

► This RA has been substantially re-written; for clarity no change marks are presented – please read RA in its entirety. ◀

RA 3519 - Permanent Fixed Wing Aerodrome - Visual Aids for Denoting Restricted Use Areas

Rationale

At times, some areas of an Aerodrome may be hazardous or Unserviceable. Without standardized Visual Aids to identify these areas, Aircraft could enter them improperly, increasing the Risk of damage to Aircraft and harm to the occupants. This Regulatory Article (RA) outlines the requirements to ensure that Restricted Use Areas are easily identifiable with the appropriate standardized Visual Aids.

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Regulation 3519(1)

Closed Runway Markings

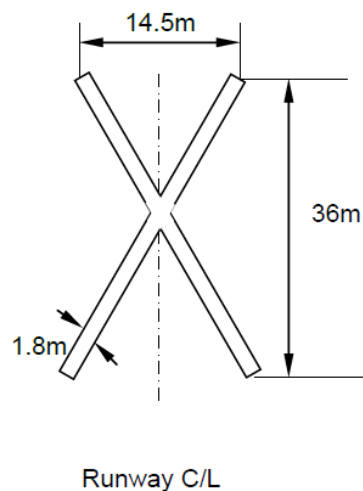
3519(1) Heads of Establishments (HoEs) **shall** ensure that closed Runways are correctly marked.

Acceptable Means of Compliance 3519(1)

Closed Runway Markings

1. A closed Runway marking **should** be displayed on a temporarily closed Runway or portion thereof, except that such marking may be omitted when the closing is of short duration (as approved by the Aerodrome Operator) and adequate warning is provided to users.
2. Closed Runway markings **should** be:
 - a. White and be of the form and proportions as detailed in Figure 1; and
 - b. Placed at each extremity of the Runway, or portion thereof, declared closed, with additional markings so placed that the maximum interval between markings does not exceed 300 m.
3. A closed Runway marking **should** be displayed on a Runway or portion thereof which is permanently closed to the use of all Aircraft and all normal Runway markings **should** be obliterated.

Figure 1 – Closed Runway Marking

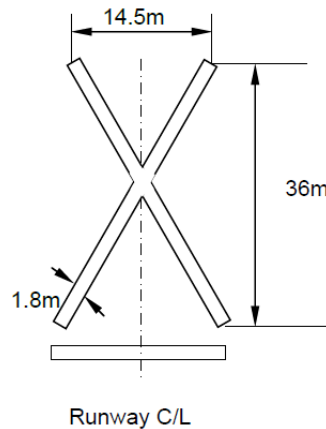


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Closed Runway Markings

4. Where a closed Runway is available for emergency use and providing it has been inspected in the previous six months and declared serviceable for an emergency landing at any time, an underscored closed marking may be placed at each end of the Runway, or portion thereof, declared closed, and additional underscored markings may be so placed that the maximum interval between markings does not exceed 300 m (Figure 2).

Figure 2. Emergency Use Closed Runway Marking



Civil Equivalence

5. This Regulation is in line with International Civil Aviation Organization (ICAO) Annex 14 Vol I, 7.1¹.
6. When an area is temporarily closed, frangible barriers or markings utilizing materials other than paint or other suitable means may be used to identify the closed area. Consideration needs to be given to requirements of RA 3512² when implementing temporary barriers.
7. Procedures pertaining to the planning, coordination, monitoring, and Safety Management of works in progress on the Movement Area are specified in the PANS-Aerodromes (Doc 9981)³.

Regulation 3519(2)

Closed Runway Lighting

3519(2) HoEs **shall** ensure that permanently or temporarily closed Runways are correctly lit.

Acceptable Means of Compliance 3519(2)

Closed Runway Lighting

8. The normal lighting systems provided for a Runway, or portion thereof, which is either temporarily or permanently closed **should not** be operated, except as required for Maintenance purposes or where operationally required.

Note — Lighting systems provided for a Runway include both Approach and Runway Lighting systems.

9. In addition to closed markings, when a closed Runway or portion thereof is intercepted by a usable Runway which can be used at night, unserviceability lights **should** be placed across the entrance to the closed area at intervals not exceeding 3 m (see paragraph 21).

10. Where operationally desirable, at an Aerodrome provided with Runway lighting, closed Runway lighting **should** be provided on Runway(s) that are temporarily closed or temporarily restricted for take-off.

¹ Refer to [ICAO Annex 14 Vol I](#).

² Refer to RA 3512 – Permanent Fixed Wing Aerodrome - Obstacle Environment.

³ Refer to [ICAO PANS doc 9981](#).

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Compliance
3519(2)**

11. Where used, closed Runway lighting **should**:
- Be placed on the centre line, at each extremity of the Runway temporarily declared closed.
 - Be of the equivalent elevated form and proportions as detailed in Figure 3, as viewed by the pilot, showing a minimum of five lights uniformly spaced on each branch, with a minimum interval as specified by Table 1.
 - Show flashing variable white light in the approach direction the Runway, at a rate of one second on and one second off.
 - Automatically revert to fixed lights in the event of the flashing system failure.
 - Be in accordance with (iaw) the specifications in ICAO Annex 14. Vol I, Appendix 2, Figure A2-27¹.

Figure 3 – Closed Runway Lighting

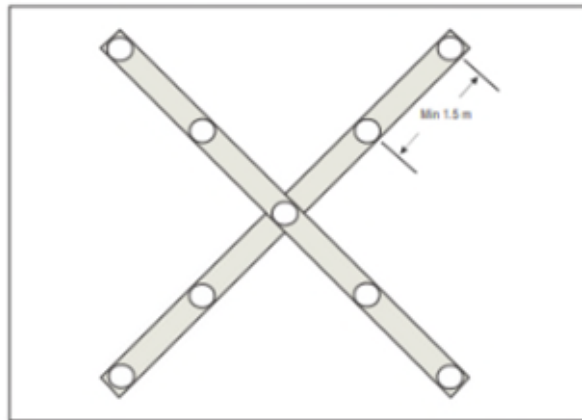


Table 1 – Minimum interval between closed Runway lights centres

Number of lights per branch	Minimum interval between lights centres
5	1.5 m
7	1.0 m
9	0.8 m

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3519(2)**

Closed Runway Lighting

12. In dusk or poor visibility conditions by day, lighting can be more effective than markings.

Civil Equivalence

13. This Regulation is in line with ICAO Annex 14 Vol I, 7.1¹.

**Regulation
3519(3)**

Closed Taxiway Markings and Lighting

- 3519(3) HoEs **shall** ensure that closed taxiways are correctly marked.

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Closed Taxiway Markings and Lighting

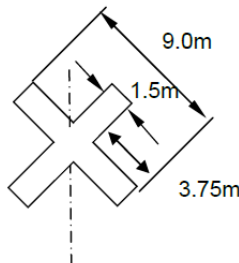
14. When a taxiway or portion thereof is permanently closed, all normal taxiway markings **should** be obliterated.
15. A closed taxiway marking **should** be displayed on a taxiway or portion thereof which is permanently closed to the use of all Aircraft.
16. A closed taxiway marking **should** be displayed on a temporarily closed taxiway or portion thereof, except that such marking may be omitted when the closing is of short

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duration (as approved by the Aerodrome Operator) and adequate warning is provided to users.

17. Closed taxiway markings **should** be:
 - a. Yellow and be of the form and proportions as detailed in Figure 4; and
 - b. Placed at each extremity of the taxiway, or portion thereof, declared closed.

Figure 4 – Closed Taxiway Marking



18. Lighting systems provided for a closed taxiway or portion thereof **should not** be operated, except as required for Maintenance purposes or where operationally required.

19. In addition to closed markings, when a closed taxiway or portion thereof is intercepted by a usable taxiway which can be used at night, unserviceability lights **should** be placed across the entrance to the closed area at intervals not exceeding 3 m (see para 21).

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Closed Taxiway Markings and Lighting

20. When an area is temporarily closed, frangible barriers or markings utilizing materials other than paint or other suitable means may be used to identify the closed area.

21. An unserviceability light will consist of a red fixed light. The light will have an intensity sufficient to ensure conspicuity considering the intensity of the adjacent lights and the general level of illumination against which it would normally be viewed. In no case will the intensity be less than 10 cd of red light⁴.

Civil Equivalence

22. This Regulation is in line with ICAO Annex 14 Vol I, 7.1¹.

Regulation 3519(4)

Hazardous Areas

- 3519(4) HoEs **shall** ensure that, if Runway markings do not provide adequate definition of the operational surface then restricted use area markings are applied to the non-operational area. Restricted use and hazardous areas on or adjacent to the Runway and taxiway surfaces **shall** be marked for better recognition.

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Hazardous Areas

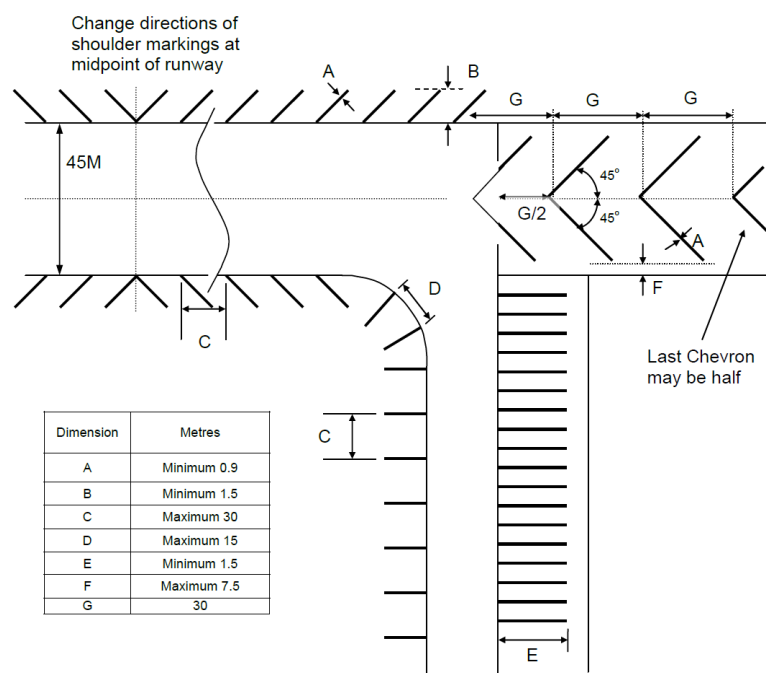
23. **Runway Shoulder.** Runway Shoulder restricted use area markings **should**:
 - a. Be a series of yellow (non-reflective aviation surface yellow) stripes.
 - b. Be 0.9 m wide extending outboard at an angle of 45° from the edge of the operational surface for not less than 1.5 m measured perpendicular to the Runway edge to within 1.5 m of the outer edge of the shoulder, or for a distance of 7.5 m whichever is less (Figure 3).
 - c. Be no more than 30 m apart.

⁴ ICAO Annex 14 Vol I, 7.4.4.

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- d. Lie on a line forming a chevron with the apex on the Runway centre-line and pointing toward the midpoint of the Runway.
24. **Taxiway Shoulder.** Taxiway shoulder restricted use area markings **should**:
- Be a series of yellow (non-reflective aviation surface yellow) stripes.
 - Be perpendicular to and extend outward from the taxiway edge for not less than 1.5 m (Figure 3).
 - Be no less than 0.9 m wide and spaced not more than 30 m apart, and on curved edges not more than 15 m apart.
25. **Restricted Use Area.** Restricted use area markings at pre-threshold areas **should** be marked with a chevron marking if:
- The surface before a threshold is paved.
 - Exceeds 60 m in length.
 - Is not suitable for normal use by Aircraft.
26. Restricted use area markings **should**:
- Point in the direction of the Runway and be placed as shown in Figure 5.
 - Be aviation yellow with an overall width of 0.9 m.
27. Blast pavement striping **should** be at least 15 m long or the width of the blast pavement if less than 15 m.

Figure 5. – Hazardous Area Markings



Guidance Material 3519(4)

Hazardous Areas Civil Equivalence

28. This Regulation is in line with ICAO Annex 14 Vol I, 7.2¹.

Regulation 3519(5)

Unserviceable Areas

- 3519(5) HoEs **shall** ensure that if any portion of a taxiway, Apron or holding bay is unfit for the movement of Aircraft, it is made sufficiently conspicuous so as to enable an Aircraft to bypass the area safely.

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Unserviceable Areas

29. The Aerodrome Operator or Aerodrome Supervisor (Recreational Flying) **should** determine whether an Unserviceable area can be safely bypassed by Aircraft, and:

- a. Where the Unserviceable area can be safely bypassed, **should** apply the appropriate visual aids as detailed below.
- b. Where the Unserviceable area cannot be safely bypassed, **should** close it to Aircraft and determine an alternative route.

Signs

30. Unserviceability signs **should** be provided where there is an operational need to indicate:

- a. Temporary changes to Runway declared distances.
- b. Temporary changes to taxiways and Aprons.
- c. Warnings of construction works.

31. Existing signs **should** be removed or obscured if they provide inadequate or misleading information regarding unserviceability areas.

32. The information provided by unserviceability signs **should not** conflict with the information provided by the appropriate Aeronautical Information Services.

33. Unserviceability signs **should** be located:

- a. Where operationally needed on the Movement Area.
- b. As per taxiing guidance signs in RA 3516⁵.
- c. So as to not visually obscure or provide conflicting information with existing, operationally required, visual aids.

34. Unserviceability signs **should** be frangible⁶. Those located near a Runway or taxiway **should** be sufficiently low to preserve clearance for propellers and the engine pods of jet Aircraft. The installed height of unserviceability signs **should not** exceed the dimension for taxiing guidance signs shown in RA 3516.

35. Unserviceability signs **should**:

- a. Be rectangular, as shown in Figure 4, with the longer side horizontal.
- b. Consist of an inscription in black on an orange background, supplemented by a black outline measuring 10 mm in width for Runways where the code number is 1 or 2, and 20 mm in width for Runways where the code number is 3 or 4.
- c. Be retroreflective iaw the provisions of ICAO Annex 14, Vol I, Appendix 4¹.

36. The inscriptions on an unserviceability sign **should** be iaw the provisions of ICAO Annex 14, Vol I, Appendix 4¹, consisting of a legible, clear and simple message, only providing the useful and necessary information for the safety of the operation.

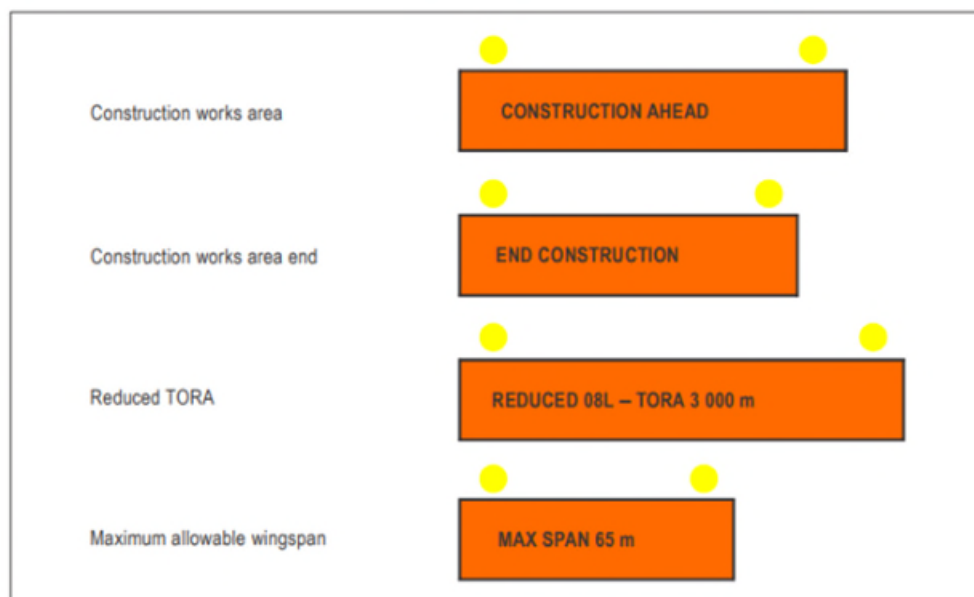
37. Where there is a need to enhance the conspicuity of unserviceability signs, they **should** be supplemented by two red or yellow simultaneously flashing lights. The intensity and the beam spread of these lights **should** be iaw the specifications in ICAO Annex 14, Vol I, Appendix 2¹.

⁵ Refer to RA 3516 – Permanent Fixed Wing Aerodrome - Signs.

⁶ Frangibility defined within [ICAO Aerodrome Design Manual Part 6](#).

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Figure 6 – Examples of Unserviceability Signs



Markings

38. Unserviceability markings **should**:

- a. Be provided on the surface of the pavement where it is impracticable to install an unserviceability sign, or it is operationally required to supplement an installed unserviceability sign.
- b. Be displayed across the surface of the taxiway or Apron where necessary and positioned so as to be legible from the cockpit of an approaching Aircraft.
- c. Consist of an inscription in black upon an orange background.

39. The character height **should** be 4 m. The inscriptions **should** be in the form and proportions shown in ICAO Annex 14, Vol I, Appendix 3¹. The background **should** be rectangular and extend a minimum of 0.5 m laterally and vertically beyond the extremities of the inscription.

Lights

40. Unserviceability lights **should**:

- a. Be provided on a Movement Area used at night, wherever any portion of the Movement Area is unfit for the movement of Aircraft but it is still possible for Aircraft to bypass the area safely.
- b. Be placed at intervals sufficiently close so as to delineate the Unserviceable area.

41. An unserviceability light **should**:

- a. Consist of a red fixed light;
- b. And have an intensity sufficient to ensure conspicuity considering the intensity of the adjacent lights and the general level of illumination against which it would normally be viewed. In no case is the intensity to be less than 10 cds of red light.

Markers

42. Unserviceability markers **should** be displayed wherever any portion of a taxiway, Apron or holding bay is unfit for the movement of Aircraft but it is still possible for Aircraft to bypass the area safely.

43. Unserviceability markers **should** be placed at intervals sufficiently close to delineate the Unserviceable area.

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44. Unserviceability markers **should** consist of conspicuous upstanding devices such as flags, cones or marker boards with the following properties:
- An unserviceability cone **should** be at least 0.5 m in height and red, orange, or yellow, or any one of these colours in combination with white.
 - An unserviceability flag **should** be at least 0.5 m square and red, orange, or yellow, or any one of these colours in combination with white.
 - An unserviceability marker board **should** be at least 0.5 m in height and 0.9 m in length, with alternate red and white, or orange and white vertical stripes.

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Unserviceable Areas

45. Temporary changes to the Movement Area may include, among other things, reduction in the Runway length, reduction in the maximum allowable wingspan, taxiway closure or any other closure to the Movement Area. Unserviceability signs provide relevant information to Aerodrome users to maintain an acceptable level of Safety during Aircraft and vehicle operations, by reducing the Risk of confusion and enhancing the awareness of such temporary changes.

Signs

46. Unserviceability signs can be used to indicate temporary closed or restricted areas, as well as to provide information on operational restrictions to Aerodrome users.
47. The information provided by unserviceability signs supplements that which is provided by the appropriate Aeronautical Information Services unit.

Lights

48. Unserviceability lights are used for such purposes as warning pilots of a hole / Hazard in a taxiway or Apron surface pavement or outlining a portion of pavement, such as on an Apron, that is under Repair. They are not suitable for use when a portion of a Runway becomes Unserviceable, nor on a taxiway when a major portion of the width becomes Unserviceable. In such instances, the Runway or taxiway is normally closed.

Markers

49. Unserviceability markers are used for such purposes as warning pilots of a hole / Hazard in a taxiway or Apron surface pavement or outlining a portion of pavement, such as on an Apron, that is under Repair. They are not suitable for use when a portion of a Runway becomes Unserviceable, nor on a taxiway when a major portion of the width becomes Unserviceable. In such instances, the Runway or taxiway is normally closed.

Civil Equivalence

50. This Regulation is in line with ICAO Annex 14 Vol I, 7.4¹.