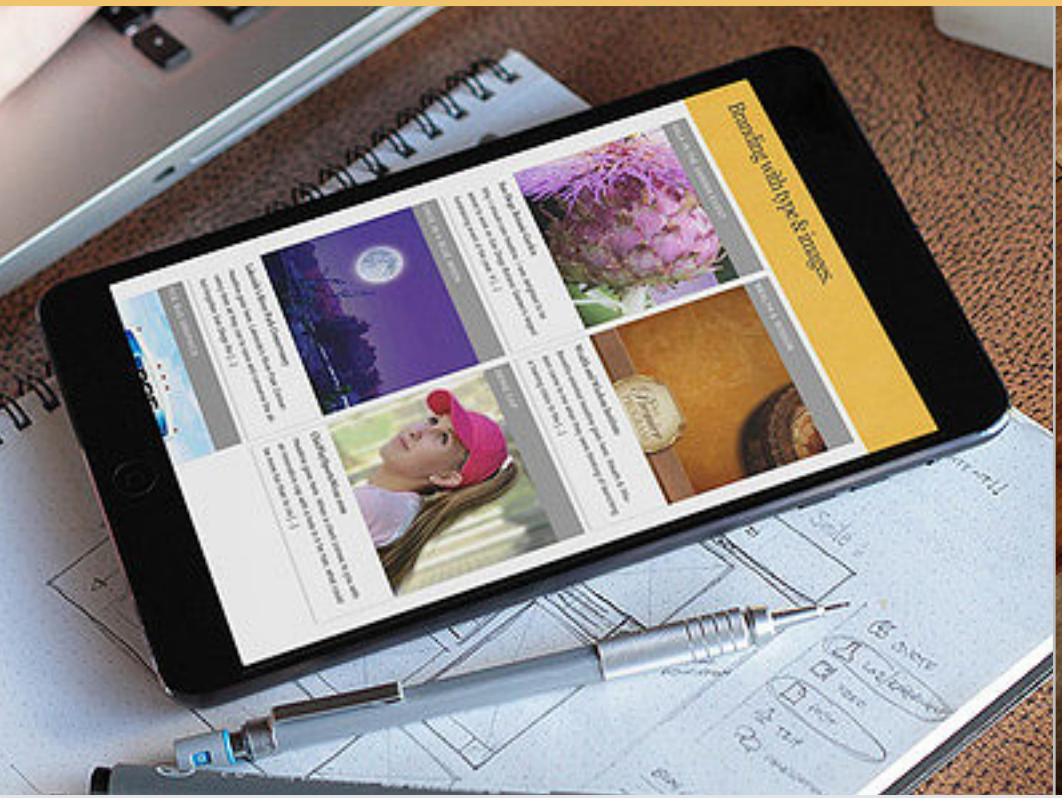
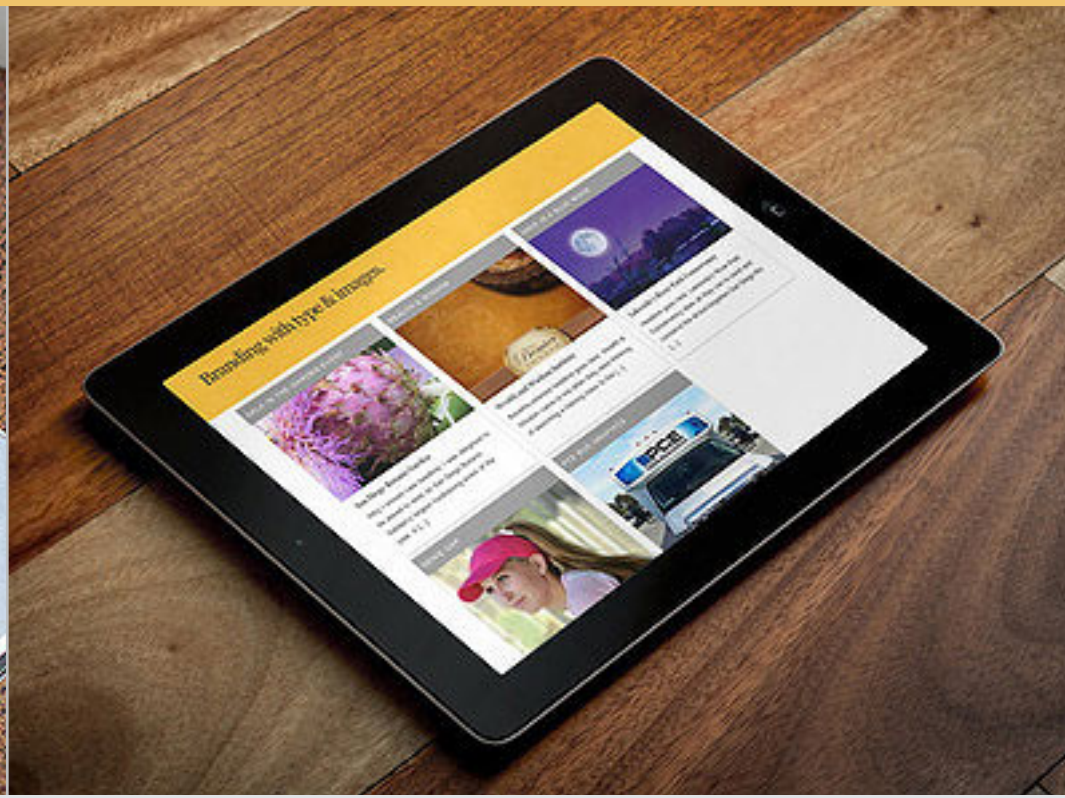
PagePipe
CASE STUDY

Report 320
Codium Grid Theme



Two-column, fluid-layout Codium Grid theme.



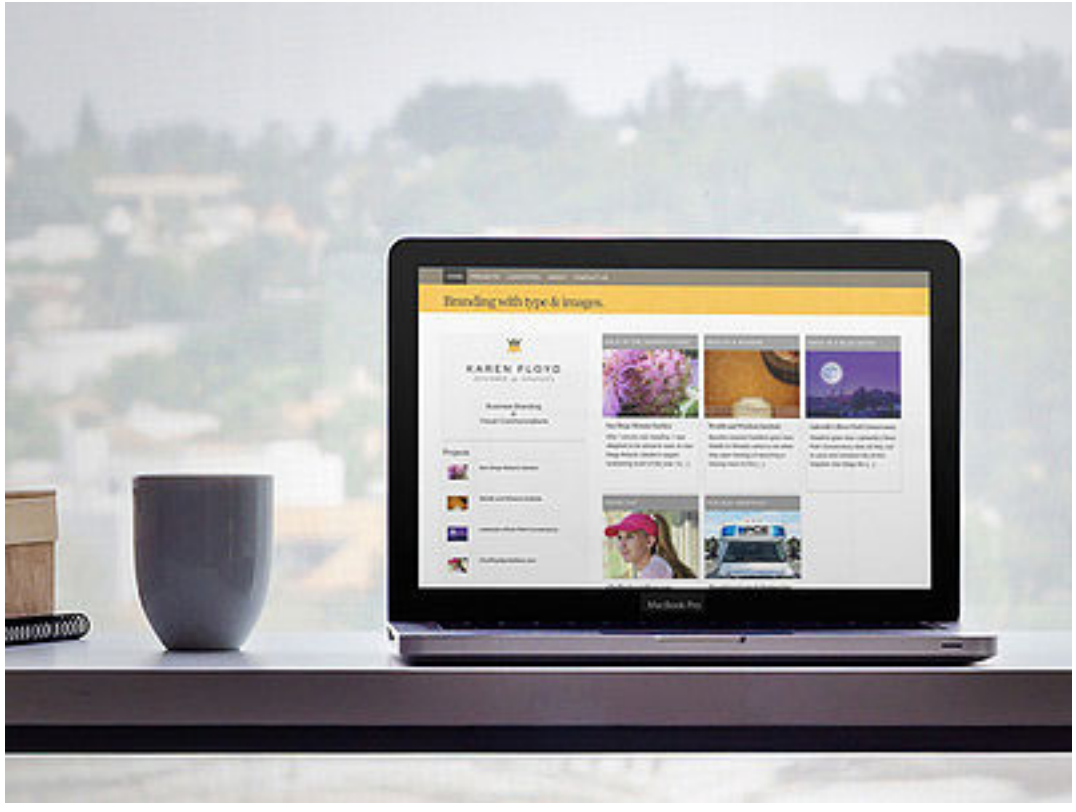
Three-column, fluid-layout Codium Grid theme.

Steve Teare
Web Engineer

At my core, I'm a WordPress theme critic. I'm biased against paid (premium?) themes, as free ones work just fine. Paid themes are often overly complicated and rarely look like the demo.

I prefer stripped or minimal themes. These are lightweight and you can build them up with only the necessary design features you want using free plugins. These websites run faster.

Slow WordPress websites are not the fault of WordPress. They are the fault of lazy and sloppy designers. Performance requires strategy.



Four-column, fluid-layout Codium Grid theme.

It's my hope that PagePipe case studies help others see how they can customize WordPress themes and still maintain performance and aesthetic balance.

In this report, we examine the Codium Grid theme and its potential for a graphic designer's portfolio site. ■

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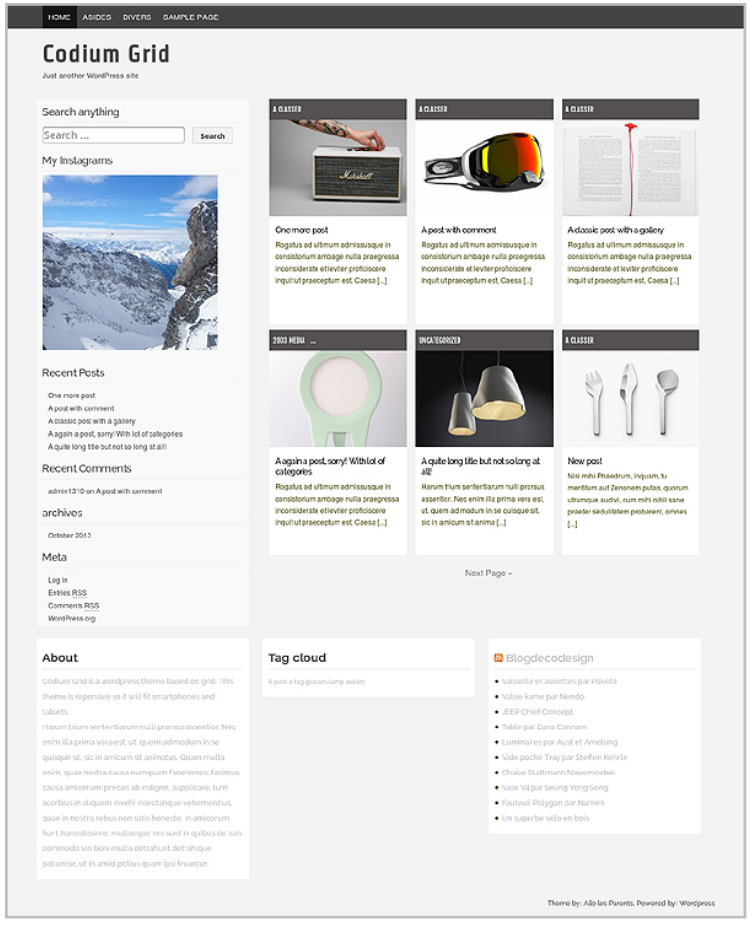
Customizing the Codium Grid theme.



Codium Grid demo.

WordPress categorizes the Codium Grid theme as a fluid layout instead of responsive. It's a layout that uses proportional measuring for content, images, or any other item. This allows the web page to stretch and contract relative to the user's screen size.

Responsive design is the process of creating a website or theme with all devices and screen sizes in mind. The techniques of fluid design combined with CSS media queries creates a theme that is responsive.

Media Queries is a CSS3 module allowing image rendering to adapt to conditions such as screen resolution. Media Queries is a cornerstone technology of responsive web design but not fluid design.

This report presents the customization phases used to brand and optimize the WordPress Codium Grid theme for use as a fast-loading design portfolio website. ■

So what?

Why should I care?

The attempted site glorification.

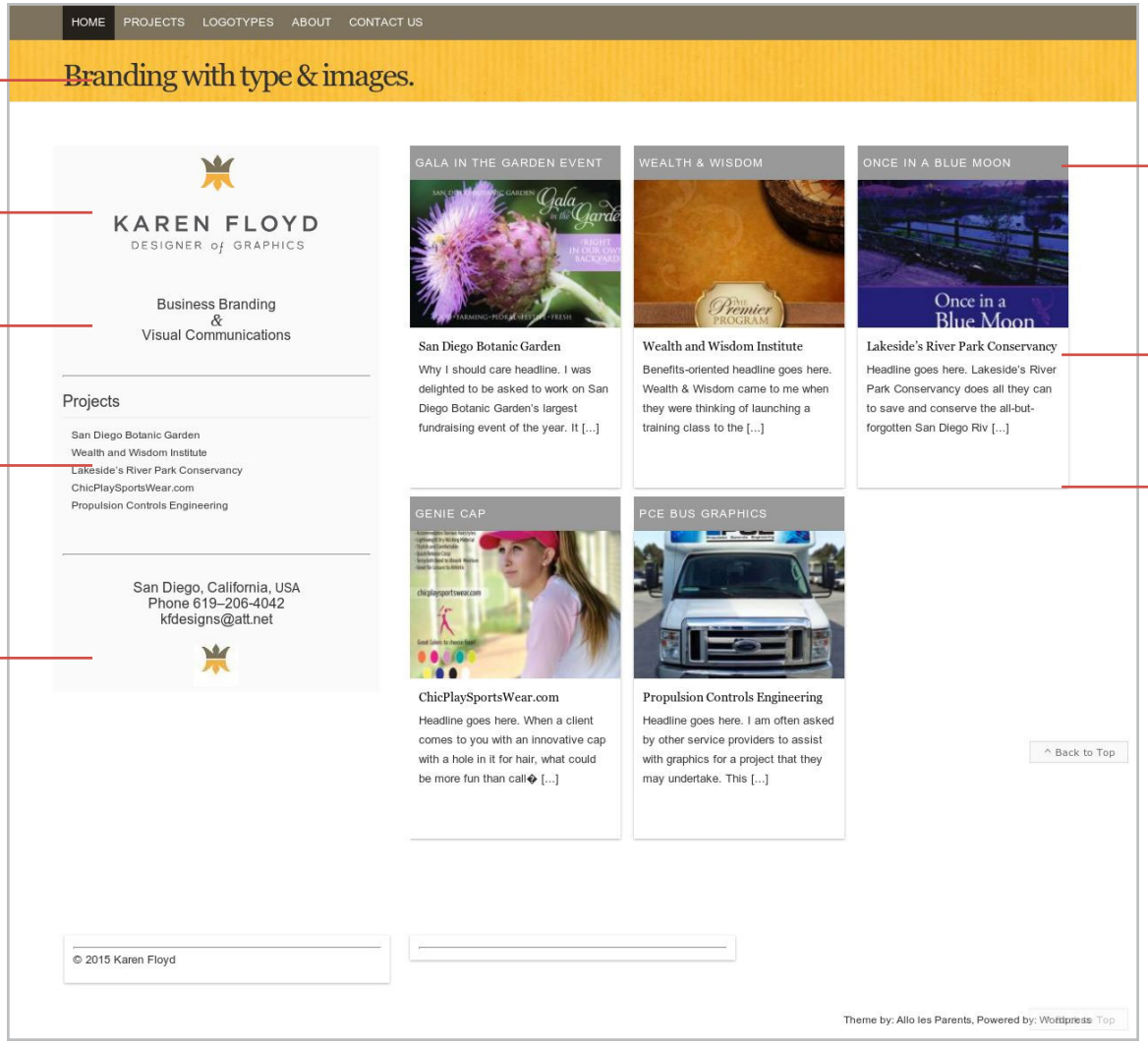
Site title and heads were changed from Google Strait webfont to websafe Georgia font for improved speed.

The “badge”is adjusted for both mobile and desktop viewing.

Light gray background must go.

Off-center navigation. Looks bad.

Added logo dingbat for closure of column. Email will be a link.



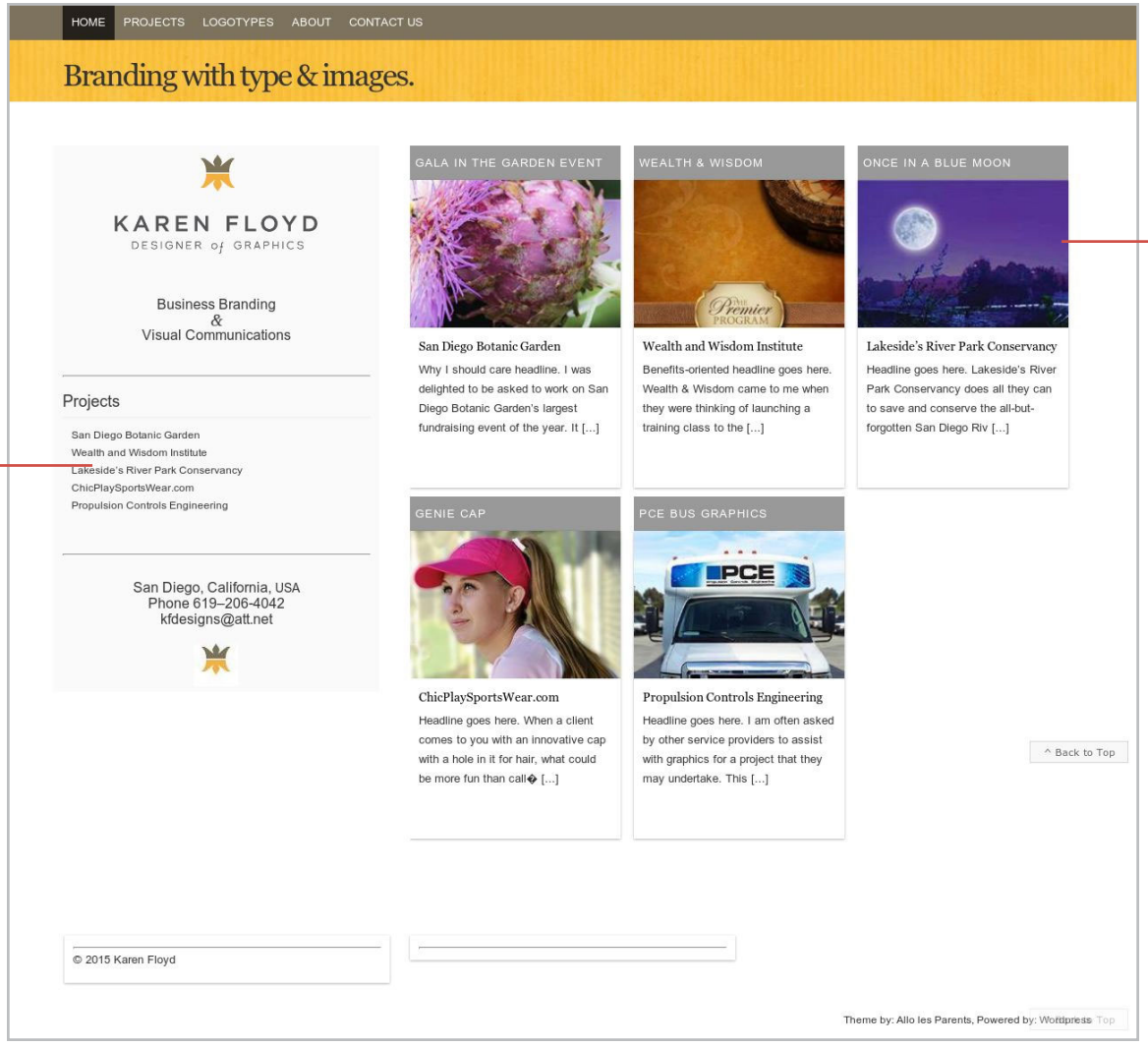
Heads changed to ALLCAPS Arial. Loosely set. Reversed out of gray #666.

Body text color is changed from #444000 to #333 for better readability.

Keyline / borders not removed yet. Too boxy.

Adaptation 1

The home page loads in one second or less.



Off-center navigation still looks bad.

Instead of letting WordPress create the thumbnails, they are optimized in a desktop imaging program. This reduces the weight by 5X.

The featured images are “zoomed in” for detail and type is excluded. This is because, at small image sizes, text becomes unreadable and people actually squint to try to read it.

Adaptation 2

Load time is now 1.5 seconds.

The tiny 50px images double the image weight because they are resized dynamically.

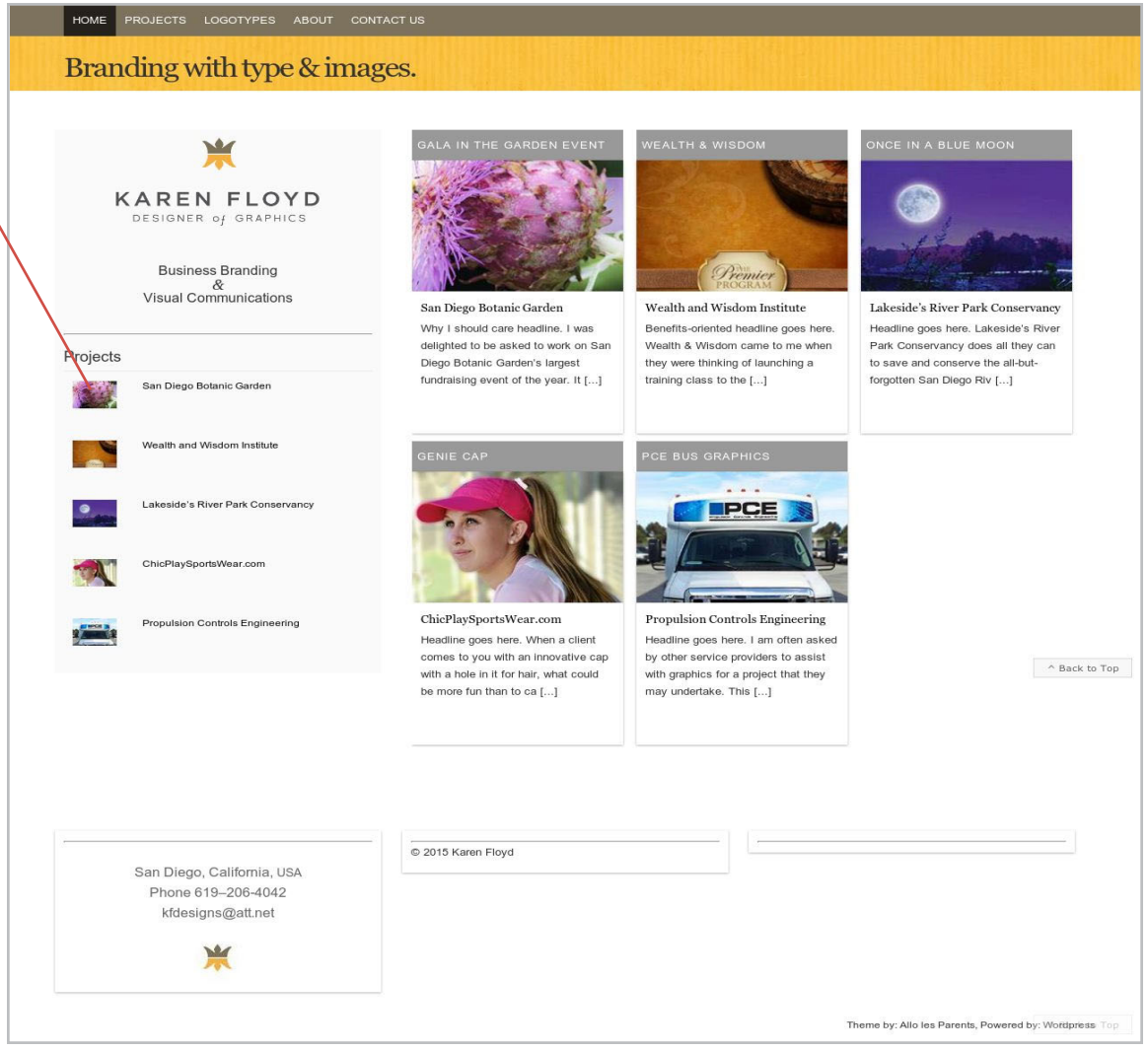
This is theoretical – to a degree – because duplicate visual assets reload from the browser cache.

But the aesthetics are improved.

It took one hour to research fourteen solutions and an hour to test six plugins.

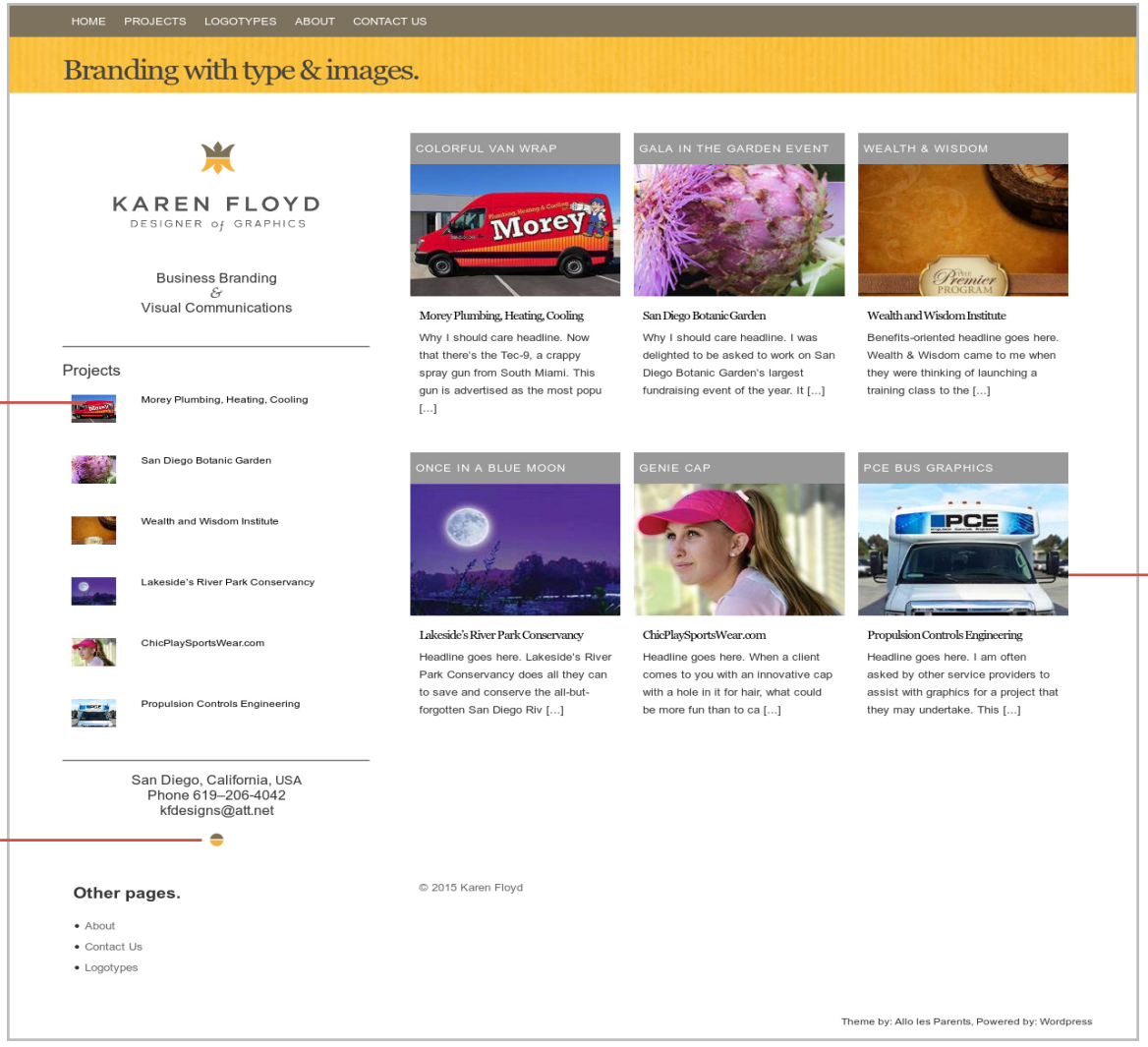
The winner “extensive recent posts widget plugin” – is a 3.5k addition.

The plugin adds these auto-resized feature images as thumbnails and creates the links.



Adaptation 3

Only 1 second load time? What happened?



The sidebar navigation of post entries and the larger, main thumbnails are both set to only show the 12 most recent post entries. This will keep page weight and clutter down. We have a 2-second performance budget. Six more projects can be added. That should work.

Twelve projects is not arbitrary but based on our research of visitor portfolio tolerance and boredom factor.

Added column-stop dingbat.

We saw some weird delays at times. So we used a reverse-IP lookup to discover what other domains were sharing our server. There were only three others and one was inactive. The other two were low traffic.

We then removed the WP Super Cache plugin. The load time dropped from 1.5 seconds to 1 second. Yikes! We found our culprit.

Thumbnails are cropped to 235px wide x 165px high. They are then Saved For Web at a JPEG quality setting of 50 to 70 with progressive rendering enabled. Any extraneous camera data is stripped. Images will be around 8k.

Adaptation 4

Why does this site run fast?

Desktop, fluid-layout Codium Grid theme.

We typically set JPEG image optimization to 70. The WordPress default is 90. We think that's overkill. You can't tell the difference between a 90 and a 70 quality setting onscreen. WebPagetest.org recommends a JPEG benchmark of a 50 quality setting.

So a setting from 50 to 70 is good but human judgment (eyeballs) must be used. Usually, the smaller the image the more you can get away with a lower, tighter number setting.

There are times when setting as low as 30 are justifiable on small thumbnails.

After the WP Super Cache delay discovery, we decided to dig deeper. We used GoDaddy's P3 Plugin Performance Profiler to help us track down more plugin waste. We had 25 plugins active burning 558 milliseconds per visit.

Here are the main culprits:

WP Typography A cool plugin but it was 55 percent of the plugin load. It wasn't that cool any more.

EWWW Image Optimizer We turned that off. It's only used when uploading new images. 12 percent of plugin load.

After these changes, the total plugin load time indicated by P3 dropped from 558 milliseconds to 167 milliseconds.

Testing with WebPagetest.com, we saw a 100 millisecond gain on both cleared and cached load times. We were squeezing hard now. We didn't move the needle on page weight gains. ■

Here's a few more reasons why this site is running faster now:

- No Facebook or Twitter social links.
- No Google Maps.
- No Google Fonts.
- No Google Analytics.
- No home page slider.

Load-time specs from WebPagetest.com

Cleared 990 milliseconds

Cached 794 milliseconds

Page weight 99k / 6k

HTTP requests 15 / 1

From Yslow

Grade 99 A

The 19 plugins used on this website.

Four speed optimization plugins. Four security plugins. Five image optimization and maintenance plugins. Two Search Engine-Optimization plugins. Four plugins for UX improvements. Read on >

Four speed-optimization plugins.

■ Better WordPress Minify
Allows you to minify your CSS and JS files for faster page loading for visitors. Many minifier plugins will break or even slow down your WordPress website. This one does a good job of speeding up a site. The gain you will get depends upon how sloppy you've been at optimizing. But even on a well-optimizied home page, we can see a 500 millisecond performance boost for load time. That's excellent.

■ Far Future Expiration Plugin
This plugin will add a "far future expiration" date for various file types to improve site performance. The browser cache is set so unchanged, 365-day-old files are not reloaded on future visits. When activated, the plugin makes a difference of 150 to 200 milliseconds in faster speed.

■ WP jQuery Plus
Loads from Google using the exact jQuery version as your current WordPress install – but Gzipped. We still love this plugin. Most people would never guess from the description what its main benefit is. The plugin description sounds like it's just an alternative jQuery for redundancy or security. The real truth is this loads jQuery from Google's cloud and always serves it up with Gzip compression. This makes for a 500 millisecond gain. WordPress themes don't always compress jQuery. That's why we classify this as a "speed" plugin.

■ Optimize Database after Deleting Revisions
Optimizes the WordPress database after cleaning it out. Database management can free up space on your hosting server. That extra bloat can slow down not only your site but also your dashboard response time. The "clean" is a one-button-press operation. It then reports cumulative improvement. When we cleared the Codium Grid site, 200+ MB of data was removed. Wow! That was a lot of trash.

Loading jQuery javascript files from Google's Libraries rather than serving it from your WordPress install directly, will reduce latency, increase parallelism, and improve caching.

You can get the browser to download more assets in parallel when you serve them from different domains.

Four security plugins.

■ BruteProtect

There's good news and bad news about this new plugin. The bad news is that WordPress/Automattic has already purchased the company that makes BruteProtect. Automattic incorporated Brute-Protect into the Jetpack monster plugin. They intend to kill the stand-alone product. This will force people to install Jetpack if they want these feature benefits. We don't like Jetpack's bloat.

BruteProtect is a cloud-based list of hacking offenders. Thousands of WordPress site owners contribute to defeat 24/7, brute-force attacks. You have to sign up for a BruteProtect API key. This is annoying but still worth it.

■ Email Address Encoder

A lightweight plugin to protect email addresses from email-harvesting robots by encoding them into decimal and hexadecimal entities. We call it spam prevention.

■ WP Updates Notifier

Sends email to notify you if there are any updates for your WordPress site. It can notify you of any core, plugin and theme updates. It's best practice to stay updated for security reasons.

Five image plugins.

■ Clean Up Images

This plugin allows you to delete all unused images. It looks for all images not referred to by any post or page within WordPress. This is a way to keep your server clean from fat, unused image files just sitting there wasting server space. You can select images you don't want deleted during the process.

■ Rocket Lazy Load

The tiny Lazy Load script for WordPress doesn't use jQuery. Lazy Load plugins delay loading images below-the-fold and to loaded last. This improves actual speed and the user perception of speed.

■ Enable Media Replace

Enable replacing media files by uploading a new file in the "Edit Media" section of the WordPress Media Library. This is a handy plugin that makes media library management easier. Just uploading a new image with the same file name does *not* overwrite the old. No change is made. This plugin allows you to globally replace all instances.

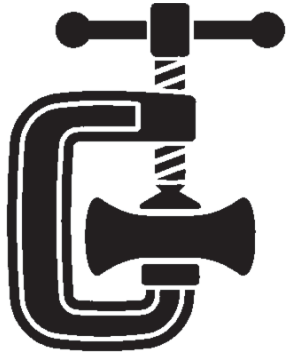
■ EWWW Image Optimizer

Reduce file sizes for images within WordPress. Uses jpegtran, optipng, and gifsicle. Optimization levels are user settable. Optimization can be done automatically, but a one-button bulk optimization is better practice.

EWWW Image Optimizer selectable features include: 1) Remove *all* metadata including EXIF and comments from photos taken with digital cameras. 2) Lossy JPG and PNG optimization. Lossy means there is a loss in image information but visual quality remains unnoticable.

■ Imsanity

Imsanity stops insanely huge image uploads. You can set dimensional limitations of images. They're then adjusted automatically. This prevents site bloat – especially from images uploaded from digital cameras.



EWWW and Imsanity plugins may seem the opposite to our recommendation to optimize images in an image editing program.

These two plugins are a safeguard against website content providers uploading big camera images. We won't being doing image maintenance in the future. So automated sizing and optimizing is a better alternative than accidental fat images. It's crude but better than no prevention whatsoever.

Two search-engine optimization plugins.

We have a low opinion of SEO (search-engine optimization), and consider most SEO efforts a waste of time. It once was possible to exploit loopholes in Google's search algorithms, but Google has plugged those holes, and plugs new ones as soon as they appear. There are just a few SEO practices that make a real difference:

If the goal is first-page appearance of your keyphrase – for example "Palouse Washington Plumber." The main place where these phrases should appear is in page titles. Next is in headlines <h1>, <h2>, etc. and in ALT tags for images.

Those places have the most credibility. And snooping out credibility is what search engine algorithms are all about. Meta tags and keyword stuffing won't get you anywhere, and such tactics might result in lower page ranking. ■

Two plugins we chose:

■ **Light SEO**
WordPress SEO plugin that focuses on creating good SEO practices such as page titling options.

■ **Visitor Mailer**
Receive an email update of site visitor numbers. This is a minimal way to find out if you're having any visitors. This plugin avoids the page weight of Google Analytics code. If you're busy and never have time or energy to do analysis of page statistics, this is a perfect, barebones, weightless solution. The plugin emails you the total unique visitors of the last week. That's all. But for us that's all we need. Being buried in "Big Data" is not our goal.

The Description Meta tag makes a difference but it doesn't improve SEO, it improves information scent. It appears as the deck to a page title on the search engine page listings. It helps people know what to expect when they click to your website page.

Four plugins for UX improvements.

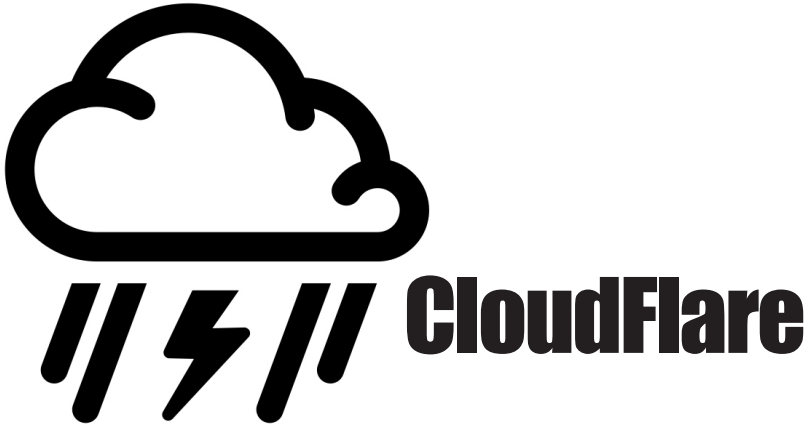
■ Simple Basic Contact Form
Delivers a clean, secure, plug-and-play contact form for WordPress. Much lighter and more secure than the ever-popular Contact Form 7. Bloat!

■ Simple Scroll To Top
Smooth and simple scroll to top plug-and-play plugin helps to add “Back to top” to your site. There are a lot of scroll-to-top plugins. We like this one because it’s lightweight.

■ Extensive Recent Posts Widget
This is a recent posts widget with customizable layout and advanced options. We needed this plugin to solve a specific problem in our sidebar. We didn’t like the format or look of the default WordPress Recent Posts Widget. This plugin gave us the customization we needed and was great for speed.

■ WP Date Remover
This plugin removes or hides the date of a particular post or page in your WordPress site. We wanted this feature to keep entries timeless and never appearing stale from old date stamps.

We’re using the posts as a design portfolio of case studies. Entries will be sporadic. We don’t want visitors thinking the site is abandoned. Blogs require regular and consistent entries if they are to be credible.



In the recent past, we've used free CloudFlare CDN services and their plugin to bulletproof our WordPress websites. Testing the Codium Grid site, we found CloudFlare doesn't guarantee consistent load speeds. During this project, we saw unpredictable and random page load times from 10 to 25 seconds. That's unacceptable even if the average time is one second.

We first thought there was traffic congestion on the shared-hosting server. We checked using *yougetsignal.com* and found only three domains resided on the shared server. One was inactive and the other two had benign, low-traffic content. The server wasn't our offender.

After plugin testing, it was clear that CloudFlare was the culprit throwing in random delays. We cancelled the account and removed the plugin. Then things stabilized. We also got better results in *WebPagetest.org*. Our cached time improved from 750 milliseconds to a 500 millisecond load. We're giddy from this discovery.

Christian Nelson, ally and web critic, saw this weird, random, delay phenomenon years ago – but not on CloudFlare. He's maintained a low opinion of CDN solutions since. He's right on the money. CDN response times can be unpredictable. ■

As of December 2014, CloudFlare operated from within thirty partner global data centers. CloudFlare is a US-based website performance company founded in 2009. CloudFlare claims to improve page load times and performance. CloudFlare attempts to block threats and limit abusive bots and crawlers. CloudFlare, also, protects customers from denial-of-service attacks.

CloudFlare uses a modified version of Nginx – a key Russian-created technology. Nginx (engine-x) is an optimized open-source server software used in the LEMP stack (Linux, Nginx, MySQL, and PHP).

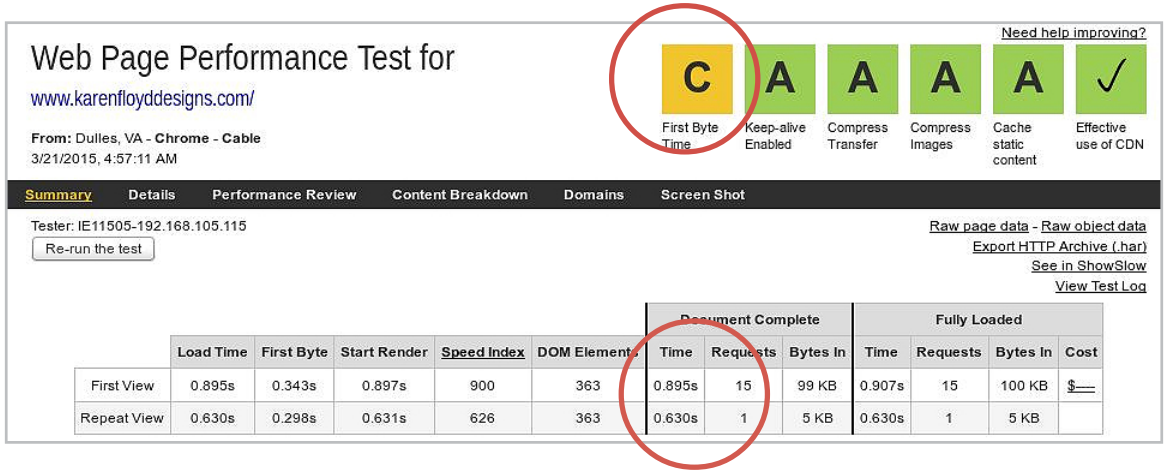
One more thing about CloudFlare CDN.

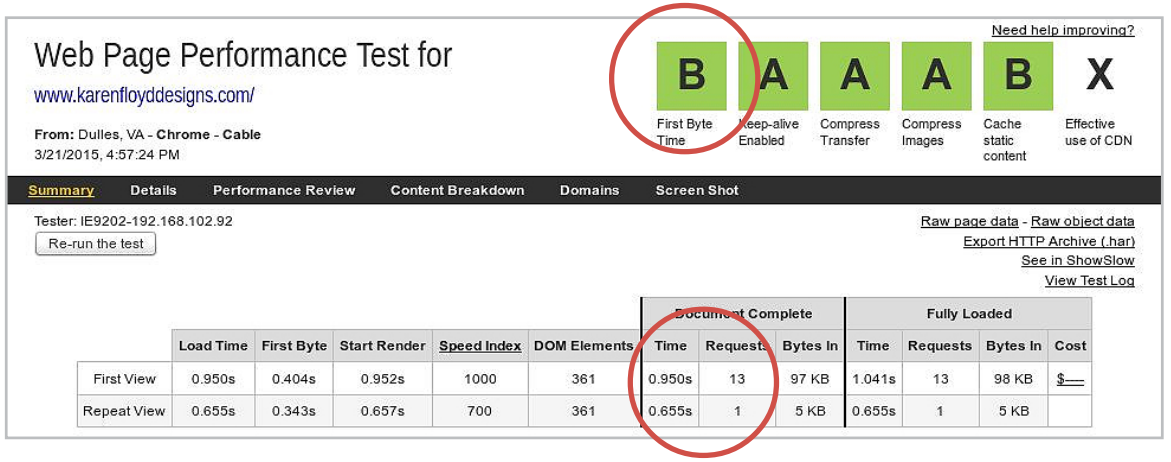
CloudFlare's Nginx servers cause failure on time-to-first-byte measurements (TTFB). On this test at the top left, the yellow "C" is usually a red "F" as in failure or flunk. This negative flag generated a brouhaha, and Cloudflare responded with a special blog entry about the topic and why they think it not a real problem. We agree. TTFB isn't a problem. CloudFlare flakiness is the problem.

CloudFlare's claim is "Gzip compression of web pages reduces the time it takes a web page to download, but the compression itself has a cost. That cost causes TTFB to be greater even though the complete download is quicker." But only on nginx servers. Apache servers are just fine.

Nginx waits until compression has started before sending the HTTP headers; when compression is turned off it sends the headers immedaitely. See bottom right image for comparison.

Our complaint: Who cares about TTFB when CloudFlare throws a monkey wrench into the running engine and randomly gives 10 second to 20 second page loads? Hiccups aren't acceptable. ■





The deception of theme demos.

Can we as designers add value to WordPress websites by improving quality? Quality is another way of saying "user experience" or UX.

Because many themes have built-in poor UX design and limited custom options, it's not uncommon to hack functionality or styling into a theme. *Theme lock* occurs when we can't change a theme without gutting the site's functionality.

Theme purchasers assume premium demo's are the "out of the box" results. When a buyer, or their web designer, fails to reproduce a demo's appearance, they imagine it's a result of their low-skill level. Clients blame the designer because "most of the theme work is already done." Wrong again.

Pretty premium theme demos create artificial client expectations. As a result, in the client's mind, their web designer is responsible for the disappointing results. This is misplaced blame.

Most people don't understand demos use high-quality stock images and other visual assets as staging for improved sales – false advertising?

Some demos are a modified theme version. Designers can spend hours hacking a theme to match buyer's whims. Paid themes generally aren't refundable. Wasted resources.

Cramming baked-in features into a theme is never a good thing. It becomes as complicated as an operating system. The learning curve is steep. The site owner may have bitten off more than they can chew. Plugins are a better solution to add functions and features when combined with a simple stripped-down theme like Codium Grid. ■

Many people's expectation is two to three times bigger than their site budget.

Themes are not built for speed.

Only 10 to 20 percent of WordPress free themes have speed as a design consideration. The rest have sloppy quality. You'd waste time searching and sorting to find a "good-enough" theme.

To speed the selection process, as a rule of thumb choose a compressed, free-theme package of 1MB or under. The smaller the better. It will be spartan and unadorned – perhaps even feature-less. The theme will burn about one second of the site's two-second performance budget. The Codium Grid theme download was only 270K – a sure bet for a speed foundation. The only other criteria we had was the "grid" feature.

A 1MB download limit *isn't* an optimized theme. It indicates the *potential* of loading in under one second. Look for what the theme *lacks* – not what it *has.* Tweaking is always – and we mean *always* – necessary for speed.

When the theme loads faster than one second, it's a bonus. Use any performance gain toward adding plugin functionality and branding (or aesthetics). A site owner supposes branding is better and generates good reputation. Maybe they're right. After speed, aesthetics creates the coveted first impression of web credibility.

Add one-second worth of plugins and images to achieve a two-second load time on shared hosting. It requires plugin trickery and other magic – the stuff we write about. (Unavoidable self promotion!)

Functionality provides what site visitors need. Address those features first based on UX value. Discard the unneeded but go ahead and load the site up in baby steps to the user-expected two-seconds.

Frugality in speed lets you splurge a little in branding. Remember the site components are provided free, so don't complain too much. ■

Web start-up entrepreneurs aren't risk takers – as is often assumed. They want a sure win. No gambling with limited resources.

Open-source WordPress and free themes and free plugins are perfect for bootstrap companies – and for testing new markets on a shoestring budget.