October 17, 2013

Doug Sandstrom
LEXCOM DEVELOPMENT
615 8th Avenue So.
Seattle, WA 98104

Re: Acoustical Report – AT&T PD58 South End Road
Site: 19230 South End Road, Oregon City, Oregon

Dear Doug,

This report presents a noise survey performed in the immediate vicinity of the proposed AT&T telecommunications facility at 19230 South End Road in Oregon City, Oregon. 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.

Ambient Conditions

Existing ambient noise levels were measured on site with a Larson-Davis 820 sound level meter on October 12, 2013. Measurements were conducted as close to the receiving property lines nearest the proposed location as possible in accordance with OAR 340-35-035. The average ambient noise level was 54 dB(A), primarily due to local traffic. The weather during the measurements was clear and the roads were dry.

Code Requirements

The site is located within the Oregon City Zoning jurisdiction. The site is on R-10 Residential zoned property. The nearest receiving properties are also zoned Residential.

The proposed new equipment consists of equipment support cabinets, which are expected to run 24 hours a day.

According to Oregon City Municipal Code Chapter 17.80.110.G Noise Reduction:
Noise generating equipment shall be baffled to reduce sound level measured at the property line to the following levels except during short durations for testing and operation of generators in emergency situations:

1. For any property where no adjacent parcel is zoned residential, the sound level at the property line shall not be greater than fifty dB;
2. For all other cases, the sound level shall not be greater than forty dB when measured at the nearest residential parcel's property line.

As the nearest receiving property is residential, the equipment must meet the 40 dB code requirement.

Predicted Equipment Sound Levels

24-Hour Operation Equipment

The proposed equipment includes a new equipment shelter. According to data obtained from the manufacturer, the equipment shelter is cooled by two Marvair AVP36 air-conditioning units which each produce a 70 dB(A) at 5 feet. The combined sound level from both units operating is 73 dB(A) at 5 feet.

To predict equipment noise levels at the receiving properties, this survey uses the methods established by ASHRAE and AHRI Standard 275-2010. Application factors such as location, height, and reflective surfaces, and noise reduction from intervening elements are accounted for in predicting the sound level at the receiving properties.

The nearest receiving property line is approximately 85 feet east of the equipment shelter. The predicted sound level at the nearest property line is shown in the table below.

Table 1
Application Factors and Predicted Noise Levels
Proposed New Equipment

Line	Application Factor	dBA
1	Equipment Sound Pressure Level at 5 ft., L_{PS}	73
2	Distance Factor (DF) $DF = 20\ log_{10}(D_1/D_2)$	-25 (85 ft)
3	New Equipment Sound Pressure Level at Receiver, L_{PR}	**48**

As shown in the table, the predicted sound pressure level from the proposed equipment at the nearest receiving property is 48 dBA which does not meet the 40 dBA code limit. Noise mitigation will be required for the equipment to meet code.

Noise Barrier Mitigation

A noise barrier must be constructed to reduce noise levels from the shelter to the west property line. We recommend constructing barriers at each source location as follows:

Equipment Shelter Barrier

Construct a noise barrier around the Marvair units to block noise from the unit to the west property line as indicated in Figure 1. A general detail of the barrier is provided in Figure 2.

1. Construct the noise barrier of continuously solid material that has a surface mass of at least 2.5 lbs/sq ft. Heavy gauge (minimum 16-ga) sheet metal will meet this requirement.

2. The barrier must extend to 8'-0" such that the top of the barrier is above the top of the equipment.

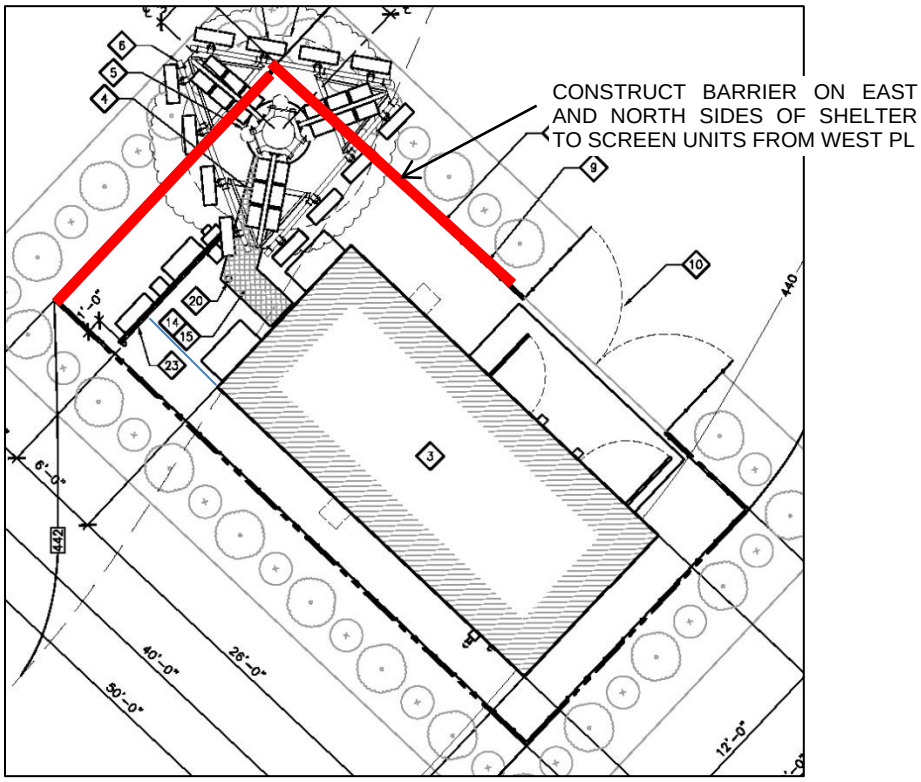

Figure 1: Noise Barrier - Plan

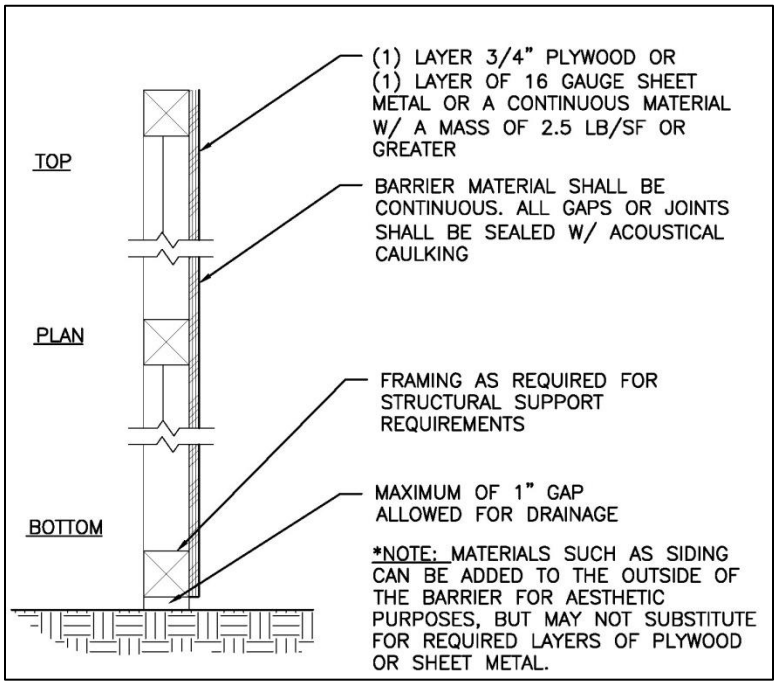

Figure 2: Noise Barrier Detail

Predicted Noise Levels – With Mitigation

The following tables present the predicted noise levels with the recommended mitigation implemented:

Table 2
Application Factors and Predicted Noise Levels
Proposed New Equipment

Line	Application Factor	dBA
1	Equipment Sound Pressure Level at 5 ft., L_{PS}	73
2	Noise barrier reduction	-10
3	Distance Factor (DF) $DF = 20\ log_{10}(D_1/D_2)$	-25 (85 ft)
4	New Equipment Sound Pressure Level at Receiver, L_{PR}	**39**

As shown in the table, the predicted sound pressure level from the proposed equipment at the nearest receiving property is 38 dBA with the noise mitigation implemented and meets the 40 dBA code limit. .

Sincerely,
SSA Acoustics, LLP

Alan Burt, P.E.
ASSOCIATE PARTNER
ACOUSTICAL CONSULTANT