U. S. Department
of Transportation
**Federal Aviation
Administration**

Great Lakes Region
Illinois, Indiana, Michigan
Minnesota, North Dakota,
Ohio, South Dakota,
Wisconsin

2300 East Devon Avenue
Des Plaines, Illinois 60018

POLICY AND PROCEDURES MEMORANDUM - AIRPORTS DIVISION

NUMBER: PPM 5370.2B

DATE: April 22, 1999

SUBJECT: Temporary and Short-Term Lighting and Marking (for construction or maintenance)

CANCELLATION: PPM 5370.2A dated 11/27/96

REFERENCES:
1. AC 150/5370-2, Operational Safety on Airports During Construction
2. AC 150/5340-1, Standards for Airport Markings
3. AC 150/5340-18, Standards for Airport Sign Systems
4. FAR Part 139, Certification and Operations: Land Airports Serving Certain Air Carriers

APPENDICES:
1. Changes from Prior PPM
2. Alternative Construction Barricades

1. Background: The above referenced material does not adequately discuss situations regarding airport facility closures, on a short-term basis, for maintenance or construction. This PPM reflects the information contained in Guidance Memorandum GM 96-3, dated April 12, 1996 and GM 97-2, dated, July 22, 1997. Also, the PPM contains both temporary lighting and marking, and short-term lighting and marking of airport facility closures as a result of construction or maintenance. The modification to standards for alternative construction barricades has been included in this revised PPM. Terms used for the purposes of this PPM are explained as follows:

a. Temporary Closure (for construction or maintenance): A closure of an airport facility, such as a runway, taxiway, or other aircraft operational area, for more than 24 continuous hours, but the airport operator does not consider it to be a permanent closure. Typically, such closures last a few days to a few months. In some situations, they may last a few construction seasons. Once reopened to aircraft traffic, the facility complies with all relevant safety and operational standards.

b. Short-Term Closure (for construction or maintenance): A closure of an airport facility such as a runway, taxiway, or other aircraft operational area that does not exceed twenty-four (24) continuous

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hours. Once reopened to aircraft traffic, the facility complies with all relevant safety and operational standards.

c. Runway End: The beginning of that portion of pavement available for the takeoff of aircraft. When the threshold is located at the runway end, this pavement is also available for landing.

(1) Temporary Runway End: The temporary beginning of that portion of pavement available for takeoff of aircraft. A temporary runway end is used when a portion of the runway will be closed to all aircraft for landing and takeoff on a temporary basis, due to construction or maintenance. With a temporary runway end, the runway end is not located at the physical end of the pavement.

d. Runway Threshold: The beginning of that portion of pavement available for landing. When the threshold is located at a point other than at the runway end, it is referred to as either a displaced or temporarily displaced runway threshold, depending on the duration of the displacement.

(1) Displaced Runway Landing Threshold: A threshold that is located at a point on the runway other than the runway end. The portion of pavement behind a displaced runway landing threshold may be available for takeoffs in either direction or landings from the opposite direction. A displaced threshold may be used to provide landing aircraft adequate clearance over objects in the runway approach area or adjacent to the runway.

(2) Temporarily Displaced Runway Landing Threshold: A threshold that is temporarily located at a point on the runway other than the runway end. The portion of pavement behind a temporarily displaced landing threshold may be available for takeoffs in either direction or landings from the opposite direction. This type of displaced runway threshold is temporary in nature due to construction or maintenance.

2. Policy/Procedures: The Great Lakes Regional policy for temporary signing and marking follows:

a. Temporary Closure of Airport Facilities:

(1) Runway pavement numeral markings shall be eliminated (obliterated or covered) within the closed area. A raised, lighted cross may be placed on each end of the runway in lieu of covering the runway numerals to indicate the entire runway is closed. Temporarily closed taxiways are usually treated as hazardous areas, and yellow crosses conforming to the dimensions in Figure 18 of AC 150/5340-1 may be installed at each entrance to a closed taxiway. Refer to Appendix 1 of AC 150/5370-2.

(2) The standard lights shall be eliminated within the closed areas (turned off, disconnected, removed, covered, or replaced).

(3) All signs shall be covered, disconnected, removed, or turned off that would cause aircraft to enter the closed area.

(4) A NOTAM shall be issued to notify the users of the closure. During the closure, it is suggested that the airport monitor the unicom traffic and advise pilots on an as-needed basis.

(a) When a runway length has to be reduced due to construction, NOTAMs must differentiate between usable and non-usable runway lengths. A displaced threshold implies that the landing threshold for that runway has been moved and the landing length reduced, but the full runway length remains usable for takeoff operations, and the opposite runway direction remains unaffected. Moving the runway end results in a reduction in usable runway length and closes a portion of the runway to all aircraft runway operations.

(b) Anytime a portion of a runway is closed, the runway safety area shifts with the runway end. If the runway/taxiway safety areas are reduced due to construction, the safety areas must be the subjects of a NOTAM. If personnel and equipment are to be working inside the safety areas, the condition must be properly NOTAMed.

(c) When issuing NOTAMs, refer to AC 150/5200-28B "Notice to Airmen (NOTAM) for Airport Operators" and Appendix 2 and 3 of that AC for the appropriate phraseology.

(5) Entrances to closed areas shall be blocked by installing barricades with alternating orange and white markings and/or yellow flashing lights. Barricades should be supplemented by 20" x 20" (minimum) orange flags or yellow flashing lights during daytime and should have yellow flashing lights during low visibility or nighttime conditions. An alternative barricade system is presented in Appendix 2.

(6) Marking, lighting, and signage shall be installed as necessary to clearly identify the temporarily closed area.

(7) For FAR Part 139 Airports, the closure marking and lighting must comply with the Airport Certification Manual/Specifications, if addressed.

b. Short-Term Closure of Airport Facilities: (NOTE: This PPM does not apply to intermittent closures for snow removal or grass cutting operations. Established procedures should be followed in these situations.)

(1) The airport should make reasonable efforts to comply with Paragraph 2.a. above.

(2) When impractical, the airport should take the following actions:

(a) Issue a NOTAM advising of the time the operational area is closed.

(b) During VFR conditions provide barricades with alternating orange and white markings and/or yellow flashing lights across the entrance to the closed area. An alternative barricade system

is presented in Appendix 2. As an option, a radio-equipped vehicle with a rotating light may be positioned at the entrance to the closed area.

(c) During low visibility or nighttime closures, the barricades should be supplemented with yellow flashing lights. The lighting and barricade spacing should adequately identify the closed area. An alternative barricade system is presented in Appendix 2. As an option, a radio-equipped vehicle with a rotating light may be positioned at the entrance to the closed area.

(d) Temporary crosses may be used to cover runway numerals and to mark closed taxiway entrances. Refer to Appendix 1 of AC 150/5370-2.

(e) For FAR Part 139 Airports, the closure marking and lighting must comply with the Airport Certification Manual/Specifications, if addressed.

c. Temporary Runway Ends:

(1) The standard runway lighting in the closed area shall be changed to red lights or completely eliminated. Runway light elimination may be accomplished by one of the following methods:

(a) Covering the lights, e.g., with metal or plastic inverted cans with the can edges secured on the ground to eliminate light leakage.

(b) Removing the isolation transformers by disconnecting the L-823 connectors and reconnecting the lighting circuit cable to provide circuit continuity.

(c) Disconnecting the lighting circuit cable for the closed area and connecting a temporary cable to provide circuit continuity for the lights remaining in service. The temporary cable may be placed around the runway end, in a duct under the runway, or laid over the closed pavement. In the latter case, the cable should be protected by installing it in conduit or between two pieces of lumber. The conduit or lumber should also be protected from jet blast (i.e.: sandbags, strapped down, fastened to pavement, etc.).

(d) Replacing lamps in the closed area with burned out lamps with the glass bulb removed and having a direct short (a piece of wire) connected between the two electrodes. **(NOTE:** Lamps are not to be removed from the light fixtures, since an excessive number of isolation transformers with open secondaries may damage the lighting circuit regulator.)

(2) There are no marking requirements for the closed area associated with a temporary runway end.

(3) Runway number(s) of standard size shall be painted at the temporary runway end. The existing runway numbers shall be obscured from view (refer to Appendix 1 of AC 150/5370-2 and Figure 18 of AC 150/5340-1).

(4) Existing markings in the usable runway area, not interfering with temporary markings, may remain.

(5) A 10-foot wide lateral threshold bar shall be painted at the temporary runway end. Refer to paragraph 12 of AC 150/5340-1.

(6) The coverage rate for temporary paint marking is 50% of the specified coverage. The following paint may be used for temporary marking:

(a) Paint meeting Federal Specification TT-P-85.

(b) Paint meeting Federal Specification TT-P-001952 diluted with water.

(c) Household latex paint diluted with water.

(7) Where the opposite end of the runway has an instrument approach, the 180° yellow lights shall be moved down the runway to provide the standard 2000-foot section of yellow warning lights.

(8) Entrances to the closed area shall be blocked by installing yellow lights either on barricades or on the ground. The light intensity must be adequate to identify the closed entrance. To increase daytime conspicuity, orange flags of at least 20" x 20" should be installed. When flags are made of fabric, a wire stiffener should be used to hold the flags in an extended position. Standard highway barricades may be used in conjunction with flags and lights. Flags, lights, and barricades should be secured to prevent ingestion into an aircraft engine and to protect from jet blast. An alternative barricade system is presented in Appendix 2.

(9) The existing runway markings in the temporarily closed area shall be either obliterated or covered.

(10) For temporary runway end changes in excess of 50 feet, the runway distance remaining signs should be covered in both directions.

(11) Temporary crosses may be used to cover runway numerals and at each entrance of a closed taxiway. Refer to Appendix 1 of AC 150/5370-2.

d. Temporarily Displaced Runway Landing Thresholds:

(1) Displaced threshold lighting shall be either inboard or outboard, having the standard number of lights, spacing, and colors. The fixtures shall meet the same standards as FAA approved edge lighting.

(2) Temporary lights may be secured to lumber, or its equivalent. The height of the lumber, or equivalent, and its method of being secured to the pavement (i.e.: sandbags, straps, fasteners, etc.) should not exceed 3 inches. Transformers may be left above ground but must be protected from sunlight. For outboard lights, the cable and transformers may be installed underground with only a few inches of dirt cover.

(3) Cable for the temporary lights and to provide circuit continuity shall be, as a minimum, the same size, rating and type as the circuit cable.

(4) Standard white arrows shall be painted in front of the threshold. The existing white centerline stripes may be used as arrow tails to construct the arrows. In this case, white arrowheads shall be added.

(5) A 10-foot wide lateral threshold bar shall be painted at the temporarily displaced runway landing threshold. See Figure 5 in AC 150/5340-1.

(6) Runway number(s) of standard size shall be painted at the temporarily displaced runway landing threshold.

(7) Existing markings within the usable area, not interfering with temporary markings, may remain.

(8) Paint used for temporary marking shall be per paragraph 2.c.(6) above.

(9) For a temporary displacement of the runway landing threshold in excess of 50 feet, the runway distance remaining signs should be covered in the landing direction.

(10) Temporary crosses may be used to cover runway numerals and at each entrance of a closed taxiway. Refer to Appendix 1 of AC 150/5370-2.

e. Temporary Marking of Runways Following Construction/Resurfacing:

(1) Reasonable efforts should be made to mark the runway in accordance with Advisory Circular 150/5340-1, as amended, prior to reopening.

(2) When it is unreasonable to conform to subparagraph 2.e.(1), the following is permissible:

(a) VFR and non-precision runways are acceptable with no markings, provided the condition has been properly NOTAMed and included on ATIS, where available. **NOTE**: FAA (CHI-FPO at 847-294-7255) must be notified in a "no marking" situation, so instrument approach minimums can be adjusted accordingly.

(b) Precision instrument runways require as minimum markings:

1 Runway numbers.

2 Centerline stripes.

3 Aiming point marking located 1000 feet from the threshold, see Figure 1, AC 150/5340-1.

4 Relief from 1, 2, and/or 3, will be evaluated on a case-by-case basis.

(3) Paint described in Paragraph 2.c.(6) above may be used for temporary markings.

Larry K. Ladendorf
for Jeri Alles
Manager, Airports Division

APPENDIX 1: Changes from Prior PPM

1. This PPM has been revised to reflect the appropriate information contained in guidance Memorandum GM 96-3, dated, April 12, 1996 and GM 97-2, dated July 22, 1997.

2. The modification to standards for construction barricades, approved by AAS-300 memorandum, dated April 14, 1997, has been incorporated into this PPM.

3. References to relocated thresholds have been removed and revised wording has been added to describe this situation. Airport owners, consultants and contractors consistently interchanged the terms "displaced threshold" and "relocated threshold" that resulted in improper marking and lighting of runways. Change 5 to AC 150/5300-13 deleted the definition for "relocated threshold", leaving definitions for only "displaced thresholds" and "thresholds". Technically, there is no need for the term "relocated threshold", since a threshold is either a threshold or a displaced threshold. The terms "temporary runway end" and "temporarily displaced runway landing threshold" were developed specifically for this PPM, to indicate the temporary nature.

4. Guidance on how to properly address closed portions of runways in NOTAMs has been incorporated.

APPENDIX 2 ALTERNATIVE CONSTRUCTION BARRICADES

Memorandum

U.S. Department of Transportation
Federal Aviation Administration

Subject: ACTION: Modification to Standards for Construction Barricades

Date: JUN 2 6 1997

From: Manager, Safety/Standards Branch, AGL-620

Reply to Attn of:

To: All ADO's
Manager, Airports District Office

Attached are plans for elevated and low profile construction barricades for use at airports in the Great Lakes Region. The barricades conform to the standards in Advisory Circular (AC) 150/5370-2C, except that the barricades do not have 20" x 20" orange flags attached.

The following features of the proposed barricades enhance the performance and effectiveness of the traditional barricades, exceed the minimum barricade standards, and eliminate the need for the orange flags:

a. Each elevated barricade has a 20" x 28" retroreflective fiberglass reinforced plastic double-faced sign attached. The side of the sign facing an airport operational area has a "No Entry Sign" face and the side facing the construction area has the statement "STOP-AIRCRAFT MOVEMENT AREA". This sign panel is hung from the connecting bar and is free swinging to reduce the impact of jet blast on the barricade. Pictures of this barricade are attached.

b. Two, 360 degree, battery-operated, flashing, yellow lights are mounted on each barricade. This lighting system exceeds those of the barricade standards and the performance of the standard highway barricades, which normally have only one unidirectional or bi-directional yellow flashing light. The proposed barricade lighting system can be operated in either a flashing or steady burning mode and can be controlled by a photoelectric cell.

c. Sand filled stabilizing tubes are attached to the legs of the elevated barricades to eliminate the need for sand bags which are normally placed on the standard highway type barricade.

d. Blue lenses can be installed on the low profile barricades lights and the barricades can then be used to delineate a temporary taxiway edge in construction areas.

AAS-300 approved the subject barricades by memorandum dated April 4, 1997 (copy attached). However, AAS-300 expressed concern with using the barricades in areas which would be subject to jet blast and/or wind conditions. Recent use of the barricades for construction projects at O'Hare International Airport indicates that the barricades perform satisfactorily under normal airport construction conditions.

The ADO's may approve the use of the subject barricades on a project-by-project basis, provided the barricades are appropriately anchored or replaced by traditional barricades if the barricades are unable to withstand the jet blast and wind conditions.

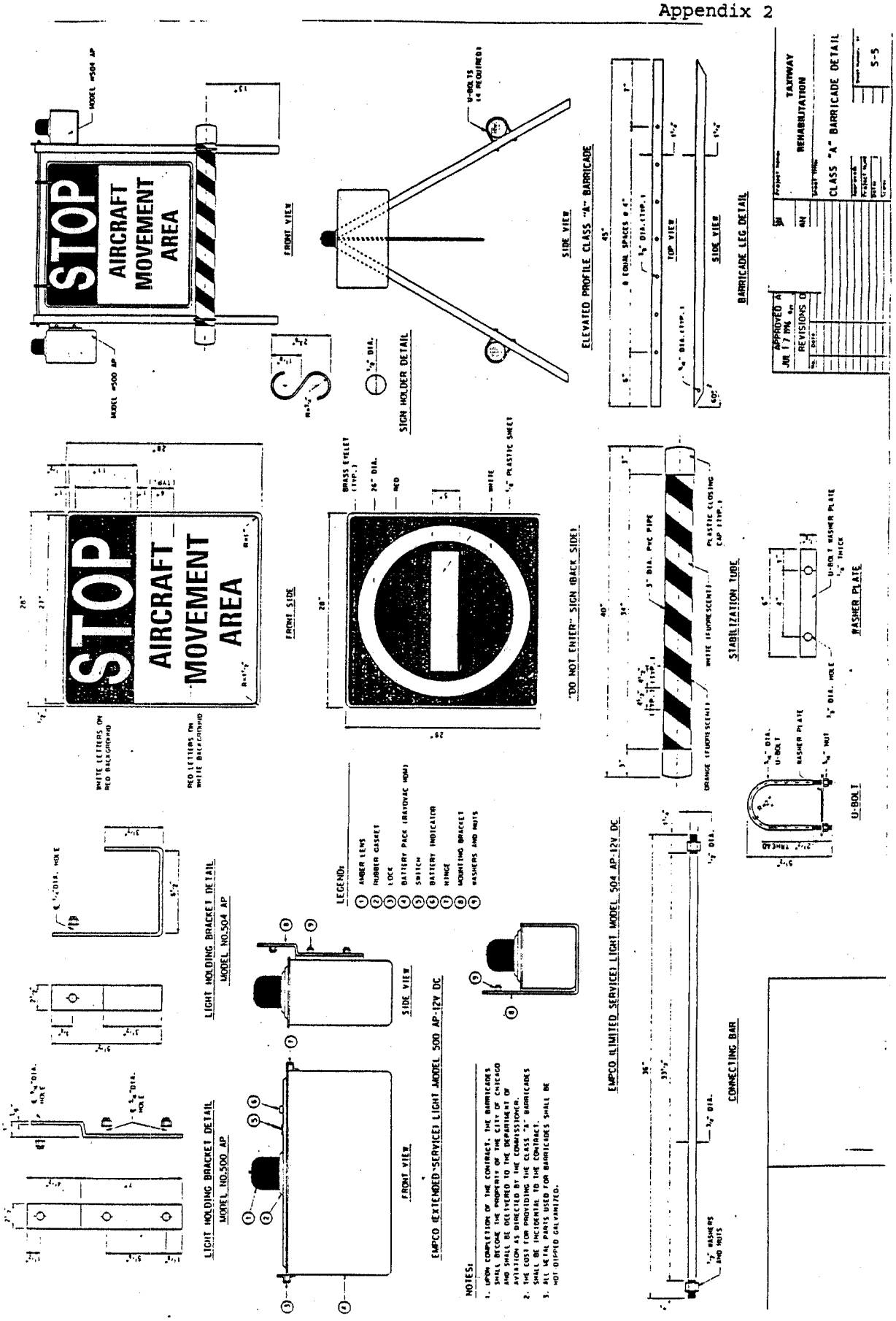
Please inform, AGL-620 of the projects for which the use of these barricades has been approved, so that AAS-200 and AAS-300 can be notified. Also, if any problems arise due to jet blast/wind conditions please inform AGL-620 so that appropriate action can be taken.

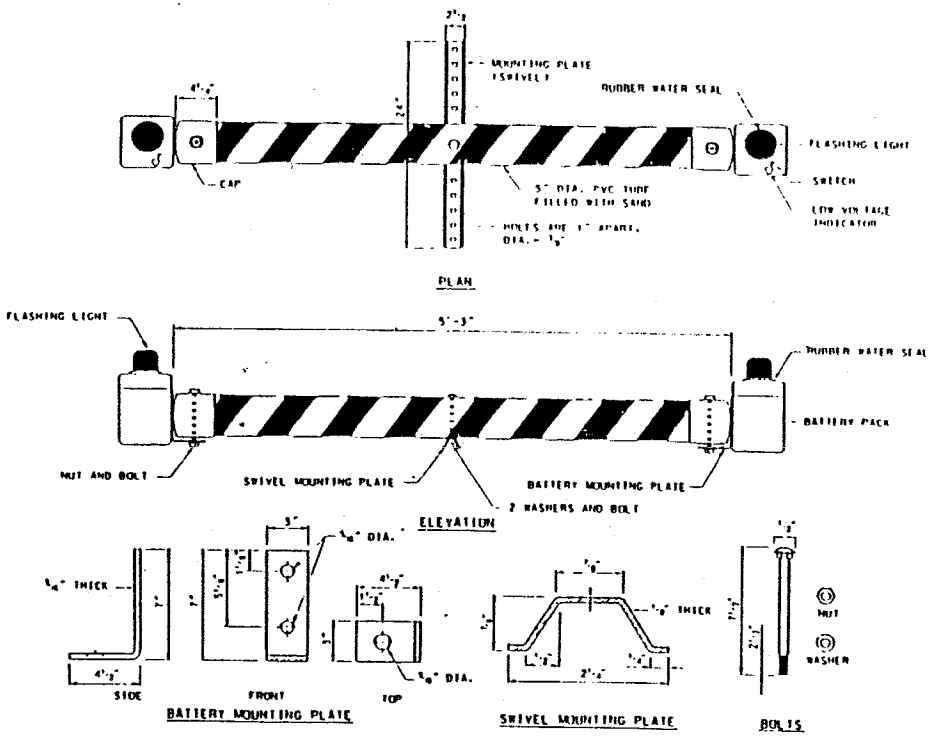
We anticipate that these barricade options will be included in the next revision of AC 150/5370-2C as an acceptable standard.

Henry A. Lamberts

cc: AAS-200
AAS-300

Attachments


STOP
AIRCRAFT MOVEMENT AREA
FRONT VIEW
SIGN HOLDER DETAIL
ELEVATED PROFILE CLASS "A" BARRICADE
SIDE VIEW
TOP VIEW
BARRICADE LEG DETAIL
TAXIWAY REHABILITATION
CLASS "A" BARRICADE DETAIL
S-5
FRONT SIDE
WHITE LETTERS ON RED BACKGROUND
RED LETTERS ON WHITE BACKGROUND
"DO NOT ENTER" SIGN (BACK SIDE)
STABILIZATION TUBE
WASHER PLATE
U-BOLT
LIGHT HOLDING BRACKET DETAIL
MODEL NO.500 AP
MODEL NO.504 AP
LEGEND:
1 AMBER LENS
2 RUBBER GASKET
3 LOCK
4 BATTERY PACK (RAYOVAC HDM)
5 SWITCH
6 BATTERY INDICATOR
7 HINGE
8 MOUNTING BRACKET
9 WASHERS AND NUTS
EMPCO (EXTENDED-SERVICE) LIGHT MODEL 500 AP-12V DC
EMPCO (LIMITED SERVICE) LIGHT MODEL 504 AP-12V DC
CONNECTING BAR
NOTES:
1. UPON COMPLETION OF THE CONTRACT, THE BARRICADES SHALL BECOME THE PROPERTY OF THE CITY OF CHICAGO AND SHALL BE DELIVERED TO THE DEPARTMENT OF AVIATION AS DIRECTED BY THE COMMISSIONER.
2. THE COST FOR PROVIDING THE CLASS "A" BARRICADES SHALL BE INCIDENTAL TO THE CONTRACT.
3. ALL METAL PARTS USED FOR BARRICADES SHALL BE HOT DIPPED GALVANIZED.



LOW PROFILE BARRICADE DETAIL (CLASS B)
N.T.S.

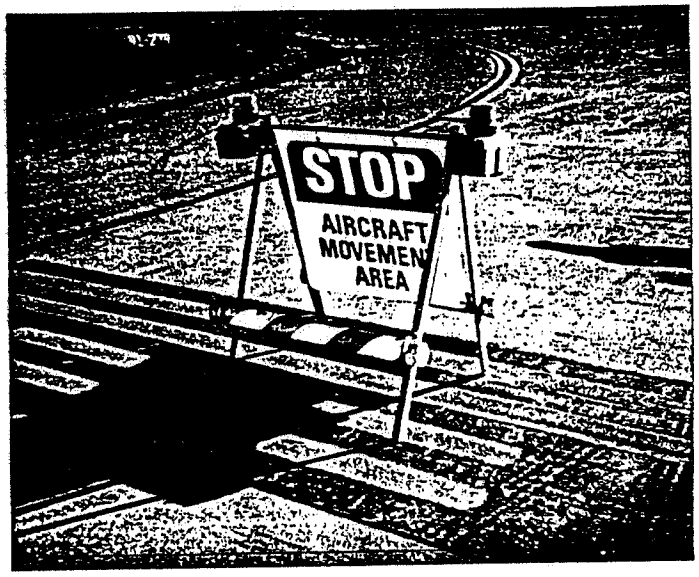
NOTES:

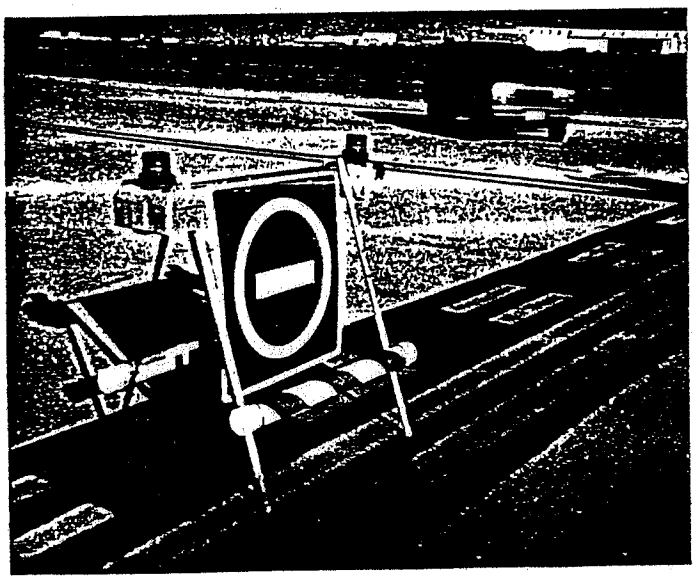
1. BLUE LENSES SHALL BE USED FOR TEMPORARY TAXIWAY EDGE DELINEATION ONLY. ALL OTHER USES SHALL REQUIRE YELLOW LENSES. CONTRACTOR SHALL PROVIDE PROPER COLORED LENSES AS REQUIRED.
2. BARRICADES TO BE PLACED AT 25' INTERVALS ALONG OPERATIONAL PAVEMENT ADJACENT TO CONSTRUCTION.
3. THIS BARRICADE TO BE USED IN AREAS WHERE A DROPOFF EXISTS IMMEDIATELY ADJACENT TO AN AIRCRAFT OPERATIONAL AREA.

APPROVED AT
JUL 17 1996
REVISIONS C

No.	Date	Remarks

Project Name: TAXIWAY REHABILITATION
Sheet Title: MISCELLANEOUS DETAILS
Approved
Project No.
Date
Scale
Sheet Number: S-4


STOP
AIRCRAFT
MOVEMEN
AREA



April 22, 1999

Memorandum

U.S. Department of Transportation
Federal Aviation Administration

Subject: **ACTION:** Modifications to Standards, O'Hare Int'l Airport, Chicago, IL, Airport Construction Barricades

Date: APR 4 1997

Reply to Attn. of:

From: Manager, Airport Safety and Operations Division

To: Manager, Safety and Standards Branch, AGL-620

Your request to the Manager, Engineering and Specification Division, AAS-200 for a Modification to Standards on behalf of the Chicago International Airport to use a construction barricade without flags was transferred to my division for action. They propose to use an elevated barricade constructed of 20" x 28" retroflective fiberglass reinforced plastic with a double-faced sign attached, or a low profile barricade constructed of an 5'3" retroflective fiberglass reinforced sand filled plastic tube during construction activities.

Chicago O'Hare International Airport may utilize the proposed construction barricades. We believe the absence of flags on the proposed barrier will not detract from their visibility. However, we are concerned that this barrier will not be able to withstand jetblast/wind conditions that occur on airports. The airport operator should carefully monitor this situation, and if it proves to be a problem, be prepared to replace the barriers with more traditional ones.

We appreciate the opportunity to review this request. If you have any questions, please contact Edward Dorsett, on (202) 267-8792.

Robert E. David