Design Guide
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<th>PIXELSTM turns USG's proven metal ceilings and wall-mounted systems into a canvas upon which you can display images, designs or graphics that can transform an ordinary surface into an exciting interactive visual. PIXELS, enabled by Intelliperf Technology, turns photos or graphics into varied-size perforations in metal panels, looking very &quot;op-art&quot; close-up and resolving into a clear image at a distance. Because the image is created by perforations, acoustical properties exist.</th>
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## System Overview

### Metal Panels
- Aluminum
- HRC (High Recycled Content) up to 90%
- PANZ®
- CELEBRATION™
- CURVATURA™

### Materials
- Aluminum panels
- Acoustical backer

### Suspension System
- FINELINE® (for CELEBRATION and FL edge PANZ panels)
- CENTRICITE® (for PANZ lay-in or FL edge panels)
- Wall-mounted (for CELEBRATION panels)

### Lighting
- Metal panels can be backlit or up-lit
- Backer material can be black or white
- Image can be a positive or negative, negative for backlighting
- Open area of perforations typically do not exceed 15% (not for general illumination)

### Design Process
- Determine application
- Select image
- Select application system (wall, ceiling, curved)
- Submit graphic to pixels@usg.com
- Complete and submit project details on check sheet
- Scaled images will be returned via email to its originator for approval
USG’s Ceilings Solutions Group will help you qualify your image or art during the design process. It starts with your selection of a photo, logo, or black and white art of your design.

- Typically, a higher contrast image will produce better results, but not always. See examples that follow.
- Select a photo from thinkstockphotos.com or provide your own image (logos, artwork, graphic) (300dpi minimum) (TIF, JPG and PDFs are acceptable).
- For custom images (not from thinkstockphotos.com), an image release statement must be completed.
- The selected image will be transformed into a perf pattern (areas of photograph are sampled for contrast and assigned a perforation diameter).
- Negative or positive. USG can provide a negative or positive of the selected image. A negative image is where the light part of image is perforated. This is typically used for backlighting where the image will become positive. (See images below).

<table>
<thead>
<tr>
<th>Image</th>
<th>Perforated Image</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="perforated_image1.png" alt="Perforated Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative Image, Backlit</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="negative_image1.png" alt="Negative Image" /></td>
<td><img src="negative_image2.png" alt="Negative" /></td>
</tr>
</tbody>
</table>
### Design Guide

#### Step 2:
Determine Canvas Size and Panel Size

- Images can be displayed on a single panel or as a mural across multiple panels.
- See examples below of how the image can be spread across multiple panels.
- Individual panel size options (2’x2’, 2’x4’, 2’x6’).

**Panel Configuration:**

**Ceiling**
- CELEBRATION
- PANZ (FL or SL)
- CURVATURA

**Walls**
- CELEBRATION

<table>
<thead>
<tr>
<th>Examples</th>
<th>4’x4’ canvas (2’x2’ panels)</th>
<th>6’x12’ canvas (2’x2’ panels)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Image Example 1" /></td>
<td><img src="image2.png" alt="Image Example 2" /></td>
</tr>
</tbody>
</table>

**Exterior Installation**

Pixels can be used on protected exterior soffits with CELEBRATION panels and DXFEV FINELINE suspension system. Panel sizes can be 2’x2’, 2’x4’ or 2’x6’. Acoustical backer is not recommended for exterior use.
## Design Guide

**Step 3:**
Determine Panel Layout

<table>
<thead>
<tr>
<th>2'x2' Squares</th>
</tr>
</thead>
</table>
| ![Grid of 2'x2' Squares](image)

<table>
<thead>
<tr>
<th>2'x4' Horizontal*</th>
</tr>
</thead>
</table>
| ![Grid of 2'x4' Horizontal](image)

<table>
<thead>
<tr>
<th>2'x4' Ashlar*</th>
</tr>
</thead>
</table>
| ![Grid of 2'x4' Ashlar](image)

<table>
<thead>
<tr>
<th>2'x4' Vertical*</th>
</tr>
</thead>
</table>
| ![Grid of 2'x4' Vertical](image)

<table>
<thead>
<tr>
<th>2'x6' Horizontal</th>
</tr>
</thead>
</table>
| ![Grid of 2'x6' Horizontal](image)

<table>
<thead>
<tr>
<th>2'x6' Vertical</th>
</tr>
</thead>
</table>
| ![Grid of 2'x6' Vertical](image)

*Note: 2'x4' not available for Curvatura
## Design Guide

### Step 4: Determine Resolution

- The dynamic effect of the eye and brain creating the image at different distances with different hole sizes and hole densities.
- Three choices for perforation fidelity.

### Perforation Pattern Orientation

- **Square:** Centerline of holes run 90° to panel sides
- **Oblique:** Centerline of holes run 60° to panel sides

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See usg.com/pixels for full-size downloadable and printable images.
**Design Guide**

**Design Considerations—Aesthetics and Budget**

**Pixels** gives you the opportunity to design and choose between higher resolution images and lower resolution images either for artistic considerations or to reduce cost. As resolution is increased, more perforations are required to create the image. Thus, higher resolution costs more than lower resolution. As well, if an image only takes up part of the canvas, the entire surface has a smaller percentage of perforations — also reducing costs. Below are examples of budgetary costs per square foot based on these considerations.

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Coverage</th>
<th>Cost (Low)</th>
<th>Cost (Medium)</th>
<th>Cost (High)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>&lt; 50%</td>
<td>$15</td>
<td>$25</td>
<td>$35</td>
</tr>
<tr>
<td>Medium</td>
<td>&lt; 50%</td>
<td>$25</td>
<td>$30</td>
<td>$45</td>
</tr>
<tr>
<td>High</td>
<td>&lt; 50%</td>
<td>$35</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td></td>
<td>&gt; 50%</td>
<td>$20</td>
<td>$30</td>
<td>$45</td>
</tr>
<tr>
<td></td>
<td>&gt; 50%</td>
<td>$30</td>
<td>$45</td>
<td>$55</td>
</tr>
</tbody>
</table>

**Note:**
Estimated costs are what contractors can expect to pay for the Pixels panels. Prices and total installation costs will vary by market. Does not include installation cost and hardware.
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Step 5:
Determine Image Evaluation
Submit Check Sheet for Image Evaluation

### IMAGE EVALUATION CHECK SHEET — LOCATED AT USG.COM/PIXELS

**Check Sheet**

<table>
<thead>
<tr>
<th>Pixels®</th>
</tr>
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<tbody>
<tr>
<td>Technical Service 800 USG-4YOU</td>
</tr>
<tr>
<td>Web Site usg.com</td>
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#### Complete the following and send to pixels@usg.com. See Pixels Design Guide for assistance.

**Contact Information**
- Name __________________________
- Company or firm name __________________________
- Phone __________________________
- Contact e-mail __________________________
- Project name __________________________

**Image or Artwork Information**
- Photograph or Graphic file
  - File name __________________________
  - Attach Image to e-mail
  - Attach Image Release Statement: __________________________
  - Thinkstockphotos.com Image Number __________________________

**Application**
- Ceiling
- Wall
- Curved (Curvatura™ applications)

**Size**
- Canvas size (total area the image will reside) __________________________ ft x __________________________ ft
- Relative image size within the canvas size __________________________ ft x __________________________ ft

**Product Type**
- Celebration™ Panel Size
  - 2’x2’
  - 2’x4’
  - 2’x6’

**Panel Layout**
- 2’x2’ Squares
- 2’x4’ Horizontal rectangles*
- 2’x4’ Ashlar (alternating) rectangles*
- 2’x4’ Vertical rectangles*
- 2’x6’ Horizontal rectangles
- 2’x6’ Ashlar (alternating) rectangles
- 2’x6’ Vertical rectangles

**Perforation rendering**
- Low
- Med
- High

**Orientation**
- Square (90°)
- Oblique (60°)

**Backer Option**
- Black Acoustibond® backer
- White Acoustibond® backer
- No backer

**Panel Color**
- Flat White
- Silver Satin
- Metallic Copper
- Metallic Gold
- Metallic Pewter
- Metallic Silver
- Metallic Oyster
- Silver Satin
- Cherry
- Maple
- Oak

**Design Review Process**
- After the Pixels check sheet has been processed the following will be emailed back to its originator:
  - A 36”x42” print that shows the image broken down into its panel sizes. This is suitable for printing on a full-sized plotter.
  - A full scale section for a highlighted area to show perf resolution and pattern. This is also suitable for printing on a full-sized plotter.
  - The USG Ceilings Solutions Group will retain these files by job name for reference and approval at the time of an order.

**Special Instructions**

**NOTE:** USG Corporation reserves the right to refuse a Pixels order request should USG deem an image to be inappropriate.

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### SAMPLE

**Design Review Process**
- After the Pixels check sheet has been processed the following will be emailed back to its originator:
  - A 36”x42” print that shows the image broken down into its panel sizes. This is suitable for printing on a full-sized plotter.
  - A full scale section for a highlighted area to show perf resolution and pattern. This is also suitable for printing on a full-sized plotter.
  - The USG Ceilings Solutions Group will retain these files by job name for reference and approval at the time of an order.
Fluorescent Strip Fixtures

Fluorescent fixtures with no reflector provide non-directional illumination in space. Use of fixtures with a reflector directs light downward and reduces upward spill light.

- No reflector provides non-directional illumination in space.
- Use of reflector directs light downward and reduces upward spill light.
- Mounting positions of fixtures vary depending on design parameters.

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Point Source Incandescent or Halogen Fixtures
Where Acoustibond backer is not selected, the perforation pattern can be projected on walls and floors of the space. White Acoustibond backer will diffuse light to create an even glow.
LED Light Sources—Single or Programmable
Programmable LEDs add an additional level of interest by allowing the opportunity to project the perforation pattern with changing colors.

Consult a lighting consultant for specific recommendations.
| Specification | For Pixels specification refer to the particular system application.  
|              | **Ceiling**  
|              | • Celebration  
|              | • Panz (FL or SL)  
|              | • Curvatura  
|              | **Walls**  
|              | • Celebration  
| Shipment and Installation | Prior to manufacturing, your Pixels ceiling or wall will be presented to the contractor for final approval. The entire canvas with specified imagery will be shipped with pre-numbered panels and accompanying shop drawings for proper and easy installation. |