a) The UL designs listed in this guide are the most efficient thicknesses at time of printing for the most common construction assemblies, but may not cover all scenarios. Please consult your local GCP Applied Technologies’ representative for updates and consult the UL Directory for further limitations and information.

b) On December 31, 2015, UL issued a document entitled “Updates to Load Restriction Factors”. In this document, UL addressed load restriction factors for steel beam ratings only. Load restrictions related to joists were not evaluated and therefore, load restrictions on joists for unrestrained assemblies need to be considered. Non-load restricted UL listing will contain the following information below the Design number on the listing: “Loading Determined by Allowable Stress Design Method or Load and Resistance Factor Design Method published by the American Institute of Steel Construction, or in accordance with the relevant Limit State Design provisions of Part 4 of the National Building Code of Canada.”

c) Unprotected concrete deck thicknesses from D925:

1. Fluted/Cellular (d) D925 N782 (e) N854
2. All Fluted LWC D925 N708 N777 N854
3. All Fluted (1hr to 2hr NWC) D925 N852 N854 N854
4. All Fluted (3hr to 4hr NWC) D925 N782 (e) N854 N854

Footnotes

- For use with 2 or 3 in. steel floor and form units only.
- Unrestrained ratings are subject to deck guage and span limitations.
- Spatterkote® SK-3 is required on all cellular units with flat plate on the bottom.
- Thicknesses for Z106 HY may have an advantage over MK-6/HY.
- For decks painted with unclassified paint/primer, lath requirements must be determined.
- Depending on the hollowcore construction, it may be possible to substitute the Beam Design N782 and/or the Joist Design N854 into UL Design J957. A calculation of the concrete volume per unit floor area and the density of the concrete of the hollowcore unit would need to be greater than or equal to the values contained in N782 and/or N854.

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Updated 02/12/18
### GCP Applied Technologies' Design Flowchart

#### Roof Designs - Unrestrained

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Substitutions</th>
<th>Non-Load Restricted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Polystyrene Board (IRMA)</td>
<td>P714 S750 S728 S749</td>
</tr>
<tr>
<td></td>
<td>Polystyrene Board over GWB (1hr)</td>
<td>P725 S750 S728 S749</td>
</tr>
<tr>
<td></td>
<td>Polystyrene Board over GWB (&gt; 1hr)</td>
<td>P725 S750 S728 S749</td>
</tr>
<tr>
<td></td>
<td>Polysocyanurate Board (1hr)</td>
<td>P732 S750 S749</td>
</tr>
<tr>
<td></td>
<td>Polysocyanurate Board (&gt; 1hr)</td>
<td>P732 S749</td>
</tr>
<tr>
<td></td>
<td>Sprayed Polyurethane Foam</td>
<td>P733 S750 S728 S749</td>
</tr>
<tr>
<td></td>
<td>Mineral and Fiber Board (1hr)</td>
<td>P732 S750 S749</td>
</tr>
<tr>
<td></td>
<td>Mineral and Fiber Board (&gt; 1hr)</td>
<td>P732 S749</td>
</tr>
<tr>
<td></td>
<td>Insulating Concrete</td>
<td>P936 S735 S736 S749</td>
</tr>
</tbody>
</table>

### Columns

- **Standard & Medium Density (MK-6, RG, MK-1000/HB, MK-10/HB, Z-106/HY, Z-106G)**
  - **X854**

- **High Density**
  - **X854 or X795**
    - (Z-146, Z-156, Z-146T, Z-156T) (Check Design)

- **Standard & Medium Density (MK-6, RG, MK-1000/HB, MK-10/HB, Z-106/HY, Z-106G)**
  - **Y710**

- **High Density**
  - **X795**
    - (Z-146, Z-156, Z-146T, Z-156T)

### Footnotes

- **h)** The UL designs listed in this guide are the most efficient thicknesses at time of printing for the most common construction assemblies, but may not cover all scenarios. Please consult your local GCP Applied Technologies' representative for updates and consult the UL Directory for further limitations and information.

- **i)** On December 31, 2015, UL issued a document entitled “Updates to Load Restriction Factors”. In this document, UL addressed load restriction factors for steel beam ratings only. Load restrictions related to joists were not evaluated and therefore, load restrictions on joists for unrestrained assemblies need to be considered. Non-load restricted UL listing will contain the following information below the Design number on the listing: "Loading Determined by Allowable Stress Design Method or Load and Resistance Factor Design Method published by the American Institute of Steel Construction, or in accordance with the relevant Limit State Design provisions of Part 4 of the National Building Code of Canada.”

- **j)** For decks painted with unclassified paint/primer, lath requirements must be determined.

- **k)** Spatterkote® SK-3 is required on decking with gypsum products.

- **l)** For 2hr ratings, S728 may provide more competitive thicknesses.

- **m)** MK-6/GF and Z106 HY may have an advantage over MK-6/HY with joists supporting protected roof decks (S728).

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