

**AMBICO Will Go The Extra Nine Yards...or...
7,000 MILES...Whatever!**



AMBICO Limited combines user friendly, professionally written and illustrated Installation Manuals which accompany door and frame assemblies to project job sites on shipping. The client is advised to adhere conscientiously to the information and instructions included in these Manuals.

In some instances, the very specialized nature of certain door and frame assemblies demand that AMBICO takes the additional step of following its product to a necessary conclusion: installation and inspection of the unit, fully installed in its opening. Two excellent examples of AMBICO's dedication to the attention to detail and the final resolution of a client's product are demonstrated in the following scenarios.

The full range of AMBICO expertise was set in motion in both projects described, however, it is interesting how the engineering (design) expertise on the one hand, works so closely with the installation experts on the other, to deliver these very specialized assemblies.

Case Study No. 1: The Taiwan Experience

Requirement: STC 51, Bullet Resistant, Level IV Sliding Door and Frame Unit (1)
(w) 14' 3"; (h) 8' 6" (wt) 3000 lb
fabricated in 4 sections
fasteners installed on site

STC 52, Steel, Swing Door and Frame Units (Several)

Client: National Security Bureau, Taipei, Taiwan
Military Training Facility

Security: The client and the use of this building combined to present a project surrounded by an extremely high level of security

Distributor: Aris Pioneer

Engineering and Design Implications:

Steve Peterman, Engineering Manager for AMBICO listed two major issues to be addressed in the specifications received from this client:

- all specs and notes were written in Chinese
- the combining of two different types of performance requirements always presents a unique challenge (in this instance, acoustic STC 51 sound attenuation was required, as well as bullet resistance to Level 4)

Most architectural drawings have common components. With the assistance of our local distributor, the specifications were determined and translated. AMBICO forwarded its drawings for approval and fabrication of the door began.



**Steve Peterman, Engineering Manager
AMBICO Limited**

Because of the very specialized design of the sliding doors, and in order to gain a full understanding of the fabrication process, both the consultant on the project and the construction manager, traveled from Taiwan and visited the AMBICO plant.

During this visit, a number of fabrication and site conditions were reviewed that enabled all parties to overcome some previously unforeseen issues. For example, it became clear that there was a column on site that would, in fact, have prevented the sliding door from opening completely. The wall section therefore had to be redesigned to accommodate the door and retain the load-bearing column in its position. This also led to some fabrication and design changes, as the armor shield had to be repositioned within the door panel. Fortunately these adjustments were implemented without any delay.

This partnership between the representatives of the owners and the manufacturers of the product, ensured that all parties were confident that this unique door assembly met all expectations and would perform as required.

AMBICO fully appreciated the importance of these units to their clients and their project. The completed doors were shipped a full two months prior to the stated time for arrival on site.

Installation Implications:

*Warren Mallon, Senior Installer
AMBICO Limited*

All crated products arrived safely in Taipei and were stored within the complex while construction continued. In order to ensure that the clients were completely satisfied with the units and their installation, AMBICO booked travel and accommodations for Senior Installer, Warren Mallon, to arrive on site in Taipei to oversee the installation. Of particular concern was the successful installation of the sliding door and frame assembly.

As the date of departure approached, AMBICO learned that a major fire had devastated the entire project and the door and frame units, stored on site, had been extensively damaged. Some were still in crates while others were lying, uncrated, and piled in the underground level of the structure. Mallon's mission immediately changed: he arrived in Taipei as planned, but not to oversee the installation of doors and frames. Mallon proceeded to assess damage to the doors and frames. The client and their insurance agents were fully prepared to accept AMBICO's expert opinion on the status of their products.

Many units required total reconstruction. Seals which had already been installed required replacement. In particular, the complex sliding door unit including seals, hardware, valance, and counter balance had to be completely reconstructed. The schedule for the entire project would be set-back 6 - 9 months. AMBICO began the re-production of the entire order, including the sliding acoustic and bullet resistant door and frame unit.

Mallon was able to measure the opening for the sliding door and frame unit and noted that it required structural steel behind and above in order to hang the door. He was able to work with the client, the foreman, and electrician (all of whom spoke English).

Almost a full 9 months later, Mallon once again started out on the 18 hour flight from Ottawa to Taipei. Upon arrival he immediately proceeded to the project. Mallon soon discovered that bullet

resistant material had been added by the contractor along the edges of the door opening, making it impossible to drill the edges. After this minor problem was overcome by the addition of steel facings, the installation of the door was accomplished without incident and the track and seals passed inspection. AMBICO supplied the stainless steel threshold. It was not in place when Mallon left to return to Canada, however, he was confident that it would be installed as per instructions. Mallon set the limits on the door operator and left the construction manager with a list of "to do" items to ensure the successful completion of this acoustic, sliding, bullet resistant door and frame unit.

The unforeseen problem of a drop in voltage from a distant control booth was also overcome. The control booth for the door was a full 40 meters from the operator. Heavy duty wiring was installed in order to obtain the necessary flow of current. When Mallon departed Taipei he was confident that this exceptional door would be fully operational and had met or exceeded all specifications of the owner.

Case Study No. 2: Bard College, Annandale-On-The-Hudson, NY



**Main Auditorium ♦ Richard B. Fisher Center
For the Performing Arts ♦ Bard College
Photograph: Peter Aaron/Esto**

Requirement: Over-sized, STC 51, swinging steel door and frame units

frame opening (w) 12'; (h) 20' (1 pair)

weight (wt) each leaf 2800 lb

each leaf fabricated in 4 panels (w) 6' x (h) 20'

frame opening (w) 12'; (h) 30' (1 pair)

weight (wt) each leaf 4200 lb

each leaf fabricated in 6 panels (w) 6' x (h) 30'

Assembly on site

Client: Bard College, Annandale-On-The-Hudson, NY
Richard B. Fisher Centre for the Performing Arts

Architect: Frank O. Gehry

Distributor: HCI Pleasants Hardware, Burlington, VT

Design Implications:

Steve Peterman, Engineering Manager at AMBICO Limited, noted that it is unusual for specifications to call for such large, in fact over-sized doors, to be specified as swing doors. It is almost impossible to apply standard performance testing in this instance. Steve applied the resources and expertise available at AMBICO from years of experience in the engineering and design of unusually large door and frame products, to design doors which would perform to the specifications. This would include panels 4 1/4" thick, with unique, robust seals. AMBICO's Research & Development Division would be called upon to develop seals which could perform in accordance with the specifications for sound attenuation in these over-size door and frame assemblies. As well, the critical issue of specially designed thresholds would have to be addressed. in order to accommodate uneven floors.

Production equipment at the site was to be rolled into and out of the stage area through this specialized door opening. There could be no perceptible "bump", and the threshold would be Mallon and O'Grady drilled, tapped and shimmed the STC frames to receive the swinging doors at a later date. Mallon and Master Welder Bob Mantha returned several weeks later to install the over-sized doors. This was accomplished in a number of steps, carefully orchestrated, in order for the installation to proceed smoothly and successfully: both the 20' door was and 30' doors were assembled on site, from 4 equal by welding the required panels welded to form 1 leaf (2 required for one opening) the 30' door was assembled on site, from 6 equal panels welded to form 1 leaf (2 required for one opening) one fork lift and one scissor lift was required (due to the size of the opening) each panel was squared and plumbed and together, squaring and plumbing each as the next panel would be attached work continued; all channels were drilled and tapped.

A number of problems presented themselves but were overcome in completing through careful planning and execution. Not the least of these issues were: the weight of each panel (700 lb); restricted bulk-head space; tight tolerances; and the necessary squaring and plumbing of each panel and then each leaf, as the installation continued.



***The AMBICO Installation Team 'Bard College, 2002
Warren Mallon, Dean O'Grady, Bob Mantha***

The thresholds, set 1/8" into the floor, would be installed at the site by the contractor. Mallon worked with the contractor to ensure that the threshold was level and plumb and that the installation was completed properly. The doors work exactly as specified, and the movement of production equipment to and from the stage area has proceeded. In fact, the "Fisher Center for the Performing Arts" opened in mid-April to critical acclaim.

The Time Element:

The first step in the installation, with Mallon and O'Grady installing the door frame, took one week.

The second step in the installation which included assembling the panels into the door leaves and installing them, took two weeks.

The entire door and frame project, from its beginnings in design, through the manufacturing process and, finally the on site assembly and installation of these over-sized doors was completed on time and within budget.