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METROLINK (SCRRA)
ENGINEERING STANDARDS
NO 8 DOUBLE SLIP CROSSING

BILL OF MATERIAL

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>22 EACH</td>
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<tr>
<td>1</td>
<td>SWG RAIL NO 8 TYPE SWITCH ROD W/ BASKET (INSULATED)</td>
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<tr>
<td>1</td>
<td>NO 1 SWG TYPE SWITCH ROD W/ BASKET (INSULATED)</td>
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<tr>
<td>1</td>
<td>NO 2 SWG TYPE SWITCH ROD W/ BASKET (INSULATED)</td>
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<td>1</td>
<td>NO 3 SWG TYPE SWITCH ROD W/ BASKET (INSULATED)</td>
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<tr>
<td>1</td>
<td>BRACE SLIDE PLATE DS-SP</td>
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<tr>
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<td>EACH</td>
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<td>SWG RAIL NO 8 TYPE SWITCH ROD W/ BASKET (INSULATED)</td>
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<tr>
<td>1</td>
<td>NO 3 SWG TYPE SWITCH ROD W/ BASKET (INSULATED)</td>
</tr>
<tr>
<td>1</td>
<td>BRACE SLIDE PLATE DS-SP</td>
</tr>
</tbody>
</table>

NOTES:
1. ENTIRE DOUBLE SLIP CROSSING TO BE FABRICATED FROM 136 LB HEAD HARDENED RAIL.
2. LOCATIONS OF INSULATED JOINTS ARE AS SHOWN ON ES2840-02 AND ES2840-03. IT WILL BE SATISFACTORY TO DELICATE THE INSULATED JOINT IN THE FIELD UP TO 1'-5" SO AS TO PROVIDE A SUITABLE SUSPENDED JOINT PROVIDED THE STAGES OF THE INSULATED JOINTS DO NOT EXCEED 4'-6".  THE PLATES MUST BE LOCATED IN A CLEAR AREA BETWEEN TIES A MINIMUM DISTANCE OF 4" FROM EDGE OF NEAREST TIE PLATE.
3. ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED INSULATED JOINTS UNLESS OTHERWISE SPECIFIED.
4. ALL MATERIALS REQUIRED FOR MANO OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER REQUIREMENTS OF THE SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
5. MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT MANUFACTURER'S PLANS AND SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.
6. WHERE REQUIRED, ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
7. SUPPORT PLATES TO BE FURNISHED INSULATED SWITCH RODS WILL BE FURNISHED INSULATED UNLESS OTHERWISE SPECIFIED.
8. MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF TURNOUT SHOP DRAWINGS THAT CHANGE DETAILS OF THESE STANDARDS MUST CLEARLY SPECIFY HOW PROPOSED CHANGES.
9. THE MATERIAL INCLUDED IN THE PURCHASE OF A "DOUBLE SLIP CROSSING COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS TO CONSTRUCT A COMPLETE TURNOUT. SWITCH TIES PER LIST ON THIS SHEET AND INSULATED JOINTS, FIELD WELDS, RUNNING RAIL AND CLOSURE RAIL IDENTIFIED ON SUBSEQUENT SHEETS.
10. THE PLATES SHALL CONFORM TO SCRRA STANDARD ES2454.
11. THE SWG RAIL NO 8 4'-6" X 6" 3 PLATE SMALL CONFORM TO SCRRA STANDARD ES2355, PLATE HOLES SHALL BE 1 DIAMETER AND HOLE LOCATIONS SMALL DESIGNED TO THE MANUFACTURER'S RAIL RAIL.
12. MANUFACTURER SHALL FURNISH ALL 3 POWERED END POINTS NO 8 136 LB RE DOUBLE SLIP CROSSING.
13. THE 27'-8" CURVED SWITCH POINT MADE FROM 40'-0" LONG RAIL NO 8 DOUBLE SLIP CROSSING.
14. THE 23'-3" STRAIGHT SWITCH POINT MADE FROM 40'-0" LONG RAIL NO 8 DOUBLE SLIP CROSSING.
15. THE 27'-2" CURVED STOCK RAIL NO 8 DOUBLE SLIP CROSSING.
16. THE 23'-5" CURVED STOCK RAIL NO 8 DOUBLE SLIP CROSSING.
17. THE 31'-3" CURVED STOCK RAIL NO 8 DOUBLE SLIP CROSSING.
18. THE 23'-5" CURVED STOCK RAIL NO 8 DOUBLE SLIP CROSSING.
19. THE 23'-5" CURVED BALLAST RAIL NO 8 DOUBLE SLIP CROSSING.
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47. THE 23'-5" CURVED BALLAST RAIL NO 8 DOUBLE SLIP CROSSING.
48. THE 23'-5" CURVED BALLAST RAIL NO 8 DOUBLE SLIP CROSSING.
49. THE 23'-5" CURVED BALLAST RAIL NO 8 DOUBLE SLIP CROSSING.
NOTE:
1. See cover sheet for notes, bill of material and drawing index.
**Crossing Data**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle of Crossing</td>
<td>75°-3½&quot;</td>
</tr>
<tr>
<td>Degree of Curvature</td>
<td>23°-9½&quot;</td>
</tr>
<tr>
<td>Gauge on Straight Track</td>
<td>4'-8½&quot;</td>
</tr>
<tr>
<td>Gauge on Curved Track</td>
<td>4'-2½&quot;</td>
</tr>
<tr>
<td>Switch Angle</td>
<td>1°-14'-04&quot;</td>
</tr>
<tr>
<td>Heel Spread Inside Switch Points</td>
<td>7‰&quot; BC, 14&quot; AC</td>
</tr>
<tr>
<td>Heel Spread Outside Switch Points</td>
<td>6½&quot; BC, 10Ž&quot; AC</td>
</tr>
<tr>
<td>Switch Point</td>
<td>27'-8‡&quot; CVD</td>
</tr>
<tr>
<td>FROG FROM THEORETICAL POINT TO HEEL</td>
<td>10'-0''</td>
</tr>
<tr>
<td>FROG FROM THEORETICAL POINT TO TOE</td>
<td>7'-6&quot;</td>
</tr>
<tr>
<td>FROG FROM THEORETICAL POINT TO HEEL JOINT</td>
<td>678.8314'</td>
</tr>
<tr>
<td>FROM THEORETICAL POINT OF CENTER FROG TO HEEL JOINT</td>
<td>5°-14'-04&quot;</td>
</tr>
<tr>
<td>FROM THEORETICAL POINT OF CENTER FROG TO HJ JOINT</td>
<td>6'-8&quot;</td>
</tr>
<tr>
<td>LENGTH OF OUTSIDE SAMSON END SWITCH POINTS (PS)</td>
<td>23°-15½&quot;</td>
</tr>
<tr>
<td>LENGTH OF INSIDE SAMSON END SWITCH POINTS (PS)</td>
<td>27°-⅞&quot;</td>
</tr>
</tbody>
</table>

**Reference Drawing**

- Layout - No 8, Double Slip Crossing - 136 lb

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crossing Type</td>
<td>No 8 Double Slip Generally per AREMA Plan RAIL 136 lb RE Heat Treated.</td>
</tr>
<tr>
<td>FROG</td>
<td>No 8 Rail Round Manganese FROG, 136 lb HE, 18°-0&quot; LONG with Panorail Plate Manganese Casting to be EXPLOSIVE HARDENED.</td>
</tr>
<tr>
<td>SWITCH POINTS</td>
<td>27°-2½&quot; &amp; 23°-17½&quot; LONG Curved and Straight Samson Planing ARAENAA DETAIL 5½O Curved Points to be Equipped with Replaceable Manganese Inserts per 2840-11 &amp; 2840-12.</td>
</tr>
<tr>
<td>CLIPS AND RODS</td>
<td>Vertical Rods with &quot;KM&quot; Clips.</td>
</tr>
<tr>
<td>ADJUSTABLE BRACES</td>
<td>Boltless with Spring Clips.</td>
</tr>
<tr>
<td>GUARD RAILS</td>
<td>J-49 Section 13°-0&quot; Raked Guard Rail with Braces and Plates.</td>
</tr>
<tr>
<td>GAUGE PLATES</td>
<td>To be Furnished Installed.</td>
</tr>
</tbody>
</table>

**Metrolink**

Southern California Regional Rail Authority

One Gateway Plaza 12th Floor L.A., CA 90012

Crossing Geometry and Crossing Data

No 8 136 lb RE Double Slip Crossing
NOTE:
1. Switch Points to be made from new head hardened rail.
2. Metal identification tag showing hand of switch point, weight of rail, material used and when made, to be fastened to switch point at location shown.
3. Right hand turnout shown make opposite hand for left hand switch points.
4. Side Planning figured on gauge line 1/8" below top of rail.
5. Metal, turnouts shown, material not shown, shall be per current AAR "Manual and Portfolios" unless otherwise specified on this plan.
6. In order to eliminate stress raisers, manufacturer shall file the edges of the bolt holes as indicated at the heel of switch point and at the heel end of the switch point. Using air hammers with suitable head and finishing with drift pin, bend on rail at edge of bolt hole to be carefully removed by chiseling before peening.
7. The contour planning shall be on the gauge side beginning at a distance of 3'-6" from the point of switch and shall be shaped to the contour of a new 25'-9" rail and small runout at the end of the top planning, where the switch point has full head contour.
8. Metal identification tag showing 10" design length of switch 121 in parentheses, the actual length of switch point rail and (1) the turnout number. This tag thus: 10'-6" (19'-0") No. 1, tag to be fastened to switch point, on gauge side of rail at 2'6" spacing block in location shown.
9. At heel end of switch point rail, break sharp corner around the entire periphery by slightly grinding. Also, do not end marked rail end by slightly grinding. Also, do not end marked rail end by slightly grinding.
11. Replacement Points must specify whether plain point or manganese steel insert are to be furnished.
12. Turnouts are to be furnished with manganese steel insert on the reverse point (pursued side) and a plain switch point on the normal point (straight side). Replacement Points must specify whether plain point or manganese steel insert are to be furnished.

Top View Switch Points

Side View Switch Point

End View of Point

Diagrams and notes from Southern California Regional Rail Authority's Engineering Standards.
NO 8 RAILBOUND MANGANESE FROG
18'-0" LONG WITH PLATES

REFERENCE DRAWINGS

NO 8 DOUBLE SLIP CROSSING - 136 LB ------------------- NO 2840-02
U-69 GUARD RAIL - 136 LB ----------------------------------------- NO 2840-60
LAYOUT - NO 8, DOUBLE SLIP CROSSING - 136 LB ------------------- NO 2840-02

DETAIL OF WHEEL RISER

SLOPE ON MANGANESE

TOP SURFACE OF CASTING

SLOPE ON MANGANESE

TYPICAL PLATE PUNCHING DETAIL

ENGINEERING STANDARDS

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

METROLINK

WELDING OF GAUGE PLATE & GUARD RAIL:

1. POSITION GAUGE PLATE AT DESIGNATED LOCATION AND ANCHOR IN PLACE.

2. CHECK TRACK FOR CORRECT GAUGE.

3. STARTING WITH THE GAUGE PLATE FACE PLATES ADJUSTABLE SPACES AND SECURE TO FROG AND GUARD RAIL WITH "PANDROL" CLIPS.

4. RECHECK TRACK GAUGE AND CORRECT IF NECESSARY.

5. CAREFULLY WELD FROG PLATE AND GUARD RAIL PLATE TO GAUGE PLATES WITH 3 PASS ½" FILLET WELD. FOLLOWING THE FOLLOWING:

   A. ELECTRODE: ½", WELDING SPEC 7018XLM.
   B. ELECTRODE: MILLING SPEC 1682.
   C. WIRE: ½", MIG, 1% MIN 0.045" FLUX CORE.

   OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR AND APPROVED BY SCRRA DIRECTOR OF ENGINEERING.

NOTES:

1. FROG ANGLE 7°-09'-10".

2. RAIL USED TO FABRICATE FROG IS TO BE 136 LB HEAD HARDENED.

3. RAIL BINDING MANGANESE FROG PER CURRENT AREA SPECIFICATIONS.

4. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION DIMENSION AS CALLED FOR.

5. OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT OF THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A 3 PASS ½" FILLET WELD ALONG REVISED GROoves OF THE SHOULDER.

6. ANY WELD PROJECTIONS BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA.

7. PLATES TO BE WELDED TO GUARD RAIL.

8. THE "PANDROL" TYPE OR APPROVED EQUAL, WELD-ON PRESS STUD SHOULDER, MADE OF HIGH STEEL AND WELDING OR PRESS STUD DESIGN SPECIFICATIONS SHALL BE USED.

9. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS ½" FILLET WELD AND ALONG REVISED GROoves OF THE SHOULDER.

10. ANY WELD PROJECTIONS BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA.

11. PLATES TO BE MADE OF MILD ROLLED STEEL.

12. THE DATA OR INFORMATION CONTAINED HEREIN.

13. THE "PANDROL" TYPE OR APPROVED EQUAL, WELD-ON PRESS STUD SHOULDER, MADE OF HIGH STEEL AND WELDING OR PRESS STUD DESIGN SPECIFICATIONS SHALL BE USED.

14. THE "PANDROL" TYPE OR APPROVED EQUAL, WELD-ON PRESS STUD SHOULDER, MADE OF HIGH STEEL AND WELDING OR PRESS STUD DESIGN SPECIFICATIONS SHALL BE USED.

15. THE "PANDROL" TYPE OR APPROVED EQUAL, WELD-ON PRESS STUD SHOULDER, MADE OF HIGH STEEL AND WELDING OR PRESS STUD DESIGN SPECIFICATIONS SHALL BE USED.
NOTES:
1. HOLD DOWN CLIPS TO BE INSTALLED IN THE FIELD.
2. SOLID CAST MANGANESE STEEL CENTER FROGS PER CURRENT AREMA SPECIFICATIONS MODIFIED FOR USE WITH "PANDROL" TYPE FASTENERS.

NO 8 DOUBLE SLIP CROSSING CENTER SECTION LAYOUT
FROG ANGLE 7°-09'-10"
FLANGEWAY 1" WIDE, 1" DEEP

1/8" LONG x 1/8"
HOLD DOWN CLIP
"D" STRAP
18" LONG x 1'
THEORETICAL PF
DS-GP-2
DS-GP-2
DS-12P
DS-12P
DS-12P
DS-12P

OUTSIDE STOCK RAIL 31'-2½"

HOLD DOWN CLIP
OUTSIDE STOCK RAIL 31'-2½"

3½" PF SLOPE ⅛" IN 6"
NOTES:
1. PLATES TO BE MADE OF WILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB NO. 8 DOUBLE SLIP CROSSING.
3. THE "PANDROL" TYPE OR APPROVED EQUAL WELD TO PRESSED STEEL SHOULDER, MADE OF WILD ROLLED STEEL AND MEETING "PANDROL" DESIGN SPECIFICATIONS SHALL BE USED.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO CAUSE PLATES, ANY WELD PROJECTIONS BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL.
6. ALL WELDS ARE 1/2" FLAT WELDS UNLESS OTHERWISE NOTED.
7. HOLES IN PLATES ARE 1" IN DIAMETER UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS
LAYOUT - NO. 8 DOUBLE SLIP CROSSING - 136 LB -------- SHEET NO. 2840-02

1. INSULATED SLIDE GAUGE PLATE DS-GP-1
   1" x 8" - WELDED - 11 ASSEMBLED EACH 2 REQ'D AS SHOWN
   9-1/2"

2. INSULATED SLIDE GAUGE PLATE DS-GP-2
   1" x 8" - WELDED - 11 ASSEMBLED EACH 2 REQ'D AS SHOWN
   9-1/2"

3. INSULATED SLIDE GAUGE PLATE DS-GP-3
   1" x 8" - WELDED - 11 ASSEMBLED EACH 2 REQ'D AS SHOWN
   9-1/2"
NOTES:

1. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL.
2. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS

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

ENGINEERING STANDARDS
FROG PLATE DETAILS

NO 8 136 LB RE DOUBLE SLIP CROSSING

LAYOUT - NO 8 DOUBLE SLIP CROSSING - 136 LB ------- SHEET NO 2840-02
NOTES:

ROD NO 1A, BASKET LOCATION A

ROD NO 1B, BASKET LOCATION B

INSULATION MATERIAL CONSISTS OF:

(1) FIBRE CHANNEL C-1
(2) FIBRE ANGLE PLATE AP-34
(3) FIBRE BUSHINGS B-11
(4) STEEL SLEEVE - PLANE 51-684
(5) STEEL CHANNEL ST-568
(6) 1/2" WEDGE BOLT CO2R-WK24-36
(7) NICK COLLARS LC2R-24C

SWITCH INFORMATION

CAUSE = 4'-5½" POLLED AT POINT = 4'-4½" MAX
E DISTANCE = 1'-1½"
PT. = 1'-6" MAX
HEMT. = 1'-6" MIN BOTH SIDES (SLID ¾" STOCK SIDE)
ROD SPACING = 1'-6½"
BREAK ALL SHARP CORNERS
DEBURR ALL HOLES

STAMP RODS WITH "RESPECTIVE ROD NO-136-DSY"

PUBLIC RECORD

DIRECTOR OF ENGINEERING AND CONSTRUCTION

ENGINEERING STANDARDS

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

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

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
INSULATION MATERIAL
CONSISTS OF:
11. FIBRE CHANNEL C-1.
12. FIBRE ANGLE PLATE AP-34.
13. FIBRE BUSHINGS BF-3.
14. STEEL ANGLE PLATE 51-684.
15. STEEL CHANNEL 51-568.
16. 3/8" HUCK COLLARS C50LR-24R-36.
17. HUCK COLLARS LC2R-24G.

SWITCH INFORMATION
CAUSE = 4'-8".
THROWN AT POINT = 4" MIN. 4½" MAX
E DISTANCE = ±1½".
PT = 0" SAMSON
RENT = /± 0" BOTH SIDES (1½) ½" STOCK SIDE.

ROD SPACING = 1'-6½" x 3'-5½" (NO 2 ROD)
ROD SPACING = 1'-6½" x 3'-5½" (NO 3 ROD)

NOTES:
1. INSULATED SPREAD RODS NO 2 OR 3 WITH
CLIPS AND BOLTS ATTACHED WITH HUCKED
INSULATED SPREAD RODS NO 2 OR 3 WITH
CLIPS AND BOLTS ATTACHED WITH HUCKED
HUCKED INSULATED RODS NO 2 OR 3 WITH
HUCKED INSULATED RODS NO 2 OR 3 WITH

2. STAMP ROD WITH "RESPECTIVE ROD NO-136-DSS"
NOTES:
1. GUARD RAIL SECTION UIC 33 (U69) UIC 860.0 GRADE 90A
2. GUARD FACE BRACKET AND SHIMS MADE FROM MILD STEEL.
3. GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION.
4. GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION.
5. BOLTS EXCEPT BOLT TO BE GRADE 8 AND NOT TO BE SECURITY LOCKED.
6. WORKMANSHIP AND TOLERANCES PER AREMA.
7. SPECIFICATIONS FOR SPECIAL TRACKWORK.
8. RECOMMENDATIONS FOR SPECIAL TRACKWORK.
9. GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION.
10. GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION.
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## Bill of Material

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
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<tr>
<td>2</td>
<td>SOLID MANGANESE CENTER FROG</td>
</tr>
<tr>
<td>4</td>
<td>100 SNAP STUDS WITH NUTS</td>
</tr>
<tr>
<td>2</td>
<td>13A &amp; 13B HEAD RODS FOR END POINTS</td>
</tr>
<tr>
<td>2</td>
<td>SOLID MANGANESE ADJUSTABLE GUARD RAIL 3707</td>
</tr>
<tr>
<td>2</td>
<td>DI RAIL HOLD DOWN CLIPS 3-3707</td>
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<tr>
<td>10</td>
<td>DI RAIL HOLD DOWN CLIPS 3-3707</td>
</tr>
<tr>
<td>20</td>
<td>SCREW SPIKES 3/4&quot; X 6&quot; 22855</td>
</tr>
<tr>
<td>2</td>
<td>DI RAIL SLIDE PLATES 13A &amp; 13B</td>
</tr>
<tr>
<td>2</td>
<td>CURVED SWITCH POINT RAIL 23'-0&quot; LONG</td>
</tr>
<tr>
<td>2</td>
<td>DI RAIL SLIDE PLATES 2A &amp; 2B</td>
</tr>
<tr>
<td>4</td>
<td>INSULATED TIE GAUGE PLATES 7&quot; THRU 10&quot;</td>
</tr>
<tr>
<td>2</td>
<td>NO 10 RAIL BOUND MANGANESE FROG - 27'-2.5&quot;</td>
</tr>
<tr>
<td>4</td>
<td>4&quot; X 8&quot; ADJUSTABLE GUARD RAIL 47 PLATES</td>
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<tr>
<td>4</td>
<td>DI RAIL SLIDE PLATES 7&quot; THRU 10&quot;</td>
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<td>2</td>
<td>CURVED SWITCH POINT RAIL 23'-0&quot; LONG</td>
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<tr>
<td>2</td>
<td>DI RAIL SLIDE PLATES 7&quot; THRU 10&quot;</td>
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## Notes:

1. THE ENTIRE DOUBLE SLIP CROSSING TO BE FABRICATED FROM 136 LB HEAD HARDENED RAIL.
2. LOCATIONS OF INSULATED JOINTS ARE AS SHOWN ON ES2841-02. IT WILL BE SATISFACTORY TO REPLACE THE INSULATED JOINT IN THE FIELD UP TO 1'-0" SO AS TO PROVIDE A SUITABLE SUSTAINED JAMB, PROVIDING THE STAGER OF THE INSULATED JOINT. THE STAGER OF THE INSULATED JOINT MAY NOT EXCEED 4'-4", SUSTAINED JOINTS MUST BE LOCATED IN A CLEAR AREA BETWEEN TIES, A MINIMUM DISTANCE OF 4'-4" FROM THE CENTER OF CLEAR TIES.
3. ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED INSULATED JOINTS UNLESS OTHERWISE SPECIFIED.
4. ALL MATERIALS REQUIRED FOR MANO OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER REQUIREMENTS OF THE SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
5. MATERIALS AND WORKMANSHIP MUST ALSO BE SUPPLIED.
6. ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
7. ALL SWITCH PLATES WILL BE FURNISHED INSULATED UNLESS OTHERWISE SPECIFIED.
8. MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF SWITCH SHOP DRAWINGS. THAT CHARGE DETAILS OF THESE STANDARDS MUST BE ACCURATE AND COMPLETE.
9. THE MATERIAL INCLUDED IN THE PURCHASE OF A "DOUBLE SLIP CROSSING COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS TO CONSTRUCT A COMPLETE TURNOUT, INCLUDING THE CENTRAL CROSSING, AND INSULATED JOINTS WELD, RUNNING RAIL AND CROSSING RAIL IDENTIFIED ON SUBSEQUENT SHEETS.
10. THE PLATES SHALL CONFORM TO SCRRA STANDARD ES2845.
11. SCREW HEADS MUST BE 3'-6" THRU 10" SMALL, CONFORM TO SCRRA STANDARD ES2845. PLATE HOLES SHALL BE 3'-6" THRU 10" SMALL, SCREW HEADS MUST BE 3'-6" THRU 10" SMALL.
12. MANUFACTURER MAY SUBSTITUTE SMALL DEVEL RAIL ENDS FOR CURRENT AREMA PLAN NO 1005.
13. THE 34'-7" CURVED SWITCH POINT RAIL IS TO BE WELDED WITH A TOTAL LENGTH OF 3'-0" LONG.
14. THE 136 LB HEAD RAIL WILL BE FURNISHED WITH SWITCH RODS NO 1A & 1B.
15. ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
16. UPON COMPLETION OF TURNOUT INSTALLATION, RUNNING RAIL MUST BE ADJUSTED TO SCRRA NEUTRAL RAIL TEMPERATURE.
17. THE ENTIRE CROSSOVER TO BE FULLY FLOOR ASSEMBLED INCLUDING END FROGS AND NE GUARD RAILS.
18. ALL C-LIPS TO BE GALVANIZED.
### CROSSING DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>Measurement</th>
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<tr>
<td>Between Theoretical Points of End Fros &amp; Center Frog</td>
<td>94°-57'</td>
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<tr>
<td>Between Theoretical Point of End Frog &amp; Center Frog</td>
<td>4°-53'-29&quot;</td>
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<tr>
<td>From Inside Switch Points to Theoretical Point of End Frog</td>
<td>12'-10&quot;</td>
</tr>
<tr>
<td>From Theoretical Point of Center Frog to Heel Joint</td>
<td>10'-4&quot;</td>
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<tr>
<td>Length of Inside Samson Stock Rails</td>
<td>25'-07&quot;</td>
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<tr>
<td>Length of Outside Samson Stock Rails</td>
<td>23'-2&quot;</td>
</tr>
<tr>
<td>Length of Fros from Theoretical Point to Toe</td>
<td>8'-17&quot;</td>
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<tr>
<td>Length of Fros from Theoretical Point to Heel</td>
<td>12'-5&quot;</td>
</tr>
<tr>
<td>Length of Outside Samson End Switch Points (00 Samson)</td>
<td>23'-05&quot;</td>
</tr>
<tr>
<td>Length of Inside Samson End Switch Points (11 Samson)</td>
<td>24'-17&quot;</td>
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</tbody>
</table>

### Specifications:

1. **Crossing Type**: 10 Double Slip, Generally Per AREMA Plan No. 814. Rail 136RE Heat Treated.
2. **Frog**: No 10 Rail Bound Vanez - Manganese. Casting to Be Explosive Nicked.
3. **Switch Points**: 23-05", 34-7".
4. **Curved and Straight Samson Pacing Aream**.
5. **Curved Cavo Surface**: 1000. 25'0" Long Curved Same Pacing Aream.
6. **Guard Rails**: 25'-0" Above Base.
7. **Guard Plates**: To Be Furnished Mounted.
8. **Angle at Centerline**: 7.43°-
9. **Angle of Crossing**: 9.00°-

### Reference Drawing

- **Crossing Geometry and Crossing Data**: Sheet No 2841-02

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**NOTE:**

1. All Measurements Given at 1/4" Below Top of Rail and 1/4" Point of End Fros.
2. All Rails to be Full Heat Treated - AREMA Plan No. 814. Rail 136RE Heat Treated.
5. All Insulated Joint Rails 30°, 6", & 35° Above Base 7/16" Pin Holes.
6. Proper Location of Joint Plates to be Marked with White Paint on Outer Flange of Rail.
7. Joint Mark All Rail Ends as Shown.
8. Entire Crossover to be Fully Assembled Including End Fros and HF Guard Rails.
NOTES:
1. SWITCH POINTS TO BE MADE FROM NEW HIGH STRENGTH RAIL.
2. MATERIAL IDENTIFICATION TAG SHOWING MANUFACTURER NAME AND MANUFACTURE DATE (SEE NOTE 8) TO BE FASTENED TO SWITCH POINT UPON INSTALLATION.
3. SIDE VIEW DRAWING OF SWITCH POINT MANUFACTURER SHALL PROVIDE THE ACTUAL LENGTH OF THE SWING POINT MANUFACTURER MUST SUPPLY SHOP DRAWINGS OF MANGANESE STEEL INSERT FOR APPROVAL TO SCRRA DIRECTOR OF ENGINEERING PRIOR TO MANUFACTURING OF INSERT.
4. MATERIAL AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "TRACKWORK PLANS AND SPECIFICATIONS", UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
5. MATERIAL AND WORKMANSHIP, ALSO ANY BOLTS NOT SHOWN, SHALL BE PER REQUIREMENTS OF "SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY - ENGINEERING STANDARDS" (SEE NOTE 10), UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
6. SIDE VIEW SWING POINT MANUFACTURER MUST SUPPLY SHOP DRAWINGS OF MANGANESE STEEL INSERT FOR APPROVAL TO SCRRA DIRECTOR OF ENGINEERING PRIOR TO MANUFACTURING OF INSERT.
7. MATERIAL AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER REQUIREMENTS OF "SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY - ENGINEERING STANDARDS" (SEE NOTE 10), UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
NOTE:

1. BEND ANGLE IN BENT STOCK RAIL TO BE AS FOLLOWS:

<table>
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<tr>
<th>SW LENGTH</th>
<th>BEND ANGLE</th>
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<tr>
<td>22'-8&quot;</td>
<td>1°-44'-11&quot;</td>
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<td>22'-8&quot;</td>
<td>1°-44'-1&quot;</td>
<td>10º&quot;</td>
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STOCK RAILS ARE SHOWN FOR "RIGHT HAND TURNOUT"

STOCK RAILS ARE SHOWN FOR "LEFT HAND TURNOUT"
NO 10 RAILBOUND MANGANESE FROG 21'-2½" LONG WITH PLATES

DETAIL OF FROG CASTING / RAIL FIT

SLOPE ON MANGANESE @ SECTION "Y" - "Y"

TYPICAL PLATE PUNCHING DETAIL

DUH POINT AT ¾" BELOW TIE NOSE

MANGANESE MUST BE GROUND TO FIT SLOPE OF RAIL HEAD FOR THE ENTIRE LENGTH OF CASTING

NO 10 RAILBOUND MANGANESE FROG 21'-2½" LONG WITH PLATES

WELDING OF GAUGE PLATE & GUARD RAIL:

POSITION CAUSE PLATES AT DESIGNATED TIE LOCATIONS AND SECURE IN PLACE.

CHECK TRACK FOR CORRECT GAUGE.

STARTING WITH THE GAUGE PLATE PLACE FROG PLATES WITH ADJUSTABLE BRACES AND SECURE TO FROG AND GUARD RAIL WITH "PANDROL" CLIPS.

RECHECK TRACK GAUGE AND CORRECT IF NECESSARY.

CAREFULLY WELD FROG PLATE AND GUARD RAIL PLATE TO FROG GAUGE PLATES WITH 3 PASS 7½", 1-TILET HOLE.

FOR WELDING USE THE FOLLOWING:

A. ELECTRODE, 7½" WELDING SPEC 7018XLM
B. ELECTRODE, ¾" WELDING SPEC "FOWM" C. WIRE, ¾" WELDING SPEC "PANDROL" FLUX COATED

OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR AND APPROVED BY SCRRA DIRECTOR OF ENGINEERING MAY BE USED.

ENGINEERING STANDARDS

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

NO 10 RAILBOUND MANGANESE STEEL FROG WITH PANDROLIZED PLATES FOR A 136 LB RE DOUBLE SLIP CROSSING

S:V8EngStds\2000\Turnouts\No 10 Double Slip\ES2841-40.dgn
NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB, NO 10 DOUBLE SLIP CROSSING.
3. ALL WELDS ARE 1/8" FILLET WELDS UNLESS OTHERWISE NOTED.
4. HOLES IN PLATES ARE 1/2" IN DIAMETER UNLESS OTHERWISE NOTED.
5. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAUGE PLATES IN THE FIELD ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAUGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
6. FROG GAUGE PLATES FOR GP-1 AND GP-2 ARE TO BE WELDED TO THE FROG GAUGE PLATES IN THE FIELD WITH A PASS 1/8" FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAUGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
7. THE WELD - ON PRESSED STEEL SHOULDERS PURCHASED FROM "PANDROL INTERNATIONAL" TO BE MILD STEEL OTHER APPROVED STEEL ON PRESSED STEEL SHOULDERS MEETING "PANDROL'S" DESIGN SPECIFICATIONS MAY BE USED.
8. THE PRESSES STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE GAUGE PLATE. ANY WELD PROTRUDING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
9. ALL PANDROL SHOULDERS TO BE TYPE 1 FORGED, UNLESS OTHERWISE SHOWN.

REFERENCE DRAWING

LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB ------------ SHT NO 2841-02

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

DIRECTOR OF ENGINEERING AND CONSTRUCTION

A. CARLOS

S:\V8EngStds\2000\Turnouts\No 10 Double Slip\ES2841-44.dgn

ENGINEERING STANDARDS

S:\Plot Drivers\pdf.plt

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

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

METROLINK
**Reference Drawings**

Layout - No 10, Double Slip Crossing - 136 lb ------- Sheet No 2841-02

**Notes:**

1. Plates to be made of mild rolled steel.
2. Each plate to be plainly stamped with plate no and 136 (weight of rail) & name of works, or line.
3. The Pandrol type weld, on pressed steel shoulder, made from mild steel to be purchased from Pandrol International, or approved alternate meeting Pandrol's design specifications.
4. The pressed steel shoulder must be carefully welded to the plate. Any welds protruding beyond the vertical face of shoulder in the area of the rail seat must be machined out to provide a clear rail seat dimension called for.
5. The plates as shown may be used for a 136 lb, no 10 double slip switch.
6. All welds are \( \frac{3}{4}\)" fillet welds unless otherwise noted.
7. Holes in plates are 71/64" UNLESS OTHERWISE NOTED.

**Reference Drawings**

- INSULATED SLIDE GAGE PLATE GP-5
  - 1" x 8" - Milled - (2 assembled each end as shown)

- INSULATED SLIDE GAGE PLATE GP-6
  - 1" x 8" - Milled - (2 assembled each end as shown)

- BRACE PLATE - 4A
  - 1" x 8" - Milled - w/Adj Rail Brace (12 required)

- BRACE PLATE - 6A
  - 1" x 8" - Milled - w/Adj Rail Brace (12 required)

- BRACE PLATE - 7A
  - 1" x 8" - Milled - w/Adj Rail Brace (1 required)

**Engineering Standards**

Insulated Gauge Plate Details - DS-GP-5 and DS-GP-6

136 lb re NO 10 DOUBLE SLIP CROSSING
PANDROL SHOULDER

WELDED STOP 1/2" x 4" x 6"
1/2" FILLET WELD (3 SIDES)

BRACE SLIDE PLATE
1" x 6" x L = (MILLED)

NOTES:
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH PLATE TO BE FLATLY STAMPED WITH PLATE NO AND 136 (WEIGHT OF RAIL).
3. PANDROL SHOULDER TO BE TYPE 1 FORGED.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE PLATE.
5. THE PLATES AS SHOWN ARE FOR A 136 LB. NO 10 DOUBLE SLIP CROSSING.

REFERENCE DRAWING
LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB ......... SHEET NO 2841-02

INSULATED SLIDE PLATE 5-C
1" x 6" x L = (MILLED)
NOTES:
1. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL
2. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

REFERENCE DRAWING
LAYOUT - NO 10 DOUBLE SLIP CROSSING - 136 LB -------- SHEET NO 2841-02

INSULATED FROG GAGE PLATE FGP-1
1" x 8" - FLAT

D S - F G P -1-10 -13 6

HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

INSULATED FROG GAGE PLATE FGP-2
1" x 8" - FLAT

D S - F G P -2 -10 -13 6

INSULATED FROG GAGE PLATE FGP-3
1" x 8" - FLAT

D S - F G P -3 -10 -13 6

LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB -------- SHEET NO 2841-02

SYMBOLOGY:
- For Insulated Joint Assembly see ES2800-99

D S - F G P -1-10 -13 6

D S - F G P -2 -10 -13 6

D S - F G P -3 -10 -13 6

NOTES:
- STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL
- HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

REFERENCE DRAWING
LAYOUT - NO 10 DOUBLE SLIP CROSSING - 136 LB -------- SHEET NO 2841-02

INSULATED FROG GAGE PLATE FGP-1
1" x 8" - FLAT

D S - F G P -1-10 -13 6

HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

INSULATED FROG GAGE PLATE FGP-2
1" x 8" - FLAT

D S - F G P -2 -10 -13 6

INSULATED FROG GAGE PLATE FGP-3
1" x 8" - FLAT

D S - F G P -3 -10 -13 6

LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB -------- SHEET NO 2841-02

SYMBOLOGY:
- For Insulated Joint Assembly see ES2800-99

D S - F G P -1-10 -13 6

D S - F G P -2 -10 -13 6

D S - F G P -3 -10 -13 6

NOTES:
- STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL
- HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.
**FROG PLATE - F-1**

\[ \frac{3}{8} \times 8 \times 2\frac{1}{16} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-2**

\[ \frac{3}{8} \times 8 \times 2\frac{3}{16} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-3**

\[ \frac{3}{8} \times 8 \times 2\frac{15}{16} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-4**

\[ \frac{3}{8} \times 8 \times 2\frac{5}{8} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-5 THRU F-7 AND F-10**

\[ \frac{3}{8} \times 8 \times 2\frac{3}{8} - \text{FLAT} \] (SEE TABLE FOR LENGTHS)

**FROG PLATE - F-8, F-9 AND F-11**

\[ \frac{3}{8} \times 8 \times 2\frac{3}{8} - \text{FLAT} \] (SEE TABLE FOR LENGTHS)

**FROG PLATE - F-12**

\[ \frac{3}{8} \times 8 \times 2\frac{5}{8} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-13**

\[ \frac{3}{8} \times 8 \times 2\frac{5}{8} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-14**

\[ \frac{3}{8} \times 8 \times 2\frac{1}{16} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-15-A**

\[ \frac{3}{8} \times 8 \times 2\frac{3}{8} - \text{FLAT} \] (2 REQUIRED)

**FROG PLATE - F-15-B**

\[ \frac{3}{8} \times 8 \times 2\frac{3}{8} - \text{FLAT} \] (2 REQUIRED)

**DIMENSION TABLE**

<table>
<thead>
<tr>
<th>PLATE</th>
<th>A</th>
<th>NO REQ'D</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-1</td>
<td>1'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>F-2</td>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>F-3</td>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>F-4</td>
<td>2'-0&quot;</td>
<td>2</td>
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<tr>
<td>F-5</td>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>F-6</td>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>F-7</td>
<td>2'-0&quot;</td>
<td>2</td>
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<td>F-8</td>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>F-9</td>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>F-10</td>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
</tbody>
</table>

**NOTES:**

1. Stamp plate with proper plate number and weight of rail.
2. Holes in plates are 1" in dia. unless otherwise noted.

**REFERENCE DRAWING**

LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB -------- SHEET NO 2841-02

**ENGINEERING STANDARDS**

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

**CONTRACTOR:**

**CONTRACT NO:**

**CONTRACT DATE:**

**DATE OF APPROVAL:**

**SIGNATURE:**

**DIRECTOR OF ENGINEERING AND CONSTRUCTION**

**ASSISTANT DIRECTOR:** STANDARDS & DESIGN

**S:\Plot Drivers\pdf.plt**

**03/31/2011**

**REVISION:**

**SCALE:**

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NOTE:

- Type W clip must be welded to rod along both sides of bottom clips.

**Plan**

- Insulated spread rods No 2 or 3 with clips and bolts attached with hucked insulated splice. (2) Each required for slip switch.

**Elevation**

- Insulated spread rods No 2 or 3 for end points.

**Insulation Material Consists Of:**

- (4) Fibre channel C-1
- (4) Fibre angle plate MP-34
- (4) Fibre bushing B-1
- (4) Steel angle ST-684
- (4) Steel channel ST-558
- (4) ¾" Huck bolts C50X-824-36
- (4) Huck collars LC2R-24G

**Switch Information**

- Switch rod with "Respective rod No, 136, No 10 DSS" along both sides of bottom clips.

**Switch Rod**

- ROD SPACING = 1'-6" x 3'-5" (No 3 rod)
- ROD SPACING = 1'-6" x 3'-0" (No 2 rod)
- SIDE = 2 RODS
- GAUGE = 4'-8½"
- THROWN AT POINT = 4½" MIN, 4" MAX
- DISTANCE = 1'-0½"
- PT. = 3" SANFORD
- HEMP = ½" BOTH SIDES (SLOT ¾" STOCK)
- ROD SPACING = 1'-6½" x 3-½" (No 2 rod)
- ROD SPACING = 1'-6½" x 3-3½" (No 3 rod)
NO 4 HEAD ROD
(TWO REQUIRED PER CROSSING)

SLOTTED HOLE DETAIL
(1/16" x 1"

ROLLED HEADLOCK DETAIL
3/16" LONG (BETHLEHEM STEEL PART NO 834-0306)
(2) PIECES AS ShOWN FOR CLIP LH MOVEABLE POINT
(1) PIECE OPPOSITE END FOR CLIP RH MOVEABLE POINT

ROLLED HEADLOCK 7" LONG
(BETHLEHEM STEEL PART NO 834-0306)
(1) PIECE PER ROD
FURNISH (1) HEAVY THREAD MACH 50 HEAD BOLTS, 1" x 4", WITH SLOTTED MET. COTTER PIN

DETAI L OF SERRATIONS
(1) PIECE PER ROD
(2) PIECES AS ShOWN FOR CLIP LH MOVEABLE POINT

NOTE:
STAMP RODS WITH "RESPECTIVE ROD NO. 136, NO 10 055" +

INSULATION MATERIAL
PER SR-36 WITH COTTER SLEEVE NUTS
WITHOUT 1/2" SABO WASHERS & 1/2" HEX NUTS.
TYPE W CLIP MUST BE WELDED TO ROD ALONG 48MM SIDES OF BOTTOM OF CLIPS.
REBEND ALL HOMES.

SWITCH INFORMATION
GAUGE: 4'-8 1/2"
THEO AT POINT: 4'
E DISTANCE: 1/16"
POINT: 1/16"
REMP: 3/16" D GAUGE SIDE
ROD SPACING: 1/16"
HEEL SPREAD: 7/16"

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

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4-3/16" (ADJUSTMENT 4'-3" TO 4'-4 1/2")

OVERTEES = 4'-3/16" (ADJUSTMENT 4'-3" TO 4'-4 1/2")

R.H. MOVEABLE POINT
THIS SIDE

L.H. MOVEABLE POINT
THIS SIDE

CUT LOCATION = 1/16" x 2 1/2" x 4'-3/16"
1/16" DIA HOLES IN ROD

1/16" DIA HOLES IN ROD

1" DIA HOLES AT ASSEMBLY

CLIP LOCATION = 1/16" x 2 1/2" x 4'-3/16"
CLIP LOCATION = 1/16" x 2 1/2" x 4'-4 1/2"

B.S. WHITWORTH THREADS
56 THREADS & 6 PER 1"
FOR 8" THREADS PER 1"

INSULATED HEAD ROD NO 4
FOR MOVEABLE CENTER POINTS
NO 10 136 LB RE DOUBLE SLIP CROSSING

DIRECTOR OF ENGINEERING AND CONSTRUCTION
ASSISTANT DIRECTOR: STANDARDS & DESIGN
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY - 1 OF 1

UserName => carlosa
Date Plotted: 10/5/2011
Plot Driver => S:\Plot Drivers\pdf.plt
FileName => s:\V8EngStds\2000\Turnouts\No 10 Double Slip\ES2841-52.dgn

ENG. DES.
DATE
REV.
DESCRIPTION
DRAWN BY:
DATE:
FOR NON-SCRRA APPROVED USES:
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NOTE:
- Stamp rods with "Respective Rod No. 136, No 10 085".
- B.S. Whitworth 6 threads per 1".
- 56 threads @ 6-per 1".
- 56 threads per 1".

INSULATION MATERIAL
- 3/4" Whitworth threads.
- 56 threads per 1".
- 8 threads per 1/2".

SWITCH INFORMATION
- Open at point: 4".
- E Distance: 1/2".
- 2" Tack Point: 1/2".
- Rod Spacing: P 14".
- Heel Spread: 7/8".
- Type M clip must be welded to rod along both sides of bottom of clips.

SLOTTED HOLE DETAIL
- 1/2" dia holes layoff and drill at assembly.

ROLLED HEADLOCK DETAIL
- 3/4" long (Bethlehem steel part no 834-0505).
- 2 pieces as shown for clip, RH moveable point.

ROLLED HEADLOCK 7" LONG
- (Bethlehem steel part no 834-0505).
- 4 pieces per rod.
- Furnish 2) heavy thread machine sq head bolts, 1" x 3/4" with slotted hex nut.
- Spring washer & cotter pin.

DETAILED OF SERRATIONS
- For 1 1/2" long straight 6 threads per 1 1/2".

CLIP LOCATION = 1" x 2 1/4" x 1'-8"
CLIP LOCATION = 1" x 2 1/4" x 1'-9"

RH MOVEABLE POINT
THIS SIDE

LH MOVEABLE POINT
THIS SIDE

1" dia holes layoff and drill at assembly.

INSULATED SPREAD ROD NO 5
(2) required per slip switch with hucked insulated splice.

CLIP LOCATION = 1" x 2 1/4" x 1'-3/4"

OVERTEES - 4'-3" (adjustment 4'-2 1/4" to 4'-3 1/4")
ASSEMBLED 16'-0" GUARD RAIL

COLLECTIVE DRILLING FROM END OF GUARD BAR MARKED "X"

- 1" DIA - 1½" ABOVE BASE

1. GUARD RAIL SECTION UIC 33; UNE 60-0 GRADE 90A
2. GUARD FACE BRINDLE 3½" WIDE
3. BASE PLATE, BRACKET AND SHIMS MILD STEEL PER AREMA SPECIFICATION M7.
4. GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION M11.
5. BASE PLATE, BRACKET AND SHIMS MILD STEEL PER AREMA SPECIFICATION M7.
6. GUARD RAIL SECTION UIC 33; UNE 60-0 GRADE 90A

NOTES:

- HOLE 1" DIA - 1½" ABOVE BASE
- GUARD RAIL SEAT
- CANT 1:40
- FROM THIS END LAYOUT & DRILLING
- COLLECTIVE DRILLING FROM END OF GUARD BAR MARKED "X"
- TYPICAL PLATE DETAIL
- PUNCHING DETAIL
- TYPICAL PLATE PUNCHING DETAIL
- FLARE DETAIL
- BREAK SHARP CORNERS OF ALL MACHINED SURFACES

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DIRECTOR OF ENGINEERING AND CONSTRUCTION
ASSISTANT DIRECTOR: STANDARDS & DESIGN

ENGINEERING STANDARDS
GUARD RAIL DETAILS
16'-0" LONG

METROLINK.
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