

24 May 2022

Bella Avery  
**Tipsy Putt**  
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**Subject: Tipsy Putt Sunnyvale Town Center, Sunnyvale CA**  
**Project Noise Compliance**  
**Salter Project**

Dear Bella:

We understand that the City of Sunnyvale PRC notified you that your project submission is incomplete without an acoustical analysis detailing how potential future project noise would be reduced to meet all applicable acoustical standards. At your request, we reviewed your project. We have completed our measurements and acoustical analysis for the subject project. This letter presents our findings and recommendations.

## **SUMMARY**

The future noise levels generated by the project should follow the requirements in the Sunnyvale Municipal Section 19.42.030 by implementing the appropriate noise reducing measures.

## **CRITERIA**

Applicable criteria are derived from the Sunnyvale Municipal Code (restated from the 4/20/2022 PRC review letter)

### 2. Noise Impact:

- a. Project Description: Include in the project description letter, the adjacent uses (above and on the sides) to provide context and to analyze impact from the proposed restaurant and mini golf.
- b. City's Noise Standard: What would be the noise impact on the adjacent uses? Provide a noise study or estimate through noise analysis noise levels generated by mini golf and indicate how it complies with the Noise Element of the City of Sunnyvale General Plan (find attached) and operation noise standards of the City of Sunnyvale Municipal Code (Section 19.42.030). Following are noise standards to comply,

I. Meet an interior noise standard of 45 dBA; II. Noise levels may not exceed the existing ambient sound level by more than 5 dBA; in no case may local ambient sound level be considered less than 50 dBA. Measurements must be taken from a position 4 feet above finished floor of the adjacent residential unit, with windows closed, to allow for accurate assessment of noise sources generated from recreational activities of the mini golf.



## MEASUREMENTS

On 16 May 2022, we visited the project to conduct preconstruction measurements. These measurements determined the amount of sound isolation currently provided by the existing floor construction.

The floor construction consists of a 12-inch-thick regular weight concrete slab. Tipsy Putt intends to leave some of this ceiling exposed and to install a drop ceiling at certain locations to conceal restaurant infrastructure.

To measure the sound isolation, we set up a known noise source in a fully enclosed retail space (The Tipsy Putt space did not have the exterior glazing in place during the time of our visit). We measured the source noise in the retail space and then we measured again in the residential unit above (Unit 222). The tested bare concrete floor tested at NIC<sup>1</sup> 64 (approximate STC<sup>2</sup> 69 equivalent). The A-weighted source noise measured at 94 dBA. The A-weighted receive level measured 32 dBA.

## ASSESSMENT

### Mini Golf

The maximum noise level per the Sunnyvale municipal code is less than 45 dBA. To exceed this level in the residential unit(s) above, the A-weighted source noise from “mini golf” would need to exceed 100 dBA (i.e. a live rock band). Reaching this noise level would be extremely unlikely because the activities associated with mini golf do not have the potential to generate these elevated levels of noise. Even conversations of several patrons speaking with elevated voices would not exceed the 100+ dBA threshold.

While activities associated with mini golf may not exceed the 45 dBA limit, other activities at Tipsy Putt should be assessed.

### Amplified Music

Amplified music has the potential to exceed the 100+ dBA threshold. Though playing music at this high level is unlikely and discouraged. Music at this volume would cause discomfort for patrons and potential hearing damage for employees with prolonged exposure.

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<sup>1</sup> NIC (Noise Isolation Class) – A single-number rating defined in ASTM E336 that quantifies the ability of a partition to reduce airborne noise between adjacent spaces under field conditions. The sound levels measured in the receive room are not adjusted to account for the effects of the room volume and furnishings. Increasing NIC ratings correspond to improved airborne sound isolation.

<sup>2</sup> STC (Sound Transmission Class) – A single-number rating defined in ASTM E90 that quantifies the airborne sound insulating performance of a partition under laboratory conditions. Increasing STC ratings correspond to improved airborne sound insulation.

**Recommendations:**

1. Floor mount speakers or suspend speakers using spring hangers such as Mason 30N.
2. Prior to opening the business, measure the noise of amplified music in the residential units above to verify that it follows the maximum allowable noise limit.
3. Provide a limiter on the sound system that can be set to restrict the maximum output of amplification of the speaker system.

**Mechanical Equipment Noise**

Kitchen exhaust fans house air conditioning units are potential sources of noise. Their noise output should not exceed the 100+ dBA threshold. However, this equipment generates vibration, which if not properly isolated, can increase noise in adjacent spaces.

**Recommendations:**

1. Vibration isolate all equipment per ASHRAE guidelines. These measures include spring hangers with integral neoprene elements for hanging equipment and base-mounted springs for rooftop equipment. A qualified acoustical consultant should review the mechanical equipment list and the vibration isolation measures.
2. Rooftop exhaust fans may require additional isolation of ductwork as fans are often rigidly connected to ductwork for fire code.

This concludes our comments on the subject project. Please contact us if you have any questions.

Best,

**SALTER**



Eric A. Yee  
Vice President

Enclosure

2022-05-24 Tipsy Putt Noise Analysis