Fort Wayne Regional Airport
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1994 Architectural Design Thesis Committee

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*Fort Wayne Regional Airport*
BACKGROUND INFORMATION

Public air transportation began with a few flights in the 1920's. In 1944 the Convention on International Civil Aviation was signed with the principal objective to reach agreement for an orderly international development of civil aviation. This was followed by the creation of the International Civil Aviation Organization. Since then, the United States has created a prestigious national aviation network. It has since grown to be an intricate network of worldwide service. In 1982, international and domestic scheduled air services served over 755 million passengers and carried 10,910,000 tones of freight.

There are two primary goals, as stated in the Airport and Airway Improvement Act of 1982, that the airline network strives to achieve and abide by.

1. The safe operation of the airport and airway system will continue to be the highest aviation priority.

2. The continuation of airport and airway improvement programs and more effective management and utilization of the nation's airport and airway system are required to meet the current and projected growth of aviation and requirements of interstate commerce, the Postal Service, and the national defense.

The capability of air transportation to offer fast and frequent trips over long distances has created worldwide demand for mobility in business and pleasure. In this process, the terminal is essential as a transfer station from ground vehicles to air vehicles.

The airport is like a total city devoted to dynamic movement. It, like a city, is also set in motion by changing economic and technological factors. The technology can, overnight, change the preestablished schedules, thereby changing all relationships and movement to and from the airport. This may occur through a manufacturers ability to produce new aircraft with greater speeds with loads comparable to existing flights. The size of the payload can also change. Therefore, flexibility has become a constant program factor in the development and design of all functions with relation to future change and growth.

The flow of the airport passenger appears almost set in stone. However, the number of passengers is not so constant. Bringing these two factors together instigates a few problems. It is critical to remember that airports are set in motion by economic factors. Therefore, like the economy, it is important to consider the expansion and the feasibility of designing for expansion.

In America, our transportation systems are among our proudest accomplishments. They provide the nation and the world with great mobility, while shaping our man-made environment, our daily routine, and our visual
surroundings. An investment in the time given to the design of transportation systems can produce pleasant places and improve our environment.

In the past, many of the airport designs have fallen into a boring path interpreting the strict passenger flow as a design criteria. This, along with the lack of funding, has resulted in a lack of determination on the part of designers and sponsors to push the envelope of design. We live in a highly technical world and sometimes it is easy to lose sight of the simple things like harmony, proportion, satisfaction of the senses, and the creation of an environment suitable to the human enjoyment, comfort, and convenience. Concise planning strategies, goals, and commitment are necessary to reach an effective and feasible architectural character.

Traditionally, the airport is a marker for the communities growth and achievement. However, the facility should not dwarf the community as a representative icon. The airport shall convey the cultural, business, environmental, and economic aspects of the community it serves. As time passes and the community grows, the airport shall also show flexibility and be able to grow to meet the ever-changing needs of the community. On the other hand, if the community doesn’t prosper as projected, then other uses for the facility need to be considered in the design process.
The Fort Wayne Regional Airport will serve as the primary commercial vehicle for the surrounding communities. The new regional airport will consolidate the aviation activities in the area. This will result in better services for the user and the consolidation of commercial service will result in better schedules and frequencies for the passenger.

The higher revenues, lower overall operational and maintenance costs, and possibly even lower capital costs, could result in a self-sufficient airport operation. If this is not feasible, at least the distribution of airport costs over a larger population is a distinct advantage.

The airport will help facilitate the increased economic growth within the area. The airport will be approximately fifty-five percent rentable space which will attract a variety of businesses to the area. Also, with the introduction of the new airport to the area, some of the inconvenience and timeliness that occurs in other forms of transportation will be alleviated.

The very nature of an airport's complexity makes it necessary to isolate various parts. Therefore, to summarize the function of the airport facility, the terminal will be basically divided into its three primary parts.

The first of these parts is the main terminal building. The main terminal consist primarily of the areas which directly relate to the passenger. The second part is the administrative building. This portion of the facility will accommodate the business relations and training needs of the facility and airline management. The third part is the maintenance building. The portion of the facility will accommodate the non-passenger operations.

These various parts interact and support each other to create a dynamic facility which responds to and serves the needs of the users. The overall facility will serve as a place for arrival and departure of travelers and cargo. The facility will become an ending point as well as a transfer point for many business and recreational travelers.

The size and character of the airport will be responsive to the surrounding context and culture. The airport passenger terminal, probably like no other public building, must not only accommodate numerous and diverse functions but must also be responsive to many changes. As the community grows and demands more from the facility, the facility will grow to accommodate the communities needs. The economic health and successfulness of the operations of the airport depends on the cooperation of the surrounding communities. With the help of the community, the problems of noise, air pollution, and ecological balance will be minimized with proper site planning and building design.

Today most airports, due to excessive land requirements and noise restrictions, tend to be placed on flat abandoned stretches of land. When airports were first built, this was acceptable. People would come from
miles around to see the big birds come and go with the wind. However, in the todays society with ever changing technology, the spark of flight has dimmed. Other than those who are enplaning or deplaning, it appears that only a handful of people actually travel to their local airport for any other reason.

The interior of the Fort Wayne Regional Airport shall convey an image which enhances and accommodates the function within. The interior detailing shall create a comfortable environment for those who pass. The passenger flow shall be emphasized in the details. The barrier free interior planning shall allow maximum movement and convenience to all users.

The main public spaces should convey a grand image for mass public gathering and transportation. The secondary spaces dedicated to waiting type functions shall convey an image of comfort, relaxation, and be suited more to the scale of the human body. The passenger, while being in a strange environment, shall feel at ease while being in the space.

The number and ethnic backgrounds of the passengers who will use the facility are great. The various amenities, concessions and restaurant atmospheres shall convey a multi-cultural image.

The exterior image shall explore, but not emulate, the aspects of flight technology and history. The materials shall be of a high technology and durable standard. The materials shall compliment each other in breaking down the scale of the building as one moves closer.

The overall building shall become a steak in the landscape for the surrounding communities to grasp on to. The terminal shall serve as a civic gateway to the Midwest. A commanding presence of the airport image shall rival that of the aircraft that dock and nurse off the terminal. On one hand, the terminal shall command a powerful presence. However, on the other hand, it shall not function as an untouchable island. The design shall respect all areas of the surrounding community (i.e. residential, commercial, industrial).

The attractiveness of the airport community must be recaptured. There must be other attractions, that are convenient to the general public as well as integrated within the fabric and planning of the airport area. These facilities must interact, but not impede with the functionality of the airport.

While the focus of this thesis is the airport design, it is critical to consider the planning issues behind the added attractions. The proposed additions to the airport park are a Aeronautical Museum, Market Center, & a formal Restaurant.
The goal of the thesis project was to challenge the idea of airport isolation by helping to recapture the excitement and joy of visiting the airport complex and taking in what it has to offer. A primary focus was to integrate other attractions with the fabric of the airport without disrupting or impeding the main function of the terminal which is mass transportation.

The integration of multiple institutions that work together within a small site raises some challenging circulation issues.

The Airport Terminal

The Fort Wayne Regional Airport terminal is a 166,000 sq. ft. structure designed to accommodate approximately 1.75 million enplanements per year. The building is based on the same idea as an aeroplane. That is the idea of using durable low maintenance materials as well as minimizing unnecessary materials.

The entry to the Terminal is a barrier free space both in mobility and visibility. The open plan allows for flexibility in placement of seating. A clear view of the surrounding is provided for maximum passenger orientation. The ticket counter flows along the southeast edge near the covered entryway. The administrative level above the ticket counter area has the capability for observation of all activities within the main lobby. See Fig. 1.14. A dynamic vertical circulation atrium is also located within the main lobby. See Fig. 1.19. This serves as the primary circulation tie between the Market Center, Museum & various parking facilities.

The main concourse branches to the south. An emphasis was placed on the relationship between the lighting and the passenger movement within this space. The lighting pattern conveys the feeling of motion. Natural lighting and views to the exterior were a primary consideration in this space. The main gates are located to the east of the main concourse. The scale of the space is decreased to accommodate human scale and emphasize the change of space function. The passenger amenities and concessions are located to the west and feed off of the main concourse. The main concourse are interrupted by main atrium spaces. These spaces serve as information, decision making, and artwork display areas. The atriums with their abundant amount of south facing glass help to interrupt and minimize the tunnel feeling that is commonly found in concourse areas. See Fig. 1.18.

The jetways at the main gate areas are dynamic truss components integrated within the fabric of the Airpot Terminal structure. This eliminates the need for the added on jetway arm. Also, with the open truss being infilled with glass, the views from the gate area as well as the jetway are maximized. This creates a more dynamic experience for the passenger. See Fig. 1.16

The smaller gate areas are located at the end of the main concourse near the secondary entry. A ramp takes the passengers to the tarmac level. From there they can walk out onto the tarmac and board their plane. The structure used for this portion of the building reflects a slightly different feel. It will not be or appear to be as permanent as the main terminal construction. This will be a economical solution to the smaller plane gate area. In the future, if expansion is needed due to increased airport activity, then the claiming of this area will be an option. See Fig. 1.17.

The Aeronautical Museum

The Aeronautical Museum is a 73,000 sq. ft. facility that serves as the educational element within the Airport Complex. It contains both and indoor and outdoor static displays. The approach to the airport
becomes more dramatic as the exterior static display comes into view. This element brings the feel and touch of the airside part of the airport terminal to the landside for people to view, interact with and enjoy. To the west of the museum is a reflecting pool. The pool contains some sculptured planes over water. This element makes the transition from the museum to the Market Center. The Market Center outdoor eating court opens up onto the tranquil reflecting pool setting.

The Market Center

The Market Center is a five story 1,700,000 sq.ft. complex located to the Northwest of the Airport Terminal and just North of the Museum. The Market Center will be composed of larger retail stores on the lower level with the larger footprint. On the upper levels, there will be small shops offering a variety of merchandise for both the community and the visitors from afar. The stores within the Market Center shall reflect the Fort Wayne culture, economics, entertainment, etc. The promotion of the Fort Wayne culture to the visitors of the Airport Terminal through the Market Center connection is critical.

The primary idea driving the bringing of these three facilities together was to minimize the common sprawl of suburbia. The relationship, proper communication, and cooperation between these three facilities will spark the growth and advancement of each. It is critical to plan for expansion in the early stages to prevent circulation problems in the future. Convenience of access is critical for the prosperity. The next few pages will clearly illustrate the relationship between the facilities.
Brief Site Introduction

The Baer Field System is owned and operated by the Board of Aviation of the City of Fort Wayne. It was originally constructed in the 1940's to serve the Baer Field Army Air Base. An increase in the need for mass air travel within the area and the expansion of the community to the Southwest has led to the expansion of the field over time. However, the existing facility has grown with little consideration for the community that is slowly reaching out to it. Its existing facility is oversized and under used due to additions with short term planning building in various directions.

The thesis project is based on the idea that the existing airport complex was destroyed in a natural disaster. Therefore, for design reasons, the new airport complex will be located on the West side of the existing runway system instead of the existing North side location.

Figure 1.2 Area Map

Figure 1.3 Location Map
Figure 1.8 First Floor - Administrative Level Floor Plan

Figure 1.9 View of Static Display Area at the Aeronautical Museum

Schematic Floor Plans

Fort Wayne Regional Airport
North & West Elevations

Market Center

Entrance to Lower Level Parking/Services

Restaurant Entry

Secondary Entrance

Fort Wayne Regional Airport
Figure 1.14 Section Perspective through the Crosswalk, Main Lobby & Concessions
Main Lobby Section Perspectives

- Control Tower
- Main Concourse
- Concession Area
- Maintenance & Service Level
- Administrative Level with View of Main Lobby
- Main Lobby & Ticket Counters
Figure 1.15 Airside Terminal View From Control Tower
Figure 1.16 Eye Level View of Jetway From Tarmac
Figure 1.18 Main Concourse View of Main Gate Area
Figure 1.19 Main Lobby Vertical Circulation Ramp and Elevator
Primary Vehicular Circulation

Figure 1.20 Service, Maintenance & Lower Level Parking Diagram

Figure 1.21 Ground Level Diagram

Legend

- Primary Accessway
- Secondary Accessway
- Short Term Drop Off
- Short Term Parking
- Long Term Parking
- Maintenance & Service Accessway
- Rental Car Parking
- Employee Parking

Fort Wayne Regional Airport
Figure 1.24 Second Level Diagram

Legend

- Primary Passenger
- Secondary Passenger
- Administrative
- Security
- Baggage
- Maintenance & Service Personnel
- Primary Vertical Circulation
Site Plan
The site basically occupies three parts of a quadrant. The fourth part is left vacant for possible future expansion of the airport facility to the north. The buildings are all tied together with a crosswalk which makes it convenient for the visitors to access the market center or the museum.

Main Lobby
The main lobby is a barrier free space both in mobility and visibility. The open plan allows for flexibility in placement of seating. A clear view of the surroundings is provided for maximum passenger orientation. The ticket counter flows along the southeast edge near the covered entry. The administrative level above has the capability to observe all activities which occur with the area.

Jetway
The jetways at the three main gates are designed into the fabric of the terminal structure. They are constructed of a telescopic truss system which inclines and declines through hydraulics. The open trusses allow for glass infill. This allows for maximum views from the gate area as well as the jetway itself.

Crosswalk
The crosswalk area is a naturally lighted space that connects all three of the main components at the airport complex. It opens on both sides to the activities of the Market Center and the Museum.
Illustrated Design Ideas

Main Concourse
The main concourse travels in a north-south direction. The clerestory windows on the east and west sides allow for a maximum amount of early and later day natural lighting. The ceiling pattern is designed to cast natural lighting patterns on the floor as the day passes on. The pattern will convey the passenger circulation pattern which is desired.

Short Term Drop Off
The short term drop off area consist of a series of canopy structures. The structures are integrated with the lighting. Therefore, in the future if more covered area is required, then the canopies can be added to the existing supports.

Restaurant
The restaurant is located within the drop off area. Valiate parking will be available at the front entrance. The restaurant opens up and focuses on the static aeronautical display that exist across the accessway at the museum.

Atriums
The main concourse is interrupted by main atrium spaces. These spaces serve as information, decision making, and artwork display areas. The atriums with their abundant amount of south facing glass help to interrupt and minimize the tunnel feeling that is commonly found in concourse areas.
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