APPENDIX 3C – ACOUSTIC AND NOISE CONTROL MEASURES

1. Definitions

a. **"ASTC"** is the Apparent Sound Transmission Class. It is a single number rating used to assess the in-situ sound isolation performance of partitions for comparison against the laboratory tested STC rating. ASTC ratings differ from NIC ratings in that the NIC is a direct difference method, while the ASTC rating is a better test of the partition itself as it removes the influence of the room finishes, therefore allowing for testing prior to full fitout. The measurement methodology is defined in ASTM 336;

b. **"dBA"** is a weighted overall sound pressure level that is weighted to more closely represent the human response to sound. The A-weighting primarily reduces the influence of low frequencies in reporting of overall sound levels;

c. **"Leq"** is the equivalent continuous sound level. The Leq is the steady sound level that is equivalent in energy to the fluctuating noise over a specified period of time;

d. **"NC"** means: Noise Criteria. NC is a single number rating that is sensitive to the relative loudness within a given space at different frequencies;

e. **"NIC"** stands for Noise Isolation Class. NIC is the single-number rating of the noise reduction that is measured between adjacent spaces. It is related to the STC of the partition separating the adjacent spaces but does not require correction for partition area or the sound absorption capacity of the receiving room. NIC is then simpler to measure in the field than ASTC and is the most direct measure of sound insulation between rooms. The methodology for measuring NIC is defined in ASTM 336;

f. **"NRC"** means Noise Reduction Coefficient. NRC is a single number rating of the sound absorbing properties of a material – derived by arithmetically averaging the Sabine absorption coefficients at 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz. An NRC of 0.00 indicates zero absorption, while an NRC of 1.00 indicates 100% absorption;

g. **"RT_{60}"** stands for reverberation time. RT_{60} is the time (in seconds) taken for the sound level in a room to decrease by 60 decibels following the abrupt termination of the source of sound. RT_{60} is the primary measure of 'acoustic liveness' of a space. A short RT_{60} (i.e. less than 0.9 seconds) favours speech intelligibility, while a long RT_{60} (i.e. greater than 1.5 seconds) favours music. For the purposes of this document the RT_{60} is the average of the 500 Hz, 1000 Hz, and 2000 Hz octave bands;

h. **"STC"** means (Laboratory) Sound Transmission Class. STC is a single number rating that is an indication of a partition's ability to block sound (primarily in the speech frequencies). The higher the STC rating, the higher is the sound transmission loss, for instance, loud speech can be understood fairly well through an STC 30 wall, but should not be intelligible through an STC 60 wall;

i. **"STC_C"** means the Composite Sound Transmission Class. The STC_C is the area-weighted logarithmic average expected when a partition is composed of multiple components with varying STC values, typically a door, window, and wall section.

2. Noise Isolation Requirements

a. Provide wall and floor assemblies with STC/ratings in accordance with Table 1 below. Field performance of wall and floor assemblies must be within 5 points of the STC rating when measured according to ASTC testing standards.

b. Extend the STC rated assembly full-height from floor to the underside of structure above for all walls and partitions requiring an STC rating in Table 1. If such a wall or partition cannot extend full height, provide an alternate system and provide an Acoustic and Vibration Consultant's report verifying that the required level of speech privacy and other requirements will be achieved with the proposed design.

c. The sound isolation ratings in Table 1 are considered the laboratory STC ratings except where noted. The field rating (ASTC or NIC) must be within 5 points of the ratings shown in Table 1 and are to be verified by post construction testing.

i. Details such as the ceiling plenum conditions, windows, doors, penetrations through the constructions, electrical box placement, recessed cabinets, etc. will be addressed to maintain the required field performance sound isolation rating.

ii. Table 1 will provide Normal speech privacy (except at corridor walls with standard, non-acoustically rated doors), assuming a background sound level of at least NC 30 (35 dBA).

d. Where a designated space is not fully enclosed (e.g., patient bays with a curtain as one partition, workstations, etc.), the partition requirements will be reduced to STC 45.

e. If adjacency combinations are not covered by Table 1, Project Co will propose STC ratings for any such new adjacency combinations for review and approval by the Owner, based on similar adjacency combinations, room type, functionality, intent, and purpose of the room.

Table 1 – Minimum STC Ratings of Demising Walls and Floor/Ceiling Assemblies

Room Categories[1]	Patient room[3]	Medical/Procedure rooms	Specialty Medical	Washrooms[2 3]	Lounge areas[3]	Circulation, reception, public areas[3]	Shared offices and workspaces[3]	Private offices[3]	Meeting rooms	Critical Acoustic	Work utility spaces	Building services
Patient room[3]	50	50	60	55	55	50	50	50	55	60	55	60
Medical/Procedure rooms		50	60	55	50	50	50	50	55	60	55	60
Specialty Medical			60	60	60	60	60	60	60	65	60	65
Washrooms[2 3]				45	55	50	55	55	55	60	45	55
Lounge areas[3]					50	45	45	50	55	60	55	60
Circulation, reception, public areas[3]						n/a	45	50	55	60	50	60
Shared offices and workspaces[3]							45	50	55	60	55	60
Private offices[3]								50	55	60	55	60
Meeting rooms									55	60	55	60
Critical Acoustic										60	60	60
Work utility spaces											45	60
Building services												45

Notes:

1. Room Categories are defined in Table 2
2. Assumed where washroom partitions do not include doors (i.e., no direct access between spaces). Where partition includes piping, the partition should be minimum STC 55 with minimum double or staggered stud construction and piping mounted to washroom side of partition only. Where there is a door connecting the spaces, STC 45 is acceptable.
3. Assumed where partitions do not include doors (i.e., no direct access between spaces). Where there is a door connecting the spaces, STC 45 is acceptable.

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Table 2 – Definition of Room Categories

Room Categories	Description of Requirements	Rooms Represented[1]
Patient room	Privacy: moderate Sound requirement: quiet Sound generation: raised voice	ADL Assessment/Treatment Bay Assessment/Treatment Room Consult/Interview Room Exam Room Exam/Treatment Bay Exam/Treatment Room Exam/Treatment Room-MH Exam/Treatment Room-Airborne Isolation Family Respite Room Interventional Suite Lounge/Living Room-Patient Medication Room Mobility Gym Nourishment Room On-Call Room Patient Room Patient Room-Mental Health Patient Room-Mental Health Accessible-Airborne Isolation-Hybrid Patient Room-Airborne Isolation Patient Uptake/Injection Room Quiet Room-Patient
Medical/Procedure rooms	Privacy: basic Sound requirement: moderate Sound generation: raised voice	Automated High-Volume Analyzer Area Cell Labelling Lab Computer Room Control Lab Low Level Lab Operating Room Procedure Room Procedure Room-Airborne Isolation Radiopharmaceutical Compounding Lab
Specialty Medical	Privacy: high Sound requirement: quiet Sound generation: low	Exam Room-EEG Exam Room-EMG Exam Room-Evoked Potentials Outpatient Audiology Clinic spaces (incl. exam, group, and procedure rooms, see also Audiology section in this Appendix) Imaging Sensory Modulation Secure Rooms (incl. Mental

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Room Categories	Description of Requirements	Rooms Represented[1]
		Health)[2]
Washrooms	Privacy: basic Sound requirement: moderate Sound generation: raised voice	Change Emergency Shower/Eyewash Lockers Washroom/Shower-Staff Washroom-Staff Washroom/Shower-Patient Washroom-Patient Washroom-Public Washroom/Tub-Inpatient Ensuite Washroom/Shower-Inpatient Ensuite
Lounge areas	Privacy: basic Sound requirement: quiet Sound generation: raised voice	Dining/Activity Area Lounge-Family/Visitor Lounge-Staff Waiting
Circulation, reception, public areas	Privacy: low Sound requirement: moderate Sound generation: raised voice	Receiving Reception Registration/Triage Servery Food Court / Retail
Shared offices and workspaces	Privacy: basic Sound requirement: quiet Sound generation: normal voice	Care Team Station Care Team Station – Enclosed Inter-Professional Team Room Study Room Workroom Workstation
Private offices	Privacy: moderate Sound requirement: quiet Sound generation: normal voice	Office Reading Room-PACS Secure Room
Meeting rooms	Privacy: high Sound requirement: very quiet Sound generation: raised voice	Conference/Meeting Room (most – see also Critical Acoustic) Multipurpose Room
Critical Acoustic	Privacy: high Sound requirement: very quiet Sound generation: amplified speech	All Multimedia Room Types[3] Clinical Operations Center and EOC Conference-Lecture Theatres Chapel Meditation Room Sacristy All Nations Sacred Space Ceremony Room Conference/Meeting Room-XXLarge-Dividable (or room designated for Yuwipi ceremonies)
Work utility spaces	Privacy: low	Cart Wash

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Room Categories	Description of Requirements	Rooms Represented[1]
	Sound requirement: moderate Sound generation: moderate equipment noise	Disposal Hold Hold-Central Equipment Housekeeping Closet MDRD Pneumatic Tube Station Soiled Equipment Hold Soiled Hold Soiled Utility Sterile Core-Equipment/Supplies Other spaces in this category include: food services, mechanical shafts, electrical closets, etc.
Building services	Privacy: none Sound requirement: none Sound generation: high levels of equipment noise	Mechanical rooms, electrical rooms, elevators, elevator machine rooms, garages, maintenance rooms, FMO workshops, mechanical and boiler rooms and similar spaces; also, rooms with noisy medical equipment.

Notes:

1. Spaces below to be defined according to the requirements of the area they serve. Where they connect multiple spaces, the more stringent criteria will be applied.
   - Alcove
   - Anteroom
   - Anteroom – Secure
   - Entrance Vestibule
   - Vestibule
2. Walls between adjacent Secure Rooms, and between Secure Rooms and other occupied spaces (except Secure Room Ante Rooms), shall be double wall assemblies; the Secure Room side of which shall be minimum 150mm (6”) cast-in-place concrete, filled concrete block, or similar construction, while the other side shall be a free-standing steel-stud and gypsum board/plywood assembly. The cavity between the two shall be fully insulated. It is assumed there will be no doors or windows in such walls.
3. Refers to Multimedia room Types 1 (with the exception of Patient Rooms), 4, 5, 6, and 7 as defined in Schedule 3, Section 7.9.6.

f. The following Room Categories (per Table 2) are considered 'Noise Sensitive' spaces:
   i. Patient Rooms,
   ii. Medical/Procedure Rooms,
   iii. Specialty Medical,
   iv. Lounge Areas,
   v. Shared Offices and Workspaces,
   vi. Private Offices,
   vii. Meeting rooms, and
   viii. Critical Acoustic spaces.

g. Project Co will provide door assemblies or an approved alternative as reviewed by the Owner that meet the minimum STC requirements as listed in Table 3 and assign them as noted in Table 5. A door schedule will be provided to the Owner for review.

h. Doors that will not be fitted with automatic door bottoms or sound-rated sweep seals (Type D0), the door undercut will not exceed 12mm.

i. Sliding doors will have full perimeter gaskets to maintain contact with the door and frame with the intent of eliminating sound leakage pathways.

j. Use solid wood doors for corridor doors.

Table 3 – Door Types

Door Type	Description - Example Components	Minimum STC Rating of Door Assembly
D0 – Basic	Basic door with no seals, or sliding door	15
D1 – Standard	Solid core wood or insulated (fibrous) metal door with full perimeter seals and automatic door bottom	30
D2 – Acoustic Rated Door	Lab rated door with full perimeter seals and automatic door bottom	38
D3 – Acoustic Rated Door Assembly	Lab rated door and assembly (frame, hardware, and seals)	45
D4 – Specialty Acoustic Door Assembly	Lab rated door and assembly (frame, hardware, and seals)	55

Note: Where windows are included in doors, the overall performance of the door type must be met.

k. Project Co will provide interior glazing that meets the minimum requirements of Table 4 and assigned per Table 5. A window/glazing schedule will be provided to the Owner for approval.

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Table 4 – Glazing Types (interior partitions only)

Glazing Type	Description	Minimum STC Rating of Window Assembly
G0 – Basic Glazing	Basic glass	15
G1 – Standard Glazing	Sealed glazing unit or monolithic glass sealed into a frame.	30
G2 – Acoustic Rated Glazing	Sealed glazing unit or monolithic glass, likely laminated.	35
G3 – Acoustic Rated Glazing Assembly	Double laminate sealed unit	42
G4 – Specialty Glazing Assembly	Custom construction and detailing with large airspace between thick laminated lites	50

Table 5 – Minimum Door/Window Requirements

Room Category[1]	Door Designation	Side Light Designation[2]	Viewing Window Designation
Patient room	D1[4]	G1	G3
Medical/Procedure rooms	D2	G2	G3
Specialty Medical	D3	G3	G3
Washrooms	D0	G1	--
Lounge areas	D0	G0	G2
Circulation, reception, public areas	D0	G1	G2
Shared offices and workspaces	D1	G1	G3
Private offices	D1	G2	G3
Meeting rooms	D2	G2	G3
Critical Acoustic	D3	G3	G4
Work utility spaces	D2	G2	G3
Building services	D2[3]	Not recommended	Not recommended

Notes: 1. Room Categories are defined in Table 2

2 Designations are for door sidelights only to a maximum of door height by 460 mm wide.

3. Building services doors should be located in utility corridors or other non-noise sensitive areas separated and away from occupied areas. If building services doors open to noise sensitive areas, then an appropriate door (and or vestibule) must be provided to comply with background noise requirements in Table 6. Supporting documentation must be provided that demonstrates compliance. Compliance testing will be required.

4. Where aluminum sliding doors are required, they will be door type D0 with a minimum STC 15.

I. Operable partitions will meet the sound isolation requirements for the intended use of the

individual spaces when divided (e.g., when divided into separate conference rooms, the operable partition must adhere to the requirements for each smaller room). Further requirements are listed below:

i. Operable partitions will be provided to have a minimum STC design rating as specified in Table 1 and will achieve minimum in-situ performance that is the lower of either ASTC/NIC 45 or ten (10) points below the STC design rating;

ii. Top and bottom seals must be operable;

iii. End stops must be rigid;

iv. The bulkhead must be insulated and designed to support the partition to meet the sound isolation requirements;

v. There must be no pass-through doors in operable partitions;

vi. The operable wall must not close on carpet, a smooth and level surface must be provided for a proper seal; and

vii. Submittals for operable partitions must be provided for review and approval by the Owner.

3. Background Noise – Interior Spaces

a. Project Co will:

i. in undertaking the design of the Facility, evaluate the expected noise from all mechanical and other systems in the Facility, including Project Co supplied equipment; and

ii. design and construct the Facility so that noise from the mechanical and other systems does not exceed the noise levels specified in Table 6 below, within the room or space identified.

Table 6 – Noise Criteria – Maximum Noise Levels Within Various Spaces

Room Categories (as defined in Table 2) (unless noted otherwise)	NC	dBA/dBC
Patient rooms (single patient) On-call rooms	35	40/60
Patient rooms (multiple occupant patient care areas), including: assessment/exam/treatment, consult/interview, etc.	40	45/65
Mental Health Area Patient rooms	30	35/60
Mental Health Area assessment/exam/treatment, consult/interview, etc.	35	40/60
NICU infant rooms and adult sleep areas	25	30/55
NICU spaces that open to infant rooms and adults sleep areas	30	35/60
NICU all other areas not noted above	35	40/60
Medical/Procedure rooms, e.g.: operating rooms	45	50/70
Specialty Medical	25	30/55
Washrooms	45	50/70
Lounge areas	40	45/65
Care team stations (all)	40	45/65
Circulation, reception and public areas	45	50/70

Room Categories (as defined in Table 2) (unless noted otherwise)	NC	dBA/dBC
Shared offices and workspaces	45	50/70
Private offices	35	40/60
Meeting rooms	30	35/60
Critical Acoustic	25	30/55
Work utility spaces	45	50/70

4. Noise Control – Exterior

a. Exterior noise levels for normal operations, transient events, and emergency power generation systems operation must be assessed by an Acoustic and Vibration Consultant using industry standard sound source modelling and sound propagation techniques/software. The Acoustic and Vibration Consultant will provide a report for review and approval by the Owner that demonstrates compliance with this section by providing details for the required acoustic controls and by indicating expected noise levels at all critical locations.

b. Normal Operation (Without Emergency Power Generation)

i. Noise from normal operations that include all mechanical and electrical systems running simultaneously (including electrical substations/transformers) but excluding the emergency power generation system will not exceed:

a. the specified room interior noise levels (15 minute Leq) specified in Table 2;

b. 55 dBA in exterior spaces associated with the Facility;

c. 60 dBA at the façade of the Facility; and

d. the City of Vancouver Noise Control By-law No 6555 requirements at the property line to the south and east of the Facility and 45 dBA at all other Facility property lines.

ii. Infrequent, short duration transient events such as emergency vehicle noise will not exceed 50 dBA 15 min Leq and 65 dBA Lmax in Noise Sensitive Spaces.

c. Operation of Emergency Power Generation

i. Noise levels due to the operation of the emergency power generation system will not exceed:

a. the specified room interior noise levels (1 minute Leq) specified in Table 2 by more than 5 points;

b. 60 dBA in exterior spaces associated with the Facility;

c. 65 dBA at the façade of the Facility; and

d. Sections 3, 5, 6, 6A, and 7 of the City of Vancouver Noise Control By-law No. 6555 (per zoning designation) at the property line of the Facility. The exemption for generator testing in Section 8(c) of the City of Vancouver Noise Control By-law No. 6555 (per zoning designation) is not permitted.

e. The outdoor sound level requirements for the emergency generator described in Section 4.c.1 b, c, and d above do not apply within 6.1m (20ft) of the combustion exhaust and the vent air intake and exhaust.

ii. The sound level limits for the emergency power generation system will be accomplished by using high-grade combustion exhaust mufflers, cooling air

intake and exhaust silencers, sound absorption in the generator room, high transmission loss partitions to enclosure the generator, vibration isolation systems, and other means as necessary.

5. Sound Masking

a. Provide a digital centralized, dual networked sound masking system in all spaces requiring Confidential speech privacy and which is not reasonably obtainable by sound proofing and adequate background noise from the building services systems. The system is subject to Owner approval.

b. The sound masking system will include the following:

i. strategically located speaker assemblies installed above or flush to a conventional suspended acoustic tile ceiling; and

ii. speaker assemblies generating unique, diffuse and unobtrusive sound with spatial and temporal uniformity, and having a spectrum shape designed to mask speech and low-level unwanted noise.

c. Sound masking system details and locations will be reviewed by the Owner.

6. Pneumatic Tube (PT) System

Consider all aspects of potential noise from the pneumatic tube system. As a minimum:

a. PT system will be located, installed, and enclosed as required to not exceed an Lmax (slow) dBA/dBC level as specified in Table 6;

b. intermittent noise as well as impact noise at the send/receive stations is allowable within the room housing the send/receive stations only. Controls will be provided that ensure noise in adjacent spaces does not exceed the LMax (slow) dBA/dBC levels as specified in Table 6;

c. avoid placing send/receive stations in Noise Sensitive areas as specified in 2.f.;

d. avoid placing diverter units and PT horizontal and vertical runs in or above Noise Sensitive areas as specified in 2.f.;

e. install PT runs over acoustic tile or gypsum wallboard ceilings in occupied areas that are not considered acoustically sensitive areas; and

f. consider isolated, mass-loaded acoustic wrap/lagging or internally insulated, 2-layer GWB enclosures for diverter units and horizontal and vertical tubes, where required for noise control.

7. Acoustical Finishes

a. Acoustical room finishes, defined as room finishes with an NRC of greater than 0.70, will be used in all occupied spaces except where prohibited by code requirements.

b. Acoustic tile ceilings with a minimum NRC rating of 0.70 and minimum CAC rating of 35 will be used throughout the facility, except where equivalent alternate treatment is provided, in NICU areas (see section 9), or where prohibited by cleanroom requirements.

c. The extent and placement of acoustical finishes will be assessed by Project Co's Acoustic and Vibration Consultant and summarized in a report for review by the Owner.

d. Sound absorbing materials will be incorporated into the design of rooms so that the Reverberation Time (RT_{60}) of the rooms do not exceed the values listed in Table 7.

e. Sound absorbing and reflecting materials will be placed to enhance speech communication in all spaces where teaching or group discussion will occur. Detailed design and assessment will be required for the Chapel and All Nations Sacred Space Ceremony Room.

f. Where achieving the RT_{60} in Table 7 appears to be challenging because of limited scope for use of conventional sound absorbing materials due to safety/security concerns,

alternative approaches will be presented to the Owners for approval.

g. Dividable spaces (those with operable partitions) must meet the requirements of this section for all configurations of the dividable space.

Table 7 – Maximum Room Reverberation Times for Unoccupied Rooms

Room Categories (as defined in Table 2)	Reverberation Time (Seconds) (in 500, 1000, and 2000 Hz Octave Bands)
Patient rooms	0.7
Patient rooms (multiple occupant clinical spaces)	0.7
Medical/Procedure rooms	0.8
Specialty Medical	0.6
Lounge areas	0.8
Circulation, Reception and public Areas	1.0
Shared offices and workspaces	0.8
Private Offices	0.8
Meeting rooms *Conference/Meeting Room-XXLarge-Dividable (or room designated for Yuwipi ceremonies)	0.6
*Chapel	0.7
*All Nations Sacred Space Ceremony Room	0.7
Critical Acoustic	0.5
Atrium	1.5

*Note: The Chapel, All Nations Sacred Space Ceremony Room, and Conference/Meeting Room-XXLarge-Dividable (or room designated for Yuwipi ceremonies per Appendix 3A [Clinical Specifications and Functional Space Requirements]) are listed under Critical Acoustic rooms for other acoustic parameters but have been placed more practically with Meeting rooms for Reverberation Time due to size and intended use.

h. Acoustic treatments will meet the following requirements:

i. Friable materials are not permitted

ii. Acoustic panels that are framed are not permitted

iii. Wall mounted acoustic materials must be mounted on walls with concealed stainless steel tamper resistant fasteners such that they will not be compromised or removed without use of special tools.

8. Operating Rooms with Imaging Equipment

a. Special care will be given in the design of any rooms containing Medical Imaging equipment, such as the CT Scanners. Attention will be paid to:

i. vibration isolation of the imaging equipment; and

ii. room finishes.

b. For rooms containing Medical Imaging equipment, the extent of noise and vibration control detailing will be determined by Project Co's Acoustic and Vibration Consultant in addition to meeting the requirements of Schedule 3.

9. NICU

a. Consult/Interview Rooms must have acoustic privacy.

b. Ceilings shall have a minimum NRC of 0.90 over 80% of the ceiling area and a minimum CAC rating of 29.

c. Sound levels from continuous background sound (limits in Table 6) in infant rooms and adult sleep areas will not exceed hourly Leq of 45 dBA and L10 of 50 dBA, when using a slow response. Transient sounds or Lmax will not exceed 65 dBA, when measured with a slow response.

d. Sound levels from continuous background sound (limits in Table 6) in staff work areas, family areas, and staff lounge areas will not exceed hourly Leq of 50 dBA and L10 of 55 dBA, when using a slow response. Transient sounds or Lmax will not exceed 70 dBA, when measured with a slow response.

e. Operational noise from Project Co supplied equipment must be included in the background noise limits presented in Table 6.

f. Personal address speakers located in sensitive areas will have adjustable volume controls for the speakers in each room and for each microphone that sends signal through the system.

g. Doors in the NICU will have acoustic seals.

10. Audiometry Booths

a. Audiology suites and spaces housing sound booths will meet the following requirements:

   i. STC requirements for meeting rooms per Table 1,

   ii. NC 25, and

   iii. RT60 0.6 seconds.

b. Booth construction will provide sufficient noise reduction such that ambient noise levels meet ANSI S3.1-1999 (R2018) Maximum Permissible Ambient Noise Levels for ears not covered testing, when measured in accordance with the procedures outlined in ANSI S3.1. Booth noise reduction performance, measured in accordance with ASTM E596, will not be less than:

Octave Band Centre Frequency (Hz)	125	250	500	1000	2000	4000	8000
Noise Reduction (dB)	19	28	38	46	52	54	54

c. Booths will include integrated ventilation equipment that meet ANSI S3.1 Maximum Permissible Ambient Noise Levels for ears not covered testing.

d. Booth interior wall and ceiling finishes will be sound absorptive (NRC 0.7 or higher).

e. Booths will be vibration isolated from the building floor to reduce structure-borne sound transmission into the booth. Vibration isolators must have a natural frequency of 6.5 Hz or less, and vibration isolation must comply with all applicable seismic restraint requirements.

f. Booth submittals will include octave band noise reduction measured in accordance with ASTM E596.

11. Gym Floor Impact Noise Control

a. Gyms, fitness, and physical rehabilitation spaces will not be located directly above or beside the following Room Categories (see Table 2):
    i. Patient Rooms,
    ii. Lounge Areas,
    iii. Private Offices,
    iv. Meeting rooms,
    v. Critical Acoustic rooms, and
    vi. any other spaces where background noise levels are NC 35 or less or sleep is expected.
b. When gyms, fitness, and physical rehabilitation spaces are directly above or adjacent to the following space types:
    i. Medical/Procedure Rooms
    ii. Shared Office and Workspaces
c. The gyms, fitness, and physical rehabilitation spaces will require the following:
    i. The IIC rating of the floor finish and floor structure only (i.e., excluding ceilings and underside finishes) will meet a minimum rating of IIC 65.
    ii. Spaces directly below will have a minimum of an acoustic tile ceiling with a minimum CAC rating of 35.
    iii. Impact noise levels (Lmax) in adjacent spaces must not exceed 35 dBA or 55 dBC.

12. Floor Vibration Limits

a. Refer to Schedule 3 Section 5.9.6.

13. Acoustic Testing and Verification

a. Refer to Schedule 3 Section 5.5.11 Acoustic Performance Testing for testing and verification requirements for acoustical performance.

END OF SECTION