

BUILDING STATISTICS



FIGURE 1: COURTESY OF THE CONSTRUCTION DOCUMENTS AND MORTENSON CONSTRUCTION.

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The Heartland Hotel

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5th Year: Construction Management

Adviser: Dr. Robert Leicht

Building Statistics: Part I

THE HEARTLAND HOTEL

GENERAL BUILDING DATA

Building Name: The Heartland Hotel (Actual name not released upon request)

Location and Site: The Midwest (Actual location not released upon request)

Building Occupant Name: The Heartland Hotel (Actual name not released upon request)

Occupancy: Hotel (Type I-B)

Size: 129,416 Square Feet

Number of Stories: 9 stories, above grade

Primary Project Team:

Owner: Local Property Owner – Further information not released upon request

Architect: Elness Swenson Graham Architects - <http://www.esgarch.com>

Structural Engineer: Meyer Borgman Johnson - <http://www.mbjeng.com>

Civil Engineer: Landform Professional Services - <http://www.landform.net>

Interior Design: Design Force Corporation - <http://designforcecorp.com>

Developer: Mortenson Development, Inc. - <http://www.mortenson.com/development>

Contractor: Mortenson Construction - <https://www.mortenson.com>

Dates of Construction: June 29th, 2015 – July 25th, 2016

Cost Information: \$40.05 Million Lump Sum

Project Delivery Method: Design-Build

ARCHITECTURE

Staying at the Heartland Hotel is meant to be an escape from the hectic world. It is designed to be an oasis – a new place for guests to feel at home. As an international chain of hotels, the Heartland Hotels are known for expressing hints of Spanish roots with a European design twist. Not only does the Heartland provide a place to stay for the night, it also offers guests a dining area, a bar and lounge, several meeting rooms, a library, and multimedia salons.

An “H” for Heartland Hotel is showcased atop a glass and metal panel tower – the tallest part of the building. The Heartland has an entrance and exit drive lane cutting underneath the building and connecting to an existing, adjacent parking garage. Courtyard-strung lights highlight the main, East entrance, but is hidden from street view (Figure 2).

Codes

The following are the codes maintained for the design and construction of the Heartland Hotel:

- 2006 IBC
- 2009 IBC High Rise Requirements
- MSBC 2007
- ASHRAE 90.1

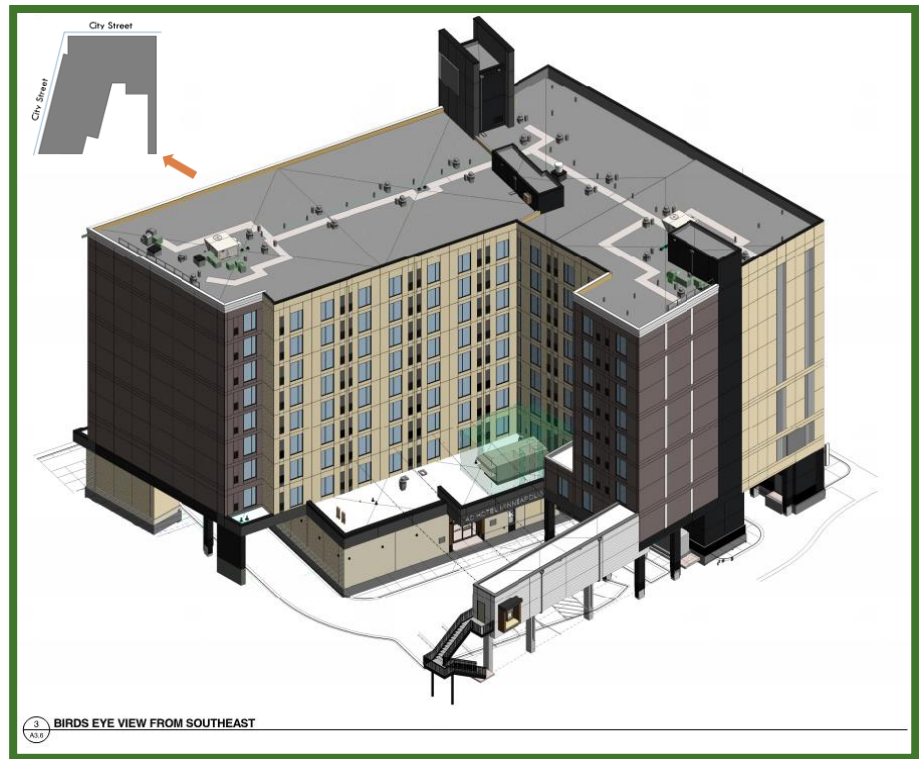


FIGURE 2: SOUTHEAST VIEW OF THE HEARTLAND HOTEL'S EAST ENTRANCE, COURTESY OF THE CONSTRUCTION DOCUMENTS (A3.6 – BIRDS EYE VIEWS).

Zoning

There are no applicable zoning requirements for this building.

Historical Requirements/District

There is a historic commercial building adjacent to the project site that must be preserved.

BUILDING ENCLOSURE

Building Façade

At the base of the Heartland, a single-story, aluminum storefront system welcomes the guests while seemingly supporting the remainder of the building (Figure 3). Above this feature, narrow windows (largest W:H ratio of 2:5) alternate between several exterior wall materials, as found in Figure 4. The façade system is a metal stud cavity wall with varying insulation types, sheathing, and vapor retarders dependent upon the exterior façade material. Glazing types consist of tempered, non-tempered, wire, and spandrel glass (A11.1 – Opening Schedules and Types/Details).



FIGURE 3: NORTH ELEVATION, COURTESY OF CONSTRUCTION DOCUMENTS (A3.2 - EXTERIOR ELEVATIONS). THIS VIEW REVEALS KEY ELEMENTS OF THE BUILDING FAÇADE.

Roofing

Two main types of roofing systems are utilized: “Adhered membrane roof assembly on PT concrete” and “Fully ballasted membrane roof assembly” (Construction Documents, A5.1 – Wall Sections). The first type of roofing atop a post-tensioned concrete slab contains EPDM at low areas and built up roof at higher areas, a minimum of 2” rigid insulation, and a vapor retarder. This roofing system has a fire resistive rating of 1 hour. The second type of roofing system atop a metal deck contains the same features as the first, but additionally includes ½” gypsum sheathing and 1 hour-rated, spray applied fireproofing.

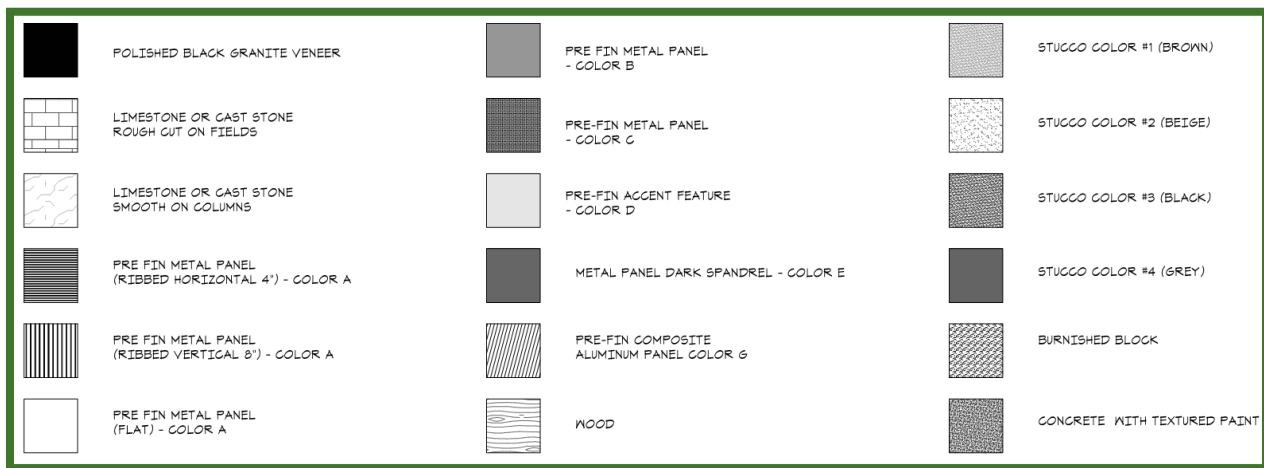


FIGURE 4: COURTESY OF THE CONSTRUCTION DOCUMENTS (A3.1 – EXTERIOR ELEVATIONS). METAL COLORS: A = SILVER METALLIC; B = GREY; C = BLACK; D = WHITE; E = DARK GREY. LIMESTONE COLOR: LIGHT BUFF (BEIGE). WOOD: RED CEDAR.

SUSTAINABILITY FEATURES

Recycling space calculations were performed per the building's square footage and usage. The design also requires recycled steel products.

Building Statistics – Part II

THE HEARTLAND HOTEL

PRIMARY ENGINEERING SYSTEMS

Construction

MDI bought the property on which The Heartland Hotel will be located, as a part of a 30-year city improvement plan. After entering into an agreement with The Heartland Hotel that the construction would take place and that MDI will be a partial owner in the final product, Mortenson Construction was then hired as the contractor. Mortenson Construction and Ellness Swenson Graham Architects are in a Design-Build contract for the design and construction of the hotel. Along with the Architect, the Interior Designer, Structural Engineer, and Civil/Landscape Professionals have all been involved early in the design process.

The construction site is on a corner and closely shouldered by two existing buildings. With two one-way streets on either side of the site, construction materials and equipment are limited to an area behind the building and near neighboring buildings. Due to the limited space, prefabrication and daily deliveries has been implemented so as to not impact productivity. The construction for The Heartland Hotel will utilize a Liebherr 281 HC Tower crane with a 170' reach. This crane will extend over twelve stories high in order to pass over neighboring buildings. The post-tensioned concrete floors will be poured on a five-day cycle, utilizing prefabricated column reinforcing and a three-story shoring system. The exterior façade is on the critical path for the schedule, and will begin as soon as the PT slab has been poured on the fifth floor. Although the Certificate of Occupancy will be awarded on August 8th, 2016, the hotel owner will not welcome guests until November. This gives the project team a more lenient schedule.

Electrical

A utility transformer connects to the main switchboard, located in the northeast corner of the building, at 2500A. This is then connected to the main electrical systems room (which supports the elevator), the fire pump room, mechanical room, and kitchen. Electrical rooms with 112.5kVA transformers and panelboards are located on floors 3, 5, 7, and 9, to support the lighting, receptacles, and VTAC units on that floor and the floor below. An additional electrical room is found on floor 8, and is connected to a supplementary 30kVA transformer on floor 9. A 250kW generator located on the first floor near Stair B.

Lighting

LED strip lights (tape lights) and downlights are scattered throughout the guestrooms, along with lamps and portable light fixtures. Hallways leading to the guestrooms are lined with 4" recessed circular fluorescent lights. Fluorescent lighting is also utilized in the first floor workroom, kitchen, mechanical and electrical rooms, and the administrative area on the second floor. The underside of the canopies, drive-through lanes, and bridge contain 6" recessed LED downlights. Four strings of LED lights are hung across the courtyard.

Mechanical

The first floor is comprised of three main mechanical rooms: mechanical, fire pump, and fire command center. Two mechanical rooftop units (with cooling and gas heating capabilities) supply the hallways leading to the guestrooms of floors 2-9, with heated and cooled air. Exhaust fans are scattered throughout the roof. Each guestroom has an individual vertical terminal air conditioning (VTAC) unit for supply and exhaust. The first floor has a return plenum ceiling and a second-story rooftop unit for air supply. Variable air volume terminal units are located throughout the first floor and in the administrative space located on the second floor. The elevator room and electrical room have split A/C systems.

Structural

The foundation system is composed of driven 7-5/8" diameter steel pipe piling filled with concrete. The first floor, a multifunction area for guests and employees, is comprised of a two-way concrete slab and grade beams 40" deep. Steel columns and beams are used only at the single-story entrance and canopies, as well as the tower, bridge, stairs, and elevator. The entrance and canopies are comprised mainly of W12x16 and W14x22 beams, while the bridge is primarily W12x26 beams. The few steel columns utilized on the first floor are W10x49, HSS4x4x1/4, and HSS6x6x3/8, while the remaining are 18"x26" concrete columns. Guestroom floors 2-9 are 6.5"-7" PT slabs with prefabricated reinforced 12"x22" columns. The columns form a 24'5"x18'5" grid throughout the building, making the width of the hotel only four columns wide. This allows spacing for the hallways and does not necessitate columns interfering with the guestroom layouts.

ADDITIONAL ENGINEERING AND ENGINEERING SUPPORT SYSTEMS

Fire Protection

Extended coverage 3/4" dry pendants line the exterior ceiling of the drive-through lanes. Standard and concealed 1/2" wet pendants are scattered throughout the administrative area, while 3/4" extended coverage wet pendants line the public area of the first floor. 1/2" horizontal sidewall sprinklers and pendants are located in the guestrooms. Two 4" standpipes with 2 1/2" fire hose valves are found on the south and northeast ends of the building.

Transportation

Guests may enter The Heartland Hotel through the West entry vestibule next to the street, through the East courtyard entry, or through either two stairs located at the northeast and southwest corners of the building. Three elevators are located in the center of the building, and two extend up to the ninth floor while the third extends up to the roof. A rooftop walkway is provided for maintenance. An approximately 56' long bridge connects the second floor of the hotel to an existing parking garage which can be utilized by guests.

Telecommunications

Six wireless access points are located on each guest floor. Hard phone lines and voice data cables are found primarily on the first and second floors. "Door Contact" sensors are located at every entrance to the building. 13 ceiling-mounted cameras are positioned on the first and second floors.