CONTOURS
No contours exist on the site. It is a flat site in every sense of the word.

DRAINAGE
As result of being flat, drainage on the site must be manipulated by the design solution.

VEGETATION
The Southern perimeter of the site is contained with low trees and vegetation below 50'
NEIGHBOR POLICY

The individual airline sites are separated by jet blast fences that create solid physical barriers. No direct interaction occurs between sites and, as result of the fences, little visual contact between sites is possible. The various sites thus work similar to a row house concept, each being independent of the other. The varied sites may be seen in succession by the aircraft passing on the taxiway, or by the motorist passing by at high speed. In this context, the site works similar to most of our highway strip developments, where details and activities within are not seen.

Not to be totally discounted is the view of the site in relation to the airport's layout, seen by the passenger as an aircraft takes off and climbs into the airways.

It may be noted that it is most common for aircraft to take off toward the East in Houston. Thus, they are normally airborne in a range of 500-2000 ft. and climbing, as the pass over the runway adjacent to the site.
CONCLUSIONS

The climate allows outdoor maintenance operations on aircraft during most of the year. This is a help to reduction of overhead costs of hangar space.

Provisions must be included for ramp positions allowing aircraft parking directed into the wind for engine run-ups and testing.

Drainage must be manipulated by the design solution.

SUMMARY
PURPOSE

The related buildings study is done to examine other buildings of similar function for aspects of critical issues that may effect the design and operation of this proposed facility.

CRITICAL ISSUES

Critical issues are those particular aspects of concern that pertain to the functions of this particular project or building type. Those issues to be examined in the following examples include conceptual organization, pedestrian, vehicle and aircraft circulation, hangar opening orientation, expansion, structural system, and aesthetic treatment of the building type.

BLDG. TYPE

In this particular project, the components can be divided into several basic building types other than airport/aviation facilities:

- Maintenance Hangar/Shops/Stores
- Offices
- Training Facilities
- Warehouse/Industrial Buildings
- Small Office Buildings
- Technical/Computer Oriented Facilities

RELATED BLDGS
STUDIES

Considering these issues and ideas, several projects will be reviewed for one or more of these aspects.

AVIATION FACILITIES

American Airlines "Super Bay" Hangar
Los Angeles, San Francisco
Zetlin Desimone, Chaplin-Conklin & Rossant Architects
(joint venture)

American Airlines Hangar
Tulsa, Oklahoma
Frankfort-Short-Imery-McKinley, Architects

Continental Airlines Facilities
Los Angeles
William & Skinner & Associates, Architects

Lockheed-California Company
Palmdale, California
William L. Pereira & Associates, Planning & Architecture

Lucky's Aircraft Service Facilities
Michigan City, Indiana (proposed)
Loren H. Urdel, Designer

Pan American Airlines Facilities
New York

Sawyer Air Service Facilities
Valparaiso, Indiana
Loren H. Urdel, Designer

United Airlines Cargo Hangar
**Legend**

- **Private Auto Circulation**
- **Service Vehicle Circulation**
- **Pedestrian Circulation**
- **Aircraft Circulation**
- **Aircraft Ramp Area**
- **Hangar Orientation**
- **Loading Dock**
- **Public Entrance**
- **Direction of Future Expansion**
AMERICAN AIRLINES HANGAR,
LOS ANGELES,
SAN FRANCISCO
AESTHETICS

This is a very simplistic structure, box-like in form, given its character by the unusual roof design.

SPECIAL PROBLEMS

The nature of this design disallows any form of maintenance shop expansion, other than linear expansion with addition of additional hangar bays.

IN OPERATION

Already in use is the huge new American Airlines maintenance hangar at San Francisco International Airport; a twin facility is being finished at Los Angeles. Designed by the engineer/architect joint venture of Lev Zetlin Associates and Conklin & Rossant, the hangars (Jan. - Feb. '71 issue, p. 58) feature modular hyperbolic paraboloid roof sections that cantilever 230 ft. from a central core structure, providing clear spans 80 ft. high and 450 ft. wide for maintenance operations. Ribbed aluminum decking covers the roof modules.
AMERICAN AIRLINES HANGAR, TULSA, OKLAHOMA
STRUCTURE:

Structural grid system

AESTHETICS
This is a handsome, flexible, utterly simple building. These are words from descriptions of the building by the jurors of the 1969 AISC committee who awarded the building an architectural award of excellence.

SPECIAL PROBLEMS
The building has an excellent design for flexibility, however, this makes it difficult to employ any forms of fixed equipment and continual relocation of portable equipment to maximize the flexible design.
STRUCTURE
Based on a structural grid system

AESTHETICS
Appealing visual contact is provided from surrounding public roadways. However, the view within the site given little consideration.

SPECIAL PROBLEMS
A lack of overall planning has created an unorganized internal structure, and varied architectural scheme.
AESTHETICS

Seen from afar, as this facility often is, the complex creates an interesting composition. From a closer perspective, there is a concept of vertical emphasis to respond to the tall aircraft height and a smaller scale accent to respond to human scale at respective building openings.

SPECIAL PROBLEMS

Each facility in the complex appears to have little relationship to efficient operation of the group.
LUCKY'S AIRCRAFT SERVICE, MICHIGAN CITY, IND. (proposed)

STRUCTURE
Widespan rigid frame combined with structural grid system

AESTHETIC
The office complex wraps the industrial facility to control views of the facility from surrounding roads, as well as to provide views of the ramp areas for the office area. The application of vegetation around the entire facility aids in giving a human scale to the large complex.

SPECIAL PROBLEMS
The design addresses the issues of controlled segregation of auto and aircraft traffic, and special requirements for views of airport and ramp areas as well as internal views to hanger and corporate offices for the president.
STRUCTURE

AESTHETICS

Aesthetic treatment of the overall complex demonstrates a successful attempt to reduce the enormous scale of such a facility. Internal aesthetics are discredited because of a lack of natural light and visual connection to the exterior.

SPECIAL PROBLEMS

The hangar treatment disallows the use of space to fit three small airplanes because of tail height openings.
STRUCTURE

Widespan rigid frame system

AESTHETICS

Color and treatment variation of door/window and hangar door fenestrations create an industrialized character. Variation in appearance is achieved with attitude (open-closed) of the large hangar doors—which in effect, open three (3) entire walls of the facility.

SPECIAL PROBLEMS

Auto and aircraft traffic are unsegregated on the West ramp, resulting in continuous conflict.

Narrow ramp areas to the East cause unorganized, inefficient ramp parking.
CONCLUSIONS

Reflecting on the analyses of various issues of these projects, some interesting points are made.

Some facilities that offer the most flexibility actually create other phenomena that make the efficiency of the facility questionable.

Many facilities which include multiple-function facilities tend to house these functions in several separate buildings, as opposed to a single complex. One thought on these projects is that this has occurred to allow for expansion among them, however these appear to be the projects that actually display the least amount of overall planning. On the other hand, Pan Am's facility, as an example, which does create a single complex, appears to provide the most admirable conditions for several conditions...

...While this facility fails to provide interaction between interior and exterior spaces, it does provide an excellent potential for such conditions...

...The facility does a good job of reducing the scale of the large facility to a human oriented scale...

...The facility appears to offer virtually unlimited expansion capabilities.
SKETCHES: SCHEME VARIATIONS