Wake Forest, NC

Wayfinding Program

PHASE II

DESIGN INTENT DRAWINGS
July 21, 2026

merje
ENVIRONMENTS & EXPERIENCES

5 W. Gay Street
West Chester, PA 19380
T 484.266.0648
www.merjedesign.com

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SECTION 1 | Sign System Standards

A | Graphic Standards

TYPEFACE FOR: VEHICULAR GUIDE SIGNS

Clearview Highway

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890 ‘’!@#$%^

Amongst the several mechanical Arts that have engaged my attention, there is no one which I have pursued with so much steadiness and pleasure, as that of Letter Founding.

Downtown	Downtown	Downtown
acceptable	NOT acceptable	NOT acceptable
123A	123A	123A
acceptable	NOT acceptable	NOT acceptable

SPECIFICATIONS

The Clearview typeface is the required message font for vehicular sign types

All type shall be set exactly as specified. Substitutions will only be accepted, at the DESIGNER'S discretion, where they match the specified typeface in every detail. The FABRICATOR should be aware that different versions of typesetting equipment may not satisfactorily match specified typefaces and in such instances will not be acceptable.

Sometimes the Foot mark is mistaken for an apostrophe and an inch mark is mistaken for quotations. Below are examples of correct and incorrect apostrophes for each typeface.

Clearview Highway

This apostrophe is CORRECT.

PARK'S

This apostrophe is INCORRECT.

PARK'S

NOTES

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CLIENT / PROJECT

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Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE

Typography Specifications

SHEET NO.

A.1

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TYPEFACE FOR: GATEWAY SIGNS

Berkeley Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890 “!@#$%^

Amongst the several mechanical Arts that have engaged my attention, there is no one which I have pursued with so much steadiness and pleasure, as that of Letter Founding.

Downtown	Downtown	Downtown
acceptable	NOT acceptable	NOT acceptable
123A	123A	123A
acceptable	NOT acceptable	NOT acceptable

SPECIFICATIONS

The Berkely Bold typeface is the required message font for gateway sign types

All type shall be set exactly as specified. Substitutions will only be accepted, at the DESIGNER'S discretion, where they match the specified typeface in every detail. The FABRICATOR should be aware that different versions of typesetting equipment may not satisfactorily match specified typefaces and in such instances will not be acceptable.

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SHEET TITLE

Typography Specifications

SHEET NO.

A.2

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TYPEFACE FOR: GATEWAY SIGNS

Berkeley Black

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890 “!@#$%^

Amongst the several mechanical Arts that have engaged my attention, there is no one which I have pursued with so much steadiness and pleasure, as that of Letter Founding.

Downtown
acceptable

Downtown
NOT acceptable

Downtown
NOT acceptable

123A
acceptable

123A
NOT acceptable

123A
NOT acceptable

SPECIFICATIONS

The Berkely Black typeface is the required message font for gateway sign types

All type shall be set exactly as specified. Substitutions will only be accepted, at the DESIGNER’S discretion, where they match the specified typeface in every detail. The FABRICATOR should be aware that different versions of typesetting equipment may not satisfactorily match specified typefaces and in such instances will not be acceptable.

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This apostrophe is INCORRECT.

PARK'S

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SHEET TITLE

Typography Specifications

SHEET NO.

A.3

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LETTER-SPACING

Inconsistencies in Letter Spacing

TYPEFACE 1

City Hall

Corrected Letter Spacing

TYPEFACE 1

City Hall

IMPORTANT: Individual spacing of each letter needs to be evaluated. See Examples Above.
Kern all Copy so that **each character is optically centered** between the center of each of the surrounding characters.

SIGN TEXT STANDARDS

COPY HEIGHT

When measuring copy height, measure only the height of the Capital letters to determine your overall copy height (shown in illustration below as “X”) Some of the other letters have an extended height beyond the average height of the letters.

LINE SPACING

When measuring line spacing, always measure from the baseline of the topmost text line to the baseline of the text line below (shown as “X”)

SPECIFICATIONS

Individual spacing of each letter needs to be evaluated. All copy shall be kerned so that each character is optically centered between the center of each of the surrounding characters.

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SHEET TITLE

Typography Specifications

SHEET NO.

A.4

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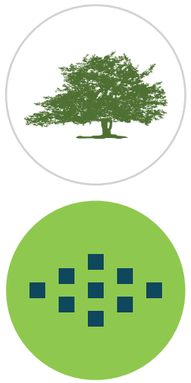
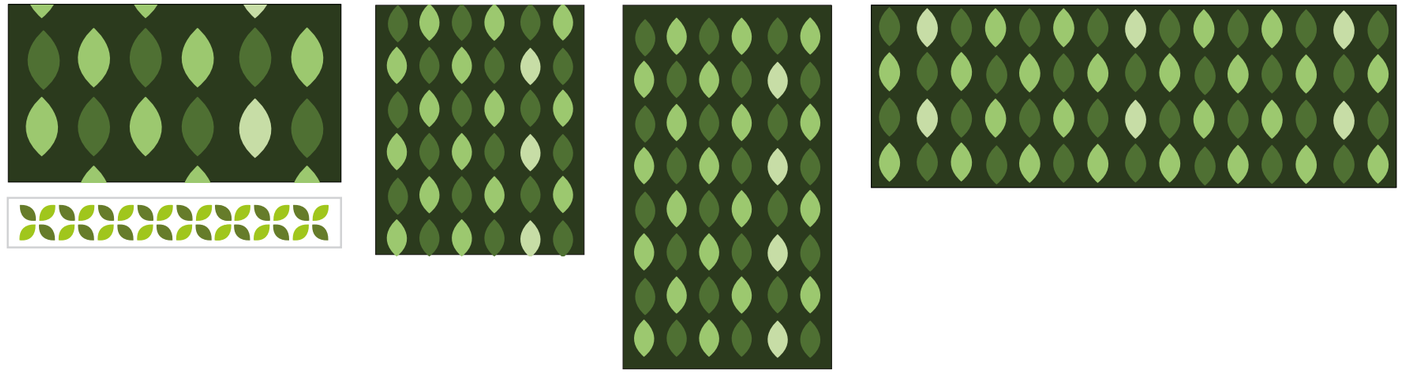
LOGO ELEMENTS / ENHANCEMENT MARKERS

Utilized in Gateway & Vehicular Signage



Patterns Utilized in Vehicular Signage

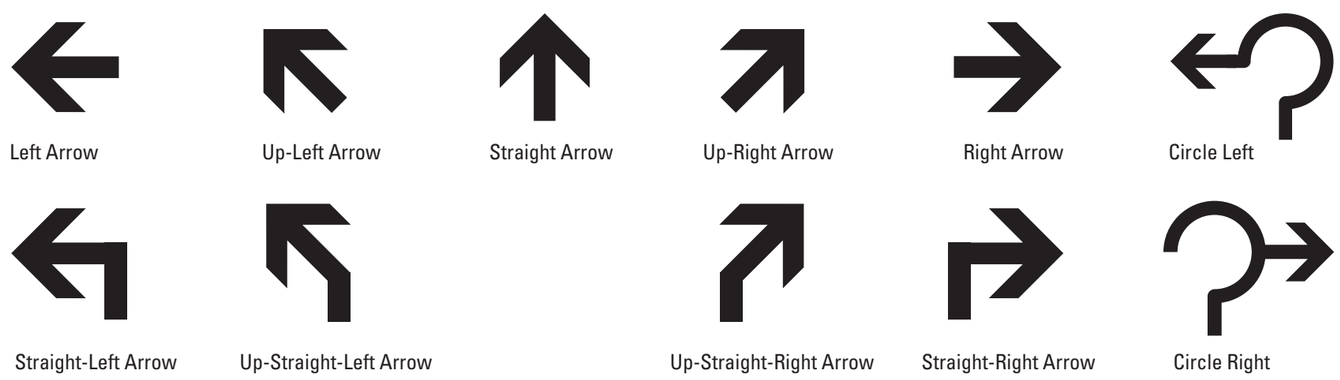


PICTOGRAPH

Utilized in Vehiclular & Pedestrian signage

ARROWS

Utilized in Vehicular Directional signage



SPECIFICATIONS

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!

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SHEET TITLE

Project Artwork

SHEET NO.

A.5

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R REFLECTIVE VINYL	NAME	SPECIFICATION	APPLICABLE	PROCESS
R1	White	3M High Intensity Prismatic Reflective Sheeting 3930 Color: **White**	Standard for System (typ.)	Knockout White: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R2	Dark Teal	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 2181**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R3	Bright Green	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 2292C**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R4	Town Green	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 2279**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R5	Dark Green	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 5605**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R6	Golden Yellow	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 142**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R7	Sunset Orange	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 1645**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R8	Aquamarine Blue	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 319**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R9	Black	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE Black**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R10	Charcoal	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE Cool Grey 10**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.
R11	Brown	3M High Intensity Prismatic Reflective Sheeting 3930 Color Match: **PANTONE 1545C**	Standard for System (typ.)	Custom Color: Background and Characters 3M custom inks direct to 3930 with 3M approved Clear UV/Graffiti overlaminate. *Applied according to Manufacturers Spec to aluminum sheet.

* 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 then 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.

P PAINTS	NAME	SPECIFICATION	APPLICABLE	PROCESS
P1	White	Color Match: **PANTONE white**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P2	Dark Teal	Color Match: **PANTONE 2181**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P3	Bright Green	Color Match: **PANTONE 2292C**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P4	Town Green	Color Match: **PANTONE 2279**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P5	Dark Green	Color Match: **PANTONE 5605**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P6	Golden Yellow	Color Match: **PANTONE 142**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P7	Sunset Orange	Color Match: **PANTONE 1645**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P8	Aquamarine Blue	Color Match: **PANTONE 319**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P9	Black	Color Match: **PANTONE Black**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P10	Lt. Green	Color Match: **PANTONE 366C**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **
P11	Brown	Color Match: **PANTONE 1545C**	Standard for System (typ.)	Surface applied, exterior sign paint and protective top coat: MATTHEWS Acrylic Polyurethane with Clear Coat Satin finish. Corrosion resistant primer, color coat, and clear anti-graffiti topcoat to seal and protect the entire system. **

** Akzo Nobel Paint was used for Phase 1 signage, Matthews Paint is preferred vendor

SPECIFICATIONS

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.

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

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Wake Forest, NC

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Phase II

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SHEET TITLE

Color Chart

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

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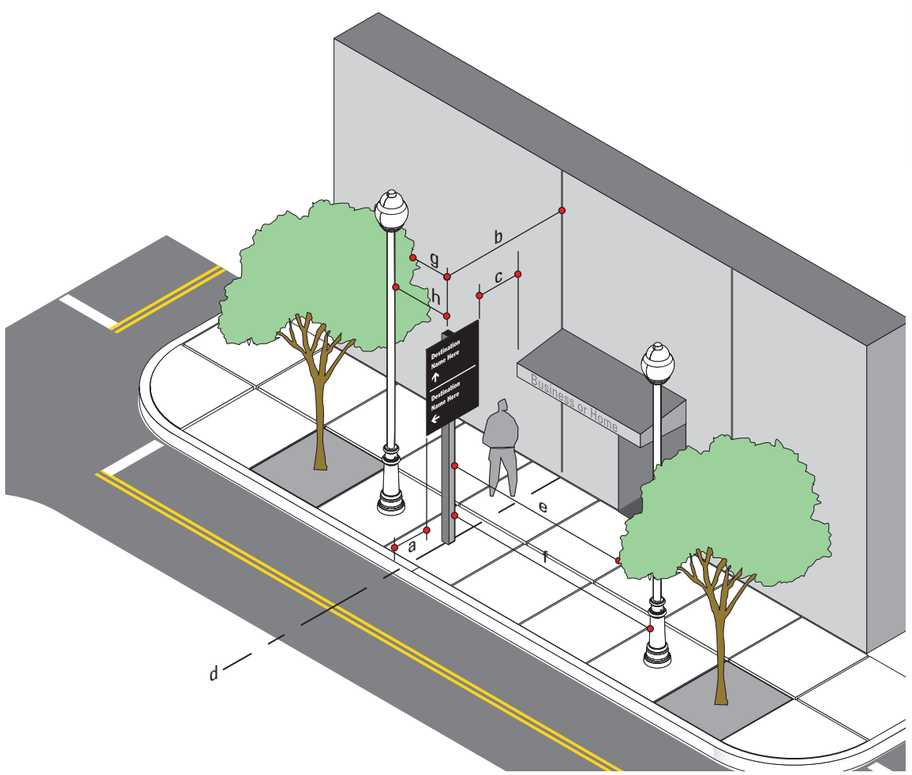
SHEET NO.

A.6

B | Placement Guidelines

Figure 1
Not to Scale



SIGN TYPE	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.

SPECIFICATIONS

FIGURE 1 - Lateral Clearance Guidelines

Within some of the Downtown areas of the Wayfinding Project, urban 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.

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.

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REVISIONS

SHEET TITLE

Sign Placement Guidelines

SHEET NO.

B.1

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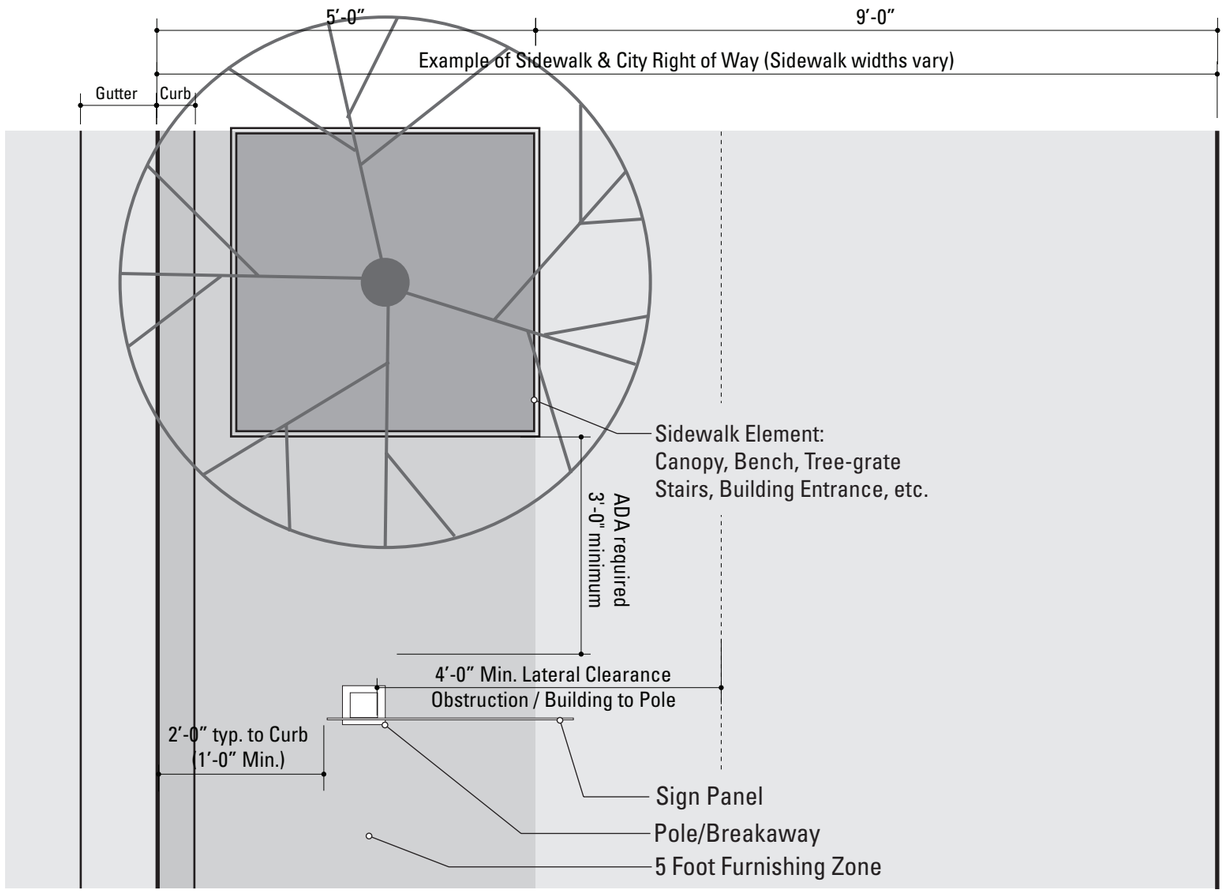

NOTE:
All locations shall be installed within the City ROW. If during the initial survey it is determined any part of the sign (pole or panel) extends outside of the City's Right of Way vertical plane and into private property, the installer must notify the city prior to fabrication/installation.

1 Reference View: Example - 5 foot Furnishing Zone / City Right of Way
SCALE: Not To Scale

Note: Top View of VDIR.1-3 shown as example.

Figure 2
Not to Scale

Unless approved by the Client 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 town's 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.

(c) Wayfinding Signs shall be positioned in such a manner that does not restrict driver's attention or view when making turns or driving through an intersection.

(d) There shall be a goal of one sign per block, although two are permissible, where necessary.

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

SPECIFICATIONS

FIGURE 2 - Lateral Clearance Guidelines

Within some of the Downtown areas, urban 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.

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REVISIONS

SHEET TITLE
Sign Placement Guidelines

SHEET NO.
B.2

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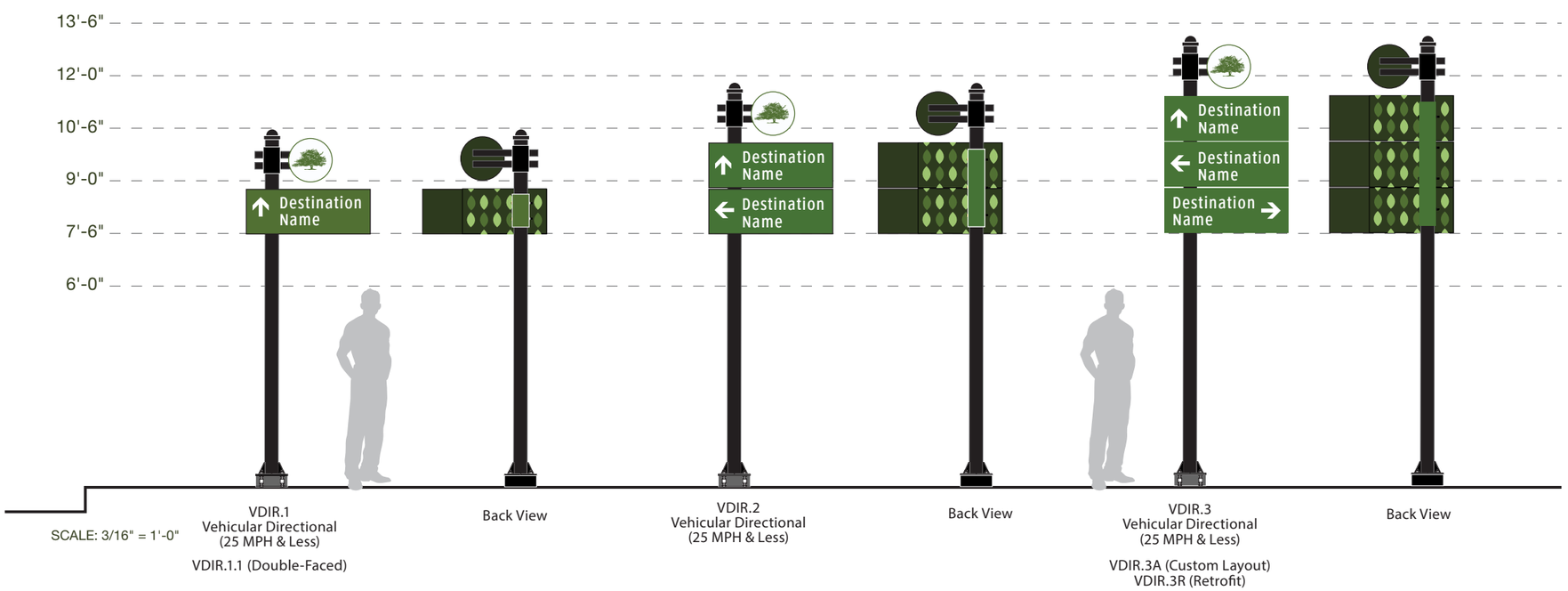
C | Menu of Sign Types



SPECIFICATIONS

MENU OF SIGN TYPES
GATE.4
GATE.5
VDIR.1
VDIR.1.1
VDIR.2
VDIR.3
VDIR.3A
VDIR.3B
VDIR.3R

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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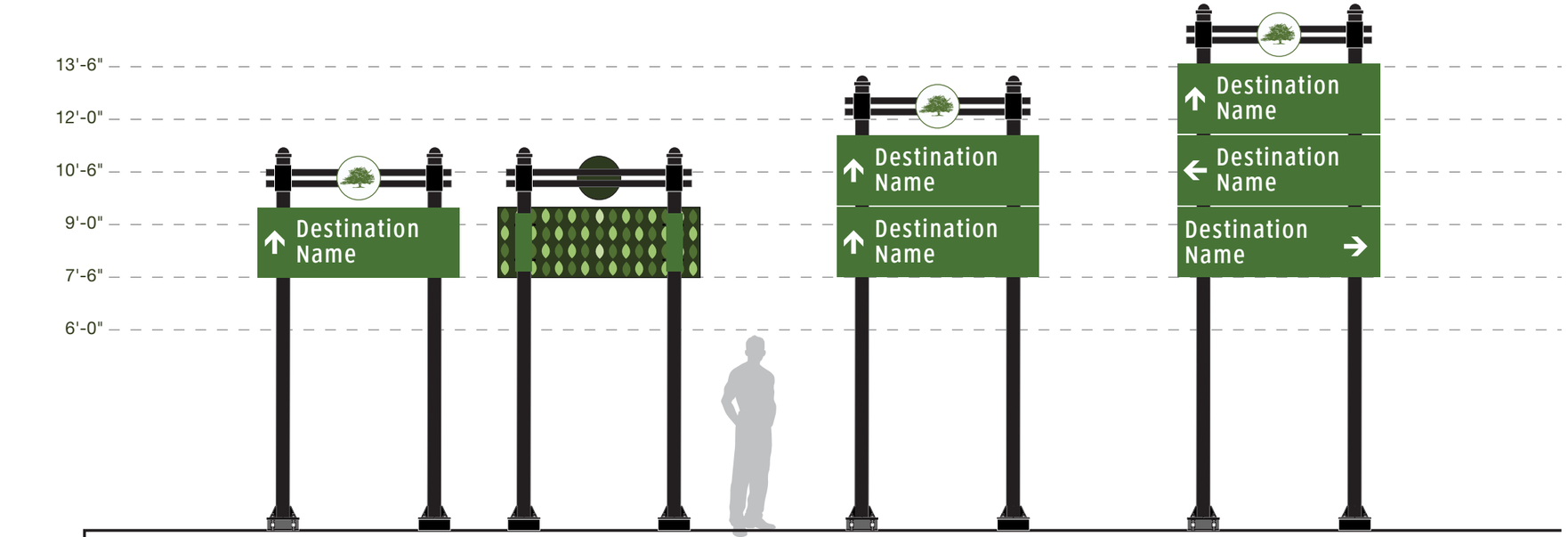
SHEET TITLE

Overview
Vehicular Signs

SHEET NO.

C.1



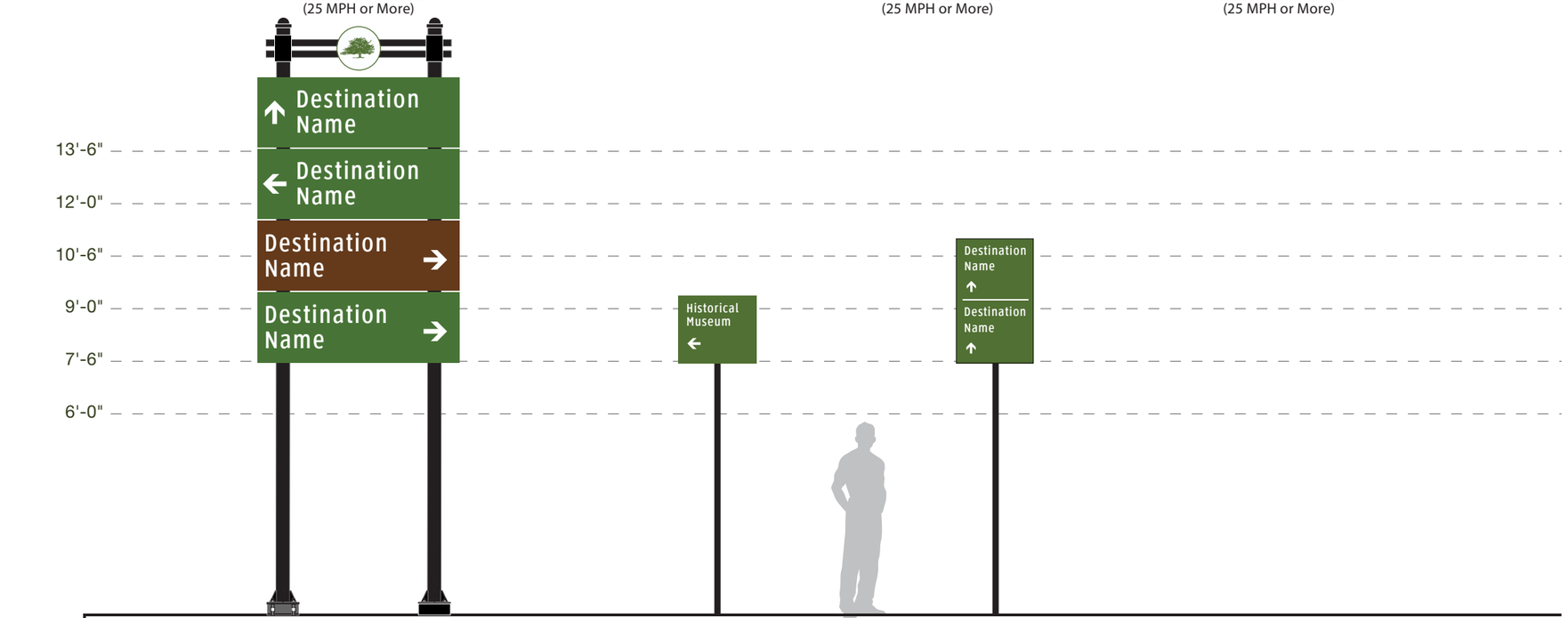
SCALE: 1/4" = 1'-0"

VDIR.4
Vehicular Directional
(25 MPH or More)

Back View

VDIR.5
Vehicular Directional
(25 MPH or More)

VDIR.6
Vehicular Directional
(25 MPH or More)



SCALE: 1/4" = 1'-0"

VDIR.6A
Vehicular Directional
(25 MPH or More)

RES.1.1
Residential Directional

RES.2.1
Residential Directional

SPECIFICATIONS

MENU OF SIGN TYPES

VDIR.4
VDIR.5
VDIR.6
VDIR.6A
RES.1.1
RES.2.1

NOTES:
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2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

ENVIRONMENTS & EXPERIENCES

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DATE 07/21/26

DRAWN BY: KRD

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REVISIONS

CLIENT / PROJECT

Wake Forest, NC

Wayfinding Program
Phase II

PROJECT NO.

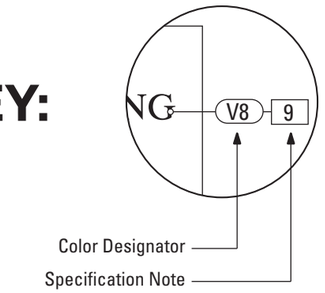
SHEET TITLE

Overview
Vehicular Signs

SHEET NO.

C.2

KEY:

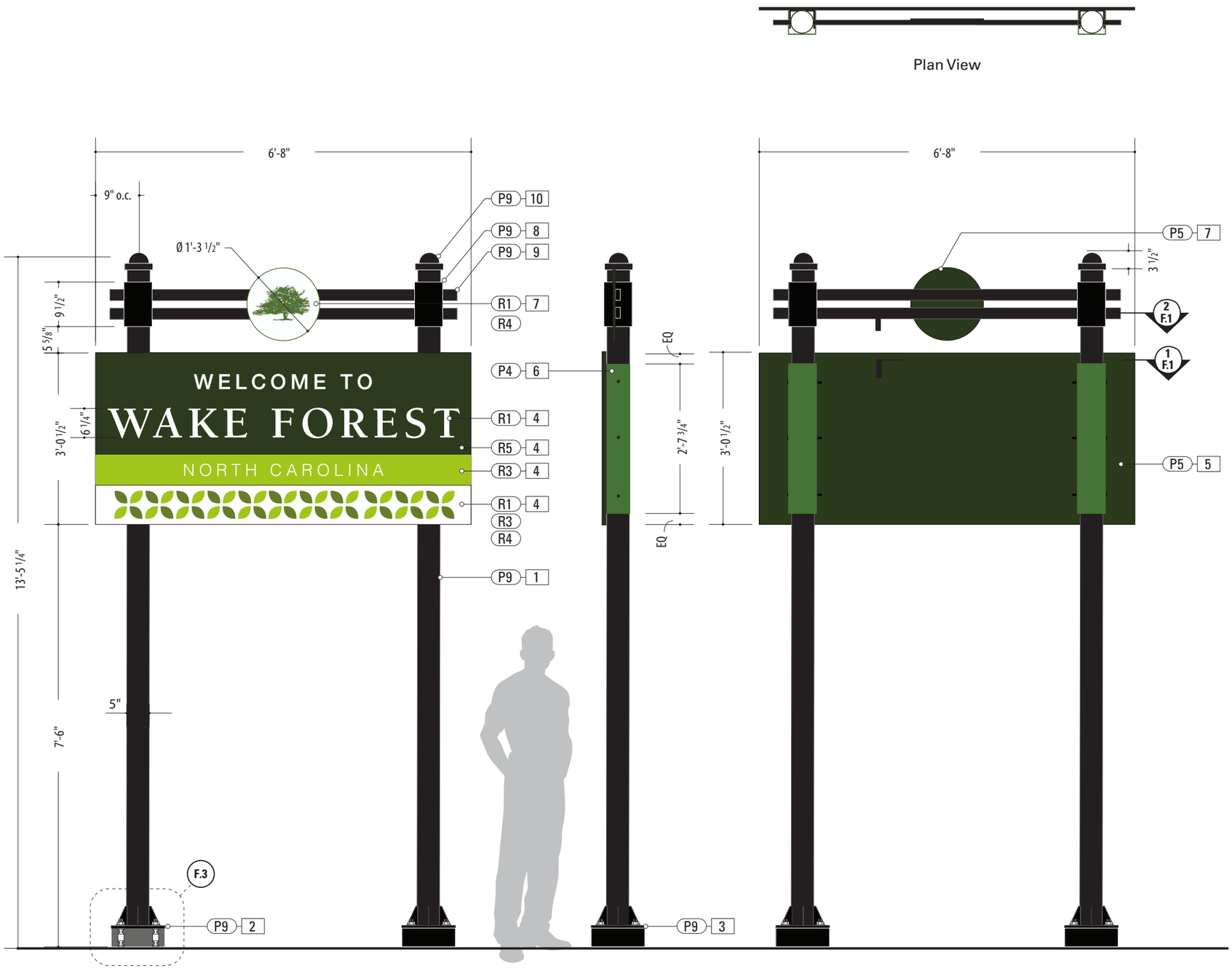


The Color Designator Chart is found in the Graphic Standards section.

The Specification Notation is found on the same page as the drawings.

D | Design Intent Drawings

SECTION 2 | Signage Drawings



1 GATE.4
SCALE: 1/2" = 1'-0"

Side View

Back View

SPECIFICATIONS **SIGN TYPE:** GATE.4 **FUNCTION:** Gateway

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
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PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
GATE.4
Gateway

SHEET NO.
D.1

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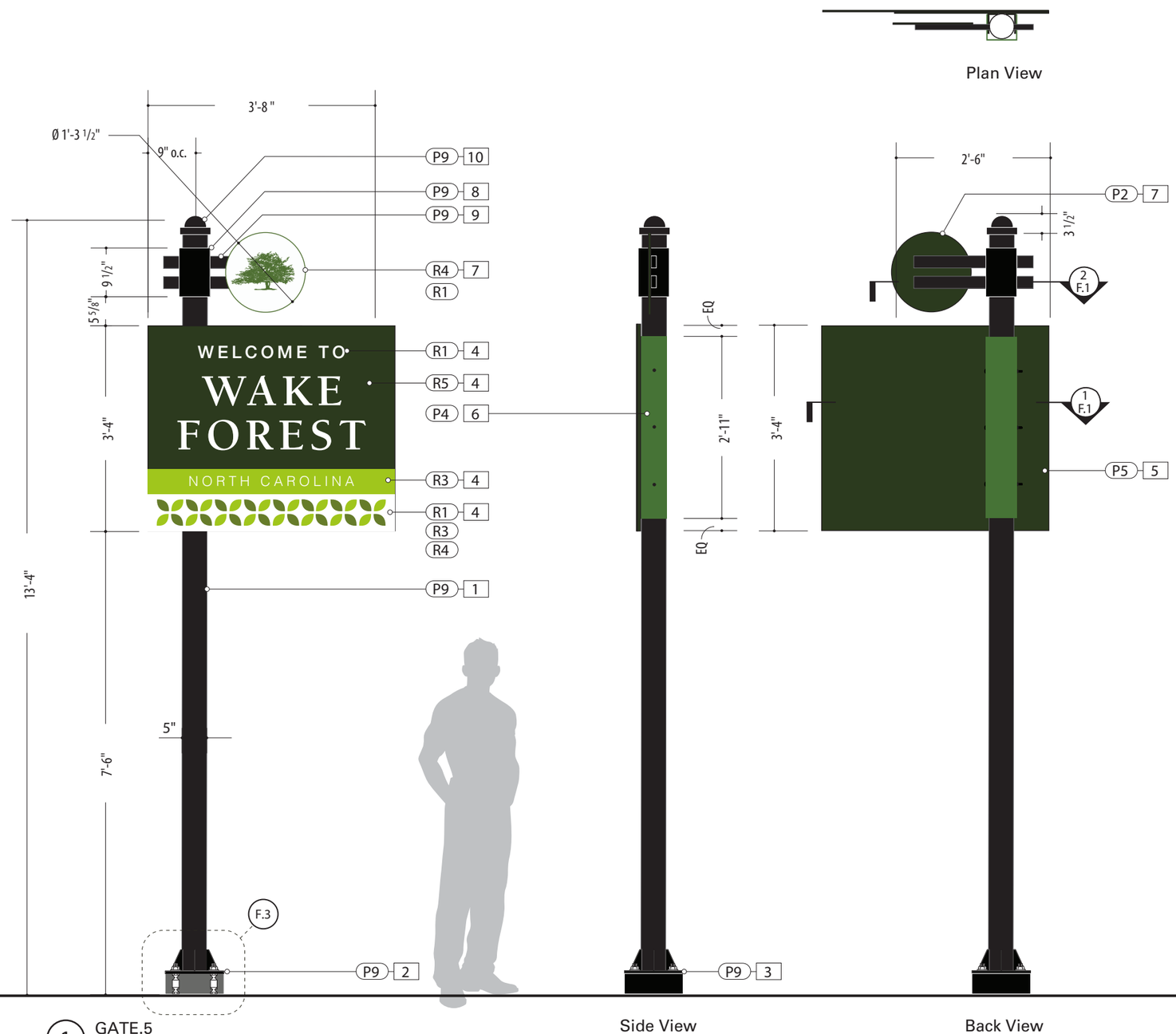

1 GATE.5
SCALE: 1/2" = 1'-0"

SPECIFICATIONS **SIGN TYPE:** GATE.5 **FUNCTION:** Gateway

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
GATE.5
Gateway

SHEET NO.
D.2

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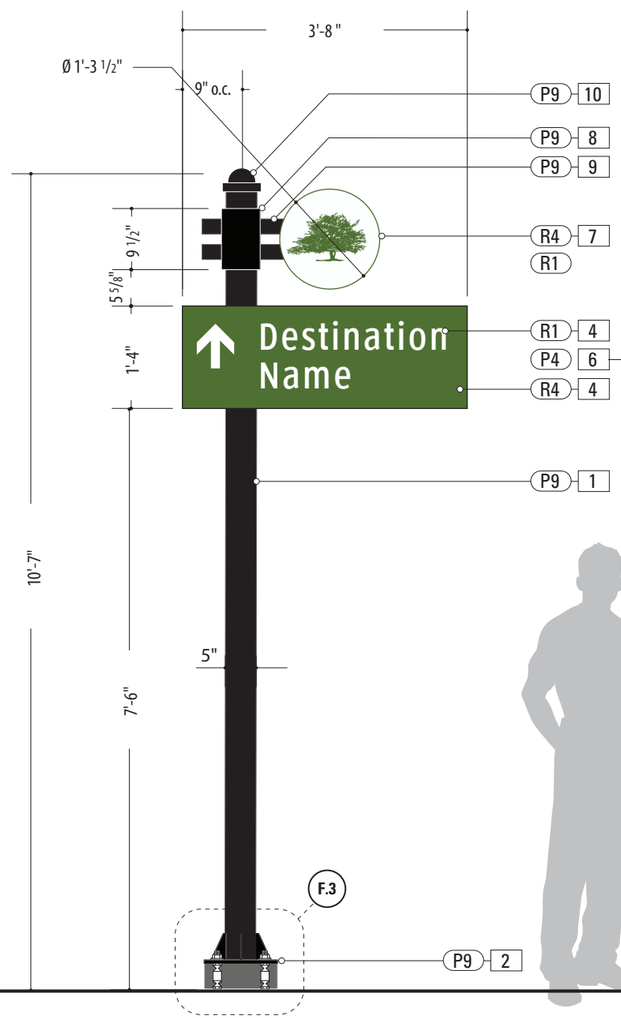
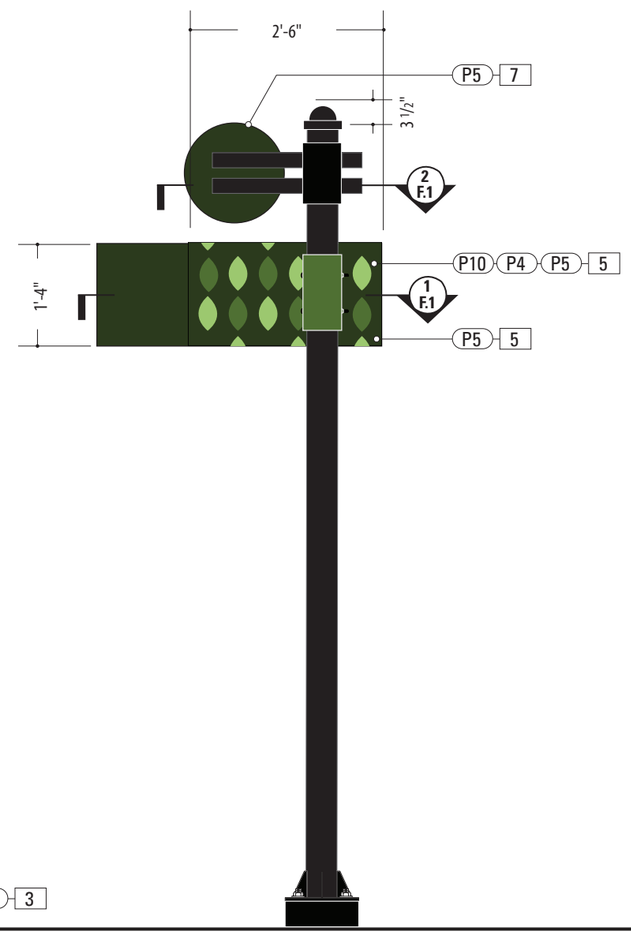


1 VDIR.1
SCALE: 1/2" = 1'-0"

Side View

Plan View



Back View

SPECIFICATIONS **SIGN TYPE:** VDIR.1 **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

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Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.1 Vehicular Directional

SHEET NO.
D.3

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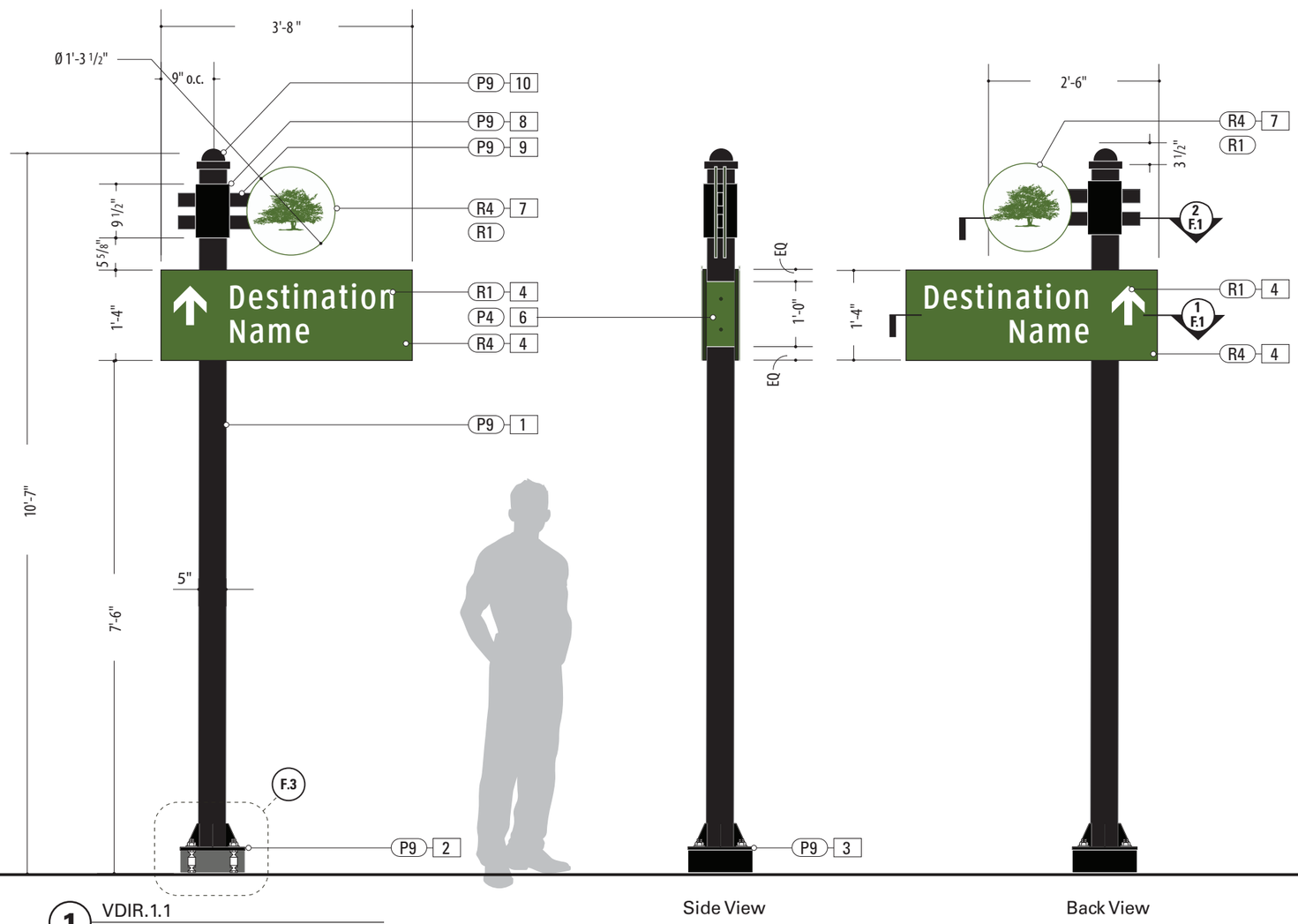

1 VDIR.1.1
SCALE: 1/2" = 1'-0"

SPECIFICATIONS **SIGN TYPE:** VDIR.1.1 **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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Wayfinding Program
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PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.1.1 Vehicular Directional

SHEET NO.
D.4

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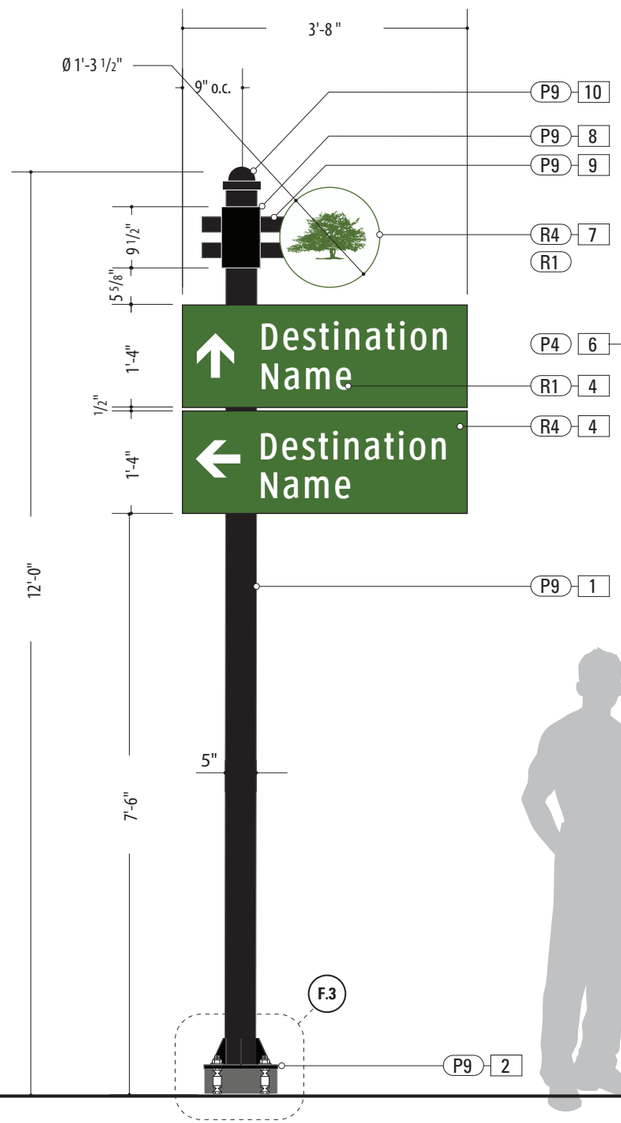
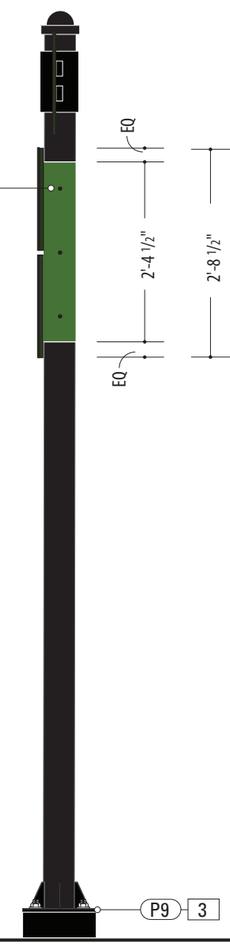
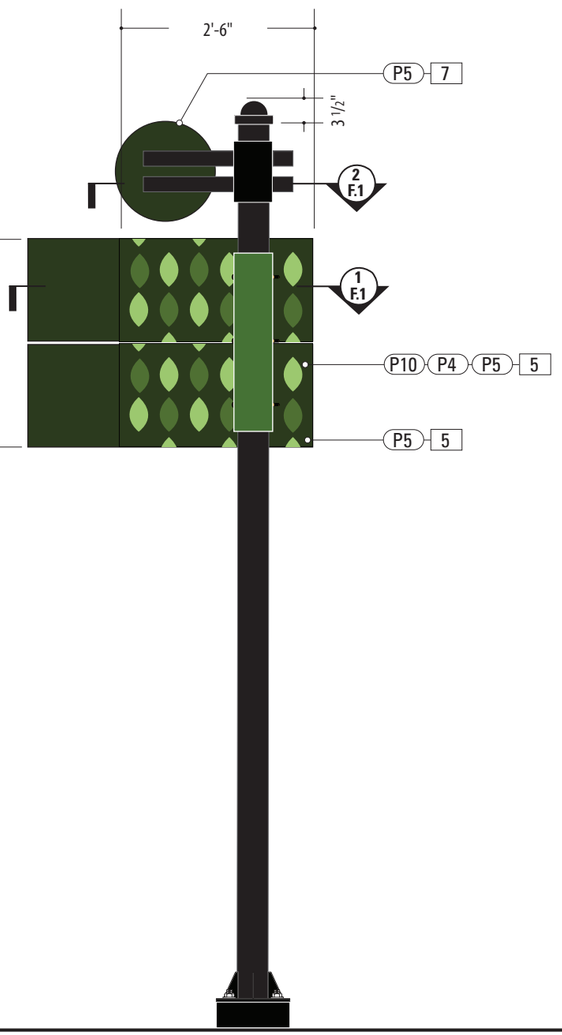


1 VDIR.2
SCALE: 1/2" = 1'-0"



Side View



Back View

Plan View

SPECIFICATIONS **SIGN TYPE:** VDIR.2 **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

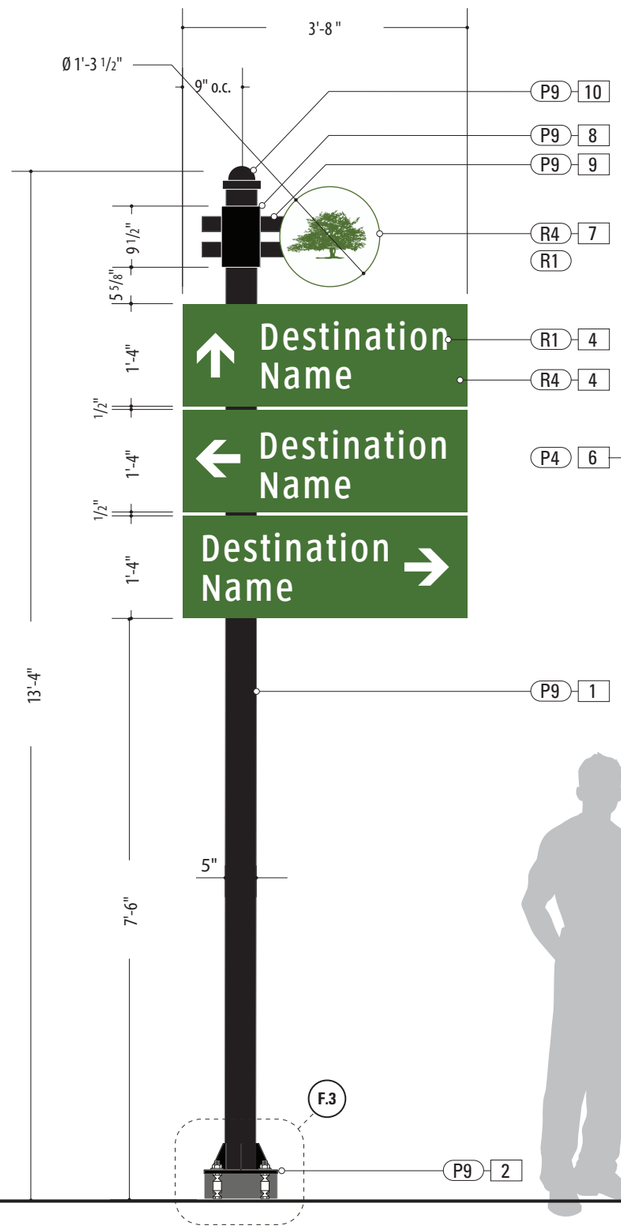
DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.2 Vehicular Directional

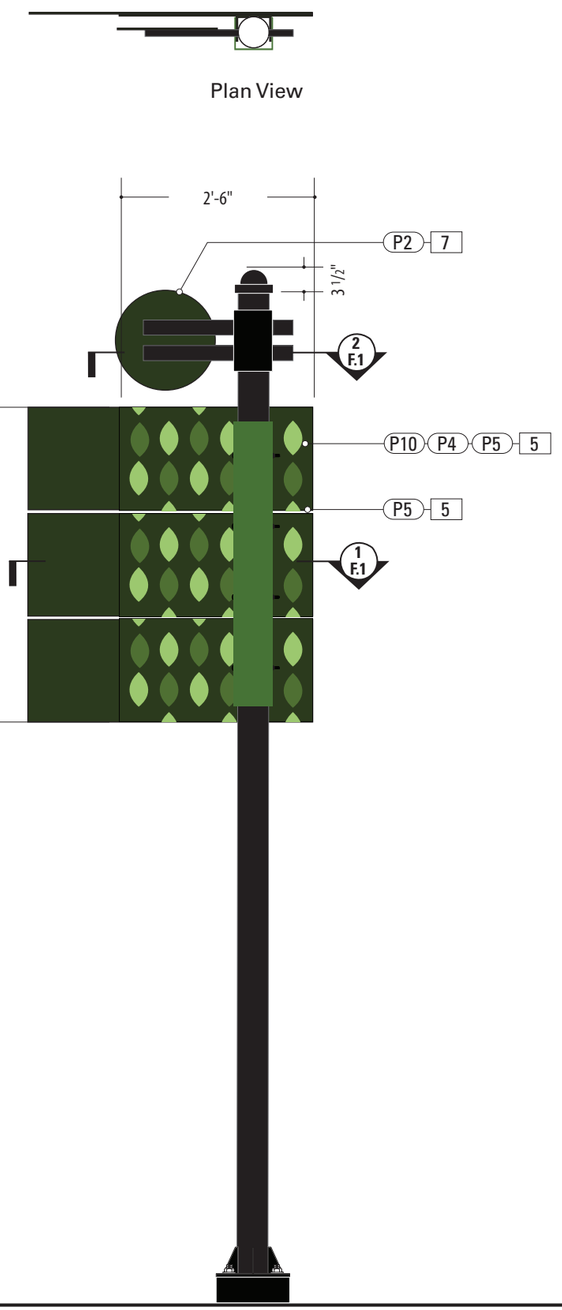
SHEET NO.
D.5

These drawings are meant for DESIGN INTENT ONLY and are not for construction. Contractor shall verify and be responsible for all dimensions and conditions of the job. Contractor shall be familiar with the site and conditions it presents. This office must be notified of any variations from the dimensions and conditions shown on this drawing. Shop drawings and details must be submitted to this office for approval prior to proceeding with fabrication. All copy shall be proofread by client and legal requirements checked by legal department.



1 VDIR.3
SCALE: 1/2" = 1'-0"

Side View



Back View

SPECIFICATIONS **SIGN TYPE:** VDIR.3 **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
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DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.3 Vehicular Directional

SHEET NO.
D.6

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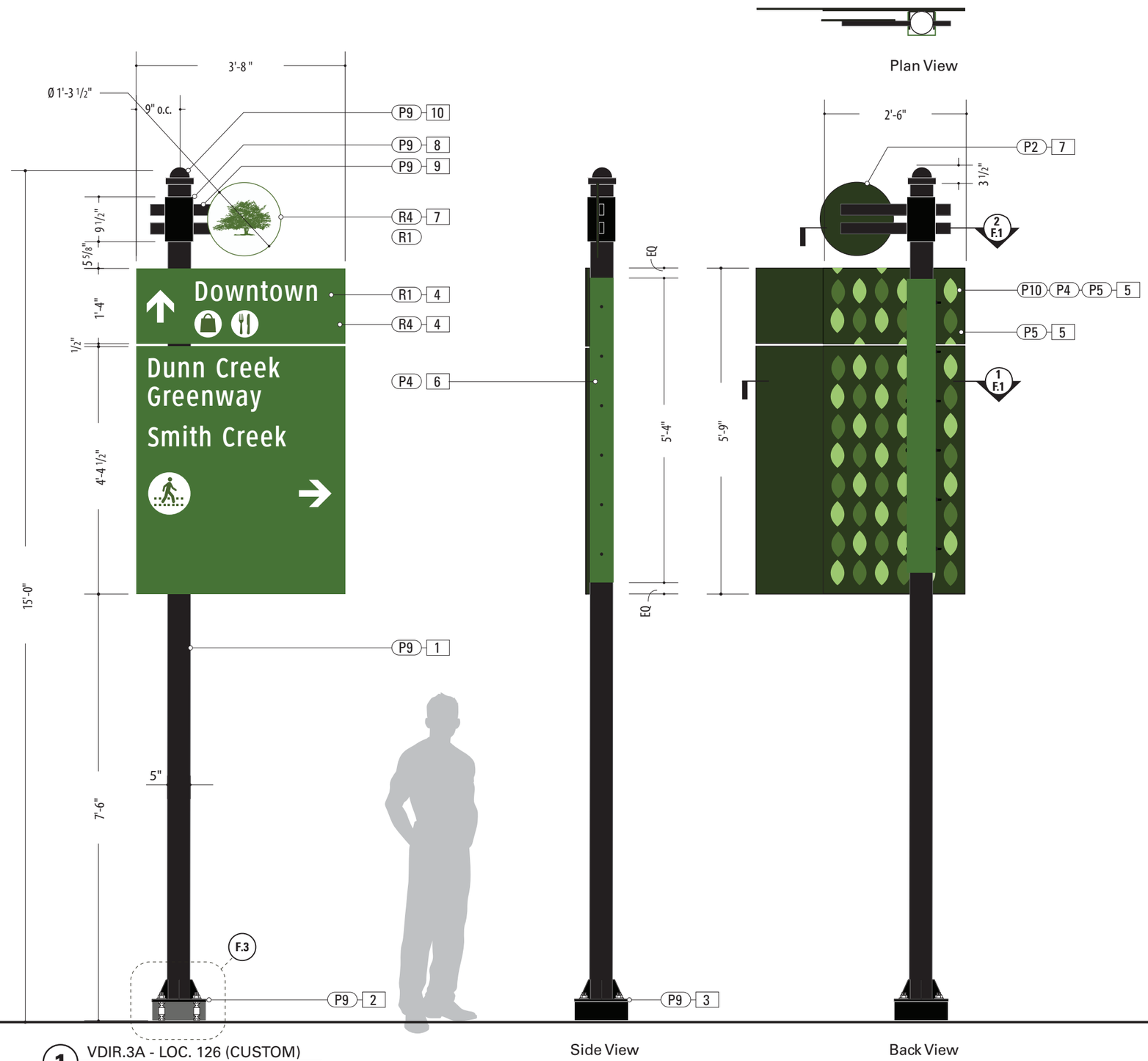

1 VDIR.3A - LOC. 126 (CUSTOM)
SCALE: 1/2" = 1'-0"

Side View

Back View

SPECIFICATIONS **SIGN TYPE:** VDIR.3A **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.3A - Loc. 126
Vehicular Directional

SHEET NO.
D.7

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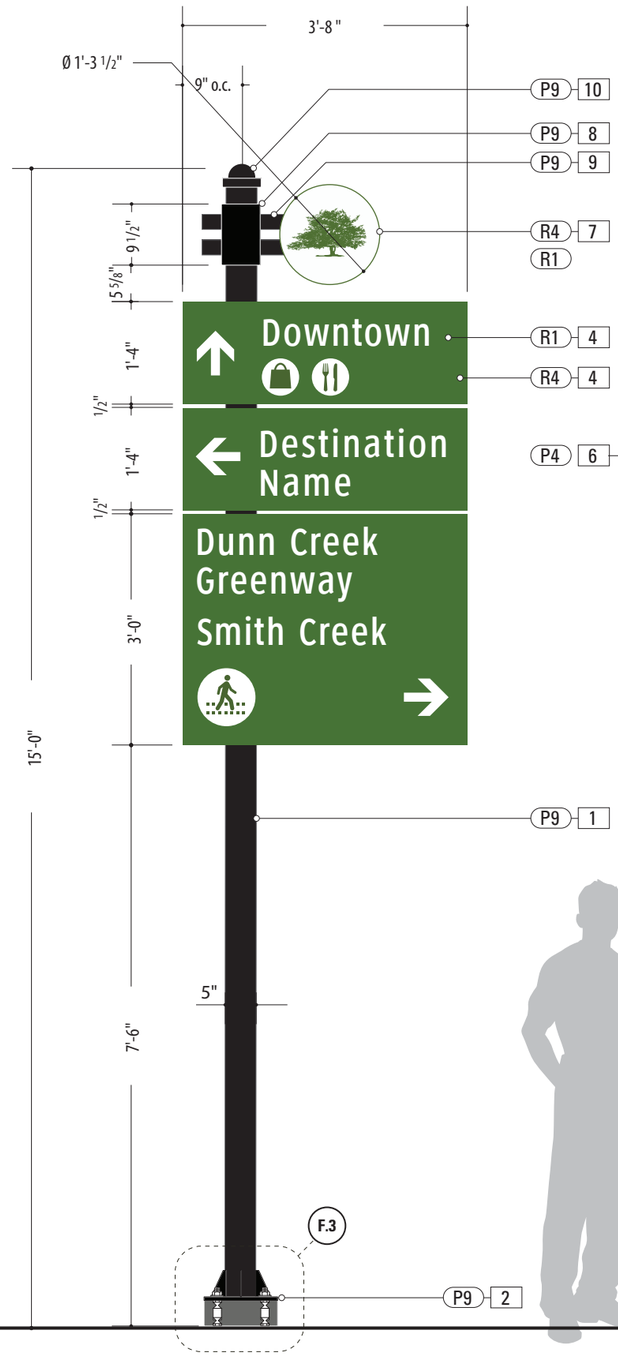
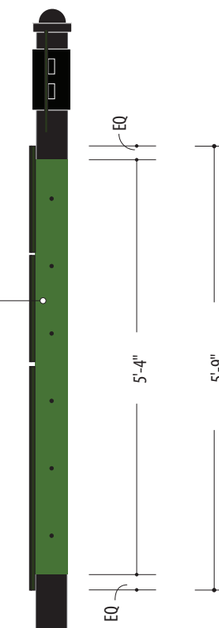
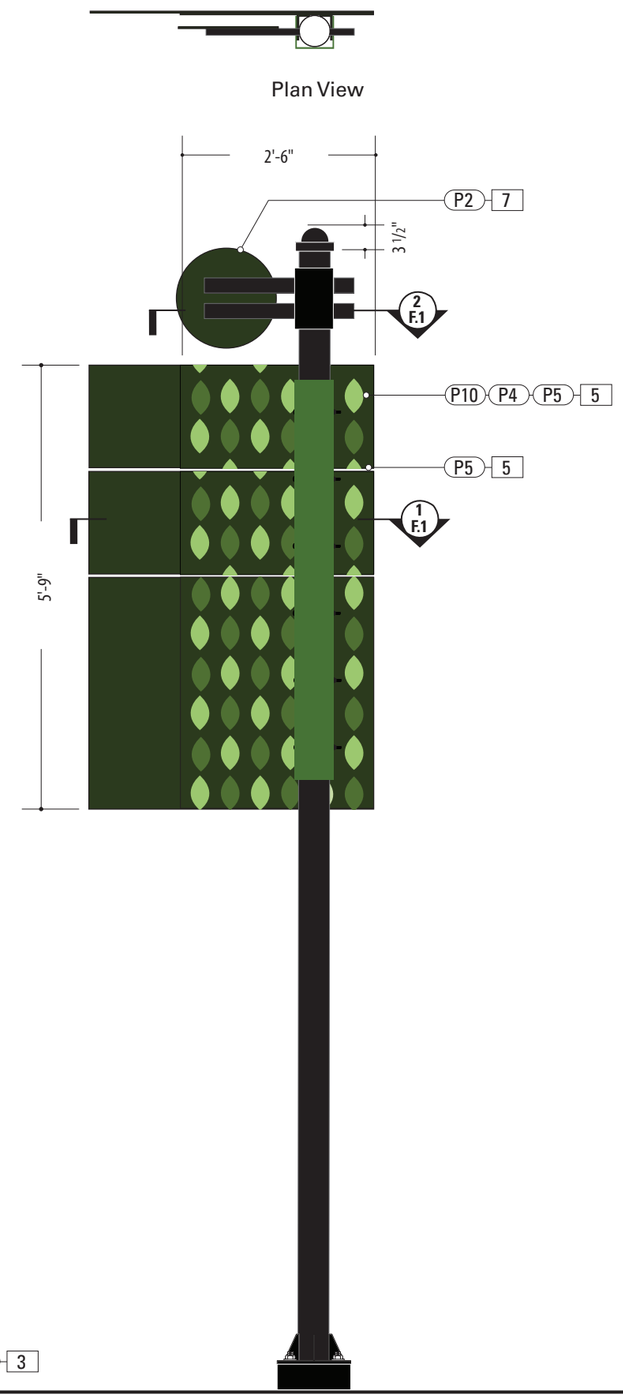


1 VDIR.3A - LOC. 125 (CUSTOM)
SCALE: 1/2" = 1'-0"



Side View



Back View

SPECIFICATIONS **SIGN TYPE:** VDIR.3B **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.3A - LOC. 125
Vehicular Directional

SHEET NO.
D.8

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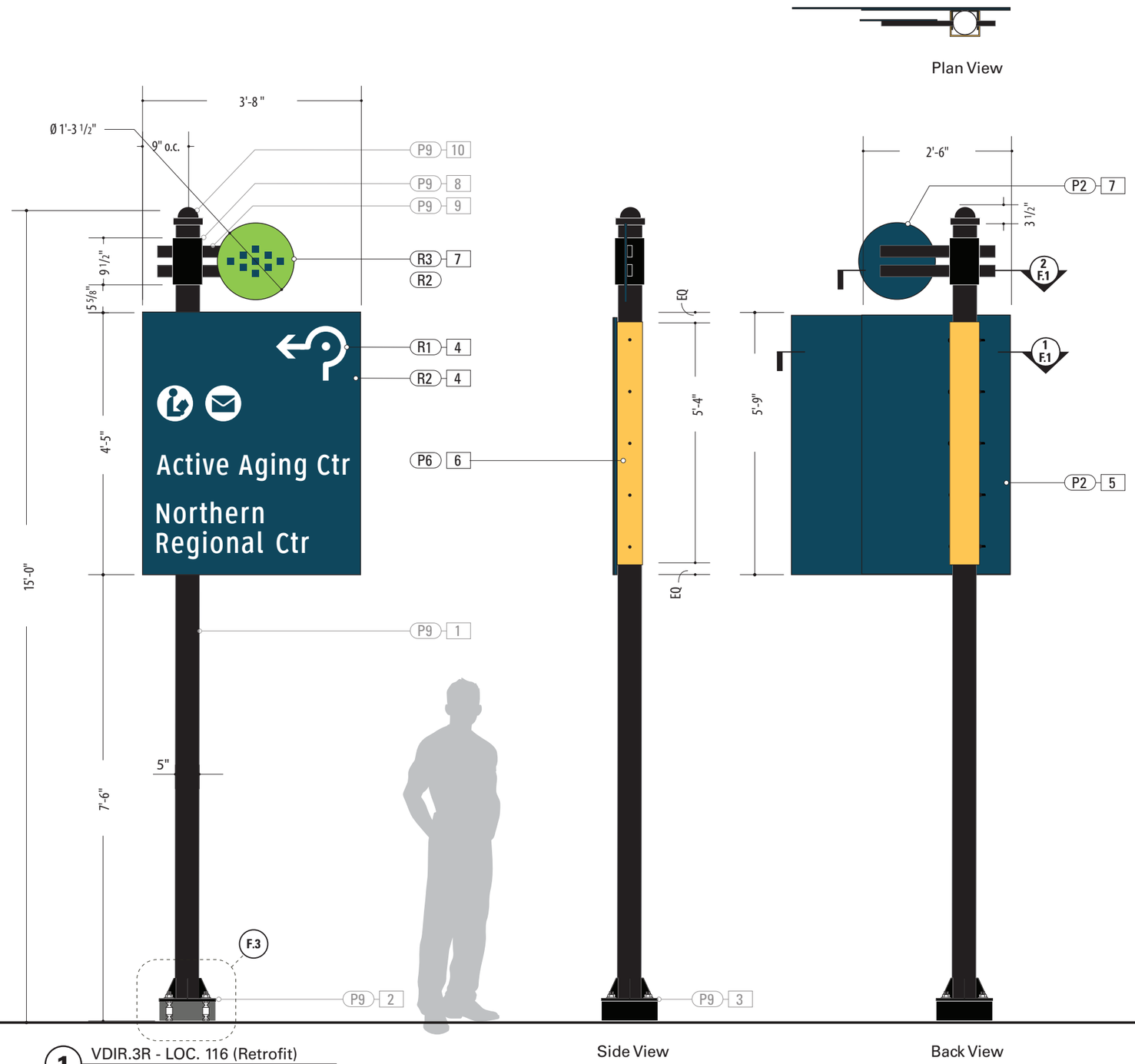

1 VDIR.3R - LOC. 116 (Retrofit)
SCALE: 1/2" = 1'-0"

SPECIFICATIONS **SIGN TYPE:** VDIR.3R **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL - REFACE/REPAINT**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE - REPAINT**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE - REPAINT**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL - REFACE/REPAINT**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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Wake Forest, NC
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Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.3R - Loc. 116
Existing Sign Retrofit

SHEET NO.
D.9

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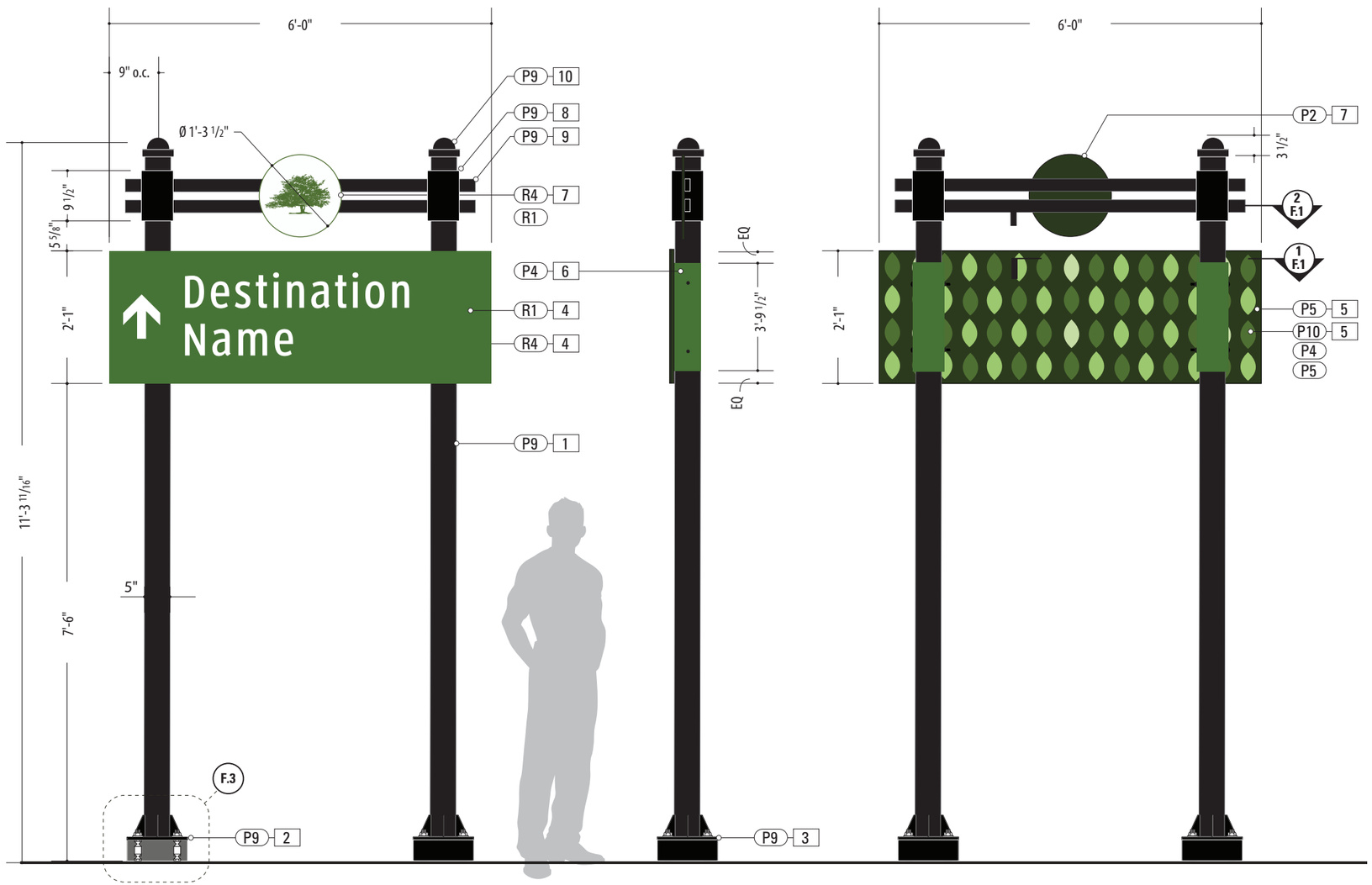
Plan View



Side View

Back View

1 VDIR.4
SCALE: 1/2" = 1'-0"

SPECIFICATIONS **SIGN TYPE:** VDIR.4 **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

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Wake Forest, NC

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Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE

VDIR.4A Vehicular Directional

SHEET NO.

D.10

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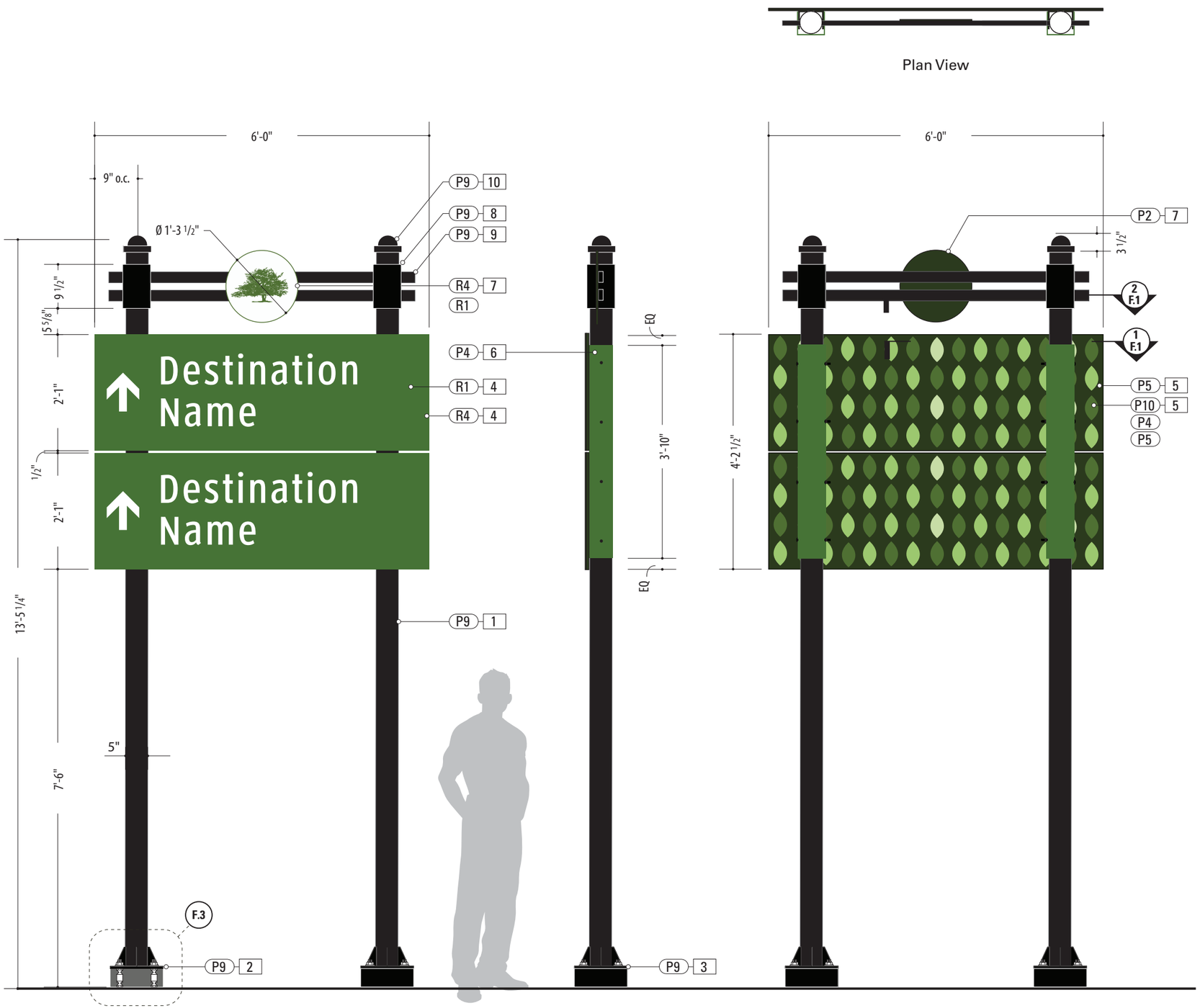

1 VDIR.5
SCALE: 1/2" = 1'-0"

SPECIFICATIONS **SIGN TYPE:** VDIR.5 **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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Phase II

PROJECT NO.

SUBCONSULTANT

DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.5 Vehicular Directional

SHEET NO.
D.11

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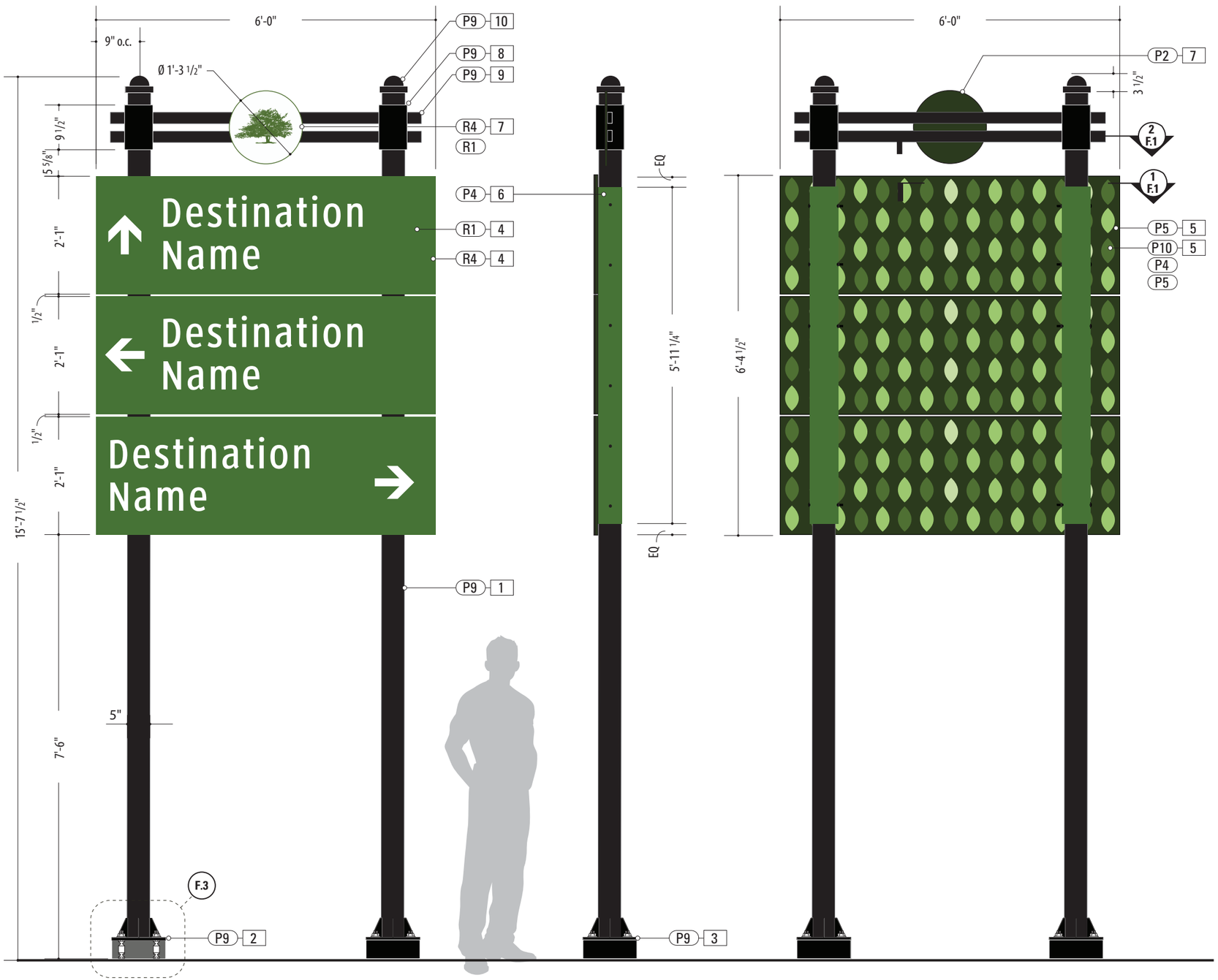

1 VDIR.6
SCALE: 1/2" = 1'-0"

SPECIFICATIONS **SIGN TYPE:** VDIR.6 **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.6 Vehicular Directional

SHEET NO.
D.12

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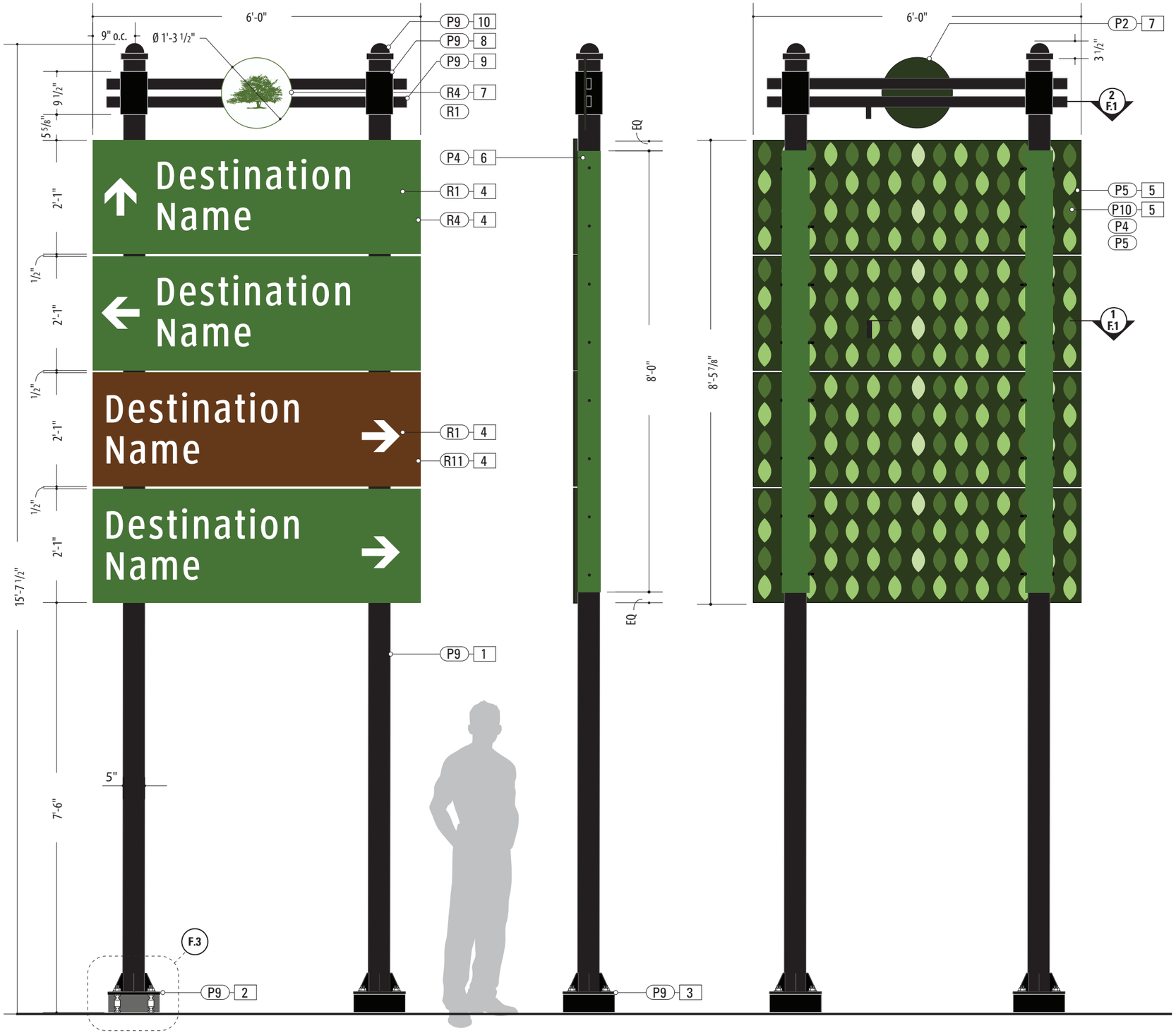

1 VDIR.6A
SCALE: 1/2" = 1'-0"

Side View

Back View

SPECIFICATIONS **SIGN TYPE:** VDIR.6A **FUNCTION:** Vehicular Directional

1. **SUPPORT POST**
   MATERIAL: 5" Dia. Alum. tube, .5" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FOOTER: Welded Plate / Breakaway Attachment (Per Detail Dwg.)

2. **BREAKAWAY ATTACHMENT**
   Transpo PoleSafe #5075 Breakaway Assembly Installed Per Engineer Req. (See Detail Page)

3. **BASE COVER**
   Transpo SPMKDN-1 Skirt for Breakaway Attachment.
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   Installed Per Engineer Req. (See Detail Page)

4. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to Sign Panel w/ adhesive + mechanical fasteners (per Detail)

5. **BACKPLATE**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   GRAPHIC BACKGROUND PROCESS: Mask + Spray Custom Pattern
   FASTENER: Welded mounting bracket at 2nd Surface for Support Post Attachment (Per Detail)

6. **ACCENT SLEEVE**
   MATERIAL: Aluminum Sheet, 1/8" thk.
   FABRICATION PROCESS: Custom router cut shape w/ 90˚ brake form bend
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
   FASTENERS: Secure through Cover / Structural Post w/ Thru-Bolts + washer Secure w/ locknut + washer - Quantity as structurally required

7. **LOLLIPOP SIGN PANEL**
   MATERIAL: .25" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS: 3M custom inks print direct to 3930 with 3M approved UV/Graffiti Vinyl Over-laminate (See Color Sheet for all color and material specifications)
   FASTENER: Secured to mounting bracket at 2nd Surface for Support Post Attachment

8. **LOLLIPOP BRACKET**
   Ø 5 1/2 x 1/ 4" Thick aluminum custom bracket painted to match P9. Bracket attached to post with mounting hardware painted to match P9

9. **LOLLIPOP SUPPORTS**
   2 3/8" x 1" aluminum bars, welded to bracket. Painted to match P9

10. **POST CAP**
    MATERIAL: Cast Resin
    FABRICATION PROCESS: Custom
    COLOR: Custom, as noted
    SURFACE PROCESS: Paint all exposed surfaces with Acrylic Polyurethane, with clear coat satin finish.
    FASTENERS: Secure w/ concealed fasteners

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
VDIR.6A Vehicular Directional

SHEET NO.
D.13

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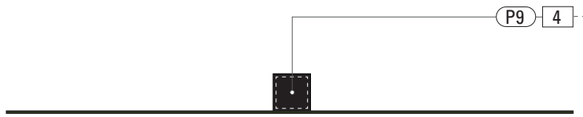
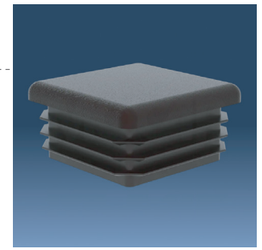
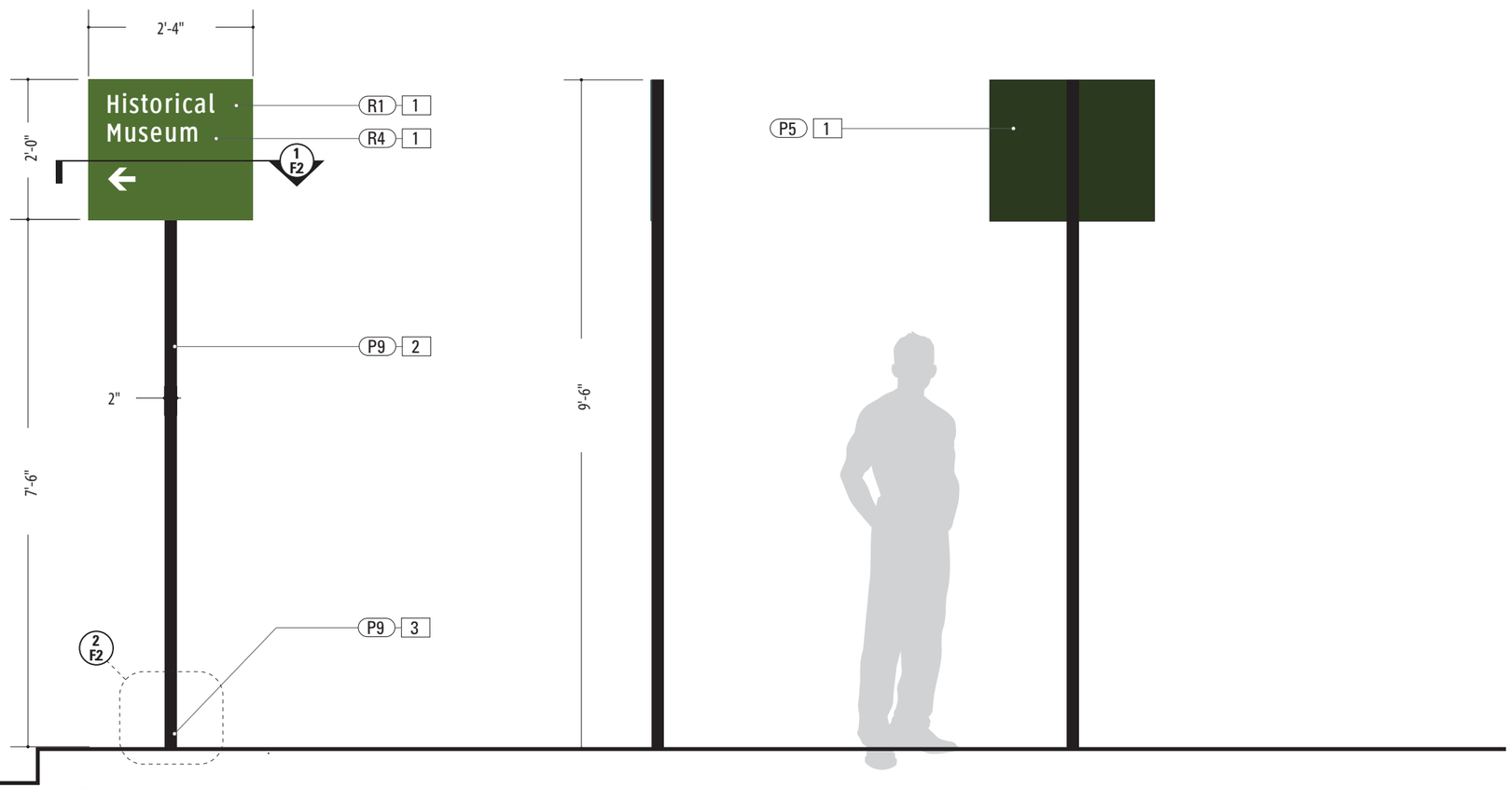


Plan View



Product Reference



1 Elevation - RES.1.1
SCALE: 1/2"= 1'- 0"

Side View

Back View

SPECIFICATIONS **SIGN TYPE:** RES.1.1 **FUNCTION:** Residential Dir.

1. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS:
   3M custom inks print direct to 3930 with
   3M approved UV/Graffiti Vinyl Over-laminate
   (See Color Sheet for all color and material
   specifications)
   FASTENER: Mechanically fastened to Support
   Post w/ Countersunk Fastener (Per Detail)

2. **SUPPORT POST**
   MATERIAL: 2" x 2" Alum. tube, .25" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces
   with Matthews Acrylic Polyurethane, with clear
   coat satin finish.
   FOOTER: Breakaway Attachment
   (Per Detail Dwg.)

3. **BREAKAWAY ATTACHMENT**
   MUTCD Breakaway Assembly
   Installed Per Engineer Req. (See Detail Page)

4. **POST CAP**
   MATERIAL: LDPE
   FABRICATION PROCESS: Cast
   Square Tubing Plug - For 2.000" (2") Tubes -
   Tube Wall: .250-.313" (2-0ga)
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces
   with Matthews Acrylic Polyurethane, with clear
   coat satin finish.
   FASTENER: Pressure-fit to top of Sign Post

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
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DRAWN BY: KRD

REVISIONS

SHEET TITLE
RES.1.1 Residential Directional

SHEET NO.
D.14

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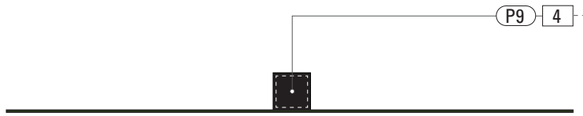
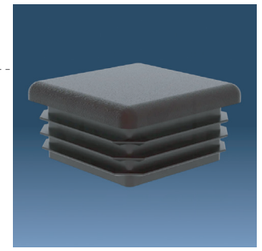
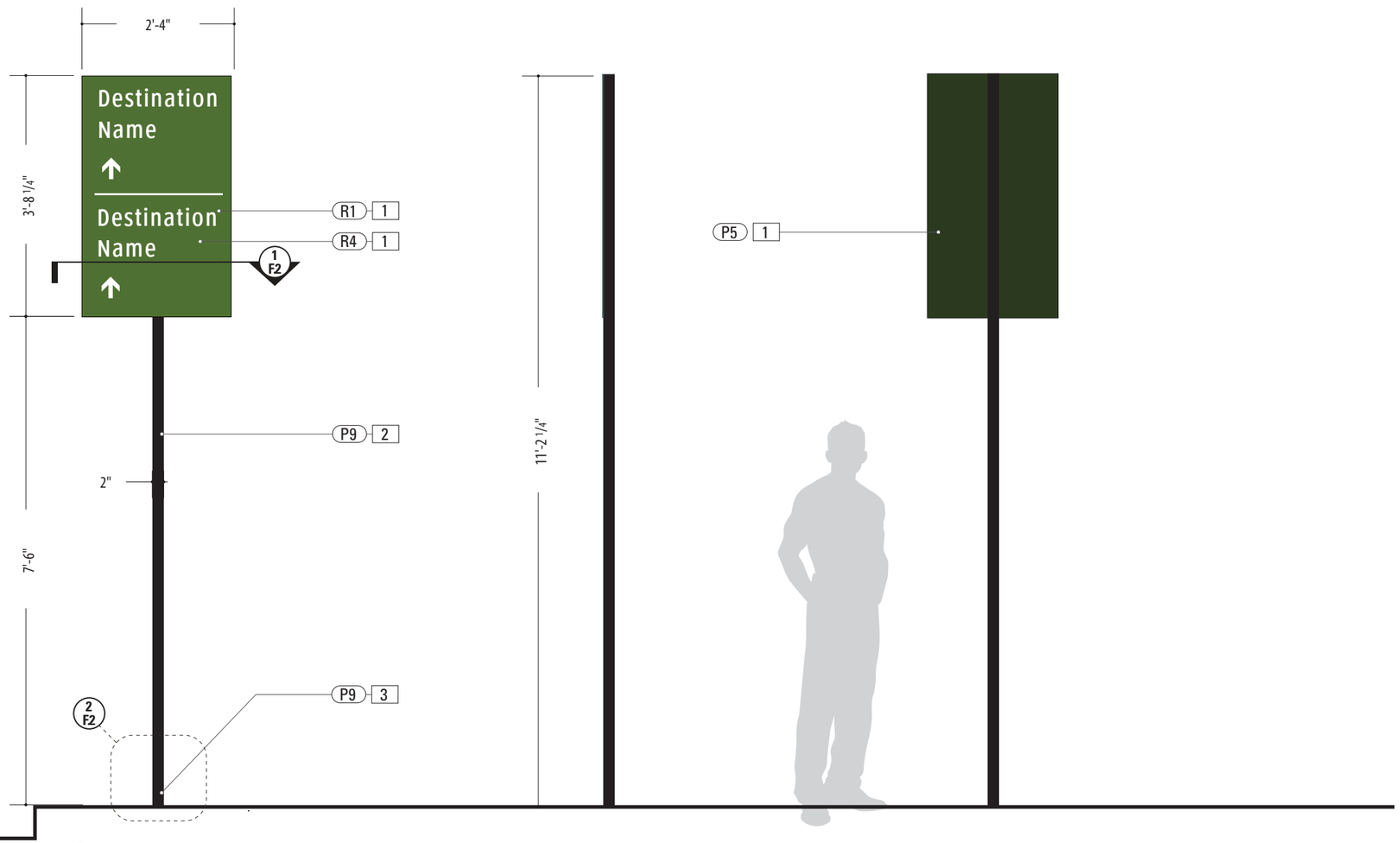


Plan View



Product Reference



1 Elevation - RES.2.1
SCALE: 1/2"= 1'- 0"

Side View

Back View

SPECIFICATIONS **SIGN TYPE:** RES.2.1 **FUNCTION:** Residential Dir.

1. **SIGN PANEL**
   MATERIAL: .125" Thk. Aluminum Panel
   FABRICATION PROCESS: Router Cut
   EDGES: Smooth
   GRAPHIC BACKGROUND AND COPY PROCESS:
   3M custom inks print direct to 3930 with
   3M approved UV/Graffiti Vinyl Over-laminate
   (See Color Sheet for all color and material
   specifications)
   FASTENER: Mechanically fastened to Support
   Post w/ Countersunk Fastener (Per Detail)

2. **SUPPORT POST**
   MATERIAL: 2" x 2" Alum. tube, .25" wall
   FABRICATION PROCESS: Extruded
   EDGES: Smooth
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces
   with Matthews Acrylic Polyurethane, with clear
   coat satin finish.
   FOOTER: Breakaway Attachment
   (Per Detail Dwg.)

3. **BREAKAWAY ATTACHMENT**
   MUTCD Breakaway Assembly
   Installed Per Engineer Req. (See Detail Page)

4. **POST CAP**
   MATERIAL: LDPE
   FABRICATION PROCESS: Cast
   Square Tubing Plug - For 2.000" (2") Tubes -
   Tube Wall: .250-.313" (2-0ga)
   COLOR: Custom, as noted
   SURFACE PROCESS: Paint all exposed surfaces
   with Matthews Acrylic Polyurethane, with clear
   coat satin finish.
   FASTENER: Pressure-fit to top of Sign Post

NOTES

1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
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DATE 07/21/26

DRAWN BY: KRD

REVISIONS

SHEET TITLE
RES.2.1 Residential Directional

SHEET NO.
D.15

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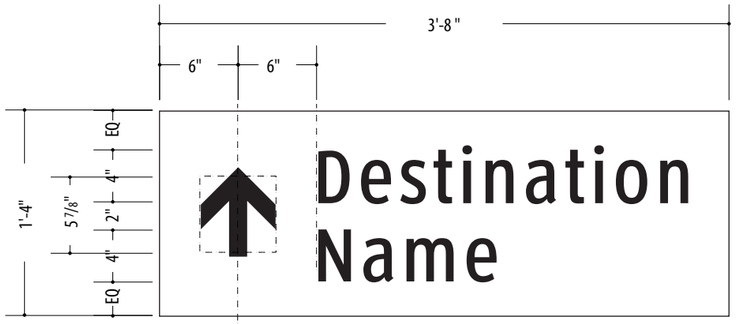
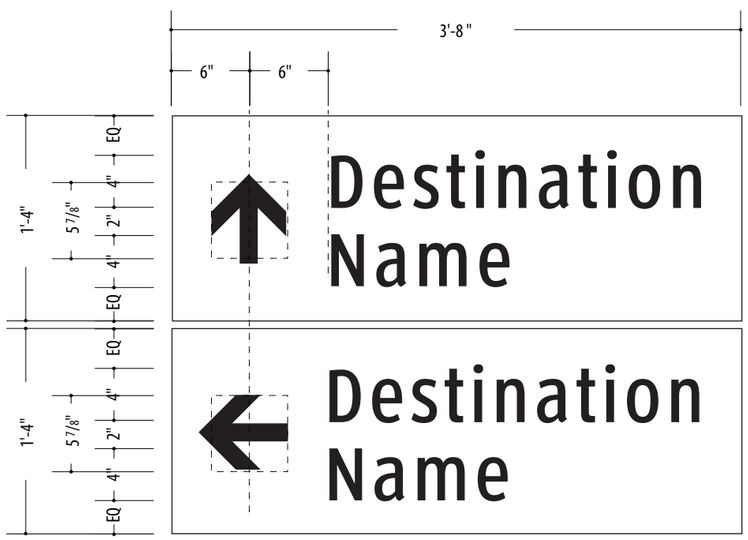
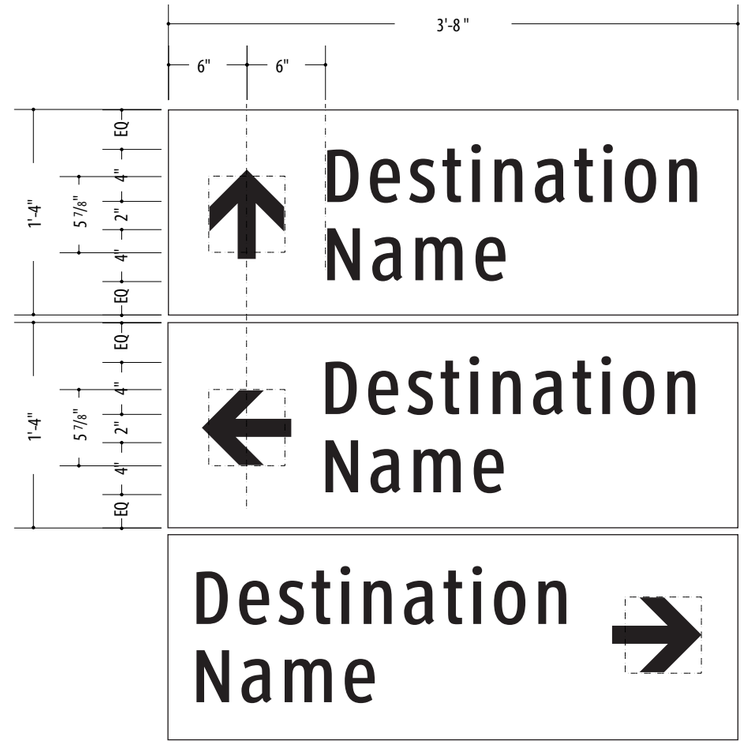
E | Graphic Layouts



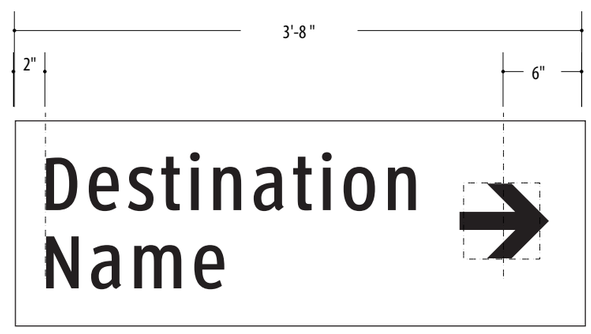
1 Graphic Layouts: VDIR .1D
SCALE: 1" = 1'-0"



2 Graphic Layouts: VDIR.2D
SCALE: 1" = 1'-0"



3 Graphic Layouts: VDIR.3D
SCALE: 1" = 1'-0"



4 Graphic Layouts: VDIR.3D
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.1
VDIR.1.1
VDIR.2
VDIR.3
VDIR.3A
VDIR.3B

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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DRAWN BY: KRD

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CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.1

051

052

1 Graphic Layout - GATE.5
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
GATE.5

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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REVISIONS

CLIENT / PROJECT

Wake Forest, NC

Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE

Graphic Layout

SHEET NO.

E.2

102

103

113

131

132

149

155

124B

142A

142C

1 Graphic Layout - VDIR.1
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.1

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.3

142B
(SIDE A)

142B
(SIDE B)

1 Graphic Layout - VDIR.1.1
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.1.1

NOTES:
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Wake Forest, NC

Wayfinding Program
Phase II

PROJECT NO.

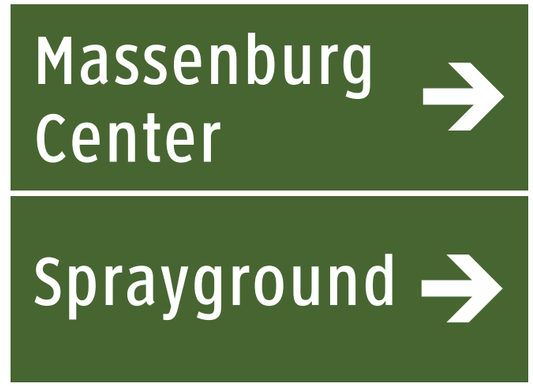
SHEET TITLE

Graphic Layout

SHEET NO.

E.4

104



105A

136

127

128

139

1 Graphic Layout - VDIR.2
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.2

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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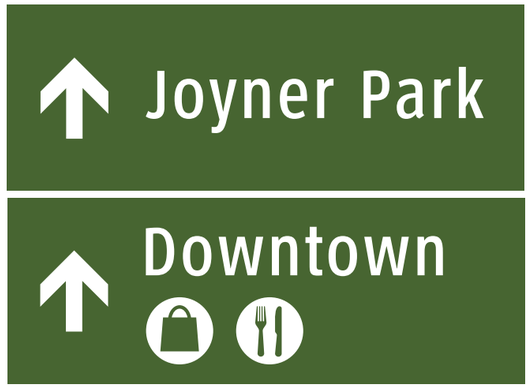
CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.5



146

111

161

156

124C

1 Graphic Layout - VDIR.2
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.2

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE

Graphic Layout

SHEET NO.

E.6

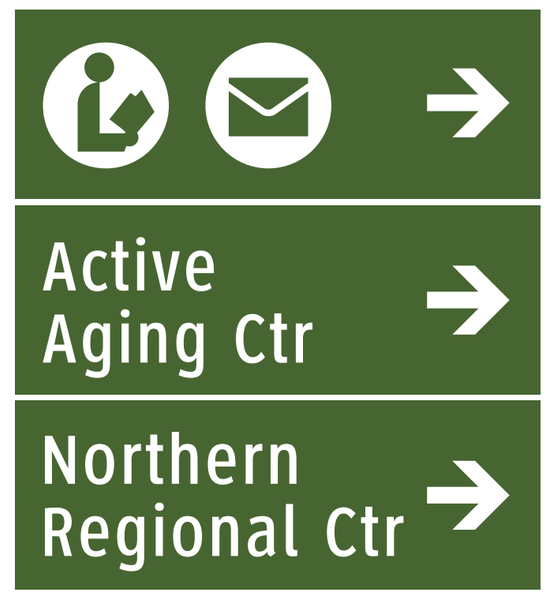
101

105

131A

106A

130



147

1 Graphic Layout - VDIR.3
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.3

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE

Graphic Layout

SHEET NO.

E.7

1 Graphic Layout - VDIR.3
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.3

NOTES:
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Wake Forest, NC

Wayfinding Program
Phase II

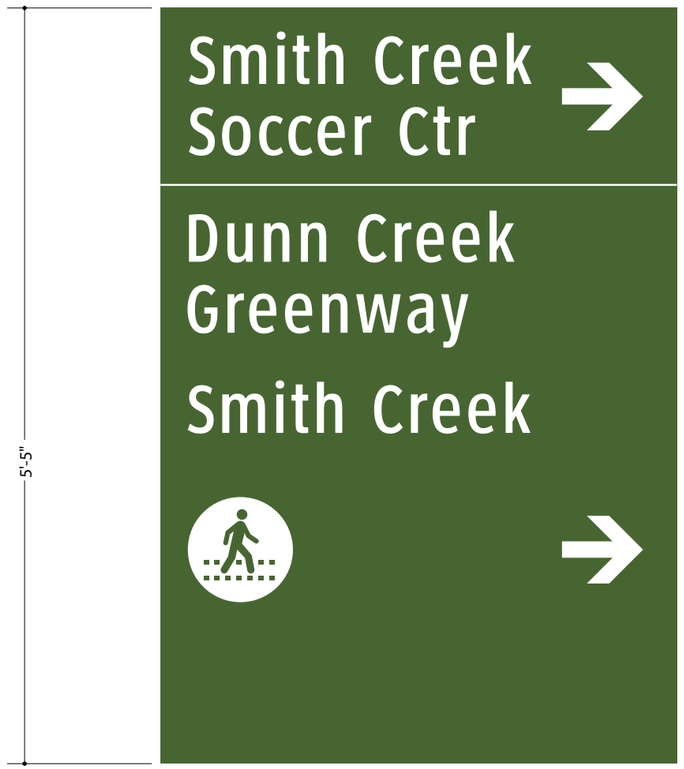
PROJECT NO.

SHEET TITLE

Graphic Layout

SHEET NO.

E.8



126

125

1 Graphic Layout - VDIR.3A
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.3A
VDIR.3B

NOTES:
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Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE

Graphic Layout

SHEET NO.

E.9

118A

127A

158

159

1 Graphic Layout - VDIR.4
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.4

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE

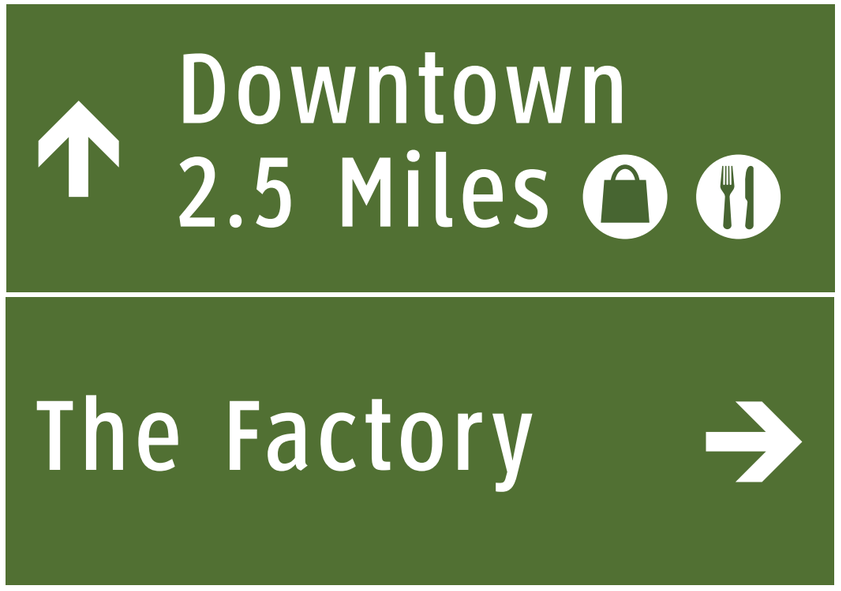
Graphic Layout

SHEET NO.

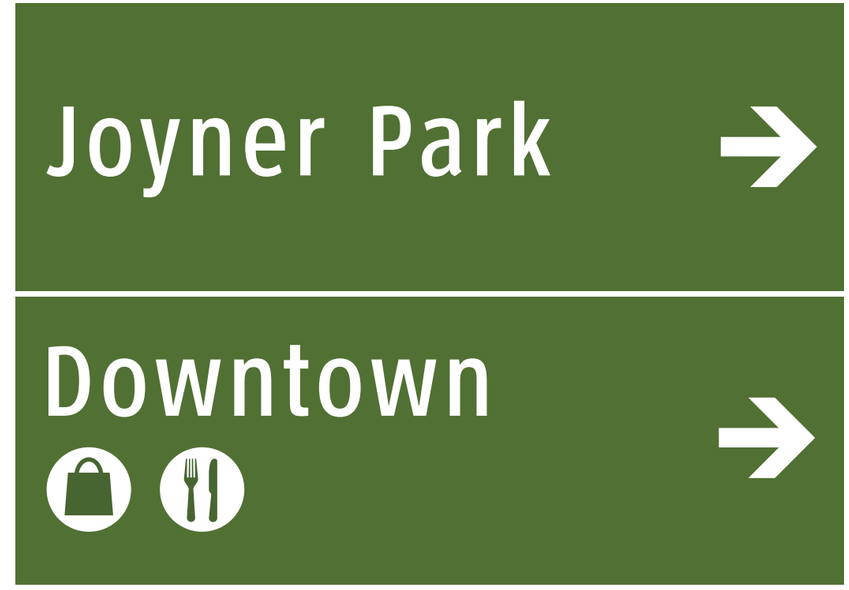
E.10

115

124A



118



133

1 Graphic Layout - VDIR.5
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.5

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
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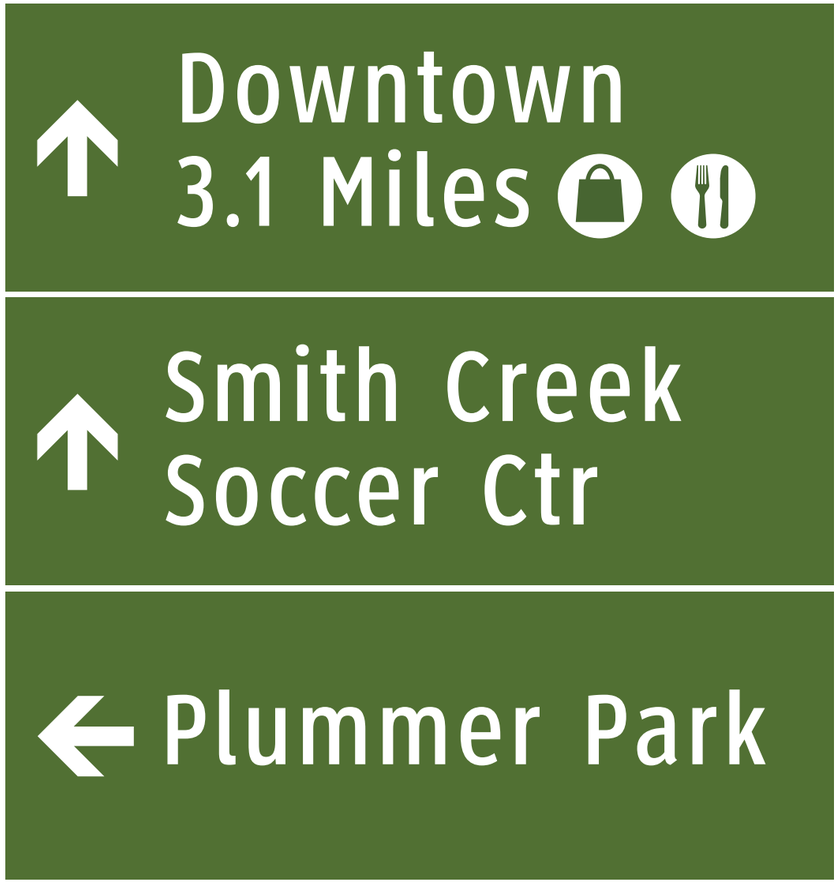
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.11



121

122

1 Graphic Layout - VDIR.6
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.6

NOTES:
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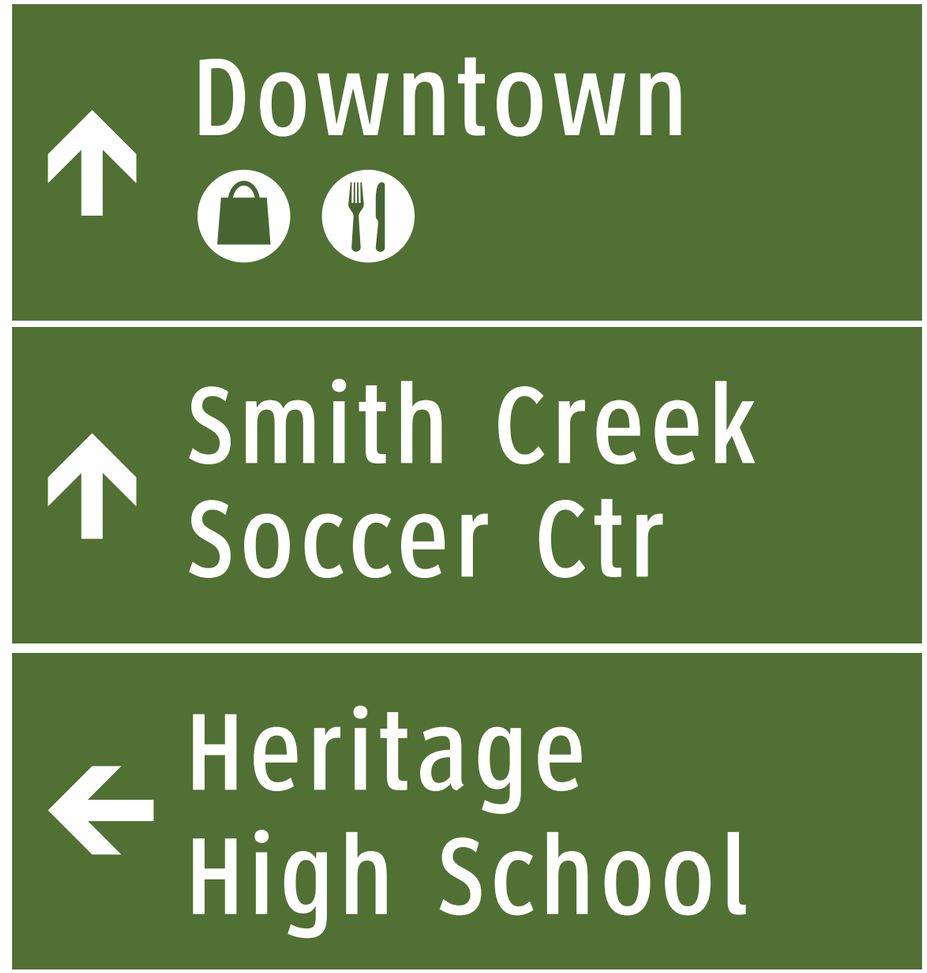
Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.12

123



124

1 Graphic Layout - VDIR.6
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.6

NOTES:
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Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.13

157

1 Graphic Layout - VDIR.6
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.6

NOTES:
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CLIENT / PROJECT

Wake Forest, NC

Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE

Graphic Layout

SHEET NO.

E.14

129

129A

1 Graphic Layout - VDIR.6A
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
VDIR.6A

NOTES:
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Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.15

1 Graphic Layout - RES.1.1
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
RES.1.1

NOTES:
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Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE
Graphic Layout

SHEET NO.
E.16

119

137

137B

1 Graphic Layout - RES.2.1
SCALE: 1" = 1'-0"

SPECIFICATIONS

Sign Types:
RES.2.1

NOTES:
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Phase II

PROJECT NO.

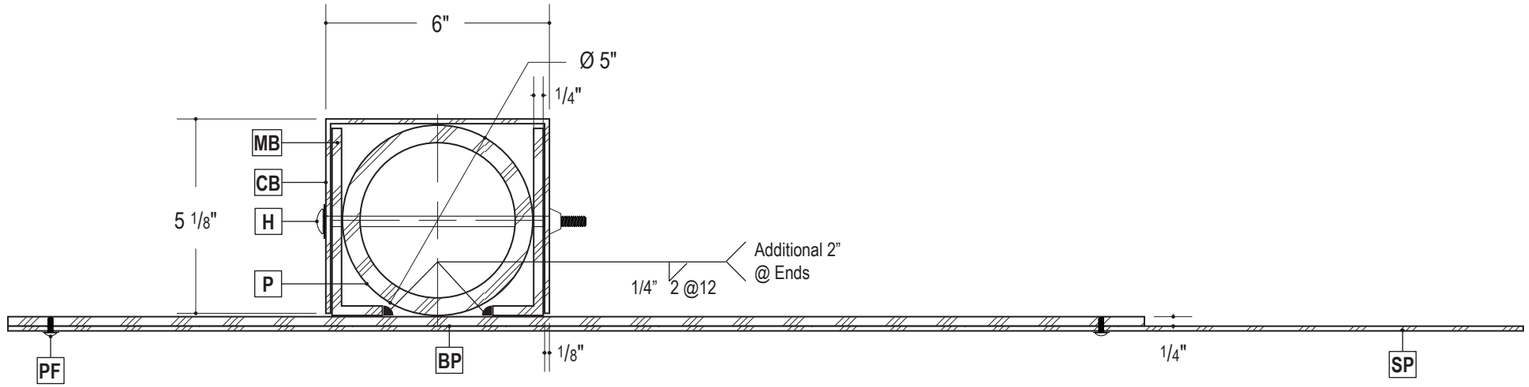
SHEET TITLE

Graphic Layout

SHEET NO.

E.17

F | Construction Details



1 Section Detail-Vehicular Directional
SCALE: 3" = 1'-0"

- SP Sign Panel - 1/8" Thick Aluminum, Chemically + Mechanically Fastened to Backer Panel
- BP Backer Panel - 1/4" Thick Aluminum
- P Post - 1/2" Thick Aluminum Extrusion
- MB Mounting Bracket - 1/4" Thick Aluminum L Brackets - Weld to Sign Panel
- CB Cover Bracket - 1/8" Thick Aluminum Breakform
- H Mounting Hardware - 1/2"Dia. S/S Bolt -Through Bracket Cover Angle(s) and Post
- PF Panel Fasteners - Tamper-Resistent Button-Head Screw w/ Nylon Washer through Sign Panel

SPECIFICATIONS

Construction Details

Sign Types:
GATE.4
GATE.5
VDIR.1
VDIR.1.1
VDIR.2
VDIR.3
VDIR.3A
VDIR.4A
VDIR.5
VDIR.6
VDIR.6A

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Wayfinding Program
Phase II

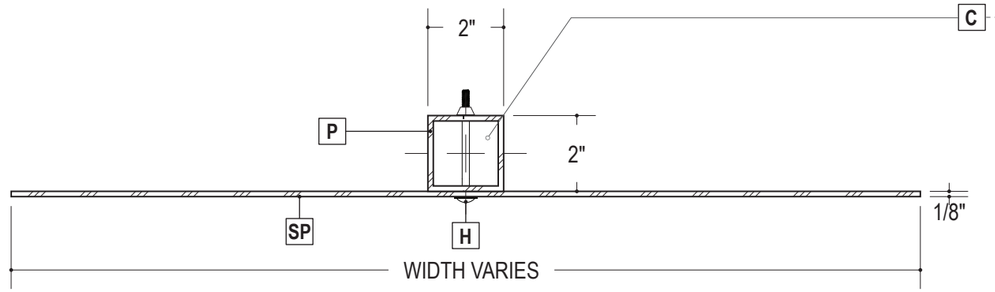
PROJECT NO.

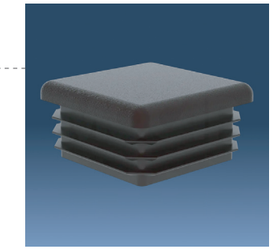
SHEET TITLE

Construction Details
Vehicular Directional

SHEET NO.

F.1





Product Reference

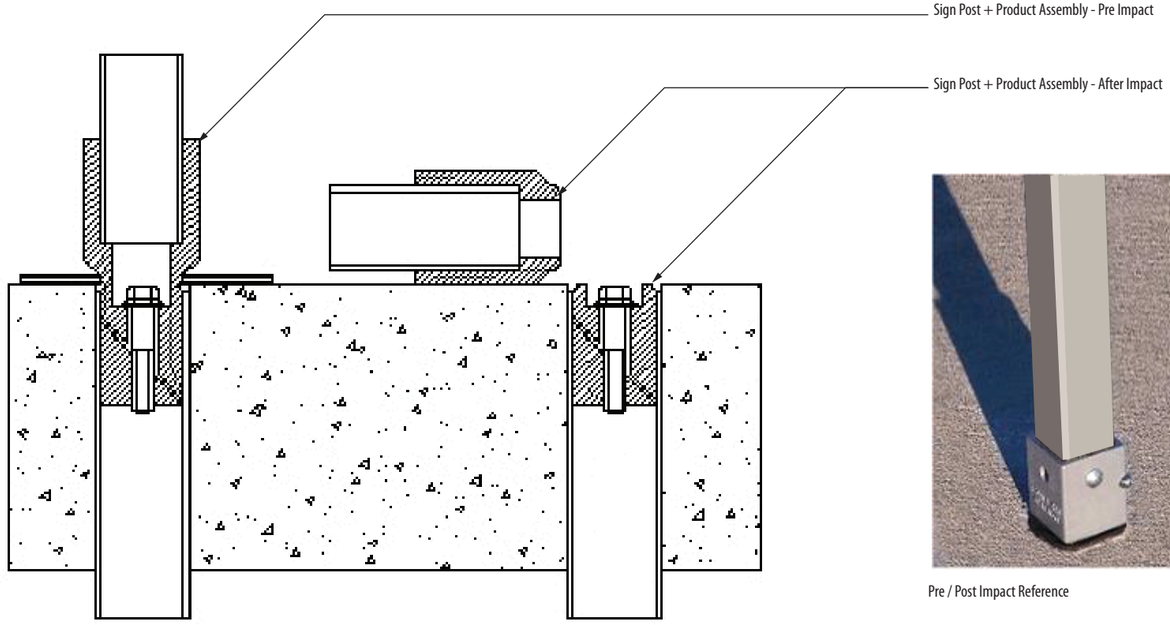
SP Sign Panel - 1/8" Thick Aluminum

P Post - 1/4" Thick Aluminum Extrusion

H Mounting Hardware - 1/2"Dia. S/S Bolt -Through Bracket Cover Angle(s) and Post

C Post Cap - Cast LDPE Square Tubing Plug - For 2.000" (2") Tubes - Tube Wall: .250-.313"

1 Section Detail-Vehicular Directional
SCALE: 3" = 1'-0"



Pre / Post Impact Reference

2 Detail - Breakout® Square Post Coupler
SCALE: 3"= 1'- 0"

SPECIFICATIONS

Construction Details

Sign Types:
RES.1.1
RES.2.1

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

ENVIRONMENTS & EXPERIENCES

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DATE 07/21/26

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REVISIONS

CLIENT / PROJECT

Wake Forest, NC

Wayfinding Program
Phase II

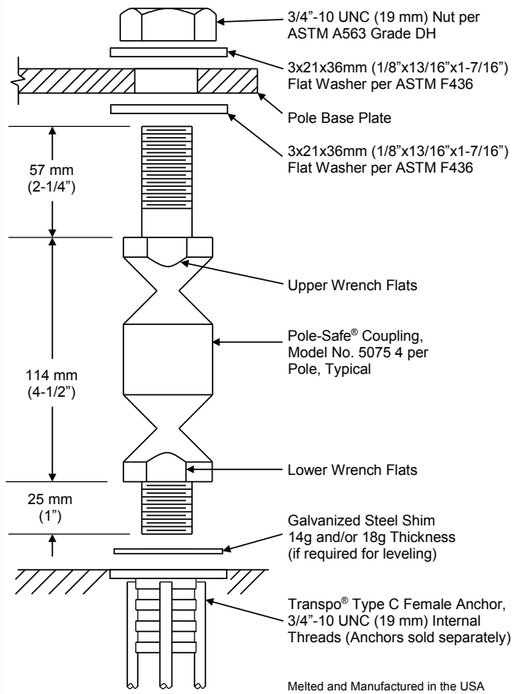
PROJECT NO.

SHEET TITLE

Construction Details
Residential Directional

SHEET NO.

F.2



Melted and Manufactured in the USA
Patent Nos. 5,474,408 & 6,056,471

SPECIFICATIONS

Performance Criteria:

1. Pole-Safe® conforms to AASHTO “Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.”
2. Pole-Safe® has been crash-tested and FHWA approved in accordance with the requirements of NCHRP Report 350, “Recommended Procedures for the Safety Performance Evaluation of Highway Features.”

Physical Properties per Coupling:

1. Ultimate Tensile Strength = 131.0 kN (29.4 kips), minimum.
2. Tensile Yield Strength = 113.6 kN (25.5 kips), minimum.
3. Ultimate Restrained Shear Strength = 8.9 kN (2.0 kips), minimum.
4. Ultimate Restrained Shear Strength = 13.3 kN (3.0 kips), maximum.

Corrosion Protection:

1. All Pole-Safe® couplings, nuts, bolts, and washers are galvanized after fabrication in accordance with ASTM A153. All leveling shims are galvanized after fabrication in accordance with ASTM A653.

Pole-Safe® Model No. 5075
Breakaway Support System for Light Poles

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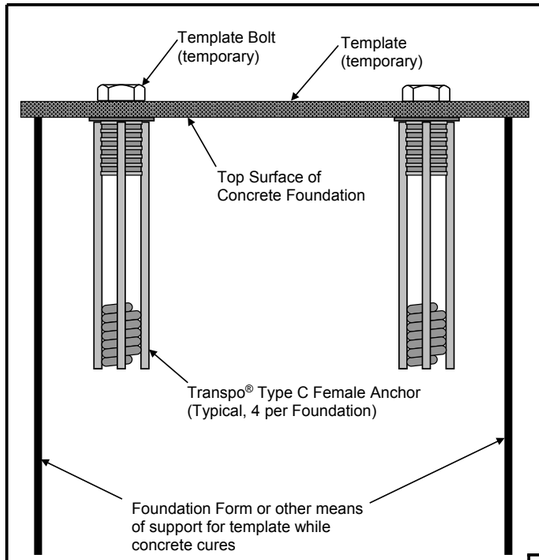

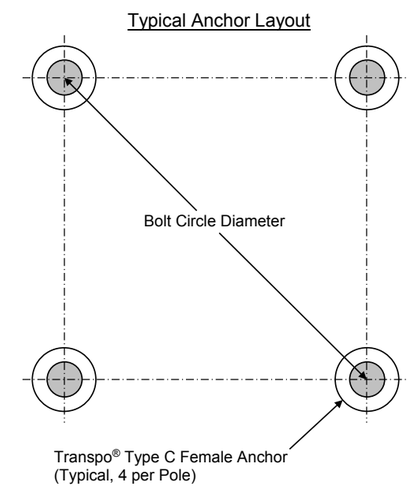

See other side of page for complete Installation Instructions

Transpo® Type C Female Anchor
for use with Pole-Safe® Model No. 5075
Breakaway Support System for Light Poles

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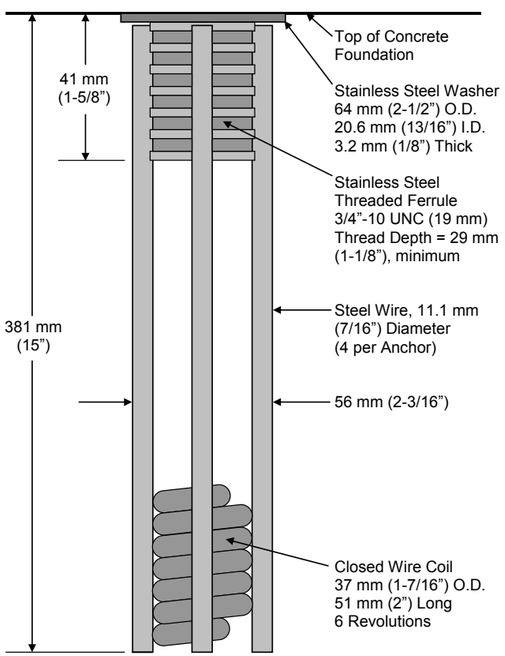

Melted and Manufactured in the USA

SPECIFICATIONS

Physical Properties:

1. Ultimate Tensile Load = 266.9 kN (60.0 kips) minimum per Anchor.
2. Actual Pullout Strength depends on foundation design and concrete properties.

Installation Instructions:

See other side of page for typical installation diagrams.

1. Fabricate flat steel or wood template with four (4) 19 mm (3/4”) diameter holes located to match the specified bolt pattern of the pole base plate.
2. Attach four (4) Pole-Safe® Type C Female Anchors to template using four (4) 19 mm (3/4”) diameter bolts. Ensure that each Anchor Washer is flush and snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation.
4. Support template such that all Anchors are level and in their proper locations.
5. Allow concrete to cure, and then remove bolts and template from the top of the foundation.

Transpo® Type C Female Anchor
for use with Pole-Safe® Model No. 5075
Breakaway Support System for Light Poles

TRANSPO® INDUSTRIES
20 Jones Street
New Rochelle, NY 10801
914-636-1000
www.transpo.com

SPECIFICATIONS

Construction Details

Sign Types:
GATE.4
GATE.5
VDIR.1
VDIR.1.1
VDIR.2
VDIR.3
VDIR.3A
VDIR.4A
VDIR.5
VDIR.6
VDIR.6A

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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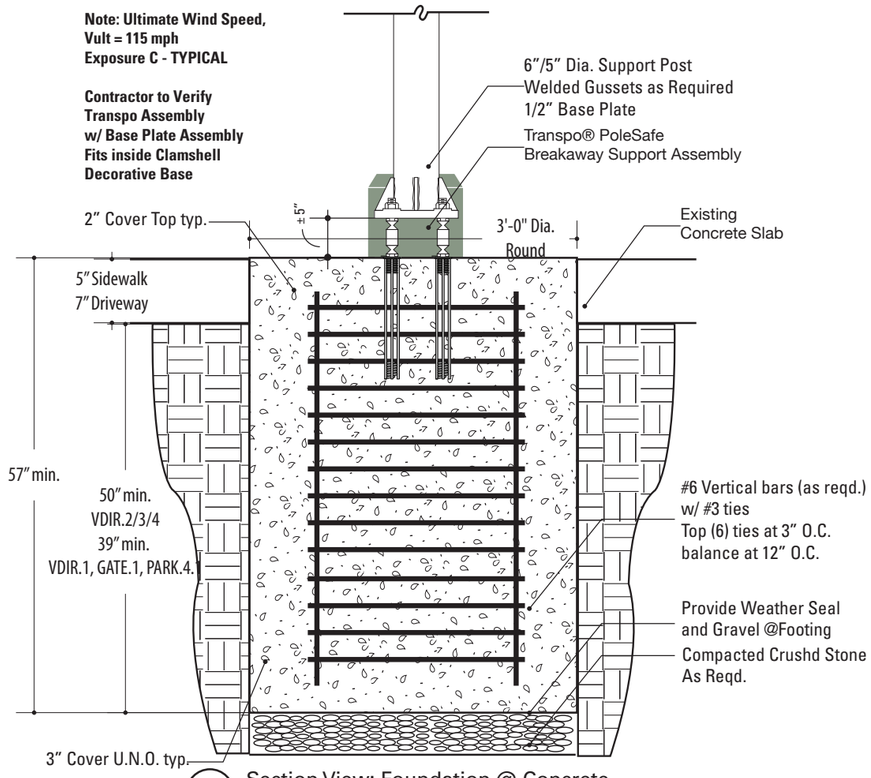
REVISIONS

CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

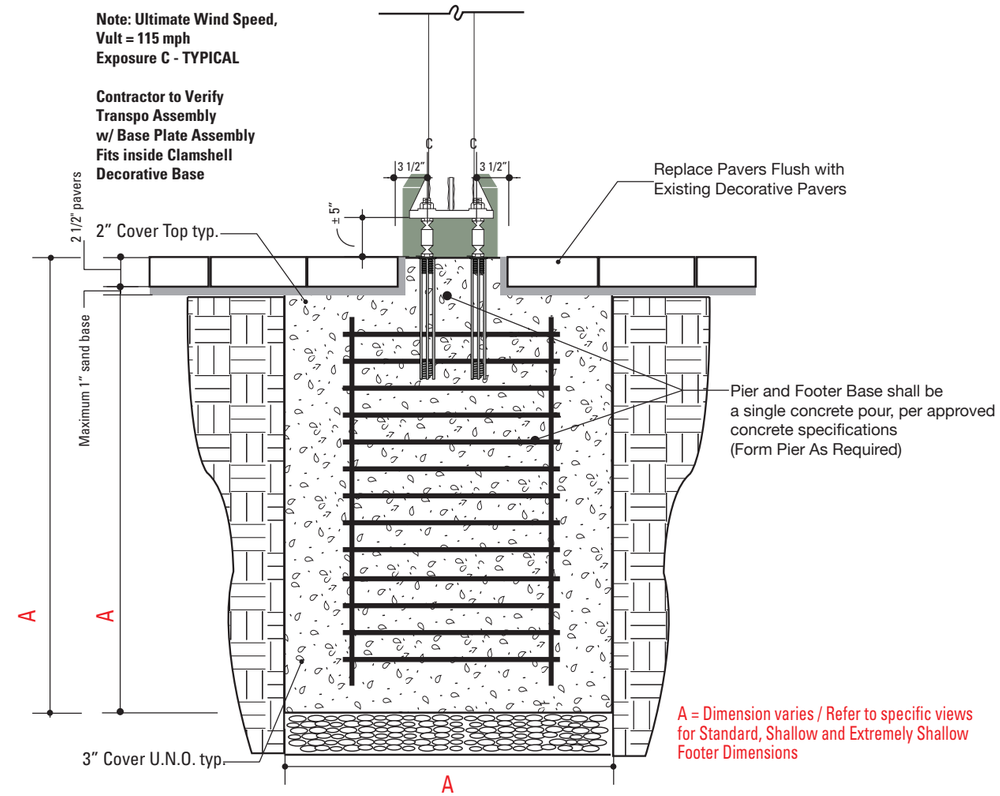
PROJECT NO.

SHEET TITLE
Transpo PoleSafe Product Details

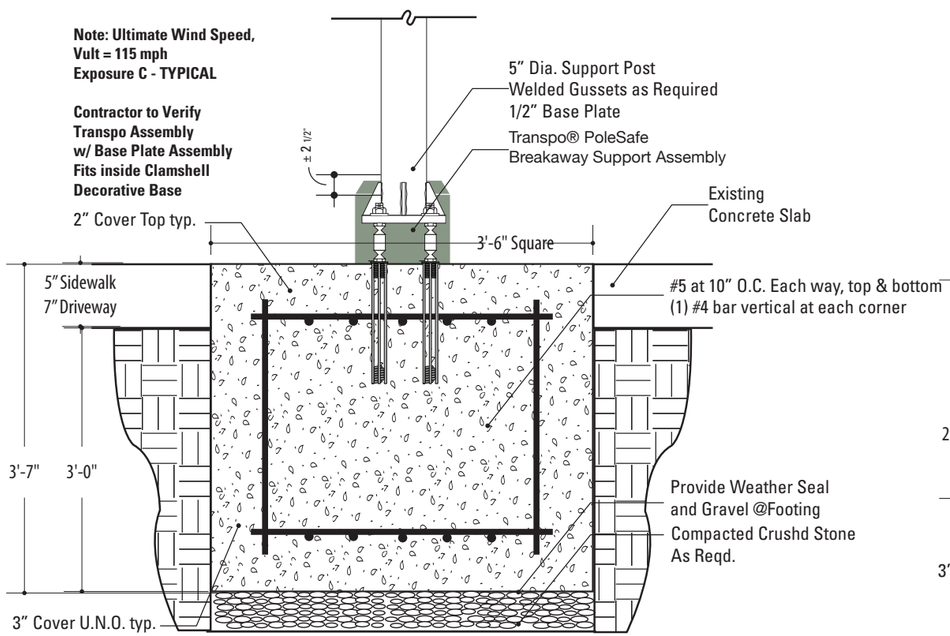
SHEET NO.
F.3



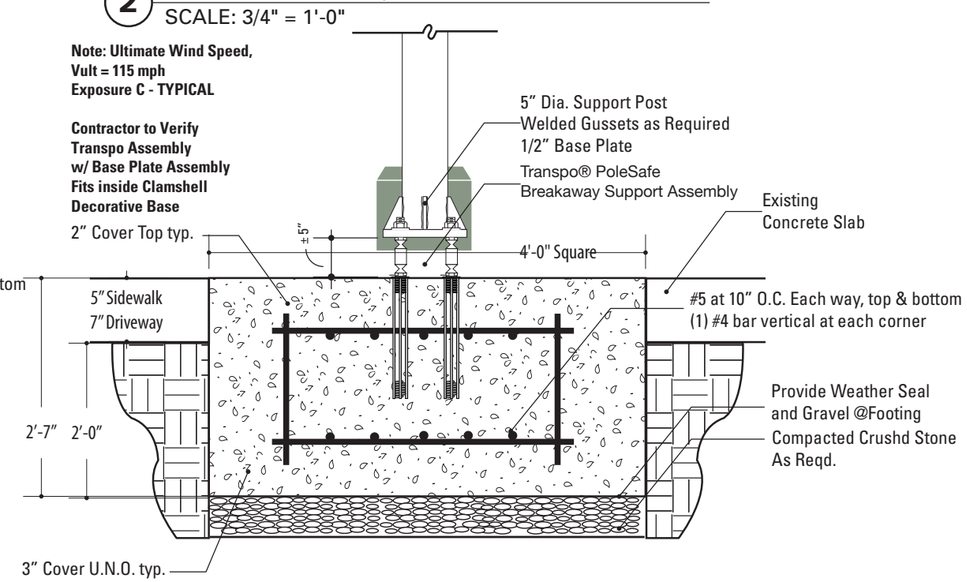
1 Section View: Foundation @ Concrete
SCALE: 3/4" = 1'-0"



2 Section View: Paver Replacement / Cement Collar Detail
SCALE: 3/4" = 1'-0"



3 Section View: Foundation - Shallow Depth
SCALE: 3/4" = 1'-0"



4 Section View: Foundation - Extremely Shallow Depth
SCALE: 3/4" = 1'-0"

SPECIFICATIONS

The FABRICATOR shall be familiar with all site conditions and shall be responsible for all underground utility checks.

The FABRICATOR shall be familiar with all basement/vault locations by obtaining plans from the local municipality Department of Public Works.

Where a basement/vault interferes with a proposed location, the sign shall be relocated to a location deemed appropriate by the municipalities Department of Public Works

Where relocation is not an option the FABRICATOR will develop the appropriate mounting solution. The solution shall meet all engineering criteria as established by the standard footings (i.e. windloads).

FINAL DESIGNS AND SHOP DRAWINGS SHALL BE SUPPLIED BY THE FABRICATOR FOR EACH OF THE BREAK-AWAY POLES IDENTIFIED AND AN DELAWARE REGISTERED PROFESSIONAL ENGINEER IS REQUIRED TO SIGN AND SEAL THE SUBMITTAL OF SHOP DRAWINGS.

NOTE:

1) **SOIL IS AVERAGE WITH MAXIMUM ALLOWABLE SOIL PRESSURE OF 3,000 POUNDS PER SQUARE FOOT. SOIL UNIT WEIGHT OF 125 PCF AND FRICTION ANGLE OF 30 DEGREES (ASSUMED).**

2) **CONCRETE STRENGTH AT 28 DAYS F'C=4,000 PSI REINFORCEMENT SHALL BE ASTM 36 FY=60,000 PSI**

3) **FOLLOW THE MOST RECENT PENNDOT DESIGN STANDARDS FOR MATERIAL AND CONSTRUCTION INFORMATION FOR THE SIGN POST BASES AND FOUNDATIONS NOT OTHERWISE SPECIFIED IN THESE CONTRACT DRAWINGS.**

4) **FOR SIGN POST SIZES REFER TO THE DESIGN INTENT DRAWING SHEETS.**

5) **SOIL IS TO BE OF CONDITION 4 OR BETTER (SW, SP, SM, SC, GM & GC)**

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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DATE 07/21/26

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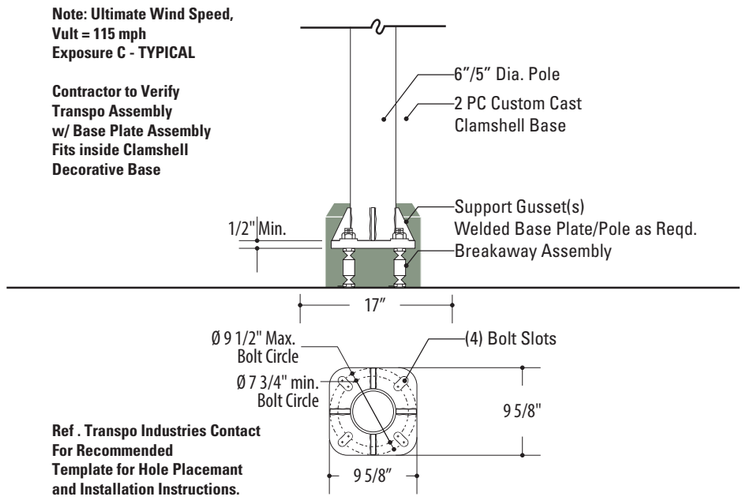
REVISIONS

CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

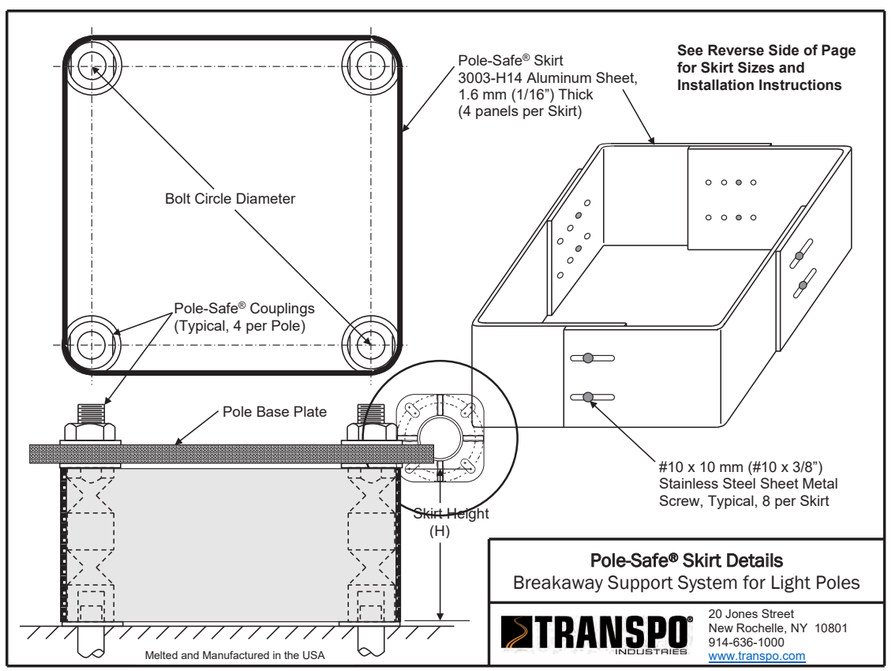
PROJECT NO.

SHEET TITLE
Transpo PoleSafe Foundation Details

SHEET NO.
F.4



1 Detail View: Support Pole Baseplate
SCALE: 3/4" = 1'-0"



Pole-Safe® Skirt Details
Breakaway Support System for Light Poles

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TRANSPO INDUSTRIES

Pole-Safe®
Breakaway Support System for Light Poles

SKIRT INFORMATION

Selection Table:

Pole-Safe® Model No.	Bolt Circle Diameter: 254 mm to 380 mm (10" to 15") Skirt Part No.	Bolt Circle Diameter: 380 mm to 500 mm (15" to 20") Skirt Part No.	Skirt Height (H) mm (in.)
4050	SPMKDN-4	SPMKDN-4L	146 (5-3/4)
4062	SPMKDN-4	SPMKDN-4L	146 (5-3/4)
4075	SPMKDN-4	SPMKDN-4L	146 (5-3/4)
4100	SPMKDN-5	SPMKDN-5L	168 (6-5/8)
4125	SPMKDN-5	SPMKDN-5L	168 (6-5/8)
5062	SPMKDN-1	SPMKDN-1L	108 (4-1/4)
5075	SPMKDN-1	SPMKDN-1L	108 (4-1/4)
5100	SPMKDN-2	SPMKDN-2L	127 (5)
5125	SPMKDN-3	SPMKDN-3L	133 (5-1/4)

Installation Instructions:

1. Place 4 skirt panels around Pole-Safe Couplings using overlap configuration shown on reverse side of page. All 4 sides of the skirt box should have 2 slots facing outside.
2. Thread 8 sheet metal screws through the outside slots into the closest corresponding holes in the adjacent inside panel.
3. Position panels snug against the Pole-Safe Couplings.
4. Tighten all 8 sheet metal screws.

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10801-6098 Phone: 914-636-1000
info@transpo.com www.transpo.com

SPECIFICATIONS

The FABRICATOR shall be familiar with all site conditions and shall be responsible for all underground utility checks.

The FABRICATOR shall be familiar with all basement/vault locations by obtaining plans from the local municipality Department of Public Works.

Where a basement/vault interferes with a proposed location, the sign shall be relocated to a location deemed appropriate by the municipalities Department of Public Works

Where relocation is not an option the FABRICATOR will develop the appropriate mounting solution. The solution shall meet all engineering criteria as established by the standard footings (i.e. windloads).

FINAL DESIGNS AND SHOP DRAWINGS SHALL BE SUPPLIED BY THE FABRICATOR FOR EACH OF THE BREAK-AWAY POLES IDENTIFIED AND A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THE PROJECT IS REQUIRED TO SIGN AND SEAL THE SUBMITTAL OF SHOP DRAWINGS.

NOTE:
1) **SOIL IS AVERAGE WITH MAXIMUM ALLOWABLE SOIL PRESSURE OF 3,000 POUNDS PER SQUARE FOOT. SOIL UNIT WEIGHT OF 125 PCF AND FRICTION ANGLE OF 30 DEGREES (ASSUMED).**
2) **CONCRETE STRENGTH AT 28 DAYS F'C=4,000 PSI REINFORCEMENT SHALL BE ASTM 36 FY=60,000 PSI**
3) **FOLLOW THE MOST RECENT DOT DESIGN STANDARDS FOR MATERIAL AND CONSTRUCTION INFORMATION FOR THE SIGN POST BASES AND FOUNDATIONS NOT OTHERWISE SPECIFIED IN THESE CONTRACT DRAWINGS.**
4) **FOR SIGN POST SIZES REFER TO THE DESIGN INTENT DRAWING SHEETS.**
5) **SOIL IS TO BE OF CONDITION 4 OR BETTER (SW, SP, SM, SC, GM & GC)**

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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REVISIONS

CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE
Transpo PoleSafe Baseplate Details

SHEET NO.
F.5

SPECIFICATIONS

Construction Details

Sign Types:
GATE.4
GATE.5
VDIR.1
VDIR.1.1
VDIR.2
VDIR.3
VDIR.3A
VDIR.4A
VDIR.5
VDIR.6
VDIR.6A

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
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REVISIONS

CLIENT / PROJECT

Wake Forest, NC

Wayfinding Program
Phase II

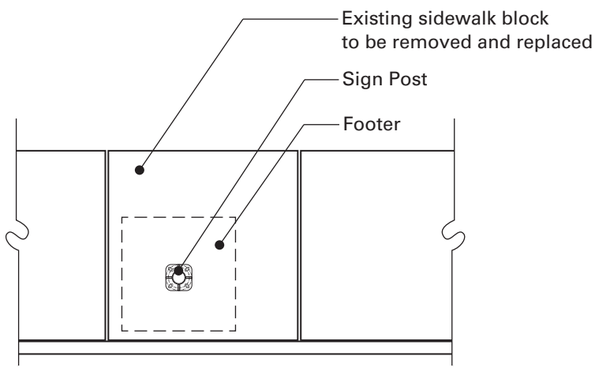
PROJECT NO.

SHEET TITLE

Transpo Pole Skirt
Sidewalk Finishing Details

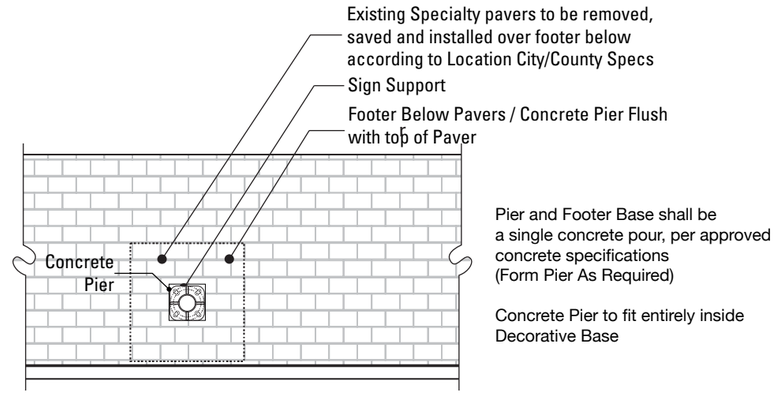
SHEET NO.

F.6



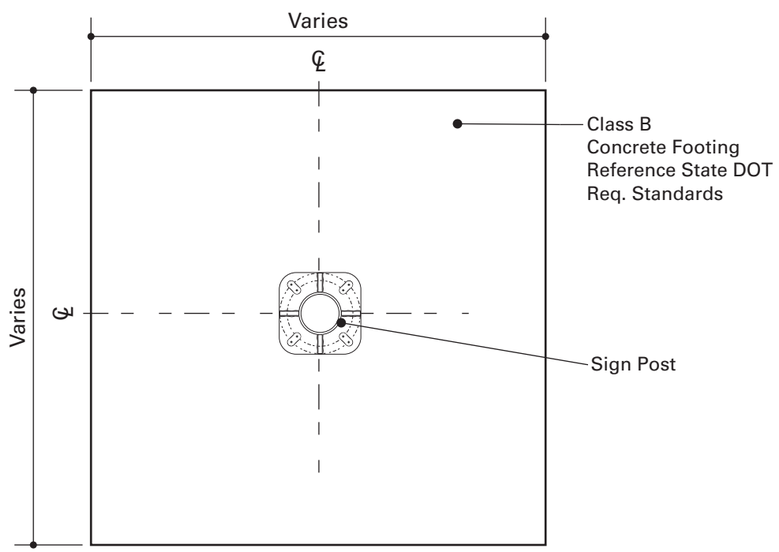
NOTE: When locating a footer within a single pavement block adjacent to at least 2 expansion joints, the entire block of pavement shall be removed and replaced with the same materials and finish of adjacent sidewalk areas.

1 Plan: Footer Placement
SCALE: NTS



NOTE: The pattern of bricks need to be removed, stored and replaced in the order they were removed. Marking the Specialty Pavers sidewalk with spray paint will NOT be allowed.

3 Plan: Specialty Pavers Footer Placement
SCALE: NTS



2 Plan View: Footer
SCALE: 1" = 1' - 0"

Acceptable Footer Detail

NOT Acceptable Footer Detail

Acceptable Footer Detail

NOT Acceptable Footer Detail

Acceptable Footer Detail

NOT Acceptable Footer Detail

SPECIFICATIONS

Sidewalk Footer Placement Details

The FABRICATOR shall be familiar with all site conditions and shall be responsible for all underground utility checks.

The FABRICATOR shall be familiar with all basement/vault locations by obtaining plans from the local municipality Department of Public Works.

Where a basement/vault interferes with a proposed location, the sign shall be relocated to a location deemed appropriate by the municipalities Department of Public Works

Where relocation is not an option the FABRICATOR will develop the appropriate mounting solution. The solution shall meet all engineering criteria as established by the standard footings (i.e. windloads).

FINAL DESIGNS AND SHOP DRAWINGS SHALL BE SUPPLIED BY THE FABRICATOR FOR EACH OF THE BREAK-AWAY POLES IDENTIFIED AND A DELAWARE REGISTERED PROFESSIONAL ENGINEER IS REQUIRED TO SIGN AND SEAL THE SUBMITTAL OF SHOP DRAWINGS.

NOTE:
1) SOIL IS AVERAGE WITH MAXIMUM ALLOWABLE SOIL PRESSURE OF 3,000 POUNDS PER SQUARE FOOT. SOIL UNIT WEIGHT OF 125 PCF AND FRICTION ANGLE OF 30 DEGREES (ASSUMED).

2) CONCRETE STRENGTH AT 28 DAYS F'C=4,000 PSI REINFORCEMENT SHALL BE ASTM 36 FY=60,000 PSI

3) FOLLOW THE LATEST NJDOT DESIGN STANDARDS FOR MATERIAL AND CONSTRUCTION INFORMATION FOR THE SIGN POST BASES AND FOUNDATIONS NOT OTHERWISE SPECIFIED IN THESE CONTRACT DRAWINGS.

4) FOR SIGN POST SIZES REFER TO THE DESIGN INTENT DRAWING SHEETS.

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

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REVISIONS

CLIENT / PROJECT
Wake Forest, NC
Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE
Sidewalk Footer Placement Details

SHEET NO.
F.7

Fig. 1

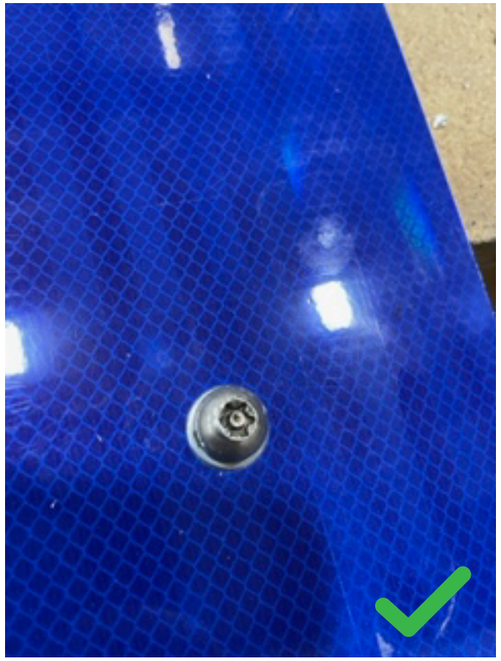
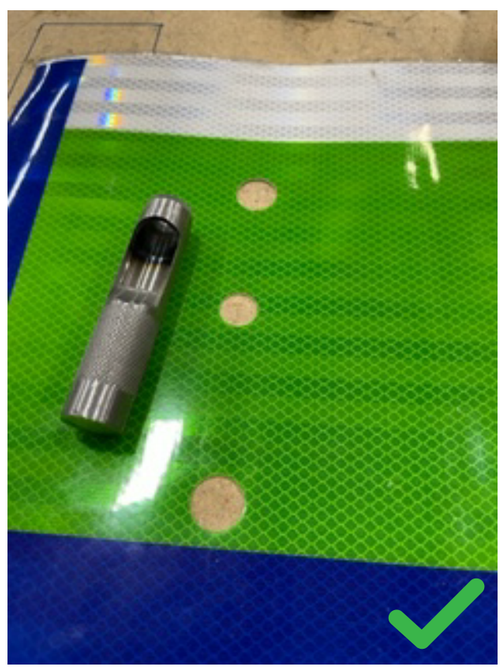


Fig. 2

Fig. 3

Fig. 4



SCREW THROUGH FACE / VINYL GUIDANCE

The reflective vinyl manufacturer recommends using at least 1, (preferably 2), nylon washers between the reflective vinyl surface and the mounting bolt head. (see **Fig. 1**). The 2 nylon washers should slip on each other as opposed to slipping on the surface of the sign, preventing it from cutting into the laminate.

Installing the hardware doesn't need to be aggressively tight and shall follow structural engineering requirements.

Caution: If the contractor / installer over-torques or provides too much force when installing the fastener, the laminate will not hold up to that treatment (see **Fig. 2 / Fig. 3**).

The vinyl manufacturer has stated, in regards to the warranty, it does not cover this type of damage (cracking, bubbling, peeling) caused by improper installation. The compromised laminate can allow moisture to penetrate and prematurely degrade the print. The extent of this will depend on the type of installation damage that occurred. There is no way to repair this damage after installation.

Additional Consideration: Punching a hole in the vinyl (see **Fig. 4**), may provide less vinyl for the washer/bolt to torque on, therefore reducing the possibility of damage.

Contractors Responsibility: The sign contractor shall always confirm the proper methods, sequencing and materials to be used for the installation with the vinyl manufacturer, to avoid voiding any warranties associated with the vinyl products. The sign contractor shall be responsible for replacing all vinyl sheeting damaged do to not following the manufacturers instructions.

SPECIFICATIONS

Construction Details

Sign Types:
GATE.4
GATE.5
VDIR.1
VDIR.1.1
VDIR.2
VDIR.3
VDIR.3A
VDIR.4A
VDIR.5
VDIR.6
VDIR.6
RES.1.1
RES.2.1

NOTES:
1. Fabricator to verify the mounting conditions and provide a detail drawing for each mounting situation, prior to fabrication. Fabricator must obtain approval from the Designer or Client for placement prior to fabrication.
2. All vinyl and painted surfaces must receive a compatible anti-graffiti (and U/V) clear coat or vinyl over laminate.
3. Hardware: All exposed hardware shall be tamper proof fasteners.
4. Contractor must provide shop drawings for all structural components, signed and sealed by a licensed engineer in the State of the project.

ENVIRONMENTS & EXPERIENCES

merje

5 W. Gay Street
West Chester, PA 19380
T 484.266.0648
www.merjedesign.com

DATE 07/21/26

DRAWN BY: KRD

These drawings are meant for DESIGN INTENT ONLY and are not for construction. Contractor shall verify and be responsible for all dimensions and conditions of the job. Contractor shall be familiar with the site and conditions it presents. This office must be notified of any variations from the dimensions and conditions shown on this drawing. Shop drawings and details must be submitted to this office for approval prior to proceeding with fabrication. All copy shall be proofread by client and legal requirements checked by legal department.

REVISIONS

CLIENT / PROJECT

Wake Forest, NC

Wayfinding Program
Phase II

PROJECT NO.

SHEET TITLE

Sign Face Details

SHEET NO.

F.8

SECTION 3 | Technical Specifications

PROJECT EXECUTIVE SUMMARY

1. PROJECT INFORMATION

Project Type:	**Wayfinding Sign System - PHASE 2**
Project Location:	**Wake Forest , NC**
Owner:	**Town of Wake Forest**
Owner's Project Mgr.:	**Bill Crabtree** **Communications & Public Affairs Director** **Communications** **(919)-435-9421**
Designer:	**MERJE** **5 W. Gay Street** **West Chester, PA 19380**
Contract Doc. Date:	**September 11, 2023**

ALL QUESTIONS DURING THE BIDDING PERIOD SHALL BE DIRECTED TO THE OWNER REPRESENTATIVE IN WRITING PER BIDDING PROCEDURES. BIDDERS SHALL NOT CONTACT THE DESIGNER DIRECTLY DURING THE BIDDING PERIOD. THE OWNER SHALL ISSUE A ADDENDUM FOR ANY QUESTIONS THAT MAY EFFECT THE WORK ASSOCIATED WITH THE PROJECT BID.

2. WORK AND SCHEDULE

The project involves fabricating and installing custom exterior wayfinding signs across various suburban and urban environments. The wayfinding signs include, but are not limited to, the following types: Vehicular Directional Signs, Pedestrian Directional Signs, Parking Signs, and Gateway Signs. The signs will be mounted in diverse conditions to meet the requirements of various site elements: Grass and Natural Ground, Sidewalk and Hardscape, Brick and Masonry, and Existing Building Structures.

All fabrication and installation must align with the provided Design Intent Documentation and follow all applicable codes and best practices for secure and durable installation. By reviewing the Design Intent Documentation in detail, contractors will understand the project's design expectations, sign locations, materials, and mounting requirements. Before commencing work, all questions should be directed to the project team for clarification.

Work Sequence: The sequence and timeframes shall be determined based on the contract award and Notice to Proceed. (* Tasks run simultaneously)

Award of Contract	**To Be Determined**
Notice To Proceed (NTP) provided by OWNER	**To Be Determined**
Kick-Off Meeting	**1 Week**
Shop Drawings	**3 weeks***
Samples	**4 weeks***
Field Mark-Outs	**4 weeks***
Fabrication and Installation	**16-24 weeks** (based on phase / scope of work)
Project Substantial Completion	**To Be Determined**

3. COST ASSOCIATED WITH THIS PROJECT BID

The BIDDER shall include, but is not limited to, all of the following costs in their bid, either as a line item or within the general costs of their Lump Sum Bid.

All Fabrication, Electrical and Installation Costs
Prototype Signs (Fabricated and Installed) (see Bid Sheet for Sign Type)
Sample Sign Components (see Bid Sheet for list)
Shop Drawings, Color & Material Samples

1. SUMMARY OF KEY SPECIFICATIONS

NOTE: This summary is being provided to the Bidder as a courtesy to highlight and make them aware of specific requirements of the project. Providing this Executive Summary does not relieve the Bidder of their responsibility to read and understand the totality of the drawings, specifications ad requirements as outlined in this complete document. By submitting a bid, the bidder acknowledges they have thoroughly reviewed all Design Intent Drawings, Technical Specifications and Contract requirements and that all necessary project cost are included in their bid, including fabrication, installation, material specifications, performance requirements, prototypes, samples, coordination and warranties as outlined here within.

1.1 GENERAL CONDITIONS (see Section - 00550 for additional details)

A. Use of Drawings. The DESIGN INTENT DRAWINGS, specifications and files are meant for DESIGN INTENT ONLY and are not for construction. CONTRACTOR shall verify and be responsible for all final drawings, dimensions and conditions of the job, including proper orientation of graphic layouts, panel shapes, brackets and mounting methods. (see Section 00550 - GENERAL CONDITIONS for more details)

B. Shop Drawings. CONTRACTOR shall produce all necessary shop drawings, indicating all materials, processes, specifications, fabrication details, and installation methods shall be submitted to The OWNER or their representative/agent for approval prior to proceeding with fabrication and installation.

C. Sign Copy and Graphic Layouts. All sign panel copy and graphic layouts, shall be proofread and approved by the OWNER prior to production. CONTRACTOR shall be responsible for replacing all signs, sign panels or other elements that did not receive an approval signature from the OWNER prior to fabrication.

D. Basis for Design. The CONTRACTOR shall maintain the basis of design as presented in the provided DESIGN INTENT DRAWINGS and shall remain responsible for the development of the final means and methods necessary to build structurally sound and approved signs and the related installation of the proposed signs.

E. Limits of DESIGNER. It is understood by the CONTRACTOR and the OWNER that the DESIGNER is not a licensed ENGINEER or Architect, and that responsibility for the interpretation of design intent drawings and engineering of all work performed under this contract to yield an effective, structurally sound and safe product is the responsibility of the OWNER'S CONTRACTOR and/or licensed STRUCTURAL ENGINEER.

1.2 POST & PANEL / PYLON SIGNS
(see Sections 10436 and 10437 for additional details)

A. Delivery, Handling And Storage

1. Delivery and Handling. Ship and deliver post, panels and all other sign components in the appropriate protective covering and crating to fully protect all sign components and surfaces against damage.

   Remove all protective covering, as required per product manufacturer instructions, in order to maintain warranties.

2. Defects. All delivered sign components shall be delivered free of any defect, including, but not limited to scratches, chips, cracking, dents, peeling, bubbling, adhesive glue / tape marks, marker writings, undesirable film coatings or other visual distractions or defects.

B. Warranty

1. CONTRACTORs Warranty Period: CONTRACTOR shall provide a warranty of 3 years from date of Substantial Completion, for all workmanship associated with the fabrication and installation of the sign system.
2. Product and Manufacturers Warranties. CONTRACTOR shall pass on to the OWNER and honor all associated third-party product warranties. Including but not limited to;
   a. Paint Warranty: Minimum 7 years
   b. Reflective Vinyl / Custom Color Warranty: Minimum 8 yrs
   c. Non-Reflective Vinyl Warranty: Minimum 10 years

C. Paint: Use polyurenthane paints or approved equal.

Clear Coat: Apply a compatible protective UV / Anti-Graffiti Clearcoat to all painted, printed, and/or vinyl surfaces. CONTRACTOR shall verify all product warranties and compatibility with applied to surfaces.

D. Reflective Sheeting and Custom Color Application Process

1. 3M Certified Fabricator: Reflective Vinyl Printing shall be performed by a current accredited 3M Certified Fabricator or 3M Certified Digital Fabricator.
2. Single Vinyl Product and Manufacturer: All vinyl sheeting, inks and overlays shall maintain the same manufacturer and required specifications. Mixing products, processes or materials from different manufacturers is not permitted.
3. Use 3M 3930 High Intensity Reflective Sheeting or approved equal that meets MUTCD requirements for Community Wayfinding Signage (MUTCD Section 2D.50)
4. Imaging Custom Colors (3M). Custom colors shall be applied to high intensity prismatic sheeting by the following imaging methods describe below or approved equal;
   a. 3M Series 3930 Sheeting and Color Application shall be covered with 3M ElectroCut Film 1170 Clear UV/Anti-Graffiti overlaminate. Refer to Product Bulletin for 3M 1170 for fabrication procedures and specifications.
   b. Preferred Printer. 3M Series 3930 sheeting may be imaged by the Durst RHO 161 TS printer.
   c. Preferred Vendor: Sherine Industries: (604) 513-1887.

E. Fabrication: Bracket And Panel Assembly

Brackets / Panel Configuration. CONTRACTOR shall be responsible for confirming, coordinating and verifying all sign panels, messages, graphic layouts, panel orientation, margins, shape, brackets, panel edges, and mounting hole positions with the proposed bracket design, configuration and assembly method, as it relates to the orientation and positioning on a new or existing pole to which it is installed on.

Pedestrian Sign Panels: This includes single and double-sided panels that may require a singular orientation and specific margin clearance, on either side of the panel, in order to work properly with

F. Field Surveys Prior to Beginning Work
CONTRACTORS representatives will be present at all field surveys and site markings prior to installation. See Section 10436 and 10437 for CONTRACTORS staff responsibilities.

G. Check / Stop / Ask (Obvious Errors)
CONTRACTOR shall, when at all practical, confirm sign messages in the field prior to final installation.

1. CONTRACTOR shall notify the DESIGNER and OWNER of any obvious incorrect message, spelling, arrow direction, pictogram and any other graphic elements OR any condition in the environment (new or previously identified) that reduces the sign(s) effectiveness, visibility or creates a situation where the sign is presenting incorrect information or creates a hazard (regardless of its safety factor or simple common sense).

2. Failure to notify the OWNER and DESIGNER of any obvious error or faulty condition prior to installation will result in the CONTRACTOR replacing the sign or rectifying the condition in the environment, at no additional cost to the OWNER or DESIGNER.

H. Removal Of Existing Signs (if Requested as part of the Bid)
The CONTRACTOR shall remove all existing wayfinding, directional and trailblazer signs as indicated in the Comments section of the project Message Schedule. This work shall be sequenced and coordinated with the installation of the new sign program.

Removal of existing signs shall be included in the CONTRACTORS, Lump Sum Project Cost.

1. CONTRACTOR shall confirm with the OWNER prior to submitting their bid, the full scope of work related to removal, including footer removal, post removal and disposal.

I. Attic Stock (if Requested as part of the Bid)
CONTRACTOR shall supply attic stock components of posts, sign panels, brackets and other components as requested and as outlined on the Bid Form.

END OF EXECUTIVE SUMMARY

00550 - GENERAL CONDITIONS / SIGNAGE PROJECTS

NOTE: These General Conditions and Specifications are specific to signage programs. In cases where the OWNER has provided additional or duplicate General Conditions, Specifications or Requirements as part of their bidding process or contract with the CONTRACTOR, the OWNER'S requirements shall take precedent.

1. DEFINITIONS.

Addendum: Written change to the bid documents issued by the OWNER before award of a contract. More than one such change is referred to as "addenda."

Affirmative Action Plan: The plan submitted by each Bidder with its Bid in the form required by the Bid Documents as to the proposed method of compliance with the affirmative action goals of the OWNER set forth in the Bid Documents.

Application for Payment: CONTRACTOR'S written request for payment of amounts due for completed portions of the Work and, if the Contract so provides, for materials delivered and suitably stored on or off the OWNER'S premises pending their incorporation into the Work. Each Application for Payment must be approved by the OWNER'S REPRESENTATIVE and the DESIGNER.

Award: The issuance of a Contract by The OWNER

Bid: A complete and properly signed written proposal of the Bidder, submitted on the Bid Proposal Form (supplemented by additional information as appropriate) included in the Bid Documents, to furnish, deliver and install the necessary materials and to perform the Work in accordance with the Contract Documents.

Bidder: An individual, firm, partnership or corporation qualified to submit a Bid for the Contract Work.

Bonds: The Bid Bond given as Bid Security, if any, the Performance Bond and Labor and Material man's Bond, or any other bond required by the Contract Documents.

Change Order: A written order to the CONTRACTOR, after the Contract is executed, authorizing a change in Contract Price, the Contract Time, or other provisions of the Contract Documents. Change Orders are not valid unless signed by the OWNER Authorized Representative.

Contract The Contract Documents that form the agreement between the two OWNER and CONTRACTOR

Contract Documents: May include the following:

Invitation to Bid	Bid Form
Instructions to Bidders	Agreement
Design Intent Drawings	Release
Technical Specifications	Addenda
Affirmative Action Plan	General Conditions
Workforce Standards	Labor and Material
Performance Bond	

Contractor: The individual, firm, partnership or corporation which, as an independent CONTRACTOR, and not an employee, has entered into the Contract with The OWNER.

Contract Sum: The price which the Contract states is the total amount The OWNER must pay to the CONTRACTOR as full and fair compensation for the performance of the Work required by the Contract Documents. The Contract Sum can be adjusted only by Change Order.

Contract Time: Contract Time means the total time allowed for performance of the CONTRACTOR'S Work, including all time extensions authorized by Change Order. Contract Time can be adjusted only by Change Order.

Days: Unless otherwise stated, any reference to days means calendar days.

Design Intent Drawings: Drawings provided by Found Design, LLC. (d.b.a. MERJE) Drawings are for bidding only and not for shop use or construction/installation.

Designer: Found Design, LLC (d.b.a. MERJE) and their sub-consultants.

Engineer: The term "ENGINEER" used throughout the Contract Documents is deemed to mean any design professional engaged by The OWNER to carry out the design and documentation of the Work. The term "ENGINEER" may refer not only to a licensed ENGINEER, but also to a architect, planner or other non-licensed design professional.

Final Payment: The Application for Payment made for the last payment under the Contract, including retainage. The Final Application for Payment must be approved by the OWNER and DESIGNER before payment will be made.

Liquidated Damages: A penalty paid by the CONTRACTOR to the OWNER for non-completion of work by the agreed upon project end date.

Notice of Award: Written notice to the successful Bidder that The OWNER is awarding the Contract to that Bidder.

Notice to Proceed: Written notice from The OWNER to the CONTRACTOR to
proceed with the Work.

Owner: The entity entering into the Contract with the CONTRACTOR

Owner Representative: The person or organization retained by the OWNER to monitor and administer construction for the OWNER, and to facilitate communications of project participants, but not to act as the OWNER'S agent. See definition of "OWNER'S Authorized Representative."

Subcontractor: Any person, firm or corporation, other than the employees of the CONTRACTOR, who contracts with the CONTRACTOR to furnish labor or labor and materials under the Contract.

Work: The construction and services required by the Contract Documents, including all labor materials, equipment and services to be provided by the CONTRACTOR to fulfill its obligations under the Contract Documents.

Work Site: The area within which the CONTRACTOR is to perform the Work under the Contract, including areas obtained by or provided to the CONTRACTOR for use in connection with the Contract, when contiguous to the project limits.

2. CONTRACT INTERPRETATION.

2.1 Documents. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. The CONTRACTOR shall perform in accordance with the Contract Documents and with all requirements reasonably inferable from the Contract Documents as being necessary to produce the intended results. In case of conflict, the most expensive combination of quality and quantity shall govern.

2.2 Reference. Material and workman¬ship specified by the number, symbol, or title of a referenced standard shall comply with the latest edition or revision thereof and amendments and supplements thereto in effect on the date of the Invitation to Bid except where a particular issue is indicated. Municipal and utility standards shall govern except in case of conflict with the Specifications. In case of a conflict between the Specifications and the referenced standard, the more stringent provision shall govern.

2.3 Ambiguities in Contract. The CONTRACTOR shall refer any perceived ambiguity, inconsistency, or discrepancy in the Contract Documents to The OWNER for clarification. Absent such clarification, the more stringent requirement in any case shall apply.

2.4 Differences Between. The most recent revision of Drawings shall control over older revisions. In the event of discrepancy between any drawing and the figure written thereon, the figures shall govern over scaled dimensions.

2.5 Omissions and Mis-Descriptions. Before submitting its Bid to The OWNER, thereafter, the CONTRACTOR shall carefully study and compare all Drawings, Specifications and other Contract Documents; shall verify all figures on the Drawings before laying out the Work. The Bidder (and the CONTRACTOR) shall promptly notify The OWNER of all errors, inconsistencies, or omissions it may discover, and obtain specific instructions in writing before proceeding with the Work. The CONTRACTOR shall be liable to The OWNER for all costs and damages resulting from errors in construction which could have been avoided by such examination and notification, and shall correct at its own expense and without extension of Contract Time, all work improperly constructed through failure to notify the DESIGNER and request specific instructions. Omission from the Drawings or Specifications or the mis-description of details of Work which are manifestly necessary to carry out the intent of the Drawings and Specifications, or which are customarily performed, shall not relieve the CONTRACTOR from performing such omitted or mis-described Work (no matter how extensive) and it shall be performed as if fully and correctly set forth and described in the Drawings and Specifications at no additional expense or delay to The OWNER.

2.6 Verification of Dimensions and Existing Work. Before commencing work, The CONTRACTOR shall take field measurements and verify field conditions and shall carefully compare such field measurements and

conditions and other information known to the CONTRACTOR with the Contract Documents. Errors, inconsistencies or omissions discovered shall be reported to the DESIGNER and the OWNER REPRESENTATIVE at once.

2.7 Familiarity with Site. By submitting a Bid, the contractor is confirming they are familiar with all site conditions and project requirements related to the fabrication, installation, coordination and permitting associated with this project.

2.8 Duty to Notify of Defects in Other Work. If any part of the CONTRACTOR'S Work depends upon the work of another CONTRACTOR or on existing conditions or structures in the building, the CONTRACTOR shall, before beginning that portion of the Work, report to the DESIGNER and OWNER'S Representative any defects or deficiencies in the work upon which its Work depends that might affect the CONTRACTOR'S Work. If the CONTRACTOR proceeds with the Work, without giving any such notice, the CONTRACTOR shall be deemed to have accepted the work of the other CONTRACTOR or the existing conditions as being adequate for its purposes, and shall not be entitled to an increase in Contract Price or Contract Time for correcting any resulting defects or deficiencies in its Work.

2.9 CONTRACTOR'S Responsibilities For Execution of the Work.

A. Compliance with Contract Documents. The CONTRACTOR shall perform the Work in strict accordance with the Contract Documents. The CONTRACTOR shall not depart from the scope of the Work as defined in the Contract Documents without written authorization from The OWNER. The CONTRACTOR shall not be relieved of responsibility for deviations from the Contract Documents by the DESIGNER'S approval of shop drawings or other submittals.

B. Standard of Quality. The CONTRACTOR shall perform all Work in accordance in accordance with first-class construction practices, in a good and workmanlike manner, and free from defects. The CONTRACTOR shall use in the Work only materials that are new, previously unused, of first-class quality and free from manufacturing or other defect or deficiency.

C. Compliance with Laws, Codes and Regulations. The CONTRACTOR shall, at all times, comply strictly with all applicable codes, regulations, statutes, laws, ordinances, regulations or rules of any governmental authority having jurisdiction over the Work or the location within which the Work takes place (collectively, "Laws") and shall obtain all approvals necessary in connection with the Work. Without limitation, the CONTRACTOR shall comply with all Laws applicable to building construction, use or occupancy, payment of SUBCONTRACTORS and material men, payment of employee wages or related taxes, health and safety Laws, environmental Laws, and applicable rules of the National Board of Fire Underwriters or any other body now or hereafter constituted to exercise similar functions.

2.10 TAXES. Except as otherwise provided in the Contract Documents, the CONTRACTOR shall pay all applicable taxes arising from or relating to the Work, at no further cost to The OWNER.

2.11 DEFECTIVE WORK OR MATERIALS

A. Workmanship or materials not conforming to the requirements of the Contract Documents are hereby deemed to be rejected, whether in place or not, and regardless of whether such materials have been expressly rejected by the DESIGNER. Rejected materials or Work shall be immediately removed from the Work Site, and promptly replaced at the CONTRACTOR'S sole expense, and without any extension of Contract Time.

B. If The OWNER issues a written direction to the CONTRACTOR to correct non-conforming or defective Work, and the CONTRACTOR does not comply with the direction within seven (7) days, The OWNER may, without further notice to the CONTRACTOR correct the deficiencies itself or through others and charge the cost of doing so to the CONTRACTOR (or deduct it from further payments to the CONTRACTOR). This remedy is without prejudice to any other remedy The OWNER may have under the Contract Documents or at law.

C. If the CONTRACTOR fails promptly to correct Work that is not in accordance with the Contract Documents, The OWNER has the right to order the CONTRACTOR to stop the Work or portions of the Work until the non-conforming Work has been corrected. The CONTRACTOR shall not be entitled to an increase in Contract Price or an extension of Contract Time as a result of any such stop work order. Any delay caused to completion of the Work by such an order shall treated as a delay caused by the CONTRACTOR'S breach. The OWNER shall have no duty to stop the Work for the reasons stated in this Subparagraph.

D. The CONTRACTOR shall pay (or The OWNER may deduct from further payment to the CONTRACTOR) any extra costs The OWNER incurs as a result of additional work the DESIGNER or OWNER'S Representative must do to evaluate, correct, or otherwise deal with non-conforming Work by the CONTRACTOR.

2.12 Required Tests and Inspections

A. The Work may be subject to inspection and testing by The OWNER REPRESENTATIVE and the DESIGNER at reasonable times. Such inspection and testing is for the sole benefit of The OWNER and shall not relieve the CONTRACTOR of responsibility for performing the Work in strict compliance with the Contract Documents. Except as specifically provided to the contrary in the Contract Documents, no testing or inspection shall be construed as constituting or implying acceptance.

B. Any Work done without proper inspection or testing as required by the Contract Documents is subject to rejection. If any Work should be covered up before the required inspection or testing and approval, it must be uncovered, at the CONTRACTOR'S sole expense and without extension of the Contract Time, to allow the inspection and testing, and promptly restored thereafter.

C. The CONTRACTOR shall be responsible for having performed all tests or inspections required by applicable laws as a condition of obtaining required certificates or permits or otherwise. The CONTRACTOR shall also obtain, from an electrical underwriter, in form and substance reasonably satisfactory to the OWNER, certifying that all electrical work pursuant to the Contract has been completed in accordance with current electrical underwriting.

2.13 Means and Methods. The CONTRACTOR is solely responsible for the means and methods of construction, use of appropriate materials and process, and the safe performance of the Work. The CONTRACTOR shall employ only competent, skilled, reliable and honest workers for the Work, who will work in harmony with other workers on the Work Site. The OWNER may require the CONTRACTOR to remove from the Work Site any employee whom it determines to be intemperate, incompetent, a threat to the safety of persons or property, or who fails to perform the Work in a manner acceptable to The OWNER. The CONTRACTOR shall promptly comply with any such direction and shall not thereafter employ the removed employee for the Work.

2.14 Unauthorized Work. Any work which is not in accordance with the Contract Documents is unauthorized. Any work the CONTRACTOR performs which is beyond that required or authorized by the Contract Documents shall be likewise considered unauthorized and The OWNER shall not be obligated to pay for it, under the Contract, or under a theory of quantum merit, unjust enrichment or otherwise. The OWNER may, but need not, order that any unauthorized Work be removed from the Work Site at the CONTRACTOR'S sole expense and without extension of the Contract Time.

2.15 Storage of Materials. Materials delivered to the Work Site for use in the Work may be stored only in areas designated by The OWNER.

2.16 Equipment and Services. Unless provided to the contrary elsewhere in the Contract Documents, the CONTRACTOR shall provide all temporary services required to complete its Work, all tools, scaffolding, hoists, cranes or other equipment and incidental materials needed for the completion of the Work. If weather protection (including heating) or additional ventilation is required to protect workers, the Work, or the boundaries within which Work is taking place, the CONTRACTOR shall provide it.

2.17 SUBCONTRACTOR Warranties. All warranties and guarantees of SUBCONTRACTORS, including suppliers and manufacturers, with respect to any portion of the Work shall be obtained by the CONTRACTOR for the benefit of and in the name of The OWNER and, to the extent possible, shall be directly enforceable by The OWNER If such warranties are not directly enforceable by The OWNER the CONTRACTOR shall fully cooperate with The OWNER in enforcing the warranties. The CONTRACTOR shall use its best efforts to obtain from all manufacturers and suppliers guarantees and warranties upon the best terms and longest periods available. The CONTRACTOR shall cause its SUBCONTRACTORS to include in their subcontracts and purchase orders the requirement that all guarantees and warranties be obtained in the name of The OWNER. The CONTRACTOR shall be jointly and severally liable for any such warranties or guarantees. To the extent that any such warranty or guaranty would be voided by reason of the CONTRACTOR'S negligence or breach in incorporating material or equipment into the Work, the CONTRACTOR shall be responsible for correcting such defect and shall be responsible pursuant to the guarantee obligations set forth herein.

2.18 Hazardous Materials.

A. The CONTRACTOR shall not bring onto the Work Site or use in the Work any hazardous or toxic materials, such as asbestos, asbestos products, or polychlorinated biphenyl. If the CONTRACTOR discovers that any materials or processes specified in the Contract Documents would require use of such hazardous or toxic materials, it shall inform the DESIGNER and The OWNER REPRESENTATIVE immediately.

B. If the CONTRACTOR encounters materials on the Work Site which the CONTRACTOR believes to be toxic or hazardous, which have not been placed on the Work Site by the CONTRACTOR, which have not been rendered harmless, and for which no express provision has been previously made in the Contract Documents, the CONTRACTOR shall stop work in the affected area and immediately report the condition to the Project Manager and DESIGNER. Work in the affected area shall be resumed when the condition is identified as not toxic or hazardous, or when the condition has been re-mediated by The OWNER

C. The CONTRACTOR shall not spill or release oil, solvents, or other chemical substances onto the Work Site. If such releases do occur, the CONTRACTOR shall promptly report them to The OWNER REPRESENTATIVE, and shall be responsible for removing and cleaning up the spilled or released substances in a legally proper

manner, at the CONTRACTOR'S own cost, and for paying any costs The OWNER incurs as a result of the spill or release. This responsibility shall exist whether or not the CONTRACTOR has been negligent.

2.19 CLEAN-UP. The CONTRACTOR shall keep the Work and the entire Work Sites safe, clean, and reasonably free from trash or debris at all times. The CONTRACTOR shall arrange for prompt removal and legal disposal of all rubbish, packing materials, scrap, rubble, and other waste material from the Work Sites. Flammable materials and chemicals or other hazardous substances will be removed from the Work Sites at the end of each day, or when they are no longer needed at the Work Sites, whichever comes first. As soon as practicable after Final Completion, the CONTRACTOR shall remove all of its project offices, equipment, tools, temporary fences, barriers, scaffolding, and other material from the Work Sites, and leave the Work Sites broom clean and free of all construction-related debris or trash.

2.20 RECORD DRAWINGS. The CONTRACTOR and each SUBCONTRACTOR shall keep on file at the Work Site one complete copy of the Drawings and Specifications, in good order and marked currently to record all changes, revisions and additions made during the construction, whether pursuant to field order or otherwise, and the location and detail of Work installed on a field run basis, as well as a complete set of approved shop drawings and Change Orders ("collectively, the Record Drawings"). The Record Drawings shall be made available for review by The OWNER and DESIGNER at all times. One (1) complete set of the Record Drawings shall be delivered to The OWNER after Final Completion of the Work, and as a condition precedent to Final Payment.

2.21 USE OF PREMISES

A. General: The general locations of the signs and the layout of the overall project area are shown on the Sign Location Plans. The CONTRACTOR shall perform the work, either exclusively or in conjunction with others performing construction as part of this project or other projects and shall coordinate all staging and work activity areas necessary to complete the tasks associated with this work.

B. Access to sign locations may be limited; CONTRACTOR shall obtain the OWNER'S approval of proposed routes of access sequencing and safety requirements. CONTRACTOR shall also coordinate with necessary OWNER representatives, departments and local /state authorities to ensure access is permitted and safe.

C. Make other arrangements for storage, unless coordinated with the OWNER and their departments representatives.

2.22 WORK UNDER OTHER CONTRACTS

A. Separate Contract: Owner may have a separate contract for performance of certain construction operations at Project site. All work related or unrelated to this project, shall be coordinated by the CONTRACTOR as required to complete this project.

B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

2.23 REGULATIONS. CONTRACTOR shall be familiar with and utilize materials and process, so that the signs meet all requirements of the 2009 Edition of the MUTCD and all subsequent revisions (May 2012), the 2010 ADA Standards for Accessible Design and all other required Federal, State and Local codes related to the fabrication and installation of this project, inclusive of industry standards, specific project requirements and all site conditions.

2.24 PRE-CONSTRUCTION MEETING

A. A pre-construction meeting will be held at a time and place designated by the Owner and Administrator for the purpose of clarification of the project and for the purpose of identifying responsibilities of the Owner, Administrator and the Contractors personnel and explanation of administrative procedures.

B. The Contractor shall also use this meeting for the following:

1. Agenda: Construction Schedule, Safety, Security, Cleaning up, Subcontractor procedures relating to; Submittals, Change Orders, Applications for Payment and Record documents.
2. Attendees: Representatives from the following shall be present; OWNER and DESIGNER. Others who may attend, State Agency, Public Works and OWNERS' Engineer.

2.25 SECURITY PROCEDURES

A. CONTRACTOR shall provide secure storage for all materials on site and within the contractors premises, to protect all work, project products and related components from loss or damage.

B. CONTRACTOR shall secure completed work as required to prevent loss or damage.

2.26 COORDINATION

A. If necessary, inform each party involved, in writing, of procedures required for coordination; include requirements for giving notice, submitting reports and attending meetings.

B. Prepare coordination drawings where limited space available may cause conflicts in the locations of installed products, and when required to coordinate installation of products.

1. Where space is limited, show plan and cross section dimensions of space available, including structural obstructions.
2. Coordinate shop drawings prepared by separate entities.
3. Show installation sequence when necessary.

3. DESIGN INTENT DRAWINGS and SHOP DRAWINGS

3.1 Drawings Provided By DESIGNER. The DESIGNER shall provide Adobe Illustrator files / DESIGN INTENT DRAWINGS associated with the PROJECT as a courtesy to the CONTRACTOR.

3.2 Use of Drawings. The DESIGN INTENT DRAWINGS, specifications and files are meant for DESIGN INTENT ONLY and are not for construction. CONTRACTOR shall verify and be responsible for all final drawings, dimensions and conditions of the job, including proper orientation of graphic layouts, panel shapes, brackets and mounting methods.

3.3 Shop Drawings. CONTRACTOR shall produce all necessary shop drawings, indicating all materials, processes, specifications, fabrication details, and installation methods shall be submitted to The OWNER or their representative/agent for approval prior to proceeding with fabrication and installation.

3.4 Review & Approval: Review and approval of the shop drawings by the OWNER and/or DESIGNER is for adherence to design intent only and shall not be construed or assumed as a acceptance of fabrication/ installation reliability or structural integrity.

3.5 Sign Copy and Graphic Layouts. All sign panel copy and graphic layouts, shall be proofread and approved by the OWNER prior to production. CONTRACTOR shall be responsible for replacing all signs, sign panels or other elements that did not receive an approval signature from the OWNER prior to fabrication.

3.6 Basis for Design. The CONTRACTOR shall maintain the basis of design as presented in the provided DESIGN INTENT DRAWINGS and shall remain responsible for the development of the final means and methods necessary to build structurally sound and approved signs and the related installation of the proposed signs.

3.7 Limits of DESIGNER. It is understood by the CONTRACTOR and the OWNER that the DESIGNER is not a licensed ENGINEER or Architect, and that responsibility for the interpretation of design intent drawings and engineering of all work performed under this contract to yield an effective, structurally sound and safe product is the responsibility of the OWNER'S CONTRACTOR and/or licensed STRUCTURAL ENGINEER

3.8 Structural Engineering. CONTRACTOR shall have all drawings signed and sealed by a registered Structural ENGINEER, licensed in the state the project is being installed.

3.9 Ownership. Ownership of all designs, drawings and files remain with the OWNER and the DESIGNER as outlined in their base agreement and shall not be used by the CONTRACTOR on any other project.

4. SUBMITTALS

4.1 Requirement of Prompt Submittal. The CONTRACTOR shall submit to the DESIGNER for review shop drawings, product data, samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work, The OWNER activities or the work of separate CONTRACTORS.

4.2 Work to Conform with Submittals. The CONTRACTOR shall perform no Work requiring submittal and review of shop drawings or other submittals until the submittals have been approved by the OWNER, DESIGNER and/ or ENGINEER as required. Work shall be performed in accordance with approved submittals.

4.3 CONTRACTOR'S Representation. By submitting shop drawings or other submittals, the CONTRACTOR represents that it has determined and verified all materials, processes, products, means / methods, field measurements and field construction criteria related thereto, and has checked and coordinated the information contained in the submittals with the requirements of the Work and the Contract Documents, including all Warranties and Engineering requirements.

5. CHANGES/CHANGE ORDERS.

5.1 Right to Make Changes. The OWNER may, without invalidating the Contract, and without prior notice to the surety, order changes in the Work, including additions, deletions or modifications. Any such change may be made ONLY by written Change Order executed by The OWNER'S Authorized Representative. Neither the Contract Time nor Contract Sum may be changed except by such a Change Order. The DESIGNER is NOT authorized to execute Change Orders or to bind The OWNER to any change to the Contract Documents.

5.2 Entitlement to Contract Adjustment. The CONTRACTOR is entitled to an adjustment to the Contract Time or the Contract Price if it has complied with the notice and documentation provisions of this Article and if:

A. the OWNER issues any directive which changes the work so that the cost of performing the Work or the time within which the Work can be completed is materially affected;

B. the site or as-built conditions differ materially from those which the CONTRACTOR knew, or which it should have discovered as a result of its pre-construction site and document investigation, and the difference will materially increase the cost or time of performance;

C. there is any material error, omission or inconsistency in the plans and specifications which the CONTRACTOR did not discover and could not reasonably have discovered in carrying out its obligations under Paragraphs 2.3, 2.6 and 2.7, and which materially increases the cost or time or performance;

D. the CONTRACTOR'S performance is delayed, because of any event which was not anticipated when the Contract was executed, which is beyond the reasonable control of the CONTRACTOR, and which is not otherwise limited by the Contract Documents.

The OWNER is likewise entitled to deductive Change Orders when changes are made that will decrease the cost of completing the Work.

5.3 Notice of Change. The CONTRACTOR shall notify the OWNER REPRESENTATIVE and DESIGNER, in writing, within three (3) days of receiving a directive, or discovering any condition, which it believes will materially affect the cost of completing the Work or the time within which the Work can be completed. The CONTRACTOR shall submit a written request for Change Order within seven (7) days of its written notice of change. The request shall set out, in reasonable detail, the reasons for the requested adjustments, and shall state the number of additional days sought and/or the amount of any increase in compensation sought. The OWNER REPRESENTATIVE may request, and the CONTRACTOR shall provide, further cost breakdowns, clarifications, documentation or back up if The OWNER reasonably believes that such additional information is needed to understand and evaluate the request.

5.4 Change Orders. After receiving a request for Change Order, The OWNER will promptly render a decision as to whether it agrees that the CONTRACTOR is entitled to adjustments in Contract Time, Contract Price or both. If the CONTRACTOR has provided unit prices in submitting its bid, and the OWNER has accepted such unit prices, then all adjustments in Contract Price with respect to the change by the stated unit price. In all other cases, The OWNER and the CONTRACTOR will agree upon the appropriate adjustments and the resulting agreement shall be set forth in a written Change Order and signed by both The OWNER and the CONTRACTOR. The CONTRACTOR'S execution of a Change Order will be its representation and agreement that the Change Order constitutes its full and final adjustment for all costs, schedule impacts, or other consequences arising from the change in question, and that no further adjustments in Contract Time or Contract Price will be sought or due with respect to the change.

5.5 Delay or Disruption. The CONTRACTOR shall be entitled to recover damages for delay or disruption ONLY if the delay or disruption was caused solely by the action or inaction of The OWNER or its representatives, and the CONTRACTOR establishes that, but for the delay, it would have been able to complete its work on time. Damages for delay shall exclude all costs attributed to home office costs or overheads, whether calculated by the Eichleay formula or otherwise, and all costs attributed to lost profits, opportunity costs, other business forgone, or similar costs. Such costs shall not be recoverable, regardless of the cause of the delay or disruption..

5.6 Duty to Continue Work. If the CONTRACTOR and The OWNER do not agree that any adjustment sought by the CONTRACTOR is justified, or if the parties fail to agree upon the appropriate amount of the adjustment in Contract Time or Contract Price, the CONTRACTOR shall nevertheless proceed with the Work, and shall promptly make a written claim.

5.7 Waiver of Right to Adjustment. If the CONTRACTOR fails to notify The OWNER in accordance with Paragraph 5.3, of any action or event which it claims materially affects the cost of completing the Work or the time within which it can be completed, the CONTRACTOR shall be deemed to have waived its right to any adjustment in the Contract Price or Contract Time as a result of the action or event in question. In such a case, the CONTRACTOR shall also be deemed to have waived any claim additional time or compensation under theories of quantum merit or unjust enrichment or negligence.

6. SUBCONTRACTORS.

6.1 CONTRACTOR Responsible for SUBCONTRACTOR Work. The CONTRACTOR may retain SUBCONTRACTORS to perform portions of the Work. However, the CONTRACTOR shall be fully responsible for Work performed by SUBCONTRACTORS, as if it had been performed by the CONTRACTOR itself.

6.2 Contract Requirements Apply. All SUBCONTRACTORS must agree that they have the same duties and obligations to the CONTRACTOR as the CONTRACTOR has to The OWNER under this Contract.

6.3 No Third-Party Rights. The SUBCONTRACTORS shall have no rights against The OWNER, either under a third-party beneficiary theory or otherwise.

6.4 Insurance. The CONTRACTOR shall require all SUBCONTRACTORS to obtain and maintain throughout the duration of the Work, insurance of the types and limits stated in paragraph 11 of the General Conditions. No SUBCONTRACTOR will be permitted to perform any Work until the CONTRACTOR has provided The OWNER, and any additional insured's, with evidence that the SUBCONTRACTOR has obtained the required insurance.

7. PROJECT SECURITY AND SAFETY REQUIREMENTS.

7.1 Continued Occupancy of OWNER. The CONTRACTOR shall be responsible for the protection and security of those portions of the Work Site that have been turned over to it for construction and for the protection and security of all materials, supplies and construction equipment, whether on or off the Work Site. The CONTRACTOR acknowledges that the Work Site, or areas of the building within which the Work is being done, may be occupied by The OWNER or other members of the public during the course of the Work, and agrees to take all reasonable security measures to protect the people and property on the Work Site from injury and damage, and to exclude from areas under construction persons who are not authorized to be in those areas. The CONTRACTOR shall comply with The OWNER 's directions concerning areas within which it must confine its activities so as to avoid injury to persons and interference with operations.

7.2 Safety. The CONTRACTOR shall provide and maintain all safety devices or measures required by any applicable laws, regulations, ordinances, or rules, by The OWNER 's insurers, or reasonably required by Project conditions, for the protection of the health and safety of all persons who may come onto the Work Site, and for the protection of property from damage due to the Work. The CONTRACTOR shall promulgate and enforce safety regulations for its workers and SUBCONTRACTORS. Among other things, the CONTRACTOR shall

A. Comply with all applicable laws, regulations, ordinances, rules, regulations or orders of any public authority (federal, state or local) as they relate to the health or safety of persons or protection of property,

B. Submit to The OWNER, before performing any work on the Work Site, a written safety program in full compliance with the requirements of this Article and which is consistent with applicable federal, state, and local laws, regulations, rules, regulations or orders, and

C. Implement all practices, procedures and programs customarily implemented by construction CONTRACTORS for projects of a similar nature.

7.3 Traffic Control Plans. Prior to the start of the project the CONTRACTOR shall provide Traffic Control Plans and strategy based on the OWNER'S requirements. For work located in the public right-of-way the CONTRACTOR shall follow all State Department of Transportation, County or Municipal government regulations, permits and ordinances.

A. On a weekly basis, the CONTRACTOR shall inform the OWNER and the DESIGNER of their anticipated installation and the quantity of flag-persons being utilized.

B. Traffic persons usage will be based on the right-of-way owner requirements. Traffic persons may consist of Municipal Officers, or Uniformed Flagger who have completed required training.

C. Basis of Payment shall be based on OWNER requirements as outlined in their Contract Agreement with the CONTRACTOR.

7.4 Damage to Site on Which Work Is Carried Out. The CONTRACTOR shall be liable to The OWNER for any damage it causes to the Work or to the site or buildings in which the Work is being carried out. Until Final Completion, the CONTRACTOR shall protect all of its Work and shall not damage the work of other CONTRACTORS or the property of The OWNER. The CONTRACTOR shall pay for any such damage, and The OWNER may withhold from further payments to the CONTRACTOR amounts reasonably attributable to any damage to the Work or to other property.

7.5 RESPONSIBILITY FOR MATERIALS AND WORK

A. The CONTRACTOR shall remain solely responsible for materials delivered and Work performed until Final Completion of the Work, except those materials and Work that may have been accepted pursuant to Subparagraph 7.4.3 of the General Conditions. The CONTRACTOR remains responsible for punch list Work until it is approved and accepted by The OWNER. The CONTRACTOR shall bear the risk of loss for any damage, however caused, to the Work or to tools, materials and equipment, until Final Completion of the Work or acceptance of Work.

B. The CONTRACTOR shall, at its own cost, promptly rebuild, repair or restore Work that has been destroyed or damaged before Final Completion.

C. The OWNER may, by written notice and at its own sole discretion, relieve the CONTRACTOR of the duty to maintain and protect certain portions of the Work, and of the risk of loss with respect to that Work. Any such notice shall not act to discharge the CONTRACTOR'S obligation to repair or replace defective Work or Work that does not conform with the Contract Documents. Any such notice shall not operate to relieve the CONTRACTOR or it obligation safety obligations or its responsibility, under any provision of the Contract Documents, for death, personal injury, or property damage, or from the CONTRACTOR'S indemnity obligations.

8. DUTY TO COORDINATE WITH OTHER CONTRACTORS ON SITE

8.1 Duty Not To Interfere. The CONTRACTOR shall not unreason¬ably impede, hinder or delay the work on any other CONTRACTOR which The OWNER or others may have performing work on the Work Site. The CONTRACTOR shall cooperate with any CONTRACTOR who will be performing work that may connect, complement, interfere with or otherwise be dependent upon the CONTRACTOR'S Work, and shall resolve any disputes or problems with such other CONTRACTOR. If

amicable resolution is not promptly reached, the CONTRACTOR shall notify the OWNER REPRESENTATIVE and shall thereafter follow the OWNER REPRESENTATIVE'S directions for resolving the issues. All CONTRACTORS responsible for Work defined in individual sections of the Project shall be responsible, jointly and severally, for coordinating their various sections of work as to scheduling, installation procedures and installation of related materials.

8.2 Scheduling. If The OWNER requests, the CONTRACTOR shall include provision in the CONTRACTOR'S schedule for the work of other CONTRACTORS.

8.3 Damages Caused by Other CONTRACTORS. If any other CONTRACTOR performing work on the Work Site at the same time as CONTRACTOR should hinder, delay or damage the CONTRACTOR'S Work, or should otherwise cause loss or injury to the CONTRACTOR, the CONTRACTOR agrees that it will look solely to such CONTRACTOR for relief. Neither The OWNER nor its representatives shall be responsible for any such hindrance, delay, damage, loss or injury, and the CONTRACTOR will, in no event, attempt to hold The OWNER or it's representatives liable for resulting costs or damages. Similarly, the CONTRACTOR agrees that it will be directly responsible to any other CONTRACTOR performing work on the Work Site for any loss, injury, damage or delay, including acceleration costs, incurred as a result of delay, interference, or damage to Work caused by the CONTRACTOR. The CONTRACTOR and its Performance Bond surety shall indemnify and hold harmless The OWNER and project DESIGNER from and against any claim brought against any of them by another CONTRACTOR for the damages covered by this Paragraph, including costs, expenses and attorneys' fees incurred as a result of the CONTRACTOR'S alleged acts or omissions.

9. PAYMENT

9.1 Schedule of Values. Within five (5) days after executing the Contract, the CONTRACTOR shall submit to The OWNER a Schedule of Values allocated to various portions of the Work. The schedule, when approved, shall be used as a basis for reviewing the CONTRACTOR'S Applications for Payment.

9.2 Progress Payments. The OWNER shall make payments to the CONTRACTOR for Work performed in accordance with the Contract Documents, and for which the CONTRACTOR has sought payments via properly completed, documented and approved Applications for Payment. At least ten (10) days before the date established for each progress payment, the CONTRACTOR shall submit to the OWNER REPRESENTATIVE an itemized Application for Payment which conforms to the following requirements:

A. The Application for Payment may be typed on the American Institute of DESIGNERS Document AIA G702, Application and Certificate for Payment, and include AIA G703, with the continuation sheet included.

B. The CONTRACTOR'S submission of an Application for Payment shall constitute its representation that the services and materials described in the application and for which payment is sought have been provided to The OWNER and that the application and all supporting invoices and other documentation are true and accurate in all respects.

9.3 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When The OWNER or it's representatives require additional data to substantiate a payment application, the CONTRACTOR shall submit the information with a numbered cover letter, identifying:

1. Project name and number.
2. Payment application number and date.
3. Detailed list of enclosures.
4. The item number, identification and a description, /or stored material on-site (if the OWNER has expressly agreed to pay for stored material(s).

9.4 Timing of Payment. Progress payments will be made by the OWNER within thirty (30) calendar days or in accordance with the timeframes outlined in their agreement with the CONTRACTOR, after presentation by the CONTRACTOR of a properly submitted and approved invoice.

9.5 Passage of Title. Material, equipment, hardware and work covered by progress payments or final payment shall become the sole property of The OWNER, no matter where located. This provision shall not be construed as relieving the CONTRACTOR from the responsibility for the fulfillment of the terms of the Contract.

9.6 Substantial Completion. The project is considered substantially complete when a minimum of 90% of the project units have been fabricated and installed and the sign program and its components and associated project sites meet all safety, code and operational requirements.

9.7 Final Completion / Final Payment. After the CONTRACTOR has completed the Work, including completion of any punchlist corrections and acceptance testing, and the DESIGNER so certifies, The OWNER will accept the Work. This will constitute Final Completion of the Work. The CONTRACTOR shall submit its Final Application for Payment within ten (10) days of Final Completion. The Final Application for Payment must conform in form and substance to the requirements for applications for progress payment and must include satisfactory evidence that all SUBCONTRACTORS and suppliers have been paid all amounts due to them for labor or materials provided for the Work and must include a written certification from the CONTRACTORS that all of the Work has been completed in accordance with the Contract and applicable laws.

9.8 The OWNER'S Right to Withhold Payments. The OWNER may withhold payment for any Work claimed to have been performed by the CONTRACTOR if the Application for Payment states, or The OWNER reasonably determines that:

A. any Work for which payment is sought is defective or non-conforming and such defects or non-conformance have not been remedied; or

B. the CONTRACTOR has not promptly paid all amounts due to laborers, materialmen and SUBCONTRACTORS; or

C. any of the CONTRACTOR'S laborers, Subcontractors or materialmen has filed a mechanic's lien against the Project, and the CONTRACTOR has not caused such lien to be discharged; or

D. The OWNER reasonably determines that the CONTRACTOR will be unable to complete the Work for the balance of the Contract Sum and the CONTRACTOR fails to provide reasonable assurances that it has the financial resources to complete the Work; or

E. the CONTRACTOR is otherwise in default under its Contract.

9.9 Liquidated Damages. The OWNER shall charge a liquidated damages penalty against the CONTRACTOR for work not completed within the 90% substantial completion timeframe and/or the agreed upon final project deadline.

A. The amount of the liquidated damages penalty shall be according to the OWNER / CONTRACTOR Contract. If the OWNER'S Contract language is silent on liquidated damages or the amount of the penalty, the penalty shall be based on the following values;

Total Contract $1 - $499,999	Penalty $ 500 per day
Total Contract: $500,000 - $749,999	Penalty $ 750 per day
Total Contract: $750,000 - $999,999	Penalty $ 1,000 per day
Total Contract: 1,000,000 or more	Penalty $ 1,500 per day

10. PREVAILING WAGE REQUIREMENTS.

10.1 Applicable Law. The CONTRACTOR shall confirm with the OWNER if this Contract is subject to the provisions, duties, obligations, remedies and penalties of the Prevailing Wage Act, which is incorporated herein as a reference when required.

10.2 Wage Predetermination. In compliance with the Prevailing Wage Act, the Prevailing Minimum Wage Predetermination may be included in the Contracts General Requirements provided by the OWNER, and is a part hereof, as approved by the Secretary of Labor and Industry.

10.3 No Strike; No Lockout. By executing the Contract, CONTRACTOR warrants and represents that the collective bargaining agreements between the CONTRACTOR and any union, which will perform under the Contract, include a no-strike, no-lockout clause.

11. INSURANCE.

11.1 OWNER Insurance Requirements. CONTRACTOR shall furnish evidence to the OWNER that with respect to the operations he performs, he/she carries a comprehensive general liability insurance policy (including, but not limited to, blanket contractual liability, completed operations/products liability, CONTRACTOR'S protective liability, and explosion, collapse and underground hazard coverage) providing a limit of not less than two million dollars ($2,000,000) for all damages arising out of bodily injury or death in any one (1) occurrence, and providing for a limit of not less than two million dollars ($2,000,000) for damages to or destruction of property, including the loss of the use thereof, in any one occurrence; two million dollars ($2,000,000) aggregate limit shall apply to bodily injury, personal injury and death, and to property damage.

CONTRACTOR shall also furnish evidence to The OWNER that with respect to the operations he performs, he carries an Umbrella Liability Policy with a limit of two million dollars ($2,000,000) with a self-insured retention limit or deductible not to exceed ten thousand dollars ($10,000).

All policies of insurance, including Umbrella Coverage, must be endorsed to include as additional named insured each of the following:

- The OWNER
- State Department of Transportation
- DESIGNER

12. INDEMNIFICATION.

12.1 Indemnity. To the full extent permitted by law, the CONTRACTOR shall indemnify, defend and hold harmless The OWNER, its Representatives, Agents, DESIGNERS and the State Department of Transportation from and against any and all losses, costs (including litigation costs and counsel fees), claims, suits, actions, damages, liability and expenses, including, but not limited to, those in connection with loss of life, bodily and personal injury or damage to property occasioned wholly or in part by the CONTRACTOR'S breach or other act or omission or the act or omission of the CONTRACTOR'S agents, SUBCONTRACTORS, employees, or servants pursuant to this Contract. This indemnity shall apply whether or not the CONTRACTOR or party for whom it is responsible was negligent,

and whether or not The OWNER, its Representative and the State Department of Transportation, or any of their respective members, officers, employees, agents, DESIGNERS, consultants and representatives were negligent.

12.2 Survival and Non-Exclusivity of Indemnity. This indemnity shall survive termination of the Contract, Final Acceptance of the Work and final payment under the Contract. This indemnity is in addition to any other rights or remedies which The OWNER, its Representative, and the State Department of Transportation, and its representatives may have under the law or under the Contract. In the event of any claim or demand made against any party which is entitled to be indemnified here under, The OWNER may in its sole discretion reserve, retain or apply any monies due to the CONTRACTOR under the Contract for the purpose of resolving such claims.

12.3 DESIGNERS Limits of Liability. The liability of the DESIGNER shall be limited to the total fee paid to the DESIGNER by the OWNER.

13. BONDS.

13.1 Time Due and Form. Within five (5) days after The OWNER gives Notice of Award of the Contract to the CONTRACTOR, and prior to or concurrently with execution of the Contract, the CONTRACTOR shall provide to The OWNER surety bonds satisfactory to The OWNER in the amounts and for the purposes stated in the Agreement. The Bonds shall be executed by a responsible surety company or companies approved by The OWNER. Bonds shall be on the form included in the Bid Documents. The CONTRACTOR shall pay all Bond premiums, costs, and incidentals. No payment will be made to the CONTRACTOR and Notice Proceed will not be issued, until the Bonds have been approved by The OWNER.

13.2 Requisite Signatures on Bonds. Both the CONTRACTOR and the surety shall sign each Bond and the signature of the authorized agent of the surety shall be notarized.

14. TERMINATION.

14.1 For Default

A. Grounds. The OWNER may terminate the Contract for default if the CONTRACTOR fails materially to perform any of its duties or obligations under the Contract properly and in a timely fashion, or if the CONTRACTOR files a voluntary petition in bankruptcy under any chapter of the Bankruptcy Code, has an involuntary petition filed against it, makes a general assignment for the benefit of its creditors, or has a receiver appointed.

B. Notice, Cure Period and Effective Date. The OWNER shall give the CONTRACTOR ten (10) days' written notice of intent to terminate or default. During those ten days, the CONTRACTOR shall have the opportunity to cure the default. However, unless the default is not cured to the satisfaction of The OWNER within the ten days and The OWNER so notifies the CONTRACTOR in writing, the Contract shall be deemed terminated without further notice and effective immediately. The CONTRACTOR hereby agrees that, in the event of termination for default, title to all Work in progress on the Work Site shall pass to The OWNER.

C. Further Payment to CONTRACTOR. The OWNER shall have no obligation to pay the CONTRACTOR for any Work done or materials supplied after the effective date of termination. No further payments on the Contract shall be made after termination until the Work has been completed by The OWNER and then only if the total cost of completing the Work, and all consequential damages, was less than the remaining balance of the Contract Price at the time of termination.

D. Assignment of Orders and Supply Contracts. The OWNER may, at its sole option, assume supply contracts or orders the CONTRACTOR placed before termination. The CONTRACTOR shall have the obligation to identify to The OWNER all such orders and supply contracts so that The OWNER may exercise its option.

E. The OWNER'S Right to Complete The Work. If the CONTRACTOR is terminated for default, The OWNER shall have the right to complete the Work by whatever means and methods it deems advisable.

F. CONTRACTOR'S Liability. The Contract shall be liable for all costs The OWNER incurs in completing the Work after a default termination, to the extent that those costs are in excess of the Contract Price, as well as for any other damages allowable under this Contract or at law.

G. Conversion to Termination for Convenience. If it is ultimately determined that The OWNER 's termination of this Contract for default was wrongful, then the termination shall be deemed to have been a termination for convenience, and the CONTRACTOR'S rights and remedies shall be limited and governed by the provisions dealing with terminations for convenience.

14.2 For Convenience. The OWNER may, upon ten (10) days' written notice, terminate this Contract for its convenience, and without declaring any default by the CONTRACTOR. In the event of such a termination, the CONTRACTOR shall cease Work. The CONTRACTOR'S sole and exclusive remedy in cases of termination for convenience is payment for the Work completed up to the time of termination and for all unavoidable costs of canceling or terminating open orders or supply contracts. The CONTRACTOR shall include in all Subcontracts for the Work a provision substantially similar to this Paragraph, authorizing termination for convenience and limiting the SUBCONTRACTORS' rights and remedies as provided herein.

15. MISCELLANEOUS.

15.1 Independent CONTRACTOR. The CONTRACTOR shall perform all Work under this Contract as an independent CONTRACTOR and not an agent or employee of the OWNER.

15.2 The OWNER As Sole Contract Privy. The CONTRACTOR is not in privity with, and shall have no claim against, the Town for any costs it incurs or claims to have incurred in connection with the Work or the Contract, but must look solely to The OWNER for payment of such costs.

15.3 Contractors's License. The CONTRACTOR represents that it has obtained and maintained in force whatever licenses are required by applicable state or local laws for CONTRACTORS performing the type of work to be done pursuant to the Contract.

15.4 Assignment. This Contract may not be assigned or transferred without the prior written consent of The OWNER. Any assignment of proceeds of this Contract shall be subject to all proper set-offs and contractually permitted withholdings in favor of The OWNER.

15.5 Governing Law/Waiver of Jury Trial. This Contract shall be governed by and construed in accordance with the laws of the State of the sign project installation, without regard to its conflict of laws principles. The parties expressly waive their right to trial by jury and agree that all disputes relating to the Contract or its breach shall be decided by a judge sitting without jury.

15.6 Choice of Venue. All disputes arising from or in connection with this Contract shall be decided in the Court of Common Pleas of The OWNER.

15.7 Integrated Agreement. The Contract is an integration, constituting the entire agreement of the parties with respect to the subject matter of the Contract. It supersedes all prior or contemporaneous discussions, writings, or negotiations. The Contract may not be modified except by a writing executed by both parties.

15.8 Remedies Cumulative. All rights and remedies provided to the parties under this Contract shall be cumulative, not exclusive. The parties may, in their discretion, avail themselves of any remedy permitted by the Contract, at law or in equity, and the exercise of one or more remedies by a party shall not preclude the simultaneous or subsequent exercise of other remedies.

15.9 Limitations. Statutes of limitations applicable to The OWNER 's right to assert claims or bring suit against the CONTRACTOR or the CONTRACTOR'S surety in connection with the Contract or the Bonds shall not begin to run, or shall be deemed tolled, until Final Completion of the Work.

15.10 Captions. The table of contents, titles, section headings, or other captions contained in the General Conditions or other Contract Documents are solely to facilitate reference and in no way affect, limit, or cast light upon the interpretation or construction of the Contract.

15.11 Advertising or Public Relations. The OWNER reserves the right to review and approve in writing all The OWNER -related copy prior to publication as well as any The OWNER -related public statements and public discussions to be made by the CONTRACTOR, any of its SUBCONTRACTORS, agents, officers, members or employees. The CONTRACTOR shall not allow The OWNER -related copy to be submitted to any trade association, seminar sponsor or other public discussion group or be published in CONTRACTOR'S advertisement or public relations programs until submitting The OWNER -related copy and receiving prior written approval from The OWNER. All information shall be factual and in no way imply that The OWNER endorses the CONTRACTOR'S firm, service, or product.

END OF SECTION 0550 - GENERAL CONDITIONS

01320 - CONSTRUCTION PROGRESS DOCUMENTATION

1. PART 1 - GENERAL

1.1 Summary

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Construction Schedule.
2. Submittals Schedule.
3. Daily construction reports.
4. Material location reports.
5. Field condition reports.
6. Special reports.
7. Construction photographs.

1.2 Definitions

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

B. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.

C. Predecessor activity is an activity that must be completed before a given activity can be started.

D. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

E. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

F. Event: The starting or ending point of an activity.

G. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

H. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

I. Milestone: A key or critical point in time for reference or measurement.

J. Diagram: A graphic diagram of a schedule, showing activities and activity relationships.

1.3 Submittals

A. Submittals Schedule: Submit 5 copies of schedule. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Submittal category (action or informational).
3. Name of subcontractor.
4. Description of the Work covered.
5. Scheduled date for Administrators final release or approval.

B. Preliminary Construction Schedule: Submit 5 printed copies; on a single sheet of reproducible media, and one a print.

C. Contractor's Construction Schedule: Submit 5 printed copies of initial schedule. Schedule shall be large enough to show entire schedule for entire construction period.

D. Construction Photographs: Submit Digital photographs of each site location prior to excavation/mounting, upon completion of excavation and upon installation of sign..

E. File Name: Sign Location

F. Folder Organization: By Sign Location Plan Number / Date

G. Daily Construction Reports: Submit five copies at weekly intervals.

H. Material Location Reports: Submit five copies at weekly intervals.

I. Field Condition Reports: Submit five copies at time of discovery of differing conditions.

J. Special Reports: Submit five copies at time of unusual event.

1.4 Quality Assurance

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 1 Section 01010 Summary / Preconstruction Meeting. Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Discuss constraints, including phasing and milestones
2. Review schedule for work of Owner's separate contracts.
3. Review time required for review of submittals and resubmittals and approvals
4. Review requirements for utility checks.
5. Review time required for completion and startup procedures.
6. Review and finalize list of construction activities to be included in schedule.
7. Review submittal requirements and procedures.

1.5 Coordination

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

2. PART 2 - PRODUCTS

2.1 Submittals Schedule

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 20 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead-time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 Contractor's Construction Schedule

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities:

1. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 30 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
2. Submittal Review Time: Include review and resubmittal times indicated in "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Designer's and Owner's Representative administrative procedures necessary for certification of Substantial Completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:
   a. Coordination with existing construction.
   b. Uninterrupted services.
   c. Use of premises restrictions.
   d. Seasonal variations.
   e. Environmental control.
6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Mockups.
   d. Fabrication.
   e. Deliveries.
   f. Installation.
   g. Curing.

D. Milestones: Include milestones indicated in the Contract Documents in schedule.

E. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

F. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

G. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for the Notice to Proceed

H. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 30 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 Reports

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. High and low temperatures and general weather conditions.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Construction Change Directives received.
14. Services connected and disconnected.
15. Substantial Completions authorized.

B. Material Location Reports: At weekly intervals, prepare a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.4 Special Reports

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

3. PART 3 - EXECUTION

3.1 Contractor's Construction Schedule

A. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule 3 days before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Administrator, Designer, Owner's Representative and other parties identified by Contractor with a need-to-know schedule responsibility.

3.2 Construction Photographs

A. Photographer: Contractors photographer.

B. Photography: Digital Files / Color / See Submittals for Naming

C. Preconstruction Photographs: Before starting construction, take necessary photographs of Project site and surrounding properties from different vantage points to show site conditions.

1. Usa a white board to indicate location number.
2. Show existing conditions adjacent to location / property.

D. Construction Progress: On a weekly basis take a minimum of 2 photos of each sign location under construction, those that have been installed and minimum of 10 photos of in-shop production of signs and materials. Photographer shall select vantage points to best show status of construction progress since last photographs were taken.

E. Final Completion Construction Photographs: Take 2 color photographs after date of Substantial Completion of each sign location for submission as Project Record Documents.

F. Photographs related to Third Party Work: CONTRACTOR shall also include photographs of surrounding area or issues that may require third party maintenance or correction. Including tree/shrub trimming, clean-up or additional
surface work.

G. Project Team Access: CONTRACTOR shall establish a accessible server site to store all project photography, available to entire project team.

END OF SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

01330 - SUBMITTAL PROCEDURES

1. PART 1 - GENERAL

1.1 Summary

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. Related Sections include the following:

1. Division 1 Section “Construction Progress Documentation”

1.2 Definitions

A. Action Submittals: Written and graphic information that requires Administrators, Designer’s and Owner’s Representative’s responsive action.

B. Informational Submittals: Written information that does not require Designer and Owner’s Representative’s approval. Submittals may be rejected for not complying with requirements.

1.3 Submittal Procedures

A. General: Digital files of design intent drawings will be provided by Designer for Contractor’s use in preparing submittals. See General Conditions.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Designer and Owner’s Representative reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in “Construction Progress Documentation” for list of submittals and time requirements for scheduled performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Designer’s receipt of submittal.

1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.

2. If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Allow [10] days for processing each resubmittal.

4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor’s review and approval markings and action taken by Designer and Construction Manager.

3. Include the following information on label for processing and recording action taken:

a. Project name.
b. Date.
c. Name and address of Designer and Owner’s Representative.
d. Name and address of Contractor.
e. Name and address of subcontractor.
f. Name and address of supplier.
g. Name of manufacturer.
h. Unique identifier, including revision number.
i. Drawing number and detail references, as appropriate.
j. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, and authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Use only final submittals with mark indicating action taken by Designer and Owner’s Representative in connection with construction.

2. PART 2 - PRODUCTS

2.1 Action Submittals

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:

a. Manufacturer’s written recommendations.
b. Manufacturer’s product specifications.
c. Manufacturer’s installation instructions.
d. Manufacturer’s catalog cuts.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Shopwork manufacturing instructions.
f. Templates and patterns.
g. Schedules.
h. Design calculations.
i. Notation of coordination requirements.
j. Notation of dimensions established by field measurement.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 11 x 17 inches but no larger than 30 by 40 inches .

3. Number of Copies: Submit copies of each submittal, as follows:

a. Initial Submittal: Submit one correctable, reproducible print.

b. Final Submittal: Submit 2 final prints to OWNER and 1 final print for DESIGNER.

D. Samples: Prepare physical units of materials or products, including the following:

1. Samples for Approval: Submit color samples consisting of units or sections of units showing the full range of colors, textures, and patterns available.

2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Designer’s sample where so indicated. Attach label on unexposed side that includes the following:

a. Generic description of Sample.
b. Product name or name of manufacturer.
c. Sample source.

3. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.

a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least three sets of paired units that show approximate limits of the variations.
b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

4. Number of Samples for Initial Selection: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer’s product line. Designer through Owner’s Representative, will return submittal with options selected.

5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

6. Samples for Verification

a. Examples of all graphic image process, including materials, methods, colors and finishes, for maps, imagery, letters, numbers and other graphic devices.
b. Full size section of all graphic image processes, including materials, methods, colors and finishes.

E. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

F. Contractor's Construction Schedule: Comply with requirements in "Construction Progress Documentation" for Owner's Representative action.

G. Submittals Schedule: Comply with requirements in "Construction Progress Documentation."

H. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: two copies of each submittal, unless otherwise indicated.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."

B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of designers and owners, and other information specified.

C. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

G. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

H. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

I. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

J. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

K. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following;

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

L. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.

M. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

3. PART 3 - EXECUTION

3.1 Contractor's Review

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Designer and Construction Manager.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

C. Existing Site Conditions. Contractor is responsible for confirming and correlating all dimensions at the job site for information which pertains to the fabrication process and coordination of work with other trades related to the project submissions and implementation.

3.2 Designer's And Construction Manager's Action

A. General: Designer and Owner's Representative will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Designer and Owner's Representative will review each submittal, make marks to indicate corrections or modifications required, and return it. Designer and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

C. Informational Submittals: Designer and Owner's Representative will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Designer and Construction Manager will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded

E. Designers Review: Designer's review is conducted for the limited purpose of checking conformance with information given and the design concept expressed in the Design Intent Drawings as part of the Contract Documents. Review of submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of material or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents.

Designer's review shall not constitute approval of safety precautions, structural requirements or of any construction means, methods, materials, techniques, sequence or procedures.

Designer's approval of a specific item shall not indicate approval of an assembly of which item is a component.

Designer's review of Samples is only for visual characteristics unless otherwise indicated. Designer's approval of Contractor's submittals shall not relieve the Contractor of responsibility for deviation from requirements of Contract Documents nor for errors or omissions in shop drawings.

No Change to Contract Sum or Contract Time is authorized by Designer's approval unless so stated in a separate modification to the contract and approved by the OWNER.

Contractor is responsible for confirming and correlating all dimensions at the job site for information which pertains to the fabrication process and coordination of work with other trades.

END OF SECTION 01330 - SUBMITTAL PROCEDURES

01781 - PROJECT RECORD DOCUMENTS

1. PART 1 - GENERAL

1.1 Summary

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

1.2 Submittals

A. Record Drawings: Comply with the following:

1. Submit 1 set of marked-up Record Prints.
2. Submit 1 set of corrected Record Prints
3. Record Specifications: Submit one copy of Project's

B. Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one copy of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

2. PART 2 - PRODUCTS

2.1 Record Drawings

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations.
   d. Locations and depths of underground utilities.
   e. Changes made by Change Order or Construction Change Directive.
   f. Changes made following Designer's written orders.
   g. Details not on the original Contract Drawings.
   h. Field records for variable and concealed conditions.
   i. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Designer and Owner's Representative. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:

1. Format: Same CAD program, version, and operating system as the original Contract Drawings.
2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Designer through Owner's Representative for resolution.

C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Designer determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult with Designer and Owner's Representative for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
3. Identification: As follows:

   a. Project name.
   b. Date.
   c. Designation "PROJECT RECORD DRAWINGS."
   d. Name of Designer and Construction Manager.
   e. Name of Contractor.

2.2 Record Specifications

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.3 Record Product Data

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.4 Miscellaneous Record Submittals

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

3. PART 3 - EXECUTION

3.1 Recording And Maintenance

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Designer's and Owner's Representative reference during normal working hours.

END OF SECTION 01781 - PROJECT RECORD DOCUMENTS

02231 - TREE PROTECTION AND TRIMMING

1. PART 1 - GENERAL

1.1 Summary

A. This Section includes the protection and trimming of trees that interfere with, or are affected by, execution of the Work or completed work, whether the work is temporary or new construction.

B. CONTRACTOR be responsible for trimming, in an professional and appropriate technique (see below; 1.3 Quality Assurance) all trees that interfere with the sign structure or site lines associated with the maximum legibility of the sign panel and its associated messages, logos and/or graphics.

1.2 Submittals

A. Product Data: For each type of product indicated.

B. Certification: From a qualified arborist that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

C. Maintenance Recommendations: From a qualified arborist for care and protection of trees affected by construction during and after completing the Work.

1.3 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. PART 2 - PRODUCTS

2.1 Materials for Protection of Trees

A. Chain Link Fence or other fencing type approved by the OWNER.

3. PART 3 - EXECUTION

3.1 Preparation

A. Temporary Fencing: Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage.

1. Install fence according to manufacturer's written instructions.

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.

3.2 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.

3.3 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.

3.4 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material, displaced trees, and excess chips from Owner's property.

END OF SECTION 02231 - TREE PROTECTION & TRIMMING

03300 - CAST-IN-PLACE CONCRETE

1. PART 1 - GENERAL

1.1 Summary

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.2 Definitions

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.3 Submittals

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mix water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, “Details and Detailing of Concrete Reinforcement.” Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork. Design and engineering of formwork are Contractor’s responsibility.

E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

F. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Cementitious materials and aggregates.
2. Form materials and form-release agents.
3. Steel reinforcement and reinforcement accessories.
4. Admixtures.
5. Curing materials.
6. Bonding agents.
7. Adhesives.

G. Minutes of preinstallation conference.

1.4 Quality Assurance

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for formwork and shoring and reshoring installations that are similar to those indicated for this Project in material, design, and extent.

C. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mixed Concrete Association’s Certification of Ready Mixed Concrete Production Facilities.

D. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

E. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer’s plant, each aggregate from one source, and each admixture from the same manufacturer.

F. ACI Publications: Comply with the following, unless more stringent provisions are indicated:

1. ACI 301, “Specification for Structural Concrete.”
2. ACI 117, “Specifications for Tolerances for Concrete Construction and Materials.”

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section “Project Meetings.”

1. Before submitting design mixes, review concrete mix design and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
   a. Contractor’s superintendent.
   b. Independent testing agency responsible for concrete design mixes.
   c. Ready-mix concrete producer.
   d. Concrete subcontractor.

1.5 Delivery, Storage, And Handling

A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

2. PART 2 - PRODUCTS

2.1 Form-Facing Materials

A. 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.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
   a. High-density overlay, Class 1, or better.
   b. Medium-density overlay, Class 1, or better, mill-release agent treated and edge sealed.
   c. Structural 1, B-B, or better, mill oiled and edge sealed.
   d. B-B (Concrete Form), Class 1, or better, mill oiled and edge sealed.

2.2 Steel Reinforcement

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 , as required by structural engineer.

2.3 Reinforcement Accessories

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI’s “Manual of Standard Practice” from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

2.4 Concrete Materials

A. Portland Cement: ASTM C 150, Type I.

1. Fly Ash: ASTM C 618, Class F.

B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:

1. Nominal Maximum Aggregate Size: 3/4 inch .
2. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 sieve, and less than 8 percent may be retained on sieves finer than No. 50.

C. Water: Potable and complying with ASTM C 94.

2.5 Admixtures

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.

B. Air-Entraining Admixture: ASTM C 260.

C. Water-Reducing Admixture: ASTM C 494, Type A.

D. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

2.6 Curing Materials

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

2.7 Related Materials

A. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

B. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:

1. Type II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.

2.8 Concrete Mixes

A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:

1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.

C. Footings and Foundation Walls: Proportion normal-weight concrete mix as follows:

1. Compressive Strength (28 Days): 4000 psi .
2. Maximum Slump: 4 inches .
3. Maximum Slump: 5 inches .

2.9 Fabricating Reinforcement

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 Concrete Mixing

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F , reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F , reduce mixing and delivery time to 60 minutes.

3. PART 3 - EXECUTION

3.1 Formwork

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch .

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Do not chamfer corners or edges of concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Re tighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 Embedded Items

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor bolts, accurately located, to elevations required.

3.3 Removing And Reusing Forms

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, de-laminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by OWNER.

3.4 Steel Reinforcement

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.5 Joints

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

3.6 Concrete Placement

A. When locating a footer within a single larger pavement block adjacent to at least 2 expansion joints, the entire block of pavement shall be removed and replaced with the same materials and finish of adjacent sidewalk areas - up to a 25 sq ft. (5' - 0" x 5' - 0")

B. When pouring a underground footer within a area that contains a surface brick or specialty pavers, The pattern of bricks / pavers shall be removed, stored and replaced in the exact same positioning in the order they were removed.

C. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

D. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by a licensed Engineer.

E. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.

F. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

G. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.

H. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

I. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 Miscellaneous Concrete Items

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

3.8 Concrete Protection And Curing

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

3.9 Concrete Surface Repairs

A. Defective Concrete: CONTRACTOR shall repair and patch any existing defective areas that surround the footer up to 50 sq ft. Remove and replace concrete that cannot be repaired and patched to OWNER'S approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

E. Perform structural repairs of concrete, subject to OWNER'S approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

G. All stained or colored concrete shall match adjacent stained or colored concrete areas.

H. All replaced surface areas shall be replaced with matching like materials, including bricks, pavers, stone, stamped concrete, or other materials.

3.10 Field Quality Control

A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi .

END OF SECTION 03300 - CAST-IN-PLACE CONCRETE

10436 - POST AND PANEL SIGNS & DIMENSIONAL LETTERS

1. PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Non Illuminated, Single-Sheet-Type Post and Panel Signs
2. Dimensional Letters.
3. Related Sign Types include, Gateways, Directional Signs, Kiosks and Single-Panel Signs Mounted to Structures.

1.2 RELATED PROJECT CONDITIONS, PROCEDURES AND WORK REQUIREMENTS

A. Executive Summary
B. Section 00550: General Conditions
C. Section 01320: Construction Progress Documentation
D. Section 01330: Submittal Procedures
E. Section 01781: Project Record Documents
F. Section 02231: Tree Protection & Trimming
G. Section 03050: Cast-In-Place Concrete
H. Section 10437: Pylon Signs, Electric. Message Brds & Channel Ltrs.
I. Section 01730: Removals, Cutting and Patching
J. Section 09999: Decorative Metals Coatings / Dye Sublimation

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide post and panel signs capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures":

1. Wind Loads: Determine loads based on a uniform pressure of 90mph or the required windloads based on the project location, which ever is greater, acting in any direction.

B. Thermal Movements: Provide post and panel signs that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, peeling / loss of adhesion of vinyl, overstressing of components, failure of connections, and other detrimental effects.

Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

C. Structural Engineering: Provide all necessary structural engineering calculations and signed and sealed drawings for proposed signs, structures (existing and new) and other elements as necessary to perform the work and provide a structurally sound and safe product.

1. CONTRACTOR shall also review and confirm the structural integrity of all existing structures a sign may be installed on.
2. When a deficiency is discovered in an existing structure, the CONTRACTOR and their ENGINEER shall provide a discovery report to the OWNER and indicate any corrections, remediation or additional structural components that shall be necessary, in order to install the sign properly and to required Federal, State and Local codes.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated include construction details, material descriptions, processes, dimensions of individual components, graphic layouts, elevations, profiles and finishes. Include manufacturer's written instructions for installing, maintaining and cleaning surfaces.

B. Shop Drawings: Show fabrication, installation details and graphic layouts for post and panels signs.

1. NOTE: The DESIGNER shall provide Adobe Illustrator files / DESIGN INTENT DRAWINGS associated with the PROJECT as a courtesy to the CONTRACTOR.
2. NOTE: The DESIGN INTENT DRAWINGS, specifications and files are meant for DESIGN INTENT ONLY and are not for construction. CONTRACTOR shall verify and be responsible for all final drawings, dimensions and conditions of the job, including proper orientation of graphic layouts, panel shapes, brackets and mounting methods.
3. Include plans, elevations, and at least 3/4-inch scale sections of typical members and other components and construction details. Show anchors, reinforcement, accessories, layout, and installation details.
4. Include message list, with details of wording and lettering layout, at least half size. Include full-size details of graphics.
5. Provide Graphic layouts for each sign location and its associated message. Minimum scale: 1" = 1' – 0"
6. For dimensional letters;
   a. Provide elevations of entire mounting surface and adjacent surfaces and details of any obstructions.
   b. Provide construction and installation details indicating any internal surface supports that is required for structural integrity.
   c. Include full-size templates for cutout characters and graphic symbols.
   d. Include full-size spacing template for individually mounted dimensional characters and graphic symbols for field-applied characters on pylons.
7. Fabricator shall provide a Structural Engineer Seal (State Licensed) for all shop drawings indicating fasteners, construction, installation, footers or other structural components.

C. Samples for Verification: Provide 3 sets of each type of product indicated, of size below:

1. Aluminum Post: For each form, finish, and color, on 6-inch-long sections of extrusions. All custom extrusion die shall be approved prior to fabrication.
2. Aluminum Sheet: Squares of each sheet thickness, at least 4 inches by 4 inches.
3. Paint Swatches: For each painted color, provide a 4" by 4" inch aluminum sheet. Clearly indicate on the back the color specification, date and submittal number.
4. Reflective Vinyl Sheet: minimum 8" by 10" for each color required.
5. Examples of all graphic image process, including materials, methods, colors and finishes, for maps, patterns, imagery, letters, numbers and other graphic devices.
6. Dimensional Characters: Full-size representative samples of each dimensional character type required, showing style, color, and material finish and method of attachment to sign background.
7. Full Size Prototype Sign(s) and Sign Components: Full size Prototype Sign(s) and select Sign Components may be requested as part of the submittal process.
   a. The full size prototype sign may be constructed / installed in place.
   b. The prototype sign(s) and requested sign components shall be fabricated of all materials, process, colors and finishes as outlined in the design intent drawings.
   c. The installed prototype sign may ultimately be used as a component of the system.
   d. The OWNER shall provide exact location and messages for the prototype sign(s).
   e. A line item shall be included on the BID FORM for the quantity of and types of prototype sign(s) and Sign components required for the submittal process.

D. All cost associated with sample submittals, including mobilization, product data, shop drawings, mock-ups, samples and other submittals shall be included within the Lump Sum Bid Proposal.

E. Fabrication and Installation of requested proto-types shall be included in the CONTRACTORS overall project schedule.

F. No additional time will be granted by the OWNER to the CONTRACTOR for the prototype fabrication / installation time or for time lost due to non-conforming materials, colors or other component associated with the completed proto-type.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized and professionally trained representative of sign manufacturer for installation and maintenance of units required for this Project.

B. Contractor shall be capable of providing replacement message panels within 10 working days of receipt of order.

C. Source Limitations: Obtain each type of post and panel signs through one source from a single manufacturer, unless incorporation of unique products is called for.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of post and panel signs and are based on the specific type indicated.

1. Do not modify intended aesthetic effects, as judged solely by the DESIGNER except with DESIGNER'S approval. If modifications are proposed, submit comprehensive explanatory data to Designer for review.
2. CONTRACTORS suggested modifications and/or products shall not increase the cost or schedule of project.

1.6 DELIVERY, HANDLING AND STORAGE

A. Delivery and Handling. Ship and deliver post, panels and all other sign components in the appropriate protective covering and crating to fully protect all sign components and surfaces against damage.

1. Remove all protective covering, as required per product manufacturer instructions, in order to maintain warranties.

B. Defects. All delivered sign components shall be delivered free of any defect, including, but not limited to scratches, chips, cracking, dents, peeling, bubbling, adhesive glue / tape marks, marker writings, undesirable film coatings or other visual distractions or defects.

1. Contractor shall be responsible for full replacement of all sign components that are delivered on site or to the location damaged, at no cost to the OWNER.
2. Contractor shall be responsible for full replacement of all sign components that are delivered on site or to the location defective, causing the product warranty to become null or void, at no cost to the OWNER.

C. Storage. The CONTRACTOR shall follow all third party, manufacturer and/or product storage instructions, procedures and requirements for all sign components. Including protection methods, protective materials, protective material removal (including instructions and timeframes), sequencing of events, environmental conditions for storage, overall storage requirements, stacking of products /materials and any other requirements.

1. Any failure by the CONTRACTOR to follow the storage requirements that cause for loss or void of warranty, product effectiveness or performance, will require complete and total replacement of all effected materials and products at no cost to the OWNER. This includes, but is not limited to, posts, panels, vinyl sheeting, paint, brackets or any other sign component.

1.7 COORDINATION

A. Coordinate installation of anchorages for post and panel signs. Furnish setting drawings, templates, and directions for installing anchorages and other items that are to be embedded in concrete. Deliver such items to Project site in time for installation.

B. Coordinate delivery time so signs can be installed within 24 hours of receipt at Project site.

1.8 WARRANTY

A. Contractors Warranty Period: Contractor shall provide a warranty of 3 years from date of Substantial Completion, for all workmanship associated with the fabrication and installation of the sign system this includes, but is not limited to the following

1. the posts, panels, footers, sign faces, materials, mounting methods and fasteners shall be free of defects, including. but not limited to; scaling, peeling, fading, warping, vinyl shrinking, adhesion, welds, structural integrity, corrosion or mechanical fastener failure.
2. The contractor is responsible for replacement/correction of sign system in case of damage due to vandalism or traffic collision prior to acceptance by the Town. Once accepted the contractor is no longer responsible for replacement/correction of sign system in case of damage due to vandalism or traffic collision.

B. Product and Manufacturers Warranties. CONTRACTOR shall pass on to the OWNER and honor all associated third-party product warranties, including, but not limited to vinyl sheeting (reflective and non-reflective), inks, vinyl overlays, paint, coatings and hardware.

1. All paints, clearcoats, reflective vinyls and non-reflective vinyls shall be free of defects, including. but not limited to; scaling, peeling, fading, warping, vinyl shrinking, adhesion or any other type of failure for the following time periods;
   a. Paint Warranty: Minimum 7 years
   b. Reflective Vinyl/Custom Color Warranty: Minimum 8 yrs.
   c. Non-Reflective Vinyl Warranty: Minimum 10 years

C. Warranty Period Commencement: Warranty period begins for each individual unit, upon the date the OWNER provides a written acceptance of a singular unit or group of units.

2. PART 2 - PRODUCTS

2.1 MATERIALS AND APPLICATION PROCESSES

A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of alloy 5005-H15.

B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of alloy 6063-T5.

C. Paints: Material Preparation and Paint Performance

1. Sign components shall be per-drilled in proper locations prior to any pre-treatment process.
2. It is important for the metal surface to be free of oil, dust, and moisture to ensure a good chemical bond with the primer.
3. Pre-treatment: All surfaces shall be cleaned, primed, and pre-treated as required by manufacturers guidelines prior to finishing.
4. Masking and spraying. All masking shall be executed with pre-letter spaced vinyl legends, assembled on sign panel or wall prior to spraying. No hand-cut masks shall be used.
5. Clear Coat: Apply a fully compatible protective UV / Anti-Graffiti Clearcoat to all painted, printed, and vinyl surfaces. Contractor shall verify all clear coat product warranties and compatibility of the clear coat products to the applied surfaces.
6. Finished work shall be crisp, accurate, visibly free from flow lines, streaks, bleeding, blisters, cracking, peeling or other imperfections in the dry-film state, without overspray, or rounded corners.
7. Screened Messages: Execute all silkscreen printing in such a manner that all edges and corners of finished letterforms are true and clean. Letterforms, color areas, graphics, or lines with rounded corners, edge buildup or bleeding, saw-toothing, etc. will not be accepted.

D. Paint: Processes and Paint Type

1. Paint Type: All paints utilized on the project shall be designed and formulated specifically for the signage industry and for exterior use.
2. Processes
   a. CONTRACTOR shall follow paint manufacturers instructions, sequencing and procedural requirements to insure full product performance and warranties are maintained at the highest level possible for all Primers, Topcoats, Clearcoats, Cleaners and Additives.
   b. this includes but is not limited to metal surface preparation, priming of surfaces, spray gun PSI, panel positioning during spraying/drying, adequate coverage, environmental conditions such as temperature and humidity, recommended dry times for subsequent coats and for proceeding to next step in fabrication process, second/additional coat procedures, applying clear coats, cleaning final product and storage during fabrication and shipping.
3. Manufacturers and Colors: Per DESIGN INTENT DRAWINGS or approved equal.
4. Paint Type / Acrylic Polyurenthane, Baked Enamel, Powder Coat and Specialty / Custom Coatings.
   a. Per the DESIGN INTENT DRAWINGS, apply paint specified to the sign components indicated
   b. Use only a paint formulated specifically for exterior signage. Apply exactly by the manufacturers instructions, sequencing and procedural requirements
   c. Include required quantity and types of compatible top coat and clearcoats per manufacturers recommendations.
   d. For Acrylic Polyurethane, utilize a matte enamel finish
   e. For Baked Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below).

      Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.

      Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 1.5 mils , medium gloss.

E. Non-Reflective Vinyl and Graphics:

1. Single Vinyl Product: All vinyl sheeting, inks and overlays shall maintain the same manufacturer and required specifications. Mixing products, processes or materials from different manufacturers, that voids warranties is not permitted.
2. Color Application: Color of vinyl material is to be integral to the material and not surface applied unless specifically noted.
3. Translucent Graphics. Use 3M Scotchcal translucent film or approved equal

F. Reflective Sheeting

1. 3M Certified Fabricator: Reflective Vinyl Printing shall be performed by a current accredited 3M Certified Fabricator or 3M Certified Digital Fabricator, which includes an annual onsite audit of manufacturing facilities, ensuring correct materials and processes are being used. Certification shall guarantee that the product will be covered by 3M MCS Traffic Warranty.

2. Single Vinyl Product and Manufacturer: All vinyl sheeting, inks and overlays shall maintain the same manufacturer and required specifications. Mixing products, processes or materials from different manufacturers, shall void warranties and is not permitted.
3. Reflective Sheeting. 3M 3930 High Intensity Reflective Sheeting or approved equal that meets MUTCD requirements for Community Wayfinding Signage (MUTCD Section 2D.50)

4. Color Application. Color background and characters shall be printed with approved compatible and fully warranty inks directly to reflective vinyl surface. Inks used in the screen printing and digital printing process must be designed for use on highway signs and recommended by the sheeting manufacturers. Inks used must be warranted to be effective for a period of time commensurate with the warranted life of the reflective sheeting.
5. Sheeting & Substrate Application. Series 3930 sheeting incorporates a pressure sensitive adhesive and shall be applied to the sign substrate at temperature of 65˚F/18˚C or higher by any of the following methods:
   a. Mechanical squeeze roll applicator – refer to 3M Information Folder (IF) 1.4 for specifications.

   b. Hand squeeze roll applicator – refer to 3M IF 1.6 for specifications.

6. 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.
7. Seam Placement. Seams are not preferred. When practical, all seams should run horizontal and be located along horizontal visual graphics where the seams will be as inconspicuous as possible.
   a. If the height of a sign panel is greater then 48 inches, the 3M 3930 material should be oriented vertically with stripes at 0 degrees, to avoid the seaming of material.

8. Material Substrate. Aluminum sheets and extrusions prepared based on vinyl manufacturers specifications and guidance. Plastic substrates are NOT acceptable.
9. Legend / Message and Background: When a white message appears on a dark background, the background shall be printed the intended color (inks directly applied to reflective sheeting) and the copy, rule lines and arrows shall “knockout” of the background. Per MUTCD, Section 2D.50, both Message and Background shall be retro-reflective.
10. Imaging Custom Colors (3M). Custom colors shall be applied to high intensity prismatic sheeting by the following imaging methods describe below or approved equal;
    a. Thermal Transfer Printing: 3M 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.

    b. 3M Series 3930 Sheeting and Color Application shall be covered with 3M ElectroCut Film 1170 Clear UV/Anti-Graffiti overlaminate. Refer to Product Bulletin for 3M 1170 for fabrication procedures and specifications.

    c. Preferred Printer. 3M Series 3930 sheeting may be imaged by the Durst RHO 161 TS printer.

    d. Preferred Vendor: Sherine Industries: (604) 513-1887.
11. Imaging Standard Manufacturer Colors (3M). Per 3M guidelines, Standard manufacturer colors may be applied to high intensity prismatic sheeting by the following imaging methods describe below or approved equal;

    a. 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.

    b. 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.

    Both, 3M ElectroCut Films and Screen Processing Inks shall be covered with 3M ElectroCut Film 1170 Clear UV/Anti-Graffiti overlaminate. Refer to Product Bulleting 1170 for fabrication procedures.

12. Warranty Reflective Sheeting Custom and Standard Colors: All color application methods utilizing 3M Series 3930 Hi-Intensity Prismatic and Series 4090 DG3, Diamond Grade reflective sheeting as the base layer, shall be warrantied as outlined below and shall not excessively fade, discolor, crack, craze, peel, blister, bubble, tear or lose reflectivity such that the signs become visually unsuitable for their intended purpose.
    a. All printed colors must be warranted to retain the following minimum reflective values based on the above tables:

    3M Hi-Intensity Prismatic
    ASTM Level IV:
    1-7 years – 80%, 8-10 years – 70%

    3M Super High Efficiency Full Cube Prismatic
    ASTM Level XI
    1-7 years – 80%, 8-10 years – 70%

G. Custom High Pressure Laminate Graphic Panels
   1. Description: Custom High Pressure Laminate (CHPL) material composed of required layers of phenolic resin impregnated brown kraft filler paper to produce specified thicknesses, surfaced by a layers of melamine overlay, graphics imaged on saturation grade paper with UV resistant pigment based process color inks, and with an optically clear UV overlay that will resist no less that 99% of all sunlight and UV rays, as well as provides a graffiti resistant surface that allows for removal with standard cleaners.
   2. Process: For purposes of this specification, layers of material described A.1 are to be assembled, and heat / pressure consolidated at approximately 1200 PSI at temperatures exceeding 275°
      Fahrenheit at manufacturer’s prescribed time frames. All manufacturing processes of printing, pressing, machining, finishing and crating to be accomplished within a single stand alone manufacturing facility to ensure consistent quality control and providing standard product delivery times of three weeks.
   3. Artwork: The graphic material and images are to be supplied by and under the supervision of the Designer or Owner. To include mechanicals, text, photographs, transparencies, film and other graphic source materials incorporated into digital graphic production artwork files in manufacturer’s required file formats. All graphics must be assembled by computer designers familiar with and experienced in the process of digital printing and submitting production artwork files that meet the artwork requirements of the manufacturer.
   4. Acceptable Manufacturer: iZone Imaging, 2526 Charter Oak Dr., Suite 100, Temple, NY 76502. Tel: 888.464.9663, Email: info@izoneimaging.com, Web: http://www.izoneimaging.co.m - or Approved Equal Vendor

H. Dye-Sublimated Printed Graphic Panels: See Section 09999: Decorative Metal Coatings / Dye-Sublimation Process.

2.2 ACCESSORIES

A. Fasteners: Use concealed, fasteners fabricated from metals that are noncorrosive to sign material and mounting surface. Where fasteners are exposed, use tamper resistant fasteners.

B. Anchors and Inserts: Use stainless-steel or hot-dip galvanized anchors and inserts. Use torque-controlled expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete.

C. Concrete for Postholes: Comply with requirements “Cast-in-Place Concrete” for normal-weight, air-entrained, poured in place ready-mix CLASS B concrete with a minimum 28-day compressive strength of 4000 psi, unless otherwise indicated.

D. Stainless Straps: When utilizing stainless steel straps to install a sign panel on a existing or new post, the mounting strap color shall match the post color.
   1. Straps shall be threaded through bracket slots or attached per manufacturer hardware specifications and instructions, .
   2. Straps shall not be drilled through or pierced by screws, rivets, or other mounting hardware.

2.3 FABRICATION: GENERAL

A. General: Provide post and panel signs of configurations indicated.
   1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces. Chemical welding is not an acceptable substitute.
   2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
   3. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
   4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
   5. All exposed fasteners shall be tamper-resistant.
   6. Single ground mounted signs shall meet criteria as specified in State DOT standard index relative to aluminum materials and structural supports for signs.

2.4 FABRICATION: BRACKET AND PANEL ASSEMBLY

A. Brackets / Panel Configuration. Contractor shall be responsible for confirming, coordinating and verifying all sign panels, messages, graphic layouts, panel orientation, margins, shape, brackets, panel edges, and mounting hole positions with the proposed bracket design, configuration and assembly method, as it relates to the orientation and positioning on a new or existing pole to which it is installed on.

1. Pedestrian Sign Panels: This includes single and double-sided panels that may require a singular orientation and specific margin clearance, on either side of the panel, in order to work properly with the assembly to the bracket, pole (existing or new) and positioning of the panel in the correct direction, when placed in the field.
2. Contractor shall be responsible for replacement of all panels that are incorrect due to the Contractor's failure to notify the DESIGNER and OWNER prior to the commencement of any step of the panel or bracket fabrication process.

2.5 POSTS

A. General: Fabricate posts to lengths required for mounting method indicated.

1. Baseplate Method: Provide posts with baseplates, flanges, or other fittings, welded to bottom of posts. Drill holes in baseplate for anchor-bolt connection.

a. Provide anchor bolts of size required for connecting posts to concrete foundations.

b. Provide cover plate over breakaway assembly as indicated on drawings and based on break-away products requirements and warranties.

B. Aluminum Posts: Per STRUCTURAL ENGINEER requirements, CONTRACTOR shall provide extruded-aluminum tubing of the required thickness. Provide stop blocks in slots to hold panels in position. Include post caps, fillers, spacers, access panels, and related accessories required for complete installation.

a. Provide weep holes as necessary to allow internal water to release from internal structures. The size, method and or positioning of the weep hole shall not alter the design intent of the post. In addition, the weep hole shall not effect the structural integrity of the sign.

C. Custom Cast Parts: Any die used to create a custom sign part, including, post caps, finials, extrusions, brackets, or other components, will become the property of The Owner. The fabricator will supply the following;

1. 1 die will remain with The Owner.
2. 1 die will remain with the fabricator for use on future projects with the owner.

D. Breakaway Post: As indicated on drawings, CONTRACTOR shall provide breakaway posts assembly for the sign types and locations indicated in the documentation drawings. Final designs and shop drawings shall be supplied by the CONTRACTOR for each of the poles identified. A State Licensed Professional Structural 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

E. Existing Poles: Prior to submitting a bid the CONTRACTOR shall become familiar with all existing pole types utilized on the project and include all necessary costs for coordination, different mounting methods and materials required for the project.

1. CONTRACTOR shall reference the Sign Locations Plans and Site Photo References provided.
2. In the case where photos of the individual sites are not provided or available, the CONTRACTOR shall visit the project site or use other means to verify each sign location and the different poles that are required.
3. Show all existing pole types and required mounting methods in shop drawings.
4. See 10436 / Section 1.3 PERFORMANCE REQUIREMENTS for Structural Engineering requirements associated with existing structures, including poles.

2.6 SIGN PANELS

A. General: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.

1. Coordinate dimensions and attachment methods to produce message panels with closely fitting joints. Align edges and surfaces with one another in the relationship indicated.
2. Increase metal thickness or reinforce with concealed stiffeners or backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.
3. Continuously weld joints and seams, unless other methods are indicated; grind, fill, and dress welds to produce smooth, flush, exposed surfaces with welds invisible after final finishing.
4. All roadside break-away panels and posts shall conform to the State DOT standards and all municipal regulations.

B. Unframed & Framed Single-Sheet Panels: Provide unframed single-sheet sign panels with edges mechanically and smoothly finished.

1. Panel Material: Material and thickness as indicated on design intent drawings.

a. Panel Finish / Painted: Surface painted, utilizing polyurethane paints as indicated in the design intent drawings.

b. Panel Finish / Vinyl: For panels that receive vinyl sheeting, finish aluminum properly and appropriately based on vinyl manufacturers requirements, so vinyl will adhere and maintain all vinyl manufacturers warranties.

c. Panel Coating / Paint: All exposed painted areas shall receive an Anti-Graffiti Protectant compatible with the panel paint finish.

d. Panel Coating / Vinyl: Cover reflective vinyl sheeting with a Clear UV/Anti-Graffiti overlaminate compatible with the vinyl manufacturers product. Refer to Manufacturers Product Bulletins for fabrication and application procedures.

2. Edge Condition: Routed and/or Square cut or as indicated on the drawings. Paint all edges to match sign face or as indicated in design intent drawings.
3. Corner Condition: As indicated on Drawings

2.7 GRAPHICS: VINYL AND SCREEN PRINTING

A. Reflective Vinyl Graphics: See PART 2. PRODUCTS

B. Non-Reflective Graphics: See PART 2. PRODUCTS

C. Screen-printed Graphics: See PART 2. PRODUCTS

2.8 ALUMINUM FINISHES

A. Comply wiith NAAMM's" Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association

C. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.

1. Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 1.5 mils , medium gloss.

2. Color: As indicated on drawings.

3. PART 3 - EXECUTION

3.1 INSTALLATION

A. Excavation: In firm, undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for posts to diameters and spacing indicated.

1. Excavate hole depths as required by structural engineer.
2. Set anchor bolts, mounting sleeves and other embedded items required for installation. Use templates furnished by suppliers of items to be attached.

B. Underground Vaults/Basements:
Prior to bidding, to the greatest extent practical the CONTRACTOR shall make themselves familiar with all underground basement/vault locations that may interfere with a potential sign location footer, by obtaining plans and historical records from the OWNER. Bidders project lump sum cost shall be inclusive of all fees associated with unique footer designs that may be required as part of this work.

1. Where a basement/vault interferes with a proposed location, the sign shall be relocated to a location deemed appropriate by the OWNER and the DESIGNER at no extra cost to the OWNER.
2. Where relocation is not an option the CONTRACTOR will develop the appropriate mounting solution. The solution shall meet all engineering criteria as established by the standard footings (i.e. windloads).

C. When installing a sign on an existing structure, the Contractor shall inspect, investigate, research, analyze and confirm the structural integrity of the proposed structure to which the sign shall be mounted to.

1. Contractor's structural engineer shall provide all necessary calculations and drawings necessary to sign and seal the required shop drawings that confirms the integrity of the existing structure as well as the attachment of the sign.

2. Existing Structures may include, but are not limited to utility poles, lamp posts, buildings, canopies, awnings, bridges, or existing sign structures.

D. Install signs level, plumb, and at height indicated in the contract documents, with surfaces free from distortion or other defects in appearance. All signs installed shall conform to State DOT's and MUTCD for offsets and standard heights.

E. Prior to any digging the contractor shall contact all required utility companys. Including, but not limited to Water, Gas, Electric, Fiber-Optics, Cable, Telephone, etc.). It is the responsibility of the Contractor to coordinate all calls, utility checks and footer production so that it will not delay the installation of the sign program.

F. Installer shall coordinate sequencing, excavation, delivery, installation and clean-up with all related or unrelated construction projects tat may effect their work, including; buildings, streetscaping, roadwork or utility projects.

G. Installer shall coordinate all excavation, delivery, installation and clean-up with adjacent businesses and property owners.

H. CONTRACTOR shall replace all surfaces with like materials. All new surfaces adjacent to and within 5'-0" sq ft of post, including the entire excavated area shall be returned to the same condition and quality, including, materials, finish and grading that was present prior to excavation.

When pouring a underground footer within a area that contains a surface brick or specialty pavers, The pattern of bricks / pavers shall be removed, stored and replaced in the exact same positioning in the order they were removed.

I. When locating a footer within a single larger pavement block adjacent to at least 2 expansion joints, the entire block of pavement shall be removed and replaced with the same materials and finish of adjacent sidewalk areas - up to a 25 sq ft. (5' - 0" x 5' - 0")

J. Lateral Offsets: Per MUTCD, State and Municipal requirements,

K. Contractors representatives will be present at all field surveys and site markings prior to installation, responsibilities will include;

1. Measuring and marking out (spray paint) final sign location number and placement
2. Recording measurements of sign placement from nearest intersection or fixed structure.
3. Recording any field conditions that may alter or revise design intent or placement of sign.
4. Record special field conditions, including custom pavers, colored concrete or other surface treatments that will require treatments.
5. Record all message, sign type and location revisions, additions or subtractions that effect the production or installation of the sign program. This information shall be forwarded to the Owner and Designer for review and approval.

L. Check / Stop / Ask (Obvious Errors): CONTRACTOR shall, when at all practical, confirm a sign message in the field prior to installation.

1. CONTRACTOR shall notify the DESIGNER and OWNER of any obvious incorrect message, spelling, arrow direction, pictogram and any other graphic elements OR any condition in the environment (new or previously identified) that reduces the sign(s) effectiveness, visibility or creates a situation where the sign is presenting incorrect information or creates a hazard (regardless of its safety factor or simple common sense).

a. Conditions in the environment include, but are not limited to any element, new or previously identified that may block the visibility of the sign, its overall effectiveness or not meet standard codes or municipal requirements, including ADA. Elements include, trees or tree branches blocking the sign, existing signs (newly installed or previously identified), or any other physical objects (hanging plants, banners, awnings, parking meters, trash cans, etc.)

2. Failure to notify the OWNER and DESIGNER of any obvious error or faulty condition prior to installation will result in the CONTRACTOR replacing the sign or rectifying the condition in the environment, at no additional cost to the OWNER or DESIGNER.
3. Delays in the project caused by the non-installation of a sign (error / omission) shall be reviewed by the OWNER and the OWNER shall determine if additional time may be added to the end-date of substantial completion.

3.2 CLEANING

A. At completion of installation, clean soiled surfaces of sign units according to manufacturer's written instructions. This shall be included within the lump sum cost of the project.

B. CONTRACTOR shall provide the OWNER with instructions, processes and a list of materials for the proper and correct cleaning of signs. Information provided shall not void any project warranties.

3.3 TRAFFIC CONTROL

A. Develop general Maintenance and Protection of Traffic plans for vehicular and pedestrian traffic in accordance with the current MUTCD, State DOT and Municipal requirements. Details for traffic control device must conform to the standard State DOT details.

B. The contractor shall apply for all permits required by the OWNER and municipality for the purposes of traffic control. The cost for all permits and coordination shall be included within the Lump Sum Bid Proposal; this includes but is not limited to equipment, manpower, police presence or any other devices or personnel required for traffic control.

3.4 REMOVAL OF EXISTING SIGNS

A. The contractor shall remove all existing wayfinding, directional and trailblazer signs as indicated in the Comments section of the project Message Schedule. This work shall be sequenced and coordinated with the installation of the new sign program.

B. Removal of existing signs shall be included in the CONTRACTORS, Lump Sum Project Cost.

1. CONTRACTOR shall confirm with the OWNER prior to submitting their bid, the full scope of work related to removal, including footer removal, post removal and disposal.

C. Removal shall be completed prior to the installation of the new sign component.

1. Removal of existing signs shall be scheduled and coordinated to minimize the time between the removal and installation of the new sign program.
2. Removal of the signs shall include all sign components to the below grade connection to the footer.

D. CONTRACTOR shall coordinate the proper location, site or recycling center with the OWNER for the disposal of the signs.

3.5 ATTIC STOCK

A. Contractor shall supply attic stock components of posts, sign panels, brackets and other components as requested and as outlined on the Bid Form.

B. If requested by the owner, contractor may provide storage space for attic stock. The cost of this will be a negotiated fee between the OWNER and the contractor on a annual, per square footage basis.

1. Attic Stock shall be stored by the CONTRACTOR in appropriate protective covering and crating to fully protect all sign components and surfaces against damage. and defect, including, but not limited to scratches, peeling, bubbling, adhesive tapes, marker writing, etc.

1. Contractor shall be responsible for full replacement of all attic stock that is damaged during the period of time it is stored, assembled or delivered to the site.

END OF SECTION 10436 - POST & PANEL SIGNS AND DIMENSIONAL LETTERS

10437 – PYLON SIGNS, ELECTRONIC MESSAGE BOARDS and CHANNEL LETTERS

1. GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Pylon / Monolith Sign (Illuminated and Non-Illuminated)
2. Electronic Message Boards (LED Displays)
3. Channel Letters & Logos (illuminated and Non-Illuminated)

1.2 RELATED SIGN TYPES

A. Related sign types include, Gateways, Directional Signs, Kiosks, and Sign-Box Type Signs Mounted to Structures.

1.3 RELATED PROJECT CONDITIONS, PROCEDURES AND WORK REQUIREMENTS

A. Executive Summary

B. Section 00550: General Conditions

C. Section 01320: Construction Progress Documentation

D. Section 01330: Submittal Procedures

E. Section 01781: Project Record Documents

F. Section 02231: Tree Protection & Trimming

G. Section 03050: Cast-In-Place Concrete

H. Section 10437: Pylon Signs, Electric. Message Brds & Channel Ltrs.

I. Section 01730: Removals, Cutting and Patching

J. Section 09999: Decorative Metals Coatings / Dye Sublimation

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide post and panel signs capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, determined according to ASCE 7, “Minimum Design Loads for Buildings and Other Structures”:

1. Wind Loads: Determine loads based on a uniform pressure of 90mph or the required windloads based on the project location, which ever is greater, acting in any direction.

B. Thermal Movements: Provide post and panel signs that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, peeling / loss of adhesion of vinyl, overstressing of components, failure of connections, and other detrimental effects.

Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

C. Structural Engineering: Provide all necessary structural engineering calculations and signed and sealed drawings for proposed signs, structures (existing and new) and other elements as necessary to perform the work and provide a structurally sound and safe product.

1. CONTRACTOR shall also review and confirm the structural integrity of all existing structures a sign may be installed on.
2. When a deficiency is discovered in an existing structure, the CONTRACTOR and their ENGINEER shall provide a discovery report to the OWNER and indicate any corrections, remediation or additional structural components that shall be necessary, in order to install the sign properly and to required Federal, State and Local codes.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated include construction details, material descriptions, processes, dimensions of individual components, graphic layouts, elevations, profiles and finishes. Include manufacturer’s written instructions for installing, maintaining and cleaning surfaces.

B. Shop Drawings: Show fabrication, installation details and graphic layouts for post and panels signs.

1. NOTE: The DESIGNER shall provide Adobe Illustrator files / DESIGN INTENT DRAWINGS associated with the PROJECT as a courtesy to the CONTRACTOR.
2. NOTE: The DESIGN INTENT DRAWINGS, specifications and files are meant for DESIGN INTENT ONLY and are not for construction. CONTRACTOR shall verify and be responsible for all final drawings, dimensions and conditions of the job, including proper orientation of graphic layouts, panel shapes, brackets and mounting methods.
3. Include plans, elevations, and at least 3/4-inch scale sections of typical members and other components and construction details. Show anchors, reinforcement, accessories, layout, and installation details.
4. Include message list, with details of wording and lettering layout, at least half size. Include full-size details of graphics.
5. Provide Graphic layouts for each sign location and its associated message. Minimum scale: 1” = 1’ – 0”
6. Fabricator shall provide a Structural Engineer Seal (State Licensed) for all shop drawings indicating fasteners, construction, installation, footers or other structural components.
7. For Dimensional Letters, Channel Letters / Logos, provide full size paper templates for review and approval in the field by the OWNER and DESIGNER.
8. Wiring Diagrams: Include all diagrams required for power, signal, digital, wireless routing and control wiring of externally illuminated signs.

C. Samples for Verification: Provide 3 sets of each type of product indicated, of size below:

1. Aluminum Post: For each form, finish, and color, on 6-inch-long sections of extrusions. All custom extrusion die shall be approved prior to fabrication.
2. Aluminum Sheet: Squares of each sheet thickness, at least 4 inches by 4 inches.
3. Paint Swatches: For each painted color, provide a 4” by 4” inch aluminum sheet. Clearly indicate on the back the color specification, date and submittal number.
4. Reflective Vinyl Sheet: minimum 8” by 10” for each color required.
5. Examples of all graphic image process, including materials, methods, colors and finishes, for maps, patterns, imagery, letters, numbers and other graphic devices.
6. Dimensional Characters: Full-size representative samples of each dimensional character type required, showing style, color, and material finish and method of attachment to sign background.
7. Full Size Prototype Sign(s) and Sign Components: Full size Prototype Sign(s) and select Sign Components may be requested as part of the submittal process.
   a. The full size prototype sign may be constructed / installed in place.
   b. The prototype sign(s) and requested sign components shall be fabricated of all materials, process, colors and finishes as outlined in the design intent drawings.
   c. The installed prototype sign may ultimately be used as a component of the system.
   d. The OWNER shall provide exact location and messages for the prototype sign(s).
   e. A line item shall be included on the BID FORM for the quantity of and types of prototype sign(s) and Sign components required for the submittal process.

D. All cost associated with sample submittals, including mobilization, product data, shop drawings, mock-ups, samples and other submittals shall be included within the Lump Sum Bid Proposal.

E. Fabrication and Installation of requested proto-types shall be included in the CONTRACTORS overall project schedule.

F. No additional time will be granted by the OWNER to the CONTRACTOR for the prototype fabrication / installation time or for time lost due to non-conforming materials, colors or other component associated with the completed proto-type.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized and professionally trained representative of sign manufacturer for installation and maintenance of units required for this Project.

B. Contractor shall be capable of providing replacement message panels within 10 working days of receipt of order.

C. Source Limitations: Provide all signs as a single source manufacturer, unless incorporation of unique products is called for. Do not use sub-contractors to fabricate signage.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of post and panel signs and are based on the specific type indicated.

1. Do not modify intended aesthetic effects, as judged solely by the DESIGNER except with DESIGNER’S approval. If modifications are proposed, submit comprehensive explanatory data to DESIGNER for review.
2. CONTRACTORS suggested modifications and/or products shall not increase the cost or schedule of project.

E. 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.

1.7 DELIVERY AND HANDLING

A. Delivery and Handling. Ship and deliver all signs and sign components in the appropriate protective covering and crating to fully protect all sign components and surfaces against damage.

1. Remove all protective covering, as required per product manufacturer instructions, in order to maintain warranties.

B. Defects. All delivered sign components shall be delivered free of any defect, including, but not limited to scratches, chips, cracking, dents, peeling, bubbling, adhesive glue / tape marks, marker writings, undesirable film coatings or other visual distractions or defects.

1. Contractor shall be responsible for full replacement of all sign components that are delivered on site or to the location damaged, at no cost to the OWNER.
2. Contractor shall be responsible for full replacement of all sign components that are delivered on site or to the location defective, causing the product warranty to become null or void, at no cost to the OWNER.

C. Storage. The CONTRACTOR shall follow all third party, manufacturer and/or product storage instructions, procedures and requirements for all sign components. Including protection methods, protective materials, protective material removal (including instructions and timeframes), sequencing of events, environmental conditions for storage, overall storage requirements, stacking of products /materials and any other requirements.

1. Any failure by the CONTRACTOR to follow the storage requirements that cause for loss or void of warranty, product effectiveness or performance, will require complete and total replacement of all effected materials and products at no cost to the OWNER. This includes, but is not limited to, posts, panels, vinyl sheeting, paint, brackets or any other sign component.

1.8 COORDINATION

A. Coordinate installation of anchorages for pylon signs. Furnish setting drawings, templates, and directions for installing anchorages and other items that are to be embedded in concrete. Deliver such items to Project site in time for installation.

B. Coordinate delivery time so signs can be installed within 24 hours of receipt at Project site.

1.9 WARRANTY

A. Contractors Warranty Period: Contractor shall provide a warranty of 3 years from date of Substantial Completion, for all workmanship associated with the fabrication and installation of the sign system this includes, but is not limited to the following:

1. the posts, panels, footers, sign faces, materials, mounting methods and fasteners shall be free of defects, including. but not limited to; scaling, peeling, fading, warping, vinyl shrinking, adhesion, welds, structural integrity, corrosion, electrical components or mechanical fastener failure.

B. Product and Manufacturers Warranties. CONTRACTOR shall pass on to the OWNER and honor all associated third-party product warranties, including, but not limited to vinyl sheeting (reflective and non-reflective), inks, vinyl overlays, paint, coatings and hardware.

1. All paints, clearcoats, reflective vinyls and non-reflective vinyls shall be free of defects, including. but not limited to; scaling, peeling, fading, warping, vinyl shrinking, adhesion or any other type of failure for the following time periods;
   a. Paint Warranty: Minimum 7 years
   b. Reflective Vinyl/Custom Color Warranty: Minimum 8 yrs.
   c. Non-Reflective Vinyl Warranty: Minimum 10 years

C. Warranty Period Commencement: Warranty period begins for each individual unit, upon the date the OWNER provides a written acceptance of a singular unit or group of units.

2. PRODUCTS

2.1 MATERIALS AND APPLICATION PROCESSES

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of alloy 6061-T6.

B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of alloy 6061-T6.

C. Paints: Material Preparation and Paint Performance

1. Sign components shall be pre-drilled in proper locations prior to any pre-treatment process.
2. It is important for the metal surface to be free of oil, dust, and moisture to ensure a good chemical bond with the primer.
3. Pre-treatment: All surfaces shall be cleaned, primed, and pre-treated as required by manufacturers guidelines prior to finishing.
4. Masking and spraying. All masking shall be executed with pre-letter spaced vinyl legends, assembled on sign panel or wall prior to spraying. No hand-cut masks shall be used.
5. Clear Coat: Apply a fully compatible protective UV / Anti-Graffiti Clearcoat to all painted, printed, and vinyl surfaces. Contractor shall verify all clear coat product warranties and compatibility of the clear coat products to the applied surfaces.
6. Finished work shall be crisp, accurate, visibly free from flow lines, streaks, bleeding, blisters, cracking, peeling or other imperfections in the dry-film state, without overspray, or rounded corners.
7. Screened Messages: Execute all silkscreen printing in such a manner that all edges and corners of finished letterforms are true and clean. Letterforms, color areas, graphics, or lines with rounded corners, edge buildup or bleeding, saw-toothing, etc. will not be accepted.

D. Paint: Processes and Paint Type

1. Paint Type: All paints utilized on the project shall be designed and formulated specifically for the signage industry and for exterior use.
2. Processes
   a. CONTRACTOR shall follow paint manufacturers instructions, sequencing and procedural requirements to insure full product performance and warranties are maintained at the highest level possible for all Primers, Topcoats, Clearcoats, Cleaners and Additives.
   b. this includes but is not limited to metal surface preparation, priming of surfaces, spray gun PSI, panel positioning during spraying/drying, adequate coverage, environmental conditions such as temperature and humidity, recommended dry times for subsequent coats and for proceeding to next step in fabrication process, second/additional coat procedures, applying clear coats, cleaning final product and storage during fabrication and shipping.
3. Manufacturers and Colors: Per DESIGN INTENT DRAWINGS or approved equal.
4. Paint Type / Acrylic Polyurenthane, Baked Enamel, Powder Coat and Specialty / Custom Coatings.
   a. Per the DESIGN INTENT DRAWINGS, apply paint specified to the sign components indicated
   b. Use only a paint formulated specifically for exterior signage. Apply exactly by the manufacturers instructions, sequencing and procedural requirements
   c. Include required quantity and types of compatible top coat and/or clearcoats per manufacturers recommendations.
   d. For Acrylic Polyurethane, utilize a matte enamel finish
   e. For Baked Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below).
      Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.
      Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 1.5 mils , medium gloss.

E. Structural Steel:

1. Hot-Rolled Structural-Steel Shapes: ASTM A 36/A 36M or ASTM A 529/A 529M.
2. Steel Tubing or Pipe: ASTM A 500, Grade B.
3. Steel Members Fabricated from Plate or Bar Stock: ASTM A 529/A 529M or ASTM A 572/A 572M, 42,000-psi (290-MPa) minimum yield strength.
4. Bolts for Steel Framing: ASTM A 307 or ASTM A 325 (ASTM A 325M) as necessary for design loads and connection details.
5. For steel exposed to view on completion, provide materials selected for surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.

F. Colored Coatings for Plastic Sheet: Nonfading coatings, including inks and paints for copy and background colors. Use coatings that are recommended by manufacturers for optimum adherence to type of plastic used.

G. Non-Reflective Vinyl and Graphics:

1. Single Vinyl Product: All vinyl sheeting, inks and overlays shall maintain the same manufacturer and required specifications. Mixing products, processes or materials from different manufacturers, that voids warranties is not permitted.

2. Color Application: Color of vinyl material is to be integral to the material and not surface applied unless specifically noted.

3. Translucent Graphics. Use 3M Scotchcal translucent film or approved equal

H. Reflective Sheeting

1. Single Vinyl Product and Manufacturer: All vinyl sheeting, inks and overlays shall maintain the same manufacturer and required specifications. Mixing products, processes or materials from different manufacturers is not permitted.
2. Reflective Sheeting. 3M 3930 High Intensity Reflective Sheeting or approved equal that meets MUTCD requirements for Community Wayfinding Signage (MUTCD Section 2D.50)
3. Color Application. Color background and characters shall be printed with approved compatible and fully warranty inks directly to reflective vinyl surface. Inks used in the screen printing and digital printing process must be designed for use on highway signs and recommended by the sheeting manufacturers. Inks used must be warranted to be effective for a period of time commensurate with the warranted life of the reflective sheeting.
4. Sheeting & Substrate Application. Series 3930 sheeting incorporates a pressure sensitive adhesive and shall be applied to the sign substrate at temperature of 65˚F/18˚C or higher by any of the following methods:
   a. Mechanical squeeze roll applicator – refer to 3M Information Folder (IF) 1.4 for specifications.
   b. Hand squeeze roll applicator – refer to 3M IF 1.6 for specifications.

5. 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.
6. Seam Placement. Seams are not preferred. When practical, all seams should run horizontal and be located along horizontal visual graphics where the seams will be as inconspicuous as possible.
   a. If the height of a sign panel is greater then 48 inches, the 3M 3930 material should be oriented vertically with stripes at 0 degrees, to avoid the seaming of material.

7. Material Substrate. Aluminum sheets and extrusions prepared based on vinyl manufacturers specifications and guidance. Plastic substrates are NOT acceptable.
8. Legend / Message and Background: When a white message appears on a dark background, the background shall be printed the intended color (inks directly applied to reflective sheeting) and the copy, rule lines and arrows shall “knockout” of the background. Per MUTCD, Section 2D.50, both Message and Background shall be retro-reflective.
9. Imaging Custom Colors (3M). Custom colors shall be applied to high intensity prismatic sheeting by the following imaging methods describe below or approved equal;
   a. Thermal Transfer Printing: 3M 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.

   b. 3M 3930 Sheeting and Color Application shall be covered with 3M ElectroCut Film 1170 Clear UV/ Anti-Graffiti overlaminate. Refer to Product Bulletin for 3M 1170 for fabrication procedures and specifications.

   c. Preferred Printer. 3M Series 3930 sheeting may be imaged by the Durst RHO 161 TS printer.

   d. Preferred Vendor: Sherine Industries: (604) 513-1887.

10. Imaging Standard Manufacturer Colors (3M). Per 3M guidelines, Standard manufacturer colors may be applied to high intensity prismatic sheeting by the following imaging methods describe below or approved equal;
    a. 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.

    b. 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.

    c. Both, 3M ElectroCut Films and Screen Processing Inks shall be covered with 3M ElectroCut Film 1170 Clear UV/ Anti-Graffiti overlaminate. Refer to Product Bulleting 1170 for fabrication procedures.

I. Warranty. All color application methods utilizing 3M Series 3930 reflective sheeting as the base layer, shall be warrantied for a minimum period of eight (8) years and shall not excessively fade, discolor, crack, craze, peel, blister, bubble, tear or lose reflectivity such that the signs become visually unsuitable for their intended purpose.

J. Custom High Pressure Laminate Graphic Panels

1. Description: Custom High Pressure Laminate (CHPL) material composed of required layers of phenolic resin impregnated brown kraft filler paper to produce specified thicknesses, surfaced by a layers of melamine overlay, graphics imaged on saturation grade paper with UV resistant pigment based process color inks, and with an optically clear UV overlay that will resist no less that 99% of all sunlight and UV rays, as well as provides a graffiti resistant surface that allows for removal with standard cleaners.
2. Process: For purposes of this specification, layers of material described A.1 are to be assembled, and heat / pressure consolidated at approximately 1200 PSI at temperatures exceeding 275° Fahrenheit at manufacturer’s prescribed time frames. All manufacturing processes of printing, pressing, machining, finishing and crating to be accomplished within a single stand alone manufacturing facility to ensure consistent quality control and providing standard product delivery times of three weeks.
3. Artwork: The graphic material and images are to be supplied by and under the supervision of the Designer or Owner. To include mechanicals, text, photographs, transparencies, film and other graphic source materials incorporated into digital graphic production artwork files in manufacturer’s required file formats. All graphics must be assembled by computer designers familiar with and experienced in the process of digital printing and submitting production artwork files that meet the artwork requirements of the manufacturer.
4. Acceptable Manufacturer: iZone Imaging, 2526 Charter Oak Dr., Suite 100, Temple, NY 76502. Tel: 888.464.9663, Email: info@izoneimaging.com, Web: http://www.izoneimaging.co,m - or Approved Equal Vendor

K. Dye-Sublimated Printed Graphic Panels (see Section 09999: Decorative Metal Coatings / Dye-Sublimation Process.

2.2 ACCESSORIES

A. Fasteners: Use concealed, fasteners fabricated from metals that are noncorrosive to sign material and mounting surface. Where fasteners are exposed, use tamper resistant fasteners.

B. Anchors and Inserts: Use stainless-steel or hot-dip galvanized anchors and inserts. Use torque-controlled expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete.

C. Concrete for Postholes: Comply with requirements “Cast-in-Place Concrete” for normal-weight, air-entrained, poured in place ready-mix CLASS B concrete with a minimum 28-day compressive strength of 4000 psi, unless otherwise indicated.

D. Raceways: Paint raceway structures to match color of building structure, so that the raceways shall be as inconspicuous as possible.

2.3 FABRICATION: GENERAL

A. General: Provide signs, message boards and channel letters of configurations indicated.

1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces. Chemical welding is not an acceptable substitute.
2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
3. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
5. Single ground mounted signs shall meet criteria as specified in State DOT standard index relative to aluminum materials and structural supports for signs.

2.4 STRUCTURES (includes Sign Framework and Raceways)

A. Base: Provide pylon signs with integral base consisting of channels, angles, plates, or other fittings. Drill holes in members for anchor-bolt connection.

1. Provide anchor bolts of size required for connecting base to concrete foundations.

B. Internal Frames: Manufacturer's standard internal aluminum or steel framing system, designed to withstand wind pressure indicated. Provide welded construction using mitered joints. Cut, drill, and tap units to receive hardware, bolts, and similar items.

1. Hot-dip galvanize steel framing system after fabrication to comply with ASTM A 123/A 123M.

C. External Frames: Manufacturer's standard external aluminum or steel framing system designed to withstand design wind pressure indicated and for direct attachment of sign message panels. Provide welded construction using mitered joints. Cut, drill, and tap units to receive hardware, bolts, and similar items.

1. Frame Finish: Match finish of panels.
2. Corner Condition: Square corners, unless otherwise indicated on DESIGN INTENT DRAWING.

2.5 SIGN PANEL / FACES

A. General: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.

1. Coordinate dimensions and attachment methods to produce message panels with closely fitting joints. Align edges and surfaces with one another in the relationship indicated.
2. Increase metal thickness or reinforce with concealed stiffeners or backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.
3. Continuously weld joints and seams, unless other methods are indicated; grind, fill, and dress welds to produce smooth, flush, exposed surfaces with welds invisible after final finishing.
4. All roadside break-away panels and posts shall conform to the State DOT standards and all municipal regulations.

B. Sign Face / Aluminum Panels: Produce smooth sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner.

1. Panel Material: 0.125-inch- (3.2-mm-) thick aluminum sheet
2. Panel Finish: Manufacturer's standard semi gloss finish with UV inhibitors.
3. Provide clips welded to back of panels for installation without visible fasteners.

C. Sign Face / Channel Letters: Material, thickness, color and finish as indicated in DESIGN INTENT DRAWINGS.

D. Illuminated Units (SIgns and Channel Letters): Make provisions for servicing and for concealed connection to electric service. Coordinate electrical characteristics with those of the power supply provided.

2.6 GRAPHICS

A. Reflective Vinyl Graphics: See PART 2. PRODUCTS

B. Non-Reflective Graphics: See PART 2. PRODUCTS

C. Screen-printed Graphics: See PART 2. PRODUCTS

D. Surface-Applied Dimensional Characters: Cut copy characters from solid material of thickness indicated. Produce precisely cut characters with square-cut, smooth edges. Apply to exposed face of sign panel with concealed fasteners.

1. Material: As indicated on Design Intent Drawings.
2. See Section 10436: Post & Panel Signs and Dimensional Letters.

E. Fabricated Channel Letters / Logos: Finish and/or paint materials as indicated in DESIGN INTENT DRAWINGS.

2.7 ALUMINUM FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

D. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

1. Color: Match Architect's sample

E. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.

1. Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm), medium gloss.

F. High-Performance Organic Coating Finish (Fluoropolymer Two-Coat System): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions and AAMA [2604] [2605].

G. High-Performance Organic Coating Finish (Fluoropolymer Three-Coat System): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: Manufacturer's standard three-coat, thermocured system consisting of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions and AAMA 2605.

1. Color and Gloss: As selected by DESIGNER

H. ELECTRONIC MESSAGE BOARD / FULL COLOR AND MONOCHROME LED SIGNS

1. Daktronics Series: Galaxy GS6 15.85 MM or approved equal. CONTRACTOR shall reference Daktronics Product Manuals and Specifications for most current requirements,

2. 15.85 MM TECHNICAL SPECIFICATIONS
   a. Character Height: 4.4" (7 pixel font)
   b. Line Spacing: 15.85 mm (0.62")
   c. Pixel Configuration:Monochrome: 1 red or 1 amber / RGB:1 red, 1 green, 1 blue
   d. Maximum Brightness: Monochrome red: 4,500 nits / Monochrome amber: 6,000 nits / RGB: 12,000 nits
   e. Monochrome Color Capability: 4,096 shades of red or amber
   f. Full Color Capability: RGB: 281 trillion colors
   g. Optimal Viewing Angle: 140 degrees horizontal x 70 degrees vertical
   h. Readability Angle: 160 degrees horizontal x 90 degrees vertical / Min Viewing Distance: 37'

3. PRODUCT FEATURES
   a. All sealed components
   b. Quick connects
   c. Mounting clips
   d. High-contrast louvers
   e. Redundant module signal
   f. Large sections for fast installation
   g. Front ventilation on displays less than 7' - 0" tall
   h. Same module size and cabinet size for all pixel pitches
   i. Shallow cabinet depth and narrow cabinet borders

4. GENERAL SPECIFICATIONS
   a. Estimated LED Lifetime: min 100,000+ hours
   b. Contrast Enhancement: Non-reflective black louvers and module face grooves disperse light
   c. Message Capability: Text, graphics, logos, basic animation, video clips, multiple font styles, and sizes
   d. Control Software: Venus® Control Suite
   e. Power: 120, 120/240 VAC Single Phase
   f. Display Dimming: 64 levels (Automatic, scheduled or manual control)
   g. Communication Options: Ethernet Fiber Optic, Ethernet Bridge Radio, Remote Cellular, Ethernet CAT5
   h. Operating Temperature: -40°F to 120°F with 99% RH non-condensing
   i. Compliance Information: UL and cUL Listed, UL-Energy Verified,
   j. FCC compliance
   k. Warranty Coverage: 5 years
   l. Product Support: Parts support for 10 years

5. DISPLAY CONFIGURATIONS
   a. Single Faced and Double Faced as noted on DESIGN INTENT DRAWINGS

3. EXECUTION 1.

3.1 INSTALLATION

A. Excavation: In firm, undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for posts to diameters and spacing indicated.

1. Excavate hole depths as required by structural engineer.

2. Set anchor bolts, mounting sleeves and other embedded items required for installation. Use templates furnished by suppliers of items to be attached.

B. When installing a sign on an existing structure, the Contractor shall investigate, research, analyze and confirm structural integrity of the proposed structure.

1. Contractor's structural engineer shall provide all necessary calculations and drawings necessary to sign and seal the required shop drawings. Existing Structures may include, but are not limited to utility poles, lamp posts, buildings, canopies, awnings, bridges, or existing sign structures.

C. Install signs level, plumb, and at height indicated in the contract documents, with surfaces free from distortion or other defects in appearance. All signs installed shall conform to State DOT's and MUTCD for offsets and standard heights.

D. Prior to any digging the contractor shall contact all required utility companys. Including, but not limited to Water, Gas, Electric, Fiber-Optics, Cable, Telephone, etc.). It is the responsibility of the Contractor to coordinate all calls, utility checks and footer production so that it will not delay the installation of the sign program.

E. Installer shall coordinate sequencing, excavation, delivery, installation and clean-up with all related or unrelated construction projects tat may effect their work, including; buildings, streetscaping, roadwork or utility projects.

F. Installer shall coordinate all excavation, delivery, installation and clean-up with adjacent businesses and property owners.

G. CONTRACTOR shall replace all surfaces with like materials. All new surfaces adjacent to and within 10' feet of post, including the entire excavated area shall be returned to the same condition and quality, including, materials, finish and grading that was present prior to excavation.

H. When locating a footer within a single pavement block (max. 5'-0" x 5'-0"), adjacent to at least 2 expansion joints, the entire block of pavement shall be removed and replaced with the same materials and finish of adjacent sidewalk areas.

I. Lateral Offsets: Per MUTCD, State and Municipal requirements,

J. Contractors representatives will be present at all field surveys and site markings prior to installation, responsibilities will include;

1. Measuring and marking out (spray paint) final sign location number and placement

2. Recording measurements of sign placement from nearest intersection or fixed structure.

3. Recording any field conditions that may alter or revise design intent or placement of sign.

4. Record special field conditions, including custom pavers, colored concrete or other surface treatments that will require treatments.

5. Record all message, sign type and location revisions, additions or subtractions that effect the production or installation of the sign program. This information shall be forwarded to the Owner and Designer for review and approval.

K. Check / Stop / Ask (Obvious Errors): CONTRACTOR shall, when at all practical, confirm a sign message in the field prior to installation.

1. CONTRACTOR shall notify the DESIGNER and OWNER of any obvious incorrect message, spelling, arrow direction, pictogram and any other graphic elements OR any condition in the environment (new or previously identified) that reduces the sign(s) effectiveness, visibility or creates a situation where the sign is presenting incorrect information or creates a hazard (regardless of its safety factor or simple common sense).

a. Conditions in the environment include, but are not limited to any element, new or previously identified that may block the visibility of the sign, its overall effectiveness or not meet standard codes or municipal requirements, including ADA. Elements include, trees or tree branches blocking the sign, existing signs (newly installed or previously identified), or any other physical objects (hanging plants, banners, awnings, parking meters, trash cans, etc.)

2. Failure to notify the OWNER and DESIGNER of any obvious error or faulty condition prior to installation will result in the CONTRACTOR replacing the sign or rectifying the condition in the environment, at no additional cost to the OWNER or DESIGNER.

3. Delays in the project caused by the non-installation of a sign (error / omission) shall be reviewed by the OWNER and the OWNER shall determine if additional time may be added to the end-date of substantial completion.

3.2 CLEANING

A. At completion of installation, clean soiled surfaces of sign units according to manufacturer's written instructions. This shall be included within the lump sum cost of the project.

B. CONTRACTOR shall provide the OWNER with instructions, processes and a list of materials for the proper and correct cleaning of signs. Information provided shall not void any project warranties

3.3 TRAFFIC CONTROL

A. Develop general Maintenance and Protection of Traffic plans for vehicular and pedestrian traffic in accordance with the current MUTCD, State DOT and Municipal requirements. Details for traffic control device must conform to the standard State DOT details.

B. The contractor shall apply for all permits required by the OWNER and municipality for the purposes of traffic control. The cost for all permits and coordination shall be included within the Lump Sum Bid Proposal; this includes but is not limited to equipment, manpower, police presence or any other devices or personnel required for traffic control.

3.4 REMOVAL OF EXISTING SIGNS

A. The contractor shall remove all existing wayfinding, directional and trailblazer signs as indicated in the Comments section of the project Message Schedule. This work shall be sequenced and coordinated with the installation of the new sign program.

B. Removal of existing signs shall be included in the CONTRACTORS, Lump Sum Project Cost.

1. CONTRACTOR shall confirm with the OWNER prior to submitting their bid, if removing the entire footer is included in the project scope of work.

C. Removal shall be completed prior to the installation of the new sign component.

1. Removal of existing signs shall be scheduled and coordinated to minimize the time between the removal and installation of the new sign program.

2. Removal of the signs shall include all sign components to the below grade connection to the footer.

D. CONTRACTOR shall coordinate the proper location, site or recycling center with the OWNER for the disposal of the signs.

3.5 ATTIC STOCK

A. Contractor shall supply attic stock components of posts, sign panels, brackets and other components as requested and as outlined on the Bid Form.

B. If requested by the owner, contractor may provide storage space for attic stock. The cost of this will be a negotiated fee between the town and the contractor on, per square footage basis.

END OF SECTION 10437 - PYLON SIGNS

01730 - REMOVALS, CUTTING, AND PATCHING

1. PART 1 GENERAL

1.1 Related Project Conditions, Procedures and Work Requirements

A. Section 00550: General Conditions

B. Section 01320: Construction Progress Documentation

C. Section 01781: Project Record Documents

D. Section 10436: Post & Panel Signs and Dimensional Letters

E. Section 10437: Pylon Signs, Electric. Message Brds & Channel Ltrs.

F. Section 03050: Cast-In-Place Concrete

1.2 PROJECT CONDITIONS

A. Removal of Existing Signs: See Sections 10436 and 10437

B. Existing Conditions: Do not disturb existing structures, construction, materials or equipment unless required by the CONTRACT

1. Do not cut, drill or remove structural members such as joists, beams or columns supporting construction that is to remain unless expressly required by the CONTRACT DOCUMENTS..

C. Existing Paint: Assume existing painted surfaces to contain lead based paints. Take precautions as required to prevent spread of lead containing particles and dust.

D. Items to Remain the Property of the OWNER: The following items shall remain the property of the State and shall be stored at the site where directed:

1. To be determined by the OWNER and provided to contractor at pre-construction meeting or prior to installation at a specific sign location.

2. PART 2 PRODUCTS

2.1 MATERIALS

A. CONTRACTOR shall replace all surfaces with like materials. All new surfaces adjacent to and within 10' feet of post, including the entire excavated area shall be returned to the same condition and quality, including, materials, finish and grading that was present prior to excavation.

B. When locating a footer within a single pavement block (max. 5'-0" x 5'-0"), adjacent to at least 2 expansion joints, the entire block of pavement shall be removed and replaced with the same materials and finish of adjacent sidewalk areas.

3. PART 3 EXECUTION

3.1 EXAMINATION

A. Prior to cutting, drilling or removal, investigate both sides of the surface involved. Determine the exact location of structural members.

B. If unforeseen obstructions are encountered, take precautions necessary to prevent damage and obtain instructions from the Owner's Representative before proceeding with the Work.

3.2 PREPARATION

A. Prepare existing surfaces properly to receive and, where required, bond with the Work.

3.3 REMOVALS, CUTTING, AND ALTERING

A. In addition to the items indicated to be removed on the Drawings, remove existing construction superseded by the Work except items such as pipes, conduits, recessed boxes, and ducts which are built into existing construction that is to remain. Cut off and conceal such items at face of remaining construction. Provide cover plates on recessed boxes.

B. Remove and alter existing construction as required to install and connect the Work to adjacent construction in an approved manner.

C. Cut and alter existing materials as required to perform the Work. Limit cutting to the smallest amount necessary. Core drill round holes and saw cut other openings where possible.

D. Perform cutting, drilling, and removals in a manner which will prevent damage to construction which is to remain.

E. Perform removal of items to remain the property of the State with such care as necessary to prevent damage to these items.

3.4 PATCHING

A. Patch existing construction and finishes defaced, damaged, or left incomplete due to alterations and removals. Patching, except as otherwise indicated, shall be limited to the areas which have been cut or altered. Finish patched surfaces to match existing adjacent surfaces as closely as practicable.

B. Perform patching around items penetrating existing construction in a manner that will maintain the water and fire resistive capability of the existing construction.

C. Paint patched areas and cover plates to match existing adjacent surfaces using same type of paint. Painting, except as otherwise indicated, shall be limited to the areas which have been patched.

D. Where surfaces exposed by removals are to remain as exposed surfaces, paint such areas to match existing adjacent surfaces as closely as practicable using same type of paint.

3.5 REINSTALLATION

A. Where reinstallation of removed items is indicated, reinstall them to a condition equal to or better than their condition before removal.

END OF SECTION 01730 - REMOVALS, CUTTING AND PATCHING

DECORATIVE METAL COATINGS - DYE SUBLIMATED PRINTED GRAPHIC PANELS

1. GENERAL

1.1 SECTION INCLUDES

A. Permanent imaging thermally-embedded in flat surfaces and dimensional objects for the following applications:

1. Signage and streetscape components.

1.2 RELATED SECTIONS

A. Section 00550: General Conditions

B. Section 01100: Summary

C. Section 01320: Construction Progress Documentation

D. Section 01330: Submittal Procedures

E. Section 01781: Project Record Documents

F. Section 10436: Post & Panel Signs and Dimensional Letters

G. Section 10437: Pylon Signs, Electrc. Message Brds & Channel Ltrs.

1.3 SYSTEM DESCRIPTION

A. Process: The process embeds a high resolution image deep into and throughout a super durable powder coated layer. The image is embedded inside the powder and flows seamlessly over edges and corners. It is not a film or a laminate. There are no visible corners and no delamination. The process shall be capable of coating and decorating both flat surfaces and dimensional objects.

1. Product substrates selected shall be able to withstand the 350 degree F (177 degree C) temperature of the powder coating oven. This includes and is not limited to aluminum, steel, glass, MDF, ceramic and high temperature plastics.

B. Characteristics: Coating shall be super durable polyurethane powder coated finish that is resistant to abrasion, humidity and corrosion. It shall be anti-graffiti, scratch resistant and non-combustible. The coating process shall be applicable for both interior and exterior applications. Coating shall withstand high traffic and extreme weather.

1. Available characteristics include anti-skid, antimicrobial, post-formable and super texture.

C. Capability: Embed process capability shall allow parts from the size of a button to 24 feet (7315 mm) in length. Includes dimensional objects, flat and embossed sheets, extruded profiles, and folded panels.

1.4 SUBMITTALS

A. Submit under provisions of Section 01330.

B. Product Data: Manufacturer's data sheets on each product to be used.

C. Shop Drawings: For all fabrications, including details of construction and attachment to adjacent surfaces.

D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns OR as indicated in Section 10436 and 10437.

E. Sustainability Submittals:

1. Certificates for percentage of recyclable base materials, recyclable transfer film and organic water-based inks.

2. Coating Process documentation of polyurethane powders emitting zero or near zero volatile organic compounds (no VOC's).

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 3 years experience manufacturing similar products. Manufacturer shall have capability to provide a "delegated design" responsibility including prototypes, value engineering and budget analysis.

B. Quality Assurance Process: The following services shall be provided by the manufacturer to deliver the specified product for installation.

1. Project Management: Management of the design facilitation, review, prototype and implementation process.

2. Value Engineering: Reviewing possible cost saving approaches for single or multiple production pieces.

3. Prototype Development: Creating a full design element or portion of the element that reflects the final production piece.

4. Production/Fabrication: Creation of the final production piece.

5. Coating and Embedding: The powder coating and embedded decoration of the final production piece.

6. Installation and Service: Installation of the final production piece as well the maintenance of the final piece after installation.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Designer.

2. Do not proceed with remaining work until workmanship is approved by DESIGNER and the OWNER.

3. Rework mock-up area as required to produce acceptable work.

1.6 DELIVERY AND HANDLING

A. Deliver products in appropriate protective covering and crating to fully protect all materials, surfaces and components against damage.

B. All delivered materials shall be delivered free of any defect, including, but not limited to cracks, scratches, peeling, bubbling, adhesive tapes, marker writing, etc.

1. Contractor shall be responsible for full replacement of materials that is delivered damaged.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard warranty for up to 10 years depending on location, substrate, environment and amount of direct sunlight.

2. PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Direct Embed Coating Systems; 6 Morris St., Paterson, NJ 07501. ASD. Tel: (954) 825-0410. Email: info@directembedcoating.com. Web: http://www.directembedcoating.com.

B. Requests for substitutions will be considered in accordance with provisions Section 05550: General Conditions

2.2 COATING SYSTEM

A. Powder Coating with Embedded Image using DECS Equipment: As manufactured by Direct Embed Coating Systems. Coating shall be resistant to abrasion, humidity and corrosion; anti-graffiti, scratch resistant, non-combustible, super-durable (UV resistant), and TGIC free (non-toxic). Suitable for both interior and exterior applications. Coating shall withstand high traffic and extreme weather..

1. Substrate Material: As indicated on the Drawings.

2. Image Source: As indicated on the Drawings.

3. Color: As indicated on the Drawings.

4. Finish: Matte.

3. EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify DESIGNER and OWNER of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and in proper relationship to adjacent surfaces.

3.4 PROTECTION

A. Protect installed products until acceptance of the project by the OWNER or the OWNER'S REPRESENTATIVE.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 09999 - DECORATIVE METAL COATINGS / DYE SUBLIMATED PRINTED GRAPHICS

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT

1. PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging non-hazardous demolition and construction waste.
2. Recycling non-hazardous demolition and construction waste.
3. Disposing of non-hazardous demolition and construction waste.

1.3 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, paint, or the like.

B. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

C. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations

D. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction

E. Diversion: Avoidance of demolition and construction waste sent to landfill or incineration. Diversion does not include using materials for landfill, alternate daily cover on landfills, or materials used as fuel in waste-to energy processes

F. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosiveness, toxicity or reactivity

G. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse

H. Recycling: The process of sorting, cleansing, treating, and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Salvage: Recovery of demolition or construction waste and subsequent reuse or sale in another facility

J. Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work

K. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste

L. Toxic: Poisonous to humans either immediately or after a long period of exposure

M. Trash: Any product or material unable to be reused, returned, recycled, or salvaged

N. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.4 PERFORMANCE REQUIREMENTS

A. The Owner has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.

B. Of the waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills or incinerators shall be minimized, thereby reducing disposal costs.

C. Develop a construction waste management plan that results in end-of-project rates for salvage/recycling of 95 percent by weight of construction and demolition waste.

D. Salvage/Recycle Requirements: Salvage and recycle as much nonhazardous demolition and construction waste as possible

1. Construction Waste:
   a. Masonry and CMU
   b. All untreated wood, including lumber and finish materials
   c. Wood sheet materials
   d. Wood trim
   e. Metals
   f. Roofing
   g. Insulation
   h. Carpet and pad
   i. Gypsum board
   j. Unused (leftover) paint
   k. Piping
   l. Electrical conduit
   m. Packaging
   n. Beverage and packaged food containers

1.5 SUBMITTALS

A. Construction Waste Management Plan (CWMP): It is the intent of this specification to maximize the diversion of demolition and construction waste from landfill disposal. Accordingly, not more than 30 days after receipt of Notice to Proceed and prior to the generation of any waste, prepare and submit a draft Construction Waste Management Plan including, but not limited to, the following:

1. Procedures for Recycling/Reuse Program to divert a minimum of 95% (by weight) of construction and demolition waste from landfill disposal, including waste resulting from demolition of any existing building and site paving scheduled for demolition; any site paving is required to be ground on site and reused as granulated fill on site.
2. Approval of the Contractor's CWMP shall not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.

B. Submit a 3-ring binder with calculations on end-of-project recycling rates, salvage rates, and landfill rates itemized by waste material, demonstrating that a minimum of 75% of construction wastes were recycled or salvaged and diverted from landfill. Include documentation of recovery rate (if commingled), waste hauling certificates or receipts, and a brief narrative explaining how and to where each waste type has been diverted.

C. Construction Waste Management Plan: Submit four copies of plan within 45 days of date established for the Notice to Proceed.

D. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit four copies of report. Include separate reports for demolition and construction waste. Include the following information:

1. Material category
2. Generation point of waste
3. Total quantity of waste in tons
4. Quantity of waste salvaged, both estimated and actual in tons
5. 5. Quantity of waste recycled, both estimated and actual in tons
6. 6. Total quantity of waste recovered (salvaged plus recycled) in tons
7. 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste
8. 8. Include up-to-date records of donations, sales, recycling and landfill/incinerator manifests, weight tickets, hauling receipts, and invoices.

E. Waste Reduction Calculations: Before request for Substantial Completion, submit four copies of calculated end-of-project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

F. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax-exempt.

G. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax-exempt.

H. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

I. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills (or transfer stations) and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with all applicable requirements of North Carolina Department of Environment, Health, and Natural Resources Policy Memorandum #16 Concerning Management of Construction, Demolition, Land Clearing, Inert, and Yard Trash Debris and any and all subsequent modifications and amendments to same. Comply with all applicable local ordinances and regulations.

B. Waste Management Meetings: Conduct an initial conference at Project Site to comply with requirements in Division 1 Section "Project Management and Coordination." Contractor shall include discussions on construction waste management requirements in

the preconstruction meeting. Contractor shall include discussions on construction waste management requirements in the regular job meetings conducted during the course of the Project; at these meetings, review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of the Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.7 CONSTRUCTION WASTE MANAGEMENT PLAN

A. A. General: Develop and implement a CWMP consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight or volume, but use the same units of measure throughout the CWMP.

B. Draft Construction Waste Management Plan: Within 30 days after receipt of Notice to Proceed, or prior to any waste removal, whichever occurs sooner, the Contractor shall submit to the Owner and Architect a Draft Waste Management Plan.

C. Final Construction Waste Management Plan: Once the Owner has determined which of the recycling options addressed in the draft Waste Management Plan are acceptable, the Contractor shall submit, within 10 calendar days, a Final Waste Management Plan.

D. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

E. Landfill Options: Indicate the name of the landfill(s) and/or transfer station(s) and/or incinerator(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all Project waste in the landfill(s).

F. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, reused, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Describe method that will be used for separating recyclable waste, including sizes of containers, container labeling, and designated location on Project Site where materials separation will be located.

G. Materials: The following list of required materials, at a minimum, must be included for salvaging/recycling:

1. Cardboard
2. Clean dimensional wood
3. Beverage and food containers
4. Paper
5. Concrete
6. Concrete Masonry Units (CMUs
7. Asphalt: Include the approximate weight of the asphalt paving to be crushed and utilized as granulated fill from the existing paving as a component of waste material diverted from the landfill.
8. Ferrous and non-ferrous metals (banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze)
9. Stretch and shrink wrap
10. Gypsum wallboard
11. Paint containers and other clean, empty plastic containers. The specifications writer may want to customize this list based on what is easily recycled or salvaged for resale or reuse at the Project and in local markets.

H. Meetings: Provide a description of the regular meetings to be held to address waste management.

I. Materials Handling Procedures: Provide a description of the means by which any waste materials identified will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

J. Transportation: Provide a description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site) and destination of materials.

1.8 CONSTRUCTION WASTE MANAGEMENT RESOURCES

A. General information contacts regarding construction and demolition waste:

1. Department of Environment and Natural Resources Division of Pollution Prevention and Environmental Assistance or similar
2. EPA Construction and demolition (C&D) debris website: http://www.epa.gov/epaoswer/non-hw/debris-new/bytype.htm
3. Directory of Wood-Framed Building Deconstruction and Reused Building Materials Companies: http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr150.pdf

B. Material Recyclers: For information on local recycling entities, visit the following websites:

2. PART 2 - PRODUCTS (Not Used)

3. PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. A. General: Implement waste management plan as approved by Designer and Owner. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with Division 1 Section “Temporary Facilities and Controls” for operation, termination, and removal requirements.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at the Project Site full-time for duration of Project.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project Site.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project Site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Recycling and waste bin areas are to be kept neat, and clean, and clearly marked in order to avoid contamination of materials.
3. Comply with Division 1 Section “Temporary Facilities and Controls” for controlling dust and dirt, environmental protection, and noise control.

E. Hazardous Wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations and should not be included in Construction Waste Management Plan’s calculations of waste.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Owner's Use:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Receivers and Processors: List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following:

1. List to be developed by Contractor.

C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project Site to the maximum extent practical.
1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project Site. Include list of acceptable and unacceptable materials at each container and bin.
a. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. A. Asphaltic Concrete Paving: Break up and transport paving to asphalt recycling facility or recycle on-site into new paving.

B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
1. Pulverize concrete to maximum 4-inch (100-mm) size.
2. 2. Crush concrete and screen to comply with requirements in Division 2 Section "Earthwork" for use as satisfactory soil for fill or subbase.

C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
1. Pulverize masonry to maximum 1-1/2-inch (38-mm) size.
a. Crush masonry and screen to comply with requirements in Division 2 Section "Earthwork" for use as general fill or subbase.
b. Crush masonry and screen to comply with requirements in Division 2 Section "Exterior Plants" for use as mineral mulch.
2. Clean and stack undamaged, whole masonry units on wood pallets.

D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, and panel products for reuse and/or recycling. Separate wood material treated with heavy metal preservatives for reuse or landfill disposal.

E. Metals: Separate metals by type.
1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

F. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts for recycling into asphalt paving or by other recycling entities.

G. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

H. Plumbing Fixtures: Separate by type and size.

I. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

J. Lighting Fixtures: Separate lamps by type and protect from breakage.

K. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

L. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:
1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project Site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees on-site.
1. Comply with requirements in Division 2 Section "Exterior Plants" for use of chipped organic waste as organic mulch.

C. Wood Materials:
1. Clean Cut-Offs of Lumber: Grind or chip into material appropriate for mulch or erosion control.
2. Lumber Treated with Heavy-Metal Preservatives: Do not grind, chip, or incinerate; must be reused or landfilled.

D. Gypsum Board: Stack large, clean pieces on wood pallets and store in a dry location for recycling and/or reuse on-site or off-site.
1. Moisture-damaged gypsum board with evidence of significant mold growth shall be disposed of in accordance with New York City's "Guidelines on Assessment and Remediation of Fungi in Indoor Environments":
http://www.nyc.gov/html/doh/html/epi/moldrpt1.shtml
2. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
a. Comply with requirements in Division 2 Section "Exterior Plants" for use of clean ground gypsum board as inorganic soil amendment.

E. Miscellaneous: Anything called out to be ground and used on site should utilize an on-site grinder.
1. Grinder should be able to accommodate a variety of materials including masonry, asphalt shingles, wood, and drywall.

3.6 DISPOSAL OF WASTE & CLEANING

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project Site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Do not burn or bury waste materials on or off site. Appropriate onsite topical application of ground gypsum or wood, or use of site paving as granulated fill is considered reuse, not waste.

B. Prohibitions: Cleaning of Concrete trucks in municipal right-of-way or on municipal or private property is prohibited.
1. Contractor shall coordinate all cleaning related to concrete trucks with client / municipality prior to arriving on site.