

**Chapter 17.30
NOISE ATTENUATION STANDARDS**

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I. General Provisions

17.30.100 Purpose.

The purpose of this chapter is to safeguard life, health, property and public welfare by establishing minimum requirements regulating the design and construction performance standards of buildings for human occupancy in the noise-sensitive vicinity of the Whidbey Naval Air Station at Ault Field, to ensure compatibility between the air station and surrounding land uses, and to protect the air station from incompatible encroachment. This chapter is not intended to abridge any safety or health requirements required under any other applicable codes or ordinances. This chapter is intended to be a companion to

the adopted zoning overlay ordinance establishing noise zones and requiring notice of disclosure. (Ord. 929 § 1, 1992).

17.30.105 Scope.

The provisions of this chapter shall apply to all buildings or structures constructed or placed in use for human occupancy on sites within designated noise zones established in accordance with the aviation environs (AE) overlay zone as established by the Oak Harbor Noise Zone Map. This chapter is intended to supplement the provisions of the Uniform Building Code, Uniform Mechanical Code, Washington State Ventilation and Indoor Air Quality Code and the adopted Washington State Energy Code. In the case of conflict between this chapter and any other applicable codes the more restrictive requirements shall be met. (Ord. 929 § 1, 1992).

17.30.110 Application to new and existing structures – Changes of use.

(1) Additions may be made to existing buildings or structures without making the entire building or structure comply with all the requirements of this chapter for new construction. Additions to structures within the designated noise zones shall be made to comply in the areas being added to the extent that is deemed practical and effective by the building official in meeting the intent of this chapter.

(2) Any change of use in the occupancy or use of a building previously unapproved for human occupancy to human occupancy use or of one previously unused for sleeping purposes to sleeping use shall not be permitted unless the building, structure or portion of the building complies with this chapter.

(3) The standards shall be applied to construction of new residential or noise sensitive commercial uses and for reconstruction, remodeling and/or additions to existing buildings of the types mentioned below when the value of the improvement exceeds 50 percent of the value of the existing structures.

(4) Where noise-sensitive activities are carried on in only a portion of new or reconstructed commercial building, only those areas judged noise-sensitive by the building official need to be protected.

(5) Relocated Structures. Structures relocated to an area within the designated noise zones shall comply with all requirements of this chapter. (Ord. 929 § 1, 1992).

17.30.115 Details for plans and specifications.

The plans and specifications shall show in sufficient detail all pertinent data and features of the building and the equipment and systems, as herein governed, including, but not limited to: exterior envelope component materials; STC ratings of applicable component assemblies; R values of applicable insulation materials; size and type of apparatus and equipment; equipment and system controls, and other pertinent data to indicate conformance with the requirements herein. (Ord. 929 § 1, 1992).

17.30.120 Fees for plan review and inspection.

The building official is authorized to collect fees for plan review and inspection for noise attenuation. These fees shall be established by Table 3-A (other inspections and fees) of the current adopted Uniform Building Code. (Ord. 929 § 1, 1992).

17.30.125 Definitions.

- (1) "Day-night average sound level (Ldn)" means a basic measure for quantifying noise exposure, namely, the A-weighted sound level averaged over a 24-hour time period, with a 10-decibel penalty applied to nighttime (10:00 p.m. to 7:00 a.m.) sound levels.
- (2) "Noise level reduction (NLR)" means the amount of noise reduction required through construction and incorporation of sound attenuation material to reduce interior noise level.
- (3) "Noise reduction coefficient (NRC)" means the arithmetic average of the sound absorption coefficients of a material at 250, 500, 1000, and 2000 Hz.
- (4) "Sound transmission class (STC)" means a single-number rating for describing sound transmission loss of a wall, partition, window or door.
- (5) "Decibel (dB)" means the measure of sound pressure or intensity.
- (6) "Oak Harbor Noise Zone Map" means a map prepared by the city of Oak Harbor and adopted as an aviation environs (AE) overlay zone, which serves as a geographic interpolation of Aviation Noise Contours as established by the NAS Whidbey Island AICUZ study program. The boundaries of noise-exposure areas on this map follow streets, property boundaries, or utility rights-of-way.
- (7) "Noise" means aircraft or other noise that interferes with speech and hearing, or is intensive enough to damage hearing, or is otherwise annoying.
- (8) "Interior noise level" means the sound level of noise in any habitable room with windows and doors closed. (Ord. 929 § 1, 1992).

17.30.130 Design requirements.

The criteria of these sections establish the minimum requirements for acoustic design of the exterior envelope of buildings and for HVAC systems and their parts. These requirements shall apply to the following uses:

Table 17.30.130
Compatibility

<u>Land use</u>	<u>Subdistrict</u>	
	<u>A</u>	<u>B</u>
	60-65 Ldn	65-75 Ldn
Residential		
Single and two-family, and multifamily	Y 25 NLR	Y 30 NLR
Manufactured housing, mobile homes	Y125 NLR	Y130 NLR
Hotels, motels and lodges	Y 25 NLR	Y 30 NLR
Commercial		

Table 17.30.130 (cont.)

<u>Land use</u>	<u>Compatibility</u>	
	<u>A</u>	<u>B</u>
Retail	Y2	Y3
Business services	Y2	Y3
Personal services	Y2	Y3
Professional services	Y2	Y3
Offices	Y2	Y3
Movie theaters, restaurants	Y2	Y3
R&D laboratories	Y2	Y3
All other commercial	Y2	Y3
Manufacturing		
Manufacturing, warehousing, distribution	Y2	Y3
Wholesale commercial	Y2	Y3
All other manufacturing		
Public and Semi-private		
Hospitals, nursing homes	Y 25 NLR	Y 30 NLR
Other medical facilities	Y 25 NLR	Y 30 NLR
Educational facilities, libraries, preschools	Y 25 NLR	Y 30 NLR
House of worship, public assembly	Y 25 NLR	Y 30 NLR
Government facilities	Y 25 NLR	Y 30 NLR
Auditoriums, concert halls	Y 25 NLR	Y 30 NLR
All other public and semi-public	Y 25 NLR	Y 30 NLR

1. New modular, factory-built or manufactured homes, constructed after the date of the ordinance codified in this section shall comply with these requirements. Mobile homes may be replaced within existing mobile home parks on existing mobile home spaces without complying with these requirements. Creation of mobile home subdivisions located within the designated noise zones shall be made to comply with all requirements of this chapter.

2. Measures to achieve a NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.

3. Measures to achieve a NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.

(Ord. 929 § 1, 1992).

17.30.135 Designated noise zones.

(1) Noise-determined construction requirements detailed in this sound transmission building code shall be applied to new construction and additions of structures, except for not normally inhabited portions of storage buildings, garages and similar structures as determined by the building official, within the designated noise zones.

(2) These contours are shown on the Oak Harbor Noise Zone Map, a copy of which is on record in the office of the director of planning and community development and by this reference is made a part of this regulation.

(a) A 25 dB noise level reduction shall be required in the 60 to 65 Ldn noise-exposure zone as defined on the Oak Harbor Noise Zone Map.

(b) A 30 dB noise level reduction shall be required in the 65 to 75 Ldn noise-exposure zone as defined on the Oak Harbor Noise Zone Map. (Ord. 929 § 1, 1992).

17.30.140 Air leakage for all buildings.

(1) The requirements of this section shall apply to the design of the exterior envelope of all buildings in the designated noise zones designed for human occupancy. The requirements of this section are not applicable to the separation of interior spaces from each other.

(2) The following locations shall be sealed, caulked, gasketed or weatherstripped to limit or eliminate air infiltration:

(a) Exterior joints around windows and door frames between the window or door frame and the framing;

(b) Openings between walls and foundations;

(c) Between the wall sole plate and the rough flooring;

(d) Openings at penetrations of utility services through walls, floor, and roofs;

(e) Between wall panels at corners;

(f) All other such openings in the building envelope.

(3) Through the wall, floor, or roof/ceiling penetrations not specifically addressed in these sections shall be designed to limit sound transmission and shall have the same average laboratory sound transmission classification as required for doors. (Ord. 929 § 1, 1992).

Article II. Noise Level Reduction – 25 Decibels

17.30.145 Compliance.

Compliance with OHMC 17.30.150 through 17.30.175 shall be deemed to meet requirements for a minimum noise level reduction (NLR) of 25 decibels. (Ord. 929 § 1, 1992).

17.30.150 Exterior walls.

(1) Exterior walls, other than as described in this section, shall have an average laboratory sound transmission class rating of at least STC-30; or

- (2) Masonry walls having a weight of at least 25 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered;
- (3) Stud walls shall be at least four inches in nominal depth and shall be finished on the outside with solid sheathing under an approved exterior wall finish.
- (a) The interior surface of the exterior walls shall be of gypsum board or plaster at least one-half inch thick, installed on the studs.
- (b) Continuous composition board, plywood or gypsum board sheathing at least one-half inch thick or equivalent shall cover the exterior side of the wall studs.
- (c) Sheathing panels shall be covered on the exterior with overlapping building paper.
- (d) Insulation material at least R-13 shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber, mineral wool, or foam plastic insulation complying with UBC Standard 42-1. (Ord. 929 § 1, 1992).

17.30.155 Exterior windows.

- (1) Windows other than as described in this section shall have a laboratory sound transmission class rating of at least STC-28; or
- (2) Windows shall be double-glazed with one pane at least three-sixteenths of an inch thick. Panes of glass shall be separated by a minimum of one-half inch airspace.
- (3) All operable windows shall be weatherstripped and airtight when closed so as to conform to an air infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E-283-65-T.
- (4) Glass shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or gasket tape.
- (5) The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal Specifications: TT-S-00227, TT-S-0230 or TT-SS-00153. (Ord. 929 § 1, 1992).

17.30.160 Exterior doors.

- (1) Doors other than as described in this section shall have a laboratory sound transmission class rating of at least STC-26; or
- (2) All exterior side-hinged doors shall be solid-core wood or insulated hollow metal at least one-and-three-quarters inch thick and shall be fully weatherstripped.
- (3) Exterior sliding doors shall be weatherstripped with an efficient airtight gasket system with performance as specified in OHMC 17.30.155(3). The glass in the sliding doors shall be double glazed with panes at least three-sixteenths of an inch thick.
- (4) Glass, over two square feet in area, in doors shall be sealed in an airtight sealant or in a soft elastomer gasket or glazing tape.
- (5) The perimeter of door frames shall be sealed airtight to the exterior wall construction as described in OHMC 17.30.155(5). (Ord. 929 § 1, 1992).

17.30.165 Roofs.

- (1) Combined roof and ceiling construction other than described in this section and OHMC 17.30.170 shall have an average laboratory sound transmission class rating of at least STC-39; or
- (2) With an attic or rafter space at least 12 inches deep, and with a ceiling below, the roof shall consist of one-half inch composition board, plywood or gypsum board sheathing topped by roofing as required;
- (3) Open-beam roof construction shall follow the energy insulation standard method for batt insulation;
- (4) Window or dome skylights shall have a laboratory sound transmission class rating of at least STC-33. (Ord. 929 § 1, 1992).

17.30.170 Ceilings.

- (1) Gypsum board or plaster ceilings shall be five-eighths of an inch thick. Ceilings shall be substantially airtight with a minimum of penetrations.
- (2) Glass fiber, mineral wool, or foam plastic insulation at least R-30 shall be provided above the ceiling between joists. (Ord. 929 § 1, 1992).

17.30.175 Ventilation.

- (1) A ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors or other openings to the exterior. The inlet and discharge openings shall be fitted with sheet-metal transfer ducts of at least 20 gauge steel, which shall be lined with one-inch-thick coated glass fiber, and shall be at least five feet long with one 90-degree bend.
- (2) Gravity vent openings in attics shall be as close to code minimum in number and size as practical.
- (3) Bathroom, laundry and similar exhaust ducts connecting the interior space to the outdoors shall contain at least a five-foot length of internal sound-absorbing duct lining. Exhaust ducts less than five feet in length shall be fully lined and shall also meet the provisions of OHMC 17.30.140(3). Each duct shall be provided with a bend in the duct such that there is no direct line of sight through the duct from the venting cross-section to the room-opening cross-section. Duct lining shall be coated glass fiber duct liner at least one inch thick. In areas (i.e., shower rooms) which produce moisture, duct lining shall be made of nonabsorbent material; commercial kitchen exhaust systems and product conveying duct systems (Chapter 11 UMC) shall be exempt.
- (4) Fireplaces shall be provided with well-fitted dampers and tightly fitting glass or metal doors. (Ord. 929 § 1, 1992).

Article III. Noise Level Reduction – 30 Decibels

17.30.180 Compliance.

Compliance with OHMC 17.30.185 through 17.30.215 shall be deemed to meet requirements for a minimum noise level reduction (NLR) of 30 decibels. (Ord. 929 § 1, 1992).

17.30.185 Exterior walls.

- (1) Exterior walls, other than as described in this section, shall have an average laboratory sound-transmission class rating of at least STC-35; or
- (2) Masonry walls having a weight of at least 40 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered;
- (3) Stud walls shall be at least six inches nominal depth and shall be finished on the outside with solid sheathing under a code-approved exterior wall finish.
 - (a) The interior surface of the exterior walls shall be of gypsum board or plaster at least five-eighths of an inch thick, installed on the studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer or stucco. If the exterior is siding on sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.
 - (b) Continuous composition board, plywood, or gypsum board sheathing at least five-eighths of an inch thick shall cover the exterior side of the wall studs.
 - (c) Sheathing panels shall be covered on the exterior with overlapping building paper.
 - (d) Insulation material at least R-19 shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber, mineral wool or foam plastic insulation complying with UBC Standard 42-1. (Ord. 929 § 1, 1992).

17.30.190 Exterior windows.

- (1) Windows other than as described in this section shall have a laboratory sound-transmission class rating of at least STC-33; or
- (2) Windows shall be double-glazed, with panes at least three-sixteenths of an inch thick. Panes of glass shall be separated by a minimum five-eighths of an inch airspace.
- (3) Double-glazed windows shall employ fixed sash or efficiently weatherstripped, operable sash. The sash shall be rigid and weatherstripped with material that is compressed airtight when the window is closed so as to conform to an infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E283-65-T.
- (4) Glass shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or gasket tape.
- (5) The perimeter of window frames shall be sealed airtight to the exterior wall construction sealant conforming to one of the following Federal specifications: TT-S-0027, TT-S-00230 or TT-S-00153. (Ord. 929 § 1, 1992).

17.30.195 Exterior doors.

- (1) Doors other than as described in this section shall have a laboratory sound-transmission class rating of at least STC-33; or

- (2) Double-door construction is required for all door openings to the exterior. Openings fitted with side-hinged doors shall have one solid-core wood or insulated hollow-metal door at least one and three-quarters-inch thick separated by an airspace of at least three inches from another door, which can be a storm door. Both doors shall be tightly fitted and weatherstripped;
- (3) The glass of double-glazed sliding doors shall be separated by a minimum one-half inch airspace. Each sliding frame shall be provided with an efficiently airtight weatherstripping material as specified in OHMC 17.30.190(3);
- (4) Glass, over two square feet in area, shall be at least three-sixteenths of an inch thick. Glass of double sliding doors shall not be equal in thickness.
- (5) The perimeter of door frames shall be sealed airtight to the exterior wall construction (framing) as indicated in OHMC 17.30.190(5);
- (6) Glass in doors shall be sealed in an airtight nonhardening sealant or in a soft elastomer gasket or glazing tape. (Ord. 929 § 1, 1992).

17.30.200 Roofs.

- (1) Combined roof and ceiling construction other than described in this section and OHMC 17.30.205 shall have an average laboratory sound-transmission class rating of at least STC-44; or
- (2) With an attic or rafter space at least 12 inches deep, and with a ceiling below, the roof shall consist of five-eighths inch composition board, plywood or gypsum board sheathing topped by roofing as required;
- (3) Open-beamed roof construction shall follow the energy insulation standard method for batt insulation, except use one-inch plywood decking with shakes or other suitable roofing material;
- (4) Window or dome skylights shall have a laboratory sound-transmission class rating of at least STC-33. (Ord. 929 § 1, 1992).

17.30.205 Ceilings.

- (1) Gypsum board or plaster ceilings shall be at least five-eighths inch thick. Ceilings shall be substantially airtight with a minimum of penetrations.
- (2) Glass fiber, mineral wool, or foam plastic insulation at least R-30 shall be provided above the ceiling between joists. (Ord. 929 § 1, 1992).

17.30.210 Floors.

The floor of the lowest occupied rooms shall be slab on fill, below grade, or over a fully enclosed basement or crawl space. All door and window openings in a fully enclosed basement shall be tightly fitted. (Ord. 929 § 1, 1992).

17.30.215 Ventilation.

- (1) A ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors or other openings to the exterior. The inlet and discharge openings shall be fitted with sheet-metal transfer ducts of at least 20 gauge steel, which

shall be lined with one-inch-thick coated glass fiber, and shall be at least five feet long with one 90-degree bend.

(2) Gravity vent openings in attics shall be as close to code minimum, in number and size, as practical. The openings shall be fitted with transfer ducts at least three feet in length containing internal one-inch-thick coated fiberglass sound-absorbing duct lining. Each duct shall have a lined 90-degree bend in the duct such that there is no direct line of sight from the exterior through the duct into the attic.

(3) Bathroom, laundry and similar exhaust ducts connecting the interior space to the outdoors, shall contain at least a 10-foot length of internal sound-absorbing duct lining. Exhaust ducts less than 10 feet in length shall be fully lined and shall also meet the provisions of OHMC 17.30.140(3). Each duct shall be provided with a lined 90-degree bend in the duct such that there is no direct line of sight through the duct from the venting cross-section to the room opening cross-section. Duct lining shall be coated glass fiber duct liner at least one inch thick. In areas (i.e., shower rooms) which produce moisture, duct lining shall be made of nonabsorbent material. Commercial kitchen-exhaust systems and product-conveying duct systems (Chapter 11 UMC) shall be exempt.

(4) Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a self-closing baffle plate across the exterior termination which allows proper ventilation. The duct shall be provided with a 90-degree bend. (Ord. 929 § 1, 1992).