Cast Iron Architecture in New York City

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Introduction

New York City's TriBeCa and SoHo neighborhoods in downtown Manhattan are home to the **largest concentration of cast iron facades in the world**. Built in a short window of time from 1850-90 to support a thriving dry goods industry, these architectural gems offer an unrivaled perspective into early industrial New York, a time before skyscrapers, luxury retail and Starbucks Coffee shops on every corner. They are yours to discover.

What's in this guidebook

- **History**. We discuss the origins of the SoHo and TriBeCa neighborhoods in the 19th century and why dry goods merchants chose to base their businesses in this part of the city.
- **Cast iron technology**. We explore why cast iron was the ideal choice for the facades of merchants' "store and loft" buildings.
- **Architectural styles**. We profile the five prevailing styles of facades and their defining characteristics: Roman, Venetian, Sperm Candle, Second Empire and Neo-Grec. To make things come alive, we offer high-resolution images that reveal salient architectural and decorative features with color highlights.
- **Walking tour of the highlights**. Following our tradition of being the most valuable resource for culture-focused travelers, we offer a walking tour that showcases thirteen of the most impressive facades in SoHo and TriBeCa. For each, we reveal its most important architectural features and offer a discussion that ties it all together.
- **Advice for getting the best cultural experience**. To help you plan your visit, this guidebook supplies logistical advice, maps and links to online resources. Plus, we give our personal tips for getting the most from your experience while on location.
- **Information the way you like it**. As with all of our guides, this book is optimized for intuitive, quick navigation; information is organized into bullet points to make absorption easy; and images are marked up with text that explains important features.

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Our readers are our greatest inspiration. Email us at founders@approachguides.com to let us know about your experience with Approach Guides — many of our recent updates have been inspired by customers like you. We personally respond to every email.

Approach Guides is based in these neighborhoods and writing this guide has made us look at them in a whole new light. We hope it does the same for you.

Enjoy the tour!

David and Jennifer Raezer
Founders, Approach Guides
www.approachguides.com

Cast Iron Architecture in New York City

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by David Raezer and Jennifer Raezer

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Contents

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These buildings will sustain a greater weight,
and are put up with less inconvenience than brick buildings,
being cast and fitted so that each piece may be put up
as fast as it is brought on the ground.
They may be taken down,
removed and put up again in a short time,
like any other casting.
In their mode of constructing nearly three feet of iron
is gained over buildings put up with brick.
They admit more light,
for the iron columns will sustain the weight
that would require a wide brick wall in ordinary buildings.
They combine beauty with strength,
for the panels can be filled with figures to any extent.

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The virtues of cast iron buildings, as described in an article
profiling the engineer James Bogardus,
in the Newark Daily Advertiser newspaper on May 4, 1849.

Watch Before You Go

Watch the New York City episode of Insights, an online travel show from the creators of Approach Guides. To see all episodes in the series, visit approachguides.com/video or subscribe to our YouTube channel.

A Video Introduction

In this episode, Jennifer Raezer, Approach Guides' founder, explores the history of cast iron architecture in New York City and discusses the benefits of the building material and features that can be quickly identified as you walk through the neighborhoods of SoHo and TriBeCa.

Watch this episode >>

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Fig. 1. Positions of Broadway extensions, Bayard's Hill and Collect Pond.
Double-tap to expand image or view in Google Maps.

Farmland to Residences

Despite Broadway's northward migration, up until 1800, SoHo and TriBeCa were **marshy farmland**. The area's defining natural feature was the Collect Pond, a freshwater lake approximately one-quarter mile in diameter, located east of TriBeCa in what is now Chinatown (blue highlights in Fig. 1).

- **A natural barrier**. Fed by an underground spring, the Collect Pond had served as the pri-

mary water source for colonial Manhattan. However, by the 18th century, it had become unsanitary and a breeding ground for mosquitoes that carried Yellow Fever. It was an obstacle to the city's northward migration.

- **Collect Pond drained in 1805**. The landscape radically changed with the 1805 draining of the Collect Pond, which set the stage for full-fledged development of the area; modern-day Canal Street marks the course of the water channel dug to drain it. In 1811, Bayard's Hill (yellow highlights in Fig. 1) was leveled to fill in the newly-reclaimed land.
- **A new source of fresh water**. Finally, to complete the process, a new source of fresh water was found: the Croton Aqueduct (built 1837-42) brought fresh water via a gravity-driven system from Westchester County north of the city.

With Broadway lengthened and the Collect Pond eliminated, the area briskly developed as a **residential neighborhood** from 1815-50. The earliest residential structures were made of brick with wood frames in the Federal style. In fact, Federal style houses from this period still exist on the south side of Spring Street between Wooster Street and West Broadway; on the north side of Canal Street between Mercer and Greene Streets; and on the northeast corner of White Street and West Broadway.

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The Appeal of Cast Iron

Cast Iron As a New Building Material

Cast iron was the first metal that offered an appealing alternative to the traditional materials used for commercial buildings in New York City: stone and brick masonry with wood framing and supports.

- **Technological breakthroughs**. Prior to 1750, cast iron, a precursor of steel, was used chiefly to build tools and machinery. However, by the late 18th century, technological innovations by the British and French — specifically the use of coke and coal, in lieu of charcoal, to heat the metal to the requisite temperature — set the stage for its use as a building material, first for bridges and later for buildings.
- **A streamlined manufacturing process**. Cast iron's low-cost manufacturing process made it an attractive material: cast iron could be heated to a liquid state and then poured into precision molds to produce the full range of architectural elements. The streamlined process offered tremendous cost advantages over the only other construction-viable metal at the time, wrought iron, which required that impurities be hammered and rolled out by labor intensive processes.
- **High compressive strength**. Cast iron's high compressive strength made it ideal for columns, beams and facades. The strength is attributable to its greater hardness, which results from its high carbon content (typically 3% versus 0.02-0.35% for wrought iron and 1-2% for steel). The only drawback, however, is that it is also more brittle, which limits its tensile strength.

Advantages of Cast Iron

Cast iron offered several advantages to merchants in the second half of the 19th century that allowed it to carve out a niche as a next-generation building material.

- **Fire resistance**. Cast iron's natural fire resistance was appealing to New York textile merchants who had only recently experienced a devastating fire at Pearl Street in 1835. That said, it must be remembered that while these new "cast iron buildings" employed brick walls and iron facades, their interiors still consisted of wood framing and supports; this necessarily weakened claims of fire resistance.
- **Lower costs**. The economic appeal of cast iron accrued from both raw material and process advantages. First, cast iron was a less expensive building material than stone. And, perhaps even more important, buildings comprised of cast iron could be **built faster**, since construction only required that discrete elements — columns, bays, window frames, cornices, etc. — be bolted together on location. Also, to add even more to its financial appeal, builders could use stock **pre-fabricated elements**, thereby avoiding the costs associated with engaging architects to create entirely new customized designs. Finally, they were easily maintained, only requiring a new coat of paint to refresh their appearance.
- **More natural light and increased interior space**. Cast iron's greater strength allowed it to support similar weights to masonry with thinner structural elements. Accordingly, cast iron facades provided larger door openings for the loading and unloading of goods and larger

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French Neo-Grec Style

Fig. 12. Neo-Grec style facade: 130 Greene Street. Highlights added.

Time Period

The last of New York's great cast iron styles, Neo-Grec was dominant in the 1870s, 1880s and very early 1890s.

Overview

Also developed under Napoleon III, the Neo-Grec style drew on Greco-Roman architecture, infusing classical forms with a simplified, more modern aesthetic. It continued the trend, pioneered in the Second Empire style, to employ cast iron's greater physical strength and manufactured nature to yield new architectural forms, free of masonry's dictates. While it shares many features with its French predecessor, it is **the most modern, decorative and delicate** of New York's cast iron facade styles.

Defining Characteristics of the Style

Linear tension between thick and thin

The Neo-Grec style achieves a powerful visual effect, born of tension between thick and thin linear elements.

- **Thin columns**. The shafts of columns are often very thin (red highlights in Fig. 12), emphasizing, at once, the delicacy and structural strength of the cast iron medium. In this respect, Neo-Grec goes even further than the Second Empire style, pushing the open glass cage-like aesthetic to its physical limit. As a result, there is an **inherent tension** in Neo-Grec designs, as columns are often so thin that they appear as if they might be unable to support the load above them.
- **... paired with thick pilasters**. Thin columns are paired with a small number of thick pilasters or columns (blue highlights in Fig. 12). Not only do these thick elements provide requisite structural support, but they also reinforce the undersized nature of the thin columns. As discussed in the introduction to New York's cast iron styles, the success of the Neo-Grec style depended on such inherent tension.
- **Glass dominates**. The thinning of structural elements is so pervasive that facades can appear as if they are walls of glass.

Facade overall

- **Projecting center**. As with the Second Empire style, the central bays of the facade often project forward.
- **Extreme linearization**. Floors are divided by prominent cornices (green highlights in Fig. 12); their strong horizontal lines balance the vertical lines of columns and pilasters. Consistent with the style's preference for delicacy, Neo-Grec cornices have a particularly strong **linear quality**: bevels on their undersides make them appear as a series of thin horizontal lines,

rather than as thick horizontal slabs.

- **Incised ornament**. Second Empire style decoration, consisting chiefly of recessed elements or simple incisions, became high art under the Neo-Grec style. Incised parallel lines and ornate patterning (yellow highlights in Fig. 12) cover spandrels, columns and pilasters.
- **Terminal blocks**. Decorative terminal blocks often sit at either end of the projecting cornices at each floor level.

Windows

- **Segmental arch or square shape**. As with the Second Empire style, Neo-Grec employs segmental arch or square-headed windows. Unlike the Second Empire style, however, square-headed windows typically do not have rounded corners.

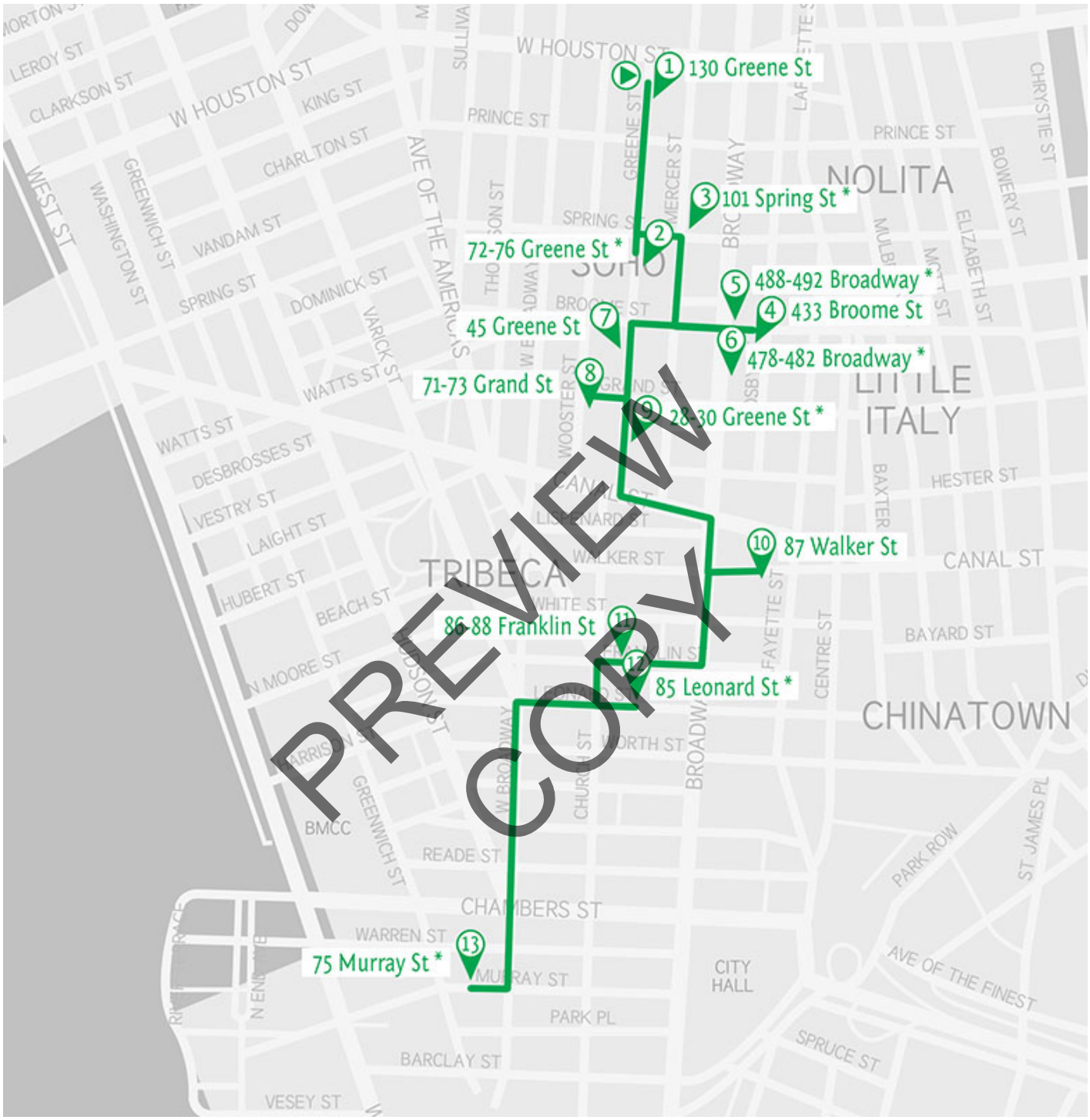
Columns

- **Ionic order leads**. The multi-order facades of all prior styles disappear. Capitals are exclusively of the Ionic order, the delicacy of which is ideally-suited for the Neo-Grec aesthetic.
- **Abstraction**. The Ionic order capitals are often abstracted or exaggerated; sometimes the abstraction is so great that capitals take on purely geometric qualities.
- **Smooth shafts**. The shafts of thin columns are typically smooth (no fluting) and employ horizontal bands midway along their lengths; medallions are often used as decoration.
- **Decoration**. The tops of shafts, just under the capitals, are frequently embellished with geometric or stylized floral forms; **egg-and-dart** designs are used frequently.

Roof cornice

- **Less prominent**. The roof cornice of Neo-Grec buildings are less prominent than those of earlier styles. They tend to more closely resemble the size and profile of the cornices that divide the floors.
- **Brackets**. Scroll-shaped brackets support the cornice.
- **Antefixae**. Antefixae — vertical blocks that terminate the covering tiles of a roof — often project above the roof cornice.

WALKING TOUR & MAP



Map: Tour of featured cast iron buildings in SoHo and TriBeCa, New York City.
View tour in Google Maps.

Our 1-2 hour walking tour includes thirteen of the most impressive cast iron facades in SoHo and TriBeCa.

***Author Tip**: To make things easier and allow you to focus on the real highlights, particularly*

if you only have limited time, we have marked those facades that we believe are must-sees with asterisks (*).

Cast Iron Walking Tour Itinerary

1. 130 Greene Street
2. 72-76 Greene Street *
3. 101 Spring Street *
4. 433 Broome Street
5. 488-492 Broadway *
6. 478-482 Broadway *
7. 45 Greene Street
8. 71-73 Grand Street
9. 28-30 Greene Street *
10. 87 Walker Street
11. 86-88 Franklin Street
12. 85 Leonard Street *
13. 75 Murray Street *

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2. 72-76 Greene Street *

Facade, 72-76 Greene Street.

Overview

- **Location**: 72-76 Greene Street, between Spring and Broome Streets (east side), SoHo. See #2 on map (in Google Maps).
- **Built**: 1872-73. Complete cast iron facade.
- **Style**: French Second Empire.

Distinguishing Features

72-76 Greene Street is perhaps the **best example of the Second Empire style** in SoHo.

- **Linearization**. The linear quality typical of Second Empire facades is quite clear in this building: the cast iron elements project strong horizontal and vertical lines that give the structure a **cage-like appearance**. As a result, the large window openings become the building's most prominent feature.
- **Round corner windows**. Windows are flat headed with rounded corners; this quintessential Second Empire window type is pervasive in SoHo and TriBeCa.
- **Projecting center**. As is typical with the Second Empire style, the two central bays — set off with freestanding partially-fluted Corinthian columns — project forward, emphasizing the three-dimensionality of the massive ten-bay facade.
- **Broken pediments**. The facade's complexity is further emphasized by broken pediments over the ground floor entrance (topped by an urn finial) and the roof cornice.
- **Rosettes**. Rosette medallions are placed in two conspicuous locations: (a) the roofs of canopies rising over single bays on the second floor; and (b) the horizontal bands on the shafts of the freestanding Corinthian columns.
- **Recessed panels**. Recessed panels sit under the windows on the ground and second floors, their edges adding a linear quality to what otherwise would have been flat planes.
- **Brackets under roof cornice**. Tightly-grouped brackets, separated by simple recessed panels, support a bevelled roof cornice (Fig. 14).
- **Roof pediment**. A low-relief decoration (Fig. 14) — possibly a bird with outstretched wings holding a fleur-de-lis in its mouth — sits in the center of the roof pediment.

Fig. 14. Roof pediment with bird-like relief decoration, 72-76 Greene Street.

***Author Tip**: We recommend stepping inside 76 Greene Street for more than just the retail shopping experience. It offers one of the best examples of a cast iron building's interior appearance and arrangement.*

Inside 76 Greene Street

- **Original cast iron columns**. As in a number of other buildings throughout the neighborhood, the original cast iron columns are still in place (Fig. 15). However, what makes these special is that their structural function is clearly discernible. Fluted Corinthian order columns prevail on the ground floor, while shorter, stockier Doric order columns provide support downstairs.
- **Large rear windows**. The large elevated windows (Fig. 15) at the rear of the ground floor, providing ample interior light, are another standard feature of New York's cast iron buildings.

Fig. 15. Interior cast iron columns and rear windows, ground floor, 76 Greene Street.

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12. 85 Leonard Street *

Facade, 85 Leonard Street.

Overview

- **Location**: 85 Leonard Street, between Church Street and Broadway (north side), TriBeCa. See #12 on map (in Google Maps).
- **Built**: 1860-61. Complete cast iron facade.
- **Style**: Italian Sperm Candle.

Distinguishing Features

- **A Bogardus facade**. This beautiful, refined building is the last attributed to the great cast iron innovator, James Bogardus.
- **Windowed arcades**. The three-bay facade holds two two-story "sperm candle" windowed arcades.
- **Vertical momentum**. The arcades are divided by a strong intermediate cornice. However, the horizontal emphasis of this single cornice is insufficient to balance the strong verticality of the oversized columns. As a result, this building conveys impressive vertical momentum.
- **Round arches**. The double-height fluted Corinthian columns and pilasters (the capitals of which have lost their acanthus leaves decoration) rest on recessed panel bases and support round arches with rope moldings.
- **Elaborate cornice**. Large foliated brackets hold a highly decorated roof cornice (Fig. 25).

Decorative details

85 Leonard's facade holds **ornate molded decoration** — some of the best in SoHo and TriBeCa.

- **Mini sperm candle arches**. The floors that split the double-height arcades display what appear to be rows of small Sperm Candle arches.
- **Rope moldings**. Rope moldings delineate foliated spandrels and recessed panels (Fig. 25).
- **Dentils**. The face of the dentil molding — marking the transition from the top of the facade to the roof cornice — has a subtle bracket-like curvature (Fig. 25).
- **Faces**. Four bearded faces peer out from the outer edge of the roof cornice (Fig. 25). Although they break from Borgardus' traditional Medusa heads (see "13. 75 Murray Street" for an example), they are executed in a similar style and likely served a related talismanic function.

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New York City Reading List

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Here are just a few of our New York City recommendations (see the complete list):

- **Grand Central: How a Train Station Transformed America** The definitive book on the city's most famous transportation landmark. *By Sam Roberts*.
- **"The Mystery of Duane Reade"** The aisles are an obstacle course, the staff moves at glacial speed, and the prices aren't even that low. How the drugstore chain took over NYC. *By Ian Mount*.
- **The Sounds of USA: The Blues** Listen to a personal collection of America's quintessential blues tracks compiled by our founder Jennifer Raezer. The perfect pre-trip soundtrack.
- **This is New York** Just for kids! Colorful illustrations guide a child through the streets of New York City. *By Miroslav Sasek*.

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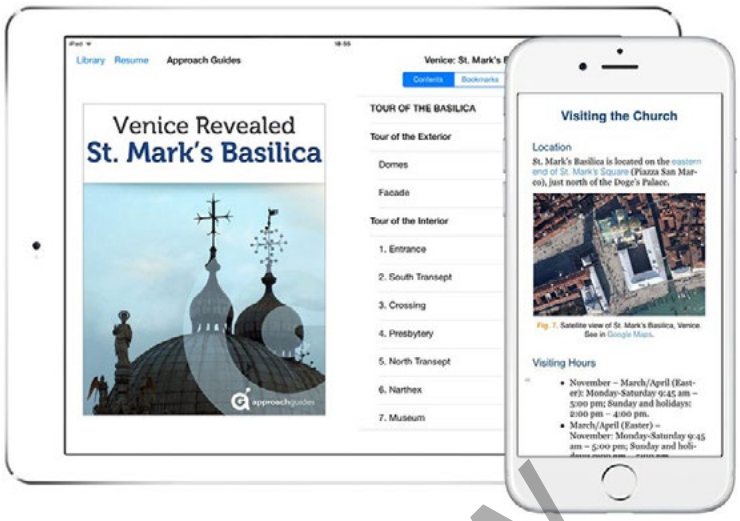

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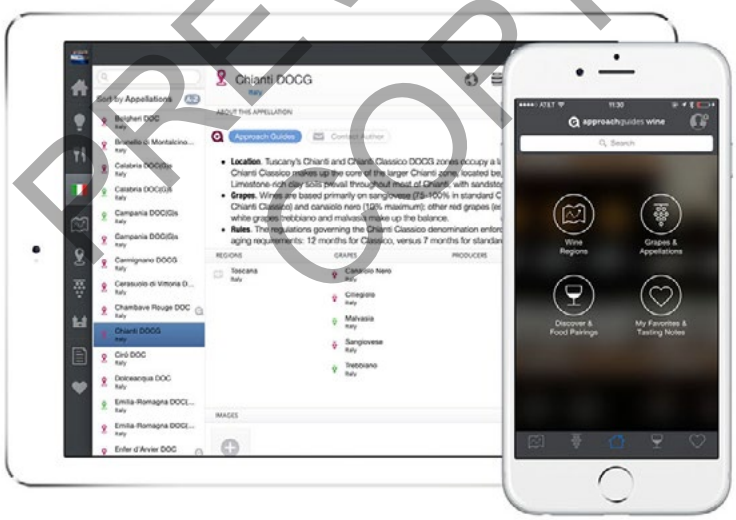

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