35th ASIAN RACING CONFERENCE HONG KONG 2014

TV Production and live racing coverage in HK

Broadcasting Services

OOnagh Chan
Head of Broadcasting Services, HKJC
5 May 2014

- Insert video of（Jack Fung）short Racing Profile already available

Broadcasting Services

Producing approx. 7000 hrs. of Racing TV each season

TV Production

- Produce Live racing coverage in 3 different languages (Cantonese, English, Putonghua)
- Produce all Pre-race and Post\-race programs (Cantonese and Eng) and winner videos
- Repackage inbound overseas simulcast TV program for local Cantonese audiences
- Produce Club corporate and training videos

IP Right Control

- IP right licensing (TV program and voice broadcast)
- Distribution of racing program to overseas with tailored content

Racing Support

- Photo-Finish team to support judge
- Video Patrol coverage for Racing Control with HD Sync Play system for Inquiry Room services

Venue AV system design and operations

- LED Large Video Display (Diamond Vision Screen, video walls)
- Sound Reinforcement System
- Digital signage

Live TV coverage, lighting and AV Design for Racing Tracks

Customer-Centric Consideration

Objective of live racing coverage and on-course AV design

- Provide a memorable visual and auditory experience to local and overseas customers

- Stimulate customer participation (Leisure seeking and wagering)

- Support racing stewards

- Others: non-raceday events

  - Banqueting service (e.g. parties, corporate gathering. training)

  - Corporate functions (M.I.C.E.)

AV experience

1) Visual experience

2) Auditory experience

Audio Visual Experience

Visual experience

1. Camera coverage
2. Track lights for Live TV
3. Feature Displays

Auditory experience

4. Sound reinforcement System

Camera Coverage for live racing

Racing Control

Racing Control
- Head-on w/ alignment to turf track and AWT for back and home straights (camera posted at strategic corners)
- Head-on w/ alignment to cover all turns
- High angle wide shot to Cover full race w/ no obstruction

Public Viewing

Public Viewing
- Parade Ring and mounting yard cameras to allow multiple horse coverage
- Live race coverage from one direction of view with minimal cut
  - Camera positions at various level of grandstand align with audience positions
  - Eye level, low angle and reverse angle cameras to enhance excitement

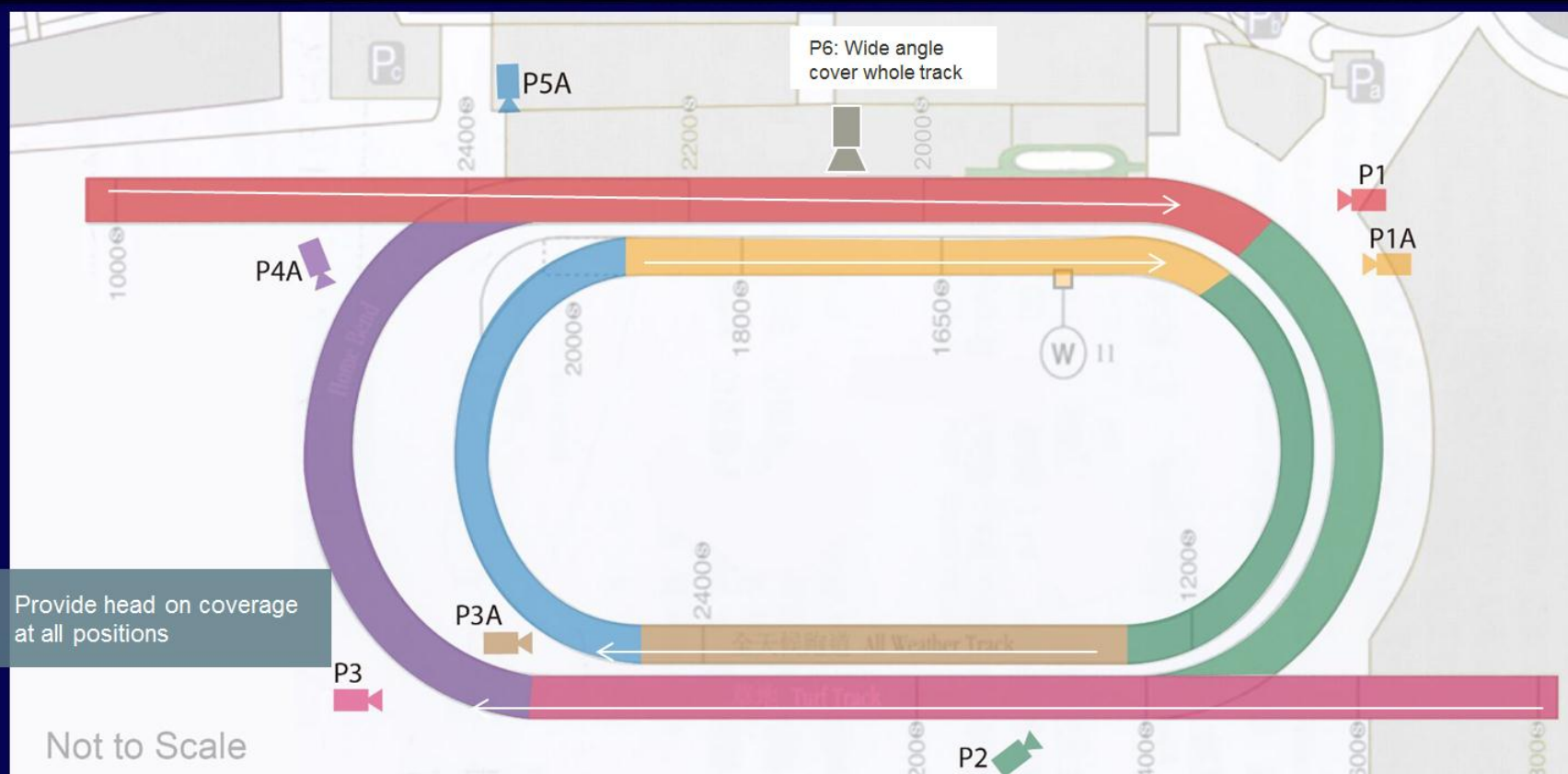Camera Location at Sha Tin

Racing Control

Public Viewing

Sha Tin Racecourse night race
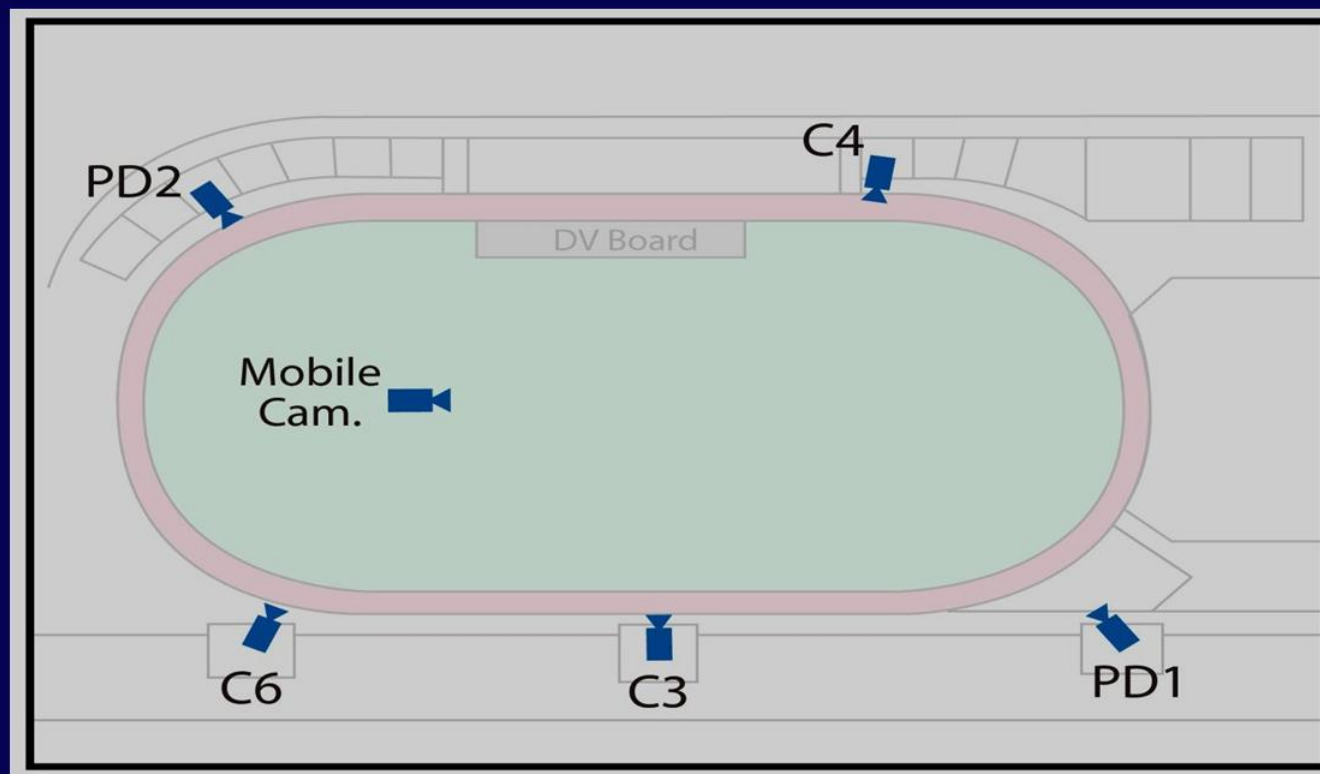
Positions of Camera for Racing Control at Shatin

Video Patrol Coverage

- Insert video (Devil)

Positions of Camera for Public at Parade Ring at Shatin

Parada Ring at Sha Tin Racecourse
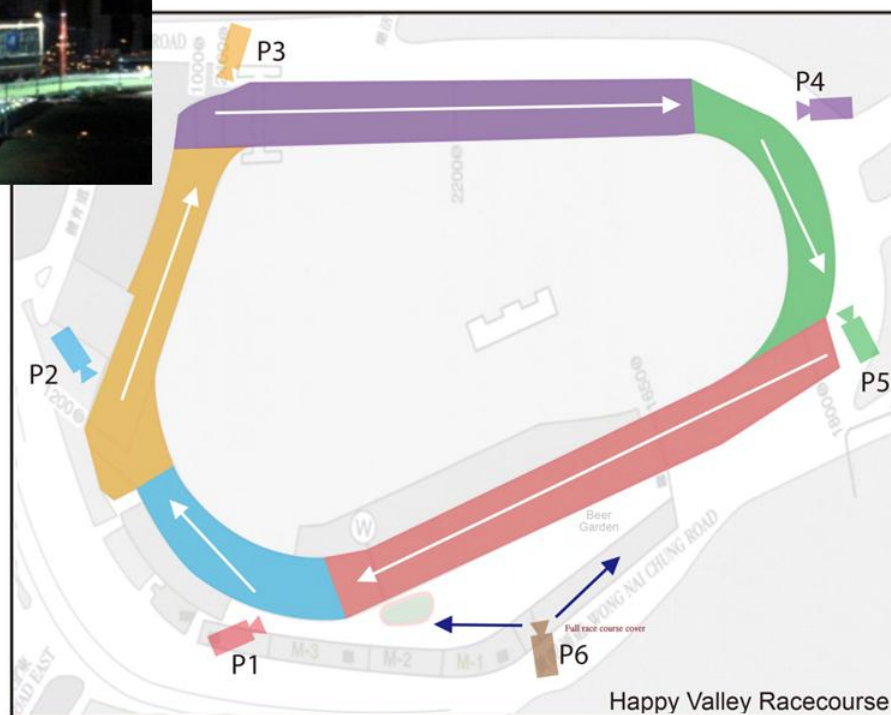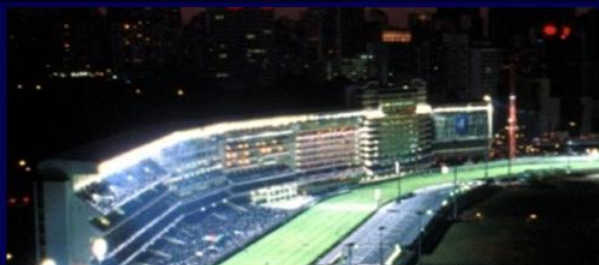
Camera Positions at Happy Valley

Racing Control
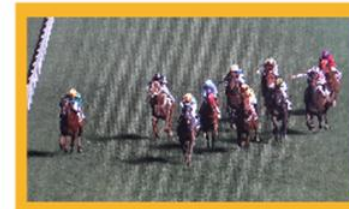
Public Viewing

Happy Valley Racecourse night race

Camera Positions at HV for **Stewards**

Area A

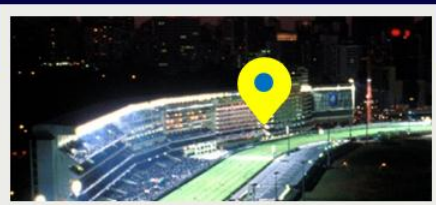Area B

Area C

Happy Valley Racecourse

Camera Positions at HV for **Audience**

- Camera positions and coverage MV (Evil Video)

Audio Visual Experience

Visual experience

1. Camera coverage
2. Track lights for Live TV
3. Feature Displays

Auditory experience

4. Sound reinforcement System

Objective of Tracklights Replacement

❑   **Ensure the safety for Jockey and horses**

❑   **Improve Live racing HD TV coverage for Public Viewing & Racing Control**

❑   **Promote Environmental Friendliness**
- ❑   **Reduce Light nuisance**
- ❑   **Energy Efficiency / sustainability**

❑   **Lighting Control Effectiveness**

Minimum Lighting Levels for sports coverage

Sport		Illuminance Level (Em. Horizontal) Lux * (Non CTV)						Glare Rating (GR)		
		Class I (major TV Coverage)		Class II (mid-grade competition)		Class III (Training)				
		Em Lux	Uo Min/ave	Em Lux	Uo Min/ave	Em Lux	Uo Min/ave	I	II	III
Athletics		500	0.7	200	0.5	50 to 100	0.5	50	55	55
Baseball	In Fld	750	0.7	500	0.7	300	0.5	50	50	55
	Out Fld	500	0.5	300	0.5	200	0.3	50	50	55
Basketball		500	0.7	200	0.6	75	0.5	50	50	55
Cricket Grounds	Sq	750	0.7	500	0.7	300	0.5	50	50	55
	Field	500	0.5	300	0.5	200	0.3	50	50	55
Equestrian		500	0.7	200	0.7	100	0.5	50	50	55
Football (soccer)		500	0.7	200	0.6	75	0.5	50	50	55
Hockey		500	0.7	200	0.7	200	0.7	50	50	55
Horse racing		750	0.7	500	0.4	200 (Trackwork)	0.2	50	50	55
Netball		500	0.7	200	0.6	75	0.5	50	50	55
Rugby		500	0.7	200	0.6	75	0.5	50	50	55
Tennis		500	0.7	300	0.7	200	0.6	50	50	55
Volleyball		500	0.7	200	0.6	75	0.5	50	50	55

* Em is the Maintained Illuminance Level (specification level) and is the design illuminance level, below which the lighting should not be allowed to fall during the period to planned maintenance.
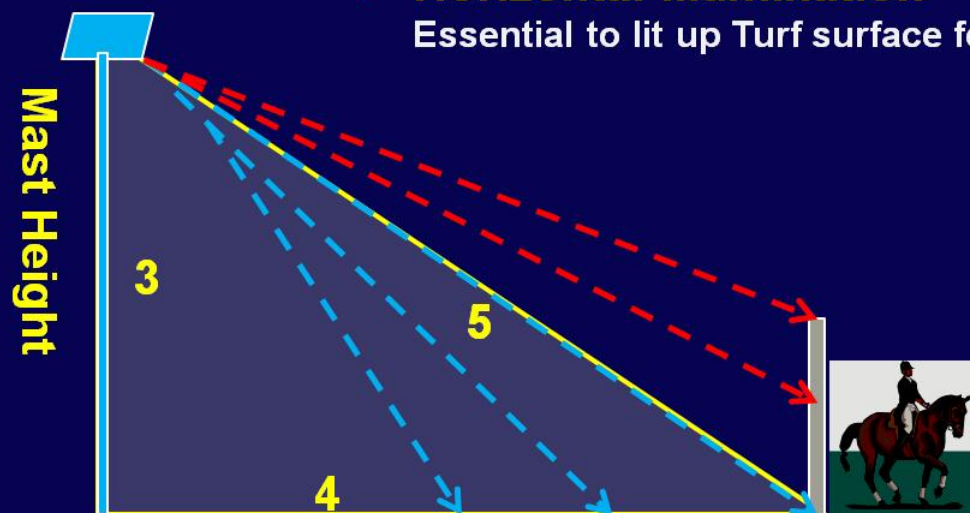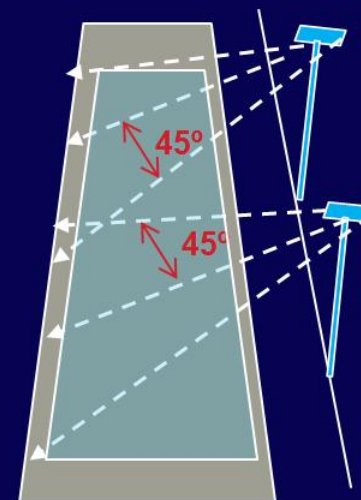
Illumination for horse racing

Vertical Illumination
Essential to lit up horse body and jockey silk

Horizontal Illumination
Essential to lit up Turf surface for safe competition

Mast Height

3

5

4

45°

45°

Best Ratio: 3,4,5   3M height Mast, covered 4 X 3 = 12 M width at a tilting angle of light fitting of a 5 ratio

For HD TV Production

❑ **Sufficient Illumination**

1. Best colour reproduction
2. Satisfactory depth of field for focusing
3. Maintain picture quality without applying digital signal amplification (increase db gain to boost low light area resulting in increased noise)

❑ **Evenness (uniformity)**

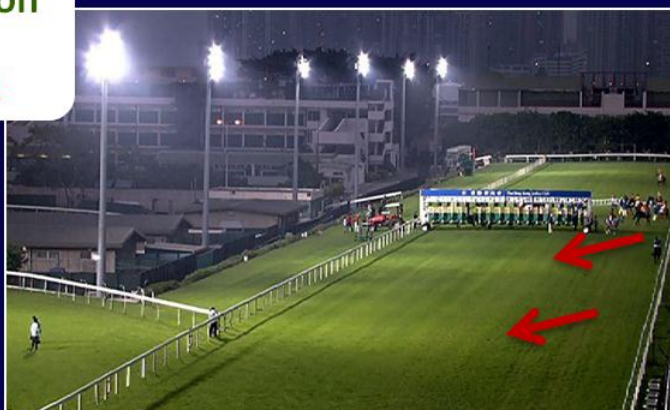❑ **Flicker Free** for TV production *(Cater for high speed capturing for slow motion replay)*

❑ **Glare Free** for TV production *(no direct light into lenses)*

Lighting and Color Temperature Evenness

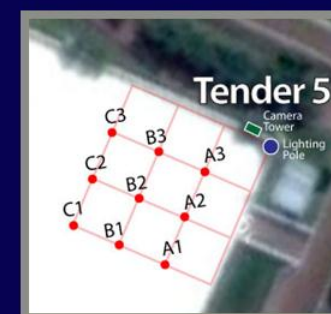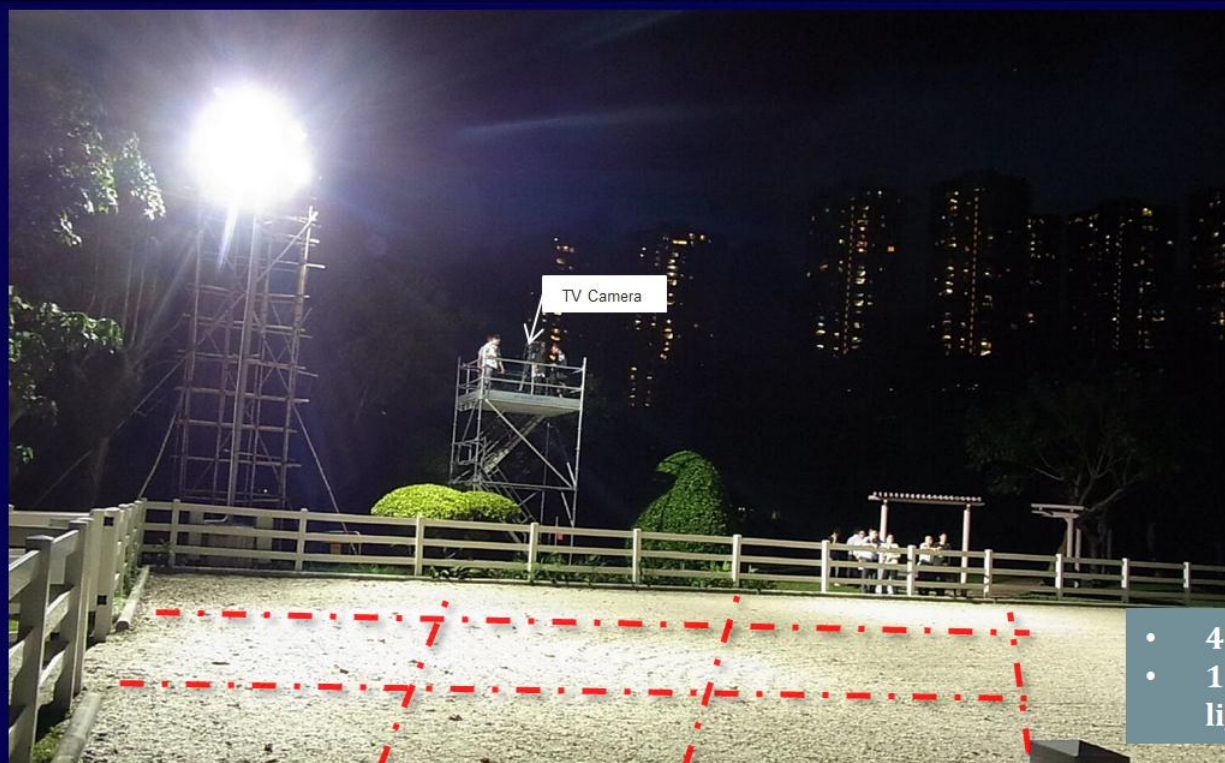**Illumination Level Uneven**

Color Temperature Uneven

5600k

4800k

Camera Coverage Quality DIFFICULT to maintain

Light Fitting Test Processes

TV Camera
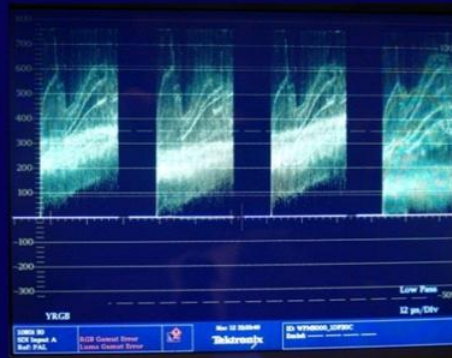
Tender 5

C3
B3
C2   A3
B2   A2
C1
B1   A1

- 4 X lights fitting set up on one mast
- 1 X camera tower set up next to the light pole

Light Fitting Test Processes

Measure at each point :

- **Lux Reading** (Lux Light Meter)
- **Color Temperature Reading** (Color Temperature Meter)
- **Wave Form performance** (Video Camera w/ signal Wave Form)
- **Visible Flicker** (Video Performance)

Light Fitting Test Processes

Measure 9 X reference point with charts →

Grey Card　　Color Chart　　Grey Scale

Measure Flickering with horse parading at 9 points with video recording

Light Fitting Test Processes

Data presentation
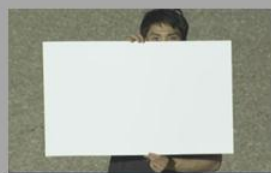

Iris: 3.5   260 Lux
Color Temp: 5940K

Iris: 3.6   434 Lux
Color Temp: 5580K
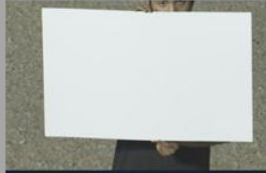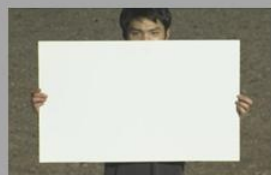
Iris:5.9   793 Lux
Color Temp: 5390K

Iris: 7   917 Lux
Color Temp: 6680K

Iris:7.6   1213 Lux
Color Temp: 5720K

Iris:5.7   702 Lux
Color Temp: 5620K

Iris:7.9   1447 Lux
Color Temp: 6650K

Iris:6.9   1002 Lux
Color Temp: 5930K

Iris:7   1312 Lux
Color Temp: 5590K

Test Result

Supplier	A	B	C	D	E
Luminous (Lux)	1281.5	926.5	720	679.5	1010.4
Uniformity (Lux) Best = 100%	67.57%	35.95%	72.73%	55.15%	35.15%
Colour Evenness (Colour temp) Best = 100%	98.48%	98.92%	86.24%	93.74%	93.40%
Average colour temp (K)	5060K	4850K	5654K	7356K	5900K
Supplier Specification of Colour temp (K)	5600K	5900K	5900K	5900K	5500K
Flickering as seen from Camera	Passed	Passed	Passed	Passed	Passed

Audio Visual Experience

Visual experience

1   Camera coverage

2   Track lights for Live TV

3   Feature Displays

Auditory experience

4   Sound reinforcement System

Feature Display

What to use:
1. **Large LED Video Screen**
2. **Video wall**
3. **Large TV set**

Indoor / outdoor

Environment

Customer Experience
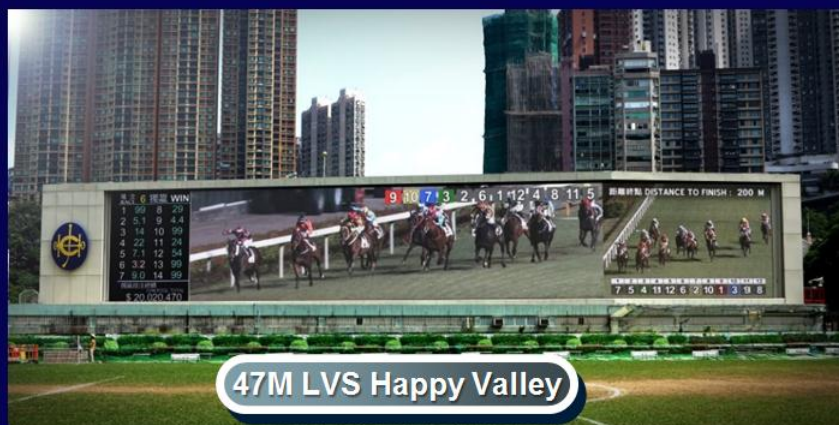
Brightness

Viewing Angle

Viewing distance

Cost efficiency
The best within your available budget

Large Video Screen (LVS)

47M LVS Happy Valley

70M LVS Sha Tin

Why use Large Video Screen for outdoor

- Cater for large numbers of audiences
- Create point of attraction
- Provide ultra bright high quality imagery
- Survive rough weather conditions

LARGE VIDEO SCREEN - CONSIDERATIONS
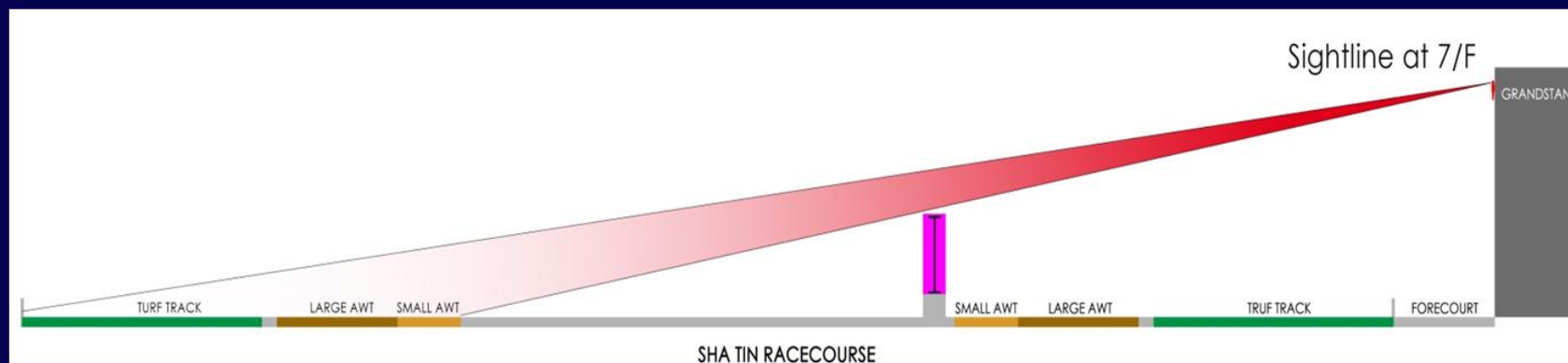

SHA TIN RACECOURSE

Horizontal Viewing Angle

- **Covering Two grandstands at Shatin**

Vertical viewing angle

- **Elevated angle (audience at eye level and from higher level)**
- **No obstruction to Racing Control and VIPs, CAMERAS**

Sightline at 7/F

SHA TIN RACECOURSE

LARGE VIDEO SCREEN - CONSIDERATIONS

Horizontal Viewing Angle

- **Covering Two grandstands at Shatin**

Vertical viewing angle

- **Elevated angle (audience at eye level and from higher level)**
- **No obstruction to Racing Control and VIPs, CAMERAS**

LARGE VIDEO SCREEN - CONSIDERATIONS

Determine screen size and pixel pitch of screen based on:

Viewing Distance / Video Signal resolution / venue size

- Minimum Viewing Distance (smooth edge, sharp and clear picture) = Pixel pitch X 750 / 1000

  Case Study: Shatin 20mm X 1000 = 20M Minimum viewing distance)

- Video Signal SD = 576 (N) X 720 (W)   HD = 1280 (H) X 1920(W)
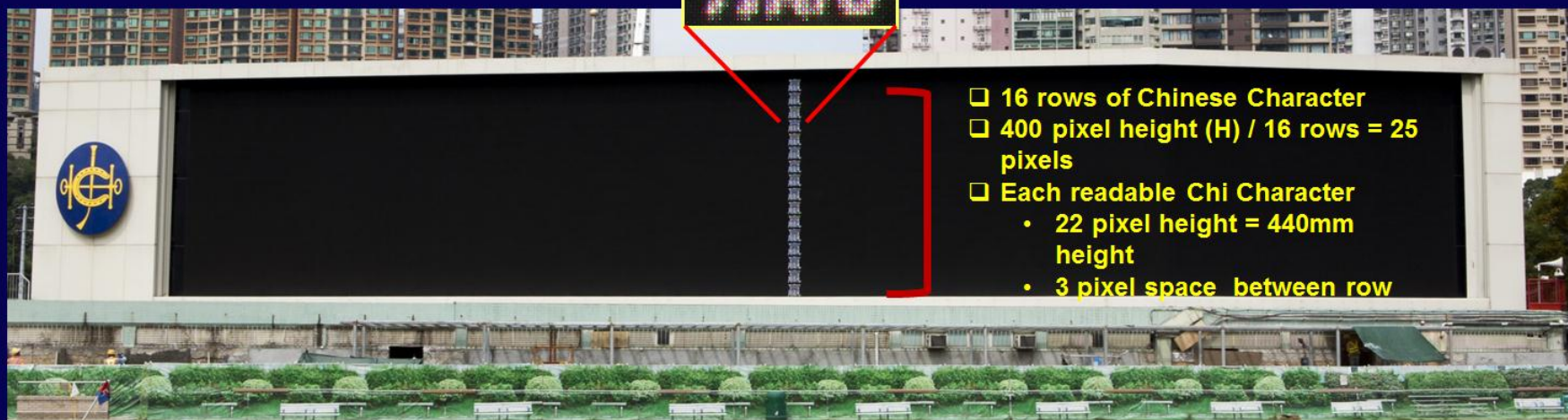

- Pixel pitch 20mm
- **Minimum viewing distance 20 M**

SHA TIN RACECOURSE
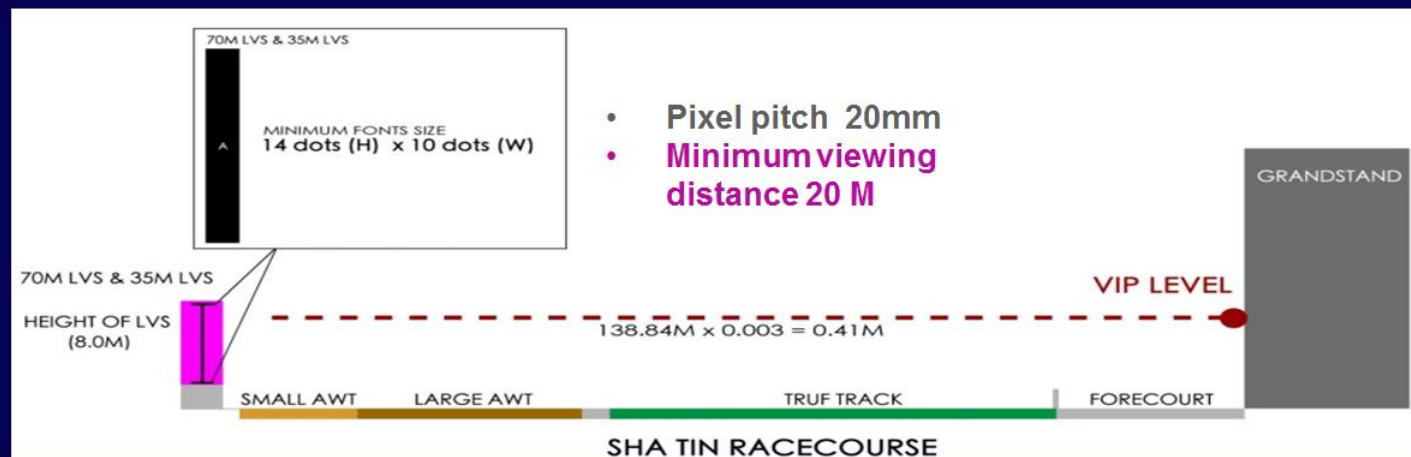
LARGE VIDEO SCREEN – VIEWING DISTANCE

- **Minimum Font Size** (Text readability) **= Screen to Audience Viewing Distance x 0.003 / 0.005 = Height of Fonts**

  Case study: 440mm (H) per Chinese Character with 16 row

  Character height 22 pixel , 3 pixel space . 22 Pixel X (138.84M X 0,003) = approx. 0.41m heihgt

- ❑ **16 rows of Chinese Character**
- ❑ **400 pixel height (H) / 16 rows = 25 pixels**
- ❑ **Each readable Chi Character**
  - **22 pixel height = 440mm height**
  - **3 pixel space between row**

SHA TIN 70M LVS

HAPPY VALLEY 47M LVS

Indoor LED Video Screen

- Create dramatic effect, center-piece in a venue
- Support raceday / non-raceday functions
- Display Live video / graphics / sponsors' adv. / digital backdrop events
- Relocate to any indoor venues (ease of install and dismount, thin, light-weight, quiet)

Seamless Video Wall (not TV)

- Flexible in screen formation: Scalable and expandable using professional video panels
(46 -65 inches)

- Flexible in display multiple information: odds, live pictures, change between paddock parade and live to provide simultaneously multiple-camera angles for display during race)

- Flexible in merging video screens to form large display to enhance customer experience

Audio Visual Experience

Visual experience

1. Camera coverage

2. Track lights for Live TV

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Auditory experience

4. Sound Reinforcement System

Auditory Experience

Sound System Design Consideration

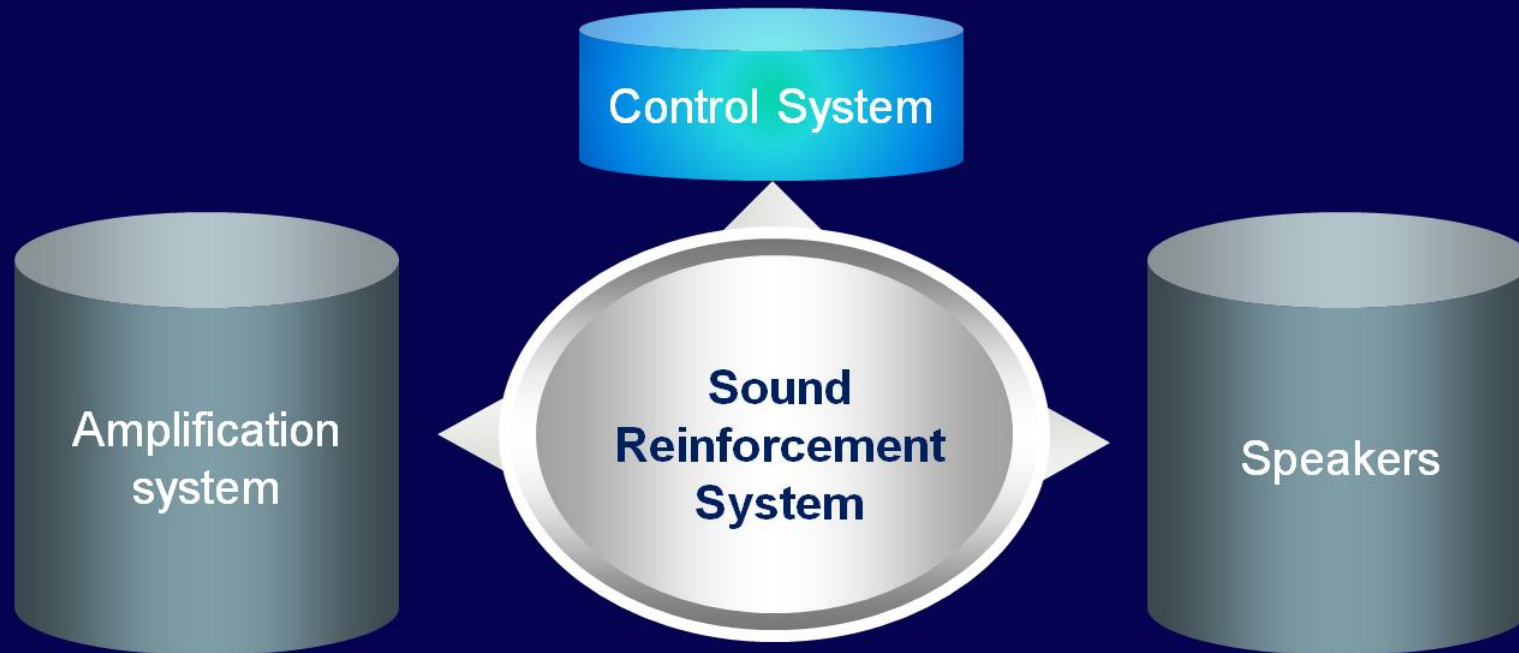Commentary Distribution

System Capability

Sound Reinforcement System - components

Control System

Amplification system

Sound Reinforcement System

Speakers

Design Consideration

Sound Reinforcement System

❑ **Powerful system to drive high quality amplifiers and speakers for best sound reproduction and program distribution**

❑ **Centralized control**
- Centralized control w/ timely response to cater for ad hoc customer requirements
- Real time system monitoring capability

❑ **Flexible routing mechanism to support multi-language program distribution**

❑ **Fail-safe design**
- Dual site operation model for system redundancy
- System Fail-over with uninterrupted operation for program broadcasting and public safety

❑ **System expandability**

Design Consideration

Speakers

❑ Select speakers to provide best quality reproduction of sound

❑ Select suitable speaker type for specific coverage angle

- Insert SK Video (???)

Design Consideration

Speakers

- Select speakers to provide best quality reproduction of sound

- Select suitable speaker type for specific coverage angle

- Negotiate with venue designers to seamless integrate speakers into venue design for aesthetic result

- Negotiate with venue designers on acoustic considerations

Design Consideration

Speaker positions

- Position speakers based on coverage angle to result in the best sound pressure and quality (e.g. Forecourt speakers) reproduction

- Adjust speakers position to avoid sound leaking onto turf track

- Adjust Sound Pressure based on racecourse attendance (insert video)

Auditory Experience

Sound System Design Consideration

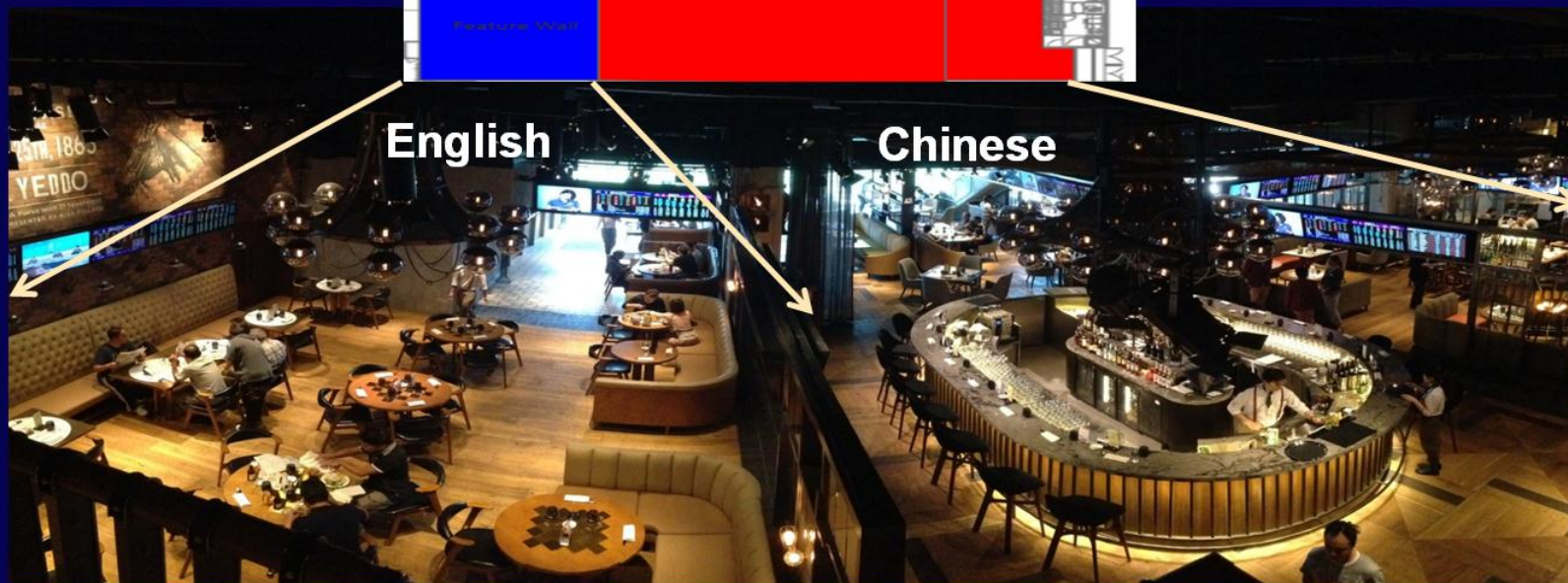Commentary Distribution

System Capability

Commentary Distribution

❑ Broadcast <u>commentary in three (3) languages</u> (Cantonese, English, Mandarin) simultaneously

❑ Enable <u>zoning design</u> to support business requirement by dividing venue with different language zones to cater for customers needs

❑ Allow <u>local control</u> at venue to cater for Individual venue events (e.g. racing party with venue host)

Auditory Experience

Sound System Design Consideration

Commentary Distribution

System Capability

System Capability

❑ At-a-Glance : Centralize control system with racecourse status

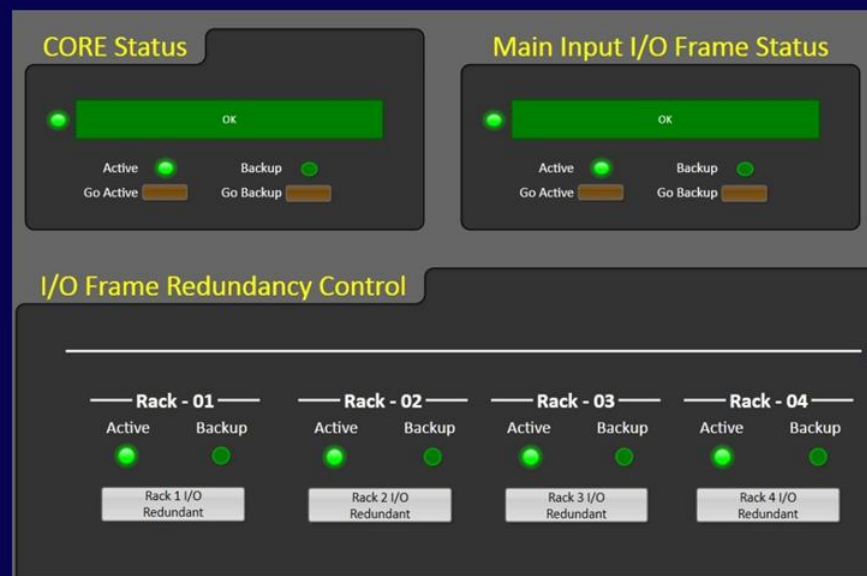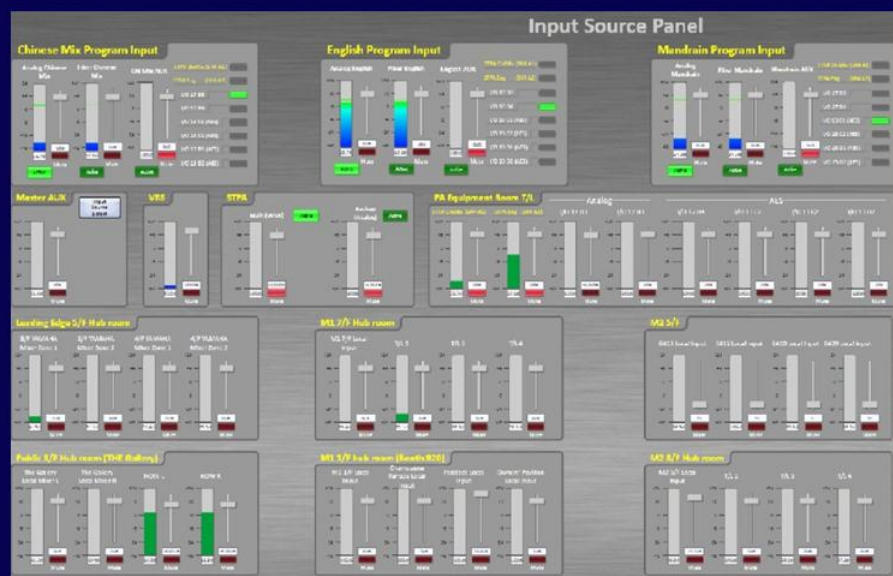○ **Language assignment and sound pressure control for each zone**
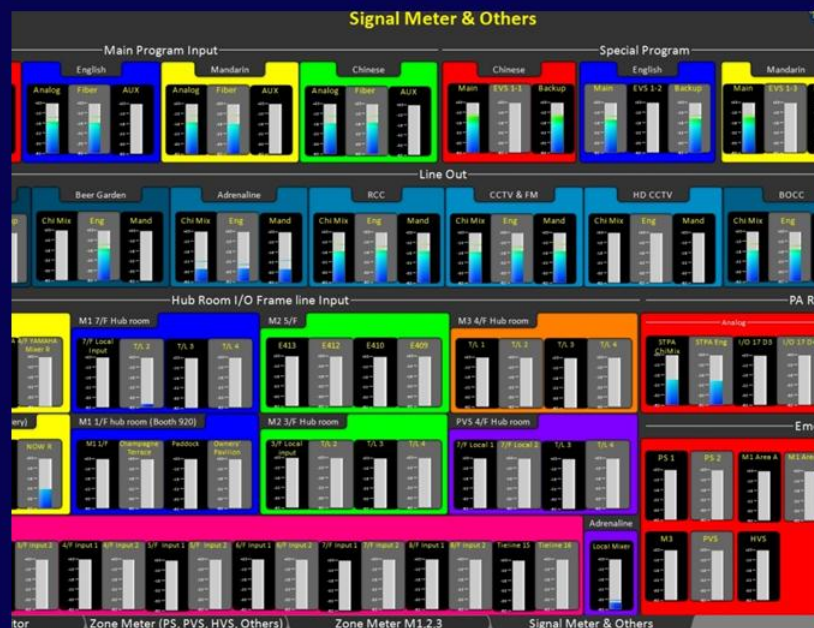
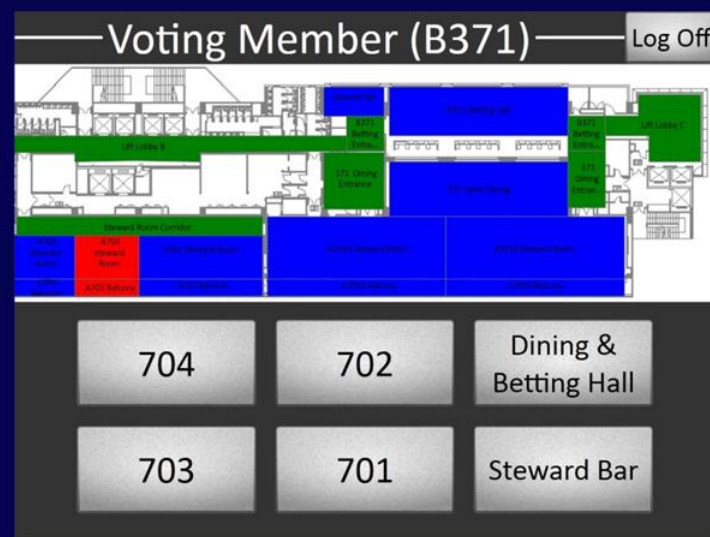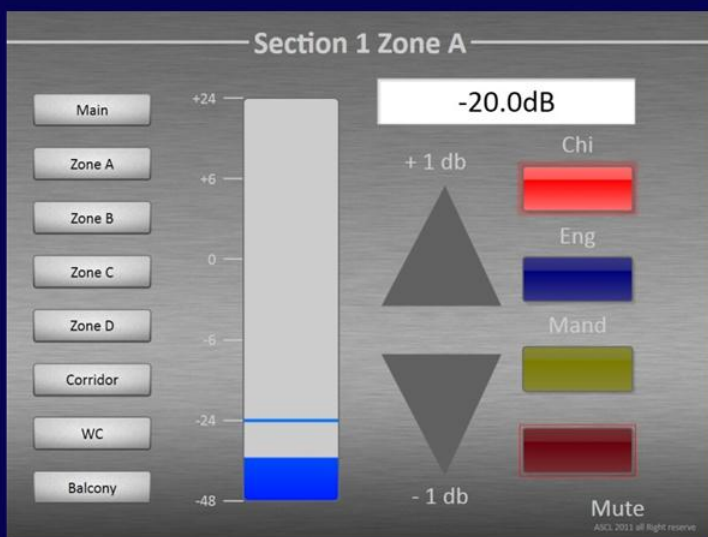○ **Race course map for each floor and venue**
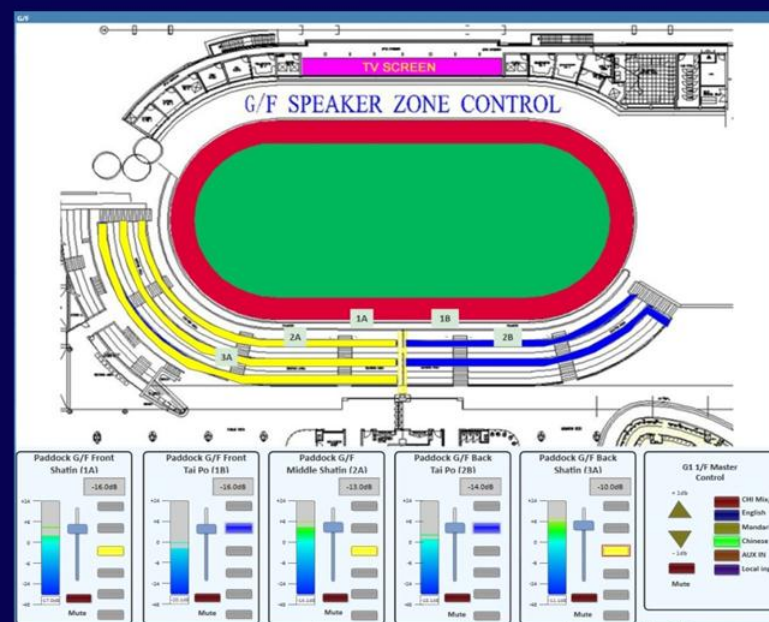
System Capability

❑ **Fail Safe** : System redundancy designed for X-site control with console indicating racecourse status

System Capability

❑ **User-friendly** : touch panel for local control to support business requirement at each venue (local sound pressure and language selection)

Racecourse AV Design – Summary

- ❑ **Customer-centric considerations**
- ❑ **Business alignment**
- ❑ **User / Customer-friendly design**
- ❑ **Cost efficiency – best technologies within budget**