# GREAT RIVERS GREENWAY EXTERIORSIGN DESIGN STANDARDS

Mississippi Greenway

Mississippi River **Overlook** H &

YC 3654 6046 Emergent Call 911

Gravois Greenway: Grant's Trail

Great Rivers Greenway

Mysun Charitable Foundation Trailhead



#### **Updated August 2020**

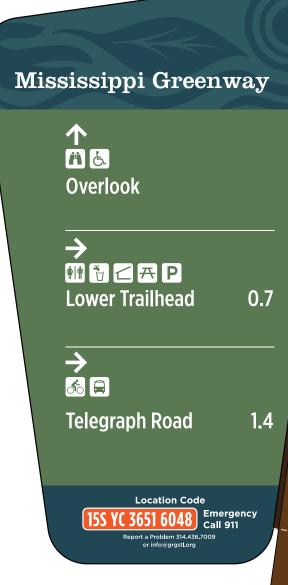
#### Deer Creek Greenway

↑ Ravine Avenue	.2	
← ⓓ ⑳ ☑ क़ ॎ ण् Marshall Avenue Trailhead	.23	
🕺 🕶 Barnickel Park	.5	
🌃 🔂 🔁 🚗 🗠 🕅 🚍 Deer Creek Park	1.1	

155 YC 3058 7628 Emergency

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↑ Shaw Park Trailhead 1.1 miles

> Location Code 155 YC 2992 8255 Emergency Call 911 Report a Problem 314.456.7009 w info@remotion

#### **Project Background**

Hello! Thanks for taking a look at our Wayfinding & Signage Design Standards.

We think it's important to share this with vendors and partners so everyone can understand our project goals and standards.

If you'd like to read the document to understand best practices, please do - what's ours is yours in terms of knowledge and industry standards.

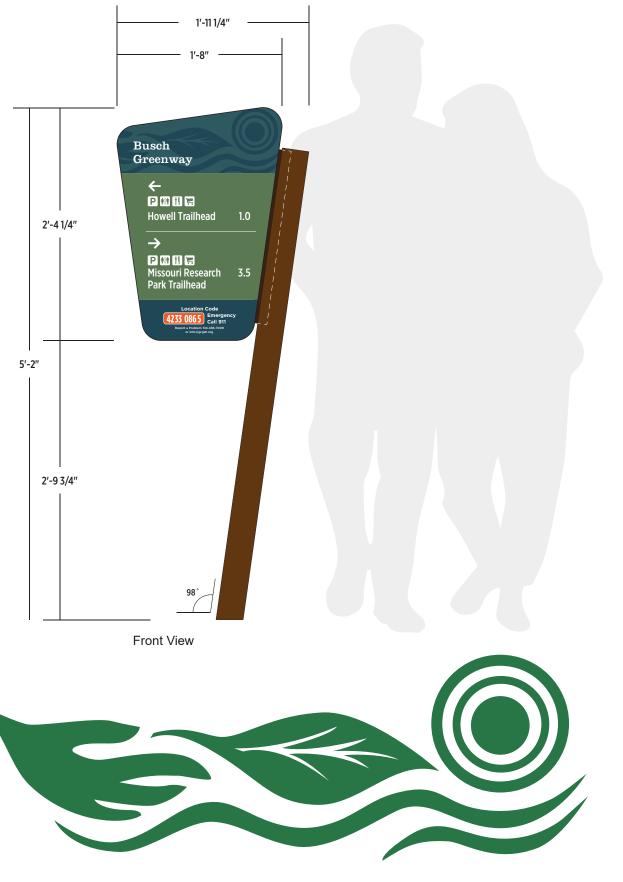
#### Please note that the following guidelines should be used only for signs that appear on greenways within Great Rivers Greenway's River Ring network.

While we are certainly flattered if people wish to use the information in this document to guide their efforts, we respectfully request that they not emulate the same colors, fonts, shapes and logos. These elements are the proprietary brand for Great Rivers Greenway, designed to help people identify that they are on a greenway and part of the network.

If you have any questions about this document or the usage of the recommendations, please contact me. Thanks for your collaboration in making the St. Louis region a vibrant place to live, work and play!

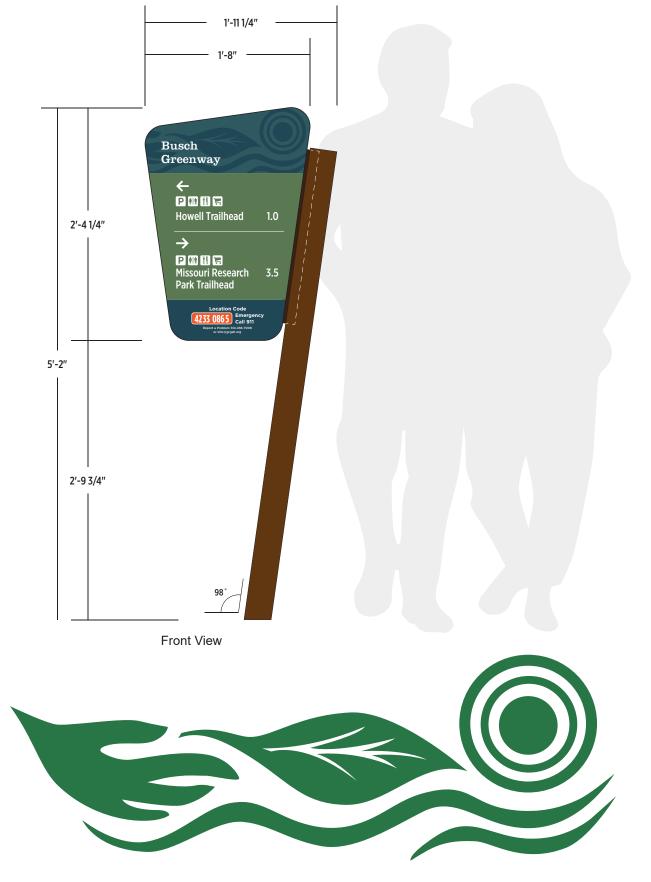
#### **Seth Treptow**

Communications Manager (314) 932-4910 streptow@grgstl.org









## **Great Rivers Greenway**

## **Q**: What is [green]wayfinding?

## **A: Direction for People in Motion**



#### Wayfinding is:

#### Visual & informational consistency

Consistent brand presence

#### Answers to visitor questions:

Listen | Prepare

What is a Greenway?

Why should I go?

What can I expect when I get there? How do I get there?

now do riget there:

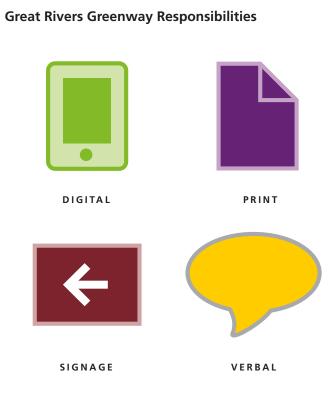
#### Arrive | Engage | Depart

Where am I?

Where can I find \_\_\_\_\_?

Does this trail connect?

Something's wrong. Who do I call?



#### Wayfinding includes:

Simplified logic & terminology

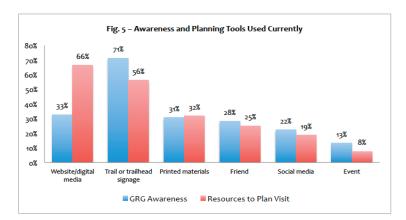
Standards for wayfinding tools

#### **Anticipating** user informational needs:

- Listen | Prepare
  - Website | Mobile
  - Printed Materials
  - Verbal Directions
- Arrive | Engage | Depart
- Wayfinding Signage
- Printed Materials
- Mobile
- Support
- Planning Guidelines
- Signage System Planning & Procurement
- Maintenance

## Q: Why develop a wayfinding program now?

## **A: Navigation Survey Results**



#### Navigation while visiting a trail

- Only 12% report using a printed map
- 80% rely on trail signage, including distance markers, wayfinding signs
- 52% report using maps on trailhead kiosks
- 41% use a smartphone or other GPS device

#### Analysis observations:

#### Greenway system growth =

- Need for standardization

#### Connectivity: Can I get there from he

- Indicate connections to transit
- Add trailblazer signs to Greenway trails
- Identify on-street routes where GRG trails e

#### Experience: How do I know ...?

- Use international symbols to describe cond Trail grade/hazards, amenities, features.
- Place distance markers on all maps

#### Location: Where am I?

- Use GRG naming hierarchy as basis for loca
- Provide a Locator Code for first responder
- GRG phone number for operations concerr

#### **Respondents report usage**

- Most respondents use multiple greenways
- Multiple uses in a given month
- Primarily for cycling, recreation

#### Trail markers, signs help people:

- Become aware of the GRG system
- Learn about greenways
- Navigate trails

#### **Digital media**

- Currently used mostly for planning a visit
- Most would use a mobile site to navigate
- Some currently use smartphone features to navigate trails
- New GRG Website is "mobile-first," providing orientation, information

	Existing Signage
	- Undertake comprehensive audit using GIS
ere?	- Create database: sign type, location, conter
crc.	- Retrofit existing signage as updates require
	- Apply new design to new trail segments
end	- Add sign types to vocabulary to meet
ena	previously unmet informational needs
	- Increase cost savings, functionality
ditions:	Mapping
	- Develop one consistent map in all media
	Separate interpretive
	- Understand the difference between
cating	wayfinding, promotion and interpretive
rs	- Place interpretive on separate sign types
rns	

#### **Great Rivers Greenway Location Code**

A critical safety issue for users of the Greenways is that they be able to identify their location if an emergency occurs. Additionally, GRG Operations staff identified the need to be able to pinpoint locations of maintenance issues on the trails: downed trees, broken pavement, graffiti, trash, etc. The previous design standard did not include this feature.

We've designed the **United States National Grid** (USNG) into the signage standard to manage both of these issues, for the following reasons:

- 1. GRG trail segments are not contiguous and rapidly expanding. This eliminates our ability to identify a location based on a given starting or ending point. The USNG identifies a unique geographic point that does not depend on linear continuity.
- 2. Location points for future trail segments already exist; they just need to be identified and applied as needed.
- 3. The sign standard is designed to accommodate the Location Code as needed. Not all signs will require the code; use of the system relies on the discretion of the GRG planner/project manager for each sign location. We've also designed a sign type to place only the location code where no other information is needed.
- 4. This code can be applied to existing signage as needed.
- 5. The system was developed by the Federal Geographic Data Committee to supplement other unique locators (e.g. street address, GPS coordinates), cross jurisdictional lines, and is supported across digital platforms.
- 6. In some cases, it may be the only way to pinpoint a location in an area with no established road network, or an area affected by a natural disaster where other locators are unavailable.
- 7. Anyone tasked with identifying locations can use it: private citizens, commercial entities, first responders, the National Guard. It allows both state and federal agencies to integrate response in the event of an emergency. It can be integrated with local 911 systems.
- 8. It's a grid-based alpha-numeric point reference system that scales from 100,000 square meters at its largest segmentation to 10 square meters at its most precise. Depending on the sign location, we can use either six digits (rural setting) or eight digits (dense urban setting) to indicate a trail user's location.
- 9. The unique combination in the code is never duplicated within a given region.

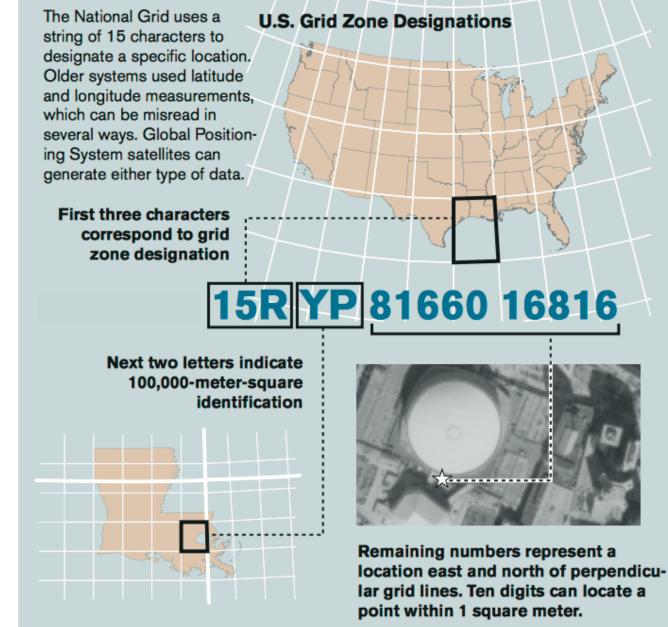
## **USNG Location Code**

Emergency **Call 911** 



or info@grgstl.org

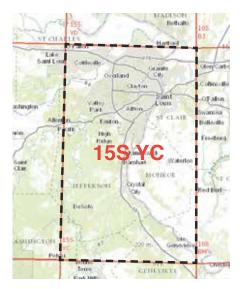
## Finding a location using the USNG



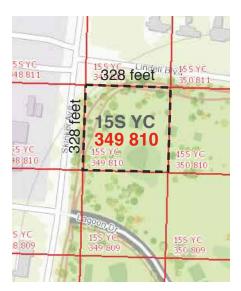
For more information visit: usngcenter.org







Regional location code (does not appear on signs)



Six digit location code 100 meter / 328 ft square



Eight digit location code 10 meter / 32.8 ft square

#### **Color** Palette

	(01) Dark Blue	02 Blue	04) Green	05 Brown	6 Gold	⑦ White	08) Orange
Pantone®:	7546 C	7477 C	5763 C	7596 C	7563 C	White	7579 C
Matthews Paint:	MP 8973 Tintoretto Blue	MP 11183 Franco Blue	MP 479 Extra Virgin	MP 4418 Doric Brown	MP 29187 Jack O'Lantern	N202SP Satin White	MP01049
Powder-Coating Finish:				color code to be determined			
CMYK Equivalent:	C91 M78 Y54 K50	C94 M82 Y44 K31	C57 M35 Y91 K17	C55 M83 Y89 K32	C16 M52 Y97 K2	C0 M0 Y0 K0	C4 M84 Y96 K0
RGB Equivalent:	R44 G50 B66	R51 G58 B87	R113 G128 B73	R90 G62 B54	R191 G140 B57	R255 G255 B255	R198 G83 B51
Clear Coat:	Satin Clear Coat finish, MP SOA4158	SP					
Digital Print:	Sherine Industries Ltd. 113 – 19433 96 Ave Surrey BC V4N 6 604.513.1887 1.800.665.0566 sherineindustries.com	4C4					

#### Typography

Gotham Bold

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz 1234567890

**Gotham Bold Italic** 

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz 1234567890

#### Gotham Medium

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz 1234567890

#### **Gotham Medium Italic**

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz 1234567890 **Clarendon Roman** 

#### **Gotham XNarrow Medium**

Aa Bb Cc Dd Ee Ff Gg Hh li Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz 1234567890

#### **Gotham XNarrow Light**

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz 1234567890

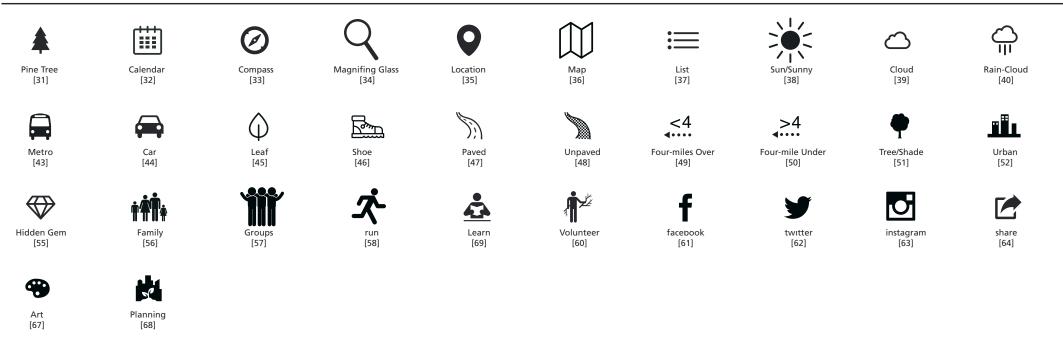
	-		

## Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz 1234567890

#### **Trail Activity and Amenity Symbols**



### **Trail Conditions/Map Symbols**



#### **Trail Regulatory**



### **Standard Symbols**







Logos

## **Great Rivers Greenway**

Trail Safety Symbols





Drinking Water [29]



Paddle Boat [15]



Fix-It Station [30]











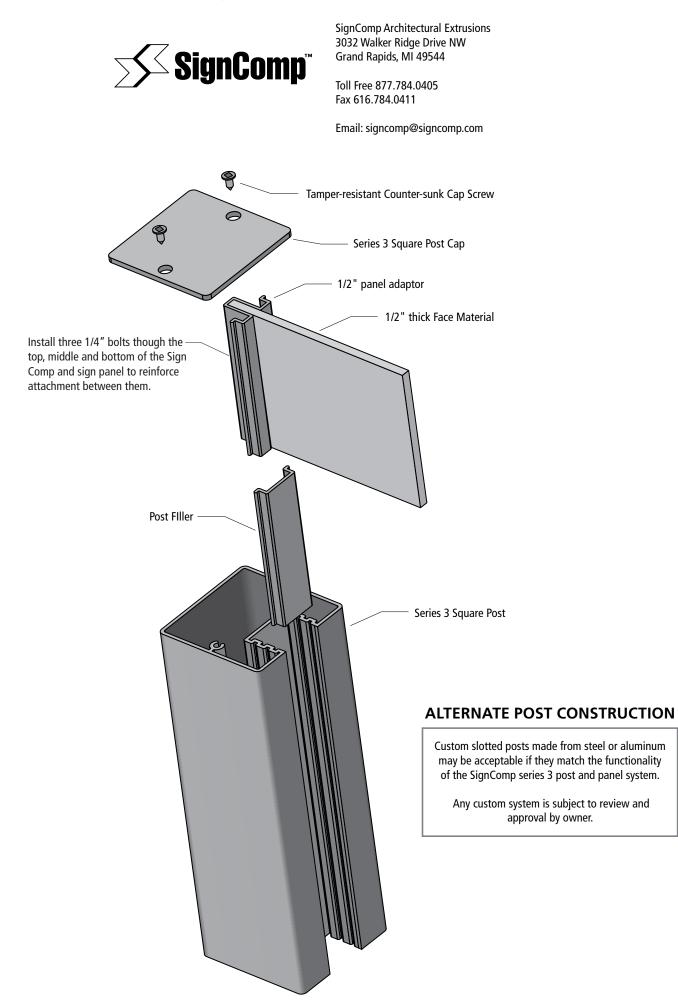


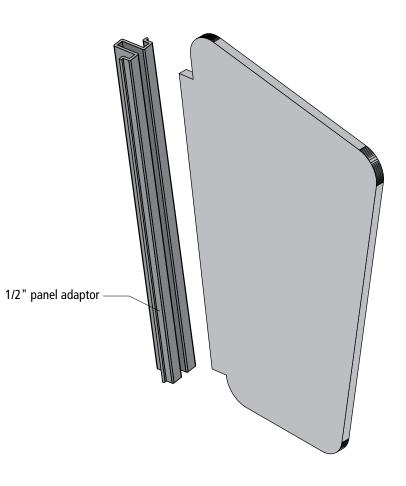


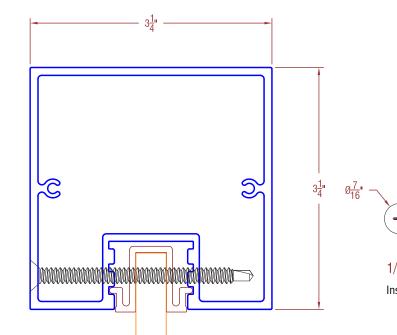


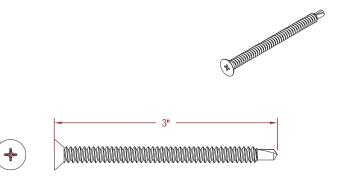
Sign Type	Description	Function	Sign Type	Description	Function
IX-1	Vehicular Main Identification	Destination or Greenway Identification Sign Type scaled for viewing by vehicular traffic on roads with a 35mph and above speed limit. Carries a 4 1/4" cap height. Locate perpendicular to traffic where	GX-99	Trailblazer Guide - 2 flag	Guide Sign mounted to tall pole, Distances, and Locator Panel. 2-destination capacity per panel face. Locate perpendicular to trail.
		possible. Destination or Greenway Identification Sign Type scaled for viewing by vehicular traffic on roads with	КХ-1	Main Trailhead Kiosk - with alternate backs	Trailhead Kiosk contains trail map and information. Alternate back panels with graphic panels or posting boards. Locate perpendicular to trail.
IX-2	Vehicular Secondary Identification	a speed limit below 35mph speed. Carries a 3 1/4" cap height. Locate perpendicular to traffic where possible.	КХ-2	Secondary Trailhead Kiosk	Trailhead Kiosk contains trail map and information, double-sided with information same on both sides. Locate perpendicular to trail.
IX-3	Vehicular Greenway Identification	Greenway identification Sign scaled for viewing by vehicular traffic. Carries a 2 5/8" cap height. Locate perpendicular to traffic where possible.	КХ-3	Trail Information	Trail etiquette information only, no map. Locate perpendicular to trail where possible.
GX-1	Vehicular Trailblazer 6"	Guide Sign to Greenway scaled for viewing by vehicular traffic on higher speed road. Locate perpendular to traffic where possible.	RX-1	Regulatory/Safety	Sign carries cautionary or safety information along with locator panel. Locate perpendicular to road where posible.
GX-2	Vehicular Trailblazer 4"	Guide Sign to Greenway scaled for viewing by vehicular traffic on roads with speed limit below 35mph. Locate perpendicular to traffic where possible.	RX-2	Mile Marker	Sign carries mileage information. Should be located at least 1 mile increments. Locate perpendicular to trail.
GX-3	Vehicular Guide	Guide Sign scaled for viewing by vehicular traffic. 3- destination capacity. Destinations grouped alphabetically by arrow direction. Left arrow, then right arrow, then straight ahead arrow.	RX-3	Mile Marker w/Trail Info and Rescue Locator	Sign carries mileage information, with locator panel and trail name. Should be located at least 1 mile increments. Locate perpendicular to trail.
GX-4	Pedestrian Trailblazer	Guide Sign to Greenway scaled for viewing by pedestrians. Locate perpendicular to traffic where possible.	TC-1	Trail Counter-Sign Panel	Trail Counter by others. Sign Panel carries Greenway name, symbols describing trail information, and trail etiquette. Locate perpendicular to trail.
GX-5	Pedestrian Large Multi-Directional Guide	Multi-Directional Trail Guide with Amenities, Distances and Locator Panel. Locate perpendicular to trail.	IN-1	Interpretive	Interpretive sign has high pressure laminate panel containing historical, biographical or nature- themed content. Sign to be located parallel to trail. See
GX-6	Pedestrian Medium Multi-Directional Guide	Multi-Directional Trail Guide with Amenities, Distances and Locator Panel. Locate perpendicular to trail.			locating diagrams in this Manual for ADA- compliant concrete pads.
GX-7	Pedestrian Medium Single-Directional Guide	Single-Directional Trail Guide with Amenities, Distance and Locator Panel. Locate perpendicular to trail.			
GX-8	Amenity Guide	Trail Guide to Amenities, Distance and Locator Panel. Locate perpendicular to Trail.			
GX-9	Trailblazer Guide	Guide Sign mounted to tall pole, Distances, and Locator Panel. 2-destination capacity. Locate perpendicular to trail.			

#### Great Rivers Greenway Sign Array: Post and Panel Assembly









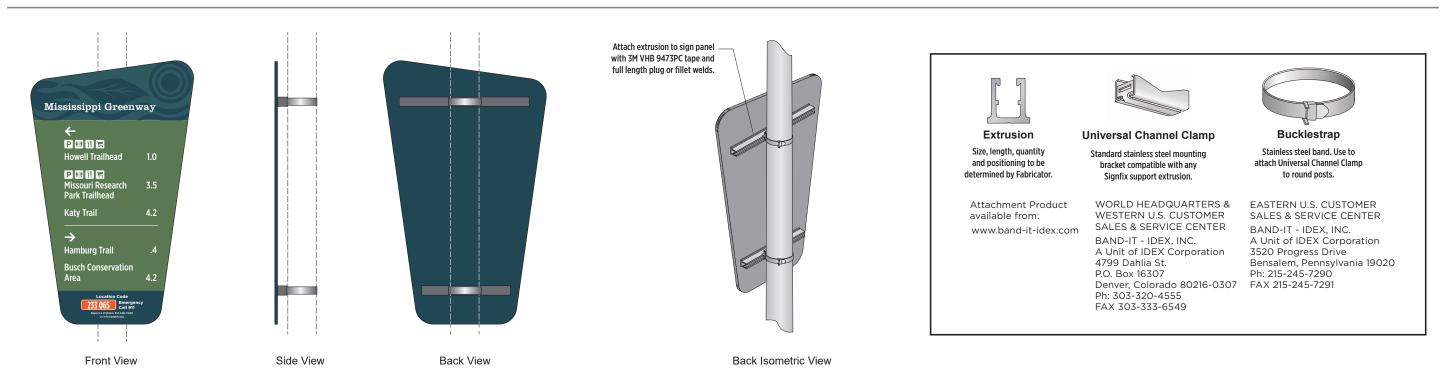
#### 1/4" STAINLESS STEEL FLAT HEAD DRILLING SCREW Install 1 screw from each side of the post (2 total screws)

WALL - Example Sign Type Gx-5w

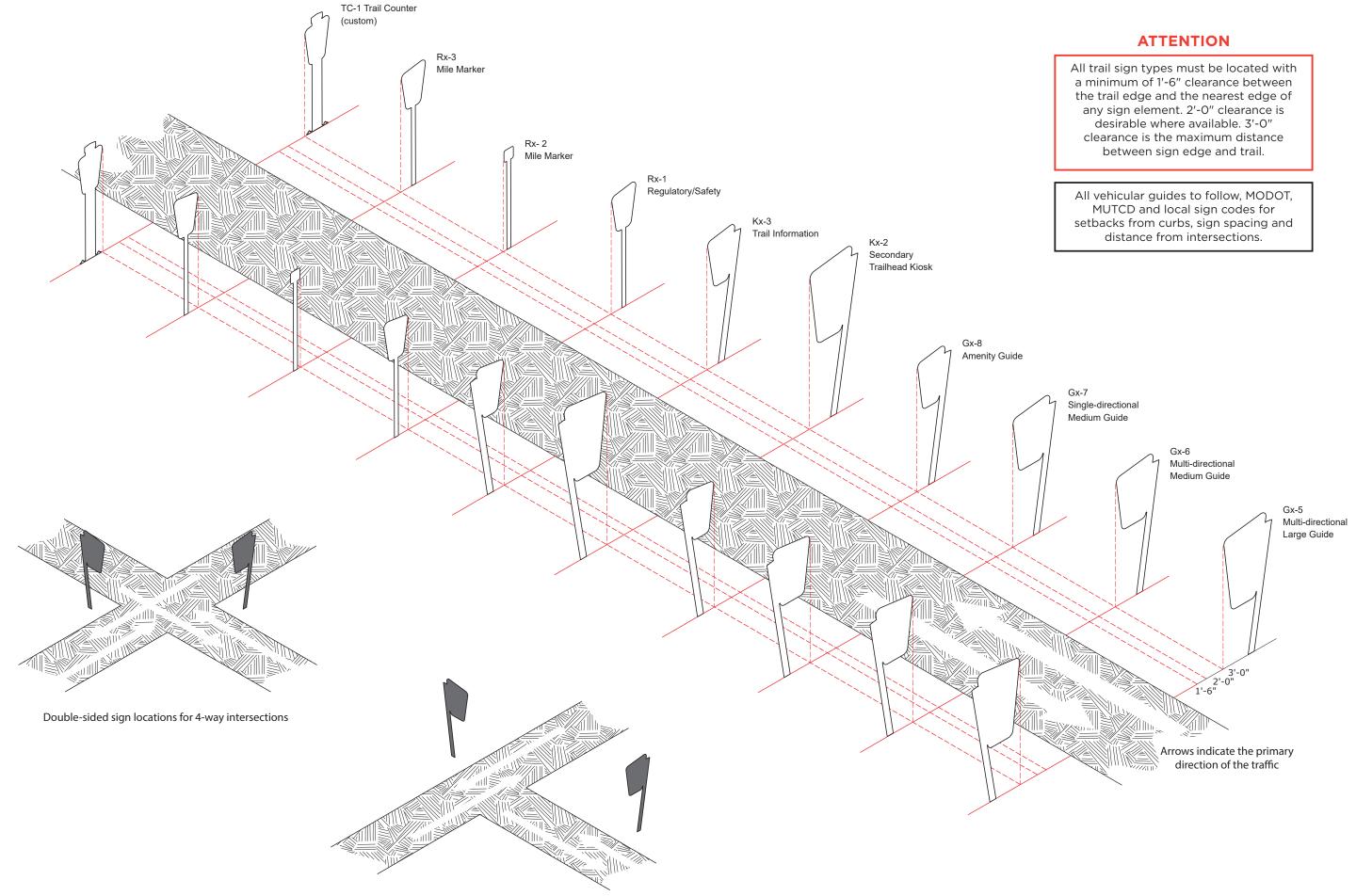
## FENCE - Example Sign Type Gx-5f



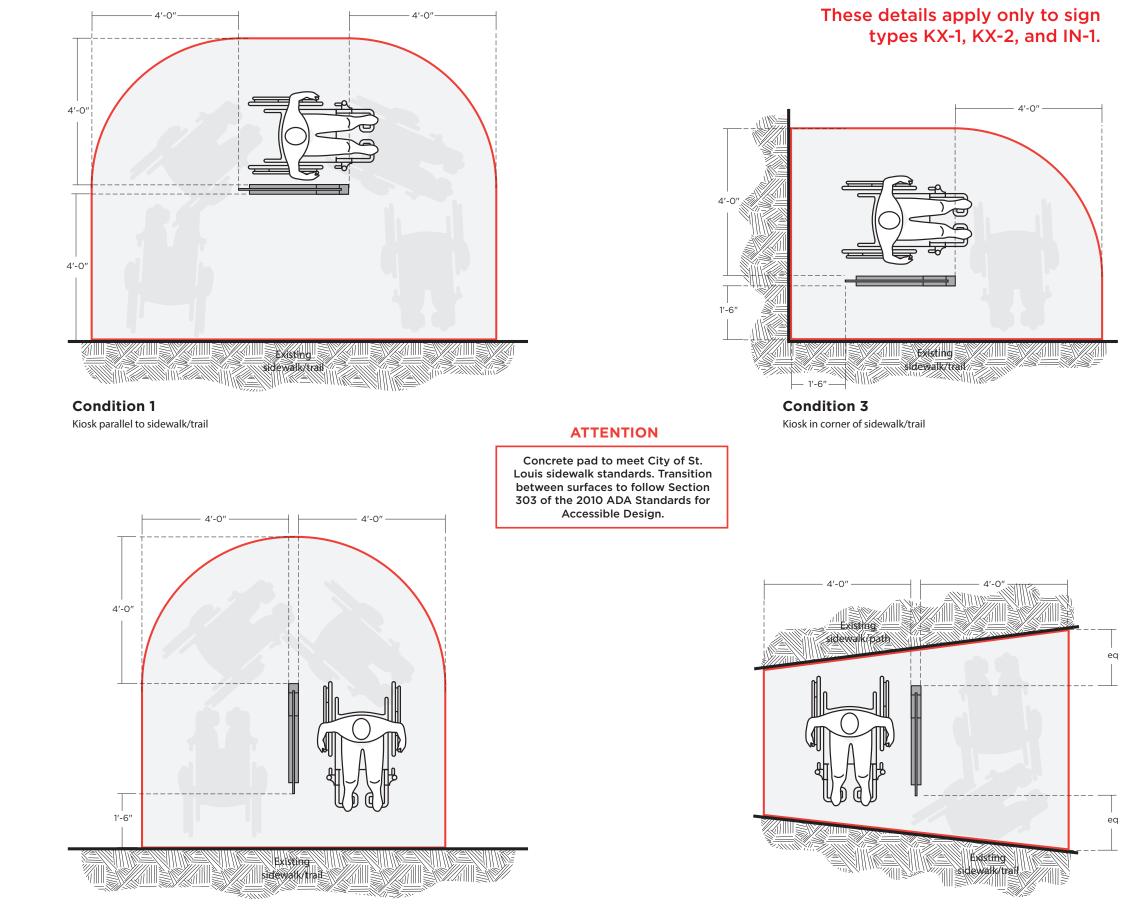
### **EXISTING POLE - Example Sign Type Gx-5e**



#### Great Rivers Greenway Sign Array: Setback Distances



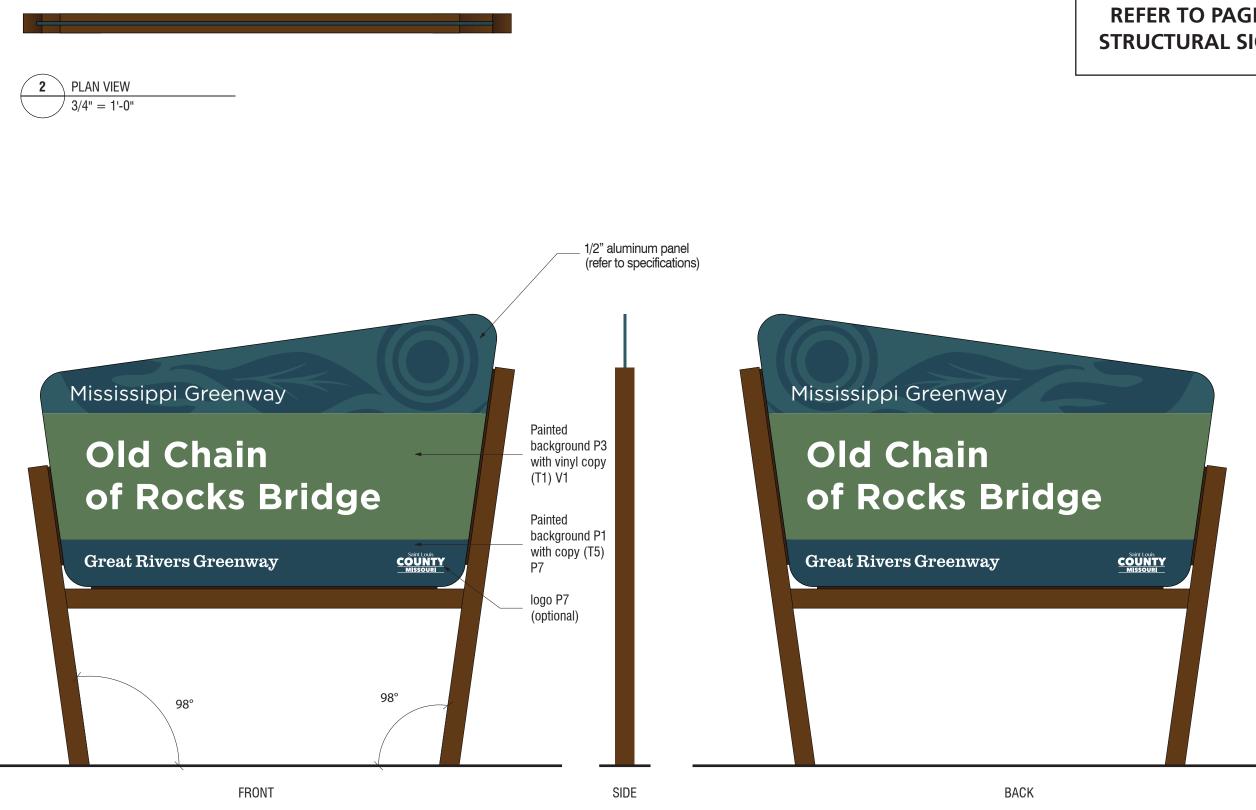
Double-sided sign locations for 3-way intersections



Condition 2 Kiosk perpendicular to sidewalk/trail **Condition 4** Kiosk in gore of sidewalk/trail

## Note:

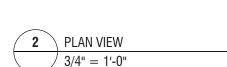
Great Rivers Greenway Sign Array: IX-1 Vehicular Main Identification

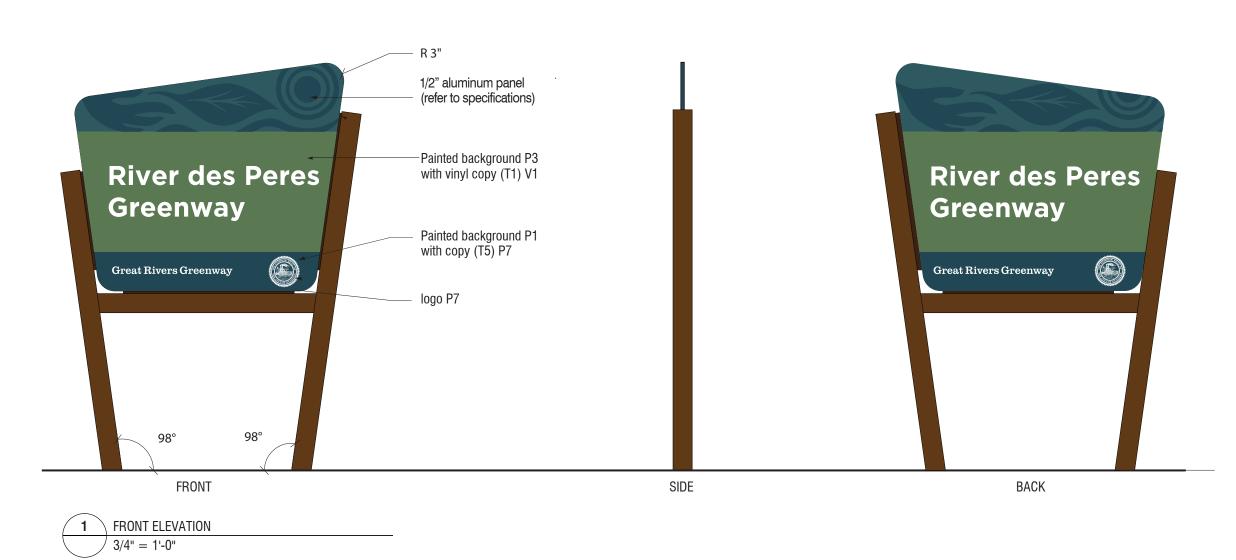


FRONT ELEVATION 3/4" = 1'-0"

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sebdacc0aadc4fa39

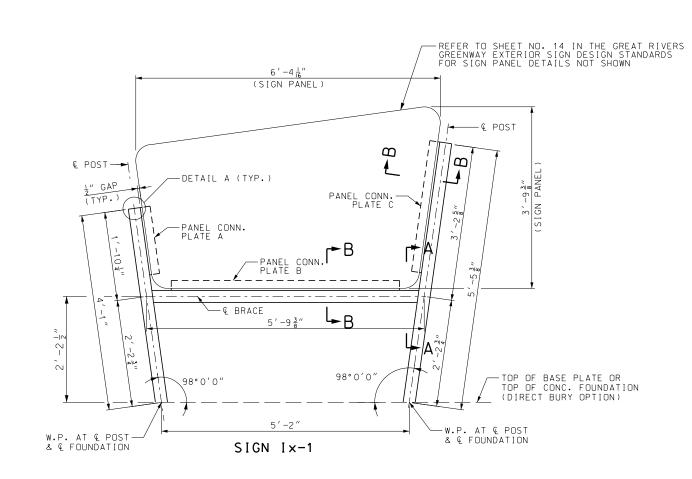
## **REFER TO PAGES 16 & 17 FOR** STRUCTURAL SIGNAGE DETAILS

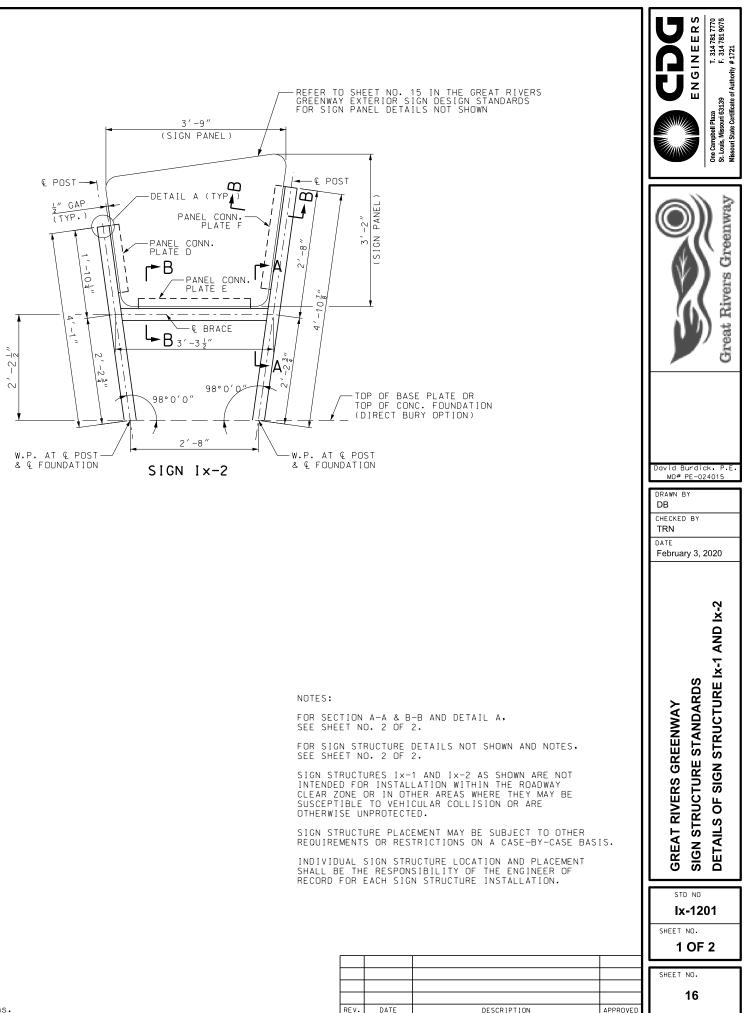




## **REFER TO PAGES 16 & 17 FOR** STRUCTURAL SIGNAGE DETAILS

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-s9a0dbf314904d199





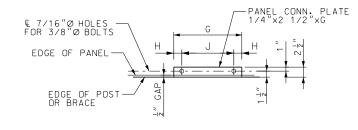
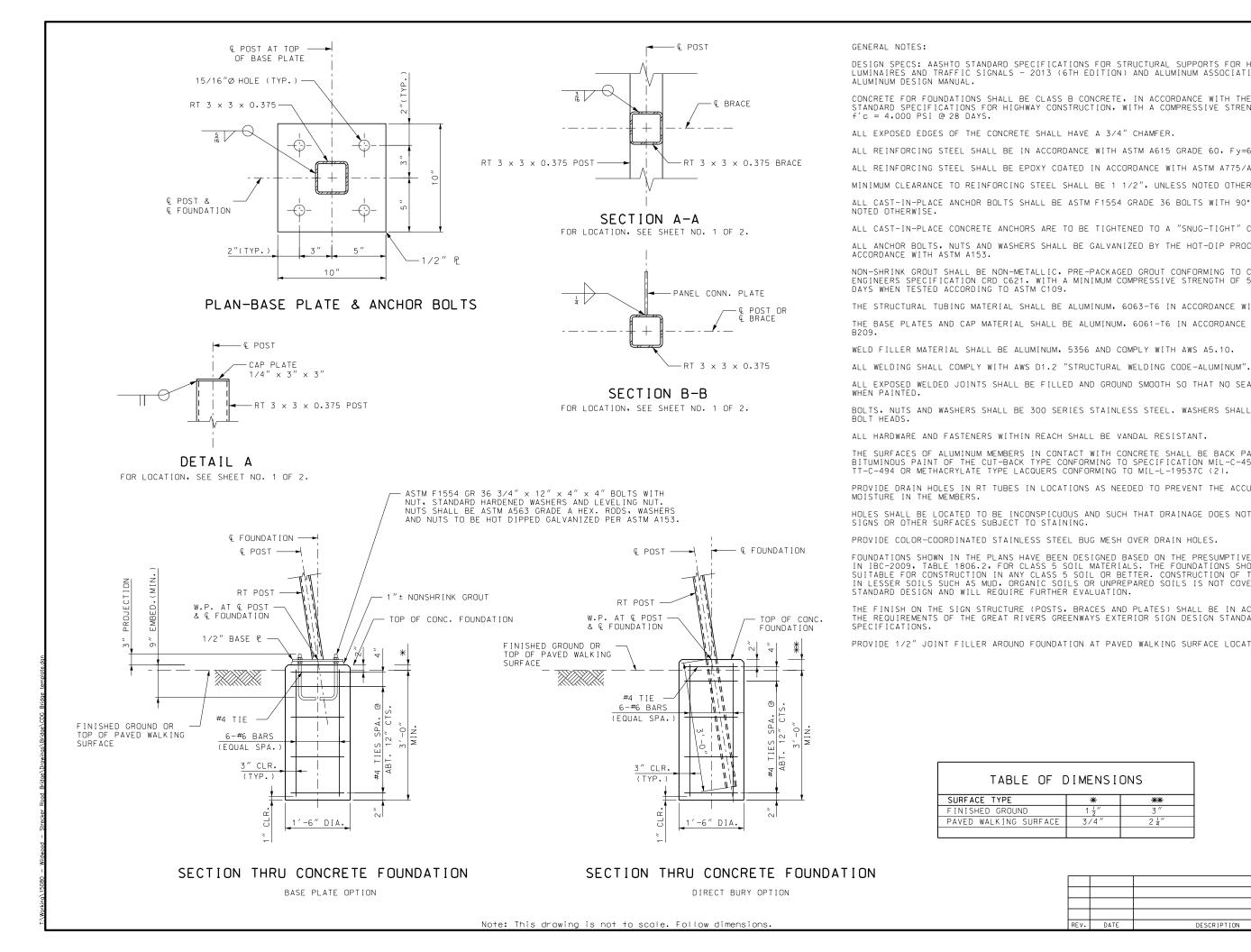


TABLE	OF PLAT	re dime	NSIONS
PLATE	G	Н	J
А	1′-5″	2″	13″
В	4′-9″	6″	3 SPA. @ 15"
С	2′-9″	1 ½"	2 SPA. @ 15"
D	1′-5″	2″	13″
E	2′-4″	2 ″	2′-0″
F	2'-2"	2″	1'-10"

#### PANEL CONNECTION PLATE DETAIL



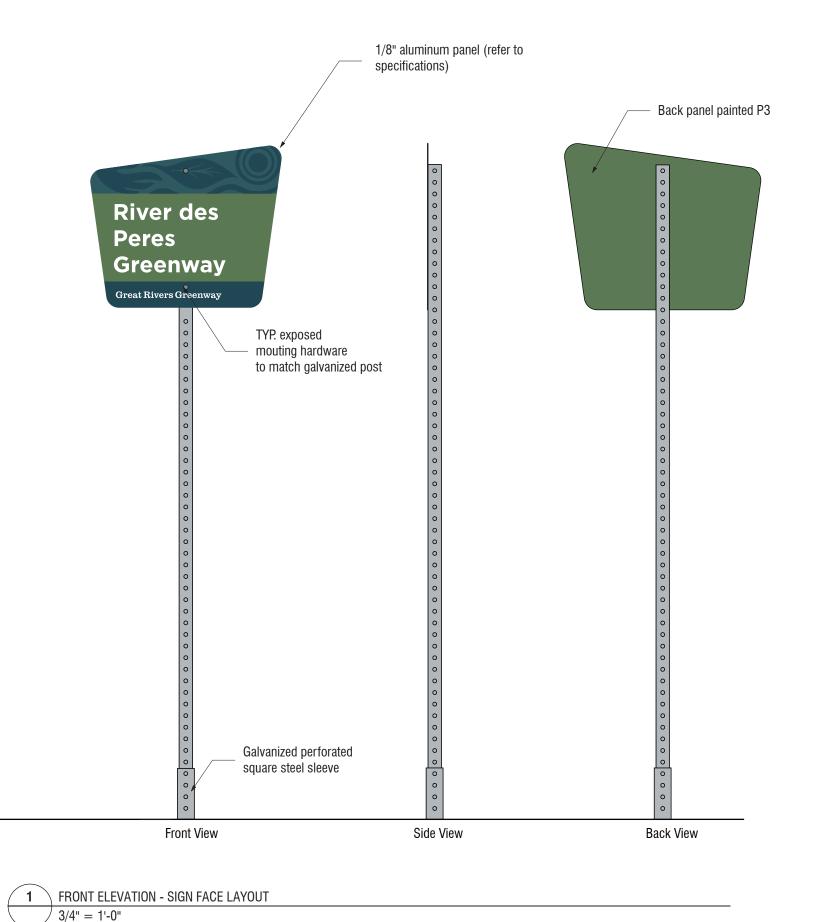
NEERS 22 DESIGN SPECS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS - 2013 (6TH EDITION) AND ALUMINUM ASSOCIATION 2015 -ט N U CONCRETE FOR FOUNDATIONS SHALL BE CLASS B CONCRETE, IN ACCORDANCE WITH THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, WITH A COMPRESSIVE STRENGTH OF ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60, Fy=60,000 PSI. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775/A775M. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2", UNLESS NOTED OTHERWISE. ALL CAST-IN-PLACE ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 36 BOLTS WITH 90° BEND UNLESS NOTED OTHERWISE. ALL CAST-IN-PLACE CONCRETE ANCHORS ARE TO BE TIGHTENED TO A "SNUG-TIGHT" CONDITION. ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED BY THE HOT-DIP PROCESS IN Ċ NON-SHRINK GROUT SHALL BE NON-METALLIC, PRE-PACKAGED GROUT CONFORMING TO CORPS OF ENGINEERS SPECIFICATION CRD C621, WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS WHEN TESTED ACCORDING TO ASTM C109. Riv THE STRUCTURAL TUBING MATERIAL SHALL BE ALUMINUM, 6063-T6 IN ACCORDANCE WITH ASTM B429. eat THE BASE PLATES AND CAP MATERIAL SHALL BE ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM ē ALL EXPOSED WELDED JOINTS SHALL BE FILLED AND GROUND SMOOTH SO THAT NO SEAM IS VISIBLE BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES STAINLESS STEEL. WASHERS SHALL BE USED UNDER avid Burdick, MD# PE-024015 THE SURFACES OF ALUMINUM MEMBERS IN CONTACT WITH CONCRETE SHALL BE BACK PAINTED WITH BITUMINOUS PAINT OF THE CUT-BACK TYPE CONFORMING TO SPECIFICATION MIL-C-450 B (1) OR TT-C-494 OR METHACRYLATE TYPE LACOUERS CONFORMING TO MIL-L-19537C (2). DRAWN B DB CHECKED BY PROVIDE DRAIN HOLES IN RT TUBES IN LOCATIONS AS NEEDED TO PREVENT THE ACCUMLATION OF MOISTURE IN THE MEMBERS. TRN DATE HOLES SHALL BE LOCATED TO BE INCONSPICUOUS AND SUCH THAT DRAINAGE DOES NOT OCCUR ONTO SIGNS OR OTHER SURFACES SUBJECT TO STAINING. February 3, 2020 FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DESIGNED BASED ON THE PRESUMPTIVE VALUES FOUND IN IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL MATERIALS. THE FOUNDATIONS SHOWN ARE SUITABLE FOR CONSTRUCTION IN ANY CLASS 5 SOIL OR BETTER. CONSTRUCTION OF THE FOUNDATIONS × AND IN LESSER SOILS SUCH AS MUD, ORGANIC SOILS OR UNPREPARED SOILS IS NOT COVERED BY THIS THE FINISH ON THE SIGN STRUCTURE (POSTS, BRACES AND PLATES) SHALL BE IN ACCORDANCE WITH <u>|</u> THE REQUIREMENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND STANDARDS STRUCTURE PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION AT PAVED WALKING SURFACE LOCATIONS. GREENWAY STRUCTURE SIGN RIVERS Ъ DETAILS GREAT SIGN TABLE OF DIMENSIONS \*\* STD NO 3/4 2 🛓 lx-1202 SHEET NO. 2 OF 2

DESCRIPTION

DATE

SHEET NO.

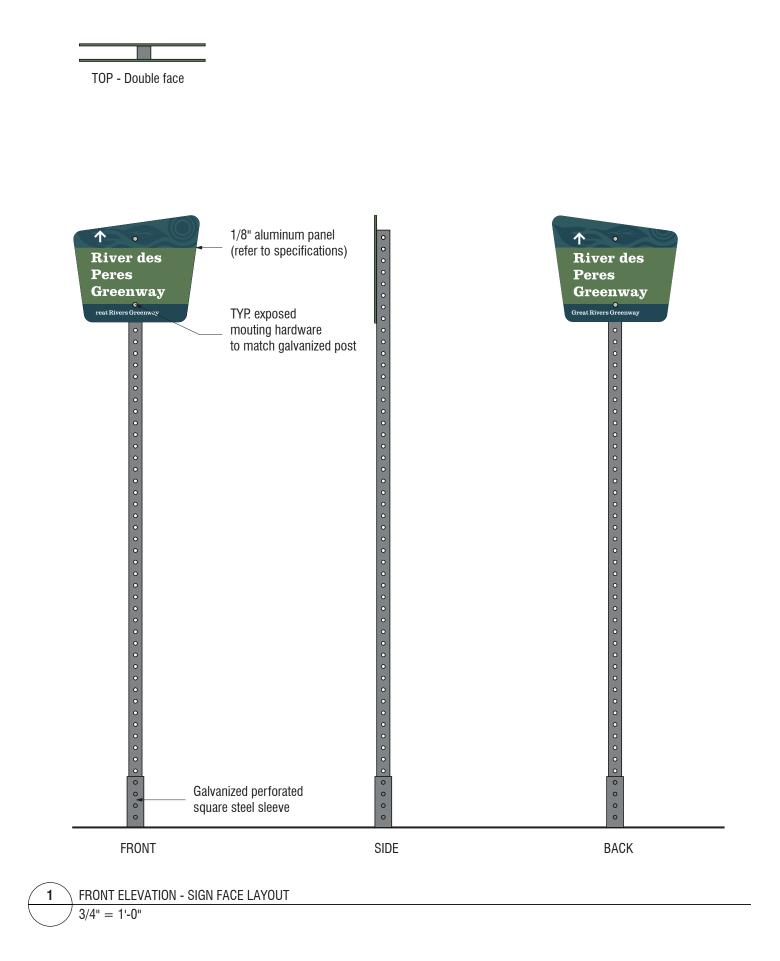
17



Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-s12cfcbf82dd40d78

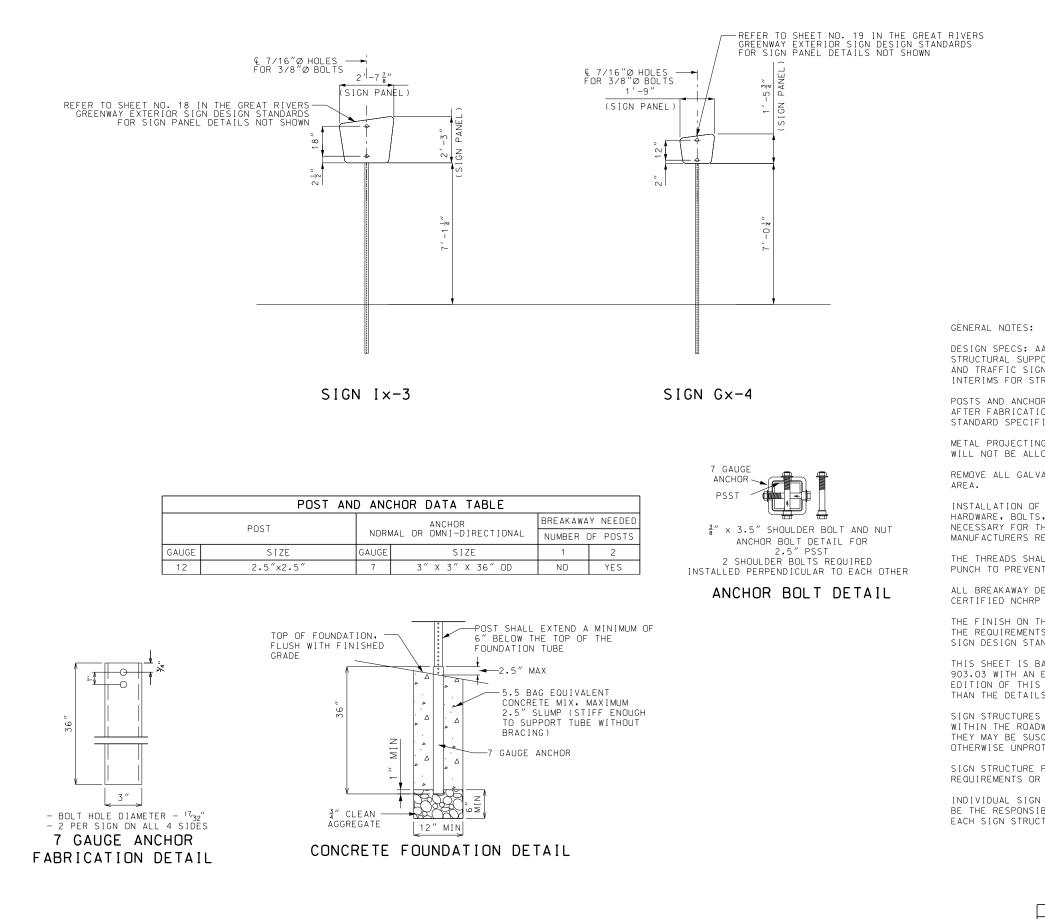
## REFER TO PAGES 20 & 21 FOR STRUCTURAL SIGNAGE DETAILS

Great Rivers Greenway Sign Array: GX-4 Pedestrian Trailblazer



Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sb7255b9acde46799

## REFER TO PAGES 20 & 21 FOR STRUCTURAL SIGNAGE DETAILS



PERFORATED SQUARE STEEL TUBE (PSST) SIGN POST OPTION

	Campell Plaza C. Campell Plaza C. Louis, Missouri 63139 C. J. 14, 781 975 F. 314 781 975 F. 314 781 975
	Great Rivers Greenway
ASHTO STANDARD SPECIFICATIONS FOR DRTS FOR HIGHWAY SIGNS. LUMINAIRES NALS - 1985 (EXCEPT 2001 AND LATEST RUCTURAL STEEL POSTS). R SHALL BE HOT DIPPED GALVANIZED DN PER SECTION 1080 OF THE MISSOURI ICATIONS FOR HIGHWAY CONSTRUCTION. G BEYOND THE PLANE OF THE PLATE FACE DWED. ANIZING RUNS OR BEADS IN THE WASHER THE BREAKAWAY ASSEMBLY SYSTEM INCLUDING , NUTS, WASHERS AND ALL OTHER APPURTENANCES	David Burdick. P.E. MO# PE-024015 DRAWN BY DB CHECKED BY TRN DATE February 3, 2020
HE COMPLETE INSTALLATION SHALL BE PER THE EQUIREMENTS. LL BE BURRED AT THE NUT USING A CENTER T NUT FROM LOOSENING. EVICES USED ON AN INSTALLATION SHALL BE 350 COMPLIANT. HE POSTS SHALL BE IN ACCORDANCE WITH S OF GREAT RIVERS GREENWAYS EXTERIOR NDARDS AND SPECIFICATIONS. ASED ON MISSOURI STANDARD PLANS DRAWING EFFECTIVE DATE 01/01/2020. THE LATEST DRAWING SHALL BE USED IF DIFFERENT S SHOWN. IX-3 AND GX-4 AS SHOWN MAY BE INSTALLED WAY CLEAR ZONE OR IN OTHER AREAS WHERE CEPTIBLE TO VEHICULAR COLLISION OR ARE TECTED. PLACEMENT MAY BE SUBJECT TO OTHER RESTRICTIONS ON A CASE-BY-CASE BASIS. STRUCTURE LOCATION AND PLACEMENT SHALL BILITY OF THE ENGINEER OF RECORD FOR TURE INSTALLATION.	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUC.  x-3 & Gx-4
	STD NO Ix-301 Gx-401 SHEET NO. 1 OF 2
	SHEET NO. <b>20</b>

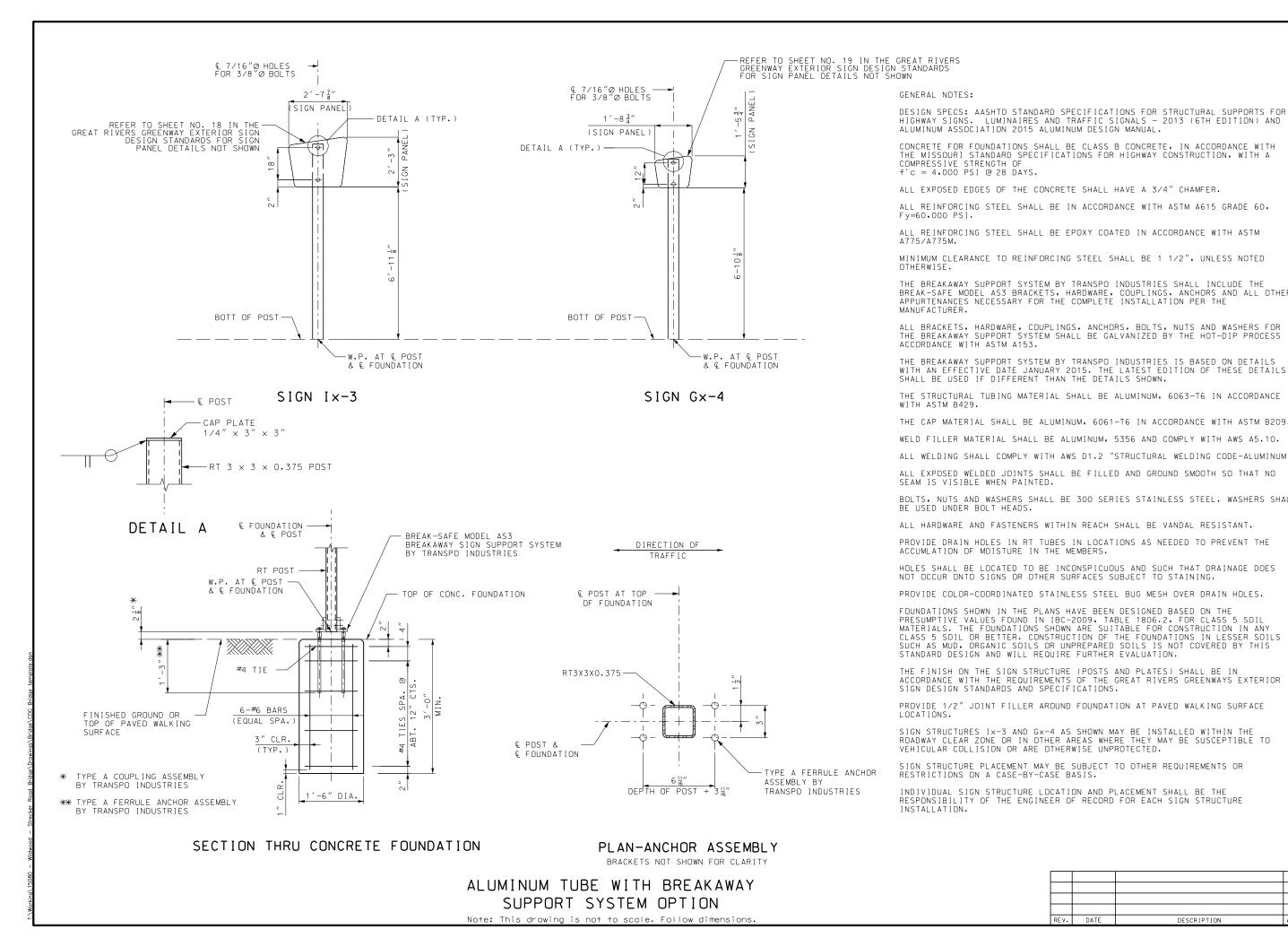
DESCRIPTION

REV.

DATE

20

APPROVED



ALL EXPOSED EDGES OF THE CONCRETE SHALL HAVE A 3/4" CHAMFER. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1  $1/2^{\,\prime\prime}$  , unless noted otherwise. THE BREAKAWAY SUPPORT SYSTEM BY TRANSPO INDUSTRIES SHALL INCLUDE THE BREAK-SAFE MODEL AS3 BRACKETS, HARDWARE, COUPLINGS, ANCHORS AND ALL OTHER APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION PER THE ALL BRACKETS, HARDWARE, COUPLINGS, ANCHORS, BOLTS, NUTS AND WASHERS FOR THE BREAKAWAY SUPPORT SYSTEM SHALL BE GALVANIZED BY THE HOT-DIP PROCESS IN THE BREAKAWAY SUPPORT SYSTEM BY TRANSPO INDUSTRIES IS BASED ON DETAILS WITH AN EFFECTIVE DATE JANUARY 2015. THE LATEST EDITION OF THESE DETAILS THE STRUCTURAL TUBING MATERIAL SHALL BE ALUMINUM, 6063-T6 IN ACCORDANCE THE CAP MATERIAL SHALL BE ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM B209. WELD FILLER MATERIAL SHALL BE ALUMINUM, 5356 AND COMPLY WITH AWS A5.10. ALL WELDING SHALL COMPLY WITH AWS D1.2 "STRUCTURAL WELDING CODE-ALUMINUM". ALL EXPOSED WELDED JOINTS SHALL BE FILLED AND GROUND SMOOTH SO THAT NO BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES STAINLESS STEEL. WASHERS SHALL ALL HARDWARE AND FASTENERS WITHIN REACH SHALL BE VANDAL RESISTANT. PROVIDE DRAIN HOLES IN RT TUBES IN LOCATIONS AS NEEDED TO PREVENT THE HOLES SHALL BE LOCATED TO BE INCONSPICUOUS AND SUCH THAT DRAINAGE DOES PROVIDE COLOR-COORDINATED STAINLESS STEEL BUG MESH OVER DRAIN HOLES. FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DESIGNED BASED ON THE PRESUMPTIVE VALUES FOUND IN IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL MATERIALS. THE FOUNDATIONS SHOWN ARE SUITABLE FOR CONSTRUCTION IN ANY CLASS 5 SOIL OR BETTER. CONSTRUCTION OF THE FOUNDATIONS IN LESSER SOILS SUCH AS MUD, ORGANIC SOILS OR UNPREPARED SOILS IS NOT COVERED BY THIS STANDARD DESIGN AND WILL REQUIRE FURTHER EVALUATION. THE FINISH ON THE SIGN STRUCTURE (POSTS AND PLATES) SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION AT PAVED WALKING SURFACE LOCATIONS. SIGN STRUCTURES IX-3 AND GX-4 AS SHOWN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION.

۲ Ш ρ z ט Z Greenway Rivers Great MD# PE-024015 DB CHECKED BY TRN DATE February 3, 2020 Š ø **STANDARDS** X-3 GREENWAY STRUC. STRUCTURE SIGN **RIVERS** ( ЧО SIGN STR DETAILS GREAT STD NO lx-302 Gx-402 SHEET NO 2 OF 2 SHEET NO. 21

REV.	DATE	DESCRIPTION	APPROVED

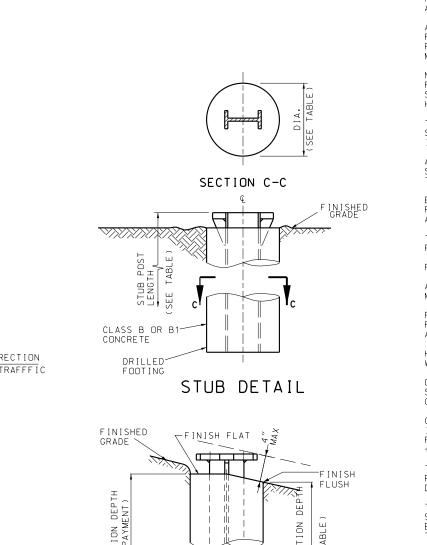


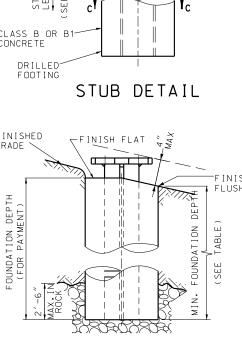
## REFER TO PAGES 23-26 FOR STRUCTURAL SIGNAGE DETAILS

R 4 7/8"

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-s9c2891a9cc443f09

POST         BOLT         WASHER         BASE CONNECTION DATA TABLE (IN.)         POST         FOUNDATION           DES. NOM SIZE NO. (IN. X48)         DIA LENGTHTORQUE OD ID THICK (IN. X48)         A         B         C         D         E         F         G         W         R         POST         VEIGHT         STUB         DIA.         LEVEL GROUND         6:1 GRADE         4:					W	ASHE	R													FUS		ЛГС	DUNDA	11014	DATA	<u>, ia</u>					
DES. NOM SIZE DIA LENGTHTORQUE OD ID THICK A B C D E F G W R POST NOM. WEIGHT STUB DIA. LEVEL 6:1 GRADE 4:	,	-					11	BAS	F CO	JNNEC	OTIO	N D#	ATA	TABL	.E (	IN.)		POST FC													
NO. (IN.X[45]) IN. IN. IN./LB. IN. IN. IN. IN. A B C B L A G W A DOST WEIGHT STUDIES GROUND CONTRACT OF CONTRACT O	2							A	в	с	D	E	F	G	W	R	POST	NOM.	WE I	GHT			LEV GROI	EL JND	6:1 GF	RADE	4:1 GF	RADE	3:1 C GR:	R 2:1 ADE	
			5 <u>8</u>		1 N.	1N.	1N. 	5	2	1 1/4	2 3/4	1 🛓	<u>3</u> 4	<u>1</u> 2	<u> </u>	$\frac{11}{32}$	NO.	SIZE	LBS/FT	LBS/IN			DEPTH	С.Ү.			DEPTH		DEPTH	1	
1 W6 15.0 1.25 4'-0" 24" 4'-0" 0.47 4'-2" 0.50 4'		_												-			1	W6	15.0	1.25	4′-0″	24″	4′-0″	0.47	4'-2"	0.50	4'-3"	0.51	4′-6″	0.54	





FOUNDATION DETAIL

NERAL NOTES:

SIGN SPECS: AASHT RUCTURAL SUPPORTS D TRAFFIC SIGNALS TERIMS FOR STRUCTI

STS, PERFORATED FI LVANIZED AFTER FA

METAL PROJECTING BE WILL NOT BE ALLOWED

REMOVE ALL GALVANIZ AREA.

ALL STRUCTURAL STEEL PLATES, FOR GROUND M REQUIREMENTS OF ASTM MINIMUM YIELD 50.00

NUTS ON HINGE PLATE REQUIRED MINIMUM BOU SEC. 1080 OF THE MIS HIGHWAY CONSTRUCTIO

THE NUT SHALL BE FR SPIN ON THE BOLT BE IRREGULARITIES, A LI

ALL BREAKAWAY ASSEM THIS DRAWING.

EACH BREAKAWAY ASSE RE-TIGHTENED TO THE AS THE INITIAL TIGH

THE THREADS SHALL B PUNCH TO PREVENT NU

POST LENGTH QUANTIT

ALL H.S. BOLTS SHAL М 164.

FURNISH TWO .012"± POST FROM BRASS SHI ASTM B 36. SHIM AS

HIGH STRENGTH BOLTS WITH EACH BOLT ARE

OPTIONAL HOLES (13/ SHOWN IN "ELEVATION GALVANIZING ONLY.

CONCRETE FOR FOUNDA IN ACCORDANCE WITH FOR HIGHWAY CONSTRUC f'c = 4.000 PSI @ 28

THE FINISH ON THE PO REQUIREMENTS OF GREA DESIGN STANDARDS AND

THIS SHEET IS BASED 903.03 WITH AN EFFEC EDITION OF THIS DRAW THAN THE DETAILS SH

SIGN STRUCTURES Gx-WITHIN THE ROADWAY THEY MAY BE SUSCEPT OTHERWISE UNPROTECT

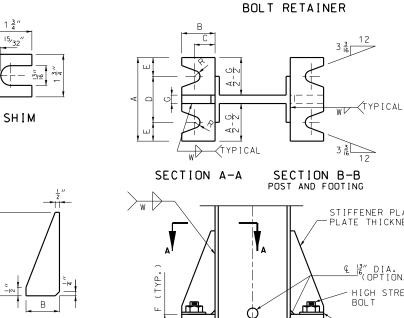
SIGN STRUCTURE PLAC REQUIREMENTS OR RES

INDIVIDUAL SIGN STR BE THE RESPONSIBILI EACH SIGN STRUCTURE

DATE

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DESCRIPTION



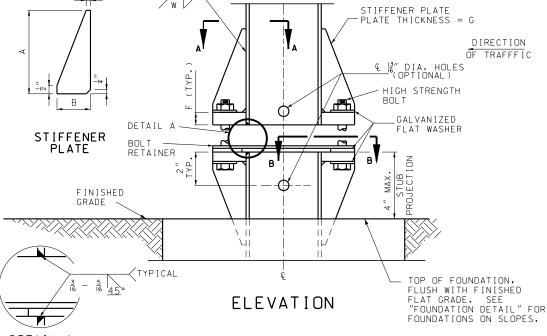
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SHEET METAL BOLT RETAINER CUT FROM 30 GAGE GALVANIZED SHEET METAL. PLACE BETWEEN BASE PLATES. SIZE VARIES TO FIT PLATE. BOLT HOLES TO BE 16 LARGER THAN REQUIRED BOLT SIZE.





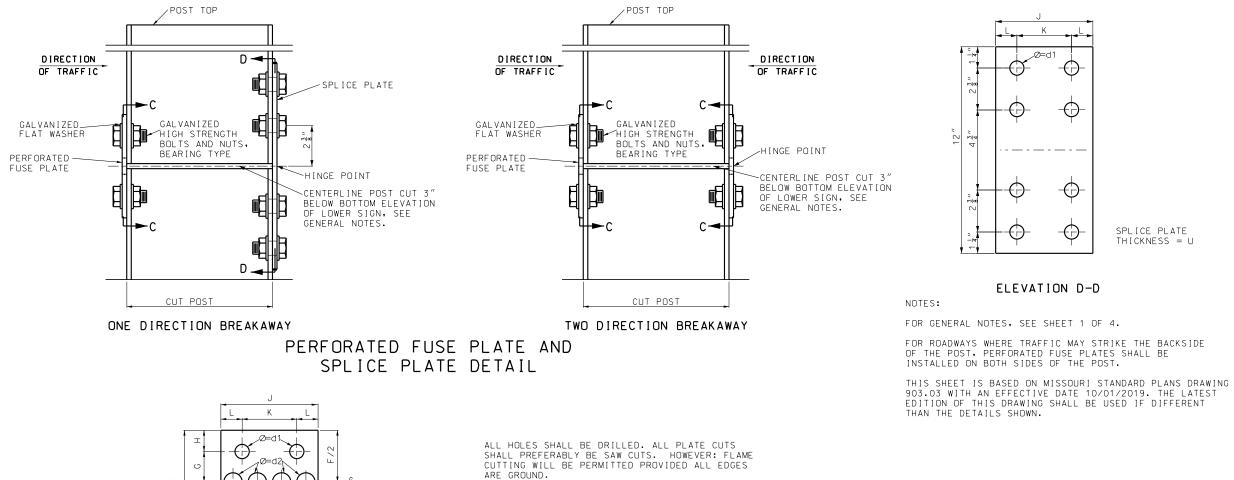
	 []
I STANDARD SPECIFICATIONS FOR FOR HIGHWAY SIGNS. LUMINAIRES - 1985 (EXCEPT 2001 AND LATEST RAL STEEL POSTS). ISE PLATE AND SPLICE PLATE TO BE RICATION.	Competition Control of Control of Control of Control (Control Control (Control of Control of Contro
OND THE PLANE OF THE PLATE FACE	
NG RUNS OR BEADS IN THE WASHER	
STIFFENER PLATES AND BASE DUNTED SIGNS SHALL MEET THE A 36 OR AASHTO M 270 GRADE 50, PSI.	rs Greenway
BOLTS SHALL BE TIGHTENED TO THE T TENSION VALUES SHOWN IN TABLE 1 SOURI STANDARD SPECIFICATIONS FOR	at Rive
E RUNNING. IF THE NUT WILL NOT CAUSE OF GALVANIZING JBRICANT SHALL BE APPLIED.	Great
BLY BOLTS SHALL BE TIGHTENED IN A D THE PRESCRIBED TORQUE SHOWN ON	
BLY BOLT SHALL BE LOOSENED AND REQUIRED TORQUE IN THE SAME ORDER ENING.	
BURRED AT THE NUT USING A CENTER FROM LOOSENING.	David Burdick, P.E. MD# PE-024015
SHOWN ON PLANS INCLUDES STUB. BE OF THE DESIGNATION AASHTO	DRAWN BY DB
ND TWO .0032"± THICK SHIMS PER   STOCK OR STRIP, DESIGNATION REQUIRED TO PLUMB POST.	CHECKED BY TRN DATE February 3, 2020
WITH HEX NUT AND THREE WASHERS O BE GALVANIZED.	
6" ROUND FOR "I" SHAPE POSTS AS ARE TO BE USED AS AID FOR	
IONS SHALL BE CLASS B OR B1 CONCRETE, HE MISSOURI STANDARD SPECIFICATIONS TION WITH A COMPRESSIVE STRENGTH OF DAYS,	Gx-1
NSTS SHALL BE IN ACCORDANCE WITH THE T RIVERS GREENWAYS EXTERIOR SIGN SPECIFICATIONS.	4Y ARDS TURE
ON MISSOURI STANDARD PLANS DRAWING CTIVE DATE 10/01/2019. THE LATEST VING SHALL BE USED IF DIFFERENT DWN.	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUCTURE Gx-1
AS SHOWN MAY BE INSTALLED CLEAR ZONE OR IN OTHER AREAS WHERE BLE TO VEHICULAR COLLISION OR ARE D.	VERS G UCTURI DF SIGN
EMENT MAY BE SUBJECT TO OTHER Irictions on a case-by-case basis.	GREAT RIVE SIGN STRUC DETAILS OF
JCTURE LOCATION AND PLACEMENT SHALL IY OF THE ENGINEER OF RECORD FOR INSTALLATION.	GRE. SIGN DET/
	STD NO
	<b>Gx-101</b> SHEET NO.
	 1 OF 4
	 SHEET NO.

23

APPROVE

WIDE	FLANG	E STRU	CTURAL	STEEL	POSTS	DESIG	N DATA				PEF	FORA	TED	FUSE	PLAT	E DA	ΤΑ Τ	ABLE						SF	LICE	PLA	TE D	ΑΤΑ ΤΑ	BLE		
POST DES. NO.	NOM. SIZE (IN.)	WEI LB/FT	GHT LB∕IN	DEPTH (IN.)	FLA WIDTH (IN.)	THICK (IN.)	WEB THICK (IN.)	POST DESIGN NO.	F (IN.)	G (IN.)	H (IN.)	J (IN.)	к (IN.)	L (IN.)	M (IN.)	N (IN.)	d1 (IN.)	d2 (IN.)	P (IN.)	BOLT DIA. (IN.)	WT. (EA.) (LBS.)	POST DESIGN NO.	J (IN.)	к (IN.)	(IN.)	U (IN.)	d1 (IN.)	BOLT DIA. (IN.)	WT. (EA.) (LBS.)	W OD IN.	ASHER ID TH IN.
1	W6	15	1.25	6	6	<u> </u>	<u> </u>	1	5	1 4	1 🛓	6	3 ½	1 4	1 <del>1</del>	<u>3</u> 4	11 16	1 4	<u> </u>	<u>5</u> 8	1.67	1	6	3 ½	1 🛓	4	11 16	5 8	4.89	1 <u>5</u> 16	16 11

THE WEIGHT OF STRUCTURAL STEEL POSTS SHOWN IN THE CONTRACT HAS BEEN COMPUTED USING THE WEIGHTS SHOWN.



PERFORATED FUSE PLATE AND SPICE PLATE SHALL BE FABRICATED FROM ASTM A 36 STRUCTURAL STEEL.

- (7)

M M N

ELEVATION C-C

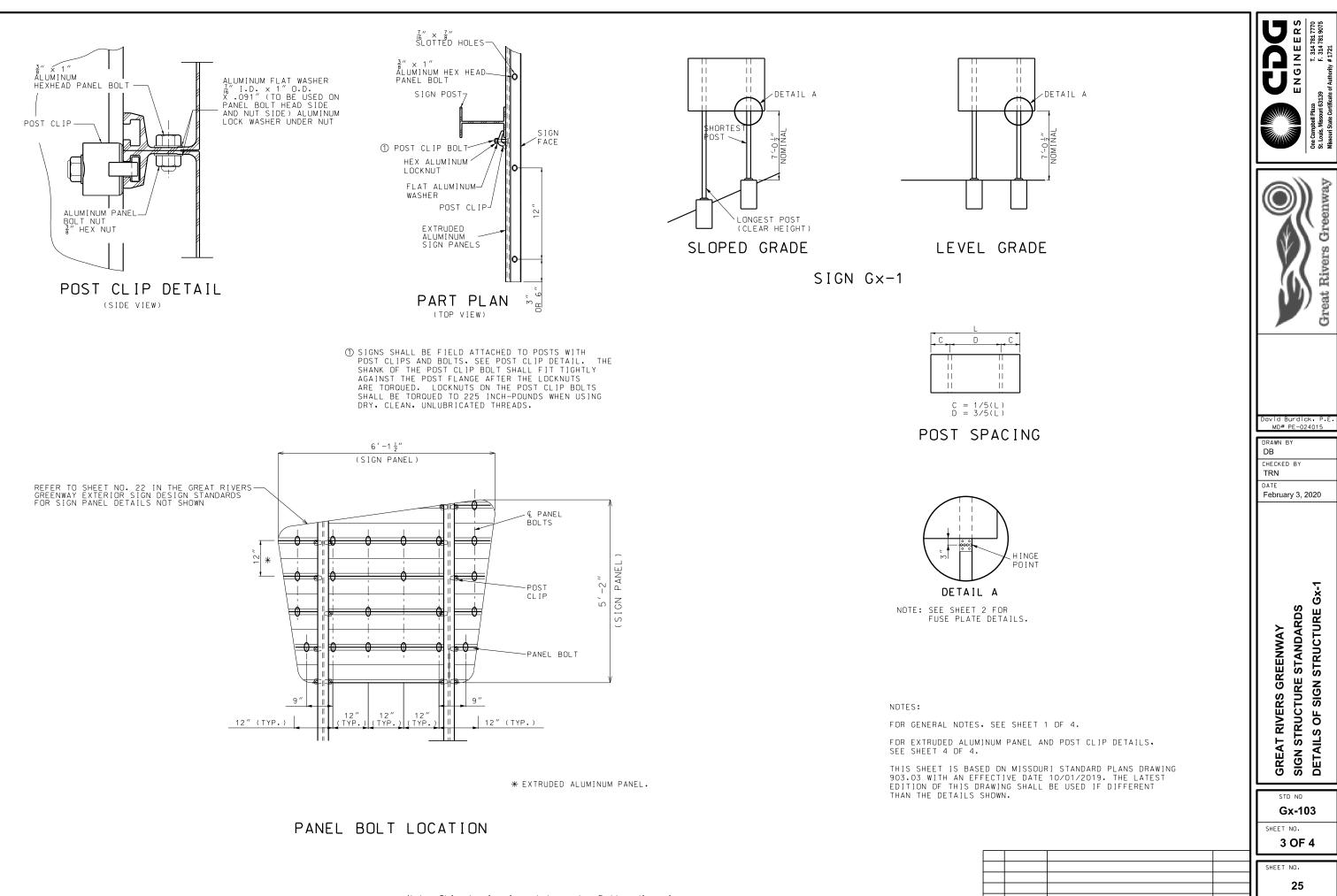
N M

PERFORATED FUSE PLATE THICKNESS = P SPLICE PLATE THICKNESS = U

903.03 WITH AN EFFECTIVE DATE 10/01/2019. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT

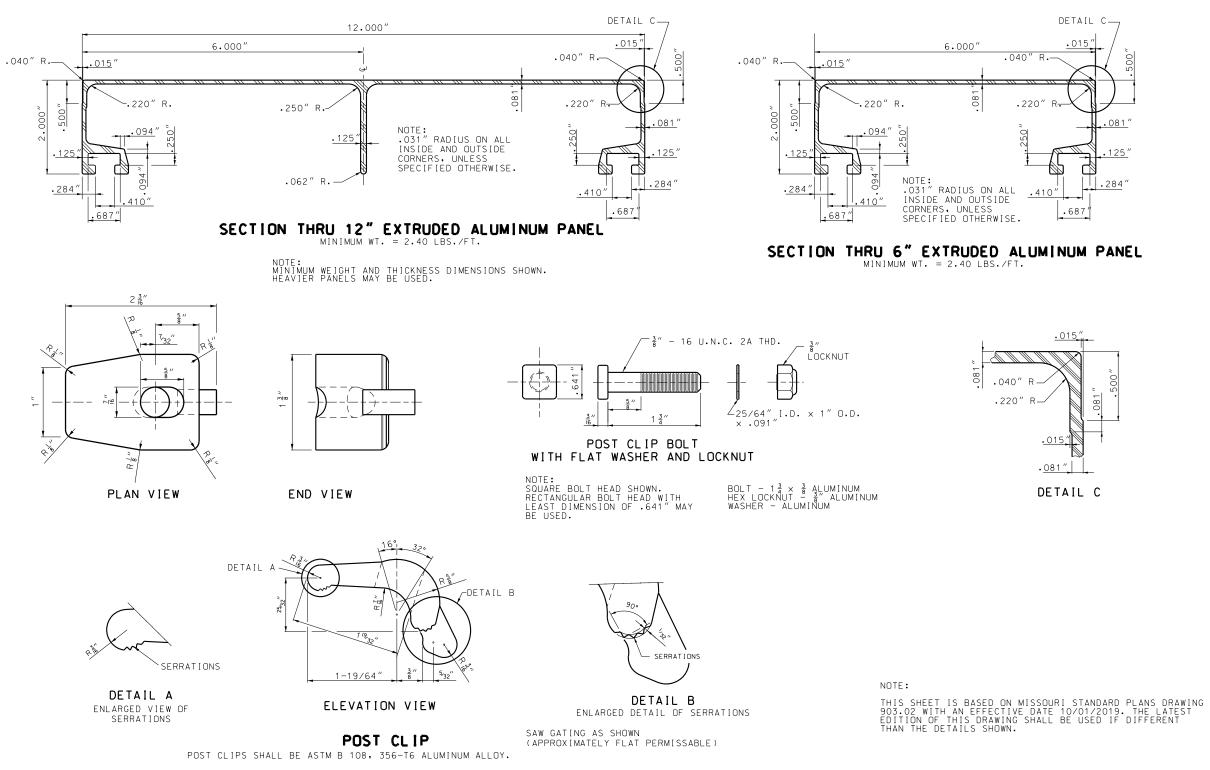
STD NO				
Gx-10				
SHEET NO.				
2 OF				
SHEET NO.				
1 24				
24				
	APPROVED	DESCRIPTION	DATE	EV.

	A Control of A Con
	Great Rivers Greenway
	David Burdick, P.E. MO# PE-024015 DRAWN BY DB CHECKED BY TRN DATE February 3, 2020
	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUCTURE Gx-1
	STD NO Gx-102 SHEET NO. 2 OF 4
-1	SHEET NO.



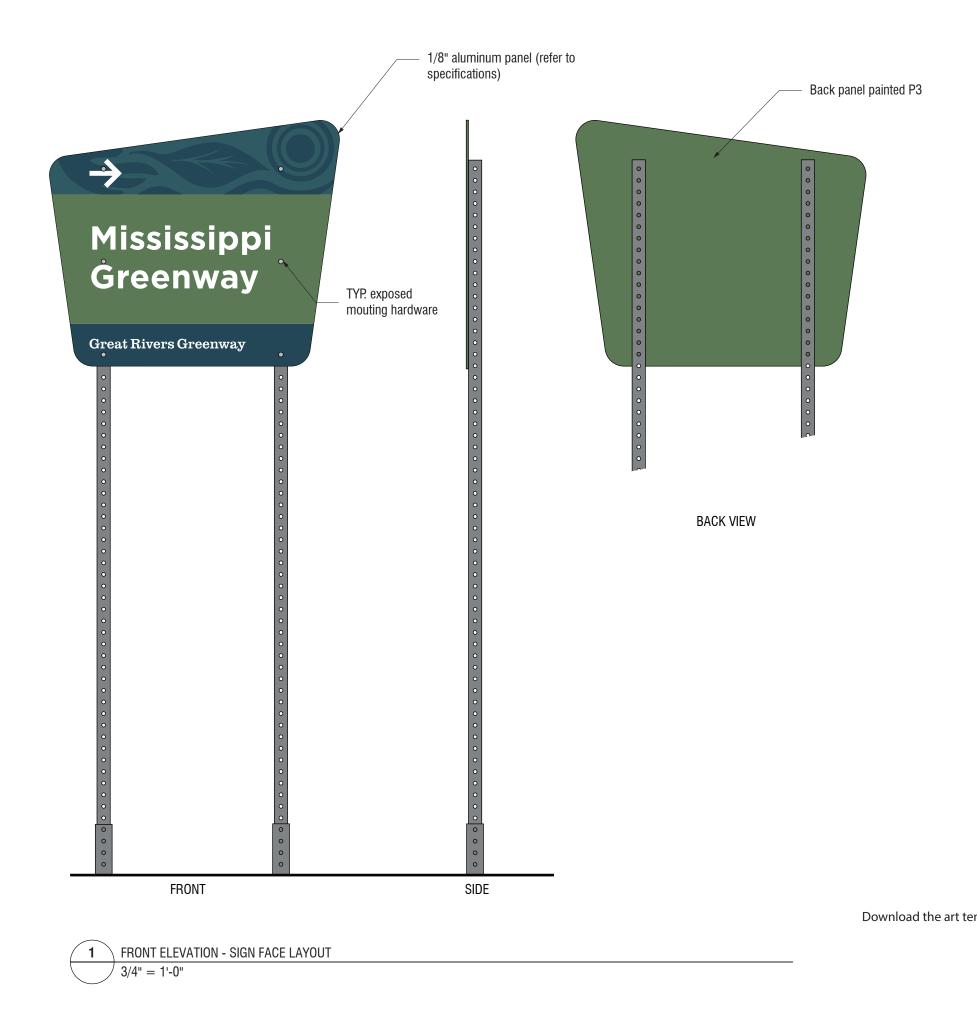
Note: This drawing is not to scale. Follow dimensions.

REV.	DATE	DESCRIPTION	APPROVED



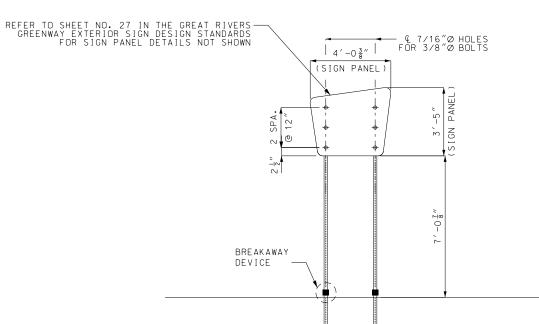
	Control of A the function of A
-	Great Rivers Greenway
	David Burdick, P.E. MD# PE-024015 DRAWN BY DB CHECKED BY TRN DATE February 3, 2020
	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUCTURE Gx-1
	STD NO Gx-104 SHEET NO. 4 OF 4
D	SHEET NO. <b>26</b>

				17	
					SHE
REV.	DATE	DESCRIPTION	APPROVED		



## REFER TO PAGES 28 & 29 FOR STRUCTURAL SIGNAGE DETAILS

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-s5bbc97d803346128



SIGN Gx-2

	PUST AN	D ANC	HOR DATA TABLE			
	POST		ANCHOR	BREAKAWA	Y NEEDED	
	1031	NORN	MAL OR OMNI-DIRECTIONAL	NUMBER OF POSTS		
GAUGE	SIZE	GAUGE	SIZE	1	2	
12	2.5″×2.5″	7	3″ X 3″ X 36″ OD	NO	YES	

-0

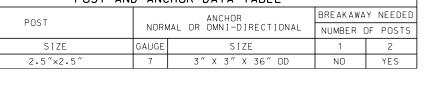
3″

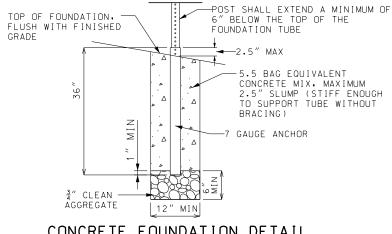
- BOLT HOLE DIAMETER -  ${}^{17}32''$ - 2 PER SIGN ON ALL 4 SIDES

7 GAUGE ANCHOR

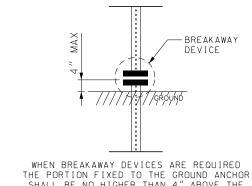
FABRICATION DETAIL

3









7 GAUGE

ANCHOR -

PSST

SHALL BE NO HIGHER THAN 4" ABOVE THE FINISHED GRADE.

 $\frac{3}{8}''~\times$  3.5" shoulder bolt and nut

ANCHOR BOLT DETAIL FOR 2.5" PSST 2 SHOULDER BOLTS REQUIRED INSTALLED PERPENDICULAR TO EACH OTHER

ANCHOR BOLT DETAIL

BREAKAWAY DETAILS

DESIGN SPECS: AA

REV.

DATE

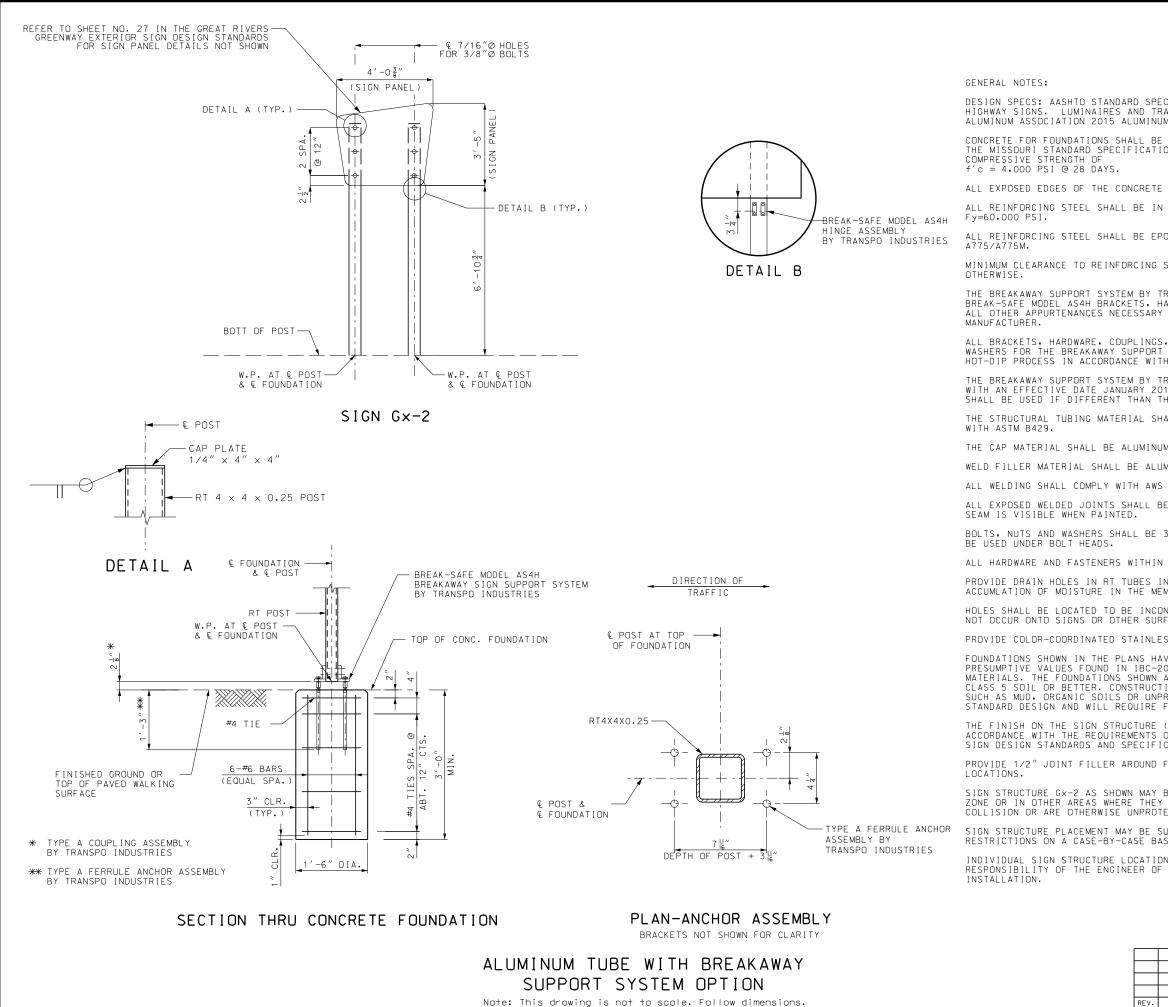


Note: This drawing is not to scale. Follow dimensions.

CENERAL NOTES: DESIGN SPECS: AMAN'D STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS TO A HOLMAN SPECIFICATIONS FOR STRUCTURAL SUPPORTS TO A HOLMAN SPECIFICATIONS FOR STRUCTURAL SUPPORTS TO A HOLMAN STRUCTURA AND TARFIC SINALS - 1388 HEXERIZ 2001 AND LATEST INTERING FOR STRUCTURAL STELE POSTS. DESTS AND ANOTHER SECTION 1080 OF THE MISSIONI STRUCTURAL SUPPORTS TO A HOLMAN SPECIFICATIONS FOR STRUCTURAL SUPPORTS SALE HOLMAN SPECIFICATIONS FOR STRUCTURAL SUPPORTS SALE HOLMAN SPECIFICATIONS FOR STRUCTURAL SUPPORTS SALE IN THE NATURE AND STRUCTURAL STRUCTURAL SUPPORTS SALE IN THE NATURE AND STRUCTURAL STRUCTURAL SUPPORTS SALE BURNES OR BEADS IN THE WASHER AND ANOTHER COMPLEXING HET THE CARACTURAL SPECIFICATIONS SHALL BE TO THE STRUCTURAL SUPPORTS OF OR STRUCTURAL IN STRUCTURE SALE BURNES ON AND ALL STRUCTURE WITH HE THERABES SALE AND STRUCTURE INSTALLED IN STALLED FOR STRUCTURES SALE BURNES OF CARE THEY SO FOR THE INSTALLATION SHALL BE STRUCTURES OF THE COMPLEXIES IN STRUCTURES SALE BURNES OF IN STRUCTURES STRUCTURES OF THE SECTION OF THE STRUCTURES SALE BURNES STRUCTURES OF THE SECTION SALE BURNES OF THE STRUCTURES OF THE STRUCTURES OF THE STRUCTURE IN STANDARDS AND SECTION OF THE STRUCTURES OF THE STRUCTURE SO THE STRUCTURE DOCTOR AND PLANES DERIMINES STRUCTURES OF THE SECTION STRUCTURE DOCTOR AND PLANES DEAMING STON STRUCTURES OF THE SECTION OF THE SECOND FOR STRUCTURE SUBJECTIVE OF THE SECOND FOR ACCENTRY SALE STRUCTURE SUBJECTIVE OF THE STRUCTURE INSTALLED UNDER STRUCTURE INSTALLED UNDER TO OTHER REQUIREMENTS OF RESTRUCTURE INSTALLED UNDER STRUCTURE DOCTOR AND PLANES DEAMING STON STRUCTURE DOCTOR AND CLISSION STRUCTURES OF TO STRUCTURES OF A STRUCTURE INSTALLED UNDER STRUCTURES OF A STRUCTURE INSTALLED UNDER STRUCTURES OF A STRUC		
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STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFTIC SIGNALS 1985 LEXCEPT 2001 AND LATEST INTERIMS FOR STRUCTURAL STEEL POSTS). POSTS AND ANCHOR SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER SECTION 1060 OF THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION. METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE ALLOWED. REMOVE ALL GALVANIZING RUNS OR BEADS IN THE WASHER AREA. INSTALLATION OF THE BREAKAWAY ASSEMBLY SYSTEM INCLUDING HARDWARE, BOLTS, NUTS, WASHERS AND ALL OTHER APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION SHALL BE PER THE MANUFACTURERS REQUIREMENTS. THE THREADS SHALL BE BURRED AT THE NUT USING A CENTER PUNCH TO PREVENT NUT FROM LOOSENING. ALL BREAKAWAY DEVICES USED ON AN INSTALLATION SHALL BE CERTIFIED NCHRP 350 COMPLIANT. THE FINISH ON THE POSTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF GREAT RIVERS CREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. THIS SHEET IS BASED ON MISSOURI STANDARD PLANS DRAWING 930.30 WITH AN EFFECTIVE DATE OI/01/2020. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT THAN THE DETAILS SHOWN. SIGN STRUCTURES CALL DE UNSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUBGEPTIBLE TO VEHICULAR COLLISION OR ARE DIFFERMISE UNROTECTED. SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRICTIONS ON A CASE-BY-CASE BASIS. INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION. STO NO <b>GX-201</b> SHEET NO. <b>1 OFF 2</b>		
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METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE ALLOWED. REMOVE ALL GALVANIZING RUNS OR BEADS IN THE WASHER AREA. INSTALLATION OF THE BREAKAWAY ASSEMBLY SYSTEM INCLUDING HARDWARE, BUTS. NUTS. WASHERS AND ALL OTHER APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION SHALL BE PER THE MANUFACTURERS REQUIREMENTS. THE THREADS SHALL BE BURRED AT THE NUT USING A CENTER PUNCH TO PREVENT NUT FROM LOOSENING. ALL BREAKAWAY DEVICES USED ON AN INSTALLATION SHALL BE CERTIFIED NCHRP 350 COMPLIANT. THE FINISH ON THE POSTS SHALL BE IN ACCORDANCE WITH THE READIREMENTS OF GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. THIS SHEET IS BASED ON MISSOURI STANDARD PLANS DRAWING 903.03 WITH AN EFFECTIVE DATE OI/01/2020. THE LATEST THAN THE DETAILS SHOWN. SIGN STRUCTURES GR-2 AS SHOWN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE OTHERWISE UNPROTECTED. SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRICTIONS ON A CASE-BY-CASE BASIS. INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION. SITD NO GX-2001 SHEET NO. 1 OFF 2	POSTS AND ANCHOR SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER SECTION 1080 OF THE MISSOURI	
REMOVE ALL GALVANIZING RUNS OR BEADS IN THE WASHER AREA. INSTALLATION OF THE BREAKAWAY ASSEMBLY SYSTEM INCLUDING HARDWARE. BOLTS. NUTS. WASHERS AND ALL OTHER APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION SHALL BE PER THE MANUFACTURERS REQUIREMENTS. THE THREADS SHALL BE BURRED AT THE NUT USING A CENTER PUNCH TO PREVENT NUT FROM LOOSENING. ALL BREAKAWAY DEVICES USED ON AN INSTALLATION SHALL BE CERTIFIED NCHRP 350 COMPLIANT. THE FINISH ON THE POSTS SHALL BE IN ACCORDANCE WITH THE RECOURDENCE OF GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. THIS SHEET IS BASED ON MISSOURI STANDARD PLANS DRAWING 903.03 WITH AN EFFECTIVE DATE 01/01/2020. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT THAN THE DETAILS SHOWN. SIGN STRUCTURES GX-2 AS SHOWN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE OTHERWISE UNPROTECTED. SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRUCTIORS ON A CASE-BY-CASE BASIS. INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION. SITO NO GX-2001 SHEET NO. 1 OF 2	METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE	MD# PE-024015 DRAWN BY
INSTALLATION OF THE BREAKAWAY ASSEMBLY SYSTEM INCLUDING HARDWARE, BOLTS, NUTS, WASHERS AND ALL OTHER APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION SHALL BE PER THE MANUFACTURERS REQUIREMENTS. THE THREADS SHALL BE BURRED AT THE NUT USING A CENTER PUNCH TO PREVENT NUT FROM LOOSENING. ALL BREAKAWAY DEVICES USED ON AN INSTALLATION SHALL BE CERTIFIED NCHRP 350 COMPLIANT. THE FINISH ON THE POSTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. THIS SHEET IS BASED ON MISSOURI STANDARD PLANS DRAWING 903.03 WITH AN EFFECTIVE DATE 01/01/2020. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT THAN THE DETAILS SHOWN. SIGN STRUCTURES GX-2 AS SHOWN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE OTHERWISE UNPROTECTED. SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRICTIONS ON A CASE-BY-CASE BASIS. INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION. STD NO GX-2011 SHEET NO. 1 OF 2	REMOVE ALL GALVANIZING RUNS OR BEADS IN THE WASHER	CHECKED BY
PUNCH TO PREVENT NUT FROM LOOSENING. ALL BREAKAWAY DEVICES USED ON AN INSTALLATION SHALL BE CERTIFIED NCHRP 350 COMPLIANT. THE FINISH ON THE POSTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. THIS SHEET IS BASED ON MISSOURI STANDARD PLANS DRAWING 903.03 WITH AN EFFECTIVE DATE 01/01/2020. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT THAN THE DETAILS SHOWN. SIGN STRUCTURES GX-2 AS SHOWN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE OTHERWISE UNPROTECTED. SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRICTIONS ON A CASE-BY-CASE BASIS. INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION. SITO NO GX-201 SHEET NO. 1 OF 2	INSTALLATION OF THE BREAKAWAY ASSEMBLY SYSTEM INCLUDING HARDWARE, BOLTS, NUTS, WASHERS AND ALL OTHER APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION SHALL BE PER THE	
CERTIFIED NCHRP 350 COMPLIANT. THE FINISH ON THE POSTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. THIS SHEET IS BASED ON MISSOURI STANDARD PLANS DRAWING 903.03 WITH AN EFFECTIVE DATE 01/01/2020. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT THAN THE DETAILS SHOWN. SIGN STRUCTURES GX-2 AS SHOWN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE OTHERWISE UNPROTECTED. SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRICTIONS ON A CASE-BY-CASE BASIS. INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION. STD NO GX-201 SHEET NO. 1 OF 2		
THE REQUIREMENTS OF GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. THIS SHEET IS BASED ON MISSOURI STANDARD PLANS DRAWING 903.03 WITH AN EFFECTIVE DATE 01/01/2020. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT THAN THE DETAILS SHOWN. SIGN STRUCTURES Gx-2 AS SHOWN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE OTHERWISE UNPROTECTED. SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRICTIONS ON A CASE-BY-CASE BASIS. INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION. SID NO GX-201 SHEET NO. 1 OF 2		
STD NO GX-201 SHEET NO. 1 OF 2	THE REQUIREMENTS OF GREAT RIVERS GREENWAYS EXTERIOR	RDS 3x-2
STD NO GX-201 SHEET NO. 1 OF 2	903.03 WITH AN EFFECTIVE DATE 01/01/2020. THE LATEST EDITION OF THIS DRAWING SHALL BE USED IF DIFFERENT	EENWA' STANDA }TRUC. (
STD NO GX-201 SHEET NO. 1 OF 2	WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE	ERS GR CTURE ( F SIGN S
STD NO GX-201 SHEET NO. 1 OF 2	SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER	T RIV STRU LS OI
Gx-201 SHEET NO. 1 OF 2	INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR	GREAT SIGN S DETAII
SHEET NO. 1 OF 2		
SHEET NO.		1 OF 2
28		

DESCRIPTION

APPROVED

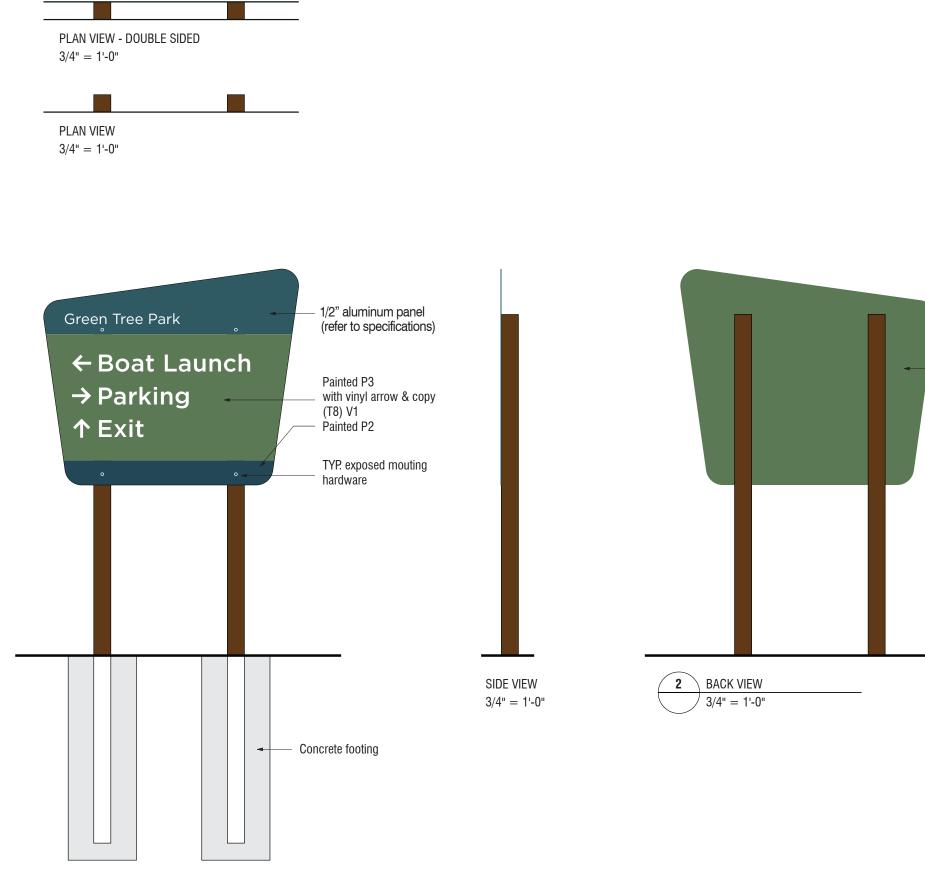


	ENGINEERS 1. 34781 7770 F. 314 781 9075 of Authority # 1721
ARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR AND TRAFFIC SIGNALS - 2013 (6TH EDITION) AND ALUMINUM DESIGN MANUAL.	Die Campbell Page St. Louis, Missouri 53439 Missouri 53426 Missouri 53446 Missouri 53466 Missouri 53466
HALL BE CLASS B CONCRETE, IN ACCORDANCE WITH IFICATIONS FOR HIGHWAY CONSTRUCTION, WITH A	One Cam St. Louis, Missouri 3
DNCRETE SHALL HAVE A 3/4" CHAMFER.	
_ BE IN ACCORDANCE WITH ASTM A615 GRADE 60,	Greenway
_ BE EPOXY COATED IN ACCORDANCE WITH ASTM	
DRCING STEEL SHALL BE 1 1/2", UNLESS NOTED	
EM BY TRANSPO INDUSTRIES SHALL INCLUDE THE KETS, HARDWARE, COUPLINGS, ANCHORS, HINGES AND CESSARY FOR THE COMPLETE INSTALLATION PER THE	Great Rivers
JPLINGS, ANCHORS, HINGES, BOLTS, NUTS AND SUPPORT SYSTEM SHALL BE GALVANIZED BY THE NCE WITH ASTM A153.	Gre
EM BY TRANSPO INDUSTRIES IS BASED ON DETAILS JARY 2015. THE LATEST EDITION OF THESE DETAILS THAN THE DETAILS SHOWN.	
RIAL SHALL BE ALUMINUM, 6063-T6 IN ACCORDANCE	
ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM B209.	
BE ALUMINUM, 5356 AND COMPLY WITH AWS A5.10.	David Burdick, P.E. MD# PE-024015
ITH AWS D1.2 "STRUCTURAL WELDING CODE-ALUMINUM". Shall be filled and ground smooth so that no ED.	DRAWN BY DB CHECKED BY
ALL BE 300 SERIES STAINLESS STEEL. WASHERS SHALL	TRN DATE February 3, 2020
WITHIN REACH SHALL BE VANDAL RESISTANT. TUBES IN LOCATIONS AS NEEDED TO PREVENT THE THE MEMBERS.	]
BE INCONSPICUOUS AND SUCH THAT DRAINAGE DOES HER SURFACES SUBJECT TO STAINING.	
STAINLESS STEEL BUG MESH OVER DRAIN HOLES.	
LANS HAVE BEEN DESIGNED BASED ON THE N IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL SHOWN ARE SUITABLE FOR CONSTRUCTION IN ANY NSTRUCTION OF THE FOUNDATIONS IN LESSER SOILS OR UNPREPARED SOILS IS NOT COVERED BY THIS EQUIRE FURTHER EVALUATION.	REENWAY STANDARDS STRUC. Gx-2
JCTURE (POSTS AND PLATES) SHALL BE IN IMENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR SPECIFICATIONS.	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUC. Gx-2
AROUND FOUNDATION AT PAVED WALKING SURFACE	ERS GF TURE SIGN (
WN MAY BE INSTALLED WITHIN THE ROADWAY CLEAR RE THEY MAY BE SUSCEPTIBLE TO VEHICULAR UNPROTECTED.	GREAT RIVERS GR SIGN STRUCTURE DETAILS OF SIGN (
AY BE SUBJECT TO OTHER REQUIREMENTS OR CASE BASIS.	REA:
_OCATION AND PLACEMENT SHALL BE THE NEER OF RECORD FOR EACH SIGN STRUCTURE	
	STD NO Gx-202
	SHEET NO.
	2 OF 2
	SHEET NO.
REV. DATE DESCRIPTION APPROVED	29

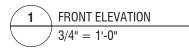
DATE	DESCRIPTION

APPROVED

#### Great Rivers Greenway Sign Array: GX-3 Vehicular Guide

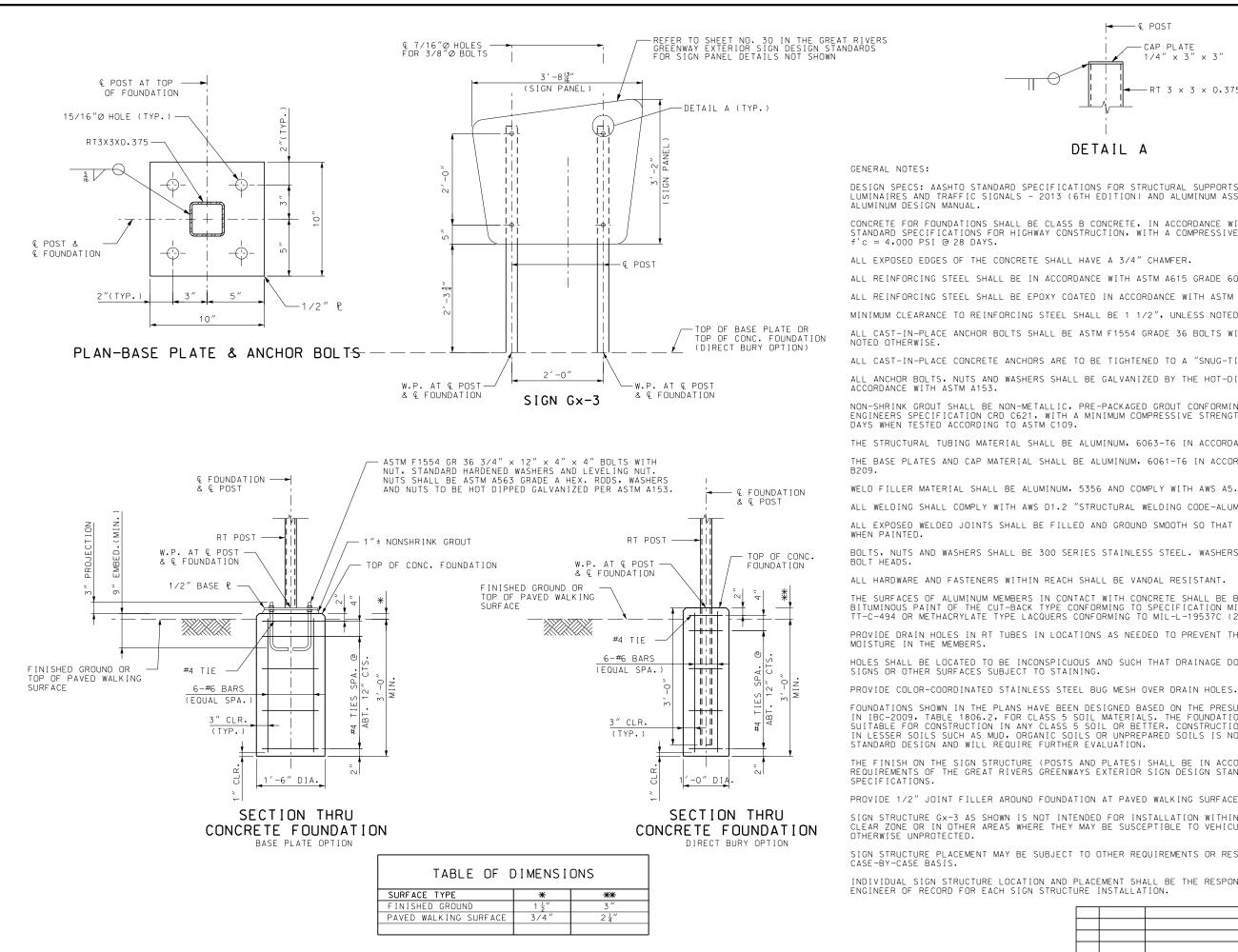


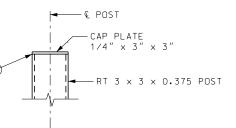
Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sa644bf86be840ada



## REFER TO PAGE 31 FOR STRUCTURAL SIGNAGE DETAILS

Back panel painted P3





#### DETAIL A

DESIGN SPECS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS - 2013 (6TH EDITION) AND ALUMINUM ASSOCIATION 2015

CONCRETE FOR FOUNDATIONS SHALL BE CLASS B CONCRETE, IN ACCORDANCE WITH THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, WITH A COMPRESSIVE STRENGTH OF

ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60, Fy=60,000 PSI. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775/A775M. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2", UNLESS NOTED OTHERWISE. ALL CAST-IN-PLACE ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 36 BOLTS WITH 90° BEND UNLESS

ALL CAST-IN-PLACE CONCRETE ANCHORS ARE TO BE TIGHTENED TO A "SNUG-TIGHT" CONDITION. ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED BY THE HOT-DIP PROCESS IN

NON-SHRINK GROUT SHALL BE NON-METALLIC, PRE-PACKAGED GROUT CONFORMING TO CORPS OF ENGINEERS SPECIFICATION CRD\_C621, WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28

THE STRUCTURAL TUBING MATERIAL SHALL BE ALUMINUM, 6063-T6 IN ACCORDANCE WITH ASTM B429. THE BASE PLATES AND CAP MATERIAL SHALL BE ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM

WELD FILLER MATERIAL SHALL BE ALUMINUM, 5356 AND COMPLY WITH AWS A5.10.

ALL WELDING SHALL COMPLY WITH AWS D1.2 "STRUCTURAL WELDING CODE-ALUMINUM".

ALL EXPOSED WELDED JOINTS SHALL BE FILLED AND GROUND SMOOTH SO THAT NO SEAM IS VISIBLE

BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES STAINLESS STEEL, WASHERS SHALL BE USED UNDER

THE SURFACES OF ALUMINUM MEMBERS IN CONTACT WITH CONCRETE SHALL BE BACK PAINTED WITH BITUMINOUS PAINT OF THE CUT-BACK TYPE CONFORMING TO SPECIFICATION MIL-C-450 B (1) OR TT-C-494 OR METHACRYLATE TYPE LACOUERS CONFORMING TO MIL-L-19537C (2).

PROVIDE DRAIN HOLES IN RT TUBES IN LOCATIONS AS NEEDED TO PREVENT THE ACCUMLATION OF

HOLES SHALL BE LOCATED TO BE INCONSPICUOUS AND SUCH THAT DRAINAGE DOES NOT OCCUR ONTO

FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DESIGNED BASED ON THE PRESUMPTIVE VALUES FOUND IN IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL MATERIALS. THE FOUNDATIONS SHOWN ARE SUITABLE FOR CONSTRUCTION IN ANY CLASS 5 SOIL OR BETTER. CONSTRUCTION OF THE FOUNDATIONS IN LESSER SOILS SUCH AS MUD, ORGANIC SOILS OR UNPREPARED SOILS IS NOT COVERED BY THIS

THE FINISH ON THE SIGN STRUCTURE (POSTS AND PLATES) SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND

PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION AT PAVED WALKING SURFACE LOCATIONS.

SIGN STRUCTURE GX-3 AS SHOWN IS NOT INTENDED FOR INSTALLATION WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE SUSCEPTIBLE TO VEHICULAR COLLISION OR ARE

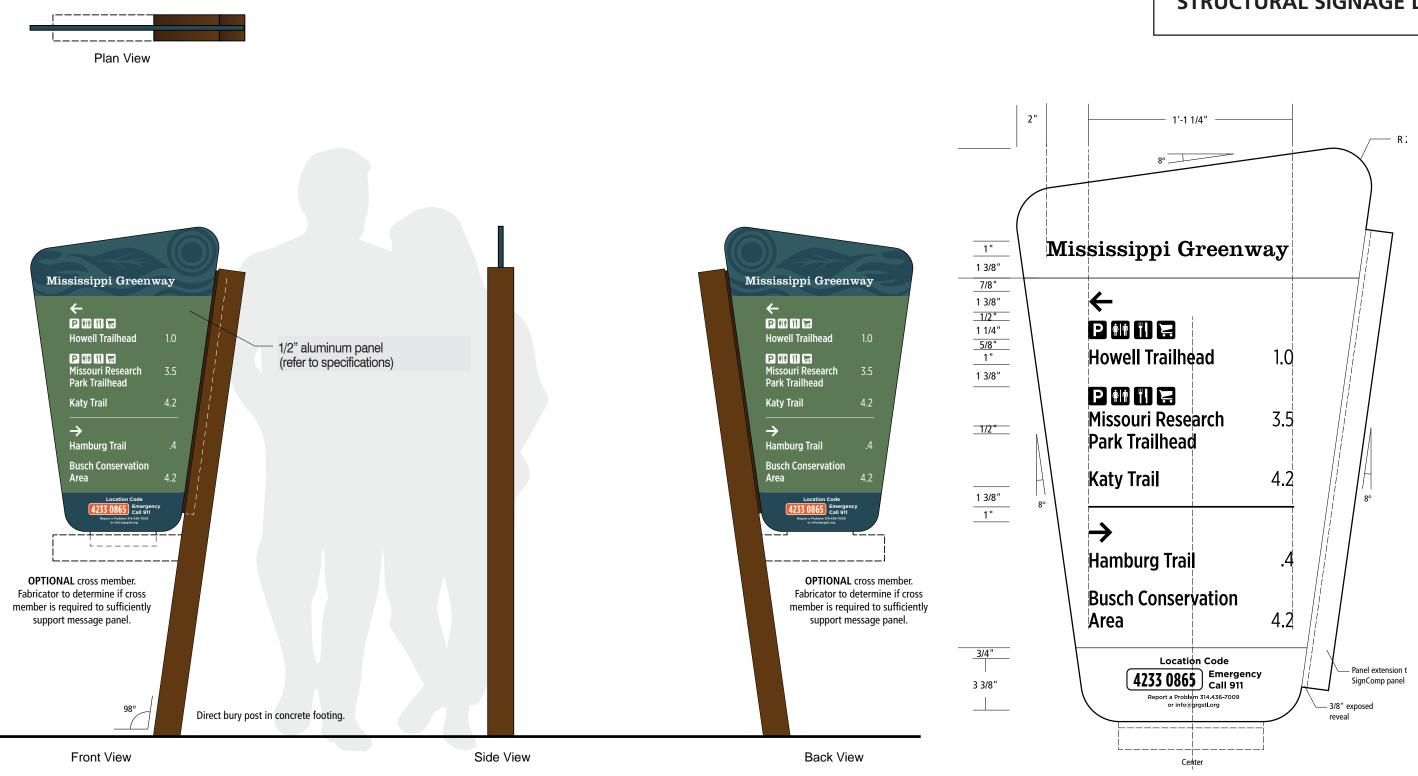
SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR RESTRICTIONS ON A

INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION.

REV.	DATE	DESCRIPTION	APPROVED

	ENGINEERS	One Campbell Plaza T. 314 781 7770 St. Louis, Missouri 63139 F. 314 781 9075 Missouri State Certificate of Authority # 1721
		Great Rivers Greenway
David E MO# DRAWN 6 DB CHECKEI TRN DATE Februa	PE-02 3Y D BY	24015
	RDS	tE Gx-3
VAY	<b>d</b> ∆	CTUR
GREAT RIVERS GREENWAY	SIGN STRUCTURE STANDARDS	DETAILS OFSIGN STRUCTURE Gx-3
GREAT RIVERS GREEN		3

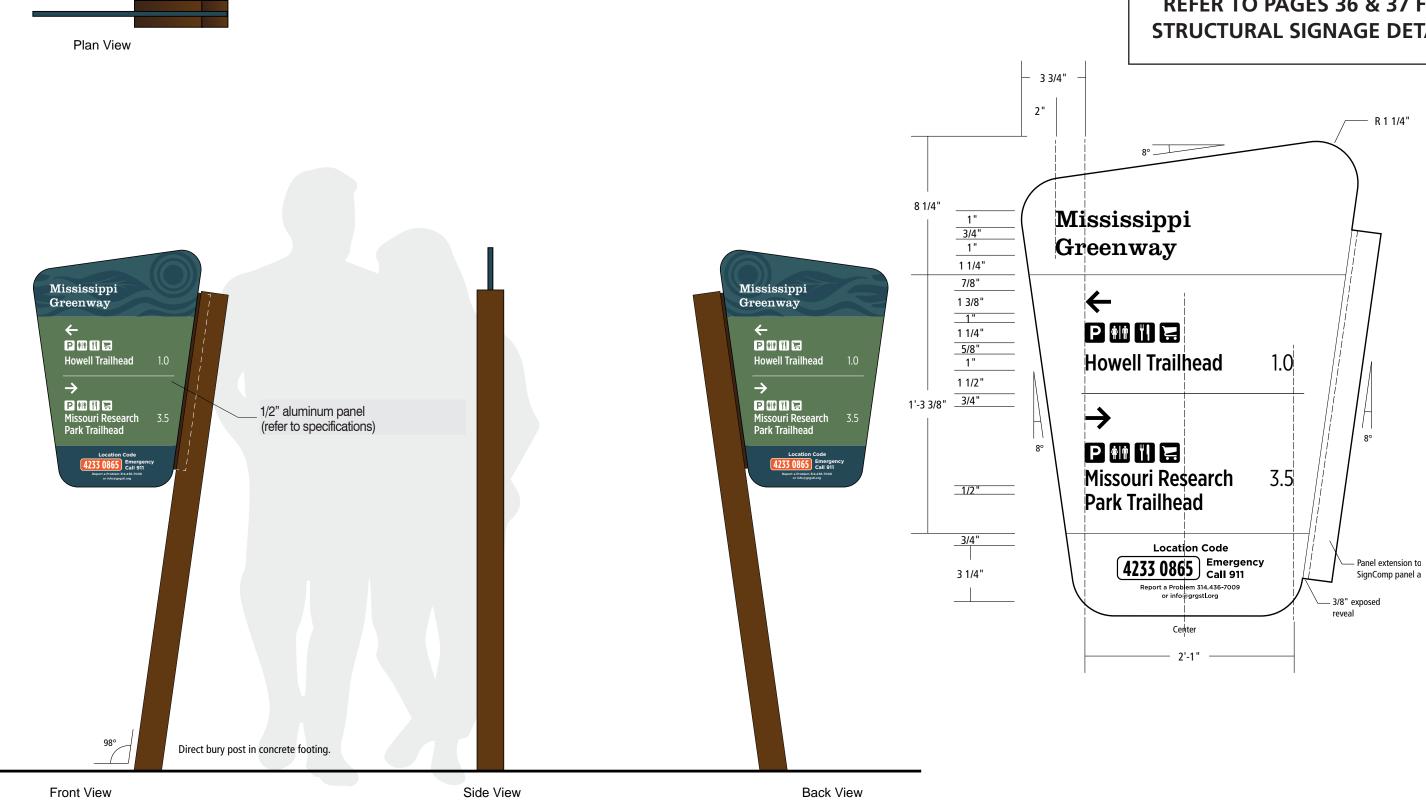
Great Rivers Greenway Sign Array: GX-5 Pedestrian Large Multi-Directional Guide



## **REFER TO PAGES 36 & 37 FOR** STRUCTURAL SIGNAGE DETAILS

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sd8515152b054b0b8

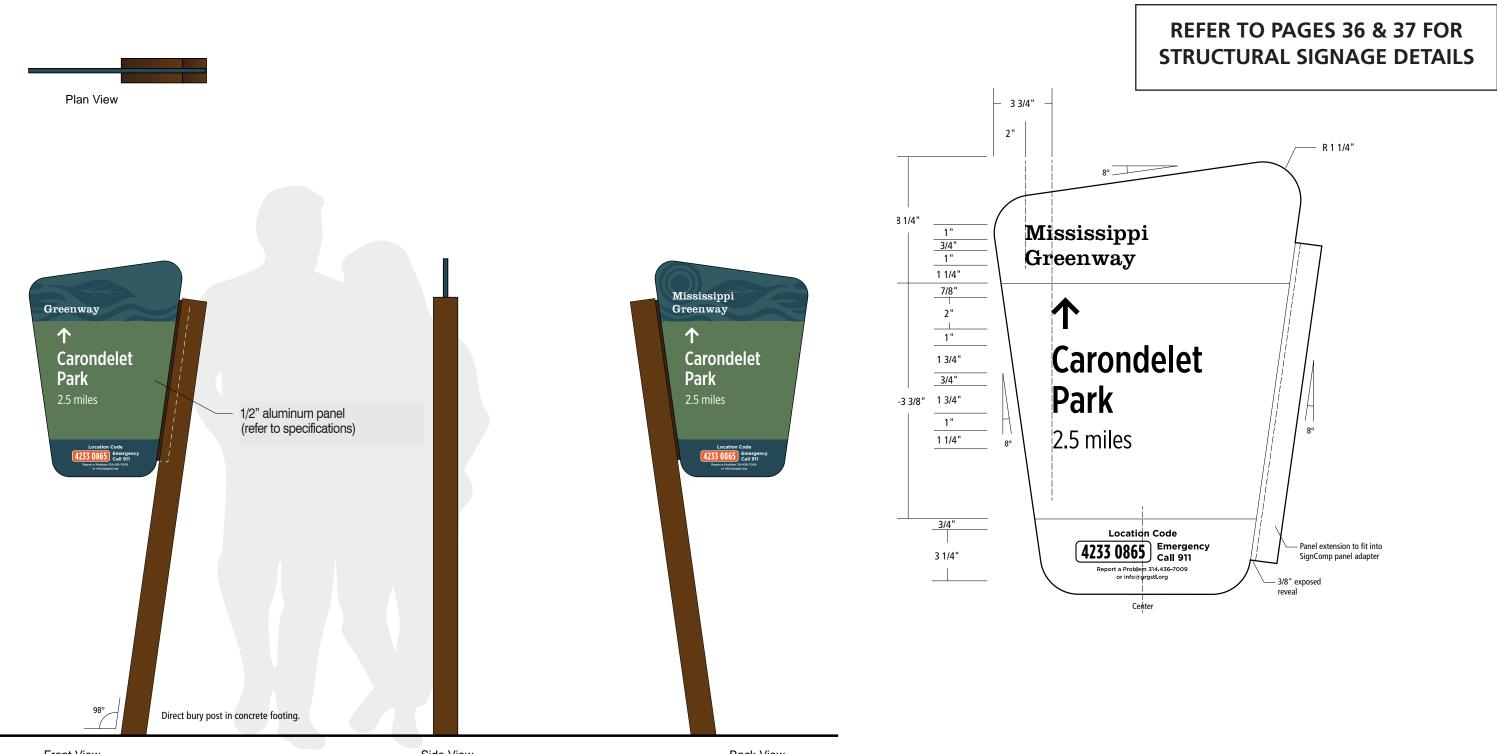
Great Rivers Greenway Sign Array: GX-6 Pedestrian Medium Multi-Directional Guide



## **REFER TO PAGES 36 & 37 FOR** STRUCTURAL SIGNAGE DETAILS

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sacf5ead56884c1d9

#### Great Rivers Greenway Sign Array: GX-7 Pedestrian Medium Single-Directional Guide

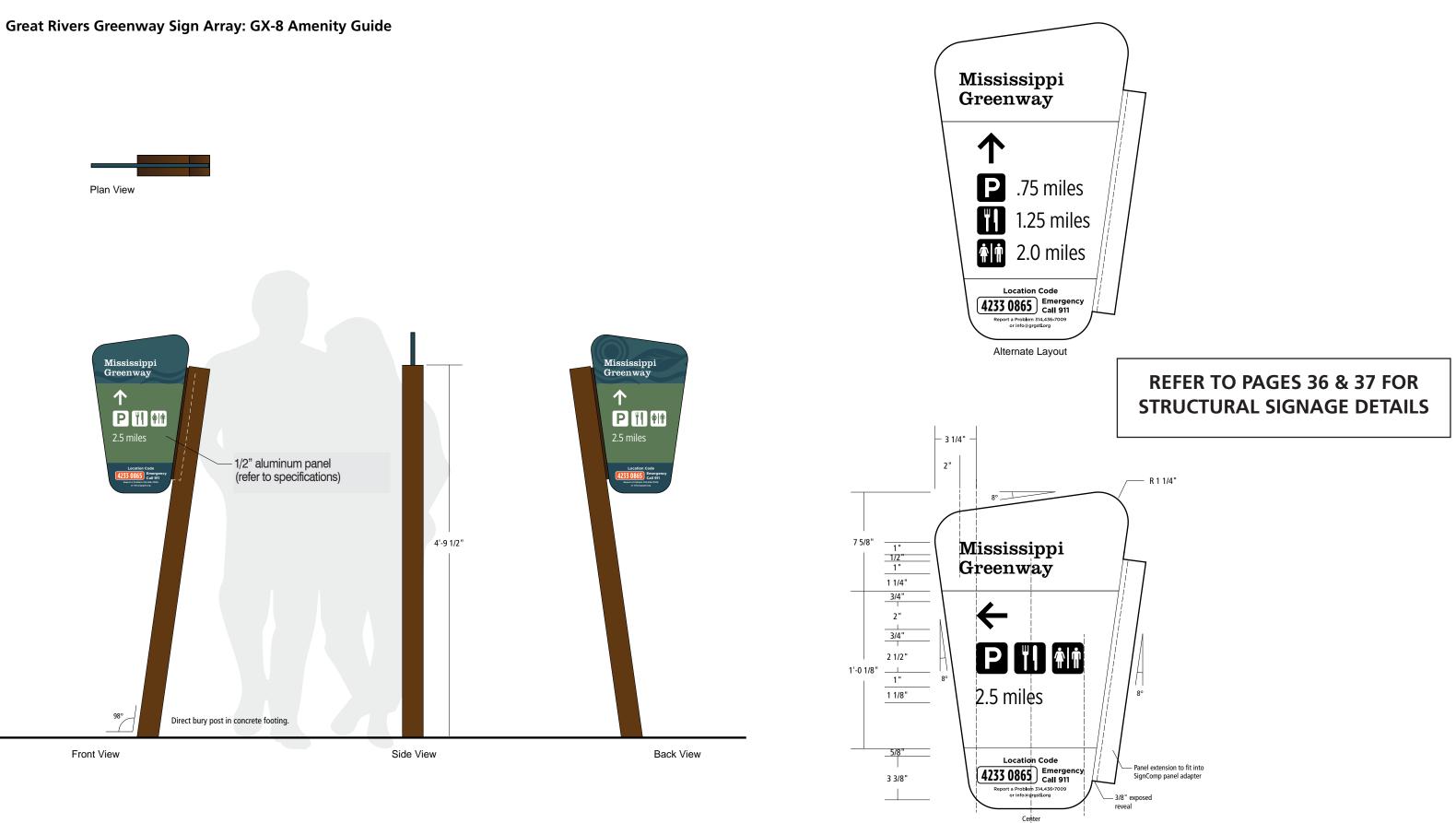


Front View

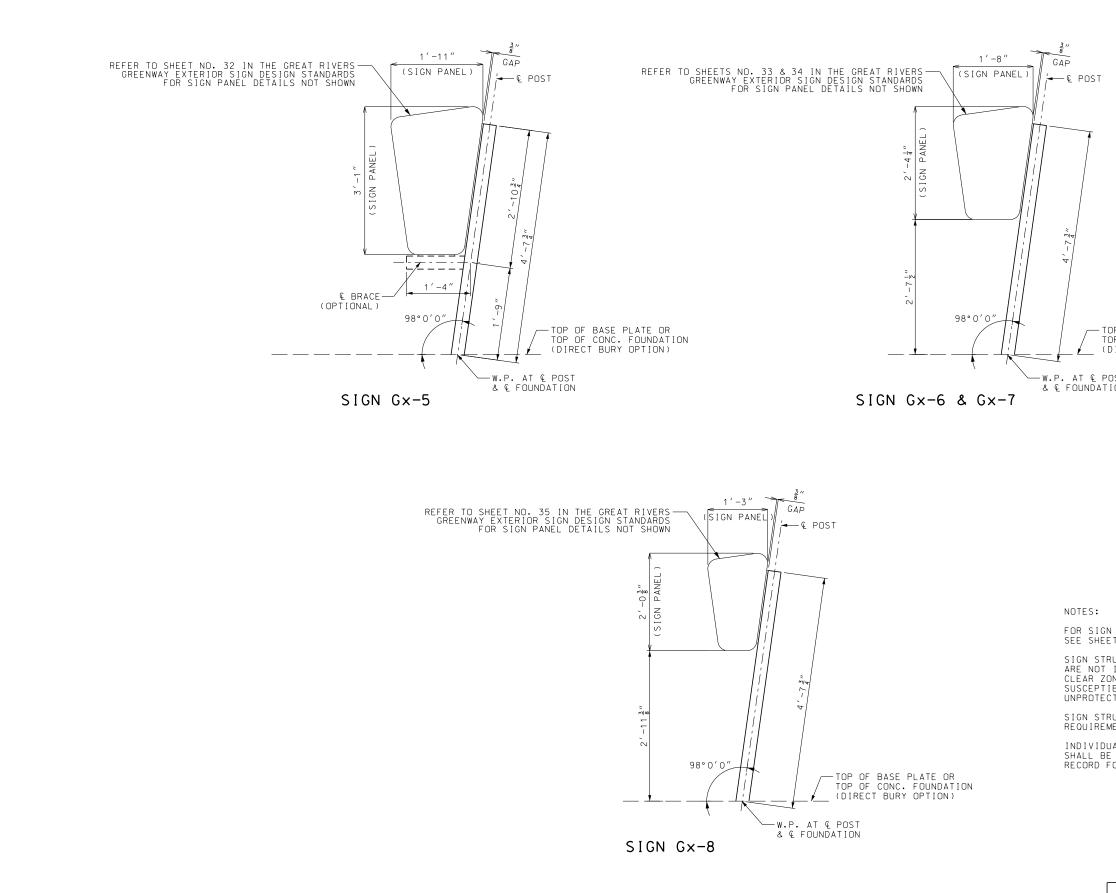
Side View

Back View

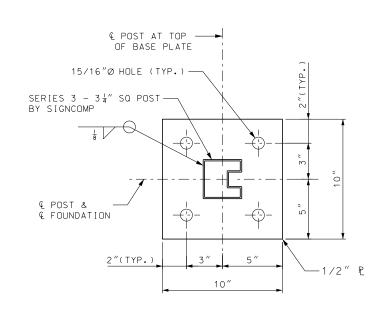
Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-s33535accf1c4b038



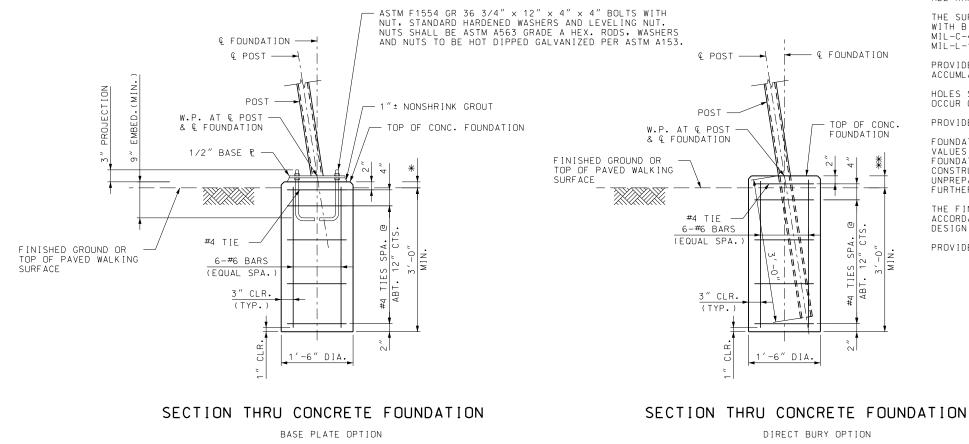
Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sdfe5350c12a4083a



					NGINEERS 1. 314 781 7770 F. 314 781 9075 Authofity # 1721
Т					E N G I N E Concembel Flaza C. Louis, firsouri 63139 E. 314 Missouri State Certificate of Authority # 1721
					Great Rivers Greenway
-TOP OF BASE PLATE OR TOP OF CONC. FOUNDATION (DIRECT BURY OPTION)					
. POST ATION					David Burdick, P.E. MD# PE-024015
					DRAWN BY DB CHECKED BY TRN
					DATE February 3, 2020
: IGN STRUCTURE DETAILS NOT SHOWN AND NOTES, HEET NO. 2 OF 2. STRUCTURES Gx-5, Gx-6, Gx-7 & Gx-8 AS SHOWN OT INTENDED FOR INSTALLATION WITHIN THE ROADWAY ZONE OR IN OTHER AREAS WHERE THEY MAY BE PTIBLE TO VEHICULAR COLLISION OR ARE OTHERWISE TECTED. STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REMENTS OR RESTRICTIONS ON A CASE-BY-CASE BASIS. IDUAL SIGN STRUCTURE LOCATION AND PLACEMENT BE THE RESPONSIBILITY OF THE ENGINEER OF D FOR EACH SIGN STRUCTURE INSTALLATION.					GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUC. Gx-5, Gx-6, Gx-7 & Gx
			STD NO Gx-567801		
					SHEET NO. 1 OF 2
					SHEET NO. <b>36</b>
	REV.	DATE	DESCRIPTION	APPROVED	







f'c = 4,000 PSI @ 28 DAYS. OF DIMENSIONS .E \* \*\* SURFACE 3/4" 24

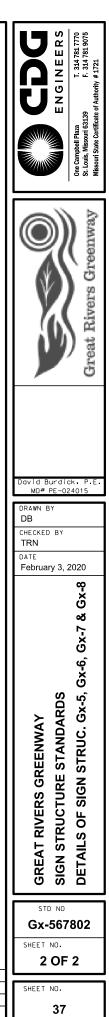
GENERAL NOTES: DESIGN SPECS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS - 2013 (6TH EDITION) AND ALUMINUM ASSOCIATION 2015 ALUMINUM DESIGN MANUAL. ALL EXPOSED EDGES OF THE CONCRETE SHALL HAVE A 3/4" CHAMFER. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60, Fy=60,000 ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775/A775M. ALL CAST-IN-PLACE ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 36 BOLTS WITH 90° BEND ALL CAST-IN-PLACE CONCRETE ANCHORS ARE TO BE TIGHTENED TO A "SNUG-TIGHT" CONDITION. ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED BY THE HOT-DIP PROCESS IN ACCORDANCE WITH ASTM A153. NON-SHRINK GROUT SHALL BE NON-METALLIC, PRE-PACKAGED GROUT CONFORMING TO CORPS OF ENGINEERS SPECIFICATION CRD C621, WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS WHEN TESTED ACCORDING TO ASTM C109. THE SIGN STRUCTURE SHALL BE THE SERIES 3 POST AND PANEL SYSTEM BY SIGNCOMP AND SHALL INCLUDE THE SERIES  $3-3\frac{1}{4}''$  SO. POST, PANEL ADAPTOR, REVEAL, CAP AND ALL OTHER APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION PER THE MANUFACTURER THE BASE PLATE MATERIAL SHALL BE ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM B209. WELD FILLER MATERIAL SHALL BE ALUMINUM, 5356 AND COMPLY WITH AWS A5.10. ALL WELDING SHALL COMPLY WITH AWS D1.2 "STRUCTURAL WELDING CODE-ALUMINUM". ALL EXPOSED WELDED JOINTS SHALL BE FILLED AND GROUND SMOOTH SO THAT NO SEAM IS VISIBLE WHEN PAINTED. ALL HARDWARE AND FASTENERS WITHIN REACH SHALL BE VANDAL RESISTANT. MIL-L-19537C (2). HOLES SHALL BE LOCATED TO BE INCONSPICUOUS AND SUCH THAT DRAINAGE DOES NOT PROVIDE COLOR-COORDINATED STAINLESS STEEL BUG MESH OVER DRAIN HOLES. FOUNDATIONS SHOWN ARE SUITABLE FOR CONSTRUCTION IN ANY CLASS 5 SOIL OR BETTER. CONSTRUCTION OF THE FOUNDATIONS IN LESSER SOILS SUCH AS MUD, ORGANIC SOILS OR UNPREPARED SOILS IS NOT COVERED BY THIS STANDARD DESIGN AND WILL REQUIRE FURTHER EVALUATION. THE FINISH ON THE SIGN STRUCTURE (POSTS, BRACES AND PLATES) SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS.

CONCRETE FOR FOUNDATIONS SHALL BE CLASS B CONCRETE, IN ACCORDANCE WITH THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, WITH A COMPRESSIVE STRENGTH OF PSI. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2", UNLESS NOTED OTHERWISE. UNLESS NOTED OTHERWISE. BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES STAINLESS STEEL. WASHERS SHALL BE USED UNDER BOLT HEADS. THE SURFACES OF ALUMINUM MEMBERS IN CONTACT WITH CONCRETE SHALL BE BACK PAINTED WITH BITUMINOUS PAINT OF THE CUT-BACK TYPE CONFORMING TO SPECIFICATION MIL-C-450 B (1) OR TT-C-494 OR METHACRYLATE TYPE LACQUERS CONFORMING TO WITH CONCRETE STATES. PROVIDE DRAIN HOLES IN SIGNCOMP MEMBERS IN LOCATIONS AS NEEDED TO PREVENT THE ACCUMLATION OF MOISTURE IN THE MEMBERS. OCCUR ONTO SIGNS OR OTHER SURFACES SUBJECT TO STAINING. FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DESIGNED BASED ON THE PRESUMPTIVE VALUES FOUND IN IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL MATERIALS. THE PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION AT PAVED WALKING SURFACE LOCATIONS.

DATE

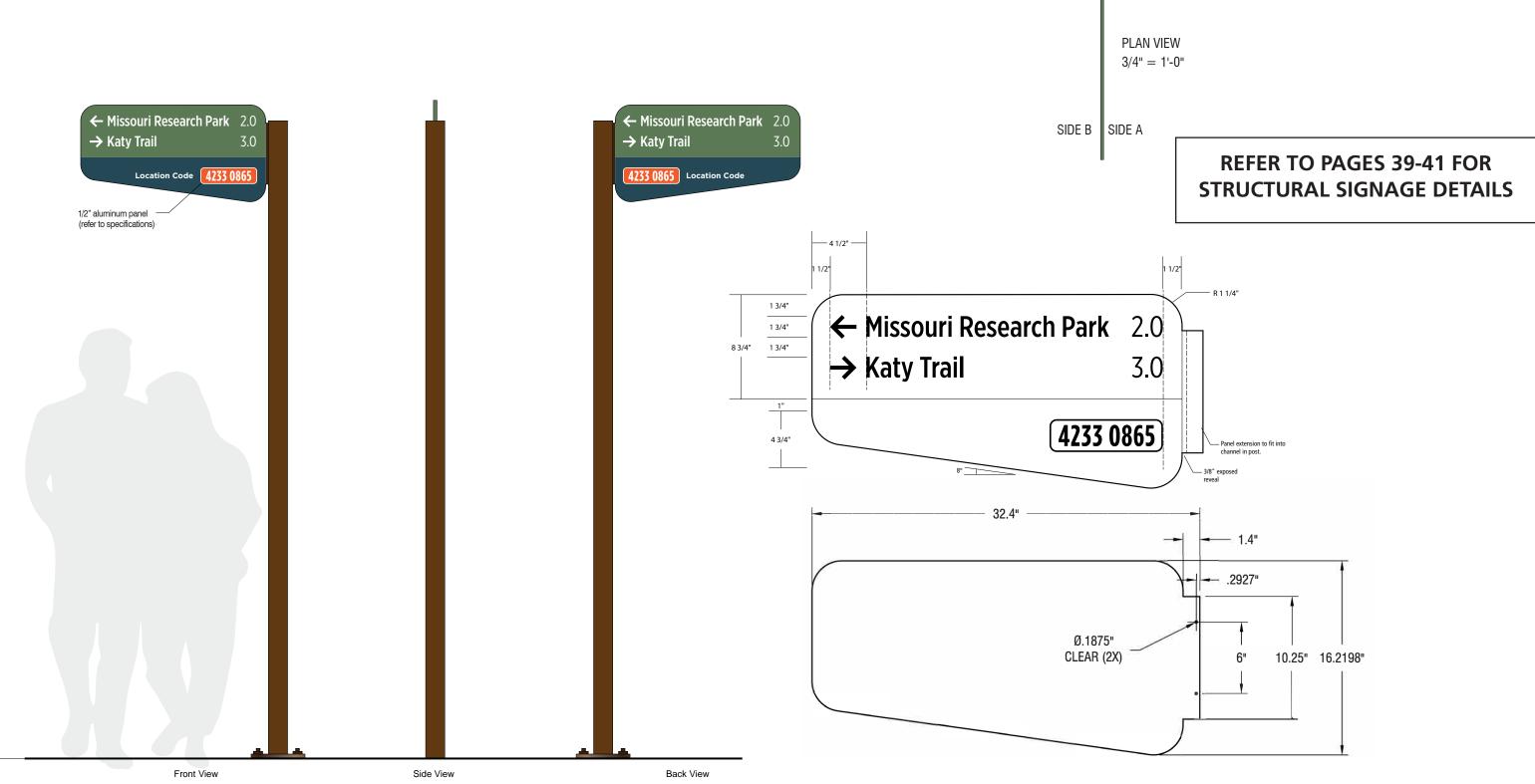
DESCRIPTION

TABL
SURFACE TYPE
FINISHED GROU
PAVED WALKING



Plan View



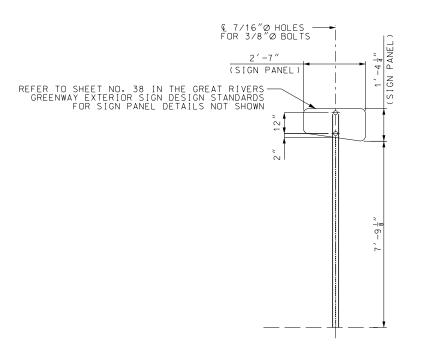


Download the art template for the GX-9 at: https://greatriversgreenway.sharefile.com/d-sdfe5350c12a4083a Download the art template for the GX-99 at: https://greatriversgreenway.sharefile.com/d-scbb7e42f064420b9

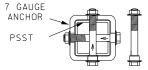
### GX-99 2 Flag Option

SIDE C

SIDE D

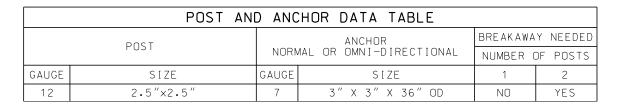


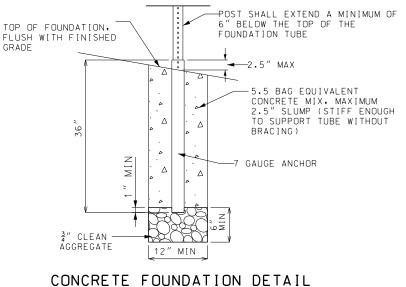


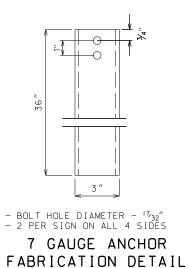


∛ × 3.5" SHOULDER BOLT AND NUT ANCHOR BOLT DETAIL FOR 2.5" PSST 2 SHOULDER BOLTS REQUIRED INSTALLED PERPENDICULAR TO EACH OTHER

ANCHOR BOLT DETAIL



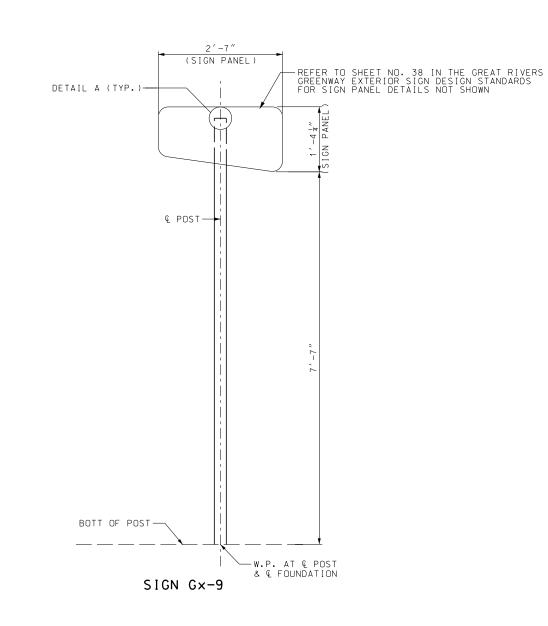




PERFORATED SQUARE STEEL TUBE (PSST) SIGN POST OPTION

Note: This drawing is not to scale. Follow dimensions.

REV. DATE	DESCRIPTION	APPROVED 39
		1 OF 3
		СТР NU Gx-901 SHEET NO.
		STD NO
		GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OFSIGN STRUCTURE Gx-9
INDIVIDUAL SIGN STRUCTURE L BE THE RESPONSIBILITY OF TH EACH SIGN STRUCTURE INSTALL	E ENGINEER OF RECORD FOR	REENWA STANDA STRUCTU
SIGN STRUCTURE PLACEMENT MA REQUIREMENTS OR RESTRICTION		۲ «RDS JRE G»
SIGN STRUCTURE Cx-9 AS SHOW WITHIN THE ROADWAY CLEAR ZO THEY MAY BE SUSCEPTIBLE TO OTHERWISE UNPROTECTED.	NE OR IN OTHER AREAS WHERE	0 0 0
THIS SHEET IS BASED ON MISS 903.03 WITH AN EFFECTIVE DA EDITION OF THIS DRAWING SHA THAN THE DETAILS SHOWN.	TE 01/01/2020. THE LATEST	
THE FINISH ON THE POSTS SHA THE REQUIREMENTS OF GREAT R SIGN DESIGN STANDARDS AND S	IVERS GREENWAYS EXTERIOR	TRN <sup>DATE</sup> February 3, 2020
PUNCH TO PREVENT NUT FROM L ALL BREAKAWAY DEVICES USED CERTIFIED NCHRP 350 COMPLIA	ON AN INSTALLATION SHALL BE	DRAWN BY DB CHECKED BY
	ERS AND ALL OTHER APPURTENANCE: INSTALLATION SHALL BE PER THE AT THE NUT USING A CENTER	David Burdick, P.E. MO# PE-024015
AREA. INSTALLATION OF THE BREAKAW	AY ASSEMBLY SYSTEM INCLUDING	
METAL PROJECTING BEYOND THE WILL NOT BE ALLOWED. REMOVE ALL GALVANIZING RUNS		
POSTS AND ANCHOR SHALL BE H AFTER FABRICATION PER SECTI STANDARD SPECIFICATIONS FOR	ON 1080 OF THE MISSOURI HIGHWAY CONSTRUCTION.	Great
DESIGN SPECS: AASHTO STANDA STRUCTURAL SUPPORTS FOR HIG AND TRAFFIC SIGNALS - 1985 INTERIMS FOR STRUCTURAL STE	HWAY SIGNS. LUMINAIRES (EXCEPT 2001 AND LATEST EL POSTS).	Rivers
GENERAL NOTES:		Greenway
		One Cam St. tous: Missouri
		Construction of the second sec
		N G I N E F 1. 314781 T 1. 314781 Authority # 1721
		4781 9075



NOTES:

FOR DETAIL A. SEE SHEET NO. 3 OF 3.

FOR SIGN STRUCTURE DETAILS FOR THIS OPTION NOT SHOWN. SEE SHEET NO. 3 OF 3.

#### GENERAL NOTES:

DESIGN SPECS: AASHTO STANDARD SPECIFICATION HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGN ALUMINUM ASSOCIATION 2015 ALUMINUM DESIGN M

CONCRETE FOR FOUNDATIONS SHALL BE CLASS B (THE MISSOURI STANDARD SPECIFICATIONS FOR H COMPRESSIVE STRENGTH OF f'c = 4,000 PSI @ 28 DAYS.

ALL EXPOSED EDGES OF THE CONCRETE SHALL HAVE

ALL REINFORCING STEEL SHALL BE IN ACCORDANG Fy=60.000 PSI.

ALL REINFORCING STEEL SHALL BE EPOXY COATED A775/A775M.

MINIMUM CLEARANCE TO REINFORCING STEEL SHAL OTHERWISE.

THE BREAKAWAY SUPPORT SYSTEM BY TRANSPO INE BREAK-SAFE MODEL AS3 BRACKETS, HARDWARE, CC APPURTENANCES NECESSARY FOR THE COMPLETE IN MANUFACTURER.

ALL BRACKETS, HARDWARE, COUPLINGS, ANCHORS THE BREAKAWAY SUPPORT SYSTEM SHALL BE GALV, ACCORDANCE WITH ASTM A153.

THE BREAKAWAY SUPPORT SYSTEM BY TRANSPO IN WITH AN EFFECTIVE DATE JANUARY 2015. THE LA SHALL BE USED IF DIFFERENT THAN THE DETAILS

THE STRUCTURAL TUBING MATERIAL SHALL BE ALL WITH ASTM B429.

THE CAP MATERIAL SHALL BE ALUMINUM, 6061-TE

WELD FILLER MATERIAL SHALL BE ALUMINUM, 535

ALL WELDING SHALL COMPLY WITH AWS D1.2 "STF

ALL EXPOSED WELDED JOINTS SHALL BE FILLED SEAM IS VISIBLE WHEN PAINTED.

BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES BE USED UNDER BOLT HEADS,

ALL HARDWARE AND FASTENERS WITHIN REACH SH

PROVIDE DRAIN HOLES IN RT TUBES IN LOCATION ACCUMLATION OF MOISTURE IN THE MEMBERS.

HOLES SHALL BE LOCATED TO BE INCONSPICUOUS NOT OCCUR ONTO SIGNS OR OTHER SURFACES SUB.

PROVIDE COLOR-COORDINATED STAINLESS STEEL 6

FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DE PRESUMPTIVE VALUES FOUND IN IBC-2009, TABLE MATERIALS. THE FOUNDATIONS SHOWN ARE SUITAE CLASS 5 SOIL OR BETTER. CONSTRUCTION OF THE SUCH AS MUD, ORGANIC SOILS OR UNPREPARED SO STANDARD DESIGN AND WILL REQUIRE FURTHER EN

THE FINISH ON THE SIGN STRUCTURE (POSTS AND ACCORDANCE WITH THE REQUIREMENTS OF THE GRE SIGN DESIGN STANDARDS AND SPECIFICATIONS.

PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION LOCATIONS.

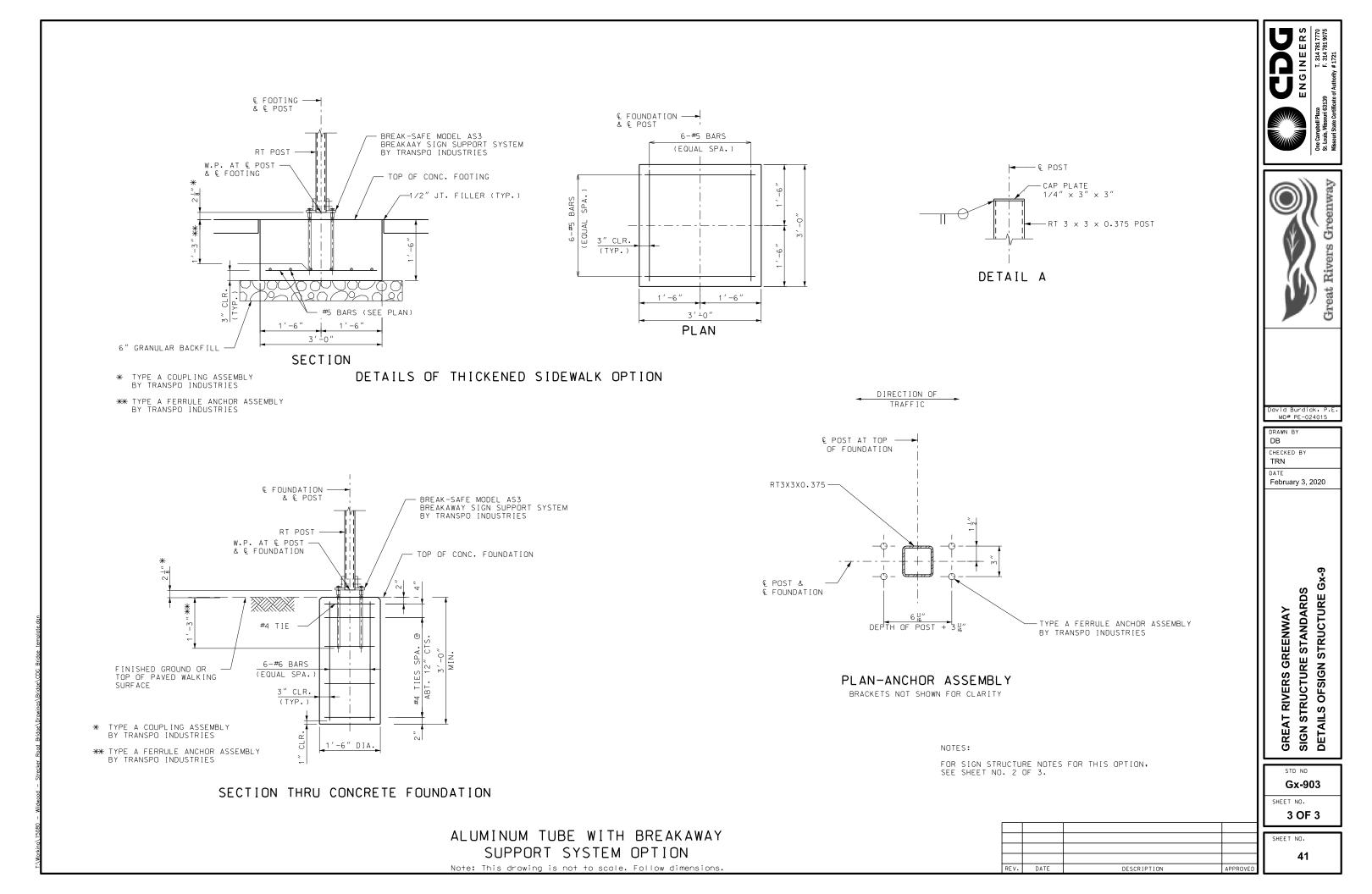
SIGN STRUCTURE GX-9 AS SHOWN MAY BE INSTALL ZONE OR IN OTHER AREAS WHERE THEY MAY BE SL COLLISION OR ARE OTHERWISE UNPROTECTED.

SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO RESTRICTIONS ON A CASE-BY-CASE BASIS.

INDIVIDUAL SIGN STRUCTURE LOCATION AND PLAC RESPONSIBILITY OF THE ENGINEER OF RECORD FO INSTALLATION.

ALUMINUM	TUBE	WITH	BREAKAWAY	
SUPPO	RT SY	STEM	OPTION	
Note: This drawi	na is not	to scale.	Follow dimensions.	

AND GROUND SMOOTH SO THAT NO ES STAINLESS STEEL. WASHERS SHALL HALL BE VANDAL RESISTANT. ONS AS NEEDED TO PREVENT THE S AND SUCH THAT DRAINAGE DOES BJECT TO STAINING. BUG MESH OVER DRAIN HOLES. DESIGNED BASED ON THE LE 1806.2. FOR CLASS 5 SOIL ABLE FOR CONSTRUCTION IN ANY HE FOUNDATIONS IN LESSER SOILS SOILS IS NOT COVERED BY THIS EVALUATION. ND PLATES) SHALL BE IN REAT RIVERS GREENWAYS EXTERIOR ON AT PAVED WALKING SURFACE LLED WITHIN THE ROADWAY CLEAR SUSCEPTIBLE TO VEHICULAR O OTHER REQUIREMENTS OR ACEMENT SHALL BE THE FOR EACH SIGN STRUCTURE STD GX SHEET N	Greenway Missouri Gata F 171 8. Louis, Missouri G3139 F. 314 3075 Missouri State Certificate of Authority # 1721			A615 GRADE 60. NCE WITH ASTM UNLESS NOTED	- 2013 AL. RETE, IN AY CONSTI 3/4" CH. ITH ASTM ACCORDAN E 1 1/2"	GNALS MANU CONC HIGHW AVE A NCE W ED IN ALL B
LATEST EDITION OF THESE DETAILS LS SHOWN. LUMINUM. 6063-T6 IN ACCORDANCE T6 IN ACCORDANCE WITH ASTM B209. 356 AND COMPLY WITH AWS A5.10. TRUCTURAL WELDING CODE-ALUMINUM". AND GROUND SMOOTH SO THAT NO ES STAINLESS STEEL. WASHERS SHALL HALL BE VANDAL RESISTANT. ONS AS NEEDED TO PREVENT THE S AND SUCH THAT DRAINAGE DOES BJECT TO STAINING. BUG MESH OVER DRAIN HOLES. DESIGNED BASED ON THE LE 1806.2. FOR CLASS 5 SOIL ABLE FOR CONSTRUCTION IN LESSER SOILS SOILS IS NOT COVERED BY THIS EVALUATION. ND PLATES) SHALL BE IN REAT RIVERS GREENWAYS EXTERIOR ON AT PAVED WALKING SURFACE LLED WITHIN THE ROADWAY CLEAR SUSCEPTIBLE TO VEHICULAR O OTHER REQUIREMENTS OR ACEMENT SHALL BE THE FOR EACH SIGN STRUCTURE STO GX SHEET N	reat Rivers	K		CHORS AND ALL OTHER DER THE G AND WASHERS FOR	INGS, ANGLATION D	COUPL INSTA S, BO
356 AND COMPLY WITH AWS A5.10. TRUCTURAL WELDING CODE-ALUMINUM". AND GROUND SMOOTH SO THAT NO ES STAINLESS STEEL. WASHERS SHALL HALL BE VANDAL RESISTANT. ONS AS NEEDED TO PREVENT THE S AND SUCH THAT DRAINAGE DOES BJECT TO STAINING. BUG MESH OVER DRAIN HOLES. DESIGNED BASED ON THE LE 1806.2. FOR CLASS 5 SOIL ABLE FOR CONSTRUCTION IN ANY HE FOUNDATIONS IN LESSER SOILS SOILS IS NOT COVERED BY THIS EVALUATION. ND PLATES) SHALL BE IN REAT RIVERS GREENWAYS EXTERIOR ON AT PAVED WALKING SURFACE LLED WITHIN THE ROADWAY CLEAR SUSCEPTIBLE TO VEHICULAR O OTHER REQUIREMENTS OR ACEMENT SHALL BE THE FOR EACH SIGN STRUCTURE STD GX SHEET N	Gr			N OF THESE DETAILS	T EDITIO OWN.	LATES LS SH
ES STAINLESS STEEL. WASHERS SHALL  HALL BE VANDAL RESISTANT. ONS AS NEEDED TO PREVENT THE  S AND SUCH THAT DRAINAGE DOES BJECT TO STAINING.  BUG MESH OVER DRAIN HOLES. DESIGNED BASED ON THE LE 1806.2. FOR CLASS 5 SOIL ABLE FOR CONSTRUCTION IN ANY HE FOUNDATIONS IN LESSER SOILS SOILS IS NOT COVERED BY THIS EVALUATION.  ND PLATES) SHALL BE IN REAT RIVERS GREENWAYS EXTERIOR ON AT PAVED WALKING SURFACE LLED WITHIN THE ROADWAY CLEAR SUSCEPTIBLE TO VEHICULAR  O OTHER REQUIREMENTS OR ACEMENT SHALL BE THE FOR EACH SIGN STRUCTURE  SIDUATIONS  STD  STD  STD  STD  STD  STD  STD  S	E-024015			Y WITH AWS A5.10. Ding code-aluminum".	ND COMPLI URAL WELI	356 A truct
BJECT TO STAINING. BUG MESH OVER DRAIN HOLES. DESIGNED BASED ON THE LE 1806.2. FOR CLASS 5 SOIL ABLE FOR CONSTRUCTION IN ANY HE FOUNDATIONS IN LESSER SOILS SOILS IS NOT COVERED BY THIS EVALUATION. ND PLATES) SHALL BE IN REAT RIVERS GREENWAYS EXTERIOR ON AT PAVED WALKING SURFACE LLED WITHIN THE ROADWAY CLEAR SUSCEPTIBLE TO VEHICULAR O OTHER REQUIREMENTS OR ACEMENT SHALL BE THE FOR EACH SIGN STRUCTURE STD GX SHEET N		CHECKED BY TRN		RESISTANT.	BE VANDA	HALL
STD GX SHEET N	SIGN STRUCTURE STANDARDS DETAILS OFSIGN STRUCTURE Gx-9	S GREENWAY JRE STANDARDS		NING. R DRAIN HOLES. O ON THE R CLASS 5 SOIL FRUCTION IN ANY S IN LESSER SOILS COVERED BY THIS ALL BE IN REENWAYS EXTERIOR ALKING SURFACE HE ROADWAY CLEAR	TO STAIL MESH OVE NED BASE OG.2, FOI FOR CONS UNDATION IS NOT ATION. ATES) SH RIVERS GI PAVED W WITHIN TI	BJECT BUG DESIG LE 18 ABLE HE FO SOILS EVALU ND PL REAT ON AT LLED
GX SHEET N	SIGN STRUCTI DETAILS OFSI	GREAT RIVER SIGN STRUCTI		REMENTS OR BE THE	ER REQUII NT SHALL	D OTH Aceme
	NO <b>K-902</b> NO.	STD NO GX-90 SHEET NO. 2 OF				[]
		SHEET NO. <b>40</b>	APPROVED	DESCRIPTION	DATE	REV.



### Great Rivers Greenway Sign Array: KX-1 Main Trailhead Kiosk - with alternate backs



Report a Problem 314.436<sup>1</sup>7009 or info@grgstl.org

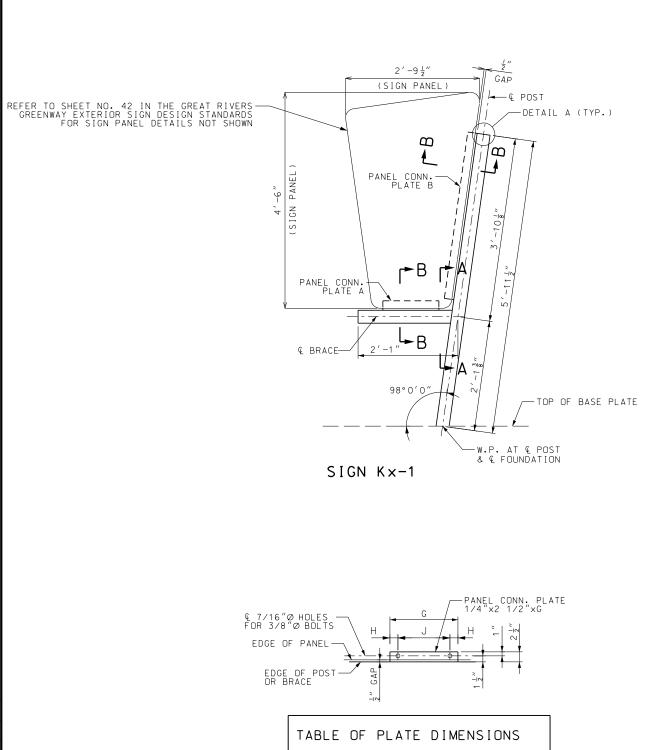
Approx 1'-1 1/4"

### REFER TO PAGES 43 & 44 FOR STRUCTURAL SIGNAGE DETAILS

 Stainless steel tamper resistant nut

← R 2 1/4"

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-scbb7e42f064420b9



TADLE	UF FLA		1310113
PLATE	G	н	J
А	1 ′ −2 ″	2 "	10″
В	3′-6″	3″	3 SPA. @ 12"

PANEL CONNECTION PLATE DETAIL

#### GENERAL NOTES:

DESIGN SPECS: AASHTO STANDARD SPECIFICATIONS I LUMINAIRES AND TRAFFIC SIGNALS - 2013 (6TH ED ALUMINUM DESIGN MANUAL.

CONCRETE FOR FOUNDATIONS SHALL BE CLASS B CONSTANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCT f'c = 4,000 PSI @ 28 DAYS.

ALL EXPOSED EDGES OF THE CONCRETE SHALL HAVE

ALL REINFORCING STEEL SHALL BE IN ACCORDANCE

ALL REINFORCING STEEL SHALL BE EPOXY COATED I

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL

ALL CAST-IN-PLACE ANCHOR BOLTS SHALL BE ASTM NOTED OTHERWISE.

ALL CAST-IN-PLACE CONCRETE ANCHORS ARE TO BE

ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE G. ACCORDANCE WITH ASTM A153.

NON-SHRINK GROUT SHALL BE NON-METALLIC, PRE-P ENGINEERS SPECIFICATION CRD C621, WITH A MINI DAYS WHEN TESTED ACCORDING TO ASTM C109.

THE STRUCTURAL TUBING MATERIAL SHALL BE ALUMI

THE BASE PLATES AND CAP MATERIAL SHALL BE ALU B209.

WELD FILLER MATERIAL SHALL BE ALUMINUM, 5356

ALL WELDING SHALL COMPLY WITH AWS D1.2 "STRUC

ALL EXPOSED WELDED JOINTS SHALL BE FILLED AND WHEN PAINTED.

BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES S BOLT HEADS.

ALL HARDWARE AND FASTENERS WITHIN REACH SHALL

THE SURFACES OF ALUMINUM MEMBERS IN CONTACT W BITUMINOUS PAINT OF THE CUT-BACK TYPE CONFORM TT-C-494 OR METHACRYLATE TYPE LACOUERS CONFOR

PROVIDE DRAIN HOLES IN RT TUBES IN LOCATIONS / MOISTURE IN THE MEMBERS.

HOLES SHALL BE LOCATED TO BE INCONSPICUOUS AN SIGNS OR OTHER SURFACES SUBJECT TO STAINING.

PROVIDE COLOR-COORDINATED STAINLESS STEEL BUG

FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DESITIN IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL M. SUITABLE FOR CONSTRUCTION IN ANY CLASS 5 SOIL IN LESSER SOILS SUCH AS MUD, ORGANIC SOILS OR STANDARD DESIGN AND WILL REQUIRE FURTHER EVALUATE.

THE FINISH ON THE SIGN STRUCTURE (POSTS, BRAC THE REQUIREMENTS OF THE GREAT RIVERS GREENWAY SPECIFICATIONS.

PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION A

NOTES:

FOR SECTION A-A & B-B AND DETAIL A, SEE

FOR SIGN STRUCTURE DETAILS NOT SHOWN, SE

SIGN STRUCTURE KX-1 AS SHOWN IS NOT INTE THE ROADWAY CLEAR ZONE OR IN OTHER AREAS SUSCEPTIBLE TO VEHICULAR COLLISION OR AF

SIGN STRUCTURE PLACEMENT MAY BE SUBJECT RESTRICTIONS ON A CASE-BY-CASE BASIS.

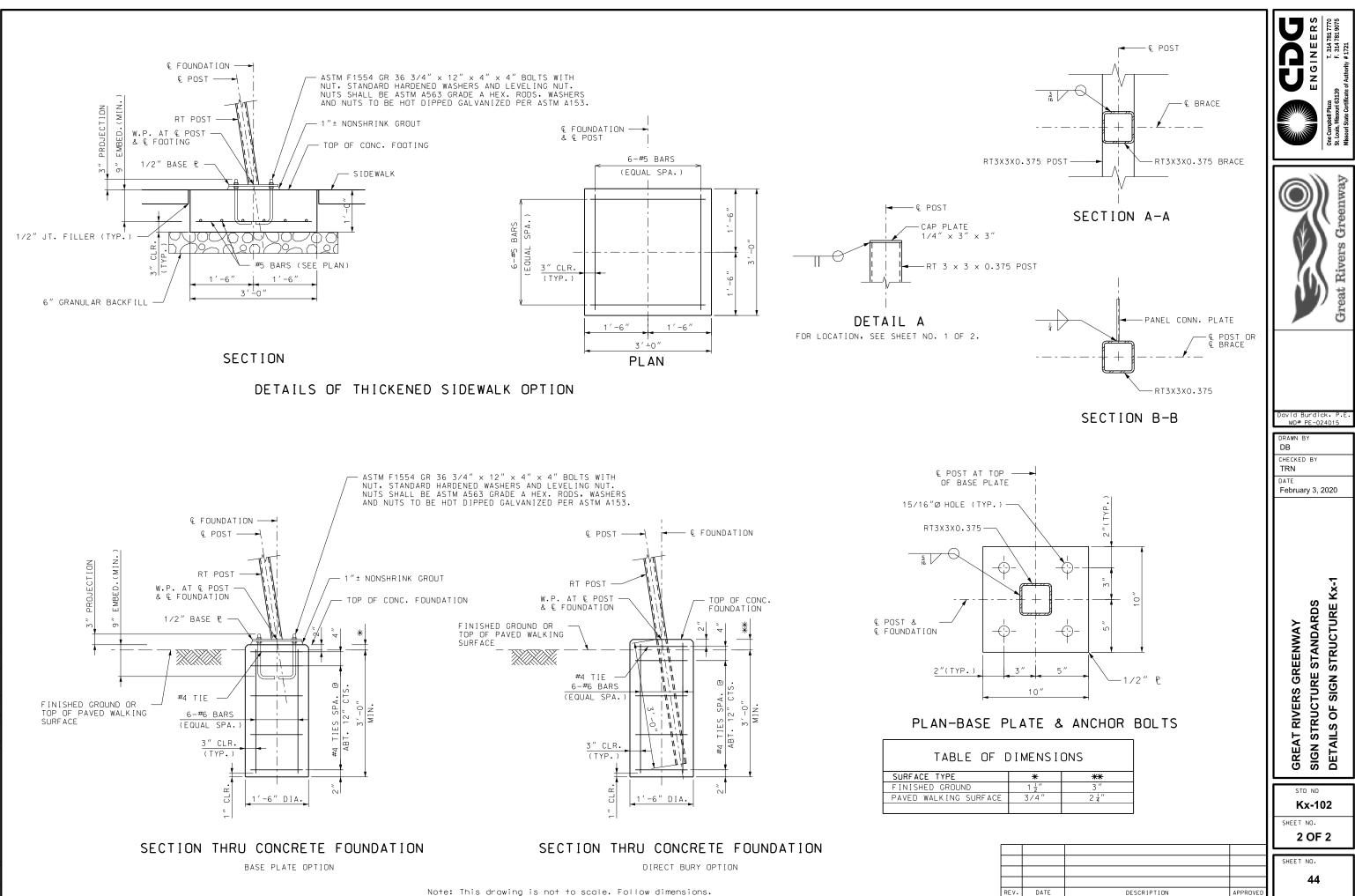
INDIVIDUAL SIGN STRUCTURE LOCATION AND F RESPONSIBILITY OF THE ENGINEER OF RECORD INSTALLATION.

REV. DATE

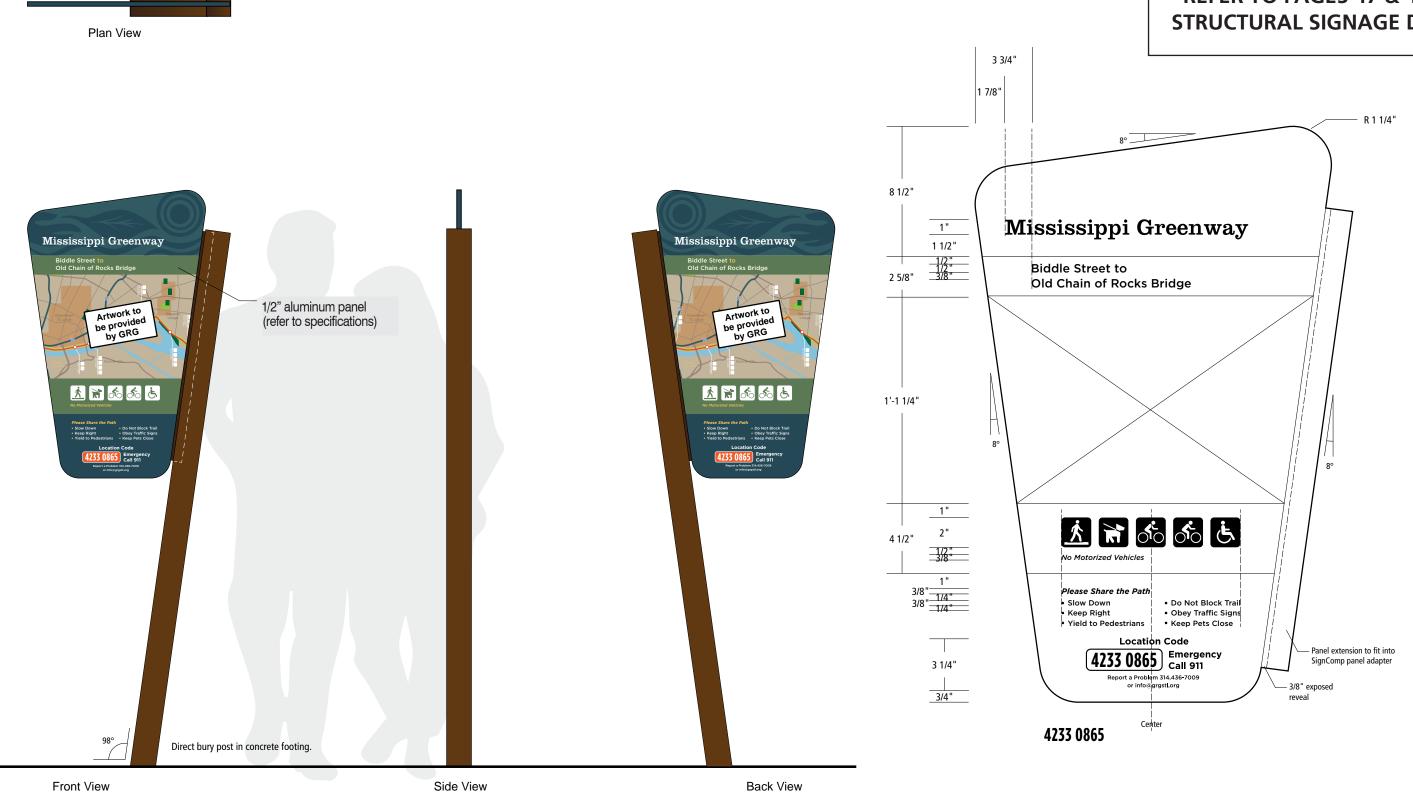
	SHEET NO.
D FOR EACH SIGN STRUCTURE	Кх-101 SHEET NO. 1 OF 2
SHEET NO. 2 OF 2. EE SHEET NO. 2 OF 2. ENDED FOR INSTALLATION WITHIN S WHERE THEY MAY BE RE OTHERWISE UNPROTECTED. TO OTHER REQUIREMENTS OR PLACEMENT SHALL BE THE	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUCTURE Kx-1
ES AND PLATES) SHALL BE IN ACCORDANCE WITH S EXTERIOR SIGN DESIGN STANDARDS AND T PAVED WALKING SURFACE LOCATIONS.	:REENWAY E STANDARDS I STRUCTURE I
D SUCH THAT DRAINAGE DOES NOT OCCUR ONTO MESH OVER DRAIN HOLES. GNED BASED ON THE PRESUMPTIVE VALUES FOUND ATERIALS. THE FOUNDATIONS SHOWN ARE OR BETTER. CONSTRUCTION OF THE FOUNDATIONS UNPREPARED SOILS IS NOT COVERED BY THIS UATION.	(x-1
ITH CONCRETE SHALL BE BACK PAINTED WITH ING TO SPECIFICATION MIL-C-450 B (1) OR MING TO MIL-L-19537C (2). AS NEEDED TO PREVENT THE ACCUMLATION OF	CHECKED BY TRN DATE February 3, 2020
TAINLESS STEEL. WASHERS SHALL BE USED UNDER BE VANDAL RESISTANT.	David Burdick, P.E. MO# PE-024015 DRAWN BY DB
AND COMPLY WITH AWS A5.10. TURAL WELDING CODE-ALUMINUM". GROUND SMOOTH SO THAT NO SEAM IS VISIBLE	
ACKAGED GROUT CONFORMING TO CORPS OF MUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 NUM, 6063-T6 IN ACCORDANCE WITH ASTM B429. MINUM, 6061-T6 IN ACCORDANCE WITH ASTM	Great R
F1554 GRADE 36 BOLTS WITH 90° BEND UNLESS TIGHTENED TO A "SNUG-TIGHT" CONDITION. ALVANIZED BY THE HOT-DIP PROCESS IN	ivers Gree
A 3/4″ CHAMFER. WITH ASTM A615 GRADE 60, Fy=60,000 PSI. N ACCORDANCE WITH ASTM A775/A775M. BE 1 1/2″, UNLESS NOTED OTHERWISE.	
ITION) AND ALUMINUM ASSOCIATION 2015 CRETE, IN ACCORDANCE WITH THE MISSOURI ION, WITH A COMPRESSIVE STRENGTH OF	Engl Braze Braze Missouri 53139 Missouri 53149 Missouri 53149 Miss
FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS.	NGINERS 1. 344 742 7770 F. 344 742 7770 F. 344 742 7770 Authority # 1724

APPROVED

DESCRIPTION

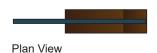


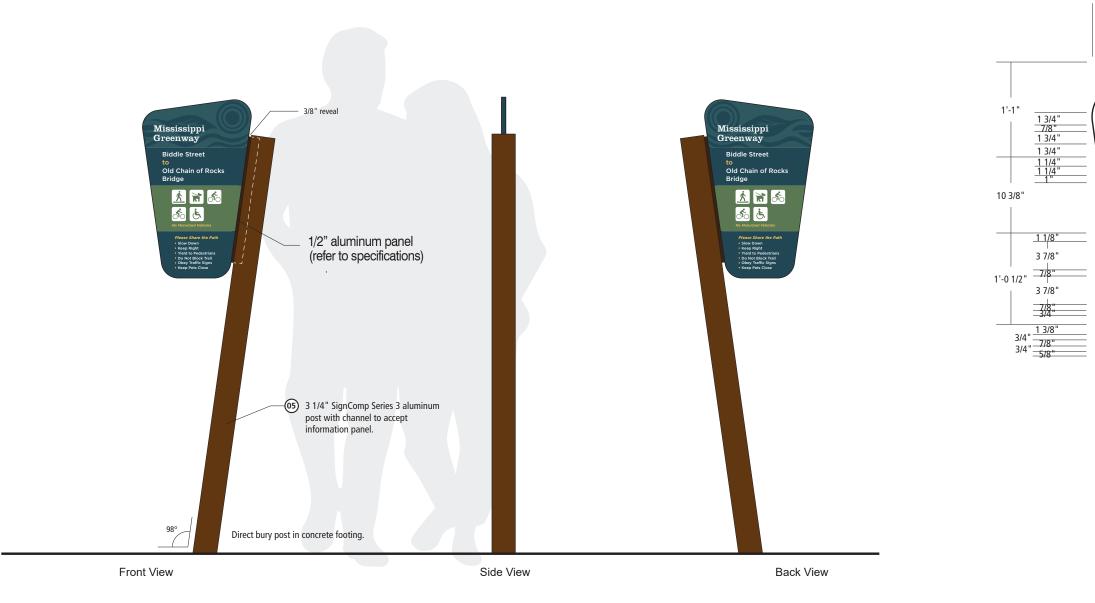
#### Great Rivers Greenway Sign Array: KX-2 Secondary Trailhead Kiosk



## **REFER TO PAGES 47 & 48 FOR** STRUCTURAL SIGNAGE DETAILS

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-se5896c6b99a44d4a

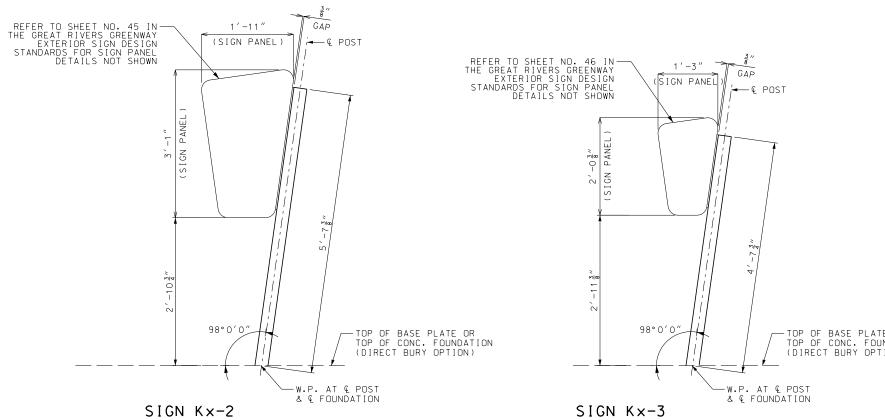




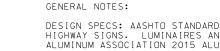
## **REFER TO PAGES 47 & 48 FOR** STRUCTURAL SIGNAGE DETAILS



Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-s0606c1d588249b9a



					Def Campbell Place Resouri 63139 Riscouri 63139 Construction # 1721 Missouri 5314 Missouri 5319
					Great Rivers Greenway
ASE PLATE C ONC. FOUNDA BURY OPTION	A T I ON	l			David Burdick, P.E. MD# PE-024015 DRAWN BY DB CHECKED BY TRN DATE February 3, 2020
SEE SHEI SIGN STI INTENDE CLEAR Z' SUSCEPT OTHERWI SIGN STI REQUIREI INDIVIDI SHALL BI	ET NI RUCTI D FOI ONE I IBLE SE UI RUCTI MENT UAL S E THI	D. 2 OF JRES KX R INSTAL DR IN OT TO VEHI NPROTECT JRE PLACC S OR RES SIGN STR E RESPON	2 AND Kx-3 AS SHOWN ARE NOT .ATION WITHIN THE ROADWAY HER AREAS WHERE THEY MAY BE SULAR COLLISION OR ARE	15.	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUCTURES Kx-2 AND Kx-:
1	[]				STD NO Kx-2301 SHEET NO. 1 OF 2
	REV.	DATE	DESCRIPTION	APPROVED	SHEET NO. <b>47</b>



CONCRETE FOR FOUNDATIONS SHAL MISSOURI STANDARD SPECIFICATI STRENGTH OF

f'c = 4,000 PSI @ 28 DAYS. ALL EXPOSED EDGES OF THE CONC

ALL REINFORCING STEEL SHALL B

PSI.

ALL REINFORCING STEEL SHALL B MINIMUM CLEARANCE TO REINFORC

ALL CAST-IN-PLACE ANCHOR BOLT UNLESS NOTED OTHERWISE.

ALL CAST-IN-PLACE CONCRETE AN CONDITION.

ALL ANCHOR BOLTS, NUTS AND WA IN ACCORDANCE WITH ASTM A153.

NON-SHRINK GROUT SHALL BE NON OF ENGINEERS SPECIFICATION CR 5000 PSI AT 28 DAYS WHEN TEST

THE SIGN STRUCTURE SHALL BE T SHALL INCLUDE THE SERIES 3-34 OTHER APPURTENANCES NECESSARY MANUFACTURER.

THE BASE PLATE MATERIAL SHALL B209.

WELD FILLER MATERIAL SHALL BE

ALL WELDING SHALL COMPLY WITH

ALL EXPOSED WELDED JOINTS SHA VISIBLE WHEN PAINTED.

BOLTS, NUTS AND WASHERS SHALL USED UNDER BOLT HEADS.

ALL HARDWARE AND FASTENERS WI

THE SURFACES OF ALUMINUM MEMB WITH BITUMINOUS PAINT OF THE MIL-C-450 B (1) OR TT-C-494 O MIL-L-19537C (2).

PROVIDE DRAIN HOLES IN SIGNCO ACCUMLATION OF MOISTURE IN TH

HOLES SHALL BE LOCATED TO BE OCCUR ONTO SIGNS OR OTHER SUR

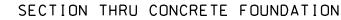
PROVIDE COLOR-COORDINATED STA

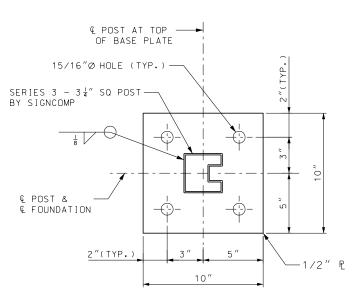
FOUNDATIONS SHOWN IN THE PLAN VALUES FOUND IN IBC-2009, TAB FOUNDATIONS SHOWN ARE SUITABL CONSTRUCTION OF THE FOUNDATIO UNPREPARED SOILS IS NOT COVER FURTHER EVALUATION.

THE FINISH ON THE SIGN STRUCT ACCORDANCE WITH THE REQUIREME DESIGN STANDARDS AND SPECIFIC

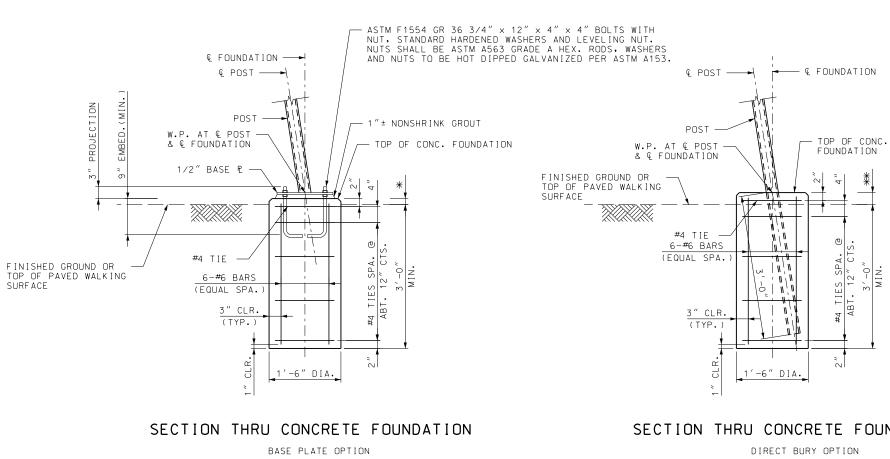
PROVIDE 1/2" JOINT FILLER ARO





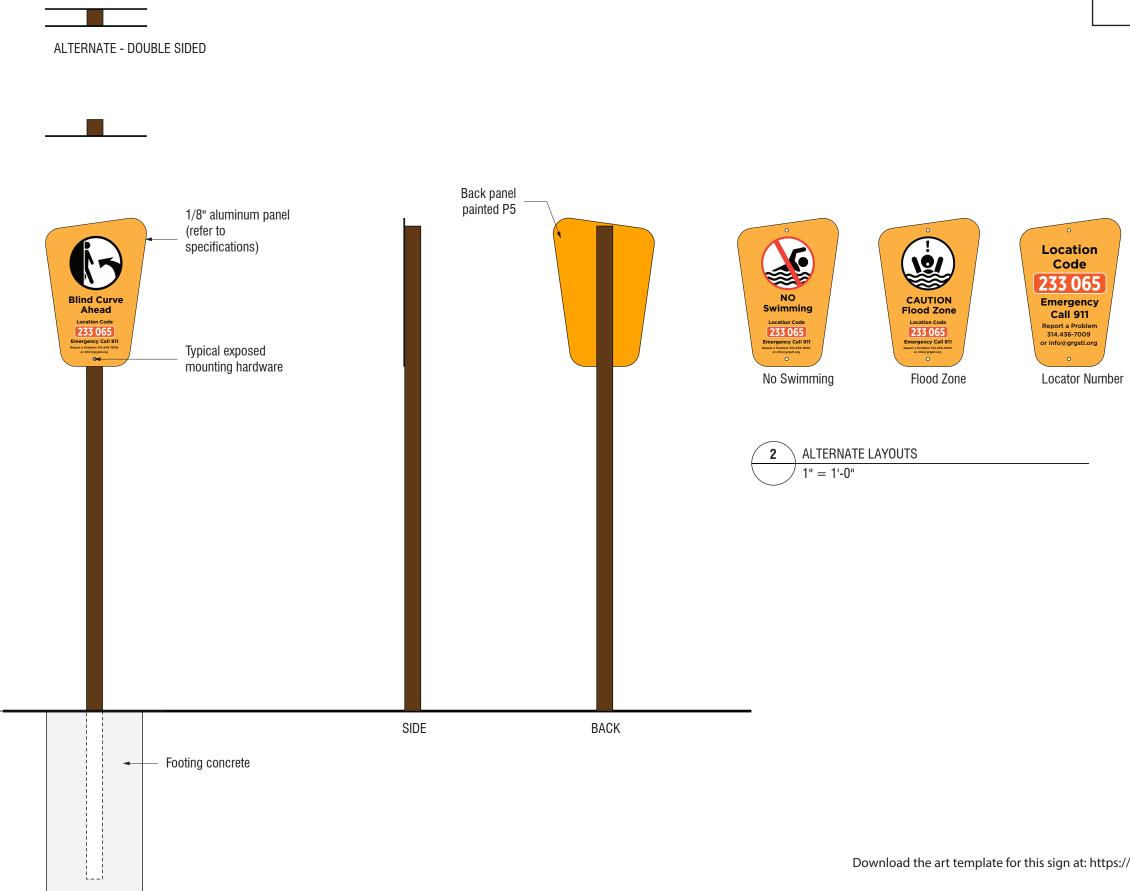


PLAN-BASE PLATE & ANCHOR BOLTS



D SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR ND TRAFFIC SIGNALS - 2013 (6TH EDITION) AND UMINUM DESIGN MANUAL. LL BE CLASS B CONCRETE, IN ACCORDANCE WITH THE IONS FOR HIGHWAY CONSTRUCTION, WITH A COMPRESSIVE CRETE SHALL HAVE A 3/4" CHAMFER. BE IN ACCORDANCE WITH ASTM A615 GRADE 60, Fy=60,000	Contraction of the second seco
BE EPOXY COATED IN ACCORDANCE WITH ASTM A775/A775M. CING STEEL SHALL BE 1 1/2", UNLESS NOTED OTHERWISE. TS SHALL BE ASTM F1554 GRADE 36 BOLTS WITH 90° BEND NCHORS ARE TO BE TIGHTENED TO A "SNUG-TIGHT" ASHERS SHALL BE GALVANIZED BY THE HOT-DIP PROCESS N-METALLIC, PRE-PACKAGED GROUT CONFORMING TO CORPS RD C621, WITH A MINIMUM COMPRESSIVE STRENGTH OF TED ACCORDING TO ASTM C109. THE SERIES 3 POST AND PANEL SYSTEM BY SIGNCOMP AND 4" SO. POST, PANEL ADAPTOR, REVEAL, CAP AND ALL	Freat Rivers Greenway
Y FOR THE COMPLETE INSTALLATION PER THE L BE ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM E ALUMINUM, 5356 AND COMPLY WITH AWS A5.10. H AWS D1.2 "STRUCTURAL WELDING CODE-ALUMINUM". ALL BE FILLED AND GROUND SMOOTH SO THAT NO SEAM IS L BE 300 SERIES STAINLESS STEEL. WASHERS SHALL BE ITHIN REACH SHALL BE VANDAL RESISTANT. BERS IN CONTACT WITH CONCRETE SHALL BE BACK PAINTED CUT-BACK TYPE CONFORMING TO SPECIFICATION OR METHACRYLATE TYPE LACQUERS CONFORMING TO	David Burdick, P.E. MO# PE-024015 DRAWN BY DB CHECKED BY TRN DATE February 3, 2020
OMP MEMBERS IN LOCATIONS AS NEEDED TO PREVENT THE         HE MEMBERS.         INCONSPICUOUS AND SUCH THAT DRAINAGE DOES NOT         RFACES SUBJECT TO STAINING.         AINLESS STEEL BUG MESH OVER DRAIN HOLES.         NS HAVE BEEN DESIGNED BASED ON THE PRESUMPTIVE         BLE 1806.2. FOR CLASS 5 SOIL MATERIALS. THE         LE FOR CONSTRUCTION IN ANY CLASS 5 SOIL OR BETTER.         ONS IN LESSER SOILS SUCH AS MUD. ORGANIC SOILS OR         RED BY THIS STANDARD DESIGN AND WILL REQUIRE         TURE (POSTS. BRACES AND PLATES) SHALL BE IN         ENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR SIGN         CATIONS.         QUND FOUNDATION AT PAVED WALKING SURFACE LOCATIONS.         TABLE OF DIMENSIONS         TYPE       ***         GROUND       1 <sup>1</sup> / <sub>2</sub> ″         KING SURFACE       3/4″	GREAT RIVERS GREENWAY SIGN STRUCTURE STANDARDS DETAILS OF SIGN STRUCTURES Kx-2 AND Kx-3
	STD NO Kx-2302 SHEET NO. 2 OF 2 SHEET NO.
REV. DATE DESCRIPTION APPROVED	48

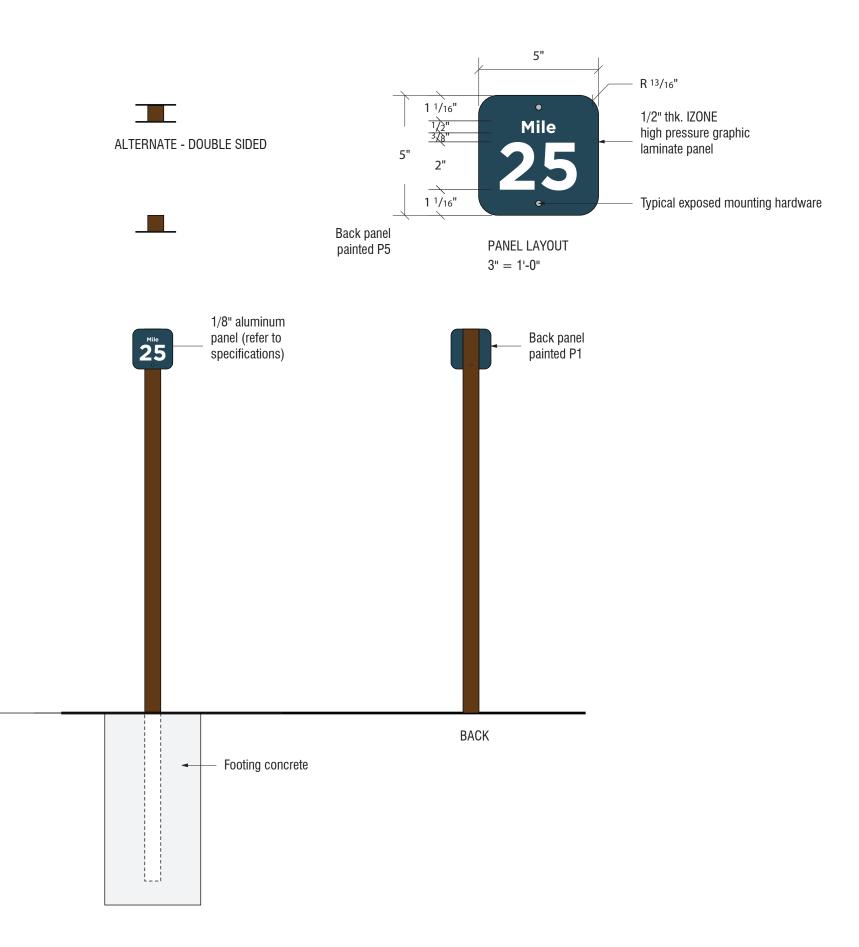
Great Rivers Greenway Sign Array: RX-1 Regulatory/Safety



## REFER TO PAGES 52 & 53 FOR STRUCTURAL SIGNAGE DETAILS

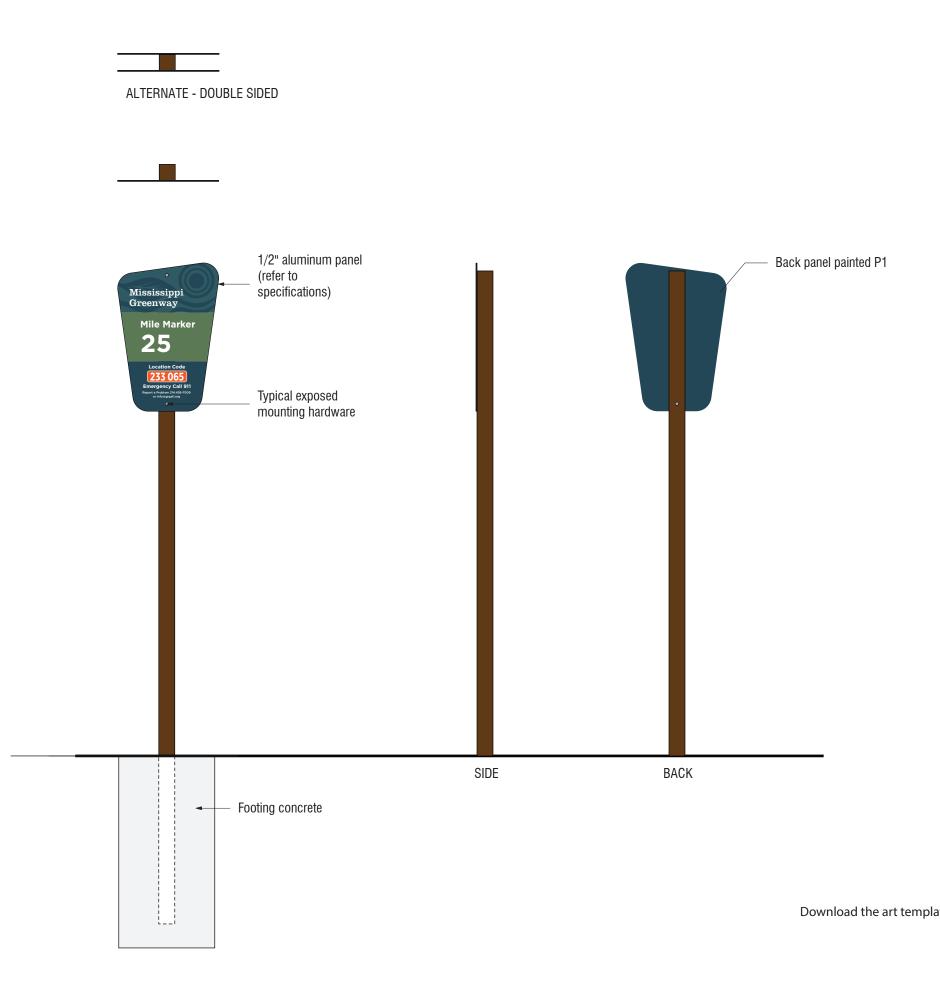


Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sdfeb2c3515e4b779



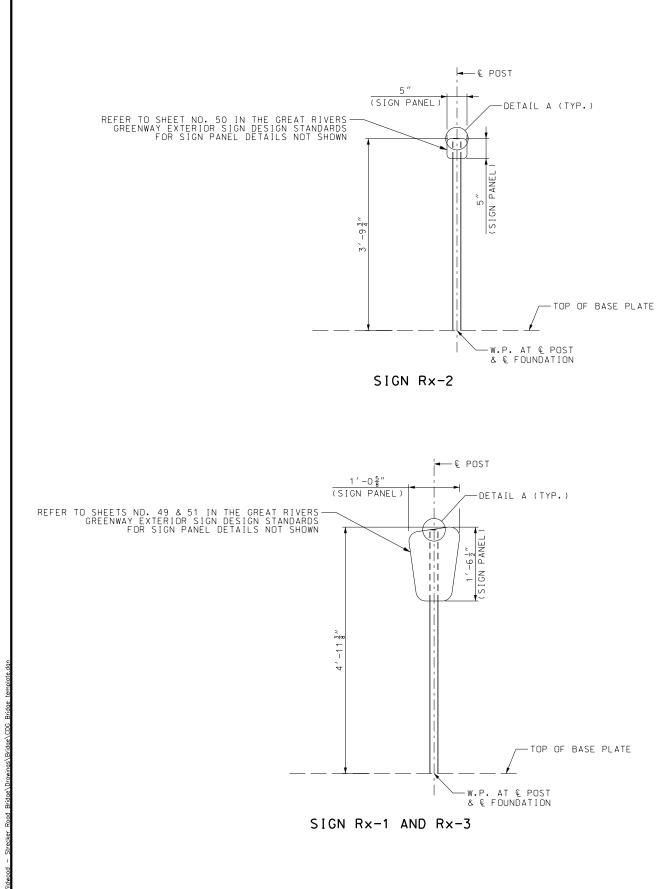
## REFER TO PAGES 52 & 53 FOR STRUCTURAL SIGNAGE DETAILS

Great Rivers Greenway Sign Array: RX-3 Mile Marker w/Trail Info and Rescue Locator



## REFER TO PAGES 52 & 53 FOR STRUCTURAL SIGNAGE DETAILS

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-sf53e58970f84a83b



GENERAL NOTES:

DESIGN SPECS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS - 2013 (6TH EDITION) AND ALUMINUM ASSOCIATION 2015 ALUMINUM DESIGN MANUAL. CONCRETE FOR FOUNDATIONS SHALL BE CLASS B CONCRETE, IN ACCORDANCE WITH THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, WITH A COMPRESSIVE STRENGTH OF f'c = 4,000 PSI @ 28 DAYS. ALL EXPOSED EDGES OF THE CONCRETE SHALL HAVE A 3/4" CHAMFER. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60, Fy=60,000 PSI. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775/A775M. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2", UNLESS NOTED OTHERWISE. ALL CAST-IN-PLACE ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 36 BOLTS WITH 90° BEND UNLESS NOTED OTHERWISE. ALL CAST-IN-PLACE CONCRETE ANCHORS ARE TO BE TIGHTENED TO A "SNUG-TIGHT" CONDITION. ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED BY THE HOT-DIP PROCESS IN ACCORDANCE WITH ASTM A153. NON-SHRINK GROUT SHALL BE NON-METALLIC, PRE-PACKAGED GROUT CONFORMING TO CORPS OF ENGINEERS SPECIFICATION CRD C621, WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS WHEN TESTED ACCORDING TO ASTM C109. THE STRUCTURAL TUBING MATERIAL SHALL BE ALUMINUM, 6063-T6 IN ACCORDANCE WITH ASTM B429. THE BASE PLATES AND CAP MATERIAL SHALL BE ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM B209. WELD FILLER MATERIAL SHALL BE ALUMINUM, 5356 AND COMPLY WITH AWS A5.10. ALL WELDING SHALL COMPLY WITH AWS D1.2 "STRUCTURAL WELDING CODE-ALUMINUM". ALL EXPOSED WELDED JOINTS SHALL BE FILLED AND GROUND SMOOTH SO THAT NO SEAM IS VISIBLE WHEN PAINTED. BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES STAINLESS STEEL. WASHERS SHALL BE USED UNDER BOLT HEADS. ALL HARDWARE AND FASTENERS WITHIN REACH SHALL BE VANDAL RESISTANT. THE SURFACES OF ALUMINUM MEMBERS IN CONTACT WITH CONCRETE SHALL BE BACK PAINTED WITH BITUMINOUS PAINT OF THE CUT-BACK TYPE CONFORMING TO SPECIFICATION MIL-C-450 B (1) OR TT-C-494 OR METHACRYLATE TYPE LACQUERS CONFORMING TO MIL-L-19537C (2).

PROVIDE DRAIN HOLES IN RT TUBES IN LOCATIONS AS NEEDED TO PREVENT THE ACCUMLATION OF MOISTURE IN THE MEMBERS

HOLES SHALL BE LOCATED TO BE INCONSPICUOUS AND SUCH THAT DRAINAGE DOES NOT OCCUR ONTO SIGNS OR OTHER SURFACES SUBJECT TO STAINING.

PROVIDE COLOR-COORDINATED STAINLESS STEEL BUG MESH OVER DRAIN HOLES.

FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DESIGNED BASED ON THE PRESUMPTIVE VALUES FOUND IN IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL MATERIALS. THE FOUNDATIONS SHOWN ARE SUITABLE FOR CONSTRUCTION IN ANY CLASS 5 SOIL OR BETTER. CONSTRUCTION OF THE FOUNDATIONS IN LESSER SOILS SUCH AS MUD, ORGANIC SOILS OR UNPREPARED SOILS IS NOT COVERED BY THIS STANDARD DESIGN AND WILL REQUIRE FURTHER EVALUATION.

THE FINISH ON THE SIGN STRUCTURE (POSTS AND PLATES) SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS.

PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION AT PAVED WALKING SURFACE LOCATIONS.

#### NOTES:

FOR DETAIL A, SEE SHEET NO. 2 OF 2.

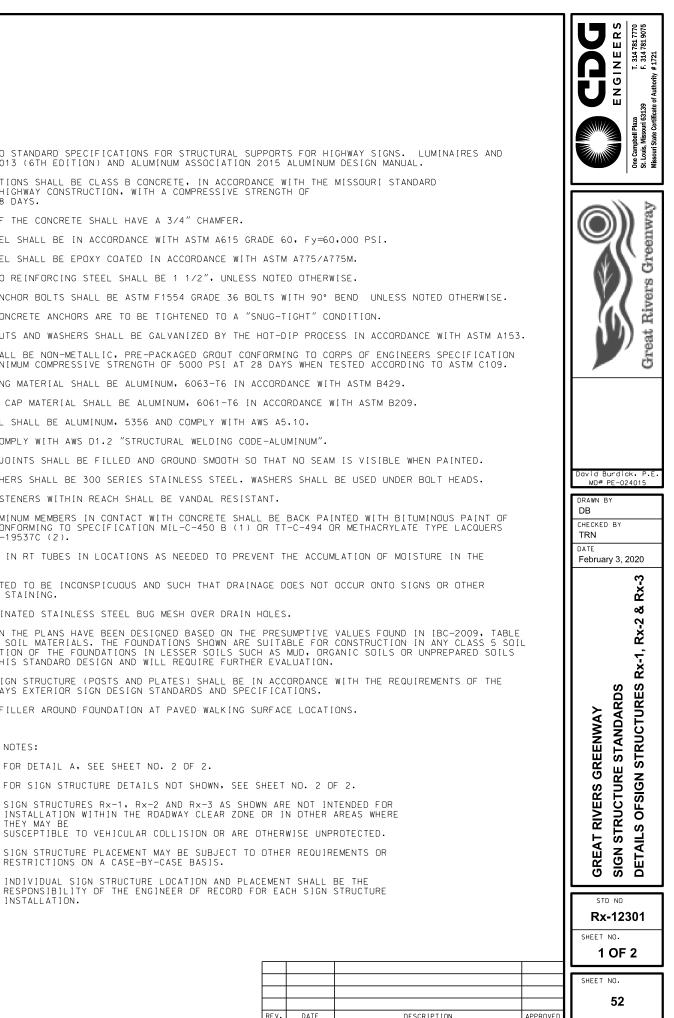
FOR SIGN STRUCTURE DETAILS NOT SHOWN, SEE SHEET NO. 2 OF 2.

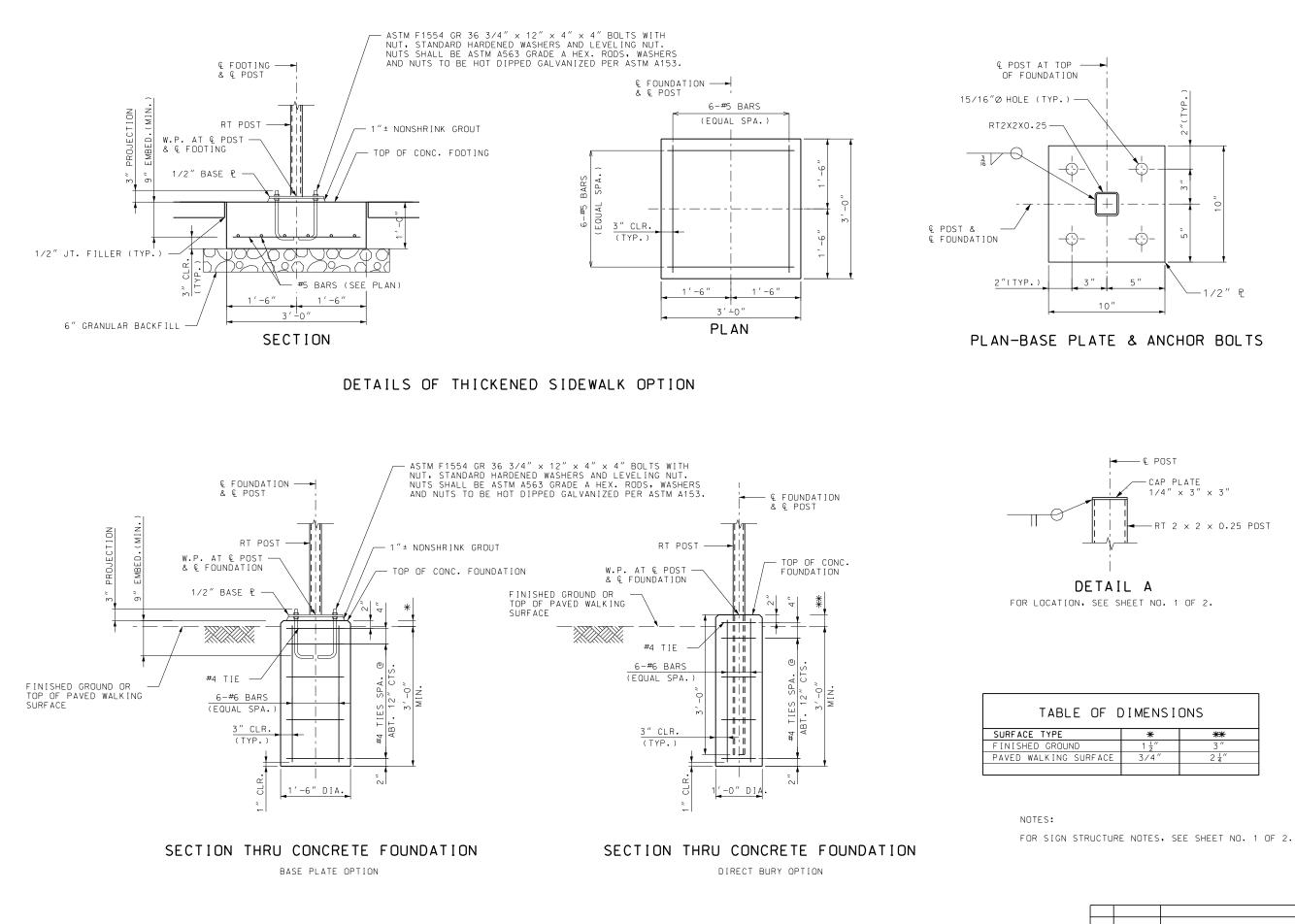
SIGN STRUCTURES Rx-1, Rx-2 AND Rx-3 AS SHOWN ARE NOT INTENDED FOR INSTALLATION WITHIN THE ROADWAY CLEAR ZONE OR IN OTHER AREAS WHERE THEY MAY BE

SIGN STRUCTURE PLACEMENT MAY BE SUBJECT TO OTHER REQUIREMENTS OR

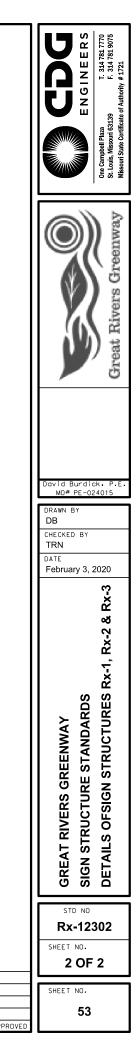
RESTRICTIONS ON A CASE-BY-CASE BASIS.

INDIVIDUAL SIGN STRUCTURE LOCATION AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR EACH SIGN STRUCTURE INSTALLATION.





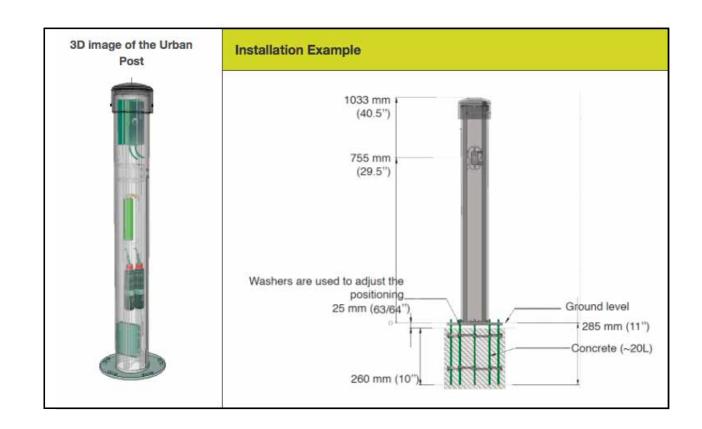
OF DIMENSIONS					
	*	**			
	1 ½"	3″			
JRFACE	3/4″	2 ¼ ″			

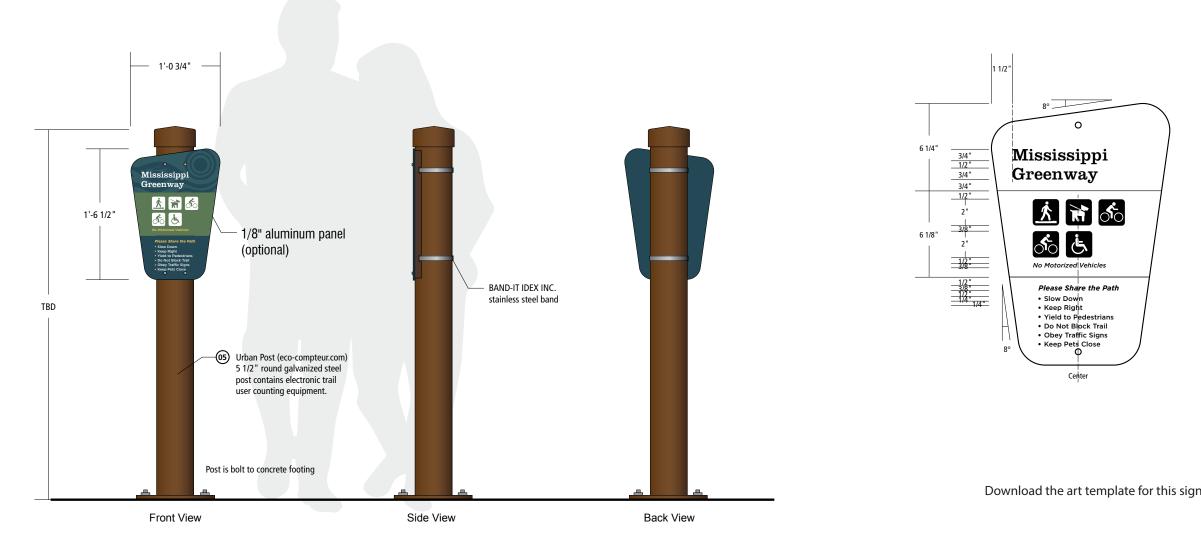


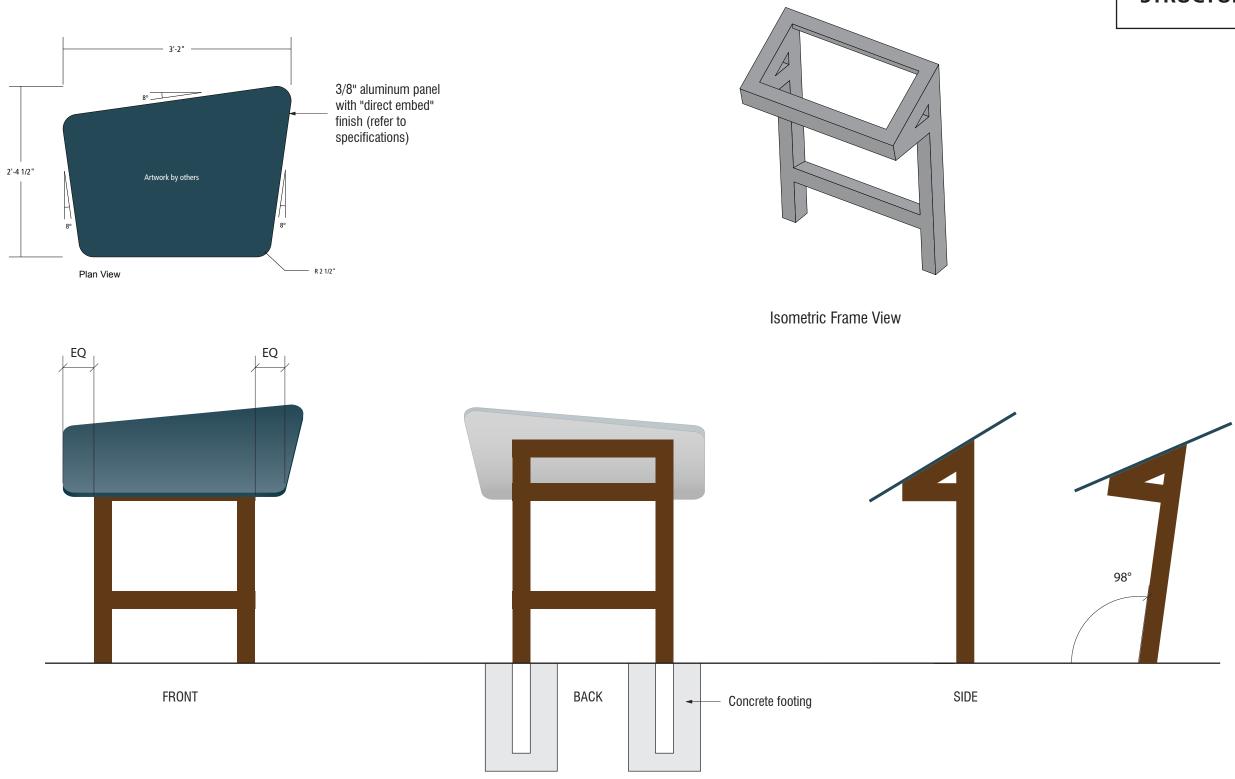
REV.	DATE	DESCRIPTION	APPRO

Custom panel mounting bracket

Plan View





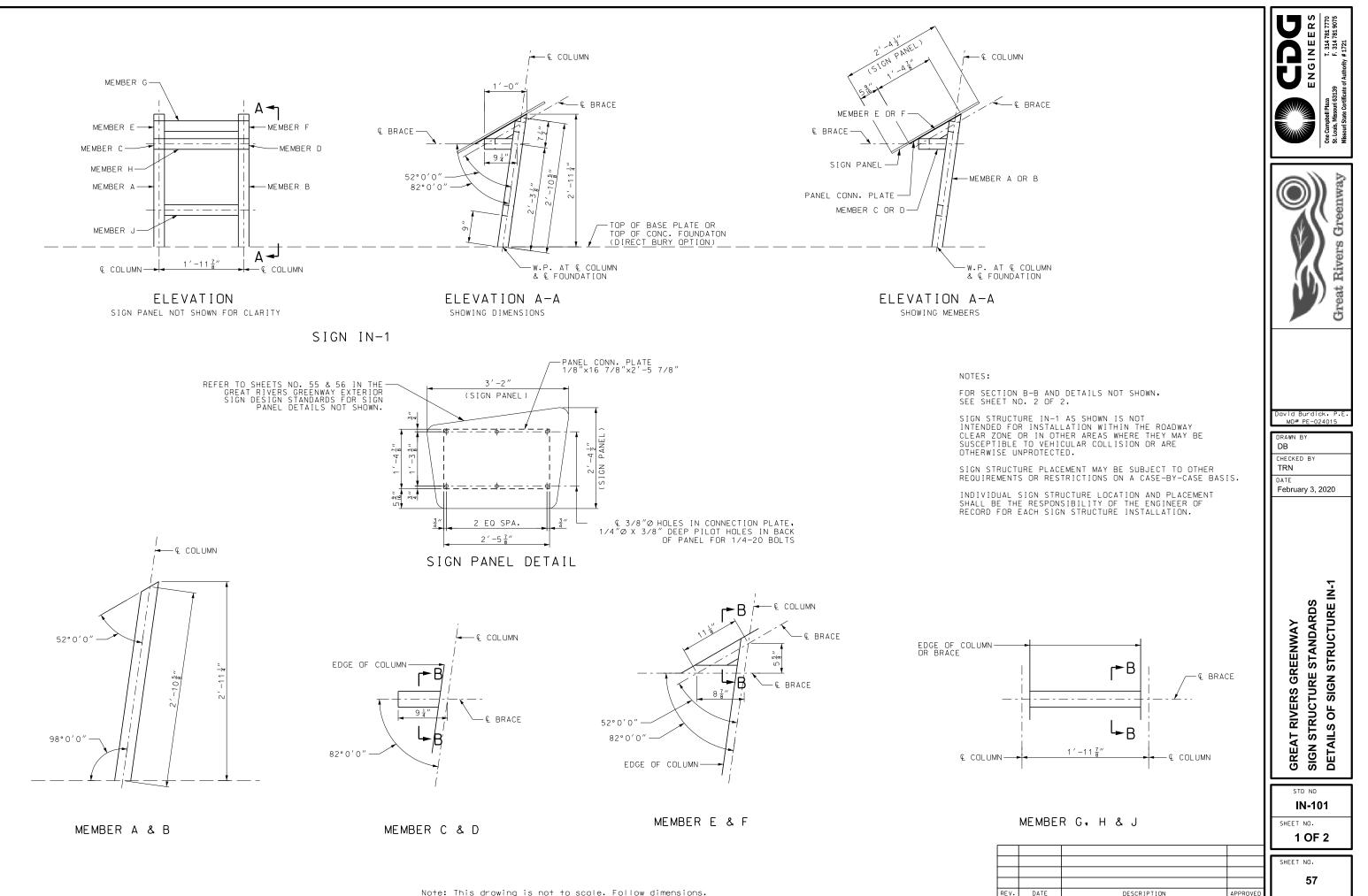


## **REFER TO PAGES 57 & 58 FOR** STRUCTURAL SIGNAGE DETAILS

Download the art template for this sign at: https://greatriversgreenway.sharefile.com/d-s7da7aa414c94910a

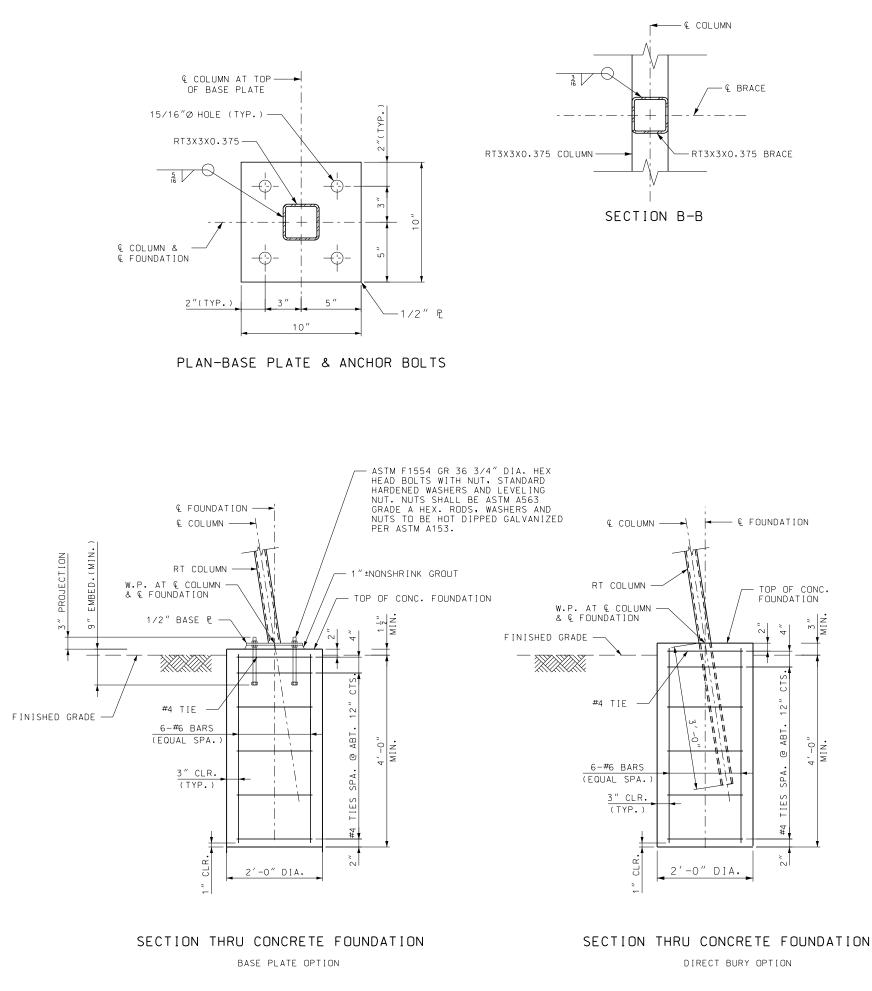
Great Rivers Greenway Sign Array: IN-1 Interpretive

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REV.

APPROV



S INEERS 22 -ט N U CONCRETE FOR FOUNDATIONS SHALL BE CLASS B CONCRETE, IN ACCORDANCE WITH THE MISSOURI f'c = 4.000 PSI @ 28 DAYS.Ċ ers Riv eat ē avid Burdick, MD# PE-024015 DRAWN DB CHECKED BY TRN DATE February 3, 2020 IN LESSER SOILS SUCH AS MUD, ORGANIC SOILS OR UNPREPARED SOILS IS NOT COVERED BY THIS THE FINISH ON THE SIGN STRUCTURE (POSTS, BRACES AND PLATES) SHALL BE IN ACCORDANCE WITH ż STANDARDS STRUCTURE GREENWAY SIGN STRUCTURE RIVERS Ъ DETAILS GREAT SIGN STD NO IN-102 SHEET NO. 2 OF 2 SHEET NO. 58

GENERAL NOTES: DESIGN SPECS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS - 2013 (6TH EDITION) AND ALUMINUM ASSOCIATION 2015 ALUMINUM DESIGN MANUAL STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, WITH A COMPRESSIVE STRENGTH OF ALL EXPOSED EDGES OF THE CONCRETE SHALL HAVE A 3/4" CHAMFER. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60, Fy=60,000 PSI. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775/A775M. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2", UNLESS NOTED OTHERWISE. ALL CAST-IN-PLACE ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 36 BOLTS WITH 90° BEND UNLESS NOTED OTHERWISE. ALL CAST-IN-PLACE CONCRETE ANCHORS ARE TO BE TIGHTENED TO A "SNUG-TIGHT" CONDITION. ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED BY THE HOT-DIP PROCESS IN ACCORDANCE WITH ASTM A153. NON-SHRINK GROUT SHALL BE NON-METALLIC, PRE-PACKAGED GROUT CONFORMING TO CORPS OF ENGINEERS SPECIFICATION CRD C621, WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS WHEN TESTED ACCORDING TO ASTM C109. THE STRUCTURAL TUBING MATERIAL SHALL BE ALUMINUM, 6063-T6 IN ACCORDANCE WITH ASTM B429. THE BASE PLATES AND CAP MATERIAL SHALL BE ALUMINUM, 6061-T6 IN ACCORDANCE WITH ASTM B209. WELD FILLER MATERIAL SHALL BE ALUMINUM, 5356 AND COMPLY WITH AWS A5.10. ALL WELDING SHALL COMPLY WITH AWS D1.2 "STRUCTURAL WELDING CODE-ALUMINUM". ALL EXPOSED WELDED JOINTS SHALL BE FILLED AND GROUND SMOOTH SO THAT NO SEAM IS VISIBLE WHEN PAINTED. BOLTS, NUTS AND WASHERS SHALL BE 300 SERIES STAINLESS STEEL. WASHERS SHALL BE USED UNDER BOLT HEADS. ALL HARDWARE AND FASTENERS WITHIN REACH SHALL BE VANDAL RESISTANT. THE SURFACES OF ALUMINUM MEMBERS IN CONTACT WITH CONCRETE SHALL BE BACK PAINTED WITH BITUMINOUS PAINT OF THE CUT-BACK TYPE CONFORMING TO SPECIFICATION MIL-C-450 B (1) OR TT-C-494 OR METHACRYLATE TYPE LACOUERS CONFORMING TO MIL-L-19537C (2). PROVIDE DRAIN HOLES IN RT TUBES IN LOCATIONS AS NEEDED TO PREVENT THE ACCUMLATION OF MOISTURE IN THE MEMBERS. HOLES SHALL BE LOCATED TO BE INCONSPICUOUS AND SUCH THAT DRAINAGE DOES NOT OCCUR ONTO SIGNS OR OTHER SURFACES SUBJECT TO STAINING. PROVIDE COLOR-COORDINATED STAINLESS STEEL BUG MESH OVER DRAIN HOLES. FOUNDATIONS SHOWN IN THE PLANS HAVE BEEN DESIGNED BASED ON THE PRESUMPTIVE VALUES FOUND IN IBC-2009, TABLE 1806.2, FOR CLASS 5 SOIL MATERIALS. THE FOUNDATIONS SHOWN ARE SUITABLE FOR CONSTRUCTION IN ANY CLASS 5 SOIL OR BETTER. CONSTRUCTION OF THE FOUNDATIONS STANDARD DESIGN AND WILL REQUIRE FURTHER EVALUATION. THE REQUIREMENTS OF THE GREAT RIVERS GREENWAYS EXTERIOR SIGN DESIGN STANDARDS AND SPECIFICATIONS. PROVIDE 1/2" JOINT FILLER AROUND FOUNDATION AT PAVED WALKING SURFACE LOCATIONS.

DESCRIPTION

DATE

Note: This drawing is not to scale. Follow dimensions.