VirginiaTech

Virginia Polytechnic Institute and State University

Blacksburg, VA 24061-0002

Campus Wayfinding Guidelines

May 2017

Office of University Planning
Campus Architecture, Real Estate & Space Management

merje
ENVIRONMENTS & EXPERIENCES

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Table of Contents

Introduction

A unique and functional wayfinding system can market Virginia Tech, present a friendly image and communicate that the University is efficient, organized and caring. Helping a visitor "find their way" is an important part of their experience and time spent on campus.

The Office of University Planning completed the Virginia Tech Campus Wayfinding Master Plan in 2011 through the design team of MERJE with sub-consultant Gay and Neel. It was approved by resolution by the Board of Visitors, June 2012, and implementation of the wayfinding master plan began in 2013.

The Wayfinding Master Plan for the Virginia Tech Campus takes a holistic view of wayfinding and considers the variety of tools that users may encounter as they find their way to and around the campus. These wayfinding tools include:

- Signage
- Technology
- Print Materials
- Orientation Maps
- Landmarks

One of the Primary Goals of the Wayfinding Master Plan included achieving a consistent and unified wayfinding system incorporating graphic improvements based on university branding initiatives, accessibility for persons with disabilities, safety, cost, durability and sustainability.

The Guidelines shown in this document outline the design of aesthetically appropriate signs that enhance the visual character of the campus and intended for use by administrators, consultants, planners and University facilities and staff. The manual explains the design components, location and implementation strategy for each sign type. Consistent application of a uniform system over time will create a uniform, coherent and organized system.

Graphic Standards

LOGOS

Primary Logo

(without tagline)

(with tagline)

Arial regular italic

IDENTITY STANDARDS

The logo without tagline consists of two parts: the shield symbol and the logotype in an updated horizontal configuration. The name "Virginia Tech" appears in a customized Raleigh typeface.

The logo with the tagline consists of three parts: the shield symbol, the name "Virginia Tech" in a customized Raleigh typeface, and the tagline in Arial regular italic. When using the logo with tagline, use the version with the registered mark after the tagline only.

Secondary Logo

Shield

SECONDARY LOGO

Use of this alternative configuration is not intended for print media or Web banners. Its use is limited to exterior building applications and signage, other signage, or formats where space constraints make it difficult to use the primary logo.

University Seal

UNIVERSITY SEAL

The formal university seal is reserved for ceremonies, watermarks for official documents, diplomas, and building plaques.

1 Customized Raleigh Font

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 0123456789

2 *Arial Italic*

ABCDEFGHIJKLMNOPQUSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 0123456789

3 Arial Regular

ABCDEFGHIJKLMNOPQUSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 0123456789

4 Clearview Highway

ABCDEFGHIJKLMNOPQUSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 0123456789

5 **Adobe Garamond Pro Bold**

ABCDEFGHIJKLMNOPQUSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 0123456789

TYPOGRAPHY

The logo without tagline consists of two parts: the shield symbol and the logotype in an updated horizontal configuration.

The name "Virginia Tech" appears in a customized Raleigh typeface, and the tagline in Franklin Gothic ITC italic or Arial regular italic.

Arial regular typeface may be used for signage applications, for informational purposes only.

Clearview Highway typeface is the font approved by the FHWA and MUTCD for community guide signs.

The typeface is easy to read, with characters having a friendly and welcoming style. All roadway signs directing to or identifying campus destinations must utilize the typeface.

PAINT & VINYL

Paint Colors

	Name	Specification	Process
P1	Blue (ADA signs)	PMS 7462c	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P2	Hokie Brown (ADA signs)	MP 57581	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P3	Blue	PMS 7462c	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P4	Hokie Brown	MP 57581	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P5	VT Orange	PMS 158c	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P6	VT Maroon	PMS 208c	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P7	VT Grey	PMS 429c	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P8	White	MP 27386	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P9	Black	MP 33653	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.
P10	Light Silver	MP 18074	Matthews Acrylic Polyurethane with Clear Coat Satin Finish.

Vinyl Colors

	Name	Specification	Process
V1	Opaque White	3M 7725C-10	3M Scotchcal ElectroCut Graphic Film Series 7725
V2	Black	3M 3630-22	3M Scotchcal Translucent Graphic Film
V3	Day/Night Dark Grey	3M 3635-0171	3M Scotchcal Translucent Graphic Film
V4	Opaque VT Orange	3M Custom Match PMS 158	3M Scotchcal ElectroCut Graphic Film Series 7725

PAINT & VINYL COLORS

The colors must look exactly the same every time they are used so that people associate them with the Virginia Tech Wayfinding & Signage System. All media, vinyl, paint, and inks must be produced so that the colors match as specified on this page.

The FABRICATOR must submit three (3) identical sets of each color specified for approval prior to any painting. Sample paint swatches must be produced on .080" aluminum sheet, approximately 3" x 6", including primer and free of defects. Sample material swatches should be the same approximate size. Samples MUST have project and color specifications attached to back side.

Vinyl Colors

	V5	Silver	Avery 9069T	Avery Translucent Graphic Film
	V6	Bronze	Avery 9298T	Avery Translucent Graphic Film
	V7	Hokie Brown	3M Custom Match MP57581	3M Scotchcal ElectroCut Graphic Film Series 7725
	V8	White	Avery 1200	High Visibility Reflective

Reflective Sheeting

		Name	**Specification**	**Process**
	R1	Hokie Brown	To match MP 57581 Pantone 412C	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*
	R2	VT Maroon	To match PMS 208c	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*
	R3	VT Orange	To match PMS 158c	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*
	R4	Salmon	To match PMS 197c	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*
	R5	VT Buff	To match PMS 7527c	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*
	R6	White	Natural 3M HI 3930	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*
	R7	Black	To match MP 33653	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*
	R8	VT Grey	To match PMS 429c	Custom color background and characters 3M custom inks direct to 3930, with 3M UV/graffiti overlaminate.*

*MUST comply with MUTCD section Table 2A-3 – Minimum maintained retroreflectivity levels.
Approved Process: Durst RHO 161 TS printer. Sherine Industries: (604) 513-1887
NOTE: All 3M products are to be processed and applied according to 3M specifications. The seaming of material is NOT preferred. If the height of a sign panel is greater than 48 inches, the 3M 3930 material should be oriented vertically with stripes at 0 degrees, to avoid the seaming of material. If seaming is required, it should occur at the rule line or between messages.

REFLECTIVE SHEETING COLORS

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MATERIALS

Materials

		Name	Specification	Process
	**M1**	Hokie Stone	Local Standard	Randomn stack with recessed-style grout
	**M2**	Black Slate Tile	Local Standard	Perfect grid with recessed-style grout
	**M3**	Sandstone	Local Standard	Sills and tops with bucket handle-style grout
	**M4**	Dark Grey Concrete Tile	Pre-cast Concrete Tile	Sills with bucket handle-style grout
	**M5**	Natural Grout	Natural Concrete Grout	Grout color for Hokie Stone and Dark Grey Concrete Tile
	**M6**	Dark Grey Grout	Colored Grout	Grout color for Black Slate Tile
	**M7**	Sandstone Grout	Colored Grout	Grout color for Sandstone
	**M8**	Aluminum	Horizontal Brushed	Individual letters are annodized clear. Etched/engraved plaques are paint-filled.
	**M9**	Phenolic Resin Panels	Exterior Grade dHPL	Phenolic resin panels by Fossil or iZone.

MATERIALS

The materials must look exactly the same every time they are used so that people associate them with the Virginia Tech Wayfinding & Signage System. All stone, tile, concrete, grout, metals and materials must be produced so that the materials and/or colors match as specified on this page.

The FABRICATOR must submit one (1) set of each material specified for approval prior to any fabrication. Sample materials and/or color swatches must be submitted in a reasonable size, approximately 9" x 9", and be free of defects. Samples MUST have project, manufacturer and material/color specifications attached to back side.

Symbols

Parking Symbols

Parking Permit Symbols

Accessible Symbol

Information Symbols

ARROWS & SYMBOLS

The arrows and symbols illustrated must look exactly the same every time they are used so that people associate them with the Virginia Tech Wayfinding & Signage System.

All artwork pictured on this page will be provided to the sign fabricator by the designer and/or client. This artwork must be used for all sign applications in this provided documentation. Do NOT substitute with any other artwork!

Arrows

Left Arrow | Up- Left Arrow | Straight Arrow | Up-Right Arrow | Right Arrow

USE OF ARROWS

When multiple directions are used on a sign, the following directional hierarchy shall take precedent. See Example below. Reference Message Schedule for individual messages.

Straight Arrow

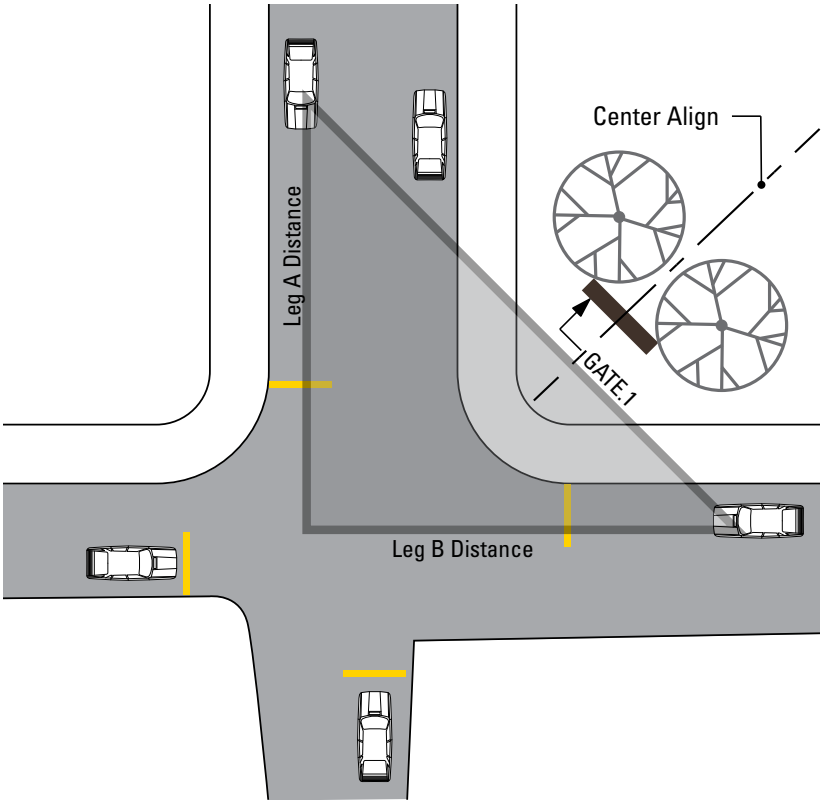
Left Arrow

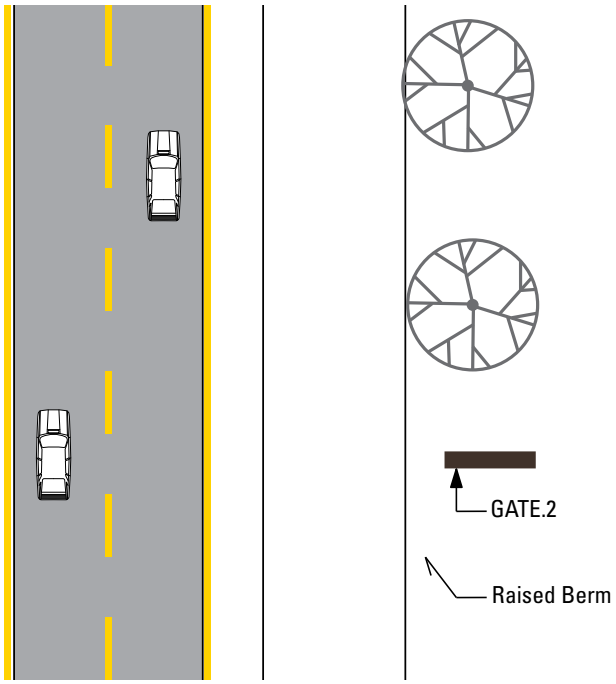
Right Arrow

Sign Placement

FIGURE 1: GATEWAYS

GATE.1 - GATE.2 : Vehicular Directional





VEHICULAR PLACEMENT GUIDELINES

The following pages illustrate installation guidelines for the location and spacing of the various sign types.

Unless approved by the Virginia Tech or its designated agent, all signs shall be installed to the right of the direction of traffic and where sufficient space is available.

(a) Signs shall be located to take advantage of natural terrain, to minimize impacts on scenic environment and to avoid visual conflicts with other signs, trees and lampposts within the City right-of-way.

(b) Signs shall be located so as not to interfere with, obstruct or divert driver's attention from any other Official Traffic Control Device. Other Official Traffic Control Devices placed at intersection approaches, subsequent to the placement of a Wayfinding Sign, shall have precedence as to location and may require the relocation of the Wayfinding Sign. In the locations where Official Traffic Control Devices are integrated into the Wayfinding Signage System, the Official Traffic Control Devices shall take precedence with regard to order, space and location, over other information.

Sight Distance at Intersections establish the areas around all intersections and driveways, the sight distance triangle that must be kept clear of sight obstructions. The sight distance triangle depends primarily on the required visibility at the intersection or driveway. It is determined by the type of intersection control (stop sign, traffic signal or no control) and the speed limit on the major road or street entered upon. (AASHTO rules apply)

VDIR.1/2/3/4 Vehicular Directional

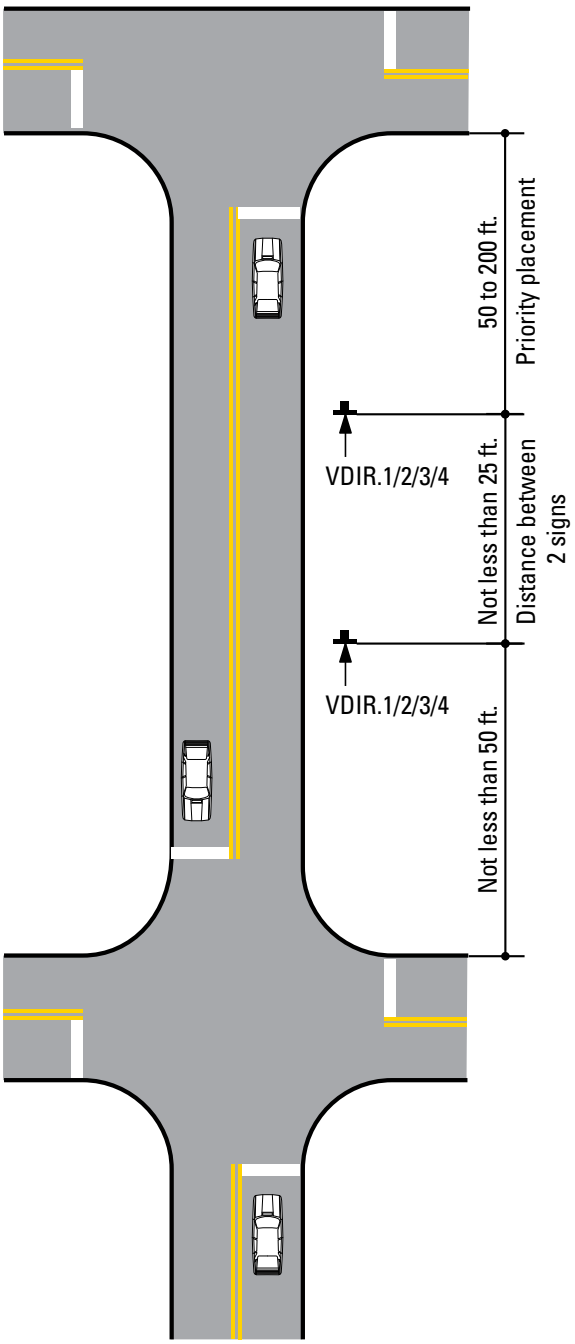


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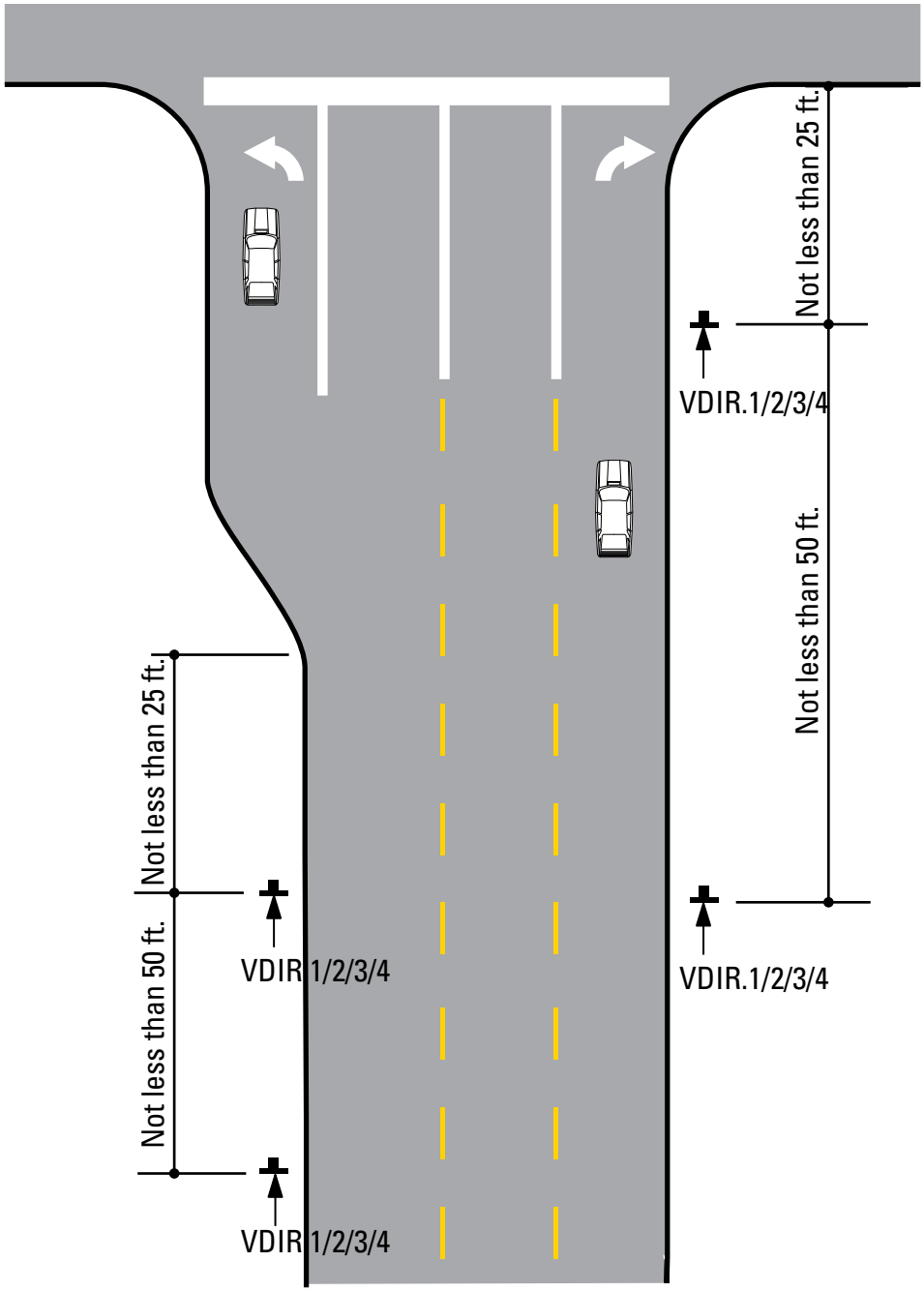
FIGURE 3: VEHICULAR DIRECTIONAL

VDIR.1/2/3/4 Vehicular Directional



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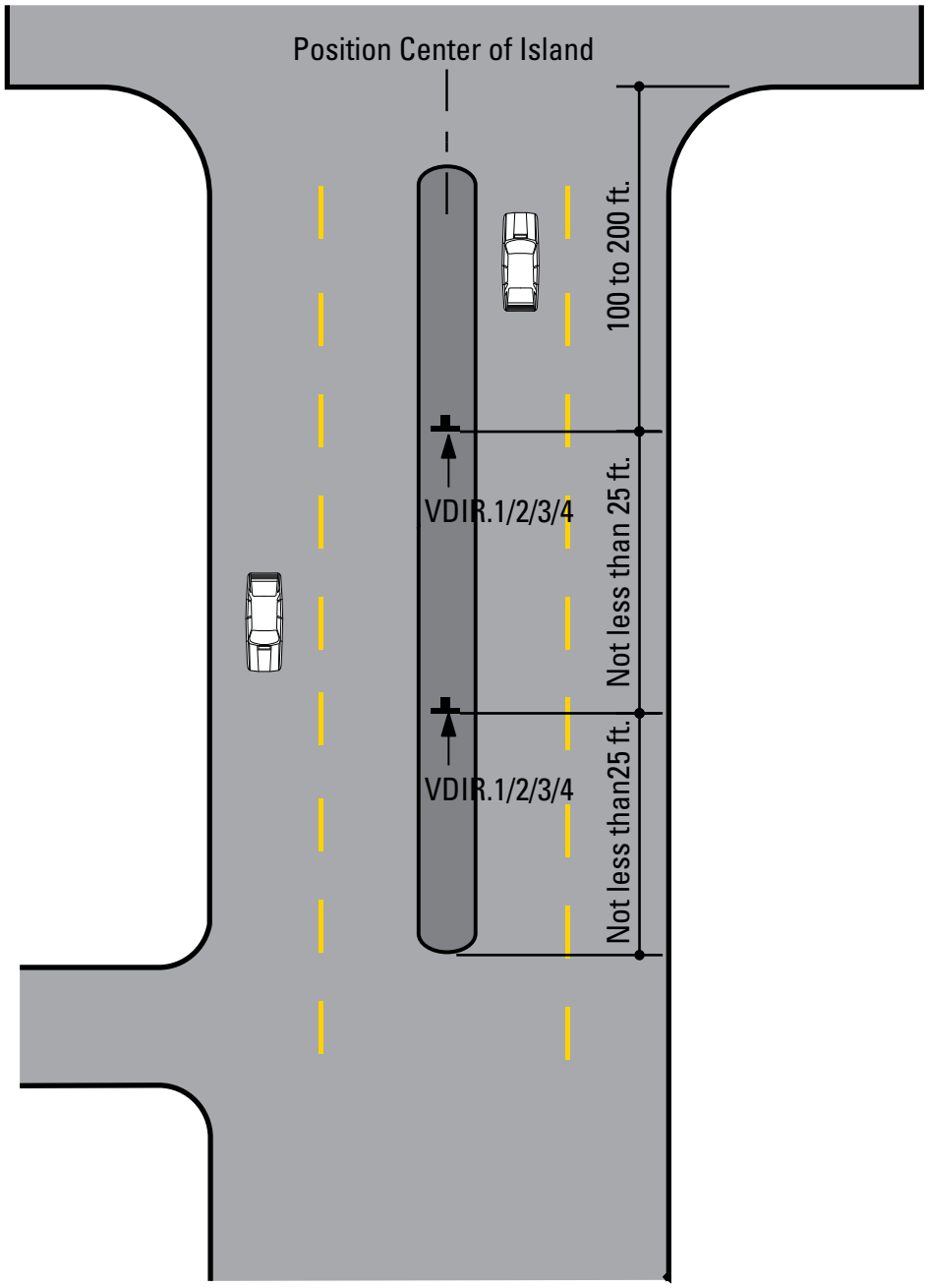

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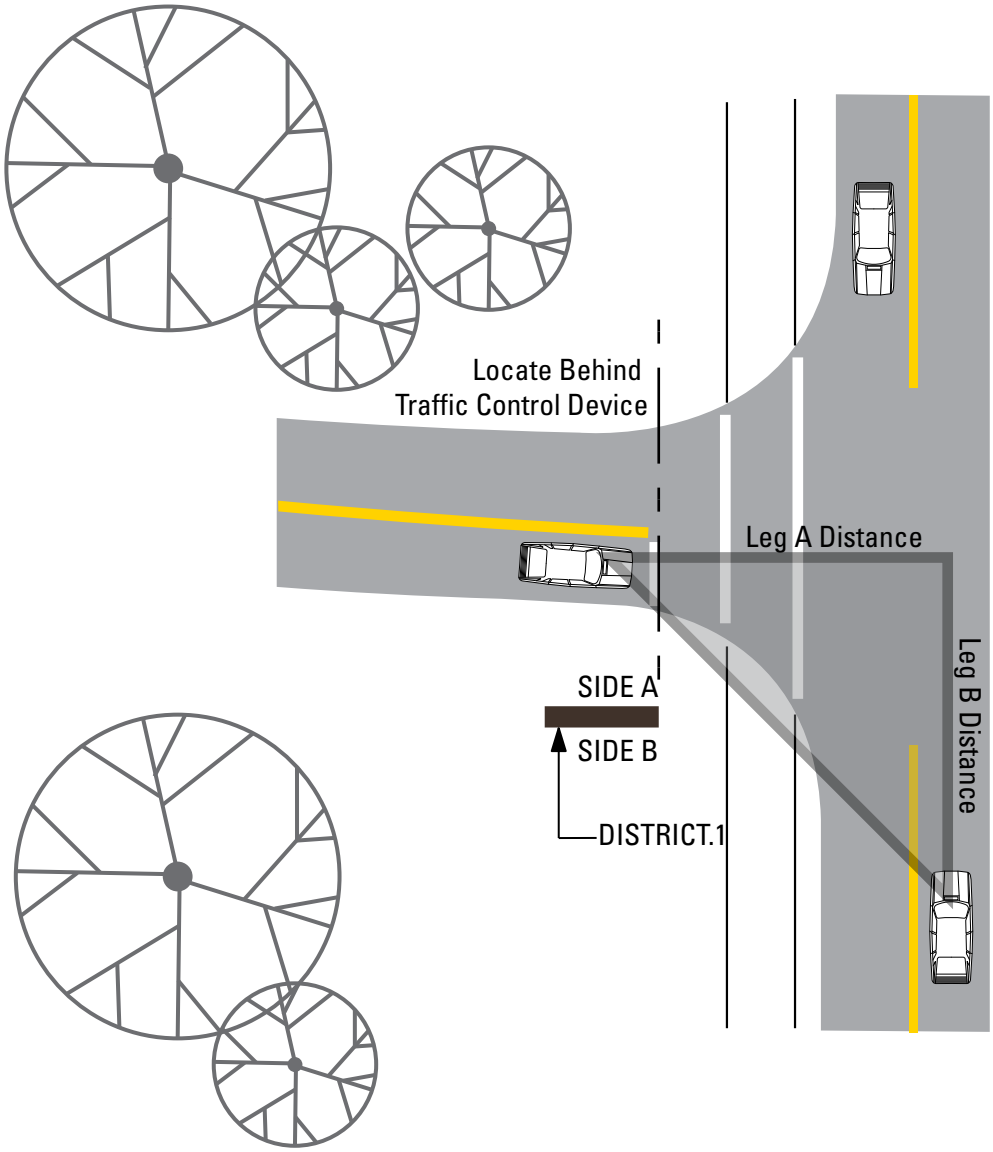
FIGURE 5:DISTRICT

DISTRICT.1: Gateway Identification Signs



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BUILDING.1/2/3/4/5: Building Identification Signs

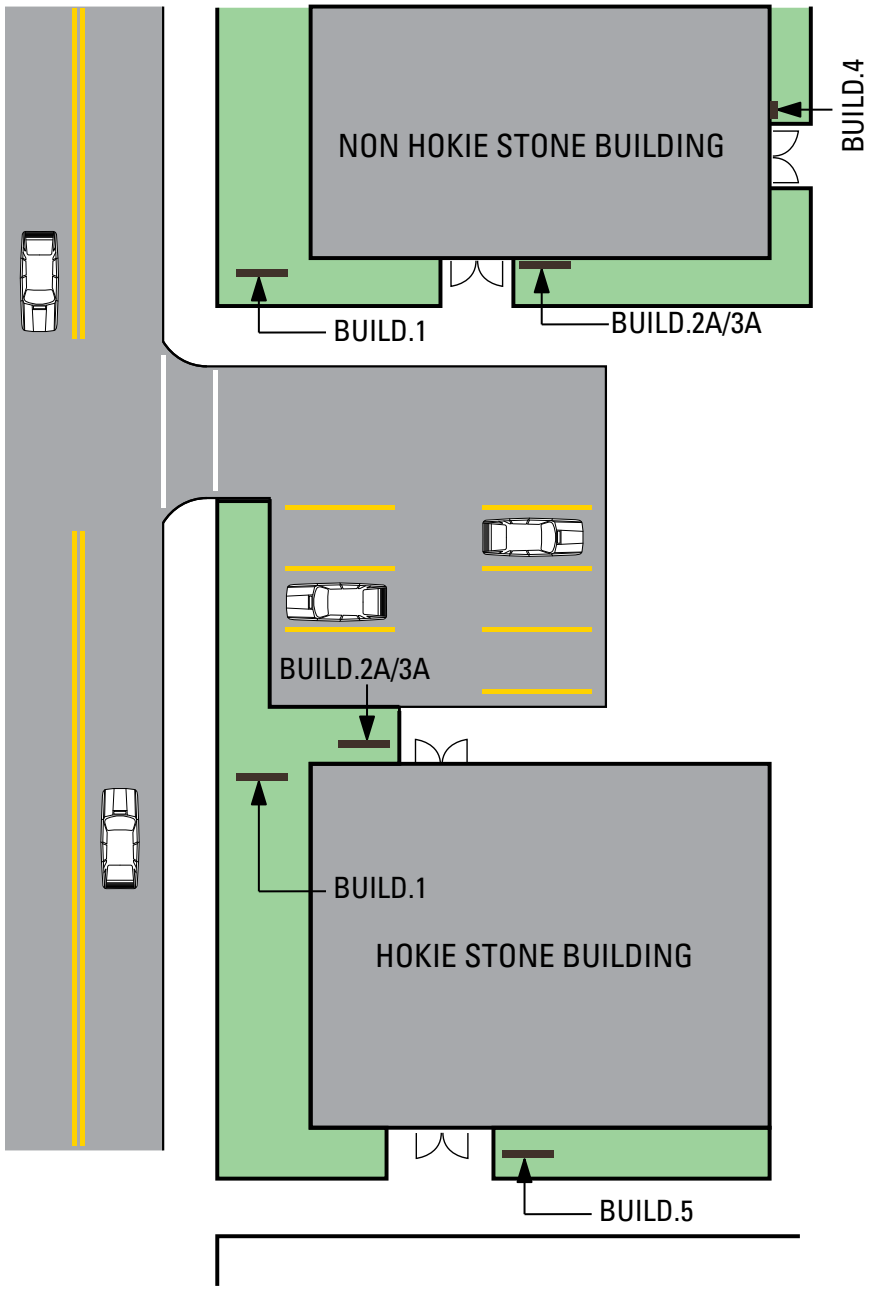

FIGURE 7: PARKING GARAGE

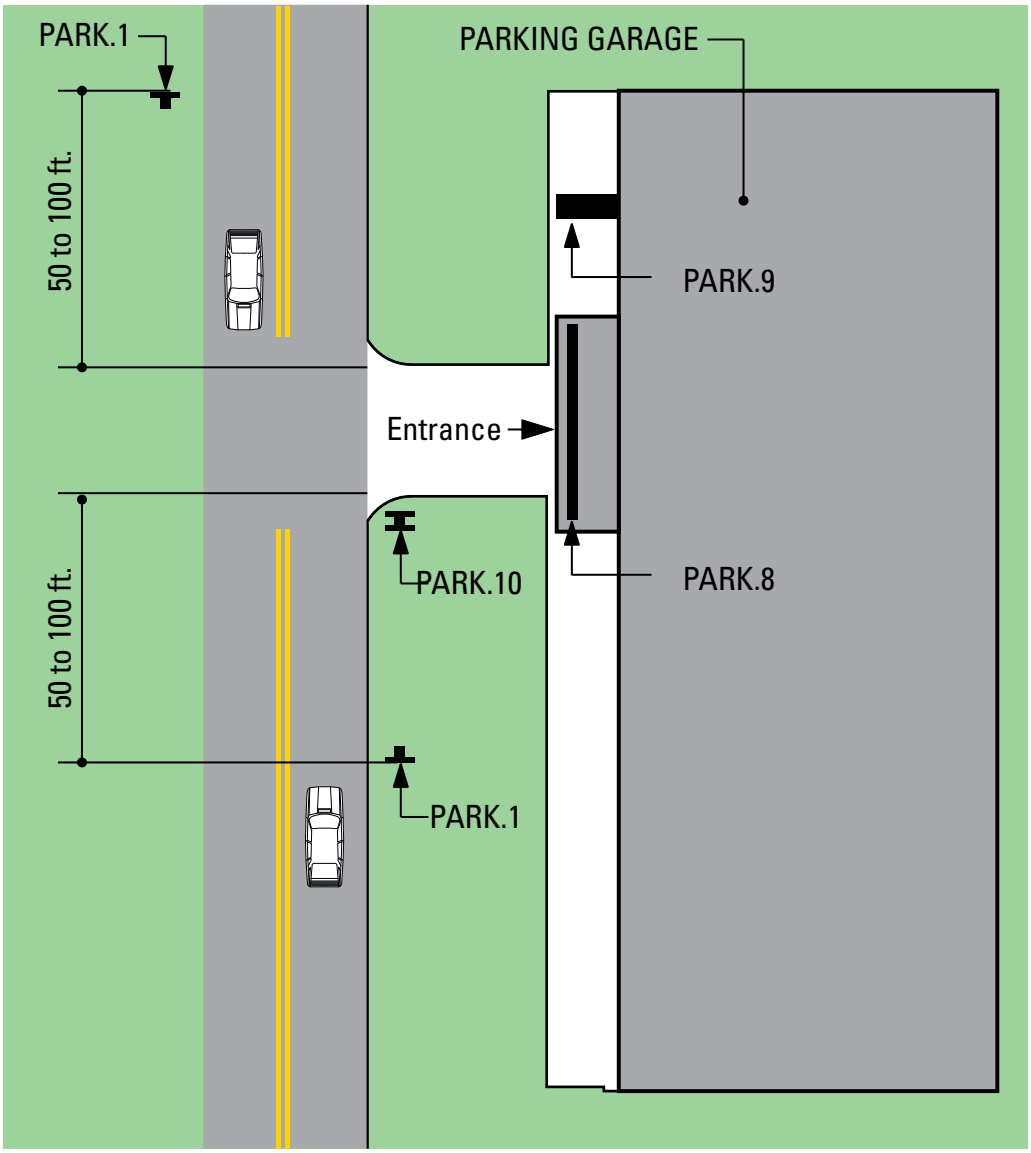

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FIGURE 8: PARKING LOT

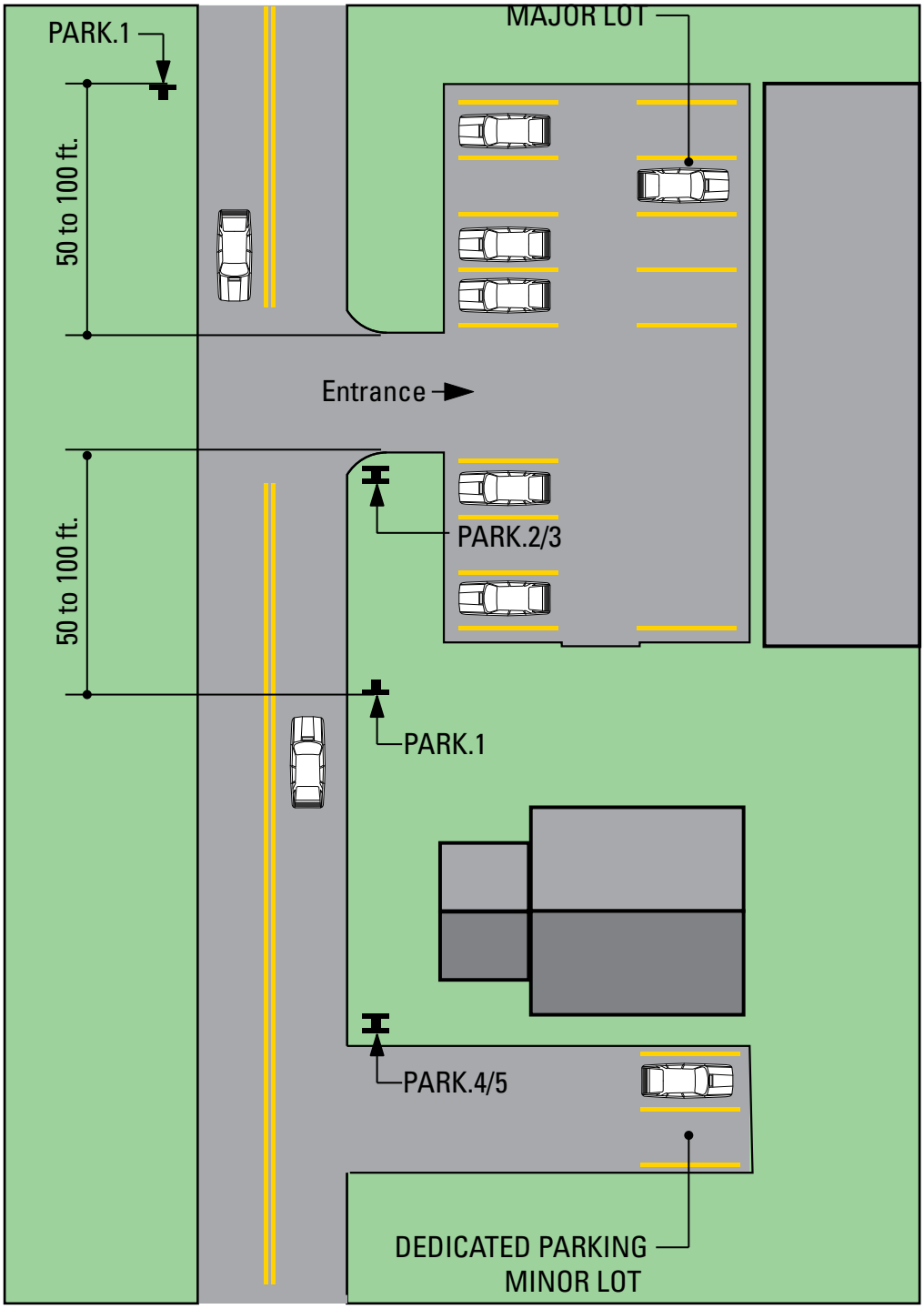

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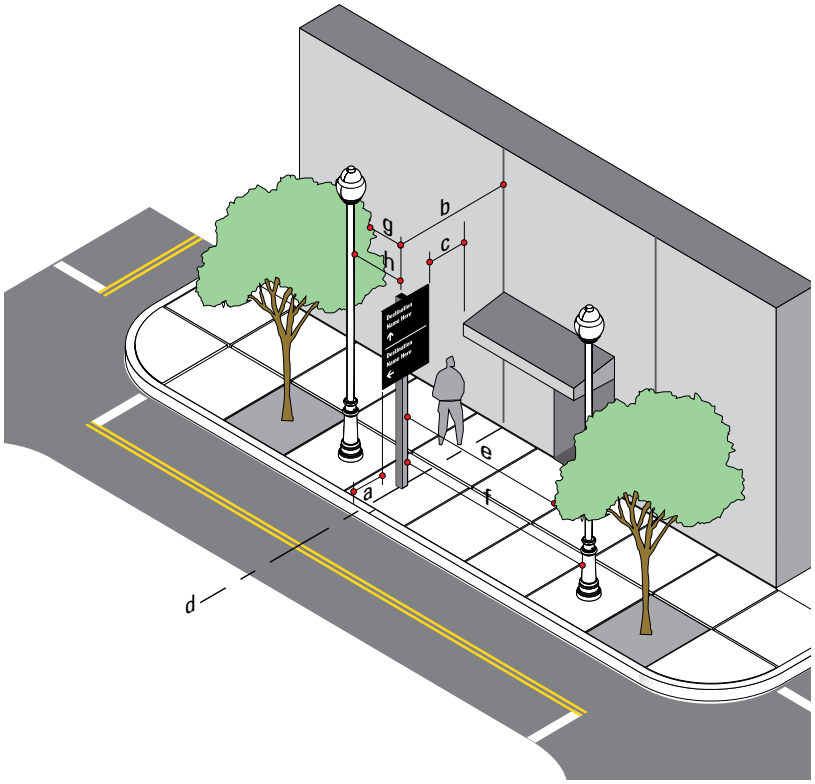
FIGURE 9: URBAN ENVIRONMENTS

Vehicular Signs

	MEASURE	PREFFERED DISTANCE	MINIMUM DISTANCE
a	Distance from Edge of Sign Panel to Edge of Curb	2'- 0" or more	1'- 0"
b	Distance from Sign Post to Nearest Obstruction	4'- 0" or more	3'- 0"
c	Distance from Edge of Sign Panel to Nearest Overhead Obstruction	4'- 0" or more	1'- 0"
d	Sign Placement in Relation to Adjacent Building	Align to building edge	Do NOT obstruct entrance
e	Distance from Face of Sign to Nearest Tree Branch	20'- 0" or more	15'- 0"
f	Distance from Face of Sign to Nearest Utlity Pole	15'- 0" or more	10'- 0"
g	Distance from Back of Sign to Nearest Tree Branch	8'- 0" or more	3'- 0"
h	Distance from Back of Sign to Nearest Utility Pole	15'- 0" or more	10'- 0"

Measurements and Distances shown are guidelines only. Prevailing local and state codes shall supersede information presented.



LATERAL CLEARANCE GUIDELINES

Within some of the campus areas of Virginia Tech, conditions and narrow sidewalks may cause deviation from the standards articulated in the previous figures. Conditions may include less lateral clearance for the 2'-0" or 5'-0" preferred distance from edge of sign panel to curb, or placement at 2'-0" or 5'-0" would create an obstacle (i.e. post positioned in middle of the side walk) or create situations of non-compliance to ADA clearances.

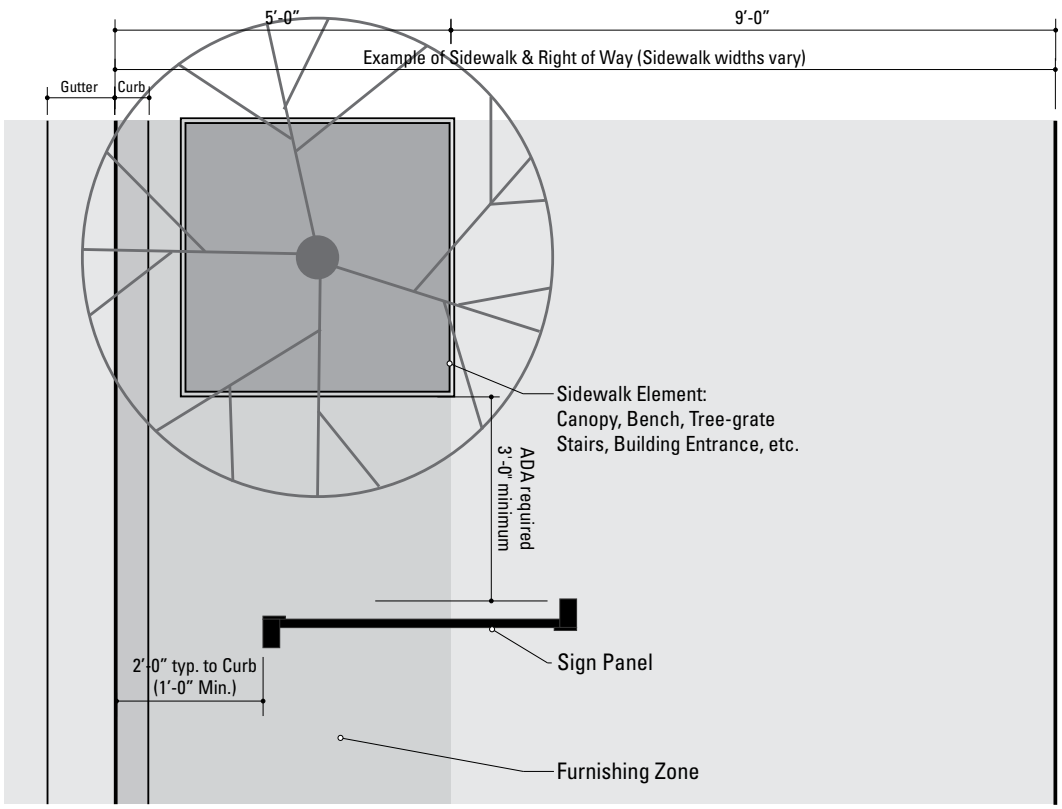
In these cases guidelines must be consistent with MUTCD Section 2A.19 options for urban areas. The following are suggested recommendations for relocation of signs if placement is in conflict with guidelines:
OPTION A: Position the sign at a minimum of 2'-0" or 5'-0" (face of curb to edge of sign panel) as required.

OPTION B: If the sign can be moved, without disrupting routing or sequencing, then it should be repositioned to achieve the 2'-0" or 5'-0" min.

If 2'-0" is not physically possible, then the following options should be allowed:
OPTION C: The sign set back should be position at 1'-6". If that is not possible then...

OPTION D: Utilize a minimum 1'- 0", in accordance with MUTCD, only as a final option.

Vehicular Signs



NOTE:
All locations shall be installed within Virginia Tech Property. If during the initial survey it is determined any part of the sign (pole or panel) extends outside of the Virginia Tech vertical plane and into private property, the installer must notify the city prior to fabrication/installation.

Note: Top view of VDIR.1 shown as example.

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Sign Overview

SIGNAGE SYSTEM OVERVIEW

Gateway Sign Types
The gateways illustrated here are secondary gateway options, and are intended to express the spirit and quality of the historic gateways, without copying them. Similar materials are utilized including Hokie stone, black slate tile, cast stone, decorative metal and the Virginia Tech wordmark. Optional donor plaques can be integrated into the stone monuments, providing recognition for groups who choose to assist with funding and construction.

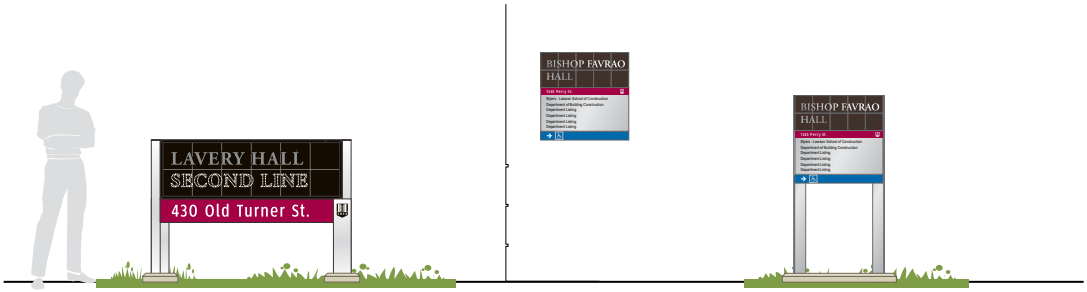
CG.1

CG.2

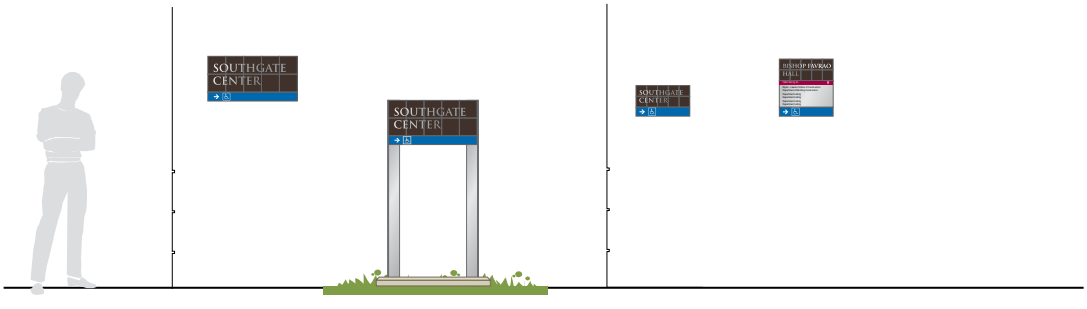
SIGNAGE SYSTEM OVERVIEW

Building Identification Sign Types
Primary and secondary campus facility identification signs are scaled to be legible from vehicles, oriented perpendicular to campus roadways, and set back from the sidewalk edges. The signs are non-illuminated, with messages occurring on both faces. Buildings with multiple entrances, and entrances with strictly pedestrian approaches, may use signs in combination.

DT.1



B.1 B.2 B.2a



B.3 B.3a B.4 B.5

VEHICULAR DIRECTIONAL

SIGNAGE SYSTEM OVERVIEW

Vehicular Directional Sign Types
The vehicular directional signs are designed for the lower-speed campus roadways, located approximately 50 feet in advance of the required turn, and set back a minimum 2 feet from the roadway edge. The signs are single-sided, with fabricated metal posts, and panels utilizing reflective copy. Some campus locations may require a lower height option.

VD.1 VD.1a

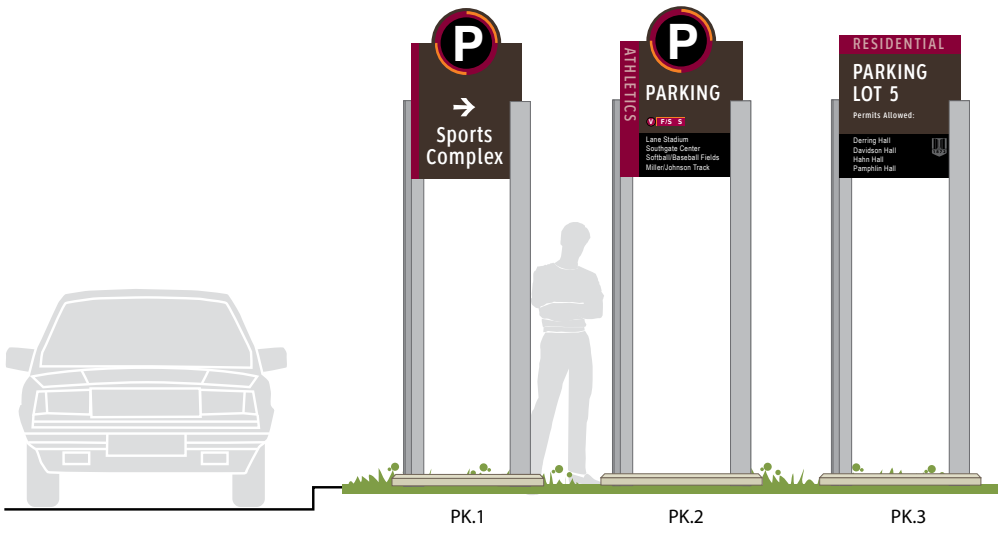
VD.2
(+ VD.2a Shorter Option)

VD.3
(+ VD.3a Shorter Option)

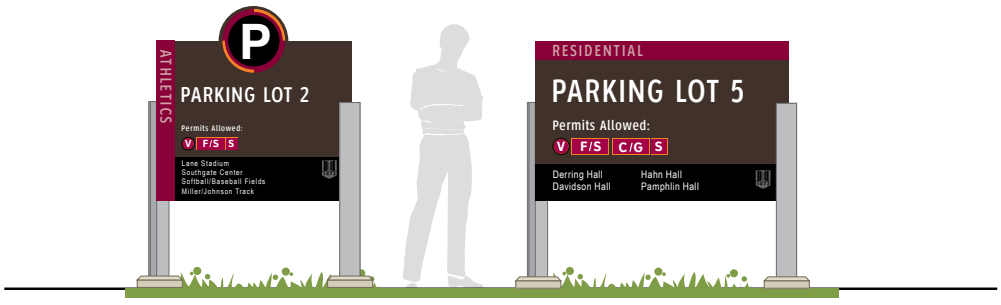
VDIR.4

SIGNAGE SYSTEM OVERVIEW

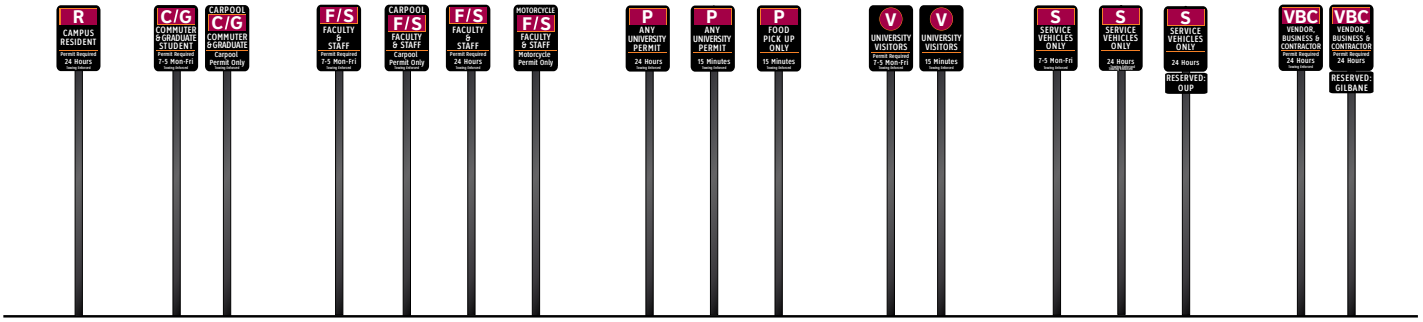
Parking Sign Types
Campus parking identification signs are scaled to be legible from vehicles, oriented perpendicular to campus roadways, and set back from the sidewalk edges. The signs are double-sided, with fabricated metal posts, and panels utilizing reflective copy. Optionally, signs may be single-sided and faced parallel to campus roadways, depending upon approaches and viewing angles.



PK.1 PK.2 PK.3



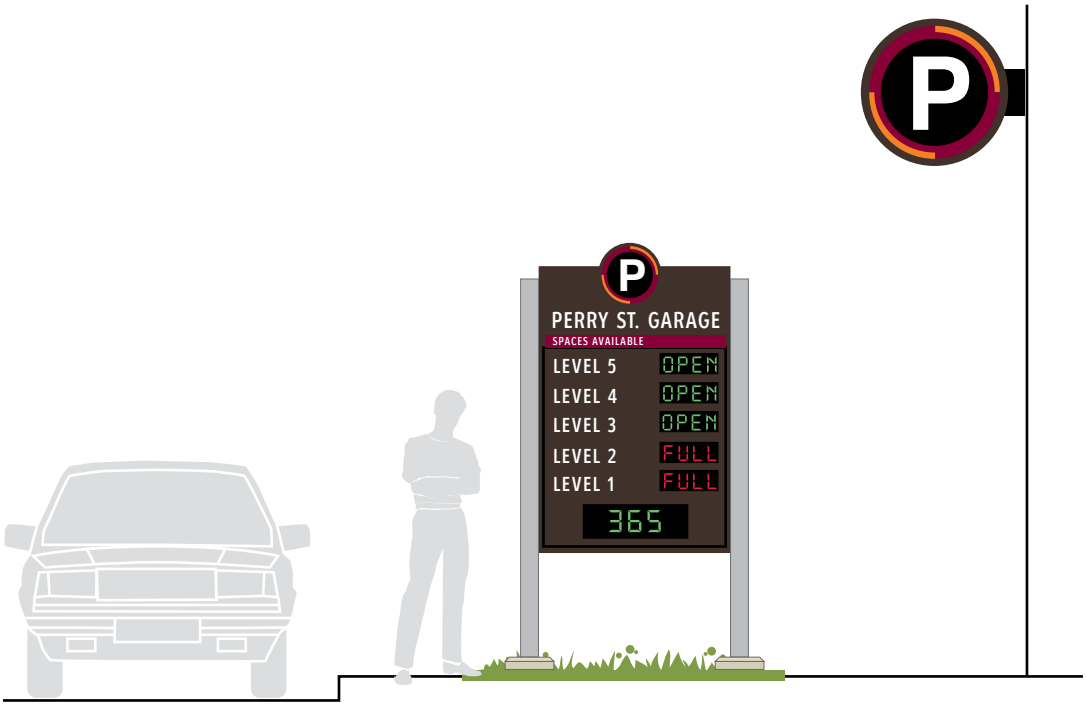
PK.4 PK.5



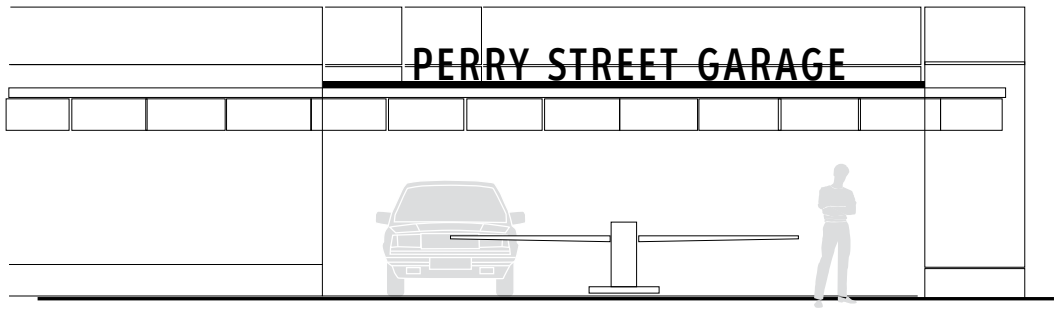
PS1 (R) PS2 (C/G) PS2a (C/G-CP) PS3 (F/S) PS3a (F/S-CP) PS3B (F/S-24) PS3a (F/S-MC) PS4 (P-24) PS4a (P-15) PS4b (P-Food) PS5 (V) PS5 (V-15) PS6 (S) PS6a (S-24) PS6B (S-24-RESERVED) PS7 (VBC) PS7 (VBC-RESERVED)

SIGNAGE SYSTEM OVERVIEW

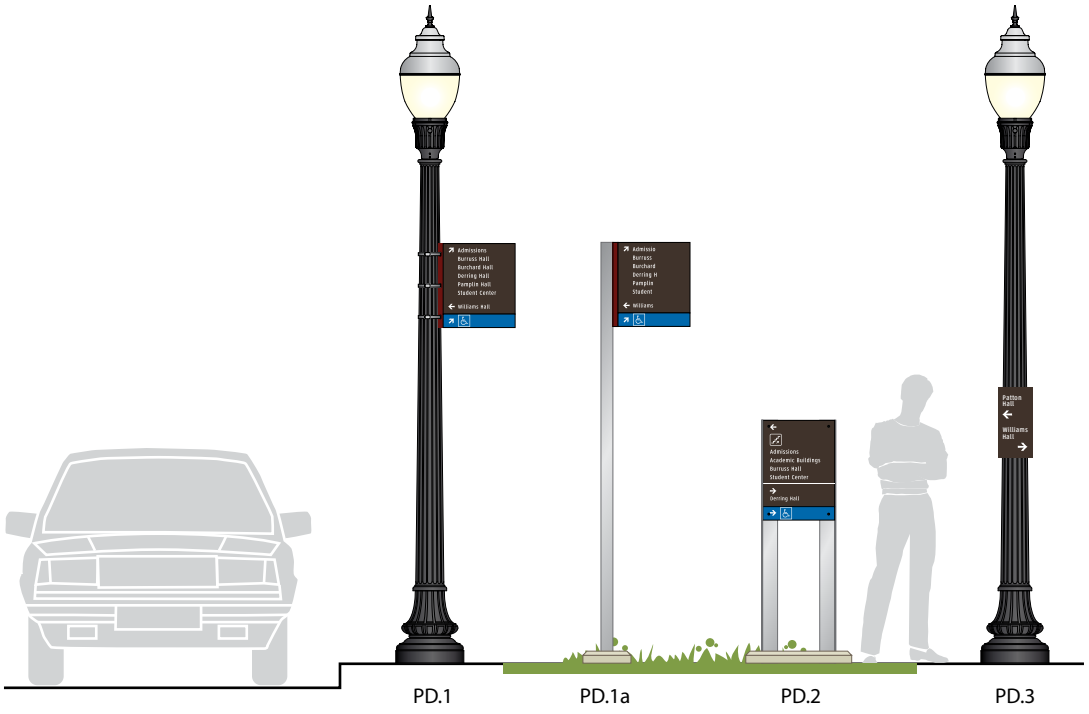
Parking Garage
Sign Types
The sign is designed to provide entry identification for parking garages on campus. The signs are internally illuminated fabricated metal cabinets, attaching to the structures surface. The final dimensions and placement of these signs will be coordinated with the design of the individual parking structure.

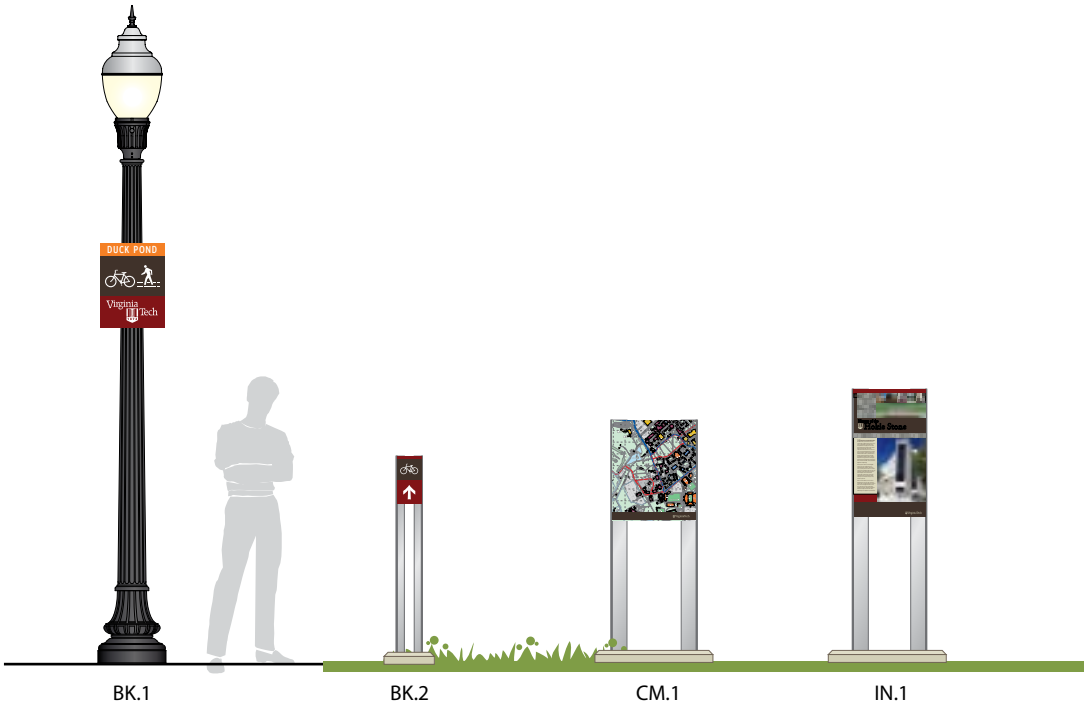


PK.6 PK.7



PK.8





SIGNAGE SYSTEM OVERVIEW

Pedestrian Directional Sign Types
The pedestrian directional signs provide visitors and students direction to destinations on the campus, and are located at intersections and/or street corners. The signs are single- or double-sided, can attach to existing street lights, and are scaled appropriately so the copy is not easily read from a vehicle.

Bike Sign Types
The bicycle sign types include recreational trail identification, bicycle parking directionals and bicycle parking area identification. The signs will direct visitors and students to these designated locations where they may not be immediately visible from the main path of travel or building entrance.

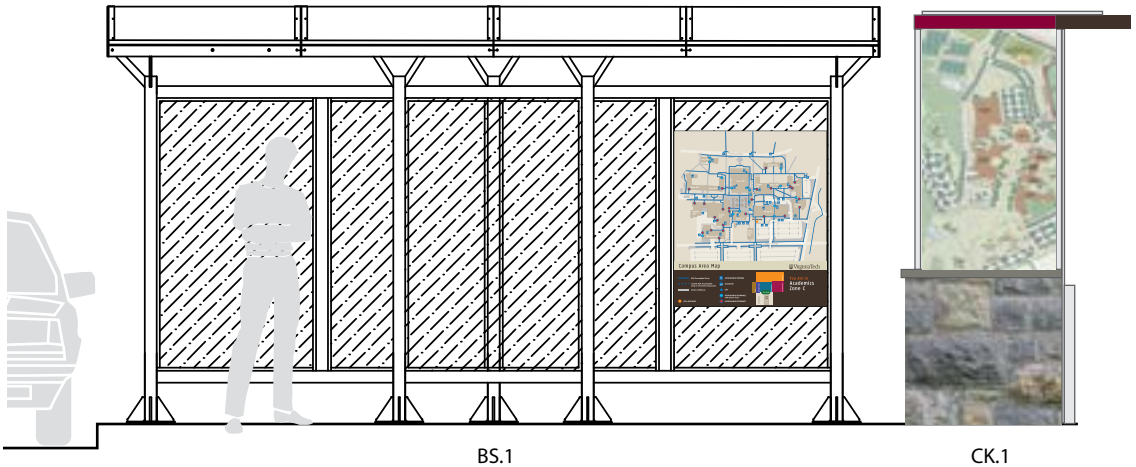
Map Sign Types
The map sign types provide visitors and students orientation from all parking areas, and through-out the campus to supplement the pedestrian directional signs.

Interpretive Sign Types
The interpretive signs provide a graphic and written narrative of historical context, data and interesting facts regarding an area or site with cultural and historic significance.

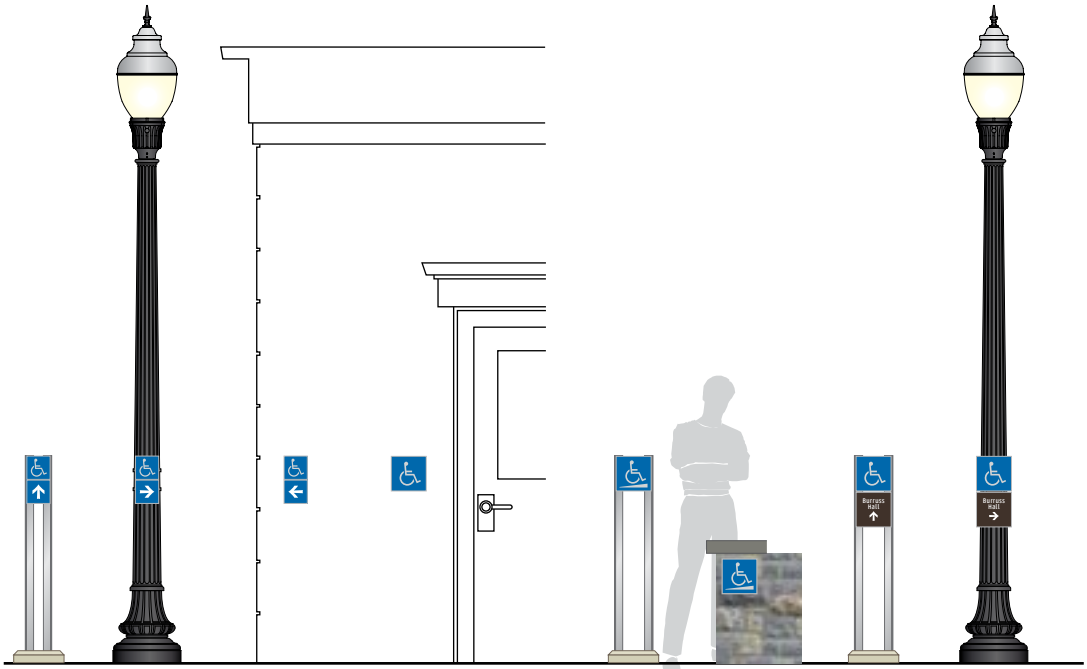
SIGNAGE SYSTEM OVERVIEW

Pedestrian Information Sign Types
The campus maps may also be applied to Bus Shelters, and small kiosk locations at key nodes of the campus. The primary content is a large scale campus map with comprehensive index of destinations. If conditions permit, the kiosk may be double-sided with the second side displaying a 5-minute walking radius map, providing localized details.

Accessible Sign Types
The accessible sign types provide direction to accessible building entrances where the entrance may not be immediately visible from the main path of travel, or in instances where an alternate and accessible entrance is provided.



BS.1 CK.1



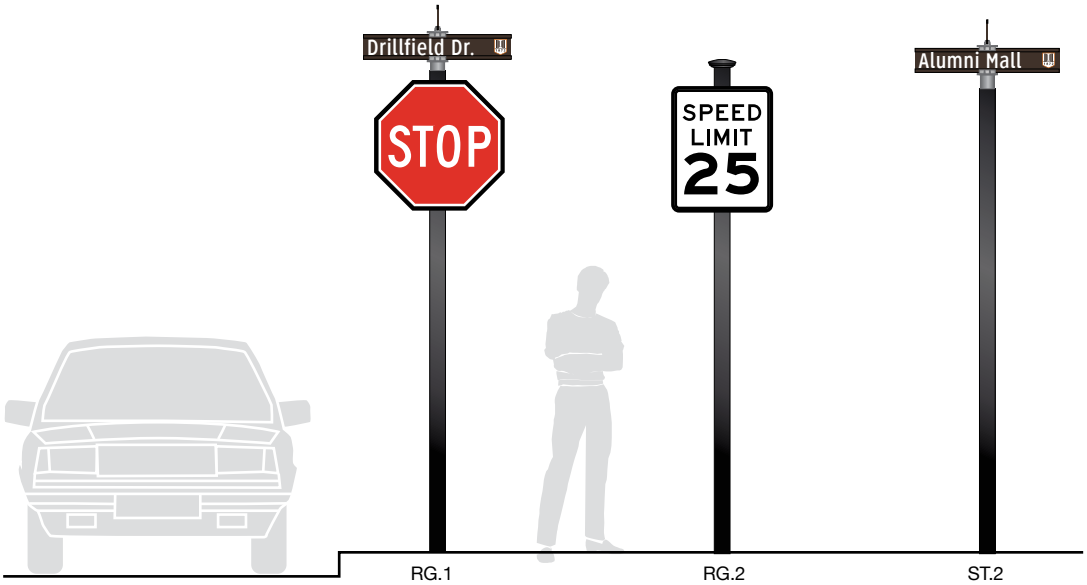
HC.1 HC.1a HC.1b HC.2 HC.3 HC.3a HC.4 HC.4a

SIGNAGE SYSTEM OVERVIEW

Pavilion Sign Types
The pavilion is located at entry points to campus, consolidating multiple displays of information into a single unit, including technology-based information systems, touch-screen wayfinding, and parking ticket vending.

PAVILION.1

PAVILION.1



SIGNAGE SYSTEM OVERVIEW

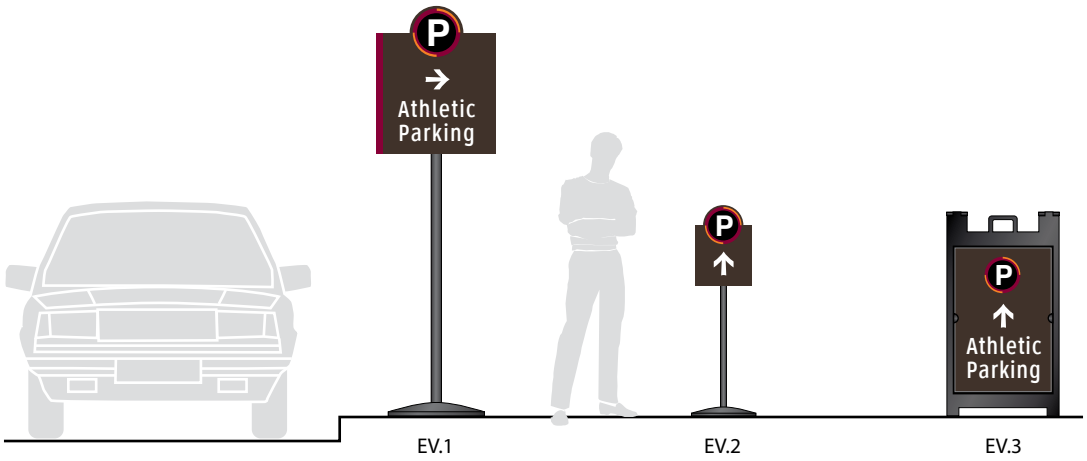
Street Name Sign Types
The street name signs provide another level of campus identity with their unique color scheme and use of the shield. There are two sizes of signs that respond to various roadway scales and speeds, can attach to traffic control poles or simple black metal round post. Locate street signs on opposite corners of the intersection of all named streets for wayfinding and emergency response purposes.

Regulatory Sign Types
Basic traffic control signage will be displayed on a simple black metal round post. This simple upgrade will unify the appearance and quality of this basic sign type, and minimize clutter of mixed hardware styles.

Banner Sign Types
Campus banners are intended to bring color and VT brand presence to the campus perimeter and key interior corridors. Banners are mounted to existing light poles, and scaled appropriately to the size of fixture.

SIGNAGE SYSTEM OVERVIEW

Event Sign Types
A new system of coordinated temporary signage will replace the current ad-hoc method of directing traffic for game-day and other large events. Safety and clear wayfinding is emphasized, along with the desire to reinforce the VT brand during these high-visibility events. Freestanding A-frame style signage and temporary post and panels respond to the various site conditions, presenting a professional, uncluttered image.

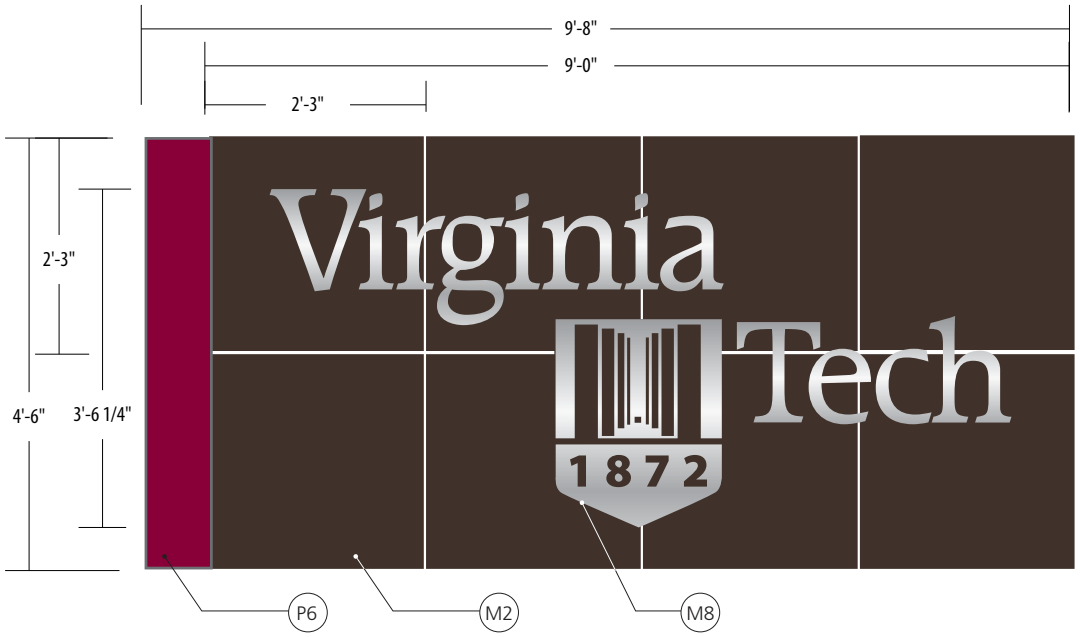


Campus Gateway

SIGN TYPE - CG.1

DESCRIPTION

Secondary Campus Gateways mark the arrival onto Campus with monument signage, similar to the design style of the Major Gateways.



1 Graphic Layout: CG.1
Scale: 1/2" = 1"

1 Elevation: CG.1
Front View
Scale: 1/4" = 1'-0"

FABRICATION DETAILS

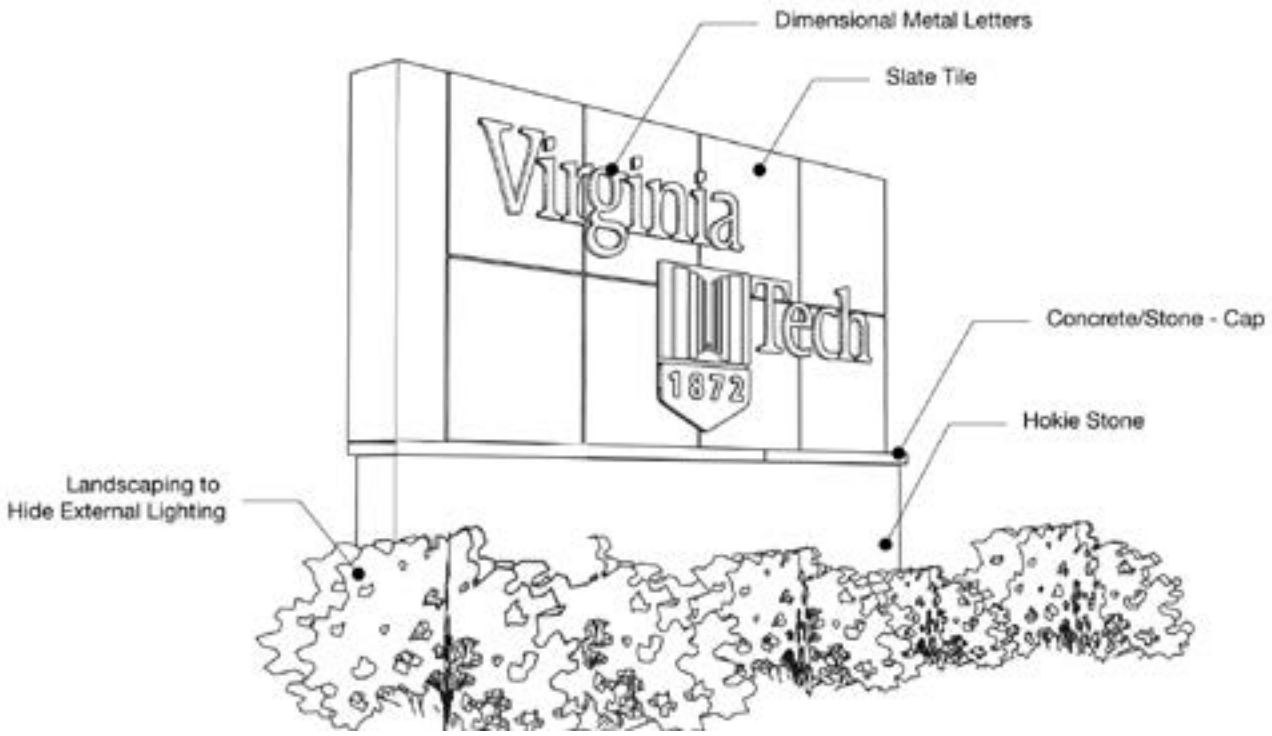
Base
Hokie Stone with grout, and pre-cast concrete sill with grout.
See construction details- Hokie Stone Base

Top Stone
Sandstone, or pre-cast concrete, with grout.

Sign Panel
Fabricated aluminum, painted, match specs in the shop drawings.

VT Wordmark
Aluminum letters, epoxy flush to slate tile.

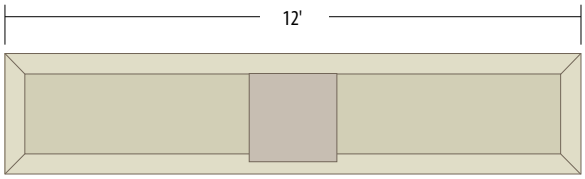
Lighting
Flush, ground mounted LED up-lights.



SIGN TYPE - CG.2

DESCRIPTION

Variable Message Board intended for High Speed Vehicular Traffic along Highway 460. LED Board to announce special events, parking and road closure messages. Sign to be located along NCDOT ROW.



Top View

1 Elevation: CG.2
Front View
Scale: 1/4" = 1'-0"

Side View

FABRICATION DETAILS

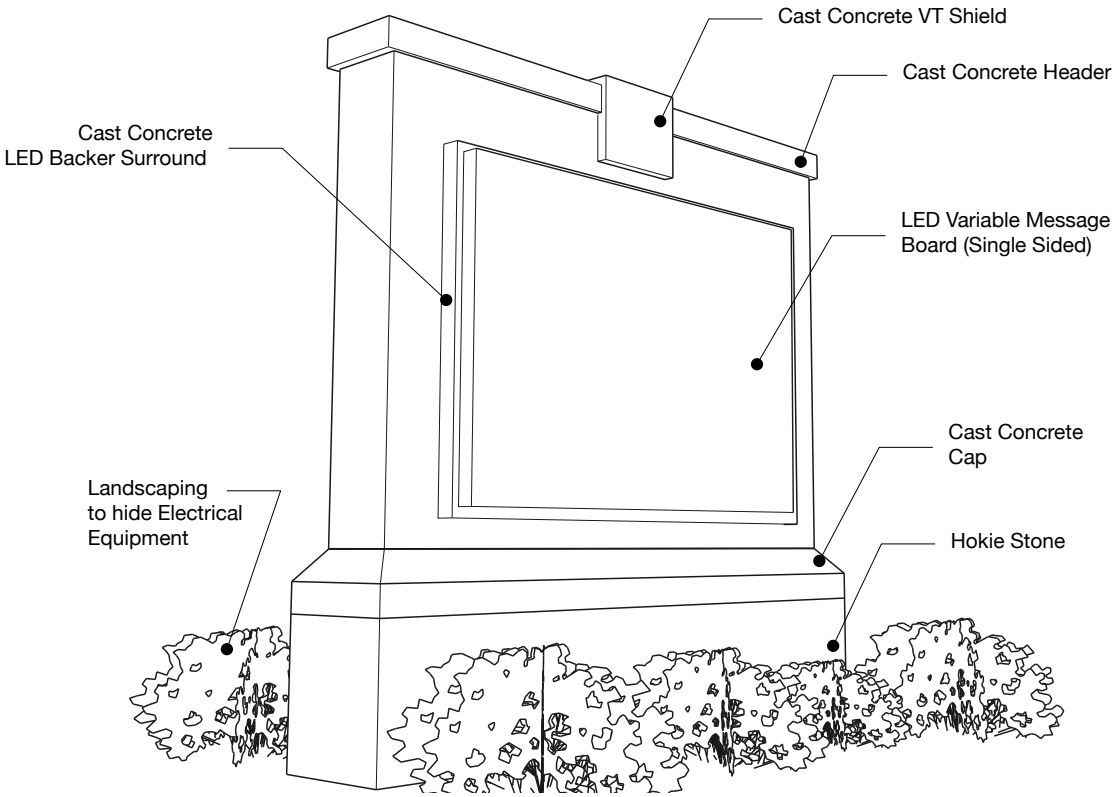
Base
Hokie Stone, with grout.

Sill and Top Stone
Sandstone, or pre-cast concrete, with grout.

Decorative Shield Stone
Sandstone, or pre-cast concrete, with grout.

LED Informational Panel
Daktronics® LED Monochromatic 19mm, 6' H x 9' W.

Lighting
Softly illuminate sign with flush, ground mounted LED up-lights.

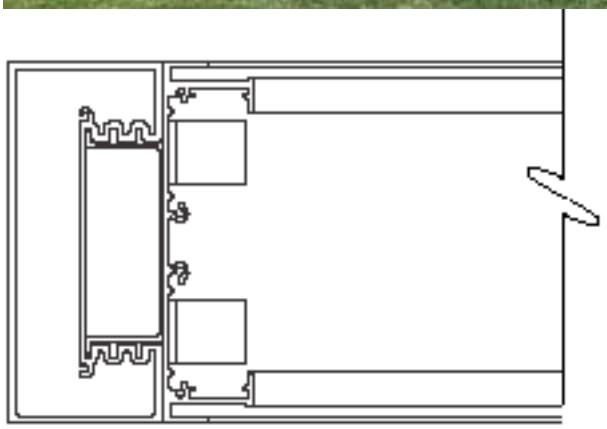


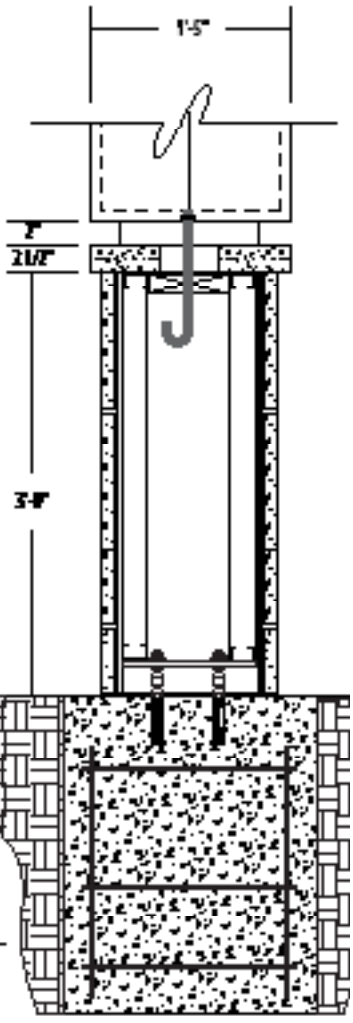
District Identity

2 Graphic Layout: DT.1
Scale: 3/4" = 1"

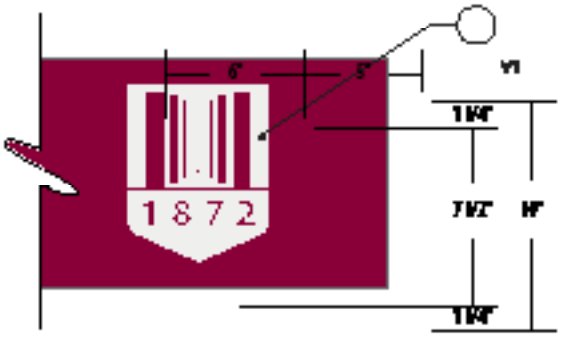
DESCRIPTION
District Arrival Monument marking the arrival into a subcampus within or outside Virginia Tech Property.

1 Elevation: DT.1
Ground Mount
Scale: 1/4" = 1'-0"





1 SECTION View: DT.1
Hokie Stone Monument Mount
Scale: NTS



2 Graphic Layout: DT.1
Hokie Stone Monument Mount
Scale: 1 1/2" = 1'

3 Side View: DT.1
Ground Mount
Scale: NTS

FABRICATION DETAILS

Base
Hokie Stone with grout, and pre-cast concrete sill with grout.

Sign Cabinet
Fabricated aluminum, painted. Acryltic front face(s), with background and silver building name. Process to match Sign Type B.1

Building Address
Reflective Vinyl message to sign cabinet.
4" Copy Height Min.

Shield
Aluminum 1/2" thick, etched and filled.

Ground Accent Lighting
Illuminate sign with fluch, ground mounted LED up-lights.

Sign Face: Internally illuminated with LED lighting. Illumination to match Sign Type B.1

Building Identity

SIGN TYPE - B.1

DESCRIPTION

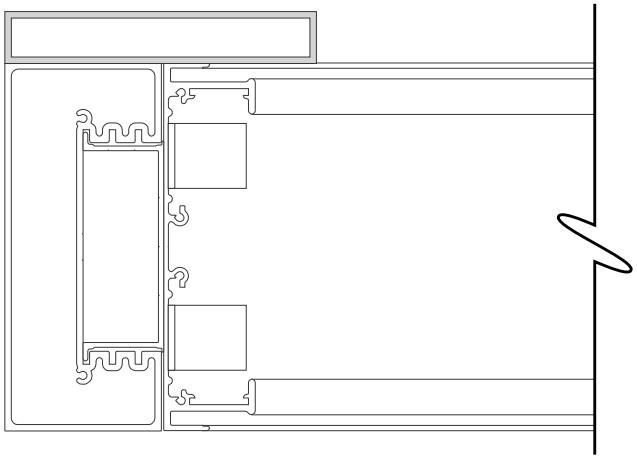
Primary Building Arrival Monument marking the arrival to a Building within or outside Virginia Tech Property. Building addressing is incorporated for emergency services.

2 Graphic Layout: B.1
Scale: 3/4" = 1'

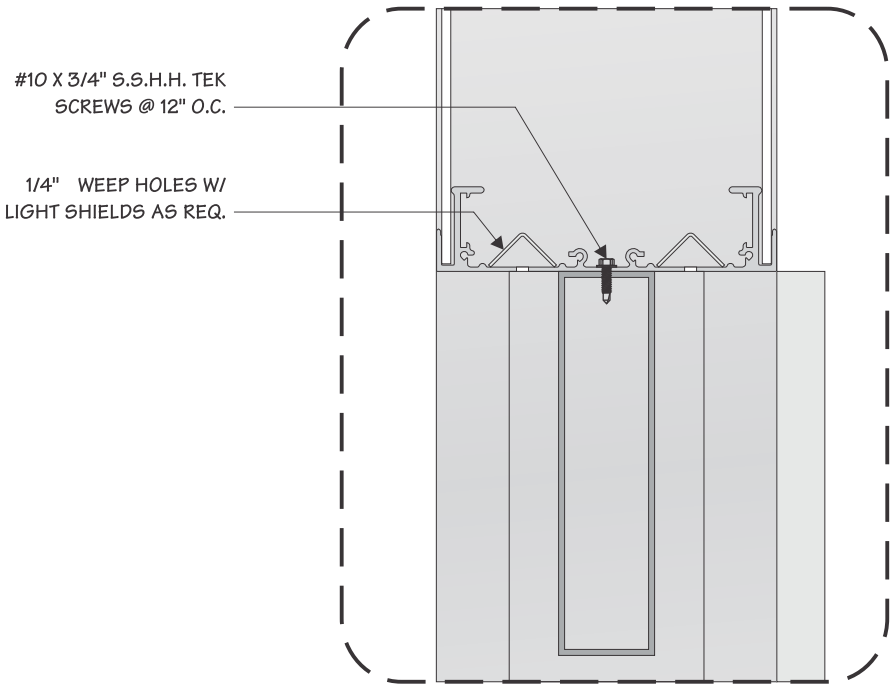
Top View

1 Elevation: B.1
Ground Mount
Scale: 1/2" = 1'-0"

Side View



1 Plan View: B.1
Ground Mount
Scale: NTS



2 SideView: B.1
Ground Mount
Scale: NTS

FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

Sign Cabinet
Fabricated aluminum, painted. Acryltic front face(s) with UV inhibitor, with background and silver building name. Temper resistant + Security hardware.

Building Address
Reflective Vinyl message to sign cabinet.

Shield
Etched filled plaque (sample) or vinyl.

Lighting
Internally illuminated with LED lighting.

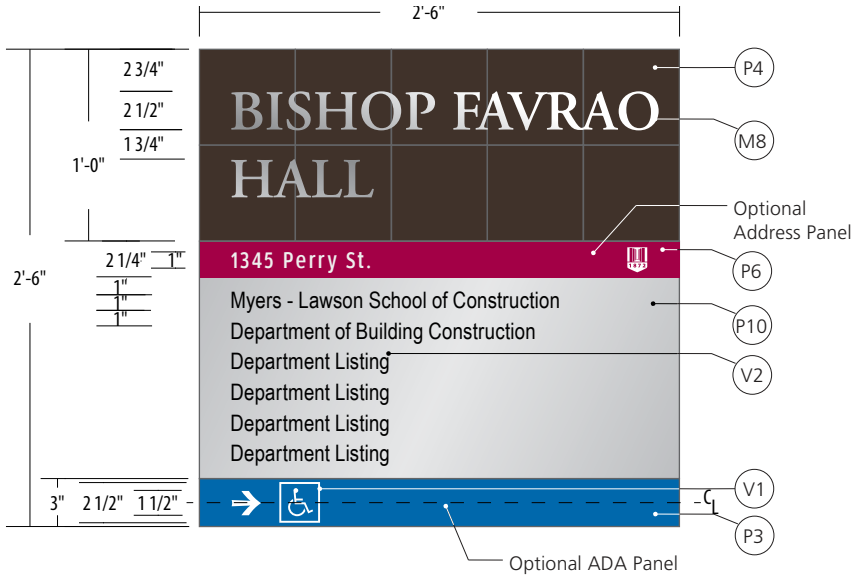
Sign Base
Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.

Shop drawings, see page #

Landscaping, see page #

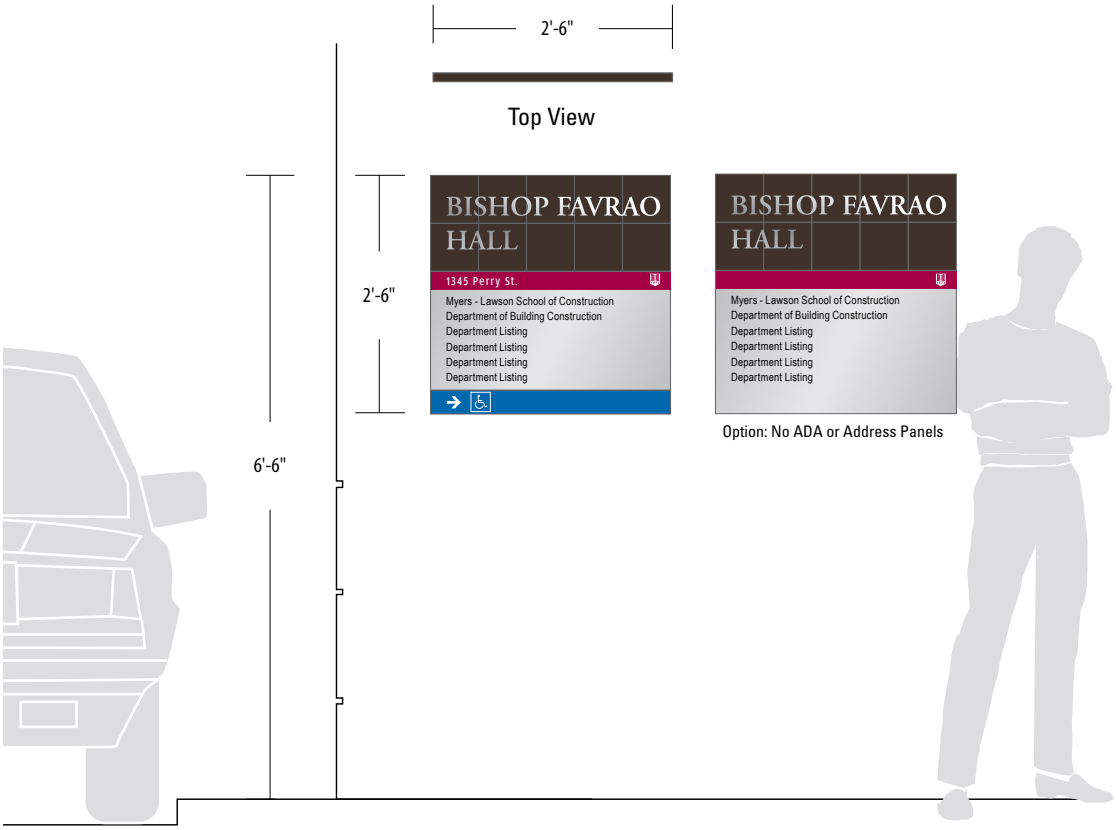
Electrical hook-up, see page #



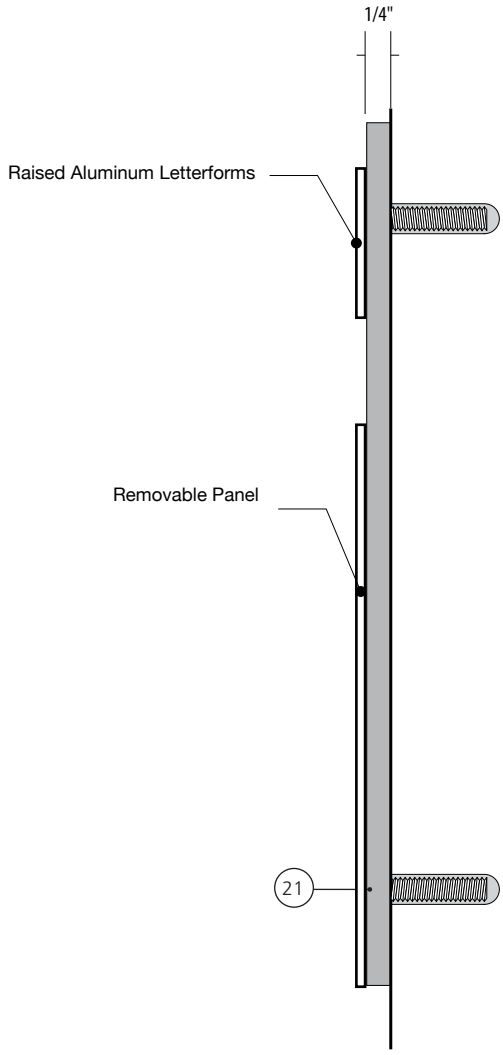
2 Graphic Layout: BD.2
Scale: 1" = 1'

DESCRIPTION

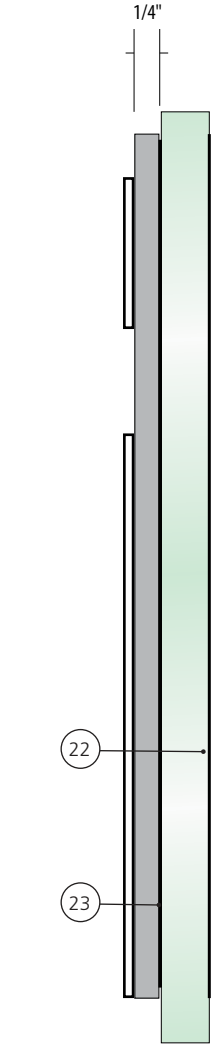
Primary Building ID Plaque marking the arrival to a Building Entrance. Mounted Directly to the Building only when HOKIE STONE is NOT installed.
Sign is to be mounted adjacent to the Primary Path of entry into the Building. Changeable Department Names are listed, as well as, ADA Access information.



1 Elevation: B.2
Wall Mount
Scale: 1/2" = 1'-0"



1 Detail: B.2
Wall Mount: Side View
Scale: NTS



2 Detail: B.2
Glass Mount: Side View
Scale: NTS

FABRICATION DETAILS

EXTERIOR Panel
Etched aluminum 1/4" thick sheet, with raised graphics and borders.

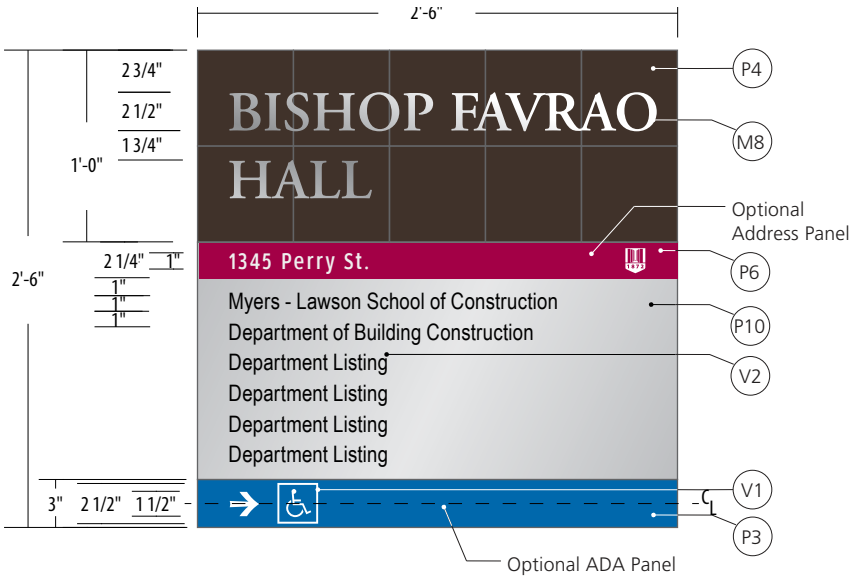
Directory Portion to be removable panel. Rail System with side caps / locking component.

Panel Mounting
Stud mount with epoxy.

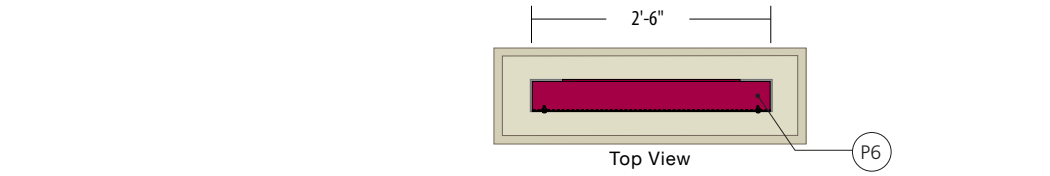
21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

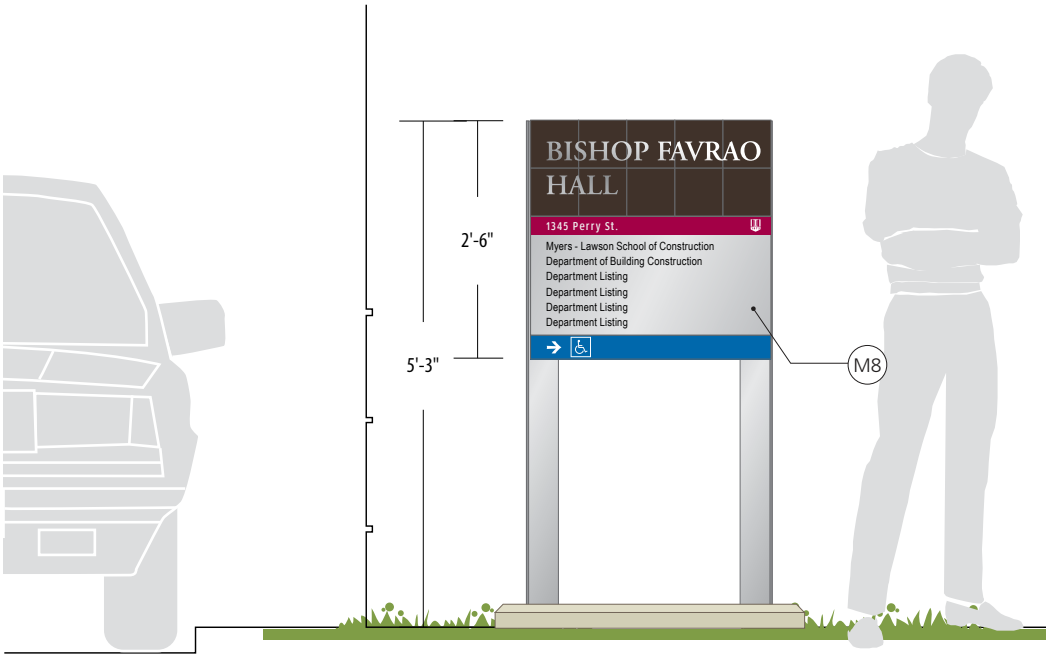
22. 3M #7725-120 Satin Aluminum Opaque Vinyl applied to opposite side of glass

23. Vertically applied 3M #4929 VHB Tape + JB Weld- adhesive



2 Graphic Layout: BD.2
Scale: 1" = 1'

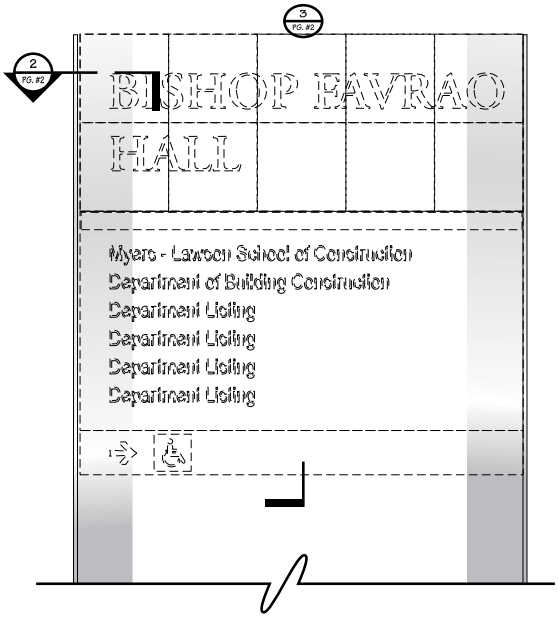




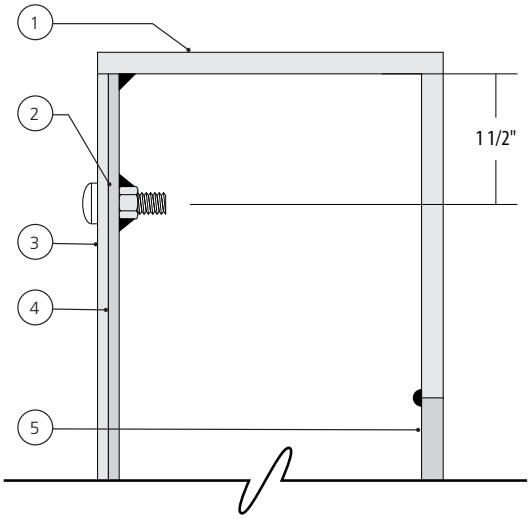
1 Elevation: B.2a
Ground Mount
Scale: 1/2" = 1'-0"

DESCRIPTION

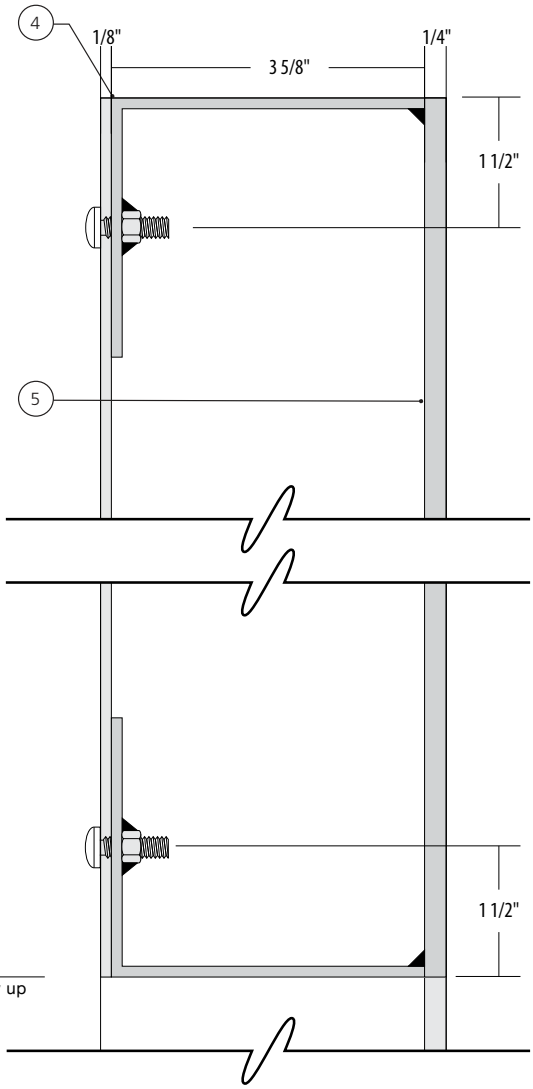
Primary Building ID Plaque marking the arrival to a Building Entrance. Ground Mounted adjacent to Building only when HOKIE STONE IS installed. Sign is to be mounted adjacent to the Primary Path of entry into the Building. Changeable Department Names are listed, as well as, ADA Access information.



1 Detail: B.2a
Ground Mount
Scale:NTS



2 Detail: B.2a
Plan Section Blow up
Scale: NTS



3 Detail: B.2a
Side Section Blow up
Scale: NTS

FABRICATION DETAILS

Posts
4" x 4" aluminum angle

Sign Panel
EXTERIOR Panel
Etched aluminum 1/4" thick sheet, with raised graphics and borders.

Directory Portion to be removable panel. Rail System with side caps / locking component.

Panel Mounting
Mechanical

21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

Sign Base
Direct bury, into concrete footer 4" below grade.

Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.

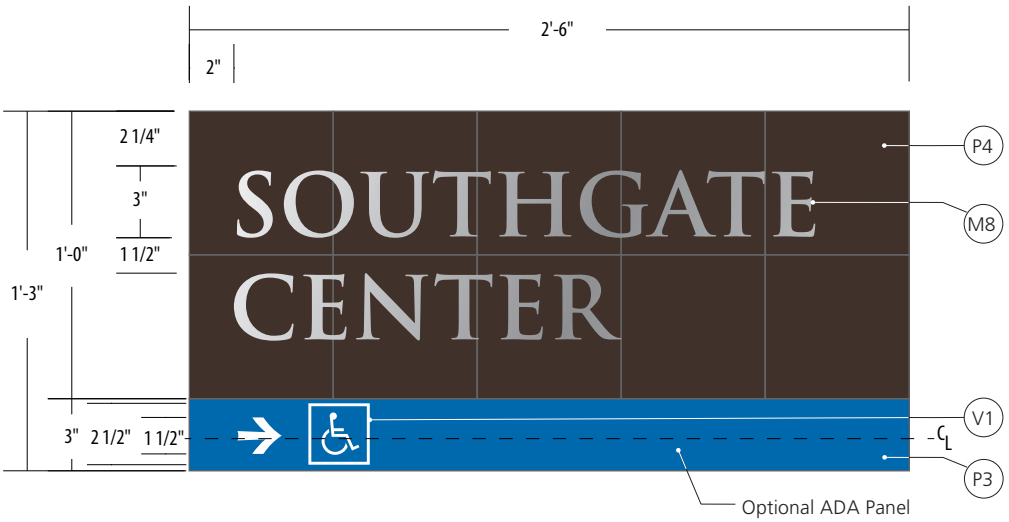
1. 4"x4"x1/4" Aluminum angle vertical

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

4. 3"x4"x1/8" Cut down to 3"x3 5/8" welded to inside of vertical angle

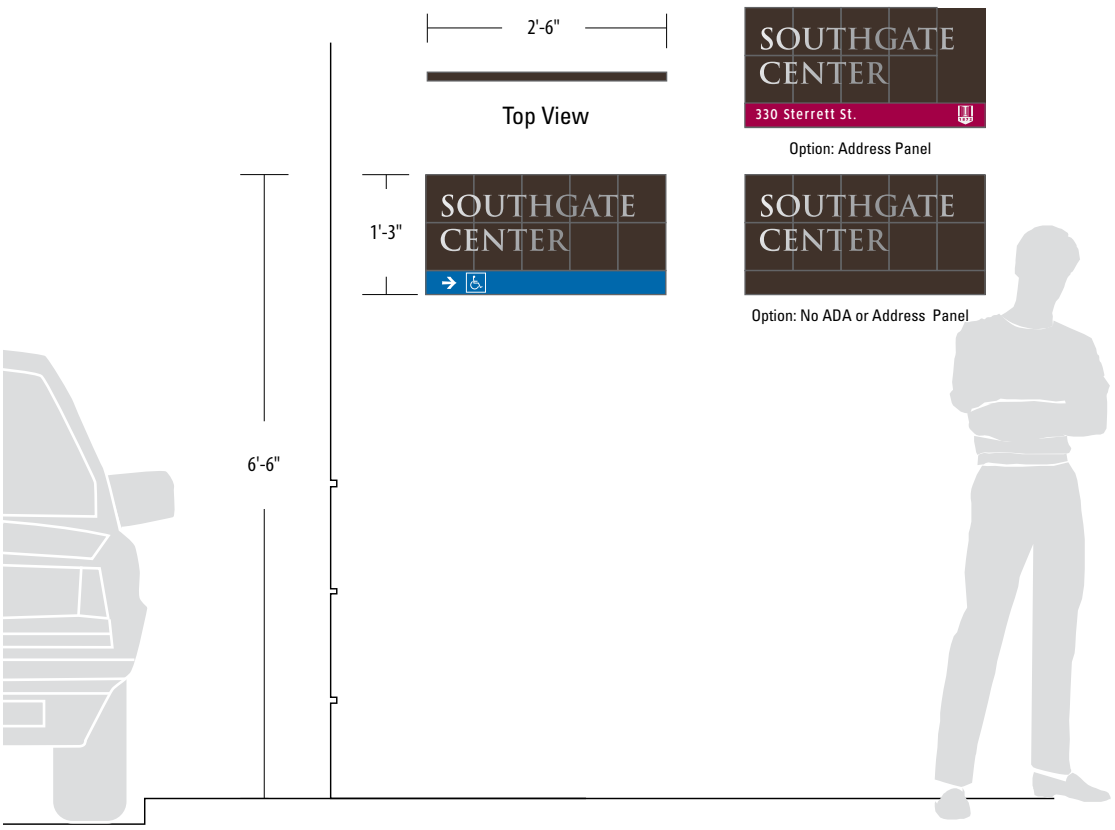
5. 1/4" Aluminum backer welded between vertical angles



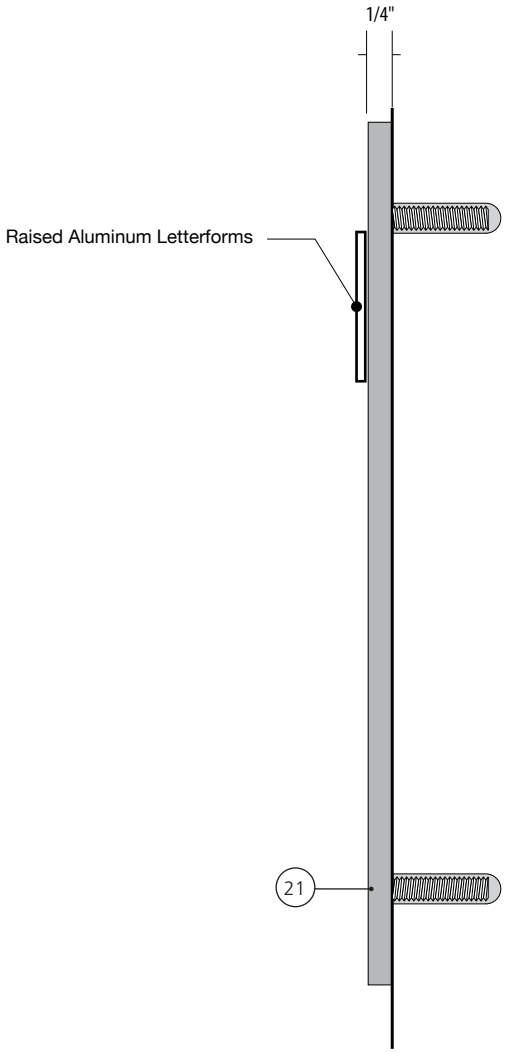
2 Graphic Layout: B.3
Scale: 1 1/2" = 1'

DESCRIPTION

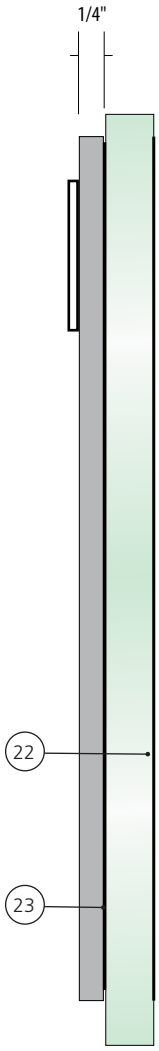
Primary Building ID Plaque marking the arrival to a Building Entrance. Mounted Directly to the Building only when HOKIE STONE is NOT installed.
Sign is to be mounted adjacent to the Primary Path of entry into the Building. ADA Access information is listed.
B.3a Single Sided
B.3b Double Sided



1 Elevation: B.3
Wall Mount
Scale: 1/2" = 1'-0"



1 Detail: B.3
Wall Mount: Side View
Scale: NTS



2 Detail: B.3
Glass Mount: Side View
Scale: NTS

FABRICATION DETAILS

EXTERIOR Panel
Etched aluminum 1/4" thick sheet, with raised graphics and borders.

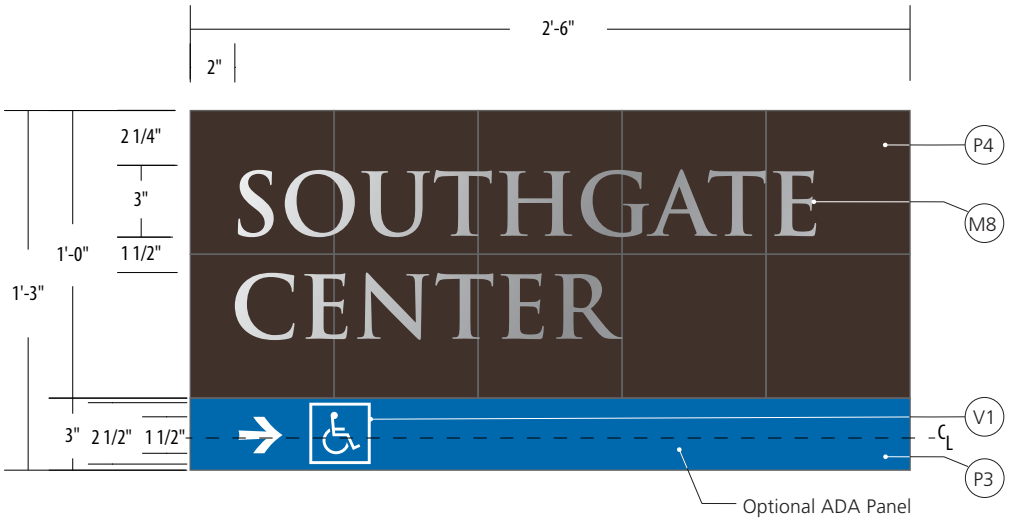
Panel Mounting
Stud mount with epoxy.

21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

22. 3M #7725-120 Satin Aluminum Opaque Vinyl applied to opposite side of glass

23. Vertically applied 3M #4929 VHB Tape & Silicone

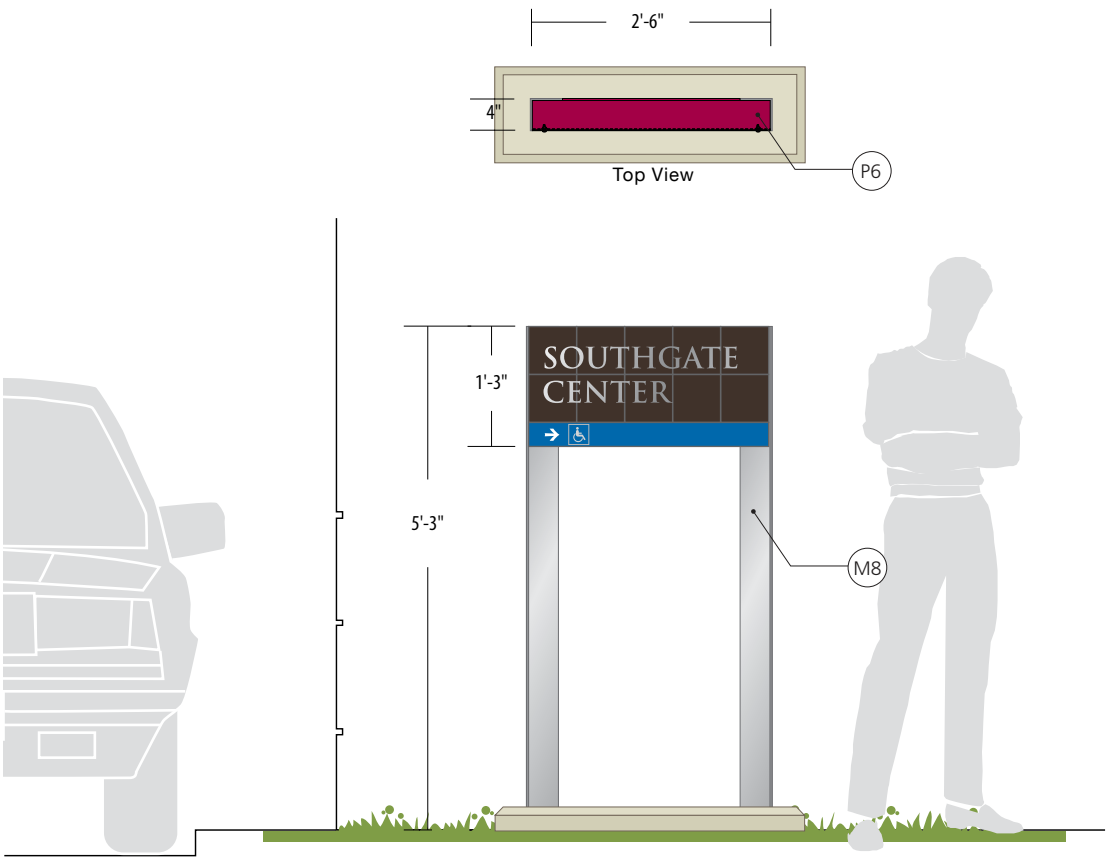
SIGN TYPE - B.3a



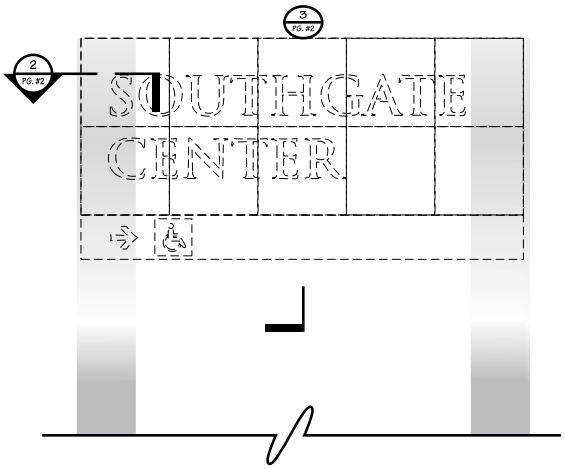
2 Graphic Layout: B.3
Scale: 1 1/2" = 1'

DESCRIPTION

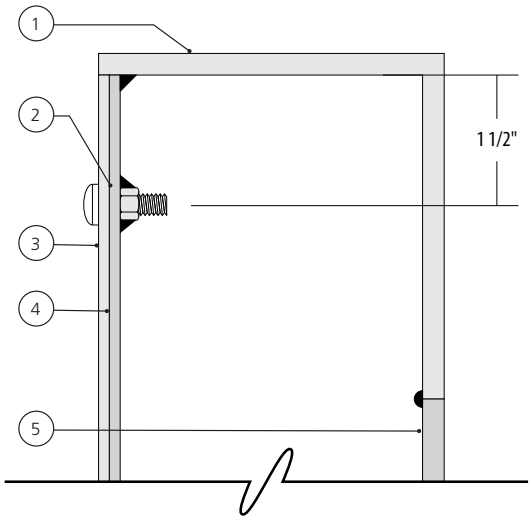
Primary Building ID Plaque marking the arrival to a Building Entrance. Ground Mounted adjacent to Building only when HOKIE STONE IS installed. Sign is to be mounted adjacent to the Primary Path of entry into the Building. Access information is listed.



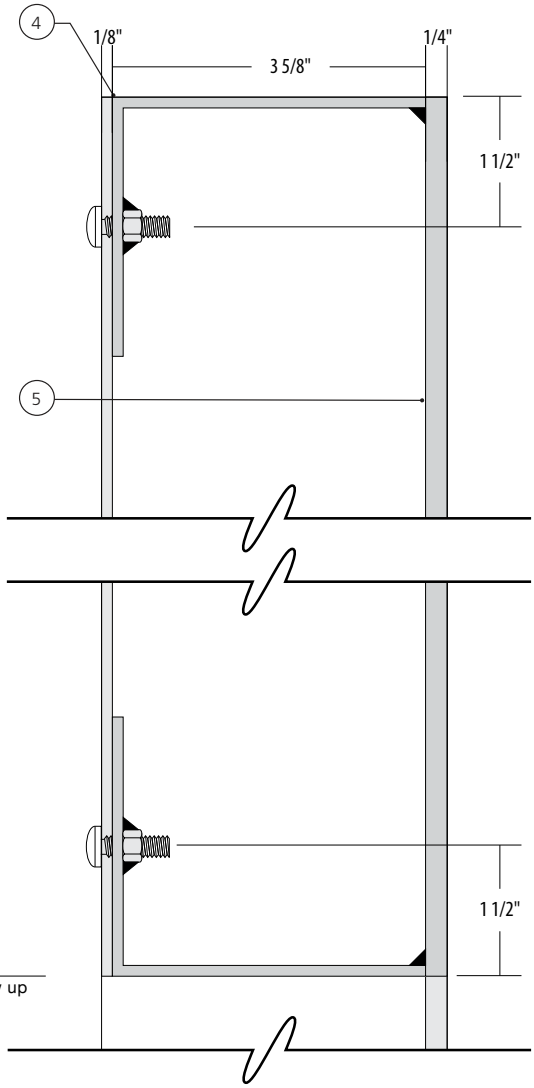
1 Elevation: B.3a
Ground Mount
Scale: 1/2" = 1'-0"



1 Detail: B.3a
Ground Mount
Scale:NTS



2 Detail: .3a
Plan Section Blow up
Scale: NTS



3 Detail: B.3a
Side Section Blow up
Scale: NTS

FABRICATION DETAILS

Posts
4" x 4" aluminum angle

Sign Panel
EXTERIOR Panel
Etched aluminum 1/4" thick sheet, with raised graphics and borders.

Panel Mounting
Mechanical

21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

Sign Base
Direct bury, into concrete footer 4" below grade.

Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.

1. 4"x4"x1/4" Aluminum angle vertical

2.1/4-20 Aluminum nut welded to inside of angle

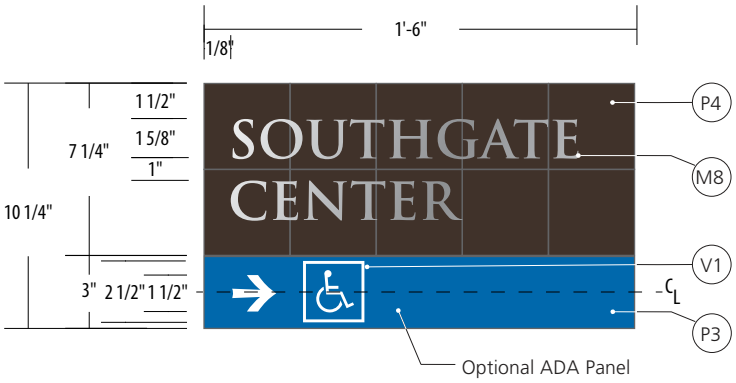
3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

4. 3"x4"x1/8" Cut down to 3"x3 5/8" welded to inside of vertical angle

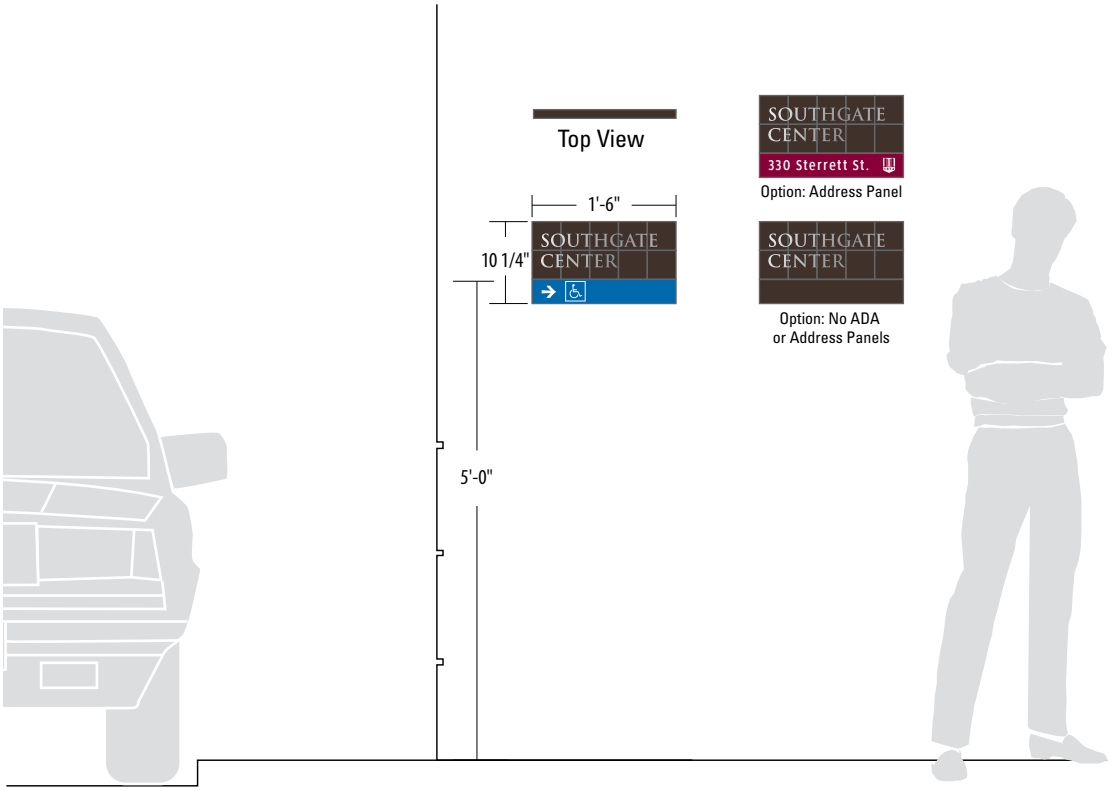
5. 1/4" Aluminum backer welded between vertical angles

DESCRIPTION

Secondary Building ID Plaque marking the arrival to a Building Entrance. Mounted Directly to the Building only when HOKIE STONE is NOT installed.
Sign is to be mounted adjacent to the Primary Path of entry into the Building. ADA Access information is listed.



2 Graphic Layout: B.4
Scale: 1 1/2" = 1'



1 Elevation: B.4
Wall Mount
Scale: 1/2" = 1'-0"

FABRICATION DETAILS

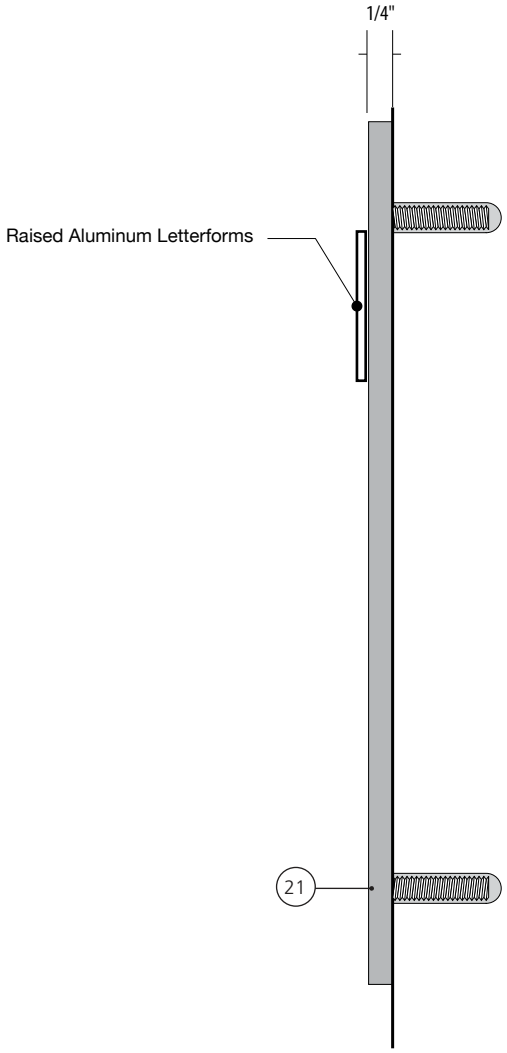
EXTERIOR Panel
Etched aluminum 1/4" thick sheet, with raised graphics and borders.

Panel Mounting
Stud mount with epoxy.

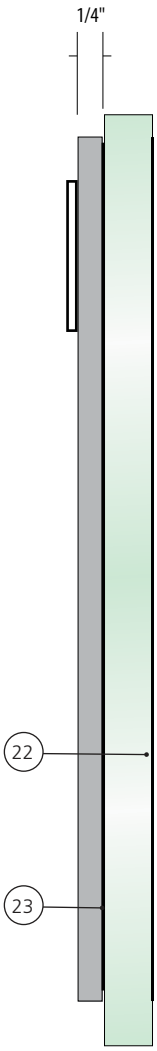
21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

22. 3M #7725-120 Satin Aluminum Opaque Vinyl applied to opposite side of glass

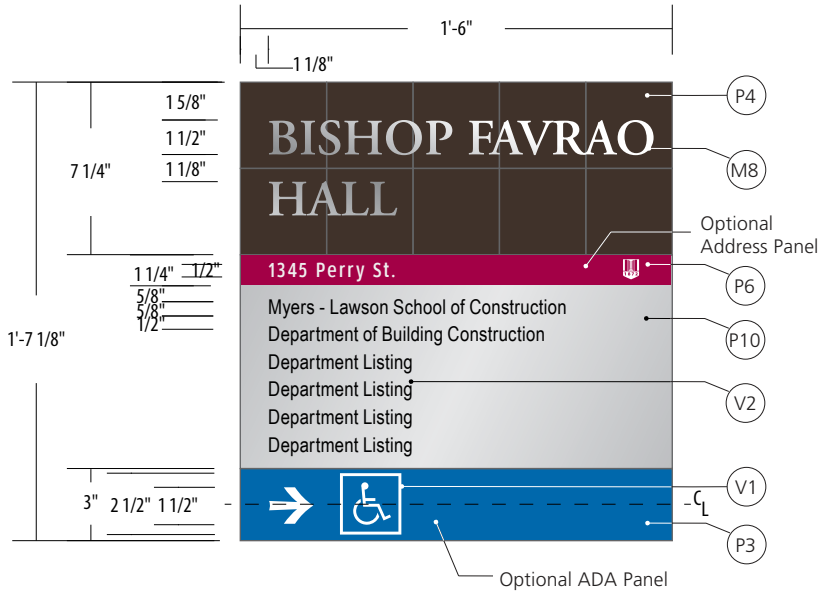
23. Vertically applied 3M #4929 VHB Tape & Silicone



1 Detail: B.4
Wall Mount: Side View
Scale: NTS



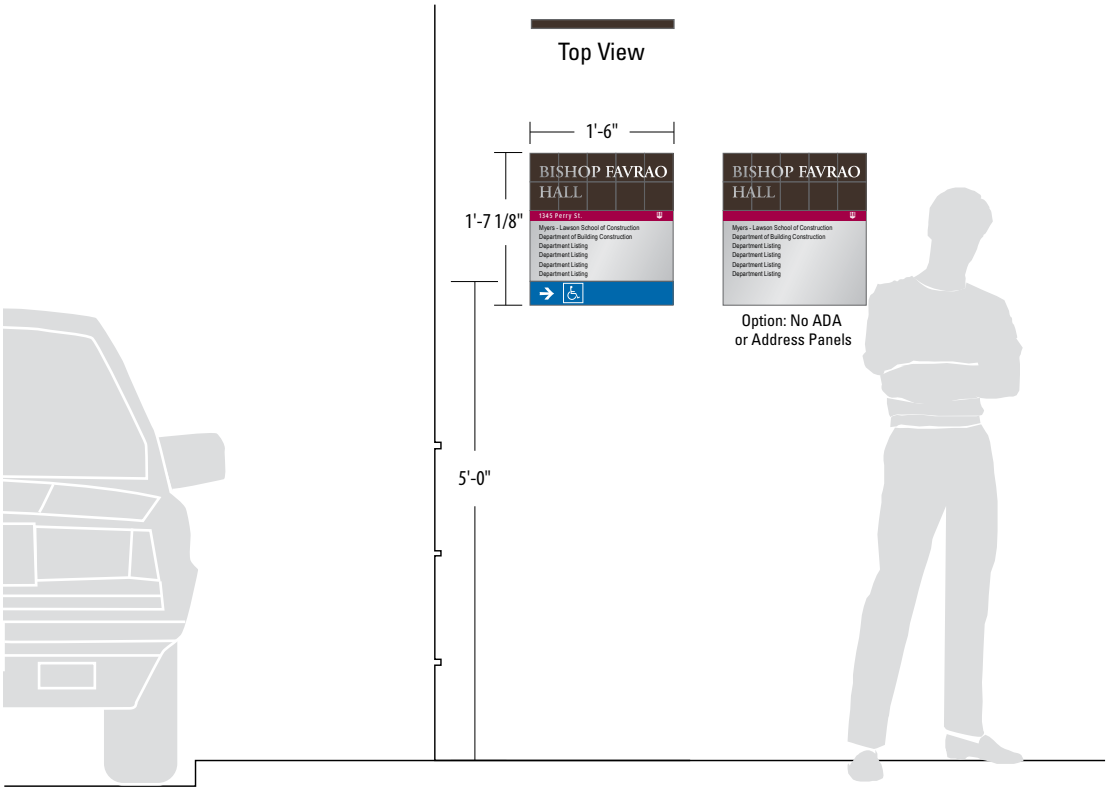
2 Detail: B.4
Glass Mount: Side View
Scale: NTS



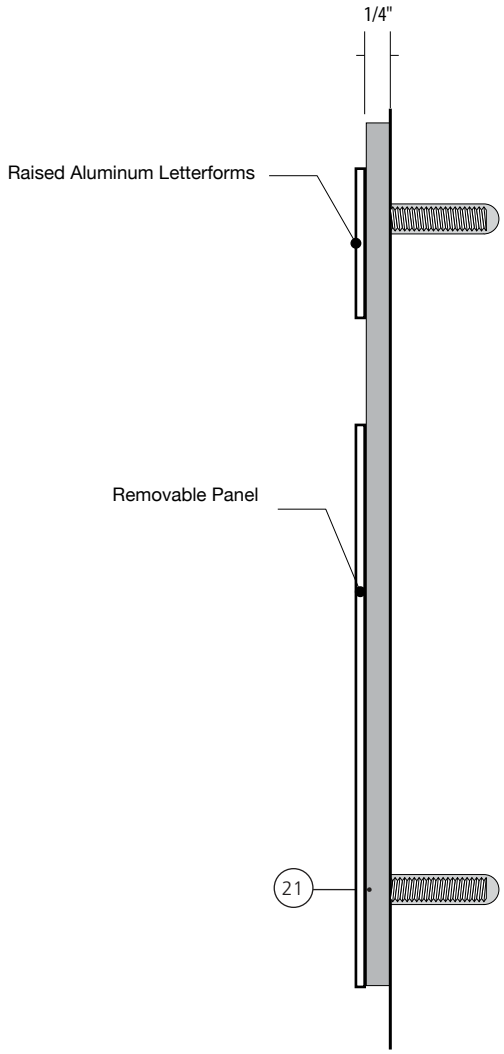
2 Graphic Layout: B.5
Scale: 1 1/2" = 1'

DESCRIPTION

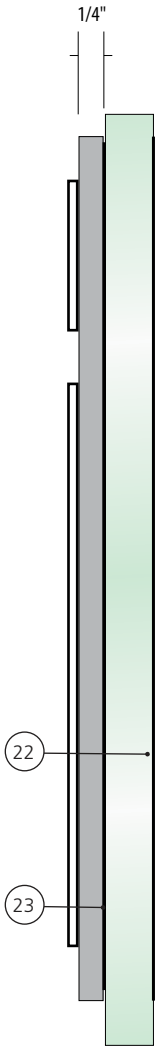
Secondary Building ID Plaque marking the arrival to a Building Entrance. Mounted Directly to the Building only when HOKIE STONE is NOT installed.
Sign is to be mounted adjacent to the Primary Path of entry into the Building. Changeable Department Names are listed, as well as, ADA Access information.



1 Elevation: B.5
Wall Mount
Scale: 1/2" = 1'-0"



1 Detail: B.5
Wall Mount: Side View
Scale: NTS



2 Detail: B.5
Glass Mount: Side View
Scale: NTS

FABRICATION DETAILS

EXTERIOR Panel
Etched aluminum 1/4" thick sheet, with raised graphics and borders.

Directory Portion to be removable panel. Rail System with side caps / locking component.

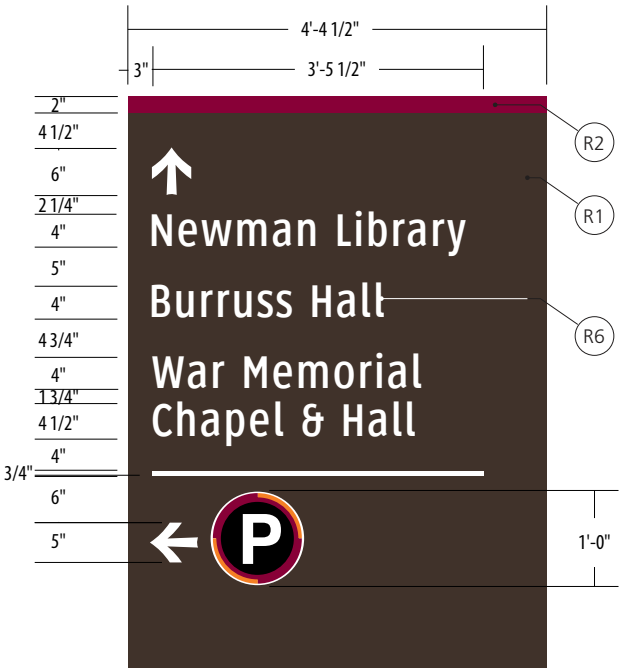
Panel Mounting
Stud mount with epoxy.

21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

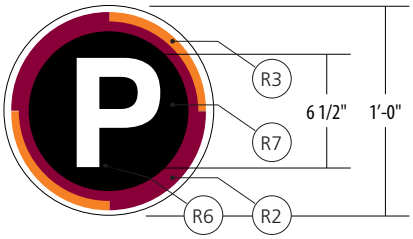
22. 3M #7725-120 Satin Aluminum Opaque Vinyl applied to opposite side of glass

23. Vertically applied 3M #4929 VHB Tape & Silicone

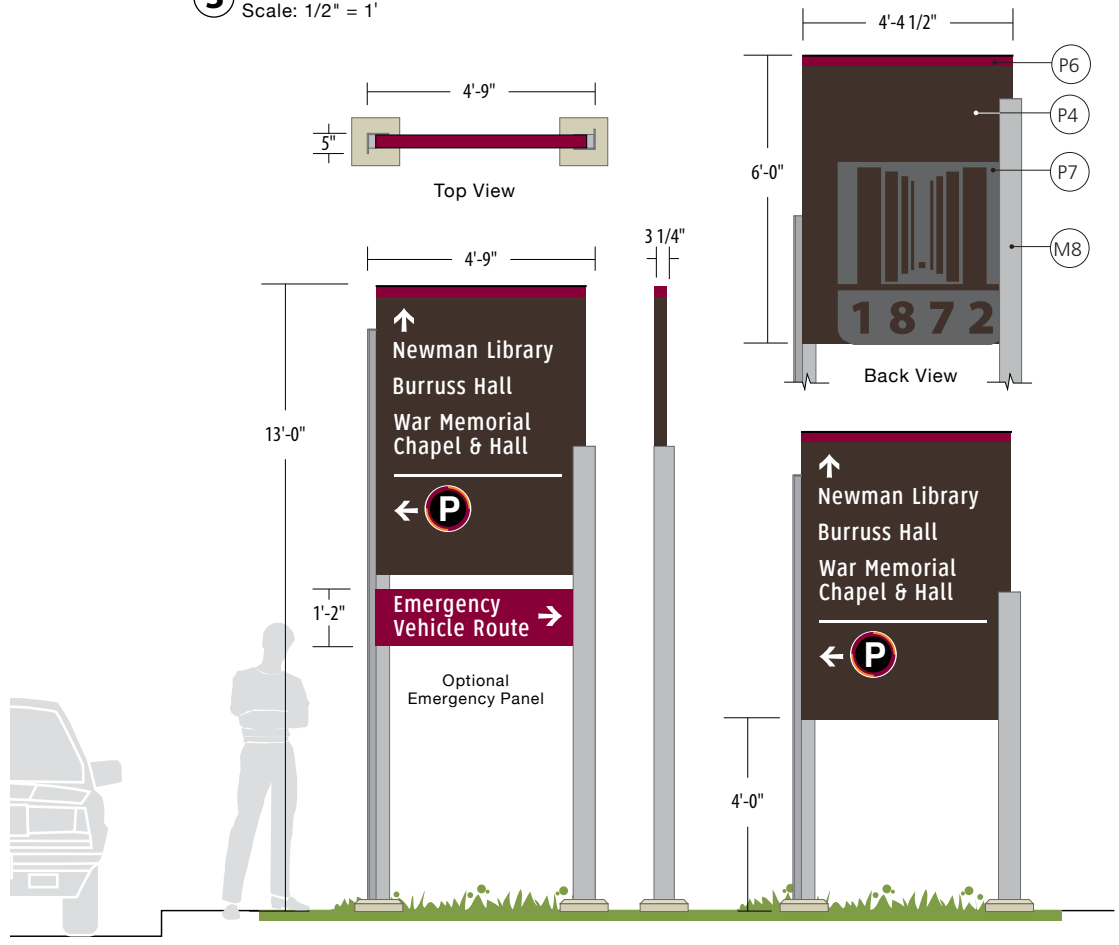
Vehicular Directional



3 Graphic Layout: VD.1 & 1.A
Scale: 1/2" = 1'



4 Graphic Layout: VD.1
Scale: NTS



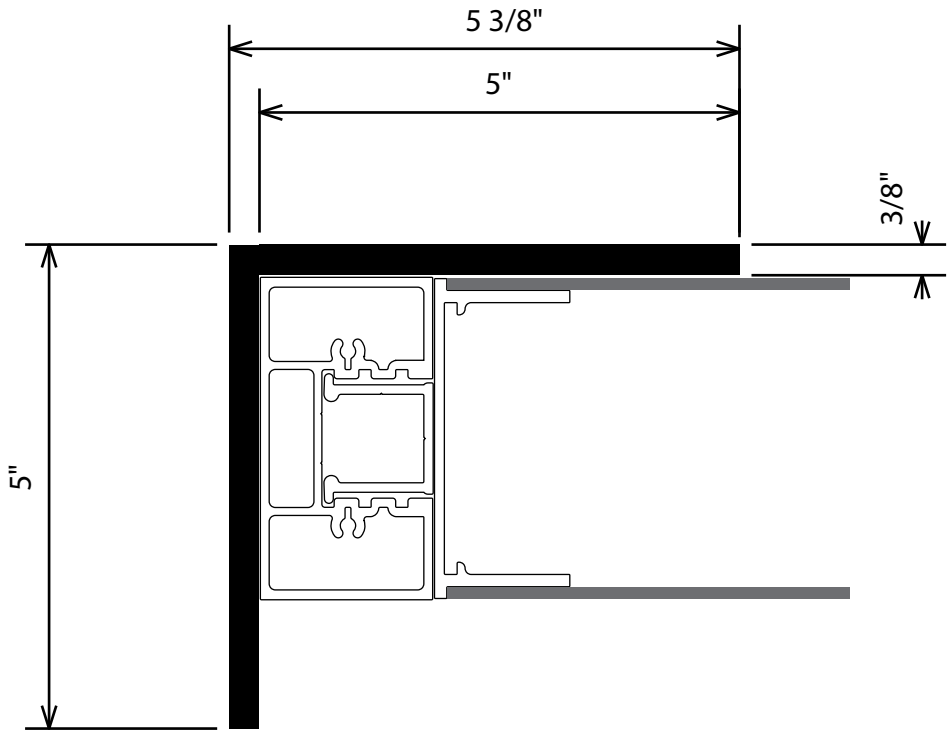
1 Elevation: VD.1
Ground Mount
Scale: 1/4" = 1'-0"

2 Elevation: VD.1A
Option 2
Scale: 1/4" = 1'-0"

DESCRIPTION

On-Campus vehicular directional signs designed for lower speed roadways governed by the University. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.

Shorter versions are shown if height or visual restrictions prevent installation. As Shown



FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

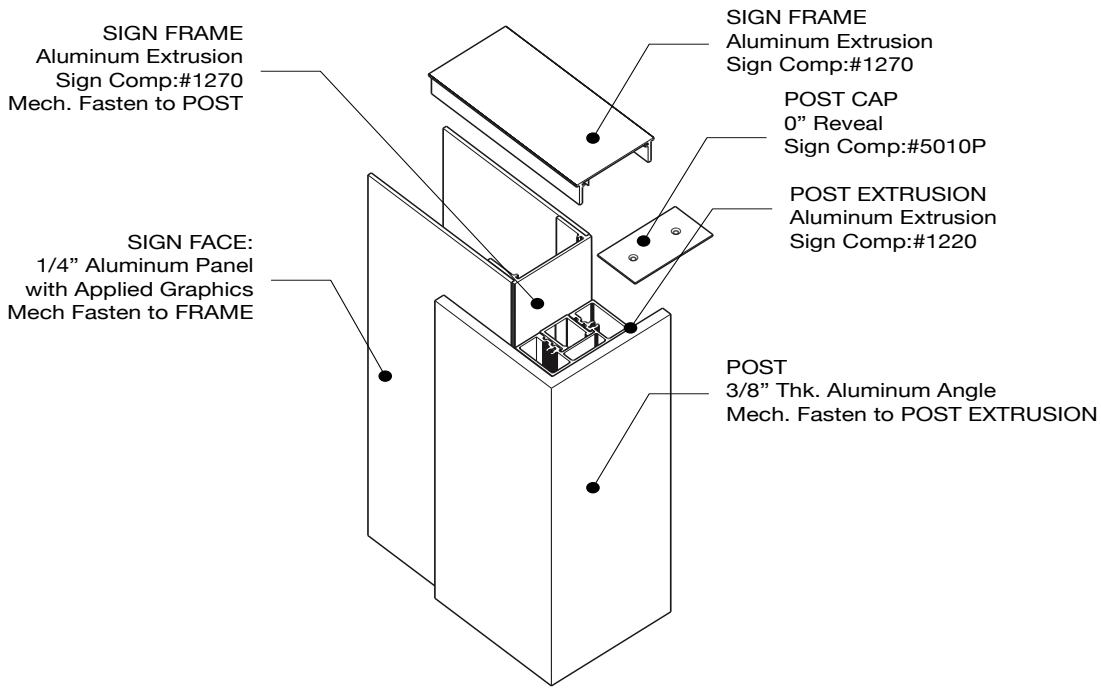
Sign Panel
Fabricated aluminum, painted.

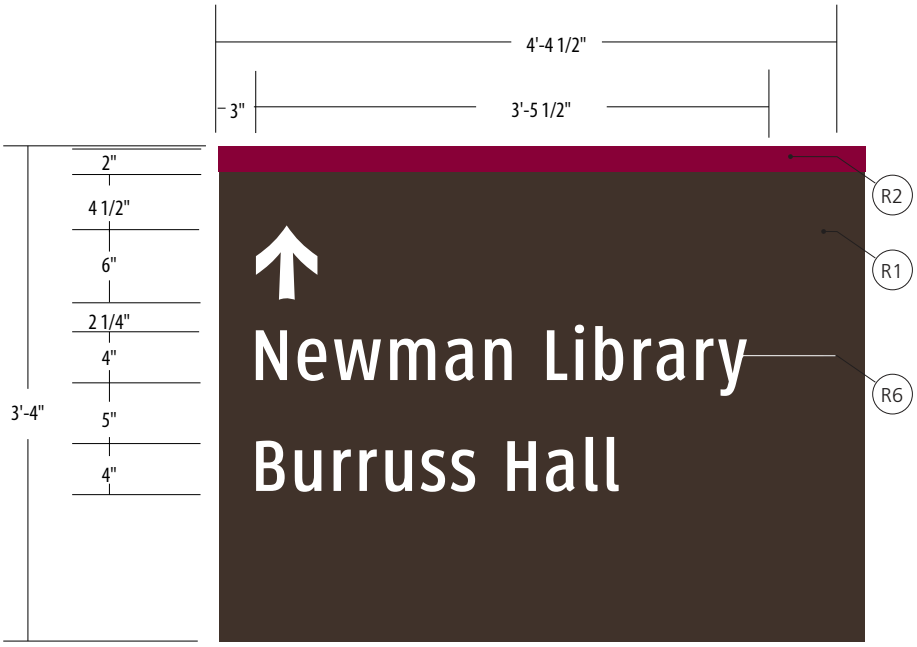
Messages and Graphics
High Intensity Reflective sheeting, single-sided only.
Background and Message

Shield
Back-side only

Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.



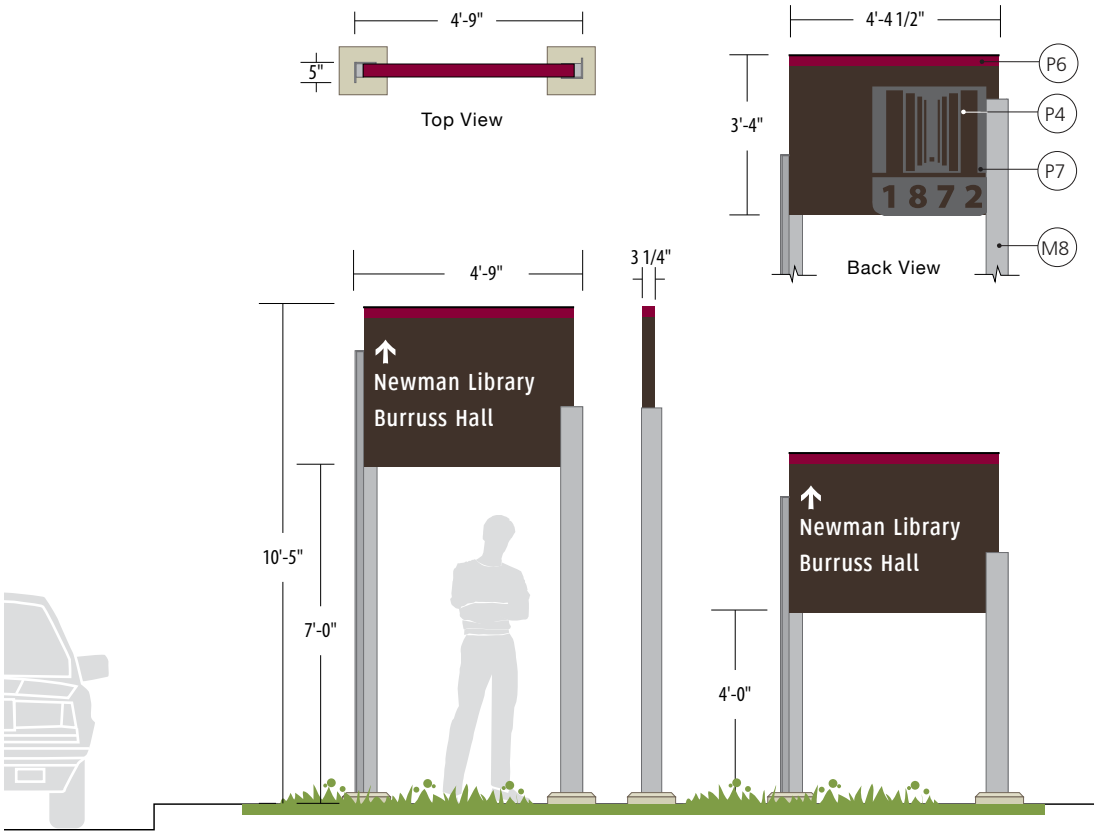


2 Graphic Layout: VD.2 & 2.A
Scale: 3/4" = 1'

DESCRIPTION

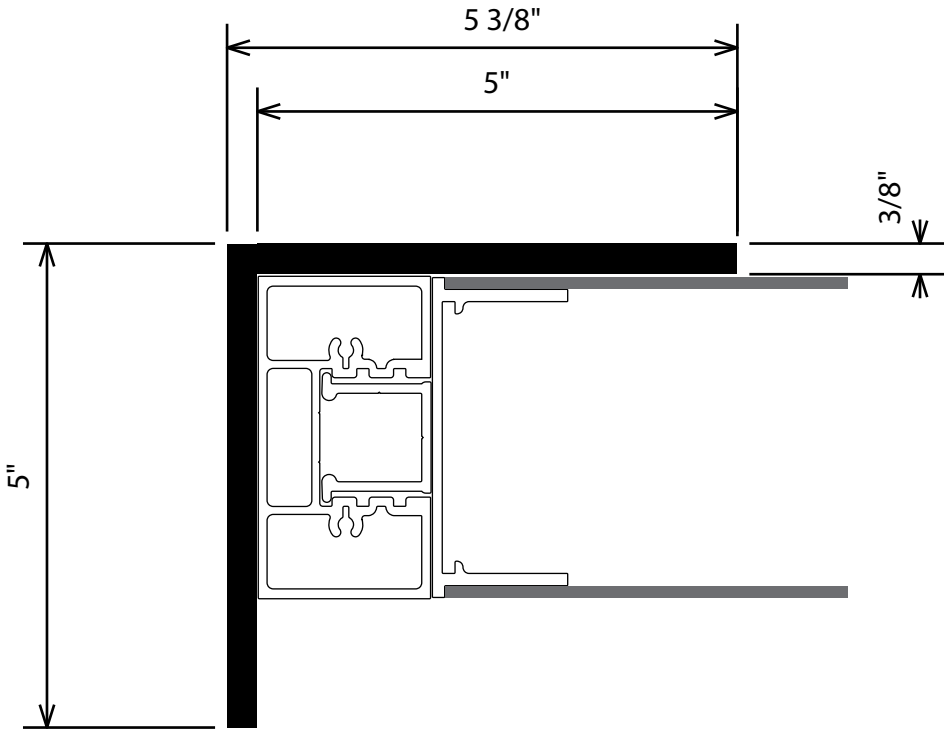
On-Campus vehicular directional signs designed for lower speed roadways governed by the University. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.

Shorter versions are shown if height or visual restrictions prevent installation. As Shown



1 Elevation: VD.2
Ground Mount
Scale: 1/4" = 1'-0"

2 Elevation: VD.2A
Option 2
Scale: 1/4" = 1'-0"



FABRICATION DETAILS

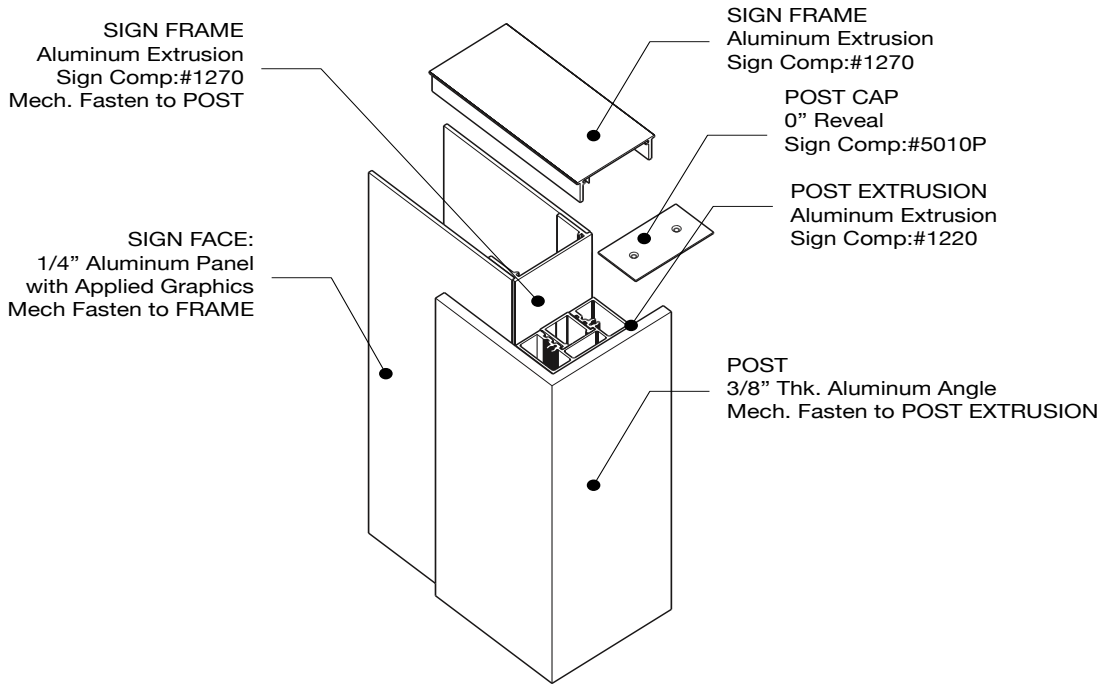
Posts
Extruded aluminum tube and sheet.

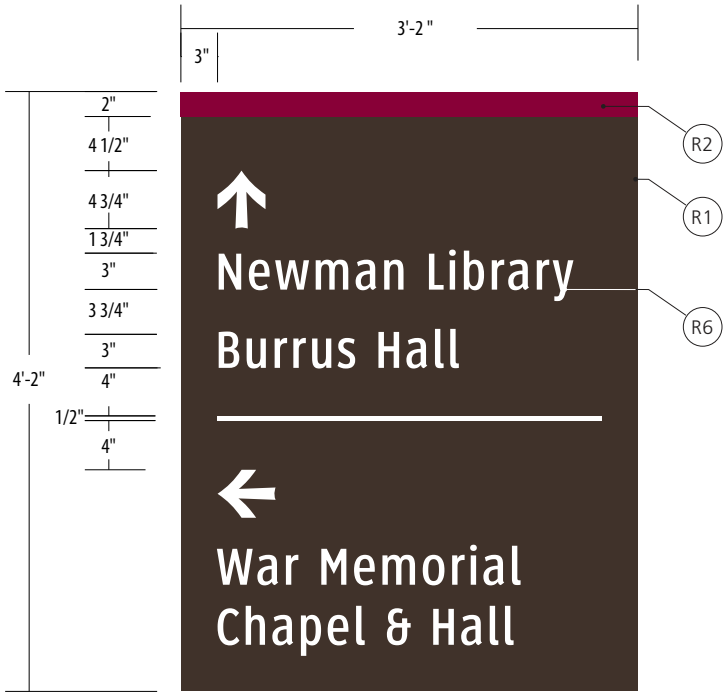
Sign Panel
Fabricated aluminum, painted.

Messages and Graphics
High Intensity Reflective sheeting, single-sided only. Background and Message

Shield
Back-side only

Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.



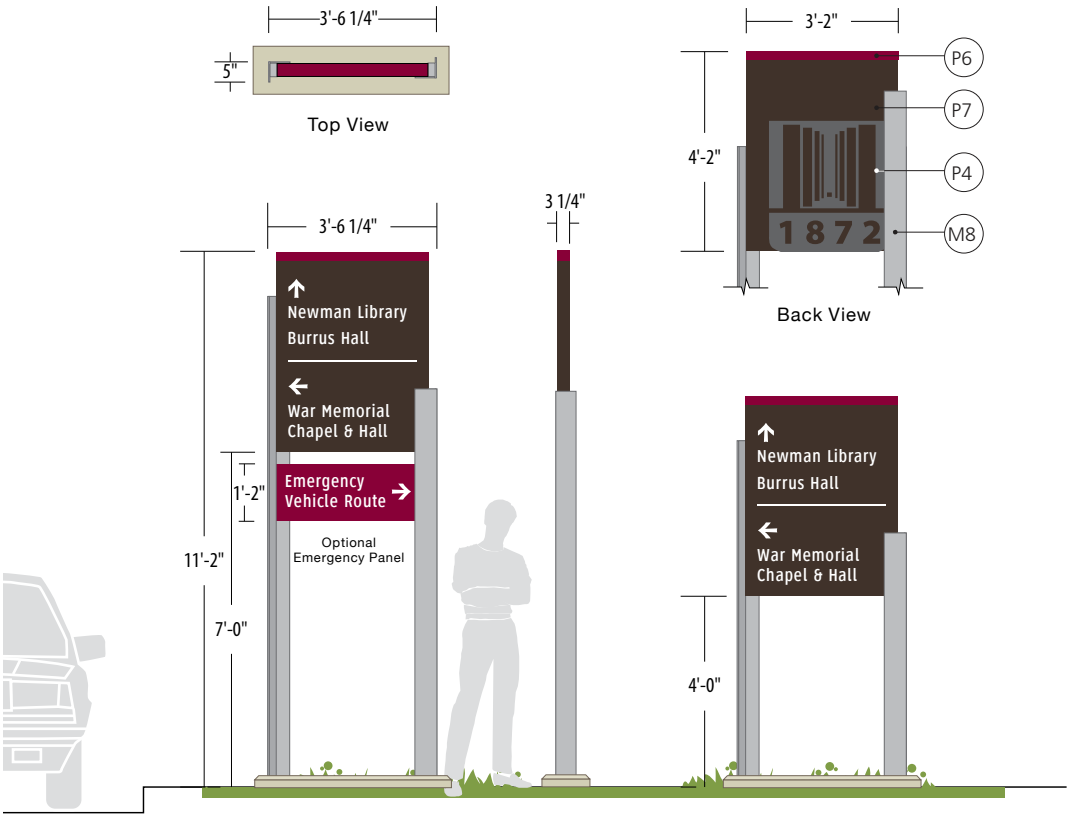


3 Graphic Layout: VD.3 & 3.A
Scale: 3/4" = 1'

DESCRIPTION

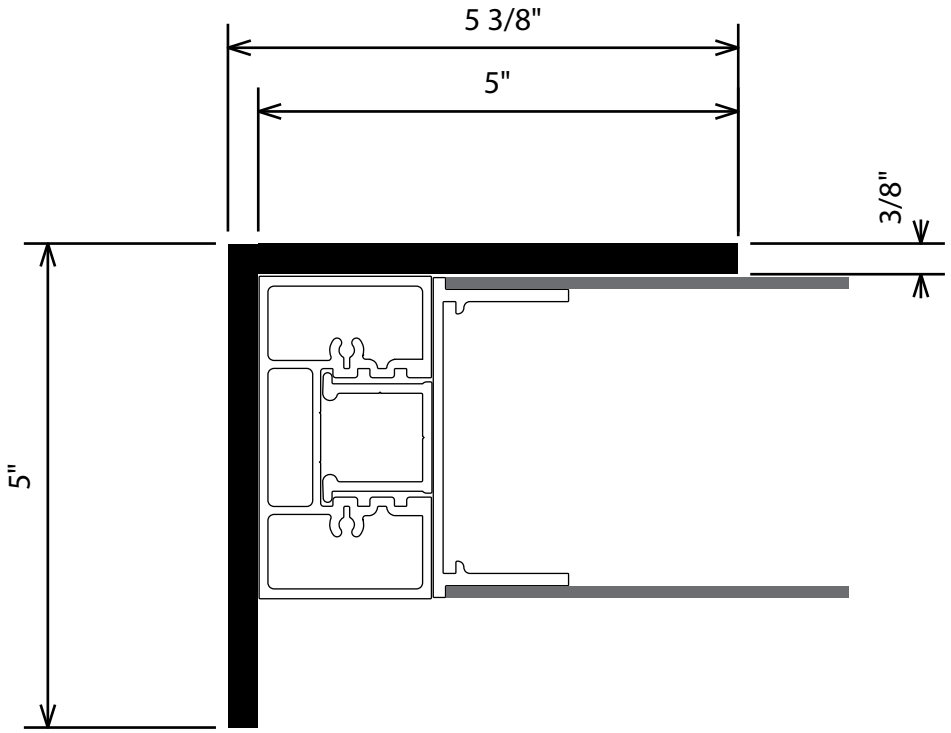
On-Campus vehicular directional signs designed for lower speed roadways governed by the University. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.

Shorter versions are shown if height or visual restrictions prevent installation. As Shown



1 Elevation: VD.3
Ground Mount
Scale: 1/4" = 1'-0"

2 Elevation: VD.3A
Option 2
Scale: 1/4" = 1'-0"



FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

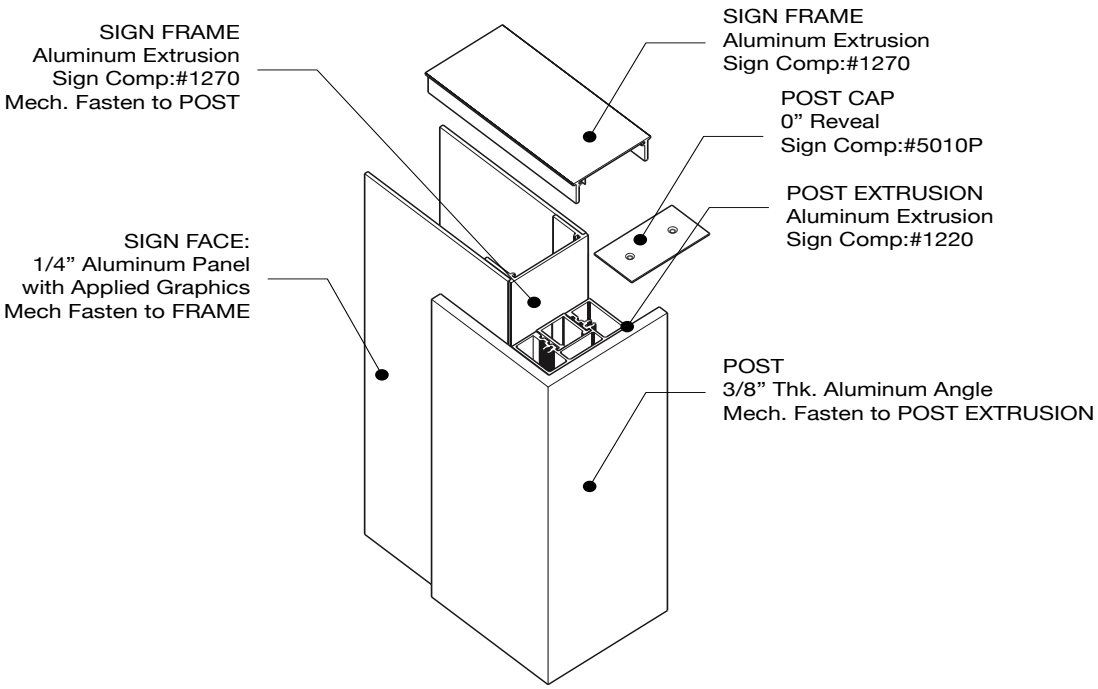
Sign Panel
Fabricated aluminum, painted.

Messages and Graphics
High Intensity Reflective sheeting, single-sided only.
Background and Message

Shield
Back-side only

Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.



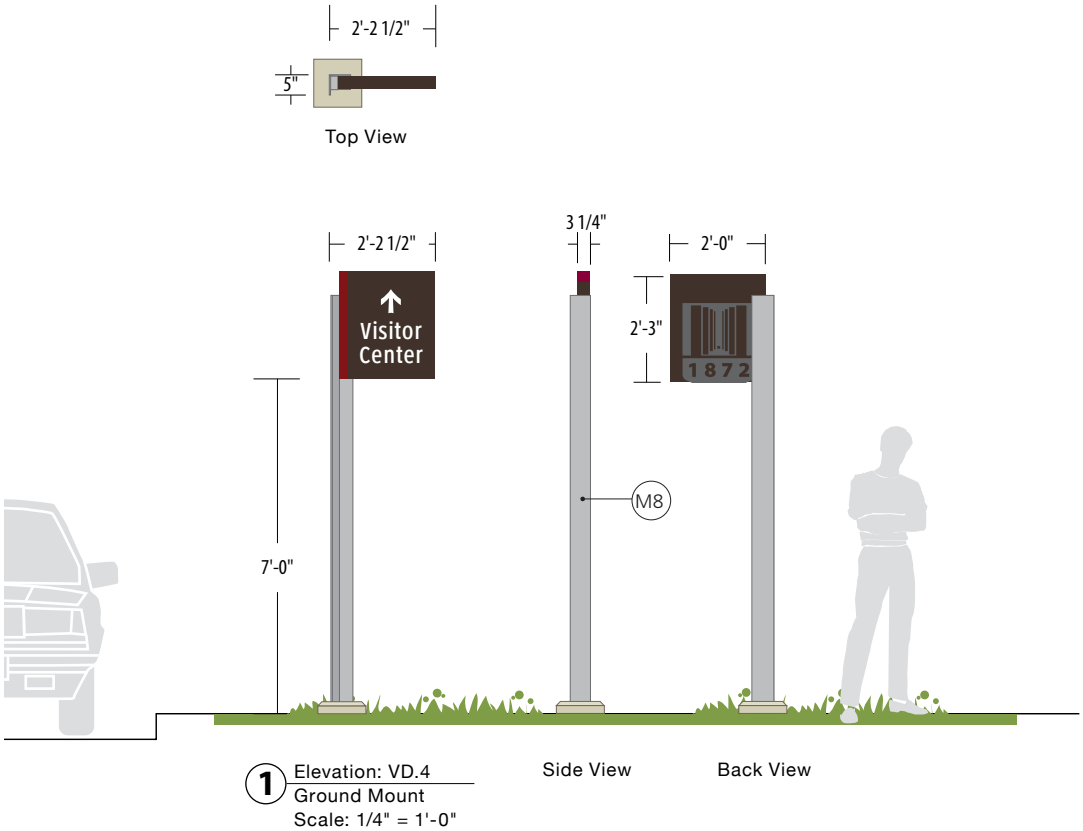
SIGN TYPE - VD.4

2 Graphic Layout: VD.4
Scale: 1 1/2" = 1'

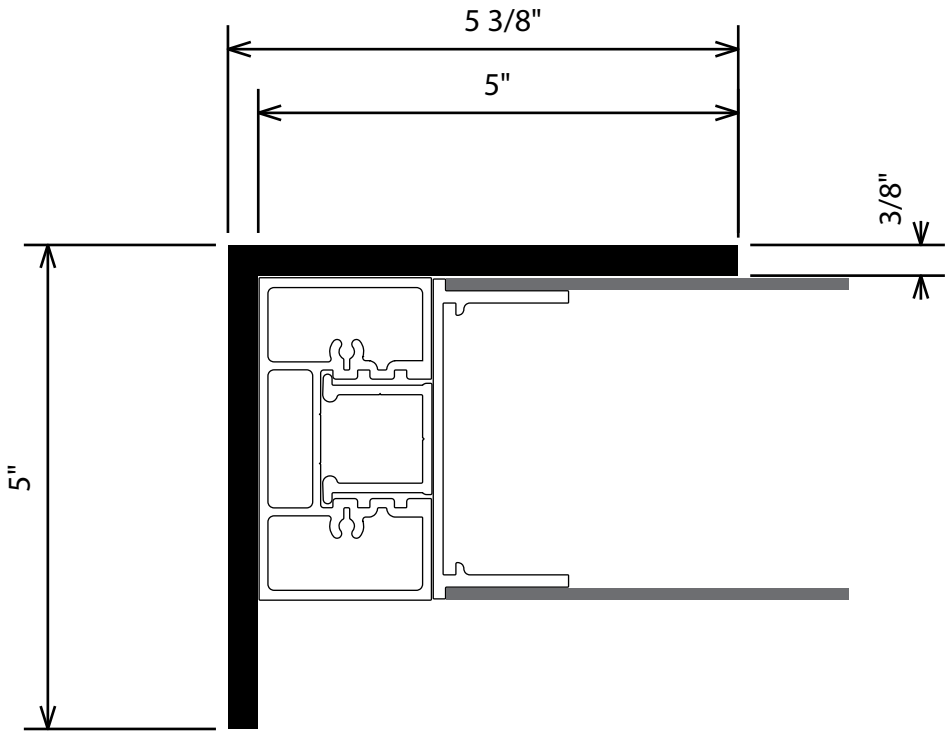
DESCRIPTION

On-Campus vehicular directional signs designed for lower speed roadways governed by the University. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.

Shorter versions are shown if height or visual restrictions prevent installation. As Shown



1 Elevation: VD.4
Ground Mount
Scale: 1/4" = 1'-0"



FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

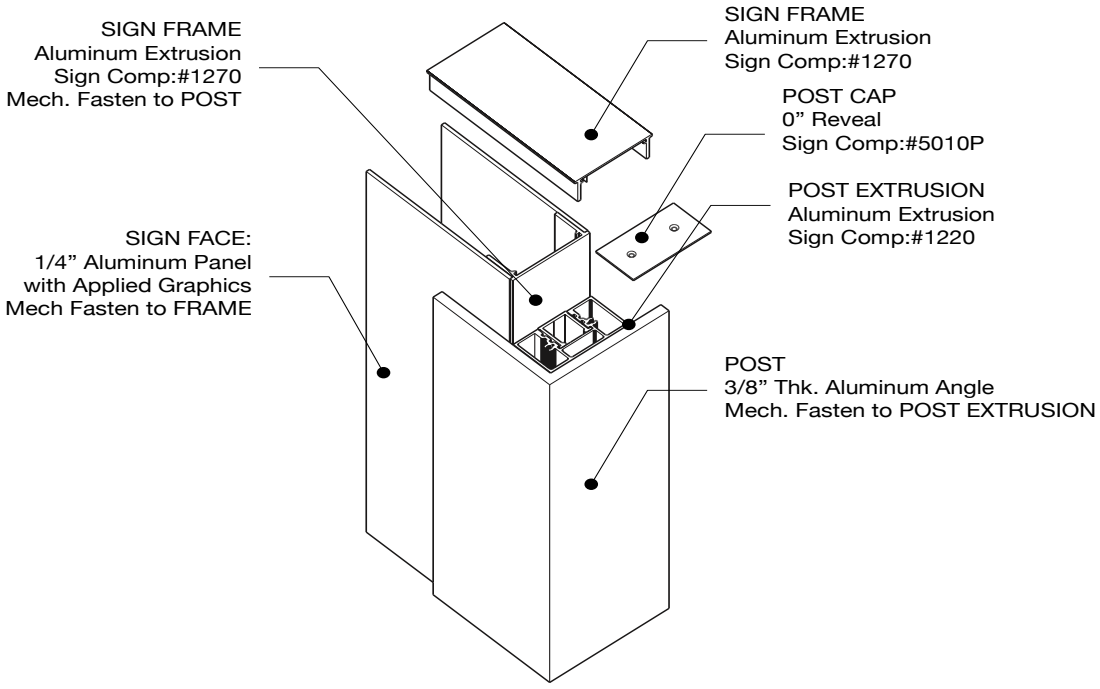
Sign Panel
Fabricated aluminum, painted.

Messages and Graphics
High Intensity Reflective sheeting, single-sided only.
Background and Message

Shield
Back-side only

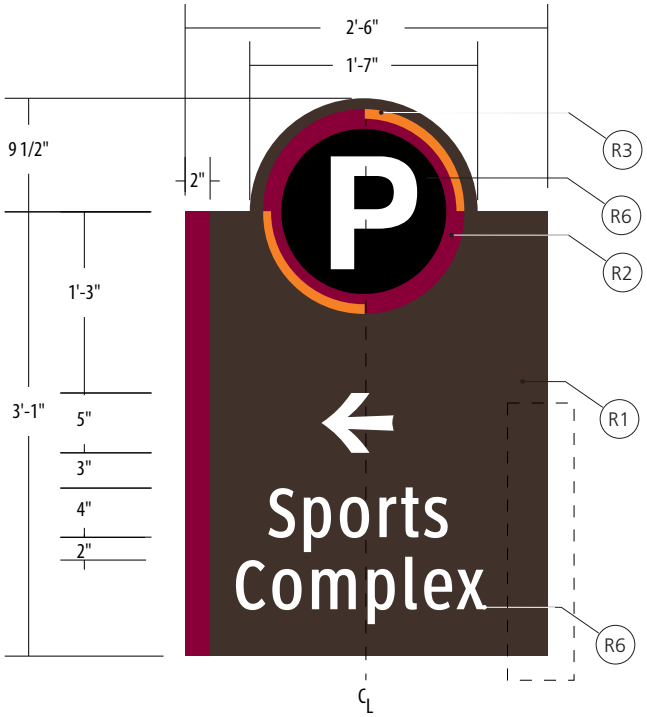
Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.



Parking Directional

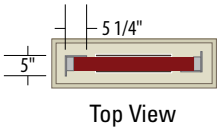
SIGN TYPE - PK.1



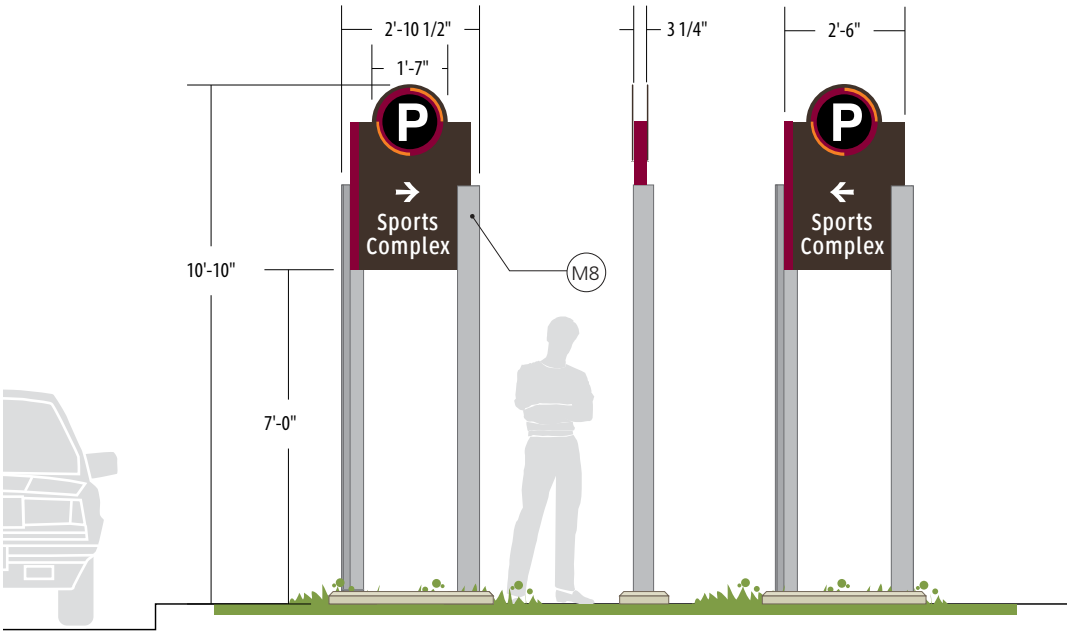
2 Graphic Layout: PK.1
Scale: 3/4" = 1'

DESCRIPTION

On-Campus Parking Directional signs designed for lower speed roadways governed by the University. Signs Direct to Parking Lots, Garages and Adjacent Destinations. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.



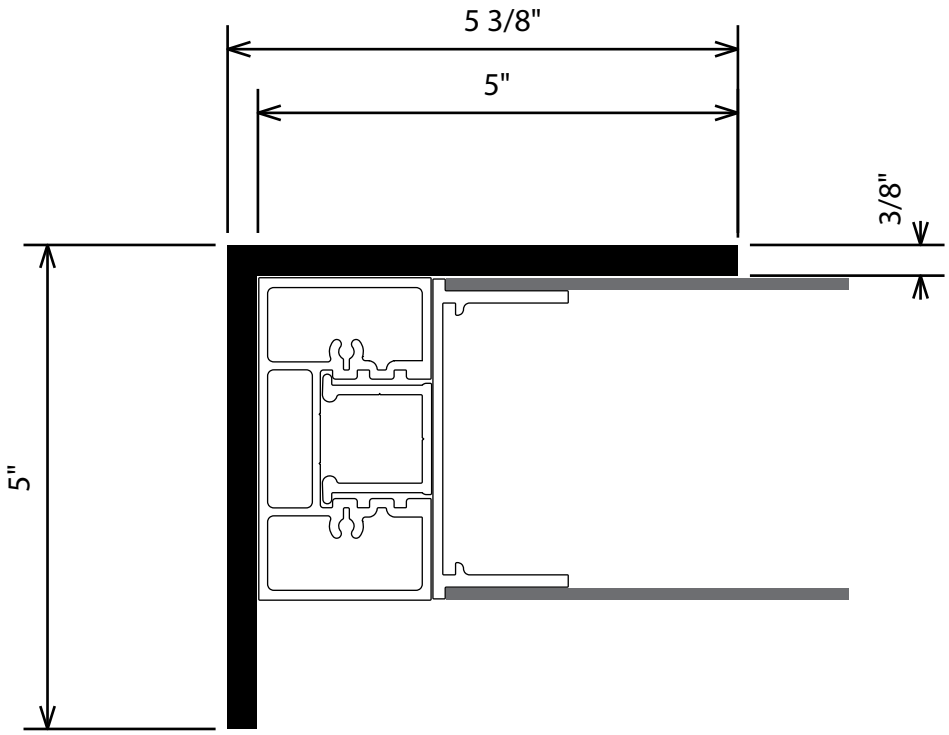
Top View



1 Elevation: PK.1
Ground Mount
Scale: 1/4" = 1'-0"

Side View

Back View



FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

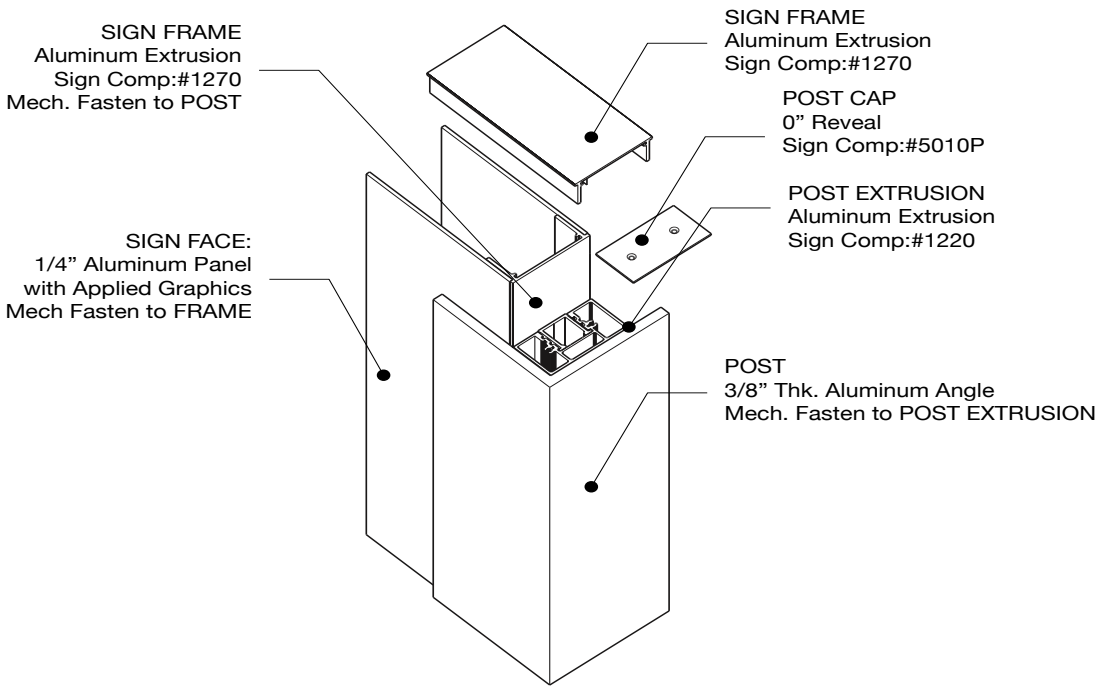
Sign Panel
Fabricated aluminum, painted.

Messages and Graphics
High Intensity Reflective sheeting, single-sided only.
Background and Message

Shield
Back-side only

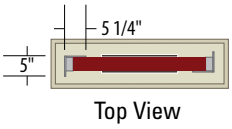
Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.

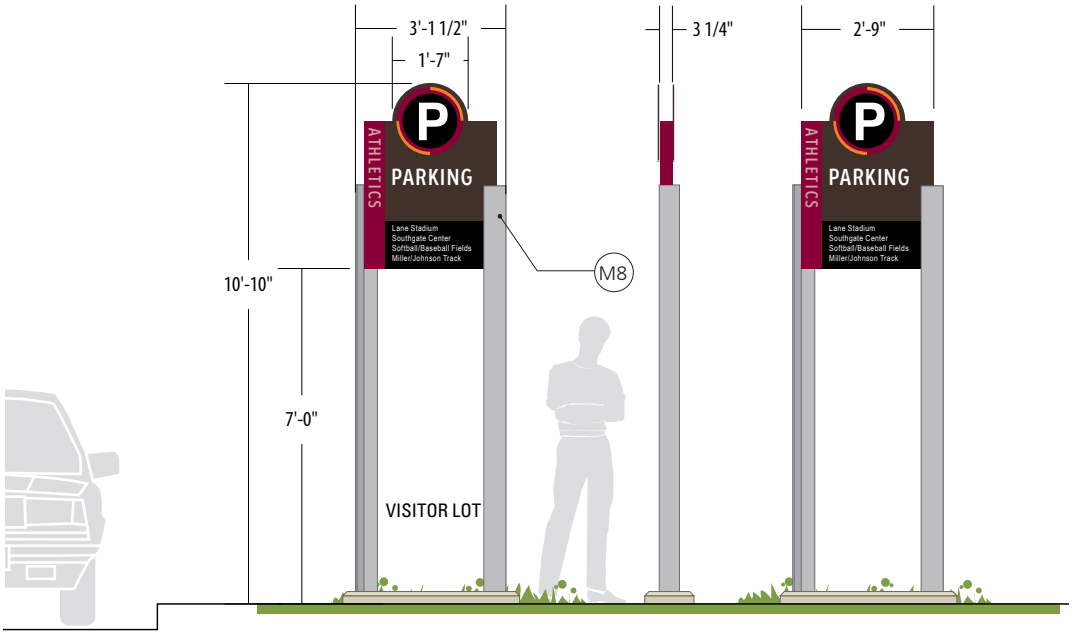


SIGN TYPE - PK.2

2 Graphic Layout: PK.2
Scale: 3/4" = 1'



Top View



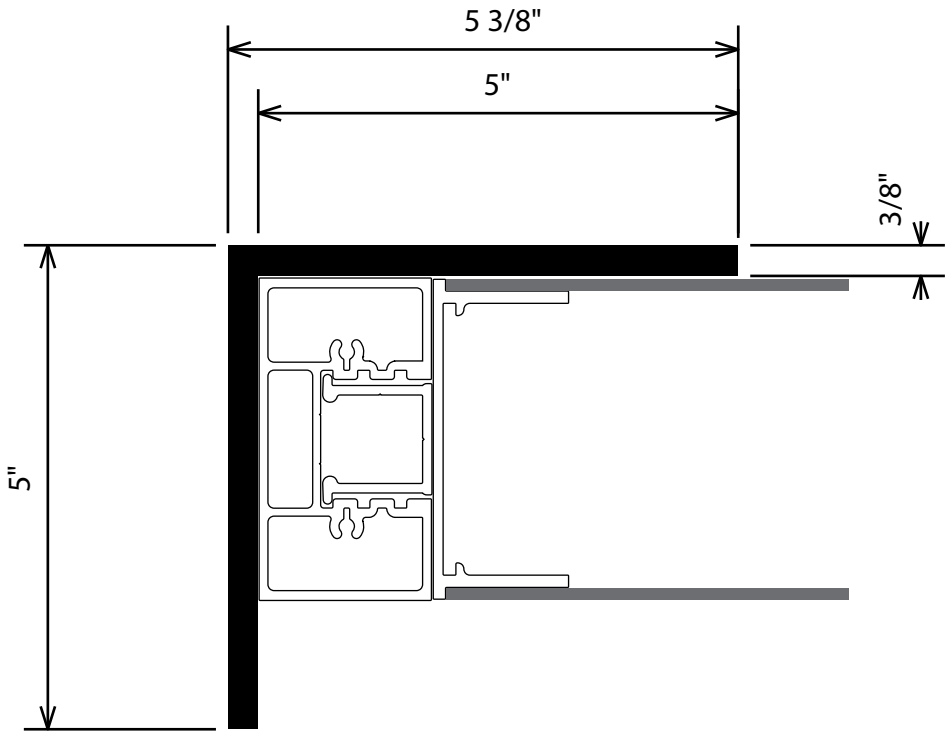
1 Elevation: PK.2
Ground Mount
Scale: 1/4" = 1'-0"

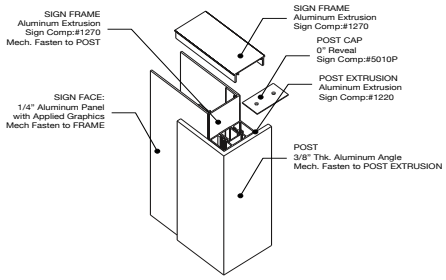
Side View

Back View

DESCRIPTION

On-Campus Parking Identification signs designed for lower speed roadways governed by the University. Signs mark the arrival to Parking Lots. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.





FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

Sign Panel
Fabricated aluminum, painted.

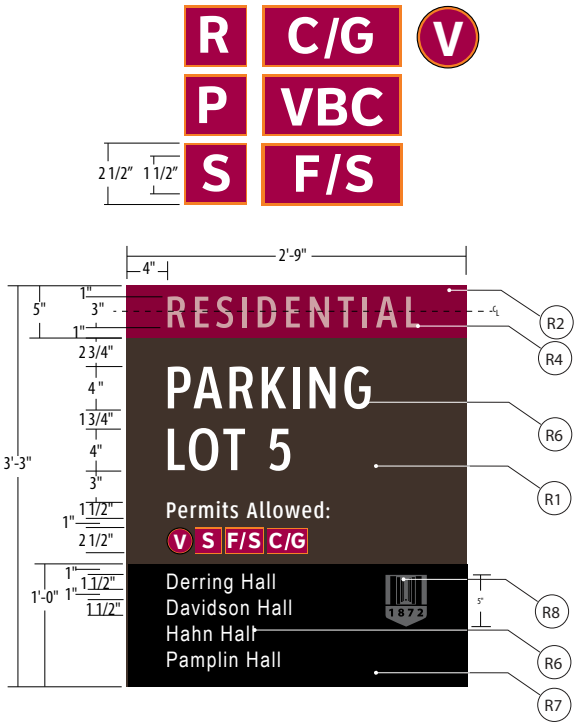
Messages and Graphics
High Intensity Reflective sheeting, single-sided or double sided only.
Background and Message

Shield
Back-side only

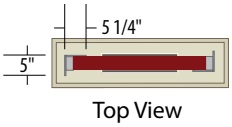
Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.

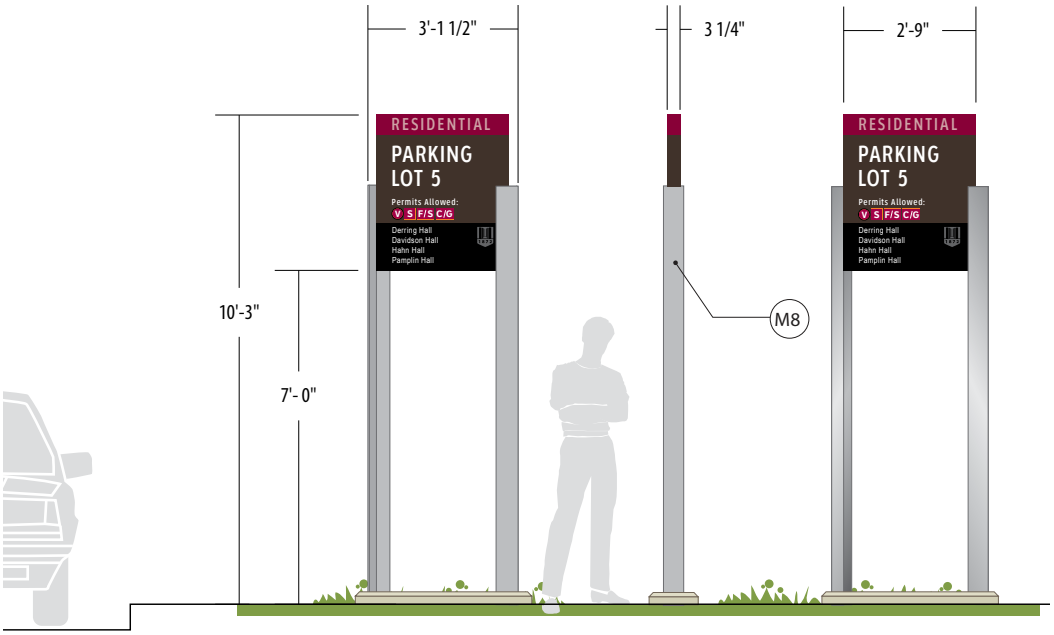
SIGN TYPE - PK.3



2 Graphic Layout: PK.3
Scale: 3/4" = 1'



Top View



1 Elevation: PK.3
Ground Mount
Scale: 1/4" = 1'-0"

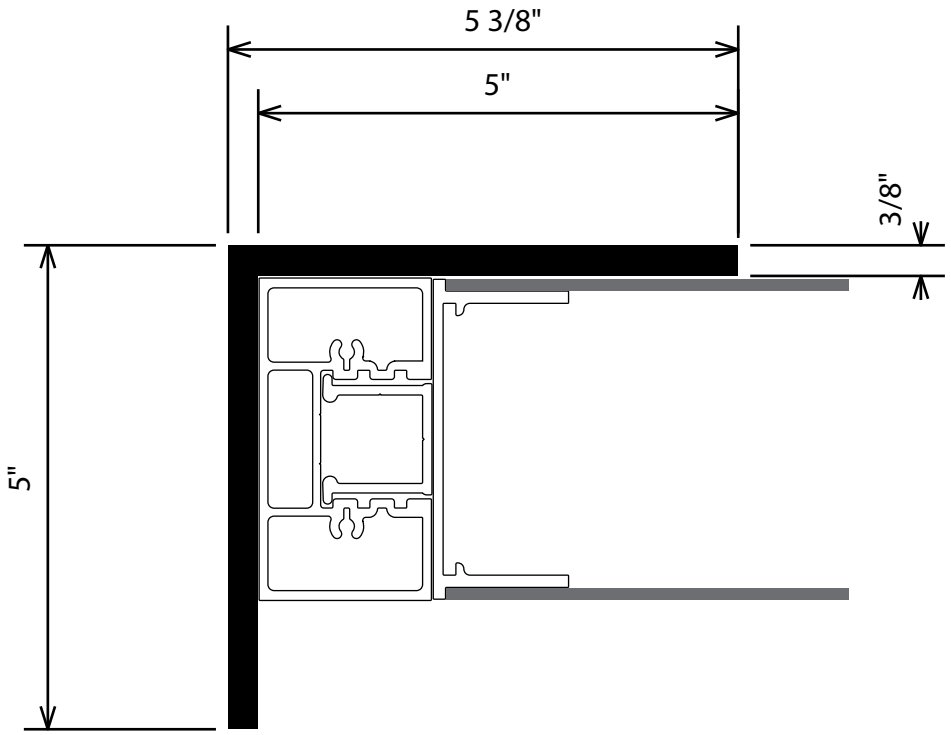
Side View

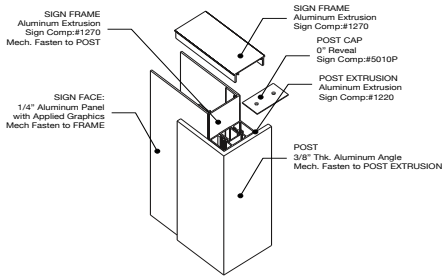
Back View

DESCRIPTION

On-Campus Parking Identification signs designed for lower speed roadways governed by the University. Signs mark the arrival to Parking Lots. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.

Signs Include regulatory information and adjacent Building/Destinations.





FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

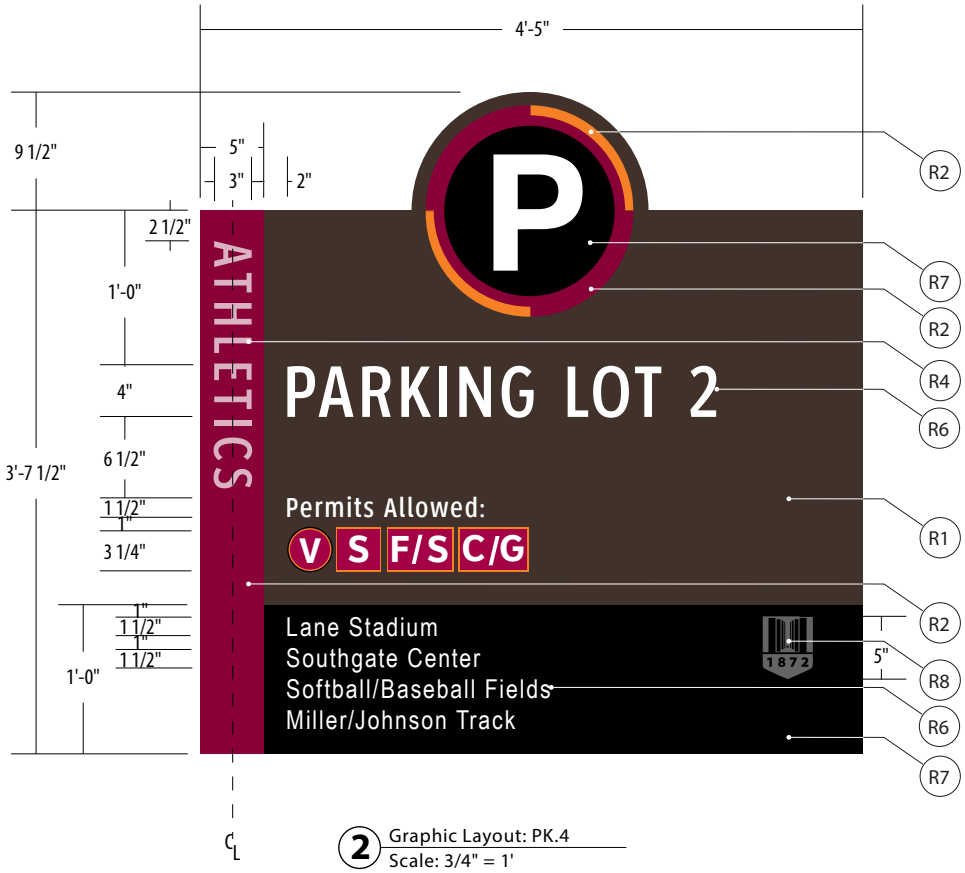
Sign Panel
Fabricated aluminum, painted.

Messages and Graphics
High Intensity Reflective sheeting, single-sided or double sided only.
Background and Message

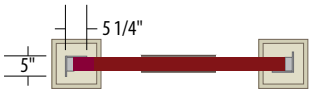
Shield
Back-side only

Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

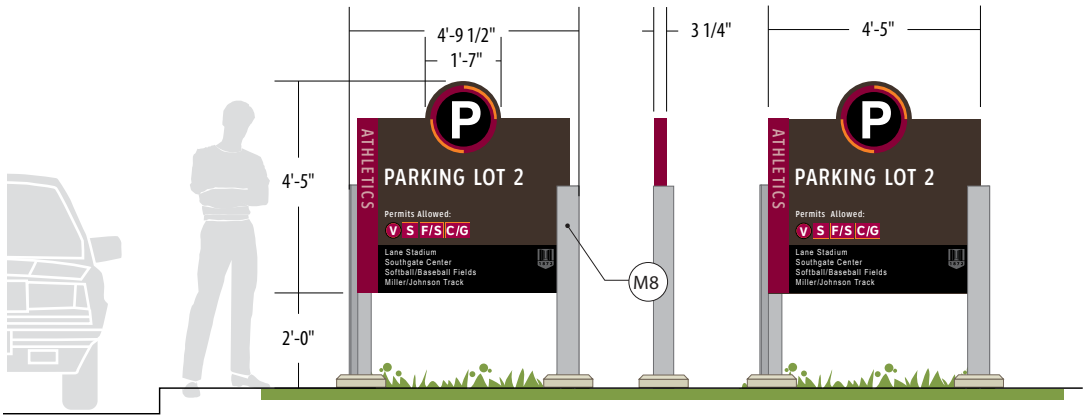
See page 150 for details.



2 Graphic Layout: PK.4
Scale: 3/4" = 1'



Top View



1 Elevation: PARK.4
Ground Mount
Scale: 1/4" = 1'-0"

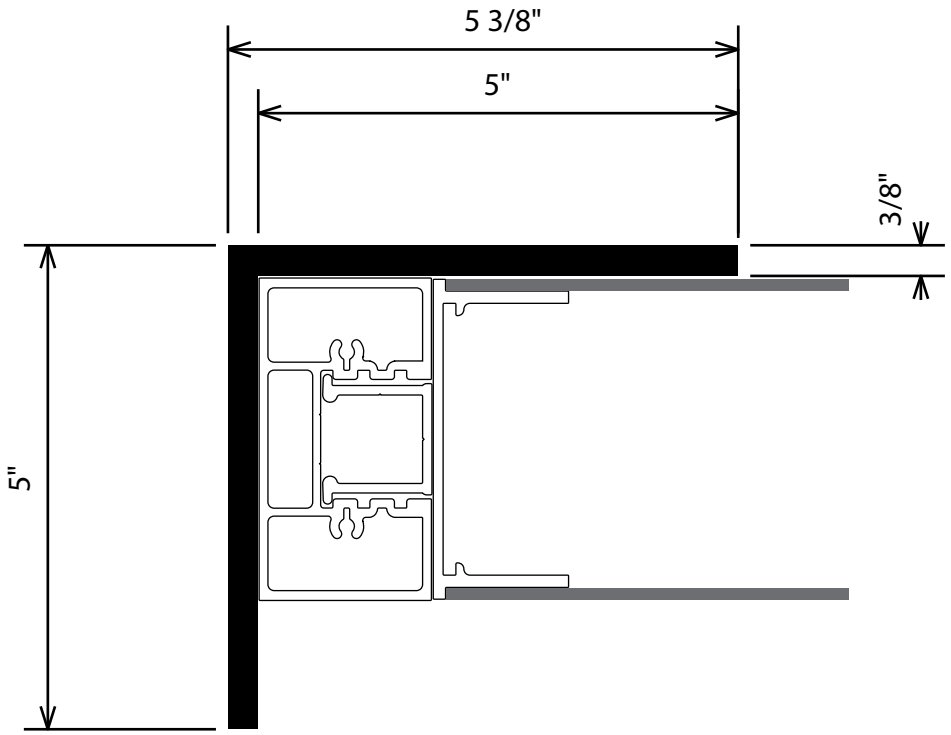
Side View

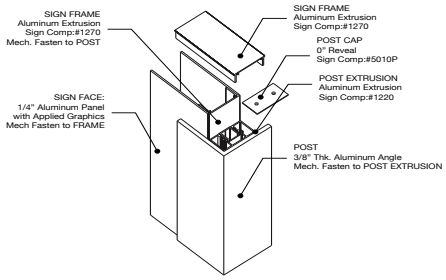
Back View

DESCRIPTION

On-Campus Parking Identification signs designed for lower speed roadways governed by the University. Signs mark the arrival to Parking Lots. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.

Signs Include regulatory information and adjacent Building/Destinations.





FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

Sign Panel
Fabricated aluminum, painted.

Messages and Graphics
High Intensity Reflective sheeting, single-sided or double sided only.
Background and Message

Shield
Back-side only

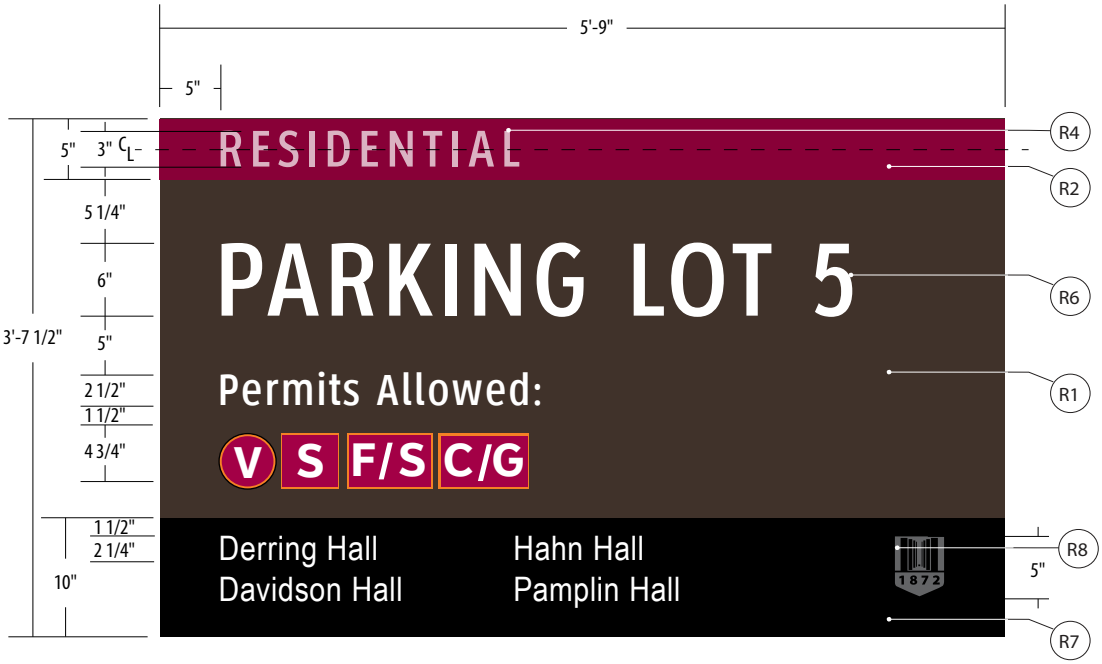
Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

See page 150 for details.

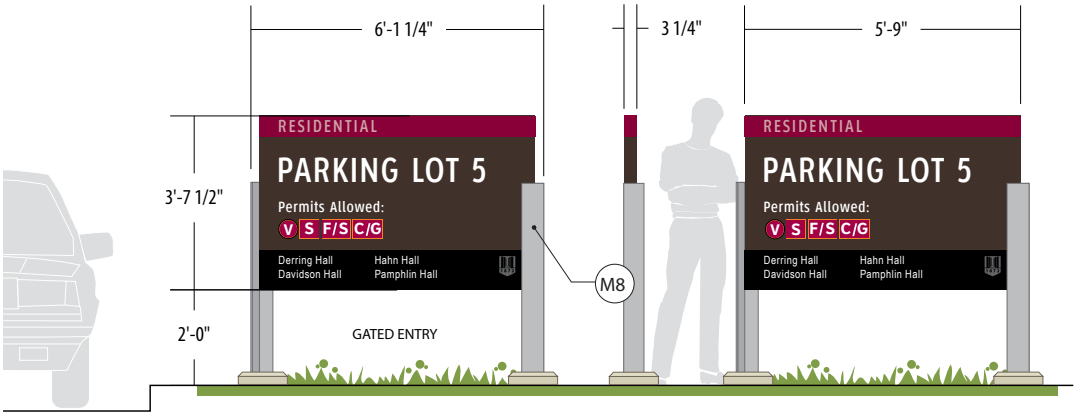
DESCRIPTION

On-Campus Parking Identification signs designed for lower speed roadways governed by the University. Signs mark the arrival to Parking Lots. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.

Signs Include regulatory information and adjacent Building/Destinations.



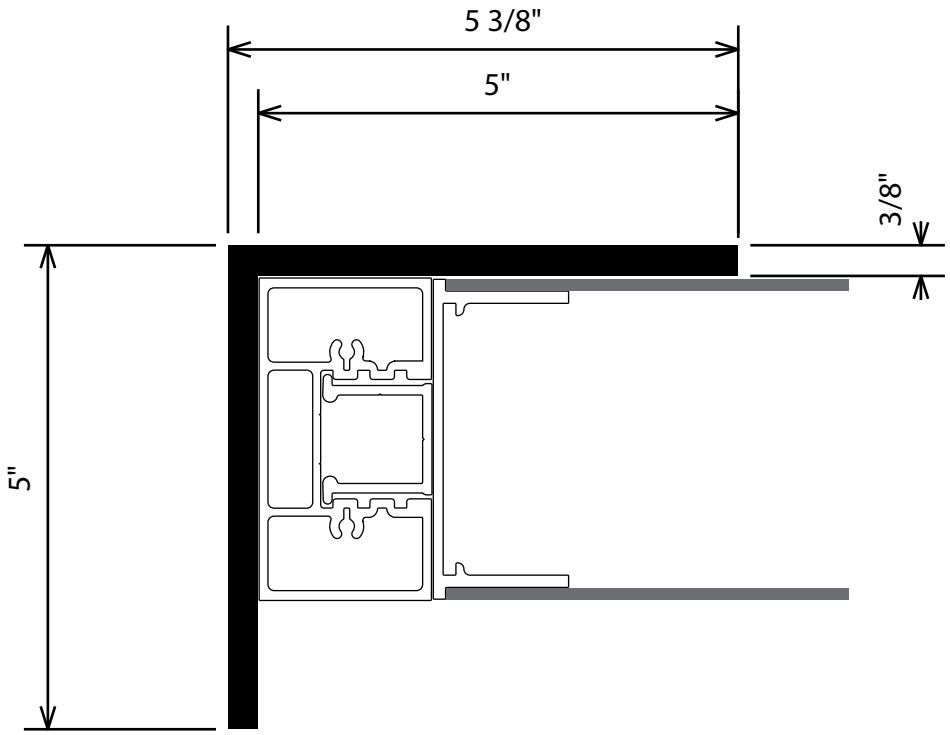
Top View

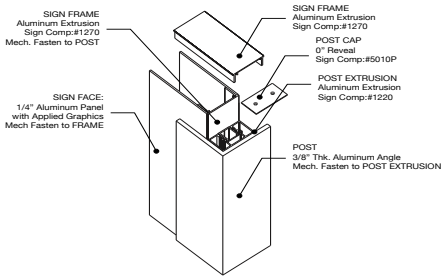


1 Elevation: PK.5
Ground Mount
Scale: 1/4" = 1'-0"

Side View

Back View





FABRICATION DETAILS

Posts
Extruded aluminum tube and sheet.

Sign Panel
Fabricated aluminum, painted.

Messages and Graphics
High Intensity Reflective sheeting, single-sided or double sided only.
Background and Message

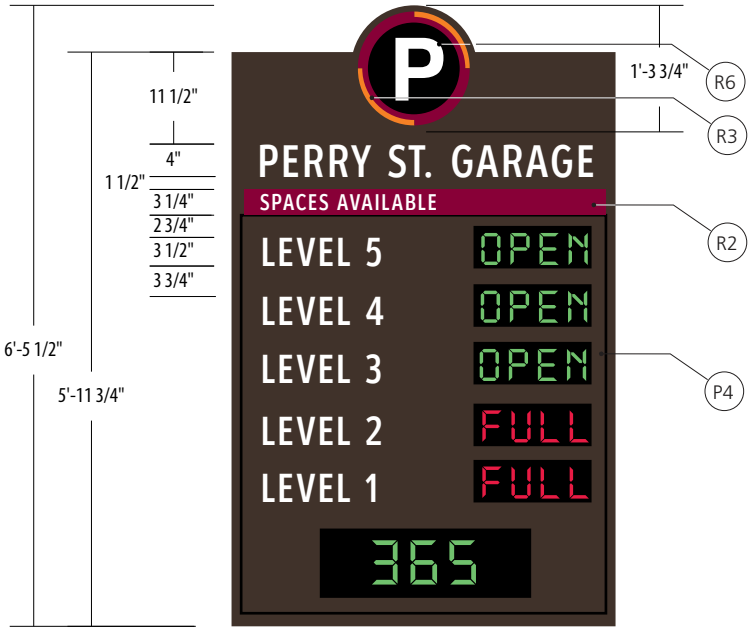
Shield
Back-side only

Sign Base
State and campus roadways require Transpo® breakaway footer, or the like, according to VDOT specifications. For shorter signs set back from roadway in planting bed applications, Virginia Tech Standard Reference Footer Drawings in Details Section.

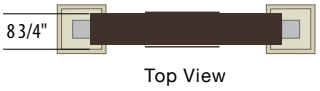
See page 150 for details.

DESCRIPTION

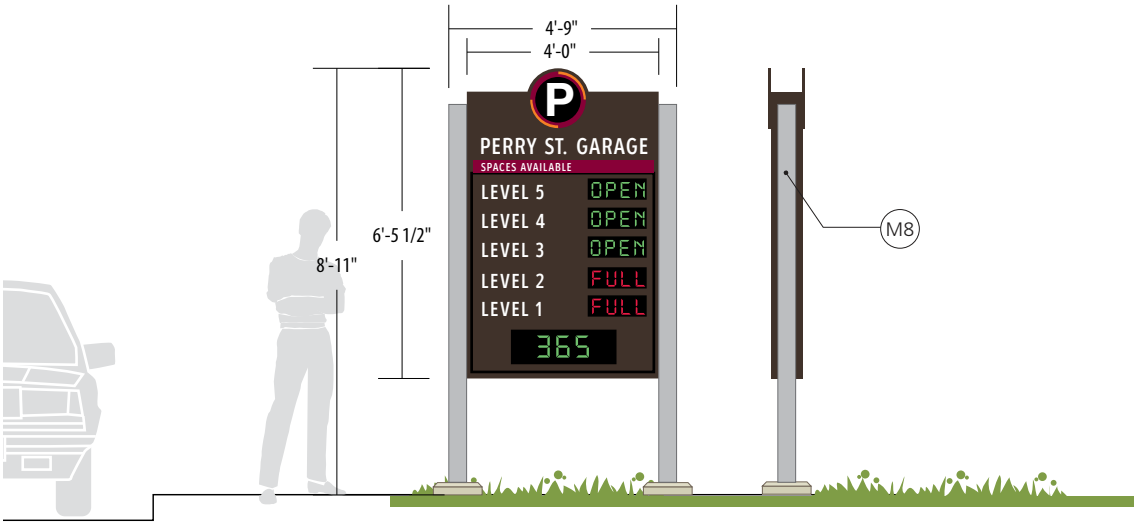
Parking Garage ID sign located at the entry drive to Parking Structures. Real Time Parking Information is provided and updated prior to entrance into the Garage. The final Design and Placement of the Sign is to be coordinated with the design and planning of each structure. Sign is Single Sided.



2 Graphic Layout: PK.6
Scale: 1/2" = 1'



Top View



1 Elevation: PK.6
Ground Mount
Scale: 1/4" = 1'-0"

Top View

FABRICATION DETAILS

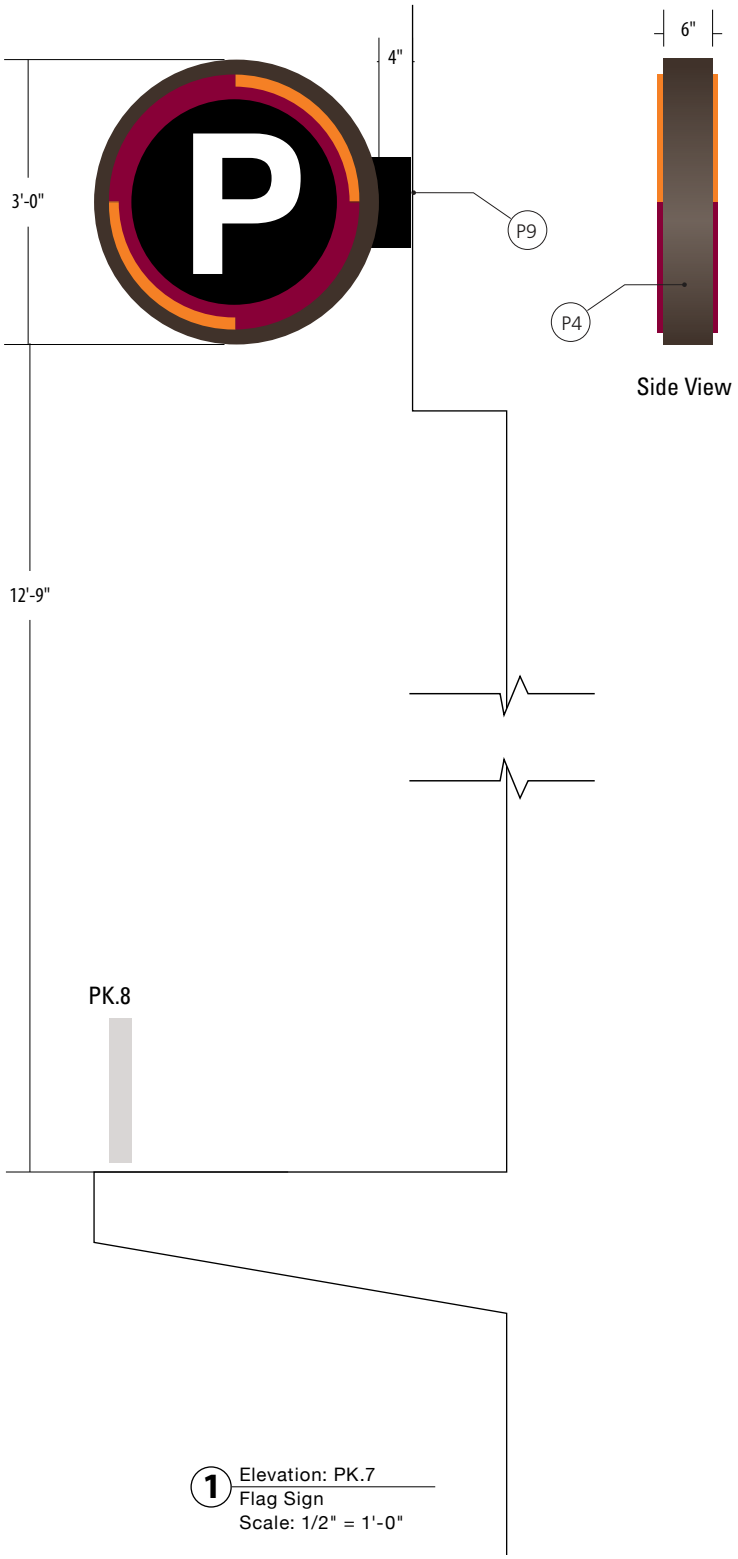
Sign is existing and to be retrofit with a new sign face. Poles to be painted color P10.

Sign Panel
Fabricated aluminum, painted.

Parking P: Reflective Background and Graphics

Messages: Reflective sheeting Cut and Applied to Background

SIGN TYPE - PK.7



1 Elevation: PK.7
Flag Sign
Scale: 1/2" = 1'-0"

DESCRIPTION

Parking Garage ID sign located on Parking Structures. The P symbol is a clear and coordinated icon for quick recognition from a distance. The Sign will be mounted vertically projecting and is double sided. The final Design and Placement of the Sign is to be coordinated with the design and planning of each structure.

FABRICATION DETAILS

WALL MOUNT
Round sign cabinet with vacuum-formed faces and internal LED illumination.

Structural steel tube sign support tied into building steel

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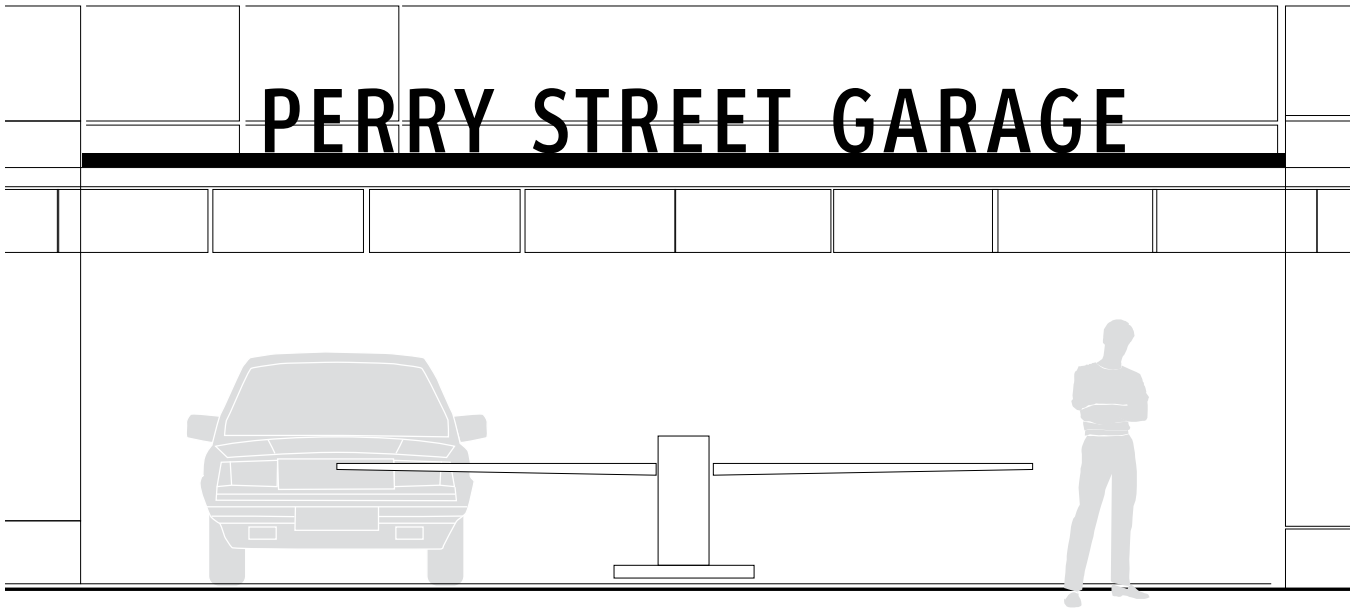
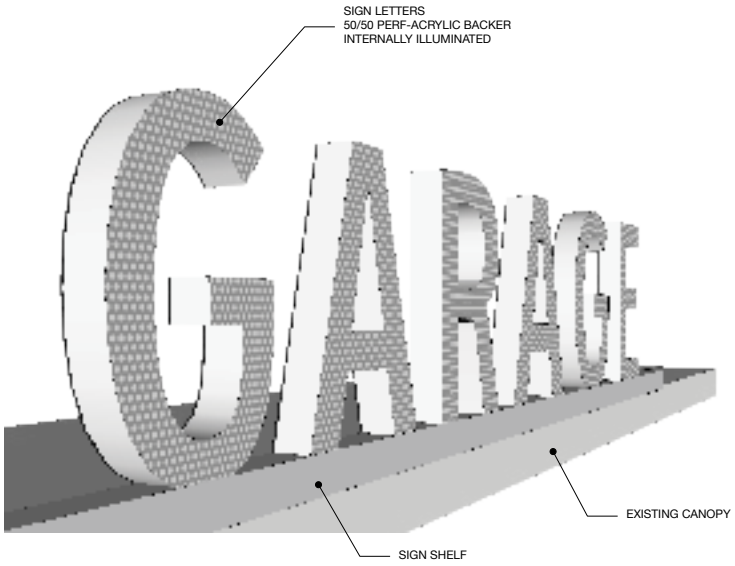
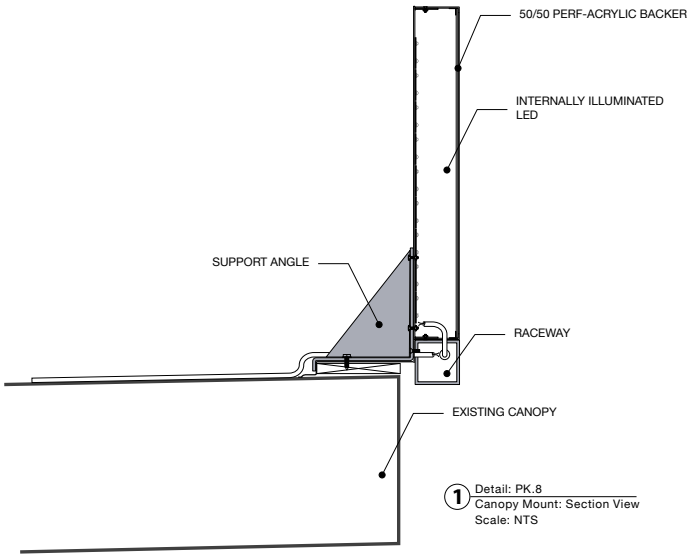
DESCRIPTION

Parking Garage ID sign located at the Main Entrance of Parking Structures. The Layout shown is for The Perry Street Garage. The final Design and Placement of the Sign is to be coordinated with the design and planning of each structure.



1 Elevation: PK.8
Overhead Wall Mount
Scale: 1/4" = 1'-0"





FABRICATION DETAILS

Sign Letters

50/50 perf Aluminum w/RED acrylic backer
THK: 1/4" Acrylic /1/8"Perf
Process: Router Cut
Retainer: Hidden/Edge.

Illumination

INTERNAL/FACE-LIT
COLORS: White
SOURCE: LED
STYLE: Letter-form
Configuration LIGHT LEVEL: Fixed
CONTROLLER: Photocell ON/OFF - External - Switch ON/OFF
All electronics are self contained with lockable access panel.
CODE: Local - NEC and UL

Shelf

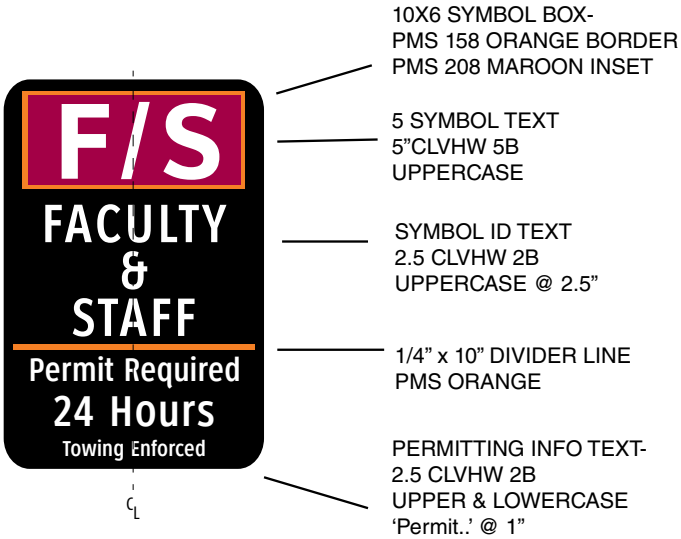
MATERIAL: Aluminum Extrusion
THK: 1/4"
Process: Cut/Cap End
Size: as reqd. structurally
Mounting: existing canopy.

Note: shelf is a raceway for ele tronic/wiring.

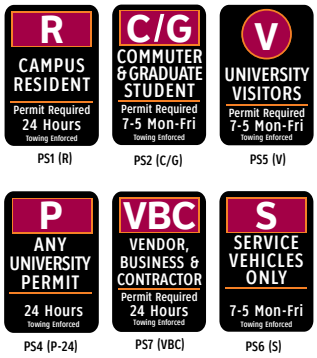
Angle/Fin

MATERIAL: Aluminum
THK: 1/4"
Size: as reqd. structurally
Mounting: existing canopy.

Parking Space



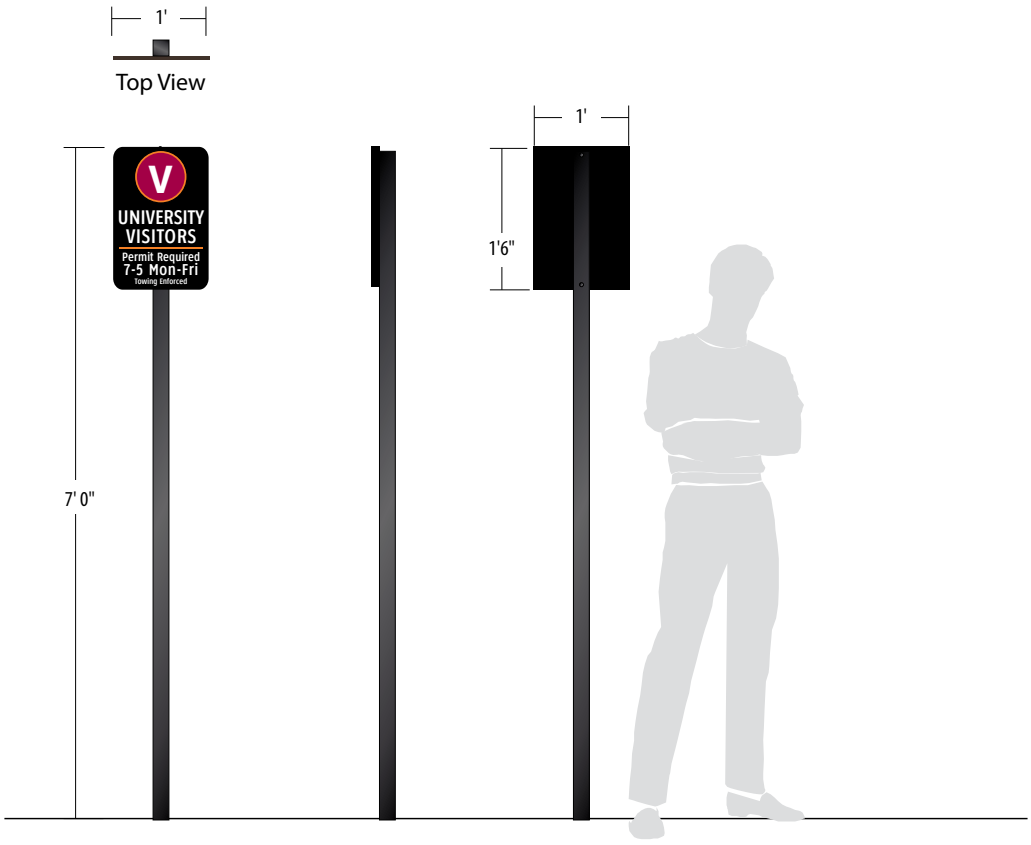
2 Graphic Layouts:PS.5
Scale: 1 1/2"= 1'



Additional Layouts

DESCRIPTION

On-Campus Parking Regulatory signs designed for lower speed roadways governed by the University. Signs mark the arrival to Parking Lots/Spots and post permitting and parking regulations/time limits. Signs are post mounted and visible from a traveling vehicle, above parked cars and providing clear viewing of adjacent architecture and pedestrians. Signs are high intensity reflective backgrounds and messaging.



1 Elevation: PS.5
Parking Space/Area ID
Scale: 1/2" = 1'-0"

FABRICATION DETAILS

Posts

Sign Panel
1/8" thick aluminum sheet, painted.

Messages and Graphics
digital print, single-sided.

Sign Base
Attach sign post to base post/ stake in ground, tamper-proof hardware.

2" Square quick puncl galvanized steel, see page #

INSERT PAGE #

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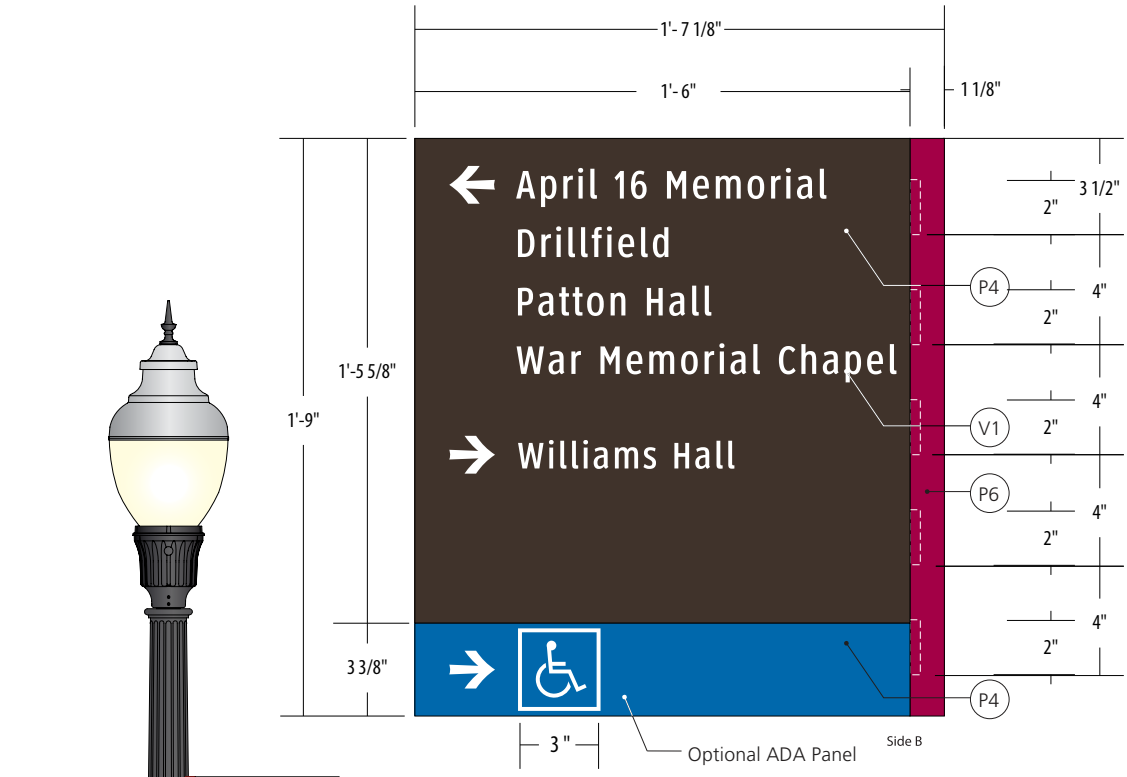
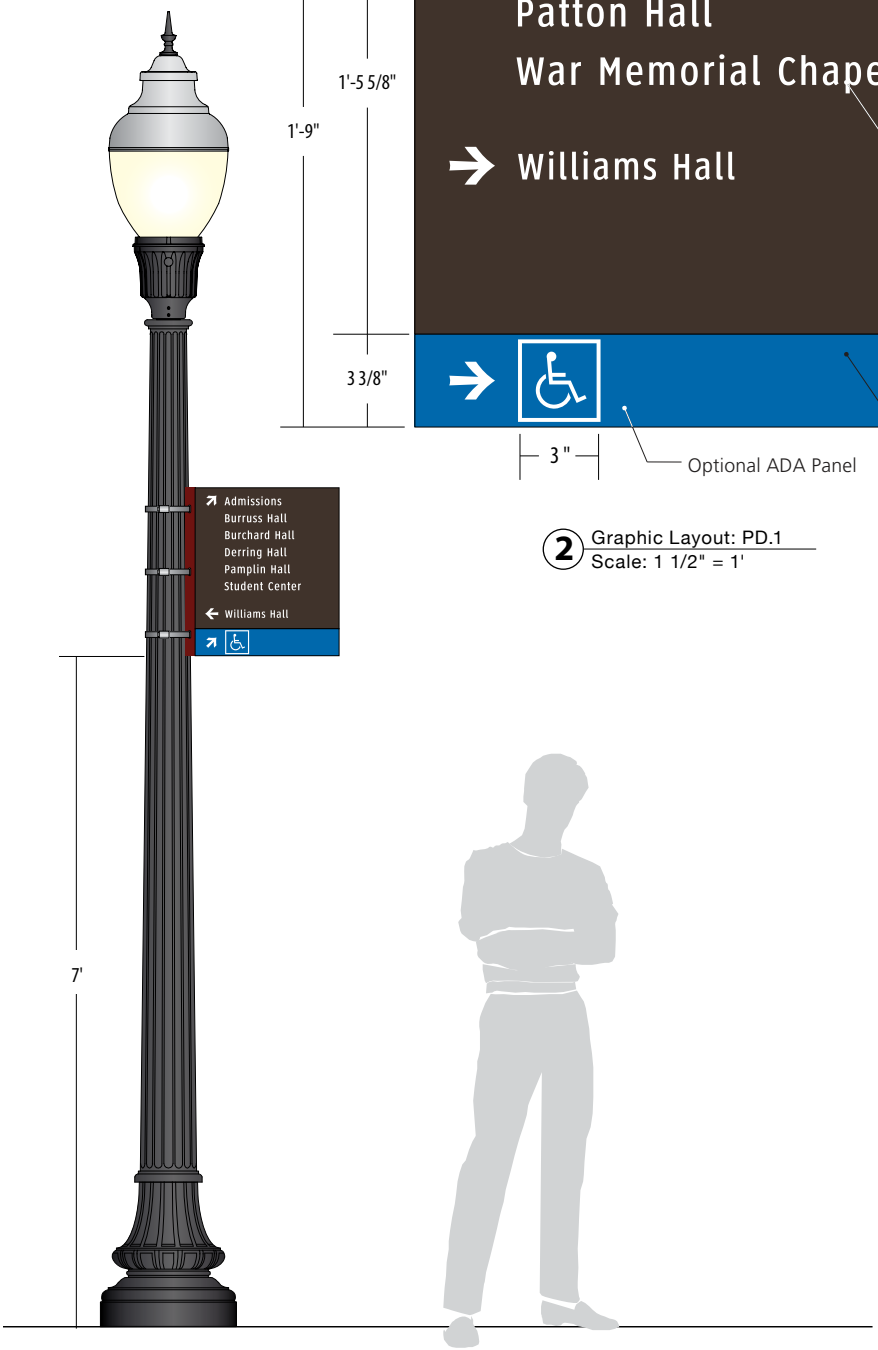
Pedestrian Directional

SIGN TYPE - PD.1



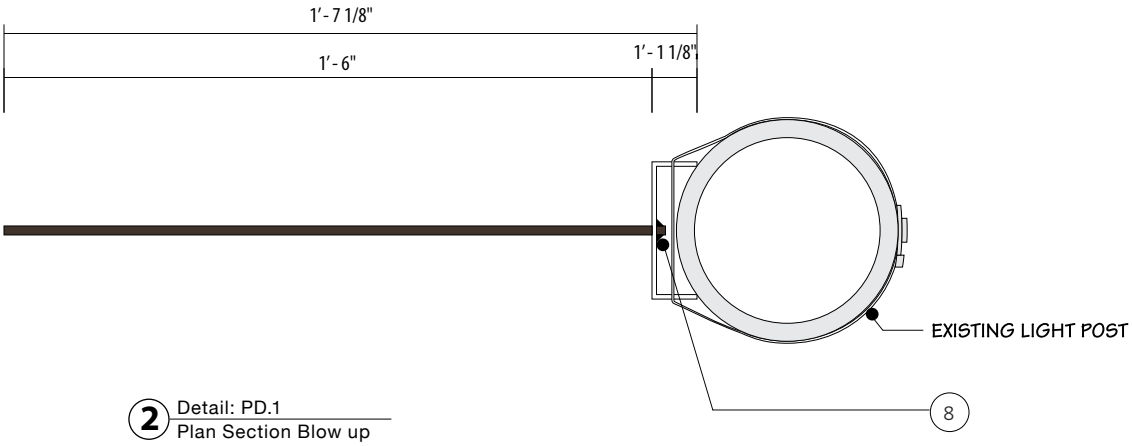
2 Graphic Layout: PD.1
Scale: 1 1/2" = 1'



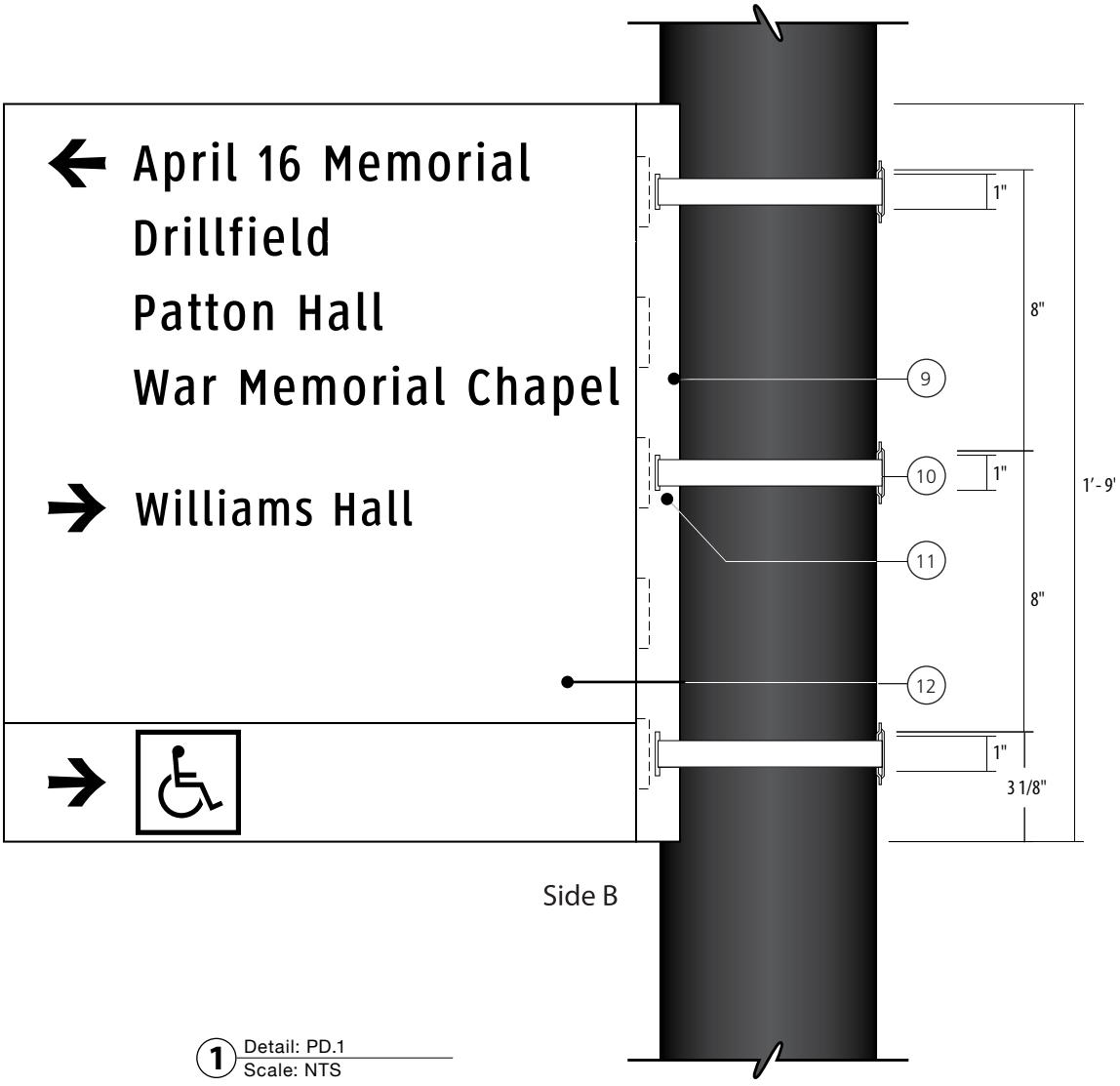
1 Elevation: PD.1
Existing Pole Mount
Scale: 1/2" = 1'-0"

DESCRIPTION

Pedestrian Directional Signs located at Key Pedestrian Decision points along Interior Campus Pedestrian Paths. ADA Access Information is also Provided.



2 Detail: PD.1
Plan Section Blow up
Scale: NTS



1 Detail: PD.1
Scale: NTS

FABRICATION DETAILS

Sign Panel:
1/8" thick aluminum sheet, painted.

Messages and Graphics;:
Opaque vinyl.

8. 1/4" Aluminum panel welded to back of AGI channel frame (No visible welds) & notch to be tight to face frame & square; double-sided.

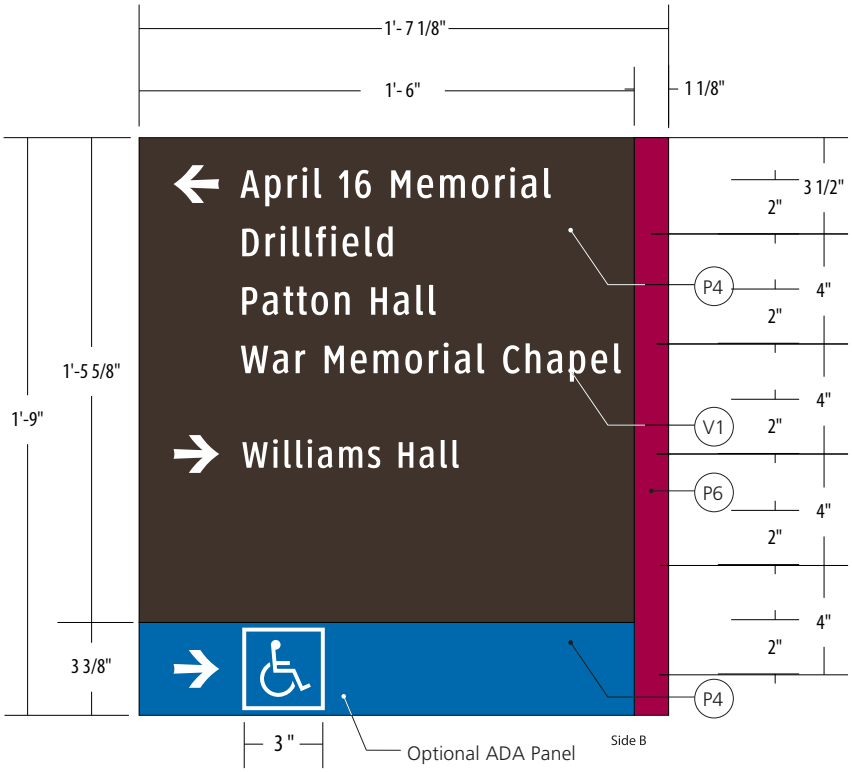
9. 3 13/16" AGI channel notched to accommodate face panel

10. 3/4 black Band-It strap for mounting (3 per panel) (C206C9-P900)

11. 1/8"x1 Slot cut out of channel to accommodate Band-It Strap

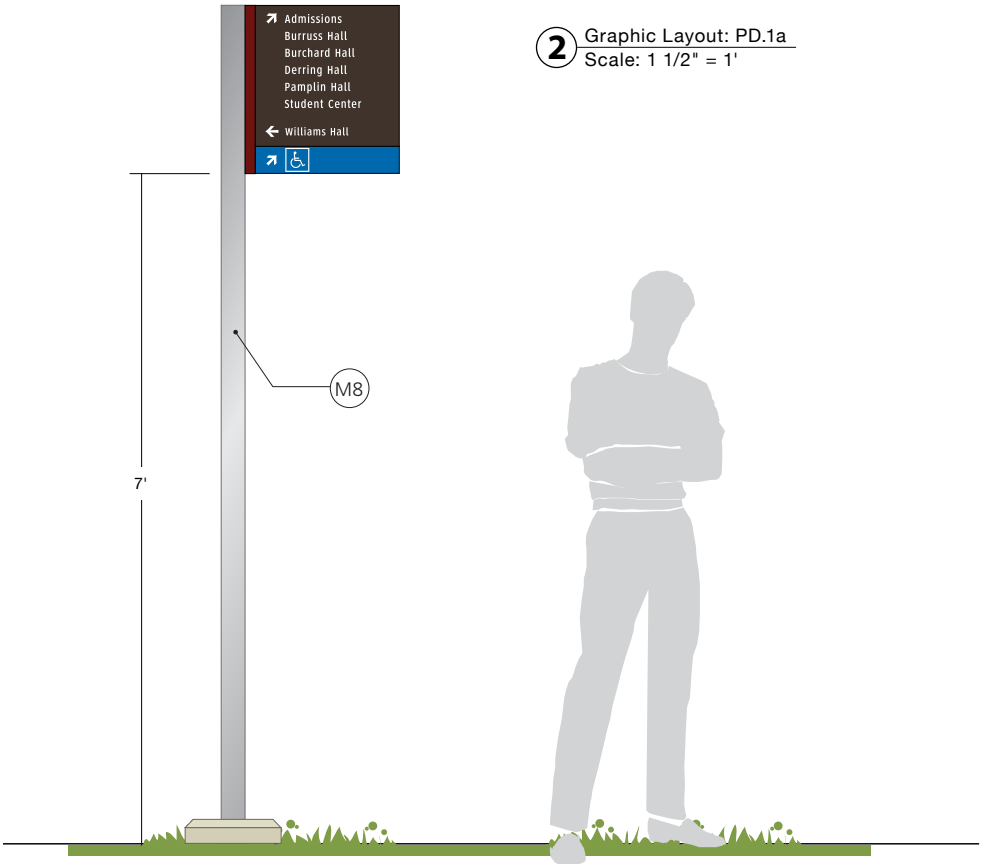
12.1/8" Aluminum face

SIGN TYPE - PD.1A



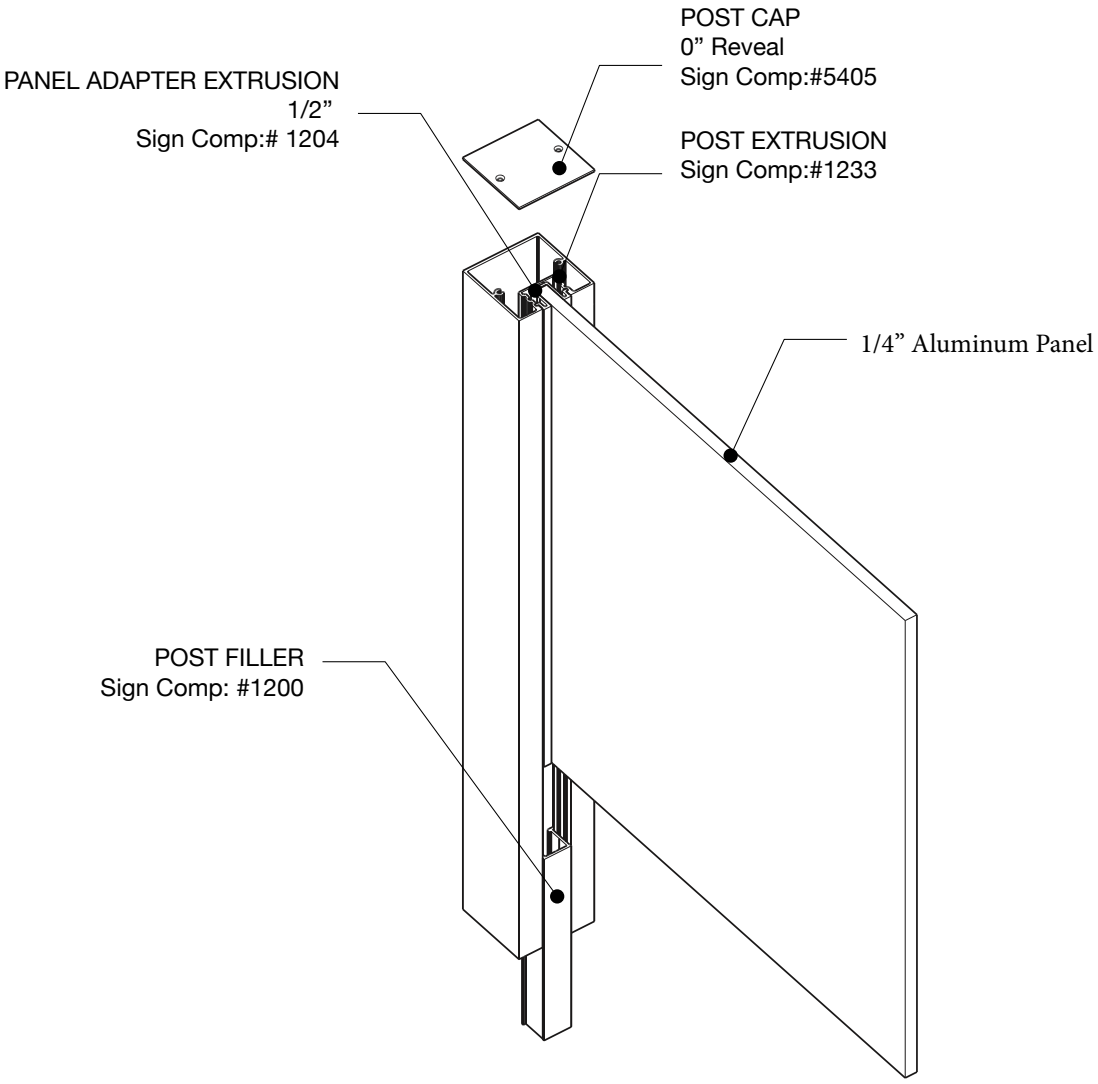
DESCRIPTION

Pedestrian Directional Signs located at Key Pedestrian Decision points along Interior Campus Pedestrian Paths. ADA Access Information is also Provided.



2 Graphic Layout: PD.1a
Scale: 1 1/2" = 1'

1 Elevation: PD.1a
Ground Mount
Scale: 1/2" = 1'-0"



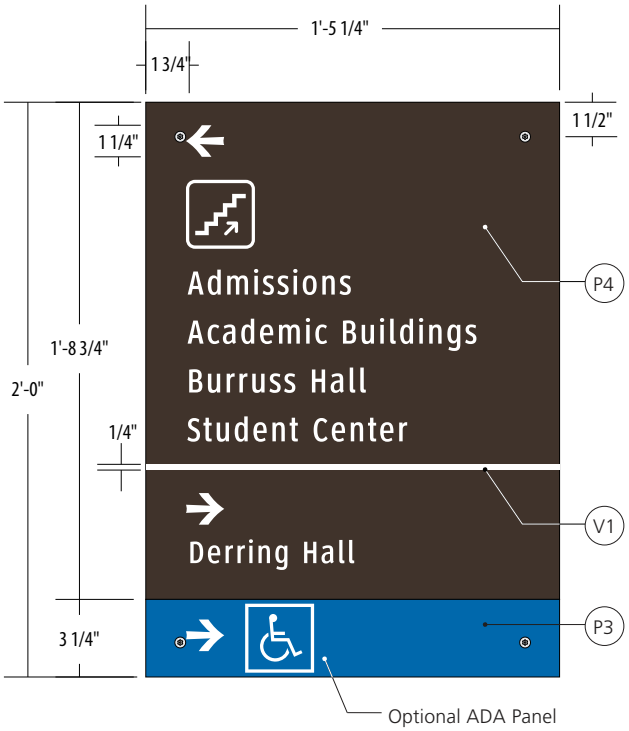
FABRICATION DETAILS

Post
Extruded aluminum tube
Assembly as Shown.

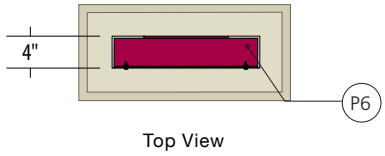
Sign Panel
1/4” aluminum panel
Double Sided

Bracket
Integral to Extruded Post

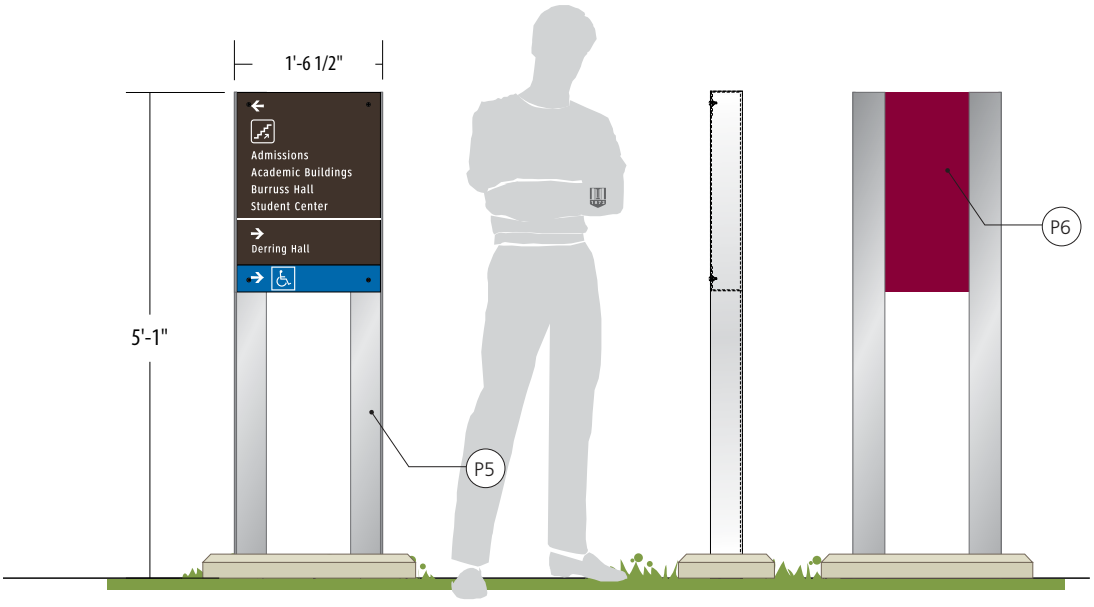
Sign Base
Direct Bury, Virginia Tech
Standard Reference Footer
Drawings in Details Section.



2 Graphic Layout: PD.2
Scale: 1 1/2" = 1'



Top View



1 Elevation: PD.2
Ground Mount
Scale: 1/2" = 1'-0"

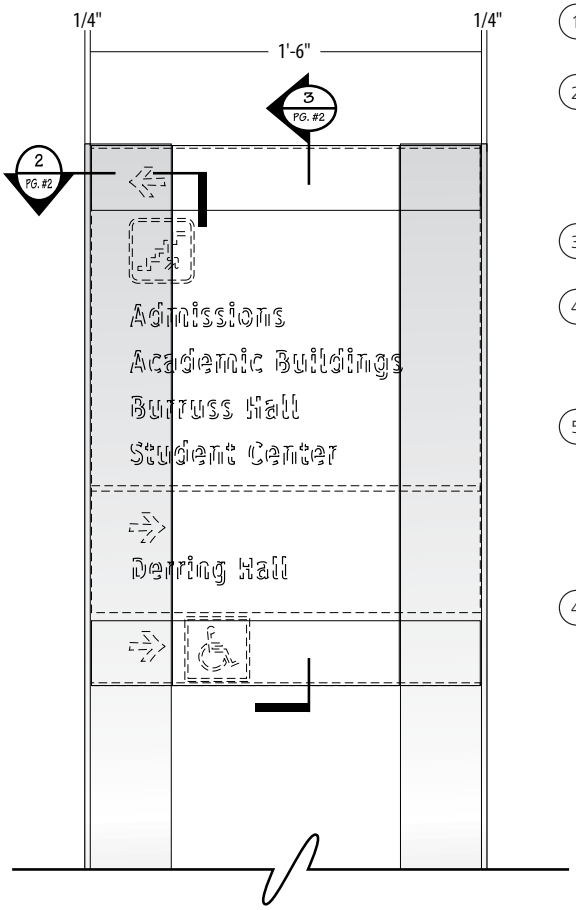
Side View

Back View

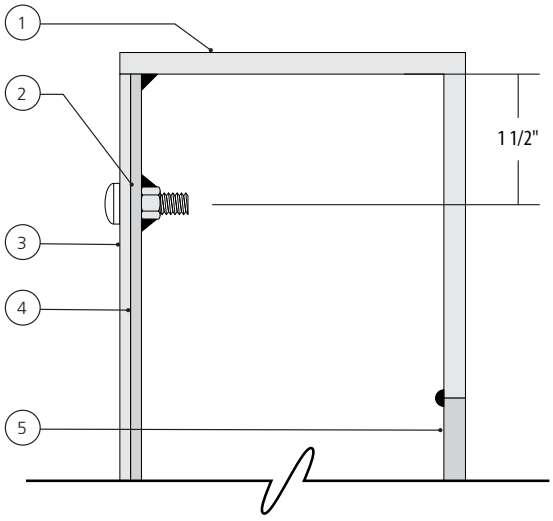
DESCRIPTION

Pedestrian Directional Signs located at Key Pedestrian Decision points along Interior Campus Pedestrian Paths. ADA Access Information is also Provided.

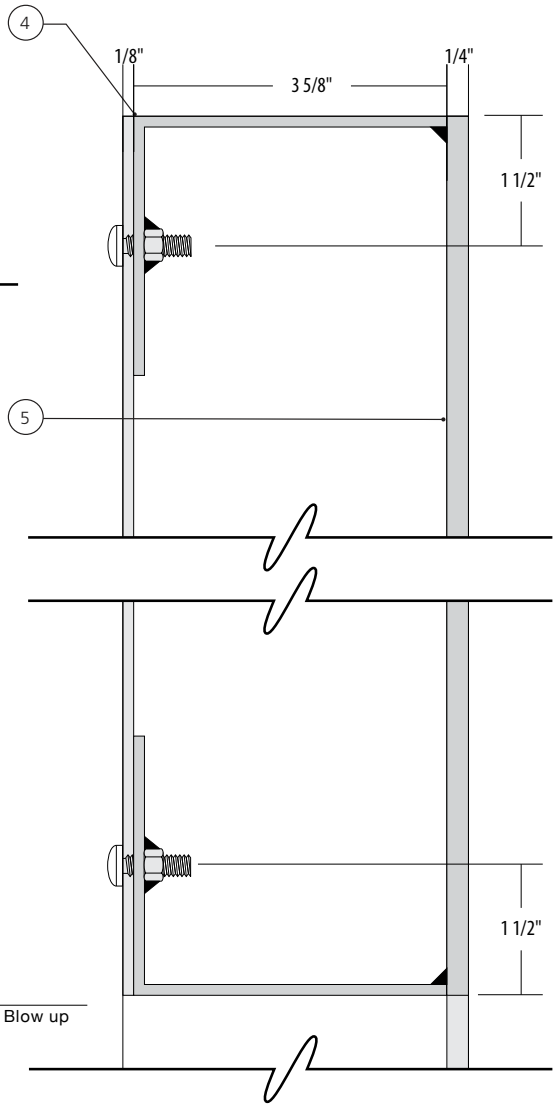
PD.2 Single Sided
PD.2a Double Sided



1 Detail: PD.2
Ground Mount
Scale: NTS



2 Detail: PD.2
Plan Section Blow up
Scale: NTS



3 Detail: PD.2
Side Section Blow up
Scale: NTS

FABRICATION DETAILS

Posts:
4" x 4" aluminum angle.

Sign Panel:
1/8" thick aluminum sheet, painted.

Messages and Graphics;:
Opaque vinyl.

Sign Base:
Direct bury, into concrete footer 4" below grade.

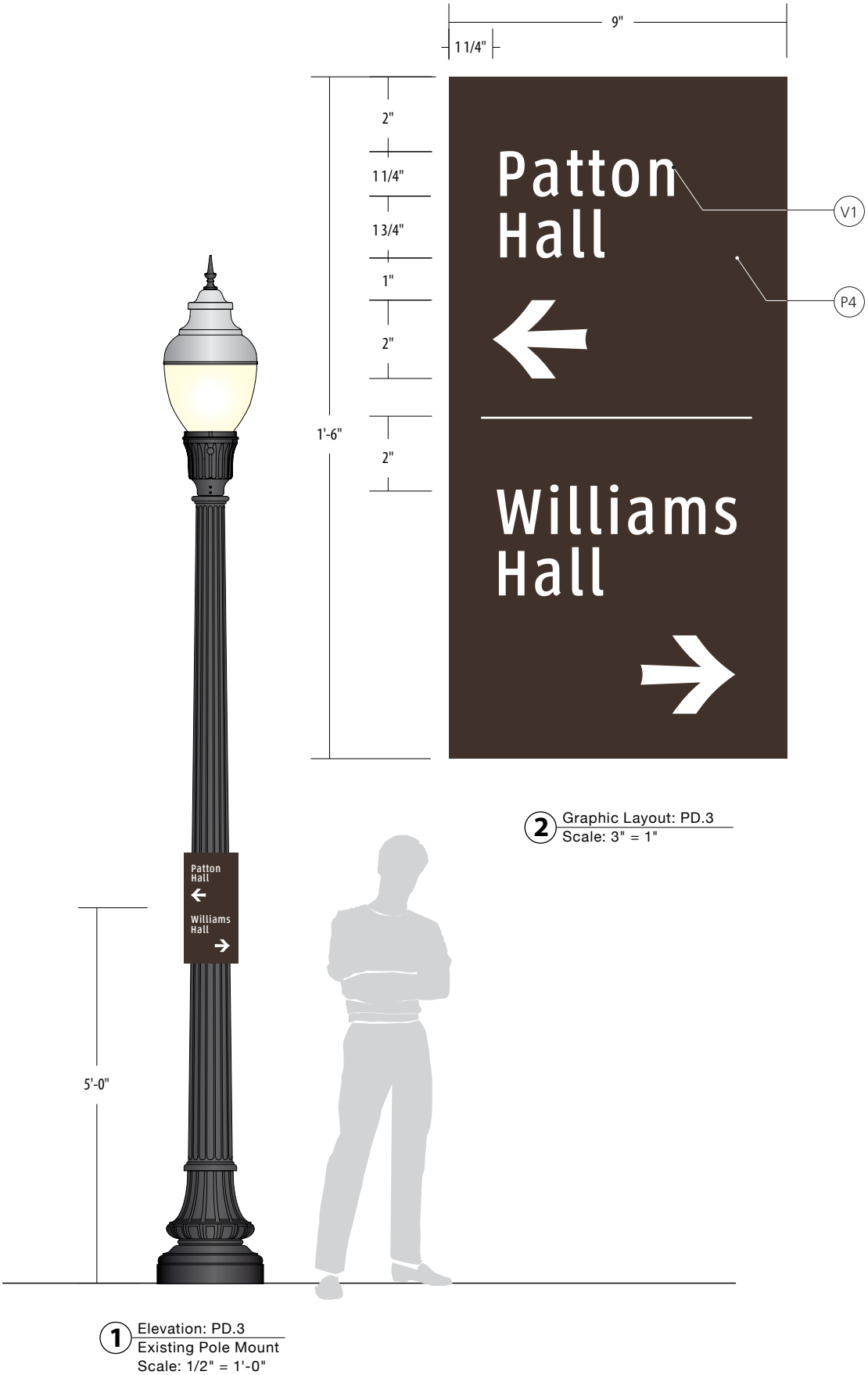
1. 4"x4"x1/4" Aluminum angle vertical

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

4. 3"x4"x1/8" Cut down to 3"x3 5/8" welded to inside of vertical angle

5. 1/4" Aluminum backer welded between vertical angles

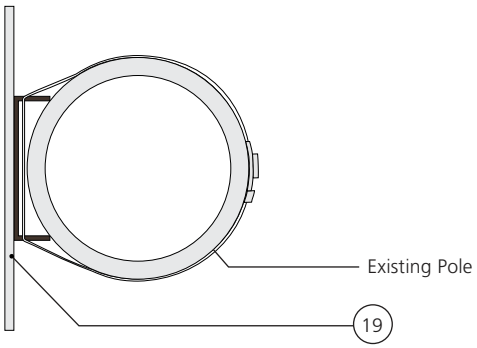


1 Elevation: PD.3
Existing Pole Mount
Scale: 1/2" = 1'-0"

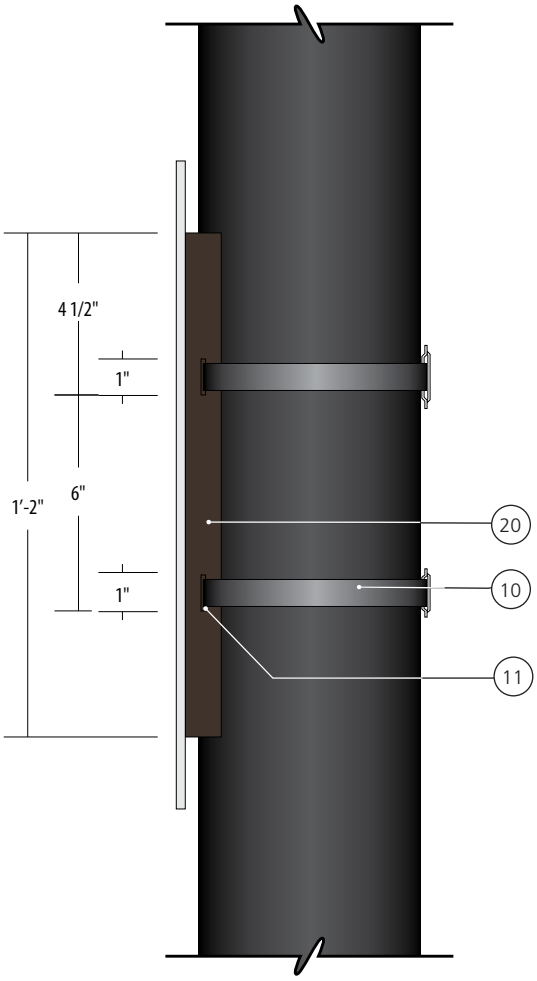
2 Graphic Layout: PD.3
Scale: 3" = 1"

DESCRIPTION

Pedestrian Directional Signs located at Key Pedestrian Decision points along Interior Campus Pedestrian Paths. ADA Access Information is also Provided.



2 Detail: Existing Pole Mount
Single Sided: Plan View
Scale: NTS



1 Detail:PD.3
Existing Pole Mount: Side View
Scale: NTS

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
1/4" Aluminum panel; double sided.

Bracket
Aluminum U-channel (P2), 3/16" thick, notched to receive sign panel. No visible welds. Three (3) 1/8" x 1" slots to receive Band-It SS strapping.

10. 3/4 black Band-It strap for mounting (2 per panel)

11. 1/8"x1 Slot cut out of channel to accommodate Band-It Strap
19. 1/4" Aluminum channel puddle welded to aluminum panel

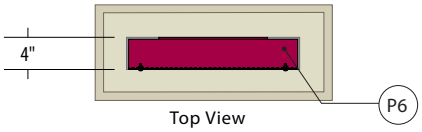
20. 4"x1"x1/8" Aluminum channel painted

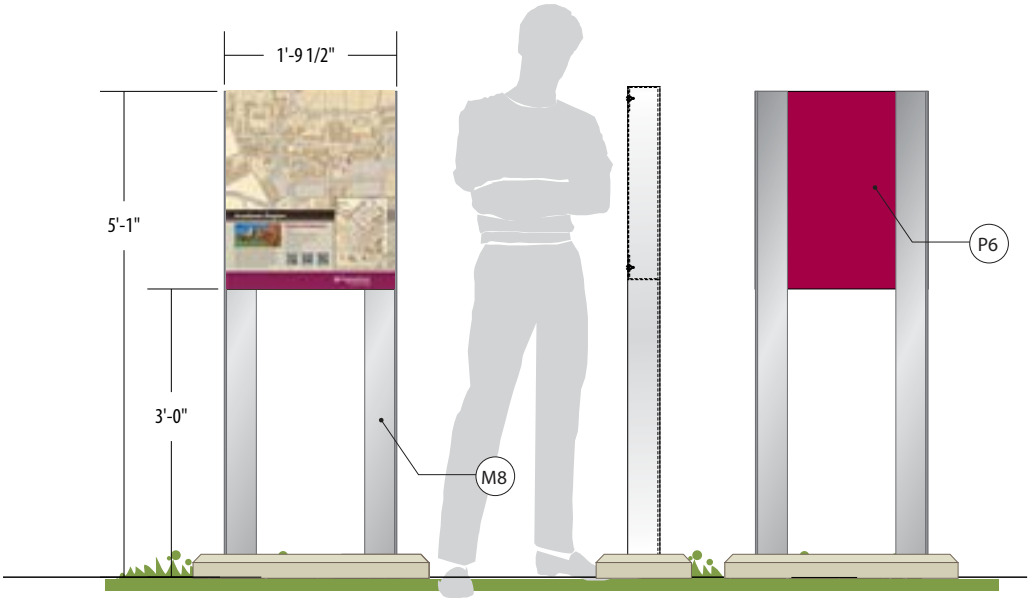
Campus Map

SIGN TYPE - CM.1

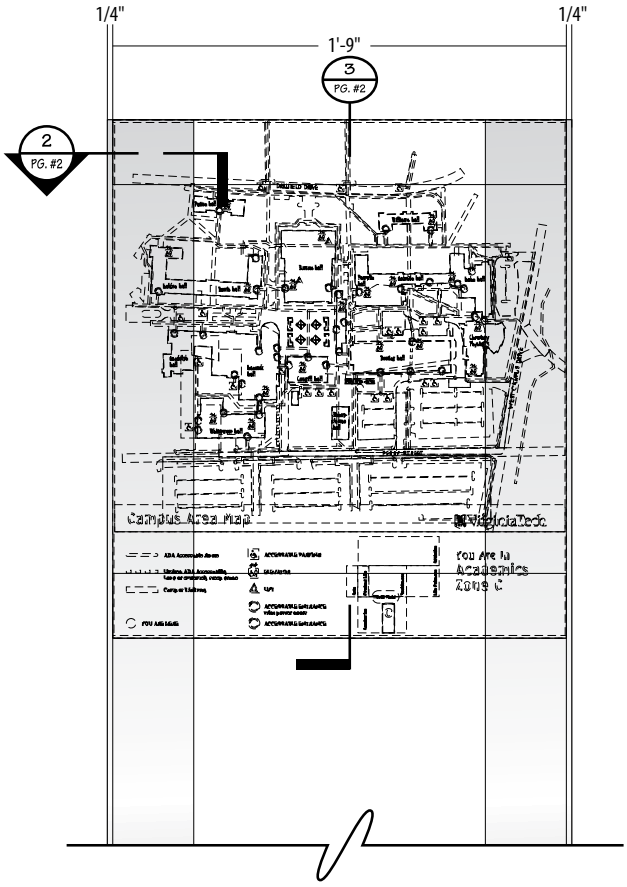
DESCRIPTION

Pedestrian Orientation Maps located at Key Pedestrian Decision points along Interior Campus Pedestrian Paths. ADA Access Information is also Provided and signs are located adjacent to Handicapped Parking Areas. Graphics provided by Universities Relations.

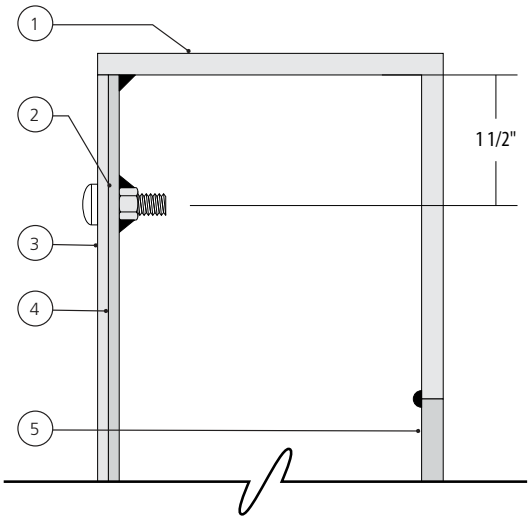




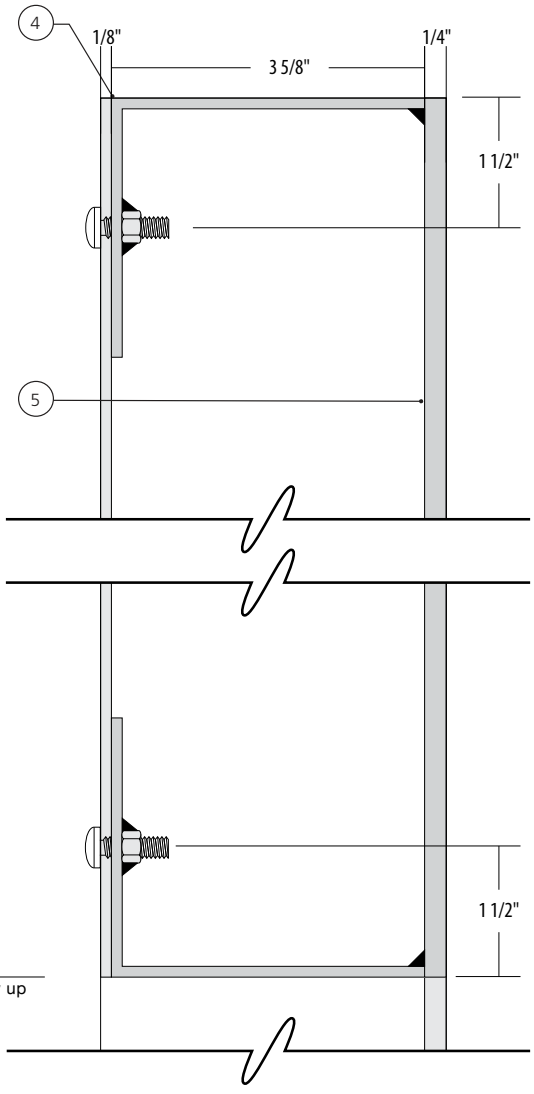
1 Elevation: CM.1
Ground Mount
Scale: 1/2" = 1'-0"



1 Detail: CM.1
Ground Mount
Scale: NTS



2 Detail: CM.1
Plan Section Blow up
Scale: NTS



3 Detail: CM.1
Side Section Blow up
Scale: NTS

FABRICATION DETAILS

Posts:
4" x 4" aluminum angle.

Sign Panel:
1/8" thick aluminum sheet, painted.

Messages and Graphics;:
Opaque vinyl.

Sign Base:
Direct bury, into concrete footer 4" below grade.

Concrete Footer Placement:
See Page:

1. 4"x4"x1/4" Aluminum angle vertical

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

4. 3"x4"x1/8" Cut down to 3"x3 5/8" welded to inside of vertical angle

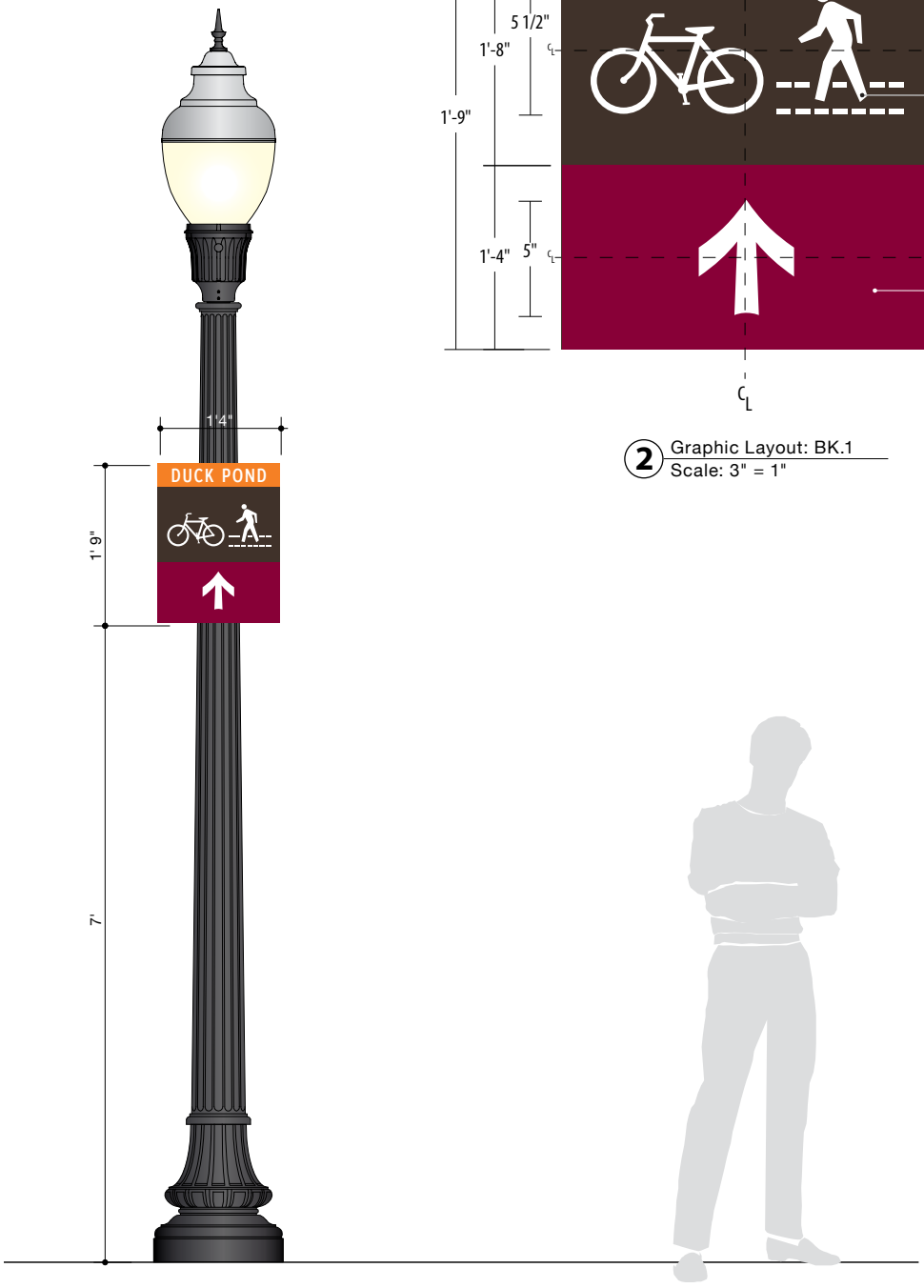
5. 1/4" Aluminum backer welded between vertical angles

Bike/Pedestrian Directional

SIGN TYPE - BK.1

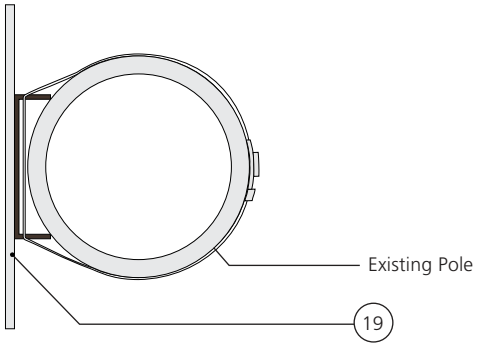
DESCRIPTION

Bike/PED Directional Signs located at Key Bike/Ped Decision points along Interior Campus Dedicated Bike Paths.

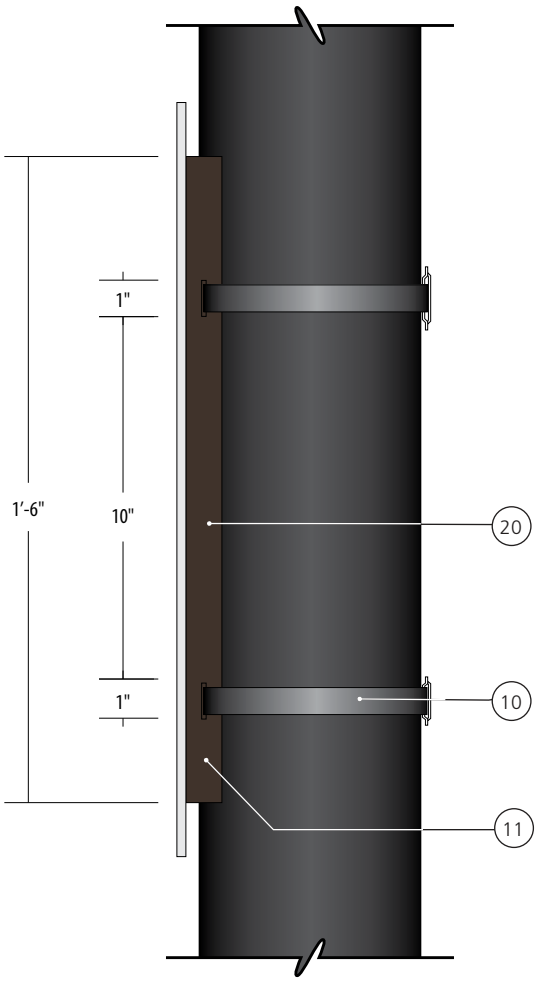


1 Elevation: BK.1
Existing Pole Mount
Scale: 1/2" = 1'-0"

2 Graphic Layout: BK.1
Scale: 3" = 1"



2 Detail: Existing Pole Mount
Single Sided: Plan View
Scale: NTS



1 Detail: BK.1
Existing Pole Mount: Side View
Scale: NTS

FABRICATION DETAILS

Sign Panel
1/8" thick aluminum sheet, painted, mechanically fastened to U-channel.

Bracket
Aluminum U-channel, 3/16" thick. Three (2) 1/8" x 1" slots to receive Band-It SS strapping.

Message and Graphics
Reflective sheeting, single-sided only.

Attachment
Three (3) Band-It SS strapping.

10. 3/4 black Band-It strap for mounting (2 per panel)

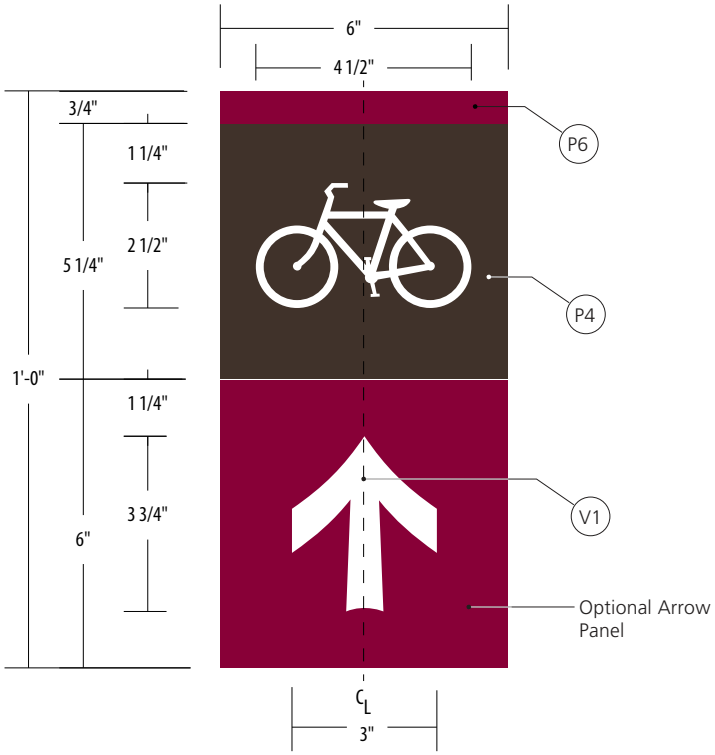
11. 1/8"x1 Slot cut out of channel to accommodate Band-It Strap
19. 1/4" Aluminum channel puddle welded to aluminum panel

20. 4"x1"x1/8" Aluminum channel painted

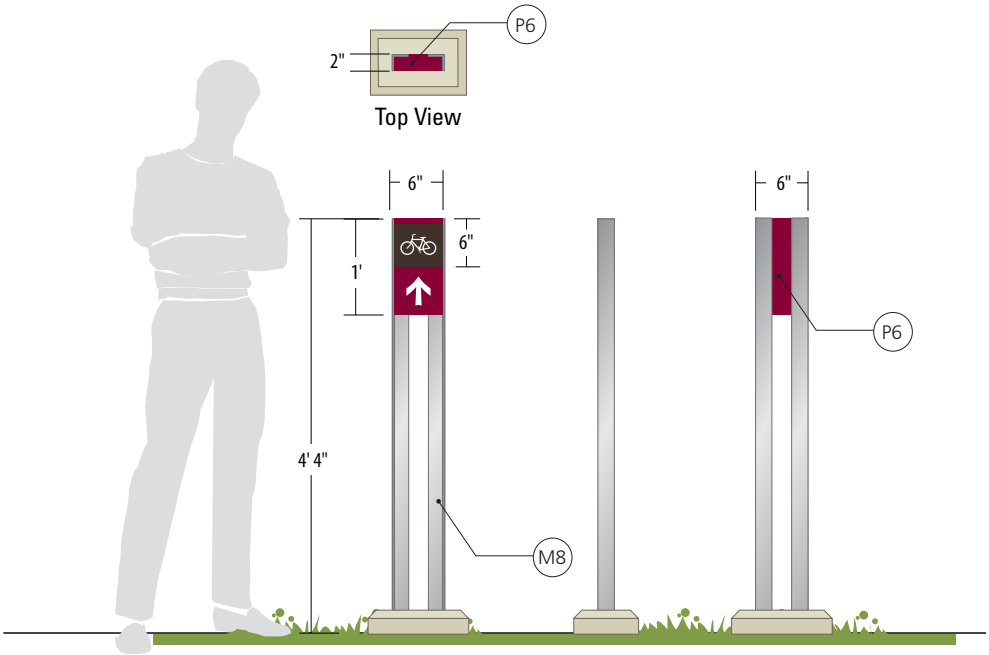
SIGN TYPE - BK.2

DESCRIPTION

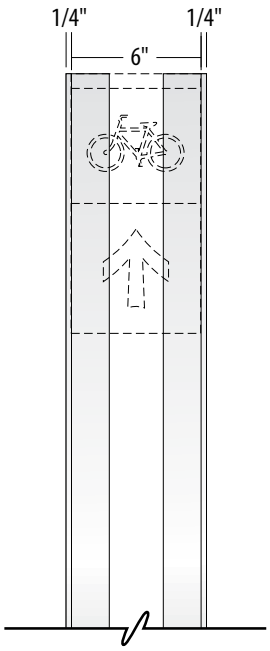
Bike/PED Directional Signs located at Key Bike/Ped Decision points along Interior Campus Dedicated Bike Paths.



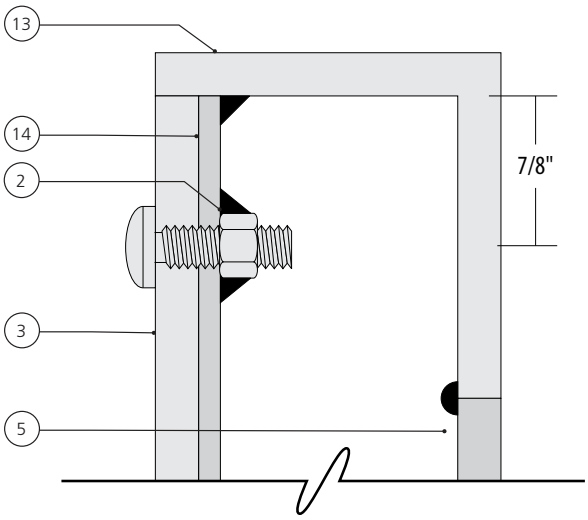
2 Graphic Layout: BK.2
Scale: 3" = 1"



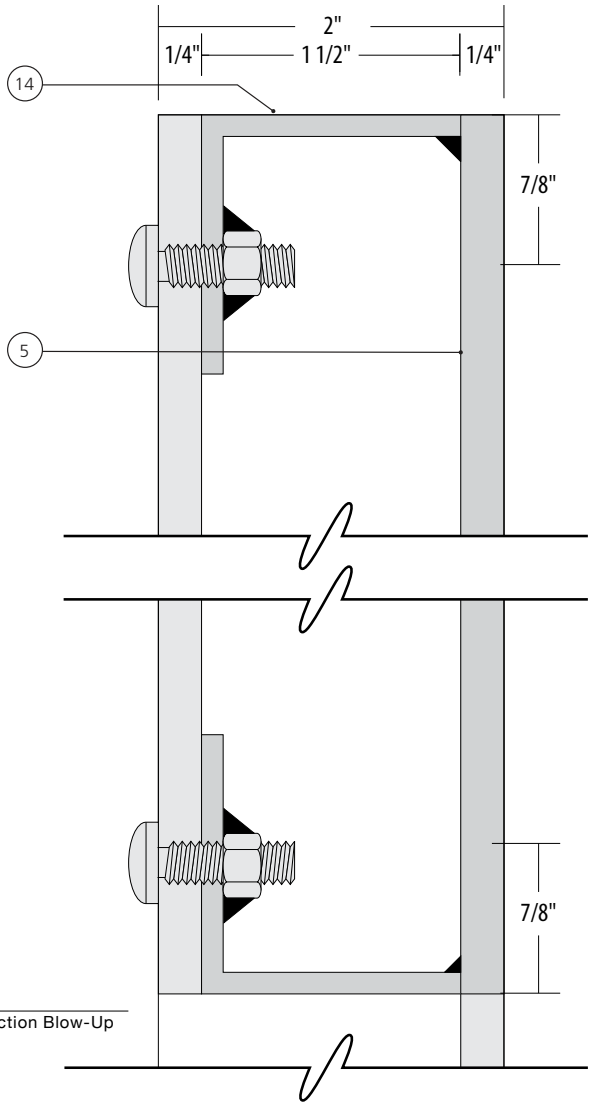
1 Elevation: BK.2
Ground Mount
Scale: 1/2" = 1'-0"



1 Detail: BK.2
Ground Mount: Foundation
Scale: NTS



2 Plan Section Blow-Up: BK.2
Ground Mount
Scale: NTS



3 Detail: BK.2
Ground Mount: Side Section Blow-Up
Scale: NTS

FABRICATION DETAILS

Posts
2" x 2" aluminum angle.

Sign Panel
1/8" thick aluminum sheet, painted.

Graphics
Opaque vinyl.

Sign Base
Direct bury, into concrete footer 4" below grade.

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

5. 1/4" Aluminum backer welded between vertical angles

13. 2"x2"x1/4" Aluminum angle vertical

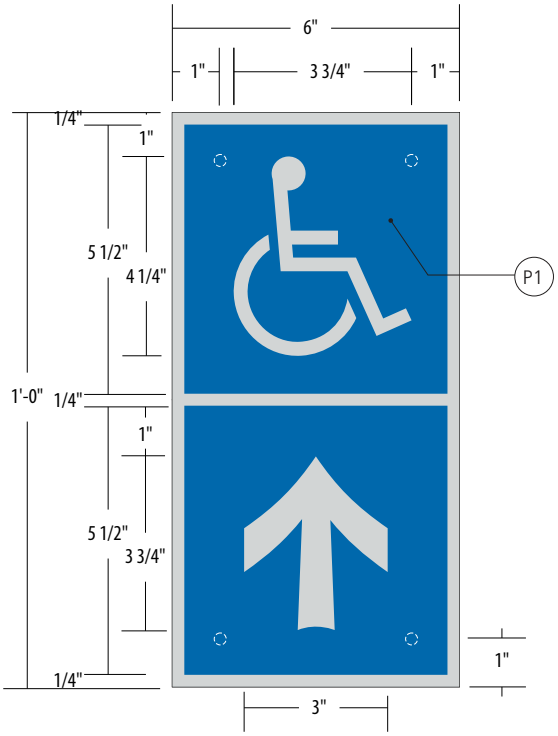
14. 1 1/2"x1 1/2"x1/8" angle welded to inside of vertical angle

ADA Directional

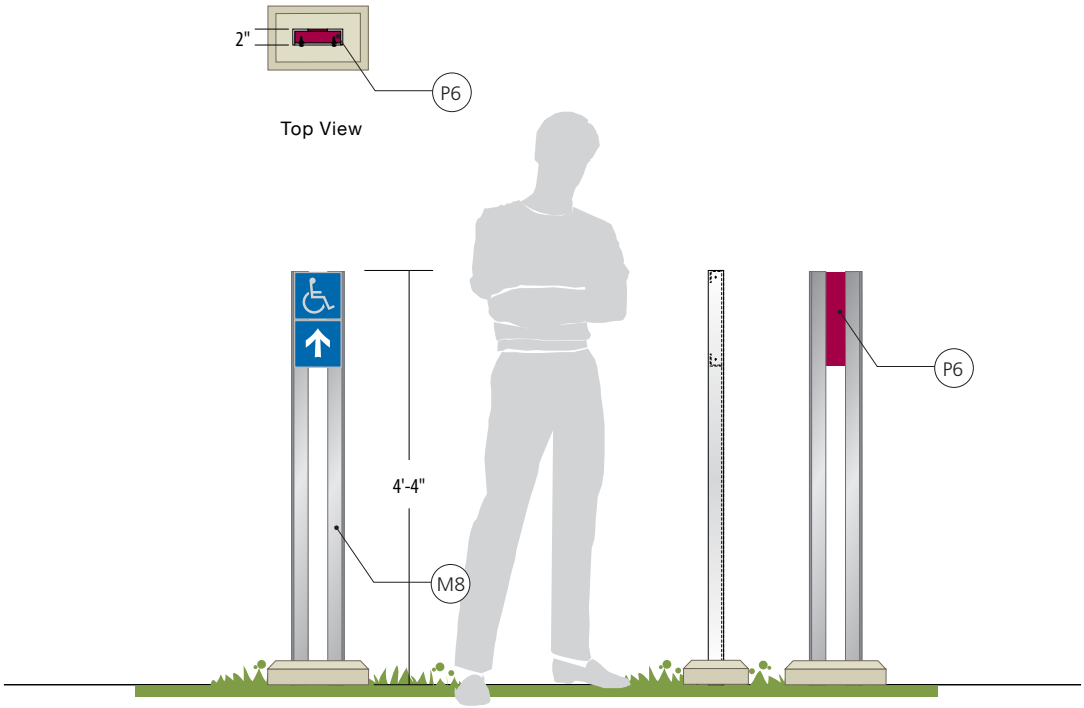
SIGN TYPE - HC.1

DESCRIPTION

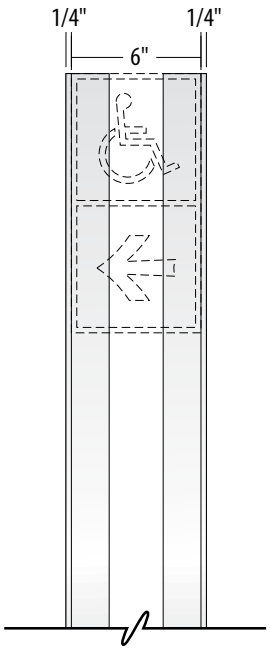
ADA ACCESS Directional Signs located at ADA Decision points along Interior Campus Dedicated ADA Paths.



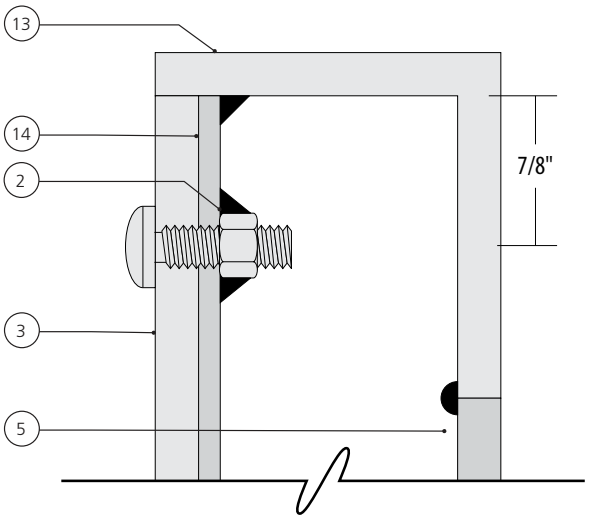
2 Elevation: HC.1
Scale: 3" = 1"



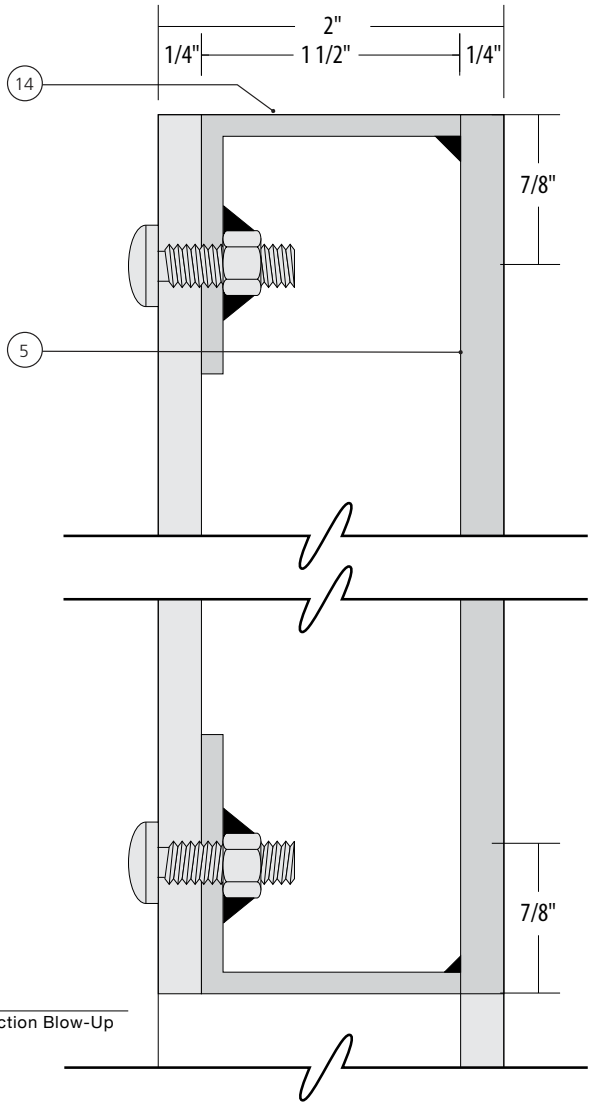
1 Elevation: HC.1
Ground Mount
Scale: 1/2" = 1'-0"



1 Detail: HC.1
Ground Mount: Foundation
Scale: NTS



2 Plan Section Blow-Up: HC.1
Ground Mount
Scale: NTS



3 Detail: HC.1
Ground Mount: Side Section Blow-Up
Scale: NTS

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Annodized Clear

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

5. 1/4" Aluminum backer welded between vertical angles

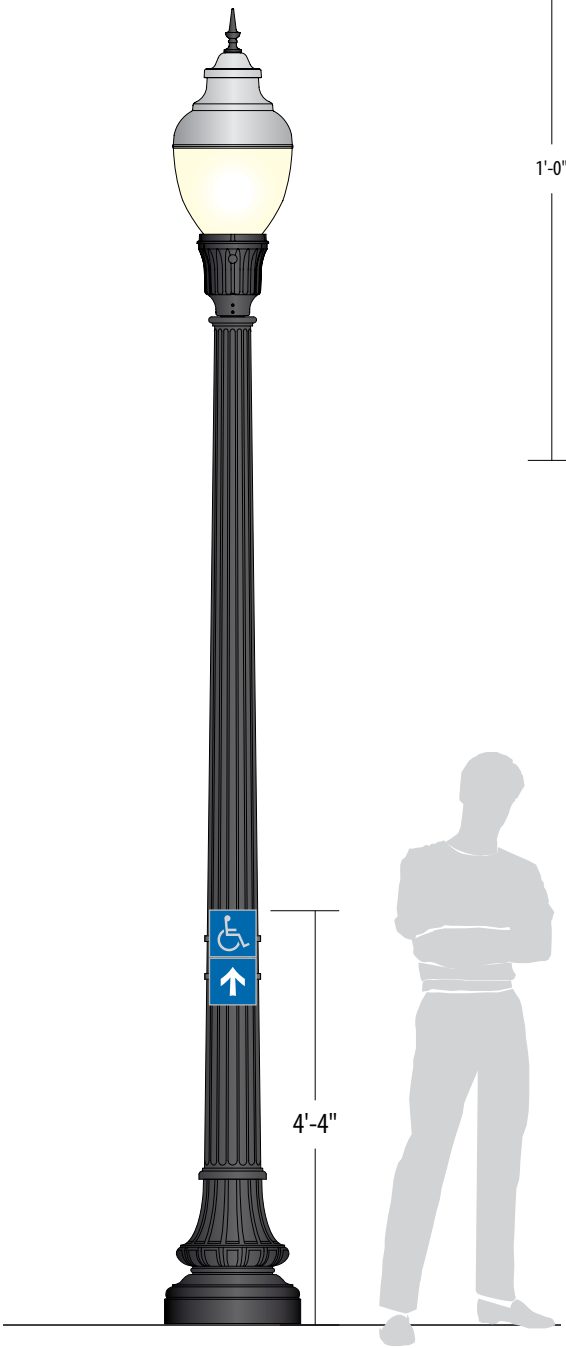
13. 2"x2"x1/4" Aluminum angle vertical

14. 1 1/2"x1 1/2"x1/8" angle welded to inside of vertical angle

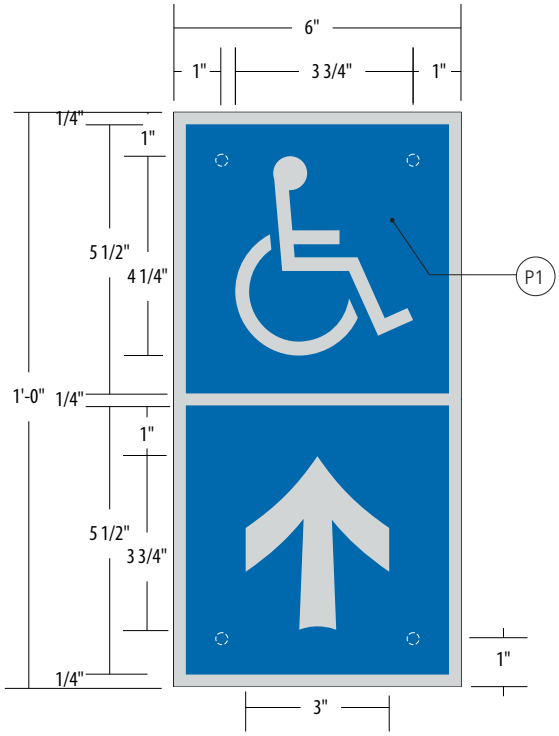
SIGN TYPE - HC.1a

DESCRIPTION

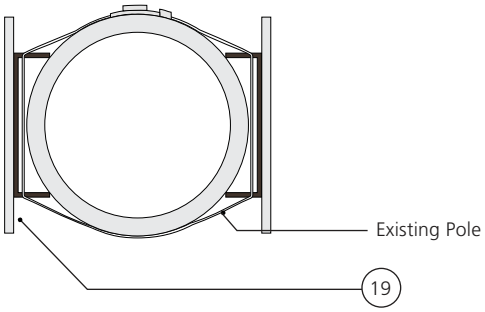
ADA ACCESS Directional Signs located at ADA Decision points along Interior Campus Dedicated ADA Paths.



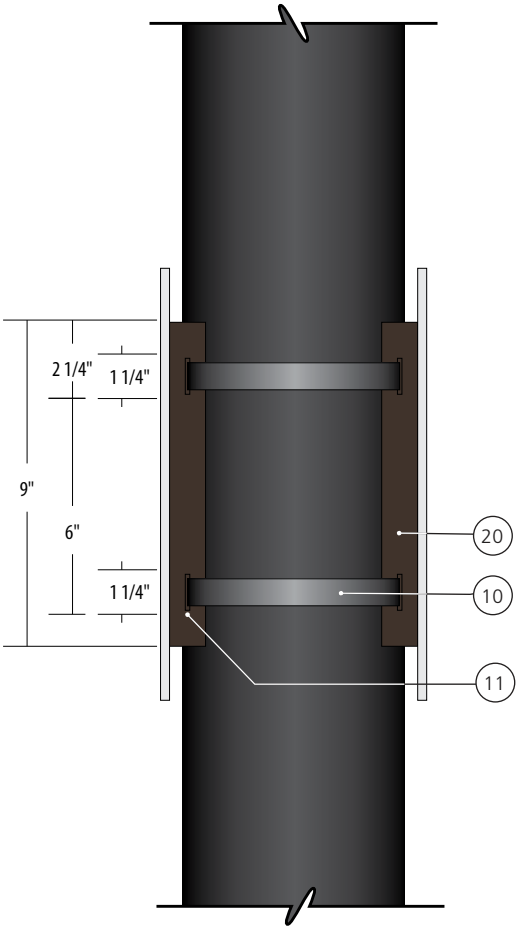
1 Elevation: HC.1a
Existing Pole Mount
Scale: 1/2" = 1'-0"



2 Elevation: HC.1a
Scale: 3" = 1"



2 Detail: HC.1
Existing Pole Mount: Plan View
Scale: NTS



1 Detail: HC.1a
Existing Pole Mount: Side View
Scale: NTS

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Annodized Clear

10. 3/4 black Band-It strap for mounting (2 per panel)

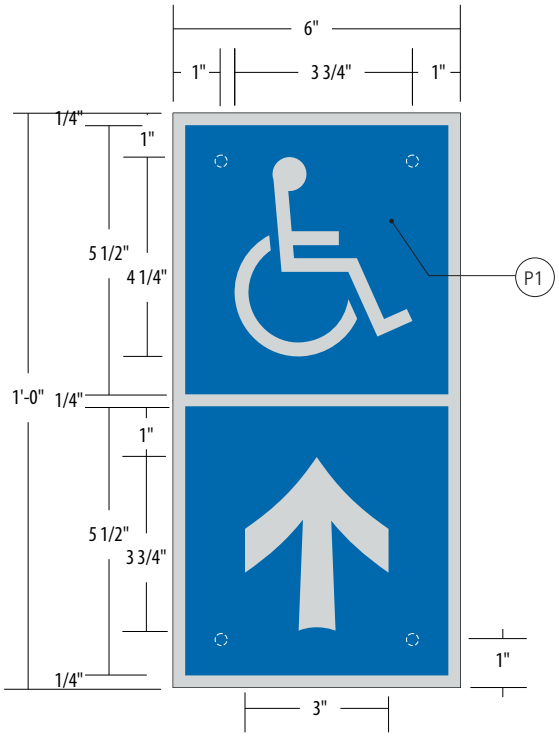
11. 1/8"x1 Slot cut out of channel to accommodate Band-It Strap
19. 1/4" Aluminum channel puddle welded to aluminum panel

20. 4"x1"x1/8" Aluminum channel painted

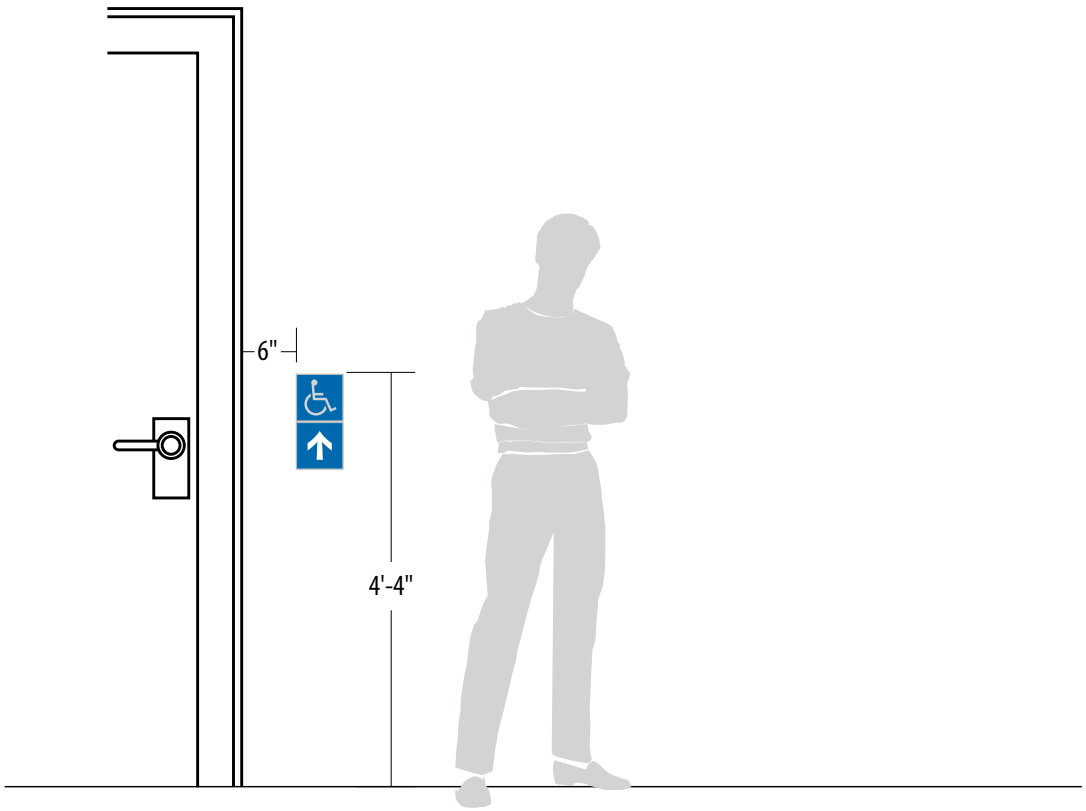
SIGN TYPE - HC.1b

DESCRIPTION

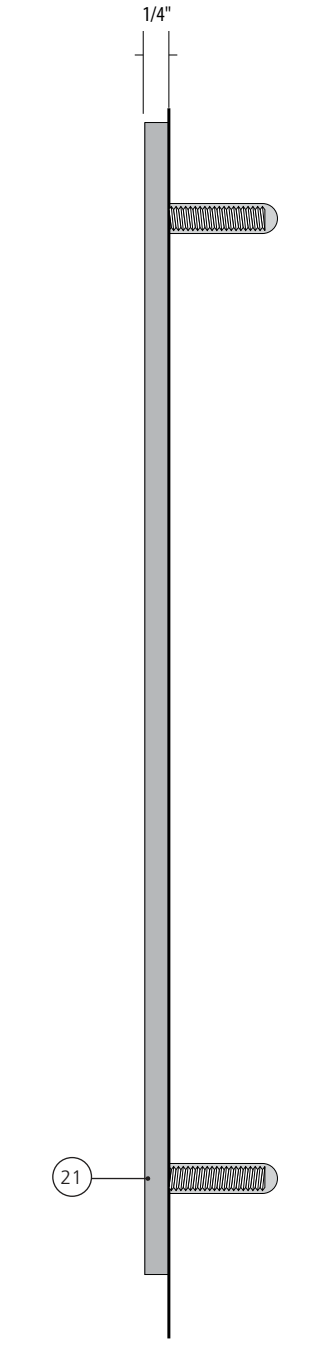
ADA ACCESS Directional Signs located at ADA Decision points along Interior Campus Dedicated ADA Paths.



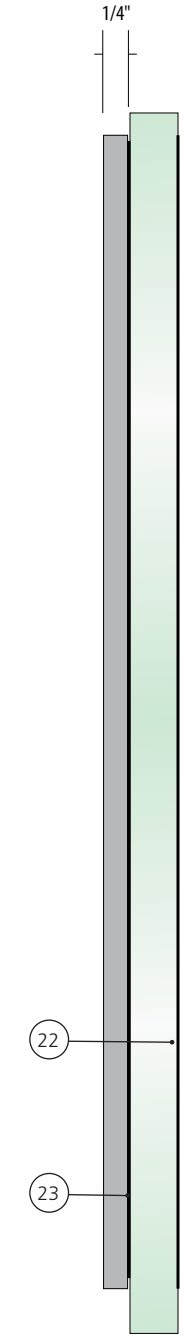
2 Elevation: HC.1b
Scale: 3" = 1"



1 Elevation: HC.1b
Wall Mount
Scale: 1/2" = 1'-0"



1 Detail: HC.1b
Wall Mount: Side View
Scale: NTS



2 Detail: HC.1b
Glass Mount: Side View
Scale: NTS

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Annodized Clear

21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

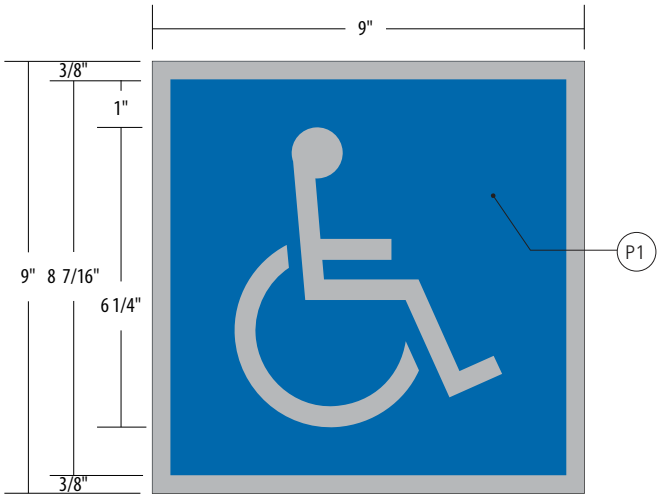
22. 3M #7725-120 Satin Aluminum Opaque Vinyl applied to opposite side of glass

23. Vertically applied 3M #4929 VHB Tape & Silicone

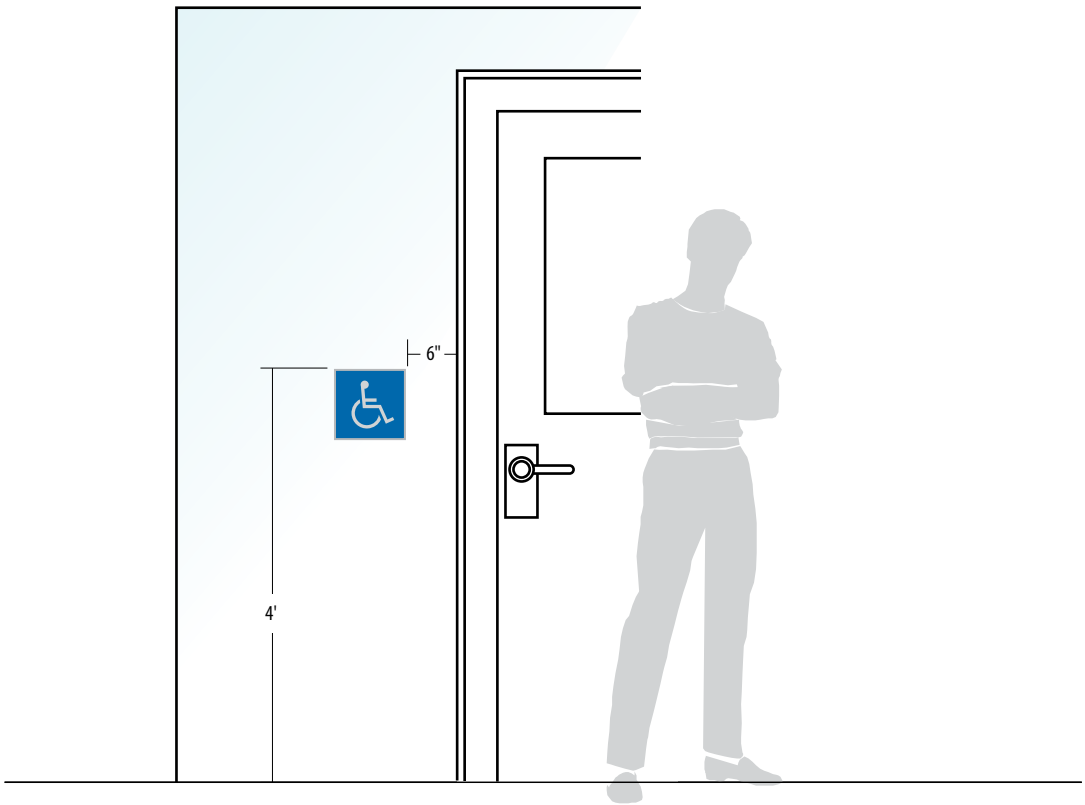
SIGN TYPE - HC.2

DESCRIPTION

ADA ACCESS ID Signs located at ADA Entry Points to Buildings.



2 Graphic Layout: HC.2
Scale: 3" = 1"



1 Elevation: HC.2
Wall Mount
Scale: 1/2" = 1'-0"

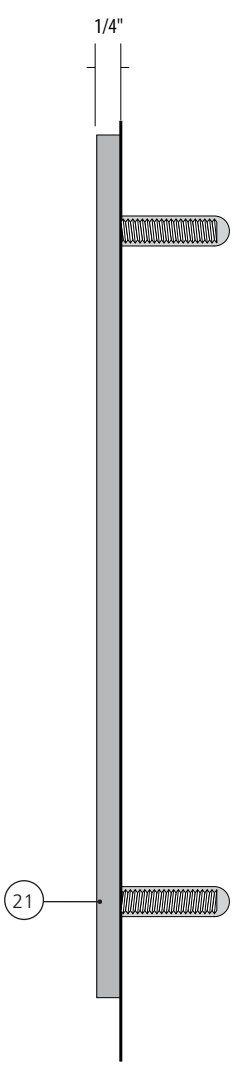
FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Annodized Clear

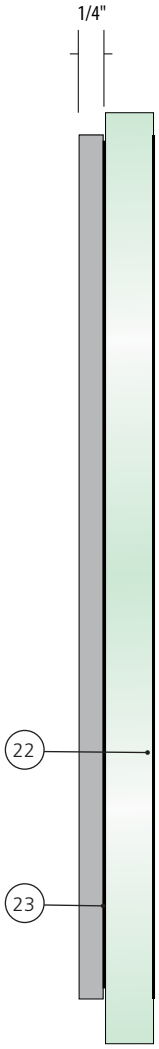
21. 1/4"-20 Stud shot welded to back of aluminum face mounted into wall with epoxy

22. 3M #7725-120 Satin Aluminum Opaque Vinyl applied to opposite side of glass

23. Vertically applied 3M #4929 VHB Tape & Silicone



1 Detail: HC.2
Wall Mount: Side View
Scale: NTS

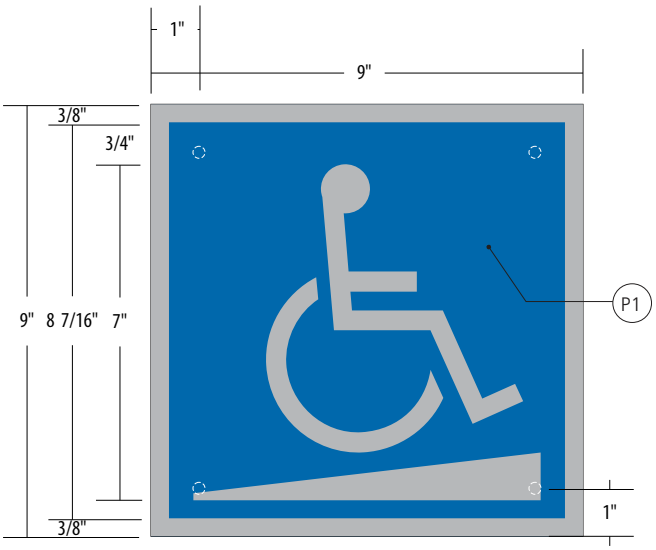


2 Detail: HC.2
Glass Mount: Side View
Scale: NTS

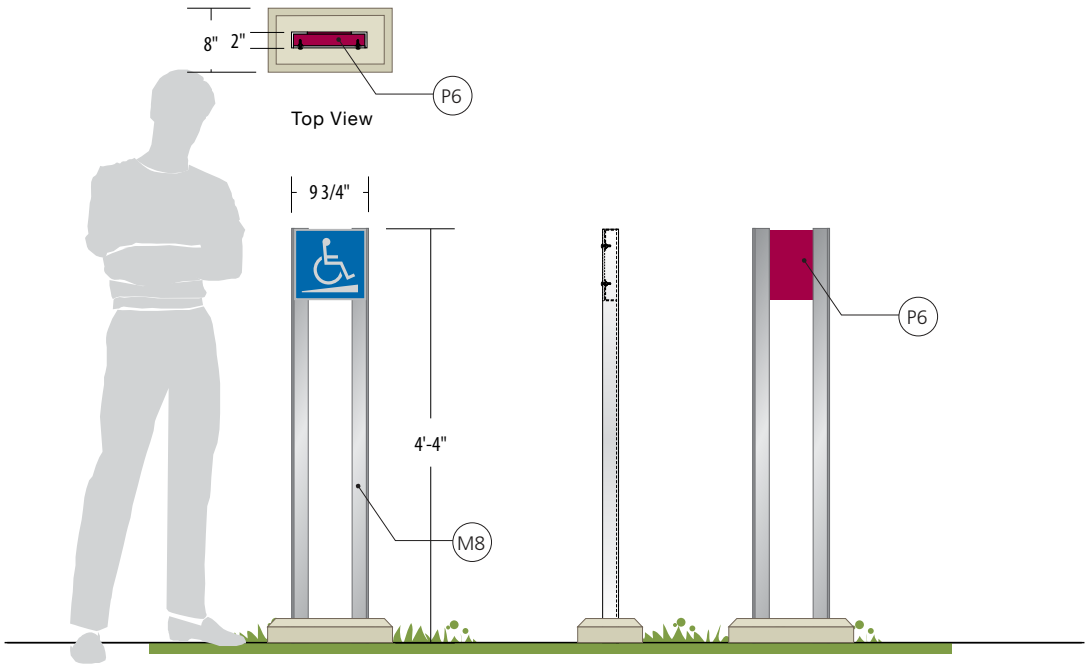
SIGN TYPE - HC.3

DESCRIPTION

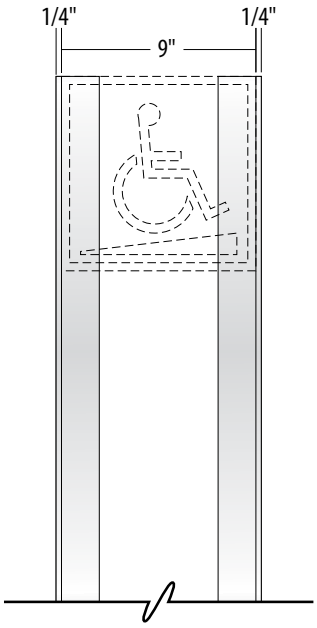
ADA ACCESS ID Signs located at ADA Entry Points to Ramps.



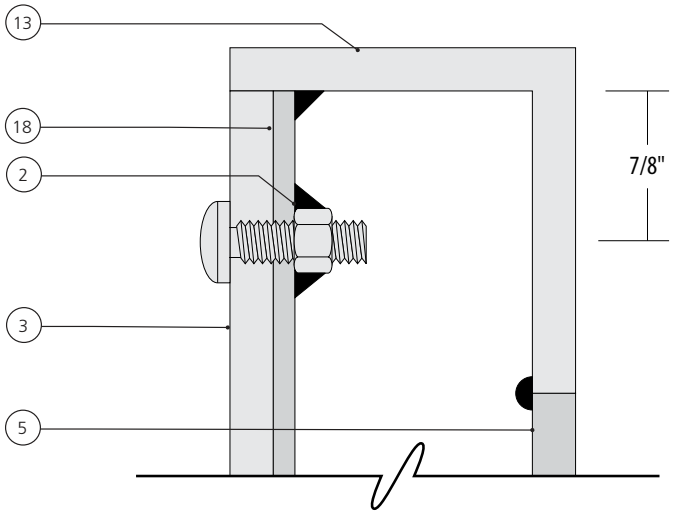
2 Graphic Layout: HC.3
Scale: 3" = 1"



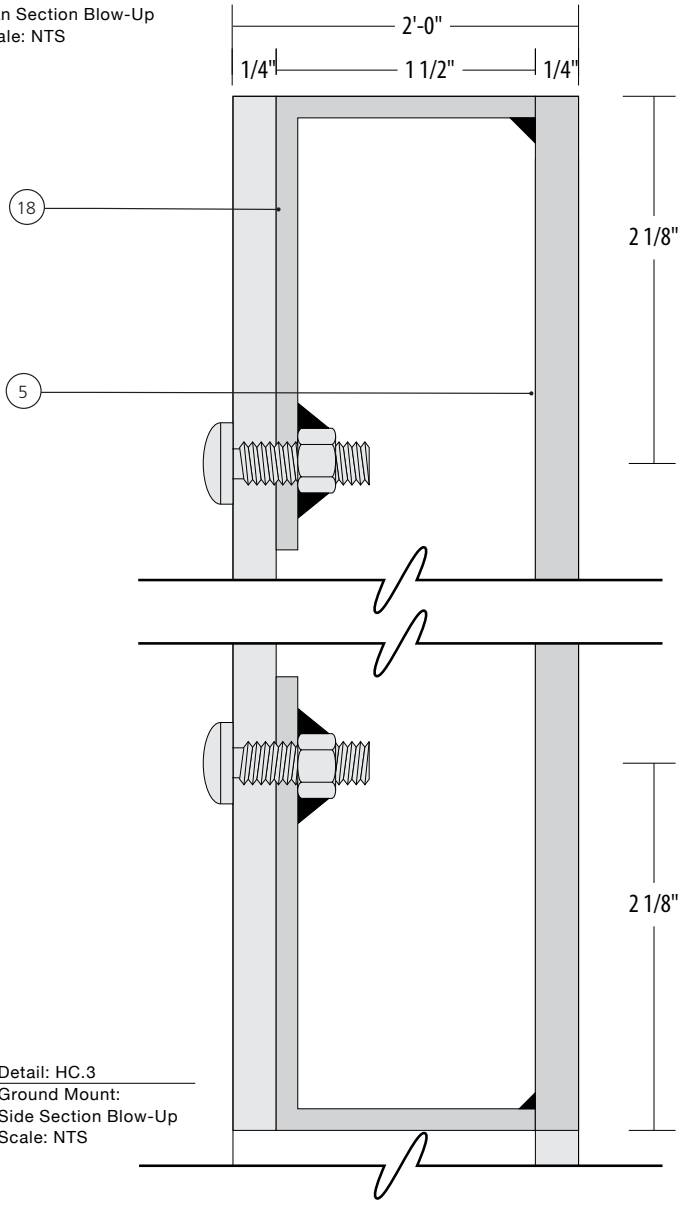
1 Elevation: HC.3
Ground Mount
Scale: 1/2" = 1'-0"



1 Detail: HC.3
Ground Mount
Scale: NTS



2 Detail: HC.3
Ground Mount:
Plan Section Blow-Up
Scale: NTS



3 Detail: HC.3
Ground Mount:
Side Section Blow-Up
Scale: NTS

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Annodized Clear

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

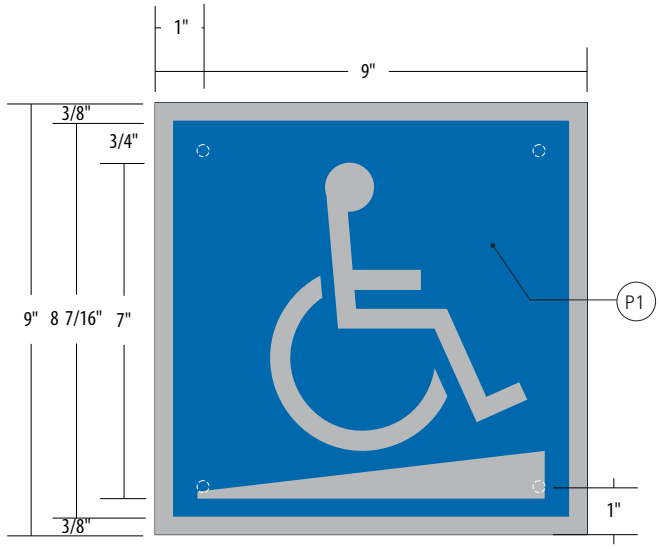
5. 1/4" Aluminum backer welded between vertical angles

13. 2"x2"x1/4" Aluminum angle vertical

SIGN TYPE - HC.3a

DESCRIPTION

ADA ACCESS ID Signs located at ADA Entry Points to Ramps.



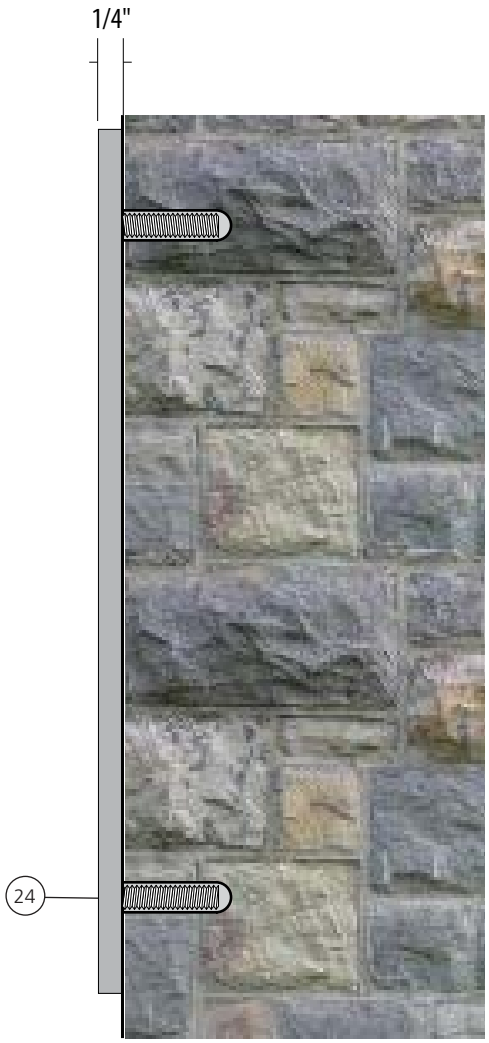
2 Graphic Layout: HC.3a
Scale: 3" = 1"

1 Elevation: HC.3a
Existing Wall Mount
Scale: 1/2" = 1'-0"

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Anodized Clear

24. Tap Pad shot welded to back of aluminum face with 1/4"-20x3" studs as req. Mounted into wall with epoxy

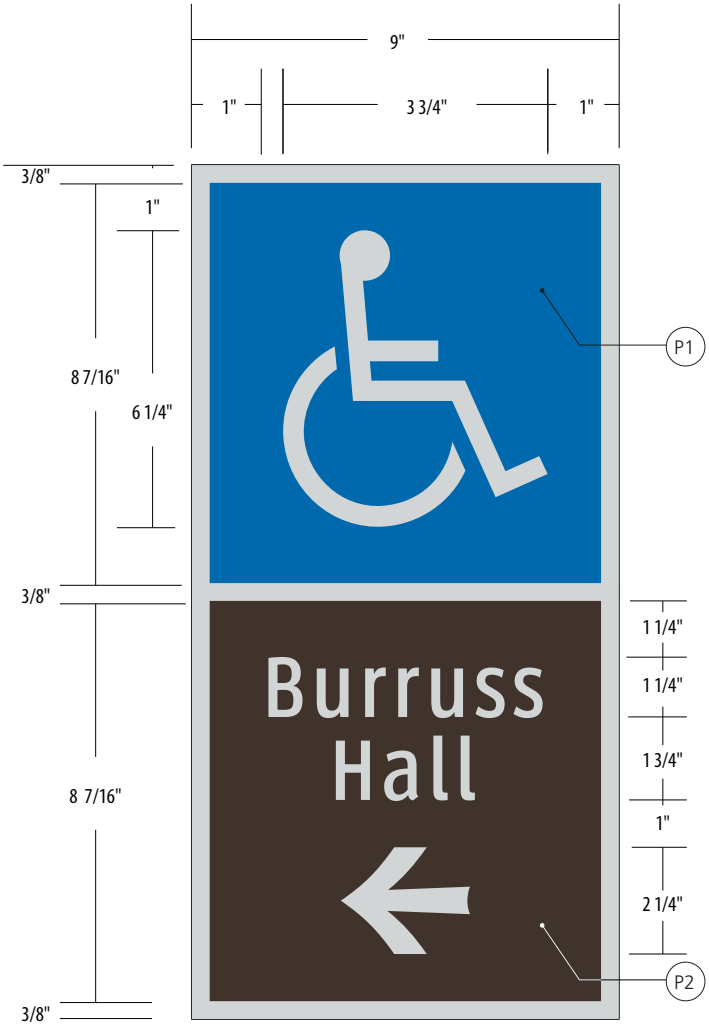


1 Detail: HC.3a
Wall Mount: Side View
Scale: NTS

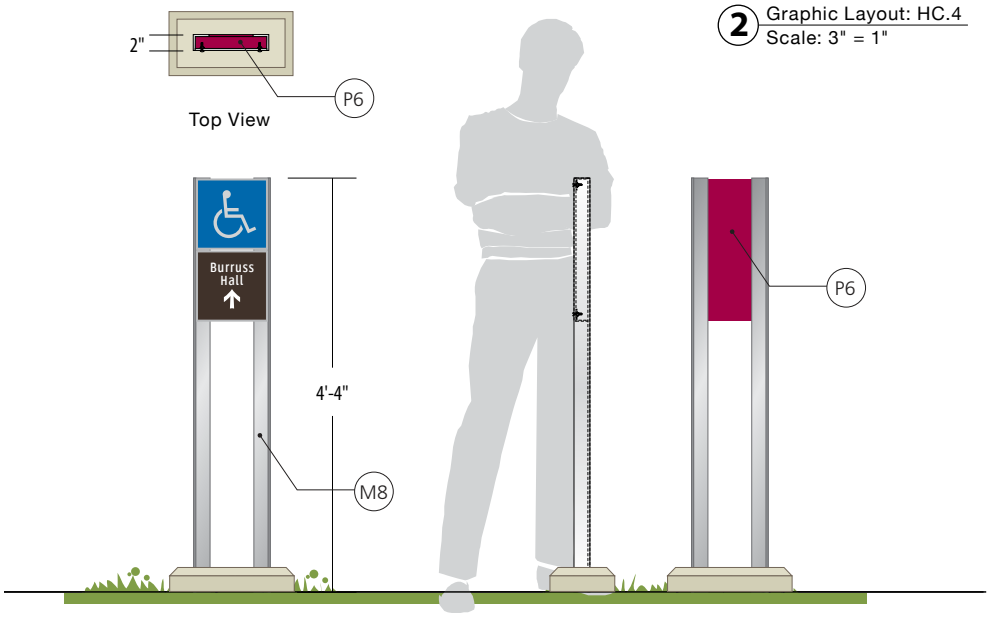
SIGN TYPE - HC.4

DESCRIPTION

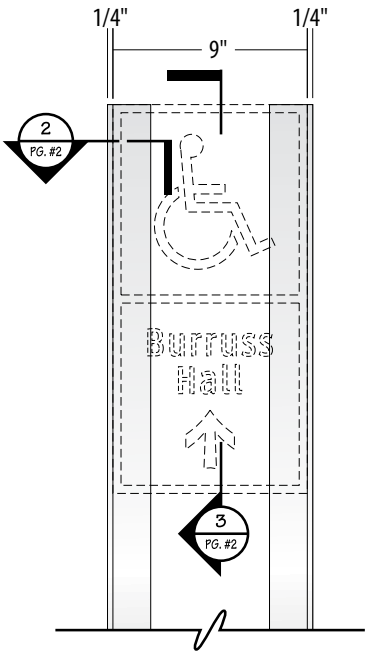
ADA ACCESS Directional Signs located at ADA Decision points along Interior Campus Dedicated ADA Paths.



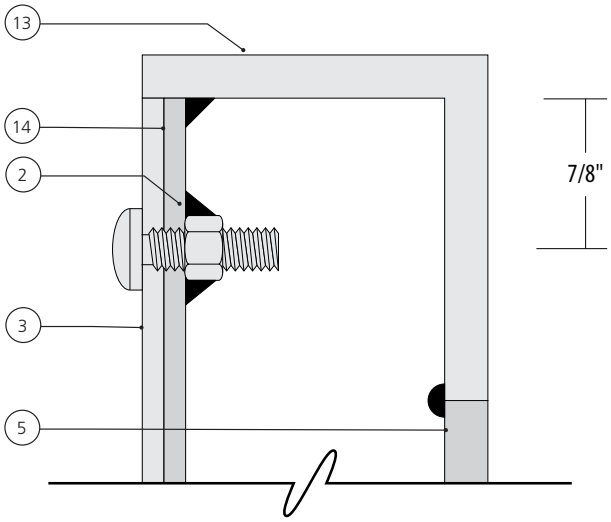
2 Graphic Layout: HC.4
Scale: 3" = 1"



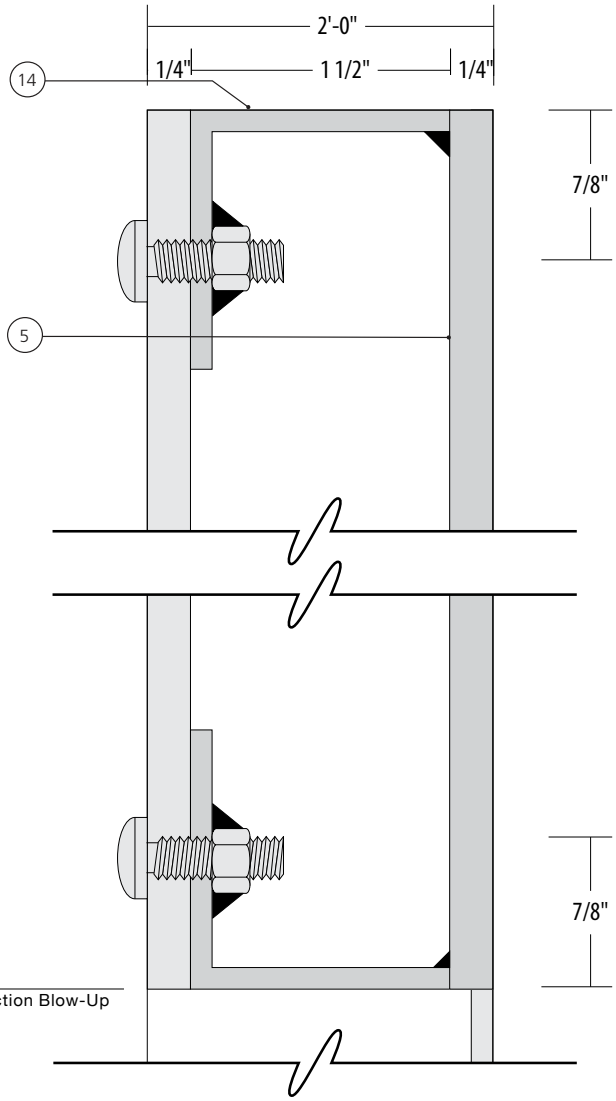
1 Elevation: HC.4
Ground Mount
Scale: 1/2" = 1'-0"



1 Detail: HC.4
Ground Mount
Scale: NTS



2 Detail: HC.4
Ground Mount: Plan Section Blow-Up
Scale: NTS



3 Detail: HC.4
Ground Mount: Side Section Blow-Up
Scale: NTS

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Annodized Clear

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

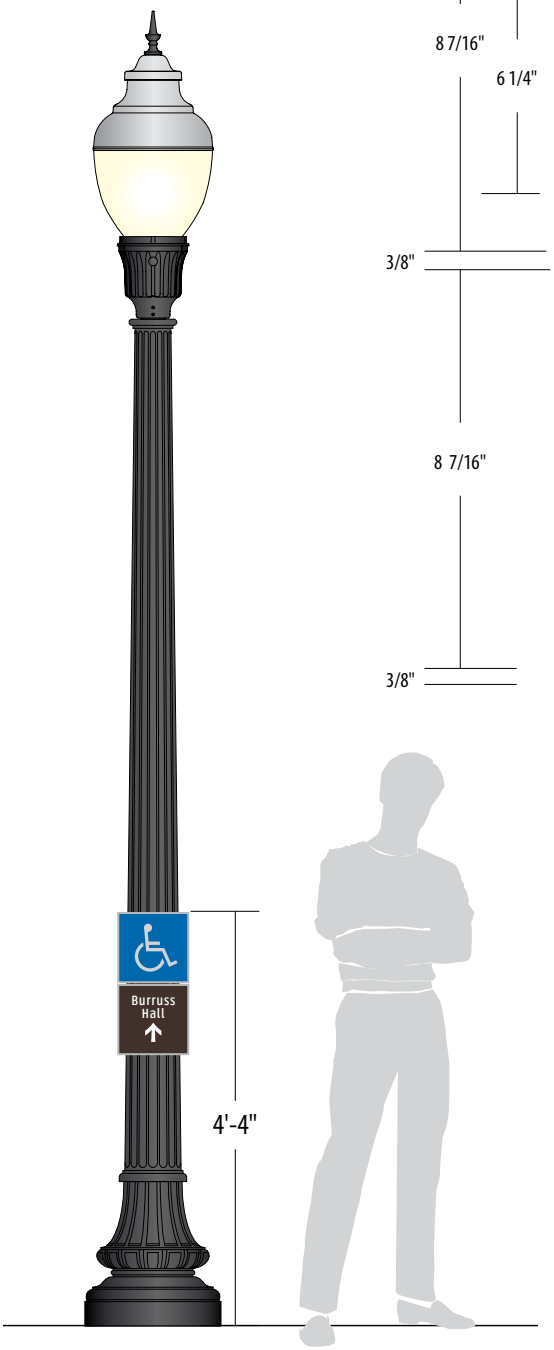
5. 1/4" Aluminum backer welded between vertical angles

13. 2"x2"x1/4" Aluminum angle vertical

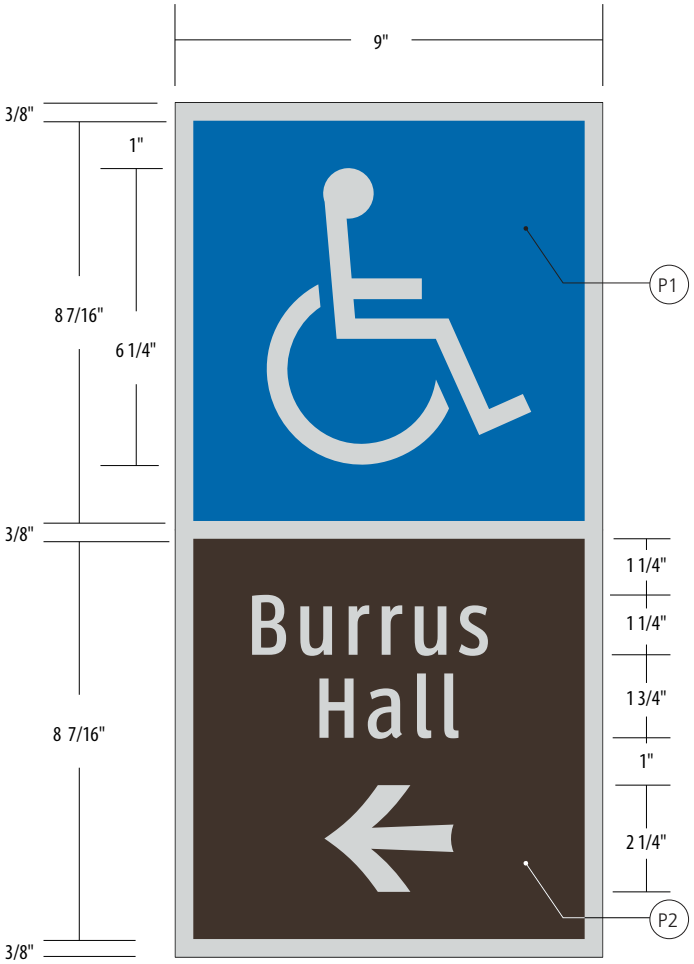
14. 1 1/2"x1 1/2"x1/8" angle welded to inside of vertical angle

DESCRIPTION

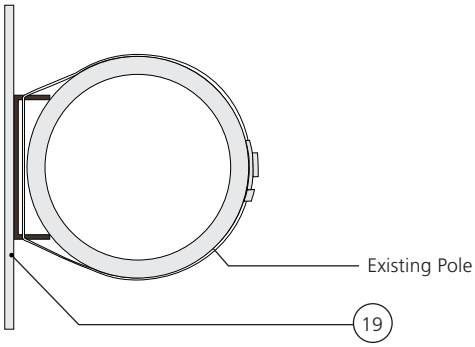
ADA ACCESS Directional Signs located at ADA Decision points along Interior Campus Dedicated ADA Paths.



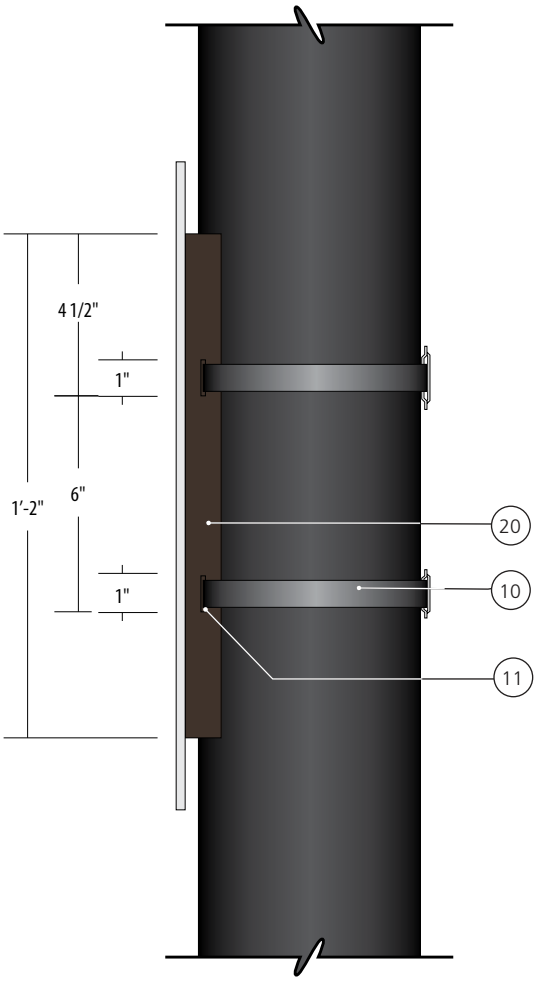
1 Elevation: HC.4a
Existing Pole Mount
Scale: 1/2" = 1'-0"



2 Graphic Layout: HC.4a
Scale: 3" = 1"



2 Detail: Existing Pole Mount
Single Sided: Plan View
Scale: NTS



1 Detail: HC.4a
Existing Pole Mount: Side View
Scale: NTS

FABRICATION DETAILS

Sign Panel:
Raised Graphics:
Natural Aluminum
Sandblasted light
Anodized Clear

10. 3/4 black Band-It strap for mounting (2 per panel)

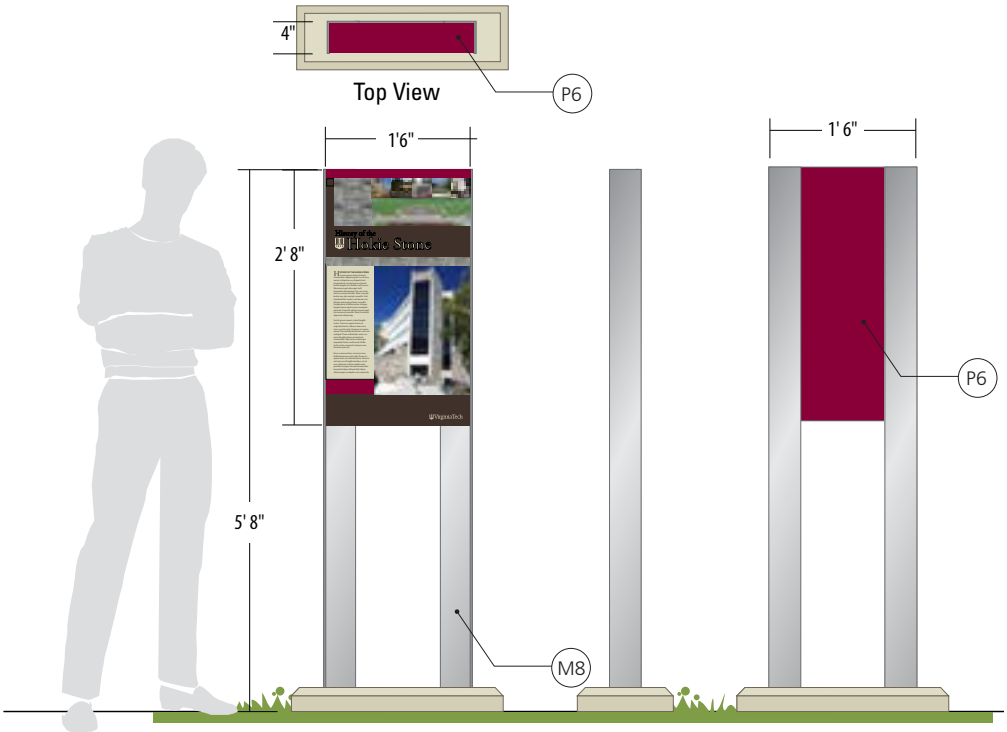
11. 1/8"x1 Slot cut out of channel to accommodate Band-It Strap
19. 1/4" Aluminum channel puddle welded to aluminum panel

20. 4"x1"x1/8" Aluminum channel painted

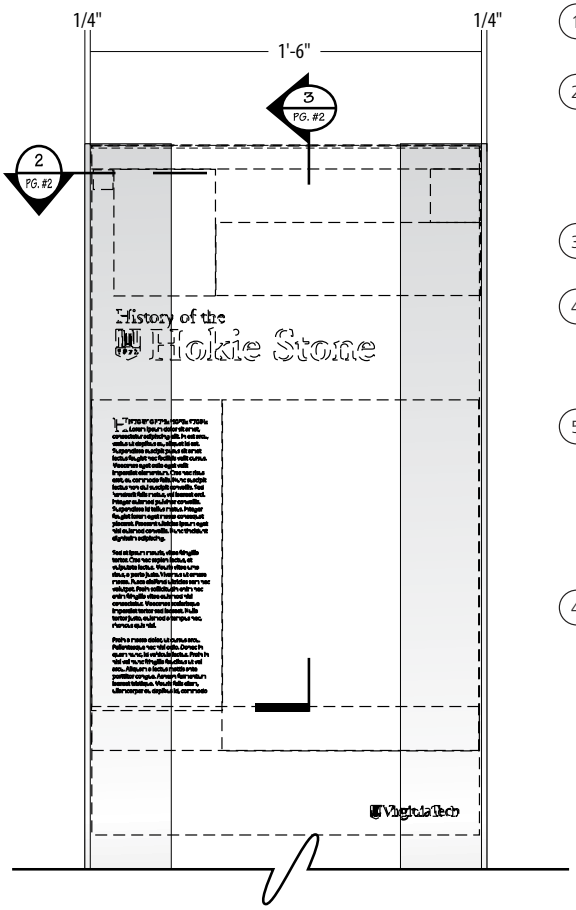
SIGN TYPE - IN.1

DESCRIPTION

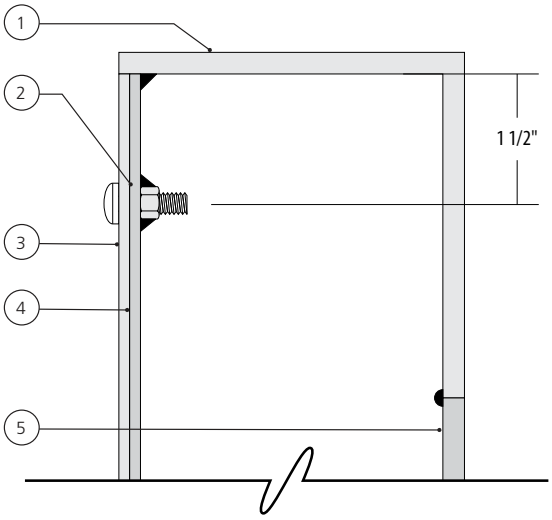
Interpretive Signs located at Significant Sites that tell the Story of Virginia Tech. Content to be provided by Virginia Tech.



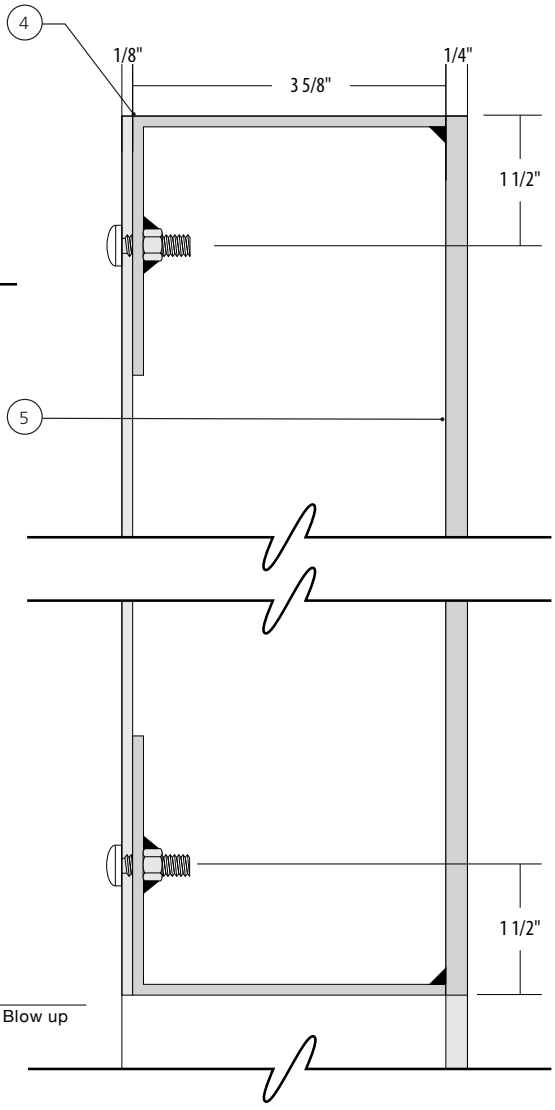
1 Elevation: IN.1
Ground Mount
Scale: 1/2" = 1'-0"



1 Detail: IN.1
Ground Mount
Scale: NTS



2 Detail: IN.1
Plan Section Blow up
Scale: NTS



3 Detail: IN.1
Side Section Blow up
Scale: NTS

FABRICATION DETAILS

Posts:
4" x 4" aluminum angle.

Sign Panel:
1/8" thick aluminum sheet, painted.

Sign Base:
Direct bury, into concrete footer 4" below grade.

1. 4"x4"x1/4" Aluminum angle vertical

2.1/4-20 Aluminum nut welded to inside of angle

3. 1/8" Aluminum face panel mechanically fastened to angle standoff w/1/4-20 tamper resistant machine screws

4. 3"x4"x1/8" Cut down to 3"x3 5/8" welded to inside of vertical angle

5. 1/4" Aluminum backer welded between vertical angles

University Kiosks, Pavilions, Bus Shelters, Banners

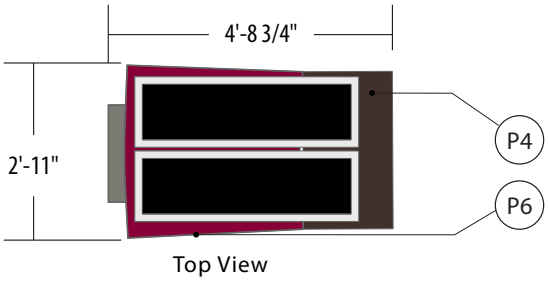
SIGN TYPE - CK.1

DESCRIPTION

Pedestrian Kiosk located at key intersections along the Interior Campus Pedestrian Path. Kiosk is Internally Illuminated and powered by Solar Energy.

Kiosk is Double Sided and would display an Orientation map, Campus Information or Interpretive Panels.

Graphics provided by University Relations.



Top View

1 Elevation: CK.1

Side A

Side B

Side View

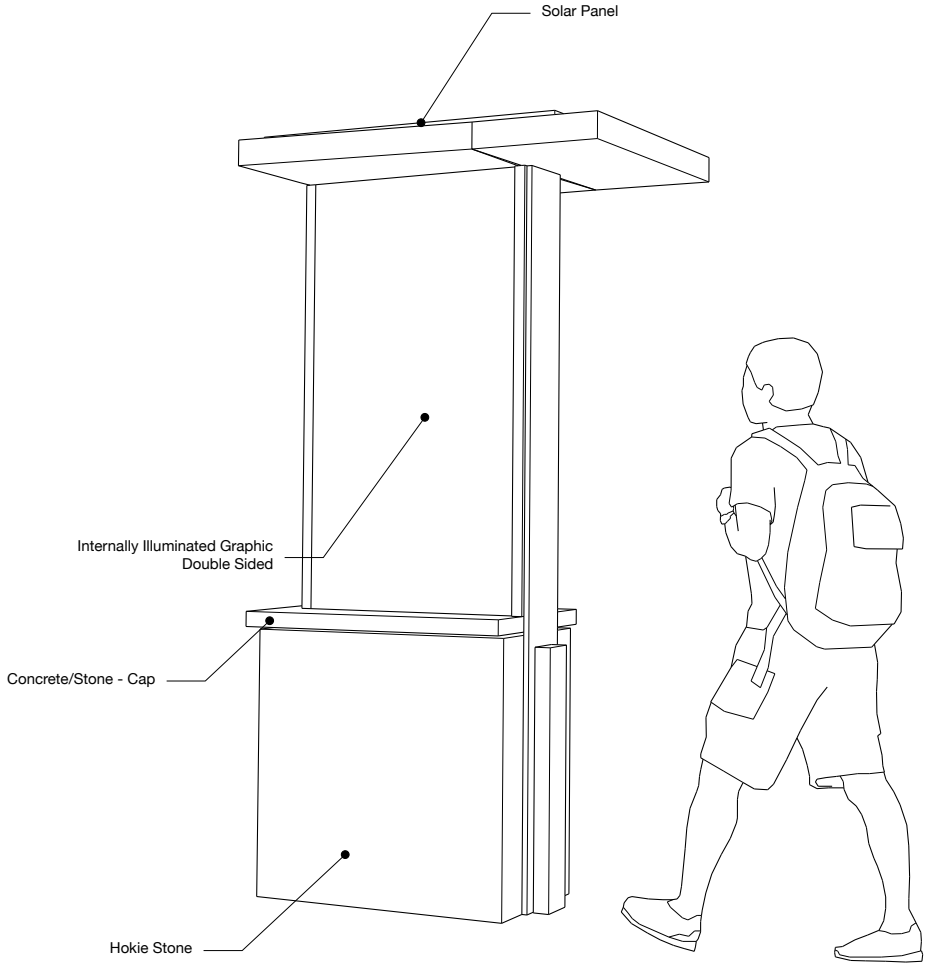
FABRICATION DETAILS

Base
Hokie Stone (M1) with grout (M5), and pre-cast concrete sill (M4) with grout (M5).

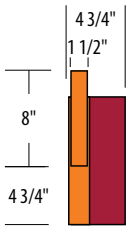
Top Stone
Sandstone, or pre-cast concrete (M2), with grout (M7).

Lighting
Internally Illuminated - LED

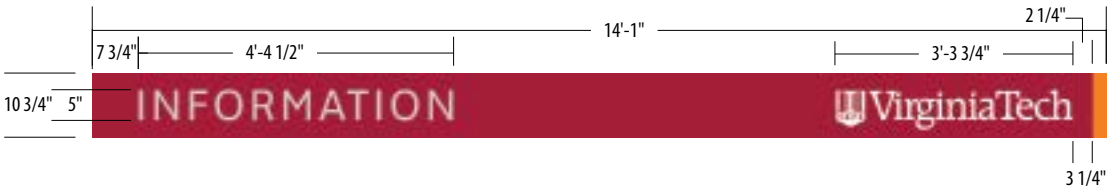
Solar Panels integrated into shade structure and hardware internal to structure.



SIGN TYPE - PAVILION.1



Side View

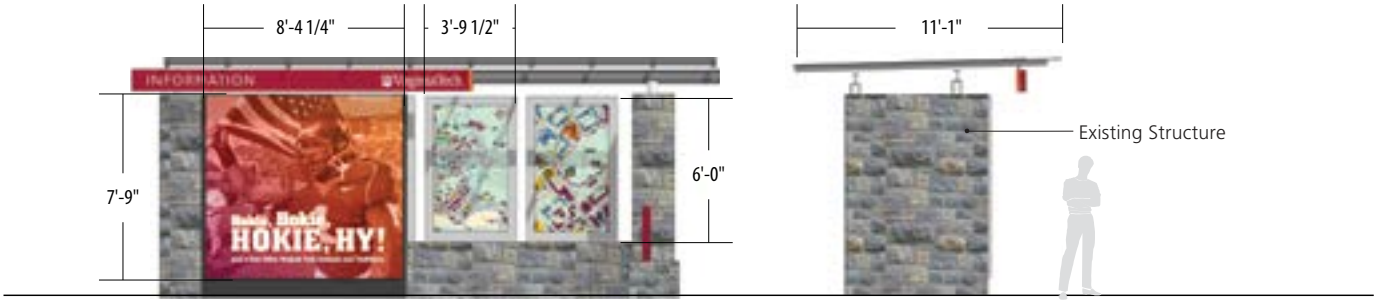


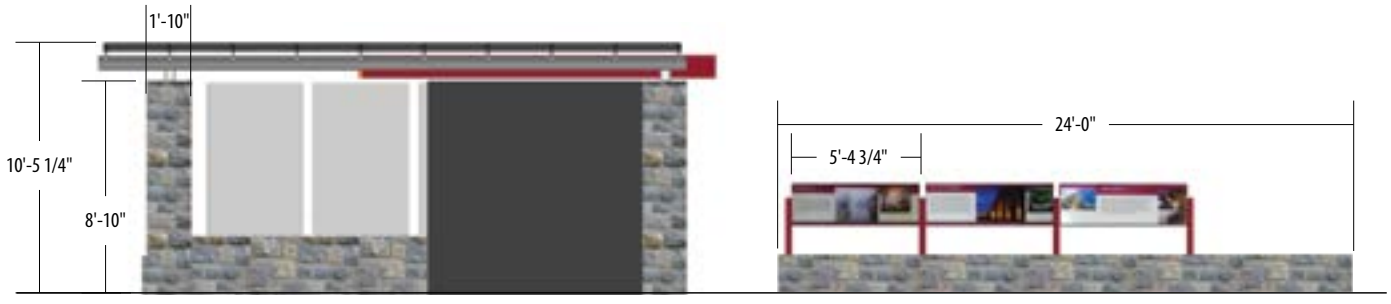
2 Graphic Layout: PAVILLION.1
Scale: 3/8" = 1'-0"

DESCRIPTION

Pavilion is located at the Major Entry Points onto Campus, acting as Remote Vistor Centers.

Interactive Display will show current events form a pedestrian level, while a Large format Video Wall will inform Vehicualr traffic. Orientation maps, Campus Information and Interpretive Panels are also on display. The existing Pavilions are to be retrofit - keeping the Hokie Stone Structures intact.





1 Elevation: PAVILION.1
Scale: 1/8" = 1'-0"

FABRICATION DETAILS

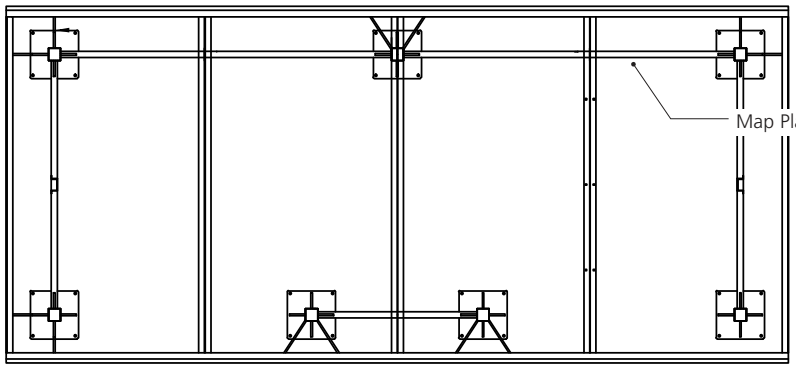
See page xx for details.

EXISTING CONDITIONS

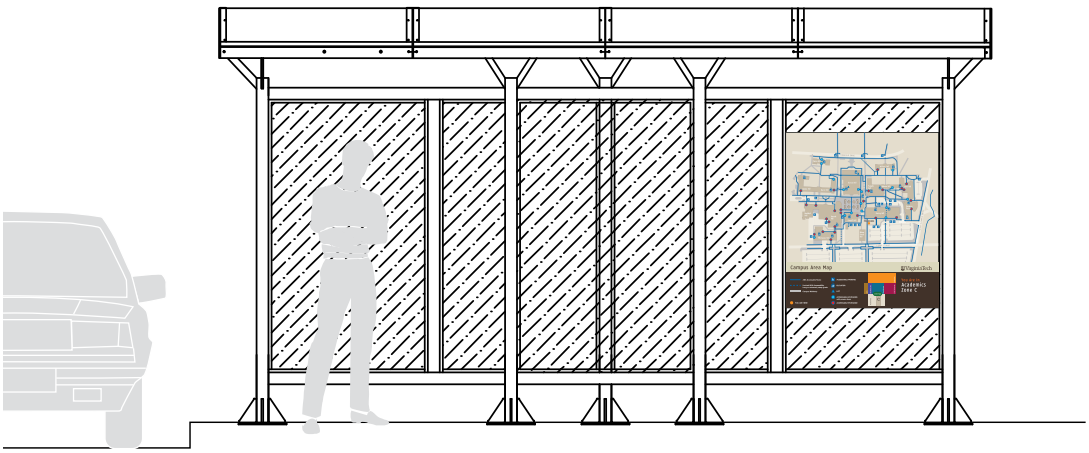
SIGN TYPE - BS.1

DESCRIPTION

Orientation Map located within Bus Shelters - Internal to Campus. Graphic is Digital Print applied directly to the glass structure.



Top View



1 Elevation: BS.1
Front View
Scale: 1/4" = 1'-0"

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SIGN TYPE - BN.1

DESCRIPTION

Banners are intended to bring a Brand Presence to the Campus Entry Corridors and Key Interior Campus Routes.

Banners are sized according to the existing light standards they are being mounted on.

1 Elevation: BN.1
Scale: 1/4" = 1'-0"

CONSORT DISPLAY GROUP | DISPLAY ONE® | ABSTRACTA® | KALAMAZOO BANNER WORKS™ | DORI POLE® | PODIA® | **D3 FEATURES & BENEFITS**

KBW BannerFlex® D3 Bracket

The KBW BannerFlex D3 is the most recent manifestation of the first-ever fiberglass arm banner bracket system. After 25 years of extensive research and engineering, the KBW BannerFlex D3 is the most trusted, most recommended banner hardware in the industry. For quality and reliability look no further than the original, Kalamazoo Banner Works.

KBW/Consort's goal is to always be ahead of the curve. Placing a banner on a light pole is like adding a sail to an immovable object. Who will you trust to protect pedestrians, automobiles and light poles - the innovator or the novice? Reduce your liability and protect your investment with the BannerFlex line of banner hardware. Available with both the standard 13/16" round fiberglass arm or the new premium Airow® fiberglass arm. The BannerFlex D3 is protected by US patent.

Wind Tunnel Tested

KBW by Consort utilizes full-scale wind tunnel and material testing facilities along with computer-aided design programs to develop and affirm our product components, capabilities, features and warranties. For specific engineering data, including our BannerFlex Wind Force Calculator, visit us at www.kalamazoobanner.com or contact your KBW/Consort Sales Representative at (800) 525-6424.

FEATURES AND BENEFITS

KBW BannerFlex D3 Main Casting

FEATURES	BENEFITS
356T6 Heat-Treated Cast Aluminum	• Superior strength and durability • Corrosion resistant • Accepts powder coating
Bolt Holes	• Casting may be easily bolted to poles in lieu of banding application
Banding Channels	• Easily allows positioning of up to 3/4" wide banding to fasten casting to pole
Arm Slide Flanges	• Banner can be installed or removed without moving or removing main casting • Allows banner-length adjustment of 1" at both top and bottom of banner • Arms may be removed when no banners are installed • Flower Pot Holder or Flag Pole Adapters may be installed when banners are not in use
Dacromet®-Coated Set Screws and Zinc-Plated Hitch Pins	• Corrosion resistant • Allows for easy installation and adjustment • Hitch pin provides added security
Warranty	• 10 Years when properly installed and maintained (see warranty information)

CONSORT DISPLAY GROUP | DISPLAY ONE® | ABSTRACTA® | KALAMAZOO BANNER WORKS™ | DORI POLE® | PODIA® | **D3 FEATURES & BENEFITS**

KBW BannerFlex D3 Arm Casting

FEATURES	BENEFITS
356T6 Heat-Treated Cast Aluminum	• Superior strength and durability • Corrosion resistant • Accepts powder coating
4-Degree Cantilevered Casting *• Top arm is canted up* *• Bottom arm is canted down*	• Wind energy is transferred from banner to fiberglass arm • Keeps baner trim and in tension • Promotes banner longevity
Eyelet Included in Casting	• Allows for cable ties to be utilized through both the banner grommet and casting to secure banner • Added security from loss or theft

KBW BannerFlex Standard 13/16" Round Fiberglass Arm

FEATURES	BENEFITS
Pultruded Fiberglass Arm	• Provides flexibility while maintaining strength • Absorbs wind energy to reduce stress on banner and light pole • Inherent flexibility of the arm allows for return of banner to original taut position once wind subsides • Increases banner longevity

KBW BannerFlex Premium 3/4" Airow Fiberglass Arm

FEATURES	BENEFITS
Eccentrically Milled, Pultruded Fiberglass Arm with UV Coating *-Airow arm available for 24" to 30" banner widths only*	• Specially designed taper of fiberglass rod increases flexibility over standard rods by up to 50% • Dissipates more wind energy to reduce stress on banner and light pole • Inherent flexibility of the arm allows for return of arm and banner to original taut position once wind subsides • Increases banner longevity • Increases flexibility while maintaining strength • Perfect for high wind areas and when extra wind load reduction is required • Patent applied for

FABRICATION DETAILS

Banner Material
18 0z. opaque white blockout vinyl with printed graphics both sides; 720 DPI maximum with UV resistant inks.

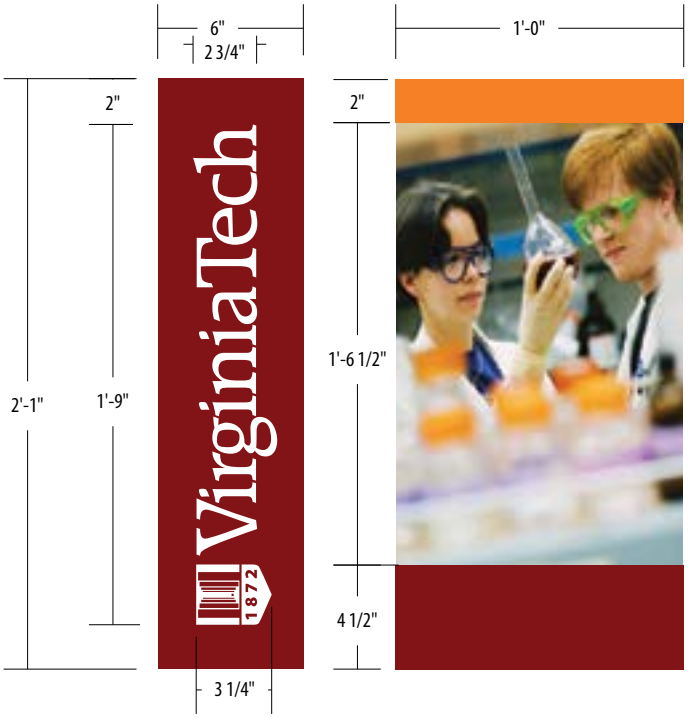
Construction
2 inch pole pockets on top and bottom, secured with double-lock stitching and back-stitching in areas of stress. Brass-spurred grommets applied to 2 inside corners locking the hem and providing security at stress points.

Hardware
Banner Saver Pro 2000 (spring loaded wind release brackets), or the like.

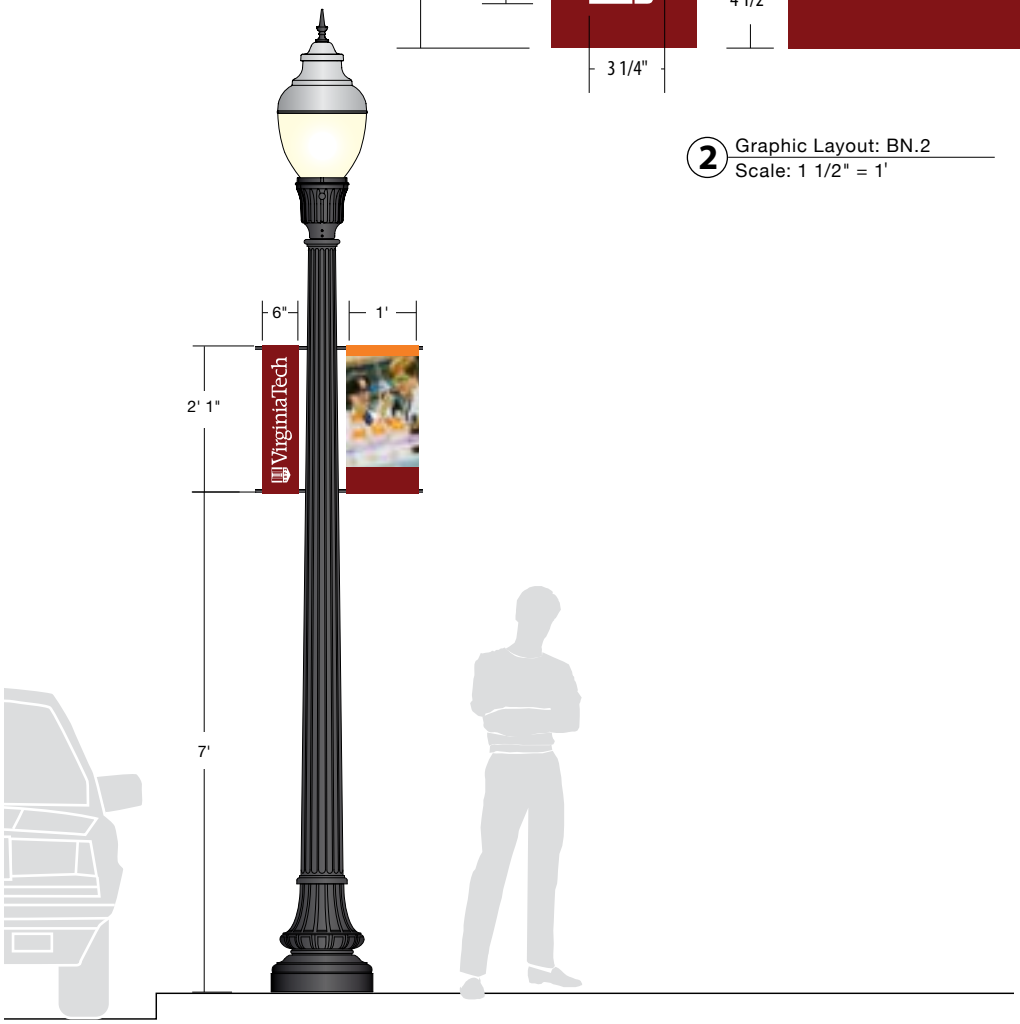
Attachment
Band-It SS strapping.

See page xx for details.

SIGN TYPE - BN.2



2 Graphic Layout: BN.2
Scale: 1 1/2" = 1'



1 Elevation: BN.2
Scale: 3/8" = 1'-0"

DESCRIPTION

Banners are intended to bring a Brand Presence to the Campus Entry Corridors and Key Interior Campus Routes.

Banners are sized according to the existing light standards they are being mounted on.

KBW BannerFlex® D3 Bracket

The KBW BannerFlex D3 is the most recent manifestation of the first-ever fiberglass arm banner bracket system. After 25 years of extensive research and engineering, the KBW BannerFlex D3 is the most trusted, most recommended banner hardware in the industry. For quality and reliability look no further than the original, Kalamazoo Banner Works.

KBW/Consort's goal is to always be ahead of the curve. Placing a banner on a light pole is like adding a sail to an immovable object. Who will you trust to protect pedestrians, automobiles and light poles - the innovator or the novice? Reduce your liability and protect your investment with the BannerFlex line of banner hardware. Available with both the standard 13/16" round fiberglass arm or the new premium Airow® fiberglass arm. The BannerFlex D3 is protected by US patent.

Wind Tunnel Tested

KBW by Consort utilizes full-scale wind tunnel and material testing facilities along with computer-aided design programs to develop and affirm our product components, capabilities, features and warranties. For specific engineering data, including our BannerFlex Wind Force Calculator, visit us at www.kalamazoobanner.com or contact your KBW/Consort Sales Representative at (800) 525-6424.

FEATURES AND BENEFITS

KBW BannerFlex D3 Main Casting

FEATURES	BENEFITS
356T6 Heat-Treated Cast Aluminum	• Superior strength and durability • Corrosion resistant • Accepts powder coating
Bolt Holes	• Casting may be easily bolted to poles in lieu of banding application
Banding Channels	• Easily allows positioning of up to 3/4" wide banding to fasten casting to pole
Arm Slide Flanges	• Banner can be installed or removed without moving or removing main casting • Allows banner-length adjustment of 1" at both top and bottom of banner • Arms may be removed when no banners are installed • Flower Pot Holder or Flag Pole Adapters may be installed when banners are not in use
Dacromet®-Coated Set Screws and Zinc-Plated Hitch Pins	• Corrosion resistant • Allows for easy installation and adjustment • Hitch pin provides added security
Warranty	• 10 Years when properly installed and maintained (see warranty information)

CONSORT DISPLAY GROUP | DISPLAY ONE® | ABSTRACTA® | KALAMAZOO BANNER WORKS™ | DORI POLE® | PODIA® | **D3 FEATURES & BENEFITS**

KBW BannerFlex D3 Arm Casting

FEATURES	BENEFITS
356T6 Heat-Treated Cast Aluminum	• Superior strength and durability • Corrosion resistant • Accepts powder coating
4-Degree Cantilevered Casting *• Top arm is canted up* *• Bottom arm is canted down*	• Wind energy is transferred from banner to fiberglass arm • Keeps baner trim and in tension • Promotes banner longevity
Eyelet Included in Casting	• Allows for cable ties to be utilized through both the banner grommet and casting to secure banner • Added security from loss or theft

KBW BannerFlex Standard 13/16" Round Fiberglass Arm

FEATURES	BENEFITS
Pultruded Fiberglass Arm	• Provides flexibility while maintaining strength • Absorbs wind energy to reduce stress on banner and light pole • Inherent flexibility of the arm allows for return of banner to original taut position once wind subsides • Increases banner longevity

KBW BannerFlex Premium 3/4" Airow Fiberglass Arm

FEATURES	BENEFITS
Eccentrically Milled, Pultruded Fiberglass Arm with UV Coating *-Airow arm available for 24" to 30" banner widths only*	• Specially designed taper of fiberglass rod increases flexibility over standard rods by up to 50% • Dissipates more wind energy to reduce stress on banner and light pole • Inherent flexibility of the arm allows for return of arm and banner to original taut position once wind subsides • Increases banner longevity • Increases flexibility while maintaining strength • Perfect for high wind areas and when extra wind load reduction is required • Patent applied for

FABRICATION DETAILS

Banner Material
17 0z. opaque white blockout vinyl with printed graphics both sides; 720 DPI maximum with UV resistant inks.

Construction
2 inch pole pockets on top and bottom, secured with double-lock stitching and back-stitching in areas of stress.

Hardware
Street lamp light poles should have existing metal rods. If not, attach an economical standard banner pole bracket system with fiberglass rods.

Attachment
Band-It SS strapping.

See page xx for details.

Street & Regulatory Signs

SIGN TYPE - ST.2

DESCRIPTION

Street Name Signs designed in Virginia Tech Colors with Identifying Shield help define the campus boundaries.

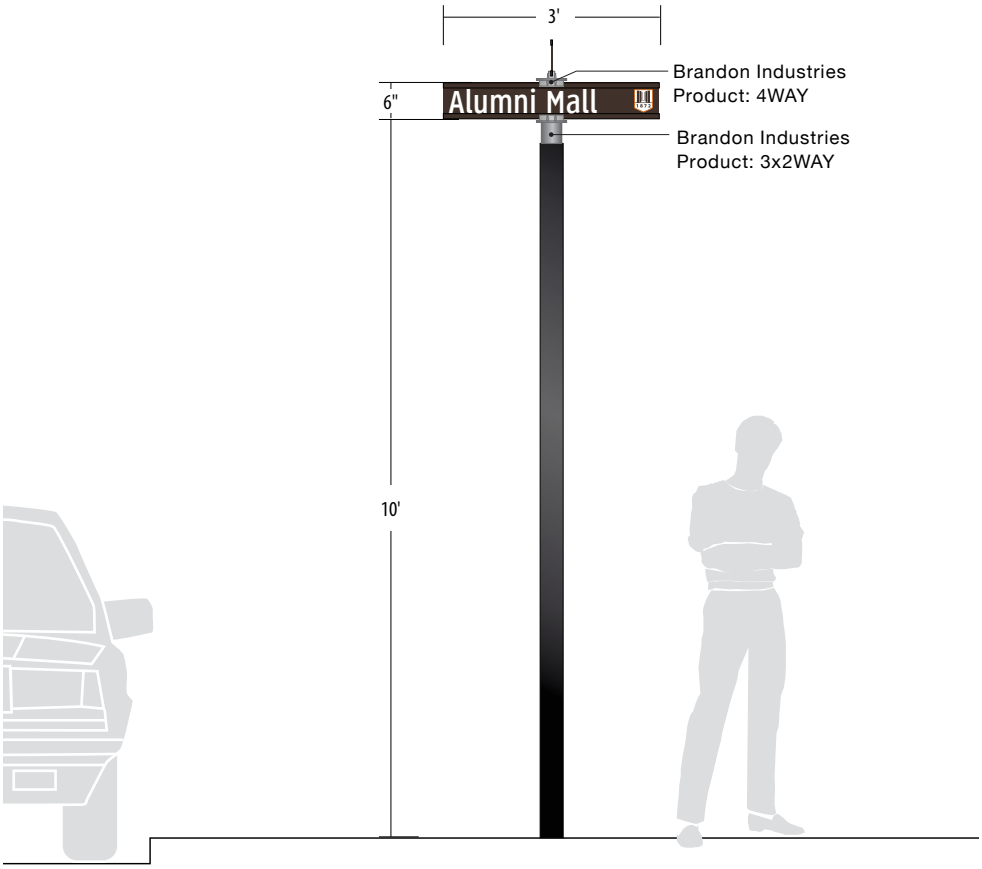
Clearview Font is utilized for Maximum Legibility with Font Height is Determined by MUTCD and VDOT requirements.

FABRICATION DETAILS

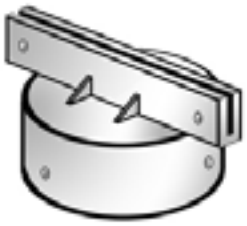
GROUND MOUNT
Posts:
4" x 4" aluminum angle (P5).

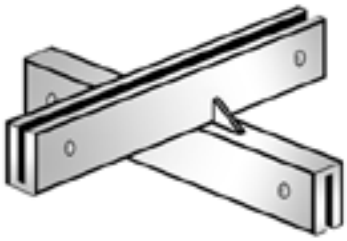
Sign Base:
Direct bury, into concrete footer 4" below grade.

POLE MOUNT
Bracket:
Aluminum U-channel (P4), 3/16" thick. Two (2) 1/8" x 1" slots to receive Band-It SS strapping.



1 Elevation: ST.2
Front View
Scale: 3/8" = 1'-0"





FABRICATION DETAILS

Material
.080" aluminum sheet with 1/4" flange top and bottom.

SIGN PANEL
High Intensity Reflective Vinyl Background and Character.

Shall Conform to MUTCD Guidelines.
Hardware Temper Resistant Security Hardware
Standard post brackets top and bottom, to support post.

Post
Standard 2 3/8" OD galvanized round pipe post.

SIGN TYPE - ST.3

DESCRIPTION

Street Name Signs designed in Virginia Tech Colors with Identifying Shield help define the campus boundaries.

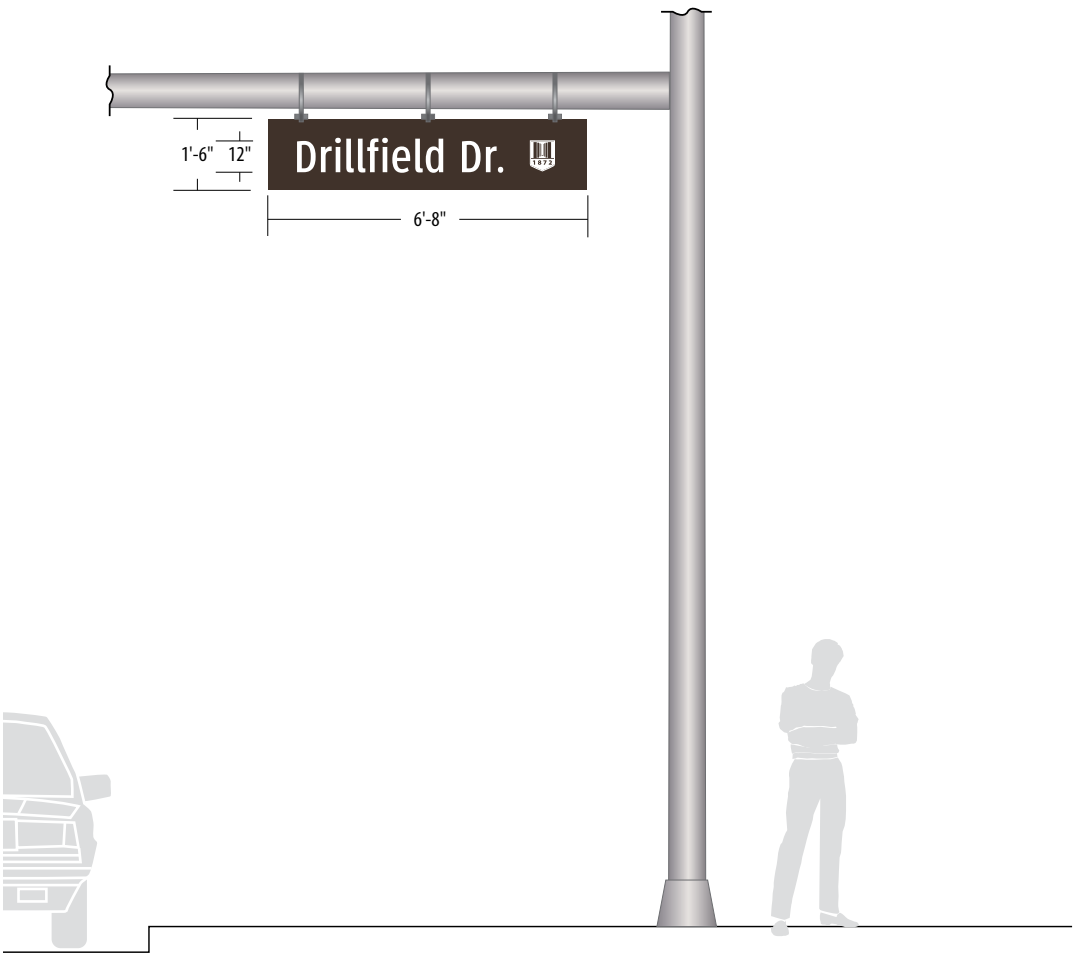
Clearview Font is utilized for Maximum Legibility with Font Height is Determined by MUTCD and VDOT requirements.

FABRICATION DETAILS

GROUND MOUNT
Posts:
4" x 4" aluminum angle (P5).

Sign Base:
Direct bury, into concrete footer 4" below grade.

POLE MOUNT
Bracket:
Aluminum U-channel (P4), 3/16" thick. Two (2) 1/8" x 1" slots to receive Band-It SS strapping.



1 Elevation: ST.3
Existing Pole Mount
Scale: 1/4" = 1'-0"

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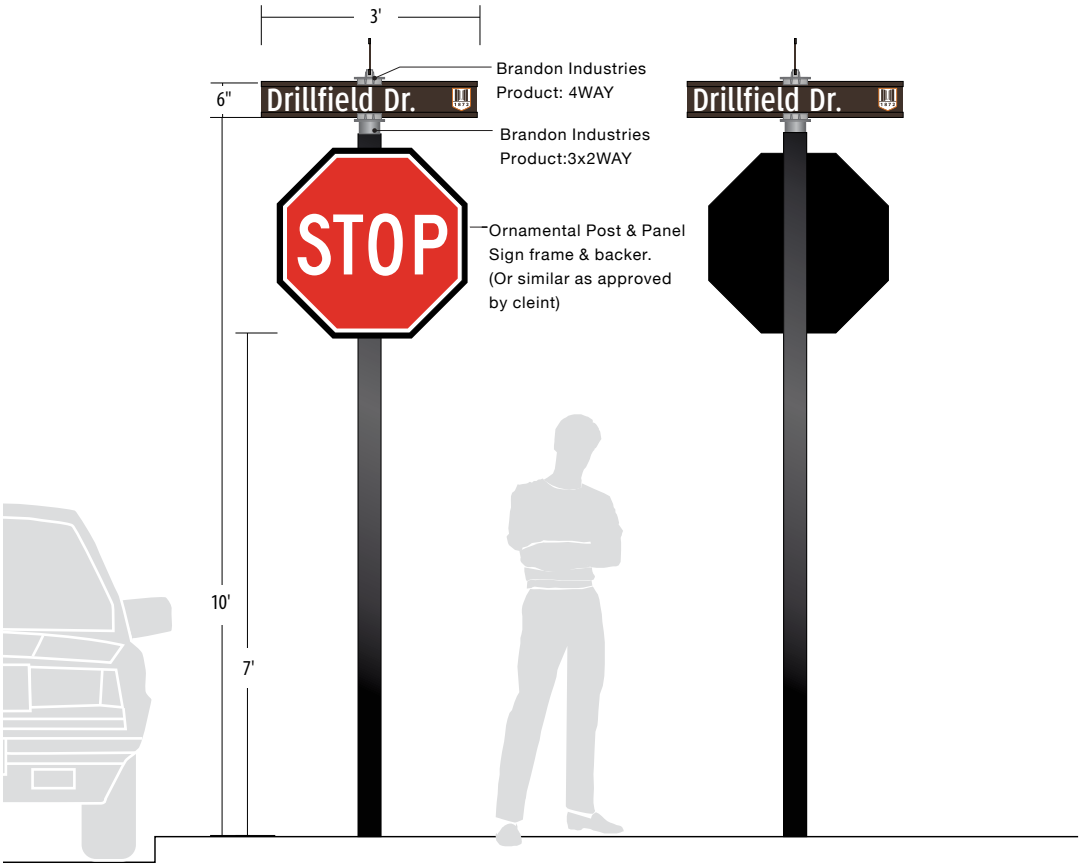
SIGN TYPE - RG.1

DESCRIPTION

Street Name Signs designed in Virginia Tech Colors with Identifying Shield help define the campus boundaries.

Clearview Font is utilized for Maximum Legibility with Font Height is Determined by MUTCD and VDOT requirements.

Regulatory Sign Standards should be upgraded to match the design aesthetics of the campus. Sign Structure to receive sign backer.



1 Elevation: RG.1
Front View
Scale: 3/8" = 1'-0"

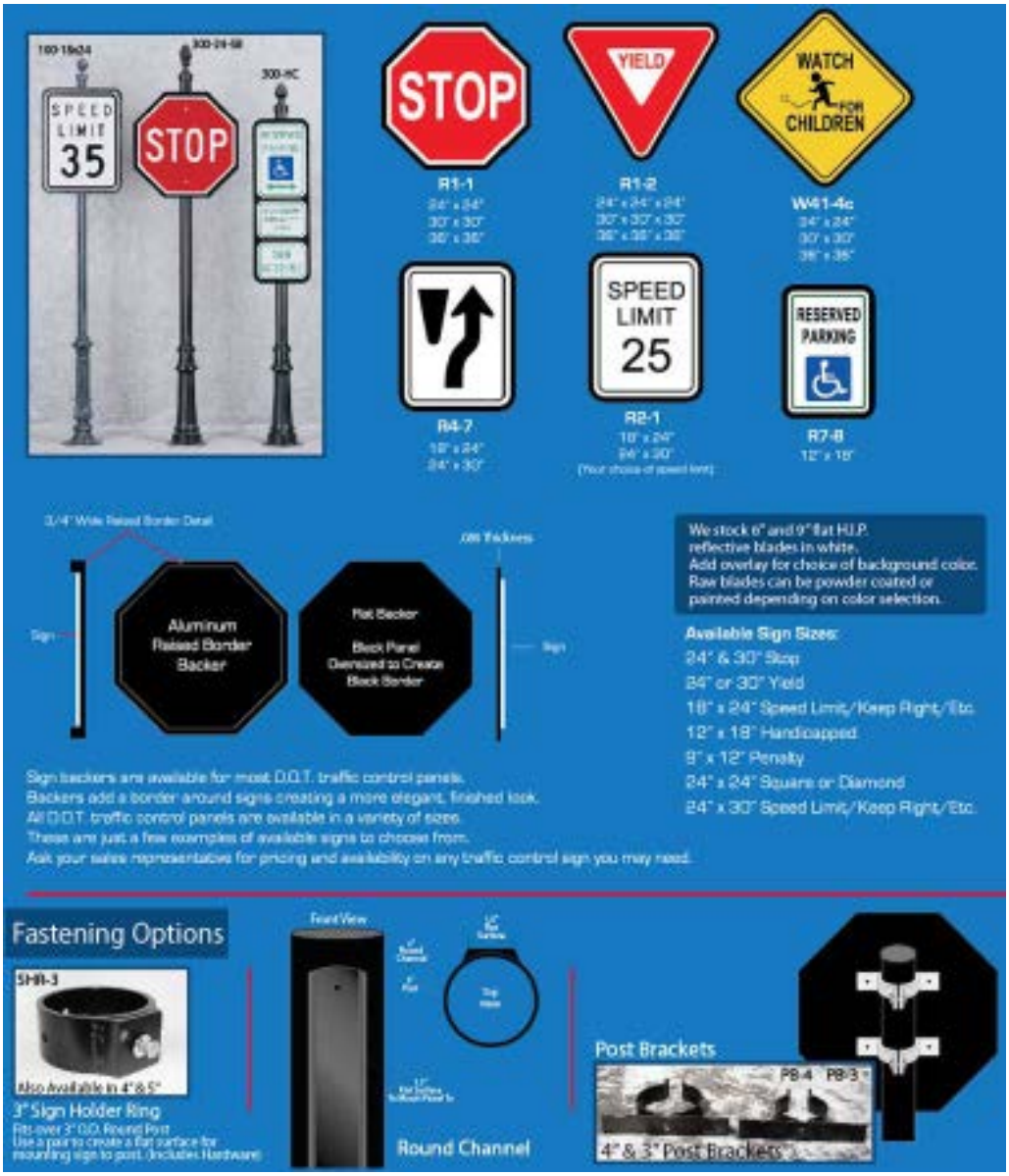
Back View

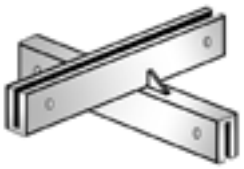
FABRICATION DETAILS

GROUND MOUNT
Posts:
2" Square

Sign Base:
Direct bury, into concrete footer 4" below grade.

POLE MOUNT
Bracket:
Aluminum U-channel (P4), 3/16" thick. Two (2) 1/8" x 1" slots to receive Band-It SS strapping.





FABRICATION DETAILS

Material
.080" aluminum sheet.

Color and graphics
High intensity reflective sheeting.

All Yeild type signs 'yellow-green'

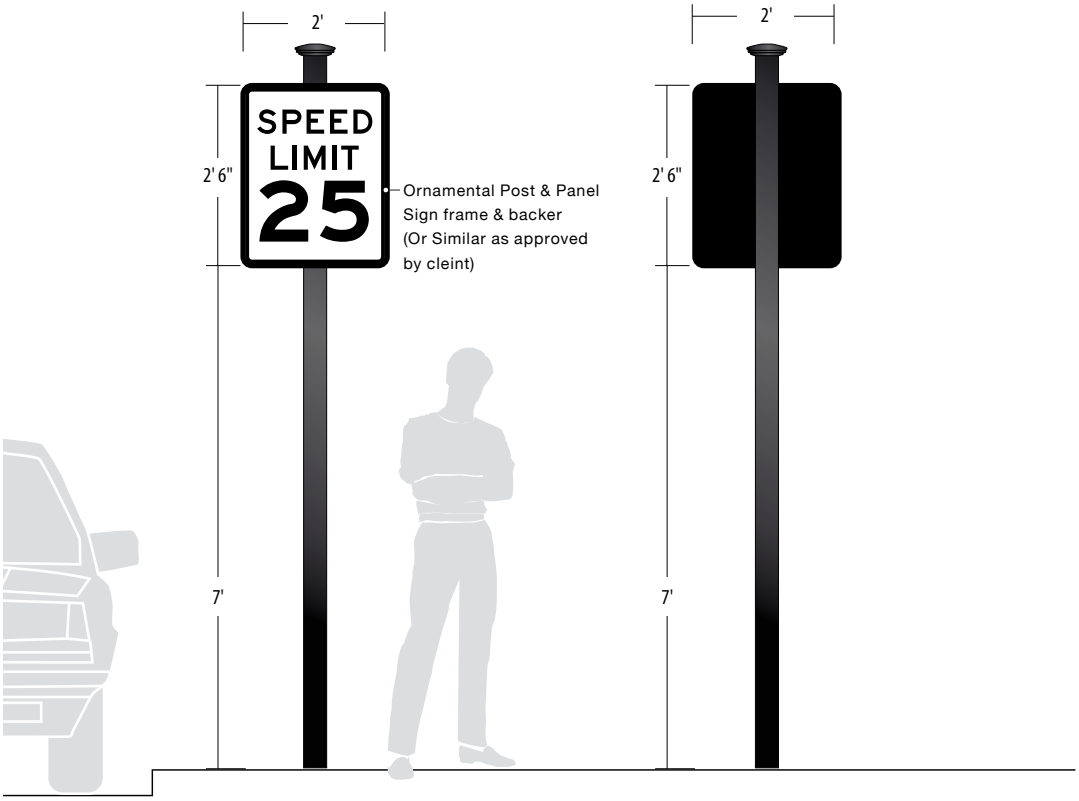
Attachment
Tamper resistant hardware.

Post
Same as RG2 2" Square

SIGN TYPE - RG.2

DESCRIPTION

Regulatory Sign Standards should be upgraded to match the design aesthetics of the campus. Sign Structure to be Painted HOKIE Brown.



1 Elevation: RG.2
Front View
Scale: 3/8" = 1'-0"

Back View

FABRICATION DETAILS

Material
.080" aluminum sheet.

Color and graphics
High intensity reflective sheeting.

Attachment
Tamper resistant hardware.

Post
Standard 2 3/8" OD galvanized round pipe post, with finial cap.

See page xx for details.

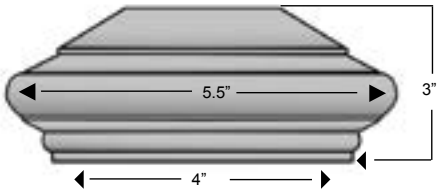
Brandon Industries, Inc.®
Quality Streetscape Solutions

1601 Wilmeth Road
McKinney, Texas 75069
www.brandonindustries.com

Phone: 800.247.1274
Fax: 972.542.1015

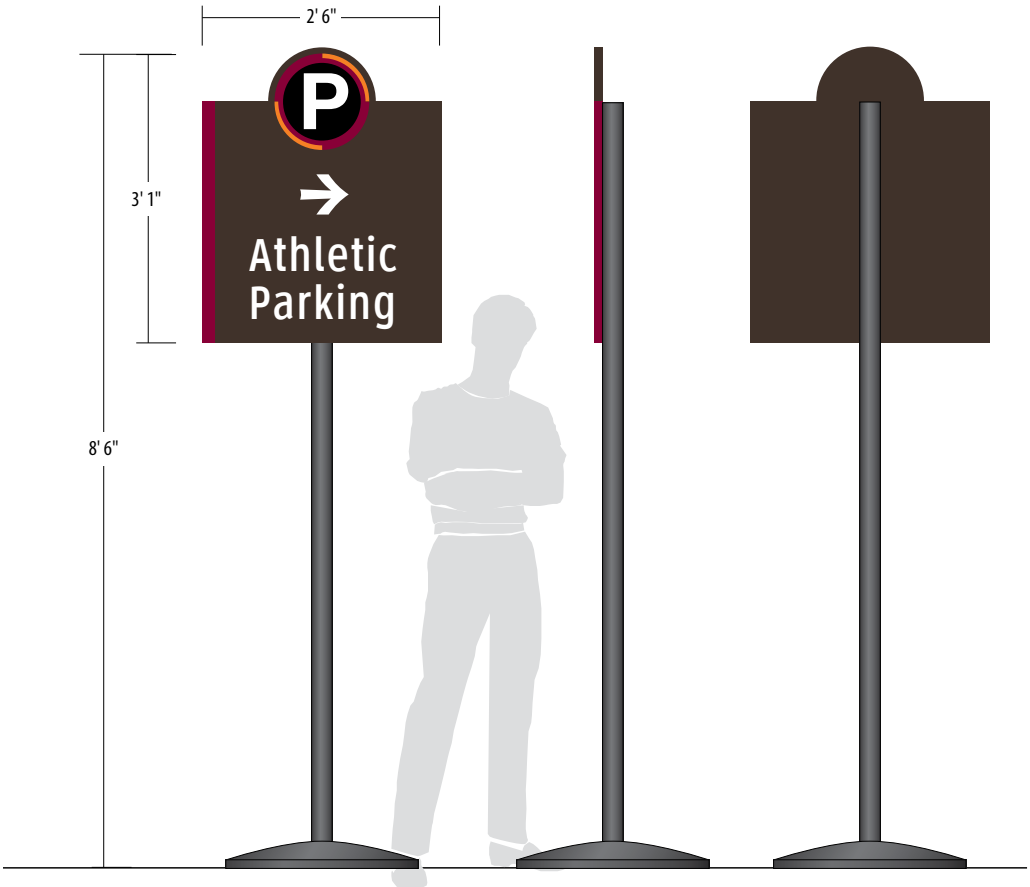
Product Specification

FINQ-C4
Finial for 4" square pole
Cast Aluminum Alloy #356



SIGN TYPE - EV.1

DESCRIPTION
Temporary Signage directing to Event Parking lots.



1 Elevation: EV.1
Directional
Scale: 1/2" = 1'-0"

Side View

Portable Sign Stands - Height Adjustable

Use Portable Sign Stands to mount signs on sidewalks or paved areas without digging or damage

- Portable Sign Stands are ideal for use in high wind areas or areas where sign posts cannot be placed in the ground
- Steel sign stands are 22" in diameter and have a 37 lb. base
- Stands are adjustable and work with a telescopic post that adjusts from 4-1/2'H up to 8'H
- Posts hold any traffic or parking sign that has top and bottom centered mounting holes
- Posts come in choice of yellow or black, with or without wheels for the base

FABRICATION DETAILS

Posts
Telescoping post, adjusts from 4.5' to 8' high, painted (P7).

Sign Panel
1/8" thick aluminum sheet, painted (P1).

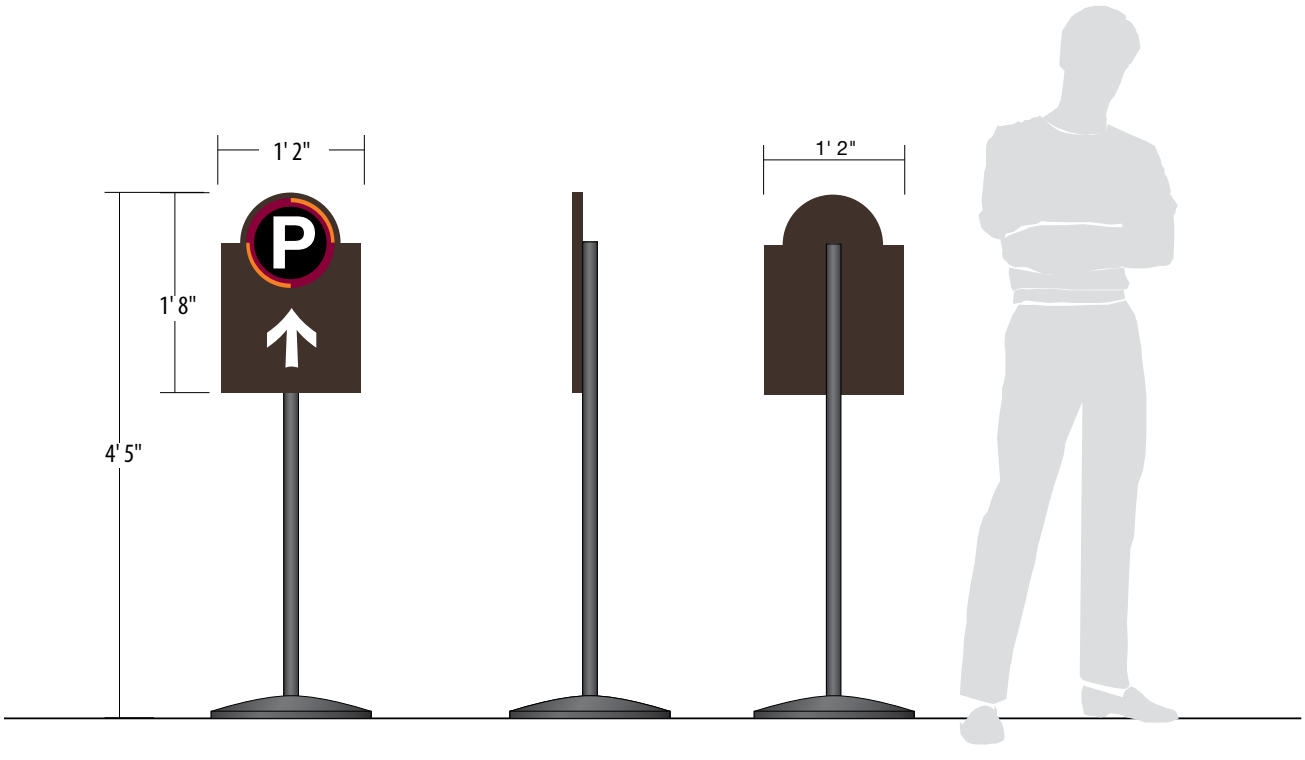
Messages and Graphics
Reflective sheeting (All R colors), single-sided.

Sign Base
Large portable sign stands typically have a 17" to 24" diameter steel base, with and without wheels.

See page xx for details.

SIGN TYPE - EV.2

DESCRIPTION
Temporary Signage directing to Event Parking lots.



1 Elevation: EV.2
Directional
Scale: 1/2" = 1'-0"

Side View

Back View

Portable Sign Stands - Height Adjustable

Use Portable Sign Stands to mount signs on sidewalks or paved areas without digging or damage

- Portable Sign Stands are ideal for use in high wind areas or areas where sign posts cannot be placed in the ground
- Steel sign stands are 22" in diameter and have a 37 lb. base
- Stands are adjustable and work with a telescopic post that adjusts from 4-1/2'H up to 8'H
- Posts hold any traffic or parking sign that has top and bottom centered mounting holes
- Posts come in choice of yellow or black, with or without wheels for the base

FABRICATION DETAILS

Posts
Standard 4' high post, painted.

Sign Panel
1/8" thick aluminum sheet, painted.

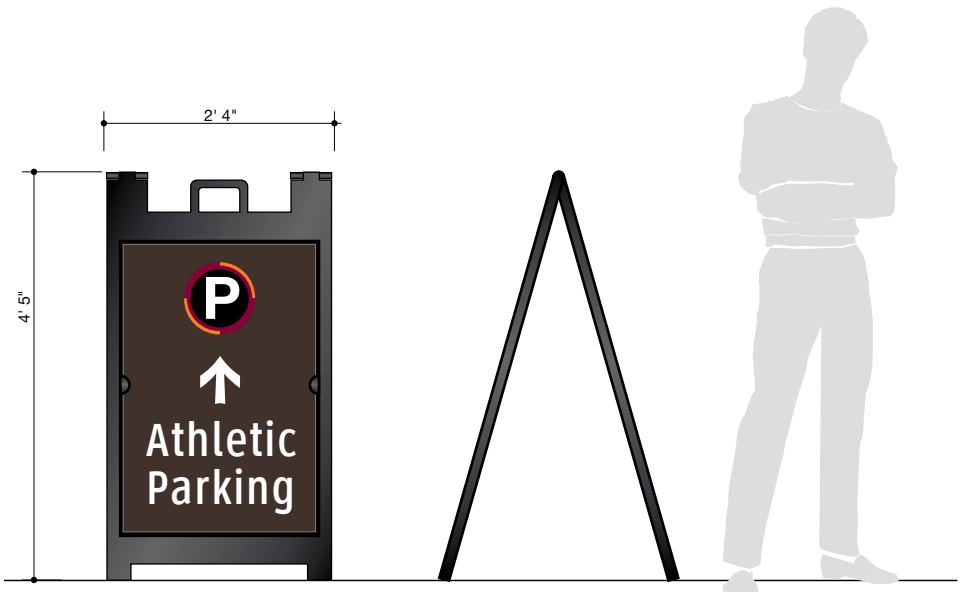
Messages and Graphics
Reflective sheeting (All R colors), single-sided.

Sign Base
Small portable sign stands typically have a 14" to 17" diameter steel base, with and without wheels.

See page xx for details.

SIGN TYPE - EV.3

DESCRIPTION
Temporary Signage directing to Event Parking lots.



Side View

1 Elevation: EV.3
Directional
Scale: 1/2" = 1'-0"

FABRICATION DETAILS

A-Frame
Durable plastic construction, black, hinged, with "Slide-In" method of changeable sign boards.

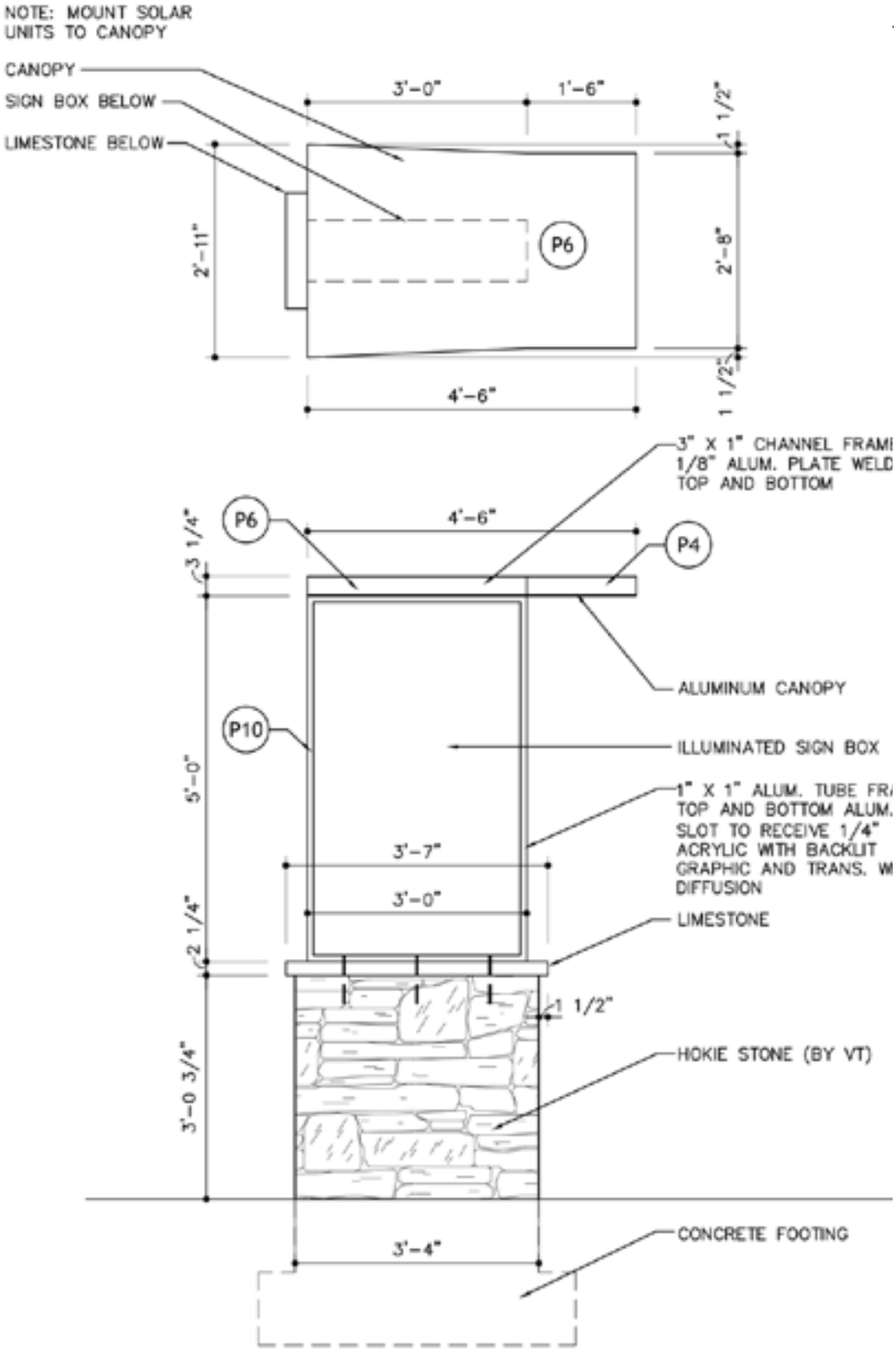
Sign Board – Option A
1/8" thick aluminum sheet, with reflective sheeting (All R colors), single-sided.

Sign Board – Option B
3/16" thick Coroplast (or Gatorboard), with printed and applied graphics.

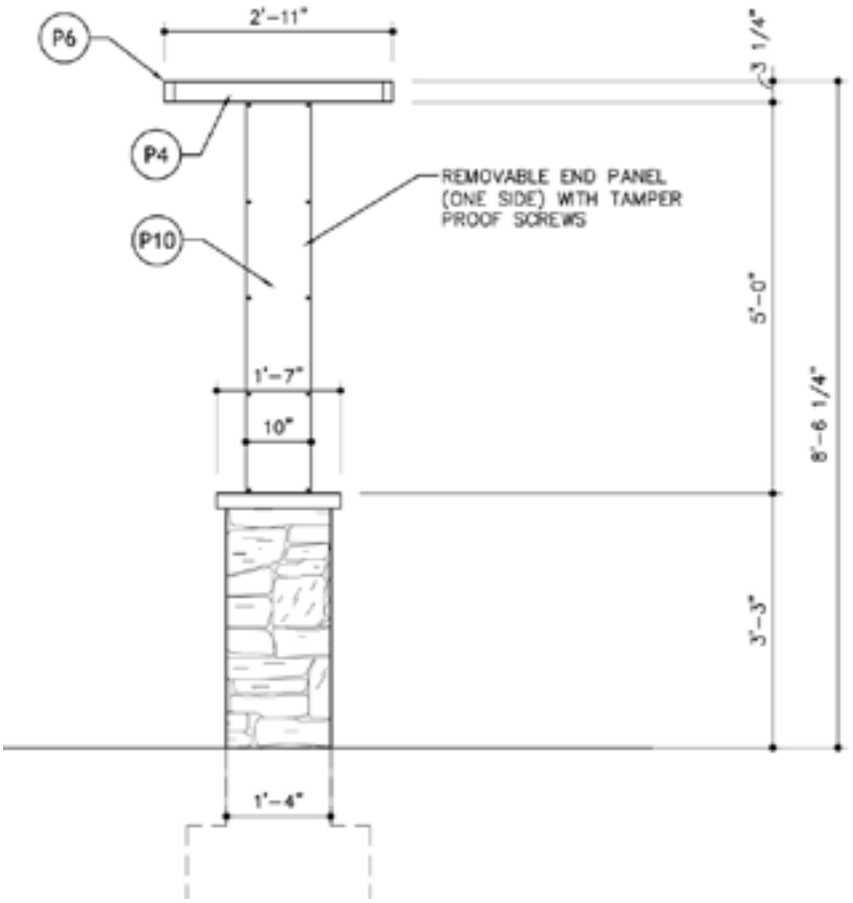
Sign Base
Recommend product type that includes fill holes for internal sand, or lead shot ballasting.

See page xx for details.

Shop Drawings


NOTE: MOUNT SOLAR UNITS TO CANOPY
CANOPY
SIGN BOX BELOW
LIMESTONE BELOW
3'-0"
1'-6"
1 1/2"
2'-11"
P6
2'-8"
1 1/2"
4'-6"
3" X 1" CHANNEL FRAM
1/8" ALUM. PLATE WELD
TOP AND BOTTOM
3 1/4"
P6
4'-6"
P4
ALUMINUM CANOPY
P10
ILLUMINATED SIGN BOX
5'-0"
1" X 1" ALUM. TUBE FR
TOP AND BOTTOM ALUM.
SLOT TO RECEIVE 1/4"
ACRYLIC WITH BACKLIT
GRAPHIC AND TRANS. W
DIFFUSION
3'-7"
3'-0"
2 1/4"
LIMESTONE
1 1/2"
3'-0 3/4"
HOKIE STONE (BY VT)
3'-4"
CONCRETE FOOTING

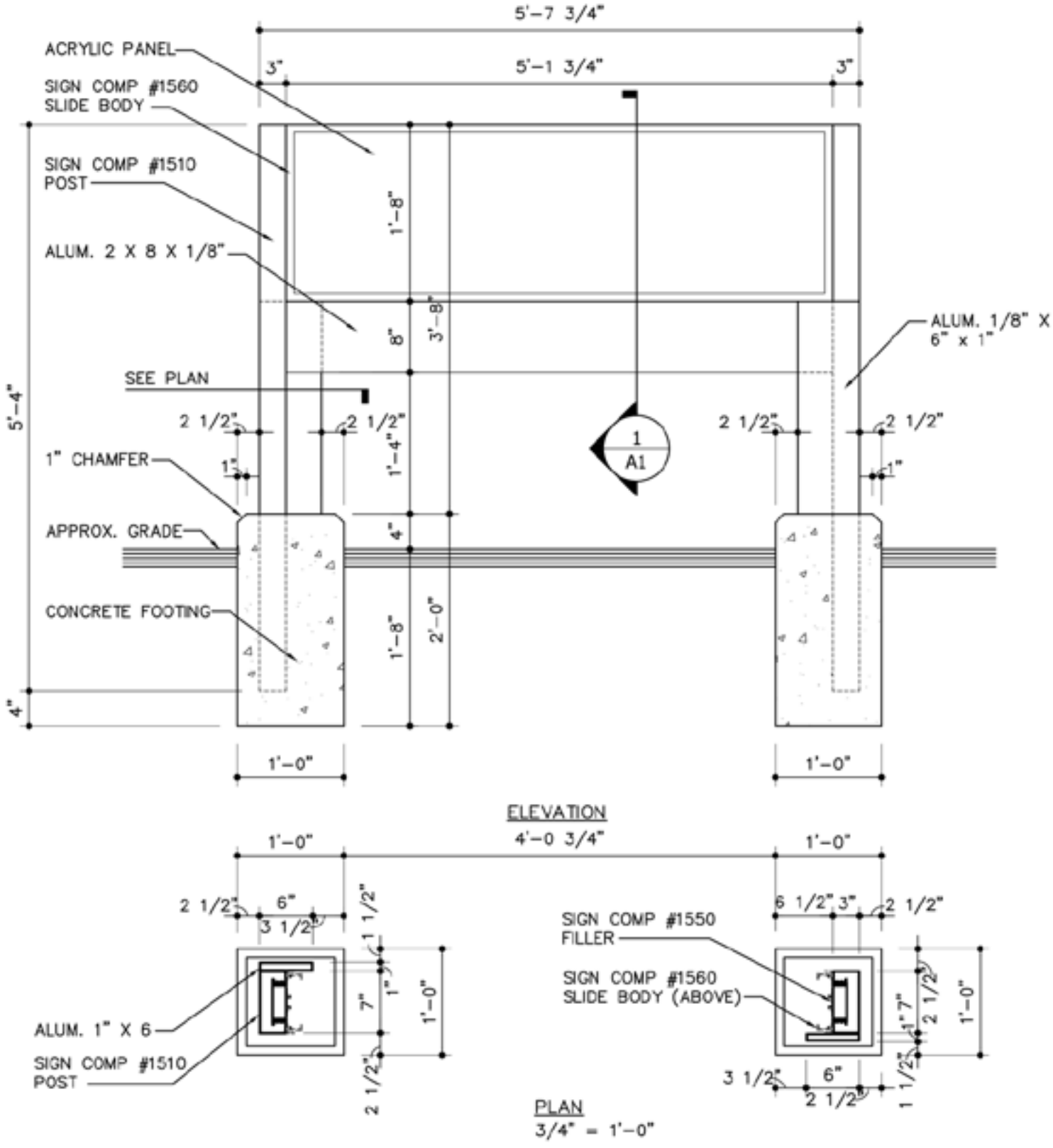
COLOR SCHEDULE	
P4	HOKIE BROWN
P6	VT MAROON
P10	LIGHT SILVER



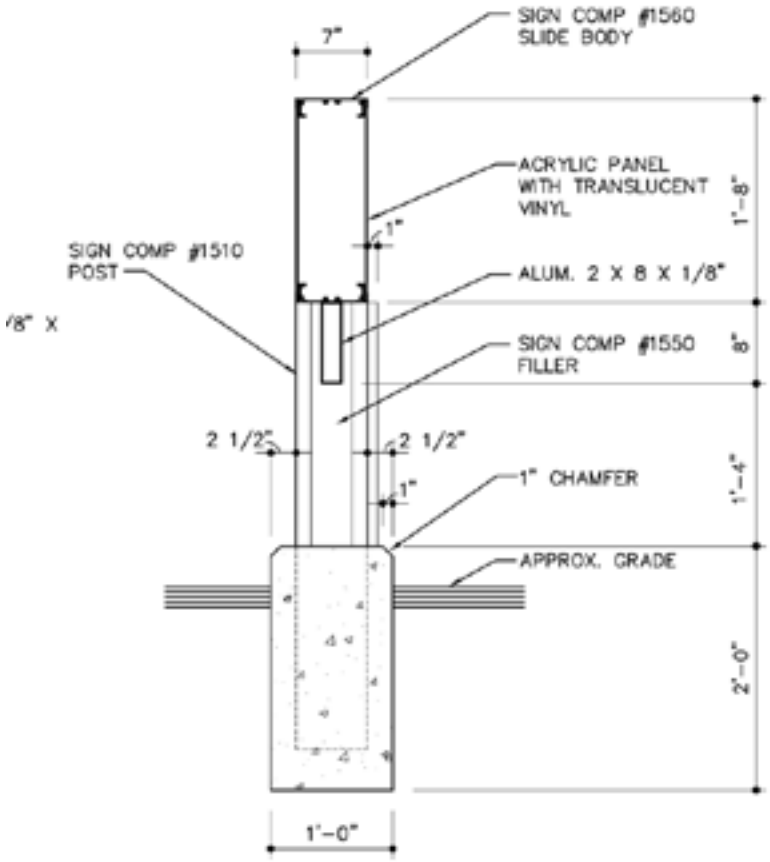
01 OF 01	CK1	DATE	KIOSK - CK.1 ELEVATION AND DETAILS
			VT SIGNAGE
			BLACKSBURG, VA

WestView COMPANIES
LANDSCAPE | DEVELOPMENT
CONSTRUCTION | IDENTITY SYSTEMS

COMMONWEALTH OF VIRGINIA
CERTIFIED ARCHITECT
RANDALL M. INGRAM
CERTIFICATE No.
010571


5'-7 3/4"
5'-1 3/4"
3"
3"
ACRYLIC PANEL
SIGN COMP #1560
SLIDE BODY
SIGN COMP #1510
POST
ALUM. 2 X 8 X 1/8"
ALUM. 1/8" X
6" x 1"
1'-8"
8"
3'-8"
SEE PLAN
5'-4"
2 1/2"
2 1/2"
1'-4"
1
A1
1" CHAMFER
1"
APPROX. GRADE
4"
CONCRETE FOOTING
1'-8"
2'-0"
4"
1'-0"
1'-0"
ELEVATION
4'-0 3/4"
1'-0"
1'-0"
2 1/2"
6"
3 1/2"
1 1/2"
1"
7"
1'-0"
2 1/2"
ALUM. 1" X 6
SIGN COMP #1510
POST
6 1/2"
3"
2 1/2"
SIGN COMP #1550
FILLER
SIGN COMP #1560
SLIDE BODY (ABOVE)
1" 7"
2 1/2"
1'-0"
3 1/2"
6"
2 1/2"
1 1/2"
PLAN
3/4" = 1'-0"

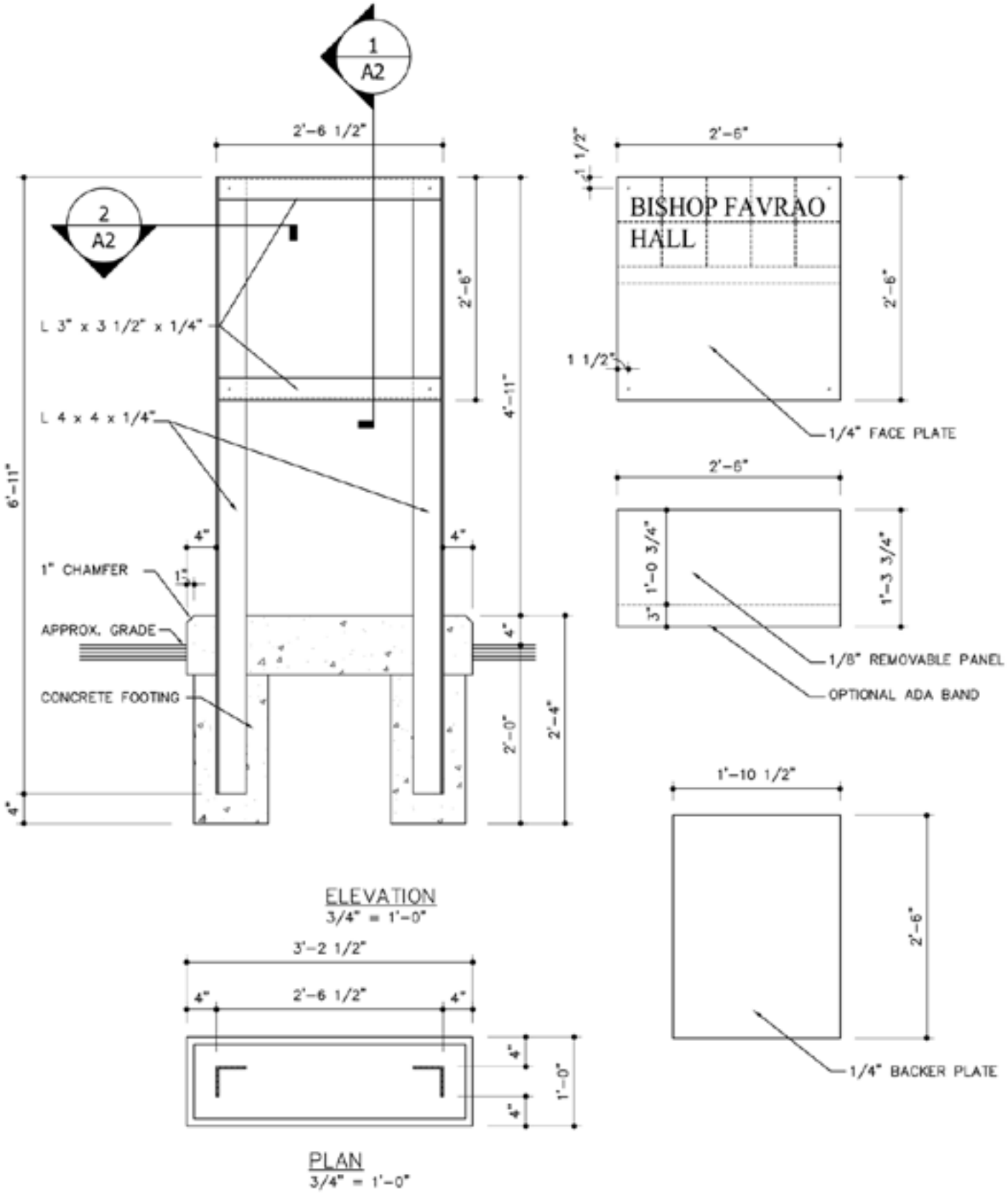
SCHEDULE		
MATERIAL	QUANTITY	LENGTH
SIGN COMP #1510	2	5'-4"
SIGN COMP #1560	2 2	1'-8" 5'-1 3/4"
SIGN COMP #1550	2	5'-4"
ALUM. 2 x 8 x 1/8	1	5'-1 3/4"
ALUM. TUBE 6" X 1"	2	2'-0"
ACRYLIC PANEL	2	5'-1 1/4" x 1'-7 1/2"



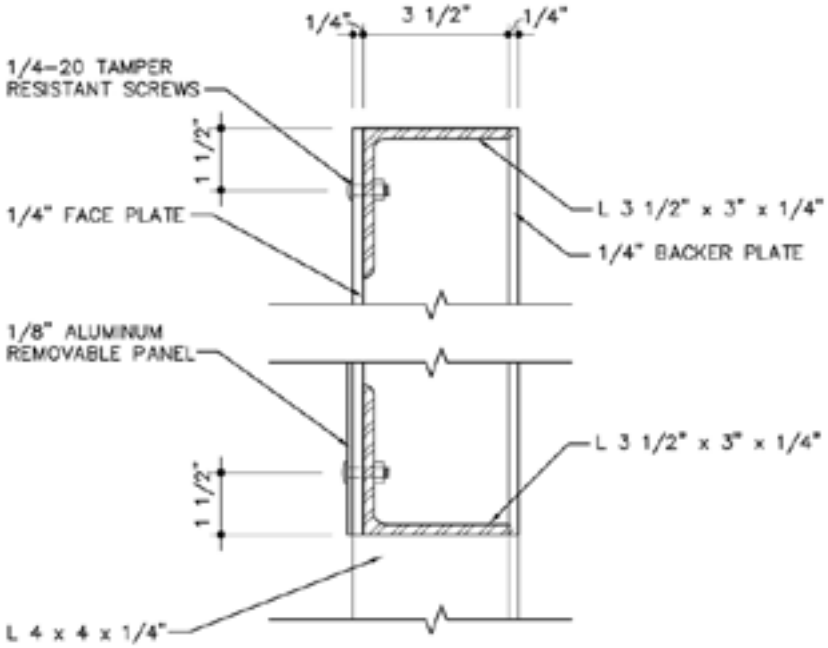
SECTION 1
3/4" = 1'-0"

01 of 09	A1 SHEET NUMBER	DATE 6-16-14	PROJECT NUMBER ----	B1 ELEVATION AND DETAILS VT SIGNAGE SIGNATURE ENGINEERING BLACKSBURG, VA	West View COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS	CERTIFIED ARCHITECT COMMONWEALTH OF VIRGINIA RANDALL M. INGRAM CERTIFICATE No. 010571

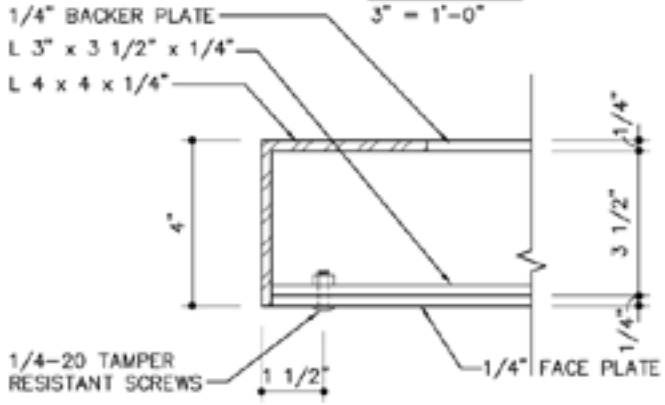
SHOP DRAWINGS



SCHEDULE		
MATERIAL	QUANTITY	LENGTH
L 4 X 4 X 1/4	2	6'-11"
L 3" x 3 1/2" x 1/4"	2	2'-6"



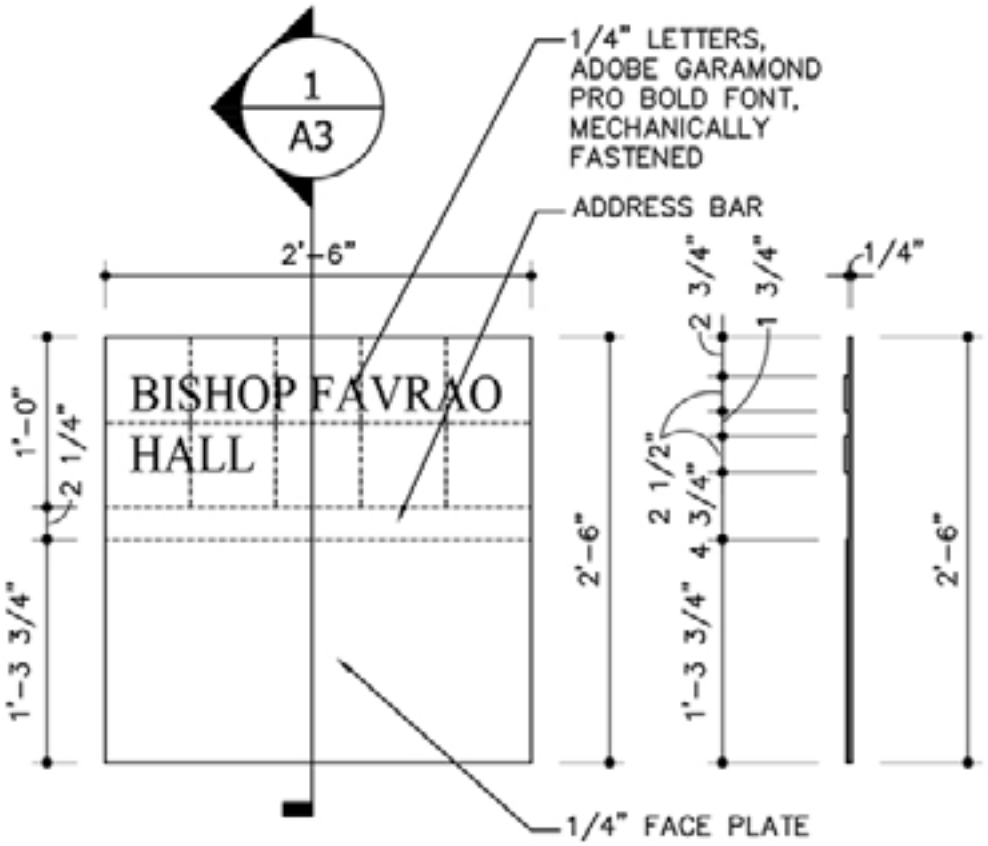
SECTION 1
3" = 1'-0"



SECTION 2
3" = 1'-0"

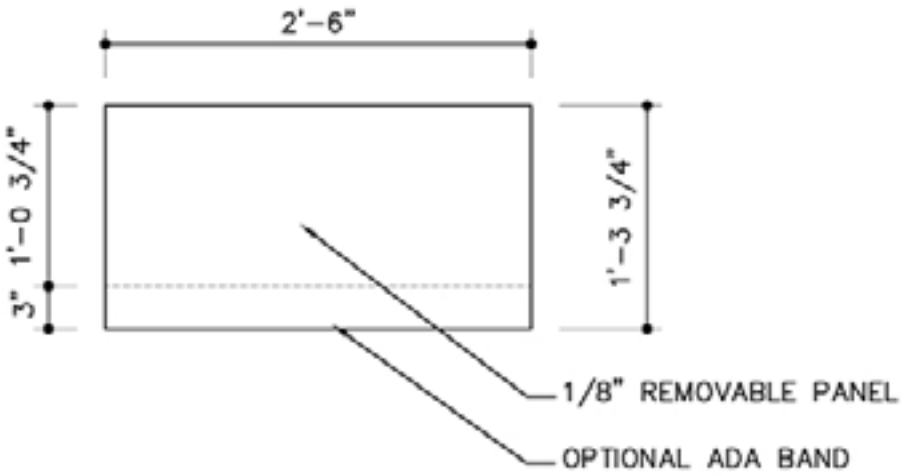
03 of 07	A2	DATE 6-16-14	PROJECT NUMBER ----	B.2a ELEVATION AND DETAILS VT SIGNAGE SIGNATURE ENGINEERING BLACKSBURG, VA	WestView COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS

COMMONWEALTH OF VIRGINIA
CERTIFIED ARCHITECT
RANDALL M. INGRAM
CERTIFICATE No. 010571



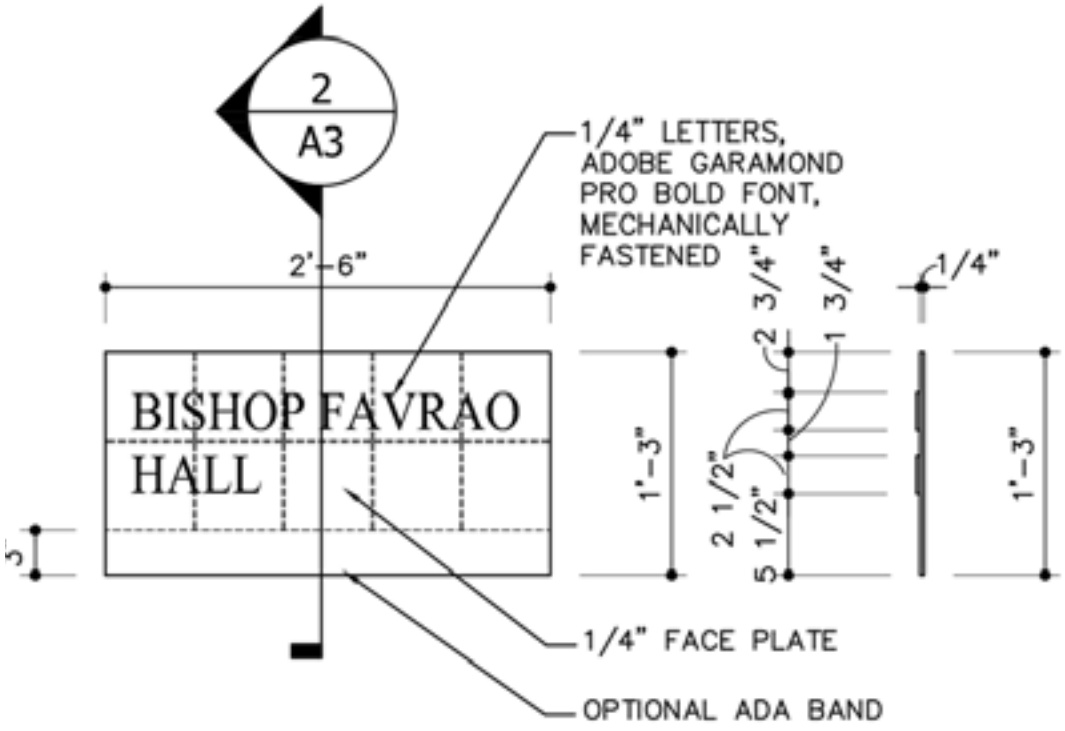
ELEVATION
3/4" = 1'-0"

SECTION 1
3/4" = 1'-0"



03 of 03	A3	DATE 6-16-14	PROJECT NUMBER	B.2 ELEVATION AND DETAILS VT SIGNAGE SIGNATURE ENGINEERING BLACKSBURG, VA	WestView COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS

COMMONWEALTH OF VIRGINIA
RANDALL M. INGRAM
CERTIFICATE No. 010571
REGISTERED ARCHITECT



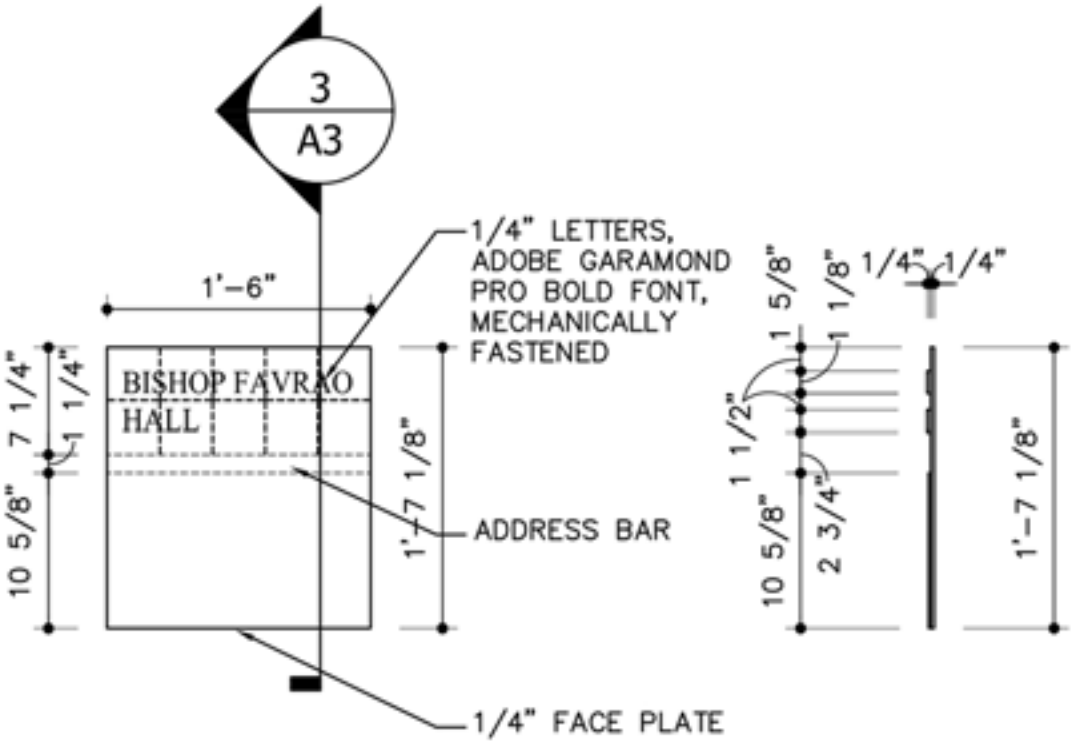
ELEVATION
3/4" = 1'-0"

SECTION 2
3/4" = 1'-0"

B3

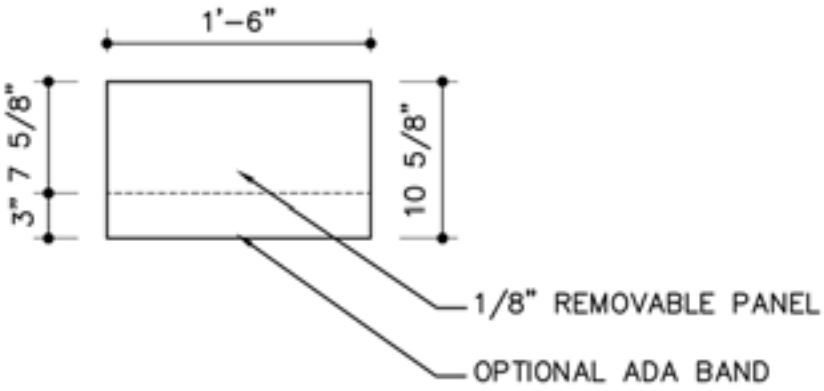
03 of 07	A3	DATE 6-16-14	PROJECT NUMBER	B.3 ELEVATION AND DETAILS VT SIGNAGE SIGNATURE ENGINEERING BLACKSBURG, VA	WestView COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS

COMMONWEALTH OF VIRGINIA
REGISTERED ARCHITECT
RANDALL M. INGRAM
CERTIFICATE No.
010571



ELEVATION
3/4" = 1'–0"

SECTION 3
3/4" = 1'–0"



03 of 03	A3	DATE 6-9-14	PROJECT NUMBER	B.5 ELEVATION AND DETAILS VT SIGNAGE SIGNATURE ENGINEERING BLACKSBURG, VA	WestView COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS

CERTIFIED ARCHITECT
COMMONWEALTH OF VIRGINIA
RANDALL M. INGRAM
CERTIFICATE No.
010571

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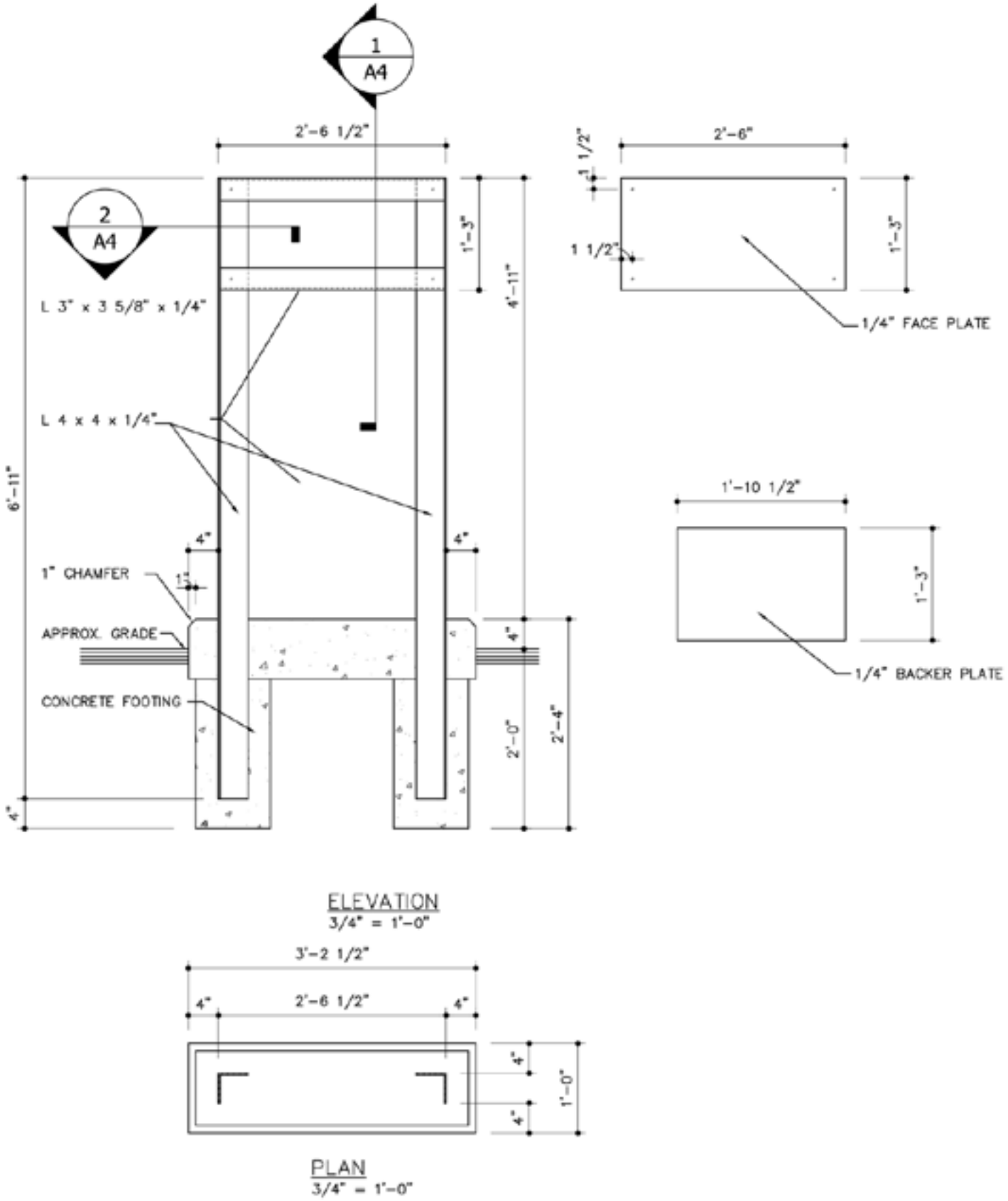
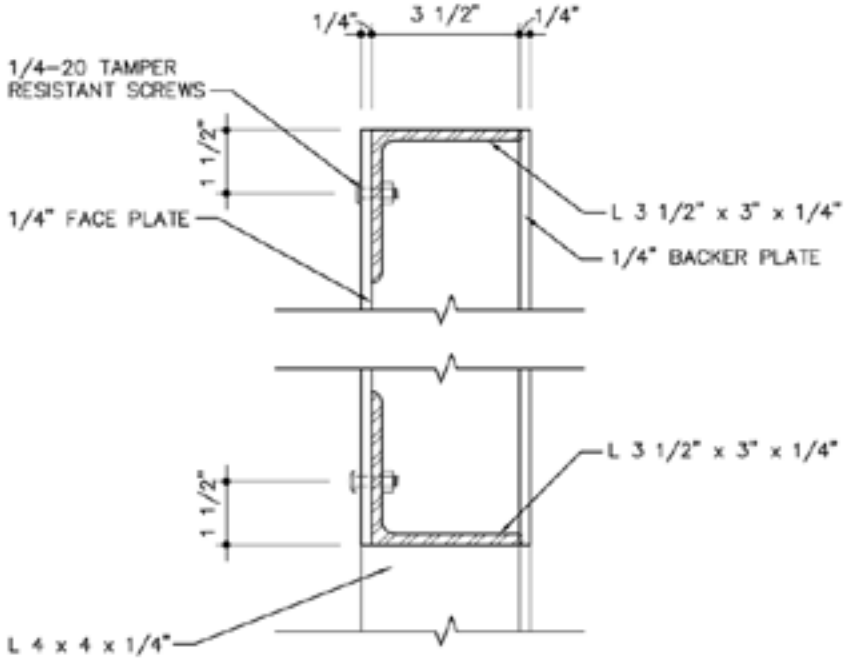
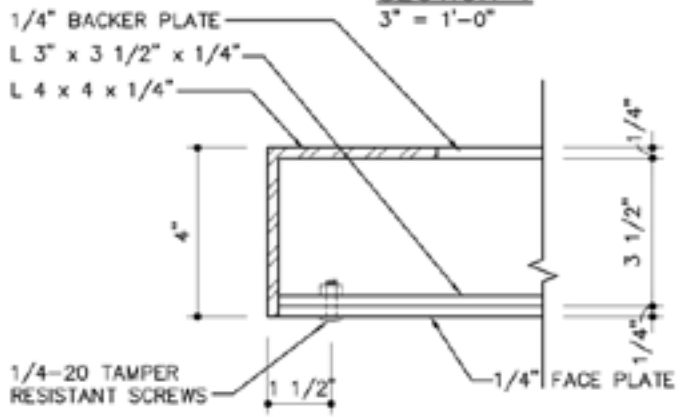

1
A4
2'-6 1/2"
2
A4
L 3" x 3 5/8" x 1/4"
L 4 x 4 x 1/4"
1'-3"
4'-11"
6'-11"
4"
1" CHAMFER
APPROX. GRADE
CONCRETE FOOTING
2'-0"
2'-4"
ELEVATION
3/4" = 1'-0"
3'-2 1/2"
2'-6 1/2"
1'-0"
PLAN
3/4" = 1'-0"
2'-6"
1 1/2"
1/4" FACE PLATE
1'-10 1/2"
1/4" BACKER PLATE

SCHEDULE		
MATERIAL	QUANTITY	LENGTH
L 4 X 4 X 1/4	2	6'-11"
L 3" x 3 1/2" x 1/4"	2	2'-6"



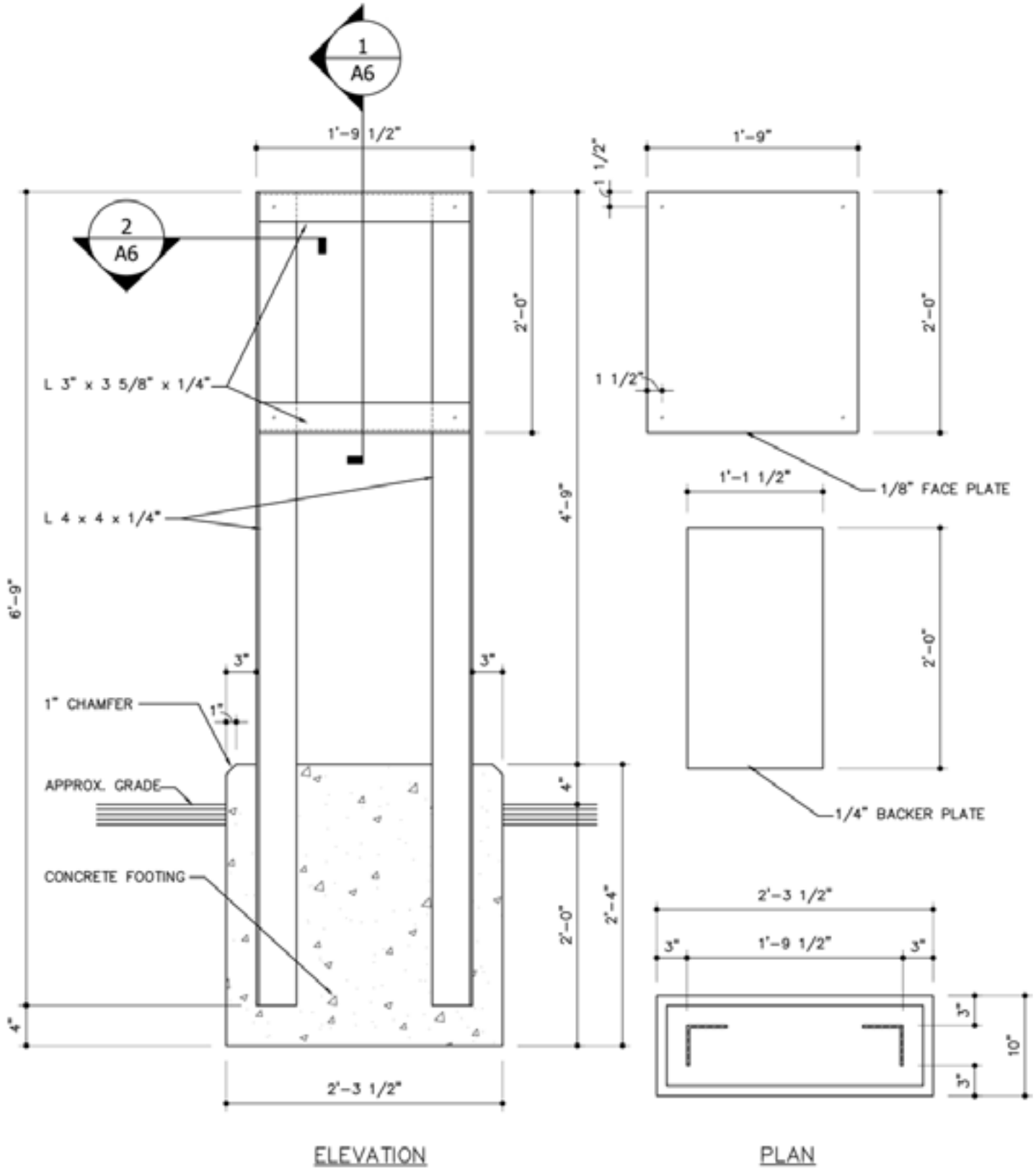
SECTION 1
3" = 1'-0"



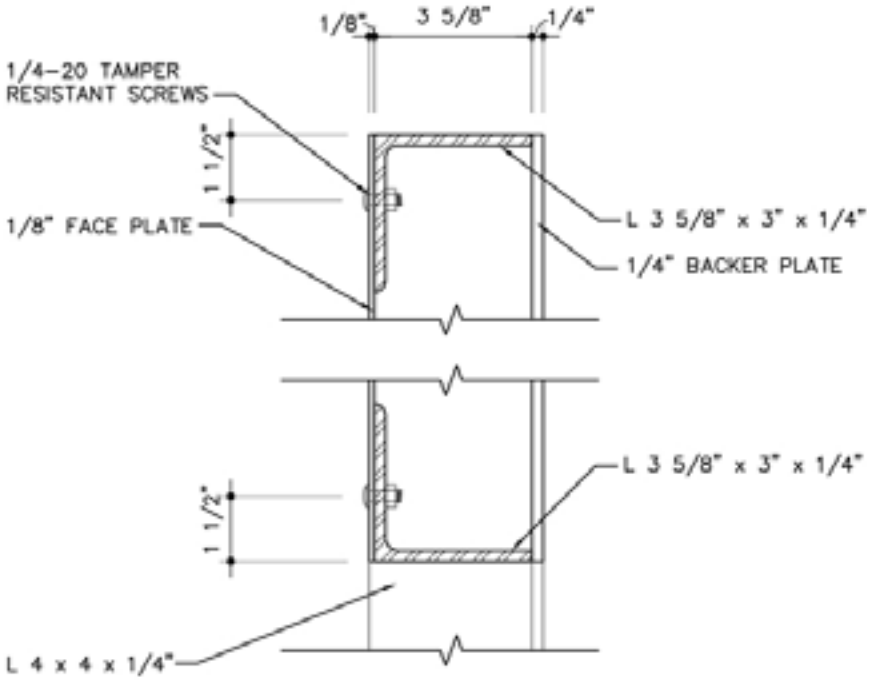
SECTION 2
3" = 1'-0"

04 of 07	A4 SHEET NUMBER	6-16-14 DATE	PROJECT NUMBER	B.3a ELEVATION AND DETAILS VT SIGNAGE SIGNATURE ENGINEERING BLACKSBURG, VA	WestView COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS

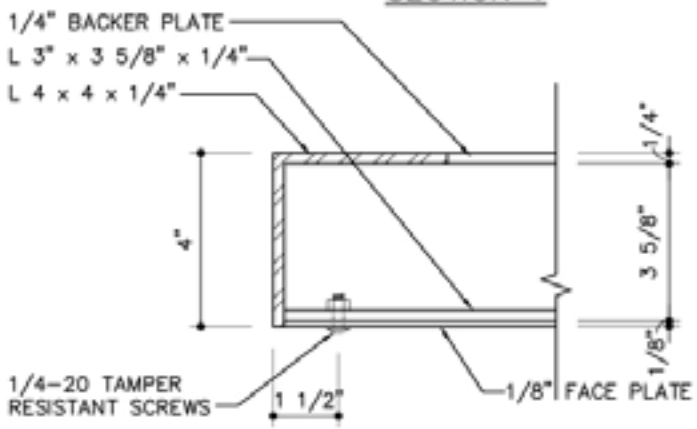
COMMONWEALTH OF VIRGINIA
RANDALL M. INGRAM
CERTIFICATE No. 010571
LICENSED ARCHITECT


1
A6
2
A6
1'-9 1/2"
2'-0"
L 3" x 3 5/8" x 1/4"
L 4 x 4 x 1/4"
6'-9"
4'-9"
3"
3"
1" CHAMFER
1"
APPROX. GRADE
4"
CONCRETE FOOTING
2'-0"
2'-4"
4"
2'-3 1/2"
ELEVATION
1'-9"
1 1/2"
2'-0"
1 1/2"
1/8" FACE PLATE
1'-1 1/2"
2'-0"
1/4" BACKER PLATE
2'-3 1/2"
3"
1'-9 1/2"
3"
3"
3"
10"
PLAN

SCHEDULE		
MATERIAL	QUANTITY	LENGTH
L 4 X 4 X 1/4	2	6'-9"
L 3" x 3 5/8" x 1/4"	2	21"



SECTION 1

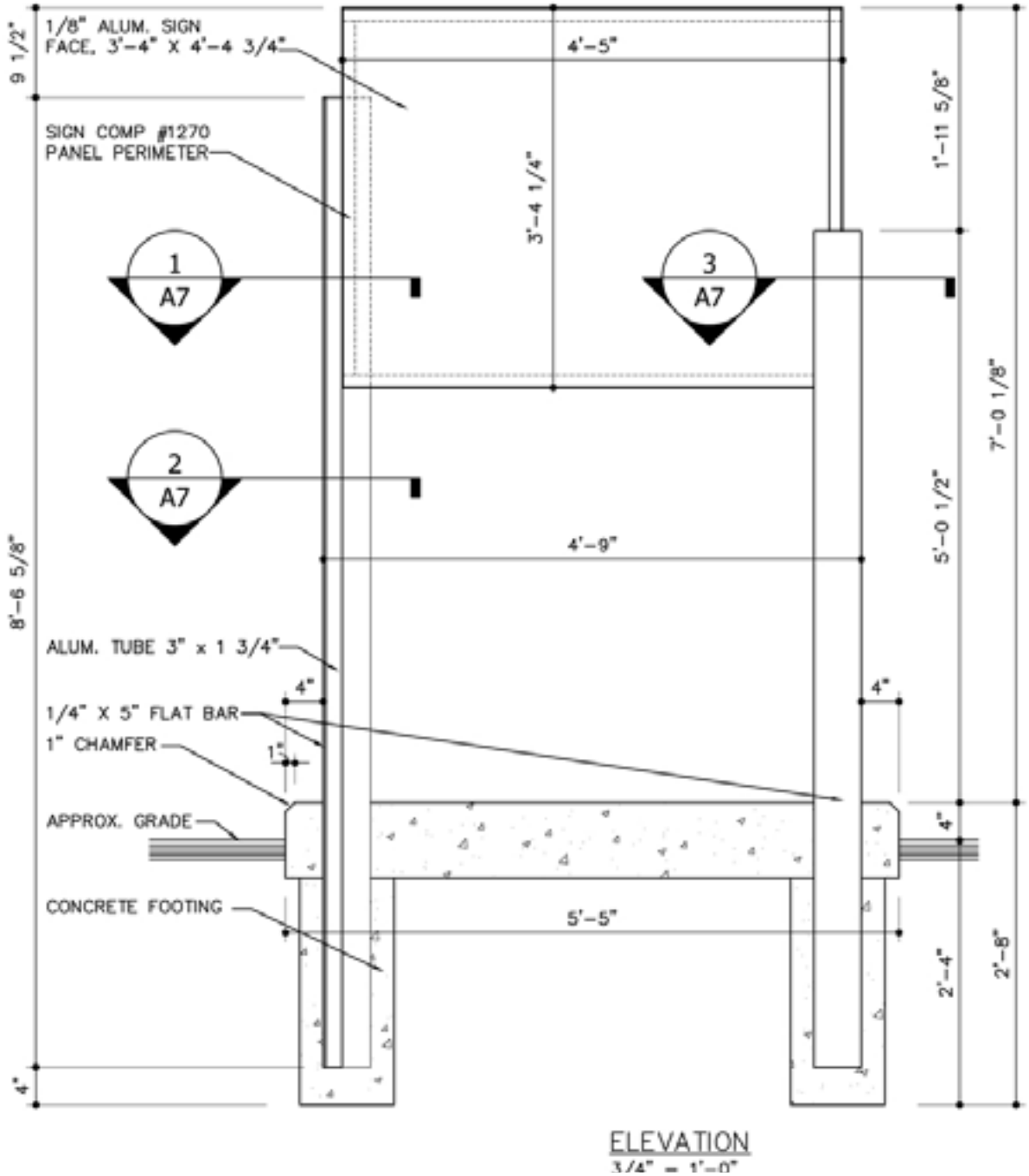


SECTION 2

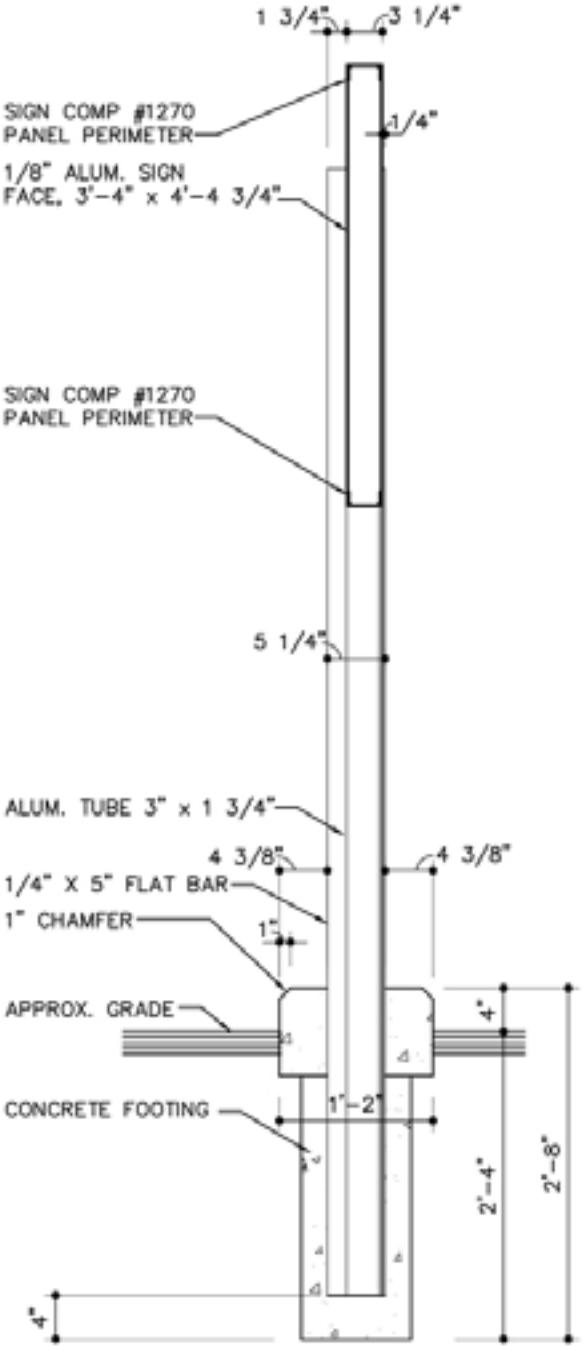
03 of 06	A6	DATE 6-16-14	PROJECT NUMBER	CM.1 ELEVATION AND DETAILS VT SIGNAGE WAYFINDING PROJECT BLACKSBURG, VA	WestView COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS

COMMONWEALTH OF VIRGINIA
REGISTERED ARCHITECT
RANDALL M. INGRAM
CERTIFICATE No. 010571

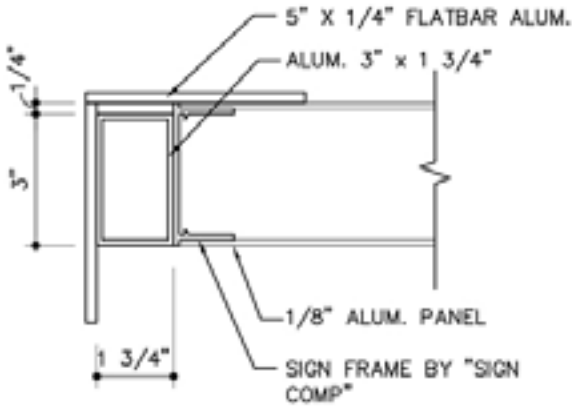
SCHEDULE		
MATERIAL	QUANTITY	LENGTH
5" X 1/4"	2 2	8'-6 5/8" 7'-4 1/2"
3" x 1 3/4" x 1/8"	1 1	8'-6 5/8" 7'-4 1/2"
SIGN COMP #1270	1	4'-5" x 3'-4 1/4"
1/8" FACE PANEL	2	4'-4 3/4" X 3'-4"



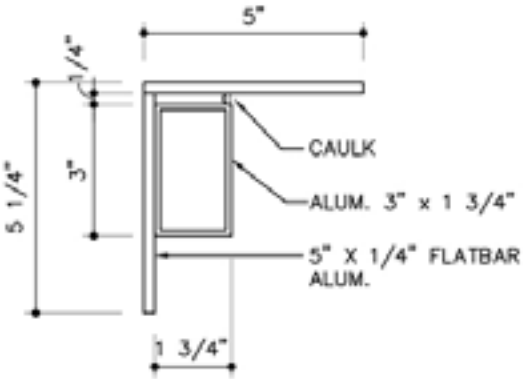
ELEVATION



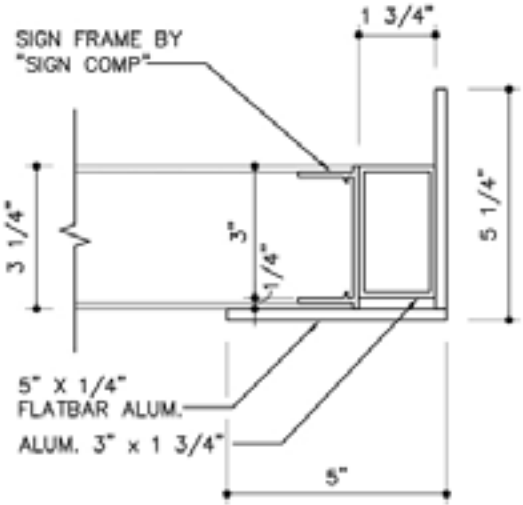
SECTION
3/4" = 1'-0"



SECTION 1



SECTION 2

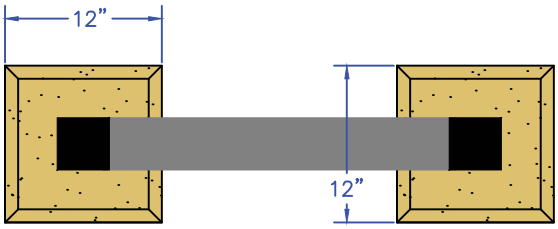


SECTION 3
3" = 1'-0"

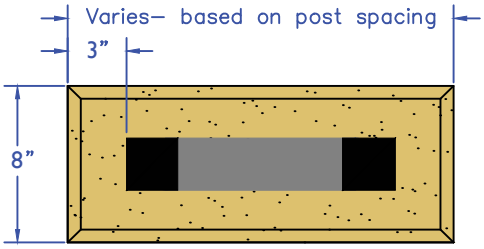
03 of 03	A7	DATE 6-16-14	PROJECT NUMBER	VD.2a ELEVATION AND DETAILS VT SIGNAGE SIGNATURE ENGINEERING BLACKSBURG, VA	West View COMPANIES LANDSCAPE I DEVELOPMENT CONSTRUCTION I IDENTITY SYSTEMS

COMMONWEALTH OF VIRGINIA
CERTIFIED ARCHITECT
RANDALL M. INGRAM
CERTIFICATE No. 010571

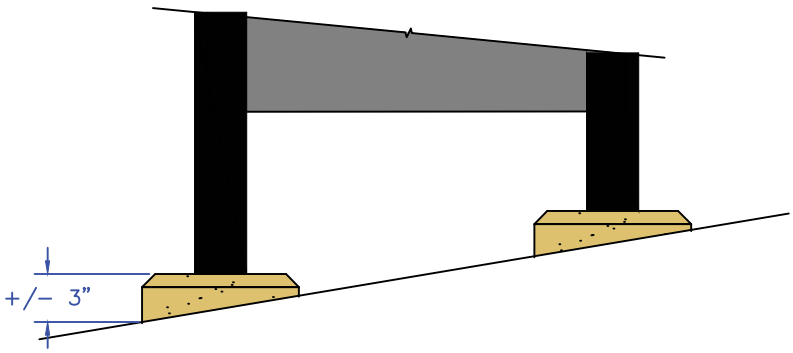
Construction Details



SEPARATE FOOTERS - FOR ALL SIGNS OVER 4FT WIDE
Plan

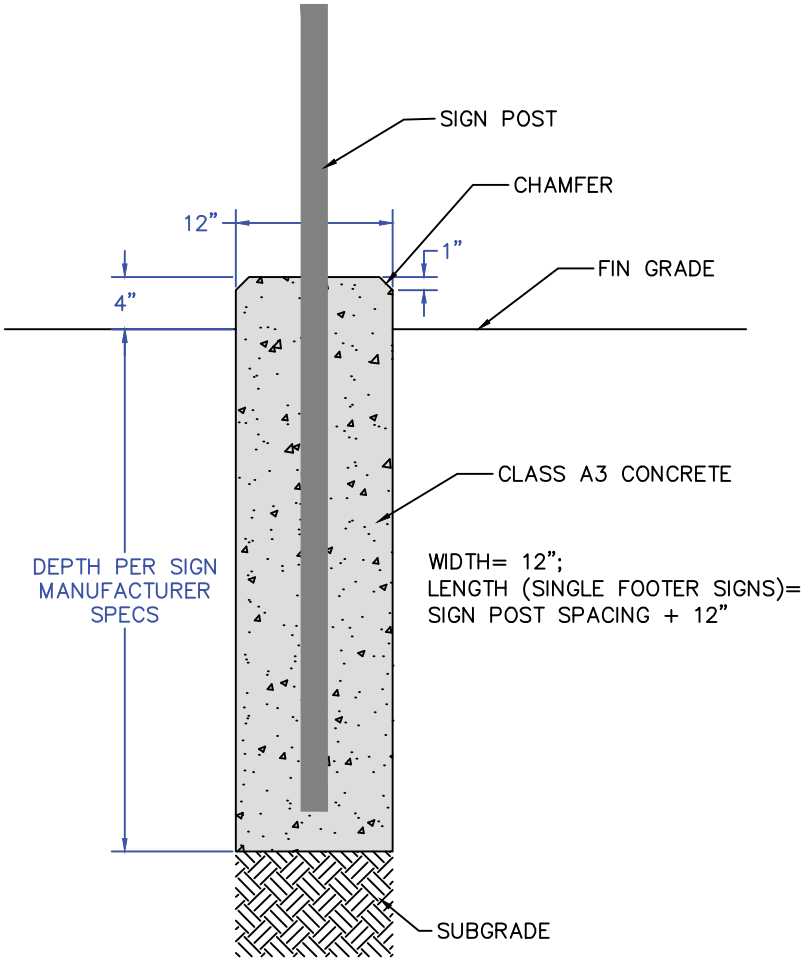


SINGLE FOOTER - FOR SIGNS UNDER 4FT WIDE ON LEVEL SURFACE
Plan



ALL SIGNS OVER 24" WIDE ON SLOPE- SEPARATE FOOTERS
Elevation

NOTES:
1. CONCRETE MIX SHALL USE NATURAL SAND– MANUFACTURED SAND IS NOT ACCEPTABLE.
2. FINISH IS MEDIUM BROOMED USING MEDIUM STIFFNESS, ANGLED NYLON RESIN CONCRETE BRUSH SUCH AS MARION 16 THOUSANDTH DIAMETER BRISTLE (ORANGE) OR EQUAL



TYP. POST FOOTER
Section

CONCRETE SIGN BASE DETAIL

06-3-2013 Not to scale

Performance Specifications

1.01 WORK RELATED

A Labor, materials, equipment and services necessary for the fabrication, delivery and installation of signage as described in the detail design intent drawings.

B Refer to the message schedule for a complete list of sign types and quantities.

Signs listed on message schedule should match those indicated on sign location plans. Contractor to notify owner of any discrepancies in sign quantities by doing take-offs before manufacturing signs.

C Signage is located in Blacksburg, VA, on the Virginia Tech Campus.

D For all signs, all fasteners, support structures required for installation.

1.02 RELATED WORK

A General carpentry and painting requirements: all work to be done in a professional manner and to the highest trade standards.

B Use OSHA safety requirements if necessary for pedestrian and/or vehicular safety.

1.03 REGULATORY REQUIREMENTS

Observe applicable codes, sign ordinances and ADA guidelines for handicapped and fire/life safety signing. All exterior signs located in the public right-of-way, including local city, county and state roadways, shall comply with the 2009 MUTCD standards.

1.04 REFERENCE STANDARDS

Refer to current editions of the following:

A MUTCD standards manual, 2009 edition.

B Federal ADAAG, 2010 standards.

C ASTM B 209–Aluminum sheet and plate.

D ASTM B 221–Aluminum-alloy extruded bars, rods, wire, shapes and tubes.

E ASTM D 822–Light and water exposure apparatus (carbon-arc type) for testing paint, varnish, lacquer and related products.

F ASTM E 84–Surface burning characteristics of building materials.

G ASTM C 143-74–Concrete slump test.

H FS L-P-391–Plastic sheet, rods and tubing, rigid and cast materials.

I FS L-P-387–Plastic sheet, laminated, thermosetting.

J ASTM C 880–Stone, granite flexural strength testing.

K PEI_Porcelain Enamel Institute

L UL 943–Fluorescent lamp ballasts.

1.05 SUBMITTALS

A Bid submittal requirements

1 All of the inclusive bid submittals must be provided to be considered a qualified bid.

2 All proprietary contractual paperwork provided by the client filled out accurately, including all requested bonding and insurance information.

3 Submit completed spreadsheet (form and/or file provided) with all requested line item prices. Ensure that all row and column totals add up properly. Use the provided format, do NOT use a different spreadsheet format.

4 Submit a projected project schedule. Schedule will show major milestones such as sample submittals, fabrication, and installation. The payment schedule will be tied to reaching these milestones. Schedule will be updated regularly throughout the project.

B Requirements

1 Schedule shop drawings, product data and sample submittals for delivery at the same time.

2 The owner may hold shop drawings, product data and samples in cases where a partial submittal cannot be reviewed until associated items have been received.

3 Allocate not less than four weeks, plus mailing time, for processing by the owner.

C Schedule

1 Submit Gantt-style schedule with all pertinent dates and milestones for the project.

2 Include all lead times for materials, processes and third party products or components.

3 Include submittal delivery dates, fabrication and installation dates.

4 Allow several weeks in schedule for review and revision time for all submittals.

5 Revise schedule regularly as project details dictate.

6 Contractor shall pay $1,000 a day for each day past the agreed upon project deadline, unless otherwise stated in the owner-contractor agreement.

D Shop Drawings

NOTE: All final shop drawings must have an engineering stamp from a state licensed engineer before being approved for fabrication.

1 Submit three (3) sets of shop drawings as outlined below.

2 Include plans, elevations, sections and large scale details of sign wording and lettering layout. Show anchorages and accessory items. Provide mounting templates.

3 Show fabrication and installation details, including all sign components such as extrusions, brackets, bracing, hardware, internal framing, foundations, etc.

4 Provide engineering data to confirm viability of signs and supports, including structural stability of all signs, fasteners and foundation design.

5 Structural details must be reviewed and stamped by a state certified structural engineer, ensuring structural integrity and safety.

E Sub Contractor Qualifications Information

1 The total percentage of subcontracted work on this project is not to exceed 49% including installation.

2 Fabricator must submit credentials for any subcontractor selected to execute any portion of this contract. This must be submitted with proposal or bid. Demonstrate subs qualifications for doing specified work.

F Samples

1 Submit three (3) sets of each sample required.

2 Owner reserves the right to reject any samples that do not satisfy the construction, finish or color requirements. Submit additional samples as required to obtain final approval.

3 Samples shall be labeled on the back, designating item number, name of manufacturer, name of project.

4 The following sample submittals are required for this project:

The following samples MUST be submitted and approved PRIOR to the fabrication of the signs.

a) 3 sets of all color samples, including paint and vinyl samples on thin aluminum plates (approx. 3" x 6").

b) 2 sets of material samples.

c) Sample fasteners, hardware and mounting hardware sufficient to obtain clear ideas of how signs are fabricated, made changeable and installed.

5 Samples should represent extreme variations in color and texture that might occur during fabrication.

G Maintenance Data

1 Submit two (2) copies of each manufacturer's recommendations for maintenance of all items.

2 The instructions shall cover cleaning, repair, repainting and maintenance of signs, including data on cleaning solutions or methods of application which should be avoided.

1.06 DELIVERY OF ATTIC STOCK (IF ANY)

A For any attic stock ordered, package separately or in like groups labeled as to contents. Include installation hardware, adhesives and installation instructions; include a reasonable array of alternative adhesives, fasteners or materials to be able to respond effectively to varying field conditions.

1.07 PROTECTION

A Store and protect assemblies from injury at the shop, in transit to the job and until erected in place, completed, inspected and accepted.

B Take special precautions to prevent pilferage both prior to and after installation. Be prepared to provide replacements for any material so removed from the site.

1.08 INSPECTION

A Materials, colors and fabricated or partially fabricated items shall be available for inspection at the factory or elsewhere, by the owner or designer during the process of manufacture and until final delivery, installation and acceptance, to determine whether or not there is compliance with the requirements of these specifications.

B Approval prior to the time of final acceptance shall not preclude rejection of delivered items which do not satisfy these specifications.

1.09 REORDERING

All items specified herein shall be available to the owner in additional quantities for a period of 10 years after completion of all work called for in this specification.

1.10 WARRANTY

All warranties on fabricator's standard contract forms must be modified to match warranty criteria mentioned herewith. Any changes in warranty length or criteria must be negotiated prior to contract signing. Any discrepancies from fabricator's contract are superseded by this performance specification.

ALL PAINT FINISH WARRANTIES MUST BE ACCOMPANIED BY SIGNED WARRANTY AGREEMENTS WITH THE PAINT MANUFACTURER AND FINISHER.

A Warrant all products (including, but not limited to, materials, hardware and finishes) against any and all defects for **a minimum period of five (5) years** from date of installation.

B Correct any and all defects in material and/or workmanship which may appear during the warranty period by restoring defective work to the standard of the contract documents at no cost to the owner and to the owner's satisfaction.

C Custom color background and characters printed with 3M inks direct to 3M High Intensity Prismatic Reflective Sheeting Series 3930, with 3M ElectroCut Film 1170 overlaminate (applied according to 3M specifications to aluminum sheet), must be warranted for a period of eight (8) years and shall not excessively fade, discolor, crack, craze, peel, blister or lose reflectivity such that the signs become visually unsuitable for their intended purpose.

D Vinyl die-cut letters shall be warranted for five (5) years against delamination from substrate.

E Correct any and all paint finish defects which may appear during the warranty period by restoring defective work to the standard of the contract documents at no cost to the owner and to the owner's satisfaction.

F Additional corrections shall include, but not be limited to, the following:

1 Peeling, bubbling, crazing, chalking, rusting or other disintegration of the sign face or of the messages or of the edge finish of the sign inserts or panel.

2 Corrosion developing beneath paint surfaces of the support systems (except when it is the result of obvious vandalism or other external damage to the paint surfaces).

3 Corrosion of the fastenings.

4 The signs not remaining true or plumb on their supports.

5 Fading of the colors when matched against a sample of the original color and material.

6 Discoloration of metal finishes.

1.11 ALTERNATE FABRICATION

A The drawings show design intent only. The fabricator is responsible for fabrication and overall level of quality. Any changes in design, materials, fabrication techniques or details necessary to the successful completion of this project should be communicated to the designer and the owner in a timely fashion.

Further development and engineering of designer's details (for fabrication and installation) is expected and should be shown in the shop drawings.

B The designer recognizes that manufacturers may have shop fabrication techniques that differ from details shown. Suggested changes in fabrication that do not alter the design intent nor reduce the quality will be considered by the designer provided they are submitted in sketch from as soon as possible prior to shop drawing preparation.

C Any value engineering changes during fabrication shall be split evenly between the contractor and owner.

2.01 QUALITY ASSURANCE

A Materials used for this project shall be new and not reconditioned or re-purposed.

B Fabricator shall be familiar with the site and all conditions related to the fabrication and installation of the project.

C Use only personnel thoroughly skilled and experienced with the products and method for fabrication and installation of signage specified.

D The owner shall reserve the right to reject any shop drawings, samples or other submittals, as well as any finished product or installation, than cannot meet the standard of quality established. Any such decision will be considered final and not subject to recourse.

E The intent of the contract documents is to provide everything necessary for a complete contract. In the event of conflict or omission, the fabricator shall consult the owner for resolution.

F Materials and hardware not specified, but necessary to the complete functioning of the sign, shall conform to the quality level established.

2.02 PREFERRED MATERIAL SUPPLIERS

Vendors and products listed below are specified for this product. These products have either been tested on prior projects and have delivered proven results, or have properties unique to this project. Any suggested substitutions must have documentation demonstrating the same level of quality and warranty PRIOR to bidding. Bids are subject to disqualification if unauthorized substitutions are used.

A Acrylic Polyurethane paint

Matthews Paint (a division of PPG), Delaware, OH 43015

Phone: 800-323-6593

www.matthewspaint.com

B All vinyl and vinyl coatings

3M Commercial Graphics Division, St.Paul, MN 55144

Phone: 888-364-3577

www. solutions.3m.com

C Acrylic sheeting

ACRYLITE® Sheet

Evonick Cyro LLC, Parsippany, NJ 07054

Phone: 855-202-7467

www.acrylite-shop.com

D Map and Interpretive panels

Digital High Pressure Laminate (dHPL)

iZone, Temple, TX 76502

Phone: 888-464-9663

www.izoneimaging.com

or

Fossil Industries, Deer Park, NY 11729

Phone: 631-254-9200

www.fossilgraphics.com

E Cast resin post caps

Serra Designs, Henderson, KY 42420

866-627-1636

email: info@SerraDesignsInc.com

F Interpretive panels

Porcelain enamel

Winsor Fireform, Tumwater, WA 98512

Phone 360-786-8200

www.winsorfireform.com

2.03 DESIGN REQUIREMENTS

A Typeface specifications

1 Typeface (or fonts) are purchased from respective font websites, licensed to the designer, and will not be shared with the fabricator. Fabricators will be responsible for purchasing matching licensed fonts for project usage. See the Graphics Standards section of the design intent drawings for the specific fonts utilized within the project.

2 Size: all letter heights specified are based on the cap height of the capital letter.

3 Alignment: When setting type or installing cut letters, ensure that letters are perfectly straight and even, with no characters set crooked or “popping up.”

4 Spacing

a) See the Graphics Standards section of the design intent drawings for the samples of letterspacing programs. The proper letter and word spacing is of extreme importance to the desired look of the signs.

b) Contractor is responsible for visual corrections to the typesetting that might be necessary. Any problems in spacing or copyfitting should be brought to the attention of the designer for solution.

BVisual justification

1 Display type may align mechanically but not optically. When flushing copy message left, a visual adjustment shall be made compensating for arrows and those letter forms that must be extended into the left hand margin to appear flush. For example, S and O must extend beyond the left margin slightly.

C Arrow and symbol specifications

1 Symbols: Symbols and pictographs shall conform to the symbol signs issued by the Department of Transportation and the American Institute of Graphic Arts. To obtain more information and digitized Macintosh (EPS) compatible AIGA symbols, contact: Society for Environmental Graphic Design (SEGD), 1000 Vermont Ave., NW, Suite 400, Washington, DC 20005, Phone: 202-638-5555.

2 Arrows: Arrows on all signs shall use the arrow files which will be provided by the owner to the successful bidder.

a) Arrow size will be dimensioned by height as shown in the design intent drawings.

D Artwork

1 The contractor shall be provided electronic Adobe InDesign and Illustrator files with the project artwork and templates. The final output quality of the artwork for finished signage shall be the responsibility of the contractor. The owner's representative reserves the right to reject artwork if it fails to meet the standard of quality established.

2.04 MATERIALS

A Aluminum extrusions: For mounting plates and structural frames shall conform to ASTM B-221, alloy 6063-T6. Shapes, sizes and weights of members shall be as required for structural stability. All connections of aluminum members shall be heli-arc welded, continuous fillets, ground smooth on all exposed surfaces, unless specifically detailed otherwise. Aluminum finishes shall be hereinafter specified.

B Aluminum sheet and plate: Type 5052-H-32 alloy aluminum, thickness as indicated. For painted finish, faces shall be etched to give an even stain finish and remove oxidation, then conversion coated to improve paint adhesion and inhibit corrosion. Surface shall be belt-sanded for a smooth finish, edges filed and ground then immersed in hot alkaline cleaner to remove contamination. For anodized finish, prepare for finish AA-M31-C21-A31. Aluminum should have consistency of color and finish throughout the project.

C Stainless Steel sheet: Chromium stainless steel sheet. Use type 304 or type 316 austenitic stainless steel with 16% chromium and 10% nickel.

D Hangers, brackets and accessories: Shall be of the type and size indicated. Where such items are not specifically called for, provide hangers, brackets and accessories as required for the proper execution of the work, as approved by the owner.

E Paint for aluminum: All coating to protect aluminum by uniformly penetrating, filling, and sealing surface pores. Coating should provide an invisible barrier to weathering, airborne contaminants, graffiti, industrial air pollution, mildew, and salt air. Coating should not yellow, peel or flake. *Coating should be guaranteed in conformance with Warranty Section 1.10-E.* ***Sign panels shall be pre-drilled in proper locations before any priming, painting or coating processes.*** Aluminum should have consistency of color and finish throughout the project.

1 **Matthews Acrylic Polyurethane (PPG)**

MAP® is a superior two-component catalyzed coating system that provides a high degree of ultraviolet, chemical and weather protection for signage and architectural metals. When used as a a complete system, primer through topcoat, MAP provides a high performance finish that lasts for years.

a) Pretreatment: Mechanically clean and chemically pretreat fabricated items in accordance with coating manufacturer's requirements and AAMA requirements for finish indicated.

1) Pretreatment: One coat 74-734 and 74-735 metal pre-treat at .25 mils DFT or one coat 74-793 spray bond at .15 to .25 mils DFT.

b) Apply primer and finish coats in accordance with coating manufacturer's requirements for finish indicated.

1) Finish coat: One coat Matthews Acrylic Polyurethane 2 mils DFT. As a final step, spray one coat of satin clear Matthews Acrylic Polyurethane 2 mils DFT for a protective top coat.

3 **TIGER Drylac® Series 38 Powdercoating**

The TIGER Drylac SHIELD System is a two-coat process combining optimum corrosion protection with highest weatherability. The basis for the excellent corrosion resistance is either TIGER Drylac Zinc Rich Primer 69/90500, TIGER Drylac Dryprotective Primer 69/70000, or TIGER Drylac 09/73841 Out-gassing Forgiving Primer. This two coat system warrants an optimum non-porous film as well as excellent UV protection through the use of high quality polyester powder coatings.

All specified project applications here-in MUST be the TIGER Drylac two-coat process. *The TIGER Drylac Series 38 Super Durable Polyester single powder coating is NOT acceptable, unless specifically identified within the sign drawing(s).*

a) Pretreatment: Mechanically clean and chemically pretreat fabricated items in accordance with coating manufacturer's requirements and AAMA 2604–05 requirements for finish indicated.

b) **Powdercoating shall be applied by a Tiger-approved applicator ONLY.** Apply primer and finish coats in accordance with coating manufacturer's requirements for finish indicated.

1) Theoretical Coverage: at 1.5 specific gravity and 2.5 mils (60 um) film thickness: 30.2 ft^2/lb (9.8 m^2/kg).

2) Refer also to the latest edition of "Theoretic Powder Coating Coverage Chart". Version 00-1001 (imperial).

F Pressure Sensitive Vinyl Legends

1 Use **3M High Intensity Prismatic Reflective Sheeting Series 3930,** with **3M ElectroCut Film 1170 overlaminate.**

a) Custom color background and characters printed with 3M inks directly.

b) Series 3930 sheeting incorporates a pressure sensitive adhesive and should be applied to the sign substrate at temperature of 65˚F/18˚C or higher by any of the following methods:

1) Mechanical squeeze roll applicator – refer to 3M Information Folder (IF) 1.4 for more details.

2) Hand squeeze roll applicator – refer to 3M IF 1.6 for more details.

c) Splices: Series 3930 sheeting must be butt spliced when more than one piece of sheeting is used on one piece of substrate. The sheeting pieces should not touch each other. This is to prevent buckling as the sheet expands in extreme temperature and humidity exposure.

d) For traffic sign use, substrates found to be most reliable and durable are properly prepared aluminum sheets and extrusions. Plastic substrates are NOT acceptable.

e) High intensity prismatic sheeting may be processed into traffic signs by any of the imaging methods describe below:

1) Screen Processing: Series 3930 sheeting may be screen processed into traffic signs before or after mounting on a sign substrate, using 3M Process Colors Series 880I or Series 880N. Refer to 3M IF 1.8 for more details.

2) Thermal Transfer Printing: Series 3930 sheeting may be imaged with 3M Thermal Transfer Ribbon Series TTR2300 in conjunction with the Matan SprinG3 or Matan Spot4 thermal transfer printers. Additionally, series 3930 sheeting may be imaged by the Durst RHO 161 TS printer, by Sherine Industries: (604) 513-1887. All applications utilizing the above printers must be covered with 3M ElectroCut Film 1170 Clear UV/Anti-Graffiti overlaminate.

3) 3M ElectroCut Film Series 1170 may be used to provide transparent colored background copy for traffic control signs on high intensity prismatic sheeting. Both materials then must be covered with 3M ElectroCut Film 1170 Clear UV/Anti-Graffiti overlaminate. Refer to Product Bulleting 1170 for fabrication procedures.

4) Vinyl Graphic Films: Scotchcal Vinyl Series 7720 and Series 7725 may be used to provide copy for traffic control signs on high intensity prismatic sheeting. Both materials then must be covered with 3M ElectroCut Film 1170 Clear UV/Anti-Graffiti overlaminate. Refer to Scotchcal product literature for more information.

f) All of the above methods utilizing series 3930 reflective sheeting must be warranted for a period of eight (8) years and shall not excessively fade, discolor, crack, craze, peel, blister or lose reflectivity such that the signs become visually unsuitable for their intended purpose.

2 Use **3M Scotchcal brand graphic film.** Material shall consist of a tough, flexible, and pigmented vinyl film and shall be processed with compatible screen printing inks and clear coatings as recommended by the film manufacturer. The film shall be precoated with pressure-sensitive adhesive. The adhesive shall be protected by a treated paper liner which shall be easily removable without soaking in water or other solvents. The sheeting shall be guaranteed against delamination for a period of 5 years.

3 Use **3M Scotchlite brand reflective graphic film.** Material shall consist of transparent plastic having a smooth, flat outer surface embedded with spherical

lens elements. Material shall be capable to being processed with compatible screen printing inks and clear coatings as recommended by the film manufacturer. The film shall be precoated with pressure-sensitive adhesive. The adhesive shall be protected by a treated paper liner which shall be easily removable without soaking in water or other solvents. The sheeting shall be guaranteed against delamination for a period of 5 years.

G Concrete

1 All concrete footers are to be poured in place.

2 All concrete footers are to be poured from thoroughly mixed and agitated concrete in order to prevent unreasonable voids in the finished casting.

3 Concrete to meet specified "PSI testing" for strength: 3500 PSI minimum.

4 Concrete to meet specified "slump test" before pouring footing.

5 All footings to extend past the frost line.

6 Any footers or posts for signs will be placed in wet concrete and allowed to fully cure in place before any signage is attached or mounted to it in any way.

7 All exposed surfaces of concrete shall receive a finish to match existing, adjacent surfaces.

8 Do NOT chamfer corners or edges of concrete, unless specifically identified, or called out in the sign drawings.

9 Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

a) Plywood, metal, or other approved panel materials.

b) Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1.

H Breakaway post: Manufacturer shall provide breakaway posts for the sign types and locations indicated in the documentation drawings. Final designs and shop drawings shall be supplied by the fabricator for each of the poles identified. A Professional Engineer shall sign and seal the submittal of shop drawings. The breakaway post shall meet or exceed the following criteria:

1 Most Current policy on Geometric Design of Highway and Streets.

2 Most Current Standard Specification for Structural supports for Highway Signs, Luminaries and Traffic Signals.

3 Most Current AASHTO Roadside Design Guide.

I Adhesive tape: Use closed-cell foam type tape with adhesive surfaces on both faces. Thicknesses and widths of tapes shall be as required to safely secure signs to various wall finishes, but in no case shall be less than 1/16 inch thick and 1/2 inch wide. Adhesive tape shall be equal to Norton Sealant Tape No. 1001 Series.

J Liquid adhesive: Use Silicone Silastic 732 RTV adhesive sealant as manufactured by Dow Corning.

2.05 FABRICATION

A Report any discrepancies between drawings, specifications and owner requirements, and request direction from owner before proceeding.

B Verify measurements in field as required for work fabricated to fit job conditions. Before starting work, examine adjoining work on which work of this section is in any way dependent for perfect workmanship and fit.

C Make work in ample time not to delay job progress and deliver to job at such time as required for proper coordination. Fabricate work true to line and detail with clean, sharply defined profiles. Finish surfaces smooth unless otherwise specified.

D Do cutting, punching, drilling and tapping required for attachment or other work coming in contact with signage work where indicated.

E Changeability: Fabricate signs in such a manner that each of the major mounting components may be removed and replaced with similar components by maintenance personnel, but not by unauthorized personnel.

F Construction: Fabricate all joints, corners, miters, etc., with work accurately machined, filed and fitted, rigidly framed together at joints and contact points. Carefully match all work to provide a perfect continuity of lines and design, with metal in contact having hairline joints. Make joints of such character and assembly to be strong and as rigid as adjoining sections. Make exposed joints where joint is least conspicuous. Corners shall be square as indicated. All edges shall be finished and free of saw marks.

Allow for expansion and contraction of materials from temperature changes, especially when two materials with different coefficients of expansion are used together.

Detail signs to minimize deflection from snow, ice, water and their own weight.

G Engineering: The system shall be engineered to eliminate buckling of any members, failure at any points, distortions or other damage. The system shall be engineered to be rigid with minimum deflection and rotation under stress and shall be able to withstand movement, shear and torsional loads. Exposed areas of signs shall not oil can.

Signs shall be designed as structurally self-supporting units. The suspension systems and substructure shall be designed by the sign manufacturer to perform in accordance with the contract documents. Structural engineering stamp as required on certain sign types- i.e. large hokie stone signs, adding letters to parking garage infrastructure.

H Connections and accessories: Weights of connections and accessories shall be adequate to sustain and withstand stresses and strains to which they will be normally subjected.

I Sign panels - General

1 Surface finish: Provide surface finishes that are free from lines, mottling, ridges, variations in color, peeling, orange peel, bubbles, pinholes, mottling, crazing, grit and coarse particles. This applies to all methods of fabrication and finishing. Use clear coatings for durability, surface protection, appearance and maintenance.

2 Material: Sign panel material is stated in the schedules under "Notes" and/or "Specifications" and/or on drawings.

3 Opacity: All signs shall have opaque background and opaque graphics, unless specifically noted otherwise.

J Anchors and fastenings

1 Mechanical

a) Provide anchors and fasteners required to secure work in place.

b) Surface finish: Do NOT expose fastenings on surface of sign panels unless specifically noted otherwise. Do NOT deform, distort or discolor sign face surfaces by attachment of concealed fastenings.

c) Corrosion resistance: all fastenings shall be non-corrosive and resistant to oxidation or other corrosive action, of the same composition completely through their cross sections, particularly when used below grade. Use highest quality stainless steel hardware and fasteners.

d) Anchors, inserts or fasteners shall be compatible with sign materials, shall not result in galvanic action or chemical interaction of adhesives and shall have demonstrable and sufficient strength for intended use.

e) Steel anchors and fastenings for exterior use shall be galvanized in accordance with ASTM A153.

f) Stability: Fabricate and install signs with fastenings to withstand all actions imposed by use; **90 mph wind** perpendicular to surfaces, water, ice, snow loads and similar forces.

g) Anchor bolts in concrete shall be cast in place. Manufacturer shall furnish instructions for the setting of anchors and bearing plates. Manufacturer shall ascertain that the items are properly set during the process of the work.

h) Color: Secure work with fastenings of same color and finish as the components they secure where they are exposed to view, unless noted otherwise.

i) Security: All exposed fasteners must be vandal resistant and have vandal-proof "spanner" type slots to be removed only with the special driver head.

K Messages

The fabricator is responsible for the message layout of all directional messages panels. Fabricator must produce scale drawings of message layouts for review prior to fabrication. Layout spacing and letterheights to be based on typical layout guideline drawing pages.

1 Layout: Typical sign panel layouts are illustrated in the design intent drawings. All messages including braille shall be flush left, unless noted otherwise. Correct line breaks are indicated in the "message" column of the schedule and should be followed exactly. Braille line breaks shall match those of the raised copy.

Any problems in the message layout shall be brought to the attention of the designer for a solution.

2 Fabrication: Execute all signs such that letter forms are true and clean. Letter forms with rounded corners, or chipped, nicked, cut or ragged edges, will not be accepted. This applies to all methods of fabrication and copy application.

3 Copy: Message copy on detail drawings is for layout purposes only. Actual copy is listed in the "message" column of the schedule. Certain copy may be provided later by the owner.

4 Capitalization: Directions for upper and lower case are found in the "message" column of the schedule must be followed exactly.

5 Single- or double-faces: All signs that are double-faced will be noted as such in the drawings and message schedule. For double-faced signs, the message will be indicated as "Side A" and "Side B" or "Side C" and Side D".

L Surface-applied messages

1 Reflectivity and specular gloss

a) Non-reflectorized message: 60 degree specular in accordance with ASTM Test D523.

2 Thickness: as indicated in specifications herein.

3 Color and color fastness

a) Exposed surfaces and finishes shall show no discernible color change or chalking when exposed for 1,000 hours in an Atlas Twin Arc Weathermaster Model HCDL-X, or equivalent, when tested in accordance with ASTM D822.

4 Inter letter spacing: Follow examples in drawings. Show sample inter-letter and inter-word spacing in sample submissions as specified.

5 Layout: Positions for all messages, symbols, arrows, lines, etc., for all signs are clearly indicated on the drawings and shall be complied with.

6 Artwork: Contractor shall be responsible for all final reproduction artwork for all messages, symbols, arrows, lines, and location plan and/or floor plan drawings.

7 Fabrication

a) Screened messages: Execute all silk screen printing in such a manner that all edges and corners of finished letter forms are true and clean. Letter forms, color areas or lines with rounded corners, edge buildup or bleeding, sawtoothing, etc., will not be accepted. Execute all silk screening from photo-screens prepared from typesetter's reproduction of the copy specified. All above work is included is this contract. Hand cut screens will not be acceptable.

b) Die-cut messages: Die-cut, pre-spaced, pre-aligned messages (numbers, words, phrases, and arrows) from 3.0 MIL flexible film coated with continuous adhesive pressure sensitive backing to meet characteristics specified for surface-applied messages. Execute die-cutting in such a manner that all edges and corners of finished letter forms are true and clean. Letter forms with round positive or negative corners, nicked, cut or ragged edges, etc., will not be acceptable.

M Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

3.01 INSPECTION

A **Examine the substrates and conditions under which the signs are to be installed and notify the owner in writing of conditions detrimental to the proper and timely completion of the work.** Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A **Install sign units and components with concealed fasteners, unless otherwise shown.** Refer to detail drawings for general method. Verify each surface in field to determine specific, appropriate hardware.

Drawings in this package may not indicate any below-ground or in-wall structural tie-ins or connections that may be necessary to assure stable and secure installation of signs. Sign fabricator is responsible for determining where such connections are necessary and for coordinating with related trades to make them.

B **Locations:** Refer to drawings for approximate locations. Any discrepancies or apparent deviations from drawing locations because of different site conditions shall be brought to the attention of the owner for solution. The owner must be present for field placement of the sign.

It shall be the responsibility of the Contractor to determine location of underground structures and utilities by the use of test pit excavation prior to excavation operations. Test pits shall be the size, depth and location as approved by the Engineer. Each pit shall be tamp-back-filled. Test pit excavation will be measured on the basis of the volume of material actually removed from within the limits specified. Tamped backfill will not be measured but shall be included in the price bid for test pit excavation.

Price provided shall include all excavation, tamped backfill, labor, tools, equipment and incidentals necessary to complete the installation of each sign.

C **For ground-mounted signs, provide whatever replacement concrete, pavers, bricks, etc., are necessary to match adjacent surfaces exactly.** Seams should be parallel or perpendicular to sign face and be symmetrical around post(s).

D **Note that this area experiences heavy public use.** Strong environmental conditions such as weather and vandalism may be routine problems. Signs must be securely mounted. Contractor is responsible for suggesting alternative fabrication or installation methods if required to prevent theft or vandalism.

E **Install signs to be level, plumb and at the proper height.** Cooperate with other trades for installation of sign units.

F **Clean and polish, remove excess adhesive.**

G **Fixture installation**

1 Install lighting fixtures with seals and gaskets. Conceal all wiring in or within the construction.

2 Lamp installation

a) Do not install lamps for permanent use until operating voltage is verified and established.

b) Install lamps in accordance with lamp and fixture manufacturer's instructions.

3 Ballast installation

a) Install ballasts at factory unless specifically indicated otherwise. Mount on rubber grommets or sound isolating details to reduce noise transmission.

3.03 TREE TRIMMING AND PROTECTION

A Include the protection and trimming of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.

1 Quality Assurance:

a) Tree Service Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site on a full-time basis during execution of the Work.

b) Arborist Qualifications: An arborist certified by the International Society of Arboriculture or licensed in the jurisdiction where Project is located.

2 Preparation:

a) Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage.

b) Protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.

c) Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.

d) Do not allow fires under or adjacent to remaining trees or other plants.

3 Excavation

a) Install shoring or other protective support systems to minimize sloping or benching of excavations.

b) Do not excavate within drip line of trees, unless otherwise indicated.

c) Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.

1) Relocate roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and relocate them without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3 inches back from new construction.

2) Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

4 Tree repair and replacement

a) Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to written instructions of the qualified arborist.

b) Remove and replace dead and damaged trees that the qualified arborist determines to be incapable of restoring to a normal growth pattern.

1) Provide new trees of 6-inch caliper size and of a species selected by Designer when trees more than 6 inches in caliper size, measured 12 inches above grade, are required to be replaced.

5 Disposal of waste materials

a) Burning is not permitted.

b) Remove excess excavated material, displaced trees, and excess chips from Owner's property.

3.04 CLEANUP

A Periodically (at least daily) and upon completion of the installation, remove all waste, dirt, wrappings and excess materials, tools and equipment, and carefully and thoroughly clean all surfaces to the satisfaction of the owner.

3.05 PROPERTY DAMAGE

A Protect all adjacent surfaces from damage and pay the cost of repairing any damage to the property caused by delivery or installation of materials. In all cases, match existing surfaces.