Design Selection:
Team “Fab Collab”

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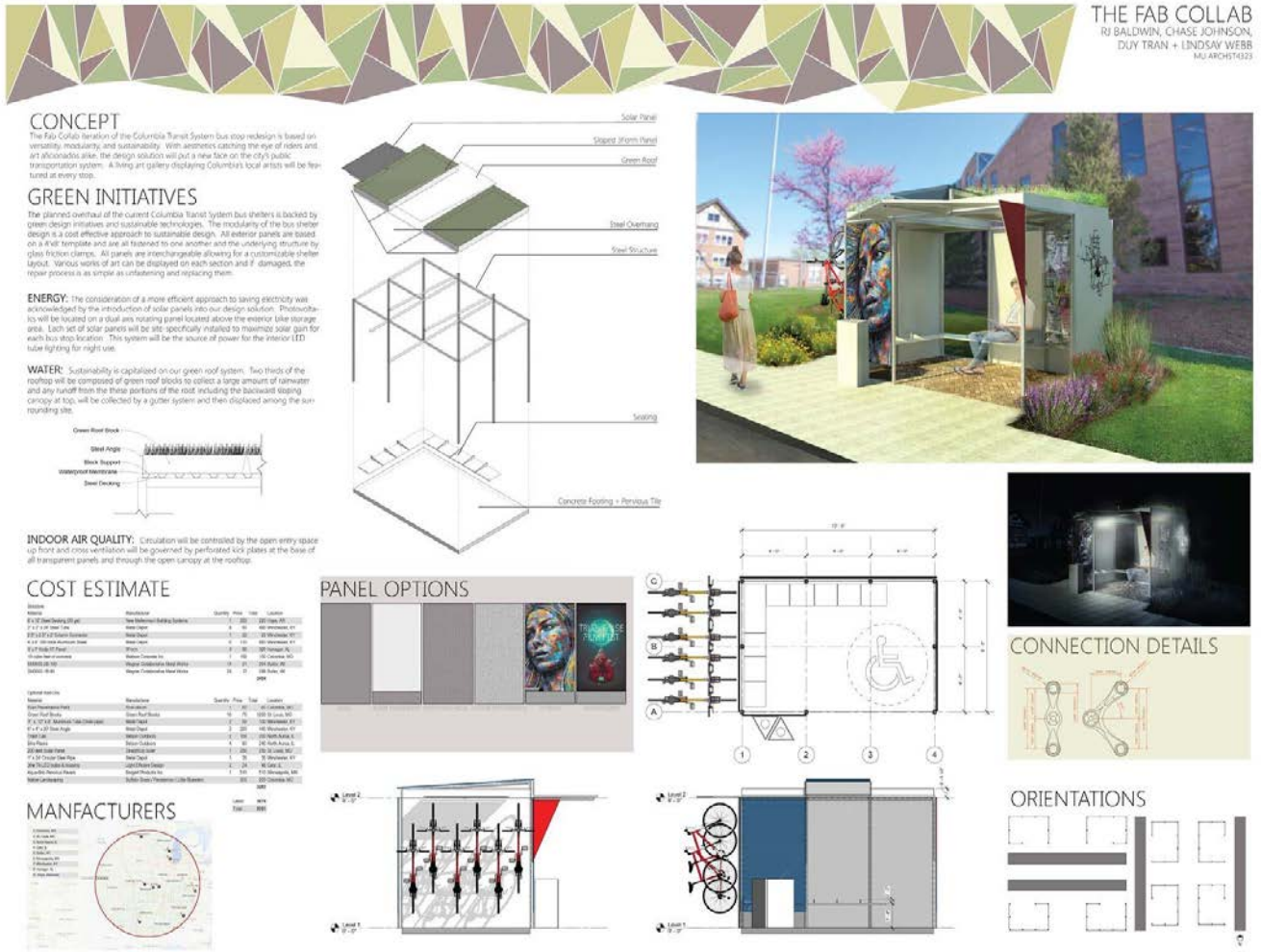

Bus Shelter Design

COMO Connect / Columbia Public Transit

Drawing Index

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

COMO Connect/ Columbia Public Transit

M. Goldschmidt, R. Baldwin, D. Tran, C. Johnson, L. Webb

Cover

Project number	MG2014-1
Date	15 Nov 2014
Drawn by	M. Goldschmidt
Checked by	M. Goldschmidt

A000

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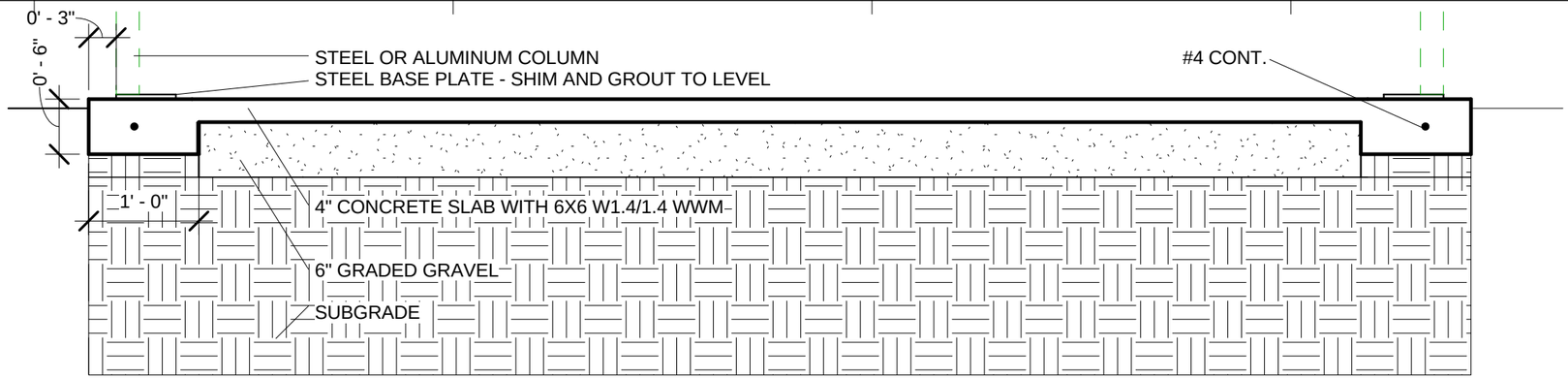
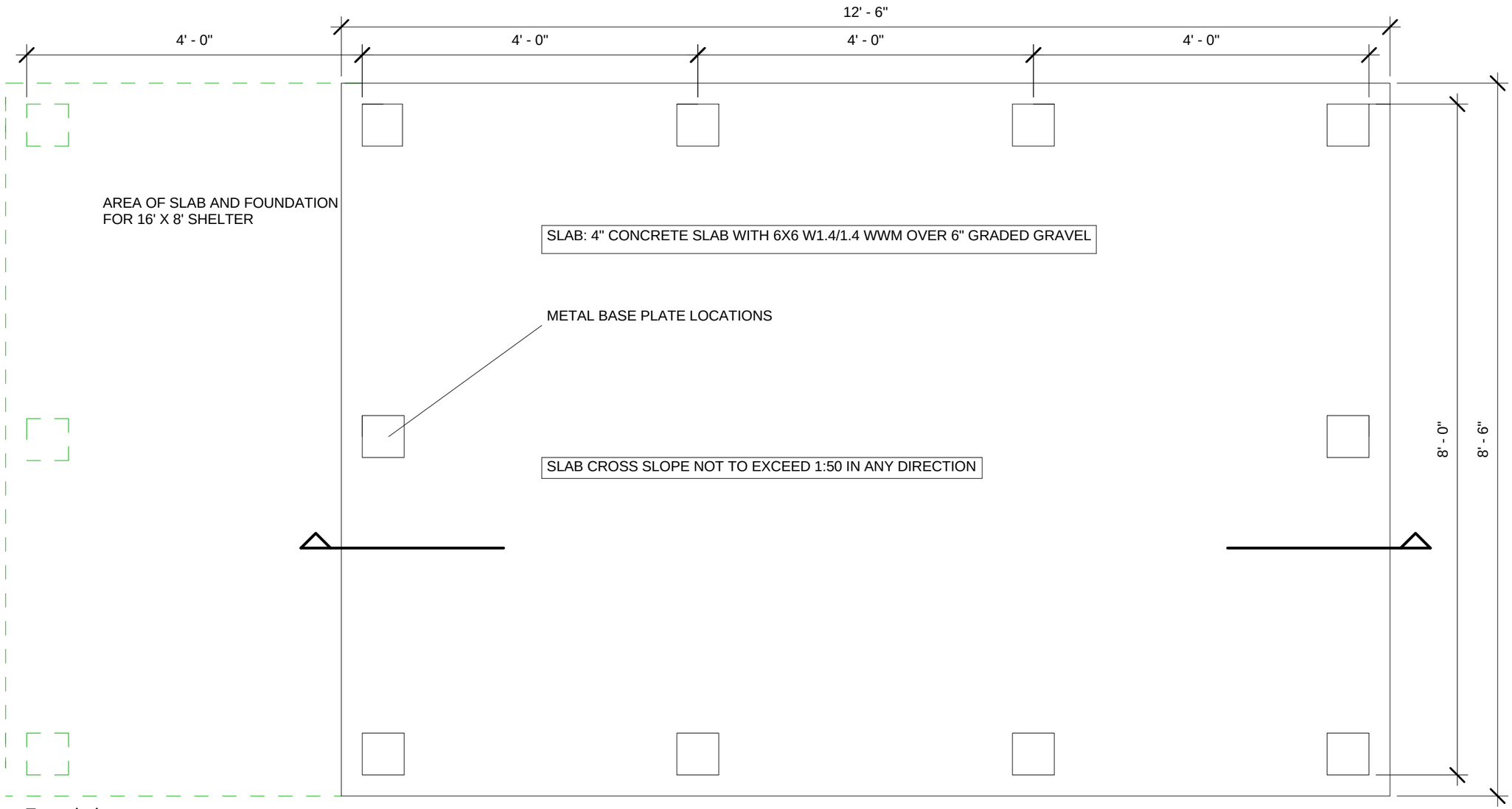


CROSS SECTION



A1 Foundation
3/4" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

COMO Connect/ Columbia Public Transit

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Foundation Plan

Project number	MG2014-1
Date	15 Nov 2014
Drawn by	Goldschmidt
Checked by	Goldschmidt

A100

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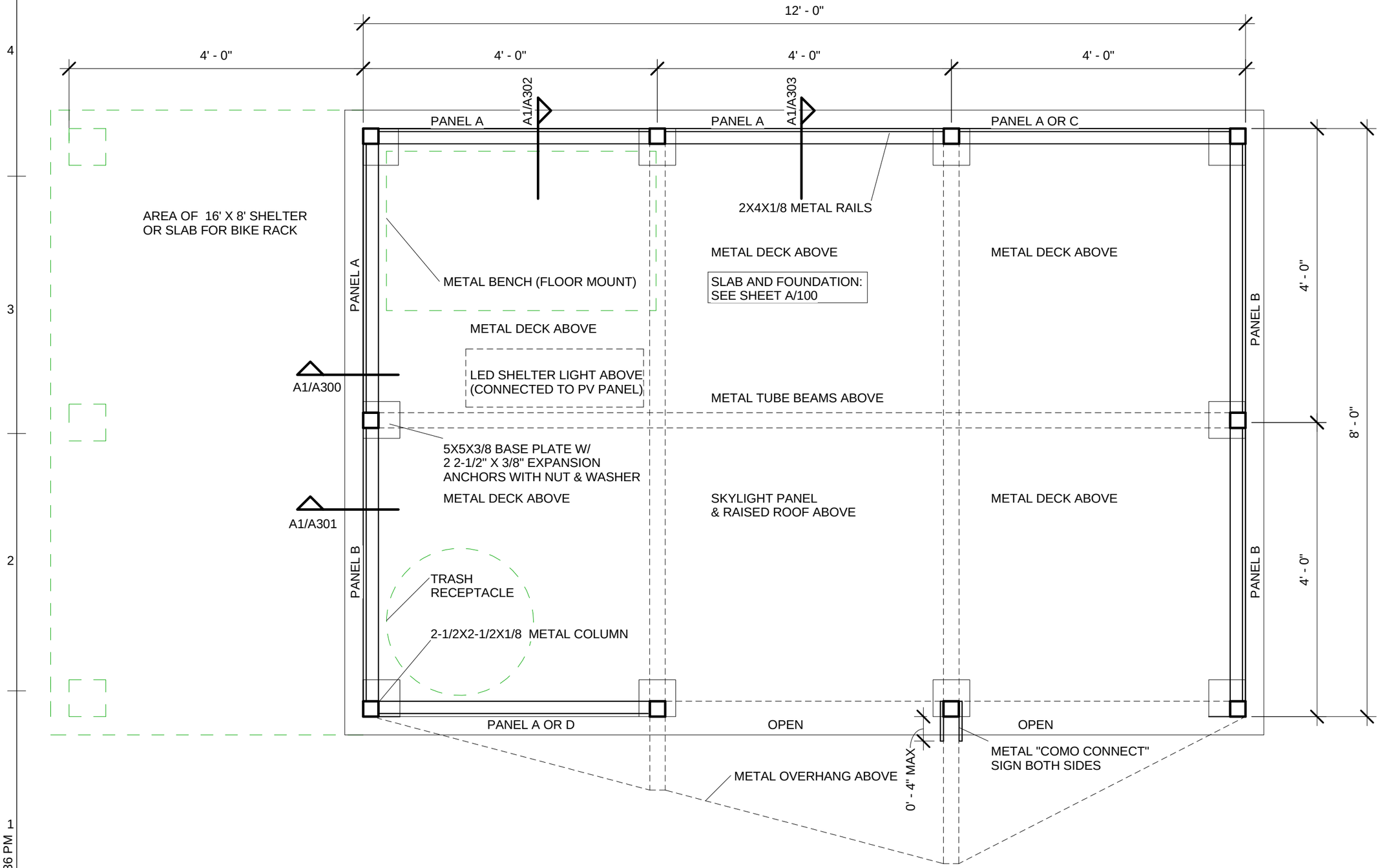

A1 Floor Plan
3/4" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

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Floor Plan

Project number	MG2014-1
Date	15 Nov 2014
Drawn by	Author
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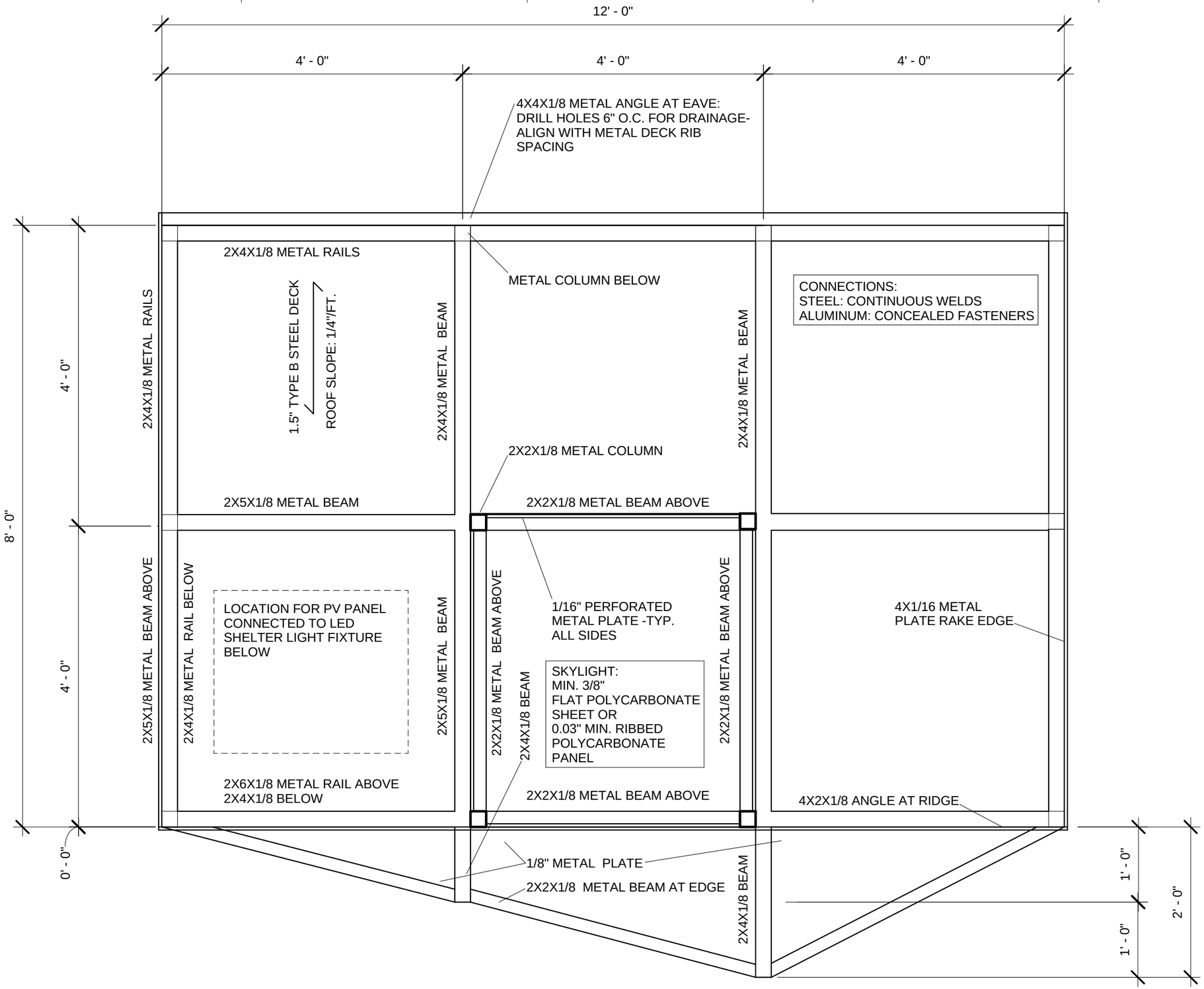

A1 Roof Framing
3/4" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

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Roof Framing Plan

Project number	MG2014-1
Date	15 Nov 2014
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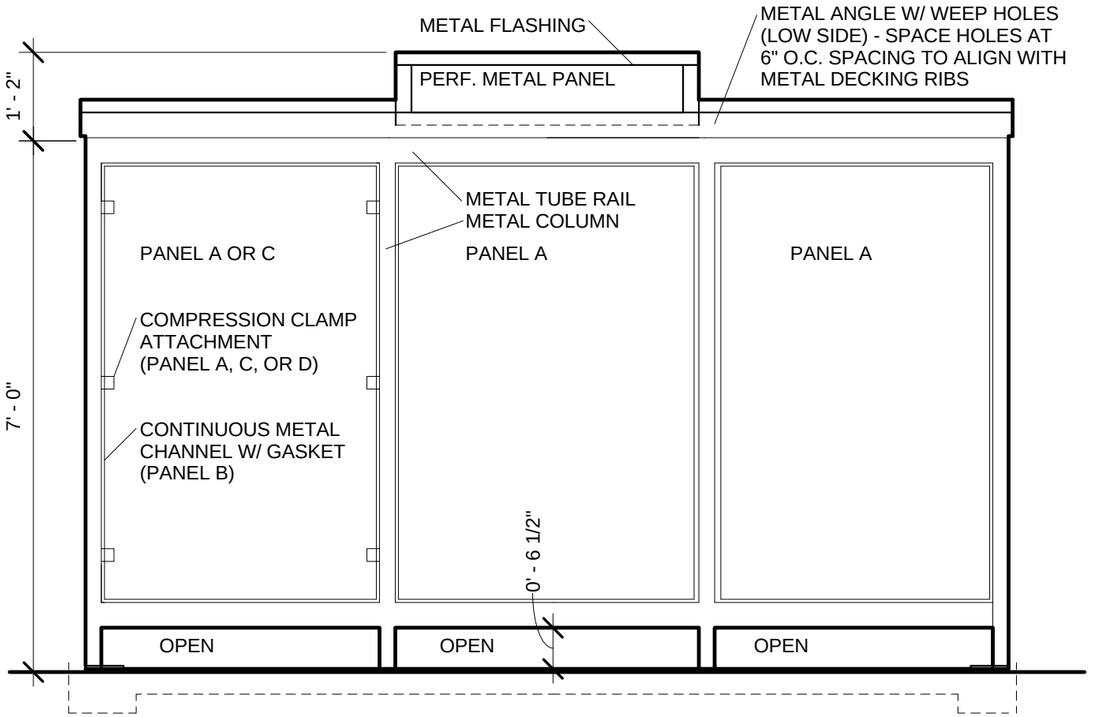

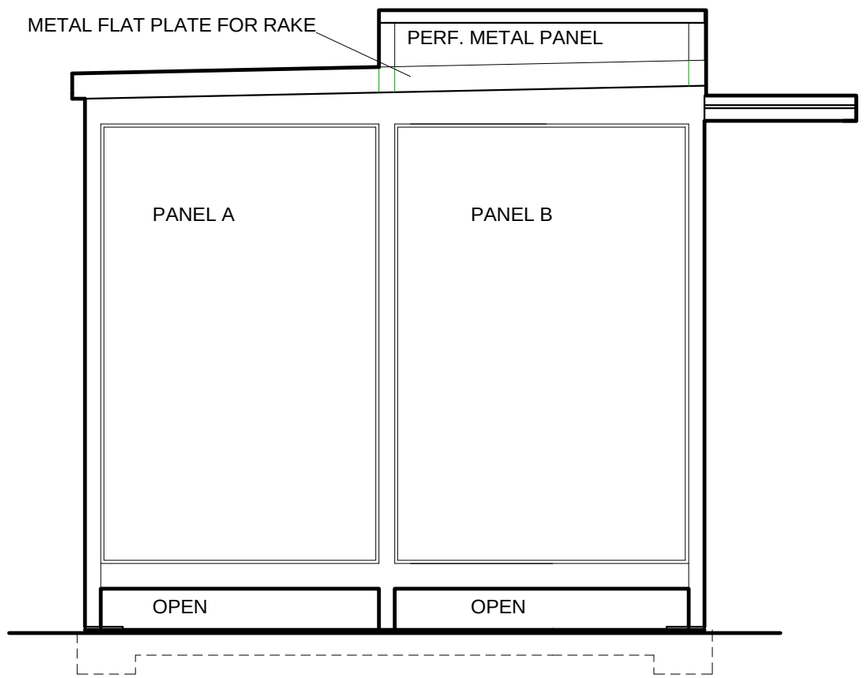

A1 Elevations - Rear and Side
1/2" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

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Elevations

Project number	MG2014-1
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A200

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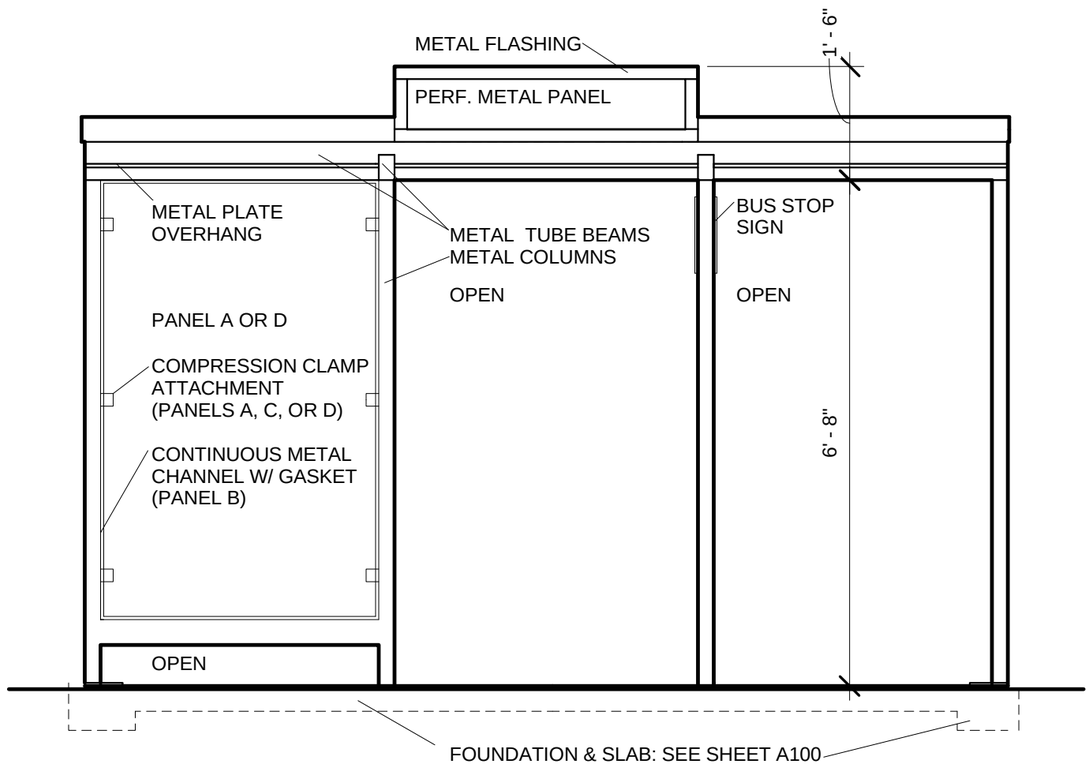
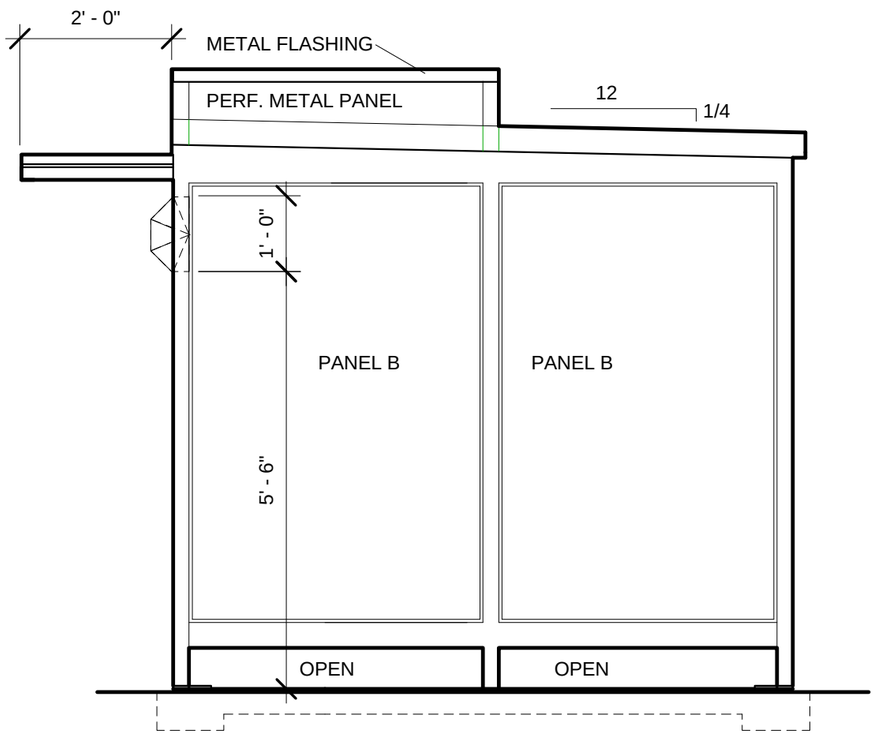
PANEL TYPES:

A: 1/16" MIN. THICK METAL SHEET
B: 3/16" TEMPERED GLASS, OR 1/4" POLYCARBONATE, OR 1/4" ACRYLIC
C: 1/16" MIN. THICK PERFORATED METAL SHEET
D: METAL ART PANEL



A1 Elevations - Front and Side
1/2" = 1'-0"



Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

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Elevations

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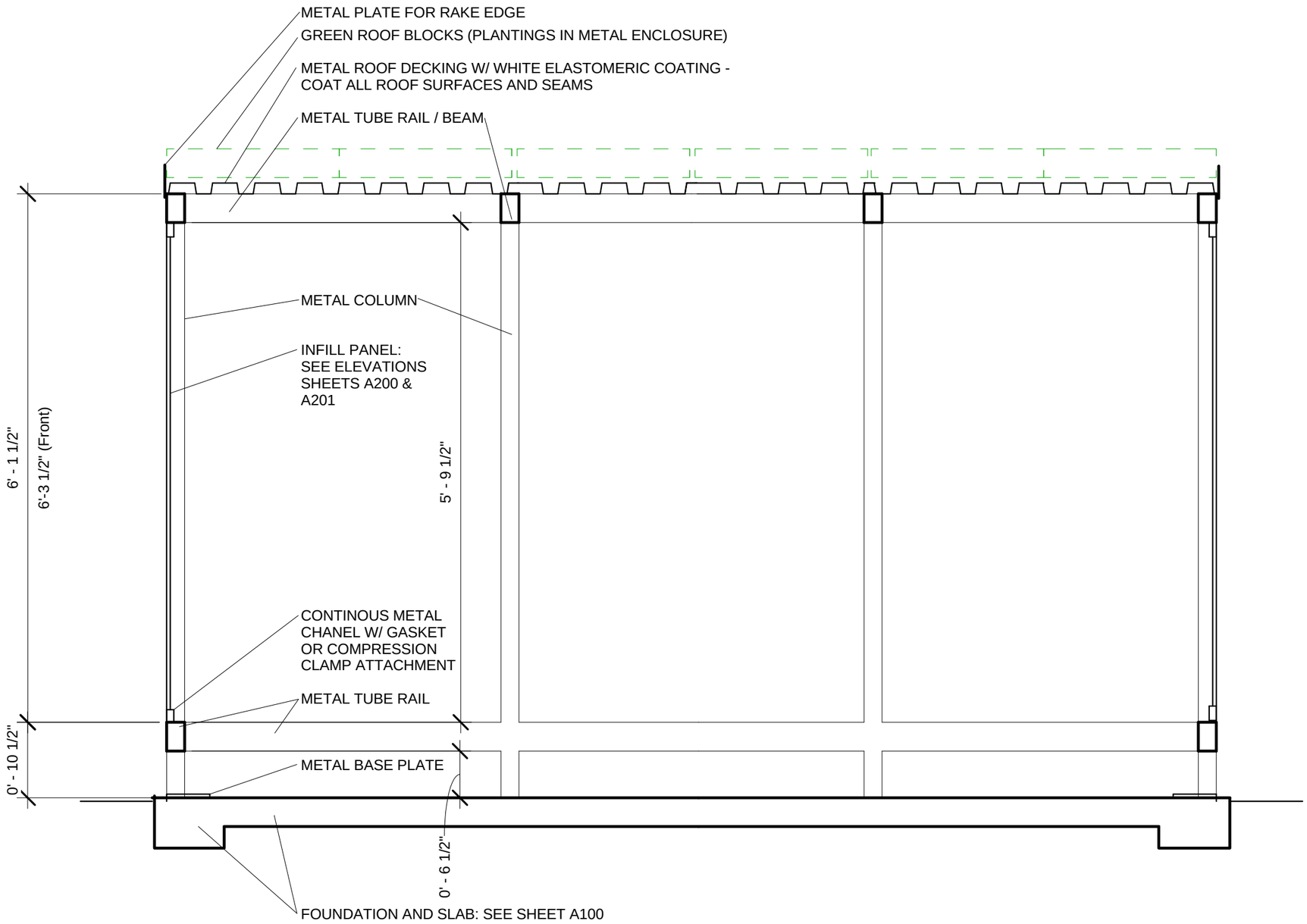

A1 Cross Section at Roof
3/4" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

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M. Goldschmidt, R. Baldwin, D. Tran, C. Johnson, L. Webb

Cross Section

Project number	MG2014-1
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Checked by	Checker

A300

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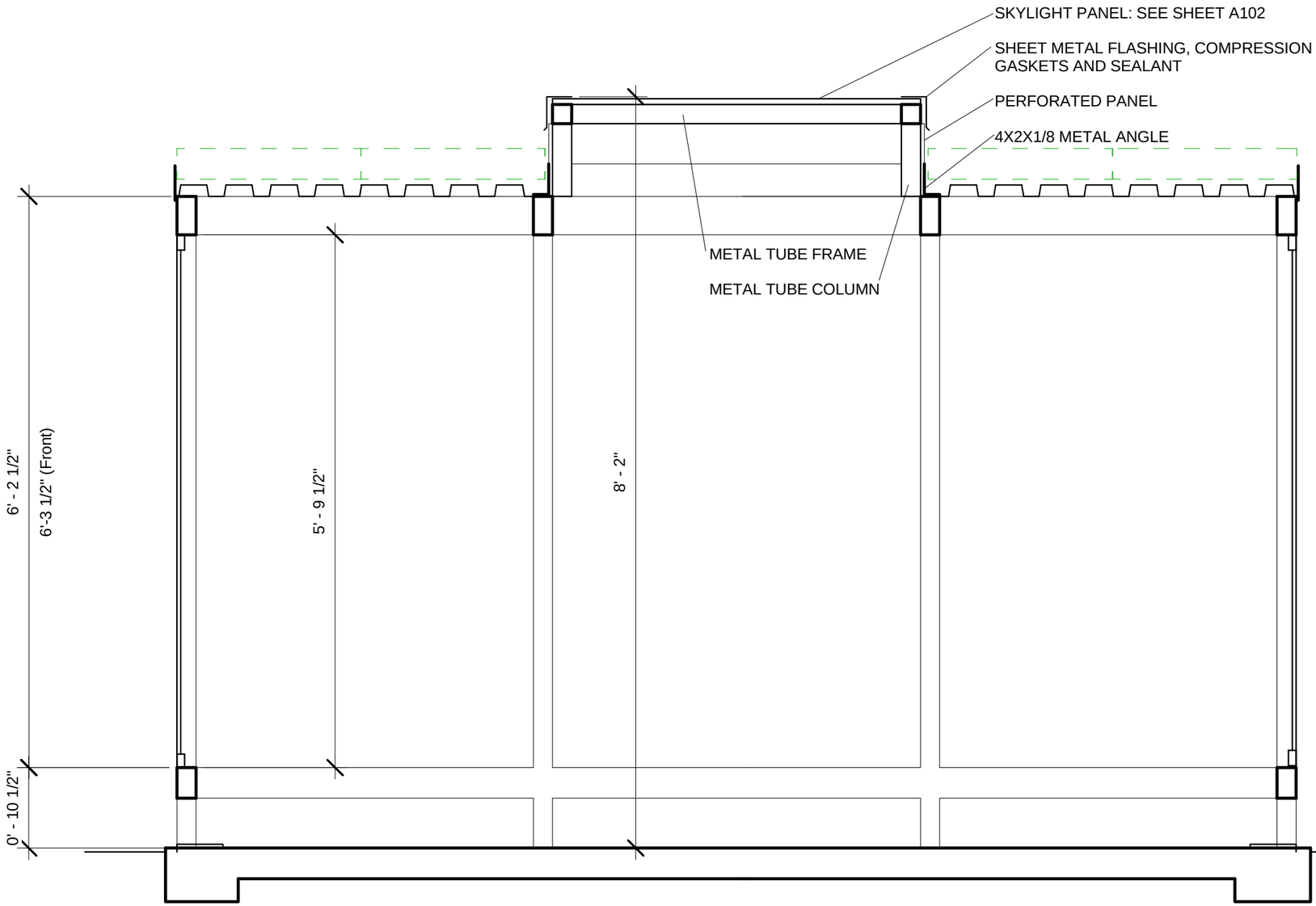

A1 Cross Section at Skylight
3/4" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

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M. Goldschmidt, R. Baldwin, D. Tran, C. Johnson, L. Webb

Cross Section

Project number	MG2014-1
Date	15 Nov 2014
Drawn by	Author
Checked by	Checker

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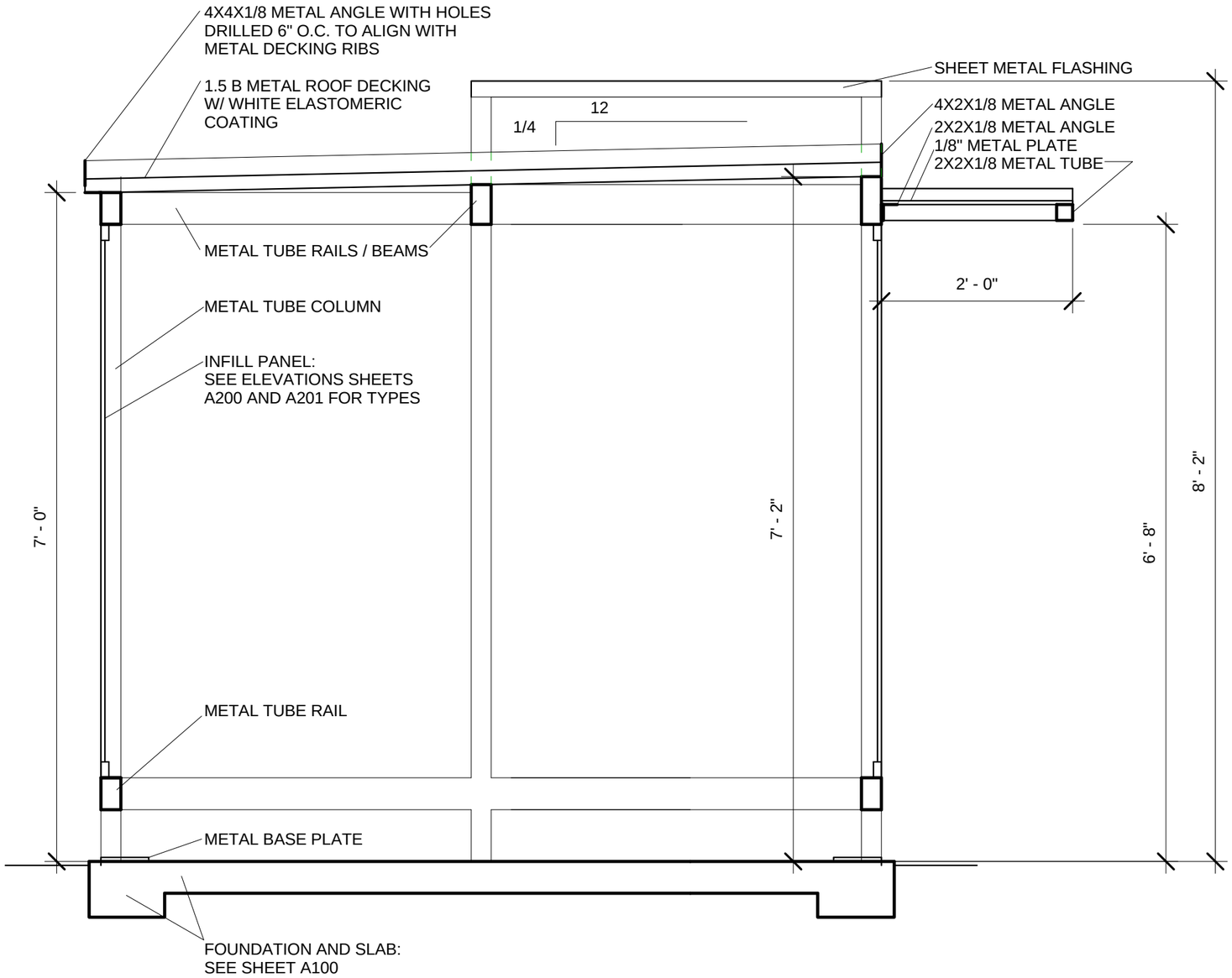

A1 Side Cross Section at Roof
3/4" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

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M. Goldschmidt, R. Baldwin, D. Tran, C. Johnson, L. Webb

Cross Section

Project number	MG2014-1
Date	15 Nov 2014
Drawn by	Author
Checked by	Checker

A302

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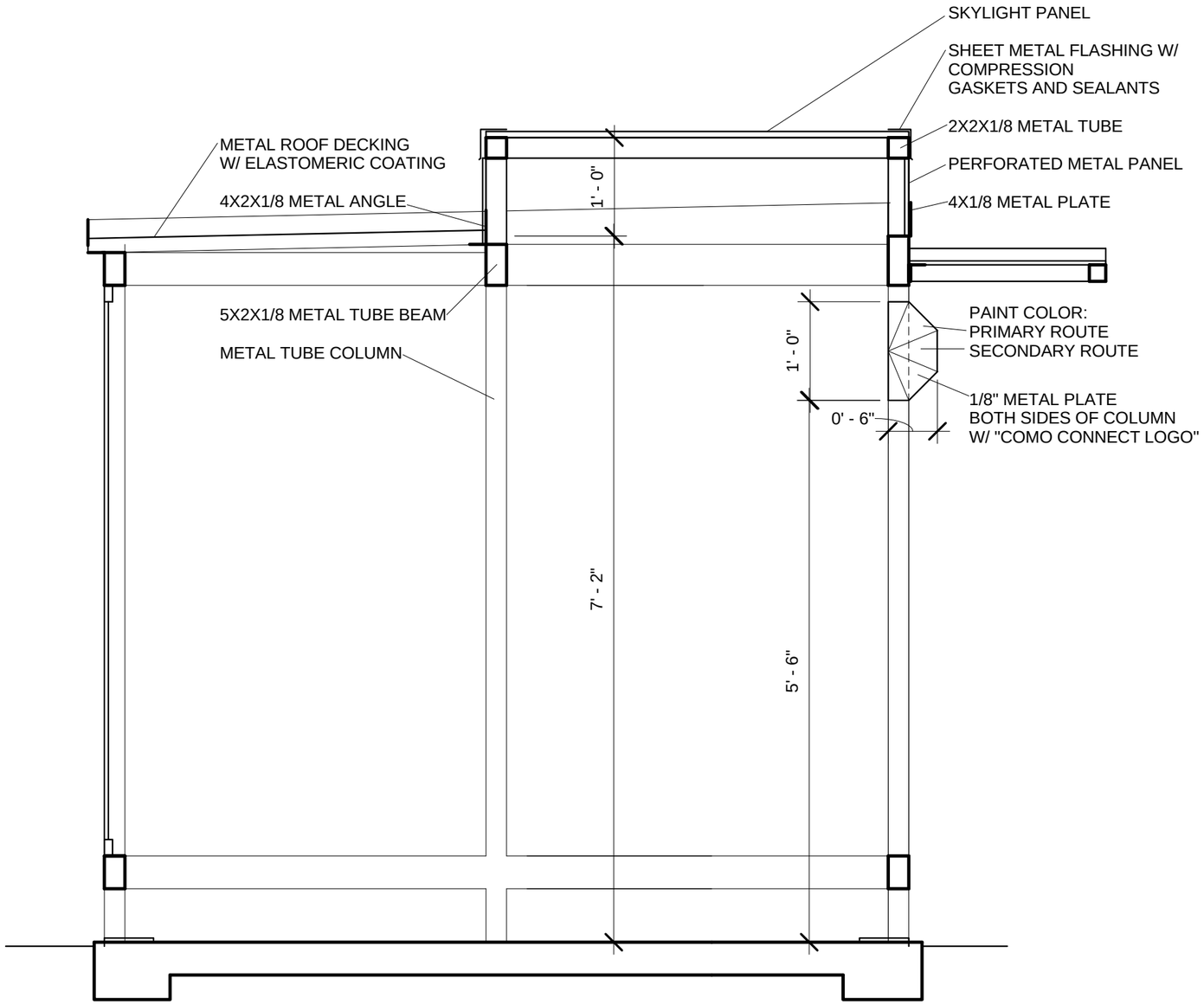

A1 Side Cross Section at Skylight
3/4" = 1'-0"

Architect:
Michael Goldschmidt
A-6016
142B Stanley Hall
University of Missouri
Columbia, MO 65211
573-884-0905
goldschmidtm@missouri.edu

BUS SHELTER DESIGN

COMO Connect/ Columbia Public Transit

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Cross Section

Project number	MG2014-1
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Drawn by	Author
Checked by	Checker

A303

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Specifications for:

Bus Shelter Design
COMO Connect / Columbia Public Transit
September 30, 2014 Revised November 15, 2014

Architect:
Michael Goldschmidt
Missouri Architect A-6016
142B Stanley Hall Columbia, MO 65211
(573) 884-0905 goldschmidtm@missouri.edu

Owner's Representative:
Drew Brooks
Multi-Modal Manager – City of Columbia, MO
Wabash Station 126 North Tenth St. Columbia, MO 65201
(573) 874-7281 tabrooks@gocolumbiamo.com

Material Specifications

Division 3 Concrete

1. Cast-in-Place Concrete:
    a. Strength: 3000 psi, 28 day
    b. Slab Finish: troweled and broom
2. Reinforcement:
    a. Slabs: 6x6 W1.4/1.4 welded wire mesh
    b. Footings: ASTM A615, grade 60 rebar

Division 5 Metals

1. Wall Panels:
    a. Panel A:
        i. 1/16 inch minimum steel or aluminum sheet

ii. Recycled Content: 50% minimum

b. Panel C:
   i. 1/16 inch perforated steel or aluminum sheet
   ii. 1/8 inch holes, 3/16 inch centers
c. Panel D: Art panel supplied by owner
a. Metal panels framed to structure using one of the following:
   i. continuous steel or aluminum channels with gaskets
   ii. Steel or aluminum compression clamps with gaskets
      1. Mounted on sides with pins
      2. 6 required per panel

2. Structure:
   a. Metal tube, angles, and flat plate materials
      i. 1/8 inch minimum wall thickness on all framing components
      ii. Sizes shown on drawings
      iii. One of the following materials:
         1. Structural Steel: ASTM A569/A36 steel
            a. Connect all framing with continuous welds or concealed fasteners
            b. Finish: primed for painting
            c. Recycled Content: 50% minimum
         2. Aluminum: 6061/6063 aluminum
            a. Connect all framing with continuous welds or concealed fasteners
            b. Finish: mill or clear anodized
            c. Recycled Content: 50% minimum
3. Metal Roof Decking:
   a. Material: G60 galvanized steel, ASTM A653
   b. Strength: 33 ksi
   c. Thickness: 1.5 inches
   d. Type: B, wide rib
   e. Gauge: 18 minimum
   f. Recycled Content: 50% minimum

Division 7 Thermal and Moisture Protection

1. Roof Coating:
   a. Product: Commercial grade elastomeric roof coating
      i. Coats: 2 total to all roof areas, roof seams, and fasteners
      ii. Apply to all areas of roof and roof seams including metal roof decking and roof side of support angles
      iii. Color: white
      iv. Sheen: bright gloss

v. Accessories: Self-stick seam fabric

2. Sealants: One part, moisture curing, commercial grade polyurethane sealant
    a. +/- 35% joint movement capability
    b. Color: grey

Division 8 Openings

2. Glazing:
    a. Panel Type B
        i. One of the following:
            1. 3/16 inch tempered clear glass
            2. 1/4 inch polycarbonate
            3. 1/4 inch acrylic
    b. Glazing panels framed to structure using continuous steel or aluminum channels with gaskets
        i. Fasten channels to structure at 12 inches on center
    c. Skylight Panel:
        i. One of the following:
            1. 3/8 inch polycarbonate
            2. 0.03 inch ribbed polycarbonate
        ii. Fasten to structure with screws with neoprene compression washers at 12 inches on center and within 1 inch of corners.

Division 9 Finishes

1. Painting:
    a. Ferrous Metals
        i. Primer: Commercial grade, rust-inhibitive primer
        ii. Top Coats (2): Commercial exterior grade, waterborne alkyd, low-VOC
            1. Sheen: gloss
            2. Color: grey

Division 26 Electrical (Optional)

1. PV/Lighting Module:
    a. Manufacturer: SolarOne
    b. Product: LED Shelter Lighting Kit, LSK 1
        i. PV Panel: 60W
        ii. Light Fixture: 2 LED lamps with motion activated sensor in aluminum housing

Division 31 Sitework

1. Earthwork:
    a. Subgrade: compacted
    b. Gravel: graded, washed
2. Green Roof Blocks (Optional):
    a. Manufacturer and Product: “Green Roof Blocks” by Green Roof Blocks, St Louis.
        i. Growing medium: 80% mineral aggregate, 20% organic matter

ii. Plants: Low growing succulent ground covers including sedums, native grasses, and perennials
iii. Planter: 8mm anodized aluminum planter with rubber walk pads
1. 12 drill holes for drainage: 3 each side

3. Site Furnishings (Optional):
    a. Bench: Belson Outdoors, Model: CNB-20X2S-SM
    b. Waste Receptacle: Belson Outdoors, Model TB3.

List of major parts for Bus Shelters
Columbia Public Transit
September 10, 2014

Quantities of materials, ***per shelter***.

I. Foundations and Footing:
   a. Concrete: need 1.8 to 2 CY
   b. If porous paving, need a total installation, (paving, underlayment, etc.) that is 10 feet 8 inches by 7 feet 4 inches (approx. 80 sf)
   c. Rock underlayment: 1.8 to 2 CY of graded, clean gravel
   d. 150 LF of #4 rebar, preferably

II. Steel or Aluminum Frame Structure:
   a. Posts and rails (choose either steel or aluminum):
      i. Posts:
         1. Steel:
            a. 2" sq x 1/4"t; 7'-0" height. Quantity: 5
            b. 2"sq x 1/4"t; 6'-0" height. Quantity 6
            c. Welded connections
         2. Aluminum:
            a. 2-1/2"sq x ¼"t; 7'-0" height. Quantity: 5
            b. 2-1/2"sq x ¼"t; 6'-0" height. Quantity: 6
            c. 5 base shoes to connect posts to base plate
            d. Concealed connectors
      ii. Rails:
         1. Steel:
            a. 2" x 4" x 1/4"t; 64 lineal feet
            b. Welded connections
         2. Aluminum:
            a. 2" x 4" x 1/4"t; 64 lineal feet
            b. Concealed connectors
         3. Add 17 lineal feet to rails for front overhang
      iii. Posts and rails to have 75-100% post-consumer recycled content
      iv. Steel will have to be painted, Aluminum should be clear anodized finish.
   b. Base Plates: 5 quantity 6" sq x 3/8" steel plates
   c. Fasteners: 10 quantity 3/8" x 3-3/4" concrete anchors with bolt, nut, washer
   d. Angles: 2-1/2" x 2-1/2" x 3/16"t in steel or aluminum (match posts and rails)
      i. Need 56 to 60 lineal feet for roof attachment
      ii. Need 32 lineal feet for interior rail between posts (3' above slab)
   e. Roof Panel: Quantity of 4; 30 inches by 8 foot panels (2 panels cut to fit space)
      i. 75% - 100% recycled content
      ii. 1-1/2" Type B Steel Roof Deck, 18 gauge.

f. Fascia: 40 lineal feet of 18 gauge (or 1/16") steel or aluminum sheet or plate, 4" height

III. Transparent Panels: Quantity of 5 (4 wall and one roof panel)
   a. 1/4 inch thick lexan, acrylic, or tempered & laminated glass
   b. Panel Size: 6 foot height by 3'-9" wide

IV. Solid Panels: (one or combination of the following types):
   a. Quantity of 4, 6'-0"h by 3'-9"w and 1 extra cut for roof overhang and location logo
   b. 18 gauge solid sheet steel with 75-100% recycled content
   c. 16 gauge solid aluminum sheet with 75-100% recycled content
   d. 14 or 16 gauge perforated aluminum or steel sheet with 75-100% recycled content
   e. Art Work

V. Panel Connectors
   a. Glass and/or panel connectors for vertical panels similar to: http://www.wagnercompanies.com/site/Viewer.aspx?iid=1551&mname=Article&rpid=524 or page 8 or 30 of this: http://www.morseindustries.com/pdf/morse_archcatalog.pdf
      i. Each panel will require 8 so total shelter total of 64
      ii. Or continuous connectors like the ones on current shelters
      b. Bent glass or panel connectors (L-shaped) for attaching transparent roof panel, similar to a. above. Panel will require 10

VI. Additional Options:
   a. If steel frame and panels, approximately 2 gallons of exterior paint, grey (2 coats)
   b. Panel Assembly: 60-100W PV panel with battery storage
   c. Lighting: 2 MR16 LED fixtures with lamps with motion sensor
      i. b. and c. above might be found as complete package: http://www.solarone.net/UserFiles/File/Complete_Literature/758-1005-00_-_LSK_Fixture_Datasheet.pdf
   d. Green Roof Blocks:
      i. http://greenroofblocks.com/ (St Louis Company) and http://greenroofblocks.com/wp-content/uploads/2012/03/Green_Roof_Blocks_Data_Sheet.pdf
      ii. Quantity: 12 will fit (6 on each side of center skylight panel) if no PV panel, 6 will fit if one side has the PV panel.
   e. Bike rack, bench and trash can: let's leave these open for the moment so we can widen the possibility of a donation.