Load Bearing Wall Members

**SigmaTrak® Runner Track Improvement**

**Product Description**
SigmaTrak® is the ideal runner track for load bearing and curtain wall metal stud wall assemblies. Manufactured from mill-certified steel, SigmaTrak’s unique shape is designed to allow a stud to seat fully within the track, providing full bearing at the top and bottom structural tracks. Load bearing studs must be fully seated within the top and bottom tracks according to design standards. SigmaTrak eliminates field issues typically seen with (T) section tracks where the studs bear directly on the corner radius of the track, creating gaps between the stud and track.

**Benefits That Add Value:**
- Track web is oversized to allow the stud to seat fully in the track
- Eliminates the gap between the stud and the track as a result of bearing on corner radii
- Faster assembly than with standard track (no forcing/squeezing stud into bearing on track radii)
- Manufactured from traceable mill-certified steel
- Manufacturing tolerances based on ASTM C955-11c

**Track Recommendations**
- The top and bottom track should match the stud thickness
- Minimum track thickness = 54mils
- When welding is required to the top track, it is recommended to use a 14ga (68mils) thickness. Welding may be used as a means of attaching light gauge components, and should be performed by an AWS certified welder.

**Material Properties:**
ASTM A1003/A1003M or ASTM A653/A653M, G-60 (Z180) minimum hot-dipped galvanized coating; or equivalent. Grade 50 (340), 50ksi (340 MPa) minimum yield strength, 65ksi (450 MPa) minimum tensile strength or 33ksi (230MPa) minimum yield strength, 45ksi (310 MPa) minimum tensile strength.

Load bearing walls are designed to fully seat within the top and bottom tracks. Design standards recommend a maximum gap of $\frac{1}{8}''$ in order to obtain an effective bearing condition.
4. The effective moment of inertia for deflection is calculated at a stress which results in a section modulus such that the stress times

3. For deflection calculations, use the effective moment of inertia.

Important Notes:

1. Web depth for track sections is equal to the nominal height plus 2 times the design thickness plus 2 times the bend radius.
2. Effective properties incorporate the strength increase from the cold-work of forming as applicable per AISI A7.2.
3. For deflection calculations, use the effective moment of inertia.
4. The effective moment of inertia for deflection is calculated at a stress which results in a section modulus such that the stress times the section modulus at that stress is equal to the allowable moment. AISI S100-07 Procedure I for serviceability determination has been used.

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<table>
<thead>
<tr>
<th>Section</th>
<th>Design Thickness</th>
<th>Gross Properties</th>
<th>Effective Properties</th>
<th>Torsional</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(in)</td>
<td>(in²)</td>
<td>(lb/ft)</td>
<td>(in 4)</td>
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</tbody>
</table>

**Gross Properties**

- **Area (in²)**
- **Weight (lb/ft)**
- **Iₓ (in⁴)**
- **Sₓ (in³)**
- **Rₓ (in)**

**Effective Properties**

- **Iₑ (in⁴)**
- **Sₑ (in³)**
- **Rₑ (in)**
- **Mₑ (in-k)**
- **Vₑ (lb)***
- **Iₑₓ (in⁶)**
- **Mₑₓ (in-k)**
- **Iₑₘ (in⁶)**
- **Mₑₘ (in-k)**
- **Jₓ1000 (in³)**
- **Xₑ (in)**
- **m (in)**
- **Rₑ (in)**
- **b (in)**

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1. Iₑ and Mₑ are based on the web element in compression.
2. Iₑₓ and Mₑₓ are based on the web element in compression.
3. Web height to thickness ratio exceeds 200. Web stiffeners are required at all support points and concentrated loads.
<table>
<thead>
<tr>
<th>Section</th>
<th>Design Thickness (All 50 ksi)</th>
<th>Gross Properties</th>
<th>SigmaTrak® Section Properties</th>
<th>Effective Properties</th>
<th>Torsional</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Area (in²)</td>
<td>Weight (lb/ft)</td>
<td>Iₓ (in⁴)</td>
<td>Iᵧ (in⁴)</td>
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<tr>
<td></td>
<td></td>
<td>Sₓ (in)</td>
<td>Rₓ (in)</td>
<td>Mₓ (in-k)</td>
<td>Vₓ (lb)</td>
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<tr>
<td></td>
<td></td>
<td>Iₓₑ (in⁴)</td>
<td>Mᵧ (in-k)</td>
<td>E₁ (in⁴)</td>
<td>Eᵤ (in⁴)</td>
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<td></td>
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<td>Jₓ₁000 (in⁴)</td>
<td>Cₓ (lb/ft)</td>
<td>Xₒ (m)</td>
<td>m (in)</td>
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<td>Rₒ (in)</td>
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</tbody>
</table>

1. Iₓ and Mₓ are based on the web element in tension.
2. Iᵧ and Mᵧ are based on the web element in compression.
3. Web height to thickness ratio exceeds 200. Web stiffeners are required at all support points and concentrated loads.