

TABLE OF CONTENTS – ARCHITECTURAL TREATMENT

CHAPTER 5

FILE NO.	TITLE	DATE
TABLE OF CONTENTS AND INTRODUCTION		
05.TOC-1	Table of Contents – Chapter 5	12Sep2014
05.TOC-2	Table of Contents – Chapter 5	12Sep2014
05.TOC-3	Table of Contents – Chapter 5	12Sep2014
05.00-1	Introduction.....	12Sep2014
05.00-2	Blank Page	12Sep2014
BASIC ARCHITECTURAL TREATMENT CRITERIA		
05.01-1	Approval and Design Considerations.....	12Sep2014
05.01-2	Cost	12Sep2014
GENERAL ARCHITECTURAL TREATMENT INFORMATION		
05.02-1	General Information.....	12Sep2014
05.02-2	General Information.....	12Sep2014
05.02-3	Parapet/Railing and Substructure Detail Coordination	12Sep2014
05.02-4	Textures	12Sep2014
05.02-5	Textures	12Sep2014
05.02-6	Texture Scale	12Sep2014
05.02-7	Colors	12Sep2014
05.02-8	Medallions	12Sep2014
05.02-9	Medallions	12Sep2014
05.02-10	Medallions	12Sep2014
05.02-11	Medallions	12Sep2014
ARCHITECTURAL TREATMENT FOR PARAPETS/RAILINGS		
05.03-1	General Information for Parapets/Railings.....	12Sep2014
05.03-2	Sculpted Design for Parapets/Railings.....	12Sep2014

*Indicates 11 x 17 sheet; all others are 8½ x 11.

TABLE OF CONTENTS – ARCHITECTURAL TREATMENT

CHAPTER 5

FILE NO.	TITLE	DATE
ARCHITECTURAL TREATMENT FOR SUBSTRUCTURE		
05.04-1	Design Considerations	12Sep2014
05.04-2	Design Considerations	12Sep2014
05.04-3	Masonry Options	12Sep2014
05.04-4	Masonry Details.....	12Sep2014
05.04-5	Abutment Elephant Ear Wingwalls.....	12Sep2014
05.04-6	Abutment U-Back Wingwalls.....	12Sep2014
05.04-7	Abutment U-Back Wingwalls.....	12Sep2014
05.04-8	Hammerhead Piers	12Sep2014
05.04-9	Hammerhead Piers	12Sep2014
05.04-10	Hammerhead Piers	12Sep2014
05.04-11	Wall Piers	12Sep2014
05.04-12	Wall Piers	12Sep2014
05.04-13	Wall Piers	12Sep2014

TEXTURE RENDERINGS – BPB-3 SERIES PARAPET

* 05.05-1	Chiseled Limestone.....	12Sep2014
* 05.05-2	Pea Gravel	12Sep2014
* 05.05-3	Chiseled Sandstone	12Sep2014
* 05.05-4	Random Cobble	12Sep2014
* 05.05-5	Vertical Fractured Stone	12Sep2014
* 05.05-6	3D Brick.....	12Sep2014
* 05.05-7	Cedar Stake	12Sep2014
* 05.05-8	Rustic Brick	12Sep2014
* 05.05-9	Drystack	12Sep2014
05.05-10	BPB-4 Series Parapets (42" F-Shape).....	12Sep2014

TEXTURE RENDERINGS – BR27C/D SERIES RAILINGS

* 05.06-1	Chiseled Limestone.....	12Sep2014
* 05.06-2	Pea Gravel	12Sep2014
* 05.06-3	Chiseled Sandstone	12Sep2014
* 05.06-4	Random Cobble	12Sep2014
* 05.06-5	Vertical Fractured Stone	12Sep2014
* 05.06-6	3D Brick.....	12Sep2014
* 05.06-7	Cedar Stake	12Sep2014
* 05.06-8	Rustic Brick	12Sep2014
* 05.06-9	Drystack	12Sep2014

*Indicates 11 x 17 sheet; all others are 8½ x 11.

TABLE OF CONTENTS – ARCHITECTURAL TREATMENT

CHAPTER 5

FILE NO.	TITLE	DATE
SCULPTED DESIGN RENDERINGS – BPB-3 SERIES PARAPETS		
* 05.07-1	Sculpted Dogwood Blossom	12Sep2014
* 05.07-2	Sculpted Oak Leaves	12Sep2014
* 05.07-3	Sculpted Fish.....	12Sep2014
05.07-4	BPB-4 Series Parapets (42" F-Shape).....	12Sep2014
SCULPTED DESIGN RENDERINGS – BR27C/D SERIES RAILINGS		
* 05.08-1	Sculpted Dogwood Blossom	12Sep2014
* 05.08-2	Sculpted Oak Leaves	12Sep2014
* 05.08-3	Sculpted Fish.....	12Sep2014
MEDALLION RENDERINGS – BR27C/D SERIES RAILINGS		
* 05.09-1	Rustic Brick – Medallion on Railing.....	12Sep2014
* 05.09-2	Drystack – Medallion on Railing.....	12Sep2014
* 05.09-3	Rustic Brick – Medallion on Wingwall	12Sep2014
* 05.09-4	Drystack – Medallion on Wingwall	12Sep2014
SUBSTRUCTURE RENDERINGS		
* 05.10-1	Full Integral and Semi-Integral Abutment with Elephant Ear Wingwall... 12Sep2014	12Sep2014
* 05.10-2	Conventional Abutment with U-Back Wingwall	12Sep2014
* 05.10-3	Conventional Abutment with Medallion	12Sep2014
* 05.10-4	Medallion Options.....	12Sep2014
* 05.10-5	Medallion Options (Unpainted).....	12Sep2014
* 05.10-6	Hammerhead Pier with Texture and Sculpted Window Options.....	12Sep2014
* 05.10-7	Hammerhead Pier with Form Liner or Masonry Options.....	12Sep2014
* 05.10-8	Wall Pier - Brick.....	12Sep2014
* 05.10-9	Wall Pier - Drystack.....	12Sep2014
* 05.10-10	Wall Pier – Hokie Stone	12Sep2014
* 05.10-11	Wall Pier – Wall Mural	12Sep2014
CELL LIBRARY: ARCHTREAT.CEL		
05.11-1	Cells 2TEX1 – 2TEX3	12Sep2014
05.11-2	Cells 2TEX4 – 2TEX6	12Sep2014
05.11-3	Cells 2TEX7 – 2TEX9	12Sep2014

*Indicates 11 x 17 sheet; all others are 8½ x 11.

INTRODUCTION

Chapter 5 of this manual establishes the practices for architectural treatment of structures.

Several major changes to past practices are as follows:

1. Added architectural treatment for substructures.
2. Re-organized the entire chapter.

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**ARCHITECTURAL TREATMENT
INTRODUCTION**

VOL. V - PART 2
DATE: 12Sep2014
SHEET 2 of 2
FILE NO. 05.00-2

APPROVAL AND DESIGN CONSIDERATIONS

APPROVAL:

Approval shall be by the District Structure and Bridge Engineer or their designee. The districts are responsible for maintenance of the bridges or oversight of locally administered projects. Therefore, they shall have approval of the proposed architectural treatment. Use of architectural treatments including sculpted designs other than those provided in this chapter requires approval of the District Structure and Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area.

SAFETY:

Architectural treatment shall not interfere with safety of the traveling public.

Crash tested railings appropriate for the location shall be used in accordance with Chapter 25.

For barrier separated sidewalk or shared use path, lighting and fencing not subject to traffic impact (i.e., exterior barrier) shall meet AASHTO requirements but need not be crash tested in accordance with Chapters 6 and 25.

Modifications for aesthetic purposes must adhere to the requirements of Chapter 6 (e.g., face-to-face of curb/rail).

Shall not encroach on horizontal/vertical clearances.

INSPECTION ACCESS:

Architectural treatment shall not prohibit inspection access.

Shall not obstruct inspection of main or secondary members or connections.

Shall not be mechanically attached with adhesive anchors, fasteners, etc. to the exterior of parapet, deck or beams/girders and substructures except that masonry can be bonded to substructures.

OTHER CONSIDERATIONS:

Shall not be used for bridges that will be overtopped by flood.

Shall not have adverse impact on hydraulic features on or under the bridge.

Shall not collect debris.

Shall not utilize materials not approved by the District Bridge Engineer.

Architectural treatment will have long term maintenance costs associated with their use. See next sheet for additional information.

Architectural treatment will affect the dimensions of many structural elements.

Architectural treatment is only one element of context sensitive solutions and aesthetic design of a bridge. Bridge design shall comply with AASHTO LRFD Article 2.5.5 for bridge aesthetics prior to considering architectural treatment.

COST:

Architectural treatment and additional bridge work due to the use of architectural treatment shall not exceed 5% of the cost of the bridge without the District Structure and Bridge Engineer approval.

Dedicated Bridge Funding for architectural treatment shall not exceed 5% of the cost of the bridge without approval of the State Structure and Bridge Engineer.

The District may use other types of funding other than Dedicated Bridge Funding to exceed the 5% limit.

Architectural treatment will require periodic maintenance throughout the life of the structure. Damage can result from accidents and vandalism and includes concrete breakage, tire markings, tagging, chipping, etc. Costs vary depending on the type and extent of damage. Re-staining frequency will depend on location of structure, climate conditions, sun exposure and stain color, but can be estimated at 10-year intervals.

GENERAL INFORMATION:

Architectural treatment (textured concrete) is typically achieved by using form liners. Stone masonry or brick with mortared joints may be considered for substructures, but shall not be used for parapets/railings for safety reasons. Form liners meeting the relief requirements noted below may not be shown in manufacturer's catalogs and will typically need to be special ordered.

If brick or stone masonry is selected for substructures, the recommended form liners and colors on File No. 05.04-3 should be used for parapets/railings where parapet/railing texture and/or color is desired.

Architectural treatment is required on structures over the interstate except where geometrically non-feasible.

Architectural treatment described in this chapter shall not be used on MSE wall panels unless approved by the District Structure and Bridge Engineer.

RELIEF FOR PARAPETS/RAILINGS:

Maximum relief for parapet/rail is limited to 1" on the inside face (i.e., traffic side) and 2" on the outside face (i.e., non-traffic side). In general the parapet/rail side receiving the architectural treatment is increased by the applied relief to achieve the reinforcing steel cover requirements. In rails with combination steel posts/rail and concrete pedestals, the face of railing must be in the same location as crash tested. Therefore, a 1" thick circular spacer plate (or washer) is required for installation between the rail and post.

RELIEF FOR SUBSTRUCTURES:

Maximum relief is limited to 3" on abutments and piers depending on the specific texture. The side receiving the architectural treatment is increased by up to 3" depending on the texture to achieve the reinforcing steel cover requirements. See File Nos. 05.04-5, -7, -8, and -11 for details.

When incorporating architectural treatment into a project, the designer shall coordinate the textures and color treatments of all the elements (parapets/railings and substructure) of a bridge throughout the design process.

Because architectural treatment on structural elements requires increase of dimensions (for instance, thickness for parapet) for the structural elements, the effects of architectural treatment on the geometry of a bridge shall be considered in determining element dimensions, clearances and span length, etc., during preliminary design.

GENERAL INFORMATION:

PAY ITEM:

For pay items, see Part 2, Chapter 3 of this manual: Estimated Quantities.

SPECIAL PROVISIONS:

Sample special provisions are available from Central Office Structure and Bridge Engineering Services Program Area.

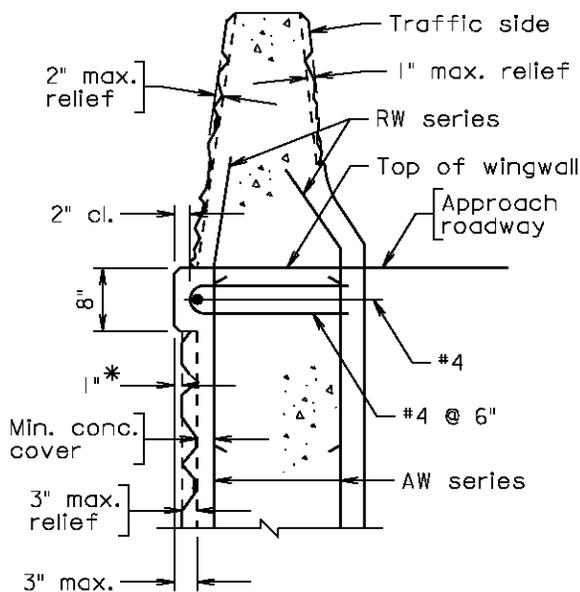
PARAPET/RAILING AND SUBSTRUCTURE DETAIL COORDINATION:

The decision to incorporate architectural treatment into a bridge project and the type of treatments shall be made during the preliminary design. Incorporating texture relief into superstructure and/or substructure elements affects geometric items such as face-to-face of curb/rail, out-to-out of deck, abutment width, pier width and/or clearances. Full scale drawings shall be developed during the preliminary design to determine the architectural treatments to be used and approximate appearance. Specific architectural treatments (e.g., wingwall medallions, sculpted windows, wall murals, etc.) may not fit on the substructure elements for which they are intended. Where specific architectural treatments do not fit, either the substructure element dimensions will need to be revised or the desired treatments not included.

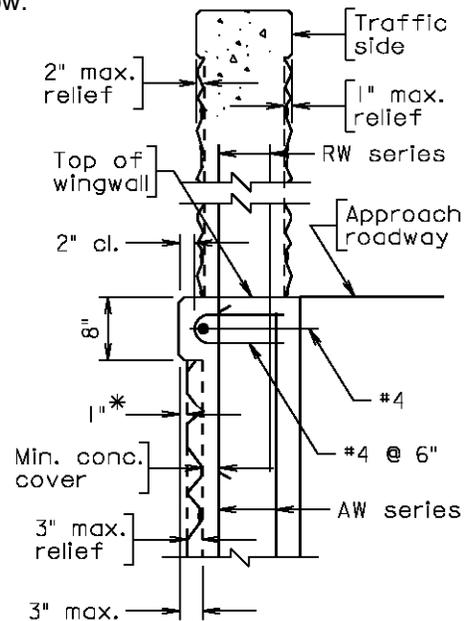
Incorporating or removing architectural treatments from a project at a later stage could require re-design and plan changes including quantities. When removing architectural treatment from a project at a late stage, it may be necessary to limit plan changes by not adjusting deck and/or substructure dimensions, casting the relief as solid concrete in the substructure, etc. However, the parapet/rail shall revert back to the standard width/detailing (i.e., without the additional relief).

Designers must consider the texture relief to be sacrificial and position reinforcement to provide the minimum concrete cover required from the back of the maximum relief used to the reinforcement. Structural coordination between elements is required as the maximum texture relief is 1" on the inside face (i.e., traffic side) of parapets/rails, a maximum of 2" on the outside face (i.e., non-traffic side) of parapets/rails and a maximum of 3" on substructure elements.

As an example, for the wingwall details shown below, the Designer needs to coordinate the position of the structural sections of the wingwall in relation to the parapet/rail and ensure the reinforcement position aligns with the minimum concrete cover required from the back of the maximum texture relief to the reinforcement. Where relief equals or exceeds 2", coping reinforcement shall be included in details as shown below.



STANDARD BPB PARAPET



STANDARD BR27 RAIL

※ Where substructure texture relief exceeds 2", the coping dimension will vary from 1" at a 2" relief down to 0" (i.e., flush with the texture relief) at the maximum relief of 3".

TEXTURES:

Textures for architectural treatment are limited to the following selections for parapets/railings and substructures. Textures for architectural treatment other than those depicted below require approval of the District Structure and Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area.

The selection type names are for description only and may vary by manufacturer. The reliefs indicated for each texture below are recommended to fully accentuate the texture pattern.

As parapet/railing relief is limited to 1" on the inside face (i.e., traffic side) and 2" on the outside face (i.e., non-traffic side), custom form liners may be required where the recommended reliefs for textures shown below are greater than the applied relief and the texture appearance may not look the same as depicted here and in the parapet/rail renderings (e.g., random cobble with a 1" relief). Similarly, where increasing relief is desired in the substructure, a custom form liner may be required (e.g., drystack with a 3" relief). See File No. 05.02-6 for discussion on texture scale and when increasing relief should be considered. Substructure relief shall not exceed 3" and shall be indicated on the plans.

Chiseled Limestone, Pea Gravel and Chiseled Sandstone are generally not recommended on substructure U-back wing walls or other areas of large surface expanse, or areas that will be passed at a high rate of speed, because the texture relief will be difficult to discern. These textures are more appropriate on parapets/rails and as backgrounds for sculpted designs.



CHISELED LIMESTONE

Stock form liners available (e.g., Scott System – Chiseled Limestone). *1 3/4" recommended relief.*



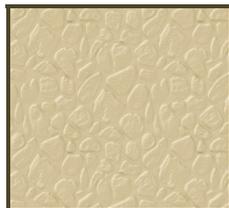
PEA GRAVEL

Stock form liners available (e.g., Scott System – Pea Gravel). *1/2" recommended relief.*



CHISELED SANDSTONE

Stock form liners available (e.g., Scott System – Bush Hammer). *1/4" recommended relief.*



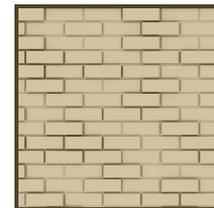
RANDOM COBBLE

2" recommended relief.



VERTICAL FRACTURED STONE

3" recommended relief.



3-D BRICK

3" recommended relief.

Continued on next sheet

TEXTURES (cont'd):



CEDAR STAKE

2" recommended relief.



RUSTIC BRICK

2" recommended relief.



DRystack

2" recommended relief.

See Sections 05.05 thru 05.10 of this chapter for architectural renderings of parapet/rail and substructure. See Part 3 of this manual for parapet/rail standards incorporating texture for architectural treatment.

TEXTURE SCALE:

Standards BPB-AT-1 thru -12 and BPB-AT-21 thru -32 found in Part 3 of this manual contain Texture Details providing grid scales for the available textures (including sculpted shapes) for 32" and 42" F-shape parapets respectively. Similarly, Standards BR27C-AT-1 thru -12 and BR27D-AT-1 thru -12 provide Texture Details for BR27C/D rails.

The minimum texture grid scale ratio between substructure and parapet/railing should be 1:1 and the maximum should be 2:1. Where viewing distance is near to the substructure unit(s), a texture grid scale ratio of 1:1 may be appropriate. Where the viewing distance increases, the scale may need to be increased up to the 2:1 maximum to make the texture on the substructure visible.

For example, a bridge over an Interstate would be primarily viewed by vehicles on the Interstate. As Interstates typically have a wide roadway template (i.e. multiple lanes, larger horizontal clearances and longer duration visibility as the structure is approached), increases in scale may be appropriate at the abutments. Bridges over small streams could be viewed from adjacent properties, paths, and/or from the water. As all these viewing locations are near to the substructure, a texture grid scale ratio of 1:1 may be appropriate. For larger structures over non-navigable waterways with flood plains, the viewing location may be near to the abutments and a texture grid scale ratio of 1:1 may be appropriate as well. However, hammerhead piers in the same layout would likely be viewed from a distance and an increase in scale may be appropriate. The size of the substructure unit should also be considered in determining an appropriate texture grid scale ratio.

In cases where the substructure texture grid scale is increased, increasing the relief should also be considered, but shall not exceed 3". Providing architectural texture only on the parapet/rail or substructure is an option. A texture grid scale similar to those shown in the BPB and BR27C/D standard series shall be added to the plan sheet(s) of the substructure element(s) receiving treatment. Texture Detail cells are provided in Section 05.11 for use on substructure plan sheets where the texture grid scale ratio between substructure and parapet/railing is 2:1. These cells can be modified for other grid scale ratios by adjusting the grid dimensions (e.g., changing the 12" dimensions and grid callout to 9" for a grid scale ratio of 1.5:1 or 6" for a 1:1 ratio).

COLORS:

The following colors for architectural treatment are available.

FEDERAL COLOR STANDARDS



27880



30109



22519



23617



37150



10324



26306



10055



37031



20219



34583



25240



34201

Colors for architectural treatment other than those specifically shown on the substructure renderings for use with particular treatments require approval of the District Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area. See Section 05.10 for substructure renderings.

MEDALLIONS:

Medallions may be used with form liner texture for the abutment walls, terminal wall and U-back wing sections.

BR27C-series and BR27D-series standards have been developed for the rustic brick and drystack textures preferred for use with medallions. Using other textures with medallions is not allowed. For the terminal wall, medallions shall not be placed on the inside face (i.e., traffic side) as the visibility of the medallion is impaired due to guardrail and rub rail attachments. For railings, see Part 3 of this manual for standards incorporating architectural treatment. Medallion diameter is 2'-4" on the railing standards.

5'-0" diameter medallions may be used on abutment wingwalls. Smaller diameters require District Structure and Bridge Engineer approval. See File No. 05.04-7 for details and specific requirements. See File Nos. 05.09-1 thru -4 and 05.10-3 for architectural renderings with medallions.

The following medallions may be used with or without colors (use of medallions other than those depicted below and on subsequent sheets requires approval of the District Structure and Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area):



CLAMSHELL

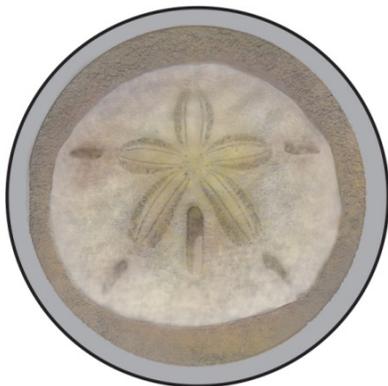
MEDALLIONS (cont'd):



CRAB

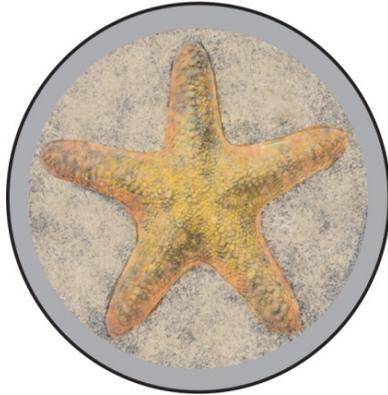


FRIGATE



SAND DOLLAR

MEDALLIONS (cont'd):



STARFISH



CARDINAL



DOGWOOD BLOSSOM

MEDALLIONS (cont'd):



TULIP POPLAR

GENERAL INFORMATION FOR PARAPETS/RAILINGS:

Architectural treatment (textured concrete) is achieved by using form liners as discussed in Section 05.02. Brick and stone masonry will not be allowed for parapets/railings for safety reasons.

RELIEF:

The maximum relief is limited to 1" on the inside face (i.e., traffic side) and 2" on the outside face (i.e., non-traffic side). See File No. 05.02-1 for more information.

FOR F-SHAPE PARAPETS (BPB-SERIES):

The parapet width is to be increased by the applied relief dimension(s).

For the inside face (i.e., traffic side), architectural treatment can be applied only to the upper sloped portion of the barrier.

See Part 3 of this manual for Standards BPB-AT-1 thru -AT-12 and Standards BPB-AT-21 thru -AT-32.

FOR BR27C-SERIES AND BR27D-SERIES RAILS:

The rail width is to be increased by the applied relief dimension(s).

If 1" relief is applied on the inside face (i.e., traffic side), the railing requires a 1" spacer (circular plate) to keep the rail face flush with the concrete stem as shown in the standard sheets.

See Part 3 of this manual for Standards BR27C-AT-1 thru AT-12 and Standards BR27D-AT-1 thru -AT-12.

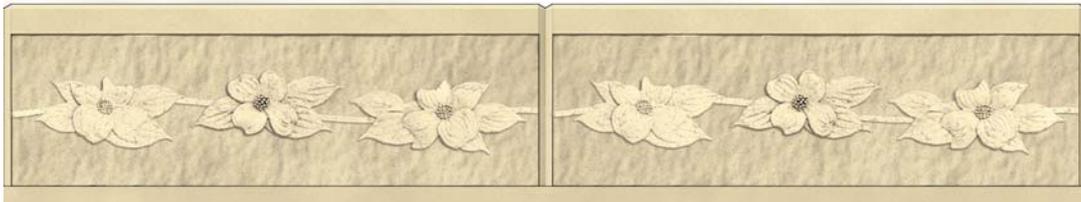
OTHER RAILINGS:

Exposed aggregate finish is allowed for use with Kansas Corral railing. No other architectural treatment shall be applied to other railings except on U-Back Wing and terminal wall portion.

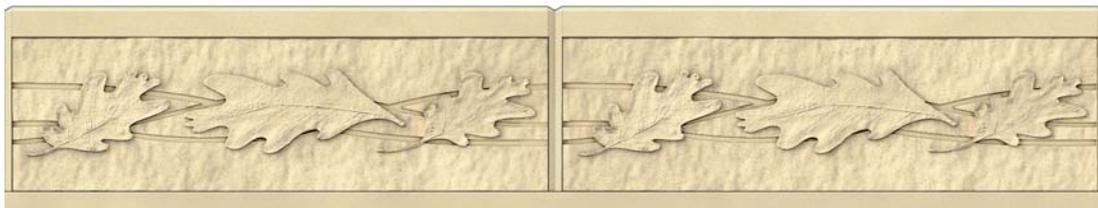
SCULPTED DESIGN FOR PARAPETS/RAILINGS:

The selections of textures and medallions for architectural treatment are discussed in File Nos. 05.02-1 thru -11.

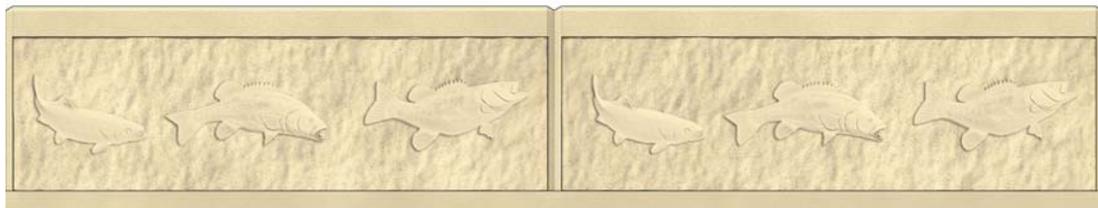
Designs with sculpted dogwood blossom, sculpted oak leaves and sculpted fish may be included with the chiseled limestone texture for the BPB-3 and 4-series parapets and the BR27C-series and BR27D-series railings. See details below. Sculpted designs shall not be used on the traffic side of terminal walls. See Part 3 of this manual for standards incorporating architectural treatment. See File Nos. 05.07-1 thru -4 and 05.08-1 thru -3 for architectural renderings.



SCULPTED DOGWOOD BLOSSOM



SCULPTED OAK LEAVES



SCULPTED FISH

DESIGN CONSIDERATIONS:

When deciding whether and how to incorporate architectural treatments into a project the following factors should be considered:

SPEED AND APPROACH VIEW ANGLE:

The designer shall consider speed(s) of travel over the bridge and/or under the bridge when selecting architectural treatment. The traveling viewers' speed and approach angle have important implications for the visibility of architectural treatment on a bridge. The greater the speed and viewing angle (as it departs from perpendicular) the less visible surface treatments will become.

Color can aid the visibility of surface and geometric features for high passing-speed and high view-angle applications (see next sheet for further discussion of color). Higher speed may also warrant greater depth of relief in the surface textures, but shall not exceed the maximum reliefs provided on File No. 05.02-1. The designer shall also consider the modular size of surface patterns, and the size of decorative features (such as medallions) to account for the higher passing speed.

SURROUNDING LANDSCAPE, INFRASTRUCTURE AND CULTURAL ENVIRONMENT:

The designer shall consider architectural treatment that will complement the surrounding natural landscape and surrounding infrastructure. Special cases may exist where the bridge serves as a gateway to a cultural district or institution. The designer shall be very thoughtful in these circumstances in choosing an aesthetic scheme. In some instances, it may be best not to use architectural treatment at all, because the details may detract from the significance or distinction of the environment. In other cases, these environments will provide the best opportunity for the use of architectural treatment.

The designer shall review the local site conditions and regional setting in which the bridge is to be built. In general, choose themes that are appropriate for the local and regional characteristics, and that do not clash with other bridges and/or structures nearby.

DIMENSIONS AND SCALE OF STRUCTURAL ELEMENTS:

The designer shall consider the dimensions and scale of the structural elements when applying architectural treatment. Decorative features such as medallions, sculpted design windows and wall murals shall have a scale and shape (aspect ratio) harmonious with the scale and shape of the structural element in which they are featured.

The placement of a decorative feature within an element shall be carefully considered, including minimum edge clearance and position. See File Nos. 05.04-7, -9 and -12 for guidance on placing medallions, sculpted design windows and wall murals respectively. Similarly, the texture scale (modular size) of patterns shall reflect the shape and scale of the structural element. See the guidelines provided in File No. 05.02-6.

DESIGN CONSIDERATIONS (cont'd):

COLOR AND LIGHTNESS:

The use of color may enhance the appearance and/or visibility of the textured or patterned features of the architectural treatment. As noted on the previous sheet, speed may be a factor in determining whether to use color. Likewise, the choice of a decorative feature may suggest (or not) the use of color.

Some elements may have varying levels of exposure, such as the horizontal extents of wall piers and vertical extents of hammerhead piers. Light colors will tend to accentuate the shadow lines of the structure and textures and dark colors will tend to subdue them. As similarly expressed on the previous sheet, consider the surrounding landscape and infrastructure when selecting colors, and choose colors that will either be harmonious with the surroundings or that will accentuate the structure, as appropriate.

Applied colors (painted or stained) will fade over time and the rate may vary on an element or between elements based on level of direct exposure to sunlight. These effects shall be considered along with long-term maintenance needs.

DETAILS OF ARCHITECTURAL TREATMENT:

The details of the architectural treatment will have a significant impact on appearance of the structure. Concrete construction joints, form liner edge joints and drainage openings shall be carefully incorporated into the texture pattern so as not to disrupt the pattern appearance or create an incongruent edge.

The modular size of patterns representing masonry shall be reflective of actual masonry sizes, and shall be adjusted to fit an integer number of units along the width and height dimensions of the structural element in which they are used. The scale and aspect ratio of the modular units (or other patterns) shall also compliment the scale and aspect ratio of the structural element.

OTHER CONSIDERATIONS:

Maximum relief is limited to 3 inches on abutments and piers depending on the specific texture. See Section 05.02 for details.

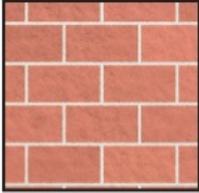
The form liner texture shall begin at the top of the footing or 1 foot 6 inches below proposed finished grade when the depth of top foundation is greater than 2 feet. The texture should be stained minimum 1 foot 6 inches below finished grade.

Anti-graffiti coating may be applied to all or portions of the superstructure and/or substructure after staining or painting at request of the locality and/or District.

No architectural treatment as described in this chapter (except for color to match bridge color scheme where desired) shall be applied to round and square multi-column piers and pile bents unless approved by the District Structure and Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area.

MASONRY OPTIONS:

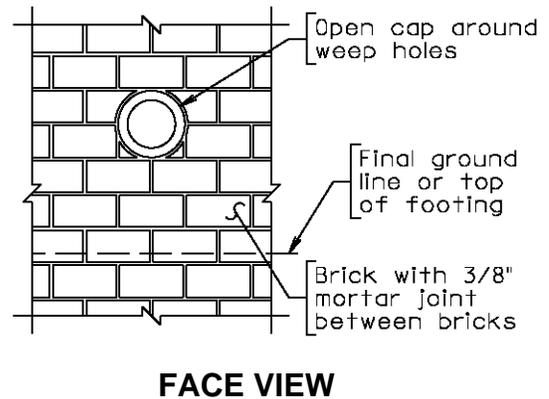
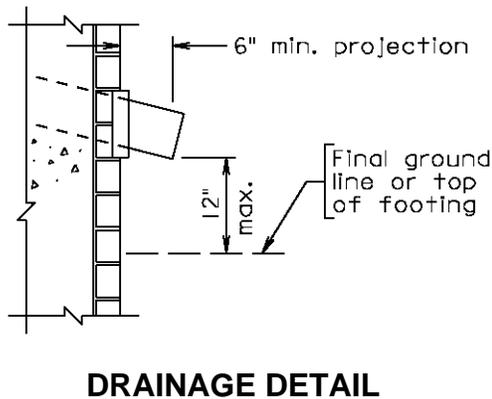
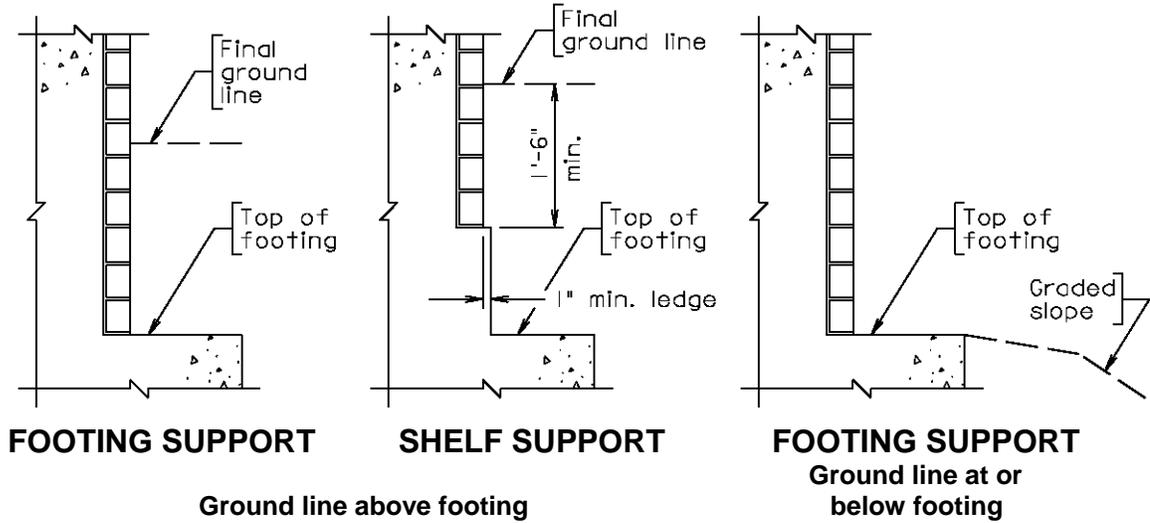
The following details are options for brick and stone masonry for architectural treatment. See File Nos. 05.10-1 thru -11 in this chapter for architectural renderings. When using masonry on the substructure, the following form liners should be considered for use on the parapet.

Masonry on Substructure	Recommended Parapet Form Liner Treatment (See File Nos. 05.02-4 and -5 for texture details)	Recommended Parapet Federal Standard Colors (Refer to File No. 05.02-7 for colors)
 <p>BRICK</p>	Rustic Brick Chiseled Limestone Chiseled Sandstone	30109
 <p>STACKED STONE</p>	Drystack Chiseled Limestone Chiseled Sandstone Pea Gravel Cedar Stake	10324 23617 26306
 <p>HOKIE STONE</p>	Drystack Chiseled Limestone Chiseled Sandstone Pea Gravel	10324 23617 26306
 <p>RANDOM COBBLESTONE</p>	Drystack	22519 23617

Use of brick or stone masonry other than those depicted in this chapter or form liner and/or color other than those recommended above requires approval of the District Structure and Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area.

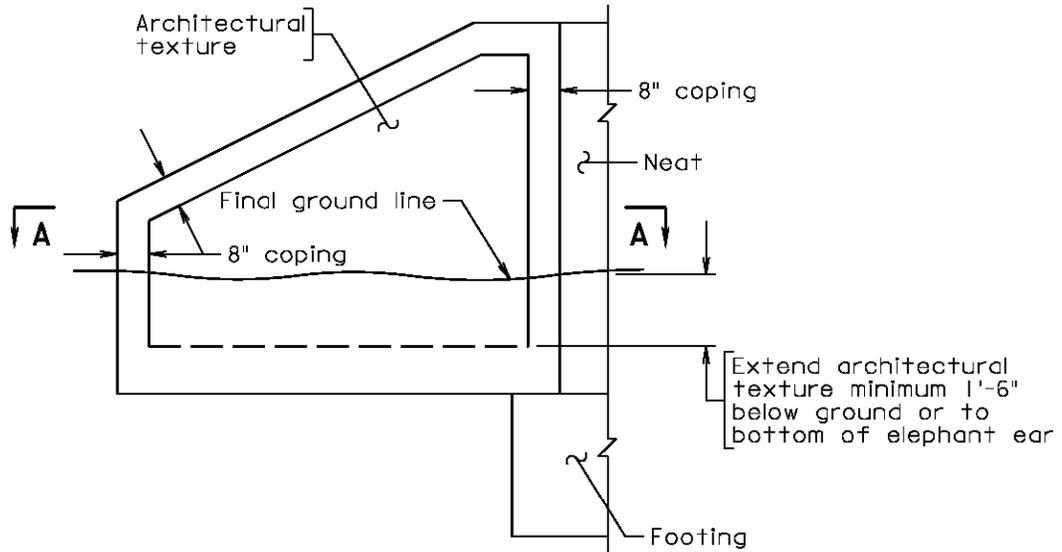
MASONRY DETAILS:

Masonry shall be supported directly on footing or built-up shelf (brick shown below, others similar). Where weep holes or pipe underdrains drain the area behind an abutment, the details will be carefully incorporated into the texture pattern so as not to disrupt the pattern appearance. See File No. 05.04-2 for additional detail guidelines including joints.



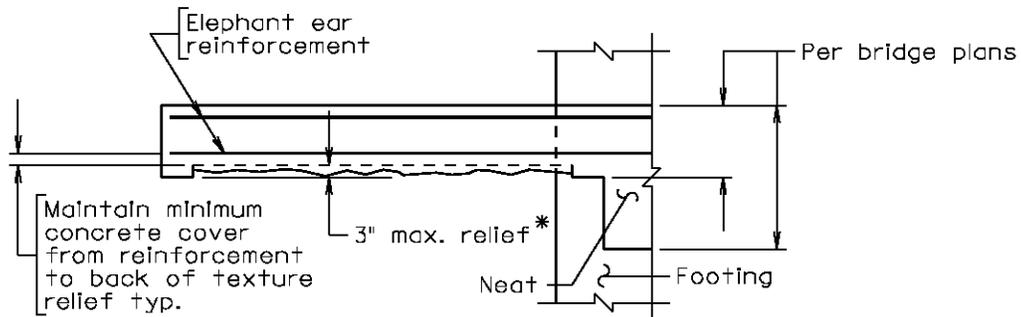
ABUTMENT ELEPHANT EAR WINGWALLS:

Limits of architectural texture and a texture grid scale shall be shown on the plans. Coping on elephant ear wingwalls shall be 8" as shown in the detail below. Architectural texture relief varies by form liner, but shall not exceed 3". See File No. 05.10-1 for architectural renderings of full and semi-integral abutments with elephant ear wingwalls.



ELEPHANT EAR WINGWALL WITH ARCHITECTURAL TEXTURE

Shown for semi-integral abutment using form liner



SECTION A-A

* Where brick or stone masonry is used, this dimension must be sufficient width to support the masonry.

ABUTMENT U-BACK WINGWALLS:

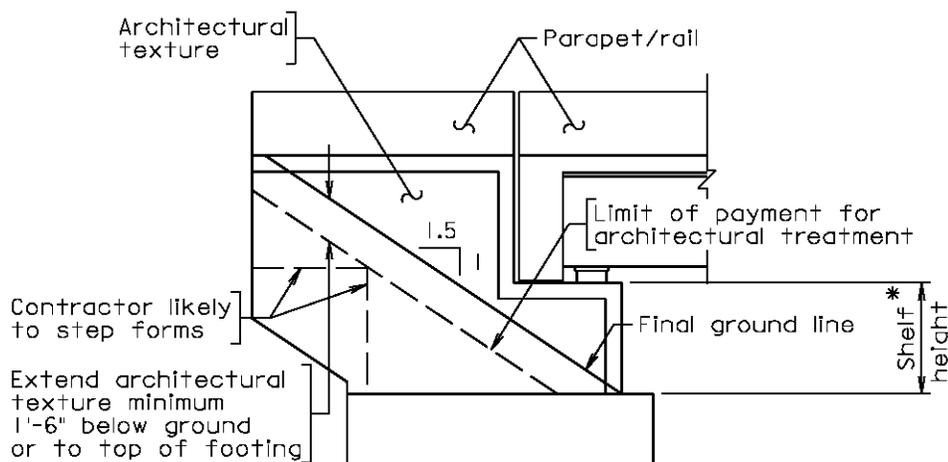
ARCHITECTURAL TEXTURE:

Limits and type(s) of architectural texture and a texture grid scale shall be shown on the plans. Architectural texture relief varies by form liner, but shall not exceed 3". True masonry may also be used, but plans shall state where form liners, masonry or both are options.

The example sketch of a semi-integral abutment with wingwalls and a 1.5:1 fill slope is provided below to assist discussion. Depending on fill and/or cut slope and type and height of abutment, the exposed area may be insufficient for architectural texture.

Coping size for abutments with wingwalls shall be 8" minimum. Full size sketches will assist determining where larger coping size is appropriate.

Differences in the superstructure and substructure architectural relief shall be coordinated during the preliminary design stage to ensure the structural wingwall thickness and reinforcement position used in design match the final plans. See File No. 05.02-3 for examples for standard BPB parapets and standard BR27 rails. A similar detail shall be shown on the plans.



U-BACK WINGWALL WITH ARCHITECTURAL TEXTURE

* Architectural treatment shall not be used where exposed shelf height is 3 feet or less.

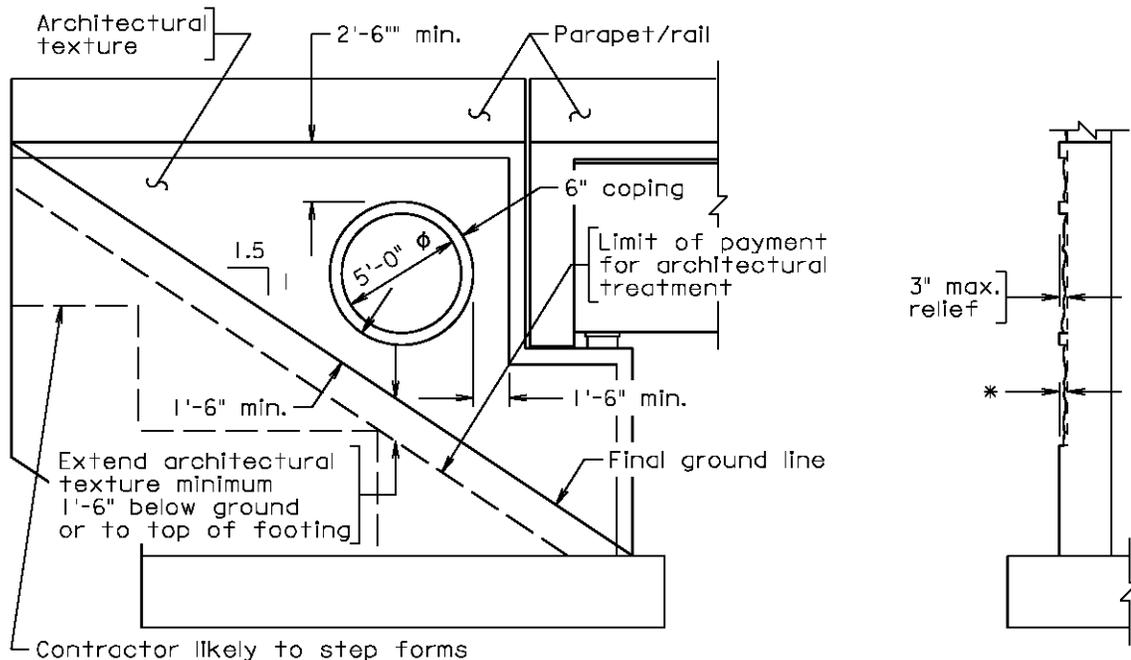
See File No. 05.10-2 for architectural renderings of conventional abutments with U-back wingwalls.

ABUTMENT U-BACK WINGWALLS (cont'd):

MEDALLIONS:

5'-0" diameter medallions may be used on U-back wingwalls. Medallion relief shall not exceed 3" and coping widths around medallions shall be 6". Medallions may be colored (painted or stained) or not colored.

The example sketch below provides coping and positioning requirements for the medallion and illustrates the abutment height needed for an exposed area large enough for the 5'-0" diameter medallion to fit (approximately 17 feet from the top of footing to the top of the deck) on a semi-integral abutment with a 1.5:1 fill slope. Other abutment heights required to fit medallions will be similar, but depend on fill and/or cut slope/details and type of abutment. Full size sketches will assist determining whether medallions can fit in the exposed area with the required clearances.



* Where brick or stone masonry is used, this dimension must be sufficient width to support the masonry.

U-BACK WINGWALL WITH ARCHITECTURAL TEXTURE AND 5'-0" MEDALLION

See File No. 05.10-3 for architectural renderings of conventional abutments with U-back wingwalls and medallions.

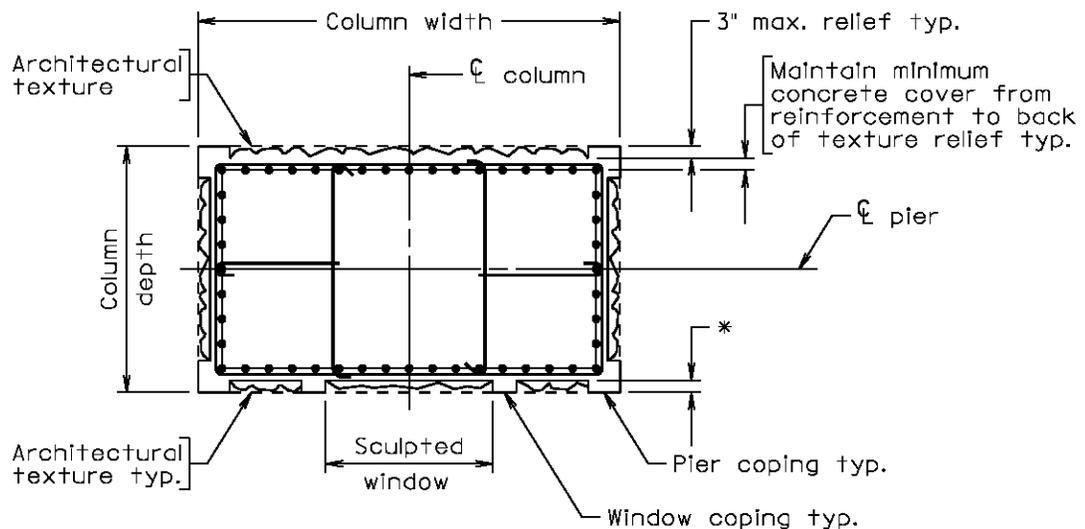
Medallion diameters less than 5'-0" may be used on abutment wingwalls only with District Structure and Bridge Engineer approval. Designers shall consider visibility of the desired medallion diameter from the primary viewing location. See File Nos. 05.09-1 thru -4 for architectural renderings of medallions on railings (2'-4" diameter) and substructure (5'-0" diameter) to see an example of the impact of medallion size on visibility from a specific viewing location.

HAMMERHEAD PIERS:

Limits and type(s) of architectural texture and a texture grid scale shall be shown on the plans. Architectural texture relief varies by form liner, but shall not exceed 3". True masonry may also be used, but plans shall state where form liners, masonry or both are options. Architectural texture for caps is limited to pea gravel, chiseled sandstone or chiseled limestone. Where architectural texture is used on columns, providing coping around caps with no architectural texture on the enclosed area is also an option.

Minimum coping size for cap and column is 8". For tall hammerhead piers, increasing the coping size in the cap may be considered. See File Nos. 05.10-6 and -7 for architectural renderings of hammerhead piers with form liner textures, colors and masonry options.

Architectural texture relief for the cap and columns shall be coordinated during the preliminary design stage to ensure the reinforcement position used in cap and column design matches those shown in the final plans (i.e., that relief and minimum concrete cover is considered during sizing of the column during preliminary design). See section below.



* Where brick or stone masonry is used, this dimension must be sufficient width to support the masonry.

COLUMN SECTION

Column depicted with window on one side
See File No. 15.02-8 for column tie details

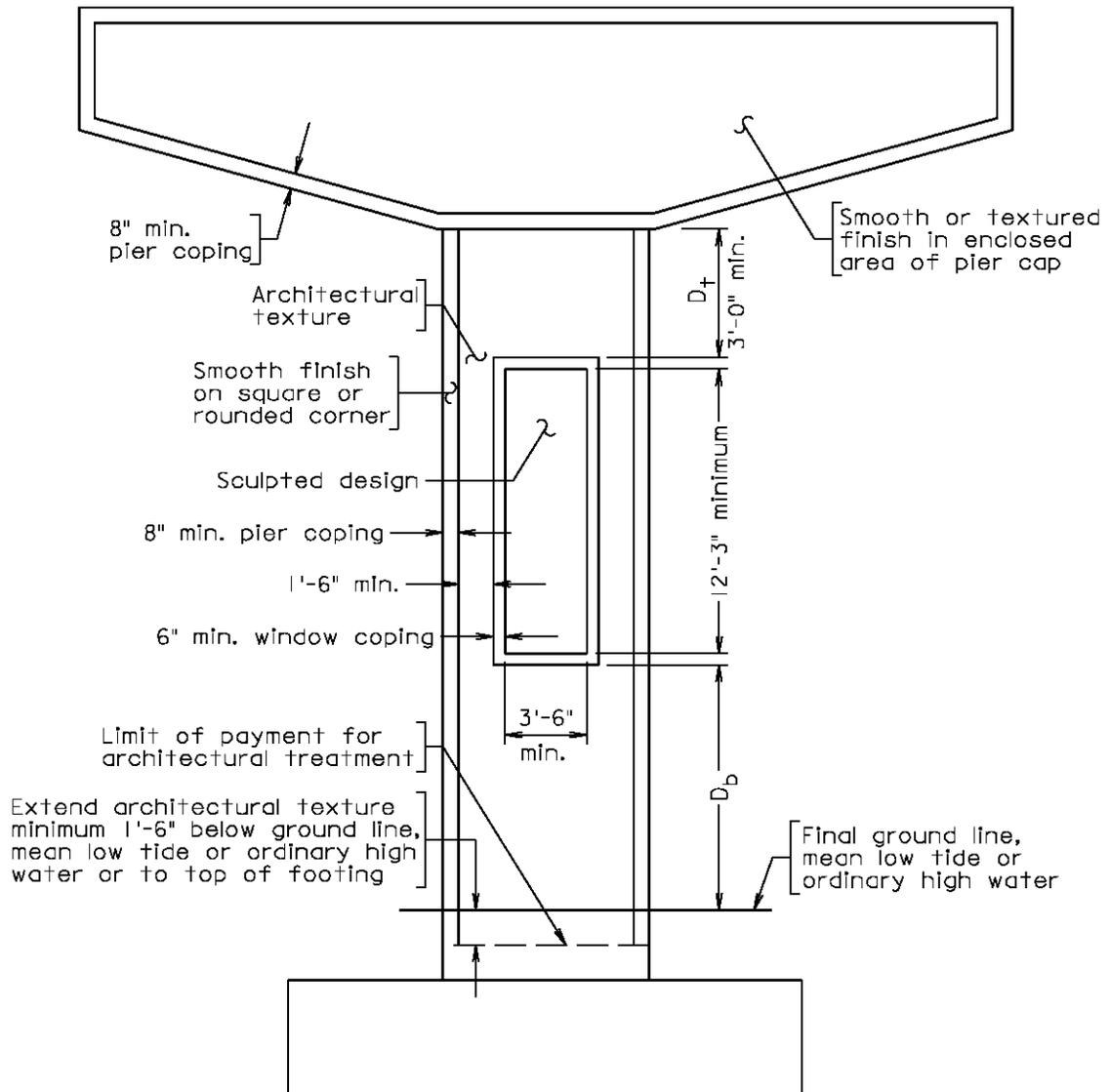
When architectural texture is desired, it shall be used on all sides of the column. However, where column depth is less than approximately 3'-0", the available area may not be sufficient for aesthetic purposes and the Designer can decide whether to apply any texture to the recessed area. Sculpted design windows may be used on one or opposite sides.

HAMMERHEAD PIERS (cont'd):

SCULPTED DESIGN WINDOW FOR HAMMERHEAD PIER COLUMNS:

Designs with sculpted dogwood blossoms, sculpted oak leaves and sculpted fly fishing may be included with chiseled limestone texture in the window background for hammerhead piers. Use of sculpted windows other than those depicted in this chapter requires approval of the District Structure and Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area.

The width to height ratio for rectangular windows is $1W : 3.5H$ with a minimum width of 3'-6". The minimum column width required to fit a sculpted design window adhering to the requirements shown below is 8'-10". Window treatments shall not be used where the minimum requirements cannot be met.



HAMMERHEAD PIERS (cont'd):

SCULPTED DESIGN WINDOW FOR HAMMERHEAD PIER COLUMNS (cont'd):

Placing the sculpted design directly inside the column coping (i.e., without the window coping and architectural texture between the pier and window copings) is allowed for column widths smaller than 8'-10" with approval of the District Structure and Bridge Engineer. However, the width to height ratio of $1W : 3.5H$ and minimum width of 3'-6" shall be maintained for the sculpted design.

Sculpted windows should be positioned so that the D_b to D_t ratio is no less than 1 to 1 (i.e. centered) and no more than 2 to 1 where D_b is the distance from the bottom of the window coping to the ground line (or mean low tide/ordinary high water) and D_t is the distance from the top of the window coping to the bottom of pier cap (as shown on the previous sheet). D_t shall be a minimum of 3'-0".

Where sculpted windows are to be used on multiple piers, the window vertical position shall be coordinated between the locations. Where column heights vary, the window size shall be based on the smallest column height receiving the treatment. Windows should be positioned at a common vertical distance from the bottom of the cap and meet the requirements in File No. 05.04-9. Otherwise, sculpted windows should not be used.

Sculpted window relief shall not exceed 3".

See File No. 05.10-6 for architectural renderings of hammerhead piers with sculpted windows.

WALL PIERS:

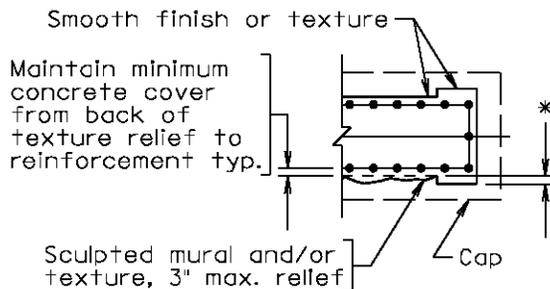
ARCHITECTURAL TEXTURE:

Limits and type of architectural texture and a texture grid scale shall be shown on the plans. Architectural relief varies by form liner, but shall not exceed 3". True masonry may also be used and plans shall state where form liners, masonry or both are options. See File Nos. 05.10-8 thru -10 for architectural renderings of wall piers with form liner textures, colors and masonry options.

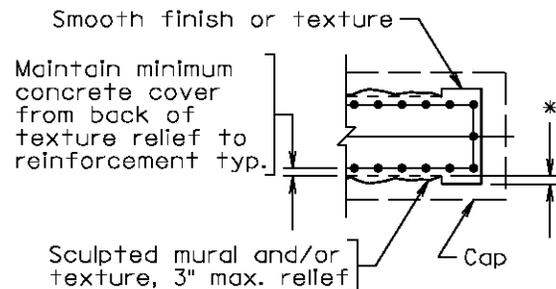
Architectural texture relief for the pier shall be coordinated during the preliminary design stage to ensure the reinforcement position used in design matches those shown in the final plans.

SQUARE WALL PIER ENDS:

Where architectural texture and/or wall mural are to be placed on one side only, use coping on opposite side to reduce excessive cover and keep details structurally symmetric except for texture and/or wall mural.



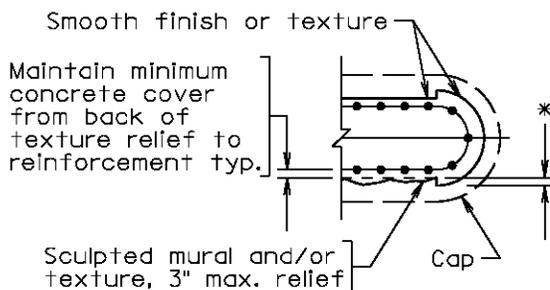
ONE-SIDE



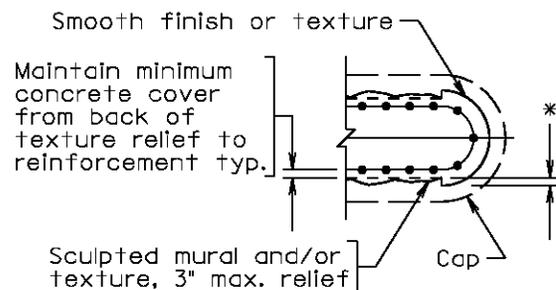
BOTH SIDES

CIRCULAR WALL PIER ENDS:

Where architectural texture and/or wall mural are to be placed on one side only, use coping on opposite side to reduce excessive cover and keep details structurally symmetric except for texture and/or wall mural.



ONE-SIDE



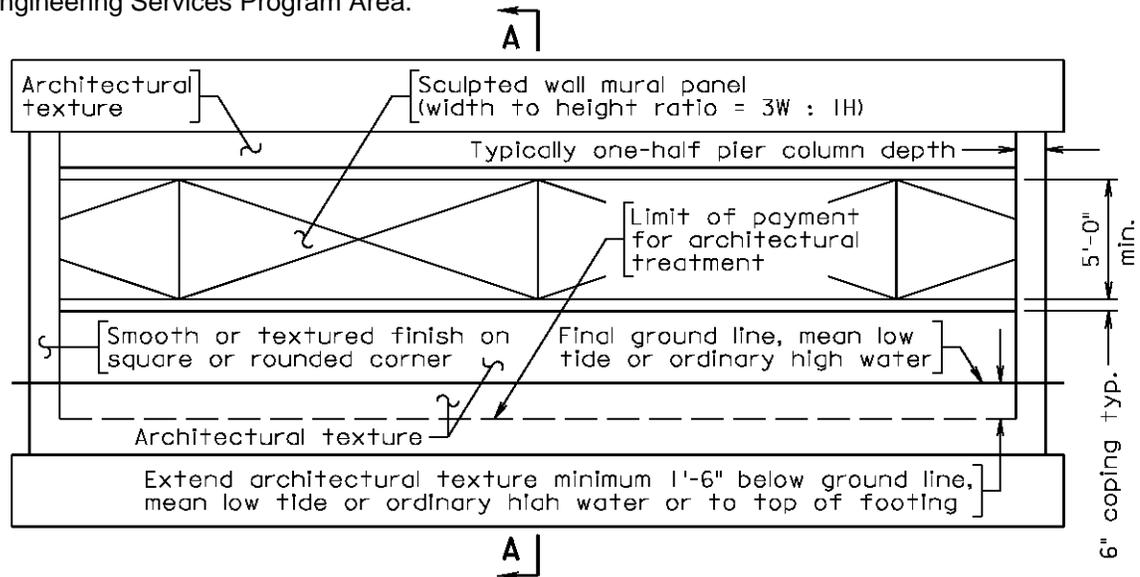
BOTH SIDES

* Where brick or stone masonry is used, this dimension must be sufficient width to support the masonry.

WALL PIERS (cont'd):

SCULPTED WALL MURALS FOR ARCHITECTURAL TREATMENT:

Wall murals depicting oak leaves, woodlands or freshwater fish may be included on wall piers, shall conform to the details shown below and may be used on one (as depicted below) or both sides. Use of sculpted wall murals other than those depicted in this chapter requires approval of the District Structure and Bridge Engineer in consultation with the Structure and Bridge Engineering Services Program Area.



MULTI-PANEL WALL MURAL DEPICTED WITH CAP

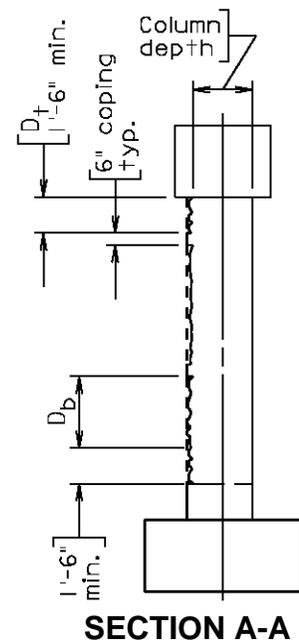
Pier cap usually necessary for structures with two lines of bearings

The minimum height for sculpted wall murals is 5'-0" which may be increased to accommodate taller wall piers. Sculpted wall mural panels have a width to height ratio of 3W : 1H. The size of the wall mural panel is project specific and will be increased proportionally by this ratio. The exposed height of the wall pier in relation to the width will determine whether multiple panels (i.e., a repeating pattern) as depicted on this sheet or a single panel as depicted on the following sheet is required.

Any repeating pattern will terminate at the corner treatment of the wall pier. The Designer shall position the repeating pattern in a logical sequence to avoid cutting off sculpted elements such as fish, trees and leaves (i.e., avoid cutting sculpted elements in half).

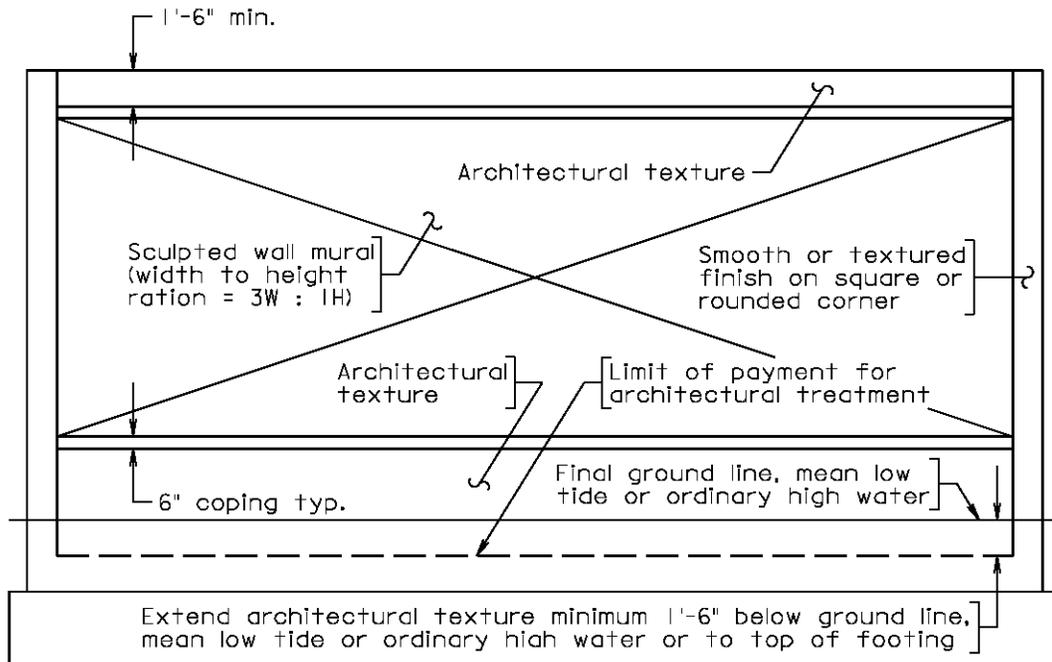
Sculpted wall murals should be positioned so that the D_b to D_t ratio is no less than 1 to 1 (i.e. centered) and no more than 2 to 1 where D_b is the distance from the bottom of the wall mural coping to the ground line (or mean low tide/ordinary high water) and D_t is the distance from the top of the wall mural coping to the bottom of pier cap (or top of column where a pier cap is not necessary). D_t shall be a minimum of 1'-6".

Sculpted wall mural relief shall not exceed 3".



WALL PIERS (cont'd):

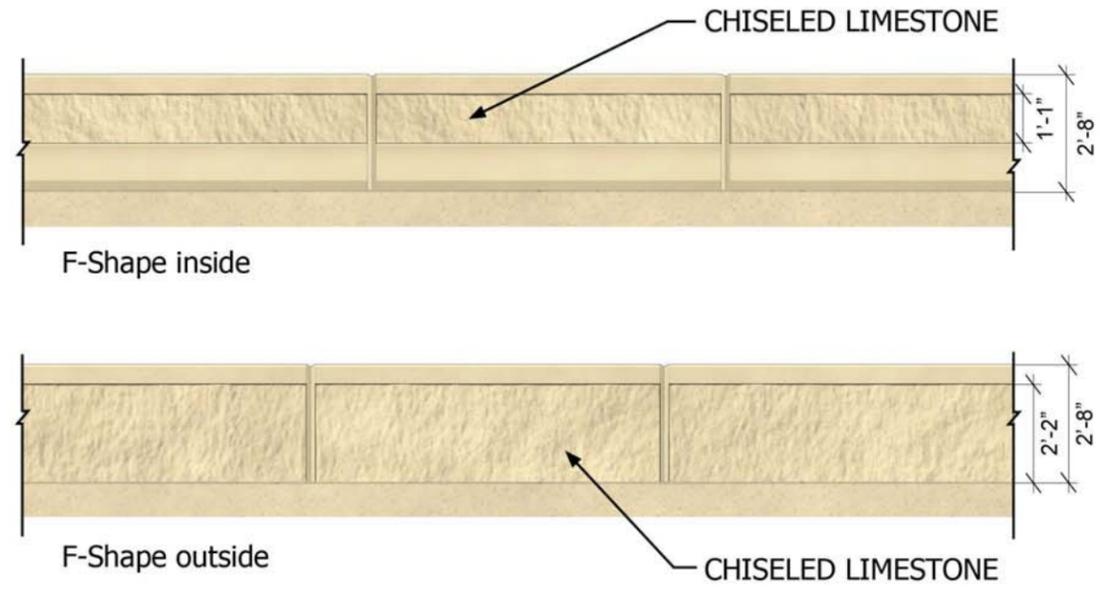
SCULPTED WALL MURALS FOR ARCHITECTURAL TREATMENT (cont'd):



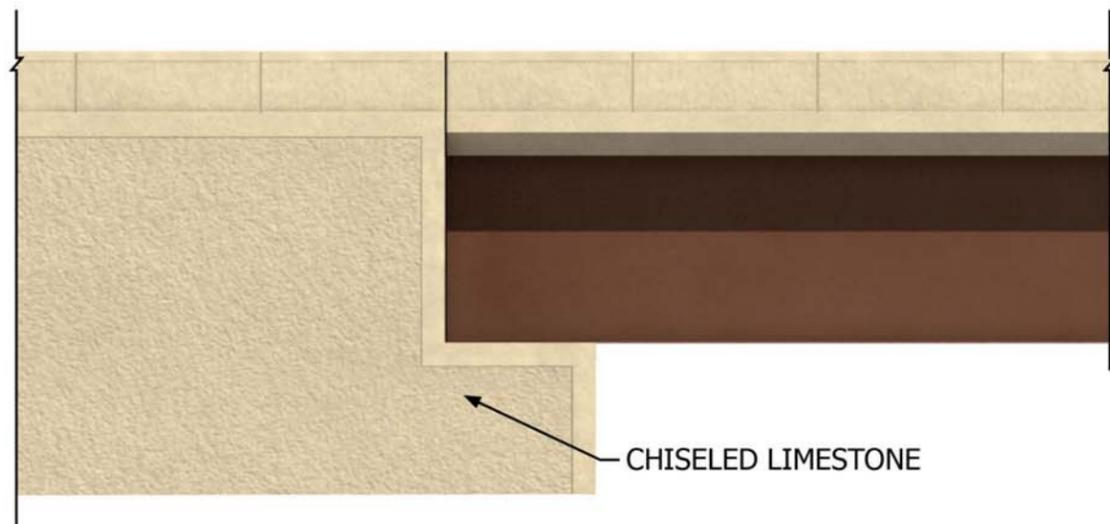
SINGLE PANEL WALL MURAL DEPICTED WITHOUT CAP

Pier cap typically not necessary with one line of bearing

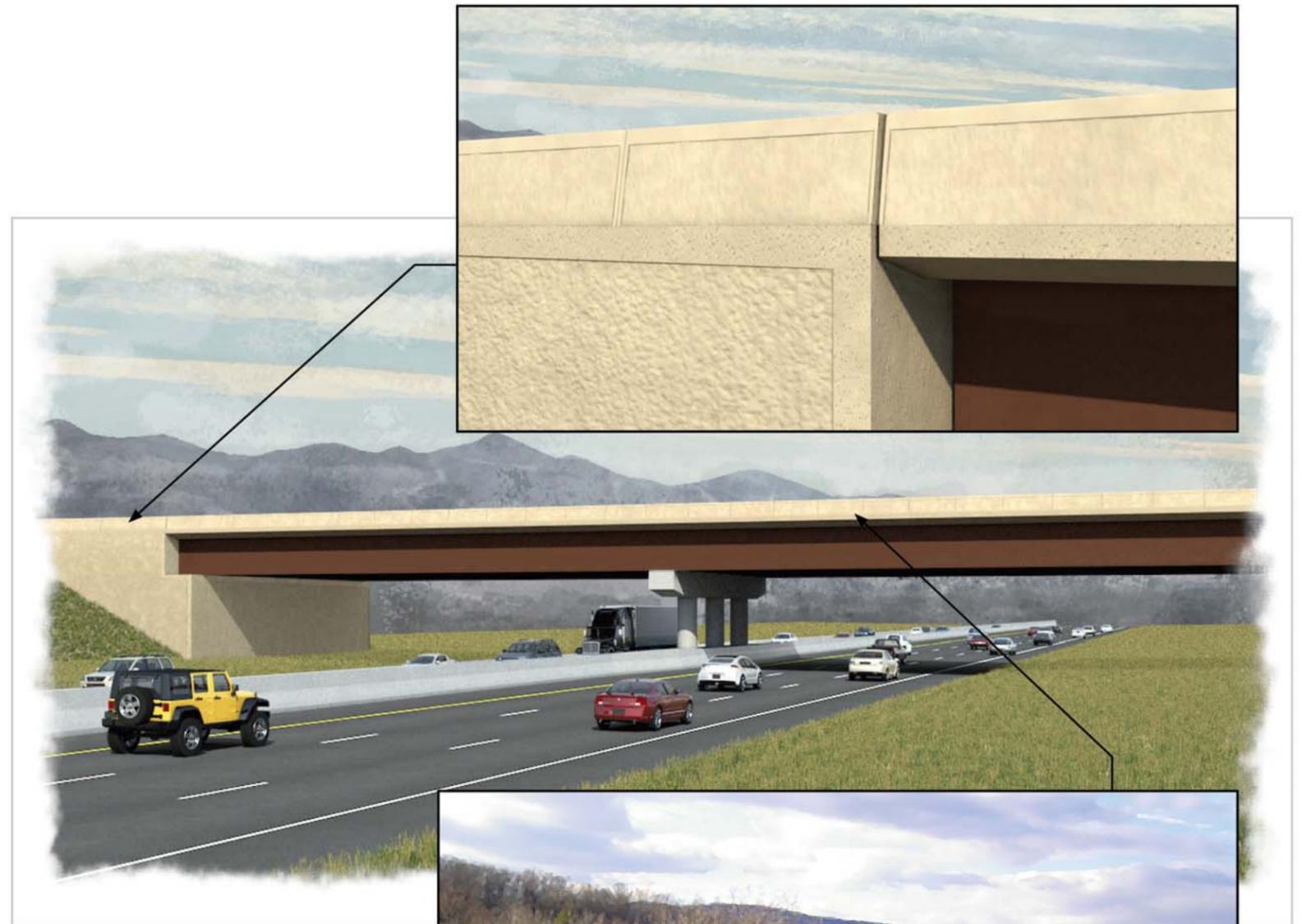
See File No. 05.10-11 for architectural renderings of wall piers with sculpted wall murals.



ELEVATION DETAILS



ELEVATION



FEDERAL COLOR STANDARDS (Optional)

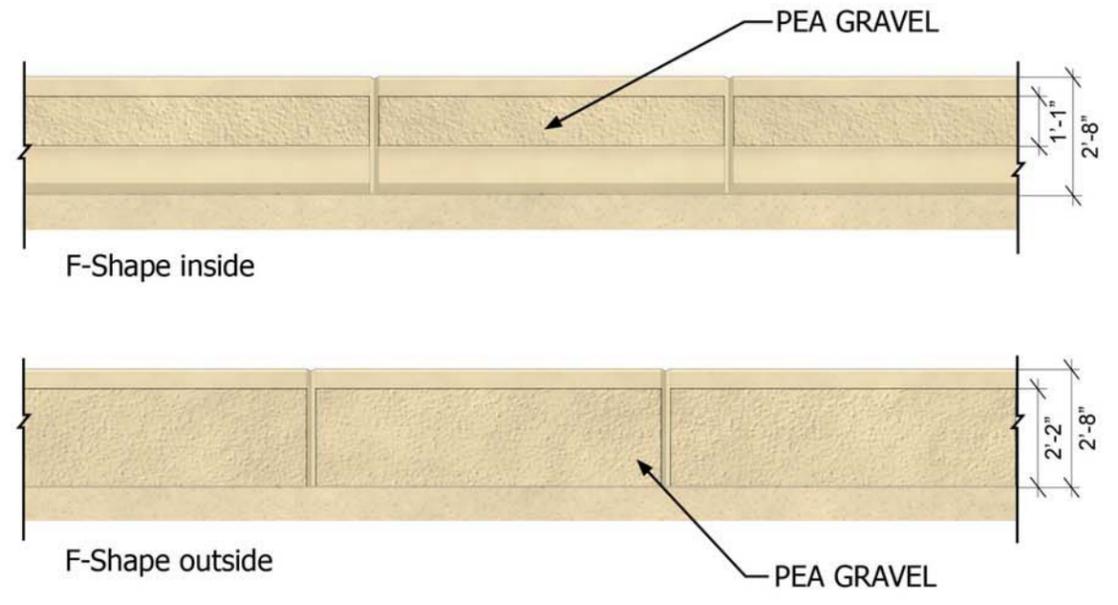


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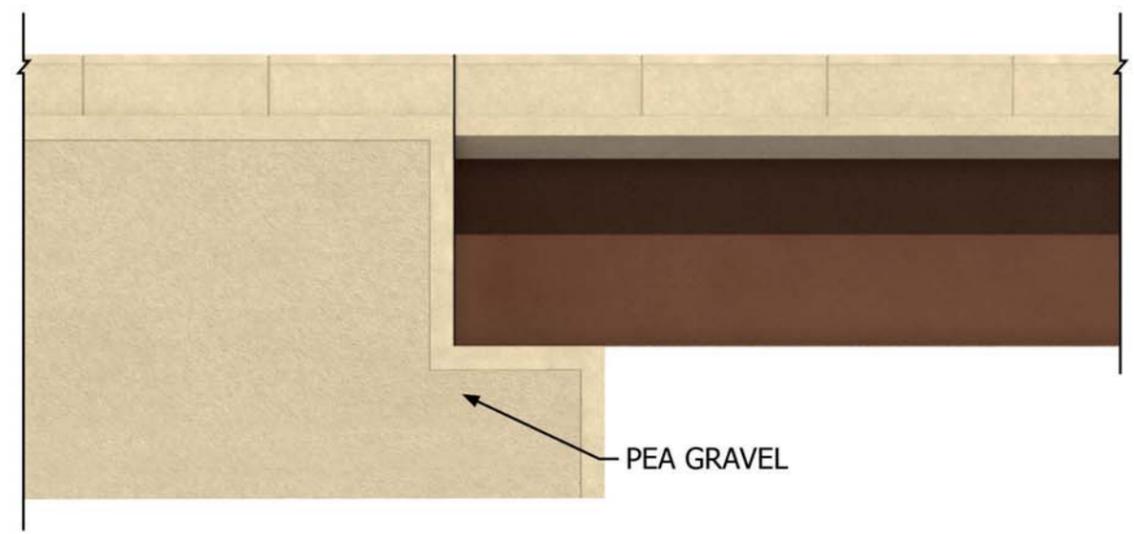


DRIVING VIEW FROM BRIDGE

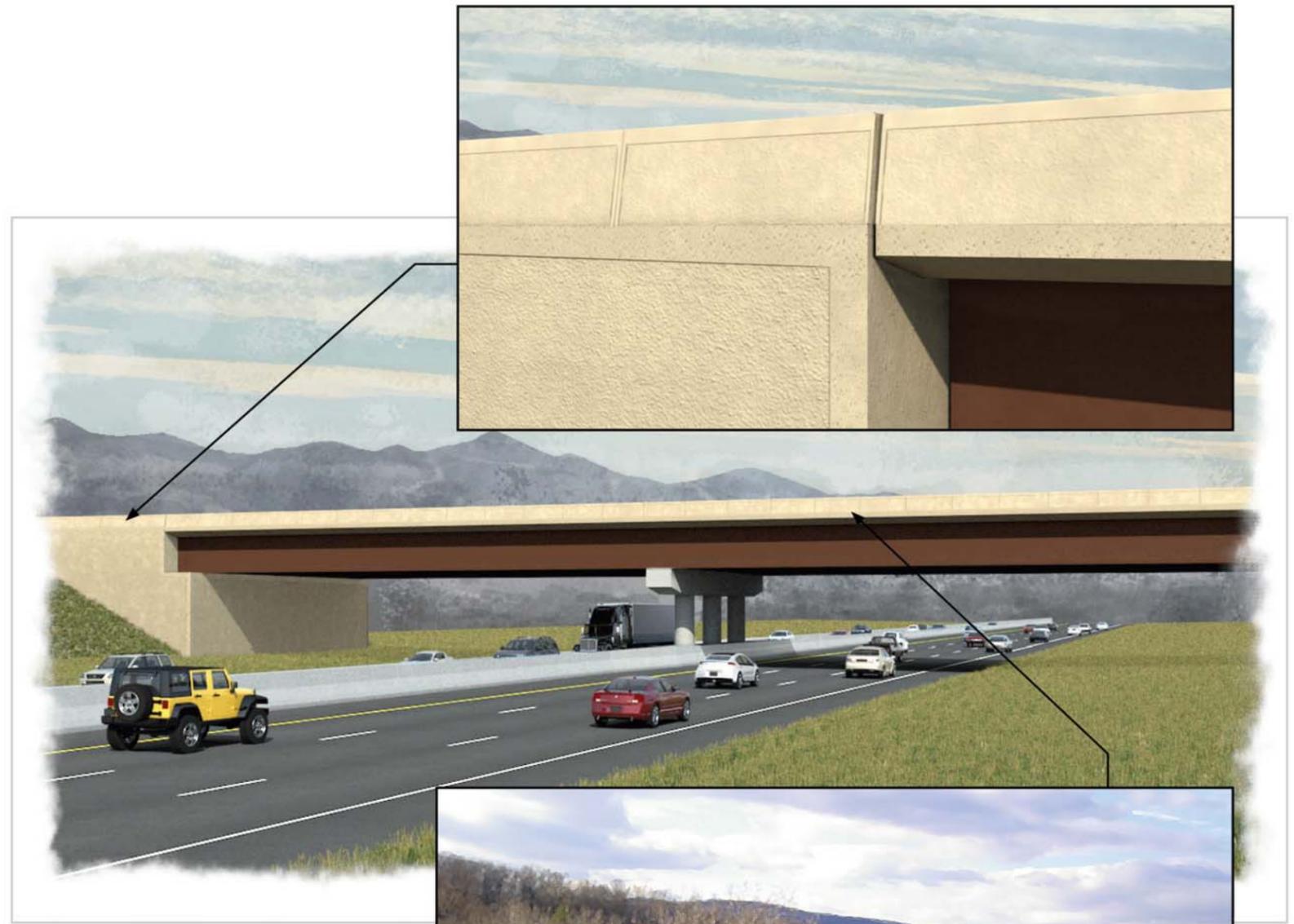
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
CHISELED LIMESTONE**



ELEVATION DETAILS



ELEVATION



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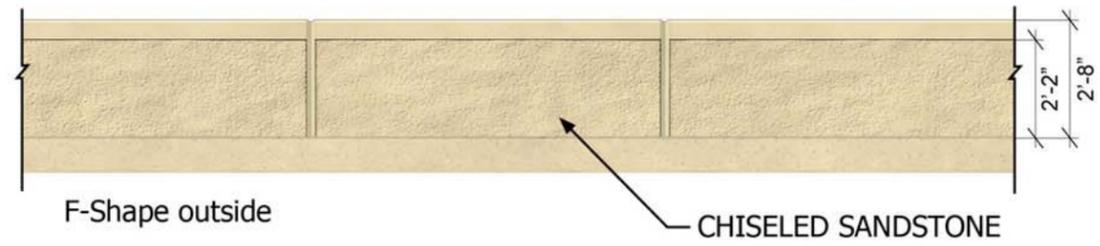
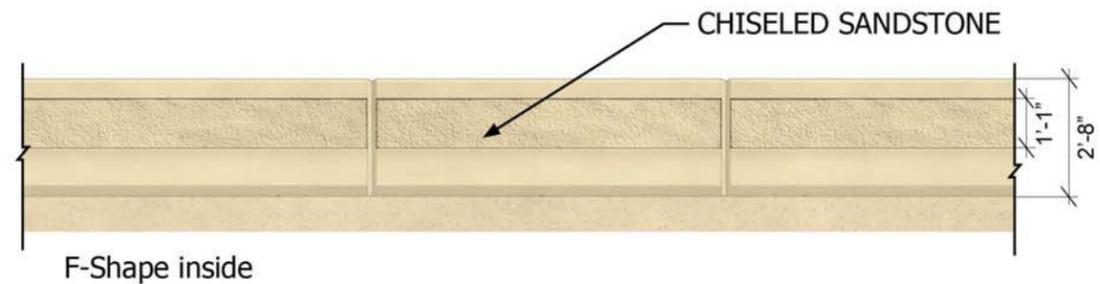


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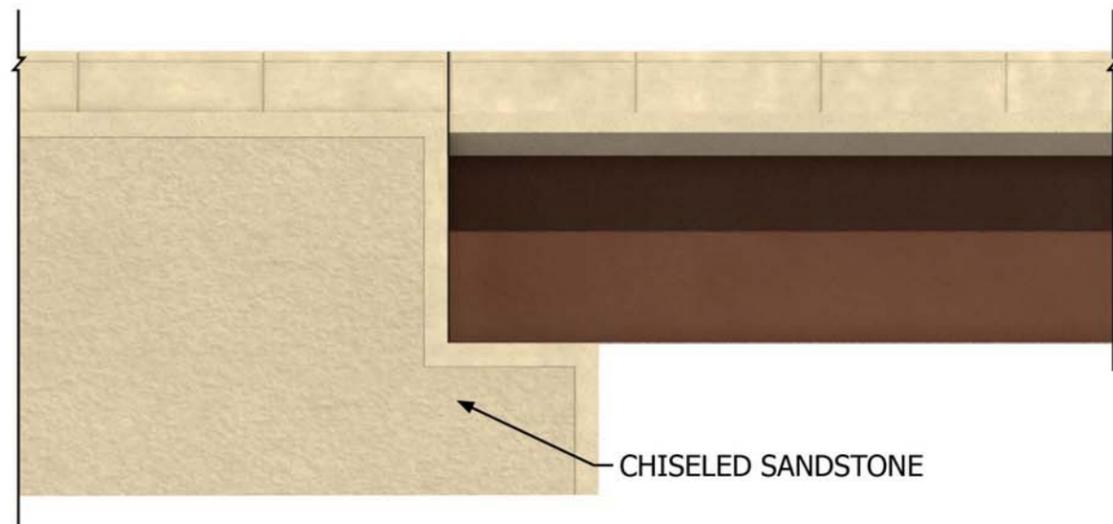


DRIVING VIEW FROM BRIDGE

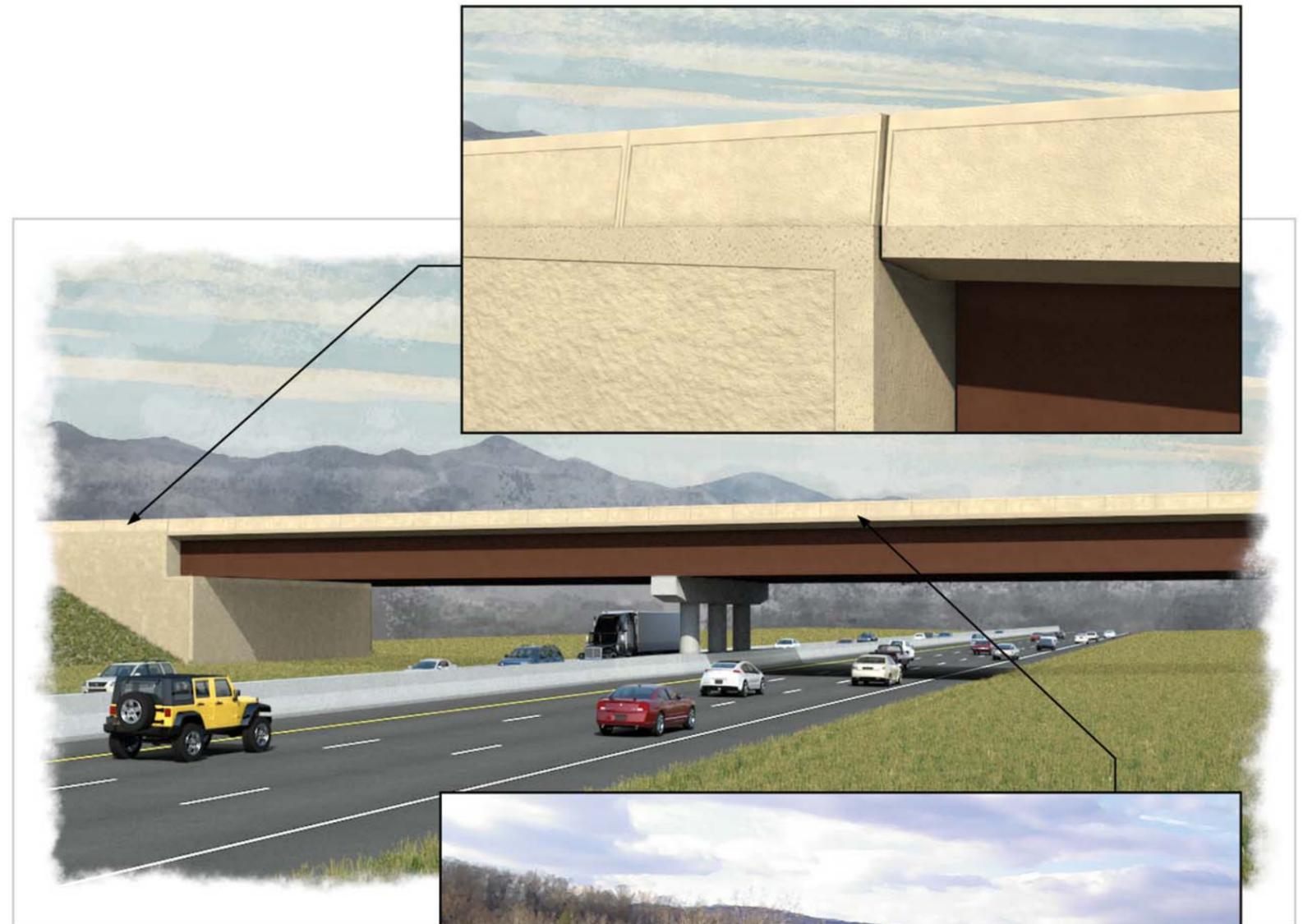
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
PEA GRAVEL**



ELEVATION DETAILS



ELEVATION



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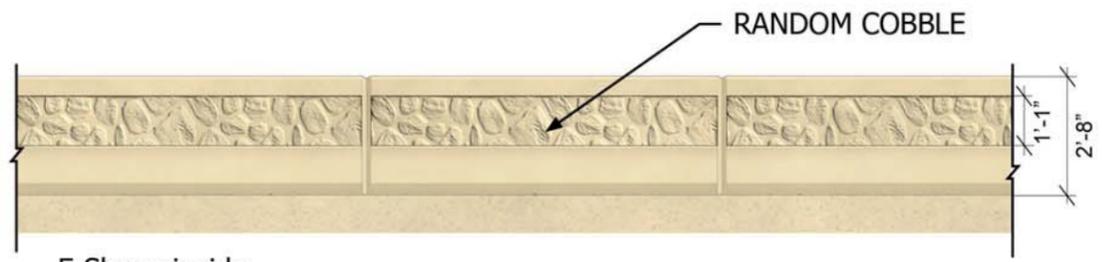


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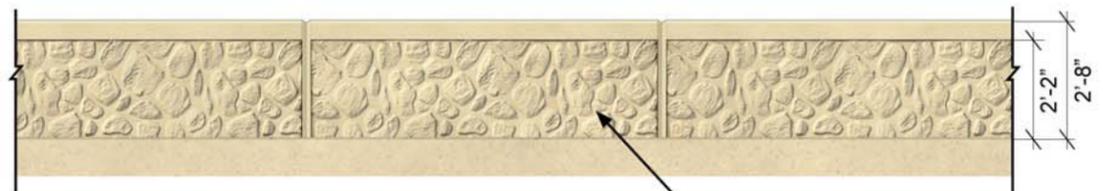


DRIVING VIEW FROM BRIDGE

**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
CHISELED SANDSTONE**



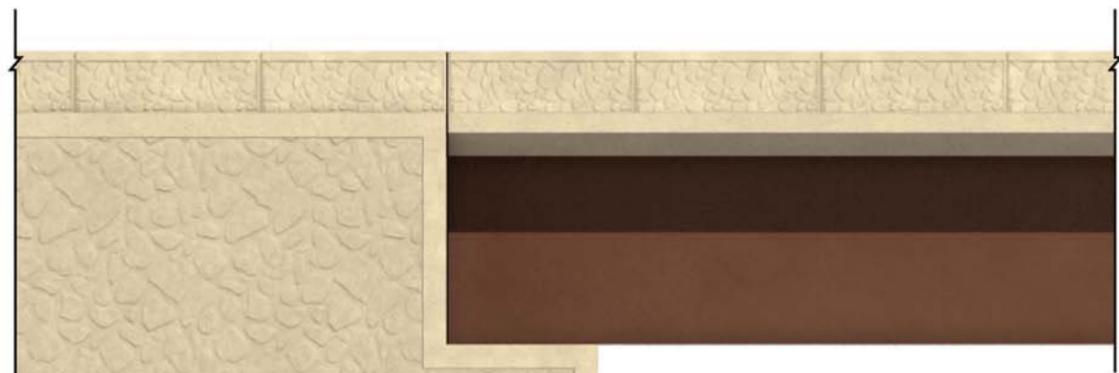
F-Shape inside



F-Shape outside

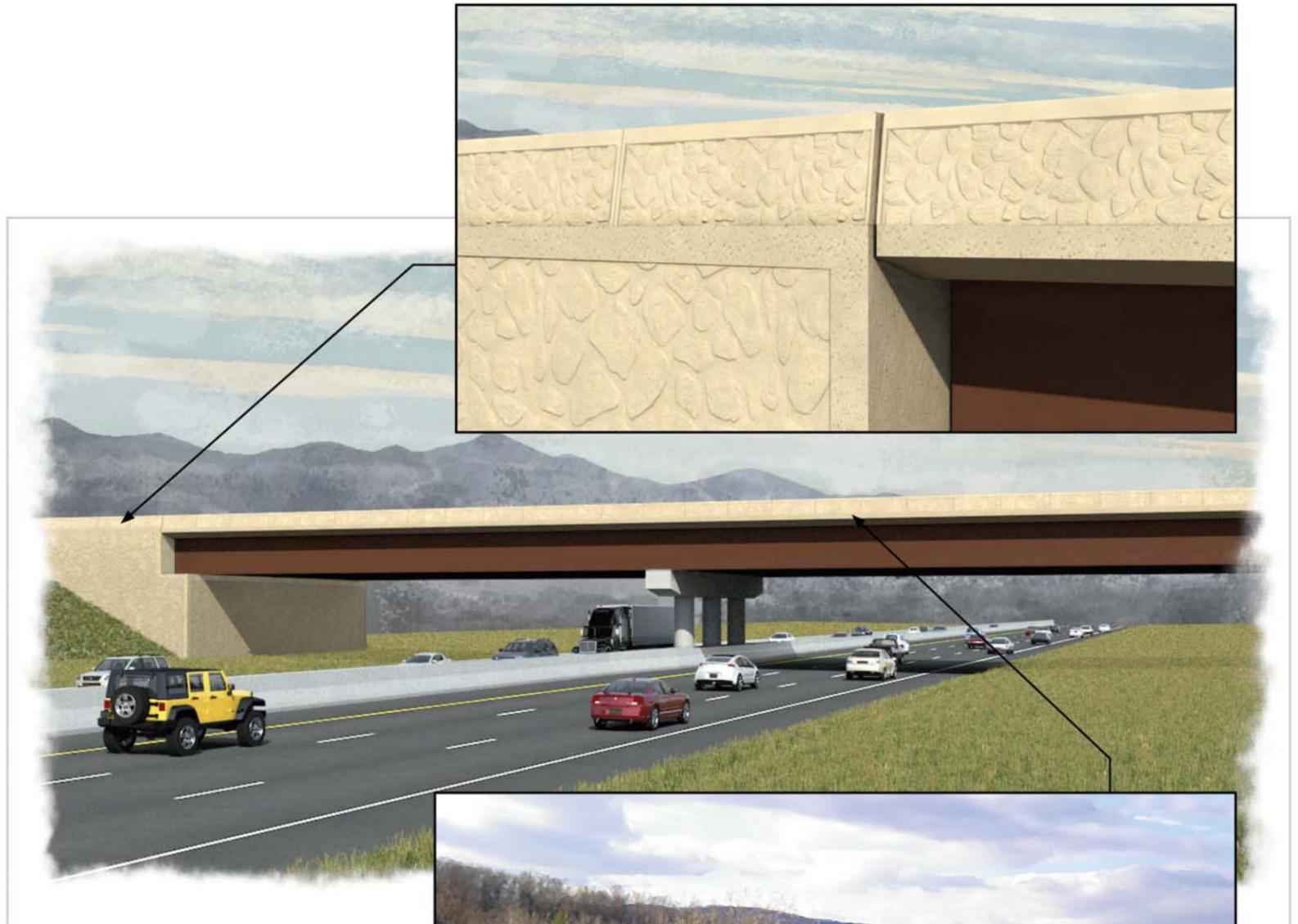
RANDOM COBBLE

ELEVATION DETAILS



RANDOM COBBLE

ELEVATION



FEDERAL COLOR STANDARDS (Optional)

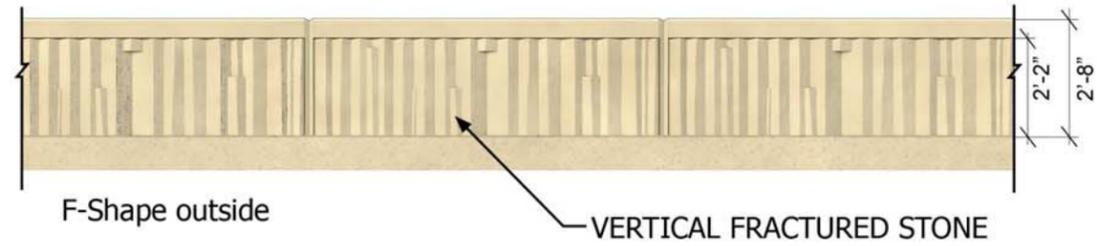
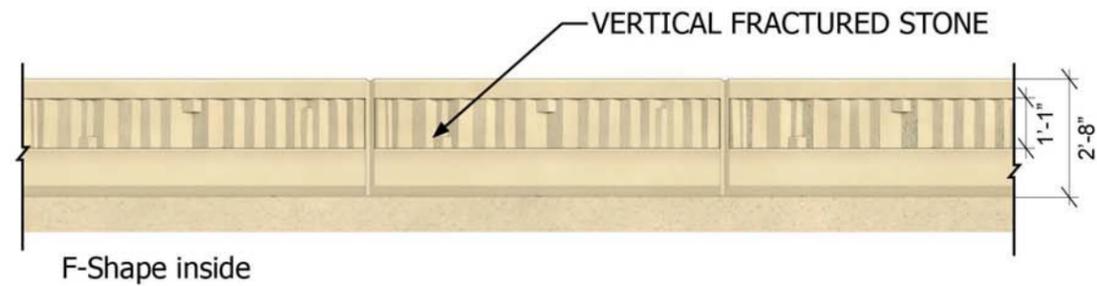


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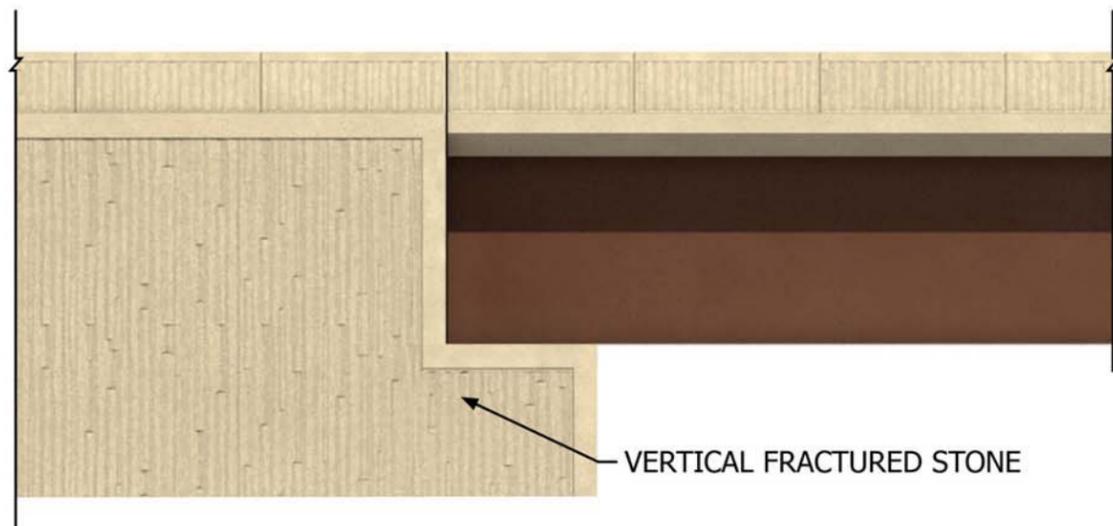


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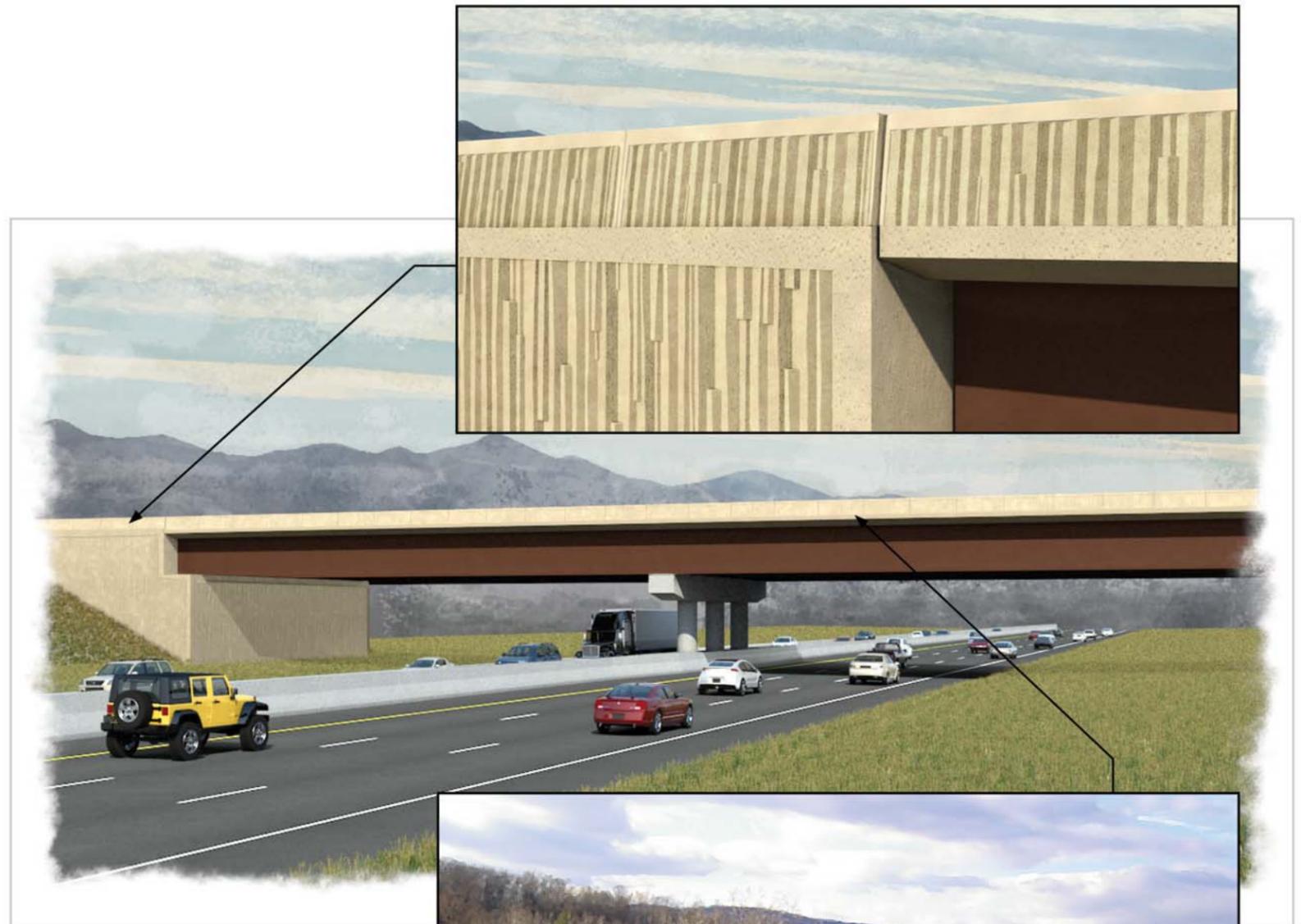
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
RANDOM COBBLE**



ELEVATION DETAILS



ELEVATION



FEDERAL COLOR STANDARDS (Optional)

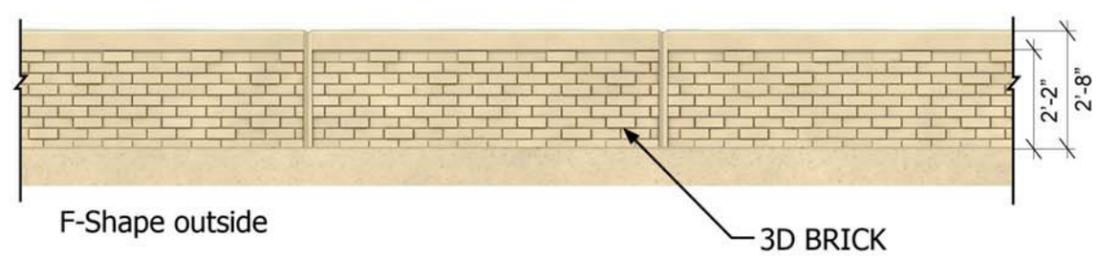
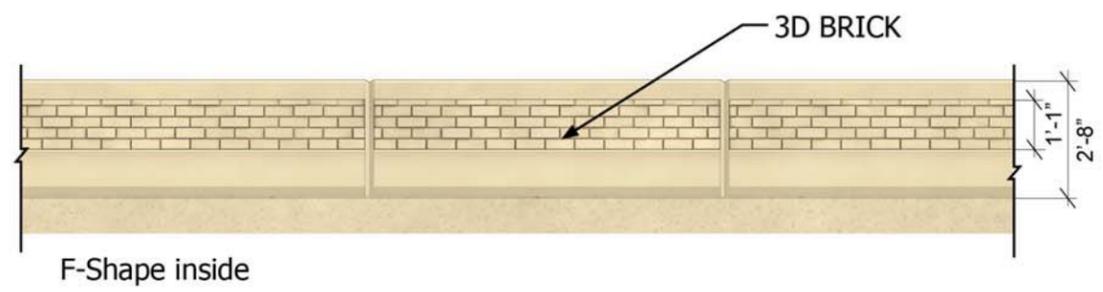


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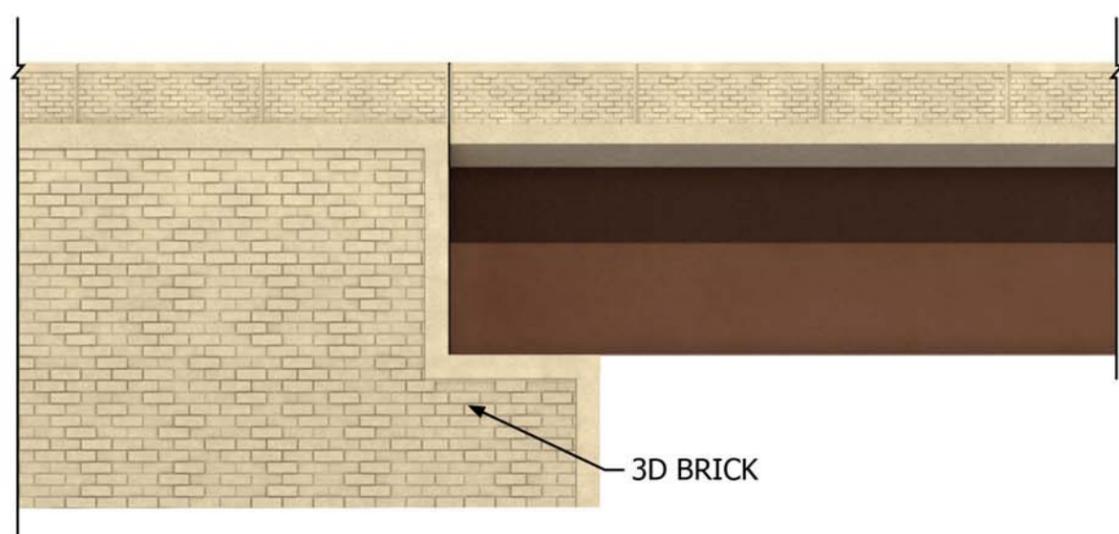


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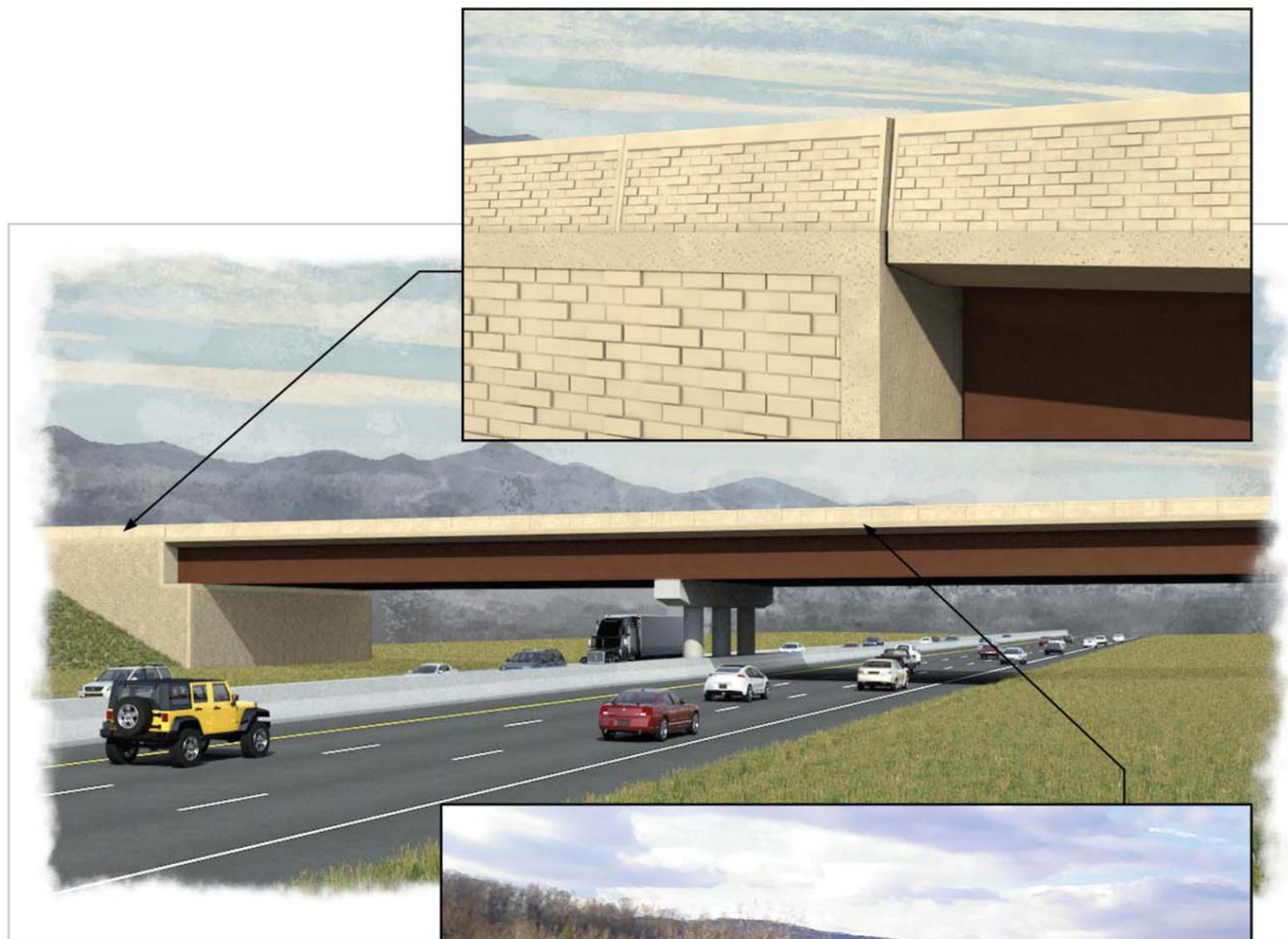
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
VERTICAL FRACTURED STONE**



ELEVATION DETAILS



ELEVATION



FEDERAL COLOR STANDARDS (Optional)

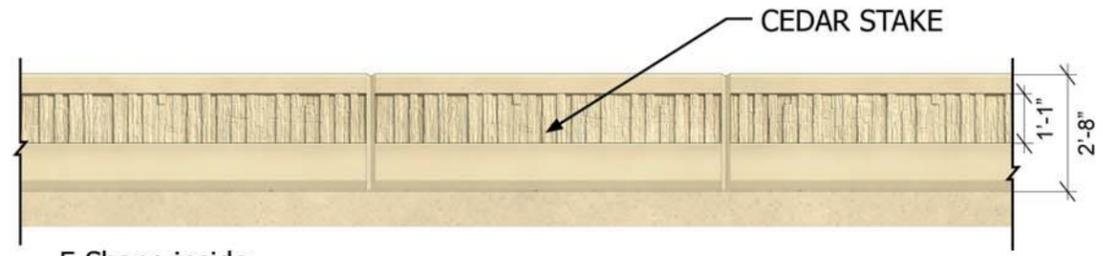


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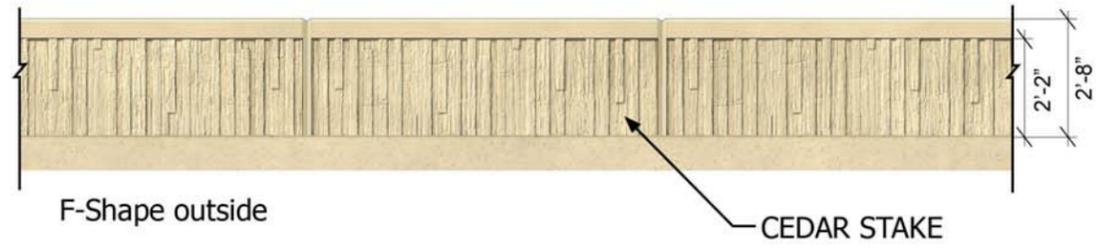


DRIVING VIEW FROM BRIDGE

**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
3D BRICK**

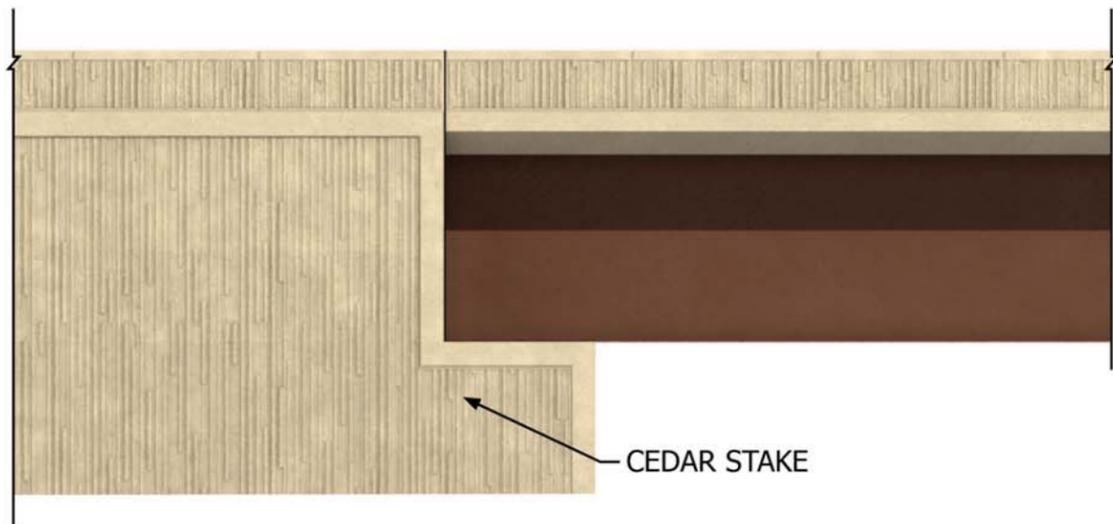


F-Shape inside



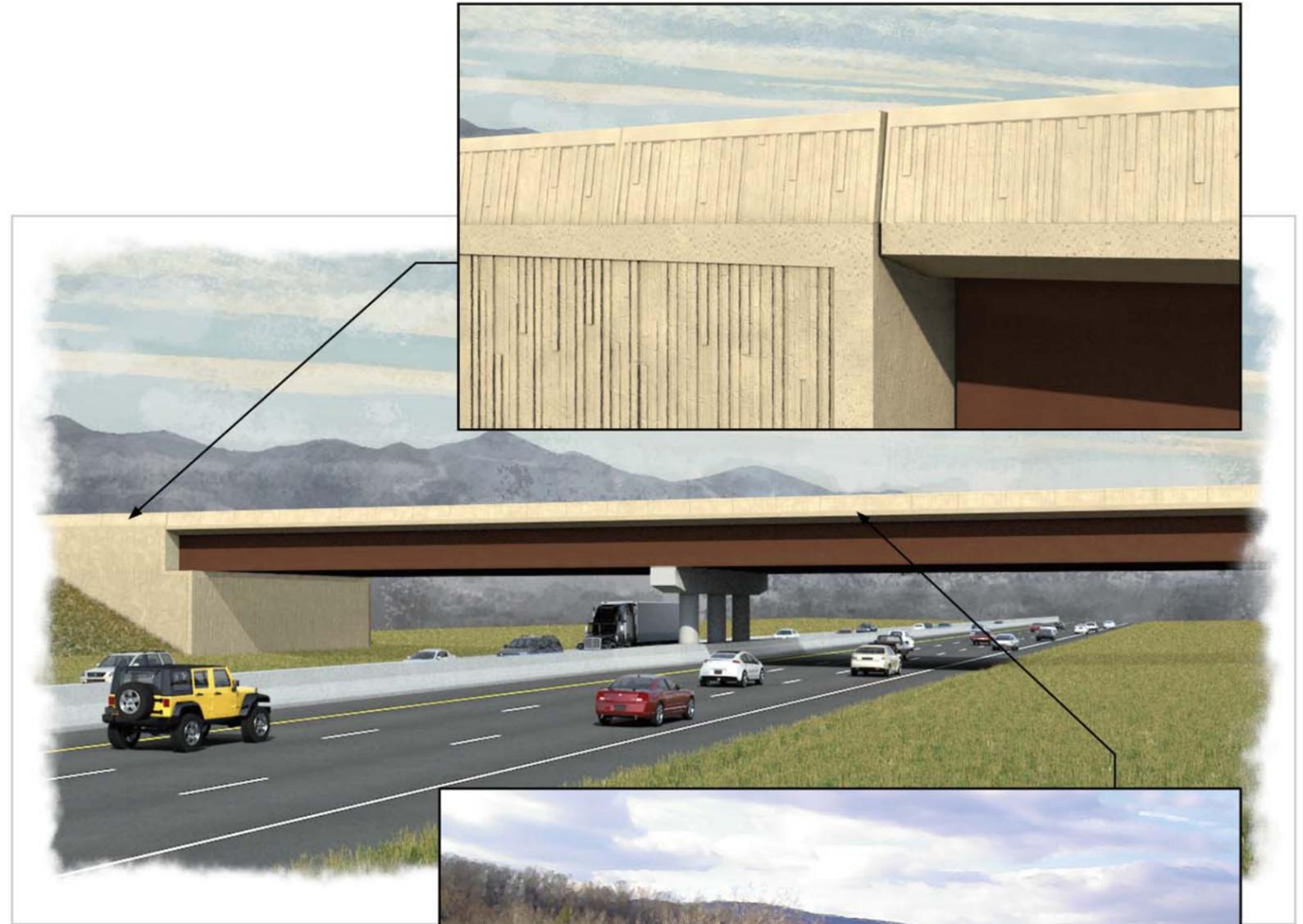
F-Shape outside

ELEVATION DETAILS



CEDAR STAKE

ELEVATION



FEDERAL COLOR STANDARDS (Optional)

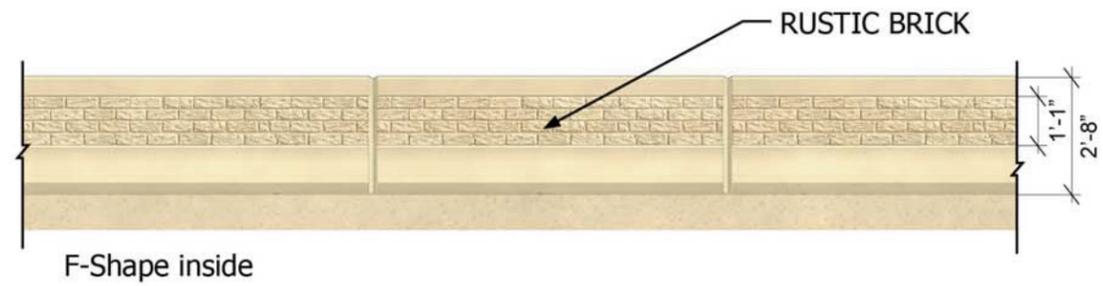


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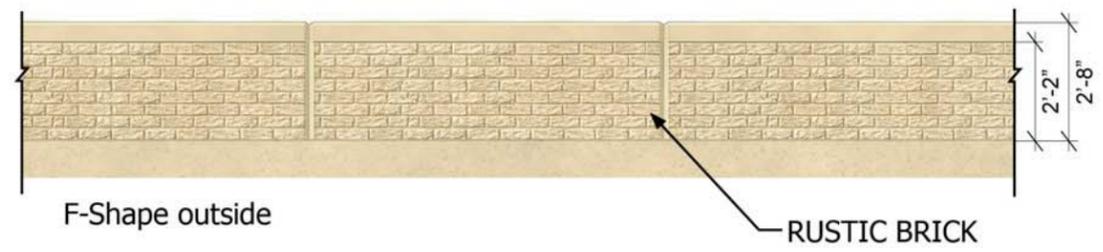


DRIVING VIEW FROM BRIDGE

**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
CEDAR STAKE**

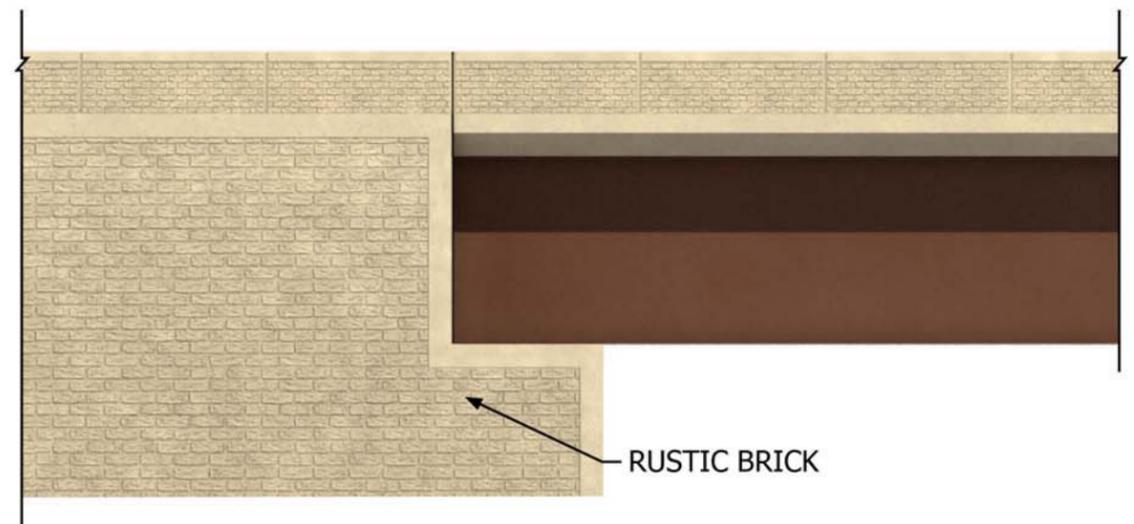


F-Shape inside



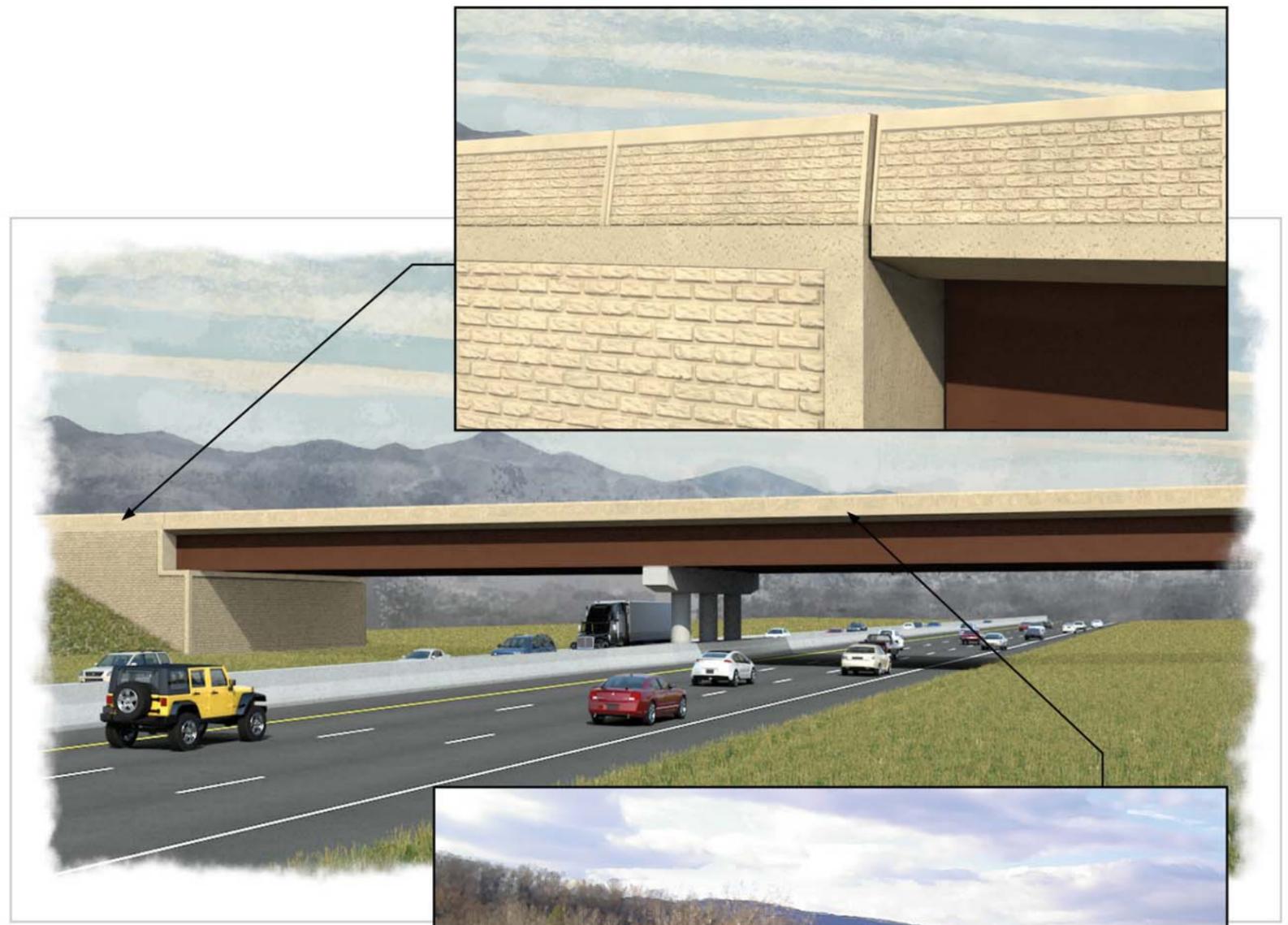
F-Shape outside

ELEVATION DETAILS



RUSTIC BRICK

ELEVATION



FEDERAL COLOR STANDARDS (Optional)

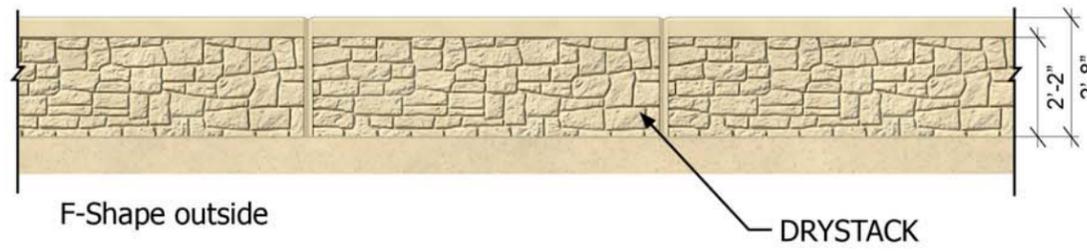
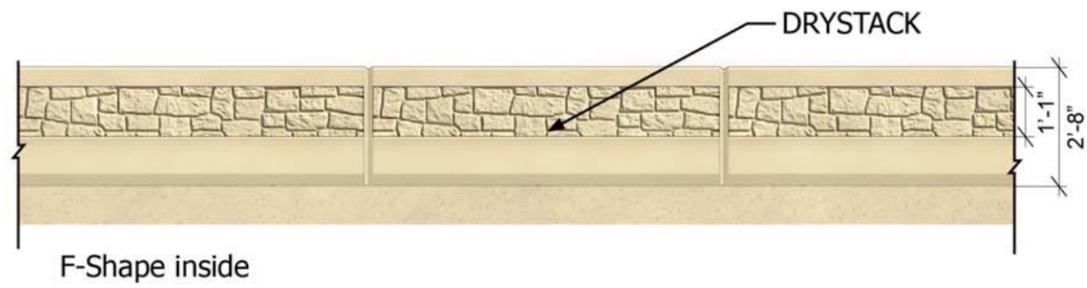


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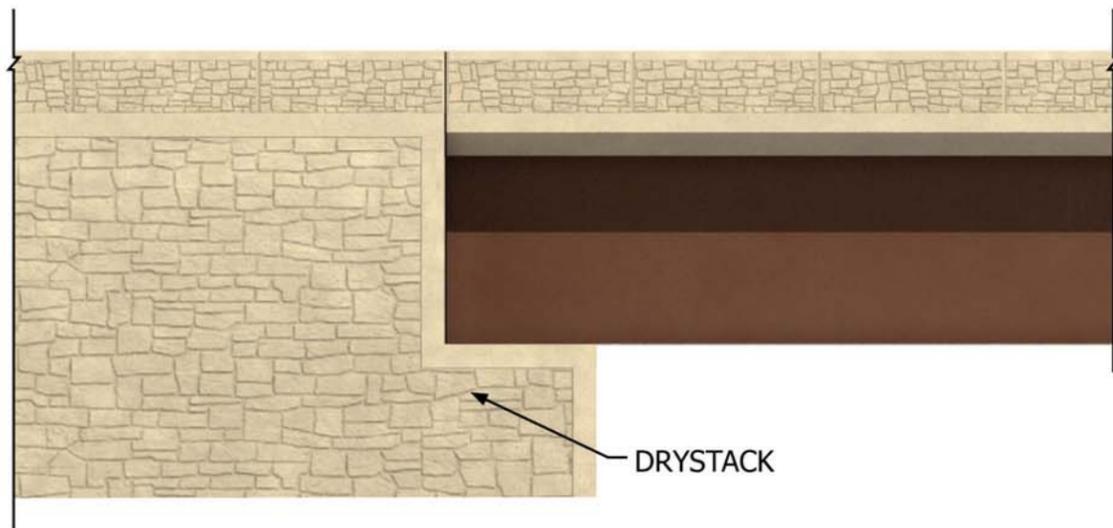


DRIVING VIEW FROM BRIDGE

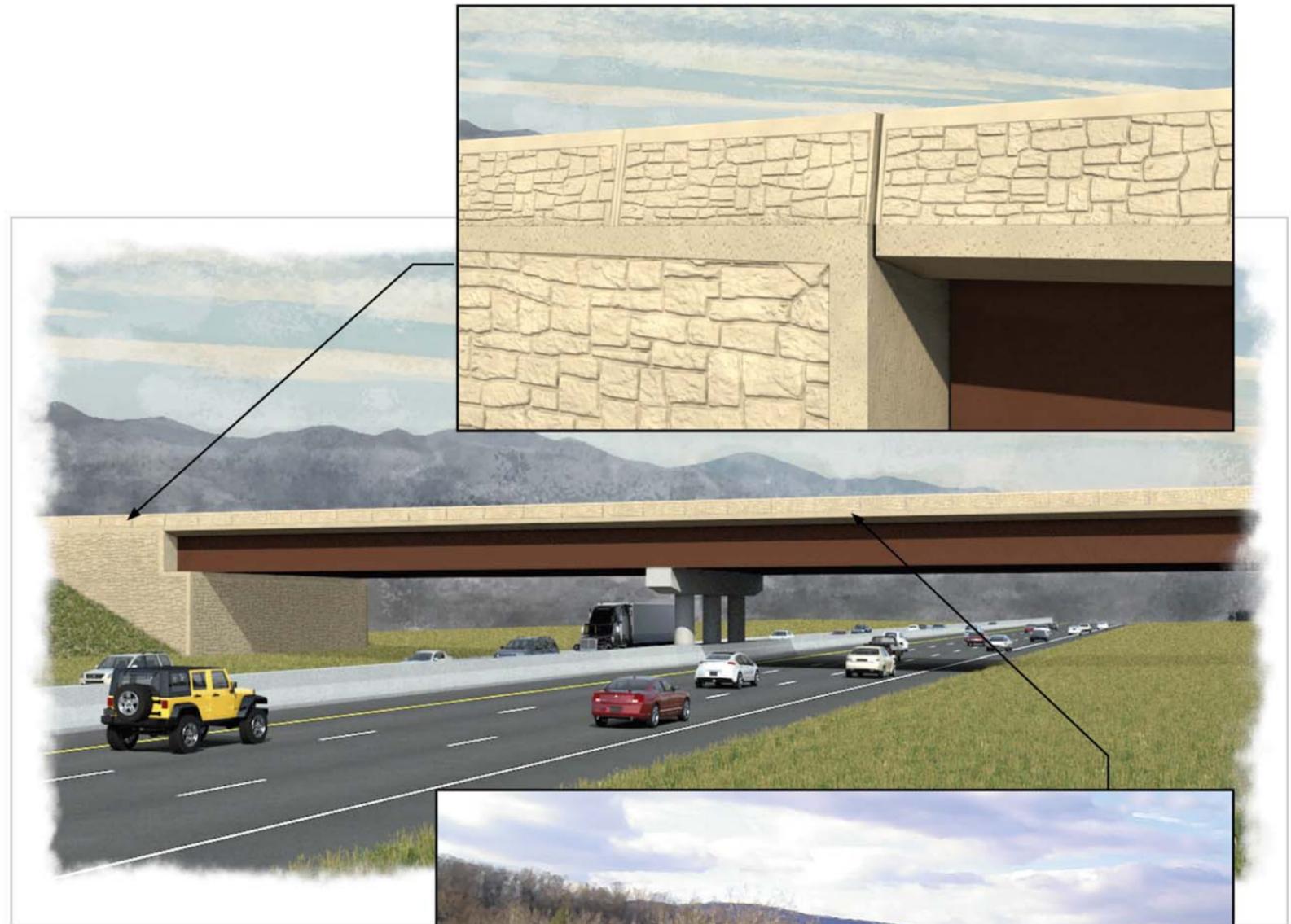
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
RUSTIC BRICK**



ELEVATION DETAILS



ELEVATION



FEDERAL COLOR STANDARDS (Optional)



23617



DRIVING VIEW FROM BRIDGE

**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
DRystack**

BPB-4 SERIES PARAPETS (42" F-SHAPE)

Architectural renderings for the 42" F-Shape parapets (BPB-4 series) are similar to the renderings shown for the 32" F-Shape parapets on File Nos. 05.05-1 thru 05.05-9 with the following changes:

ELEVATION DETAILS:

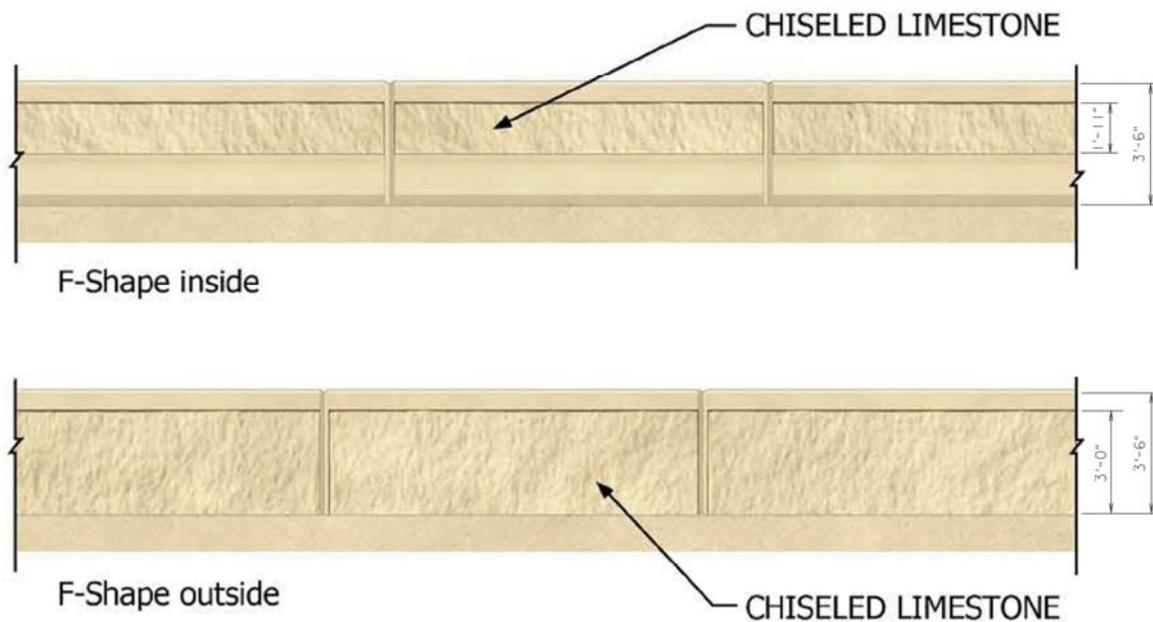
F-Shape inside:

Change dimensions: 1'-1" to 1'-11"
2'-8" to 3'-6"

F-Shape outside:

Change dimensions: 2'-2" to 3'-0"
2'-8" to 3'-6"

For example, ELEVATION DETAILS for the rendering on File No. 05.05-3 showing architectural treatment with chiseled stone would be as follows:

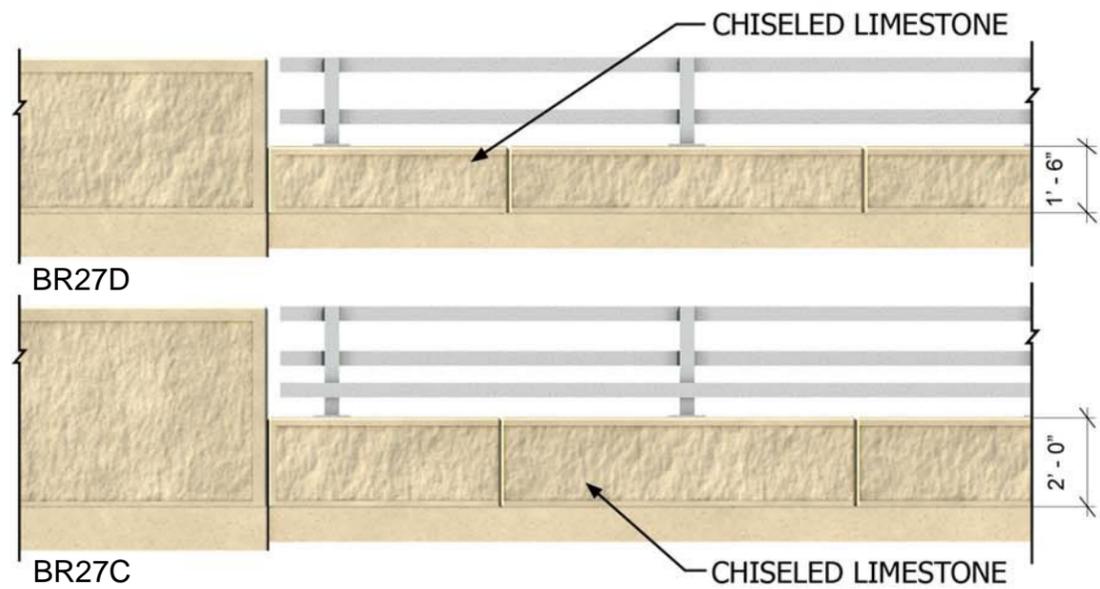


ELEVATION DETAILS

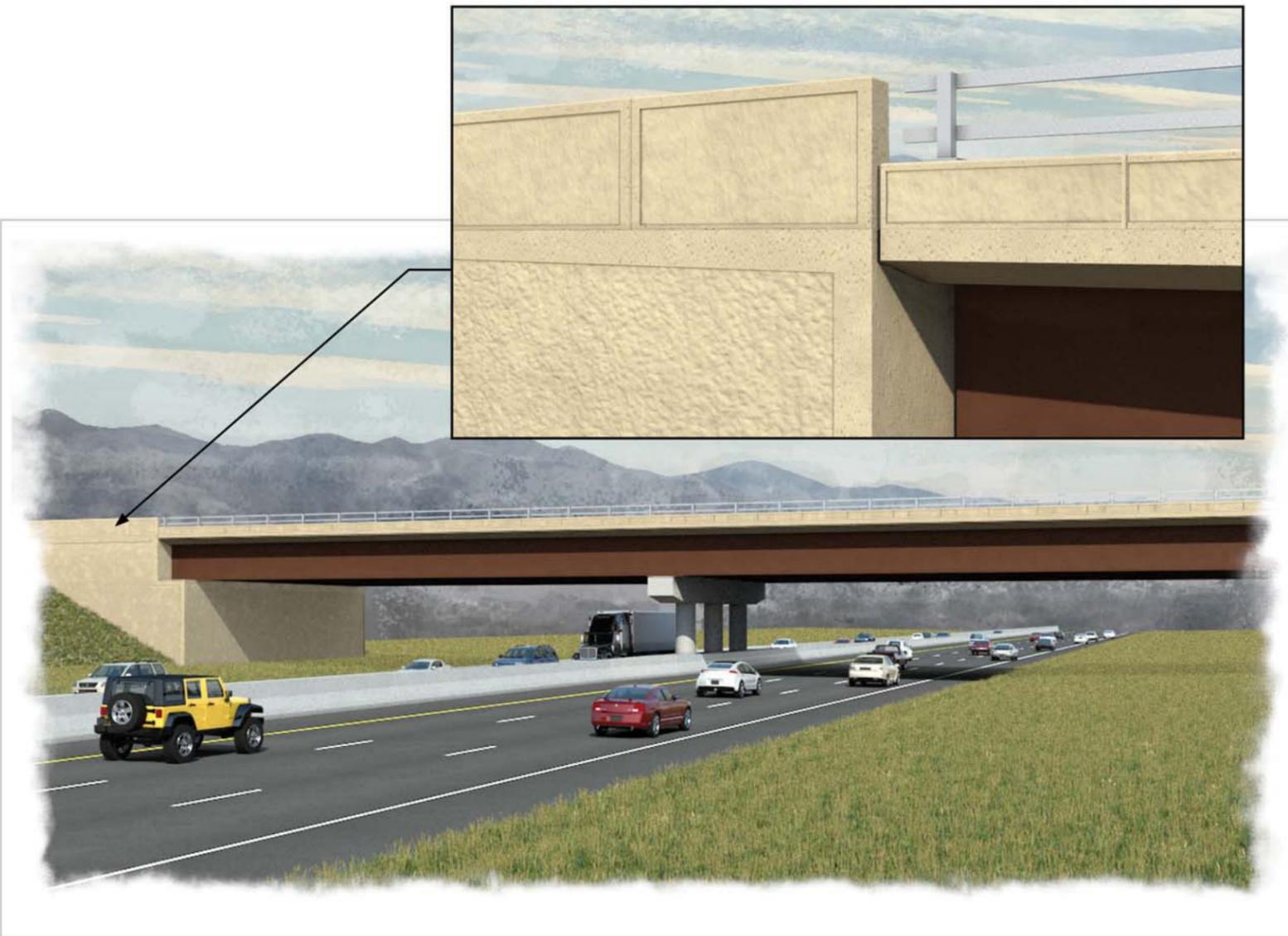
Not to Scale

**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BPB-3 SERIES PARAPET
BPB-4 SERIES PARAPETS (42" F-SHAPE)**

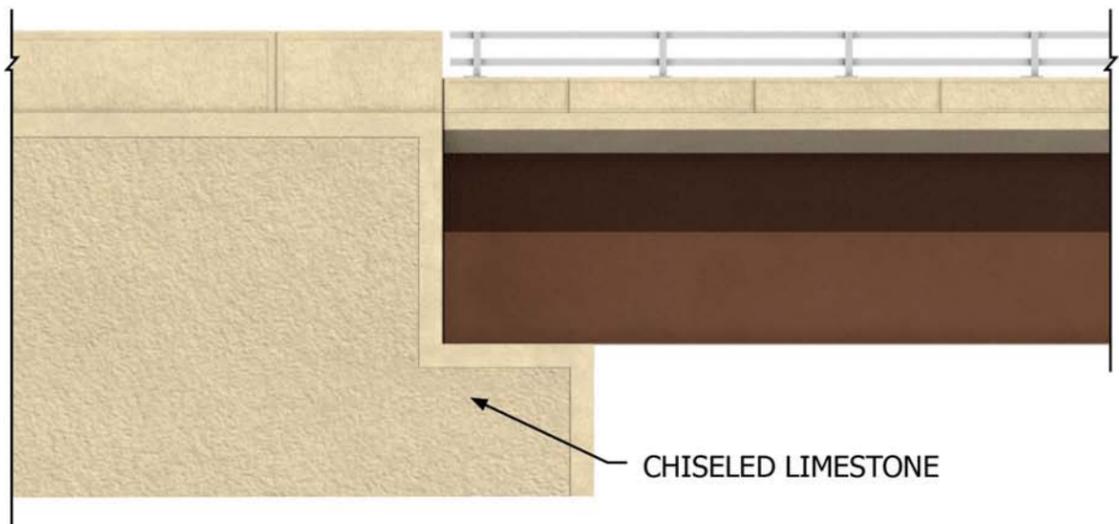
VOL. V - PART 2
DATE: 12Sep2014
SHEET 10 of 10
FILE NO. 05.05-10



ELEVATION DETAILS



DRIVING VIEW



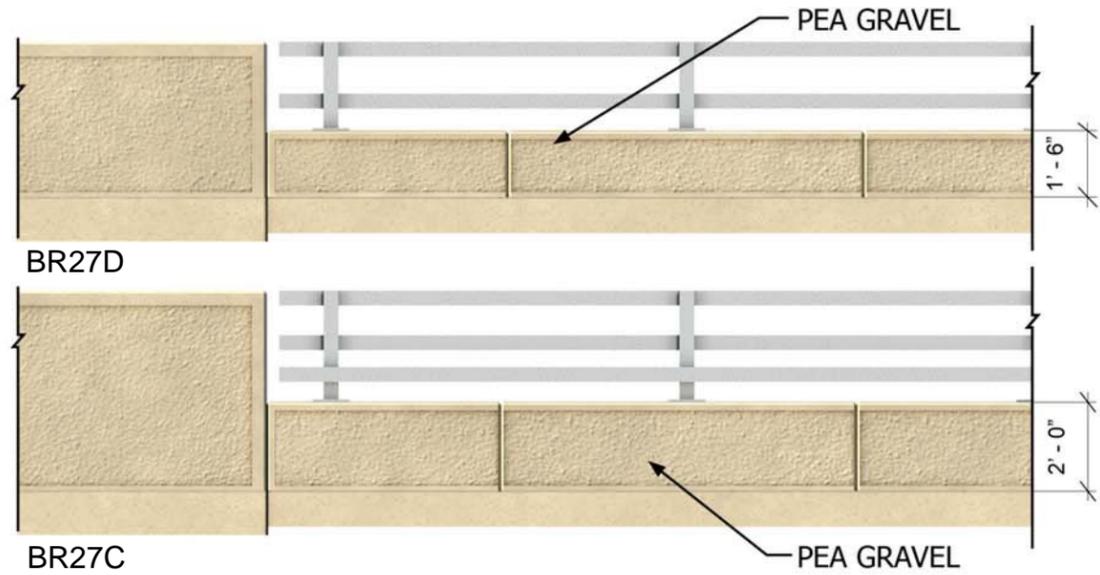
ELEVATION



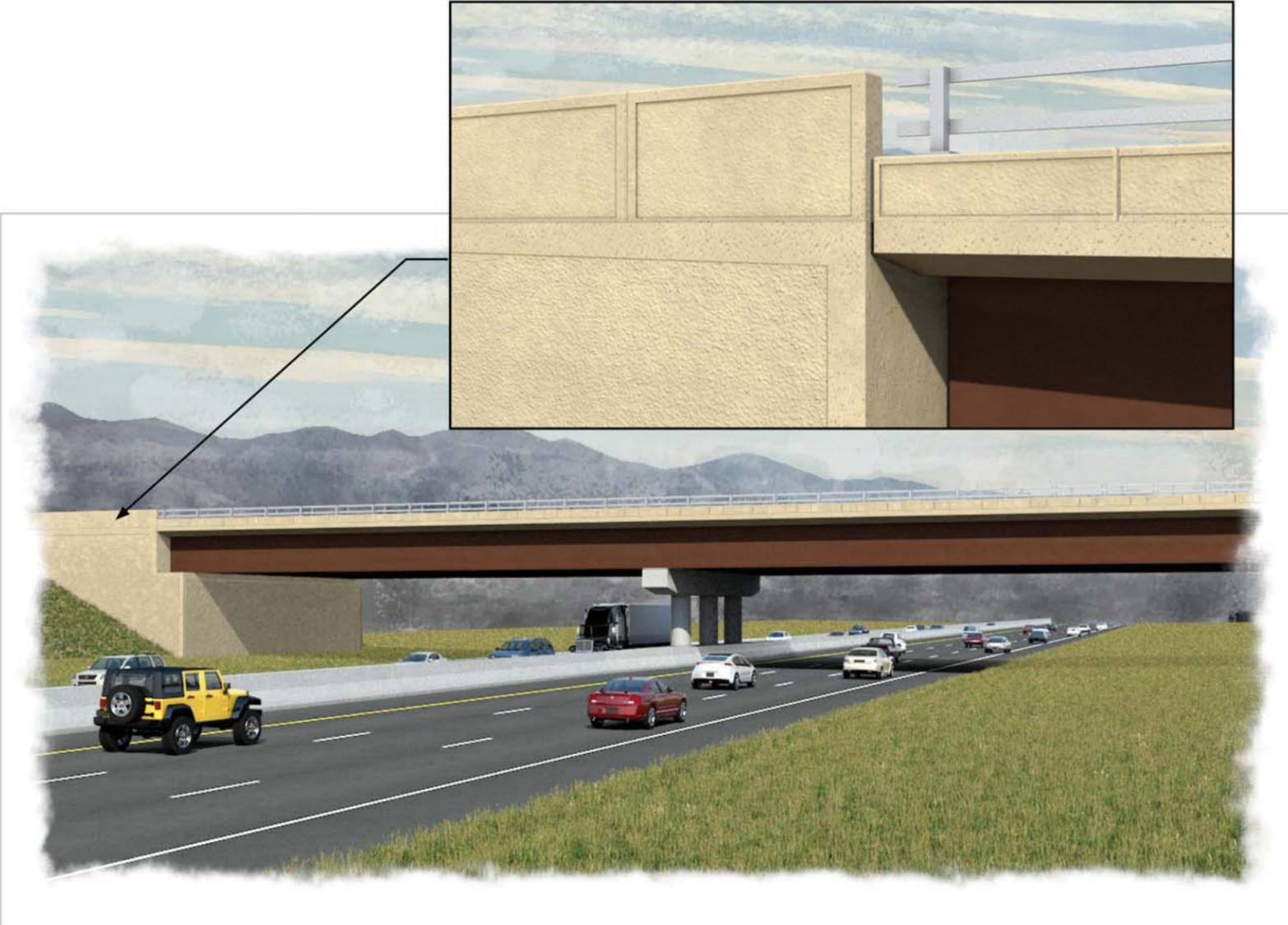
FEDERAL COLOR STANDARDS (Optional)

23617

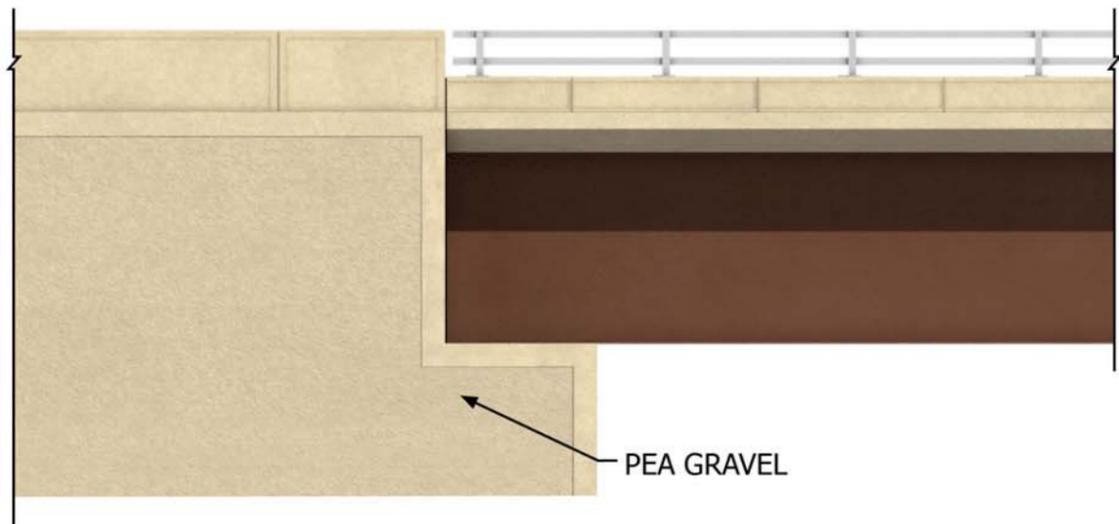
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D SERIES RAILINGS
CHISELED LIMESTONE**



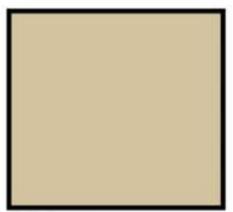
ELEVATION DETAILS



DRIVING VIEW



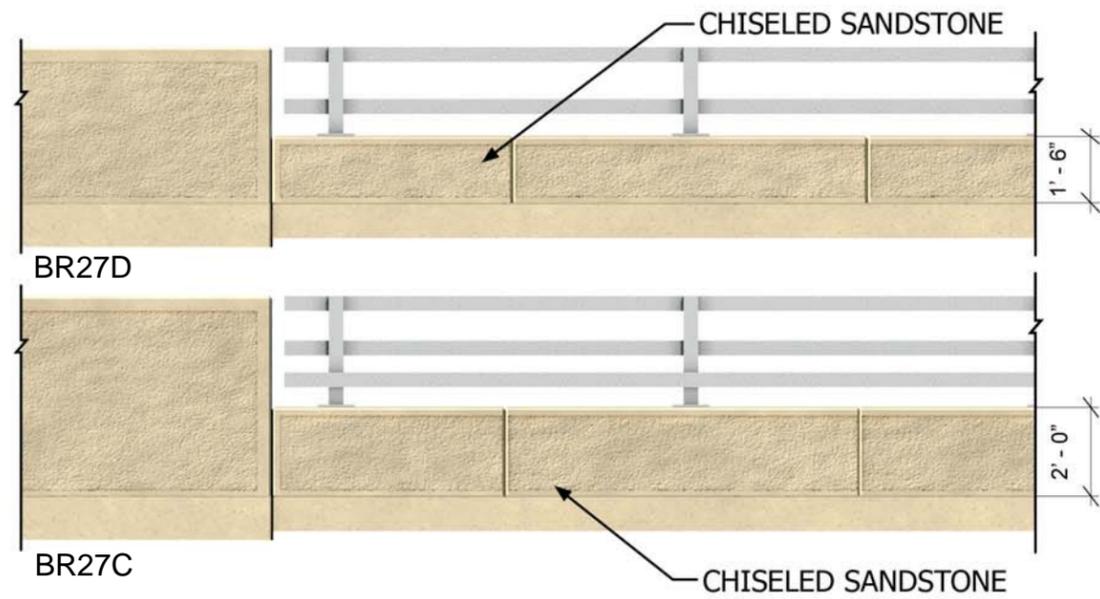
ELEVATION



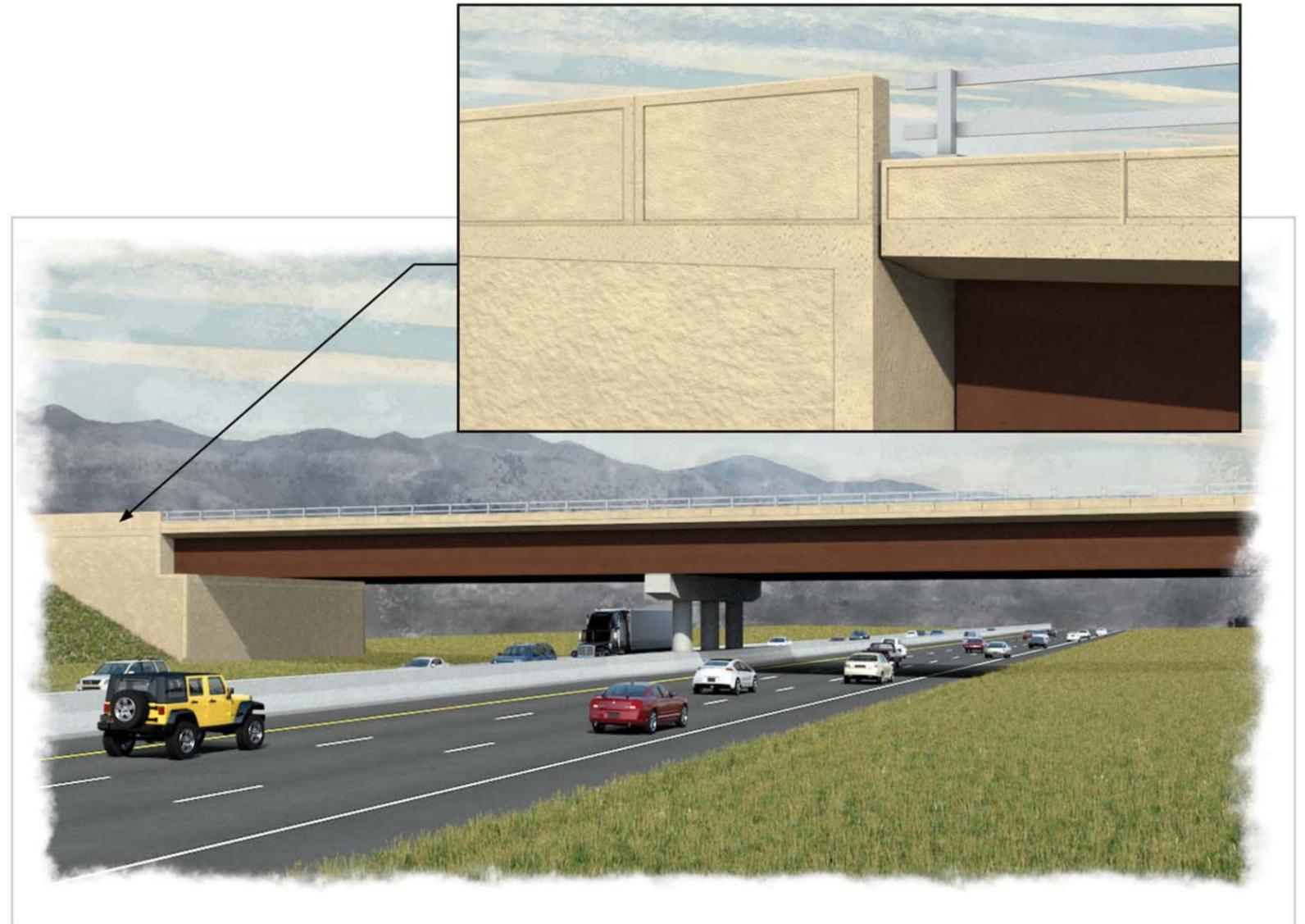
FEDERAL COLOR STANDARDS (Optional)

23617

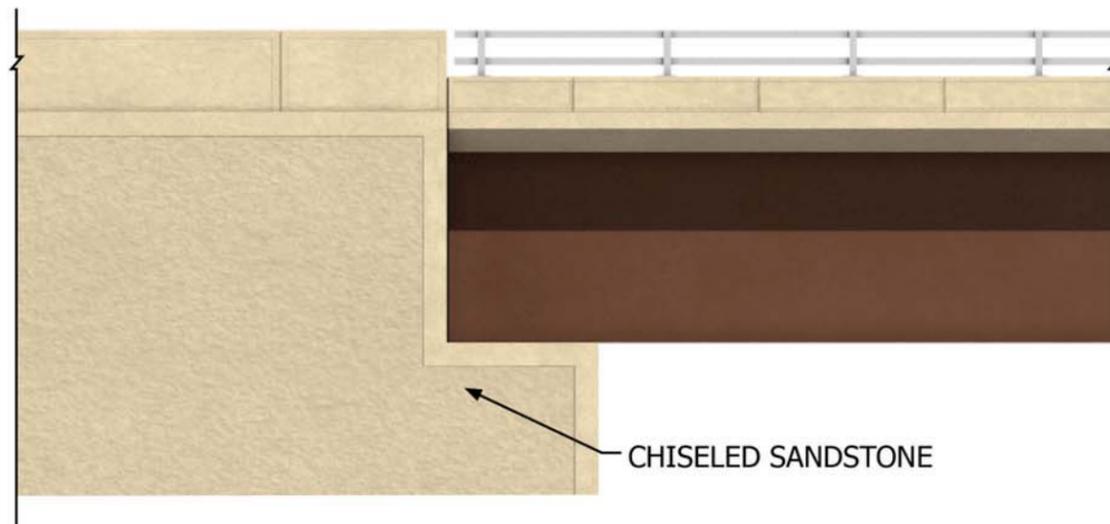
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D SERIES RAILINGS
PEA GRAVEL**



ELEVATION DETAILS



DRIVING VIEW



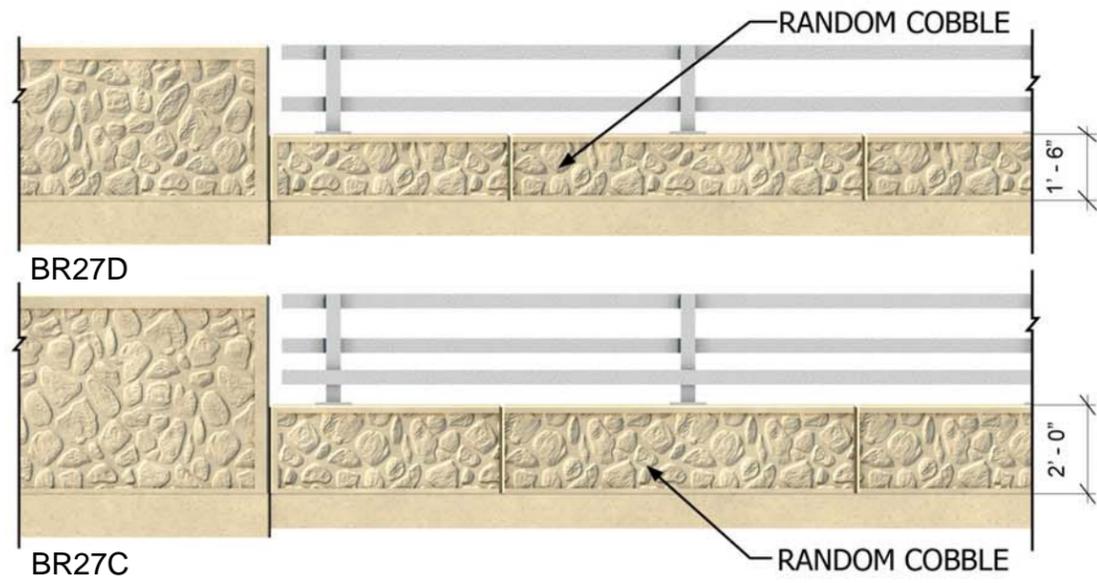
ELEVATION



**FEDERAL COLOR
STANDARDS
(Optional)**

23617

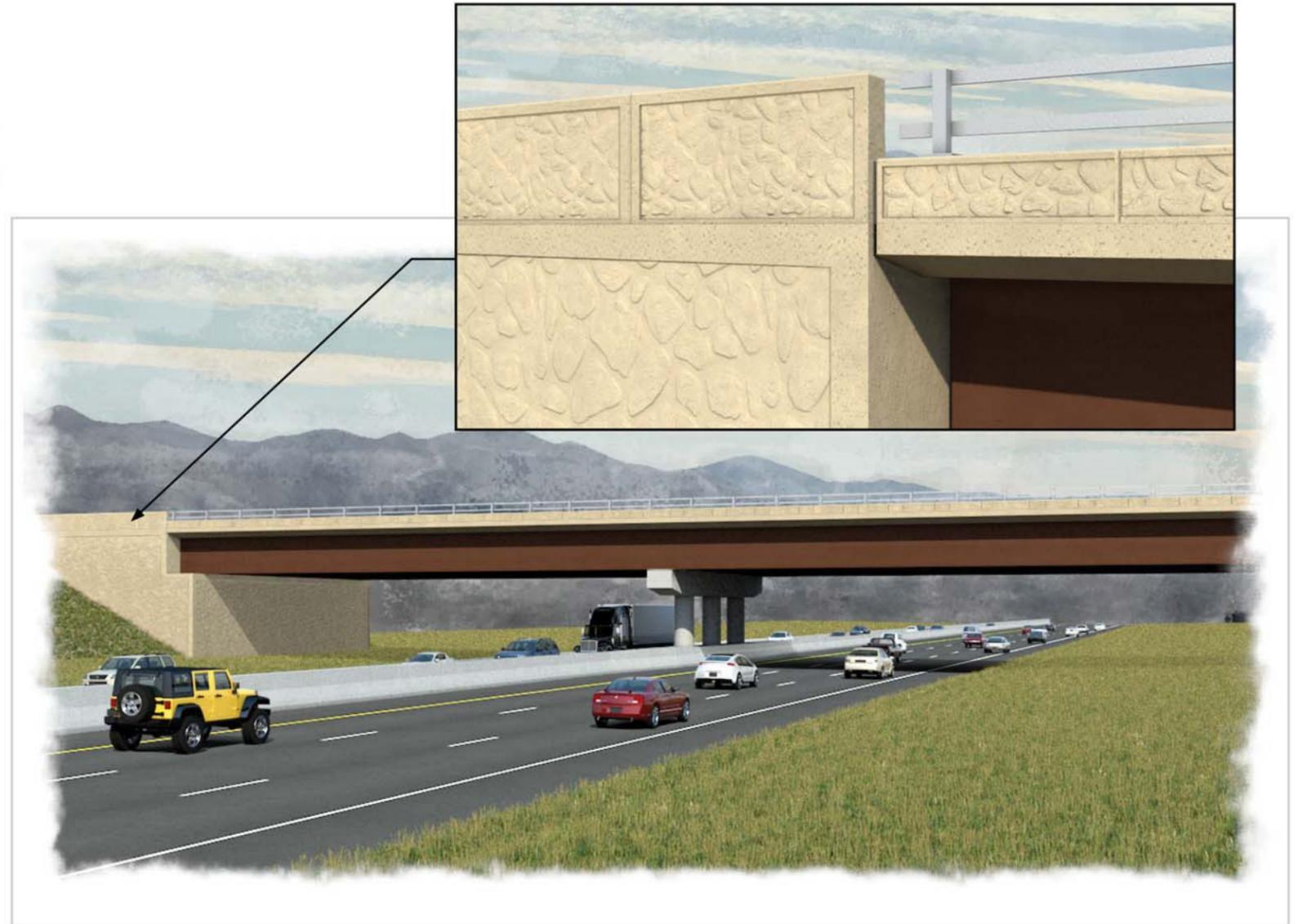
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D SERIES RAILINGS
CHISELED SANDSTONE**



ELEVATION DETAILS



ELEVATION



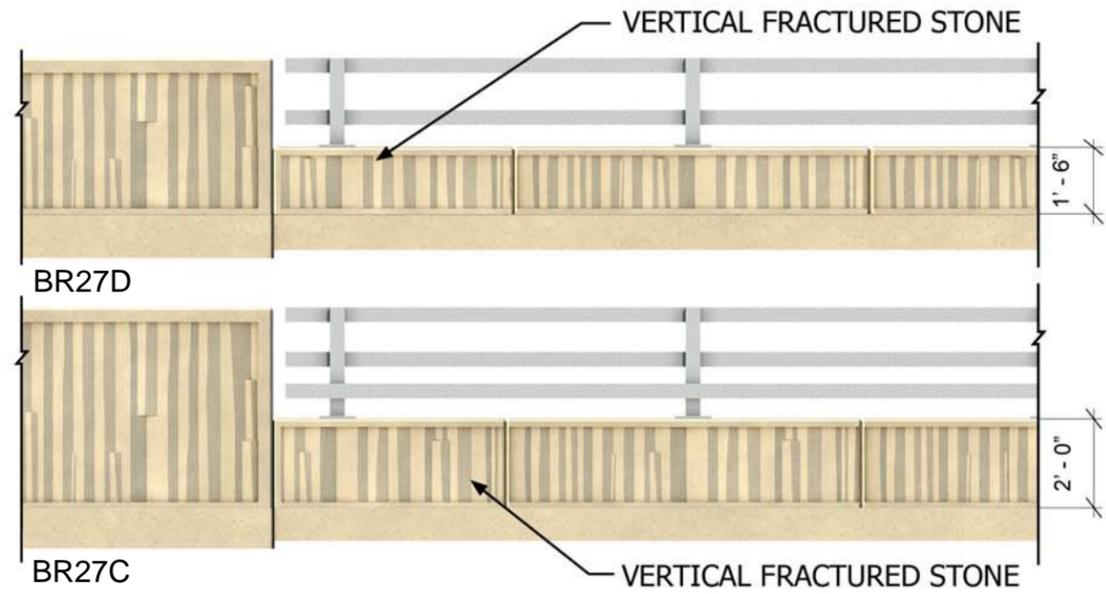
DRIVING VIEW



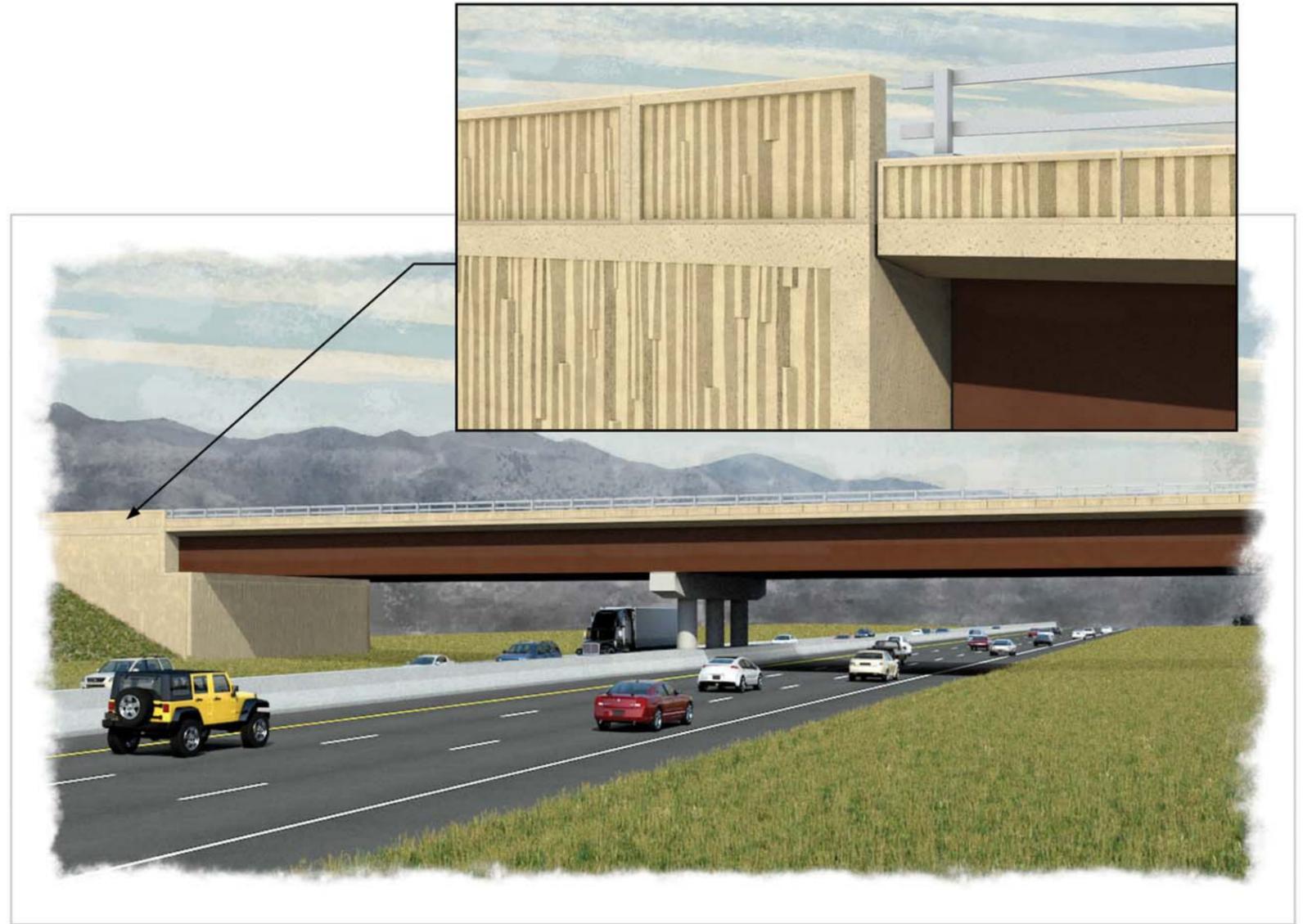
**FEDERAL COLOR
STANDARDS
(Optional)**

23617

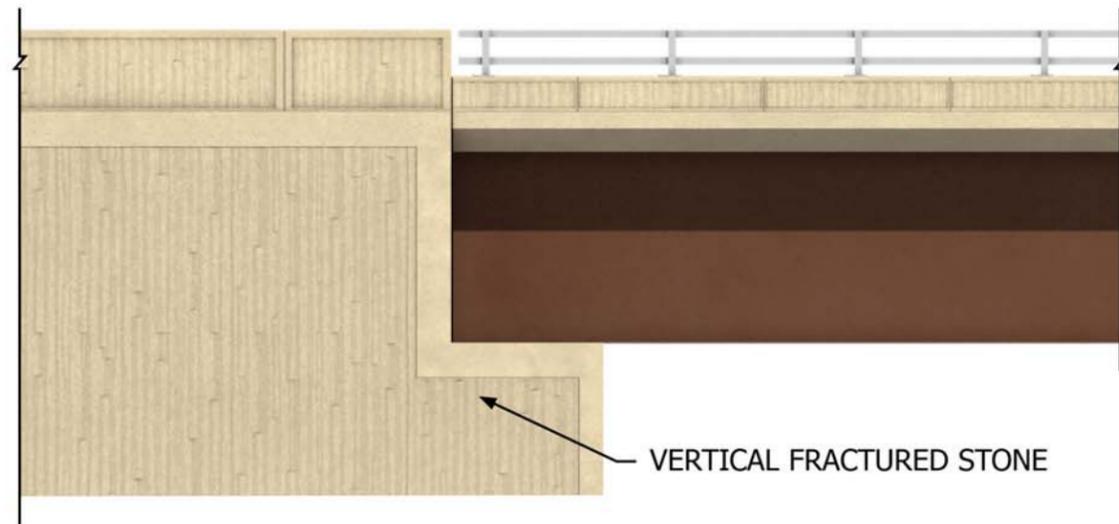
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D SERIES RAILINGS
RANDOM COBBLE**



ELEVATION DETAILS



DRIVING VIEW



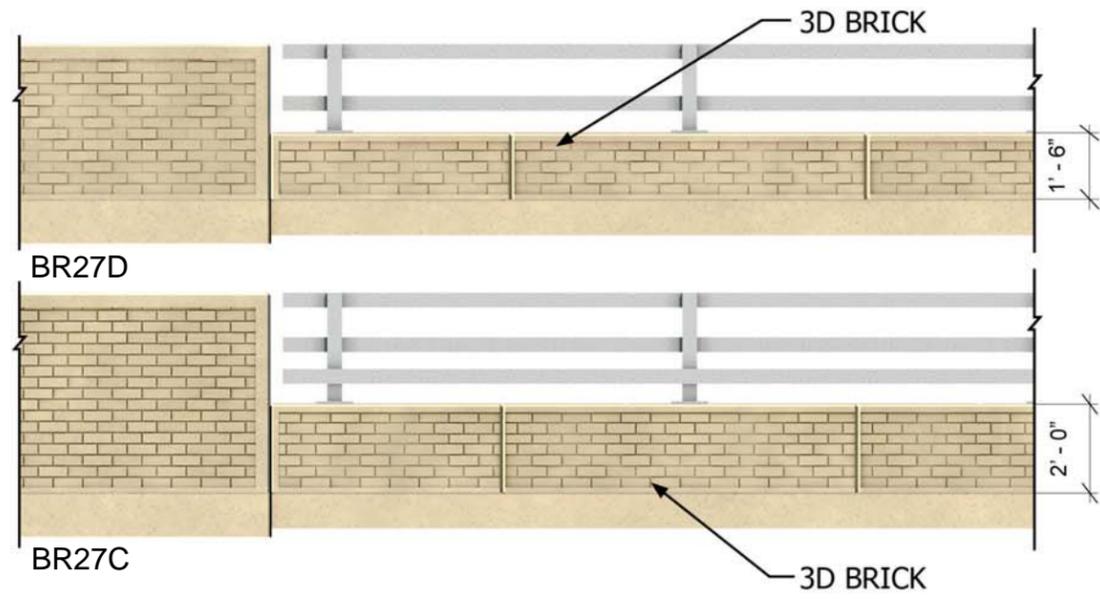
ELEVATION



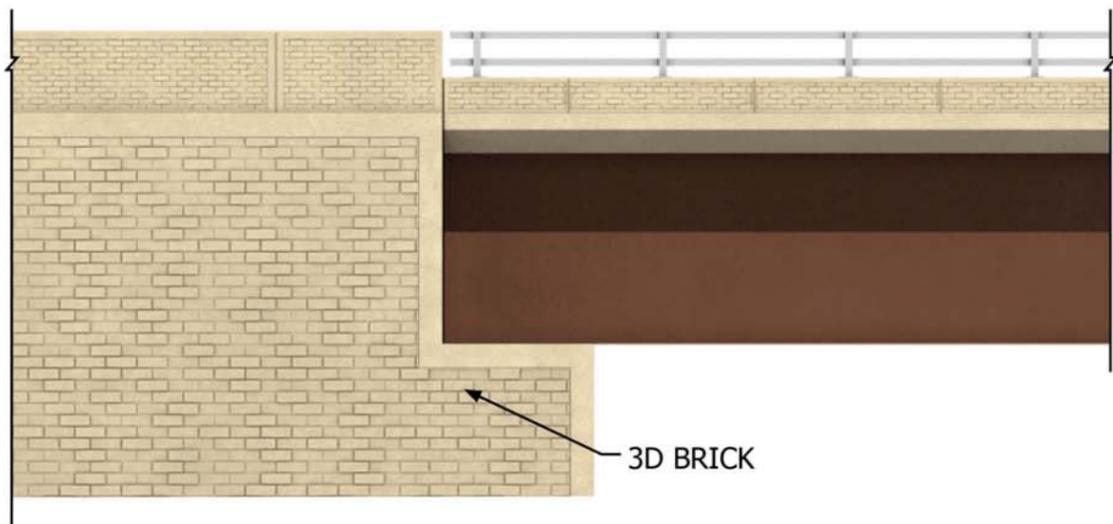
FEDERAL COLOR STANDARDS (Optional)

23617

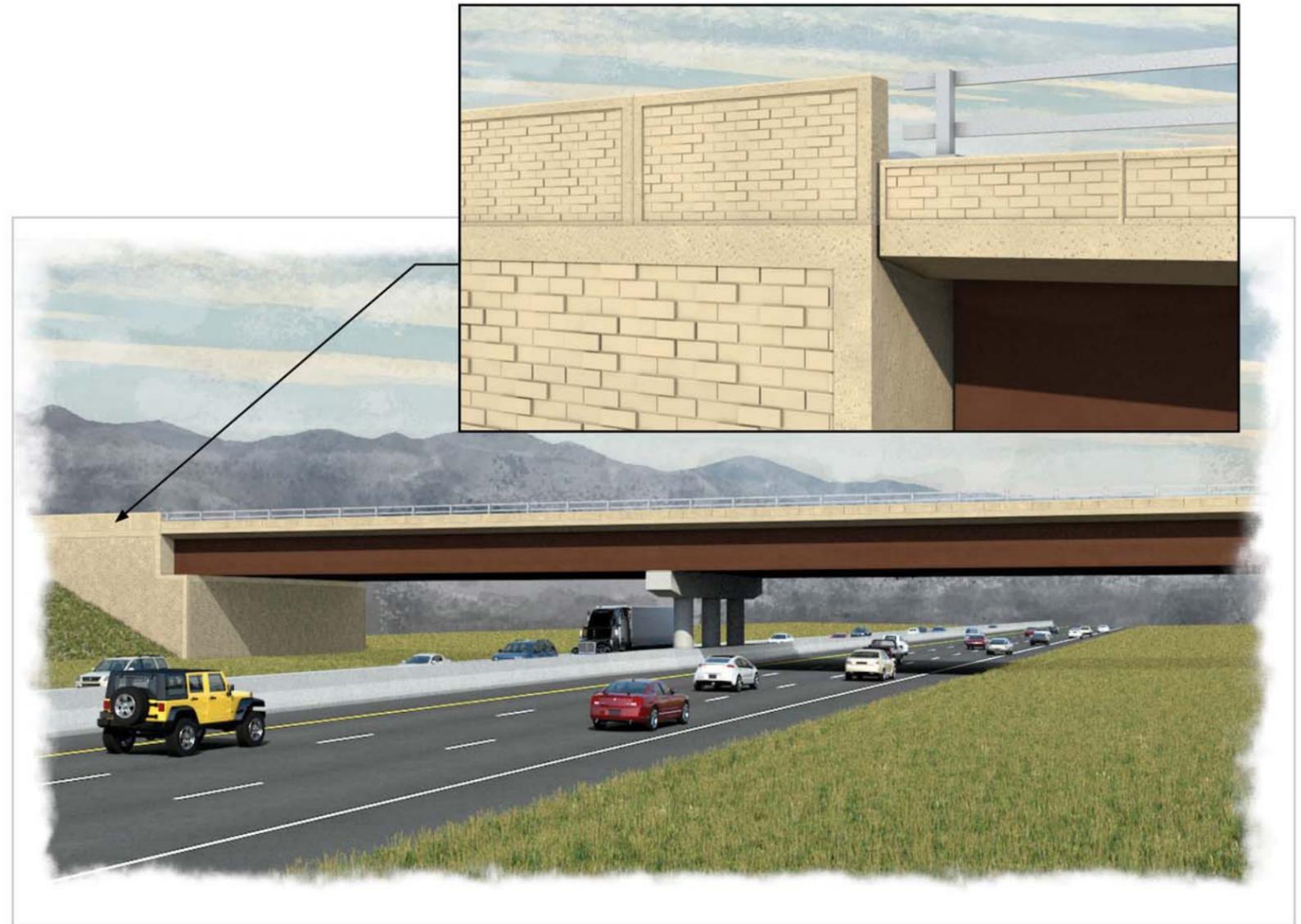
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D RAILINGS
VERTICAL FRACTURED STONE**



ELEVATION DETAILS



ELEVATION



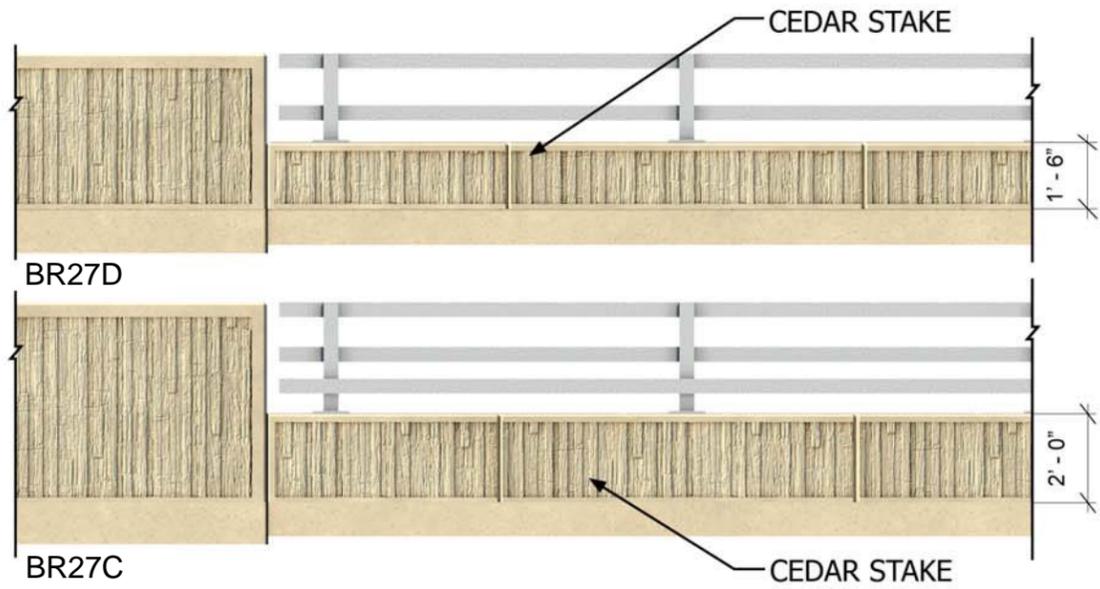
DRIVING VIEW



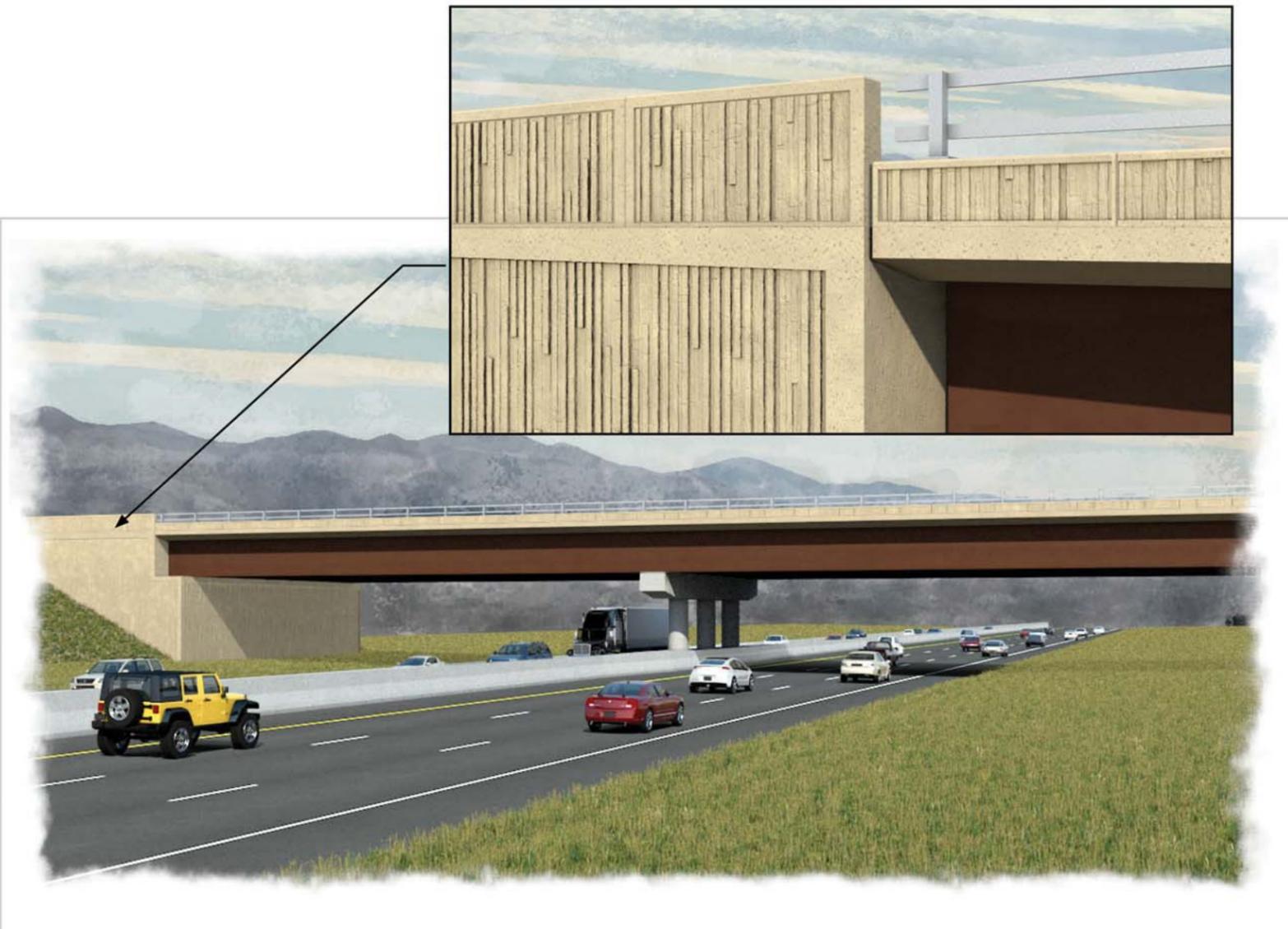
23617

FEDERAL COLOR STANDARDS (Optional)

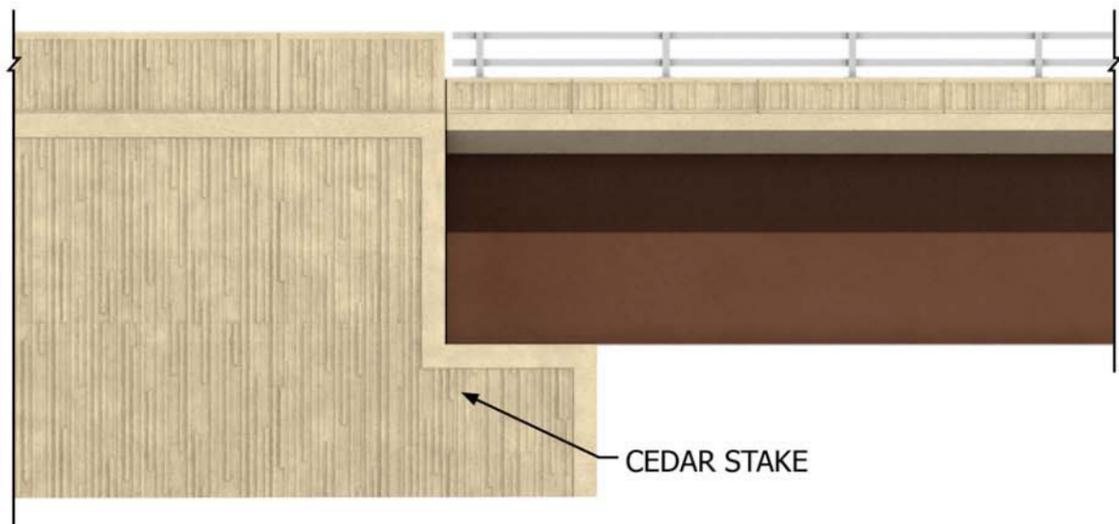
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D SERIES RAILINGS
3D BRICK**



ELEVATION DETAILS



DRIVING VIEW



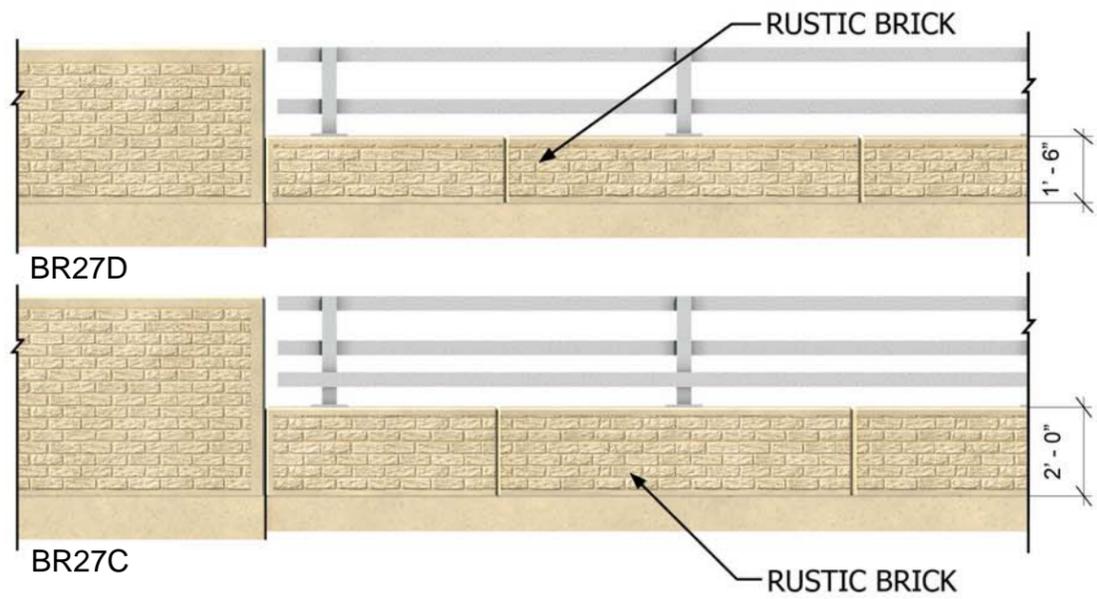
ELEVATION



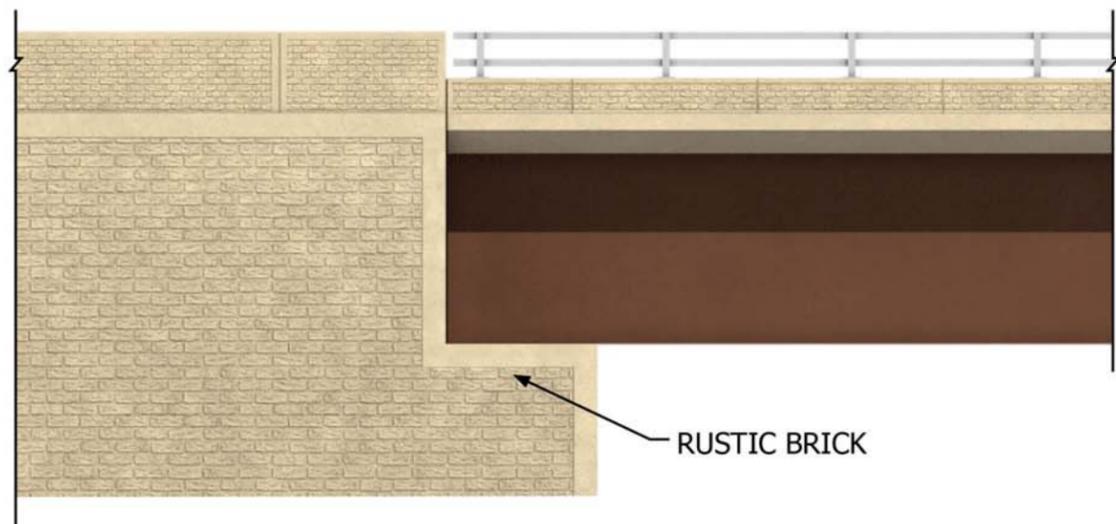
FEDERAL COLOR STANDARDS (Optional)

23617

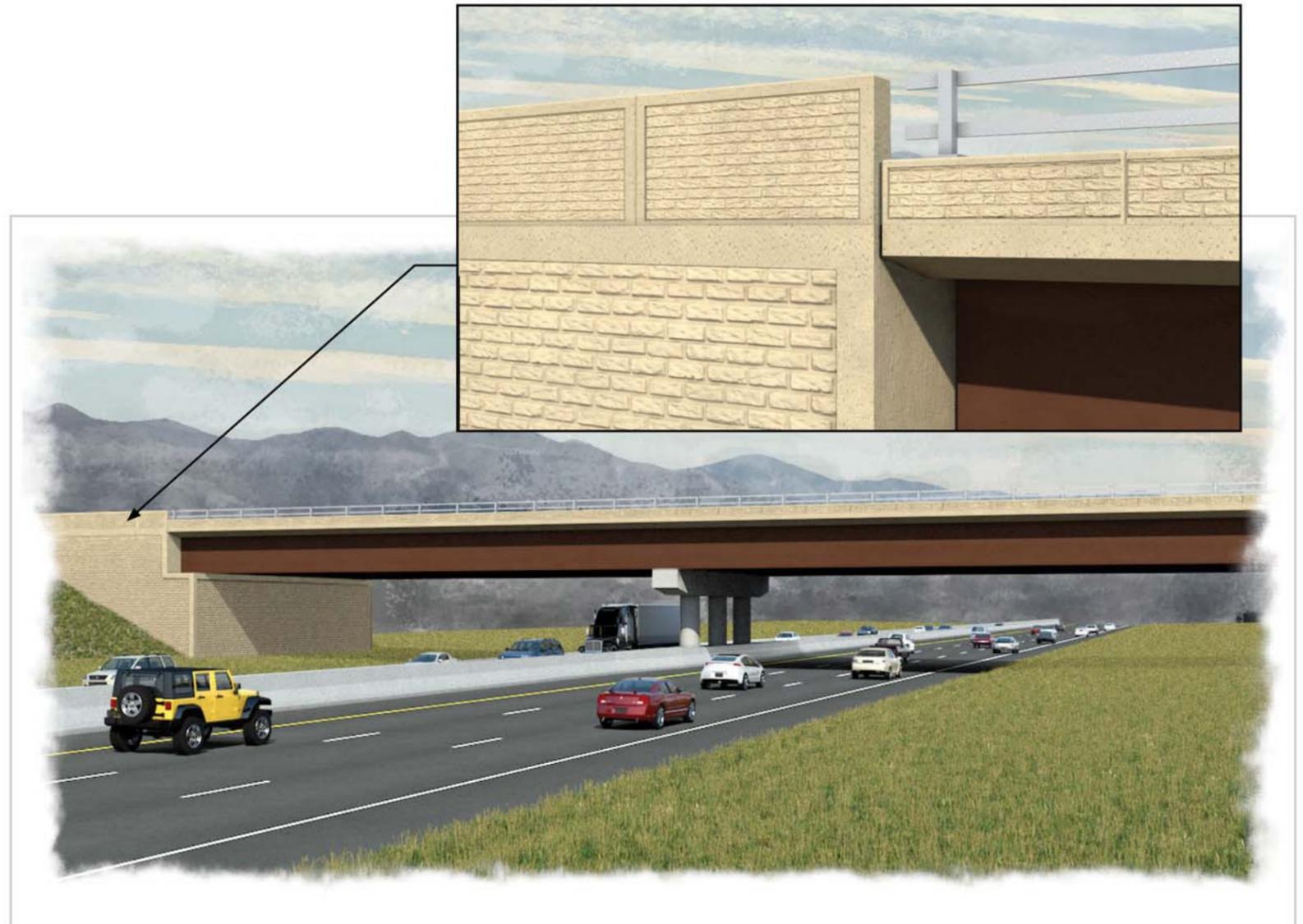
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D RAILINGS
CEDAR STAKE**



ELEVATION DETAILS



ELEVATION



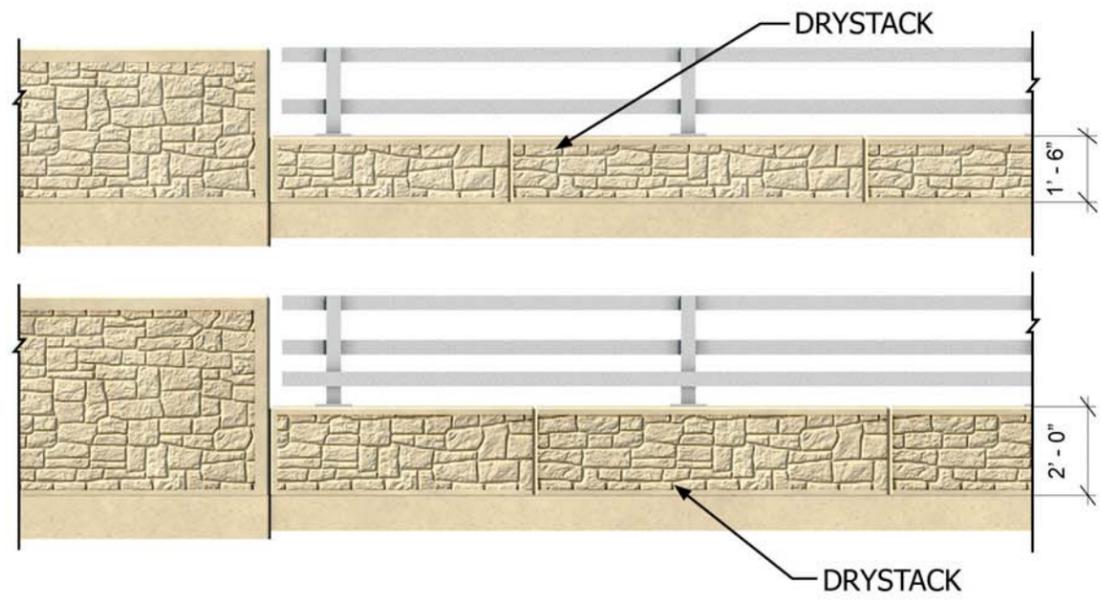
DRIVING VIEW



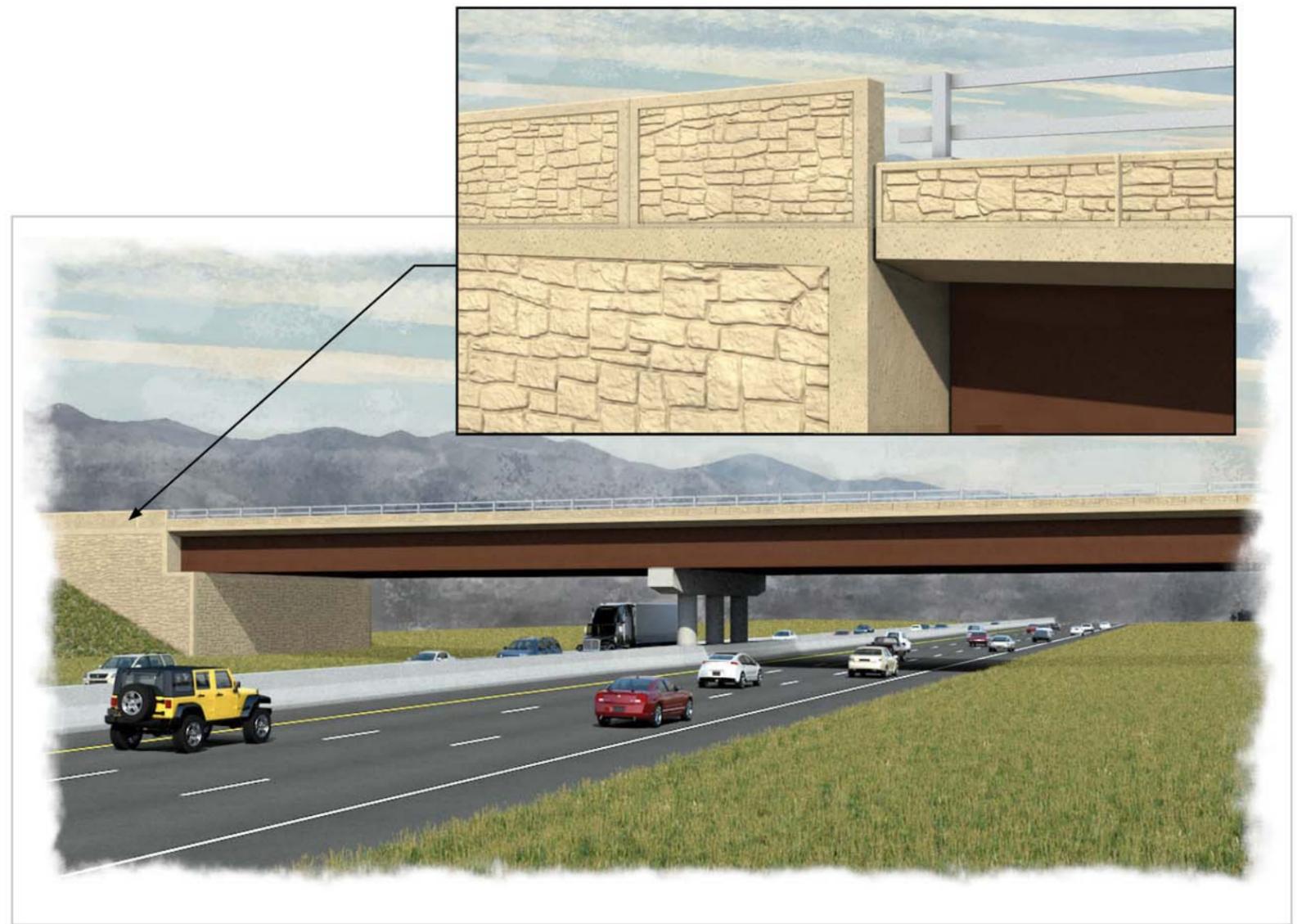
23617

FEDERAL COLOR STANDARDS (Optional)

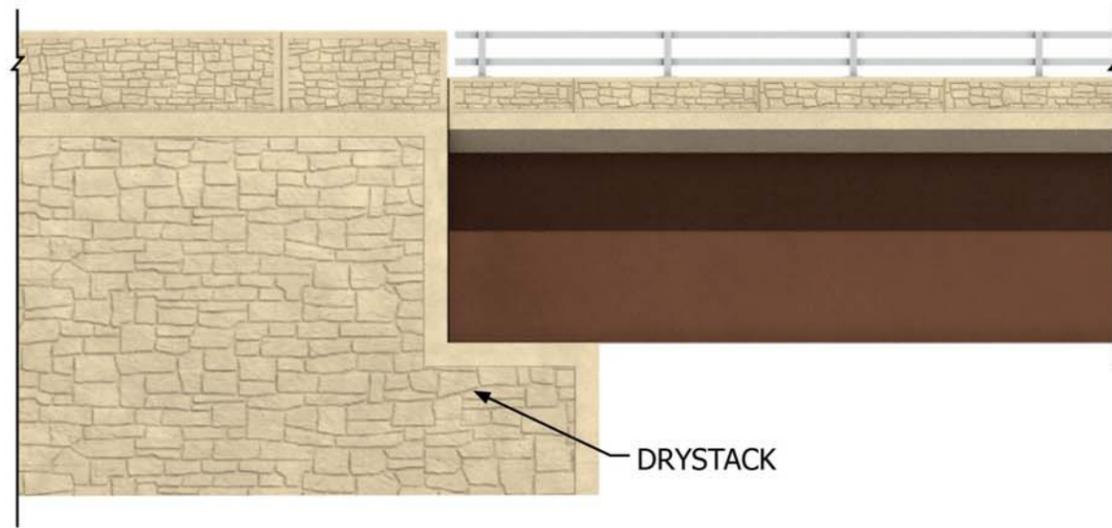
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D RAILINGS
RUSTIC BRICK**



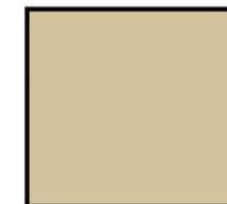
ELEVATION DETAILS



DRIVING VIEW



ELEVATION



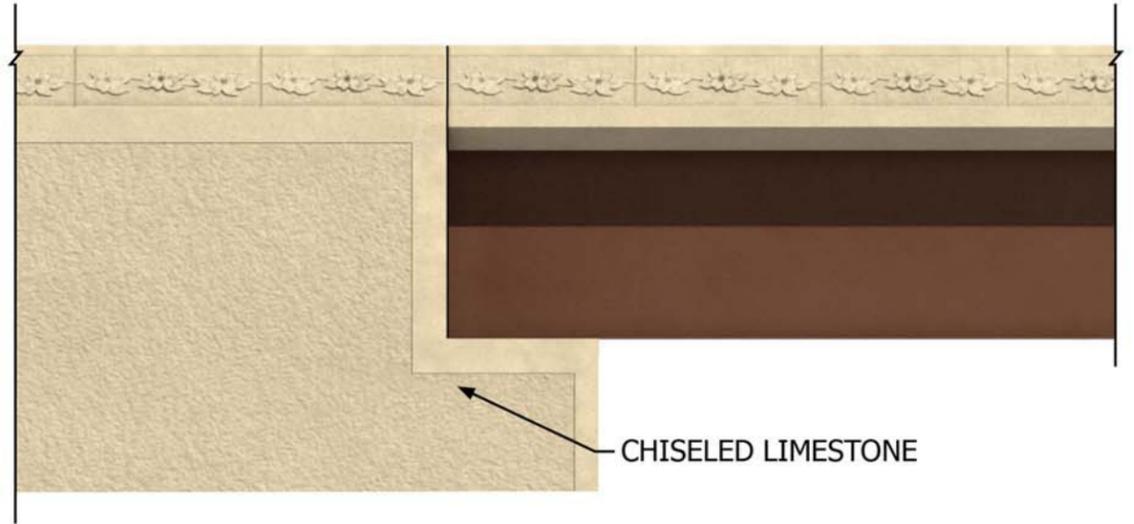
FEDERAL COLOR STANDARDS (Optional)

23617

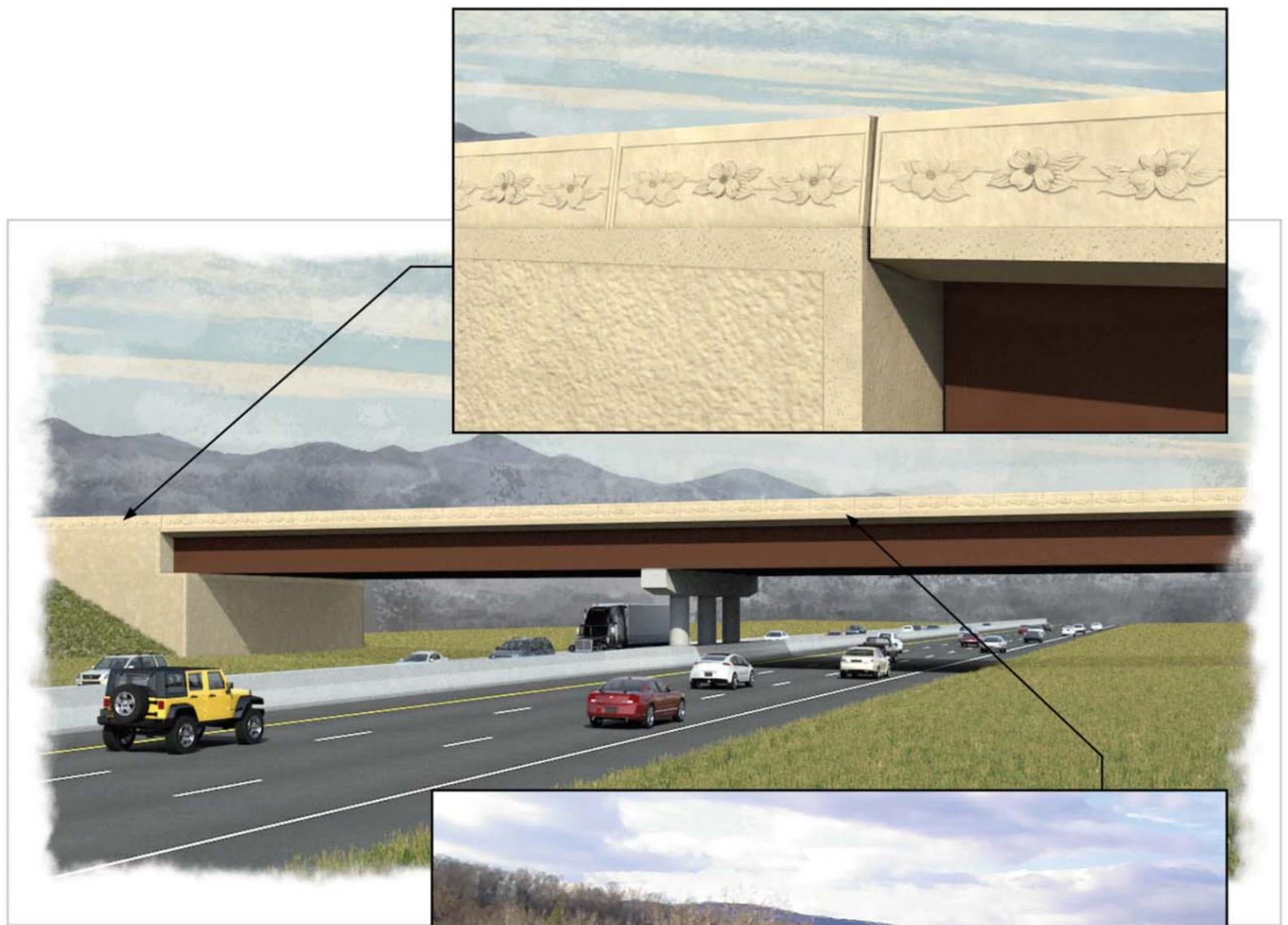
**ARCHITECTURAL TREATMENT
TEXTURE RENDERINGS – BR27C/D RAILINGS
DRystack**



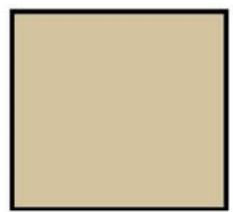
CHISELED LIMESTONE WITH
SCULPTED DOGWOOD BLOSSOM
ELEVATION DETAILS



ELEVATION



**FEDERAL COLOR
STANDARDS
(Optional)**

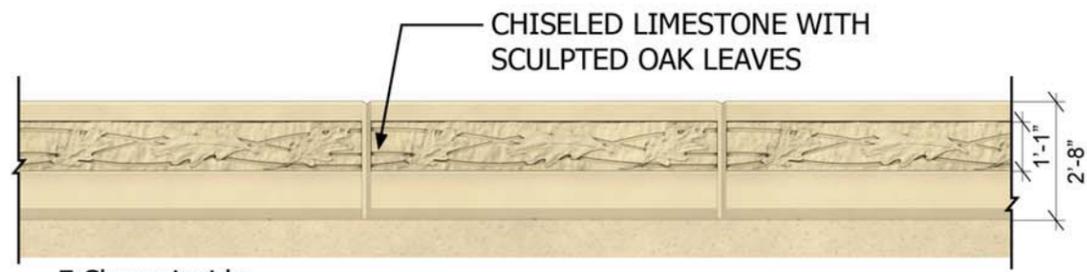


23617



DRIVING VIEW FROM BRIDGE

**ARCHITECTURAL TREATMENT
SCULPTED DESIGN RENDERINGS – BPB-3 SERIES PARAPET
SCULPTED DOGWOOD BLOSSOM**



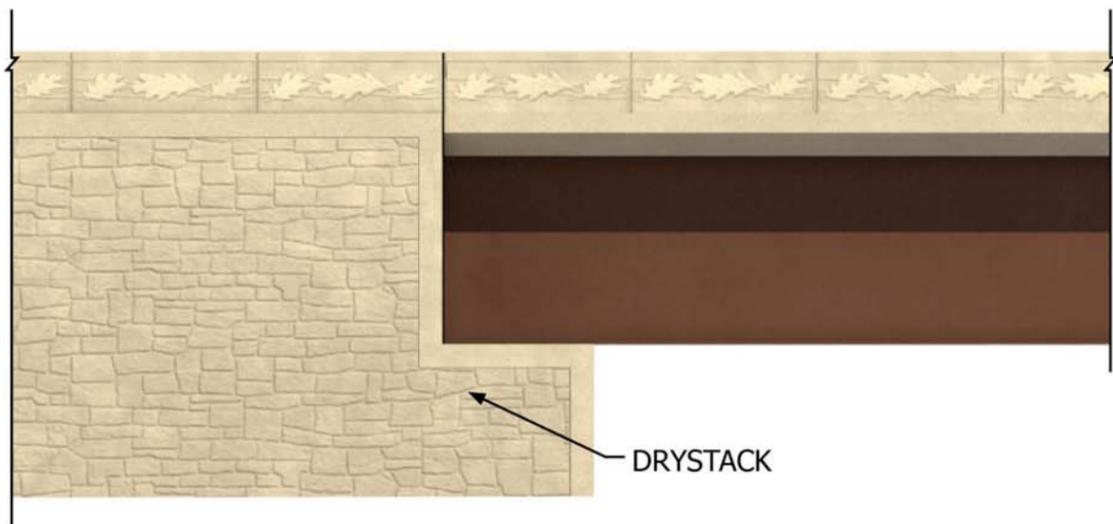
F-Shape inside



F-Shape outside

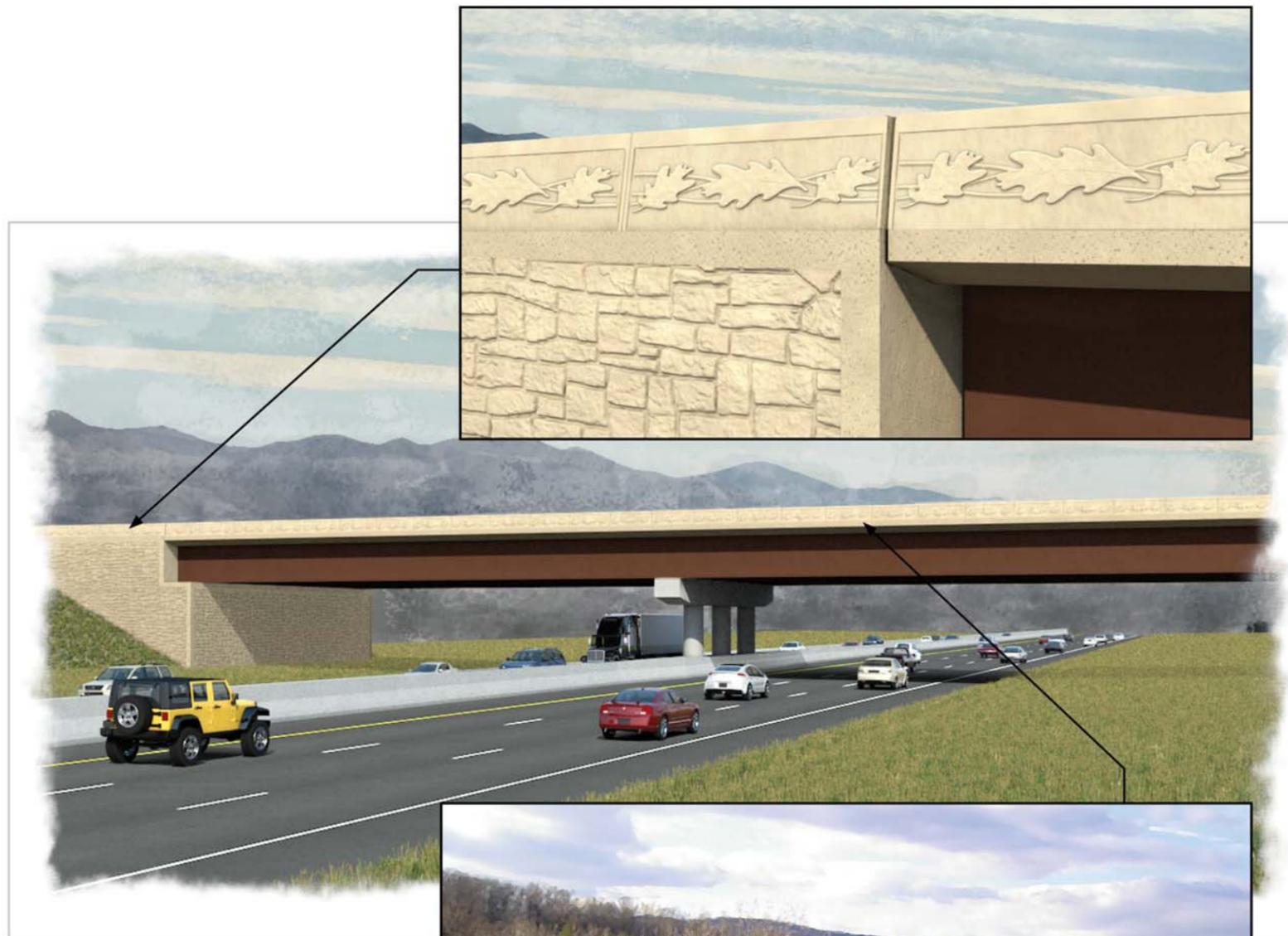
CHISELED LIMESTONE WITH SCULPTED OAK LEAVES

ELEVATION DETAILS



DRystack

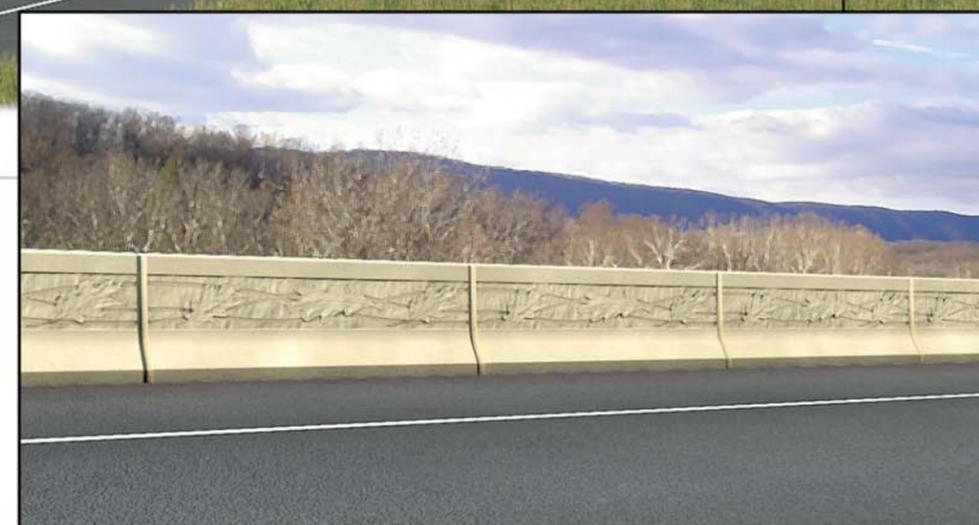
ELEVATION



FEDERAL COLOR STANDARDS (Optional)

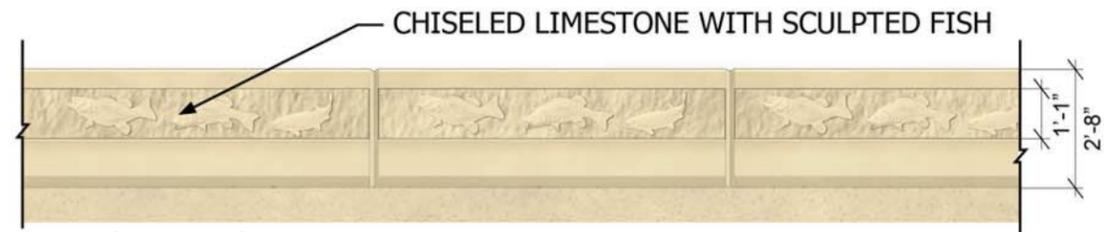


23617



DRIVING VIEW FROM BRIDGE

**ARCHITECTURAL TREATMENT
SCULPTED DESIGN RENDERINGS – BPB-3 SERIES PARAPET
SCULPTED OAK LEAVES**



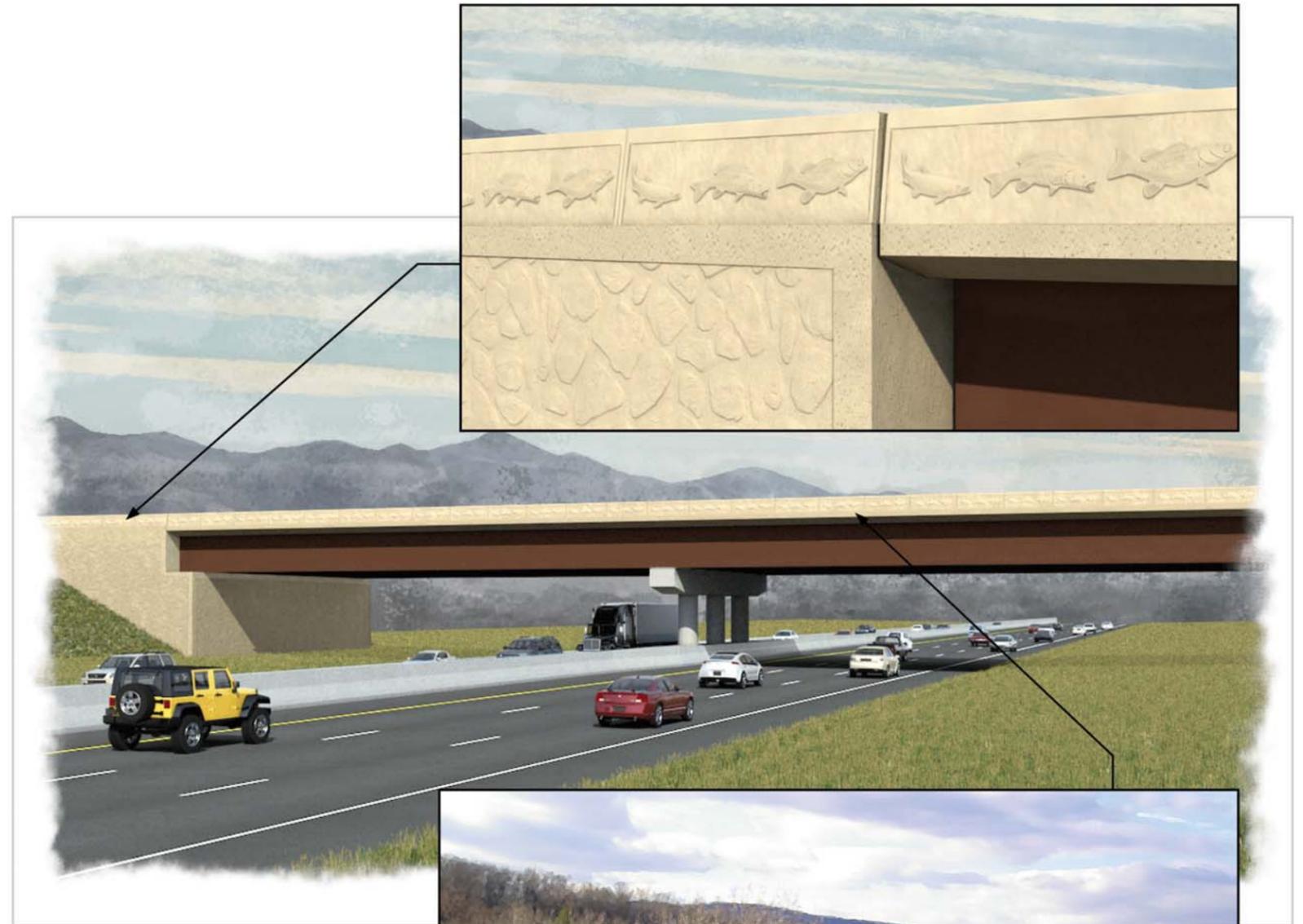
F-Shape inside



F-Shape outside

CHISELED LIMESTONE WITH SCULPTED FISH

ELEVATION DETAILS



RANDOM COBBLE

ELEVATION

FEDERAL COLOR STANDARDS (Optional)



23617



DRIVING VIEW FROM BRIDGE

**ARCHITECTURAL TREATMENT
SCULPTED DESIGN RENDERINGS – BPB-3 SERIES PARAPET
SCULPTED FISH**

BPB-4 SERIES PARAPETS (42" F-SHAPE)

Architectural renderings for the 42" F-Shape parapets (BPB-4 series) are similar to the renderings shown for the 32" F-Shape parapets on File Nos. 05.07-1 thru 05.07-3 with the following changes:

ELEVATION DETAILS:

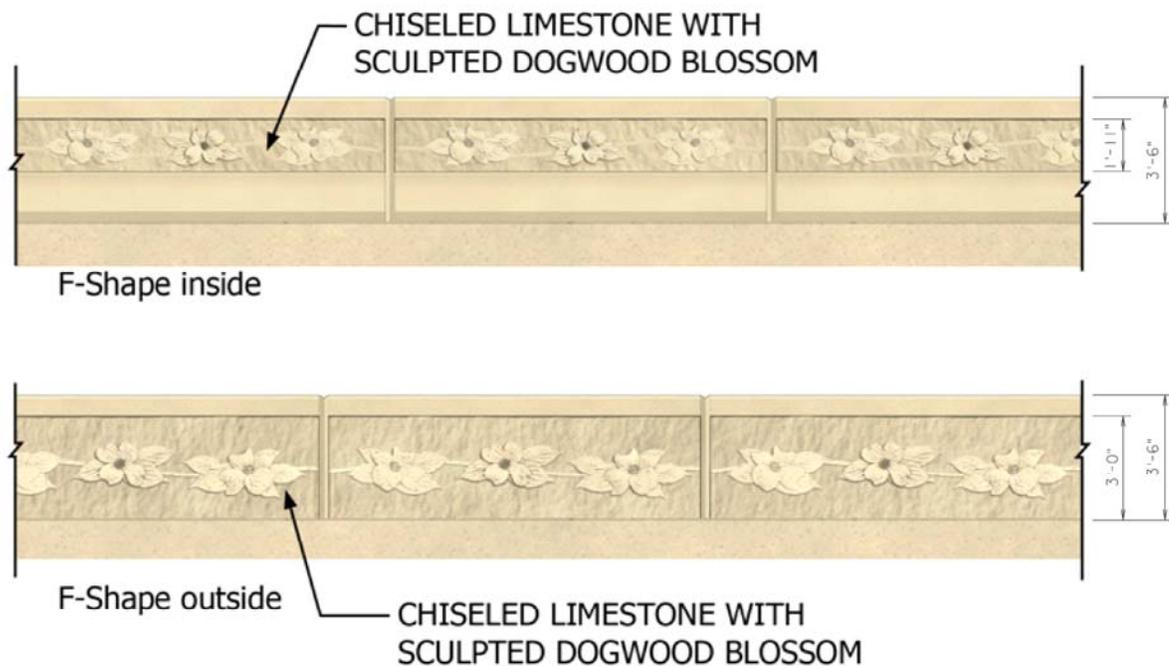
F-Shape inside:

Change dimensions: 1'-1" to 1'-11"
2'-8" to 3'-6"

F-Shape outside:

Change dimensions: 2'-2" to 3'-0"
2'-8" to 3'-6"

For example, ELEVATION DETAILS for the rendering on File No. 05.07-1 showing architectural treatment with sculpted dogwood blossom would be as follows:

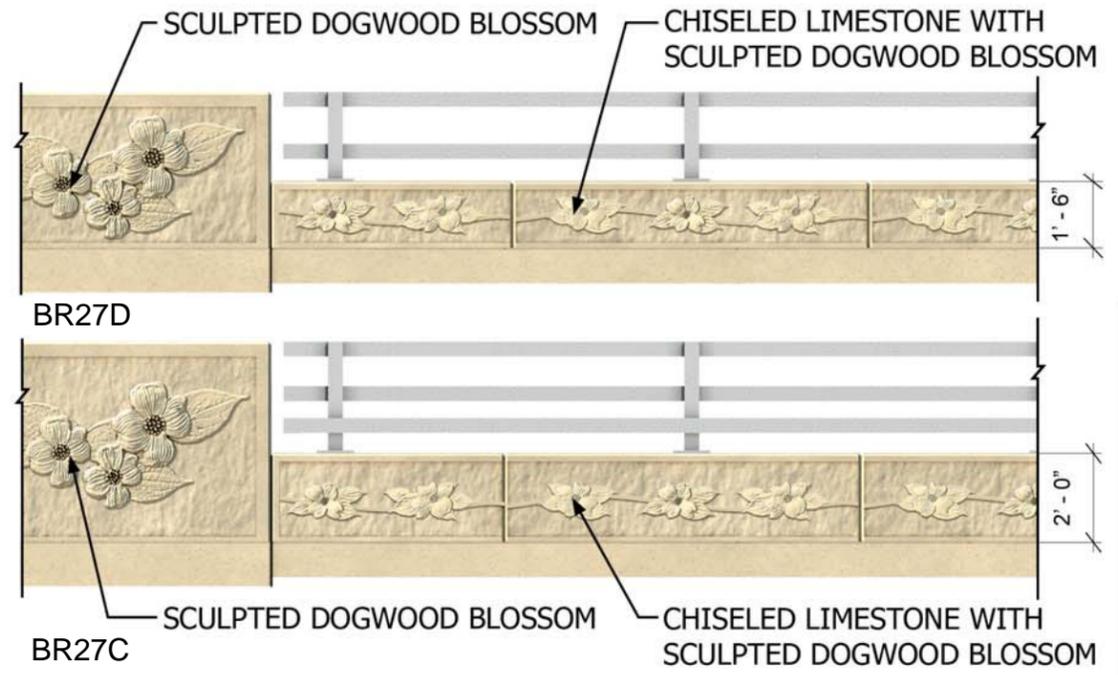


ELEVATION DETAILS

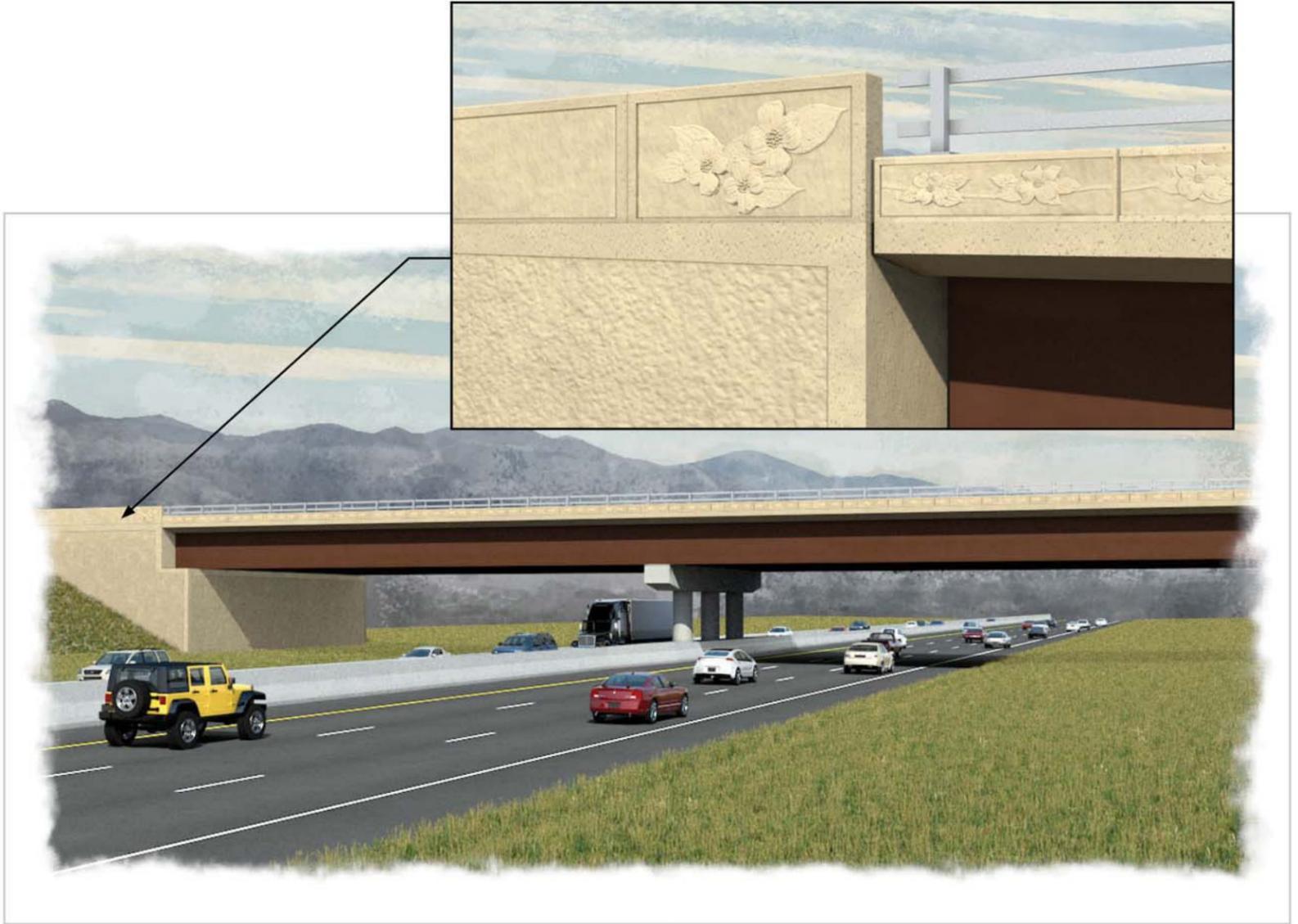
Not to Scale

**ARCHITECTURAL TREATMENT
SCULPTED DESIGN REND.'S – BPB-3 SERIES PARAPET
BPB-4 SERIES PARAPETS (42" F-SHAPE)**

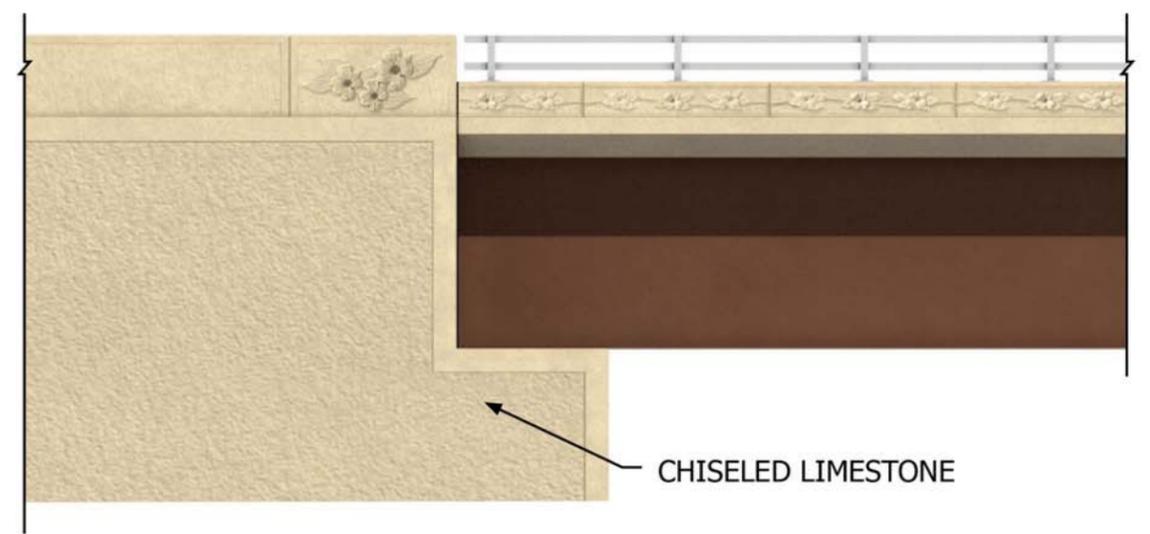
VOL. V - PART 2
DATE: 12Sep2014
SHEET 4 of 4
FILE NO. 05.07-4



ELEVATION DETAILS



DRIVING VIEW

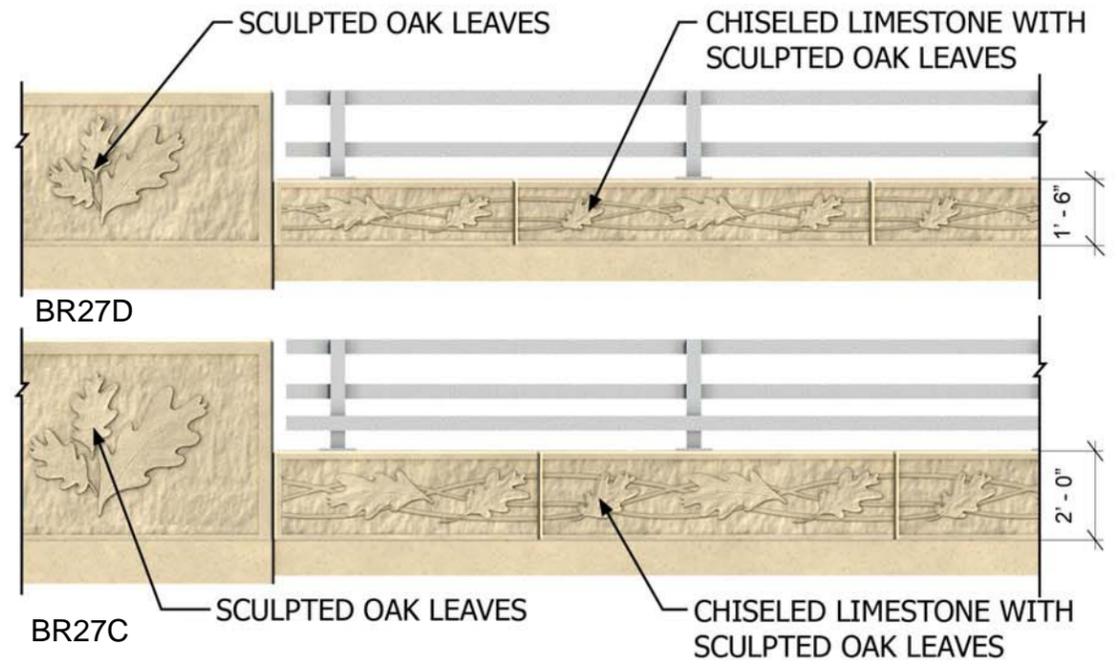


ELEVATION

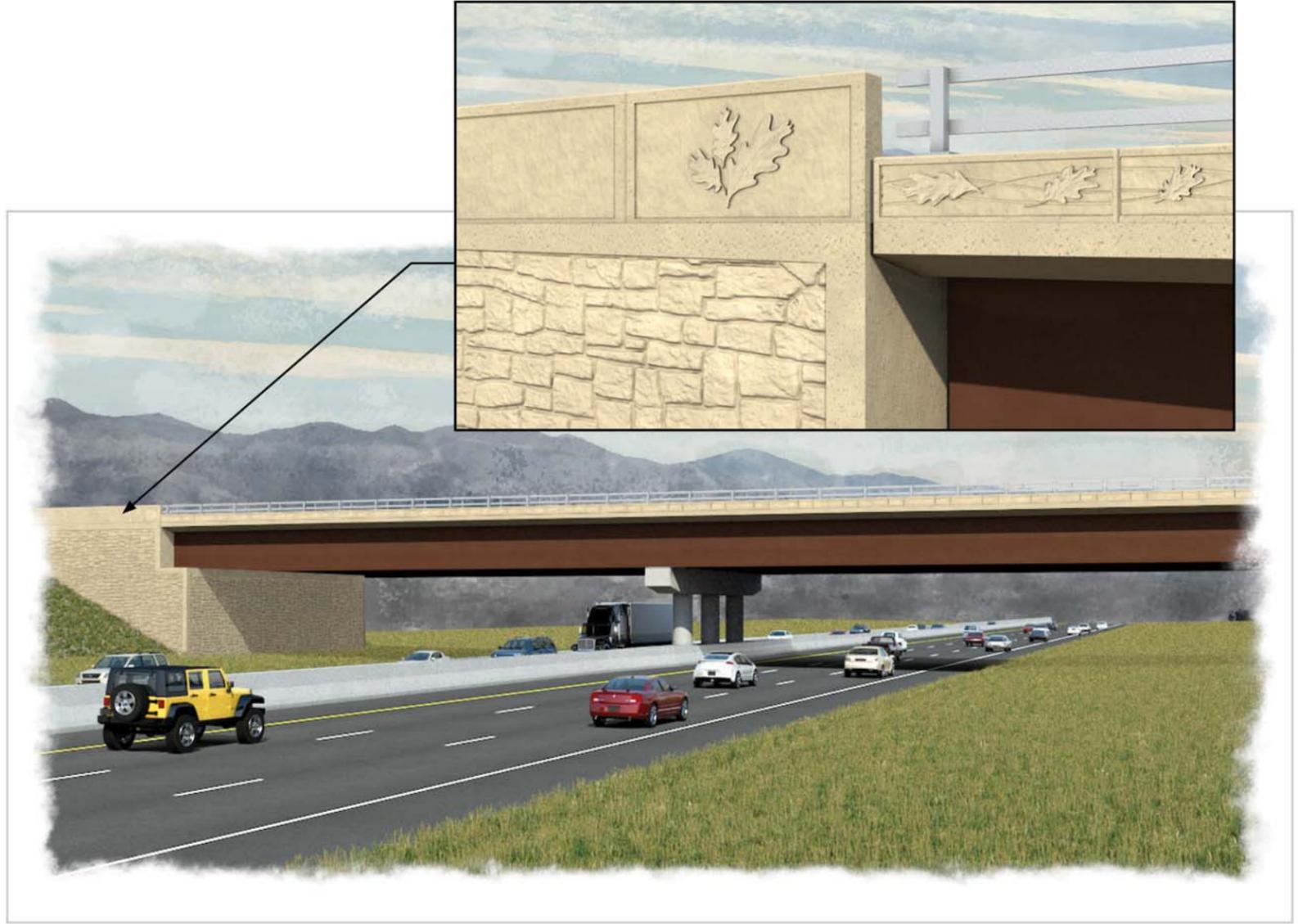
FEDERAL COLOR STANDARDS (Optional)

23617

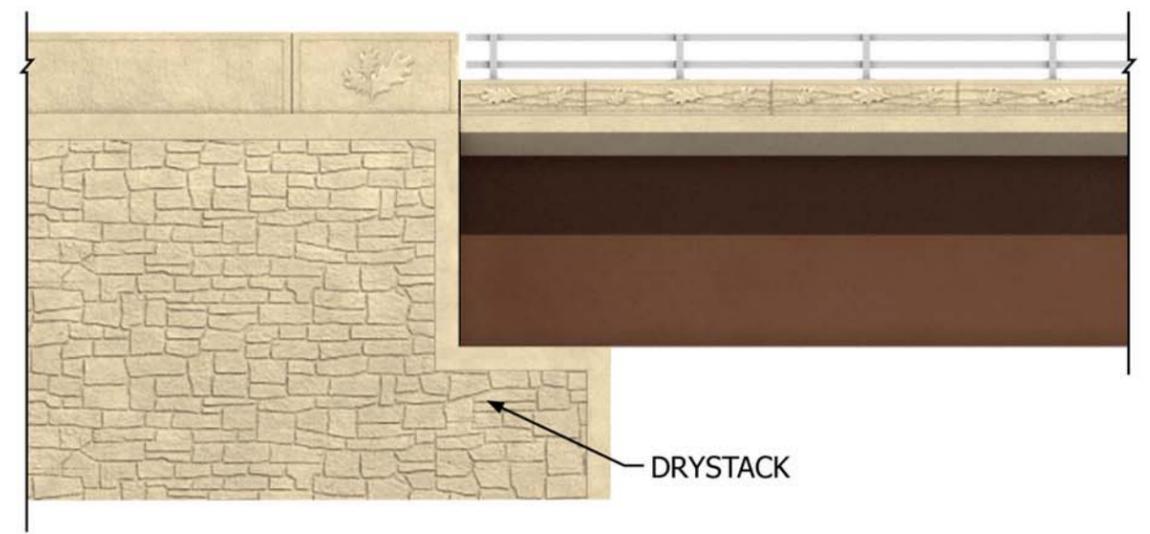
**ARCHITECTURAL TREATMENT
SCULPTED DESIGN RENDERINGS – BR27C/D SERIES RAILINGS
SCULPTED DOGWOOD BLOSSOM**



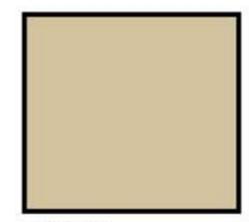
ELEVATION DETAILS



DRIVING VIEW



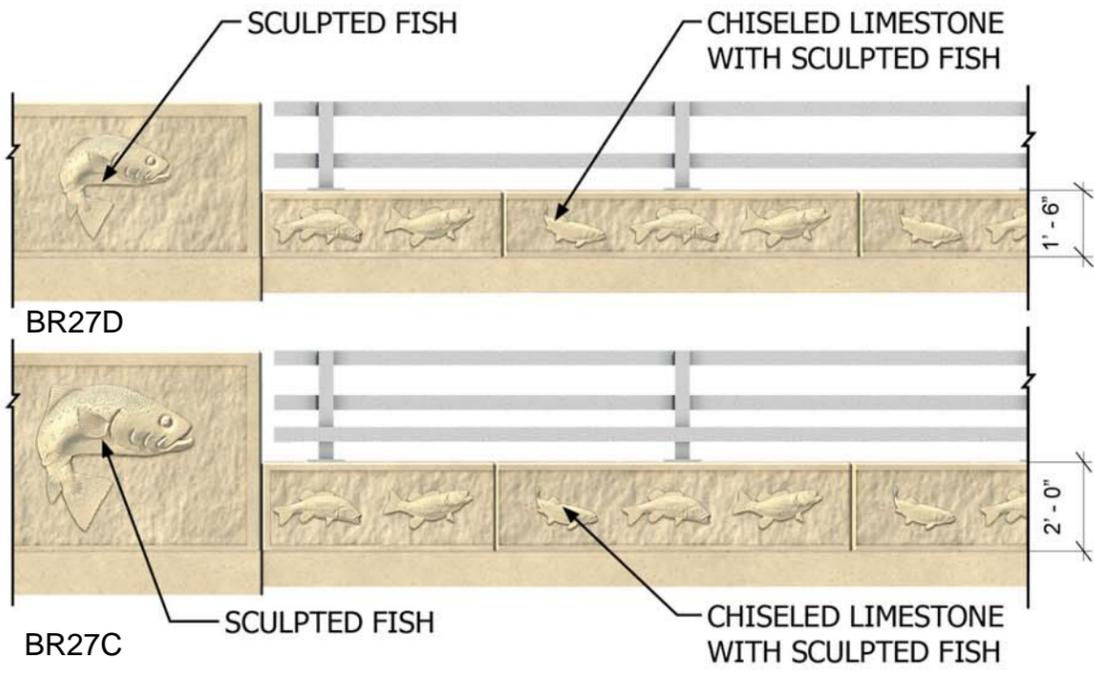
ELEVATION



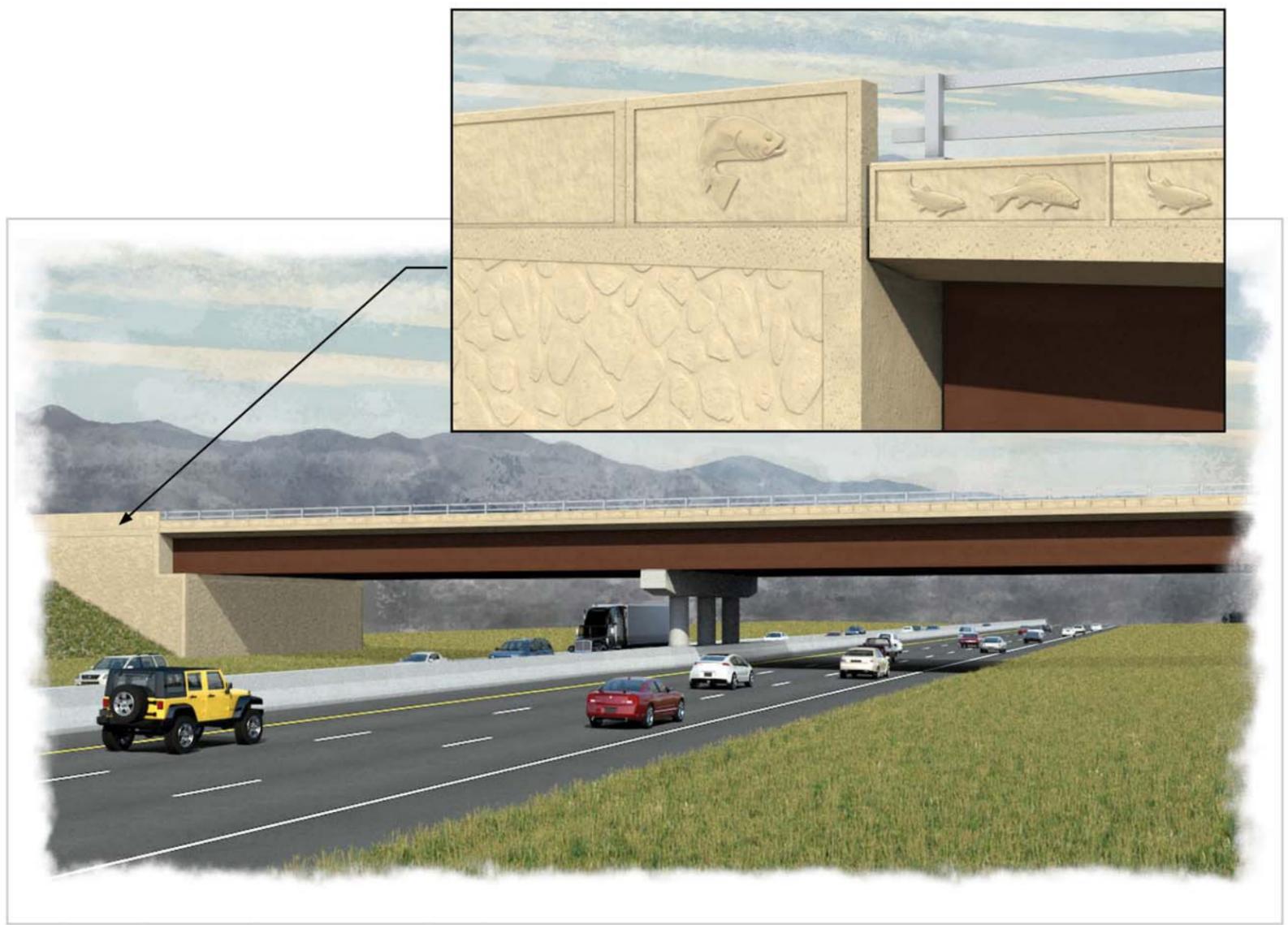
FEDERAL COLOR STANDARDS (Optional)

23617

**ARCHITECTURAL TREATMENT
SCULPTED DESIGN RENDERINGS – BR27C/D SERIES RAILINGS
SCULPTED OAK LEAVES**



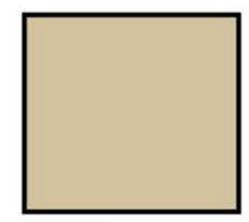
ELEVATION DETAILS



DRIVING VIEW



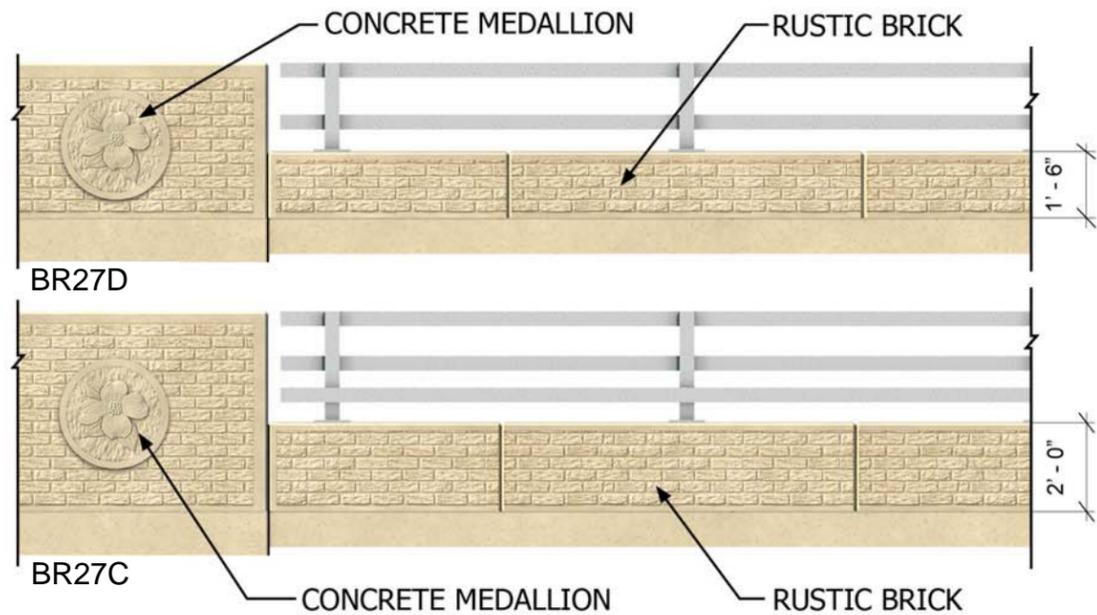
ELEVATION



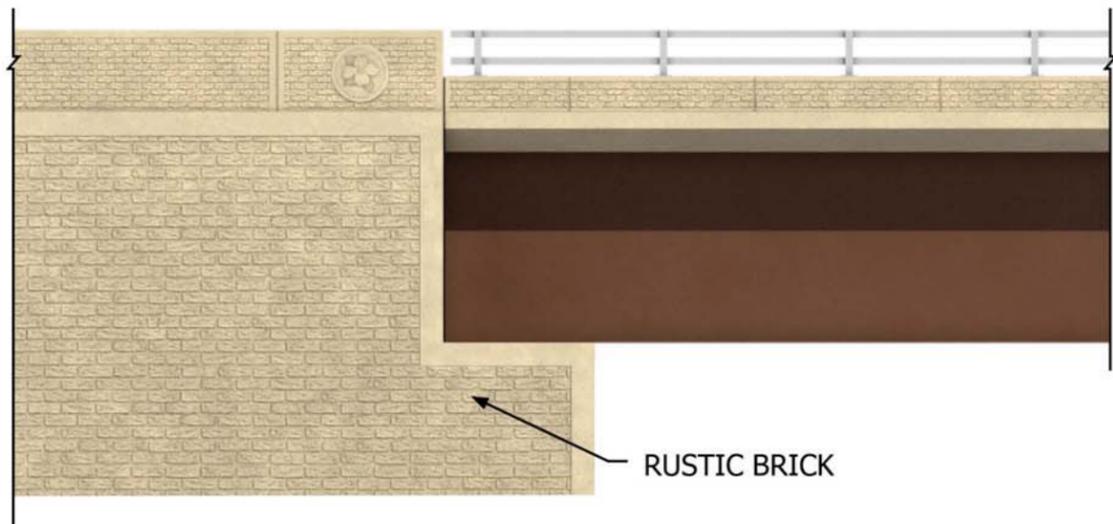
FEDERAL COLOR STANDARDS (Optional)

23617

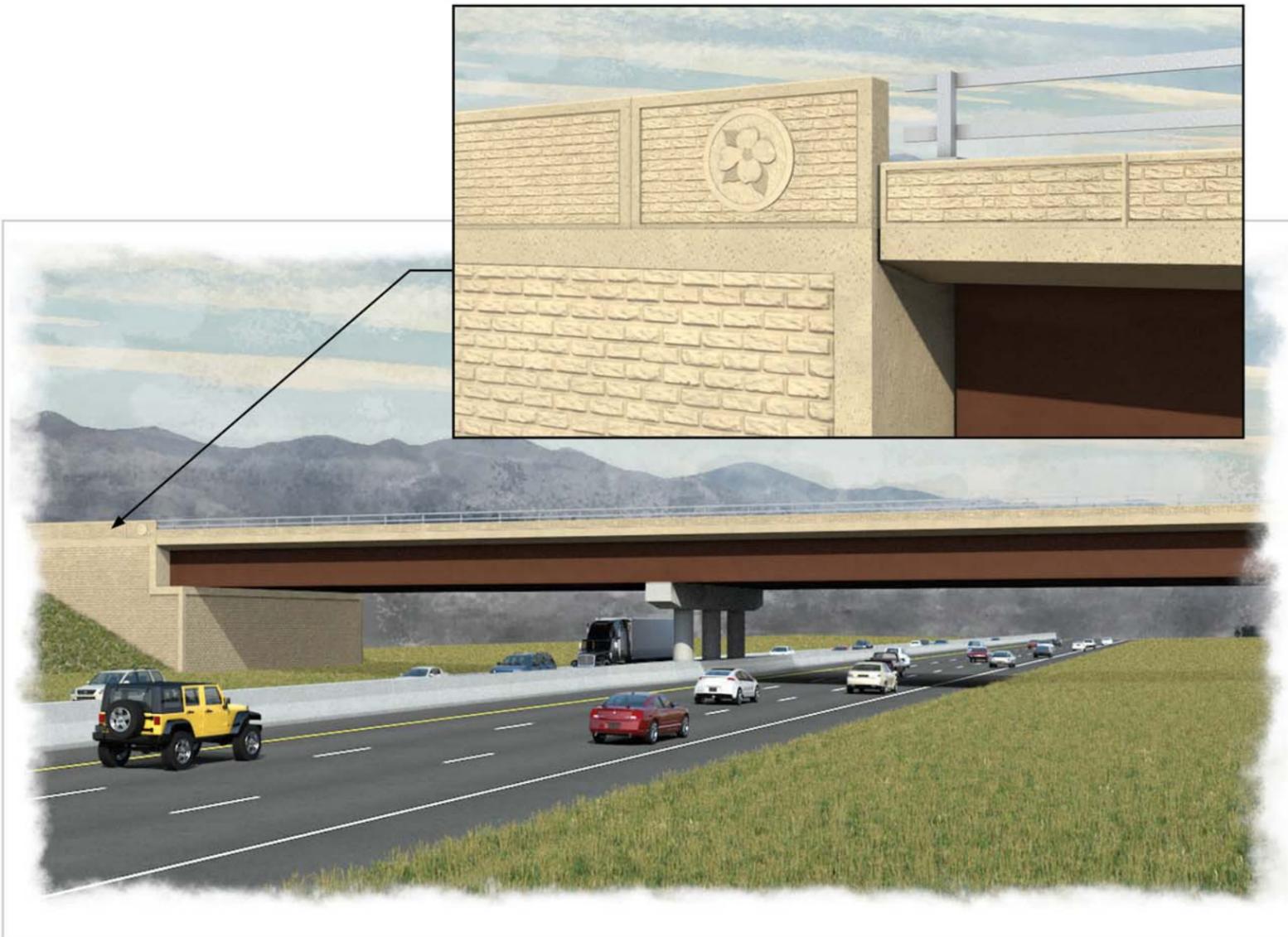
**ARCHITECTURAL TREATMENT
SCULPTED DESIGN RENDERINGS – BR27C/D SERIES RAILINGS
SCULPTED FISH**



ELEVATION DETAILS



ELEVATION



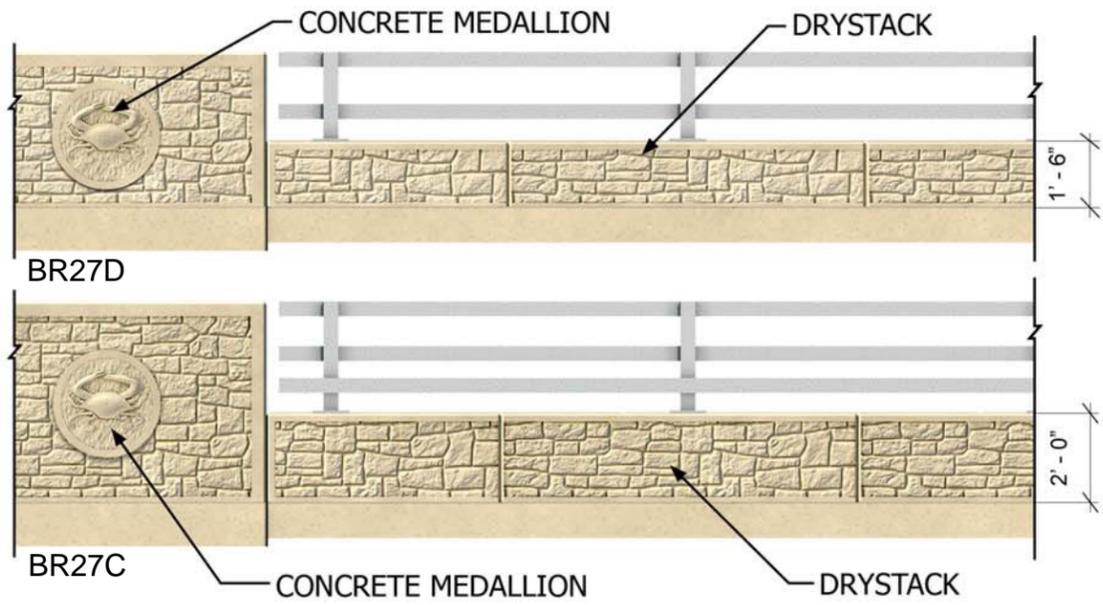
DRIVING VIEW



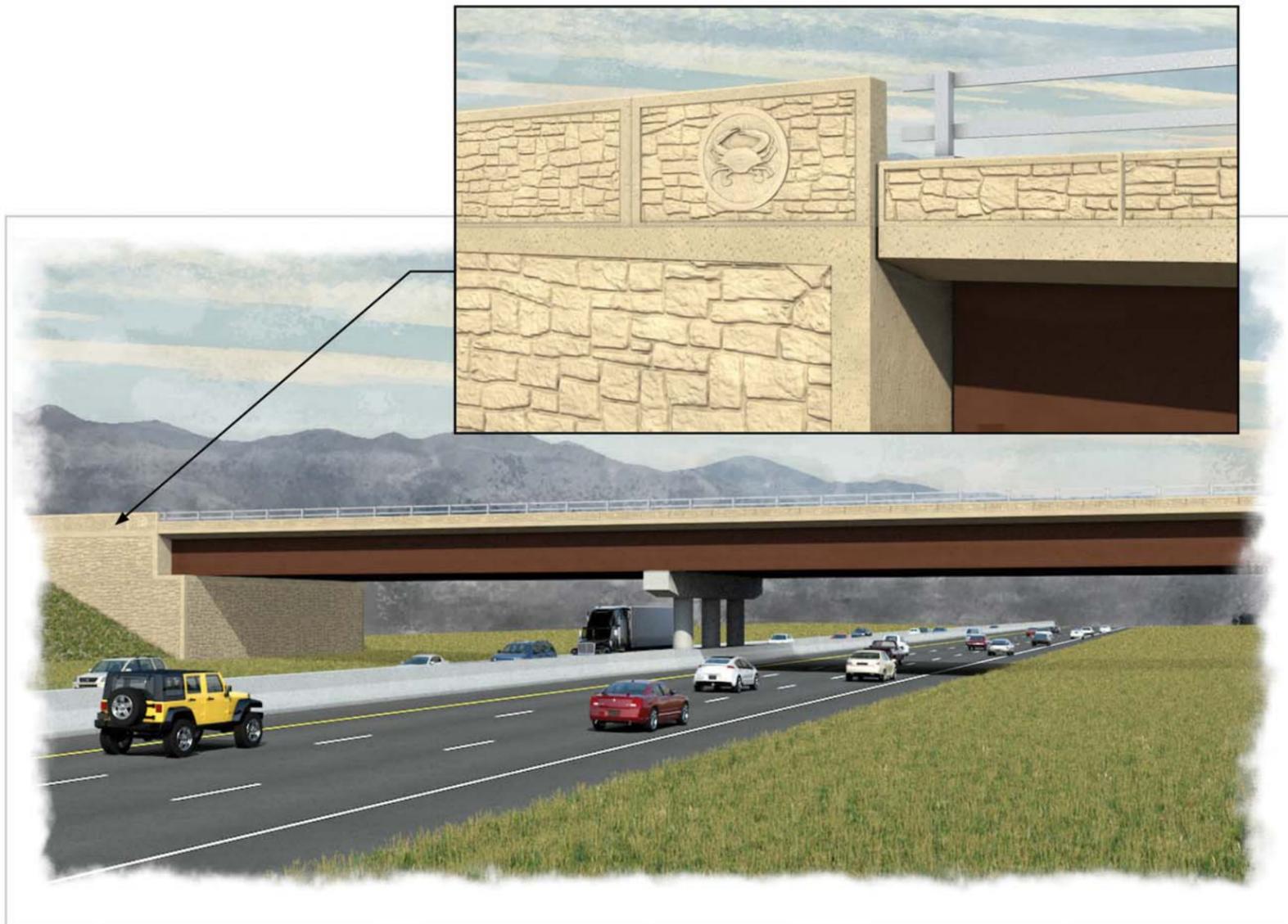
FEDERAL COLOR STANDARDS (Optional)

23617

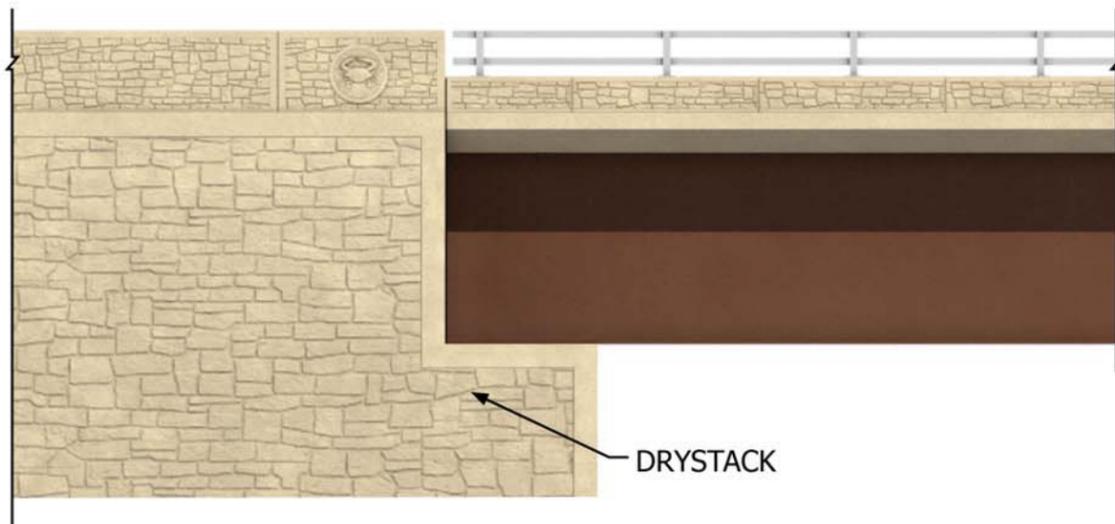
**ARCHITECTURAL TREATMENT
MEDALLION RENDERINGS – BR27C/D SERIES RAILINGS
RUSTIC BRICK – MEDALLION ON RAILING**



ELEVATION DETAILS



DRIVING VIEW



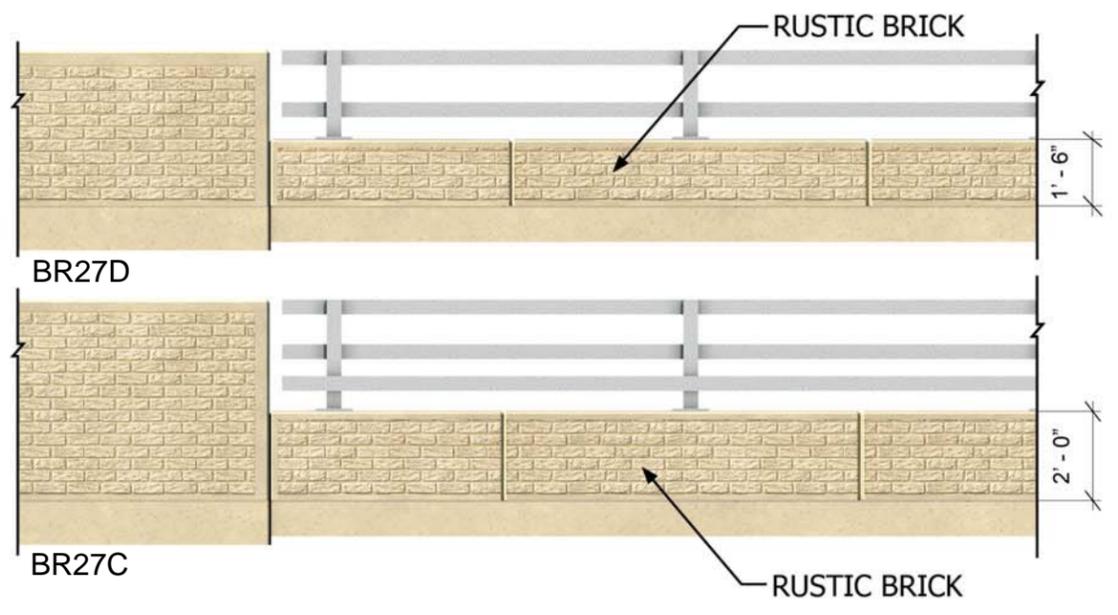
ELEVATION



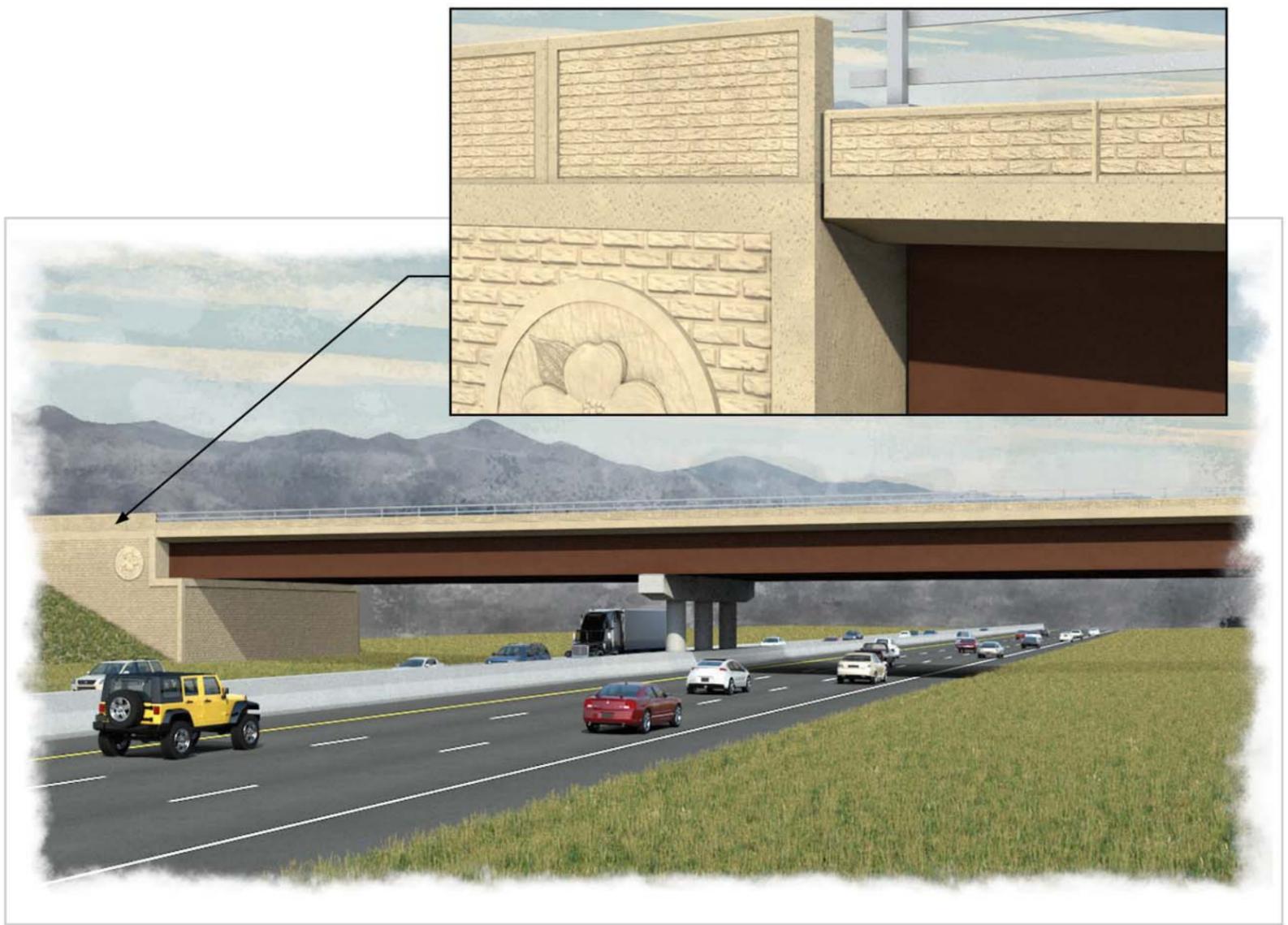
FEDERAL COLOR STANDARDS (Optional)

23617

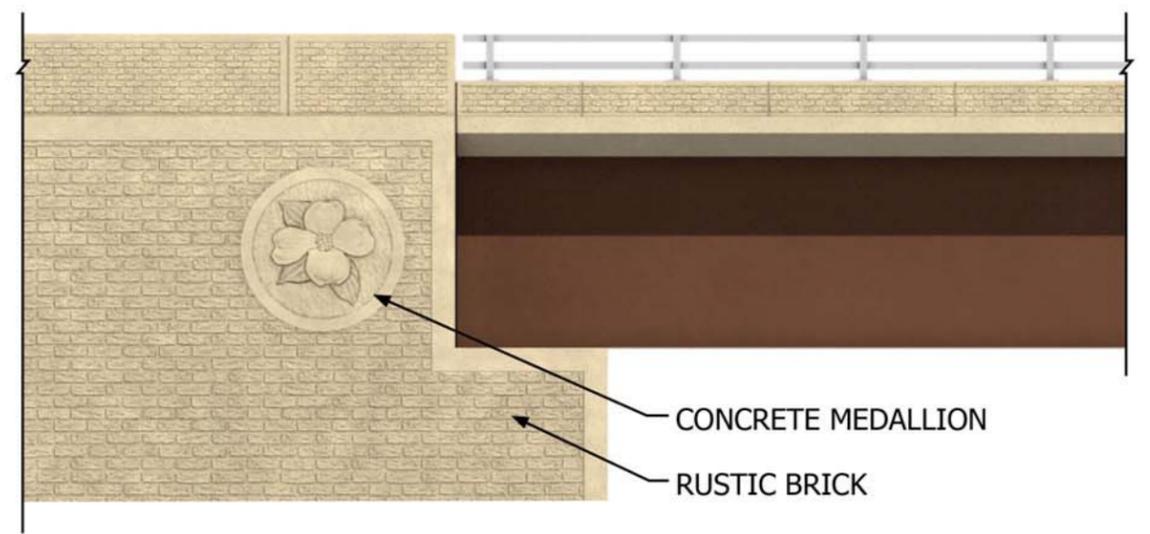
**ARCHITECTURAL TREATMENT
MEDALLION RENDERINGS – BR27C/D SERIES RAILINGS
DRystack – MEDALLION ON RAILING**



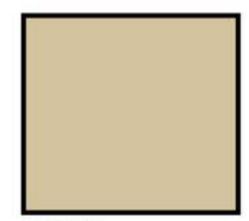
ELEVATION DETAILS



DRIVING VIEW



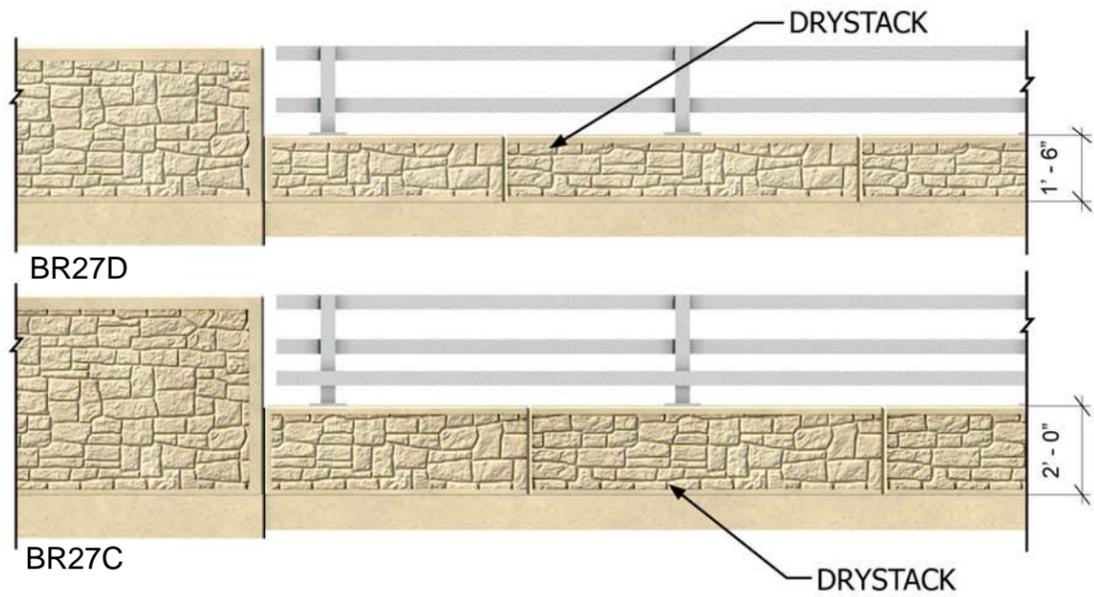
ELEVATION



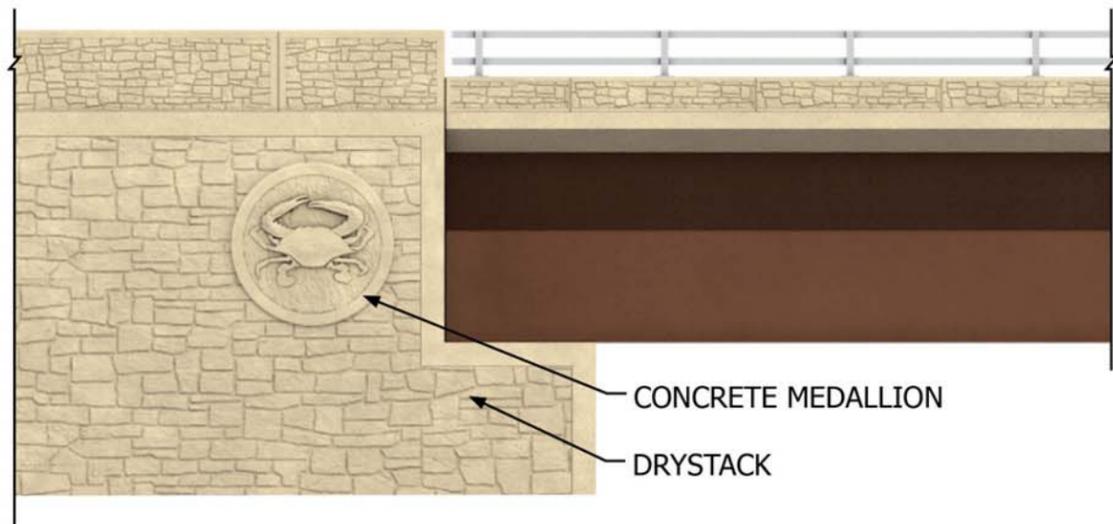
FEDERAL COLOR STANDARDS (Optional)

23617

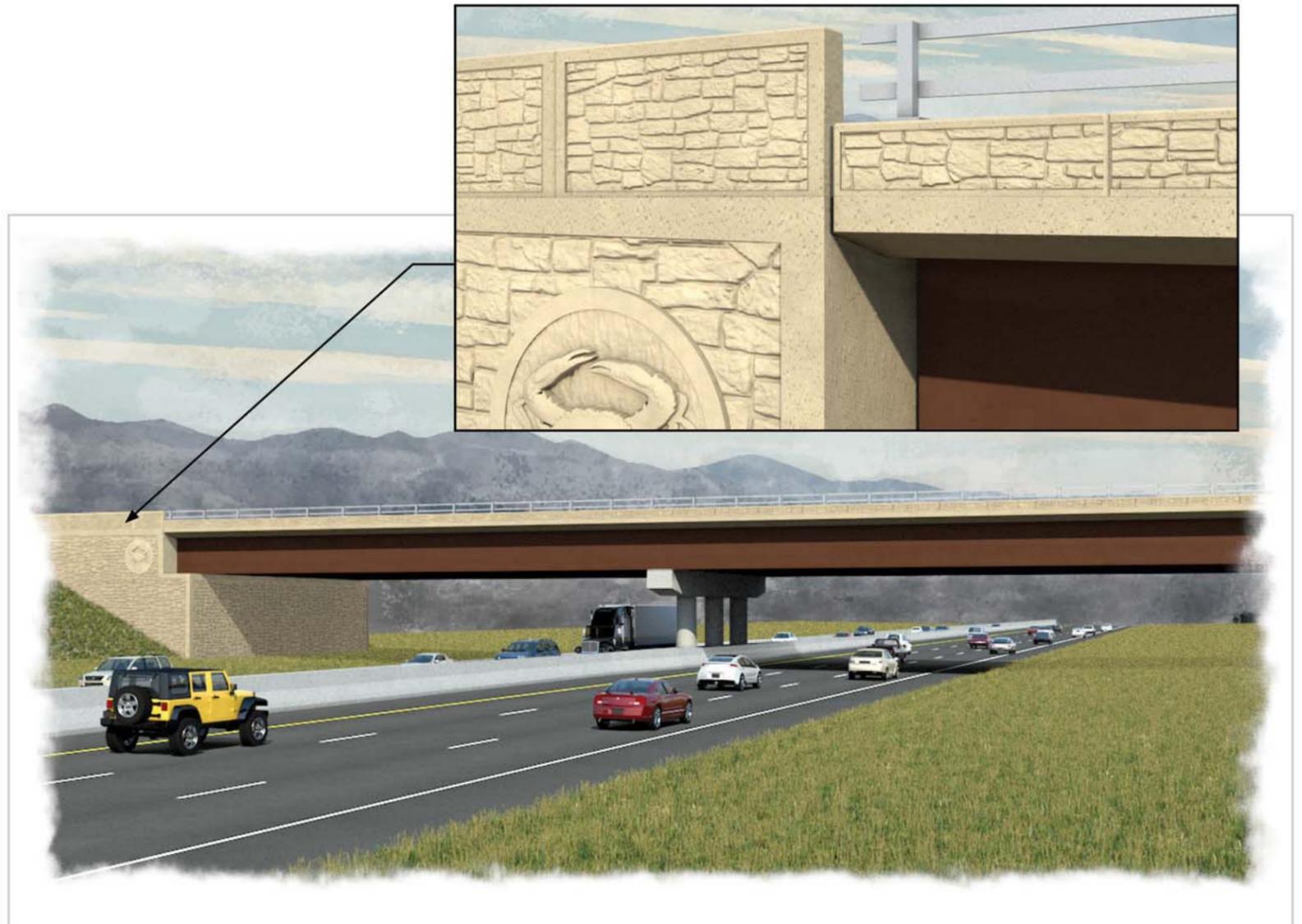
**ARCHITECTURAL TREATMENT
MEDALLION RENDERINGS – BR27C/D SERIES RAILINGS
RUSTIC BRICK – MEDALLION ON WINGWALL**



ELEVATION DETAILS



ELEVATION



DRIVING VIEW



FEDERAL COLOR STANDARDS (Optional)

23617

**ARCHITECTURAL TREATMENT
MEDALLION RENDERINGS – BR27C/D SERIES RAILINGS
DRystack – MEDALLION ON WINGWALL**



Semi Integral Abutment with Coping



Full Integral Abutment with Coping

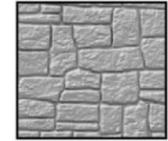


Semi Integral Abutment with Coping



Full Integral Abutment with Coping

FORMLINER TEXTURE

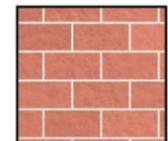


DRYSTACK

STONE MASONRY



DRY STACK STONE



BRICK



HOKIE STONE

FEDERAL COLOR STANDARDS (Optional)



23617

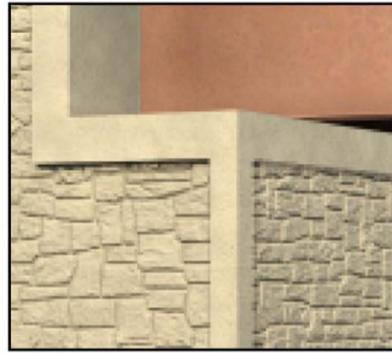


30109



26306

**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
FULL INTEGRAL AND SEMI-INTEGRAL ABUTMENT WITH ELEPHANT EAR WINGWALL**



Standard Corner Option
(Formed with Formliner)



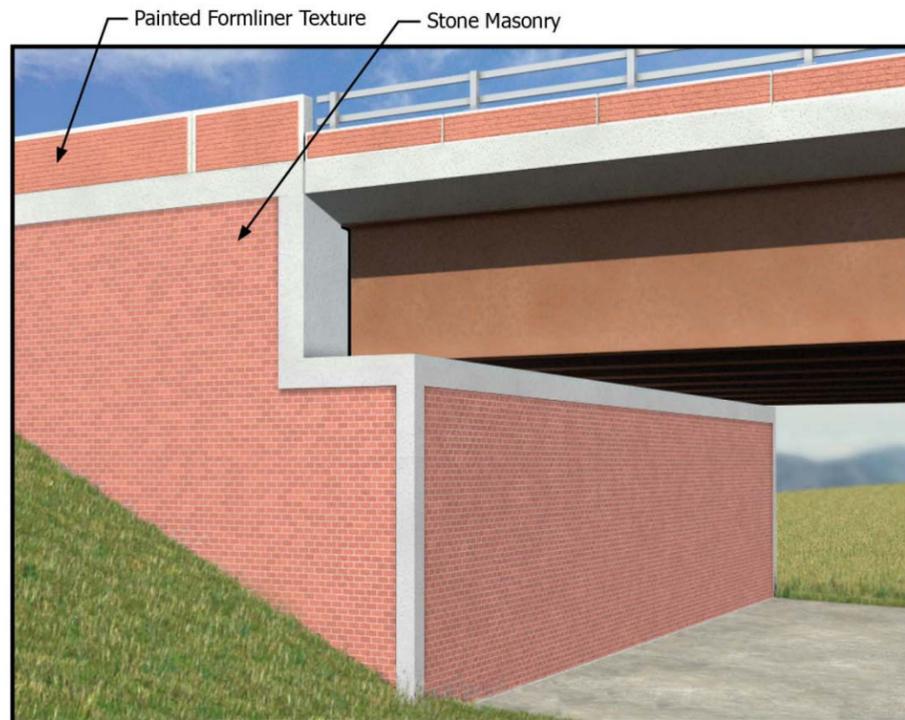
Chamfered Corner Option



U-Back Wing with Coping



U-Back Wing with Smooth Edges

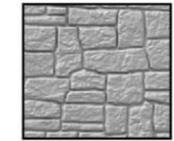


U-Back Wing with Coping



U-Back Wing with Coping

**FORMLINER
TEXTURE**

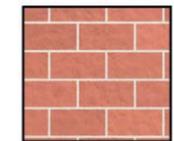


DRystack

**STONE
MASONRY**



DRY STACK STONE



BRICK



HOKIE STONE

**FEDERAL COLOR
STANDARDS (Optional)**



23617



30109



26306

**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
CONVENTIONAL ABUTMENT WITH U-BACK WINGWALL**



U-Back Wing with Coping and Medallion



U-Back Wing with Smooth Edges and Medallion

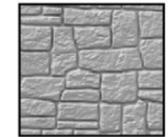


U-Back Wing with Coping and Medallion



U-Back Wing with Coping and Medallion

**FORMLINER
TEXTURE**

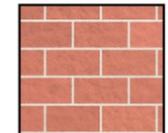


DRystack

**STONE
MASONRY**



DRY STACK STONE



BRICK



HOKIE STONE

**FEDERAL COLOR
STANDARDS (Optional)**



23617



30109



26306



10055



37031

**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
CONVENTIONAL ABUTMENT WITH MEDALLION**



**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
MEDALLION OPTIONS**

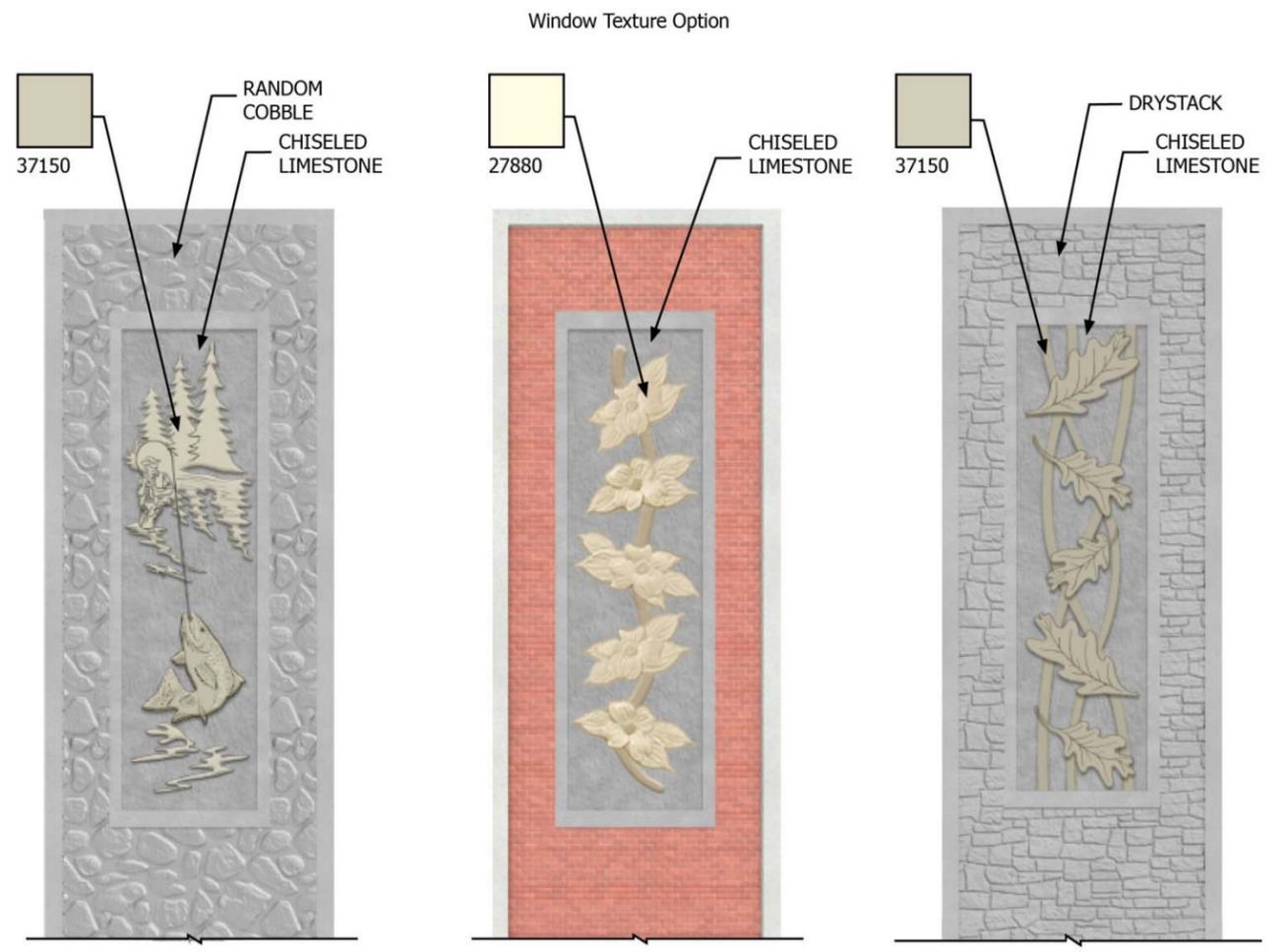


**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
MEDALLION OPTIONS (UNPAINTED)**



Hammerhead Pier

Hammerhead Pier

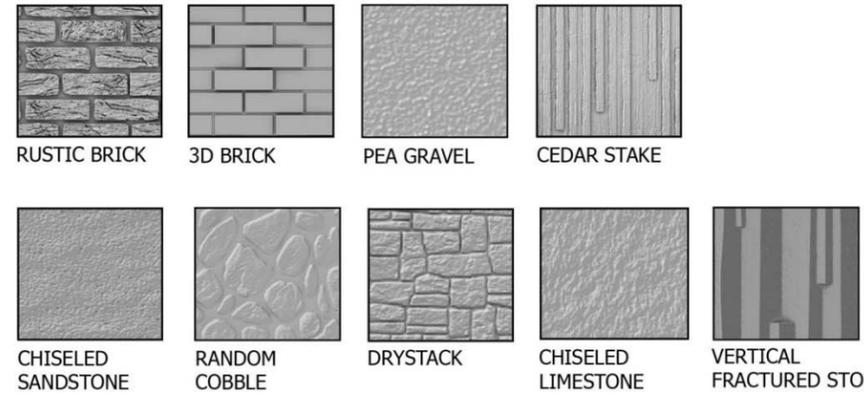


Hammerhead Pier with Window Texture Option Fly Fishing

Hammerhead Pier with Window Texture Option Dogwood Blossoms

Hammerhead Pier with Window Texture Option Oak leaves

FORMLINER TEXTURES



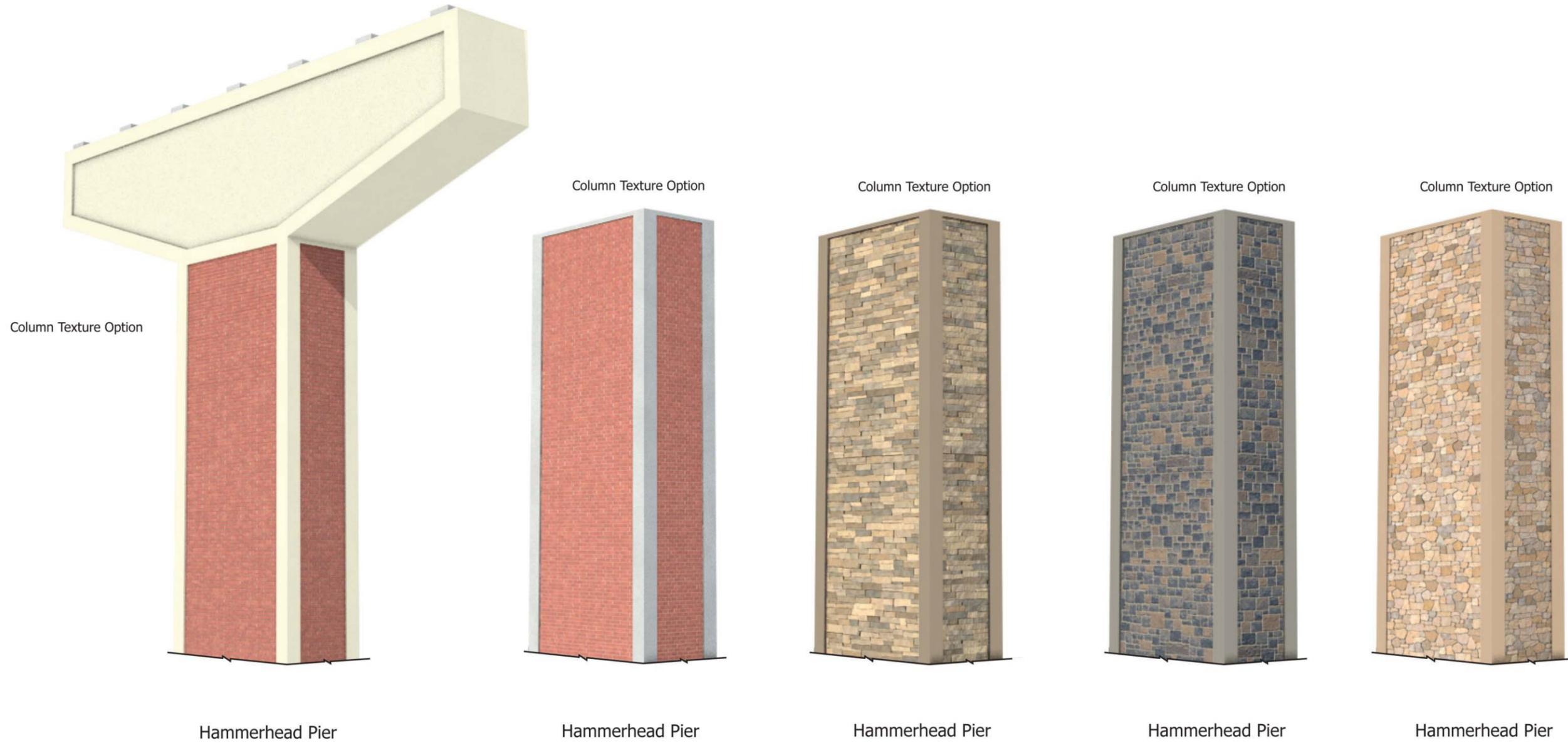
FORMLINER OR TRUE MASONRY

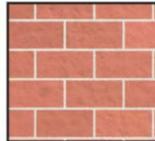
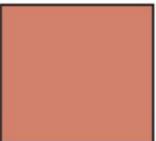


FEDERAL COLOR STANDARDS (Optional)

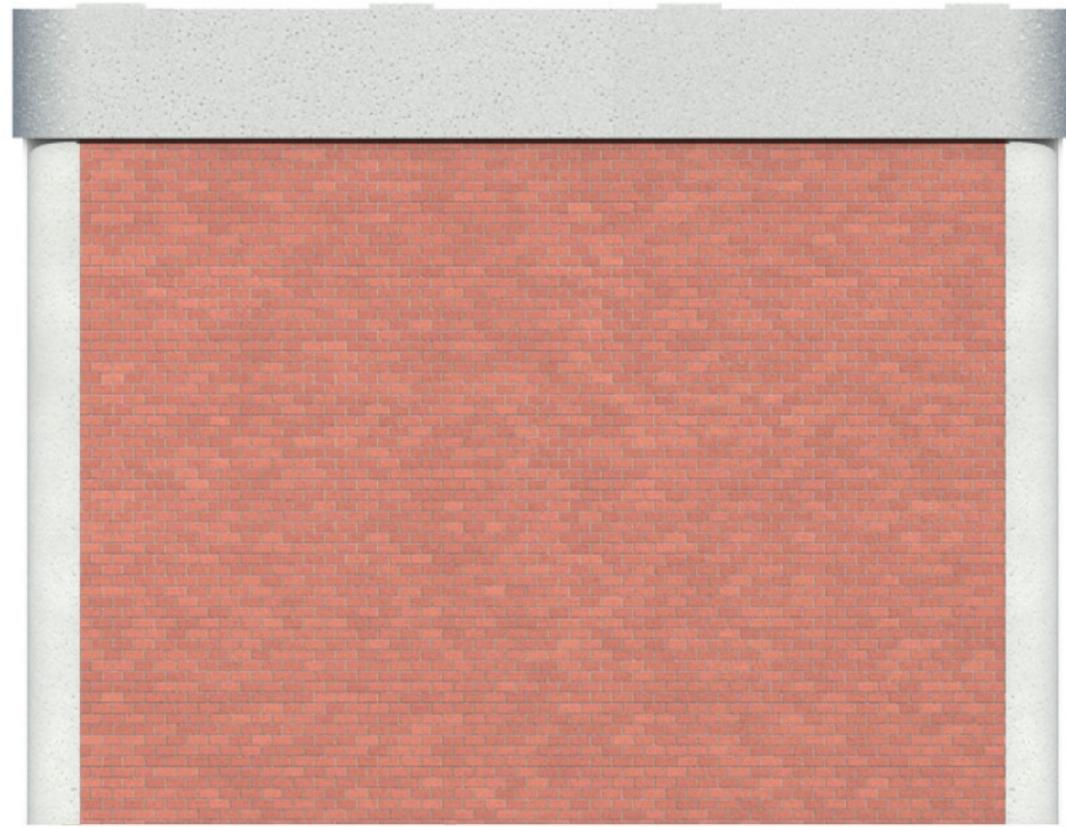


**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
HAMMERHEAD PIER WITH TEXTURE AND SCULPTED WINDOW OPTIONS**

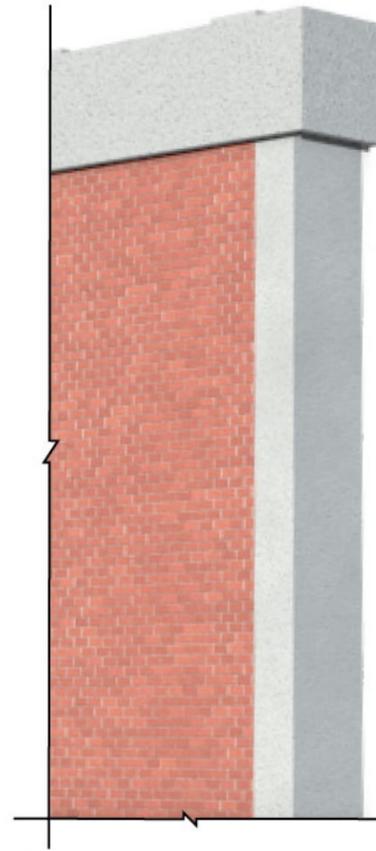
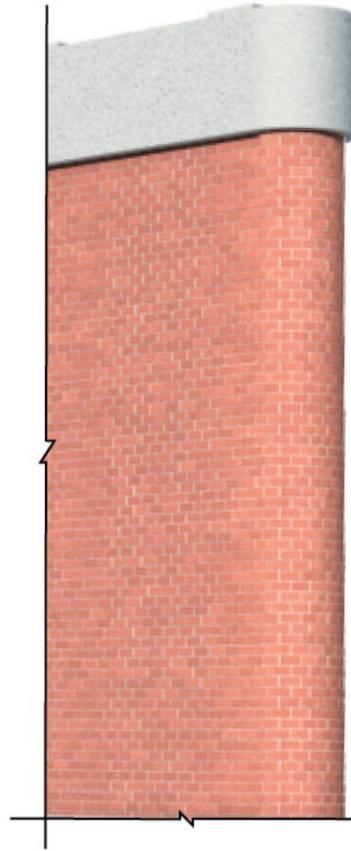
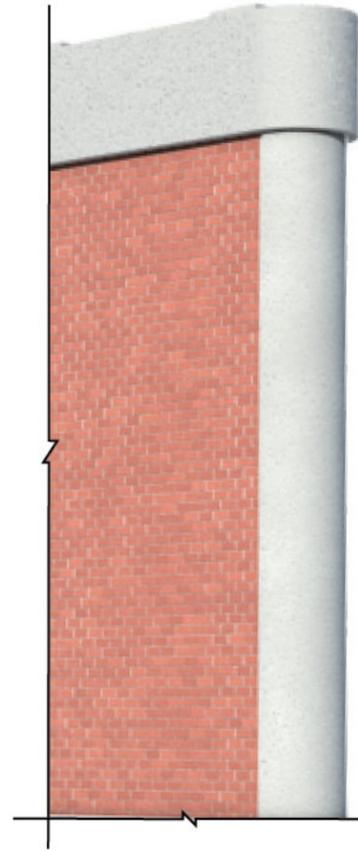


FORMLINER OR TRUE MASONRY				FEDERAL COLOR STANDARDS (Optional)				
								
BRICK	DRY STACKED STONE	HOKIE STONE	DRY STACKED COBBLESTONE	27880	30109	10324	26306	22519

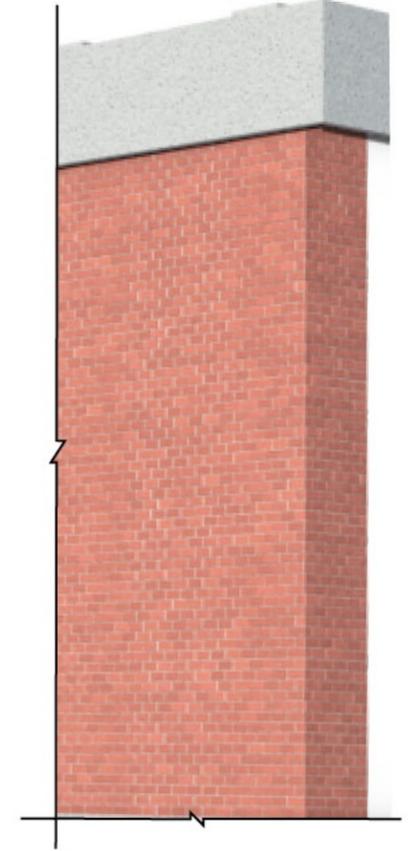
**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
HAMMERHEAD PIER WITH FORM LINER OR MASONRY OPTIONS**



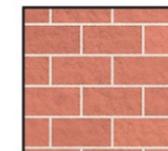
Wall Pier



Wall Pier

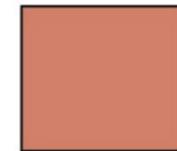


**FORMLINER OR
TRUE MASONRY**



BRICK

**FEDERAL COLOR
STANDARDS (Optional)**



30109

**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
WALL PIER – BRICK**



Wall Pier



Wall Pier

**FORMLINER OR
TRUE MASONRY**



DRY STACK STONE

**FEDERAL COLOR
STANDARDS (Optional)**



10324

**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
WALL PIER – DRYSTACK**



Wall Pier



Wall Pier

**FORMLINER OR
TRUE MASONRY**



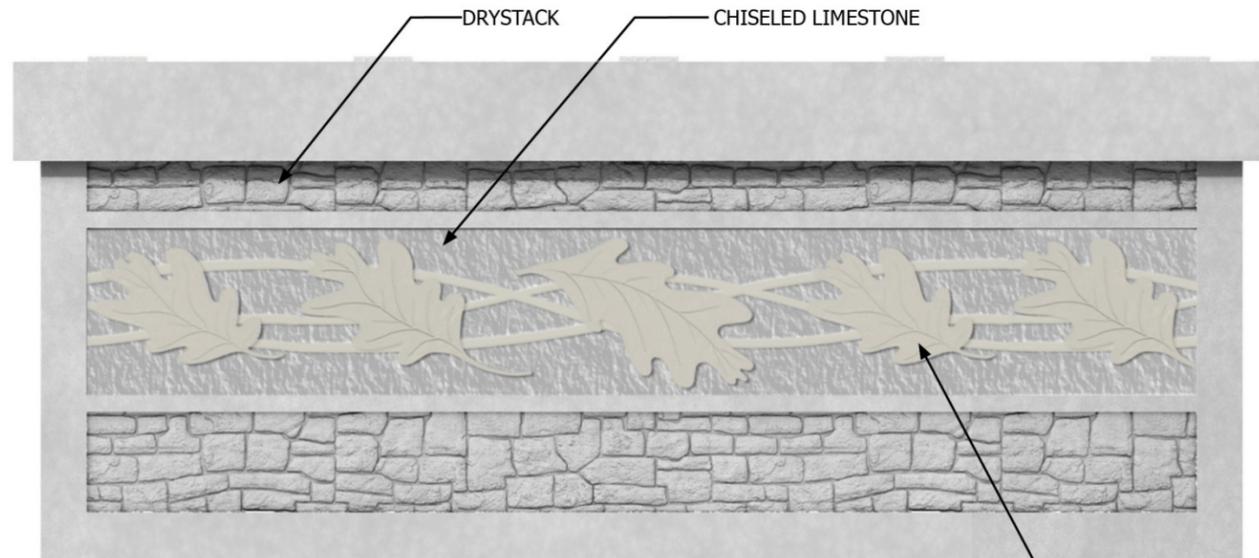
HOKIE STONE

**FEDERAL COLOR
STANDARDS (Optional)**

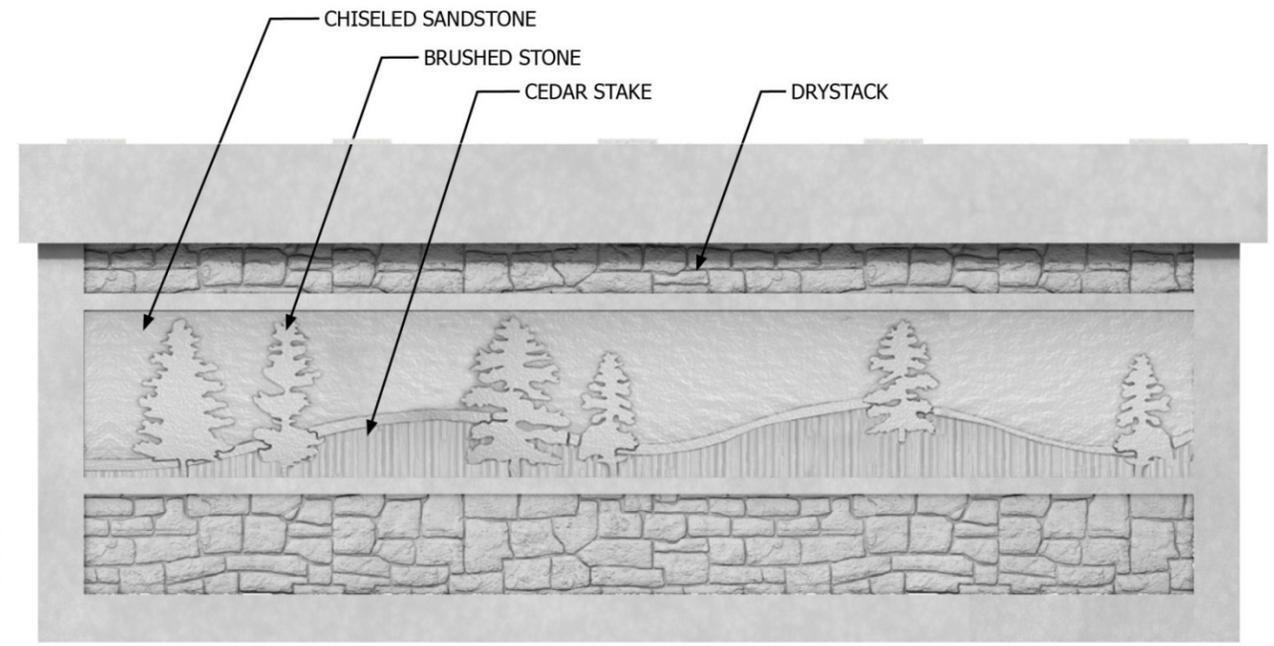


26306

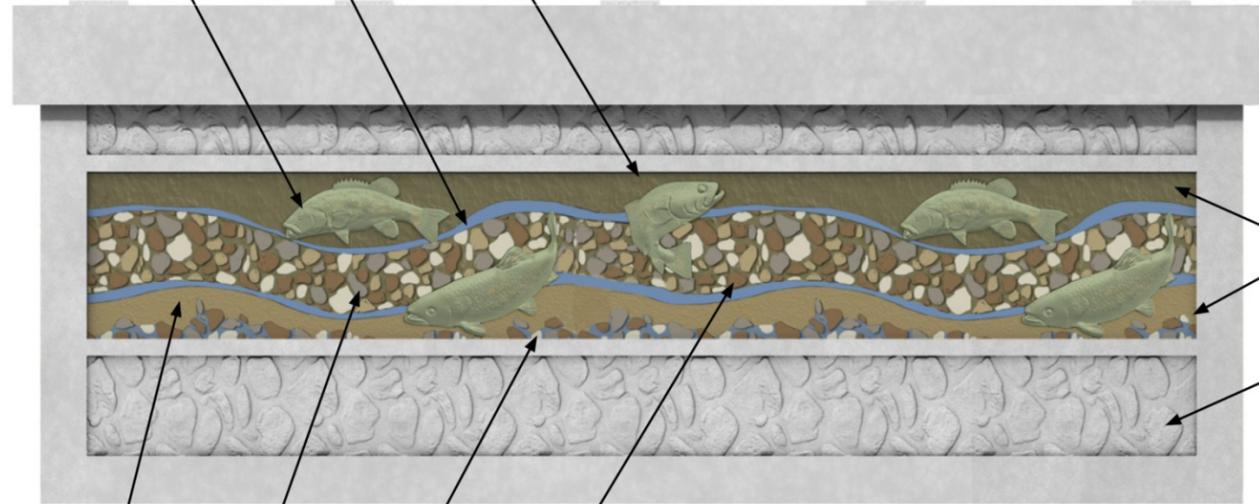
**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
WALL PIER – HOKIE STONE**



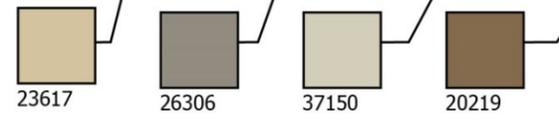
Wall Pier Oak Leaves



Wall Pier Woodland

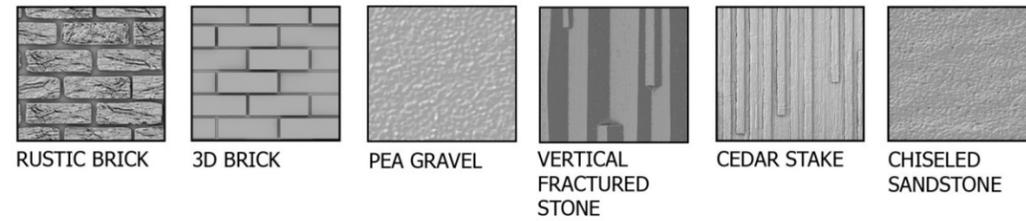


Wall Pier freshwater Fish



CHISELED SANDSTONE
PEA GRAVEL
RANDOM COBBLE

FORMLINER TEXTURES



TRUE MASONRY



**ARCHITECTURAL TREATMENT
SUBSTRUCTURE RENDERINGS
WALL PIER – WALL MURAL**

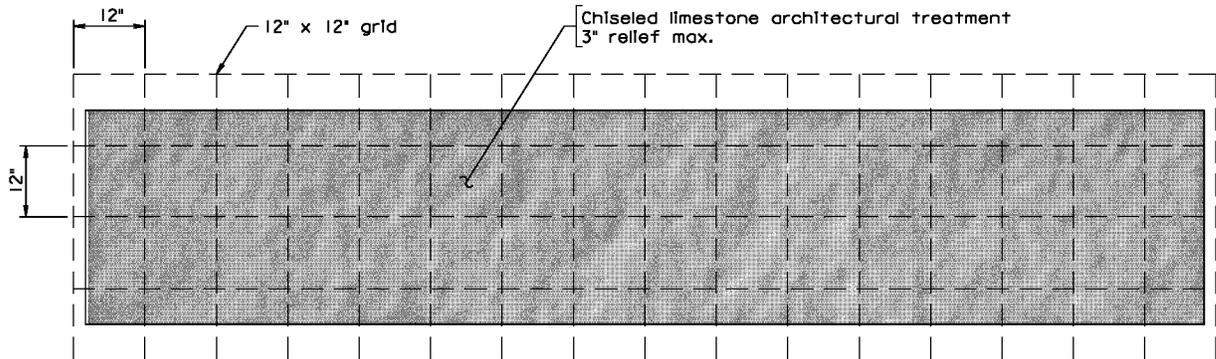
CELL

CELL NAME

CELL DESCRIPTION

2TEX1

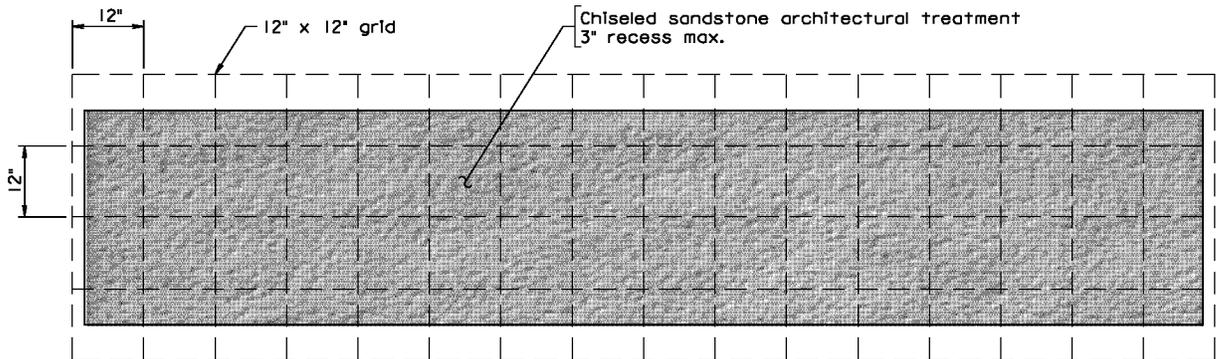
Texture grid scale (2 times size of parapet/rail texture grid scale)



CHISELED LIMESTONE TEXTURE DETAIL FOR SUBSTRUCTURE

2TEX2

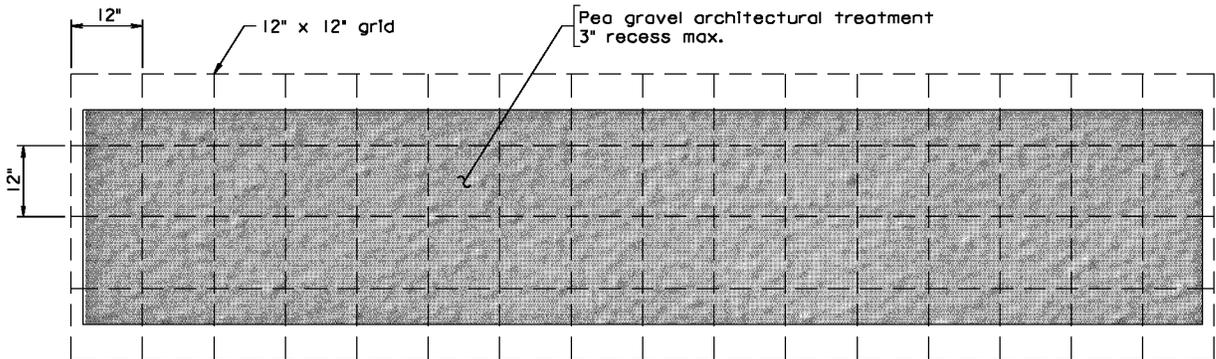
Texture grid scale (2 times size of parapet/rail texture grid scale)



CHISELED SANDSTONE TEXTURE DETAIL FOR SUBSTRUCTURE

2TEX3

Texture grid scale (2 times size of parapet/rail texture grid scale)



PEA GRAVEL TEXTURE DETAIL FOR SUBSTRUCTURE

**ARCHITECTURAL TREATMENT
CELL LIBRARY: ARCHTREAT.CEL
CELLS 2TEX1 – 2TEX3**

VOL. V - PART 2
DATE: 12Sep2014
SHEET 1 of 3
FILE NO. 05.11-1

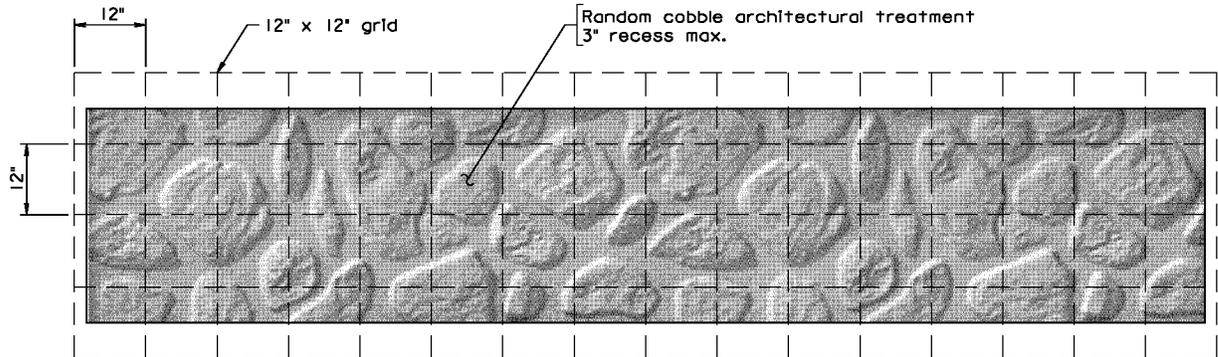
CELL

CELL NAME

CELL DESCRIPTION

2TEX4

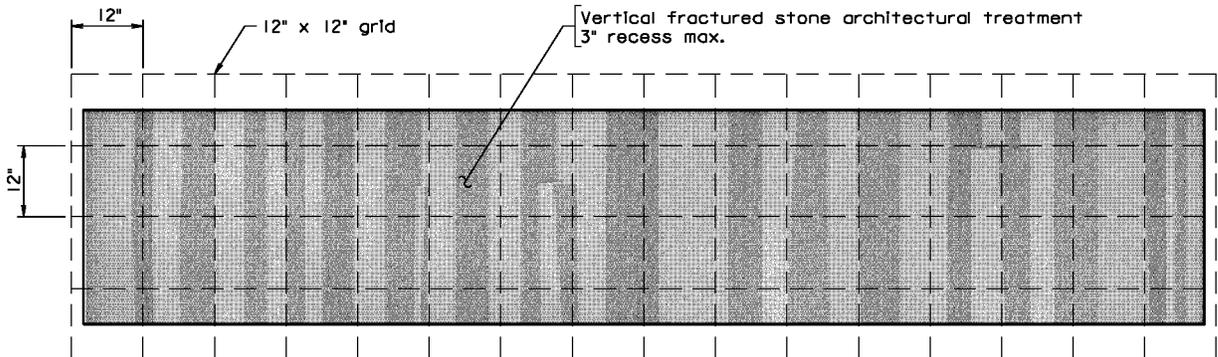
Texture grid scale (2 times size of parapet/rail texture grid scale)



RANDOM COBBLE TEXTURE DETAIL FOR SUBSTRUCTURE

2TEX5

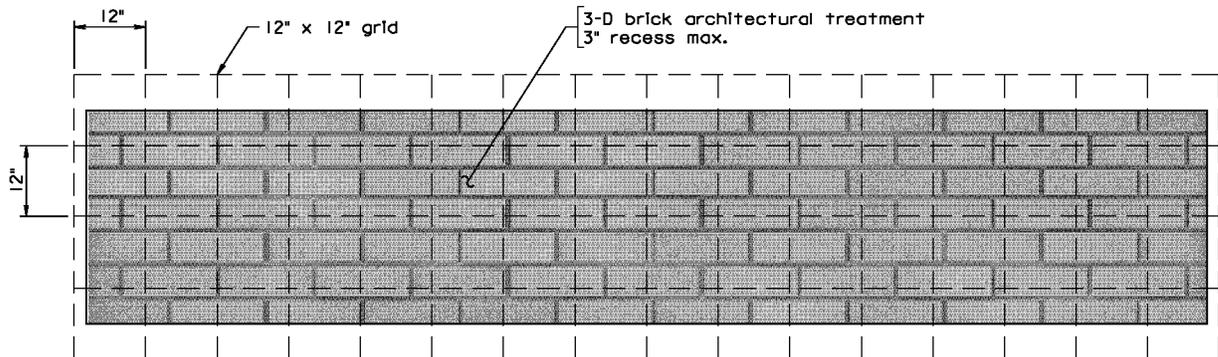
Texture grid scale (2 times size of parapet/rail texture grid scale)



VERTICAL FRACTURED STONE TEXTURE DETAIL FOR SUBSTRUCTURE

2TEX6

Texture grid scale (2 times size of parapet/rail texture grid scale)



3-D BRICK TEXTURE DETAIL FOR SUBSTRUCTURE

**ARCHITECTURAL TREATMENT
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CELLS 2TEX4 – 2TEX6**

VOL. V - PART 2
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SHEET 2 of 3
FILE NO. 05.11-2

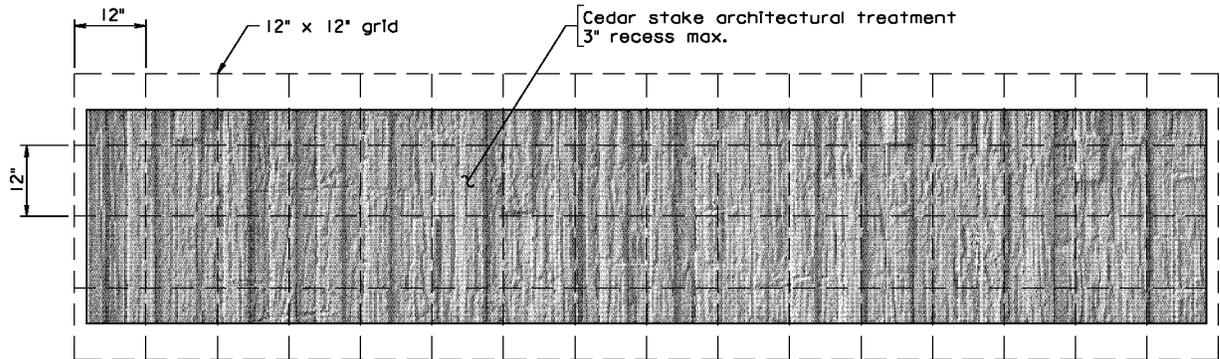
CELL

CELL NAME

CELL DESCRIPTION

2TEX7

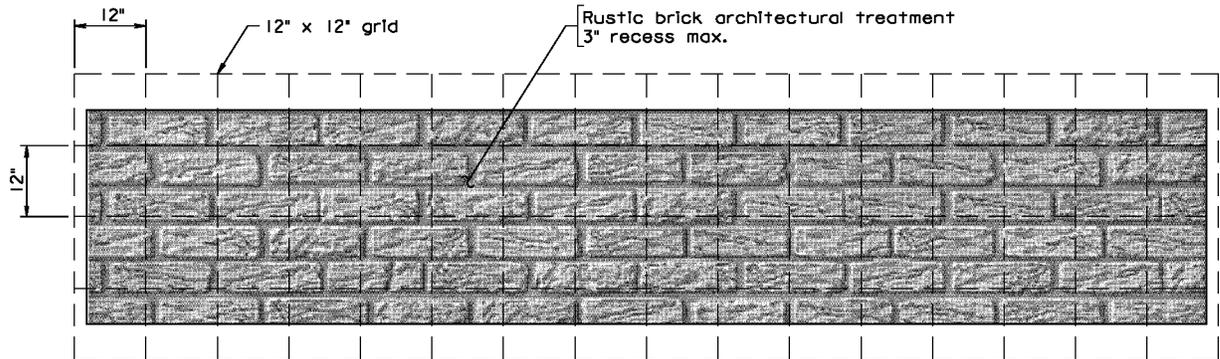
Texture grid scale (2 times size of parapet/rail texture grid scale)



CEDAR STAKE TEXTURE DETAIL FOR SUBSTRUCTURE

2TEX8

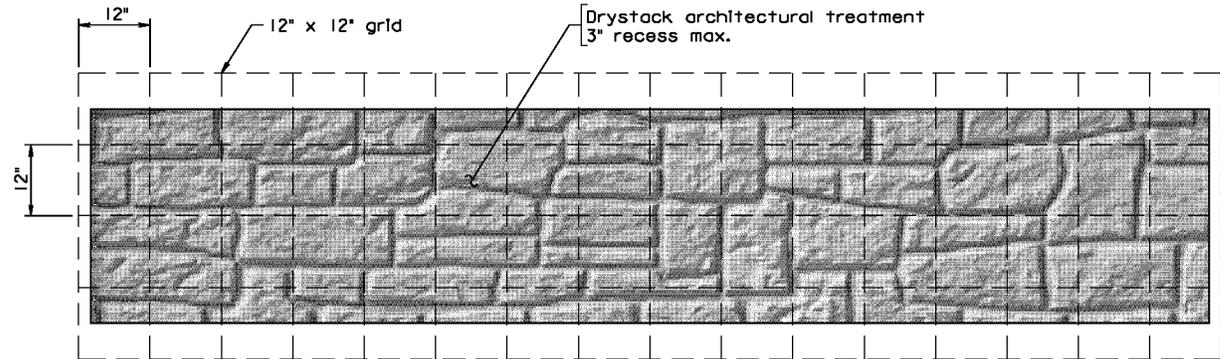
Texture grid scale (2 times size of parapet/rail texture grid scale)



RUSTIC BRICK TEXTURE DETAIL FOR SUBSTRUCTURE

2TEX9

Texture grid scale (2 times size of parapet/rail texture grid scale)



DRYSTACK TEXTURE DETAIL FOR SUBSTRUCTURE

**ARCHITECTURAL TREATMENT
CELL LIBRARY: ARCHTREAT.CEL
CELLS 2TEX7 – 2TEX9**

VOL. V - PART 2
DATE: 12Sep2014
SHEET 3 of 3
FILE NO. 05.11-3