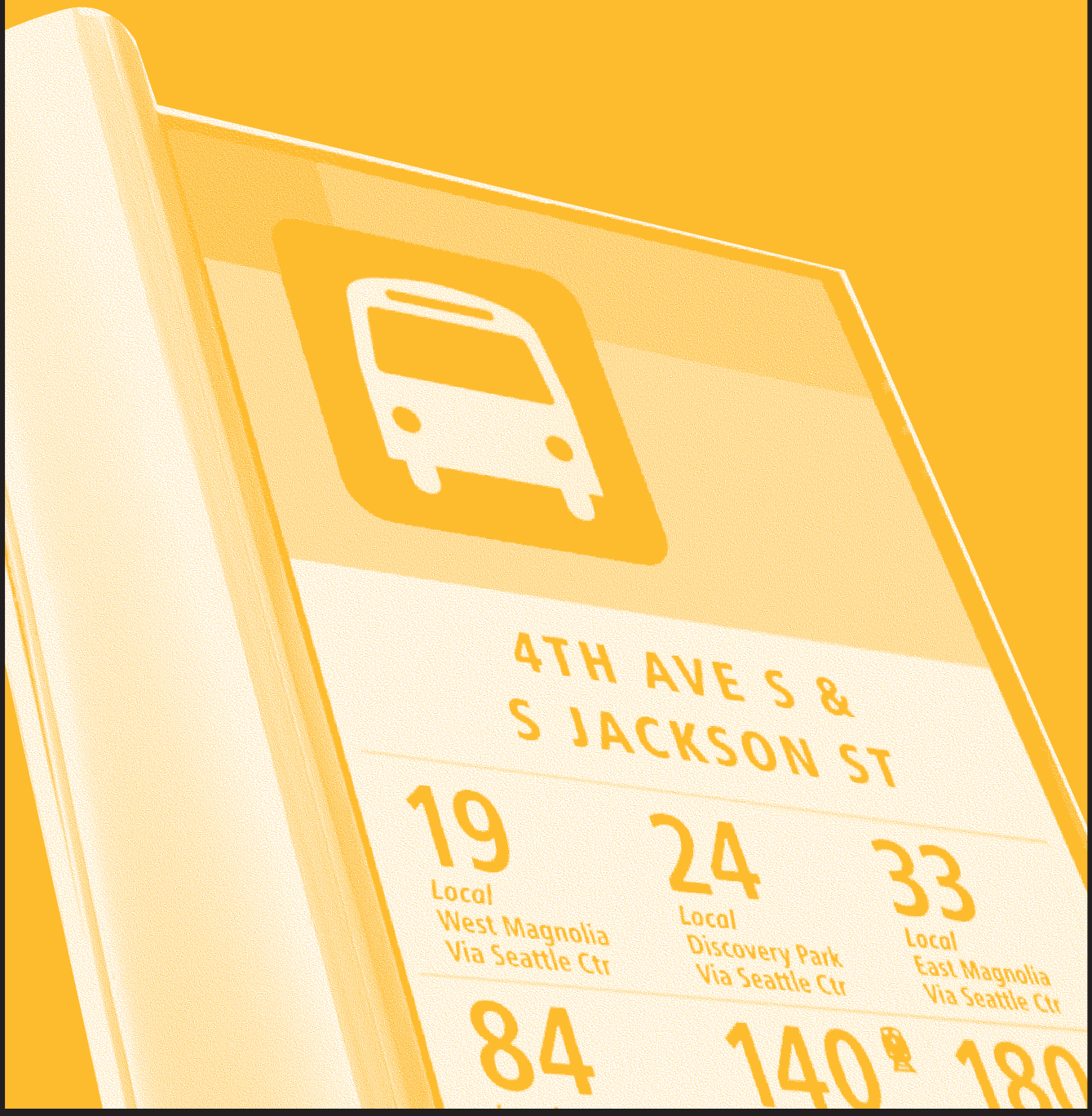
Signing Standards Manual

Volume 1
July 1, 2008



King County
METRO

Volume 1

Volume 2

Designers: Mayer/Reed & Jon Bentz Design

Letter from the General Manager

Text from the general manager to be placed here in this text size and style.

Kevin Desmond
General Manager

Introduction

This manual serves as the definitive document for reference, definition, design aesthetic, design specification, and field implementation for the King County Metro Signing Program. King County Metro and management has endorsed these standards.

While intended to anchor the design and specifications of all Metro signage, this is not a static document. Instead, the manual should be viewed as a dynamic document that will be refined, expanded, and revised over time, reflecting the growth and expansion of Metro transit services and information requirements. As an information tool, the standards have been structured to support the needs of each affected group within Metro. In addition, the signing program itself is organized into a family of sign types, each of which is designed to address a specific or set of information needs. The Metro Sign Family is as follows:

Bus Stop Signs

Customer Information Display Signs

Identification Signs

RapidRide Signs

Advisory / Other Signs

Within each of these general sign family categories resides a series of illustrations for specific sign types, each with physical characteristics tailored to fit specific information and site-specific needs. For instance in remote locations on rural routes there is no need for sophisticated multi-route information signs. In this situation a simple post and bus stop sign serves perfectly to mark a bus stop. However, as population and route density increase approaching population centers, more and more sophisticated signs are required to handle the greater information density. For this reason, a variety of sign configurations (sign types) are needed to properly present varying amounts of content.

Besides illustrations of the sign family and explanations of information display requirements, a set of detailed construction drawings, specifications, and typical installation drawings are included in this document. These drawings and specifications provide most of the information needed to build and install any sign in the program.

Finally, the mechanism for planning, procurement, management and maintenance of the sign program is essential to the success of the sign and information design. A section on the internal process and administration that will govern implementation of the sign program is included in the Forward section of this manual.

Design Rationale

A logical and deliberate process was followed in developing designs for the Metro sign family. A successful program must not only look good but it must also satisfy a number of competing programmatic needs or criteria. These include:

Function
- High Visibility
- Simplicity of Use
- Efficient Use of Space
- Flexible Design
- Modularity

Aesthetics
- Clean and Efficient
- Promotes and Supports the Metro Brand
- Attractive / Approachable
- Modern
- Dependable

Designers: Mayer/Reed & Jon Bentz Design

Sustainability
- Ease of Maintenance
- Ease of Assembly
- Common Materials
- Fits Metro Facilities Practices
- Addresses Metro's Cost Efficiencies

Economy
- Simple Fabrication
- Relatively Low-cost Materials and Fabrication
- Allows for Ongoing Metro In-house Support
- Simple Installation

The resulting designs meet the above criteria and are the direct result of a collaboration of consultant and client. The adopted designs have been subjected to public testing and comment, government reviews, ADA conformance, disability group evaluation and facilities evaluation. All data and input from this process have been integrated into the final designs specified in this document.

Metro Design Team

Gary Larson - Project Manager
201 South Jackson Street
Seattle, WA 98104-3856
T. 206.263.3535
gary.larson@kingcounty.gov

Engineering and Design Unit
Paul Eng
Liz Krenzel

Infrastructure and Integration Unit
Shirley Dunphy
Tom Friedman

Field Facilities Maintenance Unit
Robin Abille
Craig Hall
Michael Harrell

Marketing and Service Information Unit
Bob Virkelyst
Gary Larson
Brian Carr
Jim Martin

Transit Route Facilities Unit
Sharon Slebodnick
Paul Roybal
Joyce McEwen

Speed and Reliability Unit
David Cantey

Service Quality Unit
Doug Bligh

Sign and Paint Shop
Peter Vrinceaunu

Consultant Design Team

Mayer/Reed
Michael Reed
319 SW Washington Street
Suite 820
Portland, OR 97204
T. 503-223-5953
F. 503-223-8076
michael@mayerreed.com

Jon Bentz Design
Jon Bentz
14722 65th Avenue West
Edmunds, WA 98026
T. 425-745-2951
F. 425-741-0301
jb@jonbentzdesign.com

Scott AG
Michael Burch
1275 North Dutton Avenue
Santa Rosa, CA 95401
T. 707-545-4519
F. 707-571-7802
mburch@scottag

How To Use This Manual

This document has been organized into sections that relate to information content and sign function. These are described below in a brief overview of each group.

Step 1: Browse section titles and choose the appropriate topic.

Step 2: Use tabbed divider pages or the table of contents on Page Forward 1 to located desired information.

Forward

An explanation of the organization of the sign program, illustrations of all of the Metro sign family components, and an outline of the planning and procurement process for signage.

Section 1: Bus Stop Signs Overview

A detailed description and illustration of each bus stop sign type variation including how to choose the appropriate sign type, information organization, panel layout and design, sign structure design and configurations, fabrication, and installation requirements.

Section 2: Customer Information Display Signs Overview

A detailed description and illustration of each customer information sign type variation including information organization, panel layout and design, sign structure design and configurations, fabrication, and installation requirements.

Section 3: Identification Signs Overview

A detailed description and illustration of each identification sign type variation including information organization, panel layout and design, sign structure design and configurations, fabrication, and installation requirements.

Section 4: Other Signs Overview

A detailed description and illustration of each directional, coach and regulatory signs including information organization, layout and design, sign structure design and configurations, fabrication, and installation requirements.

Section 5: RapidRide Signs Overview

An explanation of RapidRide bus sign requirements and the relationship between RapidRide signs and the rest of the Metro sign program.

Section 6: Bus Stop Signs Graphic Standards

Detailed overview and explanation of how to utilize and apply standard sign layouts, color treatments, typography in preparing new bus stop sign faces.

Section 7: Temporary Signs

This section contains temporary sign production instructions. Included are explanations of Rider Alert sign production templates and how to install them.

Section 8: Fabrication

Contains a thorough explanation of the procurement process and drawings explaining sign fabrication for each sign type. Instructions are included for materials, sizes, and printing techniques. These drawings are to be used for bidding and should be provided to sign contractors for fabrication.

Section 9: Installation

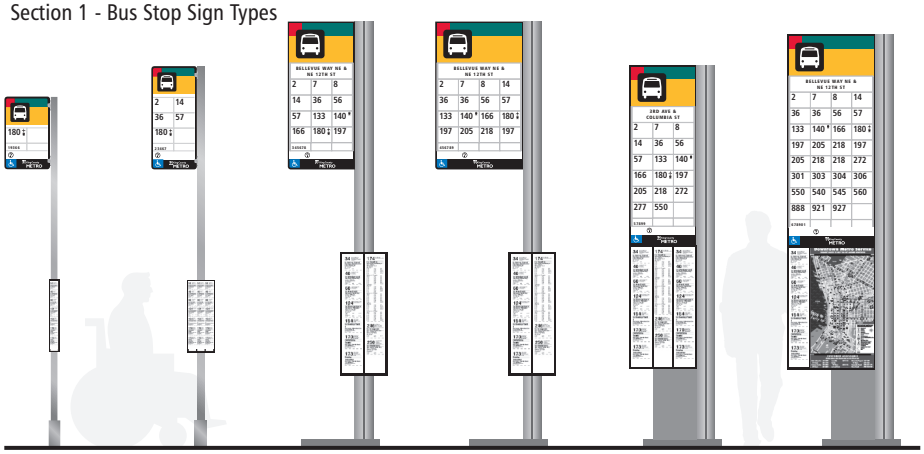
This section contains installation instructions and information on base plate to ground connections and site requirements for all sign types.

Section 10: Appendix

This section is to be provided to bidders and provides requirements for construction submittals, product data, shop drawings, samples, maintenance requirements, quality assurance, and handling. Also included are structural engineering calculations for sign and foundation designs.

Designers: Mayer/Reed & Jon Bentz Design

Section 1 - Bus Stop Sign Types



Sign Type A.1 Sign Type A.2 Sign Type B.1 Sign Type B.2 Sign Type C.1 Sign Type C.2

Section 1 - Accessory Bus Stop Sign Types

Sign Type J.1.B/C Skip Stop

Sign Type J.2.A

Sign Type J.2.B/C

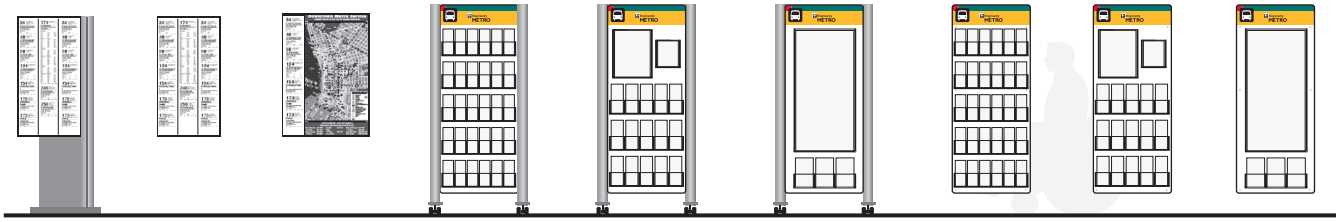
Sign Type J.3.A

Sign Type J.3.B/C

Sign Type J.4.A

Sign Type J.4.B/C

Section 2 - Customer Information Display Sign Types



Sign Type D.1 Sign Type D.2 Sign Type D.2 Sign Type M.1 Sign Type M.2 Sign Type M.3 Sign Type N.1 Sign Type N.2 Sign Type N.

Section 4 - Identification Sign Types

Sign Type E.1 Sign Type E.2 Sign Type F.1 Sign Type F.2 Sign Type H.1

Designers: Mayer/Reed & Jon Bentz Design

How Metro Produces a Sign:

1. A Sign is Needed
Use this sign standards manual to determine the type of sign you need. The brief descriptions below provide general details about producing bus stop signs and facility signs. The Information Production group is responsible for coordinating the production and installation of Metro signs.

2. Planning
Transit Route Facilities typically determines the need and locations for new or revised bus stop signs. Other Metro work groups also request other types of signs.

3. Content Production
Most requests for new or revised signs are initially placed with Information Production. IP typically orders and coordinates construction (including fabrication and painting).

Information Production project and cost center numbers are used when ordering standard signs. If a request comes from another group for a special project, that work group or project provides the account numbers.

Bus Stop Sign Types A.1, A.2:
Information Production formats these signs using Letra Studio software, based on details provided by Transit Route Facilities.

Bus Stop Sign Types B.1, B.2, C.1, C.2:
Information Production gets details or requests for these signs from various sources, including service change packages, online bus information, service planners and the SIS database. For service changes only, Information Production uses that information to format the route panel using Letra Studio software. Otherwise, route panel requests go directly to the Paint & Sign Shop.

Standard Facility Sign
(Sign Types E, F and H):
For content and graphic design, refer to this manual or up-to-date artwork on file in Information Production.

Standard state Department of Transportation traffic signs are ordered from the King County Road Services sign shop in Renton. Some traffic and regulatory signs are ordered through the Seattle Department of Transportation if the signs are for installation within the Seattle city limits.

New Sign Types or Custom Facility Signs:
Information Production creates a new design based on information provided by service and facility planners or other Metro staff. Refer to this manual for design guidelines and examples of up-to-date and similar or related sign types.

4. Fabrication - New or Revised Signs:
Information Production typically orders these signs using the Vehicle Maintenance Component Supply Center work request. The Paint & Sign Shop typically produces these signs.

Some signs may need Power & Facilities to do fabrication before installation, such as carpentry. The Work Center in Power & Facilities arranges for that work through Building Facilities Maintenance.

Replacement Signs -
(Rules & Regulations, Park-and-Ride Identification and Farebox Signs):
Unless they need to be modified, these signs are kept in stock and ordered, without a work request, directly through the Paint & Sign Shop. Transit Route Facilities provides address and towing information for use on the Rules & Regulations and Park-and-Ride ID signs.

5. Construction & Installation
A Power & Facilities work request is produced when a sign is completed and ready for installation. Information on these work requests includes the type of sign, location for installation, preferred installation date, project numbers, and contact information if there are questions.

Transit Route Facilities and Information Production also work with Design & Construction.

Designers: Mayer/Reed & Jon Bentz Design

Metro Sign Stakeholders

Planning

Service Development

- **Transit Route Facilities**
  - Supervisor
  - Route Facility Planners–Districts
  - Route Facility Planners–Data
- **Scheduling**
  - Schedule Planners–Bases
- **Service Planning**
  - Service Planners–Districts
- **Speed and Reliability**
  - Transportation Planner–Real-time

Content Production

Sales & Customer Services

- **Marketing & Service Information**
  - Supervisor
  - Chief of Service Information
  - Graphic Designers
  - Marketing Communications Specialist–Signage Program Lead
  - Marketing Communications Specialist–Bus Stop Signs

Operations

- **Service Quality**

Information Technology

- Program/Project Managers
- Applications Developers

Fabrication

Vehicle Maintenance

- **Major Maintenance/Component Supply Center**
- **Paint & Sign Shop**
  - Chief

Power & Facilities

- **Work Center**
- **Building Facilities Maintenance**
  - Chief

Construction & Installation

Power & Facilities

- **Field Facilities Maintenance**
  - Supervisor
  - Chief

Design & Construction

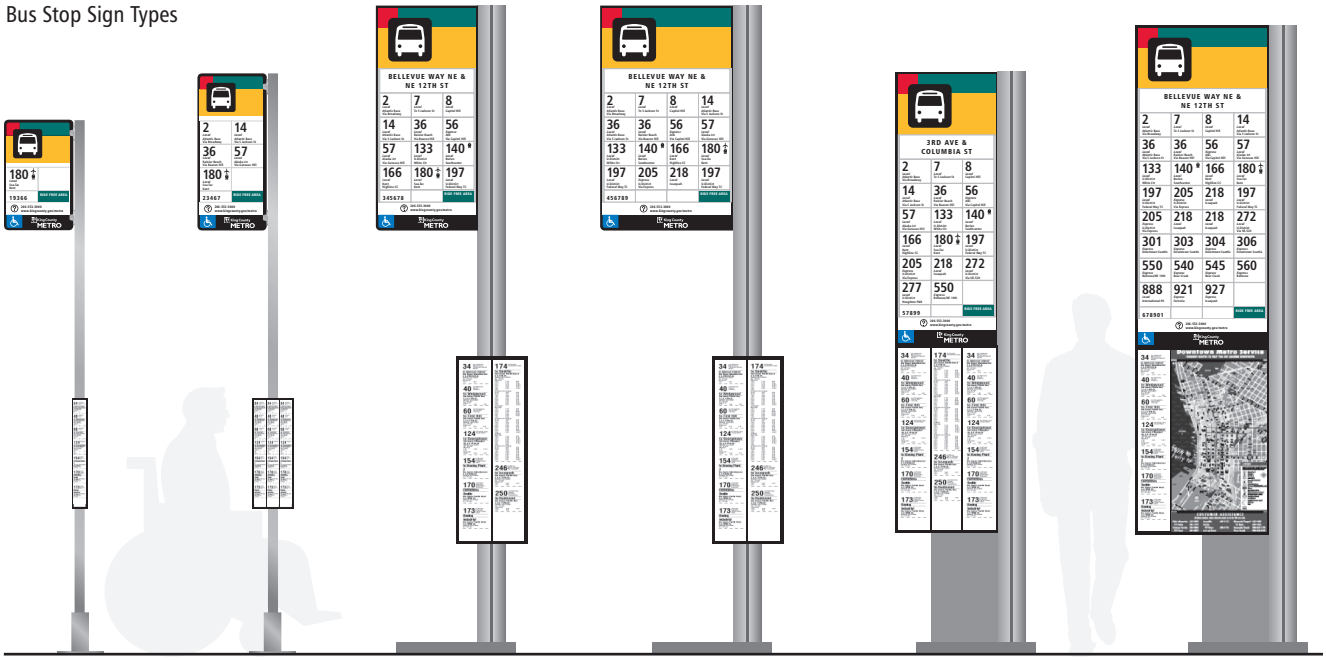
- **Real Estate**
- **Civil Engineering**
- **Program/Project Management**

Designers: Mayer/Reed & Jon Bentz Design

SECTION 1: TABLE OF CONTENTS

Designers: Mayer/Reed & Jon Bentz Design

Bus Stop Sign Types



Sign Type A.1
1-2 Routes

Sign Type A.2
3-6 Routes

Sign Type B.1
6-12 Routes

Sign Type B.2
12-16 Routes

Sign Type C.1
6-18 Routes

Sign Type C.2
18-32 Routes

Accessory Bus Stop Sign Types

Sign Type J.3.B/C

Sign Type J.2.A

Sign Type J.2.B/C

Sign Type J.3.A

Sign Type J.3.B/C

Sign Type J.4.A

Sign Type J.4.B/C

Design Rational: A family of signs has been developed in order to simplify Metro's process for ordering new signs and replacing existing signs. The color palette and graphic design has been created to enhance and compliment Metro's current bus paint schemes. The sign program features groupings of information for each bus route that is applied to each sign type. The primary grouping is contained within a consistently sized graphic called a "Route Block". The Route Block's size is the core of the sign system and determines the overall sign face size for all bus stop sign types. A Route Block's height and width dimensions do not change and forms a standard module applied consistently through each sign type variation. Each Route Block contains a bus route number, bus route destination, and route modifier.
See Section 6 for further Route Block information.

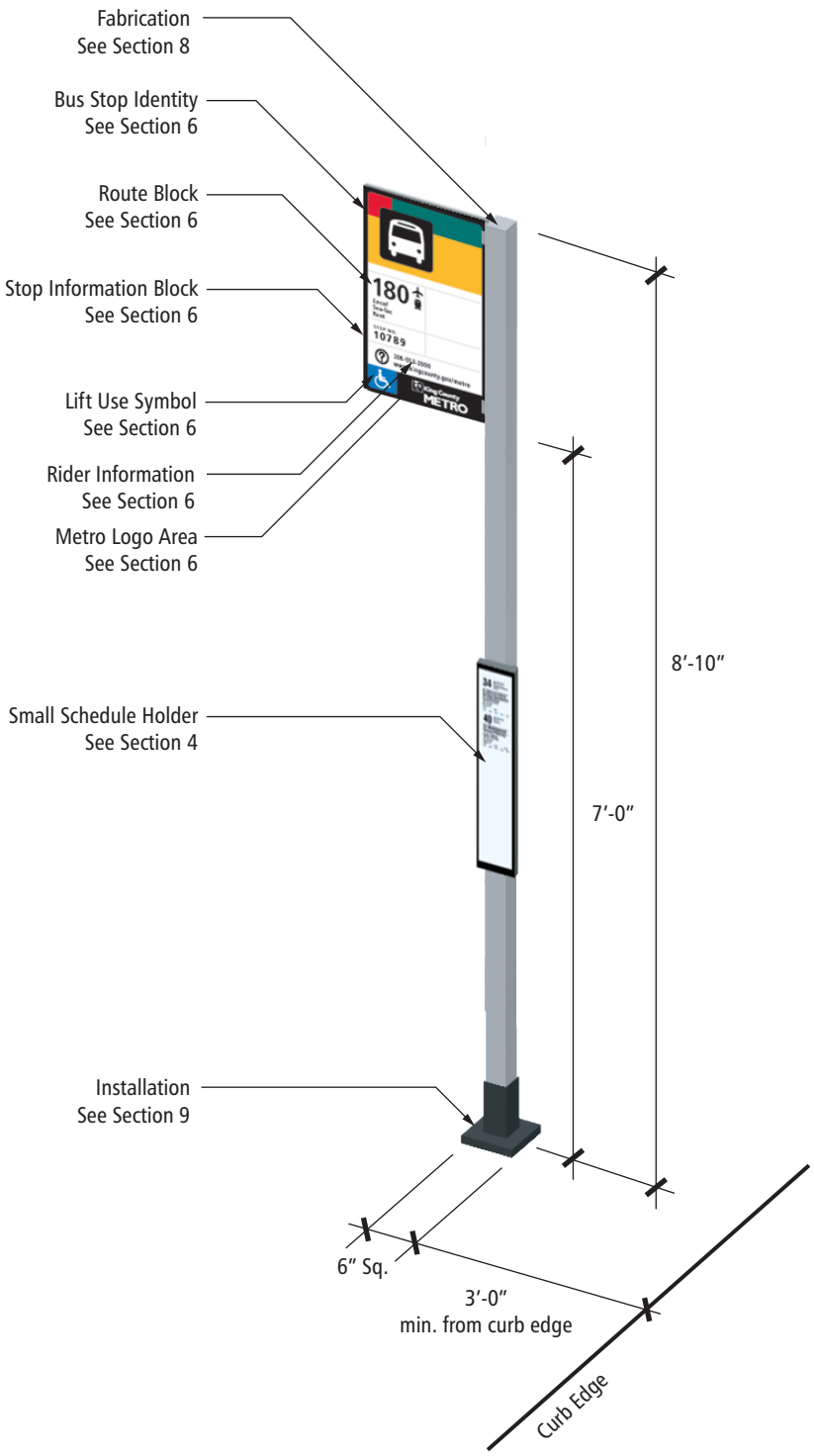
Designers: Mayer/Reed & Jon Bentz Design

Route Quantities/Determining Use: The number of route blocks needed for an individual zone is the primary determining factor for choosing a sign type. Besides the number of routes determining the size of a sign at a particular zone, the amount of additional transit related material, such as maps, fare information, tunnel information, and current events should be considered, especially at high traffic locations. The A.1 and A.2 sign types are to be used for the majority of Metro's system. When route block quantities per zone increase to more than a sign type A.2 can display (6 routes), a sign type B.1 or C.1 should be used. See "Location Planning" for assistance with choosing which to use.

Location Planning: Under typical location circumstances, sign types A.1 and A.2 are to be located in neighborhood settings. Sign Types B.1 and B.2 are to be used in SODO, urban neighborhoods and University of Washington locations. Sign Types C.1 and C.2 are to be used in downtown, transit center, Sea-Tac Airport and Freeway Station locations.

Accessory Sign Types: A smaller sized family of signs for customer and operator information and direction is part of this system. Accessory sign types are designed to install to any bus stop sign's post at heights planned for typical viewing angles. Sometimes these signs are used by operators and customers, such as a bus bay number sign. In these instances, installation and sign content legibility have been tested from boarding and operator viewing angles. Should the need arise for using more than 1 accessory sign per zone, see Page 1.14 for installation and hierarchy instructions.

Designers: Mayer/Reed & Jon Bentz Design



Location: Neighborhood sidewalks and utility poles.

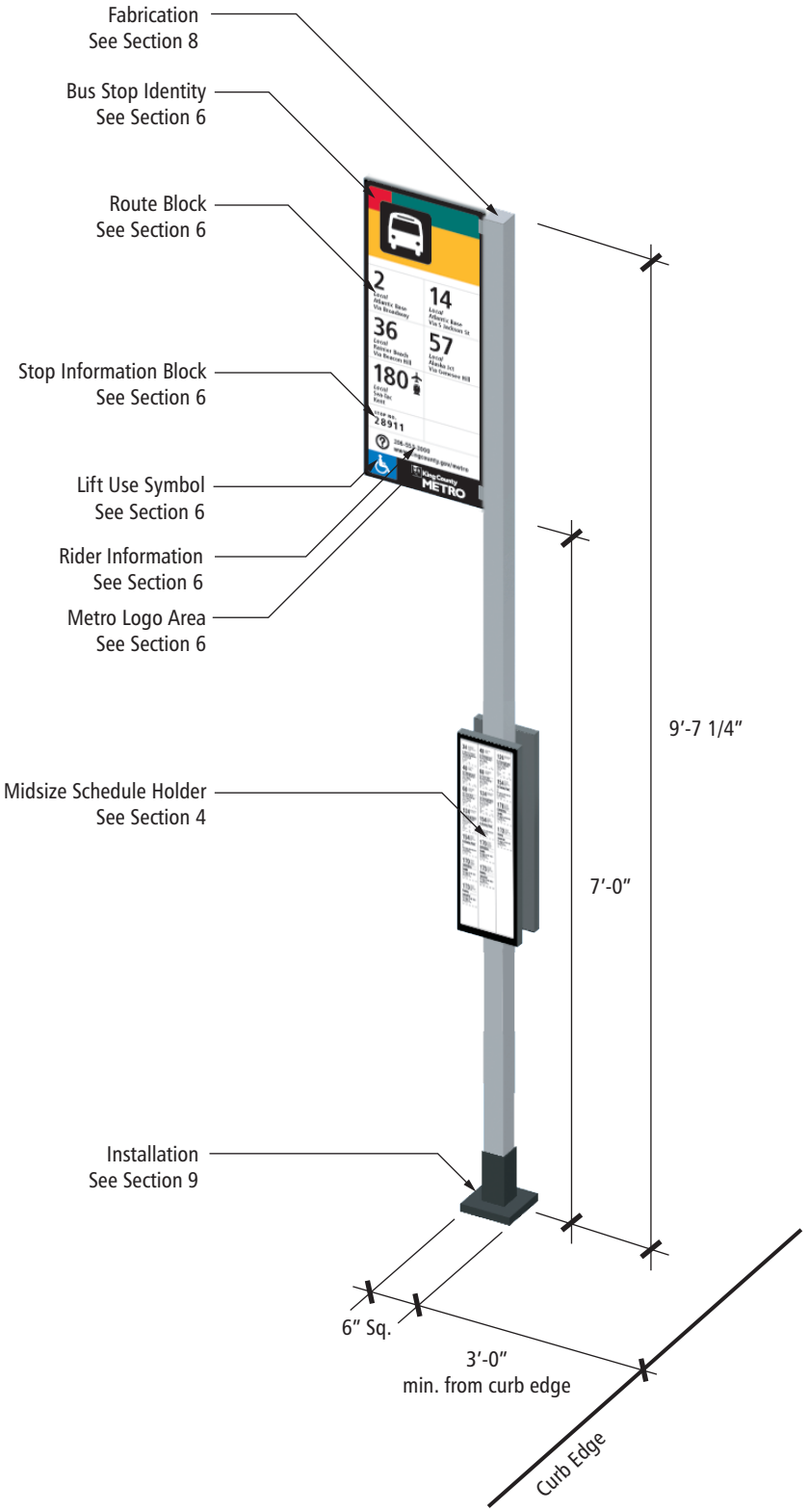
Route Quantities: 1 - 2

Schedule Holder: Single sided, single column, insert size: 2 9/16" X 21 3/8". Insert quantity: 1

Fabrication: Double-sided digitally printed graphics on reflective vinyl applied to aluminum panel. Panel connects to 2"x2"galvanized aluminum tube with Metro standard brackets.

Installation: A sidewalk installation uses a break-away galvanized aluminum baseplate anchor bolts set in concrete sidewalk 3'-0" from curb edge. The sign's pole side faces the curb and it's panel side faces away from curb edge. A utility pole installation uses Metro standard pole straps around pole. Straps attach to panel with standard brackets.

Designers: Mayer/Reed & Jon Bentz Design



Location: Neighborhood sidewalks and utility poles.

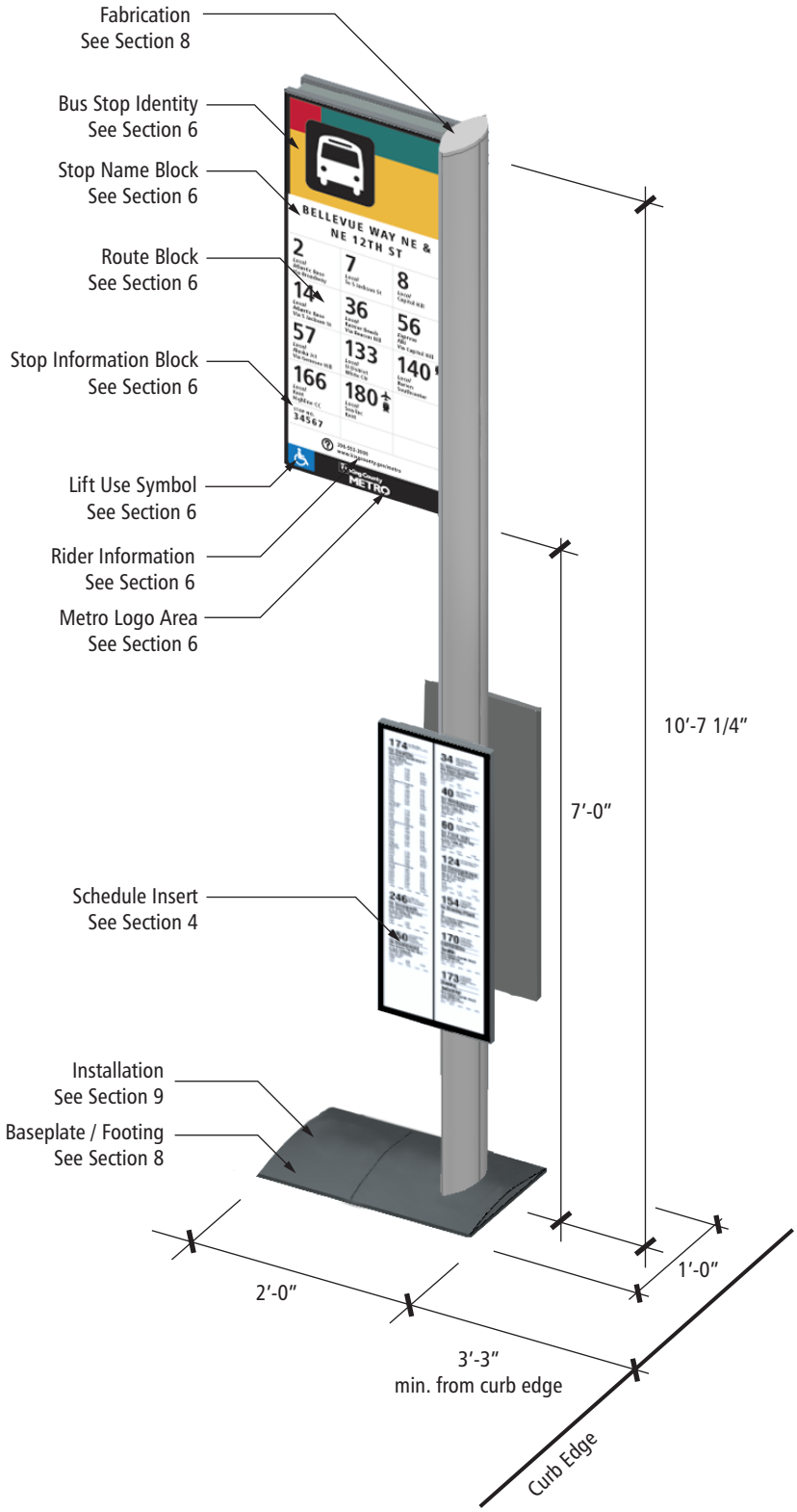
Route Quantities: 3 - 6

Schedule Holder: Double sided, triple column, insert size: 2 9/16" X 21 3/8", insert quantity: 6

Fabrication: Double-sided digitally printed graphics on reflective vinyl applied to aluminum panel. Panel connects to 2"x2" galvanized aluminum tube with Metro standard brackets.

Installation: A sidewalk installation uses a break-away galvanized aluminum baseplate anchor bolts set in concrete sidewalk 3'-0" from curb edge. The sign's pole side faces the curb and it's panel side faces away from curb edge. A utility pole installation uses Metro standard pole straps around pole. Straps attach to panel with standard brackets.

Designers: Mayer/Reed & Jon Bentz Design



Location: Use at SODO, urban neighborhoods, University of Washington bus stops. Install 3′-3″ from curb edge. Pole side faces curb.

Route Quantities: 7 - 12

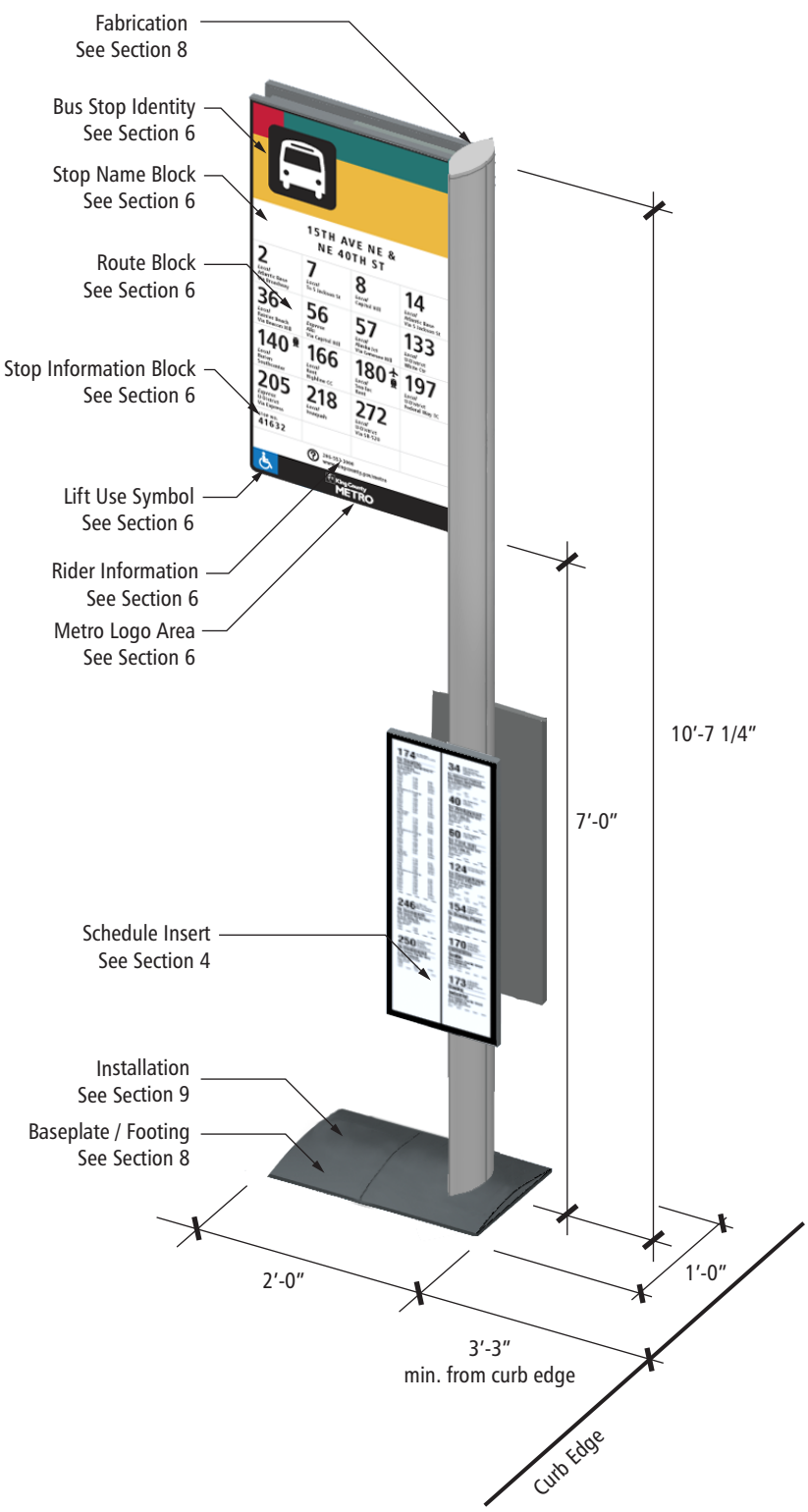
Sign Cabinet Fabrication: Painted aluminum box with double sided digitally printed graphics on reflective vinyl. Changeable route block graphics are applied to extruded aluminum tiles that slide in/out on extruded aluminum tracks.

Pole Fabrication: Structural steel pole attaches to baseplate and is clad in 2-piece aluminum extrusion and aluminum top cap.

Schedule Display Fabrication: 2 Changeable aluminum display cases with removable clear windows. Insert size: 5 5/8″ x 35 7/8″. Insert quantity: 2 in each case.

Installation: Steel baseplate mounts with anchor bolts set in foundation 3′-3″ from curb edge. Pole side faces curb and panel side faces away from curb edge.

Designers: Mayer/Reed & Jon Bentz Design



Location: Use at SODO, urban neighborhoods, University of Washington bus stops. Install 3′-3″ from curb edge. Pole side faces curb.

Route Quantities: 13 - 16

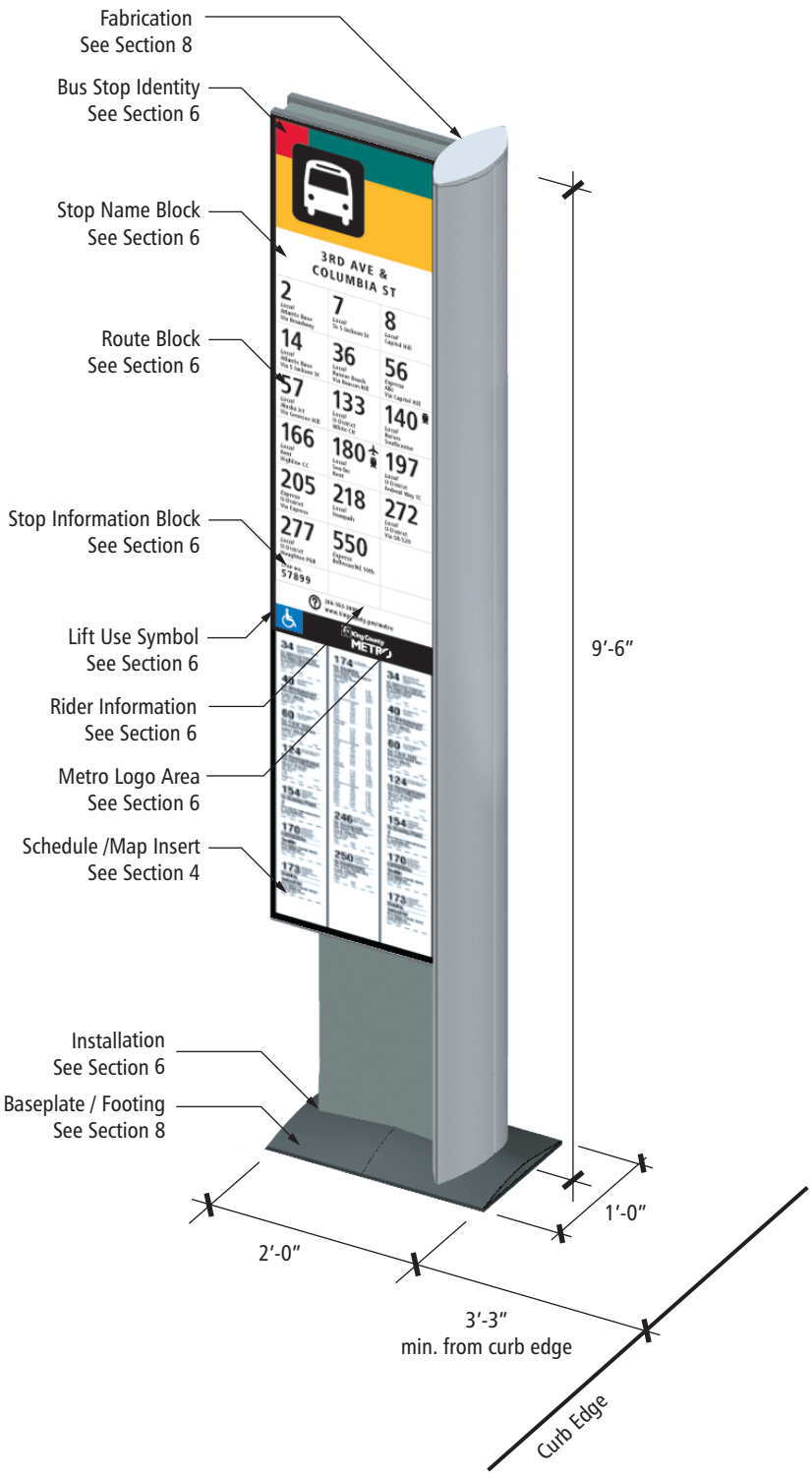
Sign Cabinet Fabrication: Painted aluminum box with double sided digitally printed graphics on reflective vinyl. Changeable route block graphics are applied to extruded aluminum tiles that slide in/out on extruded aluminum tracks.

Pole Fabrication: Structural steel pole attaches to baseplate and is clad in 2-piece aluminum extrusion and aluminum top cap.

Schedule Display Fabrication: 2 Changeable aluminum display cases with removable clear windows. Insert size: 5 5/8″ x 35 7/8″. Insert quantity: 2 in each case.

Installation: Steel baseplate mounts with anchor bolts set in foundation 3′-3″ from curb edge. Pole side faces curb and panel side faces away from curb edge.

Designers: Mayer/Reed & Jon Bentz Design



Location: Use at downtown, transit centers, Sea-Tac Airport, freeway station bus stops. Install 3′-3″ from curb edge. Pole side faces curb.

Route Quantities: 7 - 18

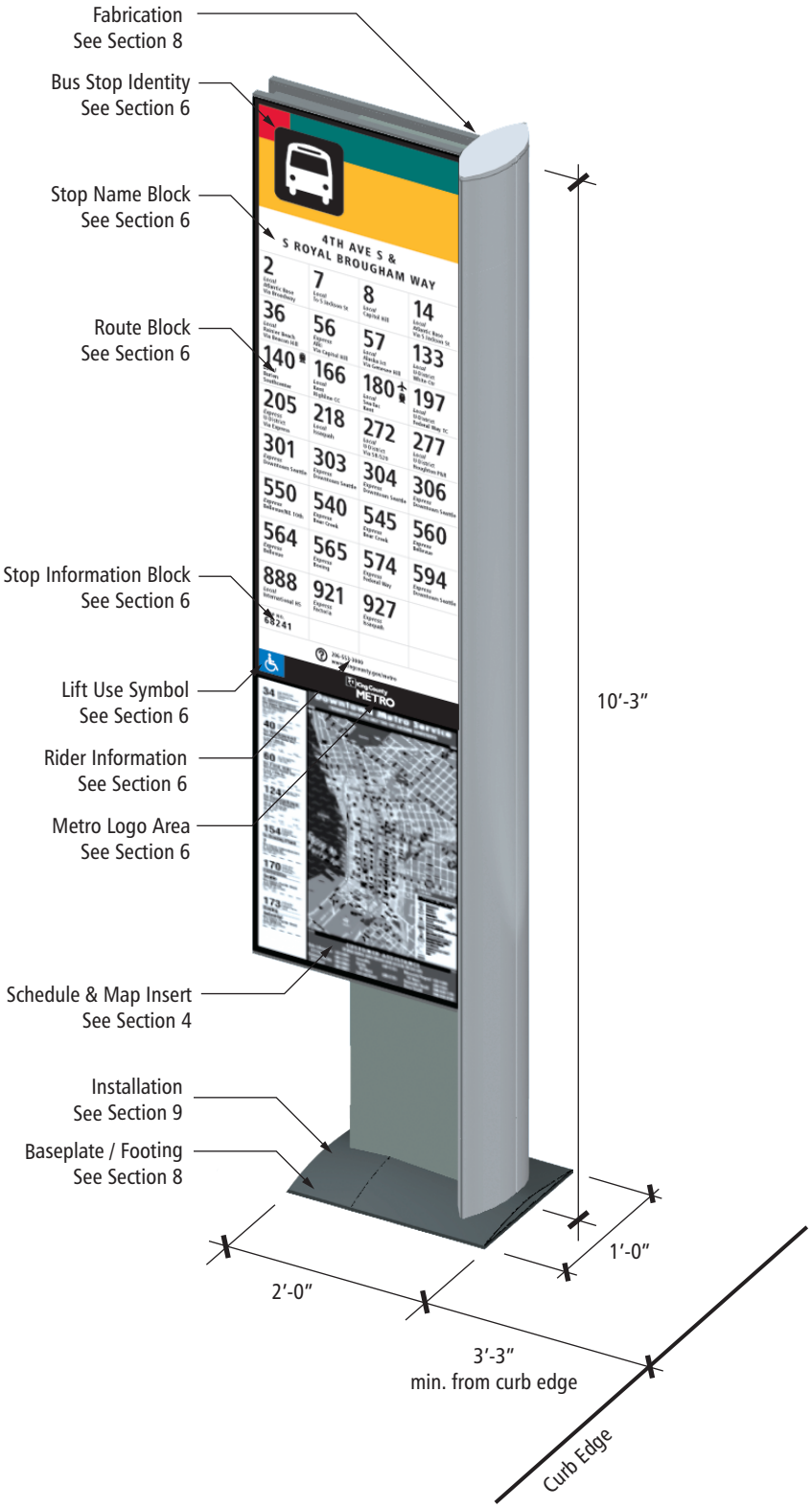
Sign Cabinet Fabrication: Painted aluminum box with double sided digitally printed graphics on reflective vinyl. Changeable route block graphics are applied to extruded aluminum tiles that slide in/out on extruded aluminum tracks.

Pole Fabrication: Structural steel pole attaches to baseplate and is clad in 2-piece aluminum extrusion and aluminum top cap.

Schedule Display Fabrication: Aluminum display case with removable clear window. Insert size: 18″ x 36″. Insert quantity: 1 in each case.

Installation: Steel baseplate mounts with anchor bolts set in foundation 3′-3″ from curb edge. Pole side faces curb and panel side faces away from curb edge.

Designers: Mayer/Reed & Jon Bentz Design



Location: Use at downtown, transit centers, Sea-Tac Airport, freeway station bus stops. Install 3 feet, 3 inches from curb edge. Pole side faces curb.

Route Quantities: 19 - 32

Sign Cabinet Fabrication: Painted aluminum box with double sided digitally printed graphics on reflective vinyl. Changeable route block graphics are applied to extruded aluminum tiles that slide in/out on extruded aluminum tracks.

Pole Fabrication: Structural steel pole attaches to baseplate and is clad in 2-piece aluminum extrusion and aluminum top cap.

Schedule Display Fabrication: Aluminum display case with removable clear window . Insert size: 24″ x 36″. Insert quantity: 1 in each case.

Installation: Steel baseplate mounts with anchor bolts set in concrete sidewalk 3′-3″ from curb edge. Pole side faces curb and panel side faces away from curb edge.

Designers: Mayer/Reed & Jon Bentz Design

Horizontal Method
Route Numbers in ascending order
from left to right, top to bottom

Lowest Number

19 *Local* West Magnolia Via Seattle Ctr	**24** *Local* Discovery Park Via Seattle Ctr	**33** *Local* East Magnolia Via Seattle Ctr
84 *Local* Madison Park Via Pike St	**140** *Local* Burien Southcenter	**180** *Local* Sea-Tac Kent
280 *Express* Reunion Via I-5, SR-520	**401** *Local* Lynnwood TC Via I-5	**402** *Express* Lynnwood TC Via I-5
404 *Local* Edmonds Via I-5	**405** *Express* Edmonds Via I-5	**408** *Local & Express* Mountlake Terrace Via I-5
410 *Local* Mariner P&R Via I-5, 128th St	**411** *Express* Mariner P&R Via I-5, 128th St	**414** *Local* McCollum Park P&R Via I-5
417 *Local* Mukilteo Via I-5	**422** *Local* Stanwood Via I-5	

Highest Number

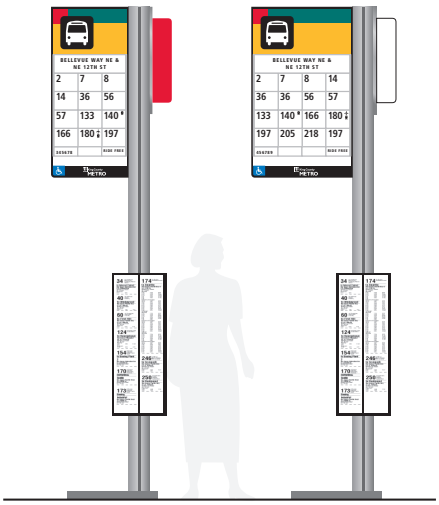
Vertical Method
Route Numbers in ascending order
from top to bottom, left to rightr

Lowest Number

19 *Local* West Magnolia Via Seattle Ctr	**280** *Express* Reunion Via I-5, SR-520	**410** *Local* Mariner P&R Via I-5, 128th St
24 *Local* Discovery Park Via Seattle Ctr	**401** *Local* Lynnwood TC Via I-5	**411** *Express* Mariner P&R Via I-5, 128th St
33 *Local* East Magnolia Via Seattle Ctr	**402** *Express* Lynnwood TC Via I-5	**414** *Local* McCollum Park P&R Via I-5
84 *Local* Madison Park Via Pike St	**404** *Local* Edmonds Via I-5	**417** *Local* Mukilteo Via I-5
140 *Local* Burien Southcenter	**405** *Express* Edmonds Via I-5	**422** *Local* Stanwood Via I-5
180 *Local* Sea-Tac Kent	**408** *Local & Express* Mountlake Terrace Via I-5	

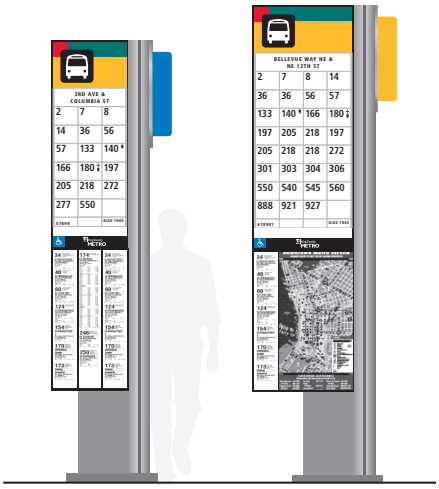
Highest Number

Designers: Mayer/Reed & Jon Bentz Design



Sign Type J.1.B/C
on Sign Type B.1

Sign Type J.1.B/C
on Sign Type B.2



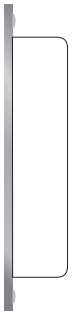
Sign Type J.1.B/C
on Sign Type C.1

Sign Type J.1.B/C
on Sign Type C.2

Sign Type J.3.B/C
Scale: 3/16″ = 1″

Fabrication
See Section 8

Bkgd color: Red
PMS 186



Bkgd color: White

Bkgd color: Blue
PMS 300

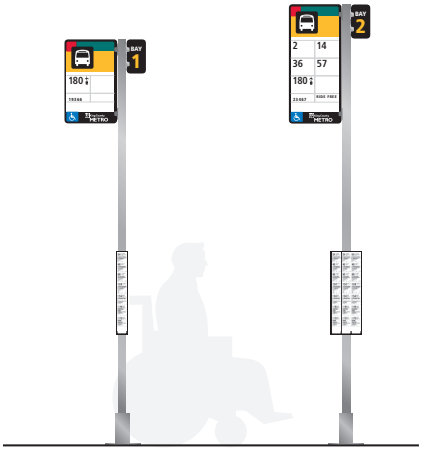
Bkgd color: Yellow
PMS 1235

Location: Sign mounts to curbside sign poles. Top of bracket aligns with top of sign column.

Fabrication: Double-sided digitally printed graphics on reflective vinyl applied to aluminum panel. Aluminum panel attaches to aluminum bracket with tamper-resistant locking plate.

B/C Installation: Bracket slips into sign column extrusion channel and locks into place.

Designers: Mayer/Reed & Jon Bentz Design

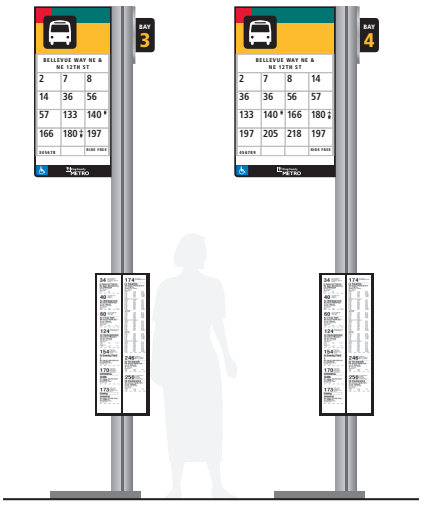


Sign Type J.2.A
on Sign Type A.1

Sign Type J.2.A
on Sign Type A.2

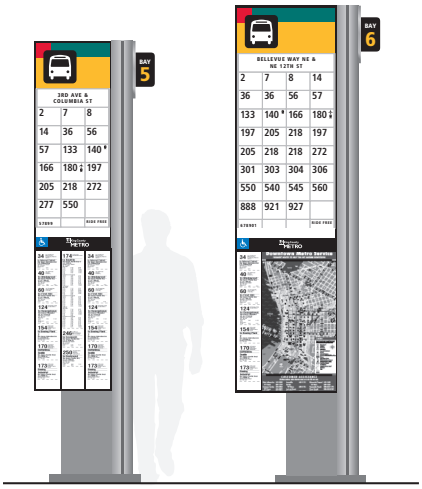
Sign Type J.2.A
Fabrication
See Section 8

Sign Type J.2.B/C
Fabrication
See Section 8



Sign Type J.2.B/C
on Sign Type B.1

Sign Type J.2.B/C
on Sign Type B.2



Sign Type J.2.B/C
on Sign Type C.1

Sign Type J.2.B/C
on Sign Type C.2

J.2.A Location: Sign mounts to curb side sign poles. Top of bracket aligns with top of sign pole.

J.2.A Fabrication: Double sided digitally printed graphics on reflective vinyl applied to aluminum panel. Aluminum panel attaches to sign post with Metro standard brackets.

J.2.A Installation: Bracket mechanically fastens to sign post.

J.2.B/C Location: Sign mounts to curb-side sign poles. Top of bracket aligns with top of sign column.

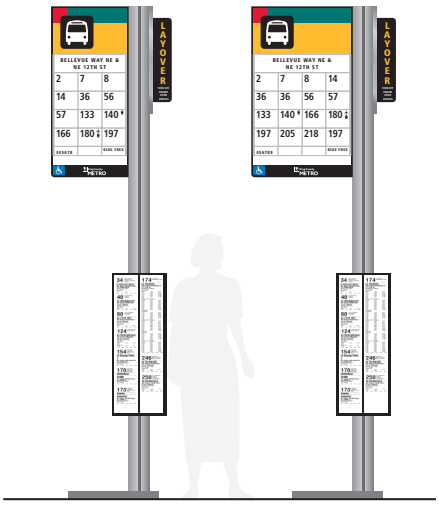
J.2.B/C Fabrication: Double sided digitally printed graphics on reflective vinyl applied to aluminum panel. Aluminum panel attaches to aluminum bracket with tamper resistant locking plate.

J.2.B/C Installation: Bracket slips into sign column extrusion channel and locks into place.

Designers: Mayer/Reed & Jon Bentz Design

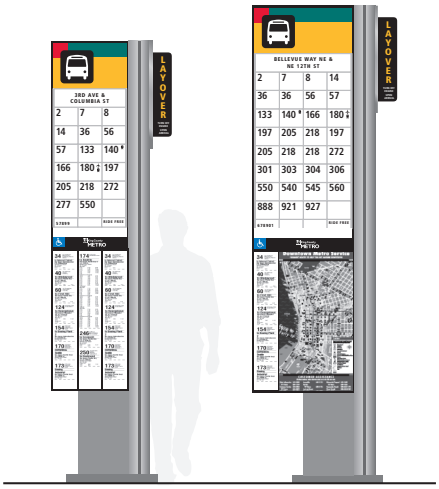
Sign Type J.3.A
on Sign Type A.1

Sign Type J.3.A
on Sign Type A.2



Sign Type J.3.B/C
on Sign Type B.1

Sign Type J.3.B/C
on Sign Type B.2



Sign Type J.3.B/C
on Sign Type C.1

Sign Type J.3.B/C
on Sign Type C.2

Sign Type J.3.A
Fabrication
See Section 8

Sign Type J.3.B/C
Fabrication
See Section 8

J.2.A Location: Sign mounts to curb side sign poles. Top of bracket aligns with top of sign pole.

J.2.A Fabrication: Double sided digitally printed graphics on reflective vinyl applied to aluminum panel. Aluminum panel attaches to sign post with Metro standard brackets.

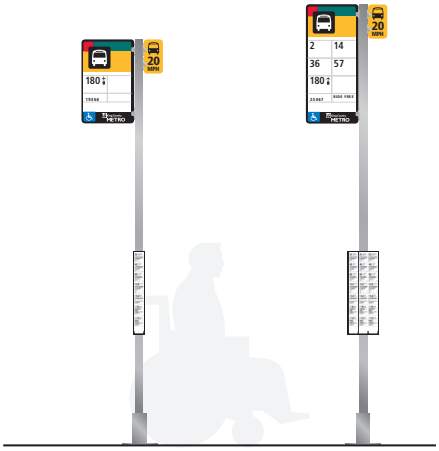
J.2.A Installation: Bracket mechanically fastens to sign post.

J.2.B/C Location: Sign mounts to curb-side sign poles. Top of bracket aligns with top of sign column.

J.2.B/C Fabrication: Double sided digitally printed graphics on reflective vinyl applied to aluminum panel. Aluminum panel attaches to aluminum bracket with tamper resistant locking plate.

J.2.B/C Installation: Bracket slips into sign column extrusion channel and locks into place.

Designers: Mayer/Reed & Jon Bentz Design

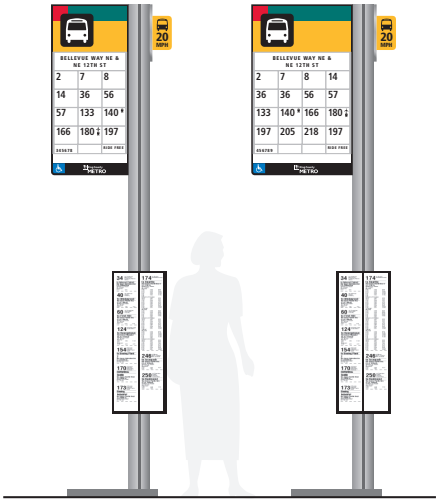


Sign Type J.4.A
on Sign Type A.1

Sign Type J.4.A
on Sign Type A.2

Sign Type J.4.A
Fabrication
See Section 8

Sign Type J.4.B/C
Fabrication
See Section 8



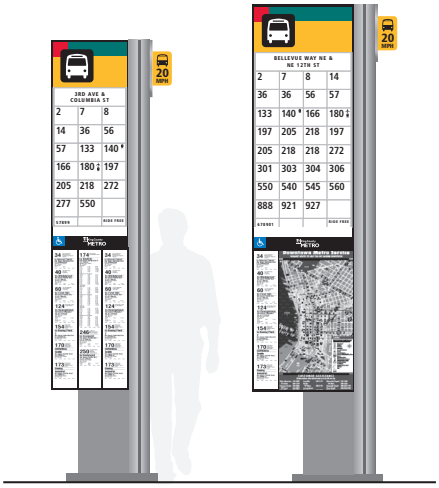
Sign Type J.4.B/C
on Sign Type B.1

Sign Type J.4.B/C
on Sign Type B.2

J.2.A Location: Sign mounts to curb side sign poles. Top of bracket aligns with top of sign pole.

J.2.A Fabrication: Double sided digitally printed graphics on reflective vinyl applied to aluminum panel. Aluminum panel attaches to sign post with Metro standard brackets.

J.2.A Installation: Bracket mechanically fastens to sign post.



Sign Type J.4.B/C
on Sign Type C.1

Sign Type J.4.B/C
on Sign Type C.2

J.2.B/C Location: Sign mounts to curb-side sign poles. Top of bracket aligns with top of sign column.

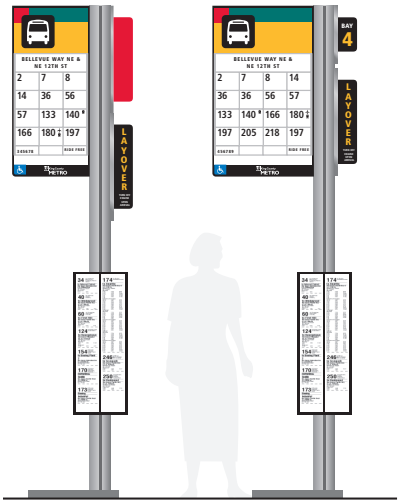
J.2.B/C Fabrication: Double sided digitally printed graphics on reflective vinyl applied to aluminum panel. Aluminum panel attaches to aluminum bracket with tamper resistant locking plate.

J.2.B/C Installation: Bracket slips into sign columns extrusion channel and locks into place.

Designers: Mayer/Reed & Jon Bentz Design

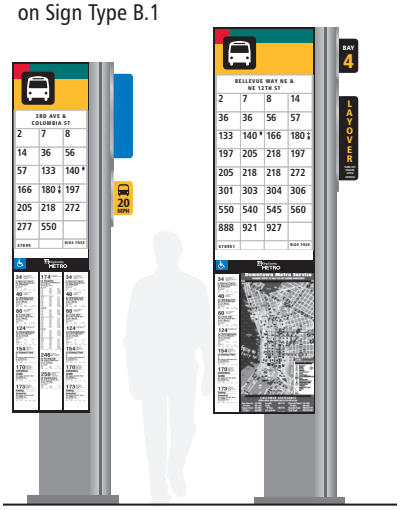
Sign Types J.3.A
& (TBD)
on Sign Type A.1

Sign Types J.3.A
& J.2.A
on Sign Type A.2



Sign Types J.1.B/C
& J.3.B/C
on Sign Type B.1

Sign Types J.2.B/C
& J.3.B/C on Sign Type E



ɔign Types J.1.B/C
& J.3.B/C
ɔn Sign Type C.1

Sign Types J.2.B/C
& J.3.B/C
on Sign Type C.2

The bus stop sign family has been designed to allow up to 2 accessory signs per post. If the need arises for multiple signs, see the following list for which sign type is to be installed in the top or bottom position.

Skip Stop - Sign Type J.1B/C:
Top position

Bay Number - Sign Type J.2A / J.2B/C:
Top position

Layover - Sign Type J.3A / J.3B/C:
Bottom position

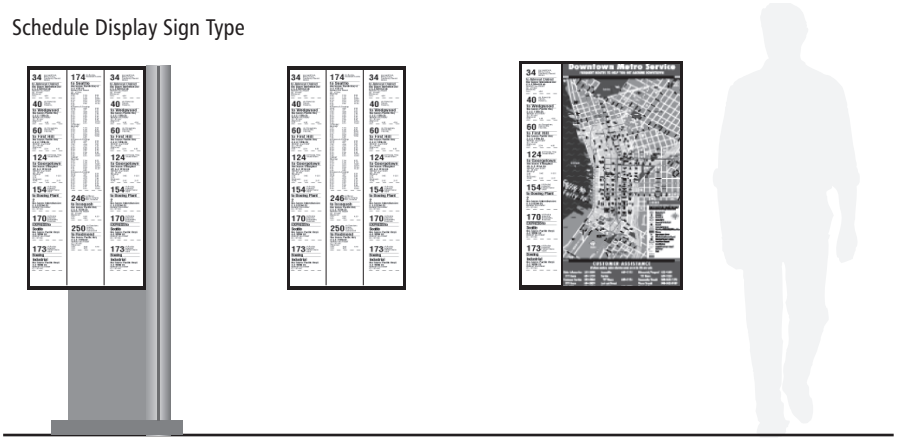
Bus Slow Order - Sign Type J.4A / J.4B/C:
Bottom position

Designers: Mayer/Reed & Jon Bentz Design

SECTION 2: TABLE OF CONTENTS

Designers: Mayer/Reed & Jon Bentz Design

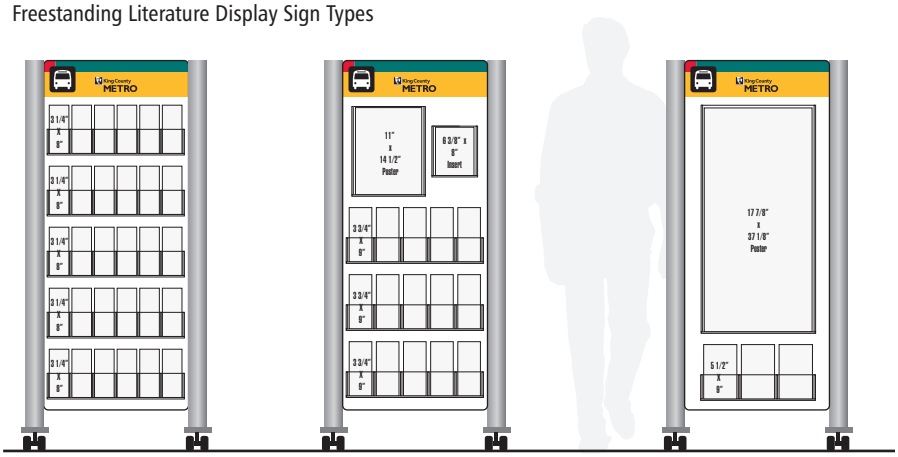
Schedule Display Sign Type



Sign Type D.1 Sign Type D.2 Sign Type D.3

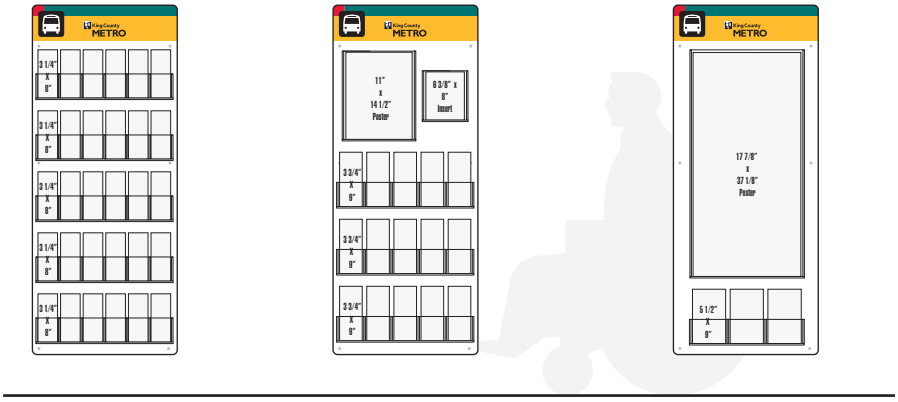
Design Rational: A family of signs has been developed in order to simplify Metro's process for ordering new signs and replacing existing signs. The color palette and graphic design has been created to enhance and compliment Metro's current bus paint schemes.

Freestanding Literature Display Sign Types



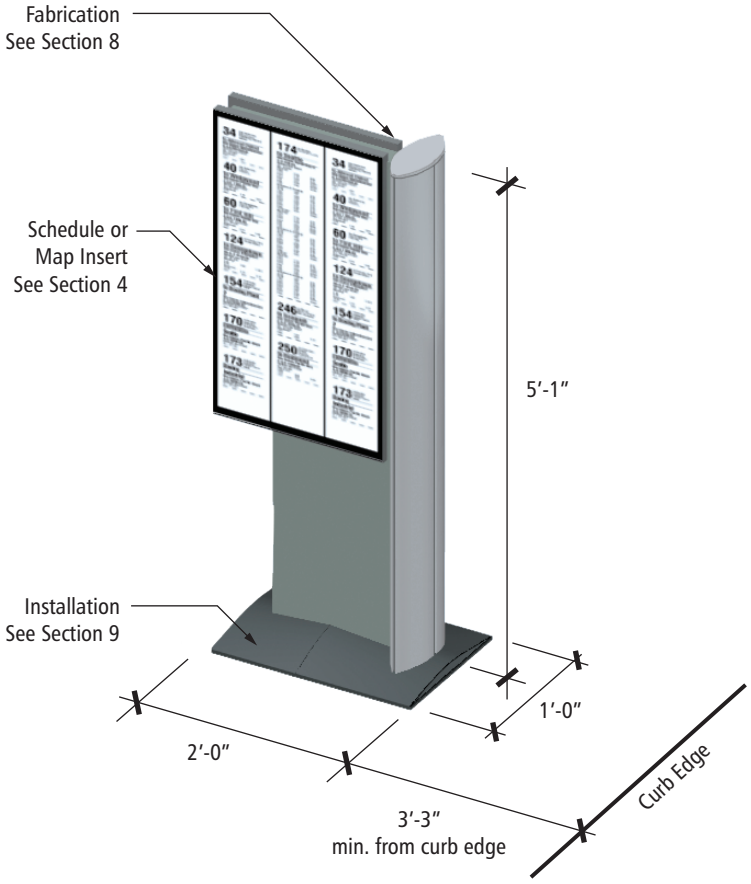
Sign Type M.1 Sign Type M.2 Sign Type M.3

Wall Mounted Literature Display Sign Types



Sign Type N.1 Sign Type N.2 Sign Type N.3

Designers: Mayer/Reed & Jon Bentz Design



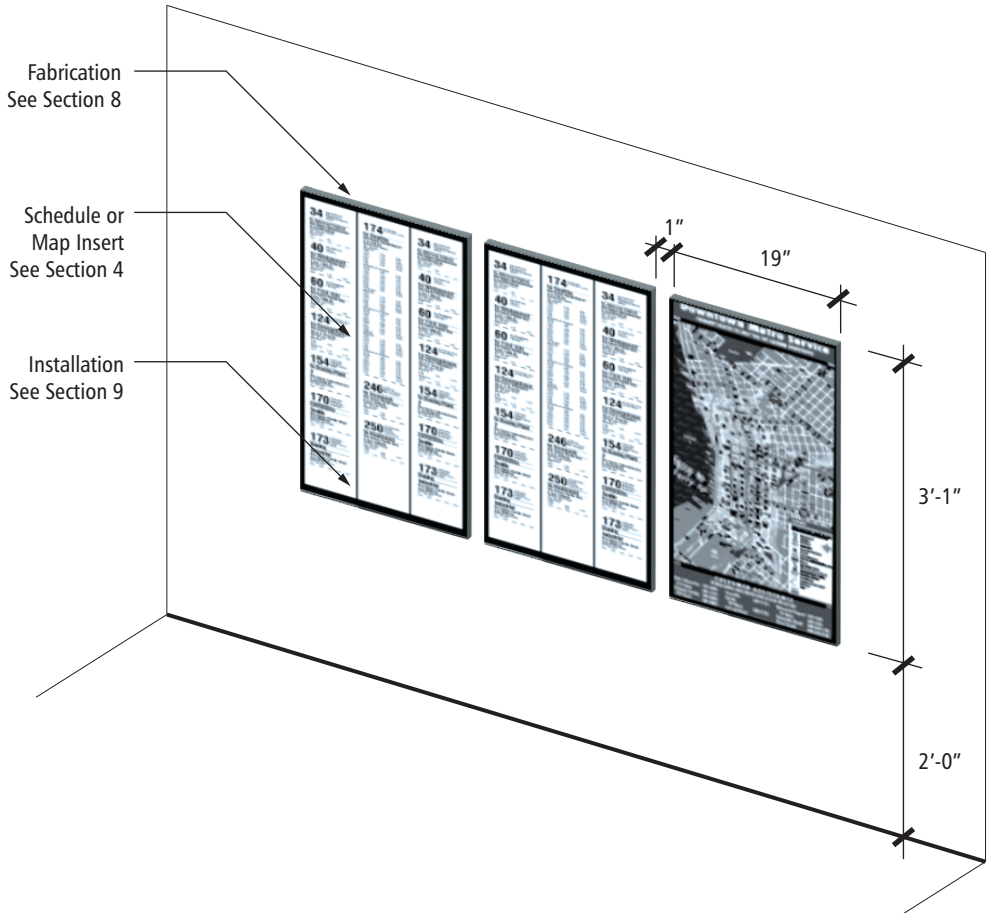
Determining Use: The number of routes needed for an individual zone is the primary determining factor for choosing a sign type D.1. When the number of routes per zone increases beyond the capacity of a sign type B.1, B.2, C.1, or C.2 display case, a sign type D.1 should be used to display the overflow information. Besides the number of routes determining if a sign type D.1 is needed at a particular zone, the amount of additional transit related material, such as maps, fare information, tunnel information, and current events should be considered, especially at high traffic locations. The Information Production Group in the Sales and Customer Services Section is responsible for maintaining information in the display cases.

Location: Use if needed at downtown, transit centers, Sea-Tac Airport, freeway station bus stops. Install 3′-3″ feet from curb edge. Pole side faces curb.

Fabrication: Structural steel pole attaches to baseplate and is clad in 2-piece aluminum extrusion and aluminum top cap. The display case is fabricated from anodized aluminum with removable clear windows. Insert size: 18″ x 36″. Insert quantity: 1 in each case.

Installation: Steel baseplate mounts with anchor bolts set in a foundation. Pole side faces curb and panel side faces away from curb edge.

Designers: Mayer/Reed & Jon Bentz Design



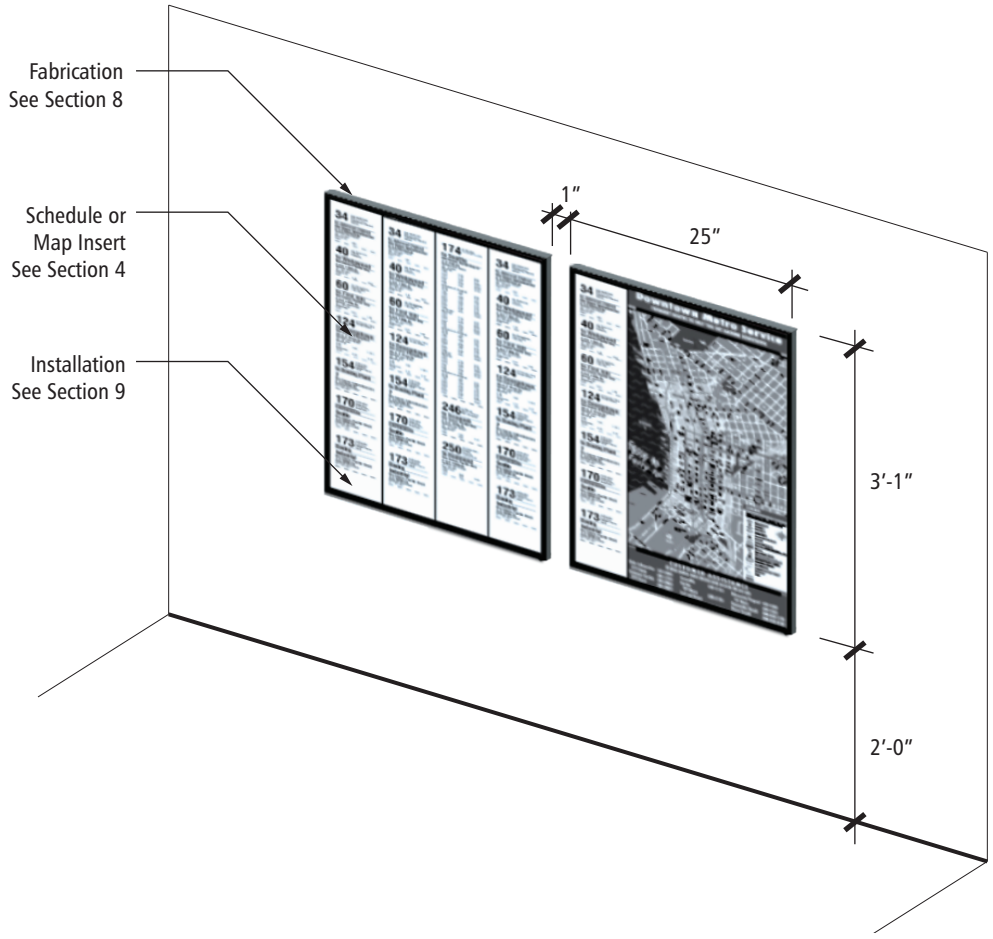
Determining Use: Display cases are used to display route and customer information maps. The Information Production Group in the Sales and Customer Services Section is responsible for maintaining information in the display cases.

Location: Wall mounted at transit centers, Sea-Tac Airport, freeway station bus stops.

Fabrication: Anodized aluminum display case with removable clear windows. Insert size: 18″ x 36″. Insert quantity: 1 in each case.

Installation: Varies per wall condition.

Designers: Mayer/Reed & Jon Bentz Design



Determining Use: Display cases are used to display route and customer information maps. The Information Production Group in the Sales and Customer Services Section is responsible for maintaining information in the display cases.

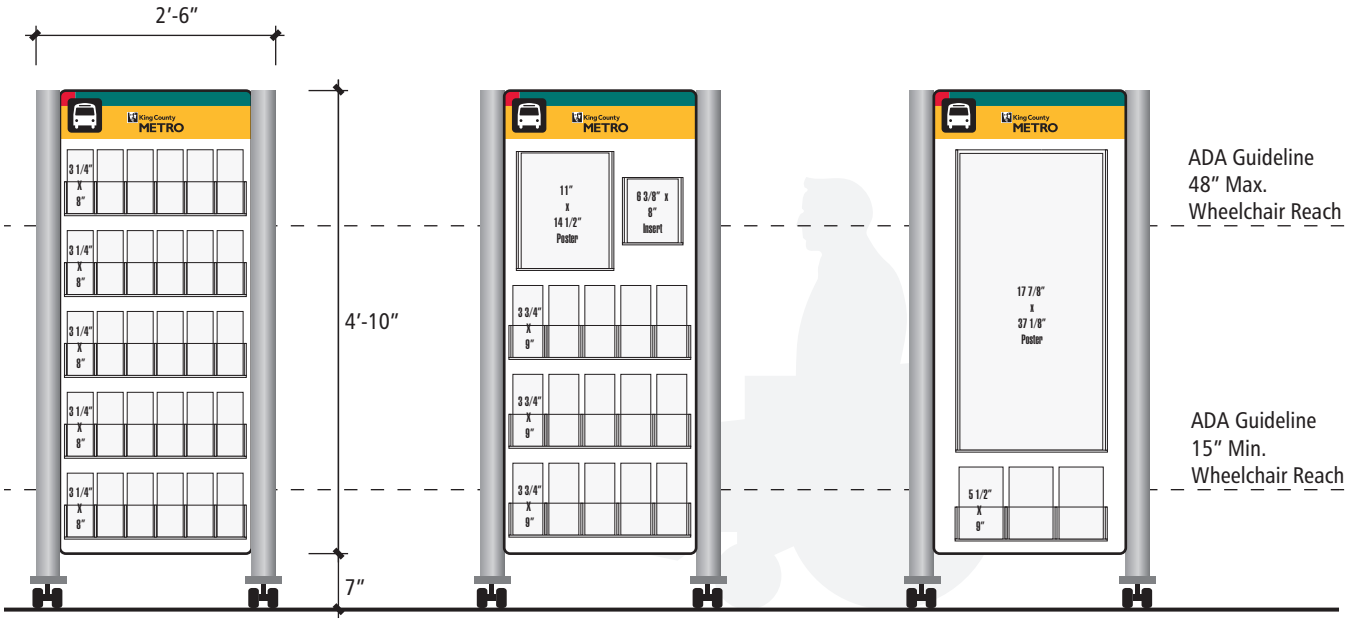
Location: Wall mounted at transit centers, Sea-Tac Airport, freeway station bus stops.

Fabrication: Anodized aluminum display case with removable clear windows. Insert size: 24″ x 36″. Insert quantity: 1 in each case.

Installation: Varies per wall condition.

Designers: Mayer/Reed & Jon Bentz Design

Freestanding Literature Display Sign Types
Scale: 1/2″=1′-0″



Sign Type M.1 | Sign Type M.2 | Sign Type M.3

Literature Quantities:

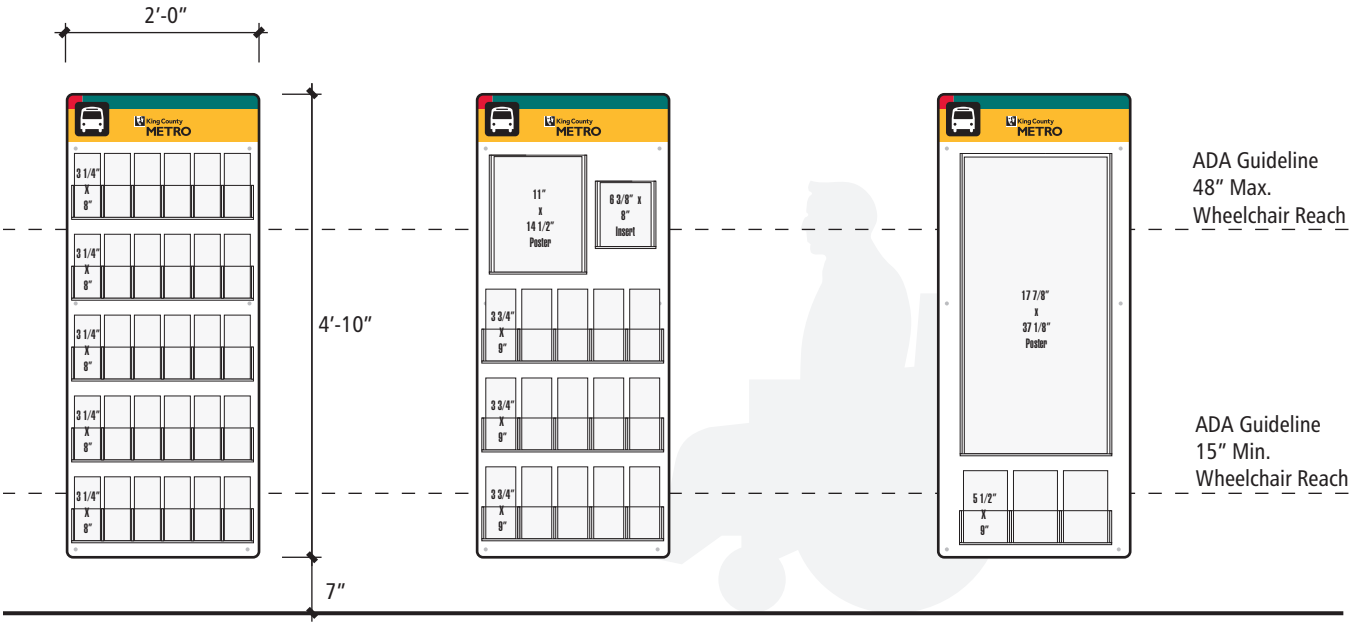
Sign Type M.1 displays:
3″ x 7″ literature pieces - Quantity: 36

Sign Type M.2 displays:
3 3/4″ x 9 Literature pieces - Quantity: 15
11″ x 14 1/2″ Poster piece - Quantity: 1
6 3/8″ x 8″ Poster pieces - Quantity: 1

Sign Type M.3 displays:
5 1/2″ x 9″ Literature pieces - Quantity: 3
17 7/8″ x 37 1/8″ Poster pieces - Quantity: 1

Designers: Mayer/Reed & Jon Bentz Design

Wall Mounted Literature Display Sign Types
Scale: 1/2″=1′-0″



Sign Type N.1 | Sign Type N.2 | Sign Type N.3

Literature Quantities:

Sign Type N.1 displays:
3″ x 7″ literature pieces - Quantity: 36

Sign Type N.2 displays:
3 3/4″ x 9 Literature pieces - Quantity: 15
11″ x 14 1/2″ Poster piece - Quantity: 1
6 3/8″ x 8″ Poster pieces - Quantity: 1

Sign Type N.3 displays:
5 1/2″ x 9″ Literature pieces - Quantity: 3
17 7/8″ x 37 1/8″ Poster pieces - Quantity: 1

Designers: Mayer/Reed & Jon Bentz Design

SECTION 6: TABLE OF CONTENTS

Designers: Mayer/Reed & Jon Bentz Design

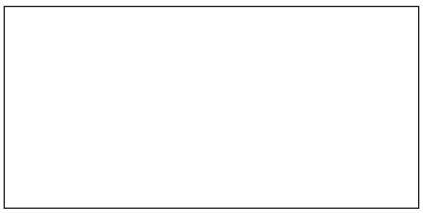
Yellow
Pantone: 1235 C
CMYK: C:0, M:29, Y:91, K:0
Vinyl: 3M 7125-25 Sunflower
Paint: Matthews: MP31456, satin

Red
Pantone 186C
CCMYK: C:0, M:100, Y:76, K:0
Vinyl: 3M 7125-263 Perfect Match Red
Paint: Matthews: MP00643, satin

Teal
Pantone: 329C
CMYK: C:100, M:0, Y:46, K:46
Vinyl: 3M 7125-357 Bermuda Blue
Paint: Matthews: MP23643, satin

Blue
Pantone: 300C
CMYK: C:100, M:44, Y:0, K:0
Vinyl: 3M 7125-57 Olympic Blue
Paint: Matthews: MP00366, satin

Black
Pantone: Black
CMYK: C:0, M:0, Y:0, K:100
Vinyl: 3M 7125-12 Black
Paint: Matthews Black, satin



White
CMYK: C:0, M:0, Y:0, K:0
Vinyl: 3M 7125-10 White
Paint: Matthews: MP-N202, satin

King County Metro Transit uses a standard palette of colors to help the public identify key assets of the sign system and provide strong visual cues to the Metro brand. These colors are consistently used throughout Metro's visual identity, bus paint schemes and signage system. The primary color used for bus stop signs is yellow. Bus stop signs are accented with red and teal. Black and white are used for symbols and information. Blue is used for accessible symbols. Together, these colors reinforce a clear impression of the Metro system in the public's eyes. When working with Metro signs that are highly visible to our customers, these colors should be used.

Designers: Mayer/Reed & Jon Bentz Design

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Humanist 777 Bold Condensed

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Humanist 777 Black Condensed

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Transit Bold Italic

Humanist 777 Condensed Bold is the sign system's "messaging" typeface and is used for the majority of the sign program.

Humanist 777 Condensed Black is for stop numbers, rider information and ride free area graphics.

Transit Bold Italic is for modifier messages and found only on route blocks. Transit is used in lieu of Humanist because Humanist 777 Condensed does not have italic fonts.

Proper kerning—the space between letters—is critical for legibility. To date, art for sign panels has been created in Adobe Illustrator with the setting: Kerning=10% em. All messages should appear in upper and lower case "Title Case" on signs, except prepositions (and, to), and on certain customer information and regulatory signs where complete sentences are used. Upper case letters are to be used on "Stop Name Blocks" and signs with tactile raised letters or on code-required signage as mandated by the governing agency.

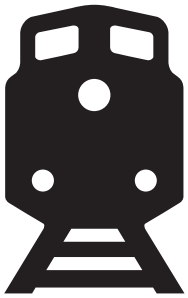
These typefaces provide a distinctive character for the sign system, while addressing the legibility requirements of ADA regulations and TCRP recommendations.

Implementing the layouts includes extremely tight typographic specifications which have successfully tested font use through sizing; spacing—kerning and leading; upper and lower case use; exact type weights and line positioning. See templates which shows how each graphic layout is being created by Metro's in-house design staff.

Typeface use to be managed by Metro design staff only.

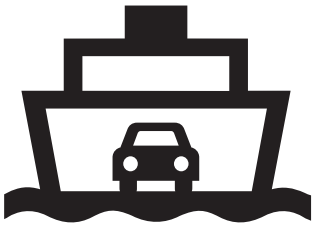
Designers: Mayer/Reed & Jon Bentz Design

Airport



Commuter Rail

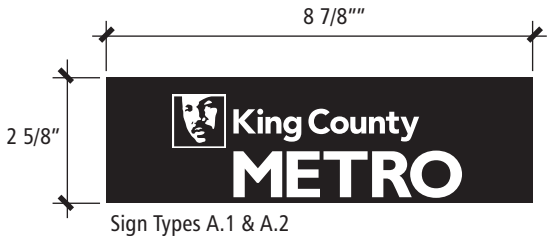
Light Rail



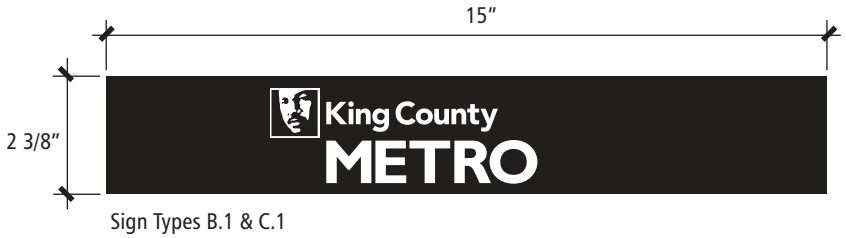
Ferry

These symbols are used to designate bus routes that intersect with other modes of transportation. The symbols are used on route blocks in combination with a bus route number. See Metro's database for specific symbol usage.

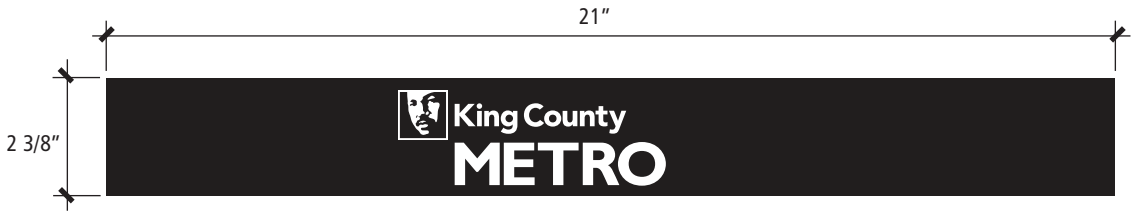
Designers: Mayer/Reed & Jon Bentz Design



Sign Types A.1 & A.2



Sign Types B.1 & C.1

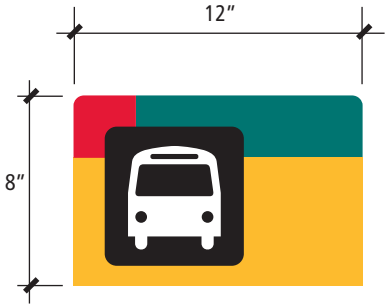


Sign Types B.2 & C.2
Scale: 1/4" = 1"

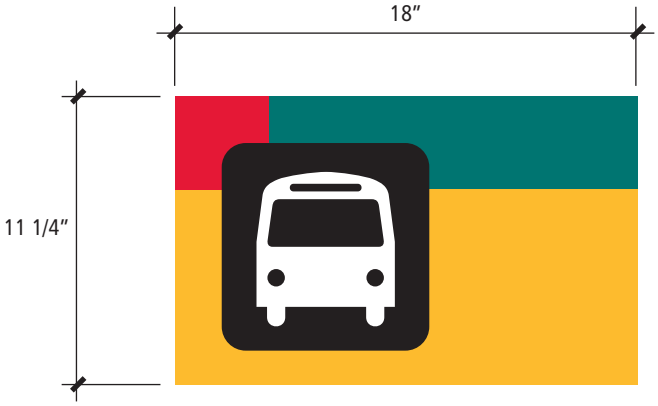
The King County Metro logo consists of the King County logo and the word METRO in all caps located directly below. This combination must appear in this fixed arrangement only. The King County Metro logo must never be altered, re-drawn or reproduced from secondary copies. The logo must always be reproduced from authorized electronic files or authorized reproduction-quality originals. The logo should be consistently used for signs in the sizes and colors shown above.

Colors:
Background is black and logo is white.

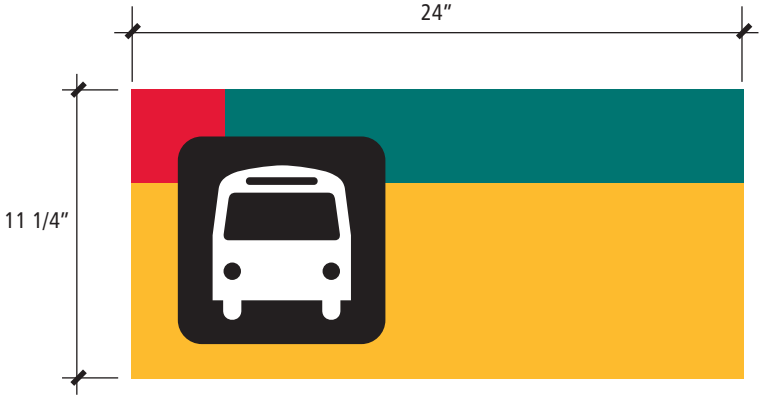
Designers: Mayer/Reed & Jon Bentz Design



Sign Types A.1 & A.2



Sign Types B.1 & C.1

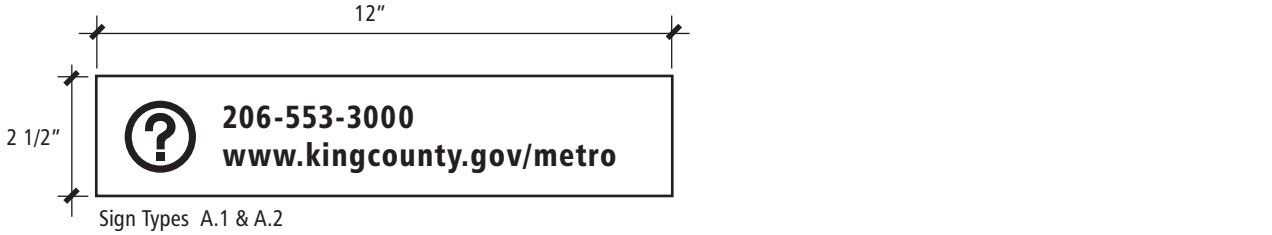


Sign Types B.2 & C.2

The bus stop sign face layout is the prime identifier for bus stops. The arrangement and composition of this sign is key to maintaining Metro's brand recognition. It's color palette and graphic design has been created to enhance and compliment Metro's current bus paint schemes. The bus stop identity should be consistently used in the sizes and colors shown above.

Colors:
Background: Yellow
Header right: Red
Header left: Teal
Symbol background: Black
Symbol: White

Designers: Mayer/Reed & Jon Bentz Design



Sign Types A.1 & A.2

Sign Types B.1 & C.1

Sign Types B2 & C2

Scale: 1/4″ = 1″

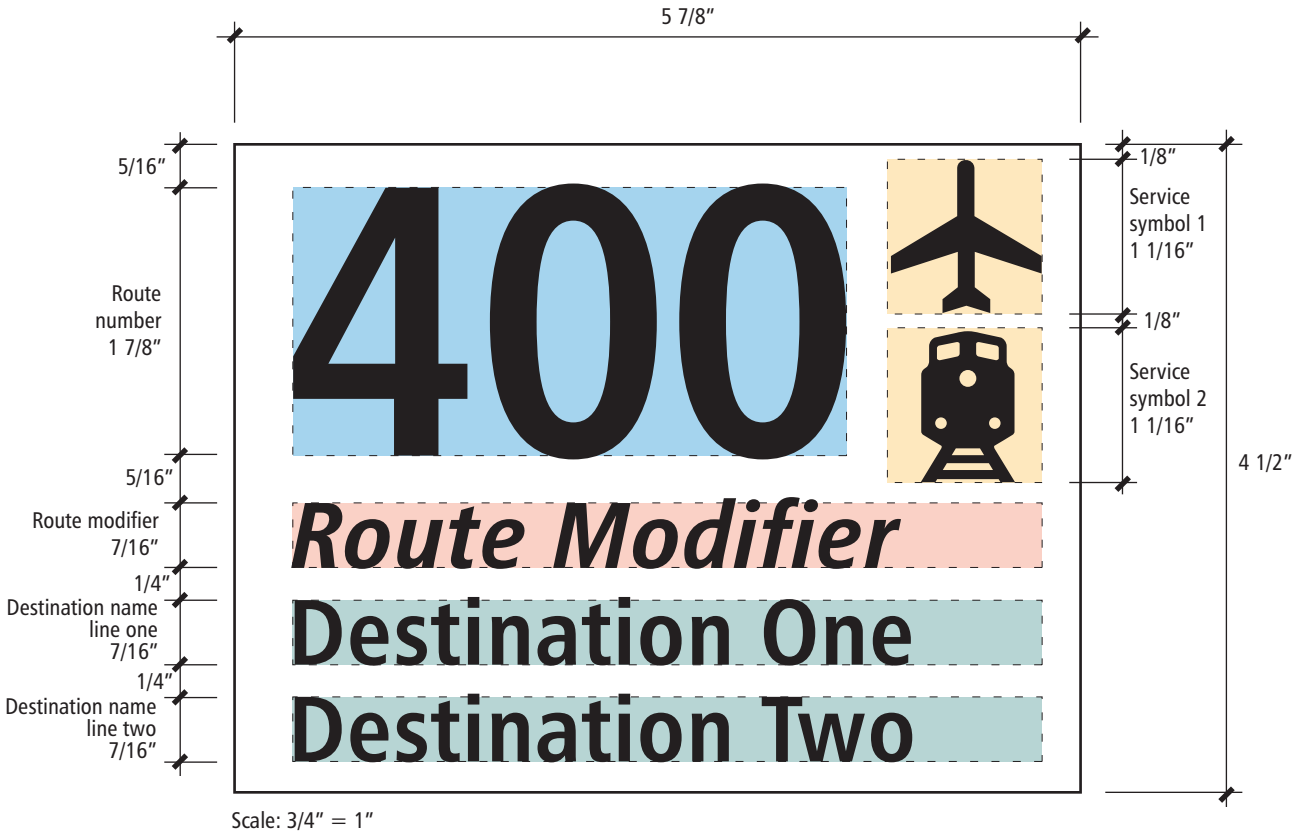
Content:
Metro web site
Metro customer information telephone number
Information symbol

Typefaces:
Humanist 777 Condensed Black

Colors:
Background is white and text is black.

The rider information graphic should be consistently used in the sizes and colors shown above.

Designers: Mayer/Reed & Jon Bentz Design



Scale: 3/4" = 1"

The "Route Block" is the key building block of the sign system and determines the overall sign face size for all sign types. A Route Block's height and width does not change for any sign type. Each Route Block contains a bus's route number, a bus's destination name, and it's route modifier description. When a bus route intersects with another mode of transportation, such as an airports or train station, then the appropriate service symbol is placed adjacent to the route number. See route database for service symbol usage.

Content:
Route blocks are able to display 1, 2 or 3 digit route numbers.
Route modifier and destination names are able to display maximum 17 characters per line.
Up to 2 service symbols may be displayed.

Typefaces:
Humanist 777 Condensed Bold:
Route numbers and destination names

Transit Bold Italic:
Route modifier

Colors:
Background is white and text is black.
Colors shown behind information above indicates maximum text area and is not included on actual signs. See page 6.8 for layout templates.

Designers: Mayer/Reed & Jon Bentz Design

3 Digits with 2 Symbols Template

3 Digits with 1 Symbol Template

3 Digits with No Symbol Template

2 Digits with 2 Symbols Template

2 Digits with 1 Symbol Template

2 Digits with No Symbol Template

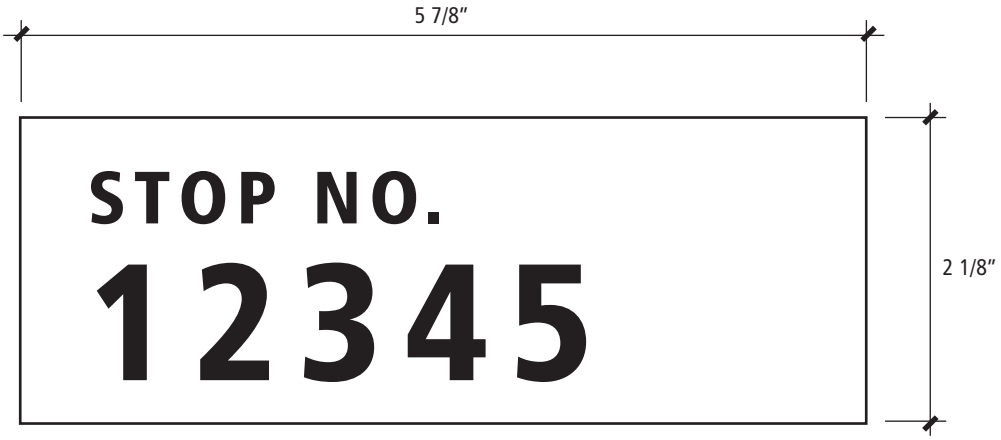
1 Digit with 2 Symbols Template

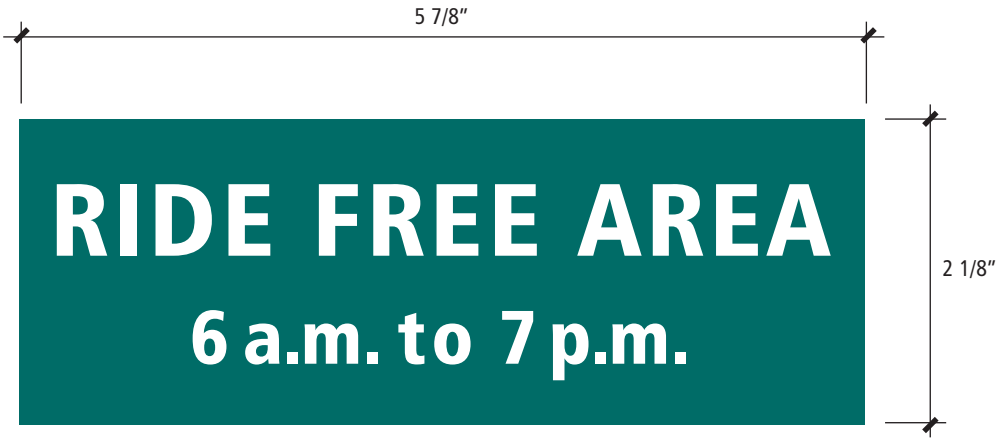
1 Digit with 1 Symbol Template

1 Digit with No Symbol Template

Route blocks are able to display 1, 2 or 3 digit route numbers. The spacing relationship between the right side of route number and the left side of the service symbol is to remain consistent. Shown above are templates to be used for 1, 2 and 3 digit route numbers and illustrate how 1 or 2 symbols are placed in relation to the route number.

Designers: Mayer/Reed & Jon Bentz Design





Scale: 3/4″ = 1″

Stop Number Information Block:
Each stop is designated with a stop number. This number is referenced when a sign requires maintenance. Stop numbers are maximum 5 digits. The stop number graphic should be consistently used in the sizes and colors shown above.

Typeface:
Humanist 777 Condensed Black
Kerning is to be set at 120% em.
All capital letters are to be used.

Colors:
Background is white and text is black.

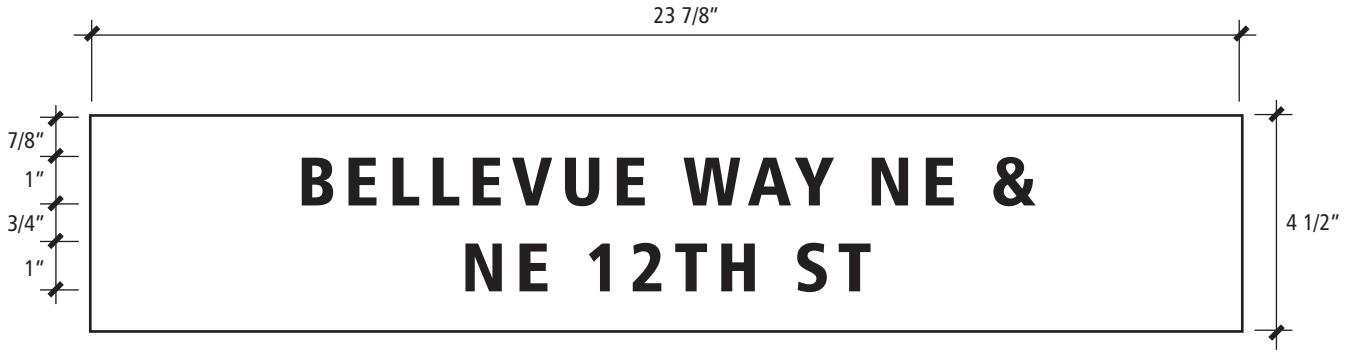
Ride Free Area Information Block:
Signs located within the Downtown Seattle ride free area display this graphic. The ride free area graphic should be consistently used in the sizes and colors shown above.

Typeface:
Humanist 777 Condensed Black
Kerning is to be set at 50% em.

Colors:
Background is teal and text is white.

Designers: Mayer/Reed & Jon Bentz Design

Sign Types B.1 & C.1



Sign Types B.2 & C.2
Scale: 1/4″ = 1″

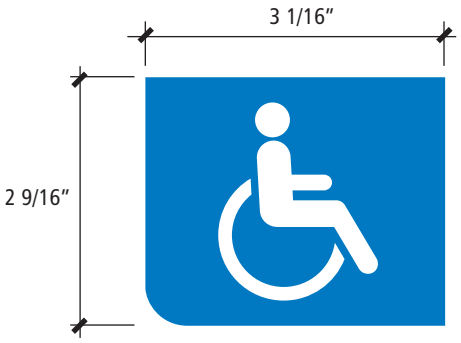
Each Sign Type B.1, B.2, C.1 and C.2 contains an area for it's stop name. The Stop Name Block shares the same height as a Route Block and does not change for any sign type.

Content:
See route database for stop name verbiage. Maximum 17 character length per line. Text is centered on the width of the block.

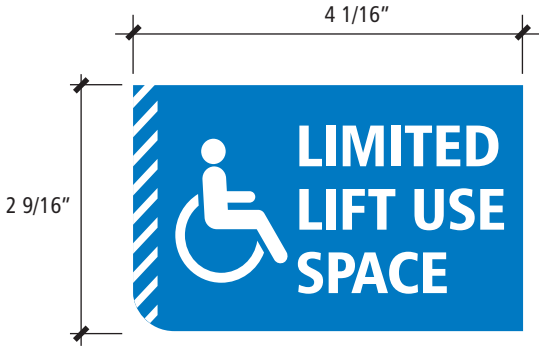
Typeface:
Humanist 777 Condensed Black
Kerning is to be set at 120% em.
All capital letters are to be used.

Colors:
Background is white and text is black.

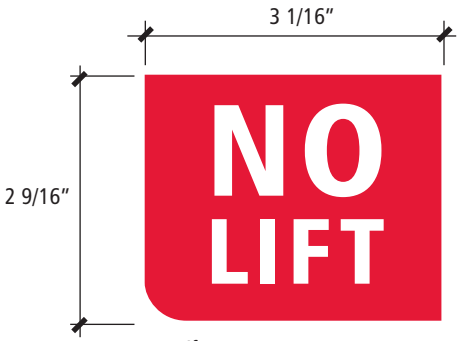
Designers: Mayer/Reed & Jon Bentz Design



Accessibility



Limited Lift Use Space



No Lift

Scale: 1/2″ = 1″

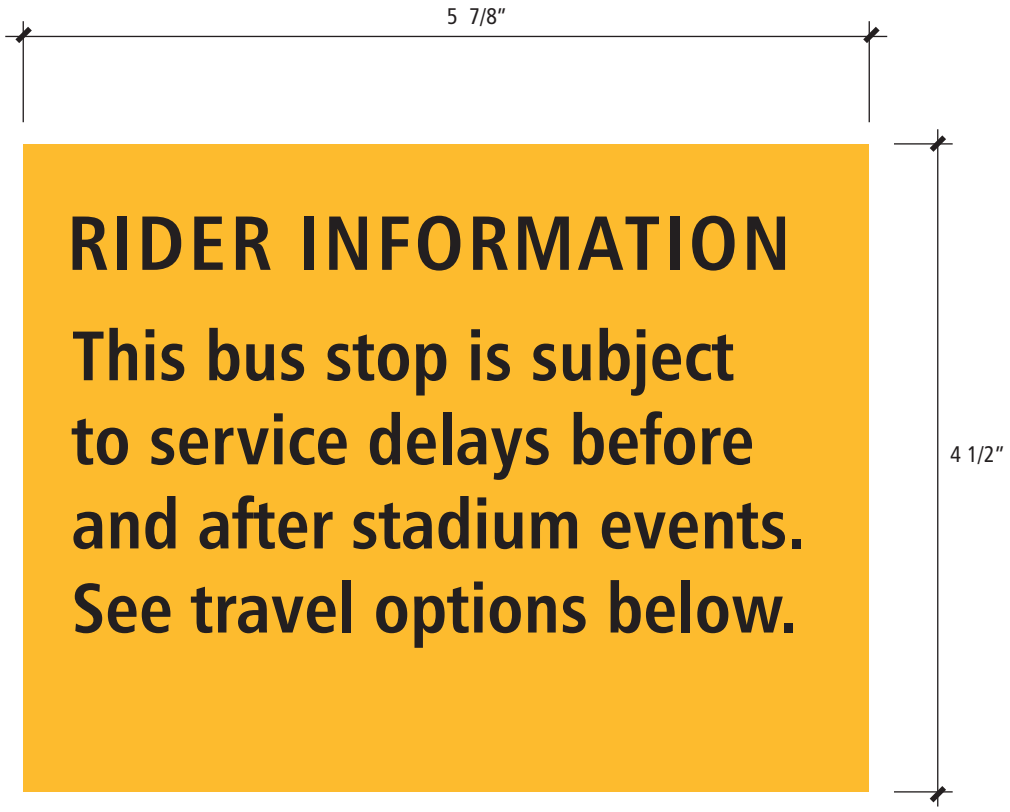
Accessibility: Indicates a zone at which the lift is to be deployed upon request and is designated to have accessible service.
Colors:
White on blue back ground.

Limited Lift Use Space: Indicates a zone at which the lift will operate, but there is only sufficient room for passengers to board or deboard.
Colors:
White on blue background.
Typeface:
Humanist 777 Condensed Black

No Lift: Indicates a zone at which the lift is unable to be deployed.
Colors: White on red background.
Typeface:
Humanist 777 Condensed Black

The lift use symbols should be consistently used in the sizes and colors shown above.

Designers: Mayer/Reed & Jon Bentz Design



Scale: 3/4" = 1"

A zone specific rider information block is located at a bus stop where schedules are affected by large scale public events, such as baseball and football games. These information blocks are the same size as a Route Block and are to be located in the lower right corner of the route block grid area. See route database for verbiage.

Typefaces:
Humanist 777 Condensed Bold

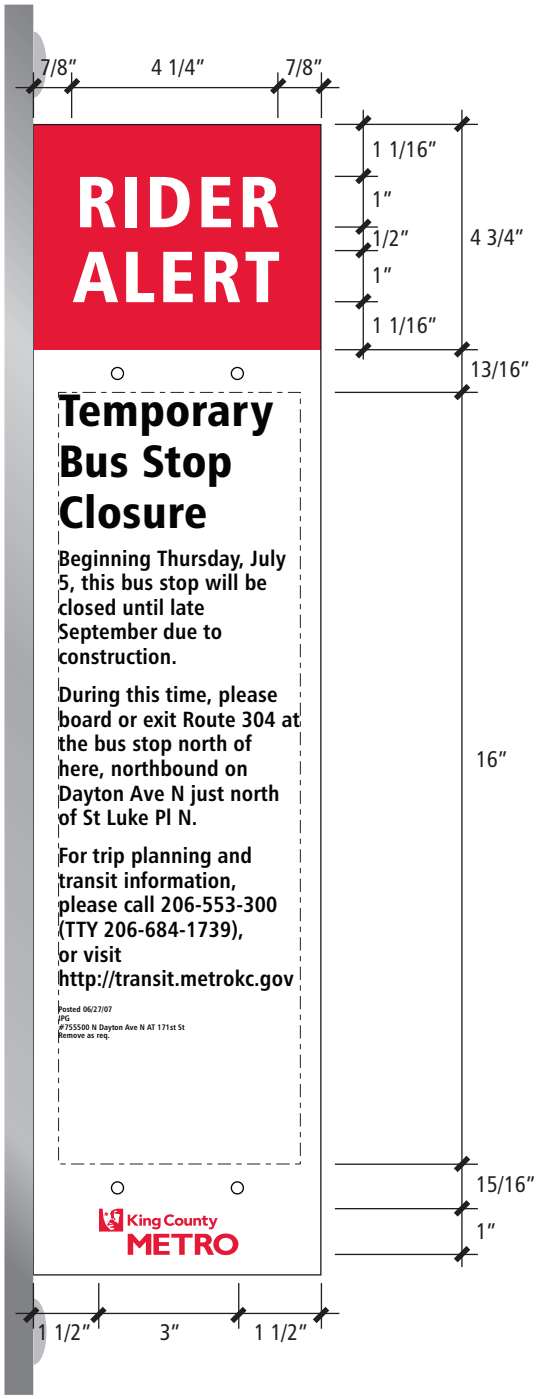
Colors:
Background is yellow and text is black.

Designers: Mayer/Reed & Jon Bentz Design

SECTION 7 : TABLE OF CONTENTS

Designers: Mayer/Reed & Jon Bentz Design

Sign Types A.1 & A.2



Sign Types B.1, B.2, C.1 & C.2

Pre-screenprinted Substraight Colors:
Background white. Header text white. Header and Metro logo red.

Substraight material: .080 Styrene

Temporary messages may be digitally printed directly on styrene or printed on paper and laminated to styrene backer.

Signs installed on sign types A.1 or A.2 are singled sided. Signs installed on sign types B.1, B.2, C.1, C.2 are double sided

Designers: Mayer/Reed & Jon Bentz Design

Sign Type A.1

Single sided message

Sign Type A.2

Single sided message

Sign Type B.1

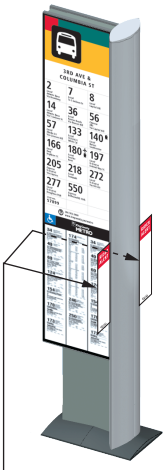
Double sided message

Sign Type B.2

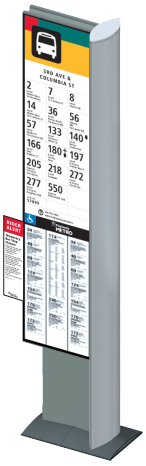
Double sided message

Sign Type C.1: Locations options

Double sided message

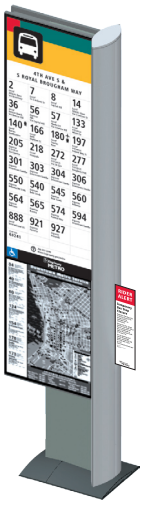


Singled sided message, located on building side of sign insert. Curb side of sign is blank.



Double sided message

Sign Type C.2: Locations options



Double sided message

Singled sided message, located on building side of sign insert. Curb side of sign is blank.

Double sided message

Sign Type A.1, A.2 Installation methods: Install with zip ties attached to sign pole. See section 9 for installation guidelines.

Sign Types B.1, B.2, C.1, C.2 Installation methods: Install with custom bracket and tri-groove tool, see Section 8 for details. There are 3 installation locations options available. The choice for which location is to be used should be based on the amount of surrounding space for each sign's site.

Designers: Mayer/Reed & Jon Bentz Design

SECTION 8: TABLE OF CONTENTS

Colors

Yellow
Pantone: 1235 C
CMYK: C:0, M:29, Y:91, K:0
Vinyl: 3M 7125-25 Sunflower
Paint: Matthews: MP31456, satin

Red
Pantone 186C
CCMYK: C:0, M:100, Y:76, K:0
Vinyl: 3M 7125-263 Perfect Match Red
Paint: Matthews: MP00643, satin

Teal
Pantone: 329C
CMYK: C:100, M:0, Y:46, K:46
Vinyl: 3M 7125-357 Bermuda Blue
Paint: Matthews: MP23643, satin

Blue
Pantone: 300C
CMYK: C:100, M:44, Y:0, K:0
Vinyl: 3M 7125-57 Olympic Blue
Paint: Matthews: MP00366, satin

Black
Pantone: Black
CMYK: C:0, M:0, Y:0, K:100
Vinyl: 3M 7125-12 Black
Paint: Matthews Black, satin

White
CMYK: C:0, M:0, Y:0, K:0
Vinyl: 3M 7125-10 White
Paint: Matthews: MP-N202, satin

Typefaces

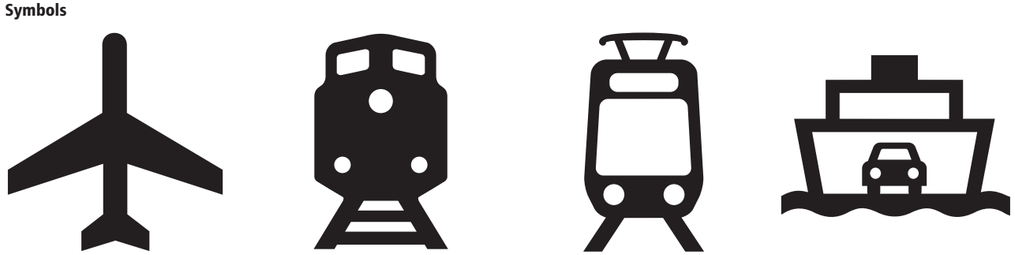
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Humanist 777 Bold Condensed

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Transit Bold Italic

Symbols



Airport **Commuter Rail** **Light Rail** **Ferry**

King County METRO

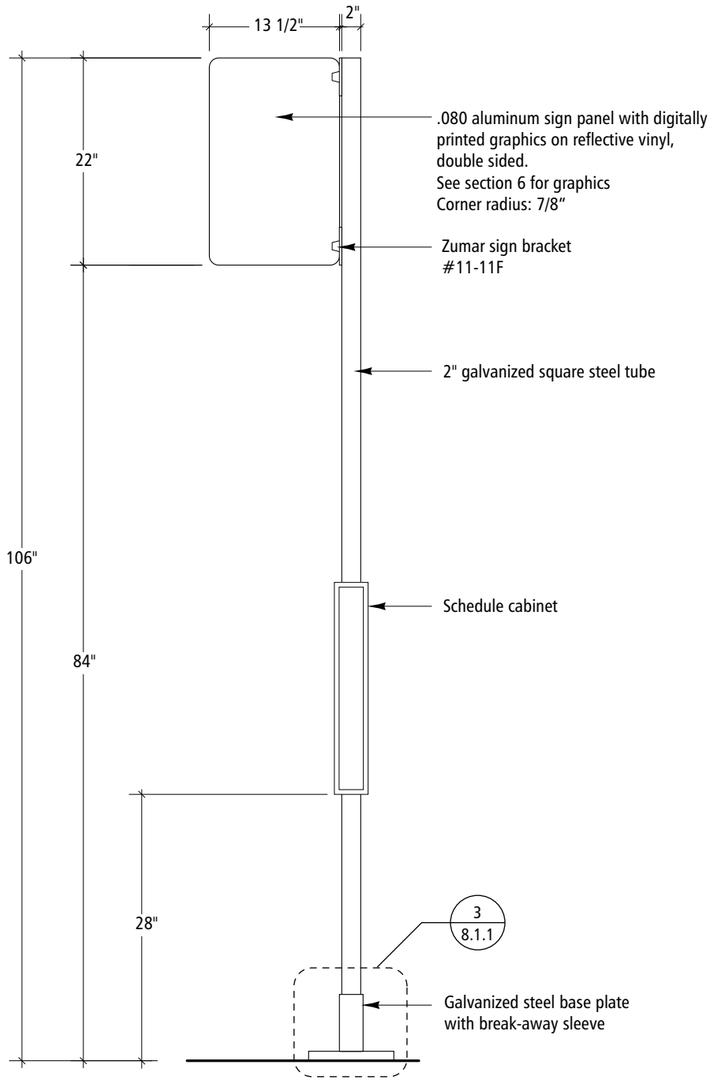
Signing Standards Manual

Volume 2
July 1, 2008

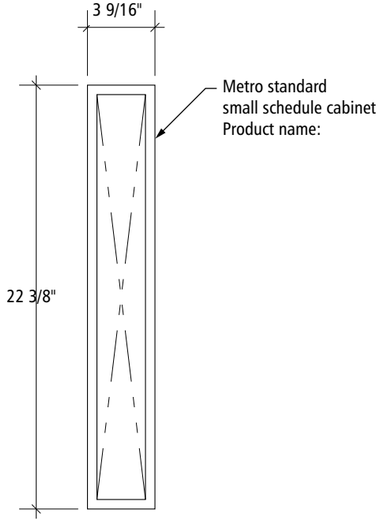
Section 8:
Fabrication

Table of Contents

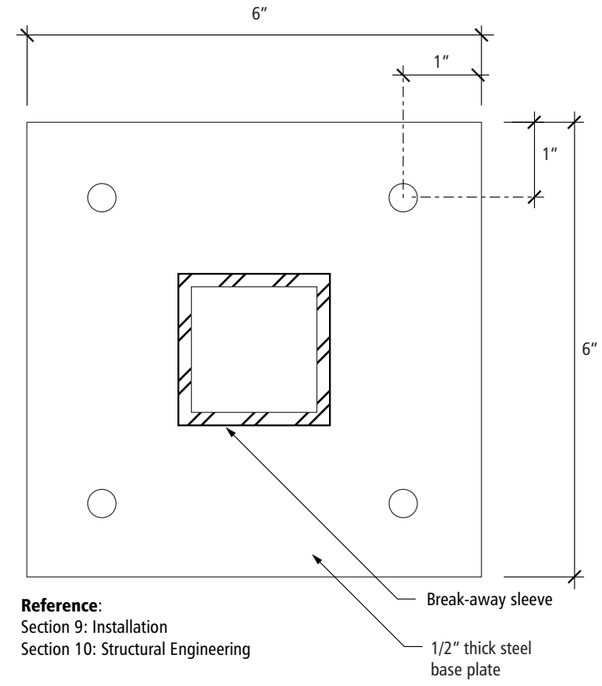
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Elevation
Scale: 3/4″=1′-0″



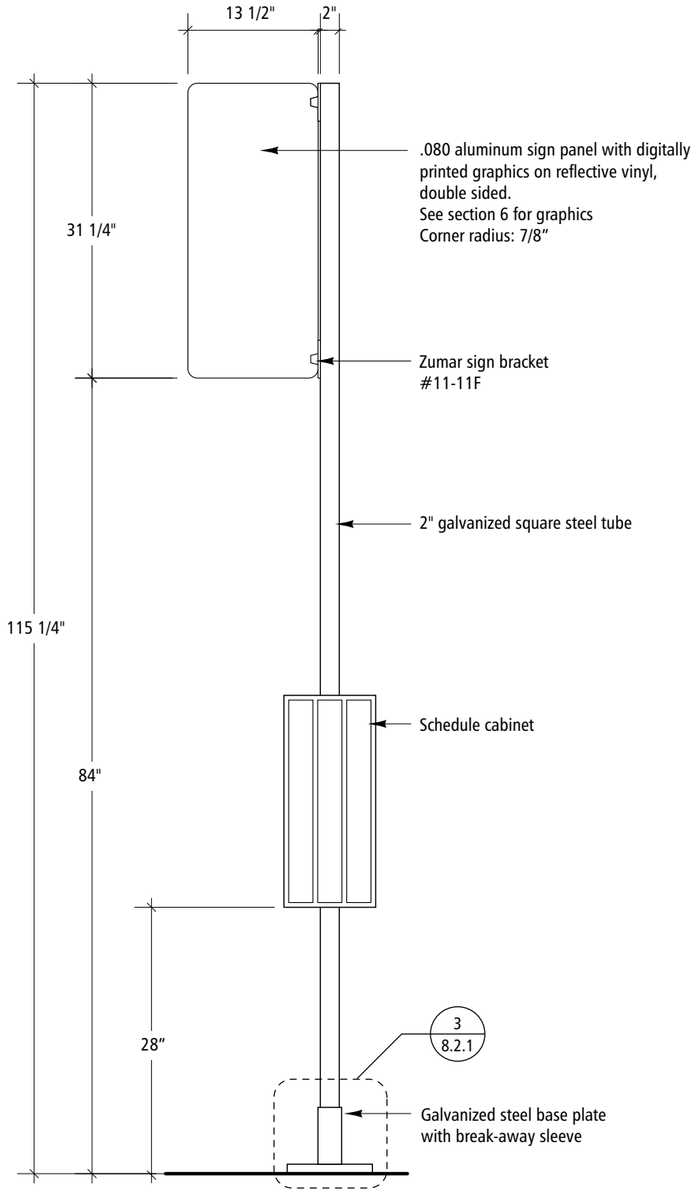
2 Schedule Cabinet Elevation
Scale: 1 1/2″=1′-0″



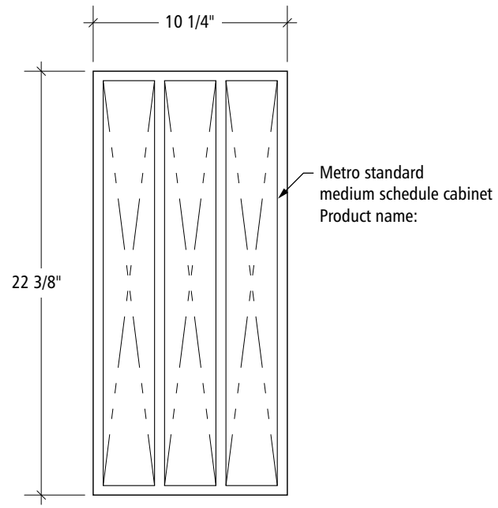
Reference:
Section 9: Installation
Section 10: Structural Engineering

3 Baseplate Plan
Scale: 1/2″=1′-0″

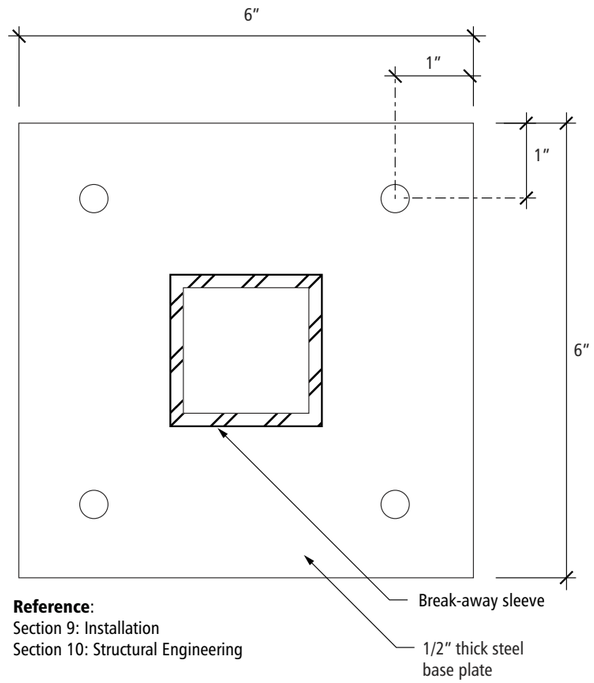
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Elevation
Scale: 3/4"=1'-0"



2 Schedule Cabinet Elevation
Scale: 1 1/2"=1'-0"



Reference:
Section 9: Installation
Section 10: Structural Engineering

3 Baseplate Plan
Scale: 1/2"=1'-0"

King County METRO

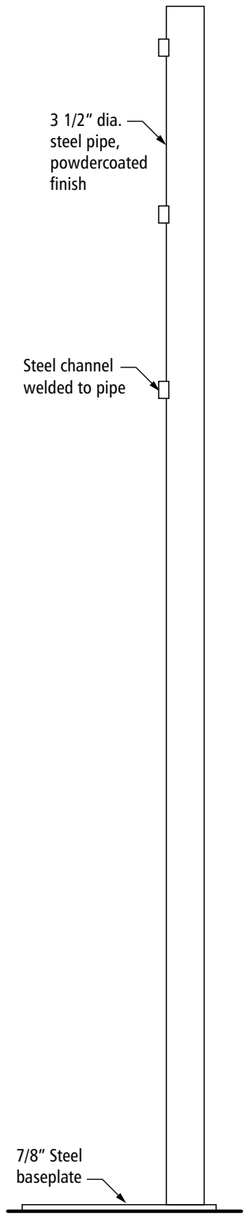
Signing Standards Manual

Volume 2
July 1, 2008

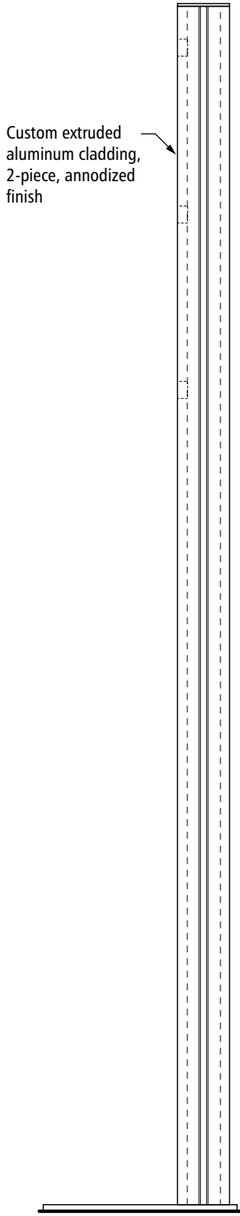
Section 8:
Fabrication

Sign Type A.2

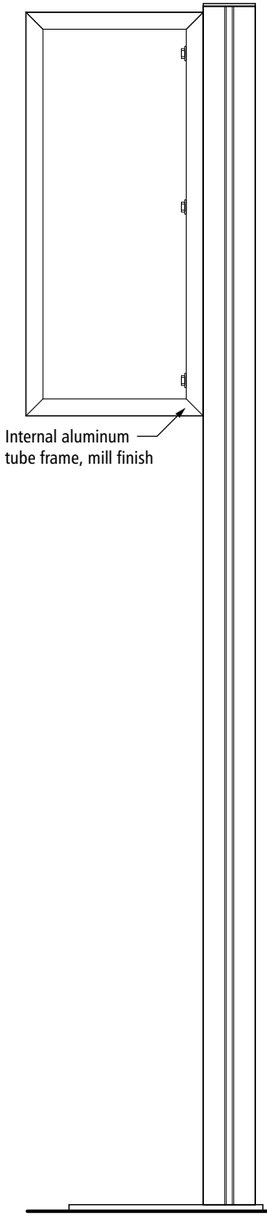
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



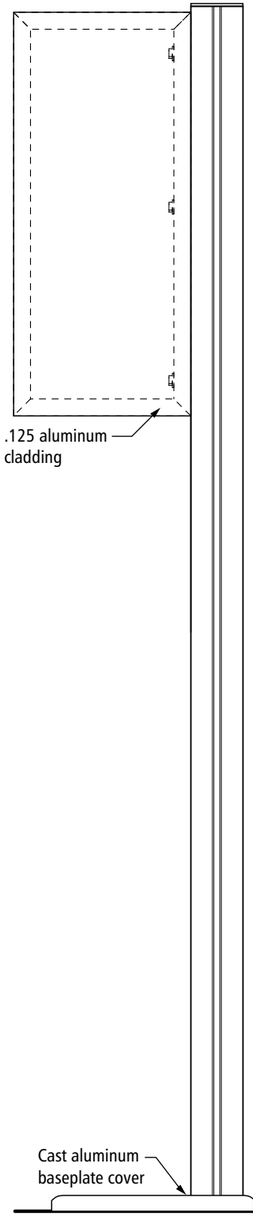
1 Elevation-Baseplate & Pipe
Scale: 3/4"=1'-0"



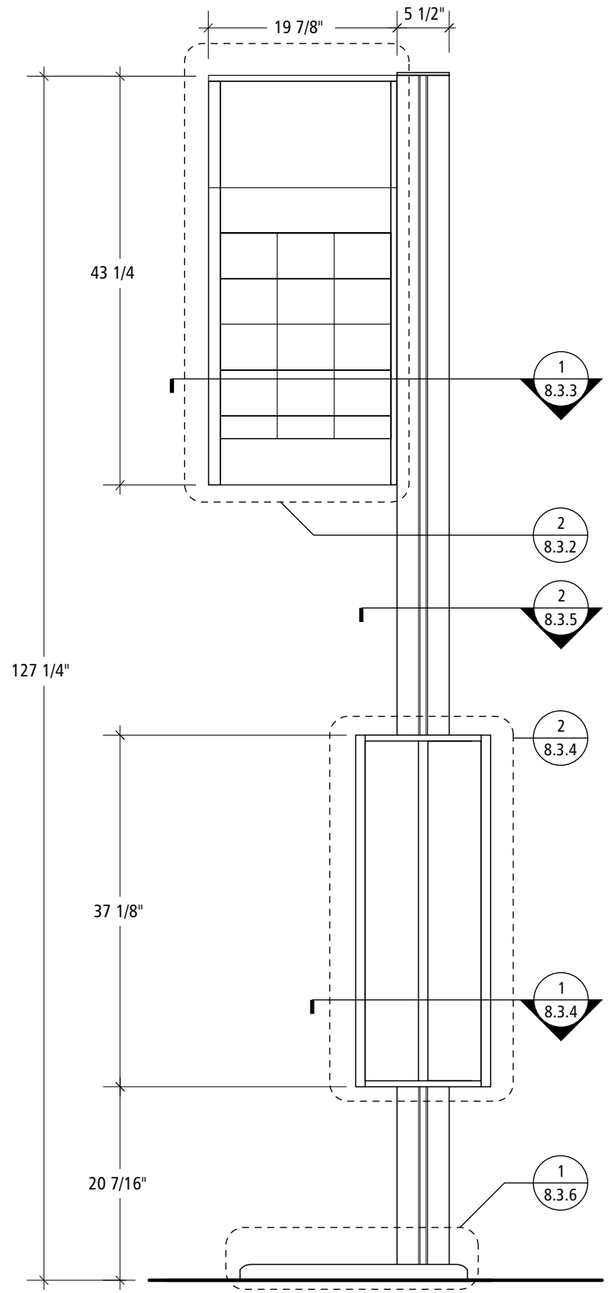
2 Elevation - Column
Scale: 3/4"=1'-0"



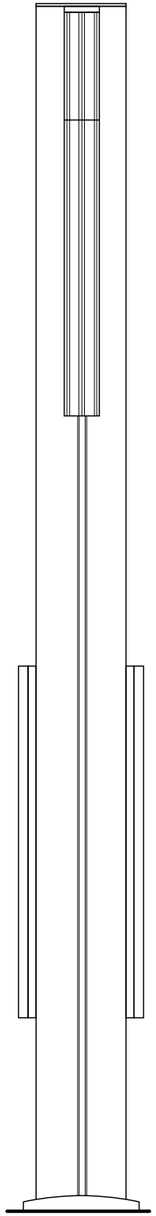
3 Elevation - Frame
Scale: 3/4"=1'-0"



4 Elevation - Sign Faces
Scale: 3/4"=1'-0"

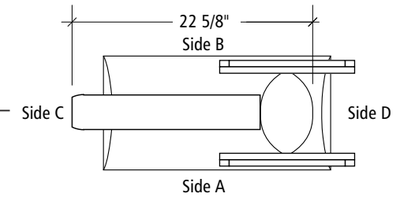


5 Elevation - Sign Type B.1
Scale: 3/4"=1'-0"



6 Side C View
Scale: 3/4"=1'-0"

7 Plan View
Scale: 3/4"=1'-0"



King County METRO

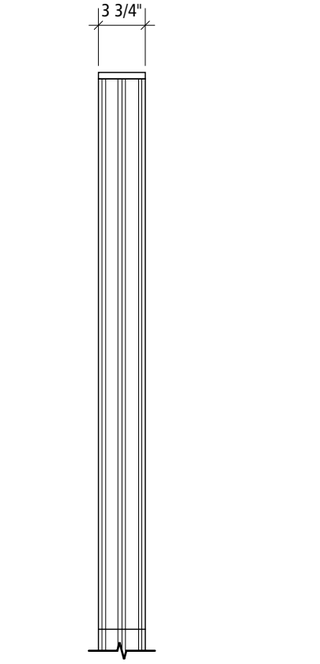
Signing Standards Manual

Volume 2
July 1, 2008

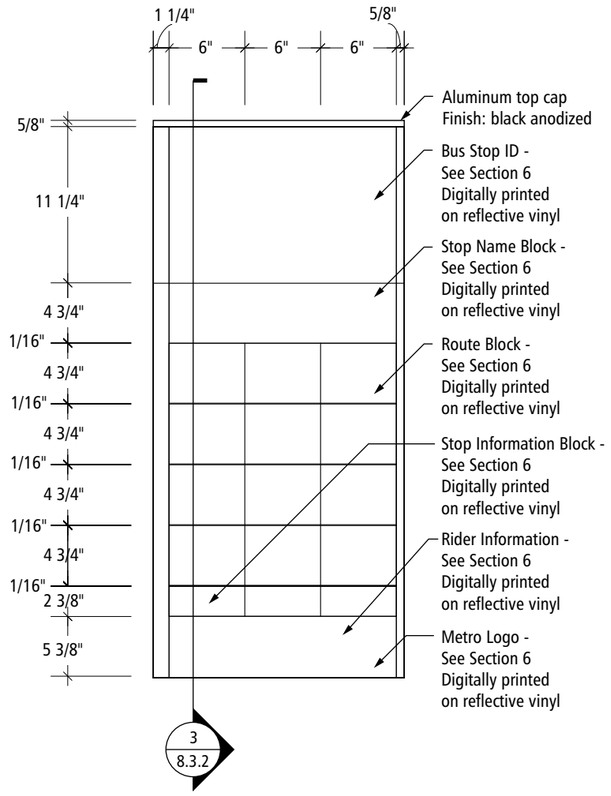
Section 8:
Fabrication

Sign Type B.1

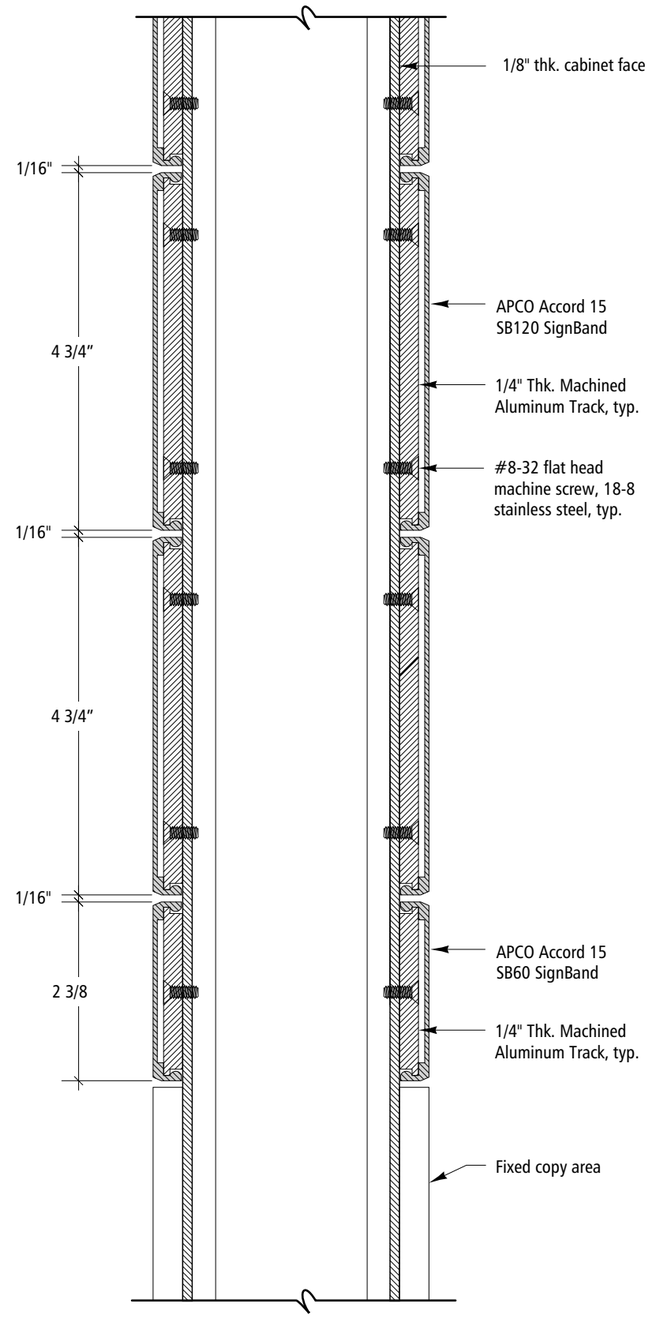
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Route Tile Cabinet End View
Scale: 1"=1'-0"

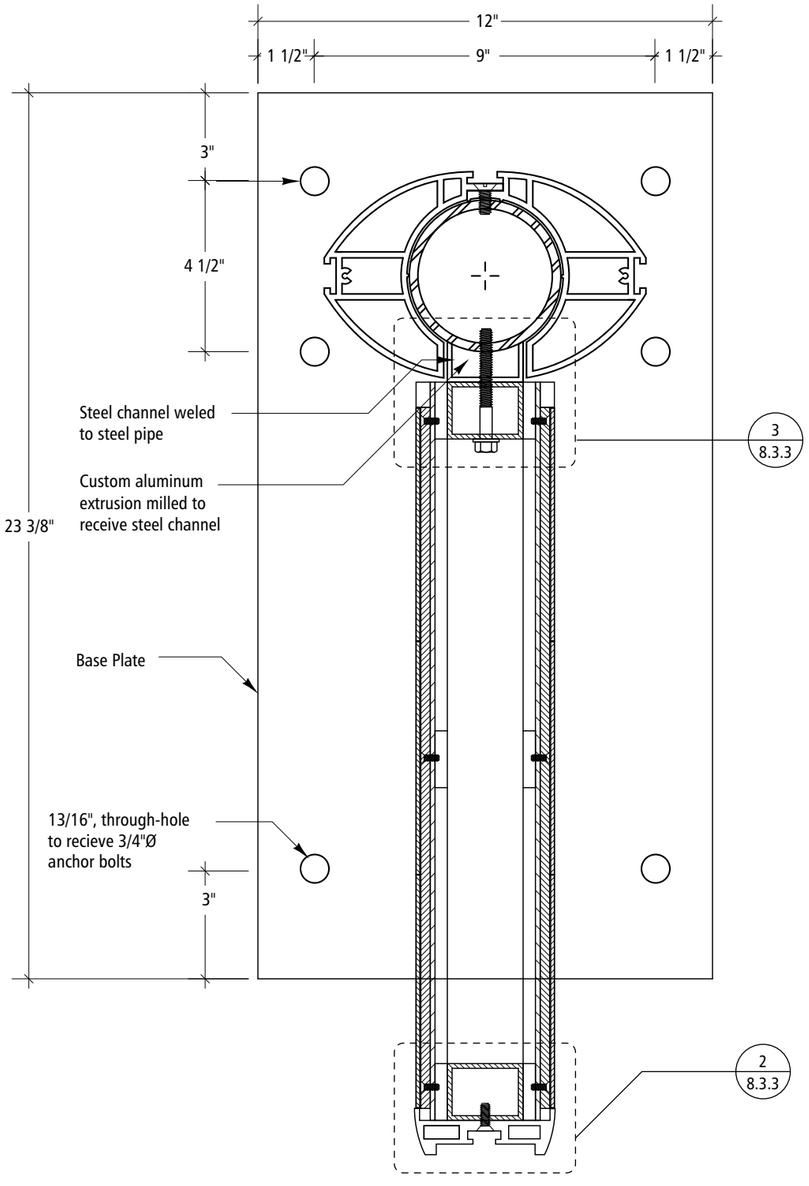


2 Route Tile Cabinet Side A (Side B Reversed)
Scale: 1"=1'-0"

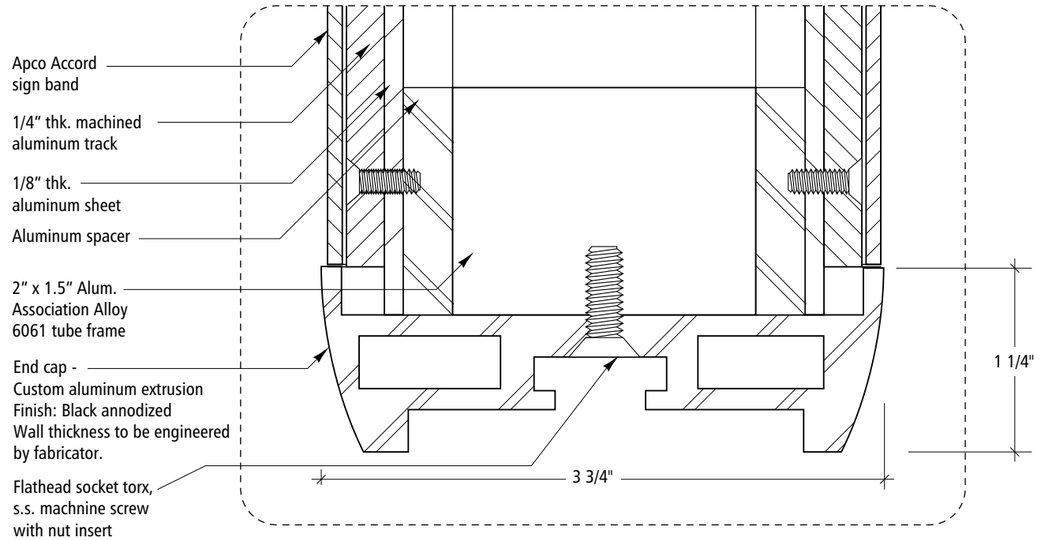


3 Route Block Section
Scale: 6"=1'-0"

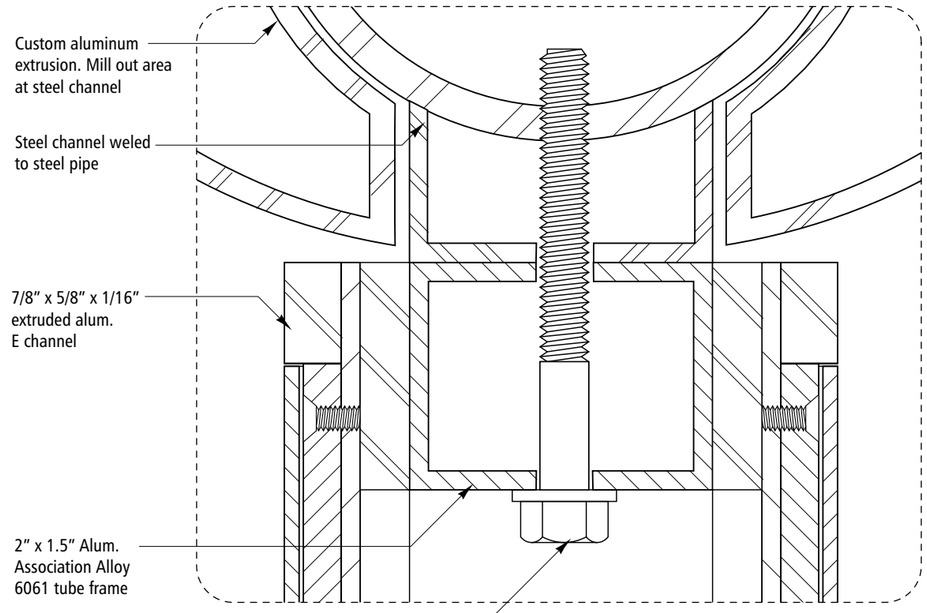
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan Section @ Route Tiles
Scale: 3″=1′-0″

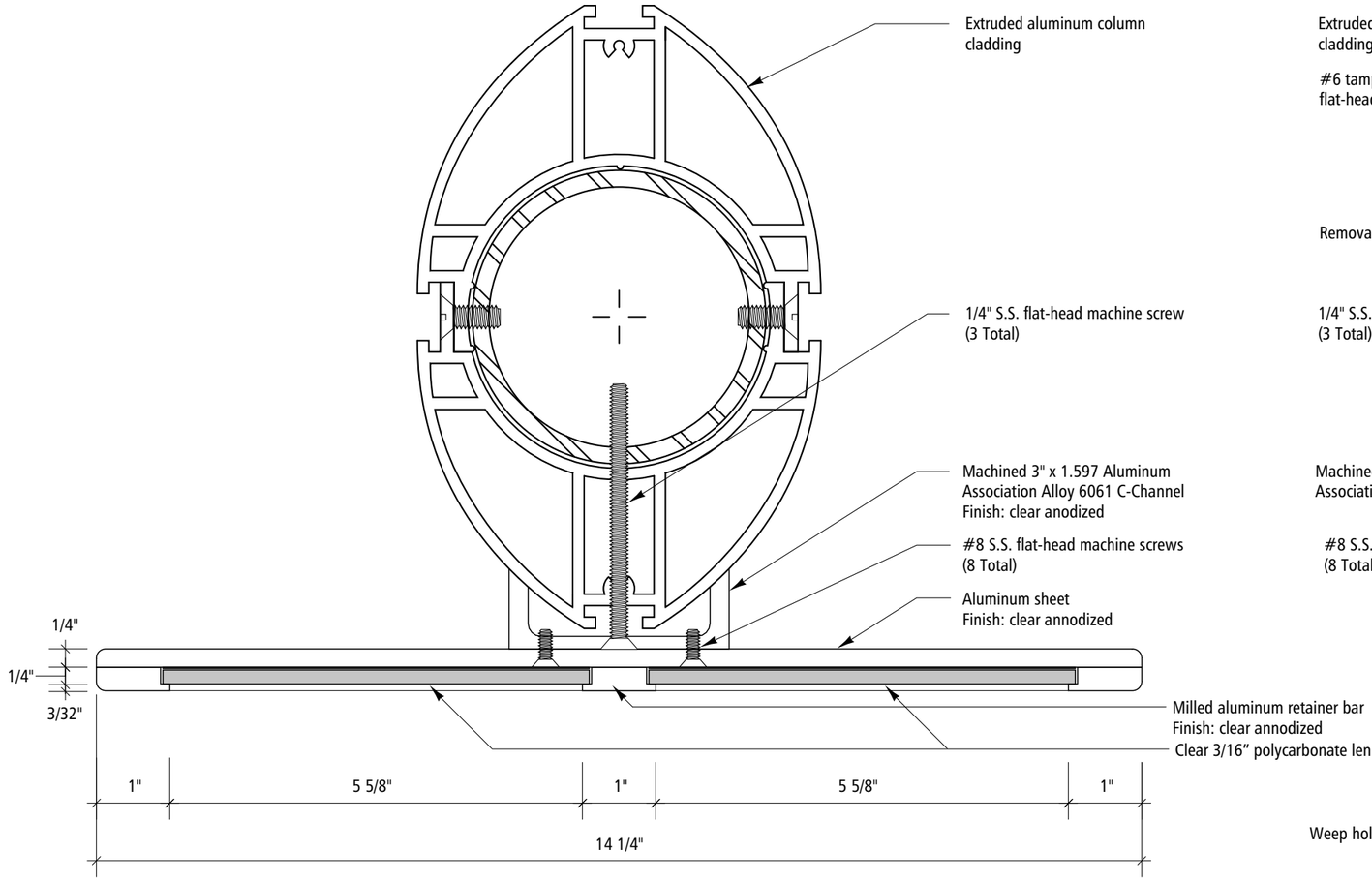


2 Plan Section Detail
Scale: Full Size

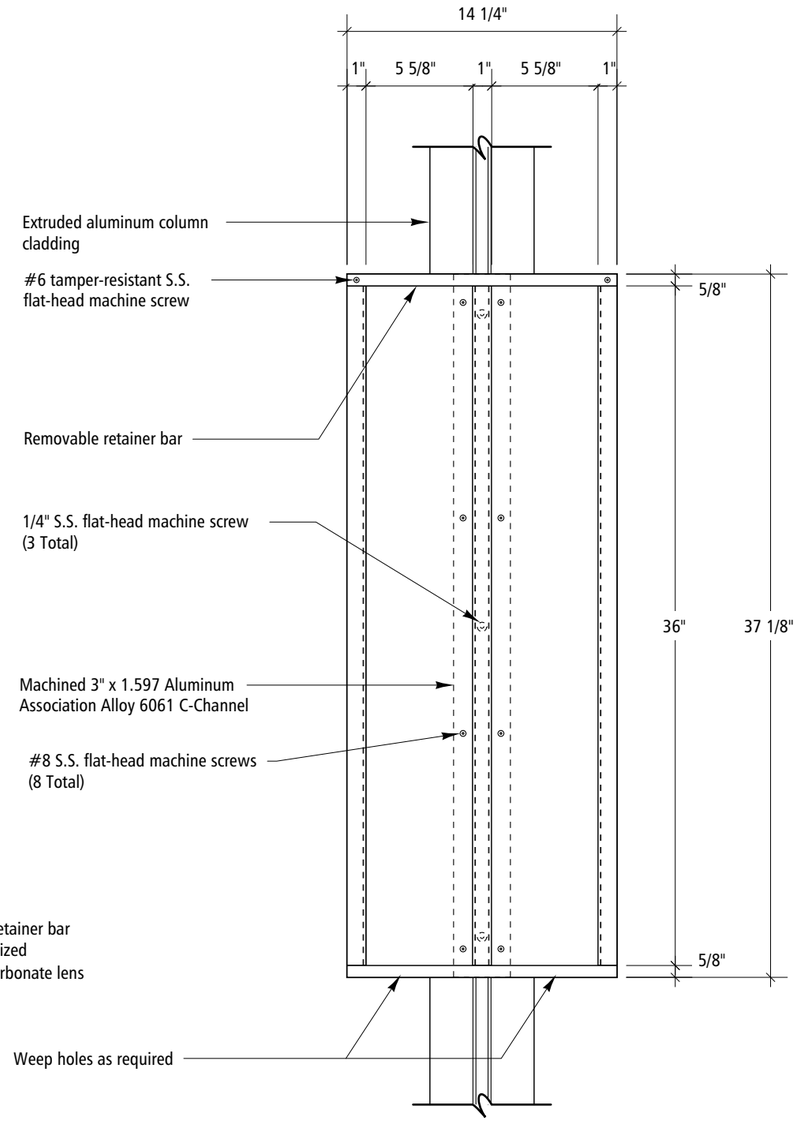


3 Plan Section Detail
Scale: Full Size

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

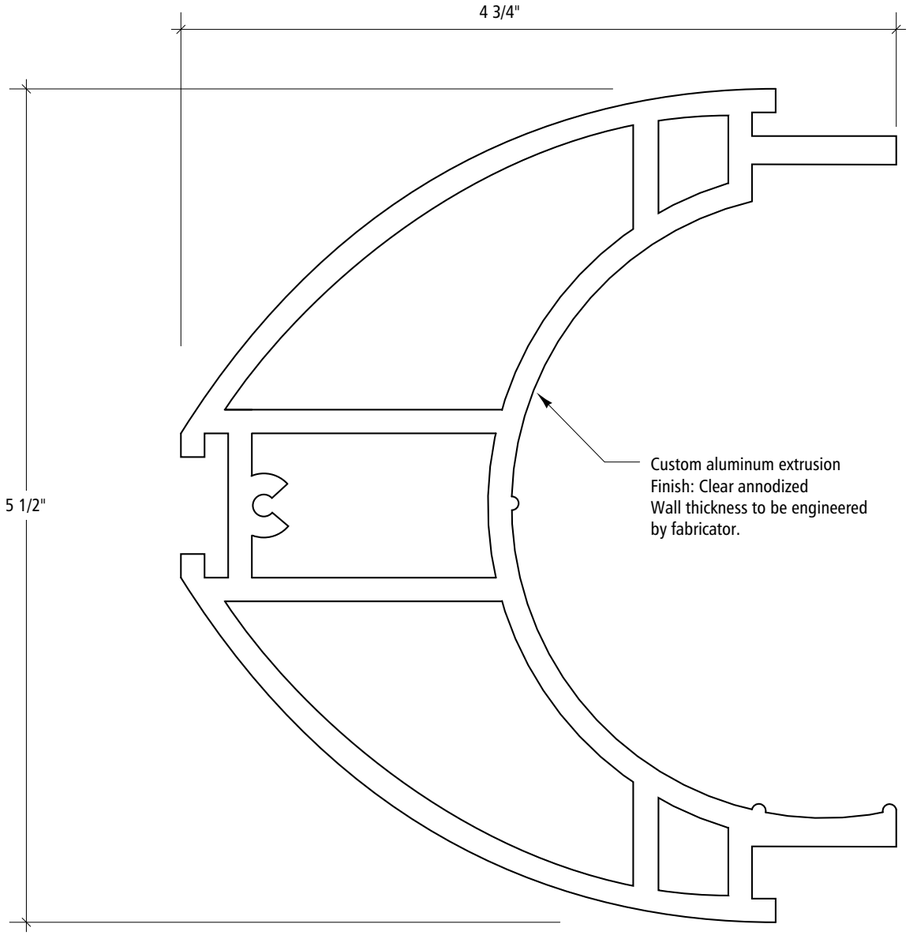


1 Plan Elevation
Scale: 6"=1'-0"

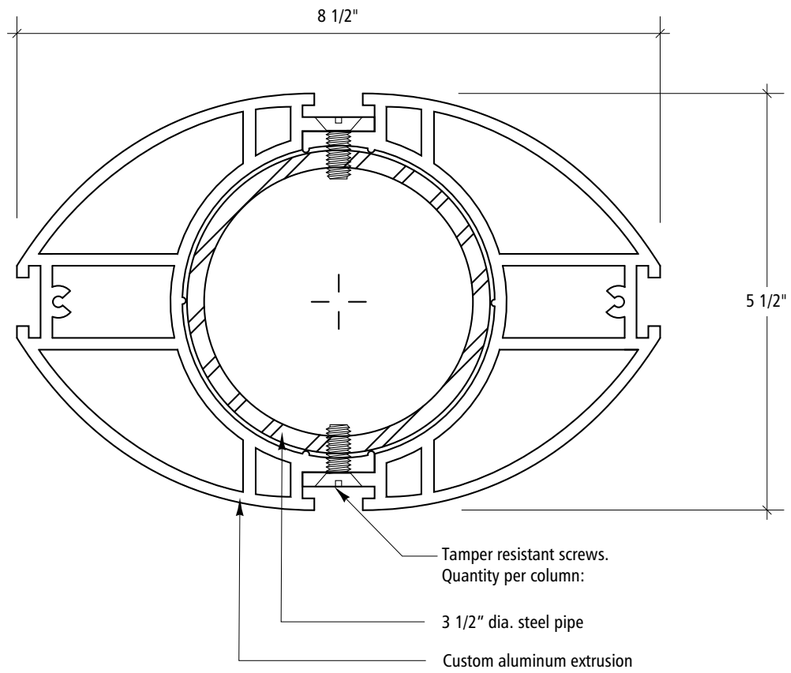


2 Elevation
Scale: 1 1/2"=1'-0"

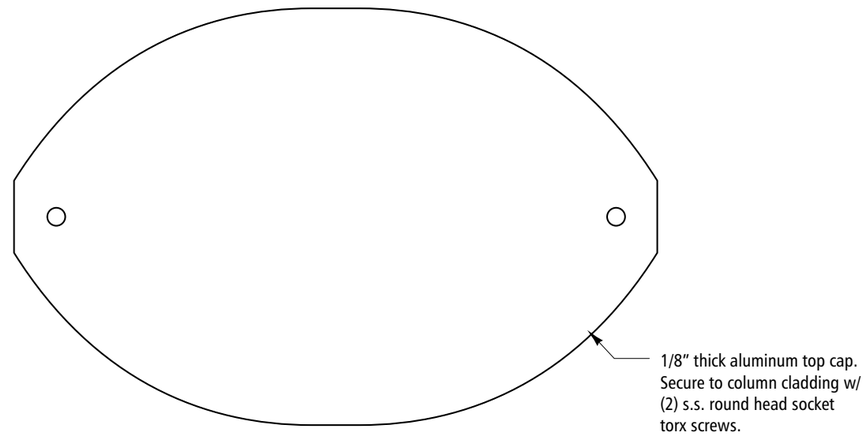
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Custom Extrusion Section
Full Scale



2 Custom Extrusion / Pipe Assembly Detail
Scale: 6"=1'-0"



3 Top Cap
Scale: 6"=1'-0"

King County METRO

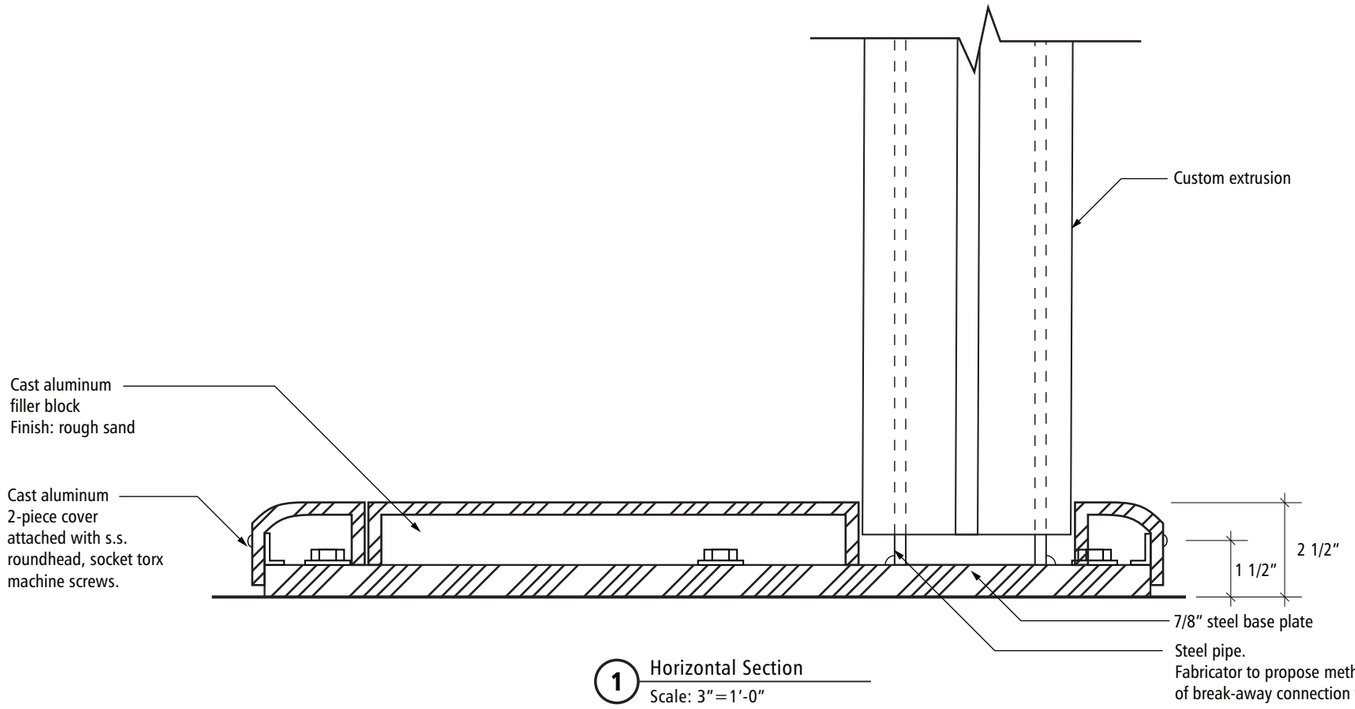
Signing Standards Manual

Volume 2
July 1, 2008

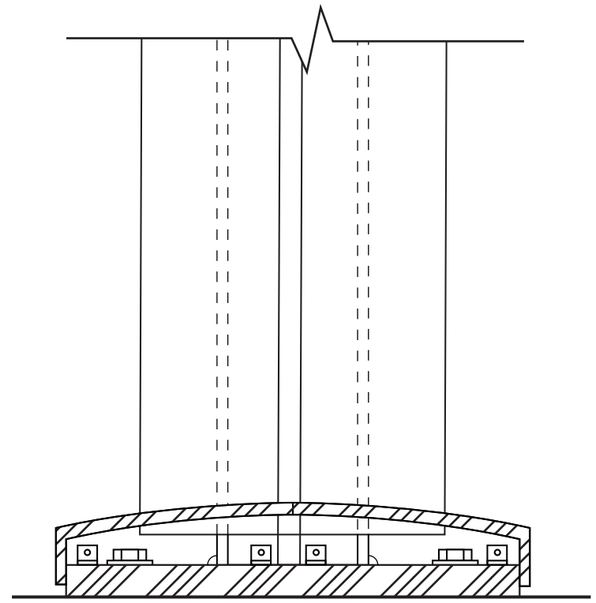
Section 8:
Fabrication

Sign Type B.1

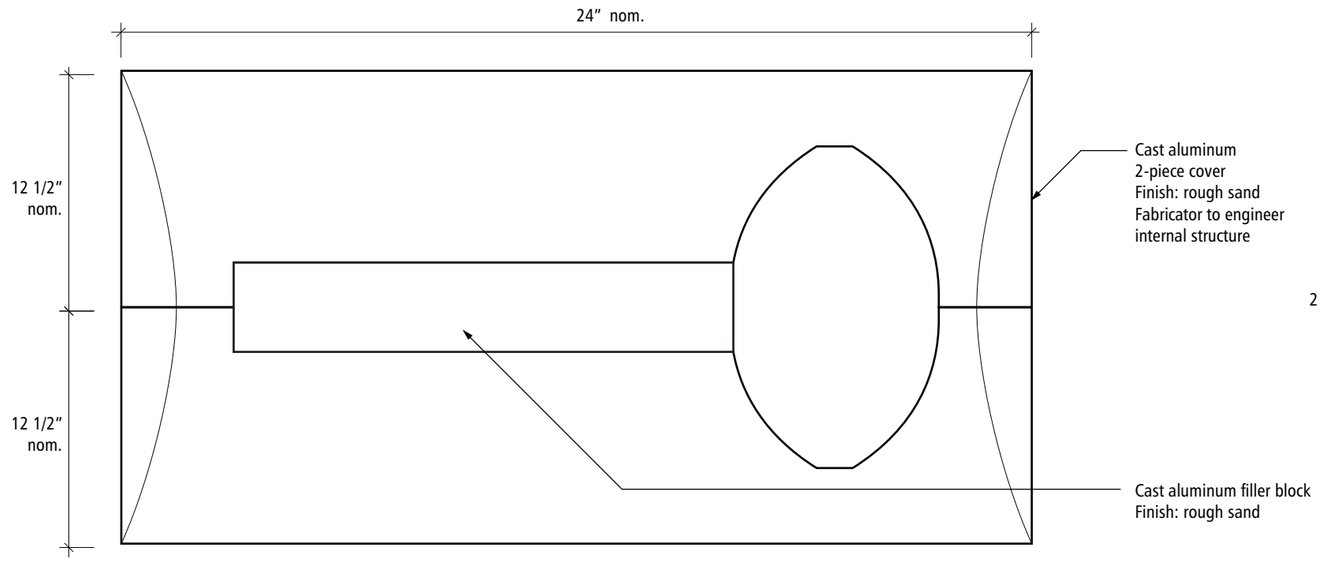
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



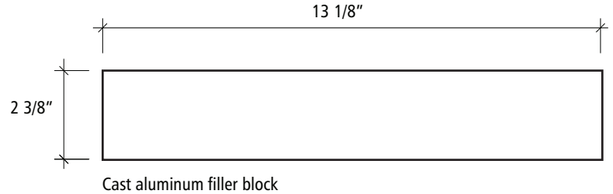
1 Horizontal Section
Scale: 3"=1'-0"



2 Vertical Section
Scale: 3"=1'-0"



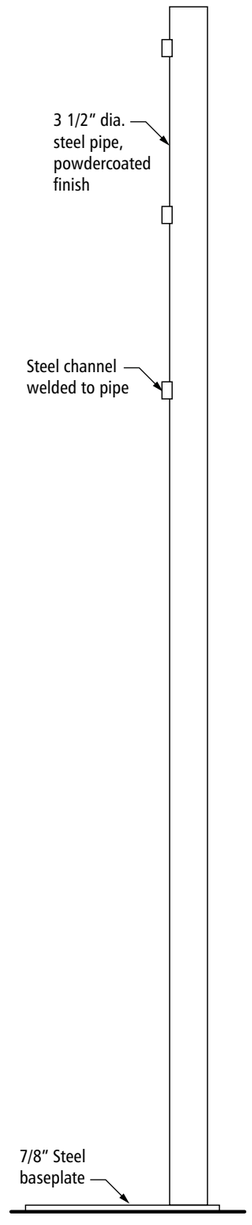
3 Cover Plate Plan
Scale: 3"=1'-0"



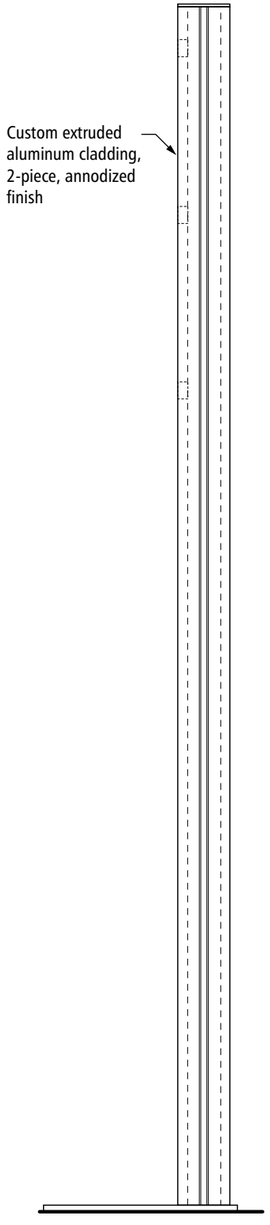
Cast aluminum filler block
Finish: Rough sand
Fabricator to engineer internal structure

4 Filler Block Plan
Scale: 3"=1'-0"

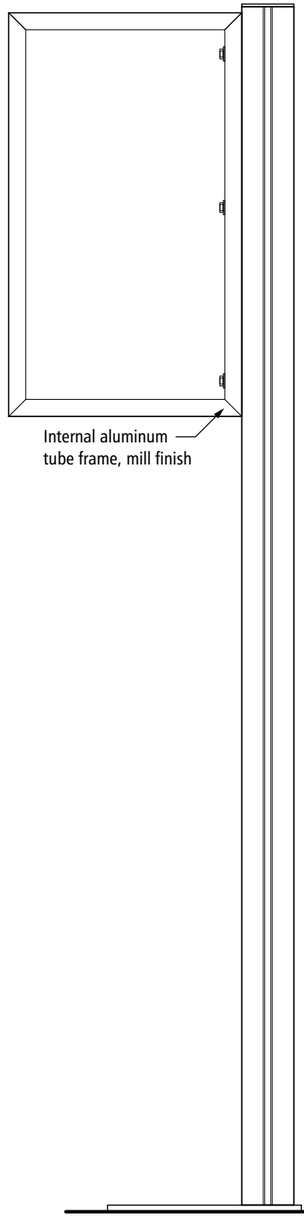
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



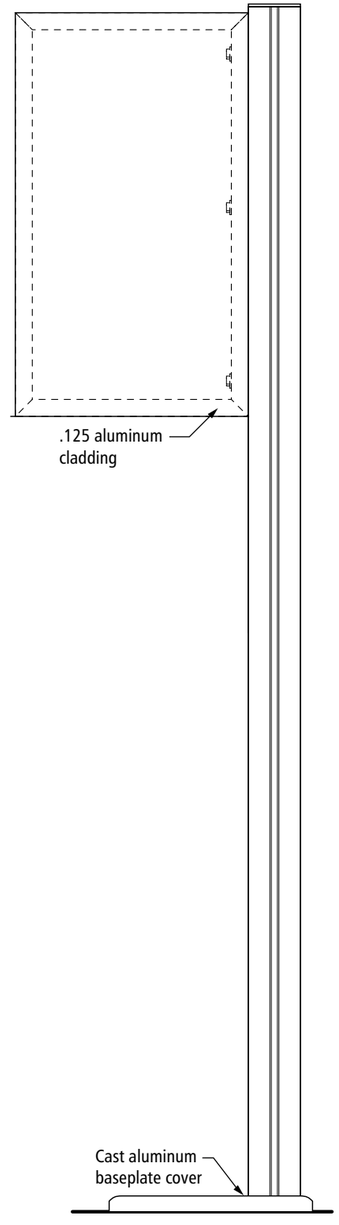
1 Elevation-Baseplate & Pipe
Scale: 3/4"=1'-0"



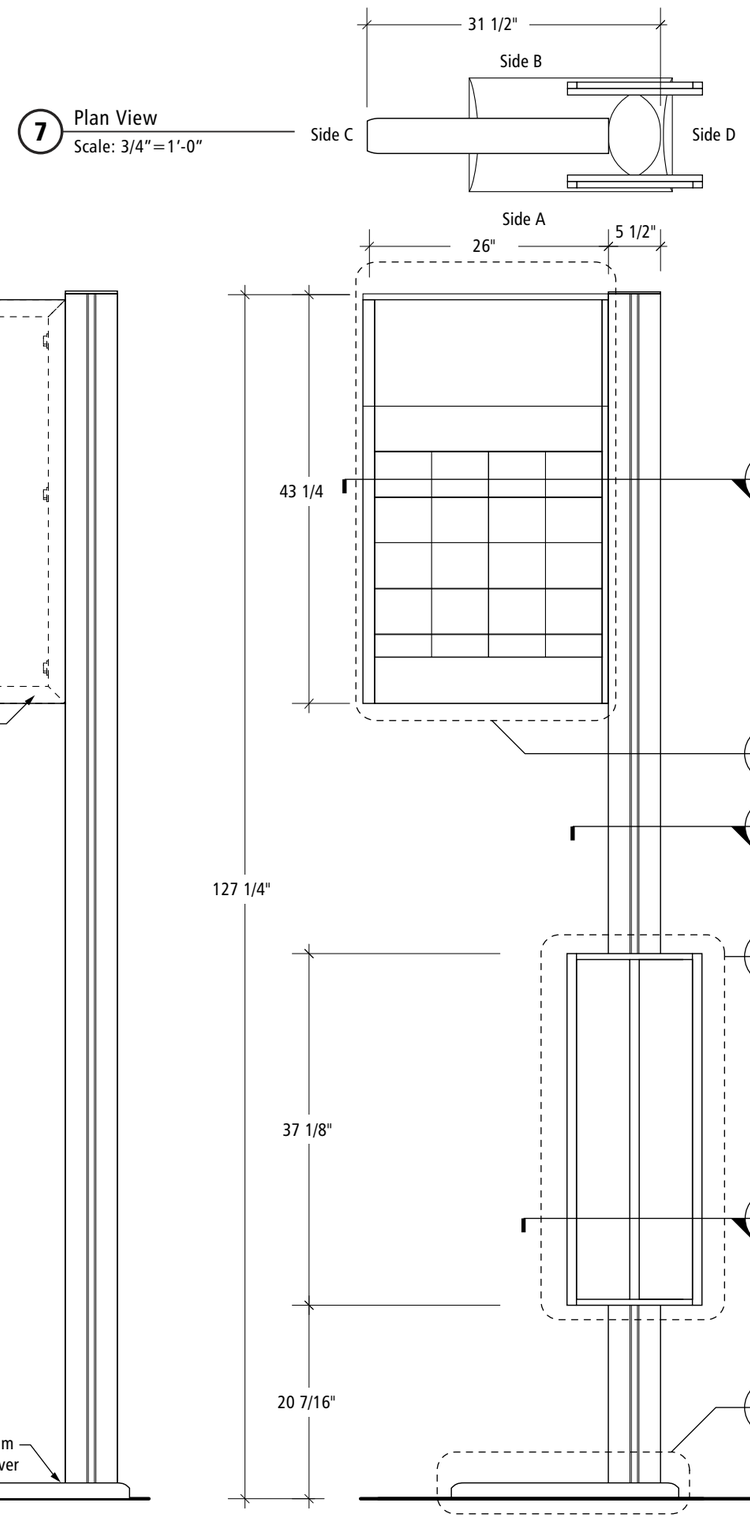
2 Elevation - Column
Scale: 3/4"=1'-0"



3 Elevation - Frame
Scale: 3/4"=1'-0"

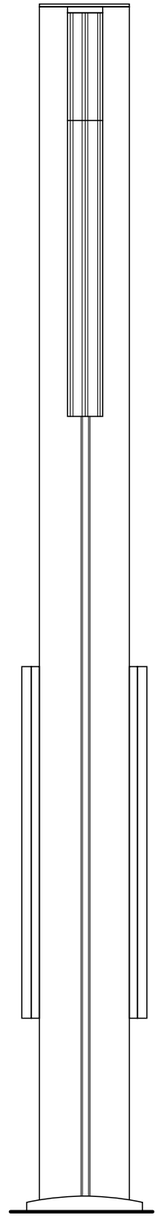


4 Elevation - Sign Faces
Scale: 3/4"=1'-0"



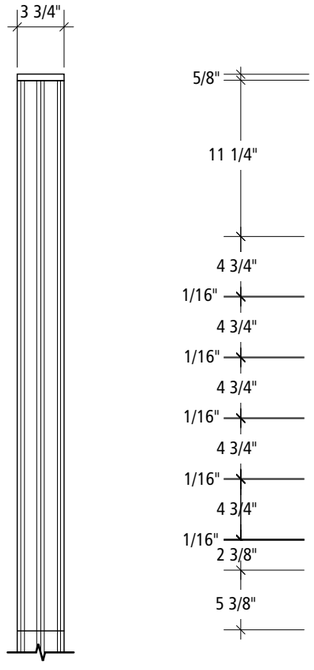
7 Plan View
Scale: 3/4"=1'-0"

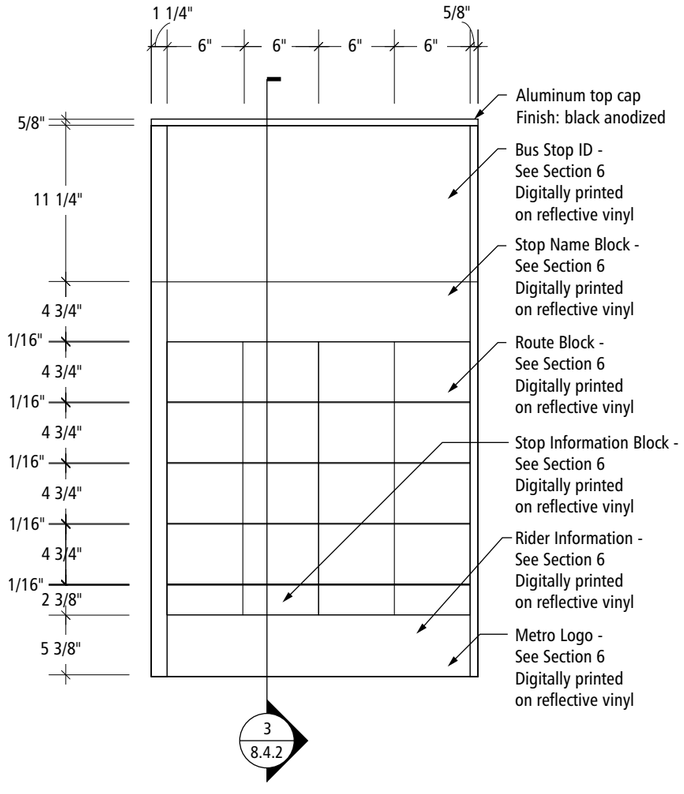
5 Elevation - Sign Type B.2
Scale: 3/4"=1'-0"



6 Side C View
Scale: 3/4"=1'-0"

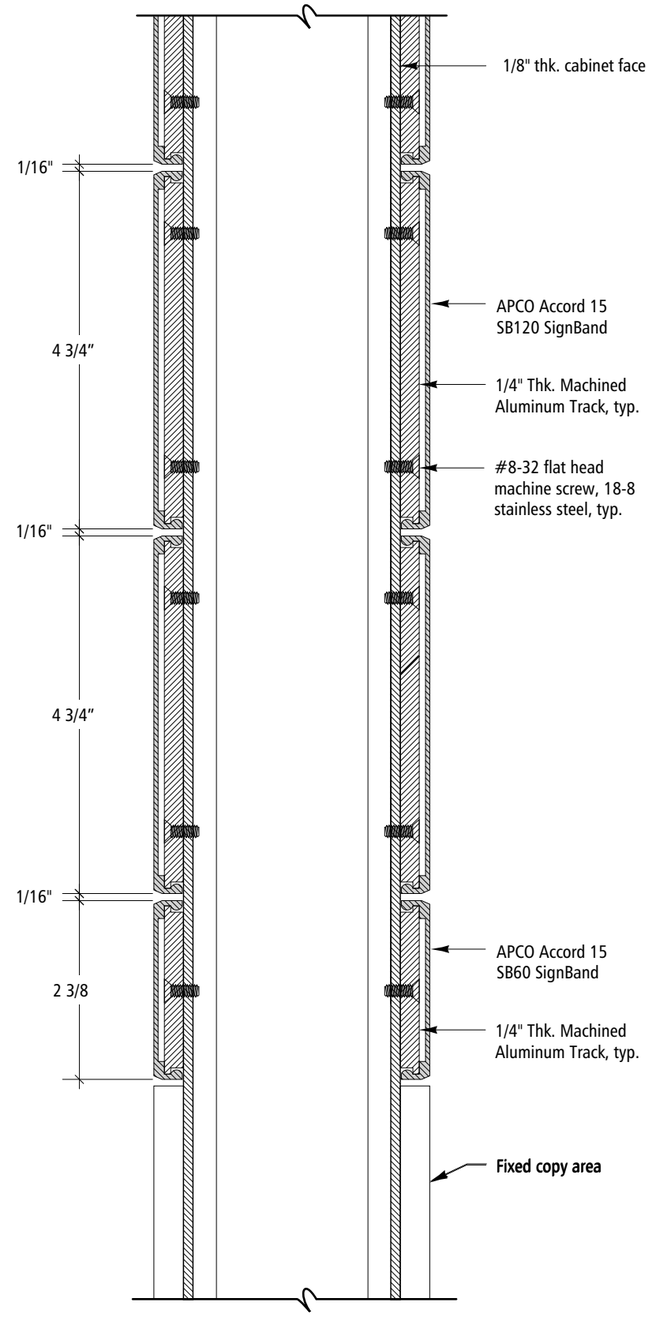
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG





1 Route Tile Cabinet End View
Scale: 1″=1′-0″

2 Route Tile Cabinet Side A (Side B Reversed)
Scale: 1″=1′-0″



3 Route Block Section
Scale: 6″=1′-0″

King County METRO

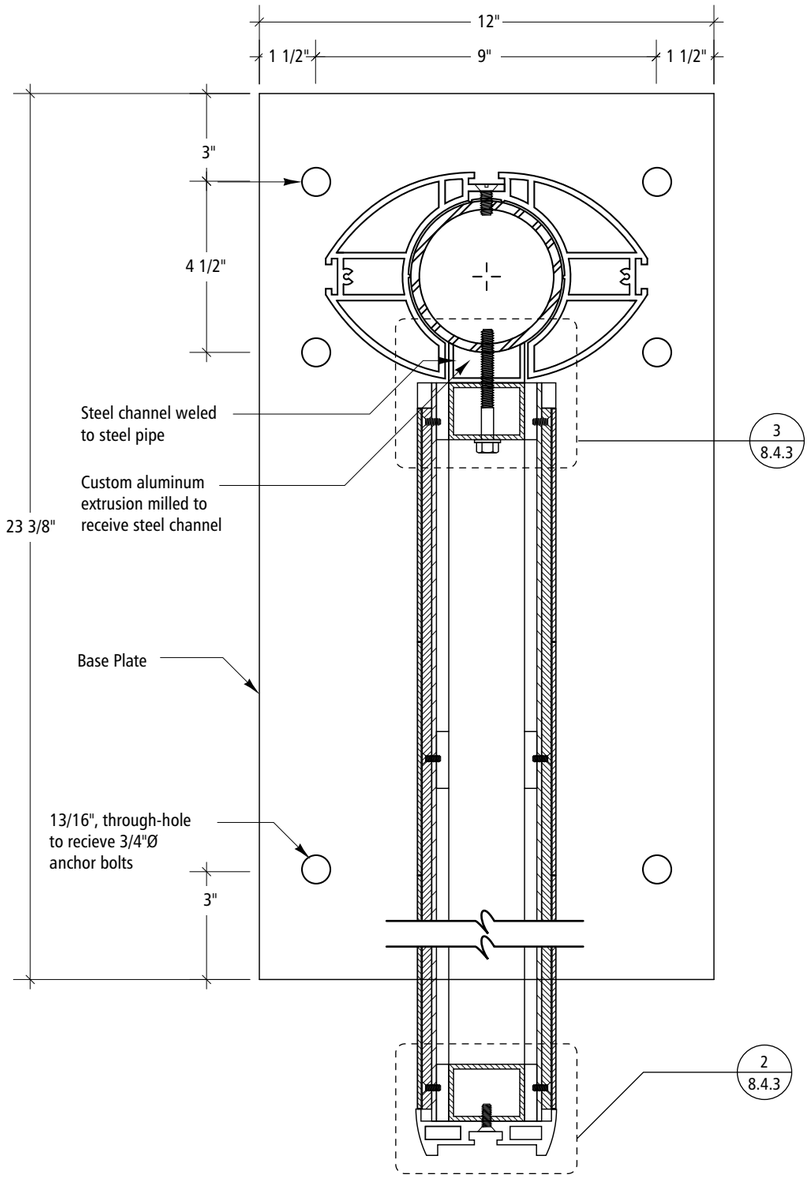
Signing Standards Manual

Volume 2
July 1, 2008

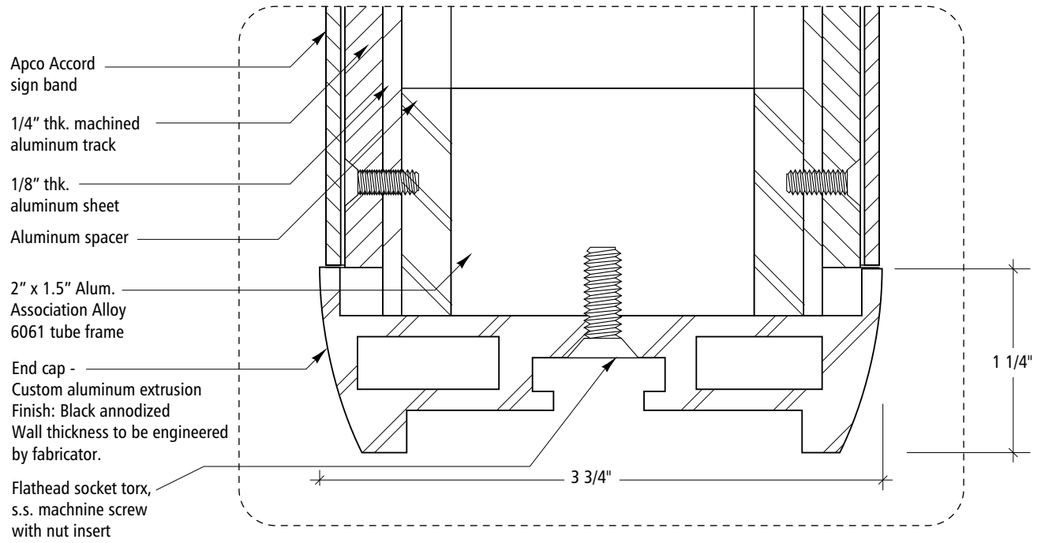
Section 8:
Fabrication

Sign Type B.2

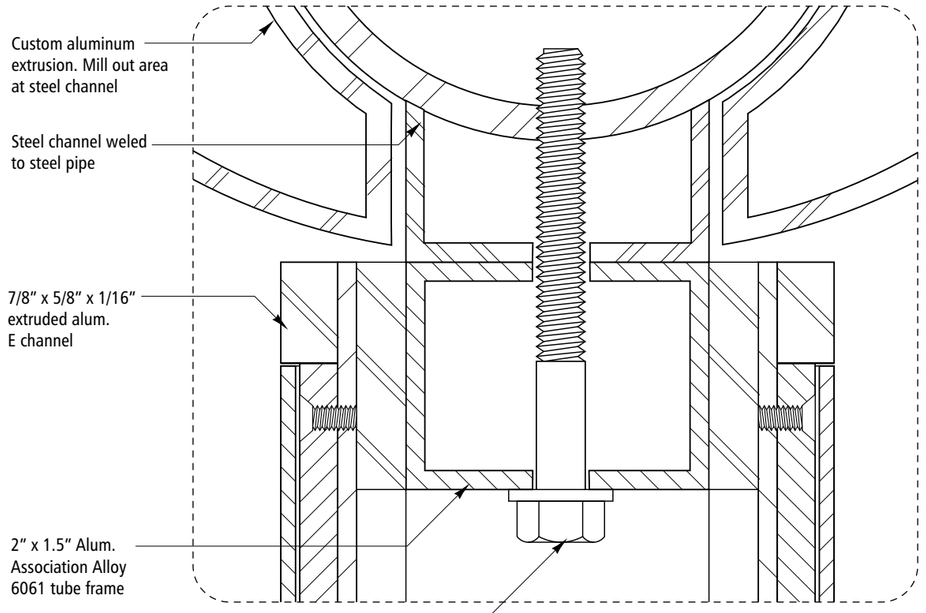
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan Section @ Route Tiles
Scale: 3″=1′-0″



2 Plan Section Detail
Scale: Full Size



3 Plan Section Detail
Scale: Full Size

King County METRO

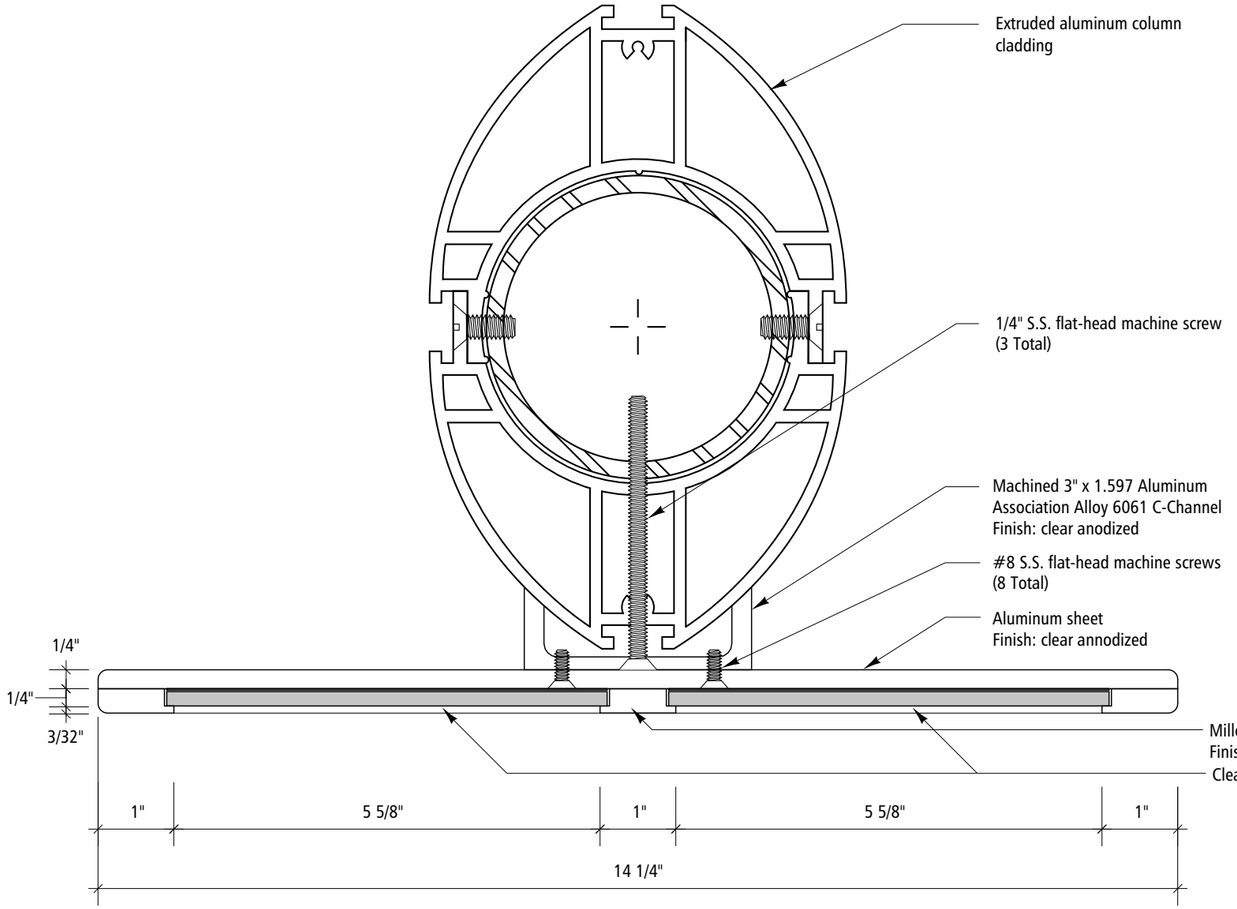
Signing Standards Manual

Volume 2
July 1, 2008

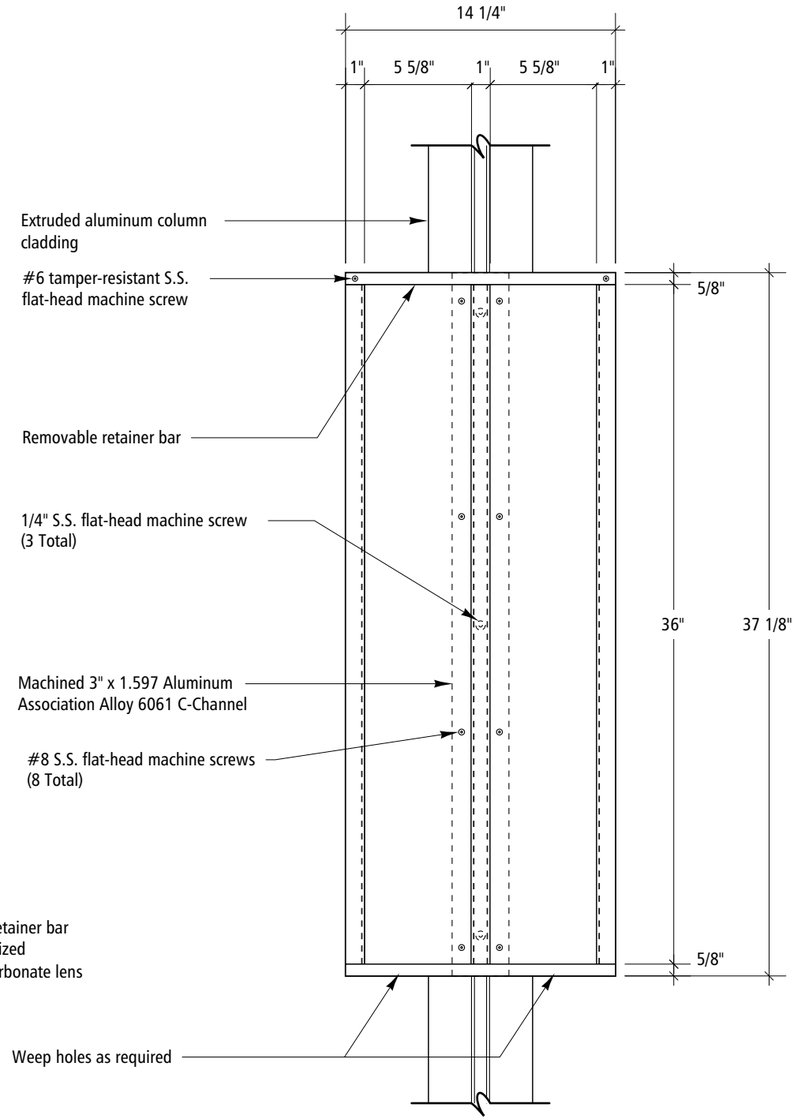
Section 8:
Fabrication

Sign Type B.2

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan Elevation
Scale: 6"=1'-0"



2 Elevation
Scale: 1 1/2"=1'-0"

King County METRO

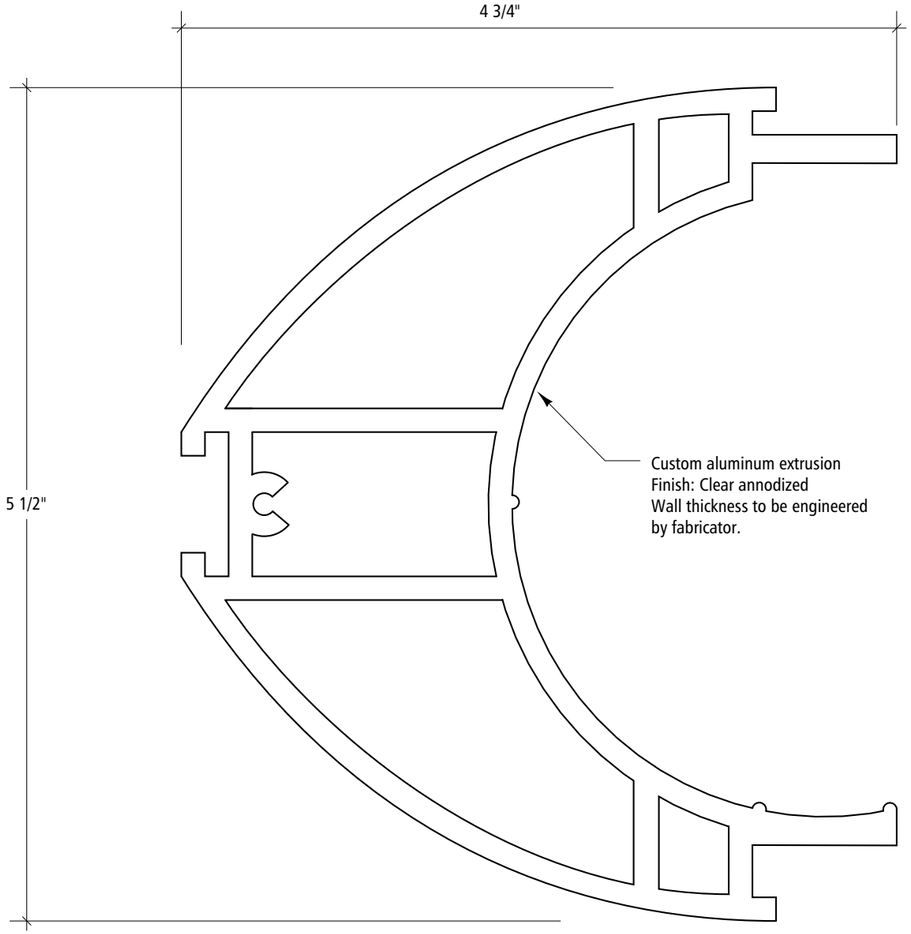
Signing Standards Manual

Volume 2
July 1, 2008

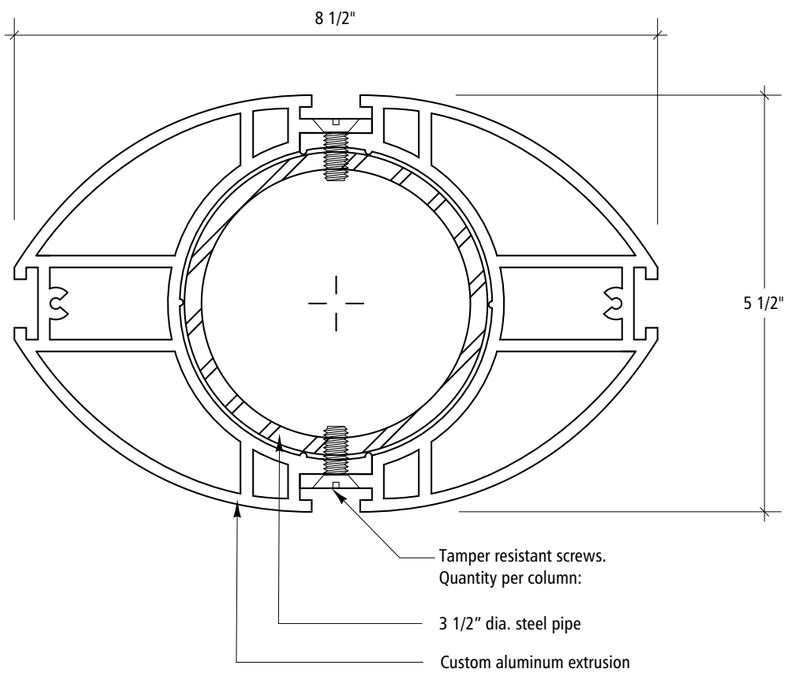
Section 8:
Fabrication

Sign Type B.2

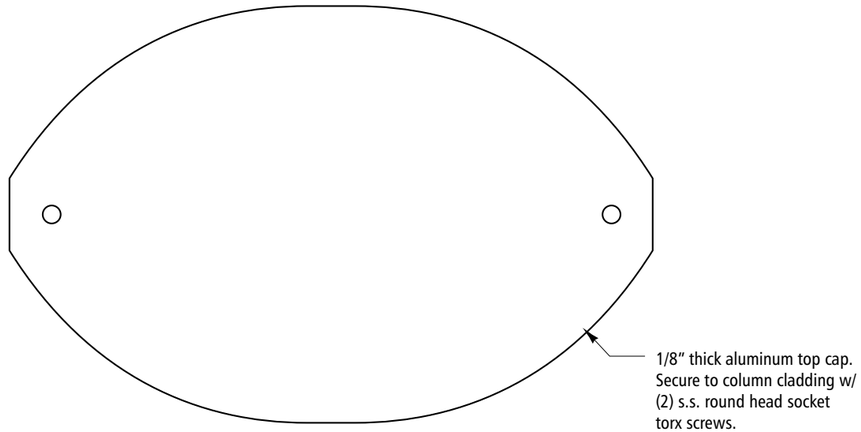
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Custom Extrusion Section
Full Scale



2 Custom Extrusion / Pipe Assembly Detail
Scale: 6"=1'-0"



3 Top Cap
Scale: 6"=1'-0"

King County METRO

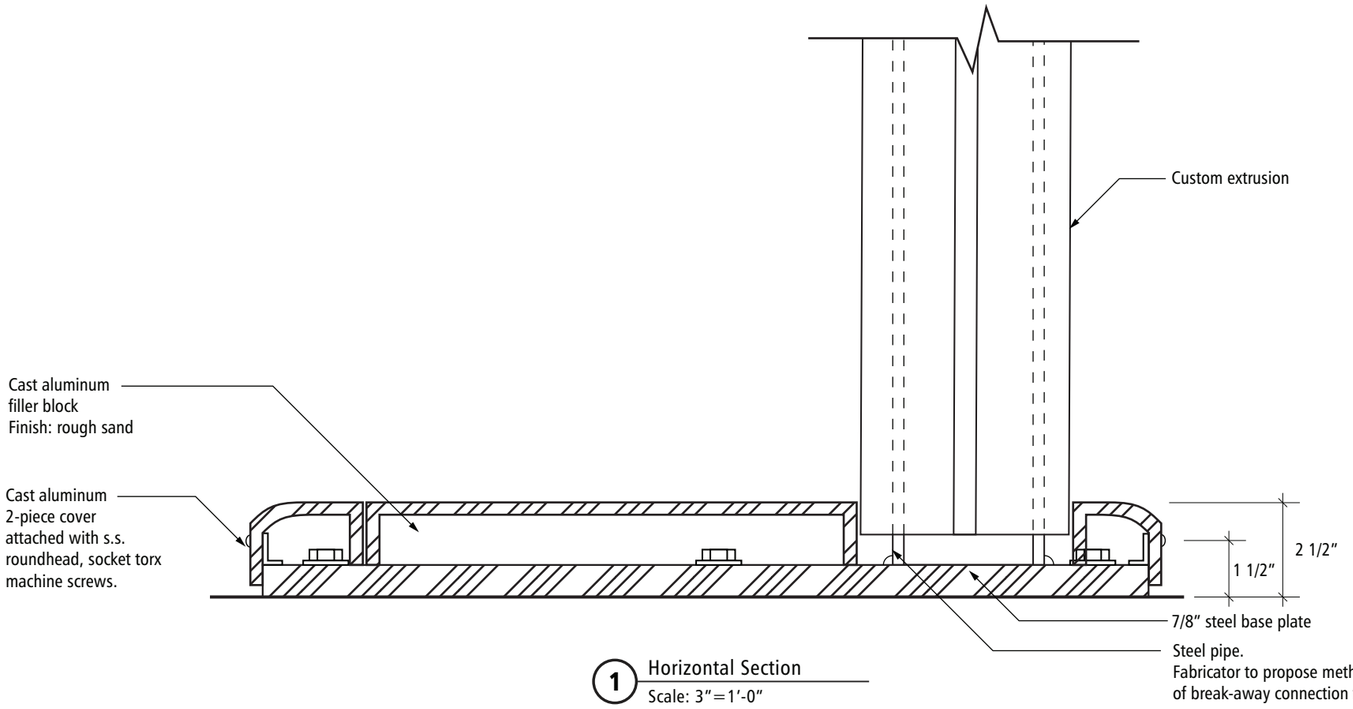
Signing Standards Manual

Volume 2
July 1, 2008

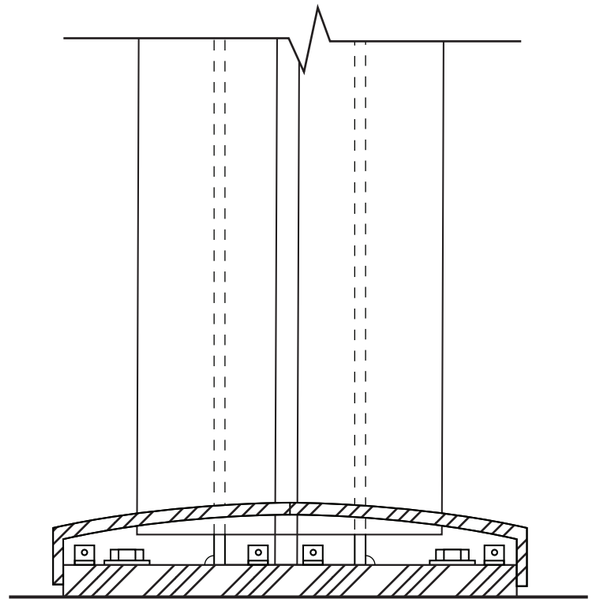
Section 8:
Fabrication

Sign Type B.2

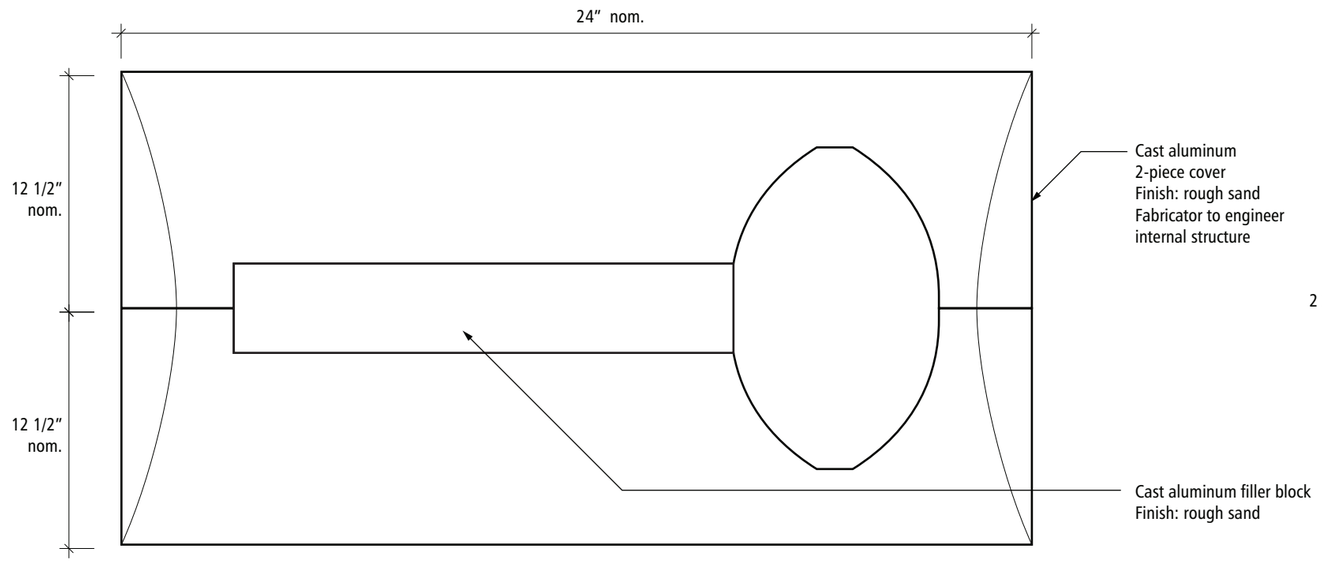
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



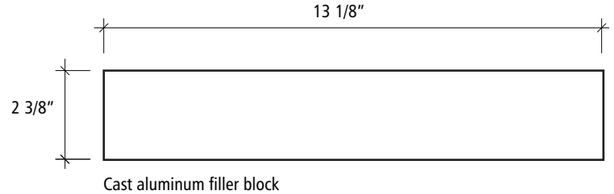
1 Horizontal Section
Scale: 3″=1′-0″



2 Vertical Section
Scale: 3″=1′-0″



3 Cover Plate Plan
Scale: 3″=1′-0″



4 Filler Block Plan
Scale: 3″=1′-0″

King County METRO

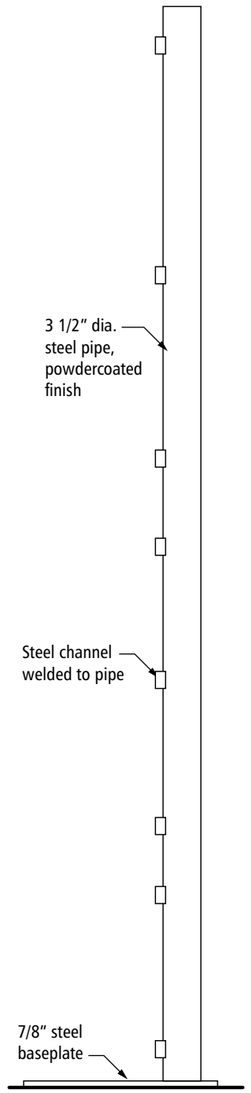
Signing Standards Manual

Volume 2
July 1, 2008

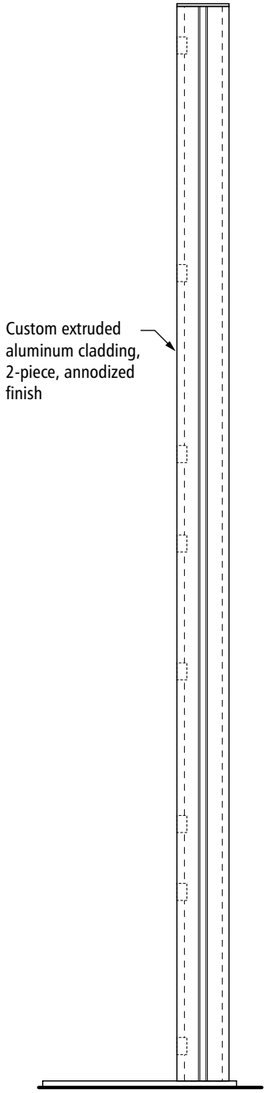
Section 8:
Fabrication

Sign Type B.2

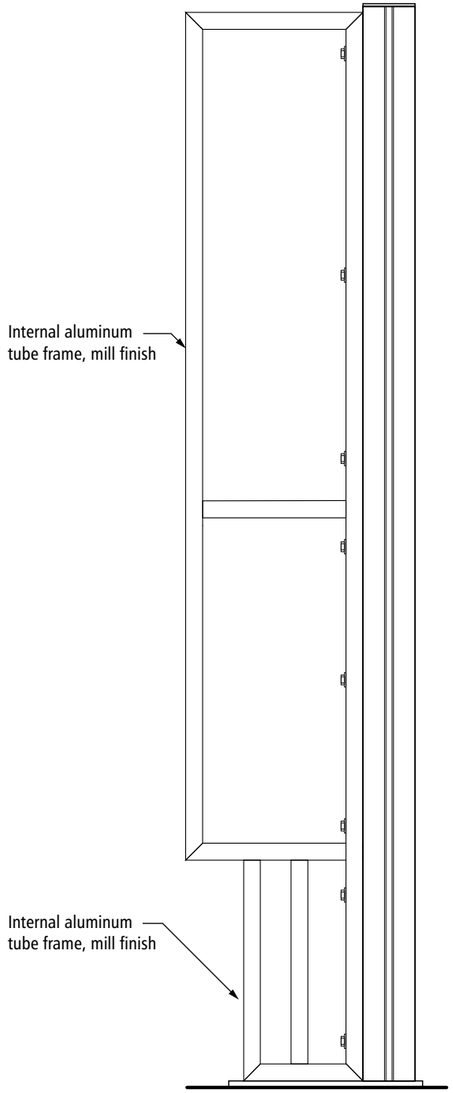
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



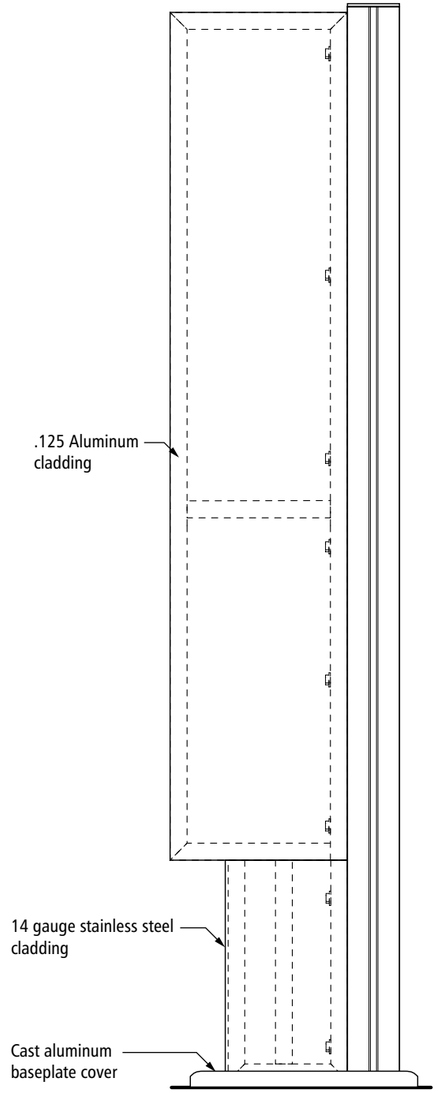
1 Elevation-Baseplate & Pipe
Scale: 3/4"=1'-0"



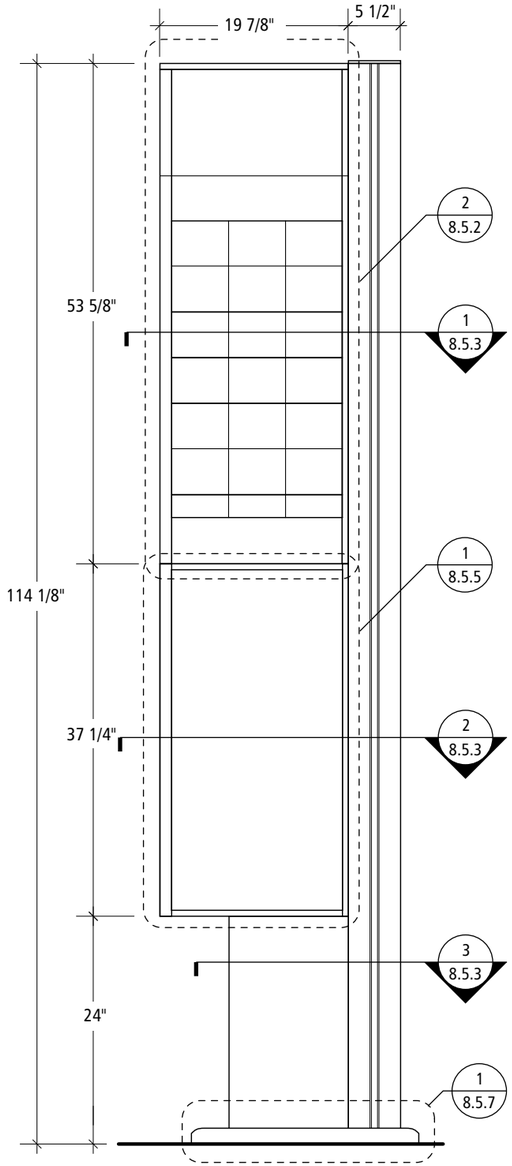
2 Elevation - Column
Scale: 3/4"=1'-0"



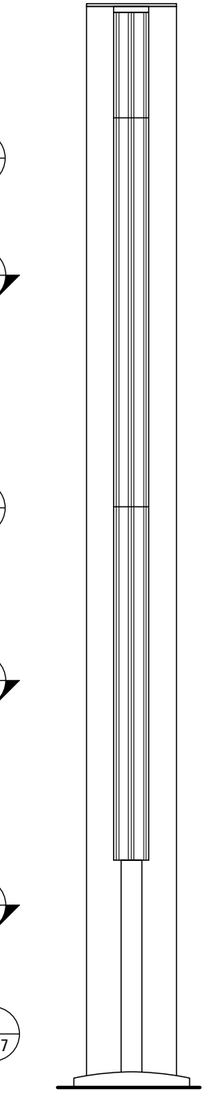
3 Elevation - Frame
Scale: 3/4"=1'-0"



4 Elevation - Sign Faces
Scale: 3/4"=1'-0"



5 Elevation - Sign Type C.1
Scale: 3/4"=1'-0"



7 Plan View
Scale: 3/4"=1'-0"

6 Side C View
Scale: 3/4"=1'-0"

King County METRO

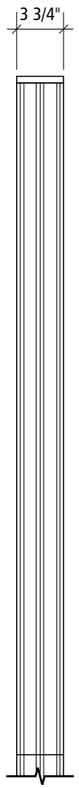
Signing Standards Manual

Volume 2
July 1, 2008

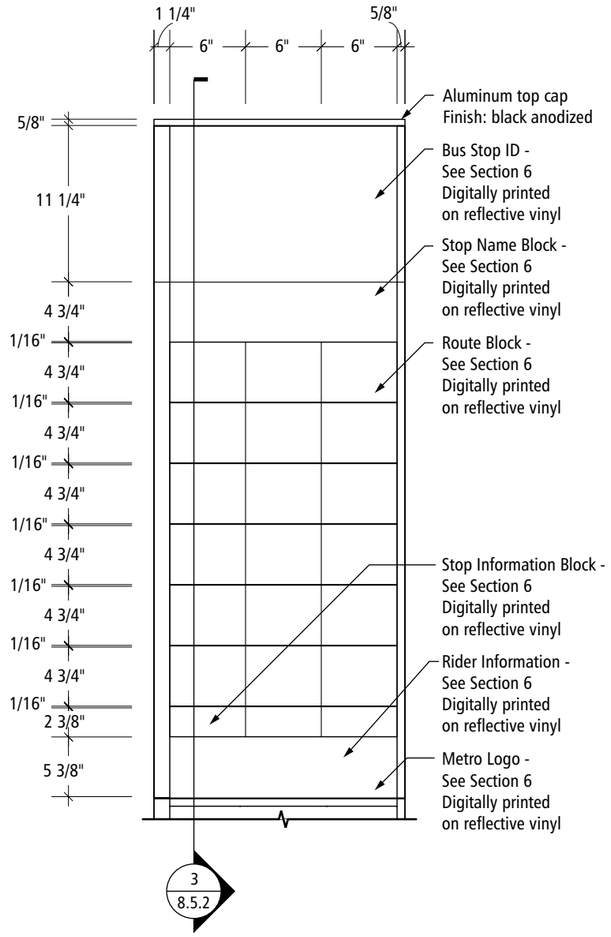
Section 8:
Fabrication

Sign Type C.1

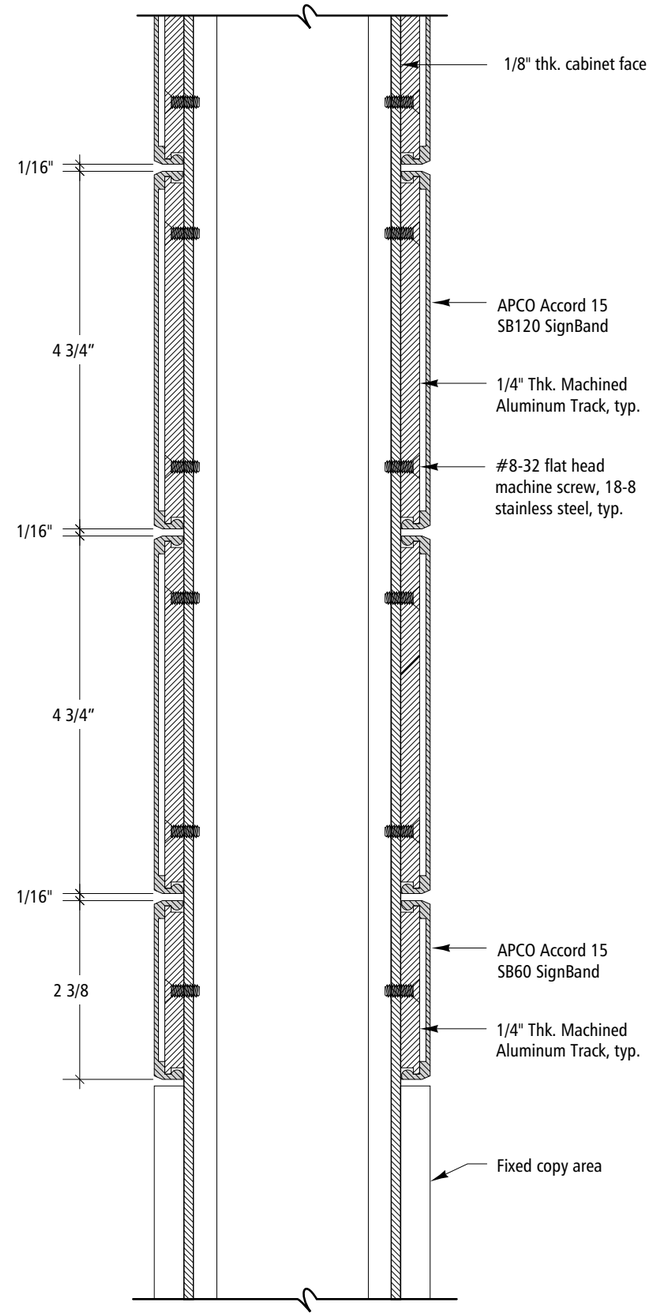
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Route Tile Cabinet Side
Scale: 1″=1′-0″



2 Route Tile Cabinet Front
Scale: 1″=1′-0″



3 Route Block Section
Scale: 6″=1′-0″

King County METRO

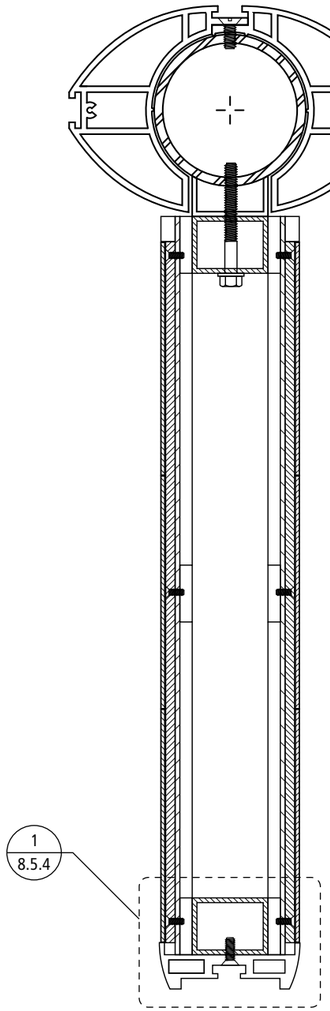
Signing Standards Manual

Volume 2
July 1, 2008

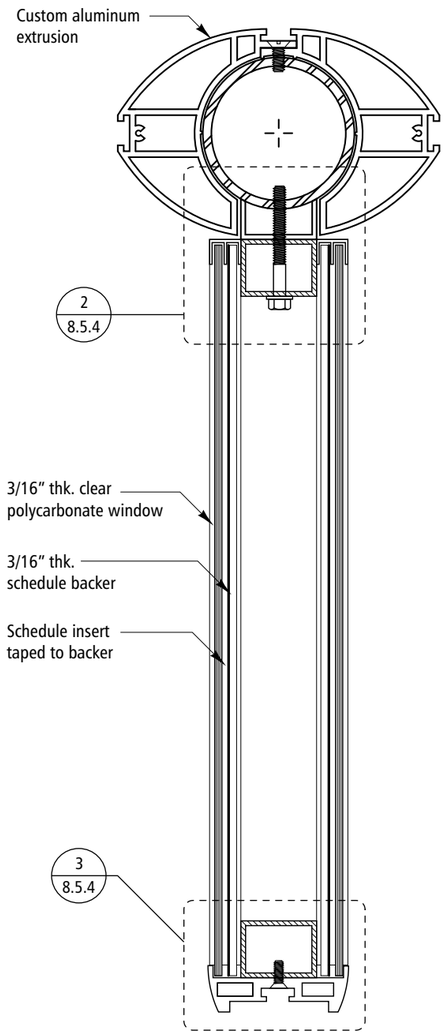
Section 8:
Fabrication

Sign Type C.1

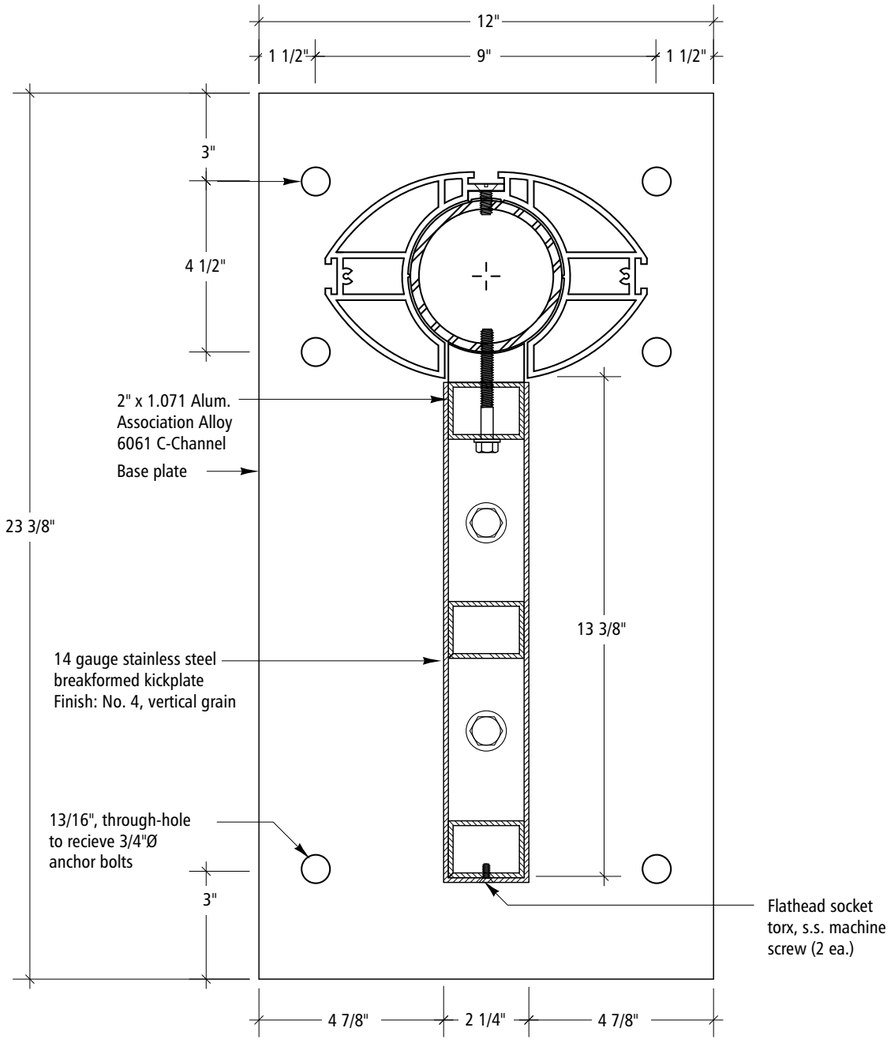
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan Section @ Route Tiles
Scale: 3″=1′-0″



2 Plan Section @ Schedule Cabinet
Scale: 3″=1′-0″



3 Plan Section @ Kick Plate
Scale: 3″=1′-0″

King County METRO

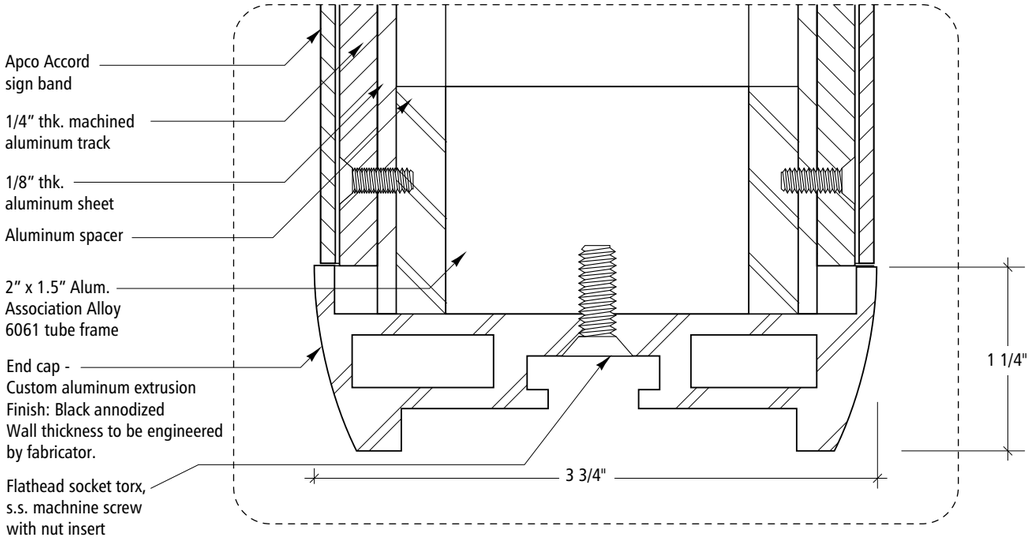
Signing Standards Manual

Volume 2
July 1, 2008

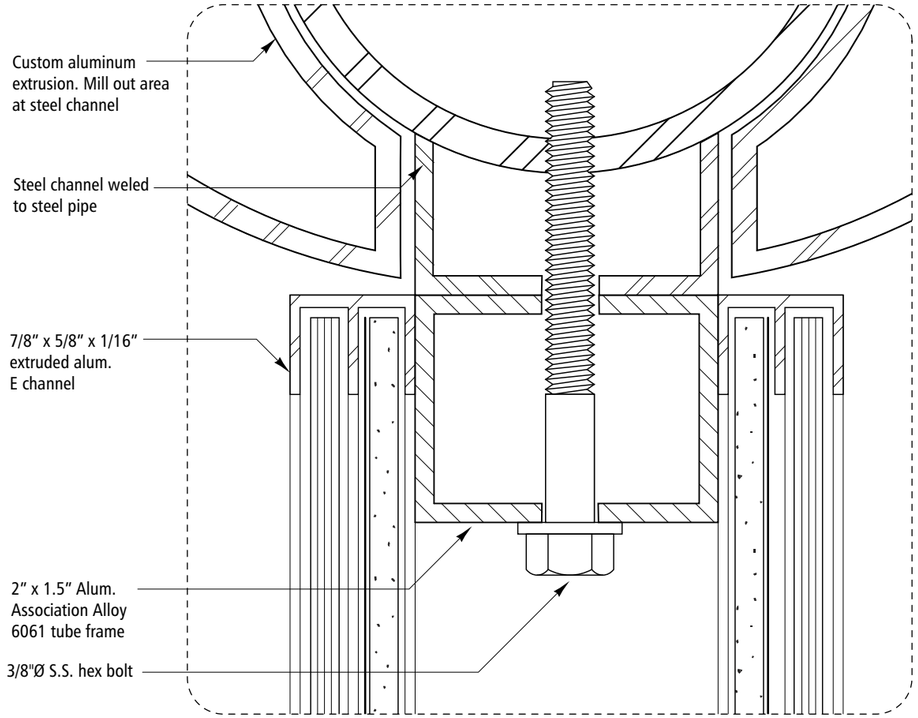
Section 8:
Fabrication

Sign Type C.1

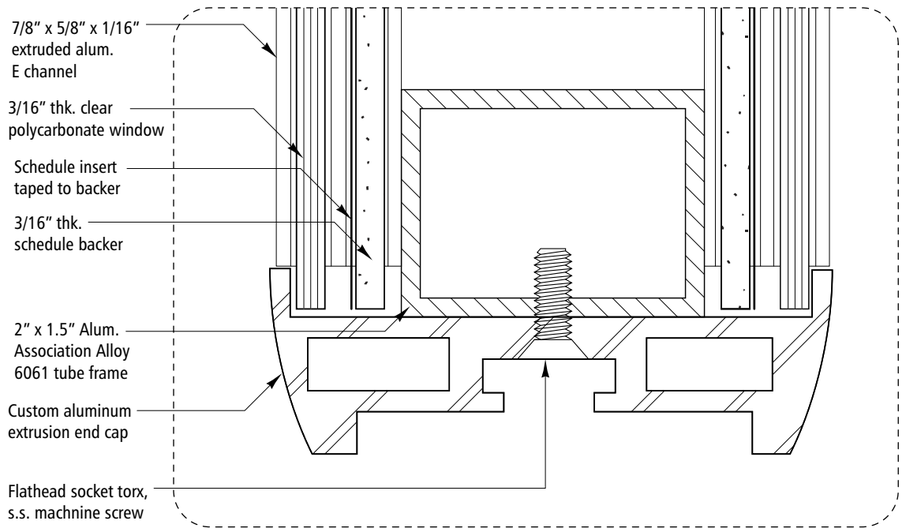
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan Section Detail
Scale: Full Size

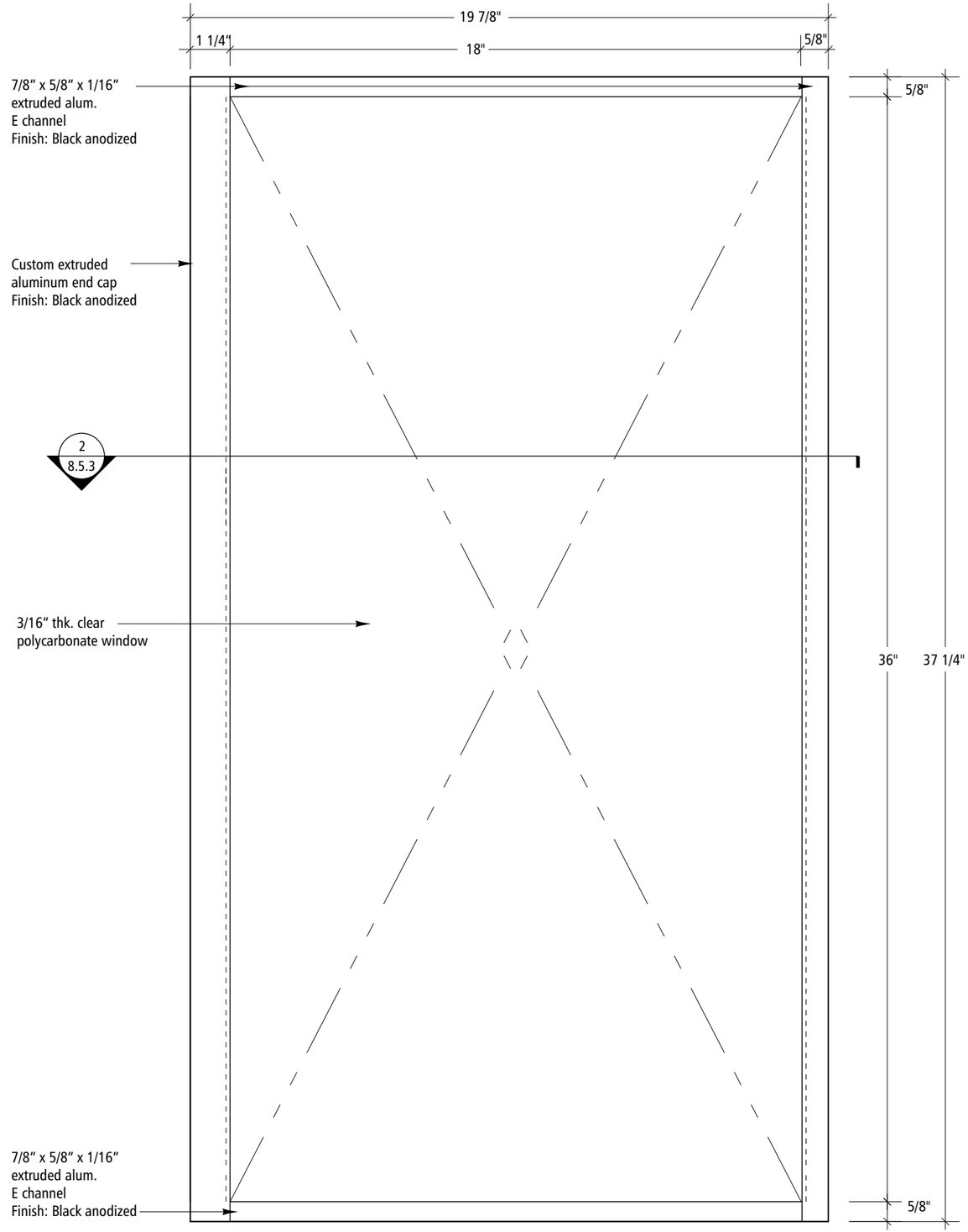


2 Plan Section Detail
Scale: Full Size



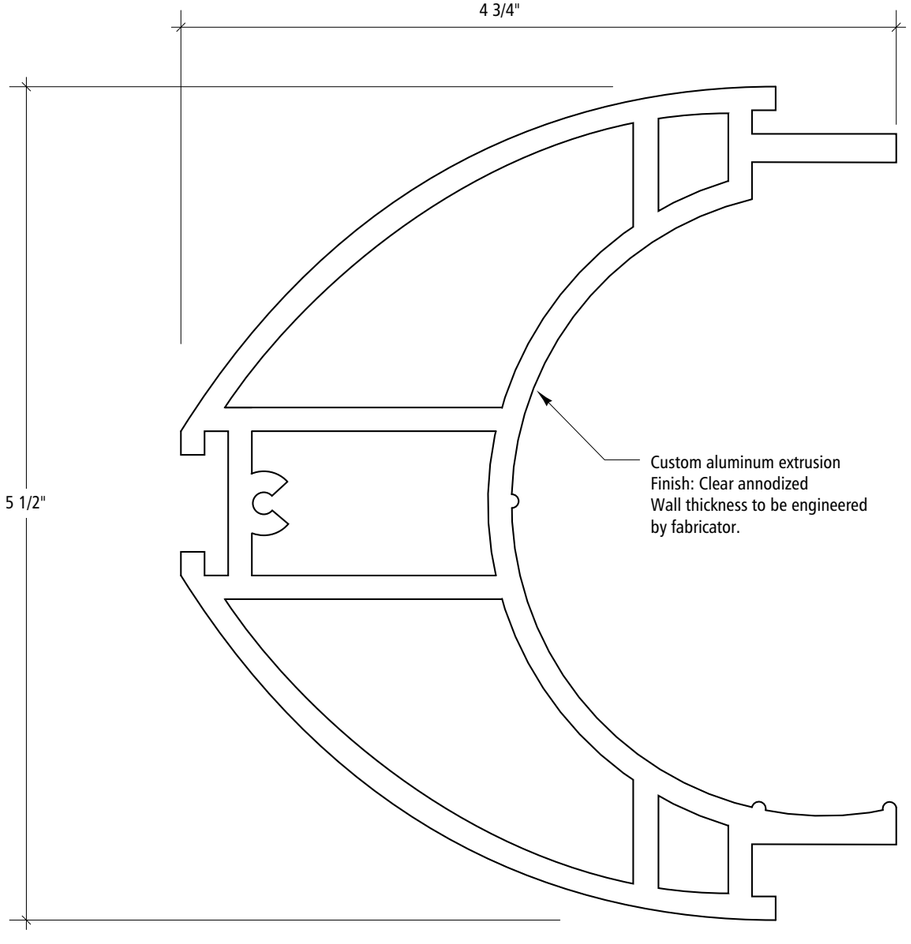
3 Plan Section Detail
Scale: Full Size

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

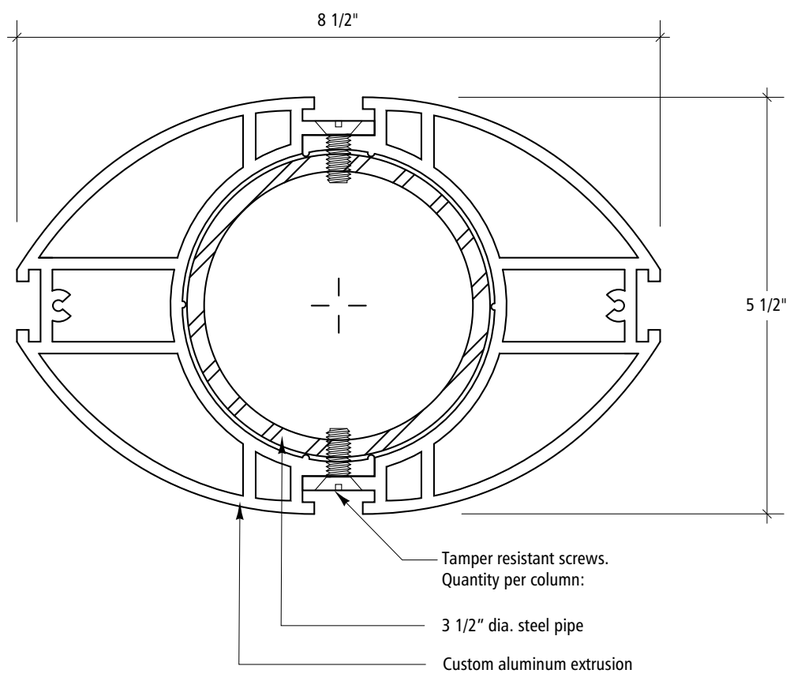


1 Display Case Elevation
Scale: 3"=1'-0"

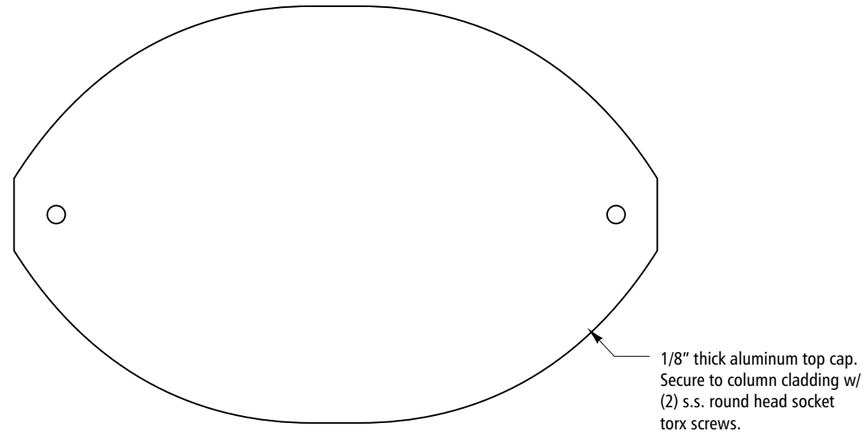
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Custom Extrusion Section
Full Scale

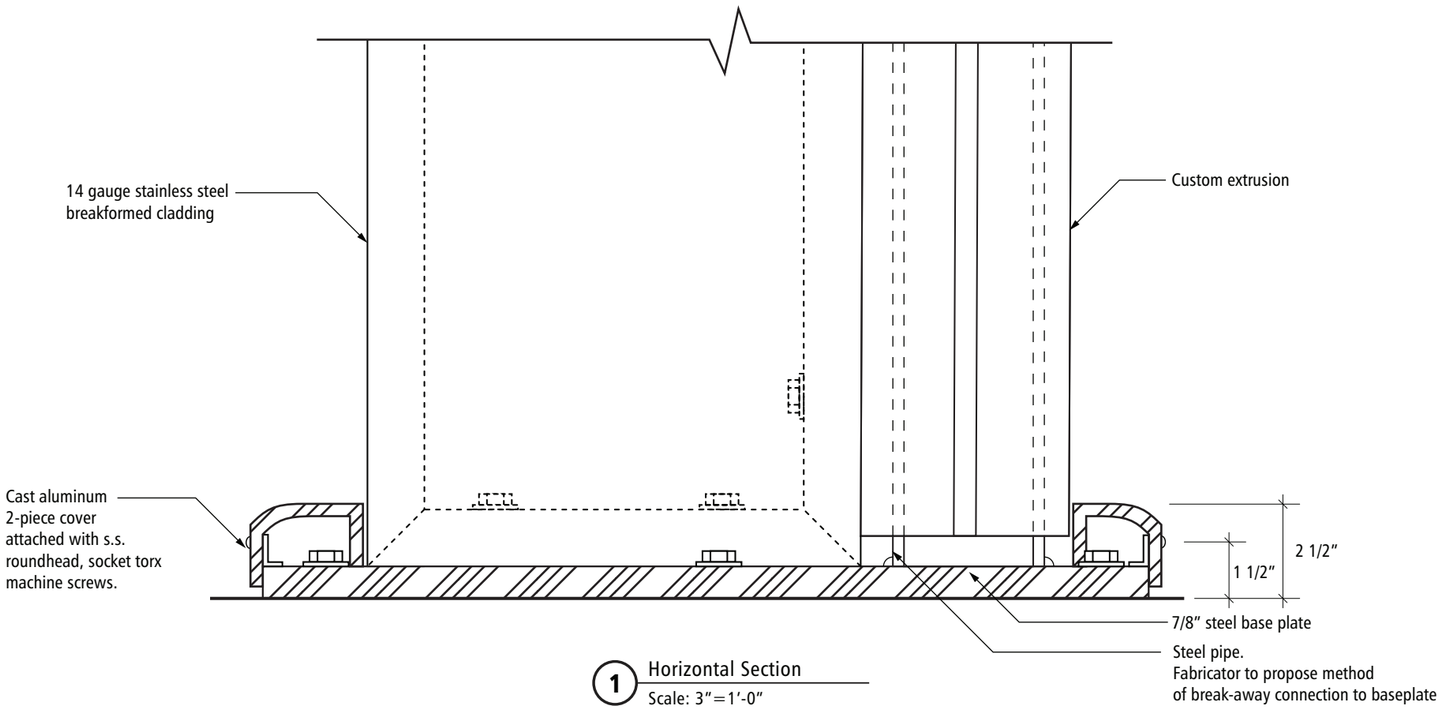


2 Custom Extrusion / Pipe Assembly Detail
Scale: 6"=1'-0"

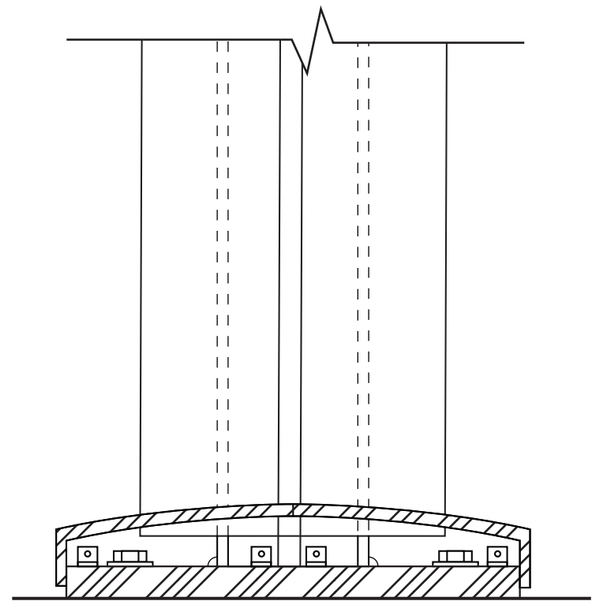


3 Top Cap
Scale: 6"=1'-0"

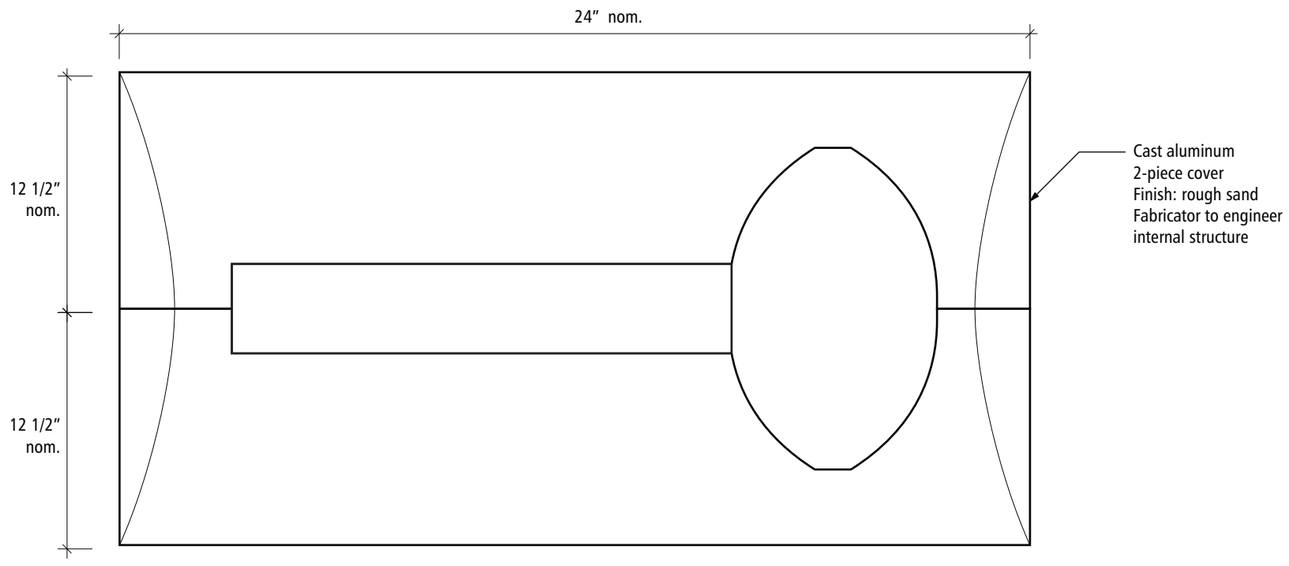
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Horizontal Section
Scale: 3"=1'-0"

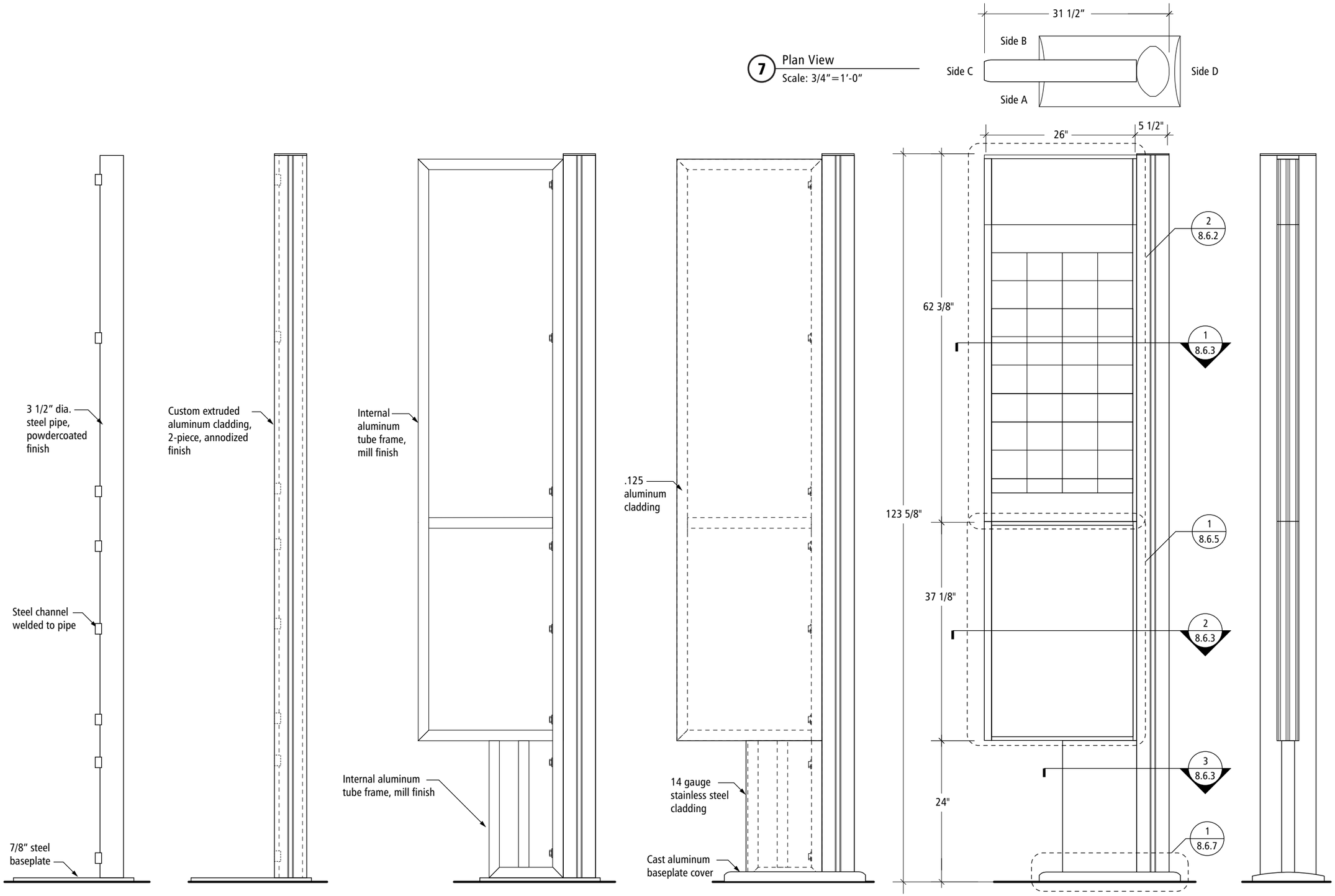


2 Vertical Section
Scale: 3"=1'-0"



3 Cover Plate Plan
Scale: 3"=1'-0"

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Elevation-Baseplate & Pipe
Scale: 3/4"=1'-0"

2 Elevation - Column
Scale: 3/4"=1'-0"

3 Elevation - Frame
Scale: 3/4"=1'-0"

4 Elevation - Sign Faces
Scale: 3/4"=1'-0"

7 Plan View
Scale: 3/4"=1'-0"

5 Elevation - Sign Type C.2
Scale: 3/4"=1'-0"

6 Side C View
Scale: 3/4"=1'-0"

King County METRO

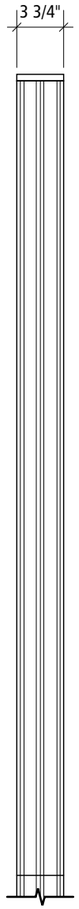
Signing Standards Manual

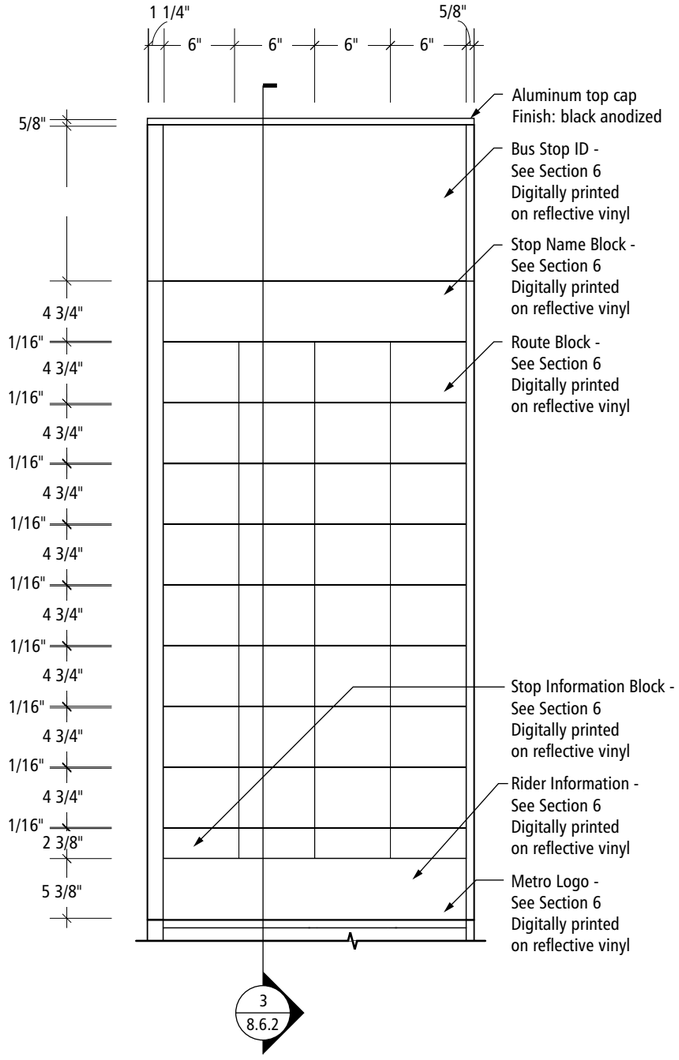
Volume 2
July 1, 2008

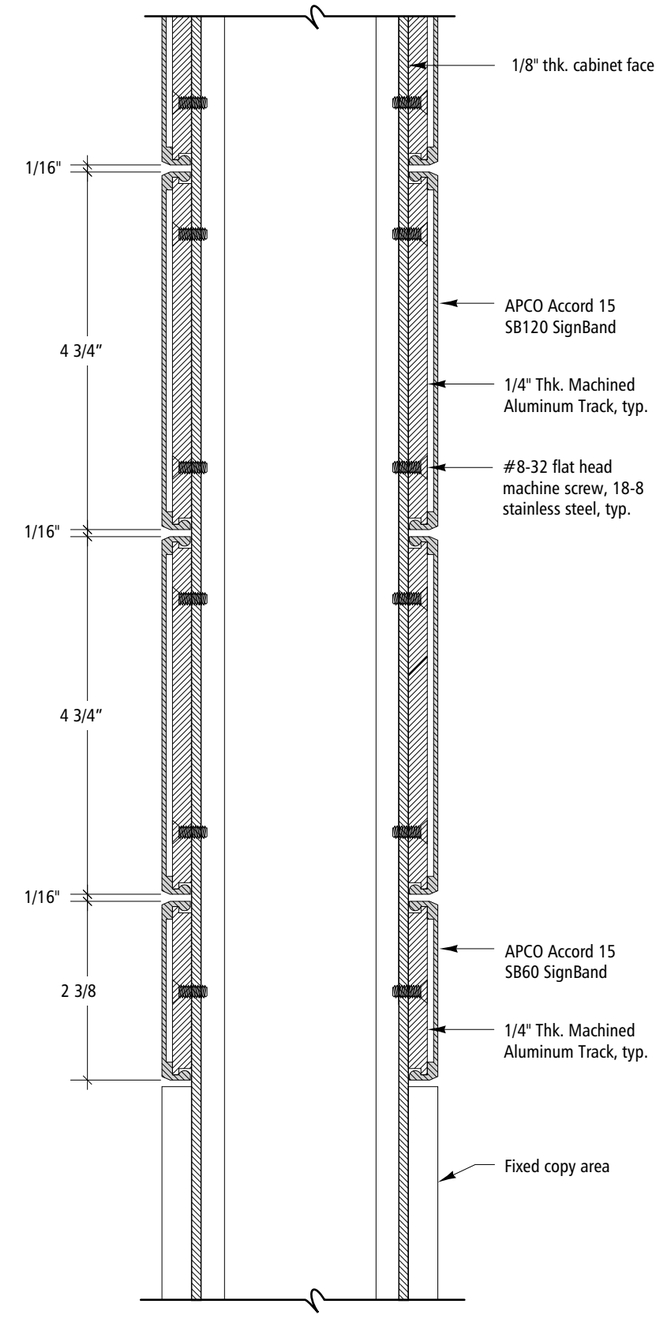
Section 8:
Fabrication

Sign Type C.2

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG







1 Route Tile Cabinet Side
Scale: 1″=1′-0″

2 Route Tile Cabinet Front
Scale: 1″=1′-0″

3 Route Block Section
Scale: 6″=1′-0″

King County METRO

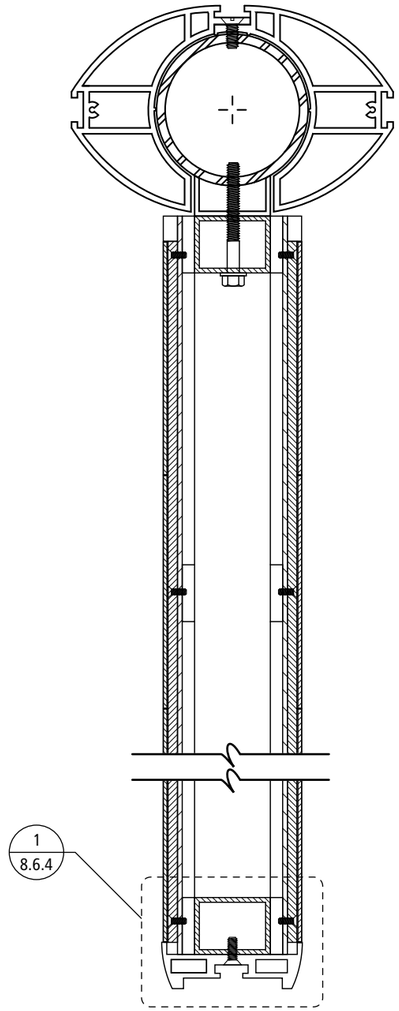
Signing Standards Manual

Volume 2
July 1, 2008

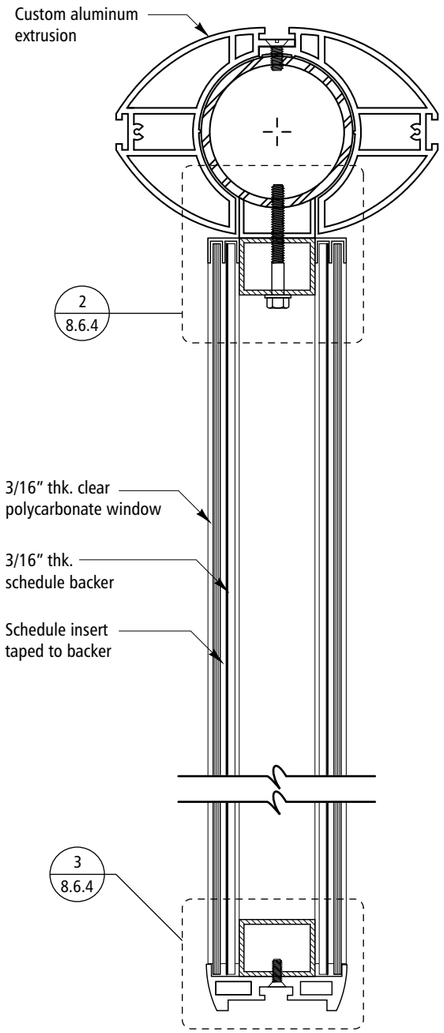
Section 8:
Fabrication

Sign Type C.2

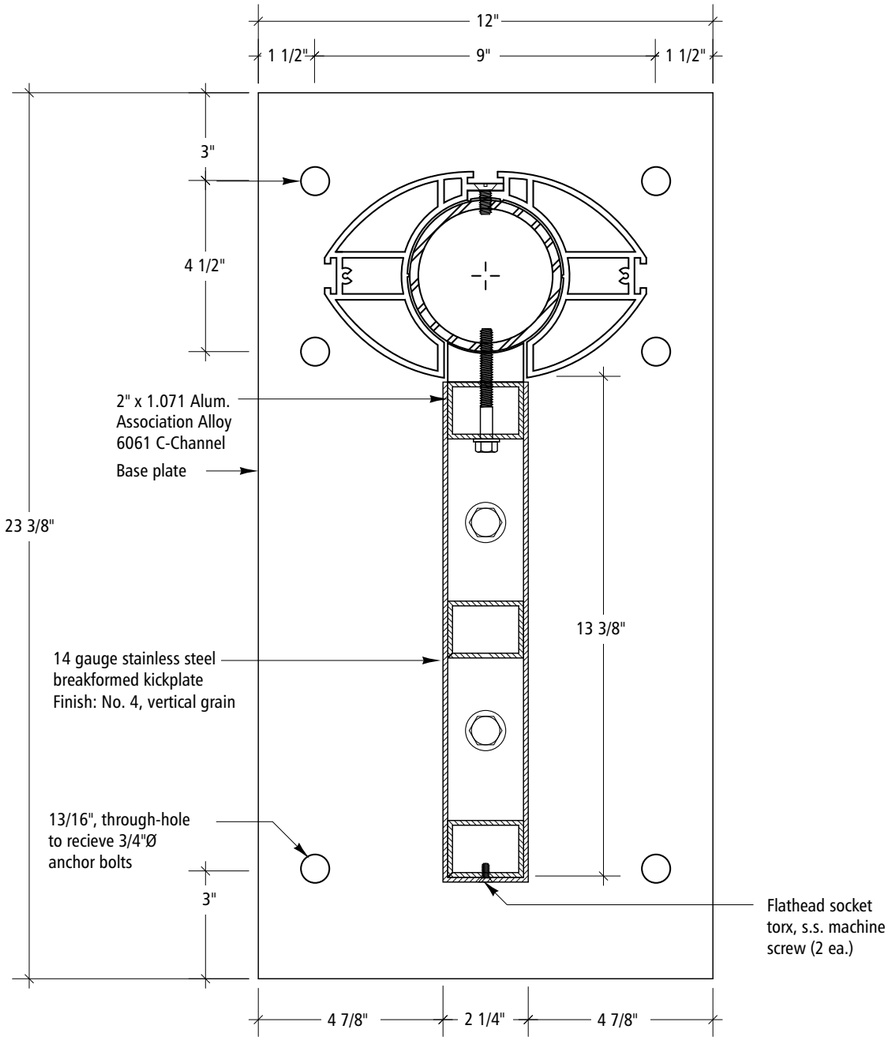
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan Section @ Route Tiles
Scale: 3″=1′-0″



2 Plan Section @ Schedule Cabinet
Scale: 3″=1′-0″



3 Plan Section @ Kick Plate
Scale: 3″=1′-0″

King County METRO

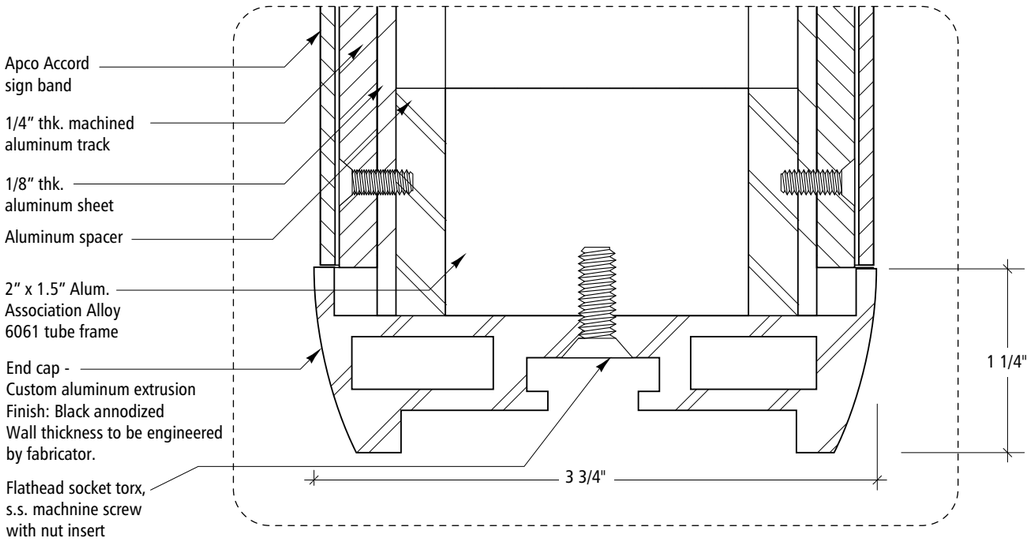
Signing Standards Manual

Volume 2
July 1, 2008

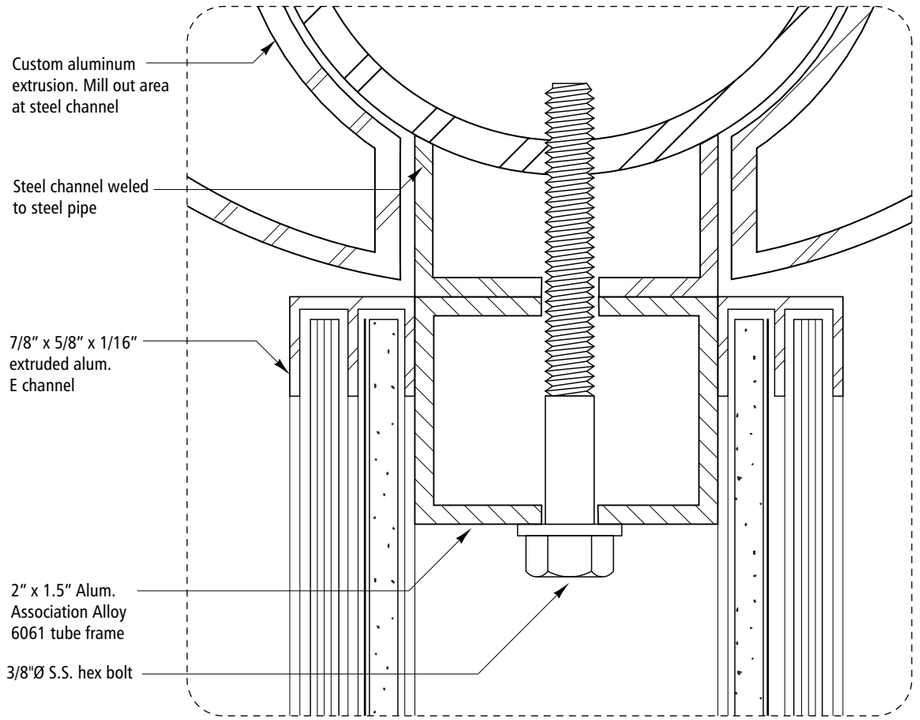
Section 8:
Fabrication

Sign Type C.2

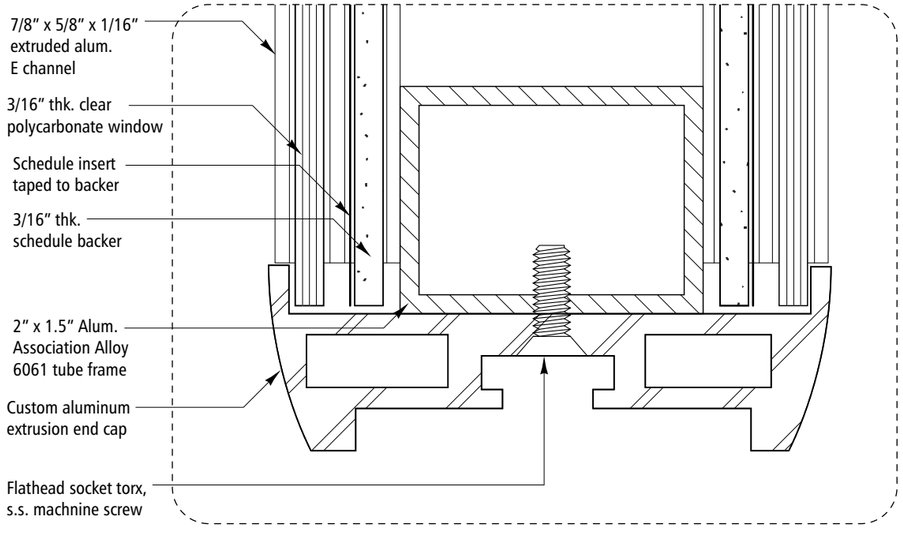
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan Section Detail
Scale: Full Size

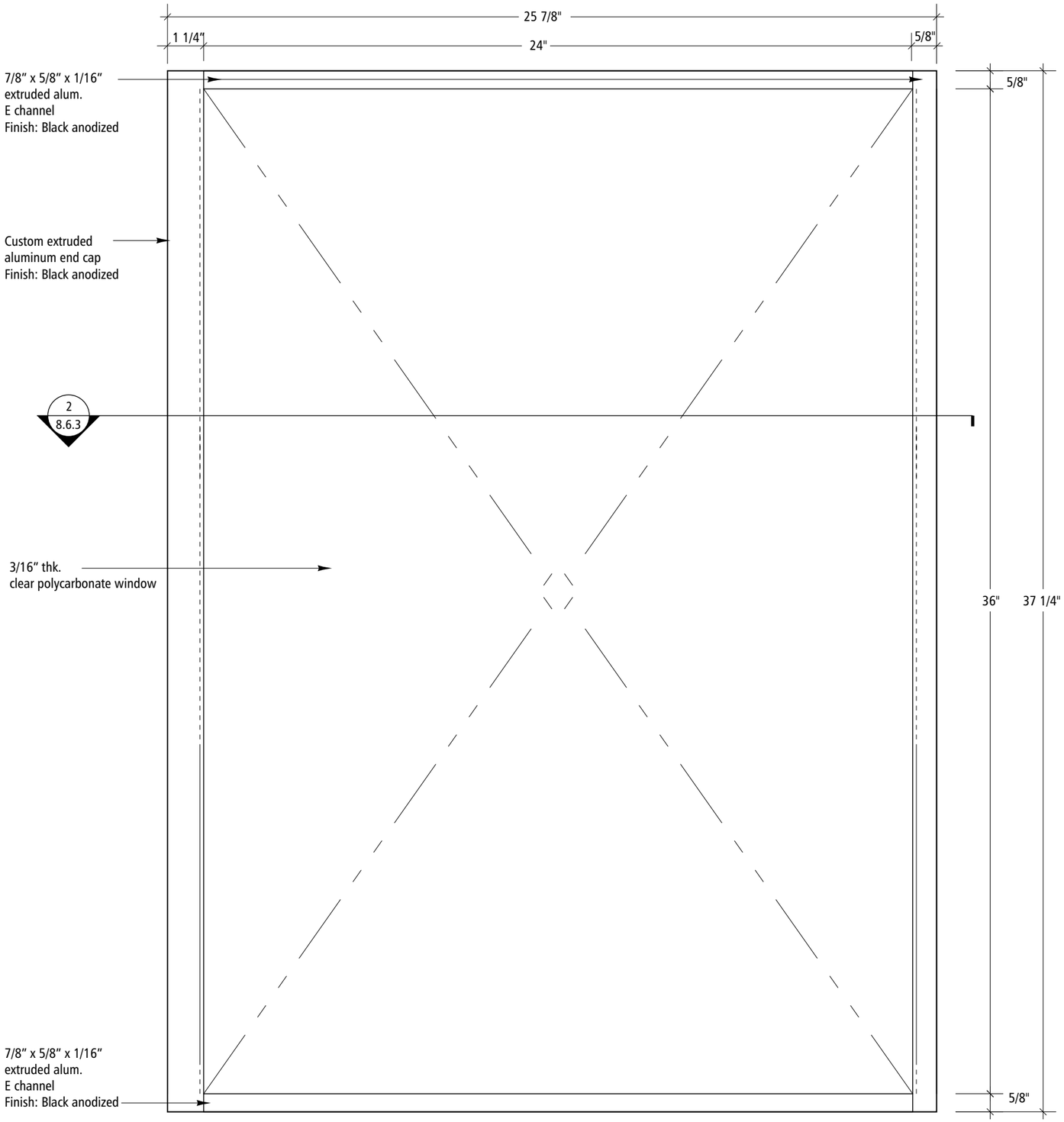


2 Plan Section Detail
Scale: Full Size



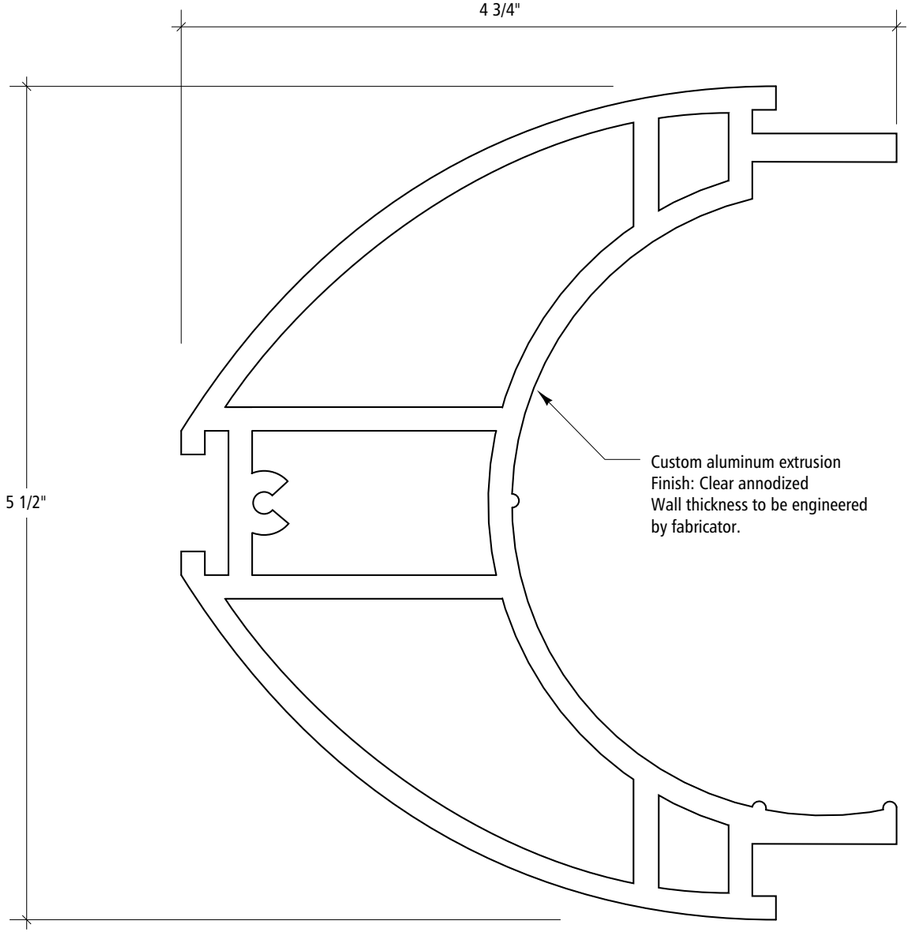
3 Plan Section Detail
Scale: Full Size

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

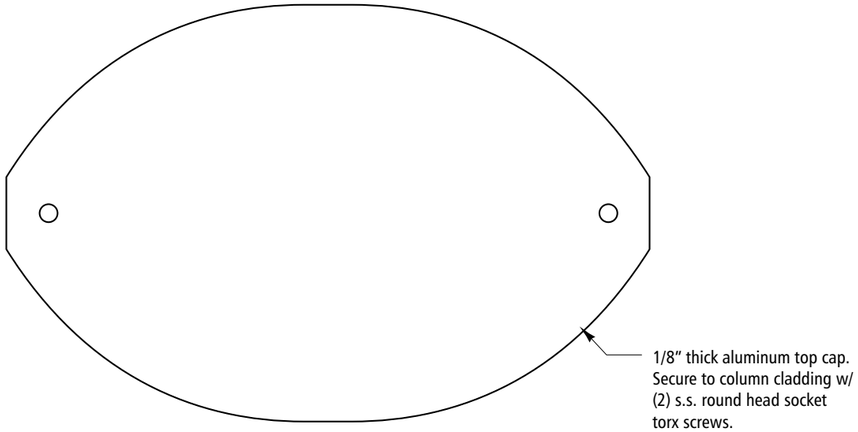


1 Display Case Elevation
Scale: 3"=1'-0"

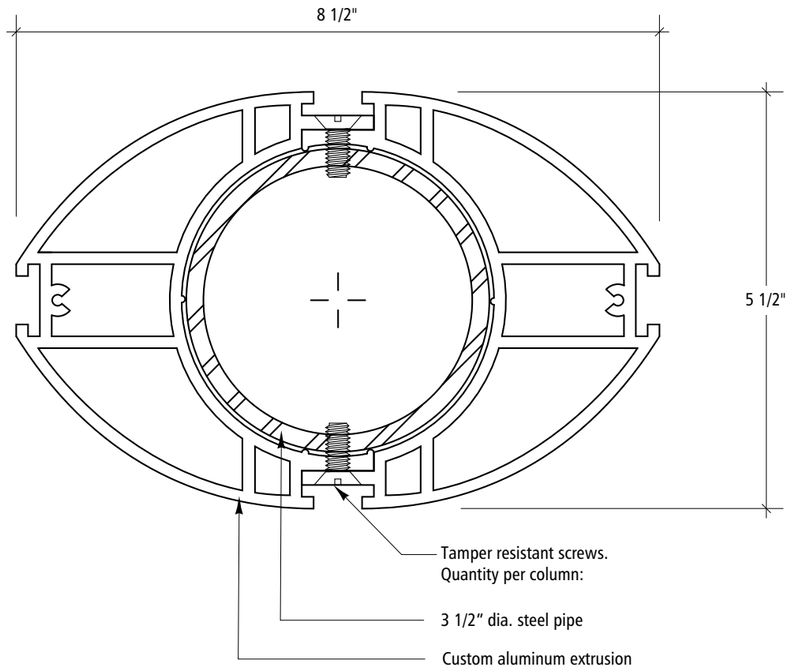
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Custom Extrusion Section
Full Scale

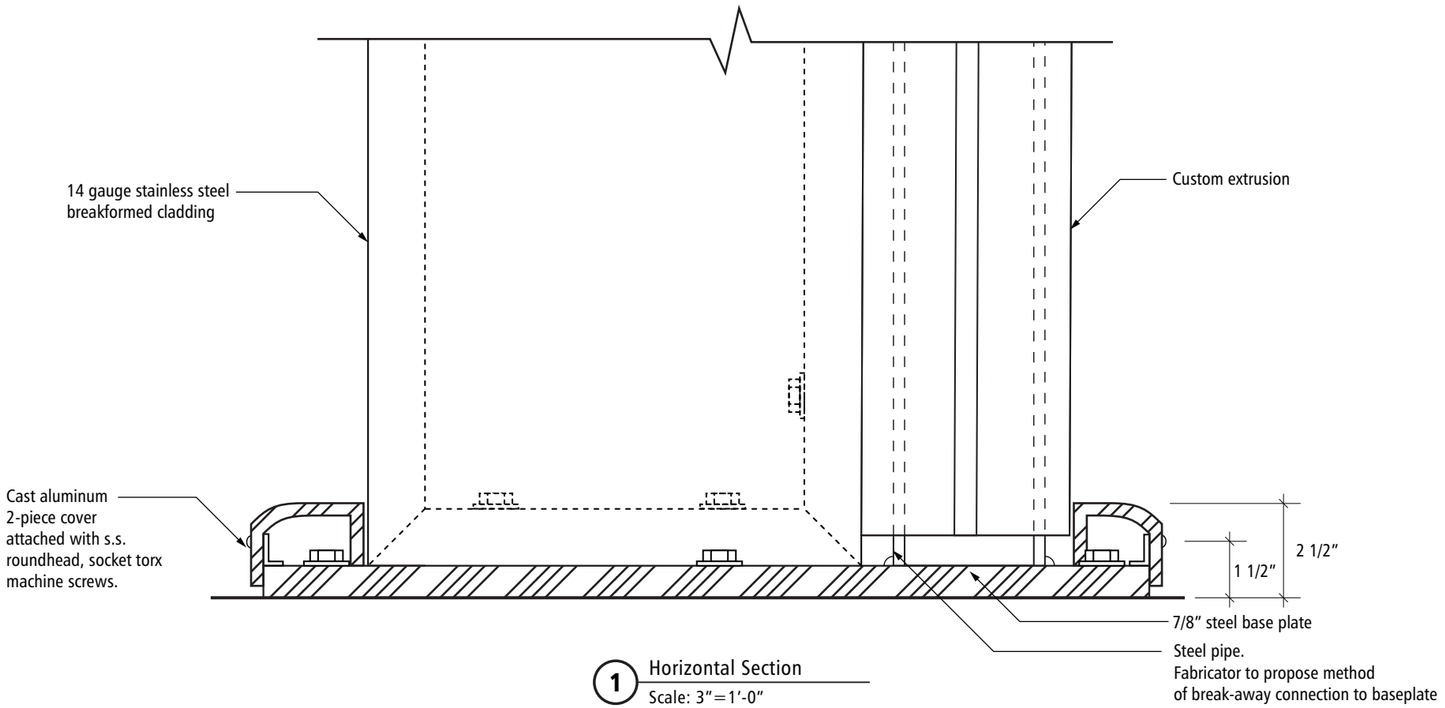


3 Top Cap
Scale: 6"=1'-0"

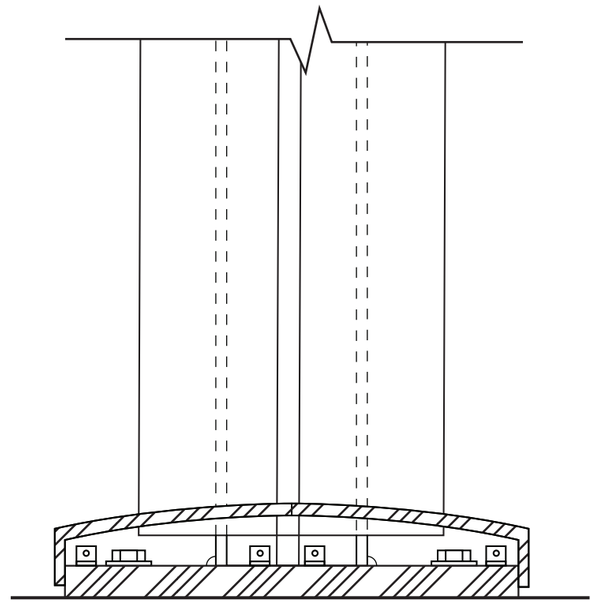


2 Custom Extrusion / Pipe Assembly Detail
Scale: 6"=1'-0"

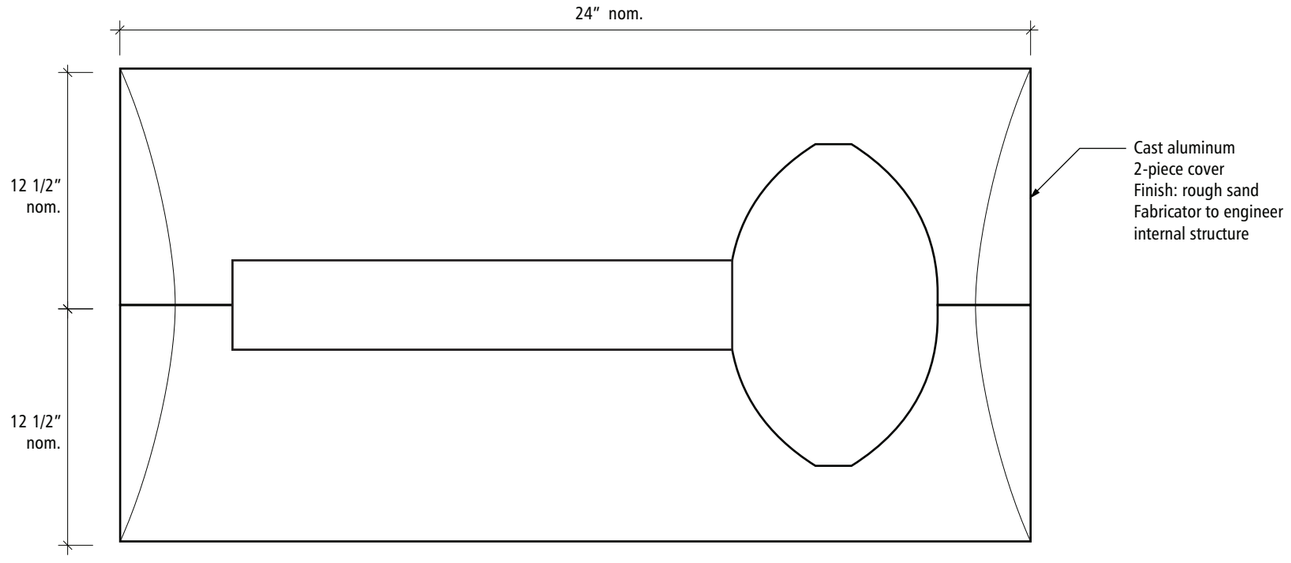
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Horizontal Section
Scale: 3″=1′-0″

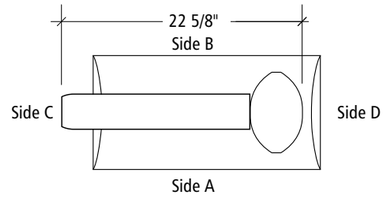


2 Vertical Section
Scale: 3″=1′-0″

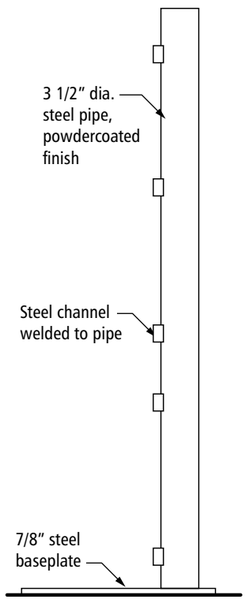


3 Cover Plate Plan
Scale: 3″=1′-0″

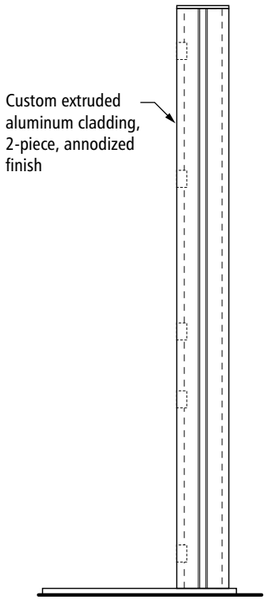
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



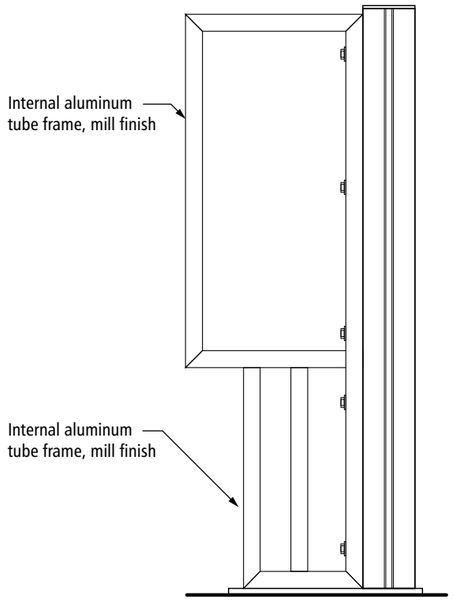
7 Plan View
Scale: 3/4″=1′-0″



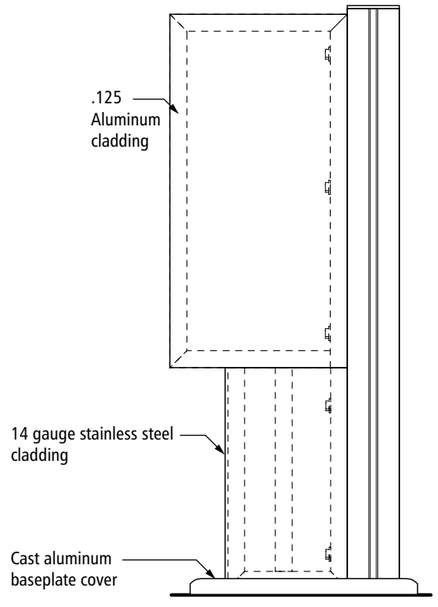
1 Elevation-Baseplate & Pipe
Scale: 3/4″=1′-0″



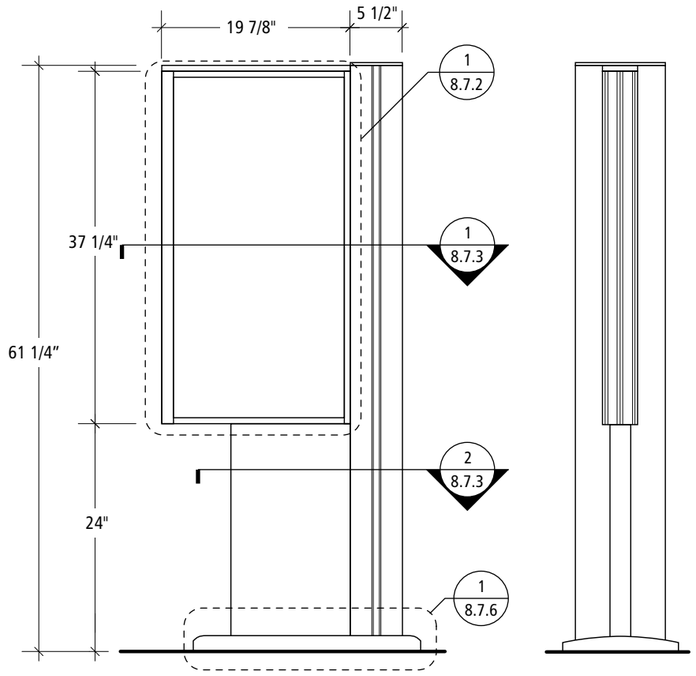
2 Elevation - Column
Scale: 3/4″=1′-0″



3 Elevation - Frame
Scale: 3/4″=1′-0″



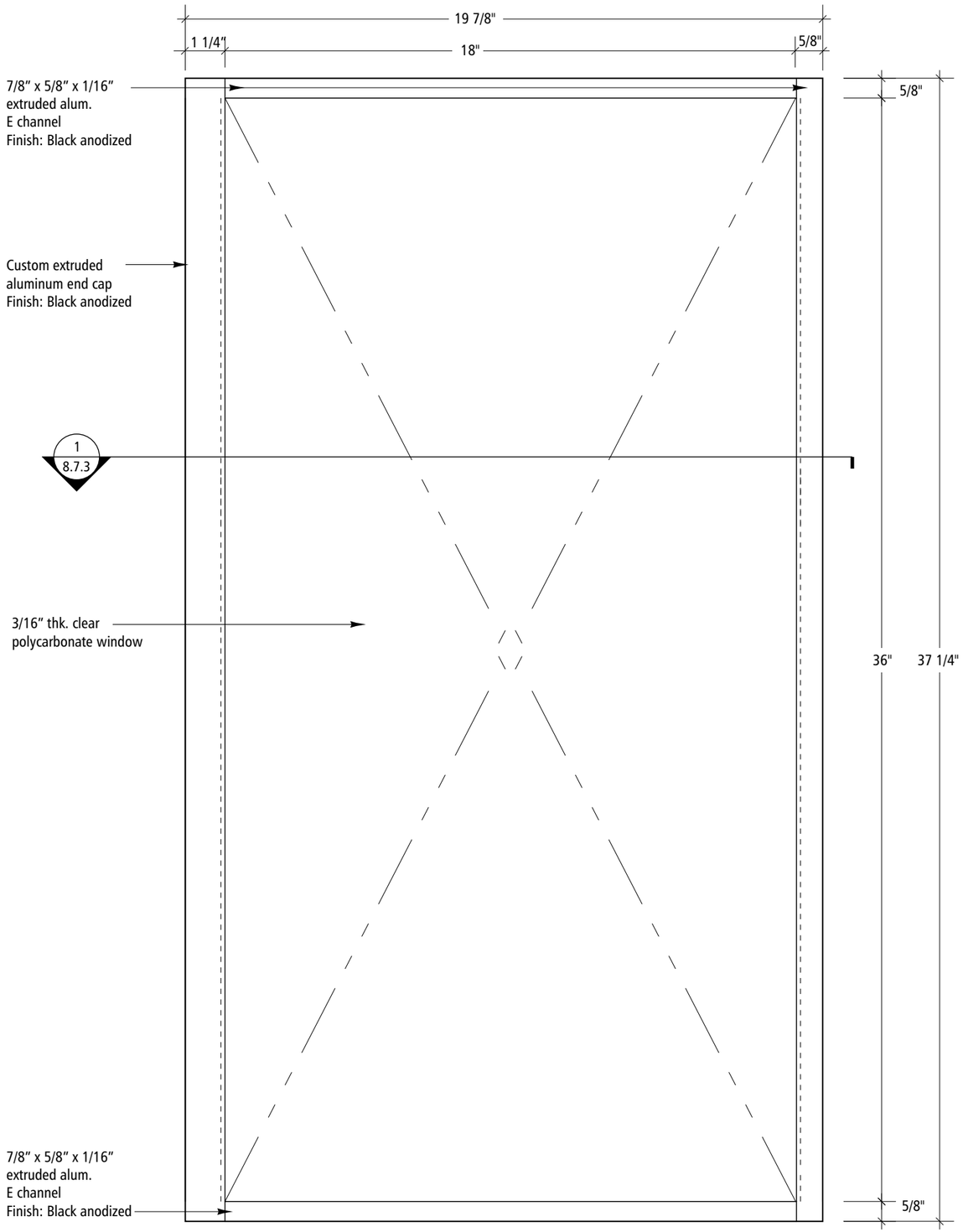
4 Elevation - Sign Faces
Scale: 3/4″=1′-0″



5 Elevation - Sign Type C.1
Scale: 3/4″=1′-0″

6 Side C View
Scale: 3/4″=1′-0″

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Display Case Elevation
Scale: 3"=1'-0"

King County METRO

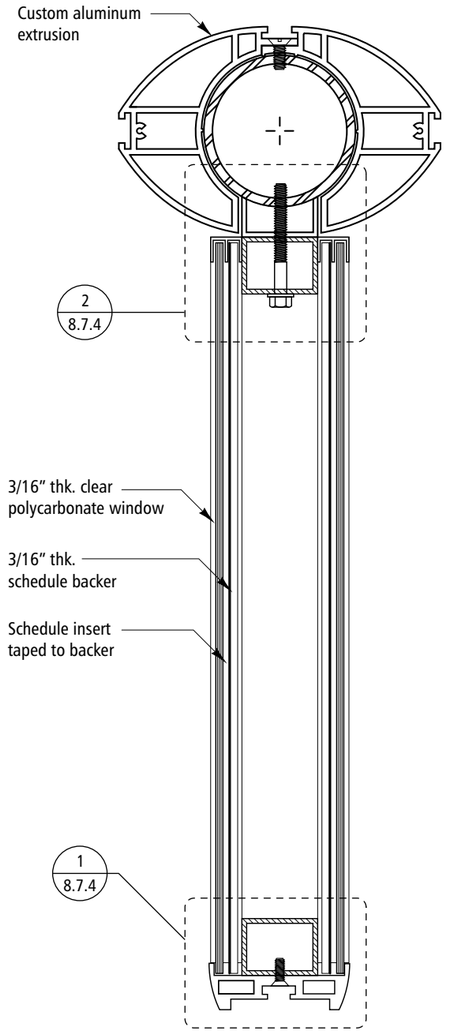
Signing Standards Manual

Volume 2
July 1, 2008

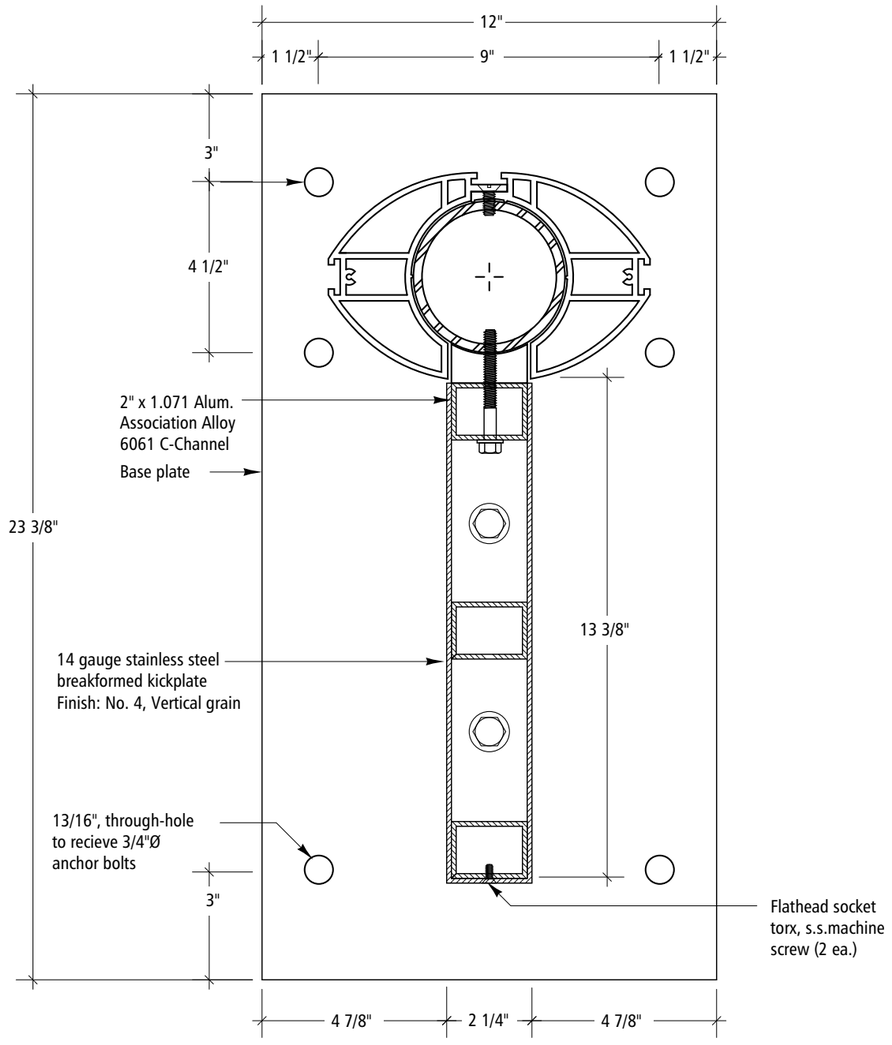
Section 8:
Fabrication

Sign Type D.1

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

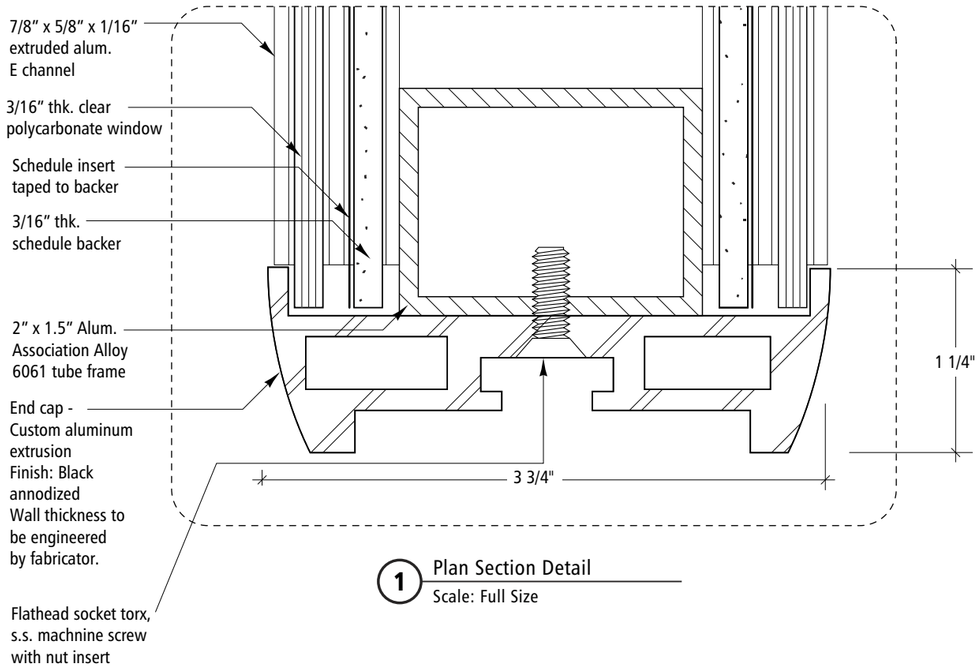


1 Plan Section @ Schedule Cabinet
Scale: 3"=1'-0"

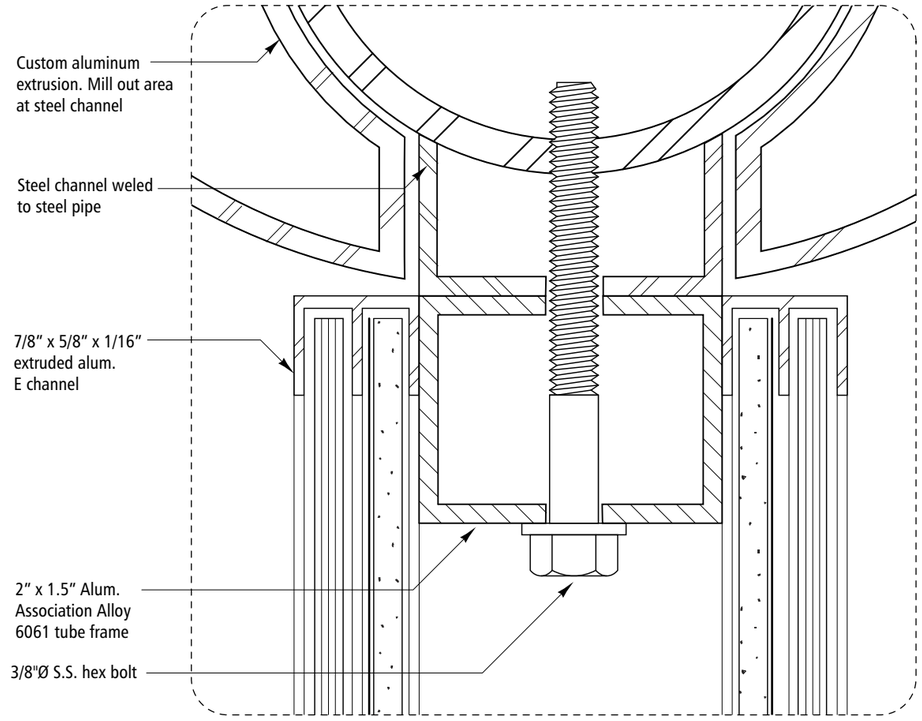


2 Plan Section @ Kick Plate
Scale: 3"=1'-0"

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

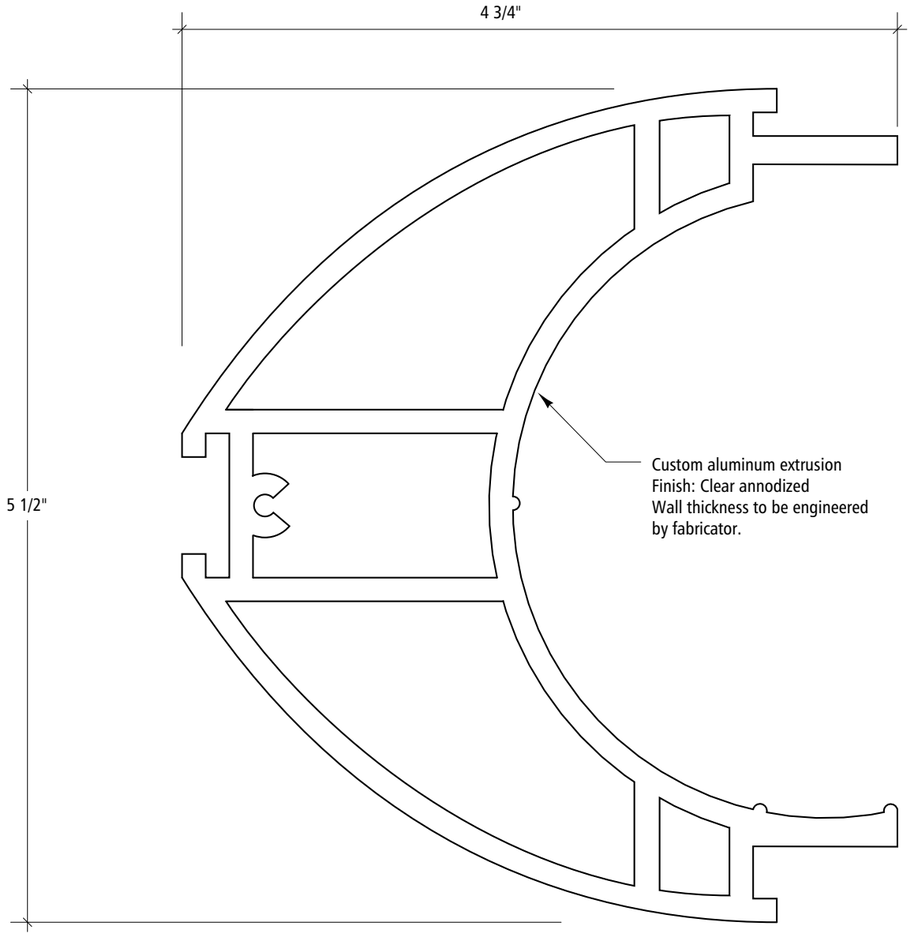


1 Plan Section Detail
Scale: Full Size

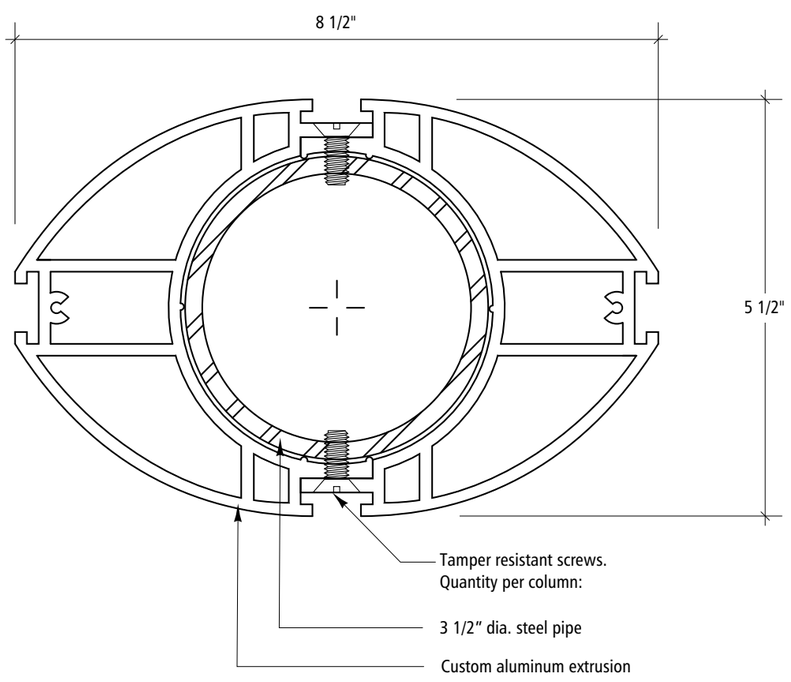


2 Plan Section Detail
Scale: Full Size

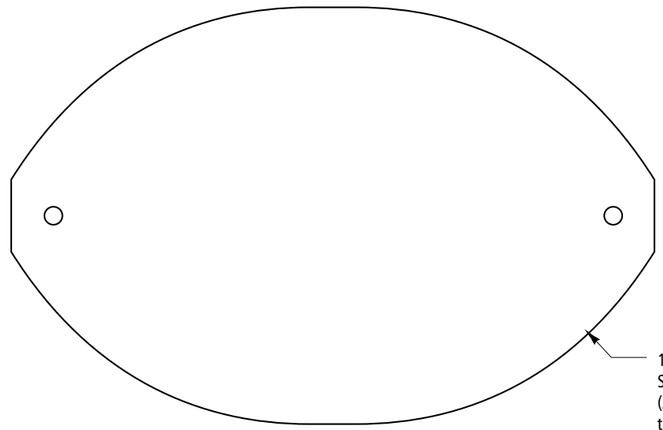
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Custom Extrusion Section
Full Scale



2 Custom Extrusion / Pipe Assembly Detail
Scale: 6"=1'-0"



3 Top Cap
Scale: 6"=1'-0"

King County METRO

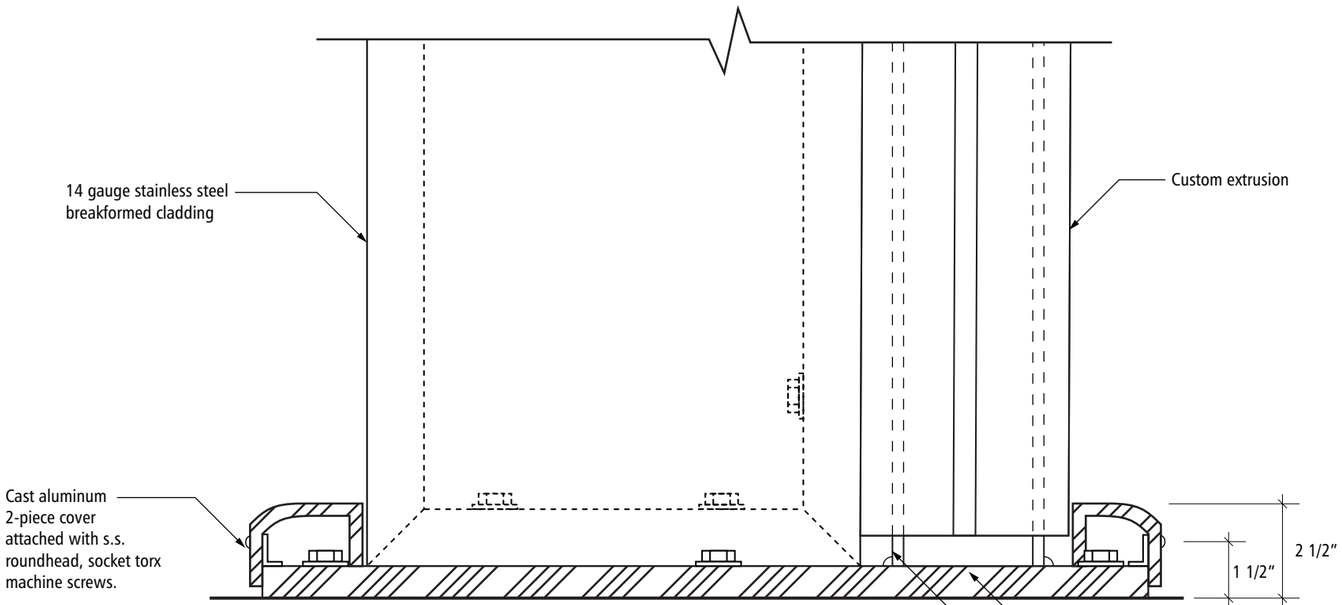
Signing Standards Manual

Volume 2
July 1, 2008

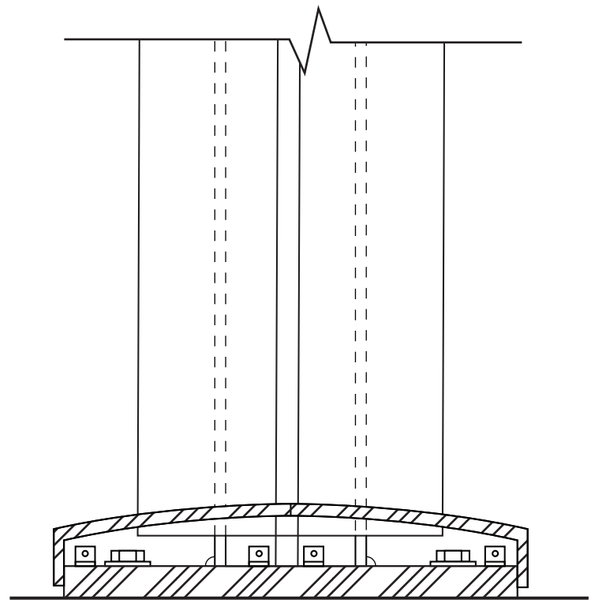
Section 8:
Fabrication

Sign Type D.1

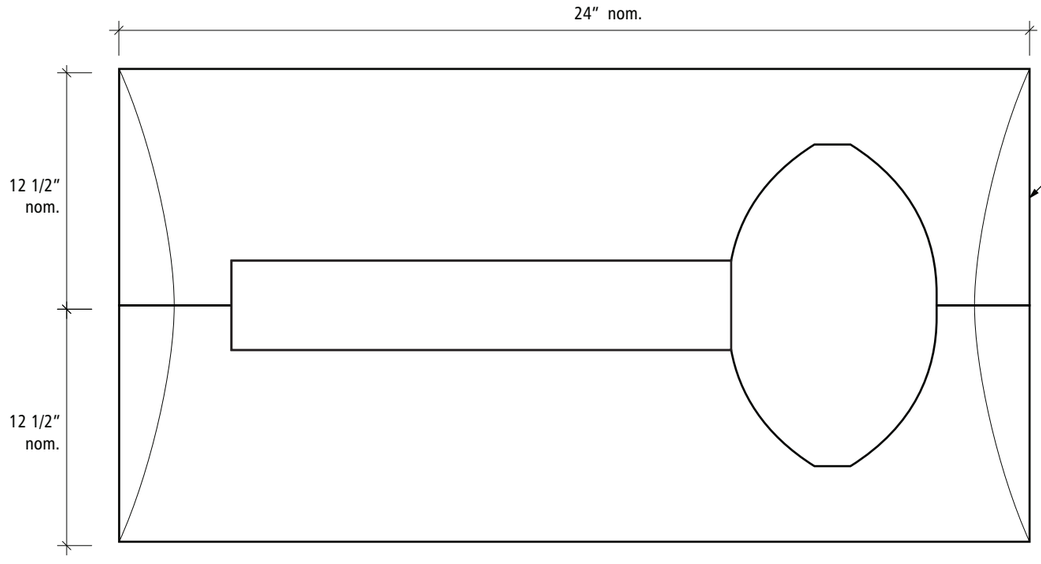
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Horizontal Section
Scale: 3″=1′-0″

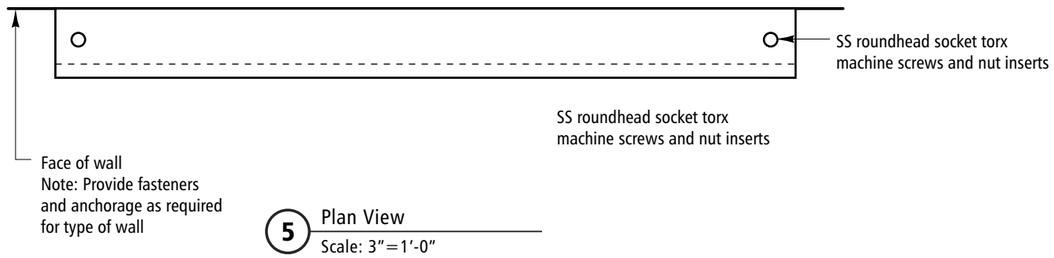


2 Vertical Section
Scale: 3″=1′-0″

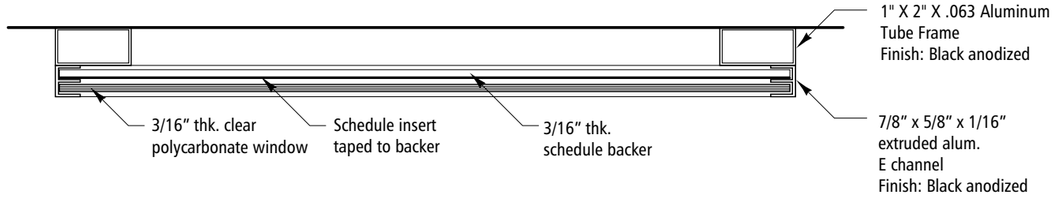


3 Cover Plate Plan
Scale: 3″=1′-0″

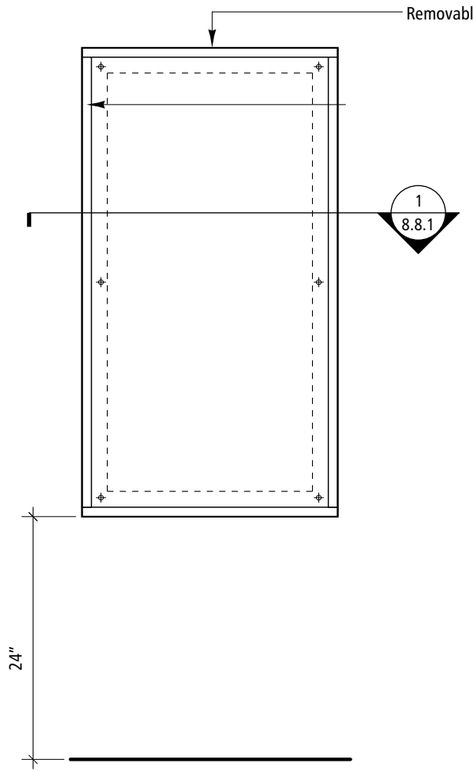
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



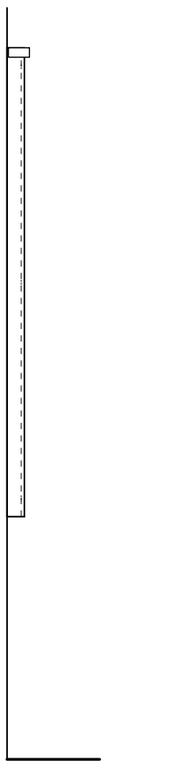
5 Plan View
Scale: 3″=1′-0″



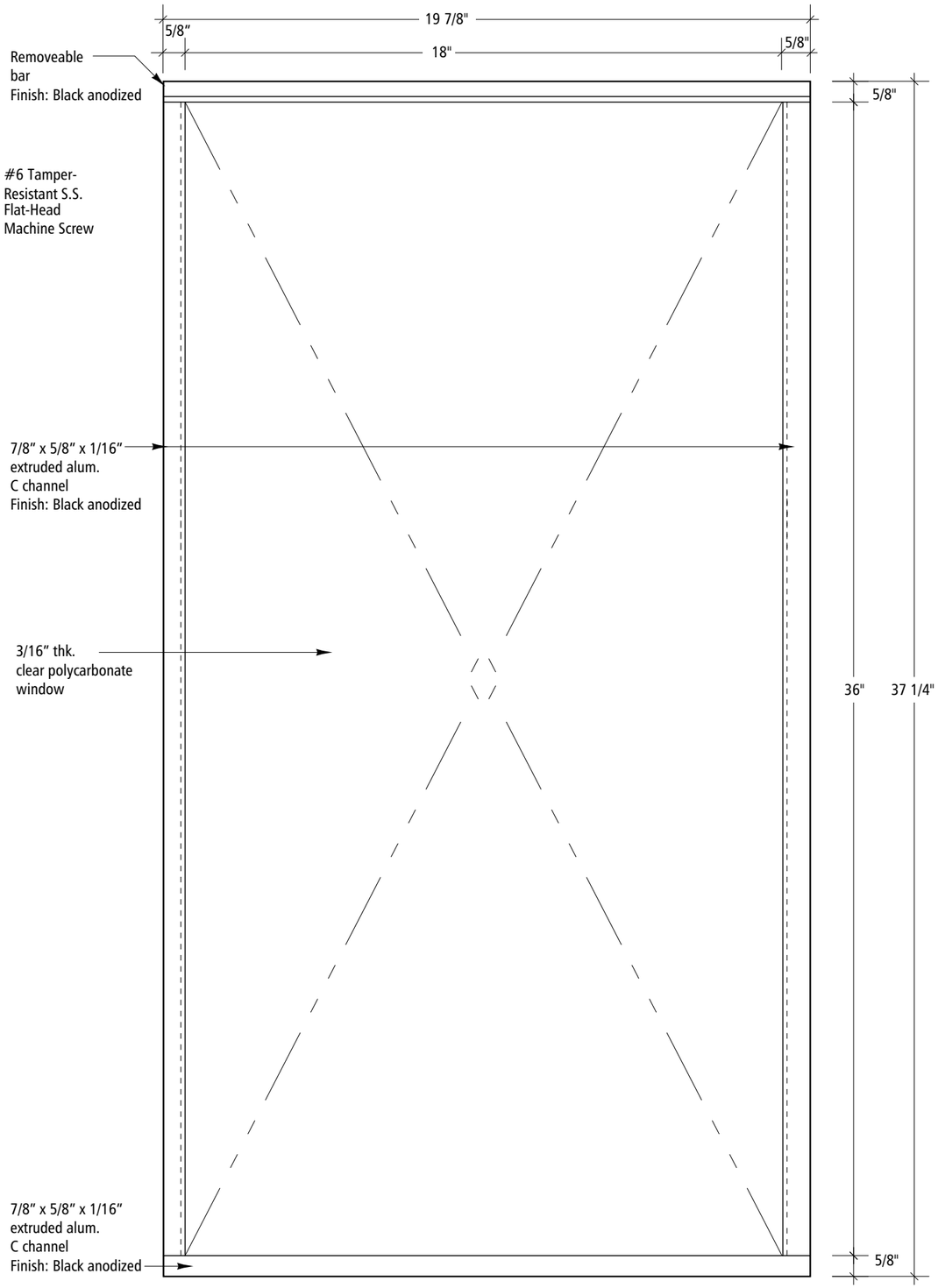
1 Section Detail
Scale: 3″=1′-0″



2 Front Elevation
Scale: 1″=1′-0″



3 Side Elevation
Scale: 1″=1′-0″



4 Display Case Elevation
Scale: 3″=1′-0″

King County METRO

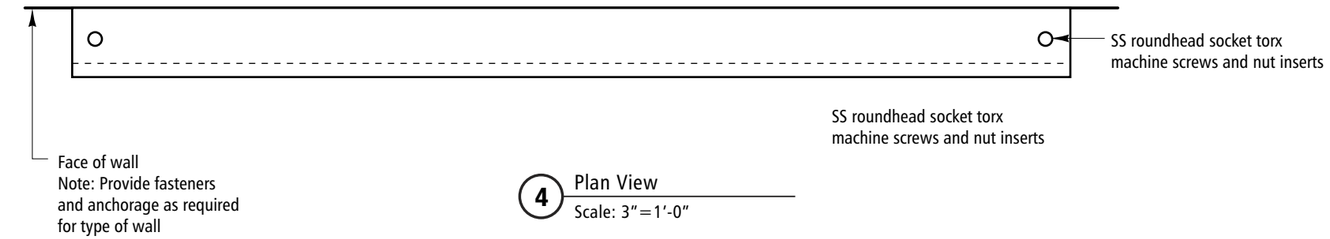
Signing Standards Manual

Volume 2
July 1, 2008

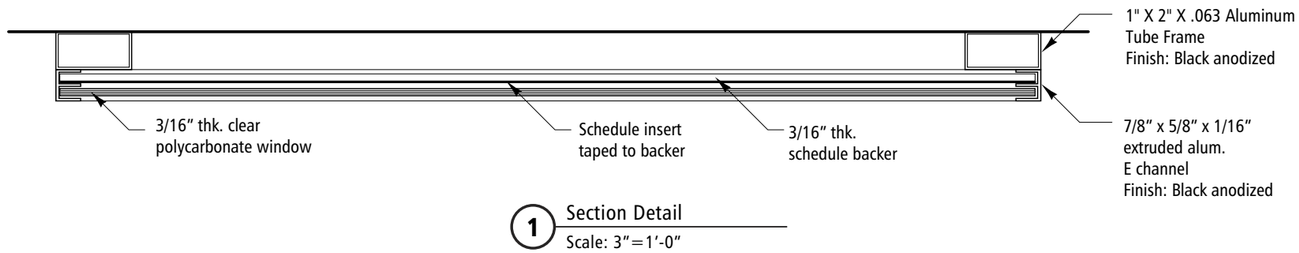
Section 8:
Fabrication

Sign Type D.2

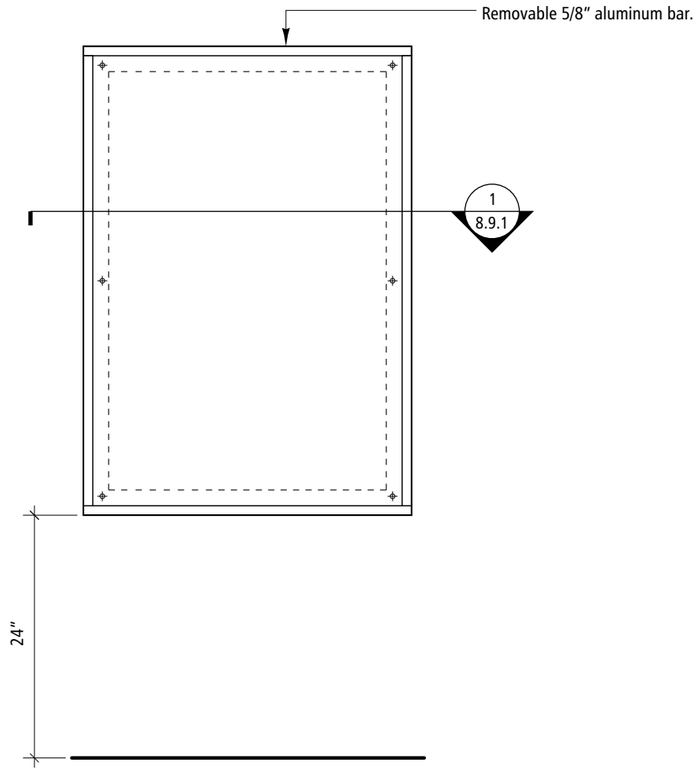
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



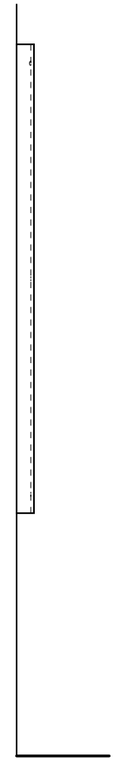
4 Plan View
Scale: 3″=1′-0″



1 Section Detail
Scale: 3″=1′-0″

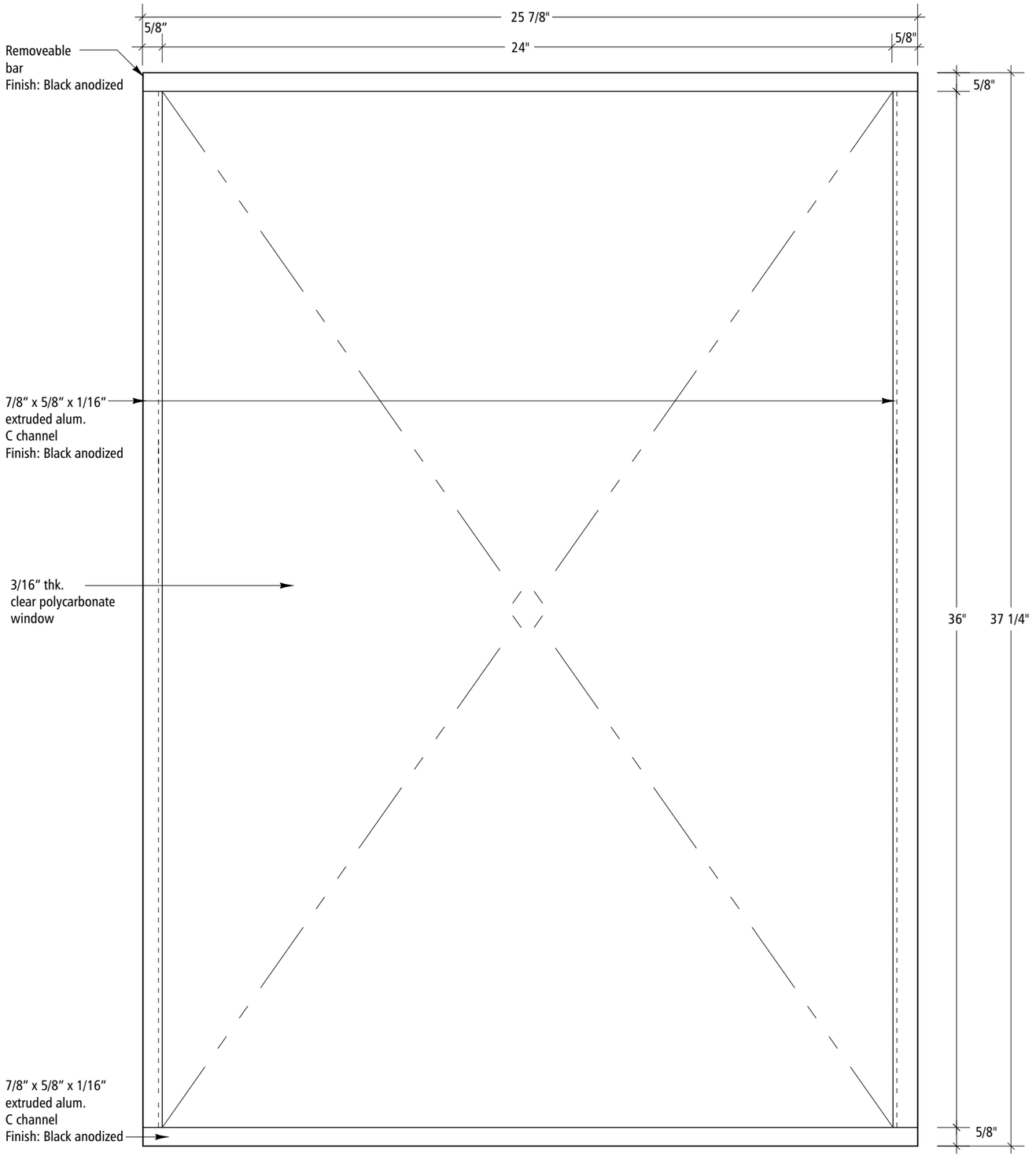


2 Front Elevation
Scale: 1″=1′-0″



3 Side Elevation
Scale: 1″=1′-0″

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Display Case Elevation
Scale: 3"=1'-0"

King County METRO

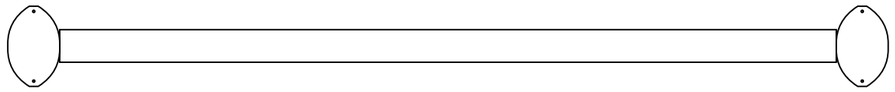
Signing Standards Manual

Volume 2
July 1, 2008

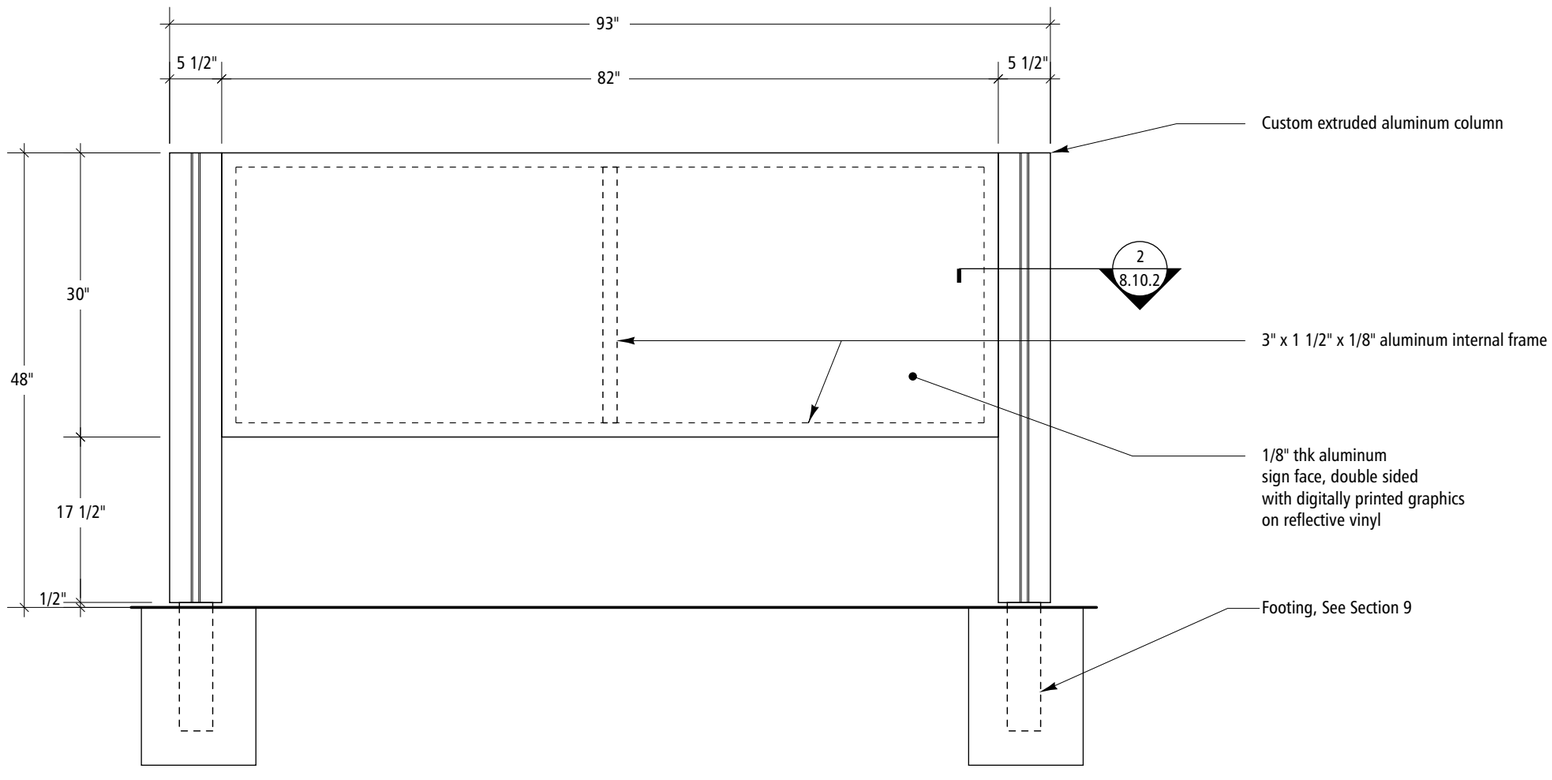
Section 8:
Fabrication

Sign Type D.3

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

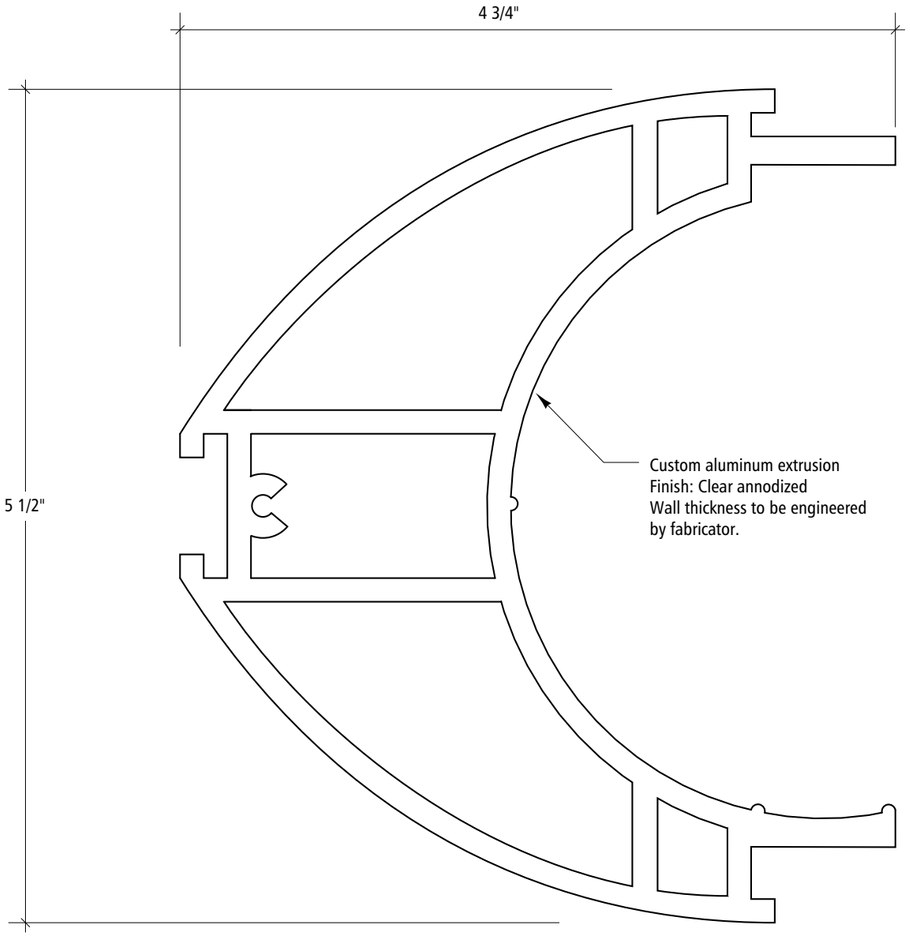


2 Plan Section
Scale: 3/4"=1'-0"

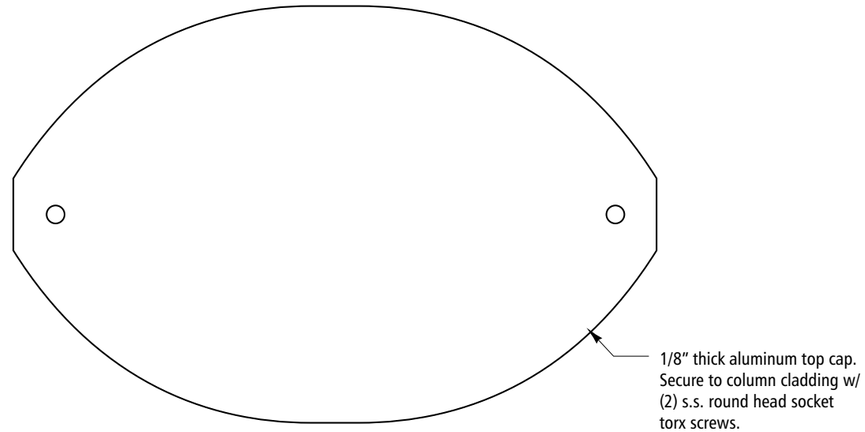


1 Elevation
Scale: 3/4"=1'-0"

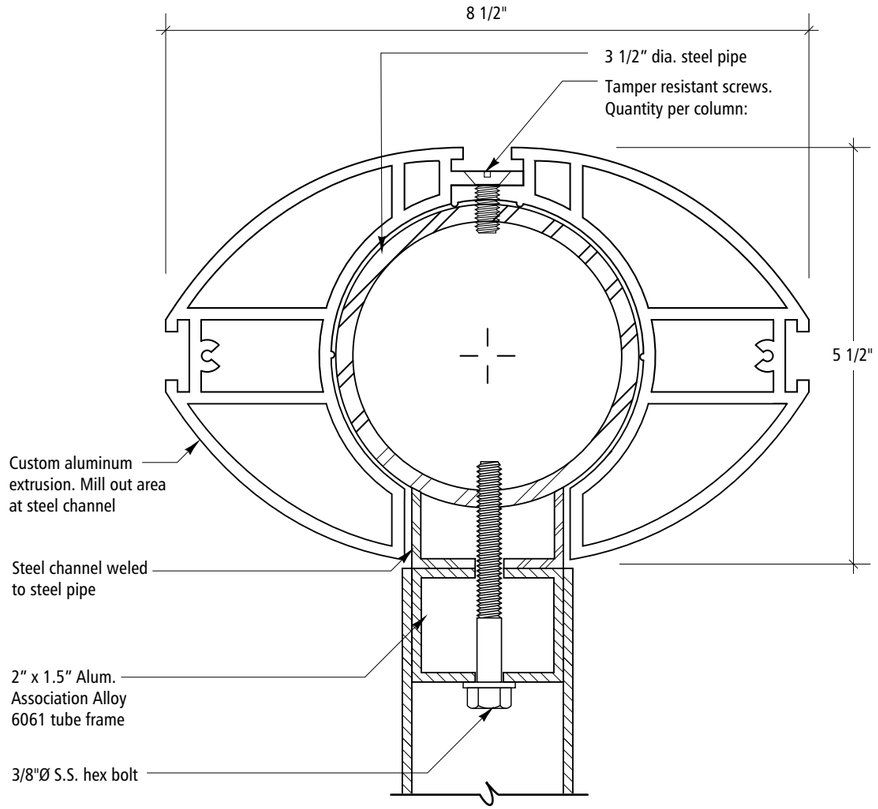
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Custom Extrusion Section
Full Scale



3 Top Cap
Scale: 6"=1'-0"



2 Custom Extrusion Pipe Sign Panel Assembly Detail
Scale: 6"=1'-0"

King County METRO

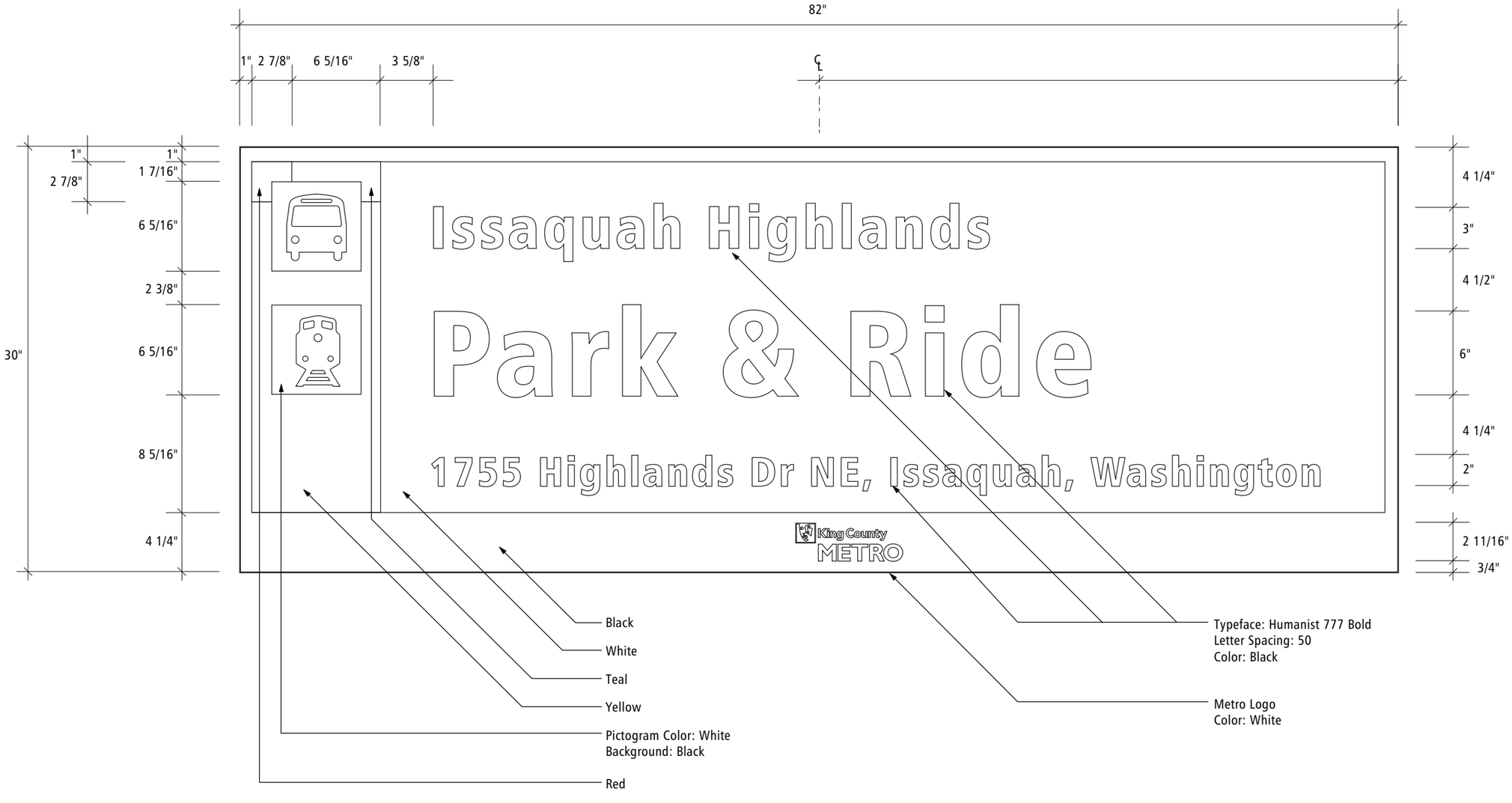
Signing Standards Manual

Volume 2
July 1, 2008

Section 8:
Fabrication

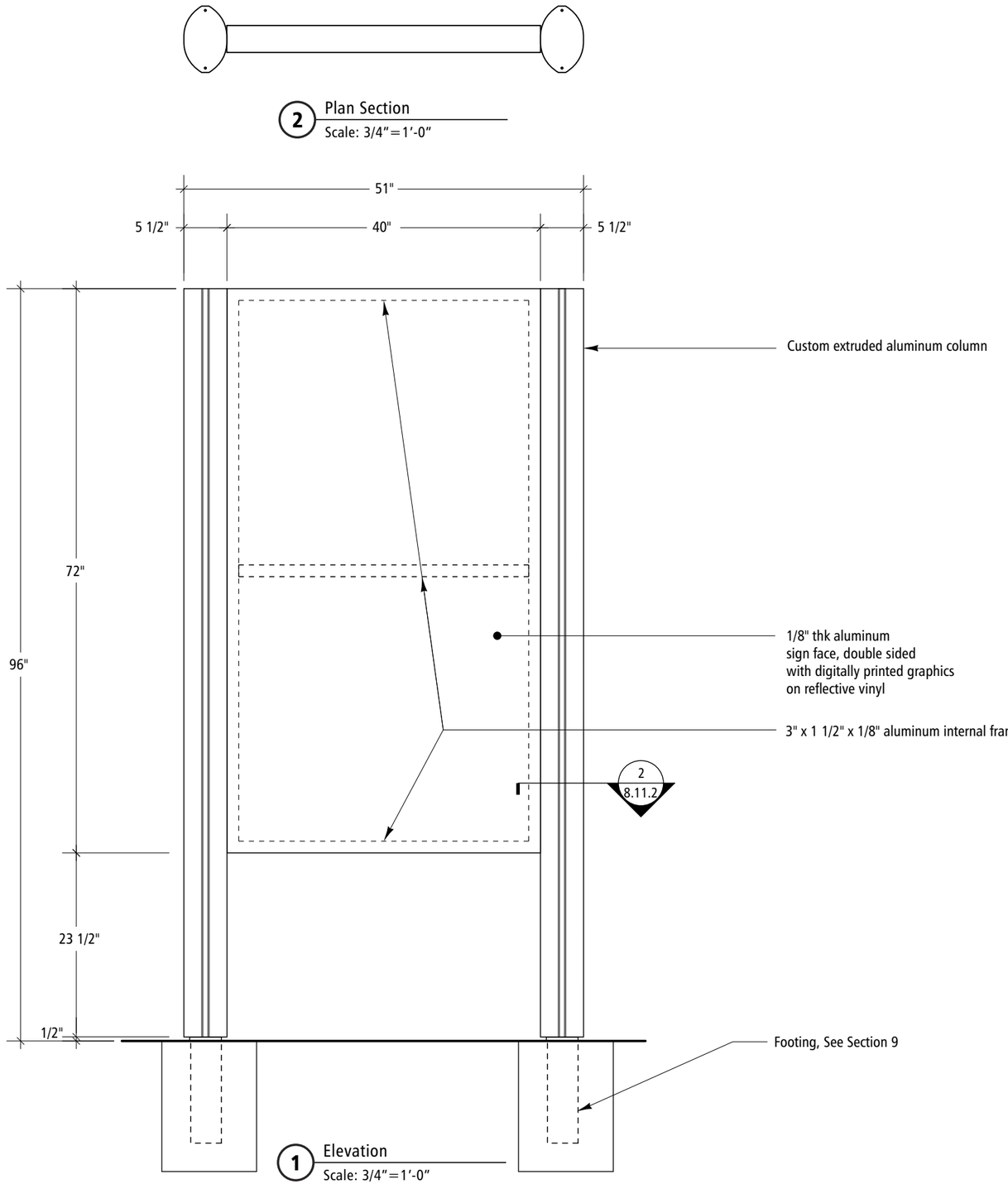
Sign Type E.1

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

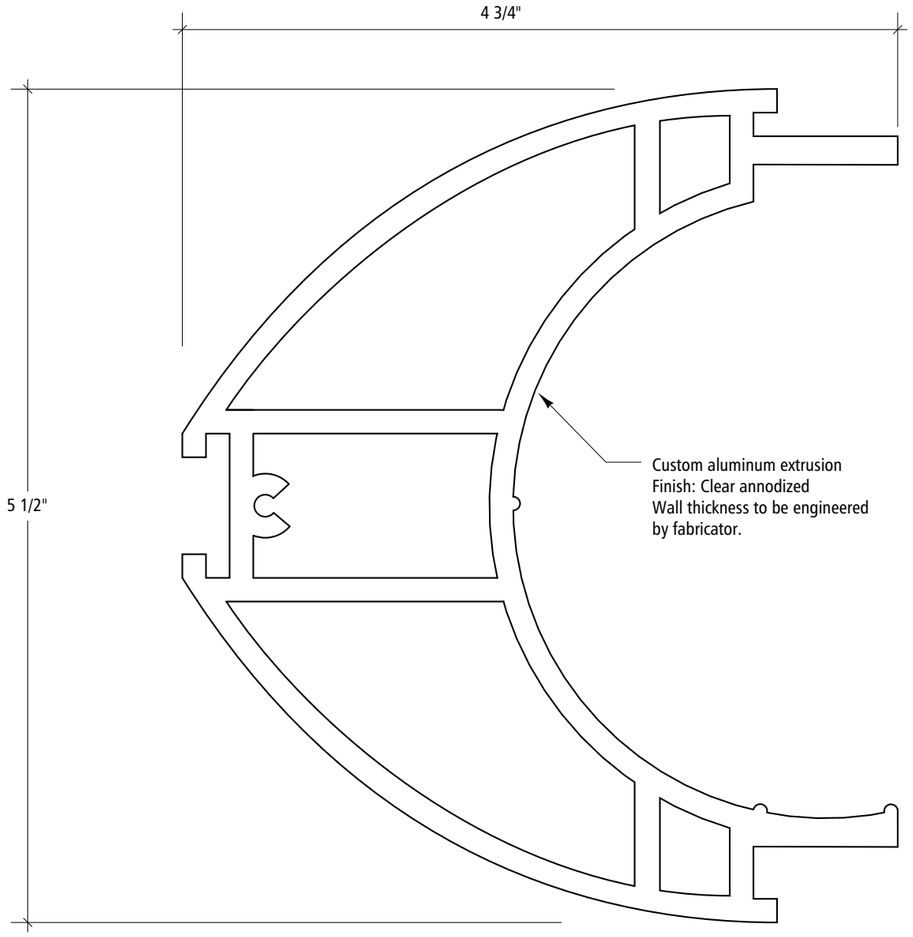


1 Typical Graphic Layout
Scale: 1 1/2″=1′-0″

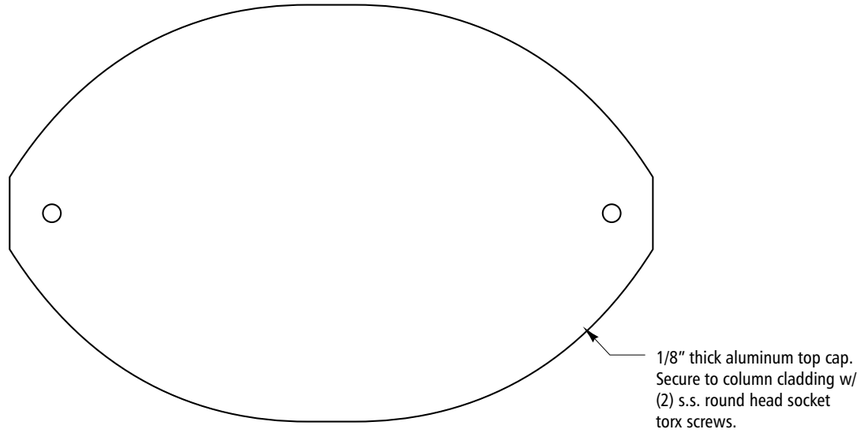
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



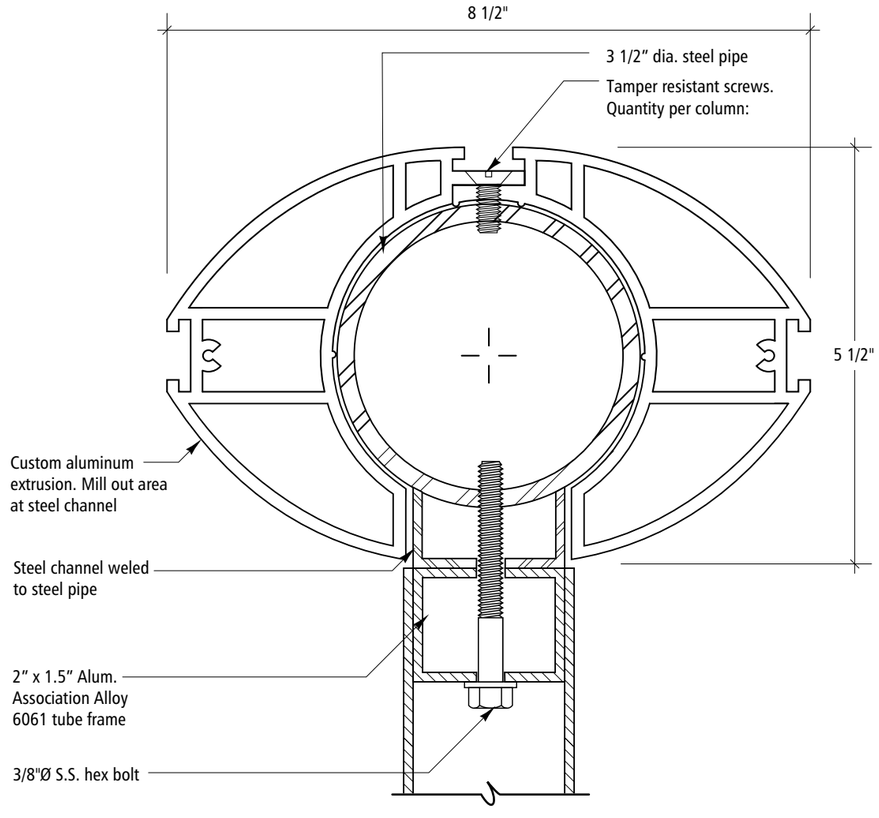
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Custom Extrusion Section
Full Scale

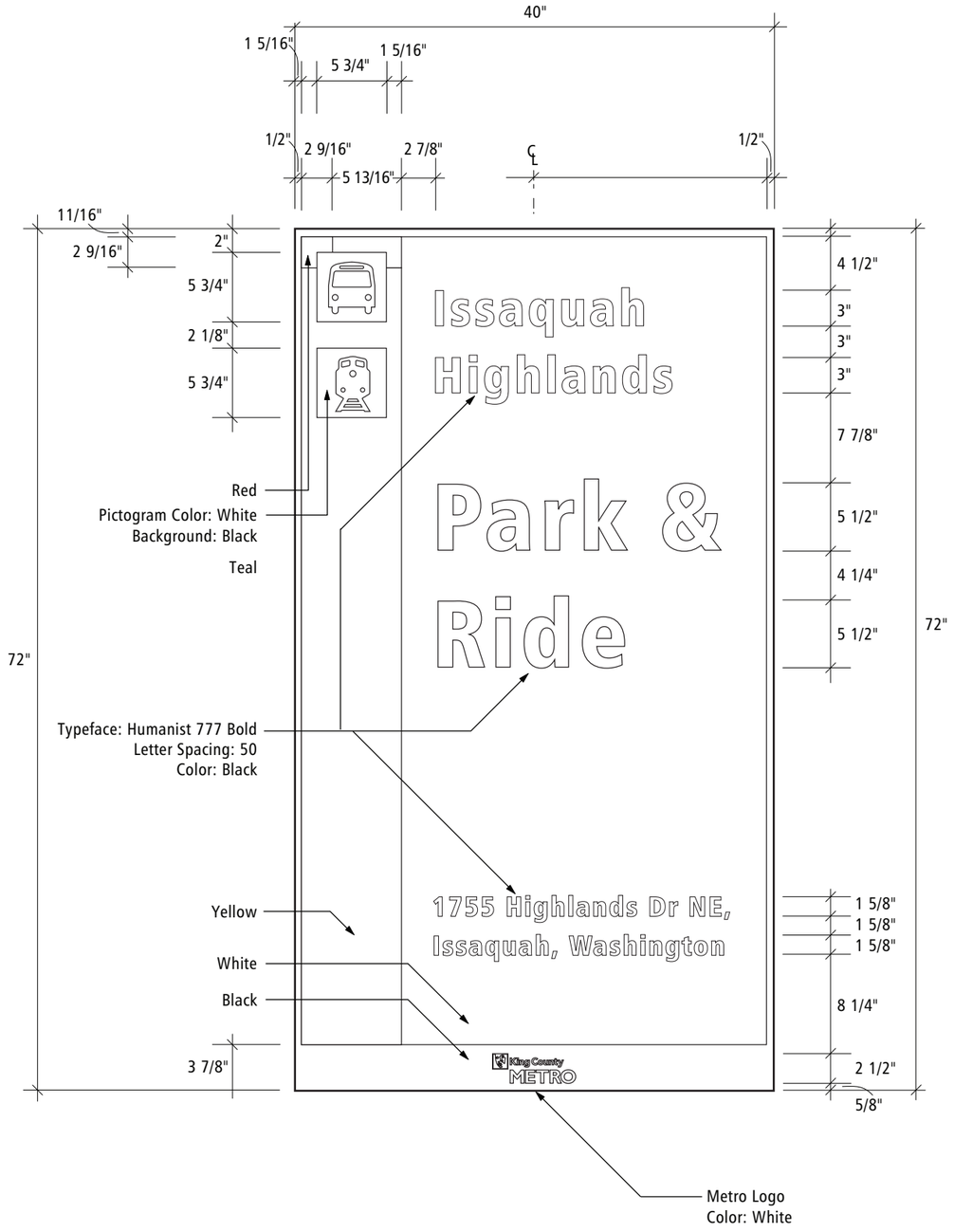


3 Top Cap
Scale: 6"=1'-0"



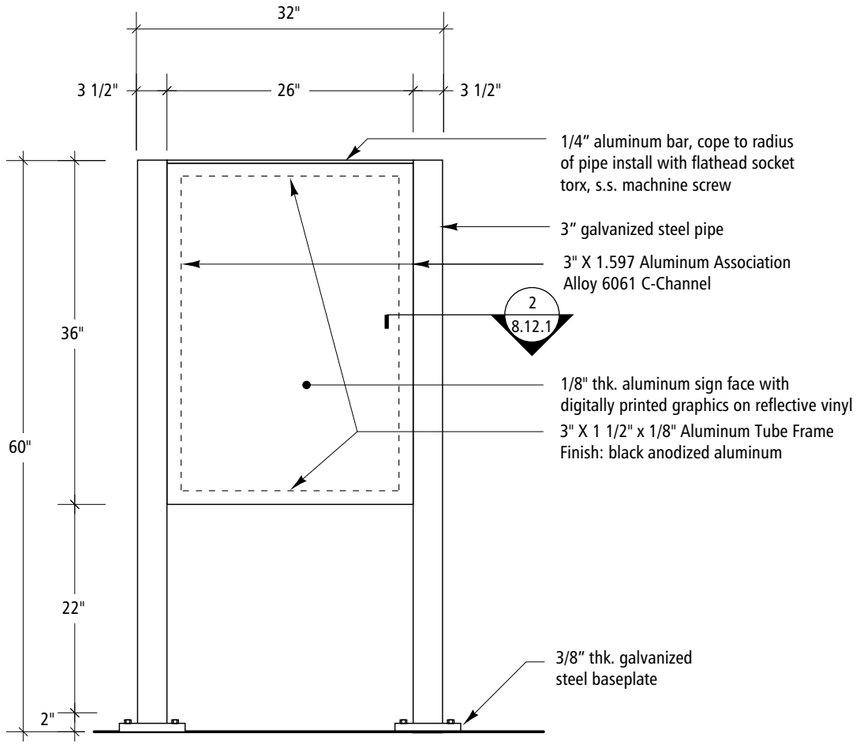
2 Custom Extrusion Pipe Sign Panel Assembly Detail
Scale: 6"=1'-0"

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

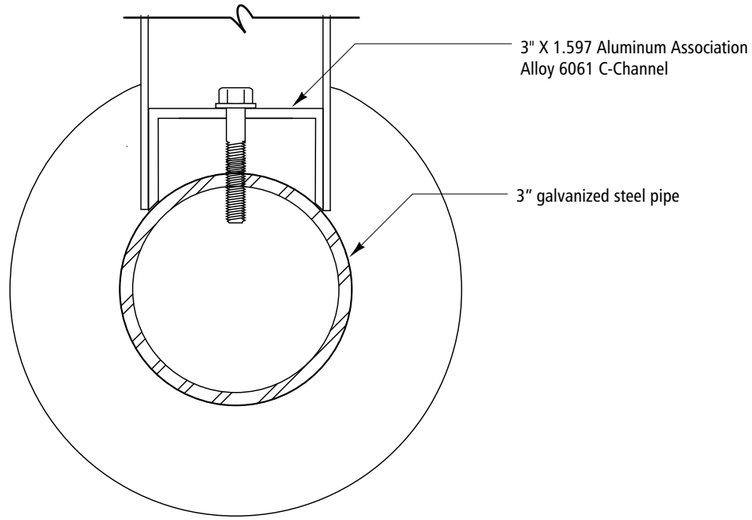


1 Typical Graphic Layout
Scale: 1"=1'-0"

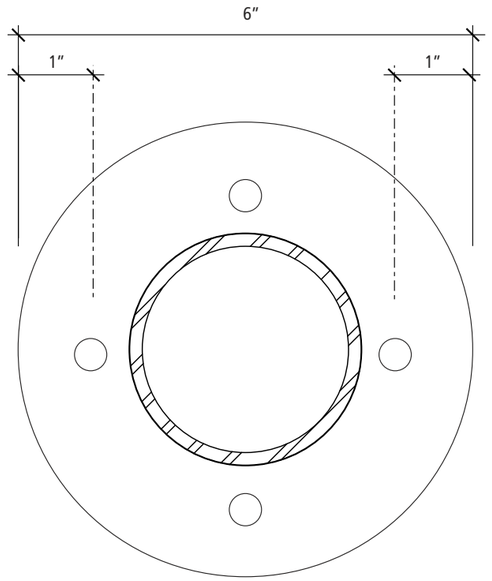
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Elevation
Scale: 3/4"=1'-0"



2 Section
Scale: 1/2"=1"



2 Baseplate Plan
Scale: 1/2"=1"

King County METRO

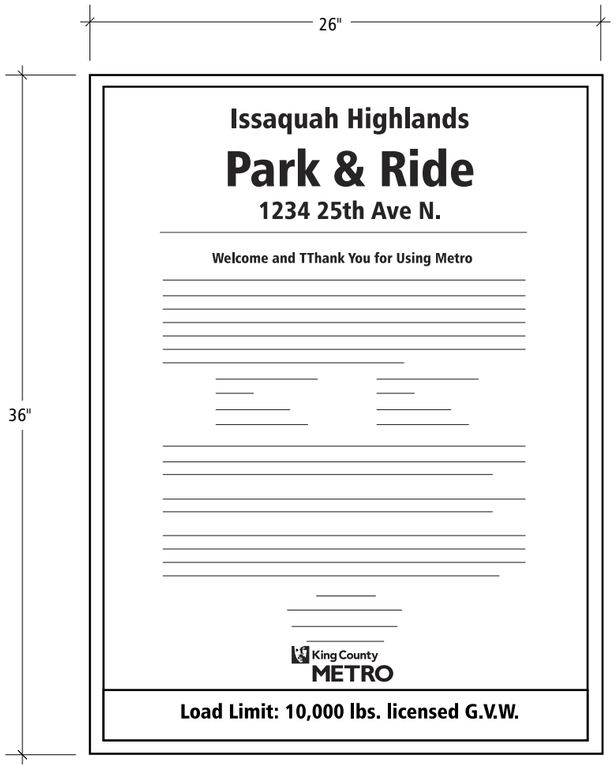
Signing Standards Manual

Volume 2
July 1, 2008

Section 8:
Fabrication

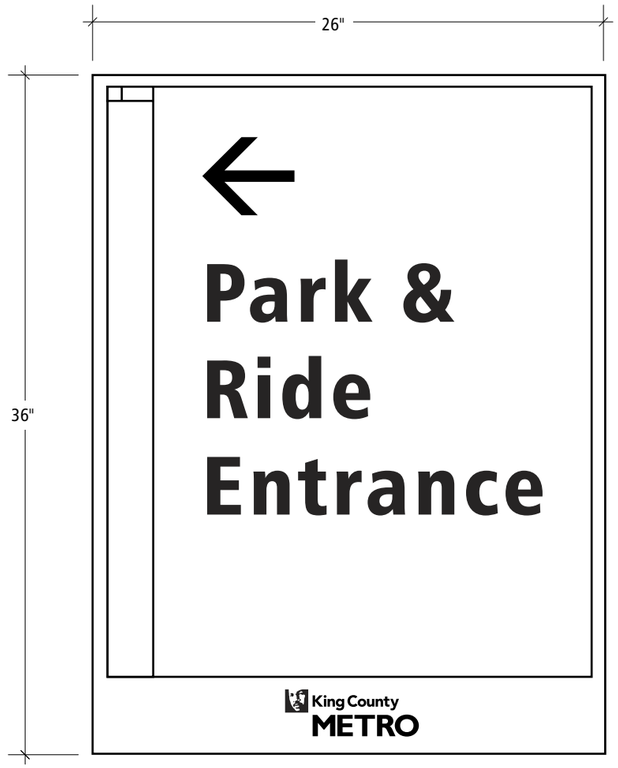
Sign Type F.1
Sign Type F.2

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



Artwork provided by Metro

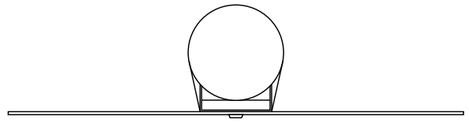
1 Sign Type F.1 - Typical Graphic
Scale: 1 1/2"=1'-0"



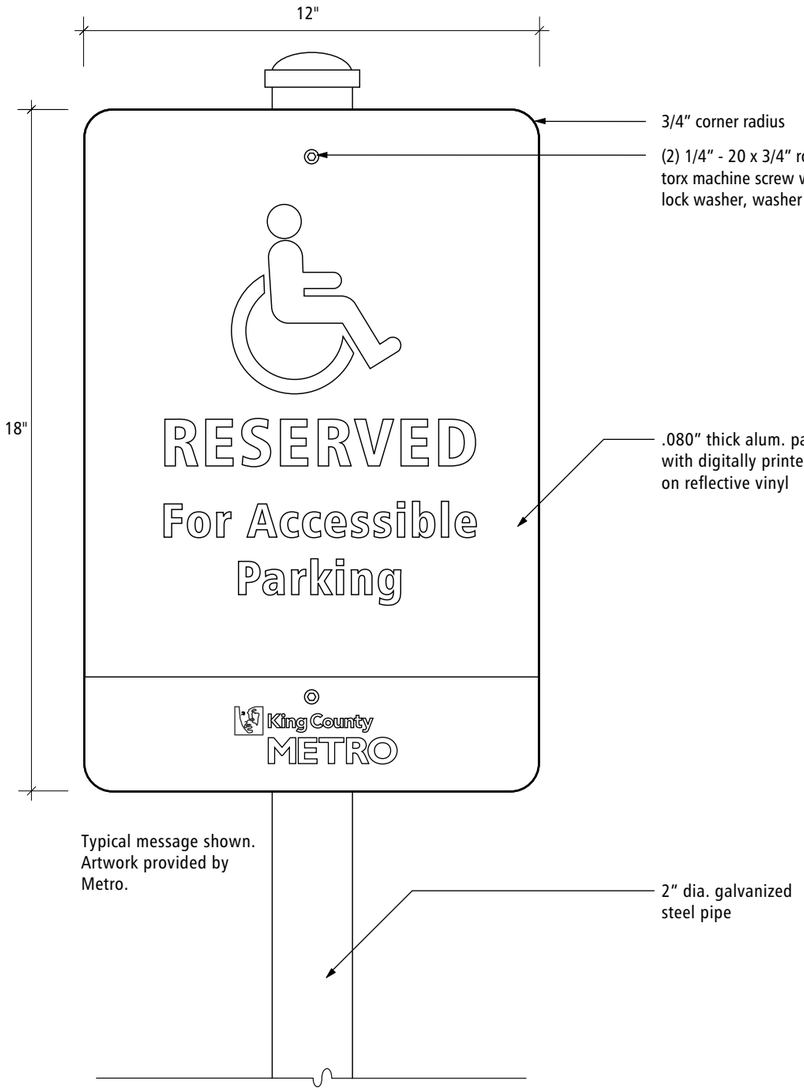
Artwork provided by Metro

2 Sign Type F.2 - Typical Graphic
Scale: 3/4"=1'-0"

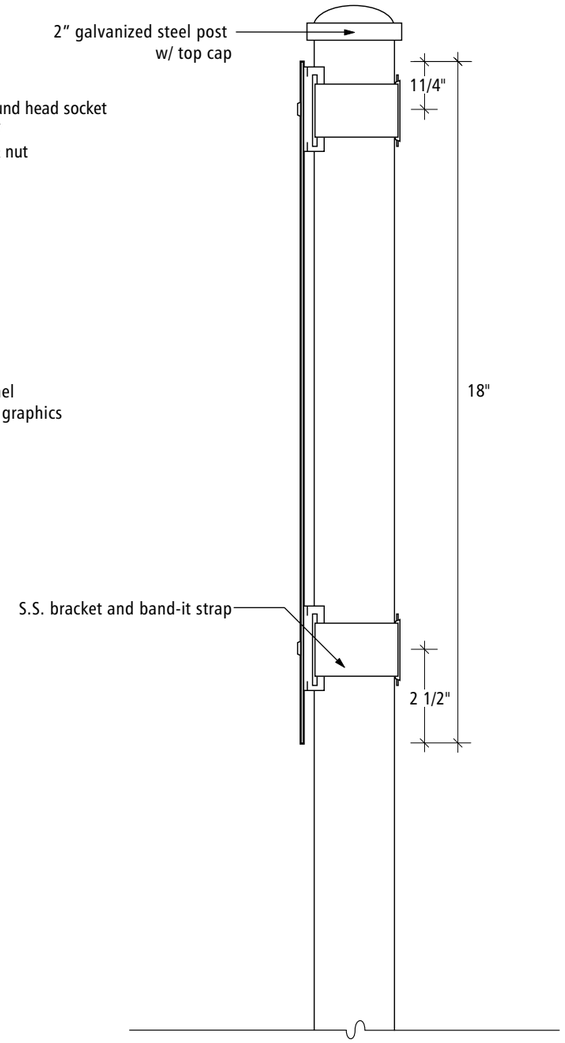
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



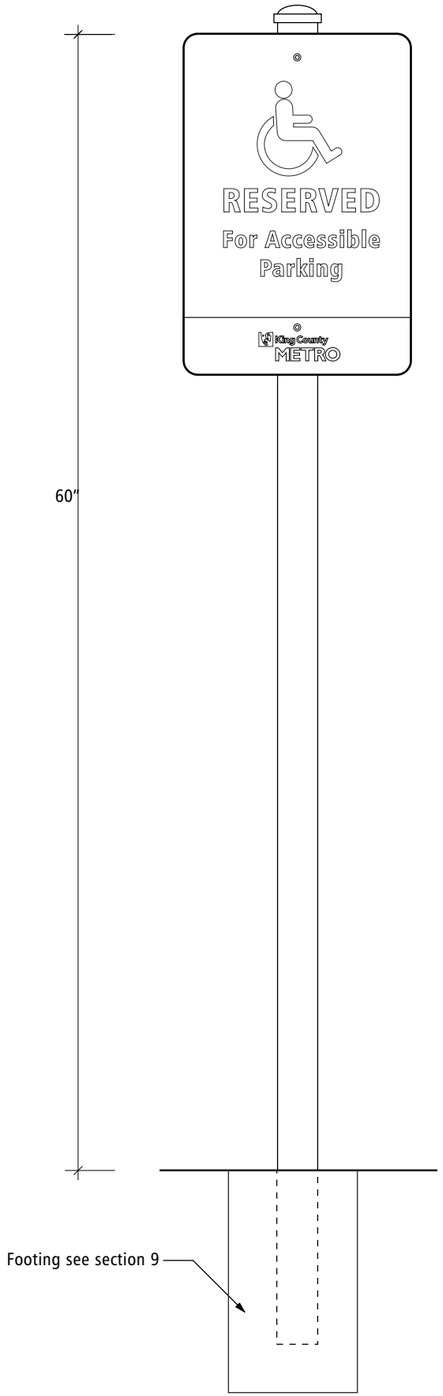
1 Plan View
Scale: 1/4″=1′-0″



2 Front Elevation
Scale: 1/4″=1′-0″



3 Side Elevation
Scale: 1/4″=1′-0″



4 Front Elevation
Scale: 3/4″=1′-0″

King County METRO

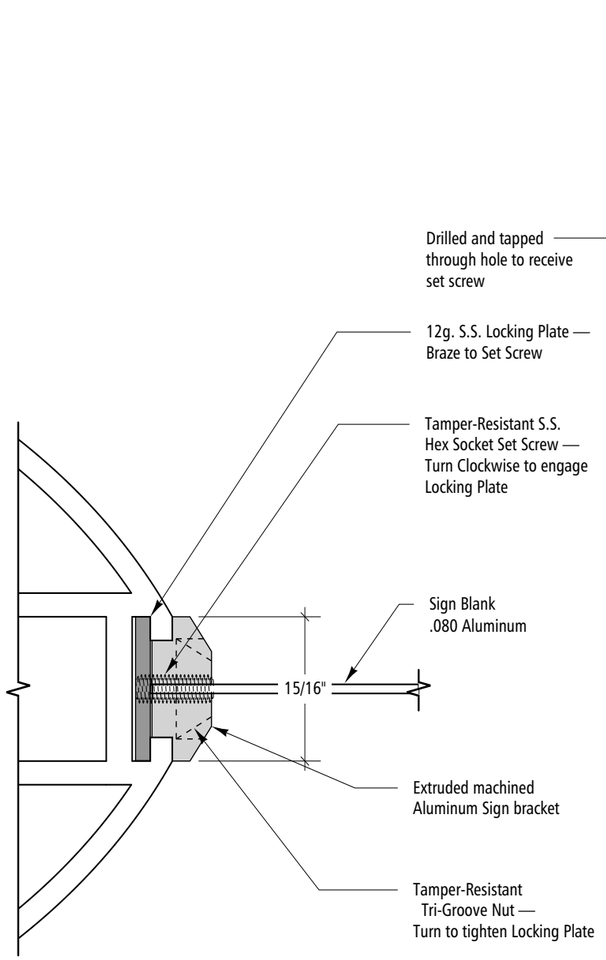
Signing Standards Manual

Volume 2
July 1, 2008

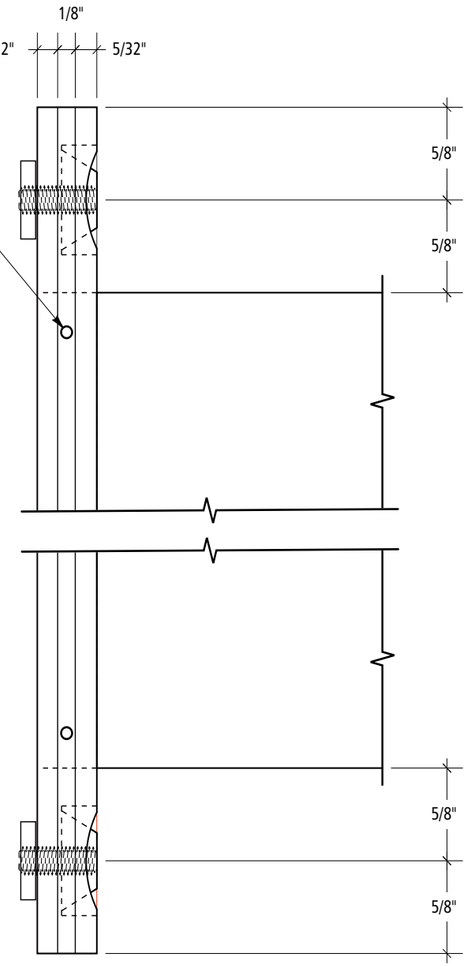
Section 8:
Fabrication

Sign Type H.1

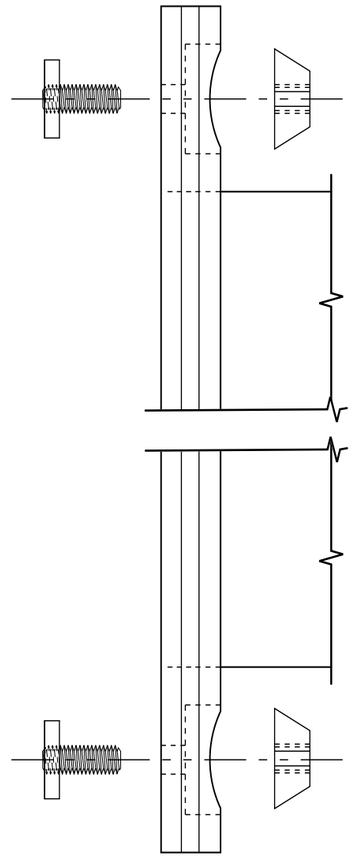
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



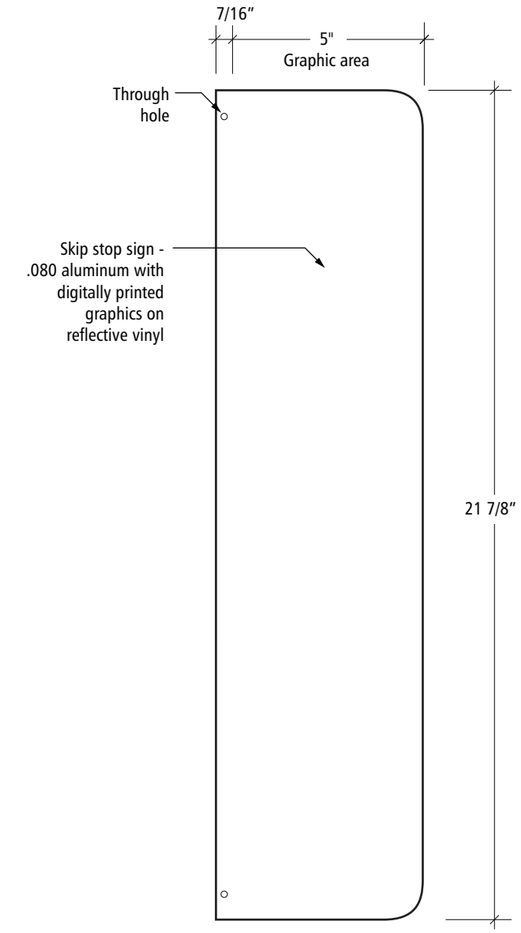
1 Section Detail
Scale: Full



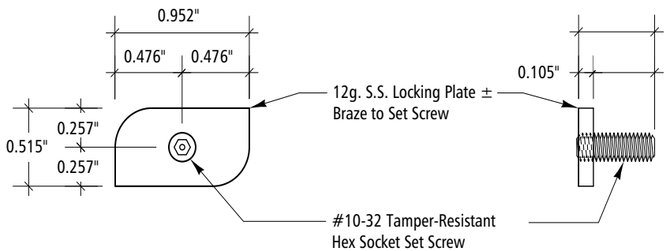
2 Side View Detail
Scale: Full



3 Exploded Side View Detail
Scale: Full

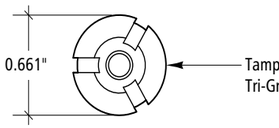


8 Panel Detail
Scale: 1/4"=1"

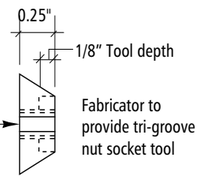


4 Locking Plate Front View
Scale: Full

5 Locking Plate Side View
Scale: Full

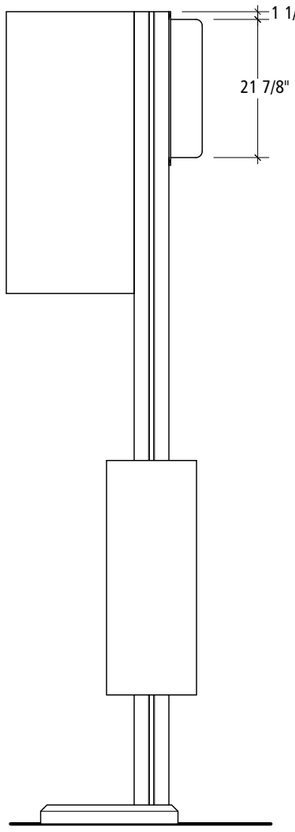


6 Tri-Groove Nut Front View
Scale: Full

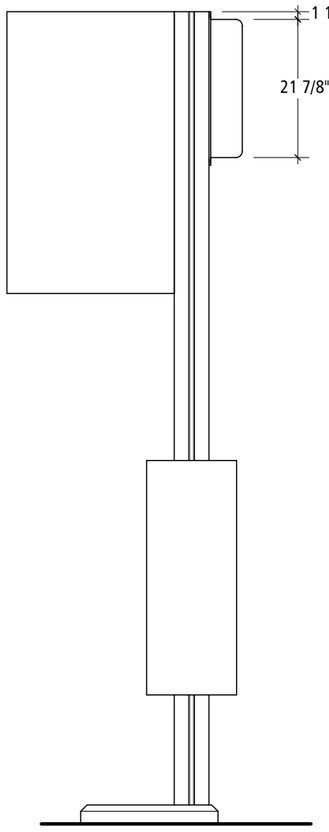


7 Tri-Groove Side View
Scale: Full

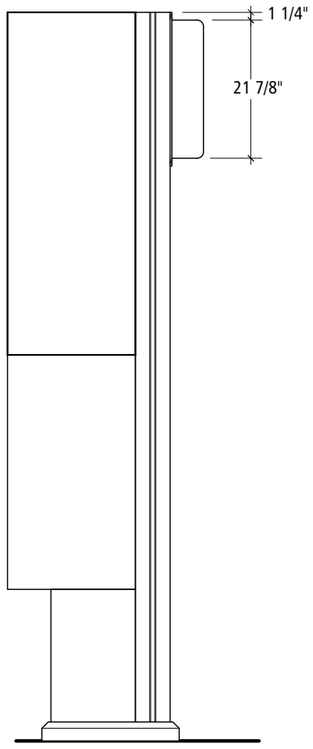
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



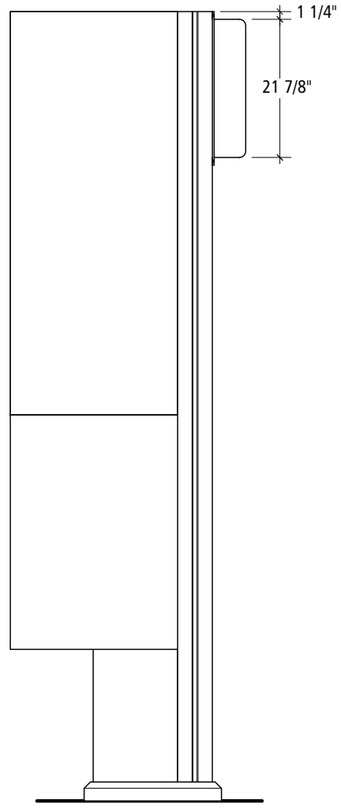
1 Elevation at Sign Type B.1
Scale: 1/2″=1′-0″



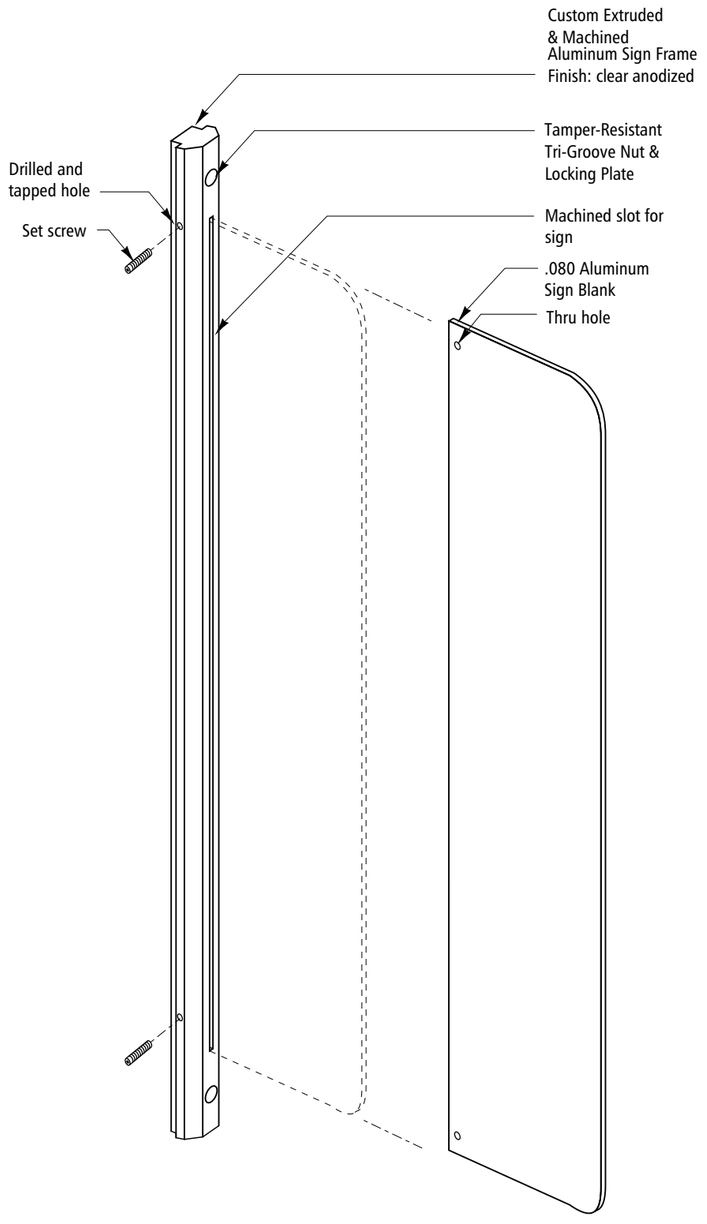
2 Elevation at Sign Type B.2
Scale: 1/2″=1′-0″



3 Elevation at Sign Type C.1
Scale: 1/2″=1′-0″



4 Elevation at Sign Type C.2
Scale: 1/2″=1′-0″



5 Isometric
Scale: NTS

King County METRO

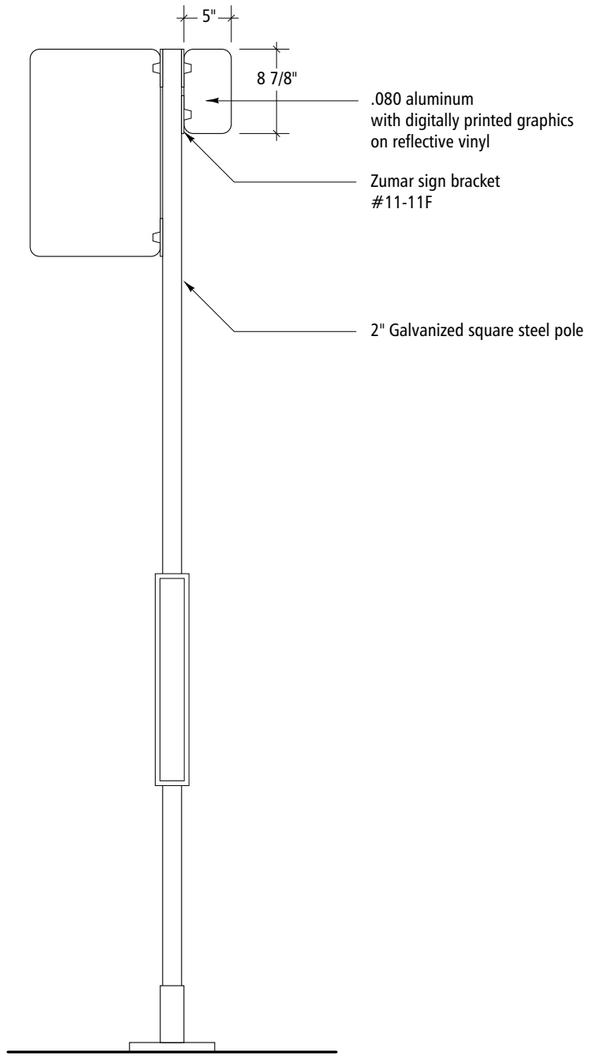
Signing Standards Manual

Volume 2
July 1, 2008

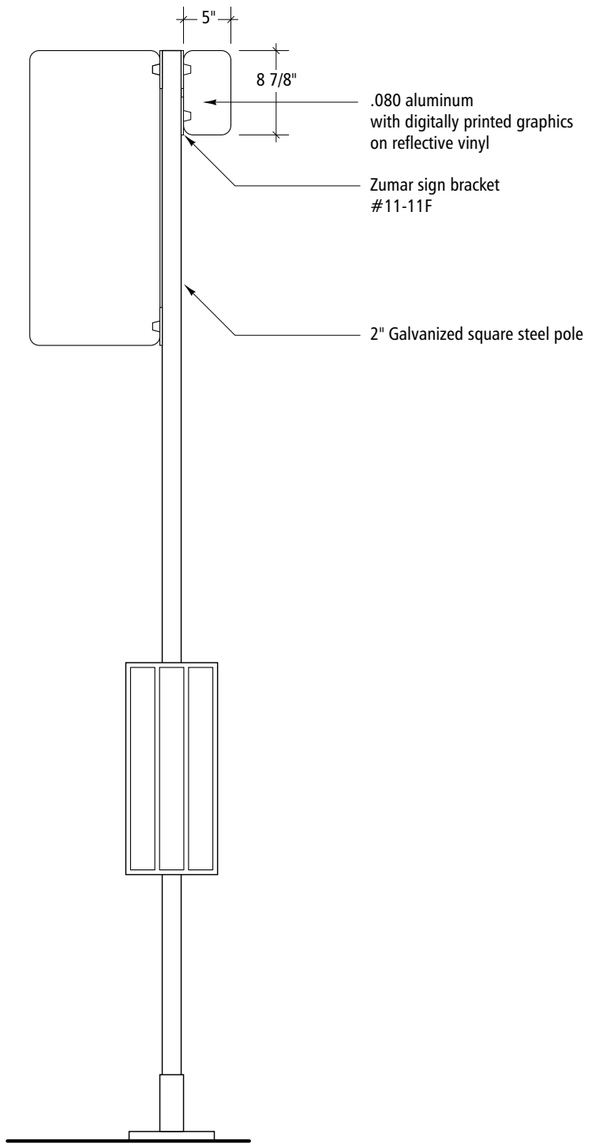
Section 8:
Fabrication

Sign Type J.1B/C

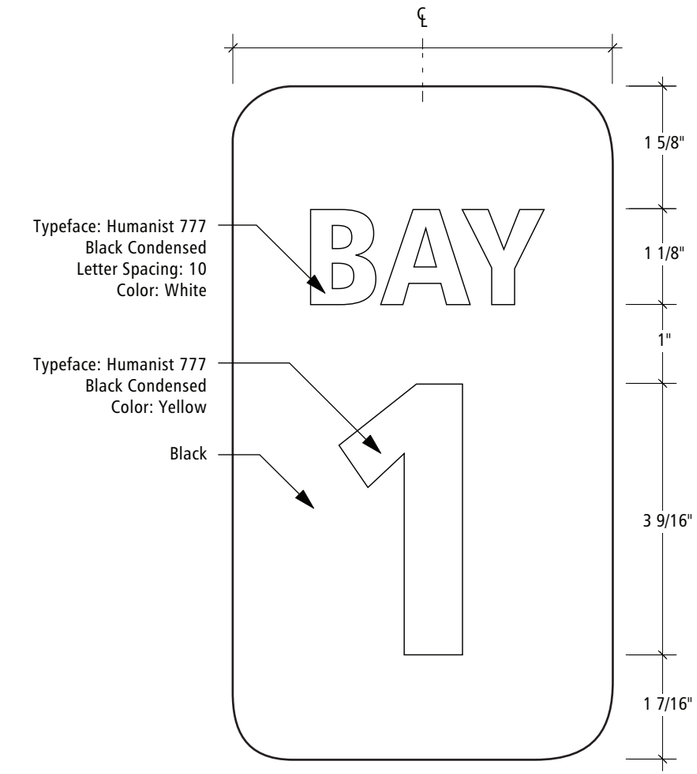
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Elevation at Sign Type A.1
Scale: 1″=1′-0″



2 Elevation at Sign Type A.2
Scale: 3/4″=1′-0″



3 Typical Graphic Layout
Scale: 1/2″=1′-0″

King County METRO

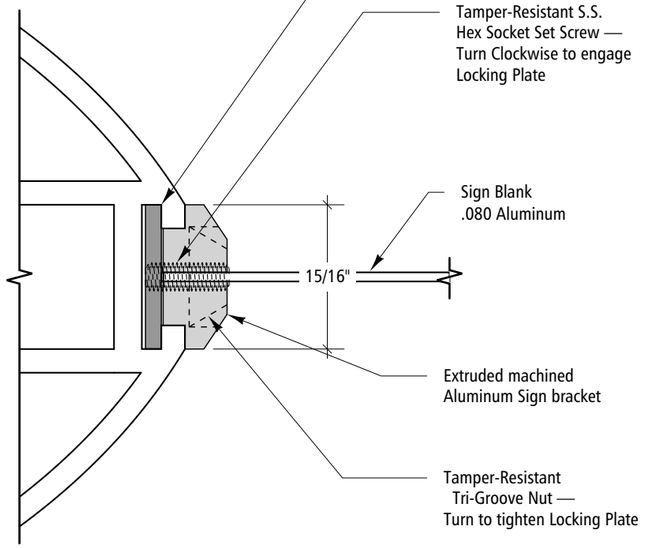
Signing Standards Manual

Volume 2
July 1, 2008

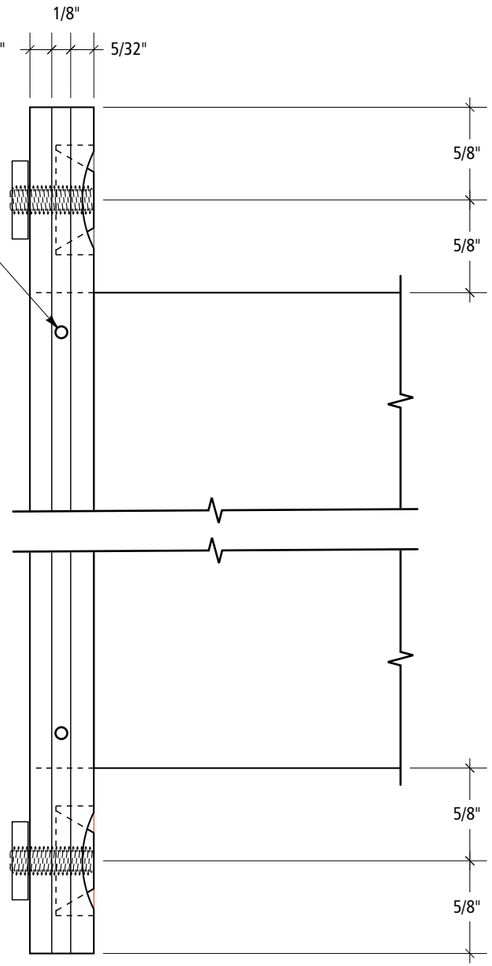
Section 8:
Fabrication

Sign Type J.2A

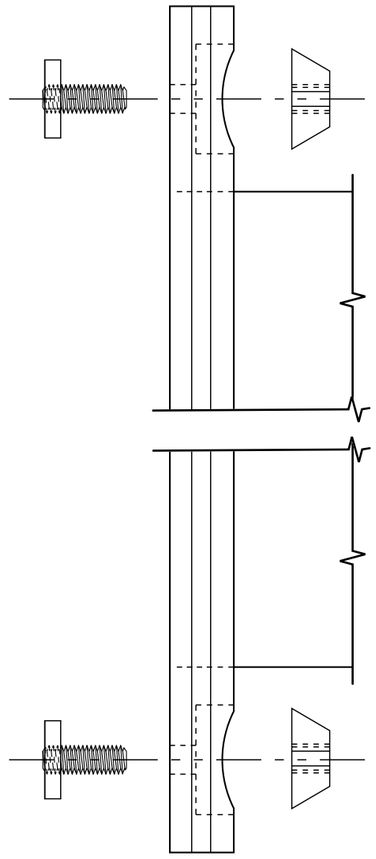
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



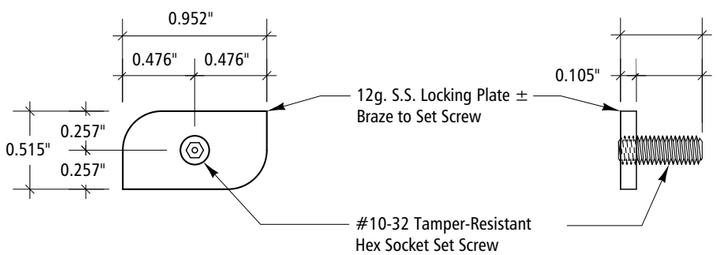
1 Section Detail
Scale: Full



2 Side View Detail
Scale: Full

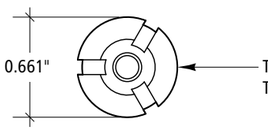


3 Exploded Side View Detail
Scale: Full

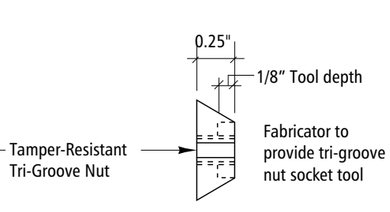


4 Locking Plate Front View
Scale: Full

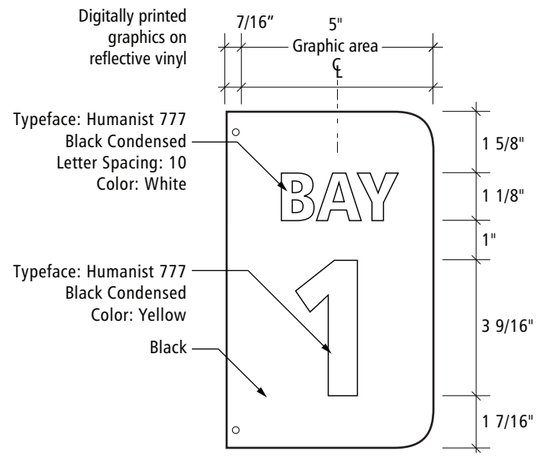
5 Locking Plate Side View
Scale: Full



6 Tri-Groove Nut Front View
Scale: Full

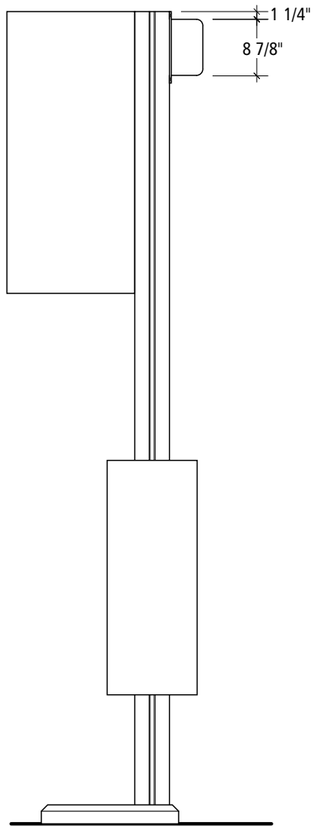


7 Tri-Groove Side View
Scale: Full

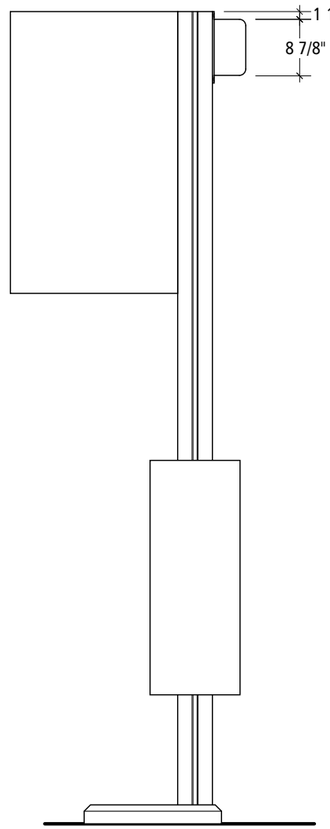


8 Typical Graphic Layout
Scale: 1/4"=1'-0"

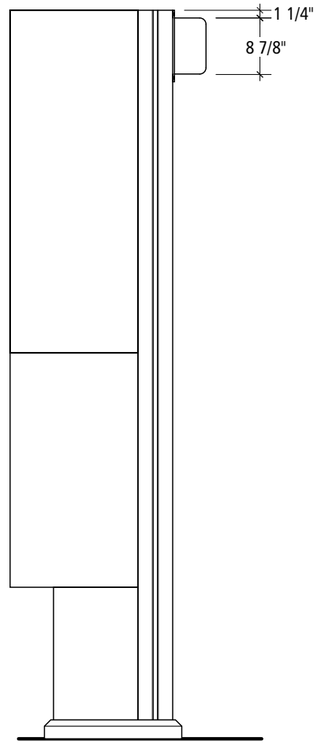
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



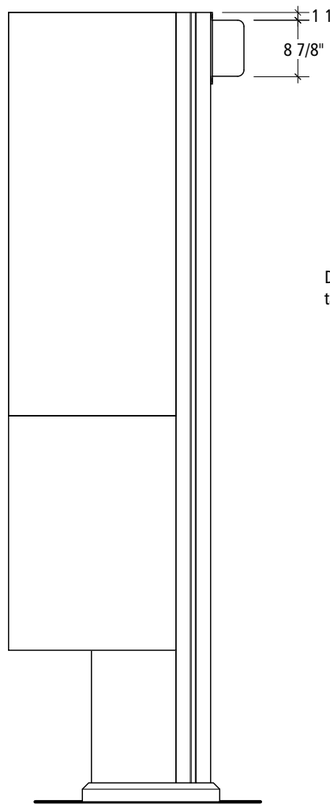
1 Elevation at Sign Type B.1
Scale: 3/4″=1′-0″



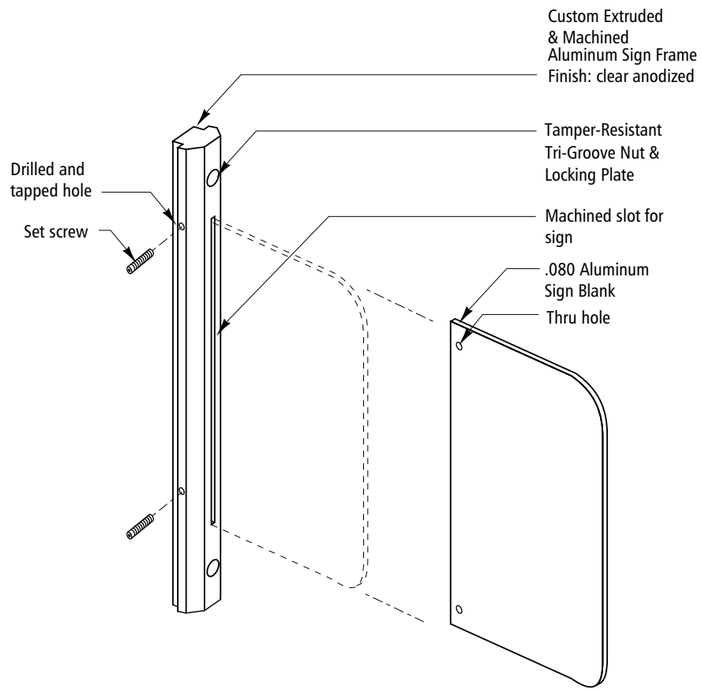
2 Elevation at Sign Type B.2
Scale: 3/4″=1′-0″



3 Elevation at Sign Type C.1
Scale: 3/4″=1′-0″



4 Elevation at Sign Type C.2
Scale: 3/4″=1′-0″



5 Isometric
Scale: NTS

King County METRO

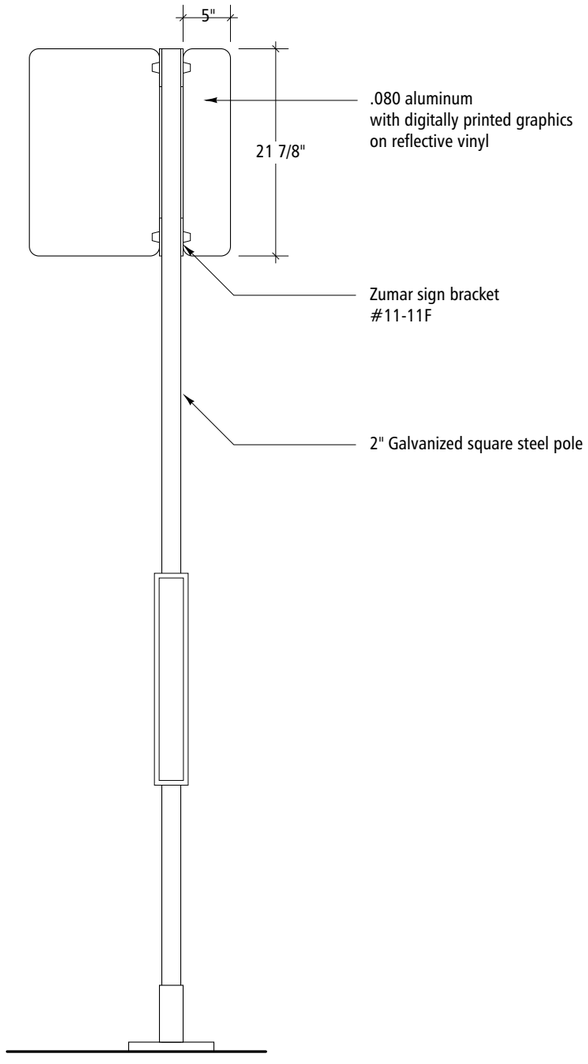
Signing Standards Manual

Volume 2
July 1, 2008

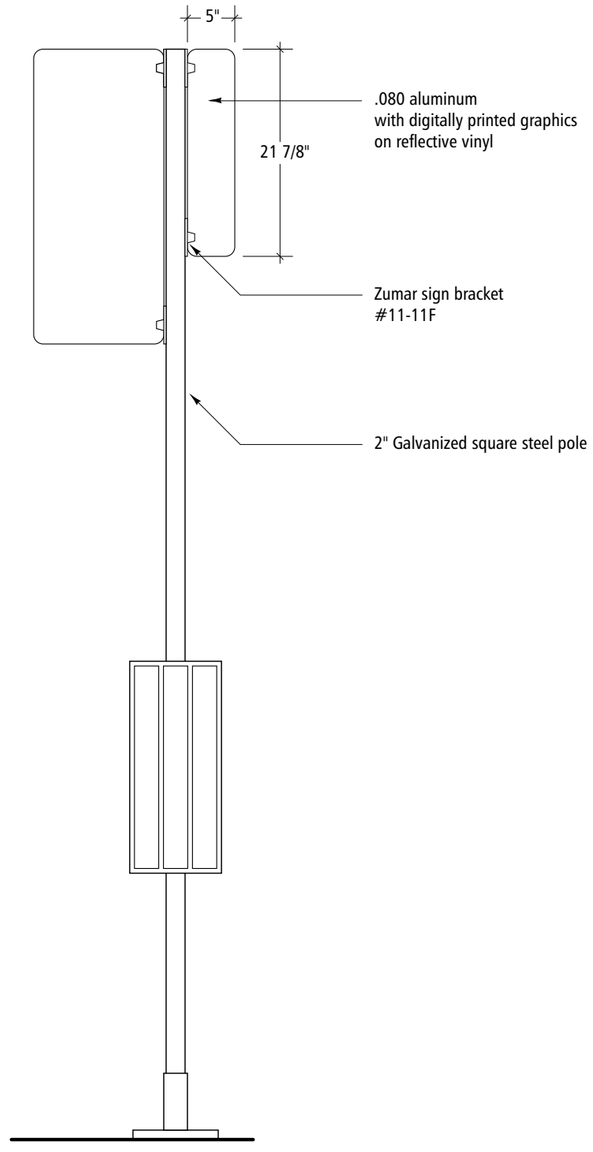
Section 8:
Fabrication

Sign Type J.2B/C

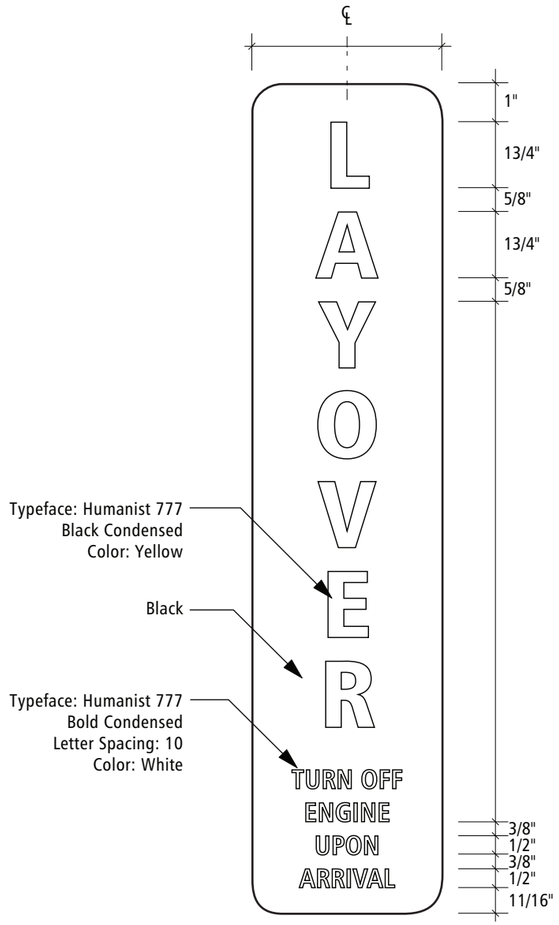
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Elevation at Sign Type A.1
Scale: 3/4"=1'-0"

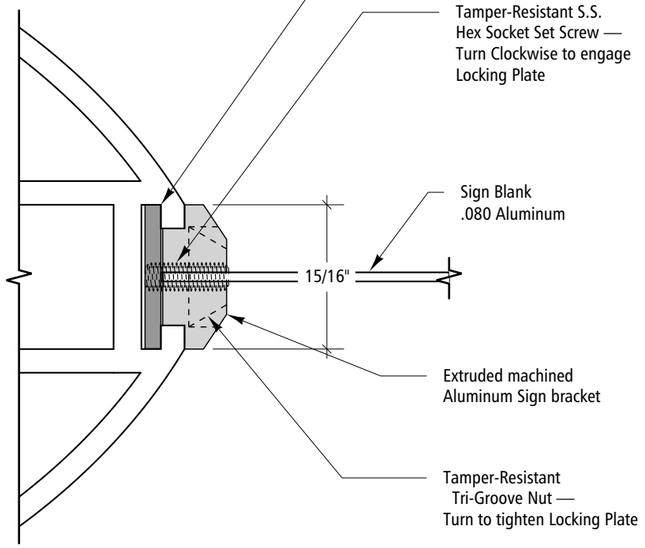


2 Elevation Sign Type A.2
Scale: 3/4"=1'-0"

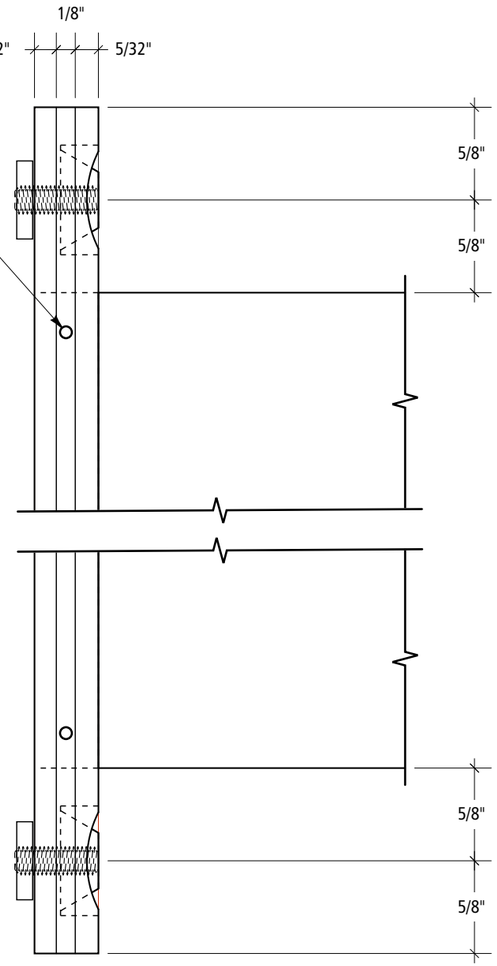


3 Typical Graphic Layout
Scale: 1/4"=1'-0"

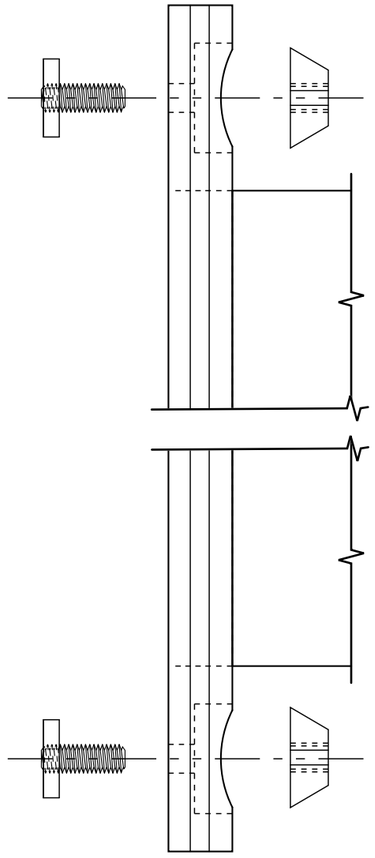
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



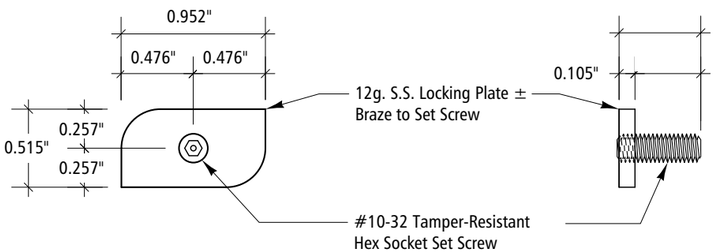
1 Section Detail
Scale: Full



2 Side View Detail
Scale: Full

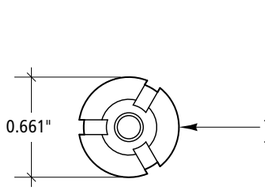


3 Exploded Side View Detail
Scale: Full

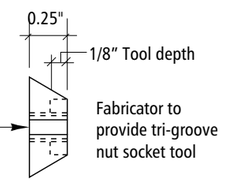


4 Locking Plate Front View
Scale: Full

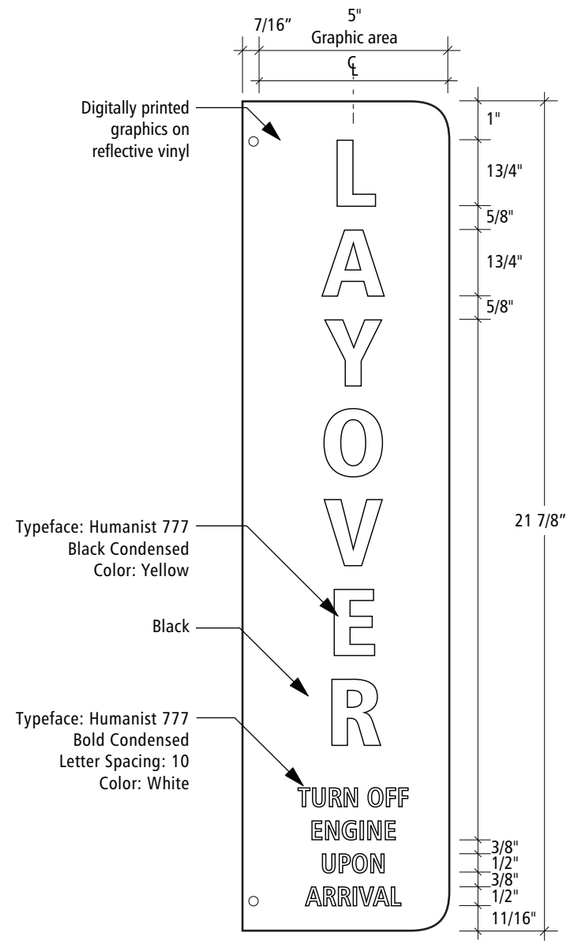
5 Locking Plate Side View
Scale: Full



6 Tri-Groove Nut Front View
Scale: Full

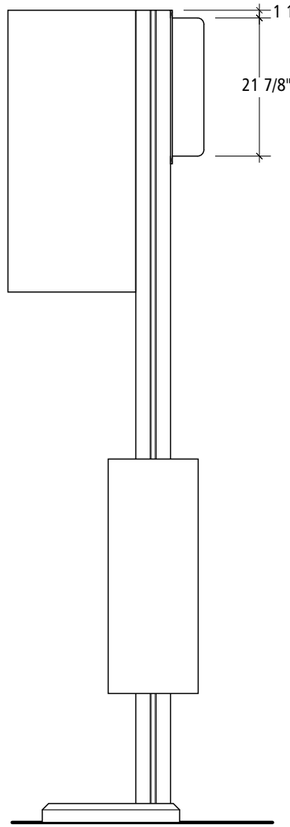


7 Tri-Groove Side View
Scale: Full

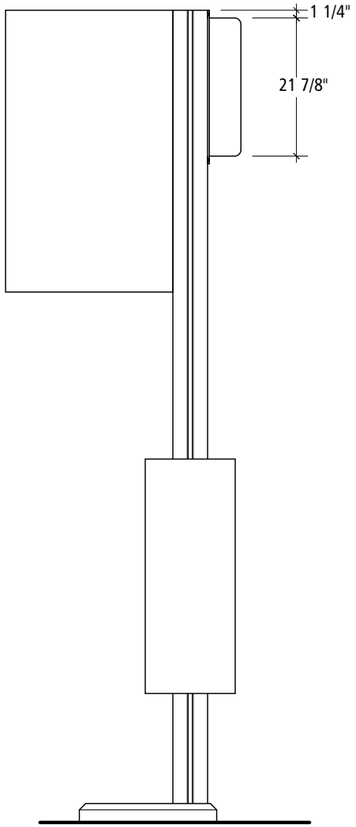


8 Typical Graphic Layout
Scale: 1/4"=1'-0"

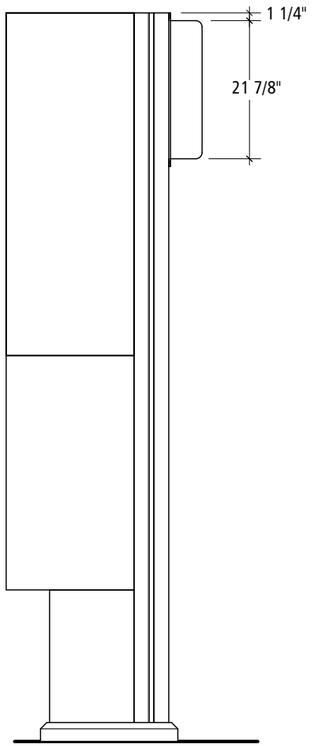
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



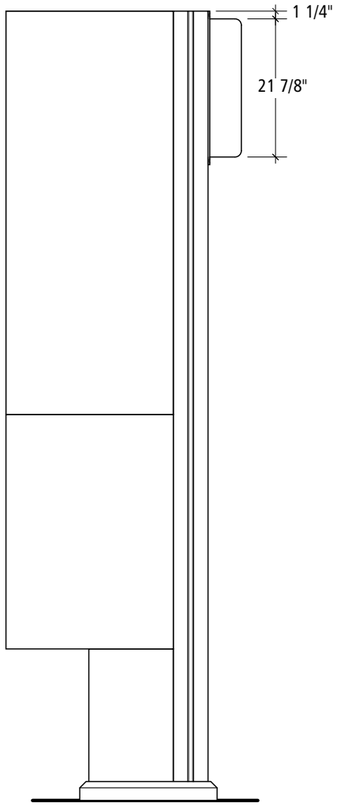
1 Elevation at Sign Type B.1
Scale: 1/2″=1′-0″



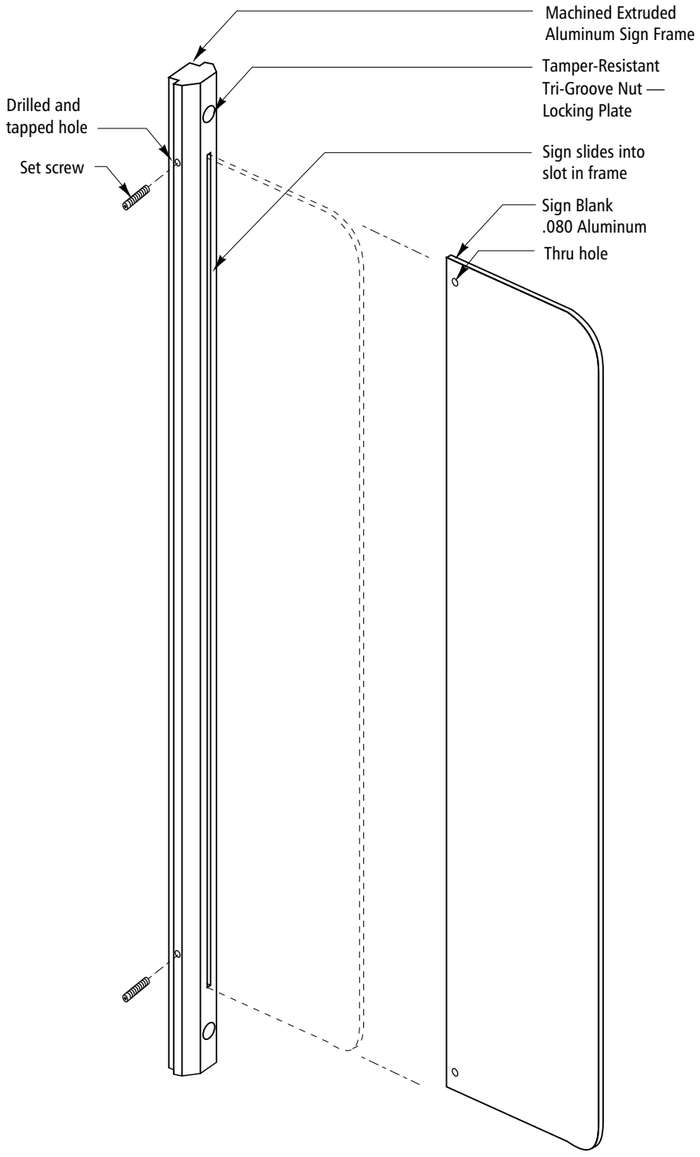
2 Elevation at Sign Type B.2
Scale: 1/2″=1′-0″



3 Elevation at Sign Type C.1
Scale: 1/2″=1′-0″



4 Elevation at Sign Type C.2
Scale: 1/2″=1′-0″



5 Isometric
Scale: NTS

King County METRO

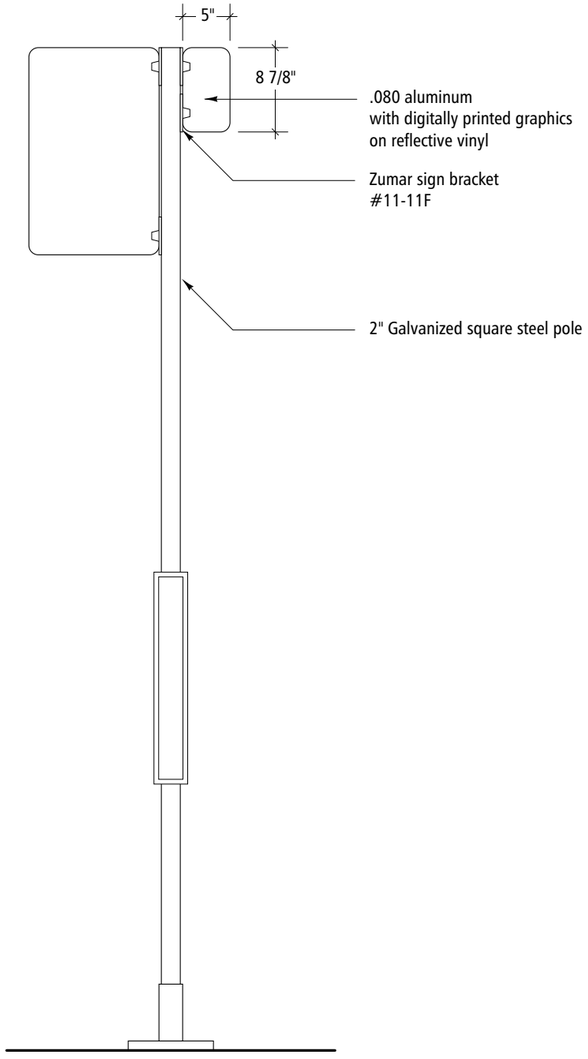
Signing Standards Manual

Volume 2
July 1, 2008

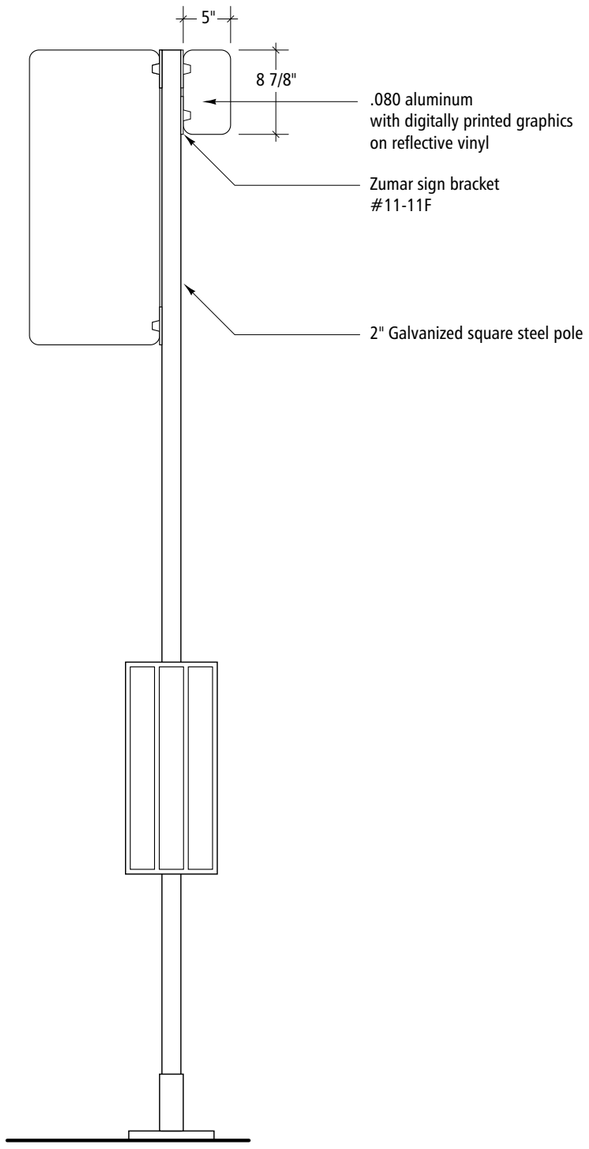
Section 8:
Fabrication

Sign Type J.3B/C

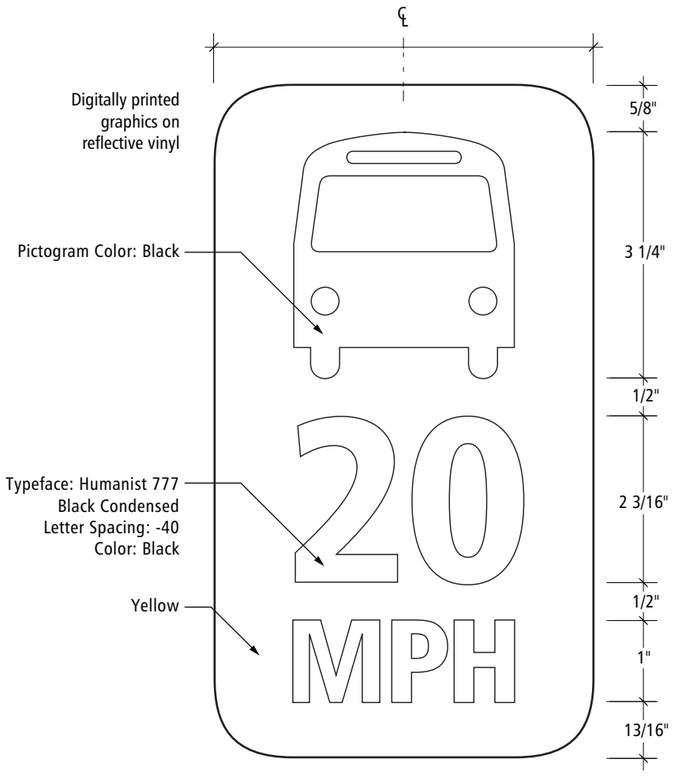
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Elevation at Sign Type A.1
Scale: 1″=1′-0″

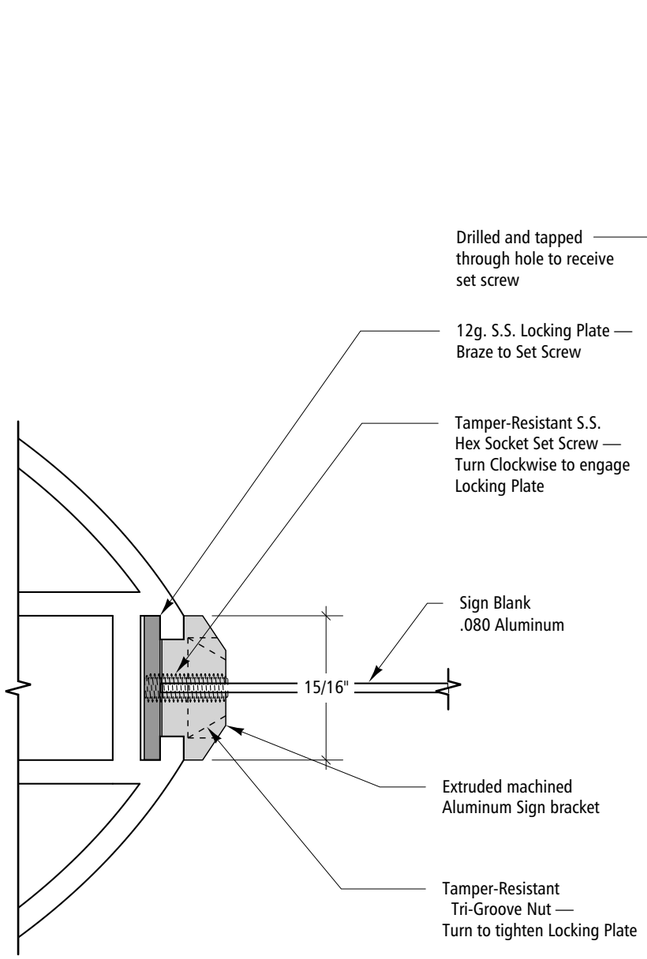


2 Elevation at Sign Type A.2
Scale: 3/4″=1′-0″

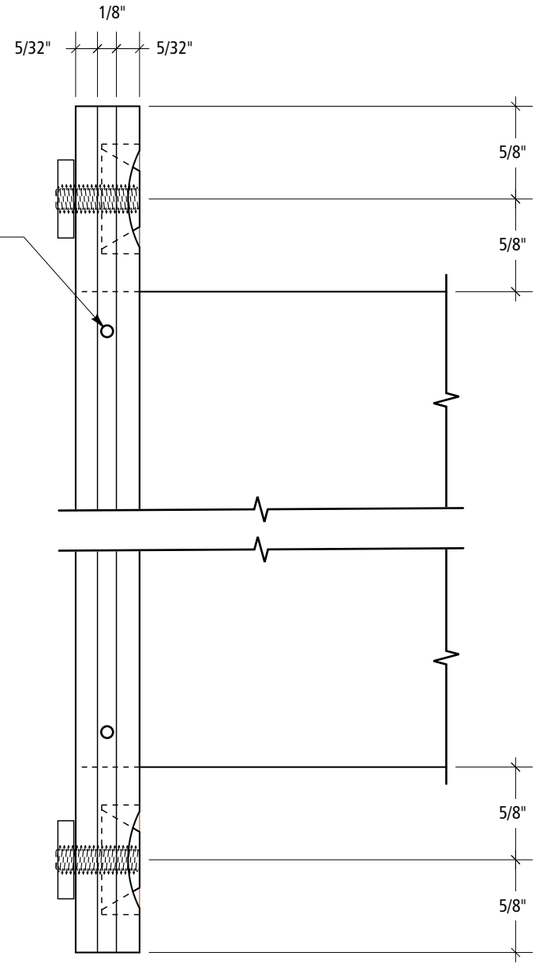


3 Typical Graphic Layout
Scale: 1/2″=1′-0″

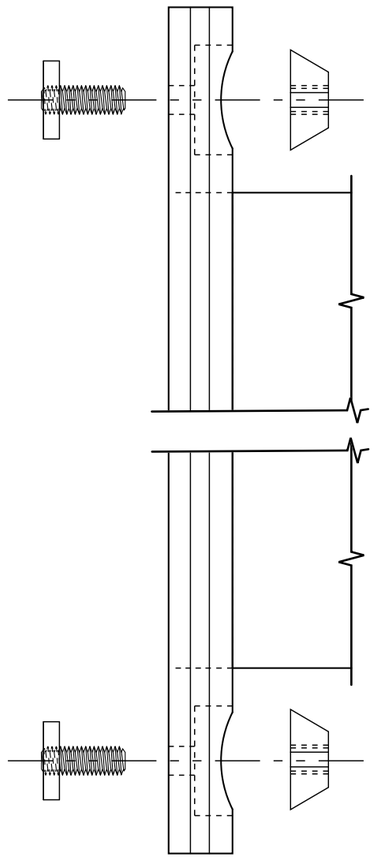
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



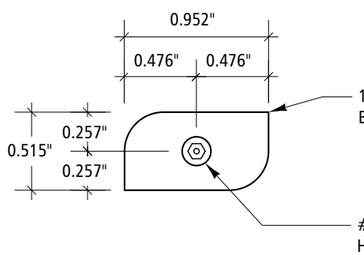
1 Section Detail
Scale: Full



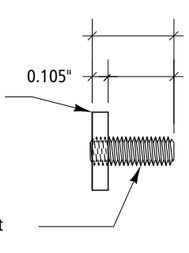
2 Side View Detail
Scale: Full



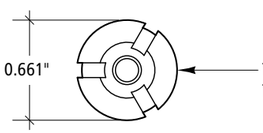
3 Exploded Side View Detail
Scale: Full



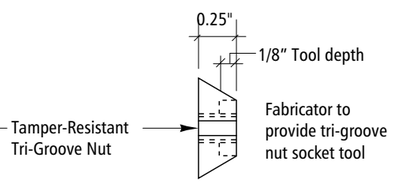
4 Locking Plate Front View
Scale: Full



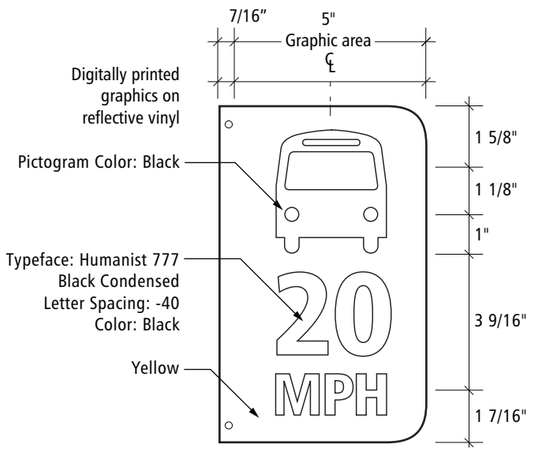
5 Locking Plate Side View
Scale: Full



6 Tri-Groove Nut Front View
Scale: Full

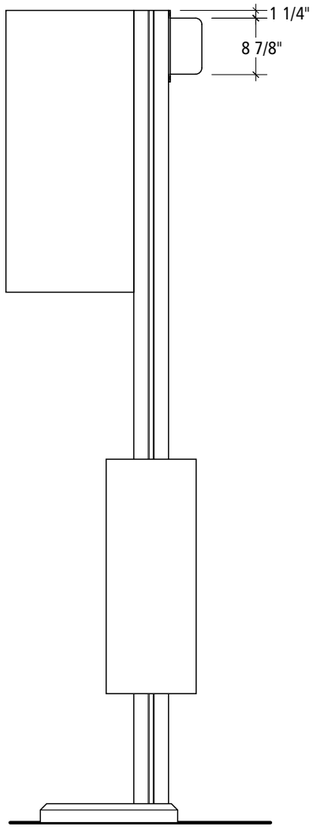


7 Tri-Groove Side View
Scale: Full

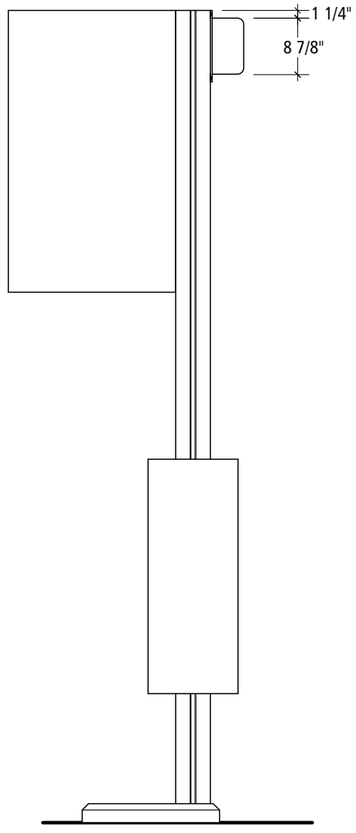


8 Typical Graphic Layout
Scale: 1/4"=1'-0"

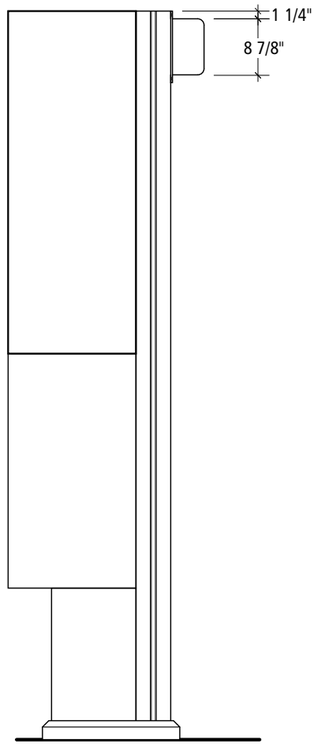
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



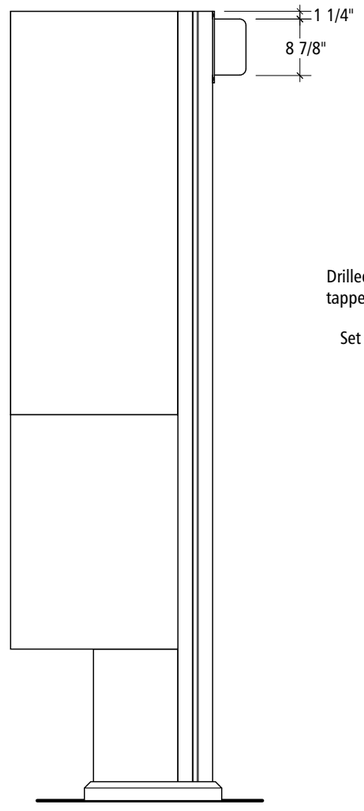
1 Elevation at Sign Type B.1
Scale: 3/4"=1'-0"



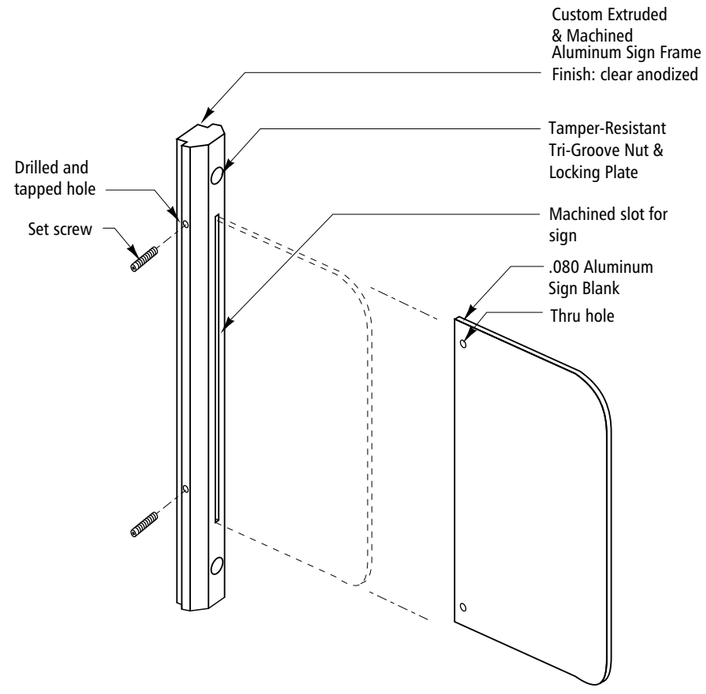
2 Elevation at Sign Type B.2
Scale: 3/4"=1'-0"



3 Elevation at Sign Type C.1
Scale: 3/4"=1'-0"



4 Elevation at Sign Type C.2
Scale: 3/4"=1'-0"



5 Isometric
Scale: NTS

King County METRO

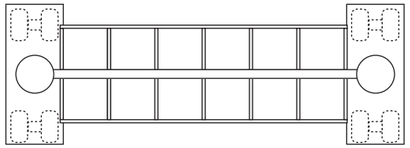
Signing Standards Manual

Volume 2
July 1, 2008

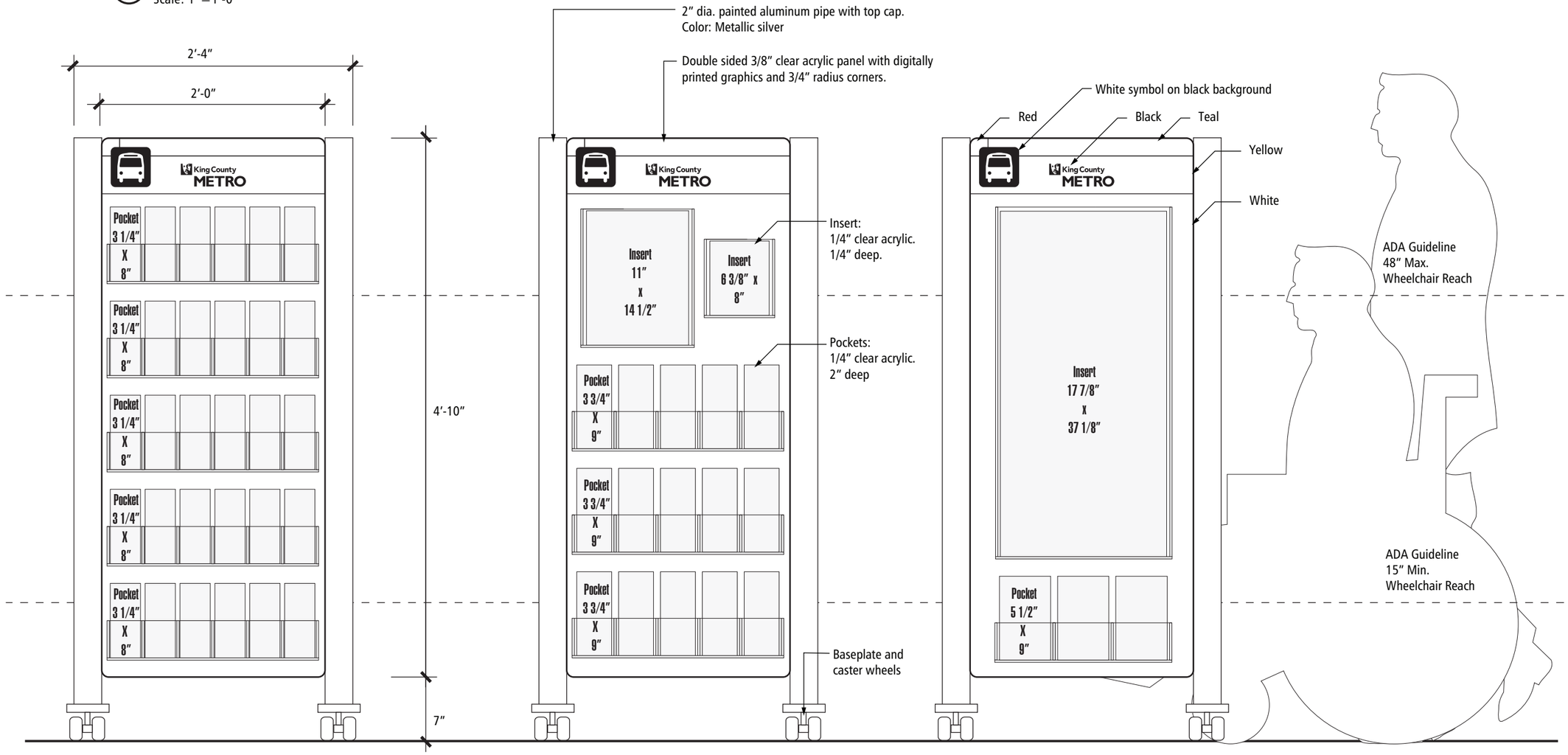
Section 8:
Fabrication

Sign Type J.4B/C

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan - Sign Type M.1
Scale: 1″=1′-0″



Sign Type M.1
Literature holder - Freestanding

Displays:
3 1/4″ x 8″ pieces, quantity: 30

2 Elevation - Sign Type M.1
Scale: 1″=1′-0″

Sign Type M.2
Literature holder - Freestanding

Displays:
3 3/4″ x 9″ pieces, quantity: 15
11″ x 14 1/2″ poster, quantity: 1
6 3/8″ x 8″ poster, quantity: 1

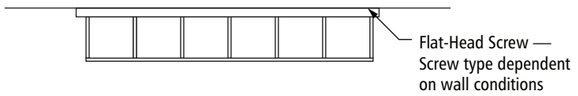
3 Elevation - Sign Type M.2
Scale: 1″=1′-0″

Sign Type M.3
Literature holder - Freestanding

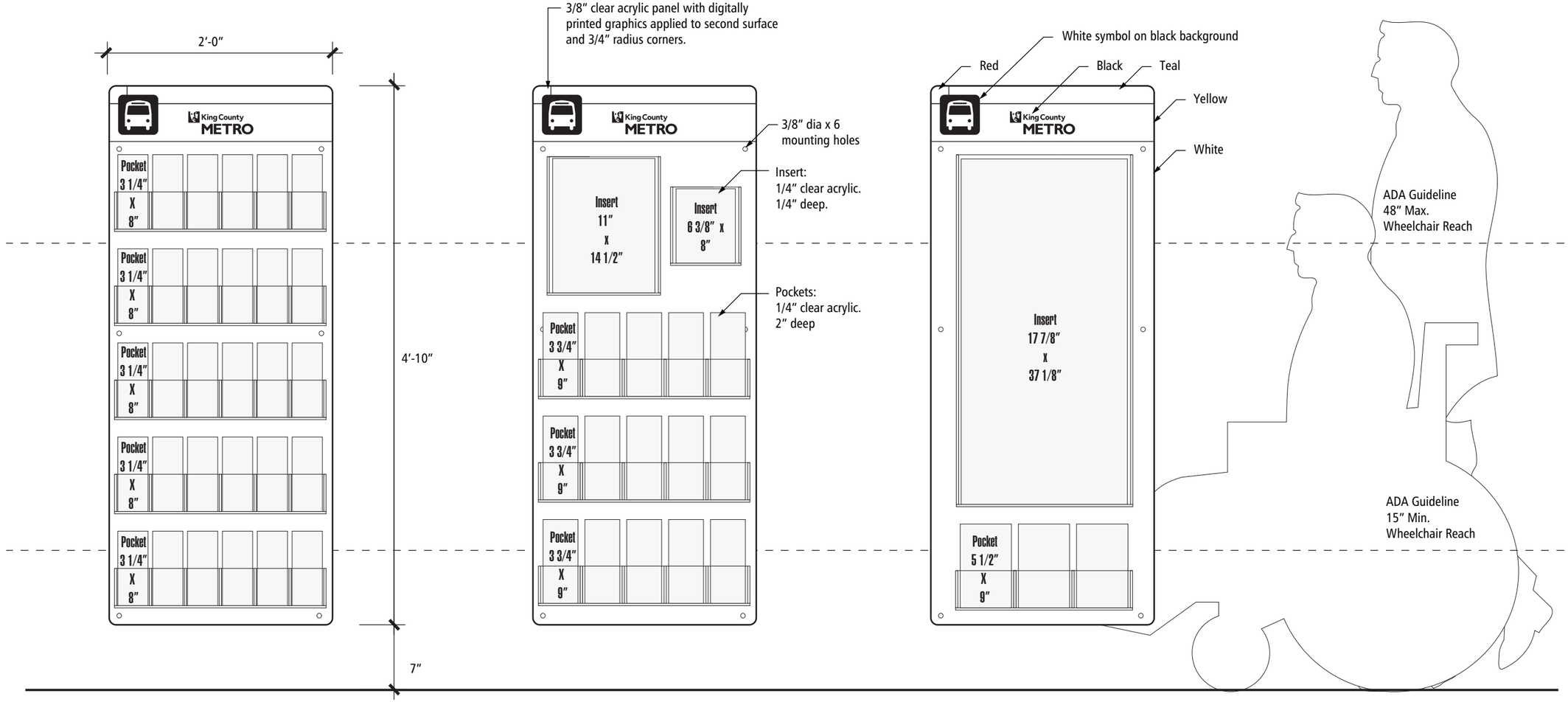
Displays:
5 1/2″ x 9″ pieces, quantity: 3
17 7/8″ x 37 1/8″ poster, quantity: 1

4 Elevation - Sign Type M.3
Scale: 1″=1′-0″

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan - Sign Type N.1
Scale: 1″=1′-0″



Sign Type N.1
Literature holder
wall mounted

Displays:
3″ x 7″ pieces, quantity: 36

2 Elevation - Sign Type N.1
Scale: 1″=1′-0″

Sign Type N.2
Literature holder
wall mounted

Displays:
3 3/4″ x 9″ pieces, quantity: 15
11″ x 14 1/2″ poster, quantity: 1
6 3/8″ x 8″ poster, quantity: 1

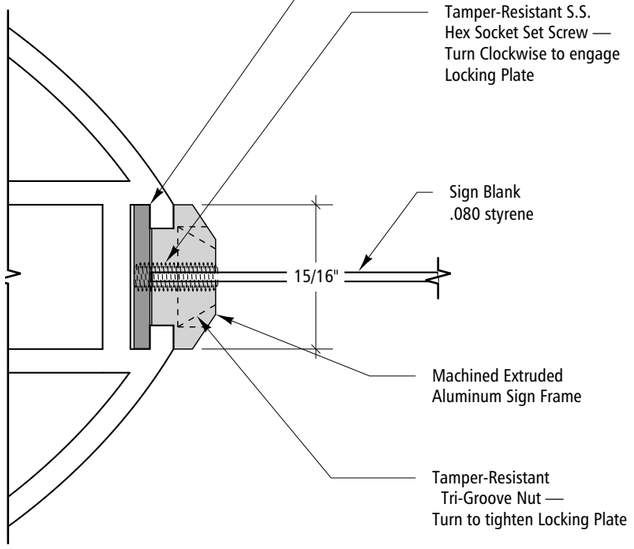
3 Elevation - Sign Type N.2
Scale: 1″=1′-0″

Sign Type N.3
Literature holder
wall mounted

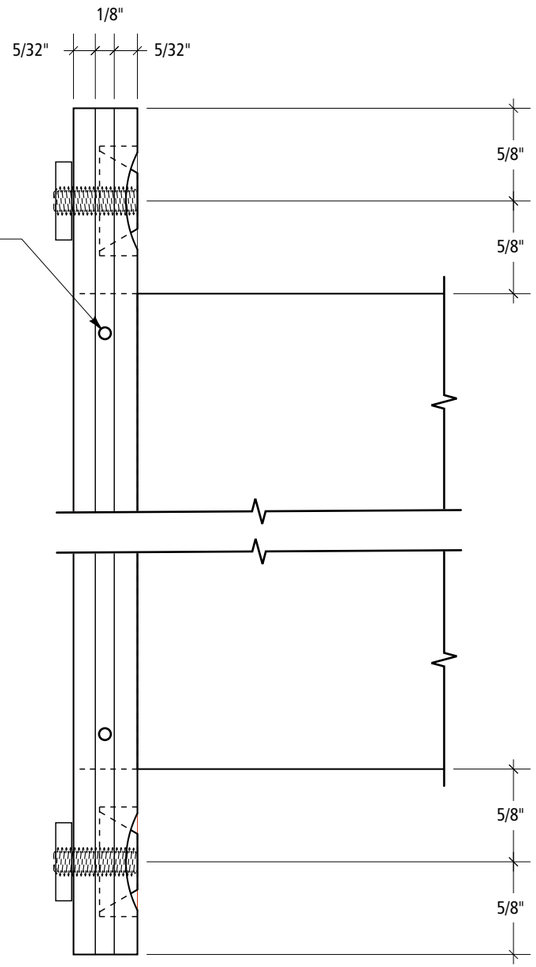
Displays:
5 1/2″ x 9″ pieces, quantity: 3
17 7/8″ x 37 1/8″ poster, quantity: 1

4 Elevation - Sign Type N.3
Scale: 1″=1′-0″

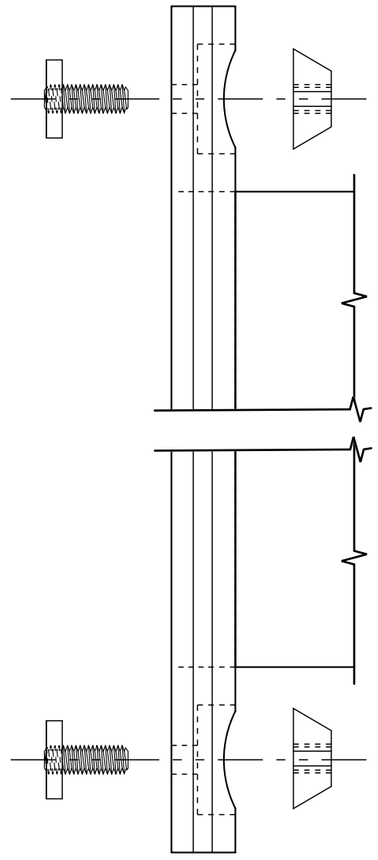
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



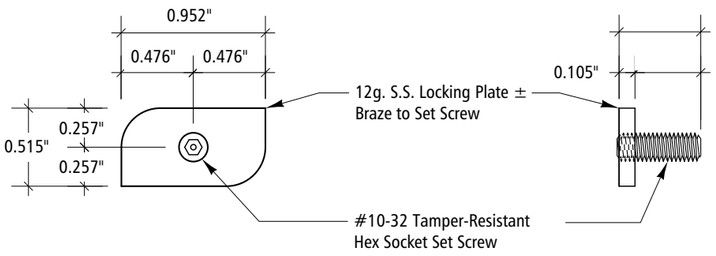
1 Section Detail
Scale: Full



2 Side Detail
Scale: Full

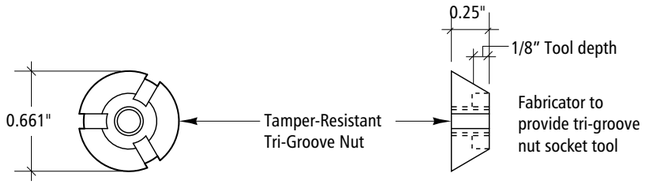


3 Exploded Side Detail
Scale: Full



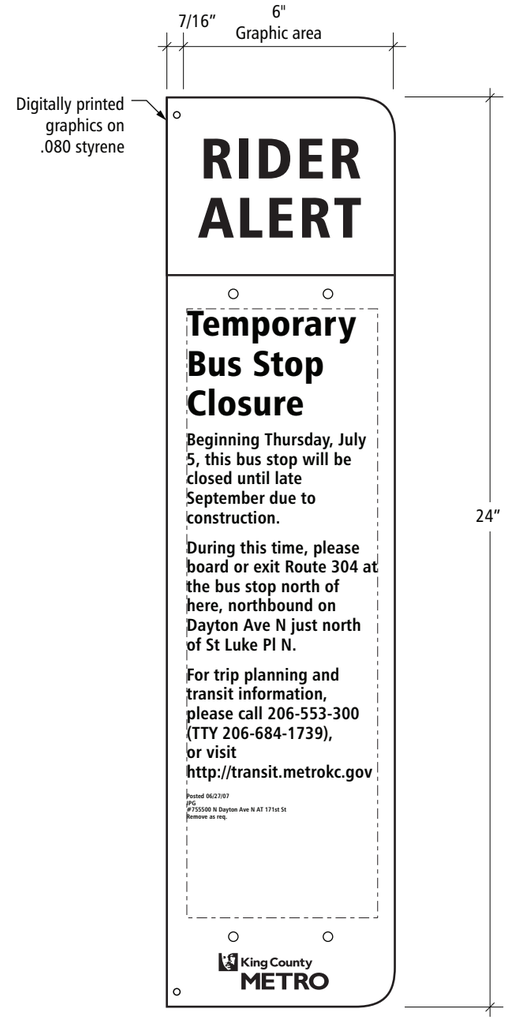
4 Front View
Scale: Full

5 Side View
Scale: Full



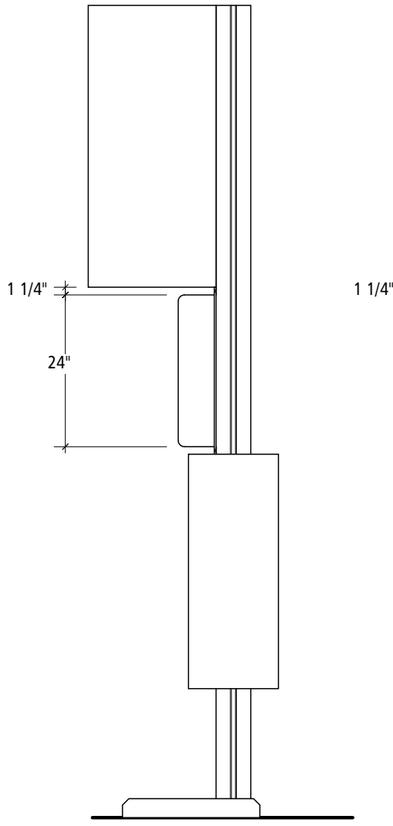
6 Front View
Scale: Full

7 Side View
Scale: Full

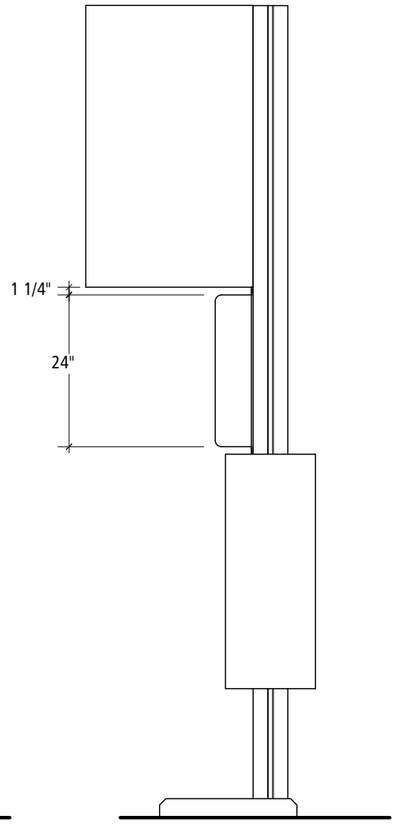


8 Typical Graphic Layout
Scale: 1/4"=1'-0"

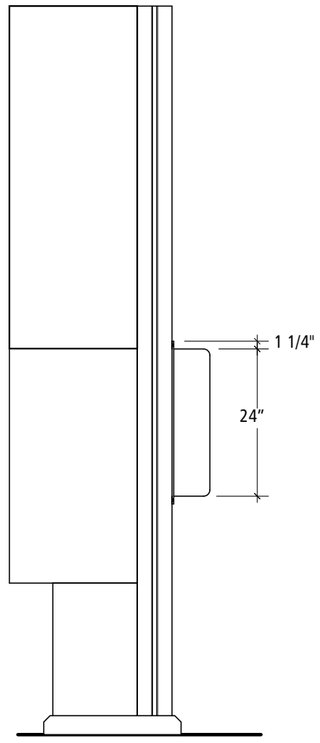
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



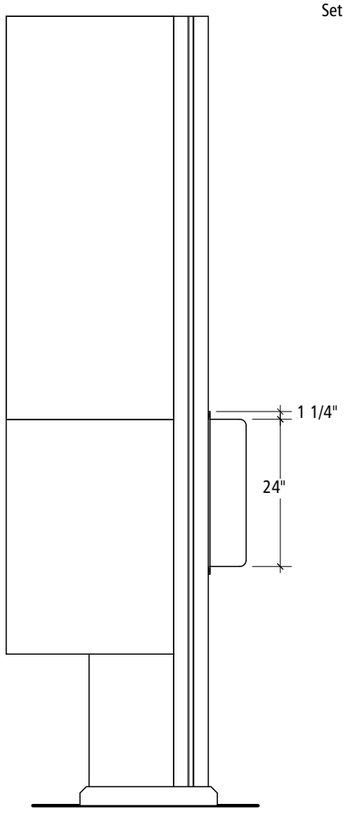
1 Elevation at Sign Type B.1
Scale: 1/2″=1′-0″



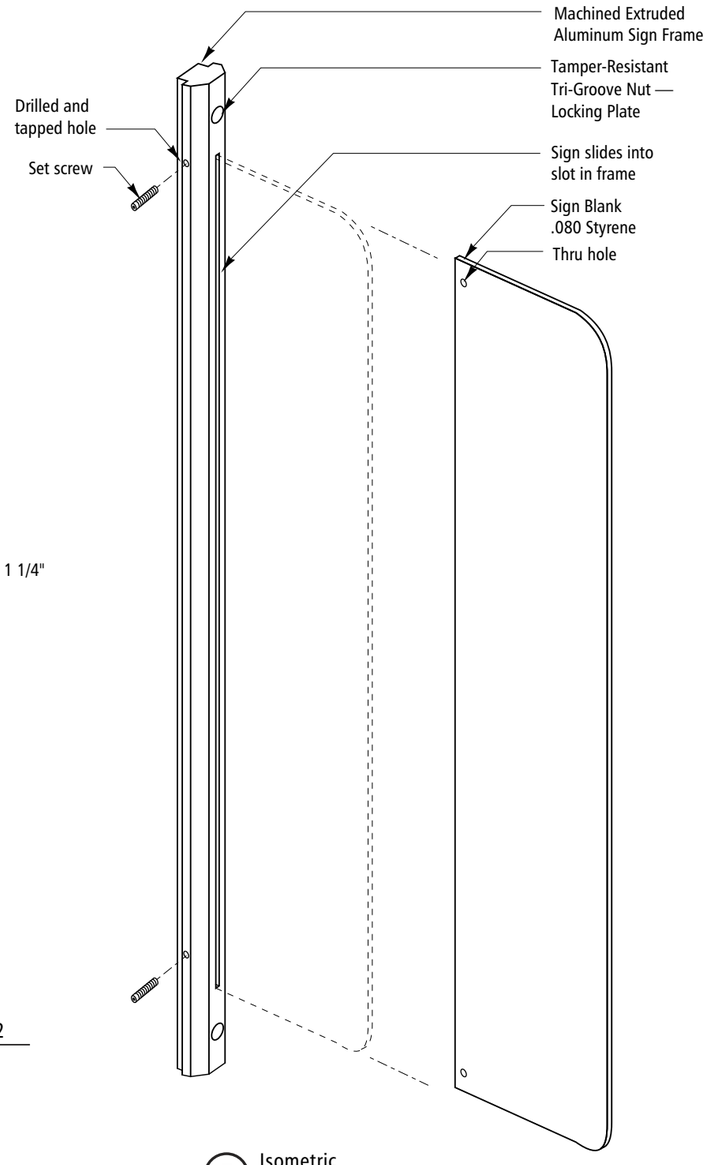
2 Elevation at Sign Type B.2
Scale: 1/2″=1′-0″



3 Elevation at Sign Type C.1
Scale: 1/2″=1′-0″



4 Elevation at Sign Type C.2
Scale: 1/2″=1′-0″



5 Isometric
Scale: NTS

King County METRO

Signing Standards Manual

Volume 2
July 1, 2008

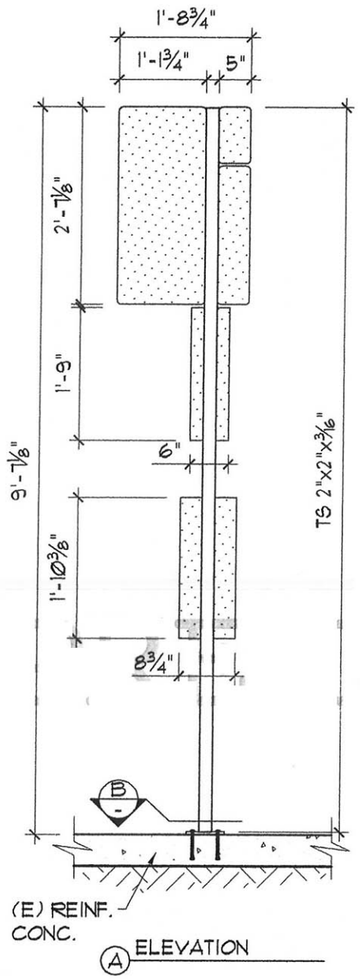
Section 8:
Fabrication

Rider Alert
Temporary Sign at
Sign Types
B.1, B.2, C.1, C.2

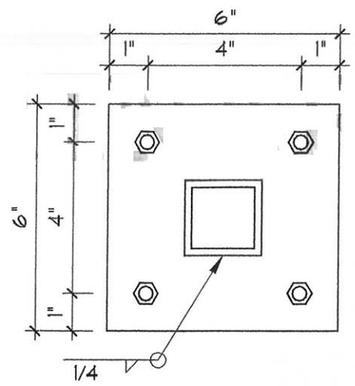
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

SECTION 9: TABLE OF CONTENTS

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



A ELEVATION



PL ½"x6"xØ'-6"
W/ (4)-½"Ø HILTI KB-TZ
2" MIN. EMBEDMENT

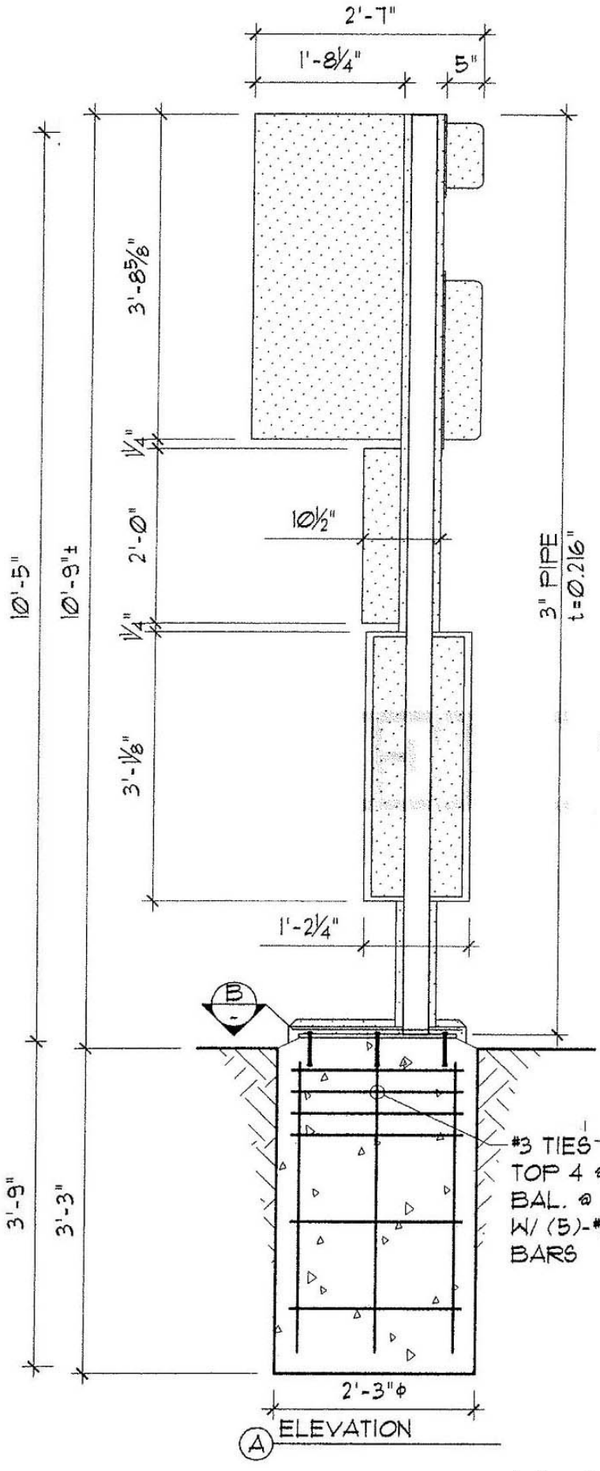
B BASE PLATE DETAIL

GENERAL NOTES FOR POLES AND FOOTING:

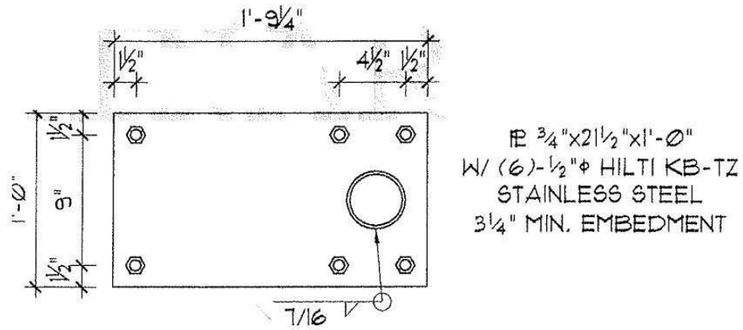
1. CONCRETE f'c=2500 PSI., MIN. SPECIAL INSPECTION NOT REQUIRED.
2. TUBE STEEL ASTM A500 GRADE B.
3. ROLLED STEEL ASTM A36.
4. SIGN CABINETRY SHALL BE FABRICATED IN THE SHOP OF AN APPROVED FABRICATOR.
5. SITE IS NOT SUBJECTED TO WIND SPEED-UP EFFECT ($K_{zt} \leq 1.0$) AS DEFINED IN SECTION 6.5.7.2 OF ASCE 7-05. CONTACT ENGINEER OF RECORD IF SUCH EFFECTS ARE PRESENT.
6. HILTI KB-TZ PER ESR-1917. SPECIAL INSPECTION REQUIRED.
7. SOIL PASSIVE PRESSURE BASED ON 2006 IBC TABLE 1804.2 CLASS 4 OR BETTER. SPECIAL INSPECTION NOT REQUIRED. (IF SOFT OR SANDY SOIL, COLLAPSING OR UNSTABLE SOIL, ORGANIC MATERIALS OR GROUNDWATER ARE ENCOUNTERED, IMMEDIATELY CONTACT THE ENGINEER OF RECORD FOR ADDITIONAL FOUNDATION REQUIREMENTS.)
8. REINFORCING STEEL ASTM A615, GRADE 60.
9. PROVIDE 3" MIN. CLEAR CONCRETE COVER ON ALL STEEL EMBEDDED IN CONCRETE FOOTING.

Reference:
Section 8 for fabrication details
Section 10 for engineering calculations

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

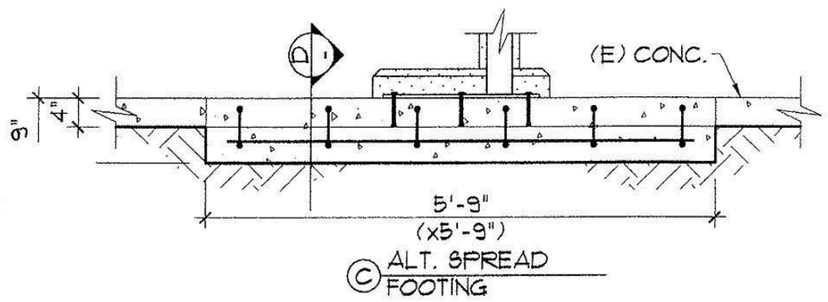


A ELEVATION

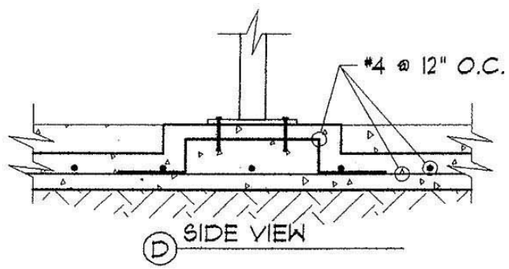


PL ¾"x2½"x1'-Ø"
W/ (6)-½"ϕ HILTI KB-TZ
STAINLESS STEEL
3¼" MIN. EMBEDMENT

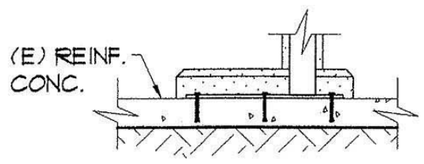
B BASE PLATE DETAIL



C ALT. SPREAD FOOTING



D SIDE VIEW



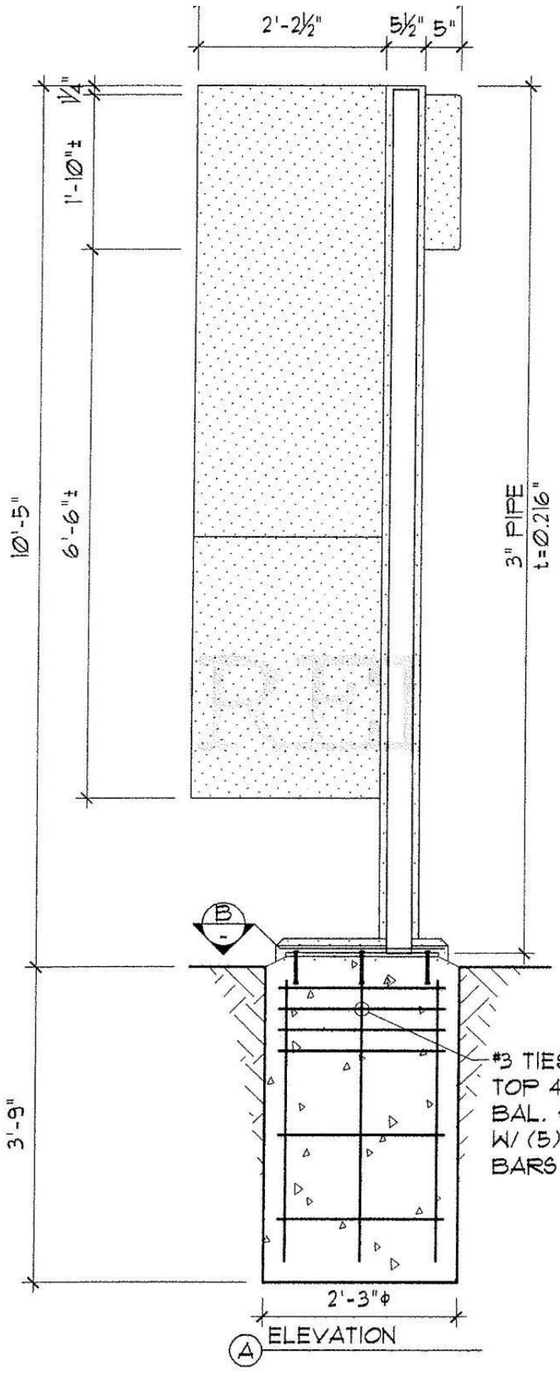
E ALT. FOOTING ATTACHMENT

GENERAL NOTES FOR POLES AND FOOTING:

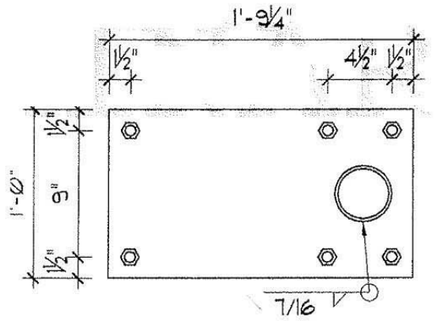
1. CONCRETE f'c=2500 PSI., MIN. SPECIAL INSPECTION NOT REQUIRED.
2. PIPE STEEL ASTM A53 GRADE B.
3. ROLLED STEEL ASTM A36.
4. SIGN CABINETRY SHALL BE FABRICATED IN THE SHOP OF AN APPROVED FABRICATOR.
5. SITE IS NOT SUBJECTED TO WIND SPEED-UP EFFECT (Kzt ≤ 1.Ø) AS DEFINED IN SECTION 6.5.7.2 OF ASCE 7-Ø5. CONTACT ENGINEER OF RECORD IF SUCH EFFECTS ARE PRESENT.
6. HILTI KB-TZ PER ESR-1917. SPECIAL INSPECTION REQUIRED.
7. SOIL PASSIVE PRESSURE BASED ON 2006 IBC TABLE 1804.2 CLASS 4 OR BETTER. SPECIAL INSPECTION NOT REQUIRED. (IF SOFT OR SANDY SOIL, COLLAPSING OR UNSTABLE SOIL, ORGANIC MATERIALS OR GROUNDWATER ARE ENCOUNTERED, IMMEDIATELY CONTACT THE ENGINEER OF RECORD FOR ADDITIONAL FOUNDATION REQUIREMENTS.)
8. REINFORCING STEEL ASTM A615, GRADE 60.
9. PROVIDE 3" MIN. CLEAR CONCRETE COVER ON ALL STEEL EMBEDDED IN CONCRETE FOOTING.
10. IF THE ANCHOR BOLT OPTION IS USED THE GENERAL CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS ARE IN GOOD CONDITION AT THE LOCATION (AND SURROUNDING AREA) OF THE ANCHOR.

Reference:
Section 8 for fabrication details
Section 10 for engineering calculations

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

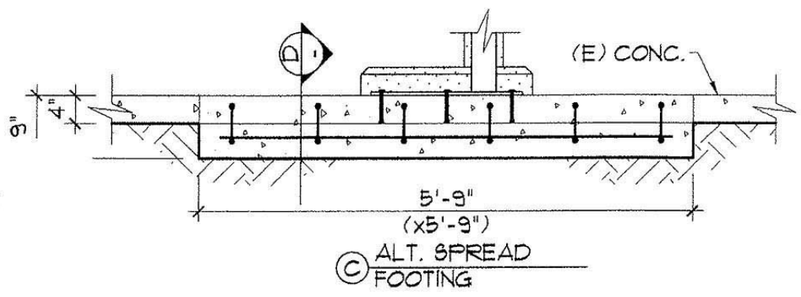


A ELEVATION

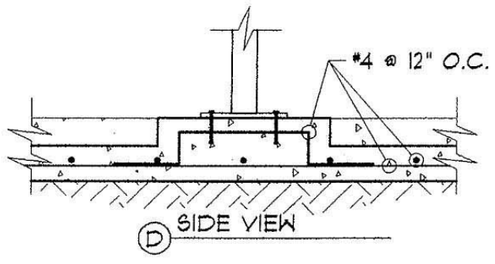


PL ¾"x2½"x1'-0"
W/ (6)-½"ϕ HILTI KB-TZ
STAINLESS STEEL
3¼" MIN. EMBEDMENT

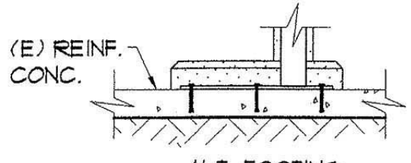
B BASE PLATE DETAIL



C ALT. SPREAD FOOTING



D SIDE VIEW



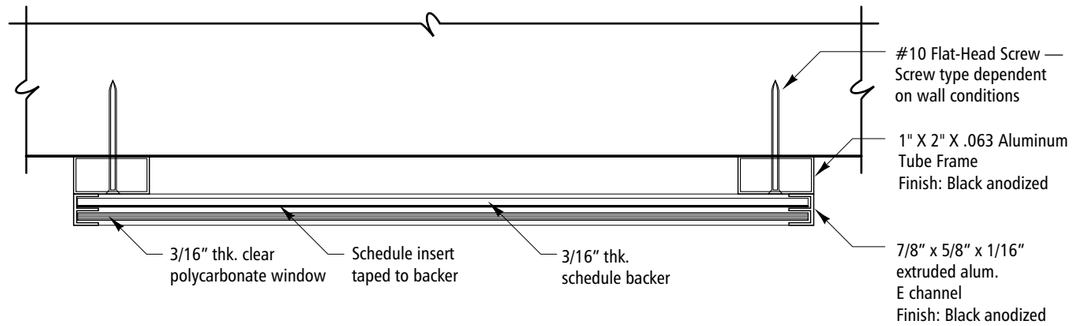
E ALT. FOOTING ATTACHMENT

GENERAL NOTES FOR POLES AND FOOTING:

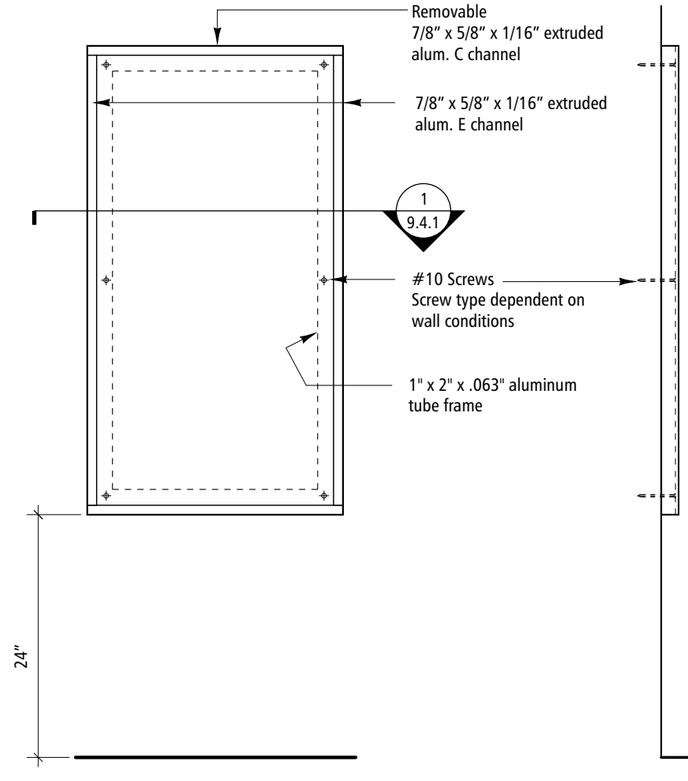
1. CONCRETE f'c=2500 PSI., MIN. SPECIAL INSPECTION NOT REQUIRED.
2. PIPE STEEL ASTM A53 GRADE B.
3. ROLLED STEEL ASTM A36.
4. SIGN CABINETRY SHALL BE FABRICATED IN THE SHOP OF AN APPROVED FABRICATOR.
5. SITE IS NOT SUBJECTED TO WIND SPEED-UP EFFECT ($K_{zt} \leq 1.0$) AS DEFINED IN SECTION 6.5.7.2 OF ASCE 7-05. CONTACT ENGINEER OF RECORD IF SUCH EFFECTS ARE PRESENT.
6. HILTI KB-TZ PER ESR-1917. SPECIAL INSPECTION REQUIRED.
7. SOIL PASSIVE PRESSURE BASED ON 2006 IBC TABLE 1804.2 CLASS 4 OR BETTER. SPECIAL INSPECTION NOT REQUIRED. (IF SOFT OR SANDY SOIL, COLLAPSING OR UNSTABLE SOIL, ORGANIC MATERIALS OR GROUNDWATER ARE ENCOUNTERED, IMMEDIATELY CONTACT THE ENGINEER OF RECORD FOR ADDITIONAL FOUNDATION REQUIREMENTS.)
8. REINFORCING STEEL ASTM A615, GRADE 60.
9. PROVIDE 3" MIN. CLEAR CONCRETE COVER ON ALL STEEL EMBEDDED IN CONCRETE FOOTING.
10. IF THE ANCHOR BOLT OPTION IS USED THE GENERAL CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS ARE IN GOOD CONDITION AT THE LOCATION (AND SURROUNDING AREA) OF THE ANCHOR.

Reference:
Section 8 for fabrication details
Section 10 for engineering calculations

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



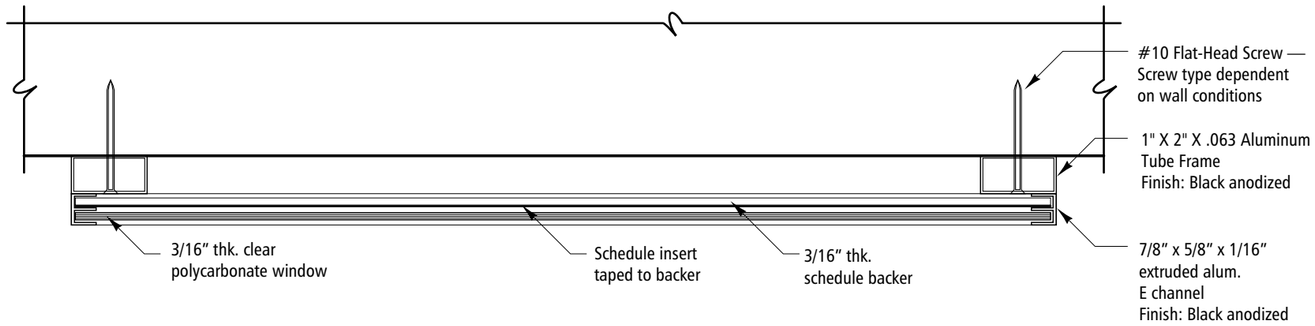
1 Section Detail
Scale: 3"=1'-0"



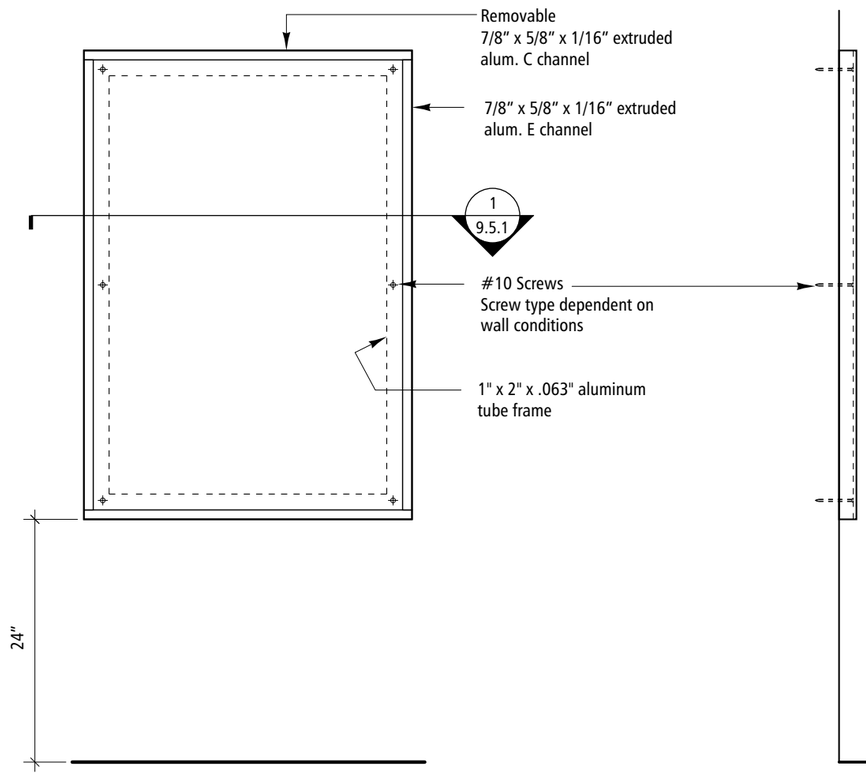
2 Front Elevation
Scale: 1"=1'-0"

3 Side Elevation
Scale: 1"=1'-0"

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



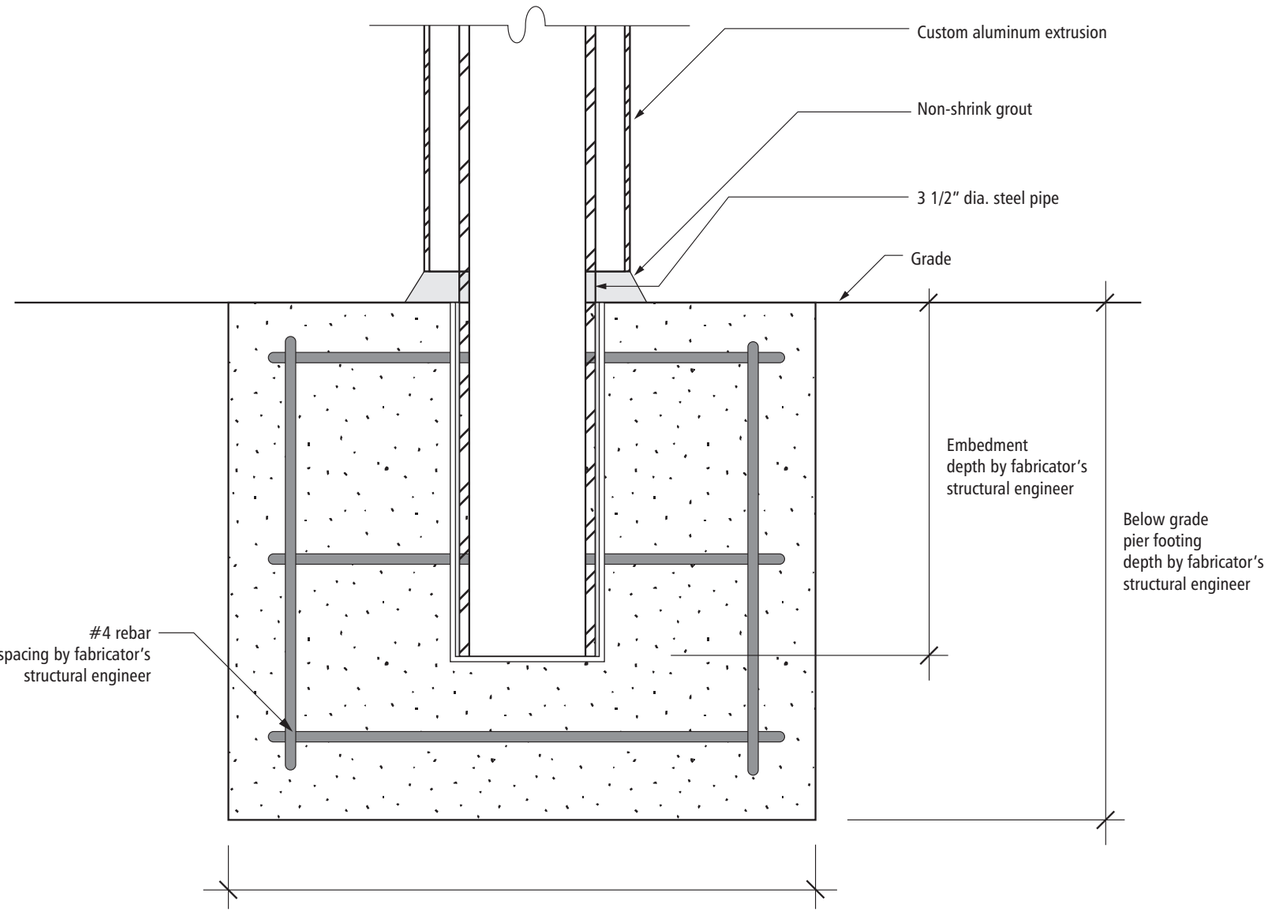
1 Section Detail
Scale: 3"=1'-0"



2 Front Elevation
Scale: 1"=1'-0"

3 Side Elevation
Scale: 1"=1'-0"

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



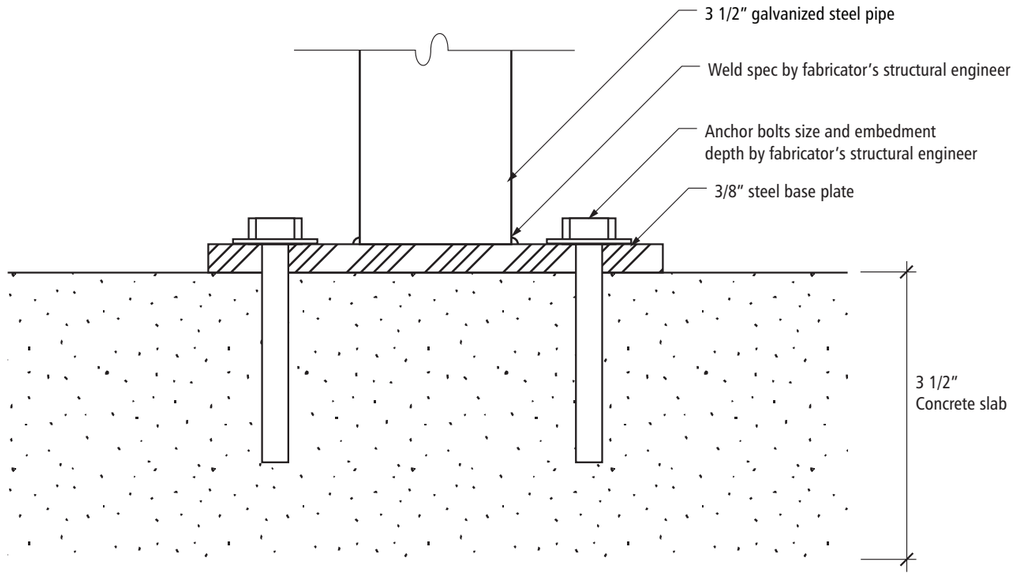
1 Pier Footing Detail
Scale: 3"=1'-0"

Notes:
1. Cast concrete footing in place with rebars and leave a 3 5/8" ø or 3 3/4" hole in the footing. (use a pvc tube, etc.)

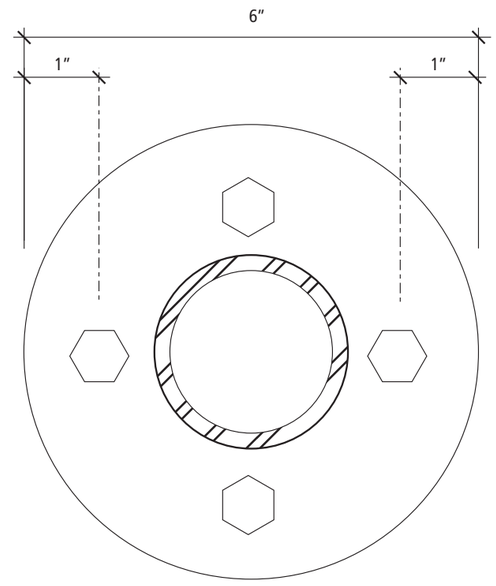
2. Install sign by inserting the 3 1/2" ø pipe in place. Secure by injecting non-shrink grout between 3 3/4" hold and 3 1/2" ø pipe.

3. Verify break-away baseplate requirements per jurisdictional locations.

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

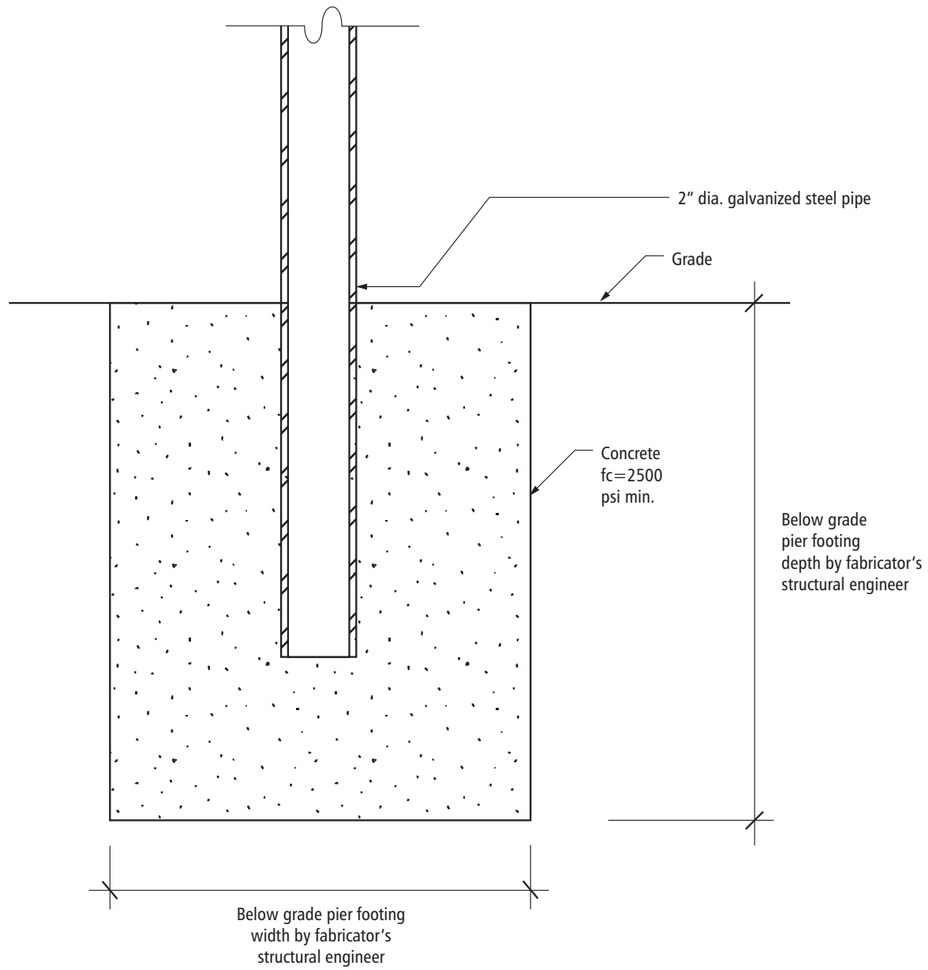


1 Bolt-Down Footings Section
Scale: 1/2"=1'-0"



2 Baseplate Plan
Scale: 1/2"=1'-0"

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

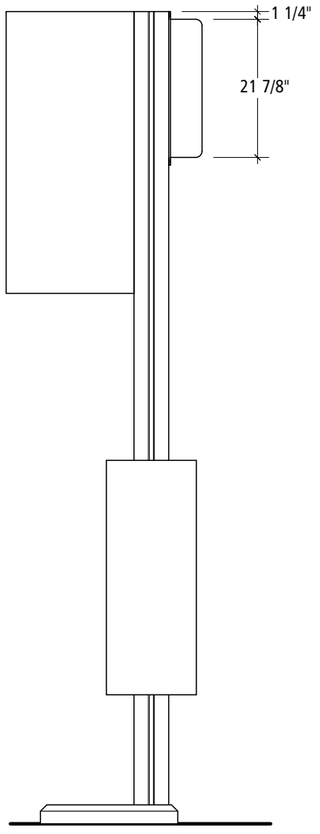


1 Pier Footing Detail
Scale: 3"=1'-0"

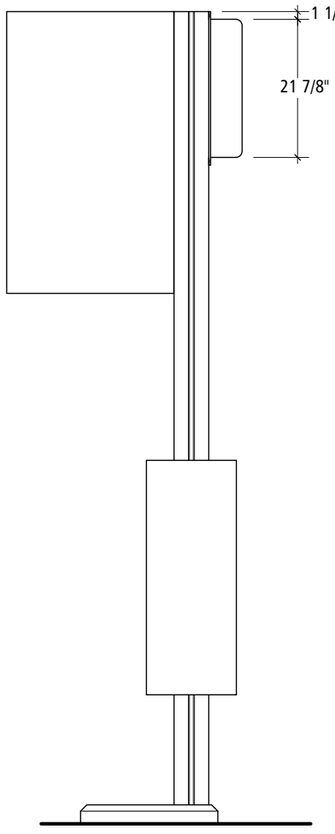
Notes:

1. Verify break-away baseplate requirements per jurisdictional locations.

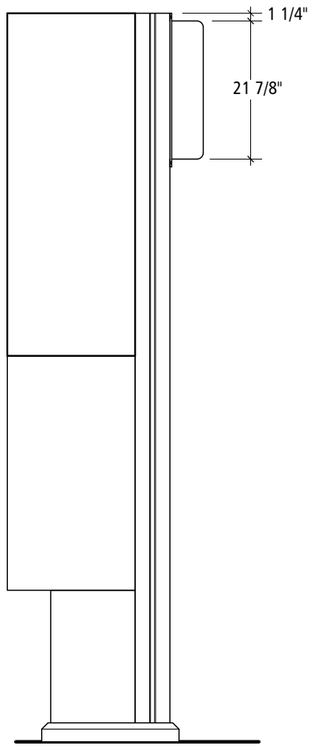
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



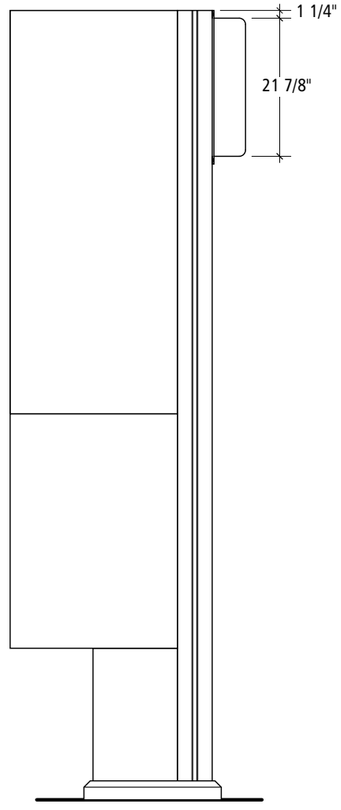
1 Elevation at Sign Type B.1
Scale: 1/2″=1′-0″



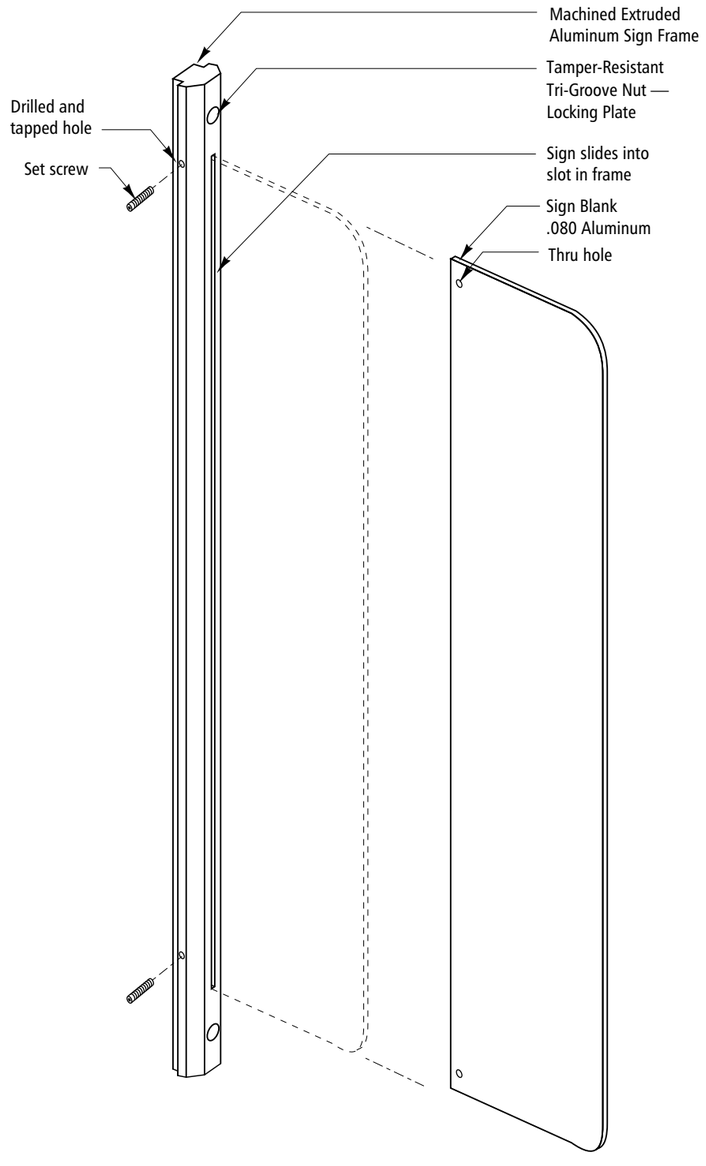
2 Elevation at Sign Type B.2
Scale: 1/2″=1′-0″



3 Elevation at Sign Type C.1
Scale: 1/2″=1′-0″



4 Elevation at Sign Type C.2
Scale: 1/2″=1′-0″



5 Isometric
Scale: NTS

King County METRO

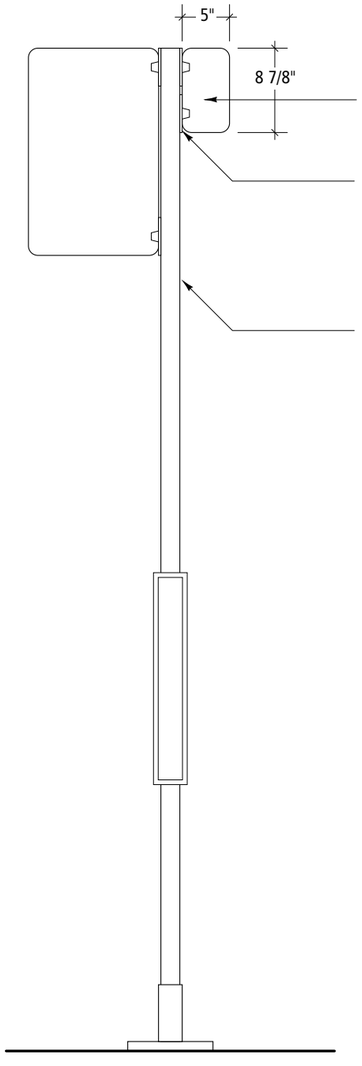
Signing Standards Manual

Volume 2
July 1, 2008

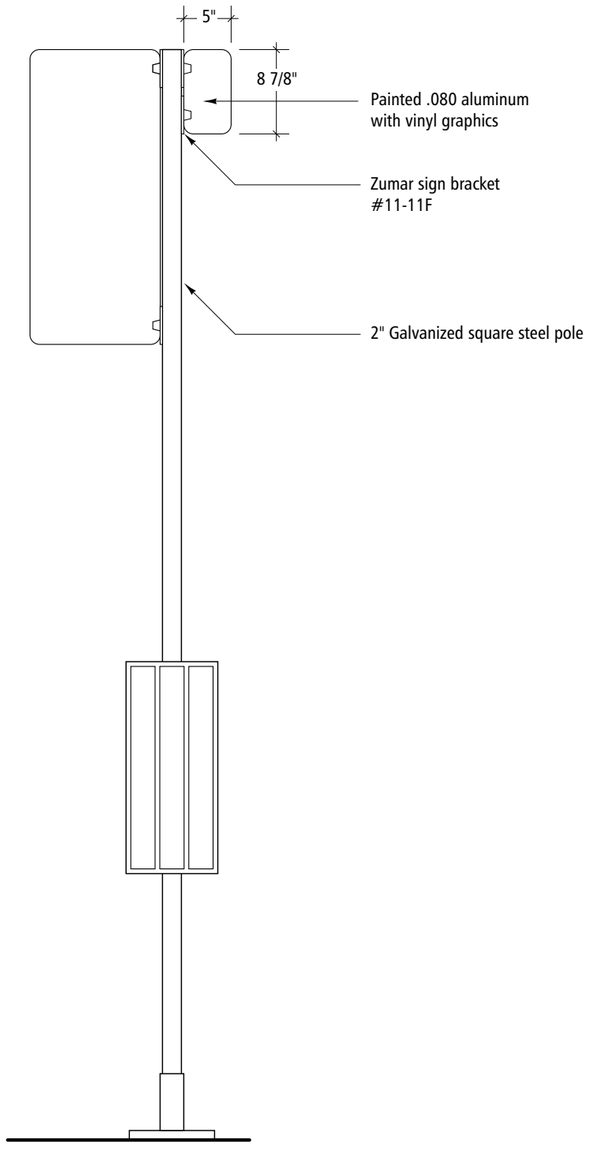
Section 9:
Installation

Sign Type J.1B/C
Sign Type J.3B/C

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

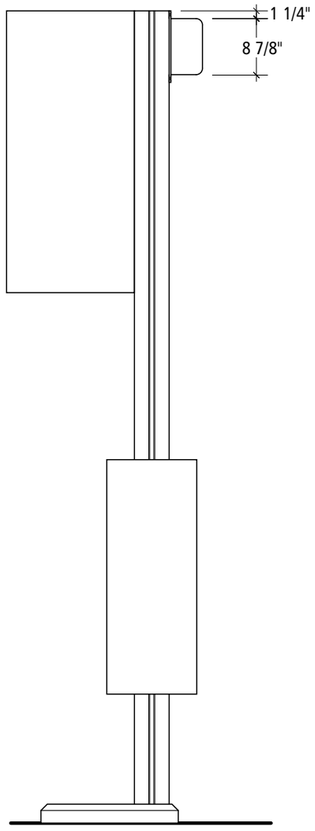


1 Elevation at Sign Type A.1
Scale: 1"=1'-0"

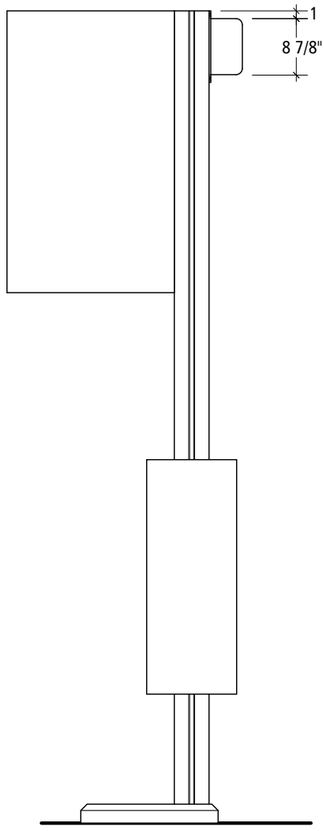


2 Elevation at Sign Type A.2
Scale: 3/4"=1'-0"

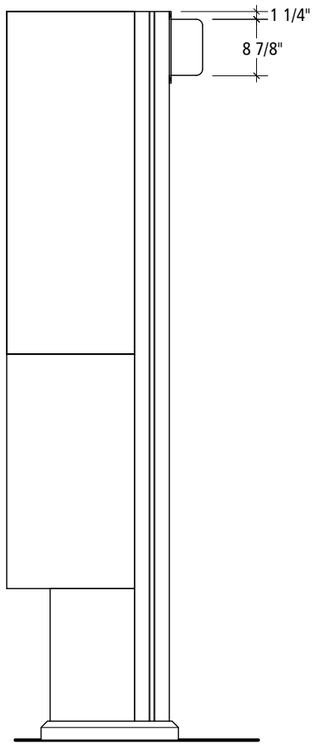
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



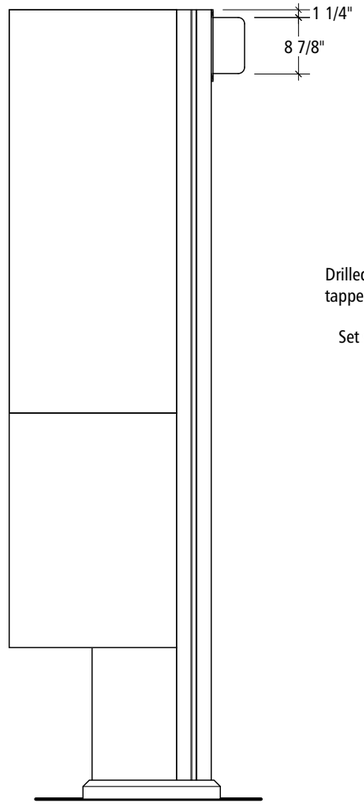
1 Elevation at Sign Type B.1
Scale: 3/4″=1′-0″



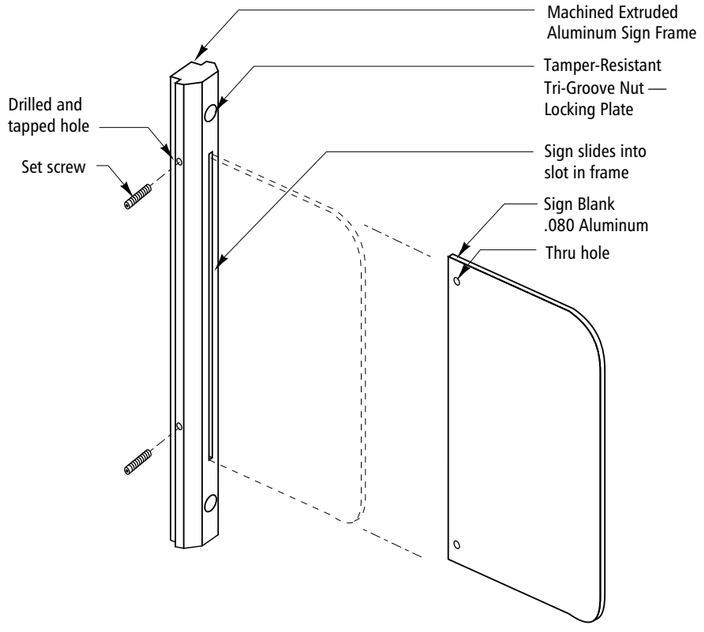
2 Elevation at Sign Type B.2
Scale: 3/4″=1′-0″



3 Elevation at Sign Type C.1
Scale: 3/4″=1′-0″



4 Elevation at Sign Type C.2
Scale: 3/4″=1′-0″



5 Isometric
Scale: NTS

King County METRO

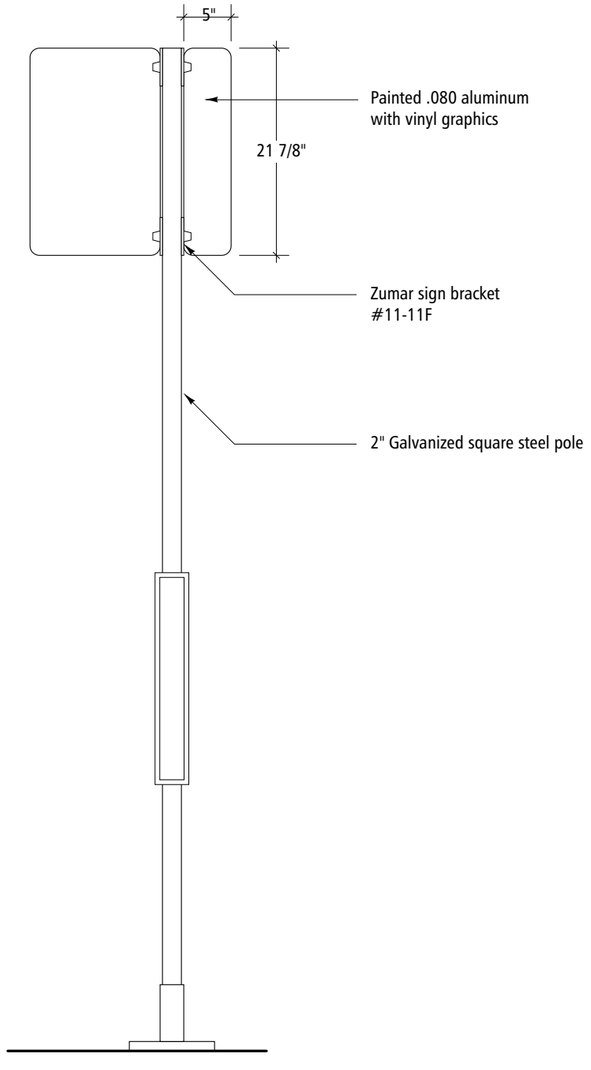
Signing Standards Manual

Volume 2
July 1, 2008

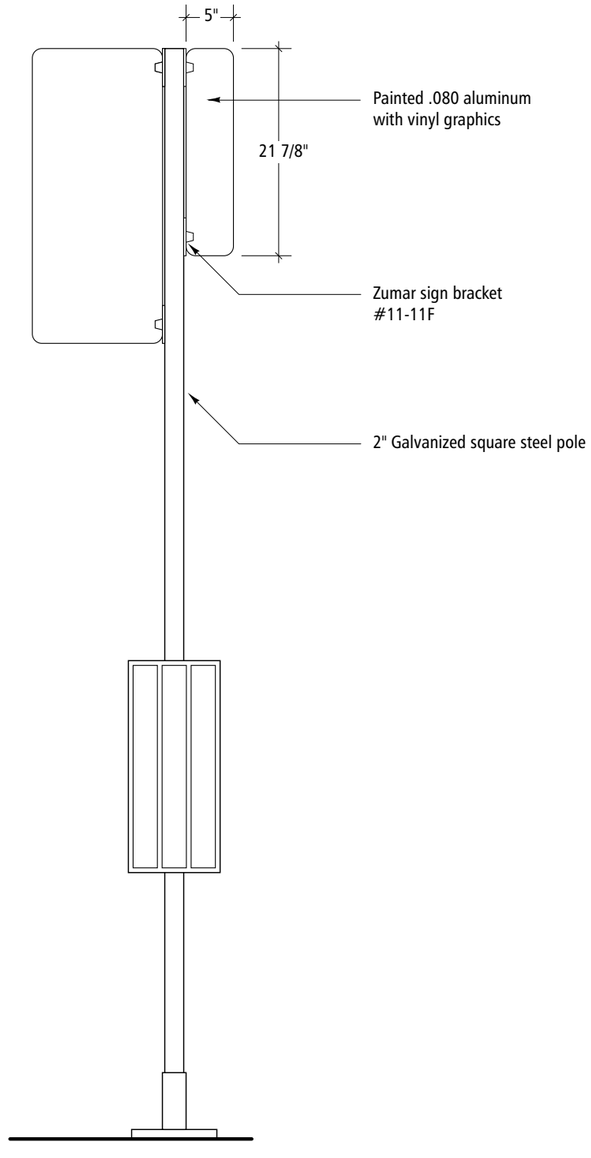
Section 9:
Installation

Sign Type J.2B/C
Sign Type J.4B/C

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

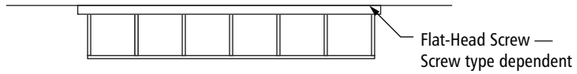


1 Elevation at Sign Type A.1
Scale: 3/4"=1'-0"

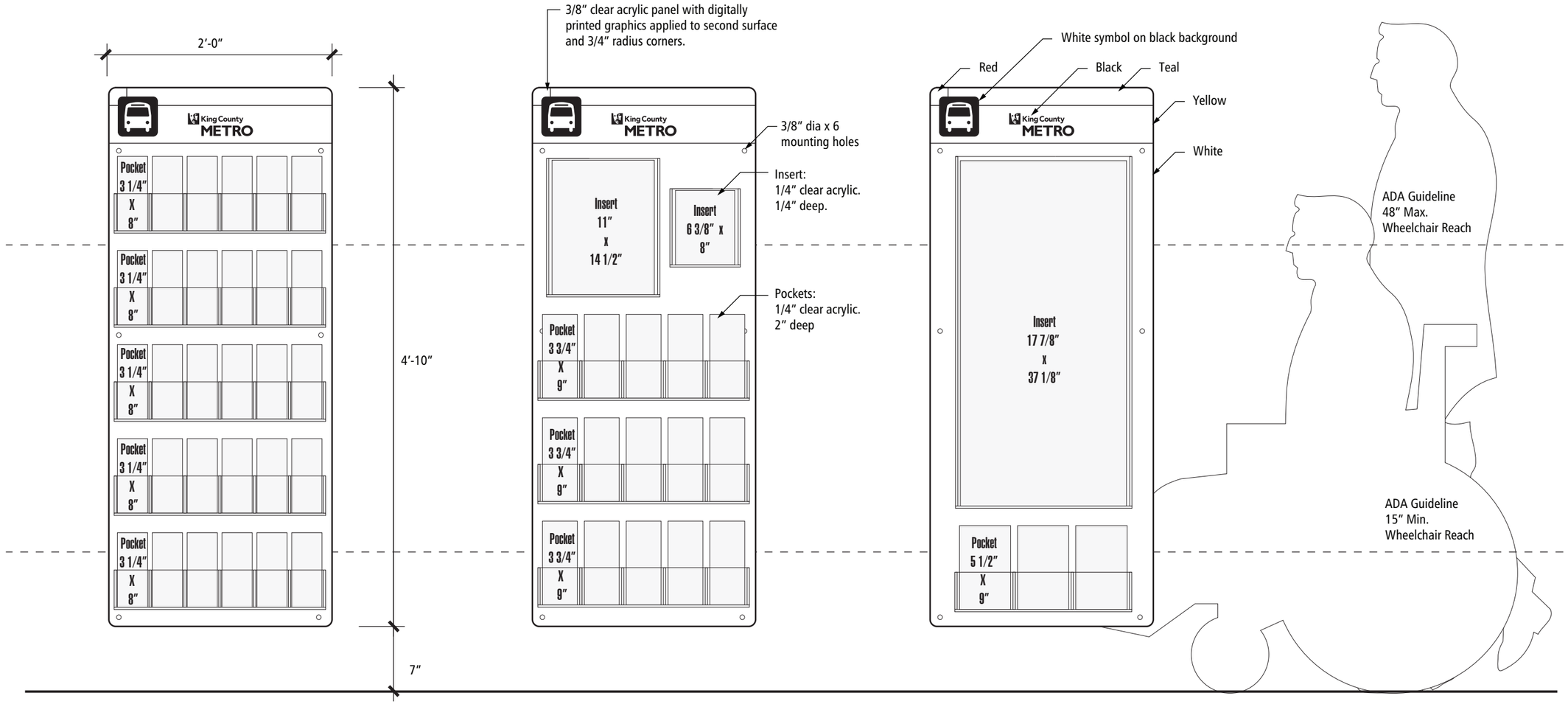


2 Elevation Sign Type A.2
Scale: 3/4"=1'-0"

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



1 Plan - Sign Type N.1
Scale: 1″=1′-0″



Sign Type N.1
Literature holder
wall mounted

Displays:
3″ x 7″ pieces, quantity: 36

2 Elevation - Sign Type N.1
Scale: 1″=1′-0″

Sign Type N.2
Literature holder
wall mounted

Displays:
3 3/4″ x 9″ pieces, quantity: 15
11″ x 14 1/2″ poster, quantity: 1
6 3/8″ x 8″ poster, quantity: 1

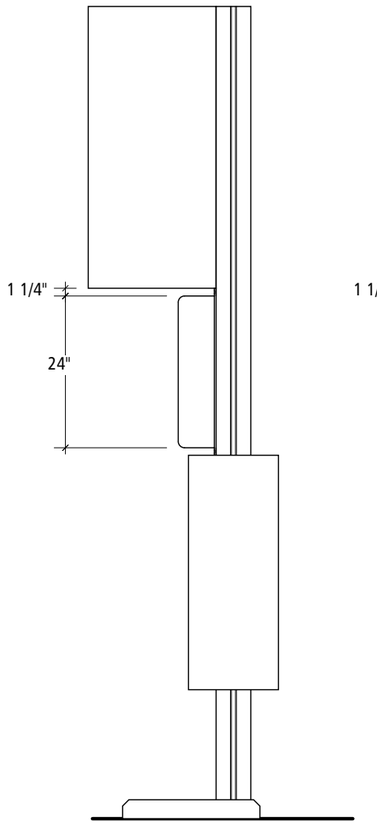
3 Elevation - Sign Type N.2
Scale: 1″=1′-0″

Sign Type N.3
Literature holder
wall mounted

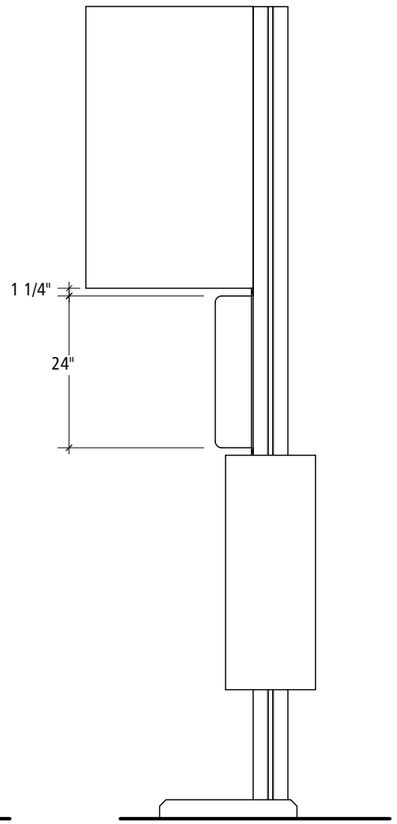
Displays:
5 1/2″ x 9″ pieces, quantity: 3
17 7/8″ x 37 1/8″ poster, quantity: 1

4 Elevation - Sign Type N.3
Scale: 1″=1′-0″

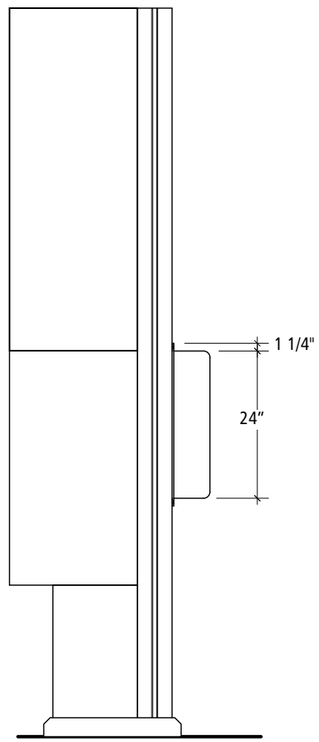
Designers:
Mayer/Reed, Jon Bentz Design, Scott AG



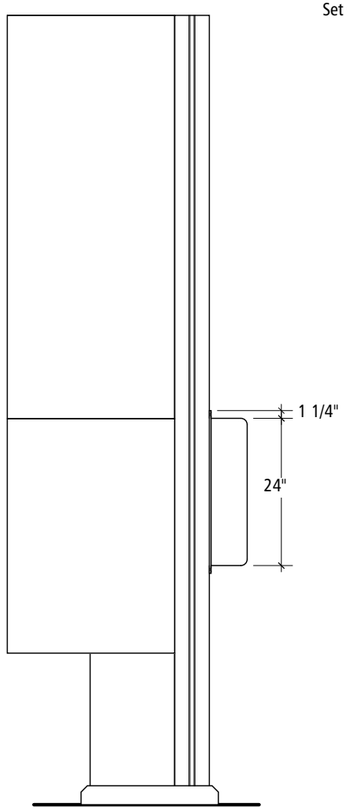
1 Elevation at Sign Type B.1
Scale: 1/2″=1′-0″



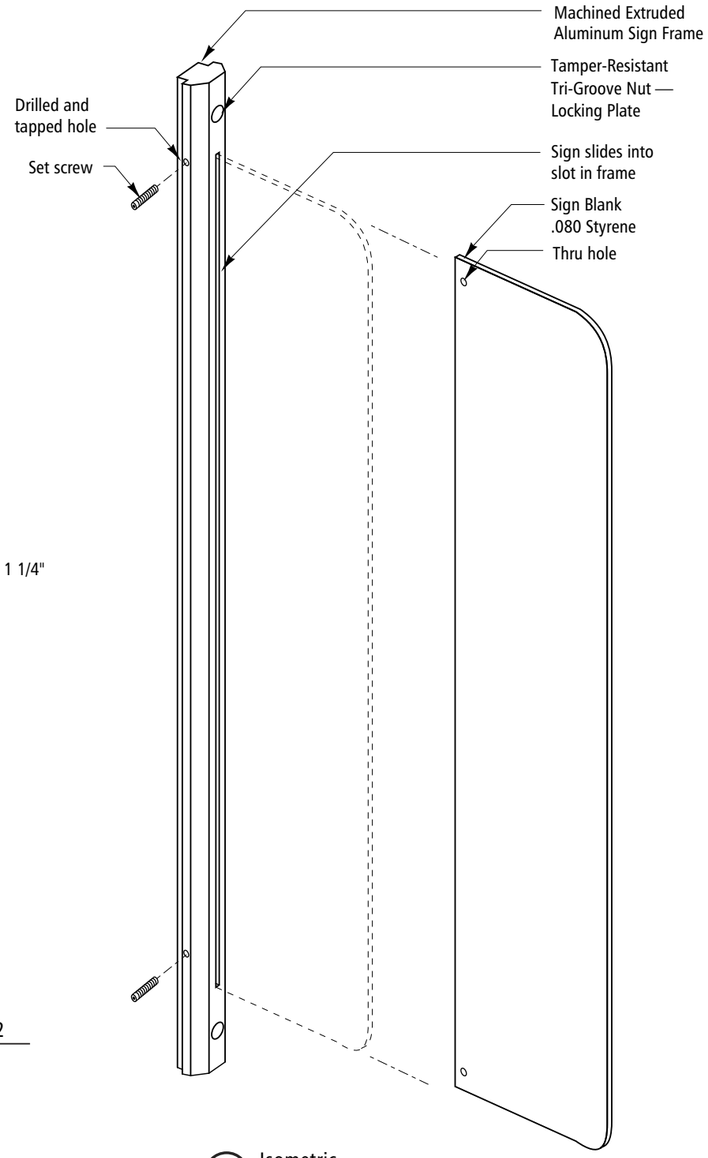
2 Elevation at Sign Type B.2
Scale: 1/2″=1′-0″



3 Elevation at Sign Type C.1
Scale: 1/2″=1′-0″



4 Elevation at Sign Type C.2
Scale: 1/2″=1′-0″



5 Isometric
Scale: NTS

Designers:
Mayer/Reed, Jon Bentz Design, Scott AG

SECTION 10 : TABLE OF CONTENTS

Designers: Mayer/Reed & Jon Bentz Design

SECTION 10 14 00

SIGNS & IDENTIFYING DEVICES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes the fabrication and installation of custom signage for King County Metro Transit Facilities.

B. Design Requirements: Provide signage that complies with the Americans With Disabilities Act (ADA) Accessibility Guidelines.

1.2 SUBMITTALS

A. Submittals shall be made in according with the requirements of section (00 00 00 insert Metro section number and title), except as noted herein.

B. Product Data:

1. Submit manufacturer's product specifications, anchor details and installation instructions for products used in sign fabrication, including paint products, lighting and electrical devices.
2. Submit qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects identifying project name, address, designer and owner.
3. Coating Systems: Include finish manufacturer’s technical information such as basic materials analysis and installation instructions. List each material and cross-reference to the specific coating, finish system and application. Identify by manufacturer’s catalog number and general classification.

C. Shop Drawings:

1. Submit complete shop drawings for fabrication and installation of signs and related work including plans, elevations and details of components and attachments to other work. Indicate materials and profiles of each member, fitting, joinery, finishes, fasteners, anchorages and accessory items.
2. For structural elements include details of cuts, connections, camber, holes and other pertinent data. Indicate welds by standard AWS symbols and show size, length and type of each weld.
3. Provide setting drawings, templates and directions for the installation of anchor bolts and other anchorages to be installed in work described in other sections.

D. Typefaces: Submit photocopy of full typographic alphabets for each typeface as indicated on the drawing.

E. Artwork: Submit full size paper proofs for special graphics including arrows, symbols and logos.

F. Materials & Finishes: Submit samples of each sign component material showing finishes, colors and surface textures. Materials & finish samples must be approved before completed product samples are fabricated.

G. Sign Layouts: Submit layout to architectural scale for each sign scheduled. In addition submit full size representative sign layouts for each sign type.

H. Completed Product Samples: Upon approval of all material & finish samples, submit full-size sample units of completed product for the following sign types. Samples shall be retained by the Metro unless noted otherwise.

1. Sign Type A.1: Completed sign assembly. Approved product may be installed.
2. Sign Type C.1: Completed sign assembly. Approved product may be installed.
3. Sign Type J.3: Completed sign assembly. Approved product may be installed.

I. Maintenance Data: Include cleaning recommendations. Provide information on methods and products for field paint repair and graffiti removal.

J. Overstock: Provide overstock of sign components per the following list. Deliver to Metro: (Insert Metro list with quantities).

K. Custom Aluminum Extrusion Dies: Upon completion of project submit extrusion dies to Metro.

L. Custom cast aluminum molds: Upon completion of project submit custom molds to Metro.

1.3 CODES, ORDINANCES AND REGULATIONS

A. The completed installation shall conform to all applicable Federal, State and local codes, ordinances and regulations.

B. Obtain all necessary permits and inspections required by the governing authorities having jurisdiction over this work. Include associated fees in initial proposal.

C. Furnish to the Metro a certificate of approval from the inspection authority at the completion of the work prior to the application for final payment.

D. Where specified materials or methods exceed minimum standards allowed by applicable codes, the more stringent requirement shall apply.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: For each sign form and graphic image process indicated furnish products from manufacturers regularly engaged in work of this magnitude and scope for minimum of five years.

B. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with the American Welding Society (AWS) "Standard Qualification Procedure".

C. Uniformity of Manufacturers: For each sign form and graphic image process indicated furnish products of a single manufacturer.

D. Fabrication Observation: Notify Metro 15 days prior to 90 percent completion of the shop fabrication, so that the work may be observed prior to delivery to the job site.

E. Project Manager: Assign project manager and submit their qualifications and experience for approval by Metro.

1.5 PERFORMANCE REQUIREMENTS

A. Expansion & Contraction: Design, fabricate and install component parts to provide for expansion and contraction of the material over a temperature range of 100 degrees F. (83.3 degrees C.), without buckling, sealant joint failure, glass breakage, undue stress on members and anchors, or other detrimental effects.

B. Fabrication Tolerances: Sign panels, cabinets and cladding shall show no visual distortion when viewed in installed position.

C. Panel Alignment at Butt Joints: Sign components shall align parallel and flat without visible variation when viewed from the normal viewing distance.

D. Installation Alignment: Signs will be reviewed by Metro for acceptance. Criteria will include plumbness, trueness, alignments and relationships with adjacent work.

1.6 PROJECT CONDITIONS

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to insure proper fitting of work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials: Deliver work to project site when adjacent finishes are complete and ready for immediate installation. For product delivered to Metro provide protective wrapping for each piece.

B. Handling Materials and Equipment: Handle finished product in careful manner in order not to damage or mar surfaces of finished product or adjacent finished surfaces.

1.8 METRO PROVIDED ARTWORK

A. Production ready artwork shall be provided as vector (outline) files saved in either EPS or Illustrator format. All fonts (text) shall be converted to curves or outline. Raster file types such as TIFF, bitmap or JPG are not acceptable.

B. Metro shall provide digital artwork and message layouts for all signs.

C. Metro shall furnish and install schedules and maps at transit information display cabinets after product installation and acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Other manufacturer's products of equal or greater quality than those specified in this section may be used. See Section (Insert Metro section number and title) for further information concerning equivalent materials, products, or services.

B. Sign Types B.1, B.2, C.1, C.2: APCO Accord 15 Sign Band. APCO Northwest, 4493 S 134th PL, Seattle, WA 98168, T: 206.835.6830, Sally Young

2.2 METALS

A. Steel: Provide steel in form indicated complying with the following American Society for Testing Materials (ASTM) requirements:

1. Tube: ASTM A 500, Grade B.
2. Shapes and Plates: ASTM A 36.
3. Sheet: ASTM A 240, Type 304.

B. Stainless Steel: Provide austenitic stainless steel in form indicated complying with the following American Society for Testing Materials (ASTM) requirements:

1. Sheet: ASTM A240, Type 304.

C. Aluminum: Provide aluminum in the form indicated complying with the following American Society for Testing Materials (ASTM) requirements:

1. Sheets: ASTM B 209, 5052-H32.
2. Extruded Bar and Shapes: ASTM B221, Alloy 6063-T6.
3. Cast: (TBD)

2.3 MISCELLANEOUS PRODUCTS AND MATERIALS

A. Fasteners: Of same basic metal and alloy as fastened metal, unless otherwise indicated. Do not use metals which are corrosive or otherwise incompatible with metals joined.

1. Fastening devices between dissimilar materials shall be 300 Series non-magnetic stainless steel bolts.
2. Material: Galvanically compatible with adjacent materials.
3. Finish: Where exposed to view match adjacent material finish.
4. Provide concealed fasteners for interconnection of metal work components and for their attachment to other work except where exposed fasteners are indicated on the drawings.

B. Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of metal to be welded, complying with applicable AWS specifications, and as required for color match, strength and compatibility in the fabricated items.

C. Glazing: 3/16" clear polycarbonate. Shieffied Makrolon GP, or equal

D. Galvanizing:

1. Provide a zinc coating for steel fabrications, complying with the referenced standards in Article 1.02.
2. Where subject to human contact, remove projections after galvanizing as required for smooth surface. Where zinc coating is reduced below average thickness required by applicable standard referenced above, apply galvanizing repair paint as specified.
3. Preparation for Shop Finishing: After galvanizing, thoroughly clean ornamental metalwork of grease, dirt, oil, flux and other foreign matter, and treat with metallic phosphate process.

E. Custom Aluminum Extrusions:

1. Provide custom aluminum extrusions as indicated on the drawings. Insure compatibility and match-up with other sign components.
2. Provide engineering design for each extrusion for performance, strength and connections.
3. Finish: As indicated on drawings.
4. At completion of project Metro shall retain extrusion dies

F. Anchors and Inserts: Provide anchors of type, size, and material required for type of loading and installation condition shown, as recommended by manufacturer, unless otherwise indicated. Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior locations and elsewhere as required for corrosion resistance. Use toothed steel or expansion bolt devices for drilled-in-place anchors.

G. Non-Shrink, Non-Metallic Grout: Pre-mixed, factory-packaged, non-staining, non-corrosive, non-gaseous, gypsum-free grout complying with CE CRD-C621. Provide grout specifically recommended by manufacturer for interior and exterior applications as indicated on Drawings.

H. Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with SSPC-Paint-20.

I. Aluminum Castings:

1. Make castings true to pattern and dimension and free from defects that would affect the service value and exterior appearance.
2. Ensure castings are boldly filleted at angles and the arises are sharp and true.
3. Before castings are removed from foundry, ensure they are cleaned and the parting lines, gates and risers are ground flush.
4. Finish: Rough sand, submit sample.

2.4 GRAPHIC COMPONENTS AND PROCESSES

A. General:

1. All graphics, including text, symbols and arrows shall be executed in such a manner that all edges and corners are true and clean.
2. Type Sizes: As indicated on drawings for particular units.
3. Typefaces: All work to precisely replicate the typefaces as indicated on drawings.
4. Typographic Spacing: Match letter, word and line spacing as indicated on drawings for all text configurations.
5. Symbols and Arrows: Match artwork as indicated on the drawings.

B. Pressure Sensitive Vinyl Graphics:

1. Provide pressure sensitive vinyl messages installed at finished surfaces in the sizes, mounting heights, letter spacing and alignment indicated on drawings.
2. Sign messages shall be provided pre-spaced in type sizes, colors and typeface as shown on the drawings and specified herein. All lettering shall be executed in such a manner that all edges and corners of letter forms are true, clean, photographically precise and accurately reproduce the typeface. Messages shall be smooth and free of air bubbles, open cuts, bulging and foreign matter between message and application surface.
3. Material: 3M high performance vinyl sheeting; or equal, matte finish.
4. Color: As indicated on drawings.

C. Digital Printing:

1. Film: 3M Scotchlite removable reflective graphic film with comply adhesive IJ680CR-10
2. Ink: Option 1 – 3M piezo inkjet series 2700 UV. Ink Option 2 – 3M piezo inkjet series 1500v2.
3. Overlaminate: 3M Scotchcal matte overlaminate 3642GPS.
4. Warranty: 7 years, 3M MCS warranty for vertical exposure.
5. 3M Sales Contact: Cindy Vogel T: 800.947.5722, E: cavogel@mmm.com

2.5 METAL FABRICATION

A. General:

1. Use materials of size and thickness indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
2. For exposed work fabricate true to line and level with accurate angles and surfaces and straight sharp edges. Exposed edges shall be square unless otherwise shown. Ease corners and edges where exposed to public touch. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
3. Provide metal work composed of metals of the forms and types which comply with requirements of referenced standards and which are free from surface blemishes where exposed to view in the finished unit. Exposed-to-view surfaces exhibiting pitting, seam marks, roller marks, "oil canning", stains, discolorations or other imperfections on finished units will not be accepted.
4. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, socket flat-head screws or bolts.
5. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
6. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Welded Construction:

1. Select type of weld for best appearance. Use concealed and plug welds wherever possible.
2. Comply with American Welding Standards (AWS) Code for procedures, appearance and quality of welds, and methods used in correcting welding work. Select weld sizes, sequence and equipment to limit distortions to allowable tolerances. Surface "bleed" of back side welding on exposed surfaces will not be accepted.
3. Assemble and weld structural system by methods which will produce true alignment of axes without warp. Grind butt welds flush; dress all exposed welds, feather edges onto base material and polish as required for smooth painted surfaces.
4. Weld corners and seams continuously, complying with AWS recommendations. All exposed welds shall be clean, consistent and uniform in appearance. Grind and finish exposed welds to match adjacent contours and finish. Remove loose rust, mill scale, and spatter, slag or flux deposits.

D. Miscellaneous Trim and Hardware:

1. Provide shapes and sizes as required for profiles shown. Except as otherwise noted, fabricate units from structural steel shapes, plates and bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other work.
2. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for supporting of signage.
3. Fabricate items to sizes, shapes and dimensions required.

E. Holes for Other Work:

1. Provide holes required for securing other work to structural system, and for the passage of other work through steel members, as shown on the final shop drawings.
2. Provide threaded nuts welded to framing, and other specialty items as shown to receive other work.
3. Drill holes 1/16" oversize for field alignment and fitting.
4. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning.

F. Shop Assembly:

1. Fabricate units to configurations indicated on reviewed shop drawings.
2. Provide required text and artwork as indicated on reviewed shop drawings.
3. Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

G. Surface Preparation: After inspection and before finishing, clean metal work to be painted. Clean metal by "wheel abrader" process or other method to achieve results defined by Steel Structures Painting Council (SSPC) for "SP-6 Commercial Blast Cleaning".

H. Preparation for Shipping and Handling: Provide strippable protective coating or wrapping.

2.6 METAL FINISHES

A. General:

1. Complete cutting, fitting, forming, drilling and grinding of metal work prior to cleaning, finishing, surface treatment and application of finishes.
2. Comply with National Association of Architectural Metal Manufacturers (NAAMM) "Metal Finishes Manual" for finish designations and application recommendations to match sheet finish specified above, except where more stringent requirements are indicated.
3. Finish all joints, bends, abrasions, and other surface blemishes to match the sheet finish. Finish free of tool or construction marks, or dents.
4. Protect mechanical finishes on exposed surfaces from damage by application of removable temporary protective covering prior to shipment.

B. Stainless Steel:

1. Finish designations prefixed by AISI conform with the system established by the American Iron and Steel Institute for designating finishes for stainless steel sheet.
2. Finish: Vertical or horizontal grain direction as indicated on drawings, AISI No. 4 finish, vertical grain.

C. Anodized Aluminum:

1. Finishing Before Anodizing: Mill finish.
2. Clear Anodized (natural) Finish: AA M21 C22A31, minimum 0.4 mil clear anodized for exterior application.
3. Black Anodized Finish: Minimum 0.4 mil anodized for exterior application.

2.7 COATINGS FOR METAL

A. Acceptable Manufacturers and Products: Matthews Acrylic Polyurethane (MAP), or equal.

B. Recommended System:

1. Aluminum: Matthews Acrylic Polyurethane (MAP), Low VOC or conventional product as required. Primers, catalysts and reducers are to be per manufacturer's recommendations. Match colors and gloss as indicated.
2. Steel: Matthews Acrylic Polyurethane (MAP), Low VOC or conventional product as required. Primers, catalysts and reducers are to be per manufacturers' recommendations. Match colors and gloss as indicated.
3. Clearcoat: Provide protective clearcoat over all painted surfaces. Use Matthews Acrylic Polyurethane (MAP), satin finish.

C. Field Repair: Provide system recommended by manufacturer for field repair by applicators employed by Metro.

D. Application:

1. Substrates to be cleaned and surface prepared as recommended by paint manufacturer.
2. The number of coats and paint film thickness required is the same regardless of the application method. Do not apply succeeding coats until previous coat has flashed off as

recommended by coating manufacturer. Sand between coat applications where required to produce an even, smooth surface in accordance with coating manufacturer's directions.

3. Apply additional coats when undercoats or other conditions show through final coat until the cured film is of uniform finish, color and appearance.
4. Minimum Coating Thickness: Dry film thickness and application procedures to be in strict accordance with manufacturer's recommendations. Apply each material at not thinner than manufacturer's recommended spreading rate, as listed above. Provide a total dry film thickness of entire coating system as recommended by manufacturer, unless otherwise indicated.
5. Apply an even film, free of cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections.
6. Completed Work: Match approved samples for color, gloss, texture and coverage. Remove, refinish, or recoat work not in compliance with specified requirements.

E. Color Schedule: Match colors as indicated on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that mounting surfaces to receive signage are properly prepared. Do not start work until conditions are satisfactory.

3.2 PREPARATION

A. Coordinate and furnish anchorages and setting drawings, diagrams, templates, instructions and directions for installation of items having integral anchors which are to be installed by others. Coordinate delivery of such items to construction site.

B. Protect mounting surfaces and adjacent areas against damage and discoloration caused by work in this section.

3.3 INSTALLATION

A. General: Locate sign units and accessories where shown or scheduled, using mounting methods of the type described and in compliance with the manufacturers instructions. Install sign units level, plumb and at the height indicated, with sign surfaces free from distortion or other defects in appearance. Notify Metro of installation conflicts.

3.4 PROTECTION

A. Protect finishes from damage during construction period, field handling and installation by use of temporary protective coverings. Protect adjacent surfaces from damage during field fabrication and installation. Remove protective covering at time of substantial completion.

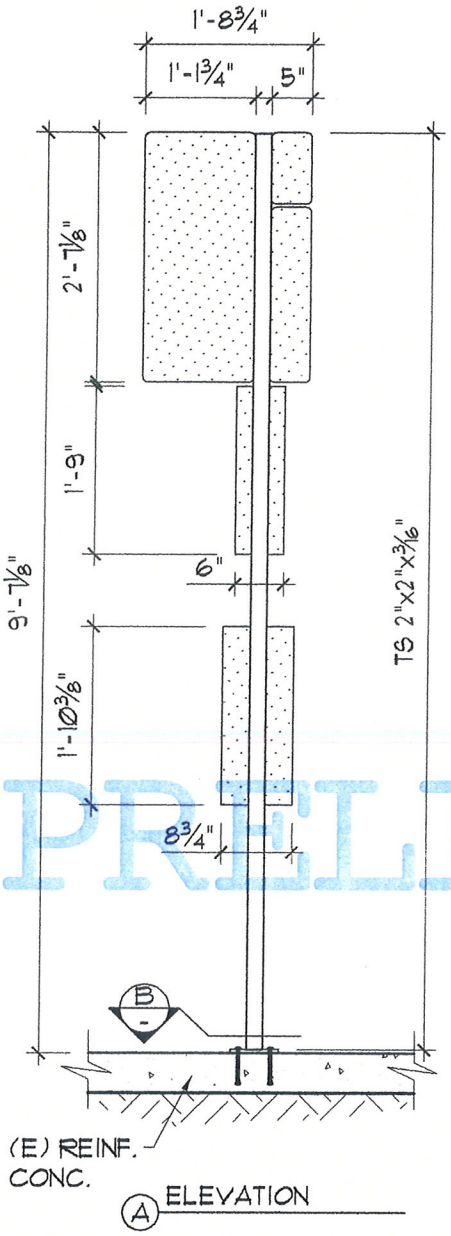
B. Restore finishes damaged during installation and construction period so that no evidence remains of corrective work. Touch up any exposed fasteners and connecting hardware to match color and finish of surrounding surface. Touch up damaged surfaces carefully, using airbrush technique where necessary. Return items which cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units as required.

3.5 CLEANING

A. Clean all exposed surfaces just prior to date of substantial completion in accord with manufacturer's written cleaning instructions. Protect units from damage until acceptance.

PROJECT: KING COUNTY METRO, KING COUNTY, WA
PROJ. NO.: 534-77B.1 DESIGNER: VH
CLIENT: SCOTT ARCHITECTURAL GRAPHICS

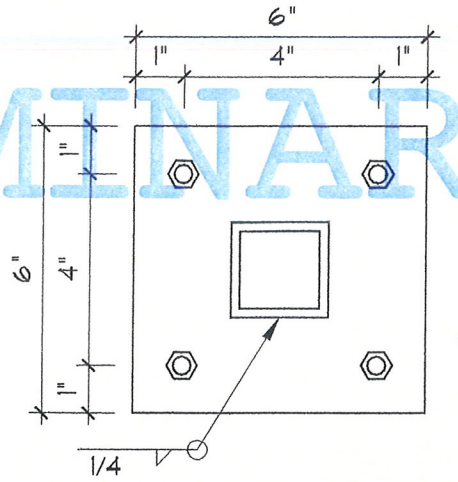
DATE: 04-07-08



(A) ELEVATION

GENERAL NOTES FOR POLES AND FOOTING:

1. CONCRETE f'c=2500 PSI., MIN. SPECIAL INSPECTION NOT REQUIRED.
2. TUBE STEEL ASTM A500 GRADE B.
3. ROLLED STEEL ASTM A36.
4. SIGN CABINETRY SHALL BE FABRICATED IN THE SHOP OF AN APPROVED FABRICATOR.
5. SITE IS NOT SUBJECTED TO WIND SPEED-UP EFFECT ($K_{zt} \leq 1.0$) AS DEFINED IN SECTION 6.5.7.2 OF ASCE 7-05. CONTACT ENGINEER OF RECORD IF SUCH EFFECTS ARE PRESENT.
6. HILTI KB-TZ PER ESR-1917. SPECIAL INSPECTION REQUIRED.
7. SOIL PASSIVE PRESSURE BASED ON 2006 IBC TABLE 1804.2 CLASS 4 OR BETTER. SPECIAL INSPECTION NOT REQUIRED. (IF SOFT OR SANDY SOIL, COLLAPSING OR UNSTABLE SOIL, ORGANIC MATERIALS OR GROUNDWATER ARE ENCOUNTERED, IMMEDIATELY CONTACT THE ENGINEER OF RECORD FOR ADDITIONAL FOUNDATION REQUIREMENTS.)
8. REINFORCING STEEL ASTM A615, GRADE 60.
9. PROVIDE 3" MIN. CLEAR CONCRETE COVER ON ALL STEEL EMBEDDED IN CONCRETE FOOTING.



PL ½"x6"x0'-6"
W/ (4)-½"ϕ HILTI KB-TZ
2" MIN. EMBEDMENT

(B) BASE PLATE DETAIL

REVISED
06-09-08
ALL PAGES

DESIGN CODE- IBC 2006

units; pounds, feet u.n.o.

WIND (wind governs design)

v 2.8

Basic Wind Speed: 85

Exposure C

Design Wind Pressures (psf)

Heights; 15 26.58

Area	Force	Arm	Moment
0.4	11	1.2	12
1.4	36	3.3	118
0.1	3	4.6	16
1.0	27	6.0	158
0.0	0	7.0	1
4.5	119	8.3	987
7.4	**196**		**1292**

Column Design

Tube Steel - ASTM A500 GRADE B

Moment at base (#-ft): 1,292

Required S (in^3): 0.5

S = Moment x 12 / (1.333*24000)

H	M	S req'd.	Size (in)	lbs / ft	t (in)	S
0.0	1,292	0.5	2.0	4.3	0.188	0.7

ASCE 7-05 Wind Loads

6.5.14 F=qh*G*Cf*As * w (w= 1.3 IBC 1605.3) included in calc of F

6.5.10 qh = 0.00256*Kz*Kzt*Kd*V^2*I

Kzt= 1.0 (unless unusual landscape)

Kz= table 6-3

Kd= 0.85 for signs

V= 85

I= 1 for structural category II

Exposure C

I= 500 (constant for Lz. Table 6.2)

e= 0.2

c= 0.2

6.5.8 G=0.925 ((1+1.7*gq*Iz*Q)/(1+1.7*gv*Iz)) or 0.85

iz=c*(33/z)^(1/6)

z=max(0.6*h, zmin)

zmin= 15

gv= 3.4

gq= 3.4

Q=sqrt(1.0 / (1+0.63*(B+h)/Lz)^0.63)

Lz= l*(z/33)^e

sign elem. #	h	Kz	qh	G	s/h	B/s	Cf	pressure	F
1	2.34	0.85	13.36	0.85	0.27	0.67	1.80	26.58	11
2	4.2	0.85	13.36	0.85	0.27	0.67	1.80	26.58	36
3	4.95	0.85	13.36	0.85	0.27	0.67	1.80	26.58	3
4	6.95	0.85	13.36	0.85	0.27	0.67	1.80	26.58	27
5	6.99	0.85	13.36	0.85	0.27	0.7	1.80	26.58	0
6	9.58	0.85	13.36	0.85	0.27	0.7	1.80	26.58	119
								sum:	196

BASE PLATE

INPUT

M	W	EDGE DIST
1292	74	1

Fy	F'c
36000	2500

BOLT TENSION

T = 12*M/.875d= 12*1292/.875*5.00=
3544 LB

PLATE WIDTH, MINIMUM

B=2*(T+W)/.35*1.33*F'c*.375*d=
2*(3544+74)/.35*1.33*2500*.375*5.00=
3.32 IN. PLATE WIDTH USED = 6.00 IN.

ACTING BEARING STRESS

fb=2*(T+W)/B*.375*d=2*(3544+74)/6.00*.375*5.00=
643 PSI

PLATE CANTILEVER

m=(DEPTH-0.95*D)/2=(6.00-0.95*2.00)/2=
2.05 IN

PLATE BENDING DUE TO BOLT TENSION

M=T*(m-EDGE DIST)/B=3544*(2.05-1.00)/6.00=
620 IN LB

PLATE BENDING DUE TO BEARING

M=(T+W)*(m-.125d)/B=(3544+74)*(2.05-.125*5.00)/6.00=
859 IN LB

PLATE THICKNESS

t=(6*M/1.33*F)^.5=(6*859/1.33*27000)^.5=
0.38 IN

BOLTS

A=T/1.33Ft No.=3544/1.33*20000*2=
0.067 SQ IN

WELD

2.00 INCH TUBE
Z=BD+D^2/3=2.00*2.00+2.00^2/3=
5.33 IN^2
fv=12M/Z=12*1292/5.33=
2907 LB/IN

****

Plate 1/2" x 6.00 x 6.00
4 - 1/2" Diam. Hilti KB-TZ, 2" Min. Embed.

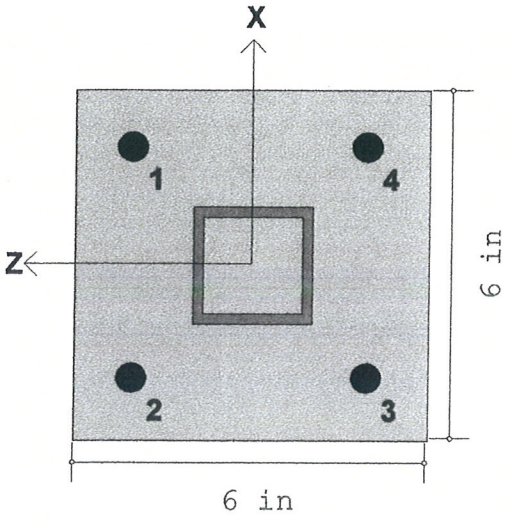
****

****

1/4" FILLET WELD
ALL AROUND

****

King County

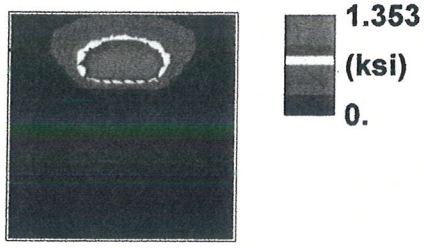


Plain Base Plate Connection

Base Plate Thickness	: .5 in
Base Plate Fy	: 36. ksi
Bearing Surface Fp	: 1.75 ksi
Anchor Bolt Diameter	: .5 in
Anchor Bolt Material	: A307
Anchor Bolt Fu	: 60. ksi
Column Shape	: TU2X2X3
Design Code	: AISC ASD 9th

Bearing Pressure

Maximum Bearing 1.353 ksi
Max/Allowable Ratio .58 ASCE EQ.3(E)
(ABIF = 1.333)



Base Plate Stress

Maximum Stress 20.71 ksi
Max/Allowable Ratio .575 ASCE EQ.3(E)
(ASIF = 1.333)

Anchor Bolts

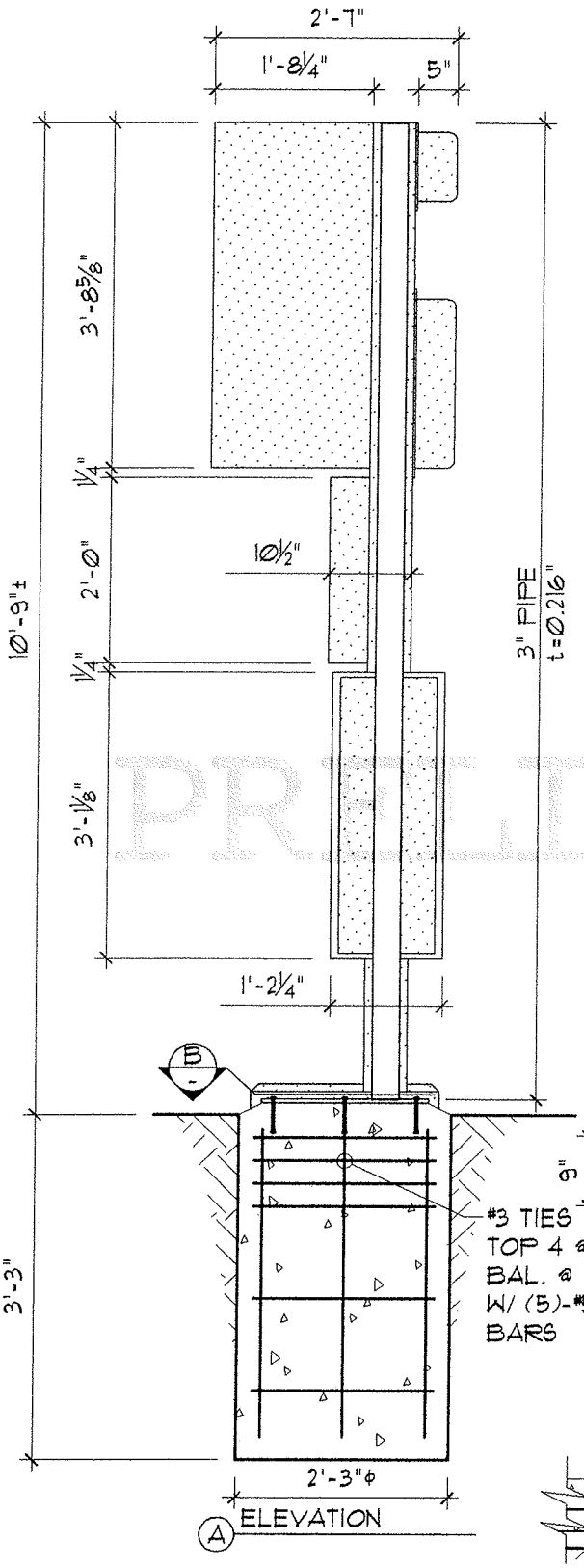
Bolt	X (in)	Z (in)	Tens.(k)	Vx (k)	Vz (k)	Ft (ksi)	Fv (ksi)	Unity	Combination
1	2.	2.	1.769	.049	0.	26.66	13.33	.338	ASCE EQ.3(E)
2	-2.	2.	1.768	-.049	0.	26.66	13.33	.338	ASCE EQ.3(E)
3	-2.	-2.	1.768	-.049	0.	26.66	13.33	.338	ASCE EQ.3(E)
4	2.	-2.	1.768	.049	0.	26.66	13.33	.338	ASCE EQ.3(E)

Loads

	P (k)	Vx (k)	Vz (k)	Mx (k-ft)	Mz (k-ft)	Reverse
DL	.74					No
WL		.196			1.292	Yes

PROJECT: KING COUNTY METRO, KING COUNTY, WA
PROJ. NO.: 534-TTC DESIGNER: VH
CLIENT: SCOTT ARCHITECTURAL GRAPHICS

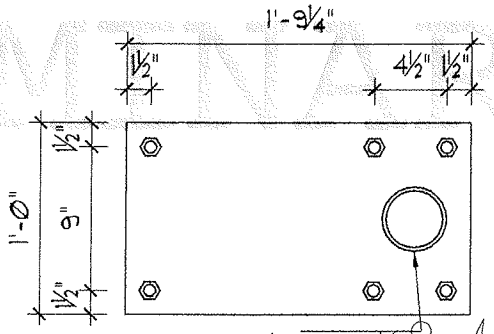
SHEET: 1 OF 5
DATE: 06-06-08



A ELEVATION

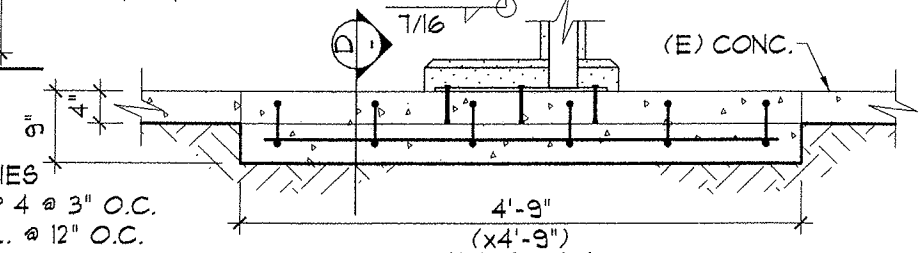
GENERAL NOTES FOR POLES AND FOOTING:

1. CONCRETE f'c=2500 PSI., MIN. SPECIAL INSPECTION NOT REQUIRED.
2. PIPE STEEL ASTM A53 GRADE B.
3. ROLLED STEEL ASTM A36.
4. SIGN CABINETRY SHALL BE FABRICATED IN THE SHOP OF AN APPROVED FABRICATOR.
5. SITE IS NOT SUBJECTED TO WIND SPEED-UP EFFECT ($K_{zt} \leq 1.0$) AS DEFINED IN SECTION 6.5.7.2 OF ASCE 7-05. CONTACT ENGINEER OF RECORD IF SUCH EFFECTS ARE PRESENT.
6. HILTI KB-TZ PER ESR-1917. SPECIAL INSPECTION REQUIRED.
7. SOIL PASSIVE PRESSURE BASED ON 2006 IBC TABLE 1804.2 CLASS 4 OR BETTER. SPECIAL INSPECTION NOT REQUIRED. (IF SOFT OR SANDY SOIL, COLLAPSING OR UNSTABLE SOIL, ORGANIC MATERIALS OR GROUNDWATER ARE ENCOUNTERED, IMMEDIATELY CONTACT THE ENGINEER OF RECORD FOR ADDITIONAL FOUNDATION REQUIREMENTS.)
8. REINFORCING STEEL ASTM A615, GRADE 60.
9. PROVIDE 3" MIN. CLEAR CONCRETE COVER ON ALL STEEL EMBEDDED IN CONCRETE FOOTING.
10. IF THE ANCHOR BOLT OPTION IS USED THE GENERAL CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS ARE IN GOOD CONDITION AT THE LOCATION (AND SURROUNDING AREA) OF THE ANCHOR.

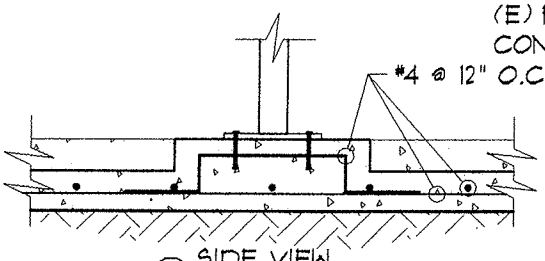


PL ⅞"x21½"x1'-0"
W/ (6)-½"ϕ HILTI KB-TZ
STAINLESS STEEL
2" MIN. EMBEDMENT

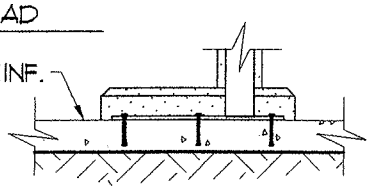
B BASE PLATE DETAIL



C ALT. SPREAD FOOTING



D SIDE VIEW



E ALT. FOOTING ATTACHMENT

PROJECT: KING COUNTY METRO, KING COUNTY, WA
PROJ. NO.: 534-TTC DESIGNER: VH
CLIENT: SCOTT ARCHITECTURAL GRAPHICS

SHEET: 2 OF 5
DATE: 06-06-08

DESIGN CODE- IBC 2006

units; pounds, feet u.n.o.

WIND (wind governs design)

v2.8

Basic Wind Speed: 85

Exposure C

Design Wind Pressures (psf)

Heights; 15 25.84

Area	Force	Arm	Moment
0.3	9	0.1	1
0.8	20	1.0	20
3.7	95	3.2	308
0.1	1	4.8	7
1.8	45	5.9	267
9.6	248	8.8	2171
16.2	**418**		**2774**

Footing Design

(IBC Table 1804.2 & note d, & Sec. 1804.3.1)

Footing Type: round

Soil Pressure(150x2x1.33): 400 b= 2.25

S1 = S x d / 3 S1= 433

A = 2.34 x P / (S1 x b) A= 1.01

d =0.5xA (1+ (1+4.36x h/A) ^.5)= 3.25

Formula Per IBC Section 1805.7.2.1

Footing size: 2'-3'' DIA. x 3'-3'' Depth

Column Design

Pipe Steel - ASTM A53 Grade B

Moment at base (#-ft): 2,774

Required S (in^3): 1.1

S = Moment x 12 / (1.333*22000)

H	M	S req'd.	Size (in)	lbs / ft	t (in)	S
0.0	2,774	1.1	3.0	7.6	0.216	1.7

Check Anchor

Moment = 2774'#

Tension = 2774'#x12"/9" = 3699#

USE HILTI KB-TZ -- 1/2" Diam. S.S., 2" min. embed.

Tall = 1476# x 1.33 = 1963#

T/2 = 1850# OK

Check Plate

Moment = 2774#x3" = 8322'#

b = 3.0

t = 0.875

S = 0.17x3.0x0.875^2 = 0.393

fs = 8322'#/0.393 = 21,176

Fall = 36000x0.6x1.33 = 28,728

PROJECT: KING COUNTY METRO, KING COUNTY, WA
PROJ. NO.: 534-TTC DESIGNER: VH
CLIENT: SCOTT ARCHITECTURAL GRAPHICS

DATE: 06-06-08

ASCE 7-05 Wind Loads

6.5.14 F=qh*G*Cf*As * w (w= 1.3 IBC 1605.3) included in calc of F

6.5.10 qh = 0.00256*Kz*Kzt*Kd*V^2*I

Kzt= 1.0 (unless unusual landscape) I= 1 for structural category II

Kz= table 6-3 Exposure C

Kd= 0.85 for signs I= 500 (constant for Lz. Table 6.2)

V= 85 e= 0.2

6.5.8 G=0.925 ((1+1.7*gq*Iz*Q)/(1+1.7*gv*Iz)) or 0.85 c= 0.2

iz=c*(33/z)^(1/6)

z=max(0.6*h, zmin)

zmin= 15

gv= 3.4

gq= 3.4

Q=sqrt(1.0 / (1+0.63*(B+h)/Lz)^0.63)

Lz= l*(z/33)^e

sign elem. #	h	Kz	qh	G	s/h	B/s	Cf	pressure	F
1	0.25	0.85	13.36	0.85	0.35	0.69	1.75	25.84	9
2	1.7	0.85	13.36	0.85	0.35	0.69	1.75	25.84	20
3	4.794	0.85	13.36	0.85	0.35	0.69	1.75	25.84	95
4	4.898	0.85	13.36	0.85	0.35	0.69	1.75	25.84	1
5	6.898	0.85	13.36	0.85	0.35	0.7	1.75	25.84	45
6	10.617	0.85	13.36	0.85	0.35	0.7	1.75	25.84	248
								sum:	418

General Footing Analysis & Design

Description Spread Footing

General Information

Code Ref: ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Allowable Soil Bearing	2,000.0 psf	**Dimensions...**	
Short Term Increase	1.330	Width along X-X Axis	4.750 ft
Seismic Zone	4	Length along Y-Y Axis	4.750 ft
		Footing Thickness	5.00 in
Live & Short Term Combined		Col Dim. Along X-X Axis	57.00 in
f'c	2,500.0 psi	Col Dim. Along Y-Y Axis	24.00 in
Fy	60,000.0 psi	Base Pedestal Height	4.000 in
Concrete Weight	145.00 pcf		
Overburden Weight	0.00 psf	Min Steel %	0.0009
		Rebar Center To Edge Distance	3.50 in

Loads

Applied Vertical Load...

Dead Load	0.162 k	...ecc along X-X Axis	0.000 in
Live Load	k	...ecc along Y-Y Axis	0.000 in
Short Term Load	k		

Applied Moments...	Creates Rotation about Y-Y Axis (pressures @ left & right)	Creates Rotation about X-X Axis (pressures @ top & bot)
Dead Load	k-ft	k-ft
Live Load	k-ft	k-ft
Short Term	k-ft	2.770 k-ft

Applied Shears...	Creates Rotation about Y-Y Axis (pressures @ left & right)	Creates Rotation about X-X Axis (pressures @ top & bot)
Dead Load	k	k
Live Load	k	k
Short Term	k	0.420 k

Summary

4.75ft x 4.75ft Footing, 5.0in Thick, w/ Column Support 57.00 x 24.00in x 4.0in high

	DL+LL	DL+LL+ST		Actual	Allowable
Max Soil Pressure	87.9	339.5 psf	Max Mu	0.207 k-ft per ft	
Allowable	2,000.0	2,660.0 psf	Required Steel Area		0.054 in2 per ft
"X' Ecc, of Resultant	0.000 in	0.000 in			
"Y' Ecc, of Resultant	0.000 in	18.656 in	Shear Stresses....	Vu	Vn * Phi
			1-Way	13.432	85.000 psi
X-X Min. Stability Ratio	1.528	1.500 :1	2-Way	1.892	100.179 psi
Y-Y Min. Stability Ratio	No Overturning				

Footing Design

Shear Forces	ACI C-1	ACI C-2	ACI C-3	Vn * Phi
Two-Way Shear	1.89 psi	0.59 psi	0.38 psi	100.18 psi
One-Way Shears...				
Vu @ Left	0.00 psi	0.00 psi	0.00 psi	85.00 psi
Vu @ Right	0.00 psi	0.00 psi	0.00 psi	85.00 psi
Vu @ Top	2.64 psi	13.43 psi	8.63 psi	85.00 psi
Vu @ Bottom	2.64 psi	-5.87 psi	-3.78 psi	85.00 psi

Moments	ACI C-1	ACI C-2	ACI C-3	Ru / Phi	As Req'd	
Mu @ Left	0.00 k-ft	0.00 k-ft	0.00 k-ft	0.0 psi	0.00 in2	per ft
Mu @ Right	0.00 k-ft	0.00 k-ft	0.00 k-ft	0.0 psi	0.00 in2	per ft
Mu @ Top	0.04 k-ft	0.21 k-ft	0.13 k-ft	102.4 psi	0.05 in2	per ft
Mu @ Bottom	0.04 k-ft	-0.08 k-ft	-0.05 k-ft	39.5 psi	-0.05 in2	per ft

General Footing Analysis & Design

Description Spread Footing

Soil Pressure Summary

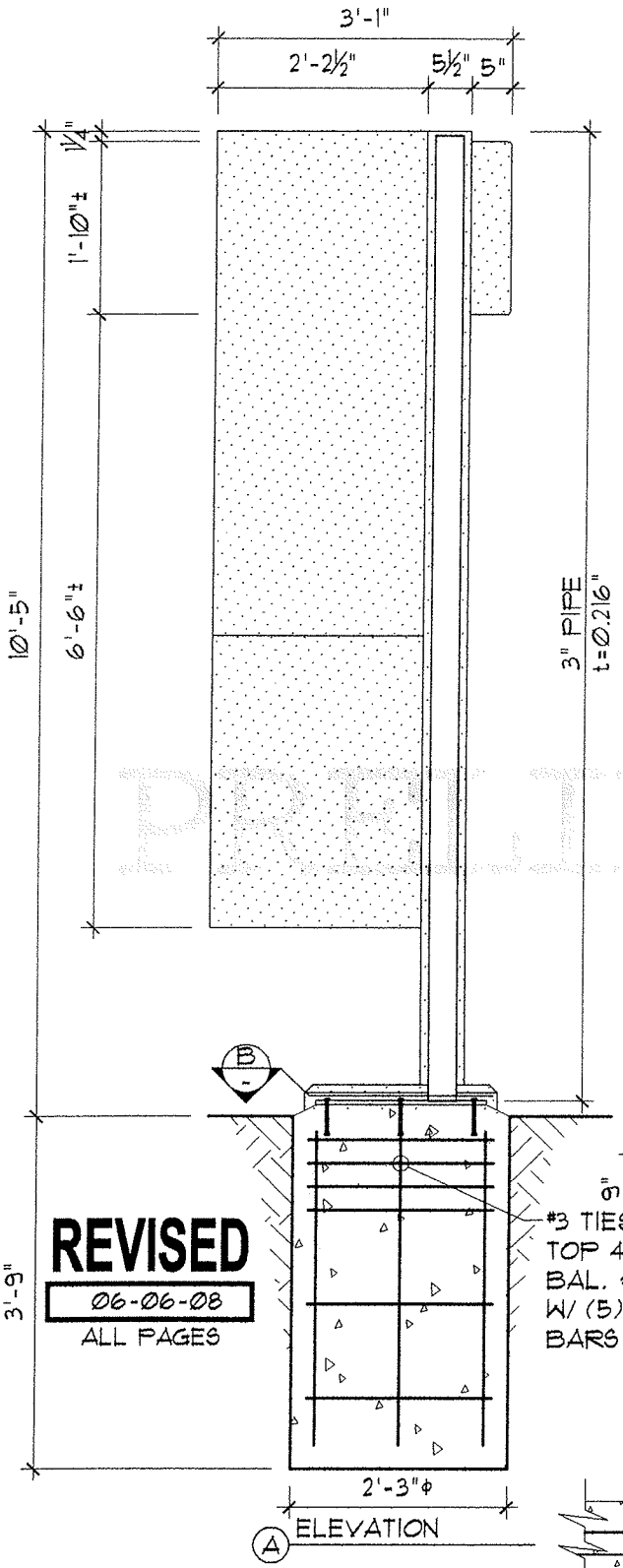
Service Load Soil Pressures	Left	Right	Top	Bottom
DL + LL	87.95	87.95	87.95	87.95 psf
DL + LL + ST	87.95	87.95	339.51	0.00 psf
Factored Load Soil Pressures				
ACI Eq. C-1	123.13	123.13	123.13	123.13 psf
ACI Eq. C-2	94.64	94.64	365.32	0.00 psf
ACI Eq. C-3	60.84	60.84	234.85	0.00 psf

ACI Factors (per ACI 318-02, applied internally to entered loads)

ACI C-1 & C-2 DL	1.400	ACI C-2 Group Factor	0.750	Add'l "1.4" Factor for Seismic	1.400
ACI C-1 & C-2 LL	1.700	ACI C-3 Dead Load Factor	0.900	Add'l "0.9" Factor for Seismic	0.900
ACI C-1 & C-2 ST	1.700	ACI C-3 Short Term Factor	1.300		
....seismic = ST * :	1.100 Used in ACI C-2 & C-3				

PROJECT: KING COUNTY METRO, KING COUNTY, WA
PROJ. NO.: 534-77A.1 DESIGNER: VH
CLIENT: SCOTT ARCHITECTURAL GRAPHICS

SHEET: 1 OF 5
DATE: 04-07-08

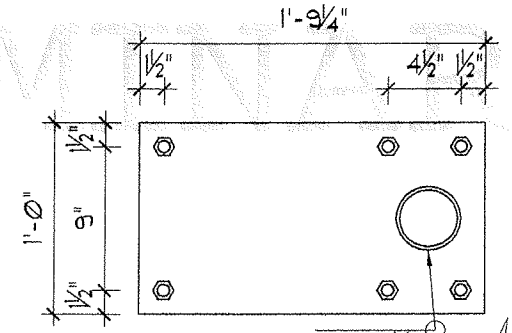


A ELEVATION

REVISED
06-06-08
ALL PAGES

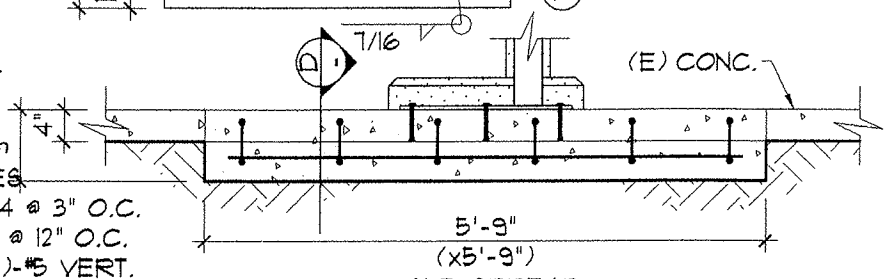
GENERAL NOTES FOR POLES AND FOOTING:

1. CONCRETE f'c=2500 PSI., MIN. SPECIAL INSPECTION NOT REQUIRED.
2. PIPE STEEL ASTM A53 GRADE B.
3. ROLLED STEEL ASTM A36.
4. SIGN CABINETRY SHALL BE FABRICATED IN THE SHOP OF AN APPROVED FABRICATOR.
5. SITE IS NOT SUBJECTED TO WIND SPEED-UP EFFECT (Kzt ≤ 1.0) AS DEFINED IN SECTION 6.5.7.2 OF ASCE 7-05. CONTACT ENGINEER OF RECORD IF SUCH EFFECTS ARE PRESENT.
6. HILTI KB-TZ PER ESR-1917. SPECIAL INSPECTION REQUIRED.
7. SOIL PASSIVE PRESSURE BASED ON 2006 IBC TABLE 1804.2 CLASS 4 OR BETTER. SPECIAL INSPECTION NOT REQUIRED. (IF SOFT OR SANDY SOIL, COLLAPSING OR UNSTABLE SOIL, ORGANIC MATERIALS OR GROUNDWATER ARE ENCOUNTERED, IMMEDIATELY CONTACT THE ENGINEER OF RECORD FOR ADDITIONAL FOUNDATION REQUIREMENTS.)
8. REINFORCING STEEL ASTM A615, GRADE 60.
9. PROVIDE 3" MIN. CLEAR CONCRETE COVER ON ALL STEEL EMBEDDED IN CONCRETE FOOTING.
10. IF THE ANCHOR BOLT OPTION IS USED THE GENERAL CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS ARE IN GOOD CONDITION AT THE LOCATION (AND SURROUNDING AREA) OF THE ANCHOR.

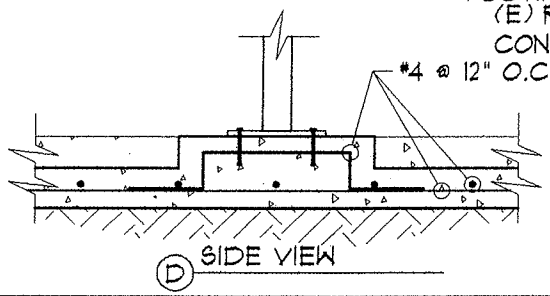


PL ¾"x2½"x1'-0"
W/ (6)-½"ϕ HILTI KB-TZ
STAINLESS STEEL
3¼" MIN. EMBEDMENT

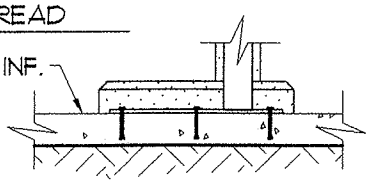
B BASE PLATE DETAIL



C ALT. SPREAD FOOTING



D SIDE VIEW



E ALT. FOOTING ATTACHMENT

DESIGN CODE- IBC 2006

units; pounds, feet u.n.o.

WIND (wind governs design)

v 2.8

Basic Wind Speed: 85

Exposure C

Design Wind Pressures (psf)

Heights; 15 25.10

Area	Force	Arm	Moment
0.4	10	0.1	1
0.8	20	1.1	23
17.6	442	5.3	2339
5.7	143	9.5	1358
24.5	**615**		**3721**

Footing Design

(IBC Table 1804.2 & note d, & Sec. 1804.3.1)

Footing Type: round

Soil Pressure(150x2x1.33): 400 b= 2.25

S1 = S x d / 3 S1= 489

A = 2.34 x P / (S1 x b) A= 1.31

d =0.5xA (1+ (1+4.36x h/A) ^.5)= 3.66

Formula Per IBC Section 1805.7.2.1

Footing size: 2'-3'' DIA. x 3'-9'' Depth

Column Design

Pipe Steel - ASTM A53 Grade B

Moment at base (#-ft): 3,721

Required S (in^3): 1.5

S = Moment x 12 / (1.333*22000)

H	M	S req'd.	Size (in)	lbs / ft	t (in)	S
0.0	3,721	1.5	3.0	7.6	0.216	1.7

Check Anchor

Moment = 3721'#

Tension = 3721'#x12"/9" = 4961#

USE HILTI KB-TZ -- 1/2" Diam. S.S., 3-1/4" min. embed.

Tall = 2312# x 1.33 = 3075#

T/2 = 2481# OK

Check Plate

Moment = 2481#x3" = 7443'#

b = 3.0

t = 0.75

S = 0.17x3.0x0.75^2 = 0.287

fs = 7443'#/0.287 = 25,934

Fall = 36000x0.6x1.33 = 28,728

PROJECT: KING COUNTY METRO, KING COUNTY, WA SHEET: 3 OF 5
PROJ. NO.: 534-77A.1 DESIGNER: VH DATE: 04-07-08
CLIENT: SCOTT ARCHITECTURAL GRAPHICS

ASCE 7-05 Wind Loads

6.5.14 F=qh*G*Cf*As * w (w= 1.3 IBC 1605.3) included in calc of F

6.5.10 qh = 0.00256*Kz*Kzt*Kd*V^2*I

Kzt= 1.0 (unless unusual landscape) I= 1 for structural category II

Kz= table 6-3 Exposure C

Kd= 0.85 for signs I= 500 (constant for Lz. Table 6.2)

V= 85 e= 0.2

6.5.8 G=0.925 ((1+1.7*gq*Iz*Q)/(1+1.7*gv*Iz)) or 0.85 c= 0.2

iz=c*(33/z)^(1/6)

z=max(0.6*h, zmin)

zmin= 15

gv= 3.4

gq= 3.4

Q=sqrt(1.0 / (1+0.63*(B+h)/Lz)^0.63)

Lz= l*(z/33)^e

sign elem. #	h	Kz	qh	G	s/h	B/s	Cf	pressure	F
1	0.25	0.85	13.36	0.85	0.63	0.41	1.70	25.10	10
2	2	0.85	13.36	0.85	0.63	0.41	1.70	25.10	20
3	8.59	0.85	13.36	0.85	0.63	0.41	1.70	25.10	442
4	10.42	0.85	13.36	0.85	0.63	0.41	1.70	25.10	143
								sum:	615

Rev: 580002
User: KW-0600544, Ver 5.8.0, 1-Dec-2003
(c)1983-2003 ENERCALC Engineering Software

General Footing Analysis & Design

Description Spread Footing

General Information

Code Ref: ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Allowable Soil Bearing	2,000.0 psf	**Dimensions...**	
Short Term Increase	1.330	Width along X-X Axis	5.750 ft
Seismic Zone	4	Length along Y-Y Axis	5.750 ft
		Footing Thickness	5.00 in
Live & Short Term Combined		Col Dim. Along X-X Axis	69.00 in
f'c	2,500.0 psi	Col Dim. Along Y-Y Axis	24.00 in
Fy	60,000.0 psi	Base Pedestal Height	4.000 in
Concrete Weight	145.00 pcf		
Overburden Weight	0.00 psf	Min Steel %	0.0009
		Rebar Center To Edge Distance	3.50 in

Loads

Applied Vertical Load...

Dead Load	0.245 k	...ecc along X-X Axis	0.000 in
Live Load	k	...ecc along Y-Y Axis	0.000 in
Short Term Load	k		

Applied Moments...	Creates Rotation about Y-Y Axis (pressures @ left & right)	Creates Rotation about X-X Axis (pressures @ top & bot)
Dead Load	k-ft	k-ft
Live Load	k-ft	k-ft
Short Term	k-ft	3.720 k-ft

Applied Shears...	Creates Rotation about Y-Y Axis (pressures @ left & right)	Creates Rotation about X-X Axis (pressures @ top & bot)
Dead Load	k	k
Live Load	k	k
Short Term	k	0.620 k

Summary

5.75ft x 5.75ft Footing, 5.0in Thick, w/ Column Support 69.00 x 24.00in x 4.0in high

	DL+LL	DL+LL+ST
Max Soil Pressure	84.6	235.2 psf
Allowable	2,000.0	2,660.0 psf
"X' Ecc, of Resultant	0.000 in	0.000 in
"Y' Ecc, of Resultant	0.000 in	17.946 in
X-X Min. Stability Ratio	1.922	1.500 :1
Y-Y Min. Stability Ratio	No Overturning	

	Actual	Allowable
Max Mu	0.251 k-ft per ft	
Required Steel Area		0.054 in2 per ft
Shear Stresses....	Vu	Vn * Phi
1-Way	12.562	85.000 psi
2-Way	2.500	98.281 psi

Footing Design

Shear Forces	ACI C-1	ACI C-2	ACI C-3	Vn * Phi
Two-Way Shear	2.50 psi	0.84 psi	0.54 psi	98.28 psi
One-Way Shears...				
Vu @ Left	0.00 psi	0.00 psi	0.00 psi	85.00 psi
Vu @ Right	0.00 psi	0.00 psi	0.00 psi	85.00 psi
Vu @ Top	3.49 psi	12.56 psi	8.08 psi	85.00 psi
Vu @ Bottom	3.49 psi	-8.19 psi	-5.26 psi	85.00 psi

Moments	ACI C-1	ACI C-2	ACI C-3	Ru / Phi	As Req'd	
Mu @ Left	0.00 k-ft	0.00 k-ft	0.00 k-ft	0.0 psi	0.00 in2	per ft
Mu @ Right	0.00 k-ft	0.00 k-ft	0.00 k-ft	0.0 psi	0.00 in2	per ft
Mu @ Top	0.06 k-ft	0.25 k-ft	0.16 k-ft	123.9 psi	0.05 in2	per ft
Mu @ Bottom	0.06 k-ft	-0.15 k-ft	-0.10 k-ft	73.3 psi	-0.05 in2	per ft

Description Spread Footing

Soil Pressure Summary

Service Load Soil Pressures	Left	Right	Top	Bottom
DL + LL	84.64	84.64	84.64	84.64 psf
DL + LL + ST	84.64	84.64	235.20	0.00 psf
Factored Load Soil Pressures				
ACI Eq. C-1	118.49	118.49	118.49	118.49 psf
ACI Eq. C-2	94.96	94.96	263.87	0.00 psf
ACI Eq. C-3	61.04	61.04	169.63	0.00 psf

ACI Factors (per ACI 318-02, applied internally to entered loads)

ACI C-1 & C-2 DL	1.400	ACI C-2 Group Factor	0.750	Add"l "1.4" Factor for Seismic	1.400
ACI C-1 & C-2 LL	1.700	ACI C-3 Dead Load Factor	0.900	Add"l "0.9" Factor for Seismic	0.900
ACI C-1 & C-2 ST	1.700	ACI C-3 Short Term Factor	1.300		
....seismic = ST * :	1.100 Used in ACI C-2 & C-3				