

Time-Lapse Photography of Runway Reconstruction For Education and Training

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Abstract

Airfield construction projects have unique construction challenges due to their close proximity to aircraft operations. Emphasis on communication, safety areas, airspace protection zones, and foreign object damage is stressed. Incursions and incidents are of significant concern to the FAA, airport operator, and contractor. This paper discusses how time-lapse photography can be utilized to develop training and educational material pertaining to the construction practices and on-site awareness of airfields. This is illustrated through two case studies documenting runway reconstruction at two GA airports in Indiana. The paper is supplemented with several images and links to YouTube videos to illustrate these concepts. With some modifications and support, the proposed techniques could be applied to larger airports.



Plane landing on "28 shortened" at LAF



Plane on taxiway "C" at LAF



Plane on taxiway "B" at VPZ



Plane on taxiway "A" at VPZ

Pre-Construction Engagement

Prior to the start of construction at VPZ, several meetings with the designer, contractor, and owner took place to ensure the project ran smoothly. In these meetings, specific construction operations, runway and taxiway closures, and safety measures were discussed. This time was also used to confirm camera locations and contractor interaction throughout the project.



Camera at R/W 27 Threshold

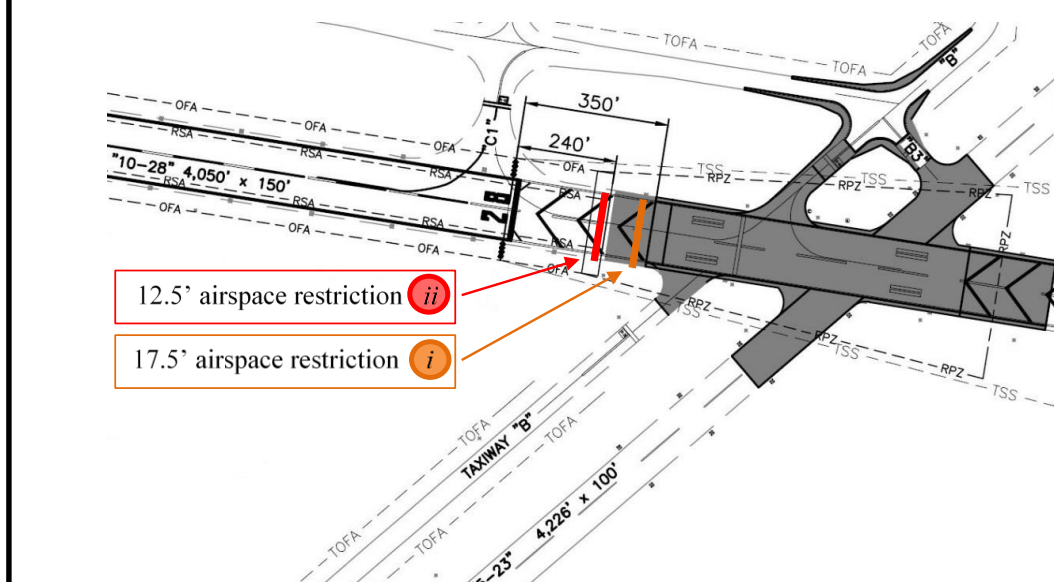


Lights and tarped 'X' for R/W 9/27 closure



Camera at R/W 27 Threshold

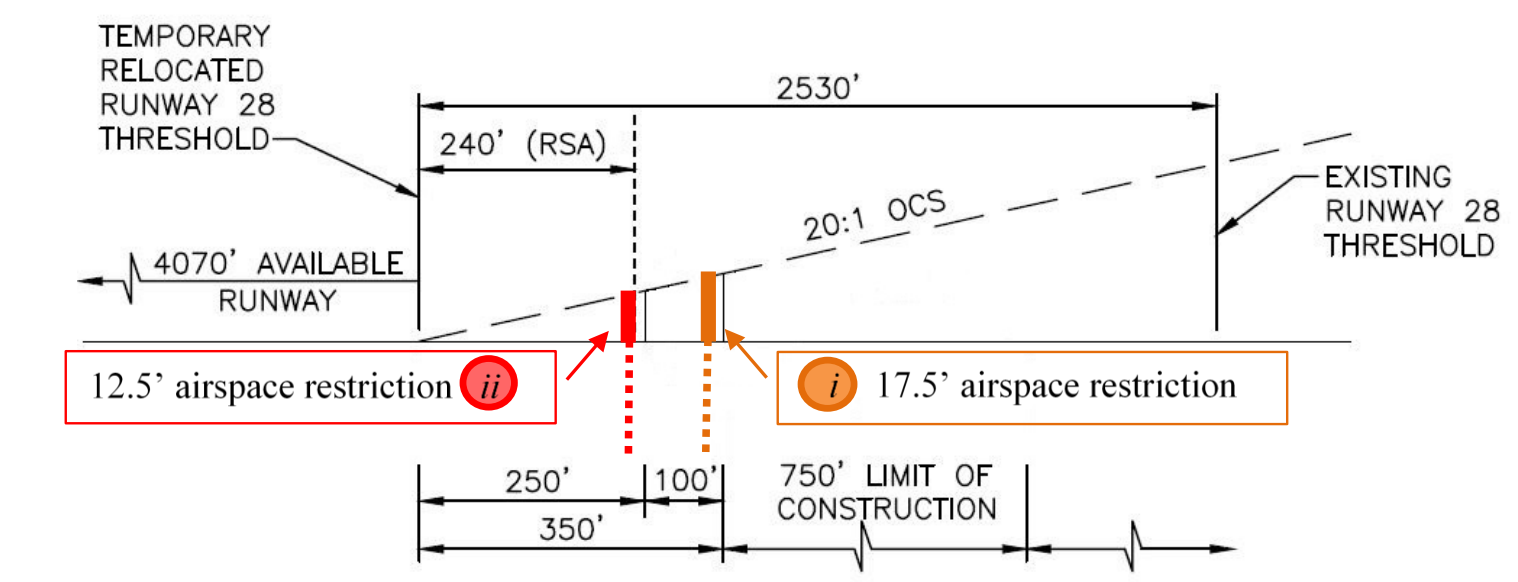
LAF Construction Plans



RPZ plan view for R/W "28 shortened"



17.5' on-site air space restriction



Airspace elevation view for R/W "28 shortened"



12.5' on-site air space restriction

VPZ Construction Operations (Camera 1)



(a) April 29, 11:00 - Original pavement



(b) May 6, 11:10 - Milling runway threshold



(c) May 13, 09:15 - Soil treatment placed



(d) May 13, 11:30 - Soil mixed

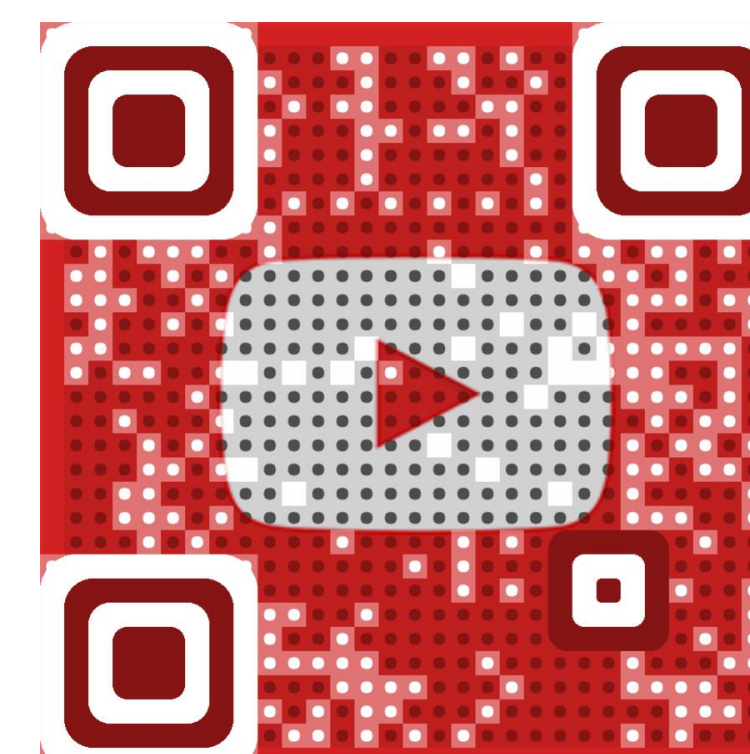


(e) May 28, 15:30 - Asphalt placement



(f) July 1, 14:00 - Pavement markings placed

Camera 1 Video Playlist: http://tiny.cc/VPZcam1		
Activities in Video Playlist	Date Range	Completion Time (Time in Video)
Runway Milling	5/2/16 - 5/11/16	10 days (19 seconds)
Soil Treatment	5/12/16 - 5/25/16	14 days (42 seconds)
Asphalt Layers	5/25/16 - 6/27/16	32 days (28 seconds)
Pavement Markings	6/30/16 - 7/1/16	2 days (29 seconds)



VPZ Construction Operations (Camera 2)



(a) April 29, 11:00 - Original pavement



(b) May 6, 10:35 - Milling nears completion



(c) May 13, 07:00 - Soil treatment placed



(d) May 13, 07:45 - Soil mixed

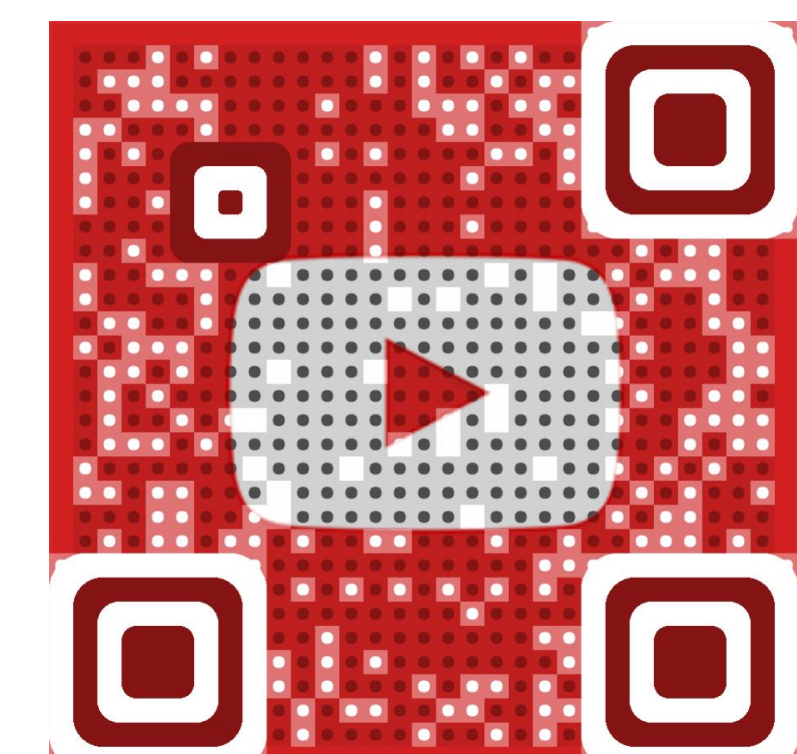


(e) May 25, 16:30 - Asphalt placement started

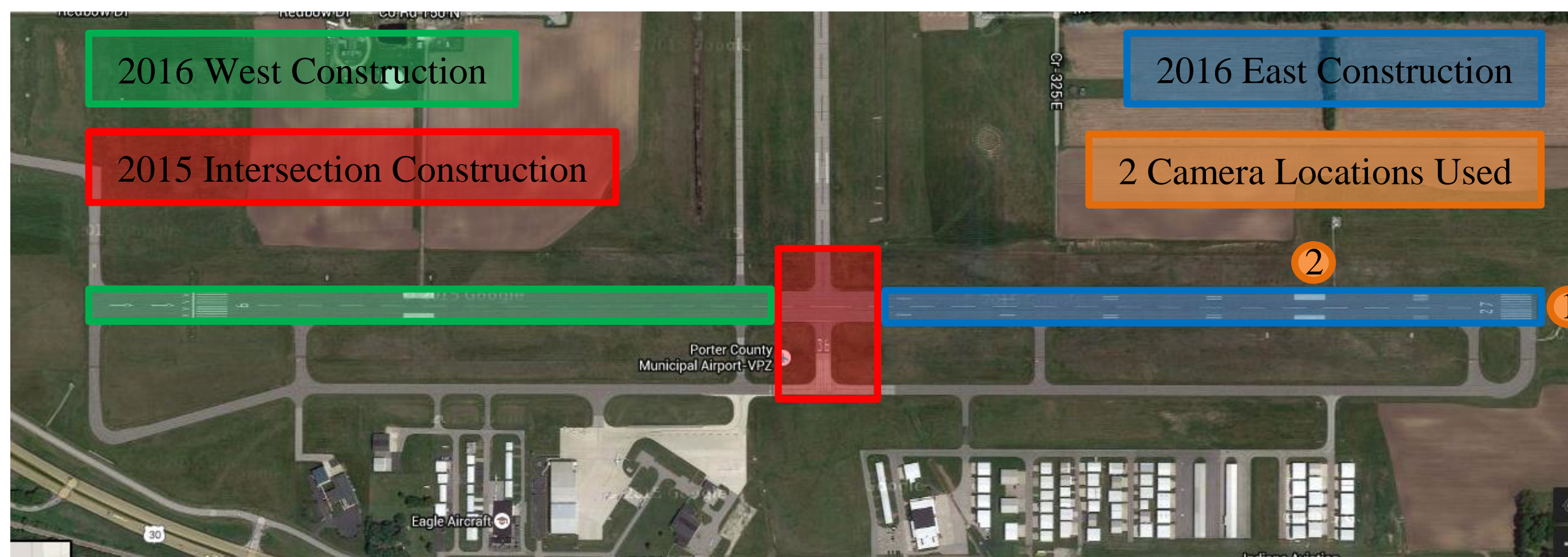


(f) June 30, 11:00 - Pavement markings placed

Camera 2 Video Playlist: http://tiny.cc/VPZcam2		
Activities in Video Playlist	Date Range	Completion Time (Time in Video)
Runway Milling	5/2/16 - 5/11/16	10 days (24 seconds)
Soil Treatment	5/12/16 - 5/25/16	14 days (32 seconds)
Asphalt Layers	5/25/16 - 6/29/16	34 days (50 seconds)
Pavement Markings	6/30/16 - 7/1/16	2 days (13 seconds)



Construction Operations Studied



Porter County Regional Airport (VPZ) construction areas and camera placements



Purdue University Airport (LAF) construction areas