APPENDIX F. NOISE WALL MATERIALS TEXTURES AND COLORS

of the

TRAFFIC NOISE MANUAL

North Carolina Department of Transportation
Traffic Noise and Air Quality Group

<u>NOISE WALL MATERIALS, TEXTURES AND COLORS</u>

This appendix provides general information about different types of wall materials and allowable textures and colors.

More information about noise wall materials, designs, and construction can be found in the FHWA *Highway Noise Barrier Design Handbook* at:

www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/design00.cfm

NOISE WALL MATERIALS

Noise Wall Maintenance and Graffiti

In choosing a wall type an important consideration is the ability to maintain the physical appearance of the wall. Material selection must consider the potential for the wall to be vandalized by graffiti, damaged by fire, or affected by termites (wood walls) and its potential to be damaged by normal NCDOT operations such as lawn mowing, snow removal, use of deicing and anti-skid materials, etc.

While the potential for a wall to be "hit" by "graffiti artists" cannot be eliminated,the choice of a rougher surface or a surface with a deeper pattern relief may tend to defer such hits as compared to a smoother surface. Graffiti removal can be aided by application of either a permanent or a sacrificial anti-graffiti coating. During the graffitiremoval process, a sacrificial coating gets removed along with the graffiti and must be re-applied. A permanent coating allows for removal of graffiti without the need for reapplying the coating afterwards.

Anti-graffiti coatings may be either clear (as typically applied to an exposed aggregate surface) or pigmented (allowing the color to be obtained by the anti-graffiti coating in lieu of a penetrating stain that provides less anti-graffiti protection). Anti-graffiti products are included on the NCDOT Approved Products List (https://apps.ncdot.gov/vendor/approvedproducts). Search under Product Category -Anti-Graffiti Products.

Absorptive Wall Materials

If the wall surface is required to be absorptive, noise wall products are limited to those contained on the NCDOT Approved Products List (search under Product Category – Sound Barrier Walls). Most absorptive panels used in highway applications are proprietary products comprised of composite materials (wood-impregnated concrete, rubberized materials, etc.), although several metal and plastic products with absorptive filling material are also available. Although the composite materials allow somewhat less options for surface textures, they still permit a wide variety of formliner finishes and stained colors to be utilized. Metal and plastic absorptive wall surfaces have the same color and texture limitations as reflective wall counterparts. More attention is typically paid to the surface textures of composite material

absorptive noise walls since the use of anti-graffiti coatings must be shown by laboratory tests to not adversely impact the absorptive properties of the noise wall.

Transparent Wall Materials

Transparent noise wall products are limited and must be included on the NCDOT Approved Products List. Most products on the market today that are used in highway applications use materials that will not show discoloration over time and will retain their transparency. These wall types should be capable of being self-cleaned (of normal dirt) to the extent possible, and therefore overhanging caps are not recommended for use with transparent panels since the caps limit normal cleansing by rain of the upper portions of the panels. Often, wire strands are placed within transparent wall panels to minimize the potential for bird strikes. Transparent panels have been used in ground-mounted and structure-mounted applications. They have been erected as fully transparent walls as well as in combination with other wall materials (top panels transparent, bottom panels solid).

NOISE WALL SURFACE TEXTURE AND COLOR

Noise Wall Textures

This discussion is limited to the surface textures of concrete and composite material noise walls since the surface textures associated with metal, wood, masonry block, brick, and plastic walls are defined by their nature and provide little, if any, opportunity to modify their surface texture characteristics.

Approved noise wall textures are shown in the attached exhibit. Various techniques are employed to create textures on concrete and composite wall surfaces. They include:

1. ***Mechanically created textures***. These methods include floating operations to create a smooth surface; raking, dragging, brooming, or brushing a surface to create a rough texture;and stamping a surface to create a particular texture (such as a brick pattern).

2. ***Exposed aggregate textures***. These textures are created by exposing a specific type of aggregate that is contained in the wall's concrete.

3. ***Textures created by formliners***. Formliners are molds used to reproduce a desired texture and design on the surface of a noise wall. Those used in highway noise wall production are usually made of elastomeric polyurethane material capable of up to 100 re-uses. There are a vast number of standard textures available from formliner suppliers.

Further information can be obtained by contacting one of the following formliner suppliers:

- Architectural Polymers http://www.apformliner.com/

- Custom Rock http://www.customrock.com/

- Fitzgerald http://www.formliners.com/

- Scott System http://www.scottsystem.com/

- Spec Formliners http://www.specformliners.com/

- U.S. Formliner http://www.usformliner.com/

- American Formliners http://www.americanformliners.com/
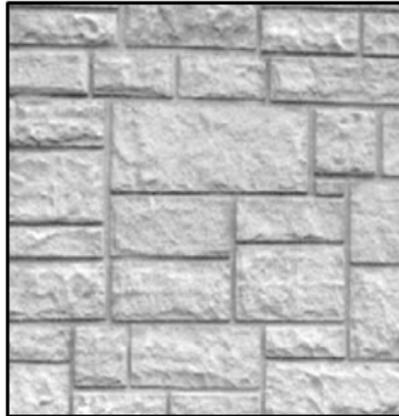
Noise Wall Colors

The colors of noise wall component surfaces are obtained using a variety of methods including:

- Through the natural materials of the wall, such as occur in wood posts and panels, exposed aggregate posts and panels, integral colors of metal and plastic wall systems, etc.

- Use of clear coatings or penetrating stains applied to wood, concrete, and composite wallposts and panels.

- Application of pigmented anti-graffiti coatings on reflective walls only.

- Painting of reflective walls only.

- Use of pigmented concrete.

Colors should be specified using the Federal Color Number system shown in the attached exhibit.
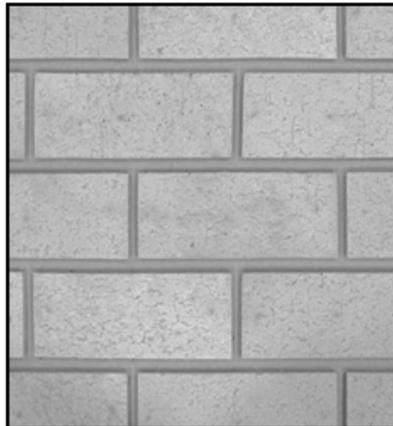
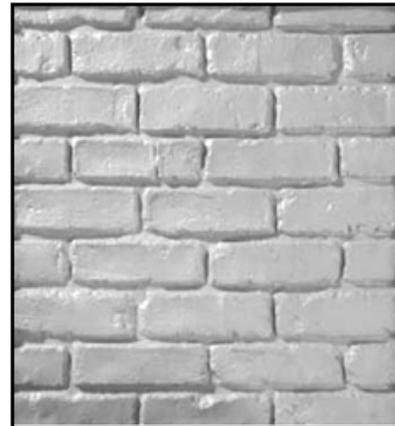# *Noise Wall Aesthetics*

Texture Options:

1. Ashlar Stone

2. Dry Stack Stone

3. Standard Brick

4. Old Brick

Noise Wall Aesthetics

Stain Options: Federal Standard 595 Paint Colors

Brown Palette				
30032	30040	30045	30049	30051
30055	30059	30061	30062	30070
30075	30076	30080	30091	30095
30097	30099	30100	30108	30109
30111	30115	30117	30118	30122
30129	30140	30145	30152	30160
30166	30206	30215	30219	30227
30233	30252	30257	30260	30266
30277	30279	30313	30315	30318
30324	30371	30372	30400	30450
30475				

Brown Palette

http://www.colorserver.net/showpalette.asp?group=0&cmd=append%20-%20search

Gray Palette				
36008	36044	36076	36081	36099
36118	36120	36122	36132	36134
36152	36160	36165	36173	36176
36187	36231	36250	36251	36270
36280	36293	36300	36306	36307
36314	36320	36329	36350	36357
36360	36373	36375	36376	36400
36405	36408	36415	36424	36440
36463	36473	36492	36493	36495
36496	36515	36521	36555	36559
36586	36595	36622	36628	36642

Gray Palette

http://www.colorserver.net/showpalette.asp?group=6