

# Complete SEO & Lighthouse 100 Score Guide

## SEO Essentials (10 Requirements)

### 1. Basic Meta Tags

html

```
<!DOCTYPE html>
<html lang="pt-br">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Página Única e Descritiva - Sua Marca</title>
  <meta name="description" content="Descrição única de 150-160 caracteres que resume o conteúdo da página">
</head>
```

### 2. Canonical Tag

html

```
<link rel="canonical" href="https://seusite.com.br/pagina-atual">
```

### 3. Crawlable Navigation & Headings

html

```
<!-- Navigation with real links, not JS-only -->
<nav>
  <a href="/sobre">Sobre</a>
  <a href="/servicos">Serviços</a>
  <a href="/contato">Contato</a>
</nav>

<!-- Proper heading hierarchy -->
<h1>Título Principal Único da Página</h1>
  <h2>Subtítulo Importante</h2>
    <h3>Subseção</h3>
```

### 4. Robots & Sitemap

html

```
<!-- In <head> -->
<link rel="sitemap" type="application/xml" href="/sitemap.xml">
```

## robots.txt:

```
User-agent: *
Allow: /
Sitemap: https://seusite.com.br/sitemap.xml
```

## sitemap.xml:

```
xml

<?xml version="1.0" encoding="UTF-8"?>
<urlset xmlns="http://www.sitemaps.org/schemas/sitemap/0.9">
  <url>
    <loc>https://seusite.com.br/</loc>
    <lastmod>2024-01-15</lastmod>
    <changefreq>weekly</changefreq>
    <priority>1.0</priority>
  </url>
</urlset>
```

## 5. Descriptive Link Text

```
html

<!-- ❌ Avoid -->
<a href="/produtos">Clique aqui</a>

<!-- ✅ Correct -->
<a href="/produtos">Veja nossos produtos exclusivos</a>
```

## 6. Optimized Images

```
html
```

```

```

## 7. Structured Data (JSON-LD)

```
html

<script type="application/ld+json">
{
  "@context": "https://schema.org",
  "@type": "WebSite",
  "name": "Seu Site",
  "url": "https://seusite.com.br",
  "potentialAction": {
    "@type": "SearchAction",
    "target": "https://seusite.com.br/busca?q={search_term_string}",
    "query-input": "required name=search_term_string"
  }
}
</script>

<!-- Optional: FAQPage -->
<script type="application/ld+json">
{
  "@context": "https://schema.org",
  "@type": "FAQPage",
  "mainEntity": [{
    "@type": "Question",
    "name": "Pergunta frequente?",
    "acceptedAnswer": {
      "@type": "Answer",
      "text": "Resposta detalhada à pergunta."
    }
  }]
}
</script>
```

## 8. Open Graph & Twitter Tags

html

```
<!-- Open Graph -->
<meta property="og:title" content="Título da Página">
<meta property="og:description" content="Descrição atrativa para compartilhamento">
<meta property="og:image" content="https://seusite.com.br/images/og-image.jpg">
<meta property="og:url" content="https://seusite.com.br/pagina-atual">
<meta property="og:type" content="website">
<meta property="og:locale" content="pt_BR">

<!-- Twitter Card -->
<meta name="twitter:card" content="summary_large_image">
<meta name="twitter:title" content="Título da Página">
<meta name="twitter:description" content="Descrição para Twitter">
<meta name="twitter:image" content="https://seusite.com.br/images/twitter-card.jpg">
```

## 9. Mobile Optimization

CSS

```
/* Minimum tap target size */
button, a {
  min-height: 48px;
  min-width: 48px;
  padding: 12px;
}

/* High contrast */
body {
  color: #212121;
  background: #ffffff;
}

/* WCAG AA compliance: contrast ratio 4.5:1 for normal text */
```

## 10. Clean Internal Links

- Verify all internal links return 200 status
- No resources blocked by robots.txt
- Regular link audits with tools like Screaming Frog

# Performance Optimization

## Critical CSS Inline

```
html

<style>
/* Inline only critical above-the-fold CSS */
body{margin:0;font-family:system-ui,-apple-system,sans-serif}
.hero{min-height:100vh;display:flex;align-items:center}
/* ... minimal critical styles ... */
</style>

<!-- Load non-critical CSS asynchronously -->
<link rel="preload" href="/css/main.css" as="style" onload="this.onload=null;this.rel='stylesheet'">
<noscript><link rel="stylesheet" href="/css/main.css"></noscript>
```

## JavaScript Optimization

```
html

<!-- Defer all non-critical JS -->
<script src="/js/main.js" defer></script>

<!-- Or async for independent scripts -->
<script src="/js/analytics.js" async></script>
```

## System Font Stack

```
css

body {
  font-family: -apple-system, BlinkMacSystemFont, "Segoe UI", Roboto,
    "Helvetica Neue", Arial, sans-serif, "Apple Color Emoji",
    "Segoe UI Emoji", "Segoe UI Symbol";
}
```

## Hero Image Optimization

```
html
```

```
<!-- Preload hero image -->
<link rel="preload" as="image" href="/images/hero.webp" type="image/webp">

<!-- Responsive hero image -->
<picture>
  <source srcset="/images/hero-mobile.webp 480w,
    /images/hero-tablet.webp 768w,
    /images/hero-desktop.webp 1200w"
    sizes="100vw"
    type="image/webp">
  
</picture>
```

## Lazy Loading Non-Hero Images

```
html


```

## CDN Headers Configuration

```
# .htaccess or server config
<IfModule mod_expires.c>
  ExpiresActive On

  # Images
  ExpiresByType image/jpeg "access plus 1 year"
  ExpiresByType image/webp "access plus 1 year"
  ExpiresByType image/png "access plus 1 year"

  # CSS and JavaScript
  ExpiresByType text/css "access plus 1 month"
```

```
ExpiresByType application/javascript "access plus 1 month"
```

```
# Fonts
```

```
ExpiresByType font/woff2 "access plus 1 year"
```

```
</IfModule>
```

```
# Cache-Control headers
```

```
<IfModule mod_headers.c>
```

```
# Immutable resources
```

```
<FilesMatch "\.(jpg|jpeg|png|webp|ico|pdf|flv|swf|woff2)$">
```

```
Header set Cache-Control "public, immutable, max-age=31536000"
```

```
</FilesMatch>
```

```
# CSS and JS
```

```
<FilesMatch "\.(css|js)$">
```

```
Header set Cache-Control "public, max-age=2592000"
```

```
</FilesMatch>
```

```
</IfModule>
```

## Complete HTML Template

```
html
```

```
<!DOCTYPE html>
<html lang="pt-br">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Título Único e Descritivo - Sua Marca</title>
  <meta name="description" content="Descrição única de 150-160 caracteres">

  <!-- Canonical -->
  <link rel="canonical" href="https://seusite.com.br/">

  <!-- Preload hero image -->
  <link rel="preload" as="image" href="/images/hero.webp" type="image/webp">

  <!-- Critical CSS inline -->
  <style>
    body{margin:0;font-family:system-ui,-apple-system,sans-serif}
    .hero{min-height:100vh;display:flex;align-items:center}
  </style>

  <!-- Open Graph -->
  <meta property="og:title" content="Título da Página">
  <meta property="og:description" content="Descrição para compartilhamento">
  <meta property="og:image" content="https://seusite.com.br/images/og.jpg">
  <meta property="og:url" content="https://seusite.com.br/">

  <!-- Twitter Card -->
  <meta name="twitter:card" content="summary_large_image">
  <meta name="twitter:title" content="Título da Página">

  <!-- Async CSS -->
  <link rel="preload" href="/css/main.css" as="style" onload="this.onload=null;this.rel='stylesheet'">
  <noscript><link rel="stylesheet" href="/css/main.css"></noscript>

  <!-- Schema.org -->
  <script type="application/ld+json">
  {
    "@context": "https://schema.org",
    "@type": "WebSite",
    "name": "Seu Site",
    "url": "https://seusite.com.br"
  }
</script>
```



```
</head>
<body>
  <!-- Navigation with real links -->
  <nav>
    <a href="/">Início</a>
    <a href="/sobre">Sobre Nós</a>
    <a href="/servicos">Nossos Serviços</a>
    <a href="/contato">Entre em Contato</a>
  </nav>

  <!-- Hero section -->
  <section class="hero">
    <h1>Título Principal Único</h1>
    <picture>
      <source srcset="/images/hero.webp" type="image/webp">
      
    </picture>
  </section>

  <!-- Content -->
  <main>
    <h2>Subtítulo Importante</h2>
    <p>Conteúdo otimizado...</p>

    <!-- Lazy loaded images -->
    
  </main>

  <!-- Deferred JavaScript -->
  <script src="/js/main.js" defer></script>
</body>
</html>
```

## Checklist Final

### SEO (Lighthouse SEO 100)

- ☐ <html lang> definido
- ☐ <meta viewport> presente
- ☐ <title> único em cada página
- ☐ <meta description> única em cada página
- ☐ Canonical tag em todas as páginas
- ☐ Links navegáveis sem JavaScript

- ☐ Hierarquia de headings correta (um `<h1>`)
- ☐ robots.txt e sitemap.xml disponíveis
- ☐ Textos de links descritivos
- ☐ Todas imagens com `alt`, `width` e `height`
- ☐ Structured data válido
- ☐ Open Graph e Twitter tags
- ☐ Tap targets móveis adequados
- ☐ Contraste WCAG AA
- ☐ Sem recursos bloqueados ou links 404

## Performance (Lighthouse Performance 95-100)

- ☐ CSS crítico inline
- ☐ JavaScript com `defer` ou `async`
- ☐ System font stack
- ☐ Hero image com preload
- ☐ Imagens em WebP/AVIF
- ☐ `srcset` e `sizes` responsivos
- ☐ Lazy loading em imagens não-hero
- ☐ Scripts third-party mínimos
- ☐ Headers de cache CDN configurados
- ☐ Zero render-blocking resources
- ☐ CLS < 0.1
- ☐ FCP < 1.8s
- ☐ LCP < 2.5s
- ☐ TBT < 300ms