



## BROADCAST LIGHTING GUIDELINES

### IFSC Event

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## EXECUTIVE SUMMARY

### Objective

To give a professional, consistent, look and feel to the International Federation of Sports Climbing (IFSC) broadcast coverage.

### Goals

To create a dynamic, vibrant lighting style that gives IFSC a recognisable look and ultimately promotes audience familiarity around the brand. Deliver uniformity around key moments with consistent lighting levels across all volumes/disciplines. Highlight the complexity of the routes and the emotion of the athletes as they compete.

### Solution

A generic lighting design to be implemented at each venue globally; delivering a familiar, stylized look to highlight the technical ability of the athletes and the dramatic nature of the sport. Detailed breakdown of key broadcast moments and the associated lighting fixtures used to deliver a consolidated style. Work closely with Local Organising Committees (LOC) in order to adapt a structured lighting scheme using locally sourced equipment and crew. Monitoring of event transmission for appraisal and improvement.

### Project Outline

To develop a look which captures the dynamism of the sport and engages a sports broadcast audience familiar with consistency and high-quality production values. The transmission should appeal to a wide demographic, from the younger contemporary urban following to the more traditional mountaineering set.

## LIGHTING STYLE

An even 1000-1500 lux of soft/wash light across the stage and vertically/horizontally up and across the walls should ideally come from behind and to the sides of the climbers as they face the wall. Light should aim to wrap around the climber illuminating the wall, their faces, hands/feet & climbing holds without producing glare.

**Frontal lighting** should be a mixture of the following:

Follow spots - with the use of a beam/wash fixture to give a soft edged illumination that can react to the athletes' progress on the wall and movement around the stage area.

Low angle wash lighting - unobstructed so as not to create shadows over the athletes and at an intensity so as not to create harsh shadows of themselves on the climbing wall. This light will act as a general fill for the athlete as they face out towards the audience and to cover the lower overhanging parts of the volume.

High angle wash lighting to illuminate the wall evenly to the top of the volume and give more natural shadows to the athletes onstage.

**Oblique/Side Lighting** - From a high or low angle slightly behind the athletes as they face the wall to give shape to the wall and contrast to the competitors faces beautifully capturing expressions as they perform difficult movements.

**Back Lighting** - high angle lighting above the wall or from an oblique angle as they face the audience to give the athletes separation.



**Audience Lighting** - General wash lighting with gobos or projection used to create patterns and add depth. The source of this lighting will be mainly backlight (from behind or above the main cameras) with minimal blinder style frontal lighting raised at relevant moments to capture suspense/reaction on the audience faces.

**Lighting cues** to illustrate the differing pace of the 3 disciplines and enhance the drama of the event:

Speed - Who wins the race to the top - cues fired as the button is pressed by the winner

Boulder - Contrast to highlight the structure of the volume and difficulty of the moves

Lead - Slower paced building the suspense as the climber ascends the wall

**Gobos** - Custom IFSC glass gobos to be installed in some of the moving lights. These can be shipped and installed in advance or travel with the core equipment. This will give branded graphics for use around the venues and in particular empty sections without audiences or where projection is outside of the budget.

**Projection** - The climbing volumes are the perfect space and colour when (using grey walls) to be used as a large digital canvas. This can be incorporated within the lighting design and used to display graphics in line with our predefined key moments or as entertainment and engagement for the live audience in the form of interactive games or featured content.

**House Lighting** - to be limited as much as possible unless budget restricts overall illumination levels.

**Ambient Lighting** - to be controlled where possible to allow for dedicated event lighting to read on camera.

## BROADCAST LIGHTING GUIDE

The following list illustrates a typical requirement for a broadcast quality lighting system. Note that the list is generic and has to be considered as an example and not mandatory requirements. Higher targets and narrower tolerances may be required

- Minimum maintained vertical illuminance on grid in 4 directions > 1400 lux
  - Uniformity (min:avg) >0.7
  - Ratio of vertical to horizontal illuminance >1:2
  - Uniformity(min:avg)>0.8
  - Uniformity gradient<5%over1m
  - Glare (GR) <35 (indoor venue) or 40 (outdoor event)
  - Flicker factor<1% (flicker free)
  - Colour rendering Ra>90withR9>50, TLCI >85
  - Colour temperature 5000-6000Kwith fixtures within 10 mired
  - Spectator spill lighting on 12 rows <25% of average illuminance on FOP
- \*Institution of Lighting Professionals, Guidance for Lightning of Televised Sporting Events, 2018 ILP.

**Modelling** - Shape and depth are achieved throughout the imagery by the placement of opposing lighting sources giving contrast across the imagery through the use of highlights and shadow.

**Separation** - the use of varying lighting ratios between action areas and ancillary areas will help to give separation to the camera shots i.e., spectator areas will benefit from a reduced level and make the athletes stand out against the crowd.

**Lux level** - it is widely accepted that a Lux level of approximately 1500 Lux is required to achieve close-up action without the use of extenders in the lenses. For super slow motion coverage and close-up angles using box lenses with doublers a lux level of >2000 Lux is needed.



**Colour temperature** 5600K Internal and external

### Camera settings

**Exposure** - Lux levels should be met in order to obtain an acceptable exposure without the introduction of gain into the broadcast cameras.

**Filters** - Neutral density filters can be used to reduce the depth of field and enhance subject separation by blurring the background of certain shots.

Star filters in camera can enhance the lighting in certain wide shots for example by flaring the light source and effecting a larger area within the image without the need for additional lighting.

## COVERAGE OF KEY MOMENTS

### **Presentation of athletes**

Full stage illumination without hotspots, follow spot to bring each athlete from the relevant entrance gate.

### **Observations**

**Boulder** - Full stage illumination focusing on the group of athletes examining each boulder section. 2 minutes on each section with the relevant section illuminated with white light (general competition lighting state). During this time other sections of the boulder face could be dimmed or coloured to focus attention on the relevant boulder the athletes are reviewing. Particular attention should be given to oblique lighting to illuminate and capture the athletes faces and hand movements.

**Lead** - Full stage illumination to contain the group of athletes examining the wall. Additional reverse/oblique angle wash lighting (to illuminate faces) to be faded up if athletes leave the stage to obtain a better view of the top part of the wall.

Full wall lighting in white light (general competition lighting state).

### **Speed** - Preparations

Oblique lighting to illuminate and capture the athletes as they prepare. Full wall lighting in white light (general competition lighting state).

### **Flower Ceremony/Introduction of the medallist**

Follow spot to bring each athlete onstage.

Full stage illumination to contain the group of athletes on podium. Strong backlight and cross key/fill to give separation from the sponsors board behind the athletes.

Full wall illumination in style/colour/projection content agreed by LOC Lighting Director with lighting cues TBC.

### **Interviews**

Soft even lighting of the winners and the IFSC backdrop.

Interviewees to be at least 0.5m away from the sponsors board to avoid distracting shadows.

### **Awarding Ceremony**

Follow spot to bring each athlete onstage

Full stage illumination to contain the group of athletes on stage. Strong backlight and cross key/fill to give separation.

Full wall illumination in style/colour/projection content agreed by LOC Lighting Director, with lighting cues TBC.



## LIGHTING CONSIDERATIONS

Lighting should not interfere with the competition schedule or cause athletes, officials, and audience any discomfort.

**Glare** - Lights should not be focused directly into the eye-lines of the athletes when competing on the wall (or observing); so as not to impair their vision or create distracting shadows which may affect their perception of distance or identification of holds. Glare should be avoided as much as possible when athletes are looking down and to the sides to check the countdown timers (bouldering and lead).

**Gobos/colour** - the use of gobos and colour should not be used on the wall whilst an athlete is competing on the wall (or observing), so as not to impair their vision or create distracting shadows which may affect their perception of distance or identification of holds.

**Redundancy** - backup lighting fixtures should be rigged to avoid any part of the competition surface suffering a lighting failure which may result in an unfair advantage or cause disruption to the event schedule.

A full lighting test and colour balance should ideally be conducted the day/night before transmission.

House lighting should be tested (strike times, colour balance, intensity/coverage) in case it is needed to be used and a secondary white balance recorded as part of the LX failure/recovery protocol.

**Hotspots** - these should be avoided, and illumination should remain consistent throughout the event to give identical conditions for all competitors.

**Containment/coverage** - Lighting must always fully cover the course of a fall and the athlete must be illuminated from top to bottom of the volume.

## LIGHTING EQUIPMENT

### Follow Spots x 4 (2 active, 2 spare)

Either

- 2 x Robert Juliat - Lancelots - 4000w 2/5°
- 2 x Robert Juliat - Merlins - 2500w 3/12°
  - o These are to be operated manually; however, we could look to standardise the follow spots by utilising a moving head and an automated follow system which would require each athlete to carry a small wearable tracker and would enable any moving light rigged in the grid to perfectly track the athlete. <https://www.zactrack.com/zactrack-smart-system>

Or

- 4 x Robe BMFL WashBeams - <https://www.robe.cz/bmfl-washbeam>
  - o These can be operated using the tracking system listed above or alternatively if wearables were not favourable or if space/budget is an issue we could look at the ground controlled remotely operated version, so the fixtures are flown or rigged on smaller structures and the operator is sited below. <https://www.robe.cz/robotspot>

### Profiles x 16

Internal/External IP rated

- 6 x Ayrton - Domino - <https://www.ayrton.eu/produit/domino/>
- 10 x Robe iPointe Hybrid - <https://www.robe.cz/ipointe>



**Floods/strobes x 17**

- 8 x SGM Q10 RGBW LED Flood, Blinder, Strobe 105° beam angle - <https://sgmlight.com/products/architectural/q-10>
- 9 x GLP JDC -1 - 117° beam angle <https://www.glp.de/en/products/strobes-led/jdc1>

**Washes x 30**

- Internal - 30 x Mac Aura XB - <https://www.martin.com/en/products/mac-aura-xb>

Or

- External IP rated - 30 x Chauvet Maverick Storm wash- <https://www.chauvetprofessional.com/products/maverick-storm-1-wash/>

**General venue lighting - x TBC**

- LED Pars - Internal/External - Elation SixPar200IP - <https://www.elationlighting.com/sixpar-200ip>

**Battery Up-lighters x 24**

Uplighting for general venue illumination - to be deployed rapidly and controlled wirelessly. Could be used in isolation areas and for presentation positions.

- Core Colour point 2 - wireless battery up-lighters (approx. 8-10 hrs battery life) - 4 charging cases of 6 - 24 total

**Atmosphere - x 2**

An industry standard haze generator to enable lighting beams to read on camera

- 2 x MDG Atmosphere Haze generator - <https://www.mdgfog.com/en/atmosphereaps>

**Camera Light - for use on mobile camera**

- 1 x Bi-Colour Torch LED Bolt 300 on camera light with D-Tap power lead and diffuser - <https://www.coreswx.com/store.coreswx/product/tl-bt300/>

Additional areas - outside of the field of play

**Interview lighting - stand up interviews against a sponsors board**

- 1 x Aperture 600D with Light Dome 2/Lantern modifiers - Internal or External
- 2 x 1x1 LED Light panels Astra 6x with rain covers & chimera modifiers - Internal or External
- 2 x Arri SkyPanel SC60's with rain covers - External
- V mount batteries and power adapters for all
- 3 x Light weight stands & sandbags
- 2 x American stands and sandbags for Sky Panels if external

**Transit Zone - general wash lighting for reactions of leading athletes, coaches/parents - use of reverse angle flown fixtures, stand based mobile soft battery lighting or on camera light.**

**Judges' validation - oblique wash lighting**

**Isolation - battery lighting as above**

Alternative lighting scheme (using floor mounted fixtures)





Specifically focusing on external events where high angle frontal lighting is challenging; a predominantly ground based lighting scheme using IP rated LED floodlights may be preferable.

A combination of varying beam angles (18-130°) and output (90-800W) can be used to give uniformity across the volumes

**Entrance/scenic lighting** - Astera Titan tubes - 2 x cases of 8 Units and WDMX control box

A set element could be constructed to give a more stylised athlete entrance. This could be a simple lighting sculpture around or behind each gate L/R of the stage which has a lighting cue fired as the athletes are announced to stage.

**Lighting control** - One way to standardise the operation is to specify a Grand MA lighting console which is widely available globally. This way we could send the show file with lighting cues to each territory and then use the clever part of the software to re-patch the locally available fixtures into the lighting cues. The Grand MA also has the ability to input electrical contactors which could be placed in line on the button at the top of the Speed wall to fire off a lighting cue (a strobe effect or a lighting chase corresponding to the winning athlete).

Console to be specified by the LOC, associated Lighting Designer/console operator.

**Plant & Rigging** - Access equipment/lighting platforms (scissor lifts/scaffold towers etc), truss & cabling routes to be specified & signed off by the LOC in accordance with venue rigging points/weight loadings etc.

External lighting structures to be covered from inclement weather conditions where necessary and structurally signed off by the LOC in accordance with appropriate wind and weight calculations/regulations.

IP rated lighting fixtures to be specific where necessary for external use.

**Cabling and equipment** - all cable and equipment to be tested in accordance with local regulations with power, data, and distribution signed off by the local supplier & LOC in conjunction with the finalised Lighting design for each venue.

**Power** - generators/local power supply to be specified & signed off by the LOC in conjunction with the finalised lighting design for each venue.

**Projection** - Media servers, projectors, and structures to be specified by the LOC & projection team

**Redundancy and consumables** - Local lighting supplier to provide spare bulbs & ballasts where required and at least 1 spare unit of each type of fixture. Consumables to be specified in conjunction with the finalised lighting design for each venue.

## CONCLUSION

This document presents a coherent lighting scheme which is scalable in order to cater to different budgets along with internal and external events of varying size. For instance, reducing the fixture count or swapping moving for fixed heads will allow budget flexibility in the determination of each event's exact specification.

It is imperative that we also draw upon the knowledge and experience of the LOCs to sense-check and adapt our vision to suit the local environment, evaluate crew capabilities and research the equipment supply chain.

As IFSC builds a more comprehensive style guide, the unique challenges we encounter in each venue should begin to plateau. The consistency issues between the indoor and outdoor events should start to diminish as we look to carry our lighting design and cues over to the evening part of the external competitions and we can fine tune our fixture placement when we have access to more detailed information from the LOCs.

With the continued appraisal of the broadcast transmission, involvement of a Lighting Director, Console Operator, Vision Supervisor, and co-operation from the LOCs IFSC is confident that it can evolve the coverage and deliver a consistently engaging broadcast of this exciting sport.