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Clearway Taxiway Guidance Signs

Compliance and Applications

ICAO Annex 14 - Vol.1 Para. 5.4 and Appendix 4
UK CAP 168
Cenelec Pr ENV 50235/1996
NATO - Stanag 3316
CASR Part 139 Manual of Standards (MOS) Aerodromes
JSP 554
JIS 2 8724

Based on the previous designs of Smiths Airfield Equipment (SAFE), atg airports ltd has developed Clearway Taxiway Guidance Signs into market leading products that are operational at sites across the globe.

This well proven design has been further developed by atg airports ltd to improve reliability and maintainability while helping to reduce overall life cycle energy costs.

Clearway Taxiway Guidance Signs can be supplied with either the latest fluorescent tube technologies, including optional long-life 50,000 hour modules, or cold cathode tube or tungsten halogen lamp technology. The sign cases are an aluminum construction designed to withstand the extremes of climate conditions encountered on airfields and airports worldwide.

Features

- Compliance with luminance and color temperature requirements of ICAO and CAP 168 for day or nighttime use.
- Economical to operate: Low electrical power demand long-life lamps and minimum maintenance.
- Modular construction: Commonality of mechanical and electrical equipment for all sign sizes.
- Easy to remove sign fascia.
- Multi-lamp design maintains sign visibility in case of partial lamp failure.
- 3500K light source provides improved color contrast and legibility.
- 18,36,58W/10,000/50,000 hour fluorescent tubes used in signs.
- Also available with 18W/m Cold Cathode Tubes or 45W Tungsten Halogen Tubes.
- Temperature range: -13°F/+131°F (-25°C/+55°C).
- Simple to install.
- Lamp failure bypass device for halogen lamps.
- Standard FAA style.
- Clearway signs can be supplied to give a constant brilliancy light output or dimmable.

Specification

Cabinet
Extruded aluminum profile - up to 20' (6.2m) long - anodized and powder coated in RAL 1007 aviation yellow.

Weather Proofing
To IP 65 Rating.

Front Panel
Shatter proof 4mm polycarbonate.

Cabinet Fixings
Non-oxidizing stainless steel clips and fixings.

Power Supplies
6.6A AGL series circuit or 230V AC supply.

Visibility
Designed for operations in weather conditions with an RVR <800m.

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Mandatory Signs
White characters on a red background are used to advise pilots (and vehicle drivers) of an airfield location beyond which they must not proceed unless authorized by air traffic control.

Information Signs
Yellow characters on a black background (location signs) or black characters on a yellow background (destination signs) are used to provide additional guidance to pilots maneuvering aircraft on the ground.

RHAG Markers
These are used in military applications. This sign indicates the position of the arrestor cable across the runway.

Stand Number Indicator Boards
As an addition to the range of signs available, Stand Number Indicator Boards are also manufactured in our workshop and meet similar criteria to standard signs.

IRDMs
Illuminated Runway Distance Markers indicate the distance to the end of the active runway to the pilot. The units are available as a single sided or double sided sign.

Double Sided Signs
Double sided illuminated signs are also available in the Clearway range. The signs are incorporated into a single framework and for continuity between the two types of signs the same fascia extrusion and fixing methods are utilized.

Information Sign

Mandatory Sign

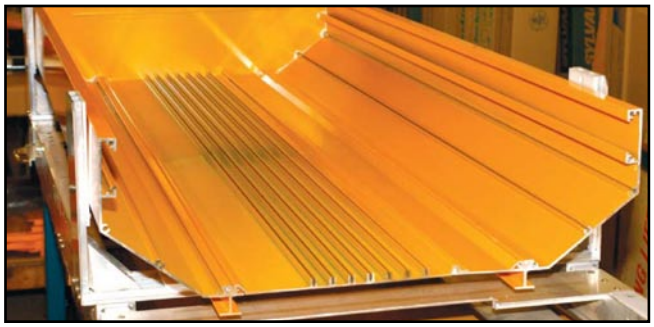
IRDM Sign

Sign Construction

Clearway Taxiway Guidance Signs are built using the latest aluminum extrusion technology, which enables a lightweight but rigid construction.

The main body of the sign cabinet is manufactured from corrosive resistant aluminum extrusions. The extrusions are interlocked with each other creating a sealed unit. This unit then has cross members and side panels secured, giving the compartment its strength. Prior to the assembly of the main cubical, all the metal work is anodized and powder coated in aviation yellow, providing a hard wearing, durable gloss finish.

The fascia framework is also manufactured from corrosive resistant aluminum extrusions, which is black in color. It is mounted and secured onto the front of the sign by the use of a quick release stainless steel clasps. A neoprene rubber gasket is fixed to the front fascias making a weatherproof seal of the complete unit to a rating of IP65. The sign fascia is hinge mounted to the main casing to provide quick and easy access for maintenance and lamp change. If required, the whole sign fascia can be lifted free from the casing to provide full, unrestricted access to the main casing.



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Electrical Data

Clearway signs are designed to operate over the current range from 2.8 - 6.6 Amp standard AGL circuit via a suitable series isolating transformer or, optionally, 230V mains supply signs can be either 50 or 60 Hz operation. Standard series circuit transformers can be used for 6 or 12 amp circuits. An external FAA style molded plug is supplied as standard for connection to AGL circuits.

Sign Conversion/Retrofitting

Due to the rapidly changing requirements of airfields and the long life of the Clearway signs, from time to time it may be necessary to make changes to airfield sign layouts. The intelligent design of the Clearway unit makes such upgrades and changes simple to implement without the need to purchase complete new signage.

Examples:

- A taxiway name change say from Alpha to Bravo notation.
- Replace a sign fascia due to collision damage.
- Convert the lighting source from a tungsten halogen or cold cathode to fluorescent tube.

All such modifications are supported by atg airports and enables airport teams to extend the sign life.

Photometric Performance

Each sign, regardless of type, is tested for the average light output, according to the procedures stipulated in ICAO annex 14 and CAP 168.

All signs will exceed the light output requirements for a RVR of <800m.

Signs are also checked for the correct color output in a simulated night condition. The measurements taken at various test points are checked against the CIE diagram for conformity.

Color	Min RVR <800m
Yellow	150 Candela
Red	30 Candela
White	300 Candela

Color	X	Y
Yellow	0.411	0.400
Red	0.688	0.306
White	0.411	0.400

Quality Assurance

Clearway signs are engineered to meet all the relevant standards.

Units are tested and results recorded by atg skilled technicians using precision instrumentation to ensure compliance. Third party independent test houses have also successfully carried out verification and certification of the Clearway sign performance.

Due to the extended maximum length of the Clearway sign up to 20' (6.2m), the homogenous nature of the fascia is kept clear of any non-compliant complications such as sign or fascia joints creating unwanted delineators in the sign front. It also enables the Clearway brand to boast superior levels of ingress protection against the harshest of elements over the entire length of the sign.

Options

- Isolators: an optional isolation switch will break all circuit supplies to enable lamp changing while the main airfield series circuit is in use.
- Bird wire: deterrent facility can be fitted to the top of the unit.
- Retro-reflective signs: these signs are similar in design, but are intended to be illuminated by an external light source, either an aircraft taxi light or by lamps mounted on the ground in front of them.
- Sign tethers: stainless steel sign tethers are also available.

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Sign Fascia

The legend fascia comprises of four layers. The main layer is opaque in color and manufactured from UV stabilized 4mm polycarbonate which has qualities to prevent it from shattering or cracking when hit by flying objects, i.e. stones picked up in a jet blast wash. The remaining layers make up the colors and characters of the sign front, all covered in an anti-vandal, non-reflective translucent fascia.

Sign Dimensions

The sizing of sign characters and spacing is directed by International and UK standards (ICAO / CAP 168) therefore, the length of individual signs is directly related to the display legend.

To accommodate these standards, signs are manufactured in 14 different lengths for both mandatory and information signs.

Mounting Systems

Standard Mountings

Ground mounting plates can be secured to a concrete or black top surface using anchor bolts. Frangible vertical support poles are inserted into the ground mounting plates. Finally, the sign is suspended from the poles using 'U' clamps. The 'U' clamps mounting method is used for both standard mounting and terrafix mounting.

Terrafix Mounting

This method is quick and easy for signs mounted direct onto grass/soil or for temporary installations. The terrafix 'spike' is driven into the ground replacing the ground mounting plate. The sign is finally erected as before, this time the vertical frangible poles are located directly into the terrafix spikes. This method eliminates the need for delethalization.

Continuous Improvement

We are committed to a program of continuous improvement (sign construction, improved optical performance and electronics). Future designs may vary from signs shown within this document.