2015/2016

145 KENT
&
THE REDINGTON RESIDENCE

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Comprehensive Design Project Proposal

For

Department of Apparel, Design and Hospitality Management

North Dakota State University

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Preliminary Proposal 145 Kent | ADHM – 450

Statement of Intent 3
Field Survey 4
Scope of Work 7
Stacking Diagram 8
145 KENT RESTAURANT 9
Mission Statement 10
Design Concept Statement 11
User/Client 12
Goals & Objectives 14
Adjacency Matrix 15
Bubble Diagram 16
Blocking Diagram 17
Circulation Diagram 18
Room Data Sheets 19
THE REDINGTON RESIDENCE 29
Mission Statement 30
Design Concept Statement 31
User/Client 32
Goals & Objectives 33
4TH Floor Adjacency Matrix 34
4th Floor Bubble Diagram 35
4th Floor Blocking Diagram 36
4th Floor Circulation Diagram 37
4th Floor Room Data Sheets 38
5TH Floor Adjacency Matrix 54
5th Floor Bubble Diagram 55
5th Floor Blocking Diagram 56
5th Floor Circulation Diagram 57
5th Floor Room Data Sheets 58
Code Analysis 65
Apendix 114

Statement of Intent
KENT 145 RESTAURANT & RESIDENCES

BROOKLYN, NEW YORK

145 KENT and THE REDINGTON RESIDENCE is the essence of what young Brooklyn residents seek. The fine-dining restaurant combined with a luxury living condominium showcases the urban elegance the city has to offer. This mixed use space will provide luxury and elegance to the Brooklyn neighborhood while staying true to Brooklyn's culture. Kent 145 will offer individuals a night of entertainment while the private resident's live on the upper floors of the building.

A mixed used building represents urban luxury and the skill set we have as design students to execute a successful design. In order to execute this design successfully, information will be gathered from multiple, credible, sources in the beginning of the design process. Research will be conducted in order to answer the question of how lighting effects the emotions and behaviors of guests in a fine-dining setting. Once this information is gathered, and the results are analyzed from the research, all information will be incorporated into the planning and design of both 145 KENT and The Redington Residence. Plans will meet all the needs of all users, and materials will be purposefully selected in order to create an elegant aesthetic by incorporating the information gathered into the design solution to create a holistic and well planned space. 145 Kent restaurant's lighting system will be well researched and executed in a unique way that attracts guests and creates conversation topics while providing adequate lighting with energy efficiency incorporated throughout the design process.

This project is important to our team because of its contribution and significance to our portfolios, education, and future career. 145 KENT & THE REDINGTON RESIDENCE will be a culmination and application of our learning at North Dakota State University. 145 KENT will add to our hospitality portion of our portfolios, and the REDINGTON RESIDENCE will add to the residential portion of our portfolios. This project will consist of previously learned materials, new information gathered, and the interior design Body of Knowledge to combine into one application that allows us to showcase all that we have learned over the years and apply our information to this senior capstone.

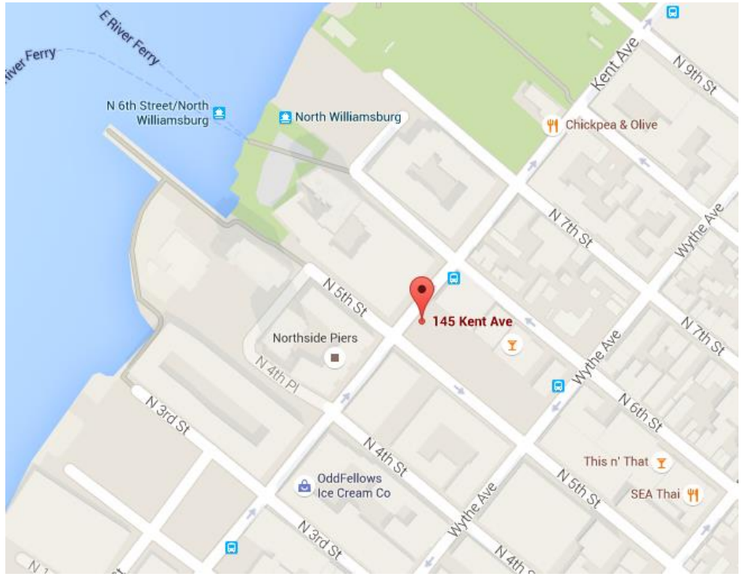
145 KENT RESTAURANT will create a space for guests to come and enjoy time with family and friends in a welcoming and fine dining environment. The lighting system will be carefully designed to create a comfortable space the guests desire to return to. This project will provide our team with an in depth learning experience about the possibilities and restrictions of design in an urban setting. We will learn about the fine-dining service industry and how design affects the overall success of the space. The possibilities and restrictions of mixed used buildings will be explored, while working in a team setting and receiving critiques from peers, professionals, and advisers. After the completion of this project, team members will have a better understanding of the use and application of high-end materials in both hospitality and residential settings.

Field Survey

Brooklyn, New York is one of the city's five boroughs, and one of the most sought out locations to live in within the five boroughs. Brooklyn boasts a diverse population and is known for being home to world renowned artists, singers, writers, actors, and politicians.

The neighborhood of Williamsburg, within Brooklyn, is specifically known for the large local art community and hipster culture. A neighborhood that first attracted a population seeking low-rent housing, is now home to some of the wealthiest New York citizens. These buyers are seeking all the luxuries of owning a private home while enjoying the urban lifestyle Williamsburg offers. The neighborhood of Williamsburg in Brooklyn stretches from Flushing Ave. to North 14th St./Nassau Ave./McGuinness Blvd./Meeker Ave., Bushwick Ave. to Kent Ave. (city-data, 2015). This stretches 2.179 Square Miles along the Hudson River and into Brooklyn (city-data, 2015). It is a borough well known for its convenience providing public transportation, with three Subway Lines with access to the L, J, M, Z, and G trains (city-data, 2015). The Williamsburg Bridge crosses the East River to the Lower East Side (city-data, 2015). Brooklyn-Queens Expressway. Bus Routes are also provided, as well as the East River ferry (city-data, 2015).

The location of our building, 145 Kent Avenue is on the corner of Kent Avenue and North 5th Street. This location provides close proximity to public transportation, views of the Hudson River, and access to local parks, shopping, and dining. Across the street from 145 Kent is a sold out condominium building, with luxury residences and amenities (Williamsburg Edge, 2015). 145 Kent is attached to a two story brick building that shares the adjacent section of the block's street front which is the location of Modern Spaces Real Estate. The block also has the amenities of a CVS Pharmacy/Grocery and Café Fabbrica which serves coffee and pastries.



Latitude: 37.3017 (U.S. Climate Data, 2015)
Elevation: 13' (city-data, 2015)
Average Precipitation: 48.26 inch (U.S. Climate Data, 2015)
Average High Temperature: 68 degrees (U.S. Climate Data, 2015)
Average Low Temperature: 48 degrees (U.S. Climate Data, 2015)

Building Exterior

The Loretta Building was built in the early 20th Century architectural style and was created by an early Fargo businessman Peter Elliott, who named it after one of his youngest daughters (Kilborne Group, n.d.). First arriving in the area via ox cart in 1873, Elliott worked on a steamboat and did survey work for the government before becoming a prominent downtown Fargo businessman. He also was a former alderman and mayor of the city (Kilbourne Group, n.d.). The fourth floor was an addition from the original building (Kilbourne group, n.d.). Interior spaces are filled with natural light on every level, even including the basement – this is due to glass blocks inset on the sidewalk, large window wells and a walk-out, rear-building patio to maximize the natural light in the building's lowest level (Kilbourne Group, n.d.). Skylights on the second, third and fourth levels bring natural light into the innermost core of the building (Kilbourne Group, n.d.). The building's exterior materials are a light brick with details along the roof line with building's name "Loretta" etched in brick near the middle top. The street level has a ceiling height of 13' and the remaining levels are around 9'. This allows a feeling of spaciousness without creating unusable space. There are two main entrances to the building currently, one entrance in front and one in back. The colors used throughout this building currently are natural wood tones and light brick. The building's staircase is very centralized and offers easy access between levels. The staircase is kept very open and has skylights up to the top floor which allow ample natural light throughout.

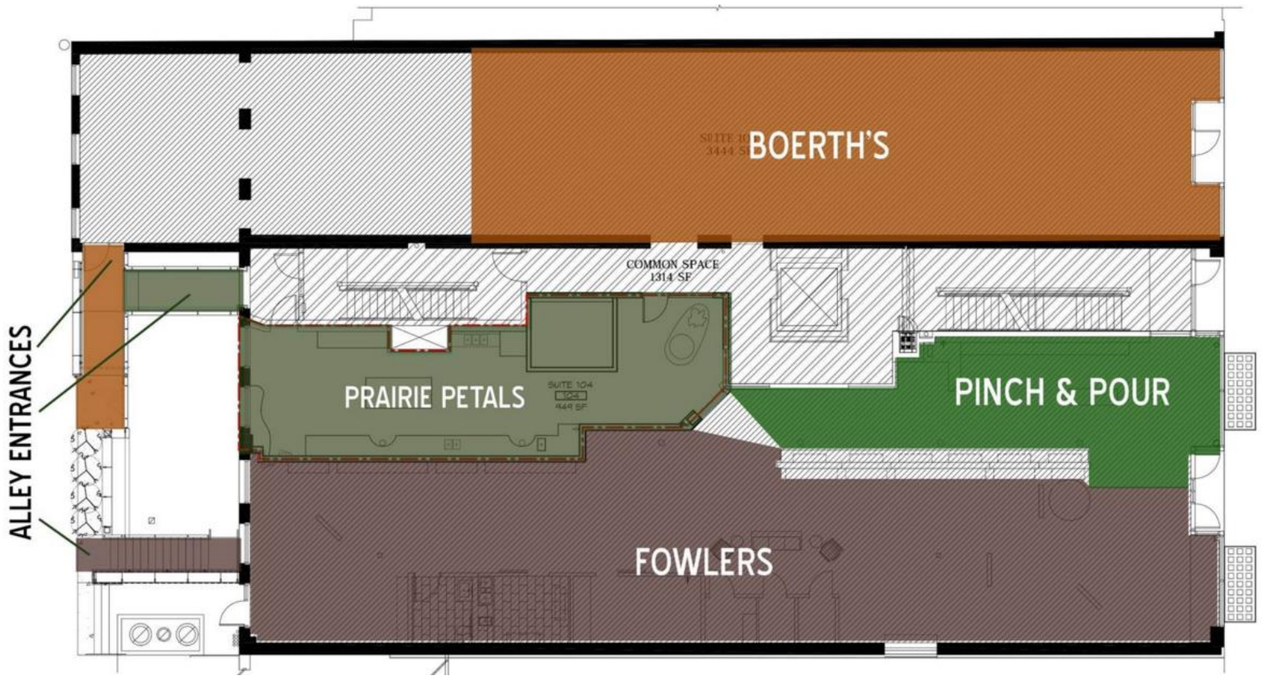


Image from: Kilbournegroup.com

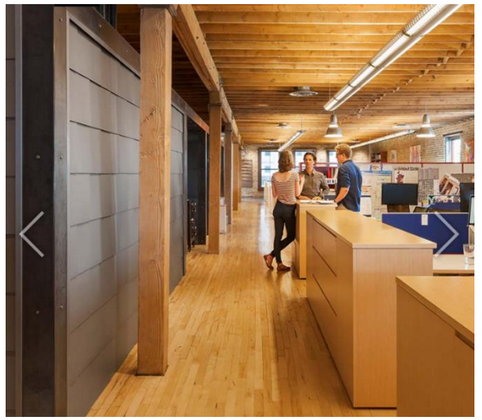
Image from: stumbeanos.squarespace.com

Building Interior

The Loretta building consists of reclaimed elements from the original building materials such as the douglas fir floor joists are exposed throughout, the each level with an interior wood paneled finish which rings true to the renovation concept of “respectful restoration”. (Kilbourne Group, n.d.). Large windows are incorporated on all levels of the Loretta Building which draw attention to the original brickwork and celebrate it’s simple beauty. The LEED checklist was followed in every aspect of the redesigning of the Loretta Building. (JLG, n.d.) This building is approximately 48,000 square feet and currently has 5 retail spaces on the lower level, and 7 office suits on the upper levels. This provides approximately 12,000 of useable square footage per floor. Before the Loretta’s restoration, only approximately 9,000 square feet was usable space. (Kilbourne Group, n.d.) Natural materials that are from the era and area are used throughout the existing interior design. The roofing materials consist of channel glass, zinc panels, and kasota stone flooring on patio. There is also a rooftop patio that users are welcomed to join that offers a great view of Downtown Fargo. (Kilbourne Group, n.d.)

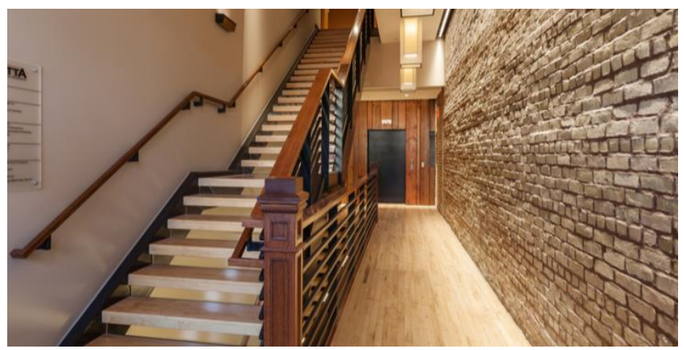
“A Blend of and new, contemporary and classic, sunlight and well-worn bricks , the Loretta is four floors of history and future-a concept so popular that the Loretta commercial spaces were 100% leased-up before the building was officially opened.”(JLG, n.d.)

Throughout the Loretta Building’s transition into 145 Kent, a mixed use space consisting of restaurant and condo units, 1 story will be added to the project. Making the now 145 Kent building into a 5 story building. The spaces will be split with the restaurant on street level and residences on upper levels. The same use of natural lighting will be incorporated into the new space, and maximized to appeal to the contemporary design. Sections of existing exposed brick will be utilized in the first floor lobby and entrance area. The rooftop patio will be incorporated for residential use in the penthouse of 145 Kent. The existing kasota stone flooring located on the 4th floor patio will be reused as well as the zinc exterior panels. Existing vertical circulations systems and mechanical systems will be retained and extended to address the addition on the 5th floor of the building. The structural and mechanical elements that will be retained are the recessed sprinkler system located throughout as well as the HVAC metal circular ducts.



(JLG, n.d.)

(JLG, n.d.)



(Kilbourne Group, n.d.)

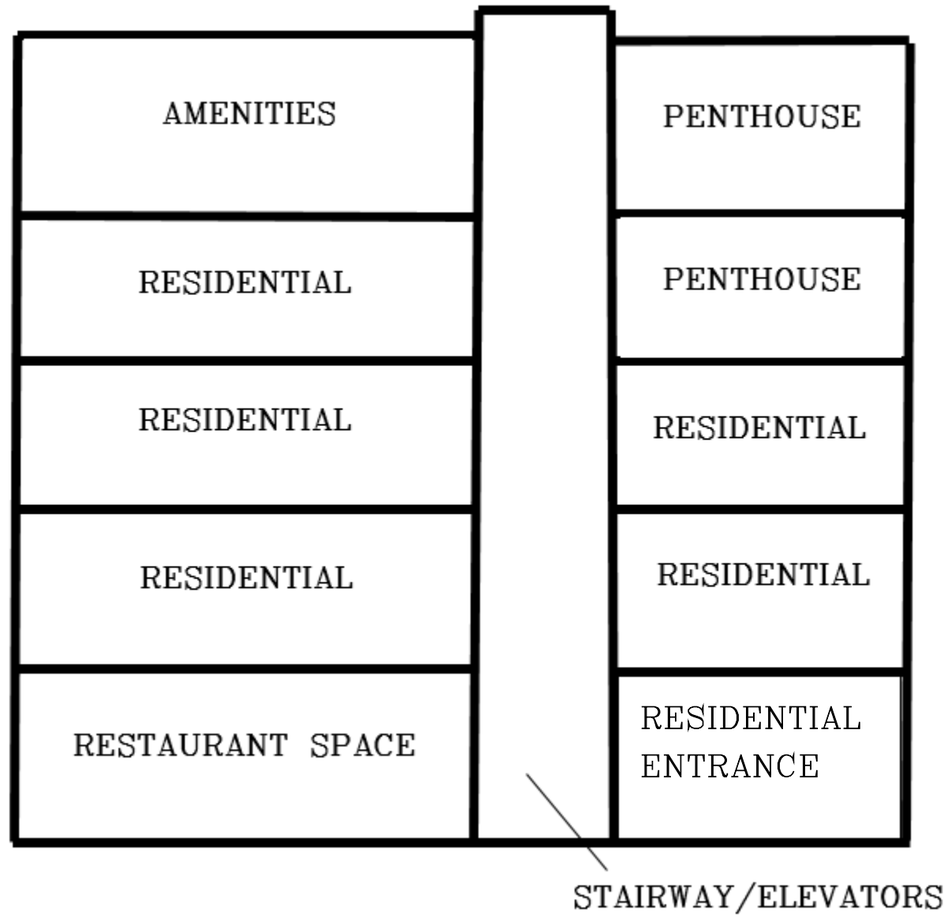
(Kilbourne Group, n.d.)

Scope of Work

Responsibilities include, but are not limited to the following:

- Initial Research
  - Annotated Bibliographies
  - Interviews with Site Managers/Owners
  - Interviews with Design Professionals
  - Site Visits
  - Content Analysis
- Gathering and sorting information
- Initial programming and preliminary design steps such as:
  - Statement of Intent
  - Mission Statement
  - User/Client Description
  - Design Concept Statement
  - Field Survey
  - Scope of Work
  - Programming:
    - Program Requirements Form
    - Room Data Sheets
  - Bubble/Blocking/Circulation Diagrams
  - Conceptual Sketches
  - Adjacency Matrix
  - Cody Analysis
- Spaces to be designed:
  - Fine-Dining Restaurant
    - Entrance/Hostess stand/Lobby
    - Dining Room
    - Private Dining Room
    - Bar
    - Lounge
    - Location of Kitchen will be define but not designed
  - Residence
    - Entries
    - Living Room
    - Kitchen
    - Dining Room
    - Study
    - Laundry
    - Guest Bathroom
    - Guest Bedroom
    - Master Suite
    - Kids Bedrooms
    - Kids Bathroom
- Construction Documents
  - Fine-Dining Restaurant
    - Floor Plan
    - FF&E Plan
    - Finish Plans
    - Reflected Ceiling Plans
    - Exterior and Interior Elevations
    - Wall Sections
    - Large Scale Plans
    - Details and Sections
  - Residence
    - Floor Plan
    - FF&E Plan
    - Finish Plans
    - Reflected Ceiling Plans
    - Exterior and Interior Elevations
    - Wall Sections
    - Large Scale Plans
    - Details and Sections
- Project Presentation Proposal
- Project Binder to include furniture, fixtures, and lighting schedules
- Presentation materials will include a presentation folio, renderings, material displays, construction documents, research binder, and codes analysis.
- Formal presentation to include PowerPoint Presentation, presentation boards, and finish displays.

Stacking Diagram



145 KENT

Mission Statement-145 KENT

"Retreat to surprising, sensory environments where amplified entertainment, vibrant lounges, modern atmosphere and innovative cocktails and cuisine create more than just a restaurant experience, but a luxury lifestyle destination." (W Hotels About, 2015)

Design Concept Statement- 145 KENT

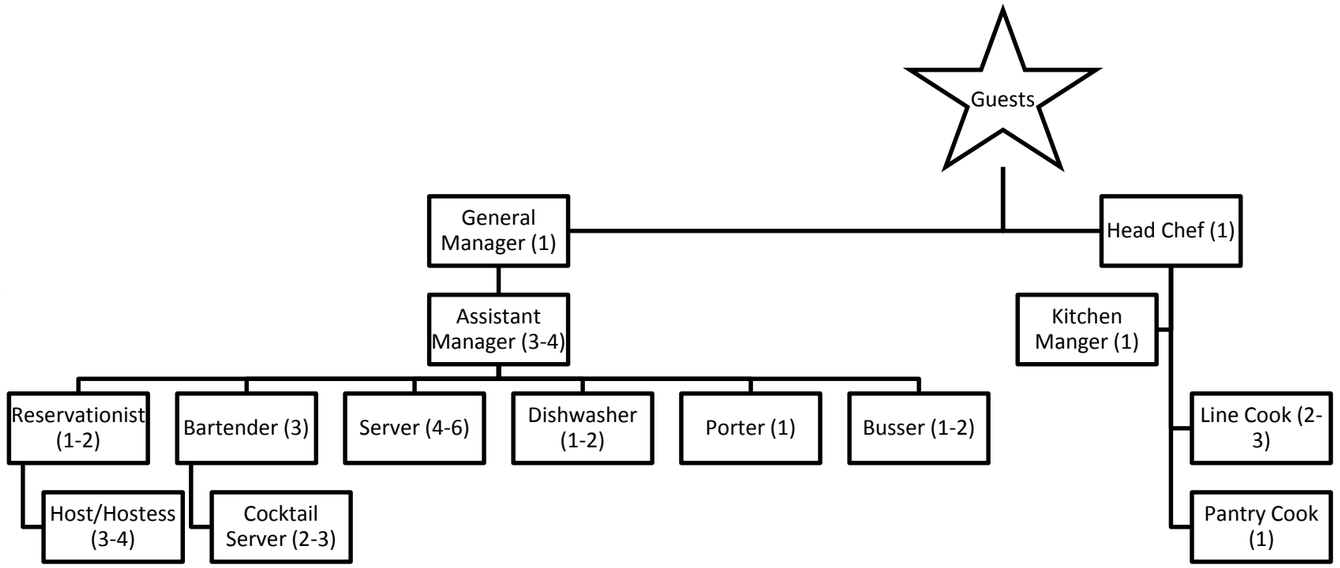
We live in a world of senses. Everything we experience is captured and brought to our consciousness only by our sense. The fine dining restaurant, Kent 111, complete with bar and lounge will serve as a space of socialization and relaxation that both locals and residents of all 5 boroughs will seek out. This space will engage the senses of its guests by utilizing deep jewel tones contrasted with metals such as gold or pewter and natural stones used in a mixed-urban style. By choosing unique lighting fixtures placed strategically throughout to draw attention to architectural elements and different seating areas within the restaurant space. There will be plenty of seating options for the user in either the lounge, semi-private or private dining. Layers of light will provide the restaurant staff with adequate lighting while ensuring proper illuminance levels for guests while dining. Our senses guide us through the world – sound, color, feeling, smell, and taste. Nothing makes the senses feel more alive than the act of eating, and nothing makes more sense than to enjoy a good meal. (Atera, 2015)

User/Client- 145 KENT

- General Manager (1)
- Assistant Managers (3-4)
    - Will greet employees, participate in line checks to ensure adherence to recipes, plan and execute pre-shift meetings, visit tables and recommend wines. Responsibilities include assisting with beverage inventory, helping to resolve guest issues, selling and promoting the restaurant through weekly concierge visits, creating section charts, coaching and rewarding staff, organizing paperwork, counting bar register and safe bank money, and securing the restaurant upon closing
- Head Chef (1)
    - The head chef will be in charge of working with managers to ensure that the kitchen is properly stocked with ingredients and supplies for the menu. The head chef will also be in charge of planning and organizing the menu, which will change seasonally, as well as plan specials for each evening.
- Host/Hostess (3-4)
    - Acting as the initial point of contact for guests, this employee will check coats and hats, take reservations, and manage a waiting list and seating chart. Other duties include maintaining the washrooms and lounge for cleanliness, answering questions, stocking display cases, and selling sundry items and gift certificates.
- Reservationist (1-2)
    - Booking dining room reservations for guests while maximizing table turns
    - Specific responsibilities include calling to confirm bookings, making sure boardroom events are properly logged, revising banquet event orders with menu selections, contracting for special arrangements and sending proposals.
    - Expected to process credit card authorizations, assist management with floor plans, and audit checks by separating food and beverage amounts.
    - Duties include maintaining a supply of catering kits, updating the local convention calendar, and helping with internal marketing strategies.
- Servers (4-6)
    - Will greet guests, perform our verbal menu presentation to each table, provide menus, suggest and serve beverages, answer questions, and take and place orders. Responsibilities include retrieving and delivering entrees and sides, removing plates and glasses, presenting desserts, delivering checks and thanking guests. Additionally, this employee will clean and restock condiments and supplies, and perform side duties as requested.
- Busser (1-2)
    - As part of our serving team, this employee will greet guests, clear plates and silverware and deliver items to dishwashers. Responsibilities include resetting tables, setting up the bar and service stations, breaking down service stations and the dining room, and performing side duties as assigned.
- Line Cooks (2-3)
    - Assisting in the preparation of meals, this employee will set up the line for efficient flow, adhere to recipe book standards, comply with established portion sizes, and wrap meat for presentation. Properly storing perishable items, this employee will maintain inventory of line items, broil and plate entrees, assure the visual accuracy of plate presentation, and ensure that the line area is clean and orderly throughout each shift.
- Pantry Cook (1)
    - Assisting with food preparation, this employee will help set up the line for efficient flow, prepare salad dressings and sauces, and cook appetizers and soufflés. Additional responsibilities include assembling soups and salads, assuring visual accuracy of pantry orders, plating desserts, wrapping and storing perishable items, and cleaning and sanitizing the pantry area throughout each shift.
- Dishwasher (1-2)
    - This individual will sort and clean dishes and glassware, unload and stack clean dishes, maintain the dish machine, sweep and mop floors, remove trash, organize the store room, clean guest restrooms as needed and assist with pantry prep as assigned.
- Porter (1)
    - Will clean equipment and rooms, vacuum carpeted areas, and replace restroom and kitchen paper supplies. This employee will also be expected to polish wood furniture, replace light bulbs, break down boxes and cartons, and remove garbage and debris, and alert management to equipment malfunctions.

User/Client- 145 KENT

- Bartender (3)
  - Will greet and build relationships with guests, take drink orders, prepare cocktails, set up the bar and service stations, wash glassware, close out bar checks, collect money and balance the cash drawer. Additionally, this employee will serve bar sandwiches and lunch entrees when applicable, as well as perform closing duties as assigned
- Cocktail Server (2-3)
  - Will greet and build relationships with guests, suggest and serve beverages and food, and take and place orders within the lounge and bar area. Additional responsibilities include answering guest questions, removing plates and glassware, delivering checks, thanking guests, and setting up the front and back of the house.
- Kitchen Manager (1)
  - Supervises and coordinates activities concerning all back-of-the-house operations and personnel, including food preparation, kitchen and storeroom areas. Hires, discharges, trains, and evaluates back-of-house personnel. Purchases or requisitions food items, supplies and equipment. Plans or participates in menu planning and food production and apportions meat, vegetables and desserts, as well as food surpluses, to control costs. Supervises food preparation personnel to ensure food adheres to standards of quality to maintain cleanliness or kitchen and equipment. May meet with clients to plan special menus.
- Guests
  - Guests of all abilities will be accommodated within the dining space. Ages 21+ will be served and a recommended dress code will be implemented. This dress code will encourage clean and tidy clothing, as well as restrict guests from wearing dress with holes, shorts, t-shirts, and tennis shoes. The clientele will include residents of the building, who will have a separate entrance and in-house delivery service available. Other guests will include those looking for a relaxing spot to socialize for happy hour, a private romantic dining space, or a space to host business dinners, family dinners, and celebrations.



(National Restaurant Association, 2015).

Goals & Objectives-145 KENT

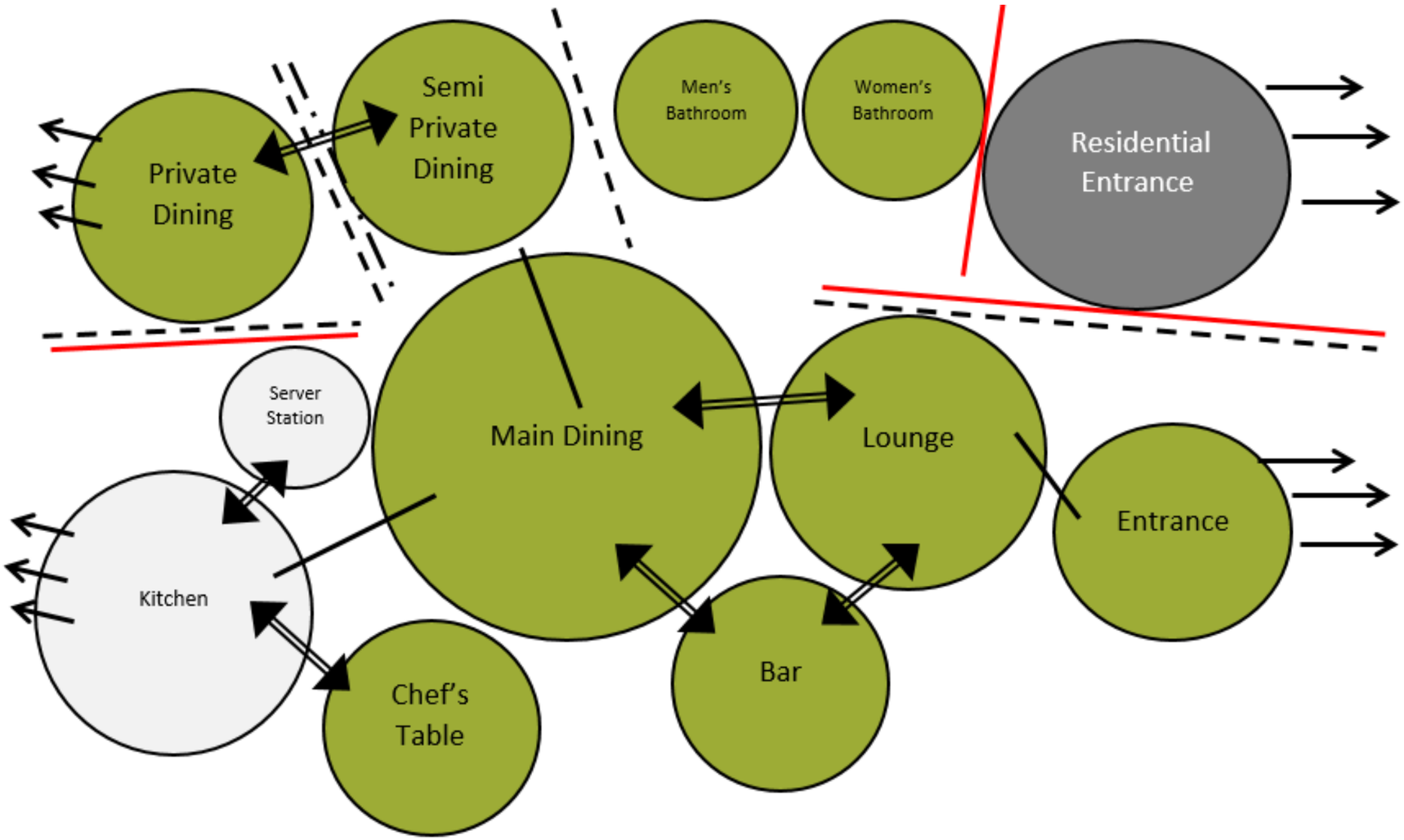
- Create a space that has a positive effect on customer perception and response to environment
  - Incorporate secluded dining options
  - Use comfortable seating
  - Use various types of seating that allows the users options
  - “Recent research shows that environmental cues such as lighting and music strongly bias the eating behavior of diners in laboratory situations.” (Ittersum, & Wansink, 2012, p. 228)
  - “The results indicated that softening the lighting and music led people to eat less, to rate the food as more enjoyable, and to spend just as much.” (Ittersum, & Wansink, 2012, p. 228)
- Utilize energy efficient lighting options to reduce total carbon emissions
  - Use LED fixtures throughout that are dimmable
  - Incorporate daylight sensors and utilize daylight whenever possible to harmonize the artificial lighting system with the daylight for appropriate illuminance distribution. (Han, S., & Taiichiro, I., 2014, p. 24)
  - Incorporate occupancy sensors where applicable
- Create a space that all users are able to enjoy
  - Incorporate universal design so all users are able to enjoy the space
  - Incorporate ADA
  - Provide multiple seating options for those who are in need of walking assistance and/or wheelchairs
  - Use wider corridors and door ways
- Apply creative concepts throughout the restaurant space. (David Burke Kitchen, n.d.)
  - Use different textures and materials together to create visual and tactile interest
  - Incorporate focal elements and draw focus with lighting elements.
  - Unique seating options and dining areas
- Create a unique and practical lighting system (The Ship, 2015)
  - Incorporate directional light fixtures on architectural elements
  - Provide adequate lighting for restaurant staff while not over illuminating the space for restaurant guests
  - Provide diffused lighting options in the space to soften the light
- Offer guests numerous seating options (The Ship, 2015)
  - Incorporate a private dining area
  - Incorporate a semi-private dining area
  - Utilize lounge seating
  - Incorporate bar seating
- Create a fine dining experience that will create a lasting memory for the guest
  - Design a custom wine storage that displays wine inventory (Spruce, n.d.)
- Create a private dining experience for guests
  - Design areas that are available to rent for private parties
  - Create separate tasting and cocktail menu
  - Incorporate full bar with mixologist in private dining area
- Offer guests the option of a close up learning experience (Atera, 2014)
  - Incorporate Chef’s Table into kitchen design (Atera, 2014)
  - Create an experience for guests
- Create a sensory experience for guests (Atera, 2014)
  - Utilize design that incorporates color, feel that complements the food
  - Incorporate a sound system into the design
  - Utilize sound attenuation

Adjacency Matrix-145 KENT

	Entrance	Main Dining	Private Dining	Bar	Lounge	Chefs Table	Kitchen	Mens Bathroom	Womens Bathroom
Entrance									
Main Dining									
Private Dining	■	■							
Bar	■		■						
Lounge	■		■	■					
Chef's Table	■	■			■				
Kitchen	■		■		■	■			
Men's Bathroom	■						■		
Women's Bathroom	■						■	■	

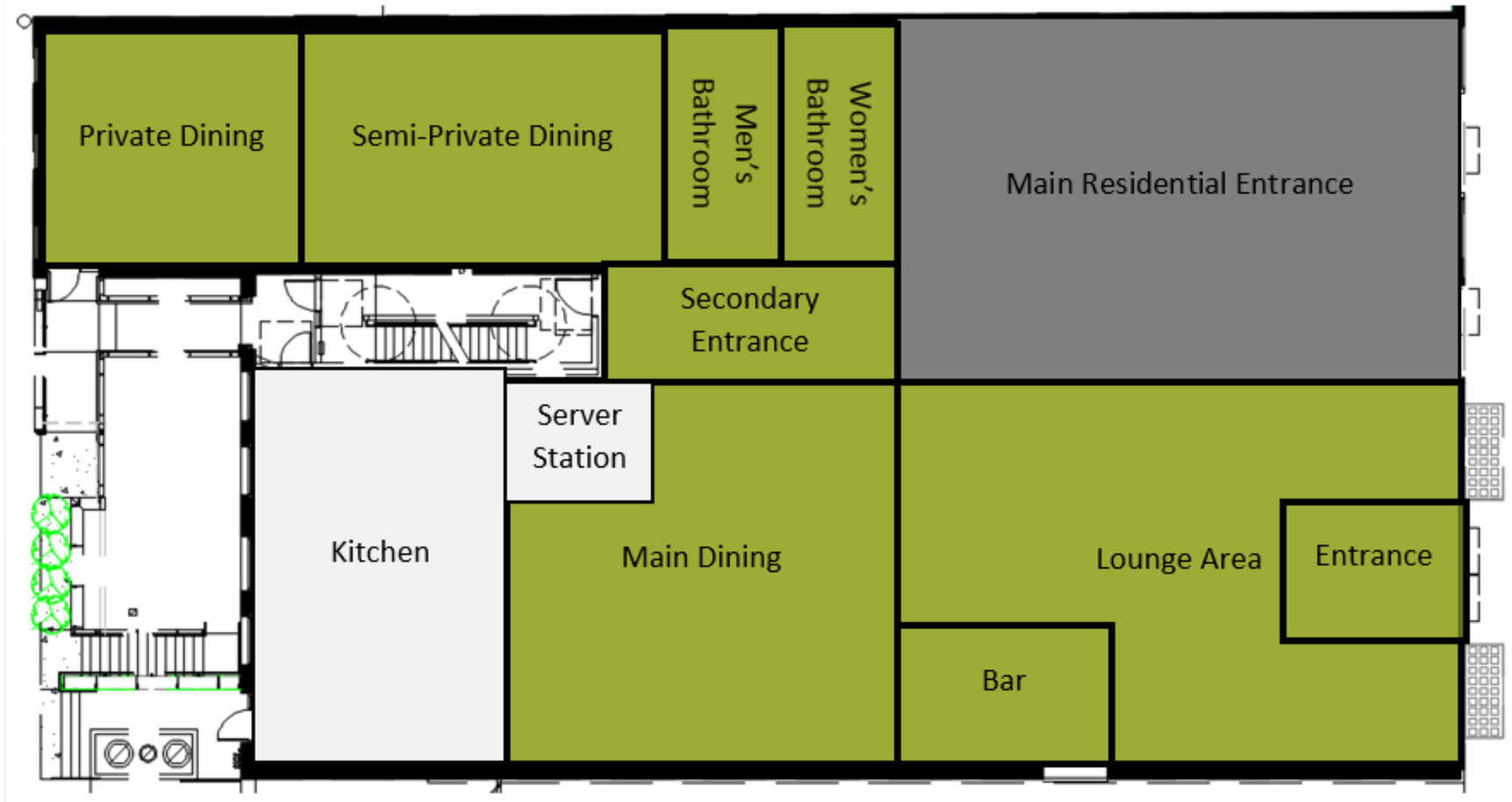
Positive ■
Neutral
Negative ■

Bubble Diagram- 145 KENT



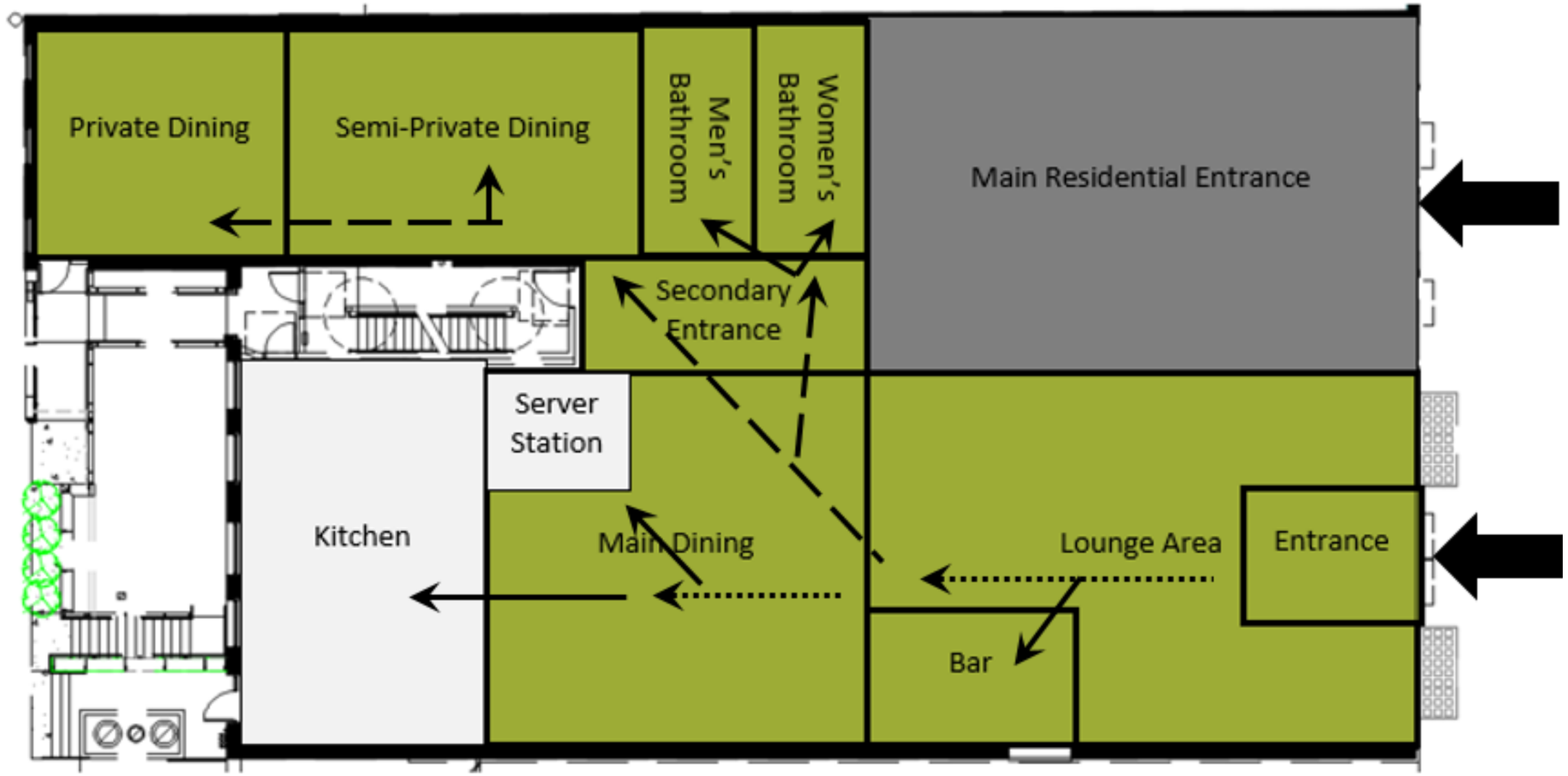
Legend	
Strong Relationship	
Minor Relationship	
Block View	
Acoustical Zoning	
Windows/View	
Collapsible wall	
Staff	
Guest	
Residential	

Blocking Diagram- 145 KENT



Legend	
Staff	
Guest	
Residential	

Circulation Diagram- 145 KENT



Circulation Diagram Legend	
Primary Circulation	
Secondary Circulation	
Tertiary Circulation	
Main Entrance	

Room Data Sheets- 145 KENT

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Entrance **Room Location:** 100 **Users:** Restaurant Patrons & Staff
Activities: Greeting guests, waiting for tables

Furniture/Equipment	**Furniture:** • Seating for waiting guests • Hostess stand	**Equipment:** • IPad for checking reservations and tables • Reservation system	**Hours of Operation:** • Lunch 11:00-3:00 • Dinner & 5:00-1:00AM (Riverpark, n.d.)	**Special Provisions:** • 42” Wide doorways for accessibility • Various types of seating for all users • Handicap door button • 5’ turnaround • Adjacent to main dining and lounge	**Occupancy:** • Assembly, Standing space • 22 OL
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** •N/A	**Communications:** • Designated data ports for two computers; multi line phone; wireless capabilities • Security system	**Electrical:** •Indirect Lighting-LED stripes integrated into architectural features	**Room Size:** • Approx. 143 sq. ft.
Architectural	**Floors:** • Tile	**Wall Partitions:** • 1-hour min. wall rating • Wall trimmed with durable baseboard & decorative crown molding • Commercial grade, fire resistant, durable wall coverings • 3 form onyx panels attached with stantions	**Ceilings:** • One hour ceiling rating 8-6” ceiling height; acoustical ceilings clouds • Gypsum wallboard	**Doors / Windows:** • All doors min. 40” wide; 1 x3/4” solid core w/gaskets for sound privacy; 16 gauge steel jambs and frames; lockable; standard cylindrical lock set; security locks as required.	**Natural Lighting:** • Remote controlled roller shades with 2% blackout for reduced glare • UV resistant glass

Additional Information

- Incorporate both indirect and direct lighting to create an environment that the restaurant patron enjoys being in. (Alonso, & O’Neill, 2010, p. 237)
- The different levels of lighting in the space will be controlled by the employees in a manner that makes the guests feel most comfortable. (Ciani, 2010, p. 15)
- The overall illuminance of the space, along with the measured CRI and color temperature will be that of the most preferred type. The most preferred type according to the research was higher levels of each of these factors.(Fotios, 2001, p. 168)
- The relation between the artificial lighting installed in the ceiling will be considered along with the daylighting from the windows. When there is no daylighting available (night time) artificial lighting will be adjusted and create a harmonized ambience. (Han, & Taiichiro, 2014, p. 24)
- Provide seating that face one another to accommodate larger groups to enhance the dining experience. (Kimes, & Robson, 2014, p. 335)
- The atmosphere paired with the product served will please guests and leave them with emotional fulfillment they expect from an upscale dining experience. (Ryu, & SooCheong, 2008, p. 4).
- Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164)

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Lounge **Room Location:** 101 **Users:** Mixologist, wait staff, and restaurant guests
Activities: Drinks, Bar food, Serving, Entertaining

Furniture/ Equipment	**Furniture:** • wine storage • Soft Seating upholstered in vinyl • Coffee Tables	**Equipment:** n/a	**Hours of Operation:** 5:00PM-1:00AM	**Special Provisions:** • Directly adjacent to bar and entrance • Multiple seating options	**Occupancy:** • Assembly, concentrated tables and chairs OL 62
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** n/a	**Communications:** n/a	**Electrical:** • Integrated dimmable lighting control • Smoke and flame detectors as per code • Home theater speakers-Sonance • Apple Savant systems • Lutron Lighting Control • Chandeliers • Recessed LED	**Room Size:** Approx 490 sq. ft.
Architectural	**Floors:** Tile	**Wall Partitions:** • Existing brick with molding detail • Seeyond acoustical material	**Ceilings:** • Gypsum soffit • Metal panels	**Doors / Windows:** • All doors min. 40” wide; • Windows fixed with operable vents; all window sills start @ 12” AFF	**Natural Lighting:** • light/glare control mechanism • UV resistant lighting

Additional Information

- Reservations highly encouraged to avoid long wait time for guests (Riverpark, n.d.)
- Seura. (2015). TV Mirrors. Retrieved from http://www.seura.com/enhanced-television-mirrors/
- Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System.
- Incorporate both indirect and direct lighting to create an environment that the restaurant patron enjoys being in. (Alonso, & O’Neill, 2010, p. 237)
- The different levels of lighting in the space will be controlled by the employees in a manner that makes the guests feel most comfortable. (Ciani, 2010, p. 15)
- The overall illuminance of the space, along with the measured CRI and color temperature will be that of the most preferred type. The most preferred type according to the research was higher levels of each of these factors.(Fotios, S. A., 2001, P. 168)
- The relation between the artificial lighting installed in the ceiling will be considered along with the daylighting from the windows. When there is no daylighting available (night time) artificial lighting will be adjusted and create a harmonized ambience. (Han, & Taiichiro, 2014, p. 24)
- Provide seating that face one another to accommodate larger groups to enhance the dining experience. (Kimes, & Robson, 2014, p. 335)
- The atmosphere paired with the product served will please guests and leave them with emotional fulfillment they expect from an upscale dining experience. (Ryu, & SooCheong, 2008, p. 4).
- Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164)

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Bar **Room Location:** 102 **Users:** Mixologist, wait staff, and users
Activities: Serving Cocktails

Furniture/Equipment	**Furniture:** • Bar stools • Wine storage	**Equipment:** • Perlick bar equipment • Cash register • Beverage dispenser	**Hours of Operation:** 5:00PM-1:00AM	**Special Provisions:** Special considerations to be made for adjacencies	**Occupancy:** • Assembly, concentrated (chairs only, not fixed) • OL 30
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** •Sink •Small dishwasher •Glass rinsing system	**Communications:** • Designated data ports for two computers; multi line phone; wireless capabilities	**Electrical:** •Home theater speakers-Sonance •Apple Savant systems •Lutron Lighting Control	**Room Size:** Approx 532 Sq. Ft.
Architectural	**Floors:** Quarry Tile	**Wall Partitions:** ● Quarry Tiles ● Existing brick ● Molding detail ● Seeyond acoustical material	**Ceilings:** • Acoustical panels • Gypsum w/ molding detail	**Doors / Windows:** • All doors min. 40” wide; • Windows fixed with operable vents; all window sills start @ 10” AFF	**Natural Lighting:** ● light/glare control mechanism ● UV resistant Glass

Additional Information

- Acoustical considerations are to be made to reduce sound transfer from bar to main dining area.
- Adjacent Storage Room (min. 6’ X 6’); adjustable shelving on 2 or more walls; lockable storage for drinks and bar equipment
- Reservations highly encouraged to avoid long wait time for guests (Riverpark, n.d.)
- Incorporate both indirect and direct lighting to create an environment that the restaurant patron enjoys being in. (Alonso, & O’Neill, 2010, p. 237)
- The different levels of lighting in the space will be controlled by the employees in a manner that makes the guests feel most comfortable. (Ciani, 2010, p. 15)
- The overall illuminance of the space, along with the measured CRI and color temperature will be that of the most preferred type. The most preferred type according to the research was higher levels of each of these factors.(Fotios, S. A., 2001, P. 168)
- The relation between the artificial lighting installed in the ceiling will be considered along with the daylighting from the windows. When there is no daylighting available (night time) artificial lighting will be adjusted and create a harmonized ambience. (Han, & Taiichiro, 2014, p. 24)
- Provide seating that face one another to accommodate larger groups to enhance the dining experience. (Kimes, & Robson, 2014, p. 335)
- The atmosphere paired with the product served will please guests and leave them with emotional fulfillment they expect from an upscale dining experience. (Ryu, & SooCheong, 2008, p. 4).
- Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164)

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Main Dining Room **Location:** 103 **Users:** Restaurant Patrons & Staff

Activities: Dining & serving

Furniture/Equipment	**Furniture:** • Ergonomic dining furniture • Booth seating • Movable Tables • Chairs	**Equipment:** n/a	**Hours of Operation:** • Lunch 11:00-3:00 • Dinner & 5:00-1:00AM (Riverpark, n.d.)	**Special Provisions:** • Walkways • Adjacencies • Acoustical considerations	**Occupancy:** • Assembly, concentrated tables and chairs • OL 139
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system;	**Plumbing / Fixtures:** • Adjacent bathroom	**Communications:** Designated data ports for two computers; multi line phone; wireless capabilities	**Electrical:** • LED track lighting • Integrated recessed LED light fixtures • Pendants • Toe kick lighting • LED strips integrated around fixtures in ceiling, walls, art • Integrated lighting control system • Home theater speakers-Sonance • Apple Savant systems • Lutron Lighting Control	**Room Size:** Approx. 1,170 sq. ft.
Architectural	**Floors:** • Existing hardwood flooring	**Wall Partitions:** • 1-hour min. wall rating • Commercial vinyl wallcovering; Corner guards and bumper rails shall be provided to protect wall surfaces in high traffic/impact areas	**Ceilings:** • One hour ceiling rating 12’ soffit • 13’ AFF ceiling	**Doors / Windows:** • All doors min. 40” wide • Windows fixed with operable vents; all window sills start @ 42” AFF	**Natural Lighting:** • Remote controlled roller shade system • UV resistant glass

Additional Information

- Multiple seating options will be made available to accommodate all users. (Mandarian Oriental, n.d.)
- Lighting system controlled by Lutron Lighting Control (Lutron, n.d.)
- Reservations highly encouraged to avoid long wait time for guests (Riverpark, n.d.)
- Incorporate both indirect and direct lighting to create an environment that the restaurant patron enjoys being in. (Alonso, & O’Neill, 2010, p. 237)
- The different levels of lighting in the space will be controlled by the employees in a manner that makes the guests feel most comfortable. (Ciani, 2010, p. 15)
- The overall illuminance of the space, along with the measured CRI and color temperature will be that of the most preferred type. The most preferred type according to the research was higher levels of each of these factors.(Fotios, S. A., 2001, P. 168)
- The relation between the artificial lighting installed in the ceiling will be considered along with the daylighting from the windows. When there is no daylighting available (night time) artificial lighting will be adjusted and create a harmonized ambience. (Han, & Taiichiro, 2014, p. 24)
- Provide seating that face one another to accommodate larger groups to enhance the dining experience. (Kimes, & Robson, 2014, p. 335)
- The atmosphere paired with the product served will please guests and leave them with emotional fulfillment they expect from an upscale dining experience. (Ryu, & SooCheong, 2008, p. 4).
- Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164)

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Private Dining **Room Location:** 108 **Users:** Wait Staff & restaurant guests
Activities: Private parties

Furniture/Equipment	**Furniture:** • Table • Chairs • Bar • Cabinets	**Equipment:** •	**Hours of Operation:** • Lunch 11:00-3:00 Dinner & 5:00-1:00AM (Riverpark, n.d.)	**Special Provisions:** • Collapsible wall into semi private dining for bigger parties • adjacencies	**Occupancy:** • Assembly, concentrated tables and chairs • OL 26
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system; 35 – 50 cfm outdoor air per occupant	**Plumbing / Fixtures:** • Small prep sink in wet bar • Under counter refrigerators for beverages	**Communications:** •Data ports for television and computer •Sura Television Mirrors	**Electrical:** •Chandelier •Track lighting •2”x2” LED light fixtures •Toe kick lighting •LED strips integrated around fixtures in ceiling, walls, art •Integrated lighting control system •Home theater speakers-Sonance •Apple Savant systems •Lutron Lighting Control	**Room Size:** • 400 sq. ft. ; bus station may be recessed into niche in corridor
Architectural	**Floors:** • Hardwood flooring	**Wall Partitions:** • 1-hour min. wall rating • Nana wall partition between the private dining spaces	**Ceilings:** • Gypsum • ACT • Integrated LED strips	**Doors / Windows:** • Windows fixed with operable vents; all window sills start @ 42” AFF	**Natural Lighting:** • Existing windows

Additional Information

- Lighting system controlled by Lutron Lighting Control (Lutron, n.d.)
- Collapsable wall that opens to Semi Private Dining Area Reservations highly encouraged to avoid long wait time for guests (Riverpark, n.d.)
- Incorporate both indirect and direct lighting to create an environment that the restaurant patron enjoys being in. (Alonso, & O’Neill, 2010, p. 237)
- The different levels of lighting in the space will be controlled by the employees in a manner that makes the guests feel most comfortable. (Ciani, 2010, p. 15)
- The overall illuminance of the space, along with the measured CRI and color temperature will be that of the most preferred type. The most preferred type according to the research was higher levels of each of these factors.(Fotios, S. A., 2001, P. 168)
- The relation between the artificial lighting installed in the ceiling will be considered along with the daylighting from the windows. When there is no daylighting available (night time) artificial lighting will be adjusted and create a harmonized ambience. (Han, & Taiichiro, 2014, p. 24)
- Provide seating that face one another to accommodate larger groups to enhance the dining experience. (Kimes, & Robson, 2014, p. 335)
- The atmosphere paired with the product served will please guests and leave them with emotional fulfillment they expect from an upscale dining experience. (Ryu, & SooCheong, 2008, p. 4).
- Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164)

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Chef's Table **Room Location:** 104 **Users:** Chef & reserved guests
Activities: Preparing food, dining, entertaining

Furniture/Equipment	**Furniture:** • Bar Stools	**Equipment:** • Exhaust hood • Cutting surfaces	**Hours of Operation:** • Lunch 11:00-3:00 Dinner & 5:00-1:00AM (Riverpark, n.d.)	**Special Provisions:** • Stainless steel countertop for sanitation	**Occupancy:** • Assembly, Concentrated (chairs only-not fixed) • 32 OL
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** •-	**Communications:** **n/a**	**Electrical:** • LED task lighting for chef • Track lighting • Pendants •Smoke and flame detectors as per code	**Room Size:** 15' x 15'
Architectural	**Floors:** • Tiled flooring • Non slip tile in kitchen	**Wall Partitions:** • Gypsum • Acoustical Panels	**Ceilings:** • Gypsum • Acoustical Panels	**Doors / Windows:** • n/a	**Natural Lighting:** n/a

Additional Information

- Reservations highly encouraged for chef's table (Riverpark, n.d.)
- Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System.
- Incorporate both indirect and direct lighting to create an environment that the restaurant patron enjoys being in. (Alonso, & O'Neill, 2010, p. 237)
- The different levels of lighting in the space will be controlled by the employees in a manner that makes the guests feel most comfortable. (Ciani, 2010, p. 15)
- The overall illuminance of the space, along with the measured CRI and color temperature will be that of the most preferred type. The most preferred type according to the research was higher levels of each of these factors.(Fotios, S. A., 2001, P. 168)
- The relation between the artificial lighting installed in the ceiling will be considered along with the daylighting from the windows. When there is no daylighting available (night time) artificial lighting will be adjusted and create a harmonized ambience. (Han, & Taiichiro, 2014, p. 24)
- Provide seating that face one another to accommodate larger groups to enhance the dining experience. (Kimes, & Robson, 2014, p. 335)
- The atmosphere paired with the product served will please guests and leave them with emotional fulfillment they expect from an upscale dining experience. (Ryu, & SooCheong, 2008, p. 4).
- Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164)

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Men's Bathroom **Room Location:** 106 **Users:** Male Guests
Activities: Hygiene

Furniture/Equipment	**Furniture:** n/a	**Equipment:** • Paper towel and soap dispenser	**Hours of Operation:** • Lunch 11:00-3:00 Dinner & 5:00-1:00AM (Riverpark, n.d.)	**Special Provisions:** • 5' turnaround • Grab bars	**Occupancy:** • 4
Mechanical / Electrical	**Heating / Vent / AC:** • Forced Air • Ceiling Vent	**Plumbing / Fixtures:** • Faucet • Automatic wall mounted toilet • Urinals • Undermount sink	**Communications:** **n/a**	**Electrical:** • Pendants • Exhaust fan • Resessed 2" x 2" LED light fixture • Smoke and flame detectors as per code	**Room Size:** 100 Sq. Ft.
Architectural	**Floors:** • Tiled flooring	**Wall Partitions:** • 1 hour rated gypsum wallboard • Tiled walls • Chair rail • Mill work	**Ceilings:** • Gypsum • Wallcovering • Hardwood panels	**Doors / Windows:** • 42" wide doorways and doors • Solid hardwood doors seaparating each bathroom stall	**Natural Lighting:** **n/a**

Additional Information

- 5' turn around
- Grab bars will be incorporated into all bathroom stalls
- Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164)

Room Data Sheet

Programming / Schematic Design *145 Kent*

Room Name: Women's Bathroom **Room Location:** 105 **Users:** women guests
Activities: Hygiene

Furniture/Equipment	**Furniture:** -	**Equipment:** • Paper towel and soap dispenser	**Hours of Operation:**	**Special Provisions:** • 5' turnaround • Grab bars	**Occupancy:** -
Mechanical / Electrical	**Heating / Vent / AC:** • Forced Air • Ceiling Vent	**Plumbing / Fixtures:** • Faucets • Automatic wall mounted toilet • Under mount sink	**Communications:** **n/a**	**Electrical:** • Pendants • Exhaust fan • Recessed 2" x 2" LED light fixture	**Room Size:** 100 Sq. Ft.
Architectural	**Floors:** • Tiled flooring	**Wall Partitions:** • 1 hour rated gypsum wallboard • Tiled walls • Chair rail • Mill work	**Ceilings:** • Gypsum • Wallcovering • Hardwood panels	**Doors / Windows:** • 42" wide door • Locks on doors	**Natural Lighting:** n/a

Additional Information

- 5' turnaround for accessibility
- Grab bars incorporated into all bathroom stalls

THE REDINGTON RESIDENCE

Mission Statement-REDINGTON RESIDENCE

“If life is about the details, yours is about to get a whole lot better. 145 KENT is Brooklyn's premiere condominium with above-and-beyond amenities. If you are looking for true urban luxury living 145 KENT is the only option.” (Ivy About, 2013)

Design Concept Statement-REDINGTON RESIDENCE

Within the Redington Residence family friendly, durable materials and warm finishes neutral tones will be found. Use of metals, stones and custom millwork accents will add to the luxurious appeal of the spacious, one of a kind penthouse in the highly sought after Williamsburg neighborhood of Brooklyn, New York. The space will be designed to fit within the urban setting of Brooklyn, with modern material and sleek lines used throughout the space. Along with luxury, comfort and organization will be highlighted by the design. An open floor plan will serve as the perfect spot for entertaining guests, while various soft and comfortable seating options will be available in each space of the home. These family friendly spaces will encourage family bonding and togetherness. Unique spaces will serve each specific need of the family, from private suites for each member, to a shared media/play room. Energy efficiency, security, and accessibility will blend into the design seamlessly. Overall, the space will serve all the needs of the active and successful Redington Family.

User/ Client- REDINGTON RESIDENCE

- Patricia Redington
  - Stay-at-home mother of the families two beloved twins
  - Is in her mid-thirties
  - Fitness and health is very important to her
  - Enjoys hosting family and friends
  - Needs accommodations for housing the family nanny
  - Has a hired chef in the home 3-4 days a week
  - Organization of the families daily routine is a top priority
  - Enjoys spending time outdoors
  - Prefers a clean and tidy look, neutral colors

- John Redington
  - Commutes to the city 5-6 days a week to run the law firm in which he is partner
  - Just had his 40th Birthday
  - Occasionally brings briefings and other paperwork home to work on
  - Enjoys cooking meals for the family when he has free time
  - He is a sports fanatic and enjoys having his friends over to watch “the big game”
  - Has a large collection of vintage cocktail shakers
  - Fitness and health is very important to him
  - He is 6’1”

- Ava Redington
  - 6 years old
  - Has acute asthma
  - Loves to read and has an extensive collection of children‘s books
  - Enjoys spending time with her twin brother but prefers to sleep in her own room
  - Into all things girly but also loves spending time outdoors
  - She loves playing dress up and “make-believe”

- Andy Redington
  - 6 years old
  - Has acute asthma
  - Has a hard time learning to read and has a tutor come to the home 4 afternoons a week
  - Enjoys spending time with his twin sister but has a hard time falling asleep. He needs his own room with no distractions.
  - He has an extensive LEGO collection and loves building with them
  - He enjoys spending time outdoors and with his dad in the kitchen

- Carla Hansen
  - The family nanny and housekeeper
  - Stays with the family 4-5 nights a week
  - Is in charge of housekeeping when the children are in school
  - Is in her mid-twenties
  - Works closely with Mrs. Redington to coordinate the families schedule

Goals & Objectives-REDINGTON RESIDENCE

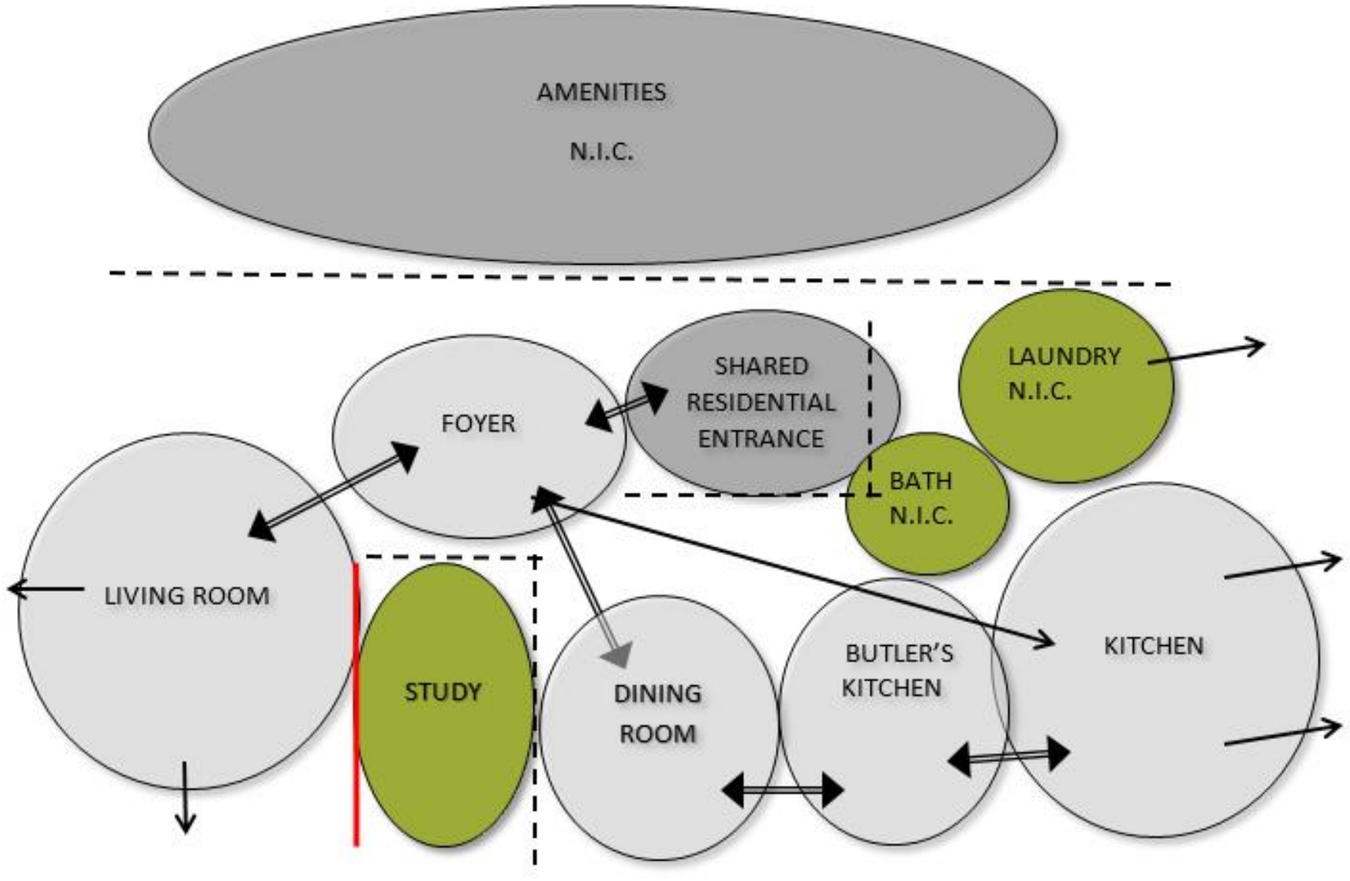
- Create a space that promotes the family dynamics of the Redington's
  - Provide multiple spaces in which the family can spend time together
  - Choose materials that are durable and easily cleaned
  - Create activity rooms for children to exercise and do activities within the home
- Utilize energy efficient lighting solutions
  - Incorporate LED light fixtures
  - Utilize sensors such as, daylight sensors, occupancy sensors and motion sensors
  - Use a control panel that has access to all lighting power throughout the residence
- Create a universally designed space
  - Follow accessibility guide lines
  - Incorporate wider doorways and hallways
  - Use levers instead of small knobs where applicable
- Add points of interest within the space
  - Incorporate architectural elements
  - Incorporate local art/fixtures from the surrounding area
  - Use antique items already owned by the family in a fresh new way
- Design a kitchen that is easily accessible for all ages
  - Incorporate base drawers instead of cabinets
  - Raise up dishwasher so that it is easy to retrieve items from
  - Install organization drawers
- Incorporate technology into the space (Puck Penthouses, 2015)
  - Integrated iPads for controlling lighting system
  - Heated flooring where needed
  - Apple Savant systems allows the home security system to be viewed wherever
  - Incorporate a home theater system (Puck Penthouses, 2015)
- Incorporate high end finishes into the condo unit design
  - Marble and limestone finishes
  - Multiple fireplaces
  - Custom Millwork
  - Five fixture bath
- Incorporate security, safety, and privacy
  - Control exterior views
  - Controlled access to the entrance
  - Security system equipped with cameras and alarms
  - Well light exterior entrance
- Provide ample space for the family to entertain guests
  - Open concept living area
  - Dining room with plenty of seating
  - Guest bedroom and bathroom
  - Separate these spaces from the families private spaces
- Provide a space for maintenance of household and users
  - Incorporate multiple laundry rooms
  - Incorporate dog washing station
  - Utilize outdoor space and incorporate grassy area for dog
- Create private master suite (21 W 20 Flatiorn, 2015)
  - Utilize a 5 fixture ensuite bathroom with radiant heat flooring
  - Incorporate a walk in closet and dressing room
  - Kitchenette incorporated into walk in closet area
- Create a secure residence
  - Key card access on all public doorways into residence
  - Key card access in elevator to penthouse suite
  - CCTV camera system for additional privacy (21 W 20 Flatiorn, 2015)
  - 24 Hour doorman (388 Bridge, 2014)
- Create a Chef's kitchen (Sotheby's International Realty, 2015)
  - Use high end appliances
  - Use sanitary countertop surfaces
  - Incorporate butler's pantry for chef's storage
- Create a high end condominium building
  - Utilize multiple amenities
  - Offer residents storage
  - Offer residents services such as housekeeping & laundry services
  - Secured parcel room with refrigerated storage for grocery, flower, and beverage delivery (21 W 20 Flatiorn, 2015)
  - Incorporate a resident's lounge (19 Park Place, 2015)

FOURTH FLOOR – The Redington Residence – Adjacency Matrix

	Shared Foyer	Foyer	Living Room	Study	Dining Room	Butlers Kitchen	Kitchen	Laundry	Powder Room
Shared Foyer									
Foyer									
Living Room									
Study									
Dining Room									
Butler's Kitchen									
Kitchen									
Laundry									
Powder Room									

	Positive
	Neutral
	Negative

FOURTH FLOOR – The Redington Residence – Bubble Diagram

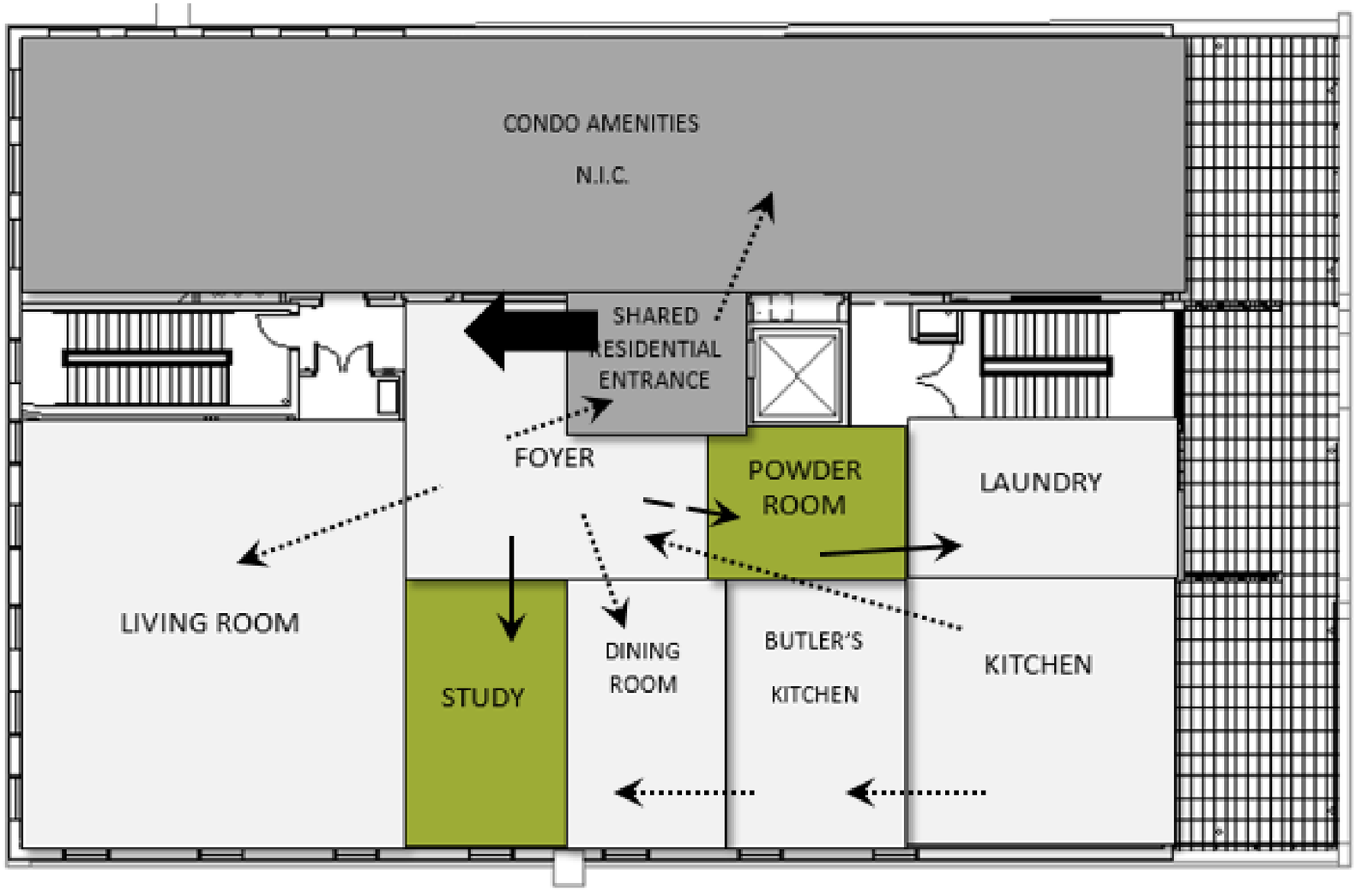


Bubble Diagram Legend	
Strong Relationship	
Minor Relationship	
Block View	
Acoustical Zoning	
Windows/View	
Collapsible wall	
Private	
Public	
Shared Residential	

FOURTH FLOOR – The Redington Residence – Blocking Diagram

Blocking Diagram Legend	
Penthouse Private	
Penthouse Public	
Shared Residential	

FOURTH FLOOR – The Redington Residence – Circulation Diagram



Circulation Diagram Legend	
Primary Circulation	
Secondary Circulation	
Tertiary Circulation	
Main Entrance	

FOURTH FLOOR – The Redington Residence – Room Data Sheets

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Shared Residential Foyer **Room Location:** 400 **Users:** Residence
Activities: Shared 4th Floor Foyer

Furniture/Equipment	**Furniture:** • N/A	**Equipment:** - Elevator	**Hours of Operation:** • 24/7	**Special Provisions:** • Adjacent to shared amenities and private penthouse foyer	**Occupancy:** • Assembly, Standing space • 2 OL
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** •N/A	**Communications:** • Key Card Access • Cameras	**Electrical:** • LED Pendant •Indirect Lighting-LED stripes integrated into architectural features •Toe Kick lighting	**Room Size:** • Approx. 105 sq. ft.
Architectural	**Floors:** • Hardwood • Tile	**Wall Partitions:** • 1-hour min. wall rating • Wall trimmed with durable baseboard & decorative crown molding • Commercial grade, fire resistant, durable wall coverings • Cold rolled steel partitions	**Ceilings:** • One hour ceiling rating 10’0” ceiling height; acoustical ceilings clouds • Gypsum wallboard • Commercial grade, fire resistant, durable wall coverings • Carpet	**Doors / Windows:** • All doors min. 40” wide; 1 x3/4” solid core w/gaskets for sound privacy; 16 gauge steel jambs and frames; lockable; standard cylindrical lock set; security locks as required.	**Natural Lighting:** • N/A

Additional Information

- Security system located within the main condo entrance will consist of CCTV, alarms, key card access, and an Apple Savant System which controls al lighting, sound and televisons within the entrance. (Savant, n.d.)

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Foyer **Room Location:** 401 **Users:** Patricia Redington, John Redington, Ava Redington, Andy Redington, Carla Hansen, family pet, guests
Activities: Putting on and removal of coats and shoes, storage of coats and shoes, main entrance and exit

Furniture/Equipment	**Furniture:** • (2) Side chairs • Entry table • Artwork	**Equipment:** • **Private Elevator Shaft**	**Hours of Operation:** Morning, afternoon, night	**Special Provisions:** • Power/Guest bath located nearby • Add staircase up to next level joining 4th and 5th level in penthouse	**Occupancy:** • OL 2
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** • N/A	**Communications:** Savant Security System (Savant, n.d.); multi line phone; wireless capabilities	**Electrical:** • One ground duplex outlet every 36" OC 12" AFF • Integrated ceiling can lighting • Suspended ceiling fixture • Standard room switch controls with dimmer switches • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces • Table lamps located on switch outlets	**Room Size:** **Approx. 190 Sq. Ft.**
Architectural	**Floors:** Marble and hardwood	**Wall Partitions:** • 1-hour min. wall rating • vinyl wallcovering; paint • 6" high bottom moldings	**Ceilings:** • One hour ceiling rating 10' ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • Controlled access to elevator • Exit door to adjacent stairway • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass • Walnut double front doors	**Natural Lighting:** N/A

Additional Information

A front entrance created of luxurious materials, unique flooring, and custom millwork will set the mood for a luxurious feel throughout the space throughout the entire penthouse (Cannell, 2013).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Living Room **Room Location:** 402 **Users:** Patricia Redington, John Redington, Ava Redington, Andy Redington, Carla Hansen, family pet, guests
Activities: Viewing television, family gatherings, conversations, playing board games, reading entertaining

Furniture/Equipment	**Furniture:** • Sectional sofa • Side chairs • End tables • Coffee table • Display of family photos • Art work	**Equipment:** • N/A	**Hours of Operation:** Moring, afternoon, evening	**Special Provisions:** • Adjacent to dining room, kitchen, and foyer area • Ceilings open to second story	**Occupancy:** • OL 6
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** •N/A	**Communications:** Cable connections; multi line phone; wireless capabilities, security viewing system	**Electrical:** • One wall duplex outlet every 36” OC 12” AFF •Integrated ceiling LED Fixtures •Ceiling mounted LED Fixtures •Lutron Lighting controls with dimming capabilities (Lutron, 2015) •Smoke and flame detectors as per code •Verify special electrical requirements for other equipment pieces	**Room Size:** Approx. 250 Sq. Ft.
Architectural	**Floors:** Hard surface flooring with accent rugs	**Wall Partitions:** • 1-hour min. wall rating • Vinyl wallcovering; paint • 6” high bottom moldings • Sound insulated gypsum board	**Ceilings:** •One hour ceiling rating 23’ ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • Floor to ceiling side by side windows • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** • Remote operated black out shades on Lutron control system (Lutron, 2015)

Additional Information

Lighting will be equipped with Lutron lighting controls to allow for complete lighting control and luxurious dimming capabilities (Lutron, 2015).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Study **Room Location:** 403 **Users: :** Patricia Redington & John Redington,
Activities: Primarily used for John's work at home, storage of files, books, and photographs, computer work

Furniture/Equipment	**Furniture:**	**Equipment:**	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:** N/A	**Communications:**	**Electrical:**	**Room Size:**
Architectural	**Floors:**	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**
Additional Information					

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Dining Room **Room Location:** 404 **Users:** Patricia Redington, John Redington, Ava Redington, Andy Redington, Carla Hansen, guests
Activities: Dining used for evening meals, entertaining guests, special occasions, holidays

Furniture/Equipment	**Furniture:** • Seating for 6-8 • Dining table • Console/Buffet table • Art work	**Equipment:** • Storage for fine china	**Hours of Operation:** Evenings	**Special Provisions:** • Adjacent to kitchen and living room	**Occupancy:** • OL 2
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** •N/A	**Communications:** multi line phone; wireless capabilities	**Electrical:** • One wall duplex outlet every 36" OC 12" AFF • Integrated ceiling LED Fixtures • Ceiling mounted LED Fixtures • Lutron Lighting controls with dimming capabilities (Lutron, 2015) • Smoke and flame detectors as per code Verify special electrical requirements for other equipment pieces	**Room Size:** Approx. 250 Sq. Ft
Architectural	**Floors:** Hard surface flooring	**Wall Partitions:** • 1-hour min. wall rating • Vinyl wallcovering • 6" high bottom moldings • Sound insulated gypsum board	**Ceilings:** •One hour ceiling rating 10' ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • Floor to ceiling side by side windows • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** • Remote operated black out shades

Additional Information

Lighting will be equipped with Lutron lighting controls to allow for complete lighting control and luxurious dimming capabilities (Lutron, 2015).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Butler's Kitchen **Room Location:** 405 **Users:** Patricia Redington, John Redington, Ava Redington, Andy Redington, Carla Hansen, family pet, guests, hired chef
Activities: daily cooking, gourmet cooking, entertainment of guests, eating of light meals

Furniture/Equipment	**Furniture:** • N/A	**Equipment:** • Refrigerator • Freezer • Microwave oven • Wine Fridge • Pantry Storage • Warming Drawer Storage • Ice Maker	**Hours of Operation:** Morning, afternoon, evening	**Special Provisions:** • Must be equipped to accommodate hired chef	**Occupancy:** • OL 1
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** • Sink/Faucet	**Communications:** Security viewing system; multi line phone; wireless capabilities; home management technology	**Electrical:** • One grounded duplex outlet every 18" (44"AFF) at counter area; remaining outlets 36" OC 12" AFF • Exhaust system above stove • Integrated ceiling LED fixtures; below counter task lighting as necessary (100 f.c. recommended) • Standard room switch controls with dimmer capability • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces	**Room Size:** Approx. 320 Sq. Ft. Providing adequate space for the activities that will be performed as well as meet ADA requirements and safety regulations
Architectural	**Floors:** Hard surface flooring	**Wall Partitions:** • 1-hour min. wall rating • Tile backsplash • Vinyl wallcovering; paint • 6" High bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10' ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass • Floor to ceiling windows will be visible from kitchen	**Natural Lighting:** • N/A

Additional Information

Lighting will be equipped with Lutron lighting controls to allow for complete lighting control and luxurious dimming capabilities (Lutron, 2015).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Kitchen **Room Location:** 406 **Users:** Patricia Redington, John Redington, Ava Redington, Andy Redington, Carla Hansen, family pet, guests, hired chef
Activities: daily cooking, gourmet cooking, entertainment of guests, eating of light meals

Furniture/Equipment	**Furniture:** • Seating for 4-6 people • Dining surface for 4-6 people • Semi-custom cabinetry	**Equipment:** • Gas range • Double oven • Refrigerator • Freezer • Microwave oven • Espresso/Coffee maker • Dishwasher (2) • Double sink (2)	**Hours of Operation:** Morning, afternoon, evening	**Special Provisions:** • Must be equipped to accommodate hired chef • ADA Accessibility	**Occupancy:** • OL 3
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** • Sink/Faucet • Dishwasher	**Communications:** Security viewing system; multi line phone; wireless capabilities; home management technology	**Electrical:** • One grounded duplex outlet every 18" (44"AFF) at counter area; remaining outlets 36" OC 12" AFF • Exhaust system above stove • Integrated ceiling LED fixtures; below counter task lighting as necessary (100 f.c. recommended) • Standard room switch controls with dimmer capability • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces	**Room Size:** Approx. 320 Sq. Ft. Providing adequate space for the activities that will be performed as well as meet ADA requirements and safety regulations
Architectural	**Floors:** Hard surface flooring	**Wall Partitions:** • 1-hour min. wall rating • Tile backsplash • Vinyl wallcovering; paint • 6" High bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10' ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass • Floor to ceiling windows will be visible from kitchen	**Natural Lighting:** • Pull down window coverings

Additional Information

Lighting will be equipped with Lutron lighting controls to allow for complete lighting control and luxurious dimming capabilities (Lutron, 2015).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Laundry Room **Room Location:** 407 **Users:** Patricia Redington, John Redington, Carla Hansen
Activities: Laundry, ironing, steaming of clothing, storage of clean/dirty laundry, storage of cleaning supplies

Furniture/Equipment	**Furniture:** •	**Equipment:** •	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:**	**Communications:**	**Electrical:**	**Room Size:**
Architectural	**Floors:**	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**
Additional Information					

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Powder Room **Room Location:** 408 **Users:** Redington Family, Occasional Guests
Activities: Hygiene

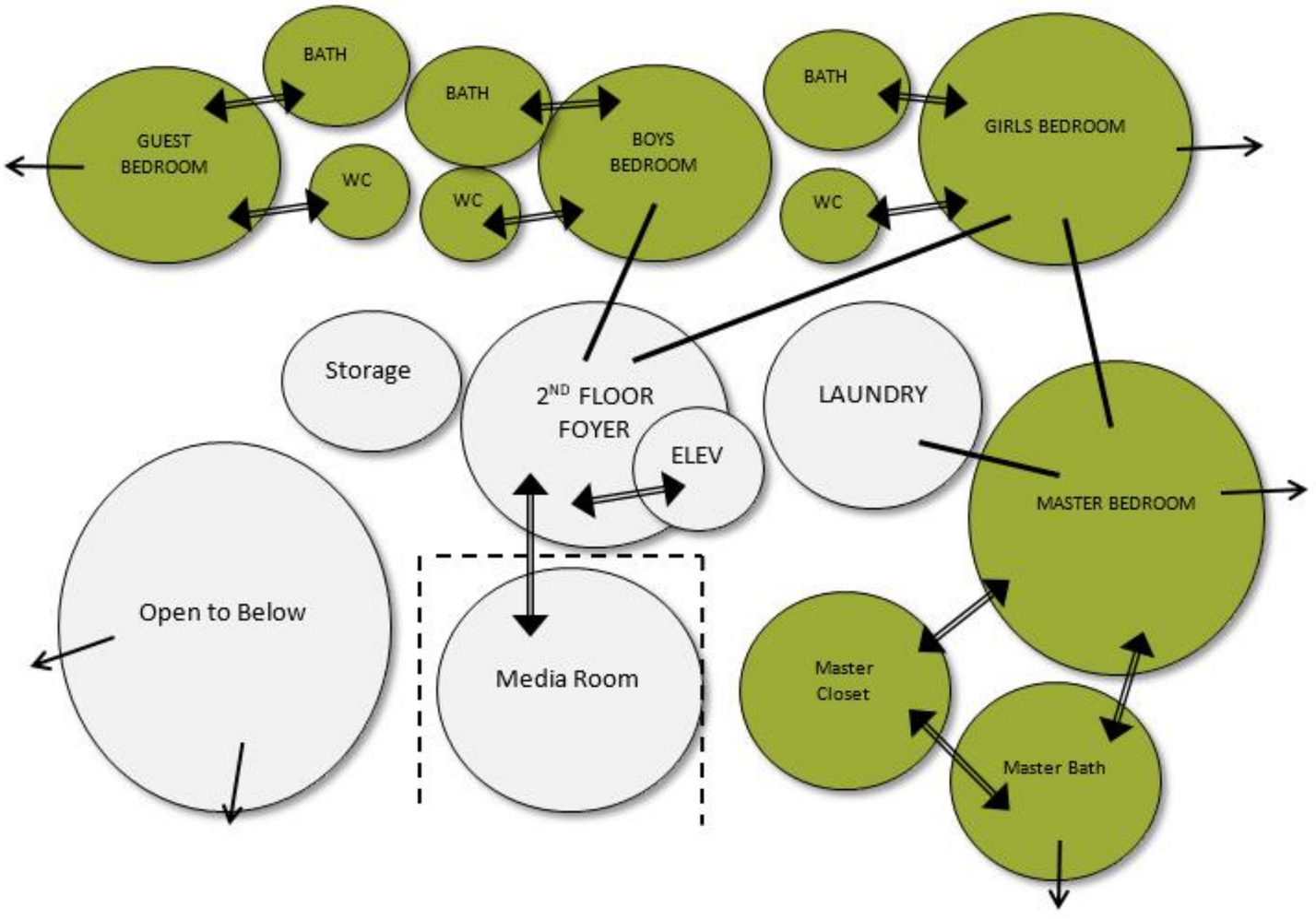
Furniture/Equipment	**Furniture:**	**Equipment:**	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:**	**Communications:** N/A	**Electrical:**	**Room Size:**
Architectural	**Floors:**	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**
Additional Information					

FIFTH FLOOR – The Redington Residence – Adjacency Matrix

	Storage	Foyer	Media Room	Laundry	Master Bedroom	Master Closet	Master Bathroom	Master Laundry	Boys Bedroom	Boys Bathroom	Boys Closet	Girls Bedroom	Girls Bathroom
Storage													
Foyer													
Media Room													
Laundry													
Master Bedroom													
Master Closet													
Master Bathroom													
Boys Bedroom													
Boys Bathroom													
Boys Closet													
Girls Bedroom													
Girls Bathroom													
Girls Closet													

	Positive
	Neutral
	Negative

FIFTH FLOOR – The Redington Residence – Bubble Diagram



Bubble Diagram Legend	
Strong Relationship	
Minor Relationship	
Block View	
Acoustical Zoning	
Windows/View	
Collapsible wall	
Private	
Public	
Shared Residential	

FIFTH FLOOR – The Redington Residence – Blocking Diagram

Blocking Diagram Legend	
Penthouse Private	
Penthouse Public	
Shared Residential	

*

FIFTH FLOOR – The Redington Residence – Circulation Diagram

Circulation Diagram Legend	
Primary Circulation	← .....
Secondary Circulation	← – – – –
Tertiary Circulation	← ———
Main Entrance	➡

FIFTH FLOOR – The Redington Residence – Room Data Sheets

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Second Story Open to Below **Room Location:** - **Users:** N/A

Activities: Open area overlooking living room and dining room

Furniture/Equipment	**Furniture:**	**Equipment:**	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:**	**Communications:**	**Electrical:**	**Room Size:** Approx. 650 Sq. Ft.
Architectural	**Floors:**	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**

Additional Information

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Foyer **Room Location:** 500 **Users:** Penthouse Owners
Activities: Common area

Furniture/Equipment	**Furniture:** • Settee • Table	**Equipment:** N/A	**Hours of Operation:** Morning, Afternoon, Evening	**Special Provisions:** Extra square footage for ADA accessibility	**Occupancy:** Occupant load: 1
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** N/A	**Communications:** Savant Security System (Savant, n.d.); multi line phone; wireless capabilities	**Electrical:** • One ground duplex outlet every 36" OC 12" AFF • Integrated ceiling can lighting • Suspended ceiling fixture • Standard room switch controls with dimmer switches • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces Table lamps located on switch outlets	**Room Size:** Approx. 260 Sq. Ft.
Architectural	**Floors:** Tile	**Wall Partitions:** • 1-hour min. wall rating • Paint • Tile • 6" high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10' ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** Natural Lighting from adjacent corridors

Additional Information

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Guest Bedroom **Room Location:** 501 **Users:** Carla Hansen, Occasional Guests
Activities: Hygiene

Furniture/Equipment	**Furniture:**	**Equipment:**	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:**	**Communications:**	**Electrical:**	**Room Size:**
Architectural	**Floors:**	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**
Additional Information					

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Guest Bathroom **Room Location:** 502 **Users:** Carla Hansen, Occasional Guests
Activities: Hygiene

Furniture/Equipment	**Furniture:**	**Equipment:**	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:**	**Communications:**	**Electrical:**	**Room Size:**
Architectural	**Floors:**	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**
Additional Information					

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Boy's Bathroom **Room Location:** 503 **Users:** Andy Redington
Activities: Hygiene

Furniture/ Equipment

Furniture:
- Vanity
- Mirror
- Towel Storage

Equipment:
- N/A

Hours of Operation:
Morning, afternoon, evening

Special Provisions:
Must be adjacent to boy's bedroom and closet

Occupancy:
- OL 1

Mechanical / Electrical

Heating / Vent / AC:
Temperature controlled by individual thermostat; central HVAC system; radiant heated flooring

Plumbing / Fixtures:
- Toilet
- Shower
- Bathtub
- Sink/Faucet

Communications:
N/A

Electrical:
- One grounded duplex outlet every 18" (44"AFF) at counter area; remaining outlets 36" OC 12" AFF
- Bathroom: exhaust fan w/light seal
- Standard room switch controls with dimmer capabilities
- LED ceiling fixtures
- Smoke and flame detectors as per code
- Verify special electrical requirements for other equipment pieces

Room Size:
Approx. 64 Sq. Ft.

Architectural

Floors:
Vinyl Tile

Wall Partitions:
- 1-hour min. wall rating
- Paint
- Tile
- 6" high bottom moldings
- Sound insulated gypsum board

Ceilings:
- One hour ceiling rating

10" ceiling height; Gypsum painted finish; acoustical sound batting

Doors / Windows:
- All interior doors side hinged wood panel painted doors with lever handles

Natural Lighting:
N/A

Additional Information

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Boys Bedroom **Room Location:** 504 **Users:** Andy Redington
Activities: Sleeping, playing with toys, reading, homework

Furniture/Equipment	**Furniture:** • Queen size bed • End table • Dresser for clothing storage • Mirror • Book storage • Toy storage • Chair • Desk	**Equipment:** • N/A	**Hours of Operation:** Morning, afternoon, evening	**Special Provisions:** Must be adjacent to children's bathroom and in close proximity to master bedroom	**Occupancy:** • OL 2
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** • N/A	**Communications:** Designated data ports for one computer; multi line phone; wireless capabilities; cable television connection	**Electrical:** • One ground duplex outlet every 36" OC 12" AFF • Suspended LED ceiling fixtures • Standard room switch controls • Smoke and flame detectors as per code	**Room Size:** Approx. 380 Sq. Ft.
Architectural	**Floors:** Carpet	**Wall Partitions:** • 1-hour min. wall rating • Vinyl wallcovering • Paint • 6" high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10" ceiling height; gypsum painted finish; acoustical sound batting	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Safety latches on all windows • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** • Pull down window coverings

Additional Information

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Girl's Bathroom **Room Location:** 505 **Users:** Ava Redington
Activities: Hygiene

Furniture/Equipment	**Furniture:** • Vanity • Mirror • Towel Storage	**Equipment:** • N/A	**Hours of Operation:** Morning, afternoon, evening	**Special Provisions:** Must be adjacent to girls bedroom and closet	**Occupancy:** • OL 1
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system; radiant heated flooring	**Plumbing / Fixtures:** • Toilet • Shower • Bathtub • Sink/Faucet	**Communications:** N/A	**Electrical:** • One grounded duplex outlet every 18" (44"AFF) at counter area; remaining outlets 36" OC 12" AFF • Bathroom: exhaust fan w/light seal • Standard room switch controls with dimmer capabilities • LED ceiling fixtures • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces	**Room Size:** Approx. 64 Sq. Ft.
Architectural	**Floors:** Vinyl Tile	**Wall Partitions:** • 1-hour min. wall rating • Paint • Tile • 6" high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10" ceiling height; Gypsum painted finish; acoustical sound batting	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles	**Natural Lighting:** N/A

Additional Information

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Girl's Bedroom **Room Location:** 506 **Users:** Ava Redington
Activities: Sleeping, playing with toys, reading, homework

Furniture/Equipment	**Furniture:** • Queen size bed • End table • Dresser for clothing storage • Mirror • Book storage • Toy storage • Chair • Desk	**Equipment:** • N/A	**Hours of Operation:** Morning, afternoon, evening	**Special Provisions:** Must be adjacent to girl's bathroom and closet	**Occupancy:** • OL 3
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** • N/A	**Communications:** Designated data ports for one computer; multi line phone; wireless capabilities; cable television connection	**Electrical:** • One ground duplex outlet every 36" OC 12" AFF • Suspended LED ceiling fixtures • Standard room switch controls • Smoke and flame detectors as per code	**Room Size:** Approx. 380 Sq. Ft.
Architectural	**Floors:** Carpet	**Wall Partitions:** • 1-hour min. wall rating • Vinyl wallcovering • Paint • 6" high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10" ceiling height; gypsum painted finish; acoustical sound batting	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Safety latches on all windows • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** • Pull down window coverings

Additional Information

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Laundry Room **Room Location:** 507 **Users:** Patricia Redington, John Redington, Carla Hansen
Activities: Laundry, ironing, steaming of clothing, storage of clean/dirty laundry, storage of cleaning supplies

Furniture/Equipment	**Furniture:**	**Equipment:**	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:**	**Communications:**	**Electrical:**	**Room Size:**
Architectural	**Floors:**	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**
Additional Information					

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Master Bedroom **Room Location:** 508 **Users:** Patricia Redington & John Redington
Activities: Sleeping, watching television, reading, relaxing

Furniture/Equipment	**Furniture:** • King size bed • (2) side tables • Seating for 2 • (2) Table lamps • Floor lamp • Artwork • Decorative rug	**Equipment:** • Wall mounted television hidden from view when not in use	**Hours of Operation:** Moring, evening	**Special Provisions:** • Must be adjacent to master closet and master bathroom. Should also be in close proximity to children's bedrooms • Extra square footage for ADA accessibility and luxurious appeal	**Occupancy:** • OL 2
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system; touch screen controlled	**Plumbing / Fixtures:** • Mini bar with sink and fridge	**Communications:** Cable television connection; multi line phone; wireless capabilities; security system viewing screen	**Electrical:** • One wall duplex outlet every 36" OC 12" AFF • Standard room switch controls with dimming capabilities • Ceiling mounted fixtures with LED lamps • Smoke and flame detectors as per code	**Room Size:** Approx. 680 Sq. Ft.
Architectural	**Floors:** Carpet	**Wall Partitions:** • 1-hour min. wall rating • Paint • Wall tile • 6" high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10' ceiling height with custom molding details, acoustical sound batting; gypsum painted finish; custom cove with molding detail	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Floor to ceiling windows • Sliding glass doors to exterior • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** • Remote lift window covering

Additional Information

Lighting will be equipped with Lutron lighting controls to allow for complete lighting control and luxurious dimming capabilities (Lutron, 2015).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

All electronics used in the master bedroom will be hidden from view when not in use, adding to the relaxation and luxurious appeal of the space (Ranallo Brooks, Anne, 2015).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Master Bathroom **Location:** 509 **Users:** Patricia Redington & John Redington
Activities: Hygiene & Beauty

Furniture/ Equipmen	**Furniture:** • Vanity with double sinks and make up application area • Vanity chair • Mirror • Storage for towels and supplies	**Equipment:** • Wall mounted towel rack • Toilet paper holder	**Hours of Operation:** Morning, afternoon, evening	**Special Provisions:** Must be adjacent to master bedroom and master closet	**Occupancy:** • OL 1
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system; radiant heated flooring	**Plumbing / Fixtures:** • 1 toilet • 2 sinks • 2 faucets • 1 rain shower head • 1 wall shower head • 1 free-standing soaking tub	**Communications:** Cable television connection; wireless capabilities	**Electrical:** • One grounded duplex outlet every 18” (44”AFF) at counter area; remaining outlets 36” OC 12” AFF • Bathroom: exhaust fan w/light seal • Integrated ceiling LED fixtures • Shower light • Standard room switch controls with dimming capabilies • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces	**Room Size:** Approx. 288 Sq. Ft.
Architectura l	**Floors:** Ceramic Tile	**Wall Partitions:** • 1-hour min. wall rating • Paint • Tile • 6” high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 9’6” ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** N/A

Additional Information

Lighting will be equipped with Lutron lighting controls to allow for complete lighting control and luxurious dimming capabilities (Lutron, 2015).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Master Closet **Room Location:** 510 **Users:** Patricia Redington & John Redington
Activities: Dressing and storage

Furniture/Equipment	**Furniture:**	**Equipment:**	**Hours of Operation:**	**Special Provisions:**	**Occupancy:**
Mechanical / Electrical	**Heating / Vent / AC:**	**Plumbing / Fixtures:**	**Communications:**	**Electrical:**	**Room Size:**
Architectural	**Floors:** Carpet	**Wall Partitions:**	**Ceilings:**	**Doors / Windows:**	**Natural Lighting:**
Additional Information					

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Master Foyer **Room Location:** 511 **Users:** Penthouse Owners
Activities: Common area

Furniture/Equipment	**Furniture:** • Settee • Table	**Equipment:** N/A	**Hours of Operation:** Morning, Afternoon, Evening	**Special Provisions:** Extra square footage for ADA accessibility	**Occupancy:** OL 1
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** N/A	**Communications:** Savant Security System (Savant, n.d.); multi line phone; wireless capabilities	**Electrical:** • One ground duplex outlet every 36” OC 12” AFF • Integrated ceiling can lighting • Suspended ceiling fixture • Standard room switch controls with dimmer switches • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces Table lamps located on switch outlets	**Room Size:** Approx. 260 Sq. Ft.
Architectural	**Floors:** Tile	**Wall Partitions:** • 1-hour min. wall rating • Paint • Tile • 6” high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10’ ceiling height with custom molding details, acoustical sound batting; gypsum painted finish	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles • Custom painted steel windows with UV Resistant Glass	**Natural Lighting:** Natural Lighting from adjacent corridors

Additional Information

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

Room Data Sheet

Programming / Schematic Design *Redington Residence*

Room Name: Media Room **Room Location:** 512 **Users:** Patricia Redington, John Redington, Andy Redington, Ava Redington, Carla Hansen, guests
Activities: Viewing of movies and television

Furniture/Equipment	**Furniture:** • Seating for 6-8 • Children's Table • Coffee Table • Accent Rugs (2) • Toy Storage	**Equipment:** • Projector screen • Projector • Surround sound system (Sonance, 2014).	**Hours of Operation:** Morning, afternoon, evening	**Special Provisions:** Must be private and acoustically controlled	**Occupancy:** • OL 2
Mechanical / Electrical	**Heating / Vent / AC:** Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures:** N/A	**Communications:** Designated data ports for one computer; multi line phone; wireless capabilities; cable television connection	**Electrical:** • One grounded duplex outlet every 36" OC 12" AFF • Standard room switch controls with dimmer capabilities • LED ceiling fixtures • Smoke and flame detectors as per code • Verify special electrical requirements for other equipment pieces	**Room Size:** Approx. 460 Sq. Ft.
Architectural	**Floors:** Carpet Tile	**Wall Partitions:** • 1-hour min. wall rating • Stained Wainscoting • 6" high bottom moldings • Sound insulated gypsum board	**Ceilings:** • One hour ceiling rating 10"' ceiling height; Gypsum painted finish; acoustical sound batting	**Doors / Windows:** • All interior doors side hinged wood panel painted doors with lever handles	**Natural Lighting:** N/A

Additional Information

Lighting will be equipped with Lutron lighting controls to allow for complete lighting control and luxurious dimming capabilities (Lutron, 2015).

Lighting, climate, security, and entertainment throughout the home will be controlled by Savant Pro System allowing owners to control all elements from a wireless tablet (Savant, n.d.).

A home theater system from Sonance will provide a movie theater like experience with surround sound and top of the line screen (Sonance, 2015)

Codes Analysis-KENT 145

Code Analysis Report

Date: 11/20/15

PROJECT INFORMATION		
Project Address/Location	**145 Kent** **Brooklyn, New York**	
Project Description	**Restaurant**	
Project Type	☐ New Building ☒ Existing Building	
Square Footage	Building: 60,000 Square Feet	
	Floor(s): 5 floors	
Building Construction	Foundation: Concrete Building Frame: Type IV Heavy Timber Exterior Walls: Concrete Masonry Roof: Concrete and zinc panels Other: Type 3 A	
CODE PUBLICATIONS REQUIRED for PROJECT – Codes & Regulations		**YEAR OF PUBLICATION**
Building Code	☒ **IBC** ☐ **NFPA 5000** ☐ **Other:**	2012
Performance Code	☐ ICCPC ☒ NFPA ☐ Other:	2012
Fire Code	☒ IFC ☐ UFC ☐ Other:	
Life Safety Code	Life Safety Code (NFPA 101)	
Plumbing Code	☒ IPC ☐ UPC ☐ Other:	
Mechanical Code	☐ IMC ☐ UMC ☐ Other:	
Electrical Code	☐ ICCEC ☐ NEC ☐ Other:	
Energy Code	☐ ICCEC ☐ NFPA 9000 ☐ Other:	
Accessibility Regulations & Standards	☒ ADA Guidelines ☐ Fair Housing Act *(residential)* ☒ ICC/ANSI A117.1: Accessible and Usable Buildings and Facilities ☐ Other:	
Additional Codes for Jurisdiction	*[List here]*	

1.0 ADMINISTRATION and DEFINITIONS	
Chapter/Section	**Description**
General	
[A] 101.2 Scope.	The provisions of this code shall apply to the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.
[A] 101.4.2 Mechanical.	The provisions of the International Mechanical Code shall apply to the installation, alterations, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.
[A] 101.4.3 Plumbing.	The provisions of the International Plumbing Code shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system. The provisions of the International Private Sewage Disposal Code shall apply to private sewage disposal systems.
[A] 101.4.4 Property maintenance.	The provisions of the International Property Maintenance Code shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.
[A] 101.4.5 Fire prevention.	The provisions of the International Fire Code shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the construction, extension, repair, alteration or removal of fire suppression, automatic sprinkler systems and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.
[A] 101.4.6 Energy.	The provisions of the International Energy Conservation Code shall apply to all matters governing the design and construction of buildings for energy efficiency.
Applicability	
[A] 102.2 Other laws.	The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.
[A] 102.6 Existing structures.	The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the International Property Maintenance Code or the International Fire Code, or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.
Permits	

[A] 105.1 Required.	Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the building official and obtain the required permit.
Floor and Roof Design Loads	
[A] 106.1 Live loads posted.	Where the live loads for which each floor or portion thereof of a commercial or industrial building is or has been designed to exceed 50 psf (2.40 kN/m2), such design live loads shall be conspicuously posted by the owner in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.
[A] 106.2 Issuance of certificate of occupancy.	A certificate of occupancy required by Section 111 shall not be issued until the floor load signs, required by Section 106.1, have been installed.
[A] 106.3 Restrictions on loading.	It shall be unlawful to place, or cause or permit to be placed, on any floor or roof of a building, structure or portion thereof, a load greater than is permitted by this code.
Temporary Structures and Uses	
[A] 108.1 General.	The building official is authorized to issue a permit for temporary structures and temporary uses. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The building official is authorized to grant extensions for demonstrated cause.
[A] 108.2 Conformance.	Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of this code as necessary to ensure public health, safety and general welfare.
[A] 108.3 Temporary power.	The building official is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in NFPA 70.
[A] 108.4 Termination of approval.	The building official is authorized to terminate such permit for a temporary structure or use and to order the temporary structure or use to be discontinued.
Inspections	
[A] 110.1 General.	Construction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain accessible and exposed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the permit applicant to cause the work to remain accessible and exposed for inspection purposes. Neither the building official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.
[A] 110.2 Preliminary inspection.	Before issuing a permit, the building official is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.
[A] 110.3.4 Frame inspection.	Framing inspections shall be made after the roof deck or sheathing, all framing, fireblocking and bracing are in place and pipes, chimneys and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes and ducts are approved.
[A] 110.3.5 Lath and gypsum board inspection.	Lath and gypsum board inspections shall be made after lathing and gypsum board, interior and exterior, is in place, but before any plastering is applied or gypsum board joints and fasteners are taped and finished. Exception: Gypsum board that is not part of a fire-resistance-rated assembly or a shear assembly.
[A] 110.3.6 Fire- and smoke-resistant penetrations.	Protection of joints and penetrations in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall not be concealed from view until inspected and approved.

[A] 110.3.7 Energy efficiency inspections.	Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: envelope insulation R- and U-values, fenestration U-value, duct system R-value, and HVAC and water-heating equipment efficiency.
[A] 110.3.10 Final inspection.	The final inspection shall be made after all work required by the building permit is completed.
[A] 110.6 Approval required.	Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.
Certificate of Occupancy	
[A] 111.1 Use and occupancy.	No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made, until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Exception: Certificates of occupancy are not required for work exempt from permits under Section 105.2.
[A] 111.2 Certificate issued.	After the building official inspects the building or structure and finds no violations of the provisions of this code or other laws that are enforced by the department of building safety, the building official shall issue a certificate of occupancy that contains the following: 1. The building permit number. 2. The address of the structure. 3. The name and address of the owner. 4. A description of that portion of the structure for which the certificate is issued. 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified. 6. The name of the building official. 7. The edition of the code under which the permit was issued. 8. The use and occupancy, in accordance with the provisions of Chapter 3. 9. The type of construction as defined in Chapter 6. 10. The design occupant load. 11. If an automatic sprinkler system is provided, whether the sprinkler system is required. 12. Any special stipulations and conditions of the building permit.
General	
201.1 Scope.	Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.
201.2 Interchangeability.	Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.
201.3 Terms defined in other codes.	Where terms are not defined in this code and are defined in the International Energy Conservation Code, International Fuel Gas Code, International Fire Code, International Mechanical Code or International Plumbing Code, such terms shall have the meanings ascribed to them as in those codes.
201.4 Terms not defined.	Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.
2.0 USE and OCCUPANCY CLASSIFICATION	
Chapter/Section	**Description**
303.3 Assembly Group A-2.	Assembly uses intended for food and/or drink consumption including, but not limited to: Banquet halls Casinos (gaming areas)

	Nightclubs Restaurants, cafeterias and similar dining facilities (including associated commercial kitchens) Taverns and bars

3.0 SPECIAL REQUIREMENTS FOR SPECIFIC OCCUPANCIES OR ELEMENTS

Chapter/Section	Description

4.0 HEIGHT and AREA LIMIATIONS BASED ON CONSTRUCTION TYPE-TYPE IV HEAVY TIMBER

Chapter/Section	Description
504.2 Mixed Occupancy.	In a building containing mixed occupancies in accordance with section 508, no individual occupancy shall exceed the height and number of story limits specified in this section for the applicable occupancies.
504.3 Height in feet.	The maximum height, in feet, of a building shall not exceed the limits specified in Table 504.3 A
508.2 Accessory occupancies	Accessory occupancies are those occupancies that are ancillary to the main occupancy of the building or portion thereof. Accessory occupancies shall comply with the provisions of Sections 508.2.1 through 508.2.4.
508.2.2 Occupancy classification.	Accessory occupancies shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space.
508.2.3 Allowable building area and height.	The allowable building area and height of the building shall be based on the allowable building area and height for the main occupancy in accordance with Section 503.1. The height of each accessory occupancy shall not exceed the tabular values in Table 503, without increases in accordance with Section 504 for such accessory occupancies. The building area of the accessory occupancies shall be in accordance with Section 508.2.1. 85’ Max

5.0 FIRE RESISTANCE and PROTECTION REQUIREMENTS

Chapter/Section	Description
Mixed Use and Occupancy	
508.1 General.	Each portion of a building shall be individually classified in accordance with Section 302.1. Where a building contains more than one occupancy group, the building or portion thereof shall comply with the applicable provisions of Section 508.2, 508.3 or 508.4, or a combination of these sections.
508.2 Accessory occupancies.	Accessory occupancies are those occupancies that are ancillary to the main occupancy of the building or portion thereof. Accessory occupancies shall comply with the provisions of Sections 508.2.1 through 508.2.4.
508.2.2 Occupancy classification.	Accessory occupancies shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space.
508.2.4 Separation of occupancies.	No separation is required between accessory occupancies and the main occupancy. 2. Group I-1, R-1, R-2 and R-3 *dwelling units* and *sleeping units* shall be separated from other *dwelling* or *sleeping units* and from accessory occupancies contiguous to them in accordance with the requirements of Section 420.

TABLE 508.4 REQUIRED SEPARATION OF OCCUPANCIES (HOURS)

OCCUPANCY	A, E		I-1, I-3, I-4		I-2		R[a]		F-2, S-2[b], U		B, F-1, M, S-1		H-1		H-2		H-3, H-4		H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A, E	N	N	1	2	2	NP	1	2	N	1	1	2	NP	NP	3	4	2	3	2	NP
I-1, I-3, I-4	—	—	N	N	2	NP	1	NP	1	2	1	2	NP	NP	3	NP	2	NP	2	NP
I-2	—	—	—	—	N	N	2	NP	2	NP	2	NP	NP	NP	3	NP	2	NP	2	NP
R[a]	—	—	—	—	—	—	N	N	1[c]	2[c]	1	2	NP	NP	3	NP	2	NP	2	NP
F-2, S-2[b] , U	—	—	—	—	—	—	—	—	N	N	1	2	NP	NP	3	4	2	3	2	NP
B, F-1, M, S-1	—	—	—	—	—	—	—	—	—	—	N	N	NP	NP	2	3	1	2	1	NP
H-1	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	NP	NP	NP	NP	NP	NP
H-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	1	NP	1	NP
H-3, H-4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1[d]	NP	1	NP
H-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	N	NP

Required separation between A-1 and R-1 occupancies=1 hour

	Fire-Resistance Ratings and Fire Tests	
	703.4 Automatic sprinklers.	Under the prescriptive fire-resistance requirements of the International Building Code, the fire-resistance rating of a building element, component or assembly shall be established without the use of automatic sprinklers or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures, and acceptance criteria specified in ASTM E 119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the building official allowed by Sections 104.10 and 104.11.
	703.6 Fire-resistance-rated glazing.	Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 or UL 263 and complying with the requirements of Section 707, shall be permitted. Fire-resistance-rated glazing shall bear a label marked in accordance with Table 716.3 issued by an agency and shall be permanently identified on the glazing.
	Fire Walls	
	706.4 Fire-resistance rating.	Fire walls shall have a fire-resistance rating of not less than that required by Table 706.4. 3a fire resistance rating
	Shaft Enclosures	
	713.4 Fire-resistance rating.	Shaft enclosures shall have a *fire-resistance rating* of not less than 2 hours where connecting four *stories* or more, and not less than 1 hour where connecting less than four *stories*. The number of *stories* connected by the shaft enclosure shall include any basements but not any *mezzanines*. Shaft enclosures shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours. Shaft enclosures shall meet the requirements of Section 703.2.1.
	713.5 Continuity.	Shaft enclosures shall be constructed as *fire barriers* in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 711, or both, and shall have continuity in accordance with Section 707.5 for *fire barriers* or Section 711.4 for *horizontal assemblies* as applicable.
	713.8 Penetrations.	Penetrations in a shaft enclosure shall be protected in accordance with Section 714 as required for *fire barriers*. Structural elements, such as beams or joists, where protected in accordance with Section 714 shall be permitted to penetrate a shaft enclosure.

	713.12 Enclosure at top.	A shaft enclosure that does not extend to the underside of the roof sheathing, deck or slab of the building shall be enclosed at the top with construction of the same *fire-resistance rating* as the topmost floor penetrated by the shaft, but not less than the *fire-resistance rating* required for the shaft enclosure.
	713.14.1 Elevator lobby.	An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three *stories*. The lobby enclosure shall separate the elevator shaft enclosure doors from each floor by *fire partitions*. In addition to the requirements in Section 708 for*fire partitions*, doors protecting openings in the elevator lobby enclosure walls shall also comply with Section 716.5.3 as required for *corridor* walls and penetrations of the elevator lobby enclosure by ducts and air transfer openings shall be protected as required for *corridors* in accordance with Section 717.5.4.1. Elevator lobbies shall have at least one *means of egress* complying with Chapter 10 and other provisions within this code. 2. Elevators not required to be located in a shaft in accordance with Section 712.1 are not required to have enclosed elevator lobbies.
	713.14.1.1 Areas of refuge.	Areas of refuge shall be provided as required in Section 1007.
	Fire Partitions	
	714.3 Fire-resistance-rated walls.	Penetrations into or through fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.3.1 through 714.3.3. Penetrations in smoke barrier walls shall also comply with Section 714.5.
	Penetrations	
	714.3 Fire-resistance-rated walls.	Penetrations into or through fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.3.1 through 714.3.3. Penetrations in smoke barrier walls shall also comply with Section 714.5.
	715.6 Fire resistant joint systems in smoke barriers	*Fire-resistant joint systems* in *smoke barriers*, and joints at the intersection of a horizontal *smoke barrier* and an exterior curtainwall, shall be tested in accordance with the requirements of UL 2079 for air leakage. The *L rating* of the joint system shall not exceed 5 cfm per linear foot (0.00775 m^3/s m) of joint at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature tests.
	Portable Fire Extinguishers	
	[F] 906.1 Where required.	Portable fire extinguishers shall be installed in the following locations. 1. In Group A, B, E, F, H, I, M, R-1, R-2, R-4 and S occupancies. 2. Within 30 feet (9144 mm) of commercial cooking equipment. 3. In areas where flammable or combustible liquids are stored, used or dispensed. 5. Where required by the International Fire Code sections indicated in Table 906.1. 6. Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the fire code official.
	[F] 906.5 Conspicuous location.	Portable fire extinguishers shall be located in conspicuous locations where they will be readily accessible and immediately available for use. These locations shall be along normal paths of travel, unless the fire code official determines that the hazard posed indicated the need for placement away from normal paths of travel.
	[F] 906.6 Unobstructed and unobscured.	Portable fire extinguishers shall not be obstructed or obscured from view. In rooms or areas in which visual obstruction cannot be completely avoided, means shall be provided to indicate the locations of extinguishers.
	[F] 906.8 Cabinets.	Cabinets used to house portable fire extinguishers shall not be locked.
	Fire Alarm and Detection Systems	
	[F] 903.2.1 Group A-1	An automatic sprinkler system shall be provided for fire areas containing Group A-1 occupancies and intervening floors of the building where one of the following conditions exists: 1. The fire area exceeds 12,000 square feet 2. The fire area has an occupant load of 300 or more 3. The fire area is located on a floor other than a level of exit discharge serving such occupancies
	[F] 907.5.2.3.1 Public and common areas.	Visible alarm notification appliances shall be provided in public areas and common areas.

	Emergency Alarm Systems	
	[F] 908.7.1 Carbon monoxide detection systems.	Carbon monoxide detection systems, which include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be listed as complying with UL 2075.
6.0 MEANS OF EGRESS		
	Chapter/Section	**Description**
	General Means of Egress	
	1001.2 Minimum requirements.	It shall be unlawful to alter a building or structure in a manner that will reduce the number of *exits* or the capacity of the *means of egress* to less than required by this code.
	[F] 1001.4 Fire safety and evacuation plans.	Fire safety and evacuation plans shall be provided for all occupancies and buildings where required by the *International Fire Code*. Such fire safety and evacuation plans shall comply with the applicable provisions of Sections 401.2 and 404 of the *International Fire Code*.
	1003.1 Applicability.	The general requirements specified in Sections 1003 through 1013 shall apply to all three elements of the means of egress system, in addition to those specific requirements for the exit access, the exit and the exit discharge detailed elsewhere in this chapter.
	1003.2 Ceiling height.	The means of egress shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Exceptions: 1. Sloped ceilings in accordance with Section 1208.2. 2. Ceilings of dwelling units and sleeping units within residential occupancies in accordance with Section 1208.2. 3. Allowable projections in accordance with Section 1003.3. 4. Stair headroom in accordance with Section 1009.5. 5. Door height in accordance with Section 1008.1.1. 6. Ramp headroom in accordance with Section 1010.6.2. 7. The clear height of floor levels in vehicular and pedestrian traffic areas in parking garages in accordance with Section 406.4.1. 8. Areas above and below mezzanine floors in accordance with Section 505.2.
	1003.3 Protruding objects.	Protruding objects shall comply with the requirements of Sections 1003.3.1 through 1003.3.4.
	1003.3.1 Headroom	Protruding objects are permitted to extend below the minimum ceiling height required by Section 1003.2 provided a minimum headroom of 80 inches (2032 mm) shall be provided for any walking surface, including walks, corridors, aisles and passageways. Not more than 50 percent of the ceiling area of a means of egress shall be reduced in height by protruding objects. Exception: Door closers and stops shall not reduce headroom to less than 78 inches (1981 mm). A barrier shall be provided where the vertical clearance is less than 80 inches (2032 mm) high. The leading edge of such a barrier shall be located 27 inches (686 mm) maximum above the floor
	1003.3.2 Post-mounted objects	A free-standing object mounted on a post or pylon shall not overhang that post or pylon more than 4 inches (102 mm) where the lowest point of the leading edge is more than 27 inches (686 mm) and less than 80 inches (2032 mm) above the walking surface. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (686 mm) maximum or 80 inches (2032 mm) minimum above the finished floor or ground. Exception: These requirements shall not apply to sloping portions of handrails between the top and bottom riser of stairs and above the ramp run.
	1003.3.3 Horizontal projections.	Structural elements, fixtures or furnishings shall not project horizontally from either side more than 4 inches (102 mm) over any walking surface between the heights of 27 inches (686 mm) and 80 inches (2032 mm) above the walking surface. Exception: Handrails are permitted to protrude 41/2 inches (114 mm) from the wall.
	1003.3.4 Clear width.	Protruding objects shall not reduce the minimum clear width of accessible routes.

	1003.4 Floor surface.	Walking surfaces of the means of egress shall have a slip-resistant surface and be securely attached.
	1003.5 Elevation change.	Where changes in elevation of less than 12 inches (305 mm) exist in the means of egress, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope), ramps complying with Section 1010 shall be used. Where the difference in elevation is 6 inches (152 mm) or less, the ramp shall be equipped with either handrails or floor finish materials that contrast with adjacent floor finish materials. Exceptions: 1. A single step with a maximum riser height of 7 inches (178 mm) is permitted for buildings with occupancies in Groups F, H, R-2, R-3, S and U at exterior doors not required to be accessible by Chapter 11. 2. A stair with a single riser or with two risers and a tread is permitted at locations not required to be accessible by Chapter 11, provided that the risers and treads comply with Section 1009.7, the minimum depth of the tread is 13 inches (330 mm) and at least one handrail complying with Section 1012 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the stair. 3. A step is permitted in aisles serving seating that has a difference in elevation less than 12 inches (305 mm) at locations not required to be accessible by Chapter 11, provided that the risers and treads comply with Section 1028.11 and the aisle is provided with a handrail complying with Section 1028.13. Throughout a story in a Group I-2 occupancy, any change in elevation in portions of the means of egress that serve nonambulatory persons shall be by means of a ramp or sloped walkway.
	1003.6 Means of egress continuity.	The path of egress travel along a means of egress shall not be interrupted by any building element other than a means of egress component as specified in this chapter. Obstructions shall not be placed in the required width of a means of egress except projections permitted by this chapter. The required capacity of a means of egress system shall not be diminished along the path of egress travel.
	1003.7 Elevators, escalators and moving walks.	Elevators, escalators and moving walks shall not be used as a component of a required means of egress from any other part of the building. Exception: Elevators used as an accessible means of egress in accordance with Section 1007.4.
	1004.1 Design occupant load.	In determining *means of egress* requirements, the number of occupants for whom *means of egress* facilities shall be provided shall be determined in accordance with this section.
	1004.6 Multiple occupancies.	Where a building contains two or more occupancies, the *means of egress* requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same *means of egress* system, those egress components shall meet the more stringent requirements of all occupancies that are served.
	Means of Egress Sizing	
	1005.1 General.	All portions of the *means of egress* system shall be sized in accordance with this section.
	1005.2 Minimum width based on component.	The minimum width, in inches (mm), of any *means of egress* components shall not be less than that specified for such component, elsewhere in this code.
	1005.4 Continuity.	The capacity of the *means of egress* required from any story of a building shall not be reduced along the path of egress travel until arrival at the *public way*.
	1005.5. Distribution of egress capacity.	Where more than one *exit*, or access to more than one *exit*, is required, the *means of egress* shall be configured such that the loss of any one *exit*, or access to one *exit*, shall not reduce the available capacity to less than 50 percent of the required capacity.
	1005.6 Egress convergence.	Where the *means of egress* from stories above and below converge at an intermediate level, the capacity of the *means of egress* from the point of convergence shall not be less than the sum of the required capacities for the two adjacent stories.
	1005.7 Encroachment.	Encroachments into the required *means of egress* width shall be in accordance with the provisions of this section.
	1005.7.1 Doors.	Doors, when fully opened, shall not reduce the required width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half.

		Exceptions: 1. Surface-mounted latch release hardware shall be exempt from inclusion in the 7-inch maximum (178 mm) encroachment where: 1.1. The hardware is mounted to the side of the door facing away from the adjacent wall where the door is in the open position; and 1.2. The hardware is mounted not less than 34 inches (865 mm) nor more than 48 inches (1219 mm) above the finished floor. 2. The restrictions on door swing shall not apply to doors within individual *dwelling units* and *sleeping units* of Group R-2 occupancies and*dwelling units* of Group R-3 occupancies.
	1005.7.2 Other projections.	*Handrail* projections shall be in accordance with the provisions of Section 1012.8. Other nonstructural projections such as trim and similar decorative features shall be permitted to project into the required width a maximum of $1^1/_2$ inches (38 mm) on each side.
	1005.7.3 Protruding objects.	Protruding objects shall comply with the applicable requirements of Section 1003.3.
	Signage & Illumination	
	1006.1 Illumination required.	The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied. Exceptions: 1. Occupancies in Group U. 2. Aisle access ways in Group A
	1006.2 Illumination level.	The means of egress illumination level shall not be less than 1 footcandle (11 lux) at the walking surface. Exception: For auditoriums, theaters, concert or opera halls and similar assembly occupancies, the illumination at the walking surface is permitted to be reduced during performances to not less than 0.2 footcandle (2.15 lux), provided that the required illumination is automatically restored upon activation of a premises' fire alarm system where such system is provided.
	1006.3 Emergency power for illumination.	The power supply for means of egress illumination shall normally be provided by the premises' electrical supply. In the event of power supply failure, an emergency electrical system shall automatically illuminate all of the following areas: 1. Aisles and unenclosed egress stairways in rooms and spaces that require two or more means of egress. 2. Corridors, interior exit stairways and ramps and exit passageways in buildings required to have two or more exits. 3. Exterior egress components at other than their levels of exit discharge until exit discharge is accomplished for buildings required to have two or more exits. 4. Interior exit discharge elements, as permitted in Section 1027.1, in buildings required to have two or more exits. 5. Exterior landings as required by Section 1008.1.6 for exit discharge doorways in buildings required to have two or more exits. The emergency power system shall provide power for a duration of not less than 90 minutes and shall consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702.
	1006.3.1 Illumination level under emergency power.	Emergency lighting facilities shall be arranged to provide initial illumination that is at least an average of 1 footcandle (11 lux) and a minimum at any point of 0.1 footcandle (1 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 footcandle (6 lux) average and a minimum at any point of 0.06 footcandle (0.6 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.
	1011.1 Where required.	Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. The path of egress travel to exits and within exits shall be marked by readily visible exit signs to clearly indicate the direction of egress travel in cases where the exit or the path of egress travel is not immediately visible to the occupants. Intervening means of egress doors within exits shall be marked by exit signs. Exit sign placement shall be such that no point in an exit access corridor or exit passageway is more than 100 feet (30 480 mm) or the listed viewing distance for the sign, whichever is less, from the nearest visible exit sign. Exceptions: 1. Exit signs are not required in rooms or areas that require only one exit or exit access. 2. Main exterior exit doors or gates that are obviously and clearly identifiable as exits need not have exit signs where approved by the building official.
	1011.3 Illumination.	Exit signs shall be internally or externally illuminated.

		Exception: Tactile signs required by Section 1011.4 need not be provided with illumination
	1011.4 Raised character and Braille exit signs.	A sign stating EXIT in raised characters and Braille and complying with ICC A117.1 shall be provided adjacent to each door to an area of refuge, an exterior area for assisted rescue, an exit stairway, an exit ramp, an exit passageway and the exit discharge.
	1011.5 Internally illuminated exit signs.	Electrically powered, self-luminous and photoluminescent exit signs shall be listed and labeled in accordance with UL 924 and shall be installed in accordance with the manufacturer's instructions and Chapter 27. Exit signs shall be illuminated at all times.
	1007.9 Signage.	Signage indicating special accessibility provisions shall be provided as shown: 1. Each door providing access to an area of refuge from an adjacent floor area shall be identified by a sign stating: AREA OF REFUGE. 2. Each door providing access to an exterior area for assisted rescue shall be identified by a sign stating: EXTERIOR AREA FOR ASSISTED RESCUE. Signage shall comply with the ICC A117.1 requirements for visual characters and include the International Symbol of Accessibility. Where exit sign illumination is required by Section 1011.3, the signs shall be illuminated. Additionally, raised character and Braille signage complying with ICC A117.1 shall be located at each door to an area of refuge and exterior area for assisted rescue in accordance with Section 1011.4.
	1007.10 Directional signage.	Direction signage indicating the location of the other means of egress and which are accessible means of egress shall be provided at the following: 1. At exits serving a required accessible space but not providing an approved accessible means of egress. 2. At elevator landings. 3. Within areas of refuge.
	1007.11 Instructions.	In areas of refuge and exterior areas for assisted rescue, instructions on the use of the area under emergency conditions shall be posted. The instructions shall include all of the following: 1. Persons able to use the exit stairway do so as soon as possible, unless they are assisting others. 2. Information on planned availability of assistance in the use of stairs or supervised operation of elevators and how to summon such assistance. 3. Directions for use of the two-way communications system where provided
	Egress Width	
	1005.2 Minimum width based on component.	The minimum width, in inches (mm), of any means of egress components shall not be less than that specified for such component, elsewhere in this code.
	1005.3 Required capacity based on occupant load.	The required capacity, in inches (mm), of the means of egress for any room, area, space or story shall not be less than that determined in accordance with Sections 1005.3.1 and 1005.3.2:
	1005.3.1 Stairways.	The capacity, in inches (mm), of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.3 inch (7.6 mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.
	1005.3.2 Other egress components.	The capacity, in inches (mm), of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant.
	1005.5. Distribution of egress capacity.	Where more than one exit, or access to more than one exit, is required, the means of egress shall be configured such that the loss of any one exit, or access to one exit, shall not reduce the available capacity to less than 50 percent of the required capacity.
	1005.7.1 Doors.	Doors, when fully opened, shall not reduce the required width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half. Exceptions: 1. Surface-mounted latch release hardware shall be exempt from inclusion in the 7-inch maximum (178 mm) encroachment where: 1.1. The hardware is mounted to the side of the door facing away from the adjacent wall where the door is in the open position; and 1.2. The hardware is mounted not less than 34 inches (865 mm) nor more than 48 inches (1219 mm) above the finished floor.

		2. The restrictions on door swing shall not apply to doors within individual dwelling units and sleeping units of Group R-2 occupancies and dwelling units of Group R-3 occupancies.
	1005.7.2 Other projections.	Handrail projections shall be in accordance with the provisions of Section 1012.8. Other nonstructural projections such as trim and similar decorative features shall be permitted to project into the required width a maximum of 11/2 inches (38 mm) on each side.
	Accessible Means of Egress	
	1007.1 Accessible means of egress required.	Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress are required by Section 1015.1 or 1021.1 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress. Exceptions: 1. Accessible means of egress are not required in alterations to existing buildings. 2. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1007.3, 1007.4 or 1007.5. 3. In assembly areas with sloped or stepped aisles, one accessible means of egress is permitted where the common path of travel is accessible and meets the requirements in Section 1028.8.
	1007.2 Continuity and components.	Each required accessible means of egress shall be continuous to a public way and shall consist of one or more of the following components: 1. Accessible routes complying with Section 1104. 2. Interior exit stairways complying with Sections 1007.3 and 1022. 3. Interior exit access stairways complying with Sections 1007.3 and 1009.3. 4. Exterior exit stairways complying with Sections 1007.3 and 1026 and serving levels other than the level of exit discharge. 5. Elevators complying with Section 1007.4. 6. Platform lifts complying with Section 1007.5. 7. Horizontal exits complying with Section 1025. 8. Ramps complying with Section 1010. 9. Areas of refuge complying with Section 1007.6. 10. Exterior area for assisted rescue complying with Section 1007.7.
	1007.2.1 Elevators required.	In buildings where a required accessible floor is four or more stories above or below a level of exit discharge, at least one required accessible means of egress shall be an elevator complying with Section 1007.4. Exceptions: 1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a horizontal exit and located at or above the levels of exit discharge. 2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a ramp conforming to the provisions of Section 1010.
	1007.3 Stairways.	In order to be considered part of an accessible means of egress, a stairway between stories shall have a clear width of 48 inches (1219 mm) minimum between handrails and shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from either an area of refuge complying with Section 1007.6 or a horizontal exit. Exit access stairways that connect levels in the same story are not permitted as part an accessible means of egress. Exceptions: 1. The clear width of 48 inches (1219 mm) between handrails is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. 2. Areas of refuge are not required at stairways in buildings equipped throughout by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. 3. The clear width of 48 inches (1219 mm) between handrails is not required for stairways accessed from a horizontal exit.

		4. Areas of refuge are not required at stairways serving open parking garages. 5. Areas of refuge are not required for smoke protected seating areas complying with Section 1028.6.2. 6. The areas of refuge are not required in Group R-2 occupancies.
	1007.4 Elevators.	In order to be considered part of an accessible means of egress, an elevator shall comply with the emergency operation and signaling device requirements of Section 2.27 of ASME A17.1. Standby power shall be provided in accordance with Chapter 27 and Section 3003. The elevator shall be accessed from either an area of refuge complying with Section 1007.6 or a horizontal exit. Exceptions: 1. Elevators are not required to be accessed from an area of refuge or horizontal exit in open parking garages. 2. Elevators are not required to be accessed from an area of refuge or horizontal exit in buildings and facilities equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. 3. Elevators not required to be located in a shaft in accordance with Section 712 are not required to be accessed from an area of refuge or horizontal exit. 4. Elevators are not required to be accessed from an area of refuge or horizontal exit for smoke protected seating areas complying with Section 1028.6.2.
	1007.9 Signage.	Signage indicating special accessibility provisions shall be provided as shown: 1. Each door providing access to an area of refuge from an adjacent floor area shall be identified by a sign stating: AREA OF REFUGE. 2. Each door providing access to an exterior area for assisted rescue shall be identified by a sign stating: EXTERIOR AREA FOR ASSISTED RESCUE. Signage shall comply with the ICC A117.1 requirements for visual characters and include the International Symbol of Accessibility. Where exit sign illumination is required by Section 1011.3, the signs shall be illuminated. Additionally, raised character and Braille signage complying with ICC A117.1 shall be located at each door to an area of refuge and exterior area for assisted rescue in accordance with Section 1011.4.
	1007.10 Directional signage.	Direction signage indicating the location of the other means of egress and which are accessible means of egress shall be provided at the following: 1. At exits serving a required accessible space but not providing an approved accessible means of egress. 2. At elevator landings. 3. Within areas of refuge.
	Exit Access & Travel Distance	
	1016.2 Limitations.	Exit access travel distance shall not exceed the values given in Table 1016.2. 250 feet with automatic sprinkler system.
	1016.3 Measurement.	Exit access travel distance shall be measured from the most remote point within a story along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit
	Exit Access Doors, Doorways, Door Hardware and Windows	
	1015.1 Exits or exit access doorways from spaces.	Two exits or exit access doorways from any space shall be provided where one of the following conditions exists: 1. The occupant load of the space exceeds one of the values in Table 1015.1. Exceptions: 2. The common path of egress travel exceeds one of the limitations of Section 1014.3. 3. Where required by Section 1015.3, 1015.4, 1015.5, or 1015.6. Where a building contains mixed occupancies, each individual occupancy shall comply with the applicable requirements for that occupancy. Where applicable, cumulative occupant loads from adjacent occupancies shall be considered in accordance with the provisions of Section 1004.1.
	1015.2 Exit or exit access doorway arrangement.	Required exits shall be located in a manner that makes their availability obvious. Exits shall be unobstructed at all times. Exit and exit access doorways shall be arranged in accordance with Sections 1015.2.1 and 1015.2.2.
	Corridors & Aisles	
	1017.1 General.	Aisles and aisle accessways serving as a portion of the exit access in the means of egress system shall comply with the requirements of this section. Aisles or aisle accessways shall be provided from all occupied portions of the exit access which contain seats, tables, furnishings, displays and similar fixtures or equipment. The required width of aisles shall be unobstructed.

		Exception: Encroachments complying with Section 1005.7.
	1017.5 Aisles in other than assembly spaces and Groups B and M.	In other than rooms or spaces used for assembly purposes and Group B and M occupancies, the minimum clear aisle width shall be determined by Section 1005.1 for the occupant load served, but shall not be less than 36 inches (914 mm).
	1018.1 Construction.	Corridors shall be fire-resistance rated in accordance with Table 1018.1. The corridor walls required to be fire-resistance rated shall comply with Section 708 for fire partitions. 0 with sprinkler system.
	1018.2 Width.	The minimum width of corridors specified in Table 1018.2 shall be as determined in Section 1005.1.
	1018.3 Obstruction.	The required width of corridors shall be unobstructed. Exception: Encroachments complying with Section 1005.7.
	1018.4 Dead ends.	Where more than one exit or exit access doorway is required, the exit access shall be arranged such that there are no dead ends in corridors more than 20 feet (6096 mm) in length. Exceptions: 3. A dead-end corridor shall not be limited in length where the length of the dead-end corridor is less than 2.5 times the least width of the dead-end corridor.
	1018.5.1 Corridor ceiling.	Use of the space between the corridor ceiling and the floor or roof structure above as a return air plenum is permitted for one or more of the following conditions: 1. The corridor is not required to be of fire-resistance-rated construction; 2. The corridor is separated from the plenum by fire-resistance-rated construction; 3. The air-handling system serving the corridor is shut down upon activation of the air-handling unit smoke detectors required by the International Mechanical Code; 4. The air-handling system serving the corridor is shut down upon detection of sprinkler waterflow where the building is equipped throughout with an automatic sprinkler system; or 5. The space between the corridor ceiling and the floor or roof structure above the corridor is used as a component of an approved engineered smoke control system.
	1018.6 Corridor continuity.	Fire-resistance-rated corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms. Where the path of egress travel within a fire-resistance-rated corridor to the exit includes travel along unenclosed exit access stairways or ramps, the fire resistance-rating shall be continuous for the length of the stairway or ramp and for the length of the connecting corridor on the adjacent floor leading to the exit. Exception: Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.
	Exits & Continuity	
	1020.1 General.	Exits shall comply with Sections 1020 through 1026 and the applicable requirements of Sections 1003 through 1013. An exit shall not be used for any purpose that interferes with its function as a means of egress. Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge.
	1020.2 Exterior exit doors.	Buildings or structures used for human occupancy shall have at least one exterior door that meets the requirements of Section 1008.1.1.
	1021.1 General.	Each story and occupied roof shall have the minimum number of exits, or access to exits, as specified in this section. The required number of exits, or exit access stairways or ramps providing access to exits, from any story shall be maintained until arrival at grade or a public way. Exits or access to exits from any story shall be configured in accordance with this section. Each story above the second story of a building shall have a minimum of one interior or exterior exit stairway, or interior or exterior exit ramp. At each story above the second story that requires a minimum of three or more exits, or access to exits, a minimum of 50 percent of the required exits shall be interior or exterior exit stairways, or interior or exterior exit ramps.
	1021.3 Exit configuration.	Exits, or exit access stairways or ramps providing access to exits at other stories, shall be arranged in accordance with the provisions of Sections 1015.2 through 1015.2.2. Exits shall be continuous from the point of entry into the exit to the exit discharge.
	1022.2 Construction.	Enclosures for interior exit stairways and ramps shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Interior exit stairway and ramp enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the interior exit stairways or ramps shall include any basements, but not any mezzanines. Interior exit stairways and ramps shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.

	1022.9 Stairway identification signs.	A sign shall be provided at each floor landing in an interior exit stairway and ramp connecting more than three stories designating the floor level, the terminus of the top and bottom of the interior exit stairway and ramp and the identification of the stair or ramp. The signage shall also state the story of, and the direction to, the exit discharge and the availability of roof access from the interior exit stairway and ramp for the fire department. The sign shall be located 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. In addition to the stairway identification sign, a floor-level sign in raised characters and Braille complying with ICC A117.1 shall be located at each floor-level landing adjacent to the door leading from the interior exit stairway and ramp into the corridor to identify the floor level.
	1022.9.1 Signage requirements.	Stairway identification signs shall comply with all of the following requirements: 1. The signs shall be a minimum size of 18 inches (457 mm) by 12 inches (305 mm). 2. The letters designating the identification of the interior exit stairway and ramp shall be a minimum of 11/2 inches (38 mm) in height. 3. The number designating the floor level shall be a minimum of 5 inches (127 mm) in height and located in the center of the sign. 4. All other lettering and numbers shall be a minimum of 1 inch (25 mm) in height. 5. Characters and their background shall have a nonglare finish. Characters shall contrast with their background, with either light characters on a dark background or dark characters on a light background. 6. When signs required by Section 1022.9 are installed in the interior exit stairways and ramps of buildings subject to Section 1024, the signs shall be made of the same materials as required by Section 1024.4.
	Other	

Location in Building	Function of space (Table 1004.1.1)	Load Factor	Area (sf)	OL
101 Lounge	Assembly – w/out fixed seats; Unconcentrated tables & Chairs	15 net	1000 sf	(1000/15= 66.66 round up to 67 OL)

Calculating Occupant Load

Function (Use) of Space (IBC 2009 Table [1004.1.1], accessory or incidental)	**Load Factor** (sf/occupant)	**Area** (sf)	**Occupant Load**
Entrance 100	**5**	**107**	**22**
Lounge 101	**15**	**929**	**62**
Bar 102	**15**	**451**	**30**
Dining 103	**15**	**2086**	**139**
Women's Restroom 105		**190**	
Men's Restroom 106		**190**	
Dining Area 107	**15**	**621**	**42**
Private Dining 108	**15**	**306**	**20**
Private Dining 108A	**15**	**437**	**29**
Condo Entrance 100A	**15**	**713**	**48**
Storage 100B		**156**	
		Total Occupant Load	**392**

NOTES:
1. The 2009 IBC makes a distinction between "gross" and "net" areas for calculating occupant load. In reality, the difference rarely matters all that much, and it is much simpler to use "gross" for all figures.

2. "Gross" areas include wall thicknesses and utility spaces (chases, shafts, mechanical/electrical spaces, etc.).
3. Use only whole numbers for areas; do not use decimal places.
4. Occupant load numbers are always rounded up to the nearest whole number.

7.0 ACCESSIBLITY

	Chapter/Section	Description
	General	
	1101.1 Scope	The provisions of this chapter shall control the design and construction of facilities for accessibility to physically disabled persons.
	1101.2 Design	Buildings and facilities shall be designed and constructed to be accessible in accordance with this code and ICC A117.1.
	Space Requirements	
	1103.1 Where required.	Sites, buildings, structures, facilities, elements and spaces, temporary or permanent, shall be accessible to persons with physical disabilities.
	1103.2.9 Equipment space.	Spaces frequented only by personnel for maintenance, repair or monitoring of equipment are not required to be accessible. Such spaces include, but are not limited to, elevator pits, elevator penthouses, mechanical, electrical or communications equipment rooms, piping or equipment catwalks, water or sewage treatment pump rooms and stations, electric substations and transformer vaults, and highway and tunnel utility facilities.
	Accessible Route	
	1104.3 Connected spaces.	When a building or portion of a building is required to be accessible, an accessible route shall be provided to each portion of the building, to accessible building entrances connecting accessible pedestrian walkways and the public way.
	1104.3.1 Employee work areas.	Common use circulation paths within employee work areas shall be accessible routes. Exceptions: 1. Common use circulation paths, located within employee work areas that are less than 1,000 square feet (93 m2) in size and defined by permanently installed partitions, counters, casework or furnishings, shall not be required to be accessible routes.

		2. Common use circulation paths, located within employee work areas, that are an integral component of equipment, shall not be required to be accessible routes.
	1104.4 Multilevel buildings and facilities.	At least one accessible route shall connect each accessible level, including mezzanines, in multilevel buildings and facilities. Exceptions: 1. An accessible route is not required to stories and mezzanines that have an aggregate area of not more than 3,000 square feet (278.7 m2) and are located above and below accessible levels. This exception shall not apply to: 1.1. Multiple tenant facilities of Group M occupancies containing five or more tenant spaces; 1.2. Levels containing offices of health care providers (Group B or I); or 1.3. Passenger transportation facilities and airports (Group A-3 or B). 2. Levels that do not contain accessible elements or other spaces as determined by Section 1107 or 1108 are not required to be served by an accessible route from an accessible level. 3. In air traffic control towers, an accessible route is not required to serve the cab and the floor immediately below the cab. 4. Where a two-story building or facility has one story with an occupant load of five or fewer persons that does not contain public use space, that story shall not be required to be connected by an accessible route to the story above or below. 5. Vertical access to elevated employee work stations within a courtroom is not required at the time of initial construction, provided a ramp, lift or elevator can be installed without requiring reconfiguration or extension of the courtroom or extension of the electrical system
	1104.5 Location.	Accessible routes shall coincide with or be located in the same area as a general circulation path. Where the circulation path is interior, the accessible route shall also be interior. Where only one accessible route is provided, the accessible route shall not pass through kitchens, storage rooms, restrooms, closets or similar spaces.
	Accessible Entrances	
	1105.1 Public entrances.	In addition to accessible entrances required by Sections 1105.1.1 through 1105.1.6, at least 60 percent of all public entrances shall be accessible. Exceptions: 1. An accessible entrance is not required to areas not required to be accessible. 2. Loading and service entrances that are not the only entrance to a tenant space.
	1105.1.6 Tenant spaces, dwelling units and sleeping units.	At least one accessible entrance shall be provided to each tenant, dwelling unit and sleeping unit in a facility. Exceptions: 1. An accessible entrance is not required to tenants that are not required to be accessible. 2. An accessible entrance is not required to dwelling units and sleeping units that are not required to be Accessible units, Type A units or Type B units.
	Special Occupancies	
	1108.1 General.	In addition to the other requirements of this chapter, the requirements of Sections 1108.2 through 1108.4 shall apply to specific occupancies.
	1108.2 Assembly area seating.	A building, room or space used for assembly purposes with *fixed seating* shall comply with Sections 1108.2.1 through 1108.2.5. Lawn seating shall comply with Section 1108.2.6. Assistive listening systems shall comply with Section 1108.2.7. Performance areas viewed from assembly seating areas shall comply with Section 1108.2.8. Dining areas shall comply with Section 1108.2.9.
	1108.2.2.1 General seating.	*Wheelchair spaces* shall be provided in accordance with Table 1108.2.2.1. Capacity of seating in assembly areas, 301-500. Minimum of 5 wheelchair accessible spaces
	Other Features and Facilities	
	1109.1 General.	Accessible building features and facilities shall be provided in accordance with Sections 1109.2 through 1109.15.
	1109.2 Toilet and bathing facilities.	Each toilet room and bathing room shall be accessible. Where a floor level is not required to be connected by an accessible route, the only toilet rooms or bathing rooms provided within the facility shall not be located on the inaccessible floor. At least one of each type of fixture, element, control or dispenser in each accessible toilet room and bathing room shall be accessible. Exceptions:

		1. In toilet rooms or bathing rooms accessed only through a private office, not for common or public use and intended for use by a single occupant, any of the following alternatives are allowed: 1.1. Doors are permitted to swing into the clear floor space, provided the door swing can be reversed to meet the requirements in ICC A117.1; 1.2. The height requirements for the water closet in ICC A117.1 are not applicable; 1.3. Grab bars are not required to be installed in a toilet room, provided that reinforcement has been installed in the walls and located so as to permit the installation of such grab bars; and 1.4. The requirement for height, knee and toe clearance shall not apply to a lavatory. 2. This section is not applicable to toilet and bathing rooms that serve dwelling units or sleeping units that are not required to be accessible by Section 1107. 3. Where multiple single-user toilet rooms or bathing rooms are clustered at a single location, at least 50 percent but not less than one room for each use at each cluster shall be accessible. 4. Where no more than one urinal is provided in a toilet room or bathing room, the urinal is not required to be accessible. 5. Toilet rooms that are part of critical care or intensive care patient sleeping rooms are not required to be accessible. 6. Where toilet facilities are primarily for children's use, required accessible water closets, toilet compartments and lavatories shall be permitted to comply with the children's provisions of ICC A117.1.
	1109.3 Sinks.	Where sinks are provided, at least 5 percent but not less than one provided in accessible spaces shall be accessible. Exception: Mop or service sinks are not required to be accessible.
	1109.7 Elevators.	Passenger elevators on an accessible route shall be accessible and comply with Chapter 30.
	1109.9 Storage.	Where fixed or built-in storage elements such as cabinets, coat hooks, shelves, medicine cabinets, lockers, closets and drawers are provided in required accessible spaces, at least 5 percent, but not less than one of each type shall be accessible.
	1109.9.1 Equity.	Accessible facilities and spaces shall be provided with the same storage elements as provided in the similar nonaccessible facilities and spaces.
	1109.11 Seating at tables, counters and work surfaces.	Where seating or standing space at fixed or built-in tables, counters or work surfaces is provided in accessible spaces, at least 5 percent of the seating and standing spaces, but not less than one, shall be accessible. Exceptions: 1. Check-writing surfaces at check-out aisles not required to comply with Section 1109.11.2 are not required to be accessible.
	1109.11.1 Dispersion.	Accessible fixed or built-in seating at tables, counters or work surfaces shall be distributed throughout the space or facility containing such elements and located on a level accessed by an accessible route.
	1109.13 Controls, operating mechanisms and hardware.	Controls, operating mechanisms and hardware intended for operation by the occupant, including switches that control lighting and ventilation and electrical convenience outlets, in accessible spaces, along accessible routes or as parts of accessible elements shall be accessible. Exceptions: 1. Operable parts that are intended for use only by service or maintenance personnel shall not be required to be accessible. 2. Electrical or communication receptacles serving a dedicated use shall not be required to be accessible. 3. Where two or more outlets are provided in a kitchen above a length of counter top that is uninterrupted by a sink or appliance, one outlet shall not be required to be accessible. 4. Floor electrical receptacles shall not be required to be accessible. 5. HVAC diffusers shall not be required to be accessible. 6. Except for light switches, where redundant controls are provided for a single element, one control in each space shall not be required to be accessible. 7. Access doors or gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (1370 mm) maximum and 48 inches minimum above the finished floor or ground, provided the self-latching devices are not also self-locking devices, operated by means of a key, electronic opener, or integral combination lock.

	1109.13.1 Operable window.	Where operable windows are provided in rooms that are required to be accessible in accordance with Sections 1107.5.1.1, 1107.5.2.1, 1107.5.3.1, 1107.5.4, 1107.6.1.1, 1107.6.2.1.1, 1107.6.2.2.1 and 1107.6.4.1, at least one window in each room shall be accessible and each required operable window shall be accessible. Exception: Accessible windows are not required in bathrooms and kitchens.
	Signage	
	1110.1 Signs.	Required accessible elements shall be identified by the International Symbol of Accessibility at the following locations: 1. Accessible parking spaces required by Section 1106.1 except where the total number of parking spaces provided is four or less. 2. Accessible passenger loading zones. 3. Accessible rooms where multiple single-user toilet or bathing rooms are clustered at a single location. 4. Accessible entrances where not all entrances are accessible. 5. Accessible check-out aisles where not all aisles are accessible. The sign, where provided, shall be above the check-out aisle in the same location as the check-out aisle number or type of check-out identification. 6. Family or assisted-use toilet and bathing rooms. 7. Accessible dressing, fitting and locker rooms where not all such rooms are accessible. 8. Accessible areas of refuge in accordance with Section 1007.9. 9. Exterior areas for assisted rescue in accordance with Section 1007.9.
	1110.2 Directional signage.	Directional signage indicating the route to the nearest like accessible element shall be provided at the following locations. These directional signs shall include the International Symbol of Accessibility: 1. Inaccessible building entrances. 2. Inaccessible public toilets and bathing facilities. 3. Elevators not serving an accessible route. 4. At each separate-sex toilet and bathing room indicating the location of the nearest family or assisted-use toilet or bathing room where provided in accordance with Section 1109.2.1. 5. At exits and exit stairways serving a required accessible space, but not providing an approved accessible means of egress, signage shall be provided in accordance with Section 1007.10.
	1110.3 Other signs.	Signage indicating special accessibility provisions shall be provided as shown: 1. Each assembly area required to comply with Section 1108.2.7 shall provide a sign notifying patrons of the availability of assistive listening systems. Exception: Where ticket offices or windows are provided, signs are not required at each assembly area provided that signs are displayed at each ticket office or window informing patrons of the availability of assistive listening systems. 2. At each door to an area of refuge, an exterior area for assisted rescue, an egress stairway, exit passageway and exit discharge, signage shall be provided in accordance with Section 1011.4. 3. At areas of refuge, signage shall be provided in accordance with Section 1007.11. 4. At exterior areas for assisted rescue, signage shall be provided in accordance with Section 1007.11. 5. At two-way communication systems, signage shall be provided in accordance with Section 1007.8.2. 6. Within interior exit stairways and ramps, signage shall be provided in accordance with Section 1022.9.
8.0 BUILDING SYSTEMS (Lighting, HVAC, Elevators)		
	Chapter/Section	**Description**
	Ventilation	
	1203.4 Natural ventilation.	Natural ventilation of an occupied space shall be through windows, doors, louvers or other openings to the outdoors. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants.

	1203.4.1 Ventilation area required.	The openable area of the openings to the outdoors shall be not less than 4 percent of the floor area being ventilated.
	1203.4.2.1 Bathrooms.	Rooms containing bathtubs, showers, spas and similar bathing fixtures shall be mechanically ventilated in accordance with the International Mechanical Code.
	Temperature Control	
	1204.1 Equipment and systems.	Interior spaces intended for human occupancy shall be provided with active or passive space-heating systems capable of maintaining an indoor temperature of not less than 68°F (20°C) at a point 3 feet (914 mm) above the floor on the design heating day. Exception: Space heating systems are not required for interior spaces where the primary purpose of the space is not associated with human comfort.
	Lighting	
	1205.1 General.	Every space intended for human occupancy shall be provided with natural light by means of exterior glazed openings in accordance with Section 1205.2 or shall be provided with artificial light in accordance with Section 1205.3. Exterior glazed openings shall open directly onto a public way or onto a yard or court in accordance with Section 1206.
	1205.2 Natural light.	The minimum net glazed area shall be not less than 8 percent of the floor area of the room served.
	1205.3 Artificial light.	Artificial light shall be provided that is adequate to provide an average illumination of 10 footcandles (107 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.
	1205.4 Stairway illumination.	Stairways within dwelling units and exterior stairways serving a dwelling unit shall have an illumination level on tread runs of not less than 1 footcandle (11 lux). Stairs in other occupancies shall be governed by Chapter 10.
	1205.4.1 Controls.	The control for activation of the required stairway lighting shall be in accordance with NFPA 70.
	1205.5 Emergency egress lighting.	The means of egress shall be illuminated in accordance with Section 1006.1.
	Sound Transmission	
	1207.2 Air-borne sound.	Walls, partitions and floor/ceiling assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to dwelling unit entrance doors; however, such doors shall be tight fitting to the frame and sill.
	1207.3 Structure-borne sound.	Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area within the structure shall have an impact insulation class (IIC) rating of not less than 50 (45 if field tested) when tested in accordance with ASTM E 492.
	Hoistway Enclosures	
	3002.3 Emergency signs.	An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN CASE OF FIRE, ELEVATORS ARE OUT OF SERVICE. USE EXIT STAIRS. Exceptions: 1. The emergency sign shall not be required for elevators that are part of an accessible means of egress complying with Section 1007.4. 2. The emergency sign shall not be required for elevators that are used for occupant self-evacuation in accordance with Section 3008.
9.0 PLUMBING		
	Chapter/Section	**Description**
	Minimum Plumbing Facilities	
	[P] 2902.1 Minimum number of fixtures	Plumbing fixtures shall be provided for the type of occupancy and in the minimum number shown in Table 2902.1. Types of occupancies not shown in Table 2902.1 shall be considered individually by the building official. The number of occupants shall be determined by this code. Occupancy classification shall be determined in accordance with Chapter 3.
	[P] 2902.2 Separate facilities	Where plumbing fixtures are required, separate facilities shall be provided for each sex.

	[P] 2902.3 Employee and public toilet facilities.	Customers, patrons and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public utilization. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 2902.1 for all users. Employees shall be provided with toilet facilities in all occupancies. Employee toilet facilities shall either be separate or combined employee and public toilet facilities.
	[P] 2902.4 Signage.	Required public facilities shall be designated by a legible sign for each sex. Signs shall be readily visible and located near the entrance to each toilet facility. Signs for accessible toilet facilities shall comply with Section 1110.
	[P] 2902.5 Drinking fountain location.	Drinking fountains shall not be required to be located in individual tenant spaces provided that public drinking fountains are located within a travel distance of 500 feet of the most remote location in the tenant space and not more than one story above or below the tenant space. Where the tenant space is in a covered or open mall, such distance shall not exceed 300 feet. Drinking fountains shall be located on an accessible route.

CALCULATING PLUMBING FIXTURES

Fixture Type	Fixture Ratio	Standard Fixtures Required				Total Fixtures Required	
		Standard Fixtures		Accessible Fixtures			
		Male	Female	Male	Female	Male	Female
☒ Water Closet	1 per 75 male 1 per 75 female	2	2	1	1	3	3
☒ Urinal	-	-	-	-	-	1	-
☒ Lavatory	1 per 200 male 1 per 200 female	1	1	1	1	2	2
☐ Bathtub							
☐ Shower							
☒ Service Sink	1 service sink					1	
☒ Drinking Fountain	1 per 500					1	
☐ Other:							

10.0 Interior Finishes

Chapter/Section	Description
General	
801.1 Scope.	Provisions of this chapter shall govern the use of materials used as interior finishes, trim and decorative materials.
801.2 Interior wall and ceiling finish.	The provisions of Section 803 shall limit the allowable fire performance and smoke development of interior wall and ceiling finish materials based on occupancy classification.
801.3 Interior floor finish.	The provisions of Section 804 shall limit the allowable fire performance of interior floor finish materials based on occupancy classification.
[F] 801.4 Decorative materials and trim.	Decorative materials and trim shall be restricted by combustibility and the flame propagation performance criteria of NFPA 701, in accordance with Section 806.
801.6 Application.	Combustible materials shall be permitted to be used as finish for walls, ceilings, floors and other interior surfaces of buildings.

801.8 Foam plastics.	Foam plastics shall not be used as interior finish except as provided in Section 803.4. Foam plastics shall not be used as interior trim except as provided in Section 806.3 or 2604.2. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover
Wall and Ceiling Finishes	
803.1 General.	Interior wall and ceiling finish materials shall be classified for fire performance and smoke development in accordance with Section 803.1.1 or 803.1.2, except as shown in Sections 803.2 through 803.13. Materials tested in accordance with Section 803.1.2 shall not be required to be tested in accordance with Section 803.1.1.
803.1.1 Interior wall and ceiling finish materials.	Interior wall and ceiling finish materials shall be classified in accordance with ASTM E 84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes. Class A:=Flame spread index 0-25; smoke-developed index 0-450. Class B:=Flame spread index 26-75; smoke-developed index 0-450. Class C:=Flame spread index 76-200; smoke-developed index 0-450. Exception: Materials tested in accordance with Section 803.1.2.
803.1.2 Room corner test for interior wall or ceiling finish materials.	Interior wall or ceiling finish materials shall be permitted to be tested in accordance with NFPA 286. Interior wall or ceiling finish materials tested in accordance with NFPA 286 shall comply with Section 803.1.2.1.
803.1.2.1 Acceptance criteria for NFPA 286.	The interior finish shall comply with the following: 1. During the 40 kW exposure, flames shall not spread to the ceiling. 2. The flame shall not spread to the outer extremity of the sample on any wall or ceiling. 3. Flashover, as defined in NFPA 286, shall not occur. 4. The peak heat release rate throughout the test shall not exceed 800 kW. 5. The total smoke released throughout the test shall not exceed 1,000 m2.
803.2 Thickness exemption.	Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls or ceilings shall not be required to be tested.
803.4 Foam plastics.	Foam plastics shall not be used as interior finish except as provided in Section 2603.10. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.
803.9 Interior finish requirements based on group.	803.9 Interior finish requirements based on group. Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.9 for the group and location designated. Interior wall and ceiling finish materials tested in accordance with NFPA 286 and meeting the acceptance criteria of Section 803.1.2.1, shall be permitted to be used where a Class A classification in accordance with ASTM E 84 or UL 723 is required. b. In other than Group I-2 occupancies in buildings less than three stories above grade plane of other than Group I-3, Class B interior finish for nonsprinklered buildings and Class C interior finish for sprinklered buildings shall be permitted in interior exit stairways and ramps.
803.10 Stability.	Interior finish materials regulated by this chapter shall be applied or otherwise fastened in such a manner that such materials will not readily become detached where subjected to room temperatures of 200°F (93°C) for not less than 30 minutes.
803.11 Application of interior finish materials to fire-resistance-rated or noncombustible building elements.	Where interior finish materials are applied on walls, ceilings or structural elements required to have a fire-resistance rating or to be of noncombustible construction, they shall comply with the provisions of this section.
803.11.1 Direct attachment and furred construction.	Where walls and ceilings are required by any provision in this code to be of fire-resistance-rated or noncombustible construction, the interior finish material shall be applied directly against such construction or to furring strips not exceeding 13/4 inches (44 mm), applied directly against such surfaces.

803.11.2 Set-out construction.	Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.11.1, Class A finish materials, in accordance with Section 803.1.1 or 803.1.2, shall be used. Exceptions: 1. Where interior finish materials are protected on both sides by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. 2. Where interior finish materials are attached to noncombustible backing or furring strips installed as specified in Section 803.11.1.1.
803.11.2.1 Hangers and assembly members.	The hangers and assembly members of such dropped ceilings that are below the horizontal fire-resistance rated floor or roof assemblies shall be of noncombustible materials. The construction of each set-out wall and horizontal fire-resistance rated floor or roof assembly shall be of fire-resistance-rated construction as required elsewhere in this code. Exception: In Types III and V construction, fire-retardant-treated wood shall be permitted for use as hangers and assembly members of dropped ceilings.
803.11.4 Materials.	An interior wall or ceiling finish material that is not more than 1/4 inch (6.4 mm) thick shall be applied directly onto the wall, ceiling or structural element without the use of furring strips and shall not be suspended away from the building element to which it is applied. Exceptions: 1. Noncombustible interior finish materials. 2. Materials that meet the requirements of Class A materials in accordance with Section 803.1.1 or 803.1.2 where the qualifying tests were made with the material furred out from the noncombustible backing shall be permitted to be used with furring strips. 3. Materials that meet the requirements of Class A materials in accordance with Section 803.1.1 or 803.1.2 where the qualifying tests were made with the material suspended away from the noncombustible backing shall be permitted to be used suspended away from the building element.
Interior Floor Finish	
804.1 General.	Interior floor finish and floor covering materials shall comply with Sections 804.2 through 804.4.2. Exception: Floor finishes and coverings of a traditional type, such as wood, vinyl, linoleum or terrazzo, and resilient floor covering materials that are not comprised of fibers.
804.2 Classification.	Interior floor finish and floor covering materials required by Section 804.4.2 to be of Class I or II materials shall be classified in accordance with NFPA 253. The classification referred to herein corresponds to the classifications determined by NFPA 253 as follows: Class I, 0.45 watts/cm2 or greater; Class II, 0.22 watts/cm2 or greater.
804.3 Testing and identification.	Interior floor finish and floor covering materials shall be tested by an agency in accordance with NFPA 253 and identified by a hang tag or other suitable method so as to identify the manufacturer or supplier and style, and shall indicate the interior floor finish or floor covering classification according to Section 804.2. Carpet-type floor coverings shall be tested as proposed for use, including underlayment. Test reports confirming the information provided in the manufacturer's product identification shall be furnished to the building official upon request.
804.4 Interior floor finish requirements.	Interior floor covering materials shall comply with Sections 804.4.1 and 804.4.2 and interior floor finish materials shall comply with Section 804.4.2.
804.4.1 Test requirement.	In all occupancies, interior floor covering materials shall comply with the requirements of the DOC FF-1 "pill test" (CPSC 16 CFR Part 1630) or with ASTM D 2859.
804.4.2 Minimum critical radiant flux.	In all occupancies, interior floor finish and floor covering materials in enclosures for stairways and ramps, exit passageways, corridors and rooms or spaces not separated from corridors by partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux. The minimum critical radiant flux shall not be less than Class I in Groups I-1, I-2 and I-3 and not less than Class II in Groups A, B, E, H, I-4, M, R-1, R-2 and S. Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials are permitted in any area where Class I materials are required, and materials complying with DOC FF-1 "pill test" (CPSC 16 CFR Part 1630) or with ASTM D 2859 are permitted in any area where Class II materials are required.
Decorative Materials and Trim	
[F] 806.1 General requirements.	In occupancies in Groups A, E, I and R-1 and dormitories in Group R-2, curtains, draperies, hangings and other decorative materials suspended from walls or ceilings shall meet the flame propagation performance criteria of NFPA 701 in accordance with Section 806.2 or be noncombustible. Exceptions: 1. Curtains, draperies, hangings and other decorative materials suspended from walls of sleeping units and dwelling units in dormitories in Group R-2 protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1 and such materials are limited to not more than 50 percent of the aggregate area of walls. 2. Decorative materials, including, but not limited to, photographs and paintings in dormitories in Group R-2 where such materials are of limited quantities such that a hazard of fire development or spread is not present.

	In Groups I-1 and I-2, combustible decorative materials shall meet the flame propagation criteria of NFPA 701 unless the decorative materials, including, but not limited to, photographs and paintings, are of such limited quantities that a hazard of fire development or spread is not present. In Group I-3, combustible decorative materials are prohibited. Fixed or movable walls and partitions, paneling, wall pads and crash pads applied structurally or for decoration, acoustical correction, surface insulation or other purposes shall be considered interior finish if they cover 10 percent or more of the wall or of the ceiling area, and shall not be considered decorative materials or furnishings. In Group B and M occupancies, fabric partitions suspended from the ceiling and not supported by the floor shall meet the flame propagation performance criteria in accordance with Section 806.2 and NFPA 701 or shall be noncombustible.
[F] 806.1.1 Noncombustible materials.	The permissible amount of noncombustible decorative material shall not be limited.
[F] 806.1.2 Combustible decorative materials.	The permissible amount of decorative materials meeting the flame propagation performance criteria of NFPA 701 shall not exceed 10 percent of the specific wall or ceiling area to which it is attached. Exceptions: 1. In auditoriums in Group A, the permissible amount of decorative material meeting the flame propagation performance criteria of NFPA 701 shall not exceed 75 percent of the aggregate wall area where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and where the material is installed in accordance with Section 803.11. 2. The amount of fabric partitions suspended from the ceiling and not supported by the floor in Group B and M occupancies shall not be limited.
[F] 806.2 Acceptance criteria and reports.	Where required by Section 806.1, decorative materials shall be tested by an agency and meet the flame propagation performance criteria of NFPA 701 or such materials shall be noncombustible. Reports of test results shall be prepared in accordance with NFPA 701 and furnished to the building official upon request.
[F] 806.3 Foam plastic.	Foam plastic used as trim in any occupancy shall comply with 2604.2.
[F] 806.4 Pyroxylin plastic.	Imitation leather or other material consisting of or coated with a pyroxylin or similarly hazardous base shall not be used in Group A occupancies.
[F] 806.5 Interior trim.	Material, other than foam plastic used as interior trim, shall have a minimum Class C flame spread and smoke-developed index when tested in accordance with ASTM E 84 or UL 723, as described in Section 803.1.1. Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the specific wall or ceiling area in which it is attached.
[F] 806.6 Interior floor-wall base.	Interior floor-wall base that is 6 inches (152 mm) or less in height shall be tested in accordance with Section 804.2 and shall not be less than Class II. Where a Class I floor finish is required, the floor-wall base shall be Class I. Exception: Interior trim materials that comply with Section 806.5.
Insulation	
807.1 Insulation.	Thermal and acoustical insulation shall comply with Section 720.
Acoustical Ceiling Systems	
808.1 Acoustical ceiling systems.	The quality, design, fabrication and erection of metal suspension systems for acoustical tile and lay-in panel ceilings in buildings or structures shall conform with generally accepted engineering practice, the provisions of this chapter and other applicable requirements of this code.
808.1.1 Materials and installation.	Acoustical materials complying with the interior finish requirements of Section 803 shall be installed in accordance with the manufacturer's recommendations and applicable provisions for applying interior finish.
808.1.1.2 Fire-resistance-rated construction.	Acoustical ceiling systems that are part of fire-resistance-rated construction shall be installed in the same manner used in the assembly tested and shall comply with the provisions of Chapter 7.
11.0 Other	
Chapter/Section	**Description**
Toilet and Bathroom Requirements	
[P] 1210.1 Required fixtures.	The number and type of plumbing fixtures provided in any occupancy shall comply with Chapter 29.
1210.2 Finish materials.	Walls, floors and partitions in toilet and bathrooms shall comply with Sections 1210.2.1 through 1210.2.4.

1210.2.1 Floors and wall bases.	In other than dwelling units, toilet, bathing and shower room floor finish materials shall have a smooth, hard, nonabsorbent surface. The intersections of such floors with walls shall have a smooth, hard, nonabsorbent vertical base that extends upward onto the walls not less than 4 inches (102 mm).
1210.2.3 Showers.	Shower compartments and walls above bathtubs with installed shower heads shall be finished with a smooth, nonabsorbent surface to a height not less than 70 inches (1778 mm) above the drain inlet.
1210.4 Toilet room location.	Toilet rooms shall not open directly into a room used for the preparation of food for service to the public.
Interior Space Dimensions	
1208.1 Minimum room widths.	Habitable spaces, other than a kitchen, shall be not less than 7 feet (2134 mm) in any plan dimension. Kitchens shall have a clear passageway of not less than 3 feet (914 mm) between counter fronts and appliances or counter fronts and walls.
1208.2 Minimum ceiling heights.	Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall be permitted to have a ceiling height of not less than 7 feet (2134 mm). Exceptions: 1. In one- and two-family dwellings, beams or girders spaced not less than 4 feet (1219 mm) on center shall be permitted to project not more than 6 inches (152 mm) below the required ceiling height. 2. If any room in a building has a sloped ceiling, the prescribed ceiling height for the room is required in one-half the area thereof. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the ceiling shall not be included in any computation of the minimum area thereof. 3. The height of mezzanines and spaces below mezzanines shall be in accordance with Section 505.1.

Code Analysis Report

Date: 12/1/15

PROJECT INFORMATION		
Project Address/Location	**145 Kent Street** **Brooklyn, New York**	
Project Description	**Residential Units**	
Project Type	☐ New Building ☒ Existing Building	
Square Footage	Building: 60,000 Square Feet Floor(s): 12,000	
Building Construction	Foundation: Concrete Building Frame: Hollow frame steel Exterior Walls: Concrete Masonry Roof: Concrete and Zinc panels Other: Type III A	
CODE PUBLICATIONS REQUIRED for PROJECT – Codes & Regulations		**YEAR OF PUBLICATION**
Building Code	☐ IBC ☐ NFPA 5000 ☒ Other:	**IRC 2012**
Performance Code	☐ ICCPC ☒ NFPA ☐ Other:	
Fire Code	☒ IFC ☐ UFC ☐ Other:	
Life Safety Code	Life Safety Code (NFPA 101)	
Plumbing Code	☒ IPC ☐ UPC ☐ Other:	
Mechanical Code	☐ IMC ☒ UMC ☐ Other:	
Electrical Code	☐ ICCEC ☒ NEC ☐ Other:	
Energy Code	☐ ICCEC ☒ NFPA 9000 ☐ Other:	
Accessibility Regulations & Standards	☐ ADA Guidelines ☐ Fair Housing Act *(residential)* ☐ ICC/ANSI A117.1: Accessible and Usable Buildings and Facilities ☐ Other:	
Additional Codes for Jurisdiction	*[List here]*	

1.0 ADMINISTRATION and DEFINITIONS

	Chapter/Section	Description
	R101.1 Title.	These provisions shall be known as the *Residential Code for One- and Two-family Dwellings* of **New York City,** and shall be cited as such and will be referred to herein as "this code."
	R101.2 Scope.	The provisions of the *International Residential Code for One- and Two-family Dwellings* shall apply to the construction, *alteration,* movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above *grade plane* in height with a separate means of egress and their *accessory structures.*
	R102.7 Existing structures.	The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the *International Property Maintenance Code* or the *International Fire Code,* or as is deemed necessary by the *building official* for the general safety and welfare of the occupants and the public.
	R102.7.1 Additions, alterations or repairs.	*Additions, alterations* or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with all of the requirements of this code, unless otherwise stated. *Additions, alterations* or repairs shall not cause an existing structure to become unsafe or adversely affect the performance of the building.
	R202 ACCESSIBLE.	Signifies access that requires the removal of an access panel or similar removable obstruction.
	R202 ACCESSIBLE, READILY.	Signifies access without the necessity for removing a panel or similar obstruction.
	R202 ADHERED STONE OR MASONRY VENEER	Stone or masonry veneer secured and supported through the adhesion of an *approved* bonding material applied to an *approved* backing.
	R202 AIR-CONDITIONING SYSTEM	A system that consists of heat exchangers, blowers, filters, supply, exhaust and return-air systems, and shall include any apparatus installed in connection therewith.
	BATHROOM GROUP.	A group of fixtures, including or excluding a bidet, consisting of a water closet, lavatory, and bathtub or shower. Such fixtures are located together on the same floor level.
	BUILDING	Building shall mean any one- and two-family dwelling or portion thereof, including *townhouses*, that is used, or designed or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, and shall include accessory structures thereto.
	CEILING HEIGHT.	The clear vertical distance from the finished floor to the finished ceiling.
	CLOSET.	A small room or chamber used for storage.
	CONDITIONED AIR.	Air treated to control its temperature, relative humidity or quality.
	CONDITIONED AREA	That area within a building provided with heating and/or cooling systems or *appliances* capable of maintaining, through design or heat loss/gain, 68°F (20°C) during the heating season and/or 80°F (27°C) during the cooling season, or has a fixed opening directly adjacent to a conditioned area.
	CONDITIONED FLOOR AREA.	The horizontal projection of the floors associated with the *conditioned space*.
	CONDITIONED SPACE.	For energy purposes, space within a building that is provided with heating and/or cooling *equipment* or systems capable of maintaining, through design or heat loss/gain, 50°F (10°C) during the heating season and 85°F (29°C) during the cooling season, or communicates directly with a *conditioned space*. For mechanical purposes, an area, room or space being heated or cooled by any *equipment* or *appliance*.
	CONSTRUCTION DOCUMENTS	Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building *permit*. Construction drawings shall be drawn to an appropriate scale.
	CONVECTOR	A system-incorporating heating element in an enclosure in which air enters an opening below the heating element, is heated and leaves the enclosure through an opening located above the heating element.
	DEAD LOADS.	The weight of all materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding, and other similarly incorporated architectural and structural items, and fixed service *equipment*.
	DRAFT HOOD.	A device built into an *appliance*, or a part of the vent connector from an *appliance*, which is designed to provide for the ready escape of the flue gases from the *appliance* in the event of no draft, backdraft or stoppage beyond the draft hood; prevent a backdraft from entering the *appliance;* and neutralize the effect of stack action of the chimney or gas vent on the operation of the *appliance*.

	DWELLING	Any building that contains one or two *dwelling units* used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.
	DWELLING UNIT.	A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation
	EMERGENCY ESCAPE AND RESCUE OPENING.	An operable exterior window, door or similar device that provides for a means of escape and access for rescue in the event of an emergency.
	EXTERIOR WALL.	An above-*grade* wall that defines the exterior boundaries of a building. Includes between-floor spandrels, peripheral edges of floors, roof and *basement* knee walls, dormer walls, gable end walls, walls enclosing a mansard roof and *basement walls* with an average below-*grade* wall area that is less than 50 percent of the total opaque and nonopaque area of that enclosing side.
	FENESTRATION.	Skylights, roof windows, vertical windows (whether fixed or moveable); opaque doors; glazed doors; glass block; and combination opaque/glazed doors. For definition applicable in Chapter 11, see Section N1101.9
	FIREPLACE	An assembly consisting of a hearth and fire chamber of noncombustible material and provided with a chimney, for use with solid fuels.
	Factory-built fireplace.	A *listed* and *labeled* fireplace and chimney system composed of factory-made components, and assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.
	GRADE FLOOR OPENING	A window or other opening located such that the sill height of the opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.
	HABITABLE SPACE.	A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered *habitable spaces*.
	HANDRAIL.	A horizontal or sloping rail intended for grasping by the hand for guidance or support.
	HEAT PUMP.	An *appliance* having heating or heating/cooling capability and that uses refrigerants to extract heat from air, liquid or other sources.
	HEIGHT, BUILDING	The vertical distance from *grade plane* to the average height of the highest roof surface.
	HEIGHT, STORY	The vertical distance from top to top of two successive tiers of beams or finished floor surfaces; and, for the topmost *story*, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters
	KITCHEN.	Kitchen shall mean an area used, or designated to be used, for the preparation of food.
	LIVE LOADS	Those loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.
	LIVING SPACE	Space within a *dwelling unit* utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes.
	OCCUPIED SPACE	The total area of all buildings or structures on any *lot* or parcel of ground projected on a horizontal plane, excluding permitted projections as allowed by this code.
	OWNER	Any person, agent, firm or corporation having a legal or equitable interest in the property.
	PERSON	An individual, heirs, executors, administrators or assigns, and also includes a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.
	PLENUM	A chamber that forms part of an air-circulation system other than the *occupied space* being conditioned.
	PLUMBING	For the purpose of this code, plumbing refers to those installations, repairs, maintenance and *alterations* regulated by Chapters 25 through 33
	PLUMBING APPLIANCE.	An energized household *appliance* with plumbing connections, such as a dishwasher, food-waste grinder, clothes washer or water heater.
	PLUMBING FIXTURE	A receptacle or device that is connected to a water supply system or discharges to a drainage system or both. Such receptacles or devices require a supply of water; or discharge liquid waste or liquid-borne solid waste; or require a supply of water and discharge waste to a drainage system.
	PUBLIC WAY.	Any street, alley or other parcel of land open to the outside air leading to a public street, which has been deeded, dedicated or otherwise permanently appropriated to the public for public use and that has a clear width and height of not less than 10 feet (3048 mm).
	RISER.	1. The vertical component of a *step* or *stair*. 2. A water pipe that extends vertically one full *story* or more to convey water to branches or to a group of fixtures.
	SLEEPING UNIT	See Section N1101.9 for definition applicable in Chapter 11.
	STAIR.	A change in elevation, consisting of one or more risers.
	STAIRWAY	One or more flights of stairs, either interior or exterior, with the necessary landings and platforms connecting them to form a continuous and uninterrupted passage from one level to another within or attached to a building, porch or deck.

	STORY	That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above.
	STRUCTURE	That which is built or constructed.
	VENT	**.** A passageway for conveying flue gases from fuel-fired *appliances*, or their vent connectors, to the outside atmosphere.
	VENTILATION	The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space. For definition applicable in Chapter 11, see Section N1101.9.
	VENTING SYSTEM.	A continuous open passageway from the flue collar of an *appliance* to the outside atmosphere for the purpose of removing flue or vent gases. A venting system is usually composed of a vent or a chimney and vent connector, if used, assembled to form the open passageway.
	WALL, RETAINING.	A wall not laterally supported at the top, that resists lateral soil load and other imposed loads.
	Load-bearing wall.	A wall supporting any vertical load in addition to its own weight.
	Nonbearing wall.	A wall which does not support vertical loads other than its own weight.
	WASTE PIPE OR STACK.	Piping that conveys only liquid sewage not containing fecal material.
	WATER HEATER.	Any heating *appliance* or *equipment* that heats potable water and supplies such water to the potable hot water distribution system.

2.0 USE and OCCUPANCY CLASSIFICATION

	Chapter/Section	Description
	R110.1 Use and occupancy	No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. Exceptions: 1. Certificates of occupancy are not required for work exempt from permits under Section R105.2. 2. Accessory buildings or structures.
	R110.2 Change in use	Changes in the character or use of an existing structure shall not be made except as specified in Sections 3408 and 3409 of the International Building Code.
	R110.3 Certificate issued	After the building official inspects the building or structure and finds no violations of the provisions of this code or other laws that are enforced by the department of building safety, the building official shall issue a certificate of occupancy which shall contain the following: 1. The building permit number. 2. The address of the structure. 3. The name and address of the owner. 4. A description of that portion of the structure for which the certificate is issued. 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code. 6. The name of the building official. 7. The edition of the code under which the permit was issued. 8. If an automatic sprinkler system is provided and whether the sprinkler system is required. 9. Any special stipulations and conditions of the building permit.

3.0 SPECIAL REQUIREMENTS FOR SPECIFIC OCCUPANCIES OR ELEMENTS

	Chapter/Section	Description
	R303.1 Habitable rooms	All habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, doors, louvers or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated. Exceptions: 1. The glazed areas need not be openable where the opening is not required by Section R310 and a whole-house mechanical ventilation system is installed in accordance with Section M1507. 2. The glazed areas need not be installed in rooms where Exception 1 above is satisfied and artificial light is provided capable of producing an average illumination of 6 footcandles (65 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level. 3. Use of sunroom and patio covers, as defined in Section R202, shall be permitted for natural ventilation if in excess of 40 percent of the exterior sunroom walls are open, or are enclosed only by insect screening.
	R303.2 Adjoining rooms	For the purpose of determining light and ventilation requirements, any room shall be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room but not less than 25 square feet (2.3 m2).

		Exception: Openings required for light and/or ventilation shall be permitted to open into a sunroom with thermal isolation or a patio cover, provided that there is an openable area between the adjoining room and the sunroom or patio cover of not less than one-tenth of the floor area of the interior room but not less than 20 square feet (2 m2). The minimum openable area to the outdoors shall be based upon the total floor area being ventilated.
	R303.3 Bathrooms	Bathrooms, water closet compartments and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 square feet (0.3 m2), one-half of which must be openable. Exception: The glazed areas shall not be required where artificial light and a local exhaust system are provided. The minimum local exhaust rates shall be determined in accordance with Section M1507. Exhaust air from the space shall be exhausted directly to the outdoors.
	R303.5.1 Intake openings	Mechanical and gravity outdoor air intake openings shall be located a minimum of 10 feet (3048 mm) from any hazardous or noxious contaminant, such as vents, chimneys, plumbing vents, streets, alleys, parking lots and loading docks, except as otherwise specified in this code. Where a source of contaminant is located within 10 feet (3048 mm) of an intake opening, such opening shall be located a minimum of 3 feet (914 mm) below the contaminant source. For the purpose of this section, the exhaust from dwelling unit toilet rooms, bathrooms and kitchens shall not be considered as hazardous or noxious.
	R303.7 Stairway illumination	All interior and exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Interior stairways shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway. For interior stairs the artificial light sources shall be capable of illuminating treads and landings to levels not less than 1 foot-candle (11 lux) measured at the center of treads and landings. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Exterior stairways providing access to a basement from the outside grade level shall be provided with an artificial light source located in the immediate vicinity of the bottom landing of the stairway. Exception: An artificial light source is not required at the top and bottom landing, provided an artificial light source is located directly over each stairway section.
	R303.8 Required glazed openings	Required glazed openings shall open directly onto a street or public alley, or a yard or court located on the same lot as the building. Exceptions: 1. Required glazed openings may face into a roofed porch where the porch abuts a street, yard or court and the longer side of the porch is at least 65 percent unobstructed and the ceiling height is not less than 7 feet (2134 mm). 2. Eave projections shall not be considered as obstructing the clear open space of a yard or court. 3. Required glazed openings may face into the area under a deck, balcony, bay or floor cantilever provided a clear vertical space at least 36 inches (914 mm) in height is provided.
	R303.9 Required heating	When the winter design temperature in Table R301.2(1) is below 60°F (16°C), every dwelling unit shall be provided with heating facilities capable of maintaining a minimum room temperature of 68°F (20°C) at a point 3 feet (914 mm) above the floor and 2 feet (610 mm) from exterior walls in all habitable rooms at the design temperature. The installation of one or more portable space heaters shall not be used to achieve compliance with this section.
	R306.1 Toilet facilities	Every dwelling unit shall be provided with a water closet, lavatory, and a bathtub or shower.
	R306.2 Kitchen	Each dwelling unit shall be provided with a kitchen area and every kitchen area shall be provided with a sink.
	R306.3 Sewage disposal	All plumbing fixtures shall be connected to a sanitary sewer or to an approved private sewage disposal system
	R306.4 Water supply to fixtures	All plumbing fixtures shall be connected to an approved water supply. Kitchen sinks, lavatories, bathtubs, showers, bidets, laundry tubs and washing machine outlets shall be provided with hot and cold water.
	R307.1 Space required	Fixtures shall be spaced in accordance with Figure R307.1, and in accordance with the requirements of Section P2705.1.
	P2705.1 General	The installation of fixtures shall conform to the following: 1. Floor-outlet or floor-mounted fixtures shall be secured to the drainage connection and to the floor, where so designed, by screws, bolts, washers, nuts and similar fasteners of copper, brass or other corrosion-resistant material. 2. Wall-hung fixtures shall be rigidly supported so that strain is not transmitted to the plumbing system. 3. Where fixtures come in contact with walls and floors, the contact area shall be water tight. 4. Plumbing fixtures shall be usable. 5. Water closets, lavatories and bidets. A water closet, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition or vanity or closer than 30 inches (762 mm) center-to-center between adjacent fixtures. There shall be a clearance of not less than 21 inches (533 mm) in front of a water closet, lavatory or bidet to any wall, fixture or door. 6. The location of piping, fixtures or equipment shall not interfere with the operation of windows or doors. 7. In flood hazard areas as established by Table R301.2(1), plumbing fixtures shall be located or installed in accordance with Section R322.1.7. 8. Integral fixture-fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site, shall meet the design requirements of ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.1.
	R307.2 Bathtub and shower spaces	Bathtub and shower floors and walls above bathtubs with installed shower heads and in shower compartments shall be finished with a nonabsorbent surface. Such wall surfaces shall extend to a height of not less than 6 feet (1829 mm) above the floor.
	R1001.1 General	Masonry fireplaces shall be constructed in accordance with this section and the applicable provisions of Chapters 3 and 4.
	R1001.5 Firebox walls	Masonry fireboxes shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. When a lining of firebrick at least 2 inches (51 mm) thick or other approved lining is provided, the minimum thickness of back and side walls shall each be 8 inches (203 mm) of solid masonry, including the lining. The width of joints between firebricks shall not be greater than 1/4 inch (6 mm). When no lining is provided, the total minimum thickness of back and side walls shall be 10 inches (254 mm) of solid masonry. Firebrick shall conform to ASTM C 27 or C 1261 and shall be laid with medium duty refractory mortar conforming to ASTM C 199.
	R1001.6 Firebox dimensions	The firebox of a concrete or masonry fireplace shall have a minimum depth of 20 inches (508 mm). The throat shall not be less than 8 inches (203 mm) above the fireplace opening. The throat opening shall not be less than 4 inches (102 mm) deep. The cross-sectional area of the passageway above the firebox, including the throat, damper and smoke chamber, shall not be less than the cross-sectional area of the flue. Exception: Rumford fireplaces shall be permitted provided that the depth of the fireplace is at least 12 inches (305 mm) and at least one-third of the width of the fireplace opening, that the throat is at least 12 inches (305 mm) above the lintel and is at least 1/20 the cross-sectional area of the fireplace opening.

	R1001.7 Lintel and throat	Masonry over a fireplace opening shall be supported by a lintel of noncombustible material. The minimum required bearing length on each end of the fireplace opening shall be 4 inches (102 mm). The fireplace throat or damper shall be located a minimum of 8 inches (203 mm) above the lintel.
	R1001.8 Smoke chamber	Smoke chamber walls shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. The total minimum thickness of front, back and side walls shall be 8 inches (203 mm) of solid masonry. The inside surface shall be parged smooth with refractory mortar conforming to ASTM C 199. When a lining of firebrick at least 2 inches (51 mm) thick, or a lining of vitrified clay at least 5/8 inch (16 mm) thick, is provided, the total minimum thickness of front, back and side walls shall be 6 inches (152 mm) of solid masonry, including the lining. Firebrick shall conform to ASTM C 1261 and shall be laid with medium duty refractory mortar conforming to ASTM C 199. Vitrified clay linings shall conform to ASTM C 315.
	R1001.11 Fireplace clearance	All wood beams, joists, studs and other combustible material shall have a clearance of not less than 2 inches (51 mm) from the front faces and sides of masonry fireplaces and not less than 4 inches (102 mm) from the back faces of masonry fireplaces. The air space shall not be filled, except to provide fire blocking in accordance with Section R1001.12. Exceptions: 1. Masonry fireplaces listed and labeled for use in contact with combustibles in accordance with UL 127 and installed in accordance with the manufacturer's installation instructions are permitted to have combustible material in contact with their exterior surfaces. 2. When masonry fireplaces are part of masonry or concrete walls, combustible materials shall not be in contact with the masonry or concrete walls less than 12 inches (306 mm) from the inside surface of the nearest firebox lining. 3. Exposed combustible trim and the edges of sheathing materials such as wood siding, flooring and drywall shall be permitted to abut the masonry fireplace side walls and hearth extension in accordance with Figure R1001.11, provided such combustible trim or sheathing is a minimum of 12 inches (305 mm) from the inside surface of the nearest firebox lining. 4. Exposed combustible mantels or trim may be placed directly on the masonry fireplace front surrounding the fireplace opening providing such combustible materials are not placed within 6 inches (152 mm) of a fireplace opening. Combustible material within 12 inches (306 mm) of the fireplace opening shall not project more than 1/8 inch (3 mm) for each 1-inch (25 mm) distance from such an opening.
	R1001.12 Fireplace fireblocking	Fireplace fireblocking shall comply with the provisions of Section R602.8.

4.0 HEIGHT and AREA LIMIATIONS BASED ON CONSTRUCTION TYPE

	Chapter/Section	Description
	R301.1 Application	Buildings and structures, and all parts thereof, shall be constructed to safely support all loads, including dead loads, live loads, roof loads, flood loads, snow loads, wind loads and seismic loads as prescribed by this code. The construction of buildings and structures in accordance with the provisions of this code shall result in a system that provides a complete load path that meets all requirements for the transfer of all loads from their point of origin through the load-resisting elements to the foundation. Buildings and structures constructed as prescribed by this code are deemed to comply with the requirements of this section.
	R301.2 Climatic and geographic design criteria	Buildings shall be constructed in accordance with the provisions of this code as limited by the provisions of this section. Additional criteria shall be established by the local jurisdiction and set forth in Table R301.2(1
	R301.3 Story height	The wind and seismic provisions of this code shall apply to buildings with story heights not exceeding the following: 1. For wood wall framing, the laterally unsupported bearing wall stud height permitted by Table R602.3(5) plus a height of floor framing not to exceed 16 inches (406 mm). Exception: For wood-framed wall buildings with bracing in accordance with Tables R602.10.3(1) and R602.10.3(3), the wall stud clear height used to determine the maximum permitted story height may be increased to 12 feet (3658 mm) without requiring an engineered design for the building wind and seismic force-resisting systems provided that the length of bracing required by Table R602.10.3(1) is increased by multiplying by a factor of 1.10 and the length of bracing required by Table R602.10.3(3) is increased by multiplying by a factor of 1.20. Wall studs are still subject to the requirements of this section. 2. For steel wall framing, a stud height of 10 feet (3048 mm), plus a height of floor framing not to exceed 16 inches (406 mm). 3. For masonry walls, a maximum bearing wall clear height of 12 feet (3658 mm) plus a height of floor framing not to exceed 16 inches (406 mm). Exception: An additional 8 feet (2438 mm) is permitted for gable end walls. 4. For insulating concrete form walls, the maximum bearing wall height per story as permitted by Section R611 tables plus a height of floor framing not to exceed 16 inches (406 mm). 5. For structural insulated panel (SIP) walls, the maximum bearing wall height per story as permitted by Section R613 tables shall not exceed 10 feet (3048 mm) plus a height of floor framing not to exceed 16 inches (406 mm). Individual walls or walls studs shall be permitted to exceed these limits as permitted by Chapter 6 provisions, provided story heights are not exceeded. Floor framing height shall be permitted to exceed these limits provided the story height does not exceed 11 feet 7 inches (3531 mm). An engineered design shall be provided for the wall or wall framing members when they exceed the limits of Chapter 6. Where the story height limits of this section are exceeded, the design of the building, or the noncompliant portions thereof, to resist wind and seismic loads shall be in accordance with the International Building Code.
	R301.4 Dead load	The actual weights of materials and construction shall be used for determining dead load with consideration for the dead load of fixed service equipment.
	R301.5 Live load	The minimum uniformly distributed live load shall be as provided in Table R301.5
	R301.6 Roof load	The roof shall be designed for the live load indicated in Table R301.6 or the snow load indicated in Table R301.2(1), whichever is greater
	R301.7 Deflection	The allowable deflection of any structural member under the live load listed in Sections R301.5 and R301.6 or wind loads determined by Section R301.2.1 shall not exceed the values in Table R301.7
	R301.8 Nominal sizes	For the purposes of this code, where dimensions of lumber are specified, they shall be deemed to be nominal dimensions unless specifically designated as actual dimensions.

	R304.1 Minimum area	Every dwelling unit shall have at least one habitable room that shall have not less than 120 square feet (11 m2) of gross floor area.
	R304.2 Other rooms	Other habitable rooms shall have a floor area of not less than 70 square feet (6.5 m2). Exception: Kitchens.
	R304.3 Minimum dimensions	Habitable rooms shall not be less than 7 feet (2134 mm) in any horizontal dimension. Exception: Kitchens.
	R304.4 Height effect on room area	Portions of a room with a sloping ceiling measuring less than 5 feet (1524 mm) or a furred ceiling measuring less than 7 feet (2134 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required habitable area for that room.
	R305.1 Minimum height	Habitable space, hallways, bathrooms, toilet rooms, laundry rooms and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet (2134 mm). Exceptions: 1. For rooms with sloped ceilings, at least 50 percent of the required floor area of the room must have a ceiling height of at least 7 feet (2134 mm) and no portion of the required floor area may have a ceiling height of less than 5 feet (1524 mm). 2. Bathrooms shall have a minimum ceiling height of 6 feet 8 inches (2032 mm) at the center of the front clearance area for fixtures as shown in Figure R307.1. The ceiling height above fixtures shall be such that the fixture is capable of being used for its intended purpose. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet 8 inches (2032 mm) above a minimum area 30 inches (762 mm) by 30 inches (762 mm) at the showerhead. R305.1.1 Basements. Portions of basements that do not contain habitable space, hallways, bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6 feet 8 inches (2032 mm). Exception: Beams, girders, ducts or other obstructions may project to within 6 feet 4 inches (1931 mm) of the finished floor.
5.0 FIRE RESISTANCE and PROTECTION REQUIREMENTS		
	Chapter/Section	**Description**
	R302.1 Exterior walls	Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1(2). Exceptions: 1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance. 2. Walls of dwellings and accessory structures located on the same lot. 3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line. 4. Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm). 5. Foundation vents installed in compliance with this code are permitted. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler systems installed in accordance with Section P2904, the fire separation distance for nonrated exterior walls and rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.
	R302.4 Dwelling unit rated penetrations	Penetrations of wall or floor/ceiling assemblies required to be fire-resistance rated in accordance with Section R302.2 or R302.3 shall be protected in accordance with this section
	R302.7 Under-stair protection	Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with 1/2-inch (12.7 mm) gypsum board.
	R302.9.1 Flame spread index	Wall and ceiling finishes shall have a flame spread index of not greater than 200. Exception: Flame spread index requirements for finishes shall not apply to trim defined as picture molds, chair rails, baseboards and handrails; to doors and windows or their frames; or to materials that are less than 1/28 inch (0.91 mm) in thickness cemented to the surface of walls or ceilings if these materials exhibit flame spread index values no greater than those of paper of this thickness cemented to a noncombustible backing.
	R302.10.1 Insulation	Insulation materials, including facings, such as vapor retarders and vapor-permeable membranes installed within floor/ceiling assemblies, roof/ceiling assemblies, wall assemblies, crawl spaces and attics shall have a flame spread index not to exceed 25 with an accompanying smoke-developed index not to exceed 450 when tested in accordance with ASTM E 84 or UL 723. Exceptions: 1. When such materials are installed in concealed spaces, the flame spread index and smoke-developed index limitations do not apply to the facings, provided that the facing is installed in substantial contact with the unexposed surface of the ceiling, floor or wall finish. 2. Cellulose loose-fill insulation, which is not spray applied, complying with the requirements of Section R302.10.3, shall only be required to meet the smoke-developed index of not more than 450. 3. Foam plastic insulation shall comply with Section R316.
	R302.10.5 Testing	Tests for critical radiant flux shall be made in accordance with ASTM E 970.
	R302.11 Fireblocking	In combustible construction, fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Fireblocking shall be provided in wood-frame construction in the following locations:

		1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs, as follows: 1.1. Vertically at the ceiling and floor levels. 1.2. Horizontally at intervals not exceeding 10 feet (3048 mm). 2. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings. 3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R302.7. 4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM E 136 requirements. 5. For the fireblocking of chimneys and fireplaces, see Section R1003.19. 6. Fireblocking of cornices of a two-family dwelling is required at the line of dwelling unit separation.
	R302.12 Draftstopping	In combustible construction where there is usable space both above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1,000 square feet (92.9 m2). Draftstopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draftstopping shall be provided in floor/ceiling assemblies under the following circumstances: 1. Ceiling is suspended under the floor framing. 2. Floor framing is constructed of truss-type open-web or perforated members.
	R302.13 Combustible insulation clearance	Combustible insulation shall be separated a minimum of 3 inches (76 mm) from recessed luminaires, fan motors and other heat-producing devices. Exception: Where heat-producing devices are listed for lesser clearances, combustible insulation complying with the listing requirements shall be separated in accordance with the conditions stipulated in the listing. Recessed luminaires installed in the building thermal envelope shall meet the requirements of Section N1102.4.4 of this code.
	R313.2 One- and two-family dwellings automatic fire systems	An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings. Exception: An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system.
	R314.1 Smoke detection and notification	All smoke alarms shall be listed and labeled in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72
	R314.2 Smoke detection systems	Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms. Where a household fire warning system is installed using a combination of smoke detector and audible notification device(s), it shall become a permanent fixture of the occupancy and owned by the homeowner. The system shall be monitored by an approved supervising station and be maintained in accordance with NFPA 72. Exception: Where smoke alarms are provided meeting the requirements of Section R314.4.
	R314.3 Location	Smoke alarms shall be installed in the following locations: 1. In each sleeping room. 2. Outside each separate sleeping area in the immediate vicinity of the bedrooms. 3. On each additional story of the dwelling, including basements and habitable attics but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
	R314.1 Smoke detection and notification	All smoke alarms shall be listed and labeled in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72
	R314.2 Smoke detection systems	Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms. Where a household fire warning system is installed using a combination of smoke detector and audible notification device(s), it shall become a permanent fixture of the occupancy and owned by the homeowner. The system shall be monitored by an approved supervising station and be maintained in accordance with NFPA 72. Exception: Where smoke alarms are provided meeting the requirements of Section R314.4.
	R314.3 Location	Smoke alarms shall be installed in the following locations: 1. In each sleeping room. 2. Outside each separate sleeping area in the immediate vicinity of the bedrooms. 3. On each additional story of the dwelling, including basements and habitable attics but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
	R314.3.1 Alterations, repairs and additions	When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings. Exceptions: 1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck, are exempt from the requirements of this section. 2. Installation, alteration or repairs of plumbing or mechanical systems are exempt from the requirements of this section.

	R314.4 Power source	Smoke alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Exceptions: 1. Smoke alarms shall be permitted to be battery operated when installed in buildings without commercial power. 2. Hard wiring of smoke alarms in existing areas shall not be required where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for hard wiring without the removal of interior finishes.
	R314.5 Interconnection	Where more than one smoke alarm is required to be installed within an individual dwelling unit in accordance with Section R314.3, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. Exception: Interconnection of smoke alarms in existing areas shall not be required where alterations or repairs do not result in removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.
6.0 MEANS OF EGRESS		
	General Means of Egress	
	R310.1 Emergency escape and rescue required	Basements, habitable attics and every sleeping room shall have at least one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches (1118 mm) measured from the finished floor to the bottom of the clear opening. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.
	R310.4 Bars, grilles, covers and screens	Bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided the minimum net clear opening size complies with Sections R310.1.1 to R310.1.3, and such devices shall be releasable or removable from the inside without the use of a key, tool, special knowledge or force greater than that which is required for normal operation of the escape and rescue opening.
	R311.1 Means of egress	All dwellings shall be provided with a means of egress as provided in this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the exterior of the dwelling at the required egress door without requiring travel through a garage.
	R311.2 Egress door	At least one egress door shall be provided for each dwelling unit. The egress door shall be side-hinged, and shall provide a minimum clear width of 32 inches (813 mm) when measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The minimum clear height of the door opening shall not be less than 78 inches (1981 mm) in height measured from the top of the threshold to the bottom of the stop. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be readily openable from inside the dwelling without the use of a key or special knowledge or effort.
	R311.3 Floors and landings at exterior doors.	There shall be a landing or floor on each side of each exterior door. The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel. Exterior landings shall be permitted to have a slope not to exceed 1/4 unit vertical in 12 units horizontal (2-percent). Exception: Exterior balconies less than 60 square feet (5.6 m2) and only accessible from a door are permitted to have a landing less than 36 inches (914 mm) measured in the direction of travel.
	Signage & Illumination	
	R311.7.9 Illumination	All stairs shall be provided with illumination in accordance with Section R303.6.
	Egress Width	
	R310.1.1 Minimum opening area	All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.530 m2). Exception: Grade floor openings shall have a minimum net clear opening of 5 square feet (0.465 m2).
	R310.1.2 Minimum opening height	The minimum net clear opening height shall be 24 inches (610 mm)
	R310.1.3 Minimum opening width	The minimum net clear opening width shall be 20 inches (508 mm).
	Accessible Means of Egress	
	R310.1.4 Operational constraints.	Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools or special knowledge
	Exit Access & Travel Distance	
	R311.7.1 Width	Stairways shall not be less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches (114 mm) on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 311/2 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are provided on both sides. Exception: The width of spiral stairways shall be in accordance with Section R311.7.10.1.
	R311.7.6 Landings for stairways	There shall be a floor or landing at the top and bottom of each stairway. The minimum width perpendicular to the direction of travel shall be no less than the width of the flight served. Landings of shapes other than square or rectangular shall be permitted provided the depth at the walk line and the total area is not less than that of a quarter circle with a radius equal to the required landing width. Where the stairway has a straight run, the minimum depth in the direction of travel shall be not less than 36 inches (914 mm).
	R311.7.8 Handrails	Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers.

R311.7.8.1 Height	Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm). Exceptions: 1. The use of a volute, turnout or starting easing shall be allowed over the lowest tread. 2. When handrail fittings or bendings are used to provide continuous transition between flights, transitions at winder treads, the transition from handrail to guardrail, or used at the start of a flight, the handrail height at the fittings or bendings shall be permitted to exceed the maximum height.
R311.7.4 Walkline	The walkline across winder treads shall be concentric to the curved direction of travel through the turn and located 12 inches (305 mm) from the side where the winders are narrower. The 12-inch (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface of the winder. If winders are adjacent within the flight, the point of the widest clear stair width of the adjacent winders shall be used.
Exit Access Doors, Doorways, Door Hardware and Windows	
R311.3.1 Floor elevations at the required egress doors	Landings or finished floors at the required egress door shall not be more than 11/2 inches (38 mm) lower than the top of the threshold. Exception: The landing or floor on the exterior side shall not be more than 73/4 inches (196 mm) below the top of the threshold provided the door does not swing over the landing or floor. Where exterior landings or floors serving the required egress door are not at grade, they shall be provided with access to grade by means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7.
R311.3.2 Floor elevations for other exterior doors	Doors other than the required egress door shall be provided with landings or floors not more than 73/4 inches (196 mm) below the top of the threshold. Exception: A landing is not required where a stairway of two or fewer risers is located on the exterior side of the door, provided the door does not swing over the stairway.
R311.3.3 Storm and screen doors	Storm and screen doors shall be permitted to swing over all exterior stairs and landings
Corridors & Aisles	
R311.6 Hallways	The minimum width of a hallway shall be not less than 3 feet (914 mm).
Exits & Continuity	
R311.5.1 Attachment	Exterior landings, decks, balconies, stairs and similar facilities shall be positively anchored to the primary structure to resist both vertical and lateral forces or shall be designed to be self-supporting. Attachment shall not be accomplished by use of toenails or nails subject to withdrawal.
R311.7.8.2 Continuity	Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 11/2 inch (38 mm) between the wall and the handrails. Exceptions: 1. Handrails shall be permitted to be interrupted by a newel post at the turn. 2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.
Other	
R311.7.10.1 Spiral stairways	Spiral stairways are permitted, provided the minimum clear width at and below the handrail shall be 26 inches (660 mm) with each tread having a 71/2-inch (190 mm) minimum tread depth at 12 inches (914 mm) from the narrower edge. All treads shall be identical, and the rise shall be no more than 91/2 inches (241 mm). A minimum headroom of 6 feet 6 inches (1982 mm) shall be provided.

Calculating Occupant Load

Location in Building	**Function (Use) of Space** (IBC 2009 Table [1004.1.1], accessory or incidental)	**Load Factor** (sf/occupant)	**Area** (sf)	**Occupant Load**
Entrance 100a	Assembly, standing space	5 net	143	28
Lounge 101	Assembly, Concentrated tables and chairs	15 net	490	32
Bar 102	Assembly, concentrated (chairs only-not fixed)	7 net	532	76
Main Dining Room 103	Assembly, Concentrated tables and chairs	7 net	1170	167
Server Station 103a	Assembly, standing space	5 net	25	5
Chef's Table 104	Assembly, concentrated (chairs only-not fixed)	7 net	225	32
Women's Restroom 105			100	
Men's Restroom 106			100	
Semi Private Dining 107	Assembly, Concentrated tables and chairs	7 net	400	57
Private Dining 108	Assembly, Concentrated tables and chairs	15 net	400	26
Kitchen 109	Kitchens, commercial	200 gross	-	
			Total Occupant Load	**423**
	NOTES: 1. The 2009 IBC makes a distinction between "gross" and "net" areas for calculating occupant load. In reality, the difference rarely matters all that much, and it is much simpler to use "gross" for all figures. 2. "Gross" areas include wall thicknesses and utility spaces (chases, shafts, mechanical/electrical spaces, etc.). 3. Use only whole numbers for areas; do not use decimal places. 4. Occupant load numbers are always rounded up to the nearest whole number.			

Calculating Occupant Load

Location in Building	**Function (Use) of Space** (IBC 2009 Table [1004.1.1], accessory or incidental)	**Load Factor** (sf/occupant)	**Area** (sf)	**Occupant Load**
Shared Residential Foyer	Assembly Standing Space	5 net	105	2
Foyer 401	Residential	200 Gross	481	2
Living Room 402	Residential	200 Gross	1187	6
Study 403	Residential	200 Gross	364	2
Dining Room 404	Residential	200 Gross	451	2
Butler's Kitchen 405	Residential	200 Gross	149	1
Kitchen 406	Residential	200 Gross	641	3
Laundry 407	Residential	200 Gross	235	1
Powder Room 408	Residential	200 Gross	66	1
Condo Amenities	Accessory Storage Area	300 Gross	2154	7
	Total Occupant Load			46
	NOTES: 1. The 2009 IBC makes a distinction between "gross" and "net" areas for calculating occupant load. In reality, the difference rarely matters all that much, and it is much simpler to use "gross" for all figures. 2. "Gross" areas include wall thicknesses and utility spaces (chases, shafts, mechanical/electrical spaces, etc.). 3. Use only whole numbers for areas; do not use decimal places. 4. Occupant load numbers are always rounded up to the nearest whole number.			

Calculating Occupant Load				
Location in Building	**Function (Use) of Space** (IBC 2009 Table [1004.1.1], accessory or incidental)	**Load Factor** (sf/occupant)	**Area** (sf)	**Occupant Load**
Guest Bedroom 501	Residential	200 Gross	478	**2**
Guest Bathroom 502	Residential	200 Gross	471	**2**
Boys Bathroom 503	Residential	200 Gross	196	**1**
Boys Bedroom 504	Residential	200 Gross	392	**2**
Girls Bathroom 505	Residential	200 Gross	196	**1**
Girls Bedroom 506	Residential	200 Gross	569	**3**
Laundry 507	Residential	200 Gross	235	**1**
Master Bedroom 508	Residential	200 Gross	577	**2**
Master Bathroom 509	Residential	200 Gross	431	**2**
Master Closet 510	Residential	200 Gross	321	**1**
Master Foyer 511	Residential	200 Gross	120	**1**
Media Room 512	Residential	200 Gross	517	**2**
		Total Occupant Load		**21**
	NOTES: 1. The 2009 IBC makes a distinction between "gross" and "net" areas for calculating occupant load. In reality, the difference rarely matters all that much, and it is much simpler to use "gross" for all figures. 2. "Gross" areas include wall thicknesses and utility spaces (chases, shafts, mechanical/electrical spaces, etc.). 3. Use only whole numbers for areas; do not use decimal places. 4. Occupant load numbers are always rounded up to the nearest whole number.			

7.0 ACCESSIBLITY

	Chapter/Section	Description
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8.0 BUILDING SYSTEMS (Lighting, HVAC, Elevators)

	Chapter/Section	Description
	SECTION N1104 ELECTRICAL POWER AND LIGHTING SYSTEMS (MANDATORY)	
	N1104.1 (R404.1) Lighting equipment (Mandatory).	A minimum of 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or a minimum of 75 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps. **Exception:** Low-voltage lighting shall not be required to utilize high-efficiency lamps.
	SECTION M1401 GENERAL	
	M1401.1 Installation.	Heating and cooling *equipment* and *appliances* shall be installed in accordance with the manufacturer's installation instructions and the requirements of this code.
	M1401.2 Access.	Heating and cooling *equipment* and appliances shall be located with respect to building construction and other *equipment* and appliances to permit maintenance, servicing and replacement. Clearances shall be maintained to permit cleaning of heating and cooling surfaces; replacement of filters, blowers, motors, controls and vent connections; lubrication of moving parts; and adjustments.
	M1401.3 Sizing.	Heating and cooling *equipment* and *appliances* shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other *approved* heating and cooling calculation methodologies.
	SECTION M1406 RADIANT HEATING SYSTEMS	
	M1406.1 General.	Electric radiant heating systems shall be installed in accordance with the manufacturer's installation instructions and Chapters 34 through 43 of this code and shall be listed for the application.

	M1406.2 Clearances.	Clearances for radiant heating panels or elements to any wiring, outlet boxes and junction boxes used for installing electrical devices or mounting luminaires shall comply with Chapters 34through 43 of this code.
	M1406.3 Installation of radiant panels.	Radiant panels installed on wood framing shall conform to the following requirements: 1. Heating panels shall be installed parallel to framing members and secured to the surface of framing members or mounted between framing members. 2. Mechanical fasteners shall penetrate only the unheated portions provided for this purpose. Panels shall not be fastened at any point closer than $^1/_4$ inch (6.4 mm) to an element. Other methods of attachment of the panels shall be in accordance with the panel manufacturer's instructions. 3. Unless *listed* and *labeled* for field cutting, heating panels shall be installed as complete units.
	M1406.4 Installation in concrete or masonry.	Radiant heating systems installed in concrete or masonry shall conform to the following requirements: 1. Radiant heating systems shall be identified as being suitable for the installation, and shall be secured in place as specified in the manufacturer's installation instructions. 2. Radiant heating panels or radiant heating panel sets shall not be installed where they bridge expansion joints unless protected from expansion and contraction.
	M1406.5 Finish surfaces.	Finish materials installed over radiant heating panels or systems shall be installed in accordance with the manufacturer's installation instructions. Surfaces shall be secured so that nails or other fastenings do not pierce the radiant heating elements.
	M1411.2 Refrigeration coils in warm-air furnaces.	Where a cooling coil is located in the supply plenum of a warm-air furnace, the furnace blower shall be rated at not less than 0.5-inch water column (124 Pa) static pressure unless the furnace is *listed* and *labeled* for use with a cooling coil. Cooling coils shall not be located upstream from heat exchangers unless *listed* and *labeled* for such use. Conversion of existing furnaces for use with cooling coils shall be permitted provided the furnace will operate within the temperature rise specified for the furnace.

9.0 PLUMBING

Chapter/Section	Description
P2502.1 Existing building sewers and drains.	Existing *building sewers* and drains shall be used in connection with new systems when found by examination and/or test to conform to the requirements prescribed by this document.
P2502.2 Additions, alterations or repairs.	Additions, *alterations*, renovations or repairs to any plumbing system shall conform to that required for a new plumbing system without requiring the existing plumbing system to comply with all the requirements of this code. Additions, *alterations* or repairs shall not cause an existing system to become unsafe, insanitary or overloaded. Minor additions, *alterations*, renovations and repairs to existing plumbing systems shall be permitted in the same manner and arrangement as in the existing system, provided that such repairs or replacement are not hazardous and are *approved*.
P2503.1 Inspection required.	New plumbing work and parts of existing systems affected by new work or *alterations* shall be inspected by the *building official* to ensure compliance with the requirements of this code.
P2503.2 Concealment.	A plumbing or drainage system, or part thereof, shall not be covered, concealed or put into use until it has been tested, inspected and *approved* by the *building official*.
P2503.5.1 Rough plumbing.	DWV systems shall be tested on completion of the rough piping installation by water or for piping systems other than plastic, by air with no evidence of leakage. Either test shall be applied to the drainage system in its entirety or in sections after rough piping has been installed, as follows: 1. Water test. Each section shall be filled with water to a point not less than 10 feet (3048 mm) above the highest fitting connection in that section, or to the highest point in the completed system. Water shall be held in the section under test for a period of 15 minutes. The system shall prove leak free by visual inspection. 2. Air test. The portion under test shall be maintained at a gauge pressure of 5 pounds per square inch (psi) (34 kPa) or 10 inches of mercury column (34 kPa). This pressure shall be held without introduction of additional air for a period of 15 minutes.
P2503.5.2 Finished plumbing.	After the plumbing fixtures have been set and their traps filled with water, their connections shall be tested and proved gas tight and/or water tight as follows: 1. Water tightness. Each fixture shall be filled and then drained. Traps and fixture connections shall be proven water tight by visual inspection. 2. Gas tightness. When required by the local administrative authority, a final test for gas tightness of the DWV system shall be made by the smoke or peppermint test as follows: 2.1. Smoke test. Introduce a pungent, thick smoke into the system. When the smoke appears at vent terminals, such terminals shall be sealed and a pressure equivalent to a 1-inch water column (249 Pa) shall be applied and maintained for a test period of not less than 15 minutes.

	2.2. Peppermint test. Introduce 2 ounces (59 mL) of oil of peppermint into the system. Add 10 quarts (9464 mL) of hot water and seal all vent terminals. The odor of peppermint shall not be detected at any trap or other point in the system.
P2601.1 Scope.	The provisions of this chapter shall govern the installation of plumbing not specifically covered in other chapters applicable to plumbing systems. The installation of plumbing, *appliances, equipment* and systems not addressed by this code shall comply with the applicable provisions of the *International Plumbing Code*.
P2601.2 Connections to drainage system.	Plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid wastes or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent indirect waste systems. **Exception:** Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved gray water system for flushing of water closets and urinals or for subsurface landscape irrigation.
P2603.4 Pipes through foundation walls.	A pipe that passes through a foundation wall shall be provided with a relieving arch, or a pipe sleeve shall be built into the foundation wall. The sleeve shall be two pipe sizes greater than the pipe passing through the wall.
P2603.5 Freezing.	In localities having a winter design temperature of 32°F (0°C) or lower as shown in Table R301.2(1) of this code, a water, soil or waste pipe shall not be installed outside of a building, in exterior walls, in *attics* or crawl spaces, or in any other place subjected to freezing temperature unless adequate provision is made to protect it from freezing by insulation or heat or both. Water service pipe shall be installed not less than 12 inches (305 mm) deep and not less than 6 inches (152 mm) below the frost line.
P2609.1 Identification.	Each length of pipe and each pipe fitting, trap, fixture, material and device utilized in a plumbing system shall bear the identification of the manufacturer and any markings required by the applicable referenced standards.
P2609.2 Installation of materials.	All materials used shall be installed in strict accordance with the standards under which the materials are accepted and *approved*. In the absence of such installation procedures, the manufacturer's instructions shall be followed. Where the requirements of referenced standards or manufacturer's instructions do not conform to the minimum provisions of this code, the provisions of this code shall apply.
P2609.3 Plastic pipe, fittings and components.	All plastic pipe, fittings and components shall be third-party certified as conforming to NSF 14.
P2609.4 Third-party certification.	All plumbing products and materials shall be listed by a third-party certification agency as complying with the referenced standards. Products and materials shall be identified in accordance with Section P2609.1.
P2609.5 Water supply systems.	Water service pipes, water distribution pipes and the necessary connecting pipes, fittings, control valves, faucets and appurtenances used to dispense water intended for human ingestion shall be evaluated and listed as conforming to the requirements of NSF 61.
P2701.1 Quality of fixtures.	Plumbing fixtures, faucets and fixture fittings shall be constructed of *approved* materials, shall have smooth impervious surfaces, shall be free from defects and concealed fouling surfaces, and shall conform to the standards cited in this code. Plumbing fixtures shall be provided with an adequate supply of potable water to flush and keep the fixtures in a clean and sanitary condition without danger of backflow or cross connection.
TABLE P2701.1 PLUMBING FIXTURES, FAUCETS AND FIXTURE FITTINGS	

MATERIAL	STANDARD
Air gap fittings for use with plumbing fixtures, appliances and appurtenances	ASME A 112.1.3
Bathtub/whirlpool pressure-sealed doors	ASME A 112.19.15
Diverters for faucets with hose spray, anti-syphon type, residential application	ASTM A 112.18.1/CSA B125.1
Enameled cast-iron plumbing fixtures	ASME A 112.19.1M, CSA B45.2
Floor drains	ASME A 112.6.3
Floor-affixed supports for off-the-floor plumbing fixtures for public use	ASME A 112.6.1M

Framing-affixed supports for off-the-floor water closets with concealed tanks	ASME A 112.6.2
Hose connection vacuum breaker	ASSE 1052
Hot water dispensers, household storage type, electrical	ASSE 1023
Household disposers	ASSE 1008
Hydraulic performance for water closets and urinals	ASME A 112.19.2/CSA B45.1
Individual automatic compensating valves for individual fixture fittings	ASTM A 112.18.1/CSA B125.1
Individual shower control valves anti-scald	ASSE 1016, CSA B125
Macerating toilet systems and related components	ASME A 112.3.4, CSA B54.9
Nonvitreous ceramic plumbing fixtures	ASME A 112.19.2/CSA B45.1
Plastic bathtub units	ANSI Z124.1.2, ASME A112.19.2/CSA B45.1
Plastic lavatories	ANSI Z124.3, CSA B45.5
Plastic shower receptors and shower stall	ANSI Z124.2, CSA B45.5
Plastic sinks	ANSI Z124.6, CSA B45.5
Plastic water closet bowls and tanks	ANSI Z124.4, CSA B45.5
Plumbing fixture fittings	ASME A 112.18.1/CSA B125.1
Plumbing fixture waste fittings	ASME A 112.18.2/CSA B125.2, ASTM F 409
Porcelain-enameled formed steel plumbing fixtures	ASME A 112.19.1/CSA B45.2
Pressurized flushing devices for plumbing fixtures	ASSE 1037, CSA B125.3
Specification for copper sheet and strip for building construction	ASTM B 370
Stainless steel plumbing fixtures	ASME A 112.19.3/CSA B45.4
Suction fittings for use in whirlpool bathtub appliances	ASME A 112.19.7 /CSA B45.10
Temperature-actuated, flow reduction valves to individual fixture fittings	ASSE 1062
Thermoplastic accessible and replaceable plastic tube and tubular fittings	ASTM F 409
Trench drains	ASME A 112.6.3
Trim for water closet bowls, tanks and urinals	ASME A 112.19.5/CSA B45.15
Vacuum breaker wall hydrant-frost-resistant, automatic-draining type	ASSE 1019

	<table><tr><td>Vitreous china plumbing fixtures</td><td>ASME A 112.19.2/CSA B45.1</td></tr><tr><td>Wall-mounted and pedestal-mounted, adjustable and pivoting lavatory and sink carrier systems</td><td>ASME A 112.19.12</td></tr><tr><td>Water closet flush tank fill valves</td><td>ASSE 1002, CSA B125.3</td></tr><tr><td>Whirlpool bathtub appliances</td><td>ASME A 112.19.7 /CSA B45.10</td></tr></table>
P2702.1 Plumbing fixtures	Plumbing fixtures, other than water closets, shall be provided with *approved* strainers. **Exception:** Hub drains and standpipes.
P2703.1 Minimum size.	Fixture tail pieces shall be not less than $1^1/_2$ inches (38 mm) in diameter for sinks, dishwashers, laundry tubs, bathtubs and similar fixtures, and not less than $1^1/_4$inches (32 mm) in diameter for bidets, lavatories and similar fixtures.
P2705.1 General.	The installation of fixtures shall conform to the following: 1. Floor-outlet or floor-mounted fixtures shall be secured to the drainage connection and to the floor, where so designed, by screws, bolts, washers, nuts and similar fasteners of copper, brass or other corrosion-resistant material. 2. Wall-hung fixtures shall be rigidly supported so that strain is not transmitted to the plumbing system. 3. Where fixtures come in contact with walls and floors, the contact area shall be water tight. 4. Plumbing fixtures shall be usable. 5. Water closets, lavatories and bidets. A water closet, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition or vanity or closer than 30 inches (762 mm) center-to-center between adjacent fixtures. There shall be a clearance of not less than 21 inches (533 mm) in front of a water closet, lavatory or bidet to any wall, fixture or door. 6. The location of piping, fixtures or equipment shall not interfere with the operation of windows or doors. 7. In flood hazard areas as established by Table R301.2(1), plumbing fixtures shall be located or installed in accordance with Section R322.1.7. 8. Integral fixture-fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site, shall meet the design requirements of ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.1.
SECTION P2708 SHOWERS	
P2708.1 General.	Shower compartments shall have not less than 900 square inches (0.6 m^2) of interior cross-sectional area. Shower compartments shall be not less than 30 inches (762 mm) in minimum dimension measured from the finished interior dimension of the shower compartment, exclusive of fixture valves, shower heads, soap dishes, and safety grab bars or rails. The minimum required area and dimension shall be measured from the finished interior dimension at a height equal to the top of the threshold and at a point tangent to its centerline and shall be continued to a height of not less than 70 inches (1778 mm) above the shower drain outlet. Hinged shower doors shall open outward. The wall area above built-in tubs having installed shower heads and in shower compartments shall be constructed in accordance with Section R702.4. Such walls shall form a water-tight joint with each other and with either the tub, receptor or shower floor. **Exceptions:** 1. Fold-down seats shall be permitted in the shower, provided the required 900-square-inch (0.6 m^2) dimension is maintained when the seat is in the folded-up position. 2. Shower compartments having not less than 25 inches (635 mm) in minimum dimension measured from the finished interior dimension of the compartment provided that the shower compartment has a cross-sectional area of not less than 1,300 square inches (0.838 m^2). **P2708.1.1 Access.** The shower compartment access and egress opening shall have a clear and unobstructed finished width of not less than 22 inches (559 mm).
P2708.3 Shower control valves.	Individual shower and tub/shower combination valves shall be equipped with control valves of the pressure-balance, thermostatic-mixing or combination pressure-balance/thermostatic-mixing valve types with a high limit stop in accordance with ASSE 1016 or ASME A112.18.1/CSA B125.1. The high limit stop shall be set to limit the water temperature to not greater than 120°F (49°C). In-line thermostatic valves shall not be used for compliance with this section.

P2708.4 Hand showers.	Hand-held showers shall conform to ASME A112.18.1/CSA B125.1. Hand-held showers shall provide backflow protection in accordance with ASME A112.18.1/CSA B125.1 or shall be protected against backflow by a device complying with ASME A112.18.3.
SECTION P2711 LAVATORIES	
P2711.1 Approval.	Lavatories shall conform to ANSI Z124.3, ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.4.
P2711.2 Cultured marble lavatories.	Cultured marble vanity tops with an integral lavatory shall conform to ANSI Z124.3 or CSA B45.5.
P2711.3 Lavatory waste outlets.	Lavatories shall have waste outlets not less than $1^1/_4$ inch (32 mm) in diameter. A strainer, pop-up stopper, crossbar or other device shall be provided to restrict the clear opening of the waste outlet.
SECTION P2712 WATER CLOSETS	
P2712.1 Approval.	Water closets shall conform to the water consumption requirements of Section P2903.2 and shall conform to ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5. Water closets shall conform to the hydraulic performance requirements of ASME A112.19.2/CSA B45.1. Water closet tanks shall conform to ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5. Water closets that have an invisible seal and unventilated space or walls that are not thoroughly washed at each discharge shall be prohibited. Water closets that permit backflow of the contents of the bowl into the flush tank shall be prohibited.
P2712.2 Flushing devices required.	Water closets shall be provided with a flush tank, flushometer tank or flushometer valve designed and installed to supply water in sufficient quantity and flow to flush the contents of the fixture, to cleanse the fixture and refill the fixture trap in accordance with ASME A112.19.2/CSA B45.1.
P2712.3 Water supply for flushing devices.	An adequate quantity of water shall be provided to flush and clean the fixture served. The water supply to flushing devices equipped for manual flushing shall be controlled by a float valve or other automatic device designed to refill the tank after each discharge and to completely shut off the water flow to the tank when the tank is filled to operational capacity. Provision shall be made to automatically supply water to the fixture so as to refill the trap after each flushing.
P2712.4 Flush valves in flush tanks.	Flush valve seats in tanks for flushing water closets shall be not less than 1 inch (25 mm) above the flood-level rim of the bowl connected thereto, except an*approved* water closet and flush tank combination designed so that when the tank is flushed and the fixture is clogged or partially clogged, the flush valve will close tightly so that water will not spill continuously over the rim of the bowl or backflow from the bowl to the tank.
P2712.5 Overflows in flush tanks.	Flush tanks shall be provided with overflows discharging to the water closet connected thereto and such overflow shall be of sufficient size to prevent flooding the tank at the maximum rate at which the tanks are supplied with water according to the manufacturer's design conditions.
P2712.6 Access.	All parts in a flush tank shall be accessible for repair and replacement.
P2712.7 Water closet seats.	Water closets shall be equipped with seats of smooth, nonabsorbent material and shall be properly sized for the water closet bowl type.
P2712.8 Flush tank lining.	Sheet copper used for flush tank linings shall have a weight of not less than 10 ounces per square foot (3 kg/m^2).
SECTION P2713 BATHTUBS	
P2713.1 Bathtub waste outlets and overflows.	Bathtubs shall be equipped with a waste outlet and an overflow outlet. The outlets shall be connected to waste tubing or piping not less than $1^1/_2$ inches (38 mm) in diameter. The waste outlet shall be equipped with a water-tight stopper.
P2713.2 Bathtub enclosures.	Doors within a bathtub enclosure shall conform to ASME A112.19.15.
P2713.3 Bathtub and whirlpool bathtub valves.	Hot water supplied to bathtubs and whirlpool bathtubs shall be limited to a temperature of not greater than 120°F (49°C) by a water-temperature limiting device that conforms to ASSE 1070 or CSA B125.3, except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section P2708.3.
SECTION P2714 SINKS	
P2714.1 Sink waste outlets.	Sinks shall be provided with waste outlets not less than $1^1/_2$ inches (38 mm) in diameter. A strainer, crossbar or other device shall be provided to restrict the clear opening of the waste outlet.
SECTION P2716 FOOD WASTE GRINDER	

P2716.1 Food waste grinder waste outlets.	Food waste grinders shall be connected to a drain of not less than $1^1/_2$ inches (38 mm) in diameter.
P2716.2 Water supply required.	Food waste grinders shall be provided with an adequate supply of water at a sufficient flow rate to ensure proper functioning of the unit.
SECTION P2717 DISHWASHING MACHINES	
P2717.1 Protection of water supply.	The water supply for dishwashers shall be protected by an air gap or integral backflow preventer.
P2717.2 Sink and dishwasher.	A sink and dishwasher are permitted to discharge through a single $1^1/_2$-inch (38 mm) trap. The discharge pipe from the dishwasher shall be increased to not less than $^3/_4$ inch (19 mm) in diameter and shall be connected with a wye fitting to the sink tailpiece. The dishwasher waste line shall rise and be securely fastened to the underside of the counter before connecting to the sink tailpiece.
P2717.3 Sink, dishwasher and food grinder.	The combined discharge from a sink, dishwasher, and waste grinder is permitted to discharge through a single $1^1/_2$-inch (38 mm) trap. The discharge pipe from the dishwasher shall be increased to not less than $^3/_4$ inch (19 mm) in diameter and shall connect with a wye fitting between the discharge of the food-waste grinder and the trap inlet or to the head of the food grinder. The dishwasher waste line shall rise and be securely fastened to the underside of the counter before connecting to the sink tail piece or the food grinder.
SECTION P2718 CLOTHES WASHING MACHINE	
P2718.1 Waste connection.	The discharge from a clothes washing machine shall be through an *air break*.
SECTION P2719 FLOOR DRAINS	
P2719.1 Floor drains.	Floor drains shall have waste outlets not less than 2 inches (51 mm) in diameter and a removable strainer. The floor drain shall be constructed so that the drain can be cleaned. Access shall be provided to the drain inlet. Floor drains shall not be located under or have their access restricted by permanently installed appliances.
SECTION P2720 WHIRLPOOL BATHTUBS	
P2720.1 Access to pump.	Access shall be provided to circulation pumps in accordance with the fixture or pump manufacturer's installation instructions. Where the manufacturer's instructions do not specify the location and minimum size of field-fabricated access openings, an opening of not less than 12-inches by 12-inches (305 mm by 305 mm) shall be installed for access to the circulation pump. Where pumps are located more than 2 feet (610 mm) from the access opening, an opening of not less than 18 inches by 18 inches (457 mm by 457 mm) shall be installed. A door or panel shall be permitted to close the opening. In all cases, the access opening shall be unobstructed and be of the size necessary to permit the removal and replacement of the circulation pump.
P2720.2 Piping drainage.	The circulation pump shall be accessibly located above the crown weir of the trap. The pump drain line shall be properly graded to ensure minimum water retention in the volute after fixture use. The circulation piping shall be installed to be self-draining.
P2720.3 Leak testing.	Leak testing and pump operation shall be performed in accordance with the manufacturer's instructions.
P2720.4 Manufacturer's instructions.	The product shall be installed in accordance with the manufacturer's instructions.
SECTION P2721 BIDET INSTALLATIONS	
P2721.1 Water supply.	The bidet shall be equipped with either an air-gap-type or vacuum-breaker-type fixture supply fitting.
P2721.2 Bidet water temperature.	The discharge water temperature from a bidet fitting shall be limited to not greater than 110°F (43°C) by a water-temperature-limiting device conforming to ASSE 1070 or CSA B125.3.
SECTION P2722 FIXTURE FITTING	
P2722.1 General.	Fixture supply valves and faucets shall comply with ASME A112.18.1/CSA B125.1 as listed in Table P2701.1. Faucets and fixture fittings that supply drinking water for human ingestion shall conform to the requirements of NSF 61, Section 9. Flexible water connectors shall conform to the requirements of Section P2905.7.
P2722.2 Hot water.	Fixture fittings and faucets that are supplied with both hot and cold water shall be installed and adjusted so that the left-hand side of the water temperature control represents the flow of hot water when facing the outlet. **Exception:** Shower and tub/shower mixing valves conforming to ASSE 1016 or ASME A112.18.1/CSA B125.1, where the water temperature control corresponds to the markings on the device.

P2722.3 Hose-connected outlets.	Faucets and fixture fittings with hose-connected outlets shall conform to ASME A112.18.3 or ASME A112.18.1/CSA B125.1.
P2722.4 Individual pressure-balancing in-line valves for individual fixture fittings.	Where individual pressure-balancing in-line valves for individual fixture fittings are installed, the valves shall comply with ASSE 1066. Such valves shall be installed in an accessible location and shall not be used alone as a substitute for the balanced pressure, thermostatic or combination shower valves required in Section P2708.3.
P2722.5 Water closet personal hygiene devices.	Personal hygiene devices integral to water closets or water closet seats shall conform to the requirements of ASME A112.4.2.
SECTION P2724 SPECIALTY TEMPERATURE CONTROL DEVICES AND VALVES	
P2724.1 Temperature-actuated mixing valves.	Temperature-actuated mixing valves, which are installed to reduce water temperatures to defined limits, shall comply with ASSE 1017. Such valves shall be installed at the hot water source.
P2724.2 Temperature-actuated, flow-reduction devices for individual fixtures.	Temperature-actuated, flow-reduction devices, where installed for individual fixture fittings, shall conform to ASSE 1062. Such valves shall not be used alone as a substitute for the balanced pressure, thermostatic or combination shower valves required for showers in Section P2708.3.

CALCULATING PLUMBING FIXTURES

Fixture Type	Fixture Ratio	Standard Fixtures Required				Total Fixtures Required	
		Standard Fixtures		Accessible Fixtures			
		Male	Female	Male	Female	Male	Female
☒ Water Closet	1 per 75 male 1 per 75 female	2	2	1	1	3	3
☒ Urinal	-	-	-	-	-	1	-
☒ Lavatory	1 per 200 male 1 per 200 female	1	1	1	1	2	2
☐ Bathtub							
☐ Shower							
☒ Service Sink	1 service sink					1	
☒ Drinking Fountain	1 per 500					1	
☐ Other:							

10.0 INTERIOR FINISHES

Chapter/Section	Description
SECTION R701 GENERAL	
R701.1 Application.	The provisions of this chapter shall control the design and construction of the interior and exterior wall covering for all buildings.
R701.2 Installation.	Products sensitive to adverse weather shall not be installed until adequate weather protection for the installation is provided. Exterior sheathing shall be dry before applying exterior cover.
SECTION R702 INTERIOR COVERING	
R702.1 General.	Interior coverings or wall finishes shall be installed in accordance with this chapter and Table R702.1(1), Table R702.1(2), Table R702.1(3) and Table R702.3.5. Interior masonry veneer shall comply with the requirements of Section R703.7.1 for support and Section R703.7.4 for anchorage, except an air space is not required. Interior finishes and materials shall conform to the flame spread and smoke-development requirements of Section R302.9.
R702.3 Gypsum board.	
R702.3.1 Materials.	All gypsum board materials and accessories shall conform to ASTM C 22, C 475, C 514, C 1002, C 1047, C 1177, C 1178, C 1278, C 1396 or C 1658 and shall be installed in accordance with the provisions of this section. Adhesives for the installation of gypsum board shall conform to ASTM C 557.
R702.3.2 Wood framing.	Wood framing supporting gypsum board shall not be less than 2 inches (51 mm) nominal thickness in the least dimension except that wood furring strips not less than 1-inch by 2-inch (25 mm by 51 mm) nominal dimension may be used over solid backing or framing spaced not more than 24 inches (610 mm) on center.
R702.3.3 Cold-formed steel framing.	Cold-formed steel framing supporting gypsum board shall not be less than $1^1/_4$ inches (32 mm) wide in the least dimension. Nonload-bearing cold-formed steel framing shall comply with ASTM C 645. Load-bearing cold-formed steel framing and all cold-formed steel framing from 0.033 inch to 0.112 inch (1 mm to 3 mm) thick shall comply with ASTM C 955.
R702.3.4 Insulating concrete form walls.	Foam plastics for insulating concrete form walls constructed in accordance with Sections R404.1.2 and R611 on the interior of habitable spaces shall be protected in accordance with Section R316.4. Use of adhesives in conjunction with mechanical fasteners is permitted. Adhesives used for interior and exterior finishes shall be compatible with the insulating form materials.
R702.3.5 Application.	Maximum spacing of supports and the size and spacing of fasteners used to attach gypsum board shall comply with Table R702.3.5. Gypsum sheathing shall be attached to exterior walls in accordance with Table R602.3(1). Gypsum board shall be applied at right angles or parallel to framing members. All edges and ends of gypsum board shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Interior gypsum board shall not be installed where it is directly exposed to the weather or to water.
R702.3.8 Water-resistant gypsum backing board.	Gypsum board used as the base or backer for adhesive application of ceramic tile or other required nonabsorbent finish material shall conform to ASTM C 1396, C 1178 or C1278. Use of water-resistant gypsum backing board shall be permitted on ceilings where framing spacing does not exceed 12 inches (305 mm) on center for $^1/_2$-inch-thick (12.7 mm) or 16 inches (406 mm) for $^5/_8$-inch-thick (16 mm) gypsum board. Water-resistant gypsum board shall not be installed over a Class I or II vapor retarder in a shower or tub compartment. Cut or exposed edges, including those at wall intersections, shall be sealed as recommended by the manufacturer.
R702.4 Ceramic tile.	
R702.4.1 General.	Ceramic tile surfaces shall be installed in accordance with ANSI A108.1, A108.4, A108.5, A108.6, A108.11, A118.1, A118.3, A136.1 and A137.1.
R702.4.2 Fiber-cement, fiber-mat reinforced cementitious backer units, glass mat gypsum backers and fiber-reinforced gypsum backers.	Fiber-cement, fiber-mat reinforced cementitious backer units, glass mat gypsum backers or fiber-reinforced gypsum backers in compliance with ASTM C 1288, C 1325, C 1178 or C 1278, respectively, and installed in accordance with manufacturers' recommendations shall be used as backers for wall tile in tub and shower areas and wall panels in shower areas.
R702.5 Other finishes.	Wood veneer paneling and hardboard paneling shall be placed on wood or cold-formed steel framing spaced not more than 16 inches (406 mm) on center. Wood veneer and hard board paneling less than $^1/_4$-inch (6 mm) nominal thickness shall not have less than a $^3/_8$-inch (10 mm) gypsum board backer. Wood veneer paneling not less than $^1/_4$-inch (6 mm) nominal thickness shall conform to ANSI/HPVA HP-1. Hardboard paneling shall conform to CPA/ANSI A135.5.
R702.6 Wood shakes and shingles.	Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles* and shall be permitted to be installed directly to the studs with maximum 24 inches (610 mm) on-center spacing.

11.0 OTHER

Chapter/Section	Description
Chapter 11 [RE] - Energy Efficiency	

	N1101.1 Scope.	This chapter regulates the energy efficiency for the design and construction of buildings regulated by this code.
	N1101.2 (R101.3) Intent.	This code shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.
	N1101.3 (R101.4.3) Additions, alterations, renovations or repairs.	Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building. **Exception:** The following need not comply provided the energy use of the building is not increased: 1. Storm windows installed over existing fenestration. 2. Glass only replacements in an existing sash and frame. 3. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation. 4. Construction where the existing roof, wall or floor cavity is not exposed. 5. Reroofing for roofs where neither the sheathing nor the insulation is exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing. 6. Replacement of existing doors that separate *conditioned space* from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a *conditioned space* from the exterior shall not be removed. 7. Alterations that replace less than 50 percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power. 8. Alterations that replace only the bulb and ballast within the existing luminaires in a space provided that the *alteration* does not increase the installed interior lighting power.
	N1102.2.2 (R402.2.2) Ceilings without attic spaces.	Where Secton N1102.1.1 would require insulation levels above R-30 and the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation for such roof/ceiling assemblies shall be R-30. This reduction of insulation from the requirements of Secton N1102.1.1 shall be limited to 500 square feet (46 m2) or 20 percent of the total insulated ceiling area, whichever is less. This reduction shall not apply to the U-factor alternative approach in Secton N1102.1.3 and the total UA alternative in Secton N1102.1.4.
	N1102.2.11 (R402.2.11) Masonry veneer.	Insulation shall not be required on the horizontal portion of the foundation that supports a masonry veneer.
	N1102.4.2 (R402.4.2) Fireplaces.	New wood-burning fireplaces shall have tight-fitting flue dampers and outdoor combustion air.
	N1102.4.4 (R402.4.4) Recessed lighting.	Recessed luminaires installed in the *building thermal envelope* shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and *labeled* as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E 283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.
	SECTION N1103 SYSTEMS	
	N1103.1 (R403.1) Controls (Mandatory).	At least one thermostat shall be provided for each separate heating and cooling system.
	N1103.1.1 (R403.1.1) Programmable thermostat.	Where the primary heating system is a forced-air furnace, at least one thermostat per dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. This thermostat shall include the capability to set back or temporarily operate the system to maintain zone temperatures down to 55°F (13°C) or up to 85°F (29°C). The thermostat shall initially be programmed with a heating temperature set point no higher than 70°F (21°C) and a cooling temperature set point no lower than 78°F (26°C).
	N1103.7 (R403.7) Systems serving multiple	Systems serving multiple dwelling units shall comply with Sections C403 and C404 of the IECC—Commercial Provisions in lieu of Secton N1103.

	dwelling units (Mandatory).	
	SECTION AK102 AIR-BORNE SOUND	
	AK102.1 General.	Air-borne sound insulation for wall and floor-ceiling assemblies shall meet a sound transmission class (STC) rating of 45 when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. *Dwelling unit* entrance doors, which share a common space, shall be tight fitting to the frame and sill.
	AK102.1.1 Masonry.	The sound transmission class of concrete masonry and clay masonry assemblies shall be calculated in accordance with TMS 0302 or determined through testing in accordance with ASTM E 90.
	SECTION AK103 STRUCTURAL-BORNE SOUND	
	AK103.1 General.	Floor/ceiling assemblies between *dwelling units,* or between a *dwelling unit* and a public or service area within a structure, shall have an impact insulation class (IIC) rating of not less than 45 when tested in accordance with ASTM E 492.

Bibliography

551 W 21. (2015). Residences. Retrieved from http://551w21.com/residences/renderings/

Alonso, A. D., &O'Neill, M. (2010) Consumers' ideal eating out experience as it refers to restaurant style: a case study. *Journal of Retail & Leisure Property, Volume 9.* Pp. 236-276

Arriffin, H.F., Bibon, M.F., & Abdullah, R.P.S.R. (2012). Restaurant's atmospheric elements: What the customer wants. *Procedia - Social and Behavior Sciences*, 38, 380-387.

Cannell, M. (2013). Architectural Digest. *A New York Penthouse by ODA-Architecture.* Retrieved from http://www.architecturaldigest.com/story/oda-architecture-manhattan-duplex-penthouse-article

Ciani, A. El., (2010). A study of how lighting can affect a guest's dining experience. *Graduate Theses and Dissertations*. Paper 11369.

City-Data. (2015). *Williamsburg neighborhood in Brooklyn, New York (NY), 11237, 11206, 11211 detailed profile.* Retrieved from http://www.city-data.com/neighborhood/Williamsburg-Brooklyn-NY.html

Fotios, S. A. (2001). Lamp colour properties and apparent brightness: A review. *Lighting Research & Technology, 33*(3), 163-181.

Han, S., & Taiichiro I., (2014). A practical method of harmonizing daylight and artificial light in interior space. *Journal of Light & Visual Environment*, 28(3) 18-24.

Horng, J., Chou, S., Liu, C., & Yen Tsai, C. (2012). Creativity, aesthetics and eco-friendliness: A physical dining environment design synthetic assessment model of innovative restaurants. *Tourism Management, 111*(1), 15-25.

Horng, J-S., Liu, C-H., Chou, S-F., & Tsai, C-Y. (2013) Professional conceptions of creativity in restaurant space planning. *International Journal of Hospitality Management,* 34, 73-80.
.

Houser, K.W., D.K. Tiller, C.A. Bernecker, & R.G. Mistrick. (2002) The Subjective Response to Linear Fluorescent Direct/indirect Lighting Systems*. Lighting Res. Technology, 34* (3) 243-64.

Ittersum, K.,& Wansink, B. (2012). Fast food restaurant lighting and musica can reduce calorie intake and increase satisfaction. *Psychological Reports: Human Resources & Marketing, 111*(1), 82-232.

Kilbourne Group. (n.d.). *History*. Retrieved from http://kilbournegroup.com/properties/loretta-building/

Kim, W. & Moon, Y. (2009) Customers' cognitive, emotional, and actionable response to servicescape: A test of the moderating effect of the restaurant type. *International Journal of Hospitality Management,* 28(1), 144-156.

Kimes, S. & Robson, S. (2014). The Impact of Restaurant Table Characteristics on Meal Duration and Spending. *Cornell Hotel and Restaurant Administration Quarterly*, *45* (14), 333-346.

Ladhari, R., Brun, I., & Morales, M. (2008). Determinents of dining satisfaction and post-dining behavioral intentions. *International Journal of Hospitality Management,* 27, 563-673.

Lutron. (2015). Homeworks. Retrieved from http://www.lutron.com/en-US/Products/Pages/WholeHomeSystems/Homeworks/Overview.aspx

Mortenson. (2014). *Mortenson announces construction and development of 4Marg luxury apartment tower in Minneapolis.* Retrieved from http://www.mortenson.com/company/news-and-insights/2014/mortenson-announces-4marq

Nabil, A.,& Mardalijevic, J. (2015) A smart lighting system for visual comfort and energy savings in industrial and domestic use. *Institute of Energy and Sustainable Development,* pp. 1-27.

National Restaurant Association. (2015). Restaurant Careers. *Job Titles.* Retrieved from http://www.restaurant.org/Restaurant-Careers/Career-Development/Career-Options/Job-Titles

Puck Penthouses. (2015). About. http://puckpenthouses.com/floorplans

Ranallo Brooks, A. (2015). IIDA. *Think Small, Live Big.* Retrieved from http://www.iida.org/content.cfm/think-small-live-big

Ryu, K., & SooCheong, J. (2008). Dinescape: A scale for customers' perception of dining environments. *Journal of Foodservice Business Research, 11*(1), 2-20.

Savant. (n.d.). *Savant Pro*. Retrieved from https://www.savant.com/savant-pro

Seura. (2015). *TV Mirrors*. Retrieved from http://www.seura.com/enhanced-television-mirrors/

Sonance. (2014). *Home Theater*. Retrieved from http://www.sonance.com/home-theater/vp-cinema

Stall-Meadows, C., & Hebert, P. (2011) The sustainable consumer: an in situ study of residential lighting alternatives as influenced in infield education. International Journal of Consumer Studies, P. 164-170

U.S. Climate Data. (2015). *Climate-New York, New York.* Retrieved from *http://www.usclimatedata.com/climate.php?location=USNY0996*

Wall, E.A. & Berry, L.L. (2007). The combined effects of the physical environment and employee behavior on customer perception of restaurant service quality. *Cornell Hotel and Restaurant Administration Quarterly*, 48(1), 59-69.

Williamsburg Edge. (2015). *Amenities.* Retrieved from http://www.williamsburgedge.com/amenities

Appendix

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Arriffin, H.F., Bibon, M.F., & Abdullah, R.P.S.R. (2012). Restaurant's atmospheric elements: What the customer wants. *Procedia - Social and Behavior Sciences, 38,* 380-387.	"…design of buying environments to produce specific emotional effects in the buyer that enhance his or her purchase probability." - Servicescape (Pg. 381)	The design of the environment will complement the product enhancing their purchase probability through perceived comfort and emotions.
	"…from the service provider's point of view, the physical environment and reasonable price are two essential elements that determine the level of customer satisfaction, and ultimately enhance customer loyalty" (Pg. 382)	The physical environment will support the upscale dining experience.
	"Ambient conditions… intangible background characteristics that generally have a subconscious effect on customer perception and response to the environment." (Pg. 383)	The ambience of the space will unknowingly encourage guests to stay longer and therefore purchase more.
	"…in order for revisit intention to occur, it was suggested that the restaurant refurbish itself with appropriate lighting, refined style, and accommodating layout." (Pg. 385)	The lighting, layout, sound, color, and temperate will be that of the most satisfactory conditions in order to encourage the return visits of guests.

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Ciani, A. E. (2010). *A study of how lighting can affect a guest's dining experience.* Unpublished master's thesis, Iowa State University, Ames, IA. Retrieved October 5, 2015, from http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=2435&context=etd	"An experience occurs when a customer has any sensation or knowledge acquisition resulting from some level of interaction with different elements of a context created by a service provider." (Pg. 15)	The different levels of lighting in the space will be controlled by the employees in a manner that makes the guests feel most comfortable.
	"Customers gladly will pay more for an experience that is not only functionally but also emotionally rewarding (Gale, 2)" (Pg. 20)	The luxury dining experience will be supported through the design of the space. Luxurious finishes and fabrics will be installed throughout the space.
	"Research shows that there is a correlation between lighting level preferences, individual emotional responses, and approach-avoidance behaviors" (Pg. 22)	The lighting levels will be the perfect balance between warm and cool lighting to satisfy the most guests preferences.

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Cimini, G., Freddi, A., Ippoliti, G., Moneriu, A., & Pirro, M. (2015). A smart lighting system for visual	*"Switching from conventional light sources to LED lighting systems, it is estimated to save the United States about $250 billion, reduce the electricity consumption by nearly one-half, and avoid 1800 million tons of carbon emissions." P. 1697*	• Incorporate energy efficient lighting systems (Cimini, Freddi, Ippoliti, Moneriu, & Pirro, 2015, p. 1,697) • The overall energy consumption throughout the nation can be greatly reduced. Using energy efficient lighting systems within the restaurant setting will be more beneficial in the long run versus incandescent bulbs (Cimini, Freddi, Ippoliti, Moneriu, & Pirro, 2015, p. 1,697)

comfort and energy savings in industrial and domestic use. *Electric Power Components and Systems, 43*(15), p. 1,696-1,703.	*"Efficient energy use, sometimes simply called energy efficiency, is the effort to reduce the amount of energy required to provide products and services." P. 1697*	• Reducing the overall energy consumption • Incorporate dimmable lights throughout the main restaurant and residential area • Incorporate in the areas that are less frequently used such as closets and utility rooms occupancy sensors • Incorporate photosensors in the areas in which natural light adequately illuminates the space • Incorporate LED lighting throughout the designed space (Cimini, Freddi, Ippoliti, Moneriu, & Pirro, 2015, p. 1,697)
	"In many countries, energy efficiency is also considered as a national security benefit, because it can be used to reduce the level of energy imports from foreign countries and may slow down the rate at which domestic energy resources are depleted." P. 1697	• Professions integrate energy efficient lighting systems then perhaps the use of energy efficient systems will become the normal and increase the chances that the laws regarding energy efficiency will catch up with the times. • Incorporate local energy and use natural resources such as sunlight (Cimini, Freddi, Ippoliti, Moneriu, & Pirro, 2015, p. 1,697)

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Fotios, S. A. (2001). Lamp color properties and apparent brightness: A review. *Lighting Research & Technology, 33*(3), 163-81.	"A visual stimulus may be characterized by its brightness and color (hue and saturation). An observer is able to make an accurate visual judgment of whether two patches of light of the same color appear equally bright" (Pg. 164)	The visual stimulus of the lighting selected for the space will be considered. The research of the effects of hue and saturation will be applied in the selections of the lamp type for each fixture.
	"Ratings of pleasantness, colorfulness, visual distinctness, and satisfaction with the lighting level were affected by illuminance and lamp type, the rating of positive aspects tending to increase with higher illuminance and higher color rendering index and color temperature." (Pg. 168)	The overall illuminance of the space, along with the measured CRI and color temperature will be that of the most preferred type. The most preferred type according to the research was higher levels of each of these factors.
	"Changes in lamp spectrum may also have a direct effect on the visual system through changes in color appearance, even in an achromatic room." (Pg. 170)	The specific type of room will be considered along with the lighting calculations. The color appearance will be adjusted accordingly.
	"Analysis of the data suggests a more consistent relationship between the perceived brightness of an interior and consideration of both the CCT and CCR of the source" (Pg. 173)	The measurement of the perceived brightness of the space will be considered along with the source of the CCT and CCR.

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Horng, J., Chou, S., Liu, C., Yen Tsai, C. (2012). Creativity, aesthetics and eco-friendliness: A physical dining environment design synthetic assessment model of innovative restaurants. *Tourism Management, 111*(1), 15-25.	"In keeping with recent lifestyle changes, dining outdoors has become an important social behavior; customers need not only a new sense of taste but also a unique dining environment to experience an alternative dining experience." P. 15	• Incorporate an outdoor space for consumers to enjoy dining outside, it is beneficial for users to enjoy the outdoor space when whether is nice. (Horng, J., Chou, S., Liu, C., Yen Tsai, C., 2012, P. 15)
	"Although the function of restaurants is primarily about providing food, because customers want to enhance their quality of life and enjoy comfortable dining space, improvements in food quality alone will not necessarily improve customer satisfaction." P. 16	• Create a comfortable dining space by incorporating lighting that enhances consumers' time at the restaurant while providing adequate lighting (Horng, J., Chou, S., Liu, C., Yen Tsai, C., 2012, P. 16)
	"When visiting upscale restaurants or dining out with family or friends on Sundays, customers would often spend 1 hour or more in experiencing the physical environment of the restaurants, including the lighting, decoration, and layout. Therefore, sense of experience and attention to the environment of the restaurants may influence their satisfaction and subsequent decision on revisiting or not." P. 16	• Create an upscale dining restaurant experience • Create a design aesthetic that focuses on the lighting, which enhances the stay • Incorporate more upscale lighting fixtures that draws focus that draws attention the fixtures. • Incorporate wall washing to draw attention to design elements and architectural details within the space. (Horng, J., Chou, S., Liu, C., Yen Tsai, C., 2012, P. 16)
	"Creative design and aesthetics are often difficult to separate, as aesthetics involve the subjective emotions of the customer; research on consumer behavior is usually focused on the visual space and aesthetic feeling that attracts customer attention." P. 17	• Create a visual space that is interesting to the consumer • Incorporate sustainable materials throughout the space (Horng, J., Chou, S., Liu, C., Yen Tsai, C., 2012, P. 17)

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Han, S., & Taiichiro I., (2014). A practical method of harmonizing daylight and artificial light in interior space. *Journal of Light & Visual Environment, 28*(3) 18-24.	"…when human health, visual comfort, and energy saving are taken into consideration in an architectural planning, it turns out that the combined use of daylight and artificial light would be useful." (Pg. 18)	A light control system that adjusts according to the amount of daylight that filters in to the space will be install and utilized. It will serve as a useful tool for management in harmonizing the daylight as it changes. (Han, S., & Taiichiro I., 2014, p. 18)
	"They found that a lot of occupants chose lower artificial light levels when daylight was bright, in order to benefit more from daylight." (Pg. 18)	The maximum amount of natural daylight will be utilized throughout the design. Large windows and sky lighting were possible will be installed. The proper lighting controls will also be utilized to control the natural daylighting when needed. (Han, S., & Taiichiro I., 2014, p. 18)
	"The results indicate that it is possible to harmonize daylight from the window and artificial lighting by designing appropriate illuminance distribution." (Pg. 24)	The artificial lighting incorporated in the space will be calculated to maximize the use of the daylight from the windows. (Han, & Taiichiro, 2014, p. 24)
	"…daylight and artificial lightings will be harmonized when overall lighting in the room is well approximated by a compound of light from the window and the whole ceiling." (Pg. 24)	The relation between the artificial lighting installed in the ceiling will be considered along with the daylighting from the windows. When there is no daylighting available (night time) artificial lighting will be adjusted and create a harmonized ambience.

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Horng, J-S., Liu, C-H., Chou, S-F., Tsai, C-Y. (2013) Professional conceptions of creativity in restaurant space planning. *International Journal of Hospitality Management,* 34, 73-80.	"Creativity refers to the subjective judgment of products' novelty and appropriateness, the development of new and useful ideas, the generation of new approaches for job improvement, or the linking of two different concepts in a new combination. Thus, creativity includes various perspectives or viewpoints that apply to different situations or industries. In an increasingly competitive and dynamic global market, creativity in the hospital industry has become more critical to survival than ever before." P. 74	• Increase a spaces uniqueness and consumer patronage, there needs to be a creative aspect incorporated within the design to create interest within the interior environment. • Create a unique space by using fixtures and architectural details to add interest. (Horng, J-S., Liu, C-H., Chou, S-F., Tsai, C-Y., 2013, P. 74)
	"A growing body of literature already has demonstrated that applying creative concepts in restaurant operations will not only influence customer satisfaction but also increase financial performance." P. 74	• Use textures, focal elements, and architectural elements to create interest throughout the interior space • Unique seating throughout the space to create interest. (Horng, J-S., Liu, C-H., Chou, S-F., Tsai, C-Y., 2013, P. 74)
	"As a result of legislation, marketing, and values, being 'green' has become the key to survival in the restaurant industry." P. 74	• Incorporate sustainable materials • Incorporate energy efficient materials and lighting systems (Horng, J-S., Liu, C-H., Chou, S-F., Tsai, C-Y., 2013, P. 74)
	"Consumers who are environmentally aware are willing to pay more for energy conservation. Thus, implementing an environmentally friendly space design not only creates a new experience but also improves customer satisfaction." P. 74	• Incorporate sustainable materials • Use LED lighting • Use natural elements throughout the space • Incorporate natural lighting where applicable (Horng, J-S., Liu, C-H., Chou, S-F., Tsai, C-Y., 2013, P. 74)

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Houser, K.W., D.K. Tiller, C.A. Bernecker, & R.G. Mistrick. (2002) The Subjective Response to Linear Fluorescent Direct/indirect Lighting Systems. *Lighting Res. Technology, 34* (3) 243-64.	"As the up light/downlight ratio changes there is consistent and predictable change in the spatial distribution of light." (Pg. 243)	The application of lighting will include both up light and down light. The changes will be measured accordingly.
	"The walls and the ceiling contributed to the perception of overall brightness when the work plane illuminance was held constant." (Pg. 258)	The color, texture, and material of the ceilings and walls will be considered when install the illuminance factors.
	"Although the subjects were not radically sensitive to changes in shadows, shadows were perceived to be less harsh for the light settings with a large uplight component and harsher for the light settings that were predominately downlight." (Pg. 258)	The shadowing of the light source will be considered. Where shadowing may disturb guests, uplighting will be utilized.
	"In terms of overall preference, the light settings where the indirect contribution to horizontal illuminance was 60% or greater were preferred to those where the indirect contribution was less than 60%." (Pg. 258)	Horizontal illuminance will be measured on surfaces in which the reading of menu's, etc. will be done. The measurement will be greater than 60%.

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Ittersum, K., & Wansink, B. (2012). Fast food restaurant lighting and music can reduce calorie intake and increase satisfaction. *Psychological Reports: Human Resources & Marketing, 111*(1), 82-232.	*"Recent research shows that environmental cues such as lighting and music strongly bias the eating behavior of diners in laboratory situations." P. 228*	• Incorporate lighting that enhances the dining experience (Ittersum, & Wansink, 2012, p. 228) • Utilize natural light (Ittersum, & Wansink, 2012, p. 228) • Incorporate indirect lighting or uplighting (Ittersum, & Wansink, 2012, p. 228)
	"The results indicated that softening the lighting and music led people to eat less, to rate the food as more enjoyable, and to spend just as much." P. 228	• Use soft lighting in the lighting system (Ittersum, & Wansink, 2012, p. 228) • Create a lighting system that encourages length of stay (Ittersum, & Wansink, 2012, p. 228) (Ittersum, K., Wansink, B., 2012, P. 228)
	"Lighting and noise could have a psychological influence on food consumption because they directly or indirectly influence eating duration. A frequent observation and robust empirical finding is that the long one dines, the more one eats. Both lighting and noise may influence consumption partly because they encourage people to spend more time eating." P. 228	• Incorporate sound attenuation throughout the restaurant design • Incorporate a warm and indirect lighting system that creates a welcoming environment • Incorporate a lighting system that encourages the consumer to stay longer, therefore spend more during their time at the restaurant • (Ittersum, &., Wansink, B., 2012, P. 228)
	"People are less aroused, less inhibited, and less self-conscious when the lights are low, and they may be more likely to consume more than they otherwise would." P. 229 *"Loud music and bright lights accelerated one's food consumption, and soft music and soft lights decelerated consumption. Even when people stayed longer, they ate less." P. 231*	• Utilize a lighting design that encourages consumers to spend more time within the interior environment • When possible incorporate lighting that is soft and warm • The selection of lighting design elicits emotions among the consumers and affects length of stay and spending. (Ittersum, &, Wansink, B., 2012, P. 229) (Ittersum, &., Wansink, B., 2012, P. 231)

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Kim, W. & Moon, Y. (2009) Customers' cognitive, emotional, and actionable response to servicescape: A test of the moderating effect of the restaurant type. International Journal of Hospitality Management, 28(1), 144-156.	*"In order to increase profit by improving customer evaluation in service firms, most previous marketing research has focused on variable resources (e.g. recruiting, selecting, training, compensating, or motivating) on service employee personnel or service quality such as reliability responsiveness, and empathy. However, since service is produced and consumed simultaneously, the consumer is 'in the factory,' often experiencing the total service within the firm's physical facility. The factory (or place where the service is produced) cannot be hidden and may also have a strong impact on customers' perceptions of the service experience." P. 144*	• Design a restaurant that is "transparent" • Incorporate an open concept kitchen where the consumer is able to watch their food being made • Create a space the restaurant staff can easily navigate, as well as the consumer. *(Kim, W. & Moon, Y.,2009, P. 144)*
	"Diverse academic fields such as architecture, environmental psychology, retailing, and marketing have been paying increasing attention to the effect of physical environment on human psychology and behavior." P. 144	• Create a dining experience that caters to the local market • Create a dining experience that positively affect the users *(Kim, W. & Moon, Y., 2009, P. 144)*
	"The servicescape is a manmade environment, not a natural or social environment. Bitner classified three dimensions of the physical environment: ambient conditions, spatial layout and functionality, and signs, symbols and artifacts." P. 145	• Provide signage throughout the space • Display local artifacts such as art, music, and produce • Create an ambient space that creates a comforting environment for the user *(Kim, W. & Moon, Y., 2009, P. 145)*
	"Environmental psychologists suggest that people's feelings or emotions determine what they do and how they do it." P. 146	• Create an ambient space that is warming, comfortable, and inviting • Cater to the environment of the local demographic *(Kim, W. & Moon, Y., 2009, P. 146)*

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Ladhari, R., Brun, I., & Morales, M. (2008). Determinants of dining satisfaction and post-dining behavioral intentions. *International Journal of Hospitality Management, 27*, 563-673**.**	"Understanding emotions is crucial for service firms because the way consumers feel about a product or service will affect their purchase decision. (Barsky and Nash, 2002)" (Pg. 563)	The understanding of emotions will be considered during the design process.
	"Customer satisfaction can directly affect customer loyalty, organizational profits, return patronage, complaint behaviors and word of mouth communications" (Pg. 563)	The relation of customer satisfaction to the design of the space will be considered when selecting furniture, finishes, and layout within the space.
	"…this study concludes that there are three main sources of customer satisfaction with restaurant services: positive emotions, negative emotions, and perceived service quality." (Pg. 572)	The three main sources of customer satisfaction, positive emotions, negative emotions, and perceived service quality will be considered throughout the design process.

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Kimes, S. & Robson, S. (2014). The Impact of Restaurant Table Characteristics on Meal Duration and Spending. *Cornell Hotel and Restaurant Administration*	*"Restaurateurs implicitly know that table characteristics affect restaurant patrons' behavior, even if the reasons are not always clear." P. 335*	• Create a layout that is easily circulated through • Create a layout and use seating that is accommodating to all individuals. • Utilize furniture that is easy to get in and out of. (Kimes, & Robson, 2014, p. 335)
	"For settings that are occupied for a short time, such as a seat in a restaurant or bar, individuals and groups often choose architectural features such as walls or columns to help define their personal territory and regulate privacy." P. 335	• Incorporate architectural feature that draw the consumer to the location of seating. • Create points of interest within the restaurant design. • Create a sense of privacy for each dining area. (Kimes, & Robson, 2014, p. 335)

Quarterly, *45*(14), 333-346.	*"Some seating configurations are more conducive to pleasant conversation than others. Seats at right angles to one another appear to encourage interaction, for instance, as opposed to seats directly facing a companion. Studies of group interaction, though, show that group members who face one another directly have shorter pauses in conversation, resulting in more positive assessments of the experience." P. 335*	• Create seating at right angle to one another to encourage conversation between patrons. • Provide multiple options of seating for consumers to choose from. • Provide seating that face on another to accommodate larger groups to enhance the dining experience. (Kimes, & Robson, 2014, p. 335)

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Nabil, A., Mardalijevic, J. (2015) A smart lighting system for visual comfort and energy savings in industrial and domestic use. *Institute of Energy and Sustainable Development*, pp. 1-27.	*"The exploitation of daylight, commonly referred to as 'daylighting', is recognized as an effective means to reduce the artificial lighting requirements of non-domestic buildings. In practice, however, daylighting is a greatly under-exploited natural resource." P. 1*	• Incorporate photosensors (daylight sensors) into the lighting system when applicable • Reduce the need for artificial lighting systems • Utilize this natural resource to its full extent (Nabil, A., Mardalijevic, J., 2015, P. 1)
	"The daylight factor at any point in a space is the ratio of the (internal) illuminance at that point to the unobstructed (external) horizontal illuminance under the CIE standard overcast sky. No account is made of the illuminance from the sun and non-overcast skies, and so the daylight factor is invariant to building orientation. The daylight factor can be determined analytically, from measurements in artificial skies or by computer simulation." P. 1	• Reducing the overall energy consumption • Dimmable lights • Occupancy sensors • Photosensors • LED lighting (Nabil, A., Mardalijevic, J., 2015, P. 1)

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Ryu, K., & SooCheong, J. (2008). Dinescape: A scale for customers' perception of dining environments. *Journal of Foodservice Business Research, 11*(1), 2-20.	"Hedonic consumption seeks pleasure or emotional fulfillment, as opposed to functional usefulness, from the service experience" (Pg. 4)	The atmosphere paired with the product served will seek please guests and leave them with emotional fulfillment they expect from an upscale dining experience.
	"DINESCAPE is different than the term SERVICESCAPE in that it focuses on the restaurant environment and it is restricted to only indoor dining environments" (Pg. 4)	The DINESCAPE, the man-made physical and human surroundings in the dining area of a restaurant, will create positive dining experience for guests.
	"From a practical standpoint, DINESCAPE is a concise multiple-item scale with acceptable reliability and validity that restaurateurs can use to better understand how customers perceive the quality of dining environments of their restaurants." (Pg. 20)	The DINESCAPE scale will be used to better predict the customer's perception of the space.

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Ryu, K., & Heesup, H. (2011). New or repeat customers: How does physical environment influence their restaurant experience? *International Journal of Hospitality Management, 30*, 599-611.	"The physical environment is an important determinant of consumer psychology and behavior." (Pg. 599)	Consumer psychology and behavior will be considered throughout the design process.
	"Facility aesthetics means architectural design, interior design, and décor that contribute to the attractiveness of the dining environment. Facility aesthetics can be critical in attracting and retaining restaurant customers" (Pg. 600)	The overall facility aesthetics will aim to attract and retain restaurant customers.
	"The DINESCAPE includes six dimensions: facility aesthetics, lighting, ambience, layout, table settings, and service staff." (Pg. 600)	The six dimensions of the DINESCAPE model will be considered.
	"The findings of the present study revealed that the proposed model could accurately predict customers' perceived disconfirmation, satisfaction, and loyalty, implying its applicability in the hospitality industries is strong.	The DINESCAPE model will be used during the design stages with the consideration of customer satisfaction and loyalty.

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Stall-Meadows, C., & Hebert, P. (2011) The sustainable consumer: an in situ study of residential lighting alternatives as influenced in infield education. *International Journal of Consumer Studies*, P. 164-170	*"It has become a priority to encourage or require consumers to adopt sustainable lighting alternatives for their homes in order to substantially save energy costs, reduce greenhouse gas emissions (particularly carbon dioxide), reduce solid waste in landfills and conserve scarce resources." P. 164* *"In the US, approximately 17% of energy consumption is used for residential lighting." P. 164*	• Reduce the contribution to greenhouse gas emissions (Stall-Meadows, & Hebert, 2011, p. 164) • Incorporate LED bulbs that last on average 20 years to reduce solid waste within the landfills (Stall-Meadows, & Hebert, 2011, p. 164) • Use sustainable materials within the space (Stall-Meadows, & Hebert, 2011, p. 164) • Consider energy efficiency of all building systems located within the building (Stall-Meadows, & Hebert, 2011, p. 164)
	"This research offered environmental and economic benefits to the global society through the testing of a new methodology towards sustainability. The outcomes of the study's unique methodology included increased awareness, acceptance, preference, ad planned adoption of CFL's and LED's. By participating in demonstrations of sustainable light sources, consumers learned they could lower energy consumption and reduce waste while still retaining appropriate illumination quality and quantity." P. 169	• Use LED's for all light fixtures located throughout the building • Incorporate photosensors • Incorporate occupancy sensors • Lower energy consumption of building by incorporating systems and sensors previously stated (Stall-Meadows, C., Hebert, P., 2011, P. 169)

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Wall, E.A. & Berry, L.L. (2007). The combined effects of the physical environment and employee behavior on customer perception of restaurant service quality. *Cornell Hotel and Restaurant Administration Quarterly, 48*(1), 59-69.	"Diners use the following types of clues to judge a restaurant experience: functional- the technical quality of the food and service; mechanic- the ambience and other design and technical elements; and humanic- the performance, behavior, and appearance of the employees." (Pg. 59)	The mechanic clues of the space will draw customers in from the front entrance throughout the entire space.
	"Customers' expectations of restaurant service were found to be significantly higher when mechanic clues were positive than when they were negative." (Pg. 66)	The entrance of the hospitality setting with aim to create positive mechanic clues upon entering the restaurant setting.
	"…the physical environment can powerfully influence people's cognition, emotion, and behavior." (Pg. 61)	The branding of the space will directly relate to the mechanic clues that guest experience when entering the space.

Research Application Chart		
Reference	**Research Discovery/Finding**	**Design Application**
Wardono, P., Hibino, H., & Koyama, S. (2012). Effects of interior colors, lighting and decors on perceived sociability, emotion and behavior related to social dining. *Procedia - Social and Behavior Sciences, 38,* 362-372.	"These authors have found five key experience design-principles for designing memorable experience including "1. Theme the experience, 2. Harmonize impressions with positive cues, 3. Eliminate negative cues, 4. Mix in memorabilia, 5. Engage all five senses."" (Pg. 363)	These five principles will be incorporated into the design of our space where appropriate. The factors that most appeal to our design concept are theme, harmonizing impressions with positive cues, and eliminating negative cues. Engaging all five senses will be the factor that is considered the most.
	"Sociability is part of five basic inborn personality attributes, along with "activity level, irritability or emotionality, soot ability, and fearfulness."" (Pg. 364)	Personality attributes will be a key focus in the design of our hospitality setting. Seating arrangements and expected points of interaction with guests and employees will be arranged to be the most comfortable arrangement possible.
	"…Ryu and Jang (2007) using structural equation modeling analysis found that facility aesthetics, involving visual cues like: furniture, color, lighting, and décor, ambience (non-visual cues) and employees influenced significantly on the level of customer pleasure, and particularly ambience and employees gave impact significantly to arousal." (Pg. 364)	The visual cues of the space will create an ambience that is cohesive with the brand of the space. Each piece of furniture, lighting fixture, and color used will be carefully selected to create positive visual cues and incorporate the branding of the space.
	"The results showed that the restaurant with monochromatic colors, dim lighting, and plain decors yielded a statistically significant difference in the entire dependent variables with almost any other interior conditions on romantic dining, as opposed to the case of casual dining." (Abstract)	The focus of the type of dining in our hospitality setting will be clearly defined (fine dining vs casual dining). The colors, lighting, and decors will be coordinated accordingly from the information found in this study.

Research Application Chart		
Reference	Research Discovery/Finding	Design Application
Wu, C. H., Liang, R. D. *(2009)* Effect of experiential value on customer satisfaction with service encounters in luxury-hotel restaurants. *International Journal of Hospitality Management, 28(1), 586-593.*	*"The first is environmental elements, i.e., consumer interactions with intangible and tangible elements in the service environment (e.g., lighting, music and internal and external environmental design) or the periods during which a consumer interacts with physical facilities and other tangible elements in the service environment proposed three store environment cues (social, design and ambient) as exogenous constructs. These cues, which correlate with consumer merchandise value, subsequently influence patronage." P. 587*	• Use adequate lighting throughout the interior environment • Provide comfortable seating that is easily navigated for the restaurant patrons • Provide a ambient space that is comfortable for the user (Wu, C. H., Liang, R. D., 2009, P. 587)
	"The physical environment may provide cues regarding the influence of consumer perceptions on the brand image of business. Hutton and Richardson (1995) proposed that a health center environment positively impacts its consumer satisfaction. Other scholars have posited that environment influences consumer satisfaction (Baker et al., 2002, Bitner, 1990 and Minor et al., 2004). For example, Sulek and Hensley (2004) argued that the atmosphere of a restaurant significantly affects its customer satisfaction." P. 589	• Create a space that positively impacts consumer satisfaction • Incorporate clear branding for the restaurant business by integrating the branding throughout the restaurant (Wu, C. H., Liang, R. D., 2009, P. 589)