

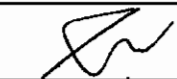

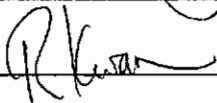
MTR Corporation Limited

Contract No. KGS 811

Kowloon Southern Link (KSL)

**Groundborne Noise Performance Test Report
During Commissioning Stage**

July 2009

	Name	Signature
Prepared & Checked:	Edith Ng	
Reviewed & Verified:	Y T Tang (IEC)	
Certified	Richard Kwan (ETL)	

Version: B

Date:

30 July 2009

The information contained in this report is, to the best of our knowledge, correct at the time of printing. The interpretation and recommendations in the report are based on our experience, using reasonable professional skill and judgment, and based upon the information that was available to us. These interpretations and recommendations are not necessarily relevant to any aspect outside the restricted requirements of our brief. This report has been prepared for the sole and specific use of our client and ENSR Asia (HK) Ltd. accepts no responsibility for its use by others.

This report is copyright and may not be reproduced in whole or in part without prior written permission.

AECOM Asia Company Ltd.

11/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong
Tel: (852) 2893 1551 Fax: (852) 2891 0305 Email: www.aecom.com

Table of Content

		Page
1	INTRODUCTION.....	2
	1.1 Background	2
	1.2 Legislation and Standards	2
2	GROUNDBORNE NOISE MONITORING	3
	2.1 Monitoring Locations	3
	2.2 Monitoring Parameters.....	3
	2.3 Noise Monitoring Equipment.....	3
	2.4 KSL Train Activity.....	4
	2.5 Groundborne Noise Monitoring.....	4
3	MEASUREMENT RESULTS	5
	3.1 Royal Pacific Hotel & Park Avenue.....	5
	3.2 HKCC & HKSM	5
4	DISCUSSION.....	6
5	CONCLUSION	7

List of Tables

Table 1-1	Operational groundborne noise criteria for HKCC, HKSM, schools, hotel guestrooms and domestic premises	2
Table 2-1	Monitoring Locations at NSRs	3
Table 2-2	Equipment list.....	4
Table 2-3	Summary of the Observations or Conditions of Monitoring Locations.....	4
Table 3-1	Baseline and Impact Noise Levels at Hotel & Residential Premises.....	5
Table 3-2	Baseline and Impact Noise Levels at HKCC & HKSM.....	5

List of Figures

Figure 1-1	Alignment of Kowloon Southern Link
Figure 2-1	Locations of Noise Monitoring at Hong Kong Space Museum
Figure 2-2	Locations of Noise Monitoring at Hong Kong Cultural Centre
Figure 2-3	Location of Noise Monitoring at Royal Pacific Hotel
Figure 2-4	Location of Noise Monitoring at Park Avenue
Figure 3-1	Recorded Noise Levels in L_{Amax} at HKSM – Planetarium
Figure 3-2	Recorded Noise Levels in L_{Amax} at HKSM - Recording room
Figure 3-3	Recorded Noise Levels in L_{Amax} at HKCC - Studio Theatre
Figure 3-4	Recorded Noise Levels in L_{Amax} at HKCC - Concert Hall
Figure 3-5	Recorded Noise Levels in L_{Amax} at HKCC - Grand Theatre

List of Appendix

Appendix A	Train Schedule
------------	----------------

1 INTRODUCTION

1.1 Background

- 1.1.1 AECOM Asia Company Ltd (AACL) was commissioned by MTR Corporation Limited to carry out a groundborne noise performance test at designated Noise Sensitive Receivers (NSRs) during the trial run of Kowloon Southern Link (KSL). The alignment of the KSL is shown in Figure 1-1.
- 1.1.2 A Groundborne Noise Performance Test Proposal has been approved by the Environmental Protection Department. Noise monitoring was performed in accordance with the approved proposal.
- 1.1.3 This report presents the groundborne noise monitoring results and assesses the noise performance during the trial runs of KSL to the NSRs.

1.2 Legislation and Standards

- 1.2.1 With reference to the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (TM-Places) under the Noise Control Ordinance (NCO), the criteria for noise transmitted primarily through the structural elements of the building or buildings will be 10dB(A) less than the relevant acceptable noise level (ANL). These criteria apply to all kinds of use from domestic premises to performing arts centres.
- 1.2.2 According to the TM-Places, the groundborne noise standard for Hong Kong Cultural Centre (HKCC) and Hong Kong Space Museum (HKSM) is $L_{Aeq(30min)}$ 55dB(A) during general operational periods. Given the nature of activities held at HKCC and HKSM, a more stringent design goal for these facilities was suggested in the EIA Report of the KSL Project. Groundborne noise limit of L_{Amax} 25dB(A) is proposed for the Grand Theatre, Studio Theatre, Concert Hall of HKCC and Planetarium, Recording Room of HKSM following the latest guidance manual "Transit Noise and Vibration Impact Assessment" 1995 issued by the Federal Transit Administration (FTA), US Department of Transportation.
- 1.2.3 The operational groundborne noise criteria in the EIA report are tabulated in Table 1-1 below.

Table 1-1 Operational groundborne noise criteria for HKCC, HKSM, schools, hotel guestrooms and domestic premises

Noise Sensitive Receiver Description	Groundborne Noise Criteria, dB(A)	
	Day & Evening (0700 to 2300 hrs)	Night (2300 to 0700 hrs)
HKCC - Grand Theatre, Studio Theatre, Concert Hall	25 (L_{Amax}) ^[1]	_ ^[2]
HKSM - Planetarium, Recording Room	25 (L_{Amax}) ^[1]	_ ^[2]
School – Classrooms	55 ($L_{Aeq 30 min}$)	_ ^[2]
Hotel guestrooms along Canton Road & Salisbury Road	55 ($L_{Aeq 30 min}$)	45 ($L_{Aeq 30 min}$)
Domestic premises along Canton Road	55 ($L_{Aeq 30 min}$)	45 ($L_{Aeq 30 min}$)

Note:

[1] For HKSM and HKCC, the 25dB(A) criterion is based on FTA guidance manual. It is maximum rms average over a 1 second period.

[2] No sensitive uses during these periods.

2 GROUNDBORNE NOISE MONITORING

2.1 Monitoring Locations

2.1.1 In accordance with the approved proposal, noise monitoring was conducted at the following NSRs:

- Hong Kong Space Museum
 - Planetarium
 - Recording room
- Hong Kong Cultural Centre
 - Studio Theatre
 - Concert Hall
 - Grand Theatre
- Royal Pacific Hotel
- Park Avenue (Olympian City II)

Measurement was conducted in an indoor environment. A summary of actual monitoring locations is shown in Table 1-2 and the locations of the noise monitoring are also shown in Figures 2-1 to 2-6.

Table 2-1 Monitoring Locations at NSRs

NSR	Monitoring Locations
HKSM - Planetarium	Centre of the stage
HKSM - Recording room	Centre of the Recording Room
HKCC - Studio Theatre	Centre of the Studio Theatre
HKCC - Concert Hall	Centre of the stage
HKCC - Grand Theatre	Centre of the Grand Theatre
Royal Pacific Hotel	Centre of the Business Centre at the lobby floor
Park Avenue	Near the centre of Karaoke Room of Club House

2.2 Monitoring Parameters

2.2.1 The parameter for measuring noise impacts on Royal Pacific Hotel and Park Avenue (Olympian City II) was the 30 minutes A-weighted equivalent continuous sound pressure level ($L_{Aeq(30\text{ min})}$).

2.2.2 The parameter for measuring noise impacts on HKCC and HKSM was A-weighted sound pressure level L_{Amax} with 1 second interval were recorded for the five monitoring locations.

2.3 Noise Monitoring Equipment

2.3.1 In accordance with TM-Places, sound level meters in compliance with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications were used for carrying out the noise monitoring.

2.3.2 The equipment used for the measurement is summarised in Table 2-2 as below.

Table 2-2 Equipment list

Equipment	Model	Serial No.	Calibration Date
Sound Level Meter	B&K 2250 L	366	5 May 2009
Sound Level Meter	B&K 2250	244	5 November 2008
Sound Level Meter	B&K 2250	242	5 November 2008
Sound Level Meter	B&K 2238	2255680	11 July 2008
Sound Level Meter	B&K 2238	2255677	11 July 2008
Sound Level Meter	B&K 2238	2255687	19 August 2008
Sound Level Meter	B&K 2238	2285692	27 October 2008
Calibrator	B&K 4321	1790985	11 July 2008
Calibrator	B&K 4321	1850426	13 March 2009

2.3.3 Immediately prior to and following each noise measurement, the accuracy of each sound level meter was checked using an acoustic calibrator generating a known sound pressure level of 94 Hz at a known frequency of 1 kHz.

2.4 KSL Train Activity

2.4.1 The trial run of the KSL was carried out during the non-traffic hours of the East Rail Line and West Rail Line, i.e. during the period of 0240 to 0410.

2.4.2 During the trial run, SP1900 were running between Hung Hom Station and Nam Cheong Station (NAC) via East Tsim Sha Tsui (ETS) Station and Austin Station (AUS) at 3-minute headway, i.e. 20 trains per hour per direction, and the trains were unloaded and running at the design speeds during the trial runs which are same as those adopted in the EIA report. The train schedule is shown in Appendix A.

2.5 Groundborne Noise Monitoring

2.5.1 Noise monitoring was conducted on 11 and 16 May 2009 subject to the site condition and accessibility of the premises. It was aimed to conduct the monitoring at all the monitoring locations within the same premises on the same day. However, during setting up at the HKCC on 11 May 2009, it was noticed that some renovation works were being carried out in the Auditoria Building of the HKCC. The monitoring at the Concert Hall and the Grand Theatre located inside the Auditoria Building was conducted on 16 May 2009. While the Studio Theatre was not affected according to the site observation, the monitoring was carried out as planned on 11 May 2009. Nonetheless, the train schedule on both dates was the same.

2.5.2 Baseline noise monitoring was conducted before and after the trial run periods.

2.5.3 During baseline noise monitoring and groundborne noise monitoring, activities inside and in the vicinity of the rooms for measurement were kept to minimal as far as possible. Moreover, all doors of the rooms were closed in order to minimize disturbance to the measurement. Observations or conditions of monitoring locations are summarized in Table 2-3.

Table 2-3 Summary of the Observations or Conditions of Monitoring Locations

Monitoring Location	Observations or Conditions		
	Lighting	Doors	Air Conditioning System
HKSM - Planetarium	On	Closed	Off
HKSM - Recording room	On	Closed	Off
HKCC - Studio Theatre	Some was on	Closed	On*
HKCC - Concert Hall	On	Closed	On*
HKCC - Grand Theatre	On	Closed	Off

	Observations or Conditions		
Royal Pacific Hotel – Business Centre	Some was on	Closed	Off
Park Avenue - Karaoke Room	Off	Closed	Off

* Although the air conditioning system of HKCC – Studio Theatre and HKCC – Concert Hall were switched on during the noise monitoring, no noticeable noise was observed during setting up for the measurement and the analysis was not affected.

3 MEASUREMENT RESULTS

3.1 Royal Pacific Hotel & Park Avenue

3.1.1 The recorded baseline levels and noise levels during trial runs in $L_{Aeq(30min)}$ at Royal Pacific Hotel and Park Avenue and predicted noise levels in EIA are shown in Table 3-1.

Table 3-1 Baseline and Impact Noise Levels at Hotel & Residential Premises

Monitoring Locations	Date	Baseline		Impact		EIA Prediction*
		$L_{Aeq(30min)}$	Period	$L_{Aeq(30min)}$	Period	$L_{Aeq(30min)}$
Royal Pacific Hotel	11 May 2009	35.1	0130 -0200	34.7	0245 - 0315	N/A
		34.9	0410 - 0440	35.7	0315 - 0345	N/A
Park Avenue	16 May 2009	29.6	0130 -0200	21.5	0245 - 0315	<35
		25.0	0410 - 0440	25.1	0315 - 0345	<35

3.2 HKCC & HKSM

3.2.1 The recorded baseline levels and noise levels during trial runs in L_{Amax} at the monitoring locations at HKCC and HKSM and predicted noise levels in EIA are shown in Table 3-2.

Table 3-2 Baseline and Impact Noise Levels at HKCC & HKSM

Monitoring Locations	Date	Baseline		Impact		EIA Prediction
		L_{Amax} Range	Period	L_{Amax} Range	Period	L_{Amax}
HKSM - Planetarium	11 May 2009	24.7 – 36.3	0130-0240 0410-0430	24.7 – 36.3	0240 – 0410	<15
HKSM - Recording Room	11 May 2009	26.2 – 53.4	0130-0240	25.7 – 60.9	0240 – 0353*	<15
HKCC - Studio Theatre	11 May 2009	23.1 – 43.5	0130-0240 0410-0440	22.8 – 47.5	0240 – 0410	<15
HKCC - Concert Hall	16 May 2009	27.1 – 41.0	0130-0240 0410-0440	27.2 – 36.6	0240 – 0410	<15
HKCC - Grand Theatre	16 May 2009	27.0 – 48.7	0130-0240 0410-0440	27.0 – 32.2	0240 – 0410	<15

* Owing to running down of sound level meter battery, the measurement ceased at 03:53. Despite that the measurement did not last to the completion of trial run and no baseline noise monitoring was conducted after the trial run periods at Recording Room of HKSM, the recorded data is considered to be sufficient for the analysis.

3.2.2 The recorded levels in L_{Amax} at 1 second interval are plotted against measurement time and the train passbys were marked in the graphs as shown in Figures 3-1, 3-2, 3-3, 3-4 & 3-5.

4 DISCUSSION

- 4.1.1 Based on the train schedule, it was observed that the trains were running at 20 trains per hour per direction. To project the scenario of the maximum frequency of 34 trains per hour in each direction as assumed in the approved EIA report, a correction factor of +2.3 dB(A) (i.e. $10 \log(34/20)$) will be considered for the $L_{Aeq(30min)}$ noise levels for Royal Pacific Hotel and Park Avenue. The frequency of trains will not affect the L_{Amax} of train noise, thus, it will not affect the measurement results for the HKSM and HKCC.
- 4.1.2 Table 3-1 shows that the noise levels recorded at Royal Pacific Hotel and Park Avenue during trial runs were approximately the same as the baseline levels. That is the train passby noise levels are not distinguishable at these two monitoring locations with an $L_{Aeq(30min)}$ of 35 dB(A) and 25 dB(A) respectively. The groundborne noise level during train passbys is therefore at least 10 dB(A) lower than the background noise and was estimated to be of maximum of 25 dB(A) and 15 dB(A) respectively. Taking into account the correction factor of +2.3 dB(A), the noise levels due to train services at Royal Pacific Hotel and Park Avenue were still below the noise criteria of 45 dB(A) $L_{Aeq(30min)}$.
- 4.1.3 From Table 3-2 and Figure 3-1, the fluctuation of noise levels in L_{Amax} recorded at HKSM - Planetarium during the whole period of trial runs is similar to the noise levels recorded during the baseline period. Moreover, no noticeable noise caused by the train passbys was observed during the trial run. Hence, the operation of KSL does not cause any impact on HKSM – Planetarium.
- 4.1.4 From Table 3-2, Figure 3-2, several discrete peaks of L_{Amax} likely to be caused by isolated human activities were observed at HKSM – Recording Room. However, the peaks do not match the time of trains passing the monitoring location. Moreover, no noticeable noise caused by the train passbys was observed during the trial run. Hence, the operation of KSL does not cause any impact on HKSM – Recording Room.
- 4.1.5 From Table 3-2, Figure 3-3, several discrete peaks of L_{Amax} were observed at HKCC - Studio Theatre. The peaks do not match the time of trains passing the monitoring location. It is suspected that the peaks might be caused by the air ventilation or building services systems. Moreover, no noticeable noise caused by the train passbys was observed during the trial run. Hence, the operation of KSL does not cause any impact on HKCC - Studio Theatre.
- 4.1.6 From Table 3-2, Figure 3-4, several discrete peaks of L_{Amax} were observed at HKCC - Concert Hall. However, the peaks do not match the time of trains passing the monitoring location. Moreover, no noticeable noise caused by the train passbys was observed during the trial run. Hence, the operation of KSL does not cause any impact on HKCC - Concert Hall.
- 4.1.7 During the noise measurement conducted at HKCC – Grand Theatre, the screen of the stage was open and noise from the back stage in particular noise from the small ventilation fans of a switch box was affecting the noise measurement. From Table 3-2, Figure 3-5, several discrete peaks of L_{Amax} were observed at HKCC – Grand Theatre. However, the peaks do not match the time of trains passing the monitoring location. Moreover, no noticeable noise caused by the train passbys was observed during the trial run. Hence, the operation of KSL does not cause any impact on HKCC – Grand Theatre.

4.1.8 It could be assumed for the worse scenario that no double-passbys were occurring during the trial run. Even so, the recorded noise levels were so low (non-detectable) that the groundborne noise impact due to double-passby would not pose any adverse impacts. Also, as the recorded noise levels were so low that the noise impact would be of no difference for loaded or unloaded trains.

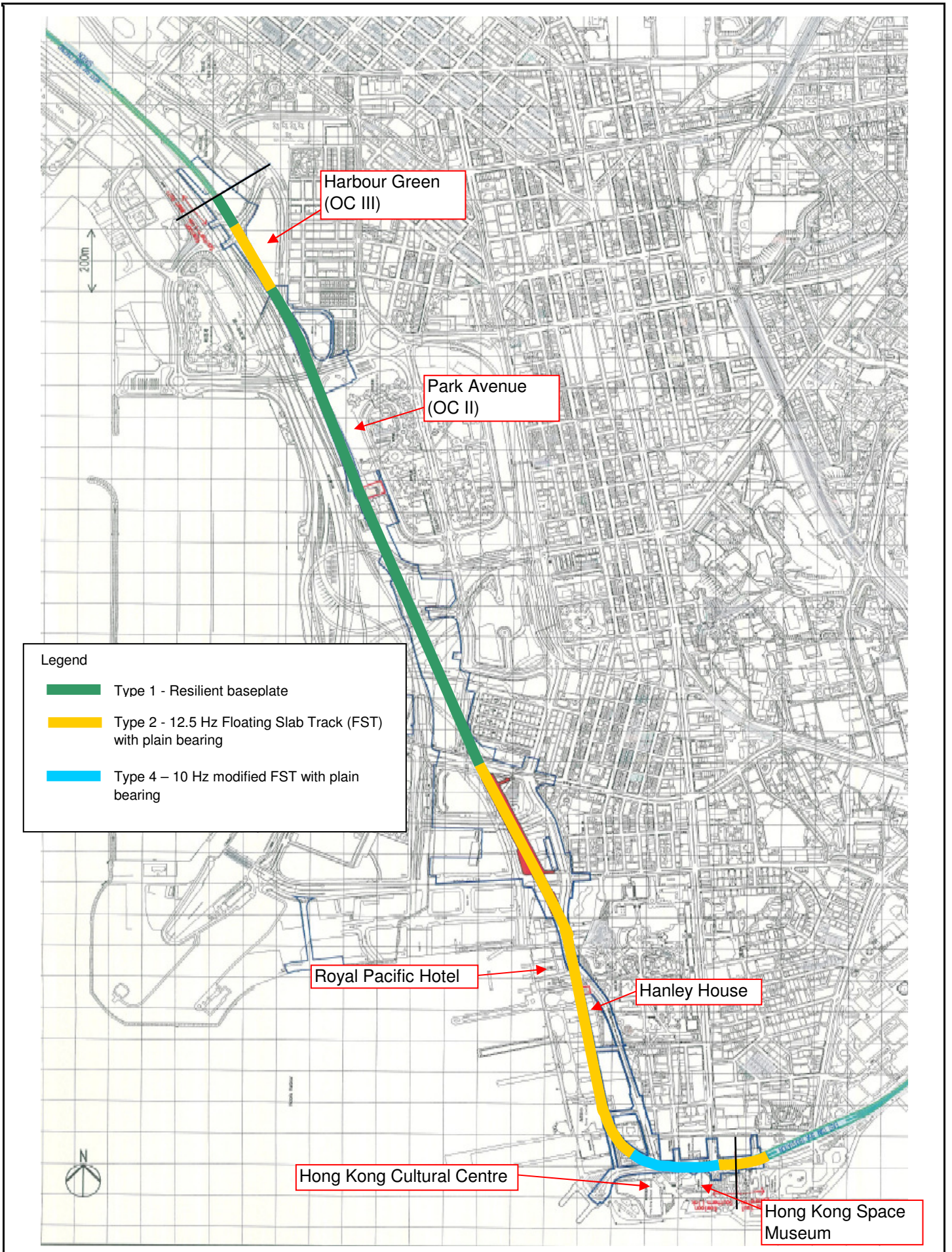
4.1.9 The trains were running regularly along the KSL section for commissioning test since rail grinding was performed only once upon completion of track laying. Wheel/rail roughness was expected and the measured noise levels would represent the real operation conditions.

5 CONCLUSION

5.1.1 As discussed in Section 4, no noticeable noise caused by the train passbys was observed at all monitoring locations, including HKCC and HKSM during the trial run and the noise levels recorded at Royal Pacific Hotel and Park Avenue during the whole period of trial runs were lower than the noise criteria of 45 dB(A).

5.1.2 The monitoring results illustrated the real-life situation of running condition of train (the planned speed and the actual noise induced by wheel/rail condition). It is concluded that the measurement can represent the effect due to the operation of KSL and the operational groundborne noise criteria in the EIA report are met.

FIGURES



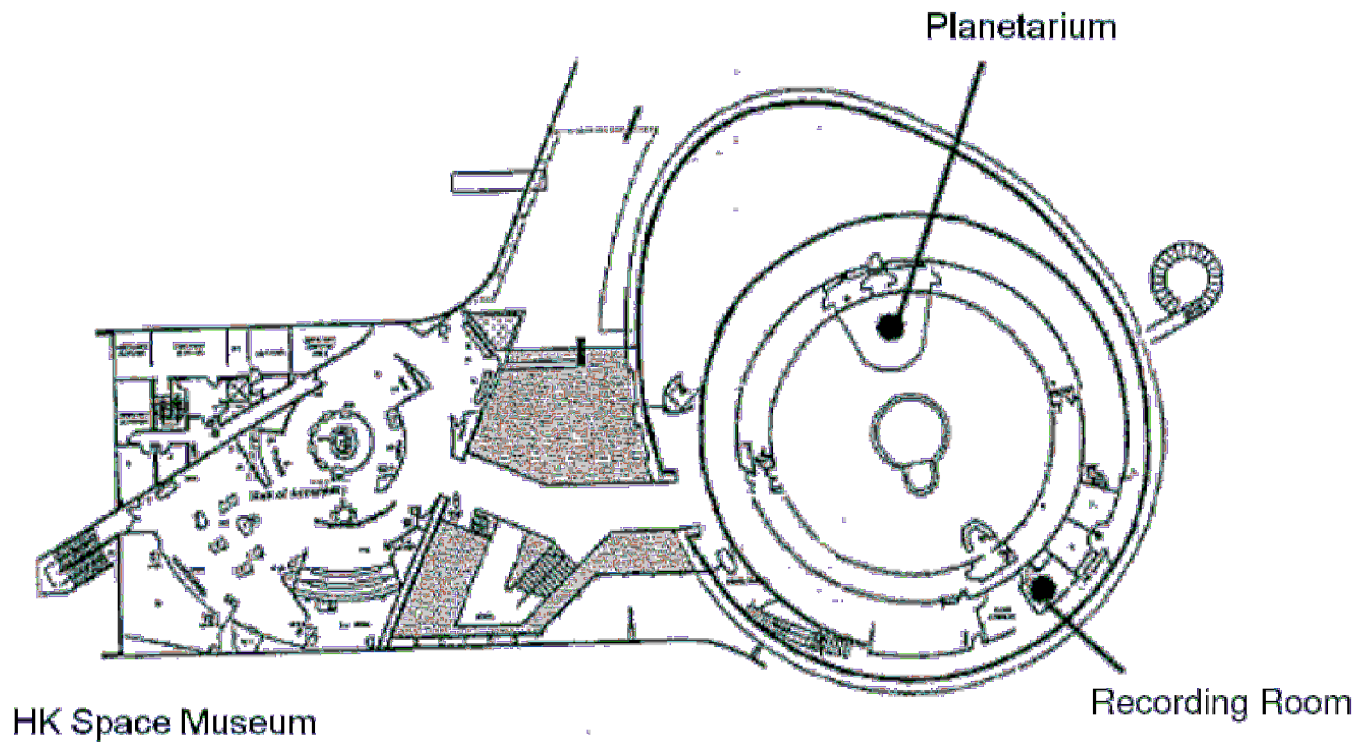
Legend

- Type 1 - Resilient baseplate
- Type 2 - 12.5 Hz Floating Slab Track (FST) with plain bearing
- Type 4 - 10 Hz modified FST with plain bearing



Alignment of Kowloon Southern Link

SCALE	N.T.S.	DATE	MAY 2009
CHECK		DRAWN	
JOB NO.	60016779	FIGURE 1-1	Rev -



HK Space Museum

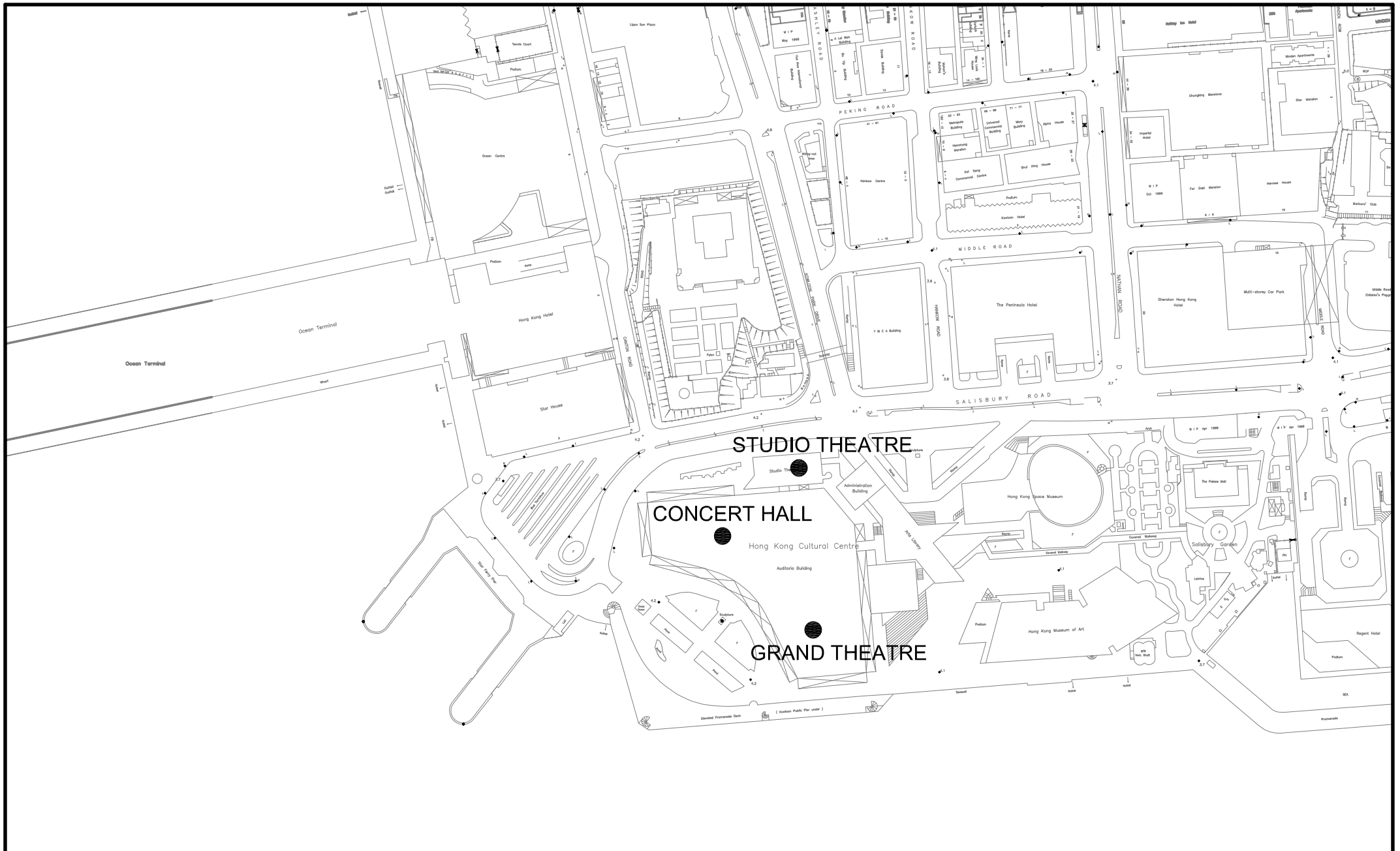
Planetarium

Recording Room

AECOM

LOCATIONS OF NOISE MONITORING AT HONG KONG SPACE MUSEUM

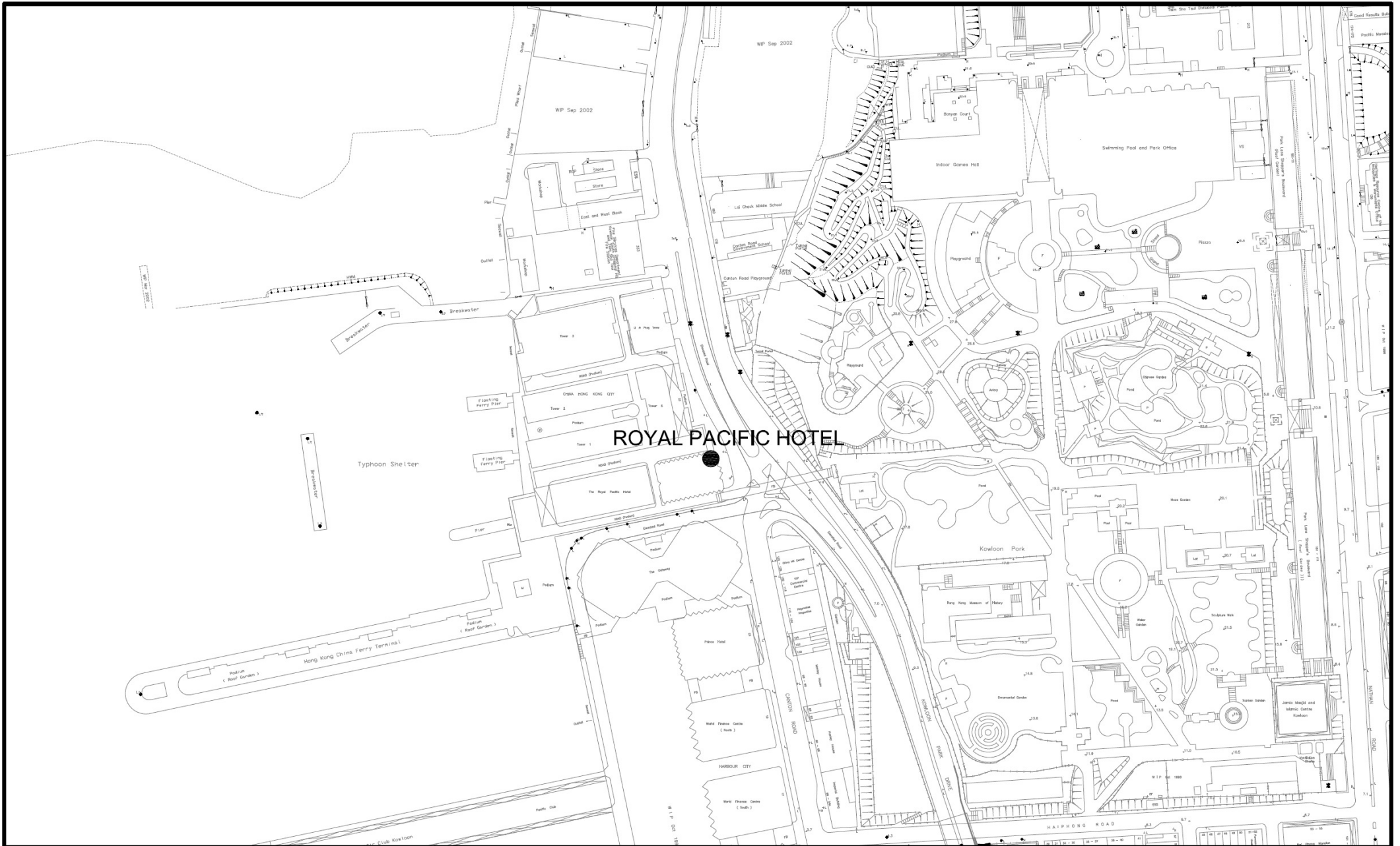
SCALE	N.T.S.	DATE	MAY 2009
CHECK	JCHL	DRAWN	LLMC
JOB No.	60016779	FIGURE 2-1	REV -



AECOM

LOCATIONS OF NOISE MONITORING AT HONG KONG CULTURAL CENTRE

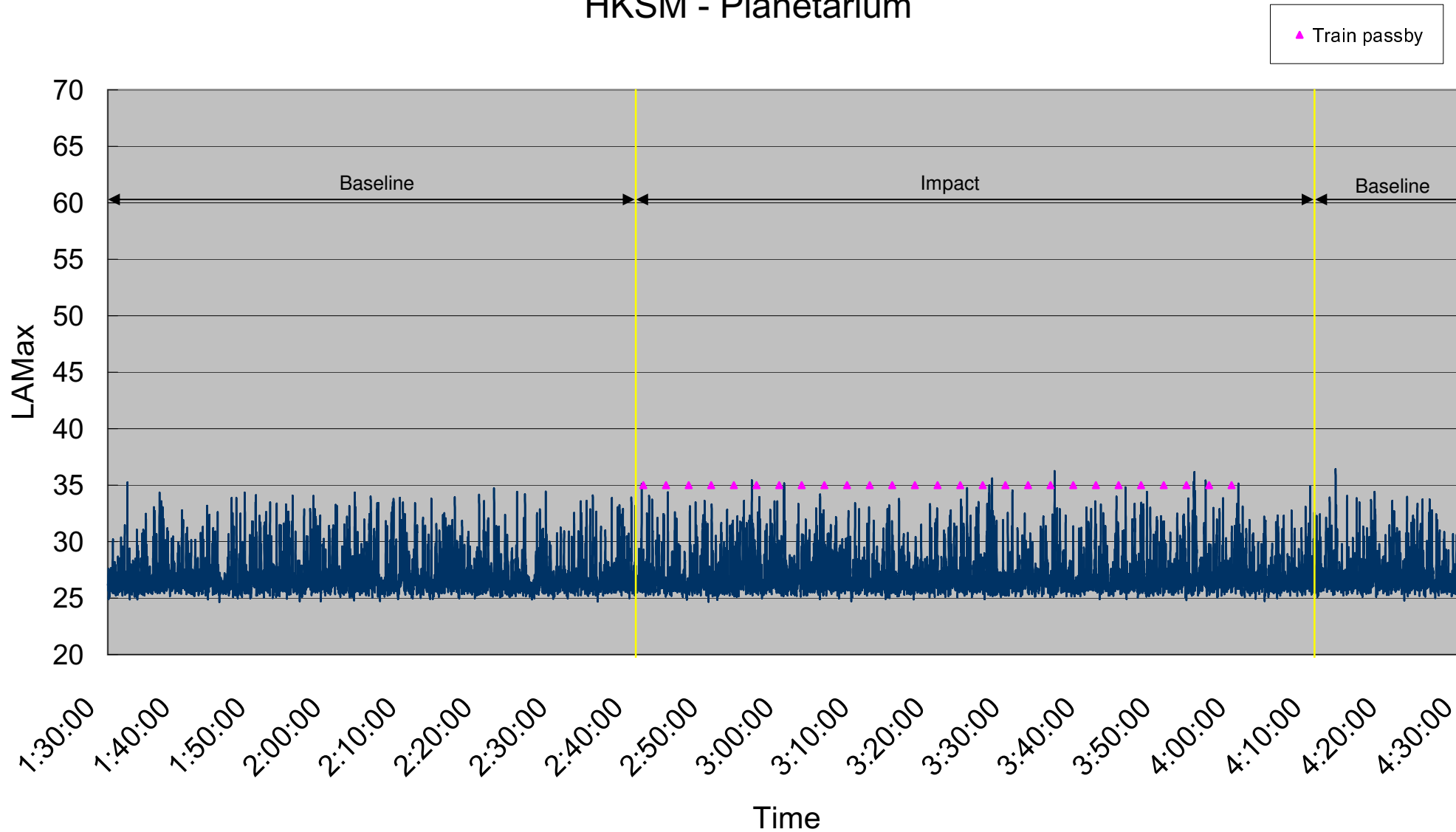
SCALE	1 : 3000 A4	DATE	MAY 2009
CHECK	JCHL	DRAWN	LLMC
JOB No.	60016779	FIGURE 2-2	REV —



LOCATION OF NOISE MONITORING AT ROYAL PACIFIC HOTEL

SCALE	1 : 3000 A4	DATE	MAY 2009
CHECK	JCHL	DRAWN	LLMC
JOB No.	60016779	Figure 2-3	REV -

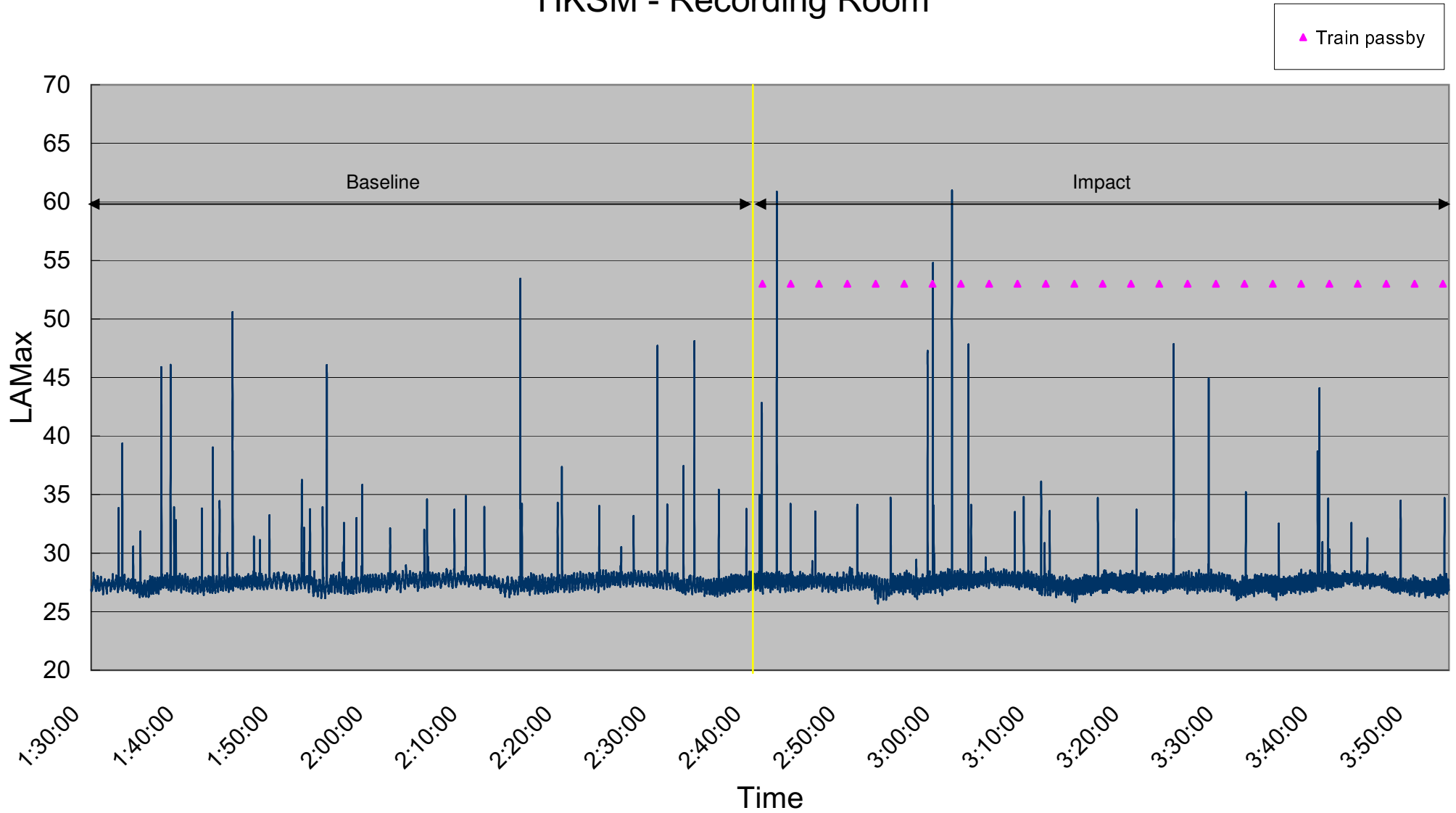
HKSM - Planetarium



Recorded LAMax at HKSM - Planetarium

SCALE	N.T.S.	DATE	May-09
CHECK	JLCH	DRAWN	RWHW
JOB NO.	60016779	FIGURE NO.	3-1
		REV	-

HKSM - Recording Room



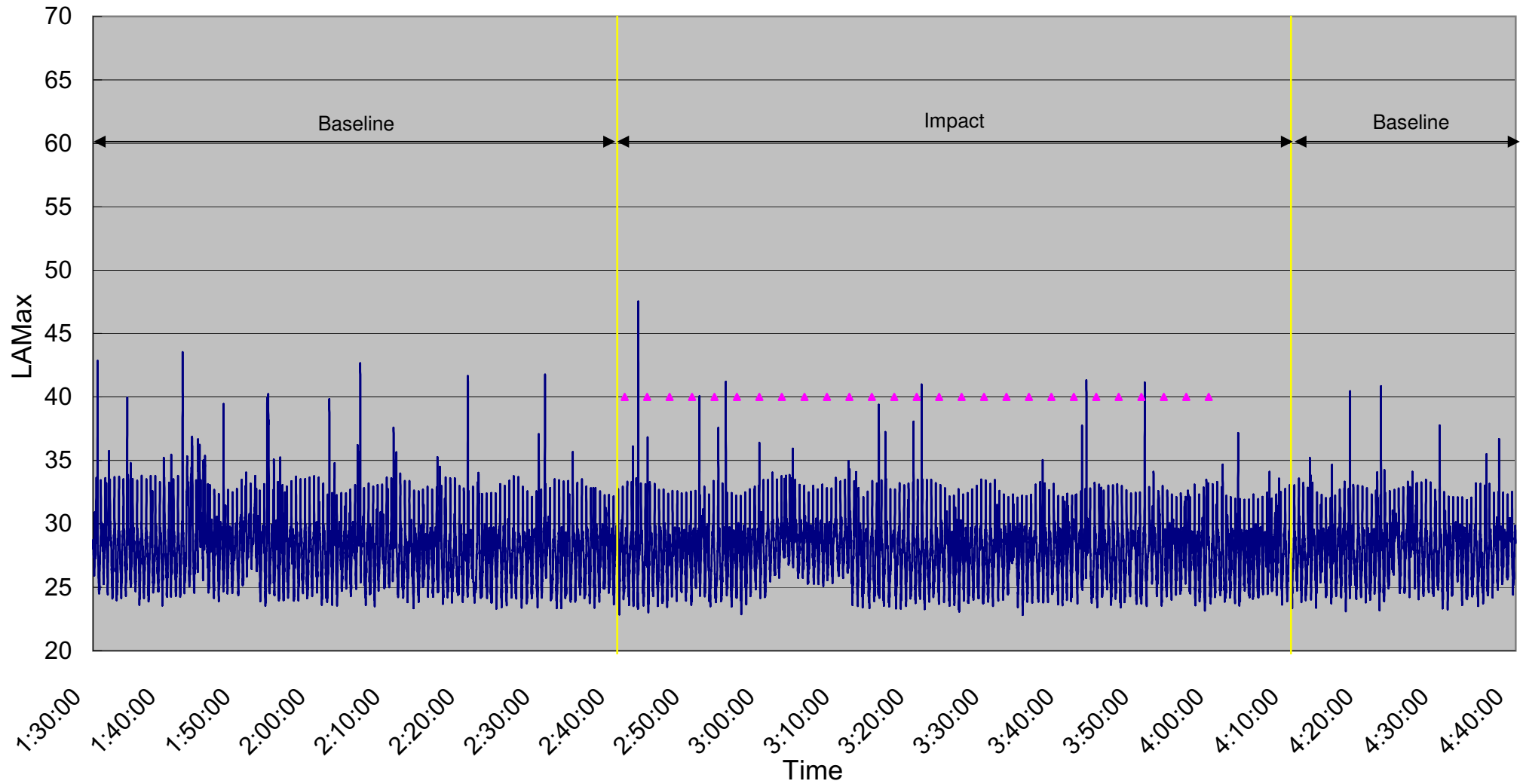
AECOM

Recorded L_{Amax} at HKSM - Recording Room

SCALE	N.T.S.	DATE	May-09	
CHECK	JLCH	DRAWN	RWHW	
JOB NO.	60016779	FIGURE NO.	3-2	REV -

HKCC - Studio Theatre

▲ Train passby

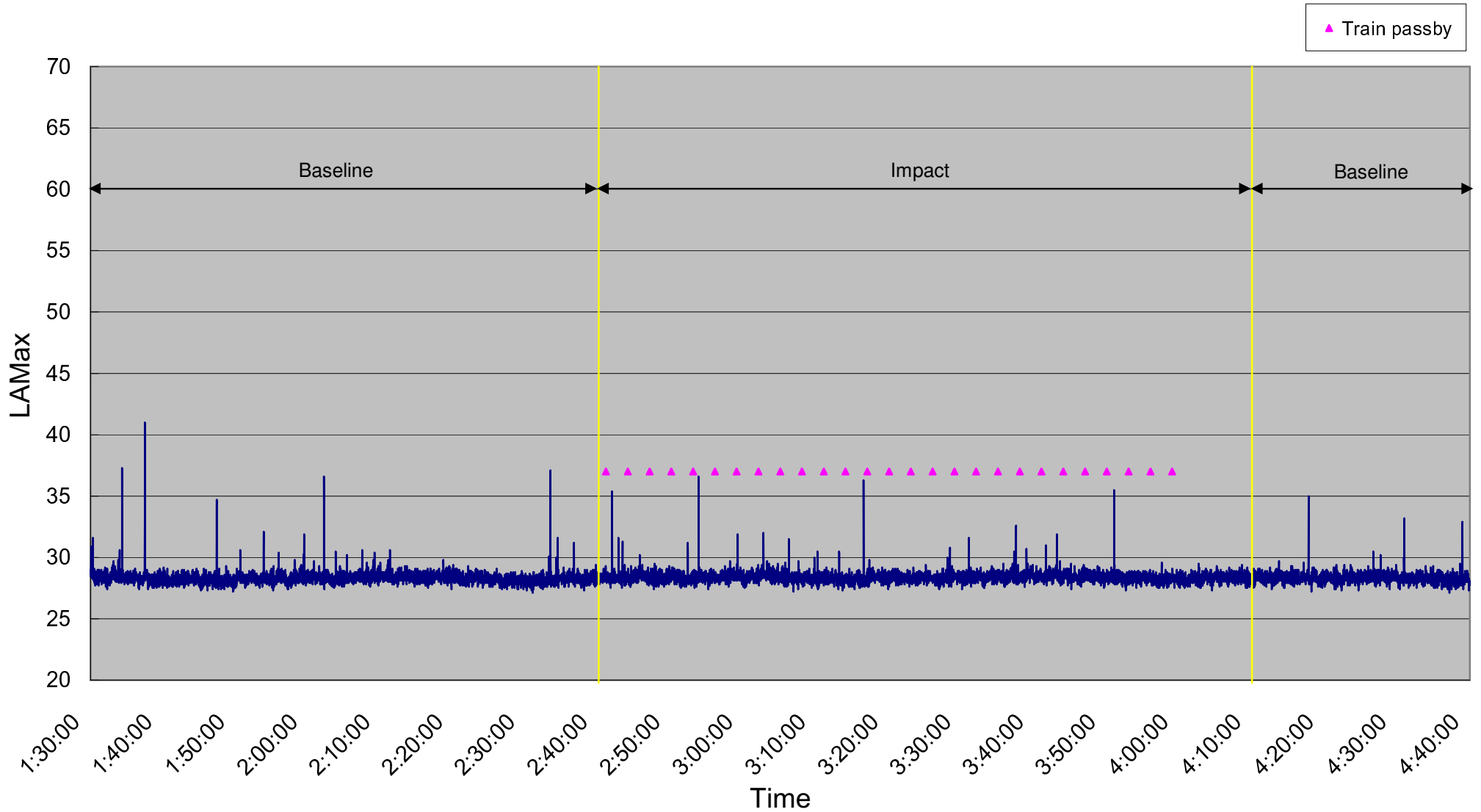


AECOM

Recorded LAMax at HKCC - Studio Theatre

SCALE	N.T.S.	DATE	May-09
CHECK	JLCH	DRAWN	RWHW
JOB NO.	60016779	FIGURE NO.	3-3
		REV	-

HKCC - Concert Hall

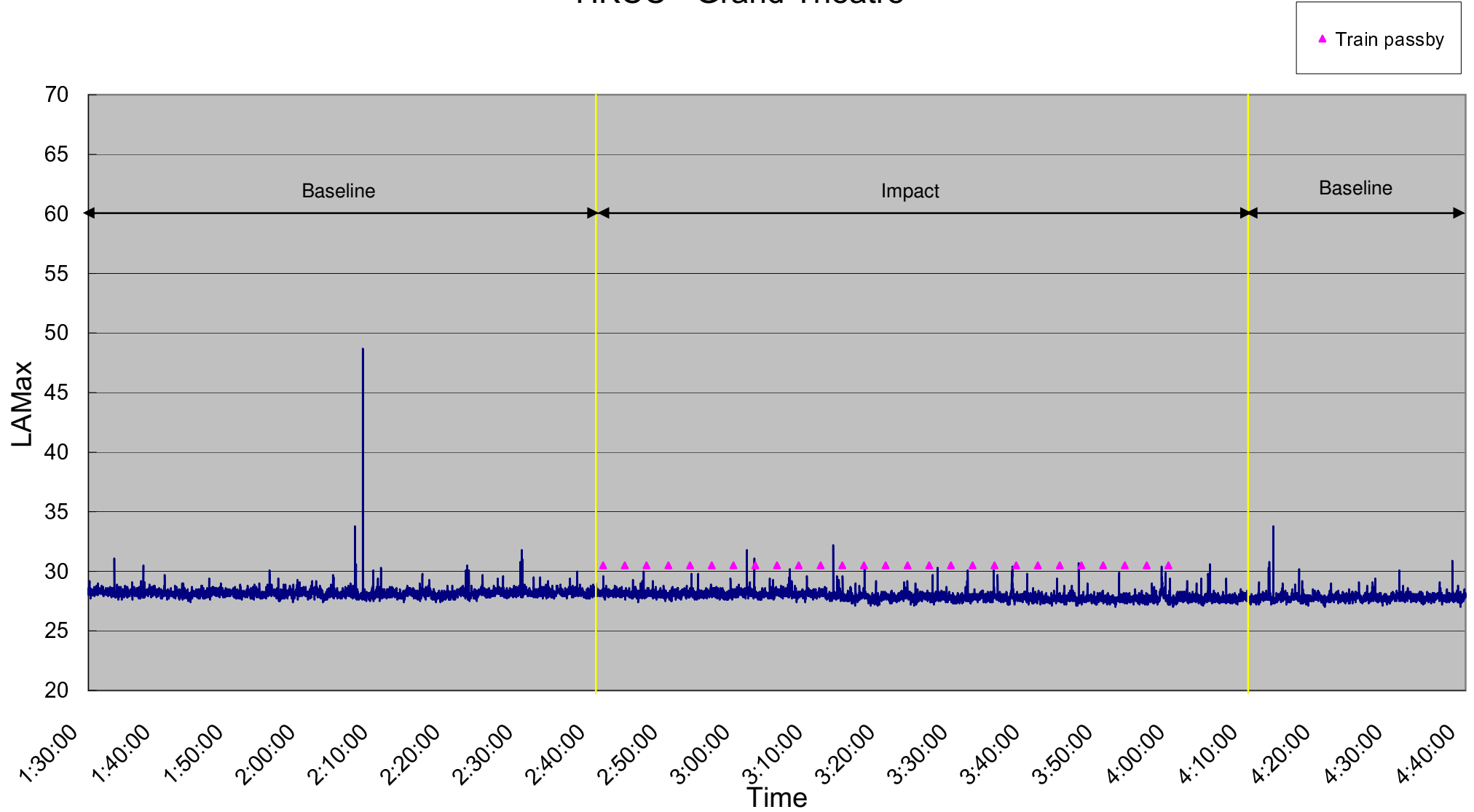


AECOM

Recorded LAMax at HKCC - Concert Hall

SCALE	N.T.S.	DATE	May-09
CHECK	JLCH	DRAWN	RWHW
JOB NO.	60016779	FIGURE NO.	3-4
		REV	-

HKCC - Grand Theatre



AECOM

Recorded LMax at HKCC - Grand Theatre

SCALE	N.T.S.	DATE	May-09	
CHECK	JLCH	DRAWN	RWHW	
JOB NO.	60016779	FIGURE NO.	3-5	REV -

APPENDIX A

Train Schedule

Appendix A - Train Schedule

Run	Up Train				
	HUH2	ETS1	AUS1	AUS1	NAC2
	Dep.	Dep.	Arr.	Dep.	Arr.
63				2:40:00	2:42:36
64		2:40:02	2:42:18	2:42:48	2:45:24
65	2:40:54	2:43:02	2:45:18	2:45:48	2:48:24
66	2:43:54	2:46:02	2:48:18	2:48:48	2:51:24
67	2:46:54	2:49:02	2:51:18	2:51:48	2:54:24
61	2:49:54	2:52:02	2:54:18	2:54:48	2:57:24
62	2:52:54	2:55:02	2:57:18	2:57:48	3:00:24
63	2:55:54	2:58:02	3:00:18	3:00:48	3:03:24
64	2:58:54	3:01:02	3:03:18	3:03:48	3:06:24
65	3:01:54	3:04:02	3:06:18	3:06:48	3:09:24
66	3:04:54	3:07:02	3:09:18	3:09:48	3:12:24
67	3:07:54	3:10:02	3:12:18	3:12:48	3:15:24
61	3:10:54	3:13:02	3:15:18	3:15:48	3:18:24
62	3:13:54	3:16:02	3:18:18	3:18:48	3:21:24
63	3:16:54	3:19:02	3:21:18	3:21:48	3:24:24
64	3:19:54	3:22:02	3:24:18	3:24:48	3:27:24
65	3:22:54	3:25:02	3:27:18	3:27:48	3:30:24
66	3:25:54	3:28:02	3:30:18	3:30:48	3:33:24
67	3:28:54	3:31:02	3:33:18	3:33:48	3:36:24
61	3:31:54	3:34:02	3:36:18	3:36:48	3:39:24
62	3:34:54	3:37:02	3:39:18	3:39:48	3:42:24
63	3:37:54	3:40:02	3:42:18	3:42:48	3:45:24
64	3:40:54	3:43:02	3:45:18	3:45:48	3:48:24
65	3:43:54	3:46:02	3:48:18	3:48:48	3:51:24
66	3:46:54	3:49:02	3:51:18	3:51:48	3:54:24
67	3:49:54	3:52:02	3:54:18	3:54:48	3:57:24
61	3:52:54	3:55:02	3:57:18	3:57:48	
62	3:55:54	3:58:02	4:00:18	4:00:48	
63	3:58:54	4:01:02	4:03:18	4:03:48	
64	4:01:54	4:04:02	4:06:18	4:06:48	
65	4:04:54	4:07:02	4:09:18		

Run	Down Train				
	NAC2	AUS2	AUS2	ETS2	HUH2
	Dep.	Arr.	Dep.	Dep.	Arr.
67				2:42:42	2:44:09
61	2:40:00	2:42:34	2:43:04	2:45:42	2:47:09
62	2:43:00	2:45:34	2:46:04	2:48:42	2:50:09
63	2:46:00	2:48:34	2:49:04	2:51:42	2:53:09
64	2:49:00	2:51:34	2:52:04	2:54:42	2:56:09
65	2:52:00	2:54:34	2:55:04	2:57:42	2:59:09
66	2:55:00	2:57:34	2:58:04	3:00:42	3:02:09
67	2:58:00	3:00:34	3:01:04	3:03:42	3:05:09
61	3:01:00	3:03:34	3:04:04	3:06:42	3:08:09
62	3:04:00	3:06:34	3:07:04	3:09:42	3:11:09
63	3:07:00	3:09:34	3:10:04	3:12:42	3:14:09
64	3:10:00	3:12:34	3:13:04	3:15:42	3:17:09
65	3:13:00	3:15:34	3:16:04	3:18:42	3:20:09
66	3:16:00	3:18:34	3:19:04	3:21:42	3:23:09
67	3:19:00	3:21:34	3:22:04	3:24:42	3:26:09
61	3:22:00	3:24:34	3:25:04	3:27:42	3:29:09
62	3:25:00	3:27:34	3:28:04	3:30:42	3:32:09
63	3:28:00	3:30:34	3:31:04	3:33:42	3:35:09
64	3:31:00	3:33:34	3:34:04	3:36:42	3:38:09
65	3:34:00	3:36:34	3:37:04	3:39:42	3:41:09
66	3:37:00	3:39:34	3:40:04	3:42:42	3:44:09
67	3:40:00	3:42:34	3:43:04	3:45:42	3:47:09
61	3:43:00	3:45:34	3:46:04	3:48:42	3:50:09
62	3:46:00	3:48:34	3:49:04	3:51:42	3:53:09
63	3:49:00	3:51:34	3:52:04	3:54:42	3:56:09
64	3:52:00	3:54:34	3:55:04	3:57:42	3:59:09
65	3:55:00	3:57:34	3:58:04	4:00:42	4:02:09
66	3:58:00	4:00:34			
67	4:01:00				