STEM AVSED
Aviation & Space Education



Identify the Different Components of an Airport

Lecture Guide in support of STEM ACTIVITY: Create and Airport Layout Plant

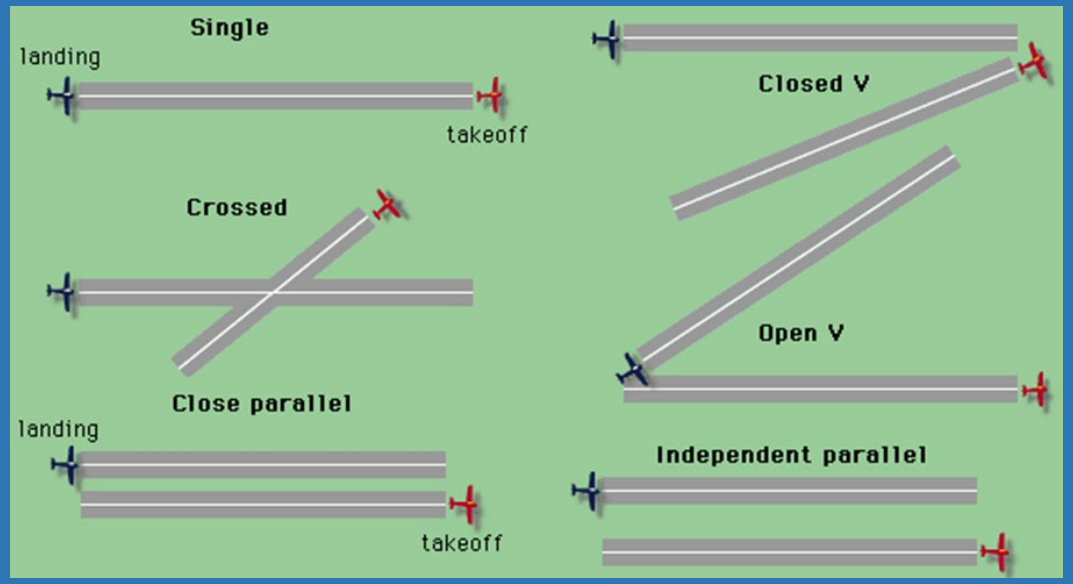
Updated June 2023

Airport Paved Surfaces

Runways







- Most runways are made with asphalt, concrete, or grass.
- Runways are aligned with the outbound magnetic heading
- The runway numbers are based on the first two numbers of the magnetic heading
- Parallel runways are labeled using terms such as left, center or right
- Runway surface markings are painted white



Video

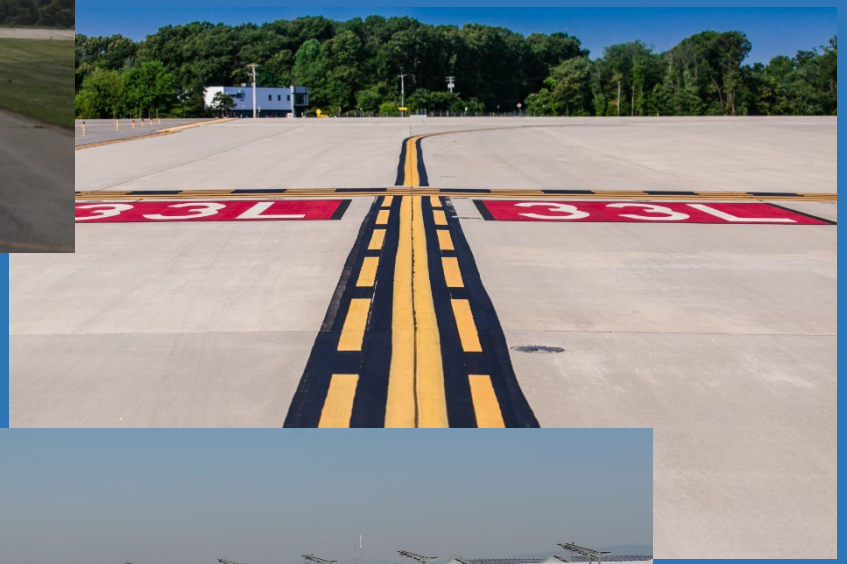
Check out this video on runways!

Apprx. 3 minutes

Airport Paved Surfaces

Taxiways, Aprons and Ramps







- Taxiway surface markings are painted yellow
- The most critical taxiway marking is the runway hold position bar
- Primary taxiways are identified with a letter. Taxiway connectors are identified with a letter number combination
- Taxiways have blue edge lights

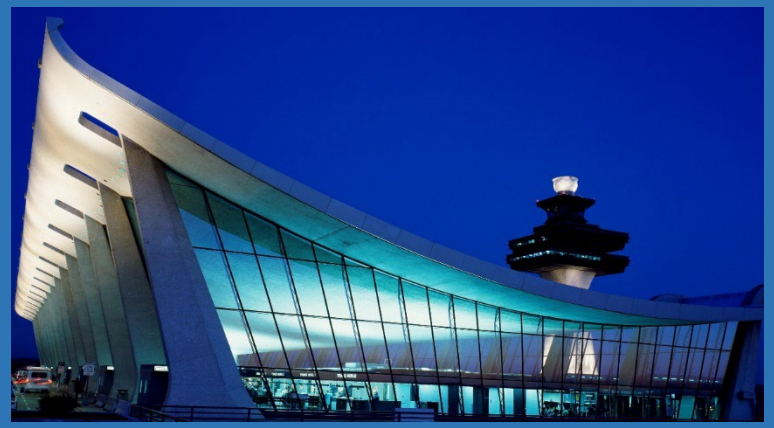
Video

Check out this video on taxiways!

Apprx. 3 minutes

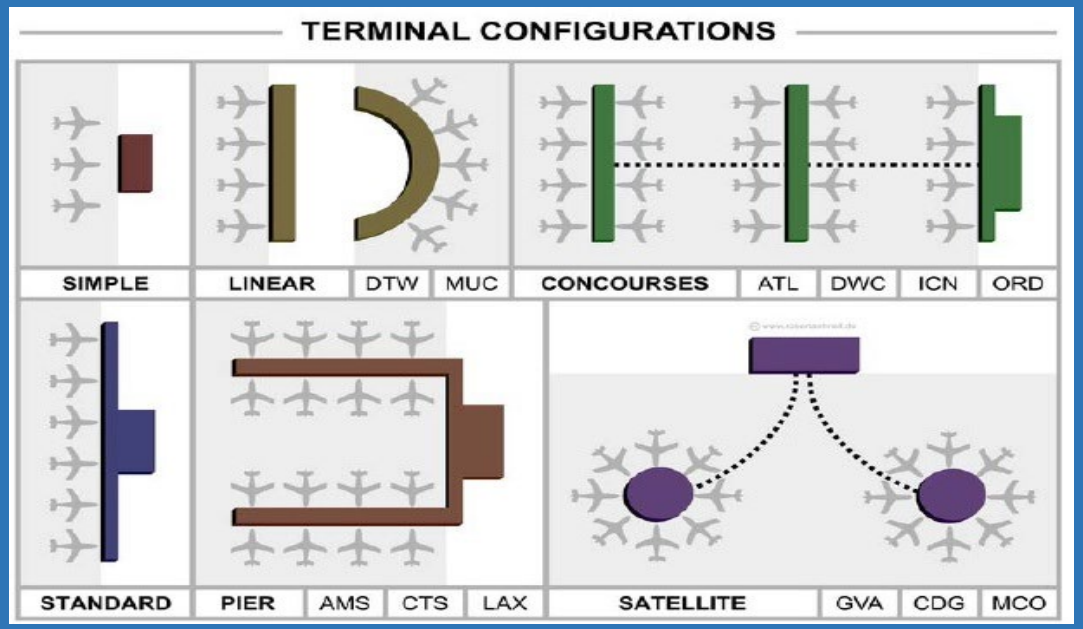
Airport Buildings

Terminals





- Primary entrance point for passengers
- Intended to assist passengers moving from the landside to the airside of an airport
- Terminal designs range from small one room buildings to multi-building island configurations that stretch across several miles.
- Terminals may include baggage, security, offices, restaurants, shopping areas, and more



Video

Check out this video on terminals!

Apprx. 6 minutes

Airport Buildings

Hangars









- Preferred parking location for aircraft
- Location of aircraft repair and paint shops
- Hangars normally do not have any windows.
- One of the largest cantilever hangars in the world is at Alliance Airport with over 840,000 sq. feet.

Video

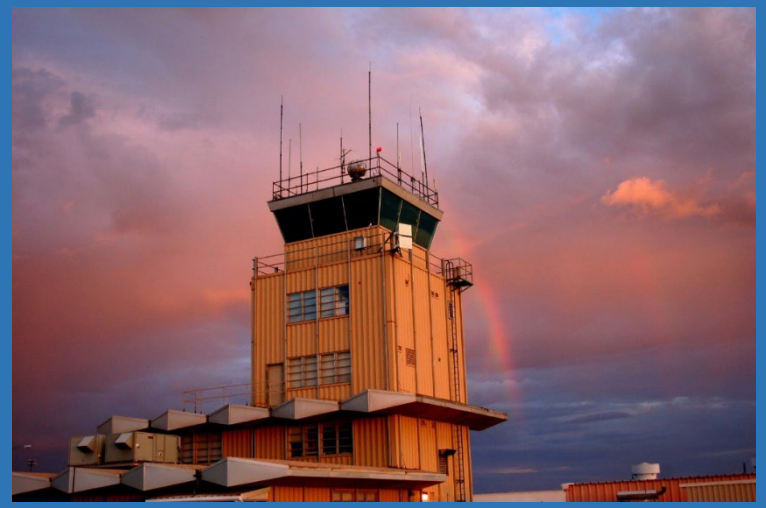
Check out this video on terminals!

Apprx. 1:30 minutes

Airport Buildings

Air Traffic Control Towers









- Air traffic control towers are built to see all the movement surfaces on an airport
- Towers' heights vary depending on the setup of each airport.
- Tower hours of operation vary based on the traffic at each airport
- Not every airport has an air traffic control tower
- All movement around the airfield is directed and monitored by air traffic controllers



Video

Check out this video on terminals!

Apprx. 1 minute

Airport Buildings

Aircraft Rescue and Firefighting





- ARFF requires special training to work around and with aircraft
- ARFF Firefighters respond to accidents, incidents, medical emergencies, and more
- ARFF stations are staffed at all hours that an airport is open so they usually include living areas for the firefighters
- All operators of Part 139, commercial service airports, are required to have ARFF services onsite

Video

Check out this video on ARFF!

Apprx. 3:30 minutes

Airport Lighting Systems





Runway Lights





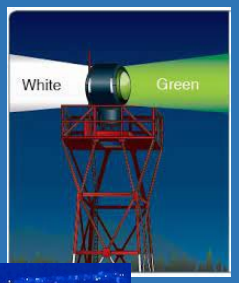
Instrument Landing System (ILS)





Taxiway Lights







Beacons, Glide Slopes, & More

Video

Check out this video on airport lights!

Apprx. 6 minutes

Airport Weather Systems

ATIS, ASOS & AWOS



- All three systems provide similar information such as cloud conditions, visibility, and wind speed
- ATIS provides weather and airport information such as runway in use and NOTAMS
- ASOS and AWOS are automated weather reporting systems
- ASOS and AWOS are similar but an ASOS is newer and provides additional services not available on an AWOS.

Video

Check out this video on weather systems!

Apprx 3:30 minutes

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FEDERAL AVIATION ADMINISTRATION

Can you identify all the major parts of your local airport?



- Students model actual airports using Minecraft
- Organized lesson plans build on one another
- Knowledge check assignments verify student learning and involvement
- Collaborative communication between students, teachers, parents, and FAA staff
- STEM based applied knowledge in math, engineering, and aerospace career development





Video

Check out this video on the Airport Design Challenge!

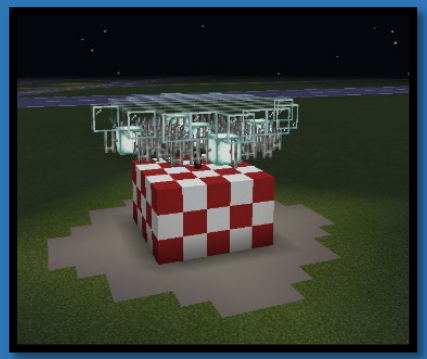
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STEM AVSED

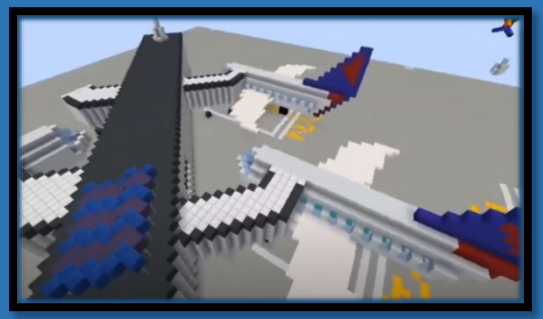
AIRPORT DESIGN CHALLENGE

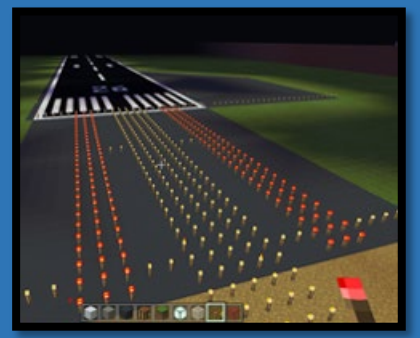












Enroll Today!