TO:

SUPERSEDED BY EI 95-013 EFFECTIVE 3/7/95

ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUBJECT: NOISE BARRIER WALL

Subject Code: 7.27-1-607

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Supersedes: None

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Noise barriers are sometimes required to abate noise in accordance with a previously approved noise study on a project by project basis. In addition, one or more neighborhood meetings are often held to determine if the community wants a noise barrier in general, and to listen to their views on what types of barrier are desired in particular. It is not our intent to have the community select (dictate) the only acceptable design, nor will we force an unacceptable design on the community. Recognizing that we do not know all the possible options, and that noise barrier technology is a rapidly changing field, we prefer to allow the Contractor the opportunity to suggest alternates as well through the Value Engineering provision.

When a timber noise wall is appropriate, for either the entire barrier, or in conjunction with other materials or earth berms, one of the attached specifications, Noise Barrier Wall Item 15607.99XX should be specified. These specifications are for wooden noise wall but allow approved alternates as well. The wooden noise wall is shown on Standard Sheets 607-5 and 607-6, Noise Barrier Wall Details (Horizontal Sheathing) and (Vertical Sheathing) respectively. These sheets are attached.

Upon request, the Soil Mechanics Bureau will design the footing depths and diameters for all Noise Wall installations.

These items and standard sheets may be used immediately. Other generic designs will be developed.

ATT.

ITEM 15607.9901 NOISE BARRIER WALL (HORIZONTAL OR VERTICAL SHEATHING)
ITEM 15607.9902 NOISE BARRIER WALL (VERTICAL SHEATHING)
ITEM 15607.9903 NOISE BARRIER WALL (HORIZONTAL SHEATHING)

Description

This work shall consist of furnishing and erecting noise barrier walls at the locations and to the heights or elevations shown on the plans. Standard noise barriers, as shown on the standard sheet(s), shall be furnished and installed. Alternates may be proposed, however, in accordance with the provisions of the value engineering note incorporated in this project. On structures, the standard wall shall be that detailed on the bridge plans.

Materials

Timber Walls - The material used to construct the timber noise barrier wall detailed in the Standard Sheets or on the bridge plans shall meet the requirements specified in the following subsections of the Standard Specifications:

Class A Concrete	501
Caulking Compound for Structures	705-06
Maroon Primer	708-02
Weathered Brown Guide Rail Paint	708-24
Wood Preservative - Water Borne	708-31
Bar Reinforcement, Grade 60	709-01
Stress Graded Timber and Lumber	712-14
Structural Steel (A-36)	715-01
Galvanized Coatings	719-01
Painting Galvanized Surfaces	740-03

Additional requirements for the standard walls shall be as follows: Timber and Lumber delivered to the site shall be straight, sound, square edged, free from shakes, loose knots or decay. Sheathing shall be double depth tongue and groove; shall be use classified as "Joist and Planks" and shall have a design value of 1200 psi, or greater, after adjustment for wind loading and wet service conditions. Stringers and posts shall be use classified as "Beam and Stringer", and shall have a design value of 1400 psi, or greater, after adjustment for size, wind loading, and wet service conditions. All stresses are extreme fiber bending stresses and use classifications are as defined in ASTM D245.

Wood used shall be pressure treated in accordance with §708-31 Wood Preservative Water Borne, except minimum retention shall be 0.60 pound per cubic foot. Moisture content of all sheathing shall be reduced to a maximum of 15% before and after pressure treating. Timber columns shall be reduced to an exterior moisture content of 15% to the depth of the penetration of the preservative and an interior moisture content of 30% maximum.

Structural glued laminated timber may be used for posts only on land. If used, it shall provide allowable design values of 2400 psi in bending before allowance for wet service, wind, and size factors. Preservative treatment shall be in accordance with AWPA C-28, "Standard for Preservative Treatment of Structural Glued Laminate Members". General requirements shall be those given for treatment of individual laminates before gluing.

Coal-tar pitch shall conform to Military Specification MIL-C-18480A. Steel shapes, nuts and washers, bolts, and anchoring devices shall be galvanized in accordance with §719-01, unless indicated otherwise on the plans. Nails shall be cement or resin coated.

All Structural Steel employed in the standard wall shall be galvanized in accordance with §719-01 Galvanized Coatings. If exposed, steel shall also be primed and painted in accordance with §740-03 Painting Galvanized Surfaces, using Maroon Primer and Weathered Brown Guide Rail Paint.

The concrete anchoring devices used on structures shall meet the requirements of subsection 710-23 - Steel Bridge and Culvert Railing.

The following are regarded to be the essential functions and characteristics of the Noise Wall:

(1) have a sound transmission loss characteristic of twenty decibels (20dBA) as exhibited by

(a) tightness and continuity
(b) minimum weight of four pounds per square foot (4 psf) exclusive of braces and uprights.

(2) have strength sufficient to withstand wind loading of twenty six point six pounds per square foot (26.6 psf) with appropriate safety factors customarily employed.

(3) have a design life of 20 years, or more

4) have aesthetics which will be satisfactory to the community, as determined by the Regional Director

(5) have, on structure only, the maximum weight stated in the contract documents.

Basis of Acceptance

Timber walls will be accepted at the site based on their conformance with the specifications and the details shown on the Standard Sheets.

Construction Details

Timber Walls - The Contractor shall select post and footing sizes based on the information given on the [illegible] subject to the Engineer's approval. On bridges, the post size shown on the Bridge Plans shall be used with no substitution permitted.

Holes for post footings shall be pre-drilled, true and plumb, as approved by the Engineer, to the stated diameter and depth. Precautions shall be taken to protect the holes from collapse. Holes shall contain no free water at the time of concrete placement.

Bar reinforcement and posts shall be set, and secured in place, in the holes which shall then be filled with Class A Concrete in direct contact with the soil to the lower level of the noise barrier wall. Any unpainted, exposed steel members shall be painted with maroon primer and weathered brown guide rail paint. A one half inch bead of caulking compound shall be applied as per standard sheet. The planks shall be erected and nailed to each post or stringer as shown on the standard sheet(s). The nails shall be driven in a staggered and diagonal nailing pattern and the nail heads hammered flush.

Any gaps or spaces in the face of the wall shall be repaired and caulked to maintain tightness. A portion of the groove may be removed from replacement sheathing boards to facilitate replacement.

Any cuts made after preservative treatment shall be carefully trimmed and coated in accordance with AWPA specification M-4 to the satisfaction of the Engineer. Milling of angle post shall be completed prior to preservative treatment.

The bottoms of all planks of wall built on land shall be set a minimum of six (6) inches below finish grade, with this portion of the planks sealed by applying a heavy coat of coal-tar conforming to Military Specification Mil-C-18480A and backfilled.

Method of Measurement

Noise barrier wall erected on land will be measured for payment by the number of square feet of barrier satisfactorily completed in accordance with this specification. The number of square feet will be computed as the number of square feet of wall projected on a plane passing through the posts, between payment lines described herein:

Upper payment line shall be set at the elevations or height shown on the plans.

Lower payment line shall be a line set six inches beneath finished grade at the foot of the wall.

Longitudinal payment lines shall be the outer extremeties of the wall.

For walls erected on structures, the upper payment line will be the same as above; the lower payment line will be the bottom of the planking; the longitudinal payment lines will be the outer extremeties of the wall, as shown on the plans.

Basis of Payment

The unit price bid shall include the cost of furnishing all labor, material, equipment, and tools necessary to perform the work; also all excavation, refilling and disposal of surplus materials, and any costs incurred in obtaining approval for alternate designs. NOISE BARRIER WALL is eligible for partial payment in accordance with §109-04, PARTIAL PAYMENT, if the contract quantity exceeds 5000 S.F.