

**SCRRA NO 14 TURNOUT
BILL OF MATERIALS & DRAWING NUMBERS**

FROG NUMBER
HAND
WSM OR RBM
CONCRETE OR TIMBER TIES
HST OR STANDARD TIES
POWER OR MANUAL
ML OR TO SIDE SW MACHINE OPERATION

| NO 14 | | | |
|----------|--------|----------|--------|
| LH | | RH | |
| WSM | | WSM | |
| CONCRETE | | CONCRETE | |
| HST | | HST | |
| POWER | | POWER | |
| MLSIDE | TOSIDE | MLSIDE | TOSIDE |

| | | | | | |
|-------------------------------|------------|--|--|--|--|
| TURNOUT LAYOUT | DRAWING NO | 2805-01 | 2805-03 | 2805-02 | 2805-04 |
| SWITCH PACK | DRAWING NO | 2805-11 | 2805-13 | 2805-12 | 2805-14 |
| CONCRETE TIE LAYOUT | DRAWING NO | 2805-31 | 2805-31 | 2805-30 | 2805-30 |
| HOLLOW STEEL TIE LAYOUT | DRAWING NO | 2805-33 | 2805-35 | 2805-32 | 2805-34 |
| FROG PACK | DRAWING NO | 2805-41 | 2805-41 | 2805-42 | 2805-42 |
| GUARD RAIL MAINLINE | DRAWING NO | 2800-50 | 2800-50 | 2800-50 | 2800-50 |
| GUARD RAIL TURNOUT | DRAWING NO | 2805-61 | 2805-61 | 2805-62 | 2805-62 |
| INSULATED RAIL ASSEMBLY | LENGTH | 48'-10 ³ / ₄ " | 48'-10 ³ / ₄ " | 48'-10 ³ / ₄ " | 48'-10 ³ / ₄ " |
| INSULATED RAIL ASSEMBLY | LENGTH | 49'-0 ¹ / ₄ " | 49'-0 ¹ / ₄ " | 49'-0 ¹ / ₄ " | 49'-0 ¹ / ₄ " |
| RAIL | LENGTH | 2@30'-0" | 2@30'-0" | 2@30'-0" | 2@30'-0" |
| RAIL | LENGTH | 3@38'-0" | 3@38'-0" | 3@38'-0" | 3@38'-0" |
| RAIL | LENGTH | 40'-0" | 40'-0" | 40'-0" | 40'-0" |
| RAIL | LENGTH | 2@48'-11 ¹ / ₈ " | 2@48'-11 ¹ / ₈ " | 2@48'-11 ¹ / ₈ " | 2@48'-11 ¹ / ₈ " |
| TIE SCREWS CONCRETE | ES2356 | QUANTITY | 352 | 352 | 352 |
| TIE SCREWS TIMBER | ES2355 | QUANTITY | - | - | - |
| WASHER FLAT | ES2356 | QUANTITY | 352 | 352 | 352 |
| SPRING WASHER DOUBLE COIL | ES2356 | QUANTITY | 352 | 352 | 352 |
| TIE PLATE PANDROL | ES2454 | QUANTITY | - | - | - |
| E-CLIP PANDROL E2055 | ES2362 | QUANTITY | 342 | 342 | 342 |
| INSULATOR PANDROL NYLON HD10 | - | QUANTITY | 342 | 342 | 342 |
| PANDROL JOINT CLIP E2063 | ES2361 | QUANTITY | 8 | 8 | 8 |
| INSULATION PANDROL NYLON 6790 | - | QUANTITY | 8 | 8 | 8 |
| TIE PAD PANDROL 69935R | - | QUANTITY | 175 | 175 | 175 |
| SHIM TO REDUCE PLATE FLEXURE | - | QUANTITY | 176 | 176 | 176 |

| REV. | DATE | DESCRIPTION | DES. | ENG. |
|------|----------|-------------|------|------|
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: A. CARLOS DATE: 03/31/2011

Nareh D. Papp
ASSISTANT DIRECTOR: STANDARDS & DESIGN

William Dava
DIRECTOR OF ENGINEERING AND CONSTRUCTION

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ENGINEERING STANDARDS

NO 14 TURNOUT

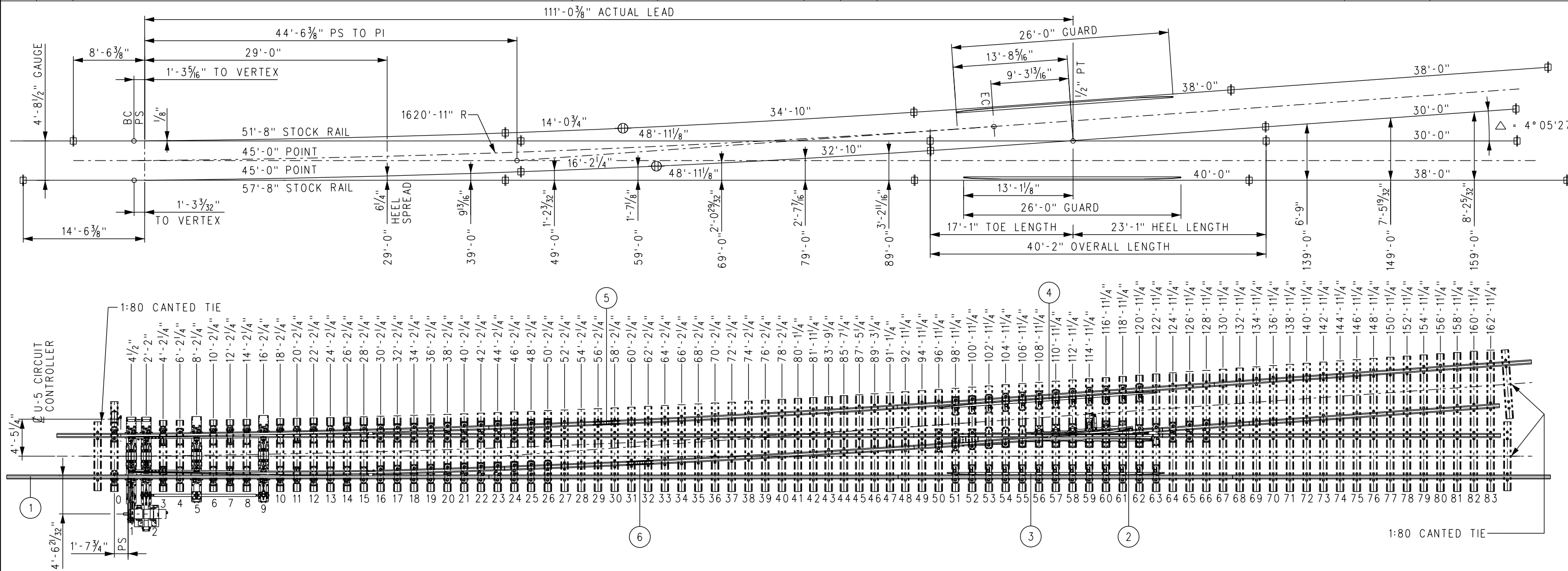
| | |
|----------------|-----------|
| STANDARD | 2800 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2800-14 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|---------|--------------|
| 1 | 1 | SWITCH PACK, NO 14-136 LB RE MODIFIED TANGENTIAL, LH, HST | 2805-11 | |
| 2 | 1 | FROG PACK, NO 14-136 LB RE WSM, LH | 2805-41 | |
| 3 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", STRAIGHT | 2800-50 | |
| 4 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", LH | 2805-61 | |
| 5 | 1 | INSULATED RAIL ASSEMBLY, 48'-10 ³ / ₄ " C/W BONDED INSULATED JOINT | - | |
| 6 | 1 | INSULATED RAIL ASSEMBLY, 49'-0 ¹ / ₄ " C/W BONDED INSULATED JOINT | - | |
| 7 | 2 | DRILLED RAIL, 136 LB RE, 30'-0" LONG | - | |
| 8 | 3 | DRILLED RAIL, 136 LB RE, 38'-0" LONG | - | |
| 9 | 1 | DRILLED RAIL, 136 LB RE, 40'-0" LONG | - | |
| 10 | 2 | DRILLED RAIL, 136 LB RE, 48'-11 ¹ / ₈ " LONG | - | |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|---------|--------------|
| 11 | 352 | TIE SCREW, CONCRETE 7/8" DIA X 6" HEX HEAD | - | |
| 12 | 352 | WASHER FLAT 7/8" TYPE A NARROW 15/16" X 1 1/4" X 0.134" | - | |
| 13 | 352 | SPRING WASHER, DOUBLE COIL (Fe6) | - | |
| 14 | 1 | CONCRETE TIE SET, 0-83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, LH | 2805-31 | |
| 15 | 342 | CLIP PANDROL E2055 | - | |
| 16 | 342 | INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10 | - | |
| 17 | 8 | CLIP PANDROL E2063 | - | |
| 18 | 8 | INSULATION, PANDROL NYLON 6790 | - | |
| 19 | 175 | TIE PAD PANDROL 6993SR | - | |
| 20 | 176 | SHIM, TO REDUCE PLATE FLEXURE | - | |



NOTES:

- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
- RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
- GUARD RAILS ARE RAISED 1" AND FORM A 1/8" FLANGEWAY.
- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
- ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- SCHWIHAG ROLLERS TO BE INSTALLED AND ADJUSTED IN THE FIELD.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

TURNOUT DATA

| | | |
|---------------------|-------------------------------------|----------------|
| FROG | NO 14 | Δ = 4° 05' 27" |
| TOE LENGTH: | 17'-1" | |
| HEEL LENGTH: | 23'-1" | |
| TOTAL LENGTH: | 40'-2" | |
| SWITCH | | |
| LENGTH OF POINTS: | 45'-0" | |
| VERTEX DISTANCE: | 1'-3 ⁷ / ₃₂ " | |
| ENTRY ANGLE: | 0° 29' 50" | |
| THICKNESS AT POINT: | 1/8" | |
| THROW AT ROD *1: | 4 3/4" | |

| | |
|--------------------|--------------------------------------|
| ACTUAL LEAD: | 111'-0 ³ / ₈ " |
| CLOSURE AREA | |
| CENTERLINE RADIUS: | 1620'-11" |
| DEGREE OF CURVE: | 3° 32' 07" |
| DESIGN SPEEDS | |
| | 35 MPH PASSENGER @ 3" UNBALANCE |
| | 25 MPH FREIGHT @ 2" UNBALANCE |

| | | | |
|---|----------|---|------------|
| DRAWN BY: | HDR | DATE: | 03/31/2011 |
|  ASSISTANT DIRECTOR: STANDARDS & DESIGN | |  DIRECTOR OF ENGINEERING AND CONSTRUCTION | |
| REV. | DATE | DESCRIPTION | DES. ENG. |
| X | XX-XX-XX | REVISION | XX XX |

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

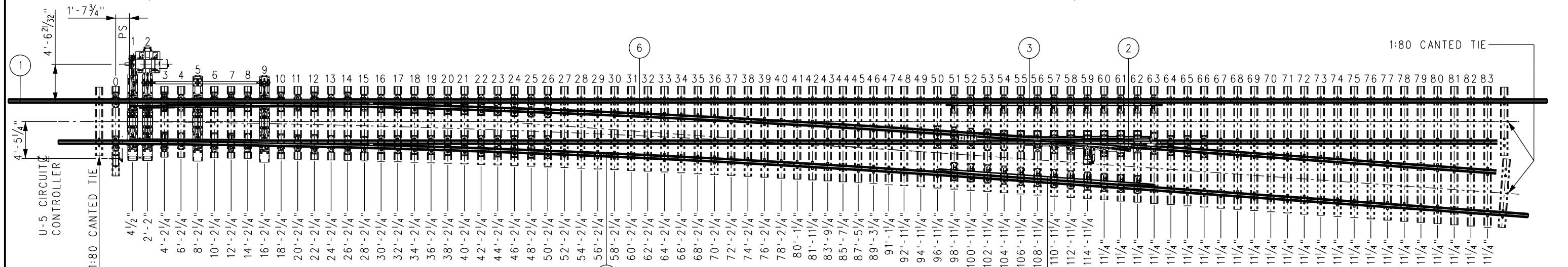
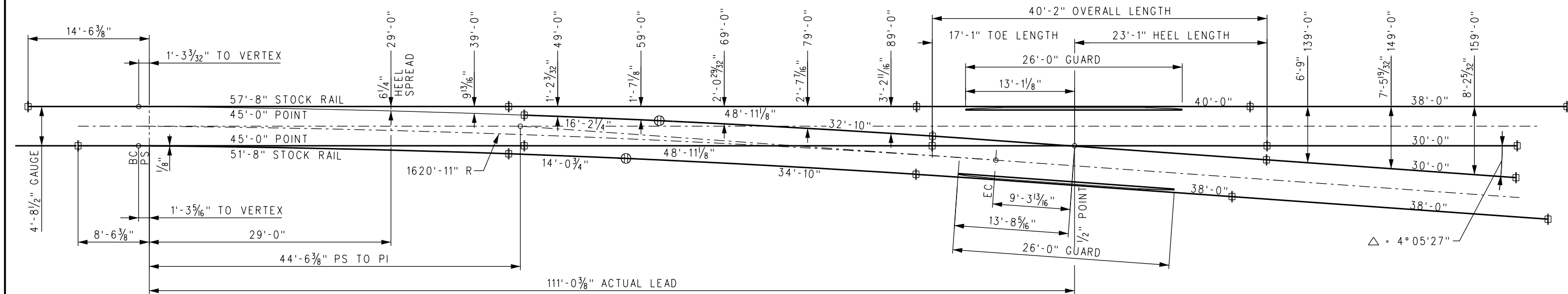
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|--------------------------------------|--|------------|-----------|
| ENGINEERING STANDARDS | | STANDARD | 2805 |
| TURNOUT LAYOUT | | SCALE: | NTS |
| NO 14-136 LB RE LH WSM FROG TURNOUT | | REVISION | SHEET |
| HST, SWITCH MACHINE ON MAINLINE SIDE | | - | 1 OF 1 |
| ADD FILE: | | CADD FILE: | ES2805-01 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|---------|--------------|
| 1 | 1 | SWITCH PACK, NO 14-136 LB RE MODIFIED TANGENTIAL, RH, HST | 2805-12 | |
| 2 | 1 | FROG PACK, NO 14-136 LB RE WSM, RH | 2805-42 | |
| 3 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", STRAIGHT | 2800-50 | |
| 4 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", RH | 2805-62 | |
| 5 | 1 | INSULATED RAIL ASSEMBLY, 48'-10 ³ / ₄ " C/W BONDED INSULATED JOINT | - | |
| 6 | 1 | INSULATED RAIL ASSEMBLY, 49'-0 ¹ / ₄ " C/W BONDED INSULATED JOINT | - | |
| 7 | 2 | DRILLED RAIL, 136 LB RE, 30'-0" LONG | - | |
| 8 | 3 | DRILLED RAIL, 136 LB RE, 38'-0" LONG | - | |
| 9 | 1 | DRILLED RAIL, 136 LB RE, 40'-0" LONG | - | |
| 10 | 2 | DRILLED RAIL, 136 LB RE, 48'-11 ¹ / ₈ " LONG | - | |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|---------|--------------|
| 11 | 352 | TIE SCREW, CONCRETE 7/8" DIA x 6" HEX HEAD | - | |
| 12 | 352 | WASHER FLAT 7/8 TYPE A NARROW 15/16" x 1 3/4" x 0.134" | - | |
| 13 | 352 | SPRING WASHER, DOUBLE COIL (Fe6) | - | |
| 14 | 1 | CONCRETE TIE SET, 0-83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, RH | 2805-30 | |
| 15 | 342 | CLIP PANDROL E2055 | - | |
| 16 | 342 | INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10 | - | |
| 17 | 8 | CLIP PANDROL E2063 | - | |
| 18 | 8 | INSULATION, PANDROL NYLON 6790 | - | |
| 19 | 175 | TIE PAD PANDROL 6993SR | - | |
| 20 | 176 | SHIM, TO REDUCE PLATE FLEXURE | - | |

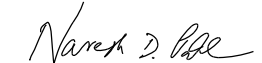


NOTES:

- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
- RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
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- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- SCHWIHAG ROLLERS TO BE INSTALLED AND ADJUSTED IN THE FIELD.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

TURNOUT DATA

| | | | | |
|--------|---------------------|-------------------------------------|---------------------------------|--------------------------------------|
| FROG | NO 14 | Δ = 4° 05' 27" | ACTUAL LEAD: | 111'-0 ³ / ₈ " |
| | TOE LENGTH: | 17'-1" | CLOSURE AREA | |
| | HEEL LENGTH: | 23'-1" | CENTERLINE RADIUS: | 1620'-11" |
| | TOTAL LENGTH: | 40'-2" | DEGREE OF CURVE: | 3° 32' 07" |
| SWITCH | LENGTH OF POINTS: | 45'-0" | DESIGN SPEEDS | |
| | VERTEX DISTANCE: | 1'-3 ⁷ / ₃₂ " | 35 MPH PASSENGER @ 3" UNBALANCE | |
| | ENTRY ANGLE: | 0° 29' 50" | 25 MPH FREIGHT @ 2" UNBALANCE | |
| | THICKNESS AT POINT: | 1/8" | | |
| | THROW AT ROD *1: | 4 3/4" | | |

| | | | |
|---|----------|-------------|------------|
| DRAWN BY: | HDR: | DATE: | 03/31/2011 |
|  ASSISTANT DIRECTOR: STANDARDS & DESIGN | | | |
|  DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | |
| REV. | DATE | DESCRIPTION | DES. ENG. |
| X | XX-XX-XX | REVISION | XX XX |

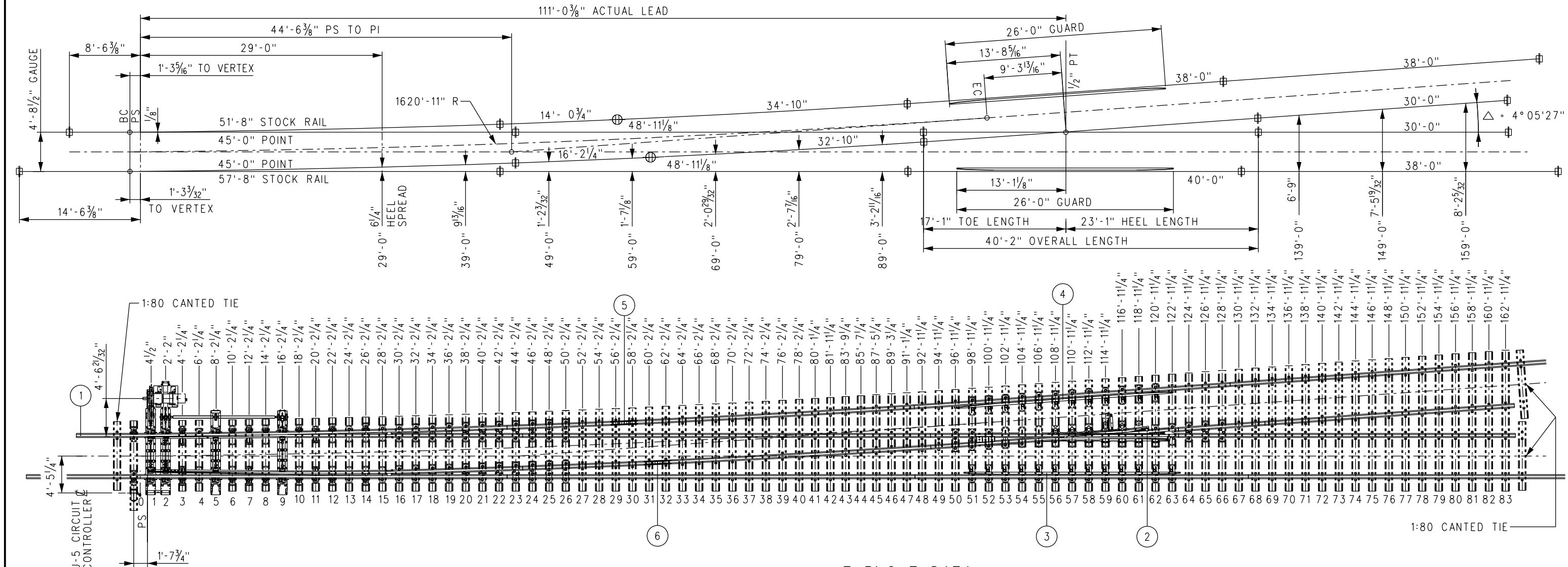
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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

| | | | |
|---|--|------------|-----------|
| ENGINEERING STANDARDS | | STANDARD | 2805 |
| TURNOUT LAYOUT | | SCALE: | NTS |
| NO 14-136 LB RE RH WSM FROG TURNOUT HST, SWITCH MACHINE ON MAINLINE SIDE | | REVISION | SHEET |
| | | - | 1 OF 1 |
| | | CADD FILE: | ES2805-02 |

| BILL OF MATERIAL | | | | BILL OF MATERIAL | | | | | |
|------------------|-----|--|---------|------------------|------|-----|---|---------|--------------|
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO | ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
| 1 | 1 | SWITCH PACK, NO 14-136 LB RE MODIFIED TANGENTIAL, LH, HST | 2805-13 | | 11 | 352 | TIE SCREW, CONCRETE 7/8" DIA X 6" HEX HEAD | - | |
| 2 | 1 | FROG PACK, NO 14-136 LB RE WSM, LH | 2805-41 | | 12 | 352 | WASHER FLAT 7/8" TYPE A NARROW 15/16" X 1 3/4" X 0.134" | - | |
| 3 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", STRAIGHT | 2800-50 | | 13 | 352 | SPRING WASHER, DOUBLE COIL (Fe6) | - | |
| 4 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", LH | 2805-61 | | 14 | 1 | CONCRETE TIE SET, 0-83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, LH | 2805-31 | |
| 5 | 1 | INSULATED RAIL ASSEMBLY, 48'-10 3/4" C/W BONDED INSULATED JOINT | - | | 15 | 342 | CLIP PANDROL E2055 | - | |
| 6 | 1 | INSULATED RAIL ASSEMBLY, 49'-0 1/4" C/W BONDED INSULATED JOINT | - | | 16 | 342 | INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10 | - | |
| 7 | 2 | DRILLED RAIL, 136 LB RE, 30'-0" LONG | - | | 17 | 8 | CLIP PANDROL E2063 | - | |
| 8 | 3 | DRILLED RAIL, 136 LB RE, 38'-0" LONG | - | | 18 | 8 | INSULATION, PANDROL NYLON 6790 | - | |
| 9 | 1 | DRILLED RAIL, 136 LB RE, 40'-0" LONG | - | | 19 | 175 | TIE PAD PANDROL 6993SR | - | |
| 10 | 2 | DRILLED RAIL, 136 LB RE, 48'-11 1/8" LONG | - | | 20 | 176 | SHIM, TO REDUCE PLATE FLEXURE | - | |



NOTES:

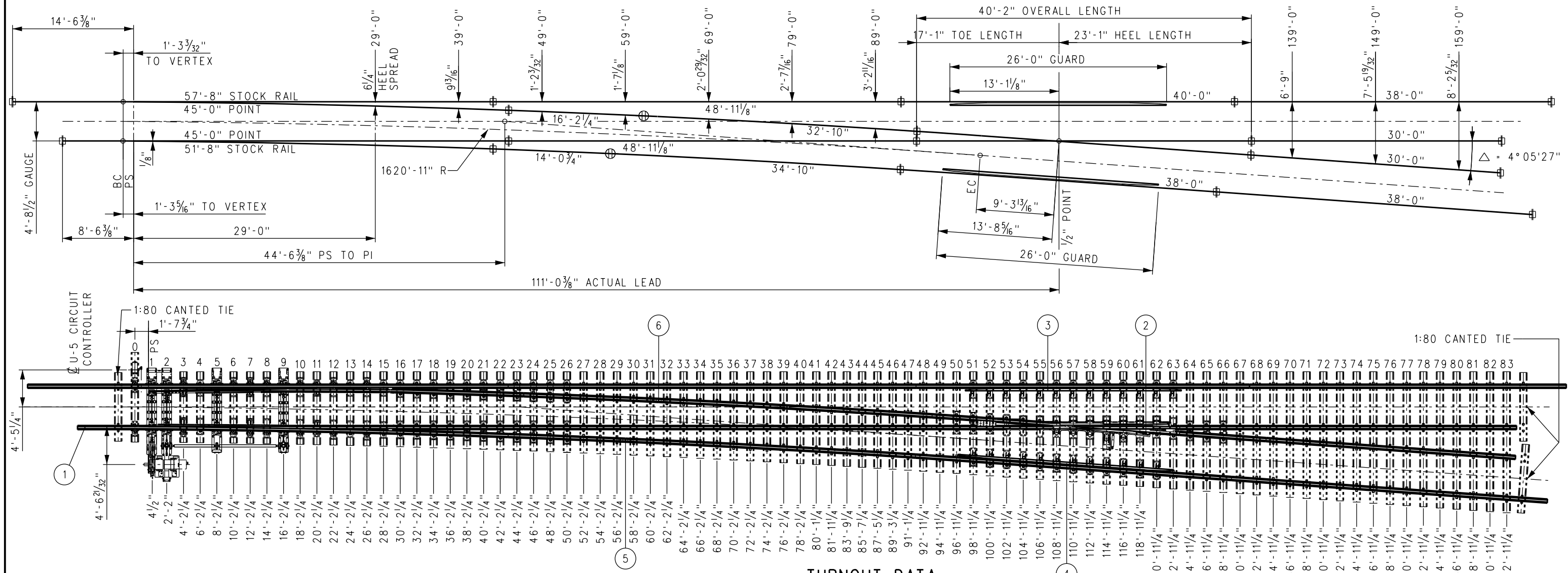
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- RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
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- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
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- ⊕ = INSULATED JOINT ⌘ = WELDED JOINT

TURNOUT DATA

| | | | | |
|--------|---------------------|----------------|---------------------------------|-------------|
| FROG | NO 14 | Δ = 4° 05' 27" | ACTUAL LEAD: | 111'-0 3/8" |
| | TOE LENGTH: | 17'-1" | CLOSURE AREA | |
| | HEEL LENGTH: | 23'-1" | CENTERLINE RADIUS: | 1620'-11" |
| | TOTAL LENGTH: | 40'-2" | DEGREE OF CURVE: | 3° 32' 07" |
| SWITCH | LENGTH OF POINTS: | 45'-0" | DESIGN SPEEDS | |
| | VERTEX DISTANCE: | 1'-3 3/32" | 35 MPH PASSENGER @ 3" UNBALANCE | |
| | ENTRY ANGLE: | 0° 29' 50" | 25 MPH FREIGHT @ 2" UNBALANCE | |
| | THICKNESS AT POINT: | 1/8" | | |
| | THROW AT ROD #1: | 4 3/4" | | |

| | | | | | |
|---|-------------|--|--|---|----------------------|
| DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011 | | <p>SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.</p> | <p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012</p> | <p>ENGINEERING STANDARDS</p> <p>TURNOUT LAYOUT</p> <p>NO 14-136 LB RE LH WSM FROG TURNOUT HST, SWITCH MACHINE ON TURNOUT SIDE</p> | STANDARD: 2805 |
| <p>ASSISTANT DIRECTOR: STANDARDS & DESIGN</p> <p><i>William Dava</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION</p> | | | | | SCALE: NTS |
| REV. DATE | DESCRIPTION | DES. ENG. | | REVISION SHEET: 1 OF 1 | CADD FILE: ES2805-03 |

| BILL OF MATERIAL | | | | BILL OF MATERIAL | | | | | |
|------------------|-----|--|---------|------------------|------|-----|---|---------|--------------|
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO | ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
| 1 | 1 | SWITCH PACK, NO 14-136 LB RE MODIFIED TANGENTIAL, RH, HST | 2805-14 | | 11 | 352 | TIE SCREW, CONCRETE 7/8" DIA x 6" HEX HEAD | - | |
| 2 | 1 | FROG PACK, NO 14-136 LB RE WSM, RH | 2805-42 | | 12 | 352 | WASHER FLAT 7/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134" | - | |
| 3 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", STRAIGHT | 2800-50 | | 13 | 352 | SPRING WASHER, DOUBLE COIL (Fe6) | - | |
| 4 | 1 | GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", RH | 2805-62 | | 14 | 1 | CONCRETE TIE SET, 0-83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, RH | 2805-30 | |
| 5 | 1 | INSULATED RAIL ASSEMBLY, 48'-10 3/4" C/W BONDED INSULATED JOINT | - | | 15 | 342 | CLIP PANDROL E2055 | - | |
| 6 | 1 | INSULATED RAIL ASSEMBLY, 49'-0 1/4" C/W BONDED INSULATED JOINT | - | | 16 | 342 | INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10 | - | |
| 7 | 2 | DRILLED RAIL, 136 LB RE, 30'-0" LONG | - | | 17 | 8 | CLIP PANDROL E2063 | - | |
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| 9 | 1 | DRILLED RAIL, 136 LB RE, 40'-0" LONG | - | | 19 | 175 | TIE PAD PANDROL 6993SR | - | |
| 10 | 2 | DRILLED RAIL, 136 LB RE, 48'-11 1/8" LONG | - | | 20 | 176 | SHIM, TO REDUCE PLATE FLEXURE | - | |



TURNOUT DATA

| | | | | |
|--------|---------------------|-------------------------------|---------------------------------|--------------------|
| FROG | NO 14 | $\Delta = 4^{\circ} 05' 27''$ | ACTUAL LEAD: | 111'-0 3/8" |
| | TOE LENGTH: | 17'-1" | CLOSURE AREA | |
| | HEEL LENGTH: | 23'-1" | CENTERLINE RADIUS: | 1620'-11" |
| | TOTAL LENGTH: | 40'-2" | DEGREE OF CURVE: | 3^{\circ} 32' 07'' |
| SWITCH | LENGTH OF POINTS: | 45'-0" | DESIGN SPEEDS | |
| | VERTEX DISTANCE: | 1'-3 3/32" | 35 MPH PASSENGER @ 3" UNBALANCE | |
| | ENTRY ANGLE: | 0^{\circ} 29' 50'' | 25 MPH FREIGHT @ 2" UNBALANCE | |
| | THICKNESS AT POINT: | 1/8" | | |
| | THROW AT ROD #1: | 4 3/4" | | |

NOTES:

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- GUARD RAILS ARE RAISED 1" AND FORM A 1/8" FLANGWAY.
- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
- ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- SCHWIBAG ROLLERS TO BE INSTALLED AND ADJUSTED IN THE FIELD.
- \oplus = INSULATED JOINT \oplus = WELDED JOINT

| | | | | | | | | |
|--|--|---|--|--|--|--|--|--|
| DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011 | | SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED. | | METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012 | | ENGINEERING STANDARDS TURNOUT LAYOUT NO 14-136 LB RE RH WSM FROG TURNOUT HST, SWITCH MACHINE ON TURNOUT SIDE | | STANDARD: 2805 SCALE: NTS REVISION SHEET: 1 OF 1 CADD FILE: ES2805-04 |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>William Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | | | | | | |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|-----------|--------------|
| 1 | 1 | HOLLOW SWITCH TIE & RODDING ASSEMBLY | ES2805-33 | |
| 2 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, STRAIGHT, LH | ES2805-21 | |
| 3 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, CURVED, RH | ES2805-22 | |
| 4 | 1 | SAMSON STOCK RAIL, 51'-8" LONG, CURVED, LH | ES2805-25 | |
| 5 | 1 | SAMSON STOCK RAIL, 57'-8" LONG, STRAIGHT, RH | ES2805-26 | |
| 6 | 2 | SWITCH PLATE (BP1C-136) | ES2800-80 | |
| 7 | 10 | SWITCH PLATE (BP2C-136) | ES2800-80 | |
| 8 | 6 | SWITCH PLATE (P4C-136) | ES2800-80 | |
| 9 | 2 | SWITCH PLATE, ROLLER SCHWIHAG RP-1-136 | ES2800-96 | |
| 10 | 4 | SWITCH PLATE, ROLLER SCHWIHAG RP-2-136 | ES2800-97 | |
| 11 | 1 | SWITCH PLATE (14-16LLC) | ES2805-81 | |
| 12 | 1 | SWITCH PLATE (14-16LRC) | ES2805-81 | |
| 13 | 1 | SWITCH PLATE (14-17LLC) | ES2805-81 | |
| 14 | 1 | SWITCH PLATE (14-17LRC) | ES2805-81 | |
| 15 | 1 | SWITCH PLATE (14-18LLC) | ES2805-81 | |

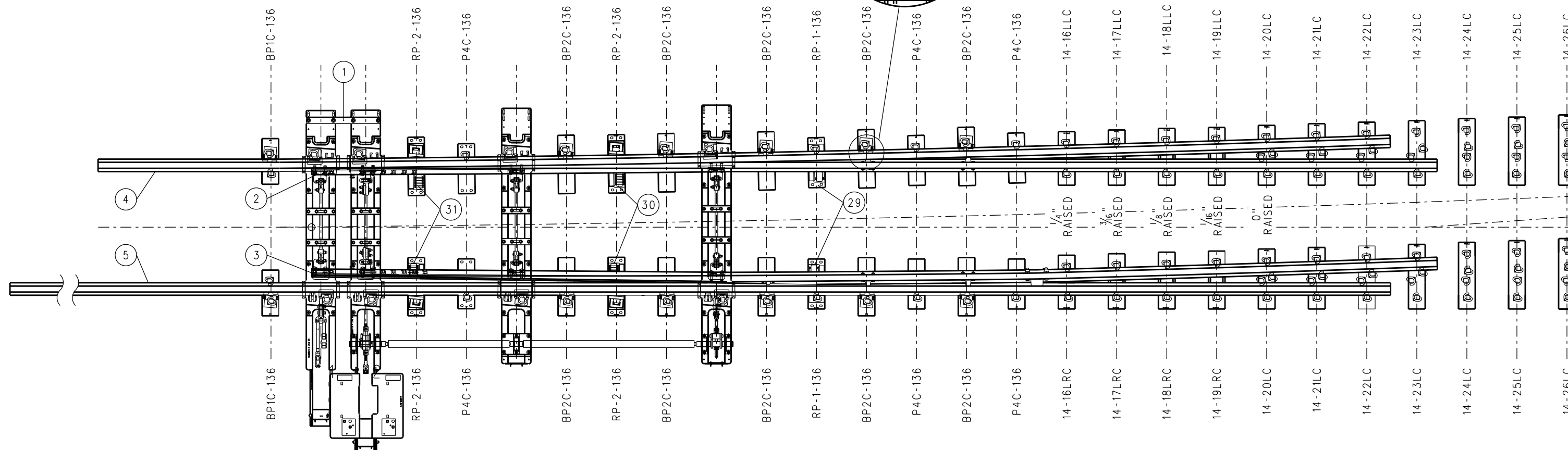
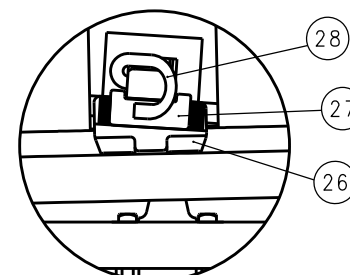
BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--------------------------------------|-----------|--------------|
| 16 | 1 | SWITCH PLATE (14-18LRC) | ES2805-81 | |
| 17 | 1 | SWITCH PLATE (14-19LLC) | ES2805-82 | |
| 18 | 1 | SWITCH PLATE (14-19LRC) | ES2805-82 | |
| 19 | 2 | SWITCH PLATE (14-20LC) | ES2805-82 | |
| 20 | 2 | SWITCH PLATE (14-21LC) | ES2805-82 | |
| 21 | 2 | SWITCH PLATE (14-22LC) | ES2805-82 | |
| 22 | 2 | SWITCH PLATE (14-23LC) | ES2805-82 | |
| 23 | 2 | SWITCH PLATE (14-24LC) | ES2805-83 | |
| 24 | 2 | SWITCH PLATE (14-25LC) | ES2805-83 | |
| 25 | 2 | SWITCH PLATE (14-26LC) | ES2805-83 | |
| 26 | 16 | BRACE, BOLTLESS, 136 LB RE 'SUREFIT' | - | |
| 27 | 16 | WASHER, SERRATED FOR BOLTLESS BRACE | - | |
| 28 | 98 | CLIP, PANDROL, E2055 | - | |
| 29 | 2 | ROLLER SCHWIHAG, SINGLE | - | |
| 30 | 2 | ROLLER SCHWIHAG, DOUBLE | - | |
| 31 | 2 | ROLLER SCHWIHAG, TRIPLE | - | |

NOTES:

- SEE DRAWING ES2805-31 FOR TIE LOCATION DIMENSIONS.
- SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT.

TYPICAL BOLTLESS BRACE ASSEMBLY



| REV. | DATE | DESCRIPTION | DES. | ENG. |
|------|----------|-------------|------|------|
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: HDR DATE:
Nareh D. Papp
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.

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

ENGINEERING STANDARDS
 NO 14-136 LB RE LH SWITCH PACK,
 HOLLOW STEEL TIES,
 SWITCH MACHINE ON MAINLINE SIDE

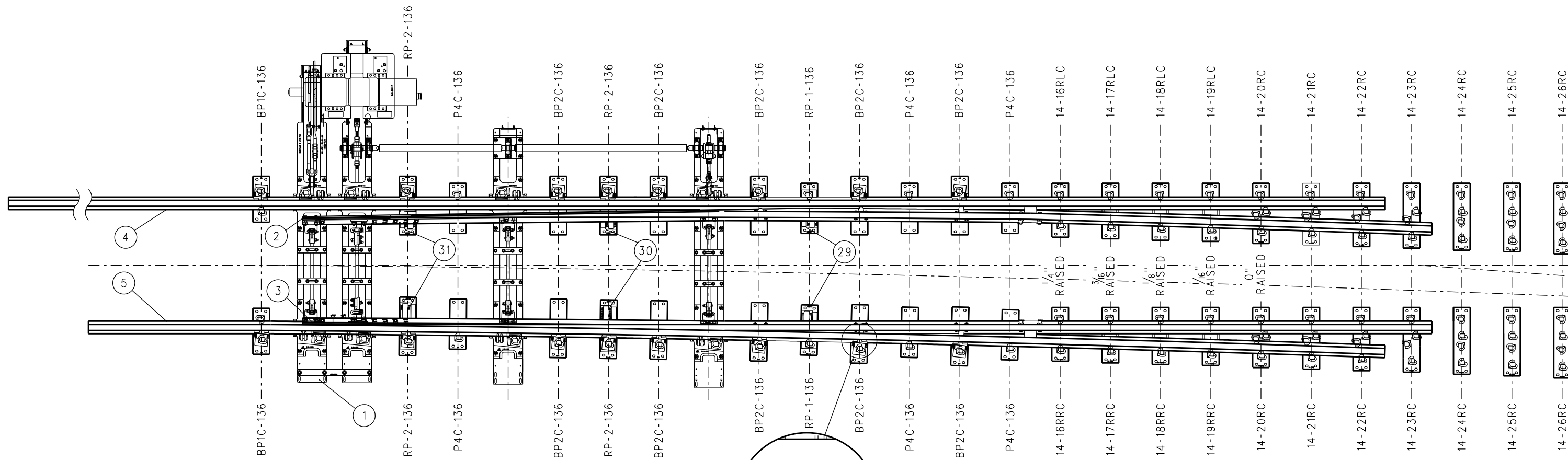
| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-11 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|-----------|--------------|
| 1 | 1 | HOLLOW SWITCH TIE & RODDING ASSEMBLY | ES2805-32 | |
| 2 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, CURVED, LH | ES2805-23 | |
| 3 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, STRAIGHT, RH | ES2805-24 | |
| 4 | 1 | SAMSON STOCK RAIL, 57'-8" LONG, STRAIGHT, LH | ES2805-27 | |
| 5 | 1 | SAMSON STOCK RAIL, 51'-8" LONG, CURVED, RH | ES2805-28 | |
| 6 | 2 | SWITCH PLATE (BP1C-136) | ES2800-80 | |
| 7 | 10 | SWITCH PLATE (BP2C-136) | ES2800-80 | |
| 8 | 6 | SWITCH PLATE (P4C-136) | ES2800-80 | |
| 9 | 2 | SWITCH PLATE, ROLLER SCHWIHAG RP-1-136 | ES2800-96 | |
| 10 | 4 | SWITCH PLATE, ROLLER SCHWIHAG RP-2-136 | ES2800-97 | |
| 11 | 1 | SWITCH PLATE (14-16RLC) | ES2805-84 | |
| 12 | 1 | SWITCH PLATE (14-16RRC) | ES2805-84 | |
| 13 | 1 | SWITCH PLATE (14-17RLC) | ES2805-84 | |
| 14 | 1 | SWITCH PLATE (14-17RRC) | ES2805-84 | |
| 15 | 1 | SWITCH PLATE (14-18RLC) | ES2805-84 | |

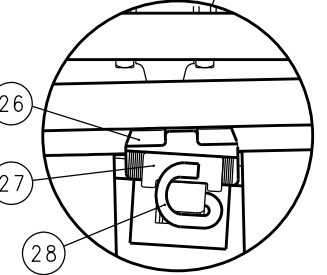
BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--------------------------------------|-----------|--------------|
| 16 | 1 | SWITCH PLATE (14-18RRC) | ES2805-84 | |
| 17 | 1 | SWITCH PLATE (14-19RLC) | ES2805-85 | |
| 18 | 1 | SWITCH PLATE (14-19RRC) | ES2805-85 | |
| 19 | 2 | SWITCH PLATE (14-20RC) | ES2805-85 | |
| 20 | 2 | SWITCH PLATE (14-21RC) | ES2805-85 | |
| 21 | 2 | SWITCH PLATE (14-22RC) | ES2805-85 | |
| 22 | 2 | SWITCH PLATE (14-23RC) | ES2805-85 | |
| 23 | 2 | SWITCH PLATE (14-24RC) | ES2805-86 | |
| 24 | 2 | SWITCH PLATE (14-25RC) | ES2805-86 | |
| 25 | 2 | SWITCH PLATE (14-26RC) | ES2805-86 | |
| 26 | 16 | BRACE, BOLTLESS, 136 LB RE 'SUREFIT' | - | |
| 27 | 16 | WASHER, SERRATED FOR BOLTLESS BRACE | - | |
| 28 | 96 | SLIP, PANDROL, E2055 | - | |
| 29 | 2 | ROLLER SCHWIHAG, SINGLE | - | |
| 30 | 2 | ROLLER SCHWIHAG, DOUBLE | - | |
| 31 | 1 | ROLLER SCHWIHAG, TRIPLE | - | |



NOTES:

- SEE DRAWING ES2805-31 FOR TIE LOCATION DIMENSIONS.
- SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT.



TYPICAL BOLTLESS BRACE ASSEMBLY

| | | | | | |
|--|--|---|--|---|---|
| DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: _____ ASSISTANT DIRECTOR: STANDARDS & DESIGN | | SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED. | SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012 | ENGINEERING STANDARDS NO 14-136 LB RE RH SWITCH PACK, HOLLOW STEEL TIES, SWITCH MACHINE ON MAINLINE SIDE | STANDARD 2805 |
| REV. DATE DESCRIPTION DES. ENG. | | | | | SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2805-12 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRRRA PART NO |
|------|-----|--|-----------|----------------|
| 1 | 1 | HOLLOW SWITCH TIE & RODDING ASSEMBLY | ES2805-35 | |
| 2 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, STRAIGHT, LH | ES2805-21 | |
| 3 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, CURVED, RH | ES2805-22 | |
| 4 | 1 | SAMSON STOCK RAIL, 51'-8" LONG, CURVED, LH | ES2805-25 | |
| 5 | 1 | SAMSON STOCK RAIL, 57'-8" LONG, STRAIGHT, RH | ES2805-26 | |
| 6 | 2 | SWITCH PLATE (BP1C-136) | ES2800-80 | |
| 7 | 10 | SWITCH PLATE (BP2C-136) | ES2800-80 | |
| 8 | 6 | SWITCH PLATE (P4C-136) | ES2800-80 | |
| 9 | 2 | SWITCH PLATE, ROLLER SCHWIHAG RP-1-136 | ES2800-96 | |
| 10 | 4 | SWITCH PLATE, ROLLER SCHWIHAG RP-2-136 | ES2800-97 | |
| 11 | 1 | SWITCH PLATE (14-16LLC) | ES2805-81 | |
| 12 | 1 | SWITCH PLATE (14-16LRC) | ES2805-81 | |
| 13 | 1 | SWITCH PLATE (14-17LLC) | ES2805-81 | |
| 14 | 1 | SWITCH PLATE (14-17LRC) | ES2805-81 | |
| 15 | 1 | SWITCH PLATE (14-18LLC) | ES2805-81 | |

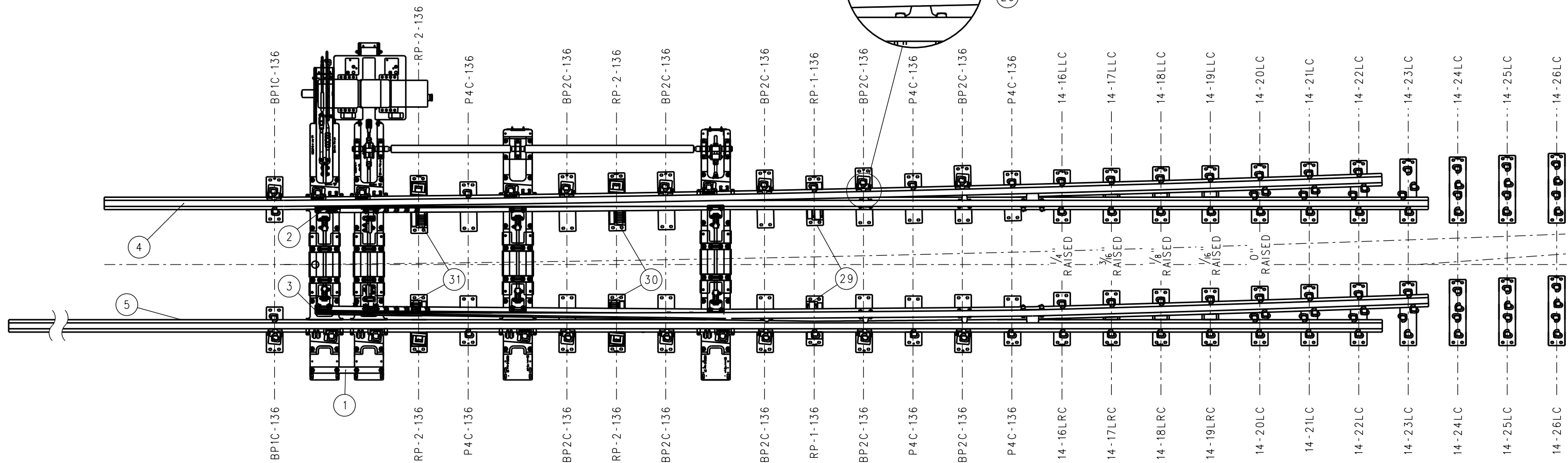
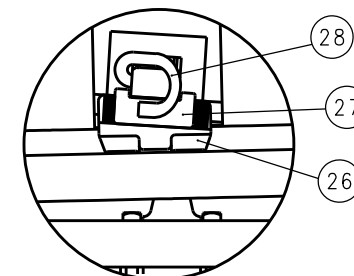
BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRRRA PART NO |
|------|-----|--------------------------------------|-----------|----------------|
| 16 | 1 | SWITCH PLATE (14-18LRC) | ES2805-81 | |
| 17 | 1 | SWITCH PLATE (14-19LLC) | ES2805-82 | |
| 18 | 1 | SWITCH PLATE (14-19LRC) | ES2805-82 | |
| 19 | 2 | SWITCH PLATE (14-20LC) | ES2805-82 | |
| 20 | 2 | SWITCH PLATE (14-21LC) | ES2805-82 | |
| 21 | 2 | SWITCH PLATE (14-22LC) | ES2805-82 | |
| 22 | 2 | SWITCH PLATE (14-23LC) | ES2805-82 | |
| 23 | 2 | SWITCH PLATE (14-24LC) | ES2805-83 | |
| 24 | 2 | SWITCH PLATE (14-25LC) | ES2805-83 | |
| 25 | 2 | SWITCH PLATE (14-26LC) | ES2805-83 | |
| 26 | 16 | BRACE, BOLTLESS, 136 LB RE 'SUREFIT' | - | |
| 27 | 16 | WASHER, SERRATED FOR BOLTLESS BRACE | - | |
| 28 | 96 | SLIP, PANDROL, E2055 | - | |
| 29 | | ROLLER SCHWIHAG, SINGLE | - | |
| 30 | | ROLLER SCHWIHAG, DOUBLE | - | |
| 31 | | ROLLER SCHWIHAG, TRIPLE | - | |

NOTES:

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TYPICAL BOLTLESS BRACE ASSEMBLY



| REV. | DATE | DESCRIPTION | DES. | ENG. |
|------|----------|-------------|------|------|
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: _____
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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ENGINEERING STANDARDS
 NO 14-136 LB RE LH SWITCH PACK,
 HOLLOW STEEL TIES,
 SWITCH MACHINE ON TURNOUT SIDE

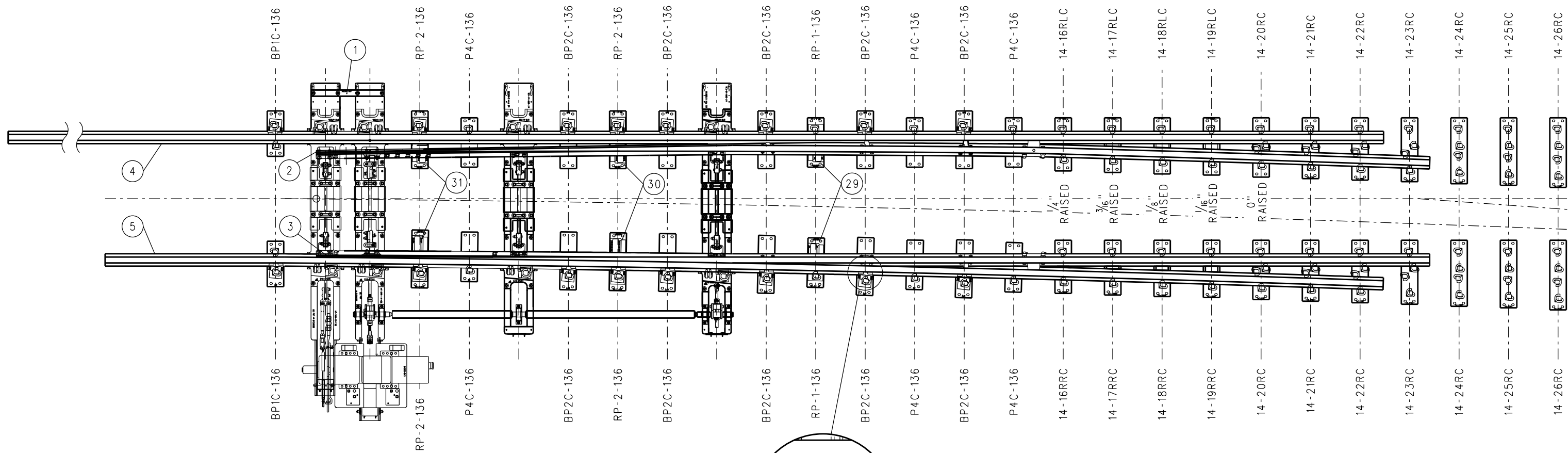
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|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-13 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|-----------|--------------|
| 1 | 1 | HOLLOW SWITCH TIE & RODDING ASSEMBLY | ES2805-34 | |
| 2 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, CURVED, LH | ES2805-23 | |
| 3 | 1 | SAMSON POINT, 45'-0" LONG, UR MANG TIP, STRAIGHT, RH | ES2805-24 | |
| 4 | 1 | SAMSON STOCK RAIL, 57'-8" LONG, STRAIGHT, LH | ES2805-27 | |
| 5 | 1 | SAMSON STOCK RAIL, 51'-8" LONG, CURVED, RH | ES2805-28 | |
| 6 | 2 | SWITCH PLATE (BP1C-136) | ES2800-80 | |
| 7 | 10 | SWITCH PLATE (BP2C-136) | ES2800-80 | |
| 8 | 6 | SWITCH PLATE (P4C-136) | ES2800-80 | |
| 9 | 2 | SWITCH PLATE, ROLLER SCHWIHAG RP-1-136 | ES2800-96 | |
| 10 | 4 | SWITCH PLATE, ROLLER SCHWIHAG RP-2-136 | ES2800-97 | |
| 11 | 1 | SWITCH PLATE (14-16RLC) | ES2805-84 | |
| 12 | 1 | SWITCH PLATE (14-16RRC) | ES2805-84 | |
| 13 | 1 | SWITCH PLATE (14-17RLC) | ES2805-84 | |
| 14 | 1 | SWITCH PLATE (14-17RRC) | ES2805-84 | |
| 15 | 1 | SWITCH PLATE (14-18RLC) | ES2805-84 | |

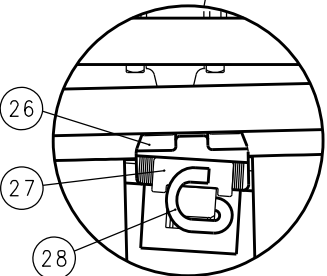
BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--------------------------------------|-----------|--------------|
| 16 | 1 | SWITCH PLATE (14-18RRC) | ES2805-84 | |
| 17 | 1 | SWITCH PLATE (14-19RLC) | ES2805-85 | |
| 18 | 1 | SWITCH PLATE (14-19RRC) | ES2805-85 | |
| 19 | 2 | SWITCH PLATE (14-20RC) | ES2805-85 | |
| 20 | 2 | SWITCH PLATE (14-21RC) | ES2805-85 | |
| 21 | 2 | SWITCH PLATE (14-22RC) | ES2805-85 | |
| 22 | 2 | SWITCH PLATE (14-23RC) | ES2805-85 | |
| 23 | 2 | SWITCH PLATE (14-24RC) | ES2805-86 | |
| 24 | 2 | SWITCH PLATE (14-25RC) | ES2805-86 | |
| 25 | 2 | SWITCH PLATE (14-26RC) | ES2805-86 | |
| 26 | 16 | BRACE, BOLTLESS, 136 LB RE 'SUREFIT' | - | |
| 27 | 16 | WASHER, SERRATED FOR BOLTLESS BRACE | - | |
| 28 | 98 | CLIP, PANDROL, E2055 | - | |
| 29 | 2 | ROLLER SCHWIHAG, SINGLE | - | |
| 30 | 2 | ROLLER SCHWIHAG, DOUBLE | - | |
| 31 | 2 | ROLLER SCHWIHAG, TRIPLE | - | |



NOTES:

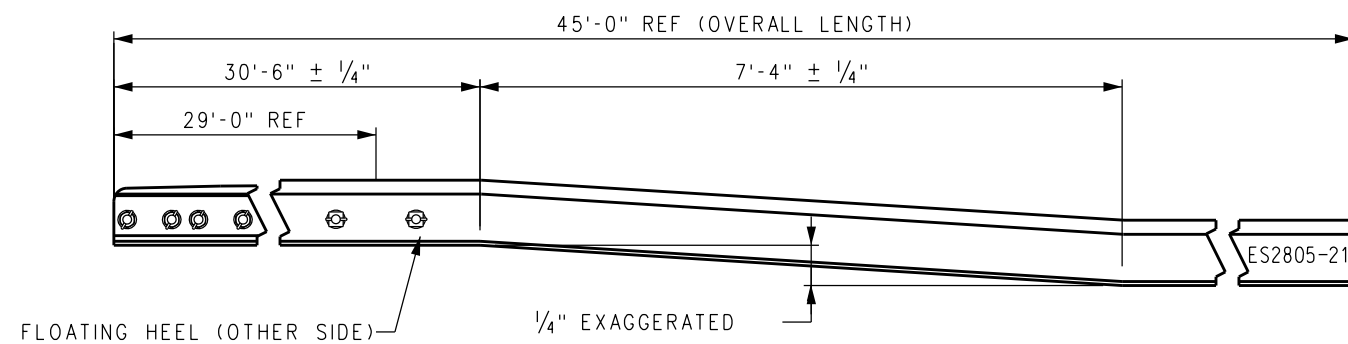
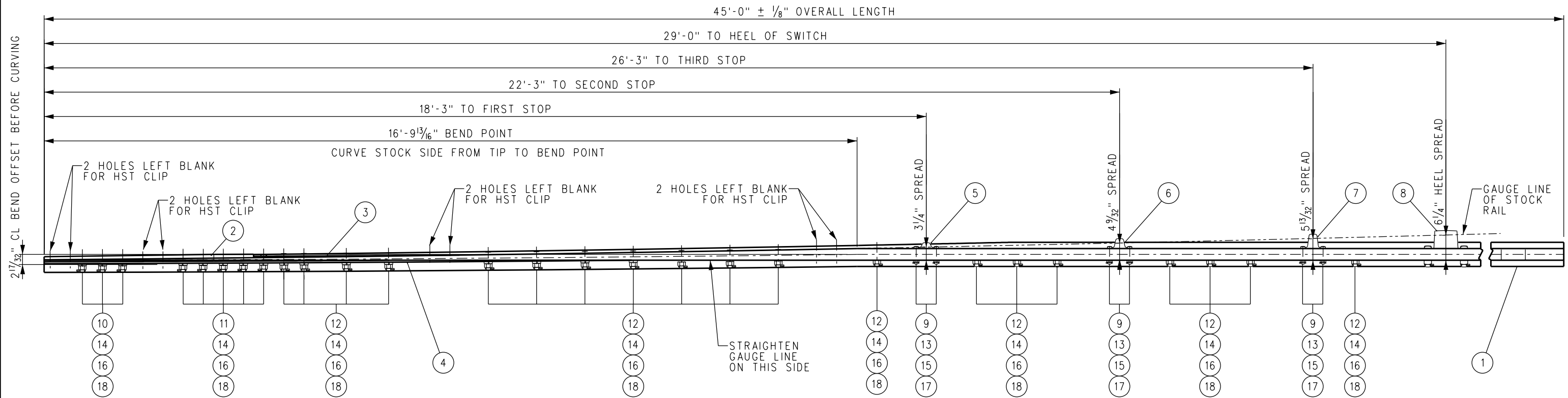
- SEE DRAWING ES2805-31 FOR TIE LOCATION DIMENSIONS.
- SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT.



TYPICAL BOLTLESS BRACE ASSEMBLY

| | | | | | | |
|--|--|---|--|--|--|--|
| DRAWN BY: <i>Narek D. Pape</i> DRAFTER DATE: _____ ASSISTANT DIRECTOR: STANDARDS & DESIGN | | SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED. | SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012 | ENGINEERING STANDARDS NO 14-136 LB RE RH SWITCH PACK, HOLLOW STEEL TIES, SWITCH MACHINE ON TURNOUT SIDE | | STANDARD 2805 SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2805-14 |
| REV. DATE DESCRIPTION DES. ENG. | DIRECTOR OF ENGINEERING AND CONSTRUCTION <i>William Davan</i> | | | | | |

| BILL OF MATERIAL | | | | BILL OF MATERIAL | | | |
|------------------|-----|--|----------------|------------------|-----|---|----------------|
| ITEM | QTY | DESCRIPTION | SCRRRA PART NO | ITEM | QTY | DESCRIPTION | SCRRRA PART NO |
| 1 | 1 | SAMSON POINT RAIL, 45'-0" LONG, UR MANG TIP, STRAIGHT, LH | | 10 | 3 | BOLT, 1" DIA x 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3/4", GR 5 | |
| 2 | 1 | MANGANESE TIP, LH, FOR 29'-0", 136 LB RE SAMSON SWITCH POINT | | 11 | 5 | BOLT, 1" DIA x 4" LONG, THIN SQ HEAD DRILLED @ 3/2", GR 5 | |
| 3 | 1 | REINFORCING BAR, STOCK SIDE, 1/2" x 22'-11 7/8" LONG, SAMSON, LH POINT | | 12 | 19 | BOLT, 1" DIA x 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5 | |
| 4 | 1 | REINFORCING BAR, GAUGE SIDE, 1/2" x 27'-4" LONG, SAMSON, LH POINT | | 13 | 6 | NUT, 3/4" DIA HEAVY HEX, GR 5 | |
| 5 | 1 | POINT STOP 2 1/16" HIGH | | 14 | 27 | NUT, 1" DIA HEAVY HEX, GR 5 | |
| 6 | 1 | POINT STOP 3 1/16" HIGH | | 15 | 6 | SPRING WASHER, 3/4" DIA | |
| 7 | 1 | POINT STOP 4 3/16" HIGH | | 16 | 27 | SPRING WASHER, 1" DIA | |
| 8 | 1 | HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE | | 17 | 6 | COTTER PIN, 3/16" DIA x 1 3/4" LONG | |
| 9 | 6 | BOLT, 3/4" DIA x 4" LONG, SQ HEAD DRILLED @ 3 21/32", GR 5 | | 18 | 27 | COTTER PIN, 1/4" DIA x 2" LONG | |



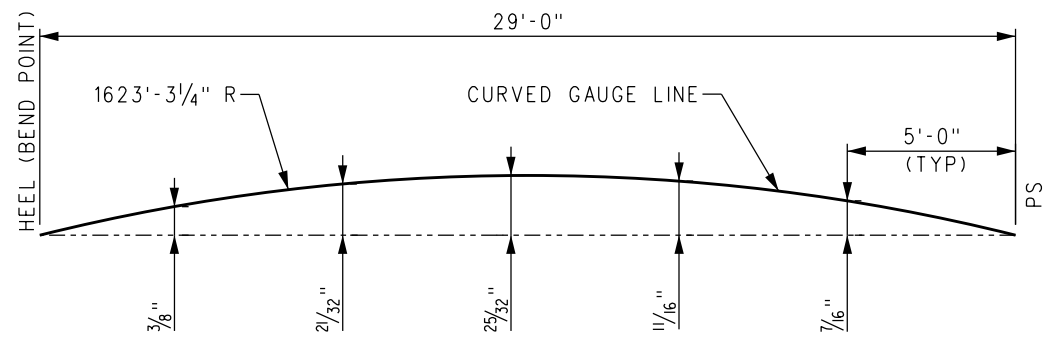
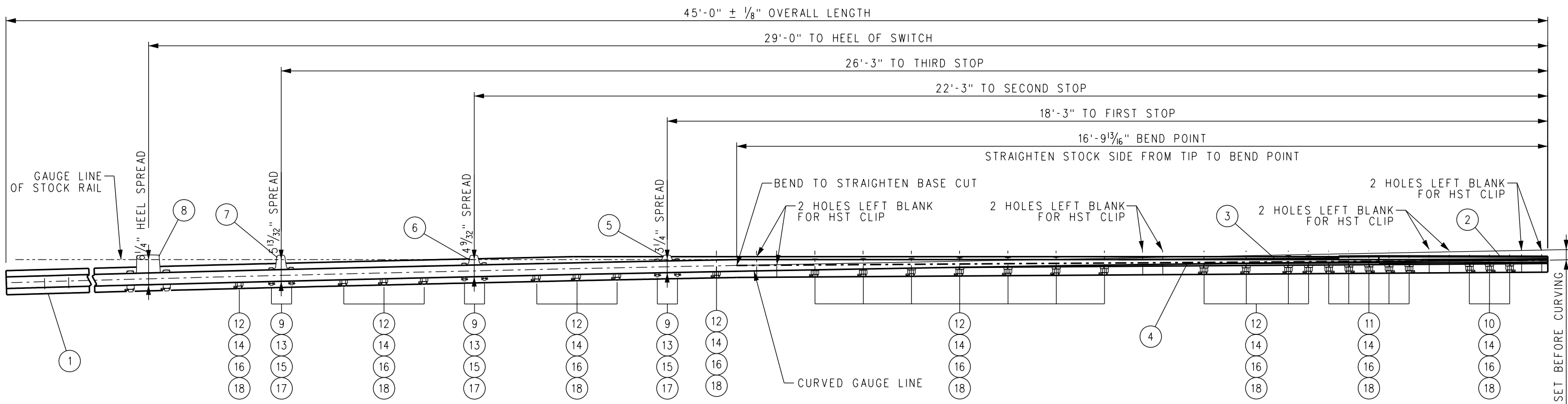
SIDE VIEW - VERTICAL BENDING DETAIL

NOTES:

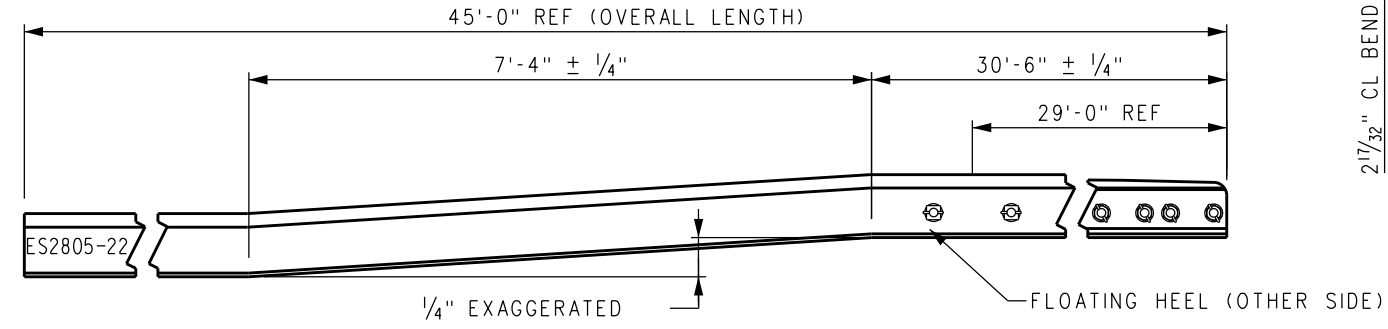
1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
2. BEVEL ALL BOLT HOLES.
3. WRITE SCRRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

| | | | | | | | | | | | | |
|--------------------------------|------|--------------------------|------|-------|--|---|--|--|--|---|--|--|
| DRAWN BY: <i>Nareh D. Papp</i> | | HDR: <i>William Dava</i> | | DATE: | | SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED. | | | | ENGINEERING STANDARDS SWITCH POINT ASSEMBLY, 136 LB RE SAMSON, STRAIGHT, LH NO 14 LH TURNOUT 45'-0" OVERALL LENGTH MANGANESE TIP | | STANDARD: 2805 SCALE: NTS REVISION SHEET: 1 OF 1 CADD FILE: ES2805-21 |
| REV. | DATE | DESCRIPTION | DES. | ENG. | | | | | | | | |

| BILL OF MATERIAL | | | | BILL OF MATERIAL | | | |
|------------------|-----|--|--------------|------------------|-----|---|--------------|
| ITEM | QTY | DESCRIPTION | SCRR PART NO | ITEM | QTY | DESCRIPTION | SCRR PART NO |
| 1 | 1 | SAMSON POINT RAIL, 45'-0" LONG, UR MANG TIP, CURVED, RH | | 10 | 3 | BOLT, 1" DIA x 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3/4", GR 5 | |
| 2 | 1 | MANGANESE TIP, RH, FOR 29'-0", 136 LB RE SAMSON SWITCH POINT | | 11 | 5 | BOLT, 1" DIA x 4" LONG, THIN SQ HEAD DRILLED @ 3/2", GR 5 | |
| 3 | 1 | REINFORCING BAR, STOCK SIDE, 1/2" x 22'-11 7/8" LONG, SAMSON, RH POINT | | 12 | 19 | BOLT, 1" DIA x 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5 | |
| 4 | 1 | REINFORCING BAR, GAUGE SIDE, 1/2" x 27'-4" LONG, SAMSON, RH POINT | | 13 | 6 | NUT, 3/4" DIA HEAVY HEX, GR 5 | |
| 5 | 1 | POINT STOP 2 1/16" HIGH | | 14 | 27 | NUT, 1" DIA HEAVY HEX, GR 5 | |
| 6 | 1 | POINT STOP 3 3/16" HIGH | | 15 | 6 | SPRING WASHER, 3/4" DIA | |
| 7 | 1 | POINT STOP 4 3/16" HIGH | | 16 | 27 | SPRING WASHER, 1" DIA | |
| 8 | 1 | HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE | | 17 | 6 | COTTER PIN, 3/16" DIA x 1 3/4" LONG | |
| 9 | 6 | BOLT, 3/4" DIA x 4" LONG, SQ HEAD DRILLED @ 3 21/32", GR 5 | | 18 | 27 | COTTER PIN, 1/4" DIA x 2" LONG | |



LATERAL CURVING DETAIL
GAUGE SIDE



SIDE VIEW - VERTICAL BENDING DETAIL

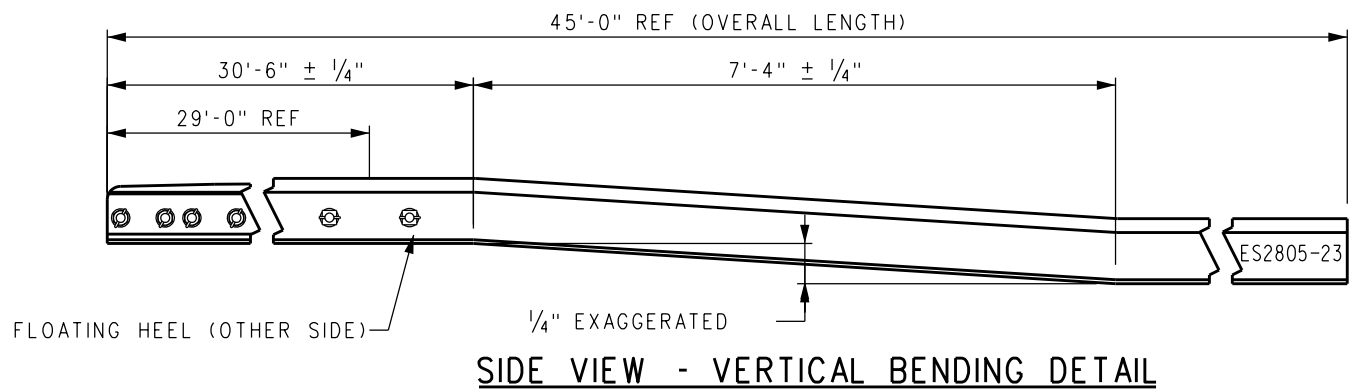
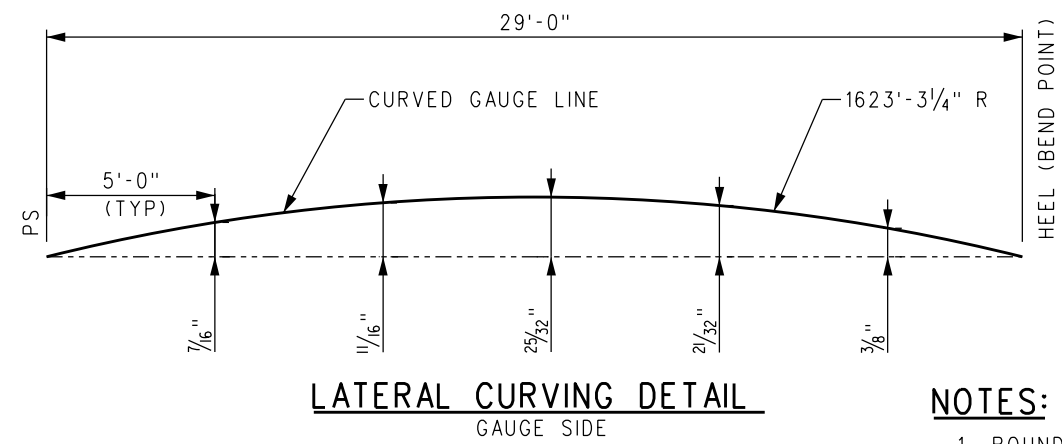
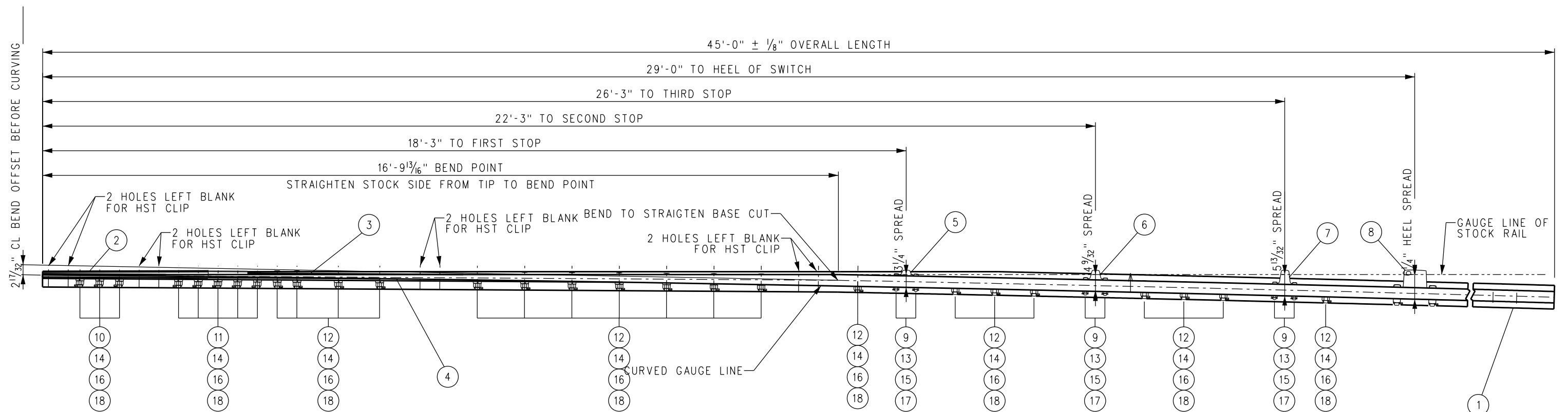
NOTES:

1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
2. BEVEL ALL BOLT HOLES.
3. WRITE SCRR PART NO ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

| | | | | | |
|--|--|---|--|--|--|
| DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: | | SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED. | | ENGINEERING STANDARDS SWITCH POINT ASSEMBLY, 136 LB RE SAMSON, CURVED, RH NO 14 LH TURNOUT 45'-0" OVERALL LENGTH MANGANESE TIP | STANDARD: 2805 |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>William Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | | | SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012 |

| BILL OF MATERIAL | | | |
|------------------|-----|--|----------------|
| ITEM | QTY | DESCRIPTION | SCRRRA PART NO |
| 1 | 1 | SAMSON POINT RAIL, 45'-0" LONG, UR MANG TIP, CURVED, LH | |
| 2 | 1 | MANGANESE TIP, LH, FOR 29'-0", 136 LB RE SAMSON SWITCH POINT | |
| 3 | 1 | REINFORCING BAR, STOCK SIDE, 1/2" x 22'-11 7/8" LONG, SAMSON, LH POINT | |
| 4 | 1 | REINFORCING BAR, GAUGE SIDE, 1/2" x 27'-4" LONG, SAMSON, LH POINT | |
| 5 | 1 | POINT STOP 2 1/16" HIGH | |
| 6 | 1 | POINT STOP 3 1/16" HIGH | |
| 7 | 1 | POINT STOP 4 3/16" HIGH | |
| 8 | 1 | HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE | |
| 9 | 6 | BOLT, 3/4" DIA x 4" LONG, SQ HEAD DRILLED @ 3 21/32", GR 5 | |

| BILL OF MATERIAL | | | |
|------------------|-----|---|----------------|
| ITEM | QTY | DESCRIPTION | SCRRRA PART NO |
| 10 | 3 | BOLT, 1" DIA x 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3 1/4", GR 5 | |
| 11 | 5 | BOLT, 1" DIA x 4" LONG, THIN SQ HEAD DRILLED @ 3 1/2", GR 5 | |
| 12 | 19 | BOLT, 1" DIA x 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5 | |
| 13 | 6 | NUT, 3/4" DIA HEAVY HEX, GR 5 | |
| 14 | 27 | NUT, 1" DIA HEAVY HEX, GR 5 | |
| 15 | 6 | SPRING WASHER, 3/4" DIA | |
| 16 | 27 | SPRING WASHER, 1" DIA | |
| 17 | 6 | COTTER PIN, 3/16" DIA x 1 3/4" LONG | |
| 18 | 27 | COTTER PIN, 1/4" DIA x 2" LONG | |



NOTES:

1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
2. BEVEL ALL BOLT HOLES.
3. WRITE SCRRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: _____
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.

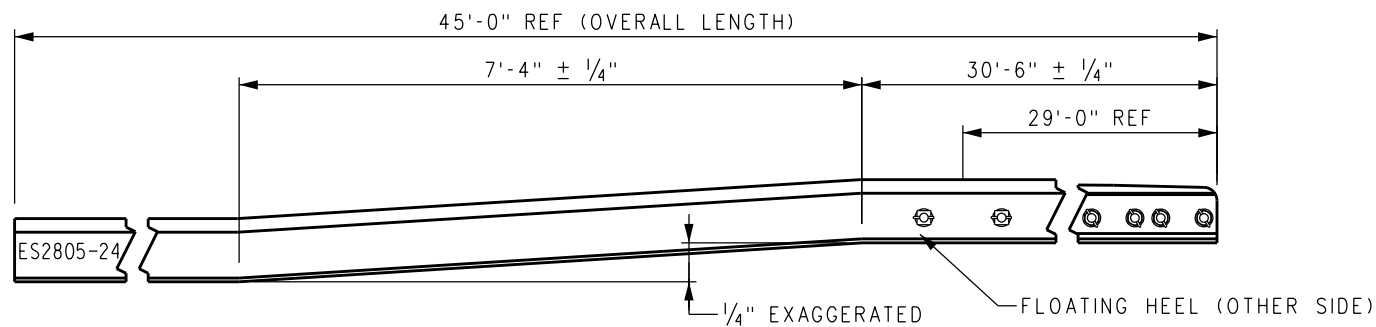
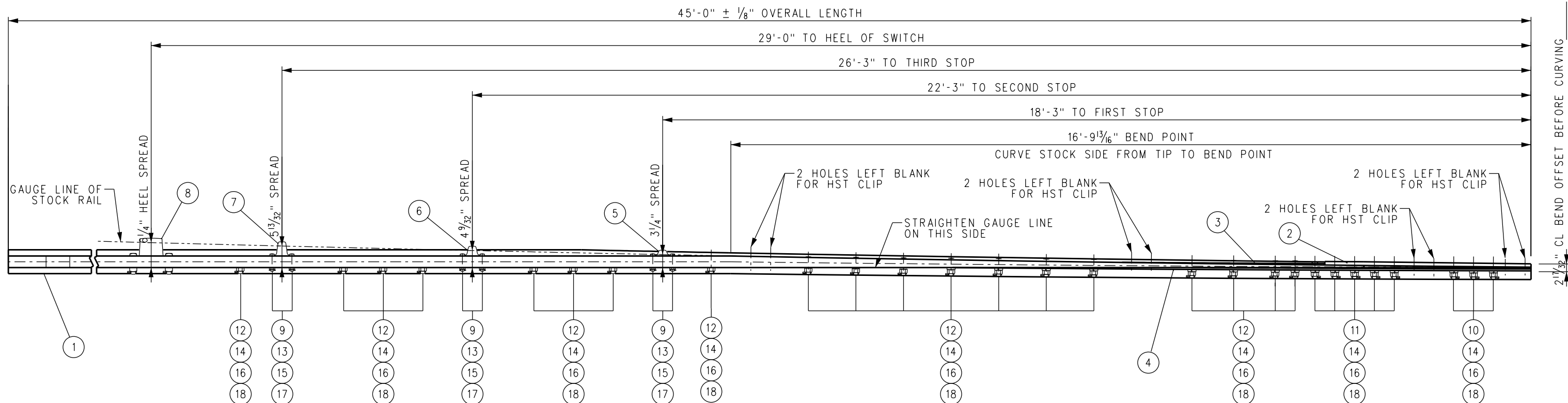
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 SWITCH POINT ASSEMBLY,
 136 LB RE SAMSON, CURVED, LH
 NO 14 RH TURNOUT
 45'-0" OVERALL LENGTH MANGANESE TIP

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE | ES2805-23 |

| BILL OF MATERIAL | | | | SCRRA PART NO |
|------------------|-----|--|--|---------------|
| ITEM | QTY | DESCRIPTION | | |
| 1 | 1 | SAMSON POINT RAIL, 45'-0" LONG, UR MANG TIP, STRAIGHT, RH | | |
| 2 | 1 | MANGANESE TIP, RH, FOR 29'-0", 136 LB RE SAMSON SWITCH POINT | | |
| 3 | 1 | REINFORCING BAR, STOCK SIDE, 1/2" x 22'-11 7/8" LONG, SAMSON, RH POINT | | |
| 4 | 1 | REINFORCING BAR, GAUGE SIDE, 1/2" x 27'-4" LONG, SAMSON, RH POINT | | |
| 5 | 1 | POINT STOP 2 1/16" HIGH | | |
| 6 | 1 | POINT STOP 3 1/16" HIGH | | |
| 7 | 1 | POINT STOP 4 3/16" HIGH | | |
| 8 | 1 | HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE | | |
| 9 | 6 | BOLT, 3/4" DIA x 4" LONG, SQ HEAD DRILLED @ 3 21/32", GR 5 | | |

| BILL OF MATERIAL | | | | SCRRA PART NO |
|------------------|-----|---|--|---------------|
| ITEM | QTY | DESCRIPTION | | |
| 10 | 3 | BOLT, 1" DIA x 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3 1/4", GR 5 | | |
| 11 | 5 | BOLT, 1" DIA x 4" LONG, THIN SQ HEAD DRILLED @ 3 1/2", GR 5 | | |
| 12 | 19 | BOLT, 1" DIA x 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5 | | |
| 13 | 6 | NUT, 3/4" DIA HEAVY HEX, GR 5 | | |
| 14 | 27 | NUT, 1" DIA HEAVY HEX, GR 5 | | |
| 15 | 6 | SPRING WASHER, 3/4" DIA | | |
| 16 | 27 | SPRING WASHER, 1" DIA | | |
| 17 | 6 | COTTER PIN, 3/16" DIA x 1 3/4" LONG | | |
| 18 | 27 | COTTER PIN, 1/4" DIA x 2" LONG | | |



SIDE VIEW - VERTICAL BENDING DETAIL

NOTES:

1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
2. BEVEL ALL BOLT HOLES.
3. WRITE SCRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

| | | | |
|--|------|--|------|
| DRAWN BY: <i>Narek D. Pape</i> | | HDR: _____ DATE: _____ | |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | |
| REVISION | | XX | XX |
| REV. | DATE | DES. | ENG. |

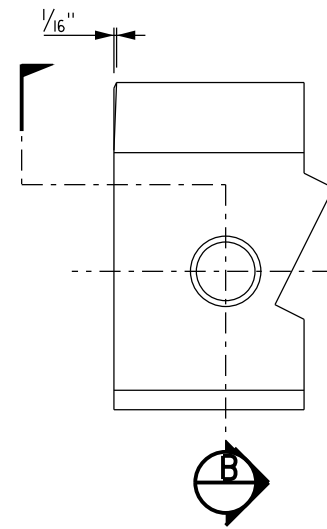
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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

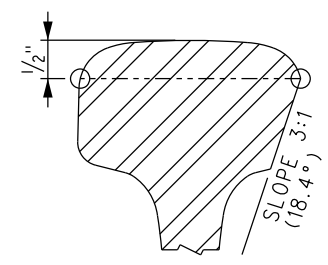
ENGINEERING STANDARDS
SWITCH POINT ASSEMBLY,
136 LB RE SAMSON, STRAIGHT, RH
NO 14 RH TURNOUT
45'-0" OVERALL LENGTH MANGANESE TIP

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE | ES2805-24 |

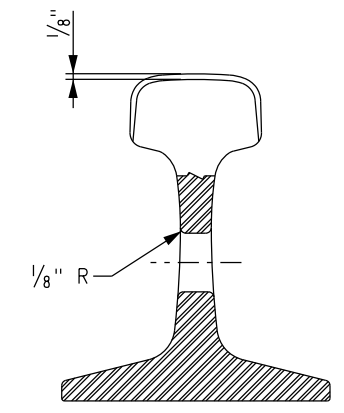
| ITEM | QTY | DESCRIPTION | SCRRRA PART NO |
|------|-----|-----------------------------|----------------|
| 1 | 1 | RAIL, 136 LB RE 51'-8" LONG | |



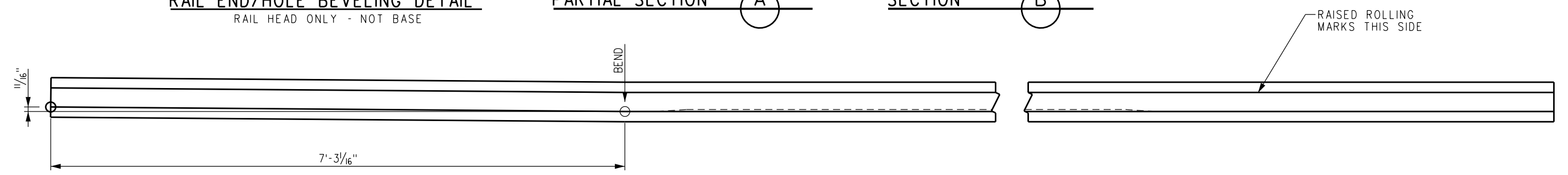
RAIL END/HOLE BEVELING DETAIL
RAIL HEAD ONLY - NOT BASE



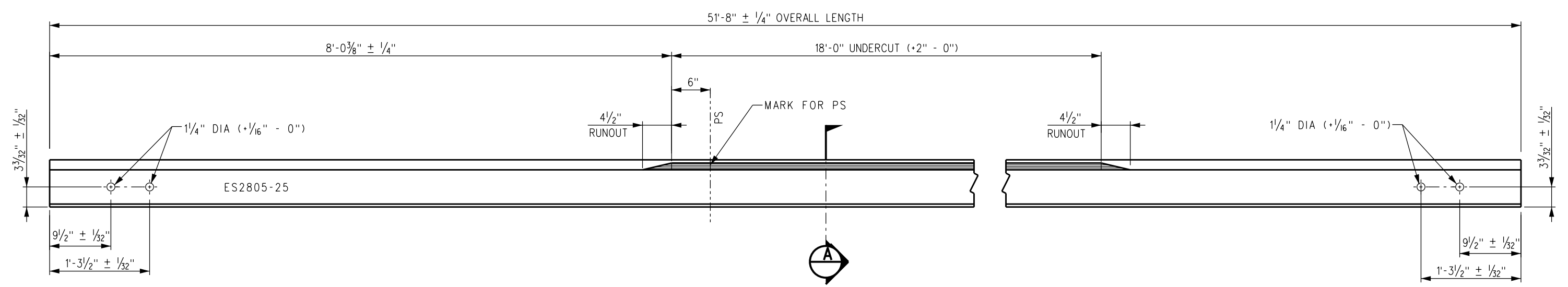
PARTIAL SECTION A



SECTION B



BENDING DETAILS



MACHINING DETAILS

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

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

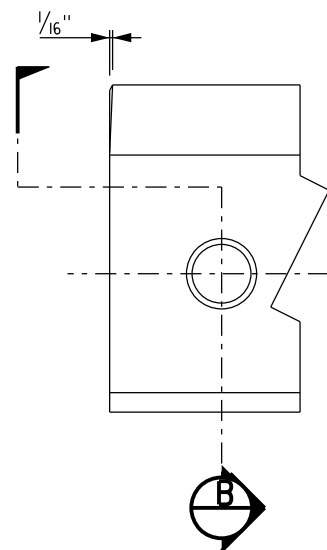
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 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

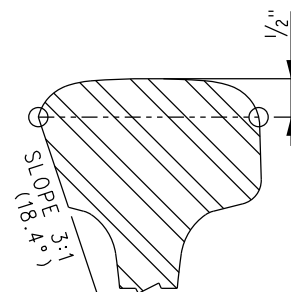
ENGINEERING STANDARDS
 SAMSON STOCK RAIL, CURVED, LH
 136 LB RE 51'-8" LONG
 FOR NO 14 136 LB RE LH SWITCH PACK

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE | ES2805-25 |

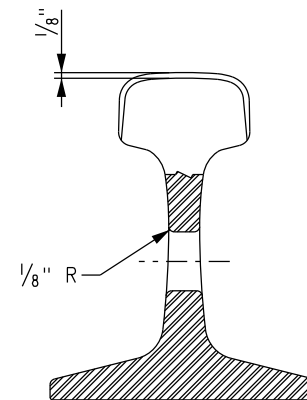
| ITEM | QTY | DESCRIPTION | SCRRA PART NO |
|------|-----|-----------------------------|---------------|
| 1 | 1 | RAIL, 136 LB RE 57'-8" LONG | |



RAIL END/HOLE BEVELING DETAIL
RAIL HEAD ONLY - NOT BASE

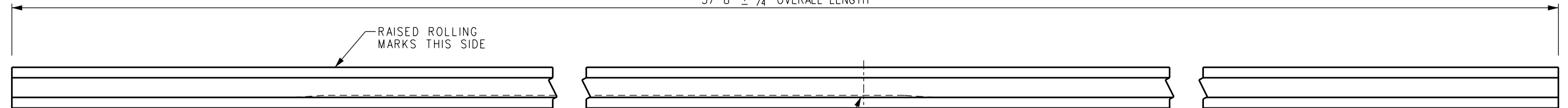


PARTIAL SECTION A



SECTION B

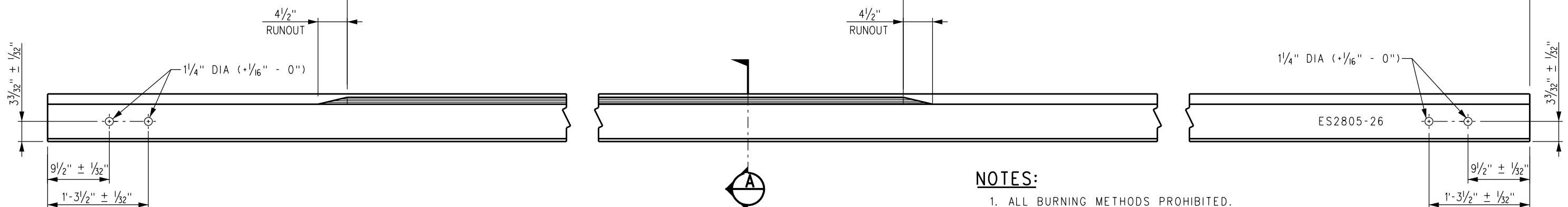
57'-8" ± 1/4" OVERALL LENGTH



MARK FOR PS

18'-0" UNDERCUT (+2" - 0")

14'-0 3/8" ± 1/4"



MACHING DETAILS

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.

| | | | | | |
|--|----------|--|------|------------------|--|
| DRAWN BY: <i>Nareh D. Papp</i> | | HDR: <i>Wilson Dava</i> | | DATE: 03/31/2011 | |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | |
| REV. | DATE | DESCRIPTION | DES. | ENG. | |
| X | XX-XX-XX | REVISION | XX | XX | |

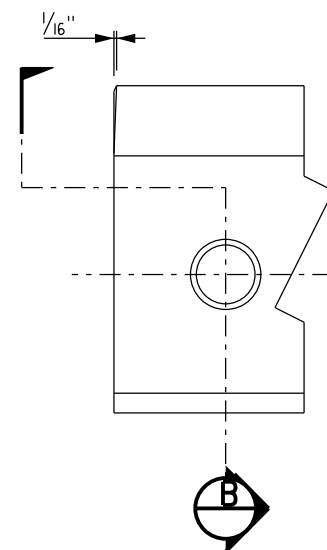
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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

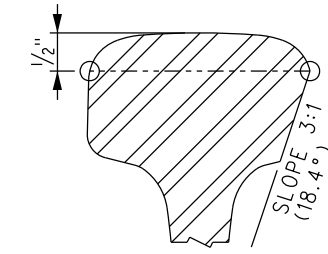
ENGINEERING STANDARDS
SAMSON STOCK RAIL, STRAIGHT, RH
136 LB RE 57'-8" LONG
FOR NO 14 136 LB RE LH SWITCH PACK

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-26 |

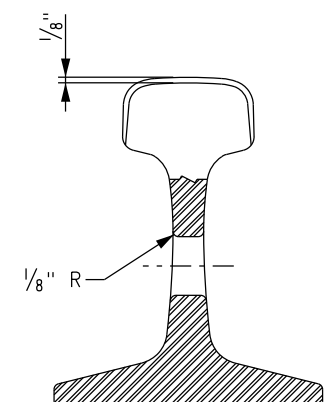
| ITEM | QTY | DESCRIPTION | SCRRA PART NO |
|------|-----|-----------------------------|---------------|
| 1 | 1 | RAIL, 136 LB RE 57'-8" LONG | |



RAIL END/HOLE BEVELING DETAIL
RAIL HEAD ONLY - NOT BASE

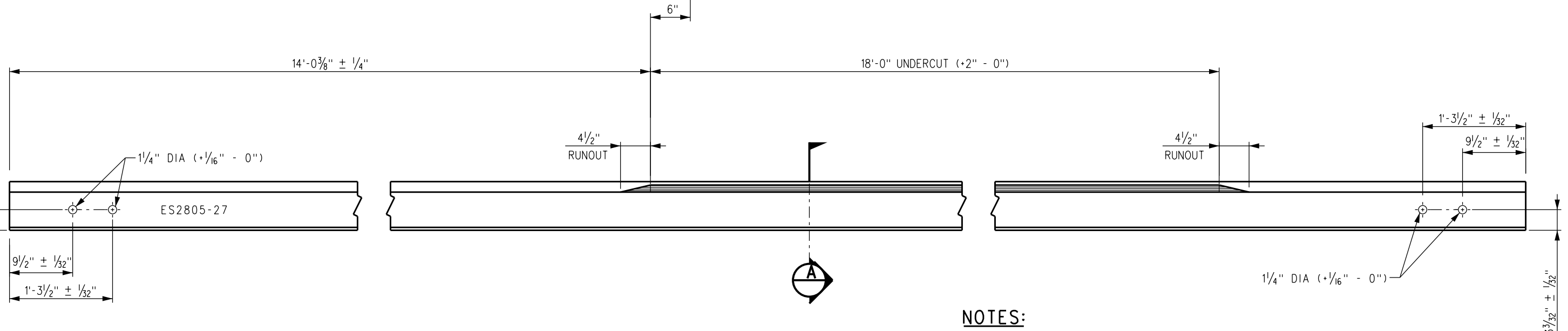
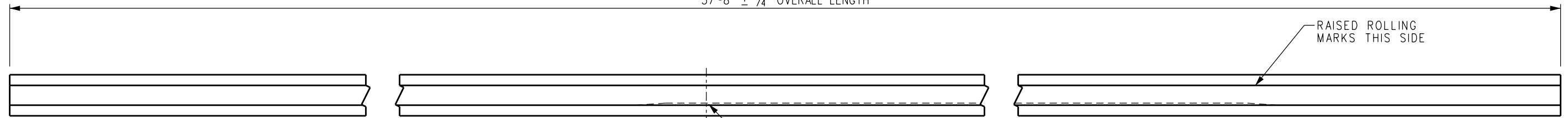


PARTIAL SECTION A



SECTION B

57'-8" ± 1/4" OVERALL LENGTH



MACHINING DETAILS

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.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

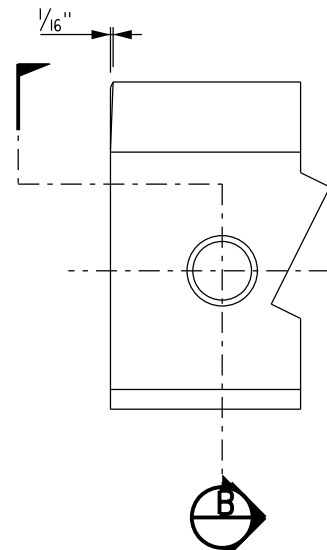
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METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

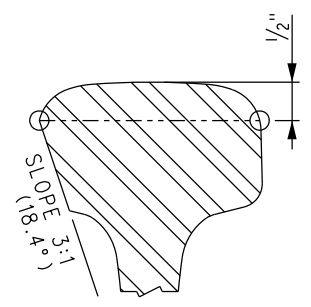
ENGINEERING STANDARDS
 SAMSON STOCK RAIL, STRAIGHT, LH
 136 LB RE 57'-8" LONG
 FOR NO 14 136 LB RE RH SWITCH PACK

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE | ES2805-27 |

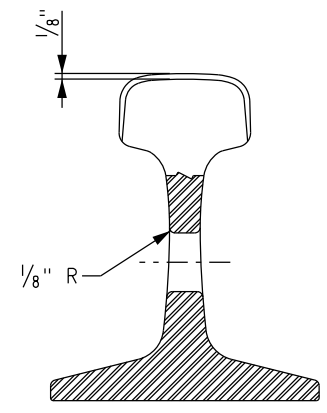
| ITEM | QTY | DESCRIPTION | SCRRA PART NO |
|------|-----|-----------------------------|---------------|
| 1 | 1 | RAIL, 136 LB RE 51'-8" LONG | |



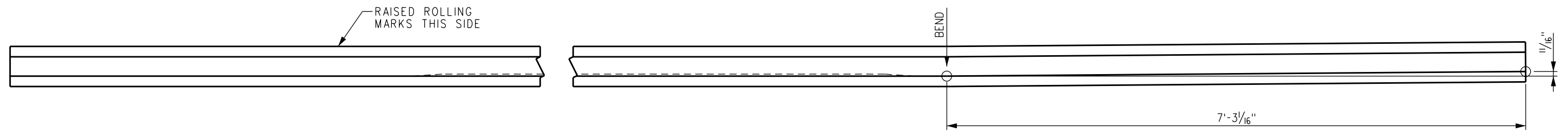
RAIL END/HOLE BEVELING DETAIL
RAIL HEAD ONLY - NOT BASE



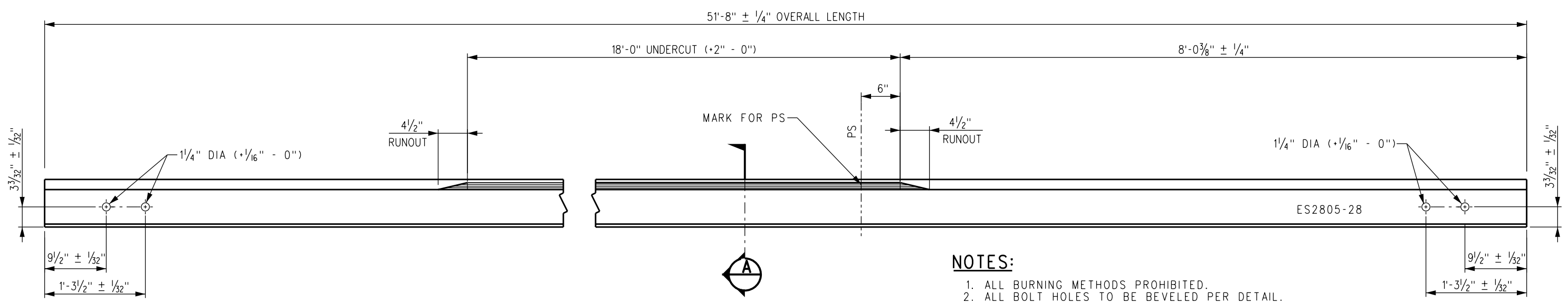
PARTIAL SECTION A



SECTION B



BENDING DETAILS



MACHINING DETAILS

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.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Pape* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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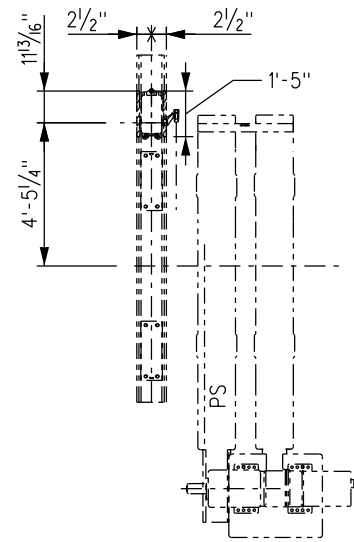
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 SAMSON STOCK RAIL, CURVED, RH
 136 LB RE 51'-8" LONG
 FOR NO 14 136 LB RE RH SWITCH PACK

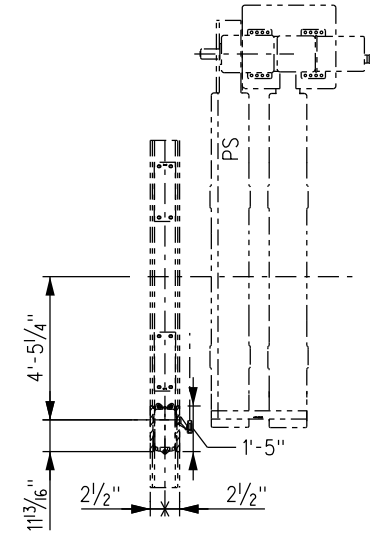
| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-28 |

BILL OF MATERIALS

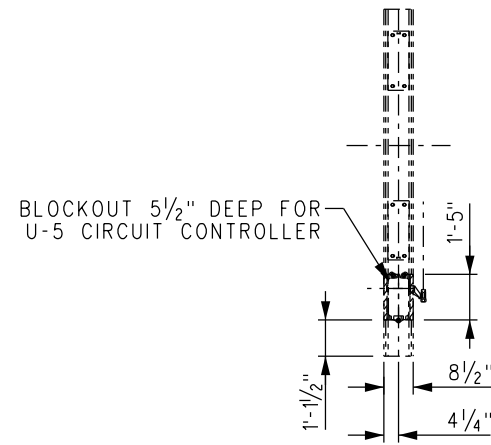
| ITEM | QTY | DESCRIPTION | DWG NO |
|------|-----|---|-----------|
| 1 | 4 | TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON MAINLINE SIDE FOR RH TURNOUT (HOLLOW STEEL) | ES2805-32 |
| 2 | 4 | TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON TURNOUT SIDE FOR RH TURNOUT (HOLLOW STEEL) | ES2805-34 |



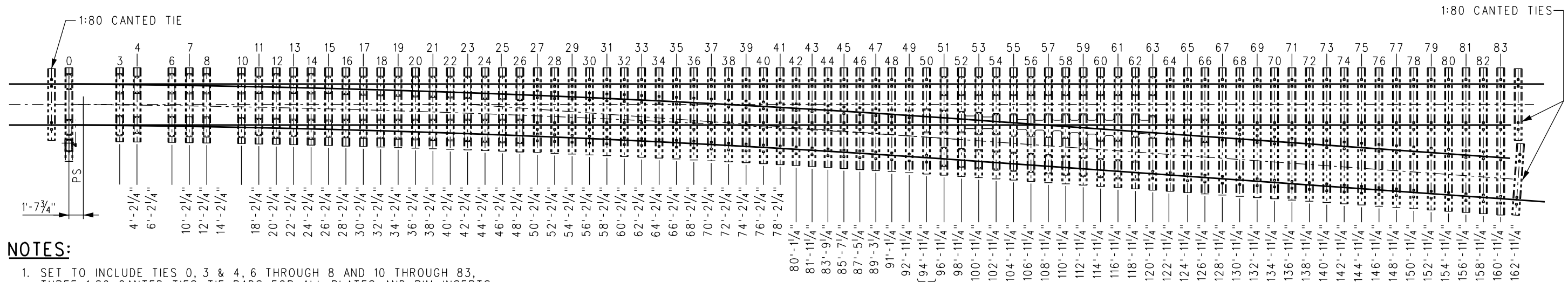
TIE "0" PLACEMENT SWITCH MACHINE ON TURNOUT (RH) SIDE



TIE "0" PLACEMENT SWITCH MACHINE ON MAINLINE (LH) SIDE



TIE "0" BLOCKOUT DETAIL



NOTES:

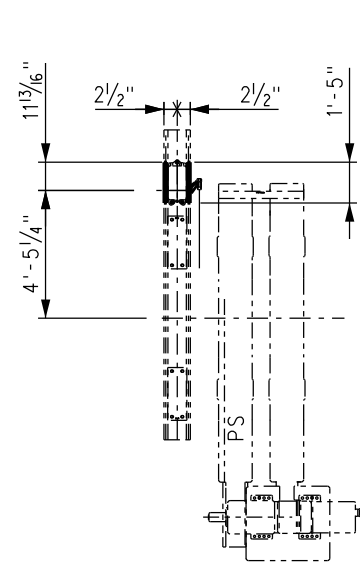
- SET TO INCLUDE TIES 0, 3 & 4, 6 THROUGH 8 AND 10 THROUGH 83, THREE 1:80 CANTED TIES, TIE PADS FOR ALL PLATES AND PIM INSERTS.
- TIE LENGTHS ARE DETERMINED BY ADDING 1'-10 1/16" FROM RAIL GAUGE LINE (OR 1-9" FROM RAIL CENTERLINE) PER SIDE AT THE CENTERLINE OF EACH TIE LOCATION.
- ALL TIES ARE FLAT (NON-CANTED) EXCEPT 1:80 CANTED TIES.
- TRANSITION TIES (QUANTITY 3) SHALL INCORPORATE 1:80 CANTED RAIL SEATS AND USE 4'-8 1/2" BETWEEN STRAIGHT RAIL SEAT GAUGES. LENGTH SHALL BE 8'-3".
- THIS DRAWING SHOWS TIE "0" PLACEMENT FOR SWITCH MACHINE ON LH/MAINLINE SIDE. USE OPPOSITE HAND FOR SWITCH MACHINE ON RH/TURNOUT SIDE.
- SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 5 AND 9.

PLATING IS 3/4" THICK. RAISE OUTSIDE RAIL SEATS ACCORDINGLY. ALL RAIL SEATS ARE FLAT.

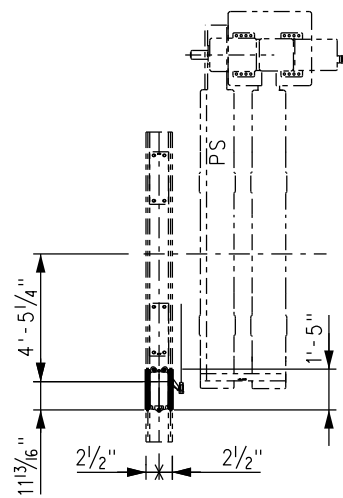
| | | | | | | |
|--|------|--|--|--|----------------------|---------------|
| DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011 | | <p>SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.</p> | <p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012</p> | ENGINEERING STANDARDS | | STANDARD 2805 |
| <p>ASSISTANT DIRECTOR: STANDARDS & DESIGN</p> <p><i>William Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION</p> | | | | <p>CONCRETE TIE LAYOUT NO 14-136 LB RE SPRING FROG TURNOUT, RH</p> | | SCALE: NTS |
| REV. | DATE | DESCRIPTION | DES. | ENG. | CADD FILE: ES2805-30 | |

BILL OF MATERIALS

| ITEM | QTY | DESCRIPTION | DWG NO |
|------|-----|---|-----------|
| 1 | 4 | TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON MAINLINE SIDE FOR LH TURNOUT (HOLLOW STEEL) | ES2805-33 |
| 2 | 4 | TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON TURNOUT SIDE FOR LH TURNOUT (HOLLOW STEEL) | ES2805-35 |

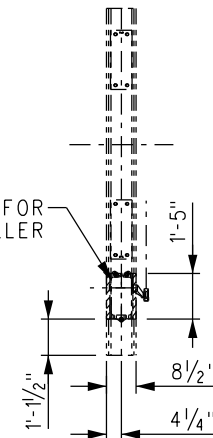


**TIE "O" PLACEMENT
SWITCH MACHINE
ON MAINLINE (RH) SIDE**



**TIE "O" PLACEMENT
SWITCH MACHINE
ON TURNOUT (LH) SIDE**

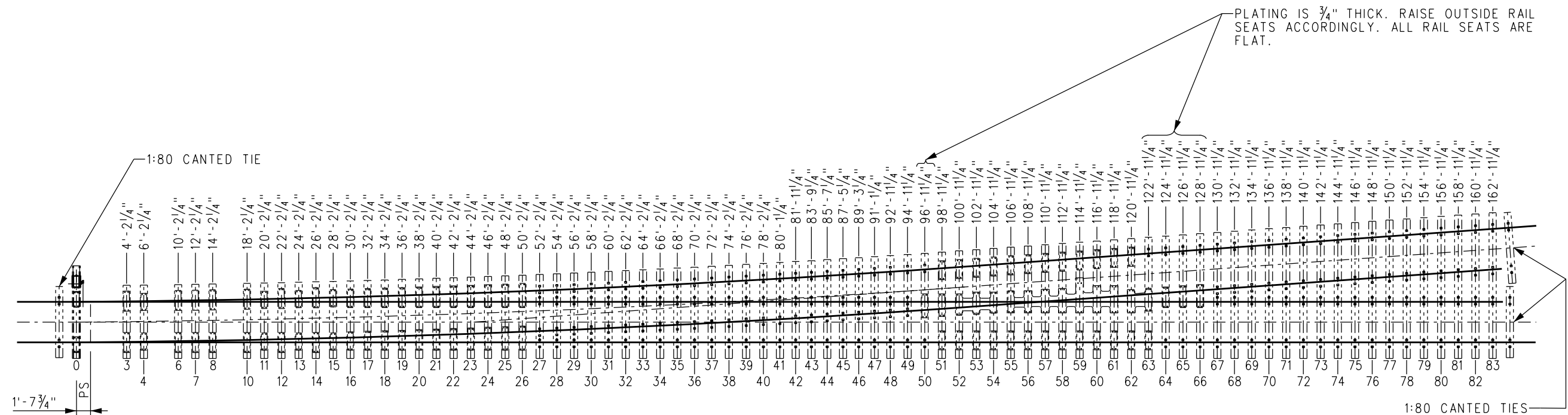
BLOCKOUT 5 1/2" DEEP FOR U-5 CIRCUIT CONTROLLER



TIE "O" BLOCKOUT DETAIL

NOTES:

1. SET TO INCLUDE TIES 0, 3 & 4, 6 THROUGH 8 AND 10 THROUGH 83, THREE 1:80 CANTED TIES, TIE PADS FOR ALL PLATES AND PIM INSERTS.
2. TIE LENGTHS ARE DETERMINED BY ADDING 1'-10 1/16" FROM RAIL GAUGE LINE (OR 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 3) SHALL INCORPORATE 1:80 CANTED RAIL SEATS AND USE 4'-8 1/2" BETWEEN STRAIGHT RAIL SEAT GAUGES. LENGTH SHALL BE 8'-3".
5. THIS DRAWING SHOWS TIE "O" PLACEMENT FOR SWITCH MACHINE ON RH/MAINLINE SIDE. USE OPPOSITE HAND FOR SWITCH MACHINE ON LH/TURNOUT SIDE.
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 5 AND 9.



| | | | |
|--|----------|------------------|-----------|
| DRAWN BY: HDR | | DATE: 03/31/2011 | |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | | |
| DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | |
| XX | XX-XX-XX | REVISION | XX XX |
| REV. | DATE | DESCRIPTION | DES. ENG. |

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

ENGINEERING STANDARDS

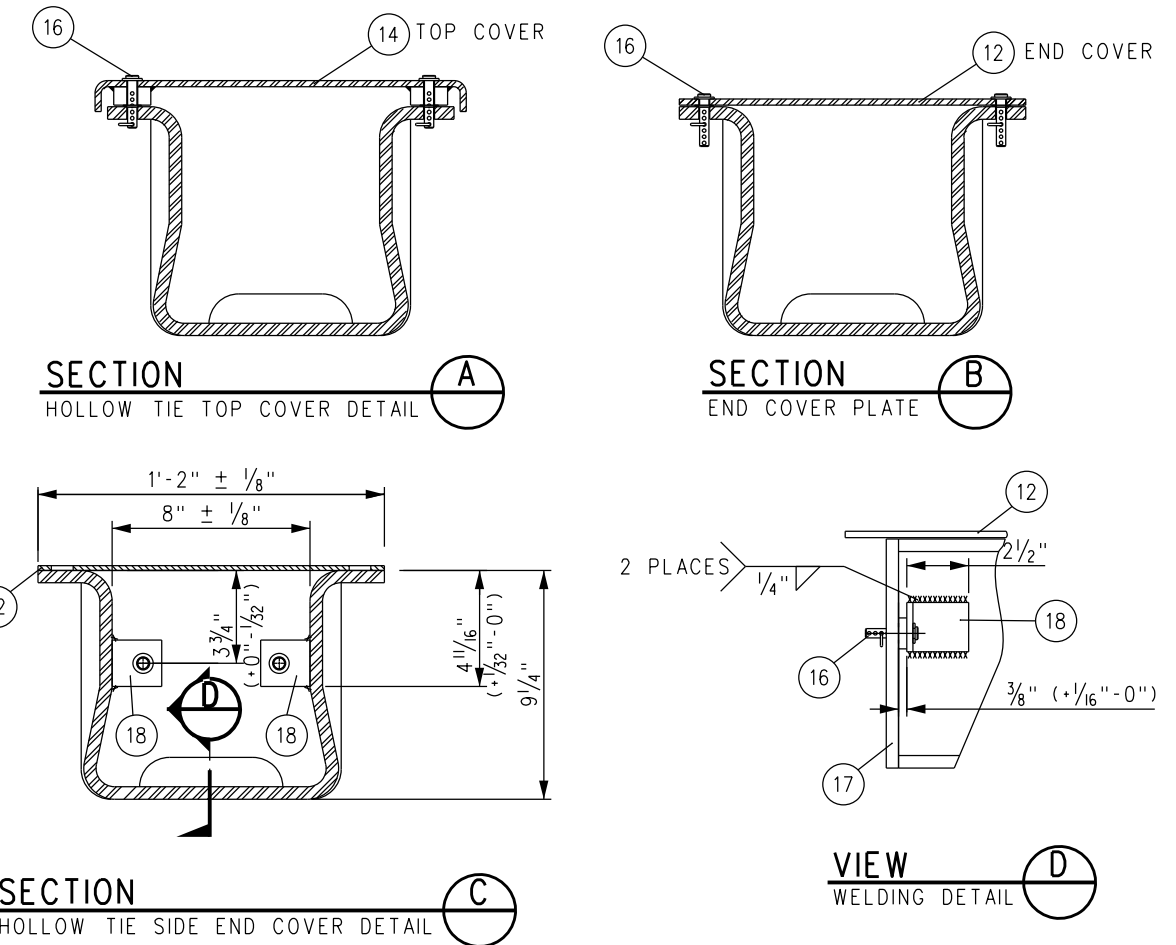
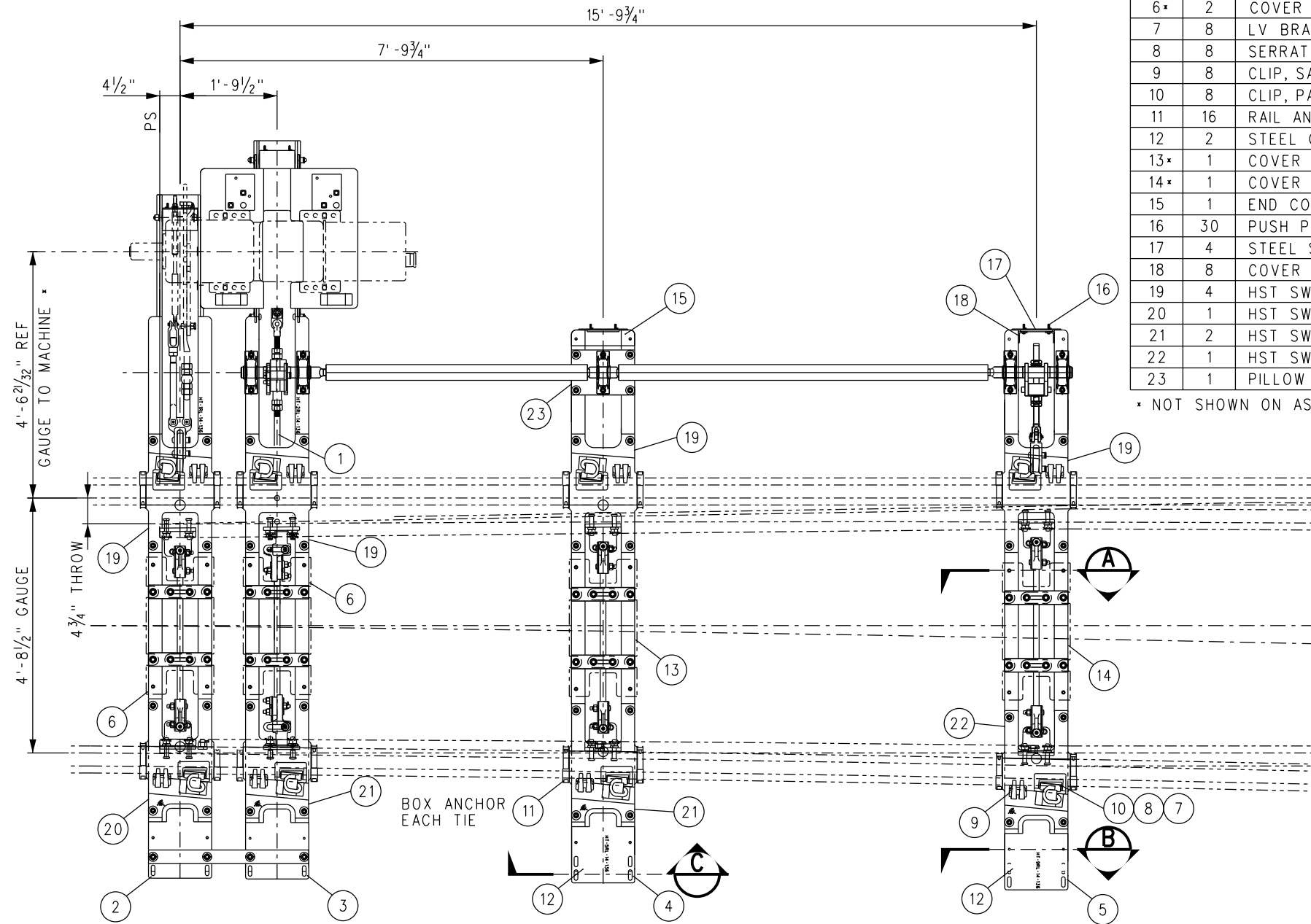
CONCRETE TIE LAYOUT
NO 14-136 LB RE SPRING FROG TURNOUT, LH

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-31 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|------------------|--------------|
| 1 | 1 | RODDING ASSEMBLY FOR NO 14-136 LB RE, SWITCH MACHINE ON LEFT SIDE | ES2805-71 | |
| 2 | 1 | HOLLOW TIE ASSEMBLY (HT-1RL-14-136) | - | |
| 3 | 1 | HOLLOW TIE ASSEMBLY (HT-2RL-14-136) | - | |
| 4 | 1 | HOLLOW TIE ASSEMBLY (HT-5RL-14-136) | - | |
| 5 | 1 | HOLLOW TIE ASSEMBLY (HT-9RL-14-136) | - | |
| 6* | 2 | COVER PLATE NO 1, HOLLOW SWITCH TIE | - | |
| 7 | 8 | LV BRACE FOR 136 LB RE | - | |
| 8 | 8 | SERRATED WASHER FOR LV BRACE | - | |
| 9 | 8 | CLIP, SAFELOK AB 2000 | - | |
| 10 | 8 | CLIP, PANDROL, E2055 | - | |
| 11 | 16 | RAIL ANCHOR UNIT DRIVE-ON TYPE 5 | - | |
| 12 | 2 | STEEL COVER PLATE FOR HST TIE, TOP END | - | |
| 13* | 1 | COVER PLATE NO 2, HOLLOW SWITCH TIE | - | |
| 14* | 1 | COVER PLATE NO 3, HOLLOW SWITCH TIE | - </td <td></td> | |
| 15 | 1 | END COVER PLATE FOR HST TIE, SHORT TOP VERSION | - | |
| 16 | 30 | PUSH PIN ASSEMBLY FOR HST COVERS | - | |
| 17 | 4 | STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE | - | |
| 18 | 8 | COVER SUPPORT BRACKET | - | |
| 19 | 4 | HST SWITCH PLATE HTP-206-STR | ES2800-90 | |
| 20 | 1 | HST SWITCH PLATE HTP-209-R | ES2800-92 | |
| 21 | 2 | HST SWITCH PLATE HTP-201-R | ES2800-93 | |
| 22 | 1 | HST SWITCH PLATE HTP-203-R | ES2800-94 | |
| 23 | 1 | PILLOW BLOCK MOUNTING PLATE | - | |

* NOT SHOWN ON ASSEMBLY FOR CLARITY



NOTE:
 1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRR.
 2. SEE DRAWING ES2805-73 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

| | | | | | |
|---|--|---|--|---|---|
| DRAWN BY: <i>Narek D. Pape</i> HDR DATE: 03/31/2011 ASSISTANT DIRECTOR: STANDARDS & DESIGN | | SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED. | SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012 | ENGINEERING STANDARDS HOLLOW STEEL TIE LAYOUT SWITCH MACHINE ON MAINLINE SIDE NO 14-136 LB RE RH | STANDARD 2805 |
| REV. DATE DESCRIPTION DES. ENG. | | | | | SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2805-32 |

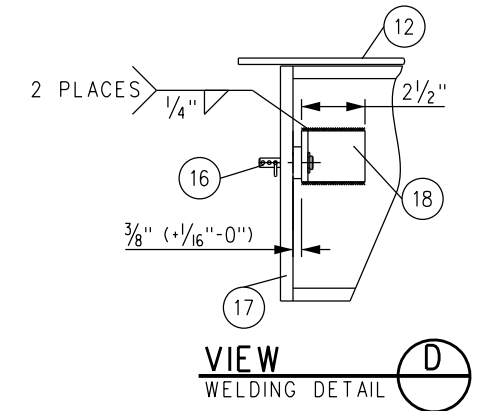
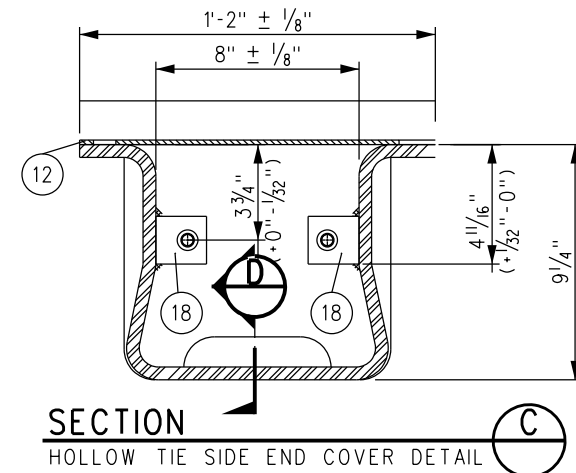
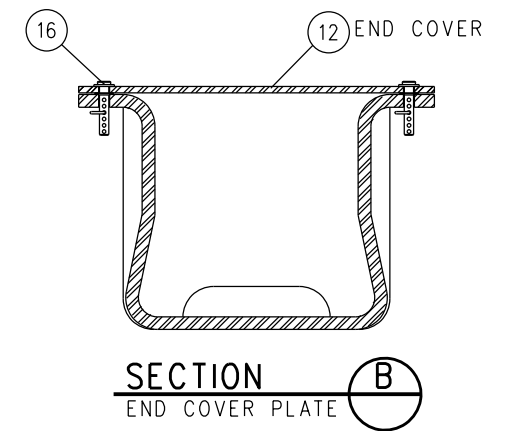
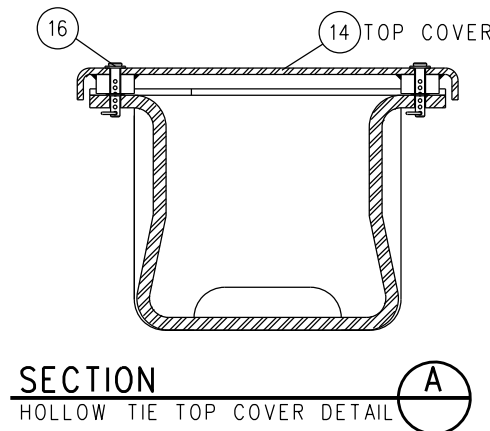
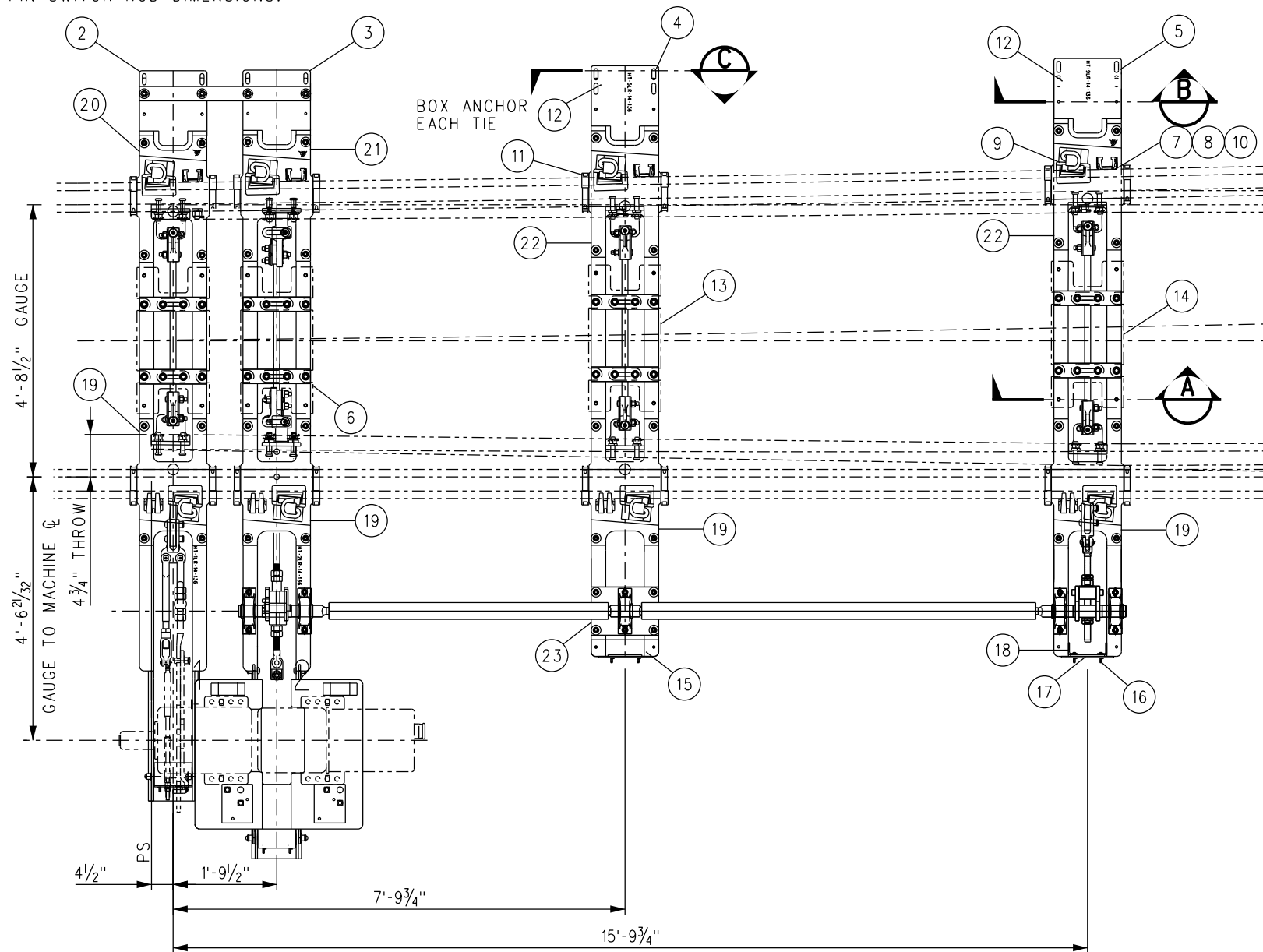
| BILL OF MATERIAL | | | | |
|------------------|-----|--|-----------|--------------|
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
| 1 | 1 | RODDING ASSEMBLY FOR NO 14-136 LB RE, SWITCH MACHINE ON RIGHT SIDE | ES2805-72 | |
| 2 | 1 | HOLLOW TIE ASSEMBLY (HT-1LR-14-136) | - | |
| 3 | 1 | HOLLOW TIE ASSEMBLY (HT-2LR-14-136) | - | |
| 4 | 1 | HOLLOW TIE ASSEMBLY (HT-5LR-14-136) | - | |
| 5 | 1 | HOLLOW TIE ASSEMBLY (HT-9LR-14-136) | - | |
| 6* | 2 | COVER PLATE NO 1, HOLLOW SWITCH TIE | - | |
| 7 | 8 | LV BRACE FOR 136 LB RE | - | |
| 8 | 8 | SERRATED WASHER FOR LV BRACE | - | |
| 9 | 8 | CLIP, SAFELOK, AB2000 | - | |
| 10 | 8 | CLIP, PANDROL, E2055 | - | |

| BILL OF MATERIAL | | | | |
|------------------|-----|---|-----------|--------------|
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
| 11 | 16 | RAIL ANCHOR UNIT DRIVE-ON TYPE 5 | - | |
| 12 | 2 | STEEL COVER PLATE FOR HST TIE, TOP END | - | |
| 13* | 1 | COVER PLATE NO 2, HOLLOW SWITCH TIE | - | |
| 14* | 1 | COVER PLATE NO 3, HOLLOW SWITCH TIE | - | |
| 15 | 1 | END COVER PLATE FOR HST TIE, SHORT TOP VERSION | - | |
| 16 | 30 | PUSH PIN ASSEMBLY FOR HST COVERS | - | |
| 17 | 4 | STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE | - | |
| 18 | 8 | COVER SUPPORT BRACKET | - | |
| 19 | 4 | HST SWITCH PLATE HTP-206-STR | ES2800-90 | |
| 20 | 1 | HST SWITCH PLATE HTP-208-L | ES2800-92 | |
| 21 | 1 | HST SWITCH PLATE HTP-200-L | ES2800-93 | |
| 22 | 2 | HST SWITCH PLATE HTP-202-L | ES2800-94 | |
| 23 | 1 | PILLOW BLOCK MOUNTING PLATE | - | |

NOTE:

- SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRR.
- SEE DRAWING ES2805-73 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

* NOT SHOWN ON ASSEMBLY FOR CLARITY



| | | | | |
|--|----------|--|------|------------------|
| DRAWN BY: <i>Narek D. Pape</i> | | HDR: <i>Willson Davan</i> | | DATE: 03/31/2011 |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | | |
| XX | XX-XX-XX | REVISION | XX | XX |
| REV. | DATE | DESCRIPTION | DES. | ENG. |

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

ENGINEERING STANDARDS
 HOLLOW STEEL TIE LAYOUT
 SWITCH MACHINE ON MAINLINE SIDE
 NO 14-136 LB RE LH

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-33 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRRA PART NO |
|------|-----|---|-----------|---------------|
| 1 | 1 | RODDING ASSEMBLY, FOR NO 14-136 LB RE, SWITCH MACHINE ON RIGHT SIDE | ES2805-72 | |
| 2 | 1 | HOLLOW TIE ASSEMBLY (HT-1RR-14-136) | - | |
| 3 | 1 | HOLLOW TIE ASSEMBLY (HT-2RR-14-136) | - | |
| 4 | 1 | HOLLOW TIE ASSEMBLY (HT-5RR-14-136) | - | |
| 5 | 1 | HOLLOW TIE ASSEMBLY (HT-9RR-14-136) | - | |
| 6* | 2 | COVER PLATE NO 1, HOLLOW SWITCH TIE | - | |
| 7 | 8 | LV BRACE FOR 136 LB RE | - | |
| 8 | 8 | SERRATED WASHER FOR LV BRACE | - | |
| 9 | 8 | CLIP, SAFELOK AB 2000 | - | |
| 10 | 8 | CLIP, PANDROL, E2055 | - | |

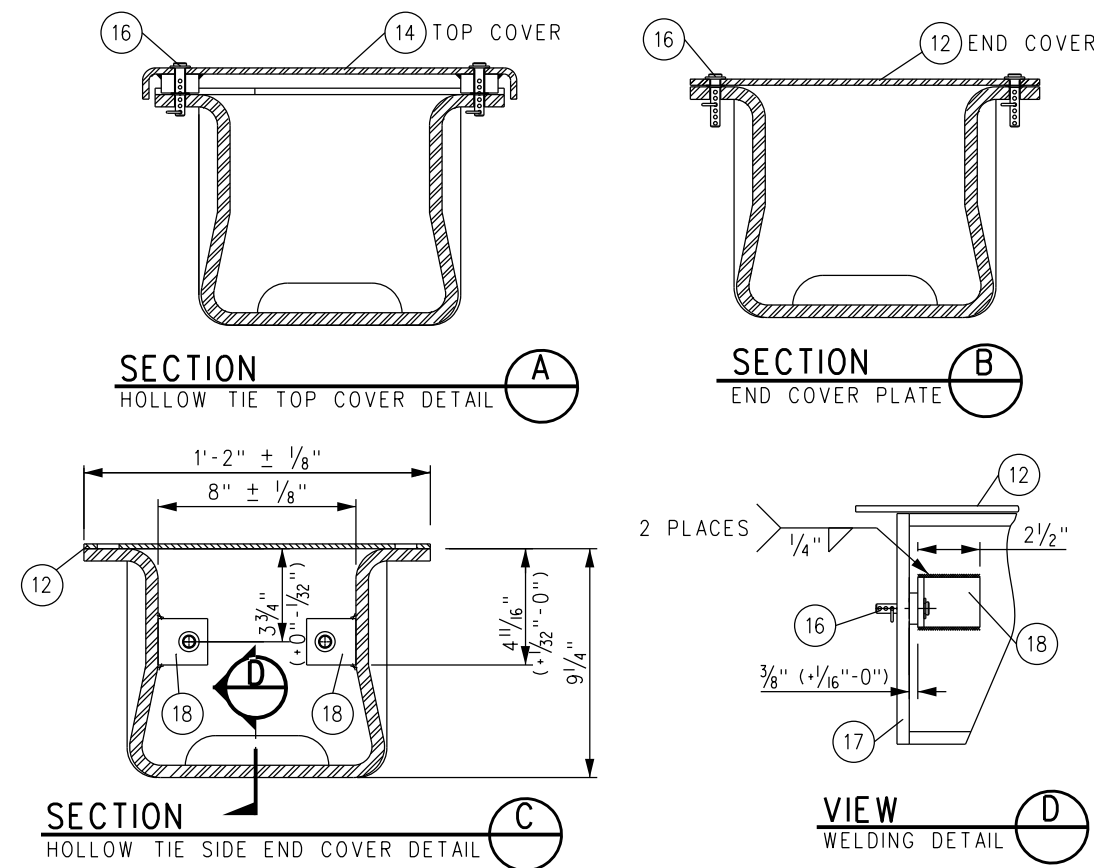
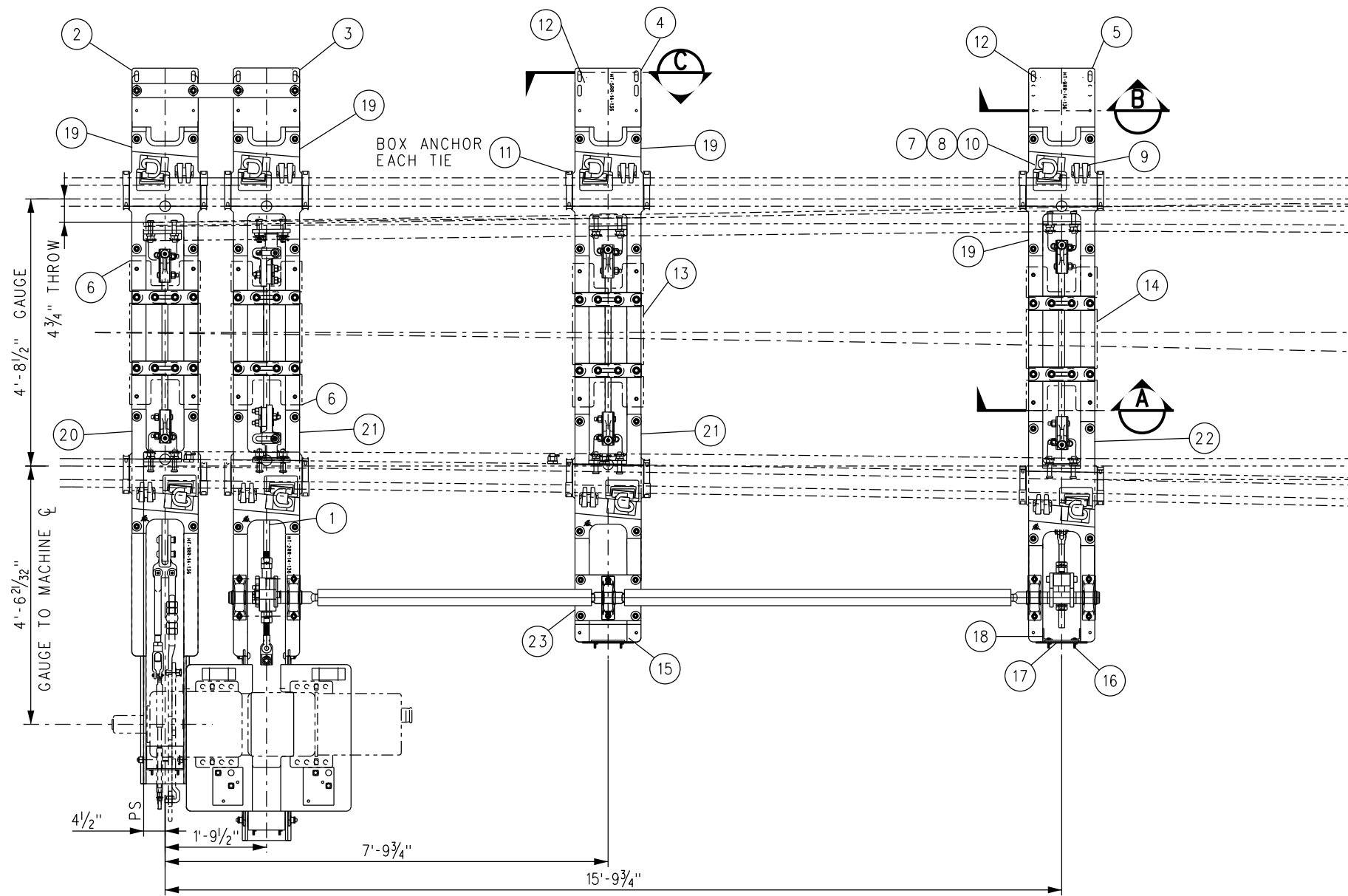
BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRRA PART NO |
|------|-----|---|-----------|---------------|
| 11 | 16 | RAIL ANCHOR UNIT DRIVE-ON TYPE 5 | | |
| 12 | 2 | STEEL COVER PLATE FOR HST TIE, TOP END | - | |
| 13* | 1 | COVER PLATE NO 2, HOLLOW SWITCH TIE | - | |
| 14* | 1 | COVER PLATE NO 3, HOLLOW SWITCH TIE | - | |
| 15 | 1 | END COVER PLATE FOR HST TIE, SHORT TOP VERSION | - | |
| 16 | 30 | PUSH PIN ASSEMBLY FOR HST COVERS | - | |
| 17 | 4 | STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE | - | |
| 18 | 8 | COVER SUPPORT BRACKET | - | |
| 19 | 4 | HST SWITCH PLATE HTP-206-STR | ES2800-90 | |
| 20 | 1 | HST SWITCH PLATE HTP-209-R | ES2800-92 | |
| 21 | 2 | HST SWITCH PLATE HTP-201-R | ES2800-93 | |
| 22 | 1 | HST SWITCH PLATE HTP-203-R | ES2800-94 | |
| 23 | 1 | PILLOW BLOCK MOUNTING PLATE | - | |

NOTE:

- SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRRA.
- SEE DRAWING ES2805-73 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

* NOT SHOWN ON ASSEMBLY FOR CLARITY



| | | | |
|--|----------|--|------------------|
| DRAWN BY: <i>Narek D. Pape</i> | | HDR: <i>Willson Davan</i> | DATE: 03/31/2011 |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | |
| XX-XX-XX | REVISION | XX | XX |
| REV. | DATE | DESCRIPTION | DES. ENG. |

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

ENGINEERING STANDARDS

HOLLOW STEEL TIE LAYOUT
SWITCH MACHINE ON TURNOUT SIDE
NO 14-136 LB RE RH

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-34 |

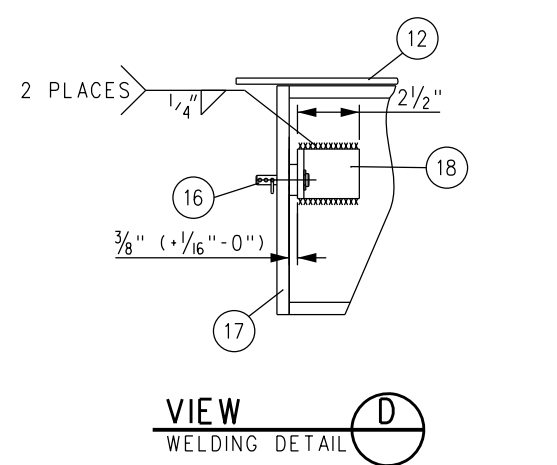
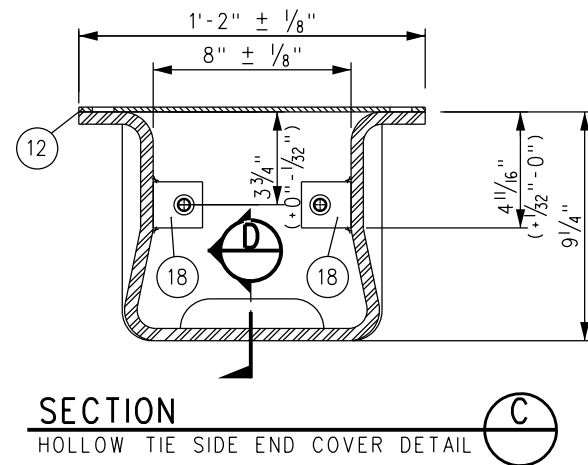
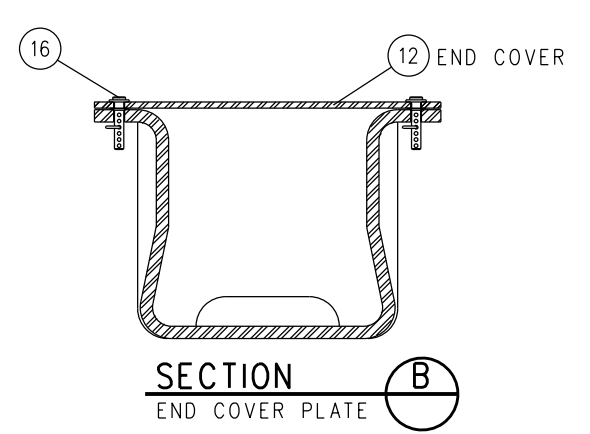
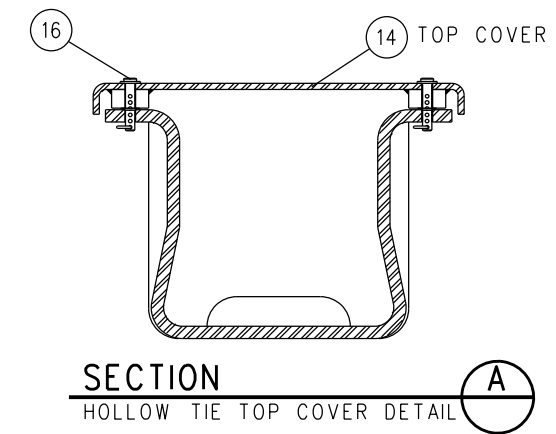
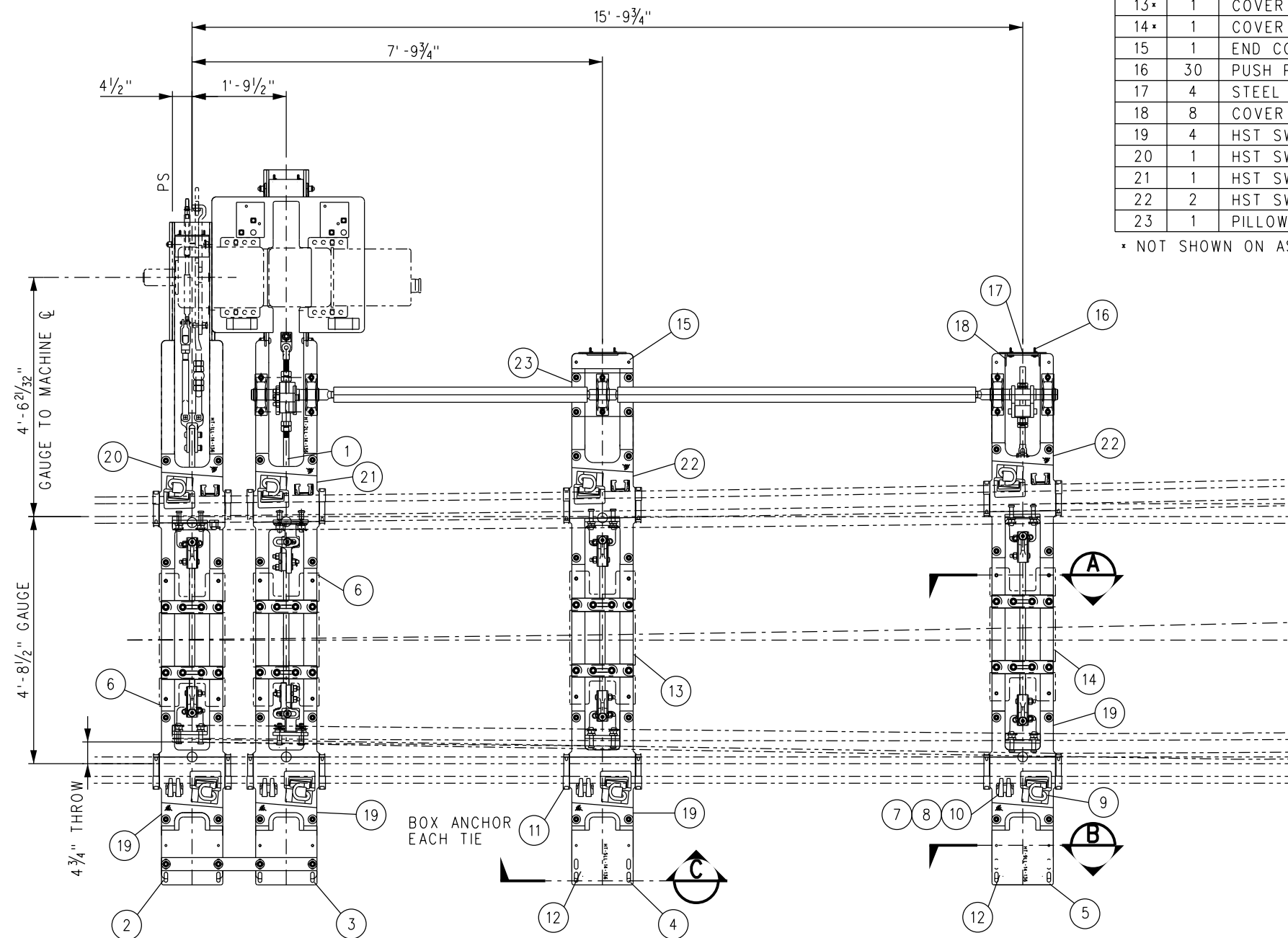
BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|-----------|--------------|
| 1 | 1 | RODDING ASSEMBLY FOR NO 14-136 LB RE, SWITCH MACHINE ON LEFT SIDE | ES2805-71 | |
| 2 | 1 | HOLLOW TIE ASSEMBLY (HT-1LL-14-136) | - | |
| 3 | 1 | HOLLOW TIE ASSEMBLY (HT-2LL-14-136) | - | |
| 4 | 1 | HOLLOW TIE ASSEMBLY (HT-5LL-14-136) | - | |
| 5 | 1 | HOLLOW TIE ASSEMBLY (HT-9LL-14-136) | - | |
| 6* | 2 | LV BRACE FOR 136 LB RE | - | |
| 7 | 8 | COVER PLATE NO 1, HOLLOW SWITCH TIE | - | |
| 8 | 8 | SERRATED WASHER FOR LV BRACE | - | |
| 9 | 8 | CLIP, SAFELOK AB 2000 | - | |
| 10 | 8 | CLIP, PANDROL, E2055 | - | |
| 11 | 16 | RAIL ANCHOR UNIT DRIVE-ON TYPE 5 | - | |
| 12 | 2 | STEEL COVER PLATE FOR HST TIE, TOP END | - | |
| 13* | 1 | COVER PLATE NO 2, HOLLOW SWITCH TIE | - | |
| 14* | 1 | COVER PLATE NO 3, HOLLOW SWITCH TIE | - | |
| 15 | 1 | END COVER PLATE FOR HST TIE, SHORT TOP VERSION | - | |
| 16 | 30 | PUSH PIN ASSEMBLY FOR HST COVERS | - | |
| 17 | 4 | STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE | - | |
| 18 | 8 | COVER SUPPORT BRACKET | - | |
| 19 | 4 | HST SWITCH PLATE HTP-206-STR | ES2800-90 | |
| 20 | 1 | HST SWITCH PLATE HTP-208-L | ES2800-92 | |
| 21 | 1 | HST SWITCH PLATE HTP-200-L | ES2800-93 | |
| 22 | 2 | HST SWITCH PLATE HTP-202-L | ES2800-94 | |
| 23 | 1 | PILLOW BLOCK MOUNTING PLATE | - | |

* NOT SHOWN ON ASSEMBLY FOR CLARITY

NOTE:

1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRR.
2. SEE DRAWING ES2805-73 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.



| | | | | |
|--|----------|--|------|------------------|
| DRAWN BY: <i>Narek D. Pape</i> | | HDR: <i>Willson Davan</i> | | DATE: 03/31/2011 |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | | |
| XX | XX-XX-XX | REVISION | XX | XX |
| REV. | DATE | DESCRIPTION | DES. | ENG. |

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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 14-136 LB RE LH

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-35 |

BILL OF MATERIAL

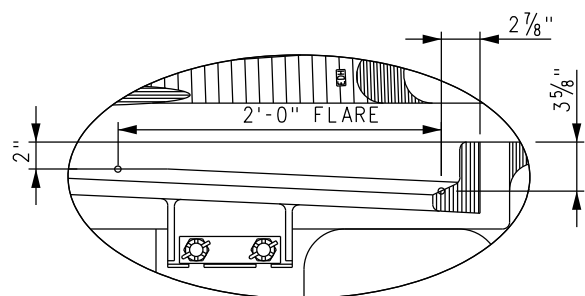
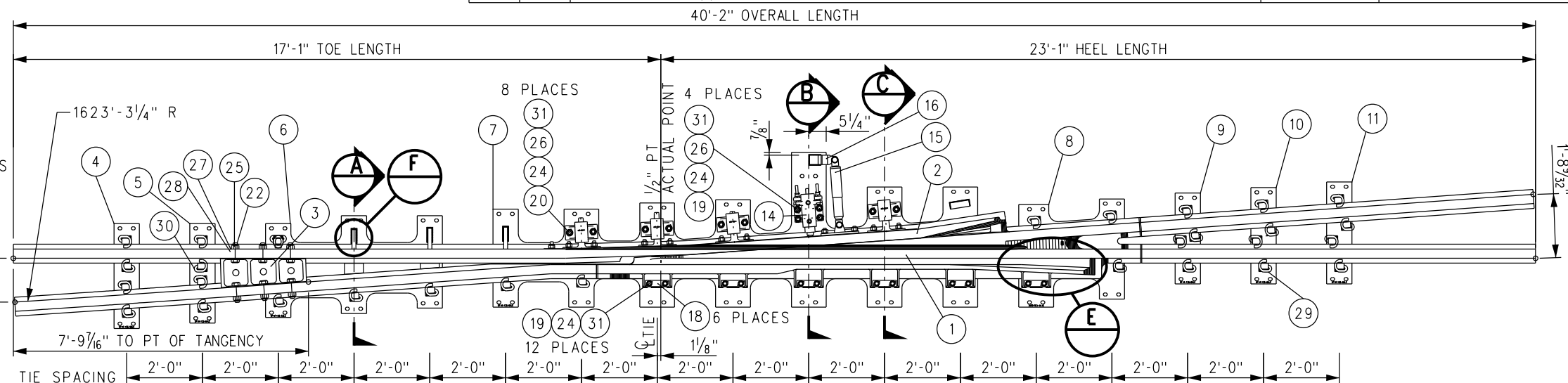
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|-----------|--------------|
| 1 | 1 | NO 14-136 LB RE SPRING FROG, LH POINT ASSEMBLY | - | |
| 2 | 1 | SPRING WING RAIL, NO 14-136 LB RE, LH C/W HARDWARE | - | |
| 3 | 1 | TOE BLOCK, NO 14-136 LB RE WSM | - | |
| 4 | 1 | FROG PLATE (14-136-50LC) | ES2805-43 | |
| 5 | 1 | FROG PLATE (14-136-51LC) | ES2805-43 | |
| 6 | 1 | FROG PLATE (14-136-52LC) | ES2805-45 | |
| 7 | 1 | FROG PLATE (14-136-55LC) | ES2805-47 | |
| 8 | 1 | FROG PLATE (14-136-62LC) | ES2805-49 | |
| 9 | 1 | FROG PLATE (14-136-64LC) | ES2805-49 | |
| 10 | 1 | FROG PLATE (14-136-65LC) | ES2805-51 | |
| 11 | 1 | FROG PLATE (14-136-66LC) | ES2805-51 | |
| 12 | 4 | HORN KEEPER, REVERSIBLE | - | |
| 13 | 4 | WEAR PLATE FOR REVERSIBLE HORN KEEPER | - | |
| 14 | 1 | SPRING BOX ASSEMBLY, WITH 3" MAXIMUM PLUNGER TRAVEL | - | |
| 15 | 1 | RETARDER, ENIDINE P/N: SP22917, CLEVIS ENDS WITH HARDWARE | - | |

BILL OF MATERIAL

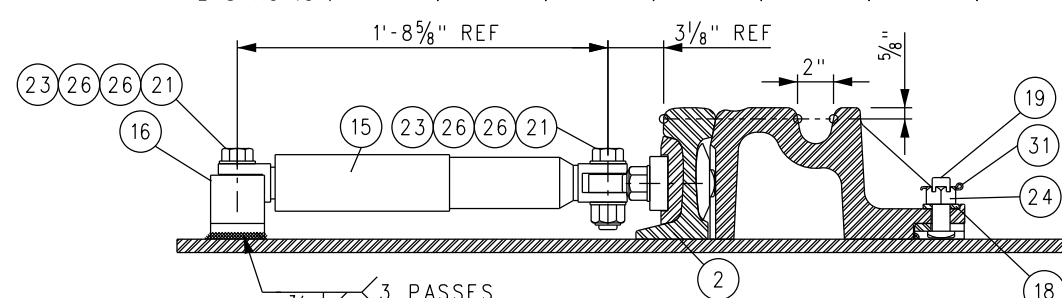
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|--------|--------------|
| 16 | 1 | RETARDER PLATE BRACKET FOR FROG C/W HYDRAULIC RETARDER | - | |
| 17 | 3 | FLAT RAIL BRACE FOR NON D-BAR APPLICATIONS | - | |
| 18 | 6 | WASHER, BOLT CAPTURE STYLE, 1/4" THICK | - | |
| 19 | 16 | BOLT, 1" DIA x 3", THIN SQ HEAD, DRILLED @ 2 1/2", GR 5 | - | |
| 20 | 8 | BOLT, 1" DIA x 3 1/2", THIN SQ HEAD, DRILLED @ 2 1/16", GR 5 | - | |
| 21 | 2 | BOLT, 1" DIA x 4 1/8", HEAVY HEX HEAD, GR 8 | - | |
| 22 | 6 | BOLT, 1 3/8" DIA x 5 1/2", SQUARE HEAD, GR 8 | - | |
| 23 | 2 | SECURITY LOCK NUT, 1" DIA, HEX (SH521), GR 5 | - | |
| 24 | 24 | NUT, 1" DIA HEAVY HEX, SLOTTED, GR 5 | - | |
| 25 | 6 | SECURITY LOCK NUT, 1 3/8" DIA HEX (SH530), GR 8 | - | |
| 26 | 16 | FLAT WASHER, FOR 1" DIA x 5/32" THICK, HARDENED | - | |
| 27 | 6 | FLAT WASHER, FOR 1 3/8" DIA x 1/4" THICK, HARDENED | - | |
| 28 | 6 | TAIL WASHER, FLAT (837K) | - | |
| 29 | 28 | PANDROL SPRING CLIP E2055 | - | |
| 30 | 1 | PANDROL SPRING CLIP E2056 | - | |
| 31 | 24 | COTTER PIN, 1/4" DIA x 2" LONG | - | |

NOTES:

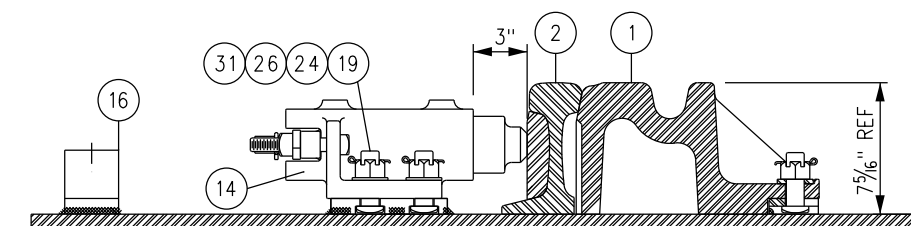
- RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES.
- SPRING BOX LOAD IS 300 LBS/IN.
- SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION.
- FLAT RAIL BRACES (ITEM NO 17) SHALL BE WELDED WHERE SHOWN, UP AGAINST SPRING WING WHEN FULLY THROWN.
- RAIL END DRILLING SHALL BE @ 9" AND 1'-3 1/2", 3 3/32" ABOVE RAIL BASE, 1 9/16" DIA AT ALL 4 RAIL ENDS. ALL RAIL HOLE EDGES SHALL BE ROUNDED WITH A 1/8" R.
- RETARDER BRACKET (ITEM NO 16) SHALL BE WELDED AS SHOWN.
- FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS.
- INSERT TO BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA.
- NAME TAG TO BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN.
- SCRR WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM.



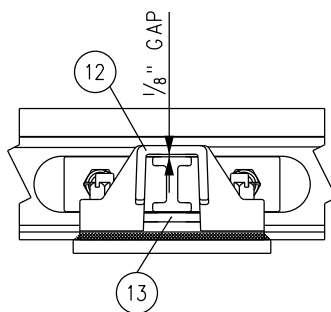
DETAIL
DIMENSIONS AT GAUGE ELEVATION



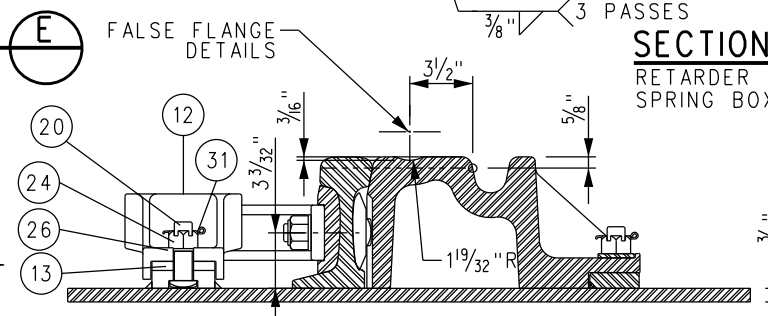
SECTION
RETARDER MOUNTING DETAIL
SPRING BOX REMOVED FOR CLARITY



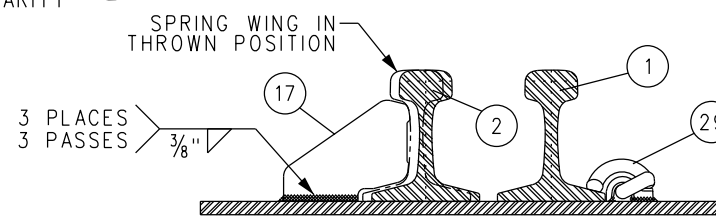
SECTION
SPRING BOX DETAIL
RETARDER REMOVED FOR CLARITY



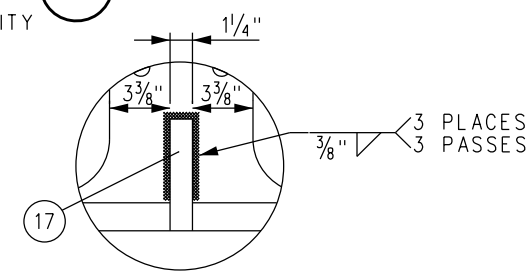
SECTION
HORN AND KEEPER
MOUNTING DETAILS



SECTION
FALSE FLANGE
DETAILS



SECTION
FLAT RAIL BRACE MOUNTING DETAILS,
TYPICAL 3 PLACES



DETAIL
FLAT RAIL BRACE MOUNTING DETAILS,
TYPICAL 3 PLACES

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS
 NO 14 WSM FROG LH
 FROG ASSEMBLY PLAN VIEW AND FROG PACK
 CONCRETE TIES-136 LB RE RAIL

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE | ES2805-41 |

BILL OF MATERIAL

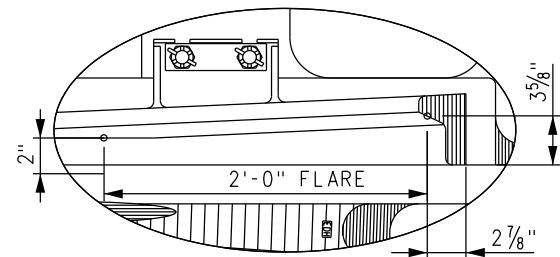
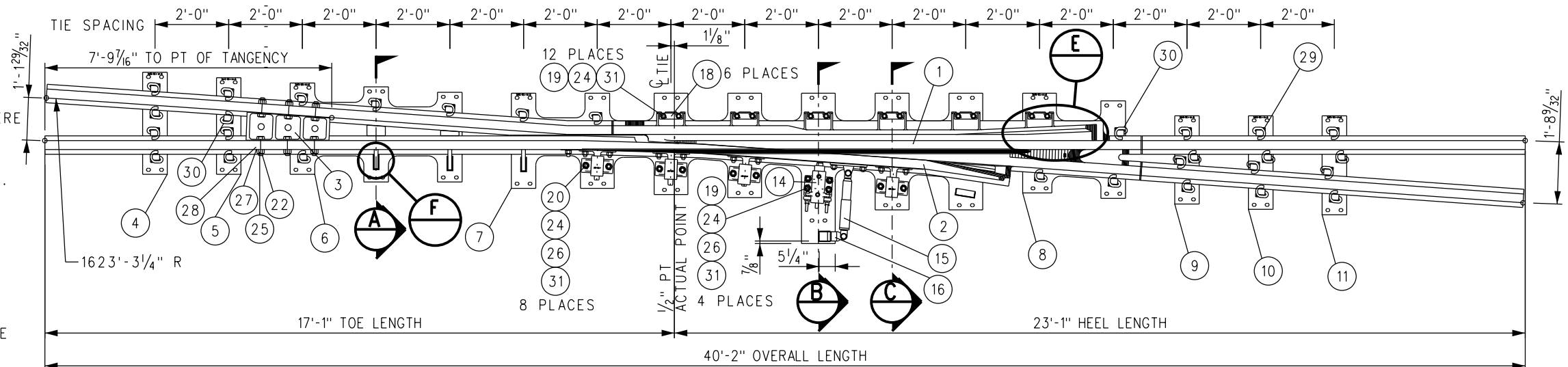
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|-----------|--------------|
| 1 | 1 | NO 14-136 LB RE SPRING FROG, RH POINT ASSEMBLY | - | - |
| 2 | 1 | SPRING WING RAIL, NO 14-136 LB RE, RH, C/W HARDWARE | - | - |
| 3 | 1 | TOE BLOCK, NO 14-136 LB RE WSM | - | - |
| 4 | 1 | FROG PLATE (14-136-50RC) | ES2805-44 | - |
| 5 | 1 | FROG PLATE (14-136-51RC) | ES2805-44 | - |
| 6 | 1 | FROG PLATE (14-136-52RC) | ES2805-46 | - |
| 7 | 1 | FROG PLATE (14-136-55RC) | ES2805-48 | - |
| 8 | 1 | FROG PLATE (14-136-62RC) | ES2805-50 | - |
| 9 | 1 | FROG PLATE (14-136-64RC) | ES2805-50 | - |
| 10 | 1 | FROG PLATE (14-136-65RC) | ES2805-52 | - |
| 11 | 1 | FROG PLATE (14-136-66RC) | ES2805-52 | - |
| 12 | 4 | HORN KEEPER, REVERSIBLE | - | - |
| 13 | 4 | WEAR PLATE FOR REVERSIBLE HORN KEEPER | - | - |
| 14 | 1 | SPRING BOX ASSEMBLY, WITH 3" MAXIMUM PLUNGER TRAVEL | - | - |
| 15 | 1 | RETARDER, ENIDINE P/N: SP22917, CLEVIS ENDS WITH HARDWARE | - | - |

BILL OF MATERIAL

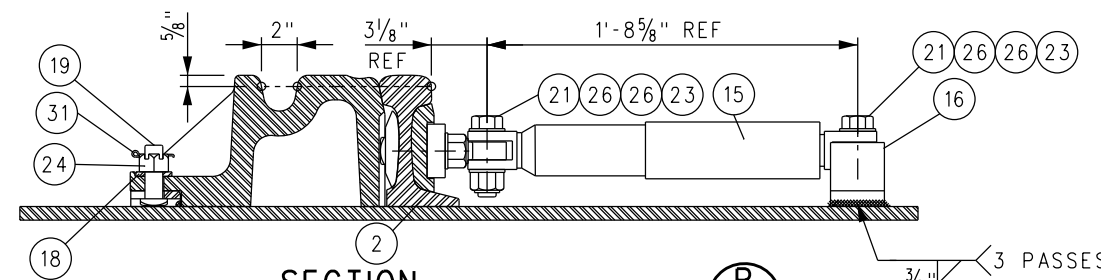
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|--------|--------------|
| 16 | 1 | RETARDER PLATE BRACKET FOR FROG C/W HYDRAULIC RETARDER | - | - |
| 17 | 3 | FLAT RAIL BRACE FOR NON D-BAR APPLICATIONS | - | - |
| 18 | 6 | WASHER, BOLT CAPTURE STYLE, 1/4" THICK | - | - |
| 19 | 8 | BOLT, 1" DIA x 3", THIN SQ HEAD, DRILLED @ 2 1/2", GR 5 | - | - |
| 20 | 8 | BOLT, 1" DIA x 3 1/2", THIN SQ HEAD, DRILLED @ 2 1/16", GR 5 | - | - |
| 21 | 2 | BOLT, 1" DIA x 4 1/8", HEAVY HEX HEAD, GR 8 | - | - |
| 22 | 2 | BOLT, 1 3/8" DIA x 5 1/2", SQUARE HEAD, GR 8 | - | - |
| 23 | 2 | SECURITY LOCK NUT, 1" DIA, HEX (SH521), GR 5 | - | - |
| 24 | 24 | NUT, 1" DIA HEAVY HEX, SLOTTED, GR 5 | - | - |
| 25 | 6 | SECURITY LOCK NUT, 1 3/8" DIA HEX (SH530), GR 8 | - | - |
| 26 | 16 | FLAT WASHER, FOR 1" DIA x 5/32" THICK, HARDENED | - | - |
| 27 | 6 | FLAT WASHER, FOR 1 3/8" DIA x 1/4" THICK, HARDENED | - | - |
| 28 | 6 | TAIL WASHER, FLAT (837K) | - | - |
| 29 | 27 | PANDROL SPRING CLIP E2055 | - | - |
| 30 | 2 | PANDROL SPRING CLIP E2056 | - | - |
| 31 | 2 | COTTER PIN, 1/4" DIA x 2" LONG | - | - |

NOTES:

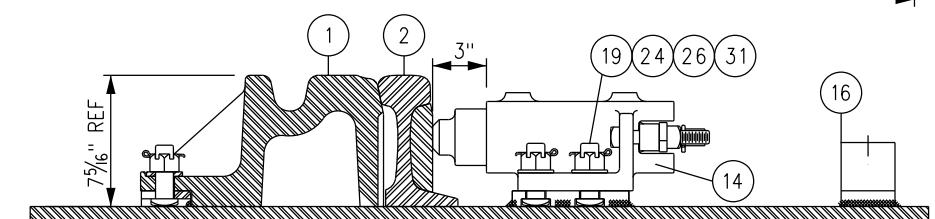
- RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES.
- SPRING BOX LOAD IS 300 LBS/IN.
- SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGEWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION.
- FLAT RAIL BRACES (ITEM NO 17) SHALL BE WELDED WHERE SHOWN, UP AGAINST SPRING WING WHEN FULLY THROWN.
- RAIL END DRILLING SHALL BE @ 9" AND 1'-3 1/2", 3 3/32" ABOVE RAIL BASE, 1 1/16" DIA AT ALL 4 RAIL ENDS. ALL RAIL HOLE EDGES SHALL BE ROUNDED WITH A 1/8" R.
- RETARDER BRACKET (ITEM NO 16) SHALL BE WELDED AS SHOWN.
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- INSERT TO BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA.
- NAME TAG TO BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN.
- SCRR WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM.



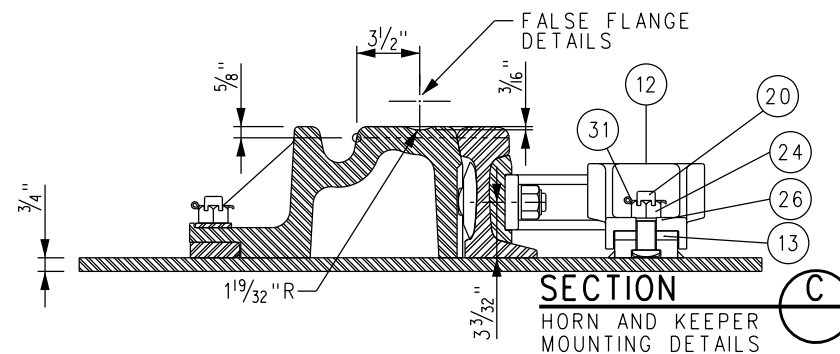
DETAIL E
DIMENSIONS AT GAUGE ELEVATION



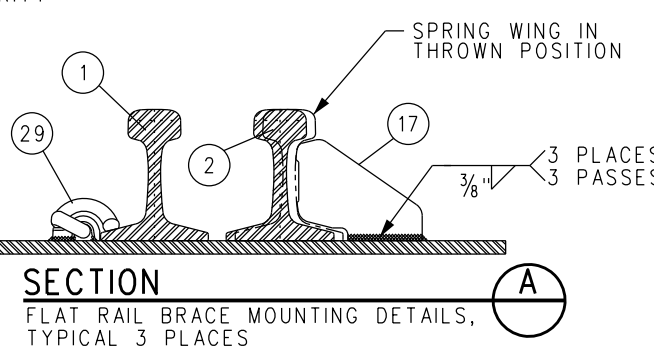
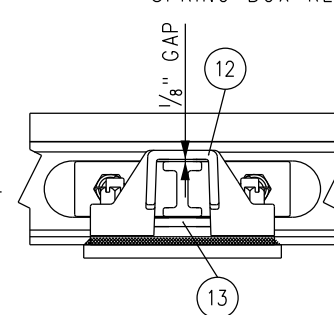
SECTION B
RETARDER MOUNTING DETAIL
SPRING BOX REMOVED FOR CLARITY



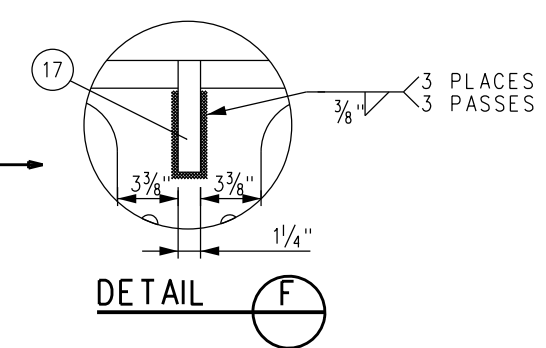
SECTION B
SPRING BOX DETAIL
RETARDER REMOVED FOR CLARITY



SECTION C
HORN AND KEEPER MOUNTING DETAILS



SECTION A
FLAT RAIL BRACE MOUNTING DETAILS,
TYPICAL 3 PLACES



DETAIL F

| | | | |
|--|--|----------|------|
| DRAWN BY: HDR DATE: 03/31/2011 | | REVISION | |
| <i>Nareh D. Papp</i> | | XX | XX |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | XX | XX |
| <i>William Dacan</i> | | DES. | ENG. |
| DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | |

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

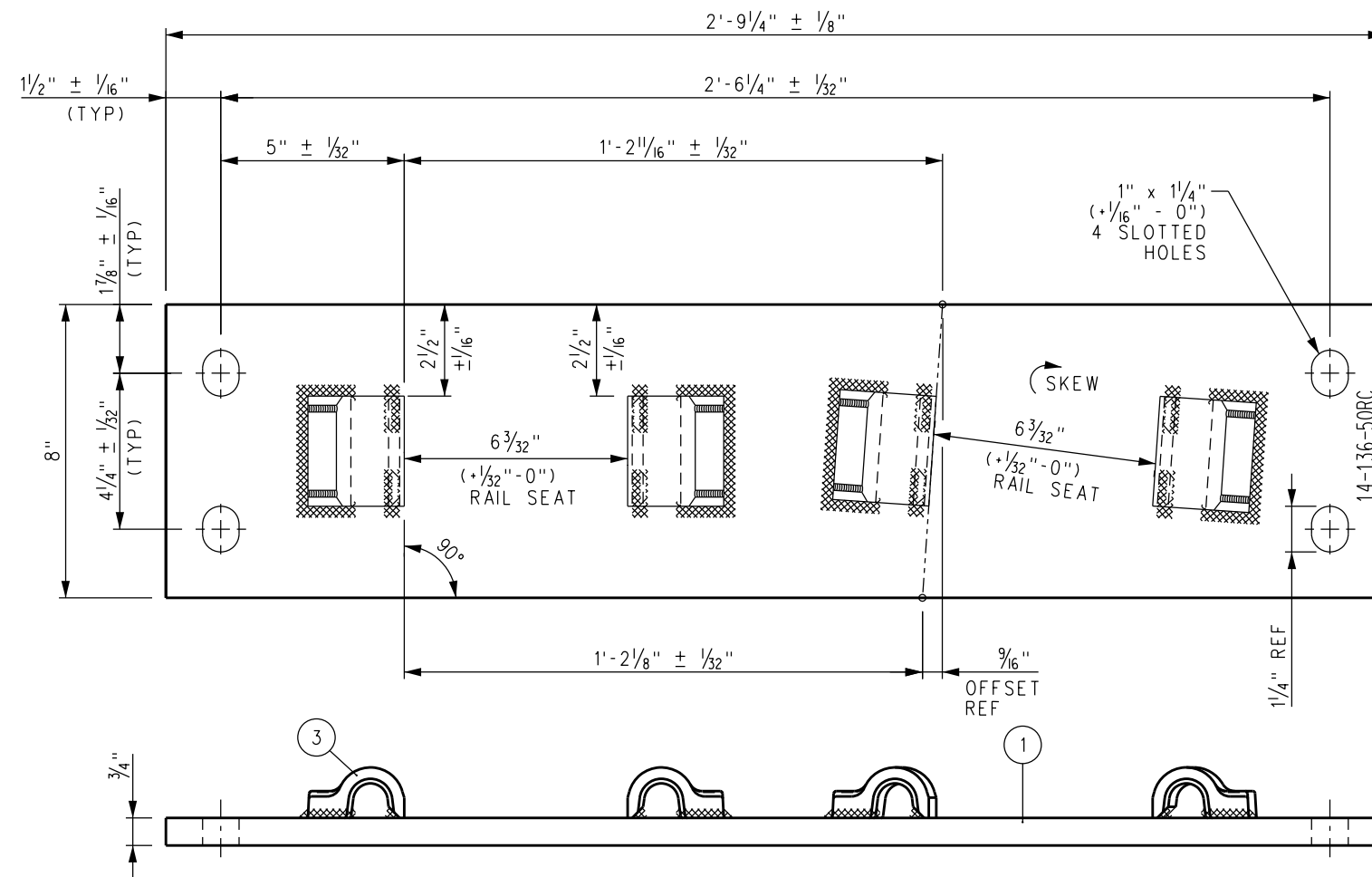
ENGINEERING STANDARDS

NO 14 WSM FROG RH
FROG ASSEMBLY PLAN VIEW AND FROG PACK
CONCRETE TIES-136 LB RE RAIL

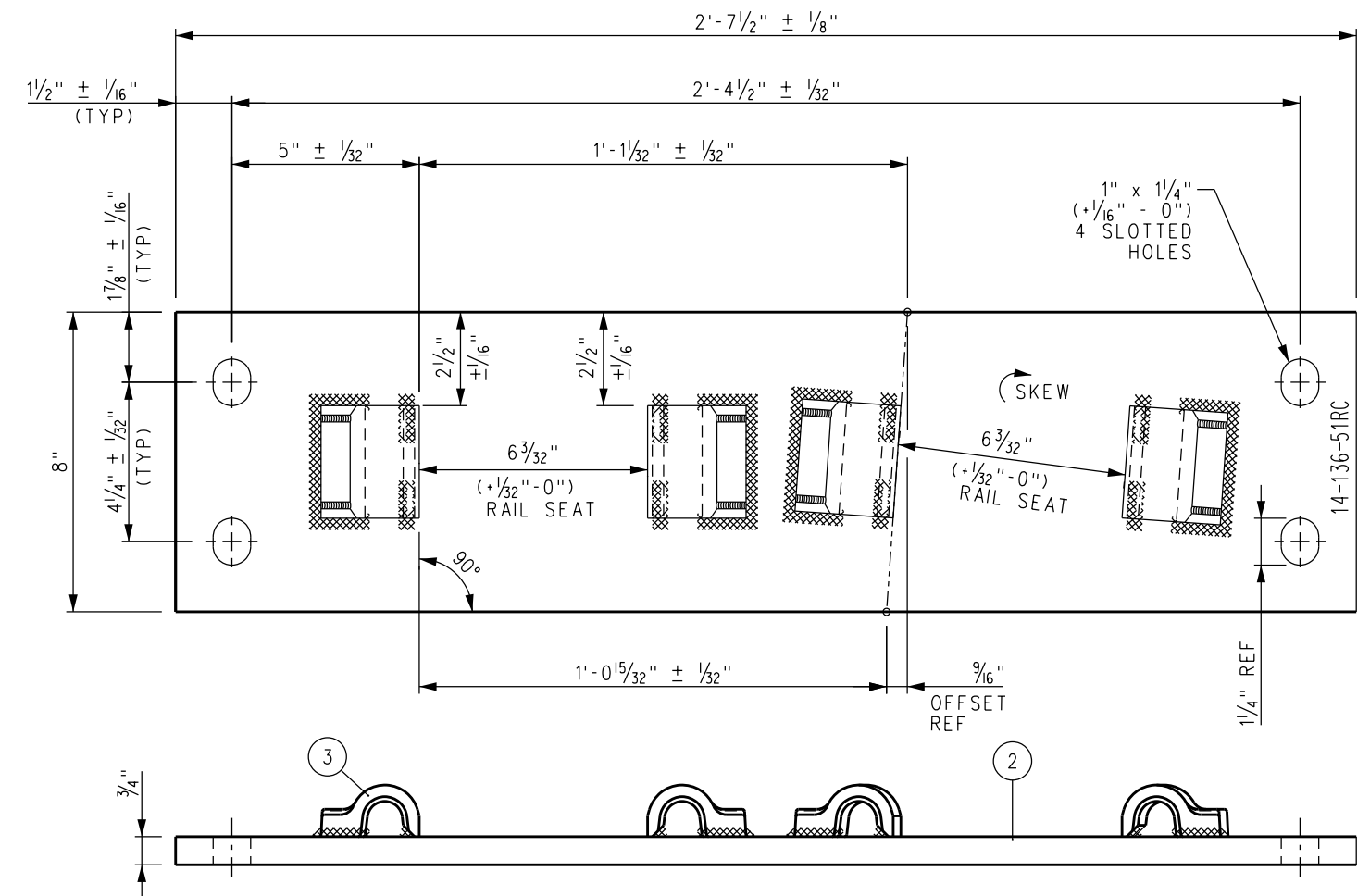
| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-42 |

BILL OF MATERIAL

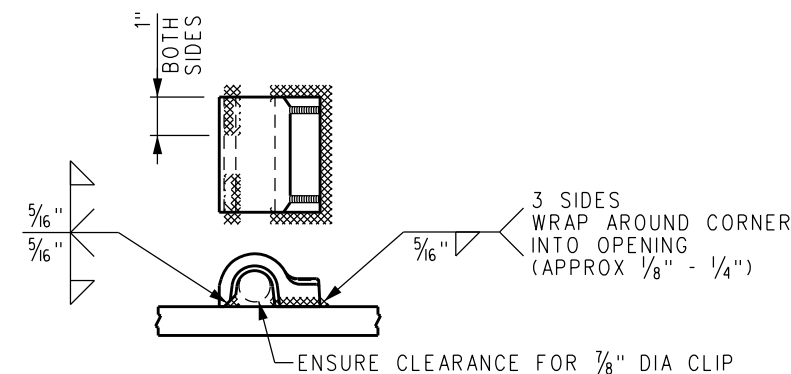
| ITEM | QTY FOR 24-136-50RC | QTY FOR 24-136-51RC | DESCRIPTION | DWG NO | SCRR PART NO |
|------|---------------------|---------------------|--|--------|--------------|
| 1 | 1 | 0 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9 1/4" LONG | - | |
| 2 | 0 | 1 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7 1/2" LONG | - | |
| 3 | 4 | 4 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |



FROG BASE PLATE 14-136-50RC



FROG BASE PLATE 14-136-51RC



FORGED SHOULDER WELDING DETAIL

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Narek D. Pape* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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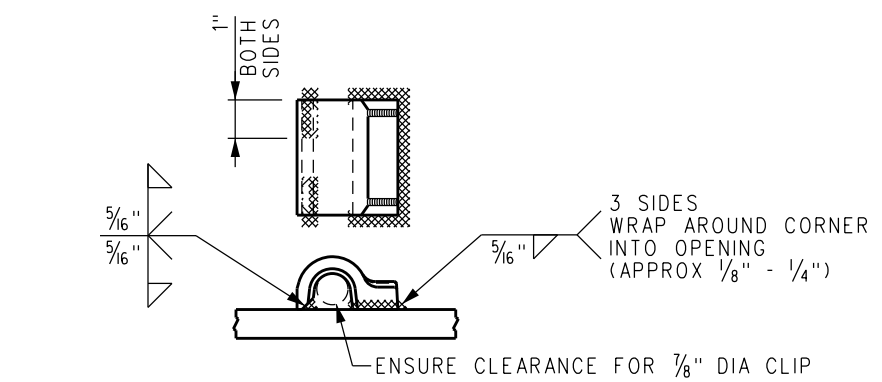
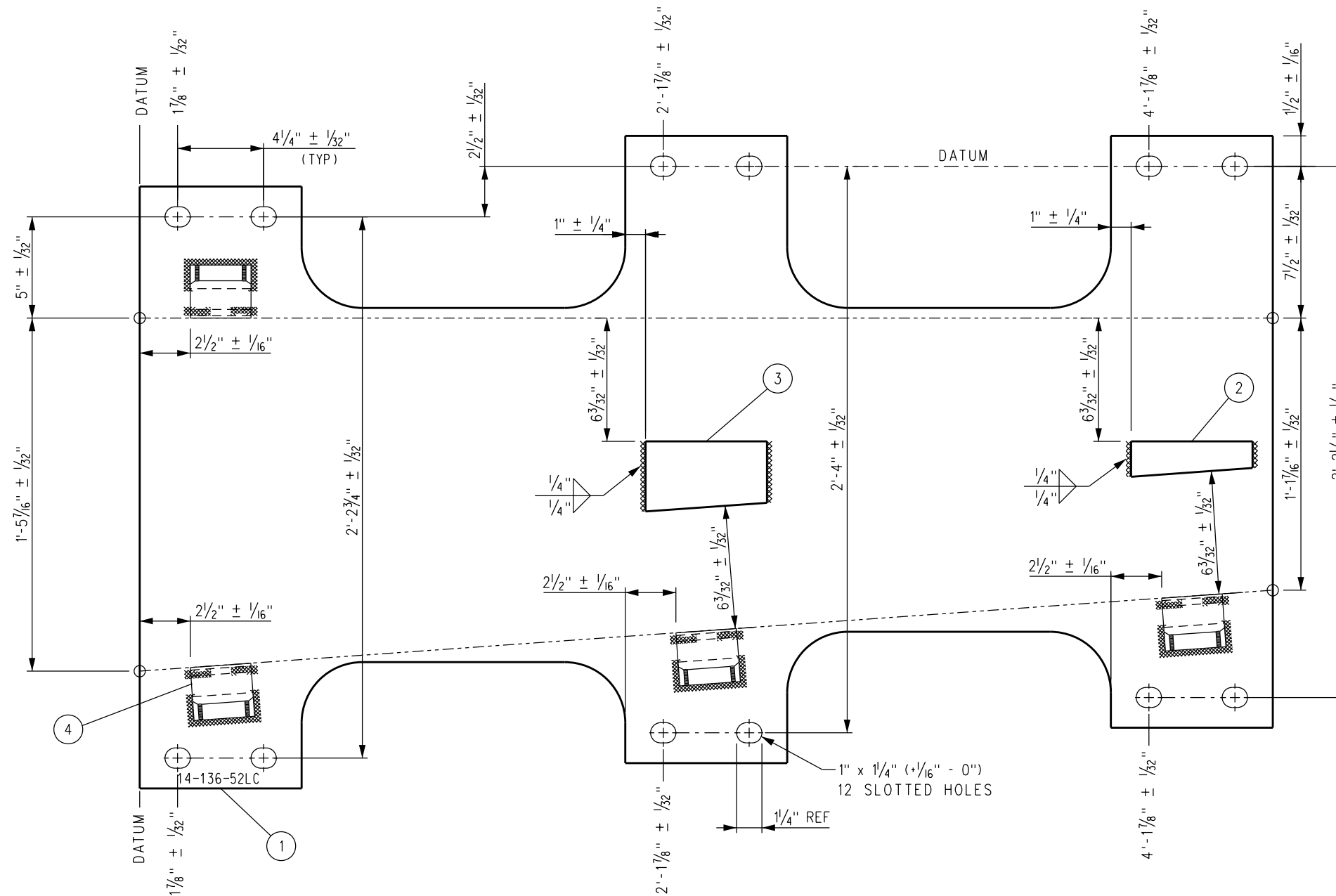
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

| | |
|---|--|
| ENGINEERING STANDARDS | |
| NO 14 WSM FROG RH FROG BASE PLATES 14-50RC AND 14-51RC CONCRETE TIES-136 LB RE RAIL | |

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-44 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|--------|--------------|
| 1 | 1 | BURNED PLATE, 3/4" THICK | - | |
| 2 | 1 | BURNED STOP, 1/2" THICK, TAPERED 1 5/16" TO 1 3/4", 6" LONG | - | |
| 3 | 1 | BURNED STOP, 1/2" THICK, TAPERED 3 1/32" TO 3 5/32", 6" LONG | - | |
| 4 | 4 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |



FORGED SHOULDER WELDING DETAIL

NOTES:

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

FROG BASE PLATE 14-136-52LC

| | | | | | |
|--|----------|--|------|------------------|--|
| DRAWN BY: <i>Nareh D. Papp</i> | | HDR: <i>Wilson Dava</i> | | DATE: 03/31/2011 | |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | |
| REV. | DATE | DESCRIPTION | DES. | ENG. | |
| X | XX-XX-XX | REVISION | XX | XX | |

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

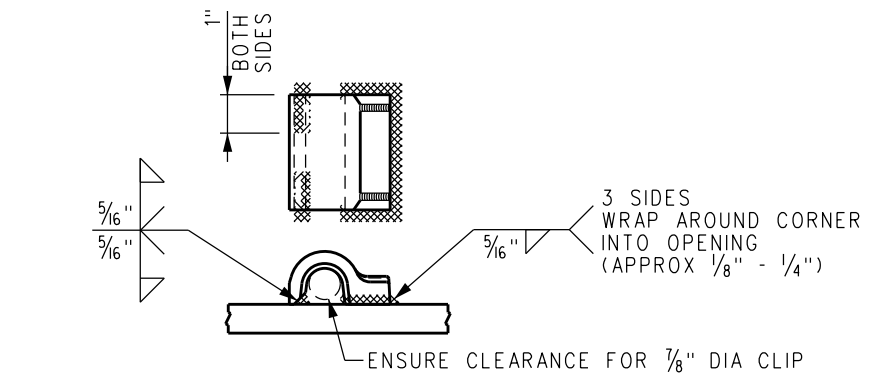
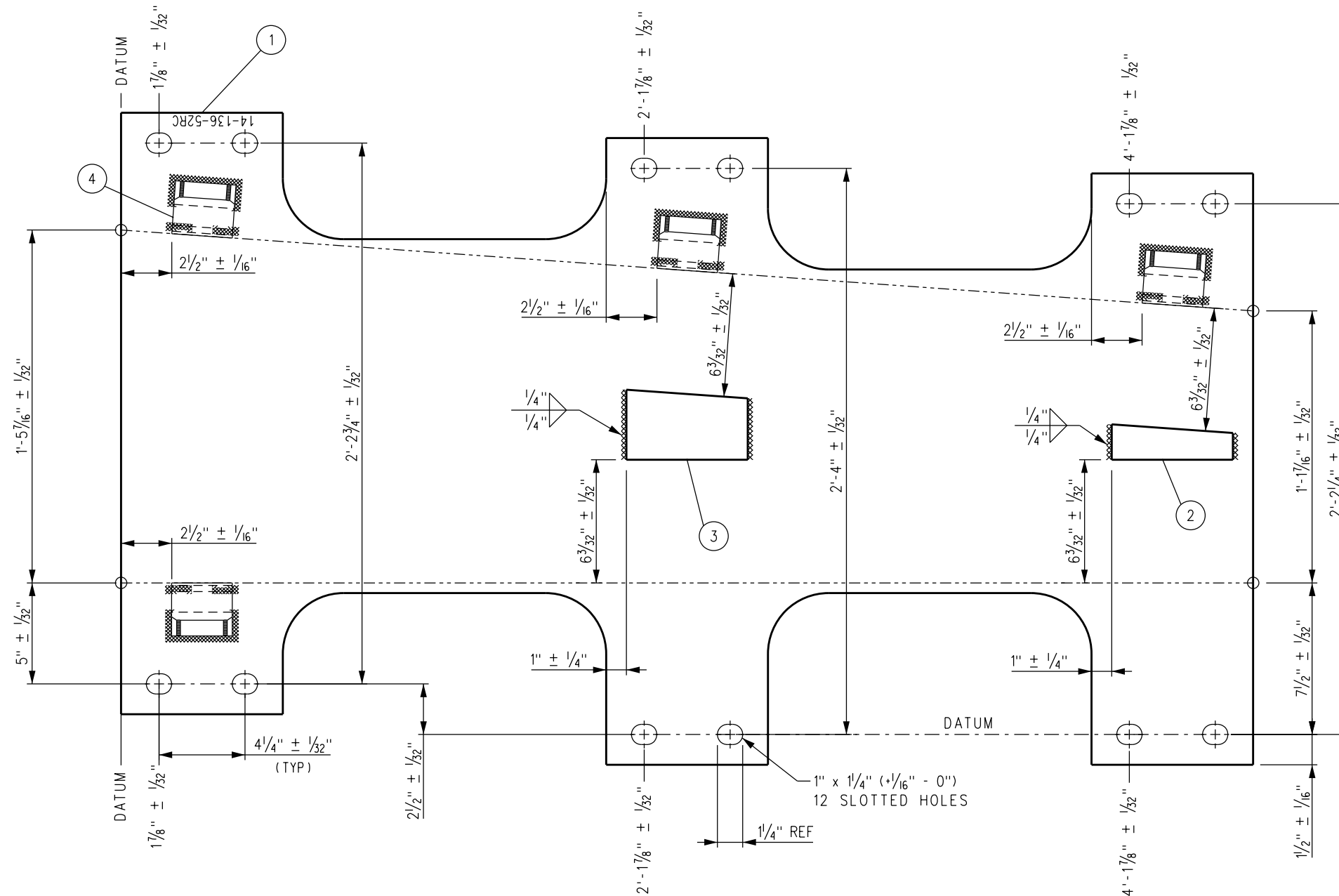
ENGINEERING STANDARDS

NO 14 WSM FROG LH
FROG BASE PLATE 14-52LC
CONCRETE TIES-136 LB RE RAIL

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-45 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|--------|--------------|
| 1 | 1 | BURNED PLATE, 3/4" THICK | - | |
| 2 | 1 | BURNED STOP, 1/2" THICK, TAPERED 15/16" TO 1 3/4", 6" LONG | - | |
| 3 | 1 | BURNED STOP, 1/2" THICK, TAPERED 3 1/32" TO 3 5/32", 6" LONG | - | |
| 4 | 4 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |



FORGED SHOULDER WELDING DETAIL

NOTES:

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

FROG BASE PLATE 14-136-52RC

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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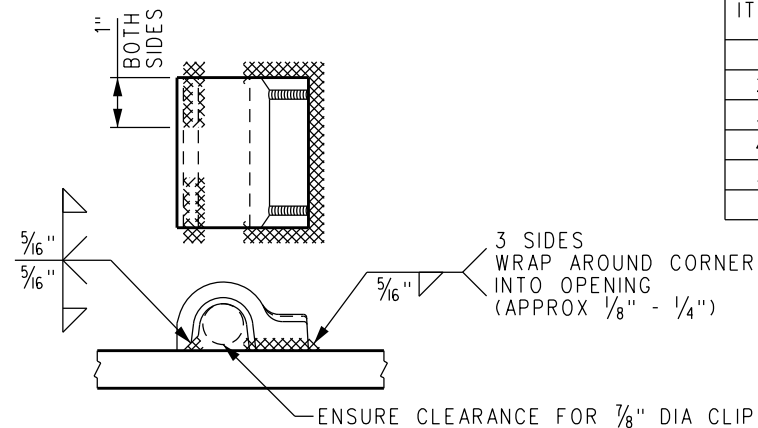
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 14 WSM FROG RH
 FROG BASE PLATE 14-52RC
 CONCRETE TIES-136 LB RE RAIL

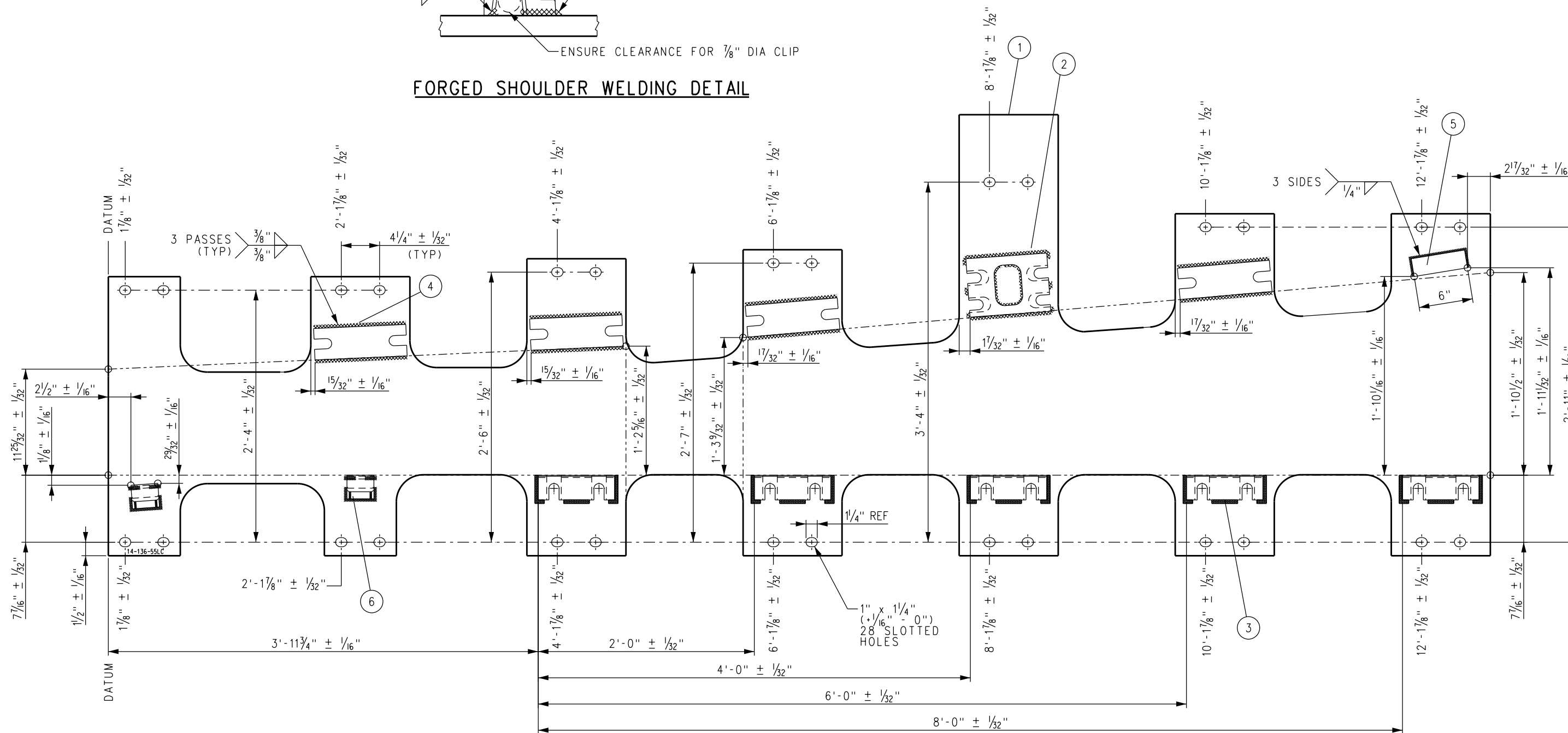
| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-46 |

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
3. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 14-136-55LC

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|--------|--------------|
| 1 | 1 | BURNED PLATE, 3/4" THICK | - | |
| 2 | 1 | CAPTURE BLOCK FOR SPRING BOX | - | |
| 3 | 5 | CAPTURE BLOCK FOR PLATE CLIP | - | |
| 4 | 4 | CAPTURE BLOCK FOR HORN KEEPER | - | |
| 5 | 1 | FLAT BAR, ASTM A36, 1/2" THICK x 2" x 6" LONG | - | |
| 6 | 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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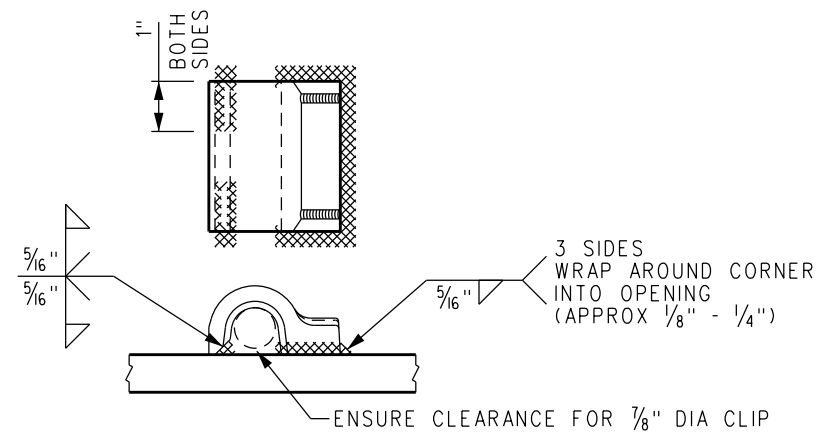
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 14 WSM FROG LH
 FROG BASE PLATE 14-55LC
 CONCRETE TIES-136 LB RE RAIL

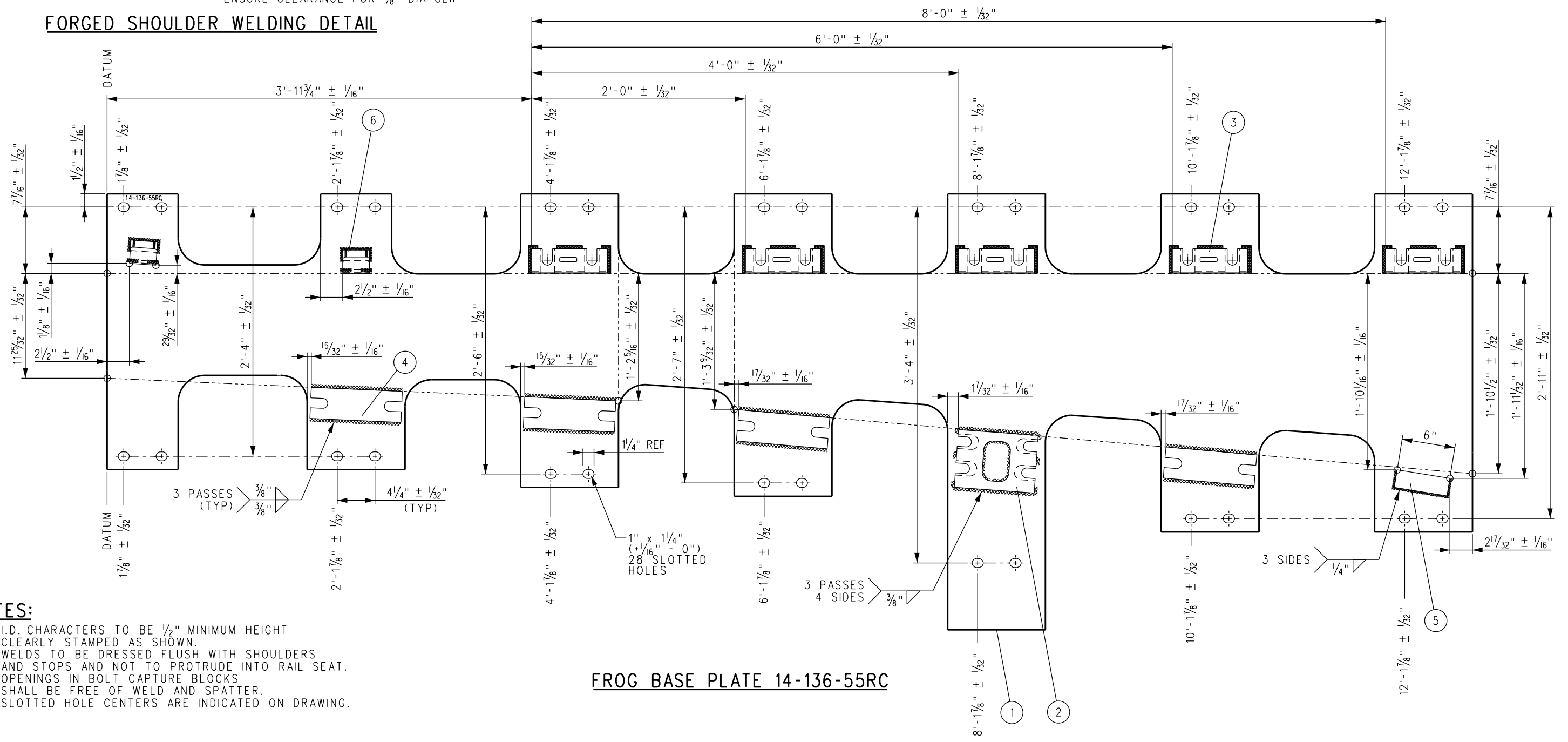
| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-47 |

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRRRA PART NO |
|------|-----|---|--------|----------------|
| 1 | 1 | BURNED PLATE, 3/4" THICK | - | |
| 2 | 1 | CAPTURE BLOCK FOR SPRING BOX | - | |
| 3 | 5 | CAPTURE BLOCK FOR PLATE CLIP | - | |
| 4 | 4 | CAPTURE BLOCK FOR HORN KEEPER | - | |
| 5 | 1 | FLAT BAR, ASTM A36, 1/2" THICK x 2" x 6" LONG | - | |
| 6 | 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 14-136-55RC

- NOTES:**
1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
 2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
 3. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
 4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William D. Davis
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METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

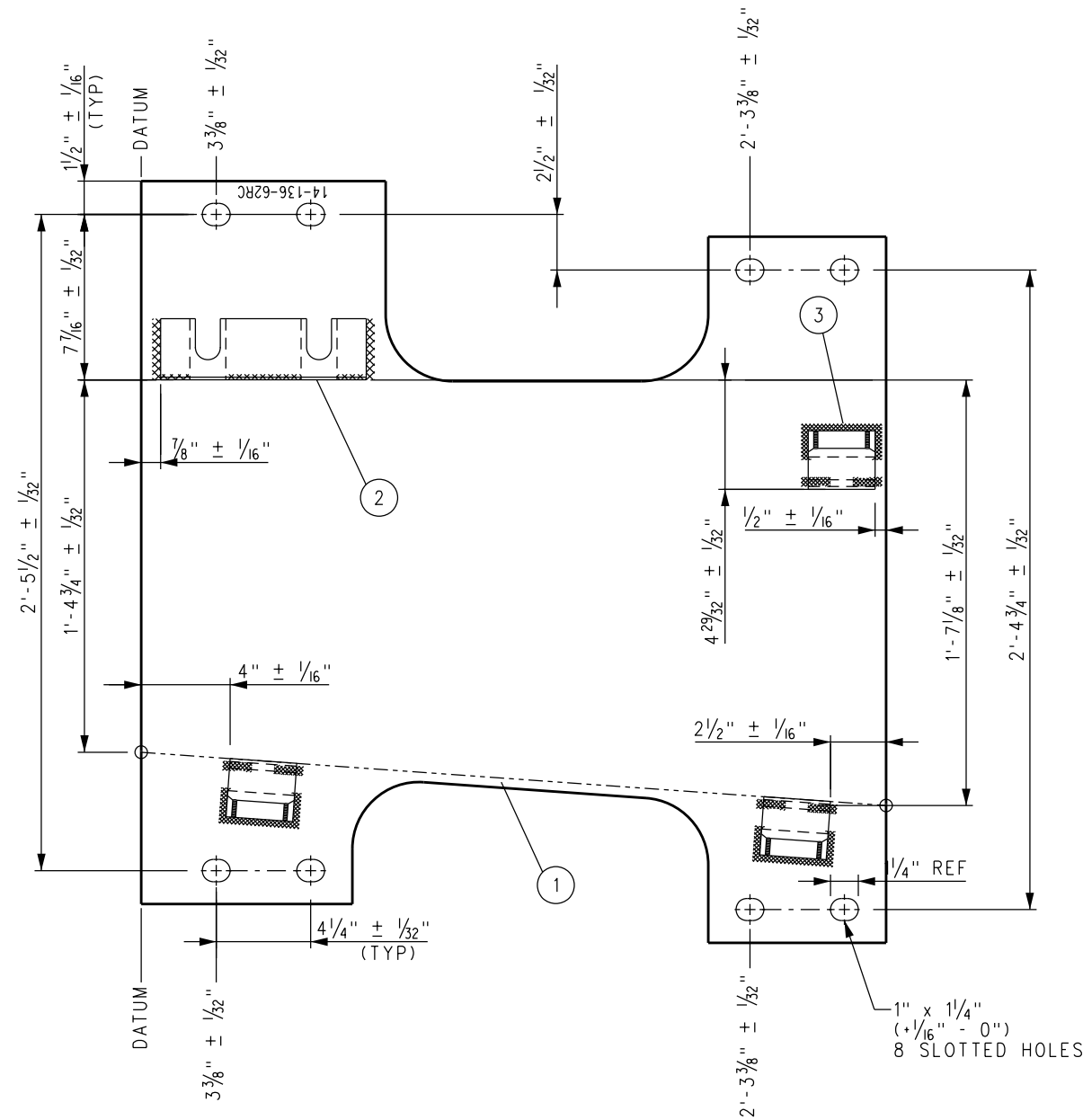
| | | | |
|--|-----------|----------|------|
| ENGINEERING STANDARDS | | STANDARD | 2805 |
| NO 14 WSM FROG RH FROG BASE PLATE 14-55RC CONCRETE TIES-136 LB RE RAIL | | SCALE: | NTS |
| REVISION | SHEET | 1 OF 1 | |
| CADD FILE: | ES2805-48 | | |

BILL OF MATERIAL

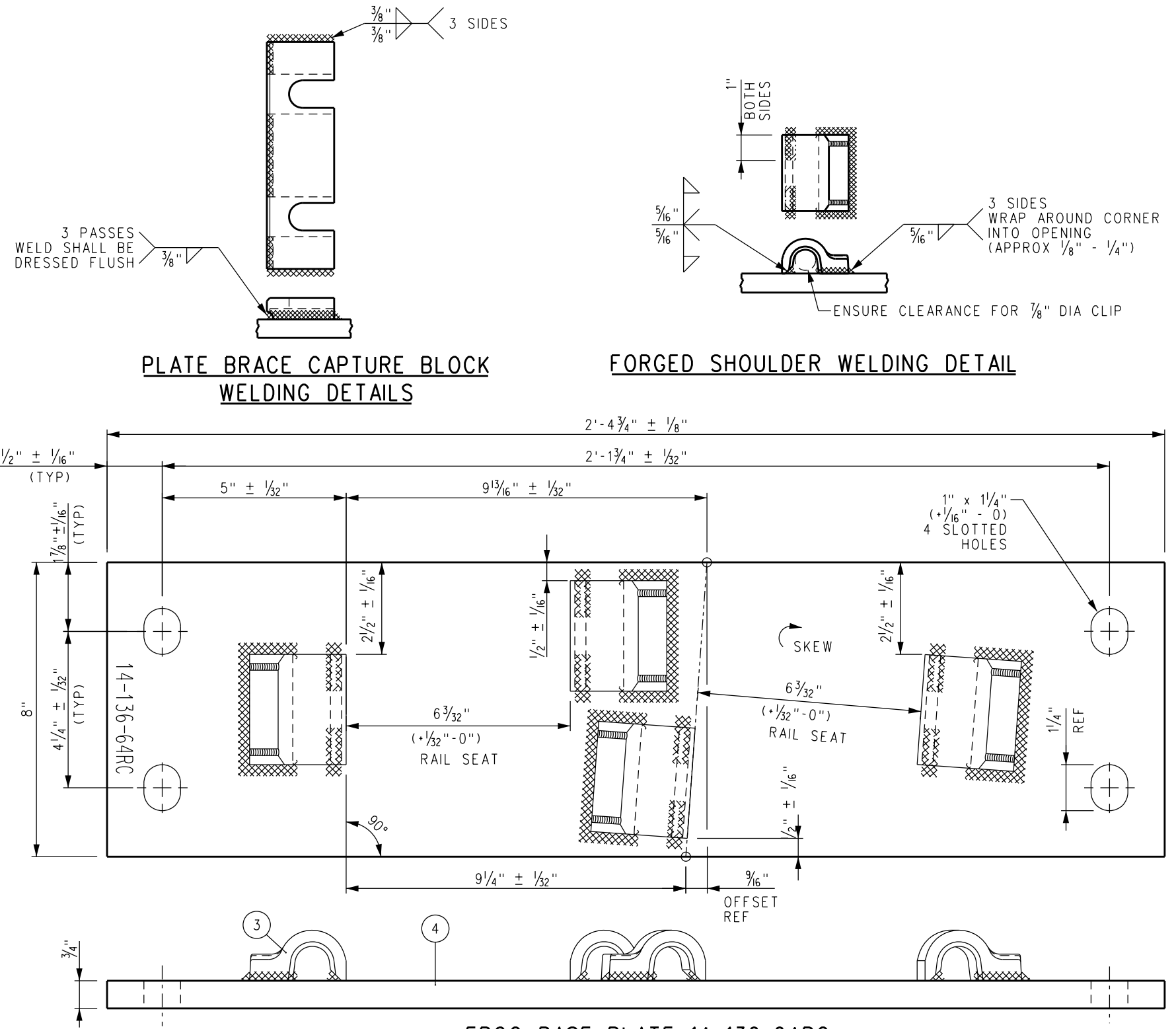
| ITEM | QTY FOR 14-136-62RC | QTY FOR 14-136-64RC | DESCRIPTION | DWG NO | SCRR PART NO |
|------|---------------------|---------------------|--|--------|--------------|
| 1 | 1 | 0 | BURNED PLATE, 3/4" THICK | - | |
| 2 | 1 | 0 | CAPTURE BLOCK FOR HORN KEEPER | - | |
| 3 | 3 | 4 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |
| 4 | 0 | 1 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-4 3/4" LONG | - | |

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
3. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.



FROG BASE PLATE 14-136-62RC



FROG BASE PLATE 14-136-64RC

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
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William Dacan
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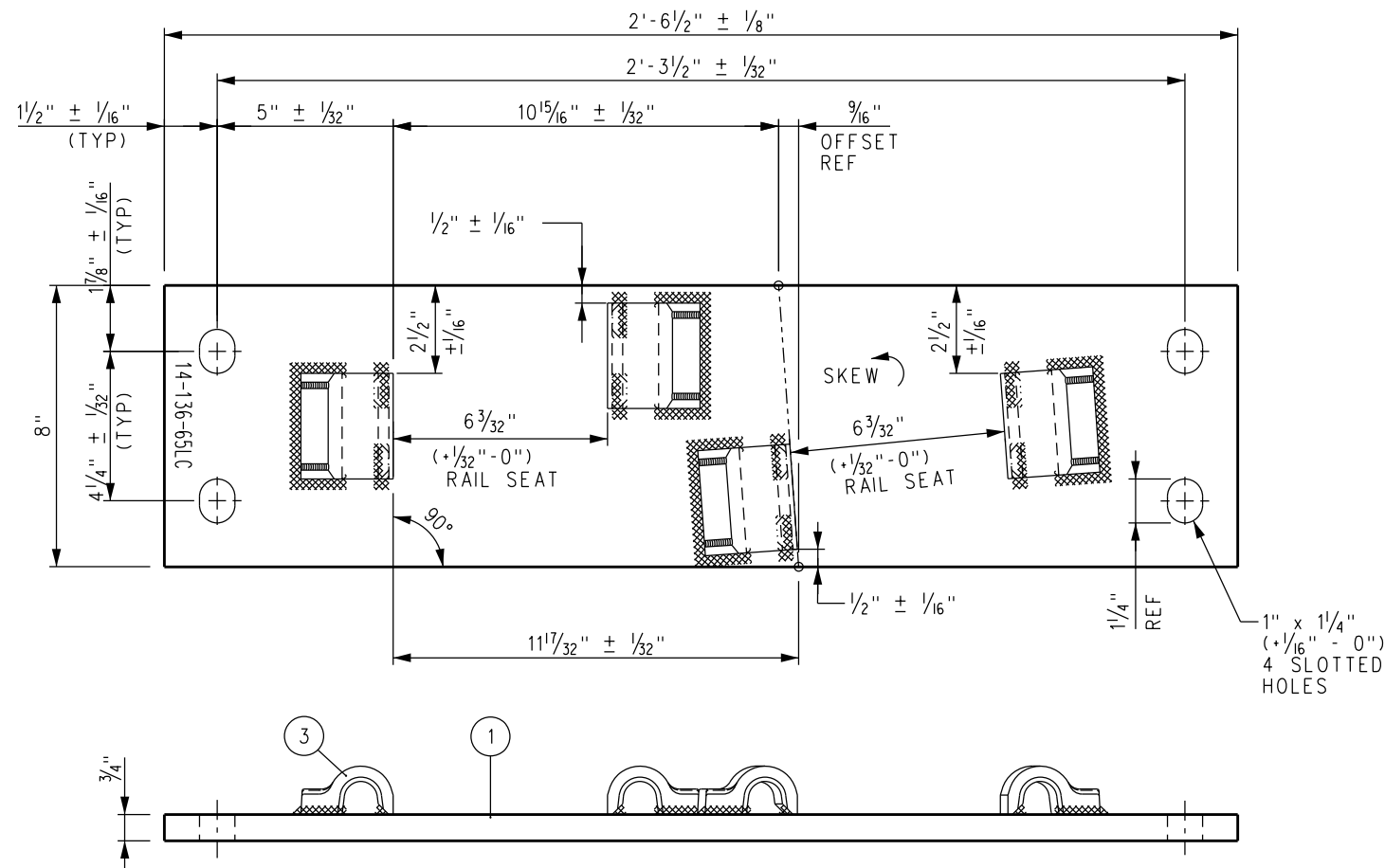
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 14 WSM FROG RH
 FROG BASE PLATES 14-62RC AND 14-64RC
 CONCRETE TIES-136 LB RE RAIL

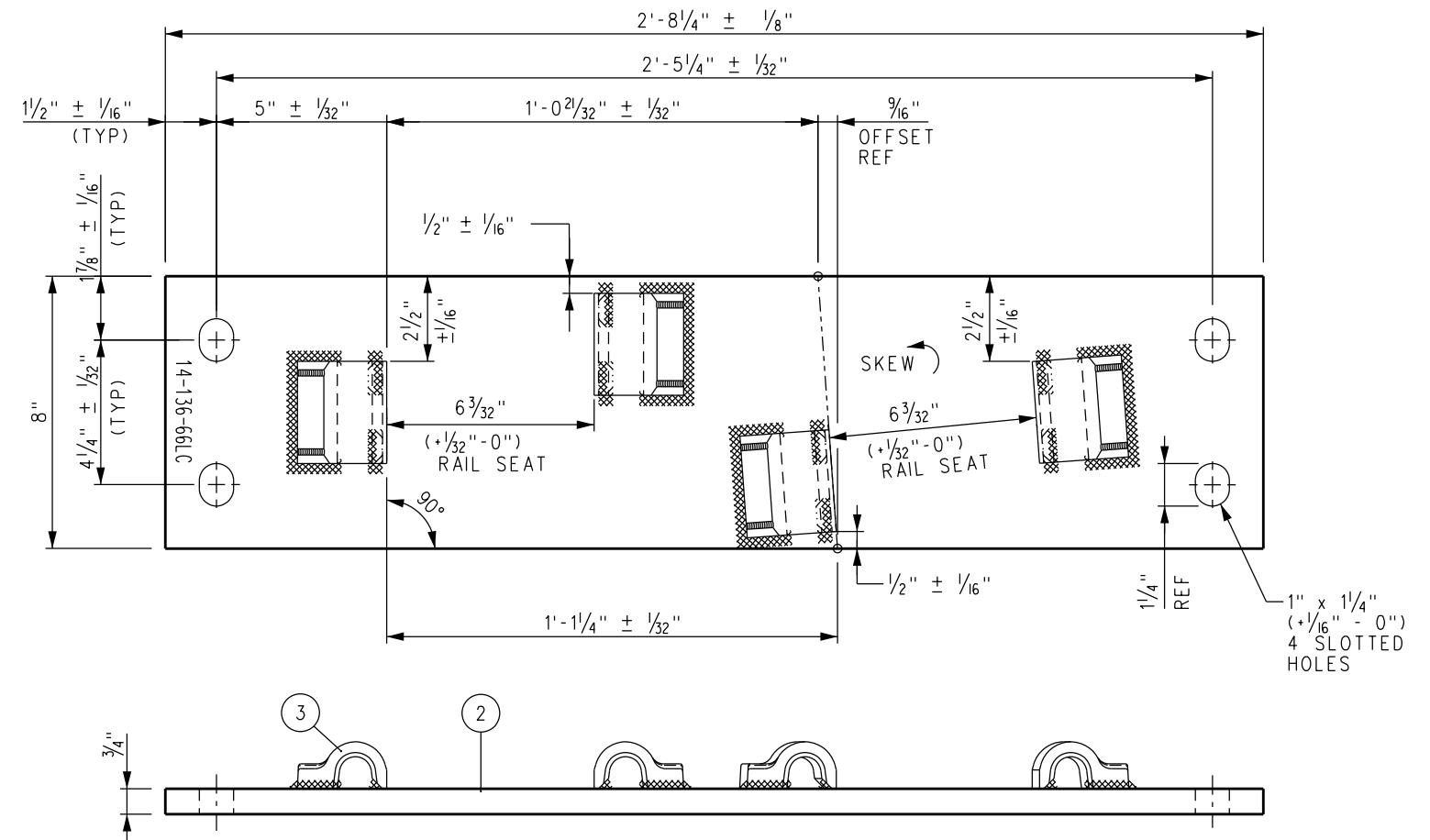
| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-50 |

BILL OF MATERIAL

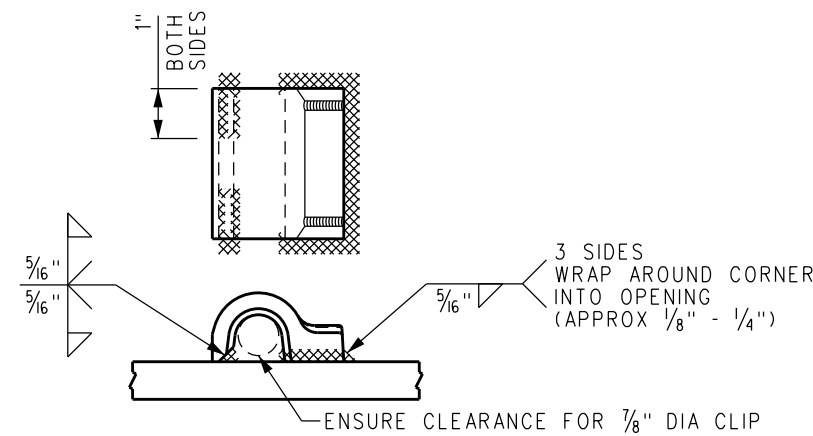
| ITEM | QTY FOR 14-136-65LC | QTY FOR 14-136-66LC | DESCRIPTION | DWG NO | SCRRRA PART NO |
|------|---------------------|---------------------|--|--------|----------------|
| 1 | 1 | 0 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/2" LONG | - | |
| 2 | 0 | 1 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8 1/4" LONG | - | |
| 3 | 4 | 4 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |



FROG BASE PLATE 14-136-65LC



FROG BASE PLATE 14-136-66LC



FORGED SHOULDER WELDING DETAIL

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Narek D. Bae* HDR DATE: 03/31/2011
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William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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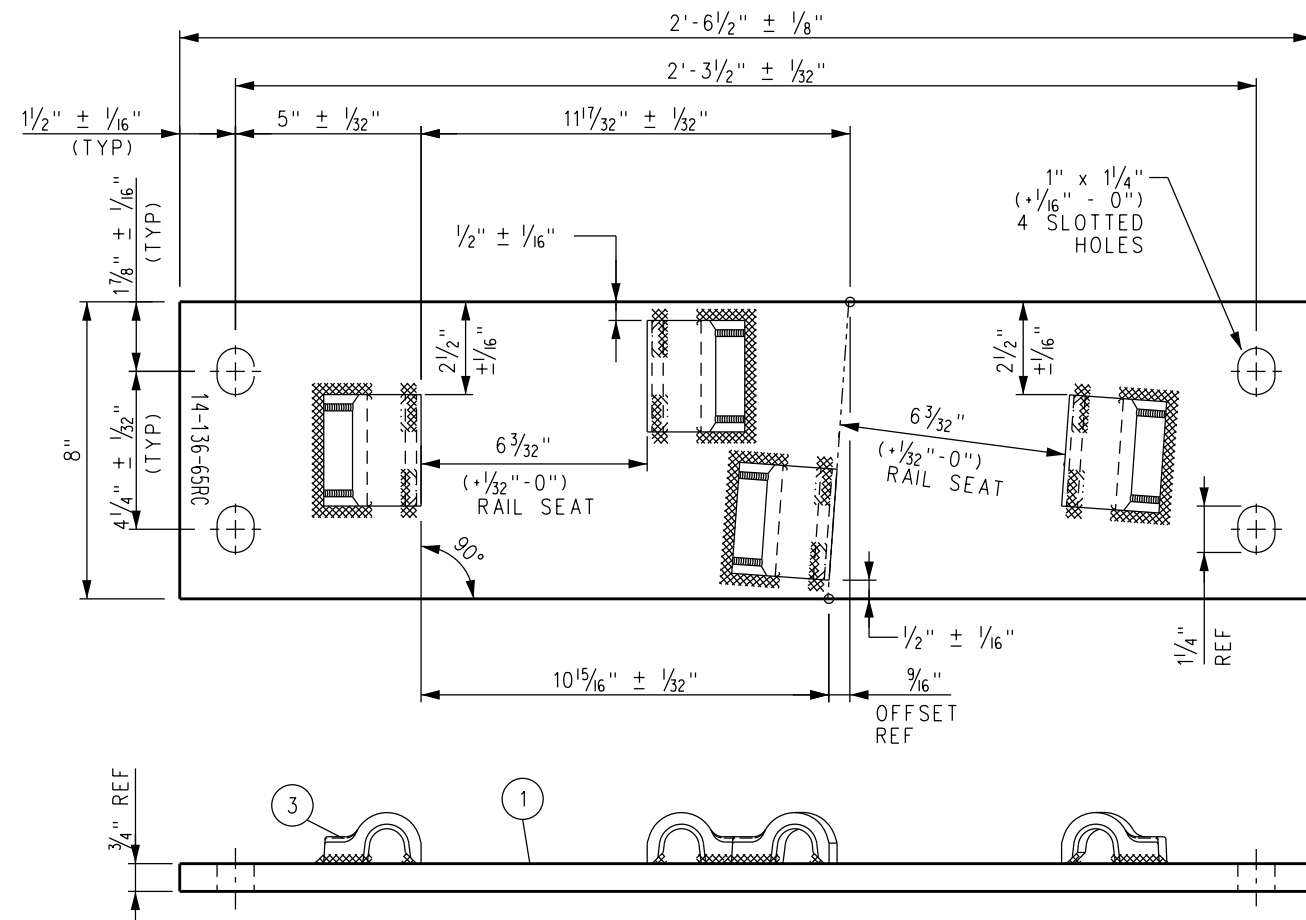
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 14 WSM FROG LH
 FROG BASE PLATES 14-65LC AND 14-66LC
 CONCRETE TIES-136 LB RE RAIL

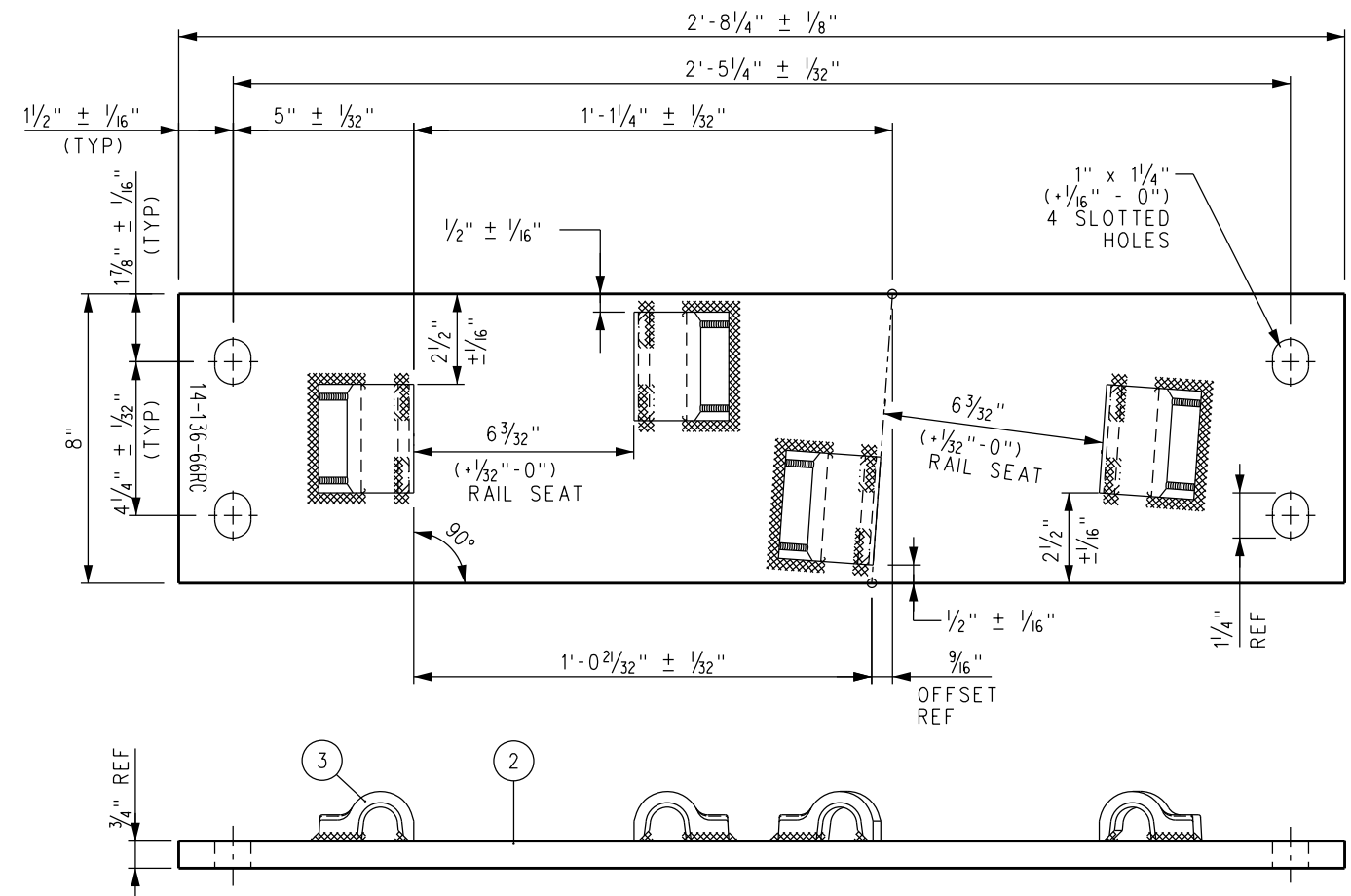
| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-51 |

BILL OF MATERIAL

| ITEM | QTY FOR 14-136-65RC | QTY FOR 14-136-66RC | DESCRIPTION | DWG NO | SCRR PART NO |
|------|---------------------|---------------------|--|--------|--------------|
| 1 | 1 | 0 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/2" LONG | - | |
| 2 | 0 | 1 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8 1/4" LONG | - | |
| 3 | 4 | 4 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 | - | |



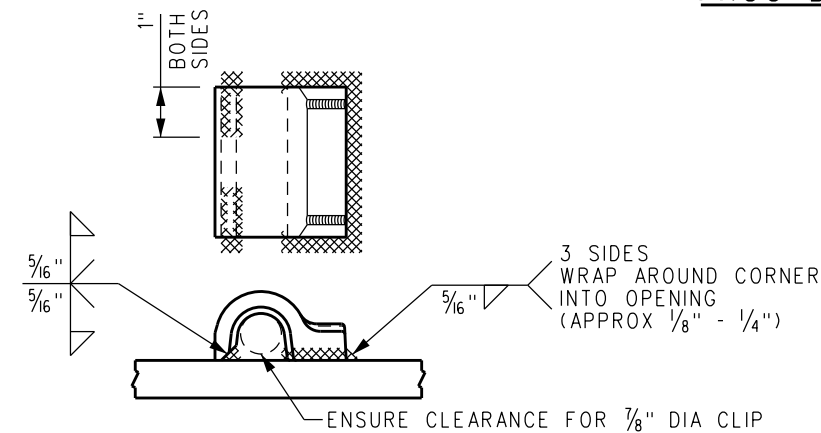
FROG BASE PLATE 14-136-65RC



FROG BASE PLATE 14-136-66RC

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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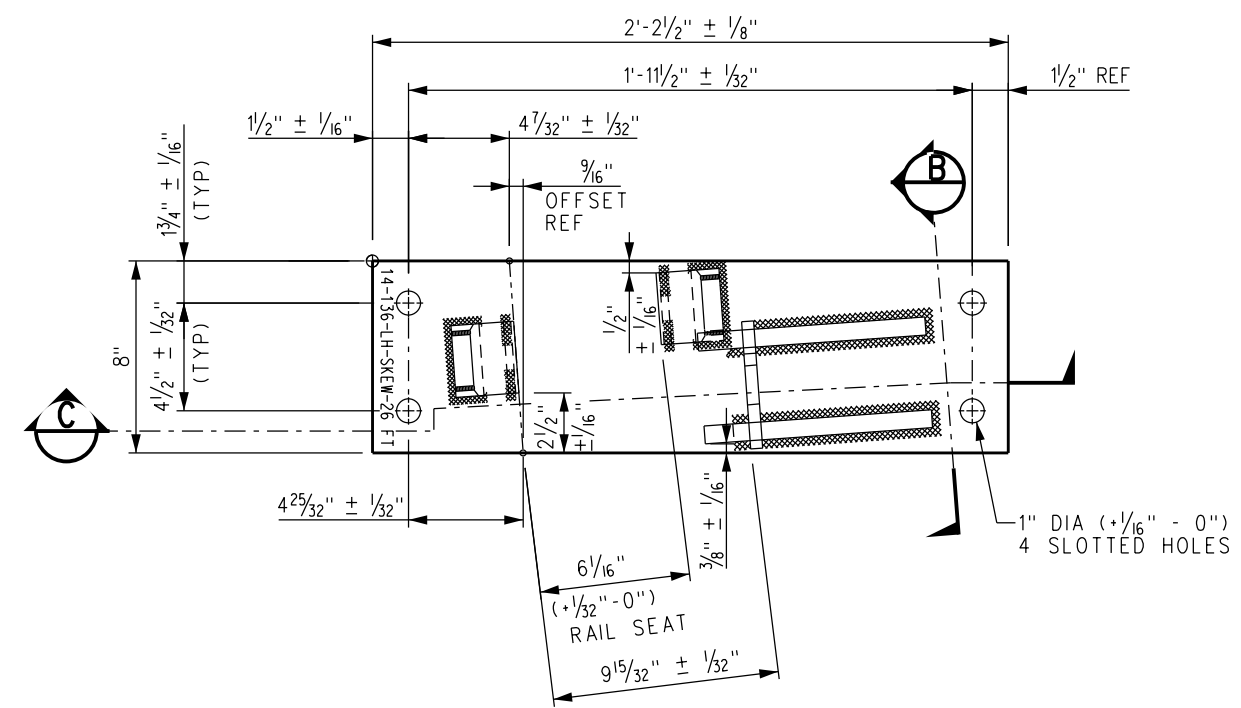
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 14 WSM FROG RH
 FROG BASE PLATES 14-65RC AND 14-66RC
 CONCRETE TIES-136 LB RE RAIL

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-52 |

BILL OF MATERIAL

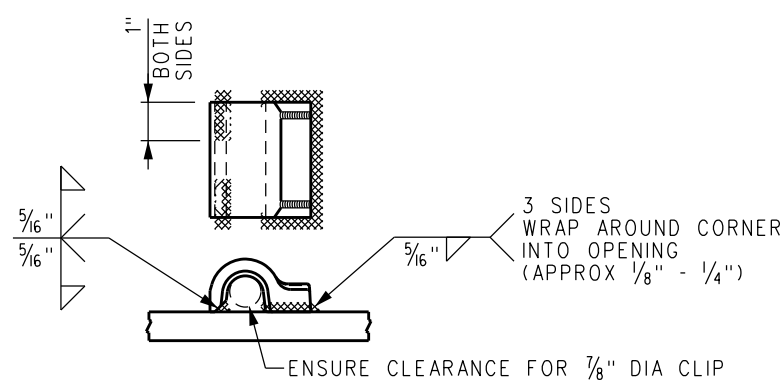
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|--------|--------------|
| 1 | 1 | GUARD BAR, UIC33 1200 SERIES x 26'-0" LONG | - | |
| 2 | 12 | GUARD RAIL PLATE ASSEMBLY, RAISED 1", LH SKEWED | - | |
| 3 | 12 | H-CLAMP | - | |
| 4 | 36 | CLIP, PANDROL, E2055 | - | |
| 5 | 12 | LOCKING BLOCK | - | |
| 6 | 48 | SHIM, 1/8" THICK x 3" x 6" LONG | - | |



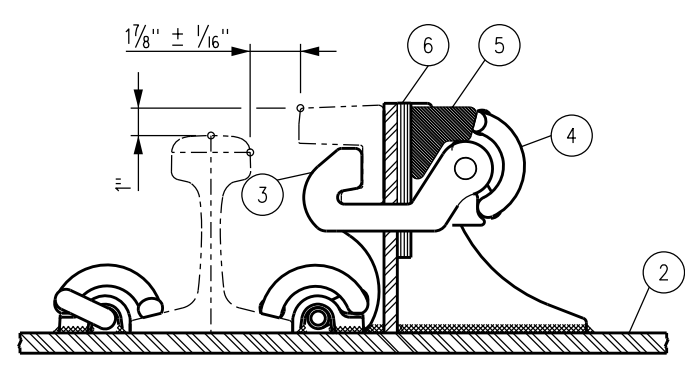
GUARD RAIL PLATE ASSEMBLY

NOTES:

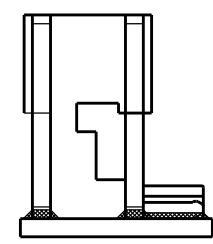
1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING IS TO BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION.
2. PANDROL SPRING CLIPS (E2055) TO BE INCLUDED IN ASSEMBLY.
3. LIFT POINTS AND WEIGHT OF ASSEMBLY TO BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT.
4. PLATE IS TO BE STAMPED WITH PLATE I.D. WITH 1/2" HIGH CHARACTERS AS SHOWN.
5. GRIND AWAY CORNER OF PANDROL SHOULDER TO CLEAR FOOT OF CHAIR ASSEMBLY.
6. SEE ES2800-50 FOR STRAIGHT SIDE GUARD RAIL.



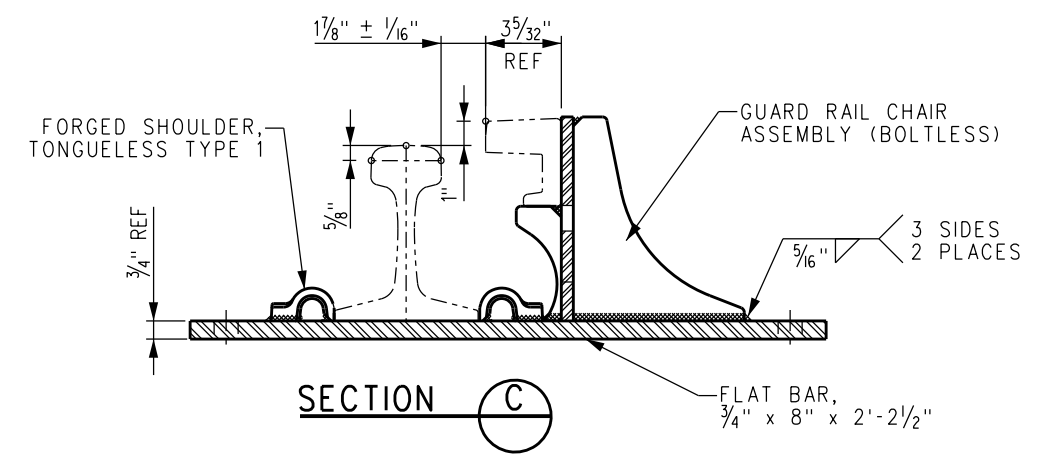
FORGED SHOULDER WELDING DETAIL



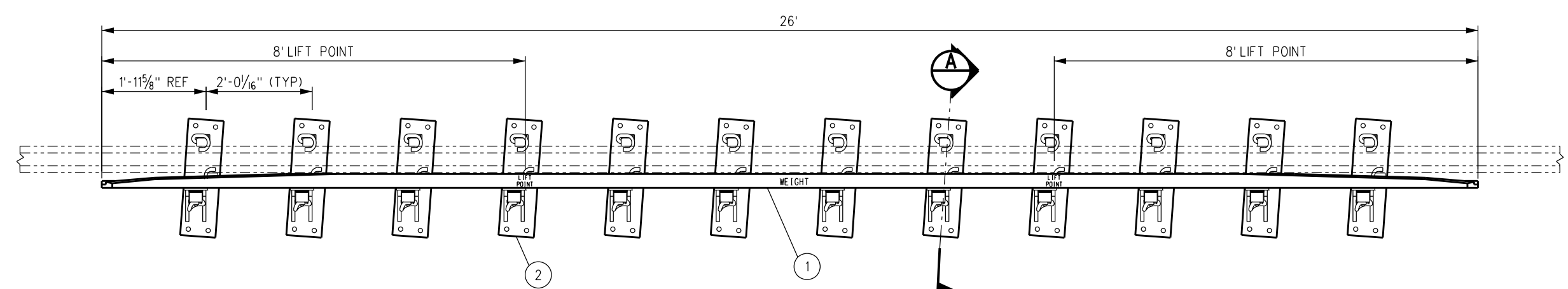
PARTIAL SECTION A
GUARD RAIL HARDWARE ASSEMBLY



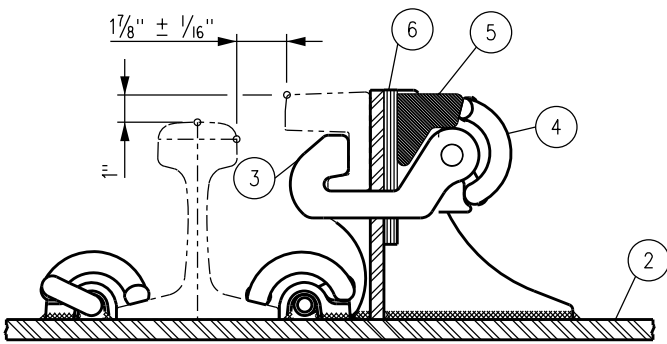
VIEW B



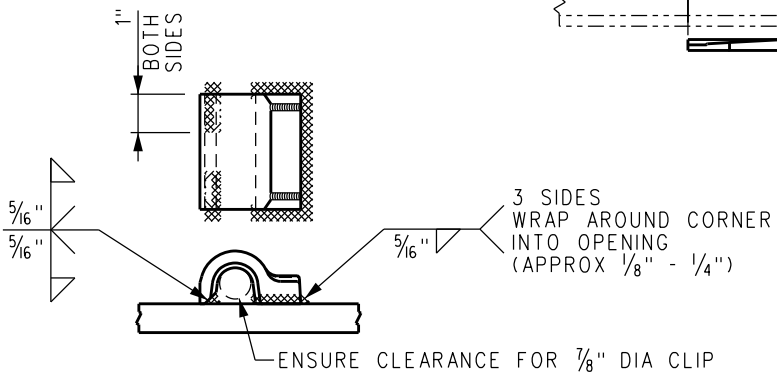
SECTION C



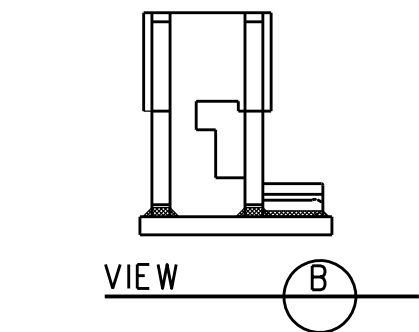
| | | | | | |
|---|--|---|--|--|---|
| DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011 ASSISTANT DIRECTOR- STANDARDS & DESIGN | | SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED. | SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012 | ENGINEERING STANDARDS NO 14 GUARD RAIL ASSEMBLY, LH SKEWED WITH PLATES 26'-0" LONG, BOLTLESS, RAISED 1" CONCRETE TIES-136 LB RE RAIL, 1-7/8" FLANGEWAY | STANDARD 2805 |
| REV. DATE DESCRIPTION DES. ENG. | | | | | SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2805-61 |



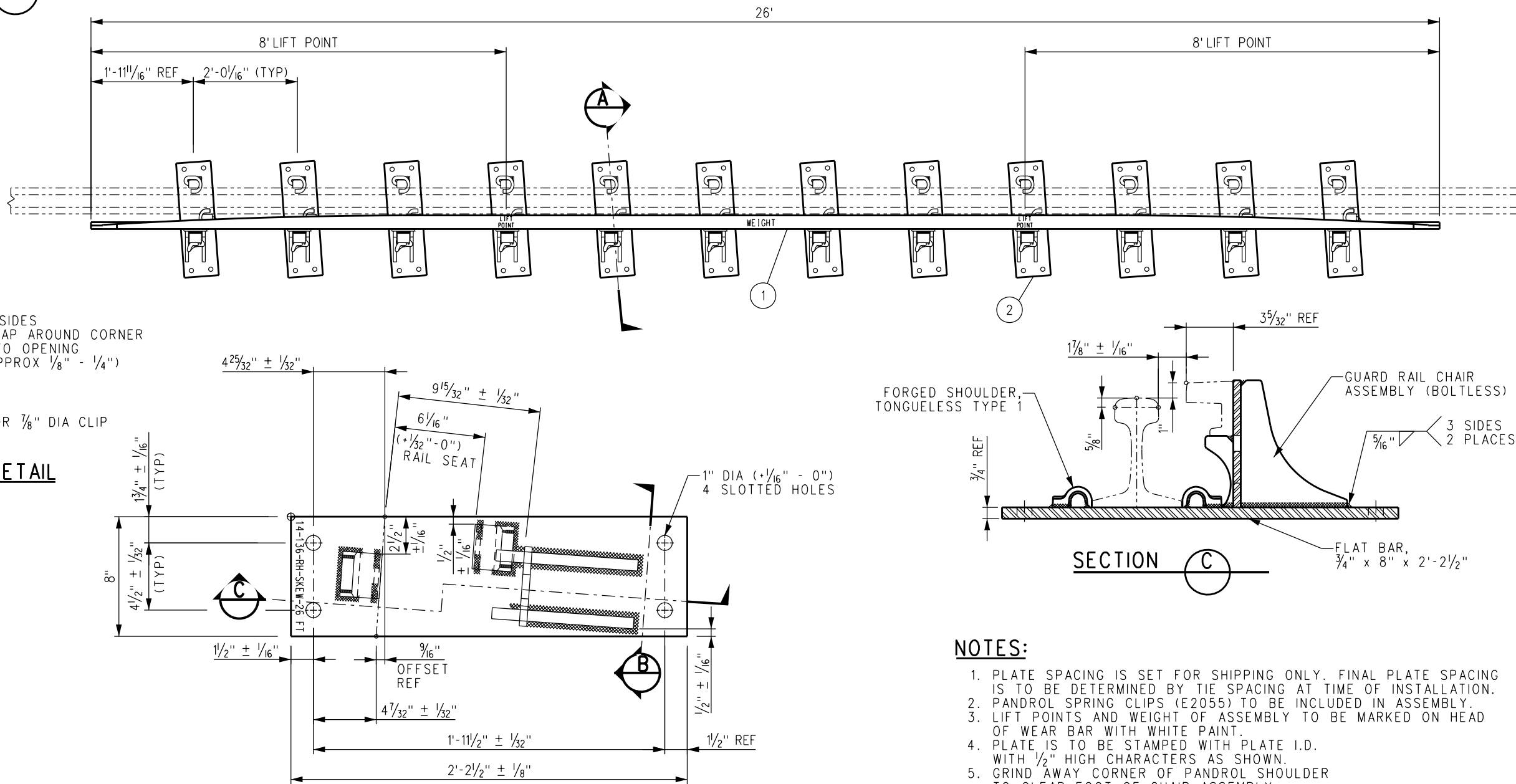
PARTIAL SECTION A
GUARD RAIL HARDWARE ASSEMBLY



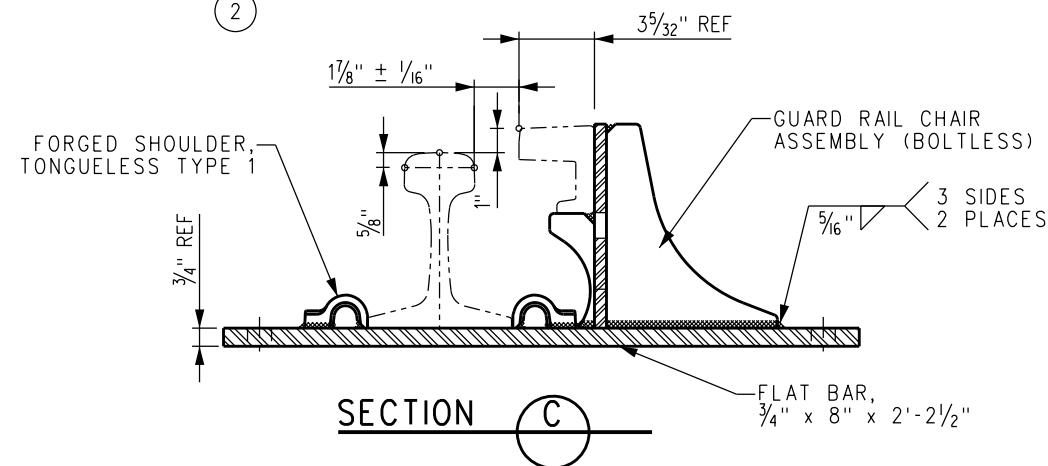
FORGED SHOULDER WELDING DETAIL



VIEW B



GUARD RAIL PLATE ASSEMBLY



SECTION C

NOTES:

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING IS TO BE DETERMINED BY TIE 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 IS TO BE STAMPED WITH PLATE I.D. WITH 1/2" HIGH CHARACTERS AS SHOWN.
5. GRIND AWAY CORNER OF PANDROL SHOULDER TO CLEAR FOOT OF CHAIR ASSEMBLY.
6. SEE ES2800-50 FOR STRAIGHT SIDE GUARD RAIL.

| BILL OF MATERIAL | | | DWG NO | SCRR PART NO |
|------------------|-----|---|--------|--------------|
| ITEM | QTY | DESCRIPTION | | |
| 1 | 1 | GUARD BAR, UIC33 1200 SERIES x 26'-0" LONG | - | |
| 2 | 12 | GUARD RAIL PLATE ASSEMBLY, RAISED 1", RH SKEWED | - | |
| 3 | 12 | H-CLAMP | - | |
| 4 | 36 | CLIP, PANDROL, E2055 | - | |
| 5 | 12 | LOCKING BLOCK | - | |
| 6 | 48 | SHIM, 1/8" THICK x 3" x 6" LONG | - | |

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

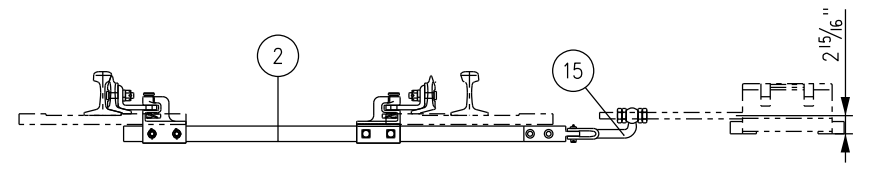
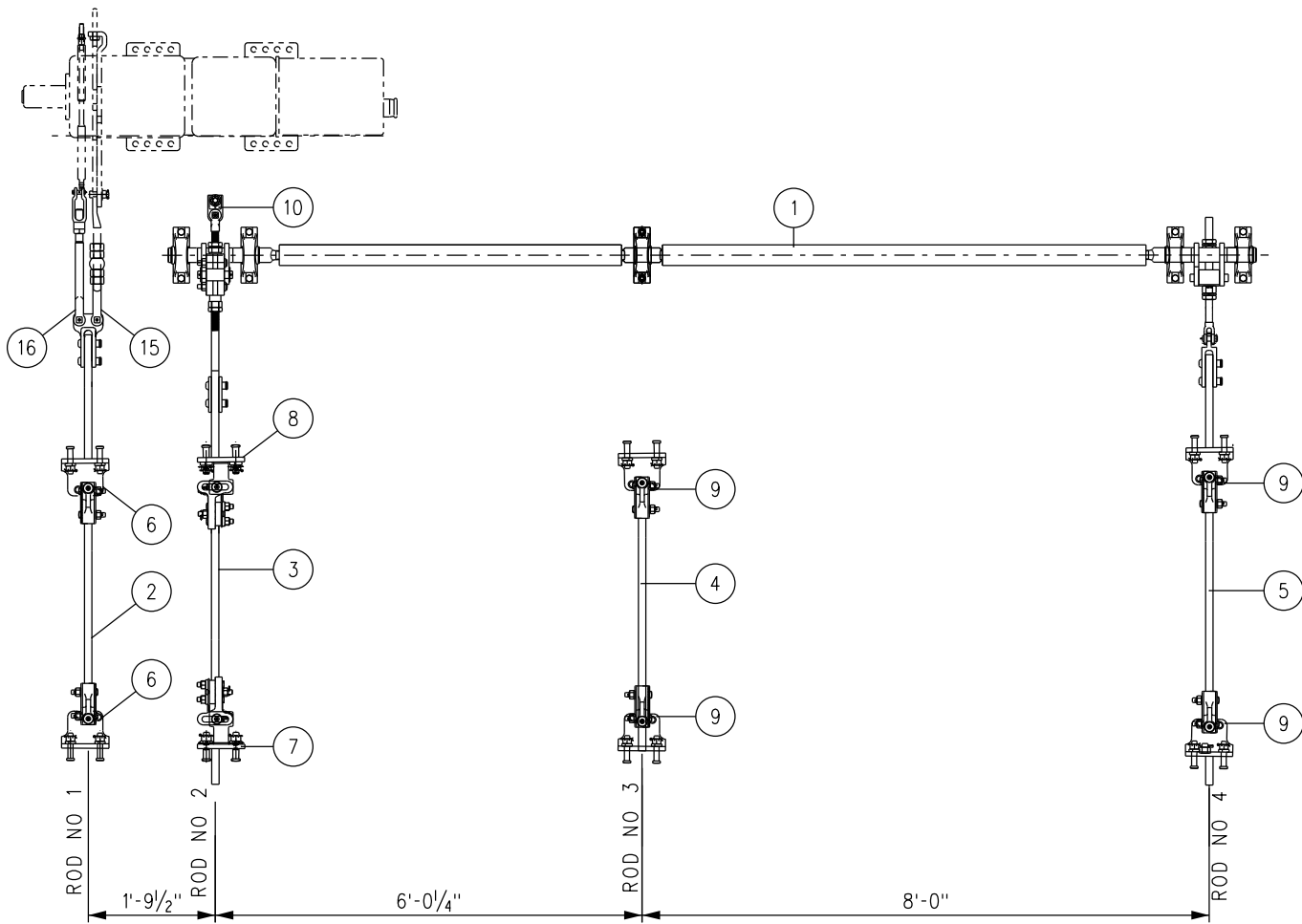
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

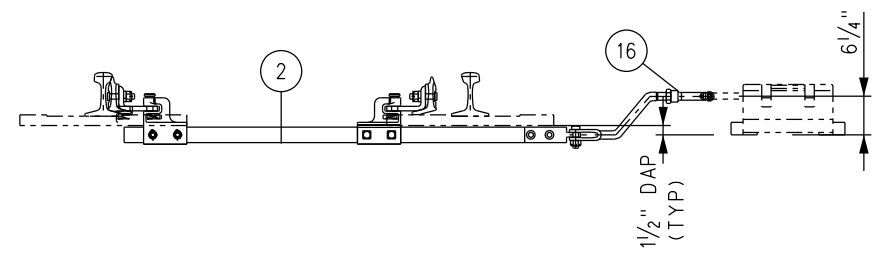
ENGINEERING STANDARDS
 NO 14 GUARD RAIL ASSEMBLY,
 RH SKEWED WITH PLATES
 26'-0" LONG, BOLTLESS, RAISED 1"
 CONCRETE TIES-136 LB RE RAIL, 1-7/8" FLANGEWAY

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-62 |



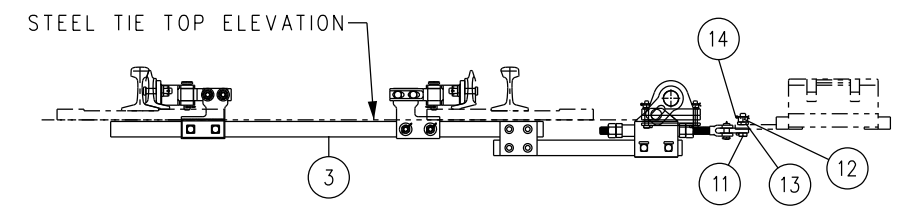
SWITCH ROD ASSEMBLY NO 1

LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



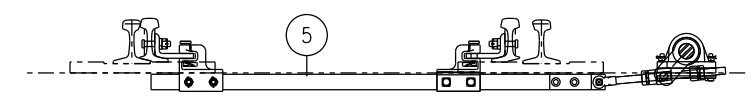
SWITCH ROD ASSEMBLY NO 1

POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



DRIVE ROD (ROD NO 2) ASSEMBLY

FRONT HELPER ROD CRANK ATTACHES TO BASKET
(VIEW FROM HEEL TOWARDS PS)



REAR HELPER (ROD NO 4) DRIVE ROD ASSEMBLY

REAR HELPER ROD CRANK ATTACHES TO ROD PIN

BILL OF MATERIAL

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|-----------|--------------|
| 1 | 1 | ROTARY ASSIST ASSEMBLY FOR NO 14-136 LB RE TURNOUT | - | |
| 2 | 1 | SWITCH ROD NO 1, FOR POINT DETECTOR/LOCK ROD, (14-136-1) | ES2805-73 | |
| 3 | 1 | SWITCH ROD NO 2, DRIVE, C/W BASKET (14-136-2) | ES2805-73 | |
| 4 | 1 | SWITCH ROD NO 3, THROW, (14-136-3) | ES2805-73 | |
| 5 | 1 | SWITCH ROD NO 4, THROW, (14-136-4) | ES2805-73 | |
| 6 | 2 | ROD POINT BRACKET, DETECTOR/LOCK ROD, HOLES AT 2 7/8" ARB* | - | |
| 7 | 1 | ROD POINT BRACKET, THROW ROD, ANTI-ROLL, HOLES AT 2 7/8" ARB*, LH | - | |
| 8 | 1 | ROD POINT BRACKET, THROW ROD, ANTI-ROLL, HOLES AT 2 7/8" ARB*, RH | - | |
| 9 | 4 | ROD POINT BRACKET, HOLES AT 2 3/8" ARB*, C/W SQ BOLTS | - | |
| 10 | 1 | DROP LUG FOR US&S M23 SWITCH MACHINE DRIVE BAR | - | |
| 11 | 1 | BOLT, 7/8" DIA x 3" LONG, DRILLED 2 9/16" BELOW HEAD, HEAVY HEX, GR 5 | - | |
| 12 | 1 | NUT, 7/8" DIA SLOTTED HEAVY HEX, GR 8 | - | |
| 13 | 1 | SPRING WASHER, 7/8" DIA | - | |
| 14 | 1 | COTTER PIN, 3/16" DIA x 1 3/4" LONG | - | |
| 15 | 1 | LOCK ROD, FOR M23 SWITCH MACHINE, HST | - | |
| 16 | 1 | DETECTOR ROD, FOR M23 SWITCH MACHINE, HST | - | |

ARB* - ABOVE RAIL BASE

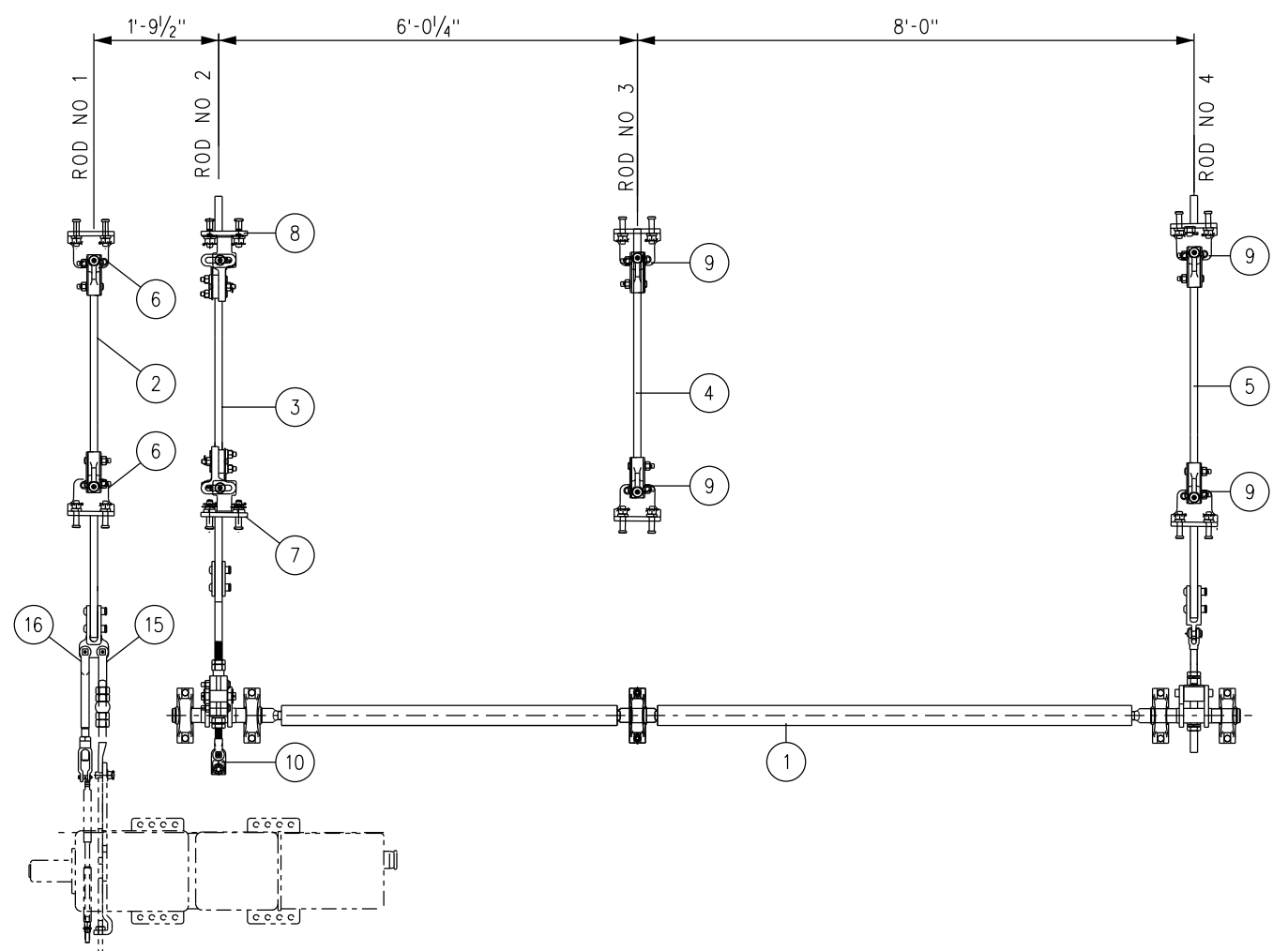
| | | | | | |
|--|----------|--|------|------------------|--|
| DRAWN BY: <i>Nareh D. Papp</i> | | HDR: <i>Wilson Davan</i> | | DATE: 03/31/2011 | |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | |
| XX | XX-XX-XX | REVISION | XX | XX | |
| REV. | DATE | DESCRIPTION | DES. | ENG. | |

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

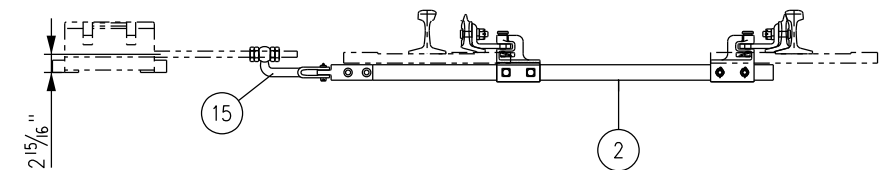
ENGINEERING STANDARDS
HOLLOW STEEL TIE RODDING ASSEMBLY
SWITCH MACHINE ON LEFT HAND SIDE
NO 14-136 LB RE SPRING FROG TURNOUT

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-71 |



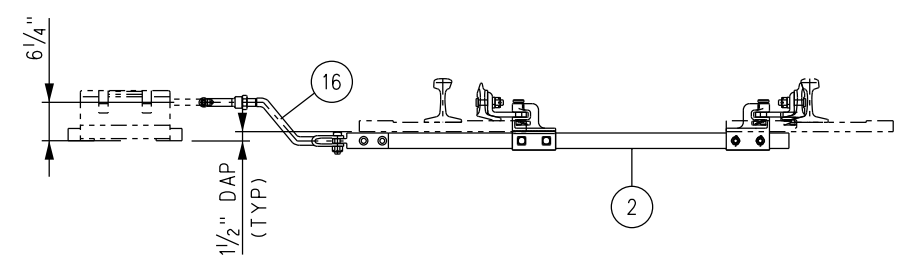
| BILL OF MATERIAL | | | | |
|------------------|-----|---|-----------|----------------|
| ITEM | QTY | DESCRIPTION | DWG NO | SCRRRA PART NO |
| 1 | 1 | ROTARY ASSIST ASSEMBLY FOR NO 14-136 LB RE TURNOUT | - | |
| 2 | 1 | SWITCH ROD NO 1, FOR POINT DETECTOR/LOCK ROD, (14-136-1) | ES2805-73 | |
| 3 | 1 | SWITCH ROD NO 2, DRIVE, C/W BASKET (14-136-2) | ES2805-73 | |
| 4 | 1 | SWITCH ROD NO 3, THROW, (14-136-3) | ES2805-73 | |
| 5 | 1 | SWITCH ROD NO 4, THROW, (14-136-4) | ES2805-73 | |
| 6 | 2 | ROD POINT BRACKET, DETECTOR/LOCK ROD, HOLES AT 2 7/8" ARB* | - | |
| 7 | 1 | ROD POINT BRACKET, THROW ROD, ANTI-ROLL, HOLES AT 2 7/8" ARB*, LH | - | |
| 8 | 1 | ROD POINT BRACKET, THROW ROD, ANTI-ROLL, HOLES AT 2 7/8" ARB*, RH | - | |
| 9 | 4 | ROD POINT BRACKET, HOLES AT 2 3/8" ARB*, C/W SQ BOLTS | - | |
| 10 | 1 | DROP LUG FOR US&S M23 SWITCH MACHINE DRIVE BAR | - | |
| 11 | 1 | BOLT, 7/8" DIA x 3" LONG, DRILLED 2 9/16" BELOW HEAD, HEAVY HEX, GR 5 | - | |
| 12 | 1 | NUT, 7/8" DIA SLOTTED HEAVY HEX, GR 8 | - | |
| 13 | 1 | SPRING WASHER, 7/8" DIA | - | |
| 14 | 1 | COTTER PIN, 3/16" DIA x 1 3/4" LONG | - | |
| 15 | 1 | LOCK ROD, FOR M23 SWITCH MACHINE, HST | - | |
| 16 | 1 | DETECTOR ROD, FOR M23 SWITCH MACHINE, HST | - | |

ARB* - ABOVE RAIL BASE



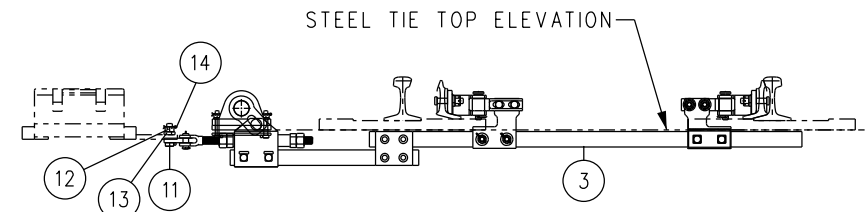
SWITCH ROD ASSEMBLY NO 1

LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



SWITCH ROD ASSEMBLY NO 1

POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



DRIVE ROD (ROD NO 2) ASSEMBLY

FRONT HELPER ROD CRANK ATTACHES TO BASKET
(VIEW FROM HEEL TOWARDS PS)



REAR HELPER (ROD NO 4) DRIVE ROD ASSEMBLY

REAR HELPER ROD CRANK ATTACHES TO ROD PIN

| REV. | DATE | DESCRIPTION | DES. | ENG. |
|------|----------|-------------|------|------|
| X | XX-XX-XX | REVISION | XX | XX |

DRAWN BY: HDR DATE: 03/31/2011
Nareh D. Papp
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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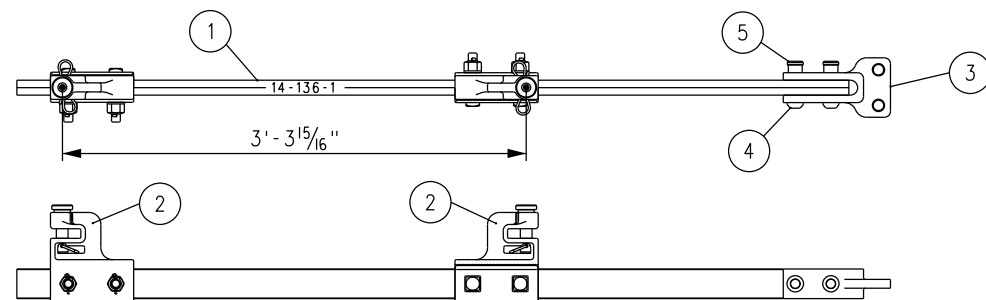
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 HOLLOW STEEL TIE RODDING ASSEMBLY
 SWITCH MACHINE ON RIGHT HAND SIDE
 NO 14-136 LB RE SPRING FROG TURNOUT

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-72 |

BILL OF MATERIAL FOR SWITCH ROD 14-136-1

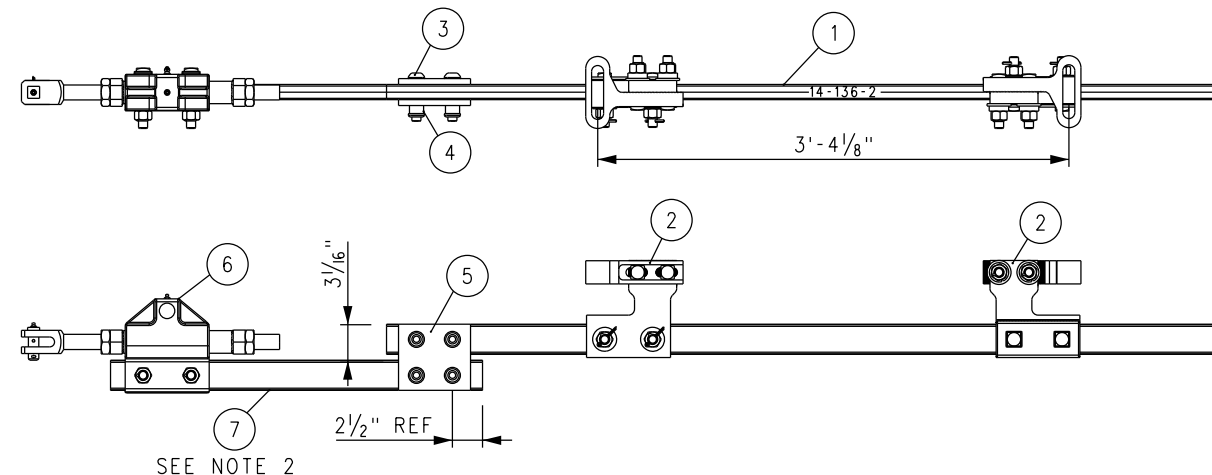
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|--------|--------------|
| 1 | 1 | SWITCH ROD 14-136-1 | - | |
| 2 | 2 | SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIE COMPOSITE RODS | - | |
| 3 | 1 | CONNECTOR LUG FOR POINT DETECTOR/LOCK RODS | - | |
| 4 | 2 | HUCK BOLT, 3/4" DIA (C50LR-BR24-36) | - | |
| 5 | 2 | HUCK COLLAR, 3/4" DIA (LC-2R24B) | - | |



SWITCH ROD ASSEMBLY 14-136-1

BILL OF MATERIAL FOR SWITCH ROD 14-136-2

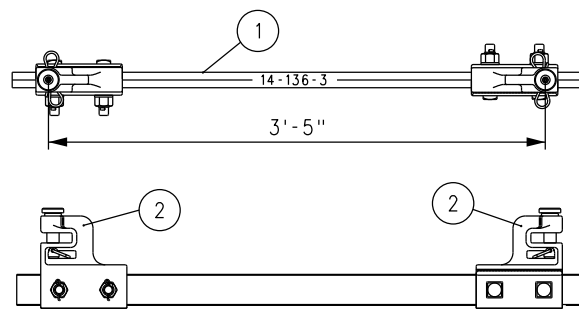
| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|---|--------|--------------|
| 1 | 1 | BLUE ROD, PULTRUDED COMPOSITE, 1/4" x 2 1/2" x 5'-10" LONG, 14-136-2A | - | |
| 2 | 2 | CLIP/LUG ASSEMBLY, HST SWITCH, ANTI-ROLLOVER DESIGN, LH | - | |
| 3 | 4 | HUCK BOLT, 3/4" DIA (C50LR-BR24-36) | - | |
| 4 | 4 | HUCK COLLAR, 3/4" DIA (LC-2R24B) | - | |
| 5 | 2 | SPLICE PLATE, FOR BLUE ROD BASKET ASSEMBLY RODS | - | |
| 6 | 1 | BASKET/ROD ASSEMBLY FOR HST WITH ROTARY ASSIST | - | |
| 7 | 1 | BLUE ROD, PULTRUDED COMPOSITE, 1/4" x 2 1/2" x 2'-7" LONG, 2-B ROD | - | |



SWITCH ROD ASSEMBLY 14-136-2

BILL OF MATERIAL FOR SWITCH ROD 14-136-3

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|--|--------|--------------|
| 1 | 1 | SWITCH ROD 14-136-3 | - | |
| 2 | 2 | SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIE | - | |



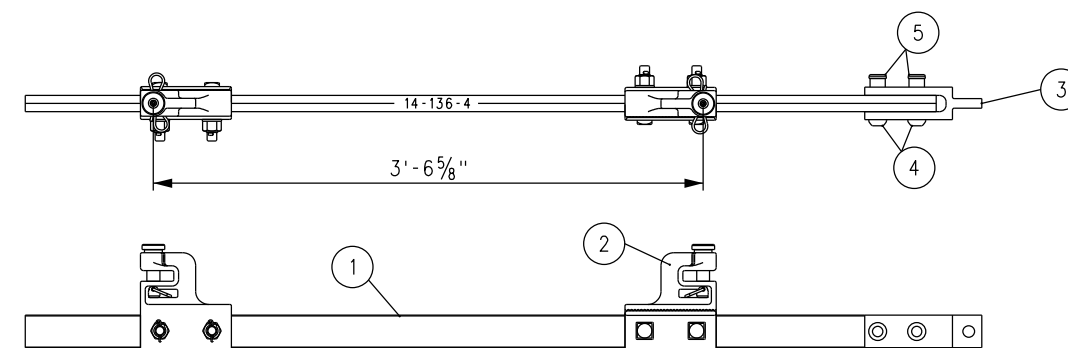
SWITCH ROD ASSEMBLY 14-136-3

NOTE: CENTER TO CENTER PIN DIMENSIONS REQUIRED FOR 4 3/4" THROW

| ROD # | C-C PIN DIMENSION |
|-------|-------------------|
| 1 | 3'-3 15/16" |
| 2 | 3'-4 1/8" |
| 3 | 3'-5" |
| 4 | 3'-6 5/8" |

BILL OF MATERIAL FOR SWITCH ROD 14-136-4

| ITEM | QTY | DESCRIPTION | DWG NO | SCRR PART NO |
|------|-----|-------------------------------------|--------|--------------|
| 1 | 1 | SWITCH ROD 14-136-4 | - | |
| 2 | 2 | SWITCH CLIP ASSEMBLY, ADJUSTABLE | - | |
| 3 | 1 | CONNECTOR LUG FOR REAR DRIVE ROD | - | |
| 4 | 2 | HUCK BOLT, 3/4" DIA (C50LR-BR24-36) | - | |
| 5 | 2 | HUCK COLLAR, 3/4" DIA (LC-2R24B) | - | |



SWITCH ROD ASSEMBLY 14-136-4

NOTES:

1. ROD IDENTIFICATION TO BE ENGRAVED ON ROD CLEARLY AS SHOWN, 3/8" MIN HEIGHT.
2. SWITCH RODS MUST BE PARALLEL WITHIN 1/16" OVER LENGTH OF 2-B ROD.

| | | | | | |
|--|----------|--|------|------------------|--|
| DRAWN BY: <i>Narek D. Pape</i> | | HDR: <i>Willson Davan</i> | | DATE: 03/31/2011 | |
| ASSISTANT DIRECTOR: STANDARDS & DESIGN | | DIRECTOR OF ENGINEERING AND CONSTRUCTION | | | |
| REV. | DATE | DESCRIPTION | DES. | ENG. | |
| X | XX-XX-XX | REVISION | XX | XX | |

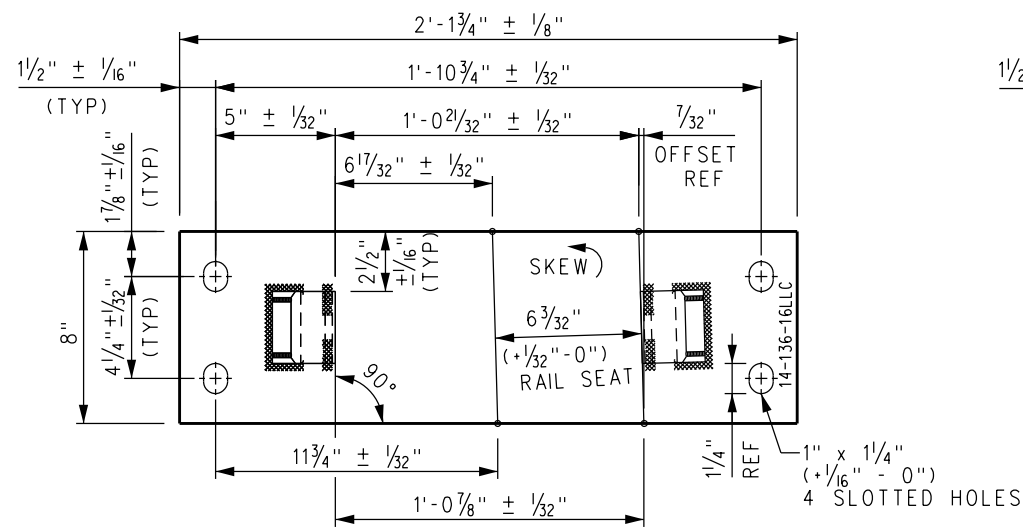
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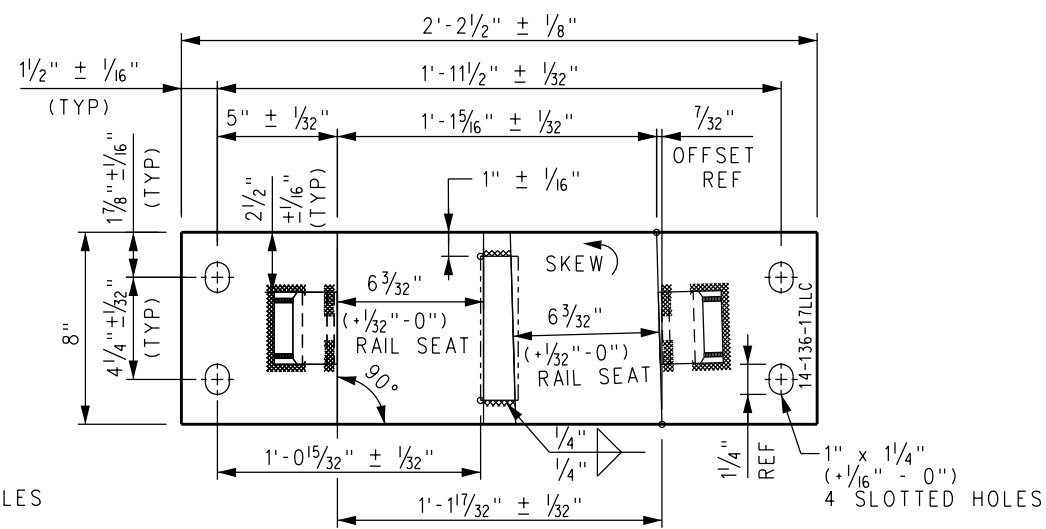
ENGINEERING STANDARDS

HOLLOW STEEL TIE SWITCH RODS
14-1, 14-2, 14-3 AND 14-4
NO 14-136 LB RE

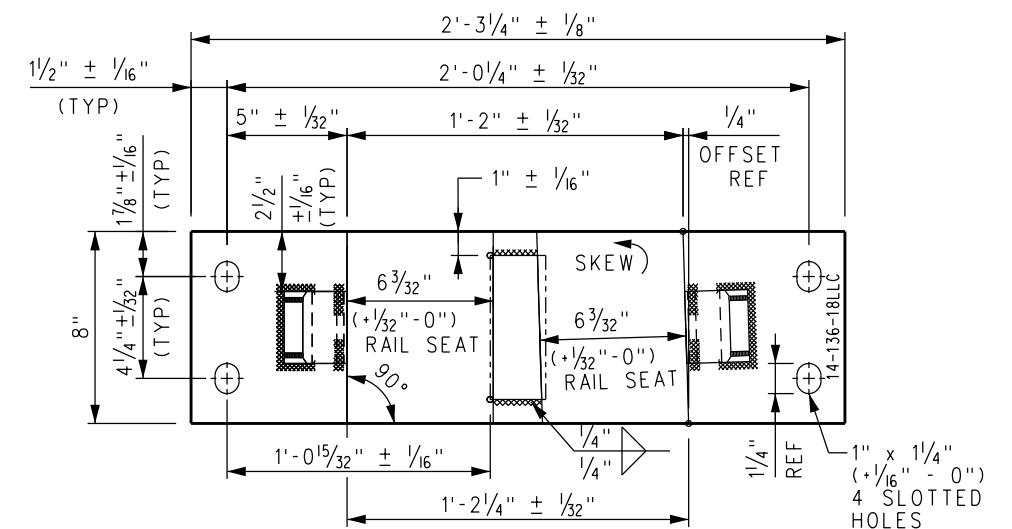
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|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-73 |



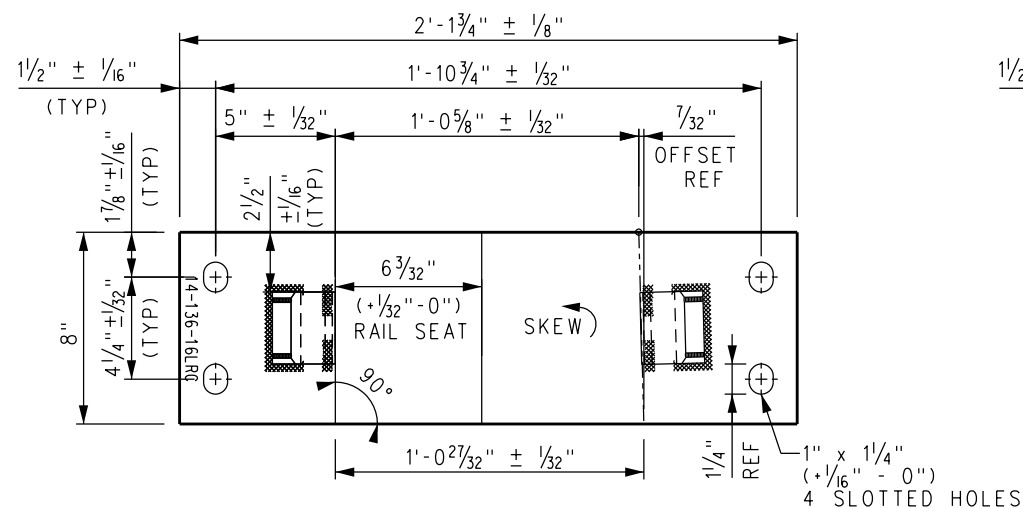
SWITCH PLATE P14-136-16LLC



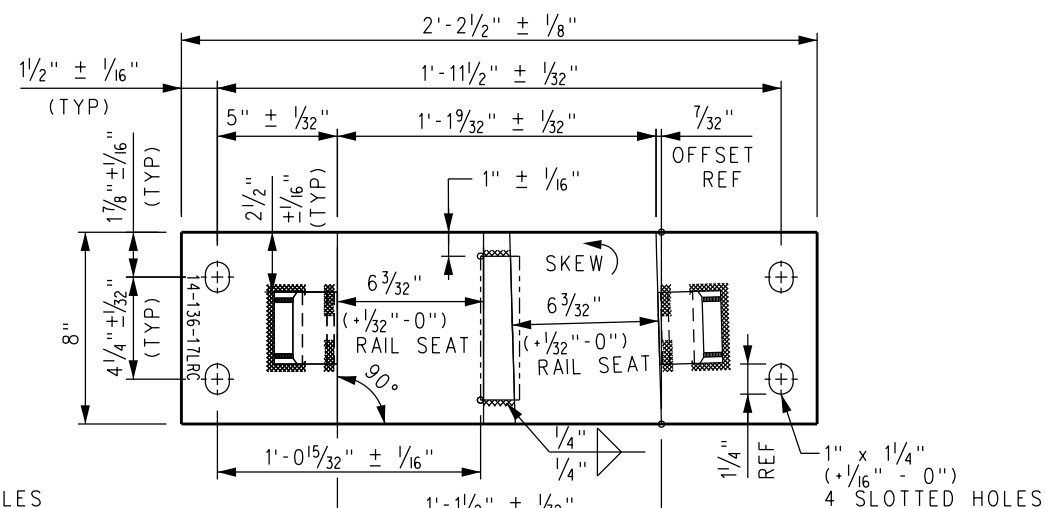
SWITCH PLATE P14-136-17LLC



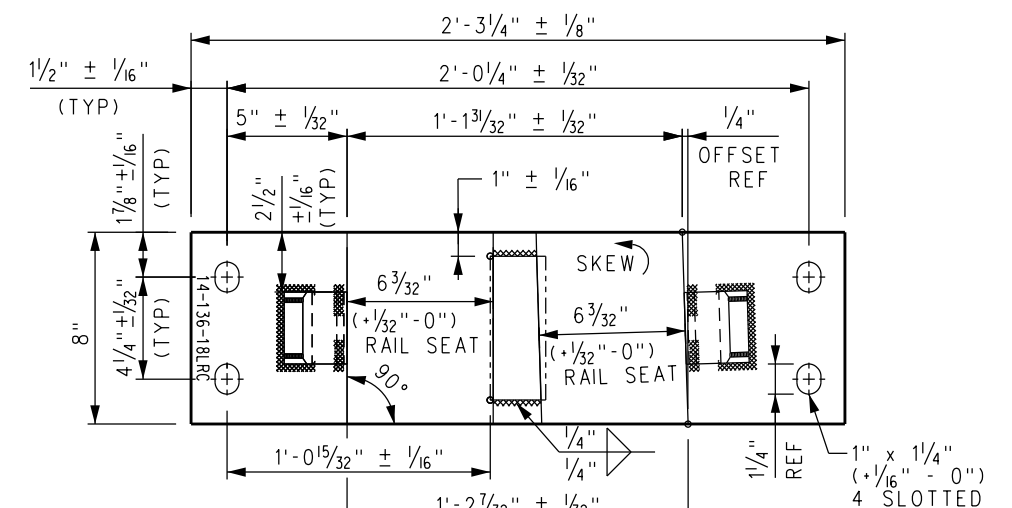
SWITCH PLATE P14-136-18LLC



SWITCH PLATE P14-136-16LRC



SWITCH PLATE P14-136-17LRC



SWITCH PLATE P14-136-18LRC

| BILL OF MATERIALS | |
|-------------------|--|
| ITEM | DESCRIPTION |
| 1 | FLAT BAR, ASTM A36, 1" x 8" x 2'-1 3/4" |
| 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 |
| 3 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5 |
| 4 | FLAT BAR, ASTM A36, 1" x 8" x 2'-2 1/2" |

| BILL OF MATERIALS | |
|-------------------|---|
| ITEM | DESCRIPTION |
| 5 | FLAT BAR, ASTM A36, 1/2" x 6" x 1 5/8" |
| 6 | FLAT BAR, ASTM A36, 1" x 8" x 2'-3 1/4" |
| 7 | FLAT BAR, ASTM A36, 1/2" x 6" x 2 5/16" |

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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.

| | | | | |
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| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

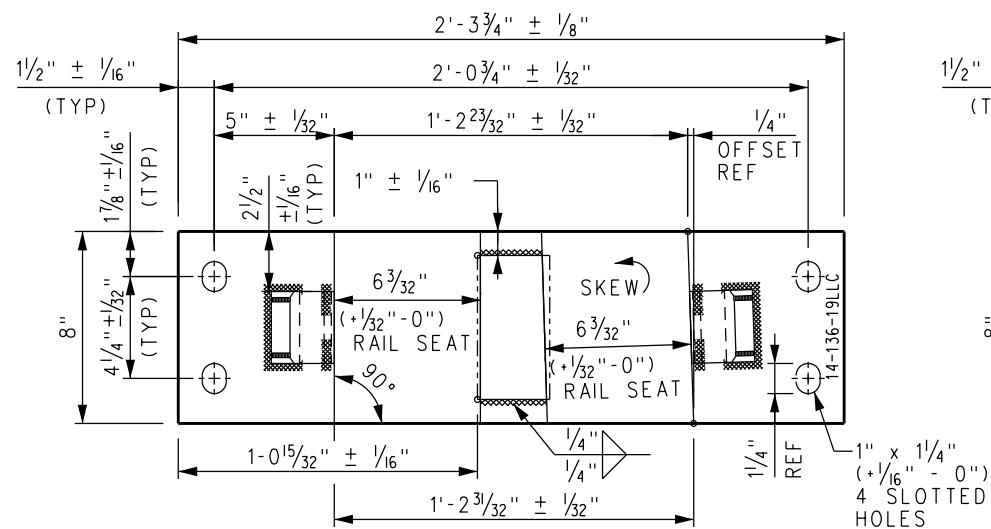
DRAWN BY: A. CARLOS DATE: 03/31/2011
Narex D. Pae
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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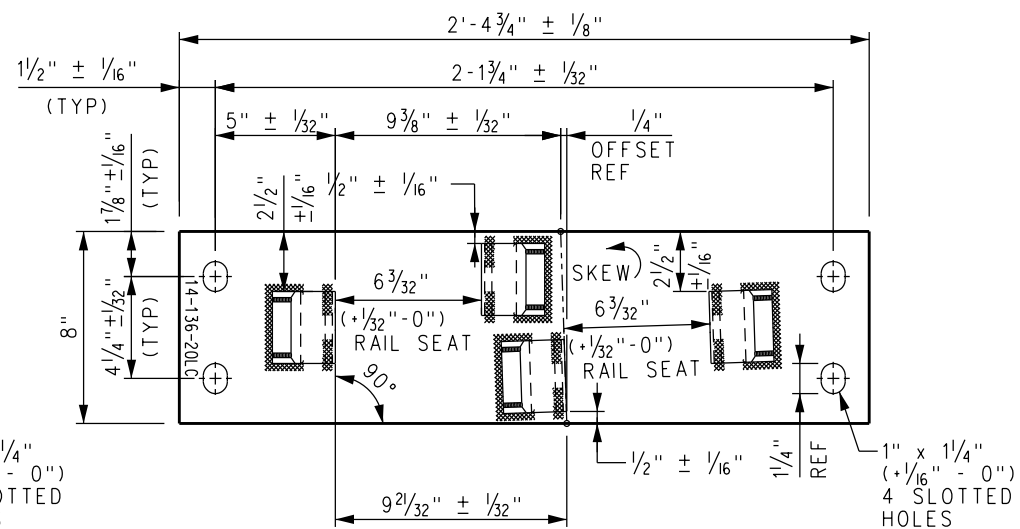
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS
 SWITCH PLATES
 (14-16LLC /LRC THROUGH 14-18LLC /LRC)
 FOR NO 14 136 LB RE LH CONCRETE TIE TURNOUT

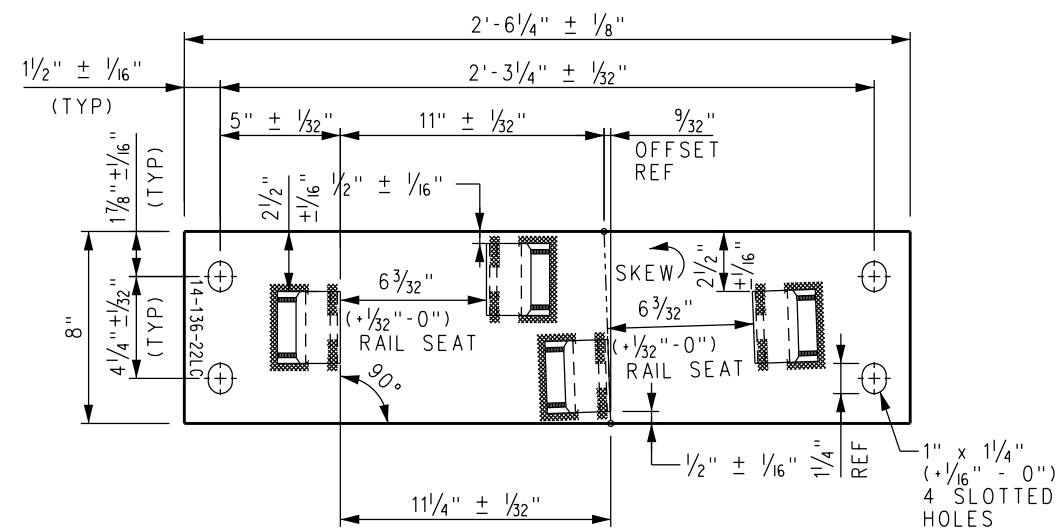
| | |
|-----------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION | SHEET |
| - | 1 OF 1 |
| CADD FILE | ES2805-81 |



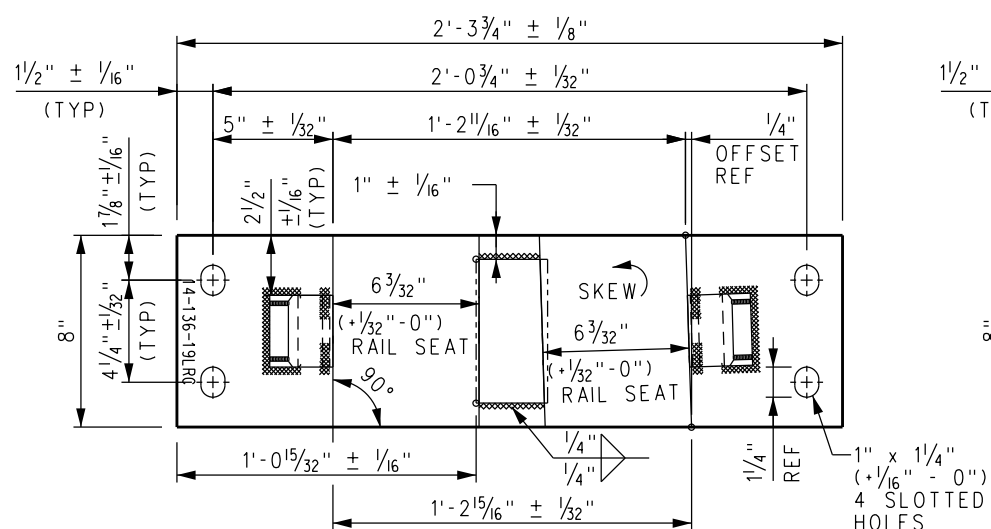
SWITCH PLATE P14-136-19LLC



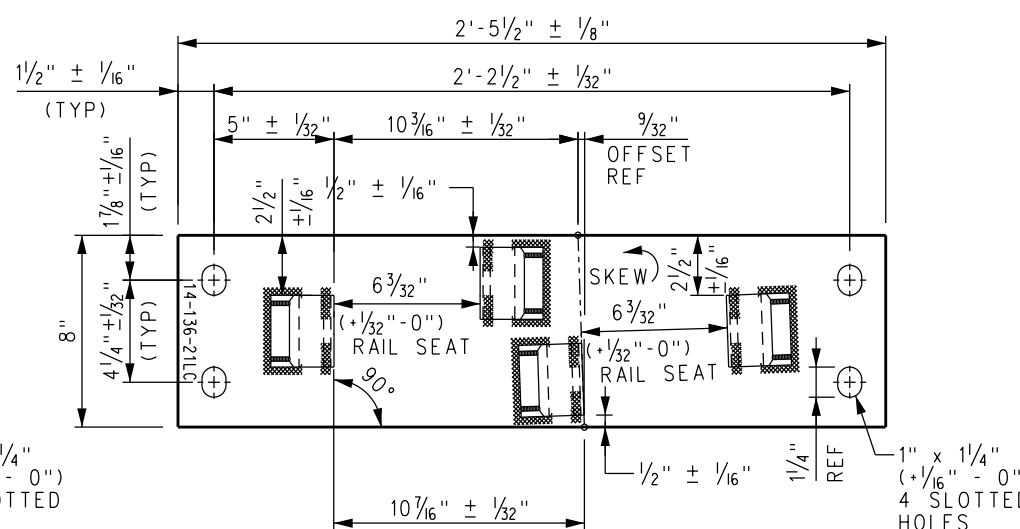
SWITCH PLATE P14-136-20LC



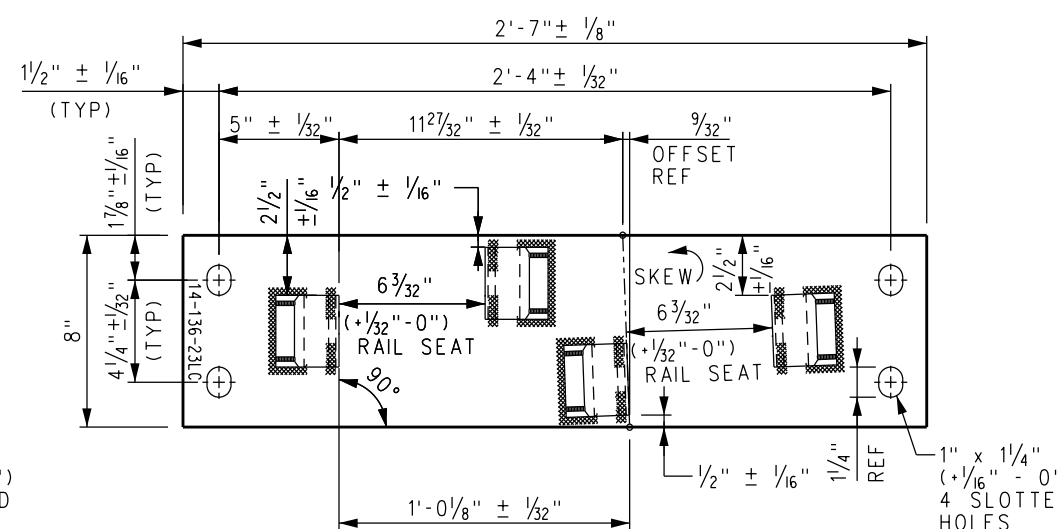
SWITCH PLATE P14-136-22LC



SWITCH PLATE P14-136-19LRC



SWITCH PLATE P14-136-21LC



SWITCH PLATE P14-136-23LC

| BILL OF MATERIALS | |
|-------------------|--|
| ITEM | DESCRIPTION |
| 1 | FLAT BAR, ASTM A36, 1" x 8" x 2'-3 3/4" |
| 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 |
| 3 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5 |
| 4 | FLAT BAR, ASTM A36, 1/2" x 6" x 3" |

| BILL OF MATERIALS | |
|-------------------|---|
| ITEM | DESCRIPTION |
| 5 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-4 3/4" |
| 6 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5 1/2" |
| 7 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/4" |
| 8 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7" |

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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. TYPE 1 PANDROL SHOULDER UNLESS NOTED OTHERWISE.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

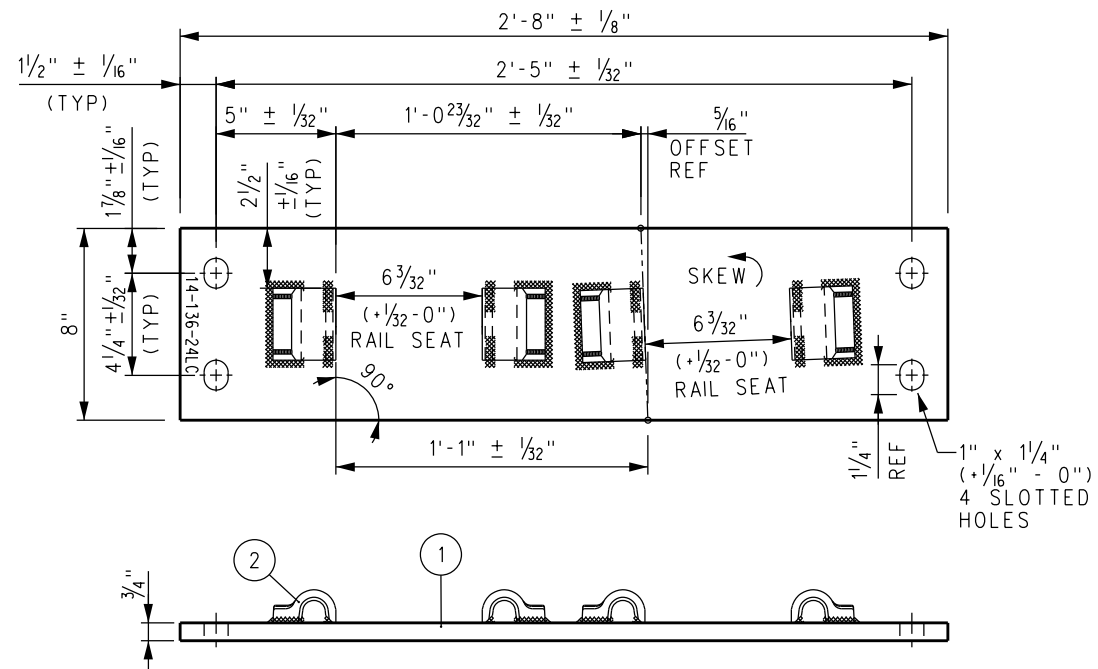
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
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 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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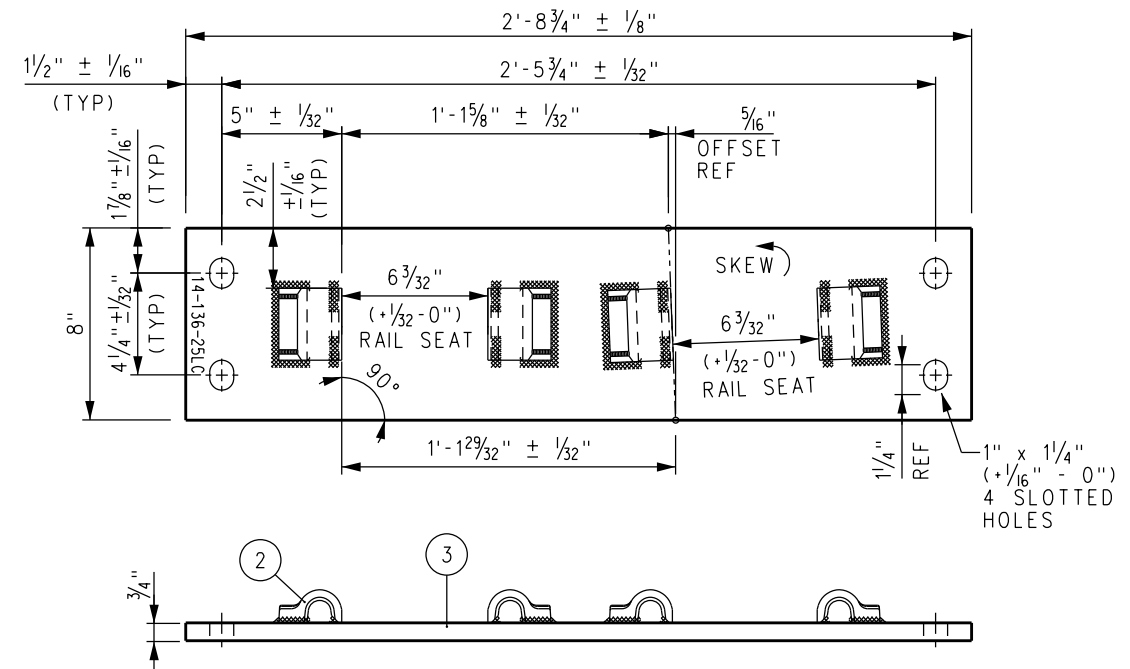
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 SWITCH PLATES (14-19LLC /LRC)
 (14-20LC THROUGH 14-23LC)
 FOR NO 14 136 LB RE LH CONCRETE TIE TURNOUT

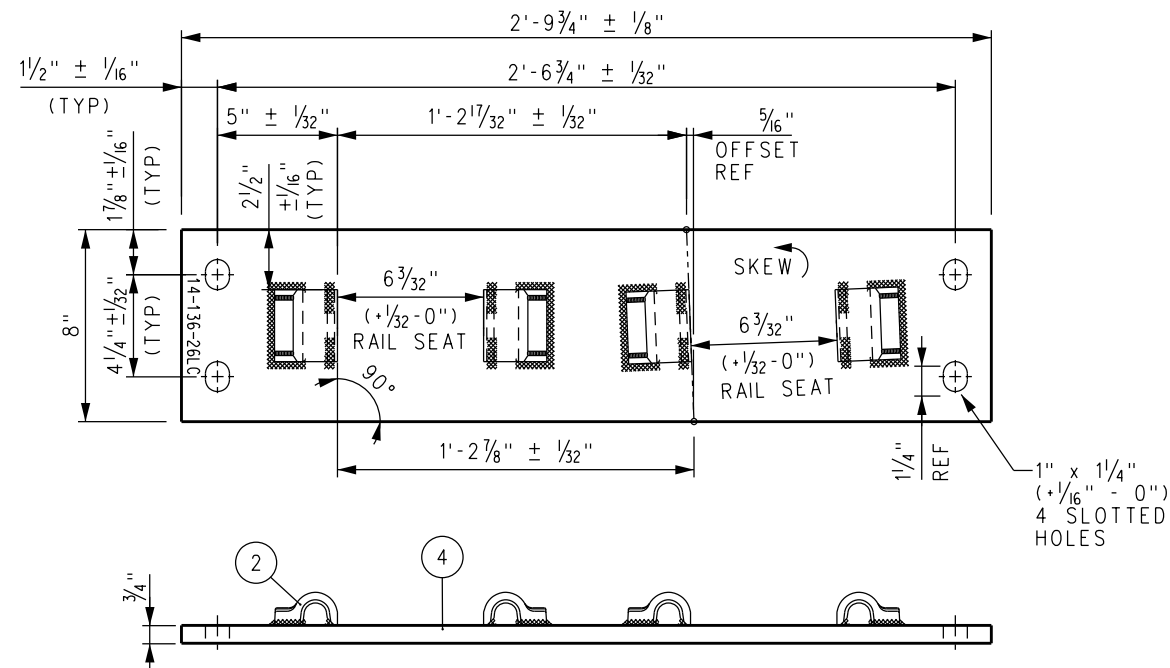
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|----------------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE | ES2805-82 |



SWITCH PLATE P14-136-24LC



SWITCH PLATE P14-136-25LC



SWITCH PLATE P14-136-26LC

NOTES:

1. I.D. CHARACTERS TO BE $\frac{1}{2}''$ 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. TYPE 1 PANDROL SHOULDER UNLESS NOTED OTHERWISE.

BILL OF MATERIALS

| ITEM | DESCRIPTION |
|------|---|
| 1 | FLAT BAR, ASTM A36, $\frac{3}{4}'' \times 8'' \times 2'-8''$ LONG |
| 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 |
| 3 | FLAT BAR, ASTM A36, $\frac{3}{4}'' \times 8'' \times 2'-8\frac{3}{4}''$ |
| 4 | FLAT BAR, ASTM A36, $\frac{3}{4}'' \times 8'' \times 2'-9\frac{3}{4}''$ |

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|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

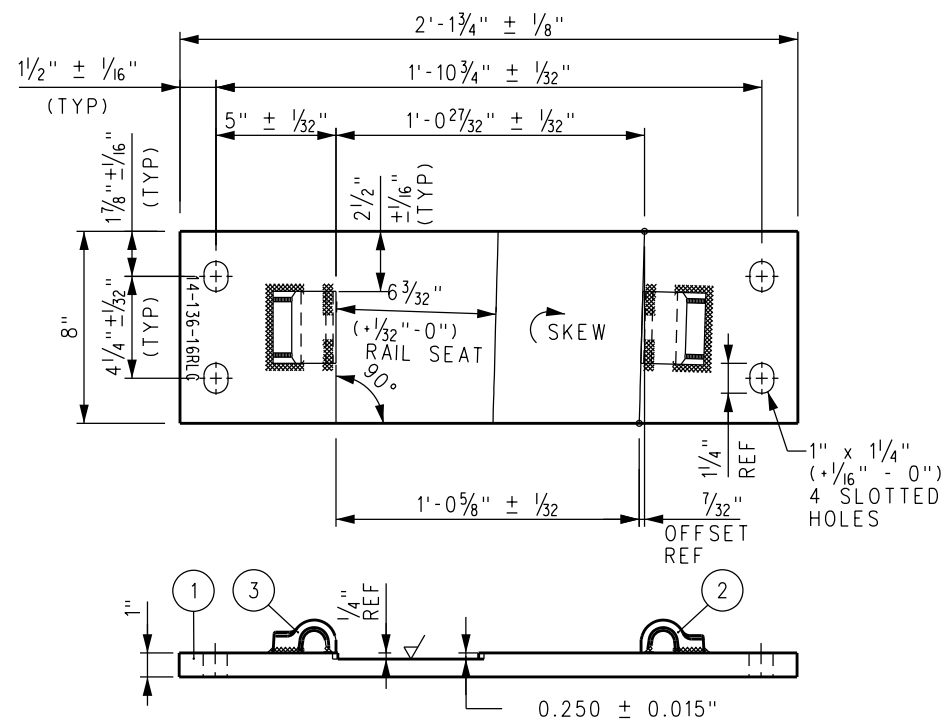
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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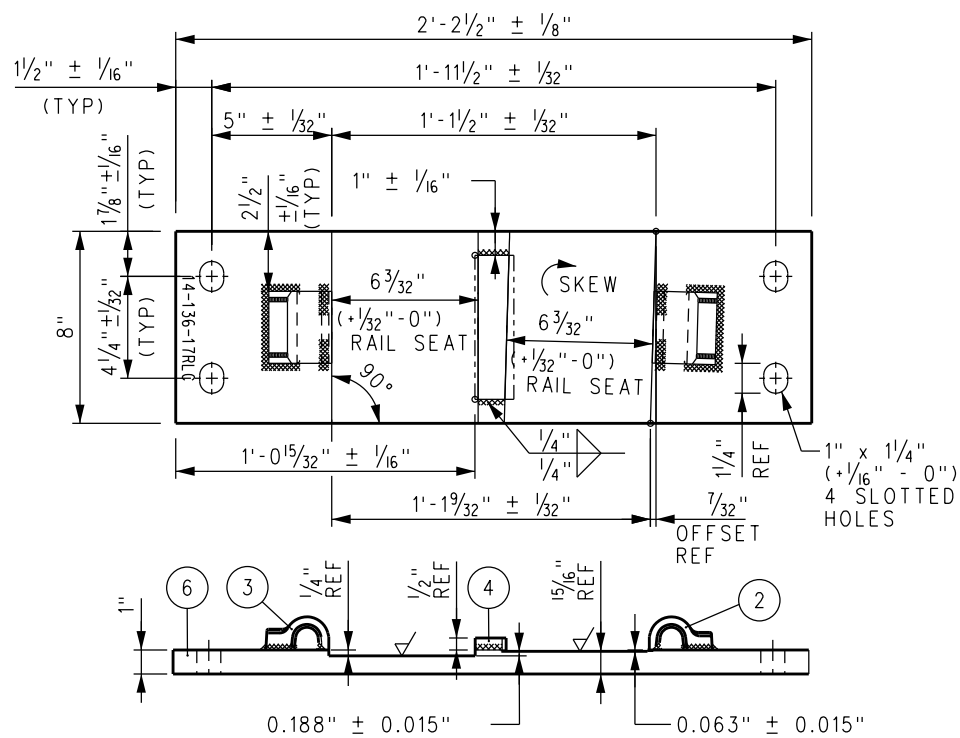
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 SWITCH PLATES (14-24LC THROUGH 14-26LC)
 FOR NO 14 136 LB RE LH CONCRETE TIE TURNOUT

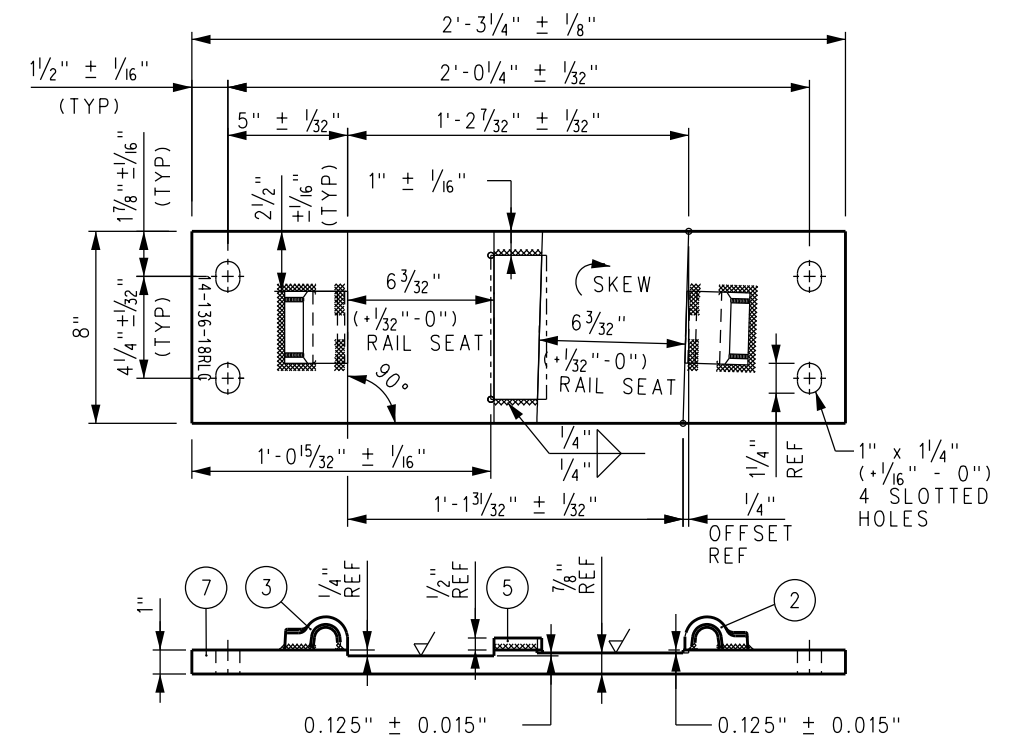
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|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-83 |



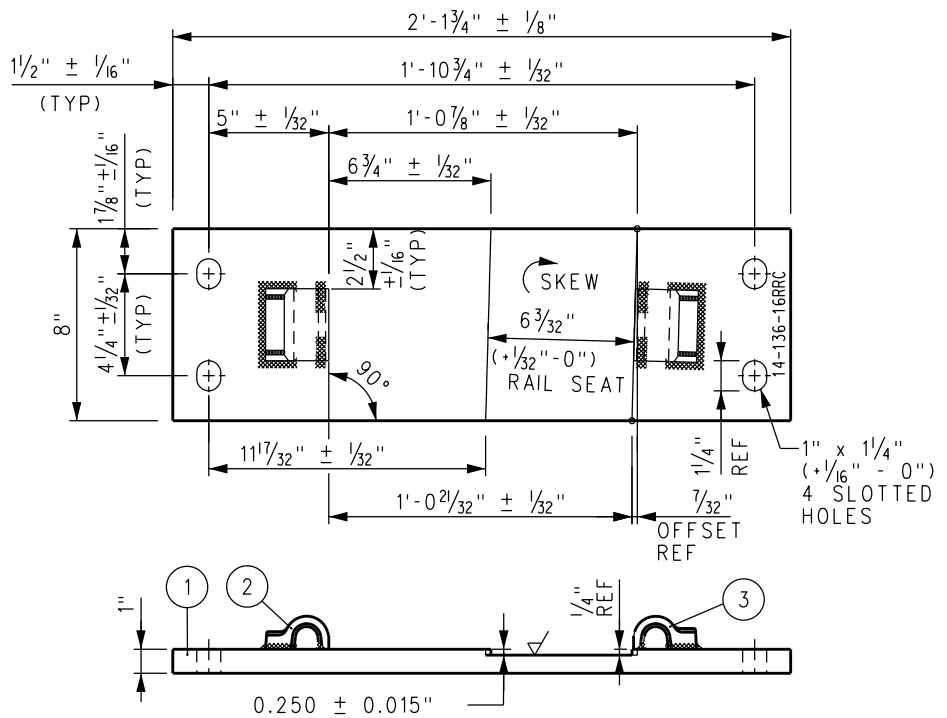
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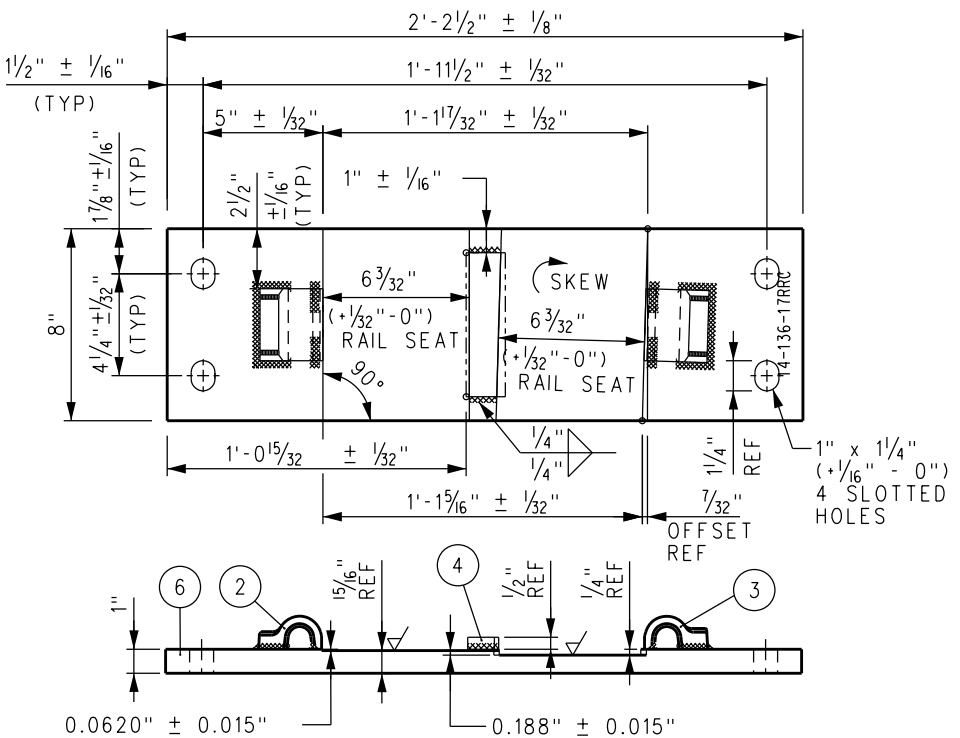
SWITCH PLATE P14-136-17RLC



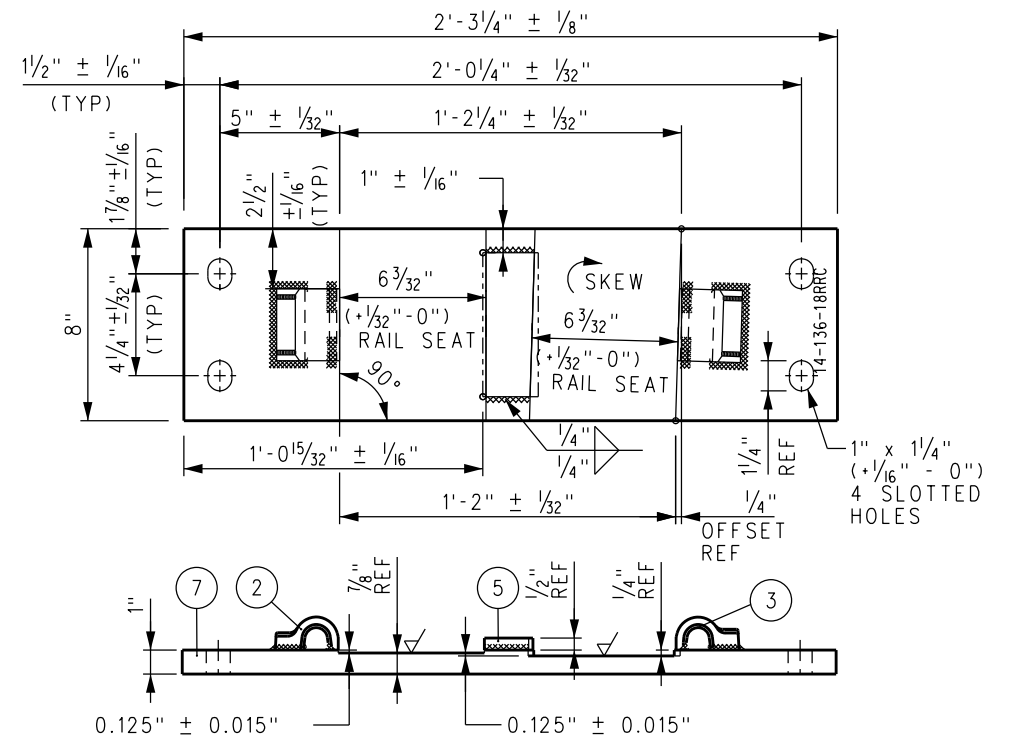
SWITCH PLATE P14-136-18RLC



SWITCH PLATE P14-136-16RRC



SWITCH PLATE P14-136-17RRC



SWITCH PLATE P14-136-18RRC

| BILL OF MATERIALS | |
|-------------------|--|
| ITEM | DESCRIPTION |
| 1 | FLAT BAR, ASTM A36, 1" x 8" x 2'-1 3/4" |
| 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 |
| 3 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5 |
| 4 | FLAT BAR, ASTM A36, 1/2" x 6" x 1 5/8" |

| BILL OF MATERIALS | |
|-------------------|---|
| ITEM | DESCRIPTION |
| 5 | FLAT BAR, ASTM A36, 1/2" x 6" x 2 5/16" |
| 6 | FLAT BAR, ASTM A36, 1" x 8" x 2'-2 1/2" |
| 7 | FLAT BAR, ASTM A36, 1" x 8" x 2'-3 1/4" |

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

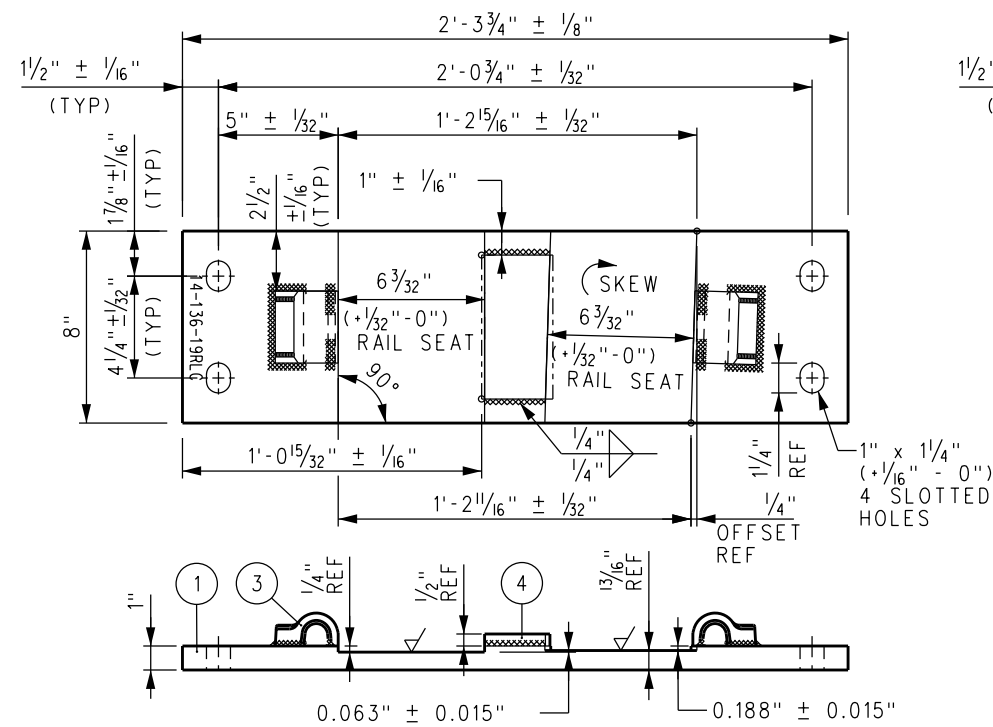
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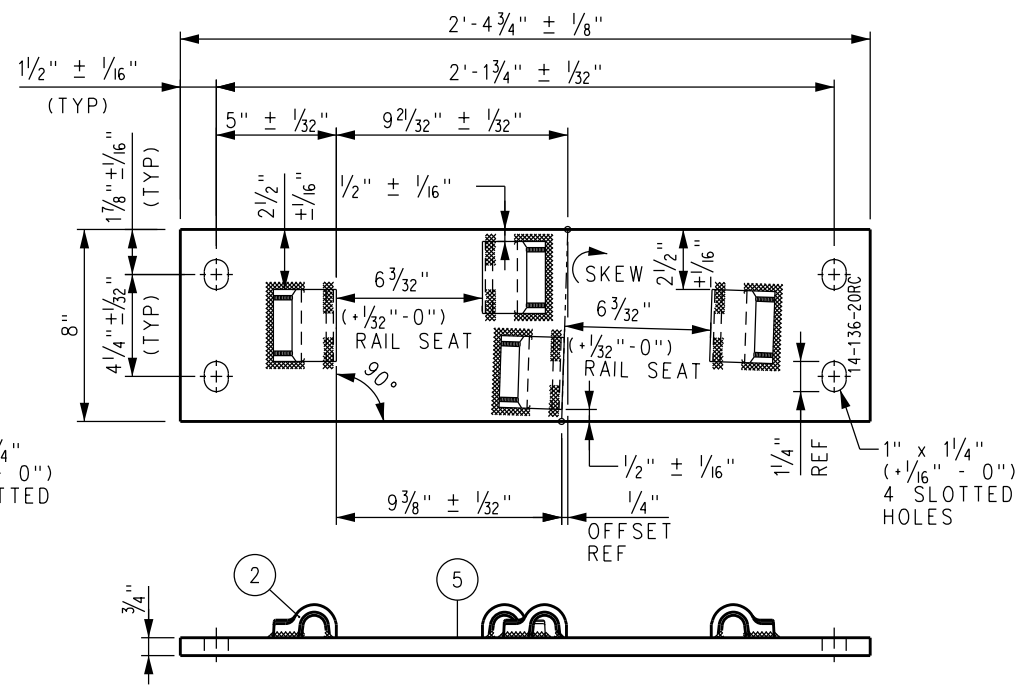


SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

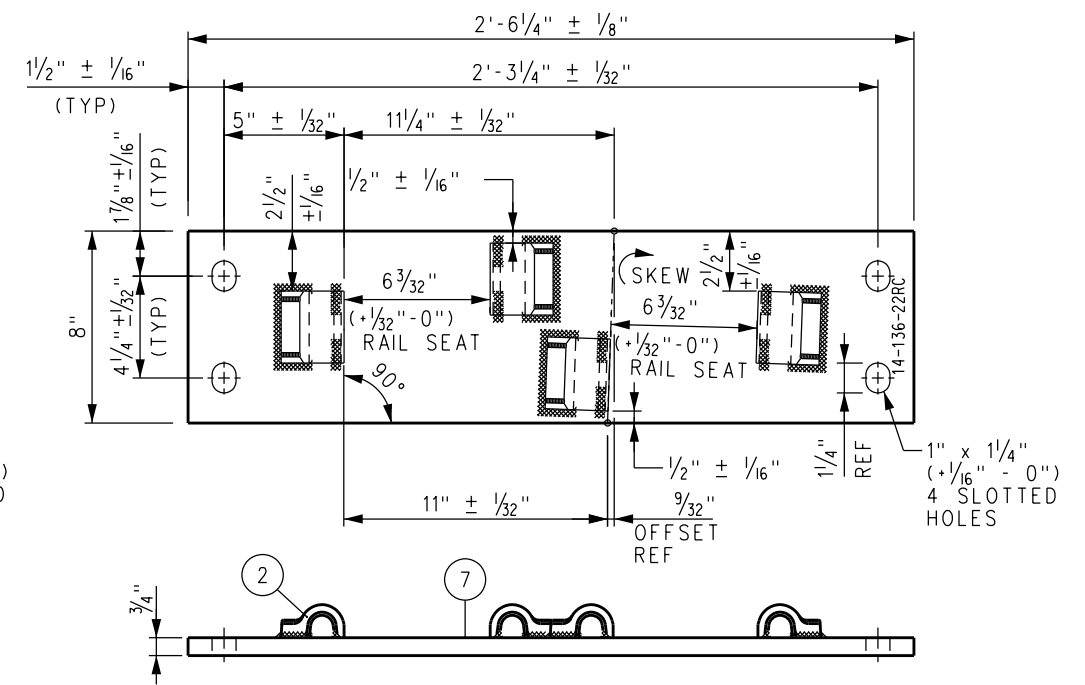
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|---|--|----------------|-----------|
| ENGINEERING STANDARDS | | STANDARD | 2805 |
| SWITCH PLATES | | SCALE: | NTS |
| FOR NO 14 136 LB RE RH CONCRETE TIE TURNOUT | | REVISION SHEET | 1 OF 1 |
| | | CADD FILE: | ES2805-84 |



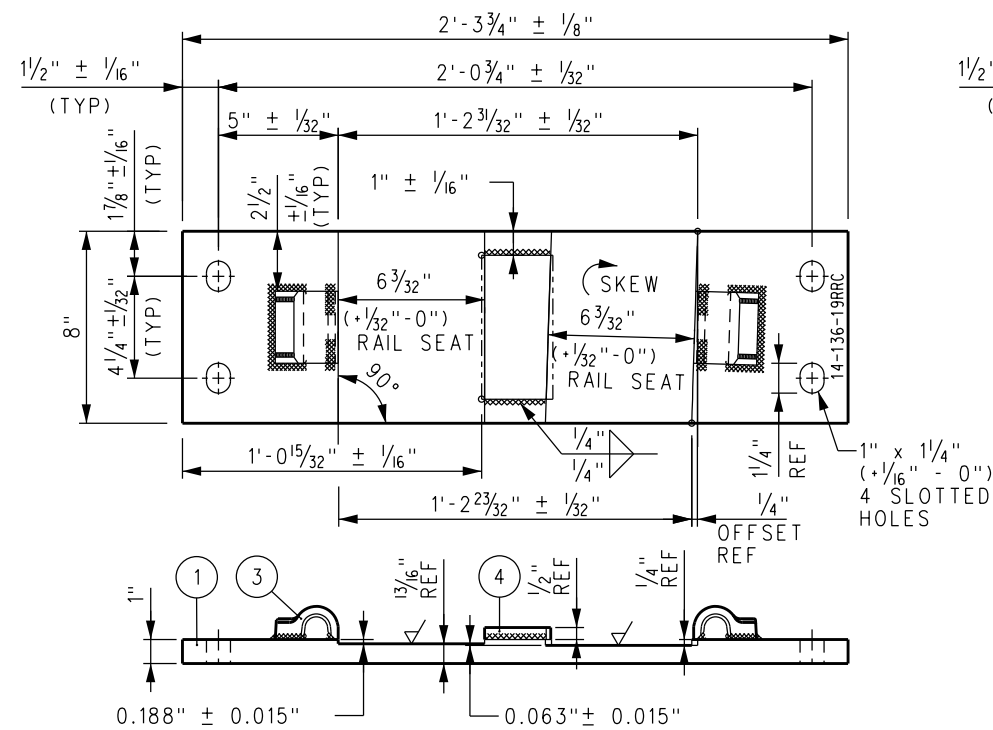
SWITCH PLATE P14-136-19RLC



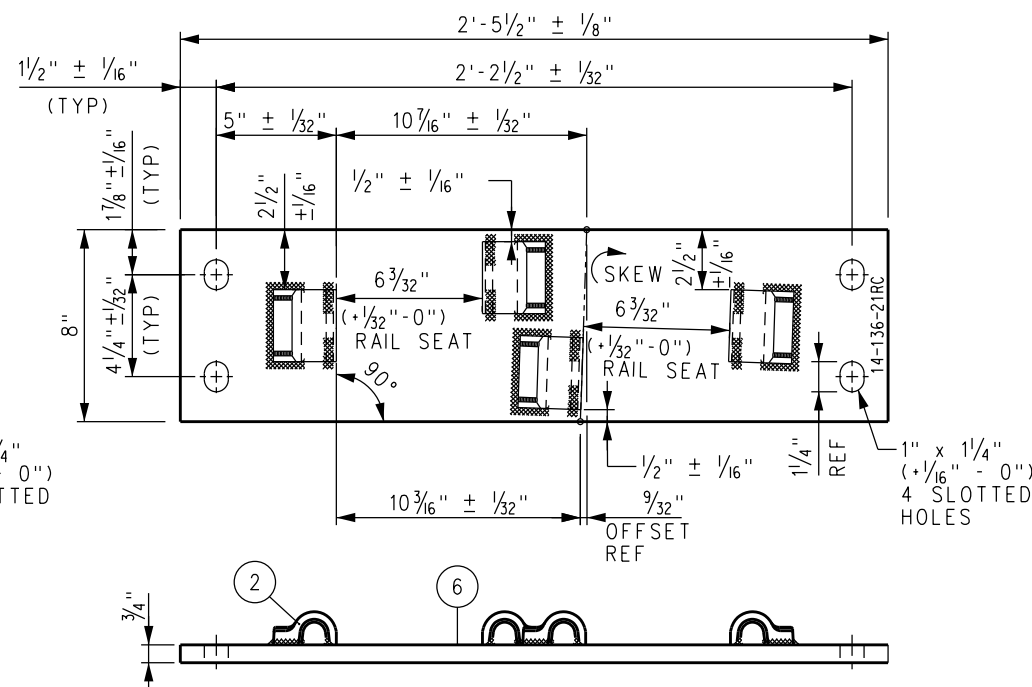
SWITCH PLATE P14-136-20RC



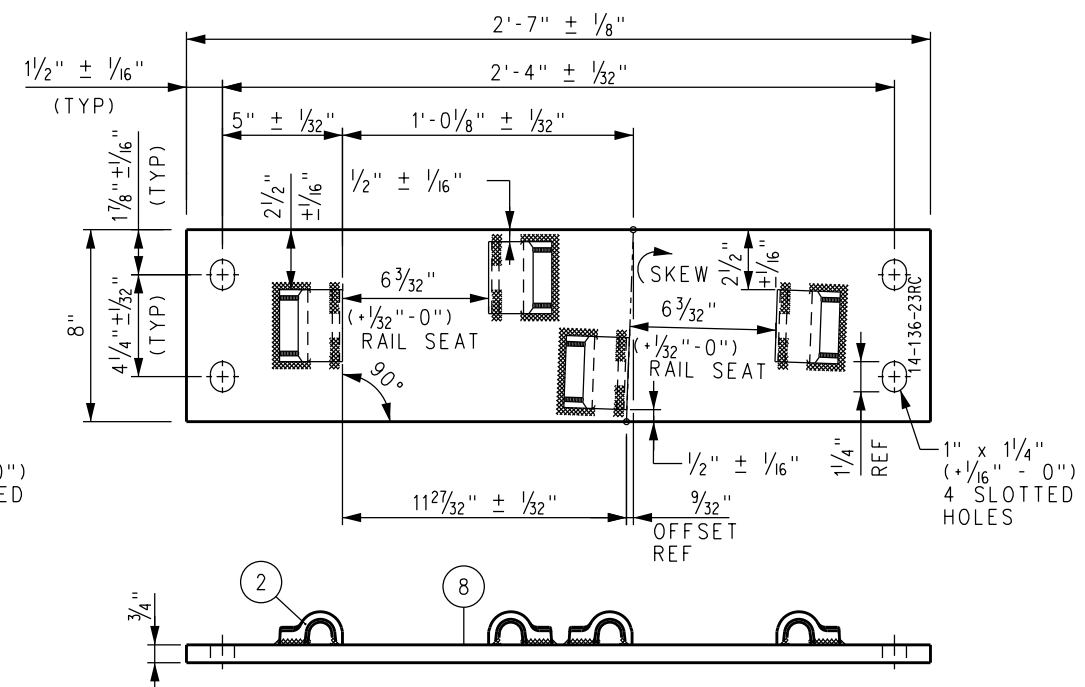
SWITCH PLATE P14-136-22RC



SWITCH PLATE P14-136-19RRRC



SWITCH PLATE P14-136-21RC



SWITCH PLATE P14-136-23RC

| BILL OF MATERIALS | |
|-------------------|--|
| ITEM | DESCRIPTION |
| 1 | FLAT BAR, ASTM A36, 1" x 8" x 2'-3 3/4" |
| 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 |
| 3 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5 |
| 4 | FLAT BAR, ASTM A36, 1/2" x 6" x 3" |

| BILL OF MATERIALS | |
|-------------------|---|
| ITEM | DESCRIPTION |
| 5 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-4 3/4" |
| 6 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5 1/2" |
| 7 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/4" |
| 8 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7" |

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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. TYPE 1 PANDROL SHOULDER UNLESS NOTED OTHERWISE.

| | | | | |
|------|----------|-------------|------|------|
| REV. | DATE | DESCRIPTION | DES. | ENG. |
| X | XX-XX-XX | REVISION | XX | XX |

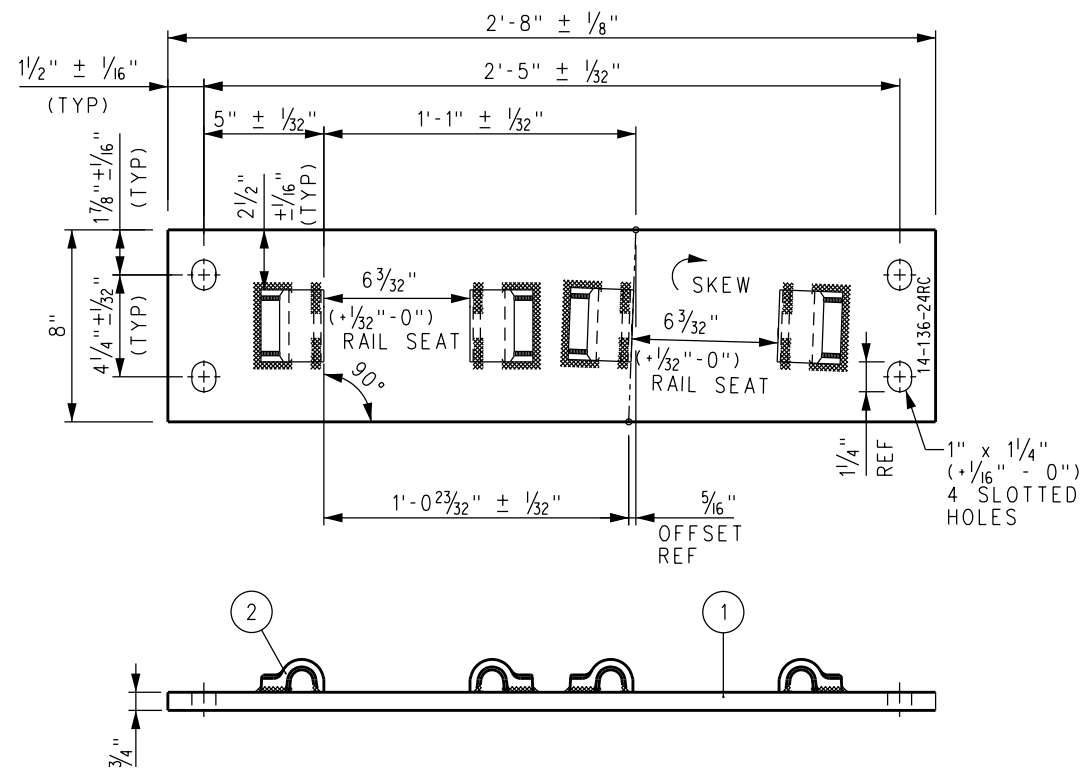
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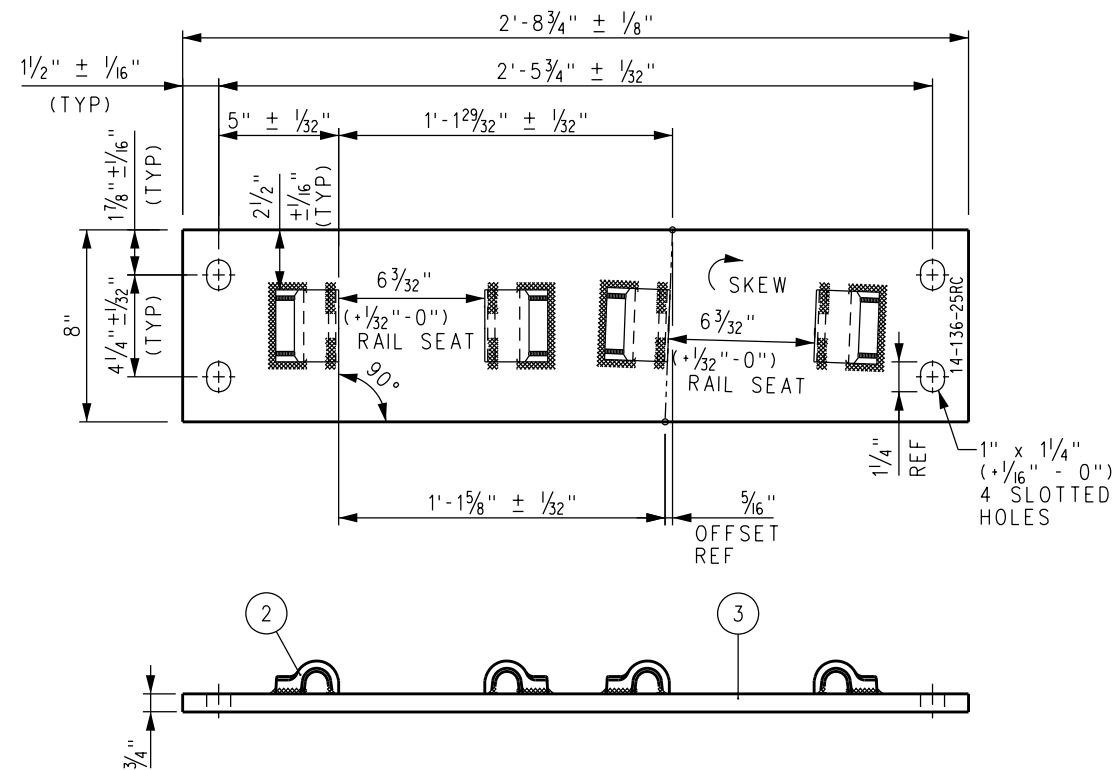
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 SWITCH PLATES (14-19RLC /RRC)
 (14-20RC THROUGH 14-23RC)
 FOR NO 14 136 LB RE RH CONCRETE TIE TURNOUT

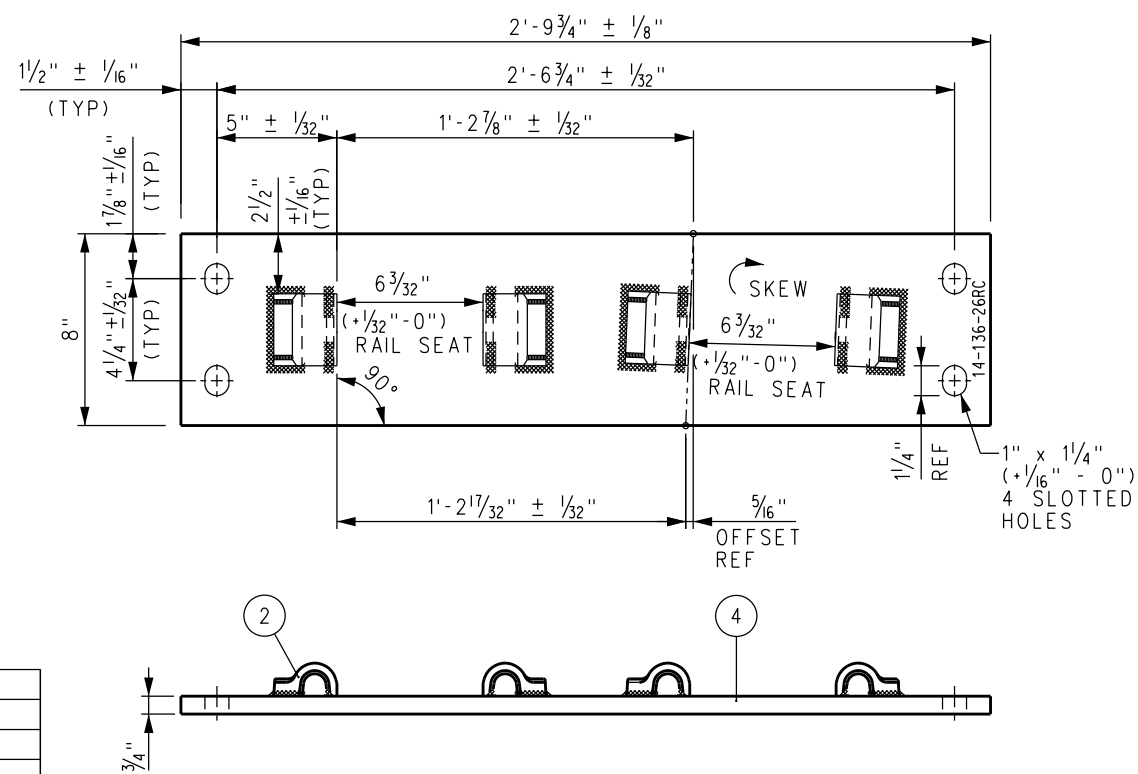
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|----------------|-----------|
| STANDARD | 2805 |
| SCALE | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE | ES2805-85 |



SWITCH PLATE P14-136-24RC



SWITCH PLATE P14-136-25RC

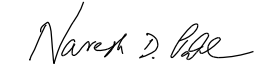
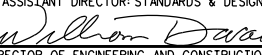


SWITCH PLATE P14-136-26RC

NOTES:

1. I.D. CHARACTERS TO BE 1/2" 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. TYPE 1 PANDROL SHOULDER UNLESS NOTED OTHERWISE.

| BILL OF MATERIALS | |
|-------------------|--|
| ITEM | DESCRIPTION |
| 1 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8" |
| 2 | SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1 |
| 3 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8 3/4" |
| 4 | FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9 3/4" |

| | | | |
|---|----------|---|------------|
| DRAWN BY: | HDR: | DATE: | 03/31/2011 |
|  ASSISTANT DIRECTOR: STANDARDS & DESIGN | |  DIRECTOR OF ENGINEERING AND CONSTRUCTION | |
| REV. | DATE | DESCRIPTION | DES. ENG. |
| X | XX-XX-XX | REVISION | XX XX |

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

ENGINEERING STANDARDS

SWITCH PLATES (14-24RC THROUGH 14-26RC)
FOR NO 14 136 LB RE RH CONCRETE TIE TURNOUT

| | |
|----------------|-----------|
| STANDARD | 2805 |
| SCALE: | NTS |
| REVISION SHEET | 1 OF 1 |
| CADD FILE: | ES2805-86 |