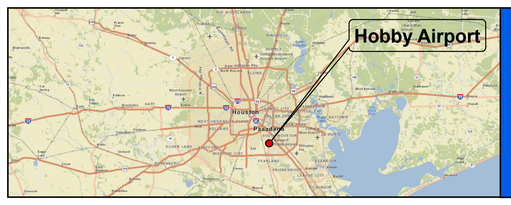

HOBBY AIRPORT RUNWAY OBSTRUCTION ANALYSIS

HOUSTON AIRPORT SYSTEM

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Date: 3/10/2014

PDC PLANNING

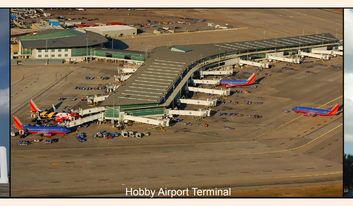
ASIS AIRPORT SPATIAL INFORMATION SYSTEM

Abstract

It is important to analyze digital elevation data sets relative to the FAA Federal Aviation Regulations Part-77 to enhance safety at the airport. The obstruction analysis will identify trees and other objects that penetrate approach surfaces to the runway. Federal Regulation 49 CFR Part 77 establishes standards and notification requirements for objects affecting navigable airspace. In order to keep airport safe, FAA Part-77 establishes imaginary surfaces with relation to the airport and to each runway.

In this study of airport safety, we focus on William P. Hobby Airport, Houston. It is the oldest commercial airport in Houston, TX, 7 miles from the downtown Houston. First opened in 1927 as a private airfield, WT Carter Field, the airport was purchased by the City of Houston in 1937 and renamed Houston Municipal Airport. The current name was given to the airport in 1967, in honor of ex-governor William P. Hobby.

1940 Air Terminal Museum, Hobby Airport


Hobby Airport Terminal

Hobby Airport Control Tower

FAA Part 77 Imaginary Surfaces

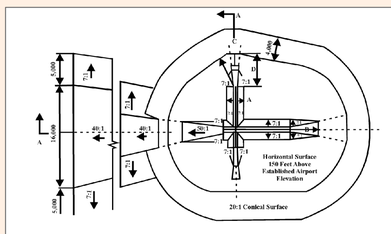
Primary Surface: A surface aligned (longitudinally) with each runway and extends 200 ft. from each runway end.

Aproach Surface: A surface longitudinally centered with the runway and extends beyond the primary surface.

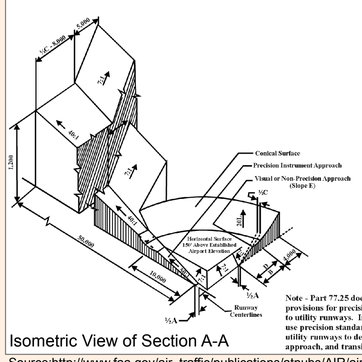
Horizontal Surface: A horizontal plane 150 ft. above the established airport elevation constructed by swinging arcs around the end of the primary surface.

Conical Surface: A 20:1 slope surface which extends upward and outward from the outer limits of the Horizontal Surface for a horizontal distance of 4,000 feet.

Transitional Surface: A surface constructed to join approach and horizontal or approach and transitional surfaces.



Civilian Airport Imaginary Surfaces



Isometric View of Section A-A

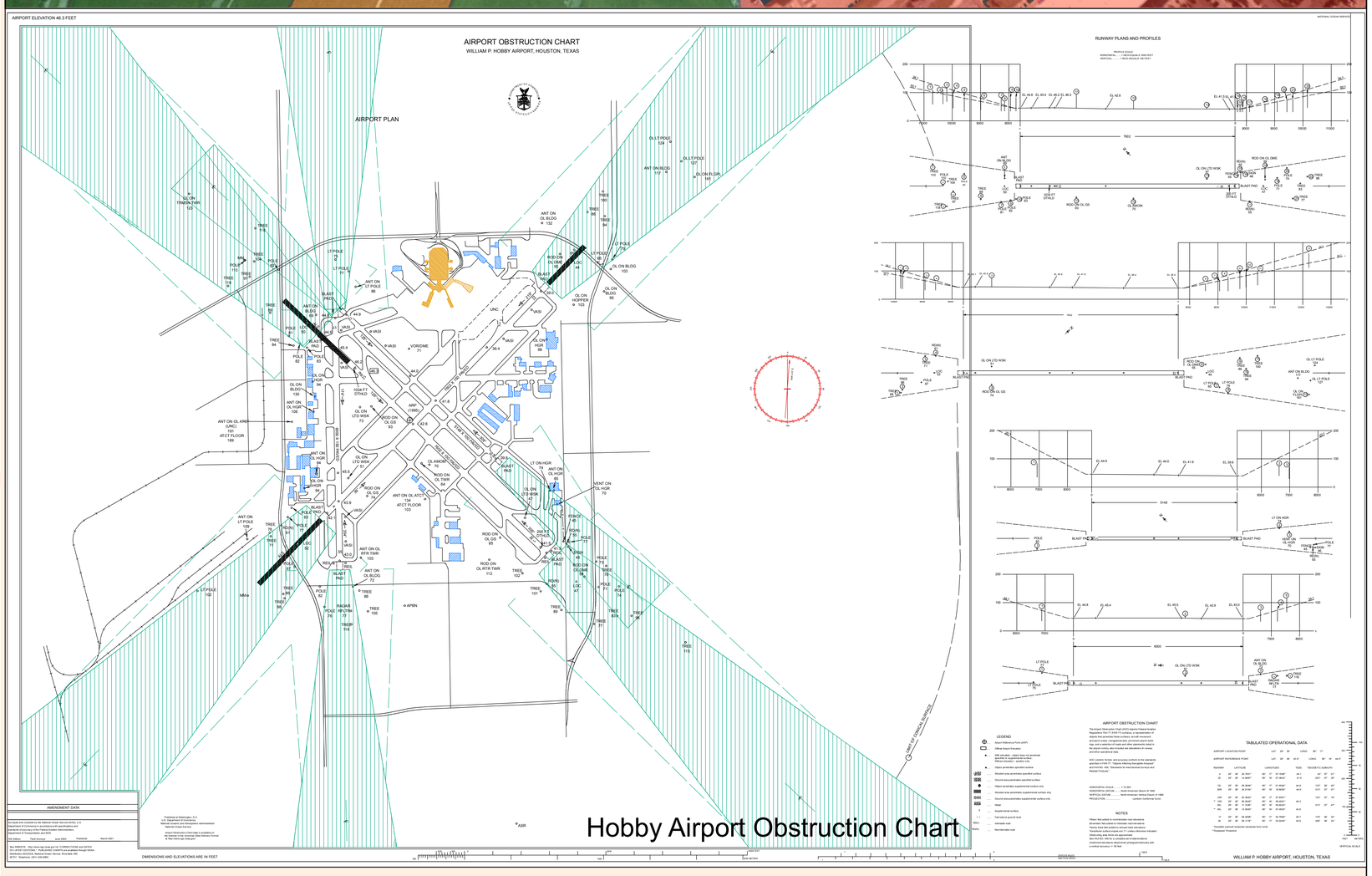
DIM	ITEM	Dimensional Standards (Feet)					
		Visual Runway		Non-Precision Instrument Runway			Precision Instrument Runway
				A	B		
		A	B		C	D	
A	Width of primary surface and approach surface width at inner end	250	500	500	500	1,000	1,000
B	Radius of horizontal surface	5,000	5,000	5,000	10,000	10,000	10,000
		Visual Runway		Non-Precision Instrument Runway			Precision Instrument Runway
				A	B		
		A	B		C	D	
C	Approach surface width at end	1,250	1,500	2,000	3,500	4,000	16,000
D	Approach surface length	5,000	5,000	5,000	10,000	10,000	*
E	Approach slope	20:1	20:1	20:1	34:1	34:1	*

A - Utility runways
B - Runways larger than utility
C - Visibility minimums greater than ¾ mile
D - Visibility minimums as low as ¾ mile
E - Precision instrument approach slope is 50:1 for inner 10,000 feet and 40:1 for an additional 40,000 feet

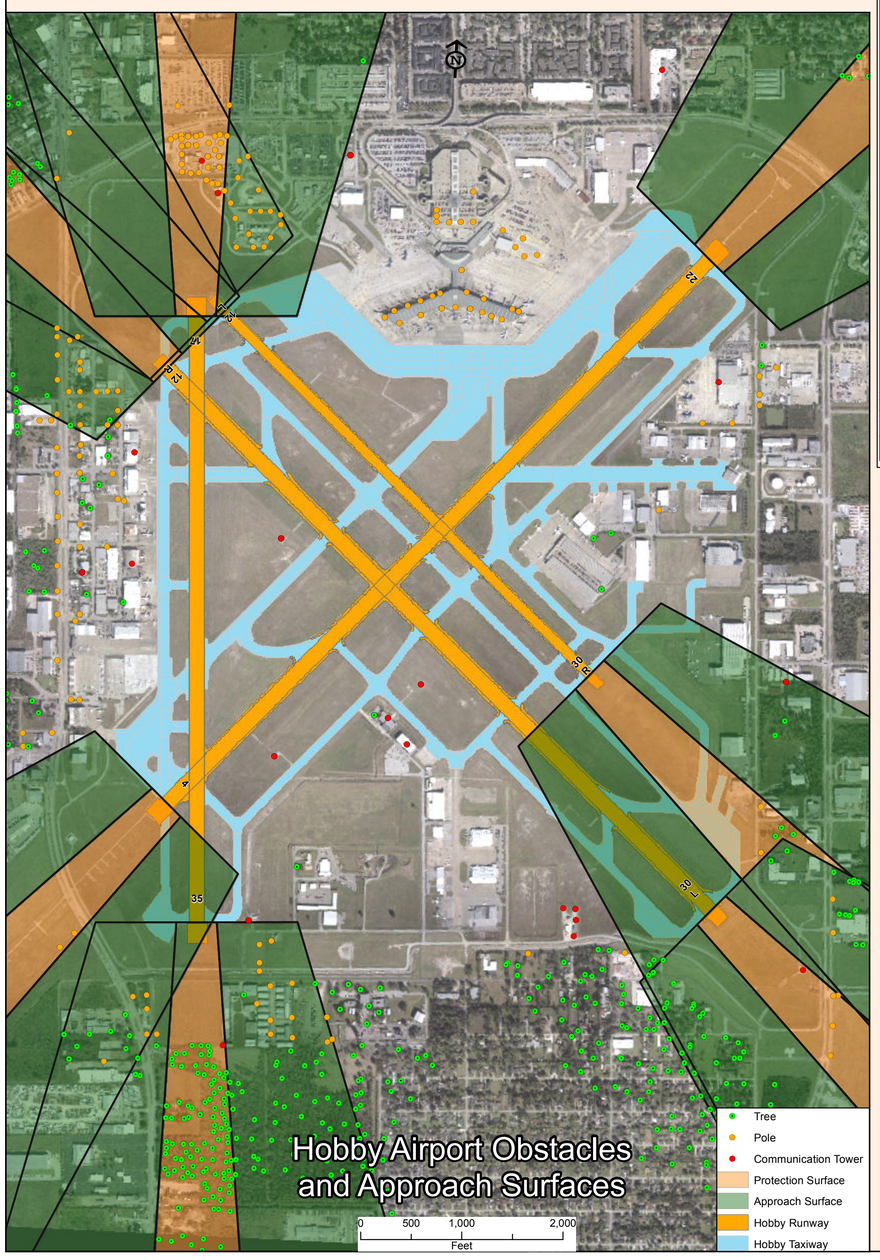
Note - Part 77.25 does not make provisions for precision approaches to utility runways. In these situations, use precision standards for other than utility runways to develop the primary, approach, and transition surfaces.

Source:http://www.faa.gov/air_traffic/publications/atpubs/AIR/air0603.html

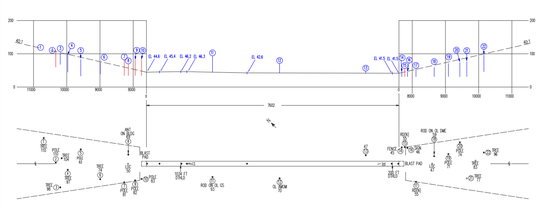
3-D View of Hobby Airport with FAA Part-77 Imaginary Surfaces

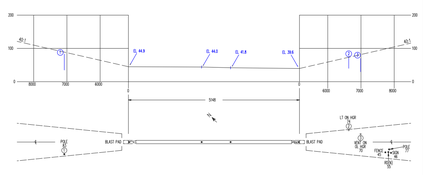


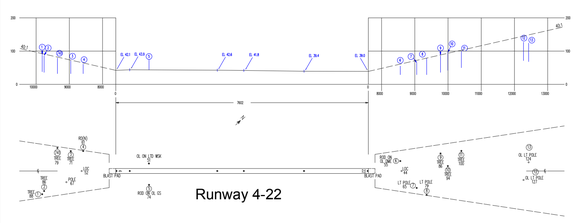
Hobby Airport Obstruction Chart

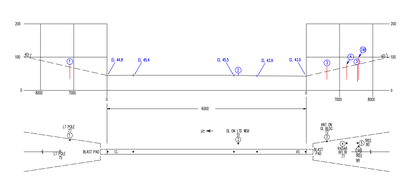


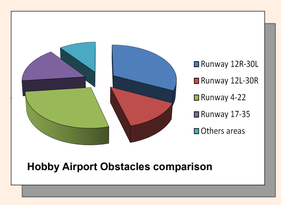
Updated Runway Plan and Profile


Runway 12R-30L

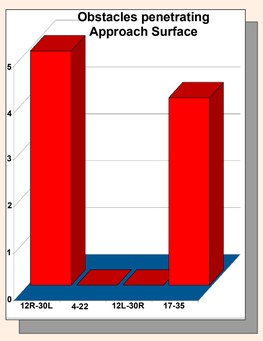

Runway 12L-30R


Runway 4-22


Runway 17-35



Hobby Airport Obstacles comparison



Conclusion:
Following obstacles need to be addressed

ID	Elevation	Description	Runway
2	110	Pole	12R
7	81	Pole	12R
8	69	Antenna	12R
9	82	Pole	12R
10	83	Pole	12R
1	77	Pole	17
3	72	Antenna	35
4	77	Radar Ref.	35
746	98	Tree	35