Microcosmic
4th and Brannan Street
Platform Station Project

Elevation
I. GENERAL NOTES:

A. SCULPTURE DESIGN CRITERIA
   1. CALIFORNIA BUILDING CODE (CBC, 2010 EDITION) AS AMENDED BY THE SAN FRANCISCO BUILDING
      CODE.
   2. AASHTO, 2009 (WITH 2010 INTERIM REVISIONS) STANDARD SPECIFICATION FOR SUPPORT FOR
      HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. DESIGNED IN ACCORDANCE WITH
      FATIGUE CRITERIA.

B. POLE DESIGN CRITERIA
   1. SUPPORTING POLE IS TO BE SUBMITTED AS A DESIGN-BUILD SYSTEM AS PREVIOUSLY
      SPECIFIED IN DRAWINGS BY DEADALUS ENGINEERING TITLED "THIRD STREET LIGHT RAIL
      PROGRAM PHASE 2-CENTRAL SUBWAY SURFACE, TRACK AND SYSTEMS" DATED 5.25.2012
   2. CODE WIND DESIGN PRESSURE 43 PSI, 90 MPH WIND SPEED (PER ASCE 7-05). ESTIMATED SCULPTURE
      SURFACE AREA 70 SQ.FT. (TOP 15 FEET OF (POLE).
   3. SEISMIC DESIGN PER ASCE-05
   4. MAXIMUM ANTICIPATED POLE DEFORMATION AT TIP = 5.7 INCHES AT 90 MPH WIND GUST.
   5. ESTIMATED SCULPTURE WEIGHT = 1,500 LBS
   6. ALL CONNECTION DESIGN PER ASSHTO DESIGN CRITERIA

C. DISCLAIMER
   DEADALUS IS NOT AWARE OF ANY SPECIFIED DESIGN CODES, GUIDELINES OR CRITERIA FOR A MOBILE
   SCULPTURE OR SIMILAR STRUCTURES AND WE MAKE NO WARRANTEE BASED ON ANY DESIGN CODES,
   STANDARDS, OR OTHER CRITERIA EXCEPT AS PROVIDED IN THESE NOTES AND IN OUR CALCULATIONS.
   THE DESIGN IS BASED ON THE CODES AND STANDARDS NOTED ABOVE AND DESIGN ASSUMPTIONS
   BASED ON OUR ENGINEERING JUDGEMNET AND EXPERIENCE AND A DESIGN WIND SPEED OF 90 MPH
   PROVIDED BY THE SFMTA PROJECT ENGINEER OF RECORD WHO PROVIDED PEER REVIEW OF THE
   POLE DESIGN.

II. STRUCTURAL STEEL SPECIFICATION

A. GENERAL
   1. CODE: COMPLY WITH AISC "MANUAL OF STEEL CONSTRUCTION" FOURTEENTH EDITION FOR ALL
      TOLERANCES, EDGE DISTANCES, SPACING, MINIMUM WELD SIZES AND OTHER DETAILS
      AND INFORMATION NOT PROVIDED.

B. MATERIALS
   1. GENERAL: ALL STEEL SHALL BE IDENTIFIED AS REQUIRED BY CBC SECTION 2203A.2. STEEL WHICH
      IS NOT PROPERLY IDENTIFIED SHALL BE TESTED TO SHOW CONFORMANCE WITH
      REQUIREMENT OF APPLICABLE ASTM STANDARD AT CONTRACTOR'S EXPENSE.
   2. PIPES: ASTM A53, TYPE S, GRADE B.
   3. WELDING FILLER MATERIAL: AWS D1.1; TYPE REQUIRED FOR BASE MATERIALS BEING
      WELDED. ELECTRODES SHALL BE E70XX, LOW HYDROGEN, UNLESS OTHERWISE NOTED.
   4. SET SCREWS: STAINLESS STEEL WITH ALLEN HEAD AND CONE TIP-ASTM F880
   5. ACCESSORIES: SET SCREW THREAD ADHESIVE - THREADLOCKER RED 271
      AS MANUFACTURED BY "LOCTITE"
   6. STAINLESS STEEL: ALL STAINLESS STEEL SHALL BE S30400 AND SHALL BE
      MANUFACTURED IN ACCORDANCE WITH ASTM A554.

C. EXECUTION
   1. FABRICATION
      a. FABRICATE STRUCTURAL STEEL MEMBERS IN ACCORDANCE WITH AISC
         SPECIFICATIONS, AISC MANUAL (FOURTEENTH EDITION) AND THE 2010 CALIFORNIA BUILDING
         CODE.
      b. ALL WELDING TO USE TUNGSTEN INERT GAS (TIG) WELDING PROCESS. USE
         WELDING ROD AS RECOMMENDED BY THE AMERICAN WELDING SOCIETY (AWS)
         FOR THE TIG WELDING PROCESS.
      c. WELDING PROCEDURES: FOLLOW ALL RECOMMENDATIONS OF THE AMERICAN
         WELDING SOCIETY FOR TIG WELDING OF STAINLESS STEEL.

D. QUALITY ASSURANCE
   1. FABRICATOR SHALL PREPARE WELDING PROCEDURE SPECIFICATIONS (WPS), PER AWS D1.1.
   2. QUALIFY WELDING PROCEDURES AND WELDING OPERATORS IN ACCORDANCE WITH AWS
      D1.1 "QUALIFICATION" REQUIREMENT.
   3. WELDING SPECIAL INSPECTION SHALL BE IN ACCORDANCE WITH CBC SECTION 1704.2
      AND 1704.3 OR AS REQUIRED BY THE CITY OF SAN FRANCISCO.
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4th and Brannan Street
Platform Station Project

Main Kinetic Components
Overall View

11-1/4" OD at Transition Point

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Main Kinetic Components
Frame

- 3/32" Stainless Steel Plate Blade
- 5" OD .125" Wall Stainless Steel Tube
- 2-1/4" OD .1875" Wall Stainless Steel Tube
- 1-1/4" OD .065" Wall Stainless Steel Tube
- Shaft 1-1/8" OD Stainless Steel Rod
- Bearing Housings for Stainless Steel Ball Bearings IB-6315
  75mm ID - 160mm OD
  2.9526" ID - 6.2992" OD

Front View

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Platform Station Project

Main Kinetic Components
Frame

- 3/32" Stainless Steel Plate Blade
- 5" OD .125" Wall Stainless Steel Tube
- 2-1/4" OD .1875" Wall Stainless Steel Tube
- 1-1/4" OD .065" Wall Stainless Steel Tube
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  75mm ID - 160mm OD
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Front View
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Main Kinetic Component Frame
Detail - A ~ I
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Platform Station Project
Main Kinetic Component Frame T-Arm Detail A, B

Nylon Bumper 4-1/4" OD x 3/4" w. 16 GA 1/2" wide Banding welded to the Sleeve

T-Arm Tube Shaft
2-1/2" OD 0.5 W

5" OD. 1/25 W Stainless Steel Tube

Bearing Housing (.375W)

#12-28 Flat Head Machine Screws 5pcs. to Flange (.375W)

Bearing Housings (.375W)

5" OD .125 W Stainless Steel Tube

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Bumper 4-1/4" OD x 3/4" Self-Lubricating Oil Filled Cast Nylon

Sleeve Tube
2-1/2" ID .125 W

#10 - 24 Set Screws w. Red Thread Adhesive

Back-up Tube
1/4

5 Total

C-1

C-2

CJP

D

E

CJP

CJP

CJP

CJP
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Main Kinetic Component Frame
T-Arm Connection
Detail - A, B

A

#12-28 Flat Head Machine Screws
w. Red Thread Adhesive 5pcs.
to Flange (.375W)

5" OD .125 W Stainless Steel Tube

T-Arm Tube Shaft
2-1/2" OD .05 W

3/8"

Bearing Housings (.375W)

2-1/4" OD .1875 W
Stainless Steel Tube

1-7/8" OD .25 W
Stainless Steel Backing Tube

1-3/8" OD .125 W
Stainless Steel Backing Tube

Flange Detail

#12-28 Thread

1/2" - 13 Flat Head Machine Screw

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Main Kinetic Component
Detail-C-1

T-Arm Tube Shaft
2-1/2" OD 0.5 W

4-3/4" OD 2-1/4" ID 1/2" Thick
Shaft Retainer Rings

Back-Up Tube
Fit to Contour of Base Post
(Intended to provide weld back-up where retainer rings aren't in contact with spindle tube)

Connection Point
CJP

2-1/2" OD .125"W 4" Long
Connector Sleeve Tube

1-7/8" OD .125"W 1-1/2" Long
Backing Tube

6-3/4" OD 5" ID 3/8" Thick
Frangé

6" OD 5" ID 3/8" Thick
Backing Frangé

2-1/4" OD .1875 W Stainless Steel Tube

2-1/2" OD .125"W 4" Long
Connector Sleeve Tube
Slides Over 2-1/4" OD Tube

2-3/16" 2-1/4" 2-3/16" 3/8"

6-5/8" 7"
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Main Kinetic Component Frame
Detail -D, E

Blade
3/32" Stainless Steel Plate

1-1/2" OD .065 W
Stainless Steel Tube

2-1/4" OD .1875 W
Stainless Steel Tube

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Main Kinetic Component Frame
Connection to Small Kinetic Component
Detail - F

2-1/4" OD .1875 W Stainless Steel Tube
Adaptor Tube
3/8-24 Set Screws w. Thread Lock
Red Thread Adhesive
Stainless Steel Ball Bearing
IB-R 18 1-1/8" - 2-1/8"

CJP

1-1/2" OD .065" W Stainless Steel Tube
1-3/8" OD .125" W Stainless Steel Tube

1/4" 3/8"

1/16" 1/4"

2-1/4" OD .1875 W Stainless Steel Tube
1-7/8" OD .1875 W 6" Long
Stainless Steel Tube

4 Locations
Min. TYP.
3/8

6"

Assembled

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Small Kinetic Assembly

Bearing Housing
1-1/4" OD .065" W
Stainless Steel Tube

1-1/4" OD .035" W
Stainless Steel Tube

1-1/2" OD .065" W
Stainless Steel Tube

Bearing Housing
2-1/8" ID Tube
Stainless Steel Ball Bearing IB-R18
1-1/8" x 2-1/8"

Bearing Housing
1-1/4" OD .065" W
Stainless Steel Tube

Bearing Housing
1/2" x 1-1/8"
Stainless Steel Ball Bearing IB-R10
5/8" x 1-3/8"

Bearing Housing
6-1/2"

Blade
.035" Stainless Steel Sheet

Blade
.05" Sheet

5/8" OD .035" W
Stainless Steel Tube

Blade
.035" Stainless Steel Sheet

56"

42"

42"

21"

21"

7"

7"
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Small Kinetic Component
Detail-G

Stainless Steel Ball Bearing
IB-R 18 1-1/8” - 2-1/8”
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Small Kinetic Component
Detail-H

All blades to be angled at 45 degrees in relation to axis of rotation.

Blade
16 GA Stainless Steel Sheet

3/4"OD .065W Stainless Steel Tube

1/2"OD Stainless Steel Rod

1-1/4"OD .035W Stainless Steel Tube

5/8"OD .035W Stainless Steel Tube

Dimples
1/4-24 Set Screws
5 per Section
5 per Section

Stainless Steel Ball Bearing IB-R8
1/2" x 1-1/8"

Backing
9/16"OD .065W Stainless Steel Tube

CJP

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All blades to be angled at 45 degrees in relation to axis of rotation.

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Small Kinetic Component
Detail - I

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Main Spindle Assembly at
Upper Base Post

Main Spindle
Bearing Housing
11-1/4" OD .375W

“T” Arm to Main Spindle
Bearing Housing

“T” Arm
5" OD .375W

Light Housing Provided by Others

Main Spindle Shaft

“T” Arm Shaft

Stainless Steel Extension
11-1/4" OD .375W

Transition Point

Tapered Steel Pole

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Main Spindle Assembly Detail J ~ M

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Platform Station Project
Upper Base Post Detail J

Main Spindle Shaft
3-1/2" OD 1/2" W

Bearing Housing
10-3/4" OD - 8.466" ID

Stainless Steel Tube
11-1/4" OD .375 W

Stainless Steel Ball Bearings
IB-6320
100mm ID - 215mm OD
3.937" ID - 8.466" OD

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Main Spindle Sleeve Detail L

Adaptor
3.937" OD - 3.5" ID

Main Spindle Shaft
3-1/2" OD 1/2" W

Sculpture Base Pipe - Stainless Steel
11.25" OD - 10.5" ID .375 W

Back-Up Ring

CJP

6 Plug Welds Min.

6 Plug Welds Min.
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Upper Base Post Detail M

1/4" Min. Annular Void Space Between Stainless and Carbon Steel

1/2" diameter x 2" long Allen head stainless steel set screw through 9/16" diameter hole in sleeve pipe. Align with set screw thru 9/16" diameter hole in sleeve pipe align with set screw below with red thread adhesive.

Carbon Steel Sleeve (Straight Shaft)  
HSS10.00x0.500x3'-0" Long Straight Shaft Round HSS

1/4" min. annular space (no metal to metal contact) Between OD of carbon Steel Sleeve and ID of Stainless Steel Sculpture Base.

Stainless Steel Sculpture Base Pipe Tapped to Receive Set Screw

1/2" Hex head Allen Stainless Steel Set Screw with Thread Adhesive  
Three 1/2" Stainless Steel Threaded Set Screws at 1/3 points around perimeter of pipe top and bottom thru btapped holes in stainless steel pipe. Length as required to end flush with exterior face of HSS.

3/4" Carbon steel Cap Plate

3/8" Elastic Bearing Pad to provide weather tight seal and galvanic separation between stainless steel and carbon steel.

Grind weld flush and with pole wall to meet architectural structure steel appearance standards.

Tapered freestanding pole diameter at top = 11.25" to match sculpture stainless steel base pole.

Sculpture Base Pipe - Stainless Steel  
11.25" OD - 10.5" ID .375 W

3/4" Dimple to receive set screw

3/8" x 3" Backing Ring

10"  
11-1/4"  
1/4" Min. Annular Void Space Between Stainless and Carbon Steel

Transition Point  

Pole to Cap Plate Field Weld  

32-1/2"  
36"  