

Michigan Central Station



<http://commons.wikimedia.org/wiki/File:Mcshie.jpg>

The Michigan Central Station was built in 1912-3 in the ornate Beaux-Arts style¹, although, as seen in the 2008 photograph above, only the vestiges of the once grand building and setting remain. Named for the Ecole des Beaux-Arts in Paris, Beaux-Arts Classicism came to America with architects as they returned from their European studies in the late 19th century and flowered after the World's Columbian Exposition of 1893. Many American prominent architects, including Henry Hobson Richardson, Louis Sullivan, Richard Morris Hunt, and Charles Follen McKim studied at the Ecole des Beaux-Arts.²

Beaux-Arts Classicism was used more commonly for public buildings than for private residences, although some of the grandest American homes of the 1880s through the 1920s were built in the Beaux-Arts style.³ For example, The Breakers, located in Newport, Rhode Island and designed by Richard Morris Hunt in 1892 for Cornelius Vanderbilt, is arguably the most well-known Beaux-Arts residence in the United States.

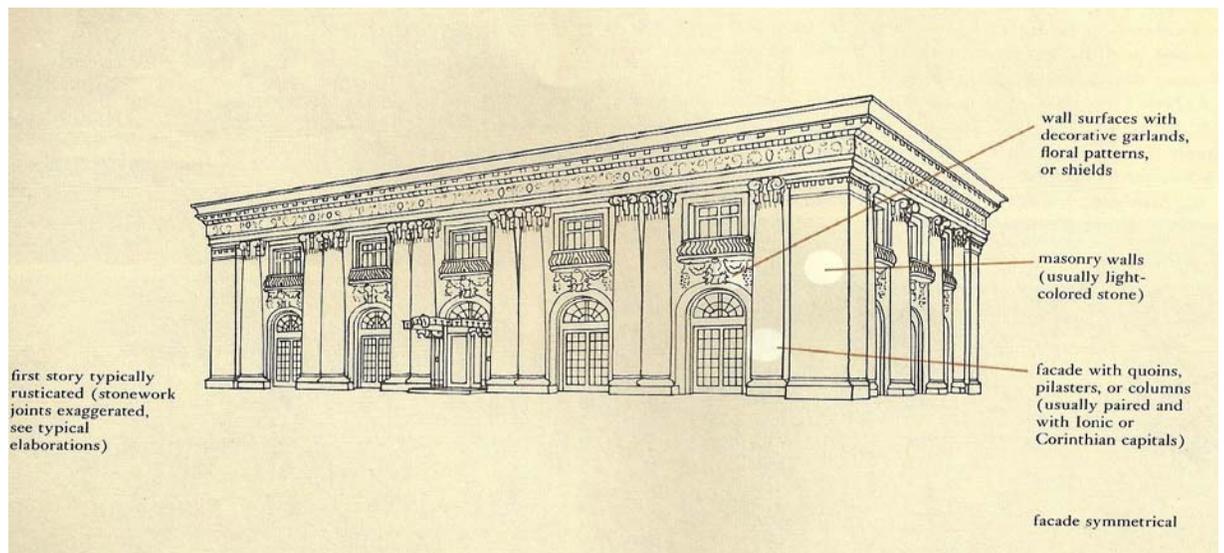
¹ Kelli B. Kavanaugh, *Detroit's Michigan Central Train Station* (Charleston: Arcardia, 2001), 26.

² Leland M. Roth, *American Architecture: A History* (Boulder: Westview, 2001), 252, 274, 224, 291.

³ Virginia and Lee McAlester, *A Field Guide to American Houses*, (New York: Alfred A. Knopf, 1984), 378-383.



http://en.wikipedia.org/wiki/File:The_Breakers_Newport.jpg

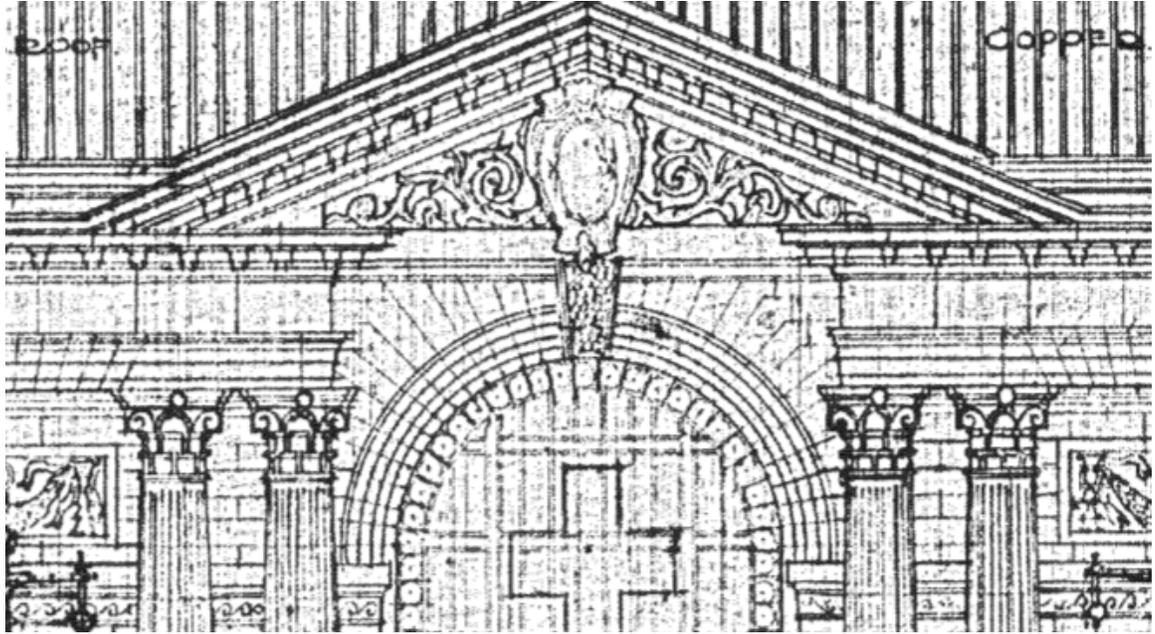


From *A Field Guide to American Houses*, p. 378

Characteristics of Beaux-Arts buildings include projecting facades or pavilions with large, usually paired, columns or pilasters.⁴ The structures are executed in masonry and typically have a rusticated base (see above illustration). Moldings are elaborate and often contain floral motifs. Cornices and entablatures are detailed and enhanced with tall parapets, balustrades, or attic stories.⁵ These details can be seen on the MCS. Paired columns and pilasters are seen flanking the arched openings. Floral swags are seen under the oversized cornices, and elaborate escutcheons and detailed keystones are seen above the arches. The pediments are also decorated with oversized elements.

⁴ John J-G. Blumenson, *Identifying American Architecture: A Pictorial Guide to Styles and Terms, 1600-1945*, Rev. ed. (New York: W.W. Norton, 1981), 67.

⁵ *Ibid.*, 67.



Detail from Drawing of North Elevation MCS

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Robert Laba

Principles of Preservation Tech: Central Michigan Terminal- Architects

Warren and Wetmore, Reed and Stem

Whitney Warren (1864-1943) began his studies at Columbia where he was enrolled for only a year before directing his academic focus at the Ecole des Beaux in Paris, France during the years 1884 to 1894. Further devotion of European classical with French- Beaux Art planning variety was carried out by a charismatic Warren and his style which can be observed from the works his firm had been commissioned throughout his life. For a decade, he studied in Paris under Daumet and Girault. Upon completing his studies in Paris in 1894, Warren entered an architectural design contest for the Newport Country Club to which he received first place. The win with his respective design began a lifelong career as an architect in New York and the many clients to follow. Later while he was commissioned to design the New York Yacht Club's new headquarters in 1898, Warren had an affinity to team up with an eventual partner **Charles D. Wetmore (1866-1941)**.

Wetmore was a Harvard educated lawyer who was also a prominent businessman and real estate developer in New York. Warren requested Wetmore for a joint partnership endeavor on the N.Y. Yacht Club in 1898 which subsequently began the respective architectural firm Warren and Wetmore that lasted over thirty years with until retirement in 1931. Warren and Wetmore had the luxury of receiving over three hundred of opportunistic commissions from both social and business associates in a variety of interests including residential, commercial, hotels, railroad, and transportation facility developments. In some cases Warren and Wetmore took the liberty to share through investing in some their respective commissioned endeavors throughout

their years. The firm's style is represented by the bold creative translation of classical European and mainly French architectural renditions of their designs that are unique to American culture leading up to World War I and the Great Depression. Warren and Wetmore included a diverse portfolio of structure types and architectural building styles both nationally and internationally. Perhaps, the Grand Central Terminal in New York City (1904-1912) while they Warren and Wetmore was commissioned to team up with the architectural firm of Reed and Stem is the most recognizable and memorable of architectural design. Warren and Wetmore built an excellent reputation for their success in hotel designs including Ritz, Ambassador, Vanderbilt and Biltmore hotels which were in the Manhattan, New York, United States, the Caribbean, and Canada. Warren was related to the Vanderbilt family as a cousin. Therefore, some of the most prominent commissions were those respectively for the relatives of the Vanderbilt and Astor families including townhouses and most significantly the expansion to William K. Vanderbilt's estate titled "Idle Hour" on Long Island. The firm's historical portfolio also included some of the magnificent apartment buildings on Park and Fifth Avenues in New York, as well as Country clubs in Long Island, South Carolina, and Massachusetts. Further, it includes luxurious sprawling estates in Long Island, New Jersey, and the Hudson River Valley. Steinway Hall, the Seaman's Church Institute, the Chelsea Piers complex, the New Aeolian Hall, and the Heckscher building were all developments in Manhattan to their credits. From the early 1900's to the 1920's, Warren and Wetmore were very instrumental in the designing of railroad stations and terminals for the New York Central Line and Canadian railroad lines, which was a byproduct of their association with Reed and Stem. Also to his personal credit post- World War I, Warren was hailed for his thorough planning for the rehabilitation for the University of Louvain library in Belgium which had been damaged from the war.

After graduating from Massachusetts Institute of Technology as an architect, **Charles Reed (1858- 1911)** found a position working as an architect for the railroad lines. Reed teamed up with Allen Stem (1856- 1931) in 1891 to begin a successful architectural firm in St. Paul, MN. Due to Reed's marriage to relation of New York Central Railroad's vice-president, Reed and Stem was able to acquire lucrative commissions which enabled the firm to take part in the design of many prestigious railroad terminals around the country and Canada. Some of the major commissions the firm is credited with are as follows;



Wulling Hall, University of Minnesota 1892 (right)

Livingston Depot, Livingston, MT. 1902 (below)





King Street Station, Seattle, WA. 1906 (right)

Northern Pacific Depot, Ellensburg, WA. 1910

Tacoma Union Station, Tacoma, WA. 1911

Michigan Central Station, Detroit, MI. 1913

Grand Central Terminal, New York, New York, 1913

Other than the Wulling Hall, Reed and Stem were also commissioned to do non- railroad architecture as well including the St, Paul Municipal Auditorium, Lewis & Clark County Court House, Helena, MT, St. Paul Athletic Club, and the White Bear Lake Yacht Club (1913), White Bear Lake, MN.

After winning the commission for the Grand Central Terminal, Reed went to New York where he was an executive architect as an associate with Warren and Wetmore and could supervise on the detail of the design work. This would be the last project that was credited with his involvement as he died during the construction in 1911 of a heart- attack. Though he never saw the finished product of The Grand Central Terminal or Michigan Central Terminal, Reed's most significant commissions, he was credited with the engineering designs of the structures while Warren & Wetmore were responsible for the aesthetic design and façade of the buildings.

For years before his death, Reed also served as the chief executive architect for the New York Central & Hudson River Railroad Company.

Stem was educated in Indianapolis Art School in Indiana where he lived and practiced with his father from 1876- 1884. After leaving Indiana and his family business with his father, Stem partnered with Edgar J. Hodgson in St. Paul, MN from 1884 to 1891 when he subsequently joined in partnership with Charles Reed. With Reed and Stem, the firm contributed many great architectural commissions until Reed's death in 1911 when Stem further practiced with Roy H. Haslund until he sought to retire in 1920 and later dying in 1932.

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MCS Comparable Depots

Sami Avery

At the time of construction, Michigan Central Station was the tallest rail station in the world. It was built in the beaux Arts or Second Empire style of architecture, which is typical for rail stations built during the turn of the century. Large arched entryways, paired columns or pilasters, a variety in exterior architectural detail, rusticated stone and recessed façade details can all be connected to the Beaux Arts or Second Empire style and can all be seen in Michigan Central Station's exterior design.

Another characteristic of MCS is the interior design modeled after Roman bathhouses. Specialists aren't exactly sure why so many rail stations during this time period were built modeled after bathhouses. The large vaulted ceilings and pilasters or columns lining the interior walls are characteristics of this style. The design allows for a grand, open space, which is most likely why this classical style is mimicked in these buildings. Some comparable stations of the time include Union Station in D.C., Grand Central Terminal in NYC, and Pennsylvania Station in NYC. These structures hold little resemblance to the scale of the height of Michigan Central Station, but share the Second Empire exterior details and Roman Bath interior design.

Union Station in Washington D.C.



Built by Daniel Burnham in 1907, this station features a similar façade in terms of the large arched details and pilasters. This station also includes an interior modeled after Roman bathhouses, similar to Michigan Central Station. Although the shape and composition of the depot's exterior differs from MCS, the station is designed in the Beaux Arts style.

Grand Central Terminal in New York



This depot was built by the same architects as Michigan Central Station, Reed and Stem, Warren and Wetmore in 1903-13. Of all the Beaux Arts depots built during this time, Grand Central Terminal most resembles MCS in interior and exterior detail. This view of the station shows a façade closely related to that of MCS with almost identical large arched windows and paired columns. Similar materials compose the exterior details and the interior is also modeled after Roman bathhouses.

Pennsylvania Station



This station was designed by McKim, Mead and White in 1910. This depot shares the Beaux Arts style and interior Roman bathhouse design in the main lobby, however, the train shed of this station features a design that is closely related to modernism. It contrasts the detailed exterior and lobby with simplicity in its details. The pediments and columns on the exterior can be related to the Beaux Arts style, but the design of this depot differs greatly in composition to that of Michigan Central Station.

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Michigan Central Station (1913)

Vernor & Michigan Ave.

Broader Context

1806: Detroit incorporated as a city

1820s: urban train stations are first built in England

1900s & 1910s: Beaux Arts Movement influencing large public buildings

1910s & 1920s: Detroit is economically and culturally booming, becoming the “country’s first high-tech metropolis”

1914-7: WWI begins (US enters several years later) and rail ridership in the US peaks

1920s: growth in personal car ownership reduces dependency on, and use of, rail for travel

1956: Architectural historian, Carroll Meek, develops the concept of “Picturesque Eclecticism” to categorize urban station evolution

1950s & 1960s: suburbanization and highway construction (both subsidized by the federal government) result in the increasing disuse of rail travel

1966: National Historic Preservation Act passed enabling Section 106 Reviews

Figure 2: Sheds outside of Michigan Central Station



Source: Detroit Free Press Archives

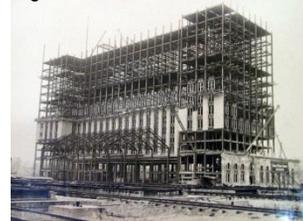
Michigan Central Station

1884-1913: Michigan Central Railroad had station downtown, but moves to Corktown to be near newly constructed tunnel to Canada

1908: MCCR begins buying up land and homes in Corktown, acquired 50 acres by Spring 1910

1913: construction completed on Michigan Central Station and opens early due to a fire at the previous Michigan Central Railroad station located closer to downtown (fire: Dec. 26, 1913)

Figure 1: MCS under construction



Source: Detroit Free Press Archives

1930s: Great Depression, economic climate results in decreased use of MCS

1941: US enters WWII and MCS experiences increased ridership from military personnel

1956: failed attempt to sell MCS for \$5million, a fraction of it’s value

1967: second failed attempt to sell MCS

1971: Amtrak takes control of MCS

Jan. 5, 1988: last train departs from MCS (heading towards Chicago) and the station officially closes

2012: future of building and site unknown

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GHPR 651
Michigan Central Station

Research Objective #4

Historic Context:

The Michigan Central Station was constructed during the peak of transcontinental passenger rail travel. Many of the stations developed during this era were greatly influenced by the City Beautiful Movement and Beaux Arts style popularized by architect-planners like Daniel Burnham. The MCS in particular was designed to convey a sense of grandeur that its planners believed mimicked the current sentiment in Detroit following the city's economic and population growth in recent decades. This era of urban station construction was conceptualized in 1956 by Carroll Meek, an architectural historian, who collectively termed three periods between 1830 and 1914 "Picturesque Eclecticism."

Construction Period:

MCS was commissioned by the Michigan Central Railroad (MCRR) who felt that a new station, further from downtown than the one they currently had (Old Michigan Depot/Michigan Central Depot) would be prudent due to the recent completion of the Detroit River Tunnel in 1909, a passageway connecting Detroit to Windsor, Canada. Similarly, between 1880 and 1910, MCRR had proactively replaced many of its Michigan depots to increase ridership opportunities and capacity. They attempted to accomplish these increases with both additional tracks and new, sophisticated amenities in their stations. MCRR also favored "through" stations (which MCS would be) over "stub" stations like the Old Michigan Depot.

Location Selection:

The new MCS was located 2.25 miles west of Detroit's central business district and adjacent to the Detroit River in Corktown, a neighborhood of immigrants largely considered blighted by city officials. Land for the new site, and the later Roosevelt Park, was purchased through a combination of eminent domain and owner-sales. In fact, MCRR began buying land in the fall of 1908 and by the spring of 1920 had acquired 50 acres after 300 homes were either bought or condemned. Detroit's city authorities had also paid roughly \$680,000 by 1915 to purchase additional land for both the MCS depot itself and the park in front of it. These funds supported the common belief at the time that a new station would foster additional growth in that direction, eventually creating a second

urban node in Detroit. In fact, a grand boulevard was envisioned for the front of the station that would link with the Cultural Center across town. Eventually, Corktown did experience a small amount of commercial growth, but nowhere near the amount envisioned before the new Michigan Central Station was built.

The location of MCS at the Canadian border crossing was also significant as many new immigrants arrived to the United States during this era, many of them through this customs point. In fact, MCS had both Immigration and Customs offices within the building to accommodate these needs.

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Monique Chase
Preservation Tech

Michigan Central Depot

Other Transportation (question no. 5)

Location of the station was set outside the city to encourage area to grow around it.

Streets redesigned around the station to encourage movement of traffic, and allow for the park to be placed directly in front.

However, it was assumed at the time that no one would be driving to the station. In 1912, cars were not as popular as they would become, therefore they were not included in the design of the building. Parking was never a priority. There was never, and still isn't, much parking in the area. While this is inconvenient for the passengers, it was much more inconvenient for the office space that existed above the passenger depot, and probably discouraged later growth.

Main forms of transportation into the station:

Street car – Department of Street Railways (DSR) – 1922- 1974 when completely replaced by buses. Detroittransithistory.info has map of street car lines from 1941, and detailed history on when each line was abandoned.

Interurban – Detroit United Railway (DUR) – 1900-1920 – included lines to the suburbs. DUR wikipedia page has map showing 1904 routes

Building plans have space for carriage entrance, street car shelter. Difficult to readjust to allow for bus and car access.

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Detroittransithistory.info

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Landscape Architecture of Michigan Central Station

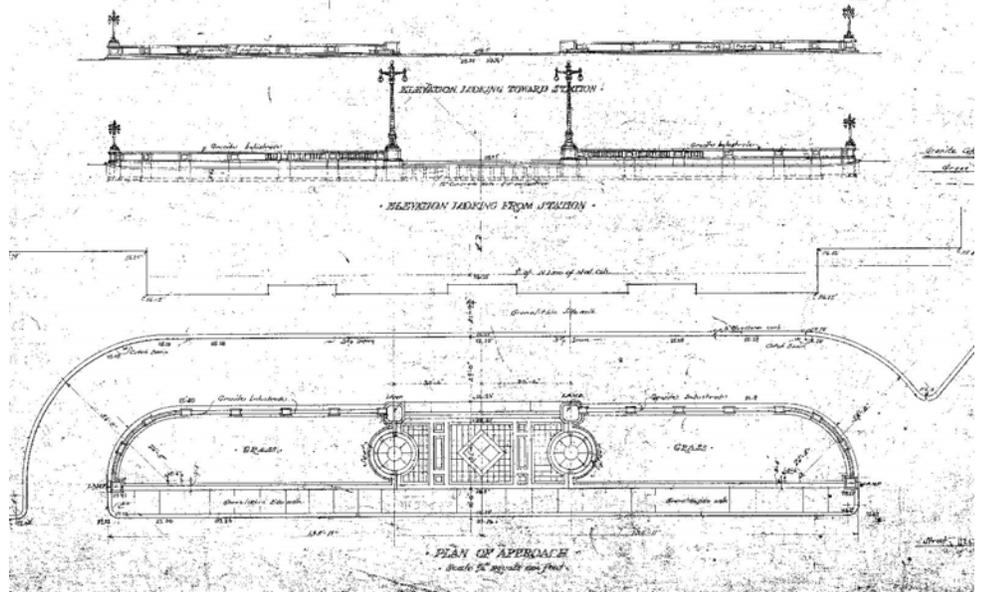
By Adam Cripps

In addition to the monumental beaux-arts structure being built as the Michigan Central Station in 1912/13, the surrounding landscape underwent alteration in order to both meet the functional needs of the station and provide a harmonious transition between it and the outer environment. At a purely functional level was the arrangement of sidewalks, driveways, trolley lines, and railroad tracks to meet the transportation needs of the stations clientele. Eurhythmic landscaping on the other hand manifested itself in beaux-arts influenced features which eased the transfer to and from the elaborate building through the green parks which surrounded the entrance routes to the station. While these parks were not part of the actual property of the Michigan Central Station, the coordination between them and the stations landscaping features tied the structure into the larger cultural phenomenon of the City Beautiful movement of the era.

While an in-depth examination of the layout and construction of the railroad tracks is beyond the confines of this brief expose, such can be found in the 1914 article “The New Michigan Central Yard at Detroit” in *Railway Age Gazette*. This composition not only goes into detail about the layout of the tracks in the yard, but includes specific details. Some of these include the angle of grade (0.25, 0.3, or 3.0 percent), construction (gravel ballast overlaid with oak ties and second-hand 80lb rail), and spacing between lines (“13 ft. and 15 ft. alternately”). In addition to landscaping the layout and construction of the tracks, the land itself had to be altered in order to create a canvas the designers could utilize. According to this article this was accomplished through importing clay from Ann Arbor and Ypsilanti to create an artificial foundation for the station. At its deepest point there was twenty-eight feet of clay.

Another important landscape design element was the trolley loop on the east side of the station. This feature connected the station with trolley spurs which ran along 15th and Dalzell streets and were further joined to main streetcar lines along Michigan Avenue. The loop was designed to allow streetcars the capability of delivering large numbers of passengers underneath a covered area connected to the station as well as a smooth transition back into their normal lines. As of January 1914, the trolley loop was yet to be constructed. Another adaptation to the landscape in order to facilitate the movement of passengers was the “Depot Esplanade,” which was a road running parallel and in front of the station. This new road connected Fifteenth, Sixteenth, and Seventeenth streets, thereby facilitating motorcar access. An arched driveway, twenty-foot wide and utilizing wood block paving with tile drains, allowed motorcar access directly to the door of the station. Furthermore, a series of granolithic paved sidewalks with bluestone curbs were laid out to facilitate pedestrian traffic along the various roads and light-railways.

The area encompassed by the driveway and esplanade, includes the most significant feature of landscape design on the stations' property. Designed to complement the beaux-arts structure behind it, the feature included many elements of the style. First of these is the granite balustrade which wrapped around the curved side of the feature, punctuated at intervals by columns and plinths at the ends of each span. Atop of the plinths were placed cast-iron lamps, which included classical and floral motifs that were popular in beaux-art design. Within this granite framework was a central walkway paved with blue stone; possibly the same "Bedford Dark Hollow blue limestone" used in the actual station building and imported from Indiana. The stones were cut into blocks and laid out in a symmetrical pattern based on the renaissance era



precedents favored in the beaux-arts style. On each side of the paved walkway were two circular stone seats, reminiscent of the seats in renaissance era gardens. The balancing of the circular seats as flanking elements of the feature, further accentuated the symmetry the architects found inspiration by in classical architecture. An artificial foundation for the feature was created utilizing cinder fill, six inches of concrete, one inch of cement, and then capped with the bluestones. The remaining of the encompassed area was kept as an open, grassy, space. This design feature, with its balance of beaux-arts décor and open space, provided a balanced shift into and out of the open parks established along the entrance roads towards the station as part of the "City Beautiful" movement.

Little of the landscape architecture's integrity remains intact. While most of the rails remain, the Trolley Loop at some point in time was paved over with asphalt. The iconic beaux-art feature in between the esplanade and driveway, however, is in even worse shape. While the plinths remain, the balustrades between them have since disappeared as have the cast iron lamps. Also, the bluestone geometric feature has been replaced by concrete as have what used to be the granite sidewalk along the esplanade. At least the open, grassy, area within it remains.

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What is Guastavino vaulting?

Rafael Guastavino was born on March 1, 1842 in Valencia, Spain. Trained as a master builder, Guastavino was heavily influenced by the architectural practices of Valencia and Barcelona, and in 1876 he exhibited the Catalan vault at the Philadelphia World's Fair.¹ Spurred in part by the reception as a result of the exposition, Guastavino immigrated to the United States with his namesake son who would ultimately continue the Guastavino construction legacy until 1962.

Drawing from the Catalan tile vaulting building traditions of his home region, Guastavino developed a system for constructing domed ceilings over large spans that proved lighter, more economical and longer lasting than the traditional arch building techniques of the late 19th century which used a single layer of stones. The “structural system of interlocking tiles was legendary in Spain for its ability to support tremendous loads with a remarkably small amount of material.”² Guastavino employed thin tiles of his own design and manufacture adhered with Portland cement in layers creating the curvature. This innovation was the builder's own, as a lime based mortar was the commonly used mixture in his native Spain for tile vaulting. The use of Portland cement is a key component to the strength and resilience of the Guastavino method as it has “superior strength and improved water resistance compared to lime mortar.”³ Additionally, the lighter weight of the thin tile layers creates less thrust over time yielding a “curvature of surface with stiffness not resulting from mass”⁴ that exudes considerably less stress upon supports. Ultimately, this cohesive timber arch construction formed a shell that could be “built up in layers

¹ Neumann, Dietrich. “The Guastavino System in Context: History and Dissemination of a Revolutionary Vaulting Method.” *APT Bulletin*. Vol. 30 No. 4 (1999): 7-13.

² Ochsendorf, John. *Guastavino Vaulting: The Art of Structural Tile*. New York: Princeton Architectural Press, 2010. p. 8.

³ Ochsendorf, p. 29.

⁴ Marter, Joan. *The Grove Encyclopedia of American Art*. Vol. 5. Oxford University Press, 2012. eBook. p. 408.

rather than employing scaffolding or supporting framework.”⁵ The domes most often have buttressing, or strengthening, walls above that flank the majority of the arch to “resist the outward thrust of the vault.”⁶

How is Guastavino vaulting used at the Michigan Central Station?

The vaulting is present in the vast waiting room area of the station. The tiles comprising the vault are laid in a herringbone pattern and bordered with a course of solider tiles along the edge. A band of octagonal tiles in an alternating pattern of two floral designs wraps the span over the waiting room space and repeats within the space. Photographic perspectives studied show at least two of these bands.

Attempts have been made to determine if Guastavino himself set foot onto the Michigan Central Station worksite and have so far been unsuccessful.

What does this mean relative to current conditions?

As Dr. John Ochsendorf points out in his book *Guastavino Vaulting: The Art of Structural Tile* that no Guastavino vault has ever collapsed on its own. Recent photographs reveal that the majority of the tiling is in place. Large sections of tile that are missing due to conditions or vandalism belong to repeated patterns, of which reproduction tiles may be cast to fill in the damaged portions. The Avery Architectural and Fine Arts Library at Columbia University also has several sample Guastavino tiles in their collection which can be analyzed to ensure legitimate reproductions. Additionally, one original image from the construction at the Michigan Central Station is available from the Avery Archives on a CD for \$40.00.

⁵ Neumann, Dietrich. Review of: “The Old World Builds the New: The Guastavino Company and the Technology of the Catalan Vault, 1885-1962.” *Journal of the Architectural Historians*. Vol. 56, No. 3. (1997): 341-343.

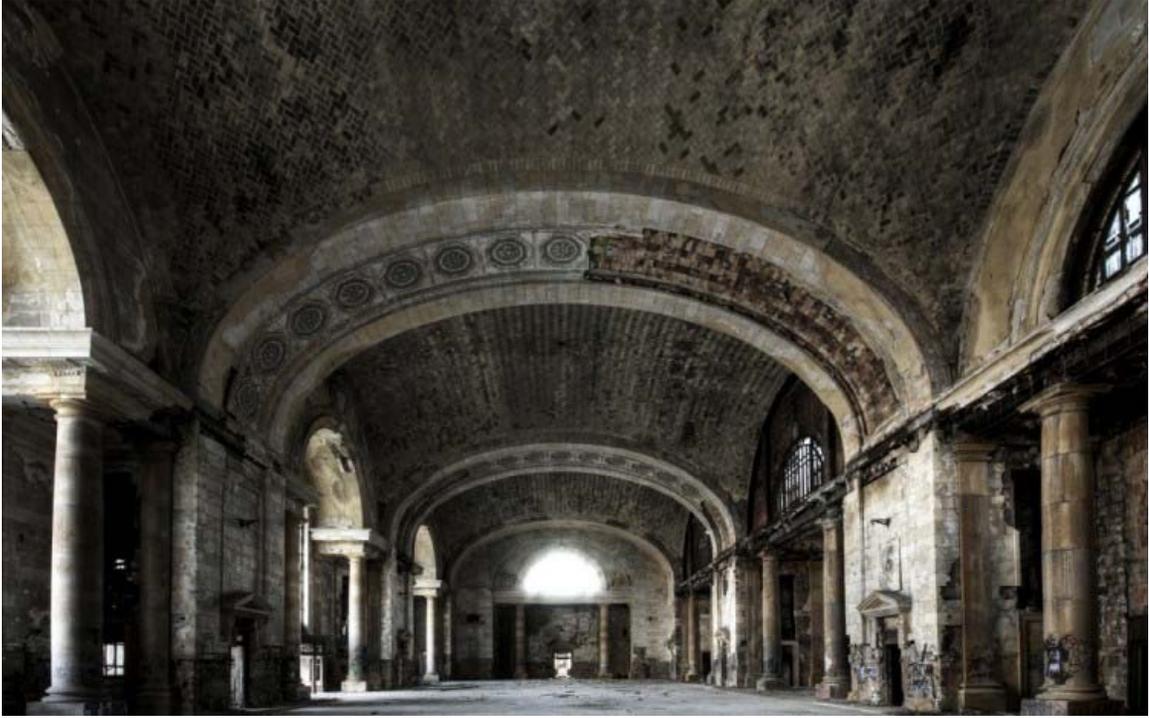
⁶Ochsendorf, p. 55.



Waiting Room. Photo credit: Ryan Southern for HistoricDetroit.org



Waiting Room. Photo credit: Geoff George for Historic.Detroit.org



Waiting Room. Photo credit: Ryan Southern for Historic.Detroit.org

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Melinda Ortiz

Principles of Preservation Technology

1-23-2012

Michigan Central Station North Façade Large Arched Windows

The Michigan Central Station, built in 1913, replaced the burned down station previously servicing Detroit (Kavanaugh 7). The Beaux Arts station was designed by Warren and Wetmore and Reed and Stern firms, and consists of the station with a tower directly behind it, creating a striking combination (Fig. 1). The station itself, reflecting the same Roman bath characteristics as other Beaux Arts train stations of the time such as New York's Grand Central Station and Pennsylvania Station, was influenced both by Roman models and contemporary Parisian architectural design. The fenestration pattern of the main façade is perhaps its most striking feature (Fig 2.). Three large 21 ft. x 40 ft. Roman arch windows with iron muntins line the north façade, with four smaller 8 ft. x 20 ft. arched windows alternating with the larger windows. The windows are flanked by double engaged Corinthian columns supporting an entablature and projecting cornice. Pediments rise above the three large windows. These windows, the centerpiece of the main façade, reflect the influence of other buildings of the Beaux Arts movement, may give us a picture of double ventilation, and relate specific ideas about Detroit to all who passed through Michigan Central Station

Warren and Wetmore and Reed and Stem also designed New York City's Grand Central Station, and though they completed both in the same year, Grand Central was designed just a few years before the Michigan Central Station (Kavanaugh 7). Evaluating Grand Central reveals the inspiration and origin of the large arched windows on the main façade of Michigan Central, and

sheds light on the intent of the design. The 42nd Street façade of Central Station, also the main façade, is characterized by three large Roman arch windows, flanked by engaged Doric columns supporting an entablature and projecting cornice, with smaller rectangular windows in between (Fig. 3). It is obviously the prototype for the more ornate Michigan Station, though the windows, at 33 ft. x 60 ft., are noticeably larger than Michigan Central's windows (Belle 56). The same basic pattern remains, yet the Corinthian columns and pediments of the Michigan station adds more ornate decoration to the Central Station prototype. Even the pattern of the lights and muntins are more ornate, adding alternating rows of smaller square lights to the rectangle lights making up the Grand Central windows.

Grand Central station also helps grasp the significance of the arched windows. Though both buildings used the large windows to light the large open interiors of the stations, the architects of Grand Central also intended to create a modern day triumphal arch as the gateway to the city (56). It can be inferred the architects assumed the same purpose for the triple arches of Michigan Central Station. The triumphal arch idea was successfully communicated to the people of Detroit, and reflected the power and importance of Detroit throughout the next decades. The decades following completion proved to be the period of significance for Michigan Central Station. The days of new technology, especially in transportation, corresponded with the Beaux Arts movement across the United States. Kavanaugh, when speaking of the light let into the station by the large windows, says "the beautiful lighting effect this 1949 photograph imparts mirrors the glorious WWII era in Detroit...regal for the city then regarded as Americas Arsenal of Democracy (62)." Yet as with other Beaux Art architecture, aesthetics came before function, and the large windows only received direct sunlight a few days of the year (Kavanaugh 28).

Yet despite the lack of sunlight, the windows might have used technology to minimize heat loss through double window ventilation and heating system. Though no information was readily available about such an experiment on the Michigan Central Station, an examination of the windows in the drawings leaves room for such a possibility, though slots are not visible. However, literature on the use of such windows reveals its simplicity and feasibility at the turn of the century. Carlos, Corvacho, Silva, and Castro-Gomes did a study on the use of these windows, and explained their feasibility like this (Figure 4):

The gap that is formed between the windows is supplied with fresh air from outside through vents at the base of the outer window. Air circulating through this gap is warmed by the heat coming from the inner window which transmits heat loss from indoors and also by solar gains. Preheated rising airflow, by stack effect and wind pressure, enters the room through a vent on the top of the roller case. Thereby the ventilated double window serves as a heat exchanger, recovering part of the heat losses through the inner window and providing solar gains. Besides this function, it is still a window offering a view to the outside and admitting daylight. The main advantages of this system are its simplicity, its inexpensive technology and the fact that there are no operation costs (929).

The large arched windows of Michigan Central Station reflect the era of a bustling and prosperous Detroit, and a greater architectural movement in the Beaux Arts across the nation and especially present in train stations. A modern triumphal arch leading to and from Detroit, the windows continue to remind us of the grandeur of the past.



Figure 1. Michigan Central Station, Warren and Wetmore, Reed and Stern, architects. 1913.



Figure 2. Michigan Central North Façade, Warren and Wetmore, Reed and Stern, architects. 1913



Figure 3. Grand Central Station. Warren and Wetmore, Reed and Stern, architects, 1913.

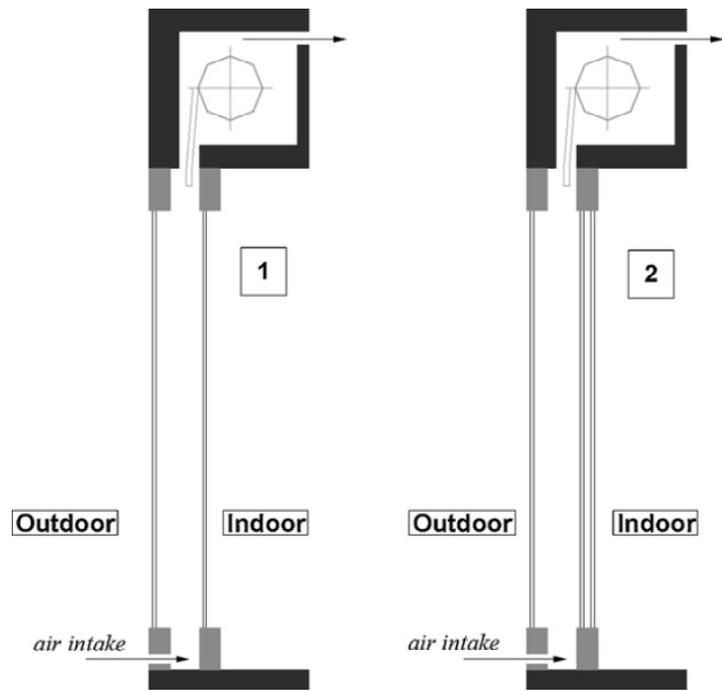


Figure 4. Ventiladed Double Window Systems 1 and 2. Carlos, Corvacho, Silva, Castro-Gomes

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Initial Research on Plaster in the Early 20th Century in Relation to the Michigan Central Station in Detroit, Michigan

Fun fact: Supposedly plaster contains and emits negative ions which results in positive reactions in human beings, such as an increase in the production of serotonin which aids depression, relieves stress and heightens the sense of well-being. So not only is it aesthetically pleasing, it has physiological effects on anyone who steps into a room that contains plaster.

Based on photographs and a small amount of research (and little incoming knowledge of the subject matter) I have concluded that the plaster in question used in the Michigan Central Station on the first floor is most likely a gypsum plaster. It appears from the photos I have seen that the gypsum plaster has been applied directly to what is likely to be Rock Lath with a perforated surface, which would have been the most economical option. The decorative plaster used to make the cornices, ceilings, etc. were probably made of the same materials, and were likely made on-site using a profile. It appears that the walls and ceilings are in sections, and may have been made in a studio elsewhere and shipped to the construction site. After discussion in class, if there are fibers in the plaster then perhaps they did use lime instead of gypsum, because lime was not as sturdy the use of fibers for strength was more common. Then again, maybe they added fibers to gypsum for an even more durable plaster.

These guesses are based on information gathered from:

- Article about acoustical plaster that you sent to me
- The Historic Preservation Technology text by Robert A. Young, PE

- Preservation Brief 21

- Gypsum plaster started to be used in the early 20th century as an alternative to lime plaster because it is stronger, didn't require reinforcement materials such as hairs or fibers, hardened much faster than lime plaster (a few weeks versus nearly a year). The negative aspect of gypsum is that it is more vulnerable to water damage (which is obvious in the MCS!)
- Gypsum board came into use after wood and metal laths, and did away with the first/bottom coat of plaster called the scratch coat.
- By the end of the 19th century plaster studios were making and shipping decorative plaster to building sites.
- Cornices with large cross sections often required wood blocking to reduce weight and quantity of plaster used. Profiles were made by first drawing the desired shape, then carving sheet metal to that shape, then a wood block to that shape. Then the sheet metal and wood block would be fixed together to create a profile that was then run along the plaster several times until the shape was flawless. Often times on cornices a wood guide strip was used to ensure it was even.
- Rock lathe was compressed gypsum covered by paper facing that was textured to create keys. It was cheaper, and by the 1930s this method was almost used exclusively.

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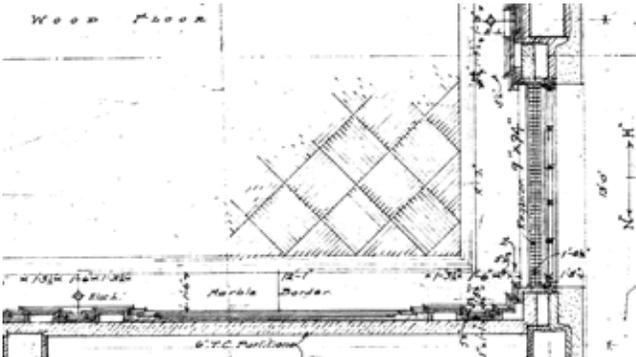
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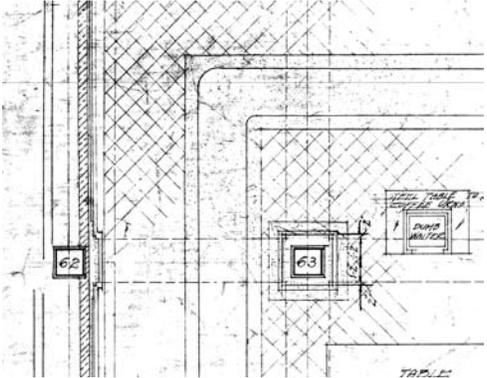


<http://www.flickr.com/photos/ashtonpar/5161068571/>

Shannon Webb
GHR 651
Flooring

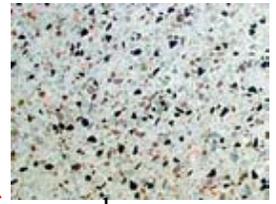


Tea Room: Wood Floors, White Oak; Marble Border.
 Reading Room: Wood Floors, White Oak; Marble Border.
 Womens Waiting Room: Hardwood Floors; Marble Borders

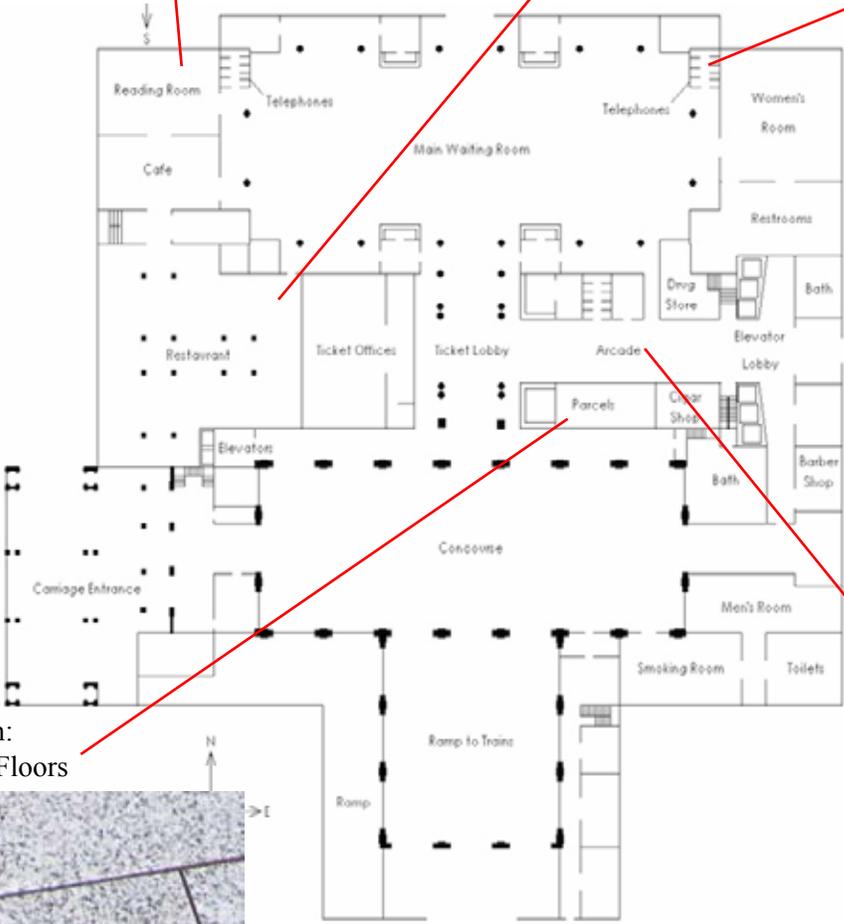


Resturant: Quarry Tile; Marble Borders

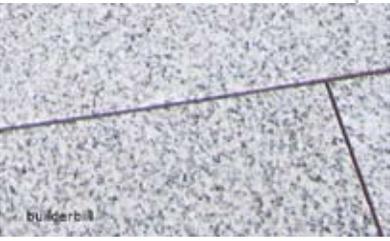
Telephone Area: Terrazzo Floor



example

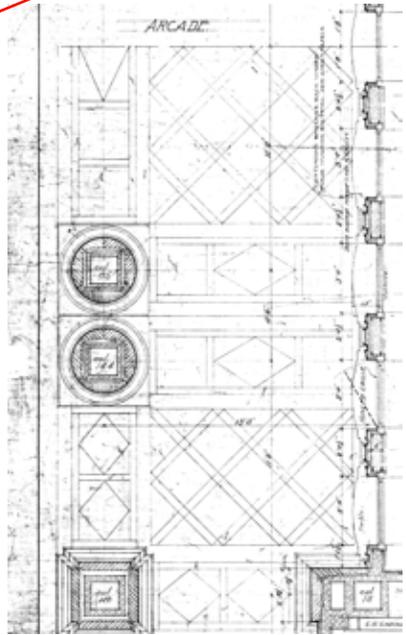


Parcel Room: Granolithic Floors



example

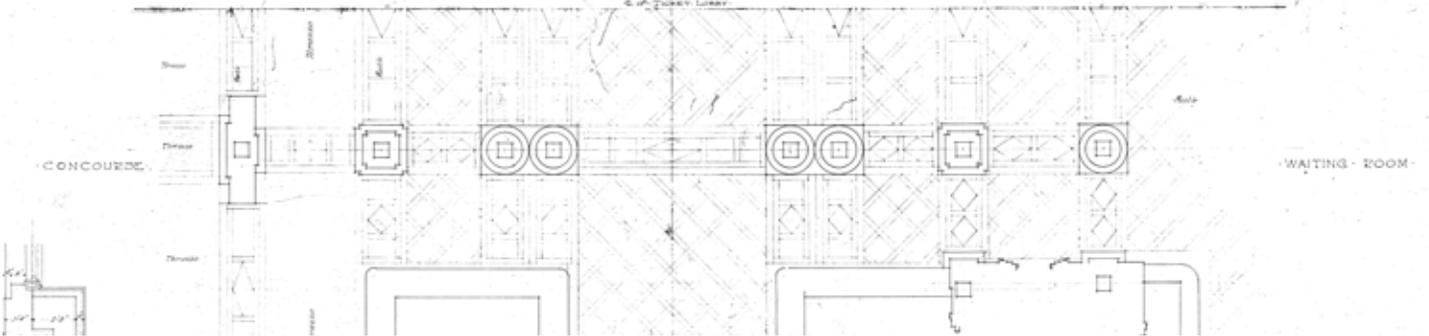
<http://triggerpit.com/2010/12/15/majestic-to-decay-michigan-central-train-station/>



Arcade: Pink Knoxville Marble



example



Example of some of the remaining flooring found in the Station. The tile and stone type material seems to have held up pretty good. Most of the flooring found in the station are strong and durable materials. This is important for the high amount of foot traffic the train station produced.



<http://triggerpit.com/2010/12/15/majestic-to-decay-michigan-central-train-station/>



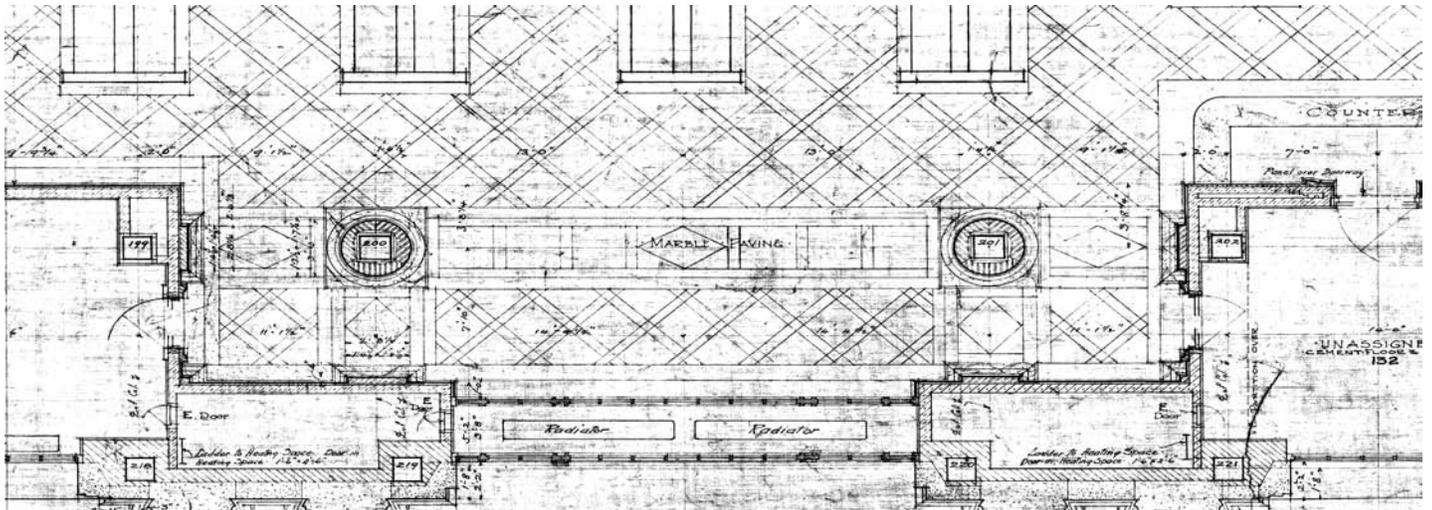
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Forgotten Detroit.com <http://www.forgottendetroit.com/mcs/24.htm>



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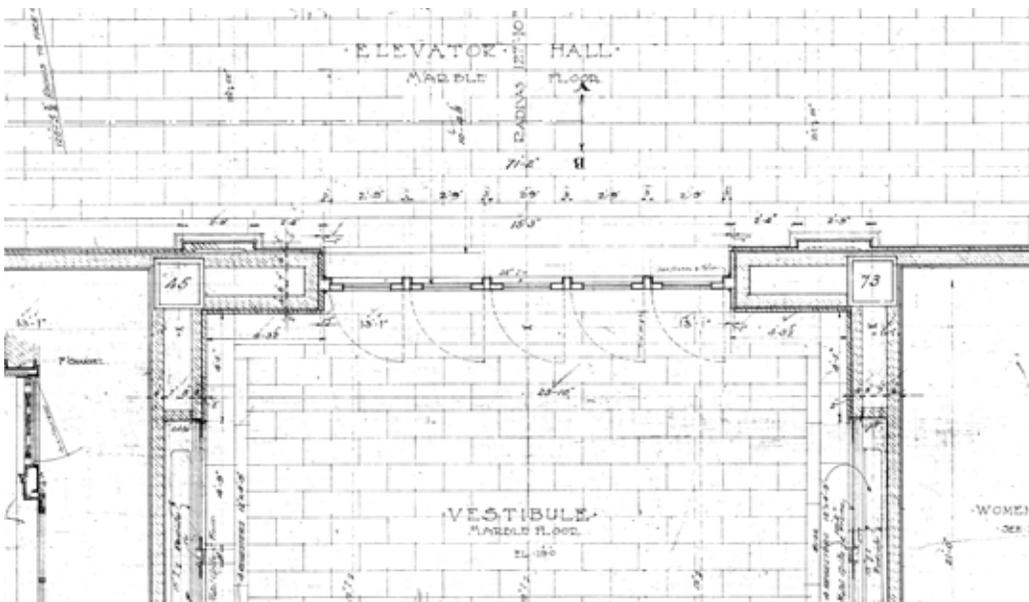


Marble Floor Design Pattern



<http://www.flickr.com/photos/ashtonpar/5161068571/>

Floor Plan Detail for Elevator and Vestibule



First Floor Offices:

Corridors: Terrazzo Floors, 2" angle to walls

Offices: Compolite Floors, 5" angle to walls

Bathrooms

Men and Women: Marble Wainscot; 2" hexagonal, White Vitrified Tile (color and pattern unknown)

Cabs Men: Terrazzo Floors

Ticket Office: Terrazzo Floors

Mezzanine: Terrazzo Floors

Stairs:

Lower Floors: Granite; Marble Landings

Office Floors: Concrete; Terrazzo Floors

Upper Office:

Finished Concrete; Build to renters specifics

Corridors:

Terrazzo Floors

Telegraph Room:

Marble Wainscot; Marble Borders

News Booth:

Terrazzo Floor

PayMasters Room:

Compolite Floor

Paymasters Room:

Compolite Floor

Pent House:

Finished Concrete

Treasurers Offices:

Terrazzo Floor

Definitions

Terrazzo is a composite material poured in place or precast, which is used for floor and wall treatments. It consists of marble, quartz, granite, glass or other suitable chips, sprinkled or unsprinkled, and poured with a binder that is cementitious, chemical or a combination of both. Terrazzo is cured, ground and polished to a smooth surface or otherwise finished to produce a uniformly textured surface. (WIKIPEDIA)

Vitrified tile is an alternative to marble and granite flooring. Vitrified Tiles have far superior properties compared to marble or natural granite. Being a manufactured product, their quality is controlled, whereas in naturally occurring marble and granite good quality is just a coincidence. Vitrified tiles possess much better mechanical strength, scratch resistance, resistance to acids, alkalis and chemicals, resistance to staining etc compared to marble or natural granite. (WIKIPEDIA)

Compolite Flooring: A description of this type of flooring is not found. The original plans reference this type of flooring to be used in many rooms of the building. It may be a type of Composite Flooring, but more research is needed. (WIKIPEDIA)

Granolithic Floors is a type of construction material composed of cement and fine aggregate such as granite or other hard-wearing rock. It is generally used as flooring, or as paving (such as for sidewalks). It has a similar appearance to concrete, and is used to provide a durable surface where texture and appearance are usually not important. (WIKIPEDIA)

Sources:

All of the information gathered about the flooring types used in the Michigan Central Station was found from the original plans. Plan image examples are from original plans.

Other website viewed:

fortmarinus.com

citrusmilo.com

savemichigancentral.com

builderbillody-help.com

Historic Lighting at the Michigan Central Station

Key Fixture Types

Lamping

Bronze¹ chandeliers, in Concourses

Exposed incandescent “A-lamp”² bulbs



zmcsinterior.jpg



20110721225139_1991-emptyconcourse.jpg

¹ Austin, Dan. Michigan Central Station. (Date not specified.) HistoricDetroit.org. 20 Jan. 2012.

<http://www.historicdetroit.org/building/michigan-central-station/>

² Lighting industry standard terminology – see

http://genet.gelighting.com/LightProducts/Dispatcher?REQUEST=RESULTPAGE&CHANNEL=Consumer&PAGENO=0&FILTER=FT0010%3AGeneral+Purpose_Standard%5EFT0006%3ALamps_Incandescent&BREADCRUMP=General+Purpose_Standard%230&BREADCRUMB=Lamps%5EGeneral+Purpose+%3A+Standard&SHOWALL=4&REQUESTFROMRESULTPAGE=TRUE&MODELSELECTIONFILTER=FT0010%3AGeneral+Purpose_Standard&COMPAREPRODCODES=&FILTERFIELD=&SORTKEY=&FROMRESULTPAGE=FROMRESULTSJSP&SEARCHVALUE=null&CATEGORY=Lamps&sortkey=> for examples.

Bronze chandeliers with frosted glass bowls, in Entrance Halls

Incandescent "A-lamp" bulbs



20110721003807_1940.jpg (cropped)

Indirect linear fixtures, in Barber Shop

Tube fluorescent bulbs



20110721004412_1966-barbershop.jpg (cropped)

Backlit glass signs that also provided downlight, at Ticketing Counters

Incandescent "A-lamp" bulbs



20110721004556_1966-interior.jpg (cropped)

Metal downlights, at Ticketing Counters

Incandescent "A-lamp" bulbs



20110721004556_1966-interior.jpg (cropped)

Bronze chandeliers with frosted glass bowls, above Soda Bar

Incandescent "A-lamp" bulbs



20110721004748_1966-sodabar.jpg (cropped)

Backlit glass signs, at Soda Bar

Tube fluorescent bulbs



20110721004748_1966-sodabar.jpg (cropped)

**Important: Natural light provided the majority of the illumination in the Station's public spaces.*



20110721004642_1966-people_benches_window.jpg



20110721215755_1973MichiganCentralDepot015.jpg



16835_297926148704_188060348704_3443189_4525882_n.jpg

Continuing research: Hope to contact Teri Jefferson of Jefferson Art Lighting for insight on lighting types from this time period as well as any knowledge he may have of fixtures at Michigan Central Station.

The Sustainability of the Michigan Central Station

The Michigan Central Station has one major aspect that makes the station inherently sustainable: it is already built. The majority of materials needed to construct a building are already present and in place, negating the need to manufacture and transport new materials and reducing the amount of energy that must be expended during the actual construction process. The energy needed to demolish and construct a new building is usually much higher than the amount of energy needed to renovate a building. Because reusing the building will save so much energy, even if it was torn down and a new highly energy efficient building was built in its place, the potential energy savings of the new building would be much less than the total amount of energy used for demolition and rebuilding. Preserving the MCS will also prevent large quantities of waste from being produced. Although in order to do a full renovation new materials will have to be brought in, the amount is considerably less than that needed for a new building.

There are other aspects of the MCS that are inherently sustainable. To determine what some of these things are, LEED standards and guidelines were used for comparison and consideration. Sustainable features of the MCS include:

- a large open space surrounding the building, which help reduce the size of the heat island it creates;
- many large windows throughout the entire building which provide daylight and views, and if operable, provide air circulation throughout the building;
- high ceilings that allow for additional air circulation;
- stone and masonry construction with a high thermal mass, which helps regulate the interior temperature of the building during all seasons.

If a full renovation were to occur in the future, there are also multiple sustainable practices that could be incorporated into the building. These include:

- planting native species and trees in the landscape to further reduce the heat island and decrease the need for irrigation;
- installing efficient plumbing systems, such as low-flow sinks, and possibly installing a gray water system to reduce the use of potable water
- using energy-efficient lighting systems, along with utilizing the large amounts of daylight admitted by the windows
- installing solar panels on an inconspicuous surface, such as the flat roof of the tower, to reduce energy costs

Sources

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The train station interior architecture is built and designed to move masses of people. Large, open spaces allow for smooth movement of masses of people and the interior of the train station itself is built to resemble the Roman bathhouses in typical Beaux-Arts design. This gives the waiting room its distinctive curved ceilings and arches, as well as Doric columns in the arcade. The station as a whole is a large, open area with tall ceilings, a large concourse with south facing ramp to access train platforms, and the offices and necessary rooms against walls, tucked out of the way, to keep spaces open and people moving freely.

The main entrance is not the grand North entrance but rather the East entrance, where people would have entered via the trolleys and inter-urban rail-lines. Through the center entrance on the East side is a vestibule which funnels the foot traffic into the arcade. Additionally, the south entrance on the East side leads to a large hallway, edged with amenity and necessary rooms, and travels directly into the concourse, providing an alternative route if one didn't want to walk into the arcade. The large, high-ceilinged waiting room was accessible directly from the North entrance and through archways off of the concourse.

The location of the six elevators shafts right inside the main, east entrance (at the vestibule), allows for the people who use the tower floors to have quick and easy access to the tower, rather than having to navigate through the waiting room, arcade, or concourse. Two additional elevators located in the western side of the concourse, near the baggage areas allow for service workers to easily access the upper floors, while serving as additional entry and exit points for people using the tower floors.

The tower floors are built to move smaller amounts of people and allow for ease of use among people who travel them frequently. The lower tower floors were built as smaller office spaces, and consist of double loaded corridors, with rooms along the east and west wings as well as the corridor. The middle tower floors were also built as office spaces and often having larger offices than the first floors, to accommodate more people in one office space, with some floors having a large office in either the east or west wings to serve as a department office, and often having larger offices than the first floors, to accommodate more people in one office space such as the Freight Claim Agent shown on the seventh floor's plan. The upper floors of the tower are large loft spaces used for storage with the highest ones never having reached full completion.

Additionally, the offices located in the eastern wing of the office floors of the tower, were more likely to be offices that the public may travel to and those in the corridor and on the western end, near the secondary elevator bank, more likely to be internal offices.

Sources:

Michigan In Pictures: Detroit's Michigan Central Station, July 2, 2007.

<http://michpics.wordpress.com/2007/07/02/detroits-michigan-central-station/>

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<http://www.nytimes.com/2010/03/06/us/06station.html>



Present Day



1913

14. How does MCS fit into the context of Detroit?

The Michigan Central Station should have fit right in to our transportation driven state but in large part due to its location the station quickly became obsolete. Detroit in the late nineteenth century was a hub of carriage production¹. With the invention of the automobile, Detroit and Michigan in general began a transformation to an economy based on transportation, specifically the automotive industry. After about 1903, Detroit became the automotive production capital but cars were not widely driven in the city². At this time there was still a demand for other types of transportation including the interurban railroad and the streetcar system. Train travel was still extremely popular and the developers of the MCS thought that it could become the center of a new neighborhood in the city of Detroit³.

The Michigan Central Station opened in 1913, before it was completed because of a fire at the old station. The station was not given any sort of parking lot for cars because at the time of construction, automobiles were not the primary transportation method that most of the population used. This lack of parking options proved problematic for the station in many ways and eventually contributed significantly to its downfall⁴. Much of the city's public transportation seems to have gone the same way as the MCS including the Interurban railway system and the streetcar systems. The Detroit United Railway Company was founded on December 31, 1900 with a capital of \$12,500,000. The articles of association for this new company were filed that day in Lansing⁵. This started the next twenty years of battles between the city of Detroit and the Detroit United Railway Company. The city leased out the routes for the interurban railroads and streetcars throughout the city which caused difficulties in getting

¹ "Detroit History," Detroit, accessed January 22, 2012, <http://www.detroit.com/history/>.

² "Michigan Central Depot," Forgotten Detroit.com, last modified March 28, 2004, <http://www.forgottendetroit.com/mcs/history.html>.

³ Ibid.

⁴ Ibid.

⁵ "Detroit United Railway Company." *New York Times* (New York City, NY), January 1, 1901

anywhere. It was not until 1922 that the city of Detroit was able to purchase the rights to the railways within the city limits. In a *New York Times* article from May, 1922 the city had recently taken possession of these rail lines giving them more than 360 miles of track and almost 1,500 cars⁶. The possession of these railways was important because they could help the public get to the MCS more easily than previously but it also signals how much trouble the city had managing their transportation resources.

Many believed that the businesses would move towards the station making it a part of the city because of similar experiments with other train stations⁷. In Detroit, this failed to occur despite Henry Ford's attempt to intervene by purchasing property for a new production plant⁸. The Great Depression hit Detroit hard and business never moved towards the station. This meant that the MCS was sitting off by its self with no easy access for the majority of the population. The situation for the MCS was compounded by the abandonment of the interurban lines in the 1930's when a combination of state government and poor business management put them out of business⁹. Michigan Central Station continued to be used especially during war times because of the high volume of military traffic going through the station. After World War II ended though, this traffic stopped and MCS quickly fell into disuse. Automobiles had taken over as the primary means of transportation, being more efficient than trains and took over the route between Detroit and Chicago. MCS was put up for sale multiple times after 1956 and eventually was abandoned in the 1980's. The MCS did not fit very well into the context of the city of Detroit because of the decisions made by its designers. The station was located too far from the major metropolitan area in a city with a difficult public transportation system. The MCS was constructed in a way that made it in-accessible to a large portion of the population. Today it seems to

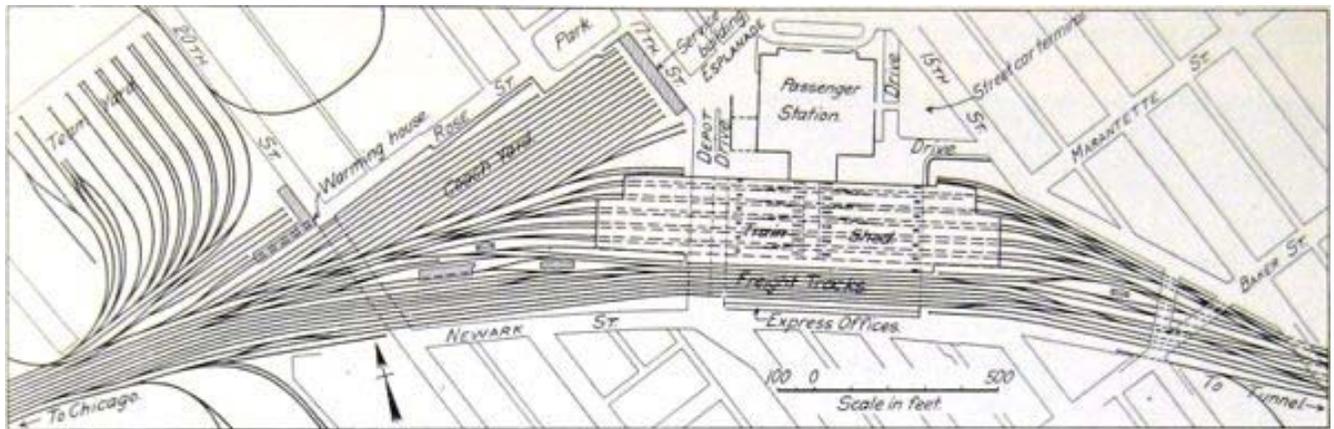
⁶ "Detroit Takes Railways: Now Owns and Operates All Cars in Municipal Limits," *New York Times* (New York City, NY), May 15, 1922.

⁷ "Michigan Central Station," Abandoned, accessed January 22, 2012, <http://www.abandonedonline.net/railroads/michigan-central-station/>.

⁸ "Michigan Central Depot," *Forgotten Detroit.com*, last modified March 28, 2004, <http://www.forgottendetroit.com/mcs/history.html>.

⁹ Schultz, Joe, "Michigan Central Station, Detroit, 2010," *Technology and Culture* 51, no. 4 (2010): 891.

serve as a representative for the city of Detroit though; many see it as a kind of symbol of the city becoming renewed and see the future of this structure as vital to the future of the city¹⁰¹¹. This seems ironic because the building seems to have come into its own as a symbol for Detroit long after its supposed heyday.



General Plan of New Passenger Terminal at Detroit

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Origins of City Beautiful

- L'Ecole des Beaux Arts, France (esp. McKim, Mead & White)
- L'Enfant, 1791 (& Andrew Ellicott, Latrobe) Washington D.C.
- Judge Woodward, 1807, Detroit
- Frederick Law Olmsted *Public Parks and the Enlargement of Towns*, 1870
- "White City" World Columbian Expo, Chicago, 1893, Daniel H. Burnham
- Citizen-Activists: Housewives...housekeeping of city streets
- McMillan Plan, Mall Washington D.C., 1901-2
- Charles Mulford Robinson, *Modern Civic Art, or the City Made Beautiful*, 1903
- City planners...artistic planning
 - remnants seen in many cities' tree lined streets

Architecture

- Beaux Arts & Neoclassical
- Monumental, overwhelming scale
- Repetition, symmetry, order, legitimacy, rationality
- Grand setting, linking civic buildings
- Eclectic use of classical reference, materials

Social Goals

- Progressive Reform: centralized urban/political influence, protection of elite property values, social control of urban masses (Wilson, 76)
- "City Beautiful Planners hoped to redefine public life" (Bluestone)
- Response to urban problems of poverty, slums, crowding
 - Large scale open areas...fight commercial supremacy
 - Language of buildings...encourage civic goals/morals
- Formality, patriotism at the end of the Gilded Age
- Clean up confused expression of mixed use found in cities-beginning of zoning
- Efficiency though beauty (was utility inherent?)
- Optimism: American cultural patrimony and the New City at beginning of 20th c.

Critiques

- City Beautiful became irrelevant... City Practical
- Displacement of residence/ businesses
- Form over Function, expense
- Massive scale can fail to connect to everyday needs of human scale



Figure 1

Conclusions

Michigan Central Station (MCS) was completed in 1913, towards the end of the City Beautiful movement. Built two and a quarter miles outside of Detroit's Central Business District, the grand Beaux Arts station replaced the main rail station in downtown that had been burnt in a fire. Combustible materials were rejected in the monumental new building; using instead granite, limestone, and "cayenne stone" to complete the buildings facades. Beaux Arts architecture often used an eclectic mix of materials, and it embraced new technology such as steel framing, concrete, and cast iron work all seen in MCS. This can be seen between the base of the building, where rusticated granite gives way to limestone arches and columns, and the building tower which was constructed of brick. All the lithic

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materials were light in color- keeping with the neoclassical reference to classical revival American architecture of a century before. (fig. 2) Classical revival architecture alluded to ancient Roman and Greek temples, thought to have always been as white as the marble of their ruins.



Figure 2



Figure 3



Fig. 2. Anonymous, Plan of **Detroit** [Judge Woodward's Plan], c. 1807, detail of Woodward Plan (4000 ft. equilateral triangle section outlined by Washington, Jefferson, and Miami avenues; see Fig. 5 for modification of plan in vicinity of Campus Martius) (*American State Papers, Public Land Series*, vol. 6, Washington, 1834, Library of Congress).

Figure 4

In planning the building, a large park was designed around the footprint, with a grid of walkways that evoke the layout of downtown Detroit with its triangular quadrants radiating from Park



Figure 5

ultimately footing the bill. While the park completed the setting of the building, the land also incorporated a boulevard (W. Vernor HWY) which finally linked the station to Michigan Boulevard. (Detroit Free Press, 1912) (fig. 6

) WWI likely interrupted plans to complete the park sooner.

City planners had intended for Michigan Central to be the civic anchor of a downtown corridor along Michigan Avenue. (Tunnard) Officials could not have anticipated the economic stagnation of



Figure 6

WWI, and the subsequent depression of the 1930s, which severely limited the growth of downtown.

[who were the planners at this time? (Frederick Law Olmstead designed Belle Isle Park in 1884...how

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were Belle Isle rail stations incorporated into plan for MCS?] Detroit's Central Business District did not extend its boundaries much after 1928 (Kavanaugh, 32), and as a result the city never grew to meet its grand anchor at the other end of Michigan Avenue. By 1920, Detroit was the fourth largest city in the nation, and growing fast. (Gibson) However; the growth that Detroit saw was always more sub-urban than urban, and this contributed to the awkwardness of Michigan Central's setting. While the station was placed adjacent to main rail lines, when trolley service stopped in the 1938 it further alienated the station from Detroit's downtown center. (Schramm et al.)

In conclusion, Michigan Central Station's setting was never as relevant as intended. The station was built at the end of the gilded era, quickly making the civic ideals of grand open space and monumental architecture much less meaningful. Instead, practical demands of the early 20th century replaced the language of neoclassical architecture. America's Motor City did not need civic monuments to tell the world of its successes- the car itself became the symbol of growth and industry. As a result, MCS remained isolated— never designed to embrace the car and the suburban environment it created. (fig. 7) While City Beautiful notions bestowed a civic face to Michigan's railroad, the ideals of the movement were never able to integrate the station to the Detroit or its populace.



Figure 7

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