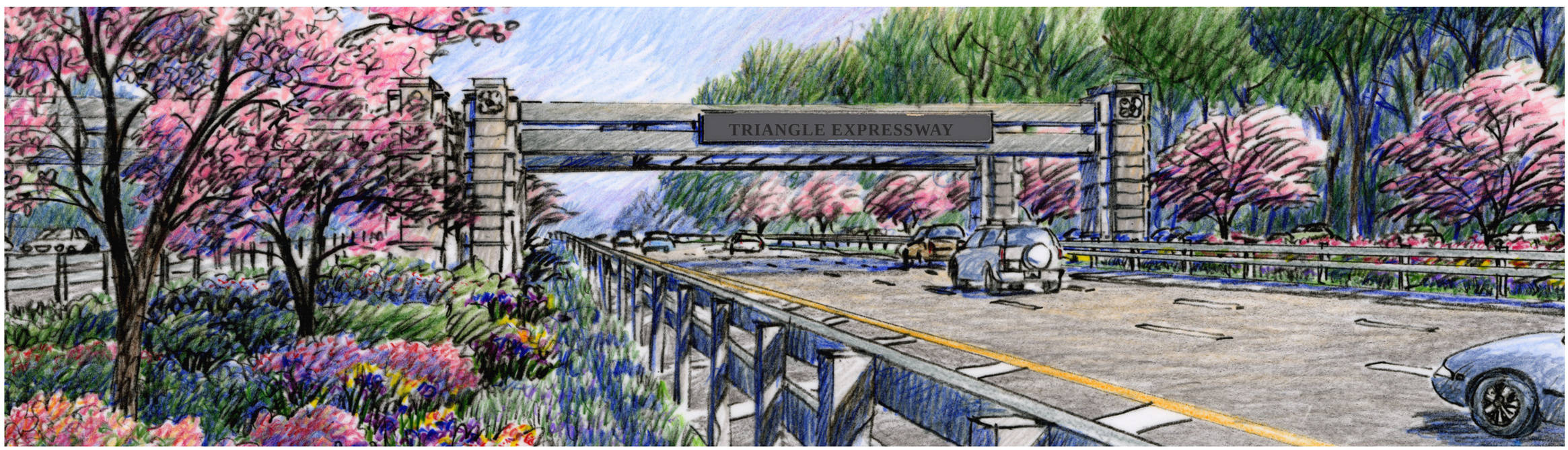
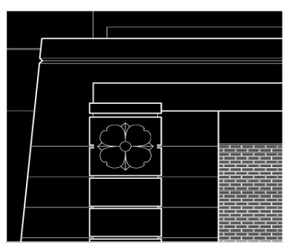
AESTHETIC DESIGN GUIDELINES



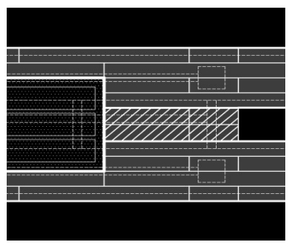
Triangle Expressway

North Carolina Turnpike Authority

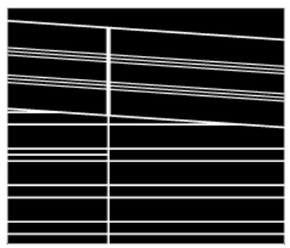
September 28, 2007



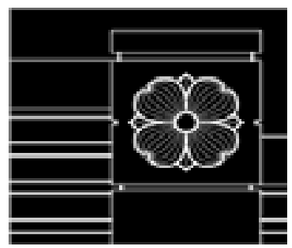
1 Bridges, Abutments and Bents 1.1–1.14



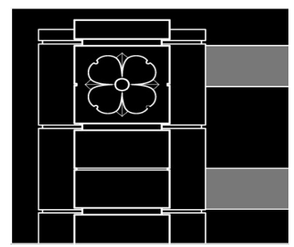
2 Toll Plazas 2.1–2.14



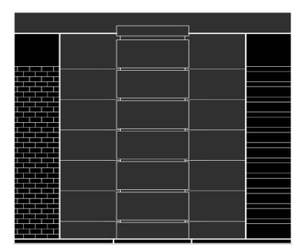
3 Retaining Walls 3.1–3.2



4 Noise Walls 4.1–4.6



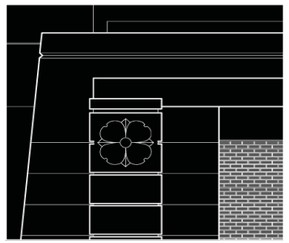
5 Sign Structures 5.1–5.3



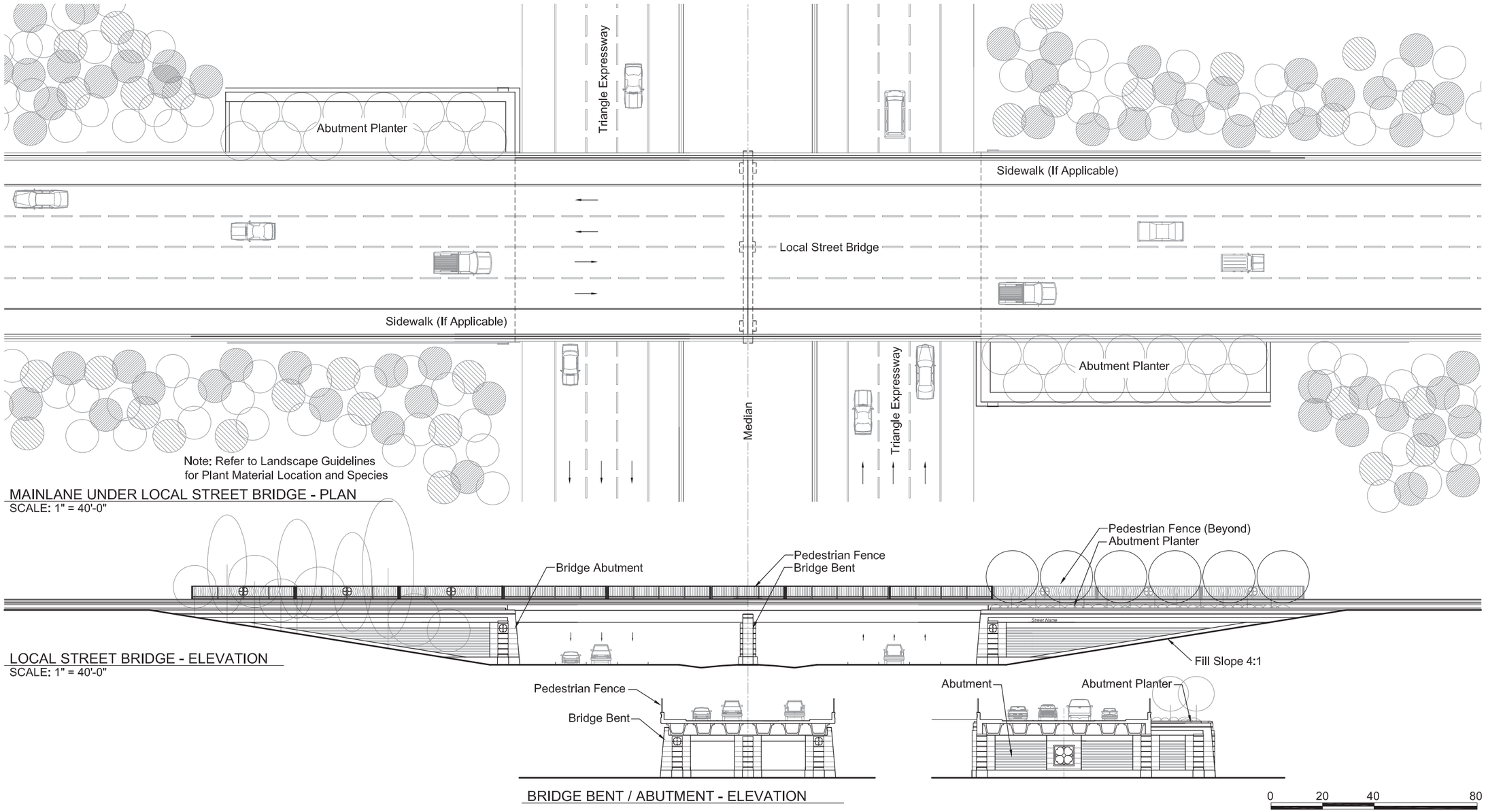
6 Coatings and Textures 6.1–6.3

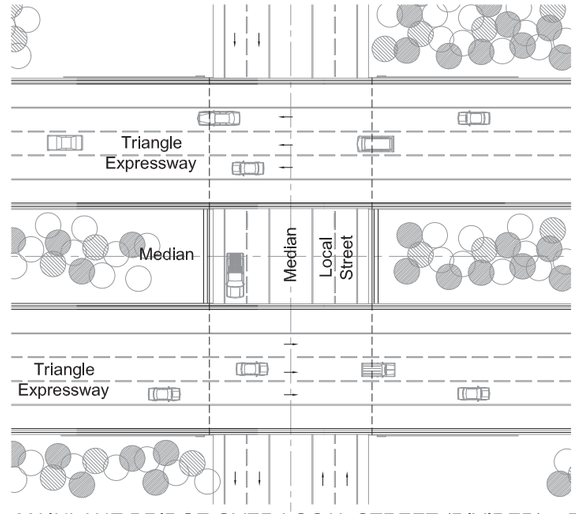
7 Landscape 7.1–7.10

8 Public Art 8.1–8.3

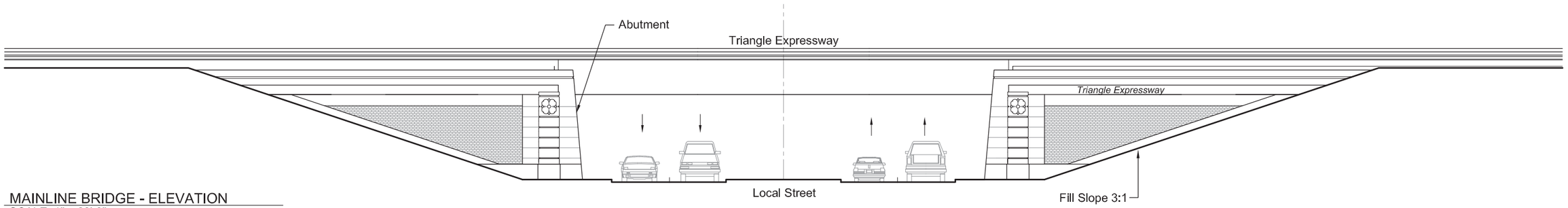


1 Bridges, Abutments and Bents 1.1–1.14

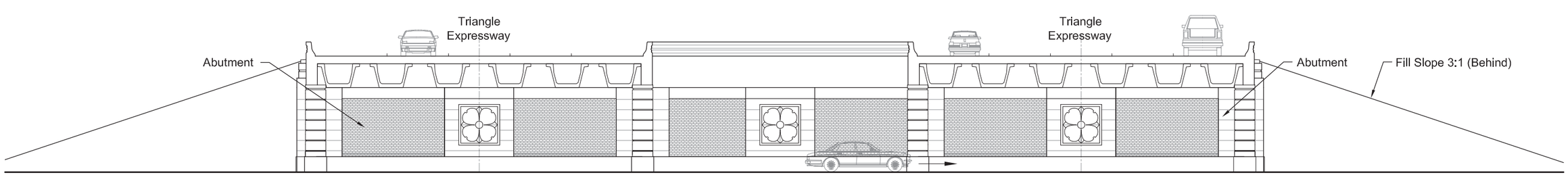

Abutment Planter
Triangle Expressway
Sidewalk (If Applicable)
Local Street Bridge
Sidewalk (If Applicable)
Abutment Planter
Median
Triangle Expressway
Note: Refer to Landscape Guidelines
for Plant Material Location and Species
MAINLANE UNDER LOCAL STREET BRIDGE - PLAN
SCALE: 1" = 40'-0"
Pedestrian Fence (Beyond)
Abutment Planter
Bridge Abutment
Pedestrian Fence
Bridge Bent
Fill Slope 4:1
LOCAL STREET BRIDGE - ELEVATION
SCALE: 1" = 40'-0"
Pedestrian Fence
Bridge Bent
Abutment
Abutment Planter
BRIDGE BENT / ABUTMENT - ELEVATION
0
20
40
80



MAINLANE BRIDGE OVER LOCAL STREET (DIVIDED) - PLAN
NOT TO SCALE

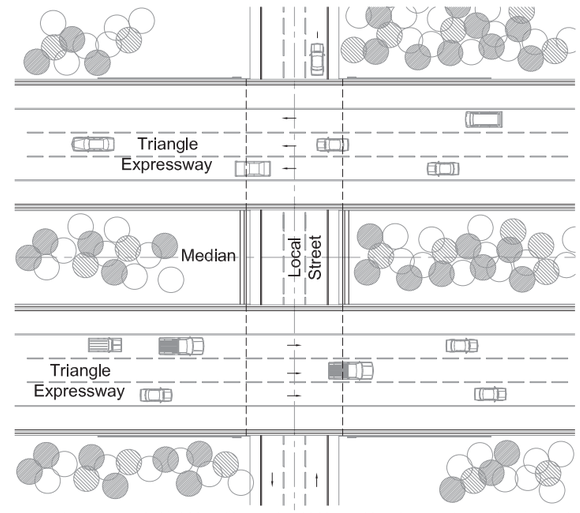


MAINLINE BRIDGE - ELEVATION
SCALE: 1" = 20'-0"

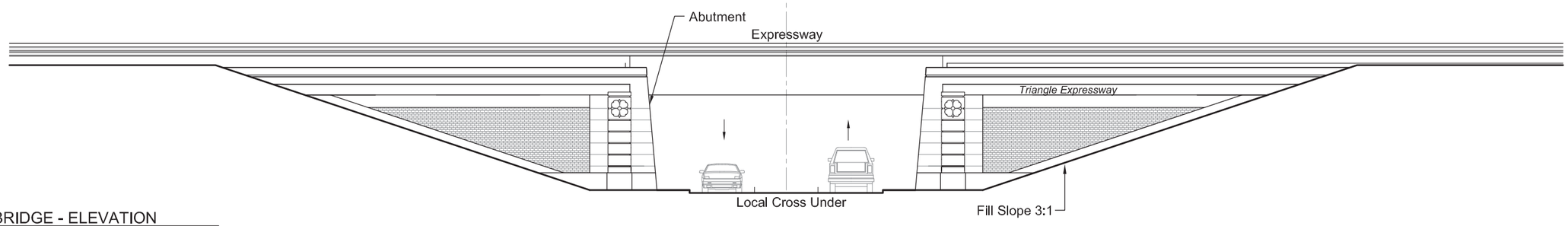


ABUTMENT - ELEVATION

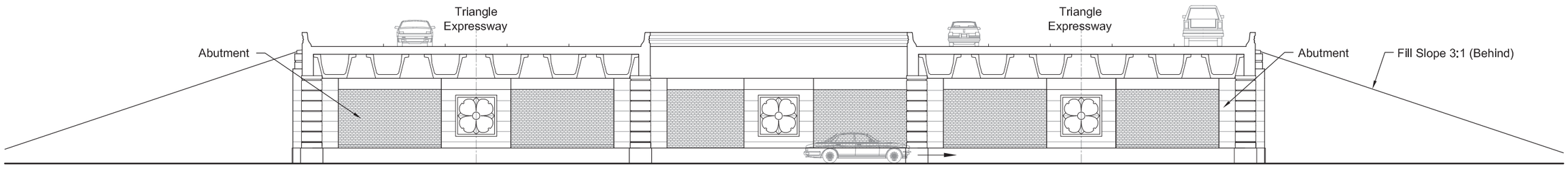
0 10 20 40



MAINLANE BRIDGE OVER LOCAL STREET (UNDIVIDED) - PLAN
NOT TO SCALE

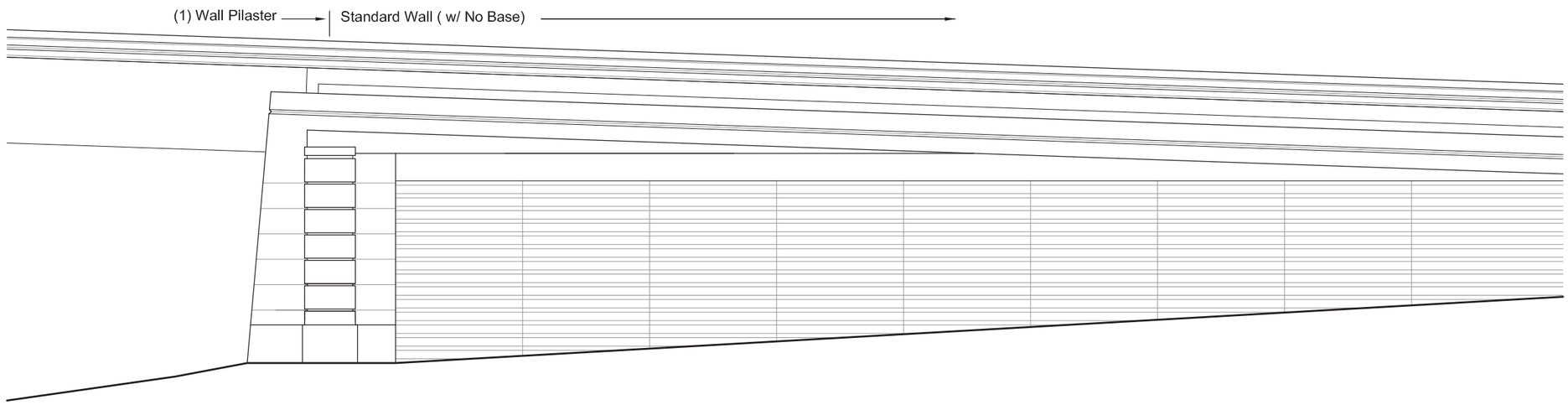


MAINLINE BRIDGE - ELEVATION
SCALE: 1" = 20'-0"

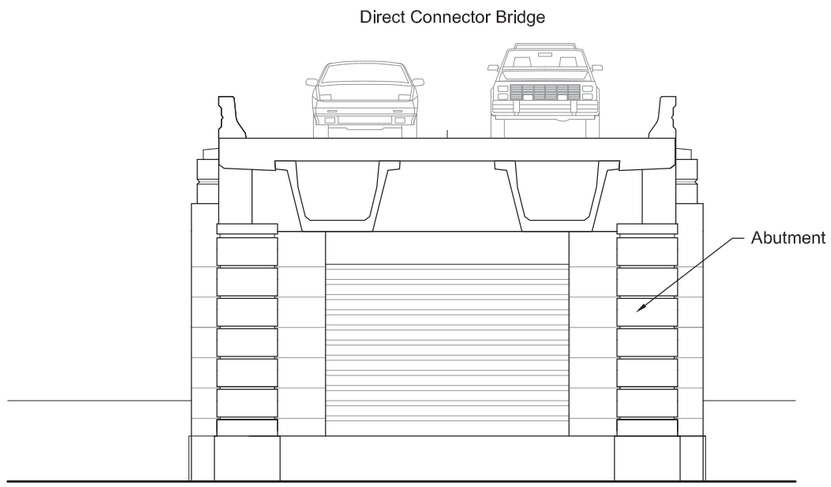


ABUTMENT - ELEVATION

0 10 20 40

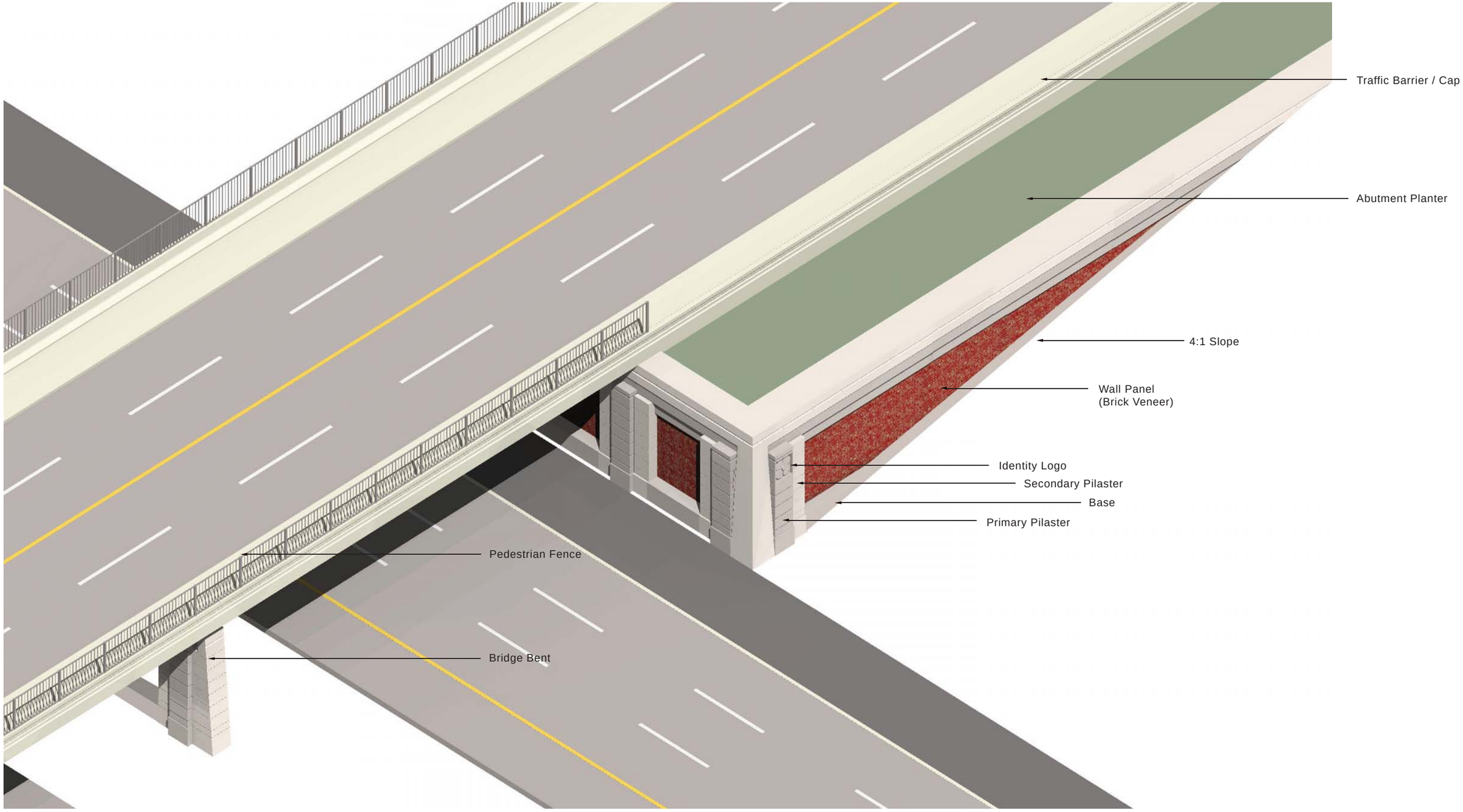


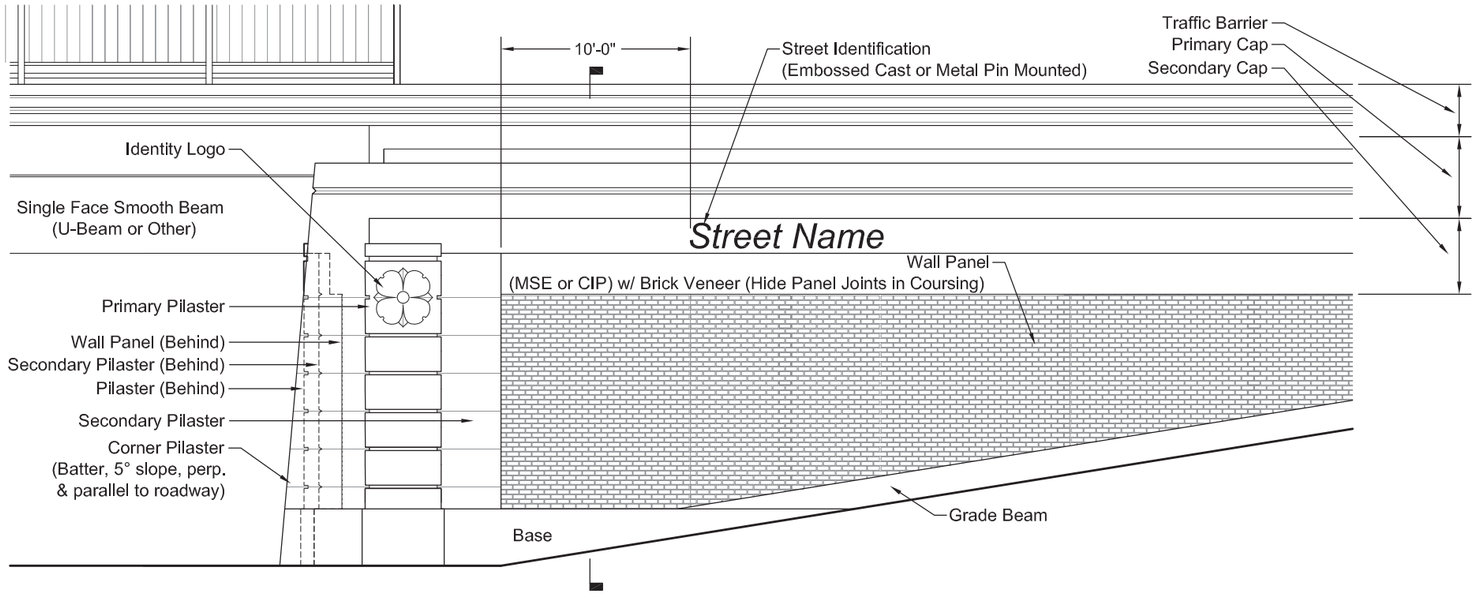
DIRECT CONNECTOR BRIDGE - ELEVATION
SCALE: 1" = 10'-0"



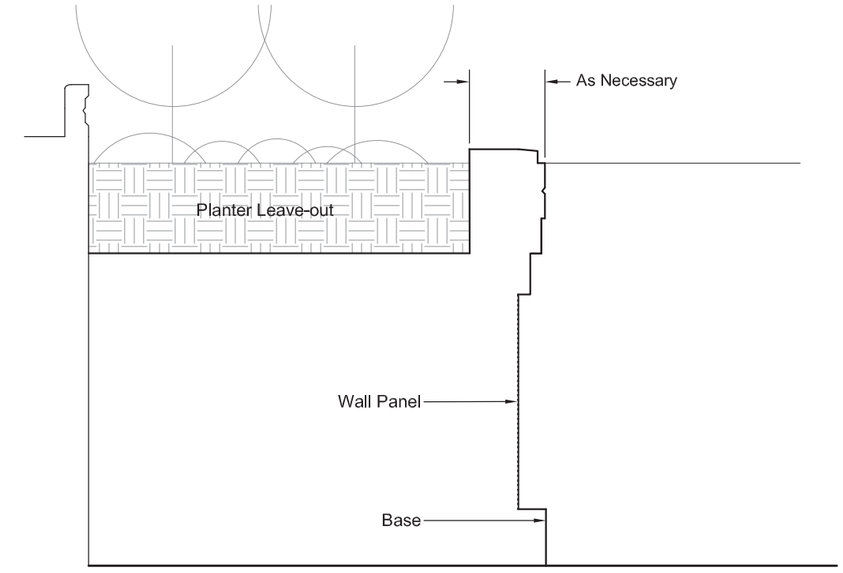
ABUTMENT - ELEVATION

0 5 10 20

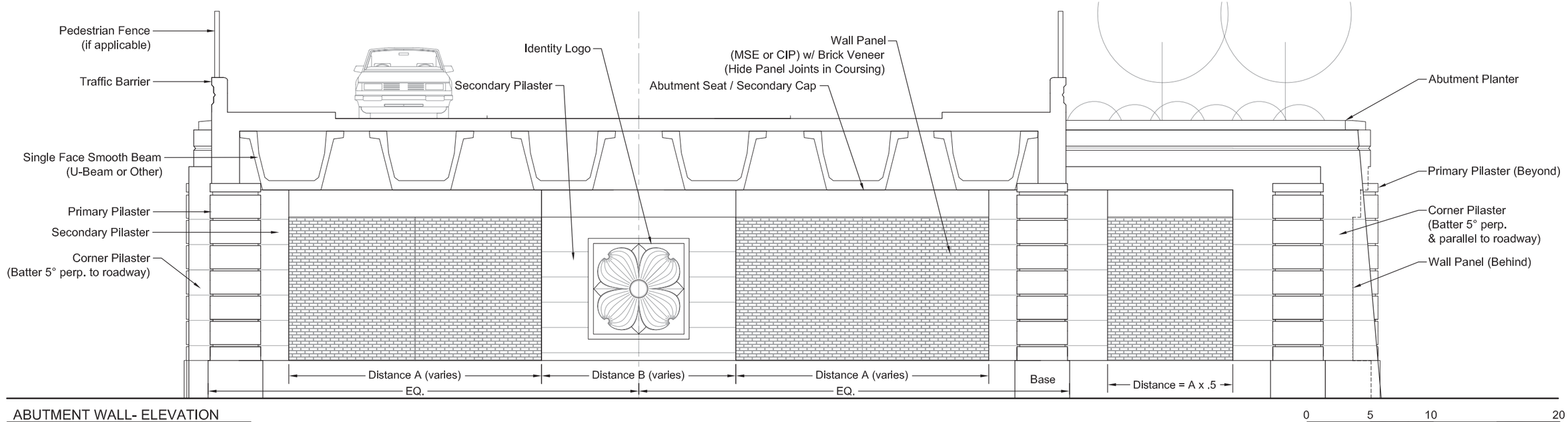

Traffic Barrier / Cap
Abutment Planter
4:1 Slope
Wall Panel
(Brick Veneer)
Identity Logo
Secondary Pilaster
Base
Primary Pilaster
Pedestrian Fence
Bridge Bent



ABUTMENT / RETAINING WALL - ELEVATION

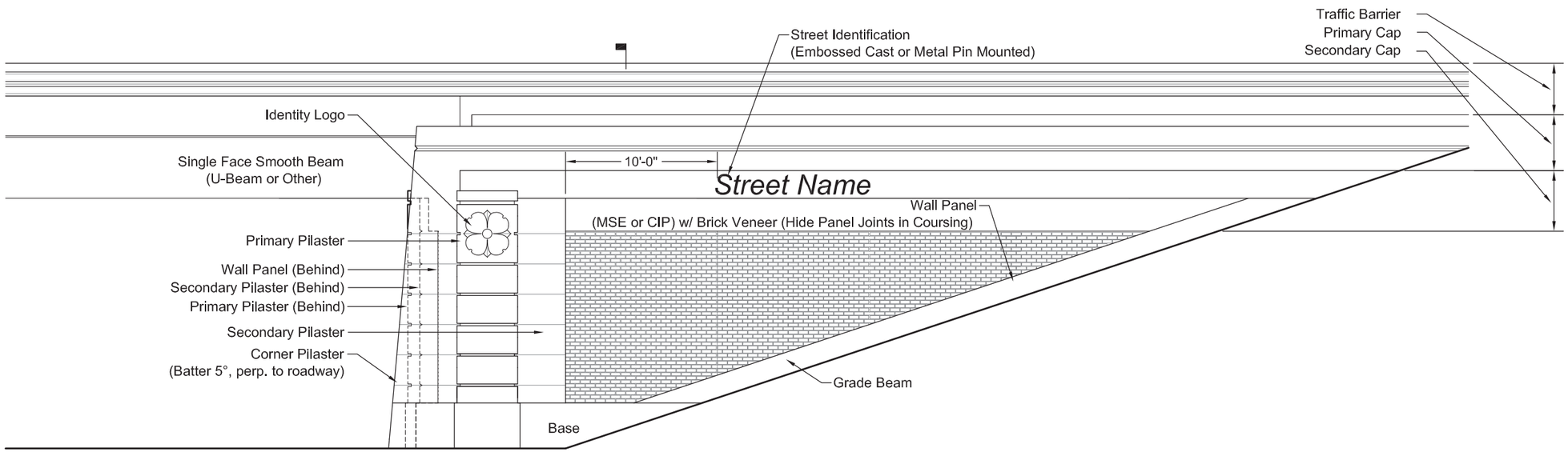


ABUTMENT PLANTER- SECTION

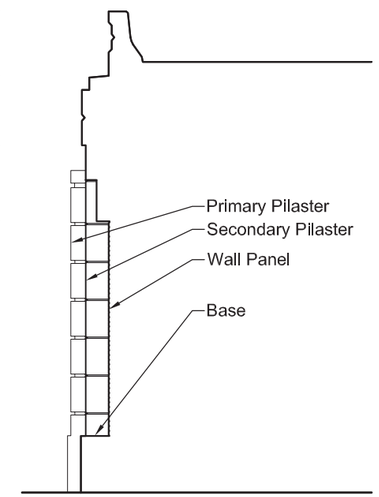


ABUTMENT WALL- ELEVATION

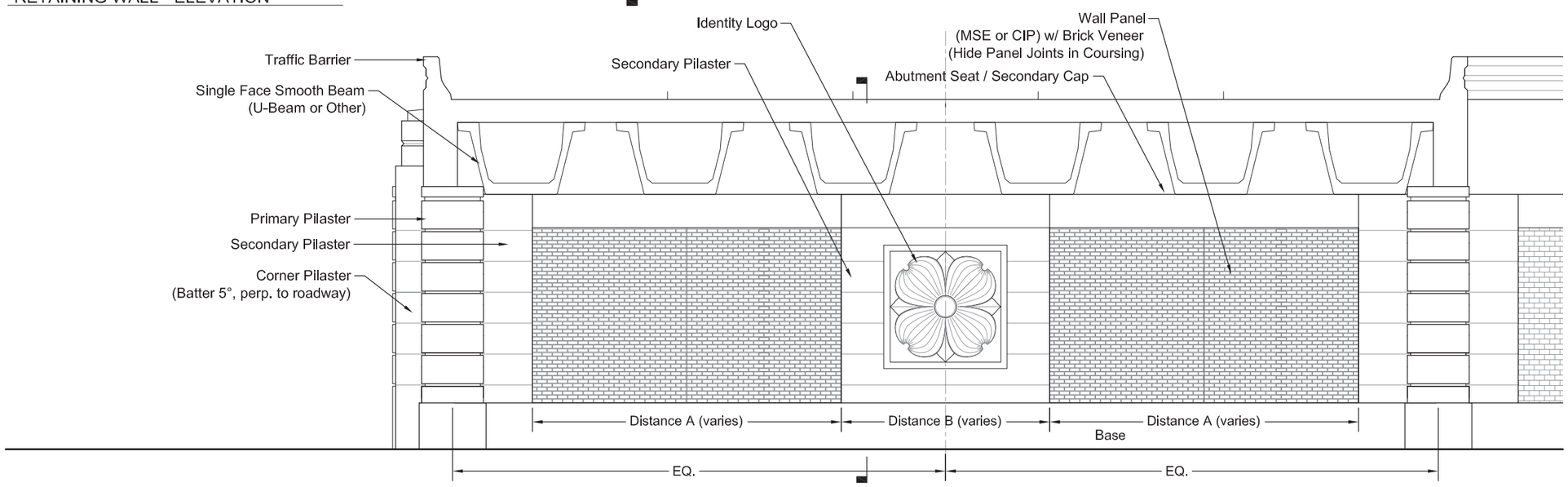
0 5 10 20



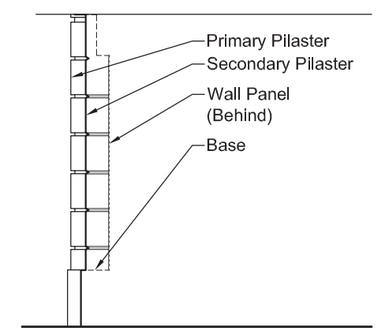
RETAINING WALL - ELEVATION



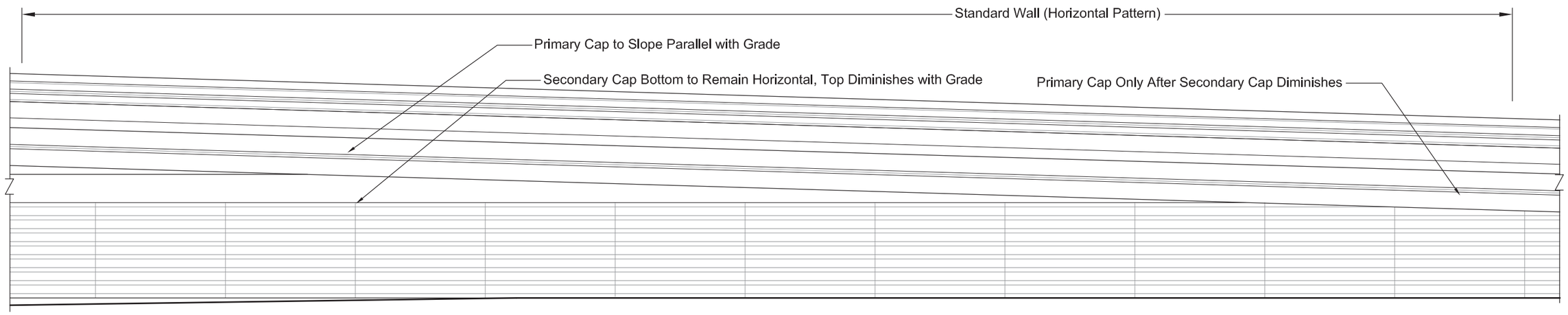
RETAINING WALL- SECTION



ABUTMENT WALL - ELEVATION

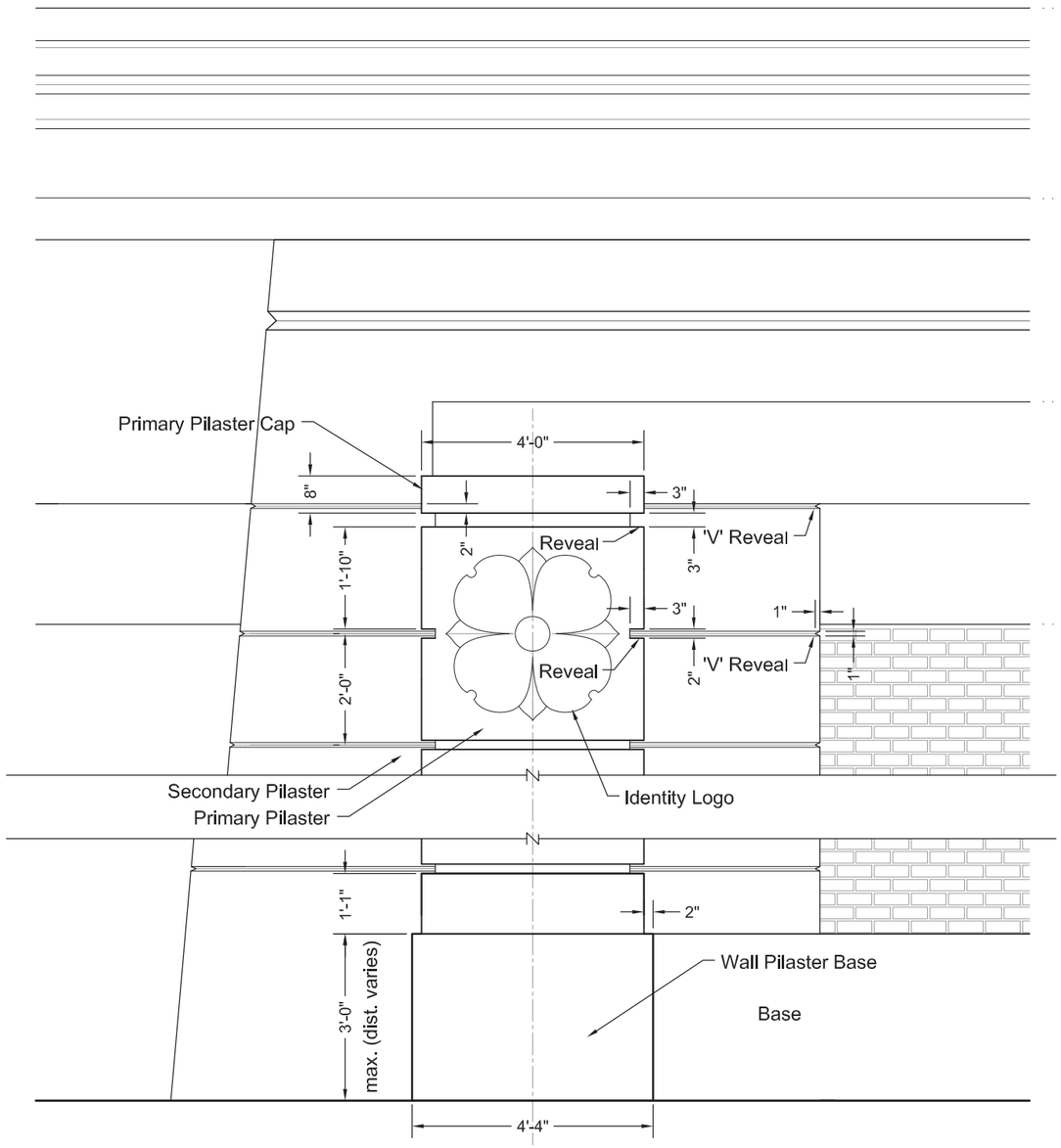


ABUTMENT WALL- SECTION

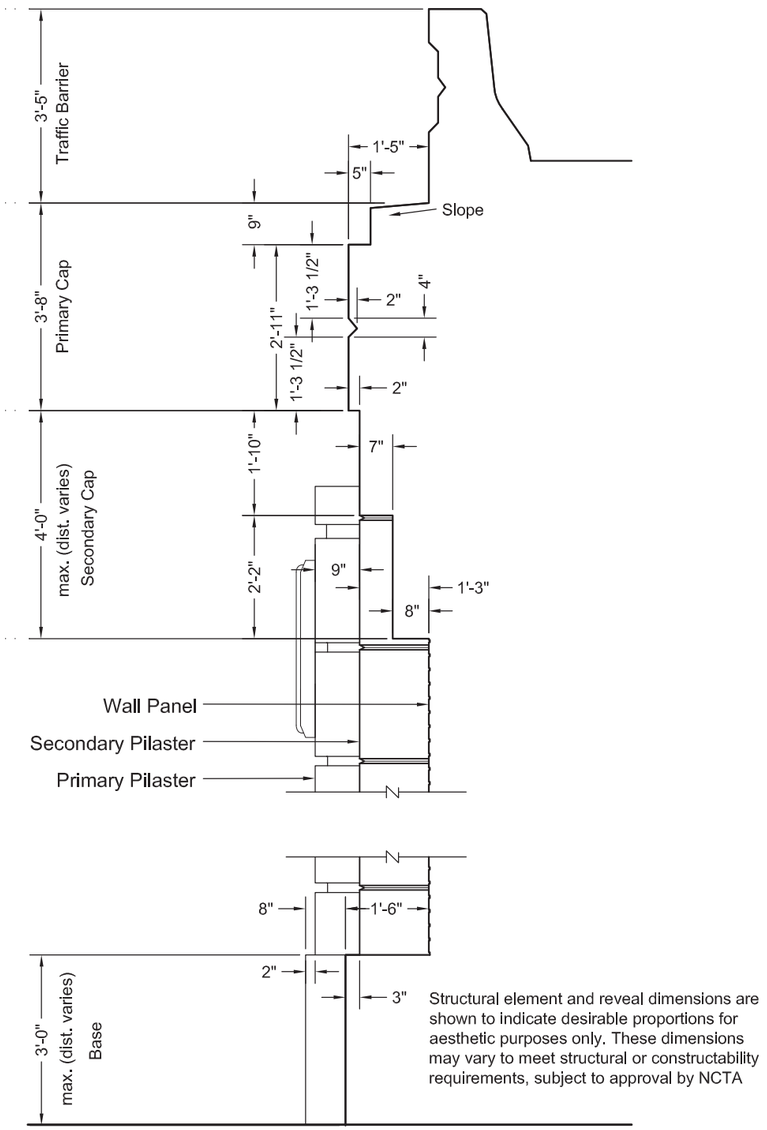


STANDARD WALL LAYOUT ON SLOPED CONDITION - ELEVATION

0 5 10 20



WALL PILASTER - ELEVATION

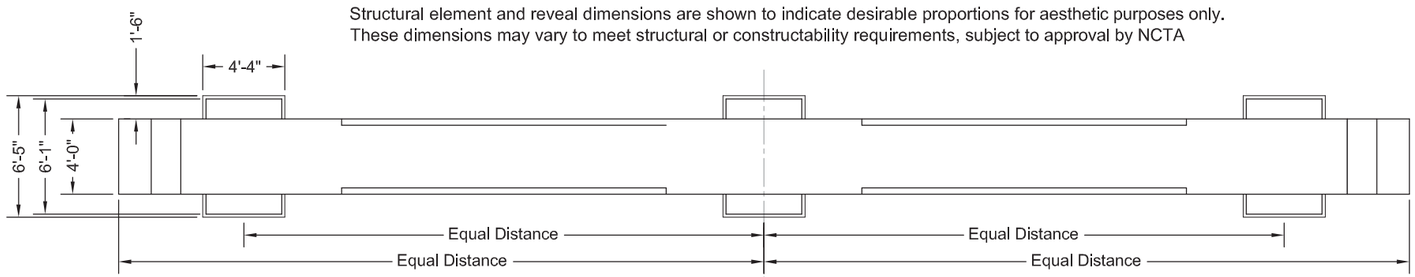


Structural element and reveal dimensions are shown to indicate desirable proportions for aesthetic purposes only. These dimensions may vary to meet structural or constructability requirements, subject to approval by NCTA

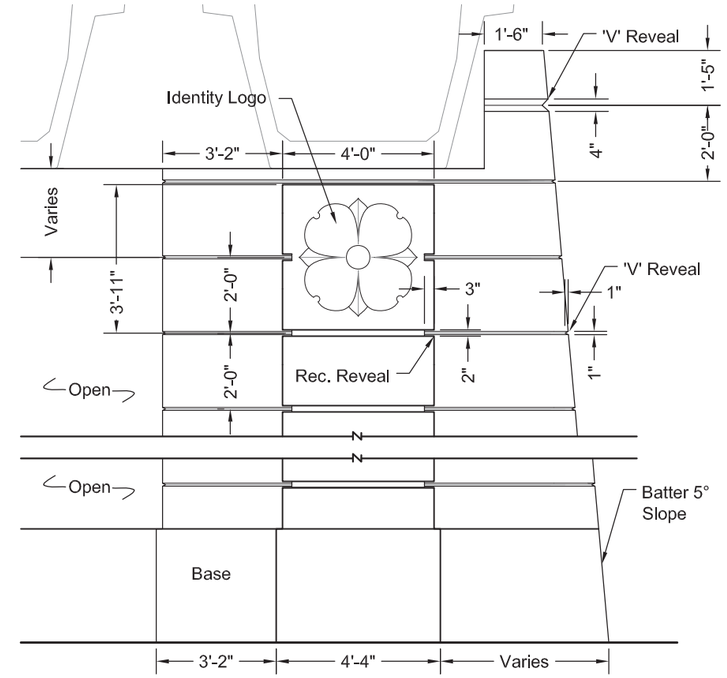
ABUTMENT WALL - SECTION

0 1 5

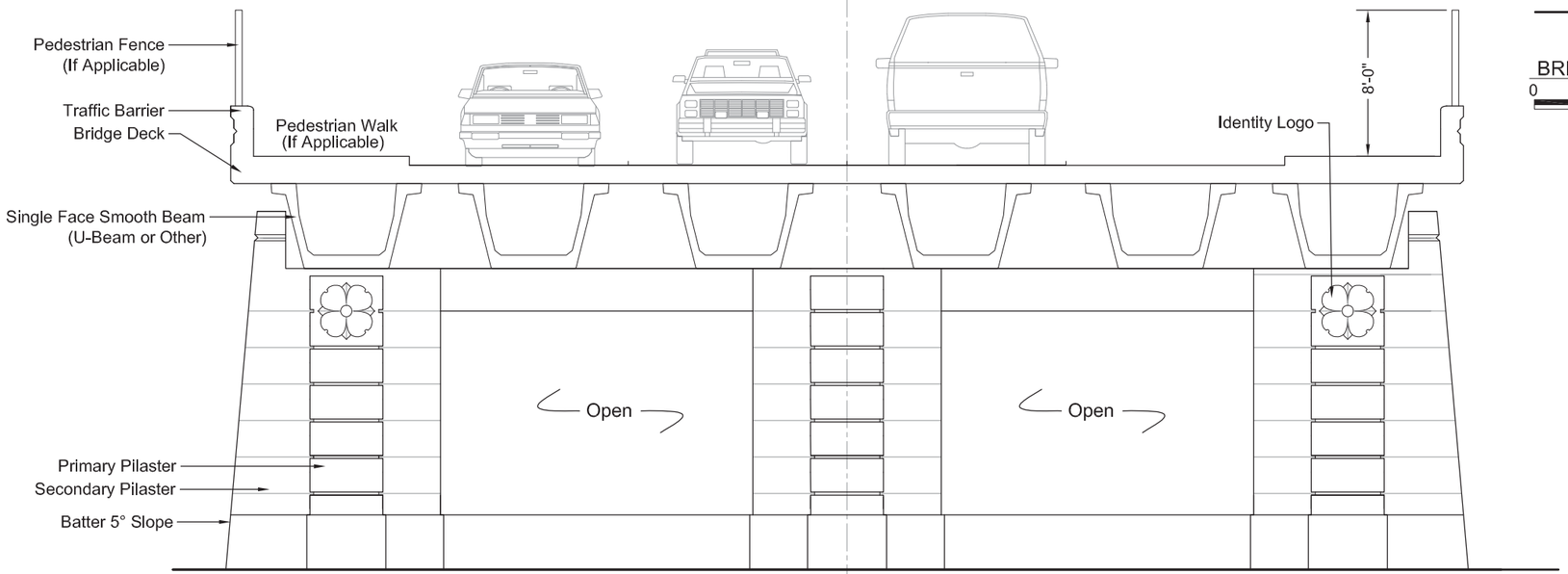
Structural element and reveal dimensions are shown to indicate desirable proportions for aesthetic purposes only.
These dimensions may vary to meet structural or constructability requirements, subject to approval by NCTA



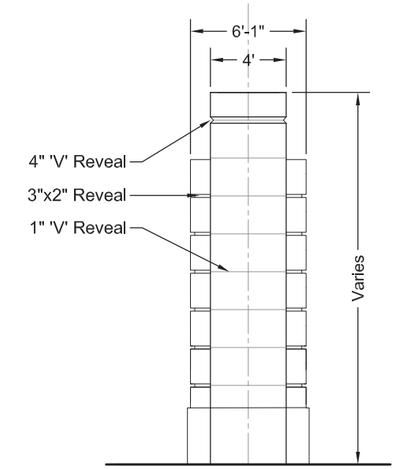
BRIDGE BENT - PLAN
SCALE: 1/8"= 1'-0"



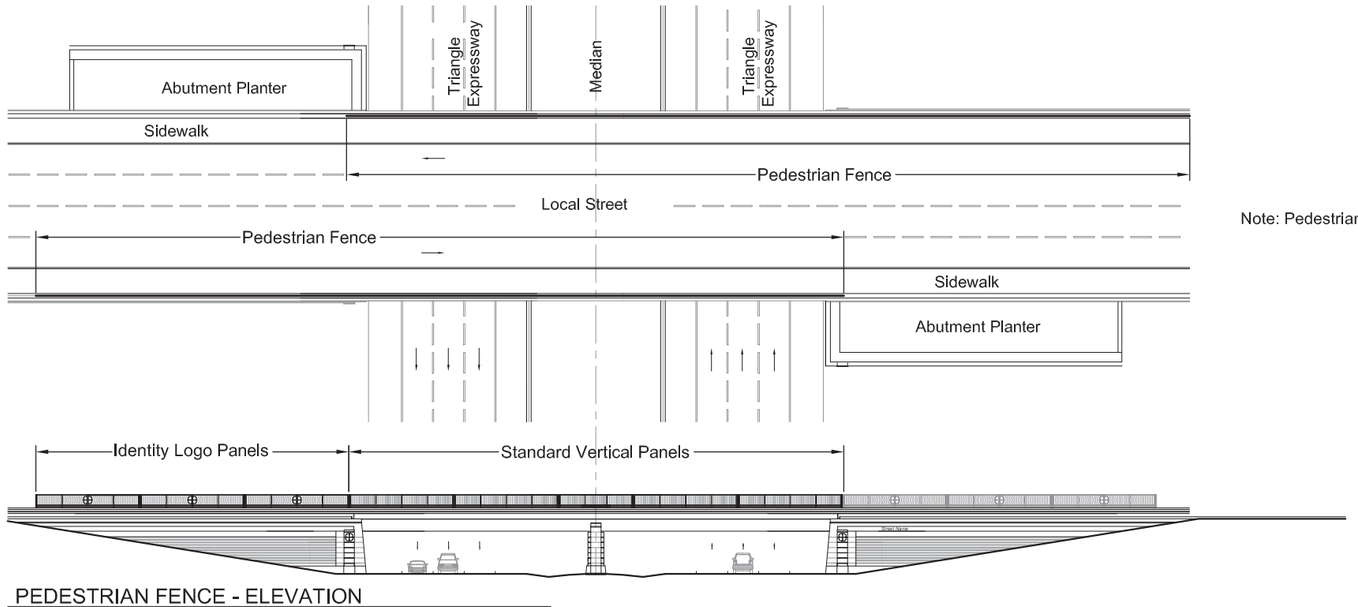
BRIDGE BENT - DETAIL ELEVATION
0 5 10



BRIDGE BENT - ELEVATION
0 5 10 20

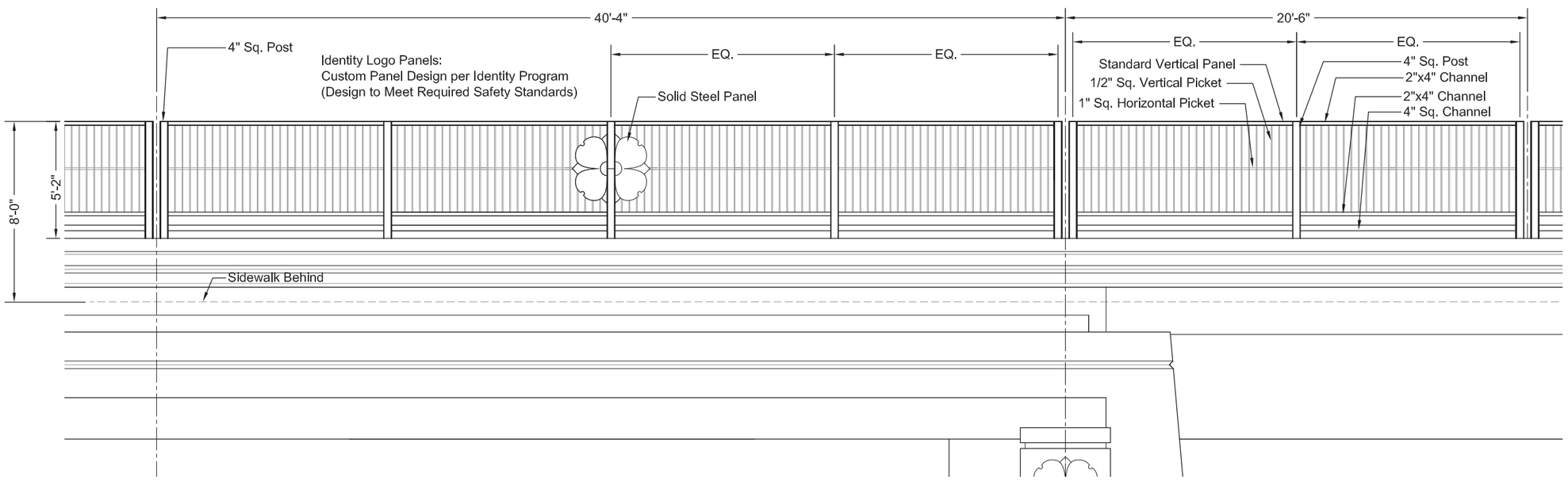


BRIDGE BENT - FRONT ELEVATION

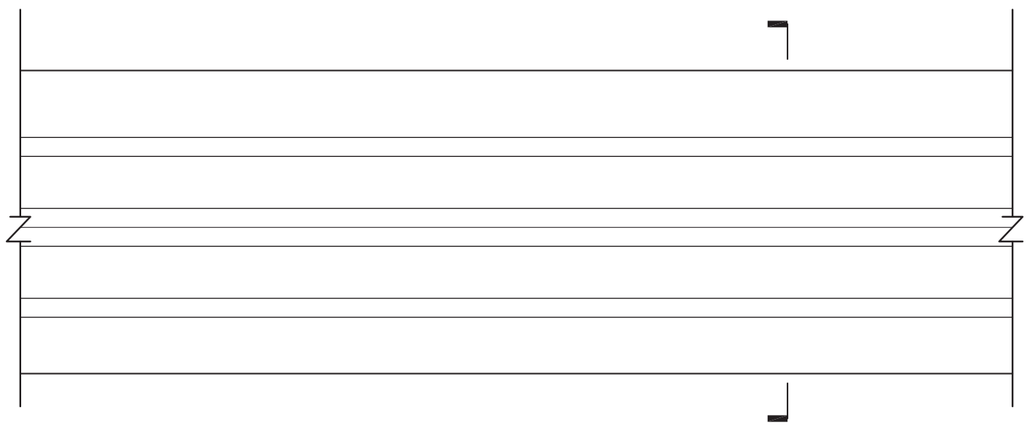


Note: Pedestrian Fence to be Used Only Where Required by NCDOT Standards.

PEDESTRIAN FENCE - ELEVATION
NTS

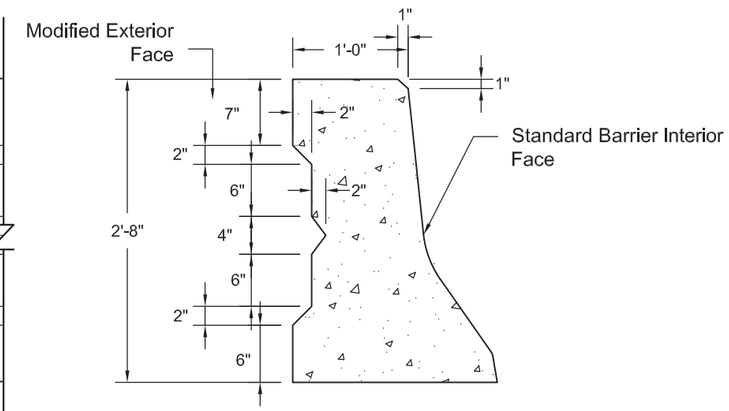


PEDESTRIAN FENCE - DETAIL ELEVATION
0 5 10

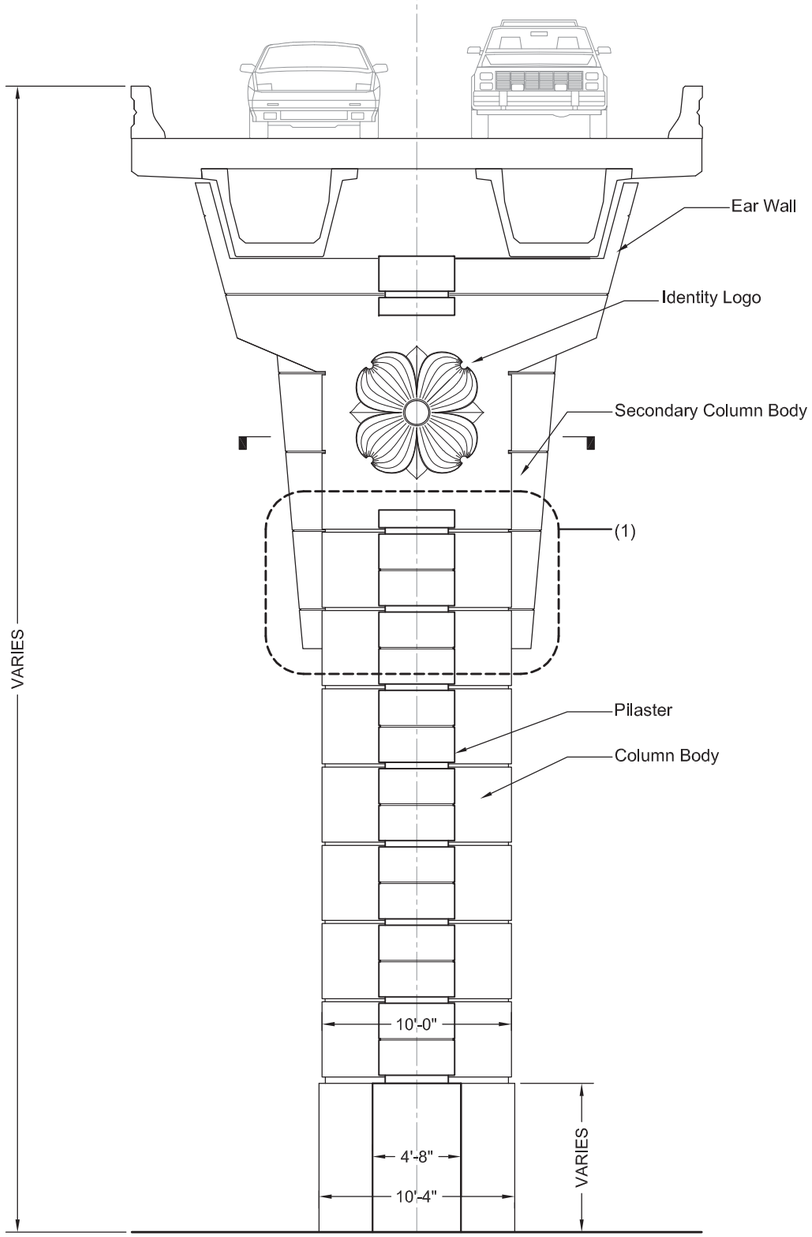


TRAFFIC BARRIER - OUTSIDE ELEVATION

0 1 3

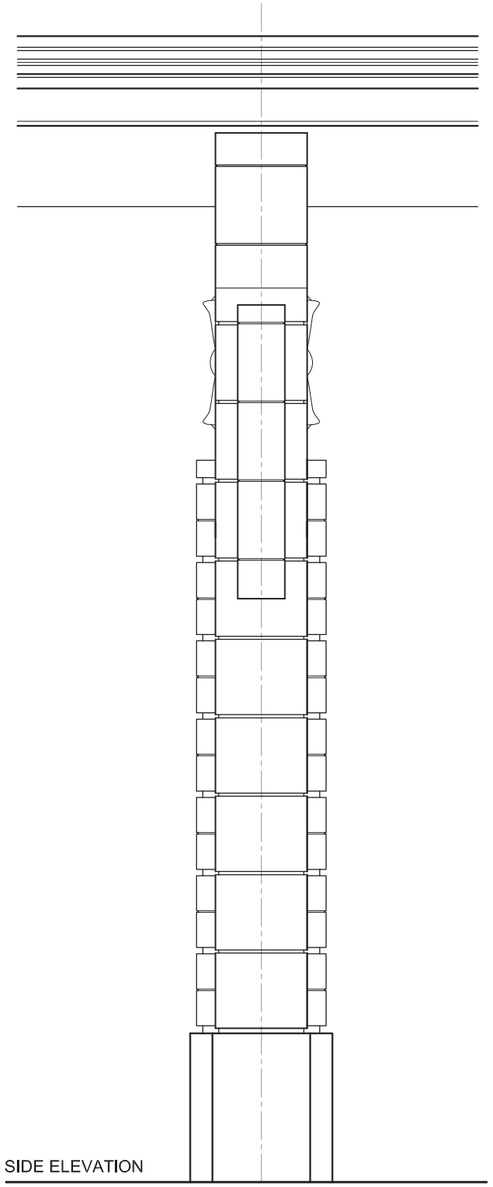


TRAFFIC BARRIER - SECTON

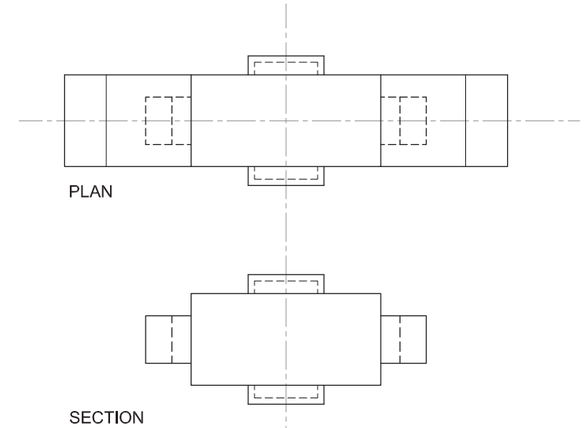


DIRECT CONNECTOR BENT / COLUMN - ELEVATION

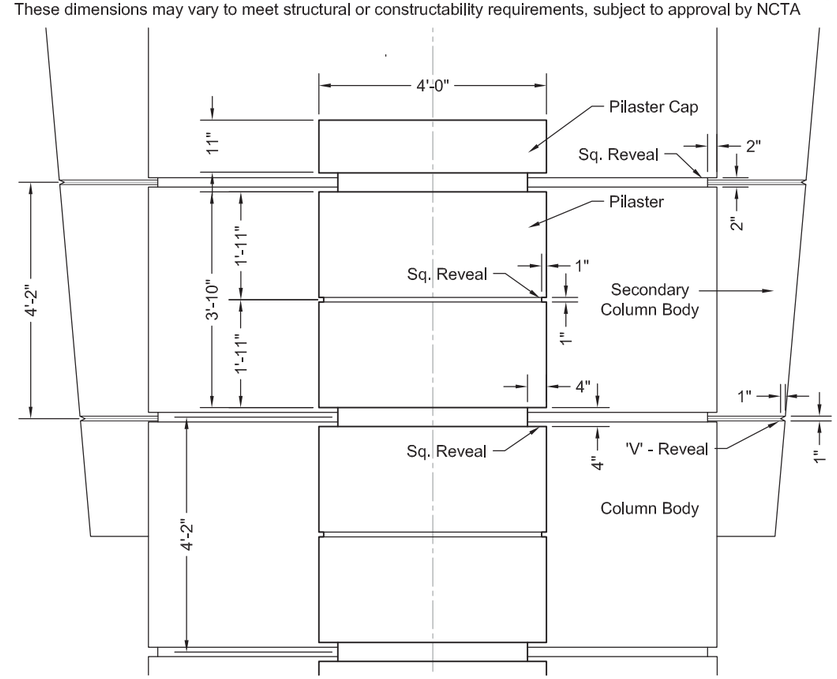
0 5 10 20



SIDE ELEVATION

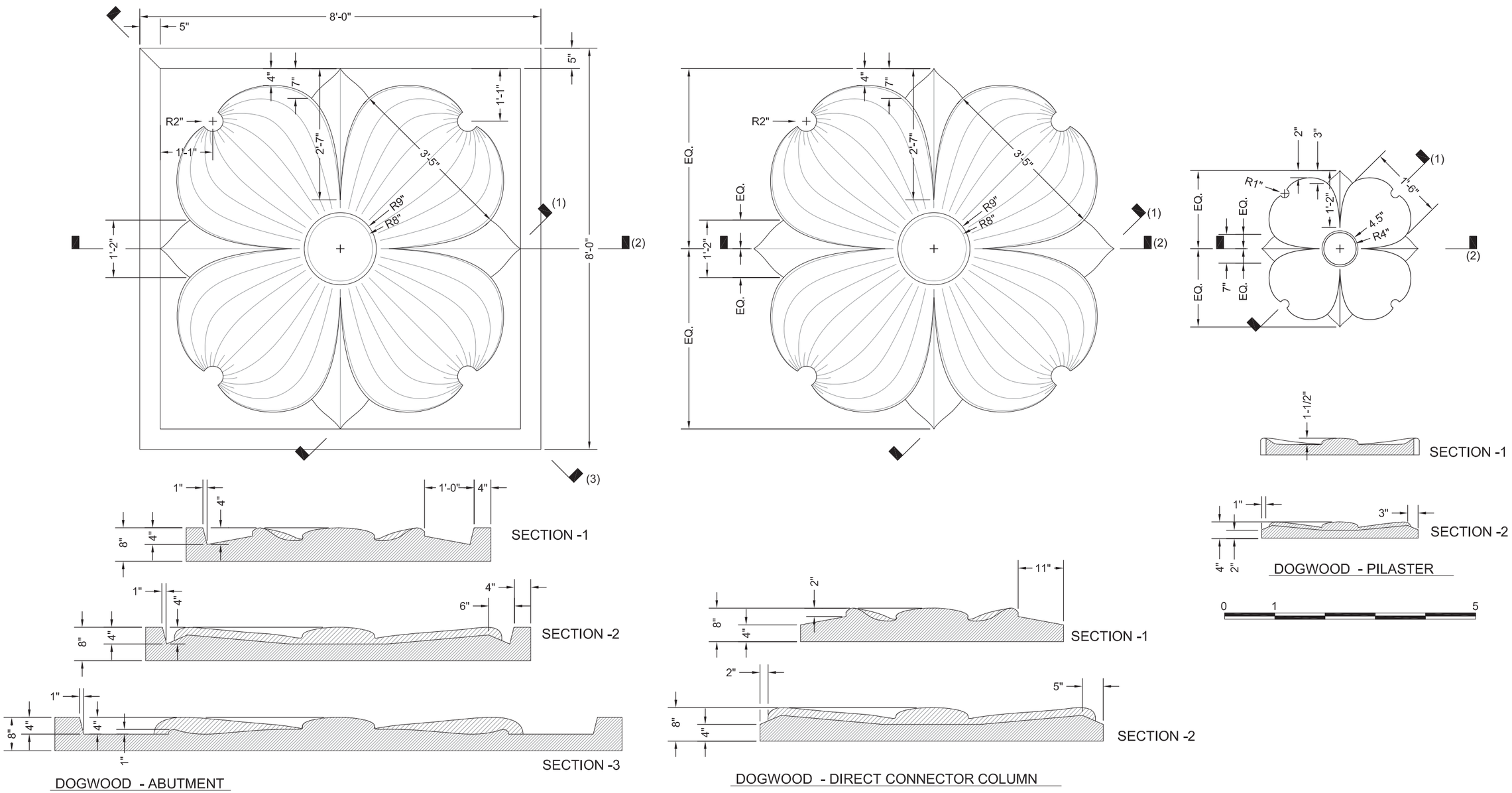


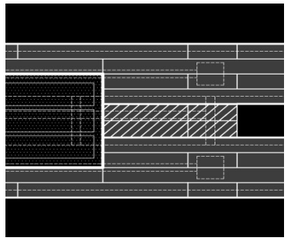
Structural element and reveal dimensions are shown to indicate desirable proportions for aesthetic purposes only. These dimensions may vary to meet structural or constructability requirements, subject to approval by NCTA



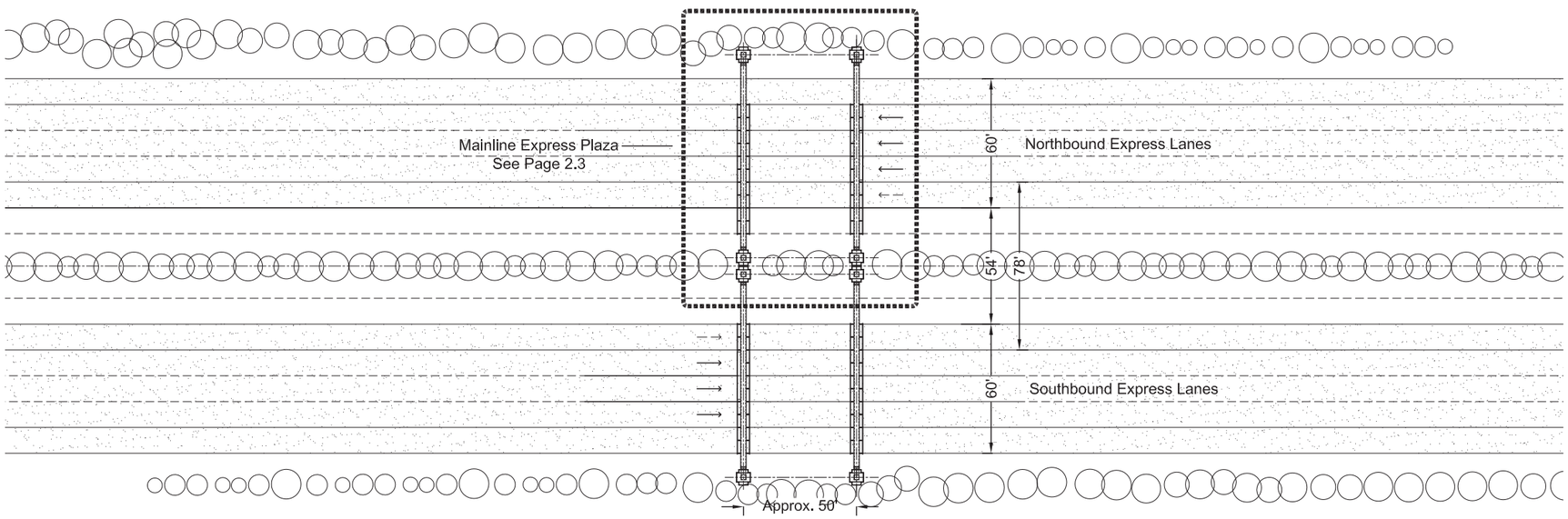
DIRECT CONNECTOR BENT / COLUMN - DETAIL ELEVATION (1)

0 1 5


8'-0"
5"
4"
7"
1'-1"
R2"
2'-7"
3'-5"
R9"
R8"
1'-2"
(1)
(2)
(3)
EQ.
R1"
1'-6"
4.5"
R4"
1-1/2"
SECTION -1
1'-0"
SECTION -2
SECTION -3
DOGWOOD - ABUTMENT
11"
DOGWOOD - PILASTER
DOGWOOD - DIRECT CONNECTOR COLUMN
0
1
5



2 Toll Plazas
2.1–2.14

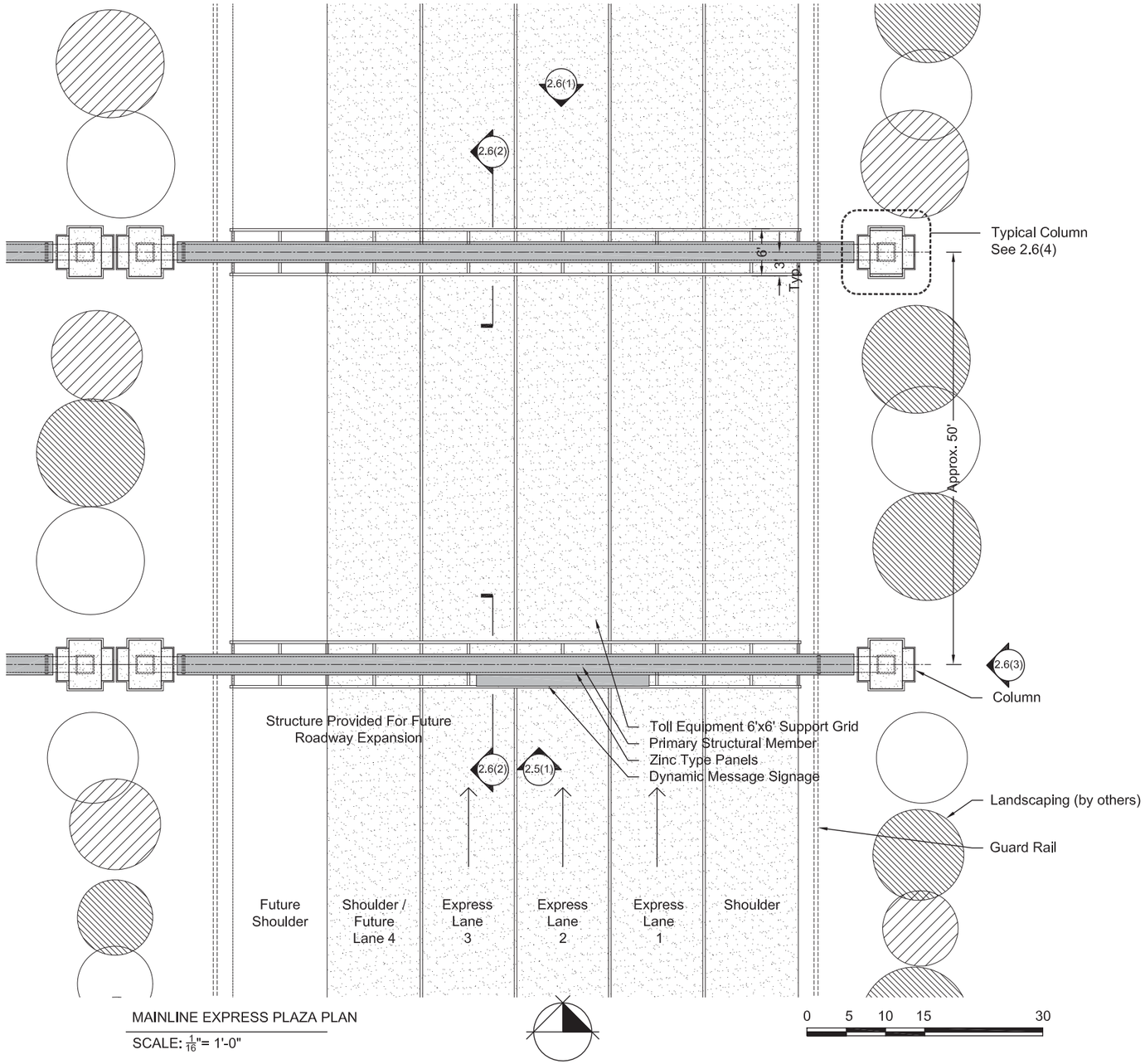


MAINLINE PLAZA PLAN
SCALE: $\frac{1}{64}$"= 1'-0"

0 5 10 15 30

The Mainline Toll Plaza plan will include a three (3) lane Express Plaza for each direction of traffic.

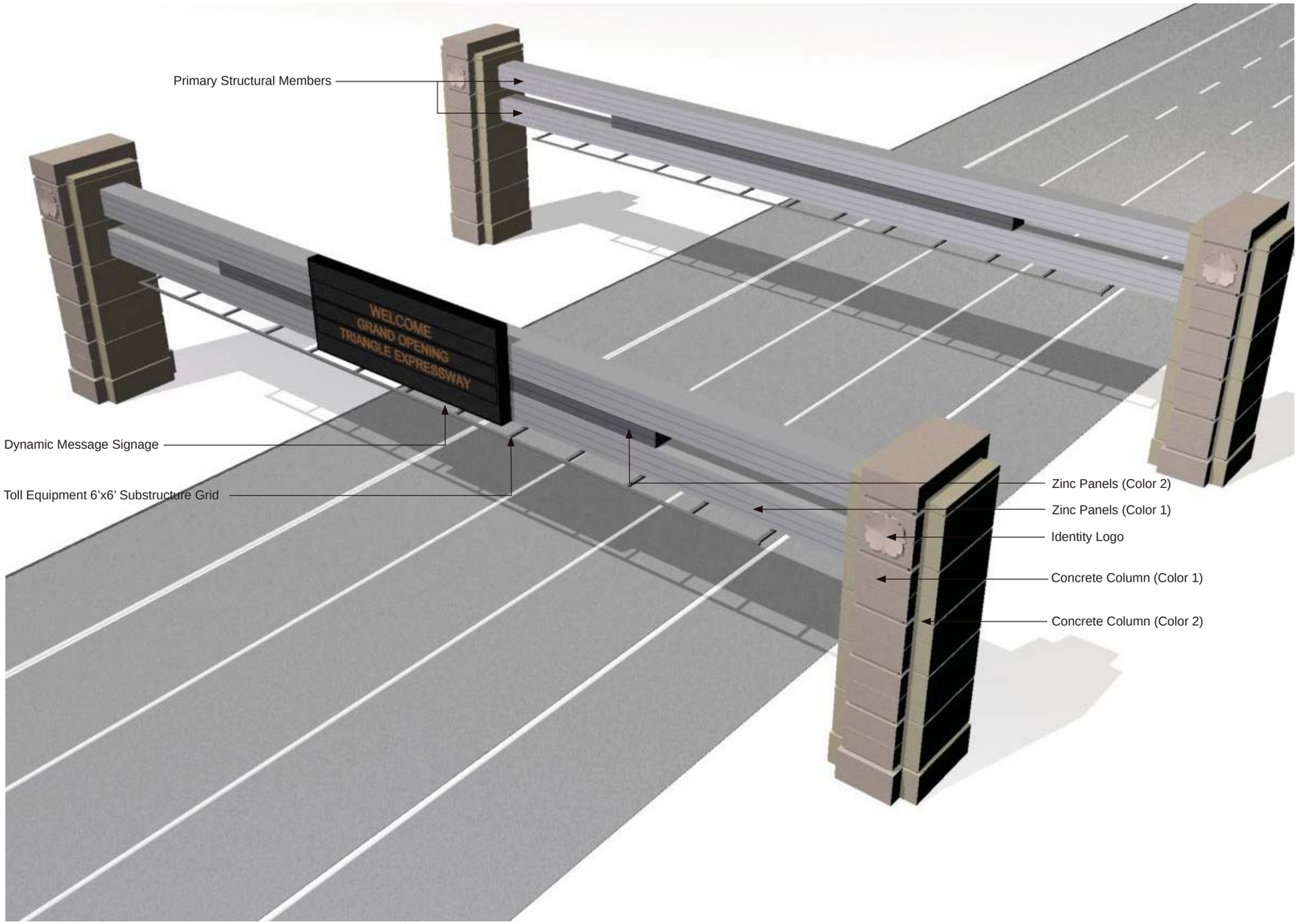
The Mainline Express Plazas will allow for a future roadway expansion of one lane in each direction. Refer to pages 2.3 thru 2.6 for further detailed information on the Mainline Express Plazas.



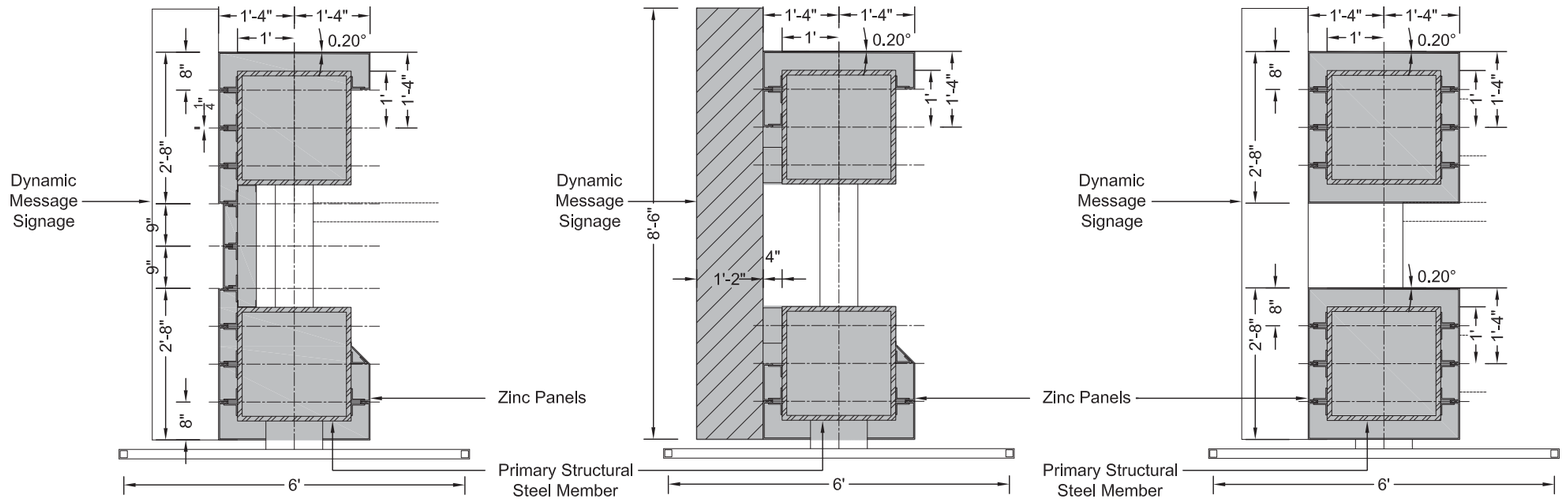
MAINLINE EXPRESS PLAZA PLAN
SCALE: $\frac{1}{16}$"= 1'-0"

The Mainline Express Plazas and gantries will accommodate future roadway expansion.

Incorporated into the front approach of the structure will be dynamic message signage (DMS). Refer to Section 6 for additional information on plaza coatings and textures.



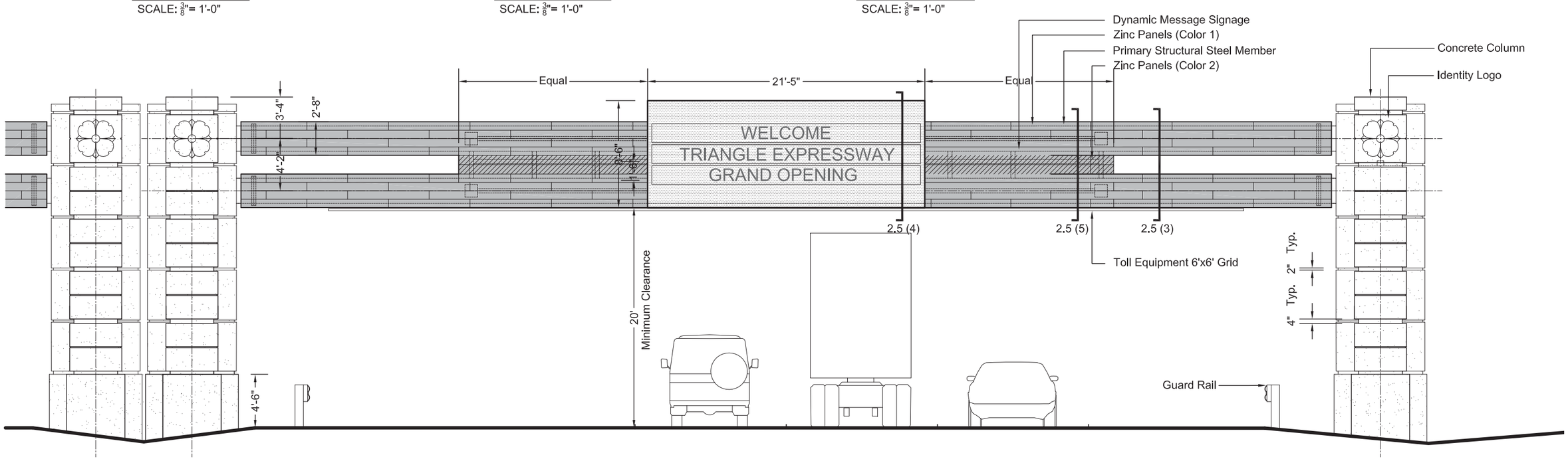
The Mainline Express Plaza axon diagram depicts a three (3) lane Open Road Tolling plaza. The structural frame is on a 6' x 6' substructure grid allowing for maximum flexiblity for locating the various electronic tolling equipment.



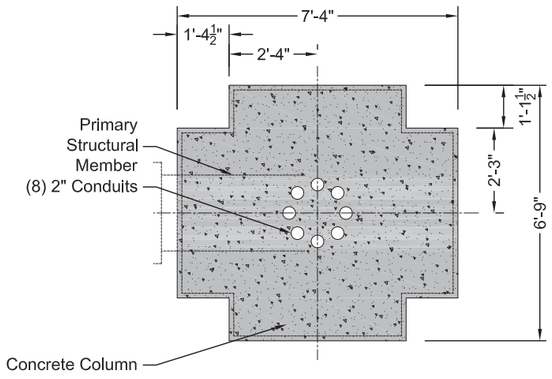
(5) TYPICAL DETAIL
SCALE: $\frac{3}{8}$"= 1'-0"

(4) TYPICAL DETAIL
SCALE: $\frac{3}{8}$"= 1'-0"

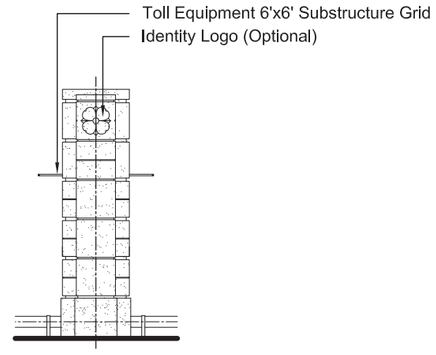
(3) TYPICAL DETAIL
SCALE: $\frac{3}{8}$"= 1'-0"



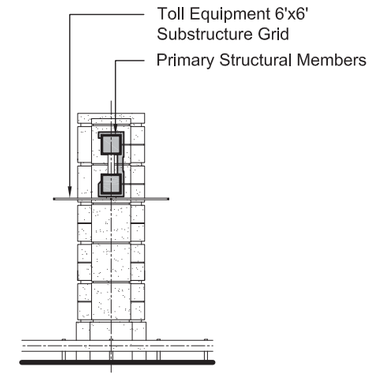
(1) MAINLINE EXPRESS PLAZA FRONT ELEVATION
SCALE: $\frac{1}{8}$"= 1'-0"



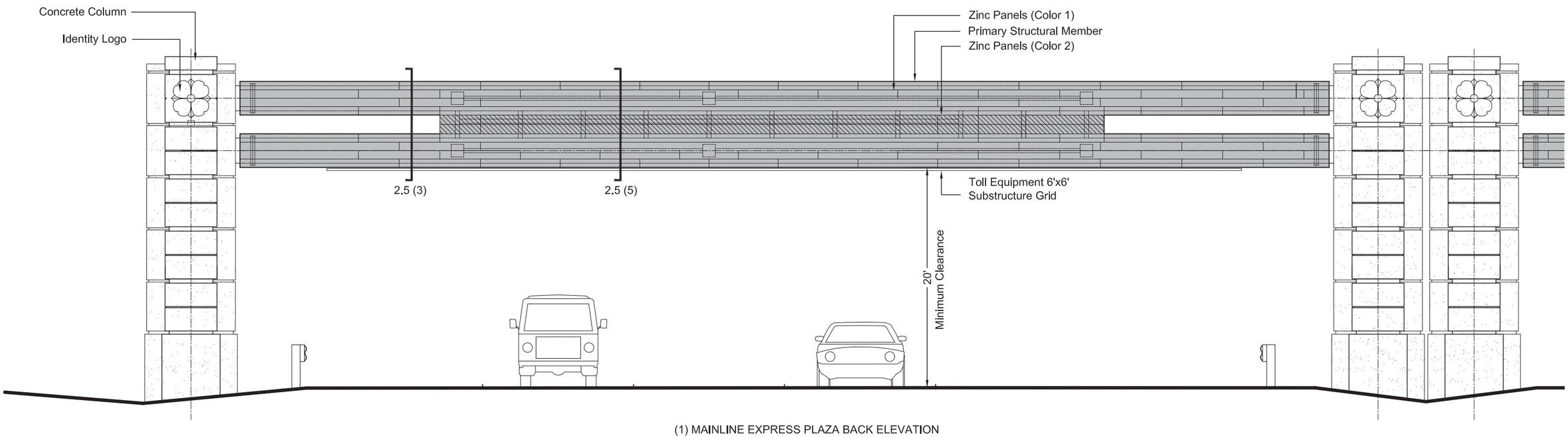
(4) TYPICAL COLUMN PLAN
SCALE: ¼"= 1'-0"



(3) MAINLINE EXPRESS PLAZA SIDE ELEVATION, TYP.
SCALE: 1/16"= 1'-0"

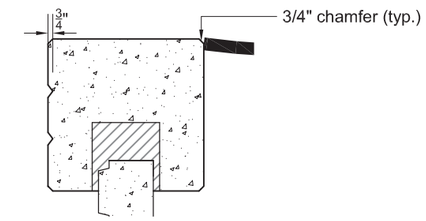


(2) MAINLINE EXPRESS PLAZA SECTION, TYP.
SCALE: 1/16"= 1'-0"

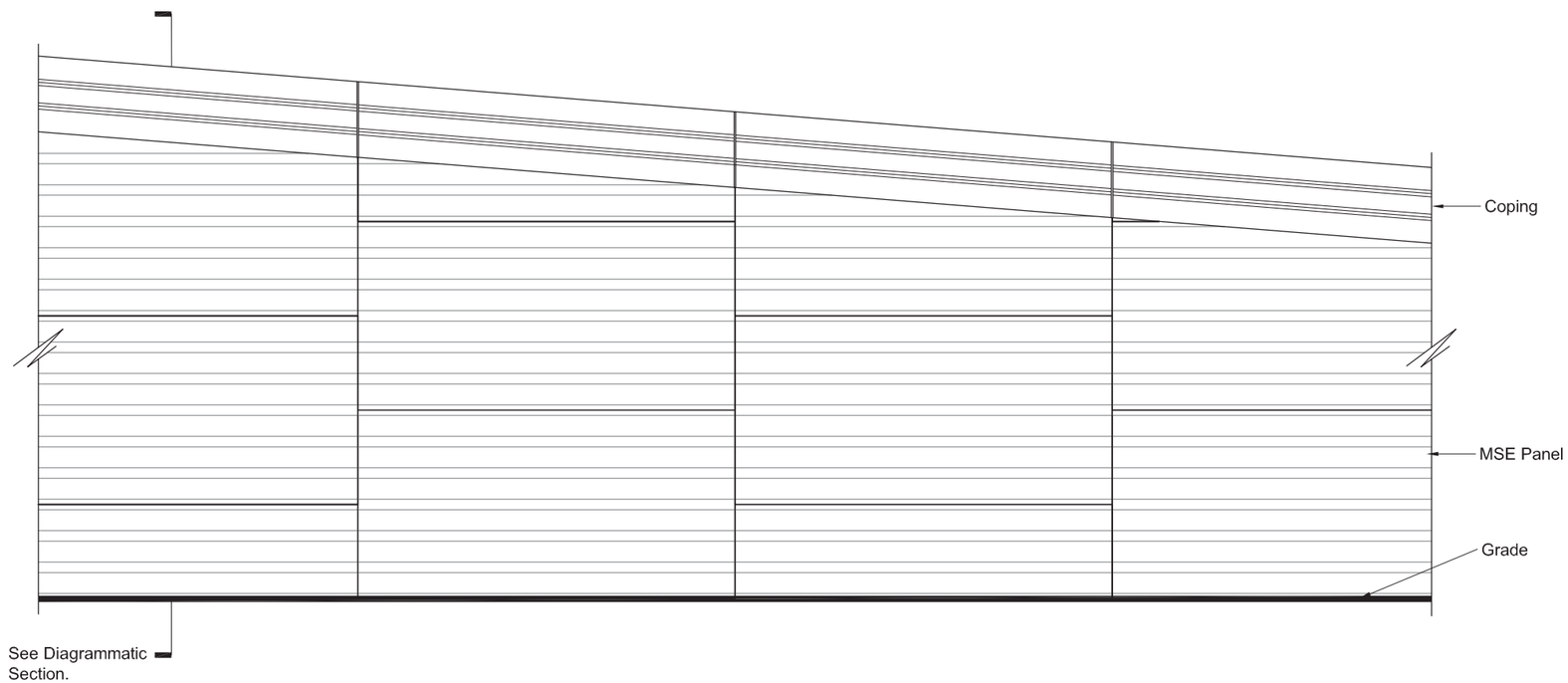


(1) MAINLINE EXPRESS PLAZA BACK ELEVATION
SCALE: ⅛"= 1'-0"

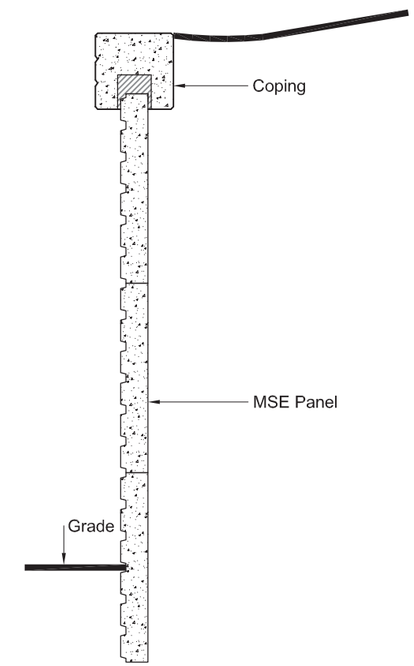
3 Retaining Walls
3.1–3.2



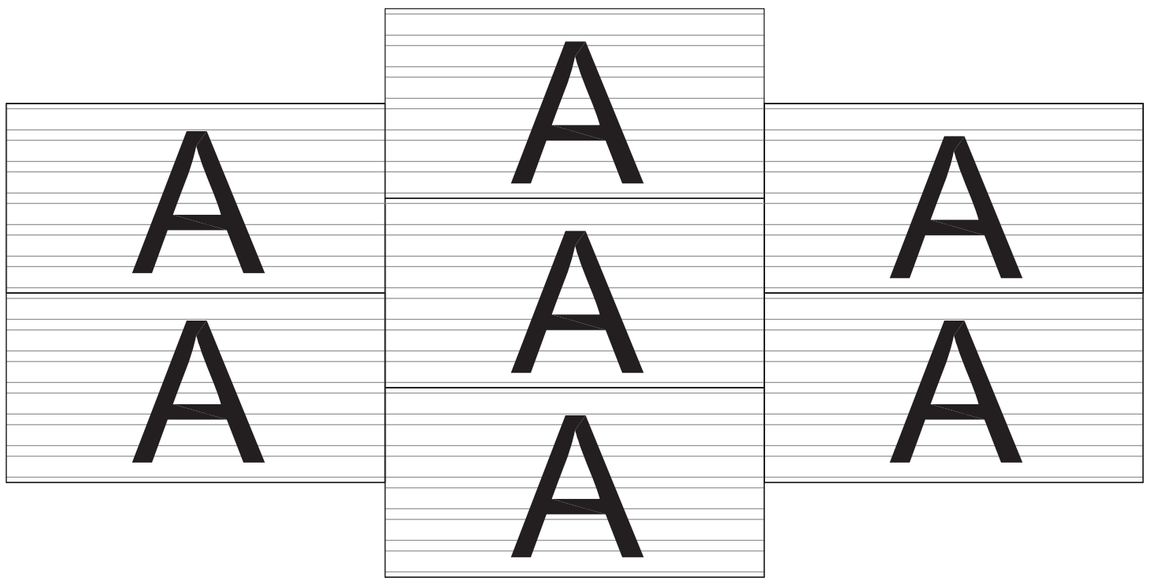
COPING DETAIL- SECTION
SCALE: 1/2"= 1'-0"



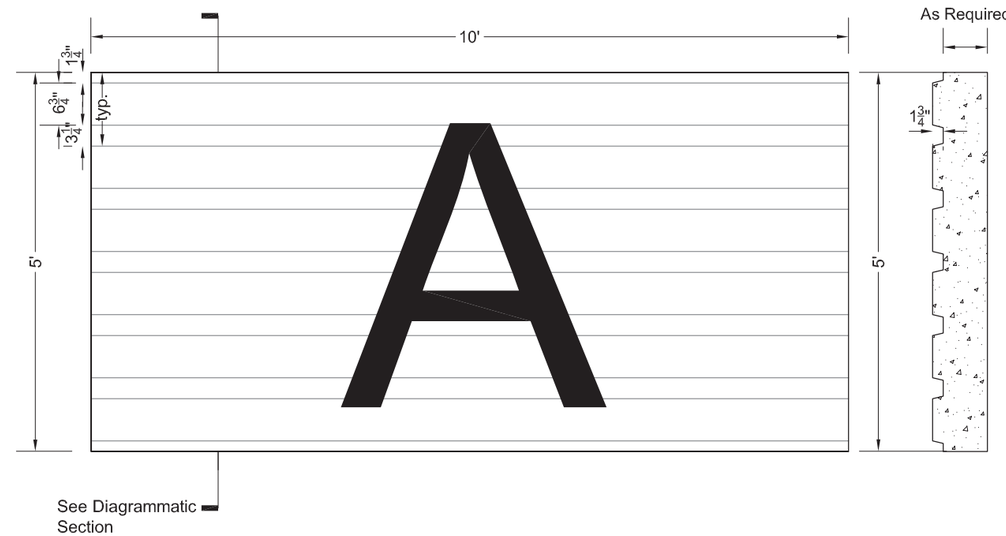
MSE WALL ELEVATION
SCALE: 1/4"= 1'-0"



DIAGRAMMATIC SECTION- MSE WALL
SCALE: 1/4"= 1'-0"

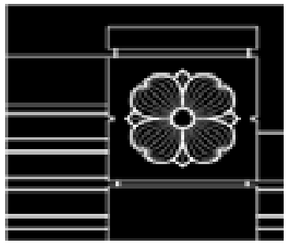


MSE WALL ELEVATION
SCALE: 1/4"= 1'-0"

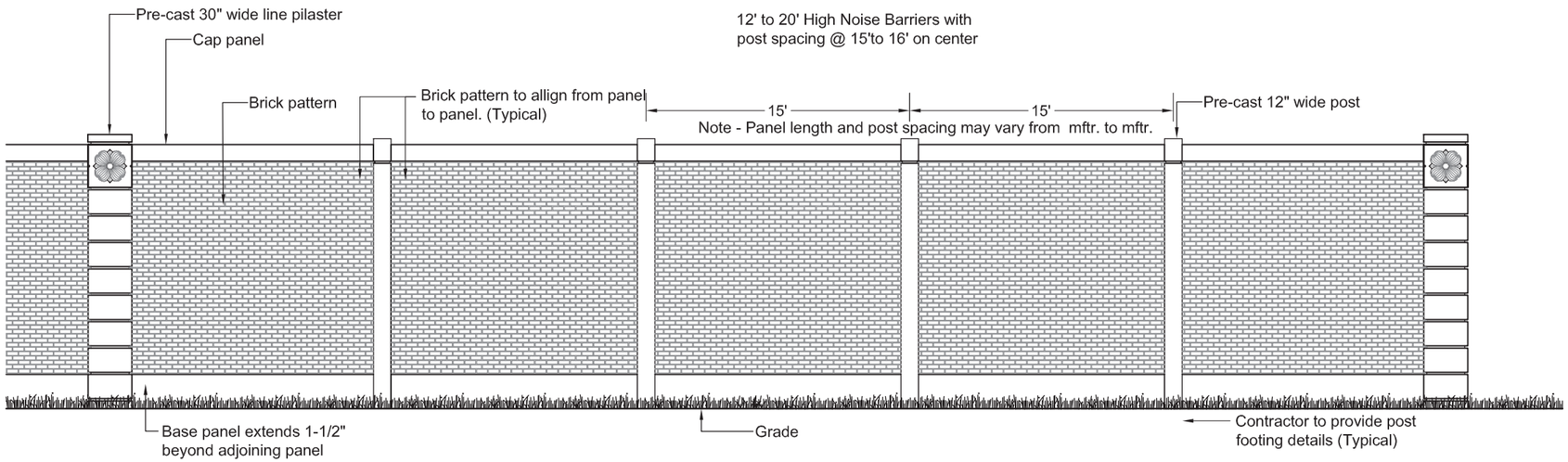


TYPICAL MSE PANEL- ELEVATION
SCALE: 1/2"= 1'-0"

DIAGRAMMATIC SECTION

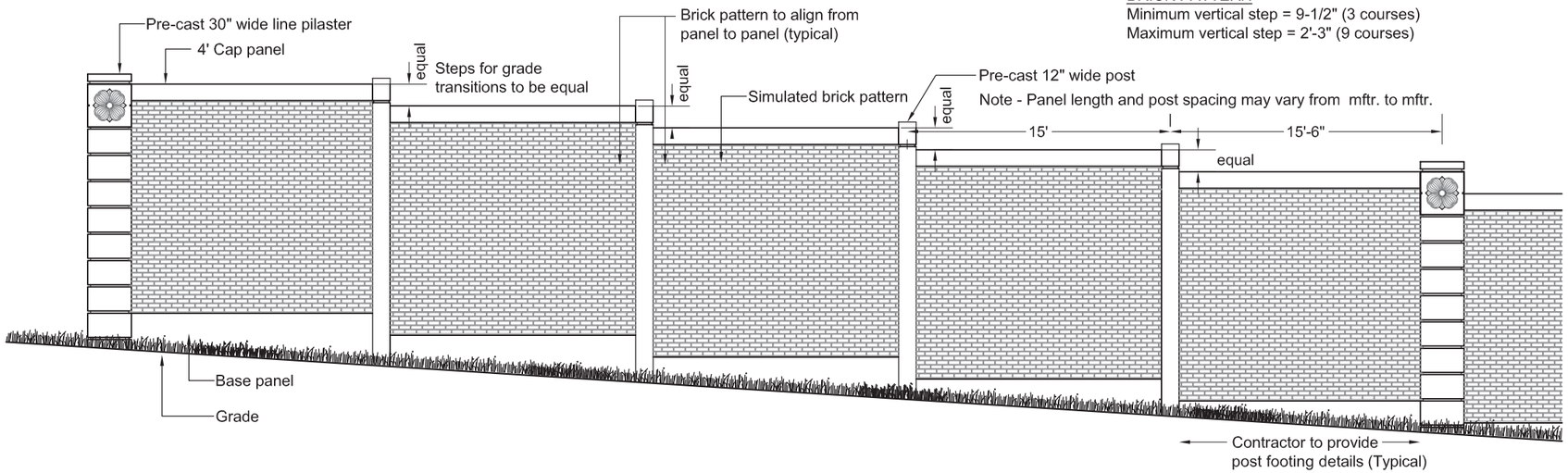


4 Noise Walls
4.1–4.6

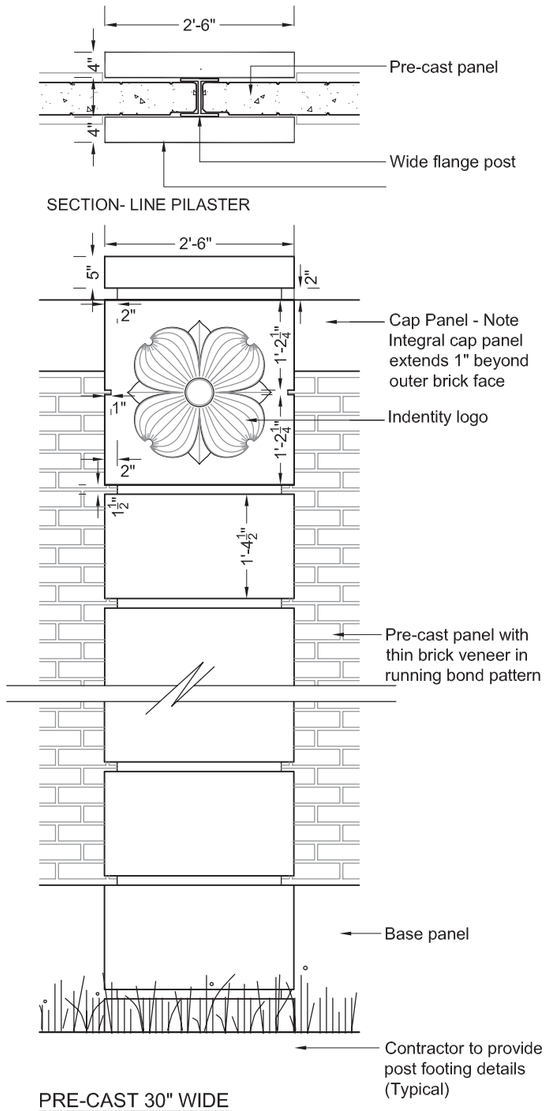


NOISE WALL ELEVATION- BRICK ALTERNATIVE- EXPRESSWAY SIDE
SCALE: 1/8"= 1'-0"

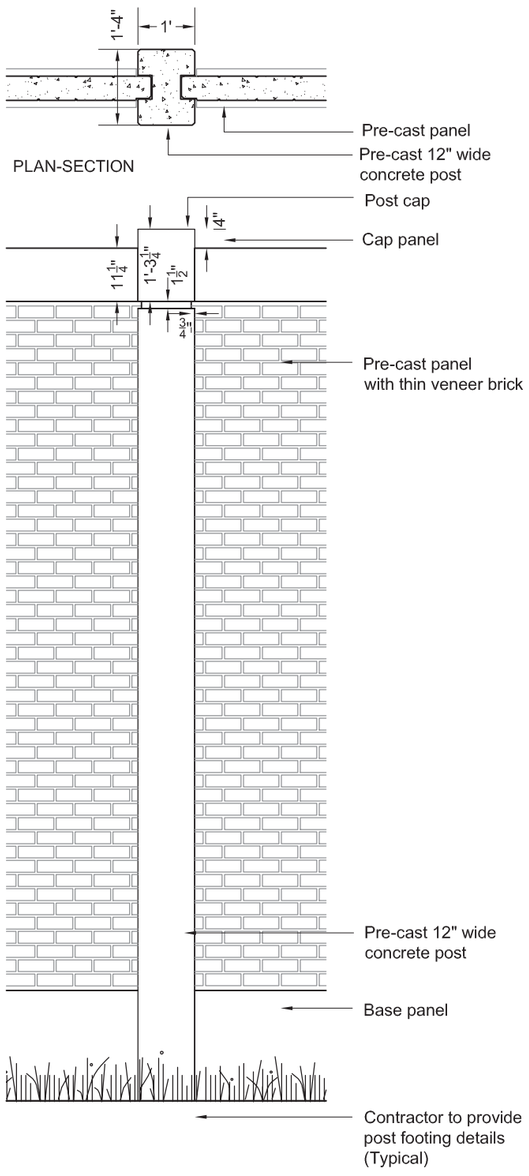
NOTE:
BRICK PATTERN
Minimum vertical step = 9-1/2" (3 courses)
Maximum vertical step = 2'-3" (9 courses)



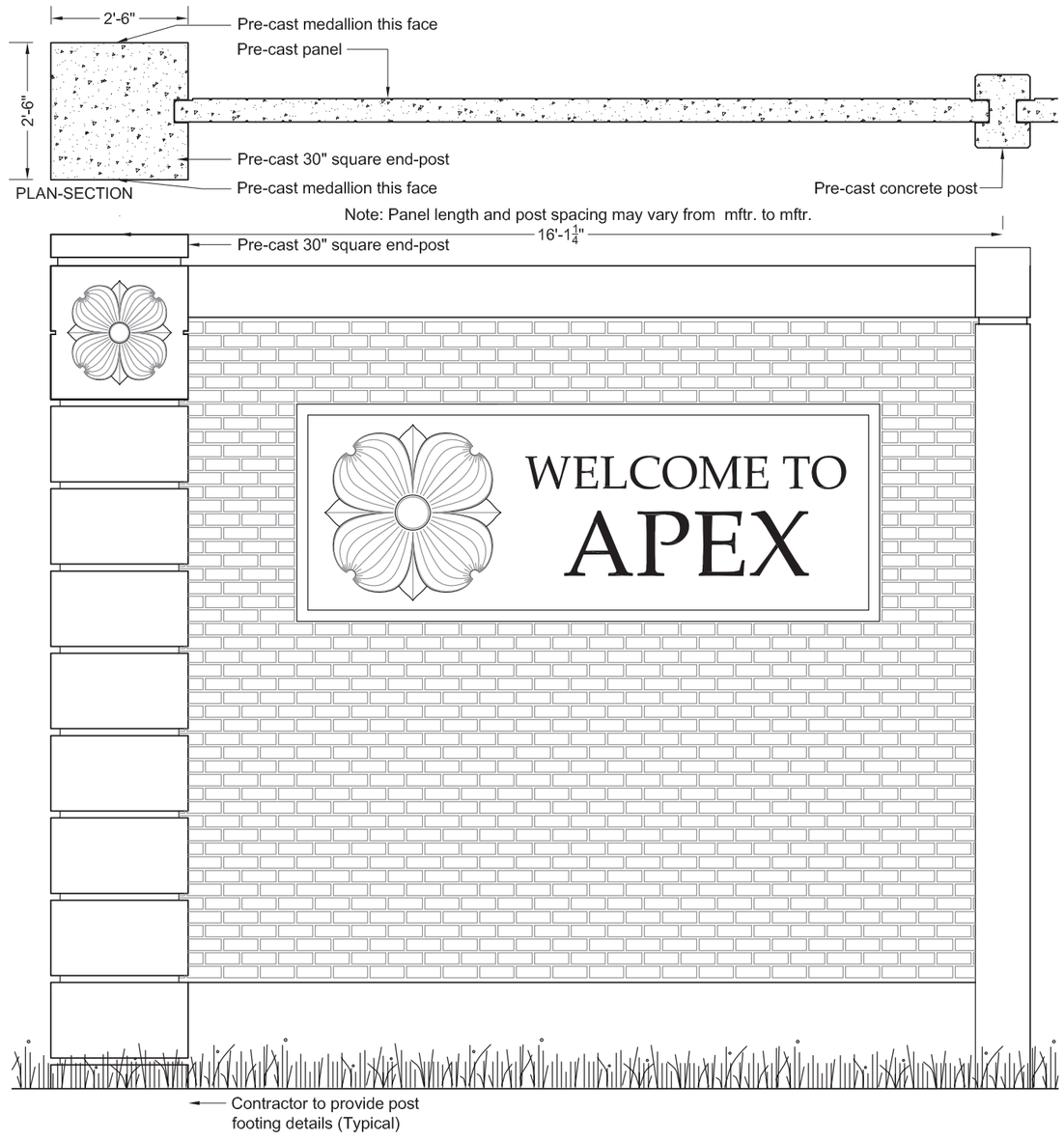
NOISE WALL ELEVATION- BRICK ALTERANTIVE- STEPPED CONDITION- EXPRESSWAY SIDE
SCALE: 1/8"= 1'-0"



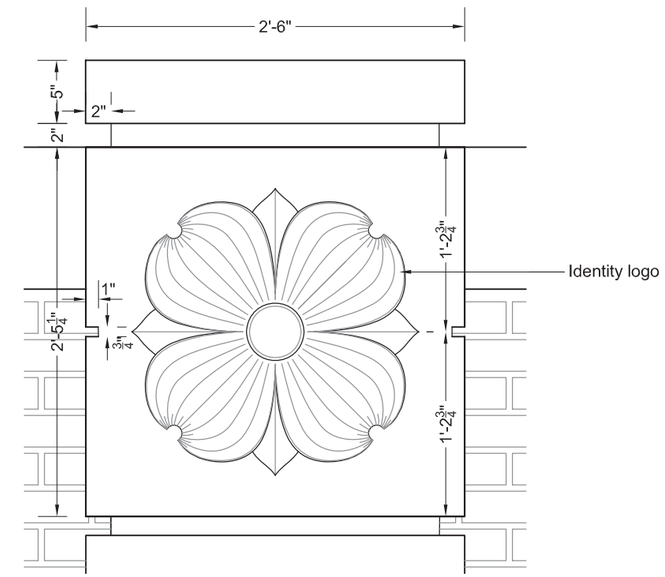
PRE-CAST 30" WIDE
LINE PILASTER ELEVATION
SCALE: 1/2 "= 1'-0"



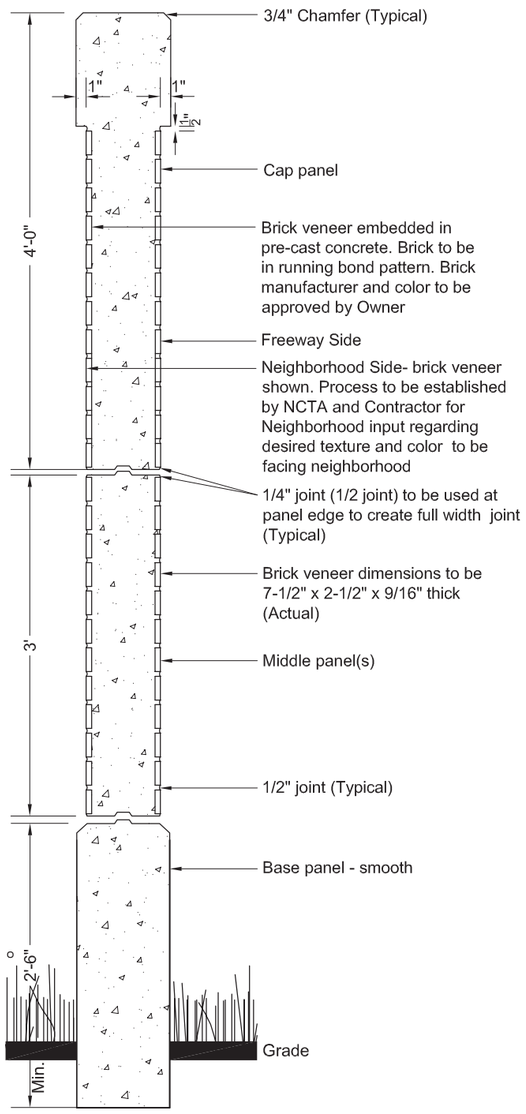
PRE-CAST CONCRETE POST ELEVATION
SCALE: 3/8"=1'-0"



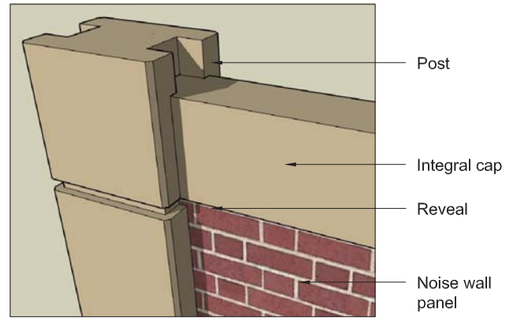
NOISE WALL GATEWAY CONCEPT
SCALE: 3/8"=1'-0"



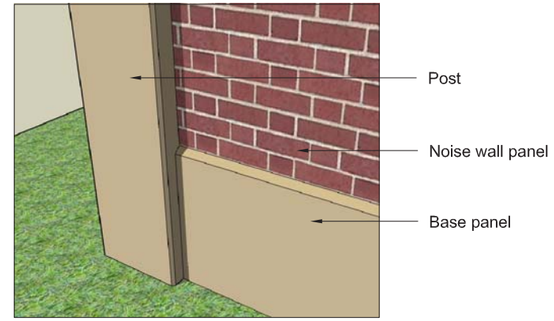
PRE-CAST 30" WIDE
LINE PILASTER CAP ELEVATION
SCALE: 1"= 1'=-0"



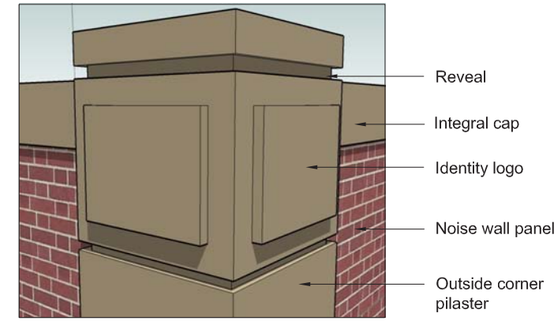
BRICK PANEL SECTION
SCALE: 1/2 "= 1'-0"



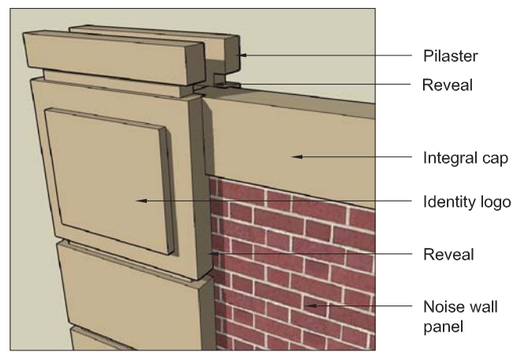
PRE-CAST 12" WIDE POST
ILLUSTRATIVE CAP DETAIL



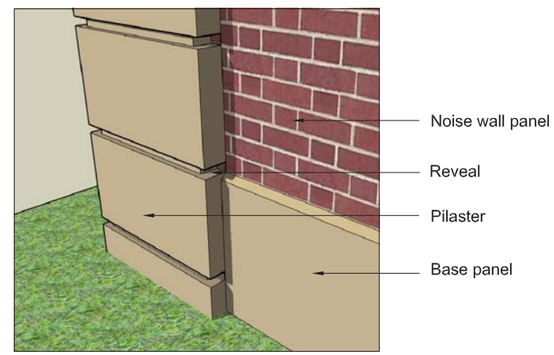
PRE-CAST 12" WIDE POST
ILLUSTRATIVE BASE DETAIL



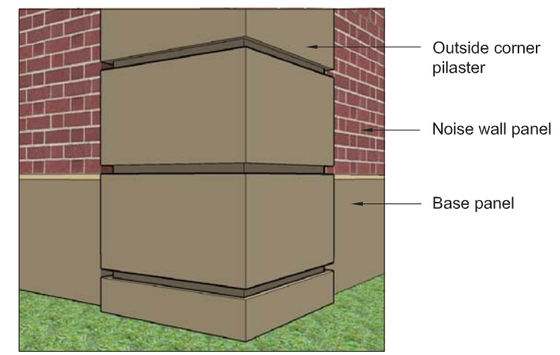
PRE-CAST 30" CORNER PILASTER
ILLUSTRATIVE CAP DETAIL



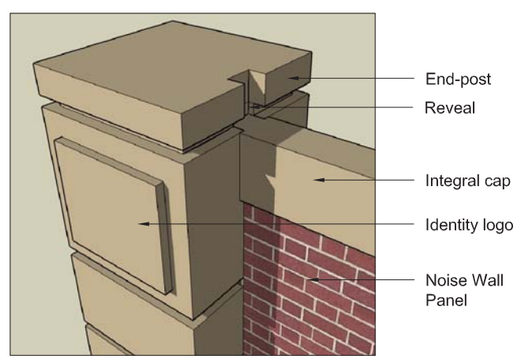
PRE-CAST 30" WIDE LINE PILASTER
ILLUSTRATIVE CAP DETAIL



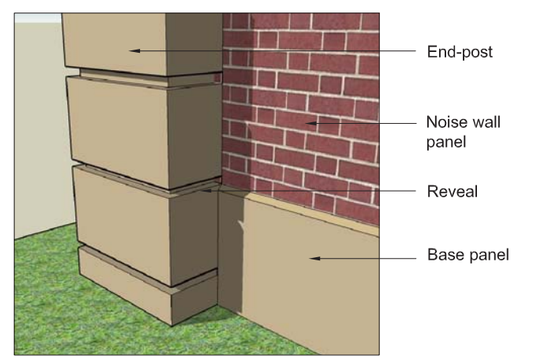
PRE-CAST 30" WIDE LINE PILASTER
ILLUSTRATIVE BASE DETAIL



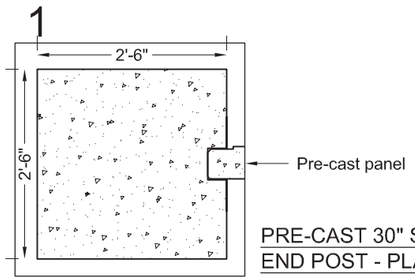
PRE-CAST 30" CORNER PILASTER
ILLUSTRATIVE BASE DETAIL



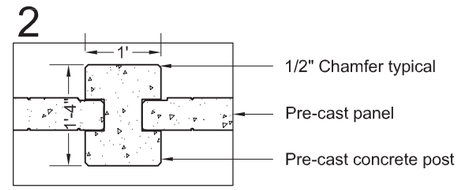
PRE-CAST 30" SQUARE END-POST
ILLUSTRATIVE CAP DETAIL



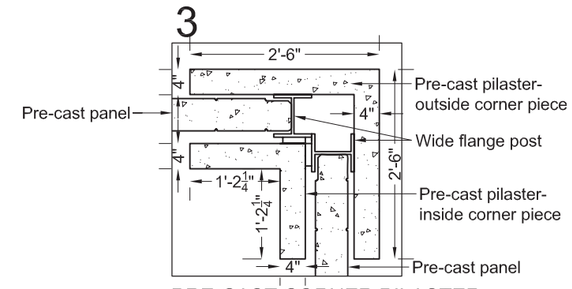
PRE-CAST 30" SQUARE END-POST
ILLUSTRATIVE BASE DETAIL



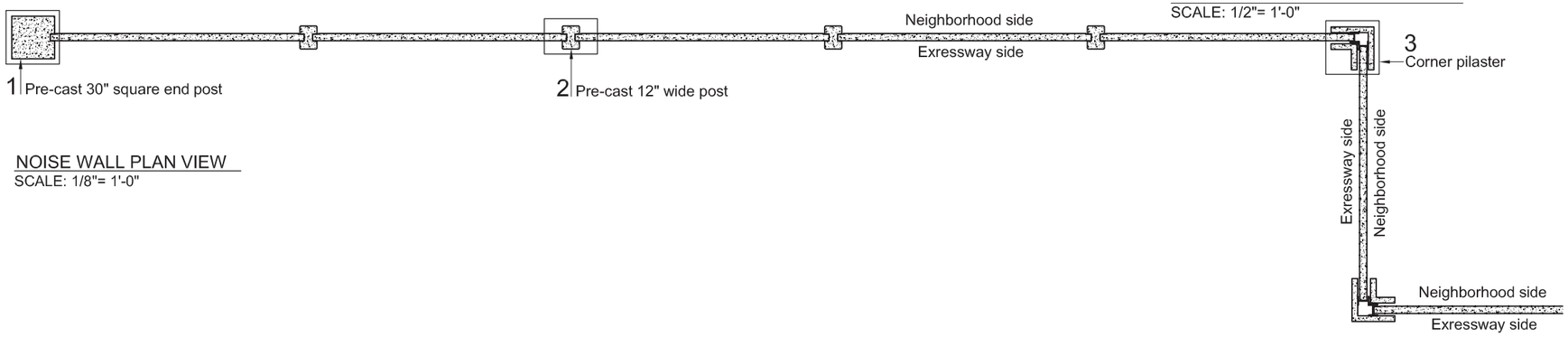
PRE-CAST 30" SQUARE END POST - PLAN SECTION
SCALE: 1/2"= 1'-0"



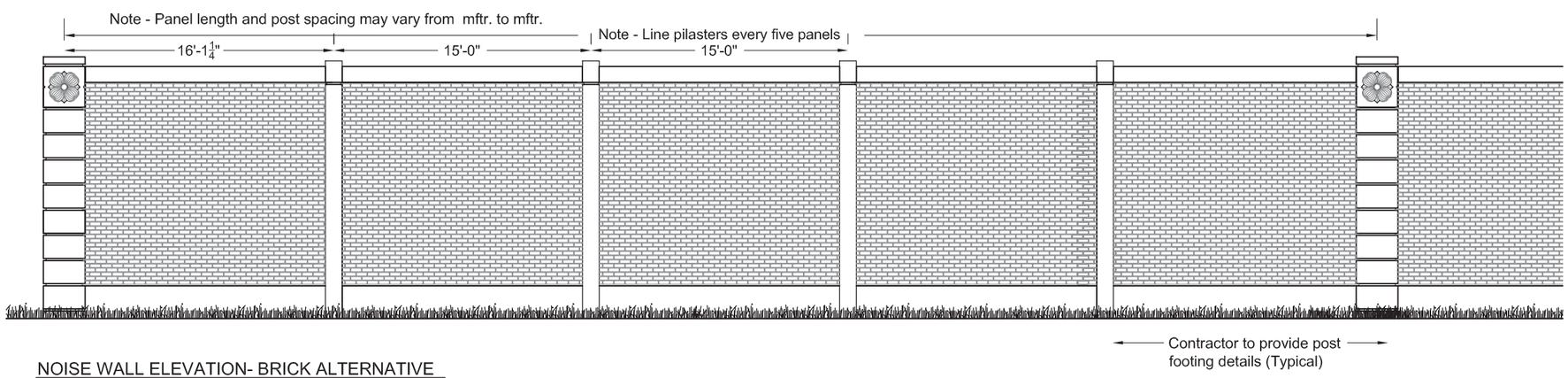
PRE-CAST 12" WIDE POST- PLAN SECTION
SCALE: 1/2"= 1'-0"



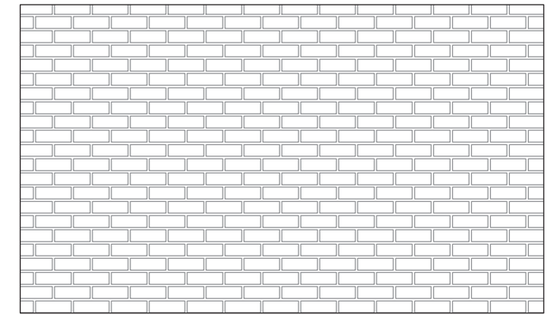
PRE-CAST CORNER PILASTER - PLAN SECTION
SCALE: 1/2"= 1'-0"



NOISE WALL PLAN VIEW
SCALE: 1/8"= 1'-0"

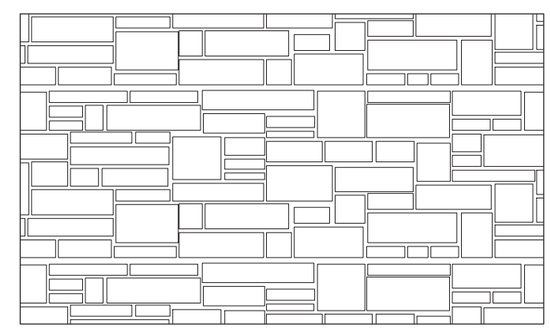


NOISE WALL ELEVATION- BRICK ALTERNATIVE
SCALE: 1/8"= 1'-0"



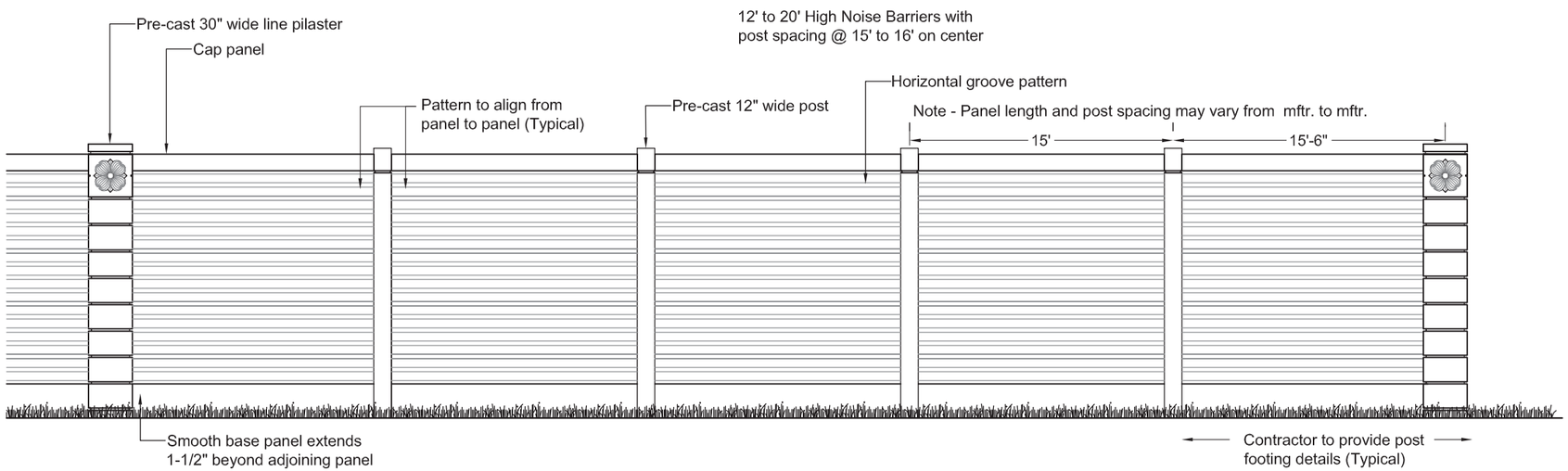
ALTERNATE 1- BRICK

ALTERNATE 2 - HORIZONTAL GROOVE PATTERN

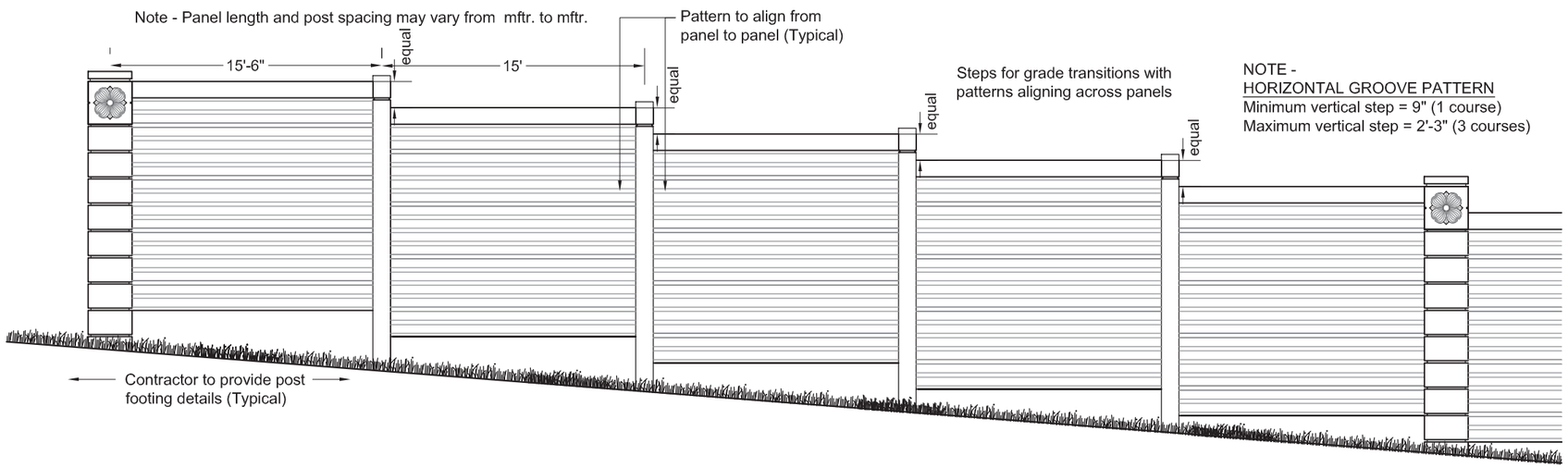


ALTERNATE 3 - RANDOM ASHLAR PATTERN

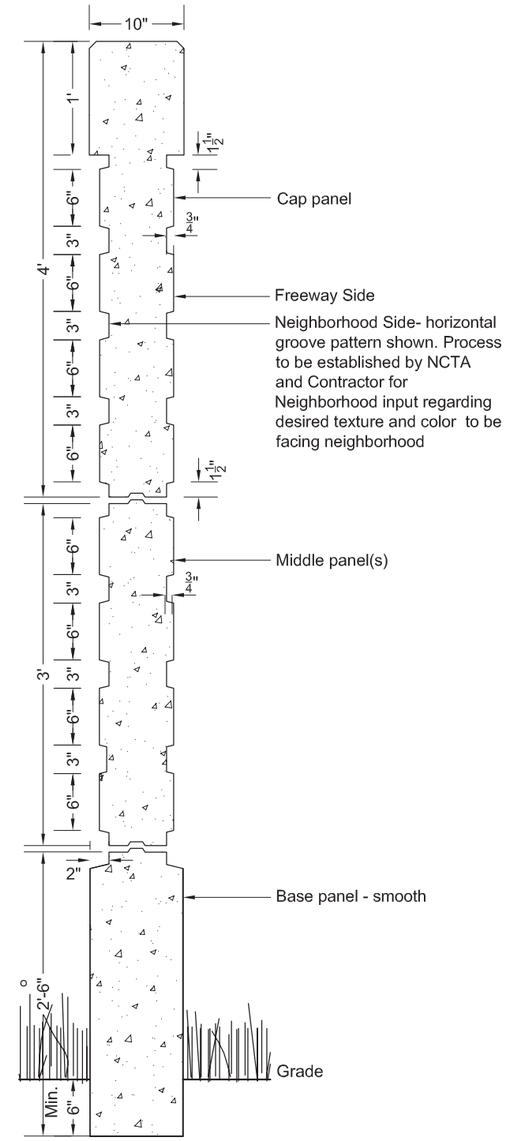
NEIGHBORHOOD SIDE TEXTURE ALTERNATIVES
SCALE: 3/8"= 1'-0"



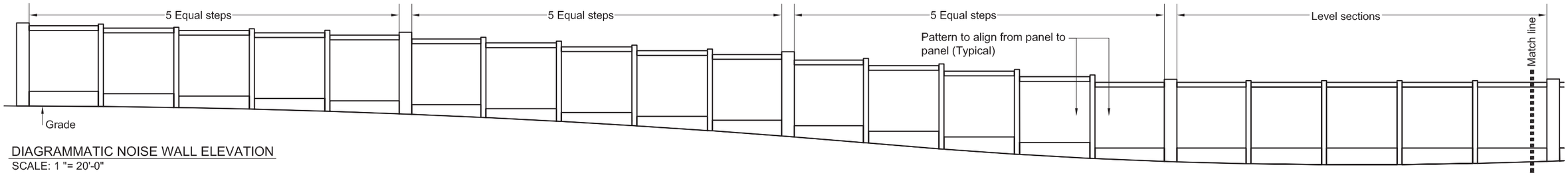
NOISE WALL ELEVATION WITH HORIZONTAL GROOVE PANELS
SCALE: 1/8"= 1'-0"



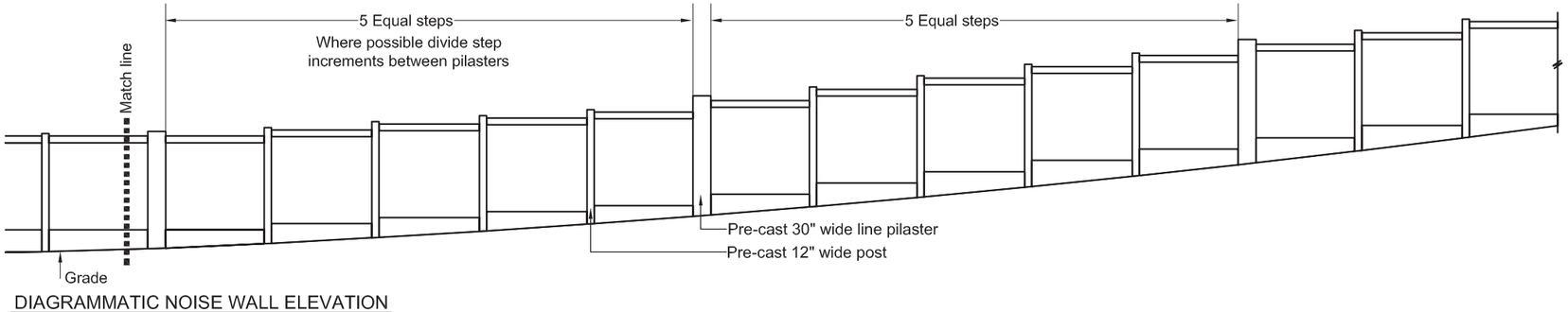
NOISE WALL ELEVATION WITH GROOVE PANELS- ALTERNATIVE STEPPED CONDITION
SCALE: 1/8"= 1'-0"



GROOVE PANEL SECTION
SCALE: 1/2 "= 1'-0"



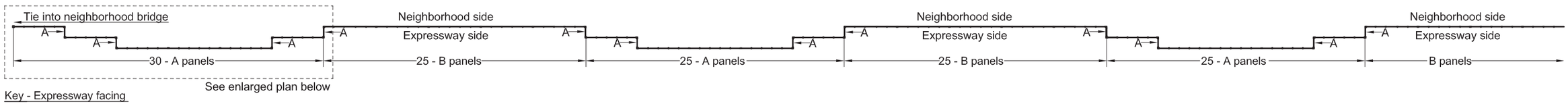
DIAGRAMMATIC NOISE WALL ELEVATION
SCALE: 1 "= 20'-0"



DIAGRAMMATIC NOISE WALL ELEVATION
SCALE: 1 "= 20'-0"

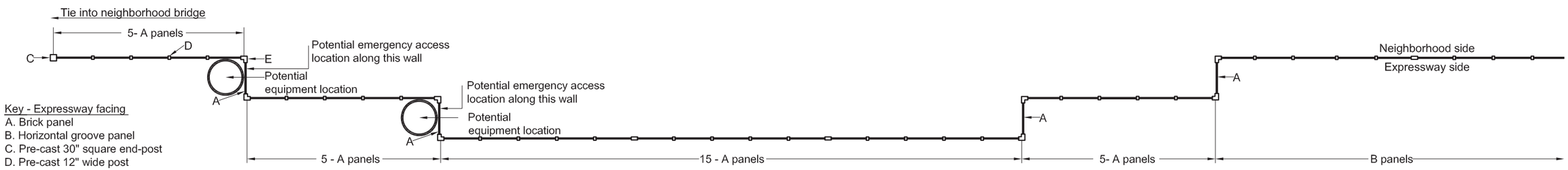
NOTE -
BRICK PATTERN
Minimum vertical step = 9-1/2" (3 courses)
Maximum vertical step = 2'-3" (9 courses)

HORIZONTAL GROOVE PATTERN
Minimum vertical step = 9" (1 course)
Maximum vertical step = 2'-3" (3 courses)



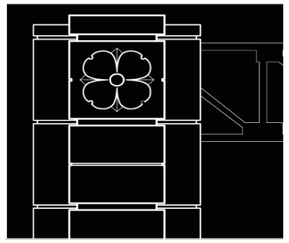
Key - Expressway facing
A. Brick panel
B. Horizontal groove panel

NOISE WALL DIAGRAMATTIC PLAN
SCALE: 1"= 150'

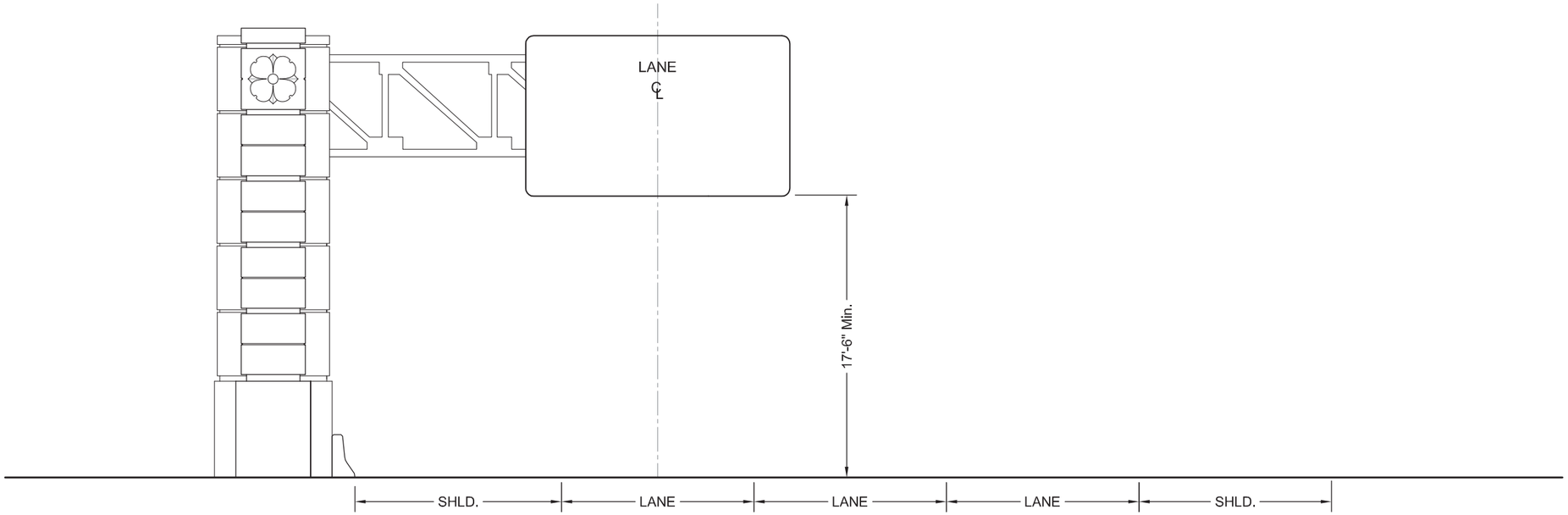


Key - Expressway facing
A. Brick panel
B. Horizontal groove panel
C. Pre-cast 30" square end-post
D. Pre-cast 12" wide post
E. Pre-cast corner pilaster

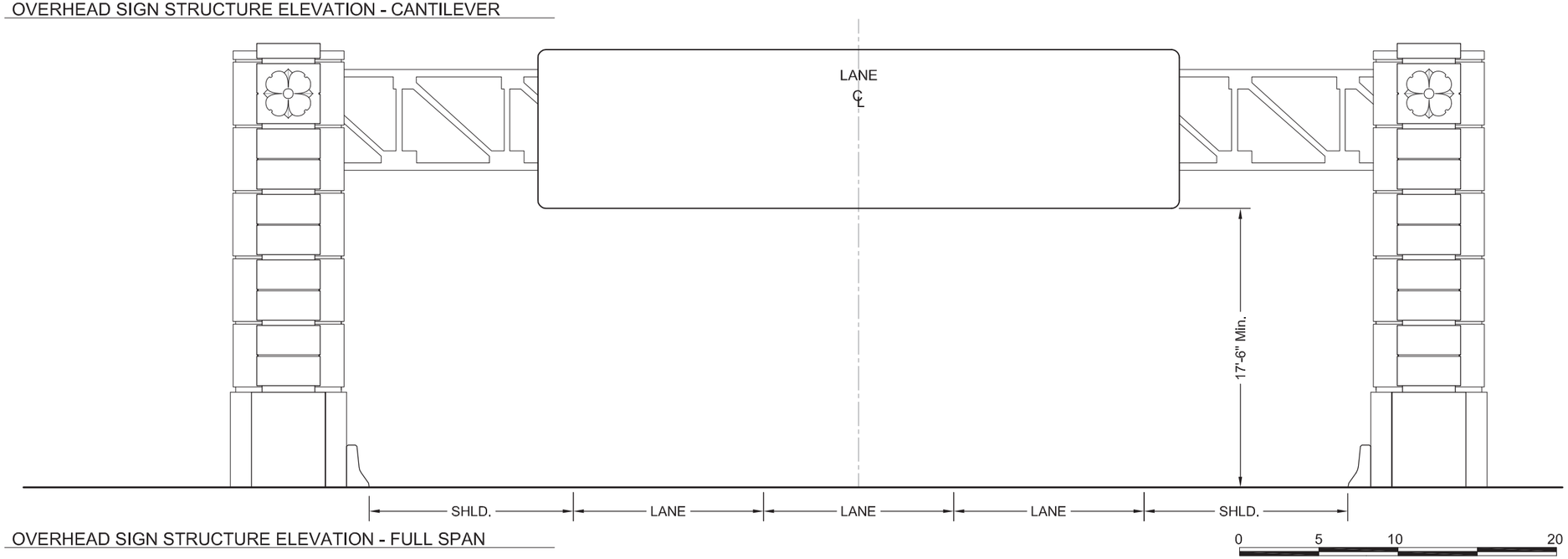
ENLARGED NOISE WALL DIAGRAMMATIC PLAN
SCALE: 1"= 40'



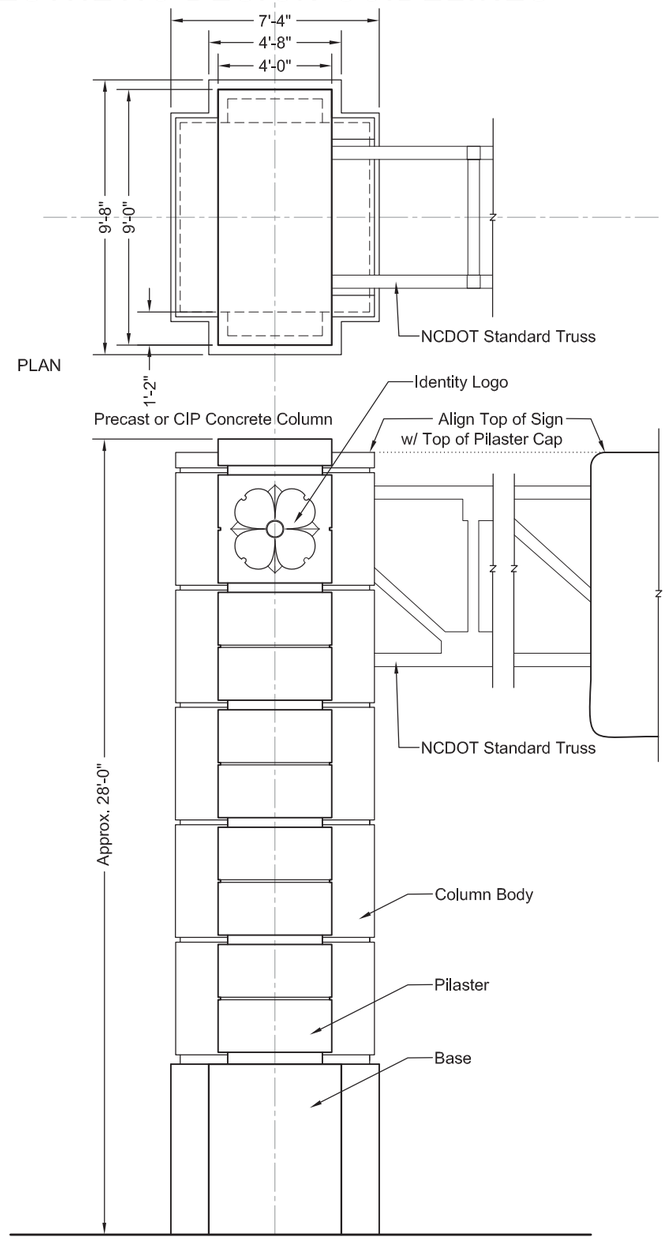
5 Sign Structures 5.1–5.3



OVERHEAD SIGN STRUCTURE ELEVATION - CANTILEVER

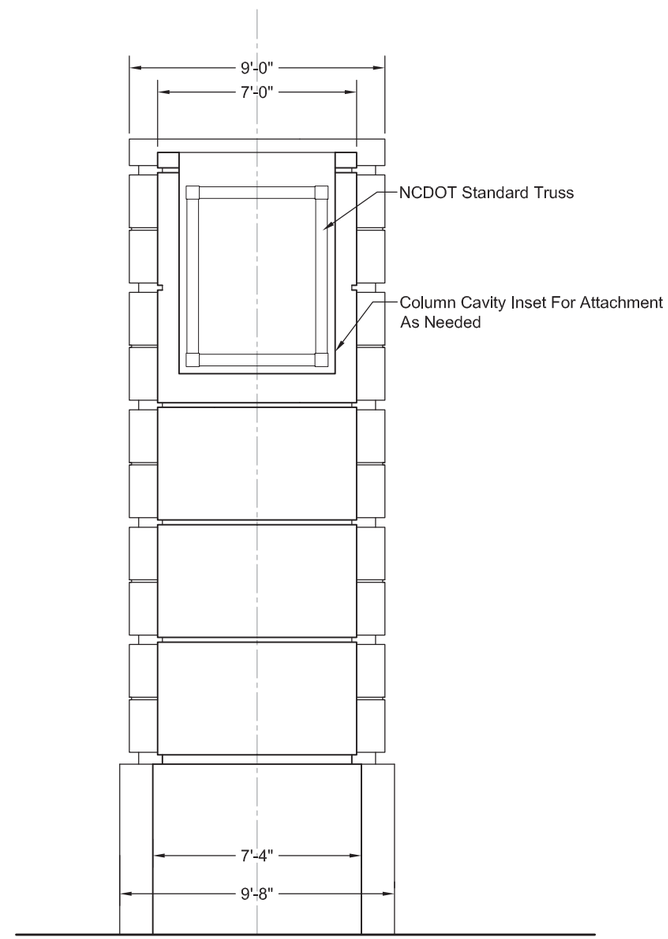


OVERHEAD SIGN STRUCTURE ELEVATION - FULL SPAN



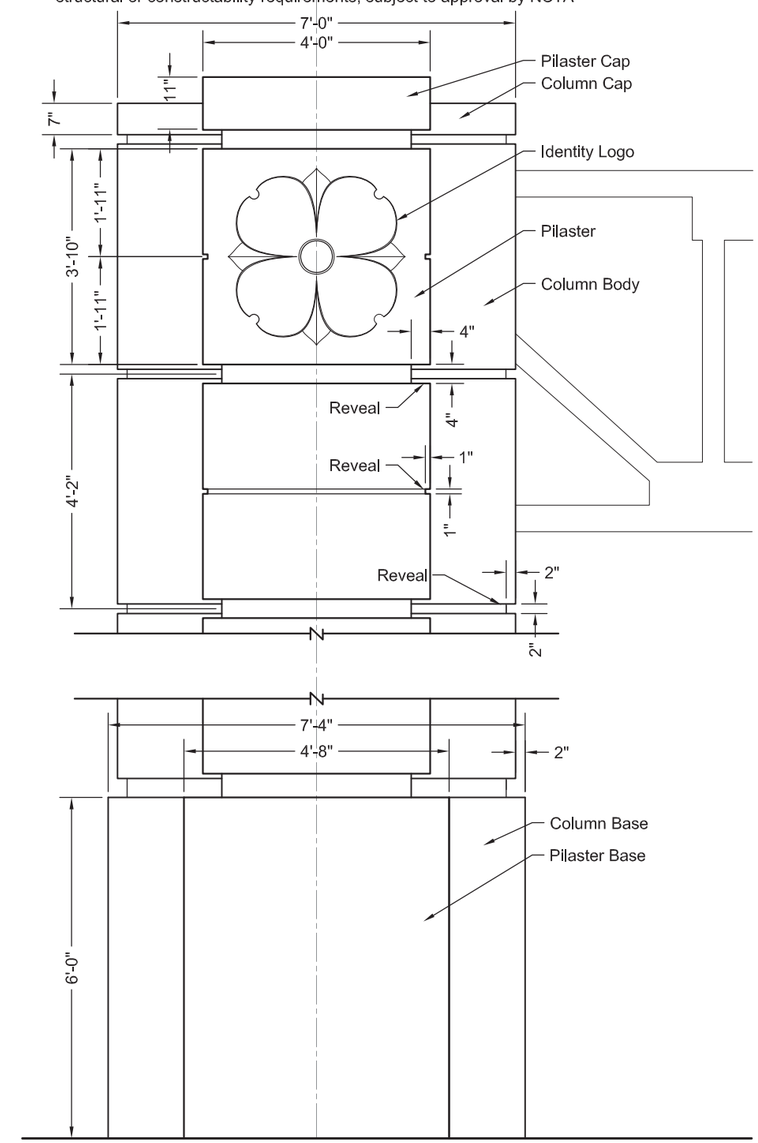
OVERHEAD SIGN STRUCTURE COLUMN EXTERIOR ELEVATION

0 5 10



OVERHEAD SIGN STRUCTURE COLUMN INTERIOR ELEVATION

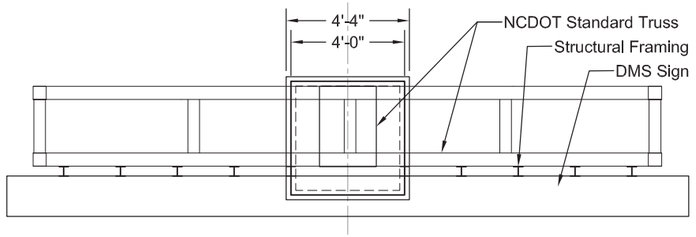
Structural element and reveal dimensions are shown to indicate desirable proportions for aesthetic purposes only. These dimensions may vary to meet structural or constructability requirements, subject to approval by NCTA



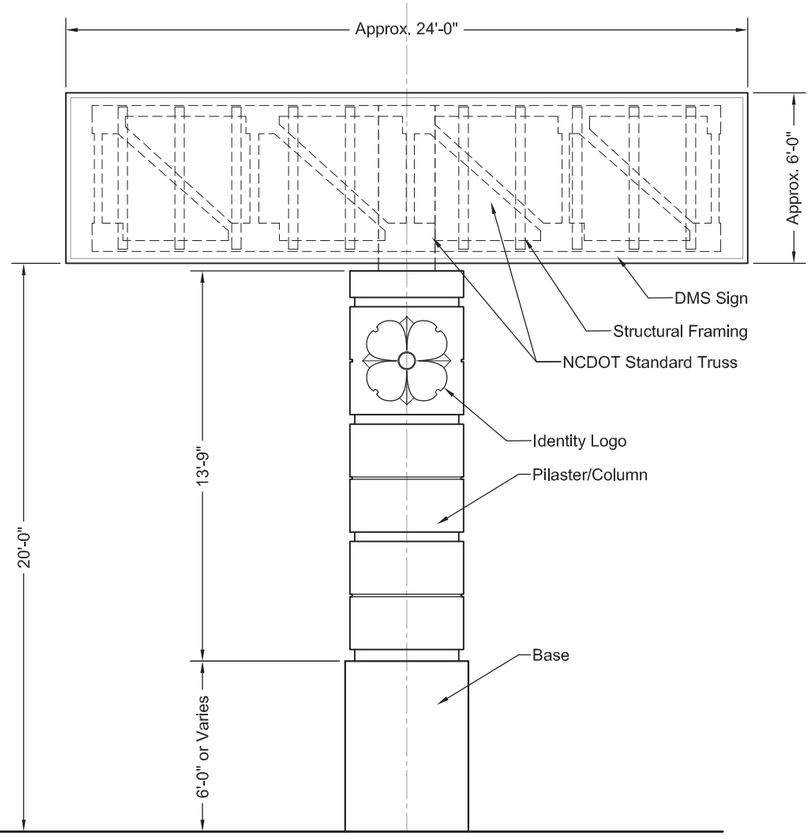
OVERHEAD SIGN STRUCTURE - DETAIL ELEVATION

0 1 5

Structural element and reveal dimensions are shown to indicate desirable proportions for aesthetic purposes only. These dimensions may vary to meet structural or constructability requirements, subject to approval by NCTA



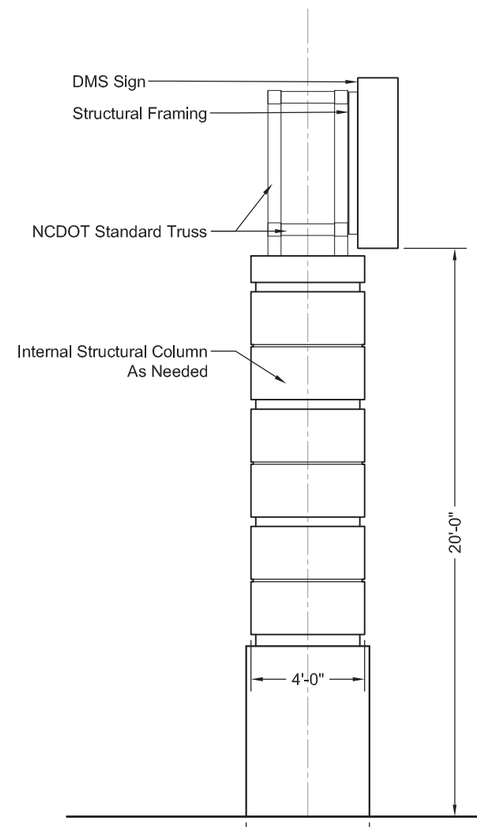
PLAN



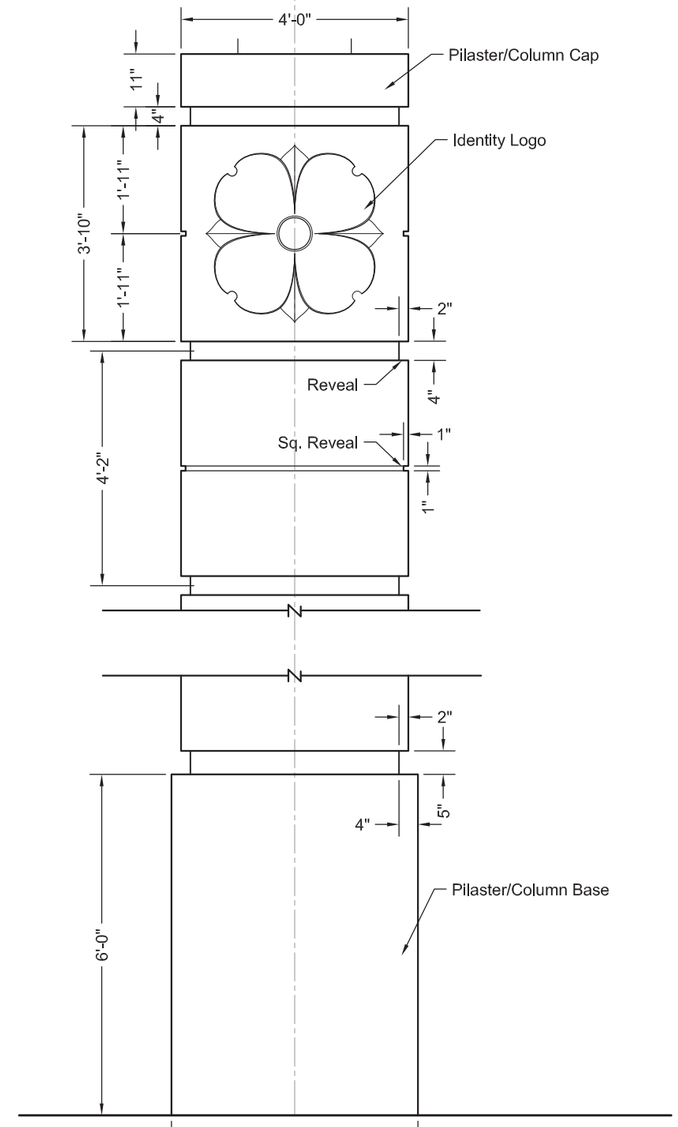
PLAN

DMS SIGN STRUCTURE COLUMN ELEVATION

0 5 10

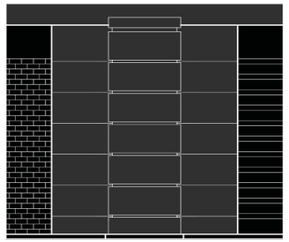


DMS SIGN STRUCTURE COLUMN INTERIOR ELEVATION



DMS SIGN STRUCTURE COLUMN DETAIL

0 1 5



6 Coatings and Textures 6.1–6.3

Color Range Closest to
Federal Standard 595B Color 36628

FOREGROUND COLOR (warm grey)
Pilaster
Base
Secondary Cap (bottom half)
Traffic Barrier (inset)
Noise Wall Cap / Secondary Pilaster

Color Range Closest to
Federal Standard 595B Color 36650

BASE COLOR (cool grey)
Traffic Barrier
Primary Cap
Secondary Cap
Bridge Deck / Beam
Secondary Pilaster

Color Range Closest to
Federal Standard 595B Color 30109

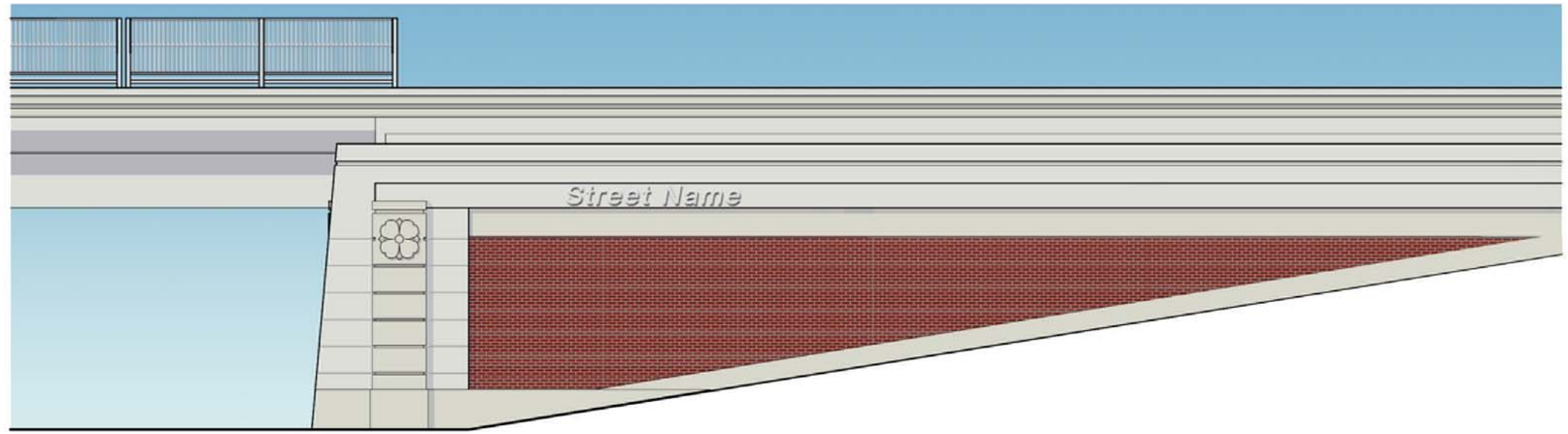
BACKGROUND -A COLOR (red brick)
Brick Wall Vaneer

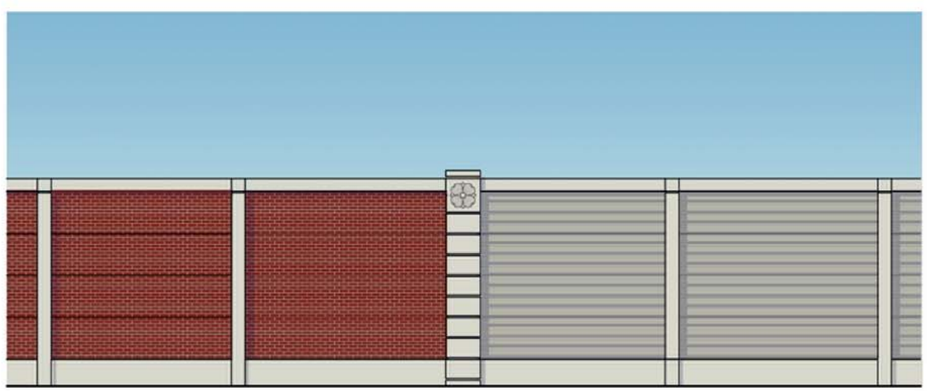
Color Range Closest to
Federal Standard 595B Color 26496

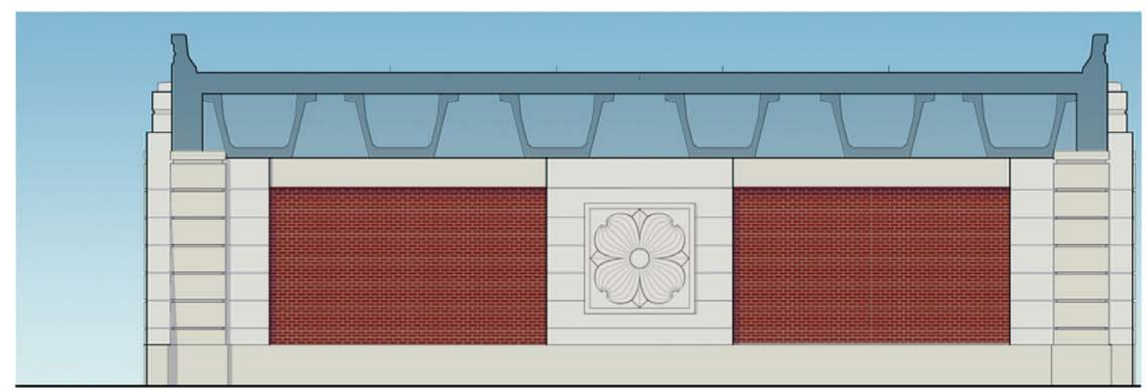
BACKGROUND -B COLOR (grey)
Standard Wall Panel

GALVANIZED FINISH (or matching color)
Pedestrian Fencing
Street Identification (if metal pin mounted)

NOTE:
Final Color Selection and Method of Stain (paint) Finish
Application Determined During Final Design.







FOREGROUND COLOR (warm grey)
Pilaster
Base
Secondary Cap (bottom half)
Traffic Barrier (inset)

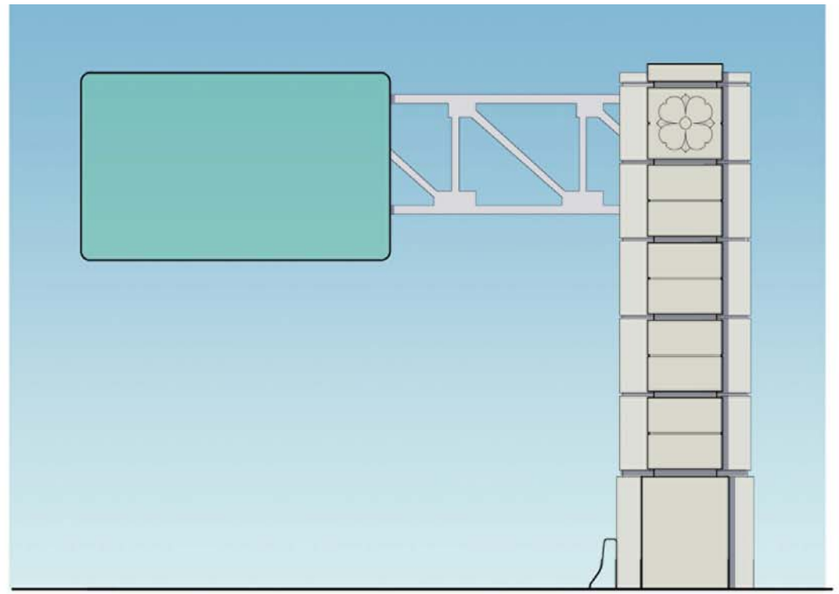
Color Range Closest to
Federal Standard 595B Color 36628

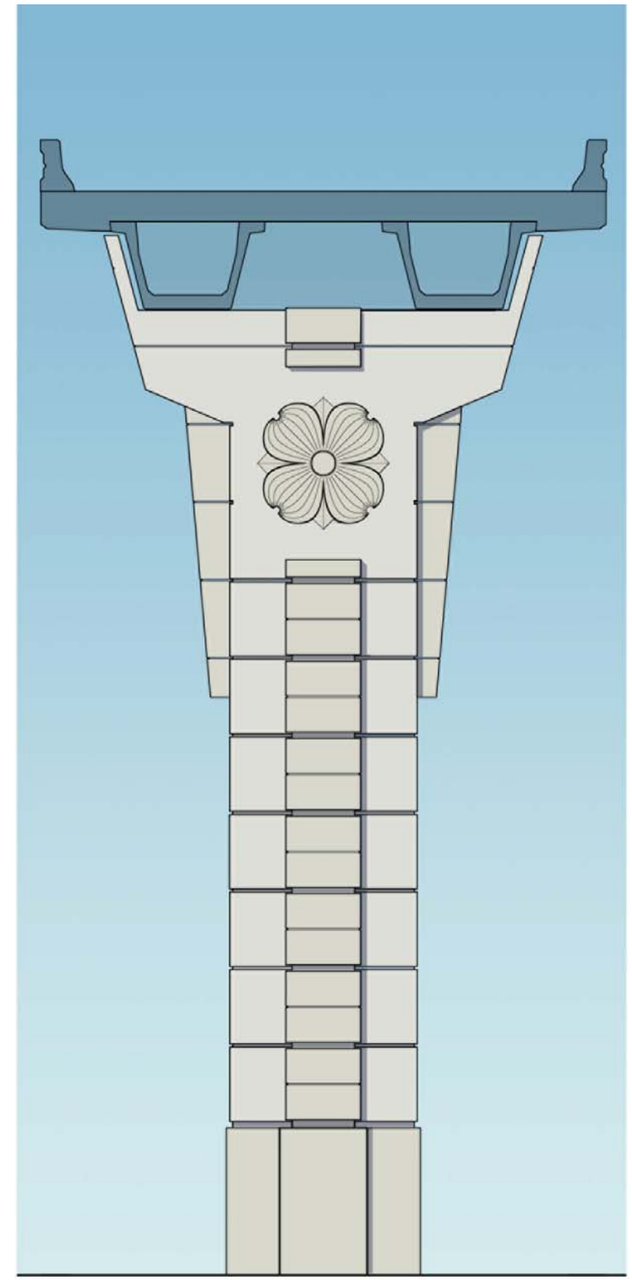
BASE COLOR (cool grey)
Traffic Barrier
Primary Cap
Secondary Cap
Bridge Deck / Beam
Secondary Pilaster

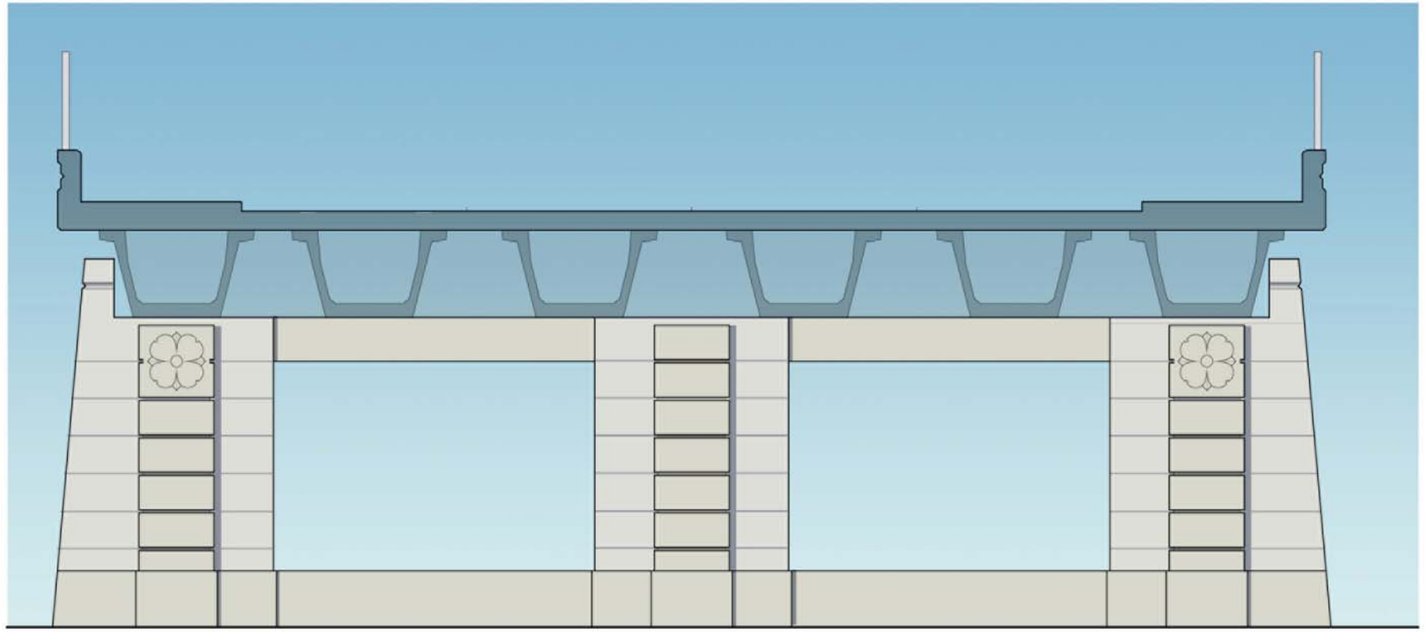
Color Range Closest to
Federal Standard 595B Color 36650

GALVANIZED FINISH (or matching color)
Pedestrian Fencing
Sign Truss

NOTE:
Final Color Selection and Method of Stain (paint) Finish
Application Determined During Final Design.







FOREGROUND COLOR (warm grey)
Pilaster
Base

Color Range Closest to
Federal Standard 595B Color 36628

BASE COLOR (cool grey)
Secondary Pilaster

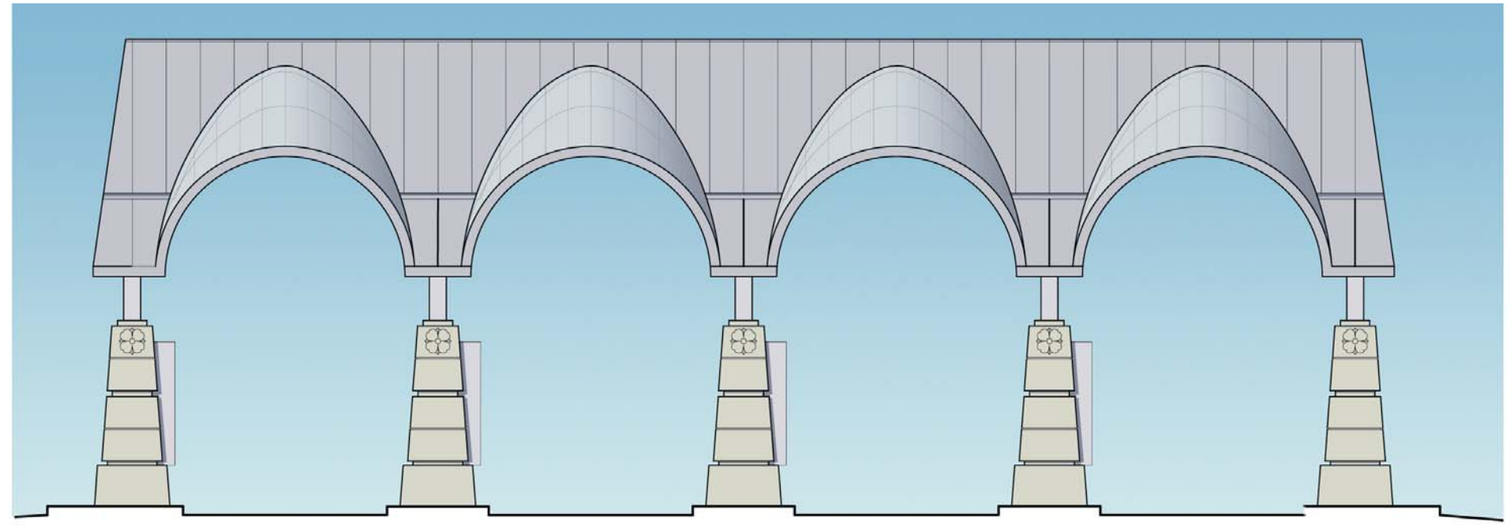
Color Range Closest to
Federal Standard 595B Color 36650

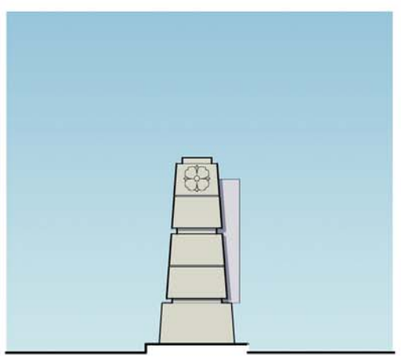
ARCHITECTURAL TENSILE FABRIC (Translucent)
Arched Openings

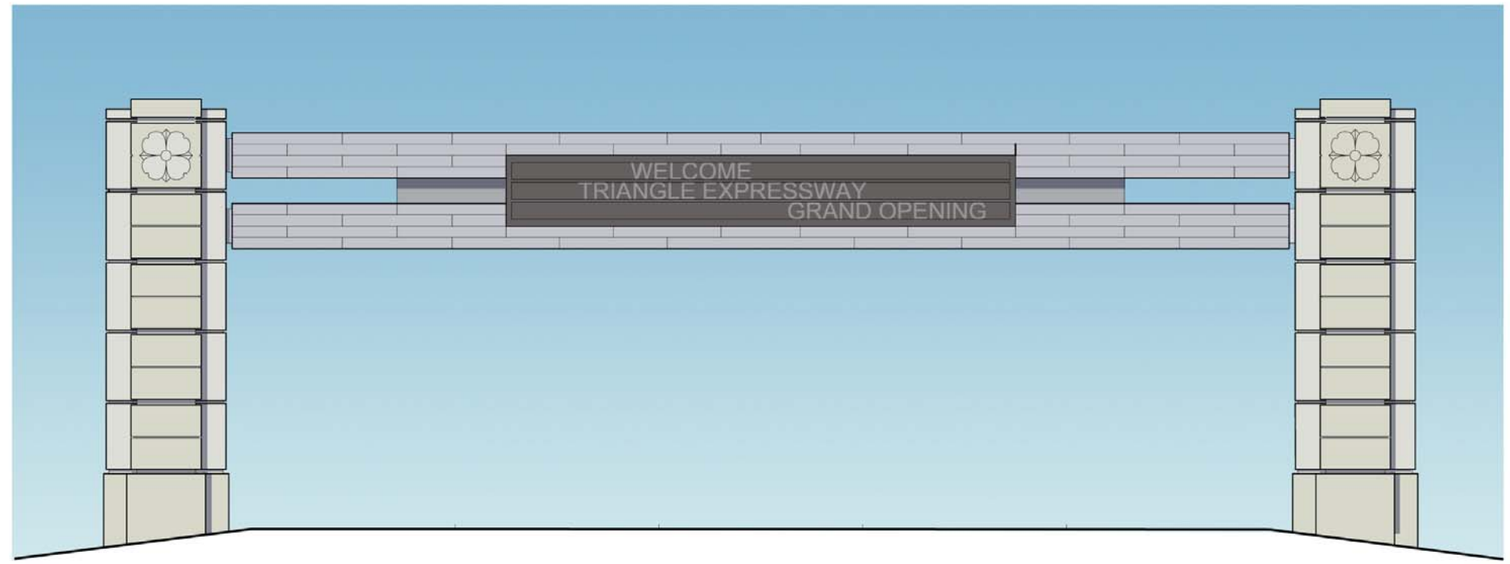
GALVANIZED FINISH (or matching color)
Roof
Structural Tubes
Structural Support
Cash Machine

ZINC PANELS
Structural Tube Cladding

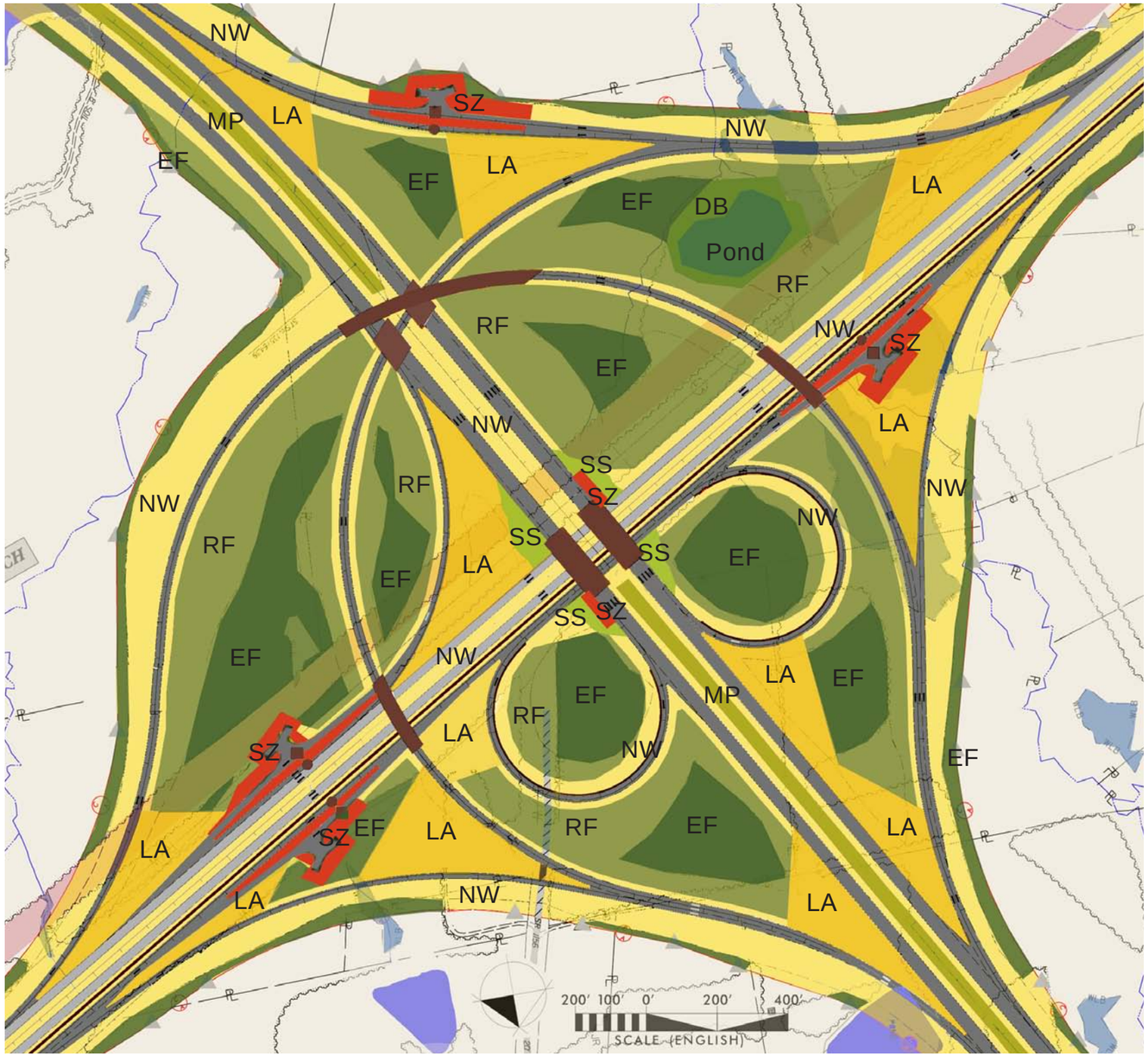
NOTE:
Final Color Selection and Method of Stain (paint) Finish
Application Determined During Final Design.







7 Landscape
7.1–7.10



PLANTING SCHEME SYSTEM TO SYSTEM PROTOTYPE

Existing forests and natural vegetation are assets the NCTA plans to preserve. and reforestation will provide continuity with the exising surrounding landscape.

EF	Existing Forest (To be retained beyond construction limits)	SS	Stablized Slope Plantings
RF	Reforestation	LA	Low Area Plantings
DB	Detention Basin Plantings	NW	Naturalized Wildflowers/Grasses
MP	Median Plantings	SZ	Special Planting Zones (see 7.3 & 7.4)

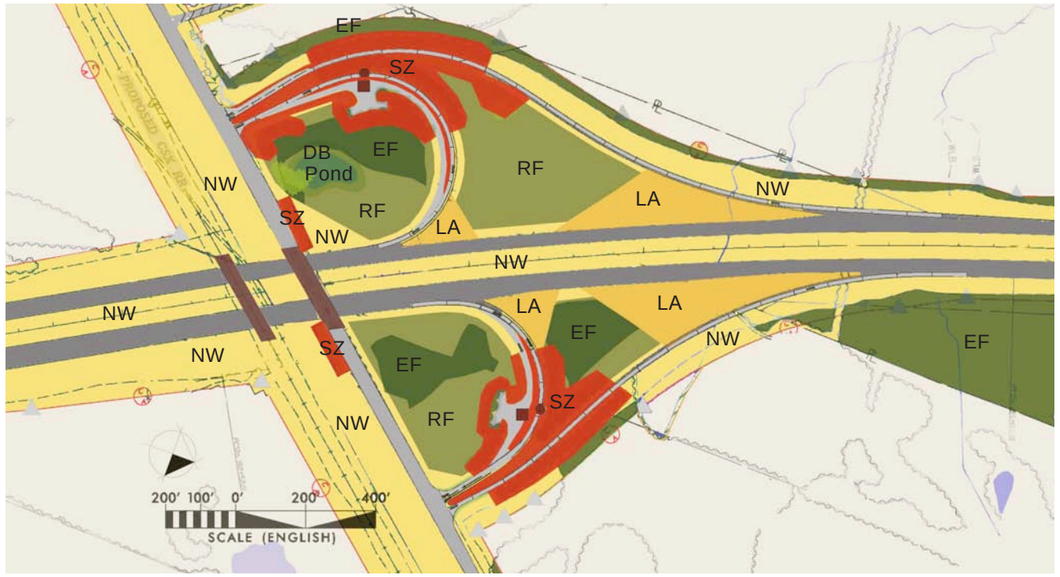
Design Principle 1

Retain existing forested areas to the extent practical and reintroduce reforestation to areas cleared due to construction activity by using native canopy and understory trees.

Triangle Expressway will have the character of a wooded parkway.

Planting Scheme for the Triangle Expressway will apply the principles outlined in the following pages.

PLANTING SCHEME DIAMOND PROTOTYPE



PLANTING SCHEME HALF DIAMOND PROTOTYPE

Slopes will be stablized with attractive vegetation. Detention ponds will not only manage stormwater but will be landscaped as scenic amenities.

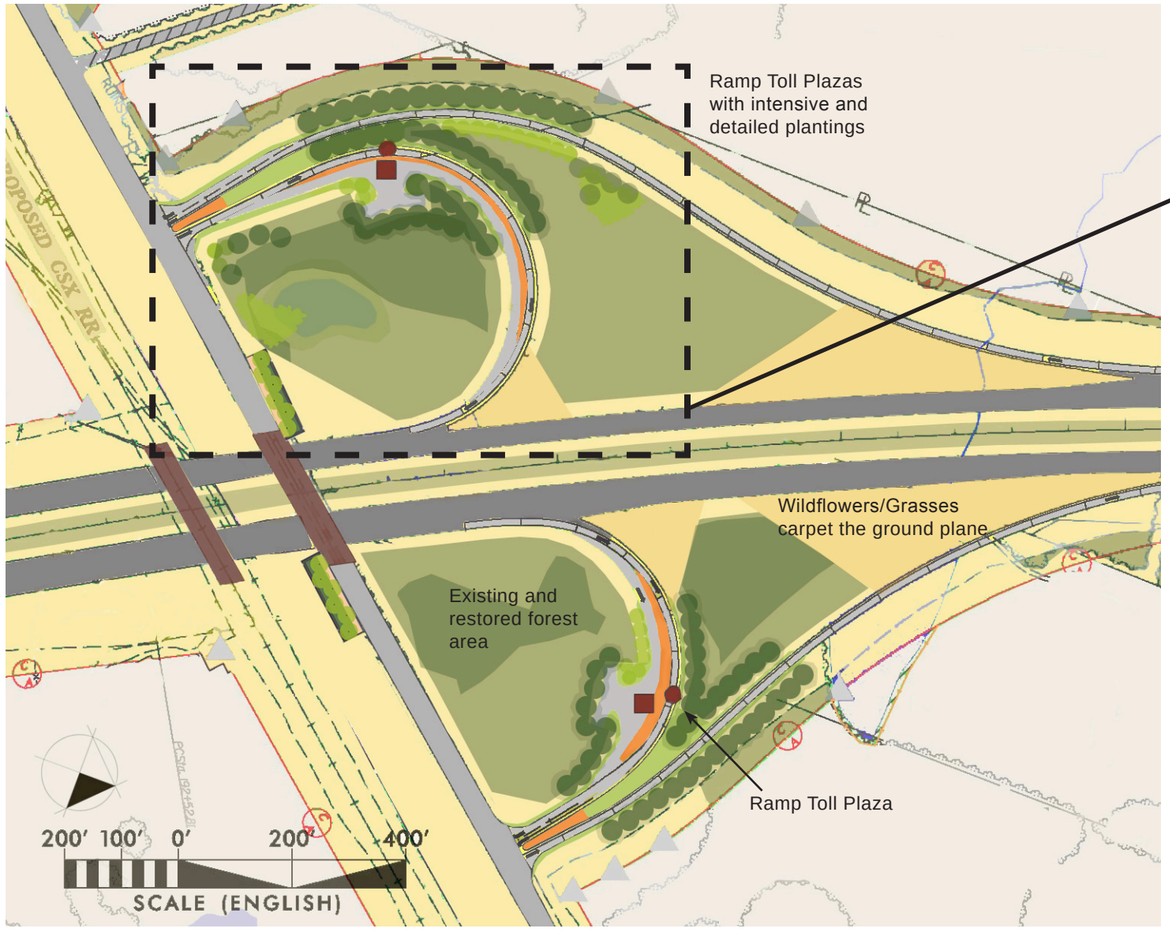
EF	Existing Forest (To be retained beyond construction limits)	SS	Stablized Slope Plantings
RF	Reforestation	LA	Low Area Plantings
DB	Detention Basin Plantings	NW	Naturalized Wildflowers/Grasses
MP	Median Plantings	SZ	Special Planting Zones (see 7.3 & 7.4)

Design Principle 1

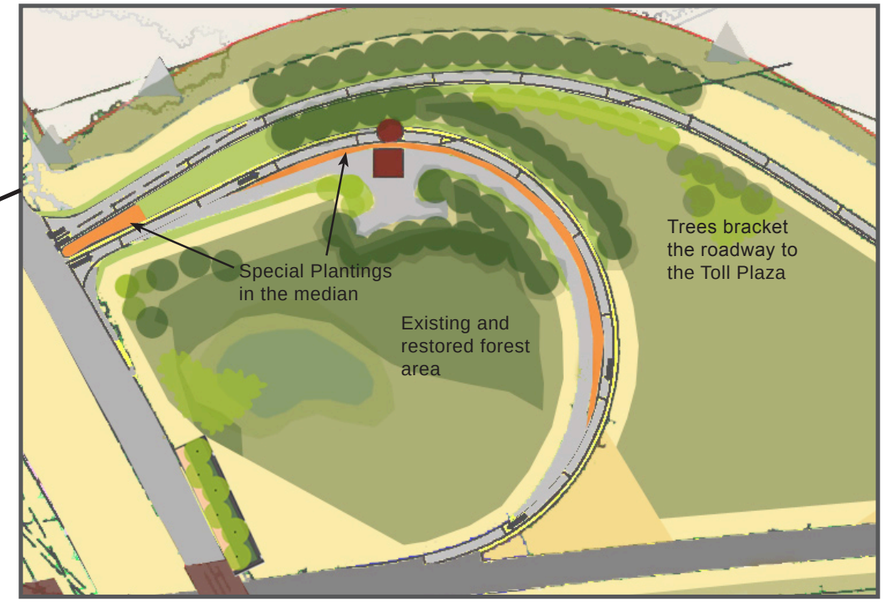
Retain existing forested areas to the extent practical and reintroduce reforestation to areas cleared due to construction activity by using native canopy and understory trees.

Triangle Expressway will have the character of a wooded parkway.

Planting Scheme for the Triangle Expressway will apply the principles outlined in the following pages.



TOLL PLAZA PLANTING PROTOTYPE



TOLL PLAZA PLANTING DETAIL — Intensive plantings including bracket of canopy trees, understory trees, shrub masses, lawn and special plantings in median.

- Existing Forest (To be retained beyond construction limits)
- Reforestation
- Naturalized Wildflowers/Grasses
- Low Planting Areas
- Canopy Trees
- Understory Trees
- Shrubs, Lawn
- Perennials & Special Plantings

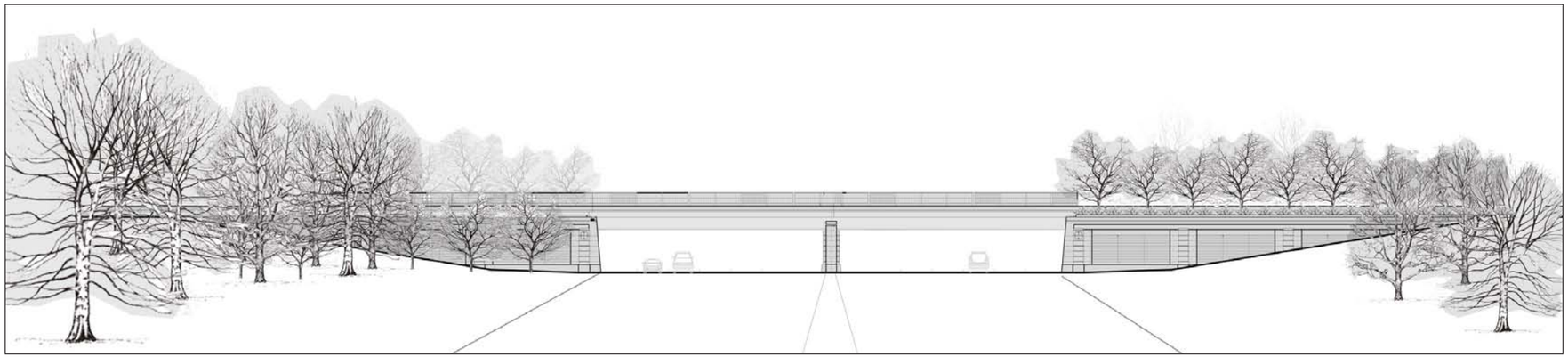
See Ramp Express/Cash 2.11-2.13

Design Principle 2

Aggregate plantings in zones where they will achieve maximum impact.

Toll Plazas are the gateways to the Triangle Expressway.

Plantings at the Toll Plazas will be appreciated by customers driving at slower traffic speeds.



RAISED PLANTERS WITH VIEW CORRIDOR — Prototype for Mainline Under Local Street Bridge

DETAIL RAISED PLANTERS — Mainline Under Local Street Bridge

Reforestation

Naturalized Wildflowers/Grasses

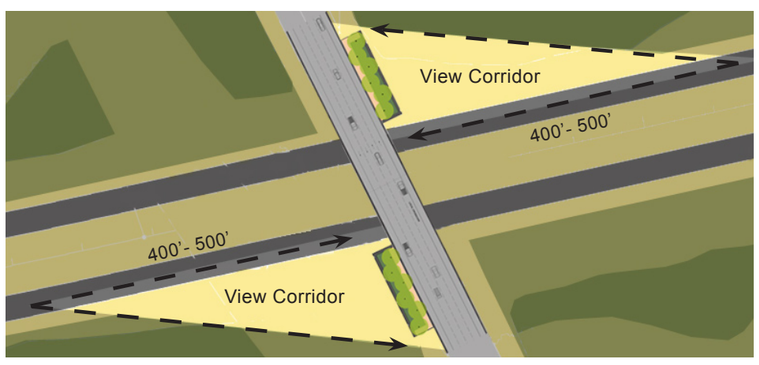
In planters —

Understory Trees

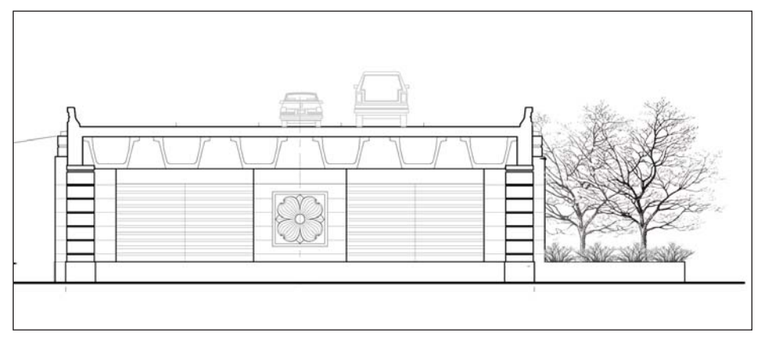
Spreading Shrubs

Perennials & Special Plantings

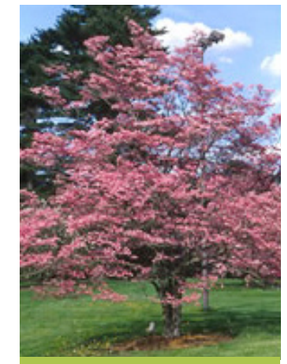
See Bridges, Abutments and Bents 1.1-1.3, 1.5



VIEW CORRIDOR TO PLANTERS



LOW PLANTER — Mainline Bridge Over Local (Divided) Street



Seasonal Color

Texture

Form

Unity

Design Principle 2

Aggregate plantings in zones where they will achieve maximum impact.

Raised and Low Abutment Planters will be constructed at Neighborhood Bridge Crossings.

Plant List

Flowering Dogwood, (*Cornus florida*)

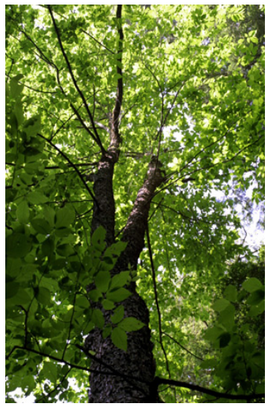
Spreading Juniper, (*Juniperus* spp.)

Daylily, 'Happy Returns' or 'Little Grapette' (*Hemerocallis* spp.)

Big Blue Liorope, (*Liorope muscari*)

See 7.5

Sweetgum,
Liquidambar styraciflua


Carolina Silverbell,
Halesia carolina

Flowering Dogwood,
Cornus florida

Details of Willow Oak (left) and American Beech (right)

PIEDMONT TREES

NATIVE CANOPY TREES

Red Maple, *Acer rubrum*

River Birch, *Betula nigra*

American Beech,
Fagus grandiflora

Carolina silverbell,
Halesia carolina

Eastern Red Cedar,
Juniperus virginiana

Sweetgum,
Liquidambar styraciflua

Tulip Poplar,
Liriodendrum tulipifera

Sourwood,
Oxydendrum arboreum

American Plane Tree,
Platinus occidentalis

White Oak, *Quercus alba*

Black Oak,
Quercus velutina

Red Oak, *Quercus rubra*

Chastetree,
Vitex agnus-castus

NON-NATIVE CANOPY TREES

Golden Raintree,
Koelreuteria paniculata

Crape Myrtle,
Lagerstroemia indica

NATIVE UNDERSTORY TREES

Downy Serviceberry,
Amelanchier arborea

Eastern Red Bud,
Cercus canadensis

White Fringetree,
Chionanthus virginicus

Flowering Dogwood,
Cornus florida

Southern Magnolia,
Magnolia grandiflora

Flowering crabapple,
Malus spp.

Canopy Trees 75' - 100' (H)
including American Beech, *Fagus grandiflora* (left)
and Sweetgum, *Liquidambar styraciflua* (right)

Understory Trees
20' - 35' (H) including
Flowering Dogwood,
Cornus florida

White Oak,
Quercus alba

Sourwood,
Oxydendron arboreum

Border Forsythia,
Forsythia x intermedia

American Beautyberry,
Callicarpa americana

Southern Wax Myrtle,
Myrica cerifera

Glossy Abelia,
Abelia x grandiflora

Big Blue Liriope,
Liriope muscari

Bottlebrush Buckeye,
Aesculus parviflora

PIEDMONT SHRUBS

EMBANKMENT AND PLANTER SHRUBS

Glossy Abelia,
Abelia x grandiflora

Hollies, *Ilex x attenuata*

Chinese Holly,
*Ilex cornuta**

Winterberry,
Ilex verticillata

Spreading juniper,
Juniperus spp.*

Southern Wax Myrtle,
Myrica cerifera

Indian Hawthorne,
Raphiolepsis umbellata

Smooth Sumac,
Rhus glabra

Flameleaf Sumac,
Rhus copallina

American Elderberry,
Sambucus canadensis

Japanese Cleyera,
*Ternstroemia gymnan-thera**

SCREENING SHRUBS

Yaupon Holly,
Ilex vomitoria

Nelly R. Stevens Holly,
Ilex x 'Nellie R. Stevens'

GENERAL SHRUBS

Bottlebrush Buckeye,
Aesculus parviflora

Red Chokeberry,
Aronia arbutifolia

American Beautyberry,
Callicarpa americana

Purple Beautyberry,
Callicarpa dichotoma

Summersweet,
Clethra alnifolia

Border Forsythia,
Forsythia x intermedia

Witchhazel,
Hamamelis virginiana

Oakleaf Hydrangea,
Hydrangea quercifolia

PERENNIALS & SPECIAL PLANTINGS

Big Blue Liriope,
Liriope muscari

Daylily,
Hermerocallis 'Happy Returns' or 'Little Grapette'*

Siberian Iris,
*Iris siberica**

Black-eyed Susan,
Rudbeckia fulgida

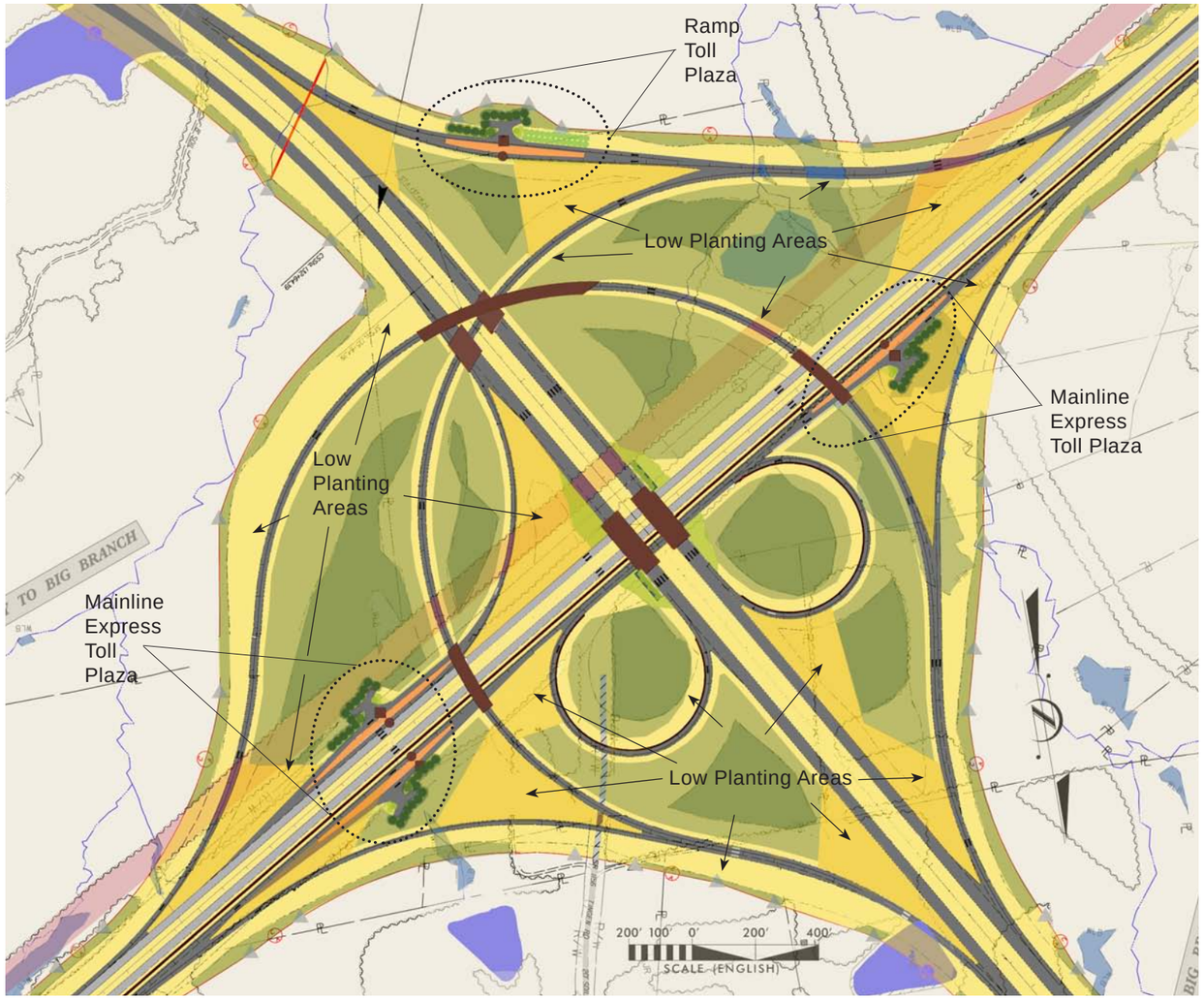
* Non-native plants

Design Principle 3

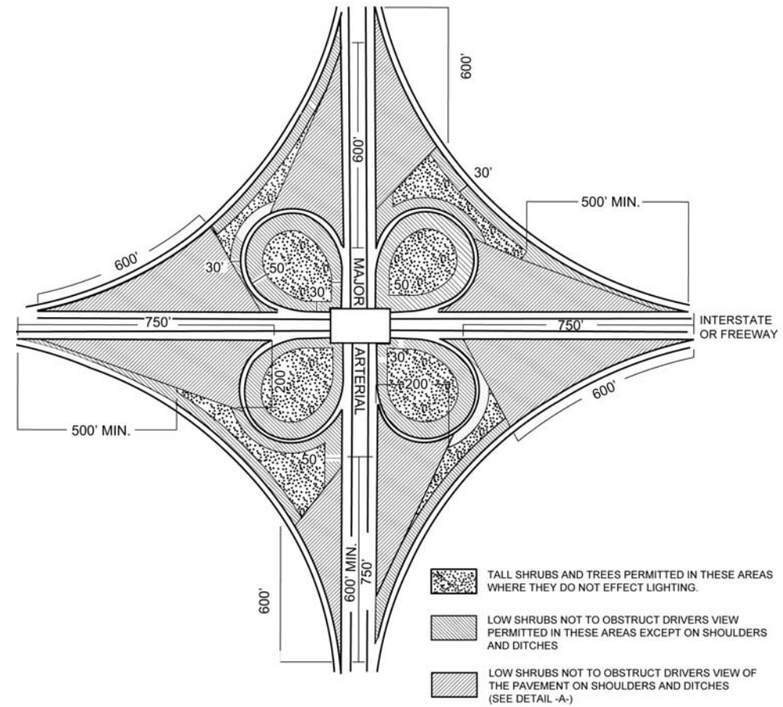
Utilize native North Carolina Piedmont plant communities.

Wildflowers/Grasses will carpet the shoulders along the length of the toll road. The subtlety of the native species in existing and reforested areas contrast with the showy native and non-native ornamental species in special planting areas at the Toll Plazas and in the low and raised Bridge Abutment Planters.

Source:
North Carolina Department of Transportation Roadside Environmental Unit Plant List
See www.ncdot.org/doh/operations/dp_chief_eng/roadside/design/plantlist/ (June 29, 2007).



NORTH CAROLINA STANDARDS APPLIED TO SYSTEM TO SYSTEM PROTOTYPE



NORTH CAROLINA STANDARDS
Plantings at Cloverleaf Intersections

Design Principle 4

Support roadway ecological functions and driver safety with landscaping.

North Carolina Department of Transportation *Guidelines for Planting within Highway Right of Way* are followed for landscape plantings to maintain sight lines at acceleration and deceleration lanes.

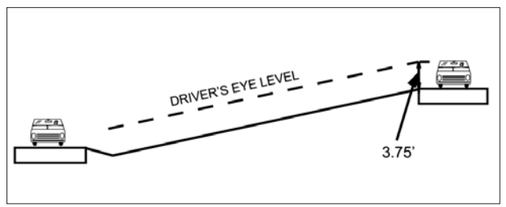
See www.ncdot.org/doh/operations/dp_chief_eng/roadside/design/plantGuidelines/ (June 29, 2007).

Low Planting Areas as per NC DOT Standards with shrubs less than 3.75' (H) and/or Naturalized Wildflowers/Grasses

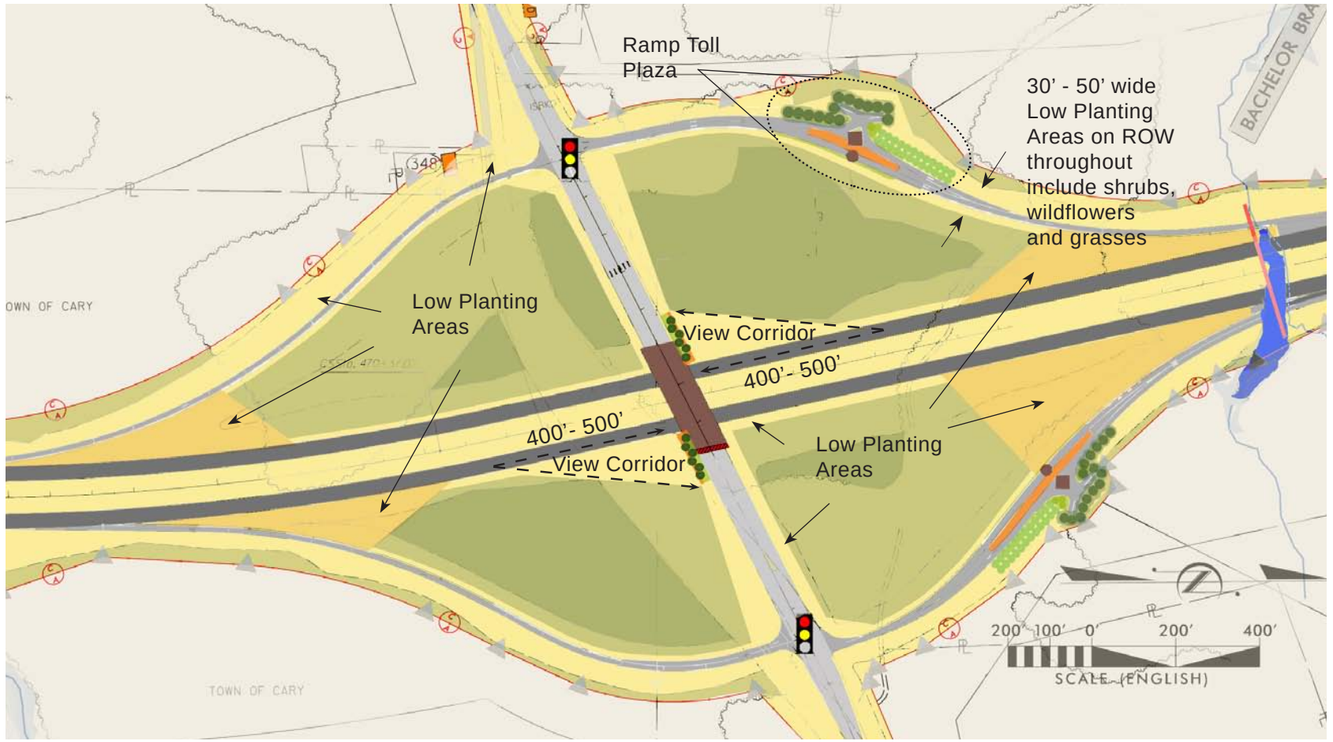
Naturalized Wildflowers/Grasses

Existing Forest

Reforestation



Sightlines to Maintain in Low Planting Areas



NORTH CAROLINA STANDARDS APPLIED TO DIAMOND PROTOTYPE

Low Planting Areas as per NCDOT Standards with shrubs less than 3.75' (H) and/or Naturalized Wildflowers/Grasses

Naturalized Wildflowers/Grasses

Existing Forest

Reforestation

Plant List
Low Planting Areas

Wildflower/Grasses Mix

Big Blue Liriope, (*Liriope muscari)*

Daylily, (*Hemerocallis* spp.)

Shrubs

Glossy Abelia, (*Abelia x grandiflora)*

Spreading Junipers, (*Juniperus* spp.)

Southern Wax Myrtle, (*Myrica cerifera)*

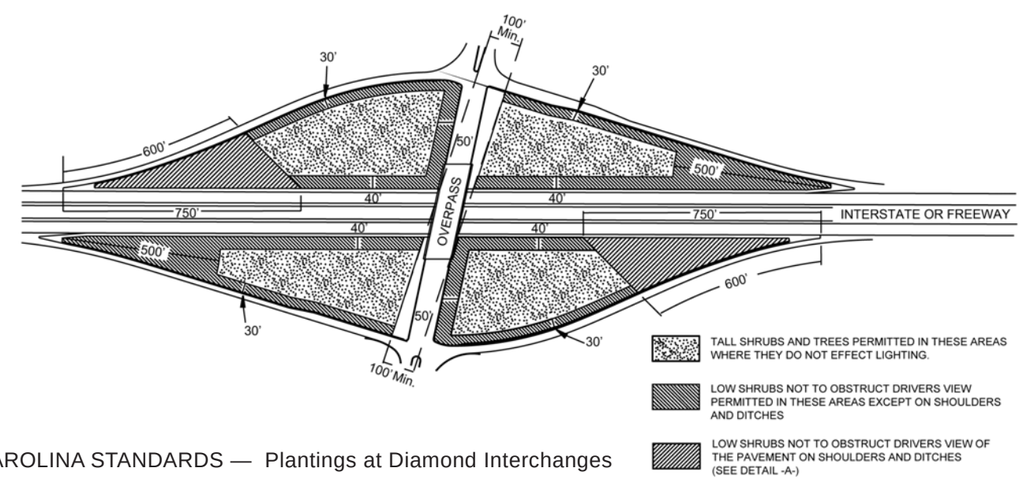
See 7.5 for details

Design Principle 4

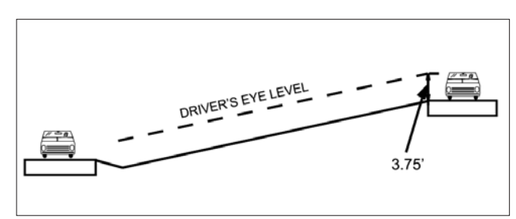
Support roadway ecological functions and driver safety with landscaping.

North Carolina Department of Transportation *Guidelines for Planting within Highway Right of Way* will be followed for landscape plantings to maintain sight lines at acceleration and deceleration lanes.

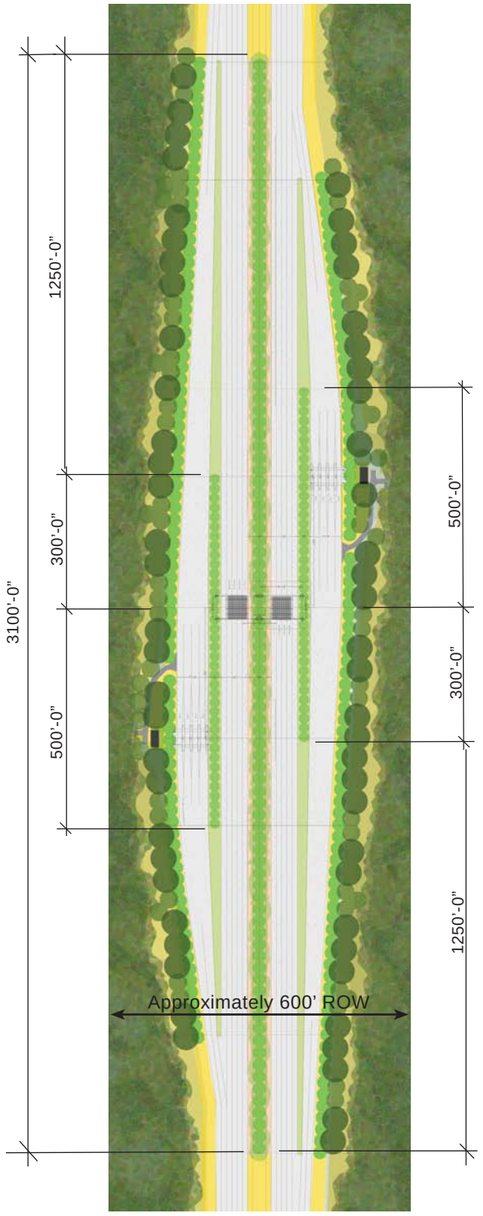
See www.ncdot.org/doh/operations/dp_chief_eng/roadside/design/plantGuidelines/ (June 29, 2007).



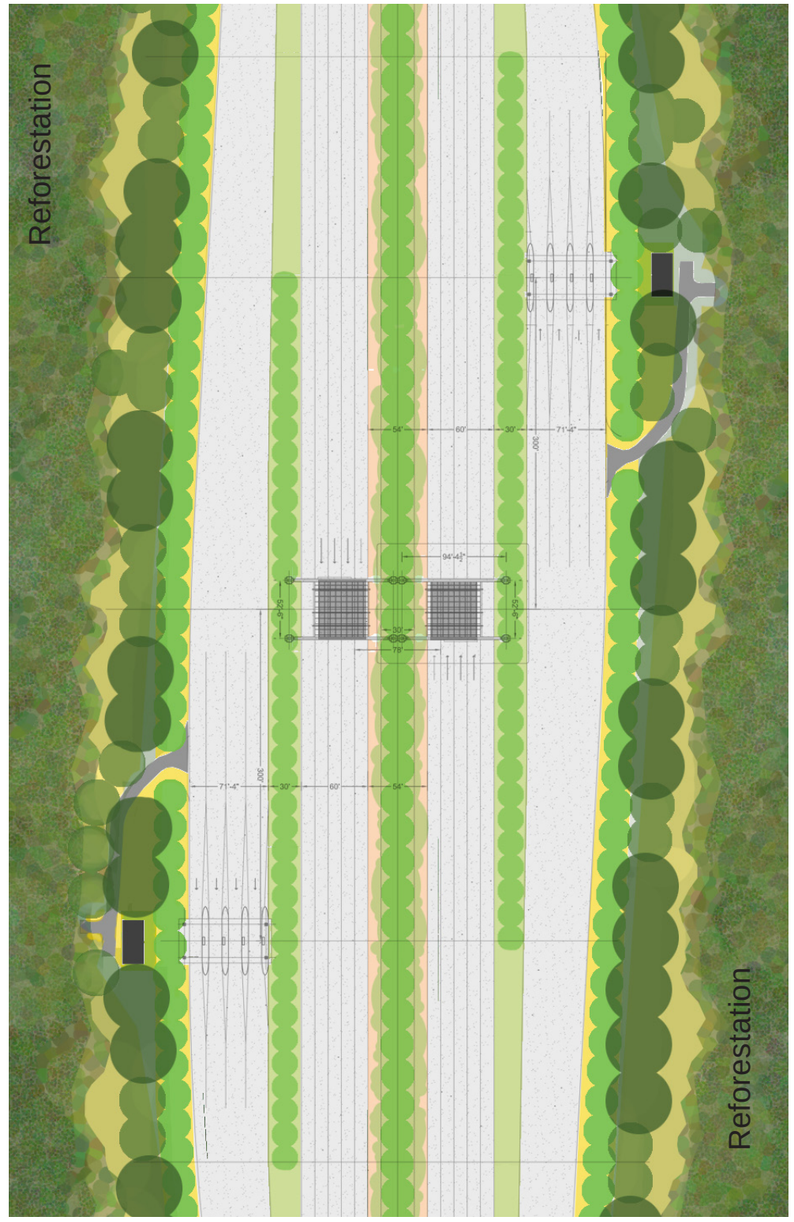
NORTH CAROLINA STANDARDS — Plantings at Diamond Interchanges



Sightlines to Maintain in Low Planting Areas



PLAN — MAINLINE TOLL PLAZA



PLANTING DETAIL — MAINLINE TOLL PLAZA

See Mainline Express 2.3 - 2.6

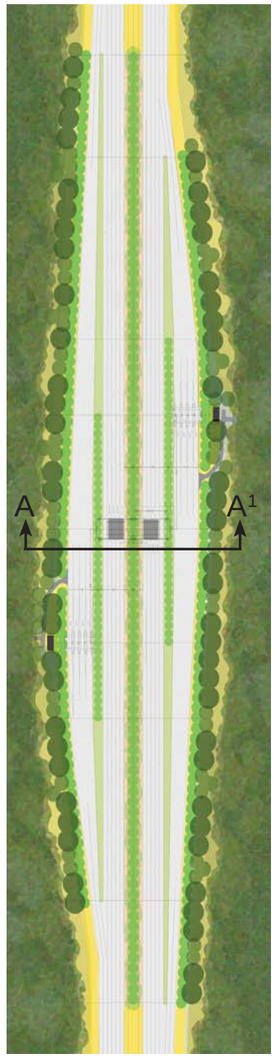
- Canopy Trees and Understory Trees
- Ornamental Understory: Flowering Dogwood, Southern Magnolia, Serviceberry, Crape Myrtle
- Median Shrubs
- Naturalized Wildflower Mix
- Perennials & Special Plantings

Design Principle 4

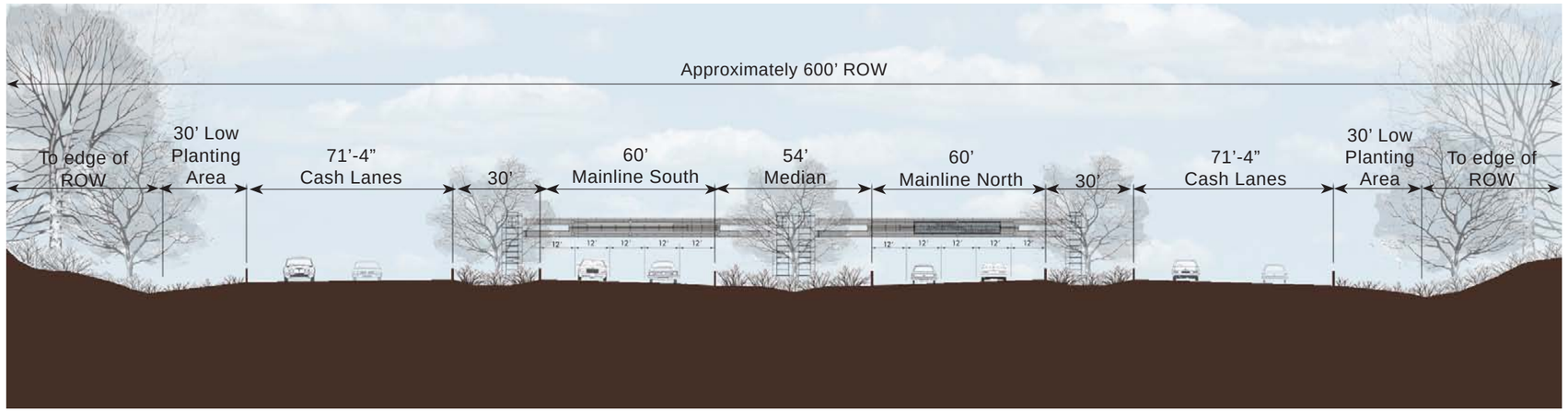
Support roadway ecological functions and driver safety with landscaping.

Mainline Toll Plaza
600' Right of Way

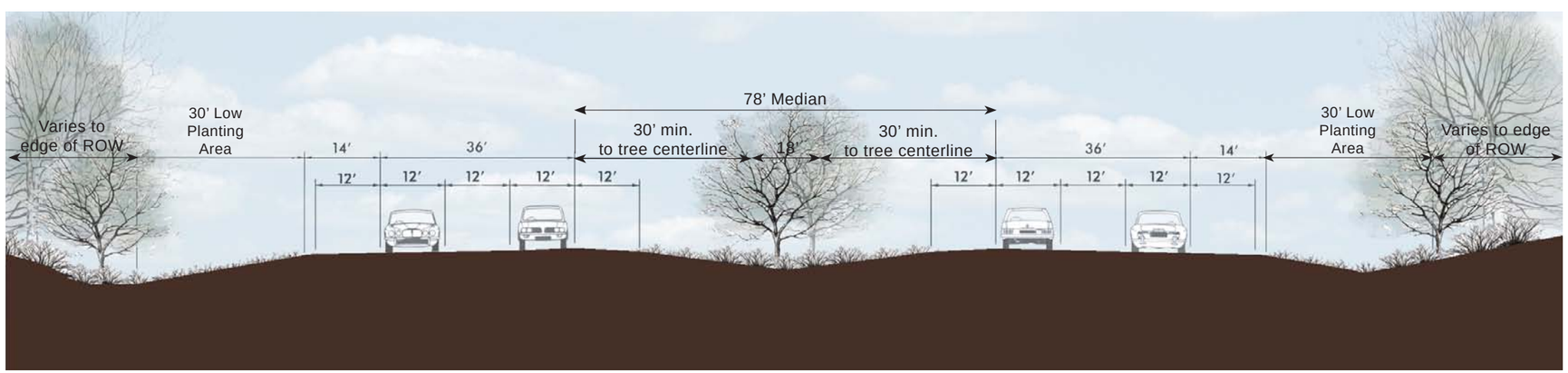
Extensive median plantings will provide screening between lanes, encourage the infiltration of water and decrease runoff, and lend character to the toll road.



Section A - A[1]
Mainline Toll Plaza



SECTION A-A[1] — MAINLINE TOLL PLAZA with 54' Wide Planting Median and 30' Wide Low Planting Areas



SECTION B — TYPICAL SIX LANE MEDIAN DIVIDED MAINLINE with 78' Wide Planted Median and 30' Wide Low Planting Areas

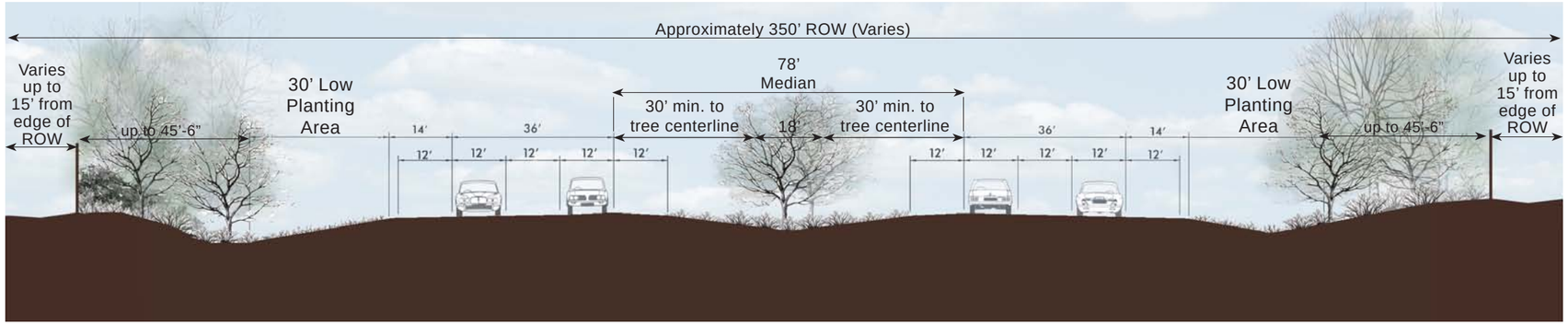
Design Principle 4

Support roadway ecological functions and driver safety with landscaping.

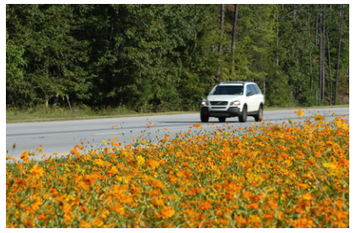
Section A-A[1] — Mainline Toll Plaza with 600' Right of Way

Section B — Typical Six Lane Mainline Right of Way

Extensive median plantings will provide screening between lanes, encourage the infiltration of water and decrease runoff, and lend character to the toll road.



SECTION C — TYPICAL SIX LANE MEDIAN DIVIDED MAINLINE WITH NOISE WALLS



Low maintenance Wildflowers/Grasses provide visual impact as well as an ecological solution

Plantings on bridge abutments and against noise walls soften architectural structures

Design Principle 4

Support roadway ecological functions and driver safety with landscaping.

Section C — Typical Six Lane Mainline 350' Right of Way with Noise Walls.

Extensive median plantings will provide screening between lanes, encourage the infiltration of water and decrease runoff, and lend character to the toll road.