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<tr>
<th>ITEM NO.</th>
<th>PART NUMBER</th>
<th>QTY.</th>
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<tr>
<td>1</td>
<td>Channel_C_9x6</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Flange_006</td>
<td>2</td>
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<tr>
<td>3</td>
<td>Channel_lid_10ft_9in</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Channel_9in_Lid 12in</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>1581A43</td>
<td>1</td>
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<tr>
<td>6</td>
<td>Channel_filler</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Str_spacer_08</td>
<td>2</td>
</tr>
</tbody>
</table>
NO LID VIEW

WITH LID VIEW

MOUNT FLANGES FLUSH WITH END

GRIND FACES FLUSH NO BURRS INSIDE CHANNEL TYP OF ALL FLANGE MOUNTS

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

NAME DATE DRAWN HRZ 11/28/2012

STOCK SIZE:

TITLE: Narrow Channel

SIZE DWG. NO. REV
A Channel_6x9_10ft 01

SCALE: 1:32 WEIGHT: 71.34 SHEET 2 OF 6
<table>
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<tbody>
<tr>
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<td>Flange_005</td>
<td>Flange, 21&quot;x8&quot;</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Channel_20x12_Lid</td>
<td>Channel, 20&quot;x12&quot;</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Channel_lid 6ft</td>
<td>Channel, 6ft</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>C-Channel_10&quot;x8&quot;x20&quot;</td>
<td>C Channel, 10 ft</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1581A93</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Channel_filler-20in</td>
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<td>ITEM NO.</td>
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<td>DESCRIPTION</td>
<td>QTY.</td>
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<td>---------</td>
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<td>-----------------------</td>
<td>------</td>
</tr>
<tr>
<td>1</td>
<td>C-Channel_8x20_10ft</td>
<td>C-CHANNEL, 10FT</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Channel_lid 10ft</td>
<td>CHANNEL LID, 10FT</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Channel_20x12_lid_12in</td>
<td>LID, SPACER</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Flange_005</td>
<td>Flange, 21&quot;x8&quot;</td>
<td>2</td>
</tr>
</tbody>
</table>
CHANNEL LID, 10FT

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

STOCK SIZE: 1/8''

UNLESS OTHERWISE SPECIFIED:

DRAWN: JCS 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

SCALE: 1:20 WEIGHT: SHEET 4 OF 5

5 4 3 2 1

CHANNEL LID, 10FT

A

Next Assy USED ON

Application DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16

ANGULAR: MACH ± 0.5 BEND ± 0.2

ONE PLACE DECIMAL ± 1

TWO PLACE DECIMAL ± 0.06

THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

APPLICATION: DO NOT SCALE DRAWING

NEXT ASSY: USED ON

FINISH: DRAWN JCS 11/28/2012

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS: STOCK SIZE: 3/16"

TITLE: LID, SPACER

SIZE DWG. NO. REV

A Channel_20x12_Lid 12in 01

SCALE: 1:12 WEIGHT: SHEET 5 OF 5
<table>
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<th>QTY.</th>
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<tbody>
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<td>1</td>
<td>Tran_arc_sidewall_02</td>
<td>TRANSITION ARC</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Tran_arc_1_02</td>
<td>TRANSITION ARC LID 1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Tran_arc_lid_02</td>
<td>TRANSITION ARC LID 2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Flange_005</td>
<td>Flange, 21&quot;x8&quot;</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Channel_8x20_26in</td>
<td>26&quot; Channel</td>
<td>1</td>
</tr>
</tbody>
</table>
Both Sides

See Flange_005 Detail

Both Sides

Both Sides

Transition

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ±1/16

ANGULAR: MACH ±0.5 BEND ±2

ONE PLACE DECIMAL ±.1

TWO PLACE DECIMAL ±.06

THREE PLACE DECIMAL ±.003

INTERPRET GEOMETRIC

TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

APPLICATION

DO NOT SCALE DRAWING

DRAWN JCS 11/18/2012

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

TITLE: Transition

SIZE DWG. NO. REV
A RB Tran 01

SCALE: 1:20 WEIGHT: SHEET 2 OF 7

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DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16

ANGULAR: MACH ± 0.5 BEND ± 0.2

ONE PLACE DECIMAL ± 0.1

TWO PLACE DECIMAL ± 0.06

THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL:

5052-H32

FINISH

COMMENT:

Q.A.

DRAWN

JCS

11/18/2012

CHECKED

ENG APPR.

MFG APPR.

STOCK SIZE:

3/16"

TITLE:

TRANSITION ARC LID 2

SIZE

DWG. NO.

REV

A

Tran_arc_lid_02

01

SCALE: 1:12

WEIGHT:

SHEET 5 OF 7
CHANNEL LID, 26"

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ±0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

UNLESS OTHERWISE SPECIFIED:

QC
MFG APPR.
ENG APPR.
CHECKED
DRAWN
DATED

STOCK SIZE: 1/8"

TITLE:

REFERENCES:

SCALE: 1:12
WEIGHT:
SHEET 7 OF 7

5 4 3 2 1

4 3 2 1

3 2 1

2 1

1

0
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<th>PART NUMBER</th>
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<td>Tran_arc_sidewall_02</td>
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</tr>
<tr>
<td>2</td>
<td>Tran_arc_1_02</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Tran_arc_lid_02</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Channel_lid 4FT</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Channel_20x12_Lid 2in</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>C-Channel_10’x8”x20”</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>CA12520096_48in_cut</td>
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<tr>
<td>8</td>
<td>Flange_005</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Lift_Plate</td>
<td>3</td>
</tr>
</tbody>
</table>
45.0°

90.00°

12 12

4 TYP

2.19

2.00

2.81

1.50

.13

48.00

46.00

45.81

2.81

45.0°
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 2
TWO PLACE DECIMAL ± 0.56
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

STOCK SIZE: 0.1875

TITLE: C-CHANNEL, 4FT

SIZE DWG. NO. REV
A C-Channel_8x20_4ft 01

SCALE: 1:20 WEIGHT: SHEET 3 OF 8
CHANNEL LID, 4FT

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL: ±1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL ±0.06
TWO PLACE DECIMAL ±0.003
THREE PLACE DECIMAL ±0.0003

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL:
5052-H32

FINISH

APPLICATION
DO NOT SCALE DRAWING

STOCK SIZE: 0.125

CENTER FOR ECODYNAMICS RESEARCH

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_DRAWN HRZ 11/28/2012

CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

5 4 3 2 1

5052-H32

NEXT ASSY USED ON

FINISH

APPLICATION DO NOT SCALE DRAWING

SCALE: 1:20 WEIGHT:

SHEET 5 OF 8
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 1/2
ONE PLACE DECIMAL ± .01
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± .003

INTERPRET GEOMETRIC
TOLERANCING PER: ASME Y14.100
MATERIAL: 5052-H32
FINISH

TITLE: TRANSITION ARC
STOCK SIZE: 0.1875

DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENT:

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<th>QTY.</th>
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<td>Gusset_3 1-2x3 1-2in</td>
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<tr>
<td>2</td>
<td>Tran_Flange_18x24</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Gusset_3x3in_angle</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Tran_chan_6ft</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Tran_arc_sidewall</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Tran_arc_1</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Tran_arc_lid</td>
<td>1</td>
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<tr>
<td>8</td>
<td>FLANGE24X6</td>
<td>1</td>
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<td>9</td>
<td>Gusset_3x3in</td>
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<td>10</td>
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<td>11</td>
<td>PIT Antenna 24X6</td>
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<td>Lift_Plate</td>
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<tr>
<td>13</td>
<td>Channel_lid-10in</td>
<td>1</td>
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</table>

**DIMENSIONS ARE IN INCHES**

**TOLERANCES:**
- FRACTIONAL: ±1/16
- ANGULAR: ±0.5° BEND: ±2°
- ONE PLACE DECIMAL: ±0.05
- TWO PLACE DECIMAL: ±0.06
- THREE PLACE DECIMAL: ±0.030

**INTERPRET GEOMETRIC TOLERANCING PER:** ASME Y14.100

**FINISH**

**MATERIAL**

**APPLICATION**

**DO NOT SCALE DRAWING**

**SCALE:** 1:25

**WEIGHT:**
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ± 1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL: ± 1
TWO PLACE DECIMAL: ± 0.06
THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL:
ASTM A36 Steel

ASTM A36 Steel

TITLE:

STOCK SIZE: 0.1875

SIZE | DWG. NO. | REV
A Tran_chan_lid 01

SCALE: 1:10 WEIGHT: SHEET 8 OF 9
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL: ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± .1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± .030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: ASTM A36 Steel

APPLICATION NEXT ASSY USED ON FINISH

APPLICABLE

DRAWN NAME DATE
HRZ 11/28/2012

STOCK SIZE: 0.19

TITLE:

SIZE DWG. NO. REV

A Tran_chan_lid2 01

SCALE: 1:10 WEIGHT:

SHEET 9 OF 9
<table>
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<td>2</td>
<td>Tran_arc_1_04-02</td>
<td>2</td>
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<tr>
<td>3</td>
<td>Tran_arc_lid_04-02</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Flange_005</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>C-Channel_10'x8&quot;x20&quot;</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Channel_20x12_Lid 4in</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Channel_lid 8FT</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>1581A42</td>
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</tr>
<tr>
<td>9</td>
<td>Channel_filler-20in</td>
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</table>
DOWN 45.00° R 23.81

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR ± 0.5°
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

TITLE: BOTTOM OF ARC

STOCK SIZE: 0.19

UNLESS OTHERWISE SPECIFIED:

DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

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DOWN 45.00° R 30.00

R 30.00

20.00

20.00

135.00°

24.76

10.39

2.00

2.00

LID FOR ARC

STOCK SIZE: 0.1875

TITLE:

5052-H32

MATERIAL:

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ±1/16
ANGULAR: ±0.5° BEND: ±2
ONE PLACE DECIMAL: ±0.1
TWO PLACE DECIMAL: ±0.06
THREE PLACE DECIMAL: ±0.030

5
4
3
2
1

NEXT ASSY

USED ON

APPLICATION

DO NOT SCALE DRAWING

CENTER FOR ECOHYDRAULICS RESEARCH

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NOTE:
PURCHASED PART
8FT ALUMINUM PIANO HINGE

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± .1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC
TOLERANCING PER: ASME Y14.100

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DOWN 90.00° R .09

CHANNEL LID 8FT

SHEET 7 OF 7

11/28/2012

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ±1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL: ±.1
TWO PLACE DECIMAL: ±.06
THREE PLACE DECIMAL: ±.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

TITLE: 8FT LID FOR C-CHANNEL

STOCK SIZE: 0.125

SIZE: A

DWG. NO.: Channel_lid 8FT

REV: 01

SCALE: 1:20

WEIGHT:
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<tr>
<td>2</td>
<td>Flange_005</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Flange_006</td>
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NOT FINALIZED
ALL PLUMBING TO BE PURCHASED AND
INSTALLED BY U OF I
BOM Table

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<tr>
<td>11</td>
<td>30x30x30-Full walls</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>30x30x30-bottom</td>
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</tr>
<tr>
<td>13</td>
<td>30x30x30-back insulation bay</td>
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<tr>
<td>14</td>
<td>30x30x30-Full insulation bay</td>
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<td>30x30x30-Lid</td>
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<td>17</td>
<td>30x30x30-foam seal</td>
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</tr>
<tr>
<td>18</td>
<td>Neal Ref -2in MALE-DIXON</td>
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<tr>
<td>19</td>
<td>Neal Ref -6in MALE-DIXON</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Neal Ref -8in knife gate</td>
<td>1</td>
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</tbody>
</table>
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ±1/16

ANGULAR: MACH ±0.5 BEND ±0.2

ONE PLACE DECIMAL: ±0.1

TWO PLACE DECIMAL: ±0.06

THREE PLACE DECIMAL: ±0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

DIMENSIONS

MATERIAL

FINISH

APPLICATION

DO NOT SCALE DRAWING

Q.A.

MFG APPR.

ENG APPR.

CHECKED

DRAWN

NAME

DATE

STOCK SIZE:

TITLE:

SIZE

DWG. NO.

REV

SCALE: 1:16

WEIGHT:

SHEET 6 OF 12

30x30x30-bottom

A

01

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bend 90.00°
Fabricator selects radius of bends

DIMENSIONS ARE IN INCHES

FRACTIONAL: \( \pm \frac{1}{16} \)
ANGULAR: MACH \( \pm 0.5 \) BEND \( \pm 2 \)
ONE PLACE DECIMAL: \( \pm 1 \)
TWO PLACE DECIMAL: \( \pm 0.5 \)
THREE PLACE DECIMAL: \( \pm 0.030 \)

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

UNLESS OTHERWISE SPECIFIED:

DRAWN: HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

STOCK SIZE:

TITLE:

SCALE: 1:16

REV

A

SHEET 7 OF 12

UNIVERSITY OF IDAHO. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UNIVERSITY OF IDAHO IS PROHIBITED.
Fabricator selects radius of bends

bend 90.00°

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ±1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL ±.1
TWO PLACE DECIMAL ±.06
THREE PLACE DECIMAL ±0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

TOLERANCE PER: ASME Y14.100

FINISH

APPLICATION

DO NOT SCALE DRAWING
30.00
1.50
0.1875

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.5
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER ASME Y14.100

MATERIAL

FINISH

NEXT ASSY USED ON

APPLICATION

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:
DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

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STOCK SIZE:

TITLE:

SIZE DWG. NO. REV
A 30x30x30-Hinge plate 01

SCALE: 1:16 WEIGHT: SHEET 9 OF 12
bend 90.00°
Fabricator selects radius of bends

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 0.1
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

APPLICATION

DO NOT SCALE DRAWING

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

SCALE: 1:16
WEIGHT:

REV

SIZE

DWG. NO.

30x30x30-Lid

A

01

STOCK SIZE:

TITLE:

CENTER FOR ECOHYDRAULICS RESEARCH

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Q.A.

COMMENTS:

DRAWN

NAME

DATE

CHECKED

ENG APPR.

MFG APPR.

5 4 3 2 1

UNIVERSITY OF IDAHO
BENT SHEETMETAL
50-52 ALUMINUM
DESIGNED TO BE AN INSULATED
WATER TANK

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL
FINISH

TITLE: 60x30x30_storage tank

SIZE DWG. NO. REV
A 60x30x30_storage tank 01

SCALE: 1:24 WEIGHT: SHEET 2 OF 15

UNLESS OTHERWISE SPECIFIED:

NAME DATE
DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

APPLICATION
DO NOT SCALE DRAWING

NEXT ASSY USED ON

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<tr>
<td>2</td>
<td>60x30x30-Side walls</td>
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</tr>
<tr>
<td>3</td>
<td>60x30x30-bottom</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>60x30x30-Front wall</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>60x30x30-back insulation bay</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>60x30x30-Side insulation bays</td>
<td>2</td>
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<tr>
<td>7</td>
<td>60x30x30-Front insulation bay</td>
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<td>8</td>
<td>60x30x30-Hinge plate</td>
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<td>9</td>
<td>60x30x30-Lid</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>60x30x30-foam seal</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Neal piano hinge</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>60x30x30-Hatch</td>
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bend 90.00°
Fabricator selects radius of bends
bend 90.00°
Fabricator selects radius of bends

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL \( \pm \frac{1}{16} \)
ANGULAR: MACH \( \pm 0.5 \) BEND \( \pm 2 \)
ONE PLACE DECIMAL \( \pm 1 \)
TWO PLACE DECIMAL \( \pm 0.6 \)
THREE PLACE DECIMAL \( \pm 0.030 \)

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

TITLE:
A x30x30-Side insulation bay01

UNLESS OTHERWISE SPECIFIED:
STOCK SIZE:

NAME DATE
DRAWN HRZ 11/28/2012

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Fabricator selects radius of bends

bend 90.00°
bend 90.00°
Fabricator selects radius of bends

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 0.2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.1
THREE PLACE DECIMAL ± 0.01

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL
FINISH

UNLESS OTHERWISE SPECIFIED:

NAME DATE
DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

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CENTER FOR ECODYNAMICS RESEARCH

TITLE:

STOCK SIZE:

SIZE DWG. NO. REV
60x30x30-Lid A 01

SCALE: 1:16 WEIGHT: SHEET 12 OF 15
<table>
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<th>ITEM NO.</th>
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<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Rest_Box_001-4</td>
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<td>9</td>
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<tr>
<td>10</td>
<td>Rest_Box_001-8</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Flange_002</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Rest_Box_001-13</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Flange_005</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Str_brac_010</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>FYKE_003-1</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>FYKE_003-3</td>
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<tr>
<td>19</td>
<td>FYKE_003-5</td>
<td>1</td>
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<tr>
<td>20</td>
<td>FYKE_003-6</td>
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<tr>
<td>21</td>
<td>Lift_Plate</td>
<td>4</td>
</tr>
</tbody>
</table>
3/16" FILLET WELD UNLESS OTHERWISE SPECIFIED

GRIND FLAT

CENTER FOR ECOHYDRAULICS RESEARCH

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5° BEND ± 2°
ONE PLACE DECIMAL ± 0.6
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.003

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

NEXT ASSY USED ON APPLICATION

APPLICATION

DO NOT SCALE DRAWING

TITLE:

REST BOX #1

STOCK SIZE:

DRAWN HRZ 11/28/2012

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

SIZE DWG. NO. REV

Sheetmetal_Rest_Box_001 01

SCALE: 1:25 WEIGHT: SHEET 2 OF 17
NOTE:
CONTINUOUS ALUMINUM HINGE
CUT TO LENGTH

PIN: \( \phi .375 \)
GAUGE: 0.120"
OPEN WIDTH: 2.00"
KNUCKLE: 2.00"

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL \( \pm \frac{1}{16} \)
ANGULAR: MACH \( \pm 0.5 \) BEND \( \pm 2 \)
ONE PLACE DECIMAL \( \pm .1 \)
TWO PLACE DECIMAL \( \pm .06 \)
THREE PLACE DECIMAL \( \pm .030 \)

INTERPRET GEOMETRIC
TOLERANCING PER: ASME Y14.100

MATERIAL
FINISH

UNLESS OTHERWISE SPECIFIED:

STOCK SIZE:

DRAWN HRZ
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

SIZE DWG. NO. REV
A 01

SCALE: 1:25 WEIGHT:

SHEET 3 OF 17
CENTER FOR ECOHYDRAULICS RESEARCH

TITLE: REST BOX WALL 3/4

STOCK SIZE: 0.1875

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.56
THREE PLACE DECIMAL ± 0.030
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

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SCALE: 1:10
WEIGHT:
SHEET 5 OF 17
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16

ANGULAR: MACH ± 0.5

BEND ± 2

ONE PLACE DECIMAL ± .1

TWO PLACE DECIMAL ± .06

THREE PLACE DECIMAL ± .030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

COMMENTS:

Q.A.

MFG APPR.

ENG APPR.

CHECKED

DRAWN

NAME DATE

DRAWN: HRZ 11/28/2012

STOCK SIZE: 0.25

TITLE: REST BOX LID-1

SIZE: REST Box_001-4

REV: A 01

SCALE: 1:20

WEIGHT:

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16

ANGULAR: MACH ± 0.5

BEND ± 2

ONE PLACE DECIMAL ± .1

TWO PLACE DECIMAL ± .06

THREE PLACE DECIMAL ± .030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

COMMENTS:

Q.A.

MFG APPR.

ENG APPR.

CHECKED

DRAWN

NAME DATE

DRAWN: HRZ 11/28/2012

STOCK SIZE: 0.25

TITLE: REST BOX LID-1

SIZE: REST Box_001-4

REV: A 01

SCALE: 1:20

WEIGHT:
DOWN 90.00° R .25

FLAT PATTERN

STOCK SIZE: 0.125

TITLE: REST BOX LID

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 0.2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.003

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: AL 5052-H32

APPLICATION: DO NOT SCALE DRAWING

NEXT ASSY: USED ON
FINISH:

NAME
DATE
DRAWN
HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

SCALe: 1:20
WEIGHT:
SHEET 7 OF 17
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 0.2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100
MATERIAL: AL 5052-H32
FINISH

DRAWN: HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

TITLE: REST BOX LID-2
STOCK SIZE: 0.1875
SIZE: NE
DWG. NO.: Rest_Box_001-6
REV: 01
SCALE: 1:20
WEIGHT:

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<th>0.375</th>
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<td>TITLE:</td>
<td>Flange, 21&quot;x8&quot;</td>
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<tr>
<td>TOLERANCES:</td>
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<tr>
<td>FRACTIONAL  1/16</td>
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<td>ANGULAR: MACH 0.5 BEND ±2</td>
<td>ENG APPR:</td>
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<tr>
<td>ONE PLACE DECIMAL  ±1</td>
<td>MFG APPR:</td>
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<td>TWO PLACE DECIMAL  ±0.06</td>
<td>Q.A:</td>
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<tr>
<td>THREE PLACE DECIMAL ±0.030</td>
<td>COMMENTS:</td>
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<td>INTERPRET GEOMETRIC</td>
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<td>SHEET 16 OF 17</td>
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24" Wide Flange

STOCK SIZE: 0.375

TITLE:

LENGTH: 5052-H32

4-3-2-1

SCALE: 1:8

WEIGHT:

SHEET 17 OF 17
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<tr>
<td>14</td>
<td>Str_spacer_09</td>
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<td>15</td>
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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± .1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± .003

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

APPLICATION

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 0.2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL
FINISH

NEXT ASSYUsed ON
APPLICATION
DO NOT SCALE DRAWING

DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

STOCK SIZE:

TITLE: REST BOX WALL 1/4

SIZE DWG. NO. REV
A Rest_Box_002-8 01

SCALE: 1:20 WEIGHT:

SHEET 7 OF 10
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACOTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: AL 5052-H32

TITLE: REST BOX LID

STOCK SIZE: 0.125

NAME: HRZ
DATE: 11/28/2012

DRAWN
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

APPLICATION
DO NOT SCALE DRAWING

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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ± 1/16
ANGULAR: MACH ±0.5 BEND ±0.1
ONE PLACE DECIMAL: ± 0.06
TWO PLACE DECIMAL: ±0.030
THREE PLACE DECIMAL: ±0.003
INTERPRET GEOMETRIC
TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

APPLICATION
DO NOT SCALE DRAWING

GRID 5 4 3 2 1

STOCK SIZE: 0.1875

TITLE: REST BOX LID-1

SIZE: A
DWG. NO.: Rest_Box_002-4
REV: 01

SCALE: 1:20
WEIGHT:

NAME DATE
DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

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Lamprey Exit Box Platform

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES TOLERANCES:
- FRACTIONAL ±
- ANGULAR: MACH ± BEND ±
- TWO PLACE DECIMAL ±
- THREE PLACE DECIMAL ±

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

APPLICATION

DO NOT SCALE DRAWING

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<thead>
<tr>
<th>UNLESS OTHERWISE SPECIFIED:</th>
<th>NAME</th>
<th>DATE</th>
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<tr>
<td>DIMENSIONS ARE IN INCHES</td>
<td>JCS</td>
<td>11/18/2012</td>
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<tr>
<td>TOLERANCES:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRACTIONAL: ±1/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANGULAR: MACH ±0.5 BEND ±1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ONE PLACE DECIMAL: ±0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWO PLACE DECIMAL: ±0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>THREE PLACE DECIMAL: ±0.030</td>
<td></td>
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</tr>
<tr>
<td>INTERPRET GEOMETRIC</td>
<td></td>
<td></td>
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<tr>
<td>TOLERANCING PER: ASME Y14.100</td>
<td></td>
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<tr>
<td>MATERIAL</td>
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<tr>
<td>AISI 316 SS</td>
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<table>
<thead>
<tr>
<th>STOCK SIZE: L3x3x0.25</th>
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<table>
<thead>
<tr>
<th>TITLE: Structural Bracket</th>
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<table>
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<th>SIZE</th>
<th>DWG. NO.</th>
<th>REV</th>
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<tr>
<td>A</td>
<td>strbracket</td>
<td>01</td>
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<table>
<thead>
<tr>
<th>SCALE: 1:12</th>
<th>WEIGHT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEET 1 OF 3</td>
<td>3</td>
</tr>
</tbody>
</table>
All Three Sides

3X Ø 11/13" ∨ 1"

1" (TYP)

R 9/32" (TYP)

3X Ø 11/13" ∨ 1"

25 1/2"

29 1/2"

33"

42"

26 3/8"

46.83in

31.87in

All Three Sides Fit to Dimensions

18"

12"

42"

18"

7 3/8"

42"
Mitre Corners (TYP)

All Joints (TYP)

3X $\frac{9}{16}$" $\rightarrow$ 31"

29.70in

30 8 26 $\frac{1}{4}$" 30"

36.84in

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm \frac{1}{16}$

ANGULAR: MACH $\pm 0.5$ BEND $\pm 2$

ONE PLACE DECIMAL $\pm 1$

TWO PLACE DECIMAL $\pm 0.6$

THREE PLACE DECIMAL $\pm 0.030$

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL:

AISI 316 SS

2x2x0.25 Square Tubing

Upwelling Box Base

DRAWN: JCS 11/18/2012

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

SCALE: 1:24

WEIGHT:

SHEET 3 OF 3

A
**C-CHANNEL, 12.5FT**

**STOCK SIZE:** 3/16"

**TOLERANCES:**
- Fractional: ±1/16
- Angular: ±0.5° bend ±1°
- One Place Decimal: ±0.1
- Two Place Decimal: ±0.06
- Three Place Decimal: ±0.030

**MATERIAL:** 5052-H32

**DIMENSIONS ARE IN INCHES**

**UNLESS OTHERWISE SPECIFIED:**

- Scale: 1:30
- Weight:

**CHECKED:**

- DRAWN: JCS 11/18/2012

**COMMENTS:**

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<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY.</th>
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<tbody>
<tr>
<td>1</td>
<td>C-Channel_8x20_12ft</td>
<td>C-CHANNEL, 12FT</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Flange_005</td>
<td>Flange, 21&quot;x8&quot;</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Channel_mount</td>
<td>Channel Mount</td>
<td>1</td>
</tr>
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**DRAWN:** JCS 11/18/2012

**TITLE:** Climbing Duct, 6ft
Climbing Duct, 6ft
<table>
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<tr>
<th>ITEM NO.</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY.</th>
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<tbody>
<tr>
<td>1</td>
<td>C-Channel_10'x8&quot;x20&quot;</td>
<td>C Channel, 10ft</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Flange_005 - girder</td>
<td>Flange through Girder</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Channel_Lid_UnderGirder</td>
<td>Channel Lid Under Girder</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Channel_mount</td>
<td>Channel Mount</td>
<td>1</td>
</tr>
</tbody>
</table>
DO NOT SCALE DRAWING

CHANNEL LID UNDER GIRDER

SHEET 4 OF 4

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ± 1/16
ANGULAR: ± 0.5°
BEND: ± 2°
ONE PLACE DECIMAL: ± 1
TWO PLACE DECIMAL: ± 0.5
THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL
FINISH

TITLE: Channel Lid Under Girder

STOCK SIZE: 1/8"

DRAWN
JCS 11/17/2012

CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

SIZE
DWG. NO.
REV

A
Channel_Lid_UnderGirder
01

SCALE: 1:20
WEIGHT: SHEET 4 OF 4
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<th>PART NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY.</th>
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<td>Tran_arc_sidewall_02</td>
<td>TRANSITION ARC</td>
<td>2</td>
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<tr>
<td>2</td>
<td>Tran_arc_1_02</td>
<td>TRANSITION ARC LID 1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Tran_arc_lid_02</td>
<td>TRANSITION ARC LID 2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Flange_005</td>
<td>Flange, 21&quot;x8&quot;</td>
<td>2</td>
</tr>
</tbody>
</table>
TITLE: TRANSITION ARC LID 2

STOCK SIZE: 3/16"

DIMENSIONS ARE IN INCHES
TOLERANCES:
- FRACTIONAL: ± 1/16
- ANGULAR: MACH ± 0.5 BEND ± 2
- ONE PLACE DECIMAL: ± 0.1
- TWO PLACE DECIMAL: ± 0.06
- THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH: 

DRAWN: JCS 11/18/2012

CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

UNLESS OTHERWISE SPECIFIED:

CENTER FOR ECOHYDRAULICS RESEARCH

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<th>DESCRIPTION</th>
<th>QTY.</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Flange_006</td>
<td>Flange, 21&quot;x9&quot;</td>
<td>2</td>
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<tr>
<td>2</td>
<td>Channel_9in_EXIT</td>
<td></td>
<td>1</td>
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</table>
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 0.2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL
FINISH

APPLICATION
DO NOT SCALE DRAWING
DO NOT SCALE DRAWING

SCALE: 1:10
WEIGHT:

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ± 1/16
ANGULAR: MACH: ± 0.5 BEND: ± 0.2
ONE PLACE DECIMAL: ± 0.1
TWO PLACE DECIMAL: ± 0.06
THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL
FINISH

NEXT ASSY USED ON
APPLICATION

DRAWN
NAME: HRZ
DATE: 11/28/2012

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

STOCK SIZE:

TITLE:

SIZE DWG. NO. REV
A Tran.Exit 01

SCALE: 1:10 WEIGHT: SHEET 5 OF 5
<table>
<thead>
<tr>
<th>ITEM NO.</th>
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<th>DESCRIPTION</th>
<th>QTY.</th>
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<tr>
<td>1</td>
<td>Channel_9in_Ex</td>
<td>Trap Drop Chnl</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Flange_006</td>
<td>Flange, 21&quot;x9&quot;</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Slide Gate</td>
<td>Slide Gate</td>
<td>1</td>
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Gate to be removed. Do not weld.

See Flange_006 Detail
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>PART NUMBER</th>
<th>QTY.</th>
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<tbody>
<tr>
<td>1</td>
<td>UPWELLING_001-2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>UPWELLING_001-4</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>UPWELLING_001-3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>UPWELLING_001-11</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Flange_005</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>UPWELLING_001-8</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>UPWELLING-003</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>UPWELLING_001-15</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>UPWELLING_001-5</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>UPWELLING_002</td>
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<td>11</td>
<td>UPWELLING_001-18</td>
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<tr>
<td>12</td>
<td>1581A483</td>
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<tr>
<td>13</td>
<td>12065A630-Thandle</td>
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<tr>
<td>14</td>
<td>1581A154</td>
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<td>15</td>
<td>Part2^Upwelling_Box</td>
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<tr>
<td>16</td>
<td>UPWELLING_001-19</td>
<td>2</td>
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</table>
UPWELLING BOX WALL 1/4

DIMENSIONS ARE IN INCHES

TOLERANCES:
- FRACTIONAL: ±1/16
- ANGULAR: MACH ±0.5 BEND ±0.1
- ONE PLACE DECIMAL: ±0.5
- TWO PLACE DECIMAL: ±0.06
- THREE PLACE DECIMAL: ±0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

APPLICATION: FINISH

UNLESS OTHERWISE SPECIFIED:

DRAWN: JCS 11/18/2012

STOCK SIZE: 3/16"
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ±1/16
ANGULAR: MACH ±0.5 BEND ±2°
ONE PLACE DECIMAL: ±0.1
TWO PLACE DECIMAL: ±0.06
THREE PLACE DECIMAL: ±0.030
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100
MATERIAL: 5052-H32

TITLE: UPWELLING BOX WALL 3/4

STOCK SIZE: 3/16"
UPWELLING BOX BASE

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL: ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL: ± 1
TWO PLACE DECIMAL: ± 0.06
THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

APPLICATION: DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

NAME: JCS  DATE: 11/18/2012

STOCK SIZE: 3/16"

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See Flange_006 Detail

30.00deg
7.38in
2.20in

All Sides

Title: Upwelling Exit

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm \frac{1}{16}$
ANGULAR: MACH $\pm 0.5$ BEND $\pm 2$
ONE PLACE DECIMAL $\pm 1$
TWO PLACE DECIMAL $\pm 0.5$
THREE PLACE DECIMAL $\pm 0.030$

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

APPLICATION

DO NOT SCALE DRAWING

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5 4 3 2 1
3.46in

9"

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.6
THREE PLACE DECIMAL ± 0.06

INTERPRET GEOMETRIC
TOLERANCING PER: ASME Y14.100

MATERIAL:
5052-H32

APPLICATION
USED ON
FINISH

NAME DATE
DRAWN JCS 11/18/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

STOCK SIZE: 3/16"

TITLE: EXIT RAMP

SIZE DWG. NO. REV
A UPWELLING_001-13 01
SCALE: 1:2 WEIGHT:
SHEET 12 OF 15
EXIT RAMP LID

STOCK SIZE: 3/16"

TITLE:

SIZE: A

DWG. NO. UPWELLING_001-16

REV 01

SCALE: 1:2

WEIGHT:

SHEET 13 OF 15

MATERIAL: 5052-H32

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16

ANGULAR: MACH ± 0.5 BEND ± 2

ONE PLACE DECIMAL ± 0.1

TWO PLACE DECIMAL ± 0.06

THREE PLACE DECIMAL ± 0.030

UNLESS OTHERWISE SPECIFIED:

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

DRAWN JCS 11/18/2012

NAME DATE

NEXT ASSY USED ON

APPLICATION DO NOT SCALE DRAWING

EXIT RAMP LID

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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES.

TOLERANCES:
- FRACTIONAL: ± 1/16
- ANGULAR: ± 0.5°
- BEND: ± 2°
- ONE PLACE DECIMAL: ± 0.1
- TWO PLACE DECIMAL: ± 0.06
- THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

APPLICATION: DO NOT SCALE DRAWING

SCALE: 1:12
WEIGHT: SHEET 15 OF 15

TITLE: Upwelling Fyke

STOCK SIZE: 1/8"

DRAWN: JCS 11/18/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

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<th>PART NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY.</th>
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<td>1</td>
<td>Rest_Box_002-2</td>
<td>REST BOX BASE</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Rest_Box_002-4</td>
<td>REST BOX LID-1</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Rest_Box_002-3</td>
<td>REST BOX WALL 3/4</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Rest_Box_002-11</td>
<td>REST BOX WALL 2/4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Rest_Box_002-8</td>
<td>REST BOX WALL 1/4</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>CA12520096_32in_cut</td>
<td>32&quot; hinge cut from Aluminum Piano Hinge Monroe 8&quot;</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Rest_Box_002-12</td>
<td>REST BOX WALL 4/4</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>REST_BOX_002-1</td>
<td>REST BOX LID 2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Flange_005</td>
<td>Flange, 21&quot;x8&quot;</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Transition box2</td>
<td>TRANSITION REST BOX OUT</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Box Beam</td>
<td>REST BOX SUPPORT</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Rest_Box_002-15</td>
<td>REST BOX WALL 2/4</td>
<td>1</td>
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<tr>
<td>13</td>
<td>Fyke-003</td>
<td>REST BOX FYKE</td>
<td>1</td>
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</tbody>
</table>
All Parts Except Lid and Fyke

See Flange_005 Detail

DIMENSIONS ARE IN INCHES

TOLERANCES:
- FRACTIONAL ± 1/16
- ANGULAR: MACH ± 0.5, BEND ± 2
- ONE PLACE DECIMAL ± 1
- TWO PLACE DECIMAL ± 0.56
- THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

APPLICATION

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

DRAWN: JCS 11/18/2012

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

TITLE: Rest Box

SIZE: A

DWG. NO.: Sheetmetal_Rest_Box

REV: 01

SCALE: 1:24

WEIGHT:

SHEET 2 OF 11
Rest Box Wall 1/4

STOCK SIZE: 3/16"

TITLE:

CENTER FOR ECOHYDRAULICS RESEARCH

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16

ANGULAR: MACH ± 0.5 BEND ± 2

ONE PLACE DECIMAL ± 0.1

TWO PLACE DECIMAL ± 0.06

THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH:

COMMENTS:

DRAWN JCS 11/18/2012

CHECKED

ENG APPR.

MFG APPR.

Q.A.

NAME DATE

PROPRIETARY AND CONFIDENTIAL

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3X $\phi \frac{9}{16"} \downarrow 1"

$2\frac{1}{4$ $- 12" - 18" - 3\frac{3}{4$"}

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm \frac{1}{16}$
ANGULAR: MACH $\pm 0.5$, BEND $\pm \frac{1}{2}$
ONE PLACE DECIMAL $\pm .1$
TWO PLACE DECIMAL $\pm .06$
THREE PLACE DECIMAL $\pm .030$

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

APPLICATION: DO NOT SCALE DRAWING

STOCK SIZE: C 3x5

TITLE: REST BOX SUPPORT

SIZE | DWG. NO. | REV
--- | --- | ---
Box Beam | 01

SCALE: 1:12
WEIGHT:

SHEET 10 OF 11

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<tr>
<td>20</td>
<td>Channel_lid-10in</td>
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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL: ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL: ± 0.1
TWO PLACE DECIMAL: ± 0.06
THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32
FINISH

STOCK SIZE: 0.1875

TITLE: REST BOX WALL 2/4

SIZE: REST_BOX_004-11

REV: 01

SCALE: 1:16 WEIGHT: SHEET 2 OF 11
STOCK SIZE: 0.1875

TITLE: REST BOX WALL 2/4

SIZE DWG. NO. REV
A REST_BOX_004-15 01

SCALE: 1:16 WEIGHT: SHEET 3 OF 11

CENTER FOR ECOHYDRAULICS RESEARCH

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ±0.5 BEND ±0.2
ONE PLACE DECIMAL ±.1
TWO PLACE DECIMAL ±.06
THREE PLACE DECIMAL ±0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL: 5052-H32

FINISH

COMMENTS:

DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

5 4 3 2 1
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL ± .1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± .030
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100
MATERIAL: 5052-H32
FINISH

CTRL

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NOTE:
PURCHASED PART
ALUMINUM PIANO HINGE
CUT TO LENGTH IF NECESSARY
DOWN 90.00° R .25

STOCK SIZE: 0.125

TITLE: REST BOX LID

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL:

AL 5052-H32

FINISH

APPLICATION

DO NOT SCALE DRAWING

Q.A.

MFG APPR.

ENG APPR.

CHECKED

DRAWN

NAME DATE

5 4 3 2 1
EXIT RAMP

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/16
ANGULAR: MACH ±0.5 BEND ±0.2
ONE PLACE DECIMAL ±0.1
TWO PLACE DECIMAL ±0.06
THREE PLACE DECIMAL ±0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100
MATERIAL: 5052-H32
FINISH

UNLESS OTHERWISE SPECIFIED:

STOCK SIZE: 0.1875

SHEET 10 OF 11

11/28/2012
TITLE: EXIT RAMP LID

STOCK SIZE: 0.1875

DRAWN HRZ 11/28/2012

MATERIAL 5052-H32

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL ±.1
TWO PLACE DECIMAL ±.06
THREE PLACE DECIMAL ±.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

UNLESS OTHERWISE SPECIFIED:

FINISH

5 4 3 2 1

5052-H32

EXIT RAMP LID

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<td>UPWELLING_001-4</td>
<td>TRAP BOX LID-1</td>
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<td>3</td>
<td>Trap_001-3</td>
<td>TRAP BOX WALL 3/4</td>
<td>1</td>
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<tr>
<td>4</td>
<td>UPWELLING_001-15</td>
<td>TRAP BOX WALL 1&amp;2/4</td>
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<td>5</td>
<td>trap_001-4</td>
<td>TRAP BOX WALL 4/4</td>
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<td>6</td>
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<td>2' hinge cut from Aluminum Piano Hinge Monroe 8'</td>
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<td>7</td>
<td>UPWELLING_001-5</td>
<td>TRAP BOX LID 2</td>
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<td>8</td>
<td>cart</td>
<td>Cart Supplied by UofI</td>
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<td>STOCK SIZE:</td>
<td>3/16&quot;</td>
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ±1/16
ANGULAR: MACH ± 1/16
ONE PLACE DECIMAL: ± 1
TWO PLACE DECIMAL: ± 0.06
THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL:
5052-H32

FINISH:

COMMENTS:
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ±1/16
ANGULAR: MACH ±0.5 BEND ±2
ONE PLACE DECIMAL: ±0.1
TWO PLACE DECIMAL: ±0.06
THREE PLACE DECIMAL: ±0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERICAL: 5052-H32

FINISH:

TEST ASSY USED ON

APPLICATION DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TITLE:

TRAP BOX WALL 4/4

STOCK SIZE: 0.1875

SIZE

A

DWG. NO.

trap_001-4

REV

01

SCALE: 1:12

WEIGHT:

SHEET 5 OF 8
DOWN 90.00° R 1/4"

TRAP BOX LID 2

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR, MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL:
AL 5052-H32

APPLICATION
DO NOT SCALE DRAWING

Q.A.

COMMENTS:

STOCK SIZE:
1/8"

TITLE:
TRAP BOX LID 2

DRAWN
HRZ
11/18/2012

CHECKED

ENG APPR.

MFG APPR.

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STRUCTURAL NOTES

DESIGN CRITERIA:
1. Design Codes:
   A. 2009 International Building Code
   B. ASCE Standard ASCE/SEI 7-05
2. Design Loads:
   A. D.L. = Component Weight + Water
3. Wind load = 90 MPH, exposure C, Iw = 1.0
4. Seismic: IBC Table 15.4.2
   Elevated Tank on Symometrically Braced Legs: 15.7.10
   R = 3.0  SDS = 0.542
   $S1 = 0.228Cs = .03$

MATERIALS:

ALUMINUM: Per Specification for Aluminum Structures
1. Aluminum Sheet Materials: 5052-H32 (welded)
   A. Ftu = 25 KSI
   B. E  = 10,200 KSI
   C. Fty = 9.5 KSI
   D. Fcy = 9.5 KSI
2. Aluminum Shapes Materials: 6061-T6 (welded)
   Channels, Angles and Square Tubes
   A. Ftu = 24 KSI
   B. E  = 10,100 KSI
   C. Fty = 15 KSI
   D. Fcy = 15 KSI
3. Welding shall be accordance with AWS A5.10 /M5.10 specifications:
   A. Welding Filler Material: 4043

STAINLESS STEEL: Per AISI Specification
1. All Stainless Steel Componets: AISI 304
2. Welding shall be accordance with AWS A5.22 / M5.22 specifications:
3. Component Bolts: SS - 304; ASTM A193, grade 8, meeting provisions
   of ANSI/ASME B18.2.1 dimensional requirements.
4. Bolts to Concrete: Hilti "Kwik Bolt -TZ" -SS 304 (or equivalent)
5. Provide neoprene washers to isolate Stainless Steel bolt heads and
   nuts from bearing at aluminum surfaces.

BAR GRATING: Aluminum or Stainless Steel
1. 1" x 1/8" GW

CORROSION PROTECTION
1. Provide Bitumen coating for all Aluminum surfaces in contact with
   concrete or stainless steel surfaces. Bitumen shall be shop applied.
   Protect all Bitumen coatings during shipping.
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DECK CONDUIT SUPPORTS

Str_stand-04

Str_stand-03

Str_stand-02

Str_stand

BASE MOUNT PLATE

SHIM FOR STANDS

3/8" 50-52 AL
NO BITUMEN

3/8" 50-52 AL
NO BITUMEN

TYP .563TYP

TYP .688TYP

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.56
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER:
ASME Y14.100

MATERIAL:
6061 Alloy

FINISH

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50-52 AL OKAY IF BENDING OR FLAT
60-61 AL FOR SHAPES
TYPICAL FLANGE FOR 24"X6" CLIMBING DUCT

TYPICAL FLANGE FOR 20"X6" CLIMBING DUCT
HOLE SPACING UNDETERMINED

TYPICAL FLANGE FOR 9"X6" HORIZONTAL DUCT

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ±0.5 BEND ±0.2
ONE PLACE DECIMAL ±0.1
TWO PLACE DECIMAL ±0.05
THREE PLACE DECIMAL ±0.003

MATERIAL: 5052-H32

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

ENGINEERING DRAWING SHEET 12 OF 35

SCALE: 1:80 WEIGHT:

UNLESS OTHERWISE SPECIFIED:

DRAWN: HRZ 11/28/2012
CHECKED:
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

STOCK SIZE: 0.375

TITLE:

A 01

SIZE DWG. NO. REV

5 4 3 2 1
TYPICAL CROSS SECTION FOR BENT CHANNEL
9"X6" HORIZONTAL DUCT

TYPICAL CROSS SECTION FOR BENT CHANNEL
20"X6" CLIMBING DUCT

NOTES
ALUMINUM 50-52
INTERNAL SHARP OK
REFER TO DUCT DRAWINGS FOR DETAILS
3/16" FILLET WELD UNLESS OTHERWISE SPECIFIED
TYP OF REST BOX ASSEMBLY METHOD

GRIND FLAT

3/16" FILLET WELD UNLESS OTHERWISE SPECIFIED
TYP OF REST BOX ASSEMBLY METHOD
WELD AND GRIND FLANGE FLAT

NOTES:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH.0.5 BEND ±2
ONE PLACE DECIMAL ± .1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± .003

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

NEXT ASSY

USED ON

APPLICATION

DO NOT SCALE DRAWING

SCALE: 1:25
WEIGHT:

SHEET 15 OF 35

CENTER FOR ECOHYDRAULICS RESEARCH

UNLESS OTHERWISE SPECIFIED:

STOCK SIZE:

TITLE:

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WELD FLANGES THIS SIDE

WELD AND GRIND Flush WITH CHANNEL BOTH SIDES

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

TITLE: Climbing Duct, 6ft

STOCK SIZE:

SCALE: 1:20
WEIGHT:

SHEET 16 OF 35
3/16" FILLET WELD ALL CORNERS

TYP MOUNT FLANGE FLUSH WITH DUCT
GRIND FLAT

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL: ± 1/16
ANGULAR: MACH ± 0.5
ONE PLACE DECIMAL: ± 0.1
TWO PLACE DECIMAL: ± 0.06
THREE PLACE DECIMAL: ± 0.030

INTERPRET GEOMETRIC
TOLERANCING PER: ASME Y14.100

MATERIAL:

UNLESS OTHERWISE SPECIFIED:

NAME DATE
DRAWN HRZ 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:

SIZE DWG. NO. REV
A Tran_90deg_Elbow 01

SCALE: 1:20 WEIGHT: SHEET 21 OF 35

FINISH

APPLICATION
DO NOT SCALE DRAWING

NEXT ASSY USED ON
MOUNT FLANGES FLUSH WITH END

3/16"

GRIND FACES FLUSH NO BURRS INSIDE CHANNEL TYP OF ALL FLANGE MOUNTS

120.00

6.0 TYP

1.50

TYP OF ALL FLANGE MOUNTS

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± .1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± .030

interpreting GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

INTERNET: 1:10

FACTOR: 71.34

SheET: 23 OF 35

Center for ECOHYDRAULICS RESEARCH

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NOTES:
TYPICAL 3/16" FILLET WELD BOTH FLANGES
GRIND FACE FLUSH
NO BURRS OR SHARP EDGES

K

VIEW K-K
SCALE 1 : 12

K

VIEW L-L
SCALE 1 : 12

24.00
6.38
20.38
6.38
25°

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ≤ 1/16
ANGULAR: MACH ≤ 0.5 BEND ± 0.5
ONE PLACE DECIMAL ≤ 1
TWO PLACE DECIMAL ≤ 0.56
THREE PLACE DECIMAL ≤0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

APPLICATION

DO NOT SCALE DRAWING
WELDED CHANNEL

BENT C-CHANNEL
20"X6"

45°

25.91

9.11

6.38 TYP

NOTES:
TYPICAL 3/16" FILLET WELD
BOTH FLANGES
GRIND FACE FLUSH
NO BURRS OR SHARP EDGES
TYPICAL 3/16" FILLET WELD
BOTH FLANGES
GRIND FACE FLUSH
NO BURRS OR SHARP EDGES
See Flange_005 Detail

All Sides

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± .1
TWO PLACE DECIMAL ± .06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

MATERIAL

FINISH

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

STOCK SIZE:

REVDWG. NO.

A

UPWELLING BOX

SHEET 28 OF 35

SCALE: 1:20 WEIGHT:

JCS 11/28/2012

ENGINEER

MFG APPR.

Q.A.

COMMENTS:

CENTER FOR ECODYNAMICS

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UPWELLING_002

STOCK SIZE: 1/8"

MATERIAL: 5052-H32

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

TOLERANCES:
- FRACTIONAL: ± 1/16
- ANGULAR: MACH ± 0.5
- BEND ± 2
- ONE PLACE DECIMAL: ± 1
- TWO PLACE DECIMAL: ± 0.56
- THREE PLACE DECIMAL: ± 0.030

DIMENSIONS ARE IN INCHES

DO NOT SCALE DRAWING

Weld All Seams

UNLESS OTHERWISE SPECIFIED:
- SCALE: 1:12
- WEIGHT:

CENTER FOR ECOHYDRAULICS RESEARCH

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NAME DATE
DRAWN JCS 11/28/2012
CHECKED
ENG APPR.
MFG APPR.
Q.A.

COMMENTS:

TITLE:

SIZE DWG. NO. REV
1/8" UPWELLING_002 01

SCALE: 1:12 WEIGHT: SHEET 29 OF 35

APPLICATION DO NOT SCALE DRAWING

NEXT ASSY USED ON FINISH

1 2 3 4 5

NOTES:
TYPICAL 3/16" FILLET WELD
BOTH FLANGES
GRIND FACE FLUSH
NO BURRS OR SHARP EDGES
NOT FINALIZED
PROPOSED Y-GATE
MECHANISM TO BE DESIGNED AND BUILT BY U OF I
SHEETMETAL DUCTWORK TO BE BUILT BY YANKE

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 0.2
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.100

UNLESS OTHERWISE SPECIFIED:

DRAWN HRZ 11/28/2012

STOCK SIZE:

TITLE:

SCALE: 1:15

DWG. NO. Tran.Exit.Ygate

REV 01

WEIGHT:

SHEET 31 OF 35
PROPOSED TRANSITION
FORMED OUT OF ALUMINUM
SQUARE TO ROUND

NOT FINALIZED

M

VIEW M-M

5.00

6.50

6.50

5.00

M

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES.
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 0.5 BEND ± 2
ONE PLACE DECIMAL ± 1
TWO PLACE DECIMAL ± 0.06
THREE PLACE DECIMAL ± 0.003

INTERPRET GEOMETRIC
TOLERANCING PER: ASME Y14.100

MATERIAL

DIMENSION

FINISH

APPLICATION

DO NOT SCALE DRAWING

PROPERTY AND CONFIDENTIAL
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PROHIBITED.

CENTER FOR
ECOHYDRAULICS
RESEARCH

UNLESS OTHERWISE SPECIFIED:
NAME DATE
DRAWN HRZ 11/28/2012

STOCK SIZE:

TITLE:

SIZE DWG. NO. REV
A Flange_07 01

SCALE: 1:10
WEIGHT:

SHEET 32 OF 35
NOT FINALIZED
ALL PLUMBING TO BE PURCHASED AND
INSTALLED BY U OF I

35.25
35.25
35.88
30.00

CENTER FOR ECOHYDRAULICS RESEARCH

NOT FINALIZED
ALL PLUMBING TO BE PURCHASED AND
INSTALLED BY U OF I

35.25
35.25
35.88
30.00

30x30x30_storage tank

5 4 3 2 1

NOT FINALIZED
ALL PLUMBING TO BE PURCHASED AND
INSTALLED BY U OF I

35.25
35.25
35.88
30.00

30x30x30_storage tank

5 4 3 2 1

NOT FINALIZED
ALL PLUMBING TO BE PURCHASED AND
INSTALLED BY U OF I

35.25
35.25
35.88
30.00

30x30x30_storage tank

5 4 3 2 1

NOT FINALIZED
ALL PLUMBING TO BE PURCHASED AND
INSTALLED BY U OF I

35.25
35.25
35.88
30.00

30x30x30_storage tank

5 4 3 2 1
STRUCTURAL NOTES

DESIGN CRITERIA:
1. Design Codes:
   A. 2009 International Building Code
   B. ASCE Standard ASCE/SEI 7-05
2. Design Loads:
   A. D.L. = Component Weight + Water
3. Wind load = 90 MPH, exposure C, Iw = 1.0
4. Seismic: IBC Table 15.4.2
   Elevated Tank on Symetrically Braced Legs: 15.7.10
   R = 3.0  SDS = 0.542
   S1 = 0.228  Cs = .03

MATERIALS:
ALUMINUM: Per Specification for Aluminum Structures
1. Aluminum Sheet Materials: 5052-H32 (welded)
   A. Ftu = 25 KSI
   B. E = 10,200 KSI
   C. Fty = 9.5 KSI
   D. Fcy = 9.5 KSI
2. Aluminum Shapes Materials: 6061-T6 (welded)
   Channels, Angles and Square Tubes
   A. Ftu = 24 KSI
   B. E = 10,100 KSI
   C. Fty = 15 KSI
   D. Fcy = 15 KSI
3. Welding shall be accordance with AWS A5.10 /M5.10 specifications:
   A. Welding Filler Material: 4043

STAINLESS STEEL: Per AISI Specification
1. All Stainless Steel Components: AISI 304
2. Welding shall be accordance with AWS A5.22 / M5.22 specifications:
4. Bolts to Concrete: Hilti "Kwik Bolt -TZ" -SS 304 (or equivalent)
5. Provide neoprene washers to isolate Stainless Steel bolt heads and nuts from bearing at aluminum surfaces.

BAR GRATING: Aluminum or Stainless Steel
1. 1" x 1/8" GW

CORROSION PROTECTION
1. Provide Bitumen coating for all Aluminum surfaces in contact with concrete or stainless steel surfaces. Bitumen shall be shop applied. Protect all Bitumen coatings during shipping.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Channel_8x20_6ft</td>
<td>6' Channel</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Channel_8x20_10ft</td>
<td>10' Channel</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Channel_8x20_Entry</td>
<td>12' Open Chnl 1 Fl</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Channel_5.1875x20_7ft under girder</td>
<td>Climbing Duct, Under Girder</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Channel_8x20_12ft open</td>
<td>Climbing Duct, 12' Open</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>MT Antenna</td>
<td>MT Antenna</td>
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<td>7</td>
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<td>8</td>
<td>Str brac_03-1</td>
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<td>9</td>
<td>Strbracket</td>
<td>Structural Bracket</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>RB Iron</td>
<td>Transition</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>UPWTran</td>
<td>Transition</td>
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<td>12</td>
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<td>2</td>
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<tr>
<td>13</td>
<td>TrapDrop</td>
<td>Trap Exit</td>
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<td>14</td>
<td>Upwelling_Box</td>
<td>Upwelling Box</td>
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<td>15</td>
<td>STRUCT_UPWELLING_BASE</td>
<td>Upwelling Box Base</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Str brac_02</td>
<td>Lower Channel Support</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>CHANNEL_SUPPORT</td>
<td>Deck Channel Support</td>
<td>1</td>
</tr>
</tbody>
</table>
All Parts Except Lid and Fyke

See Flange_005 Detail

Dimensions are in inches

Tolerances:
- Fractional
- Angular: Mach
- Bend
- Three Place Decimal

Interpret Geometric Tolerancing Per:
- Material
- Finish

Title: Rest Box

Size: DWG. NO. A

Rev: Sheet 11 of 23

Scale: 1:30

Weight:

Unles otherwise specified, all parts are tolerances.
Cart to Be Supplied by UofI

All Parts Except Lid
Gate to be removed. Do not weld.

See Flange_006 Detail
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1/2'x10"x10"
Base Plate (Typ)

16X Ø .69  .50

(16) 5/8" Ø HILTI T3 - SS 304 ANC IN /4" EMBED

3X Ø .56  30.00

3x3x3/16 Square Tubing

STOCK SIZE:

3x3x3/16 Square Tubing

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL:
ANGULAR TOLERANCE:
BEND TOLERANCE:
THREE PLACE DECIMAL:
INTERPRET GEOMETRIC TOLERANCING PER:
FINISH:

DRAWN:
CHECKED:
ENG APPR.:
MFG APPR.:
Q.A.:
COMMENTS:

UPWELLING BOX BASE

CENTRAL FOR ECODYNAMICS RESEARCH

SCALE: 1:24 WEIGHT: SHEET 19 OF 23

John Day Dam Assembly

DWG. NO. REV

B 1

NEXT ASB: USED ON
FIND:
APPLICATION: DO NOT SCALE DRAWING

30.00
29.75
1.50
7.00
3.50
29.66

JCS

3X
.56
30.00

16X Ø .69  .50

Title:
John Day Dam Assembly

Center for Ecodynamics Research

Sheet 19 of 23

Scale: 1:24

Weight:

Northwest Box Base

Center for Ecodynamics Research

Sheet 19 of 23

Scale: 1:24

Weight:

Northwest Box Base

Center for Ecodynamics Research

Sheet 19 of 23

Scale: 1:24

Weight:
Deck Channel Support

8X Ø .69 \( \pm .50 \)

1/2"x10"x10"
Base Plate (Typ)

4X Ø .56 \( \pm .19 \)

7.28
7.28
4.33

31.36

[8] 5/8" Ø HILTI T3 - SS 304 ANC IN /4" EMBED

L 3x3x1/4''
HSS 3x3x3/16''

All Joints (TYP)

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Deck Channel Support

8X Ø .69 \( \pm .50 \)

1/2"x10"x10"
Base Plate (Typ)

4X Ø .56 \( \pm .19 \)

7.28
7.28
4.33

31.36

[8] 5/8" Ø HILTI T3 - SS 304 ANC IN /4" EMBED

L 3x3x1/4''
HSS 3x3x3/16''

All Joints (TYP)

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Deck Channel Support

8X Ø .69 \( \pm .50 \)

1/2"x10"x10"
Base Plate (Typ)

4X Ø .56 \( \pm .19 \)

7.28
7.28
4.33

31.36

[8] 5/8" Ø HILTI T3 - SS 304 ANC IN /4" EMBED

L 3x3x1/4''
HSS 3x3x3/16''

All Joints (TYP)

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Deck Channel Support

8X Ø .69 \( \pm .50 \)

1/2"x10"x10"
Base Plate (Typ)

4X Ø .56 \( \pm .19 \)

7.28
7.28
4.33

31.36

[8] 5/8" Ø HILTI T3 - SS 304 ANC IN /4" EMBED

L 3x3x1/4''
HSS 3x3x3/16''

All Joints (TYP)

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Deck Channel Support

8X Ø .69 \( \pm .50 \)

1/2"x10"x10"
Base Plate (Typ)

4X Ø .56 \( \pm .19 \)

7.28
7.28
4.33

31.36

[8] 5/8" Ø HILTI T3 - SS 304 ANC IN /4" EMBED

L 3x3x1/4''
HSS 3x3x3/16''

All Joints (TYP)

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Due to the radius not being machined, these holes did not line up and were enlarged in the field to accommodate. 1/4" fender washers were used between the angle and the nut to prevent failure.
(10) 1/2" x 1 1/2" Stainless Steel Bolts

(4) 1/2" x 1 1/2" Stainless Steel Bolts
<table>
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<tr>
<th>ITEM NO.</th>
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<th>QTY.</th>
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<td>6' Channel</td>
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<tr>
<td>2</td>
<td>Channel_8x20_10ft</td>
<td>10’ Channel</td>
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<td>3</td>
<td>Channel_8x20_Entry</td>
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<td>Climbing Duct, Under Girder</td>
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<td>5</td>
<td>Channel_8x20_12ft open</td>
<td>Climbing Duct, 12’ Open</td>
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<td>PIT Antenna</td>
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<td>Sheetmetal_Rest_Box</td>
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<td>strbracket</td>
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<tr>
<td>15</td>
<td>STRUCT_UPWELLING_BASE</td>
<td>Upwelling Box Base</td>
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