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SUBJECT: Supplemental Construction Noise Evaluation for Modifications to Units 4 and 10 of the Merge 56 Development - City of San Diego CA

Ldn Consulting (Ldn) has examined the construction noise conditions for Units 4 and 10 Modifications to the Merge 56 Development construction. Provided below are the supplemental construction noise findings.

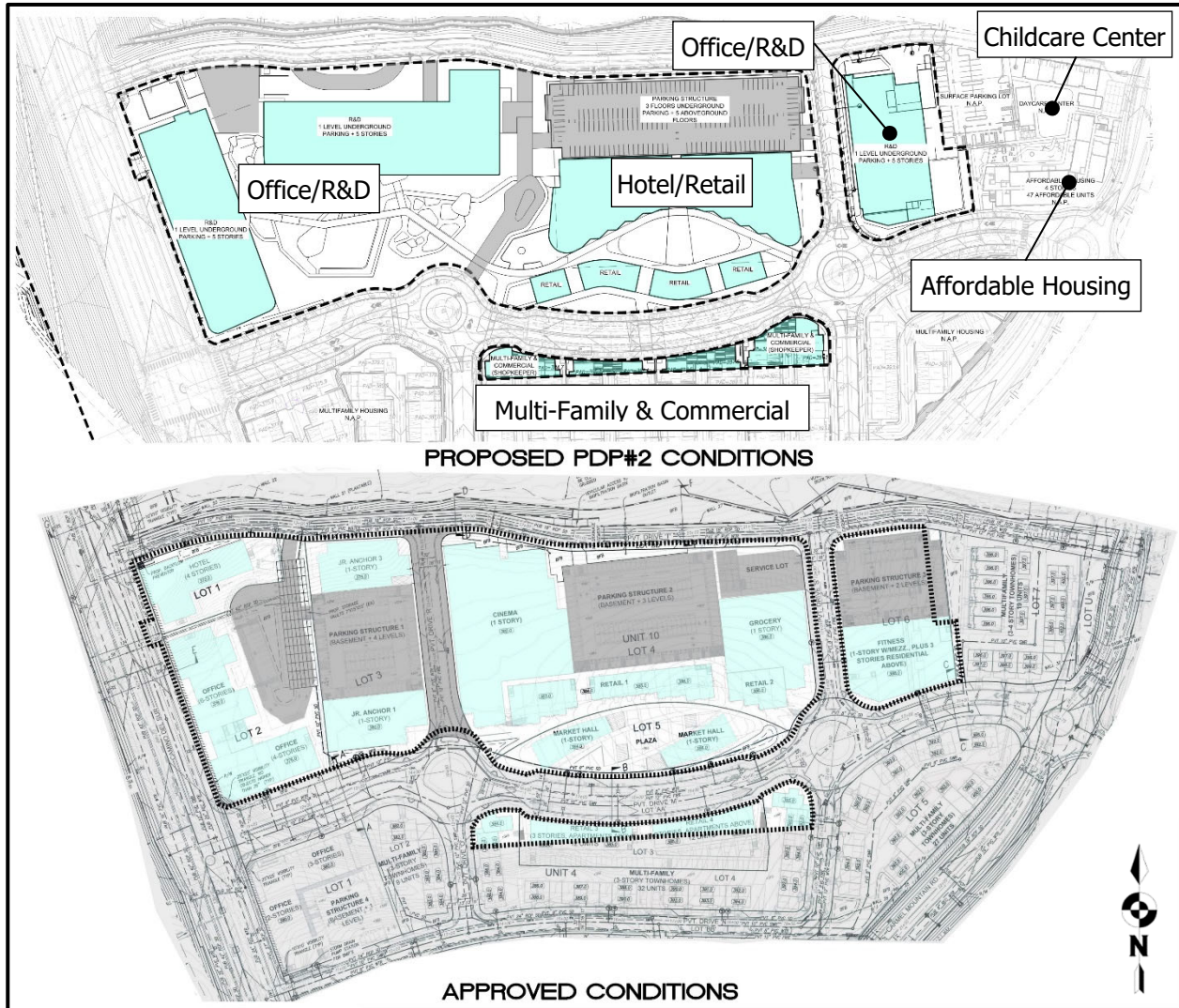
City of San Diego Municipal Code, Noise Regulations (Noise Ordinance)

Division 4 of Article 9.5 of the City of San Diego Municipal Code addresses the limits of disturbing or offensive construction noise. The Municipal Code states that with the exception of an emergency, it should be unlawful to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

Background and Analysis

According to the originally approved noise study prepared by LDN Consulting (*Source: Merge 56 Residential and Commercial Development Noise Study, 2015*), the primary source of construction noise would be the grading activities and commercial building construction and would be expected to comply with the City's 75 dBA Leq 12-hour standard at the residential property lines. The project is proposing to modify the arrangement of office and commercial uses along the north, increasing the total square-footage from 525,000 square-feet to a total of 791,031 square-feet, which would consist of 610,000 square-feet of research and development (R&D), 27,000 square-feet of commercial/retail, 15,000 square-feet of quality restaurant, an 8,000 square-foot child care center, and an increase of 77,031 square feet to the 120 room hotel (with no change to the number of rooms). Due to the increased parking requirements, the project is proposing subterranean parking, which will require additional construction phases to be analyzed. Figure 1 on the following page shows a comparison of the originally approved site plan and proposed site plan.

Figure 1: Site Plan Comparison



Since the proposed affordable housing and childcare center to the east and the residential townhomes to the south will be constructed and occupied at the time of construction of the office and R&D site, noise levels at the noise sensitive land uses must comply with the City's 75 dBA Leq 12-hour standard.

The site has already been previously mass graded. In addition to the finished grading and building construction, the office/R&D site and hotel/retail will require underground excavation and potentially shoring. These construction phases are analyzed in more detail below.

Excavation Phase Noise Findings

According to the project proponent, the project will require two excavators and a grader working simultaneously to excavate the subterranean parking area. Up to 16 haul trucks an hour could be transporting soil off the site with as many as four trucks on site at any given time. Not all the equipment will operate continuously over a 12-hour period, the equipment will be utilized on an as-needed basis depending on the site excavation activities are required.

The noise levels utilized in this analysis for the site excavation are shown in Table 1 for the affordable housing/childcare center proposed 150 feet to the east and Table 2 for the residential town homes proposed 200 feet to the south. These are the adjacent noise sensitive land uses (NSLU). As can be seen in Tables 1 and 2, with the equipment working closely together at the nearest location the cumulative noise levels would be 71.1 dBA and 67.7 dBA at the affordable housing/childcare center and the residential townhomes, respectively, from the site excavation activities over a 12-hour period. The equipment will be spread out over the site at larger distances and the noise levels would be lower. Therefore, the site excavation activities would be expected to comply with the City's 75 dBA Leq 12-hour standard at the nearest land uses to the east and south and no impacts are anticipated.

Table 1: Site Excavation Noise Levels (Affordable Housing/Childcare)

Construction Equipment	Quantity	Source Level @ 50-Foot (dBA) ¹	Duty Cycle (Hours/Day)	12 Hour Noise Level @ Nearest NSLU ² (dBA)
Excavator	2	72	12	75.0
Loader/Grader	1	73	12	73.0
Dump Trucks	4	75	12	78.0
Cumulative Levels @ 50 Feet (dBA)				80.6
Minimum Distance to Affordable Housing/Childcare				150
Noise Reduction Due to Distance				-9.5
NEAREST NSLU NOISE LEVEL				71.1
¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data				
² Noise Sensitive Land Use				

Table 2: Site Excavation Noise Levels (Townhomes)

Construction Equipment	Quantity	Source Level @ 50-Foot (dBA) ¹	Duty Cycle (Hours/Day)	12 Hour Noise Level @ Nearest NSLU ² (dBA)
Excavator	2	72	12	75.0
Loader/Grader	1	73	12	73.0
Dump Trucks	4	75	12	78.0
Cumulative Levels @ 50 Feet (dBA)				80.6
Minimum Distance to Townhomes				220
Noise Reduction Due to Distance				-12.9
NEAREST NSLU NOISE LEVEL				67.7
¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data				
² Noise Sensitive Land Use				

Shoring Phase Noise Findings

According to the project proponent, the project could potentially use a vibratory drill, a compactor, an excavator and water truck during the shoring phase within the excavation site, if shoring is required. Additionally, the shoring phase may require a crane to hoist the equipment from the excavation site. Not all the equipment will operate continuously over a 12-hour period, the equipment will be utilized on an as-needed basis depending on the shoring activities are required.

The noise levels utilized in this analysis for the shoring activities are shown in Table 3 for the affordable housing/childcare center to the east and Table 4 for the residential town homes. As can be seen in Tables 3 and 4, with the equipment working closely together at the nearest location the cumulative noise levels would be 75.1 dBA and 71.8 dBA at the affordable housing/childcare center and the residential townhomes, respectively, from the site excavation activities over a 12-hour period. The equipment will be spread out over the site at larger distances and the noise levels would be lower. Therefore, the shoring activities would be expected to comply with the City's 75 dBA Leq 12-hour standard at the nearest land uses to the east and south and no impacts are anticipated.

Table 3: Shoring Noise Levels (Affordable Housing/Childcare)

Construction Equipment	Quantity	Source Level @ 50-Foot (dBA) ¹	Duty Cycle (Hours/Day)	12 Hour Noise Level @ Nearest NSLU ² (dBA)
Vibratory Drill	1	80	12	81.8
Compactor	1	73	12	74.8
Excavator	1	76	12	77.8
25-Ton Crane	1	74	12	75.8
Water Truck	1	70	12	71.8
Pickup Truck	1	59	12	60.8
Cumulative Levels @ 50 Feet (dBA)				84.7
Minimum Distance to Affordable Housing/Childcare				150
Noise Reduction Due to Distance				-9.5
NEAREST NSLU NOISE LEVEL				75.1
¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data				
² Noise Sensitive Land Use				

Table 4: Shoring Noise Levels (Townhomes)

Construction Equipment	Quantity	Source Level @ 50-Foot (dBA) ¹	Duty Cycle (Hours/Day)	12 Hour Noise Level @ Nearest NSLU ² (dBA)
Vibratory Drill	1	80	12	81.8
Compactor	1	73	12	74.8
Excavator	1	76	12	77.8
25-Ton Crane	1	74	12	75.8
Water Truck	1	70	12	71.8
Pickup Truck	1	59	12	60.8
Cumulative Levels @ 50 Feet (dBA)				84.7
Minimum Distance to Townhomes				220
Noise Reduction Due to Distance				-12.9
NEAREST NSLU NOISE LEVEL				71.8
¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data				
² Noise Sensitive Land Use				

Concrete Pouring Phase Noise Findings

According to the project proponent, the project could potentially use up to one concrete pump and mixer, paver, and two rollers during the concrete pouring phase within the excavation site. Additionally, up to 16 concrete mixer trucks an hour could be transporting material to the site with as many as eight trucks on site at any given time. Not all the equipment will operate continuously over a 12-hour period, the equipment will be utilized on an as-needed basis depending on the shoring activities are required.

The noise levels utilized in this analysis for the concrete pouring activities are shown in Table 5 for the affordable housing/childcare center to the east and Table 6 for the residential town homes. As can be seen in Tables 5 and 6, with the equipment working closely together at the nearest location the cumulative noise levels would be 75.3 dBA and 72.0 dBA at the affordable housing/childcare center and the residential townhomes, respectively, from the site excavation activities over a 12-hour period. The equipment will be spread out over the site at larger distances and the noise levels would be lower. Therefore, the concrete pouring activities would be expected to comply with the City's 75 dBA Leq 12-hour standard at the nearest land uses to the east and south and no impacts are anticipated.

Table 5: Concrete Pouring Noise Levels (Affordable Housing/Childcare)

Construction Equipment	Quantity	Source Level @ 50-Feet (dBA)¹	Duty Cycle (Hours/Day)	12 Hour Noise Level @ Nearest NSLU² (dBA)
Concrete Trucks	8	75	0.5	72.0
Concrete Pump and Mixer	1	80	12	81.8
Paver	1	75	12	76.8
Roller	2	75	12	79.8
Cumulative Levels @ 50 Feet (dBA)				84.9
Minimum Distance to Affordable Housing/Childcare				150
Noise Reduction Due to Distance				-9.5
NEAREST NSLU NOISE LEVEL				75.3
¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data				
² Noise Sensitive Land Use				

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Table 6: Concrete Pouring Noise Levels (Townhomes)

Construction Equipment	Quantity	Source Level @ 50-Foot (dBA) ¹	Duty Cycle (Hours/Day)	12 Hour Noise Level @ Nearest NSLU ² (dBA)
Concrete Trucks	8	75	0.5	72.0
Concrete Pump and Mixer	1	80	12	81.8
Paver	1	75	12	76.8
Roller	2	75	12	79.8
Cumulative Levels @ 50 Feet (dBA)				84.9
Average Distance to Townhomes				220
Noise Reduction Due to Distance				-12.9
NEAREST NSLU NOISE LEVEL				72.0
¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data				
² Noise Sensitive Land Use				

Building Construction Phase Noise Findings

The building construction is anticipated to be the same as what was previously analyzed in the originally approved noise study prepared by LDN Consulting, Inc. According to the study, with the equipment all working together the cumulative noise levels would be 73.9 dBA at a distance of 100 feet from the building construction over a 12-hour period. The nearest noise sensitive land uses to the east and south are located 150 feet and 220 feet, respectively, and the noise levels would be lower with the equipment spread out. Therefore, the construction activities would be expected to comply with the City's 75 dBA Leq 12-hour standard at the NSLU and no impacts are anticipated.

Conclusions

Based upon the calculations of the noise levels when construction equipment is located near the closest noise sensitive land uses, located to the east and to the south, the average noise levels would not to exceed the 75 dBA 12-hour standard and no impacts will occur and no mitigation measures are required.

Sincerely,

Jeremy Loudon, Principal