

BUILDING AREA DEVELOPMENT

BUILDING AREA USES

Facilities typically found within the building area of a small airport include:

- Based aircraft tiedown and hangar space;
- Transient aircraft parking;
- Fixed base operations facilities;
- Fuel storage and dispensing equipment;
- Aircraft washing area;
- Automobile parking.

Also sometimes found are:

- Airport administration office;
- Nonaviation facilities such as commercial or industrial buildings or a coffee shop.

This chapter examines the demand for and possible ways of accommodating additional building area facilities at Orland Haigh Field. The focus of the analysis is on the areas required for aviation facilities. Also discussed is the potential use of the portions of airport property which are excess to aviation needs.

DESIGN FACTORS

The manner in which new facilities can be developed at the Airport is constrained by various aeronautical factors and by the physical conditions which already exist, as well as by financial factors. The following paragraphs examine the most important of these design factors. Figure 7 highlights the most significant of the problems and opportunities affecting the existing building area and its future development.

Asphalt Mat

The 3,000-foot square asphalt mat remaining from the Airport's World War II beginnings is Orland Haigh Field's most conspicuous and unusual feature. As reflected in Figure 7, its existence represents both an opportunity and a problem. The opportunity comes from the fact that the mat consists of reasonably good pavement, the continued use of which can reduce the costs of developing new facilities. The problem lies in the tendency to overestimate the asset

value of the mat and thus to let it influence development decisions more than it should. For example, there is a strong preference toward placing new hangar buildings on the mat rather than on adjacent bare ground even though potentially better development can be built off the mat at not much higher cost. These hangar location trade-offs are further discussed below.

Other Existing Facilities and Leases

Existing building area facilities which have significant useful lives expected to extend beyond the end of the 20-year master planning period are assumed to remain in place unless strong layout planning reasons for eliminating them become apparent. The same is generally true of leasehold boundaries for which the terms run more than 20 years from now. An exception is where boundary changes would have little or no effect on existing leasehold development and use.

The tabulation below notes which facilities are assumed to remain, which ones can or should be eliminated or moved, and which ones are considered optional (they could remain or be eliminated depending upon site design factors).

| Disposition of Existing Facilities | | |
|---|--|---|
| <i>Remain</i> | <i>Eliminate</i> | <i>Optional</i> |
| <ul style="list-style-type: none"> • All T-hangars except those noted • Portable hangars or their replacement in same location • Herfi hangar and leasehold • Herfi hangar on east edge of mat • Myers hangar on north side of mat | <ul style="list-style-type: none"> • Old 6-unit T-hangar building • Agricultural pond and leasehold • North access road | <ul style="list-style-type: none"> • Airport office/pilots' lounge • Adjacent county T-hangar • All trees • Watchman's residence • Mobile home • Private underground fuel storage near east edge of mat • East access road |

Runway and Taxiway Setbacks

As noted in the preceding chapter, the controlling setback distance from the runway and taxiway to building area facilities is the distance between the proposed parallel taxiway and parked aircraft. A 50-foot setback is recommended. Primary taxilanes within the building area should have a minimum of 40 feet clearance from taxiway centerline to buildings or parked airplanes.

Although not an FAA aeronautical design requirement, it is recommended that future hangar buildings or portable hangars be placed no closer than 400 feet from the runway. This is approximately 80 feet closer to the runway than the nearest hangar building is now located. By maintaining this distance, it will be possible for a future airport office to be situated slightly closer to the runway and thus allow personnel to have a clear view of both runway approaches.

AIRCRAFT PARKING

Hangars

A top-priority question in the Building Area Plan development is where to locate future hangar units. Provisions need to be made for additional capacity both in the near term and the longer range. The Master Plan forecasts in Chapter 5 indicate a potential demand for as many as 10 more hangar spaces in the near term and at least 20 more within 20 years.

Specific issues to be examined at Orland Haigh Field concern the type, size, and location of these hangars.

Type

The two basic types of hangar spaces to consider at Orland Haigh Field are T-hangar buildings, typically with 6 to 10 aircraft bays, or individual, so-called "portable" units. There are important tradeoffs between the two hangar types as noted here.

Since financing is such a significant determinant of what type of hangars can be built, it is recommended that provisions be made for both types at Orland Haigh Field. Further discussion of hangar financing options is included in Chapter 9.

Size

Nearly all single-engine airplanes can fit in hangars with a 39- to 40-foot clear opening. Most twins need more room. Also, users tend to prefer slightly larger hangars than they really need. At airports having many hangars, a variety of sizes can generally be provided. Since construction costs and, therefore, rental rates vary in nearly direct proportion with hangar size, aircraft owners need only pay for the space they want. At smaller airports with relatively few hangar spaces, it is more difficult to accommodate the various possible combinations of demand.

Hangar bay widths at Orland Haigh Field mostly range between 39 feet and 40 feet. Currently, there are no hangars capable of accommodating twin-engine aircraft. Owners of twins have occasionally inquired about basing their aircraft at Orland if suitable hangar space were available.

Some spaces adequate to accommodate twin-engine aircraft should be provided. However, to keep construction and rental costs down, most of the spaces should continue to be in the size range suitable only for single-engine planes.

Location and Layout

The principle hangar location issue at Orland is whether to continue to construct new hangars on the existing asphalt mat or begin to use the unpaved adjacent area (Table 9). To date, only one hangar has been built off of the mat. For economy, most of the hangars on the mat use the existing asphalt as the floor. One consequence of this

| Comparative Evaluation | | |
|---------------------------------|----------|----------|
| Factor favors: | | |
| | T-Hangar | Portable |
| Construction quality | X | |
| Attractiveness | X | |
| Revenue generation | X | |
| Ease of incremental development | | X |
| Layout flexibility | | X |
| Size flexibility | | X |
| Construction cost | | X |

design is that water drains into some of the buildings.

The type of hangar unit – conventional versus T-hangar versus portable unit – also is a factor in the location question. The one-sided nature of conventional and portable units allows them to effectively be placed along the edge of apron pavement; whereas, T-hangars require pavement on both sides. Aesthetically, however, portable units are often less attractive than contemporary T-hangars, especially if they consist of a mixture of sizes and manufacturers. Placing them in a relatively inconspicuous area is thus usually preferable.

An important hangar layout consideration is their orientation. Whenever practical, they should be oriented so that the prevailing winds do not blow into the hangars, a condition which results both in debris accumulation in the hangars and more difficult operation of the doors.

Tiedowns

As indicated in the Master Plan forecasts, most of the future aircraft parking space demand at Orland Haigh Field is expected to be for hangars rather than tiedowns. Assuming that the hangar demand is met, only about 10 tiedowns will be needed for based aircraft at the end of the 20-year planning period. An additional 10 tiedowns should be provided for transient aircraft.

With most of the demand being for hangars, sufficient space is available on the asphalt mat to accommodate tiedown needs through the end of the master planning period. Indeed, the mat is large enough to accommodate both the tiedown demand and much of the hangar demand. It is important, though, that the mat not be so fully taken up with hangars in the near term so as to be unable to meet long-term demand for based and transient aircraft tiedowns.

Most airports specifically mark transient spaces so that transient aircraft will not park in spaces assigned to based aircraft. This has not been necessary at Orland Haigh Field because excess capacity is available to accommodate both uses. Nevertheless, for the convenience of transient flyers as well as to eliminate potential future confusion and conflict, designation of specific spaces for transient aircraft is recommended.

The orientation of tiedowns is an important factor at any airport where the winds frequently blow more strongly than 15 to 20 miles per hour. To minimize potential control surface deflection damage, it is best for aircraft to be parked facing into the wind. Less acceptable is for the tail to be toward the wind. The strongest winds at Orland Haigh Field are normally from the north to northwest or sometimes from the south. Wherever practical, tiedown rows therefore should be oriented perpendicularly to the runway.

Also, where ample space is available – as is the case at Orland Haigh Field – "taxi-through" tiedown positions are preferred for the convenience they offer. This configuration is especially desirable for transient spots.

Table 9

HANGAR LOCATION TRADEOFFS

| | <i>On Mat</i> | <i>Off Mat</i> |
|------------------------|--|---|
| Cost | \$12,000 - \$15,000 per unit if existing mat used as floor; \$14,000 - \$17,000 per unit if new floor built. | \$17,000 - \$20,000 per unit including concrete floor and proportionate share of access taxilane. |
| Taxilane Access | Existing asphalt mat pavement can be used although an overlay is expected to be necessary within life span of hangars. | New taxilanes would need to be built extending from existing mat; 25-foot width is eligible for FAA grants; portions leading to each hangar unit must be financed together with the hangar buildings. |
| Drainage | No drainage provisions if built directly on mat; limited potential if new floor built. | Good drainage can be incorporated into design. |
| Use of Land | Remaining space on mat is limited especially if buildings are kept at least 400 feet back from runway as recommended; some available space should be preserved for tiedown apron (drainage not as critical). | Ample land available along east edge of mat as well as along eastern part of north edge. |
| Layout Options | Layout flexibility and efficiency limited by triangular shape of available area. | Usable areas are generally rectangular in shape, allowing several good layout choices. |

OTHER AVIATION-RELATED FACILITIES

Terminal Building

The existing airport office and pilots' lounge is capable of adequately serving the Airport's needs for at least another decade. Before the end of the 20-year Master Plan time frame, however, the need for a larger, more functional, more attractive building is expected to arise. The planning for more immediate facility needs should allow for this eventual development.

A particular function to be housed in the terminal building should be the airport UNICOM operation. The building and the UNICOM facility should be located so as to allow the operator to see the full length of the runway and both approaches. As noted above, this will require the building to be set slightly forward of other airport buildings.

The terminal building should be centrally located on the Airport. It should be adjacent to transient aircraft parking and close to aircraft fueling facilities. Convenient public road access and automobile parking is also essential.

Fixed Base Operations Facilities

Although none of the Airport's three current fixed base operators offers complete general aviation services, the businesses complement each other so as to meet the most common needs of pilots and aircraft owners. At the present time, airport activity does not appear to be sufficient to support any competing FBO's. This possibility nonetheless must be considered in the airport plan.

As long as the Airport has space available for such a function, then FAA regulations require it to be accommodated. The difficult task is to allocate a space which would be functional if and when the demand arises some years hence, but which does not unnecessarily restrict development in the mean time. Convenient access to both the airfield and automobile access roads is a requirement. Depending upon the amount of tiedown apron which is controlled, the leasehold size for typical full-service FBO's is commonly 2 to 5 acres.

Another prospect is that one of the existing FBO's would want to expand or an additional specialized FBO would seek to establish business at the Airport. Specialized FBO's usually provide a single service such as radio repair, aircraft painting, or upholstery and interior work. Their space requirements are normally small – space for a conventional hangar capable of holding one or two aircraft plus some adjacent apron area. Airfield and road accessibility can be limited. (Private developers and lessors of hangar space are also considered to be FBO's, but the spatial needs for this type of activity are essentially the same as for publicly owned hangars.) Except for interest in construction of additional privately owned T-hangars, no FBO expansion or new development plans are presently known.

Nonetheless, the airport plans should allow for such facilities if practical.

It is recommended that most future FBO development, especially any new buildings (except T-hangars), occur off the existing asphalt mat.

Fuel Facilities

Public

In mid-1988, the fuel island and underground fuel storage tanks at the Airport were removed in favor of storing and supplying fuel by truck. This arrangement eliminates the need for the expensive special tank construction techniques and leak detection systems required by current and anticipated state and federal regulations. It does, however, have drawbacks. The most significant — one which has not arisen at Orland Haigh Field — is that most fuel suppliers are unwilling to deliver only the small quantities which a refueling truck can hold. The other is that it limits the amount of fuel which can be kept on hand to meet peak demands. A refueling truck typically holds between 750 and 1,800 gallons of fuel, often split between two types. Most tanker supply trucks carry a total of some 8,000 gallons (double for tandem trucks) and underground tanks usually contain 5,000 to 10,000 gallons.

In the long term, it is anticipated that underground or above ground fixed fuel storage will again be desirable. A location for a fixed fuel storage facility is provided for in the plan. Aircraft fueling can continue to take place from a truck or an island can again be installed.

Private

Also located at the Airport is a separate, private-use fuel storage facility. It is owned by EG&G Energy Measurements, Inc., a company affiliated with the U.S. Department of Energy, and is intended to provide an emergency fuel source for aircraft operated by the company. The underground tank is situated along the eastern edge of the asphalt mat. Access to the tank by helicopters and fixed-wing aircraft as large as a King Air is required. EG&G anticipates renewing its lease for an indefinite period.

Automobile Access and Parking

Improved on-airport automobile access roads and parking are a high-priority requirement at Orland Haigh Field. An automobile parking lot should be established next to the existing airport office/pilots' lounge. Places for 25 to 35 vehicles should adequately meet most needs. Overflow parking, perhaps unpaved or on the shoulder of the access road, should be available nearby. The parking lot should be designed so as also to function with a future terminal building.

Most importantly, the automobile facilities need to be separated from aircraft operations areas. Only authorized vehicles, including those of aircraft owners, should be permitted on the apron. No vehicles except those of airport staff should be allowed on the runway or

parallel taxiway.

Good access to the Airport is available via County Roads 200 and P. Existing on-airport roads are in fair to poor condition. The north road is unpaved and leads traffic onto the main apron. The east road also brings vehicles into aircraft operating areas. Neither road alignment is regarded as important to maintain.

Security Fencing

The primary purpose of security fencing at a small general aviation airport is to keep unauthorized vehicles from driving onto the runway and taxiway whether deliberately or inadvertently. A fence will limit the places where pedestrians can easily enter the Airport, but will not prevent entry.

Orland Haigh Field has no existing fencing except around one FBO. Vehicles driving onto the airfield has been a common problem. Installation of a security fence around the perimeter of the aircraft-operating areas should be accomplished as soon as financial circumstances permit. Controlled-access gates should be provided in the building area.

Utilities

Upgrading of existing utilities will be necessary in order to accommodate future development. No significant problems in providing adequate capacity are expected, however.

The Airport currently uses a well for water supply and a septic system with leach field for wastewater disposal. Future demand generated by aviation-related development can continue to be met with similar methods although additional capacity may be necessary. Nonaviation development of the property excess to aviation needs could generate substantially higher water and wastewater demands. Ample ground water is available for water supply; however, a storage reservoir may be required to provide adequate flow for fire protection. Connection to the City of Orland facilities west of the Airport is the probable means of wastewater disposal. A lift station would be required since the airport building area is at a lower elevation than the treatment plant.

A new electrical distribution system will be necessary to properly serve future aviation and nonaviation facilities at the Airport. Construction of an electrical power vault is proposed in conjunction with the planned runway lighting project. It should be located so as not to interfere with long-range development of the building area. Power supply to the site is adequate for any aviation-related functions as well as for average nonaviation uses which might be developed. Activities needing high power levels might require installation of additional distribution lines.

Utility Requirements at Small Airports

- Telephones – for airport businesses and the general public.
 - Electricity – for runway and building lighting, shop equipment, etc.
 - Water – for drinking, rest rooms, aircraft washing, landscaping, and fire protection.
 - Wastewater Disposal – from rest rooms and aircraft washing.
 - Gas – usually propane, for building heating.
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EXCESS AIRPORT PROPERTY

Orland Haigh Field comprises some 390 acres. Even allowing for substantial growth in aviation activity beyond the 20-year time frame of the Airport Master Plan, a large portion of this acreage will not be needed for aviation-related development. The western two-thirds of the asphalt mat is currently used for low-intensity non-aviation functions providing modest income to the Airport. This area should continue to be made available for non-aviation use with aviation-related uses remaining solely on the east side. The frontage property along County Roads P and 200 is the least needed area for aviation functions on the east side and is potentially the most suitable for non-aviation development.

It is not the purpose of the Airport Master Plan to recommend specific uses of the property deemed excess to aviation needs. Several of the limitations on development of this land should be noted, however.

- The land uses must be compatible with airport activity. The compatibility criteria outlined in the next chapter for off-airport land uses are applicable to non-aviation development on the Airport as well. Light industrial or warehousing functions would be appropriate and seem to be the type of development most likely to occur.
- Lack of water supply (both for drinking and fire protection) and wastewater disposal systems are significant limitations. It is anticipated that the flow and quantity of water would be adequate for most uses if new wells are drilled on the site. Connection to the City of Orland wastewater treatment facility on the west side of the Airport would be possible although the run would be uphill and therefore require a lift station. Presumably, the city would want to annex the property before allowing connections to its system.
- Access roads are another consideration. Although the site is situated less than 2.0 miles from State Highway 32, the adjoining roads are relatively narrow country roads. New on-airport access roads, as described earlier in this chapter, also are needed to open up the area for non-aviation development.
- A change from the current Airport District zoning designation may be necessary to permit certain types of development.
- As discussed in Chapter 9, it is recommended that the County lease rather than sell the excess airport property. Lease terms will need to be established which are conducive to private investment.

ALTERNATIVE BUILDING AREA LAYOUTS

A variety of different building area layout alternatives were examined during the preparation of the proposed plan presented in Chapter 3. The most significant variables included:

- The design of the core area around the administration building, including the configuration of the automobile parking lot and possible replacement of the administration building.
- The location and orientation of additional T-hangars, including whether to phase out the existing 14-unit building adjacent to the administration building.
- The location of fixed base operations expansion areas.
- How much area needs to be preserved for aviation uses and which areas can be made available for non-aviation development.
- How to stage the sequence of development so that intermediate phases also work efficiently.

These and other alternatives were discussed with the County staff and Orland Airport Advisory Committee. The proposed design reflects their input. The plan also reflects the projections and assumptions addressed in this report. It is important to recognize that circumstances could change and thus result in minor or major differences in the Airport's future development needs. An essential aspect of the Building Area Plan therefore is to have sufficient flexibility to be able to change to accommodate whatever reasonable future needs actually occur.