Senate Finance and Public Administration Legislation Committee —Budget Estimates Hearing—May 2011

Answers to Questions on Notice

Parliamentary departments, Department of Parliamentary Services

Topic:	**Disability Access**
Question:	**21**
Hansard reference	**F&PA p.18 , 23 May 2011**

Date set by the committee for the return of answer: 8 July 2011

Senator FIFIELD: Could I ask whether the committee could be provided with a copy of the CRS work that is being undertaken on accessibility issues?
Mr Thompson: I believe we could provide the earlier report into that—the April 2009 report.
Senator FIFIELD: If there are any other documents that relate to accessibility in the building, consultants reports that you have commissioned or are to hand since that date, that would also be useful.

Answer

1 Copies of consultants' reports provided.

(a) CRS Australia—Functional Access Assessment of Parliament House (January 2009) (**Attachment A**);
[Note: this report is Commercial-in-Confidence. Just the Table of Contents, the Introduction, and the Summary & Conclusions are provided in Attachment A]

Attachment A: CRS PH assess C-in-C rpt J

(b) CRS Australia—Supplementary Report into Access Options for the Senate and House of Representatives Chambers (April 2009) (**Attachment B**);

Attachment B - CRS Australia—Supplemer

(c) Morris-Goding Accessibility Consulting—DRAFT Accessibility Review of Parliament House (May 2011) (**Attachment C**);

Attachment C - Morris-Goding Access

(d) DPS Audio Frequency Induction Loop Audit (February 2009) (**Attachment D**);

Attachment D - Audio Frequency Indu

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INTRODUCTION

This report is a functional access assessment rather than an access audit. The following comments apply:

- The report makes reference to the Building Code of Australia (BCA) but the assessment is not of either a new building nor new building works
- Reference is made to Disability Discrimination Act (DDA) requirements with awareness that application has to be within the guidelines of “reasonable and practicable”
- Judgements of reasonable and practicable are made with reference to Commonwealth Government OHS Legislation and the requirements for the application of risk and hazard mitigation processes.
- The “users” being considered potentially include the staff working within Parliament House; the Members of the Houses of Parliament; their staff; contractors providing services to all users such as catering and cleaning, café, bank, florist, travel agent, Post Office and members of the public including those who come to visit publicly accessible areas of the building; those who attend other areas of the building as guests of Senators, Members or staff; and those attending private functions
- The definition and understanding of ‘reasonable and practicable’ access to a disabled individual is likely to vary with the level of autonomy and control each person has within their use of the building; their ability to manage disability requirements, and their expectations of access and services
- The functional expectation underlying the assessment is that both disabled individuals who perform most activities independently, (able to arrive at, enter and use the House facilities by themselves), and those persons who require the assistance of a carer (assisting them to undertake some activities) are considered
- The report is not intended to provide an audit of building related regulations or legislation but aims to provide practical advice regarding improving access to the Parliament House-user interface for all those users with disabilities. It is noted that section D3.4 of the Deemed to Satisfy Provisions of the BCA for access for people with disabilities do not require access to more than 30% of the public space in restaurants, function rooms or the like; or any area if access would be inappropriate because of the particular purpose for which the area is used
- Fundamental to the risk assessment of desirable levels of access level is consideration and understanding of the need for both a high level of security required in a public building of such importance, and the inherent and fundamentally challenging demands balancing the demands related to maintaining building design integrity
- Additionally this risk assessment recognises the consideration of the need to also balance the public’s need for access to their Parliament House while protecting and supporting those who carry out work activities within the building

SUMMARY & CONCLUSION

A Functional Access Audit of Parliament House was undertaken involving on-site assessment, measurement and liaison with Parliamentary Services management.

In general, there is evidence of high level intention and planning to accommodate persons with disabilities within the Parliament house complex, but some anomalies and inconsistencies exist between different areas. There are some issues which are related to the inherent aesthetic design features of the building, which has been designed as an impressive National Capital building, rather than for accessibility.

There are four themes which have emerged and require addressing in degrees of urgency:

1) Safety issues - urgent and important.

Given the many different levels within the complex, one of the most urgent issues is ensuring that barrier heights are adequate. The balustrade on the outer edge of Queens Terrace poses a public safety hazard due to the low height (860mm) of the barrier where the viewing step is located. Also, on Viewing area to the Great Hall, level 1, there is a danger of serious injury to a wheelchair occupant due to the lack of a barrier at ground level. Other urgent items are the replacement of towel rails in the disabled toilets with weight-bearing grab-rails, and the provision of emergency call buttons in the disabled toilets in the car park area.

In general, the second most immediate items which should be addressed are the fall hazards, such as non-fixed mats, small lips or ledges, which have the capacity to cause significant injury to all members of the public, and should therefore be eliminated as far as reasonably practicable. In some cases however, this may be difficult, given the importance of the design aesthetic.

A third safety item is the re-timing of automatic doors to allow safe egress and ingress by visitors with mobility issues.

2) Ergonomic Issues

These include design features such as very heavy doors, which are difficult to open for frail or mobility-impaired visitors, and thick carpet which is difficult for wheelchairs and people with wheeled mobility frames, children's strollers etc. There should be provision of seating for frail or mobility challenged visitors.

3) Accessibility issues

Issues here include access to telephones, heights of switches and mail boxes, signage for visually-challenged visitors, as well as car-park access. These issues vary considerably within the complex, and it is suggested that kerb accessibility, doors operation etc are standardised to be easily used by wheelchair users and other visitors with mobility issues.

4) Routine maintenance

A regular, planned program should be implemented to ensure that handrails are not loose, mats are safely located etc.

Attachment B

Australian Government
CRS Australia

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Bega NSW 2550
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ABN 65 281 415 387

Scott Radburn
Department of Parliamentary Services
PO Box 6000
Canberra ACT 2600

Dear Scott,

Thankyou for enquiring regarding access options for the Senate and House of Representatives chambers, in particular, for wheelchair users who are also Senators or Members. The following provides some options to assist.

Design limitations

The main barrier for wheelchair accessibility is the internal steps, and access to seats on the graduated levels in both chambers.

Options considered such as stair-climbers mounted on the walls of the House of Representatives would not only impact on design integrity, but would only allow access to the advisor's benches, not the members benches. Stair climbers mounted in aisles would present a trip hazard for ambulant members as well as blocking their egress in an emergency situation.

The benches themselves with armrests that do not fold out of the way are also a barrier for a person in a wheelchair attempting to transfer themselves, or be assisted to transfer. A person in a wheelchair transfers to their stronger side, and the double benches limit their position within the chamber. An extremely disabled person in an electric wheelchair may be able to get to a lower level using a stair-climber system or similar wheelchair platform, but without a hoist,

or other transferring system, they would not be able to access the benches and would need to stay positioned in an aisle-way, which would be a hazard to ambulant people in the event of an emergency evacuation. Even if a hoist were to be used to lift the person onto the bench (assuming arm-rests could be folded out of the way) they would be at risk in the event of an emergency evacuation.

Additionally, the gaps between the benches are between 500mm and 300mm when not a designated aisle-way, which is insufficient for wheelchair access.

Physical limitations

There are also a number of unknowns regarding the wheelchair user. For example, the variables include :

- unilateral weakness or full paralysis, such as a hemiplegia,
- upper limb weakness or paralysis as in quadriplegia,
- some lower limb mobility or none at all,
- ability to independently transfer, or
- requiring an attendant and/or hoist, manual wheelchair user or electronic chair user etc.

Options

Access for a disabled parliamentarian is therefore likely to involve a compromise, as it must be acknowledged that without significant modification (i.e. redesign of both chambers to widen aisles, redesign benches, replace steps with ramps and platforms) a wheelchair user cannot access every seat no matter what equipment is installed.

It is worth considering the issue of reasonable practicability. To amend the building fabric of Parliament House, and add hydraulic wheelchair ramps on each side of each chamber, would involve substantial cost and time to DPS.

If the potential cost is considered against the number of mobility-impaired parliamentarians over the last 20 years; the different preferences of people with respect to access; the possibility that more Members with mobility impairment will enter Federal Parliament; and the suitability of alternative solutions, it may be more practicable to implement a solution involving compromise.

There are a number of possible solutions which involve no change to the building fabric of Parliament House. These are shown at the Addendum. Two which may work for the majority of wheelchair users is a trolley unit (Scalamobil) which fits under the existing wheelchair, or the Hercules Personal Stair-climber (information attached). These have their own limitations, as they cannot be operated by the wheelchair user, necessitating an attendant. The lifting limit of 150kgs on the Scalamobil may also mean that it is not able to be used for electric wheelchairs and bariatric wheelchair users.

Another solution may be TopChair, a stair climbing wheelchair. It uses tracks to ride up and down stairs and obstacles without any help of fixed structure like a ramp, In most cases, TopChair can be used without an attendant. I am still ascertaining if TopChair is available within Australia.

Finally, it may be feasible to construct a movable stand-alone bench for each chamber in the same design as the other benches, which could be situated at the top level if suitable. This would allow the bench to be used on either side of the chamber, or along the curved areas to the rear of the chamber. If designed to accept a wheelchair, this would provide ease of access for a mobility-impaired Parliamentarian. It could be fitted with the same items that benches currently have, such as a microphone, pull-out writing platform, an attendant call-button, headphone jack, and a telephone to the member's suite. Further, it could be stored until such time as needed, and might not become obsolete over time in the same way that other solutions possibly could.

Please phone me if you wish to discuss this further.

Regards,

Mandy Richardson
Occupational Therapist
30/3/09

ADDENDUM

Hercules Complete Lifting Solutions Company specialises in solving your lifting problems.

We have distributors throughout Australia so please contact us about any of the products you see here.

We have a range of stairclimbing trolleys with the capability to carry over 1500kg up stairs, these trolleys save labour, injury, time, and money.

At last—its here! The revolutionary Hercules Personal Stairclimbers which can climb virtually any stairs—straight, curved, spirals, inside or out, and even on wet slippery surfaces.

It quickly packs up into 3 small pieces with the heaviest component weighing just 16kgs.

Hercules Complete Lifting Solutions

Level 1, 138 Silverwater Rd
SILVERWATER NSW 2128
AUSTRALIA

Ph: +61 2 9684 2900 or Toll Fee on 1800 649 603

Fax:+61 2 9684 2966

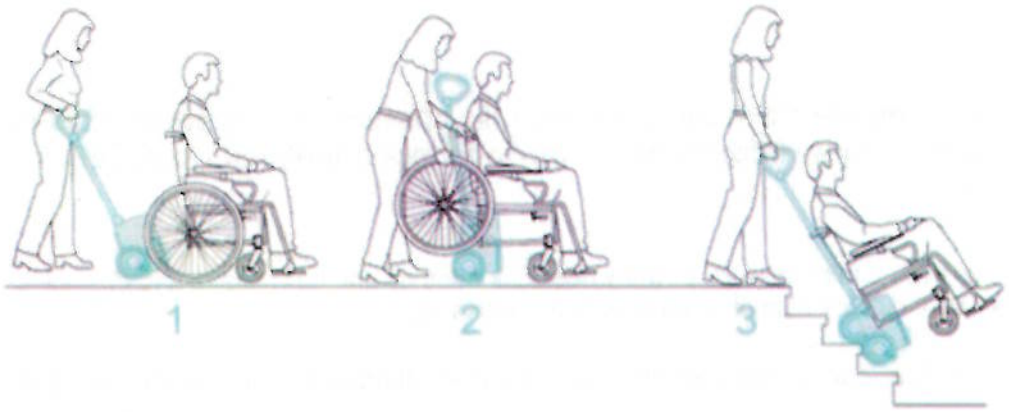
Scalamobil

The Scalamobil is a lightweight compact stairclimbing device for wheelchairs that easily manages even narrow and winding stairs. Scalamobil can be adapted to hundreds of brands of wheelchairs as well as to various aids for children. Together with our Scalachair X3 the Scalamobil is also useful for people who are not dependent on a wheelchair, but have problems with climbing stairs of all kinds. It is important to know that handling the Scalamobil does not call for physical strength. Due to its light weight and moderate dimensions, it is a device which is very easy to transport. Easily and quick dismantled it fits in the back of any vehicle.

More information....

- How the Scalamobil works...
- Standard wheelchair installation.....
- Scalamobil eliminates stairway problems.....
- Customised to your needs.....
- Practical when traveling.....
- Accessories...
- Scalaport X6
- Scalachair X3

SPECIFICATIONS FOR SCALAMOBIL		
E-Box	Batteries: Range: Operating elements:	2 x 12 volt, 3.4 Ah, leakage-proof and maintenance- free. Up to 300 steps (approx. 20 floors), depending on the weight of occupant. Single-step switching, climbing speed control.
Climbing Unit	Lifting capacity: Step height: Motor nominal output:	Maximum load (occupant plus chair) 120kg. Max. 20cm step height (with the Scalamobil S27SE height increases to 25cm), minimum step depth11cm. 176 Watt, climbing speed, controllable in 6-16 steps/min.
Handle	Operating elements:	On/Off switch, battery indication, lateral adjustment of the handles. Toggle up/down down switch for climbing stairs.
Battery Charger		With electronic charging and automatic switch-off mechanism.
Weight:	Total weight: Stair climbing unit: Handgrip unit:	24.5kg 19.3kg 5.2kg
Accessories:	Attachment for wheelchair	Head-rest Safety belt Scalaport X6 Scalachair X3 Voltage transformer for charging the battery in the car.


1
2
3

TopChair® , the stair climbing wheelchair, creates new opportunities for people with mobility impairments : move independently at home, at work or outside.

Thanks to its tracks, this high-tech power wheelchair rides up and down stairs and obstacles on your way without any help of fixed structure like a ramp..

You can drive TopChair on your own. In most of the cases there is no need for an attendant.

TopChair® is an innovative combination of:

- 4 wheels, including two powered rear wheels, to move on flat terrain,
- 2 rubber tracks to ride across steps, curbs and obstacles.
- a high performance microprocessor for optimal security and ease of driving.

Switching from « flat mode » to « step mode » is just a press of a button.

TopChair® is the only existing wheelchair able to go up or down a 20 cm high step.

TopChair® has a range of more than to 300 steps on a single battery charge.

The embedded system controls permanently the seat and the chassis tilt. It maintains the seat horizontal automatically.

Attachment C

DEPARTMENT OF PARLIAMENTARY SERVICES

PARLIAMENT HOUSE, CANBERRA

ACCESSIBILITY REVIEW

Morris-Goding Accessibility Consulting

DRAFT

6th May 2011

Prepared by:

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Eden Fong

Morris Goding Accessibility Consulting

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1. EXECUTIVE SUMMARY

The Access Review Report is a key element in the Disability Access and High Safety Project for Parliament House, Canberra, and an appropriate response to the AS1428 series, Building Code of Australia (BCA), and ultimately the Commonwealth Disability Discrimination Act (DDA).

Morris-Goding Accessibility Consulting has prepared the Access Report to provide advice and strategies to maximise reasonable provisions of access for people with disabilities.

The Report has sought to prioritise issues that have been previously identified so as to ensure the achievement, of equality, independence and functionality for people with a disability in a timely and efficacious manner.

The main recommendations that have arisen from the review include:

- Upgrade of the paths of travel, the taxi tank, and signage facilities in the main basement public car park area;
- Upgrade of some potential slip and trip hazards within the building;
- Continuing upgrade of accessible sanitary facilities to ensure that they are functional for people with a disability;
- Conducting investigations into possibilities for providing suitable doors along paths of travel;
- The immediate development and implementation of comprehensive staff management plans and procedures for the facilitation of non-discriminatory access to Parliament House and its facilities so as to ameliorate particular instances of *prima facie* non-compliance; and
- Conducting investigations into upgrading, over the longer term, the accessibility of the areas, facilities and amenities for Parliamentarians and visitors.

2. INTRODUCTION

2.1. General

The Department of Parliamentary Services of the Parliament of Australia has engaged Morris-Goding Accessibility Consulting to provide an access review of Parliament House, Canberra ACT 2600. The access review is an integral part of the Disability Access and Height Safety Project, which is being overseen by DPS.

The following Report has been made with reference to a site inspection which was conducted by Morris Goding in conjunction with Guida Moseley Brown Architects and the Department of Parliamentary Services itself on Monday, 18 April 2011.

The requirements for the Report are to identify and prioritise issues requiring action so as to ensure the provision in a timely and efficacious manner access for people with a disability which is safe, equitable, independent and functional.

The Report considers the building's user groups, including Parliamentarians, staff, visitors, and members of the public. The Report considers:

- People with a sensory impairment (hearing and vision);
- People with a mobility impairment (ambulant and wheelchair); and
- People with a dexterity impairment

The Report attempts to eliminate, as far as possible, discrimination against persons on the ground of disability and ensure, as far as practicable, that people with a disability have the same rights of access to premises as the rest of the community.

2.2. Regulatory and Historical Context

The Disability Discrimination Act 1992 ('DDA') is the framework national legislation in relation to disability discrimination. Amongst other things, the DDA provides that it is unlawful to discriminate against people with a disability with respect to access to premises. The primary enforcement mechanism for the DDA is via complaints by aggrieved persons to the Australian Human Rights Commission.

The Disability (Access to Premises – Buildings) Standards 2010 were created under the auspices of the DDA. The Premises Standards set out the minimum requirements for non-discriminatory access to buildings. The Premises Standards entered into force on 1 May 2011.

Further, in concert with the commencement of the Premises Standards, the Building Code of Australia ('BCA') has been amended to reflect the provisions of the Premises Standards. The new accessibility provisions in the BCA similarly came into force on 1 May 2011.

BCA 2011 and the DDA Premises Standards 2010 are each only applicable to *new* building work – that is, building work for which construction approval was sought on or after 1 May 2011. The above notwithstanding, however, the present Access Report has been compiled with a view to making recommendations for the amelioration of the risk

of a complaint or incident arising due to unequal access or inadequate functionality for people with a disability.

It has also previously been noted by others elsewhere that the built fabric of Parliament House is of substantial historical and heritage significance. The present Access Report has been compiled with the highest possible degree of sensitivity to heritage considerations. It is to be stressed, however, that mere heritage status does not, in and of itself, immediately and categorically preclude the provision of accessibility. Rather, different solutions should first be canvassed for the maximisation of accessibility.

2.3. Applicable Statutory and Regulatory Standards

The following accessibility codes may be applicable in future upgrades.

- AS 1428.1(2001) – General requirements for access – New building work
- AS 1428.1(2009) – General requirements for access – New building work
- AS 1428.2(1992) – Enhanced and additional requirements
- AS 1735.12(1999) – Lift access for people with disabilities
- Building Code of Australia ('BCA')
- Disability (Access to Premises – Buildings) Standards 2010 (current as at 1 May 2011)

2.4. Previous Assessments

Whilst the present report has been made with reference to a site visit by MGAC on 18 April 2011, the Report also seeks to thematically and practically reconcile the recommendations contained in the following previous accessibility assessments of Parliament House:

Authors	Title	Date
Mandy Richardson & Rwth Stuckey, CRS Australia	Functional Access Assessment of Parliament House – Canberra	January 2009
Martin Ciolek & Joshua Covington, Broadcasting and Infrastructure Support	Audio Frequency Induction Loops Audit in Parliament House v 0.1	December 2008
Eric Martin & Associates	Parliament House, Canberra: Building Compliance Audit for Persons With Disabilities	August 2003
Eric Martin & Associates	Parliament House, Canberra: Access Policy for Future Projects	August 2003

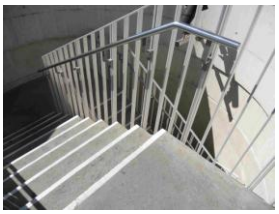
3. FIRST PRIORITY

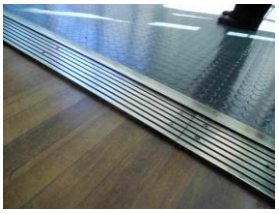
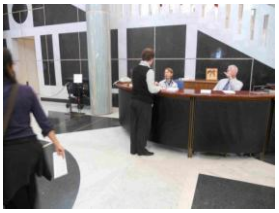
3.1. Definition

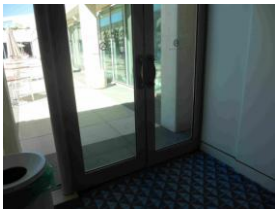
The items set out below are identified as being of the highest priority either because they relate to safety hazards for people with a disability, or because they represent conspicuous and substantial instances of inequality for people with a disability, or both. It is recommended that the following issues are addressed at the earliest available opportunity.

3.2. Recommendations

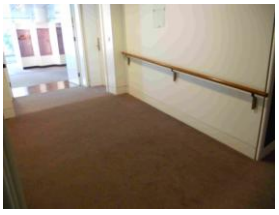
No	Item	Recommendation(s)	Photo
Ingress & Egress			
1	Matting	Provide fixed matting at the public main ceremonial entrance, at the Senate main entrance, and (where applicable) at the entry threshold at doorways connecting to courtyard. Any new matting is to conform to the maximum vertical level differences in AS 1428.1(2009). Permanent recessed matting is recommended. *Rationale:* Safety. The present loose matting is difficult for wheelchair users to traverse and represents a trip hazard generally.	 *Loose matting at public main entrance*
2	Main entrances-signage – House of Representatives and Senate	Provide clear signage at the House of Representatives and Senate main doorways directing users to the staff call button and providing instructions for all users. *Rationale:* As the staff call button is the designated alternative solution to the provision of an entry doorway which is independently operable by people with a disability, its availability should be made abundantly clear.	 *Help button on totem post (at right) is not obvious – signage required.*
3	Security gates	Devise and implement a management plan requiring staff at security entry points to assist a person in a wheelchair pass through the security gates if and when required. Devise and implement a management plan for the provision at the earliest possible opportunity of security gates with a minimum clear width of 850mm (1000mm preferred) at each secured main entrance.	N/A

No	Item	Recommendation(s)	Photo
		Rationale: A security gate is akin to a doorway. A clear width of 850mm is required under AS1428.1(2009) for doorways that are required to be accessible.	
Emergency Egress			
4	Emergency egress plan	Prepare and implement an emergency management plan for the implementation of strategies to facilitate emergency egress for people with a disability. Any such plan should incorporate use of fire wardens. The conducting of drills at regular intervals in which such plans are deployed, assessed, and refined is recommended. A twice-yearly drill has been suggested in previous access reviews.	N/A
Paths of Travel			
5	Stairways – stair nosings	Provision of permanent indicative contrasting strips that are compliant with AS 1428.1 on each stair tread of the two forecourt stairways is strongly recommended. The current strips are painted strips and, as such, require regular maintenance. *Rationale:* Safety – A contrasting nosing is critical for people with limited vision to locate the riser.	 *Forecourt stairways – painted strips have a tendency to wear out over time.*
6	Stairways - TGSIs	Provide warning tactile ground surface indicators (TGSIs) at minimum at the op of stairways. TGSI provision at the top and bottom of stairs is preferred. *Rationale:* Safety for people with a visual impairment.	N/A
7	Ramp handrails	Provide continuous handrails on either side of the series of ramps which lead from the tour bus bays in the public car park to the main entry lift.	 *Above: Lack of handrails at car park ramps*

No	Item	Recommendation(s)	Photo
			 *Above: Break in handrails at ramps*
8	Ramp gradients	Provide a path of travel with gradients of not steeper than 1:14 throughout from the coach bays in the public car park to the main entry lift. Currently, the uppermost ramps at the series of ramps in the public car park have a gradient in excess of 1 in 14.	 *Uppermost ramps in public car park have steep gradients*
9	Kerbing	➢ Provide a minimum 30 per cent luminance contrast between the kerb and the roadway at basement car parks; or ➢ Provide higher maintenance illumination levels along main pedestrian paths of travel. *Rationale:* Given the general low level of illumination in the car parks, the kerbs are a potential tripping hazard for people with low vision.	 *Lack of legible delineation at some kerbs in public car park area*
10	Paths of travel – cover plates	Provide a seamless 1:8 gradient threshold ramped transition across the cover plates at various pedestrian bridge links which connect the building's central wing with the Representative and Senate wings. Currently, the cover plates present a 5mm vertical rise on one side, which is a potential trip hazard.	 *Cover plate*
11	Paths of travel – marble flooring	Conduct investigations into the possibility of increasing slip resistance at marble flooring – eg, application of sealant. *Rationale:* Marble flooring is potentially slippery, especially when wet.	

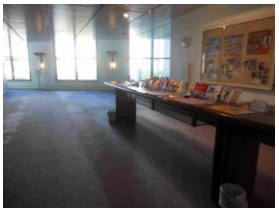
No	Item	Recommendation(s)	Photo
			Marble flooring at Marble Foyer.
12	Doorways - automation	Ensure the doors connecting the Parliamentary Education room with the Queens Terrace and doors connecting to rooftop domain are power operated. Currently doors are heavy to operate. Investigations to be undertaken for heavy-weight entry doorways that connect to key or high-traffic areas – eg, the double doors at the bridge links – to be power operated. Ensure fully automated hinged doors are programmed to remain open for a reasonable period of time – 15 seconds is recommended.	 *Parliamentary Education double doors*  *Typical powered entry doorway from Reps/Senate car parks*
Passenger Lifts			
13	Passenger lifts – carpet	Ensure carpet pile height in lifts is not greater than 11mm; or replace altogether with hardstand surface.	N/A
Taxi			
14	Taxi Bay - location	Ensure one taxi pick-up/setdown point is accessible. Ensure any accessible public taxi pick-up/set-down point is located wholly located on a level area. Currently, the entire taxi rank is located on an area which is at an unsuitable grade. *Rationale:* Safety and accessibility for wheelchair users. Taxi stands are akin to accessible car parking in that a level surface is required for boarding and disembarkation.	 *Taxi rank and adjacent footpath are both entirely at unsuitable grade.*
15	Taxi Bay - TGSIs	Provide directional tactile ground surface indicators (TGSIs) from the accessible taxi bay to the main entry lift. *Rationale:* Directional TGSIs are not mandatory in this instance. However, due to the high potential for confusion in the basement car park	N/A

No	Item	Recommendation(s)	Photo
		area, immediate provision is recommended.	
Accessible Parking			
16	Accessible parking setout	Ensure all accessible car parking bays have a clear width of 3.2m. Currently some have a clear width of less than 3.2m. Ensure all accessible car parking bays each have a minimum internal length of 5.4m. Currently all have a length of 5.0m. Any reconfiguration of accessible car parking is to maintain minimum of 2 per cent accessible parking up to 1000 spaces or part thereof, and 1 per cent for each 100 spaces thereafter. Any additional accessible car parking is to comply with AS 2890.6(2009) – that is, a 2.4m-wide bay and an adjacent 2.4m-wide hatched shared area.	 *Example of a current staff accessible car parking bay*
17	Staff accessible parking – paths of travel	On every basement level where there is staff accessible car parking, ensure car park main entry doorways each have a minimum clear width of 850mm. Currently 770mm clear width.	
Sanitary Facilities			
18	Accessible toilet door	Provide a minimum 300mm internal latch-side clearance at the entry doorway to the accessible toilet at the public car park on basement level. This can be achieved by re-hanging the door. Currently, the internal latch-side clearance is less than 100mm.	 *View into the basement public accessible toilet. The door latch is at far right.*

No	Item	Recommendation(s)	Photo
19	Accessible toilets - design	Corridors outside accessible toilets should be upgraded to comply with AS 1428.1. The dimensions and fixtures of any new or upgraded accessible toilets should at minimum comply with AS 1428.1(2001). Compliance with AS 1428.1(2009) is preferred. If an accessible toilet cannot be easily upgraded, it should immediately be rebadged as an ambulant toilet, and directional signage to the nearest compliant accessible toilet is to be installed.	 *Some corridors outside toilets are too narrow.*  *Some accessible toilets will require reconfiguration of fixtures for functionality– eg washbasin is encroaching on pan circulation in above toilet.*
20	Accessible toilets - allocation	Where there is a bank of male and female toilets but no accessible toilet, provide clear directional signage directing users to the nearest accessible toilet.	N/A
Signage and Communications			
21	Great Hall	Provide directional signage directing users to the on-grade entrances to the upper viewing terrace of the Great Hall. *Rationale:* There are ramps leading to the upper viewing terrace in the Great Hall, all of which have non-compliant gradients. Users should be directed away from these ramps on safety grounds. Further, the on-grade entrances in any case constitute the only direct accessible path of travel to the wheelchair viewing spaces.	 *Ramp from corridor to Great Hall viewing terrace*

No	Item	Recommendation(s)	Photo
22	Stairways /Lifts	Ensure any signage at stairways directing users to the passenger lifts includes the international symbol of access (wheelchair logo).	 *Directional signage to the lift in Marble Foyer*  *Directional signage to lift at public basement car park (near coach bays)*
23	Accessible Toilets	Identification signage at all accessible toilet should be upgraded to comply with the BCA, including Braille, raised text and tactile pictogram. *Rationale:* Failure to provide Braille an information in tactile formats disadvantages people with a visual impairment. Correct signage has also been a standard BCA requirement even prior to 1 May 2011.	 *Above: Identification signage at public car park accessible toilet.*  *Above: Identification signage at ground level accessible toilet*

No	Item	Recommendation(s)	Photo
24	Hearing Augmentation	Devise and implement a management plan whereby portable hearing devices are made readily available for use and meetings are allocated to a compliant committee/meeting room if and when required by a user. Devise and implement a management plan for the provision at the earliest available opportunity of a suitable permanent system of hearing augmentation in all committee and meeting rooms. The audit conducted by Broadcasting Infrastructure Support is to be used as a guide. Coverage of 100% of the floorspace in any given meeting room is preferred. Where less than 100% coverage is provided, signage indicating the extent and location of coverage is be provided. *Comment:* It is readily arguable that a hearing augmentation upgrade is a high priority irrespective of whether hearing augmentation was required under old codes, given that the *raison d'être* of the building is to be a place where people meet and converse, and given the building's high profile.	N/A
Miscellaneous			
25	Parliamentary Offices	Devise a management plan whereby meetings involving a visitor in a wheelchair can take place in a designated area to which suitable access has already been provided. Devise a management plan whereby any staff members with a disability are allocated to offices which are accessible. *Comment:* It is understood that all Senate, House, and Ministerial office entry doors have a clear width of 770mm. Whilst instances of *Parliamentarian* wheelchair users have been few, there is a distinct possibility of a *visitor* (eg, a lobbyist) being in a wheelchair.	N/A

No	Item	Recommendation(s)	Photo
26	Post Office	Devise and implement a management plan for staff assistance to be rendered to a person with a disability at the Parliament House public post office if and when required. *Rationale:* Accessible postal services are not mandated under any access code. However, the inability of a person in a wheelchair to – for example – purchase, fill out, and send a postcard could constitute an instance of unequal access.	 *Post office raised bench for writing (standing only)*

4. SECOND PRIORITY

4.1. Definition

It is recommended that the issues set out below are to be of second priority in any proposed upgrade. The recommendations set out below are either mandated in various codes that have come into force subsequent to the completion of Parliament House, or constitute a lesser safety hazard for people with a disability, or both. Additionally, in many instances, the existing building fabric also inherently precludes immediate action. It is recommended that the following issues are addressed in the short-to-medium term.

4.2. Recommendations

No	Item	Recommendation(s)	Photo
Paths of Travel			
1	Gratings	Ensure openings of storm grates that are located along path of travel are not more than 13mm in width. *Rationale:* Safety and functionality for both wheelchair users and people with limited mobility (eg, cane users).	 *Grating at forecourt*
2	Forecourt	Consideration to be given to providing a suitable hardstand path of travel across the main entry forecourt. Currently, the majority of the forecourt consists of loose gravel. *Comment:* It is conceded that the red loose gravel has design and/or heritage significance. However, the provision of one continuous accessible path of travel which is sympathetic to the scheme does not appear to be impossible.	
3	Kerb ramps	Provide splayed sides at kerb ramps at basement car parks as safety measure. The provision of a level landing a minimum of 1500mm in depth at the top of each kerb ramp is additionally preferred where possible.	 *Some kerb ramps currently lack splayed sides.*

No	Item	Recommendation(s)	Photo
4	Internal Courtyards	Provide a continuous accessible path of travel to each unique type of internal courtyard. Provision of powered door operation is recommended. Currently, all doorways leading to all of the internal courtyards are very heavy and lack suitable level landings on the external side.	 *Double door leading to a courtyard.*
5	Carpet	Consideration to be given to ensuring that carpet at all high-traffic areas has a pile height of not greater than 11mm – including the Parliament Shop. *Comment:* A pile height of not greater than 11mm is required for new buildings under the DDA Premises Standards 2010. Although not mandatory for an existing building, provision of an 11mm pile height is recommended for functionality for wheelchair users in the longer term.	
6	Path of travel into House of Representatives chamber	Devise a management plan for the future installation of a stair platform lift to leading to the House of Representatives chamber. *Comment:* The ability to *enter* the chamber would be considered a basic accessibility issue. The ability to *use* the chamber is a more complex issue. See also under Chamber Tiered Seating in Third Priority section below.	 *Stair platform lift connecting corridor with Senate chamber*
Passenger Lifts			
7	Passenger lifts - illumination	Ensure maintenance illumination levels in all passenger lifts is minimum of 100 lux, compliant with AS 1735.12.	N/A
Emergency Egress			
8	Emergency egress stairways	Where applicable, provide nosing strips on each tread of each emergency egress stairway. Nosing strips are to comply with AS 1428.1.	 *Above: Staff car park stairway which doubles*

No	Item	Recommendation(s)	Photo
			are emergency egress.
Accessible Parking			
9	Staff accessible parking	Ensure any ramp leading from accessible car parking bays to the car park main entry doorway complies with AS 1428.1(2009) as far as practicable.	 *The above ramp has inappropriate handrails and kerbing.*
Sanitary Facilities			
10	Accessible Showers	Ensure any accessible showers comply with AS1428.1(2009). *Rationale:* Provision of accessible showers is only mandatory in limited circumstances. Parliament House does not fall into any of the required categories. Therefore, upgrade is recommended primarily to ensure functionality for users.	N/A

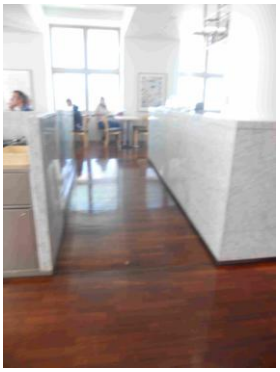
5. THIRD PRIORITY

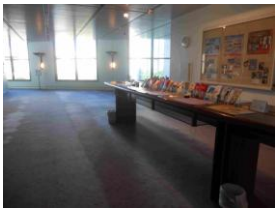
5.1. Definition

It is recommended that the issues set out below be considered as having third priority status in any proposed upgrade. The issues noted below were identified in previous accessibility assessments of Parliament House. However, they are not explicitly covered in any current mandatory building code. Adoption of these recommendations will ameliorate the risk to Parliament House of a complaint of disability discrimination to the Australian Human Rights Commission. It is recommended that the following issues are given due consideration over the longer term.

5.2. Recommendations

No	Item	Recommendation(s)	Photos
Ingress & Egress			
1	Rest seating	Provide fixed public rest seating near the security gate area at the public main entrance to Parliament House which fronts the main forecourt. Any rest seating should possess backrests and armrests. Provide armrests at any rest seating at the public basement car park area. *Rationale:* Rest seating is desirable for people with limited mobility in the event that there are long queues for entry into the building.	 *Above: rest seating in car park lacks armrests.*
Emergency Egress			
2	Emergency egress stairways	Consideration to be to ensuring any doorway leading to an emergency egress stairway has a minimum clear width of 850mm. This is so as to provide a safety refuge for a wheelchair user in the event of an emergency. *Comment:* Emergency refuges are accessibility best practice only and are not mandated under any access code.	N/A
Paths of Travel			
3	Stairways - general	High-use stairways to comply as far as practicable with AS 1428.1(2009).	N/A

No	Item	Recommendation(s)	Photos
4	Queens Terrace – plaque	Consideration for the commemorative plaque at the centre of the Queens Terrace to appropriately recessed in compliance with AS1428.1(2009)	
5	Queens Terrace Café – internal ramp	Consideration to be given to providing handrails on either side of the internal ramp within the Queens Terrace Café. *Rationale:* There is already a continuous accessible path of travel to the majority of the floor area within the Café. The upper area to which the ramp leads contains no features or amenities which are unique, or different to those on the main floor level.	 *Internal ramp at Queen's Terrace Café*
6	Corridor lighting fixtures	Consideration to be given for the provision of a minimum vertical clearance of 2000mm above FFL under wall lighting fixtures. *Rationale:* The principal potential safety issue is in relation to a person with a visual impairment using the wall as a means of orientation.	
7	Rooftop domain - viewing platforms	Consideration to be given to providing ramped access to the viewing platforms on the rooftop domain	N/A
Public Facilities			
8	Payphones	Consideration to be given for one payphone per bank of payphones to be accessible. *Comment:* Provision of accessible payphones is not mandatory under any access code.	N/A

No	Item	Recommendation(s)	Photos
9	Post office	Consideration to be given to providing a lowered writing counter and a lowered post box for wheelchair users at the post office. *Comment:* Provision of accessible writing counters or post boxes at post offices is not mandatory under any access code.	 *Post office writing counter (standing only)*
10	Parents' rooms	Provide duplicate clothes-hanging devices between 1200-1350mm above FFL and not less than 500mm from any internal corner. Hooks currently 2000mm FFL Ensure the baby change table is suitably accessible in accordance with AS 1428.1. *Comment:* Baby change facilities are covered under AS 1428.1(2009) for new developments.	N/A
11	Water bubblers	Consideration to be given to providing accessible water bubblers/fountains. *Comment:* The provision of accessible water bubblers is not mandated under any access code.	 *The majority of water bubblers lack suitable clearances and are in inaccessible locations.*
12	Cloaking desk	Consideration to be given to providing a lowered counter at the cloaking desk near the central Member's Hall. *Comment:* The provision of an accessible cloaking facility is not mandated under any access code. However, the cloaking counter is a key point where a person in a wheelchair would need to reach his/her belongings.	 *Cloaking desk*
Members', Senators' and Executive Facilities			
13	Division bells	In consultation with the relevant authorities, consideration to be given for all division clocks to have visual indicators which activate as necessary when divisions are called. *Rationale:* To cater for the scenario of a there being a Member or Senator having a hearing	N/A

No	Item	Recommendation(s)	Photos
		impairment. Visual indicators are alternative solution to providing hearing augmentation throughout the building.	
14	Office Suites	Ensure at least one Member, one Senator, and one Ministerial suite is accessible. The entry doorway to any accessible suite is to have a minimum clear width of 850mm. *Comment:* Historically, there has already been one instance of an MP in a wheelchair – namely, Graham Edwards, the former Member for Kalgoorlie. Accommodation should be provided for a future Member, Senator or Minister with a disability.	N/A
15	Chamber tiered seating – Senate and House of Representatives chambers	In consultation with the relevant authorities, provide accessible seating within the House of Representatives and the Senate respectively. Any seating solution is to be of equal amenity and dignity as far as practicable. *Comment:* Parliamentary rules and conventions dictate that individuals are to sit in certain physical locations within the chamber depending on their political rank or position. Consultation is required to determine the provision of accessibility 'to the degree necessary'.	
16	Committee Rooms – Hansard	Consideration to be given to placement of Hansard staff in an accessible room rather than a booth. A technological solution may be suitable.	N/A
17	Phone Booths	Consideration to be given to providing a booth for phone calls in the Parliamentary libraries. *Comment:* This is not a critical amenity given the common use of mobile telephones.	 *Phone booth in small Parliamentary Library*
18	Members' Dining Room	Consideration to be given for the maximization of accessibility to these facilities.	N/A
19	Meditation cubicles	Consideration to be given for the maximization of accessibility to these facilities.	N/A

No	Item	Recommendation(s)	Photos
Staff Facilities			
20	Kitchennettes	Consideration for one kitchenette in each staff section to be accessible. Any accessible kitchenette should include: ➢ An 800mm-long bench which is height-adjustable adjacent to the sink. ➢ Operative components of any hot water unit to be located in accessible position. ➢ Taps to be lever-action or similar. *Comment:* Accessible kitchen fixtures are not mandated under any access code for buildings of this type. Upgrades represent accessibility best practice.	 *Example of a staff kitchen*
21	Emergency phones	Consideration to be given to providing a button and speaker emergency facility (preferred) or an ordinary receiver emergency telephone at a suitable height at vestibule areas near basement car parks. Currently, wall-mounted emergency telephones have been provided at an inappropriate height.	N/A

Attachment D

AUDIO FREQUENCY INDUCTION LOOPS AUDIT IN PARLIAMENT HOUSE

For the Purpose of OH&S Compliance

Version 0.1 December 2008

Prepared by

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Publication History

Version Number	Date Issued	Nature of Amendment	Amended by
0.1	17/11/2008	First Draft	Mirek Ciolek

Document Owner: Mirek Ciolek, Technical Officer, Broadcast Support

Executive Summary

This report presents the results of an Audit carried out in all Induction Loop Systems located in Parliament House and maintained by DPS. The Parliamentary buildings are equipped with Loop systems in a number of public and private areas.

The User/Customer must be equipped with a Hearing Aid compatible with Telecoil technology to take advantage of the Audio Frequency Induction Loop Signal Transmission. The magnetic field strength must be chosen so that there is sufficient signal strength for a good quality audio signal without overload of the hearing aid during louder passages.

In each venue, the Induction Loop Amplifier** was checked and set up as per manufacturers' recommendations. The room was then tested with a calibrated Induction Loop Receiver choosing suitable reference points and the results were tabulated. The background noise was also recorded to confirm a suitable signal levels above background (electromagnetic) noise.

A summary of Compliance can be found in **Table 1** in **Section 3.5**.

Appendix A contains extensive information as compiled from tests in all venues.

It is desirable to achieve a signal to noise ration of 45dB with a minimum of 25dB. After a number of tests, it became obvious that loop topography utilised has resulted in poor system performance. A 20% coverage is achievable in most venues, but not in critical areas ie witness seats in committee rooms.

The Signage is both comprehensive and complete throughout the public areas of Parliament House and it meets the Australian standards.

A list of Recommendations:

Upgrade loop design to achieve better coverage in venues.

Upgrade older amplifiers to achieve simplified calibration process

Where required, fit an equaliser to optimise metal loss compensation.

In order to achieve value for money, any AFILs rework performed in Parliament House should be supervised and commissioned by a Broadcast Support Officer who has experience with Induction Loop systems.

(**Due to the fact that 3 different manufacturers' equipment is used, the amplifier output had to be tailored for optimum performance, see Appendix B)

TABLE OF CONTENTS

1. INTRODUCTION

1.1 STAKEHOLDERS

The current Stakeholders for the AFILs Systems are:

1. DPS
2. Chamber Departments

1.2 INTENDED AUDIENCE

The intended audience for this document is DPS staff (ie internal information only) for the purpose of enhancing systems to meet OH&S compliance.

1.3 DOCUMENT PURPOSE

This report firstly presents the opportunity to evaluate existing systems as built for an earlier Australian Standard and secondly to look at improving the existing systems. By embracing better and proven technologies, DPS would be in a position to enhance the systems to meet 2007 standards.

The tabulated results present the opportunity to evaluate compliance and the extra information gathered in this exercise gives us the opportunity to consider enhancements or redesign of loops to meet the current standards.

The department is under obligations to have the Parliament House buildings conform to the Buildings Code of Australia AS 1428 (which directs us to AS 60188.4, preceded by AS 1088.4 see section “1.4 Document references”)

1.4 DOCUMENT REFERENCES

Ref No	Title	Version	Date
1	Magnetic Field Strength in Audio Frequency Induction Loops for Hearing Aid Purposes	AS 60118.4	2007
2	Superceded Reference: Magnetic Field Strength in Audio Frequency Induction Loops for Hearing Aid Purposes	AS 1088.4	1987
3	Equivalent Reference: Magnetic Filed Strength in Audio Frequency Induction Loops for Hearing Aid Purposes	IEC 60118-4 Ed. 2.0	2006
4			
5			

1.5 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

This subsection provides the definitions of all terms, acronyms and abbreviations required to properly interpret this document.

Acronym	Extended Form
AFILs	Audio Frequency Induction Loops
AS	Australians Standards
dB Peak	In reference to Induction Loop Calibrator (referenced to 100mA/m)
c-weighted	Bandwidth 20Hz to 20kHz (unaltered Baseband Audio frequency range)
a-weighted	Modified curve attenuating lower and upper audio spectrum
RMS	Root Mean Square: Mathematical reference in Testing and Measurement
VA	Volt Ampere: Unit of power
mA/m	milliAmps/metre: unit of measure of Magnetic Filed Strength

2. OVERVIEW

2.1 PURPOSE

The purpose of this document is to identify compliance of AFILs systems in Parliament House (as identified), to AS 60118.4 (2007) With the exception of the technical procedures, test results and equipment descriptions, it has been presented at the general (layman's) level, rather than pure engineering level of understanding.

2.2 SCOPE

2.2.1 In Scope

All central Committee Rooms, House of Representatives Floor and Galleries, Senate Galleries and miscellaneous facilities serviced by DPS.

2.2.2 Out of Scope

Great Hall and certain public area which would benefit from an AFILs system, but are currently not fitted out. Such areas include Information Desk in the Marble Foyer, Post Office Counter, Security Desk (Marble Foyer), etc.

House of Representatives 2nd Floor North/South Galleries

For this audit Committee Rooms 1R5, 1R6, 1S5 and 1S6 are also excluded because they were not originally fitted or upgraded with AFILs.

The Media Galleries in both chambers are also excluded due to operational requirements and agreement with the Media.

2.3 ASSUMPTIONS

This document has been prepared in accordance with the following assumptions:

1. As far as possible, this document was produced as an independent evaluation of the AFILs systems in Parliament House and must be respected as such.
2. The technical staff in Broadcast Support adhered to correct engineering principles in order to achieve Compliance Testing. The same procedures have been utilised in the past for testing and commissioning of new systems in Broadcasting Assets. This processes can be verified by an external consulting electroacoustic engineer if required.

3. BODY

3.1 EQUIPMENT REQUIRED

Brand, Model and Description:

1. LM Audio ILM12 Induction Loop Monitor
2. Neutrik MiniRator MR1 Test Signal Generator
3. Fluke 79 Mk3 RMS Multimeter
4. Connectivity leads, suitable for the 3 different amplifiers
5. Technical Manuals relating to the Loop amplifiers

3.2 TEST PROCEDURE FOR LOOP RESPONSE

As per description

1. Isolate loop amplifier from system
2. Set up current monitor on output of amplifier
3. Inject 0dBu into amplifier input, adjust output until 0dBpk can be measured on perimeter areas of loop (typically just reaches 0dB ref on Loop Amplifier)
4. Check loop current is within specification (preferably with some headroom)
5. Perform basic check with Loop Monitor to confirm reasonable loop output
6. Collect Loop Monitor data adhering to a defined grid
7. Tabulate results
8. Note any irregularities

3.3 TEST PROCEDURE FOR BACKGROUND NOISE

As per description:

1. Turn loop amplifier "OFF"
2. Select critical test points and sweep the room noting any sources of noise
3. Tabulate readings on venue map for reference

3.4 QUALITY METHOD

It is desirable to achieve Signal Levels of 0dB peak (down to -6dB) and a signal to noise ration of 45dB with a minimum of 25dB.

The decision on compliance of the Committee Rooms was weighted for an acceptable level for Members/Senators seating as well as Witness Desks in the "classic" Estimates'

configuration. In this configuration the extra seating for support staff and next witnesses is also important.

Due to the random access to seating in the Chamber public galleries, it would be desirable to have 100% coverage and therefore compliance was weighted for this requirement.

Listed below are Compliance classifications:

1. Fully implies 80-100%
2. Partially implies 20-80% (ie walkabout to find a good reception spot!!)
3. Marginally implies <20% area of suitable level
4. Non implies low base level and excessive signal attenuation

3.5 ABBREVIATED SUMMARY OF DATA FROM RESULTS

To assist with compliance, the fully functional and non-functional venues in this document shall be classified, where applicable, with one of the above classification codes.

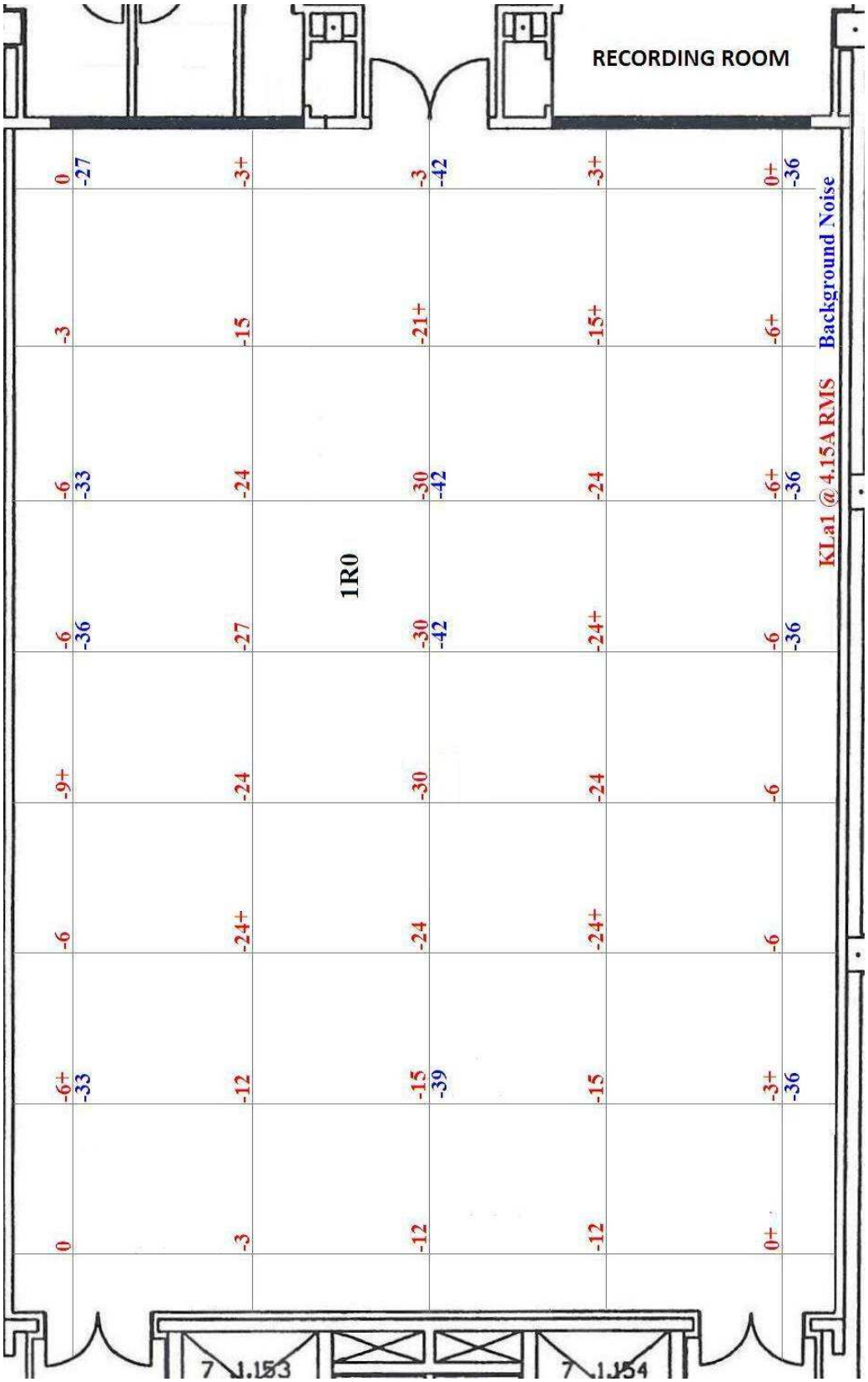
Table 1: SUMMARY OF COMPLIANCE

Ref	*Venue*	*Description*
A1	Main CR (1R0)	Non Compliant
A2	1R0 Gallery	Partially Compliant
A3	CR 1R1	Non Compliant
A4	CR 1R2	Non Compliant
A5	CR 1R3	Fully Compliant
A6	CR 1R4	Marginally Compliant
A7	CR 2R1	Marginally Compliant
A8	CR 2R2	Fully Compliant
A9	CR 2R3	Non Compliant
A10	CR 1S2	Marginally Compliant
A11	CR 1S3	Non Compliant

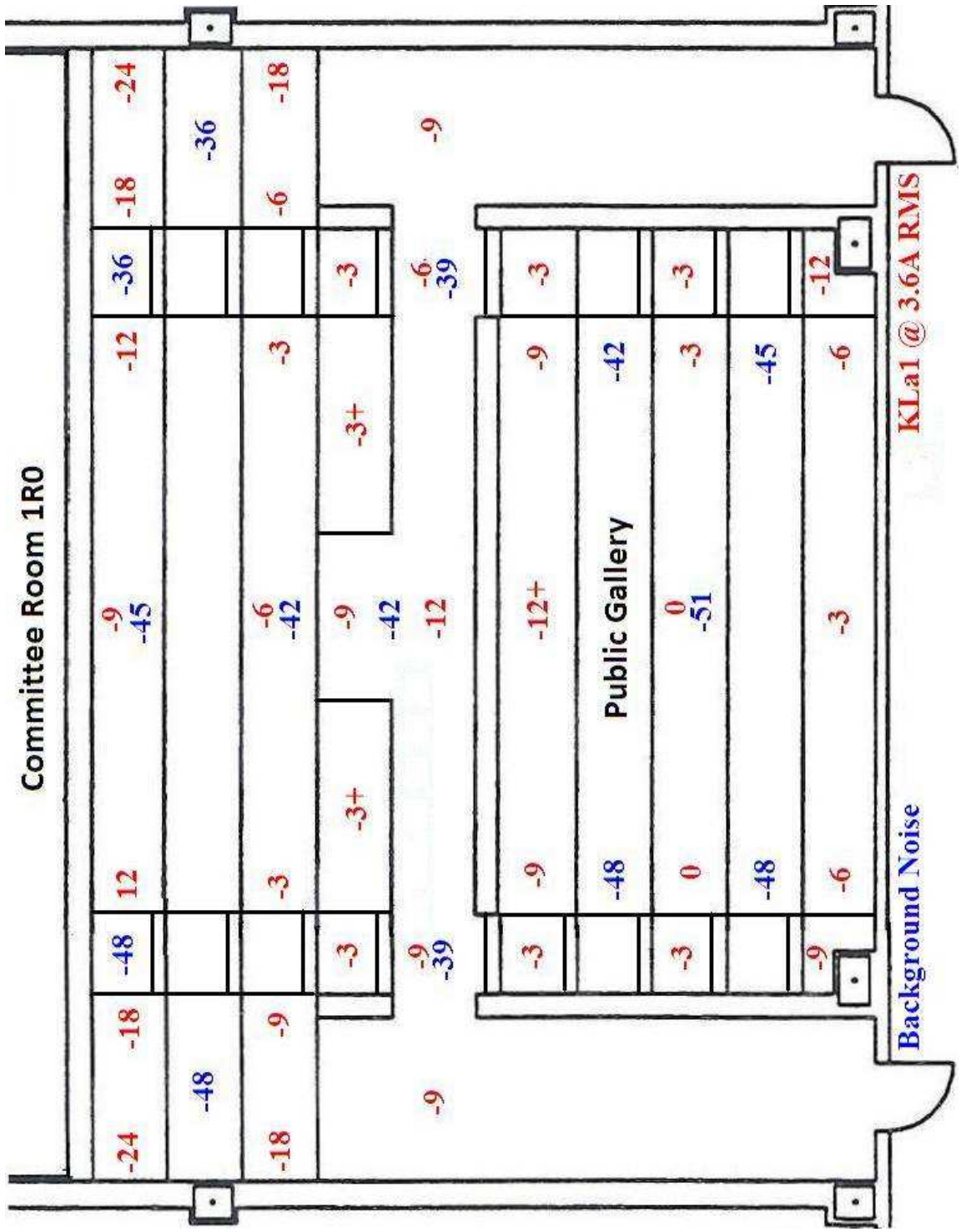
Table 1: SUMMARY OF COMPLIANCE		
A12	CR 1S4	Non Compliant
A13	CR 2S1	Non Compliant
A14	CR 2S2	Fully Compliant
A15	CR 2S3	Non Compliant
A16	HoR (Floor0	Fully Compliant
A17	HoR Gal 2nd West	Fully Compliant
A18	Hor Gal 1st West	Non Compliant
A19	HoR Gal 1st Nth	Non Compliant
A20	HoR Gal 1st Sth	Non Compliant
A21	Sen Gal 2nd East	Fully Compliant
A22	Sen Gal 2nd Nth	Partial Compliant
A23	Sen Gal 2nd Sth	Non Compliant
A24	Sen Gal 1st East	Fully Compliant
A25	Sen Gal 1st Nth	Non Compliant
A26	Sen Gal 1st Sth	Non Compliant
A27	Theatre	Partial Compliant (Compliant with labelling as indicated)
A28	EPCR Blue Room	Fully Compliant
A29	Govt Party Room	Non Compliant
A30	Opp. Party Room	Non Compliant
A31	Cabinet Room	Fully Compliant

Appendix A Data from Venues

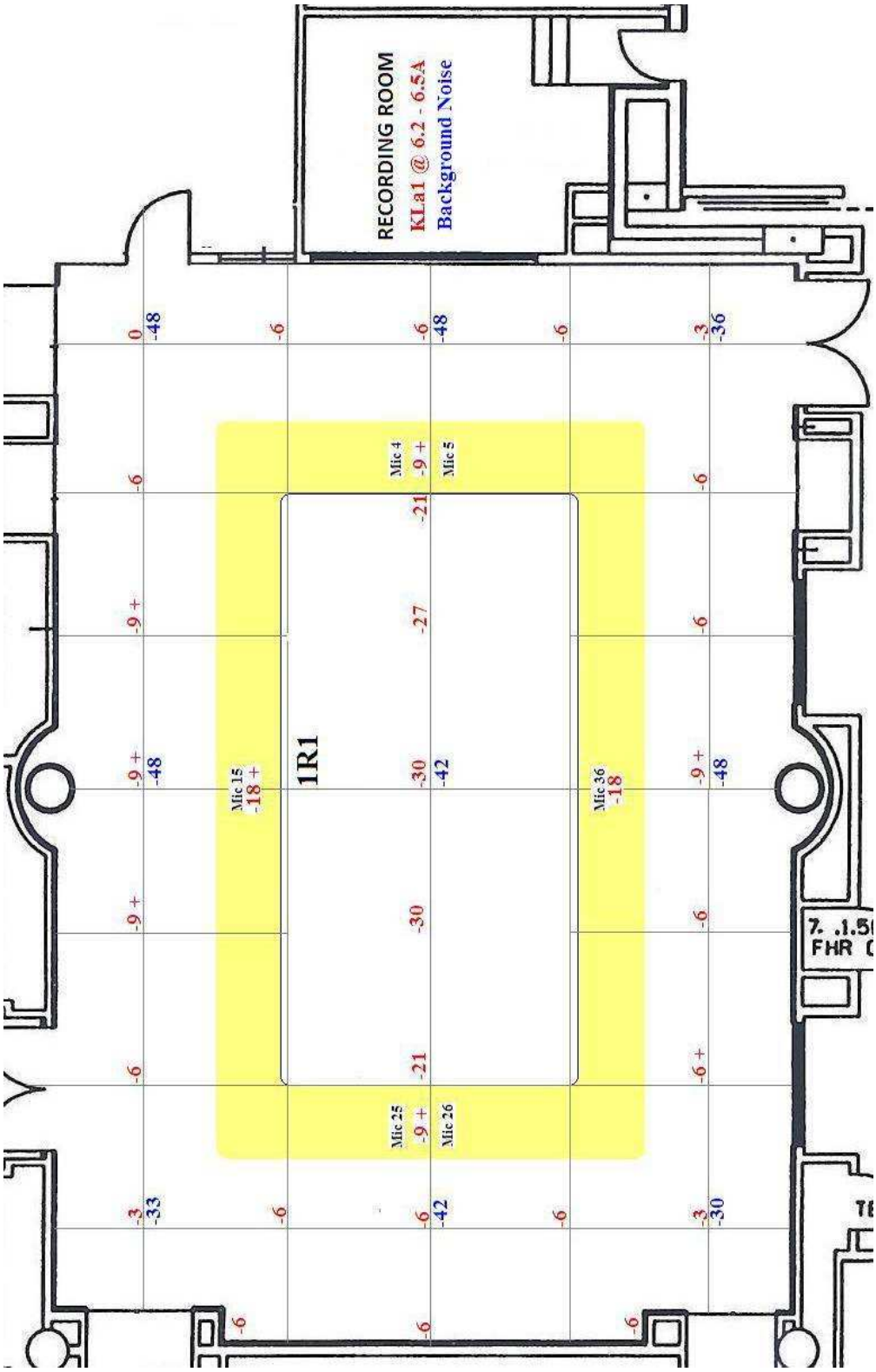
A1 Committee Room 1R0 (Main)



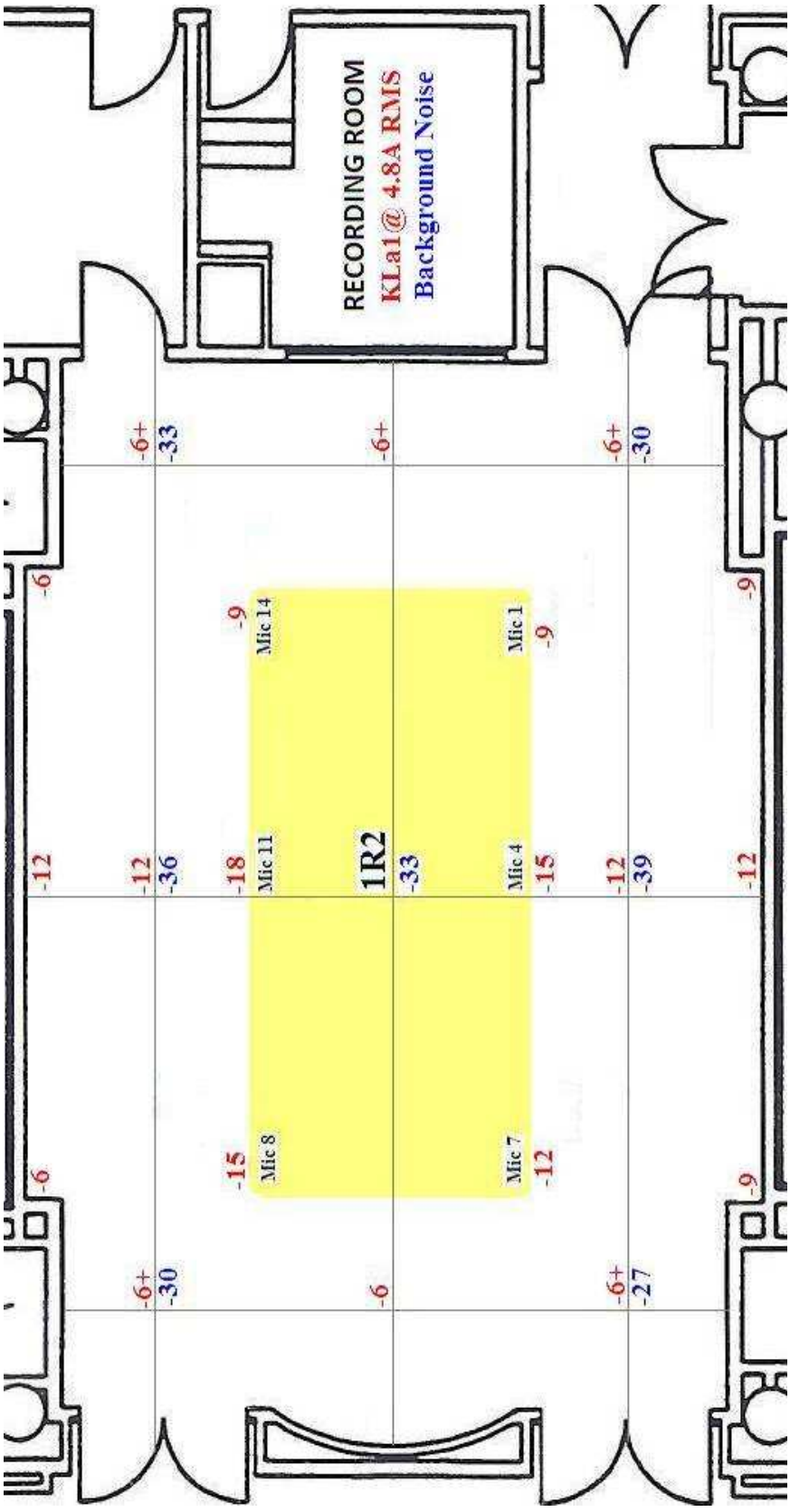
A2 Committee Room 1R0 (Gallery)



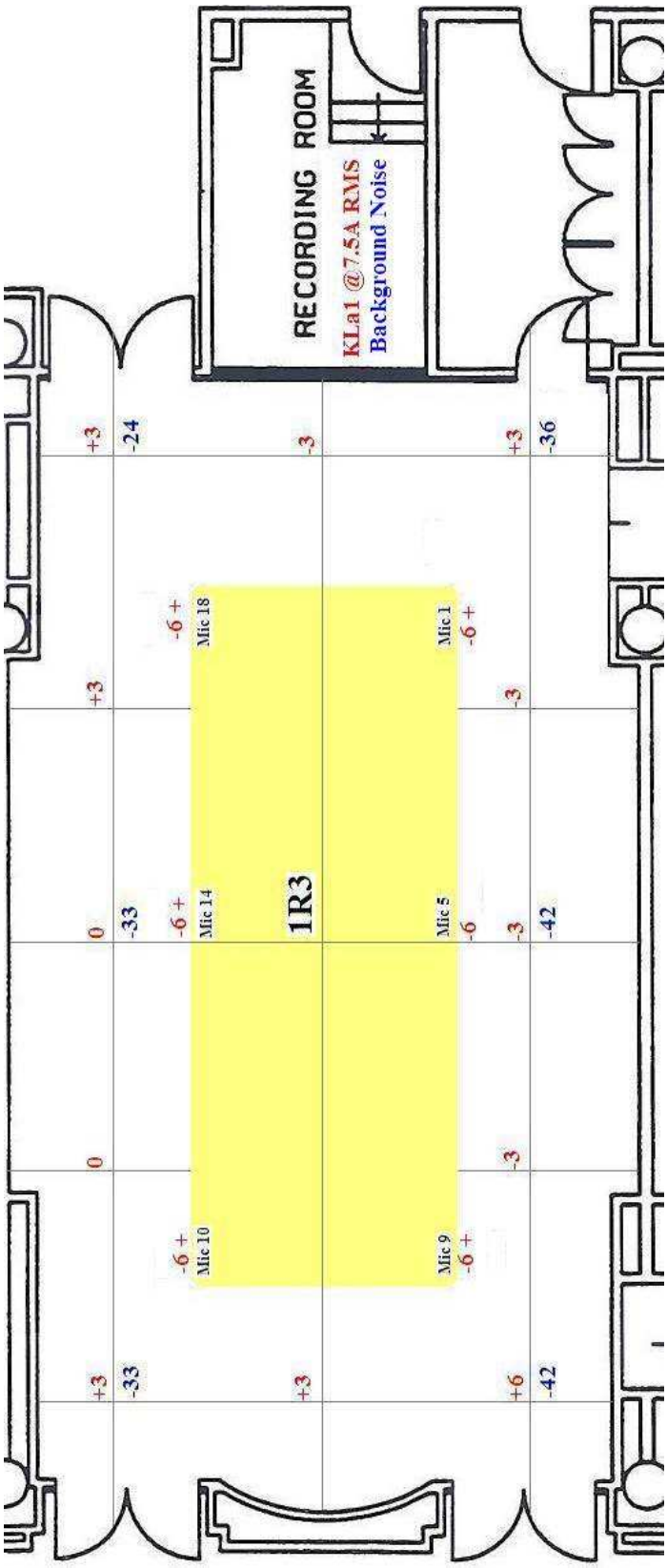
A3 Committee Room 1R1



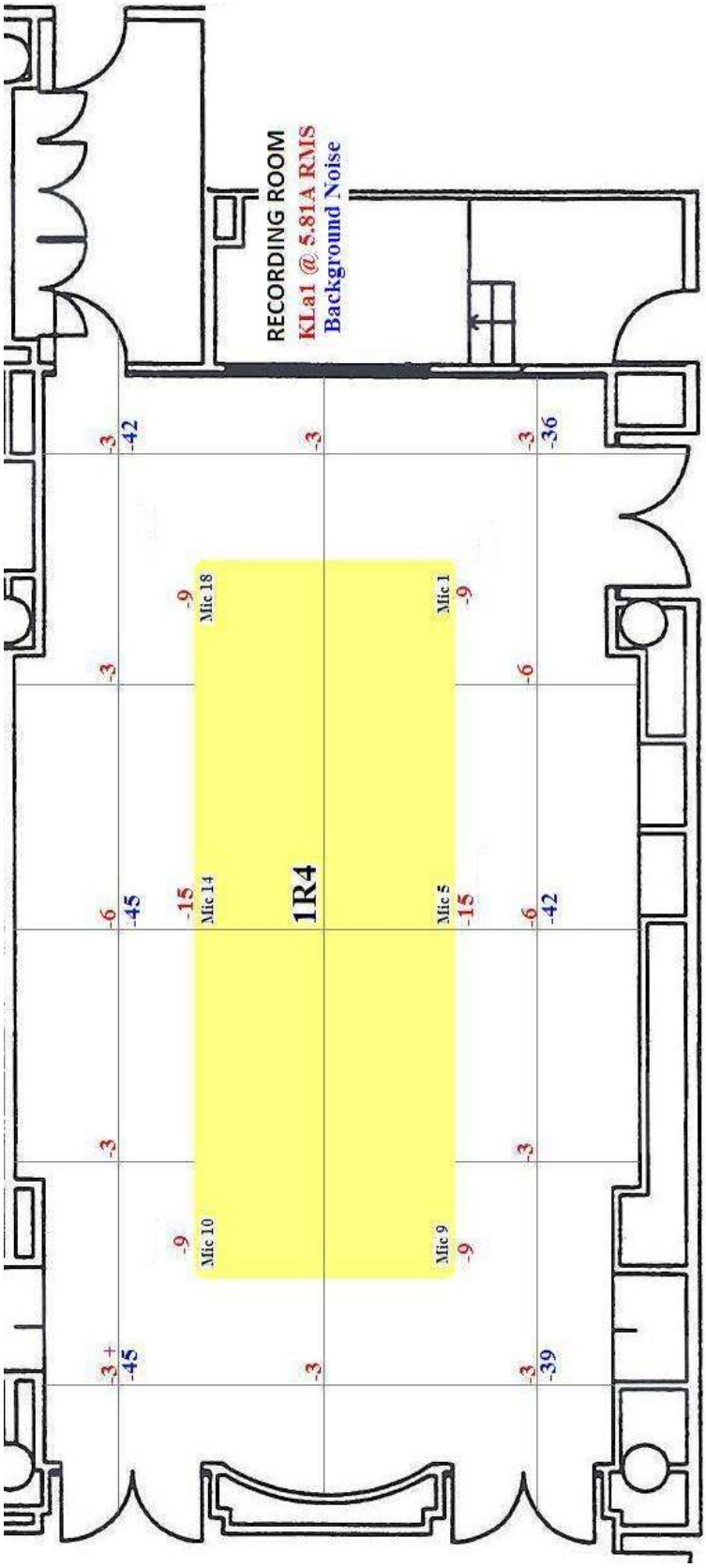
A4 Committee Room 1R2



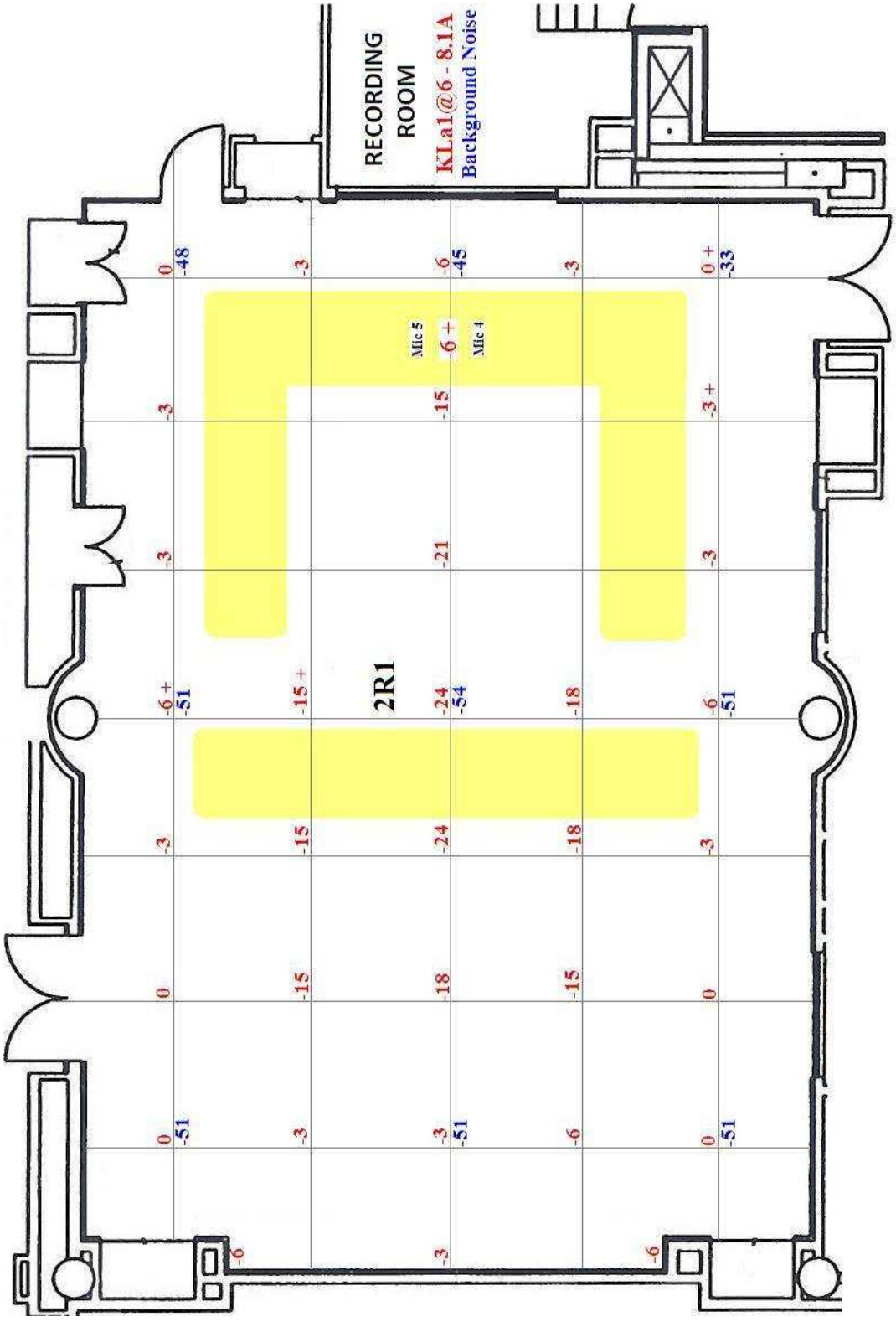
A5 Committee Room 1R3



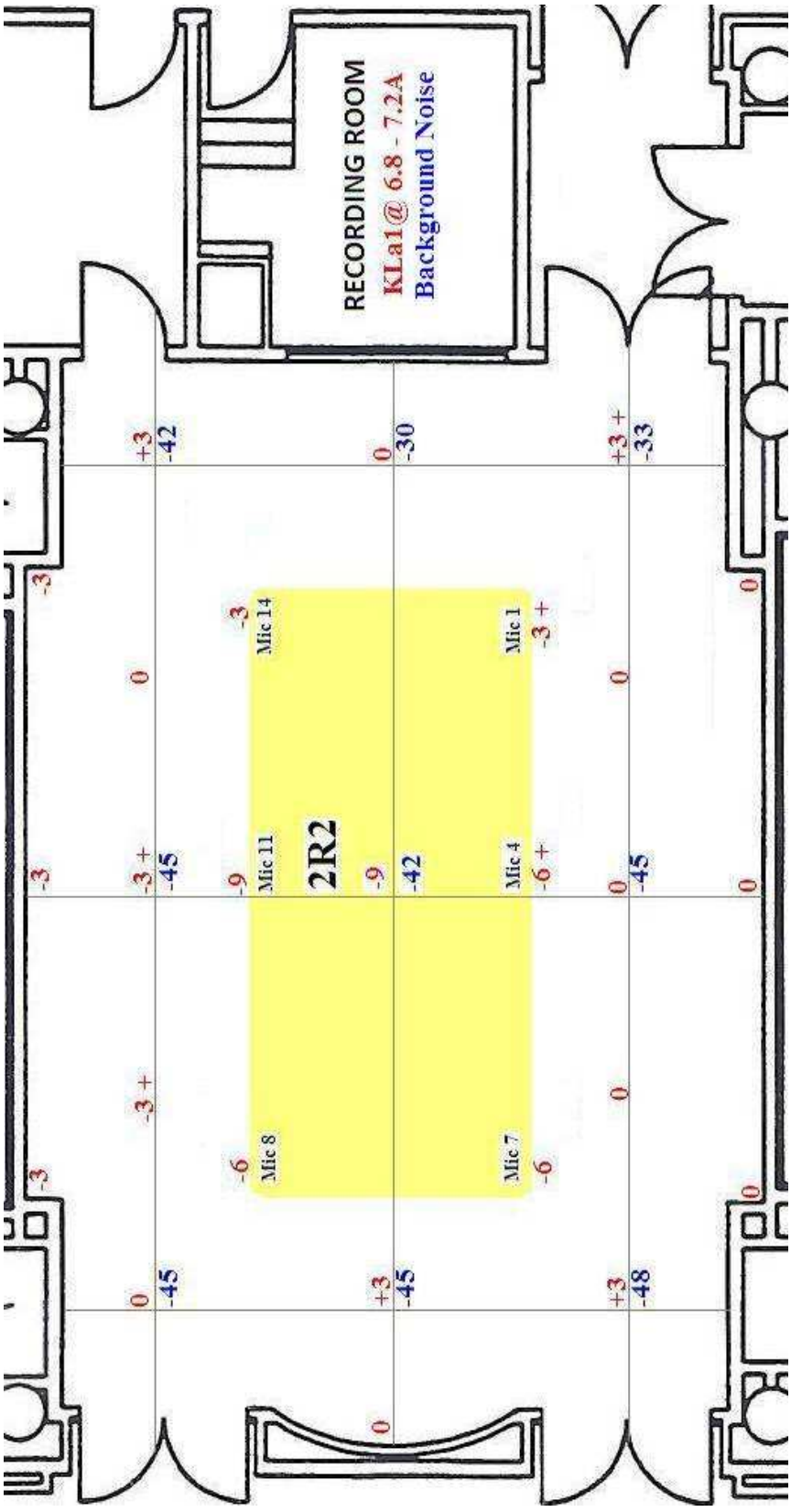
A6 Committee Room 1R4



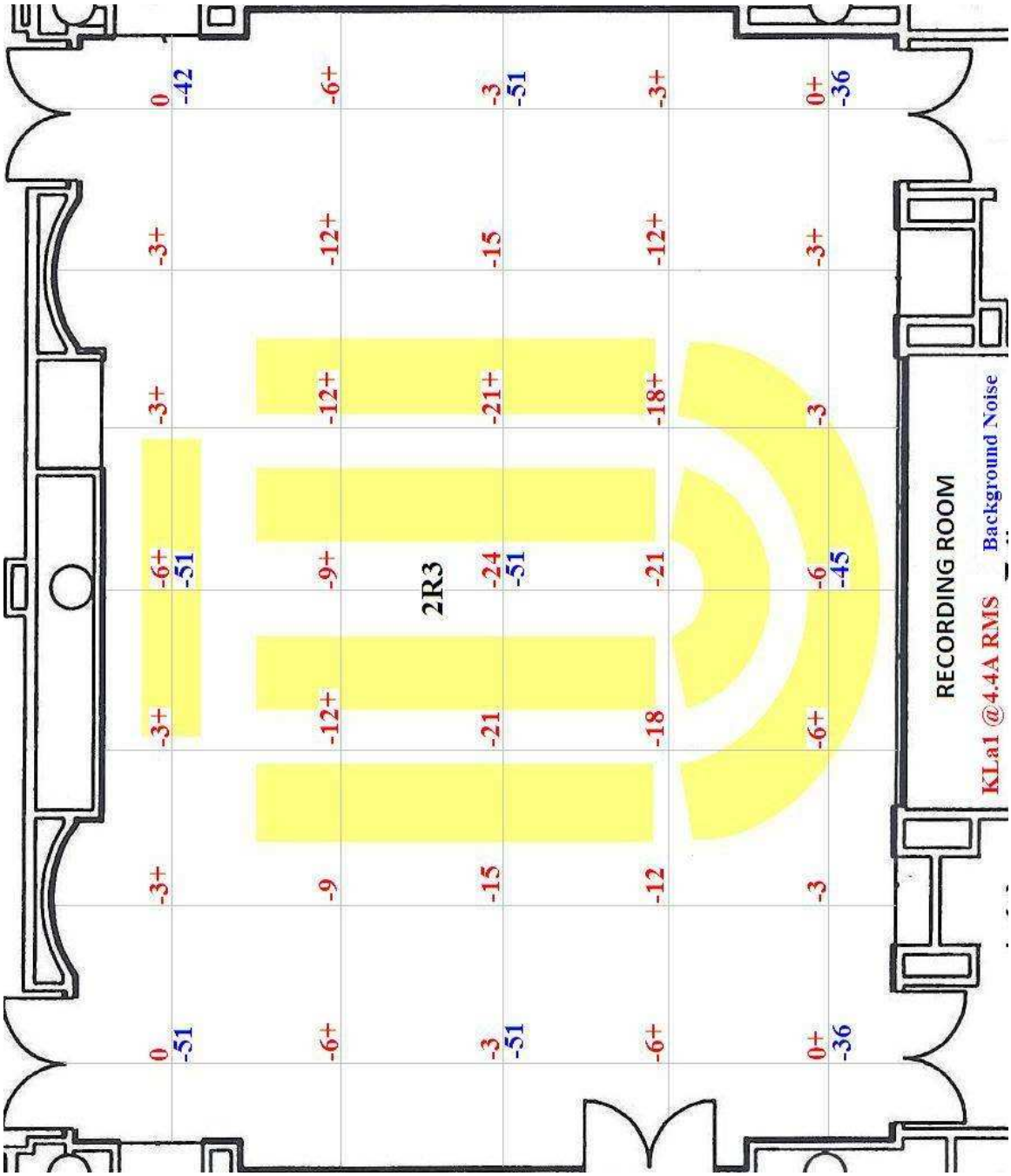
A7 Committee Room 2R1



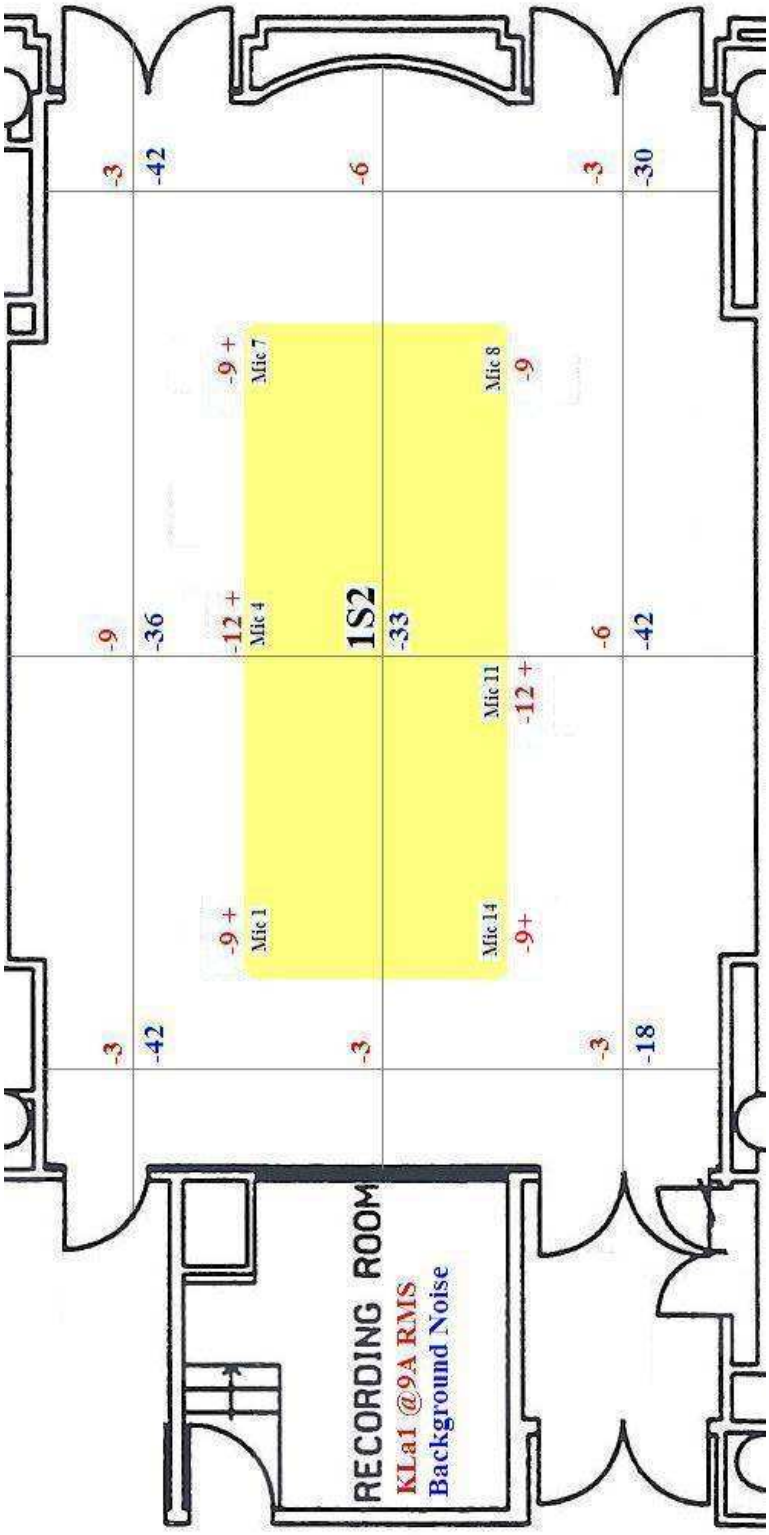
A8 Committee Room 2R2



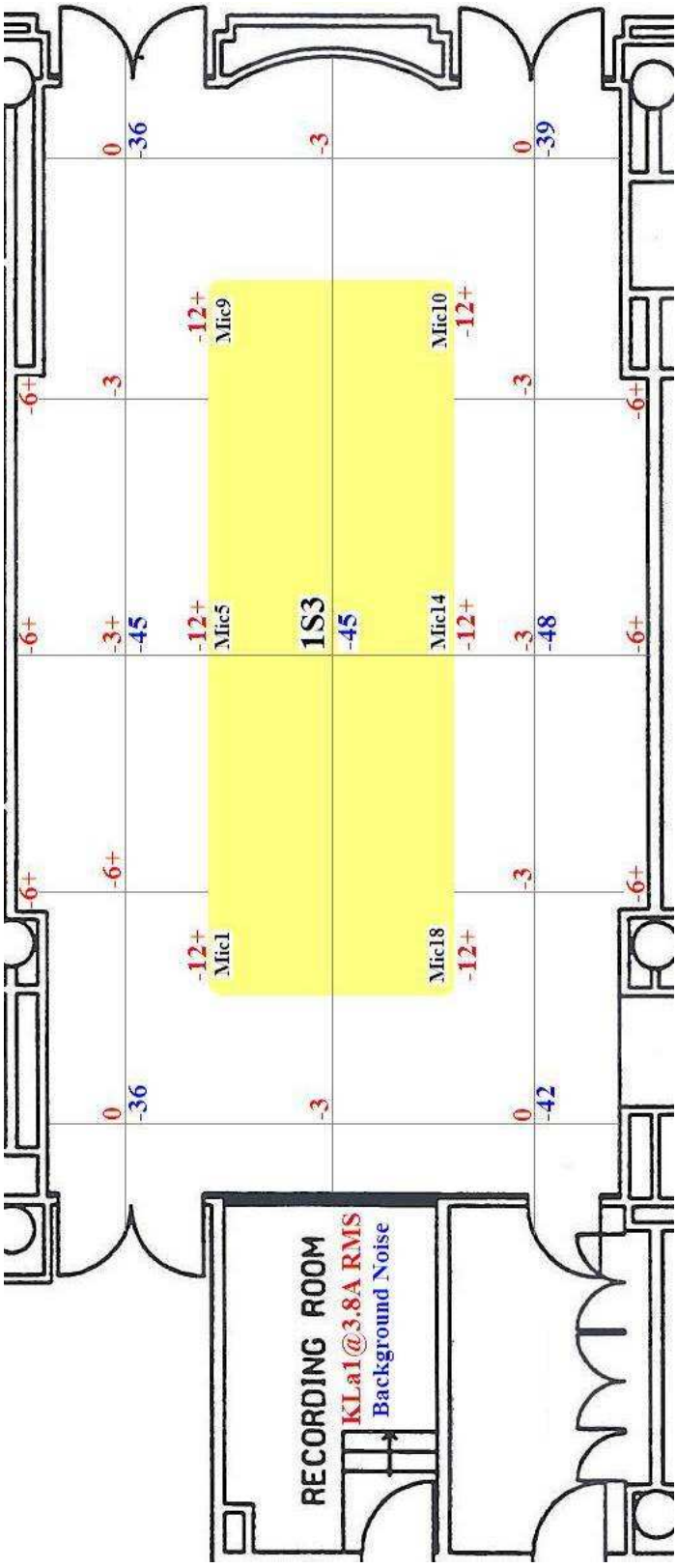
A9 Committee Room 2R3



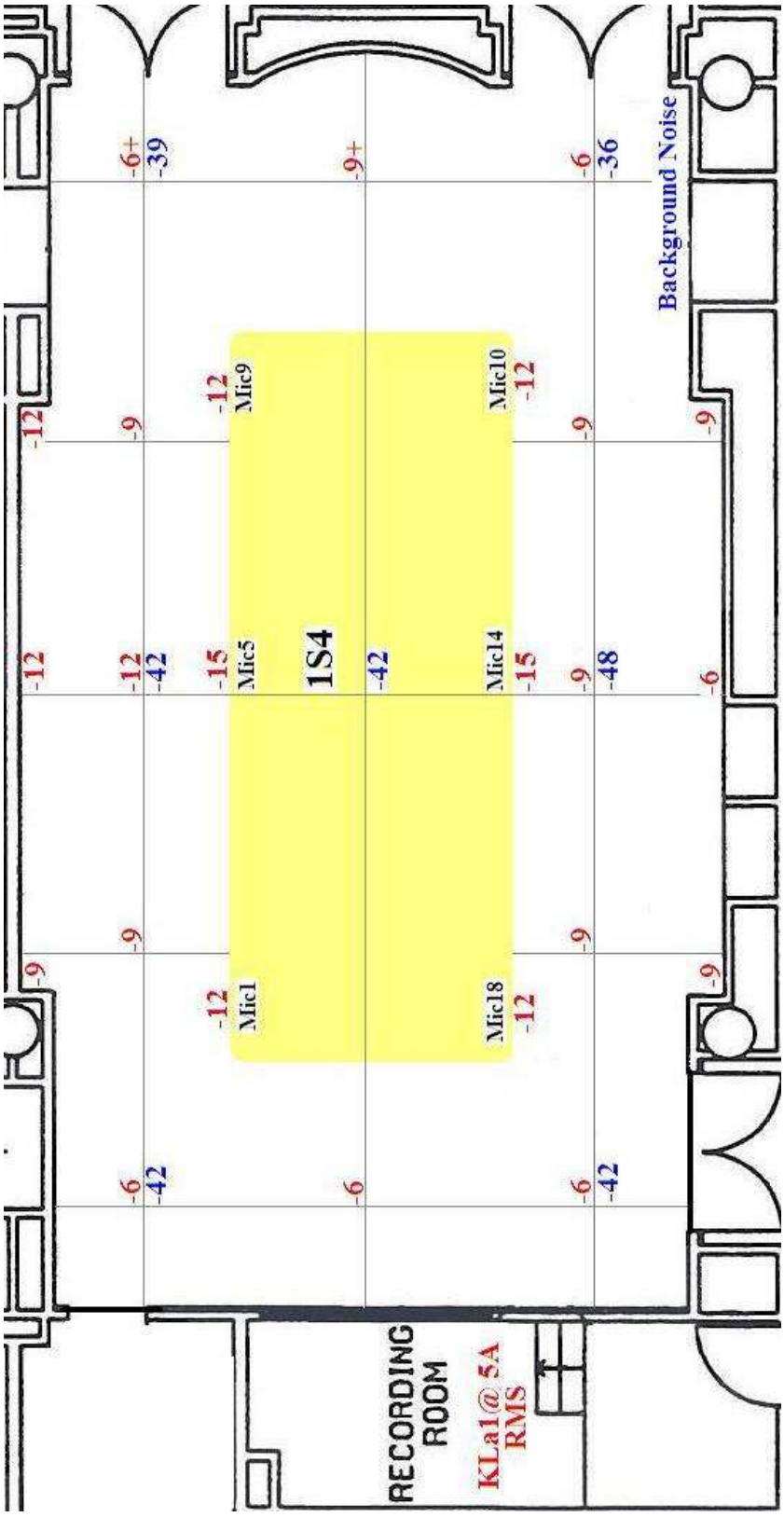
A10 Committee Room 1S2



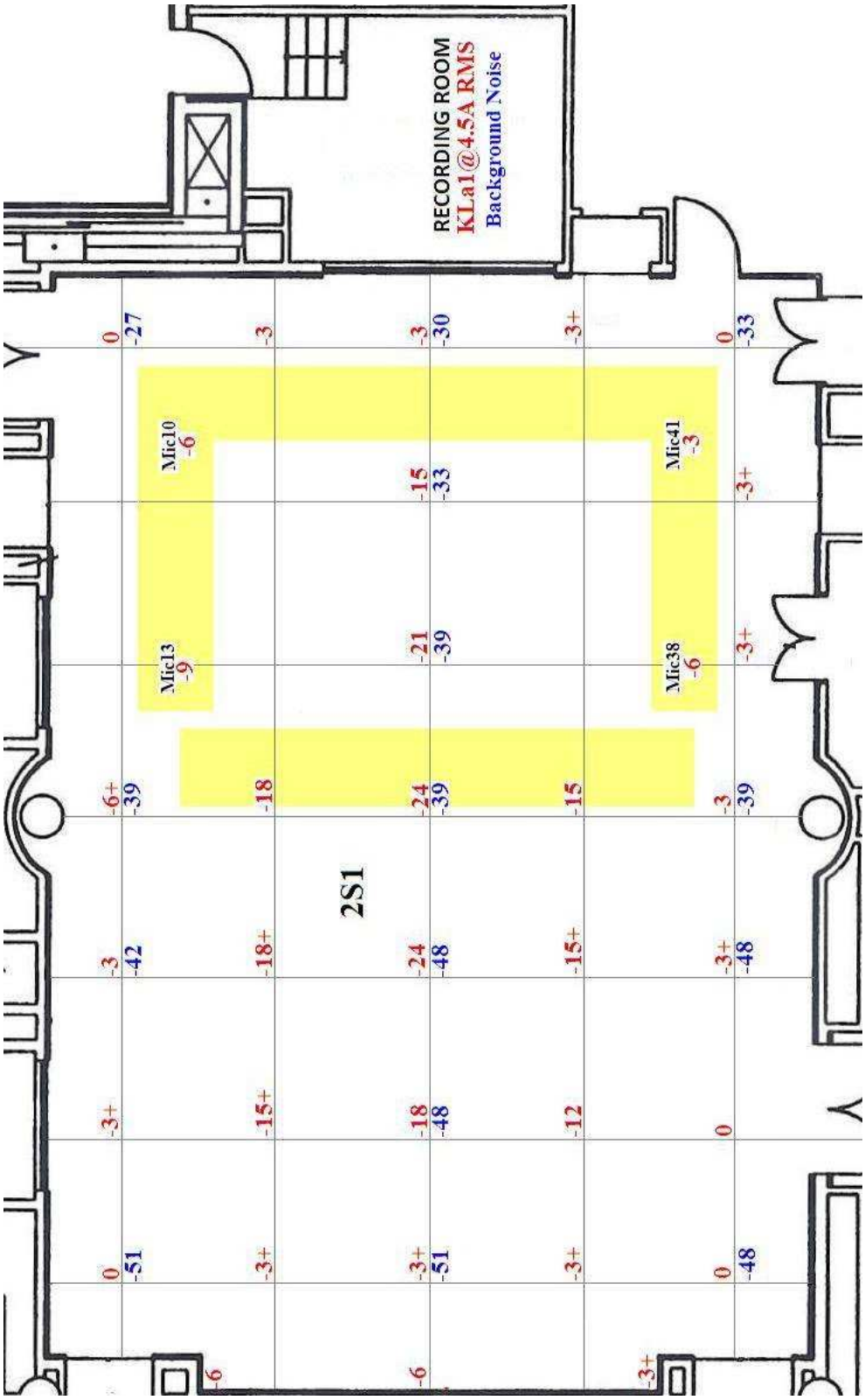
A11 Committee Room 1S3



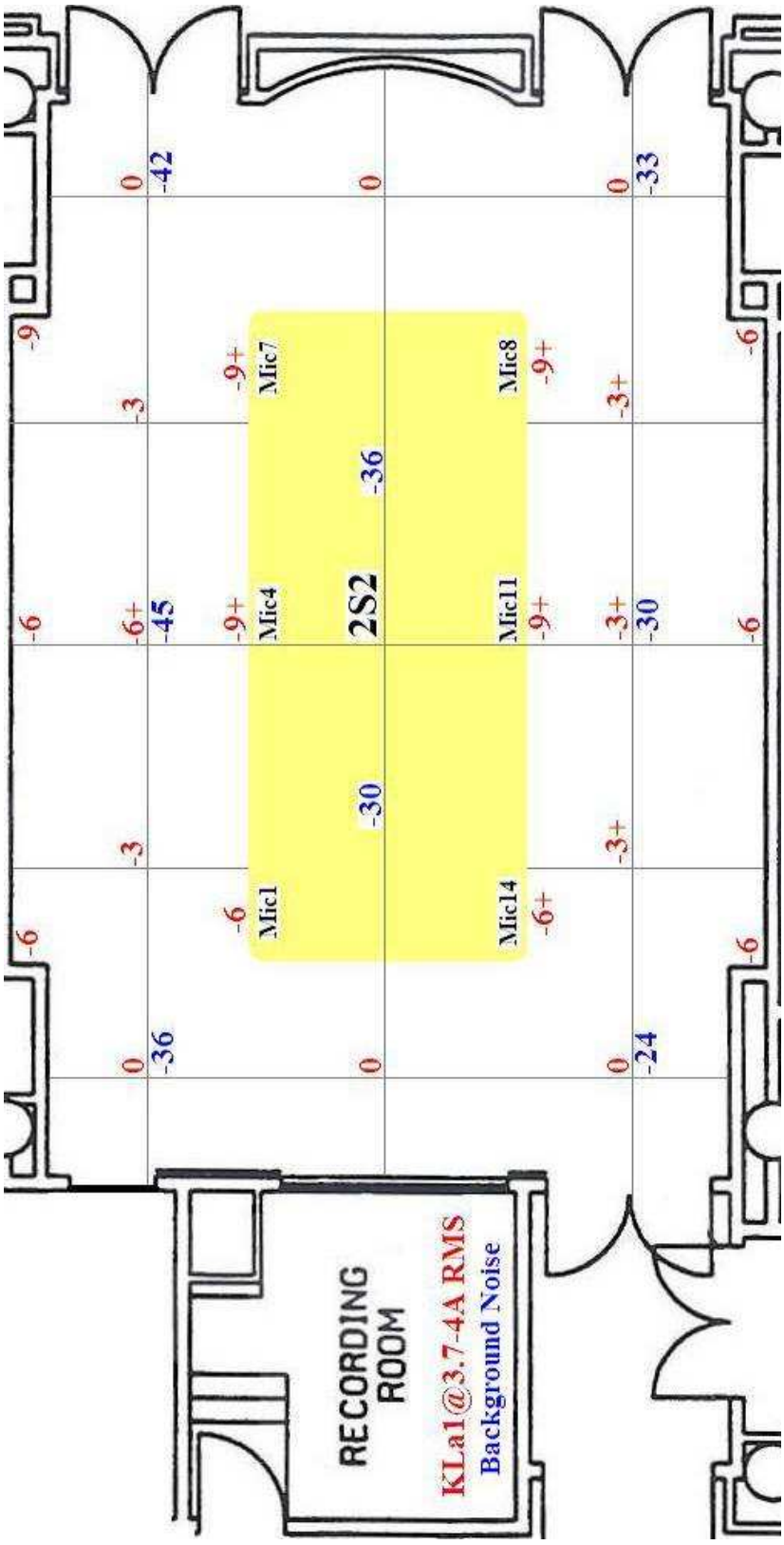
A12 Committee Room 1S4



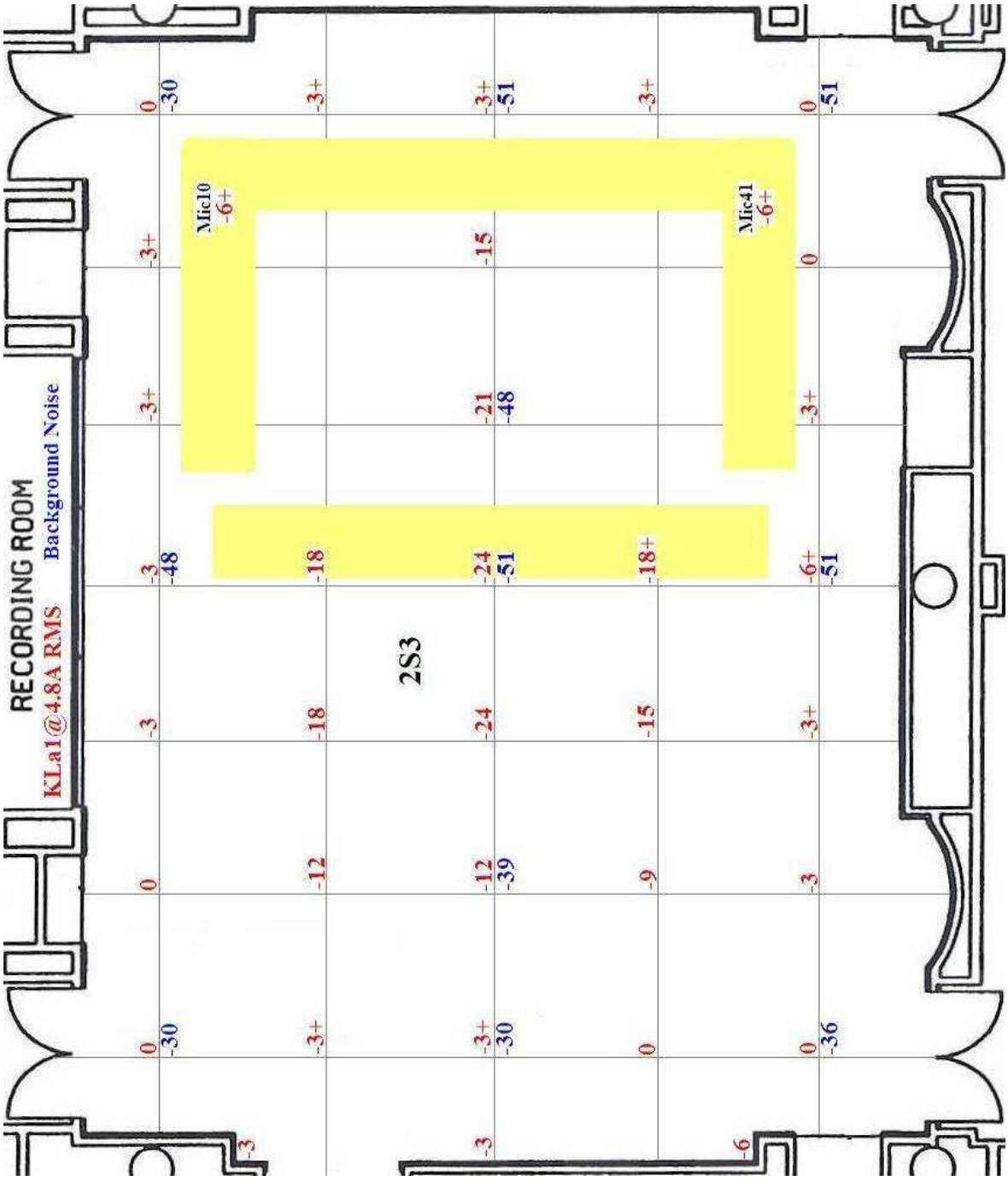
A13 Committee Room 2S1



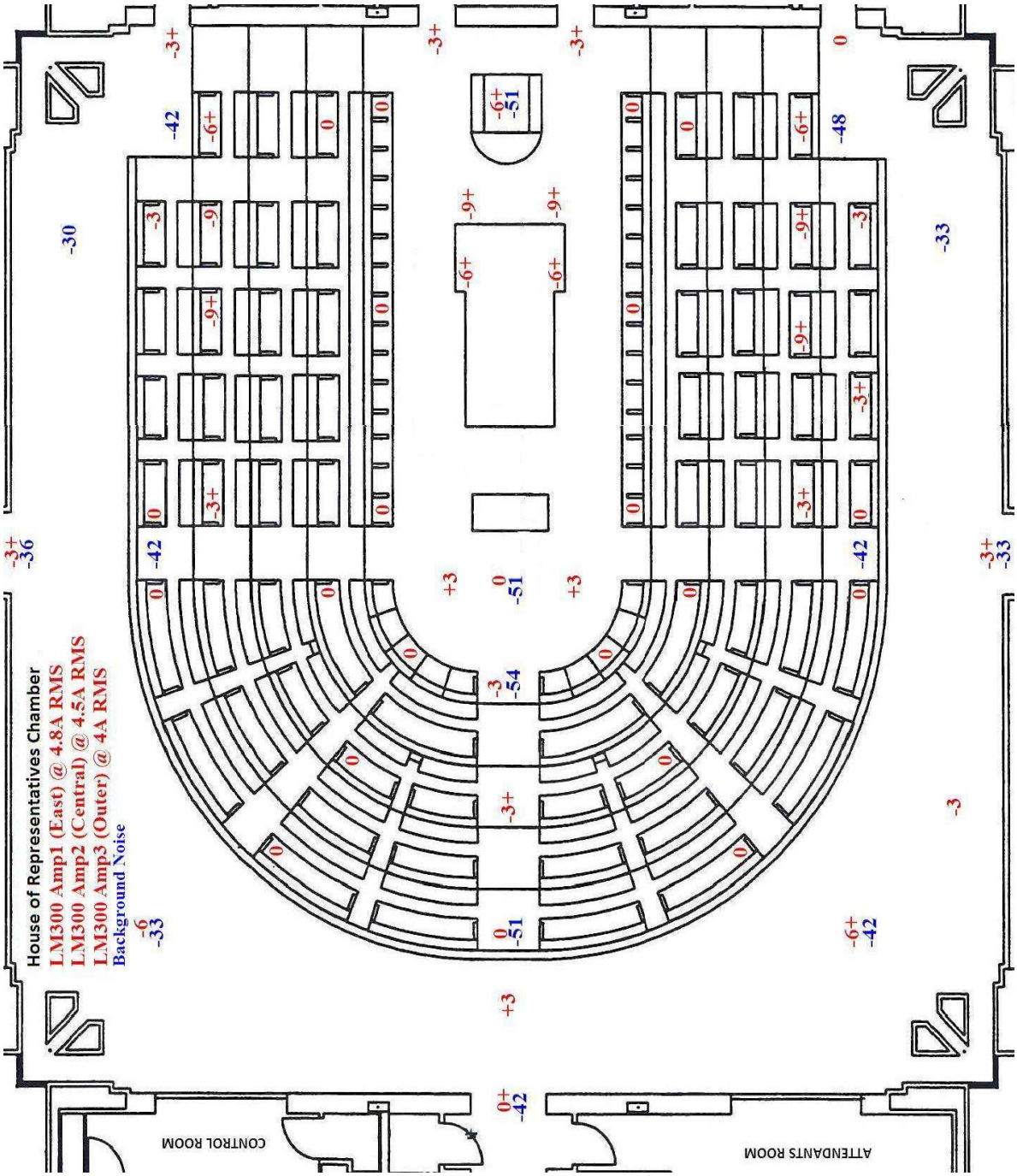
A14 Committee Room 2S2



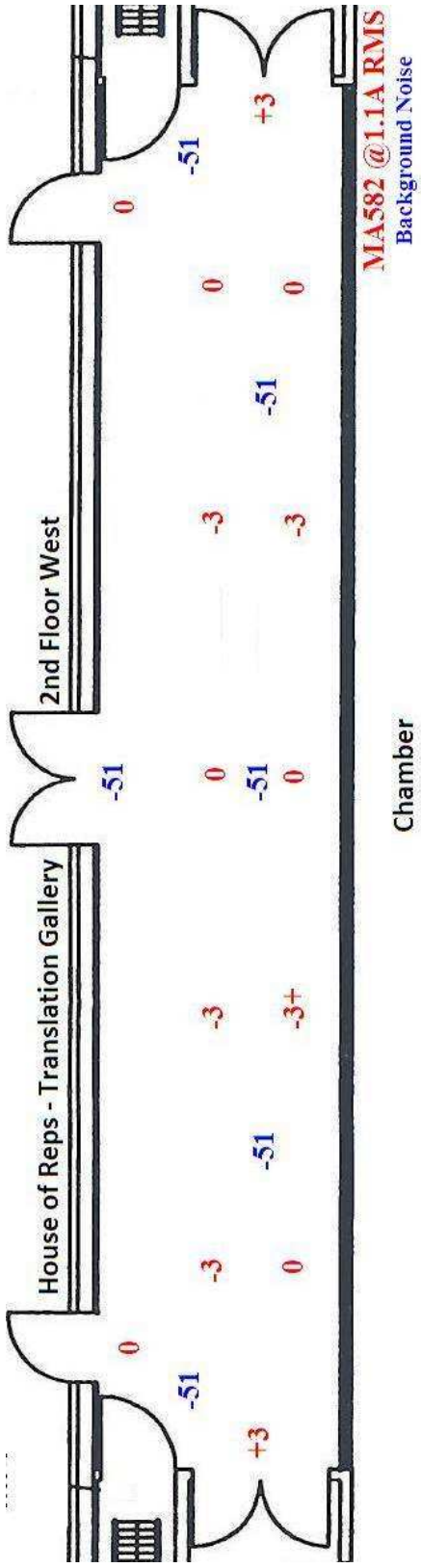
A15 Committee Room 2S3



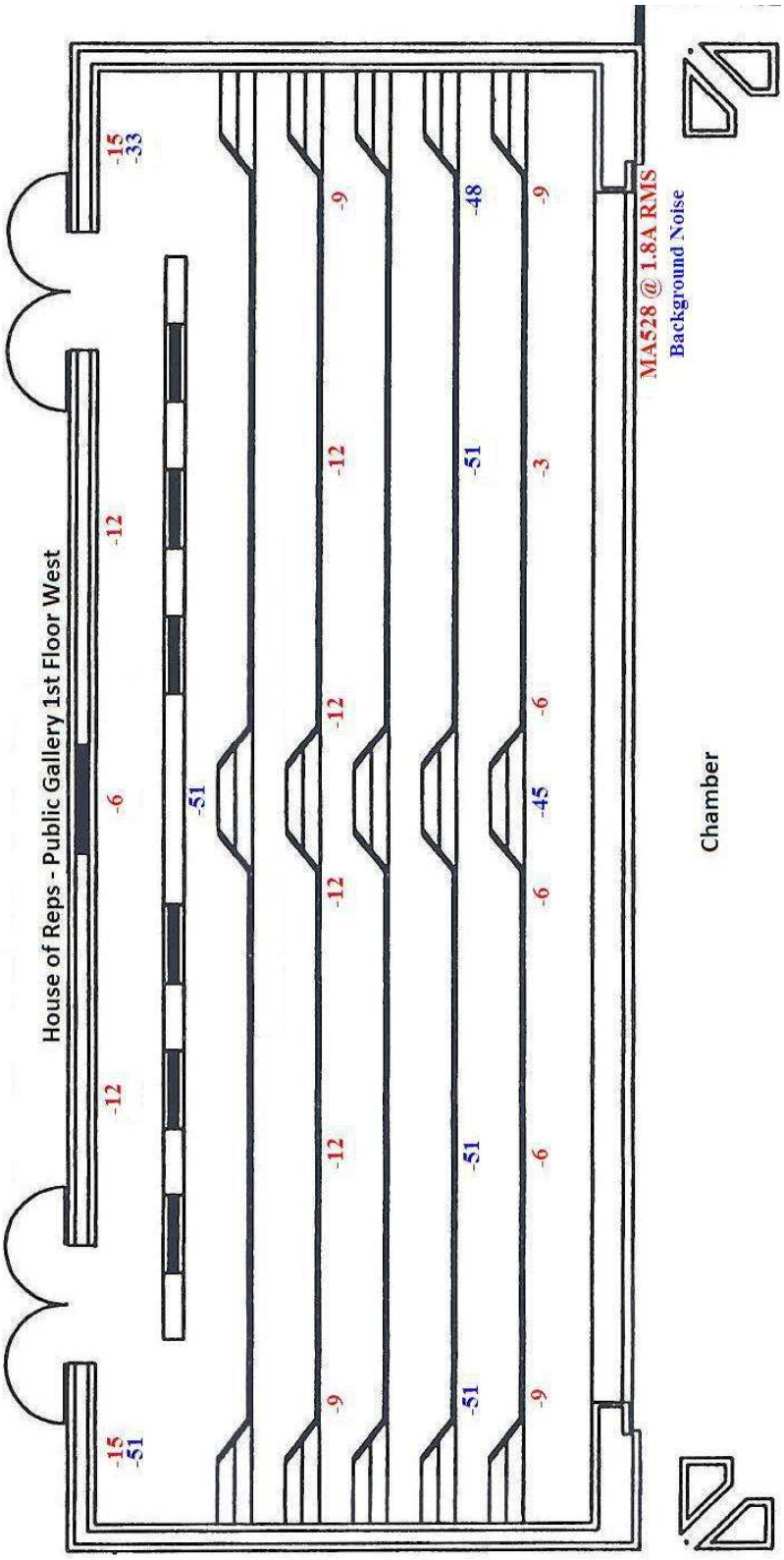
A16 HoR Floor (Chamber)



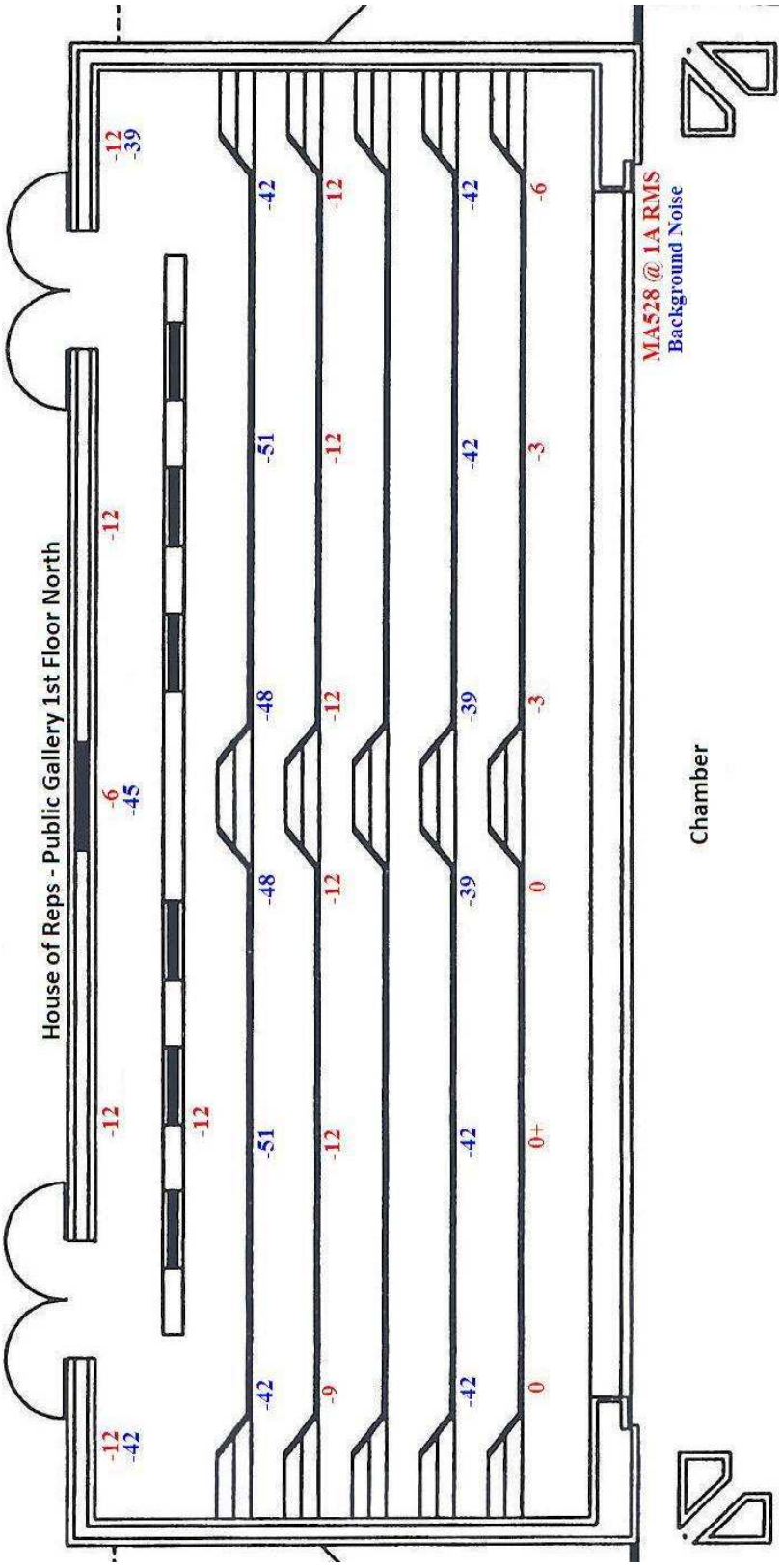
A17 HoR Gallery 2nd West



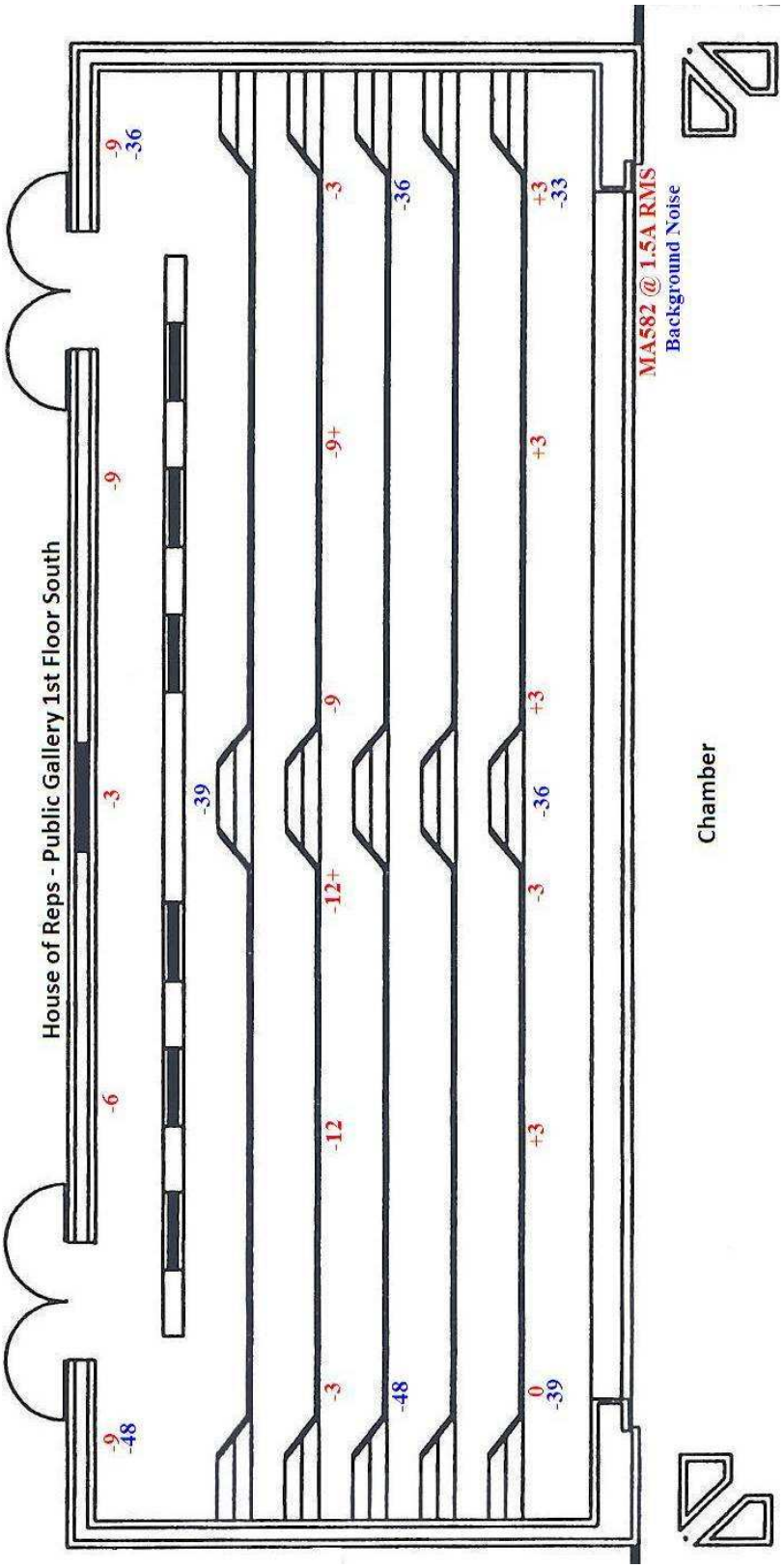
A18 HoR Gallery 1st West



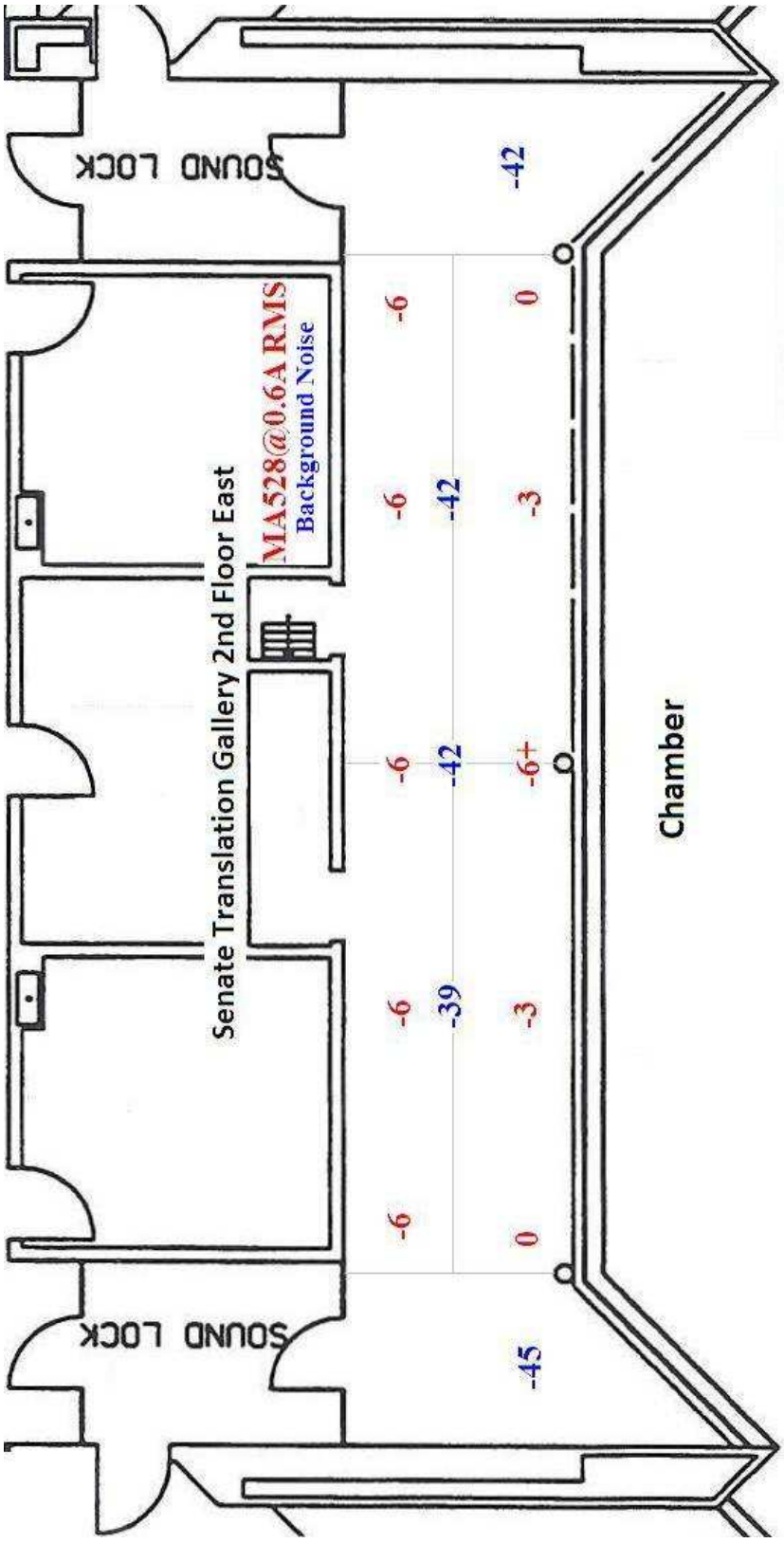
A19 HoR Gallery 1st North



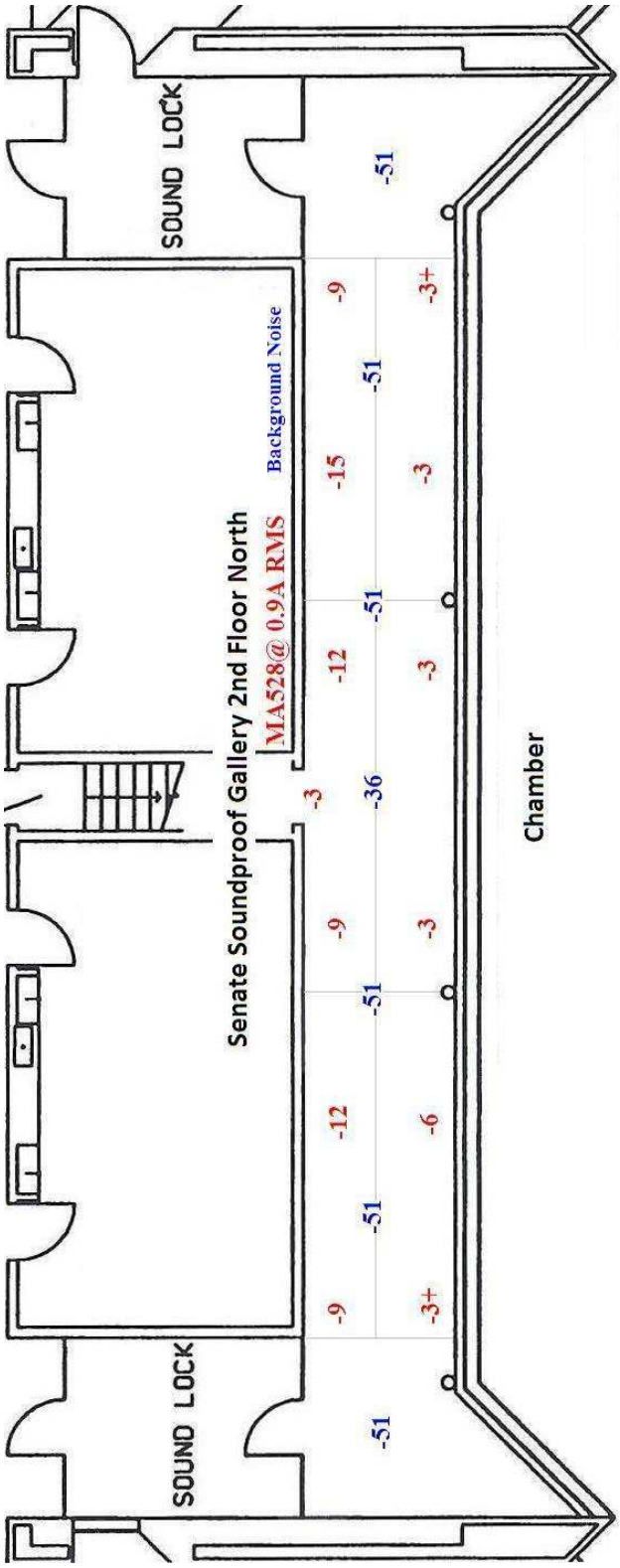
A20 HoR Gallery 1st South



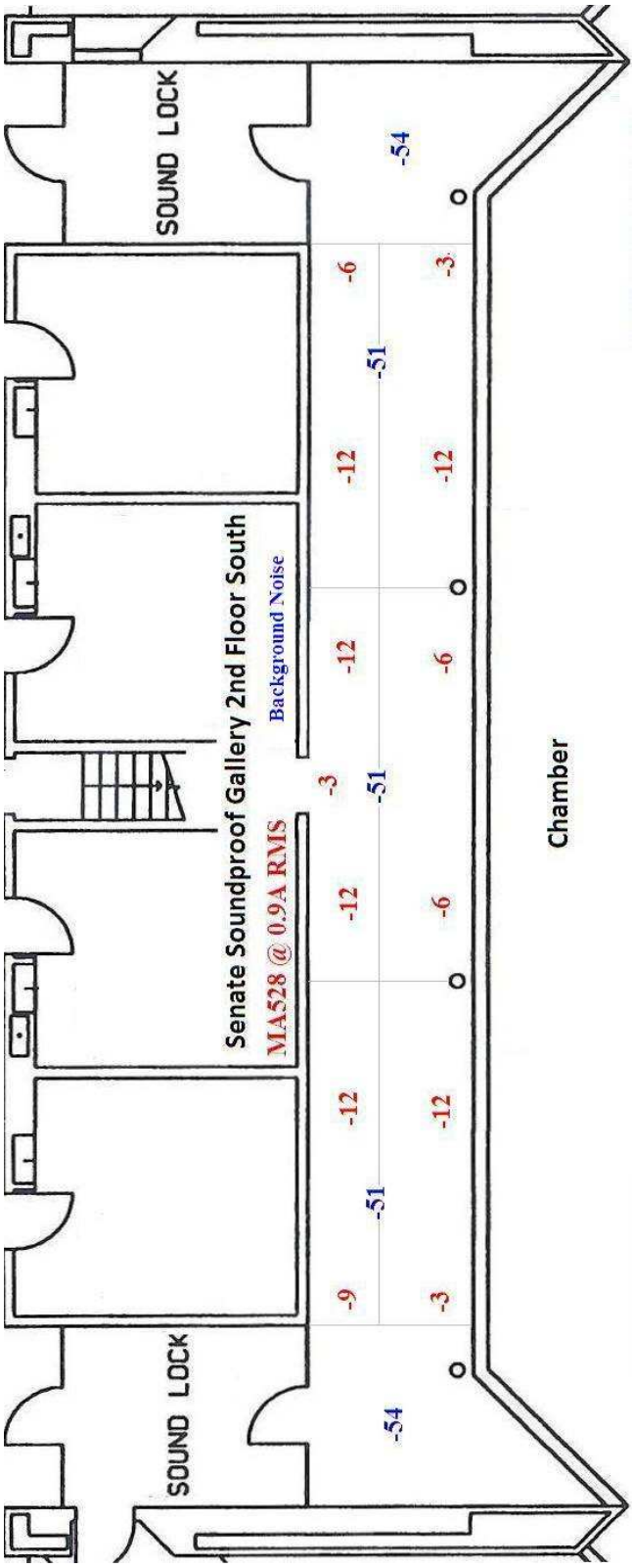
A21 Senate Gallery 2nd East



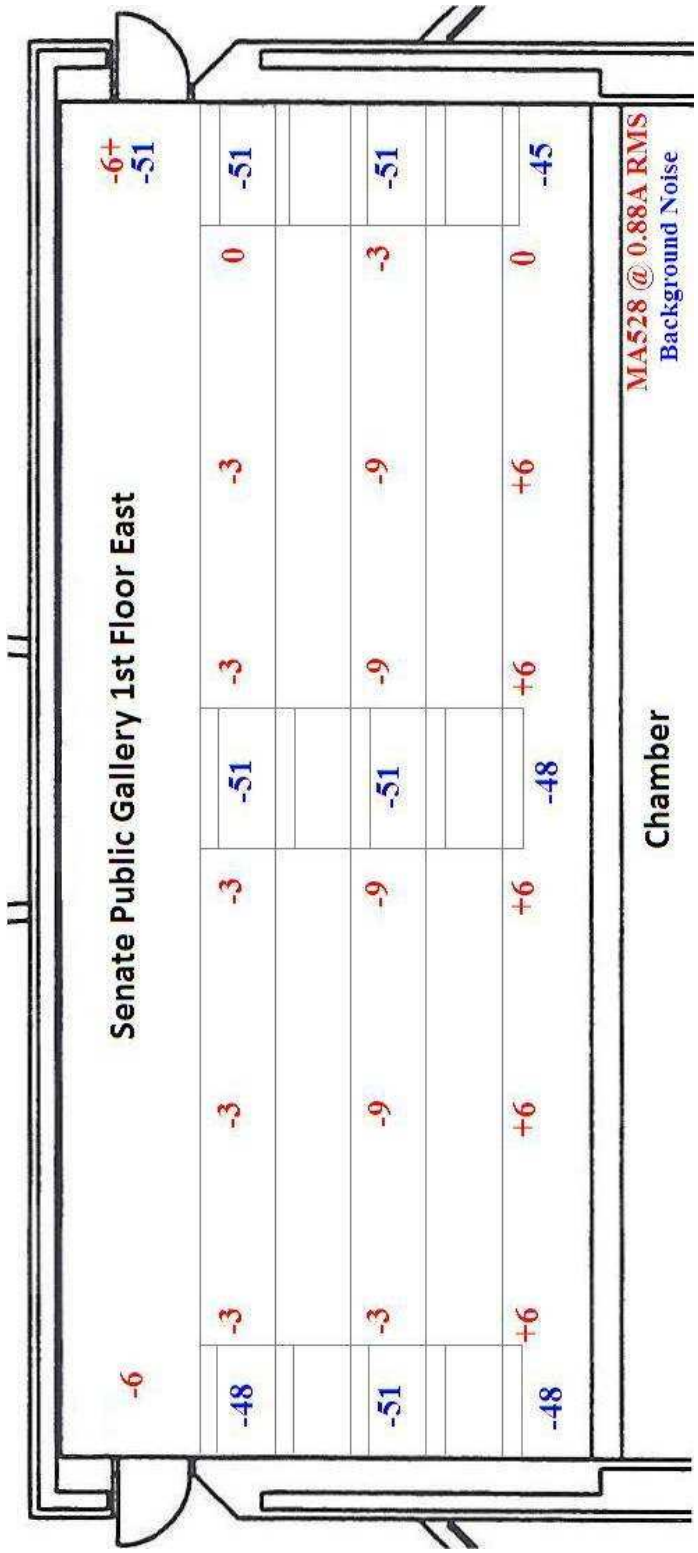
A22 Senate Gallery 2nd North



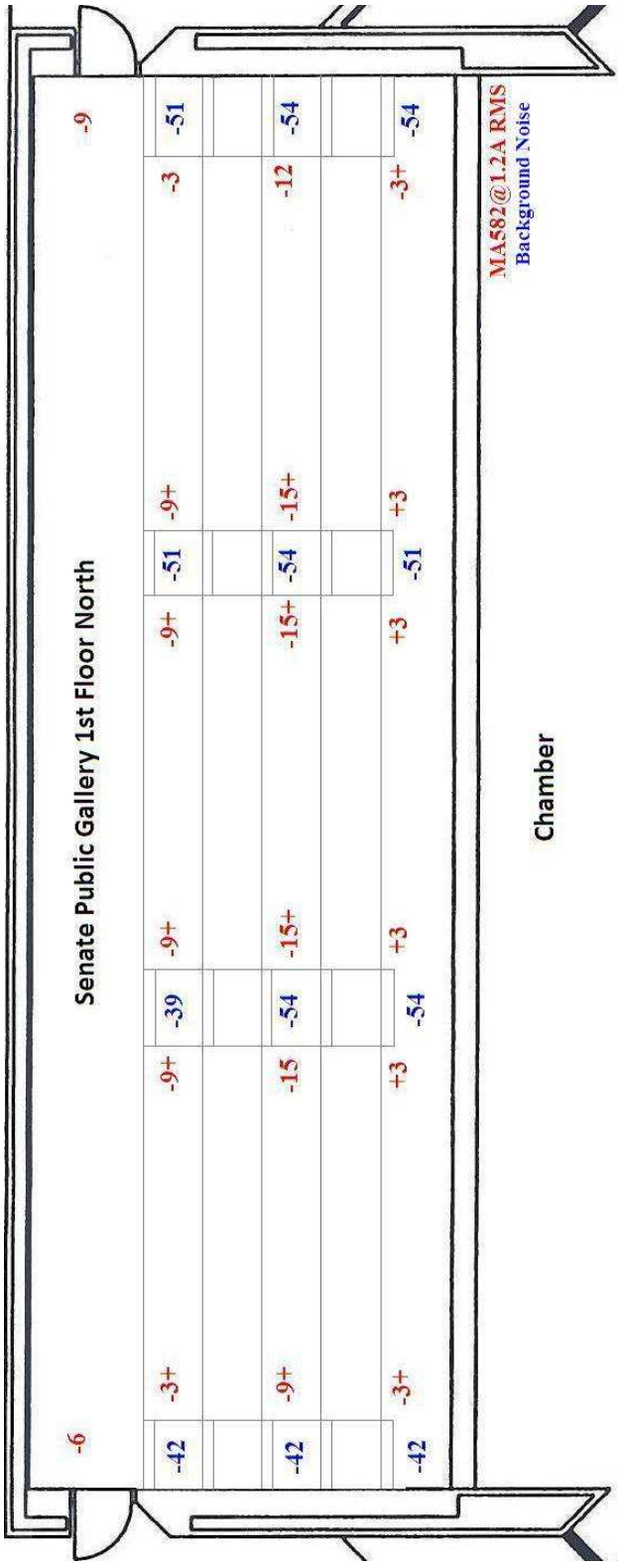
A23 Senate Gallery 2nd South



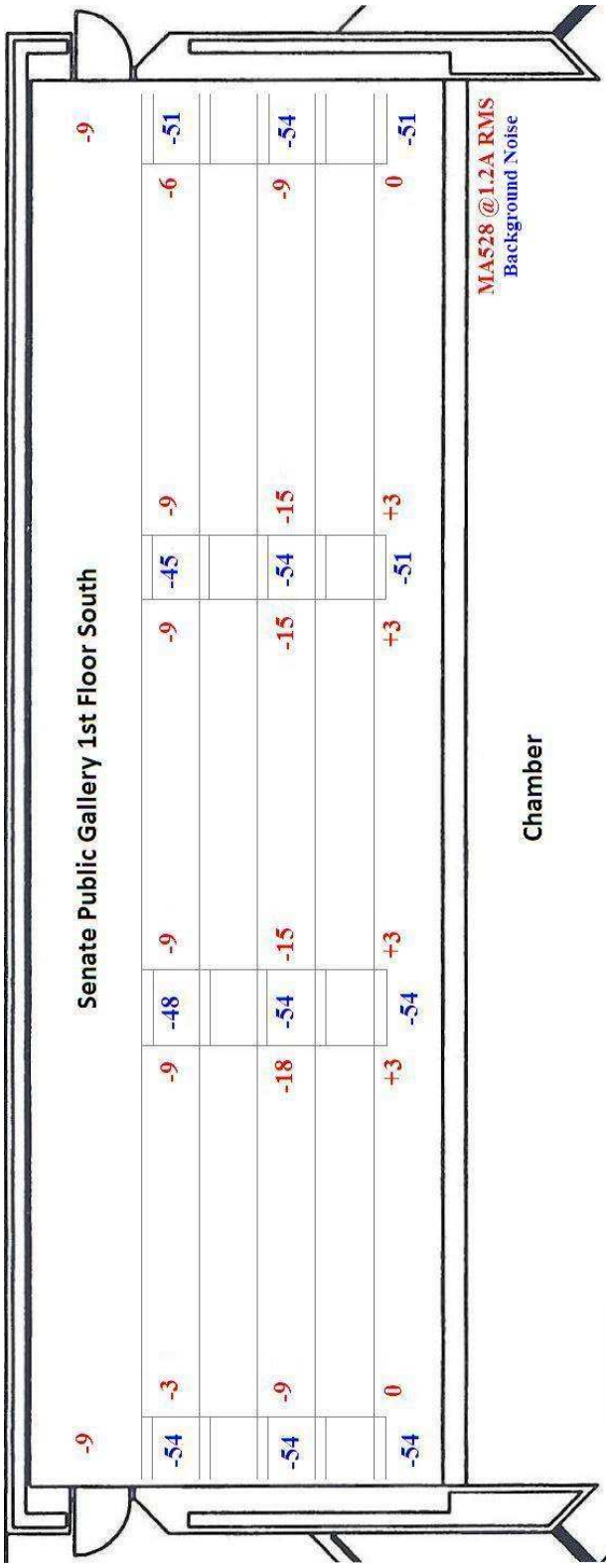
A24 Senate Gallery 1st East



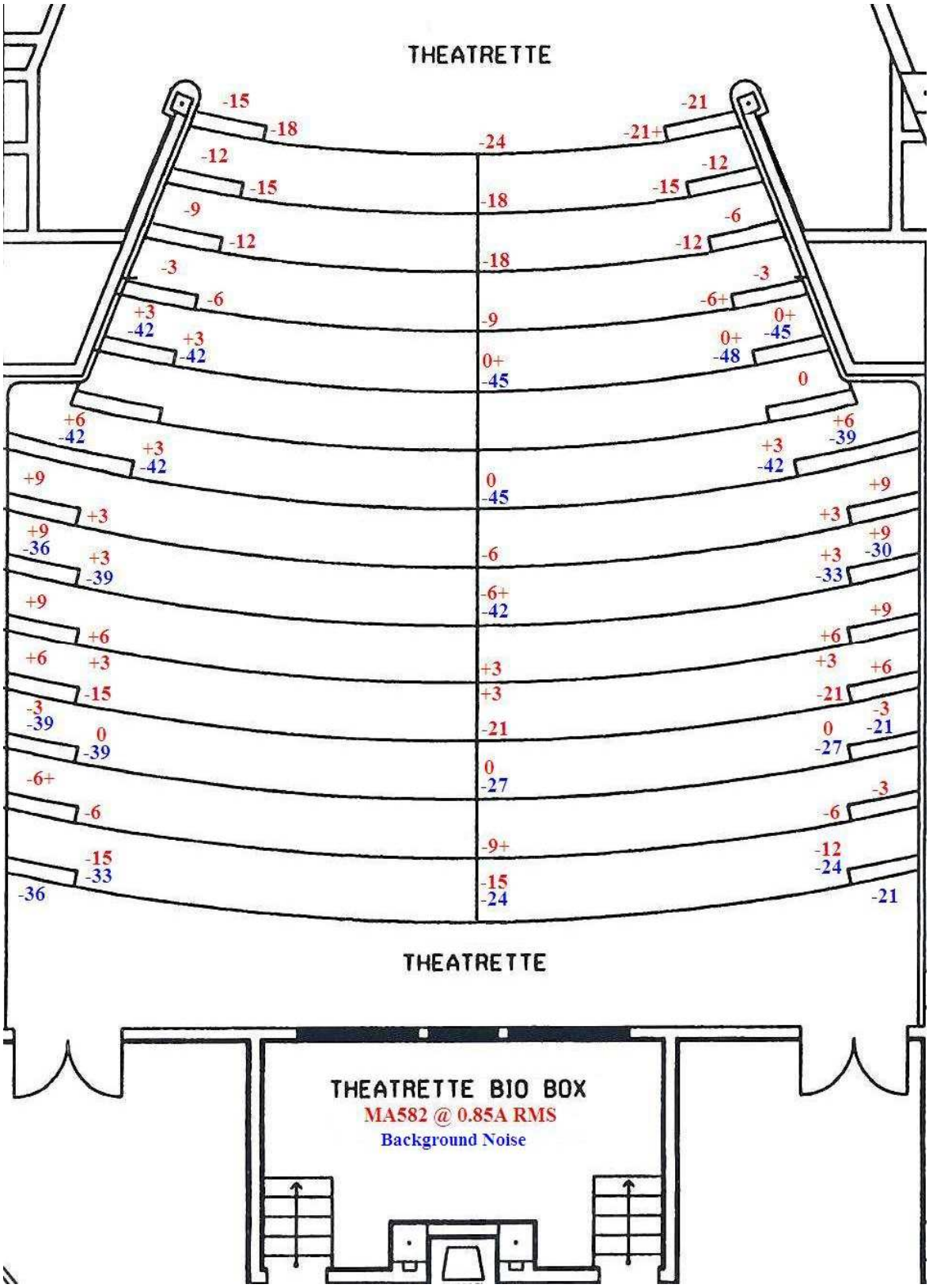
A25 Senate Gallery 1st North



A26 Senate Gallery 1st South



A27 Theatre


THEATRETTE
-15
-18
-12
-15
-9
-12
-3
-6
+3
-42
+3
-42
-24
-18
-9
0+
-45
-21
-21+
-12
-15
-6
-12
-3
-6+
0+
-45
0+
-48
0
+6
-42
+3
-42
+9
+3
+9
-36
+3
-39
+9
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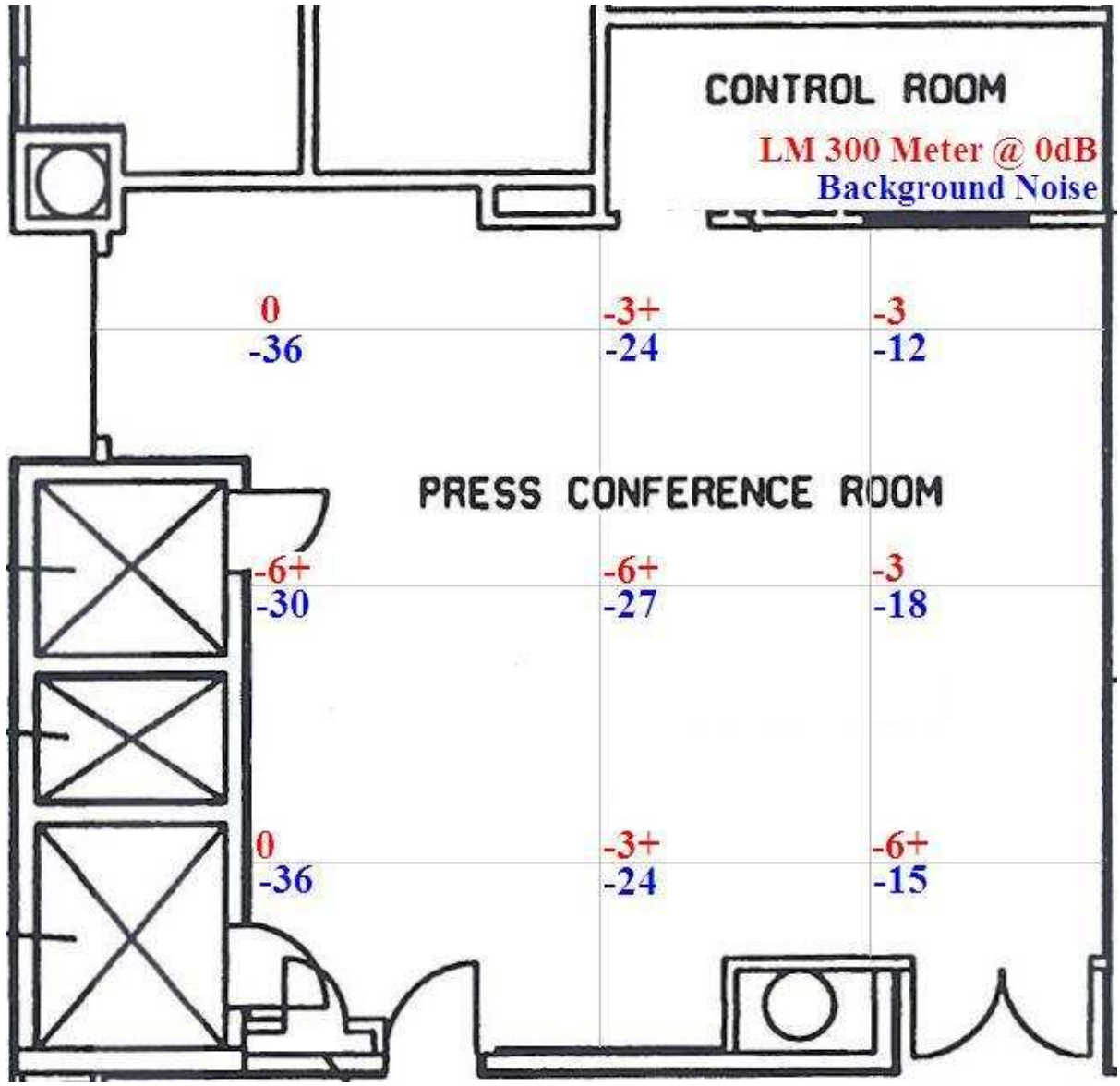
+3
-15
-3
-39
0
-39
-6+
-6
-15
-33
-36
0
-45
-6
-6+
-42
+3
+3
-21
0
-27
-9+
-15
-24
+6
-39
+3
-42
+9
+3
+9
-30
+3
-33
+9
+6
+3
+6
-3
-21
0
-27
-3
-6
-12
-24
-21
THEATRETTE
THEATRETTE BIO BOX
MA582 @ 0.85A RMS
Background Noise

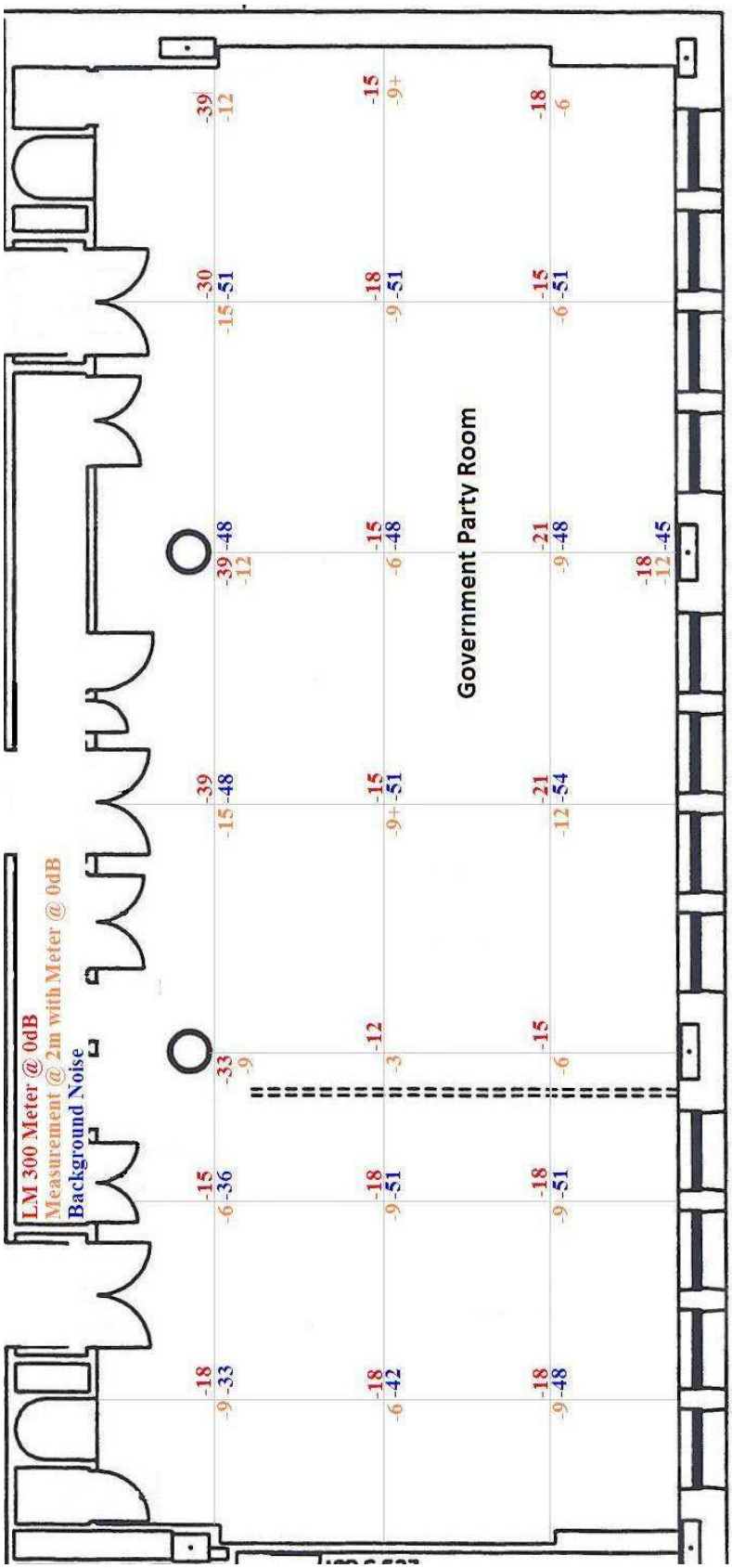
A28 EPCR (Blue Room)



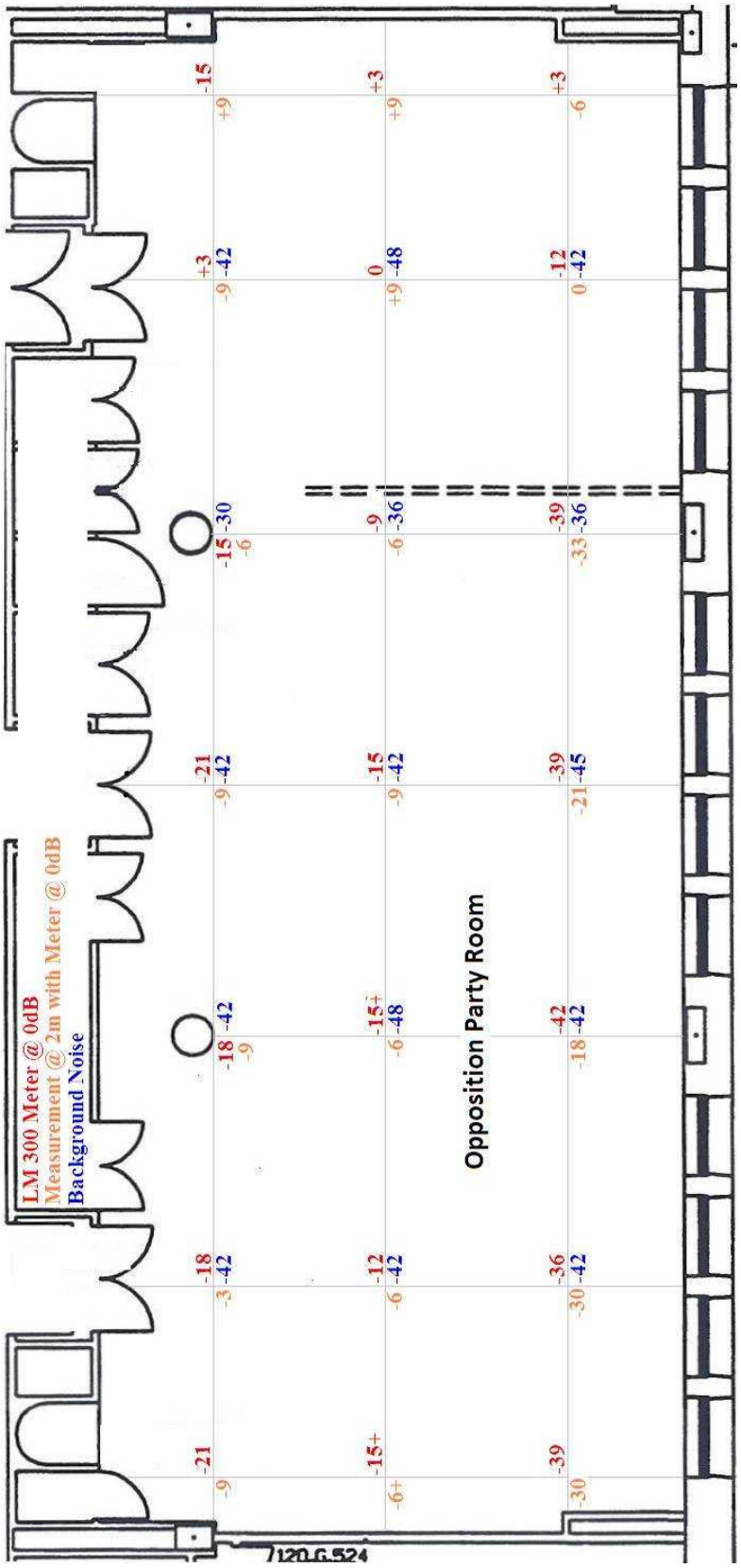
Note: This room has a number of Television Studio Lamps and associated mains wiring which produces above normal amounts of Hum.

There is a sharp rise in The North East corner (top right)

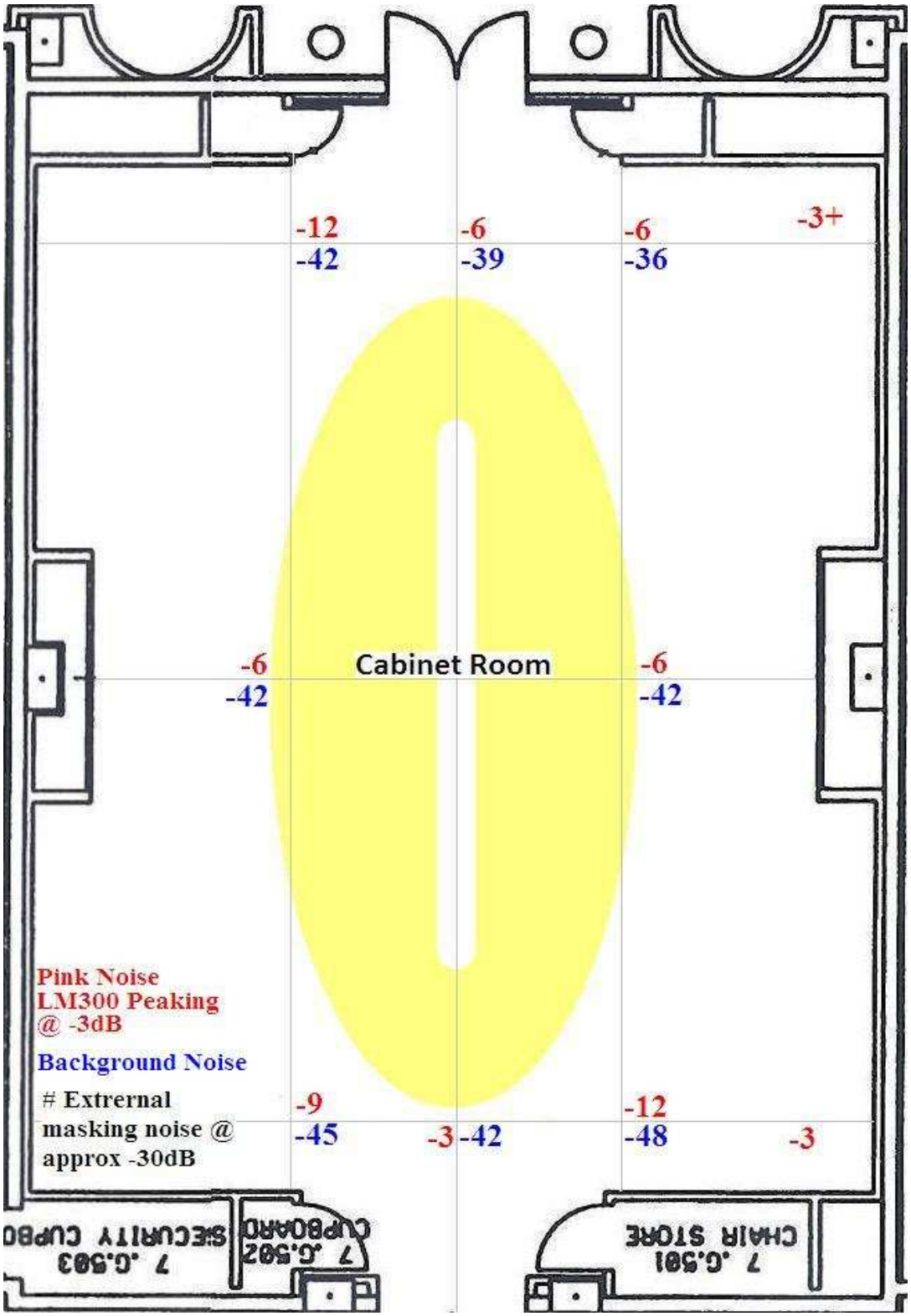
A29 Government Party Room



A30 Opposition Party Room



A31 Cabinet Room



Due to system integrity issues, this room was only partially tested with a low level pink noise source. During commissioning and certification by T4, this venue was compliant to a very stringent standard.

Appendix B Amplifier Descriptions

While each of the following amplifiers are capable of driving a loop successfully, there are some subtle differences, therefore require a tailored setup which result in some variations, especially when handling extended transients. For optimum results, it is best to feed AFILs amplifiers with a processed signal (eg: 2:1 compressor and a suitable limiter) especially when mixed brands of amplifiers are used in the one venue.

B1 Murray MA528: Transconductance Amplifier

Rating: 300VA, 9Amps RMS (Current Indicated in 100V Transformer Circuit)

No compressor possible overload on higher levels

Extremely destructive to Program at overload levels

Older Technology, suffers from excessive heat (convection cooled) but robust.

Direct or Line Transformer coupling available, Loop current monitoring in Transformer coupling mode cannot be easily monitored. One would expect losses when utilising transformer coupling method.

B2 Australian Monitor : KLa1

Rating: ?VA, 6Amps Peak (Nominal)

Dual stage level/drive control

Utilises compressor/limiter in processing circuit and inherently safe output stage

Very robust, fan cooled but generates excessive heat at high levels

Beware of setting up into compression mode during alignment

B3 LM Audio: LM300R (now GPT 300-II)

Rating: 300VA, 9Amps Peak

New generation amplifier incorporating inherently safe output stage, very effective Compressor/Limiter processing

Convection cooled, designed for minimal heat dissipation, fairly robust.

Probably the easiest “textbook” setup for a loop amplifier

Appendix C The Standard Signal and Loop Performance

C1 Basic Setup

In a standard Installation, a nominal signal of +4dBu (1kHz tone) is injected into the amplifier and the output is adjusted for an indication of 0dB peak current on the Induction Loop tester (calibrated for 100mA/m) The preferred output across the Loop Area is 0dBpk +/-3dB.

In a practical room, it is common to find 0dBpk as a maximum and a range down to -9dBpk in some parts of the room (-12dBpk may still useable depending on the signal to noise ration and performance of the hearing aid in question).

The Background Noise measurements are actually measured in C-weighted response due the Filter topology in the Induction Loop Monitor. This is an actual measurement of potentially destructive signals in the background environment usually of an electromagnetic nature, often derived from 240V mains equipment or simply the presence of mains wiring.

C2 Parliament House Setup

In Parliament House we use 0dBu as the alignment level, but we have other complications. The programme may contain a large dynamic range with a consistent levels around +3dBu to +6dBu for extended periods. Calibration of the loop amplifier must leave sufficient headroom to avoid distortion and yet have sufficient level for a good signal to noise ratio during normal programme.

C3 Issues with Crest Factor

It is assumed that the Crest factor for speech is 4; therefore the 100mA/m standard field strength required for Loop calibration, often ends up as 400mA/m for short terms eg 125mS, in order to deliver signal integrity placing a huge demand on amplifier/loop design. (this then becomes the 12dB difference in 400mA/m standard)

Currently more work is being done to define the standards with greater accuracy and therefore ultimately better service delivery with the use of AFILs.

C4 Loop Types

Originally, Perimeter loops with “Voltage” amplifiers were used which gave an incorrectly equalised audio signal into Telecoil enhanced Hearing Aid receivers.

Today we are able to fit multiple loops with correctly engineered, purpose built amplifiers and achieve much better results. This includes “good fidelity” in the range 100Hz to 5kHz (acceptable range for speech inteligibility) This bandwidth is useful in removing air-conditioner noise and mains hum to some degree as well as any high frequencies which may mask speech definition.

C5 Metal Loss

In today's building much use is made of metal and composite materials for reinforcement of concrete, trays for wiring and extensive plumbing for water, sewerage and air-conditioning flow and control.

Unfortunately, the extensive use of metal products in building construction adds to the phenomena of signal loss (absorption) due to the presence of certain metals and results in a non-predictable signal pattern often at the expense of reception in certain areas of a loop or degradation of frequency spectrum. Metal loss compensation can be added to a loop system, and in some cases achieving very good results.

C6 Standards under further Revision

Under the current standard, public meeting places in excess of 120 square metres, required a minimum of 20% of fitted out with a compliant AFILs system.

This is being revisited and authorities are looking at up to 100% coverage in all venues and potentially going to 400mA/m.

Appendix D Extract of Australian Standards

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

HEARING AIDS

PART 4—MAGNETIC FIELD STRENGTH IN AUDIO-FREQUENCY INDUCTION LOOPS FOR HEARING AID PURPOSES

INTRODUCTION

Induction loop systems generate an alternating magnetic field which may be detected, over a definable area, by receivers equipped with induction pick-up coils. Induction loop systems are used for various applications, e.g. in public address, paging and simultaneous interpretation systems, and as an aid for the hearing-impaired. Audio-frequency induction loop systems, in particular, are often employed in schools for hearing-impaired children, as attachments to domestic radio and television receivers and in churches, theatres and cinemas, for the benefit of hearing-impaired people.

The pick-up device for an audio-frequency induction loop system will usually be a personal hearing aid, of a type fitted with a pick-up coil; however, special induction loop receivers may be used in certain applications. Transmission of an audio-frequency signal via an induction loop system can often establish an acceptable signal-to-noise ratio in conditions where a purely acoustical transmission would be degraded by reverberation and background noise.

The use of personal hearing aids as loop system receivers enables the wearers of these aids to take advantage of induction loop signal transmission wherever such loops are provided. For this advantage to be most effective it is necessary for a standard value of magnetic field strength to be adopted, thus allowing a corresponding adjustment of the sensitivity of the pick-up coil in the hearing aid. The magnetic field strength must be chosen so that:

a) it is high enough to produce an acceptable signal-to-noise ratio over ambient electro-magnetic noise from power installations, etc.;

b) it is not so high as to cause overloading of the hearing aid.

The value of magnetic field strength recommended in this standard has been chosen so that these requirements are met. The lower limit of magnetic field strength is governed by the expected level of ambient electro-magnetic noise, measurements of which have been made in a number of homes, churches, schools, theatres, etc., in order to determine typical values. Measurements have also been made on hearing aids currently in use, to determine an acceptable range of input levels and on which the higher limit is based.

An induction loop system will typically incorporate a driving amplifier which is not specified in this standard. However, a recommendation of the frequency dependence of the magnetic field strength is included.

The recommended value for magnetic field strength may also be applicable to transmitting coils intended for very short range (i.e. close contact) inductive coupling of other devices, such as radio and television receivers, to hearing aids.

(IEC Page 5)

In the case of large areas or magnetic disturbances from mains or lighting regulation systems, it may be necessary to deviate from this standard or refrain from using an induction loop system.

1. Scope

This standard applies to audio-frequency induction loop systems producing an alternating magnetic field and intended to provide an input signal for hearing aids operating with an induction pick-up coil.

2. Object

The object of this standard is to specify a standard value of magnetic field strength in audio-frequency induction loops for hearing aid purposes, such as will give an adequate signal-to-noise ratio without overloading the hearing aid.

3. Explanation of terms

3.1 *Recommended average value for magnetic field strength*

The magnetic field strength obtainable within a specified area, corresponding to the long-time average of the speech signal applied to the system.

3.2 *Maximum magnetic field strength*

The magnetic field strength obtainable within a specified area, corresponding to the maximum short-time average of the speech signal (approximately 0.125 s, referring to the integration time used during the averaging process) applied to the system.

3.3 *Specified magnetic field area*

The area within which the hearing aid induction coil will be located under normal use of the hearing aid and within which the magnetic field strength is required to meet the recommended specifications.

Note. — The specified magnetic field area is not necessarily the geometrical area of the plane of the induction loop.

3.4 *Specified vector component of the magnetic field strength*

3.4.1 For many purposes, such as in spaces where the users of hearing aids are standing or sitting in upright positions, the vertical component of the magnetic field will be the significant one. In such cases the specified vector component relates to the vertical component. If other field components may be of importance, these should be reported and the direction stated.

3.4.2 For other cases, such as small transmitting coils used for close contact coupling, orientation of the coil for maximum sensitivity may be possible. Therefore the specified vector component relates to the field strength at the location and in the direction for maximum sensitivity of the user's induction pick-up coil.

: Page 7)

3.5 *Specified frequency response of the magnetic field*

The variation with frequency of the magnetic field strength in relation to that at 1 000 Hz for a constant input level to the system.

4. Recommended magnetic field strength

4.1 *Recommended average value for magnetic field strength in the specified magnetic field area*

The recommended value for magnetic field strength is:

$$(-20 \pm 3) \text{ dB re } 1 \text{ A/m}$$

created by a 1 000 Hz sinusoidal input signal, of level equal to the long-time average level of the speech signal applied to the input of the system.

Note. — The maximum value of magnetic field strength, for a system set up to this recommended field strength, will be approximately:

$$-8 \text{ dB re } 1 \text{ A/m}$$

This maximum is derived on the basis that the difference of the maximum short-time average level between a speech signal (approximately 0.125 s) and the long-time average level is approximately 12 dB.

4.2 *Recommended frequency response of the magnetic field*

For an electrical input signal to the system which has a constant value over a frequency range of 100 Hz to 5 000 Hz, the measured frequency response of the magnetic field over that range should not differ by more than ± 3 dB from the value at 1 000 Hz.

Note. — At schools for hearing-impaired children, it may be desirable to introduce a low-frequency boost to compensate for the falling low-frequency response characteristic of induction loop transmission.

5. Interference

Interference may occur to telecommunication equipment or wiring which is very close to the induction loop, particularly where the loop covers a large area.

Special measures may be necessary to limit this interference to an acceptable level.