CERTIFICATE OF DESIGN AND CHECKING FOR NON-COMPLEX WORKS FORM Issue 1.02

Title of Scheme:	**West Anglia Station Project**		**PRS Ref:**	
Location:	**ELR:**	**Mileage:**	**OS Grid Ref:**	**Structure No:**
London Fields	BGK	2m 35ch	TQ348842	N/A

PUBLIC ANNOUNCEMENT SYSTEM

The remit with the WASP specification for this station requires the supply of a Network Rail compliant Public Announcement system.

As there are no current Public Announcements systems installed at the station, a complete new system will be provided based on the Ateis IDA8 product that is currently in place at one other London Overground station.

During the process of the production of this document a design elevation between the two systems used by London Overground on their stations, namely the ASL and Ateis system, was carried out.

In the comparison of the two system it was found that the price difference of the procurement of the hardware and build of the system itself was negligible, whilst differences between the systems themselves where significant.

Ultimately the Ateis IDA8 based system was selected based on the fact that the ASL PA system is currently being phased out and replaced with the more expensive Vipedia solution. In comparison the Ateis IDA8 system is a current product with a sustainable maintenance path, which also provides a greater level of future expandability and also offers the additional benefit of being able to form part of a compliant Voice Alarm system should the station later be upgraded or any lifts be installed at the station.

The new Ateis based IDA8 PA system will be formed of a single IDA8C audio router which will manage all inputs, outputs and interfacing with the PCDVA system which will is detailed.

The IDA8C audio router will manage the station announcements which will be provided via a single DPAfour125 amplifier unit capable of providing up to 500W of PA amplification across a total of 4 separate zones.

The audio router and PA Amplifier will be installed within a new central SISS equipment cabinet which will be provided with the station comms room that is located within the station subway/booking hall area.

New speakers have been provided for non-platform areas and all areas of the station platforms within which the current 8 car rolling stock comes to rest.

Open areas of the platform will be served by lighting column mounted Penton CAD10/TC speakers which will be cabled in an A/B arrangement in order to provide redundancy for the failure, damage or vandalism of a single speaker chains cabling.

A desktop calculation of the suitability of the speaker selected against the arrangement that is being provided for the PA system has also been carried out as part of the design process for the PA system. The below details show the calculations formulated to evidence the conformance and suitability of this design for SPL levels that will be provided be the PA system:

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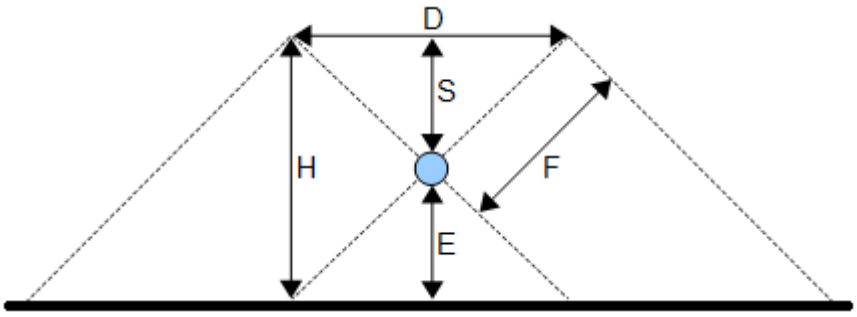

Speaker Height (H)	=	2.5m
Distance Between Speakers (D)	=	12m
Furthest Distance to Ear (F)	=	6.1m
Shortest Distance to Ear (S)	=	1m
Height of Ear €	=	1.5m

Cell 10T	Metres						
Watts	**1**	**2**	**3**	**4**	**7**	**8**	**12**
1	101 dB	95 dB	91 dB	89 dB	84 dB	83 dB	79 dB
1.25	102 dB	96 dB	92 dB	90 dB	85 dB	84 dB	80 dB
2.5	105 dB	99 dB	95 dB	93 dB	88 dB	87 dB	83 dB
5	108 dB	102 dB	98 dB	96 dB	91 dB	90 dB	86 dB
10	111 dB	105 dB	101 dB	99 dB	94 dB	93 dB	89 dB

101 dB	= Quoted performance figure from Penton data sheet
82 dB	= Assess average SPL for station + 10db

During the comms sites surveys at this station the average ambient noise level for the platforms with calculated to be approximately 72.5db. For this reason it is assumed that the PA speakers on the platform will need to be capable of announcing at approximately 82db, notwithstanding gain alterations that will be made as part of the systems commissioning process.

Spare capacity for PA systems on Network Rail train stations is specified under NR L2 TEL 30134. It is stated that the PA system should have capacity available for 1.25 X the total used speaker loading. The below calculation shows this designs conformance with the standard criteria:

Zone 1 A&B = 67W

Zone 2 A&B = 62.5W

Zone 31 A&B = 15W

Total Amplifier Loading = 144.5W

Total Amplifier loading x 1.25 = 169.5W

Total Available Capacity = 500W

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Spare capacity in way of total number of outputs is also specified within NR L2 TEL 30134. 10% spare capacity is stated as a requirement of PA systems on Network Rail train station. The below calculations confirms the compliance of the proposed system with the standard requirements.

Total Used Outputs = 3

Total Available Outputs = 8

Used Percentage Capacity = Total Used (3) / Total Available (8) = 0.375 or 37.5%

Spare Capacity = 100% - Used Percentage Capacity (37.5%) = 62.5%

Non-platform and indoor areas of the station will be supplied with PA via Penton Sentry 6STC speakers which will predominantly be made up of station subways and Booking Halls.

In order to ensure that the PA volume at the station does not become a potential noise nuisance to the surrounding residential area, the PA system will be fitted with 1no ambient noise sensor for each of the individual zones of the system.

The ambient noise sensor will be used to measure the current level of ambient noise in the particular zone at the point just before an announcement is made. The subsequent announcement will then be made at a level of 10db above the measure level of ambient noise, not exceeding 90db.

Each PA zone at the station will also be provided with a passive Audio Frequency Induction Loop (AFIL) which will provide a facility for the hearing impaired user of the station to be provided station announcements.

The AFIL will consist of a MNTech OmniT unit that will sit on one of the two speaker cable legs for each of the zones at the station.

AFILs for this station will be sited in such a way as to allow a general ability to see the Customer Information display (CIS) for the area of the station hat hey are being installed.

Within the staff accommodation at London Fields a zone selectable local microphone will be provided for station staff. This microphone will all the member of staff that is using it to pick one or multiple of the stations zones as well as being able to provide and all call facility when making station announcements.

The staff at this station will also be provided with a Roaming Public Announcement (RPA) system consisting of 2no radio microphone which will be capable of making zone specific announcement for the platforms only.

The 2no RPA microphone will be of the same Teleque manufacturing as those that are used throughout other London Overground stations and will be provided with a RPA charging station which will be located in the station staff accommodation.

Finally, the PA system will be provided with a new ATOS Personal Computer Digital Voice Announcement (PCDVA) system. The PCDVA for this station will be installed within the same central SISS equipment cabinet mentioned above and will interface directly with the PA audio router.

VANDALPROOF METAL CABINET Loudspeakers

SENTRY6/STC SENTRY6/TBBC

TECHNICAL SPECIFICATIONS

Rated power, Watts	6
Tappings 100 volt line, Watts	6/3/1.5/0.75/0.25
Transformer Impedance, Ohms, 100V	1.67k/3.33k/6.66k/13.3k/40k
Tappings 70.7 volt line, Watts	3/1.5/0.75/0.375/0.125
Driver impedance, Ohms	8
Effective frequency range, Hz (BSEN60268-5)	Sentry6/STC: 180 - 18,000 Sentry6/TBBC: 180 - 17,000
S.P.L. @ 1m, 1 watt, dB, Test Signal Bandwidth 100Hz-10 kHz	Sentry6/STC: 93 Sentry6/TBBC: 92
S.P.L. @ Full power Octave Bandwidth, dB	Sentry6/STC: 99 Sentry6/TBBC: 101
Acoustic Power (dB-PWL@1 watt) 1 k/2kHz, dB	Sentry6/STC: 89/89 Sentry6/TBBC: 91/93
Dispersion at 1k/2k Hz, Degrees	Sentry6/STC: 170/120 Sentry6/TBBC: 130/120
Directivity Axial Q factor, 1 k/2kHz	Sentry6/STC: 4.8/6.3 Sentry6/TBBC: 2.3/4.9
Dimensions, front & depth, mm	190 x 190 x 75
Net weight, Kgs	1.8 / 1.7
Colour/Finish	White RAL9016
Material	Steel Front, Die cast back box
Mounting	Screw
Flush Mounted Version Available	SENTRY6/TBBC

- BS5839 Part 8 voice alarm compliant

EASE, CATT, ULYSSES and Architectural specifications are supplied on the disc inserted at the back of this folder

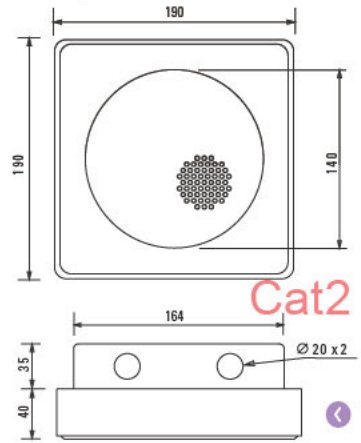
Manufacturer reserves the right to alter specifications without notice – March 2007

SENTRY6/STC SENTRY6/TBBC

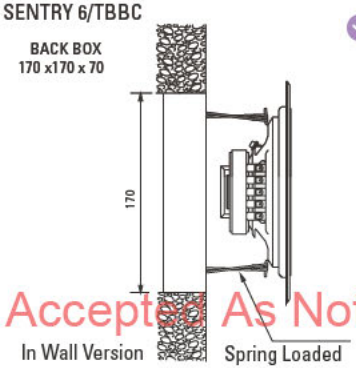
VANDALPROOF METAL CABINET LOUDSPEAKERS

front view unit: mm

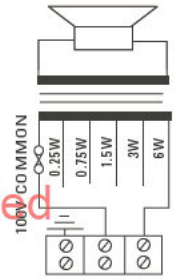
SENTRY6/STC



SENTRY 6/TBBC



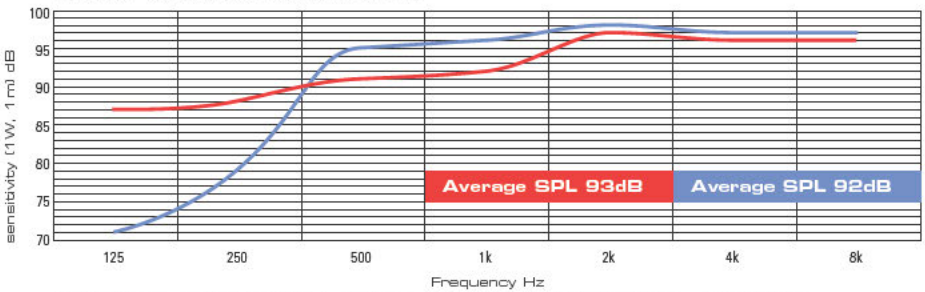
circuit diagram



top view unit: mm

CE

speech octave band sensitivity



Effective Frequency Range

- **SENTRY6/STC** 180Hz - 18,000Hz
- **SENTRY6/TBBC** 180Hz - 17,000Hz

PENTON

Penton UK Ltd

Unit 2 Teville Industrials | Dominion Way | Worthing | West Sussex | BN14 8NW

T: +44 (0)1903 215315 | F: +44(0)1903 215415 | E: SALES@PENTONUK.CO.UK

www.pentonuk.co.uk

MOULDED SOUND PROJECTORS

CAD10/T
CAD10/TC

TECHNICAL SPECIFICATIONS

Rated power, Watts	10
Tappings 100 volt line, Watts	10/5/2.5/1.25
Transformer Impedance, Ohms	1k/2k/4k/8k
Tappings 70.7 volt line, Watts	5/2.5/1.25/0.375
Driver impedance, Ohms	8
Effective frequency range, Hz (BSEN60268-5)	120–18,000
S.P.L. @ 1m, 1 watt, dB, Test Signal Bandwidth 100Hz – 10 kHz	90
S.P.L. @ Full power, Octave Bandwidth dB	100
Acoustic Power (dB-PWL@1 Watt) 1k/2k Hz, dB	87/89
Dispersion at 1k/2k Hz, Degrees	180/120
Directivity Axial Q factor, 1 k/2kHz	2.5/5.8
Dimensions, front & depth, mm	Ø138 x 204
Net weight, Kgs	1.3
Colour/Finish	White
Material	ABS Plastic with UV inhibitor and Stainless steel hardware
Mounting	Aluminium U bracket

- CAD10/TC is BS5839 Part 8 voice alarm compliant

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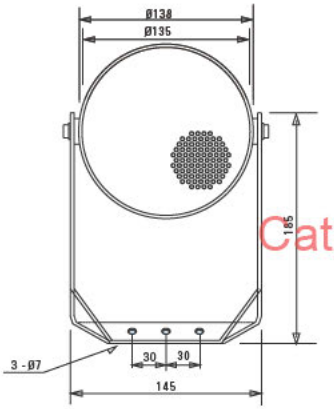
CAD10/T CAD10/TC

MOULDED SOUND PROJECTORS

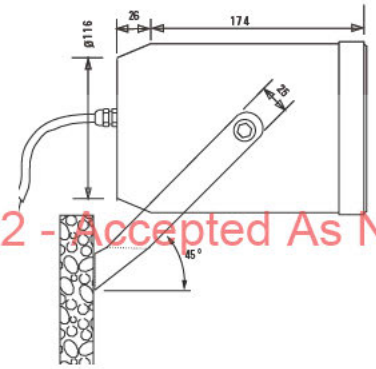
front view

unit: **mm**



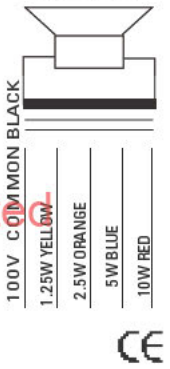
side view

unit: **mm**



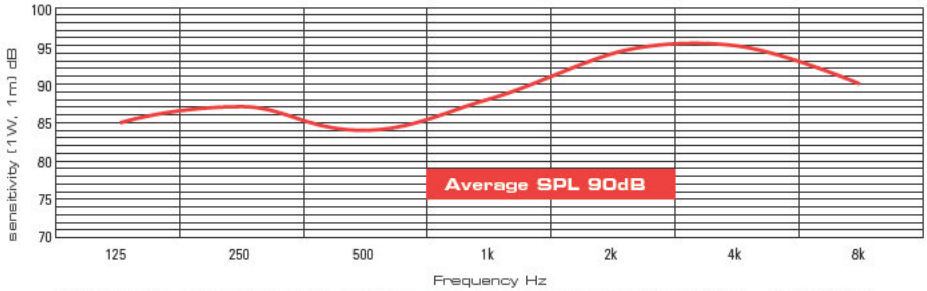
circuit diagram

CAD10/T



CE

speech octave band sensitivity



Effective Frequency Range **CAD10/T CAD10/TC** 120Hz - 18,000Hz

PENTON

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