

3 May 2022

Peter Sodini

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**Subject: Bertolucci Parcel
Preliminary Environmental Noise Study
Salter Project 22-0139**

Dear Peter:

We have conducted a preliminary environmental noise study for this project. The purpose of the study is to determine the noise environment at the proposed site, compare the noise levels with applicable standards, and recommend mitigation measures as necessary. This report summarizes the results of our study.

PROJECT CRITERIA

California Building Code (Title 24, Part 2)

Section 1206 of the 2019 California Building Code requires that the indoor noise level in residential units of multi-family dwellings not exceed DNL¹ 45 dB.

South San Francisco General Plan

Chapter 9 of the City Noise Element is consistent with the State Standards requiring an interior DNL of 45 dB. The Noise Element also notes that where site conditions permit, noise buffering should be utilized to reduce exterior noise levels to DNL 65 dB or below. The Noise Element notes that barriers should be avoided if feasible.

¹ DNL (Day-Night Average Sound Level) – A descriptor for a 24-hour A-weighted average noise level. DNL accounts for the increased acoustical sensitivity of people to noise during the nighttime hours. DNL penalizes sound levels by 10 dB during the hours from 10 PM to 7 AM. DNL is sometimes written as Ldn. For practical purposes, the CNEL (Community Noise Equivalent Level) and DNL are usually interchangeable.



CALGreen Code

CALGreen Code Section 5.507.4 addresses acoustical issues for non-residential spaces. If a building is exposed to an exterior $L_{eq}(h)^2$ of 65 dB during any hour of operation, the building envelope must reduce the interior noise environment to $L_{eq}(h)$ of 50 dB in occupied areas. This applies to the project's amenity and retail spaces.

NOISE ENVIRONMENT

The project site is located at the intersection of Cypress and Lux Avenue, within a quarter-mile of the South San Francisco Caltrain station and the US-101 freeway. The noise environment at the site is controlled by vehicular traffic on the local streets and US-101. To quantify the existing noise environment, we conducted two long-term noise measurements between 23 and 25 March 2022 and one short-term measurement on 23 March 2022. The long-term measurements were at a height of 12 feet above grade and the short-term measurement was at 30 feet above grade. The measurement locations and measured noise levels are shown on **Figure 1**.

A future traffic analysis was not provided for this project. Therefore, we have added 1 dB to the calculated noise levels to account for general future traffic increases³.

RECOMMENDATIONS

For our analysis, we have used the floor plans, elevations, and exterior wall assemblies shown on the "Formal Planning Application #3" drawings dated 6 August 2021.

Interior Spaces

We calculated the window and exterior door STC ratings needed to meet the project criteria, as shown in **Figures 2 to 7**. We have assumed the following for our calculations:

- All spaces – including sleeping areas – will have hard-surfaced (non-carpeted) flooring
- Residences will have 9-foot high ceilings
- Retail spaces will have 15-foot high ceilings
- The exterior wall will include stucco or a similar finish (approximately STC 45 exterior wall)

² $L_{eq}(h)$ – The equivalent steady-state A-weighted sound level that, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same period.

³ The California Department of Transportation assumes a traffic volume increase of three-percent per year, which corresponds to a 1 dB increase in DNL over a ten-year period.

The recommended STC ratings are for full window and door assemblies (glass and frame) rather than just the glass itself. Tested sound-rated assemblies should be used. For reference, typical one-inch glazing assemblies (two 1/4-inch-thick panes with 1/2-inch airspace) typically achieve an STC rating of 32. STC ratings above 33 require laminated glass.

Where windows need to be closed to achieve an indoor DNL of 45 dB, an alternative method of supplying fresh air (e.g., mechanical ventilation) should be provided. This issue should be discussed with the project mechanical engineer.

Outdoor-Use Spaces

Noise levels at the interior courtyard are expected to be below DNL 65 dB.

At the Level 7 terrace, noise levels will be approximately DNL 72 dB. We understand that there will be a 6-foot tall glass wall surrounding the terrace. This wall will be sufficient to reduce noise levels to DNL 65 dB as long as there are no cracks or gaps in the glass wall, and it is continuous from top to bottom.

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This concludes our preliminary environmental noise study for the Bertolucci Parcel project. Please feel free to call if you have any questions.

Best,

SALTER



David Twohig
Consultant



Felipe Tavera
Senior Associate

Enclosures as noted





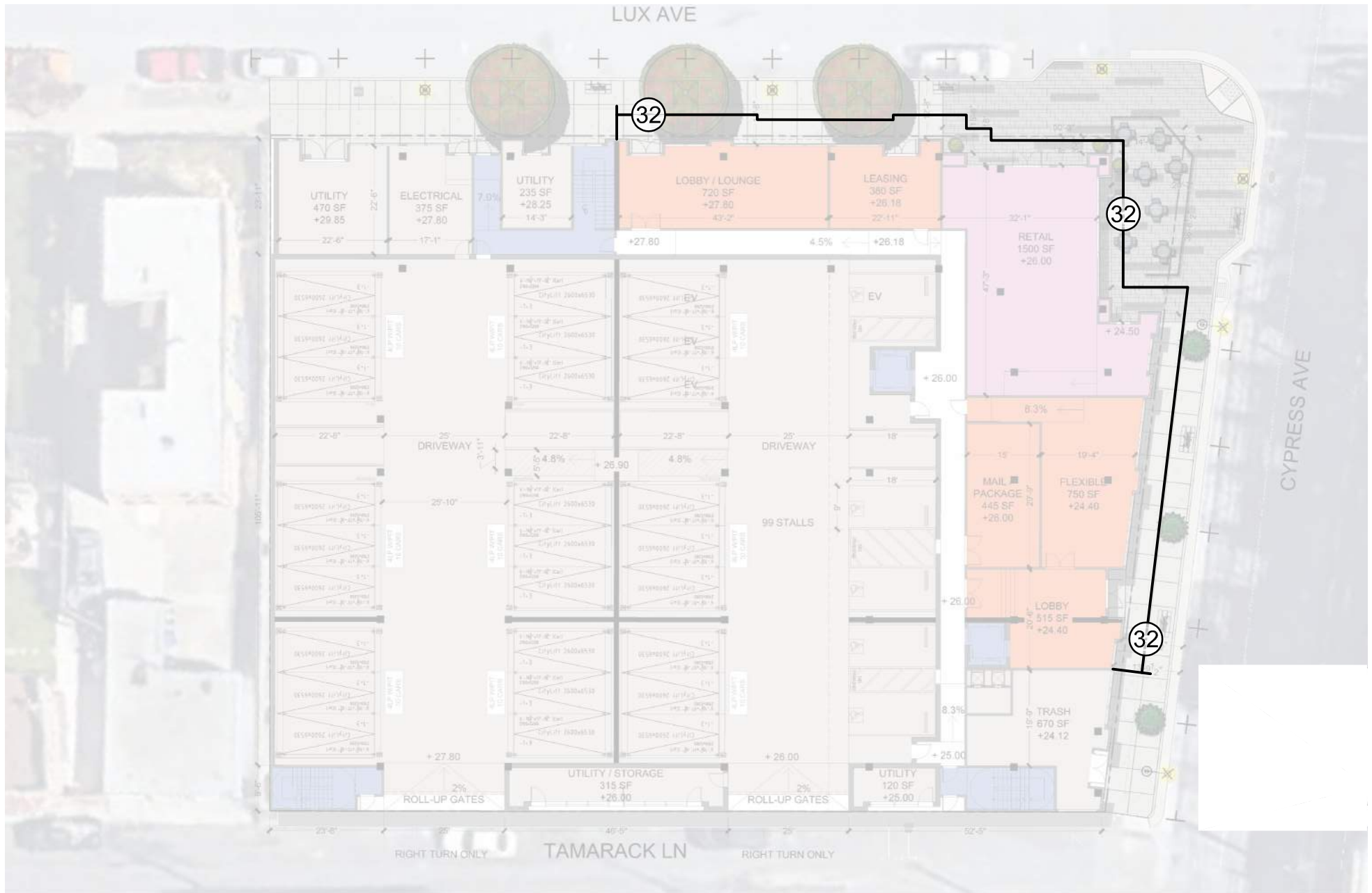
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BERTOLUCCI PARCEL MEASUREMENT LOCATIONS AND MEASURED NOISE LEVELS

FIGURE 1

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FT/VCS
04.26.22



NOTE: STC RATINGS ARE FOR THE COMPLETE ASSEMBLY (E.G., GLASS, FRAME, AND OPERABLE SECTIONS) BASED ON TEST REPORTS FROM AN NVLAP-ACCREDITED LAB

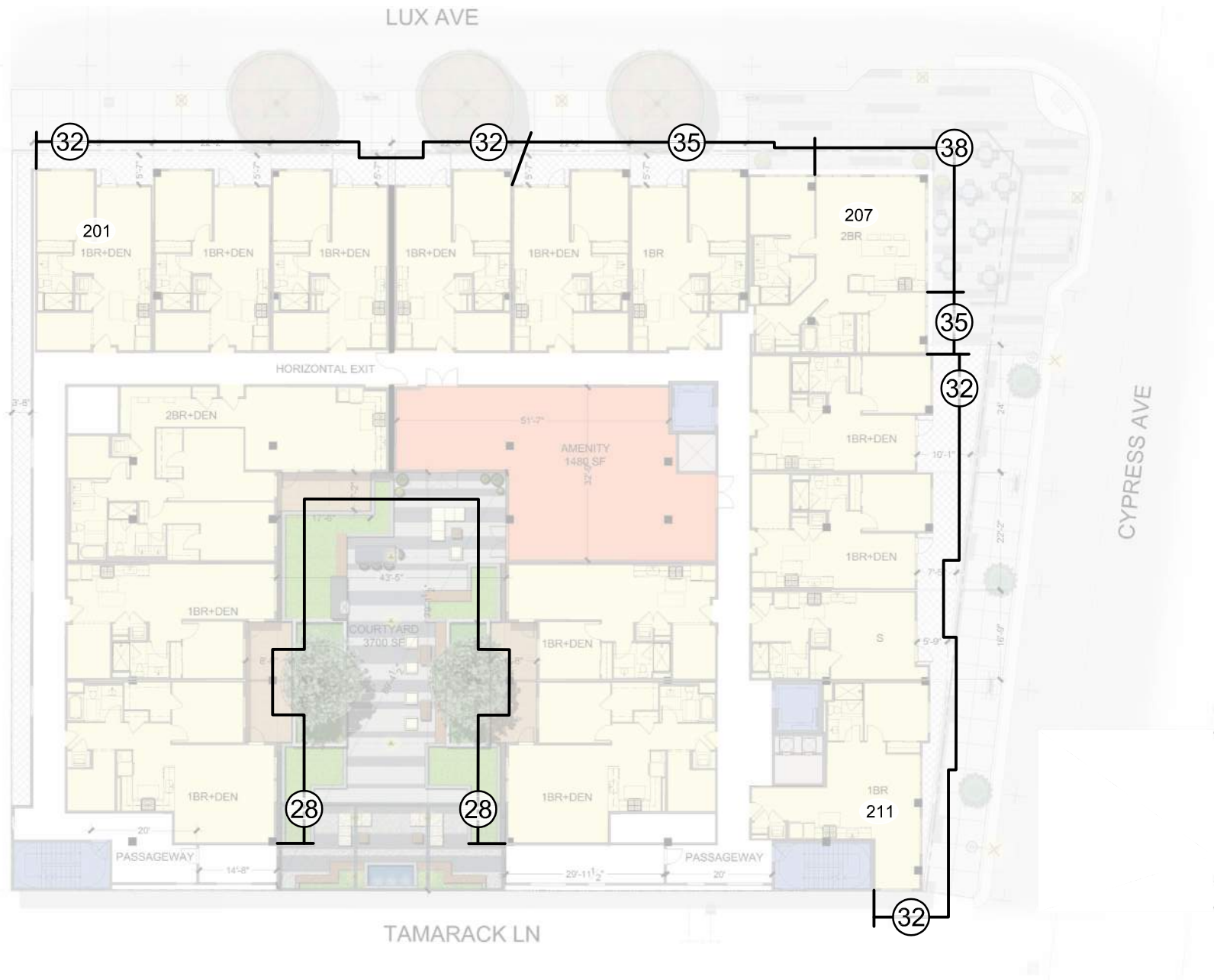
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BERTOLUCCI PARCEL MINIMUM CODE-REQUIRED STC RATINGS FOR WINDOWS AND EXTERIOR DOORS (FLOORS 1 AND 1.5)

FIGURE 2

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NOTE: STC RATINGS ARE FOR THE COMPLETE ASSEMBLY (E.G., GLASS, FRAME, AND OPERABLE SECTIONS) BASED ON TEST REPORTS FROM AN NVLAP-ACCREDITED LAB

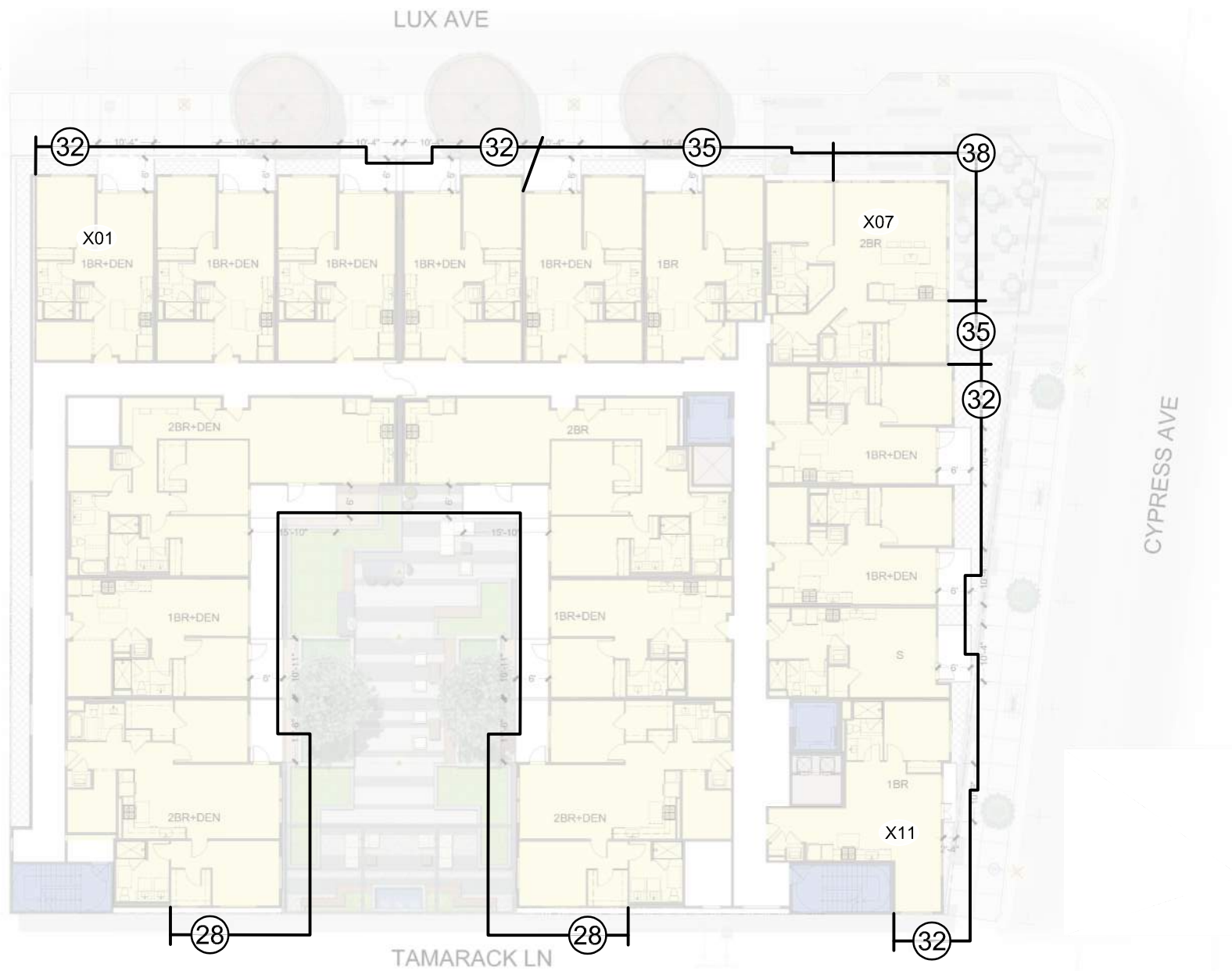
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BERTOLUCCI PARCEL MINIMUM CODE-REQUIRED STC RATINGS FOR WINDOWS AND EXTERIOR DOORS (FLOOR 2)

FIGURE 3

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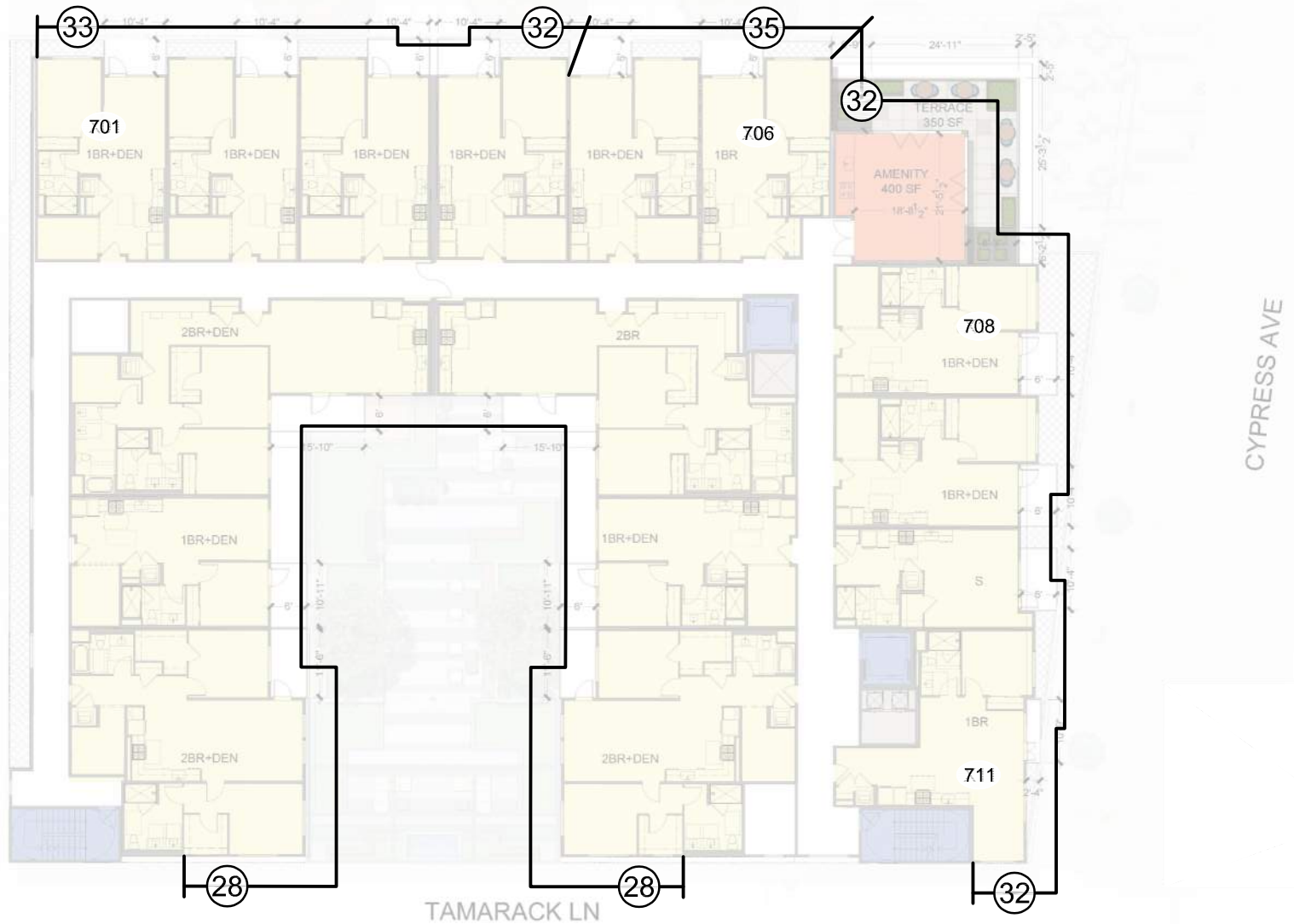
BERTOLUCCI PARCEL
MINIMUM CODE-REQUIRED STC RATINGS FOR
WINDOWS AND EXTERIOR DOORS (FLOORS 3 TO 6)

FIGURE 4

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LUX AVE



CYPRESS AVE

TAMARACK LN

NOTE: STC RATINGS ARE FOR THE COMPLETE ASSEMBLY (E.G., GLASS, FRAME, AND OPERABLE SECTIONS) BASED ON TEST REPORTS FROM AN NVLAP-ACCREDITED LAB

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BERTOLUCCI PARCEL MINIMUM CODE-REQUIRED STC RATINGS FOR WINDOWS AND EXTERIOR DOORS (FLOOR 7)

FIGURE 5

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