### BILL OF MATERIAL

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<th>DRAW NO</th>
<th>SCGR PART NO</th>
<th>ITEM</th>
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<td>G30-00265</td>
<td>B99-89093</td>
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<td>CONCRETE (3) 0.149 x 13.75 TIES, PLATE PADS, LM</td>
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<td>1</td>
<td>Guard Rail Assembly - Boltless</td>
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<td>Finishing Fillet 1/2&quot; x 1/8&quot; x 0.154&quot;</td>
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<td>Insulated Rail Assembly, 52&quot; - 2&quot; Bonded Insulated Joint</td>
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<td>1</td>
<td>Insulated Rail Assembly, 52&quot; - 2&quot; Bonded Insulated Joint</td>
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</tbody>
</table>

### TOTAL LENGTH
- Heel Length: 97' 2" - 0"
- Toe Length: 94' 0" - 0"

### DESIGN SPEEDS
- Degree of Curve: 1° 19’ 24"
- Centerline Radius: 4815’ - 0"
- Entry Angle: 1° 19’ 24"

### TURNOUT DATA
- Length of Points: 87’ 0” - 79’ 0”
- Centerline Radius: 4815’ - 0”
- Entry Angle: 1° 19’ 24"
- Degree of Curve: 1° 19’ 24"
- Design Speeds: 70 MPH Passenger at 3’ Unbalance

### THROWN AT ROD #1:
- 4” @ 1’ - 7”

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**SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY**

**ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA 90012**

**ENGINEERING STANDARDS**

---

**METROLINK**

**TURNOUT LAYOUT**

**NO 24-136 LB RE L.H. WSM**

**HST, SWITCH MACHINE ON MAINLINE SIDE**
NOTES:
1. SEE TURNOUT DRAWING ES2807-01 FOR THE LOCATION DIMENSIONS.
2. SWITH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT.

DETAIL A
TYPICAL BRAZELLE BRACE ASSEMBLY

HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
HOLLOW STEEL TIES,
# Bill of Material

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<td>HOLLOW SWITCH TIE &amp; RODDING ASSEMBLY</td>
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<tr>
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<td>1</td>
<td>SANSION POINT, 7' 6&quot; LONG, DOUBLE REINFORCED, UP MAIN, LH</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>SANSION POINT, 7' 6&quot; LONG, DOUBLE REINFORCED, UP MAIN, RH</td>
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<td>4</td>
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<td>SANSION STOCK RAIL, 7' 6&quot; LONG, LH</td>
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<td>SANSION STOCK RAIL, 7' 6&quot; LONG, RH</td>
</tr>
<tr>
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<td>THERMAL STESS BLOCK, 136 LB RE, UNIFORM REAR, RH</td>
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<tr>
<td>8</td>
<td>2</td>
<td>SWITCH PLATE (BP1C-136)</td>
</tr>
<tr>
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<td>SWITCH PLATE (BP1C-136)</td>
</tr>
<tr>
<td>10</td>
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<td>SWITCH PLATE (BP2C-136)</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>SWITCH ROLLER PLATE (RP-1-136) SCHWIHAG</td>
</tr>
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<td>12</td>
<td>1</td>
<td>SWITCH PLATE (24-34RRC)</td>
</tr>
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<td>SWITCH PLATE (24-41RRC)</td>
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## Notes:
1. See TYPICAL DRAWING (ES2807-02) FOR LOCATION DIMENSIONS.
2. SWITCH ROLLER PLATES SHALL BE PREPARED TO DIMENSIONS SHOWN IN DETAIL. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT.

---

**Detail A**

TYPICAL SWITCH HEEL ASSEMBLY

**Detail B**

TYPICAL BOLTLESS BRACE ASSEMBLY

---

**Description**

- Hollow Steel Tie & RODDING Assembly
- Screw Plate (BP1C-136)
- Screw Plate (BP2C-136)
- Screw Plate (24-34RRC)
- Screw Plate (24-35RRC)
- Screw Plate (24-36RRC)
- Screw Plate (24-37RRC)
- Screw Plate (24-38RRC)
- Screw Plate (24-39RRC)
- Screw Plate (24-40RRC)
- Screw Plate (24-41RRC)

---

**Engineering Standards**

No 24-106 LB RE RH Switch Pack, Hollow Steel Tie
Switch Machine on Mainline Side

---

**Metrolink**

Southern California Regional Rail Authority
One Gateway Plaza, 17th Floor, L.A., CA 90012
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS

NOTES:
1. MACHINED SIDE HEAD CUTS BEFORE REMOVING HEAD AND WEB AREA SHOWN FOR MANGANESE TIP.
2. POINT TO BE MACHINED STRAIGHT.
3. ALL HOLES SHALL BE CHAMFERED WITH 1/8" R EDGES.

METRICAL

SWITCH POINT ASSEMBLY, 136 LB RE SAMSON, RH NO 24 LH / RH TURNOUT
79'-2" OVERALL LENGTH MANGANESE TIP
### Notes:

1. All burning methods prohibited.
2. All bolt holes to be beveled per detail.
3. Point of switch to be marked on gauge side of web with a white line using waterproof marker or paint.
4. Write SCRRA ES number on web of rail with waterproof marker or paint.

### Bill of Material

<table>
<thead>
<tr>
<th>Item</th>
<th>QTY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Rail, 136 lb re 80'-0&quot; long</td>
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</tbody>
</table>

### Partial Section A

- **RAIL END/HOLE BEVELING DETAIL**
  - Rail head only - not base

- **SECTION B**
  - 80'-0" x 5/8" overall length
  - Raised rolling marks two sides
  - Partial hole beveling detail

### Marks This Side

- 1'-3" ± 1/8"
- 1'-8" ± 1/8"
- 2'-2" ± 1/8"
- 2'-8" ± 1/8"

### Marks for PS

- 2 holes
  - 1/2" dia (+1/8" - 0")

### Pressure Sratch

- 1/8" x 1/16" x 1/16"

### Revised Information

- 03/31/2011

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RAIL END/HOLE BEVELING DETAIL

PARTIAL SECTION

SECTION

NOTES:

1. ALL BURNING METHODS PROMPTED.
2. ALL BOLT HOLES TO BE BEVELED PER DETAIL.
3. POINT OF SWITCH TO BE MARKED ON GAUGE SIDE OF WEB.
4. MARK FOR PS.
5. SCRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

rail, 136 lb re 73'-8" long

rail, 136 lb re lh switch pack

rail, 136 lb re 73'-8" long

samson stock rail, rh

ES2807-24

4.05.44 UNDUG (3") - 0"
4.05.44 RUNOUT
2.05.44 RUNOUT

1/4" DIA (1/4" - 0")
2 HOLES

1/8" DIA (1/8" - 0")
5 HOLES

ALL BOLT HOLES TO BE BEVELED PER DETAIL.
ALL BURNING METHODS PROHIBITED.
MARK FOR PS.
MARKER OR PAINT.
WITH A WHITE LINE USING WATERPROOF MARKER OR PAINT.

WRITE SCRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

136 LB RE LH SWITCH PACK

FOR NO 24 136 LB RE LH SWITCH PACK

ENGINEERING STANDARDS

SAMSON STOCK RAIL, RH

136 LB RE 73'-8" LONG

FOR NO 24 136 LB RE LH SWITCH PACK

ES2807-24

NO 24 136 LB RE LH SWITCH PACK

ES2807-24
NOTES:
1. ALL BURNING METHODS PROHIBITED
2. ALL RAIL HOLES TO BE REVELED PER DETAIL
3. POINT OF SWITCH TO BE MARKED ON RAIL SIDE OF WEB
   WITH A WHITE LINE USING WATERPROOF MARKER OR PAINT.
4. WRITE SCRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF
   MARKER OR PAINT.

RAIL END/HOLE BEVELING DETAILS

RAIL HEAD ONLY - NOT BASE

PARTIAL SECTION A

SECTION B

80'-0" ± 3/4" OVERALL LENGTH

RAISED ROLLING MARKS THIS SIDE

MARK FOR PS — 8"

1/8" DIA 1 1/4" ± 0"
5 HOLES

45° UNDERCUT (3/4" ± 0"

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

SAWMAN STOCK RAIL, RH

FOR NO 24 136 LB RE RH SWITCH PACK

ENGINEERING STANDARDS

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

ONE GATEWAY PLAZA 12TH FLOOR L.A., CA 90012

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NOTES:

1. SET TO INCLUDE TIES 0, 2, 3 THROUGH 5, 7 THROUGH 9, 11 THROUGH 15, THROUGH 18 AND 20 THROUGH 149.
2. TIE LENGTHS ARE DETERMINED BY ACORING 2'-0" FROM RAIL GAUGE LINE FOR 1'-9"
   FROM RAIL CENTERLINE PER SIDE AT THE CENTERLINE OF EACH TIE LOCATION.
3. ALL TIES ARE FLAT (NON-CANTED) EXCEPT 1:80 CANTED TIES.
4. TRANSITION TIES (QUANTITY 1) SHALL INCORPORATE 1:60 CANTED RAIL SEATS AND
   USE 4'-8" BETWEEN STRAIGHT RAIL SEAT GAUGES. LENGTH SHALL BE 8'-3".
5. THE DRAWING SHOWS TIE "X" PLACEMENT FOR SWITCH MACHINE ON RH TURNOUT SIDE.
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 3, 5, 6, 14, AND 19.
NOTES:

1. SET TO INCLUDE TIES 0, 3, THROUGH 5, 7 THROUGH 9, 11 THROUGH 13, THROUGH 18 AND 20 THROUGH 149.

2. TIE LENGTHS ARE DETERMINED BY ADDING 1'-10½" FROM RAIL GAUGE LINE (OR 21") FROM RAIL CENTERLINE PER SIDE AT THE CENTERLINE OF EACH TIE LOCATION

3. ALL TIES ARE FLAT (NON-CANTED) EXCEPT 1:80 CANTED TIE.

4. TRANSITION TIES (NUMBER 5) SHALL INCORPORATE 1:80 CANTED RAIL SEATS AND USE 4'-8½" BETWEEN STRAIGHT RAIL SEAT GAUGES. LENGTH SHALL BE 8'-3".

5. THIS DRAWING SHOWS TIE "O" PLACEMENT FOR SWITCH MACHINE ON LH/TURNOUT SIDE. USE OPPOSITE HANS FOR SWITCH MACHINE ON MAINLINE SIDE.

6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 6, 10, 14, AND 19.
### BILL OF MATERIAL

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<th>DESCRIPTION</th>
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<td>5A</td>
<td>PUSH PIN ASSEMBLY FOR HST COVERS</td>
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<td>STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE</td>
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**NOTES:**

1. SWITCH MACHINE AND MACHINE PLATES (NE) MUST BE COORDINATED WITH SCRRA.
2. SEE DRAWING ES2807-73 & ES2807-74 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

---

**HOLLOW STEEL TIE LAYOUT**

**ENGINEERING STANDARDS**

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

---

**SECTION A:** HOLLOW TIE TOP COVER DETAIL

**SECTION B:** END COVER PLATE

**SECTION C:** HOLLOW TIE SIDE END COVER DETAIL

**VIEW D:** WELDING DETAILS

---

**METROLINK**

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

---

**ENGINEERING STANDARDS**

HOLLOW STEEL TIE LAYOUT SWITCH MACHINE ON TURNOUT SIDE NO 24-136 LB RE RH
NOTE:

1. SEE ES2807-42 FOR CROSS SECTIONS, DETAILS, AND NOTES.
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<td>-</td>
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<tr>
<td>20</td>
<td>2</td>
<td>WASHER, BOLT CAPTURE STYLE, ½&quot; THICK</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>2</td>
<td>WASHER, BOLT CAPTURE STYLE, ½&quot; THICK</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Notes:
1. SEE ES2807-43 FOR CROSS SECTIONS, DETAILS, AND NOTES.
POINT DETAILS @ THEORETICAL 1/2" PT

- WELD THREE SIDES PLACED WITH SPRING WING 1/2" OPEN AT THEORETICAL 1/2" POINT.
- THICK TYPE "A" BRACE 1/2" THICK WELD
- FULL RADIUS AT POINT WHEN POINT THICKNESS IS 1/2" Point will have a full 1/2" radius through the entire length of the frog.
- 1/16" C/W CLEVIS HARDWARE
- 11/32" C/W CLEVIS HARDWARE
- 1/4" THICK PLATE RISER
- 1 1/2" X 1 1/2" X 2 1/4" CAPTURE BLOCK COMES WELDED ONTO BASE PLATE
- 3 SIDES PLACED WITH SPRING WING 1/2" OPEN AT THEORETICAL 1/2" POINT.
- HORN AND RETARDER DETAILS

SPRING BOX DETAIL

- C/W CLEVIS HARDWARE
- 1/4" THICK PLATE RISER
- 1/4" X 1 1/2" X 2 1/4" CAPTURE BLOCK COMES WELDED ONTO BASE PLATE
- 1/4" X 1 1/2" X 2 1/4" CAPTURE BLOCK COMES WELDED ONTO BASE PLATE
- 3 PASSES
- 4 SIDES PLACED WITH SPRING WING 1/2" OPEN AT THEORETICAL 1/2" POINT.
- 3 PASS
THEORETICAL †” POINT

POINT DETAILS

FULL RADIUS AT POINT

1/8" THRU ENDING POINT RAIL WHEN POINT THICKNESS IS 1/8" WILL HAVE A FULL 1/8" RADIUS THROUGH THE ENTIRE LENGTH OF THE FROG

3 PASSES

2 PLACES

MIN. 1/8"

POINT AND RETARDER DETAILS

(ATTHEORETICAL 1/2" PT)

HORNS AND RETARDER

WELDED RAIL BRACE PLATE DETAIL

B

SECTION A

WELDED RAIL BRACE PLATE DETAIL

DESIGNER:

DRAWN:

DATE:

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

DIRECTOR OF ENGINEERING AND CONSTRUCTION

ASSISTANT DIRECTOR: STANDARDS & DESIGN

ENGINEERING STANDARDS

REVISION SHEET

SCALE:

CADD FILE:

ENG.

DES.

DATE

REV.

DESCRIPTION

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IN SPRING WING RAIL ASSEMBLY

CASTING HORN & HARDWARE

FOR SPRING RAIL IS INCLUDED

IN SPRING WING RAIL ASSEMBLY

WELD DOWN HORN

1/8" CLEARANCE BETWEEN

OPEN WING AND CAPTURE BLOCK

ON PLATE E

SECTION C

SECTION

SECTION THROUGH HOLD DOWN

ENGINEERING STANDARDS

NO 24 WSM FROG LH – DETAILS

FROG ASSEMBLY DETAILS AND FROG PACK

CONCRETE TIES-136 LB RE RAIL

A

SECTION

B

SECTION

C

SECTION

1:4

1:5
NOTES:
1. I.D. CHARACTERS TO BE 1/8" MINIMUM WEIGH CLEANED STAMPED AS SHOWN.
2. RAILS TO BE DRESSED FLUSH WITH SWELLED & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

FORGED SHOULDER WELDING DETAIL

BILL OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY FOR 24-136-1R</th>
<th>QTY FOR 24-136-2R</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
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<td>FLAT BAR ASTM A36 6&quot; x 6&quot; x 2'-8&quot; LONG</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>FLAT BAR ASTM A36 6&quot; x 6&quot; x 2'-7&quot; LONG</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4</td>
<td>SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1</td>
</tr>
</tbody>
</table>

NOTES:
1. I.D. CHARACTERS TO BE 1/8" MINIMUM WEIGHT CLEANED STAMPED AS SHOWN.
2. RAILS TO BE DRESSED FLUSH WITH SWELLED & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
NOTES:
1. I.D. CHARACTERS TO BE % minimum height clearly stamped as shown.
2. WELDS TO BE DRESSED FLUSH WITH RAIL SEAT. NO TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

ENSURE CLEARANCE FOR 1/16" BR CLIP
FORGED SHOULDER WELDING DETAIL

1. LD CHARACTERS TO BE ½" MINIMUM HEADING CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
FORGED SHOULDER WELDING DETAIL

1. I.D. CHARACTERS TO BE $\frac{1}{8}$" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE CRIEDGED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

ENSURE CLEARANCE FOR $\frac{1}{8}$" DIA. CLIP.
ENFORCE CLEARANCE FOR 3⁄4" O.D. CLIP

ENSURE CLEARANCE FOR 3⁄4" O.D. CLIP

NOTES:
1. I.D. CHARACTERS TO BE 3⁄16" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
1. I.D. CHARACTERS TO BE 1/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
4. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
5. UNLESS OTHERWISE NOTED, ALL TOLERANCES SHALL BE ± 1/16".

ENSURE CLEARANCE FOR 3/16" DIA CLIP

THE FRONT FACES OF STOPS MUST LINE UP AND TOUCH CASTING BASE

FROG BASE PLATE 24-136-6R

FORGED SHOULDER WELDING DETAIL

NOTES:
Line up and touch casting base.

The front faces of stops must line up and touch casting base.

Ensure clearance for ½" dia. clip.

Forced shoulder welding detail.

Bill of Material:

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<thead>
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<th>DESCRIPTION</th>
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<tr>
<td>1</td>
<td>1</td>
<td>Burned plate, ASTM A36, ¾&quot; thick</td>
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<tr>
<td>2</td>
<td>5</td>
<td>Capture block for plate clip</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Block casting, capture horn, mushroom</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Capture block for spring box</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Shoulder, Pandrol, forged tongueless, type 1</td>
</tr>
</tbody>
</table>

Notes:
1. I.D. characters to be ¾" minimum weight clearly stamped as shown.
2. Welds to be dressed flush with shoulder & not to protrude into rail seat.
3. Slotted hole centers are indicated on drawing.
4. Openings in bolt capture blocks shall be free of weld and spatter.
5. Unless otherwise noted, all tolerances shall be ± ⅛".

Simplified frog base plate 24-136-6L.

Concrete ties - 136 lb re rail.
FORGED SHOULDER WELDING DETAIL

THE FRONT FACES OF STOPS MUST LINE UP AND TOUCH CASTING BASE

ENSURE CLEARANCE FOR ¾” DM CLIP

FORGED SHOULDER WELDING DETAIL

THE FRONT FACES OF STOPS MUST LINE UP AND TOUCH CASTING BASE

ENSURE CLEARANCE FOR ¾” DM CLIP

FORGED SHOULDER WELDING DETAIL

THE FRONT FACES OF STOPS MUST LINE UP AND TOUCH CASTING BASE

ENSURE CLEARANCE FOR ¾” DM CLIP

FORGED SHOULDER WELDING DETAIL

THE FRONT FACES OF STOPS MUST LINE UP AND TOUCH CASTING BASE

ENSURE CLEARANCE FOR ¾” DM CLIP
NOTE:
1. I.D. CHARACTERS TO BE ⅜" MINIMUM WEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
4. OPENINGS IN SLOTTED CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
5. UNLESS OTHERWISE NOTED, ALL TOLERANCES SHALL BE ±⅛".

FORGED SHOULDNP WELDING DETAIL

THE FRONT FACES OF STOPS MUST LINE UP AND TOUCH CASTING BASE

SLOTTED HOLES 1" x 1'" (+⅛" - 0")

28 SLOTTED HOLES

ENGINEERING STANDARDS
NO 24 WSM FROG LH
FROG BASE PLATE 24-7L
CONCRETE TIES 136 LB RE RAIL

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA, 90012

DIRECTOR OF ENGINEERING AND CONSTRUCTION
ENGINEERING STANDARDS

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BILL OF MATERIAL

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<th>QTY FOR 24-136-9R</th>
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<td>FLAT BAR, ASTM A36, 5/8&quot; x 8&quot; x 2'-2½&quot; LONG</td>
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<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>FLAT BAR, ASTM A36, 5/8&quot; x 8&quot; x 2'-3½&quot; LONG</td>
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<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>BURNT STOP, 1¼&quot; THICK, 7&quot; LONG, 15º TAPER</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>SHOULDER, PANDELO, FORGED TONGUELESS, TYPE 1</td>
</tr>
</tbody>
</table>

NOTES:
1. ½ CHARACTERS TO BE ½" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

FORGED SHOULDER WELDING DETAIL

ENSURE CLEARANCE FOR ½" DM CLIP.
BILL OF MATERIAL

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<tr>
<th>ITEM</th>
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<th>QTY FOR 24-136-12R</th>
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<td>FLAT BAR, ASTM A36, 1/4&quot; x 6&quot; x 2'-4½&quot; LONG</td>
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<td>FLAT BAR, ASTM A36, 1/4&quot; x 6&quot; x 2'-5½&quot; LONG</td>
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<td>1</td>
<td>FLAT BAR, ASTM A36, 1/4&quot; x 6&quot; x 2'-6½&quot; LONG</td>
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<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>SHOULDER, PANARD, FORGED, TONGUELESS, TYPE 1</td>
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</tbody>
</table>

NOTES:
1. I.D. CHARACTERS TO BE 1/16" MINIMUM LEFT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DIPPED FLUSH WITH RAIL SEAT & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

FORGED SHOULDER WELDING DETAIL

ENSURE CLEARANCE FOR 3/8" DIAM剪

ENFORCE THE 2807-56 CONCRETE TIES-136 LB RAIL

FROG BASE PLATE 24-136-11R

FROG BASE PLATE 24-136-12R

FROG BASE PLATE 24-136-13R

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS
NO 24 WSM FROG RH
FROG BASE PLATES 24-11R, 24-12R AND 24-13R
CONCRETE TIES 136 LB RE RAIL
TABLE OF CONTENTS

BILL OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY FOR 24-136-14R</th>
<th>QTY FOR 24-136-15R</th>
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<tbody>
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<td>FLAT BAR, ASTM A36, 1/2&quot; x 6&quot; x 2'-7½&quot; LONG</td>
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<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>FLAT BAR, ASTM A36, 1/2&quot; x 6&quot; x 2'-8½&quot; LONG</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4</td>
<td>SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1</td>
</tr>
</tbody>
</table>

NOTES:

1. ID CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. RAILS TO BE DRESSED FLUSH WITH SHOULDERS & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

ENSURE CLEARANCE FOR 1/8" DIA CLIP

FORGED SHOULDER WELDING DETAIL

FROG BASE PLATE 24-136-14R

FROG BASE PLATE 24-136-15R

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS

NO 24 WSM FROG RH
FROG BASE PLATES 24-14R AND 24-15R
CONCRETE TIES 136 LB RE RAIL
BILL OF MATERIAL

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<th>ITEM</th>
<th>QTY FOR 24-136-14L</th>
<th>QTY FOR 24-136-15L</th>
<th>DESCRIPTION</th>
<th>DRAWING NO</th>
<th>SORSA PART NO</th>
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<td>FLAT BAR ASTM A36, 1/2&quot; x 6&quot; x 2'-7½&quot; long</td>
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<tr>
<td>2</td>
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<td>FLAT BAR ASTM A36, 1/2&quot; x 6&quot; x 2'-8½&quot; long</td>
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<td>4</td>
<td>4</td>
<td>SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM IN HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRIED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

ENSURE CLEARANCE FOR 3/8" DIA CLIP

FORGED SHOULDER WELDING DETAIL

FROG BASE PLATE 24-136-14L

FROG BASE PLATE 24-136-15L

CONCRETE TIES-136 LB RE RAIL

FROG BASE PLATES 24-14L AND 24-15L

NO 24 WSM FROG LH
**FORGED SHOULDER WELDING DETAIL**

**PARTIAL SECTION**

GUARD RAIL HARDWARE ASSEMBLY

**NOTES:**
1. PLATE SPACING IS SET FOR SHIPING ONLY. FINAL PLATE SPACING IS TO BE DETERMINED BY THE SPACING AT TIME OF INSTALLATION.
2. PANDROL SPRING CLIPS (E2055) TO BE INCLUDED IN ASSEMBLY.
3. LIFT POINTS AND WEIGHT OF ASSEMBLY TO BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT.
4. PLATE 1 TO BE STAMPED WITH PLATE I.D. WITH 1/4" HIGH CHARACTERS AS SHOWN.
5. GRIND AWAY CORNER OF PANDROL SHOULDER TO CLEAR FOOT OF CHAR ASSEMBLY.

**GUARD RAIL PLATE ASSEMBLY**

**BILL OF MATERIALS**

<table>
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<tr>
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<tr>
<td>1</td>
<td>1</td>
<td>GUARD RAIL UIC3 1200 SERIES 26'-0&quot; LONG</td>
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<tr>
<td>2</td>
<td>15</td>
<td>GUARD RAIL PLATE ASSEMBLY, 136 LB RE RAISED 1&quot; STRAIGHT</td>
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<td>3</td>
<td>3</td>
<td>H-CLAMP</td>
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<td>4</td>
<td>39</td>
<td>CLIP, PANDROL, E2055</td>
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<tr>
<td>5</td>
<td>15</td>
<td>LOCKING BLOCK</td>
</tr>
<tr>
<td>6</td>
<td>32</td>
<td>SWIV. 2&quot; X 3&quot; X 6&quot;</td>
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</table>

**ENGINEERING STANDARDS**

NO. 24 GUARD RAIL ASSEMBLY.

STRAIGHT WITH PLATES 26'-0" LONG.

BOLTLESS, RAISED 1"

CONCRETE TIES-136 LB RE RAIL, 1-7/8" FLANGEWAY

**SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY**

ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA 90012

**ASSEMBLY (BOLTLESS)**

GUARD RAIL CHAIR ASSEMBLY.

GUARD RAIL HARDWARE ASSEMBLY.
FORGED SHOULDER WELDING DETAIL

ENSURE CLEARANCE FOR 5/16" DIA CLIP

GUARD RAIL HARDWARE ASSEMBLY

PARTIAL SECTION

GUARD RAIL PLATE ASSEMBLY

NOTE:

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING IS TO BE DETERMINED BY THE SPACING AT TIME OF INSTALLATION.

2. PANDROL SPRING CLIPS (E2055) TO BE INCLUDED IN ASSEMBLY.

3. LIFT POINTS AND WEIGHT OF ASSEMBLY TO BE MARKED ON HEAD OF WEAH BAR WITH WHITE PAINT.

4. PLATE IS TO BE STAMPED WITH PLATE I.D. WITH 5/8" HIGH CHARACTERS AS SHOWN.

5. GRIND AWAY CORNER OF PANDROL SHOULDER TO CLEAR FOOT OF CHAIR ASSEMBLY.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA 12TH FLOOR L.A., CA 90012

CONCRETE TIES-136 LB RE RAIL, 1-7/8" FLANGEWAY

ENG. DES. DATE REV.

COMMENTS

DRAWN BY DATE

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### Bill of Material for Switch Rod 24-136-1

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<td>SWITCH ROD 24-136-1</td>
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<tr>
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<td>2</td>
<td>SWITCH CLIP ASSEMBLY, ADJUSTABLE FOR HOLLOW TIE COMPOSITE RODS</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>CONNECTOR LUG FOR POINT DETECTOR/LOCK RODS</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>HUCK BOLT, 3/8&quot; DA (LC-2R24-96)</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>HUCK COLLAR, 1/2&quot; DA (LC-2R24)</td>
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### Bill of Material for Switch Rod 24-136-2

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<tr>
<td>2</td>
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<td>CLIP/LUG ASSEMBLY, ANT-ROLL-OVER DESIGN, LW</td>
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<td>3</td>
<td>4</td>
<td>HUCK BOLT, 3/8&quot; DA (LC-2R24-96)</td>
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<tr>
<td>4</td>
<td>1</td>
<td>HUCK COLLAR, 1/2&quot; DA (LC-2R24)</td>
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<tr>
<td>5</td>
<td>2</td>
<td>SPIKE PLATE FOR BLUE ROD BASKET ASSEMBLY RODS</td>
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<td>BASKET/ROD ASSEMBLY FOR HST WITH ROTARY ASSIST</td>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>BLUE ROD, PULTRUDED COMPOSITE, 1/4&quot; x 21.5&quot; x 2'7&quot; LONG, 1-B ROD</td>
</tr>
</tbody>
</table>

### Notes:

1. SWITCH ROD ASSEMBLY 24-136-1

   - See Note 2

2. SWITCH ROD ASSEMBLY 24-136-2

   - See Note 2

3. SWITCH ROD ASSEMBLY 24-136-3

   - See Note 2

---

**Hollow Steel Tie Switch Rods**

24-1, 24-2, and 24-3

**No 24-136 LB RE**
BILL OF MATERIAL FOR SWITCH ROD 24-136-4

ITEM   QTY   DESCRIPTION   DWG NO   SCRRA PART NO
1       1   SWITCH ROD 24-136-4   -       -
2       2   SWITCH CLIP ASSEMBLY, ADJUSTABLE FOR HOLLOW TIE   -       -

BILL OF MATERIAL FOR SWITCH ROD 24-136-5

ITEM   QTY   DESCRIPTION   DWG NO   SCRRA PART NO
1       1   SWITCH ROD 24-136-5   -       -
2       2   SWITCH CLIP ASSEMBLY, ADJUSTABLE FOR HOLLOW TIE   -       -

BILL OF MATERIAL FOR SWITCH ROD 24-136-6

ITEM   QTY   DESCRIPTION   DWG NO   SCRRA PART NO
1       1   SWITCH ROD 24-136-6   -       -
2       2   SWITCH CLIP ASSEMBLY, ADJUSTABLE FOR HOLLOW TIE   -       -
3       1   CONNECTOR LUG FOR REAR DRIVE ROD   -       -
4       2   HUCK COLLAR, 3/8" DIA (LC-2R24-36)   -       -
5       2   HUCK BOLT, 3/8" DIA (C50LR-BR24-36)   -       -

NOTE:
1. ROD IDENTIFICATION TO BE ENGRAVED ON ROD CLEARLY AS SHOWN, 1/8" MIN HEIGHT.
NOTES:
1. ID CHARACTERS TO BE 3⁄8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. HOLES TO BE DRESSED FLUSH WITH SHOULDER.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
SWITCH PLATE P24-136-36LRC

SWITCH PLATE P24-136-37LRC

NOTES:
1. I.D. CHARACTERS TO BE 3/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER CLEARLY STAMPED AS SHOWN.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

FOR NO 24 136 LB RE CONCRETE TIE TURNOUT

EMERGENCY COMMAND CENTER
Aston 2007

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS

SHEET 2/8

24-35LLC / LRC THROUGH 24-37LLC / LRC

FOR NO 24 136 LB RE CONCRETE TIE TURNOUT
SWITCH PLATE P24-136-38LLC

SWITCH PLATE P24-136-38LRC

NOTES:
1. I.D. CHARACTERS TO BE 1/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER.
3. NOT TO PROTRUDE INTO RAIL SEAT.
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FLAT BAR ASTM A36, 1/8&quot; x 6&quot; x 2'-3&quot;</td>
</tr>
<tr>
<td>2</td>
<td>SHOULDER, PANOROL, FORGED, TYPE 1, ANTI-OVERDRIVE</td>
</tr>
<tr>
<td>3</td>
<td>STOP, BURNED SKEW, 1/2&quot; THICK, TAPERED 2-3/4&quot; TO 2-1/4&quot; OVER 6&quot;</td>
</tr>
</tbody>
</table>

FOR NO 24 136 LB RE LH CONCRETE TIE TURNOUT

METROLINK,
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA 90012

ENGINEERING STANDARDS

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
FOR NO 24 136 LB RE LH CONCRETE TIE TURNOUT

SWITCH PLATES (24-38LLC / LRC)
4 SLOTTED HOLES

NOTES:
1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
& NOT TO PROTRUDE INTO RAIL SEAT.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA 12TH FLOOR L.A., CA 90012

ENGINEERING STANDARDS

SWITCH PLATES (24-39LC THROUGH 24-44LC) FOR NO 24 136 LB RE LH CONCRETE TIE TURNOUT

BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FLAT BAR, ASTM A36, 8&quot; x 10&quot; x 2'-0&quot;</td>
</tr>
<tr>
<td>2</td>
<td>SWHOLD, PANDROL, FORGE, TYPE 1 ANTI-OVERDRIVE</td>
</tr>
<tr>
<td>3</td>
<td>FLAT BAR, ASTM A36, 8&quot; x 10&quot; x 2'-0&quot;</td>
</tr>
<tr>
<td>4</td>
<td>FLAT BAR, ASTM A36, 8&quot; x 10&quot; x 2'-0&quot;</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FLAT BAR A36M A50, 1&quot; x 8&quot; x 2'-1&quot;</td>
</tr>
<tr>
<td>2</td>
<td>SHOULDER, PANDROL, FORGED, TYPE 1, ANTI-OVERDRIVE</td>
</tr>
<tr>
<td>3</td>
<td>SHOULDER, PANDROL, FORGED, TYPE 5, ANTI-OVERDRIVE</td>
</tr>
<tr>
<td>4</td>
<td>FLAT BAR A36M A50, 1&quot; x 8&quot; x 2'-2&quot;</td>
</tr>
<tr>
<td>5</td>
<td>FLAT BAR A36M A50, 1&quot; x 8&quot; x 2'-2½&quot;</td>
</tr>
</tbody>
</table>

NOTES:
1. ID CHARACTERS TO BE 1/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. MEANS TO BE DRESSED FLUSH WITH SHOULDER.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA 90012

FOR NO 24 136 LB RE RH CONCRETE TIE TURNOUT
(24-32RLC / RRC THROUGH 24-34RLC / RRC)

ENGINEERING STANDARDS

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

FOR NO 24 136 LB RH CONCRETE TIE TURNOUT

NOTES:
1. I.D. CHARACTERS TO BE ≥ 1⁄8" MINIMUM HEIGHT
   CLEARLY STAMPED AS SHOWN.
2. HOLES TO BE DRESSED FLUSH WITH SHOULDER
   & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

SKEW
DESCRIPTION
SWITCH PLATE P24-136-35RLC
FLAT BAR, ASTM A36, 1" x 6" x 2'-3"
SHOULDER, PANDROL, FORGED, TYPE 5, ANTI-OVERDRIVE

SWITCH PLATE P24-136-36RLC
FLAT BAR, ASTM A36, 1" x 6" x 2'-1/2"
SHOULDER, PANDROL, FORGED, TYPE 1, ANTI-OVERDRIVE

SWITCH PLATE P24-136-37RLC
FLAT BAR, ASTM A36, 1" x 8" x 2'-3"
SHOULDER, PANDROL, FORGED, TYPE 5, ANTI-OVERDRIVE

ENGINEERING STANDARDS
SWITCH PLATES
24-35RLC / RRC THROUGH 24-37RLC / RRC
FOR NO 24 136 LB RH CONCRETE TIE TURNOUT

METROLINK.
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012
## Bill of Materials

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flat Bar ASTM A36 3/4&quot; x 8&quot; x 2'-3/8&quot;</td>
</tr>
<tr>
<td>2</td>
<td>Shoulder, Pandrol, Forged, Type 1 Anti-overflow</td>
</tr>
<tr>
<td>3</td>
<td>Sleeper Stop, 3/8&quot; thick, tapered 2'-3/8&quot; to 2'-3/8&quot; over 6&quot;</td>
</tr>
</tbody>
</table>

### Notes:

1. I.D. Characters to be 3/16" minimum height and clearly stamped as shown.
2. Welds to be dressed flush with shoulder.
3. Not to protrude into rail seat.
4. Slotted hole centers are indicated on drawing.

---

**Drawing Information**

- **Name:** carlosa
- **Date Plotted:** 10/5/2011
- **Plot Driver:** S:\Plot Drivers\pdf.plt
- **Filename:** s:\V8EngStds\2000\Turnouts\No 24 Turnout\ES2807-87.dgn
- **Date:** 03/31/2011

---

**Drawing Details**

- **Switch Plate P24-136-3BRLC**
- **Switch Plate P24-136-3BRRCS**

---

**Engineering Standards**

- **For No 24 136 lb Re Rh Concrete Tie Turnout**
- **Switch Plates (24-3BRLC / RRC)**

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**Contact Information**

- **Southern California Regional Rail Authority**
- **One Gateway Plaza, 12th Floor, L.A., CA 90012**

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**Bill of Materials**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flat Bar, ASTM A36, ( \frac{1}{4} )&quot; x 8&quot; x 2'-7&quot;</td>
</tr>
<tr>
<td>2</td>
<td>Shoulder Pandrol Forged Type 1 Anti-Overdrive</td>
</tr>
<tr>
<td>3</td>
<td>Flat Bar, ASTM A36, 2&quot; x 8&quot; x 2'-7&quot;</td>
</tr>
</tbody>
</table>

**Notes:**

1. I.D. Characters to be \( \frac{1}{8} \)" Minimum Height
2. Welds to be dressed flush with shoulder
3. Slotted hole centers are indicated on drawing.

---

**Bill of Materials**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Flat Bar, ASTM A36, ( \frac{1}{4} )&quot; x 8&quot; x 2'-8&quot;</td>
</tr>
<tr>
<td>5</td>
<td>Flat Bar, ASTM A36, 2&quot; x 8&quot; x 2'-8&quot;</td>
</tr>
</tbody>
</table>

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**Switch Plate P24-136-45RC**

**Switch Plate P24-136-46RC**

**Switch Plate P24-136-47RC**

**Switch Plate P24-136-48RC**

---

**Engineering Standards**

Switch Plates (24-45RC Through 24-48RC) for No 24 136 lb Re RH Concrete Tie Turnout

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**Drawn by:**

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**For Non-SCRRA Approved Uses:**

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