5. CONSTRUCTION

6. CASING PIPE SHALL BE DESIGNED TO PREVENT LEAKAGE OF ANY SUBSTANCE FROM THE CASING THROUGHOUT ITS LENGTH EXCEPT AT END CASING, WHICH SHALL BE INSTALLED AND JOINTED AS MAY BE NEEDED TO MAINTAIN WATER TIGHTNESS. ALL JOINTS FOR CARRIER LINE INSTALLATION WILL BE AS PROVIDED IN THIS SPECIFICATION.

7. SUBSTANCES SHALL HAVE A MINIMUM COVER FROM BASE OF RAIL TO TOP OF PIPE SIX INCHES AND OVER IN DIAMETER. IN ALL CASES THE SPACE PROVIDED UNDER THE PIPE SHALL BE AT LEAST TWO INCHES GREATER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE.

8. CASING PIPE AND NON-CASED PIPELINES SHALL BE DESIGNED TO CARRY Cooper's Electronics Standards Basis for Non-Pressure Pipeline.

9. THE WALL THICKNESS MAY BE DECREASED BY 0.063 INCH, IF THE INSTALLER PROVIDES A CASING WHICH IS ADEQUATE FOR THE LOADS THAT RESULT DURING INSTALLATION. THE METHOD OF CONSTRUCTION SHALL MEET ALL CURRENT MEANS AND END USES.

10. EXECUTION OF WORK

11. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN CONSENT OF THE AUTHOR. THE SELECTION AND USE OF THESE STANDARDS IS COMPLETELY AT THE DISCRETION OF THE INSTALLER.
1. **SCOPE**
   
el. Providing guidelines for the installation of pipes along railroad tracks, focus on the depth and positioning of pipes, and the methods of installation.
   
f. The scope includes specific requirements for the installation of pipelines, focusing on the protection of railroad tracks.
   
e. The guidelines are intended for the installation of pipelines in close proximity to railroad tracks.
   
d. The guidelines cover the installation of pipelines in areas where railroad tracks are present, ensuring safety and minimizing interference.
   
c. The guidelines are set forth by the Southern California Regional Rail Authority (SCRRA) to ensure compliance with their policies and regulations.

2. **GENERAL REQUIREMENTS**
   
   a. **Pipe Placement:** The placement of pipes along railroad tracks shall be in such a manner that the pipes are not less than 5 feet from the centerline of the nearest railroad track.
   
   b. **Pipe Depth:** The depth of the pipe shall be such that it is not less than 1.5 times the nominal diameter of the pipe, measured from the bottom of the pipeline to the top of the pipe.
   
   c. **Protection:** The pipes shall be protected from damage by external forces such as vehicles, machinery, and physical impacts.
   
   d. **Signage:** The pipes shall be marked with signs or markers to indicate their presence and location.
   
   e. **Access:** Access to the pipes shall be provided as necessary for maintenance and repair purposes.

3. **CARRIER PIPE**
   
   a. The carrier pipe shall be of sufficient size and depth to ensure the safe and efficient transport of the liquid or gas it contains.
   
   b. The carrier pipe shall be installed in such a manner that it is not less than 25 feet from each side of the centerline of the nearest railroad track.
   
   c. The carrier pipe shall be installed under the railroad tracks, ensuring that it does not interfere with rail operations.
   
   d. The carrier pipe shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.

4. **Casing**
   
   a. The casing shall be installed in such a manner that it is not less than 10 feet from each side of the centerline of the nearest railroad track.
   
   b. The casing shall be installed under the railroad tracks, ensuring that it does not interfere with rail operations.
   
   c. The casing shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.
   
   d. The casing shall be marked with signs or markers to indicate its presence and location.

5. **CONSTRUCTION**
   
   a. The construction of pipelines shall be performed in such a manner that it is not less than 5 feet from the centerline of the nearest railroad track.
   
   b. The construction of pipelines shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.
   
   c. The construction of pipelines shall be designed and installed to ensure the safe and efficient transport of the liquid or gas it contains.
   
   d. The construction of pipelines shall be marked with signs or markers to indicate its presence and location.

6. **CATHODIC PROTECTION**
   
   a. The pipes shall be protected from corrosion by cathodic protection systems.
   
   b. The pipes shall be checked for the presence of corrosion and repaired as necessary.
   
   c. The pipes shall be marked with signs or markers to indicate the presence of corrosion protection systems.

7. **INSPECTION AND TESTING**
   
   a. The pipes shall be inspected periodically to ensure their safety and efficiency.
   
   b. The pipes shall be tested periodically to ensure their safety and efficiency.
   
   c. The pipes shall be marked with signs or markers to indicate the presence of inspection and testing procedures.

8. **SEALS AND SUPPORTS**
   
   a. The seals and supports shall be designed and installed to ensure the safe and efficient transport of the liquid or gas it contains.
   
   b. The seals and supports shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.
   
   c. The seals and supports shall be marked with signs or markers to indicate their presence and location.

9. **VENTS**
   
   a. The vents shall be designed and installed to ensure the safe and efficient transport of the liquid or gas it contains.
   
   b. The vents shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.
   
   c. The vents shall be marked with signs or markers to indicate their presence and location.

10. **SHUT-OFF VALVES**
    
    a. The shut-off valves shall be designed and installed to ensure the safe and efficient transport of the liquid or gas it contains.
    
    b. The shut-off valves shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.
    
    c. The shut-off valves shall be marked with signs or markers to indicate their presence and location.

11. **LONGITUDINAL PIPES**
    
    a. The longitudinal pipes shall be designed and installed to ensure the safe and efficient transport of the liquid or gas it contains.
    
    b. The longitudinal pipes shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.
    
    c. The longitudinal pipes shall be marked with signs or markers to indicate their presence and location.

12. **APPROVAL OF PLANS**
    
    a. The plans for the installation of pipelines shall be submitted to SCRRA for approval prior to construction.
    
    b. The plans shall be reviewed by SCRRA to ensure compliance with their policies and regulations.
    
    c. The plans shall be marked with signs or markers to indicate their approval status.

13. **EXECUTION OF WORK**
    
    a. The work shall be performed in such a manner that it is not less than 5 feet from the centerline of the nearest railroad track.
    
    b. The work shall be protected from damage by external factors such as vehicles, machinery, and physical impacts.
    
    c. The work shall be marked with signs or markers to indicate the presence of the work in progress.

**TABLE 1**

<table>
<thead>
<tr>
<th>Diameter (inches)</th>
<th>Min. Wall Thickness (inches)</th>
<th>Diameter (inches)</th>
<th>Min. Wall Thickness (inches)</th>
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</thead>
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<td>24&quot; (+/- 0&quot;)</td>
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<tr>
<td>8&quot; (+/- 0&quot;)</td>
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<td>28&quot; (+/- 0&quot;)</td>
<td>0.531 (+/- .012)</td>
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<tr>
<td>10&quot; (+/- 0&quot;)</td>
<td>0.531 (+/- .012)</td>
<td>30&quot; (+/- 0&quot;)</td>
<td>0.620 (+/- .012)</td>
</tr>
<tr>
<td>12&quot; (+/- 0&quot;)</td>
<td>0.620 (+/- .012)</td>
<td>32&quot; (+/- 0&quot;)</td>
<td>0.688 (+/- .012)</td>
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<tr>
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<td>0.765 (+/- .012)</td>
<td>34&quot; (+/- 0&quot;)</td>
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</tr>
<tr>
<td>20&quot; (+/- 0&quot;)</td>
<td>0.844 (+/- .012)</td>
<td>36&quot; (+/- 0&quot;)</td>
<td>0.938 (+/- .012)</td>
</tr>
</tbody>
</table>

**CASEMENT REQUIREMENTS - FIGURE 1**

**ENGINEERING STANDARDS**

**5022**

**9092**

**LO 1**

**E3902**
ENGINEERING STANDARDS
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

DIRECTOR OF ENGINEERING AND CONSTRUCTION
ASSISTANT DIRECTOR: STANDARDS & DESIGN

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

INTER-TRACK FENCE ELEVATION

NOTE:
ALL METAL SHALL BE HOT DIP GALVANIZED STEEL

SECTION B

ANCHOR PLATE

DETAIL 2

ANCHOR PLATE

DETAIL 1

FENCE POST ANCHORAGE
TABLE 1 - MINIMUM SIZES FOR STEEL FENCE AND GATE POSTS

<table>
<thead>
<tr>
<th>PANEL HEIGHT</th>
<th>FENCE POSTS (NOMINAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 8" x 3.75" x 12 ga. I-beam up to and including 8 ft. height
- 8" x 3.75" x 12 ga. I-beam up to and including 10 ft. height

GATE LEAF

- 3" x 1/2 ga. up to 6 ft.
- 3" x 1/2 ga. up to 6 ft.
- 4" x 1/2 ga. up to 6 ft.
- 4" x 1/2 ga. up to 6 ft.
- 5" x 1/2 ga. up to 6 ft.
- 5" x 1/2 ga. up to 6 ft.
- 6" x 1/2 ga. up to 6 ft.
- 6" x 1/2 ga. up to 6 ft.

A. MATERIAL SPECIFICATIONS:

1. STEEL MATERIAL FOR FENCE FRAMEWORK, INCLUDING CORRUGATED PALES, RAILS, AND POSTS, WHEN GALVANIZED PRIOR TO FORMING, SHALL MEET THE REQUIREMENTS OF ASTM A36/A36M WITH A MINIMUM TENSILE STRENGTH OF 40,000 PSI AND THE STEEL SHALL BE NOT GALLVANIZED TO MEET THE REQUIREMENTS OF ASTM A53/A53M WITH A MINIMUM TENSILE STRENGTH OF 45,000 PSI.

2. MATERIAL FOR CORRUGATED PALES SHALL BE A MINIMAL 2.75" X 0.75" X 14 ga. THE CROSS-SECTIONAL SHAPE OF THE HORIZONTAL FENCE RAIL SHALL CONFORM TO A NORMAL 2" X 2" X 0.125" SQUARE TUBE, MACHINED TO THE SPECIFIED TOLERANCES. THE FENCE RAIL SHALL BE PROCESSED IN SUCH A MANNER AS TO PROVIDE A TRUE SQUARE CROSS SECTION. THE FENCE RAIL SHAPE SHALL HAVE A MINIMUM WALL THICKNESS OF 0.050".

B. MATERIAL FOR STEEL FENCE PRIVACY SCREENING, IF REQUIRED BY SCRRA, SHALL BE 1/8 INCH TUBULAR STEEL, GALVANIZED STEEL, OR STEEL WITH A TRUE SQUARE CROSS SECTION. THE MATERIAL FOR STEEL FENCE PRIVACY SCREENING, IF REQUIRED BY SCRRA, SHALL BE 18 GAUGE STEEL WITH A TRUE SQUARE CROSS SECTION.

C. MATERIAL FOR STEEL FENCE PRIVACY SCREENING, IF REQUIRED BY SCRRA, SHALL BE 1/8 INCH TUBULAR STEEL, GALVANIZED STEEL, OR STEEL WITH A TRUE SQUARE CROSS SECTION. THE MATERIAL FOR STEEL FENCE PRIVACY SCREENING, IF REQUIRED BY SCRRA, SHALL BE 18 GAUGE STEEL WITH A TRUE SQUARE CROSS SECTION.

FENCE SELECTION CRITERIA:

1. CHAIN LINK FENCING SHALL BE USED ONLY FOR MAINTENANCE OF EXISTING CHAIN LINK FENCES.
2. TUBULAR STEEL FENCING SHALL BE USED FOR SECURITY PURPOSES.
3. HIGH SECURITY ORNAMENTAL FENCING SHALL BE USED FOR ALL FENCE HEIGHTS.
FENCE SELECTION CRITERIA

1. CHAIN LINK FENCING SHALL BE USED ONLY FOR MAINTENANCE OF EXISTING CHAIN LINK FENCES.
2. WELDED WIRE MESH OR HIGH SECURITY ORNAMENTAL FENCING SHALL BE USED FOR ALL RIGHT-OF-WAY FENCES AS DIRECTED BY SCRRA.
3. TUBULAR STEEL FENCING WILL BE USED FOR PROPERTY LEASES AND STORAGE FACILITIES WHERE AESTHETICS ARE A MAJOR CONCERN AND AS DIRECTED BY SCRRA.
4. INTER-TRACK FENCING SHALL BE USED BETWEEN THE TRACKS AT ALL STATIONS.
5. CONCRETE BLOCK WALLS SHALL BE USED FOR COMMERCIAL, AND RESIDENTIAL DEVELOPMENTS.
NOTES:

1. WELDED WIRE FENCE FABRIC TO BE #6 GAUGE HARDENED STEEL WIRE WELDED INTO A 2'-0" X 6' RECTANGULAR PATTERN PER ASTM A633, CLASS CI, 12 OZ. PER SQUARE FOOT. NOT TO BE GAULVEED AFTER WELDING.
2. TRIANGULAR SHAPED STEIFFENING BUM TO BE PLACED HORIZONTALLY APPROXIMATELY 12' DOWN FROM TOP OF WELDED WIRE MESH PANEL.
3. POSTS, BRACE RAILS AND GATE FRAMES SHALL BE STANDARD HEAVY SCHEDULE 40 GAULVEED PIPE PER ASTM A53 AND HAVE A MINIMUM YIELD STRENGTH OF 35,000 PSI.
4. DIAGONAL BRACING AT 500 FT. MAXIMUM SPACING AND AT ALL TERMINAL, GATE AND CORNER POSTS.
5. KEY-HOLE STEEL AND HOT-DIP GALVANIZED 1.2 OZ. PER SQUARE FOOT TO BE PLACED AT TOP OF ALL LINE POSTS AND DIAGONAL BRACING.
6. CONCRETE FOOTINGS TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS.
7. LINE POST FOOTINGS SHOWN ON DRAWING, FOOTINGS AT GATE AND END POSTS TO BE 2'-0" X 6'-0", ALL FOOTINGS TO BE CROWNED AT TOP FOR DRAINAGE.
8. GATE FRAME POSTS AND SPACE SHALL BE AS PER CHAIN LINK Fence STANDARD.

FENCE SELECTION CRITERIA

1. CHAIN LINK FENCING SHALL BE USED ONLY FOR MAINTENANCE OF EXISTING CHAIN LINK FENCES.
2. WELDED WIRE MESH ON HIGH SECURITY, ORNAMENTAL FENCING SHALL BE USED FOR ALL HIGH-SECURITY FENCES AS DIRECtED BY SCRRA.
3. TUBULAR STEEL FENCING WILL BE USED FOR PROPERTY LEASES AND STORAGE FACILITIES WHERE AESTHETICS ARE A MAJOR CONCERN AND AS DIRECTED BY SCRRA.
4. TEMPORARY RAILING (TYPE K) WITH WELDED WIRE MESH FENCING SHALL BE USED FOR ALL PARKING TRACKS. K-RAIL AND FENCE ANCHORS SHALL BE AS PER CALTRANS STANDARD PLANS T4 AND T3.
5. SAFETY MEASURES REQUIRED BY SCRRA SHALL BE FOLLOWED IN THE TRIMMING OF THE LANDSCAPE VINES.
6. LANDSCAPE VINES SHALL NOT BE ALLOWED TO GROW ON THE FENCE UNLESS WRITTEN APPROVAL IS GRANTED BY SCRRA. IF LANDSCAPE VINES ARE ALLOWED TO GROW, THEY WILL BE TRIMMED REGULARLY SO THAT THEY WILL NOT EXTEND OVER THE WALL, AND THE WALL SAFETY MEASURES REQUIRED BY SCRRA SHALL BE FOLLOWED IN THE TRIMMING OF THE VINES.
7. SIX-INCH OPENINGS AT REGULAR INTERVALS IN FENCES AND WALLS SHALL BE PROVIDED TO DRAIN WATER AWAY FROM TRACKS AND RAILROAD RIGHT-OF-WAY.
# Fence Selection Criteria

1. Chain link fencing shall be used only for maintenance of existing chain link fences.
2. Welded wire mesh or high security ornamental fencing shall be used for all right-of-way fences as specified by SCRRA.
3. Tubular steel fencing will be used for property lines and storage facilities where aesthetics are a major concern and as directed by SCRRA.
4. Inter-track fencing shall be used between the tracks at all stations.
5. Concrete block walls and reinforcing developments. Removal of graffiti from both sides of the wall shall be the owner/developer’s responsibility.
6. Temporary scaling-type K with welded wire mesh fencing shall be used for all parking leases. K-RAIL and fence anchors shall be as per CalTrans, standard plans.
7. Inter-track fencing shall not be allowed to be used on the fence unless written approval is granted by SCRRA if landscape vines are allowed to grow they will be trimmed regularly so that they will not extend over the wall. Safety measures required by SCRRA shall be followed in the trimming of the vines.
8. Soil openings at regular intervals in fences and walls shall be provided to drain water away from tracks and rail systems right-of-way.

## Fence Fabric

- Fencing fabric shall be woven into 1" mesh.
- Commercial quality aggregates and cement and sand shall not contain less than 27% of cement by weight and cement shall be produced from commercial quality aggregates. Commercial quality cement and sand shall not contain less than 27% of cement by weight and cement shall be produced from commercial quality aggregates. Commercial quality cement and sand shall not contain less than 27% of cement by weight and cement shall be produced from commercial quality aggregates.

## Fabric Types

- Type CL-4 = 45 FABRIC.
- Type CL-8 = 72 FABRIC.
- Type CL-6 = 72 FABRIC.

## Typical Member Dimensions (See Notes)

| Fence Material | Line Posts | Gate Length | Gate Post 6'-0" and Less | Gate Post Over 6'-0"
|----------------|------------|-------------|--------------------------|-------------------------
|                | 6'-0" & LESS |            |                          |                         |
|                | 3" x 3"     |            |                          |                         |
|                | 3'-0"       |            |                          |                         |

## Notes

1. The table below shows example of post and brace sections when may comply with the specifications.
2. Sections shown in the tables must also comply with the strength requirements and other provisions of the specifications.
3. Other sections which comply with the strength requirements and other provisions of the specifications may be used on approval of SCRRA.
4. Diagonal braces shall be used in accordance with the drawings shown on the floor plan.
5. Member sizes and shapes are nominal.
6. Wire gage to be 11-GA. for fences 6'-0" and less and 9-GA. for fences over 6'-0" as determined by field conditions.
7. For additional information refer to Cal Trans Standard Specifications, General Provisions Section 80, and Traffic Control Facilities - Fences.
8. Fence posts shall be set in concrete footings into suitable soil conforming to the details shown on the drawing and centered at the top to 10% at the water line. Portland cement concrete for metal post footings and for design shall be provided from commercial quality aggregates and cement and sand shall not contain less than 27% of cement by weight. Fence fabric shall be woven into 1" mesh.

## Engineering Standards

- Right of Way Fencing
- Chain Link Fence

---

**Scrren**

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

---

** Feyson**

- Assistant Director: Standards & Design
- Director of Engineering and Construction

---

**Drawn By**

- Carlos A.
- S:\Plot Drivers\practice_pdf.plt

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**Date Plotted**

- 06-19-15

---

**Fence Location Scale Note**

- 1:100

---

**Diagonal Brace**

- May be used as alternate to horizontal brace with rod brace.

---

**Tension Wire**

- 10'-0" for fabric less than 6'.

---

**Gate Panel**

- Gate panel height as specified.

---

**Diagonal Brace or Horizontal Brace with Truss Rods**

- Diagonal brace or horizontal brace with truss rods.

---

**Diagonal Brace**

- May be used as alternate to horizontal brace with rod brace.

---

**Typical Member Dimensions (See Notes)**

| Fence Material | Line Posts | Gate Length | Gate Post 6'-0" and Less | Gate Post Over 6'-0"
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>6'-0&quot; &amp; LESS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3&quot; x 3&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3'-0&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Fabric Types**

- Type CL-4 = 45 FABRIC.
- Type CL-8 = 72 FABRIC.
- Type CL-6 = 72 FABRIC.
NOTE:
1. FOR NOTES AND LEGEND SEE ES5107-01.
2. TO BE DETERMINED IN FIELD BY SCRRA.
NOTES:

1. THIS DRAWING FOR REFERENCE ONLY. LAYOUT WILL VARY BY LOCATION.
2. FURNISH AND INSTALL FIRE DEPARTMENT KEY ACCESS BOX PER LOCAL FIRE CODE.
3. ACCESS CONTROL SYSTEM PER SCRRA REQUIREMENTS.
4. FURNISH AND INSTALL PAINTED STOP BAR (12" WIDE, SOLID WHITE LINE).
5. GATE OPERATOR PER SECTION 32.3132 OF THE SCRRA STANDARD SPECIFICATIONS.
**NOTES:**

1. THIS DRAWING FOR REFERENCE ONLY. GATE CONFIGURATION WILL VARY BY LOCATION.

2. STEEL MATERIAL FOR GATE COMPONENTS SHALL BE COMMERCIAL STEEL WITH A MINIMUM
   YIELD STRENGTH OF 45,000 PSI.

3. GATE POSTS SHALL BE STEEL, 6" x 3/16" MINIMUM

4. HORIZONTAL RAILS SHALL BE STEEL, 1.75" x 14 GAUGE, MINIMUM.

5. VERTICAL (END) RAILS SHALL BE STEEL, 2" SQUARE x 14 GAUGE, MINIMUM.

6. PICKETS SHALL BE STEEL TUBING, 1" SQUARE x 14 GAUGE, MINIMUM.

7. ALL RAILS AND PICKETS SHALL BE JOINED BY WELDING.

8. ALL GATE HARDWARE (POSTS, ASSEMBLIES, TRACK, FOOTINGS, ETC.) PER MANUFACTURER'S
   REQUIREMENTS.

9. GATE COLOR SHALL BE BLACK UNLESS SPECIFIED OTHERWISE (PER SCRA APPROVAL).

10. GATE SHALL MEET THE COATING PERFORMANCE CRITERIA OF ASTM F2408.
NOTES:

1. THIS DRAWING FOR REFERENCE ONLY. LAYOUT WILL VARY BY LOCATION.

2. FURNISH AND INSTALL FIRE DEPARTMENT KEY ACCESS BOX PER LOCAL FIRE CODE.

3. ACCESS CONTROL SYSTEM PER SCRRA REQUIREMENTS.

4. FURNISH AND INSTALL PAINTED STOP BAR (12" WIDE, SOLID WHITE LINE).

5. GATE OPERATOR PER SECTION 32.31.32 OF THE SCRRA STANDARD SPECIFICATIONS.
NOTES:
1. THIS DRAWING FOR REFERENCE ONLY. GATE CONFIGURATION WILL VARY BY LOCATION.
2. STEEL MATERIAL FOR GATE COMPONENTS SHALL BE COMMERCIAL STEEL WITH A MINIMUM YIELD STRENGTH OF 45,000 PSI.
3. STEP POSTS AND GUIDE POSTS SHALL BE STEEL, 6" x 3/16" MINIMUM.
4. HORIZONTAL RAILS SHALL BE STEEL, 1.75" x 14 GAUGE, MINIMUM.
5. VERTICAL (END) RAILS SHALL BE STEEL, 2" SQUARE x 11 GAUGE, MINIMUM.
6. PICKETS SHALL BE STEEL TUBING, 1" SQUARE x 14 GAUGE, MINIMUM.
7. ALL RAILS AND PICKETS SHALL BE JOINED BY WELDING.
8. ALL GATE HARDWARE (POSTS, ASSEMBLIES, TRACK, FOOTINGS, ETC.) PER MANUFACTURER'S REQUIREMENTS.
9. GATE COLOR SHALL BE BLACK UNLESS SPECIFIED OTHERWISE (PER SCRRA APPROVAL). 
10. GATE SHALL MEET THE COATING PERFORMANCE CRITERIA OF ASTM F240B.
NOTES:

1. SIGN CONTRACTOR SHALL ENGINEER, FABRICATE & INSTALLATION OF SIGN STRUCTURE TO SATISFY ALL LOCAL CODES & WIND LOAD FACTORS. FIELD VERIFY SITE CONDITIONS PRIOR TO FABRICATION.

2. SIGN PANEL TO BE PAINTED DURAPLY OR MEDEX W/ SMOOTH-FINISHED EDGES & SEAMS.

3. METROLINK LOGO TO BE PROVIDED BY METROLINK. COLORS PER SIGNAGE STANDARDS.

4. LETTER STYLE SHALL BE AKZIDENZ GROTESK PER SCRRA STANDARD ES3301-02.

5. CONTRACTOR TO DETERMINE BEST SIGN MOUNTING APPLICATION PER SITE CONDITION.
**Details for Installing Signs at Grade**

**Engineering Standards**

**Material Specifications:**

- **Signs:** As indicated on individual sign standard.

- **Posts:**
  - 12 gage 1.05" thick square steel tube (ASTM A-36) with 1/2" dia. mounting holes 1" O.C. All galvanized in accordance with ASTM A-366.
  - 2" tube @ 2.42 lb/ft.
  - 2" tube @ 2.77 lb/ft.

- **Anchors:**
  - 12 gage 1.05" thick square steel tube (ASTM A-36) with 1/2" dia. mounting holes 1" O.C. All galvanized in accordance with ASTM A-366.
  - 2½" tube @ 3.14 lb/ft.

- **Hardware:** Galvanized aluminum, vandal resistant. Bolts: 3/8" diameter carriage bolts, 2024-T4 alloy. Length 3" or 5½". Nuts: Tamper resistant ACOA or equal washers: flat, 1/8" ID, 3/16" OD.

- **Location:** CL of post shall be 9 to 15 ft., measured perpendicular to CL of track, from field side of nearest rail unless otherwise specified on individual sign standard. Installer shall avoid damaging underground utilities when setting anchor.

**Dimensions:**

- **Section B-B**
  - THRU SIGN AND POST
  - 3½" long bolt with nut & washers
  - ½" dia. holes in post and sign (typ)
  - 2" square post

- **Section C-C**
  - THRU POST AND ANCHOR
  - 3½" long bolt with nut & washers
  - ½" dia. holes in post and anchor (typ)
  - 2½" square post

- **Section D-D**
  - THRU SIGN AND POST
  - 3½" long bolt with nut & washers
  - ½" dia. holes in post and sign (typ)
  - 2½" square post

**Scale:**

- CADD file: ENG. DES.

**Date Plotted:** 10/5/2011

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

**FileName:** s:\V8EngStds\5000\ES5210.dgn

**UserName:** carlosa
1. To allow mile posts to be read from both directions, one double-faced aluminum panel with white reflective sheeting background and black plastic numerals shall be mounted at right angles to the track at each location.

2. The post shall be set per the location plan on this sheet. Exceptions shall require the approval of SCRRA.

3. In single track territory, mile posts shall be set on right hand side of the track as one faces in the direction of increasing mile post numbers. In multiple track territory, mile posts shall be set on the field side of the track farthest to the right.

4. In multiple track territory where spread tracks exist, the letter "X" shall precede the mile post number on the newer line at the option of SCRRA. Where the distance separating the two lines is not sufficient to warrant such designation, the letter "X" need not precede the mile post numbers on the newer line.

5. When the exact mile post station falls within the limits of a bridge, grade crossing or other feature where it would be impractical to locate a sign, the mile post shall instead be set at the end of the feature nearest the exact mile post station.

6. Horizontal signs are preferred. Vertical signs shall be used only where horizontal clearance is restricted.

**MATERIAL NOTES:**

1. Signs shall include aluminum panel, retroreflective sheeting, polyurethane paint, screened-process colors on film, UV protection overlay, anti-graffiti overlay, posts, anchors, and hardware.

2. Aluminum panel shall be Alcoa 6061-T6 or equal.

3. Text font shall be 1/2" Arial bold 1/2" as per SCRRA ES5210, size as indicated.

4. Posts, anchors, and hardware shall be as per SCRRA ES5210.

5. Panel shall be painted on all sides with two part acrylic polyurethane paint coating.

6. Retroreflective sheeting shall conform to the requirements of ASTM D4956, Class IX or greater. Retroreflective sheeting shall have class 1, 3, or 4 retroreflective backing which shall be pressure sensitive and fungus resistant.

7. Screened-process colors and non-reflective opaque black film shall have equivalent outdoor weatherability characteristics as the retroreflective sheeting.
MATERIAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>MATERIAL</th>
<th>MANUFACTURER AND PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH INTENSITY SHEETING (BLACK)</td>
<td>1</td>
<td>3M SCOTCHMATE HIGH INTENSITY PRISMATIC WHITE GRAY 3930 SHEETING</td>
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<tr>
<td>&amp; SHEETING (WHITE)</td>
<td>2</td>
<td>NIPPON CARBIDE RETRO-REFLECTIVE SHEETING TYPE XCRYSTAL GRAY</td>
</tr>
<tr>
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<td>3</td>
<td>AVERY DENNISON OMNI-VIS T-9500 PRISMATIC HIGH INTENSITY SHEETING</td>
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<tr>
<td>COPY / GRAPHICS (BLACK)</td>
<td>1</td>
<td>3M PROCESS COLOR SERIES 8851 INK</td>
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<td>2</td>
<td>NIPPON CARBIDE GRAFHTIENTistant 3803 INK</td>
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<td>3</td>
<td>AVERY DENNISON 4930 INK</td>
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<tr>
<td>ANTI- GRAFFITI OVERLAY</td>
<td>1</td>
<td>3M PREMIUM PROTECTIVE OVERLAY FILM 1580</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>NIPPON CARBIDE BRAND HIGH SCALE T-10801</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>AVERY DENNISON OL - 1000 PREMIUM ANTI-GRAFFITIFILM</td>
</tr>
<tr>
<td>PANEL</td>
<td>1</td>
<td>1&quot; THICK ALUMINUM, ALCOA 6061-T6 OR EQUAL</td>
</tr>
<tr>
<td>POSTS, ANCHORS &amp; HARDWARE</td>
<td>1</td>
<td>AS PER SCRRA ES5210</td>
</tr>
</tbody>
</table>

INSTALLATION NOTES:

1. QUARTER MILE INCREMENT SIGNS ALLOW TRAIN CREWS AND OTHERS TO ACCURATELY DETERMINE HILDEST LOCATIONS BETWEEN MILE POSTS AND DETERMINE TRACK MILEAGE LIMITS. WHEN PILOT INSTRUCTIONS AND OTHER ITEMS DESCRIBED IN TERMS OF MILEPOST LOCATION, EACH BAND REPRESENTS A QUARTER MILE INTERVAL. 2. TO ALLOW SIGNS TO BE READ FROM BOTH DIRECTIONS, ONE DOUBLE-FACED ALUMINUM PANEL WITH WHITE REFLECTIVE SHEETING BACKGROUND AND BLACK PLASTIC BANDS SHALL BE MOUNTED AT RIGHT ANGLES TO THE TRACK AT EACH LOCATION. 3. THE POST SHALL BE SET PER THE LOCATION PLAN ON THIS SHEET. EXCEPTIONS SHALL REQUIRE THE APPROVAL OF SCRRA. 4. IN SINGLE TRACK TERRITORY, MILE POSTS SHALL BE SET ON RIGHT HAND SIDE OF THE TRACK AS ONE APPROACHES IN THE DIRECTION OF INCREASING MILE POSTS. IN MULTIPLE TRACK TERRITORY, MILE POSTS SHALL BE SET ON THE FIELD SIDE OF THE TRACK FARTHEST TO THE RIGHT. 5. WHEN THE EXACT QUARTER MILE INCREMENT STATION FALLS WITHIN THE LIMITS OF A BRIDGE, GRADE CROSSING OR OTHER FEATURE WHERE IT WOULD BE IMPRACTICAL TO LOCATE A SIGN, THE MARKER SHALL INSTEAD BE SET AT THE END OF THE FEATURE NEAREST THE EXACT INCREMENT STATION.

MATERIAL NOTES:

1. SIGNS SHALL INCLUDE ALUMINUM PANEL RETROREFLECTIVE SHEETING, POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM UV PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE. 2. ALUMINUM PANEL SHALL BE ALCOA 6061-T6 OR EQUAL. 3. POSTS, ANCHORS, AND HARDWARE SHALL BE AS PER SCRRA ES5210. 4. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING. 5. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL HAVE CLASS 1, 3, OR 4 ADHESIVE BACKING WHICH SHALL BE PRESSURE SENSITIVE AND FUNGUS RESISTANT. 6. SCREENED-PROCESS COLORS AND NONREFLECTIVE, OPAQUE BLACK FILM SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.
**MANUFACTURER AND PRODUCT**
- THICK ALUMINUM, ALCOA 6016-T6 OR EQUAL

**INSTALLATION NOTES**
1. SIGNS SHALL INCLUDE ALUMINUM PANEL, RETROREFLECTIVE SHEETING, POSTS, ANCHORS, AND HARDWARE SHALL BE AS PER SCRRA ES5210.
2. ALUMINUM PANEL SHALL BE ALCOA 6061-T6 OR EQUAL.
3. TEXT FONT SHALL BE 1/8 ANGEL BOLD 1/2" AS PER SCRRA ES1212.
4. POSTS, ANCHORS, AND HARDWARE SHALL BE AS PER SCRRA ES5210.
5. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC.
6. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1293 WHICH MEETS OR EXCEEDS RETROREFLECTIVE SHEETING SHALL HAVE CLASS 1, 3, OR 4 ADHESIVE BACKING WHICH SHALL BE PRESSURE SENSITIVE AND FUNGUS RESISTANT.
7. SCREENED-PROCESS COLORS AND NONREFLECTIVE OPAQUE BLACK FILM SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.

**MATERIAL NOTES**
1. SIGNS SHALL INCLUDE PANEL, AND PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE.
2. ALUMINUM PANEL SHALL BE ALCOA 6061-T6 OR EQUAL.
3. TEXT FONT SHALL BE 1/8 ANGEL BOLD 1/2" AS PER SCRRA ES1212.
4. POSTS, ANCHORS, AND HARDWARE SHALL BE AS PER SCRRA ES5210.
5. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC.
6. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1293 WHICH MEETS OR EXCEEDS RETROREFLECTIVE SHEETING SHALL HAVE CLASS 1, 3, OR 4 ADHESIVE BACKING WHICH SHALL BE PRESSURE SENSITIVE AND FUNGUS RESISTANT.
7. SCREENED-PROCESS COLORS AND NONREFLECTIVE OPAQUE BLACK FILM SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.

**MATERIAL SPECIFICATIONS**

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<th>SHEETING (GREEN)</th>
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<tr>
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<td>2</td>
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</thead>
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<td>1</td>
<td>NIPPON CARBIDE T-CAL</td>
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<td>2</td>
<td>AVERY BENNISON DL - 1000 PREMIUM ANTI-GRAFFITI FILM</td>
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<td>3</td>
<td>JW PREMIUM PROTECTIVE OVERLAY FILM - 160</td>
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<th>PANEL</th>
<th>MANUFACTURER AND PRODUCT</th>
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</thead>
<tbody>
<tr>
<td>1/4&quot; THICK ALUMINUM, ALCOA 6061-T6 OR EQUAL</td>
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</table>

**POSTS, ANCHORS & HARDWARE**
1. AS PER SCRRA ES5210

**RESUME SPEED SIGN**
- GREEN PANEL-WHITE NUMBERS
- 45° PANEL (TYP) ON WHITE BLACK COPY

**REDUCE SPEED SIGN**
- YELLOW PANEL-BLACK NUMBERS
- 45° PANEL (TYP) ON WHITE BLACK COPY

**SPEED SIGN LOCATION**
- SPEED SIGN LOCATION
- ELEVATION OF TOP OF POST
- 2" SQUARE POST
- ANCHORED PER SCRRA ES5210

**ENGINEERING STANDARDS**
- PERMANENT SPEED RESTRICTION SIGNS

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**SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY**

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

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**OMETEOLIN**

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
**MATERIAL NOTES:**

1. Signs shall include aluminum panel, retroreflective sheeting, protective overlay, anti-graffiti overlay, posts, anchors and hardware.
2. All panels shall be ACP-401 or equal.
3. Text fonts shall be 3/8" and bold 1/2" as per SCRRA ES5212.
4. Posts, anchors, and hardware shall be as per SCRRA ES5220.
5. Panels shall be painted on all sides with two part acrylic polyurethane paint coating.
6. Retroreflective sheeting shall conform to the requirements of Acme Mfg. Class I or greater. Retroreflective sheeting shall have Class 1, 3, or 4 adhesive backing which shall be pressure-sensitive and fungus resistant.
7. Screened-process colors and nonreflective opaque black film shall have equivalent outdoor weatherability characteristics as the retroreflective sheeting.

**INSTALLATION NOTES**

1. To allow mile posts to be read from both directions, one double-faced aluminum panel shall be mounted at right angles to the track at each location.
2. The post shall be set for the location plan on this sheet. Exceptions shall require the approval of SCRRA.
3. No trespassing/tenth mile sign with even numbers shall be set for the eastward direction and odd numbers on the westward direction on the right side of the track. No trespassing signs shall be set for both directions where trespassing/tenth mile signs are not present.
4. When the exact mile post station falls within the limits of a bridge, grade crossing or other feature where it would be impractical to locate a sign, the mile post sign shall instead be set at the end of the feature nearest the exact mile post station.
5. No trespassing sign only, will be installed on four corners of Metrolink-Rail grade crossing within 50 feet from the edge of crossing.
6. No trespassing/tenth mile sign shall be placed on center fence at stations.

**MATERIAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>SHEETING</th>
<th>MANUFACTURER</th>
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<tr>
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<td>3M</td>
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</tbody>
</table>

**ENGINEERING STANDARDS**

**NO TRESPASSING AND TENTH MILE POST SIGN**

**PLAN**

**SECTION**

**SHEET**

**DRAWN BY:**

**DES.**

**ENG.**

**ASSISTANT DIRECTOR:** STANDARDS & DESIGN

**DRAWN BY:**

**DATE:**

**MANUFACTURER AND PRODUCT**

**SCALE:** 1" = 1'-0"
MATERIAL NOTES:
1. SIGNS SHALL INCLUDE ALUMINUM PANEL, RETROREFLECTIVE SHEETING, POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM BY PROTECTION OVERLAY, ANTI-SMASH OVERLAY, POSTS, ANCHORS AND HARDWARE.
2. ALUMINUM PANEL SHALL BE ALCOA 6016-T6 OR EQUAL.
3. POSTS, ANCHORS, AND HARDWARE SHALL BE AS PER SCRRA ES5210.
4. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.
5. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4564, CLASS III OR GREATER RETROREFLECTIVE SHEETING SHALL HAVE CLASS 3, OR A GLASS BEAD ARRANGEMENT WHICH SHALL BE PRESSURE SENSITIVE AND FUNGUS RESISTANT.

INSTALLATION NOTES
1. PURPOSE TO ASSIST TRAIN CREWS AND OTHERS IN ACCURATELY DETERMINING LOCATIONS FOR SPEED RESTRICTIONS AND FORM B TRACK BULLETINS.
2. WHERE USED AS SPECIFIED BY THE GENERAL CODE OPERATING RULES.
3. PLACEMENT ALL SIGNS ON THIS PAGE ARE DISPLAYED TO THE SIDE OF THE TRACK FOR THE APPROPRIATE DIRECTION OF TRAFFIC MOVEMENT. ACTUAL LOCATION MAY BE ADJUSTED SLIGHTLY TO AVOID OBSTRUCTIONS AND UTILITIES. CARE MUST BE USED IN PLACEMENT TO ENSURE SIGN DOES NOT OBLITERATE RAILWAY, MAINTENANCE ROAD, DRAINAGE DITCH, SIDE TRACKS, ETC. ALL SIGNS MUST CONFORM TO THE CLEARANCES SPECIFIED IN CPUC GD 26-0. WHEN INSTALLING 2-PIECE FLAG HOLDER, DRIVE FLAG BASE WITH FLAG BASE SHOWN ONLY, DO NOT USE REFLECTIVE TAPE APPLIED TO FLAG BASE.
4. DISTANCE FROM FIELD SIDE OF NEAREST RAIL TO FLAG POST SHALL NOT BE LESS THAN 9 FEET NOR MORE THAN 15 FEET. EXCEPT AS PRESCRIBED BY RULE 5.4.

TYPICAL SECTION EUHER POST AND BASE
DETAIL 5

TYPICAL SECTION THROUGH POST AND SIGN
DETAIL 3

TYPICAL SECTION THROUGH POST AND BASE
DETAIL 5

FLAG BASE DRIVER
FOR 2-PIECE FLAG HOLDER
DETAIL 3

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

ENGINEERING STANDARDS
STOP, SLOW AND RESUME SPEED SIGNS
FLAGS AND SIGNS

METROLINK

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

MATERIAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>PRODUCT SYSTEM</th>
<th>MANUFACTURER AND PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEETING (YELLOW)</td>
<td>1 - 3M DIAMOND GLASS 3-4092</td>
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<tr>
<td>SHEETING (RED)</td>
<td>2 - AVERY DENNISON OMNI CUBE T-11501</td>
</tr>
<tr>
<td>ANTI- GRAFFITI OVERLAY</td>
<td>3 - AVERY DENNISON OL - 1000 PREMIUM ANTI - GRAFFITI FILM</td>
</tr>
<tr>
<td>PANEL</td>
<td>1 - 5/16&quot; THICK ALUMINUM, ALCOA 6016-T6 OR EQUAL</td>
</tr>
<tr>
<td>POSTS, ANCHORS &amp; HARDWARE</td>
<td>AS PER SCRRA ES5210</td>
</tr>
</tbody>
</table>

NOTE:
YELLOW-RED FLAG ILLUSTRATED. PURCHASE REQUIREMENTS MUST SPECIFY COLOR OF FLAG.
WHISTLING POINT SIGN

ELEVATION OF TOP OF NEAREST TIE

- WHITE PANEL WITH BLACK FONT (TYP)
- ⅛" THICK ALUMINUM, ALCOA 6016-T6 OR EQUAL
- HARDWARE
- PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.
- POSTS, ANCHORS AND HARDWARE SHALL BE AS PER SCRRA ES5210.
- THE SIGNS WILL BE CENTERED BETWEEN TRACKS TO THE RIGHT OF THE TRACK AS VIEWED FROM AN APPROACHING TRAIN.

OPTIONAL PANEL
- QUIET ZONES
- MATERIAL NOTES:
  1. SIGNS SHALL INCLUDE ALUMINUM PANEL, RETROREFLECTIVE SHEETING, MULTICOLOR PANEL, SCREENED-PROCESS COLORS OR FILM, UV PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE. POSTS, ANCHORS AND HARDWARE SHALL BE AS PER SCRRA ES5210.
  2. ALUMINUM PANEL SHALL BE ALCOA 6061-T6 OR EQUAL.
  3. TEXT FONT SHALL BE ⅛" ARIAL BOLD ⅛" AS PER SCRRA ES5212, AS RENAMED.
  4. POSTS, ANCHORS AND HARDWARE SHALL BE AS PER SCRRA ES5210.
  5. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.
  6. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER.
  7. MATERIAL SPECIFICATIONS

MATERIAL SPECIFICATIONS

PRODUCT SYSTEM MANUFACTURER AND PRODUCT
1 HIGH INTENSITY SHEETING (TYP)
   1 3M SCOTCHLITE HIGH INTENSITY PRISMATIC WHITE GRADE 3930 SHEETING
   2 NIPPON CARBIDE RETRO-REFLECTIVE SHEETING TYPE VMCRYSTAL GRADE
   3 AVERY DENNISON 4930 INK
2 COPY / GRAPHICS (BLACK)
   1 3M PROCESS COLOR SERIES 8591 INK
   2 NIPPON CARBIDE GRAFFITITRUSTANT 3803 INK
   3 AVERY DENNISON 4930 INK
3 ANTI-GRAFFITI OVERLAY
   1 3M PREMIUM PROTECTIVE OVERLAY FILM 1580
   2 NIKKALITE BRAND W-1 SCALE F-10801
   3 AVERY DENNISON OL-1000 PREMIUM ANTI-GRAFFITI FILM
4 PANEL
   1 ⅛" THICK ALUMINUM, ALCOA 6061-T6 OR EQUAL
   2 ⅛" SQUARE POST BLACK FONT (TYP) WHITE PANEL WITH BLACK FONT (TYP)
   3 ½" ⅛" SQUARE POST BLACK FONT (TYP) WHITE PANEL WITH BLACK FONT (TYP)
   4 ⅛" SQUARE POST BLACK FONT (TYP) WHITE PANEL WITH BLACK FONT (TYP)
   5 ⅛" SQUARE POST BLACK FONT (TYP) WHITE PANEL WITH BLACK FONT (TYP)

INSTALLATION NOTES

1. IN SINGLE TRACK TERRITORY, SIGNS SHALL BE LOCATED TO THE RIGHT OF THE TRACK AS VIEWED FROM AN APPROACHING TRAIN IN MULTIPLE TRACK TERRITORY OR WHERE SERVING ARE ADJACENT TO MAIN TRACK(S), THE SIGNS WILL BE PLACED ON THE RIGHT SIDE OF THE OUTSIDE TRACKS. IN MULTIPLE MAIN TRACKS WHERE TRACK CENTERS ARE 20 FEET OR GREATER, THE SIGNS WILL BE CENTERED BETWEEN TRACKS TO THE RIGHT OF THE TRACK AS VIEWED FROM AN APPROACHING TRAIN, NO LESS THAN 1200 TO CROSSING.
2. THE POST SHALL BE SET PER THE LOCATION PLAN ON THIS SHEET. EXCEPTIONS SHALL REQUIRE THE APPROVAL OF SCRRA.
3. QUIET ZONE SIGN SHALL BE USED ONLY AT LOCATIONS THAT HAVE BEEN LEGISLATED AS QUIET ZONES.
4. WHERE THERE ARE MULTIPLE PUBLIC CROSSINGS NOT MORE THAN 1320' APART, THE SIGN IN ADVANCE OF THE FIRST CROSSING SHALL INCLUDE A SECOND PANEL Displaying A NUMERAL WHICH REPRESENTS THE NUMBER OF CROSSINGS INVOLVED.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
800 WILSHIRE BLVD., SUITE 1500, L.A., CA. 90017
DIRECTOR OF ENGINEERING AND CONSTRUCTION
PRINCIPAL ENGINEER: DESIGN & ENGINEERING

ENGINEERING STANDARDS

WHISTLING POINT / QUIET ZONE SIGN

FOR NON-SCRRA APPROVED USES:
ALL RIGHTS RESERVED. ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRA.
USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE SCRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRA APPROVED USES ONLY.
**Material Specifications**

<table>
<thead>
<tr>
<th>Product System</th>
<th>Manufacturer and Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH INTENSITY SHEETING (YELLOW)</td>
<td>1. 3M SC3 4080</td>
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<tr>
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<td>2. AVERY DENNISON OMNI-CUBE T-11500</td>
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<td>ANTI-GRAFFITI SHEETING</td>
<td>1. 3M PREMIUM PROTECTIVE OVERLAY FILM</td>
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<td>2. MICHIGAN BRAND T-SCALE T-4080</td>
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</tr>
<tr>
<td>POSTS, ANCHORS &amp; HARDWARE</td>
<td>1. AS PER SCRRA ES5210</td>
</tr>
</tbody>
</table>

**Installation Notes**

1. **Yard Limit Sign** shall be installed to indicate limit of territory operated under Rule 6.13.
2. The post shall be set per the location plan on this sheet. Exceptions shall require the approval of SCRRA.

**Material Notes:**

1. Signs shall include aluminum panel, retroreflective sheeting, polyurethane paint, screened-process colors or film, UV protection overlay, anti-graffiti overlay, posts, anchors and hardware.
2. Aluminum panel shall be alcoa 6061-T6 or equal.
3. Posts, anchors, and hardware shall be as per SCRRA ES5210.
4. Panel shall be painted on all sides with two part acrylic polyurethane paint coating.
5. Retroreflective sheathing shall conform to the requirements of ASNY 1750, CLASS II or greater. Retroreflective sheathing shall have CLASS II or greater retro-reflec- tive coating, which shall be pressure sensitive and fungus resistant.
NOTES:

1. BOTH RAILS TO BE MARKED ON THE WEB ON FIELD SIDE WITH OSHA SAFETY ORANGE SPRAY PAINT.

2. MARKING TO BE MADE USING 3/4" GOTHIC LETTERING STENCIL.

3. RAILS TO BE MARKED DIRECTLY OPPOSITE EACH OTHER ALIGNED WITH THE OUTERMOST INSULATED JOINT.

4. REFER TO ES5230 FOR TRACK IDENTIFICATION MARKING.
FLAG STANCHION

All parts made from steel

Plan

Elevation

SLEEVE

RAIL STRAP

THICK, FLEXIBLE SLEEVE

STABILIZER

3/8" THICK, FLEXIBLE RAIL STRAP
INSTALLATION NOTES:

1. SIGNS SHALL BE PLACED AT ALL STATIONS AND BUSINESS TRACKS LISTED ON TIMETABLE SCHEDULE PAGE.

2. IN TWO TERRITORY, ONE SIGN IS REQUIRED AT EACH END OF TRACKS IN PLAN VIEW FROM APPROACHING TRAINS.

3. AT OTHER LOCATIONS IN THE TERRITORY WHERE SIGNS ARE REQUIRED, SIGNS SHALL BE MOUNTED ON BOTH SIDES OF POST AT TIMETABLE STATION LOCATION.

4. IN OTHER THAN CTC OR TWO TERRITORY, SIGNS SHALL BE MOUNTED ON BOTH SIDES OF POST AND LOCATED AT TIMETABLE STATION LOCATION.

5. TO MINIMIZE THE LENGTH OF THE SIGN, ABBREVIATIONS THAT MAKE MEANING CLEAR MAY BE USED. REQUIREMENTS FOR STATION SIGNS ARE DEPENDENT ON SMALL-SIZE MOUNTING HARDWARE REQUIRED PER TYPICAL MOUNTING DETAILS.

6. STATION SIGN SHALL BE PLACED ON OPPOSITE SIDE OF SWITCH STAND 10'-0" AHEAD OF SWITCH POINTS.

MATERIAL SPECIFICATIONS:

1. ALUMINUM PANEL RETROREFLECTIVE SHEETING, POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM OF SCRRA ES5210.

2. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER.

3. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.

4. BLACK LETTERS SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL HAVE CLASS 3 OR 4 ADHESIVE BACKING WHICH SHALL BE SCREENED-PROCESS COLORS AND NONREFLECTIVE, OPAQUE BLACK FILM AND POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM, UV PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE.

5. SIGNS SHALL INCLUDE ALUMINUM PANEL, RETROREFLECTIVE SHEETING, AND POLYURETHANE PAINT PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE.

6. MATERIAL PANEL SHALL BE AS PER SCRRA ES5210.

7. SCREENED-PROCESS COLORS AND NONREFLECTIVE OPAQUE BLACK FILM SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.

ENGINEERING STANDARDS:

STATION SIGNS FOR OTHER THAN CTC TERRITORY:
THE HEAD BLOCKS.
SIGNS WILL BE USED AND THE DISTANCES THEY WILL BE SET OUTSIDE APPROACHING THE YARD. SCRRA WILL DESIGNATE STATIONS AT WHICH FACES THE YARD.
FACE OF THE SIGN SHALL BE SET FACING TRAINS.
POST SHALL BE SET ON THE RIGHT HAND SIDE OF THE TRACK AS ONE THE SIGNS SHALL BE SET PER THE LOCATION PLAN ON THIS SHEET. THE

1. DIRECTOR OF ENGINEERING AND CONSTRUCTION

ENGINEERING STANDARDS

REV.

STANDARD

SHEET

SCALE:

CADD FILE:

ENG.

DES.

DATE

REV.

DESCRIPTION

DRAWN BY:

DATE:

FOR NON-SCRRA APPROVED USES:

ALL RIGHTS RESERVED.

ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRA.

USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF

SCRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE SCRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRA APPROVED USES ONLY.

INSTALLATION NOTES

1. THE SIGNS SHALL BE SET ON THE LOCATION PLAN ON THIS SHEET. THE POST SHALL BE SET ON THE RIGHT HAND SIDE OF THE TRACK AS ONE APPROACHING THE YARD. SCRRA WILL DESIGNATE STATIONS AT WHICH SIGNS WILL BE SET AND THE DISTANCES THEY WILL BE SET OUTSIDE THE HEAD BLOCKS.

MATERIAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>MANUFACTURER AND PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH INTENSITY SHEETING</td>
<td></td>
</tr>
<tr>
<td>1 3M SCOTCHLITE HIGH INTENSITY PRISMATIC WHITE GRADE 3930 SHEETING</td>
<td></td>
</tr>
<tr>
<td>2 NIPPON CARBIDE RETRO-REFLECTIVE SHEETING TYPE III CRYSTAL GRADE</td>
<td></td>
</tr>
<tr>
<td>3 AVERY DENNISON OMNI-VIEW T-9500 PRISMATIC HIGH INTENSITY SHEETING</td>
<td></td>
</tr>
<tr>
<td>COPY / GRAPHICS (BLACK)</td>
<td></td>
</tr>
<tr>
<td>1 3M PROCESS COLORS SERIES 8851 INK</td>
<td></td>
</tr>
<tr>
<td>2 NIPPON CARBIDE GRAFFITI RESISTANT 3803 INK</td>
<td></td>
</tr>
<tr>
<td>3 AVERY DENNISON 4930 INK</td>
<td></td>
</tr>
<tr>
<td>ANTI-GRAFFITI OVERLAY</td>
<td></td>
</tr>
<tr>
<td>1 3M PREMIUM PROTECTIVE OVERLAY FILM 150</td>
<td></td>
</tr>
<tr>
<td>2 NIKKALITE BRAND HIGH INTENSITY SHEETING</td>
<td></td>
</tr>
<tr>
<td>3 AVERY DENNISON OL-1000 PREMIUM ANTI-GRAFFITI FILM</td>
<td></td>
</tr>
<tr>
<td>PANEL</td>
<td></td>
</tr>
<tr>
<td>1 3/8&quot; THICK ALUMINUM. ALCOA 6061-T6 OR EQUAL</td>
<td></td>
</tr>
<tr>
<td>POSTS, ANCHORS &amp; HARDWARE</td>
<td></td>
</tr>
<tr>
<td>1 AS PER SCRRA ES5210</td>
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MATERIAL NOTES:

1. SIGNS SHALL INCLUDE ALUMINUM PANEL RETROREFLECTIVE SHEETING, POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM, PRESSURE SENSITIVE GRAFFITI RESISTANT OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE.
2. ALUMINUM PANEL SHALL BE ALCOA 6061-T6 OR EQUAL.
3. TEXT FONT SHALL BE 7/8" HELVETICA 9/8" AS PER SCRRA ES1212, AS INDICATED.
4. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.
5. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL HAVE EYES 7/8" OR GREATER DIA. HOLE AS INDICATED.
6. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL HAVE EYES 7/8" OR GREATER DIA. HOLE AS INDICATED.
7. SCREENED-PROCESS COLORS AND NONREFLECTIVE GRAY AND CUSTOM COLORS SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.
NOTES

1. TARGET PLATE TO HAVE NON-REFLECTIVE WHITE VINYL APPLIED TO BOTH SIDES.

2. HANDLE SHALL BE SCHEDULE 40 PVC SLOTTED TO ACCOMMODATE TARGET PLATE.

3. HANDLE SHALL BE SECURED TO TARGET PLATE WITH TWO 3/4" X 20 X 1" PLATED HEX HEAD BOLTS. NUTS SHALL BE 3/4" X 20 ROUND BASE WELD NUTS.

4. A 1" BLACK BORDER SHALL BE SILK SCREENED TO BOTH SIDES OF TARGET PLATE WITH NO SPACE BETWEEN EDGE OF TARGET PLATE AND BORDER.

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<td></td>
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<tr>
<td>GRAPHICS BLACK</td>
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<td></td>
<td>3 AVERY DENNISON 4930 INK</td>
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<tr>
<td>PANEL</td>
<td>1 16&quot; DIA. X 0.063 THICK ALUMINUM</td>
</tr>
<tr>
<td>HANDLE</td>
<td>1 1&quot; DIA SCHEDULE 40 PVC (17&quot; LONG, SLOTTED 3&quot;)</td>
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**MARKING LOCATION PLAN**

### NOTES:
1. Track identification markings to be utilized at all track locations where crossings exist.
2. Rail to be marked on the web with text facing the center of the track, marking to be made 5'-0" from the end of the crossing panels.
3. Marking will match name the track is designated in SCRRA timetable.
4. Locations with multiple main line tracks shall be marked with SCRRA main track followed by the track number, for example SCRRA Main Trk 2.
5. Stencil industry and yard tracks will be marked with the marking stencil.
6. In locations where web of rail is blocked from view, the identification marking may be made on the top surface of the crossing panels next to be located on the outer edge desirable when facing away from the center of the crossing.
7. Marking to be made using 2" Gothic lettering stencil.
8. SCRRA Safety White spray paint to be utilized, black paint may be used when substrate and white paint is difficult to see.

### STENCIL OPTIONS

- **SCRRRA**
- **SIDING**
- **IND**

### TYPICAL MARKING ON WEB OF RAIL

- **SCRRRA MAIN TRK 1**

**SCRRRA MAIN TRK 1**

**MARKING FOR TRACK IDENTIFICATION**

**SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY**

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