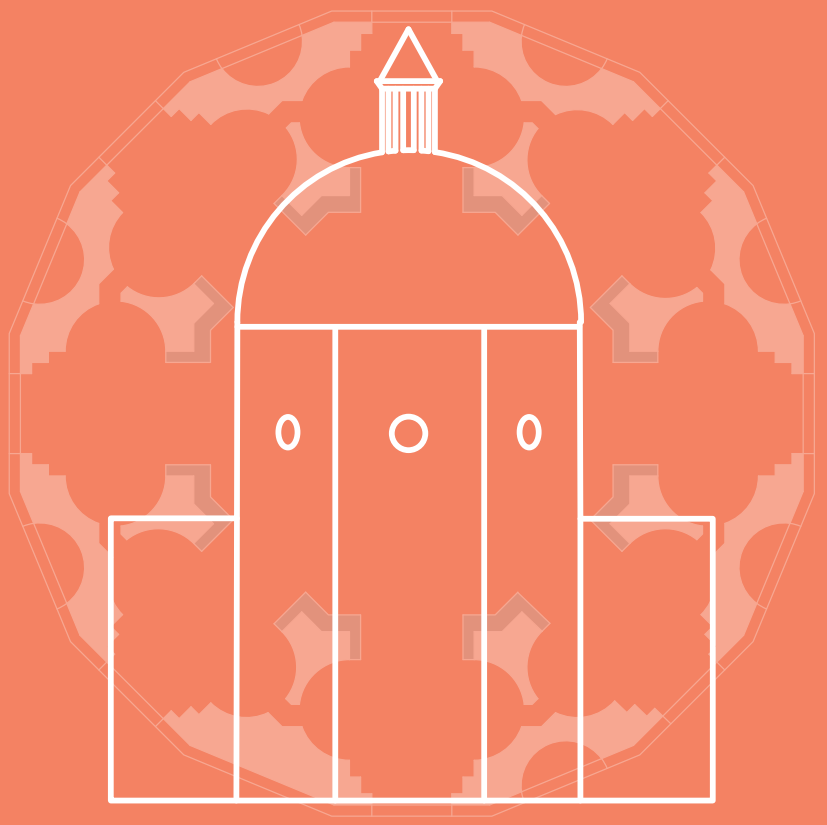
THE SPIRIT OF BRUNELLESCHI

mckenzie watson

master of architecture final study



THE SPIRIT OF BRUNELLESCHI

A special thank you to those who helped guide me throughout this process. Your time and dedication made all of this possible.

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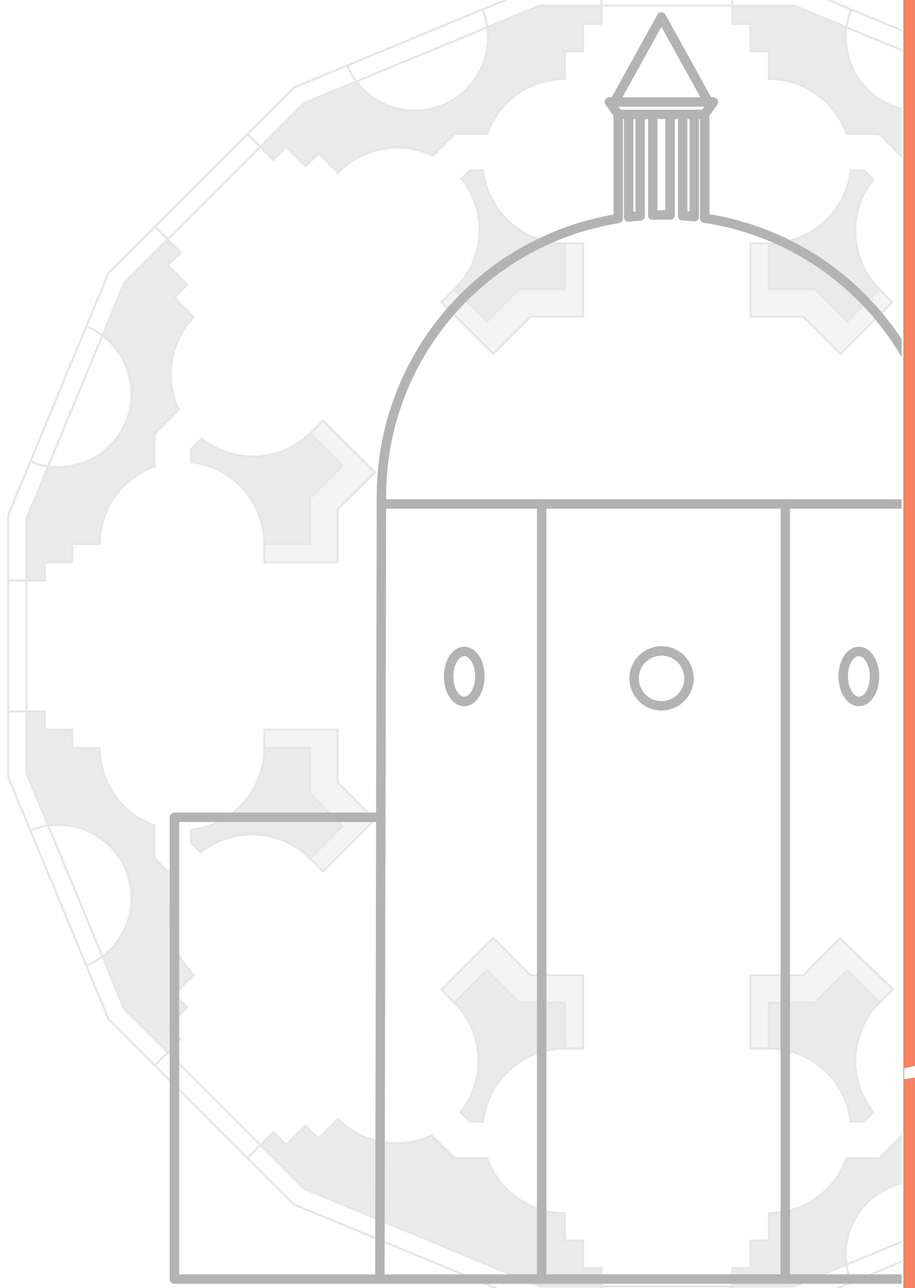


INTRODUCTION

1 2 3 4 5 6

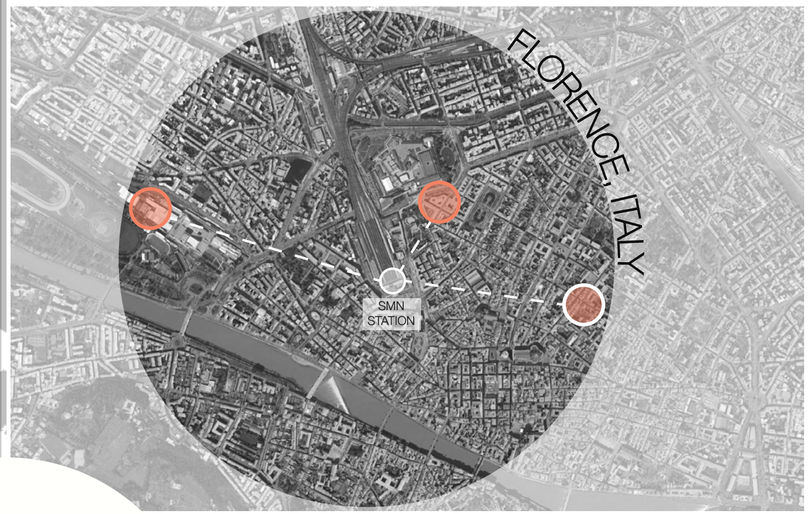
How can an adaptive re-use project celebrate the Renaissance and Contemporary periods and be developed as an architectural piece that is both respective and forward thinking?

As someone fortunate enough to travel during both my undergraduate and graduate architecture programs, I have been exposed to architecture that is rich with history. Having the ability to see projects from periods dating back to the Renaissance and further sparked my early interest in adaptive reuse. Since first stepping foot in Barcelona as a junior, I have been continually fascinated with these types of projects. Because of this, I knew that I could channel my passion when developing an architectural piece for my final study project. Around the same time I began formulating my architectural question, I was given the opportunity to be the Graduate Assistant Teacher for the TAMU COA Italy program during the Fall of 2018. I knew that this opportunity would once again bring me closer to the prominent older architecture I was always inspired by, and give me a chance to design with my style and a classical style all in one. Knowing I would be close to Florence, Italy where the heart of the Renaissance began, I set out to find a building that represented the Renaissance and had cause for my artistic renovation. Being so close to the city, I traveled there regularly and immersed myself in the culture, and walked with both locals and tourists. I surrounded myself with Renaissance-era architecture and grew an even greater appreciation for the period of great architects like Filippo Brunelleschi. I believe my opportunity to live in my city of focus sets my design decisions apart, as they stem not just from research but personal experience.

1 RESEARCH

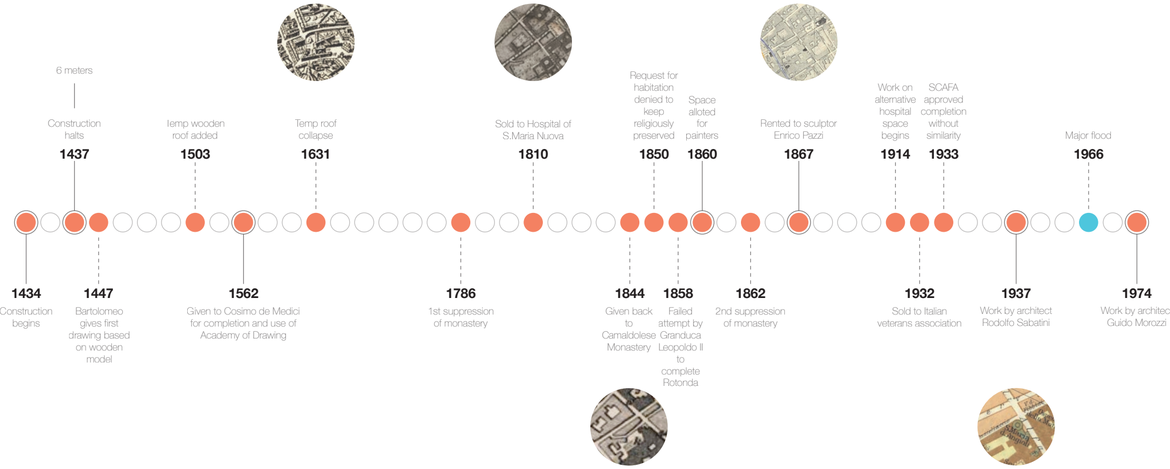
2 3 4 5 6

FLORENCE/FIRENZE is a city that is exploding with 14th and 15th century Renaissance architecture. Walking through the city center gives anyone the feeling of being transported into the age of Brunelleschi, Lorenzo de'Medici, and Galileo. In the 21st century, contemporary architecture has been sprouting slowly in the form of dwellings, music halls, and retail spaces. With such a prominent architectural style in place, Florence has multiple opportunities to explore the blending of it's famous Renaissance influence and the upcoming contemporary and modern styles of architecture that are taking the world by storm.



SITE SELECTION

Studying in Florence gave me the perfect opportunity to explore my architectural blending passion first-hand. I chose three sites to experiment with, all within walking distance of the Santa Maria Novella train station. Between an abandoned factory, a horse training facility turned business, and an abandoned Renaissance Rotunda, I felt my studies were best directed toward the Rotunda that was started by Renaissance architect, Filippo Brunelleschi. The Rotunda is located approximately five minutes walking north of the famous Florence Duomo.

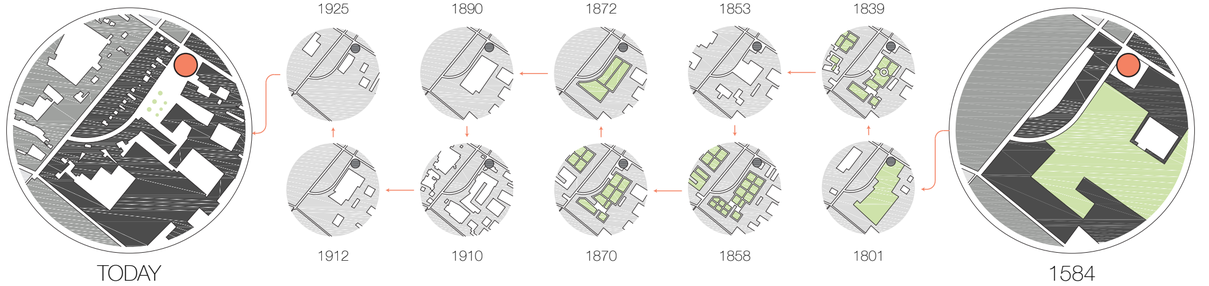


ROTUNDA TIMELINE

The Rotunda began in 1434 with the intent of being a solitary oratory for the Monks of the Camaldolese Monastery. Construction lasted three years before money was diverted to the Florentine war with Lucca. Only having been built up to about 7 meters, the Rotunda was left uncared for until a temporary roof was added in the early 1500s. It wasn't until the 1800s when interest was sparked again in the building, and a renovation was completed in the 1930s by Rodolfo Sabatini.

GARDEN + PARKING LOT EVOLUTION

The lot that the Rotunda sits on was once a large garden area for the monastery to grow all their needed produce to be self-sustaining. According to the city of Florence maps (referenced below), there was a progression from the large garden area to a small parking lot from the Renaissance period to today. In the 1800s there is visible interest and the apparent manicuring of the garden area. It appears that the garden was changed to fit a parking requirement for surrounding housing in the 1930s.



THE CAP

As mentioned in the building timeline above, the Rotunda was only constructed to approximately six to seven meters before money was diverted to the war between Florence and Lucca. The addition to finish the building was added in the 1930s by Rodolfo Sabatini as requested by the Italian War Veterans Association, who currently owns the building. This 'cap' was designed to finish the Rotunda with minimal architectural connection to Brunelleschi's design and has been harshly criticized by several Professors and Architects since completion.

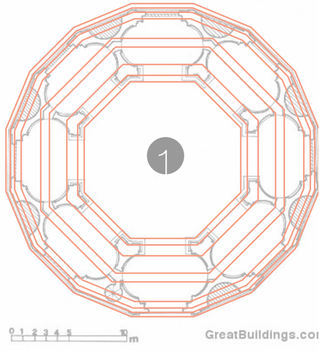
THE IDEA

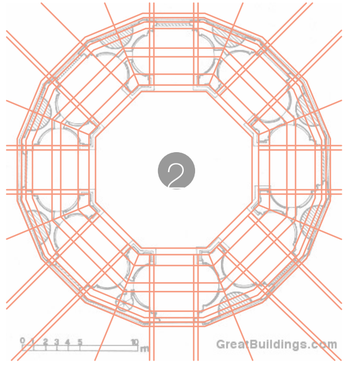
It is essential in the project proposal to preserve the original seven meters of Brunelleschi's constructed design. By removing 'the cap,' there is visual opportunity to truly grasp what was erected during the Renaissance period by the most celebrated architect of the time. From any point on the site, any visitor can see the original fabric, the modern completion, and the glass cylinder that encapsulates the two pieces to create one cohesive project.

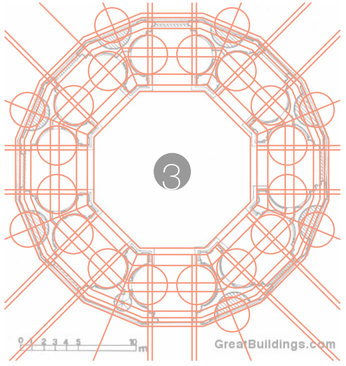
Geometry Analysis

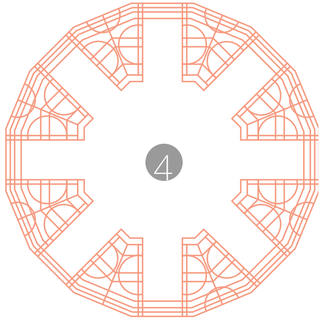
Rotunda floor plan | built vs intended

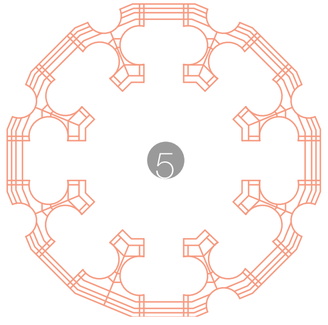
Many of the floor plans that are available online and in physical references are hand drawn, meaning there are several imperfections. Knowing that Brunelleschi designed through a heightened knowledge and fascination with geometry, I set out to reconstruct the floor plan as I imagined Brunelleschi would have. Using one of the most detailed and widely referenced plans, I overlaid geometry to create a mathematically consistent floor plan. There were several steps involved, that can be seen on this page. This strategy gave me a clear idea to both study and design around, with the backing of Brunelleschi's design methodology.

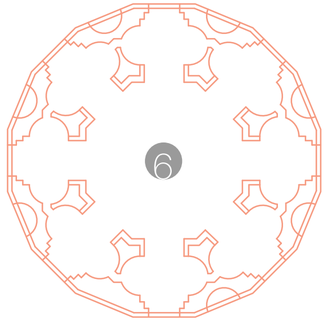


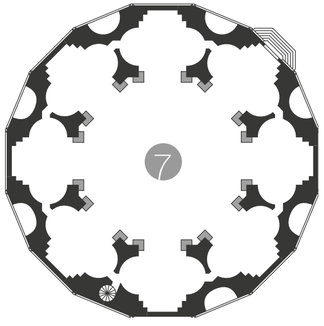




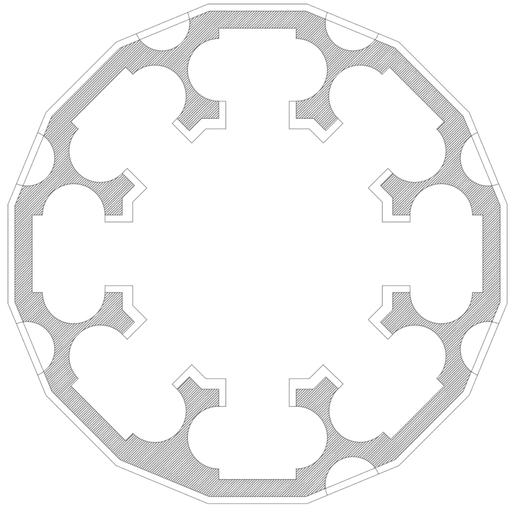








BUILT



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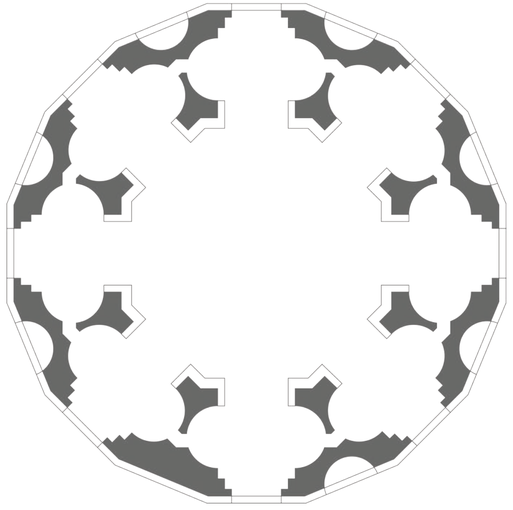


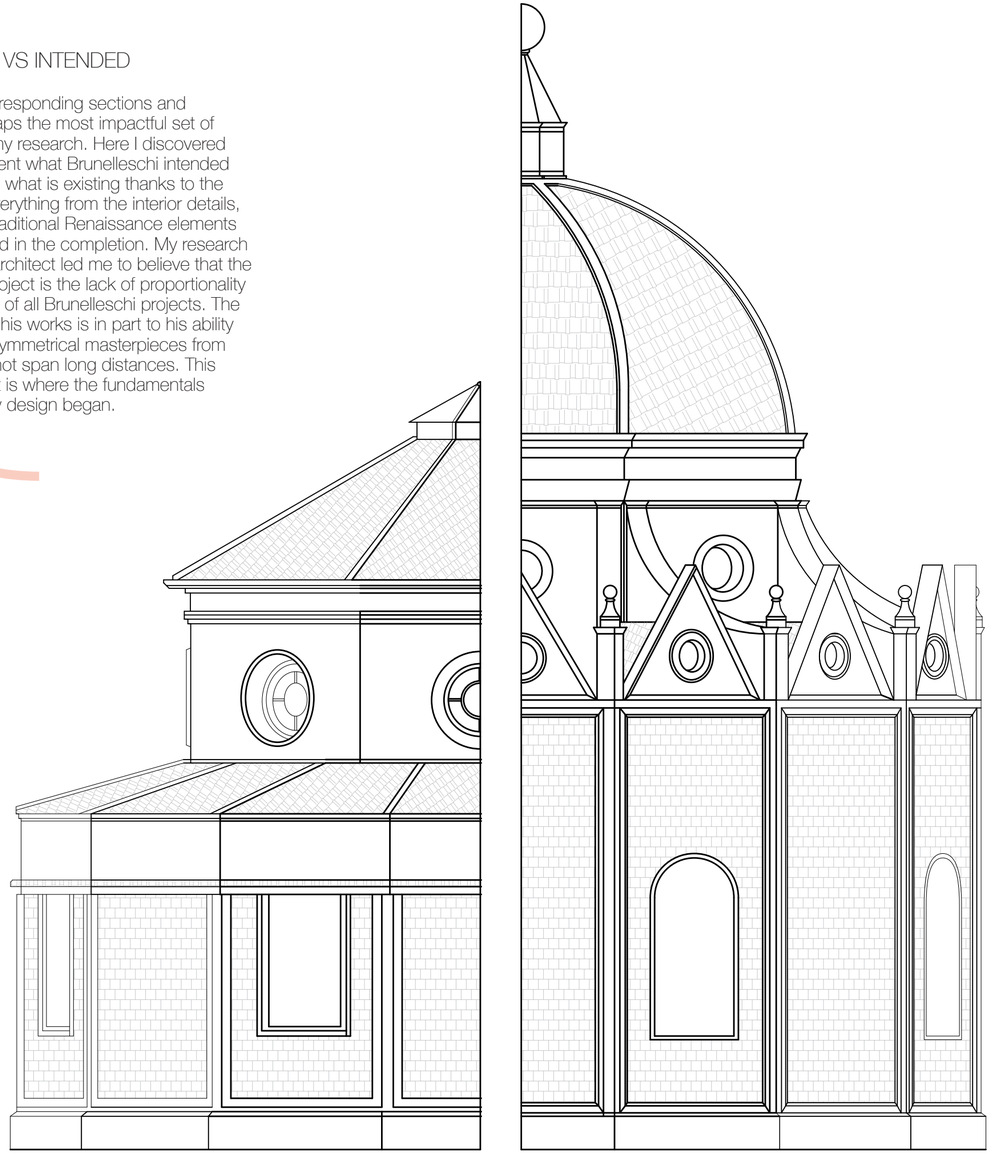
INTENDED

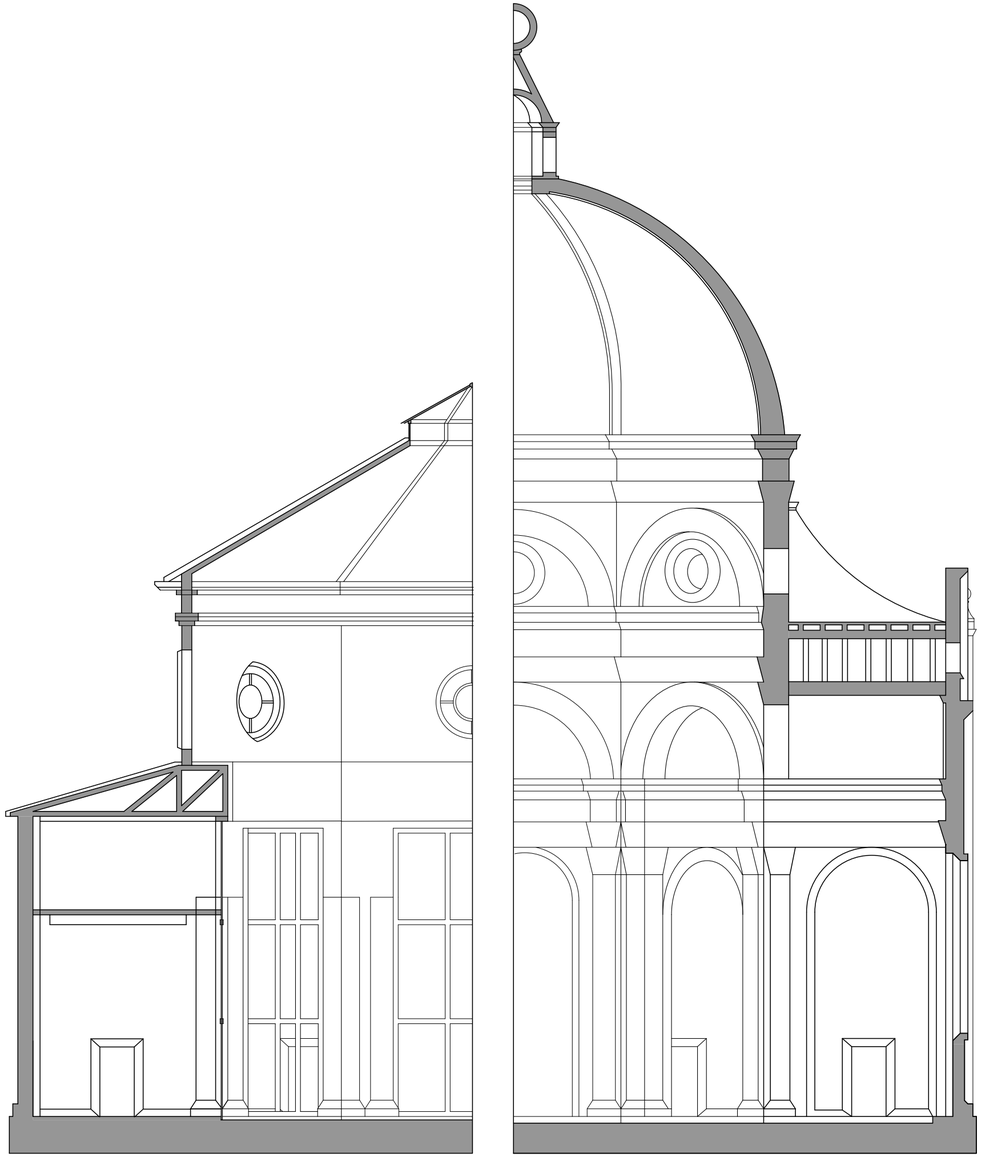
THE CHANGE

This geometry study is where I first began to understand just how different what is currently standing is from what Brunelleschi intended. In the floor plan alone, it is obvious that the geometry has been greatly simplified. Much of the detail within the chapels is lost, along with the passageway between each chapel. The built plan is much more enclosed. While the plan remains overall radial, the character of each chapel is plan is lost.

BUILT VS INTENDED

This set of corresponding sections and elevations is perhaps the most impactful set of drawings I have in my research. Here I discovered how genuinely different what Brunelleschi intended to have built is from what is existing thanks to the 1930's renovation. Everything from the interior details, proportionality, and traditional Renaissance elements were warped or omitted in the completion. My research on Brunelleschi as an architect led me to believe that the real disgrace to this project is the lack of proportionality true to what we know of all Brunelleschi projects. The grandeur of many of his works is in part to his ability to construct great symmetrical masterpieces from materials that cannot span long distances. This acknowledgment is where the fundamentals of my design began.





BUILT VS INTENDED

The Architect

Filippo Brunelleschi | 1377 - 1446

Filippo Brunelleschi was likely the most prominent architect of the Italian Renaissance. In his early life, he studied as a goldsmith and a sculptor but was driven to architecture after several lost commissions in his trained field. Unlike other architects of the time, Brunelleschi also designed with engineering in mind. The building of the Florence Duomo, the work he is most well known for, was a feat of both architecture and engineering. His design was extravagant, and it required the construction process to be specifically designed. His masterwork did not just stop there. He is known for other projects such as the Museum of the Innocents, Pazzi Chapel, the Church of San Lorenzo, etc. He designed with a keen sense of geometry, balance, and perspective that set him apart from other designers of his time.

Additional Brunelleschi information:

Architectural style heavily influenced from his trip with Donatello to Rome in 1402

Re-founding of linear perspective since Greek and Roman times

Named head architect of Santa Maria del Fiore Dome by the Medici family until his death

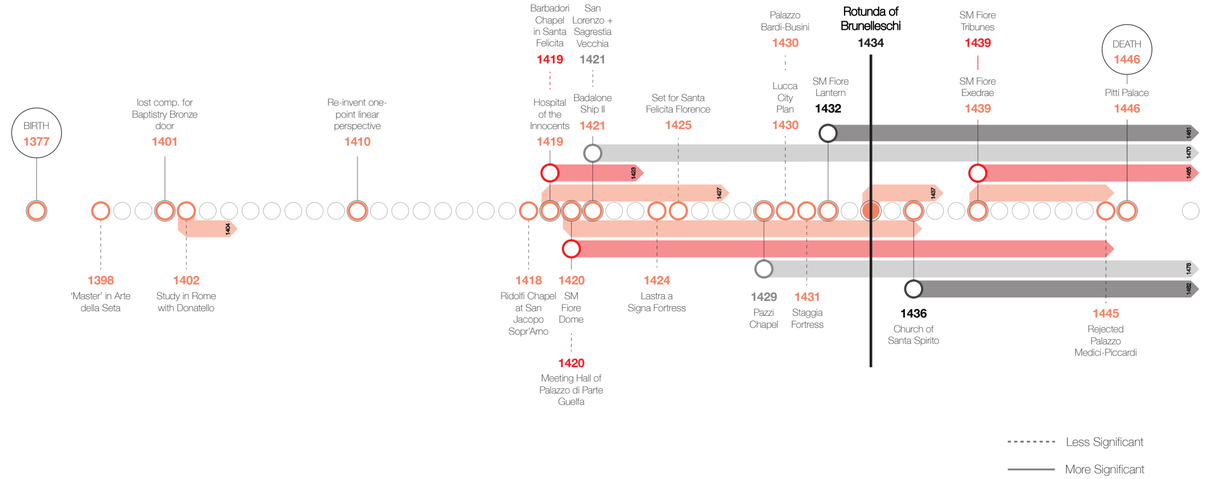
Involved in the planning of many cities outside of Florence

Designed sets for stages, festivals, etc

Viewed architecture as a progressive opportunity to learn from history and move forward creatively

Worked for several religious establishments on both small and large scale projects

First significant project commission with the help of goldsmith guild he was a part of



Principles of Brunelleschi's design work

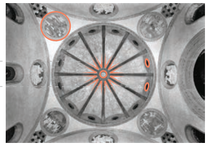
1. History is an opportunity to compare and criticize architecture as an art form
   - Studying proportionality is the best way to understand ancient art
2. Architecture is an opportunity to be constantly progressive and demonstrate a wealth of knowledge
3. The unity of an architectural space is felt through a balance of form, force, and matter
   - Any plane is an opportunity for the perception of depth
   - Planes represent an intersection of a visual pyramid as spatial infinity
4. There is opportunity to explore the blending of longitudinal and centralized plans where opposing perspective styles show the difference between actual depth and perceived depth
5. Fundamental principle of balanced perspective is geometrical congruity
   - Symmetry goes as deep as the bones of a building, not just decorative elements to achieve symmetrical bliss
   - Geometrical congruity is accomplished through proportionality

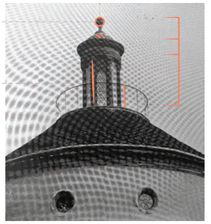
Tripartite Comparison

Old Sacristy | Pazzi Chapel | Rotunda

After studying Brunelleschi as an architect, it was imperative for me to explore some of his projects. The two closest related projects in aesthetics to the Rotunda are the Old Sacristy of San Lorenzo and The Pazzi Chapel of Santa Croce. These two projects were the perfect opportunity to compare Brunelleschi's principles of proportionality, progression, and balance between one another and the Rotunda. Here I gained insight into how Brunelleschi learned from previous projects and what he found valuable in similar style projects. I looked at traditional Renaissance architectural elements and geometrical comparisons in both plan and elevation.

SAN LORENZO
OLD SACRISTY



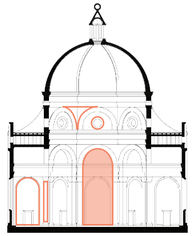


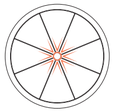
SANTA CROCE
PAZZI CHAPEL

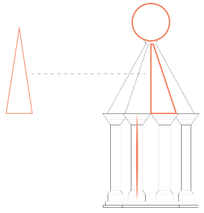
SANTA MARIA DEL FIORE

FLORENCE DUOMO LANTERN

ROTUNDA OF
BRUNELLESCHI







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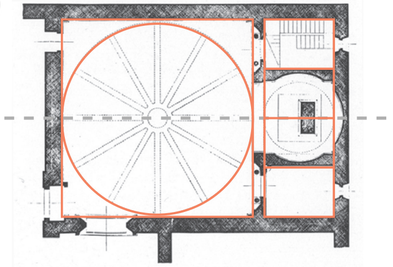

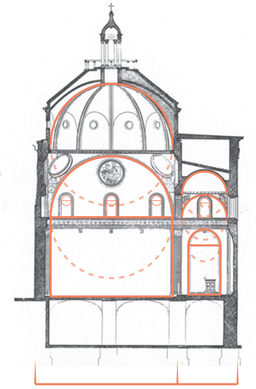

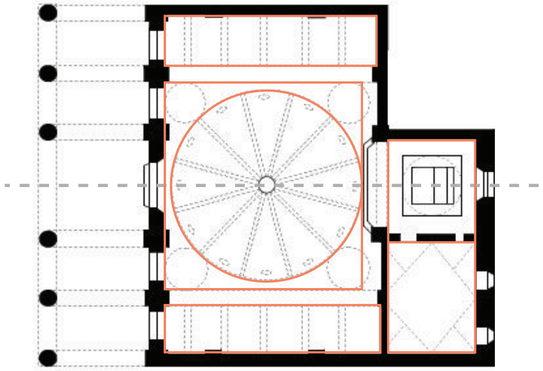

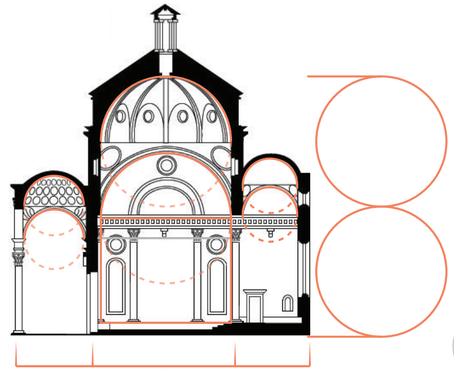

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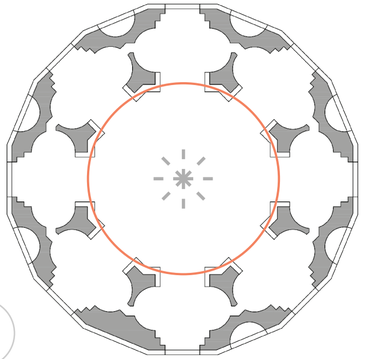
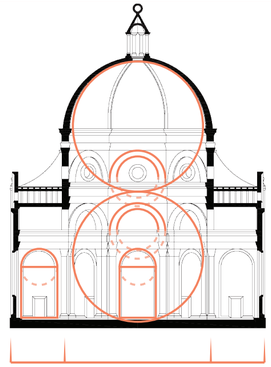
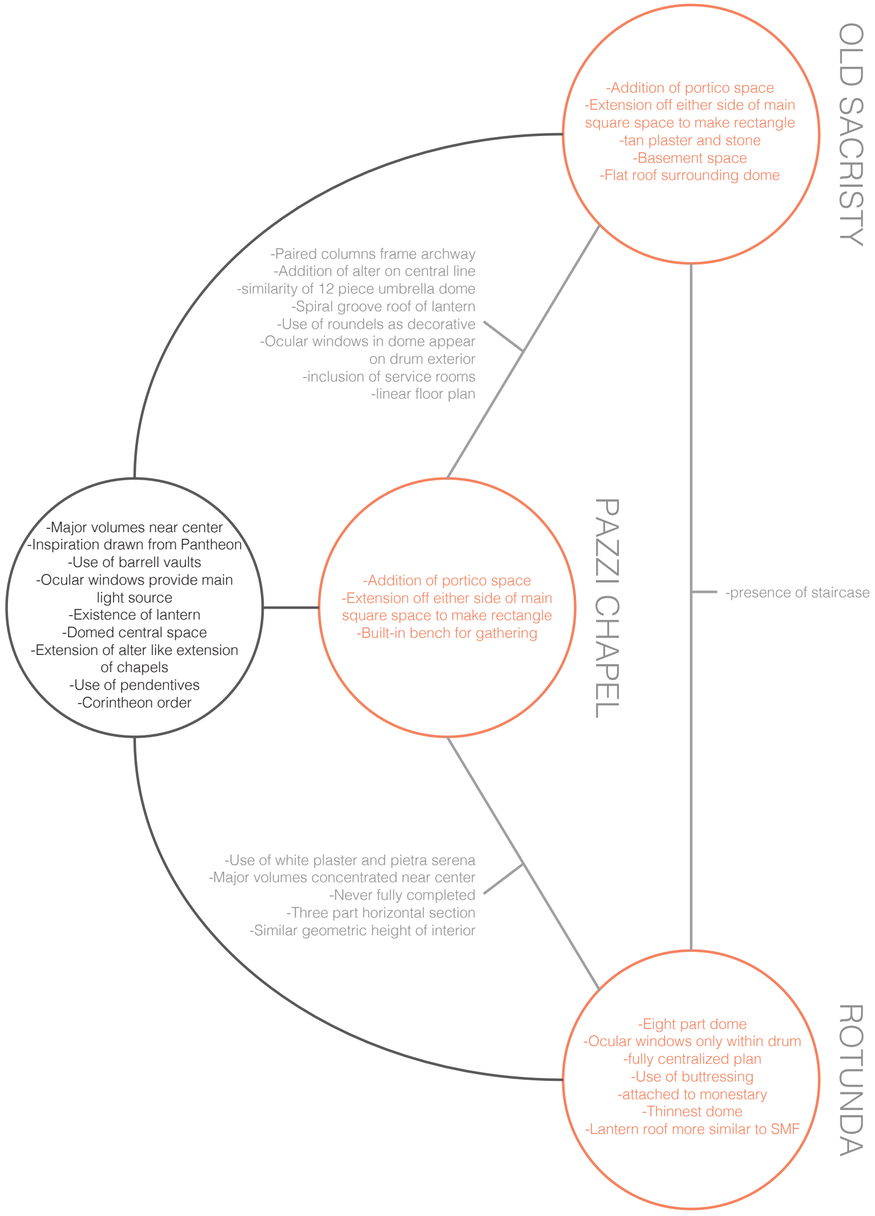






1430's FIRENZE

THE 1430s

After studying Brunelleschi the architect and several of his projects in detail, I looked into what other types of artistic works were taking place in Florence around the time of the Rotunda construction. Within the ten years of the 1430s, other figures such as Donatello, Uccello, and Fra Angelico were busy at work creating some of the most famous pieces to come out of the Italian Renaissance.

art + architecture

1431
Brunelleschi designs fortress for Staggia

Luca della Robbia commissioned to design marble Cantoria over door of New Sacristy

1432
Brunelleschi designs lantern of S. Maria del Fiore

1433
Donatello commissioned to design Cantoria over door of Old Sacristy

Donatello 'Feast of Herod' marble relief

1434
Construction of Rotonda del Brunelleschi begins

Donatello sculpts stucco roundels in San Lorenzo Old Sacristy

1435
Donatello sculpts 'Jeremiah' for Giotto's Bell Tower

1436
Dome of S. Maria del Fiore completed

Leon Battista Alberti describes Dürer's principles of perspective in written form

Paolo Uccello paints equestrian monument of Giovanni Acuto (Sir John Hawkwood) in S. Maria del Fiore

Church of Santa Spirito construction begins

1437
Construction of Rotonda del Brunelleschi halts

Work on San Marco begins by Michelozzo and Giovanni of Fiesole (Fra Angelico)

1438
Fra Angelico commissioned by Cosimo de Medici to fresco cloister, chapter house, refectory, and dormitory cells of San Marco, Firenze

1439
Construction of S. Maria del Fiore tribunes by Brunelleschi begins

Construction of S. Maria del Fiore exedrae by Brunelleschi begins

Domenico Veneziano begins fresco series in Church of San Egidio

Domenico Veneziano starts painting 'Adoration of Magi'

Domenico Veneziano starts painting Portinari chapel in hospital of Santa Maria Nuova

1440
Completion of Old Sacristy in San Lorenzo by Brunelleschi

Brunelleschi Adapted

musuem of the innocents | IPOSTUDIO

The Museum of the Innocents, located only two minutes north of the Rotunda, was Brunelleschi's first architectural commission in 1419. Although it has changed its duties over the years, it has always remained loyal to the children of Florence. It is most well-known for being a former orphanage that was the first of its kind in the city. Brunelleschi designed the front facade, the central courtyard, two wings, and an additional courtyard. Even in this first design, Brunelleschi experimented with new technology such as the sail vaults without centering. Today it has been partially renovated into a museum dedicated to telling the history of the establishment and the orphans of Florence. I had the opportunity to sit down with a few members of the firm that were tasked with this renovation that opened in 2016. Carlo Terpolilli and Mariagiulia Pasqualis spoke with me about the opportunities and burdens of working on an original Brunelleschi masterpiece. My notes from the session can be found to the right.

Additional MOI information:

Founded by the silk merchants guild, the group Brunelleschi was a member of at a young age

Today it works as a children's charity foundation, museum, and place of education

Brunelleschi designed with precise mathematical-geometrical rules and focused on the relationship between form, materials, and structure

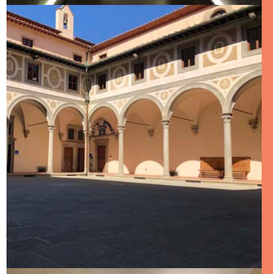
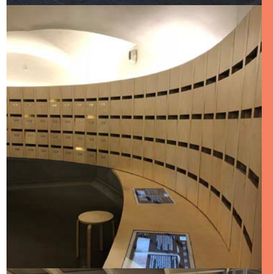
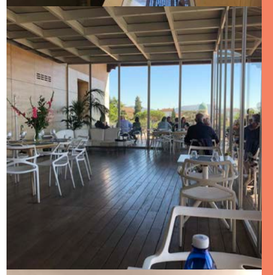
Stunning use of white plaster against Pietra Serena stone, a combination that can be seen in both San Lorenzo and the Rotunda by Brunelleschi

Renovation Project:

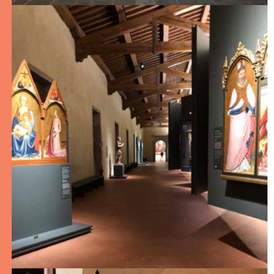
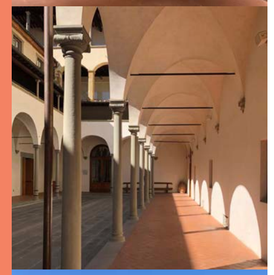
Complete re-design of interior spaces, layering not to take away the existing fabric

New entrance that included portion of adjacent building, fresh circulation

Hinged panel exhibition space made of fiberglass and aluminum





Carlo Terpolilli + Mariagiulia Bennicelli Pasqualis

Important meeting take-aways:

Two paths to start design: create a new Renaissance interpretation OR create an entirely new contemporary layer

Design of new layer allows an obvious separation of new and old, with a leaning effect that can be taken away at any point

Adaptive re-use requires a defined sense of responsibility, and a pairing with Brunelleschi requires responsibility | bravery | respectability

Follow the nature of the building through simplistic forms to create beauty without exaggeration and a balance of two different styles

Giving new life to a building can mean anything from a radical re-interpretation to a preservation method or a combination of the two

Careful materiality choices allowed for the introduction of contemporary materials that relate to Renaissance materials through color and texture

Public funding helped gather support for a project with such great historical importance

Unique Preservation

byzantine fresco chapel | menil collection houston

The Byzantine Fresco Chapel of the Menil Collection in Houston, TX was perhaps one of my most significant aesthetic influences. Without really studying the project in detail, I could see from the photographs that the space was being re-created without exact replication. This particular project was an installation to house two frescos that originated in Cyrus. The form created around them is the frosted glass and steel structure that mimics the spirit of the religious home of the frescos back in Cyprus through contemporary materiality and methodology. This project lead me on a pathway to design considering how I could create the same quality of a single known space without putting up studs and sheathing. The partitioned frosted glass, metal framing, and connections were a significant design driving aesthetic for me from my first glance at this project.

Additional BFC information:

Frescos purchased by Dominique de Menil in 1938

Frescos date back to 13th century Cyprus of orthodox origin

Space designed by architect Francois de Menil, and intended to bring the spiritual purpose of the frescos to the building

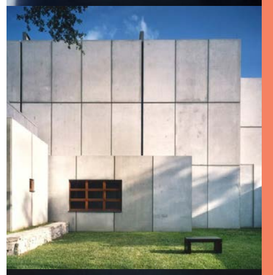
An agreement between Menil and the Church of Cyprus ended in 2012, and the frescos were sent back home to their origin, exhibit dismantled

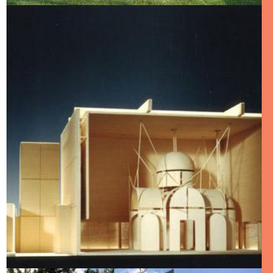
Floating glass walls create an enclosure that is specific to displaying the frescos, without replicating their original home.

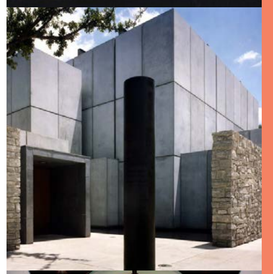
The glass enclosure was designed almost as a reliquary box.

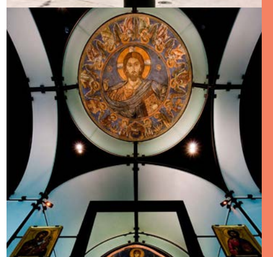
The chapel itself is oriented in the cardinal directions

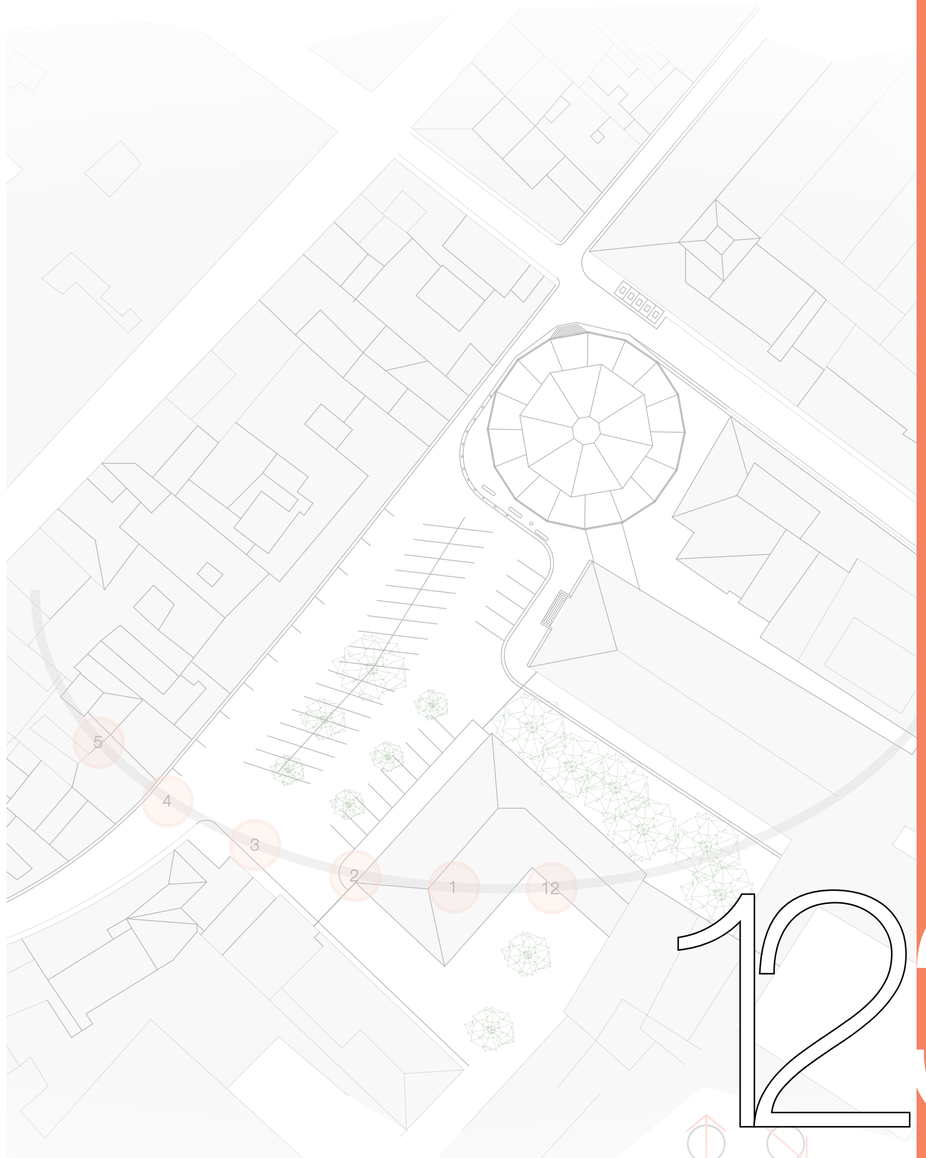
Rough limestone exterior of enclosure mimics the materials of the fresco's original home.



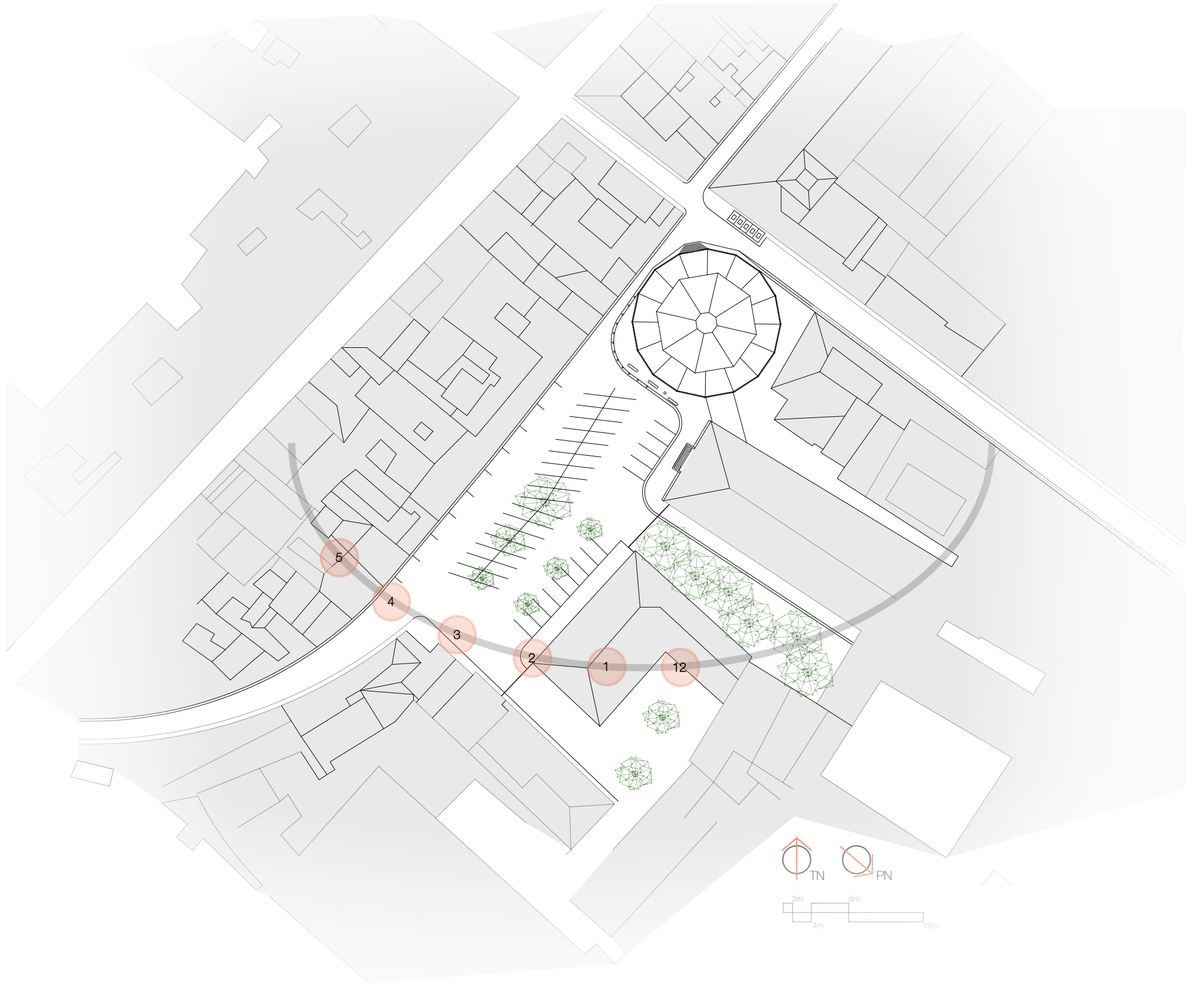








123456 SITE + PROGRAM



ABOUT THE SITE

With a site that is only a five-minute walk north of the Florence Duomo, it can be expected that the surrounding area is tight. The small parking lot/former garden area on the southern side of the Rotunda is the only openness around the building, and all other sides are adjacent to a small single car roadway next to another tall structure. This lot presents the opportunity for an additional building but must respect the inhabitants sharing a wall of the parking lot. On the eastern side, the entrance to the University of Florence campus and the 1930's renovation addition for the War Veterans Association reside. These two facades are essential to maintain. It is also important to recognize the view where most people will experience the Rotunda when visiting from the Duomo to the south.

5 min


view from parking lot NE


view from parking lot NE


view from parking lot N


view from parking lot N


view from street corner S


view from street corner S


view from street NW


view from street NW


view from street corner SW


view from street SE

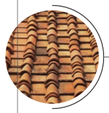

view from parking lot NE


view from parking lot NW


view from parking lot SW


view from interior


view from interior


Terracotta Tiles
roofing


Pietra Forte
limestone


Stucco
over masonry


Plaster
lime


Brick Masonry

ABOUT THE MATERIALS

All of the materials used on the Rotunda are the same traditional materials used by all architects during the Renaissance period. Pietra forte limestone found in nearby quarries is one of the most popular exterior materials of the time. The 1930's addition incorporates brick masonry that would not have otherwise been seen in a project such as this dating back to the Florentine Renaissance.

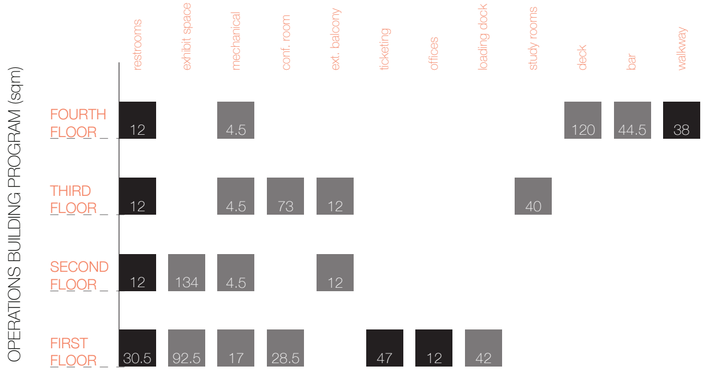
EXISTING
EXTERIOR BUILDING MATERIALS

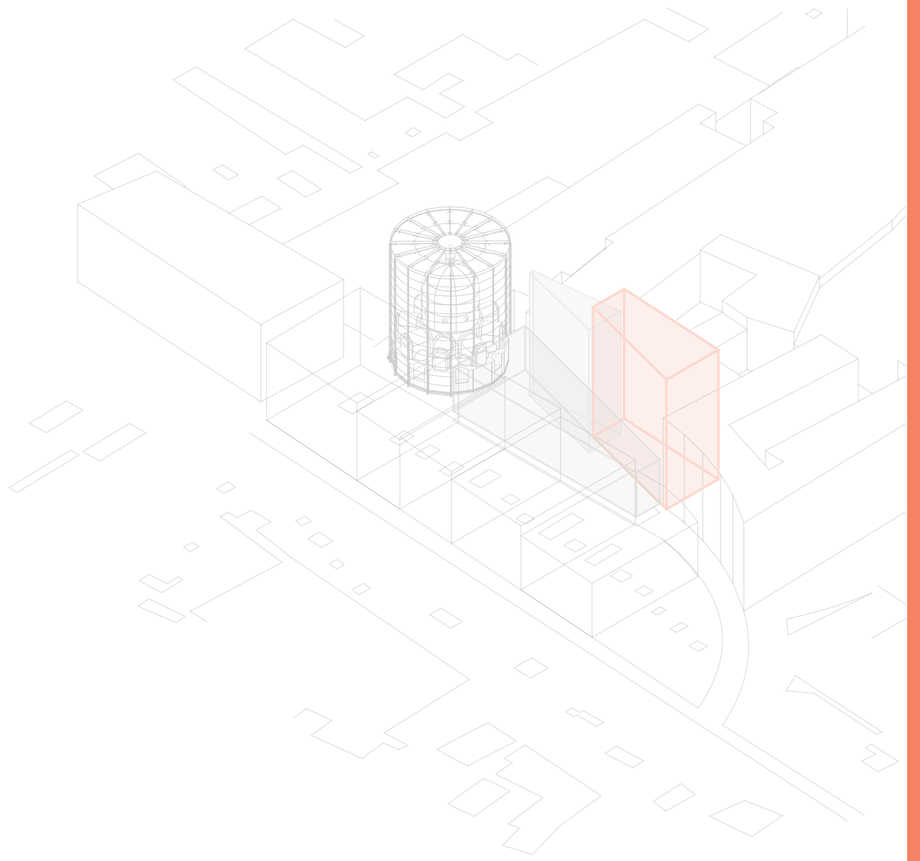
The Spaces

rotunda program | operations building program

ROTUNDA PROGRAM

When it was first built, the Rotunda was intended to be a place of worship, prayer, and solitude. The single story and high ceiling heights played a part in creating the ideal space for such purposes. Over the years it was transformed into an artist space, offices, and meeting headquarters. Through my renovation, it will be restored to a place of reflection. The single story will remain, and the great ceiling heights will be conceived for the first time in pure form. However, instead of being a private space for monastery personnel, it will be open as a place of remembrance for all people to experience.





CONCEPT

123456

CHOOSING A CONCEPT

After months of research, I took quite a long time picking the concept I found appropriate to move forward. It was easy to come up with concepts; I must have gone through ten solid ideas before limiting my options to three. Even after doing analyses on my final three concepts, I eventually designed using a molded version of more than one. Historic preservation is an opinionated field. Opinions are coming from several different places on how to deal with a project gracefully, respectfully, or boldly. The following pages show to final three options I decided upon before picking a concept direction. My choice may be my opinion, but I believe my research backs this direction in both a respective and forward-thinking fashion.

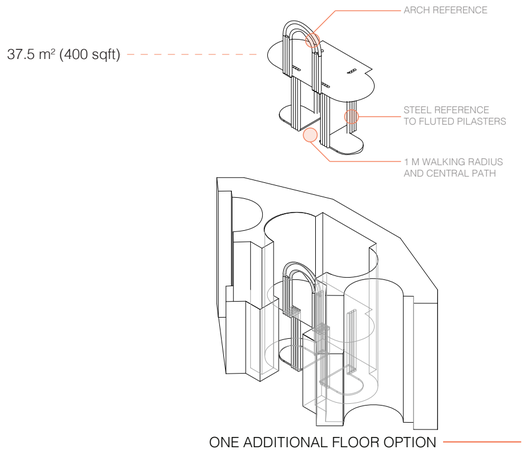
1

OPTION ONE

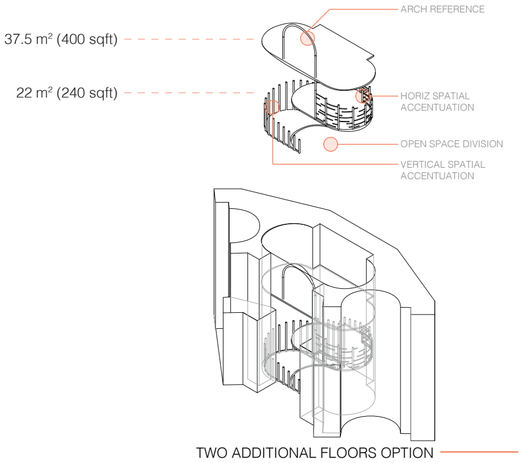
LEAVE + INSERT

LEAVE EXISTING BUILDING INTACT

CREATE AND INSERT CONTEMPORARY PROGRAMMATIC INSERTS



ONE ADDITIONAL FLOOR OPTION



TWO ADDITIONAL FLOORS OPTION

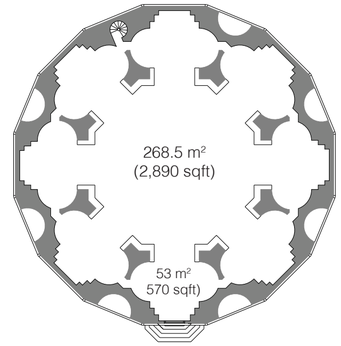
2

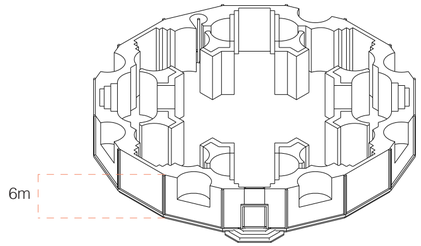
OPTION TWO

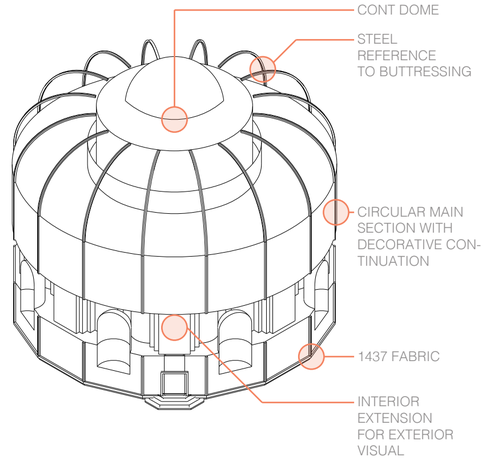
ADAPTIVE REBUILD

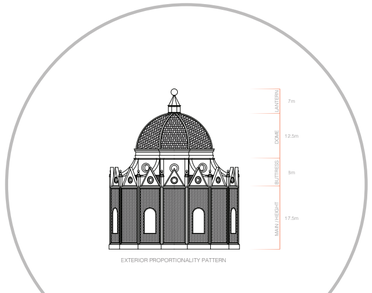
STRIP AWAY 1930'S RENOVATION

RECONSTRUCT IN A CONTEMPORARY FASHION
WITH RESPECT TO 1430'S DESIGN









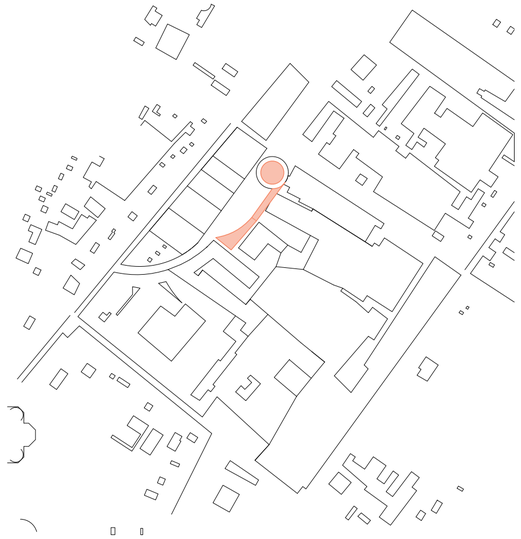
3

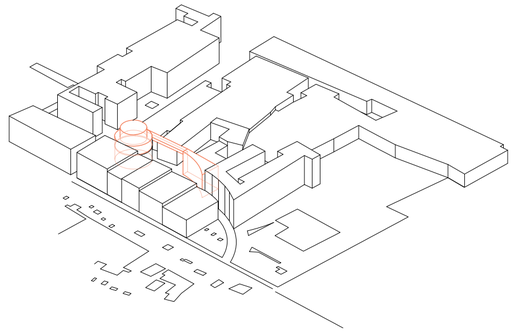
OPTION THREE

ADD OUTSIDE SCOPE

LEAVE EXISTING BUILDING INTACT

CREATE ADDITIONAL SQUARE METERS
WITHIN PARKING LOT FOR PROGRAM

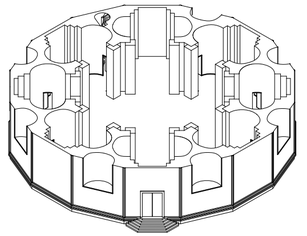




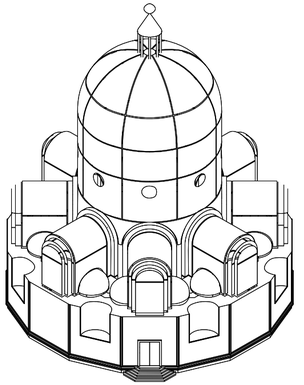
FINAL CONCEPTUAL DIRECTION

THE ROTUNDA

To glorify the portion designed and completed by Brunelleschi in the 1430s, the first step is to remove the controversial 'cap' of the 1930s. Once the building is stripped down to the original fabric, the void spaces designed by Brunelleschi will be re-created using frosted glass molded by a brick kiln and cold-rolled steel. During his time, Brunelleschi did not have incredible materials with the ability to span long distances. Part of the beauty of his work is his ability to use what material was given and create spaces that were never imagined before. By bringing his spatial design to life with contemporary materials, there is an introduction of a magical moment between Brunelleschi and contemporary architecture. The third step is to encase both new and old portions in a 'perfect' glass cylinder. Here the pieces are molded together as one in a harmony that allows the space to be habitable through weatherproofing. Finally, the necessary structural elements will be added along with an interior walkway that sits at the height of the oculi. The ambulatory is an opportunity for visitors to see the design from a perspective that would only be possible through contemporary intervention. Another layer of understanding of both Brunelleschi's design and the possibility of contemporary materials is awakened at this moment.



1



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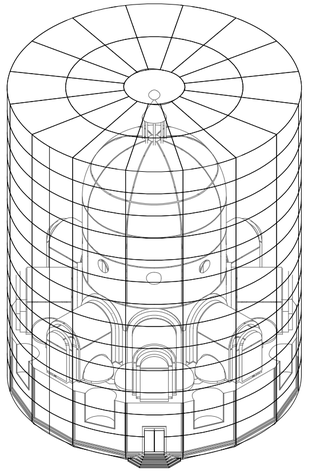

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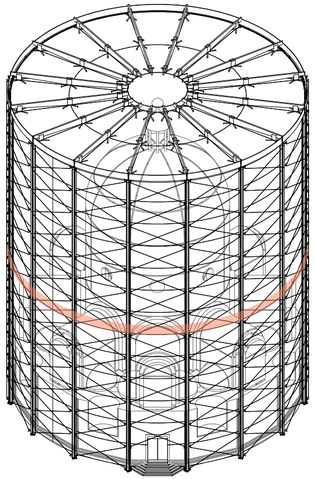
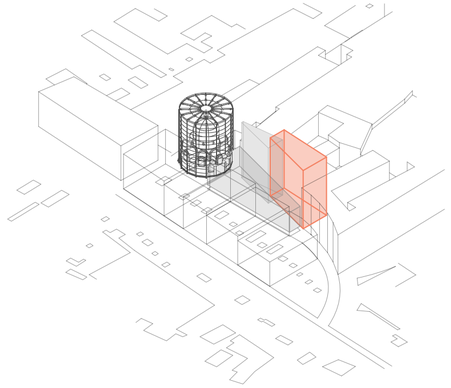


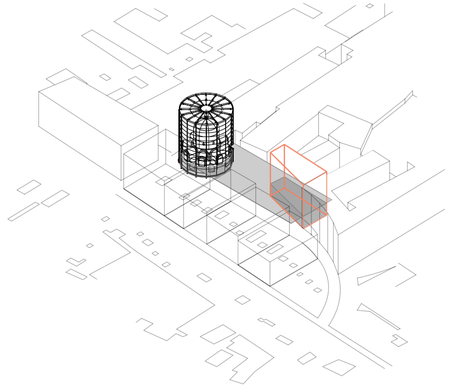
4

OPERATIONS BUILDING

For the Rotunda to open to the public for viewing, it is necessary to create another building close by that will include a program to help it operate. The operations building will consist of programs such as ticketing, restrooms, and rentable spaces for the public. The space available within the parking lot to the south of the Rotunda appears to be plentiful but includes facades that must be preserved. The first step is to delineate the available building space to protect both the view walking toward the Rotunda from the Duomo and the entrances of both the University of Florence and the 1930's War Veterans Association Building. This strategy leaves a footprint of around 375 sqm in the lower southeast corner of the site. Second, there will be a visual connection to the Rotunda by limiting the height of the first floor of the additional building to match the seven meters of the original Rotunda. Such a relationship will prove to be appropriate both in a visual context and spatial awareness. Third, there is a cut in the diagonal front facade of the operation building to show a likeness to the radial plan and octagonal frame of the Rotunda. Lastly, a walkway along the fourth floor of the operations building will create a physical connection between the two buildings. The fourth floor is set to sit above the two preserved facades, allowing them to remain open.



1



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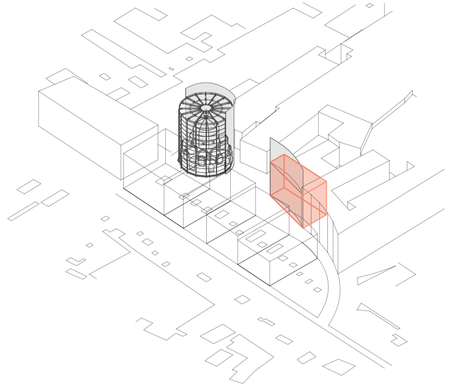

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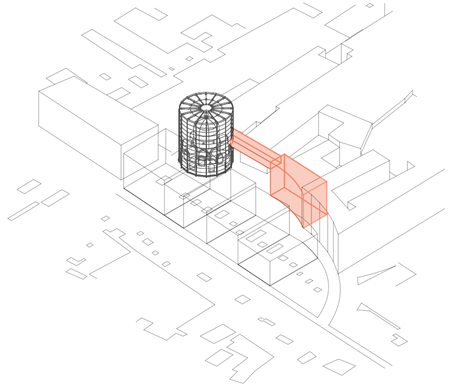
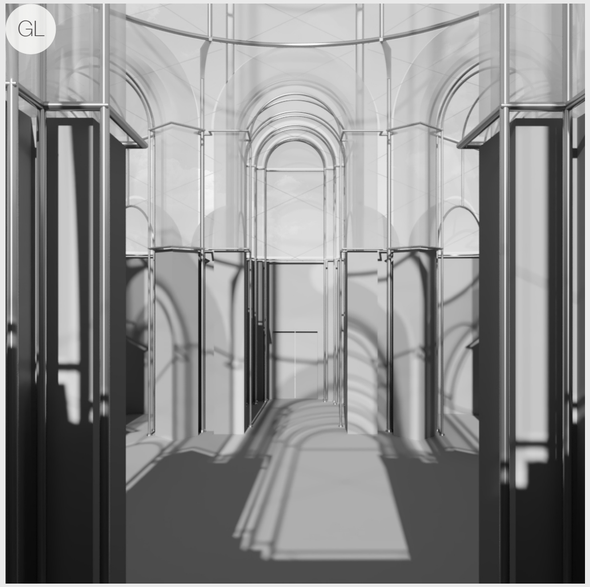


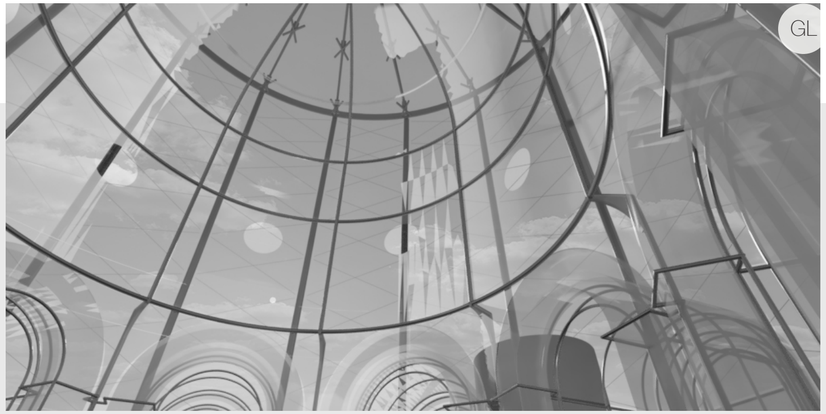
4

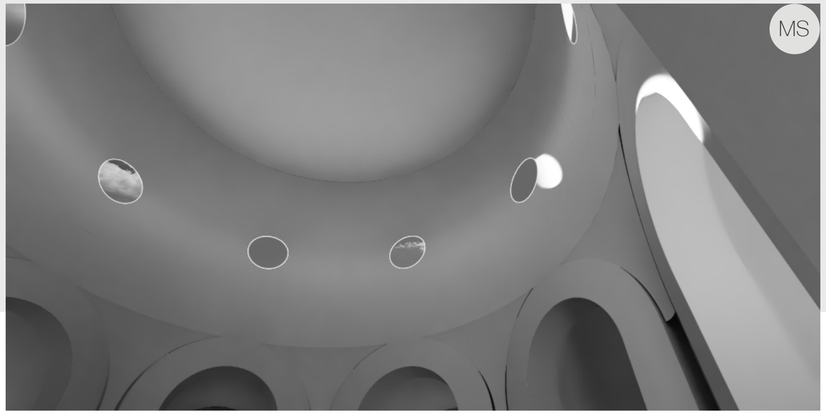
GLASS VS MASONRY

The conceptual exploration of the Rotunda in different material forms helped to define the real importance of the void space Brunelleschi designed. The space is grand either way, but the feeling of standing in the Rotunda as masonry construction versus glass construction is drastically different. In the masonry renders, the solitude of the space is evident. When the original prayer program remained, this would have fulfilled that request. However, when gazing up at the chapels and the dome of the glass Rotunda, the visitor can experience everything from the masonry version and more. In the glass space, it is easy to recognize the proportion, height, and value of the radial design. Each chapel can be entered and give a feeling of respectfulness of design and religion. But there is an added layer coming through the design when the glass is introduced. Glass helps illuminate the layers of the space, the proximity to the outer context, and highlight the geometry both with the chapel and what is helping to create it. Standing within the contemporary re-creation of the Rotunda is everything one could expect from experiencing the original, had it been completed, as well as experiencing an understanding of the design that would not have been possible before.

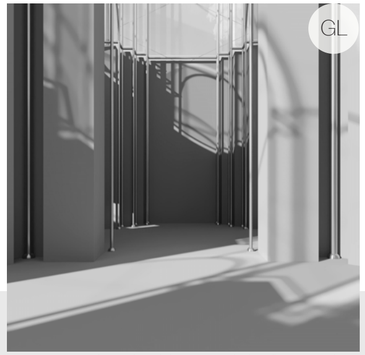


view from one chapel across to another

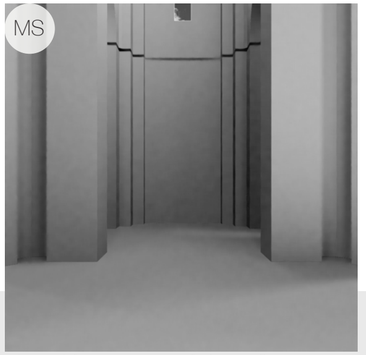




view looking up from far side of dome floor



view looking straight forward to



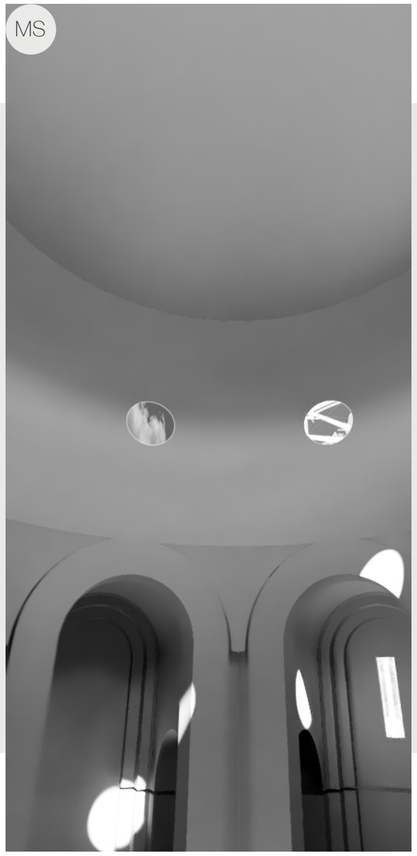
chapel from center of dome floor

view looking up toward top of

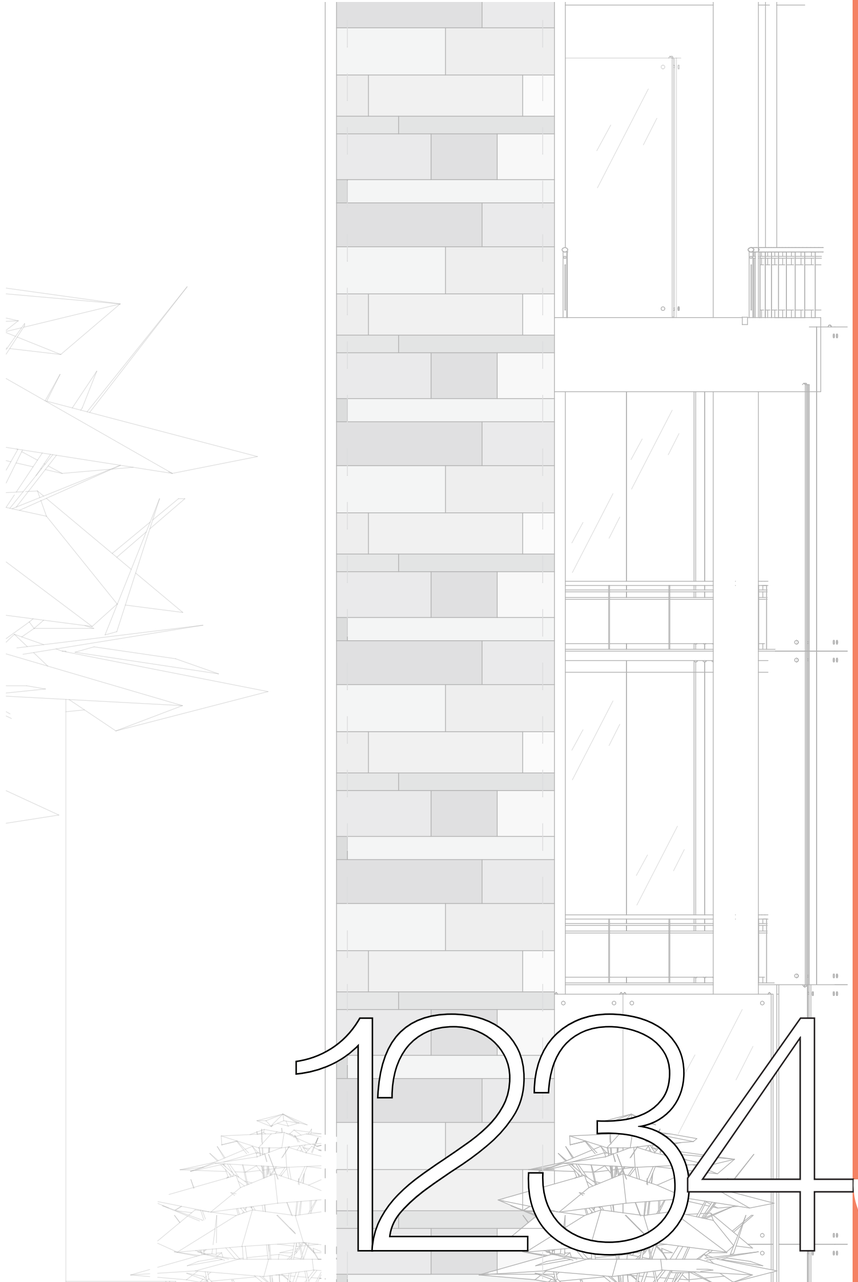
chapel from center of dome floor

view looking down to

chapels from drum of dome

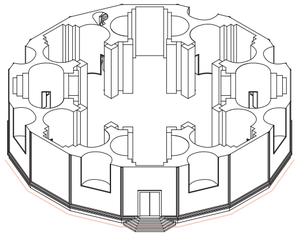


view looking up to dome edge from center of dome floor

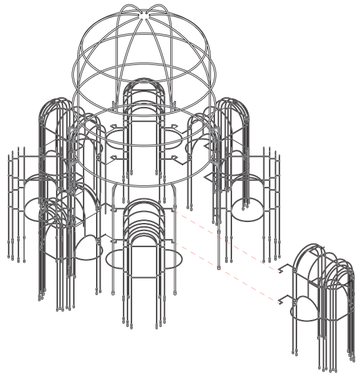


123456 PROPOSAL

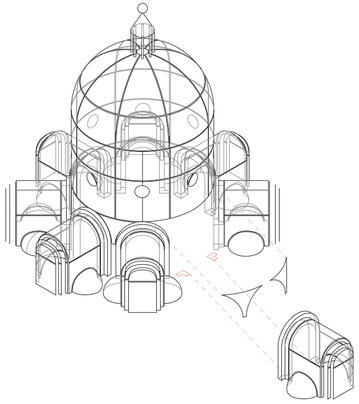
THE LAYERS



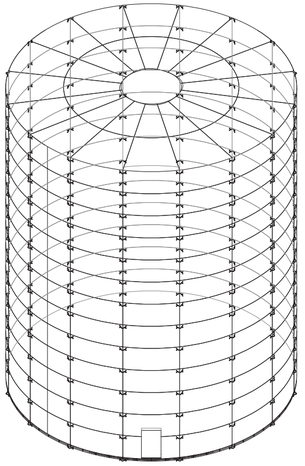
1 1437 existing masonry



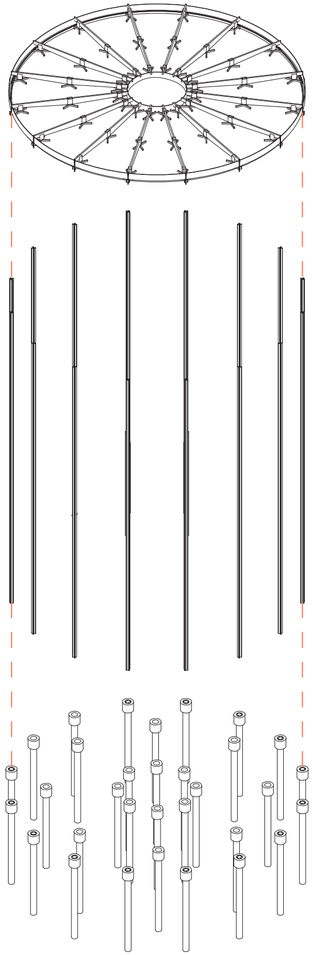
2 Cold-rolled steel round bars for chapel and dome



3 Frosted glass formed by brick Kiln



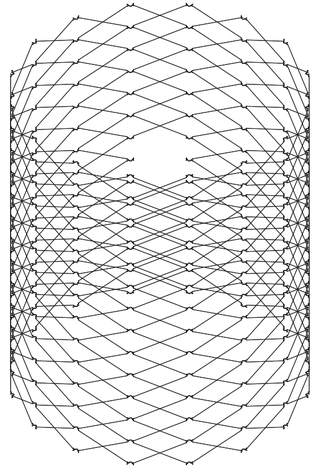
4 Pilkington self-cleaning glass cylindrical encasement with spider connections



5 Pile foundation under existing masonry and steel columns

6 Four angle steel columns

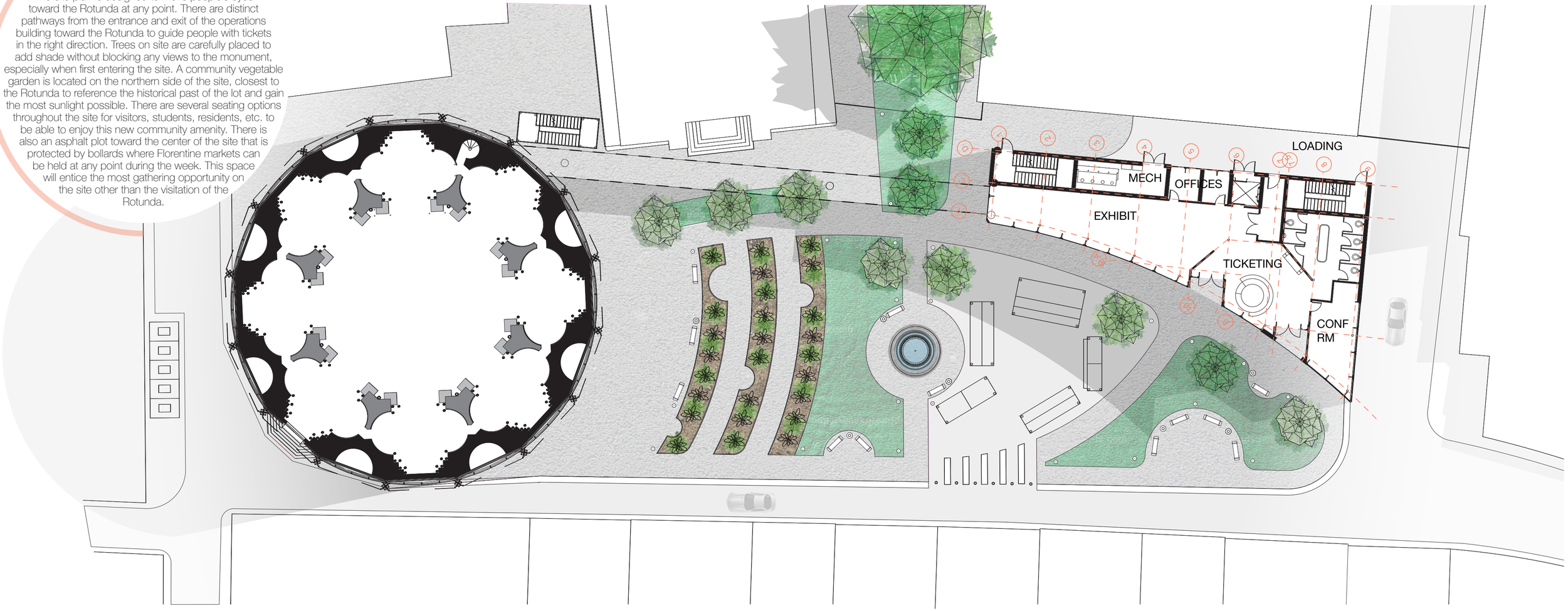
7 Angled steel roofing system



8 Spider connection inspired lateral bracing of galvanized woven wire cables

THE SITE PLAN

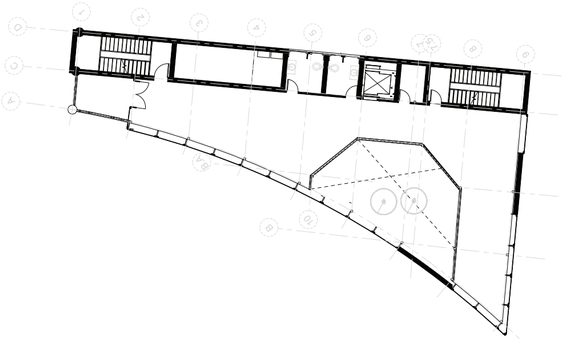
The site plan is designed to move people's eyes toward the Rotunda at any point. There are distinct pathways from the entrance and exit of the operations building toward the Rotunda to guide people with tickets in the right direction. Trees on site are carefully placed to add shade without blocking any views to the monument, especially when first entering the site. A community vegetable garden is located on the northern side of the site, closest to the Rotunda to reference the historical past of the lot and gain the most sunlight possible. There are several seating options throughout the site for visitors, students, residents, etc. to be able to enjoy this new community amenity. There is also an asphalt plot toward the center of the site that is protected by bollards where Florentine markets can be held at any point during the week. This space will entice the most gathering opportunity on the site other than the visitation of the Rotunda.



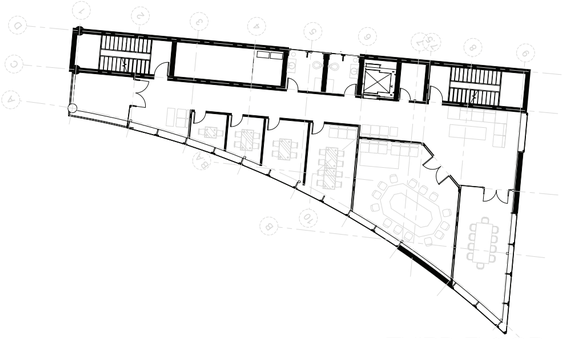
Gathering Spaces

floor plans | materials

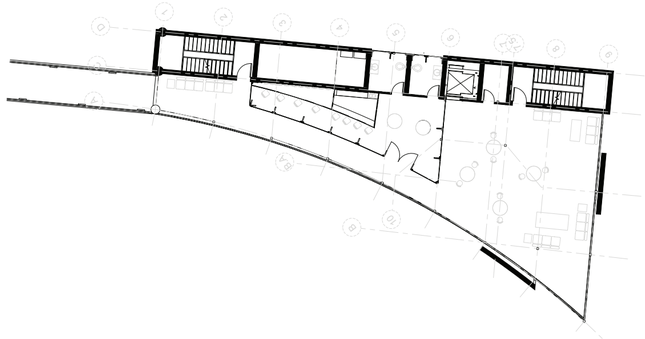
The second-floor exhibition space is the largest of the two and is expected to be used for displaying information about the project, history of the Rotunda, or history of the monastery. The entry atrium continues through this floor and helps to convey the publicity of the space. The third floor contains two large conference rooms and four different sized study rooms. The purpose of this floor is to involve both the residents and the students of the area in the project by giving them a space to use for jobs or schooling. There is also an outdoor viewing balcony on this floor to always remind the visitor of the importance of the monument that is the pinnacle of this project. The fourth floor is an open-air roof deck with seating and a bar area. These types of spaces are common in Florence as the weather is continually lovely enough to spend time outdoors. Visitors can rest here before walking across to the ambulatory of the Rotunda while enjoying views of the site on their way.



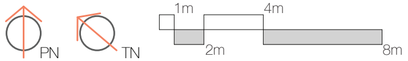
SECOND FLOOR



THIRD FLOOR



FOURTH FLOOR



FROSTED GLASS

PILKINGTON
SELF-CLEANING GLASS

PIETRA FORTE LIMESTONE

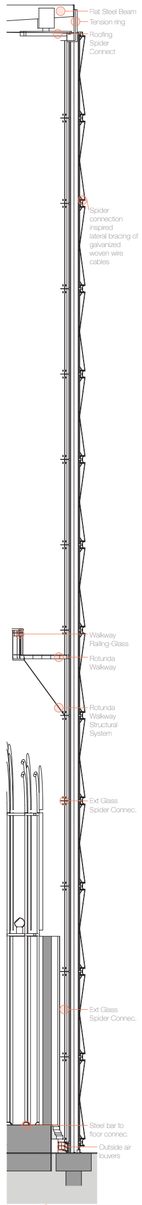
COLD-ROLLED
STEEL

THE AMBULATORY

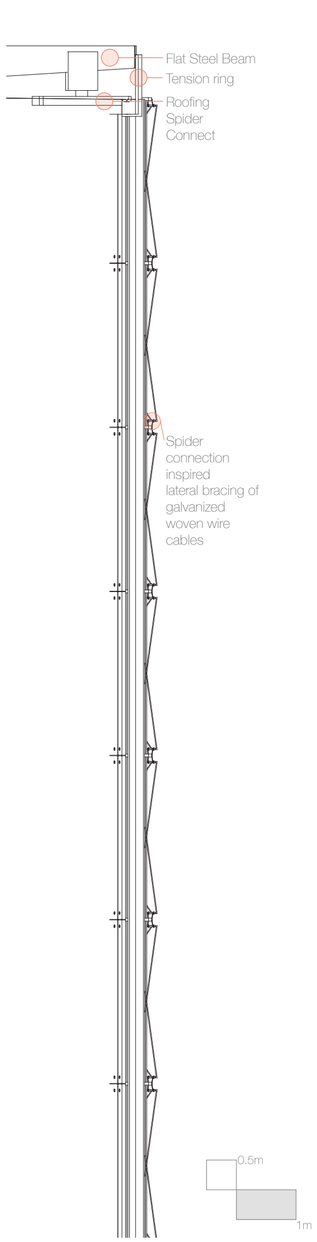
When Brunelleschi designed the Rotunda, his focus was on what sort of space he could create using the masonry at his disposal. His design centered around the voids that were possible at the time and how he could break the mold. To get the spaces he desired, large masonry walls that were several bricks thick would have been required. In design today, the use of steel and glass helps to eliminate the waste of material that would have been necessary to obtain the same desired height back in the 1430s. With the freeing of extra space around the voids, there is an opportunity to view Brunelleschi's geometric masterpiece from angles he could not possibly dream. The ambulatory I have designed for the contemporary rendition of the Rotunda is at the level of the fourth floor of the adjacent operations building and the four oculi from the original dome design. The placement of this ambulatory opens the door to viewing not only the spatial quality of the design from all angles but also how contemporary materials can be used to obtain the same architectural piece with added layering. The ambulatory is an added experience to an already stunning design that is made possible through the blending of both Renaissance and contemporary design mentalities.

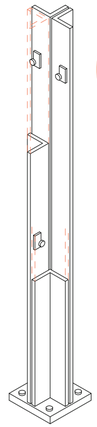
THE ROTUNDA EXPERIENCE

As with many other Brunelleschi designs, walking into the Rotunda is a moment of grandeur as well as harmony. The radial floor plan surrounds the visitor with geometry that is as precise as it is beautiful. This surreal experience was lost with the 1930's completion when all care for the original design was tossed aside in favor of completion. The Italian War Veterans Association hired Rodolfo Sabitini to complete the design with little reference to Brunelleschi. After my research regarding this completion, I recognize along with several others that what was done in the 1930s was an unjust finality. To create the serenity of space that Filippo Brunelleschi envisioned, my design revolves around dismantling the 1930's work and let the original design breathe life into the building again. By finishing what Brunelleschi's started but through the use of contemporary materiality, anyone that enters the Rotunda will experience it's peaceful and yet daring design. Not only do visitors feel the grace of design when walking through each chapel space, but there is also an essence of secrets unveiled as they look closely past the many layers of glasswork. The Rotunda is both a representation of Renaissance design and contemporary culture, a balanced blend of the two.

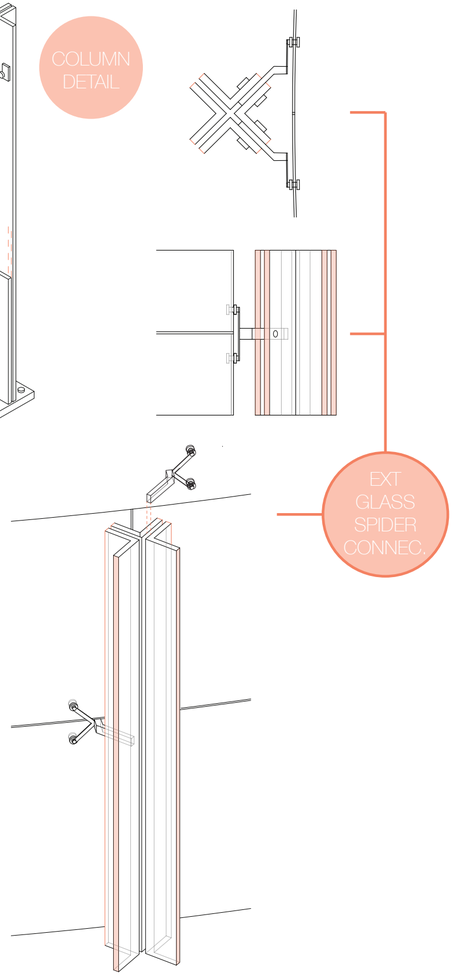


ROTUNDA WALL SECTION





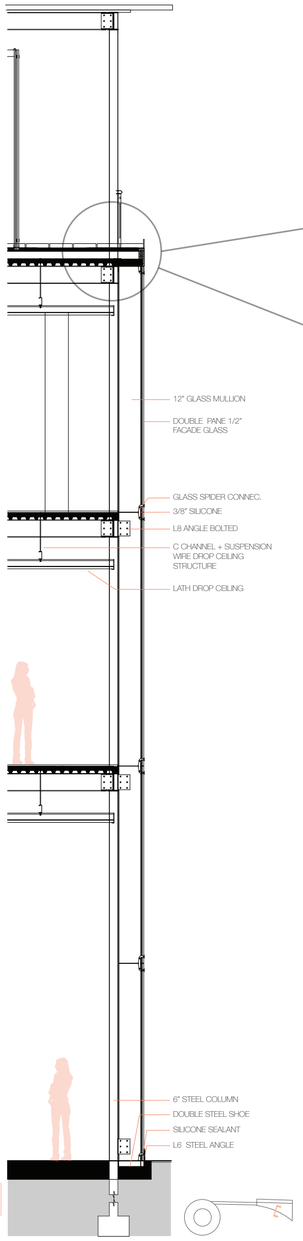
COLUMN DETAIL

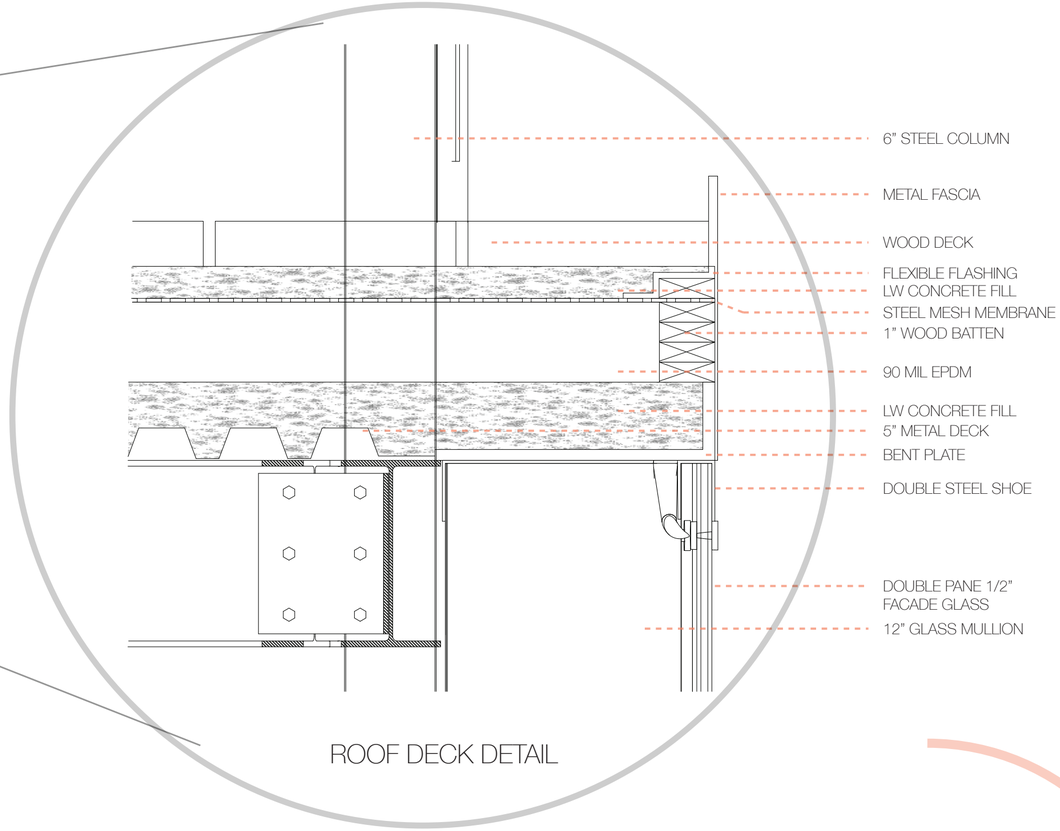


EXT GLASS SPIDER CONNEC.

THE SPIDER CONNECTION

With the four-angle column structural design, a spider connection detail made sense. Not only is there a spider connection detail that attaches the exterior cylindrical glass to the vertical structure, but the same similar feature exists to connect the lateral bracing to the vertical structure. The spider connection is as simple as it is beautiful, and further gives the ‘magical’ illusion that Brunelleschi himself would have guessed to be impossible.





ROOF DECK DETAIL

THE OPERATIONS WALL

The wall detail of the operations building is similar to that of any building containing a steel frame and spider connection glass facade. However, the roof deck detail was a more significant challenge. This particular point on the building needed to conclude the spider connection glass facade, provide weatherproofing for an open-air deck, and cover all other structure in a pleasing facia.

THE ROOF DECK EXPERIENCE

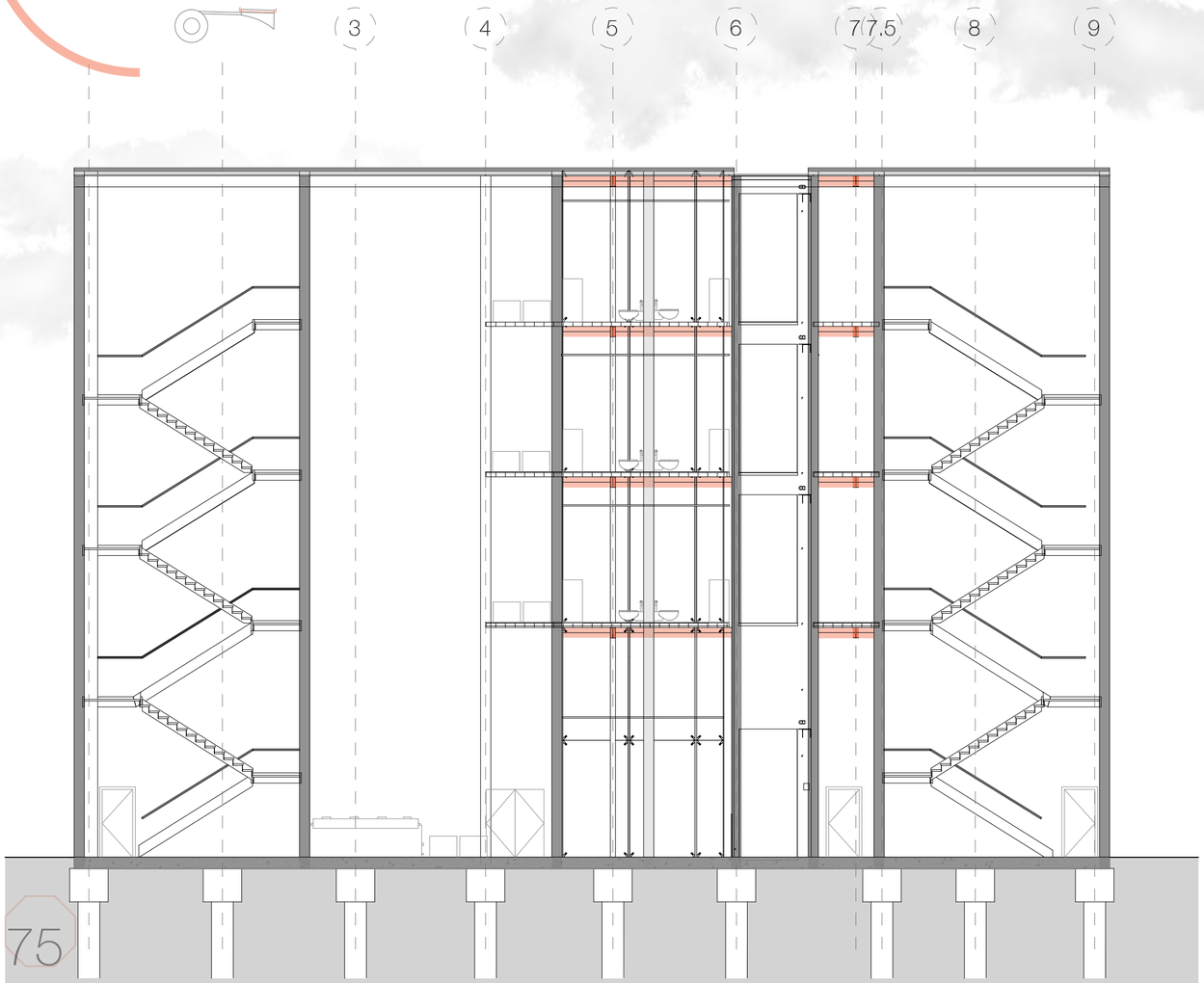
The roof deck is not only a place where people will pass through to reach the Rotunda ambulatory. Here there is an opportunity to take in the full breadth of the site in combination with the two buildings and the new active community spaces. Decking areas where people can stay, drink, and enjoy the sites of Florence in the almost perfect year-round weather are quite famous and exist in many famous buildings. Here anyone can enjoy the view from the bar area and the open air bridge leading to the Rotunda.

FULL SITE VIEW

This site section gives one of the better views to just how every element of both buildings and the context work together in harmony. The scale of the Rotunda in all of its glory is visible here as it compares to other buildings on site. Although it seems grand, the height is comparable to what was initially designed. As mentioned in the operations building parti, there is a subtle correlation between the two buildings through the intentional design of a seven-meter first-floor ceiling height in the operations building. The first-floor ceiling height there matches the height of the Rotunda's original fabric and is visible in this section. It is also important to note that the two most critical existing facades on the site (University Entrance and 1930's Veterans headquarters) are preserved thanks to the height and spacing of the bridge to the ambulatory.

THE CORE

The operations core is visible here in section. All vertical circulation through both fire stair and elevator are located within the core, as well as mechanical space and small restrooms for each floor.



GRAND ENTRANCE

The entrance into the operations building features a double height ceiling, octagonal plan, pietra forte feature wall, and easy access to the needed amenities. While the lobby is modern, there are several connections to the Rotunda both in material and in layout. Visitors will enter from the door shown in the rendering and buy tickets at the circular desk. They will then either exit through the doors on the other side of the ticketing desk and make their way to the Rotunda, or take the elevator next to the feature wall to access the roof deck and bridge to the ambulatory on the fourth floor. There are also the largest restrooms in the building located on this floor for easy access.

OPERATIONS AESTHETIC

The operations building contains connections to the Rotunda both in the design layout and the aesthetics of the piece. As mentioned in the operations building parti, there is a subtle first-floor connection where the height remains the same along the entire site between both new and old structures. The front glass facade is rounded to draw a relationship between both the existing round character of the Rotunda and the newly added glass cylinder of the renovation. Surrounding the main entrance of the operations building, there is a floor to ceiling pietra forte accent wall to make an apparent material relationship between the two structures. Many of these design decisions can be found when looking from any point on the site. However, there are other subtler avenues of contact such as the one shown in the elevation to the right. The elevation depicts the shortest and most northern side of the operations building. Here is where the glass facade meets the working core. The face is designed to mimic the character of the pietra serena seen in several places throughout the site, but through the use of metal paneling to draw in the steel structure being used in the renovation. This tactic is also the point where all three outdoor balcony spaces are visible and are being expelled into both the shear wall core and the glass facade. Although the area of this particular wall may be comparatively small, there is much of the design that culminated here.

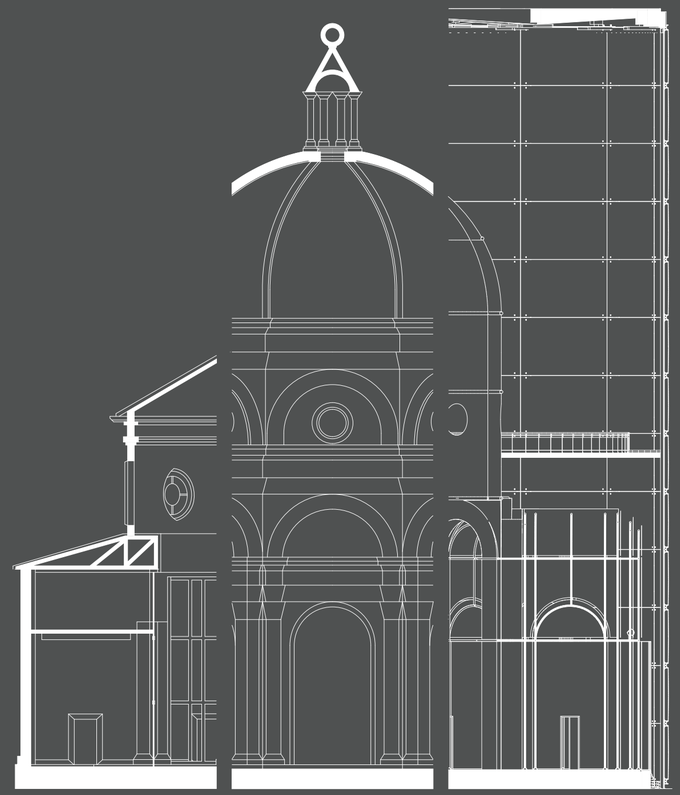
AFTER DARK EXPERIENCE

In its current state, this particular lot is not one many people would visit past working hours. However, with the major proposed site renovation, there is more opportunity for people to visit, study, drink with friends, etc. The operations building and the site is well-lit to maintain a safe and welcoming environment. However, the real reason to stay past dark is to experience the Rotunda with the addition of electricity. The glass and steel of the renovation become one with the night sky while the primary Rotunda geometry is lit brighter than anything else in the surrounding area. After dark is maybe the most excellent time to truly bask in the glory of Brunelleschi's creation as it comes to life without interruption.

6 CONCLUSION

CONCLUSION

I began this final study project intending to study how to blend two different and very unique architectural styles. I hoped that plenty of research of both subjects would prepare me to make a decision for design direction with full clarity. However, the more research I composed, the more guidelines came to light, and the more opinions from myself and others were brought to the table. I do believe that my final result completed my blending study goal and remained respective and forward-thinking. But is it the BEST direction? When completing a project that contains so much history, there will never be an exact right design direction that is agreeable across all parties. There will always be a 'better way,' 'more simple way,' or 'more politically correct way.' Not only did I learn that blending styles takes knowledge, patience, and passion, but I also found that no matter how correct I feel in my design, there will be others that disagree. Taking a plot and creating something from ground-up can have infinite possibilities. Our job as architects is to create and display a vision for this plot. But when there is nothing but grass, to begin with, what is there is fundamentally criticize? Some may believe that working on an adaptive-reuse project gives the architect a solid starting point and fewer possible directions than in a ground-up project. However, the complexity, historical significance, and architectural treasures that are the core of adaptive re-use projects add several layers of complexity that challenge architects in more ways than imaginable.

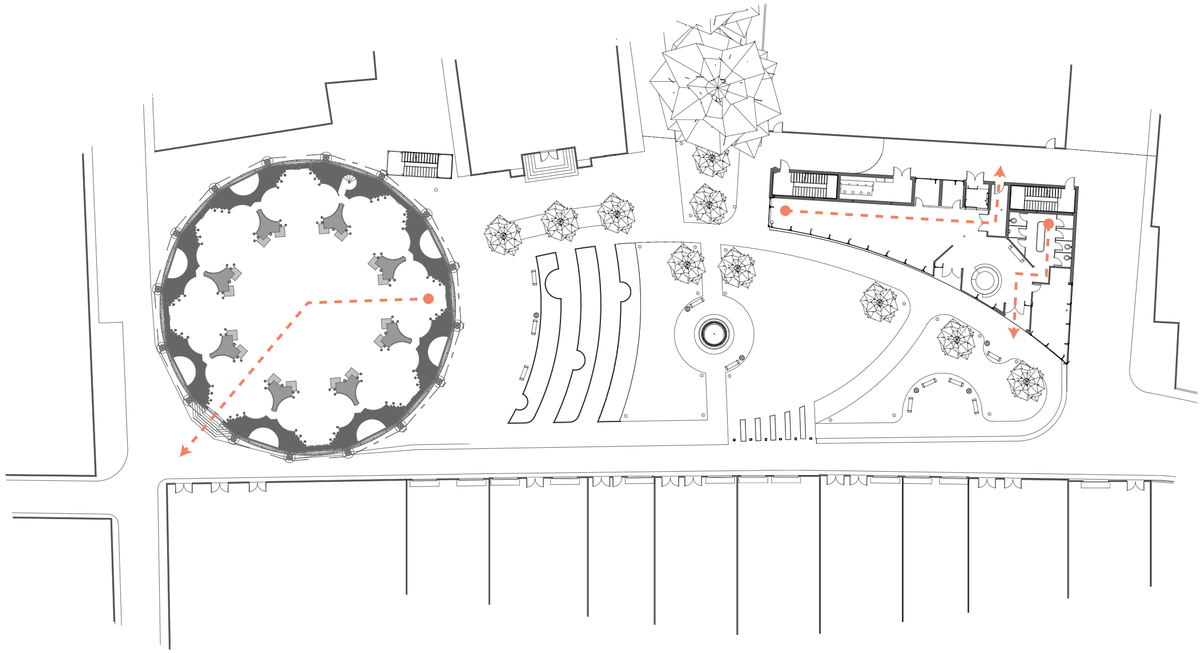


SABATINI BRUNELLESCHI WATSON

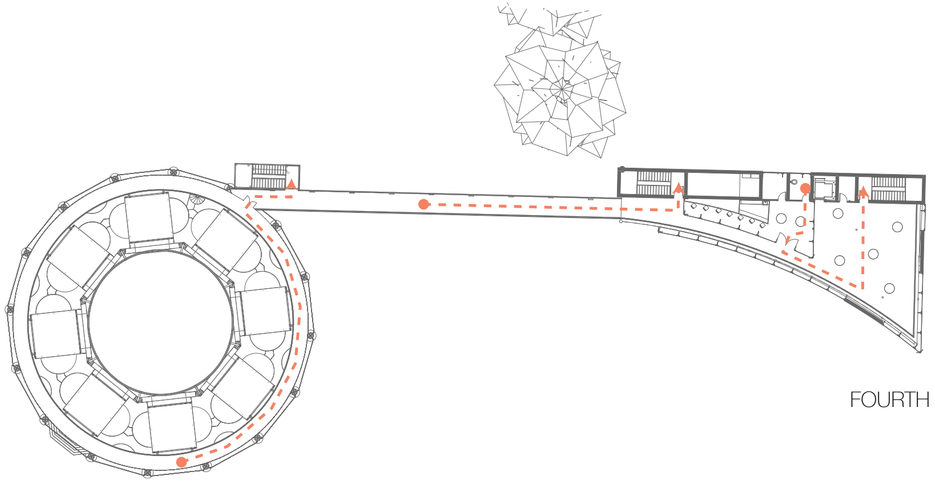
APPENDIX X

EGRESS

There is one exit in the Rotunda that serves as both the main exit and the fire exit. This passageway is a historically significant exit and entrance that is sufficient to get everyone out of the 745 sqm space. In the operations building, there are five exits on the first floor in case of an emergency. Two of the exits are along the front facade near ticketing, two are located in the back of the structural core within the fire staircases, and one is available through a service corridor. On the second and third floors, there is access to two fire staircases that will lead people out of the building. On the fourth floor of the operations building, there is access to the two fire staircases, just the same as on the lower two levels. For visitors that may be visiting the Rotunda ambulatory, there is an additional exterior fire stair located just outside of the east end of the Rotunda. This staircase or the closest staircase to the southern end of the ambulatory bridge may also be used by those that are on the bridge and have not yet reached either building.



FIRST FLOOR



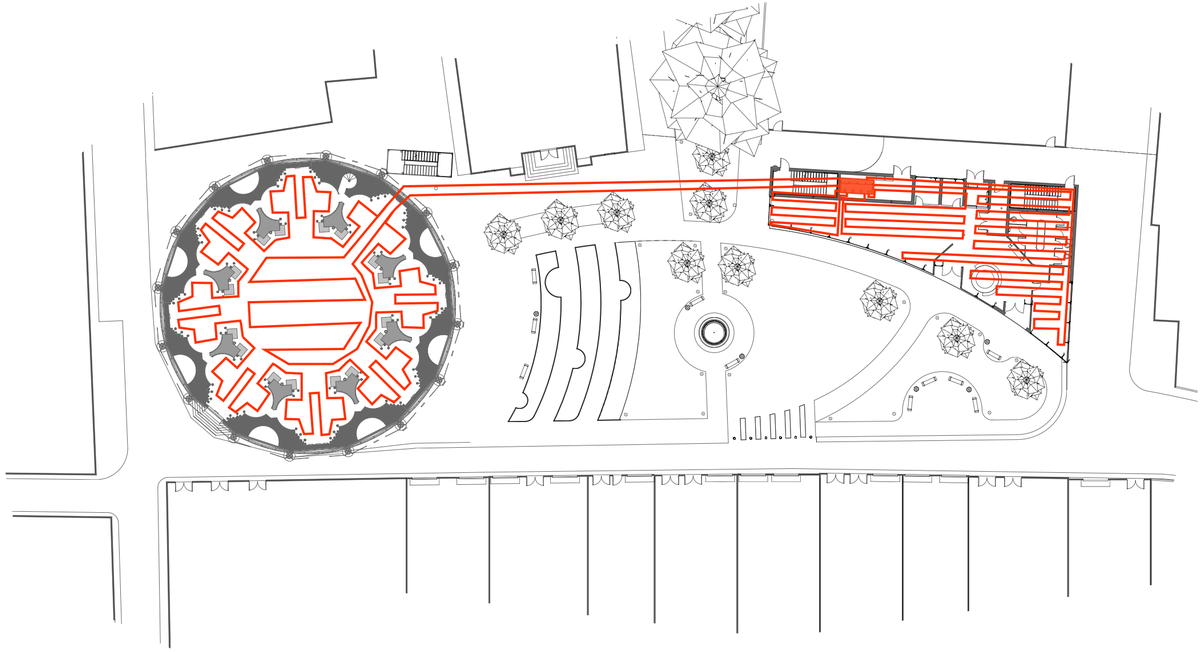
FOURTH FLOOR

MEP

Due to the temperate climate of Florence, many buildings omit the need for cooling functionality. Because the Rotunda only features one main floor and the operations building is around 930 sqm in total, I have also chosen to eliminate the excess need for funding and electricity by not including a cooling system. However, in the winter months, the city does get cold enough to need heating. To heat the Rotunda, I propose a radiant heating system. The existing floor will need to be removed, the system will be added, and then the floor will be replaced. The basic mechanical units to power this system, such as the boiler, will be located within the operations building mechanical room. The radiant system will also be used within the operations building itself, and the necessary piping will be placed underneath the metal decking of each floor. The piping within the Rotunda will be placed under grade, below the shadow of the ambulatory to reach the structure.

The mechanical room located within the core of the operations building is a full height uninterrupted space from the first floor to the fourth floor. Because of this design, there is no need for interior chases for plumbing features.

The ventilation system is centered within the operations building, similar to the heating system. Each floor in the mechanical room features a small extended slab to house the air handling units and allow a hub for the return air ducts. The channeling of the ducts in the operations building is standard and flows below the slab and above the drop ceilings of each floor. From the fourth floor, the ductwork is carried through the operations buildings and underneath the ambulatory bridge to reach the Rotunda, so both buildings are adequately ventilated. There are also moveable louvers located on the bottom of the outer glass cylinder of the Rotunda to help manage smaller amounts of ventilation.



RADIANT HEATING SYSTEM

APPENDIX

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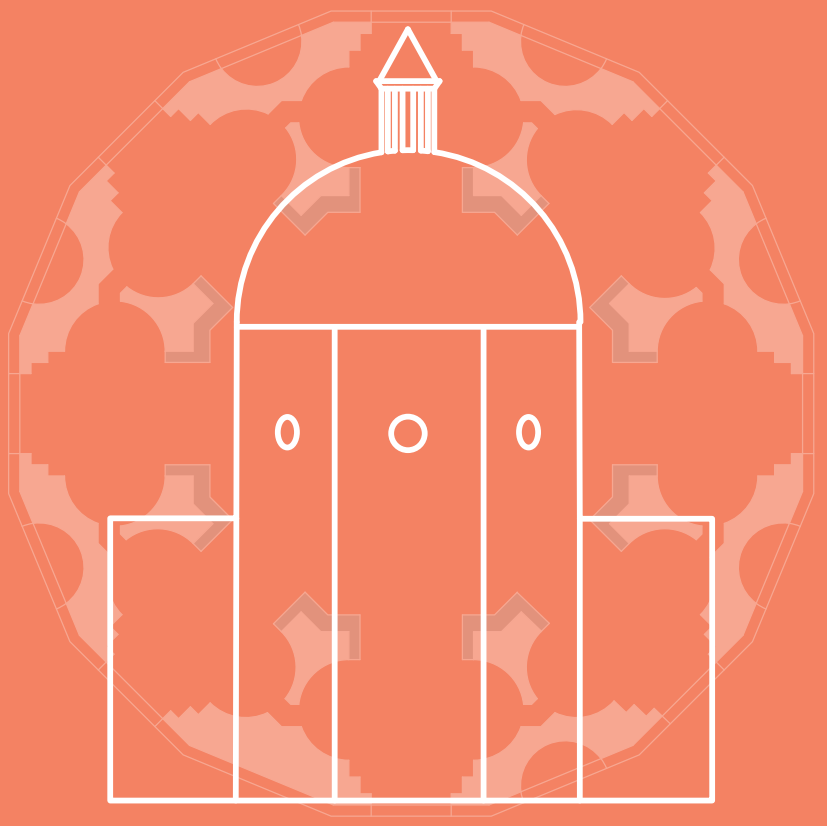

THE SPIRIT OF BRUNELLESCHI

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