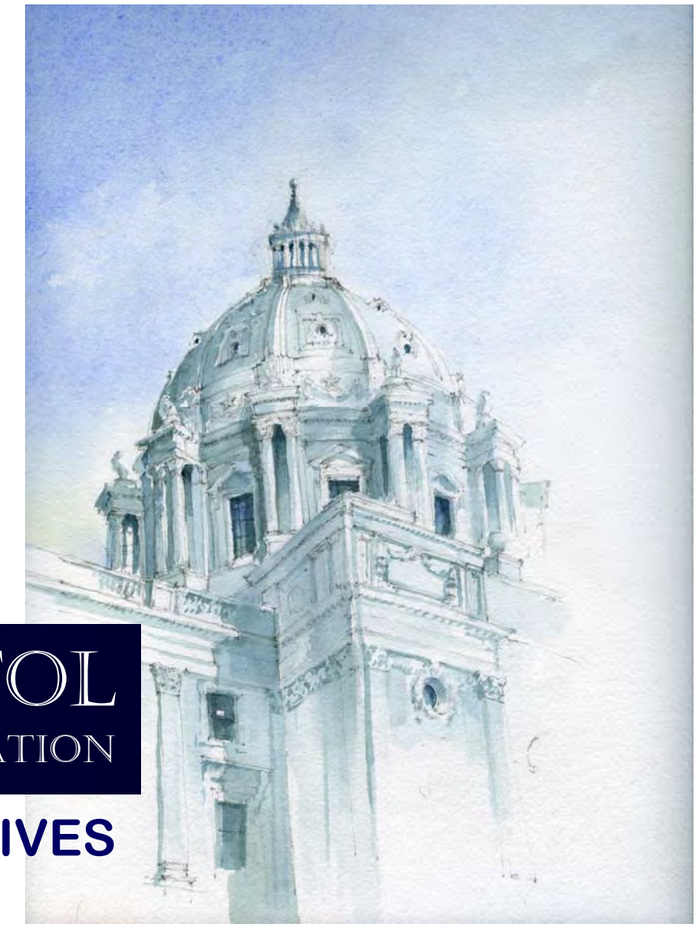


MINNESOTA STATE CAPITOL

REPAIR AND RESTORATION

DESIGN GUIDELINES AND IMPERATIVES

Real Estate and
Construction Services

Admin Minnesota
DEPARTMENT OF ADMINISTRATION

MOCA

WORKING DRAFT

VOLUME AND CONNECTION

The volumes and the connection of volumes on the interior of the Capitol were carefully orchestrated by Cass Gilbert in the original design. Grand volumes such as the Rotunda were supported by the beautiful transitional volumes of the stairs.

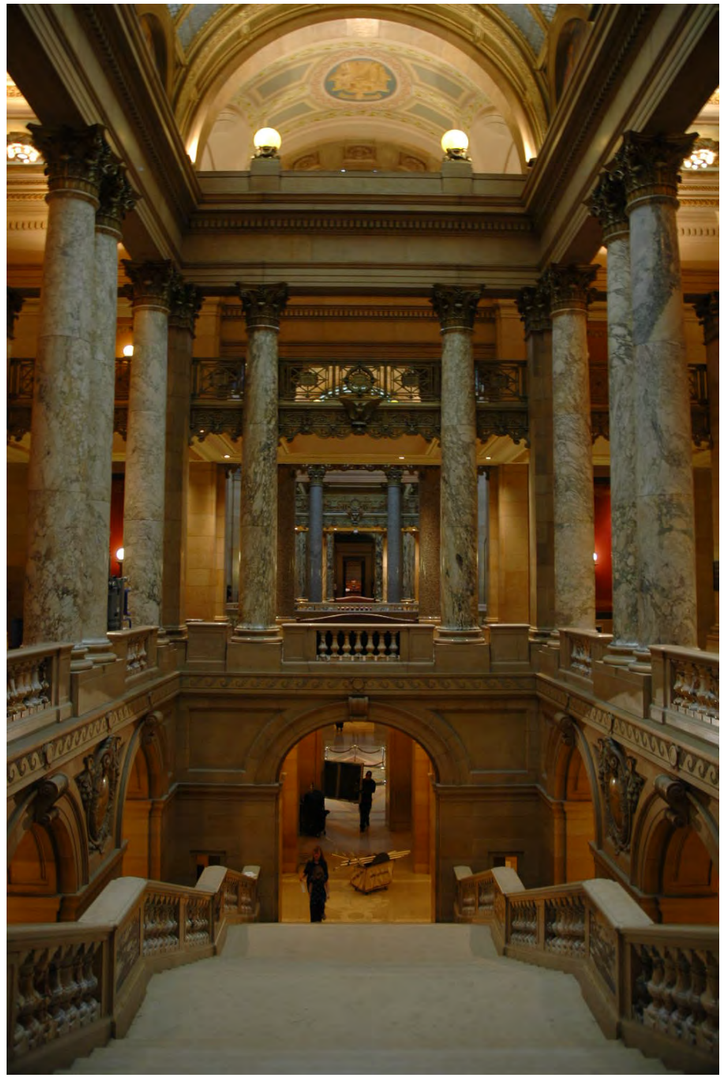
This careful connection of spaces and the grand scale of these significant volumes combine to create majesty and power appropriate to the function of each space.

The Rotunda, Aisles and Grand Stairs are common to all visitors, occupants and elected officials. The Senate, House and Supreme Court Chambers are crafted to suit unique functions and are served by the grand common spaces of the building.

The volume enclosed by these spaces is important to the experience of the Capitol Building and is part of the original architectural integrity of the building.

Modifications to building systems should respect these volumes and not change them in the Preservation Zone. Where possible volumes that have been changed over time should be restored.

Design Guideline:
Repairs and building systems improvements should not change the volumes and connection of volumes created in the original design for grand public spaces.



Grand Stairs and Rotunda connection

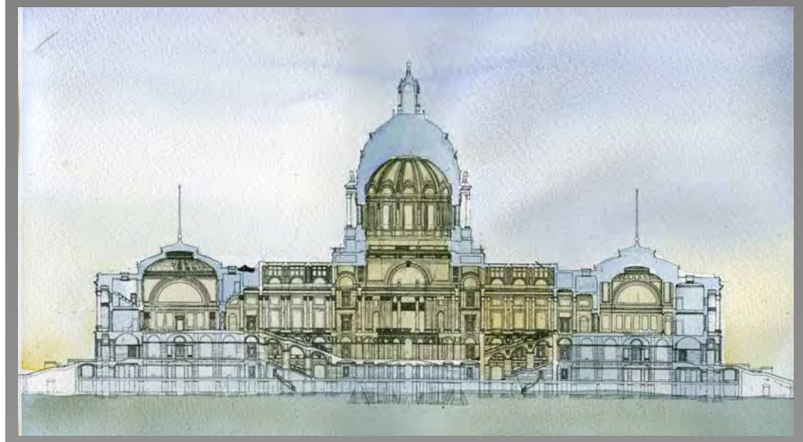


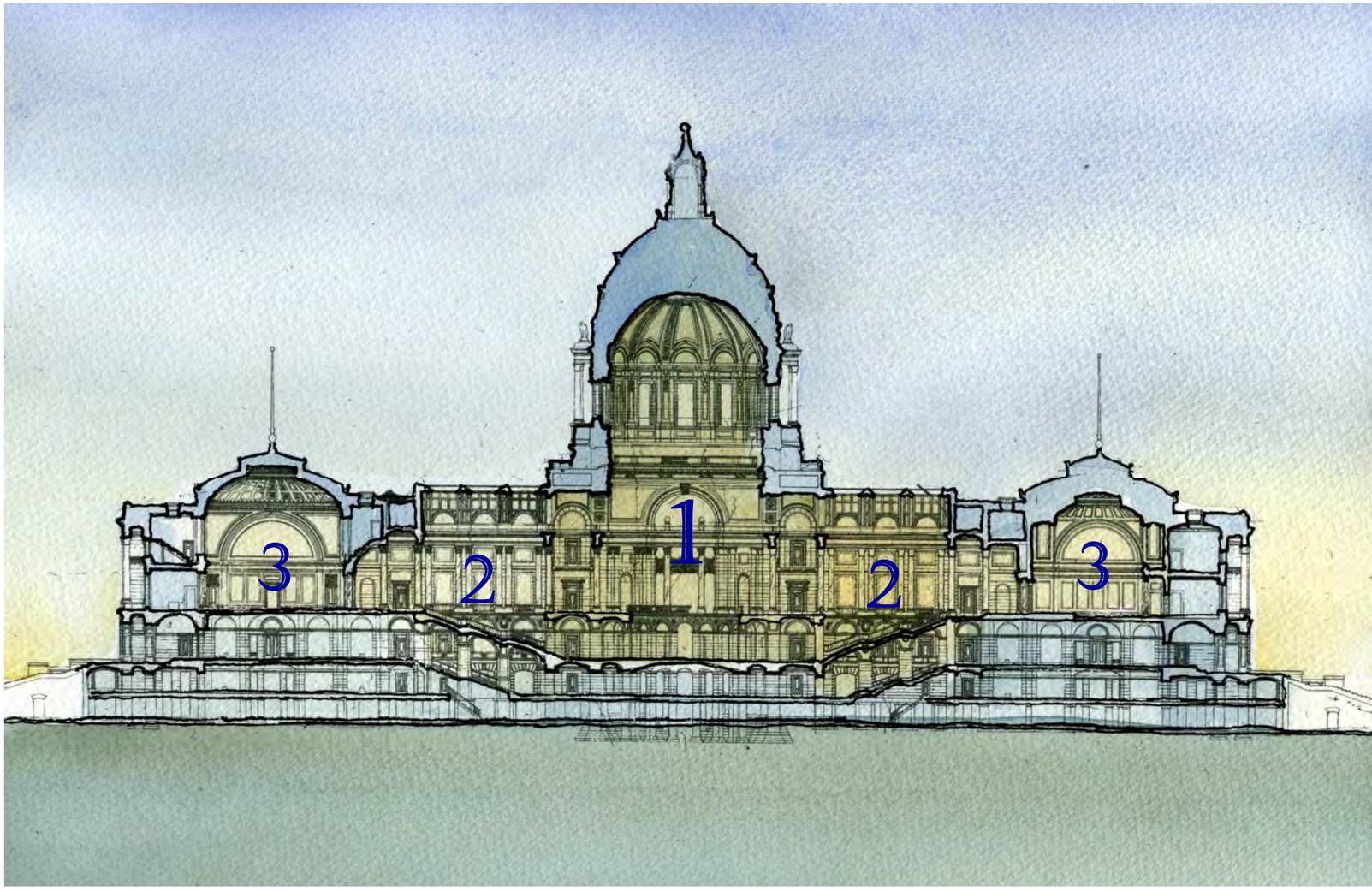
Diagram of grand volumes and their connections

HIERARCHY

The organization of space within the Capitol follows a hierarchy created by the placement, volume, and level of finish. Clearly spaces were planned carefully to convey the power and import of the functions within the building. Unlike many building types, capitol buildings usually preserve the most important and beautiful spaces for the public. The "Peoples House" gives all equal access to the most significant and finely finished spaces. Great pride of ownership and citizenship are the intended emotions evoked by these grand spaces.

A careful hierarchy of space has been planned for the Capitol. This hierarchy dictates circulation and use of the building. Spaces at the top of this hierarchy are usually not flexible in their function and should be preserved as intended.

Spaces may become more flexible as they diminish in importance. The character of all space in the Capitol should reflect the original architectural character envisioned by Cass Gilbert even if the space utilization is more flexible and conforms to current demand and agreements for use.



Design Guideline:
The hierarchy of spaces in the Capitol provide a guide for preservation and flexibility of use. All spaces regardless of use should be repaired using the Cass Gilbert design as guide.

ENTRY

ENTRY
The South Entrance is designed to be the grand entrance to the building. This axis was envisioned as the framing axis for the building and the approach to the building was carefully planned to create the experience of entering the building from this direction.

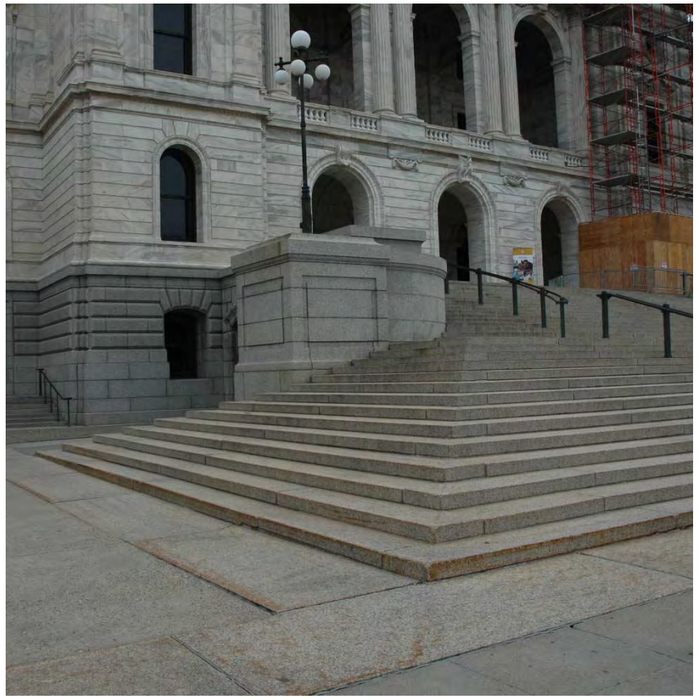
The terrace, stair configuration, and Porte Cochere were all planned to support the South Entrance as the most significant entrance to the building. It is important, even with current security concerns, that the South Entrance remain open to visitors and continues to provide the experience originally envisioned for the arrival sequence for the building.

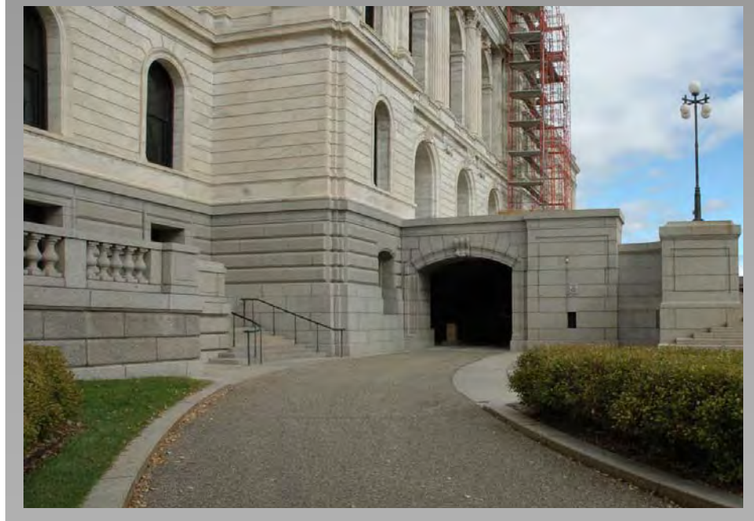
Ramps have been added to the South Porte Cochere and steps have been eliminated. The drive and walking surface to the area exceeds current requirements for compliance with ADA. Cross slopes also exceed current requirements in this area.

The west entry and Porte cochere remain relatively unchanged and should be preserved.

The east Porte cochere has been significantly compromised. Mechanical equipment should be removed and original materials and configuration restored.

Design Guideline:
Repairs and building security planning should accommodate the retention of the South Entry as the primary ceremonial entry to the building. Other entrances should be restored.





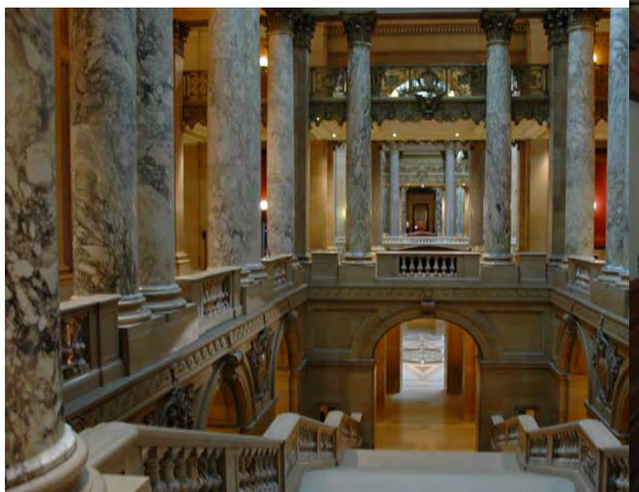
CIRCULATION 04

CIRCULATION WITHIN THE CAPITOL
Circulation within the building has changed from its original configuration over time. Minor corridors have been turned into Hearing Rooms and offices. Some of the building entrances have been closed off completely altering the exterior interior circulation.

Elegant stairs within the building make vertical circulation clear. Elevators are at convenient locations serving to major public circulation areas.

Minor corridors also are served by smaller utilitarian stairs that create the internal circulation to offices and Hearing Rooms and provided additional exit paths from the building.

The patterns of circulation within the building were carefully planned in the original design. The same clarity of interior and exterior circulation should be considered in the restoration and repair projects that are currently planned.



Design Guideline:
Repairs and building systems improvements should not change the patterns of circulation created in the original design for grand public spaces. Minor Corridors and secondary stairs should be carefully considered for function and restoration at this time.

SEQUENCE OF EXPERIENCE
The volumes and the connection of volumes on the interior of the Capitol were carefully orchestrated by Cass Gilbert in the original design. Grand volumes such as the Rotunda were supported by the beautiful transitional volumes of the stairs.

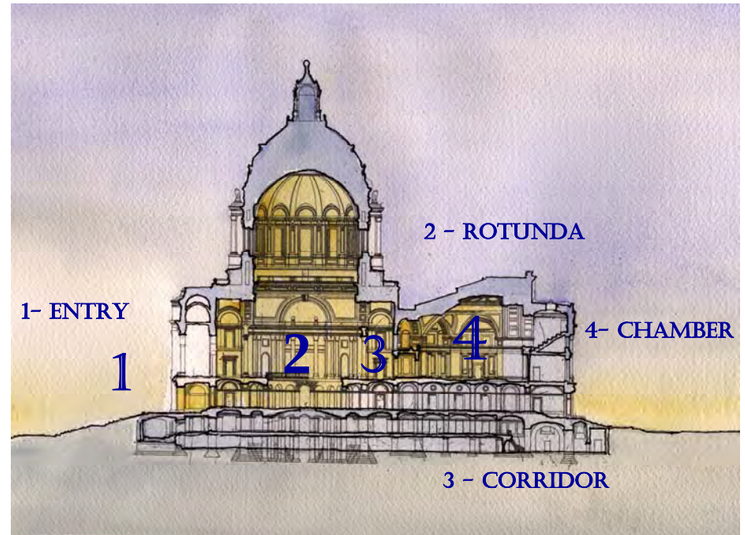
This careful connection of spaces and the scale of these significant volumes combine to create majesty and power appropriate to the function of each space.

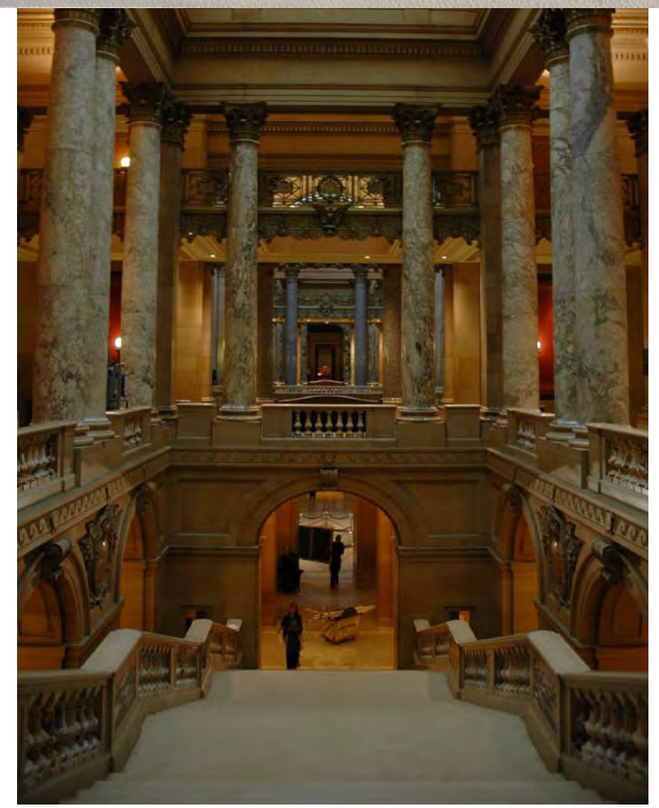
The Rotunda, Aisles and Grand Stairs are common to all visitors, occupants and elected officials. The House, Senate and Supreme Court Chambers are crafted to suit unique functions and are served by the grand common spaces of the building.

The volume enclosed by these spaces is important to the experience of the Capitol Building and is part of the original architectural integrity of the building.

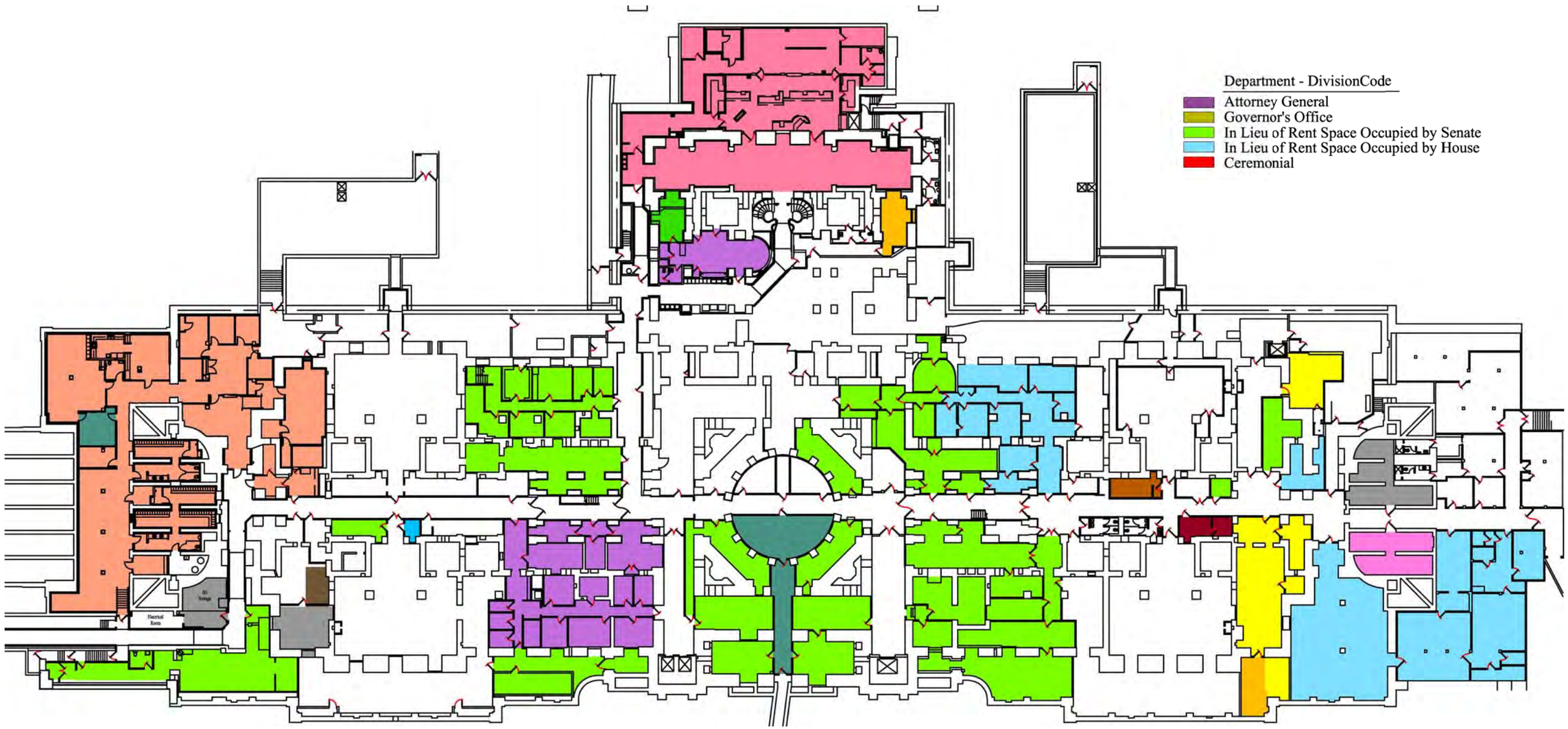
Other portions of the building follow in sequence and experience. The minor corridors are intended to provide elegant functional circulation to offices and Committee hearing Rooms. Stairs are provided within the Minor Corridors to assist in exiting and functional relationships between

Design Guideline:
Repairs and building systems improvements should not change the sequence of spatial experience created by the building design.





ZONES OF USE



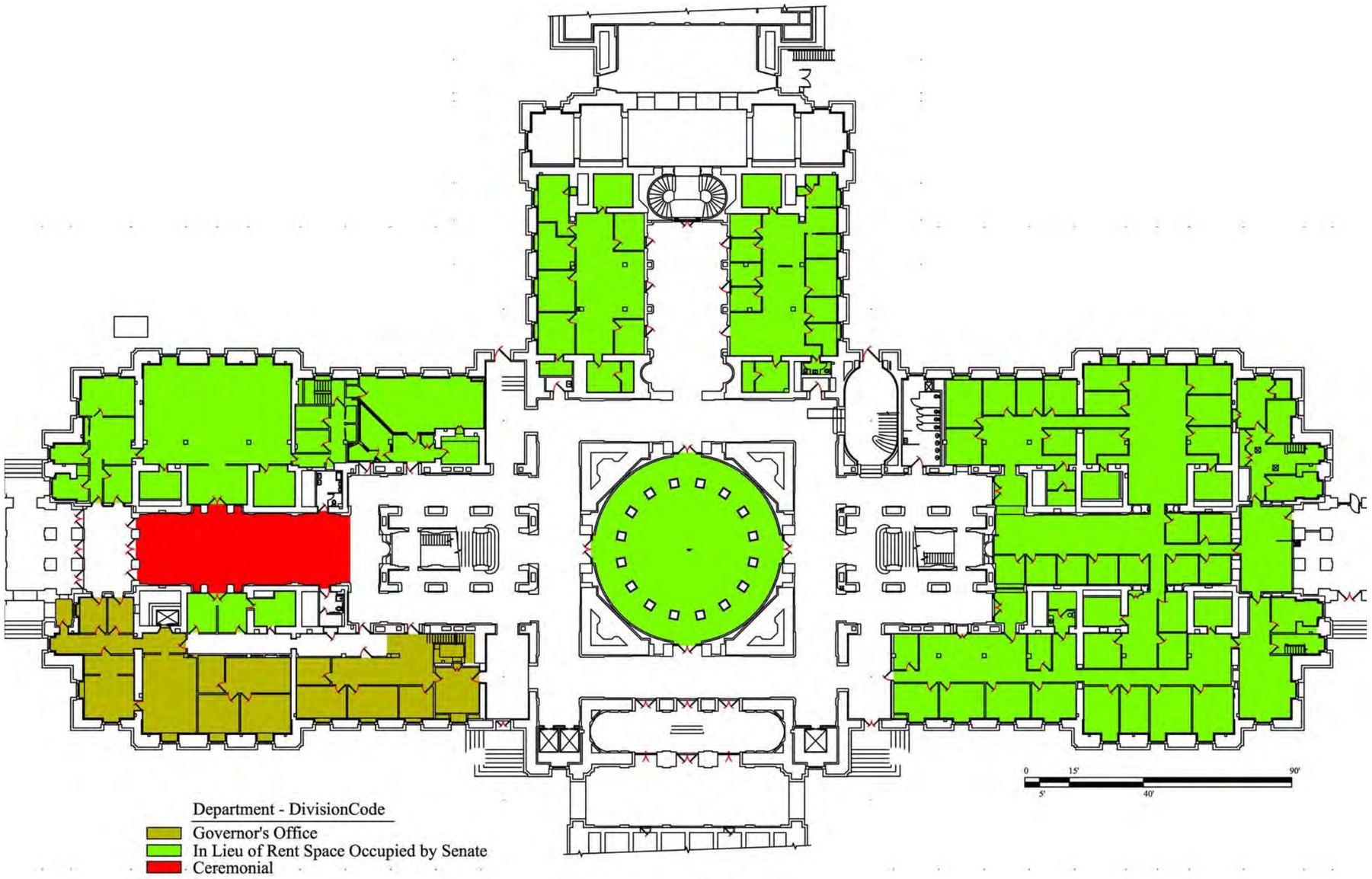
BASEMENT PLAN

INTERIOR GUIDELINES

1/2/2013

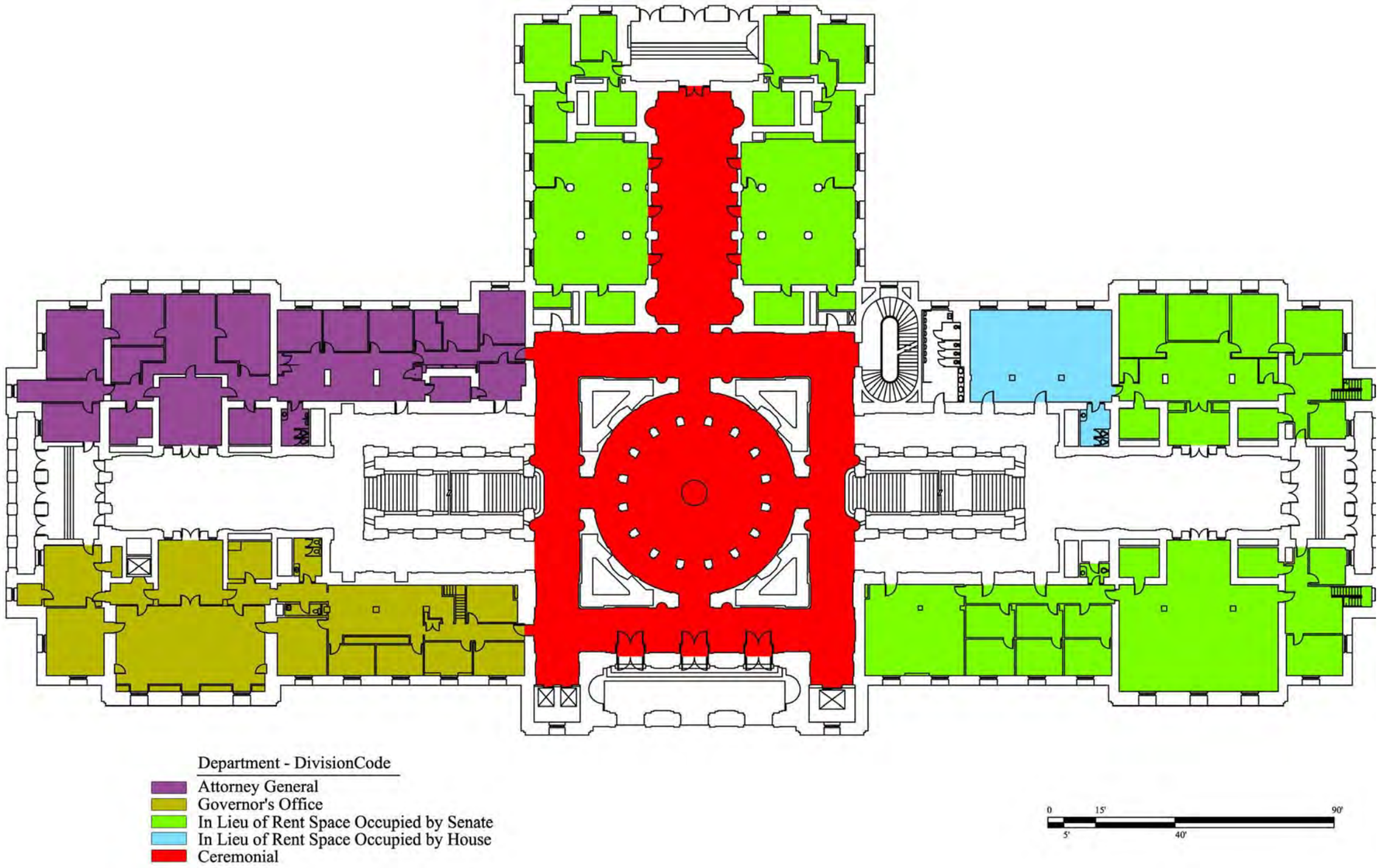
WORKING DRAFT

ZONES OF USE



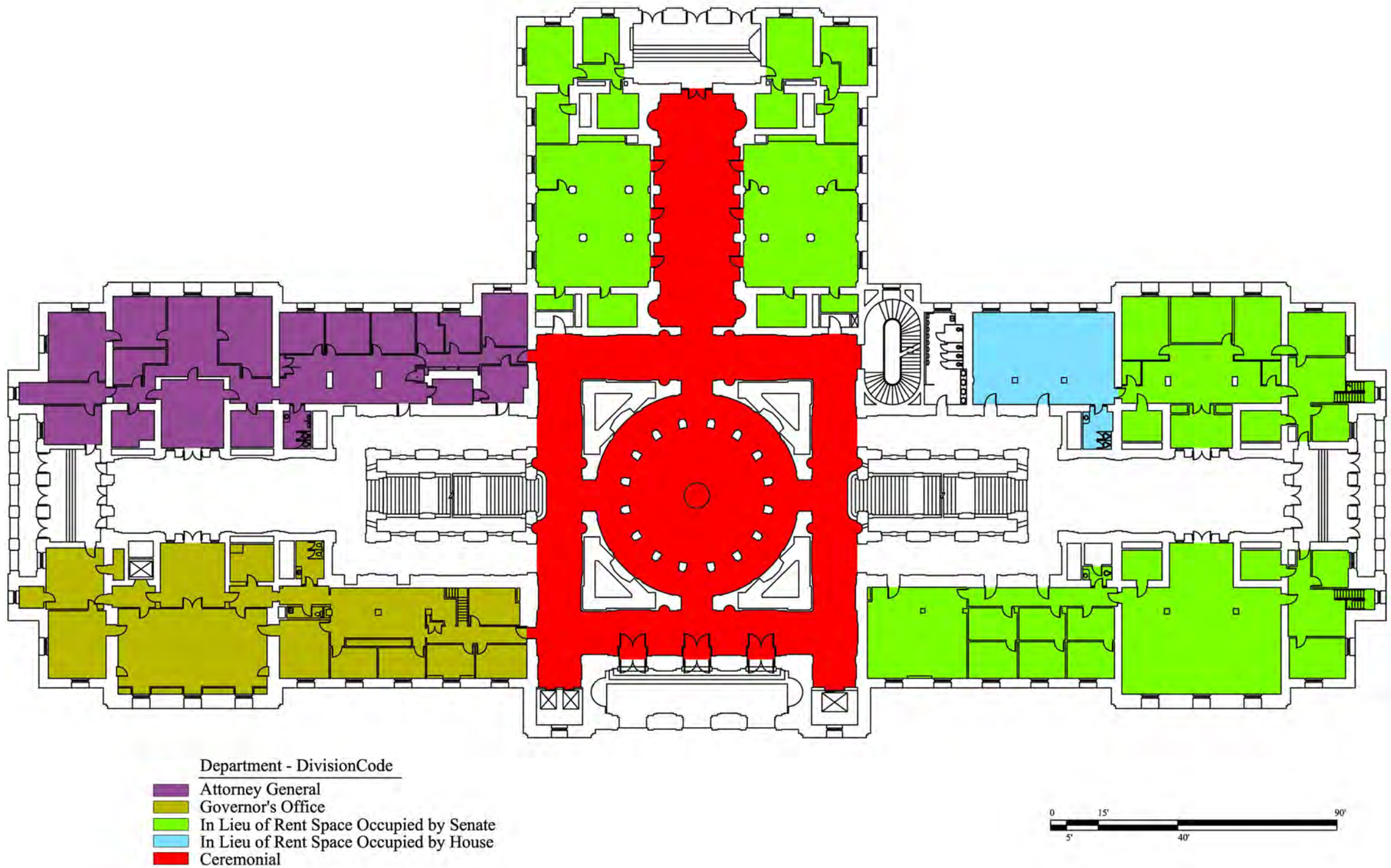
GROUND LEVEL PLAN

ZONES OF USE

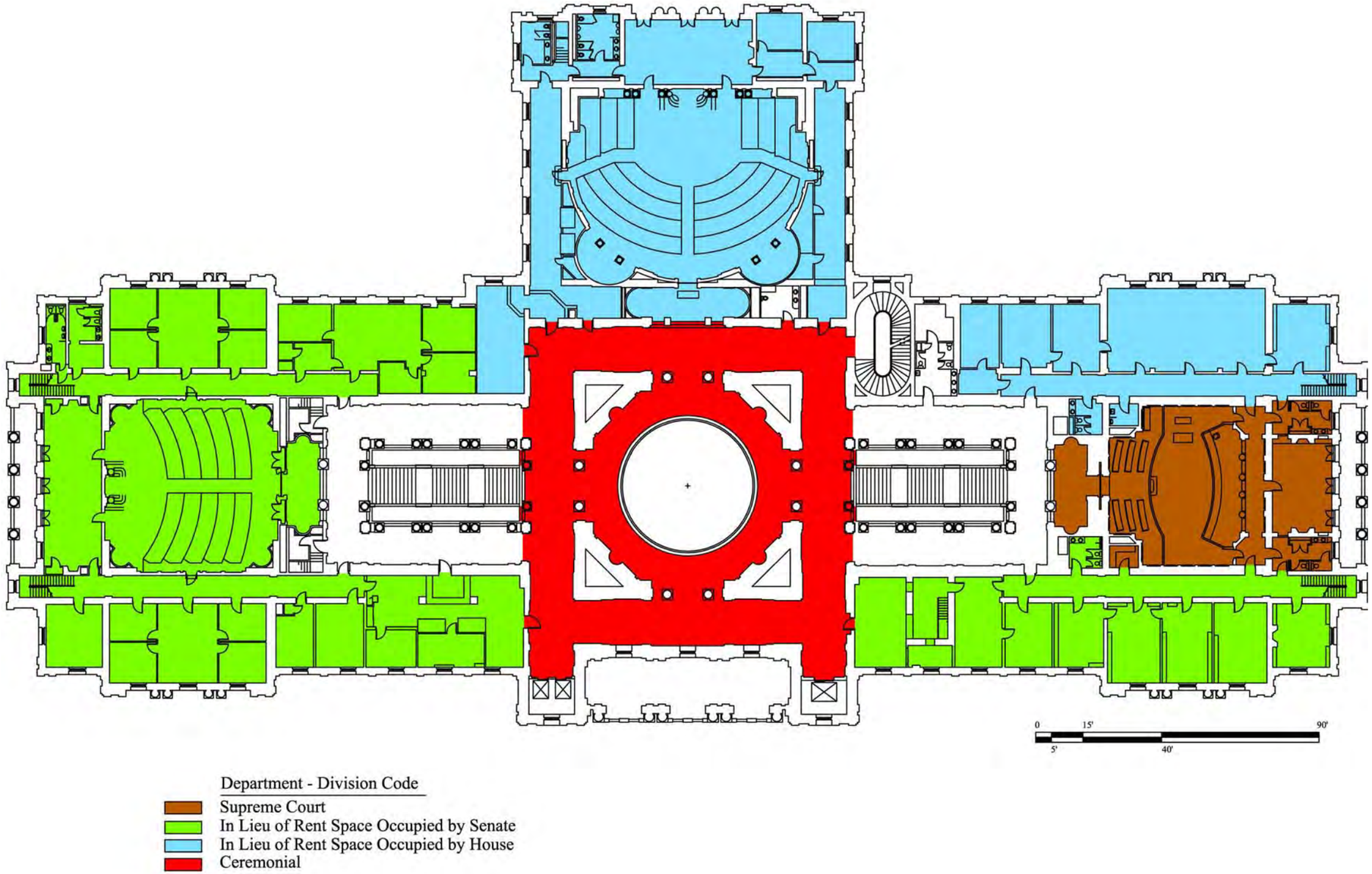


LEVEL TWO PLAN

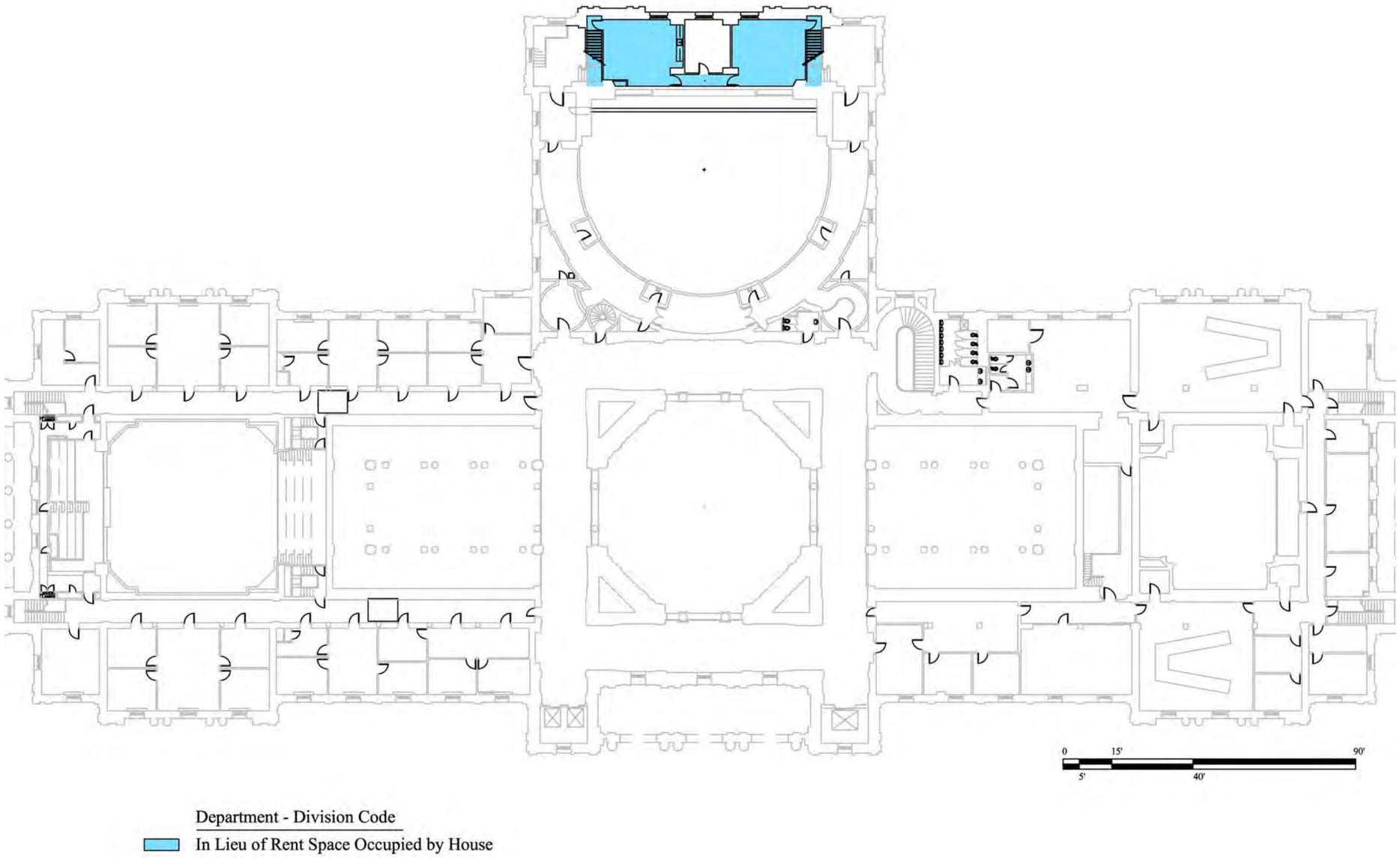
ZONES OF USE



LEVEL THREE PLAN



LEVEL FOUR PLAN



MEZZANINE LEVEL PLAN

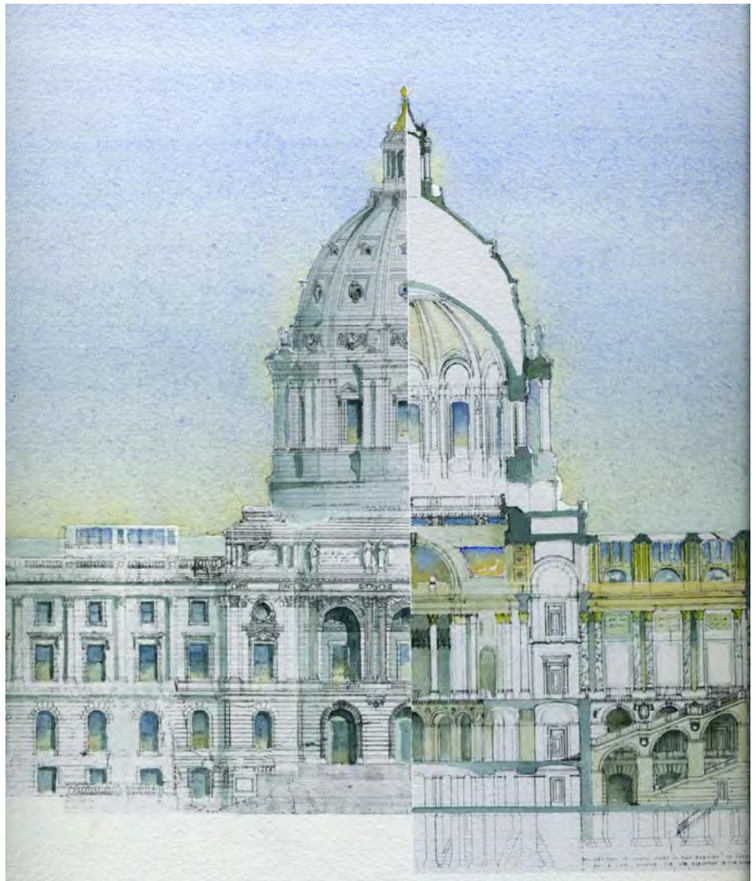
ZONE ONE
The organization of spaces in the original design of the building created a hierarchy of finishes and flexibility of use. Many different organizational and functional plans exist that were created by Cass Gilbert during the years he had responsibility for the work at the Minnesota State Capitol.

Some spaces in the Capitol have remained constant in use and unchanged in general character during the life of the building. Included are the important public corridors and rotunda spaces on all floors, the House, Senate and Supreme Court Chambers, the Governor's Reception Room and Ceremonial Offices for Constitutional Officers. These areas should be preserved. Preservation includes configuration, use, finishes, historic lighting, and all other elements that are original to the building.

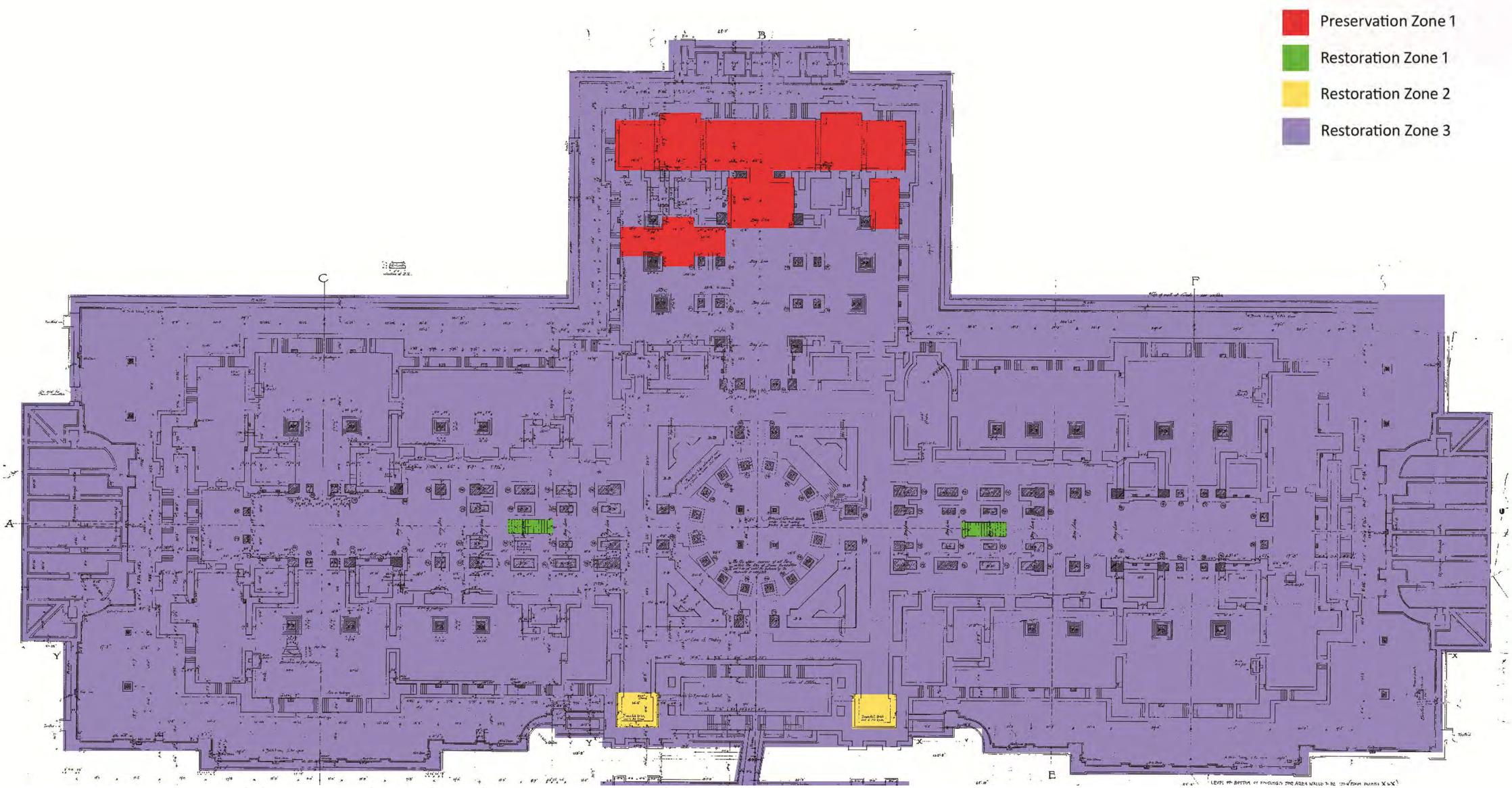
Intrusive elements that have been added over time should be removed. Life safety and security equipment should be carefully designed and placed for minimal impact on these spaces. The integration of building systems in these areas should be carefully planned to not adversely effect the original fabric and configuration within the Zone One.

USE OF SPACE IN ZONE ONE
Space use in the Zone One is primarily in accordance with the original use. Little deviation from this use exists in the building today. Temporary uses such as food service carts and media connections should be careful planned to preserve the original configuration and finishes.

Design Guideline:
Zone One protects the most significant area in the building. These spaces should be given the highest priority for architectural integrity.

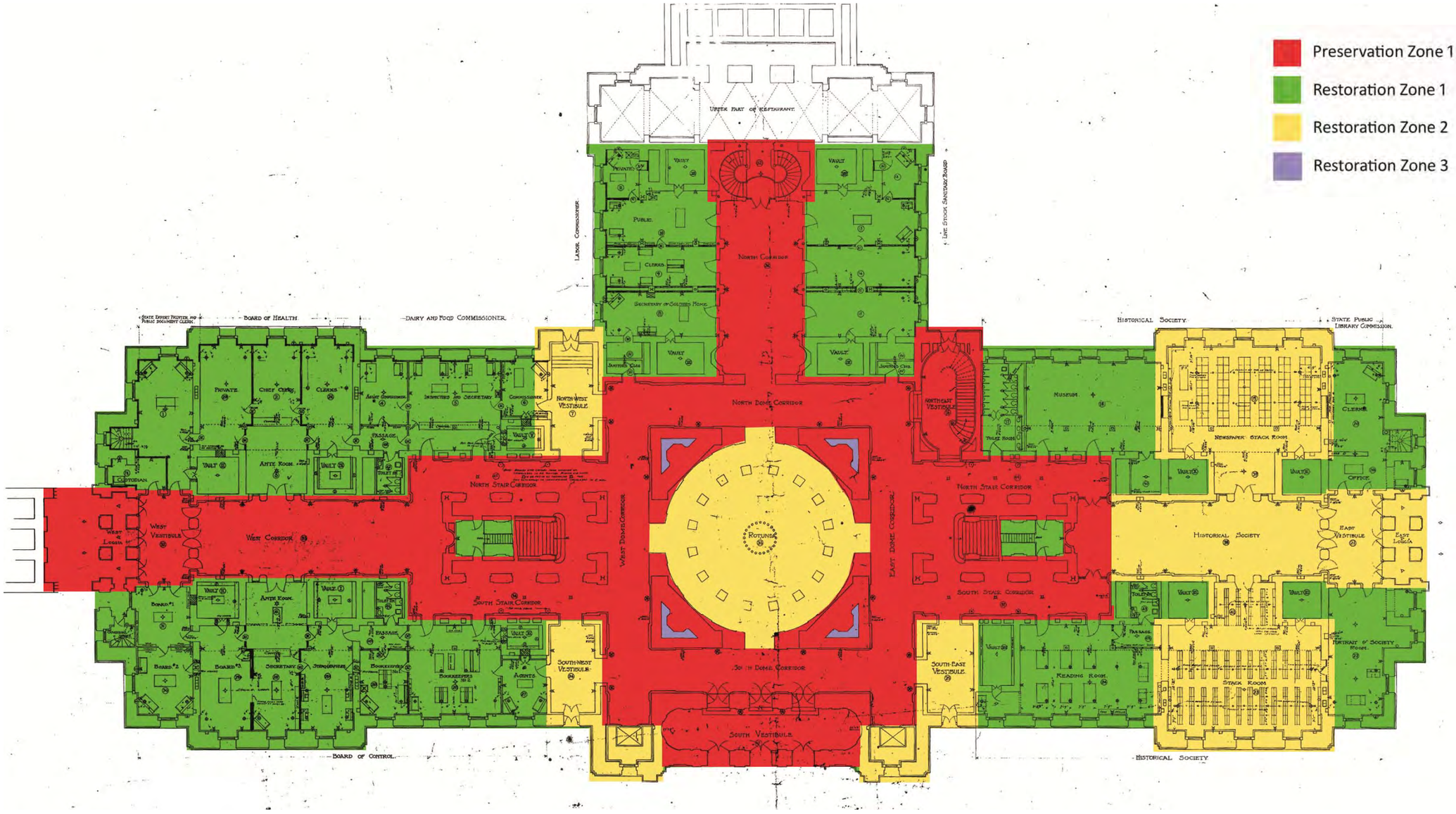


ZONES



BASEMENT AND AREA UNDER TERRACE

ZONES



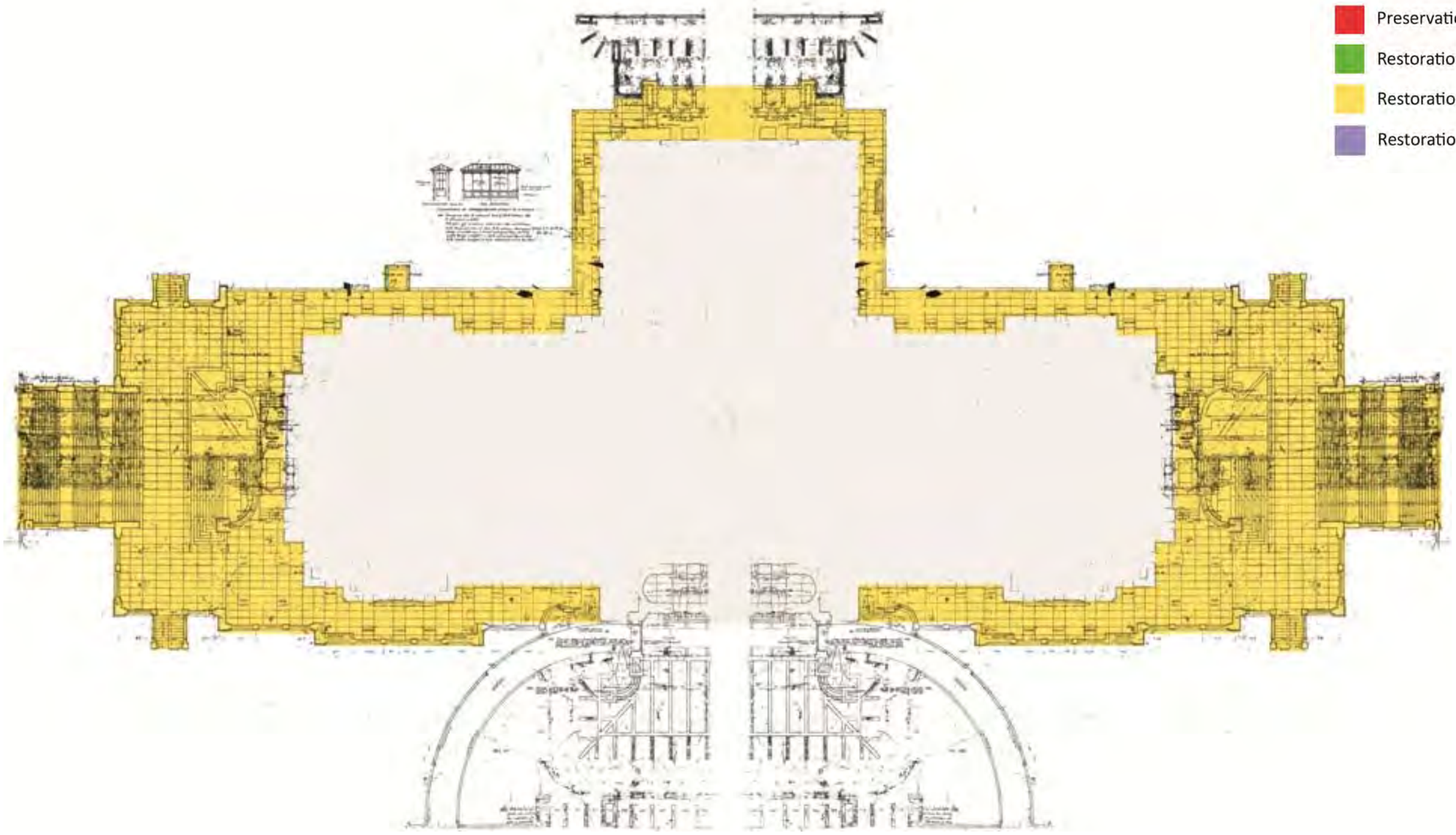
GROUND LEVEL

INTERIOR GUIDELINES

1/2/2013

WORKING DRAFT

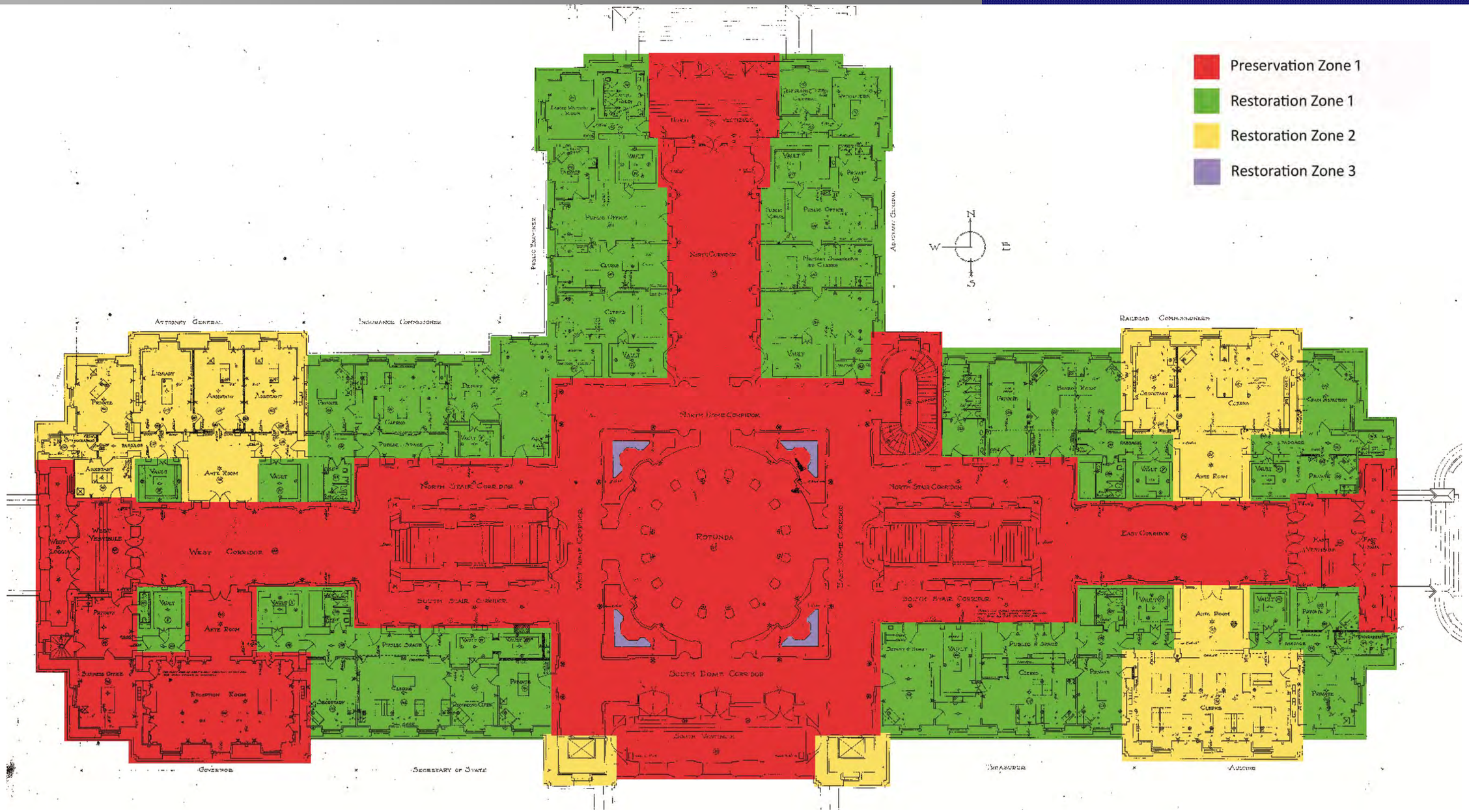
ZONES



TERRACE LEVEL

ZONES

08.A



FIRST LEVEL

INTERIOR GUIDELINES

1/2/2013

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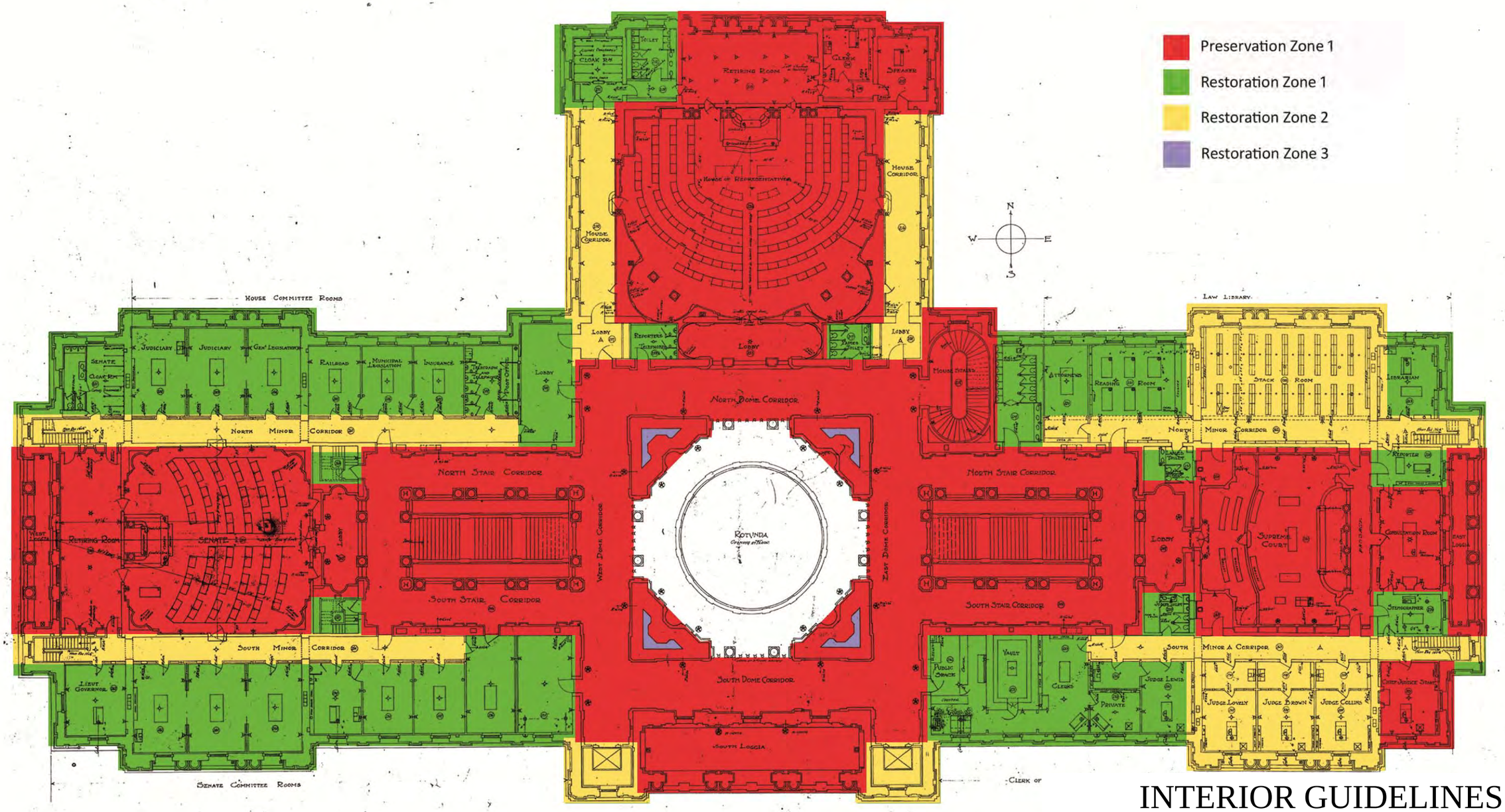
ZONES



SECOND LEVEL

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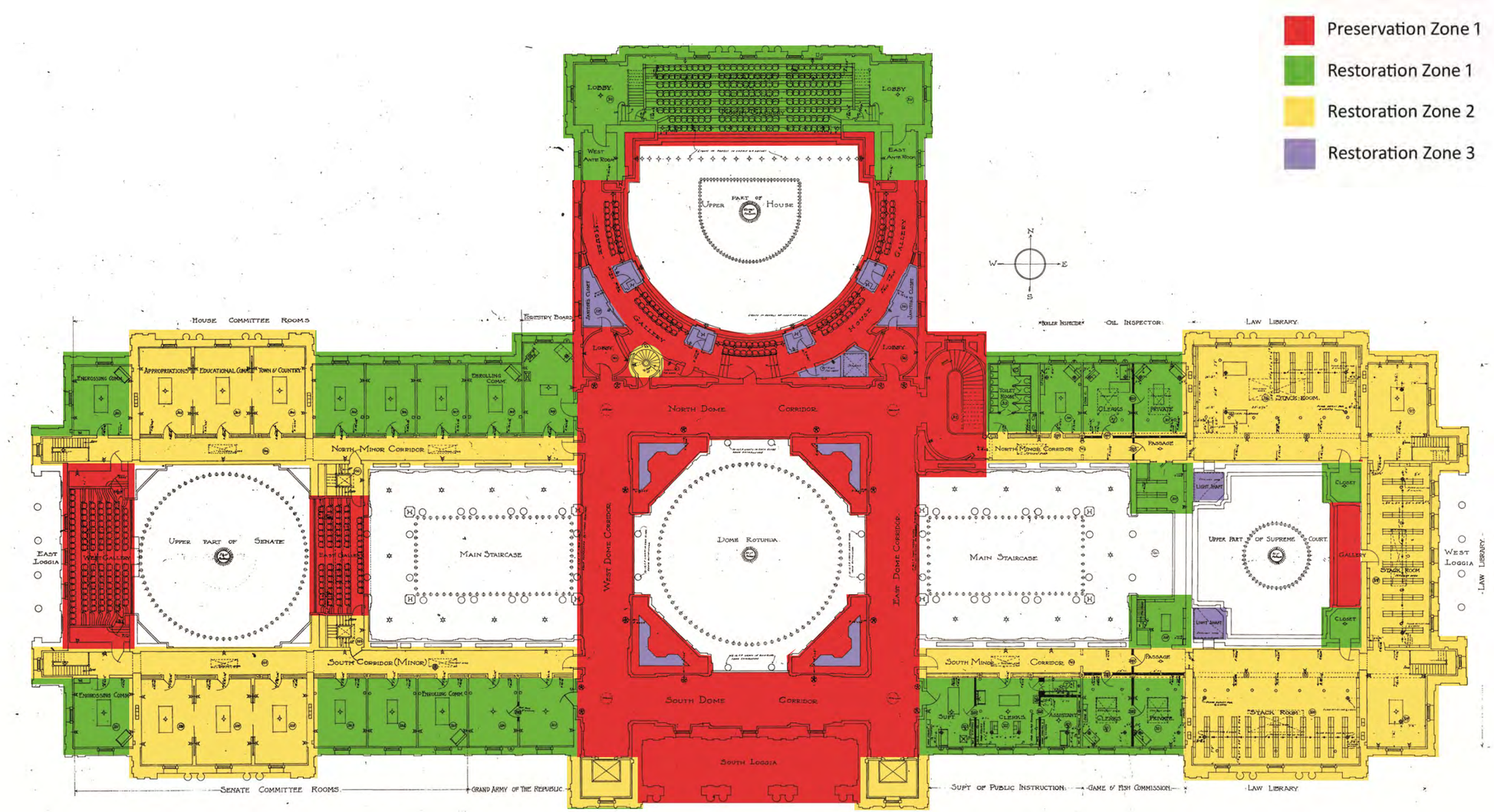
ZONES



THIRD LEVEL

INTERIOR GUIDELINES

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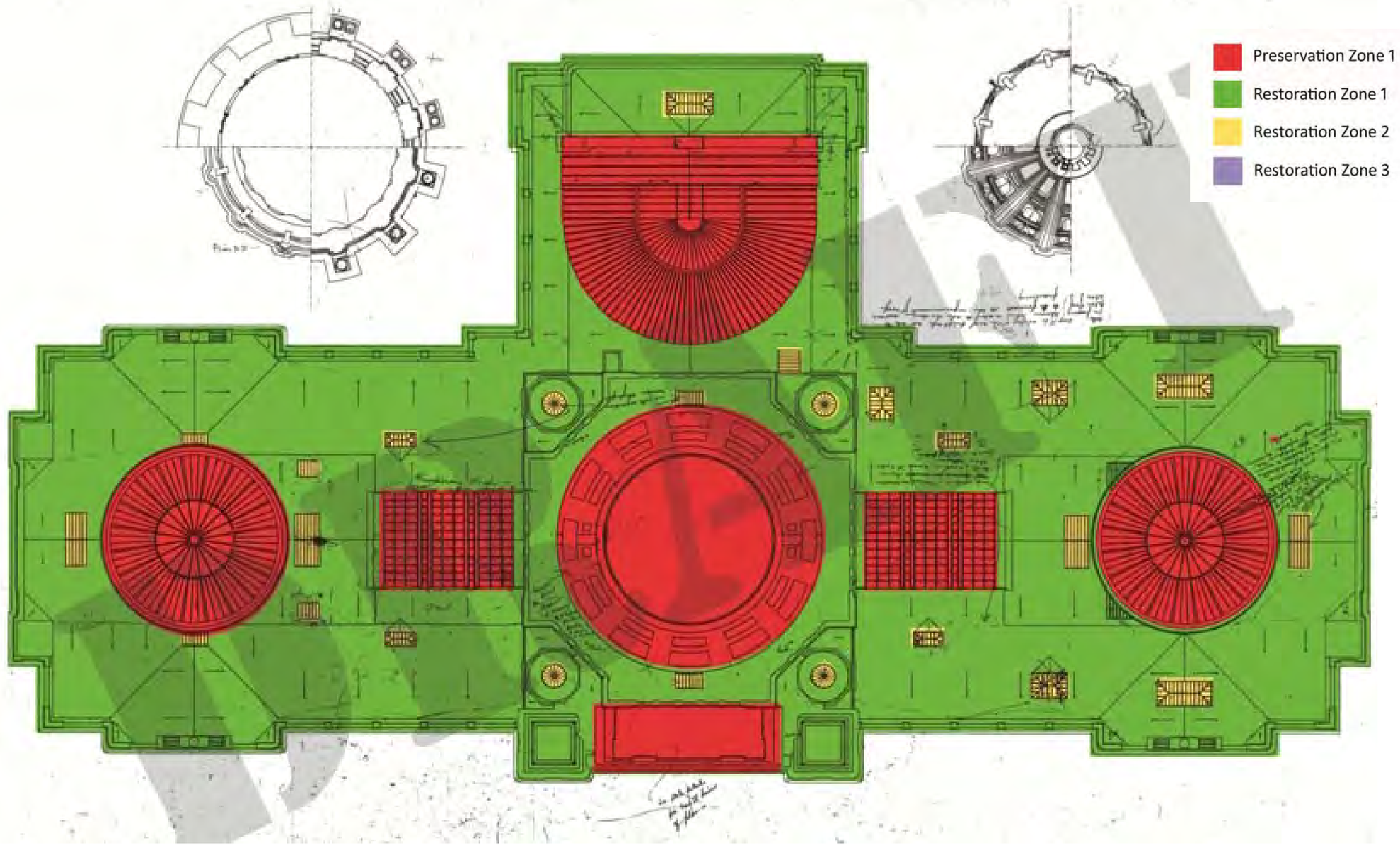
ZONES



ROOF PLAN

ZONES

ZONES

It is clear that some spaces in the Capitol have remained constant and other have changed in use, finish and character. Secondary circulation and space utilization beyond the grand public spaces have changed dramatically over time to respond to changing demand and political processes. This evolution is common as government has grown to serve increasing populations and more complex issues.

FLEXIBILITY OF USE

Flexibility of use should be planned within the confines of the existing structure. Building systems upgrades should be carefully planned to impact significant public spaces in the building as little as possible. Repairs and building system upgrades should be planned to minimize impact to historic fabric and provide maximum future flexibility. To assist in planning for building systems upgrades, zones have been designated and assigned a numerical value. This hierarchy is intended to guide the decisions regarding repair and replacement of new building systems.

Design Guideline:
Zones are designated to give hierarchy to the spaces within the Capitol Building to guide repairs and restoration.

ZONE TWO

Zone Two is significant in existing architectural character and finishes. Careful planning, design and construction activities should preserve and restore these spaces. Included are the important minor public corridors, existing exit stair paths, significant meeting rooms and other building features that have changed over times and should be restored.

ZONE THREE

Zone Three offers flexibility for use and configuration. Original historic finishes in these areas have been lost or covered with newer finishes. The new finishes in these areas should be compatible in character and design with the original finishes in the building with some allowance for configuration alteration to accommodate new building systems and functions. Spaces in this zone were changed early in the life of the building, some even by Cass Gilbert.

ZONE FOUR

Zone Four includes reclaimed spaces in the Basement Level, and spaces that had ultimate flexibility in the original design. Spaces under the Terrace and stairs are included in this zone. All areas that are utilized in this zone for constant occupation for offices and support staff functions should be designed for access to natural light and be provided with building systems services equal to other areas in the building.

FUNCTIONAL RELATIONSHIPS

The most important function of the building is to support the highest level of activity of the three branches of government for the State of Minnesota. Chambers for legislative business, Supreme Court, and Governor's daily operations should receive the highest functional priority. Constitutional Officers have traditionally been housed in the Capitol and should now have ceremonial offices therein even if entire support staff is not housed in the Capitol building proper.

Early designers of Capitol buildings often realized that government would grow and planned for expansion within the site plan concepts. The arrangement of the Capitol Campus in Minnesota has accomplished this with the Judicial Branch to the East, the Executive Branch to the North and the Legislative Branch to the West.

Public access to the primary functions of the building forms the fundamental organizing elements of the building. Theses spaces are also very symbolic in organization and finish. Great pride of ownership and respect for democracy are self evident in the grandeur of the building's exterior and interior quality.

Often referred to as the "Peoples House", the Capitol should be open to the people of Minnesota for many uses but the primary function should endure in perpetuity. Changes to the building to facilitate the modern function of government should be undertaken with great care for the building and the symbolism embodied in its character. Space within the building should be organized to serve these lofty functions and maintain the dignity and purpose of these fundamental processes. Many functions of government were gradually moved to other buildings but the core functions remain.

Design Guideline:
Repairs and building systems improvements should enhance the function of government and not compromise the most important use as the "Peoples House".

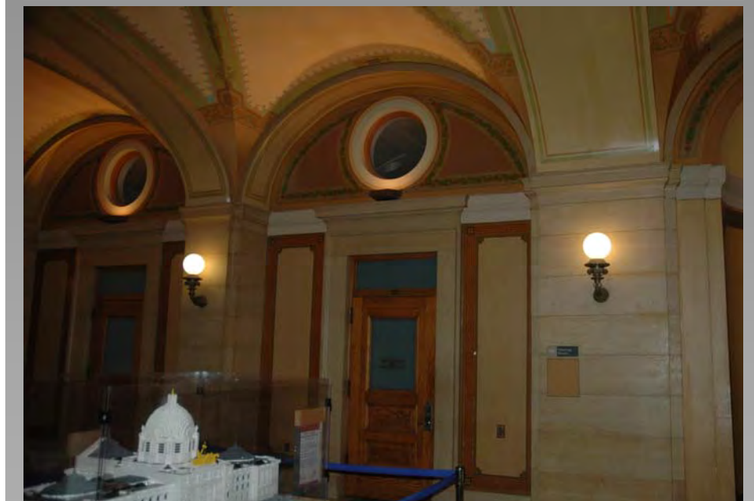
EXHIBIT SPACES
Temporary exhibits are currently in the North wing on Level Two. This is a well planned space in a large circulation area that is oversized for the circulation demand. The space is immediately adjacent to the Rotunda and in the path of tours and self guided access to the building. This area is appropriate for an exhibit gallery for traveling or temporary exhibits..

Early Gilbert drawings indicate an exhibit hall on the ground floor near the East entrance associated with State History. This area may be considered for permanent exhibits related to Minnesota State History for school group, tour groups, and other visitors. Accommodations could be made in this area to serve the unique needs of school groups such as box lunch storage, cloak/coat room, gathering and organizing, and an introductory interpretive message.

Current trends in exhibit design include interactive exhibits that promote learning by multiple sensory engagement. Interactive exhibits should be considered for some exhibit spaces in the Capitol.

Exhibits are currently spread throughout the building. Many are located in the Rotunda Space on multiple levels. Some are also displayed in unfilled sculpture niches in and around the Rotunda.

Design Guideline:
Repairs and building systems improvements should include review and improvement of the function and placement of exhibits. This will enhance the function, accessibility, and safety of the building



VISITOR SERVICES
The Capitol is visited by nearly 300,000 people annually including attendance at public events, rallies, tourists, and those who come to actively participate in State Government.

School groups compose a large number of these visitors. Educational tours are provided by State History guides and volunteers. Accommodating these large groups of children provides some logistical challenges. Organizing students into groups and storing coats and box lunches for these groups is difficult in the present configuration.

The South steps and entry provide the best experience and sequence of arrival. The building was designed to be experienced by visitors in this manner. This is the traditional "Main Entrance" to the building.

The current location of the Welcome Desk serves to greet groups but the area is small and does not accommodate large groups arriving for tours. Other functions that are complimentary to the Welcome Desk such as Gift Shop, cloak room, storage and tour organizing spaces are not possible in the limited space around the current desk.

Building accessibility for disabled visitors is also extremely difficult.

Design Guideline:
Visitors to the Capitol should have ready access to information and guided tours. School groups should be accommodated and provisions made for gathering and storing essential items and materials to serve these large groups.

GIFT SHOP

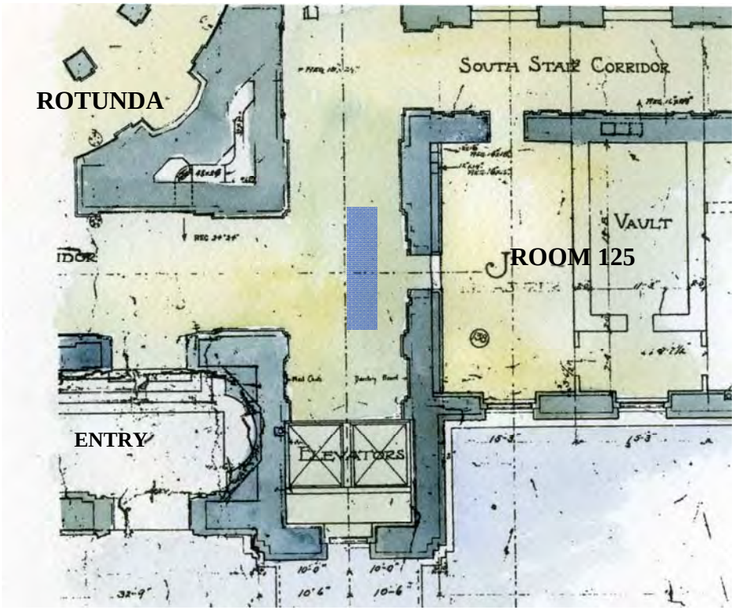
GIFT SHOP
A minimal Gift Shop is located at the Welcome Desk and Information Center. The merchandise for purchase is displayed on top of the desk and is distracting to the functions of greeting, sharing information and organizing tours.

Many states have been able to use Capitol Gift Shops as a source of revenue. Collectibles and information about Minnesota including books, clothing, art, and tour information guides are all appropriate in these shops. If combined with an information Center, staffing costs are minimal.

The Gift Shop could be combined with other visitor services and located in an area that is adequate to provide for these services.

Design Guideline:
The Gift Shop should be located where it can be expanded to provide appropriate merchandise for Capitol visitors and complement other Visitor Services.

Existing Gift Shop at Minnesota



Current location for Gift Shop

Texas State Capitol Gift Shop

PRESS CENTER

The press is an essential part of the government process. Ready access to press conferences requested by elected officials is important for the efficient operation of government. Room 125 has been used as the "Press Room" in the Capitol for legislators. A photo of the Capitol building attached to the tack surface behind a podium serves as backdrop. The room is also a hearing room with a conference table and video feed to the Senate Media Room. Press Room facilities exist in the State Office Building but are located some distance from the Chambers. Press Room facilities should be improved in the Capitol Building.

The press organizations representing local television, radio, and print media are located in permanent office and equipment space in the basement. Proximity to the chambers and hearing rooms is very important during the legislative session. A "blue wall" has been painted in the corridor of this area to provide a backdrop for impromptu press statements. This area is inadequate.

Live feeds from House and Senate Media are a primary source for these groups. In addition to these systems, mobile broadcasts are often used to cover various events in other parts of the building. Parking of media trucks and cable management to accommodate these events should be planned with the systems upgrade.

Lighting required for these functions is marginal and the dimming system in Room 125 is aging and difficult to maintain.

Design Guideline:
Repairs and building systems improvements should include upgraded facilities for House and Senate Media. Press conference facilities should be improved.

Room 125—Press conference set up.

ATTACHED PAINTINGS
Paintings are an essential element in the experience of the building. Places for art and sculpture are present in every vista in the public corridors and circulation areas. The pieces that are attached directly to the building and are integral with the shapes of the pendentives and lunettes are of special concern during the demolition and installation of new building systems.

All of the attached art within the Capitol Building should be carefully evaluated and protected during all phases of the work. Conservation activities where required should take place during times when the building systems are being repaired and improved. Protection of these elements shall be the responsibility of the construction and design teams.

Most of the attached art is within the Preservation Zone. Minimal destructive and restoration work will be executed within this zone. Lighting design and restoration of historic lighting fixtures should also consider the illumination of attached art in its historic context and in the current use and lighting requirements of the building.

ATTACHED SCULPTURE
The exterior of the building is adorned with a number of carved and cast statuary. These elements are very important to the design of the exterior of the building. Some historic documents and renderings show much more exterior statuary was planned by Cass Gilbert.

Design Guideline:
Repairs and building systems improvements shall not adversely affect the attached art within the building. Conservation and protection of each painting must be executed during all phases of work.

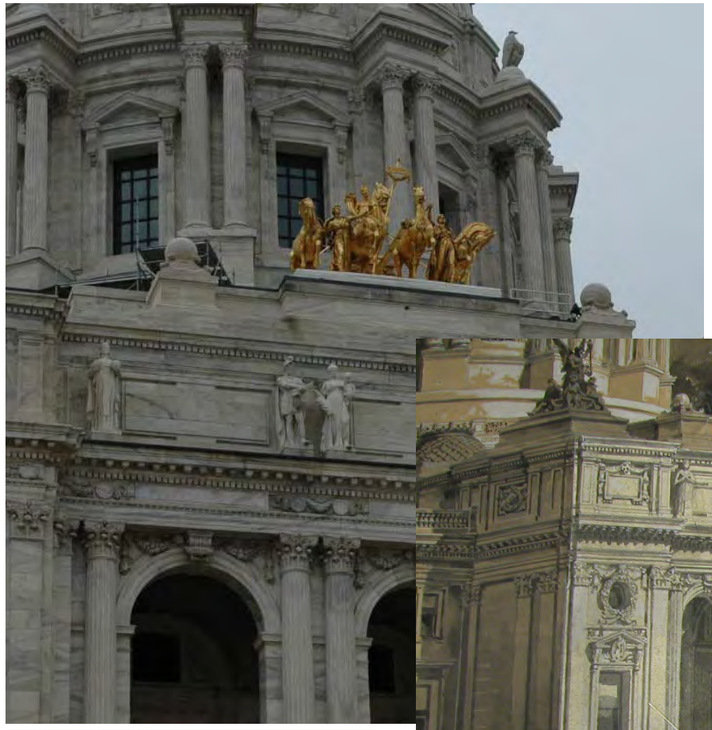
SCULPTURE
Construction activities may require the removal and temporary storage of unattached sculpture within the building. Evaluation of condition and restoration measures will not be included in the repair and restoration project.

Exterior stone sculpture in the entablature and attic storey of the building will be evaluated and restored if required under the existing stone restoration contract. Bronze and stone sculpture located on the grounds and adjacent to the stairs and terrace should not be affected by the work. All sculpture should be protected during all construction activities. During the repair and restoration of the Capitol, the existing sculpture should be carefully evaluated and preserved. Conservation and repair should be considered at the same time.

ADDITIONAL COMMISSIONED SCULPTURE
Additional sculpture was planned for the exterior of the building by Cass Gilbert as shown in some of the original renderings. Sculptural elements atop the elevator shafts and monumental sculpture adjacent to the South Portico were not executed in the original construction. Also the lions were not created even though the bases are in place for them.

Opportunities for new commissioned art should be investigated and separate fundraising activities could coincide with the repair and restoration.

Design Guideline:
Repairs and building systems improvements should not impact sculpture. Removal and storage of sculpture shall (not) be part of the work.



ACCESSIBILITY CODE COMPLIANCE
Improvements were made in the house and Senate Galleries to accommodate wheelchair access. These improvements have been made carefully within the historic context of the building. They include the removal of stairs and the addition of ramps in the vestibules leading to the Galleries. Careful review of these improvements for compliance is required. Additional consideration should be given for hearing impaired and the blind.

Access is not well provided within the Supreme Court Chambers. This includes the seating areas as well as the Bench. This area should be carefully evaluated and planned for access.

Existing toilet rooms have been modified to provide wheelchair access. Gender specific public restrooms are on alternate floors in the building. It is recommended that gender designated public restroom facilities be located on every floor. In addition to these modifications, a family or assisted restroom should also be included on every floor.

Way finding information is not clear and needs to be improved. Braille and higher contrast signage should be included.

Many areas of the building are not illuminated well enough.

Parking and an accessible routes should be studied for existing accessible entrances to the building.

Design Guideline:
Repairs and building systems improvements should include access and toilet room improvements to comply with ADA code requirements and more stringent State Codes.

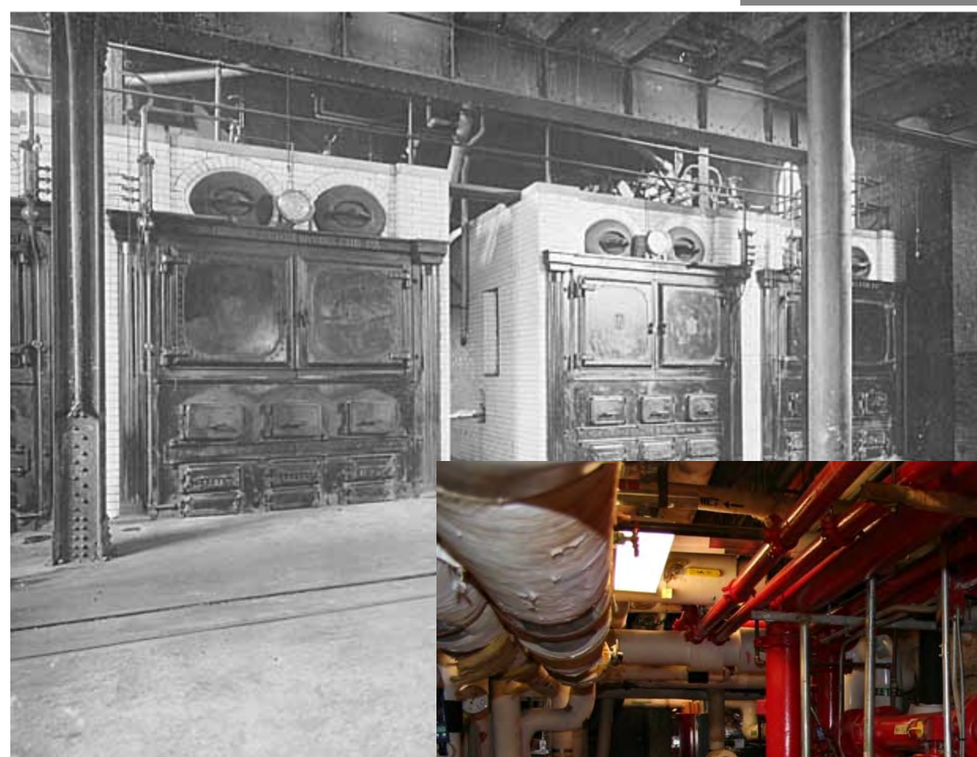
East Porte Cochere ramp to floor level served by elevators

South Porte Cochere ramp to floor level served by elevators

House gallery wheelchair access improvements

PRINCIPLES FOR MECHANICAL SYSTEM

1. Engineered systems shall provide a modern standard of function to support building operations for the next 100 years. Systems shall be designed to be accessible for regular and periodic maintenance and be flexible and adaptable to accommodate future building needs and evolving technology.
2. The mechanical systems shall be designed to minimize the operating cost of the building. A life cycle cost approach shall be used when evaluating system options and features to account for first costs, energy costs, and regular and periodic maintenance costs. All system options considered shall be reliable and proven technologies and utilize high quality and durable materials.
3. Preservation work shall be accomplished within the existing footprint of the building and be installed to minimize the loss of useable space. Use of the attic for new equipment space and systems distribution is the principal strategy to offset additional space required by modern systems.
4. Engineered systems must be installed to maintain the historic fabric of the building. Required interventions shall be accomplished within the guidelines set forth in the Historic Structures report.
5. All work shall conform to the State of Minnesota's Capitol Complex Construction Guidelines and Standards.



Design Guideline:
The mechanical and ventilation system in the building should be replaced in its entirety according to the above principles.

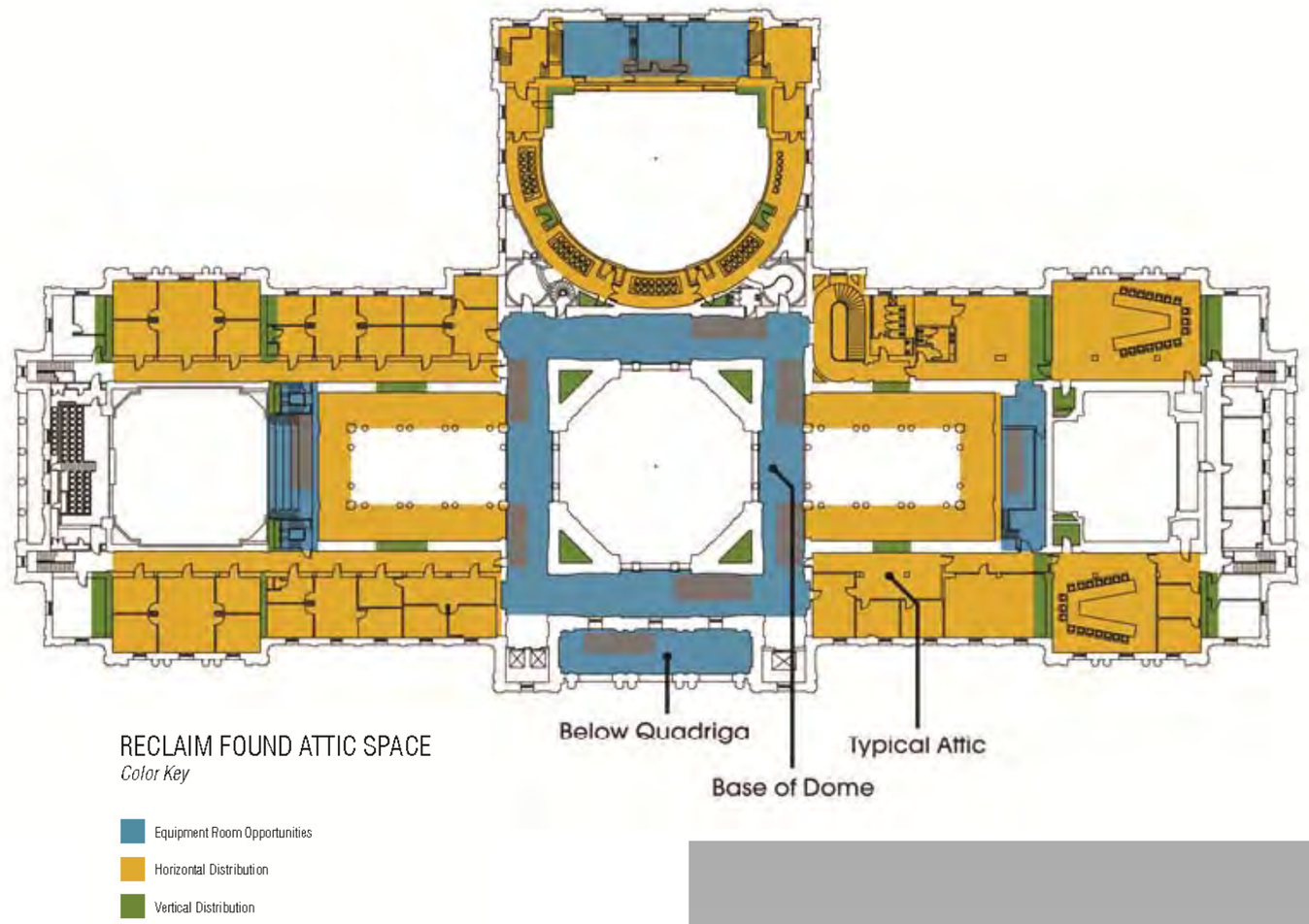
RECLAIM FOUND ATTIC SPACE
The use of the attic spaces for new equipment rooms and for distribution of systems is the primary concept to meet the guiding principles including working within the existing footprint of the building and to maximizing the useable space in the building. The attic spaces shall be used to the fullest reasonable extent to locate new equipment and for horizontal distribution of systems throughout the building.

EQUIPMENT ROOM OPPORTUNITIES
The original capitol building was constructed with an attic space above the entire third floor area of the building. Area volume of the attic space varies with the sloping roof structure and other building features. Large volume areas that are opportunities for use as new mechanical space include the following:

- At the base of the dome above the commons space, four areas total adjacent to the dome to the north, south, east and west.
- Within the hipped roof area adjacent to the Senate chambers in the west wing of the building.
- Within the hipped roof area adjacent to the Supreme Court Chambers in the East wing of the building.
- The area considered to be the fourth floor on the North side of the House Chambers.

SYSTEMS DISTRIBUTION
Distribution of new systems shall work within the systems distribution concepts developed in the original Cass Gilbert design to the greatest extent possible. Modern systems that provide a modern standard of function will require larger and/or new areas to be developed for distribution. The strategy developed for air distribution will establish an order for distribution of all building systems. Primary horizontal distribution will be accomplished on the north side of the lower level and within the attic space above the third floor. These primary horizontal distribution opportunities provide connectivity between the equipment spaces and locations developed for vertical distribution. Electrical and data room distribution systems shall be planned such that they stack between floors.

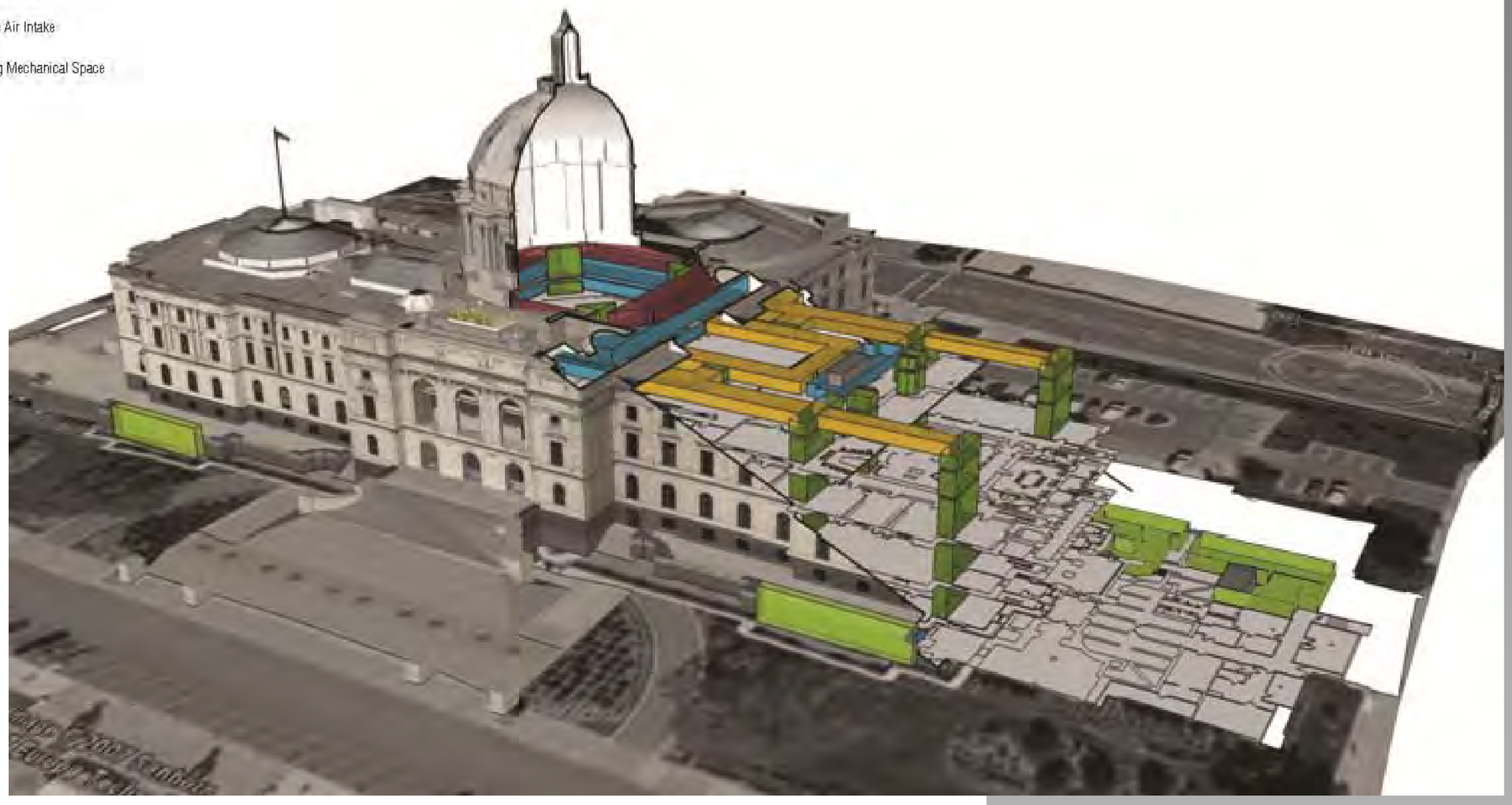
All secondary distribution on each floor shall be organized and consistent between floors. Systems shall be predominately located and accessible from the corridors adjacent to private offices and meeting spaces. Low voltage distribution shall accommodate future expansion and modifications and be routed in an accessible cable tray.



ORGANIZING BUILDING SYSTEMS

Color Key

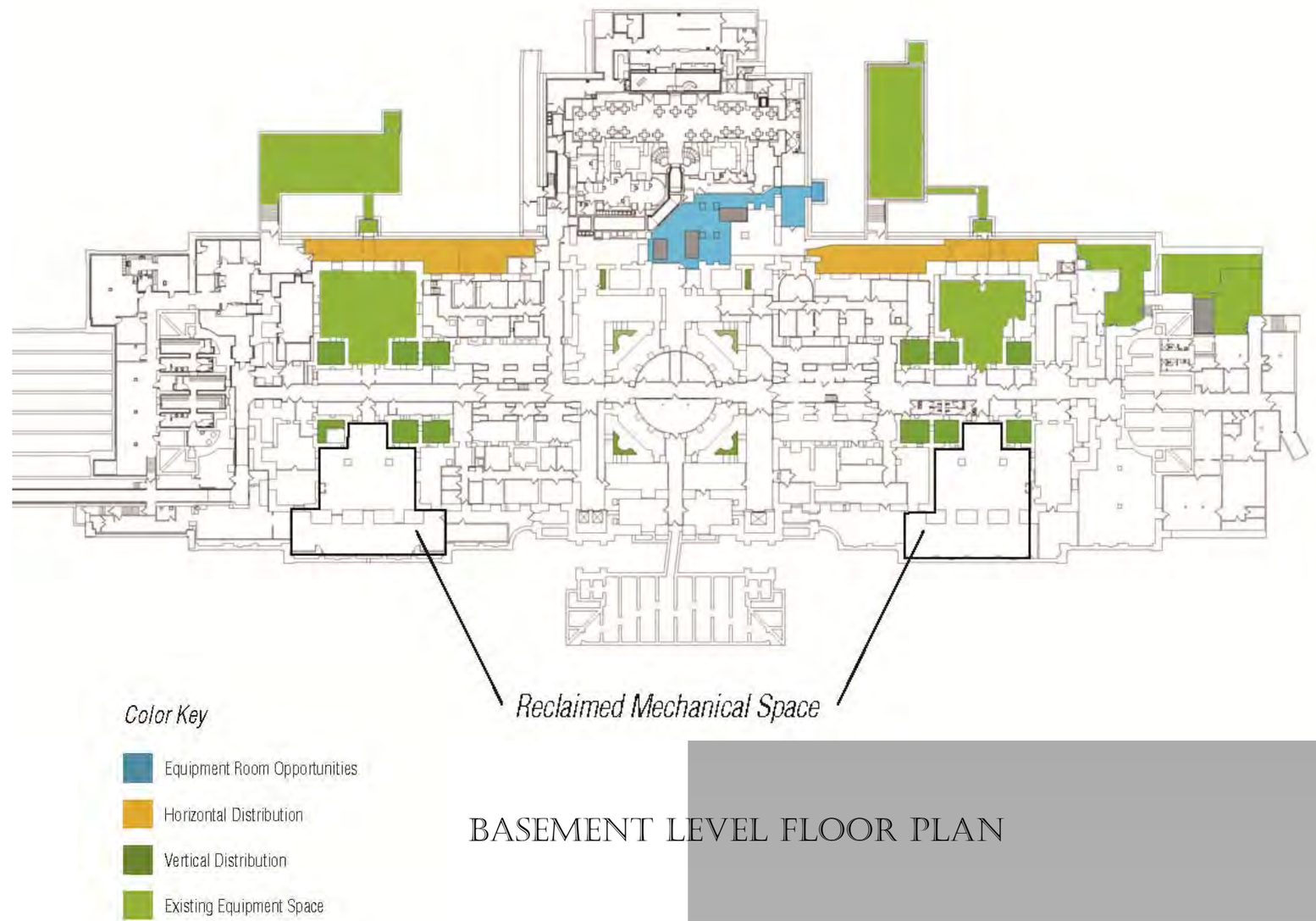
- Equipment Room Opportunities
- Horizontal Distribution
- Vertical Distribution
- Outside Air Intake
- Existing Mechanical Space



LOWER LEVEL EQUIPMENT SPACE

Converting existing mechanical space into new useable space is a primary strategy to complete the restoration project with minimal loss of usable space. It is the intent to leave as existing spaces that accommodate existing systems that are reused as part of the final system solution. These systems are predominately on the North side of the Lower Level and include at a minimum the District Energy hot and chilled Water service entrance located in the Northeast corner of the building, the horizontal pipe distribution along the North wall, and the Electrical service entrances located in the recently constructed equipment vaults to the North of the building. It is a goal to convert the four existing mechanical rooms located in each quadrant of the lower level into new usable space.

New equipment space as necessary will be developed along the north portion of the basement level to house any new air handling systems that may be required. These systems are anticipated to include those serving the rotunda and commons area, the cafeteria and kitchen areas, areas that are occupied 24/7 (possibly capitol security), data room cooling systems, and other areas of occupancy that are not typical building meeting or office functions.



BASEMENT LEVEL FLOOR PLAN

AIR HANDLING SYSTEM CONCEPT

New systems shall be integrated into the historic fabric and shall be accomplished within the existing building footprint. Necessary interventions shall be concentrated in low priority preservation zones as delineated in the historic structures report. At a minimum all office, small room meeting space, and adjacent support areas may be served by a dedicated outside air system. Large volume spaces include the House, Senate, and Supreme Court chambers shall be served by constant volume re-circulating systems.

Office, Small Meeting Rooms, and Adjacent Support Areas: Shall be served by a total of 5 dedicated outside air systems with chilled beams for individual space heating and cooling zone control. Hot water finned tube radiation shall be provided at all perimeter zones. Four of the systems shall be located in the attic space at the base of the dome each serving all floors of their respective building quadrant including the Northwest, Southwest, Northeast, and Southeast. The fifth system shall be located in the attic space to the North adjacent to the House chambers to serve ground through fourth floors.

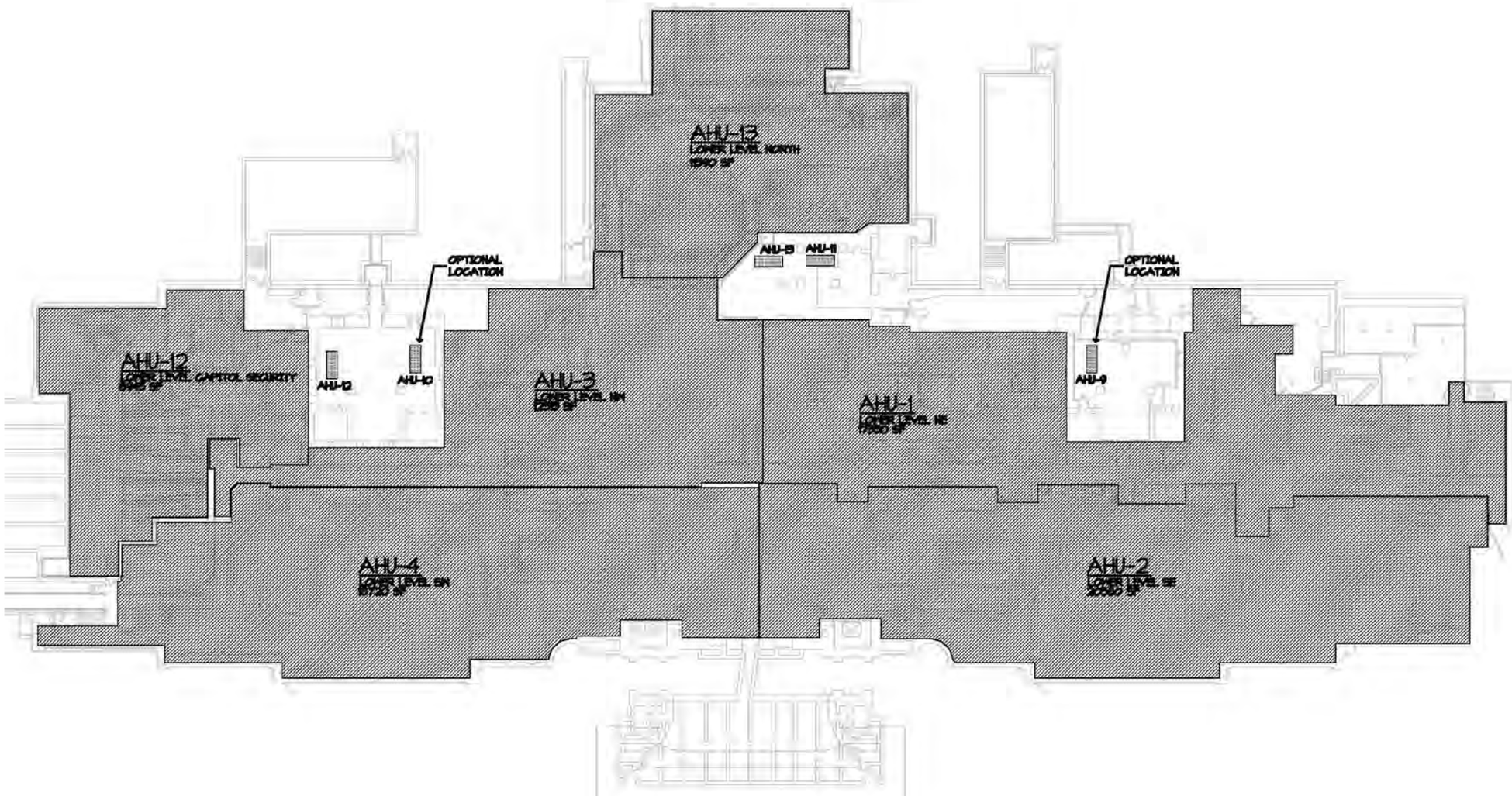
House Chambers: May be served by a constant volume re-circulating system located in the attic space adjacent to the House chambers or in the attic space adjacent to the North side of the dome.

Senate Chambers: May be located in the large volume attic space above the Senate chambers on the West side of the building.

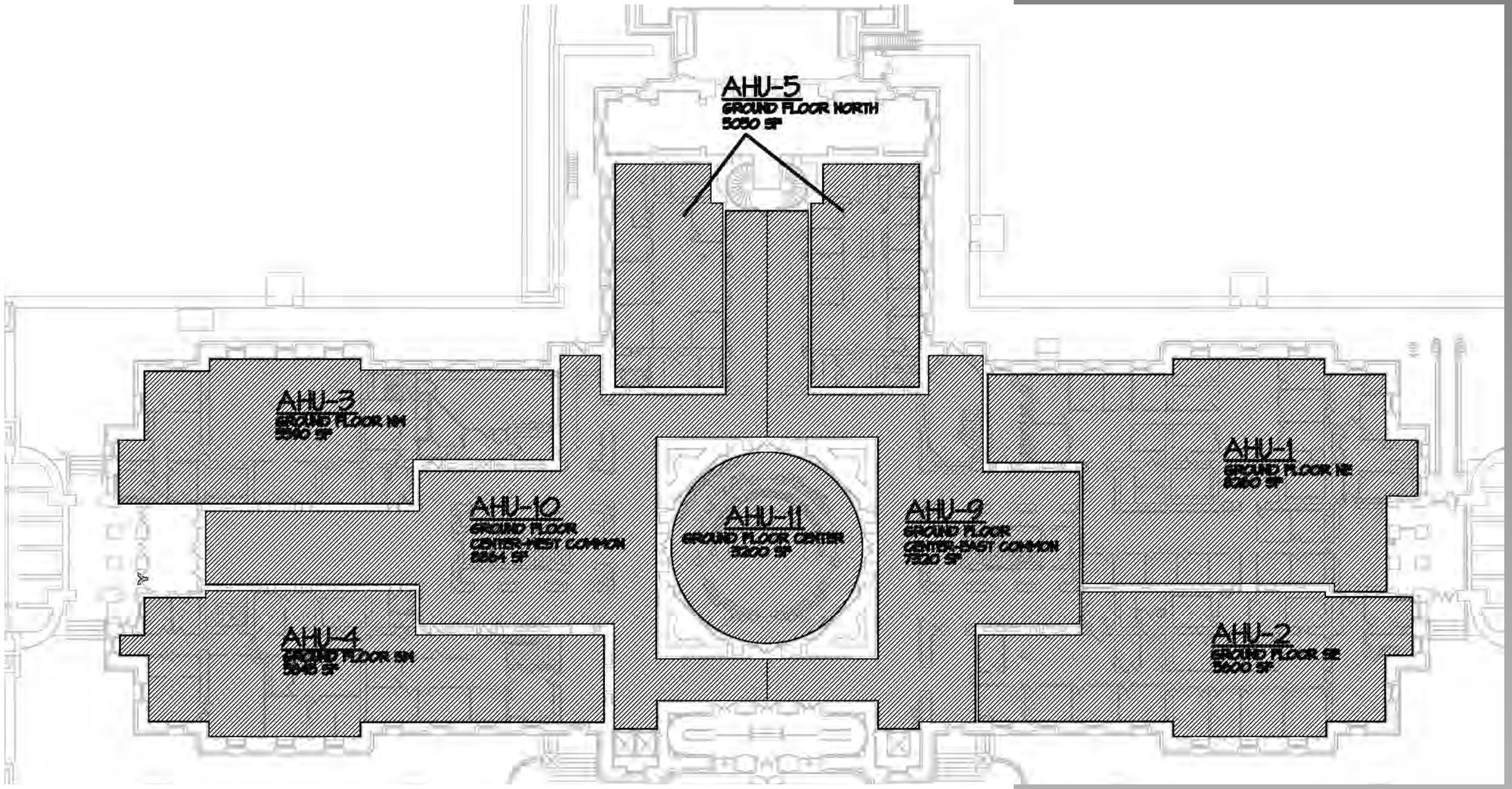
Supreme Court Chambers: May be located in the large volume space to above the Supreme Court Chambers on the East side of the building.
Rotunda and Commons: May be served by systems independent of other building systems. The new systems are anticipated to be located in a new mechanical room on the north side of the lower level. The design team shall study system options for optimal system performance. Options may include dedicated outside air, re-circulating type systems, or natural ventilation systems.

Kitchen and Cafeteria: Shall be served independent of other systems and be a re-circulating constant volume or variable air volume system located in a new mechanical room on the North side of the Lower Level. Make-up air for kitchen exhaust systems to be provided as required per code requirements.

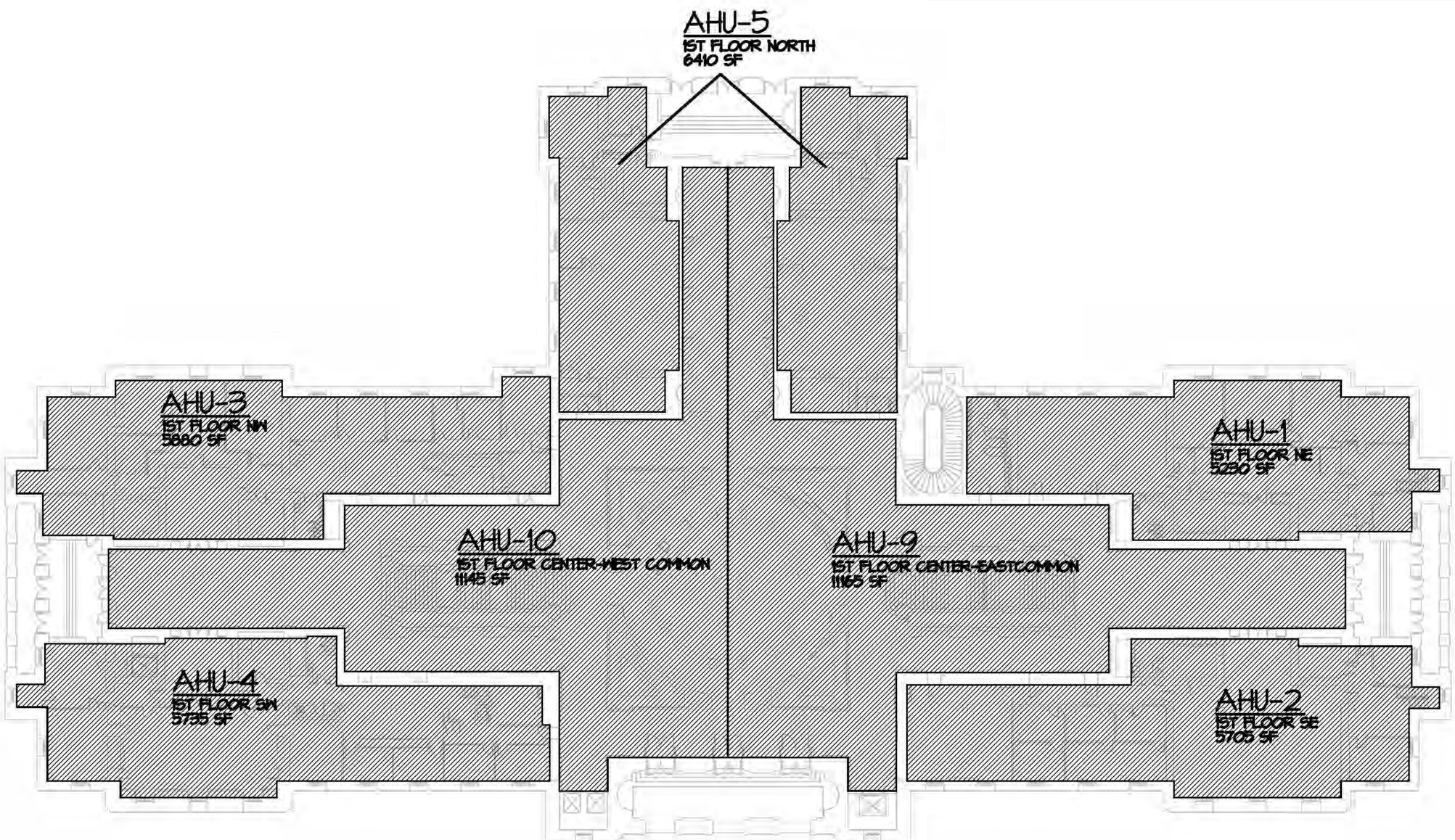
Other Systems: Additional systems to provide cooling for data rooms or areas that operate for longer hours than the normal office functions shall be considered in addition to the specific systems listed.



BASEMENT LEVEL AIR HANDLING ZONES

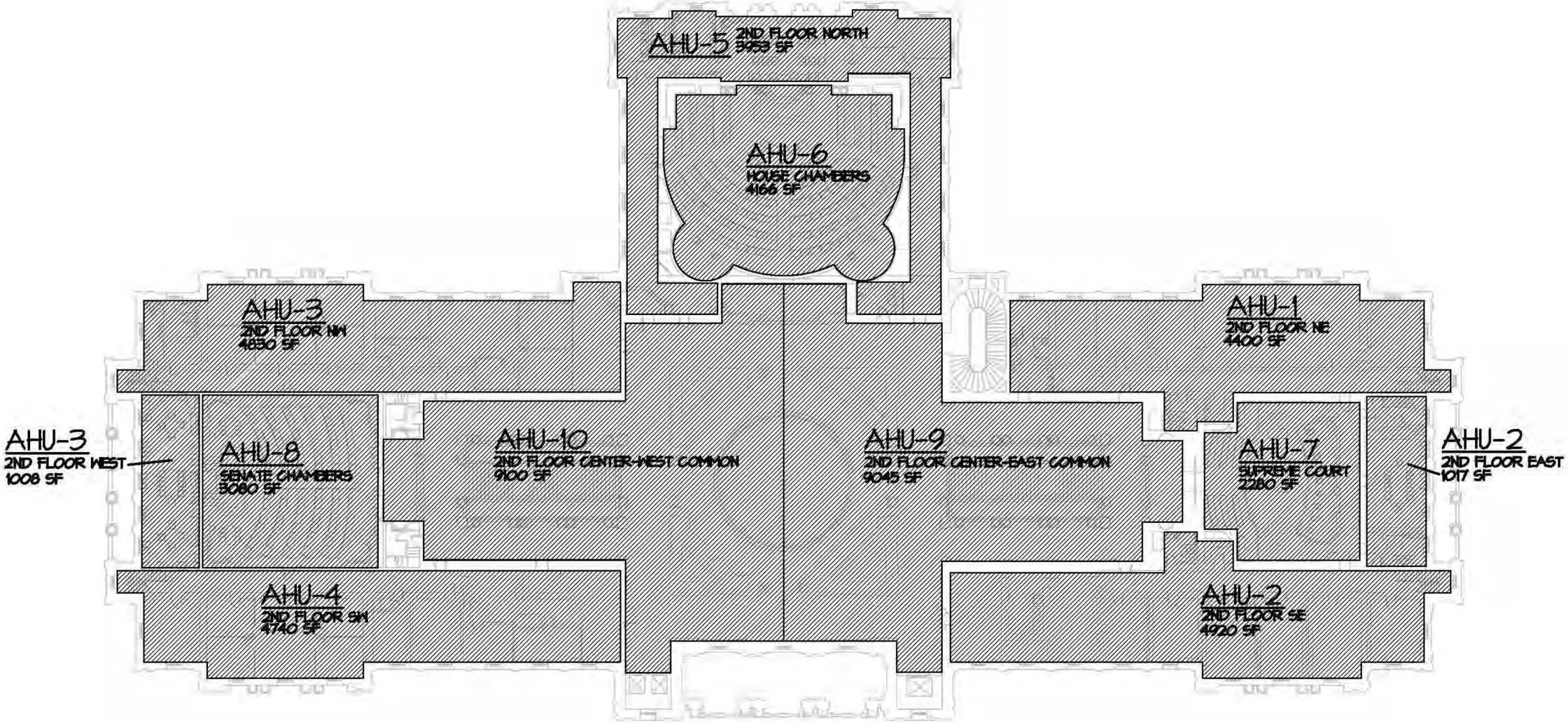


GROUND LEVEL AIR HANDLING ZONES

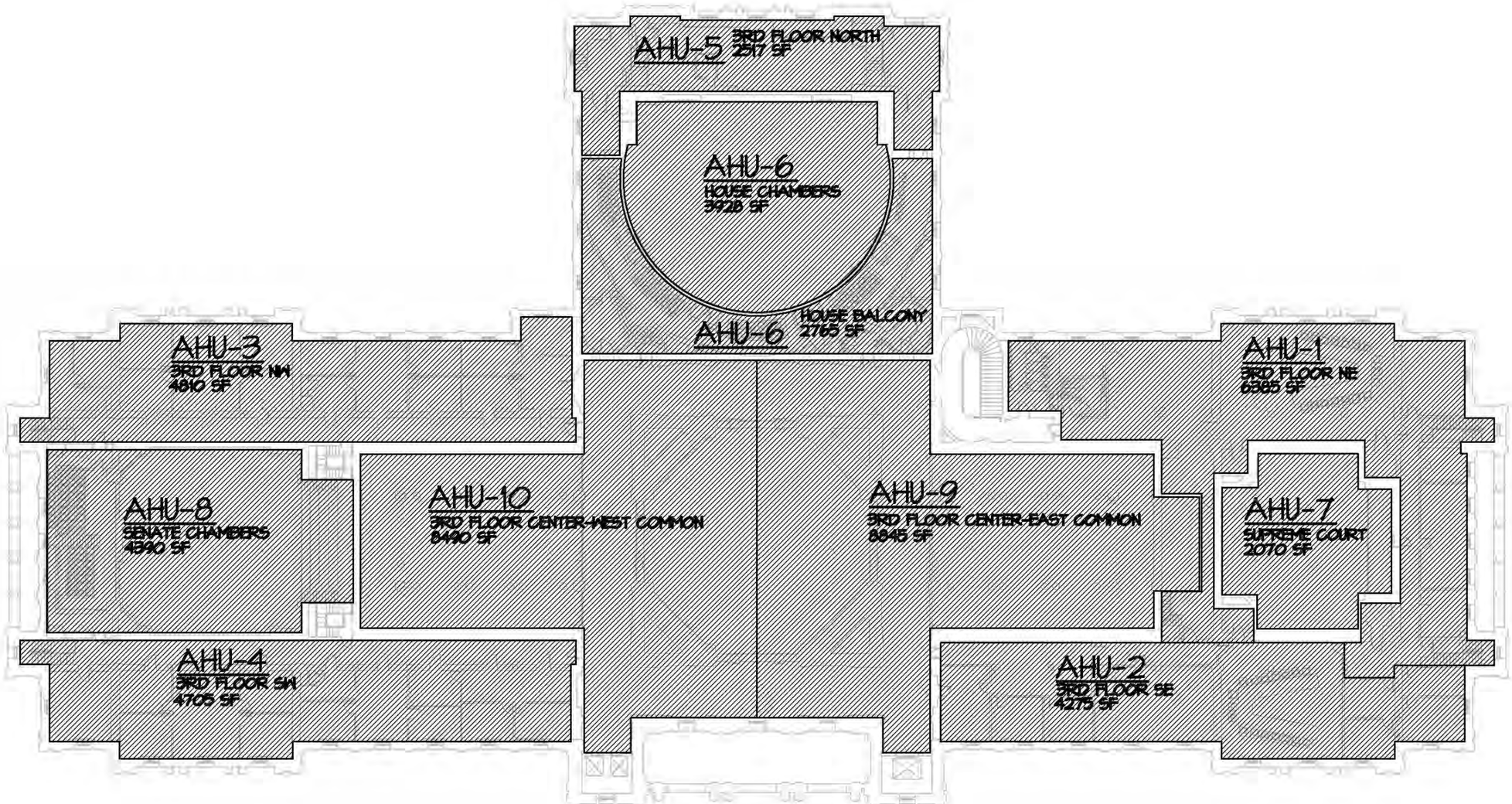


FIRST FLOOR AIR HANDLING ZONES

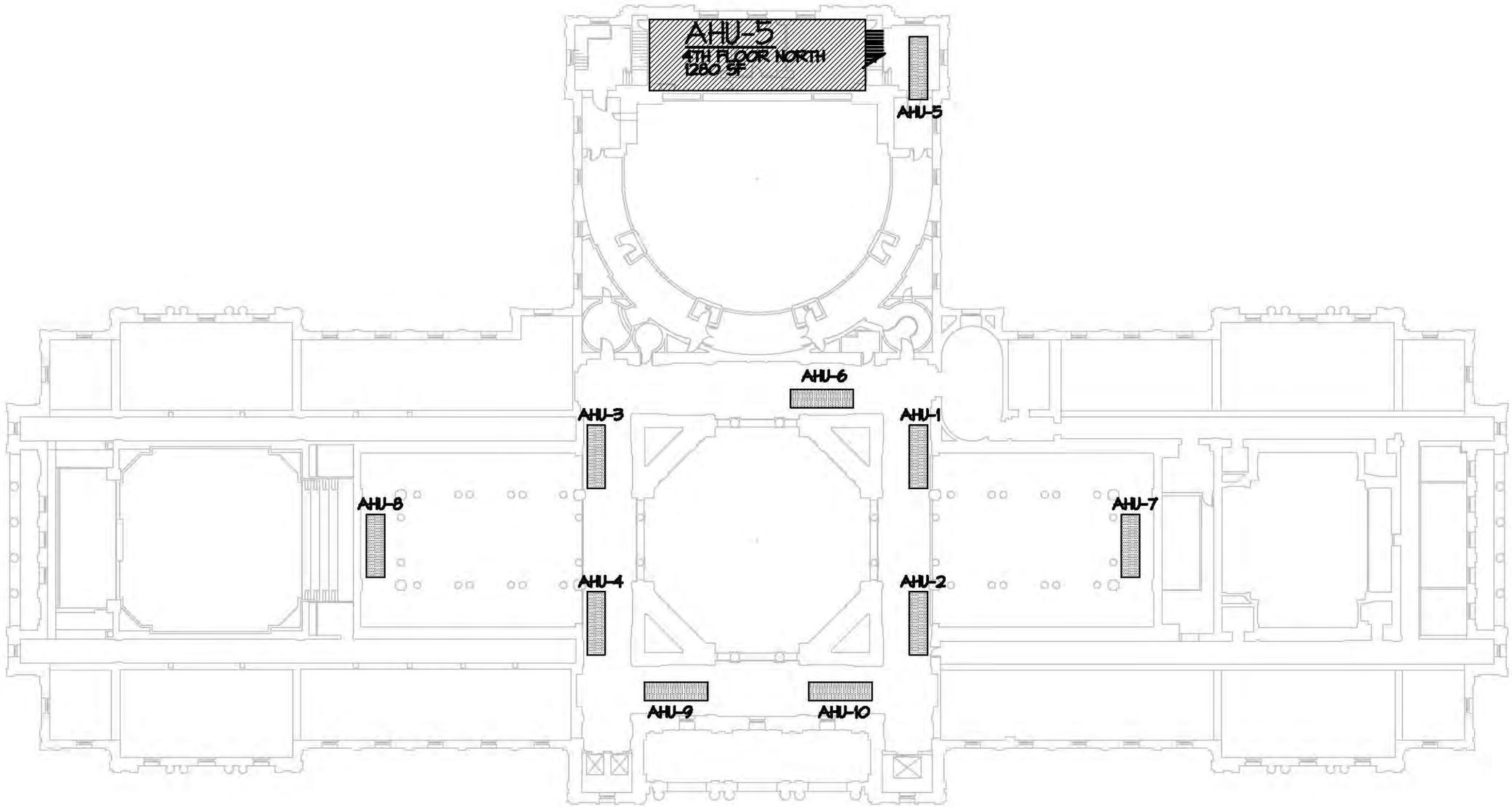
WORKING DRAFT



SECOND FLOOR AIR HANDLING ZONES



THIRD FLOOR AIR HANDLING ZONES



FOURTH FLOOR/ATTIC AIR HANDLING ZONES

BUILDING SYSTEMS CONCEPT
Renovations and modifications to the systems over the years have resulted in the current condition of disorganization systems abandoned in place. It is a primary goal to remove all abandoned and unused system components. All new distribution of systems shall be provided such that they are accessible and adaptable to future building needs. A strategy for distribution shall be developed by the design team that is consistent and logical throughout the building.

HEATING AND COOLONG PLANT
The existing District Energy hot water and chilled water service shall be re-used to provide for the building heating and cooling needs. Adequacy of these services shall be verified and estimated service life of all systems re-used shall be determined. Modifications to improve access for service and maintenance shall be considered.

BUILDING AUTOMATION SYSTEM
All new work shall be an extension of the existing Capitol Complex Honeywell control system.

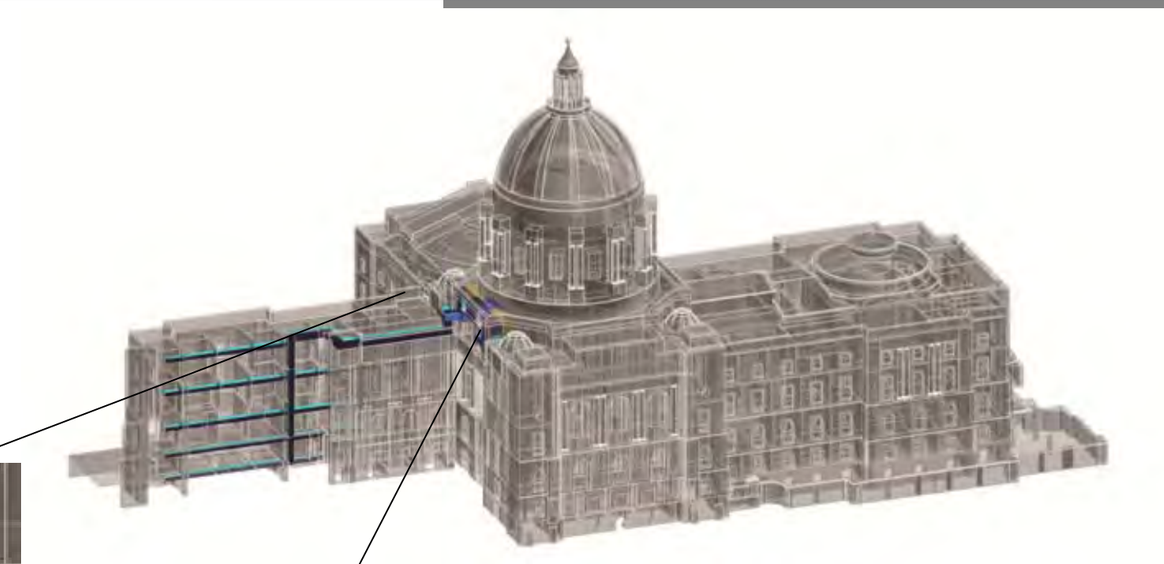
Design Guideline:
The mechanical and ventilation system in the building should be replaced in its entirety using the above concepts

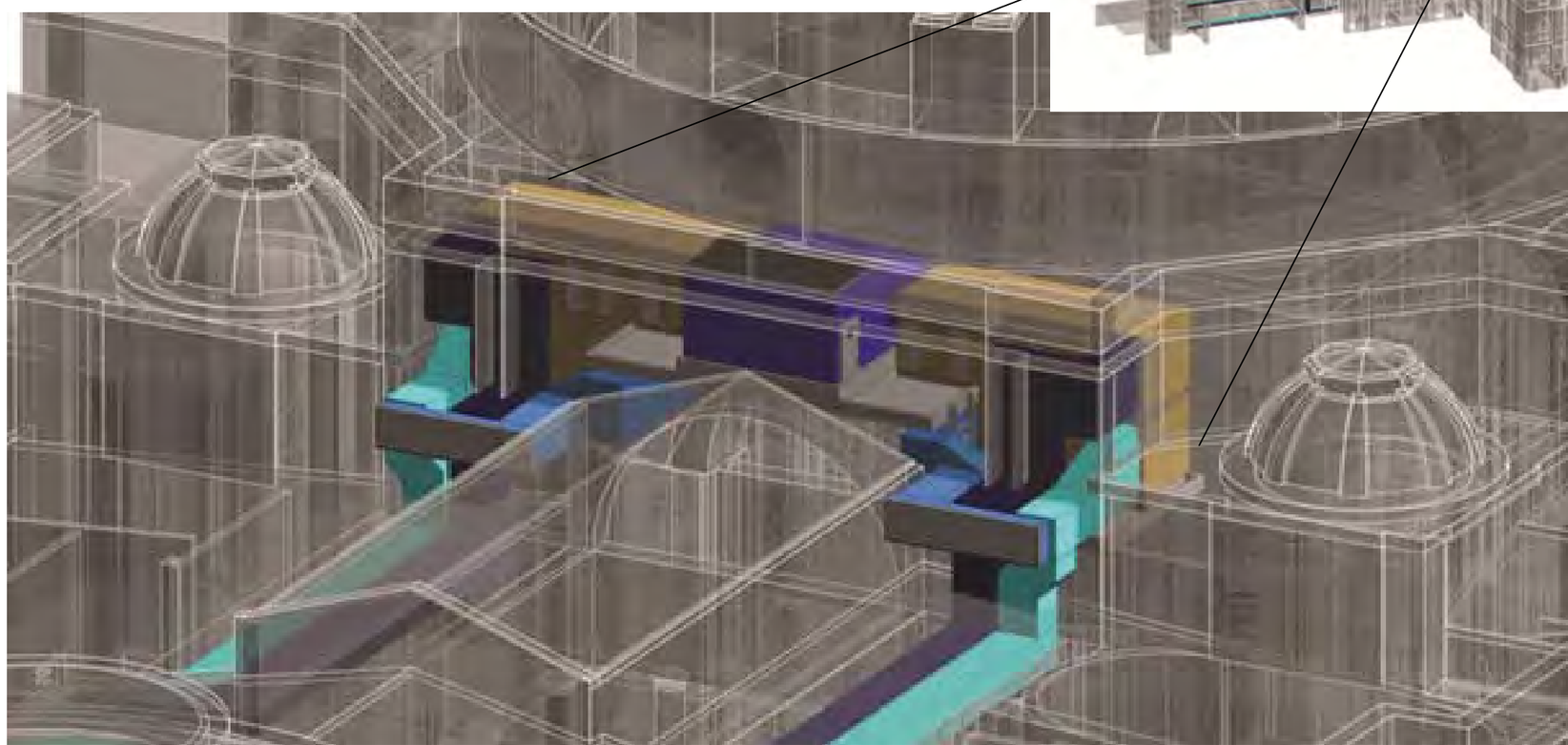
NEW EQUIPMENT SPACE CONCEPT
Any attic or Roof space developed for new equipment space needs to be accomplished with a modern standard of function with consideration of the needs of Plant Management and shall not put the existing historic elements of the building at risk. New equipment rooms shall be designed to meet the following:

1. Accommodate easy access by maintenance personnel for regular maintenance of equipment and monitoring of equipment. A high priority is placed on developing access internally from the building. Provisions requiring access from the roof is discouraged. Any provisions for regular access shall not require special tools and procedures by maintenance personnel.
2. Accommodate periodic access for removal and replacement of all systems and components. The 100 year building plan shall be developed such that all system components can be removed and replaced with minimal collateral impact to historic areas of the building and minimal costs for removal and replacement of other building systems. Removable access panels shall be considered where necessary.
3. Effective strategies to mitigate the effects of vibration from new equipment shall be developed. Equipment room floors shall be supported independent and be isolated of all existing building systems. A complete structural and vibration analysis shall be completed to engineer all required vibration mitigating elements.
4. Effective strategies to mitigate the risk of water dam age from all systems located in the attic spaces shall be developed. Strategies shall include at a minimum the following:
    - Water proofing of equipment floors and outside air intake plenums. Consideration shall be given to membranes and toppings.
    - Positively sloped floors to accessible floor drain locations.
    - Drain pans below all equipment coils exposed to mixed and outside air streams.
    - Use of proven pipe materials and coupling techniques. All proposed materials and methods shall be reviewed and approved by the Owner Program Manager.
    - Snow melt and snow baffle systems to manage and remove snow at outside air intakes. Outside air intake plenums shall be water proofed and constructed with positively sloped plenum floors to accessible drains locations. Drains shall connect to the storm system through an air gap or drained to the adjacent roof where possible.
    - Revise service to prevent free flow from District Energy in the event of equipment failure in the Capitol Building.

THE MECHANICAL SYSTEM IN THE CAPITOL DOES NOT SUPPORT THE CURRENT FUNCTION

MECHANICAL





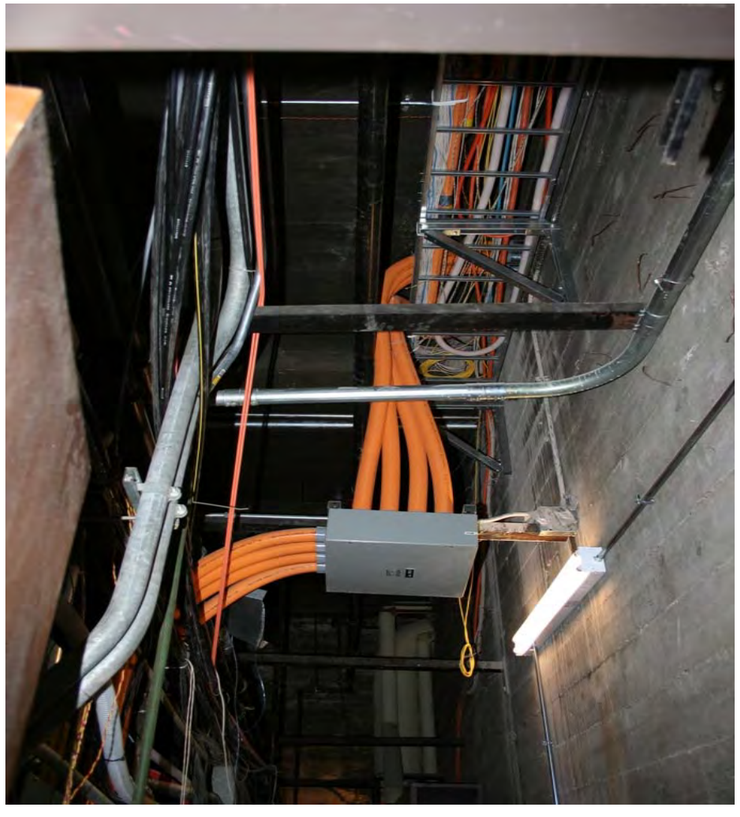
COMMUNICATIONS
Rapid and secure communication is essential to the efficient function of government. It is clear that each branch of government functioning within the capitol will have unique security priorities and protocol. It is clear that these systems are changing rapidly and the requirements of today may change in a very short time. Equipment is becoming smaller and more efficient. The repair and restoration of the Capitol should provide the most advanced systems available at the time of the work.

Careful planning and sizing of raceways and organization of equipment spaces will provide greater flexibility for future developments. Usually vertical stacking of required equipment spaces provides the best option for these spaces in multi-story buildings. The nature of the Capitol Building may present some challenges for stacking equipment rooms and horizontal distribution of cable.

Planning of raceway location and equipment rooms should be coordinated with all other systems in initial design. Where possible, cable capacity should be shared and raceways should be planned to accommodate growth. Capacity for communication, internet and internal digital communication with servers should be fast and efficient.

VOICE AMPLIFICATION AND RECORDING
Voice amplification and audio and video recording equipment should be planned and coordinated for all meeting rooms including Chambers.

Design Guideline:
Repairs and building systems improvements should include new equipment space and raceway capacity for current and future needs.



PLUMBING SYSTEMS
All storm, waste, vent, and hot and cold water distribution piping within the building shall be replaced. The design team shall review the adequacy and condition of the service entrances and make a recommendation as to the need for replacement. It is the intent to generate 110 Deg F hot water for general building use and 140 Deg F for the kitchen from the District Energy hot water service. Adequacy of the District Energy Service shall be verified and estimated service life of all systems re-used shall be determined. Modifications to improve access for service and maintenance shall be considered.

FIRE PROTECTION SYSTEMS
It is the intent to fully sprinkle the building. All distribution systems and discharge heads shall be integrated into the historic fabric of the building. All measures to protect historic and electronic equipment from water damage as a result of accidental discharge shall be incorporated into the design.

Design Guideline: All plumbing including supply, waste and rainwater lines in the building shall be replaced. Location of toilet rooms and staff break rooms should be carefully considered for plumbing system efficiency.

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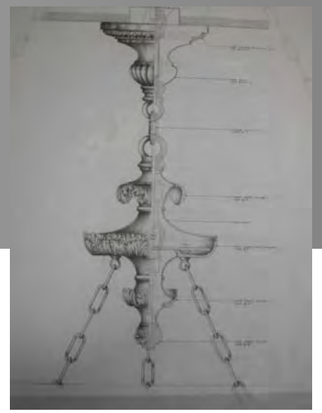
ELECTRICAL SERVICE
The existing electrical service at each of the two utility vaults shall be upgraded from the existing 208 volt service to 480 volt for distribution to the building. All new wiring and distribution panels from the service entrance shall be provided.

EMERGENCY POWER
Building life safety functions and other critical building operations will be supplied by and existing generator located at the power plant on Robert Street. The design team shall collaborate with Real Estate and Construction Services and Plant Management to determine the extent of systems to be included on the generator and if additional capacity is required.

LIGHTING AND CONTROL
All new energy efficient lighting and control shall be incorporated throughout the building. Lighting and control shall conform to capitol complex design standards. Historically appropriate lighting shall be designed to conform to the guidelines of the historic structures report.

Design Guideline:
Repairs and building systems improvements should provide for new electrical distribution systems throughout the building.



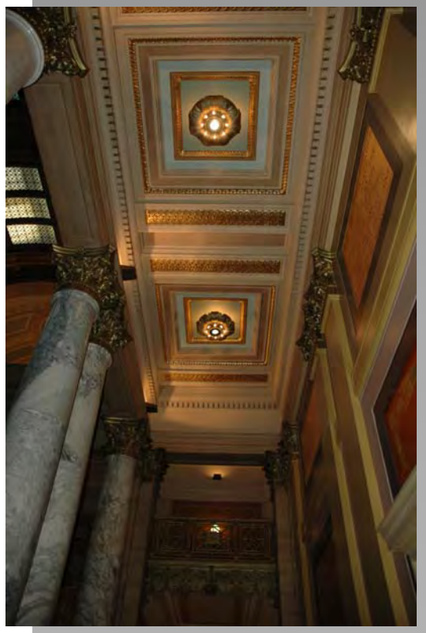
HISTORIC LIGHTING

The Minnesota State Capitol was constructed during the early development of electrical lighting. The original fixtures were beautifully crafted and are a significant element in the building design. Original incandescent lamps are beautiful and prove historically accurate color for the finishes and art within the building.

Current codes and building user expectations have created higher standard for interior building illumination. This condition has created a number of solutions within all areas of the building ranging from simple fluorescent 2’x4’ fixtures cove mounted wall sconces. These lighting systems have been designed at various times throughout the life of the building and many are not compatible with the original character of the building.

Historic lighting fixtures should be maintained and restored as required to reverse modifications that have altered the character of the fixtures. Additional lighting should be carefully planned to be compatible with the original design and character of the building. Lighting level throughout the building should be evaluated for current use and code compliance.

Design Guideline:
Historic lighting fixtures should be evaluated and repaired. If new lighting is added it should exhibit the same color temperature as the original lamps. Additional lighting levels may be required and should be carefully planned.



DECORATIVE FINISHES AND PAINT

Areas that have been repainted over time should be evaluated very carefully and restored to original colors. This is especially true in areas within the Preservation Zone. Durability of some recent decorative painting has not been good.

Great care should be taken to evaluate substrates and select materials for the restoration of decorative painting that will endure.

Where original decorative painting exists, professional conservation and cleaning services shall be engaged to research and provide services relative to this work. These efforts should be in close collaboration with the Minnesota Historical Society and the State Historic Preservation Officer.

Metal leafing and other applied decorative finishes should be evaluated, conserved and restored if required.

Design Guideline:
Decorative painting should be carefully conserved, researched and restored as necessary. Recently failed repairs should be evaluated for cause and documented for future reference.

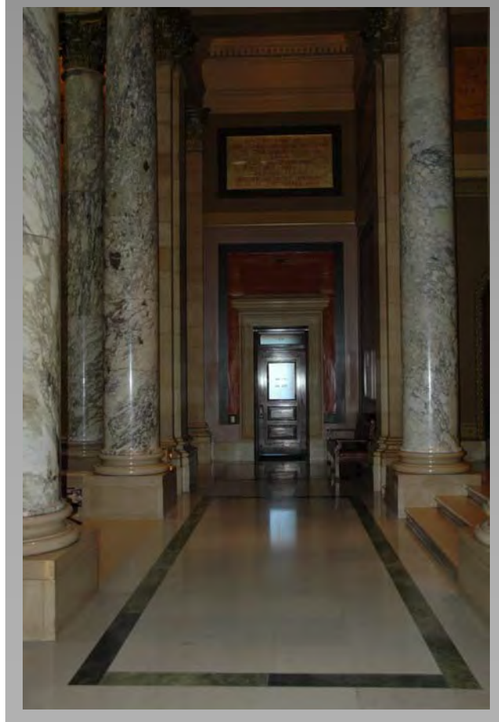
EXTERIOR DOORS

Exterior doors vary in material and shape. South Entry doors are bronze and glass and have endured very well. French doors to Balcony and loggia areas are wood and are in poor condition. Current contracts are providing restoration for these doors. On the West Porte Cochere the doors are wood but have been protected from the elements by the enclosure. The East Porte Cochere doors are not visible in the mechanical room that occupies the Porte Cochere. These doors should be located and reinstalled or reconstructed to match the doors on the West.

INTERIOR DOORS

Many different configurations for doors within the building exist today. Some of the most significant doors have been removed in the Preservation Zone. An example of this is the door behind the welcome desk adjacent to the South entrance. Doors in the Preservation Zone should be returned if possible or replacement doors constructed to match exactly if the doors can not be found. As functions within the Capitol have changed, many doors have been added or removed. The character of the doors in these areas will be determined by the Restoration Zones. Flush doors in Steel frames are not appropriate in any zone except possibly Restoration Zone three.

Design Guideline:
Repairs to the building should include exterior and interior doors. Doors removed from the Preservation Zone should be returned. Other doors should be appropriate to the Restoration Zone where they exist based on original design.



LOGGIA AND BALCONIES

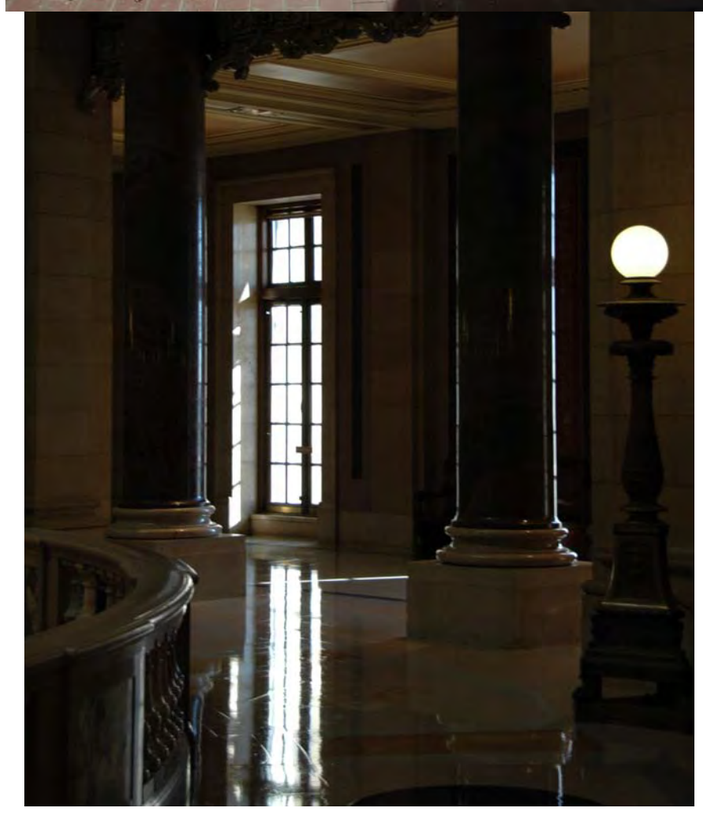
Many of the most significant spaces in the building are adjacent to loggia or balcony areas. The retiring rooms for the House and Senate Chambers, and the Supreme Court deliberation Room are all served in this way. The South Entrance doors are contained within such a space and the Level above at the Rotunda is also served by another Loggia. These area also provide relief on the exterior of the building creating deep shadows on all building elevations.

These areas should be restored to the original character and finish. Doors to these areas should be restored to their original finish and function. This would facilitate easy cleaning and maintenance.

It should be recognized that the height of the existing balustrade does not comply with current life safety codes for height or configuration. If these area were to made accessible to the building users or the public, major modifications would be required. The threshold freeboard elevation above the floor was designed to keep water and snow accumulating in these outdoor areas from entering the building. These areas also provide a significant barrier to wheelchar access to these areas.

Temporary provisions could be made to accommodate both of these problems if a public event required access to these areas. Permanent modifications to comply with these should be avoided.

Design Guideline:
The loggia areas should be restored and damaged finishes and materials repaired or replaced. Access should be carefully planned.



HEARING ROOMS

The Hearing Rooms are the natural extension of the public circulation space in the Capitol. Committees meet and receive public comment in these rooms. They are an essential component of the public process of government. Committee Rooms were included in the original design of the building. Large rooms were divided into smaller rooms with large folding doors. Clearly these rooms functioned very differently than modern hearing/ committee rooms today.

Existing hearing rooms in the Capitol often do not accommodate all public participants and accommodations are usually made for remote broadcast.

Space in the capitol has been expanded in and adjacent to the original designed committee Rooms. Minor Corridors have been incorporated into these rooms to make more space for participants. Columns exist in these enlarged spaces rendering them difficult for sight lines and appropriate furniture arrangement. In almost every case, Hearing Rooms have encroached on planned building circulation. The largest of these rooms is located under the Rotunda floor on the Ground Level. This was initially circulation space also. Room 318 still functions as a corridor connecting office spaces on the Third Floor.

All of the Hearing/Committee Rooms should be equipped with sound recording and amplification systems.

Design Guideline:
Hearing Rooms in the Capitol are marginal in function and layout. They should be evaluated as new building systems are installed and reconfigured as appropriate to function according to demand.

Minor Corridor through Hearing Room

TOILET ROOMS

TOILET ROOM LOCATION AND CAPACITY
The original design locates major restrooms for men and women on alternate floors. Modern conventions usually locate men's and women's toilet rooms together. Accommodations for wheelchair access have been made in some of the restrooms, ambulatory Men's and Women's public restrooms should be located on every floor.

Fixture count should be reviewed for current building occupancy including Meeting Rooms and other assembly spaces.

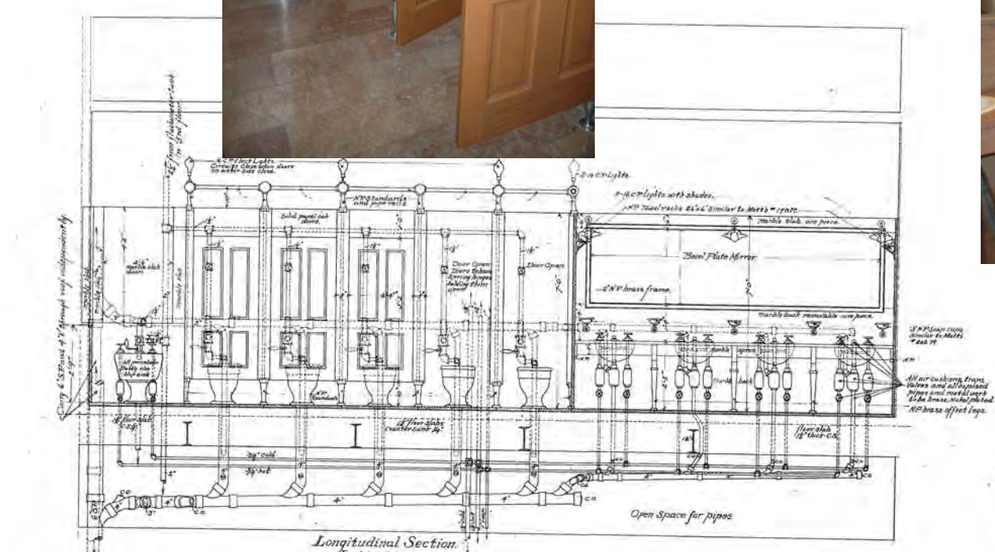
Way finding and restroom signage should be improved.

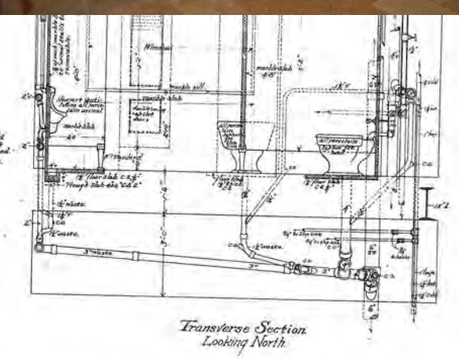
FAMILY AND UNISEX RESTOOMS
A number of unisex restrooms have been added over time. This type of restroom is very convenient and location and quantity should be evaluated for the entire building.

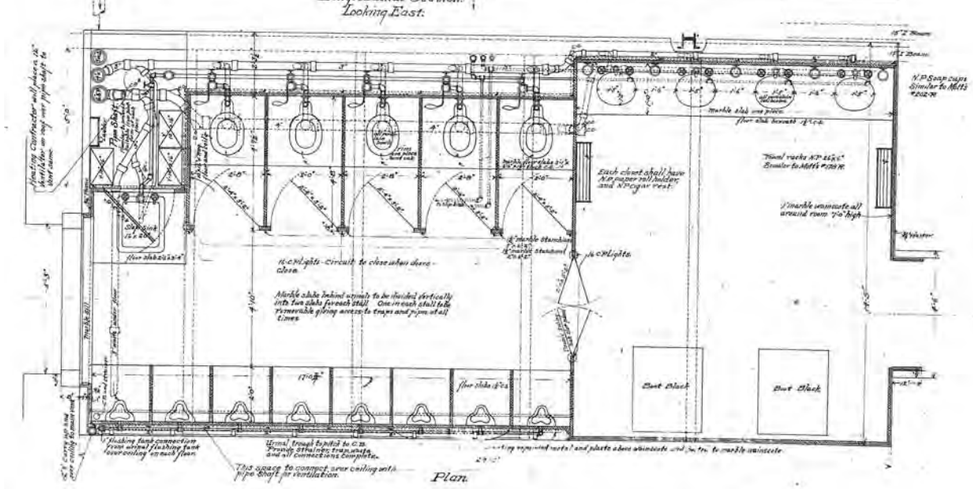
FINISHES
Toilet room modifications and new toilet rooms should all be finished as the original toilet rooms including stone floors and toilet partitions and counter tops. Wood panel doors. To match existing should also be used.

Fixtures should be new and selected for water efficiency but should also be appropriate for the historic context. Automatic flushing mechanisms should be considered for urinals only.

Design Guideline:
Restored and new toilet rooms should be finished to match the original. Modern fixtures should be used but should be selected to be appropriate for existing finishes.







Note- Plumber shall verify all measurements at building. All cutting of marble work necessary for installation of Electrical or Heating Work shall be done by Plumber according to directions of the Architect. All exposed metal work- spring hinges, locks, ample clips, bolt heads nuts etc. and all towel racks, soap dishes, paper roll holders, air-cushion traps, cocks, valves, rails, legs, standards— all metal-work whatsoever exposed to view to be Nickel Plated. These drawings show general arrangement and must be followed as closely as possible. Plumber will be held responsible for the working of the system and any changes from the plans found necessary for the effective operation of the system must be made by him after first consulting with the Architect.

General Toilets in 1st floor and Basement to be same arrangement of fixtures. Size of rooms approximately the same.

GENERAL TOILET ROOM SECOND FLOOR
GENERAL TOILET IN FIRST FLOOR AND BASEMENT
SAME ARRANGEMENT AS ABOVE.
SCALE - 3/8" = 1'-0"
SEE ALSO FULL SIZE DETAILS OF INTERIOR FINISH.

SCALE REDUCTION. REPRODUCED FROM THE ALBUMS OF THE MINNESOTA HISTORICAL SOCIETY 1967

SHEET No. 147

NEW EXIT STAIRS

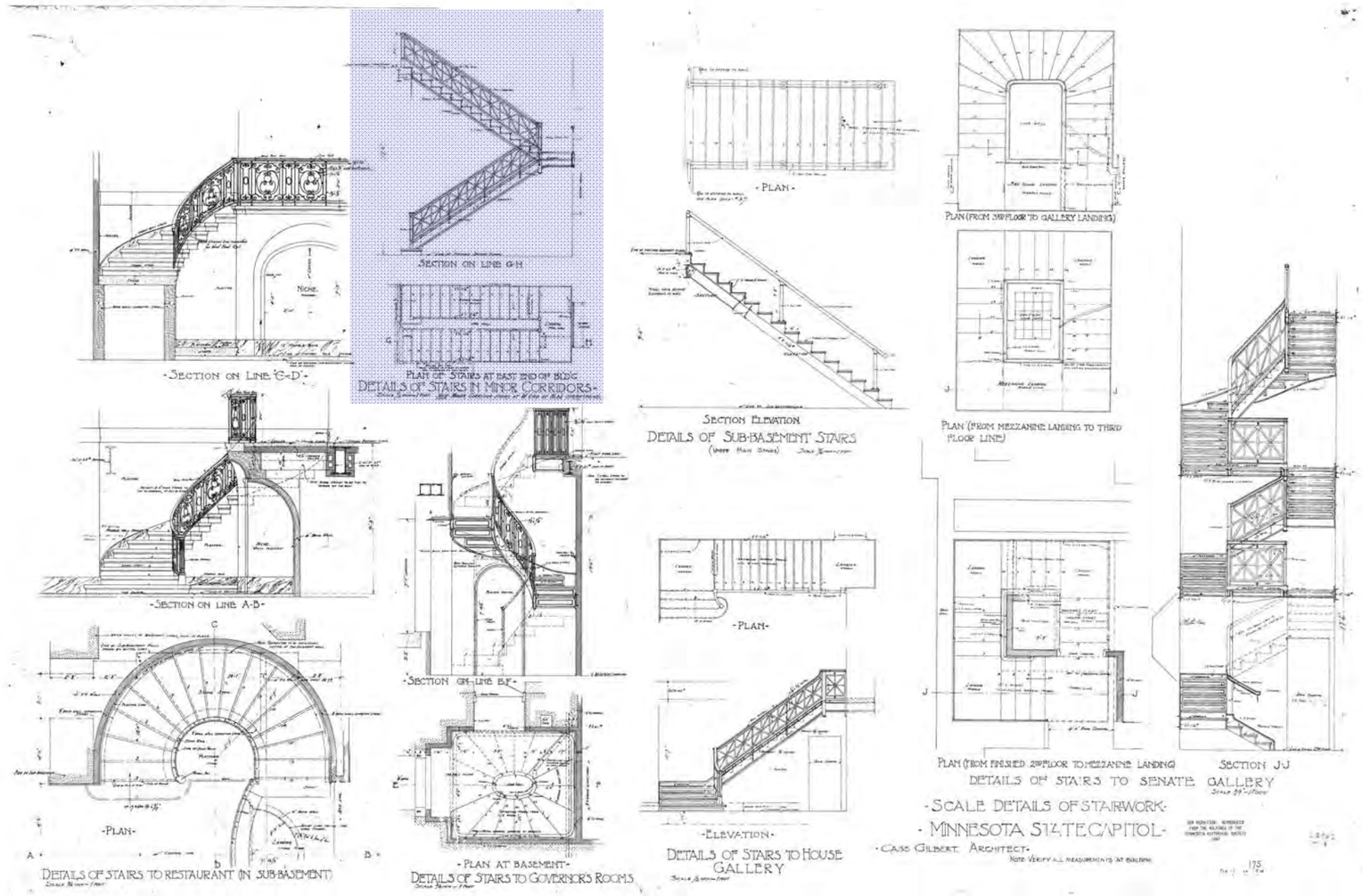
New emergency exit stairs may be required. The design and character of these stairs should comply with current code and respect exterior windows. Stairways in the Minor Corridors offer a model for a simple functional stair that is compatible with the original architectural design of the building. Other stair details in the building may also offer solutions to the configuration and detail of the stair.

Exiting strategy and occupancy plan should be carefully evaluated to determine the requirement of new exit stair systems. Restoration of Minor Corridors as exit paths should be given consideration with the exiting plan.

Placement of exit stairs will be determined together with other building functional layouts. Building systems vertical chases may be located adjacent to new exit stairs as stacked through floor openings will provide opportunities for locating these vertical chases.

New exit stairs should not impact configurations or finishes in the Preservation Zone.

Design Guideline:
Repairs and building systems improvements should include building exiting strategies that may include additional exit stairs. Complete analysis of building exiting for life safety is required.



SIGNAGE

Interior signage and way finding is very important in the building as circulation is not self evident. The current signage system is not unified in its character or system.
It is recommended that a complete signage system be developed to serve the building interior and exterior. A unified system appropriate to the building original design is required.

DIRECTORIES
Building directories should be located in gathering areas and near major entrances to the building. These should be clear in information and orientation. Locations should be carefully selected so that directories can be oriented with the configuration of the building and the readers position when reading the directory.

FLEXIBILITY
Occupants of the building change over time. When individuals are identified on signage, a system of changing names in a simple and elegant way will be necessary. The ability to create the changing signage should be available to building managers.

Design Guideline:
Repairs and building systems improvements should include a complete signage package for exterior and interior way finding and room identification.

Existing Directory

Existing Signage is not unified in character and design

PUBLIC STAIRS

A variety of elegant public stairs are included in the building. The elliptical stair near the intersection of the North and East wings of the building is very functional and beautiful. The Grand Stairs near the Rotunda are extremely beautiful and designed to support the grand pubic spaces in the building. These stairs encourage use and elevators provide secondary vertical circulation.

ELEVATORS

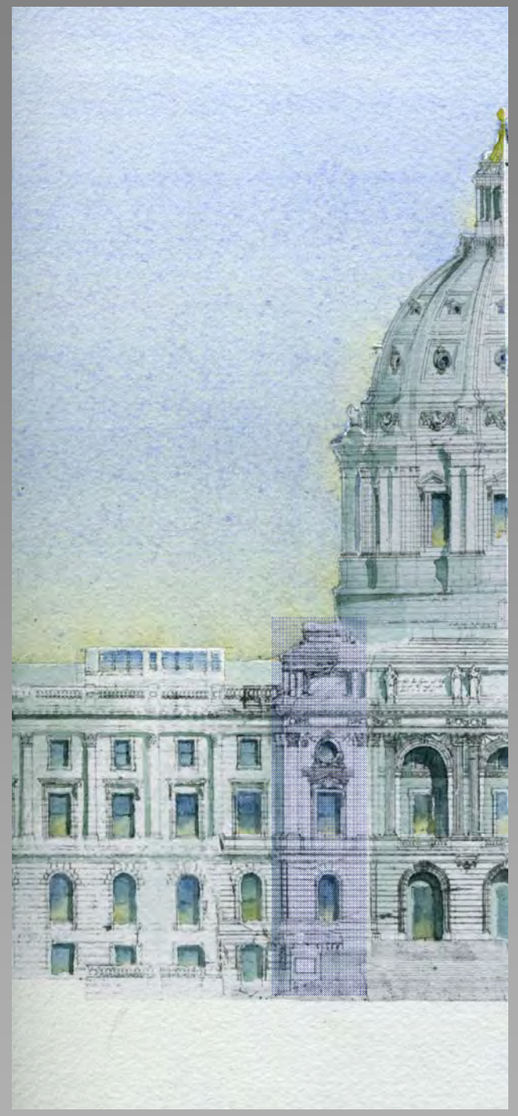
Numerous elevators are located throughout the building. Openings for elevators were originally glass and iron. Elevators are usually on outside walls and pass adjacent to windows in prominent locations near the South Entry. These elevators are expressed on the exterior of the building with shafts that frame the portico and loggia on each side.

Elevator cars and openings have been replaced. This has eliminated the natural light intended for the corridor from these windows located in the elevator shaft. This has had an adverse effect on the natural light within the Rotunda Space and has changed the prominence of the elevators as a significant design element in the planned vertical circulation system in the building.

Design Guideline:
Repairs and building systems should improve elevator performance and capacity and restore the daylight originally planned for the Rotunda area through the elevator shaft areas.

Beautiful and functional public stair flooded with daylight

Elevator doors and shaft that were glass and bronze in original design aligned with exterior window beyond flooding interior with light.



Elevator Shaft expressed on the Exterior of the Building

EXISTING FOOD SERVICE FACILITIES
The Rathskeller dining facility in the Basement Level of the Capitol was part of the original design of the building. It has been restored recently and is served by a modern kitchen located under the North Stairs. The café is in full operation during the legislative sessions and is used as a sitting area for the adjacent vending machine operation located in the corridor in the basement.

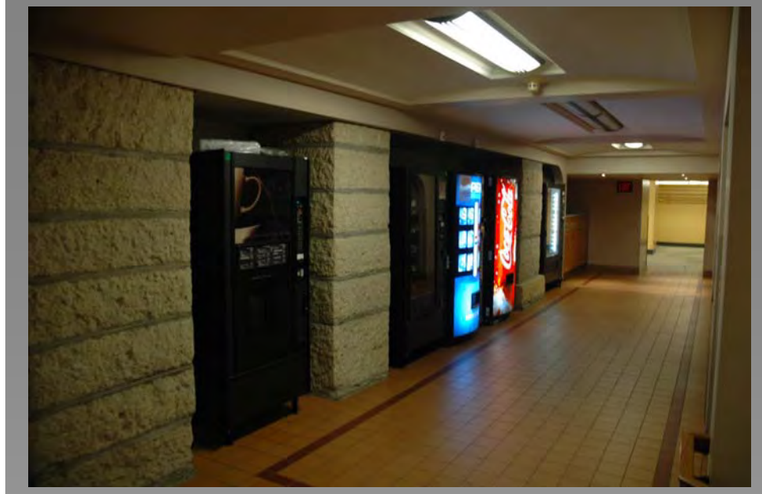
Food Carts are used to provide additional service near the Chambers during the session. The are convenient but somewhat problematic for circulation and food smell. Consumption of food away from designated dining areas and containment of trash is also difficult.

An additional dining room is located in the lower level of the building. This room contains a beautiful mural and historic finished that have fallen into disrepair. This area should be restored and the mural conserved. This space has been used as a dining room for the Supreme Court.. This room should be restored.

Cafeteria areas exist in other adjacent State Buildings connected by tunnels to the Capitol for times when the Café in the Capitol is not in service.

Design Guideline:
Repairs and building systems improvements should improve food service for the Capitol and restore damaged finishes in the Rathskeller.

Entry to Café (Rathskeller)



Vending area adjacent to Café in Tunnel area.

Supreme Court Dining Room

SUSTAINABLE DESIGN
The building systems design shall conform to all the State of Minnesota Sustainable Building Guidelines. It is imperative that the design team designate the Guideline Leader to administrator organize the team roles and accountability. At the conclusion of each project phase, the design team shall submit the project for compliance review via the B3-MSBG tracking tool (www.msbgtracking.com).

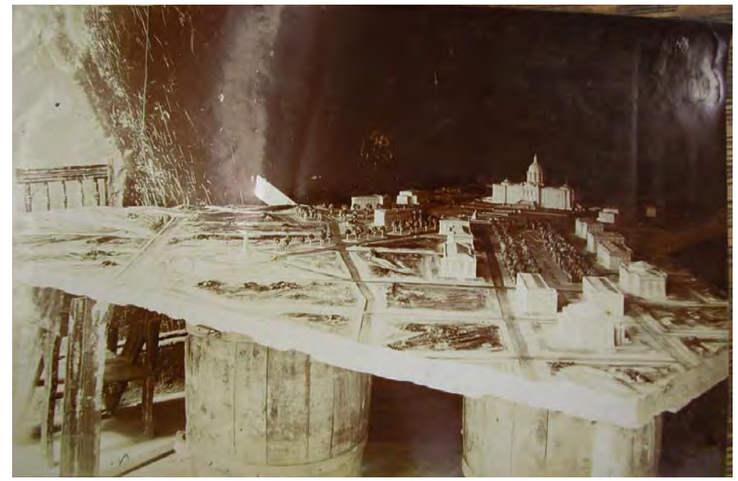
Critical path issues for the design team will include establishing the building energy target in the pre-design phase of the project to inform the selection and required performance of building systems. An energy model shall be used to determine building energy performance and ensure compliance with the established energy performance target.

Renewable resources are wind and sun. The design and construction team must study the potential of this 2% requirement and provide study data for these resources and their particular application for this project.

Design Guideline:
Repairs and building systems improvements should evaluate all design options with the Minnesota Sustainable Building Guidelines.

CENTRAL ARCHIVE
The work of preservation and building systems upgrades is important history. Many of the modifications made to the Capitol over time are also very important and inform the current work. Past vision and un-built projects may inform future growth and planning. It is important to document these changes and ideas for ready access for this and future work at the Minnesota State Capitol. A central archive should be developed to facilitate access to this work.

BUILDING INFORMATION MODELING
Modeling and documenting techniques have change dramatically during the life of the building. Current methods will include modeling the building and building systems in a digital format in three dimensions. Building information modeling will integrate existing building information, new design documentation and building management systems using these powerful tools.



Design Guideline: Repair and Restoration information related to work on the building should be places in a central archive for easy access to ideas and built conditions. This will facilitate more efficient building management.

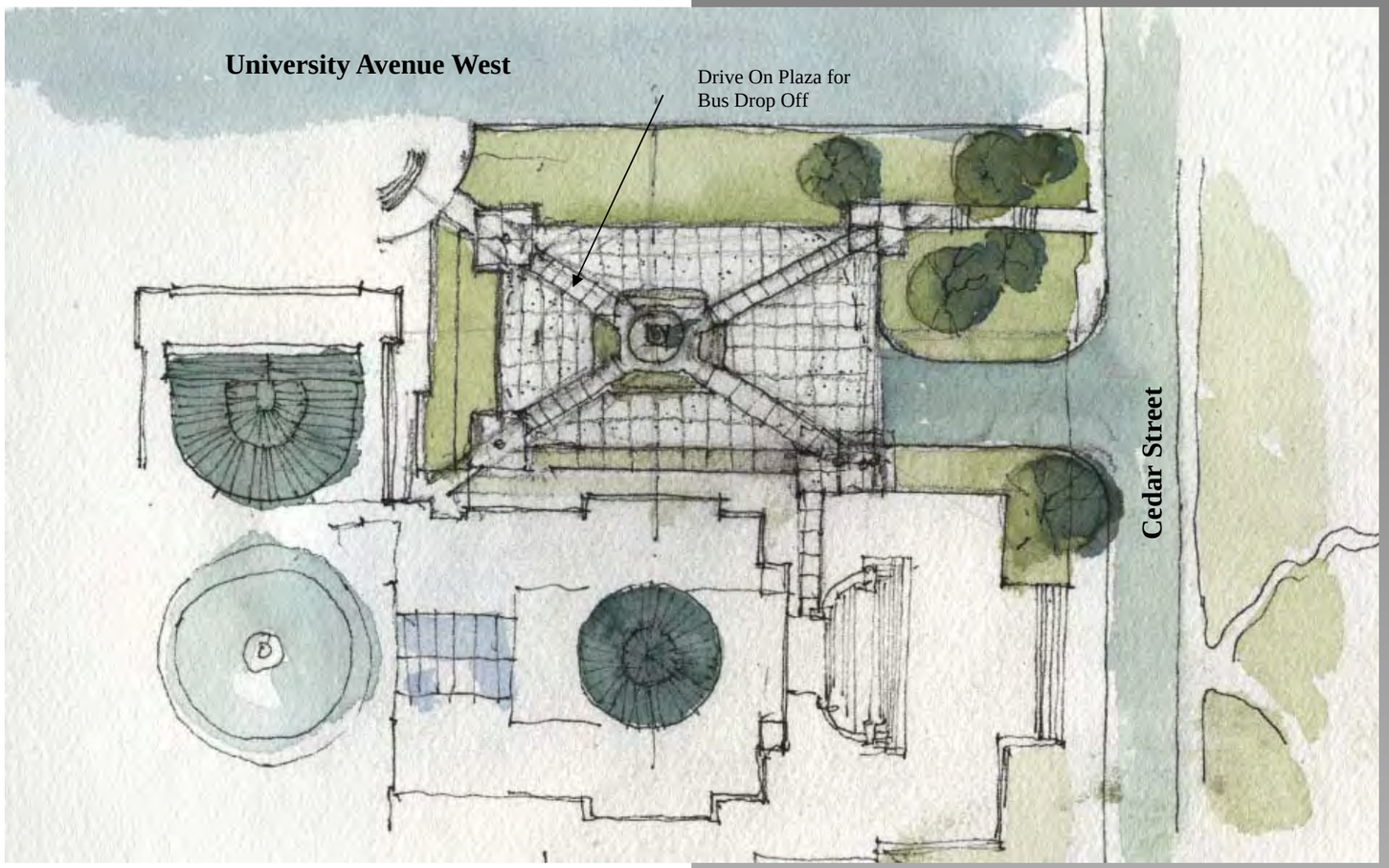
Lot O East and North of Capitol Building

Parking Lot O should be returned to green space and be designed to mirror the landscape on Lot N. If it is determined that the school bus drop of area is best located in Lot O, decorative paving should be added to the landscape design to facilitate a “Drive On Plaza” for drop off only.

Circulation should be counterclockwise around the central element (preferably sculpture). The drop off zone should be located near the existing ramp to the East Ground Level Entry restored when the mechanical unit in the Porte Cochere is removed.

The entrance road should be widened to accommodate the turning radius of busses and moved South to better accommodate the grades. A paving material change should signal the transition from drive to Plaza.

Walks from the North Entry steps should be created to link the North Entry Steps to the East Entry and Also connect the door into the Capitol with the most direct path to Cedar Street and the Administration Building over the bridge at University and Cedar. The landscape buffer between the Plaza and the Light Rail should be enhanced.



Design Guideline: Grounds immediately adjacent to the Capitol should be enhanced and repaired with the Construction activities for the Repair and restoration work.

Aurora Avenue

Aurora Avenue was very important in the original design of the Capitol. The rendering to the left indicates a promenade for carriages and a grand gathering area at the foot of the South steps. Use of this area has evolved into parking areas in close proximity to the main public entry into the building.

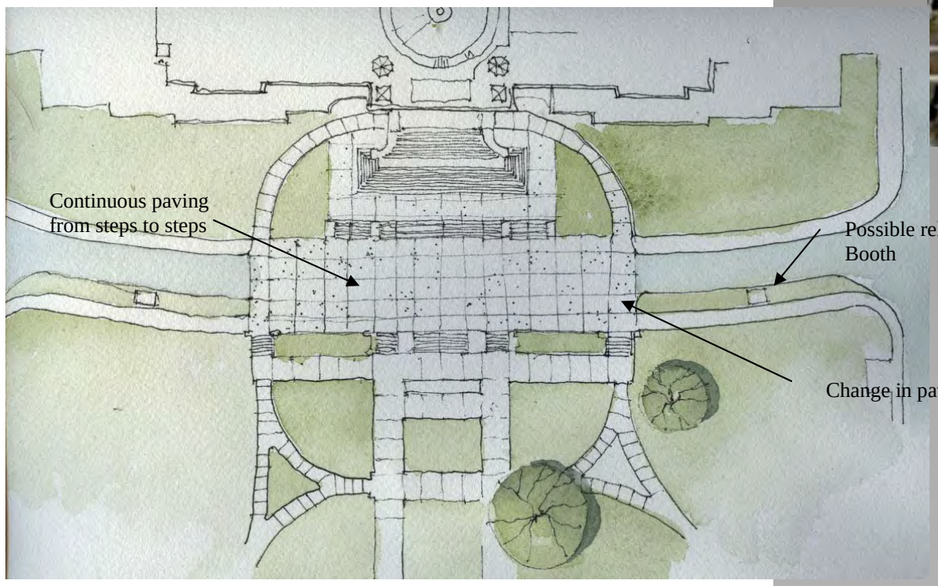
The original competition for the selection of the architect was very specific to exclude all site development and landscape design. Gilbert recognized how important the grounds were to the overall design and spend many years advocating for site improvements, He often provided ideas and designs without compensation.

The area South of the South steps between the drives to the Porte Cochere should be enhanced to connect the South entry to the Capitol to the Mall. Parking in this area should be eliminated to enhance the function of this area as a gathering place and to preserve the vista to and from the South Entry of the Capitol.

Security Booth location may change to provide better control of traffic on Aurora.

Design Guideline: Aurora Avenue should be enhanced to provide a connection between the Mall and the South Steps. Areas of Aurora East and West of the Porte Cochere Drives should be enhanced with landscaping.

Historic Rendering of Aurora



Aurora Avenue Concept Sketch

Aurora Avenue (Continued)

The function of Aurora Avenue should continue as an important promenade, drop off area, bus drop off, access to the Porte Cochere, and short term public parking for ADA access into the Porte Cochere. In addition Aurora should be enhanced as the Ceremonial Entrance to the Building.

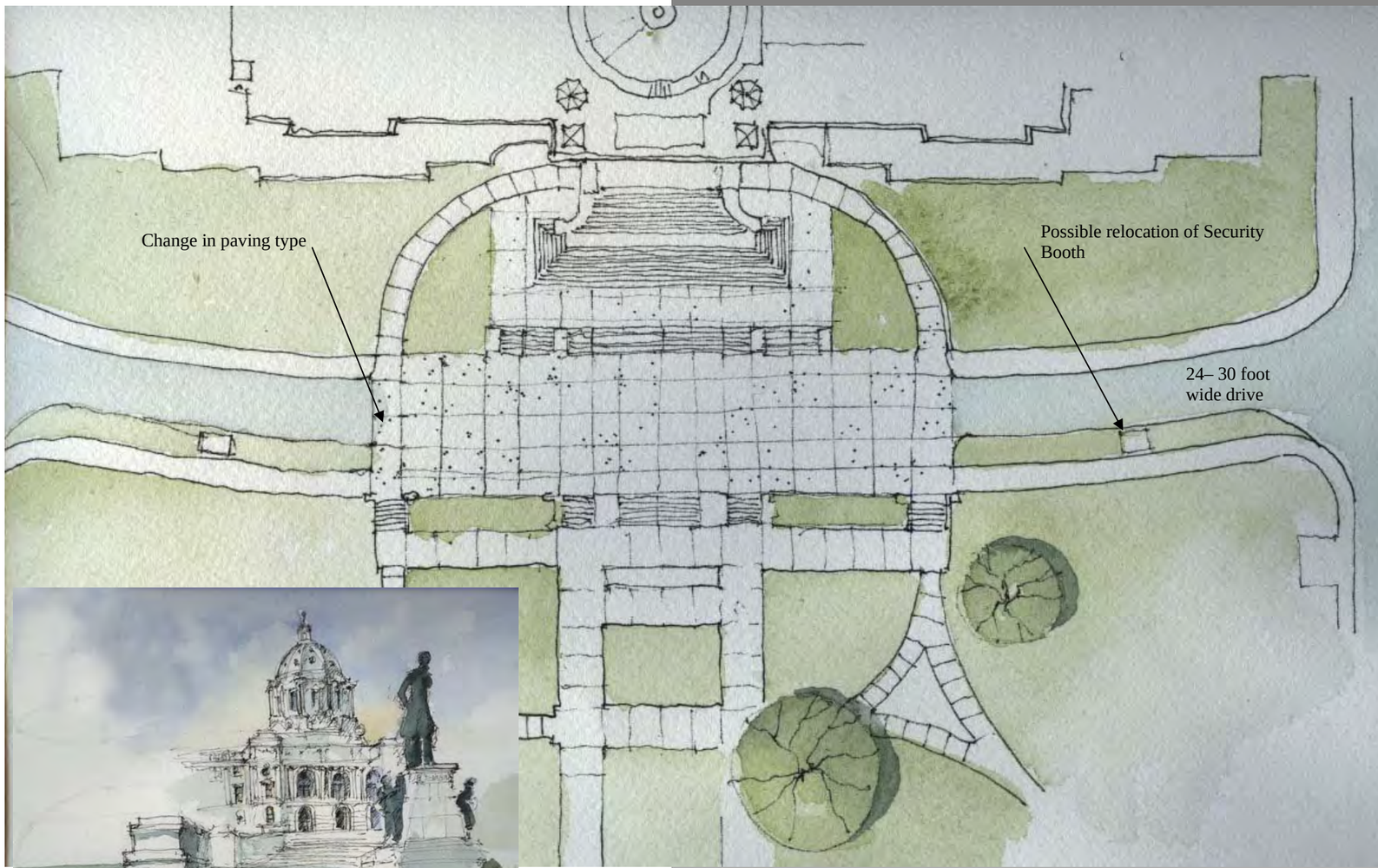
These activities can all be accomplished if the width of Aurora is reduced between Cedar and the curved drive access to the Porte Cochere. Width should also be reduced between the west exit drive of the Porte Cochere to MLK.

The Plaza created by the change in paving and the more direct connection to the Mall could be used for a number of public events and be easily controlled at MLK and Cedar. Vehicle traffic would be slowed and the "Drive On Plaza" elements will provide important transitions between vehicle and vehicle/pedestrian environments. The area south of Aurora between including the statuary

This reduction in width would allow for a landscaped buffer between the walk and the drive surface. This landscaped area would create a safer walking environment along Aurora and would enhance the appearance.

Landscape elements and Statuary should be enhance to form the link between the Capitol and Mall.

Design Guideline: Aurora Avenue should be enhanced to provide a connection between the Mall and the South Steps. Areas of Aurora East and West of the Porte Cochere Drives should be enhanced with landscaping.



Aurora Avenue Concept Sketch

Statue and stairs to Mall enhanced by Plaza that links South stairs across Aurora Avenue