

October 25, 2023

LaKeisha Marsh

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**Subject: Body Fit Training; Redondo Beach, California
Acoustical Design Review
Veneklasen Project No. 7233-168**

Dear LaKeisha:

Veneklasen Associates, Inc. (Veneklasen) has reviewed the drawings for comparison to the local municipal code and tenant lease requirements. This report documents our acoustical comments. Veneklasen has summarized the comments into areas where modifications may be required.

The project is located on the ground floor of a 2-story commercial building. There are commercial adjacencies on each side of the suite and above it. Single family residences are located directly behind the building. Veneklasen understands the building structure consists of lightweight wood-framed construction.

City Noise Ordinance

The City of Redondo Beach Noise Ordinance (Chapter 4-24.301) establishes exterior ambient sound level requirements for property lines based on receiving land use. The same chapter precludes the generation of sound that exceeds these thresholds for more than 30 minutes out of an hour. For low-density residential, the limit is 50 dBA during the daytime and 45 dBA at nighttime (10 PM-7 AM).

The recommendations herein meet these requirements.

Lease Language

Veneklasen has not received the final lease language. The draft lease does not include quantitative sound level limits but precludes the generation of excessive noise or vibration that generates complaints from other tenants or occupants of the building. Veneklasen understands this does not preclude all audibility of sound/vibration but sounds/vibrations intense enough to generate complaints.

Project Acoustical Design Goals

The design presented herein is intended to render sounds from Body Fit Training virtually inaudible in adjacent tenant spaces and at property lines. This is intended to ensure that the suite can operate without frequent complaints. The element of human response is the most difficult to anticipate when undertaking acoustical design of a fitness facility. Sensitivity to sound varies from person to person and with activity. Even with the recommended measures, some complaints may occur. In this case, the generated sound level within the tenant suite can be reduced.

Note that early morning and late-night classes are the highest risk for potential noise complaints from the adjacent multifamily residential building.

Recommendations – Executive Summary

A summary of the acoustical design for the subject space is presented in this section. In the following section, specific details and descriptions are provided for review and implementation by the architecture and construction teams. These two sections represent the same design.

Acoustical design incorporates design of multiple elements into a comprehensive balanced strategy. Sound travels between spaces following the weakest path, therefore, significant upgrades in acoustical performance to part of a

studio where other elements are much weaker acoustically does not balance the cost of mitigation with the realized benefit. The design presented herein is presented as a system; modifications to the recommendations presented herein that apply to one element may warrant adjustments to other elements in order to maintain the balanced design.

The proposed tenant suite is located on the ground floor of a commercial building, surrounded by the exterior and two adjacent tenants. There is also a nearby residential multifamily property. The building structure consists of a wood frame structure.

In the studio, Veneklasen recommends providing independent walls in front of any elements that are common to the adjacent tenants. This includes structural columns. Furring, consisting of a freestanding wall, is recommended for all remaining elements. A freestanding wall represents less material cost and a higher level of acoustical performance, however, requires more floor space. If floor space does not allow, inform Veneklasen for additional review.

A suspended ceiling is recommended to minimize flanking from the studio to the adjacent tenant. However, Veneklasen understands that no ceiling will be provided due to ceiling height limitations. Door seals are also recommended to control sound levels in other parts of the suite which have lower levels of acoustical isolation than the studio.

Recommendations are provided related to the design of the mechanical and plumbing systems and speaker installations. The most important element in controlling sound transmission to neighbors is avoiding rigid mountings and contact between the speakers and building structural elements.

Veneklasen can assist in advising regarding alternate solutions, upon request, to align the recommendations herein with client's budget, schedule, and aesthetic design goals. The recommendations herein balance cost with performance; it is possible that reductions in music level, particularly at bass frequencies, may be necessary to avoid complaints. Neither the Municipal Code nor tenant lease includes quantitative requirements which suggests that any complaints could be deemed reasonable and actionable. The goal is to avoid complaints without unnecessarily burdening Body Fit Training's operations. Care should be taken with late-night or early-morning classes to avoid complaints from the nearby residential building.

The remaining section outlines these recommendations in detail.

Recommendations – Technical Details

This section provides additional information regarding construction practices and detailing necessary to implement the acoustical design approach described above.

A. Studio Demising Wall Assembly

1. Typical demising wall
 - a) Existing tenant wall types E1 and E2 (to remain) are assumed to be a single wood stud with one (1) layer of gypsum board on each side (two layers total) and batt insulation in the cavity. Legend on sheet A1.0 confirms that E1 and E2 are full height.
 - b) Wall type S1/A1.1 is specified where the Studio directly abuts an existing tenant wall type E1. S1 is a single metal stud wall with two (2) total layers of 5/8-inch QuietRock ES and a minimum air space of 2 inches. This is acoustically acceptable. The partition shall extend to the structure.
 - c) Provide mineral wool or glass fiber fire block where draft stop is required. This is acceptable; do not use gypsum board or other rigid material.
2. Refer to section M for partition intersection information.
3. Refer to section N for top-of-wall detailing.

4. Refer to section O for additional partition information.

B. Lobby Tenant Demising Wall Assembly

1. Existing tenant wall type E1 is specified. This is acoustically acceptable, considering that the neighboring tenant is a restaurant. However, if a more noise-sensitive tenant, such as an office or yoga studio, occupies the space in the future, further mitigation measures may be required.
2. Refer to section M for partition intersection information.
3. Refer to section N for top-of-wall detailing.
4. Refer to section O for additional partition information.

C. Studio at Lobby Wall Assembly

1. Wall is keyed as S2/A1.1 and consists of a single metal stud construction spaced 16 inches on center, two (2) layers of gypsum board on one side, and a single layer on the other side. This is acoustically acceptable.
2. Refer to section M for partition intersection information.
3. Refer to section N for top-of-wall detailing.
4. Refer to section O for additional partition information.

D. Studio at Stairwell

1. Keynote 16/A1.0 specifies one (1) additional layer of 5/8-inch drywall at the stairwell wall. This is acoustically acceptable.

E. Exposed Structures, Studio

1. Where structural elements (columns, beams, roof slabs, shear walls) are present within the studio, they shall be covered with gypsum board assemblies.
2. For columns, provide a furred wall around columns. Furred wall framing shall be spaced off face of column by 1/2 inch, minimum. Furred wall framing shall be freestanding, with batt insulation equal in depth to the studs, and one (1) layer of 5/8-inch gypsum board. Furring shall extend a minimum of 6 inches above the ceiling.
3. Refer to section K for flooring information.
4. Refer to section M for intersection information.
5. Refer to section N for top-of-wall detailing.
6. Refer to section O for additional partition information.

F. Studio Door

1. Applies to doors at entrance to Training Studio.
2. Glass door 102 and glazing surround A/A5.0 are specified. Anticipate significant sound leakage at this assembly.
3. Veneklasen recommends a glass door with metal frame and full perimeter seals between the Training Studio and the Lobby.

4. Acoustical seals around full perimeter of doors. Head and jamb seals shall be Pemko S773 triple-fin seals and threshold seals shall be Pemko 434_PKL drop bottom seal. Ensure doors/seals are adjusted so that seals are fully engaged when door is closed.
5. All doors to the Studio shall be closed during classes.

G. Rear Exit Door

1. Not found on drawings. Notify Veneklasen if this condition changes.

H. Main Entrance Door (Storefront)

1. There are no acoustical requirements for this door.

I. Ceiling Assembly, Studio and Lobby

1. Veneklasen understands that the ceiling assembly will consist of an exposed wood truss structure supporting the plywood subfloor, and a lightweight concrete topping with ceramic tile finish flooring on the above tenant's side.
2. Drawings suggest a drop ceiling to remain at the northern half of the Training Studio.
3. Refer to section N for top-of-wall detailing.
4. Refer to section O for additional ceiling detailing information.

J. Ceiling Assembly, Restrooms

1. RCP plans indicate gypsum board ceilings. This is acoustically acceptable.
2. Refer to section N for top-of-wall detailing.
3. Refer to section O for additional ceiling detailing information.

K. Flooring, Studio

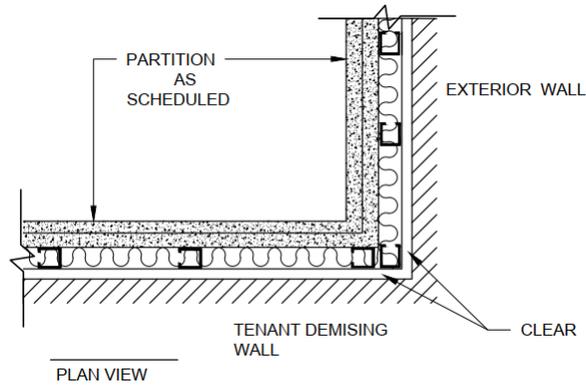
1. Finish plans indicate a 10mm rubber flooring. This is acoustically acceptable.

L. Flooring, Lobby

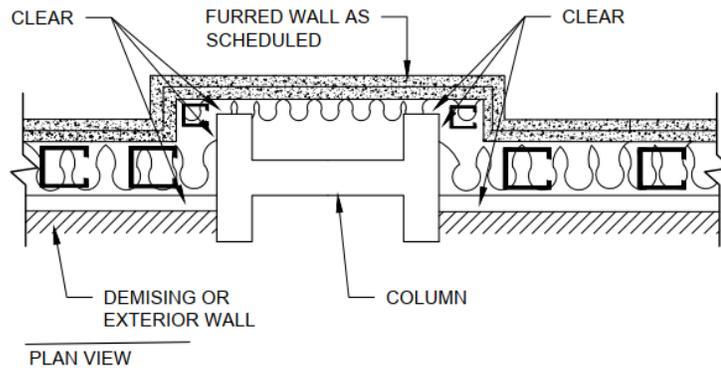
1. Finish plans indicate LVT flooring. This is acoustically acceptable.

M. Studio Wall Intersections

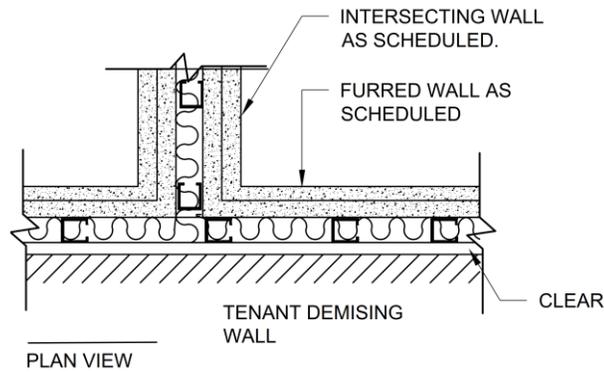
1. Where studio walls intersect with other walls, avoid rigid connections between the framing and gypsum board of the two assemblies. Provide a 1/4-inch gap at the perimeter of all acoustical wall assemblies and fill gap with acoustical or fire-rated sealant. This is noted on sheet A1.0 (note 15). Inclusion of a construction detail may be beneficial. Refer to conceptual details below.



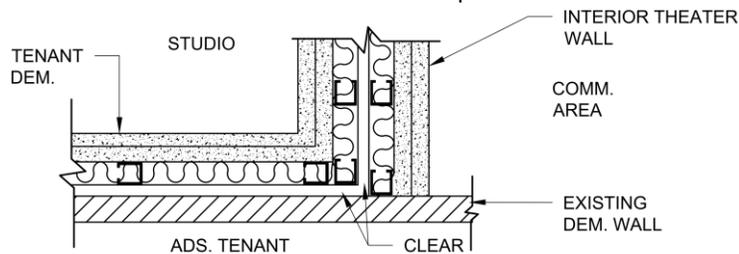
2. Studio walls at columns. Avoid contact between columns and studio furred walls. Refer to conceptual detail below.



3. Studio and interior wall intersection. Refer to conceptual detail below.



4. Studio and common area wall intersection. Refer to conceptual detail below.



N. Top of Wall Details

1. At top of studio walls, gypsum board must extend to structure, leaving a minimum 1/4-inch, maximum 1/2-inch gap between gypsum board and structure. Cut gypsum board to follow deck and truss profile.

O. General Construction

1. Ensure any penetrations in the concrete deck above the suite and demising walls are fully filled with acoustical or fire-rated sealant prior to construction within tenant suite. Any gaps larger than 1/2-inch in size shall be lapped with 5/8-inch gypsum board to reduce gap to 1/2 inch or less. All penetrations in sound-rated assemblies shall be filled with sealant rated Grade 0 or better according to ASTM C834.
2. Should any openings occur in the structure (unused tenant shafts, doorways, etc.), these shall be closed with material having equal surface weight as the assembly in which the opening occurs. Inform Veneklasen of any such conditions for further review.
3. Outlet boxes. Install putty pads on the back of all outlet boxes and other similar penetrations within any sound-rated constructions (ceiling and walls). Back-to-back outlet boxes in acoustical walls are prohibited. Separate outlet boxes on opposing sides of a partition by at least one stud bay.
4. Cable trays must not pass through the demising walls between suite and adjacent spaces. If possible, cable trays should be rerouted so that they do not penetrate the demising wall with the studio. Cable tray and conduit penetrations in partitions should be packed tightly with heavy density putty once the cables are pulled.
5. Wrap any PVC, ABS, or similar piping that will be exposed to the studio music with 2-lb. pipe wrap.
6. Where structural elements penetrate acoustically rated walls, maintain minimum 1/4-inch, maximum 1/2-inch gap between structural elements and gypsum board. Ensure gap is filled with a continuous bead of acoustical sealant.
7. Provide 1/4-inch clear between any trades penetrating the gypsum board and the gypsum board in an acoustically rated wall or ceiling. Fill gap with acoustical sealant. Any gaps larger than 1/2-inch shall be lapped with gypsum board. All penetrations in sound-rated assemblies shall be filled with sealant rated Grade 0 or better according to ASTM C834.
8. Provide 1/4-inch, minimum, 1/2-inch maximum around the full perimeter of gypsum board ceiling assemblies. Fill gap with acoustical or fire-rated sealant. Rigid contact with walls shall be avoided.
9. Penetrations in gypsum board ceilings shall be limited to those required by code (i.e. sprinklers).
10. Speakers in studio shall not be recessed within sound-rated assemblies.
11. In furred and double-stud construction, there shall be no connections between furred studs and adjacent construction or double stud rows. Trades shall not be installed within the airspace. Cross bracing is not permitted. Trades shall not be attached to adjacent construction and furred wall.
12. Where batt insulation is specified for walls, it shall be equal in thickness to the depth of the studs.
13. Seismic Restraint. Where required, seismic restraint shall be minimized such that it meets but does not exceed code requirements. No rigid attachment is permitted for seismic restraint of sound-isolation assemblies. Sway bracing for partitions shall be equal to Mason Industries type DNSB. Bracing for ceilings shall consist of slack aircraft cables.
14. Comply with manufacturer's installation instructions for all acoustical systems.

15. The design direction provided herein pertains to acoustical design only. There may be other requirements that pertain to each site, including, but not limited to, building code, seismic codes, and fire/life safety requirements. Design professionals in these fields should be consulted to ensure all applicable requirements are met.

P. Sound System

1. Speakers shall not be recessed in any sound-rated assemblies, including studio ceiling.
2. Speaker isolation
 - a) Main speakers, attached to building structure or non-vibration-isolated ceilings. Isolate with the use of Mason Industries type W30NCC having a minimum static deflection of 1 inch in compression or tension.
 - b) Suspended speakers from a pole are preferred over ceiling-mounted or wall-mounted speakers.
 - c) Subwoofers are understood not to be used for this brand. Inform Veneklasen if subwoofers are provided.
3. Audio-visual systems shall include an electronic limiter that controls the maximum wattage fed to the speakers. This will control both music and amplified voice sources to ensure that sound levels do not increase over the life of the facility, particularly with multiple users and natural variations in instructor voice and timbre.

Q. Mechanical Systems

1. Rooftop units and exhaust fans are located on the roof, requiring duct routing to the studio and other areas through the studio ceiling. This allows for sound transmission between spaces and to the building exterior through the ductwork.
 - a) Provide a minimum 10-foot length (or full length of duct, where shorter than 10 feet) of 1-inch thick internal duct lining within all ducts where they enter or exit the studio.
2. Where ductwork is exposed, wrap the ductwork with 2-lb. duct wrap, Kinetics Noise Control KNM-200AL, or approved equal.
3. Vibration isolation:
 - a) Forced Air Unit. Provide 0.2-inch deflection neoprene mounts below unit, Mason Industries type BR or approved equal. Avoid contact between units and walls.
 - b) Humidifiers. If used, provide 3/4-inch neoprene pads between the unit and the wall, Mason Industries type Super W. Provide neoprene washer/bushings at through-bolts, Mason Industries type WB. Avoid rigid contact between humidifier and walls. Attach to an interior suite wall, not the tenant demising wall.
 - c) Interior fans. Fans <1000 CFM, provide neoprene washer bushings, Mason Industries type HMIB. Fans ≥1000 CFM, provide vibration isolation hangers with 1-inch static deflection, Mason Industries type 30.
 - d) Exhaust fan, >1000 CFM. Provide internal neoprene isolators within the fan, by manufacturer.
 - e) Heat pump units. Isolate with 1-inch deflection spring mounts or roof curb with 1-inch deflection springs, Mason Industries type SLF or RSC, Specification N. If spring mounts are utilized, provide minimum 3-inch thick concrete housekeeping pad below unit.
4. Veneklasen anticipates the existing rooftop/exterior mechanical equipment meets all municipal code requirements, including property line requirements.

- a) Rooftop exhaust fan EF-4 shall comply with municipal code and property line requirements, and any screening or vibration isolation requirements provided by the Landlord.
5. Comply with manufacturer's installation instructions for all acoustical systems.
6. Seismic restraint, if required, shall not compromise effectiveness of vibration isolators. Utilize slack cable restraint for suspended equipment.

R. Acoustical Field Measurements

1. On October 20, 2023, Veneklasen conducted acoustical measurements to assess the existing airborne and impact sound isolation performance of the floor-ceiling assembly between the Body Fit Training and the tenant directly above. It's important to note that since the structure is planned to remain exposed without a ceiling, there is a potential risk of future noise complaints if this is not properly addressed. Typically, wood frame assemblies perform less effectively in this regard compared to concrete assemblies.

The objective of these measurements was to determine the maximum sound levels generated by amplified music and voice inside the Studio, as well as to assess the potential for impact noise from the tenant above to cause disruptions within the Body Fit Training premises. Veneklasen has provided the following comments and recommendations based on the results of the measurement program.

- a) The airborne sound isolation between Body Fit Training is reasonably acceptable for tenants with lower noise sensitivity, such as restaurants. Regardless, Veneklasen recommends maintaining the interior noise levels within a range of 95-100 decibels when measured in a "C" or dBC (not dBA) weighting network averaged over the duration of a song or track. Note that if, in the future, a more noise-sensitive tenant, such as an office, were to occupy the space above Body Fit Training, there is a possibility that the interior sound levels may be required to be reduced to a greater extent in order to reduce noise complaints.
- b) The measured impact noise isolation between the tenant space above and Body Fit Training is not acoustically acceptable. This implies that footsteps may be audible within the Body Fit Training premises when music is not playing.

If you have any questions, please do not hesitate to call.

Sincerely,
Veneklasen Associates, Inc.



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Associate



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