SSA acoustics
Stewart · Burt · Nelsen · Esselstrom

May 11, 2023

Kelly Lea
J5 Infrastructure

Re: Acoustical Report – AT&T WL4557 Walla Walla Mill Creek
Site: 928 Sturm Avenue, Walla Walla, WA 99362

Dear Kelly,

This report presents a noise survey performed in the immediate vicinity of the proposed AT&T telecommunications facility 928 Sturm Avenue in Walla Walla, Washington. This noise survey extends from the proposed equipment to the nearest properties. The purpose of this report is to document the existing conditions and the impacts of the acoustical changes due to the proposed equipment. This report contains data on the existing and predicted noise environments, impact criteria and an evaluation of the predicted sound levels as they relate to the criteria.

Code Requirements

The property is within the City of Walla Walla zoning jurisdiction on property with an RN (Residential) zoning. The receiving properties to the north and south are within the Walla Walla city limits and are all zoned RN. The receiving properties to the east and west are not within the Walla Walla city limits, and they are in Residential use.

The proposed new equipment includes equipment support cabinets and an emergency generator. The equipment support cabinets are expected to run 24 hours a day. The generator will run once a week during daytime hours only for maintenance and testing purposes.

Under Walla Walla municipal code 8.13.030, noise from equipment on a Residential property is limited as follows:

Residential Receiver: Noise is limited to 55 dBA during daytime hours. During nighttime, defined as the hours between 10 p.m. and 7 a.m. on weekdays and between 10 p.m. and 9 a.m. on weekends, maximum sound levels are reduced by 10 dBA for Residential receiving properties. Since the support cabinets are expected to operate 24 hours a day, they must meet the 45 dBA nighttime limit.

Additionally, Walla Walla Municipal Code 8.13.040 allows that during any one-hour period, the maximum permissible noise level may be exceeded by 5 dBA for a 15 minute period. Therefore, the generator must not exceed 60 dBA when running during daytime hours for maintenance testing. The generator is exempt during emergency operation. However, it is requested that the generator meet the hourly code limits during emergency operations.

Ambient Conditions

Existing ambient noise levels were measured on site with a Svantek 971 sound level meter on February 21, 2023. Measurements were conducted as close to the proposed location as possible and the property lines in accordance with the State of Washington code for Maximum Environmental Noise Levels WAC 173-60-020. The average ambient noise level was 54 dBA.

Predicted Equipment Sound Levels

24-Hour Operation Equipment
The proposed equipment includes (1) Vertiv XTE 802 Series Walk-In-Cabinet (WIC). According to the manufacturer, this WIC is manufactured with (1) Marvair DAC2000S000-299-VAR-0013 and (1) Marvair ECUA18 MAA1018. The following table presents a summary of the equipment and their associated noise levels:

Table 1: **Equipment Noise Levels**

Equipment	dBA (each)	Quantity	Combined dBA @ 5 ft
Marvair DAC2000S000-299-VAR-0013	66 dBA @ 5ft	1	66
Marvair ECUA18 MAA1018	62 dBA @ 5ft	1	62
Total dBA (All cabinets combined)			**67**

Methods established by AHRI Standard 275-2010 and ASHRAE were used in predicting equipment noise levels to the receiving properties. Application factors such as location, height, and reflective surfaces are accounted for in the calculations.

The WIC will be located at grade. The nearest receiving properties are approximately 75 feet north (after the proposed boundary line adjustment relocating the property line to at least 65 feet north of the lease area), 78 feet west, and 83 feet south of the equipment. The following table presents the predicted sound levels at the nearest receiving properties:

Table 2: Predicted Noise Levels: Proposed Equipment Cabinet

Line	Application Factor	N	W	S
1	Sound Pressure Level at 5 ft (dBA), Lp1	67	67	67
2	Distance Factor (DF) Inverse-Square Law (Free Field): DF = 20*log (d1/d2)	-24 (75 ft)	-24 (78 ft)	-24 (83 ft)
3	New Equipment Sound Pressure Level at Receiver, Lpr (Add lines 1 and 2)	**43**	**43**	**43**

As shown in Table 2, the sound pressure level from the proposed equipment is predicted to be 43 dBA at the proposed receiving property line to the north, 43 dBA at the nearest receiving property to the west, and 43 dBA at the nearest receiving property to the south. These noise levels meet the 45 dBA nighttime code limit. Noise levels at other receiving properties, which are further away, will be lower and within code limits.

Emergency Equipment

The proposed equipment includes one Polar Power PN 8220-603-D-20-03 20 KW generator which has a sound level of 67 dBA at 23 feet. The generator will be located at grade. The nearest receiving properties are approximately 75 feet north (after the proposed boundary line adjustment relocating the property line to at least 65 feet north of the lease area), 71 feet west, and 84 feet south of the generator. The following are the predicted sound levels at the nearest receiving properties:

Table 3: Predicted Noise Levels: Proposed Emergency Generator

Line	Application Factor	N	W	S
1	Equipment Sound Pressure Level at 23 ft. (dBA), Lp1	67	67	67
2	Distance Factor (DF) Inverse-Square Law (Free Field): DF = 20log (d1/d2)	-10 (75 ft)	-10 (71 ft)	-11 (84 ft)
3	New Equipment Sound Pressure Level at Receiver, Lpr (Add lines 1 and 2)	**57**	**57**	**56**

As shown in Table 3, the sound pressure level from the proposed generator during test cycle operation is predicted to be 57 dBA at the proposed receiving property line to the north, 57 dBA at the nearest receiving property to the west, and 56 dBA at the nearest receiving property to the south. These noise levels meet the 60 dBA daytime code limit. Noise levels at other receiving properties, which are further away, will be lower and within code limits. However, these noise levels exceed the 45 dBA nighttime code limit that is requested to meet during emergency operation.

Noise Mitigation

Noise levels from the generator and cabinets have been requested by the jurisdiction to reduce noise levels to the surrounding properties, particularly for the generator to meet nighttime code limits under emergency operations. To provide the noise reduction, a noise barrier is recommended to be installed between the equipment and the receiving properties as follows:

Recommended Noise Barrier

- Install a noise barrier consisting of a wall and partial roof on all four sides of the equipment. The wall portion of the noise barrier is indicated by the bold **red** lines in Figure 2. This portion can be whatever height above grade is needed to allow for the preferred slope of the partial roof.

- Install the partial roof portion of the noise barrier from the top of the wall portion of the noise barrier towards the equipment as indicated by the **red** shaded area in Figure 2. The partial roof shall extend (in plan view) 2'-0" from the wall portion of the noise barrier. The top of the partial roof shall be a minimum of 10'-6" above grade.

- Construct the noise barrier and partial roof with a solid material that has a surface mass of at least 2.5 lbs/sq ft. The following are common barrier materials that meet this requirement:

    - 3/4-inch exterior grade plywood
    - 16-gauge sheet metal
    - HardiPanel Vertical Siding or HardiBacker 1/2-inch

- Install sound absorbing material on the underside of the partial roof with a minimum NRC rating of 0.70. This same material shall be used to line the inside walls of the structure. The following are recommended products for this application:

    - 1" thick F-Sorb
    - 1" thick Polysorb
    - Soundseal Quilted Fiberglass Absorber (QFA-10 Silicone-coated-fiberglass-cloth faced).

- A detail of the barrier construction is presented in the following figure.

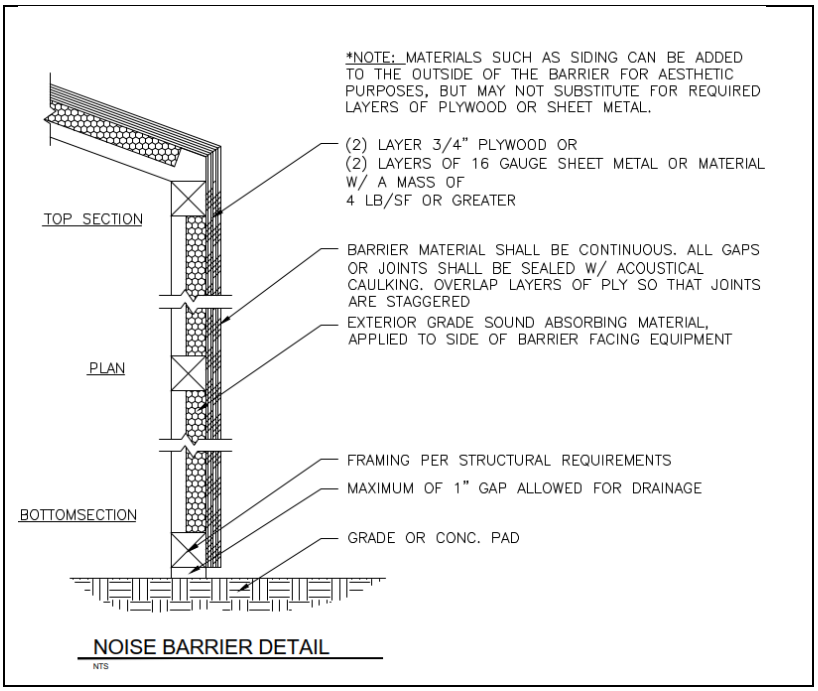

Figure 1: Noise Barrier Detail

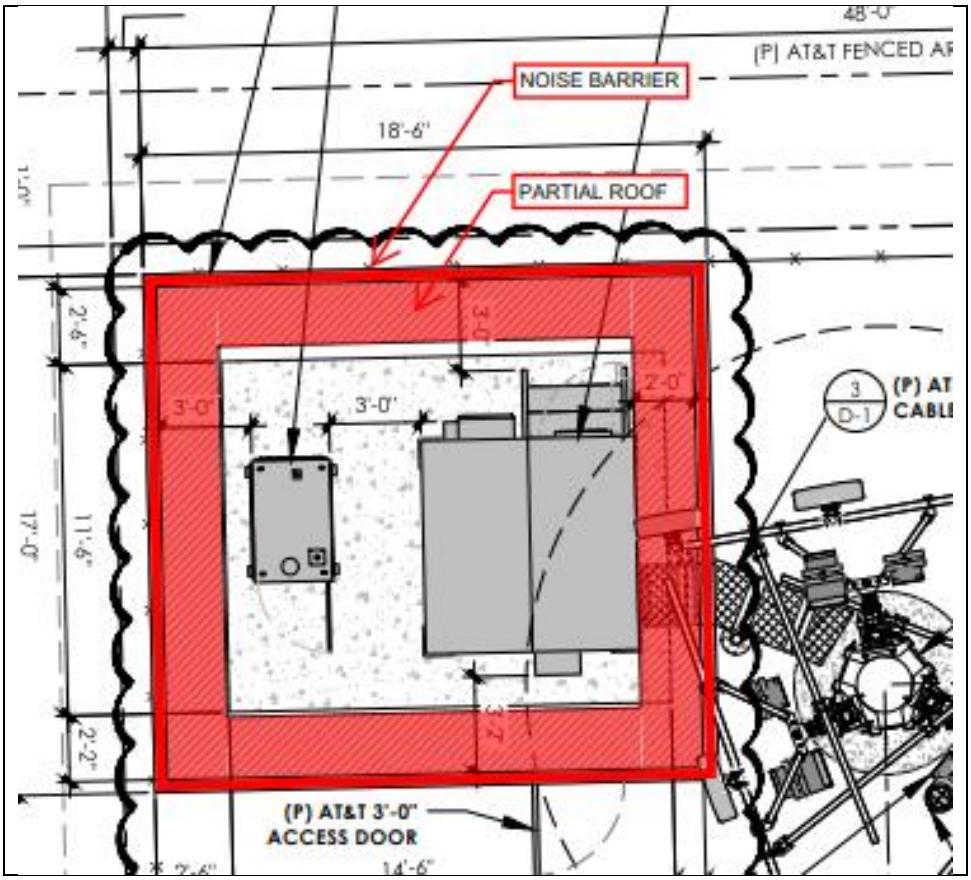

Figure 2: Noise Barrier - Plan

Predicted Noise Levels With Mitigation

24-Hour Operation Equipment
The following table presents the predicted noise level from the cabinet to the nearest receiving property to the north with the recommended noise mitigation implemented:

Table 4: Predicted Noise Levels: Proposed Equipment Cabinet

Line	Application Factor	N	W	S
1	Sound Pressure Level at 5 ft (dBA), Lp1	67	67	67
2	Noise Reduction – Noise Barrier	-12	-7	-12
3	Distance Factor (DF) Inverse-Square Law (Free Field): DF = 20*log (d1/d2)	-24 (75 ft)	-24 (78 ft)	-24 (83 ft)
4	New Equipment Sound Pressure Level at Receiver, Lpr (Add lines 1 through 3)	**31**	**36**	**31**

As shown in Table 4, the sound pressure level from the proposed equipment cabinet with the recommended noise mitigation implemented is predicted to be 31 dBA at the proposed receiving property line to the north, 36 at the receiving property to the west, and 31 dBA at the receiving property to the south. Each of these noise levels meet the 45 dBA nighttime code limit.

Emergency Equipment

The following table presents the predicted noise level from the generator to the nearest receiving property to the north with the recommended noise mitigation implemented:

Table 5: Predicted Noise Levels: Proposed Emergency Generator

Line	Application Factor	N	W	S
1	Equipment Sound Pressure Level at 23 ft. (dBA), Lp1	67	67	67
2	Noise Reduction – Noise Barrier	-12	-14	-12
3	Distance Factor (DF) Inverse-Square Law (Free Field): DF = 20log (d1/d2)	-10 (75 ft)	-10 (71 ft)	-11 (84 ft)
4	New Equipment Sound Pressure Level at Receiver, Lpr (Add lines 1 through 3)	**45**	**43**	**44**

As shown in Table 5, the sound pressure level from the proposed generator during test cycle operation with the recommended noise mitigation implemented is predicted to be 45 dBA at the proposed receiving property line to the north, 43 at the receiving property to the west, and 44 dBA at the receiving property to the south. Each of these noise levels meet the 60 dBA daytime code limit. Additionally, these noise levels meet the 45 dBA nighttime code limit when operating under emergency operations.

Please contact us if you have any questions or require further information.

Sincerely,
SSA Acoustics, LLP

Steven Hedback
Acoustical Consultant