

Airport Imaginary Surfaces



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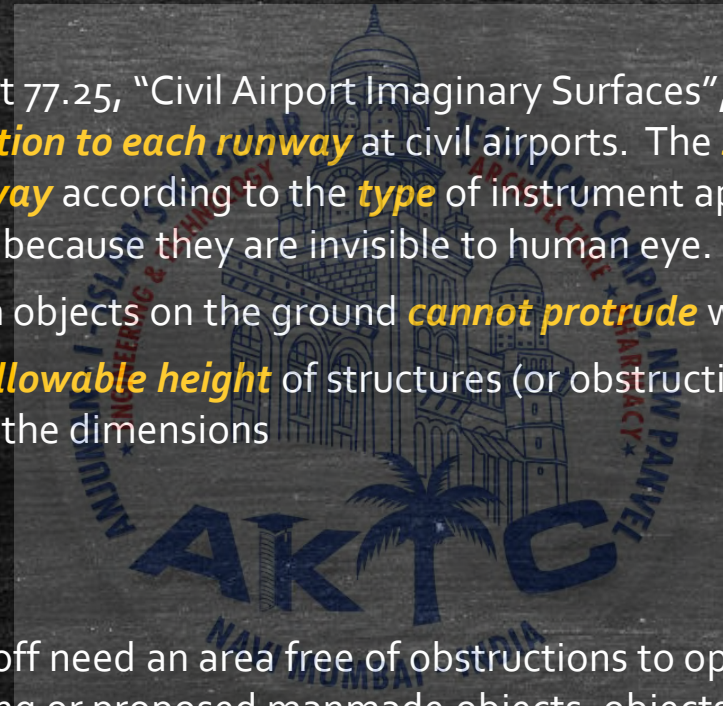
What is an Airport Imaginary Surface?

▪ WHAT IS IT?

- Federal Air Regulation Part 77.25, "Civil Airport Imaginary Surfaces", establishes a **complex structure** of imaginary surfaces **in relation to each runway** at civil airports. The **size** of each imaginary surface is based on the **category of each runway** according to the **type** of instrument approach available or planned for that runway. It is referred as **Imaginary** because they are invisible to human eye.
- It is that **area** above which objects on the ground **cannot protrude** without constituting an obstruction.
- It **defines the maximum allowable height** of structures (or obstructions) that may be placed in the vicinity of any active runway by defining the dimensions

▪ WHY IS IT NEEDED

- Aircraft landing or taking off need an area free of obstructions to operate safely. Thus Imaginary surfaces exist primarily to prevent existing or proposed manmade objects, objects of natural growth or terrain from extending upward into navigable airspace.
- According to the provisions set forth in Part 77, an object is an "Obstruction to Air Navigation" if it is of greater height than any imaginary surface established under the regulation.



Size of Imaginary surface depends on...

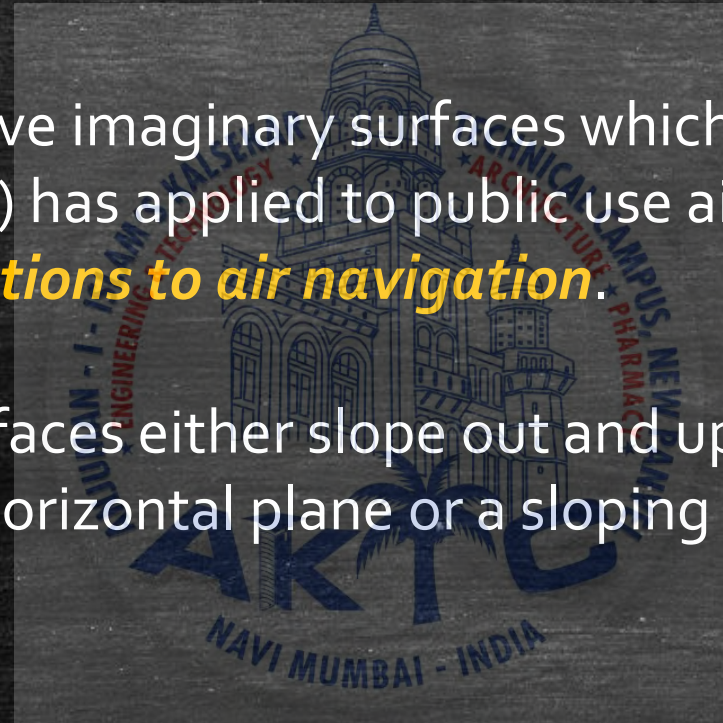
- Category of Runway
- Type of approach available or planned



Type of Imaginary Surfaces

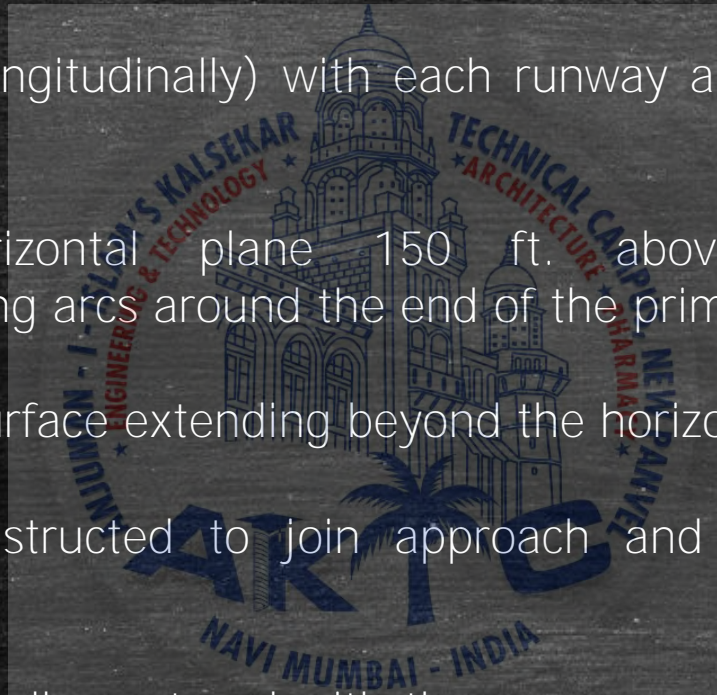
There are basically five imaginary surfaces which the Federal Aviation Administration (FAA) has applied to public use airports for the purpose of **determining obstructions to air navigation**.

These imaginary surfaces either slope out and up from all sides and ends of runways or are a horizontal plane or a sloping plain above public use airports.



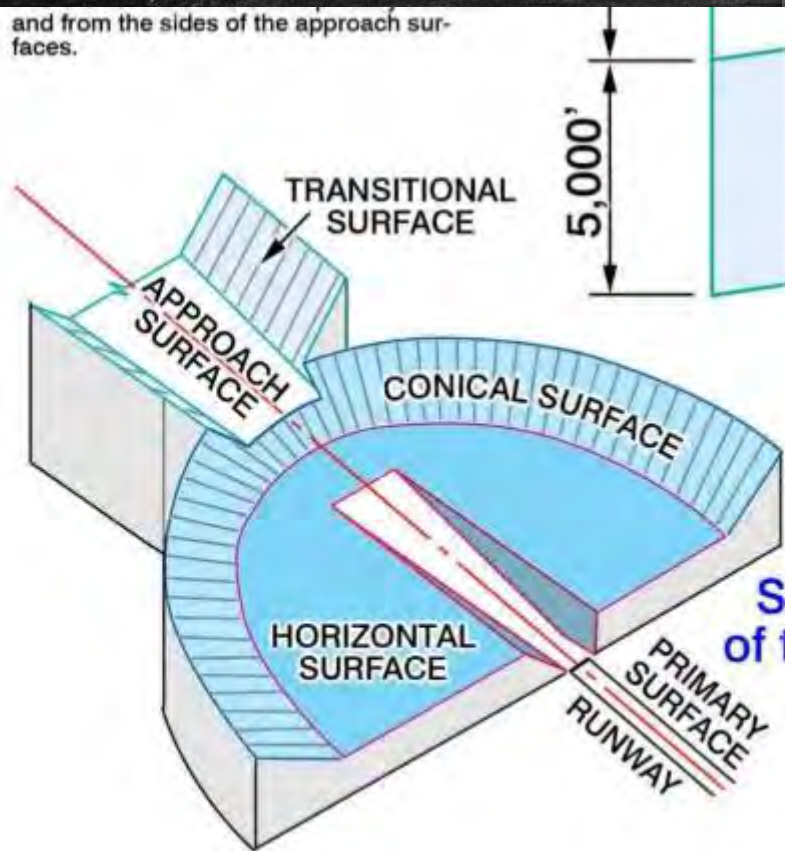
Imaginary Surface – Primary Surface

- **Primary Surface**: Aligned (longitudinally) with each runway and extends 200 ft. from each runway end
- **Horizontal Surface**: Horizontal plane 150 ft. above the established airport elevation. Constructed by swinging arcs around the end of the primary surface
- **Conical Surface**: 20:1 slope surface extending beyond the horizontal surface
- **Transitional Surface**: Constructed to join approach and horizontal or approach and transitional surfaces
- **Approach Surface**: Longitudinally centered with the runway and extends beyond the primary surface



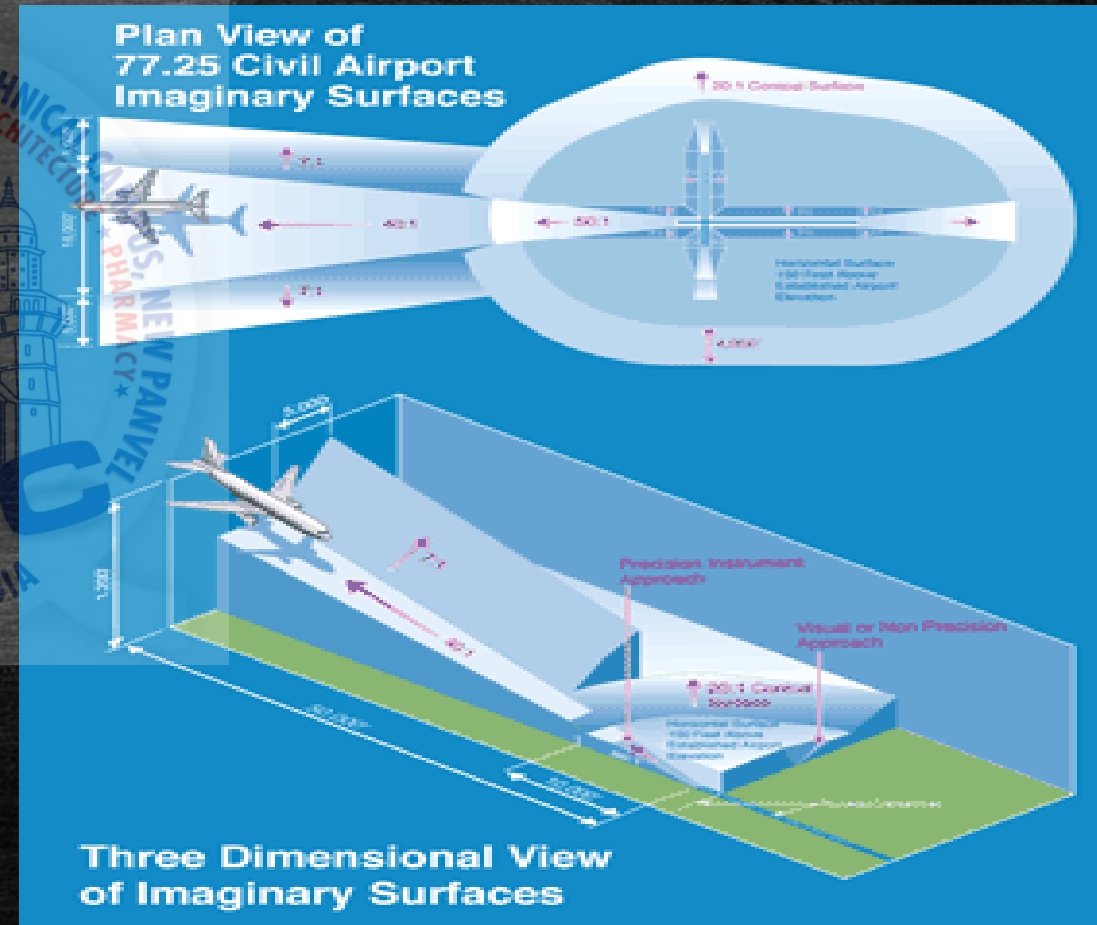
Imaginary Surfaces

and from the sides of the approach surfaces.



Spatial Represent
of the Imaginary Sur

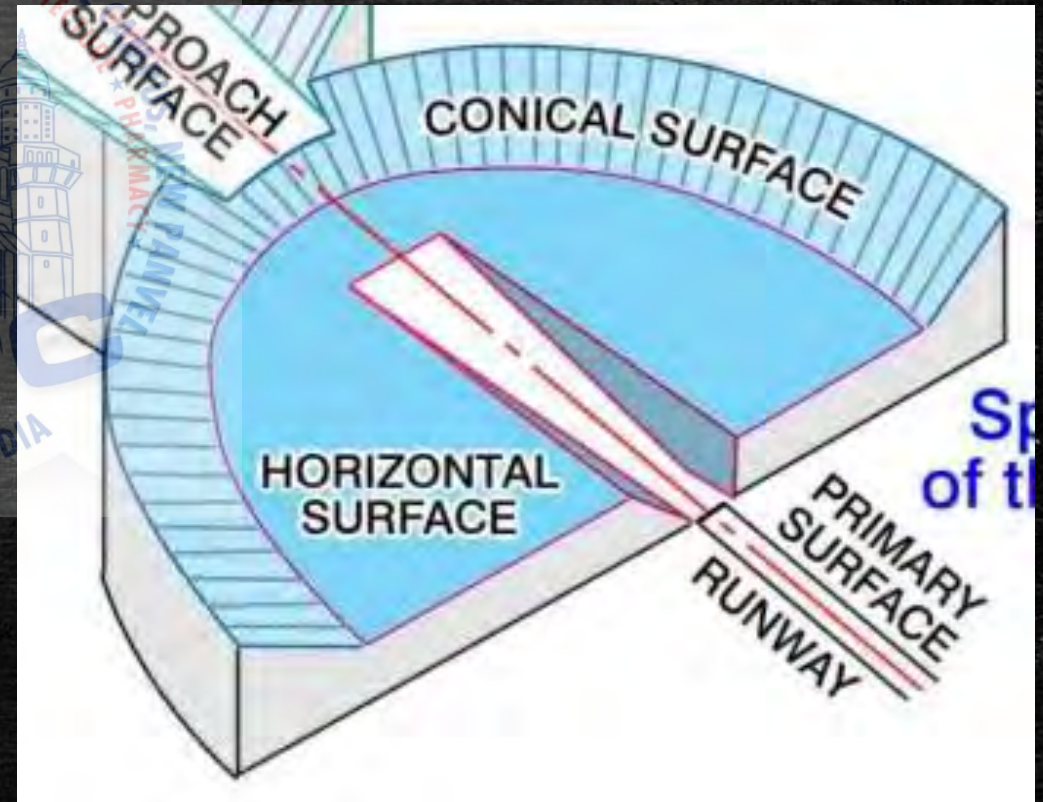
This infographic
specific descriptio
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Three Dimensional View
of Imaginary Surfaces

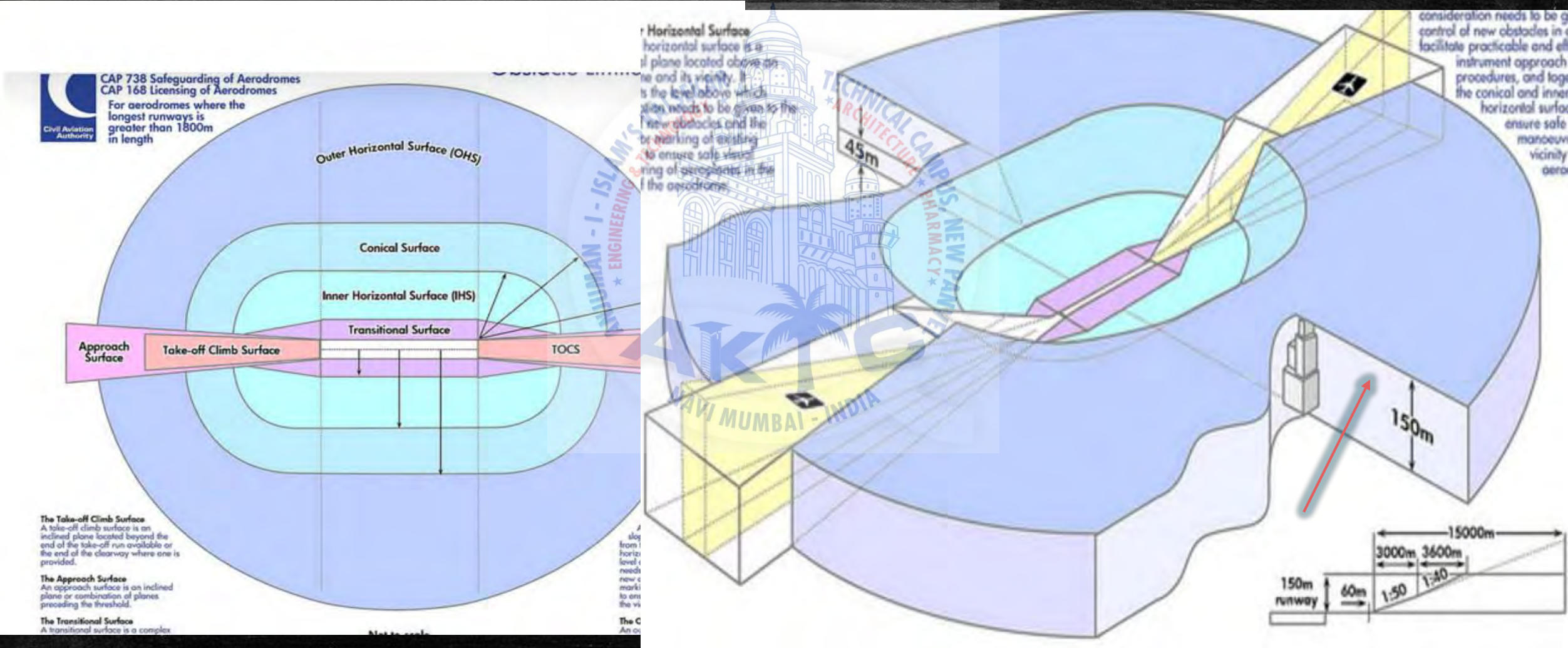
Primary Surface

- Aligned longitudinally with each runway and extends 200 feet from each runway end
- Same elevation as RW



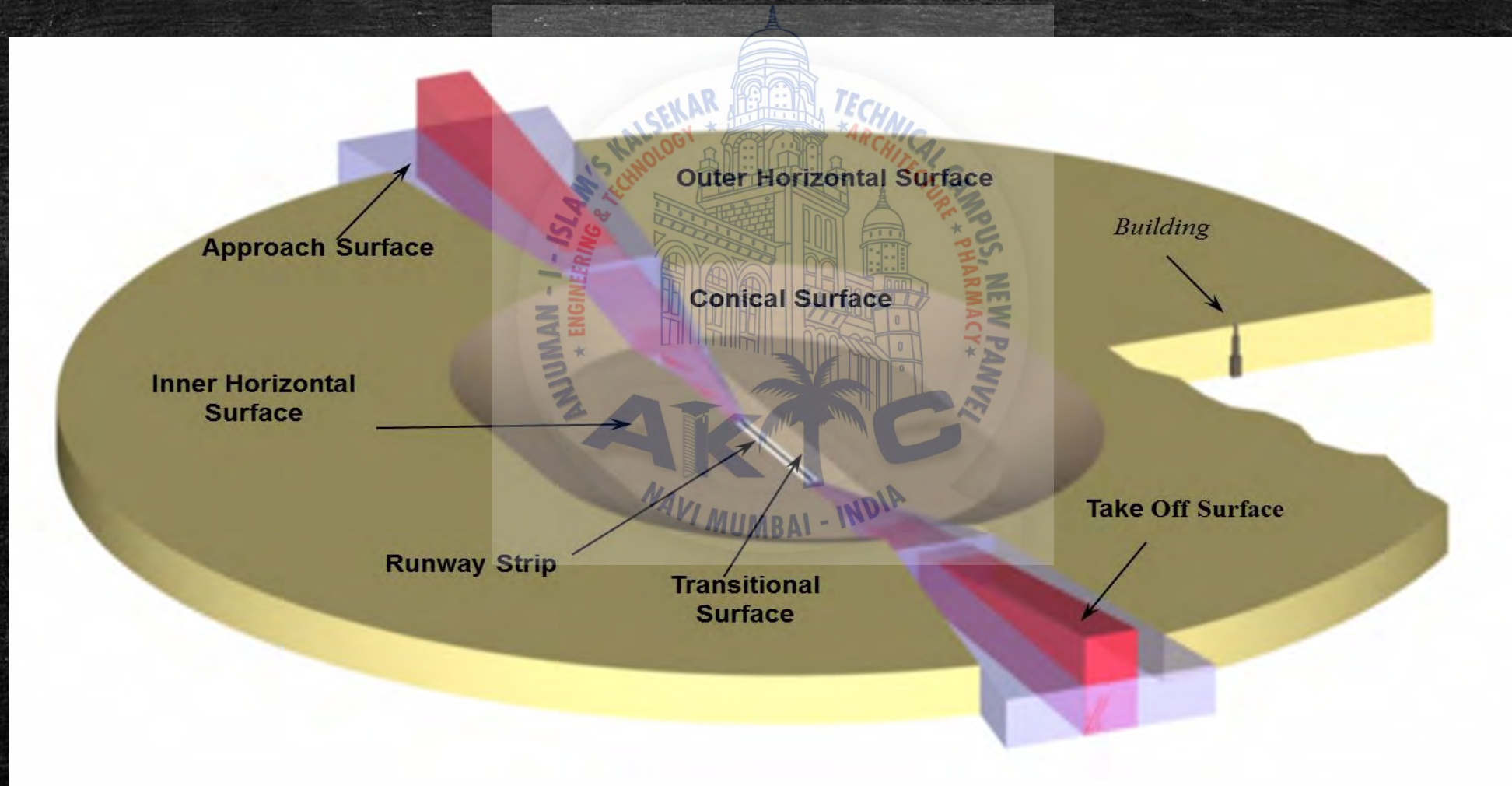
Horizontal Surface

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



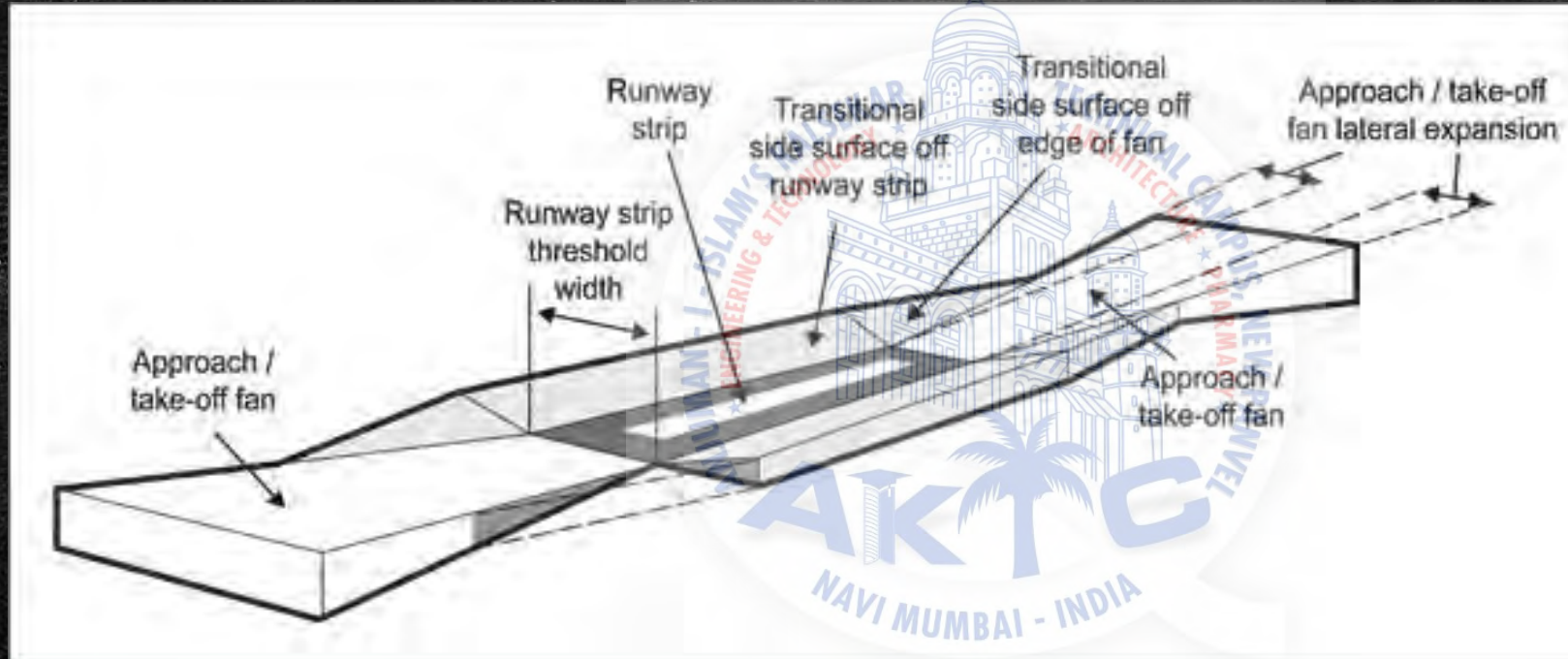
Conical Surface

- **Conical Surface**: 20:1 slope surface extending beyond the horizontal surface
20:1 means for every 20 feet length, take 1 feet high



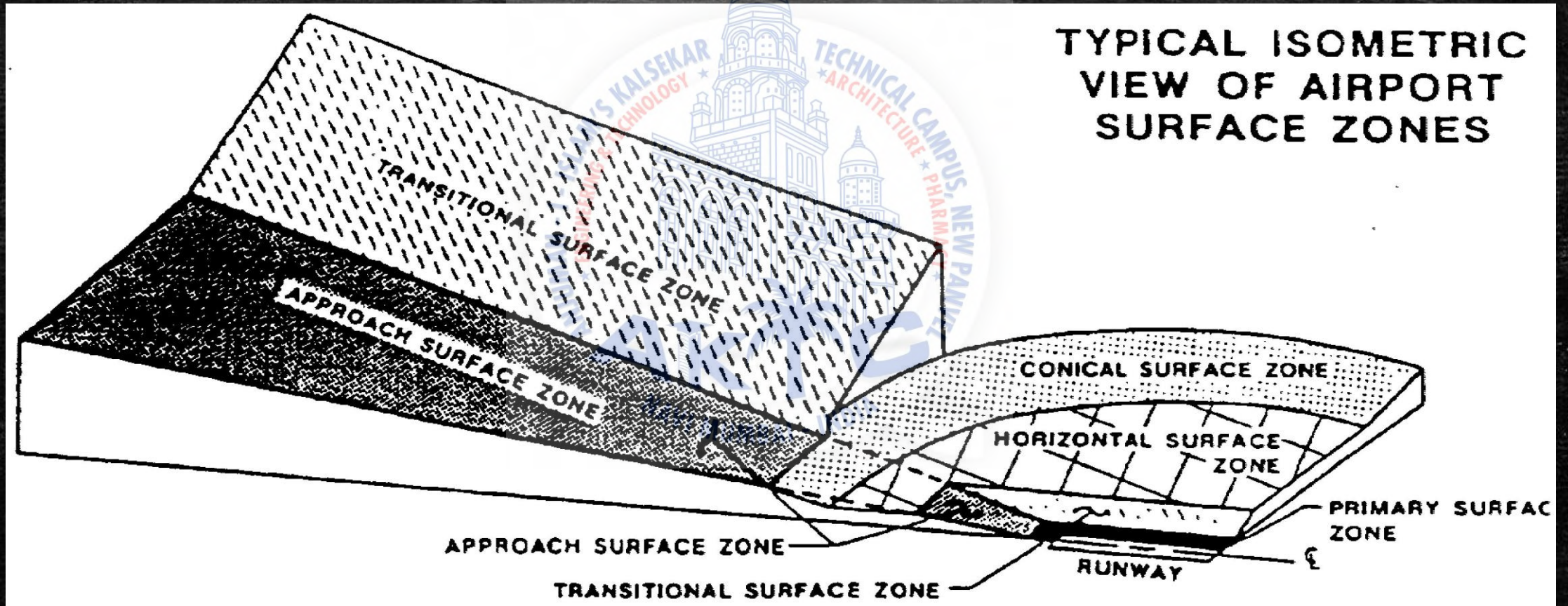
Approach Surface

- **Approach Surface**: Longitudinally centered with the runway and extends beyond the primary surface

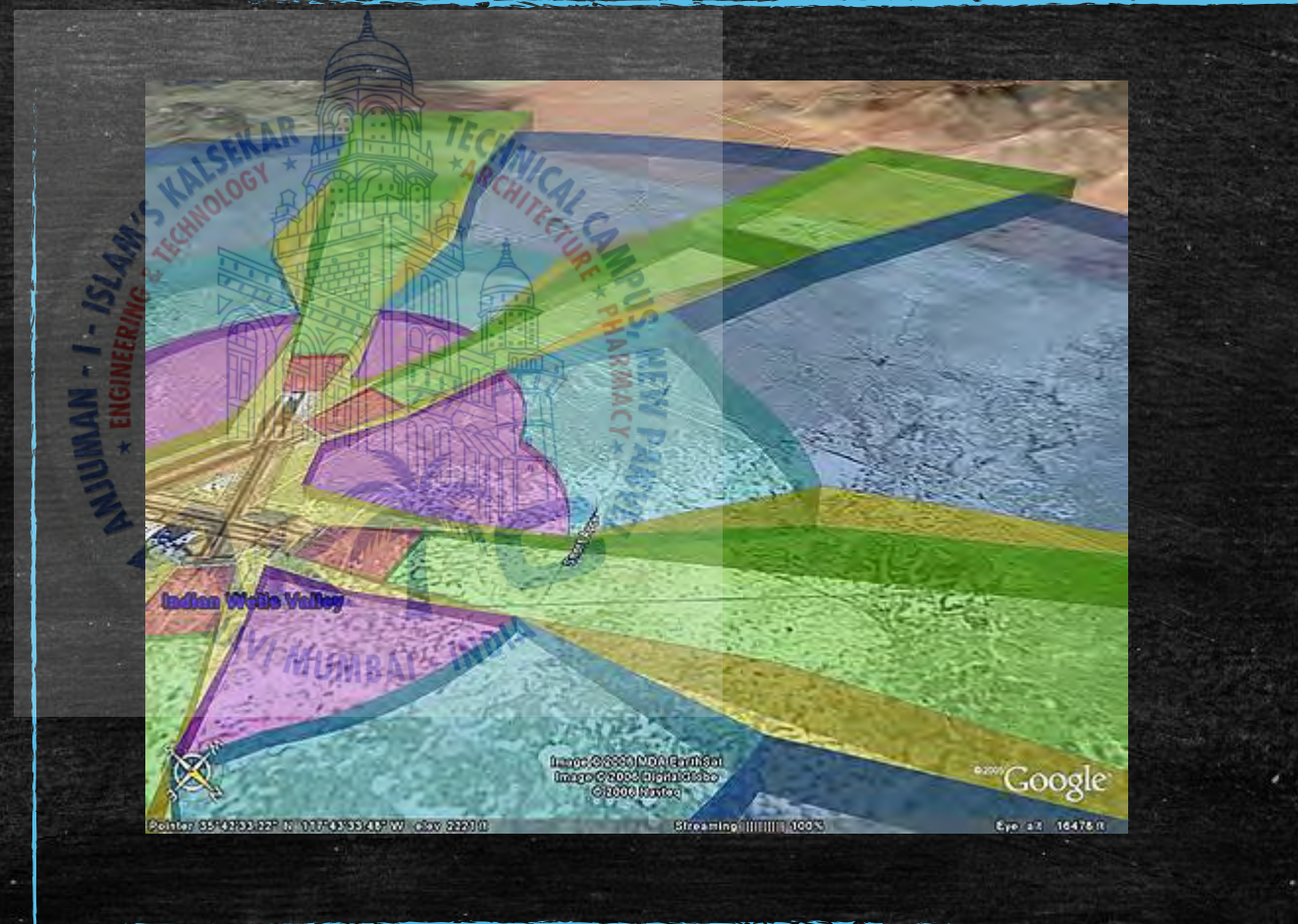


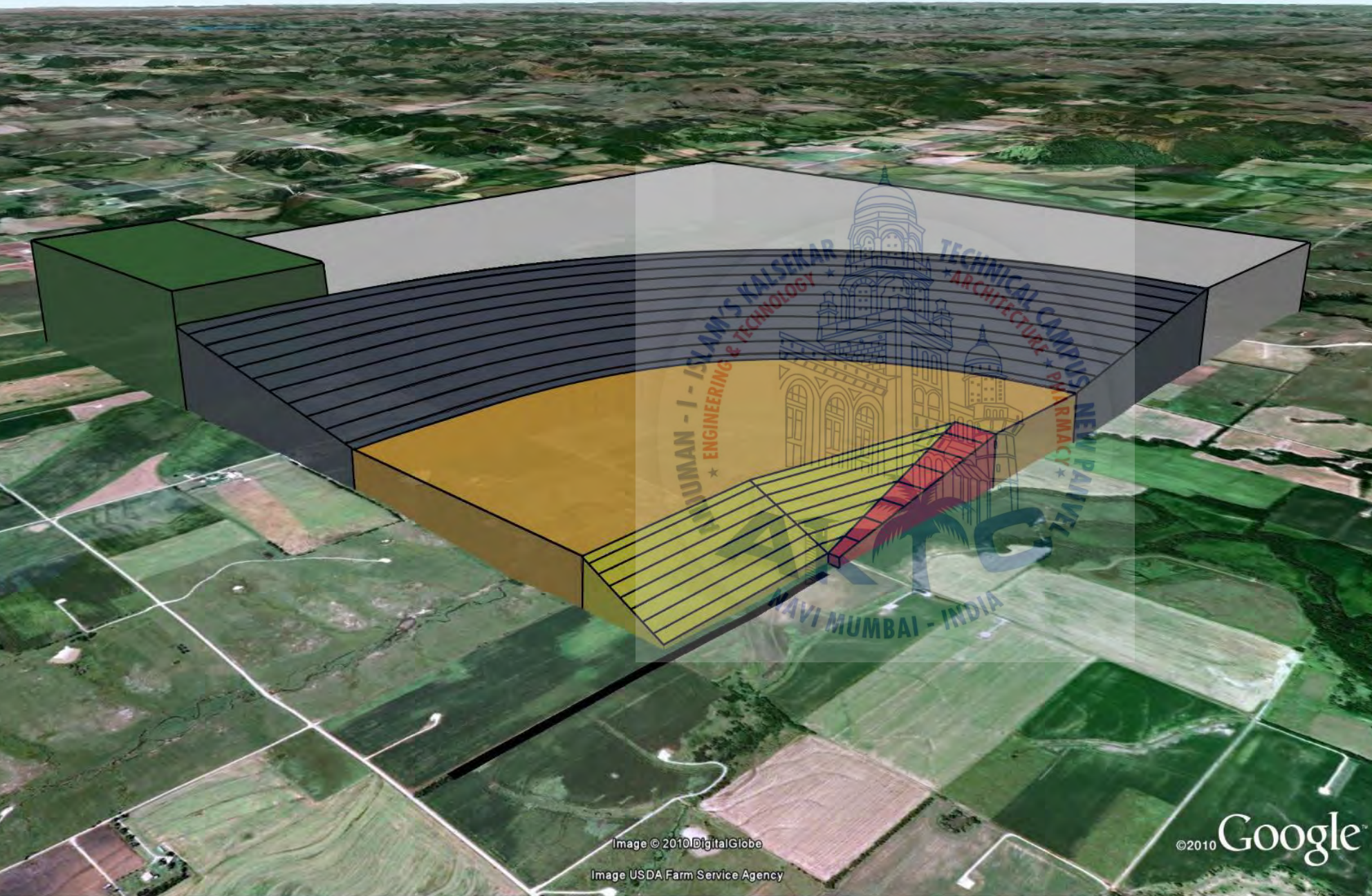
Transitional

- **Transitional Surface:** Constructed to join approach and horizontal or approach and transitional surfaces



Some Images for Illustration..





LEGEND

-  Transitional 7:1 Surface
-  Approach 20:1 Surface
-  Horizontal Surface
(150 Ft. Above Airport Elevation)
-  Conical 20:1 Surface
-  VFR Traffic Pattern
(350 Ft. Above Airport Elevation)
-  VFR Traffic Pattern
(500 Ft. Above Airport Elevation)

Example of
VFR Traffic Pattern
Figure 2



Williams Aviation Consultants, Inc.

Video for clear Illustration...



Understanding Part 77 - Civil Worked Imaginary Surfaces - YouTube (360p).mp4