

Safety/Phasing Plans

Getting Out There



Presentation to: North and South Dakota Aviation Users

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Federal Aviation
Administration



CONSTRUCTION SAFETY STANDARDS



- Advisory Circular (AC) 150/5370-2, *Operational Safety on Airports During Construction*, contains guidelines for operational safety during construction.
- AC 150/5370-2 is approved standard for construction operations for NPIAS airports and Federally funded construction projects.
- Construction activity is defined as the presence and movement of personnel, equipment, and materials.

CONSTRUCTION SAFETY STANDARDS

Who is responsible for safety during a construction project on an airport?

- 1. The contractor.**
- 2. The project engineer.**
- 3. The airport management.**
- 4. Luck.**



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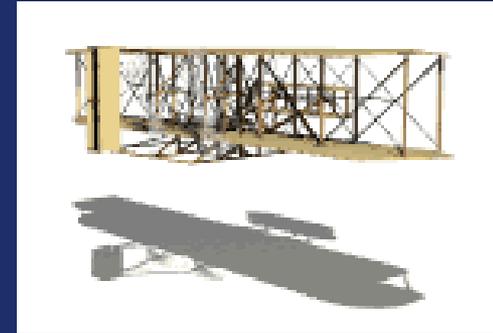
AIRPORT RESPONSIBILITIES

- **Ensure operational safety is not degraded by hazards or marginal conditions associated with construction activity on the airport.**
- **Provide and maintain the maximum clearances possible between construction activities and aircraft.**
- **Close an affected area or pull back personnel and equipment during construction.**
- **Ensure the condition movement areas and safety areas**
- **Self-inspection and airport condition reporting**



AIRPORT RESPONSIBILITIES

What does an airport do to keep construction projects safe?



Develop a plan to address how construction will be done to assure **safety** in the construction environment. For complex projects, the construction can be broken down into steps, or **phases**.



SAFETY PHASING PLAN

Where does an airport begin to start developing a safety/phasing plan?

By talking to users of the airport.

- 1. FBO's**
- 2. Agricultural Sprayers**
- 3. Airway Facilities if the airport has federal owned NAVAIDs.**
- 4. Private users**
- 5. contractor**



SAFETY PHASING PLAN

- **Plans and specifications for airport projects should include a project description and a detailed section on maintaining operational safety during construction.**
- **AC 150/5370-2 specifies contents of a safety plan to ensure that safety measures are established for every phase of construction.**



SAFETY PHASING PLAN SUBMITTALS TO THE FAA



- **Identify
Maximum
Equipment
Height**

SAFETY PHASING PLAN SUBMITTALS TO THE FAA

An aerial photograph of an airfield under construction. The central focus is a large, circular construction site containing several large, conical stockpiles of material, likely aggregate or soil, covered in dark plastic. To the right of these stockpiles is a complex structure, identified as a batch plant, with various pieces of machinery and equipment. The construction site is surrounded by green grass and paved roads. In the background, a long, straight runway or taxiway stretches across the landscape. At the bottom of the image, a long train of freight cars is visible on a railway track.

**Coordinates of critical points of the airfield
(batch plant, stock piles, cranes, etc.)**

SAFETY PHASING PLAN SUBMITTALS TO THE FAA



**Identify all construction access & egress routes on
the airfield**

Vehicular activity on airport movement areas
should be kept to a minimum.

SAFETY PHASING PLAN SUBMITTALS TO THE FAA

Identify airfield construction training programs. Training programs should include radio familiarization and runway incursion prevention awareness.



GROUND VEHICLE -- AIRFIELD VISUAL AID SAFETY PLACARD			
ATCT LIGHT GUN SIGNALS <small>U.S. Department of Transportation Federal Aviation Administration</small>		AIRPORT SIGN SYSTEMS	
COLOR AND TYPE OF SIGNAL STEADY GREEN 	VEHICLE, EQUIPMENT & PERSONNEL MOVEMENT CLEARED TO CROSS, PROCEED OR GO	TAXIWAY LOCATION : Identifies taxiway on which vehicle/aircraft is located 22 RUNWAY LOCATION: Identifies runway on which vehicle/aircraft is located 	TWY/RWY HOLD POSITION : Hold short of runway on taxiway 26-8 RWY/RWY HOLD POSITION: Hold short of intersecting runway
FLASHING GREEN 	NOT APPLICABLE TO GROUND VEHICLES	RSA/OFFZ BOUNDARY : Exit boundary of rwy protected areas 	8-APCH RWY APCH HOLD POSITION: Hold short for acft on approach
STEADY RED 	STOP	ILS CRITICAL AREA BOUNDARY : Exit boundary of ILS critical area 	ILS ILS CRITICAL AREA HOLD POSITION: Hold short of ILS critical area
FLASHING RED 	CLEAR THE TAXIWAY/RUNWAY	TWY DIRECTION : Defines direction & designation of intersecting taxiway(s) 	NO ENTRY : Identifies paved areas where aircraft entry is prohibited
FLASHING WHITE 	RETURN TO STARTING POINT ON AIRPORT	DIRECTION SIGN ARRAY : Identifies location in conjunction with multiple intersecting taxiways 	22A OUTBOUND DESTINATION: Defines directions to take-off runways
ALTERNATE RED/GREEN 	EXERCISE EXTREME CAUTION	RUNWAY EXIT : Defines direction & designation of exit taxiway from runway 	MIL INBOUND DESTINATION: Defines directions for arriving aircraft
TOWER FREQ:	GROUND FREQ:	4 RUNWAY DISTANCE REMAINING: Identifies runway length remaining 	TAXIWAY ENDING MARKER : Indicates taxiway does not continue
HELP PREVENT RUNWAY INCURSIONS -- "READ BACK" YOUR AIR TRAFFIC INSTRUCTIONS!		AIRPORT MARKINGS	
		HOLDING POSITION : Hold short of intersecting rwy 	ILS CRITICAL AREA : Hold short during ILMG conditions
		TAXIWAY/TAXIWAY HOLDING POSITION : Hold short of intersecting taxiway 	MOVEMENT AREA BOUNDARY : Defines boundary of movement area and non-movement area
		TAXIWAY EDGE : Defines edge of usable full strength taxiway pavement. Adjoining pavement NOT usable 	DASHED TAXIWAY EDGE : Defines edge of taxiway where adjoining pavement or apron IS available for taxi
		SURFACE PAINTED HOLDING POSITION : Hold short of intersecting runway on taxiway 	1-18 SURFACE PAINTED TAXIWAY DIRECTION: Direction & designation of intersecting taxiway
		SURFACE PAINTED TAXIWAY LOCATION : Identifies taxiway on which vehicle/aircraft is located 	1-18 SURFACE PAINTED TAXIWAY LOCATION: Identifies taxiway on which vehicle/aircraft is located

References: Aeronautical Information Manual (AIM), AC 90-108, AC 120-104, AC 150/5340-10C, (Copyright) 2010-2011
 FAA Form 5280-7GV (2-2000) FAA Real World Training, Airport Certification Dept. 2000

SAFETY PHASING PLAN SUBMITTALS TO THE FAA

Delineate construction areas from aircraft operating areas

Fencing and barricades should be installed to prohibit vehicle access to airport movement areas.

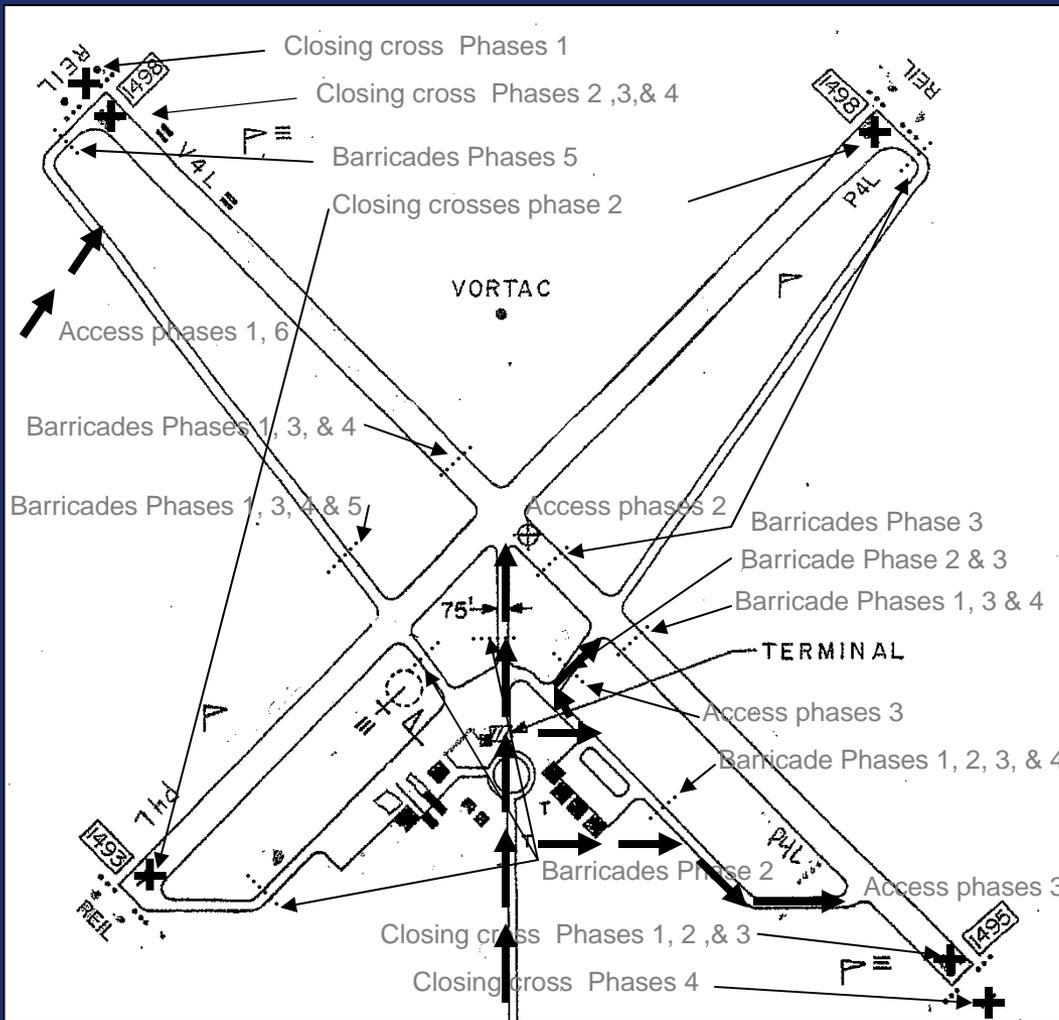


SAFETY PHASING PLAN SUBMITTALS TO THE FAA

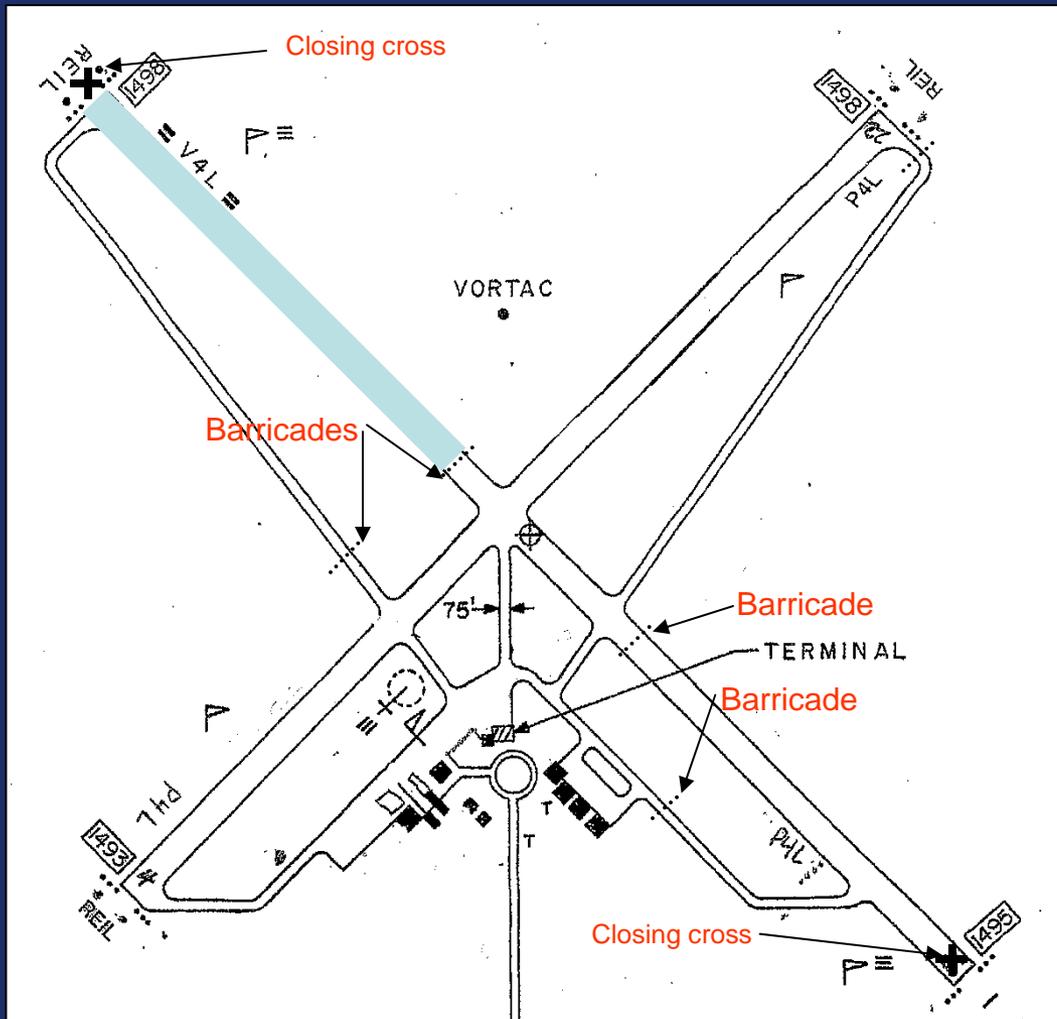
**Separate construction activities from
movement areas**

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SAFETY PHASING PLAN SUBMITTALS TO THE FAA



SAFETY PHASING PLAN SUBMITTALS TO THE FAA





Where vehicular traffic on airport operational areas cannot be avoided, it should be carefully controlled. Vehicles in airport operational areas should have a radio, be escorted by a vehicle with a radio, or controlled by flag personnel.

SPECIAL SAFETY REQUIREMENTS

- Taxiways and Aprons –
 - Construction activity set-back lines should be located at a distance of 10 feet plus .7 times the wingspan of the largest aircraft.



SPECIAL SAFETY REQUIREMENTS

- Taxiways and Aprons – Construction activity may be permitted up to the edge of active taxiways and aprons, provided the activity is first coordinated with airport operator, FAA, and users, and
 - **NOTAMs are issued and**
 - **Marking / lighting provisions implemented.**
 - **A method is established that provides adequate clearance is maintained between aircraft and construction equipment. Monitor wing tip clearance is necessary at all times.**



SPECIAL SAFETY REQUIREMENTS

- Runway Ends - Construction equipment should not penetrate a 20:1 approach surface for visual runways, or 34:1 approach surface for runways with approaches.
- Runway Edges –No Construction may occur closer than 200 feet from runway centerline unless the runway is closed or restricted to aircraft operations. Runway's with safety areas less than 200 feet from runway centerline may be permitted up to the edge of the safety area if less than 200 feet.



Hazardous Condition - Excavation adjacent to runways, taxiways, and aprons.



SPECIAL SAFETY REQUIREMENTS

- Hazardous Area Lighting and Marking
 - Use barricades with alternate orange and white markings. Use low profile barricades where applicable. Supplement barricades with orange flags at least 20 x 20 inches (50 x 50 cm) square.



Flags should be made and installed so they are always in the extended position and properly oriented.



SPECIAL SAFETY REQUIREMENTS



➤ Construction specifications should include a provision requiring the contractor to have someone on call, 24 hours each day, for emergency maintenance of airport hazard



For night use, the barricades are supplemented with red lights. (Yellow lights no longer acceptable after 10/1/04)



- **Proximity to Navigation Aids**

- Construction activity in the vicinity of navigational aids requires special consideration, particularly stockpiles of materials and movement or parking of equipment that may interfere with electronic emissions and transmissions
- The effect of the activity will be evaluated by the FAA through the airspace review process. Recommend coordinating with local AF for input prior to submission of S/P.

SPECIAL SAFETY REQUIREMENTS

- Temporary Runway Thresholds
 - Lighting should be installed outboard of the runway surface, and could include threshold lights, runway end identifier lights (REILs), and other markings.
 - The extent of required lighting is directly related to construction duration and the level of aircraft activity.
 - Precision approach path indicators (PAPIs) are important for construction beyond the ends of the runway.
 - New markings put into place, old markings removed.

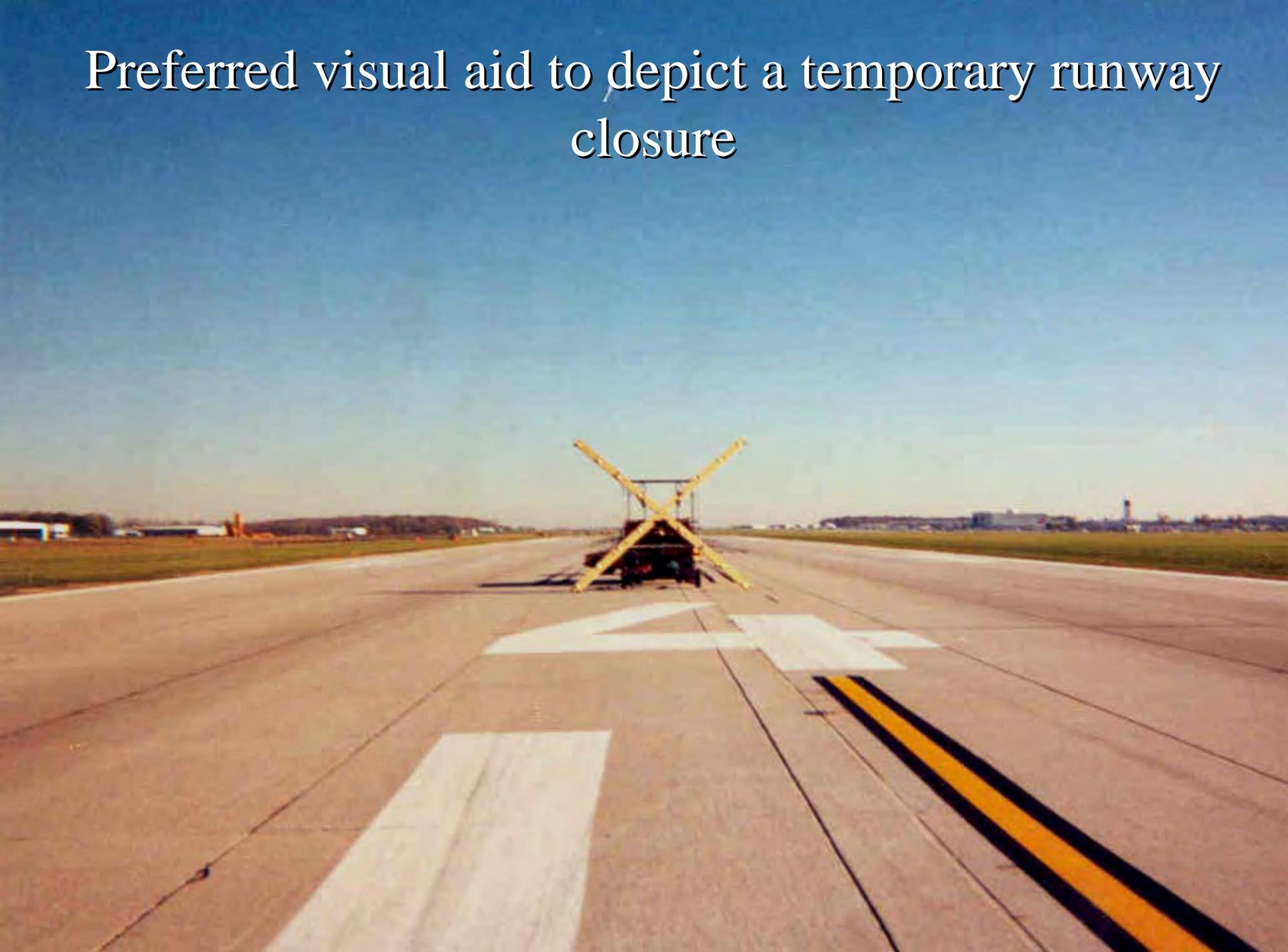


SPECIAL SAFETY REQUIREMENTS

- Temporarily closed runway/taxiway
 - Disconnect all lighting circuits.
 - Place a temporary cross at each runway end, covering the numbers.
 - Place barricades or cross at entrances to each closed taxiway.
 - NAVAIDs will be removed from service.



Preferred visual aid to depict a temporary runway closure



SPECIAL SAFETY REQUIREMENTS

- Self-Inspection

The airport operator should conduct frequent inspections of construction activity, especially during critical phases of the project, to ensure that prescribed safety procedures are being followed.



HAZARDOUS CONDITIONS:



Heavy equipment, stationary or mobile, operating or idle, near airport movement areas and safety areas.

HAZARDOUS CONDITIONS



FOD is estimated to cost the industry \$4 billion a year.

Holes, obstacles, loose pavement, trash and other debris near on or near airport operations areas.



Exposed wiring creates a fire ignition source!



HAZARDOUS CONDITIONS:

Open trenches/excavation along pavement edges or in safety areas.



Remove old pavement markings



DANGER

**AIRPORT
CONSTRUCTION**

**Safety During Construction Requires,
Education, Training & Communication**



**You play an important role with
safety during construction**

Remain Alert



SAFETY PHASING PLAN SUBMITTALS TO THE FAA

- **S/P should be submitted to the FAA at the project validation time (usually mid-December).**
- **Submission should conform to AC 150/5370-2.**





Federal Aviation Administration

Questions

