

# CROSSING DOME ROOF

NYC LANDMARKS PRESERVATION COMMISSION PUBLIC HEARING

March 26 , 2019



The Cathedral Church of  
**Saint John The Divine**

**ennead** architects



1908 Photograph



The Cathedral Church of **Saint John The Divine**

March 26, 2019

**Construction began in 1892**

ennead architects



Dome Construction -1909 Photograph



First Services in the Choir and the Crossing - 1911 Photography





1909 Photograph



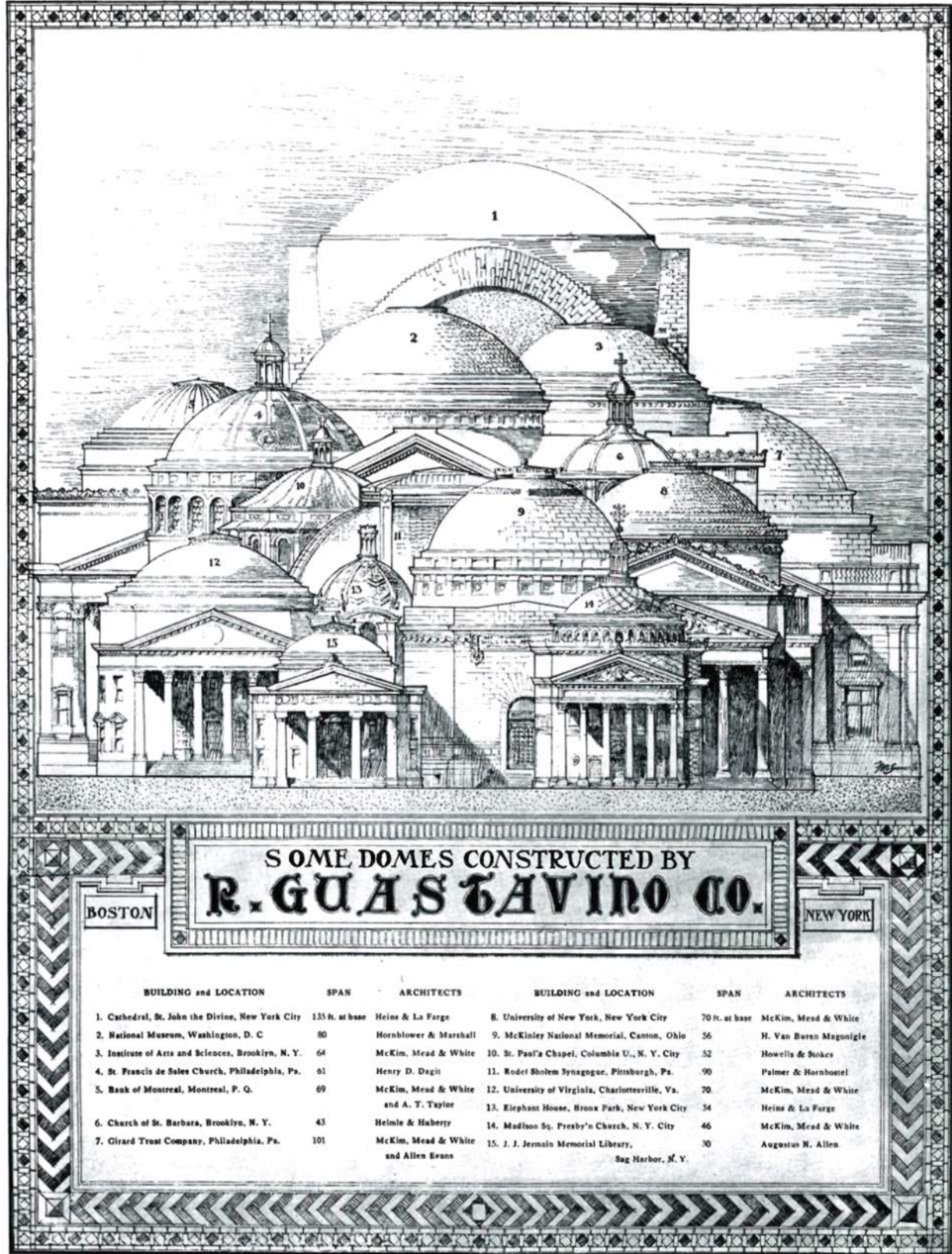
The Cathedral Church of **Saint John The Divine**

March 26, 2019

**Completion of Crossing Dome, 1909**

ennead architects

# Rafael Guastavino Company Advertisement for Domes, early twentieth century

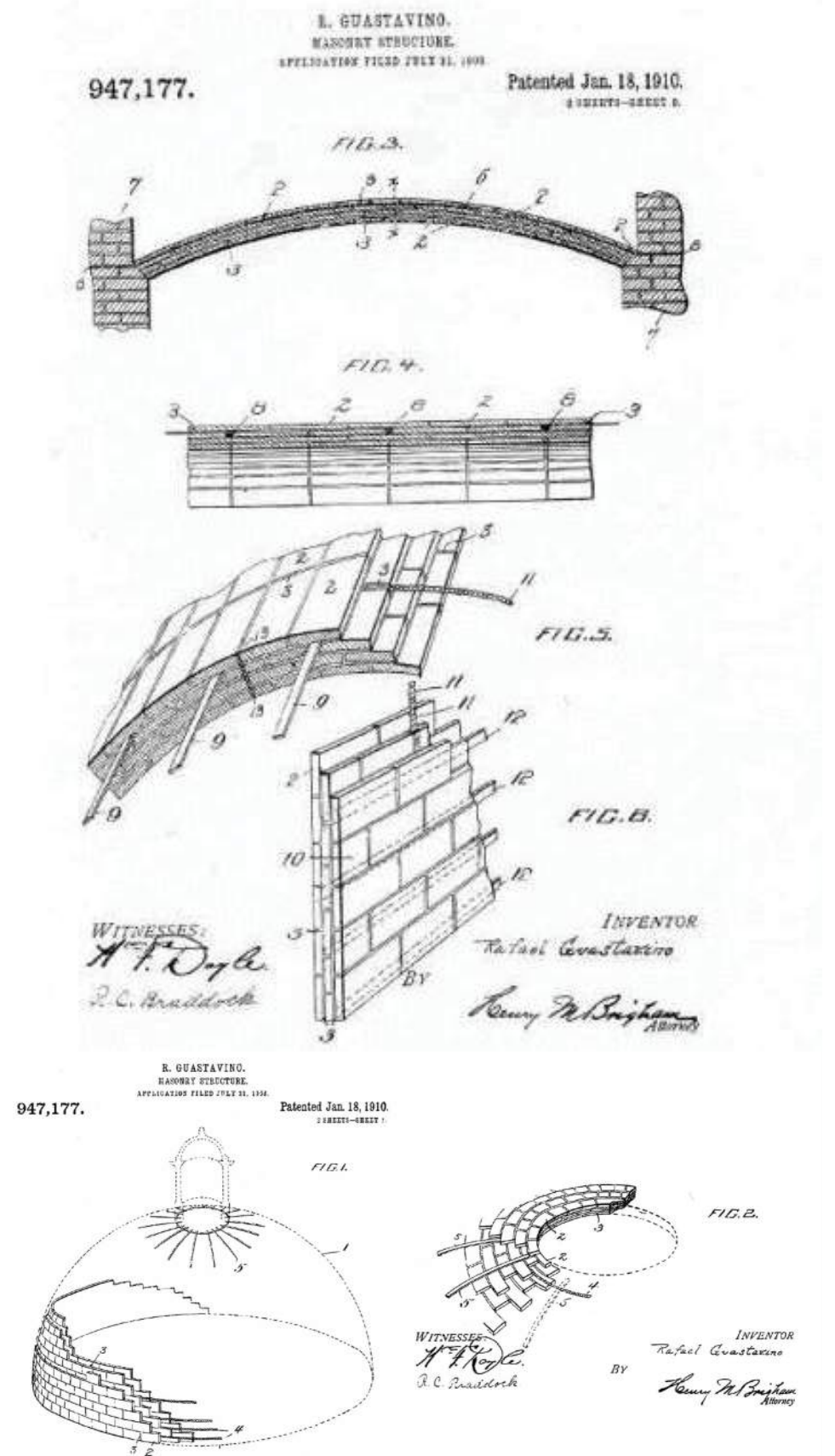


	Building and location	Span	Designed	Roofing	Recent work
1	Cathedral, St. John the Divine, New York, NY	135 feet (diameter)	1899 - 1940	Dome: none; built-up coal-tar and felt; currently Foam-Glas insulation and built-up assembly; coating Chancel and Chapels: batten seam metal (copper to be confirmed by Jim Gainfort); currently insulation with copper secured to existing battens	Chancel and Chapels: James R. Gainfort Consulting Architect, with Silman
2	National Museum, Washington, DC	80 feet	1906 - 1909	tile	
3	Institute of Arts and Sciences, Brooklyn, NY	64 feet	1901	stone clad	
4	St. Francis de Sales Church, Philadelphia, PA	61 feet	1909 - 1931	Original: decorative tile clad (dome); tile clad (vaults) 1950s alteration: dome - concrete cap with porcelain tile; vaults - ??? Current: dome - concrete cap with silicate paint; vaults at transept and nave - copper [standing- or batten-seam] with plywood underlayment fixed with self-tapping screws	Historic Building Architects with Silman (1996 - present) - porcelain tile removed from all domes; concrete surface repaired and coated with silicate paint; vaults copper (see previous)
5	Bank of Montreal, Montreal, P.Q.	69 feet	1903	batten-seam copper	
6	Church of St. Barbara, Brooklyn, NY	43 feet	1907 - 1926	Spanish tile and copper (main dome)	
7	Girard Trust Company, Philadelphia, PA	101 feet	1905 - 1953	sheet metal (to be verified)	
8	University of New York, New York, NY	56 feet	Dome: 1897 Ambulatory/Hall of Fame: 1900 and 1913 (extension)	Dome: copper tile Roofing: Spanish tile	Dome / Library: Beyer Blinder Belle with Silman (2018) - investigation and design of new roof; design of new cladding for steps and new gutter;  Stetson-Harza (1987): repairs / replacement of gutters and roofing at steps at lower portion of dome;  Ambulatory / Hall of Fame: James Stewart Polshek & Partners, Architects (1979) - conditions report on Hall of Fame; replair of roof, gutters, and Guastavino vaults at the Hall of Fame; archival records are not clear if the work was designed by JSP & Partners
9	McKinley National Memorial, Canton, OH	56 feet	1905 - 1906	stone	
10	St. Paul's Chapel, Columbia, New York, NY	52 feet	1903 - 1910	tile	
11	Rodolf Sholom Synagogue, Pittsburgh, PA	90 feet	1905 - 1906	tile and stone (to be confirmed)	
12	University of Virginia, Charlottesville, VA	70 feet	1897	originally designed with a copper tile roof (see University of New York, No. 8, above) that was never built; originally built with batten-seam copper sheet; in 1970s (1976) copper roofing was replaced with painted sheet metal	John G. Waite Associates with Silman / 1200 AE - roofing installed
13	Elephant House, Bronx Park, New York, NY	34 feet	1906 - 1908	currently batten-seam copper; may have been terra cotta / decorative tile as originally constructed	
14	Madison Square Presbyterian Church, New York, NY	46 feet	pre-1906	flat, shingled tile	
15	J.F. Jermain Memorial Library, Sag Harbor, NY	30 feet	1909	batten-seam copper	Newman Architects with Silman and Building Conservation Associates - steel tension hoop replaced; roofing replaced
<b>Other Roofs with Guastavino Company Domes and Vaults</b>					
	St. Bartholomew's Church		1916-1930	stone and tile	Acheson Doyle Partners with Silman - corroded steel tension hoop replaced; batten-seam copper roofing replaced with batten-seam copper
	Basilica of St Lawrence		1905	copper ...	
	Church of the Holy Trinity (Catholic)		1910-1911	copper	



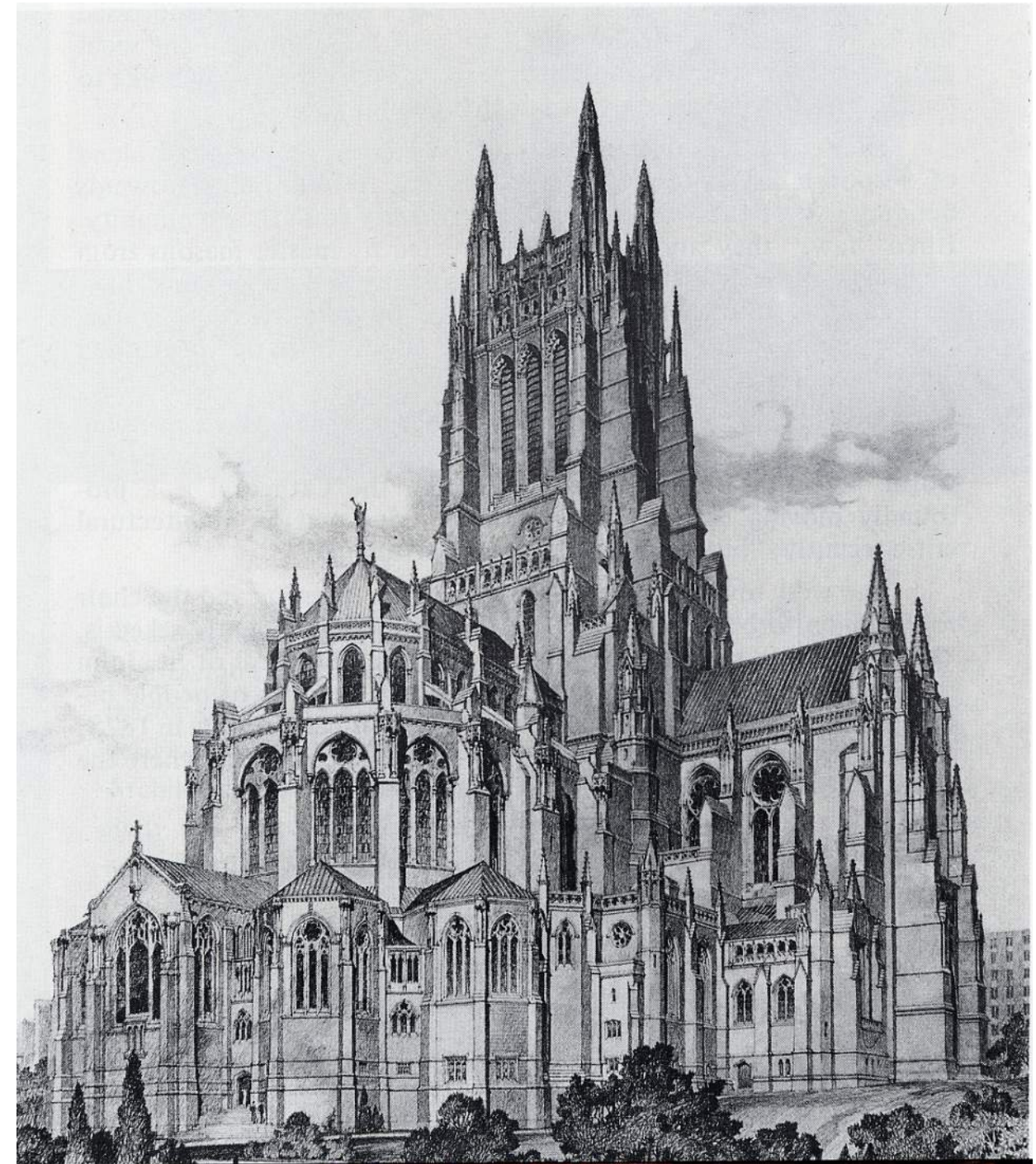
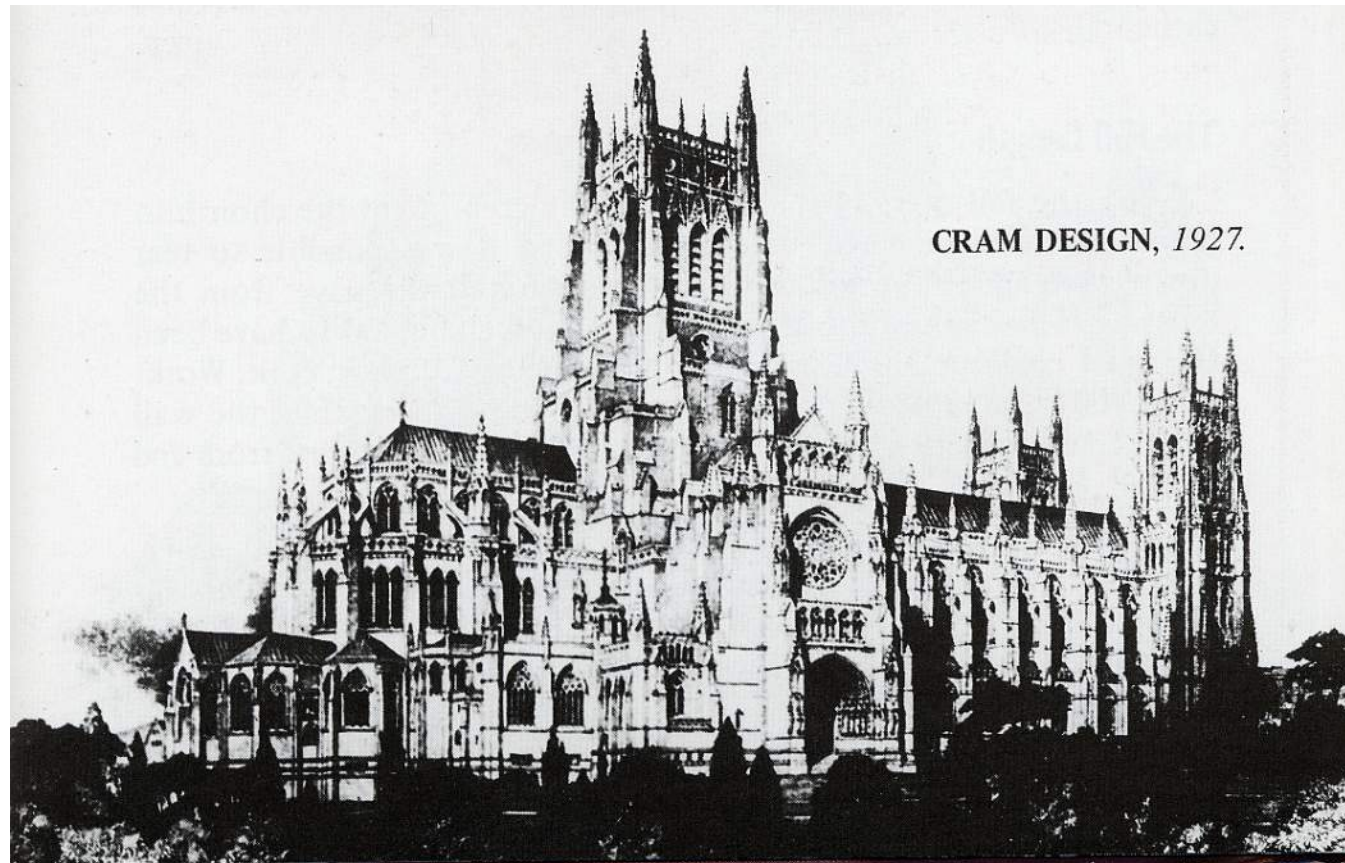


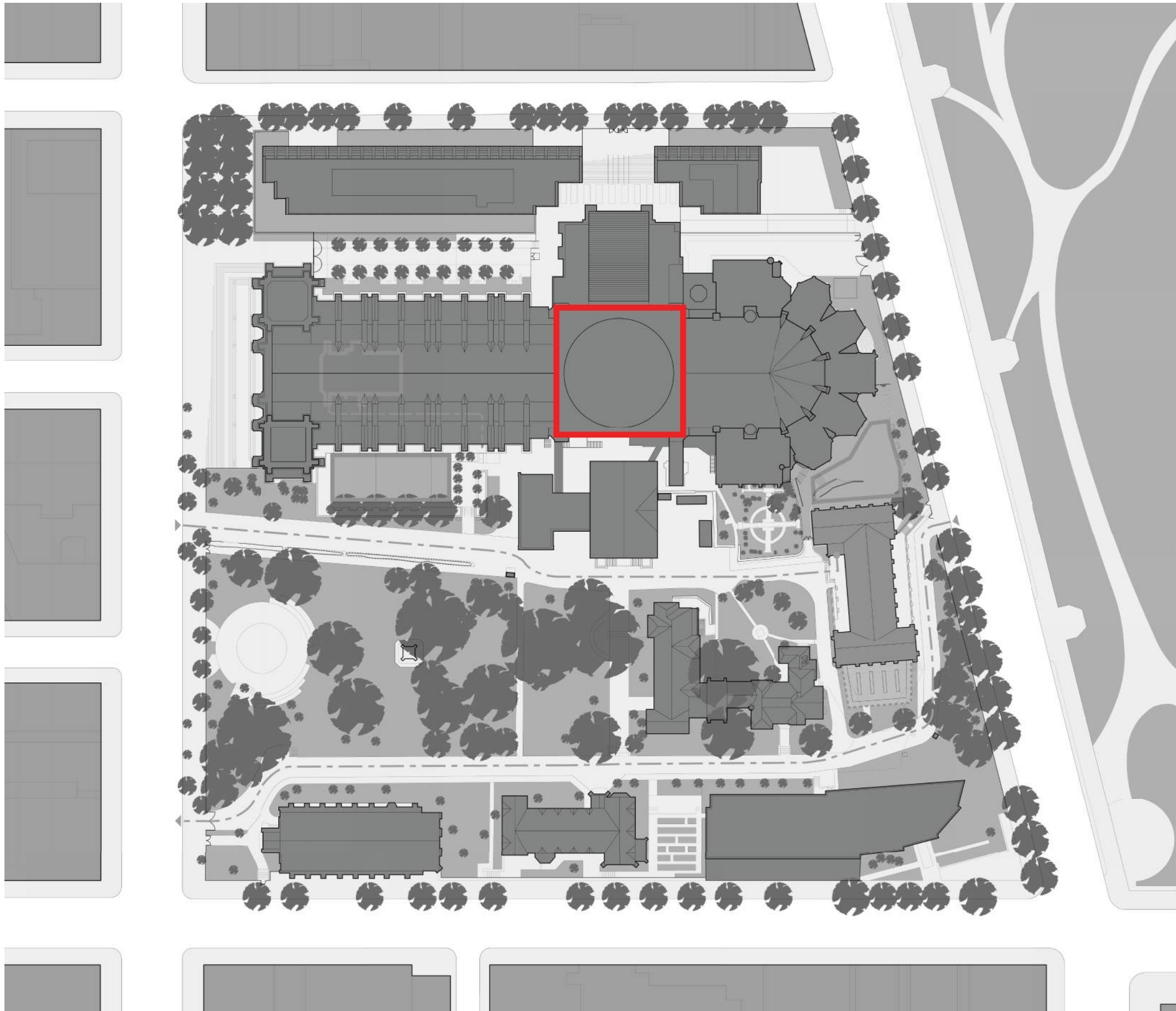
Photo of Guastavino Vault Underside, 2016



Guastavino Masonry Vault Patent Document, 1910



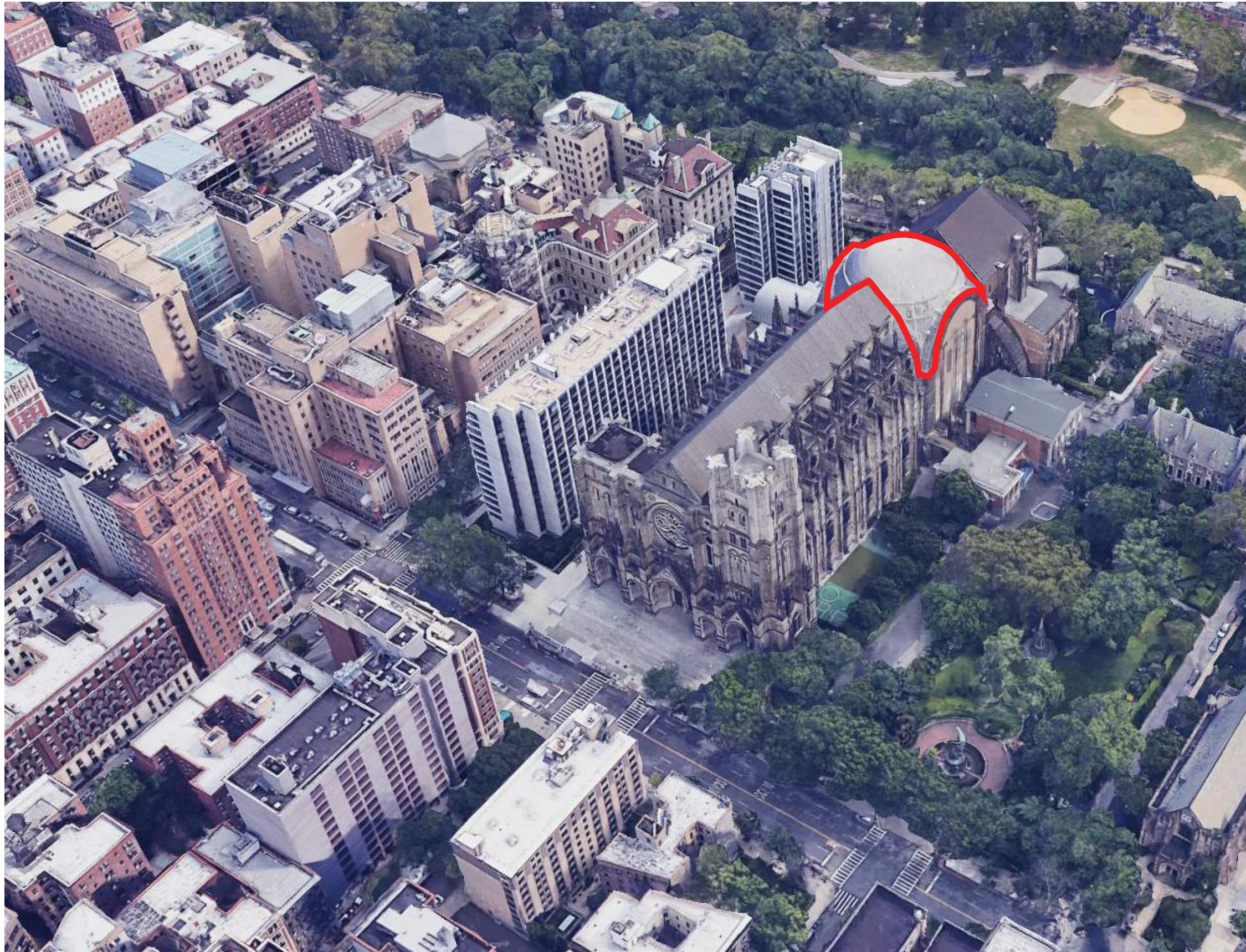




AREA OF WORK

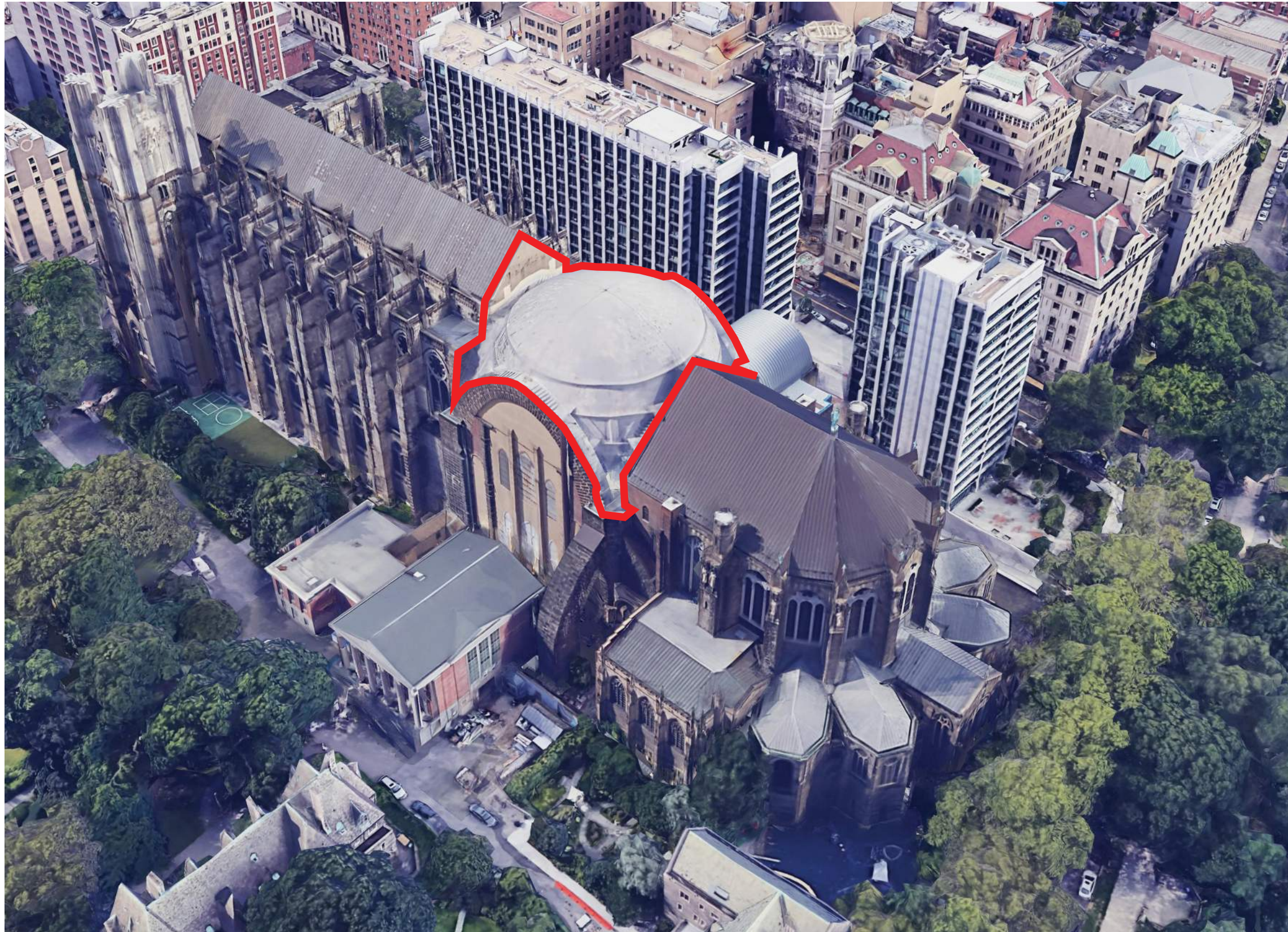






 AREA OF WORK





 AREA OF WORK





The Cathedral Church of **Saint John The Divine**

March 26, 2019

View From Amsterdam Ave, **Existing**

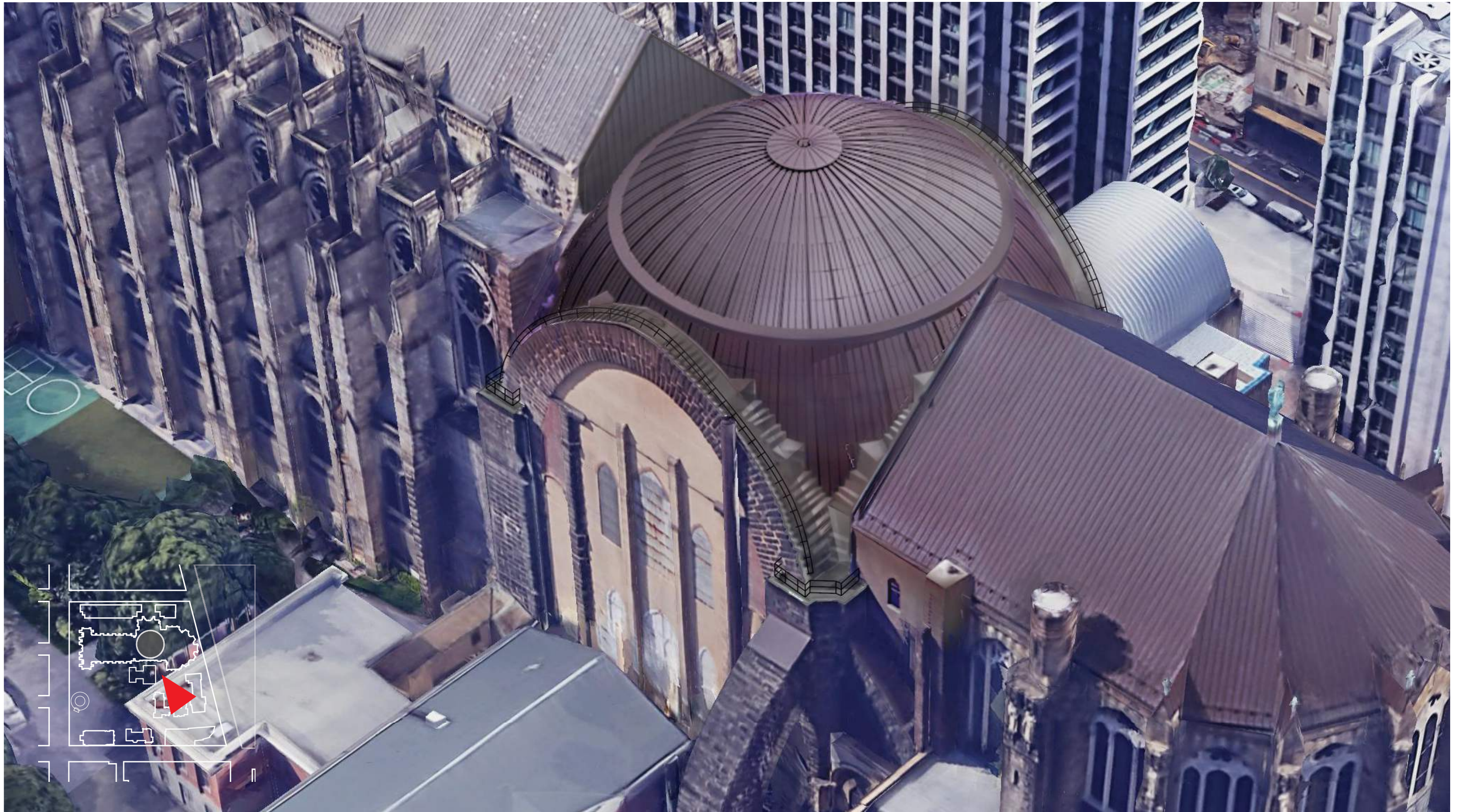
ennead architects



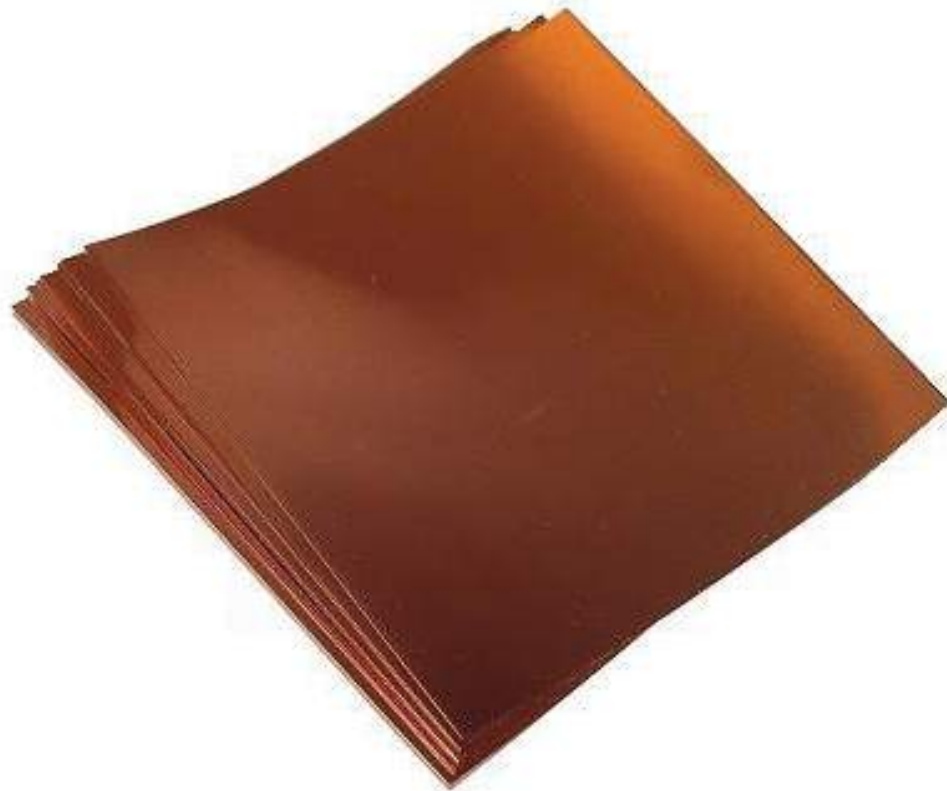












## ARCHITECTURAL GUIDE SPECIFICATIONS

The following are parts of a guide specification for incorporation into architectural specifications. Complete details, specifications and descriptive text for the installation of copper roofs, gutters, flashings, etc., are contained in the Revere manual *Copper & Common Sense*.

### General

#### QUALITY ASSURANCE

Unless otherwise shown or specified, comply with applicable recommendations and details in *Copper & Common Sense* by Revere Copper Products, Inc.

#### Products

##### Material Data

##### Physical Properties

Atomic wt.	63.54		
Specific gravity	8.89 to 8.94		
Density	.322lb./cu.in.		
Coefficient of thermal expansion	0.000098		

Thickness	Theoretical	Minimum	Wt/Sq. Ft
16 oz.	0.0216"	0.0204"	1.00 lb.
20 oz.	0.0270"	0.0258"	1.25 lb.
24 oz.	0.0323"	0.0308"	1.50 lb.
32 oz.	0.0431"	0.0411"	2.00 lb.

Mechanical properties	Temper designation			
	Soft	Cold-rolled		
		H00	H01	H02
Tensile strength	30-38	32-40	34-42	37-46
Yield strength	-	20	28	30
Elongation	45%	30%	25%	10%
Rockwell F Scale	65	54-82	60-84	77-89

#### MATERIALS

A. Copper- Select copper or coppers as required for aesthetics.

1. **Standard sheet copper:** cold rolled ounce weight (12-ounce, 16-ounce, 20-ounce, and/ or 32-ounce as noted on drawings) copper sheet complying with ASTM B370. Unless otherwise noted, temper shall be H00.

2. **ContinentalBronze:** Our pre-aged copper is shipped with a natural brown/ bronze copper oxide finish. This material has no chemicals on the surface and will patina over time, in most environments the copper surface will eventually weather to a green patina.

3. **Tin-zinc alloy coated copper:** cold rolled ounce weight (12-ounce, 16-ounce, and 20-ounce as noted on drawings) copper coated both sides with tin-zinc alloy. Base copper sheet or coil shall comply with ASTM B370. Finish and appearance shall be that of Revere **FreedomGray™**.

4. **Pan-forming copper:** cold rolled ounce weight (12-ounce, 16-ounce and/ or 20-ounce as noted on drawings) copper in coil complying with ASTM B370 and manufactured in accordance with specifications for Revere **Ultrapan™**.

5. **Textured copper:** Solid copper having a designated minimum copper content of 99.5% or higher, in thickness ranging from .008" to .135", as specified on drawings. Finish and appearance shall be that of **Liberty Collection™ Rigidized©** textured copper.

6. **Copper composite panel:** Thermoplastic core coated both sides with lightweight copper sheet, with a protective film on exterior skin. Total thickness shall be 4mm or 6mm as specified on drawings. Finish and appearance shall be that of Revere **Alpolic Composite Panel™**.

B. Solder- shall conform to ASTM B32. For **FreedomGray** tin/zinc alloy coated copper- Pure tin or lead-free, high-tin solders such as Number 497 by Johnson Manufacturing.

C. Fasteners- for plain copper, **Continental Bronze** and **FreedomGray** tin/zinc alloy coated copper shall be copper, copper alloy or non-magnetic, series 300 stainless steel.

#### Execution

##### STORAGE AND COORDINATION

A. Store all architectural copper sheet and coils (plain/bare, Continental Bronze, and /or FreedomGray) off the ground in an enclosed structure so as to maintain dry conditions and exclude condensation. Do not store on bare ground under tarp.

B. Handle sheets and formed shapes in a manner to reduce scratches.

**Note:** The use of gloves may minimize fingerprints during initial weathering. Fingerprints fade and disappear with addition weathering. However, in arid locations they may persist for an extended period.

#### INSTALLATION

A. Except as otherwise shown or specified, comply with Revere Copper Products, Inc. recommendations and instructions as published in *Copper & Common Sense* and published Revere literature.

B. Separate and protect dissimilar metals as recommended by manufacturers of dissimilar metals (other than copper).

C. Solder plain/bare copper or **FreedomGray** in accordance with instructions published by Revere Copper Products, Inc.

**Note:** Prior to soldering plain/bare copper, **ContinentalBronze** or **FreedomGray**, areas to be soldered must be mechanically cleaned to produce a bright, unoxidized surface. Plain/bare copper and **ContinentalBronze** should be pre-tinned before soldering. It is not necessary to remove the tin-zinc alloy coating from the **FreedomGray**.

#### CLEANING

Do not chemically or abrasively clean plain/bare copper, **ContinentalBronze** and/or **FreedomGray**. If necessary, construction dirt may be washed from copper with clean, fresh water only. Do not use soaps, detergents or other cleaning agents.

#### PROTECTION

Protect plain/bare copper, **ContinentalBronze** and/or **FreedomGray** from oils, greases, masonry cleaning compounds, iron and steel fines and fasteners, and other construction materials that may stain or discolor copper surface. To minimize condensation or water stains, at the end of each workday, remove tarps or other protections placed on copper. Manufacturing representatives are available for assistance or on-site meetings.

Refer to current manufacturer's SDS for safety and handling information.

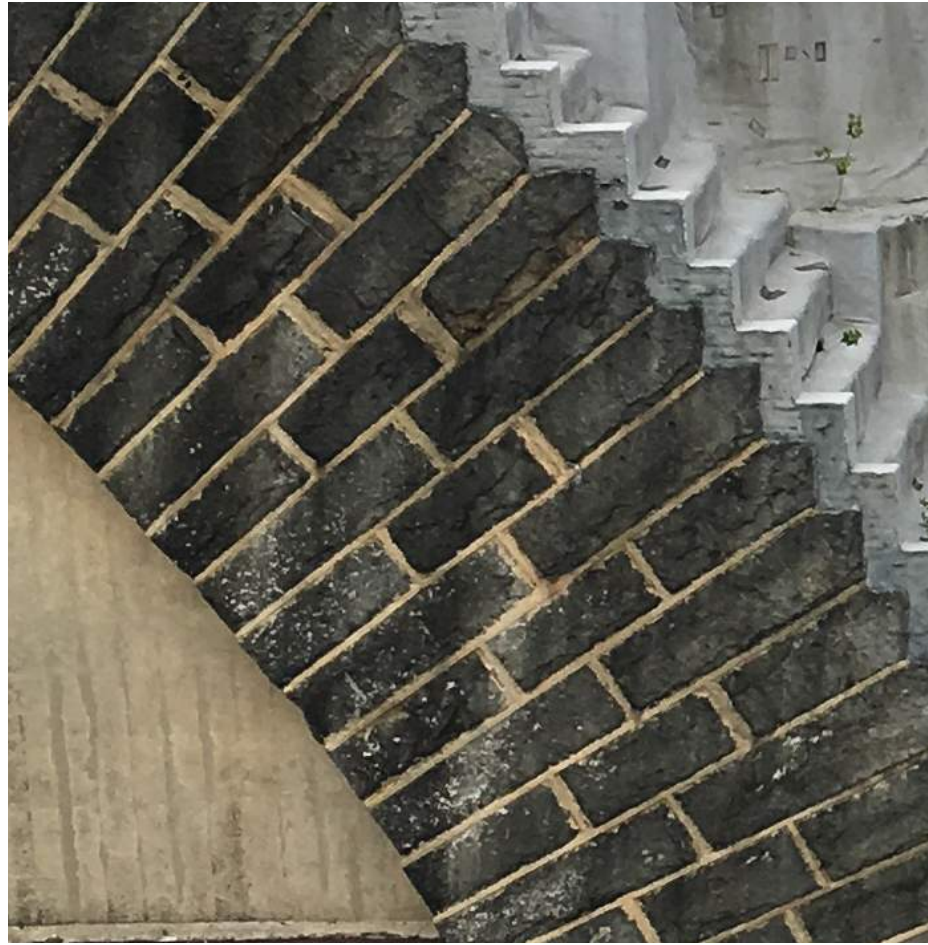


**Revere Copper Products, Inc.**  
One Revere Park, Rome, NY 13440-5561  
For technical assistance:  
1-800-448-1776 ext. 2554  
[www.reverecopper.com](http://www.reverecopper.com)  
email:archcopper@reverecopper.com

Revere Liberty Collection, FreedomGray, ContinentalBronze, Ultrapan and Revere Classic Copper are trademarks of Revere Copper Products, Inc.

Alpolic Composite Panel is a trademark of Mitsubishi Chemical America. Rigidized is a registered trademark of Rigidized Metals Corporation. ZT/TZ alloy is a trademark of Revere Copper Products, Inc.





Existing Arch Face of Granite

Option 1



Option 2



Option 3



Proposed Roofing Membrane Color Options





Dry and crumbly consistency of the original membrane



Large gap between Foam-glass Insulation and Tile Dome



Advanced Corrosion at screws (mechanical fasteners for insulation)



Outer waterproofing membrane is not adhered to Foamglass Insulation

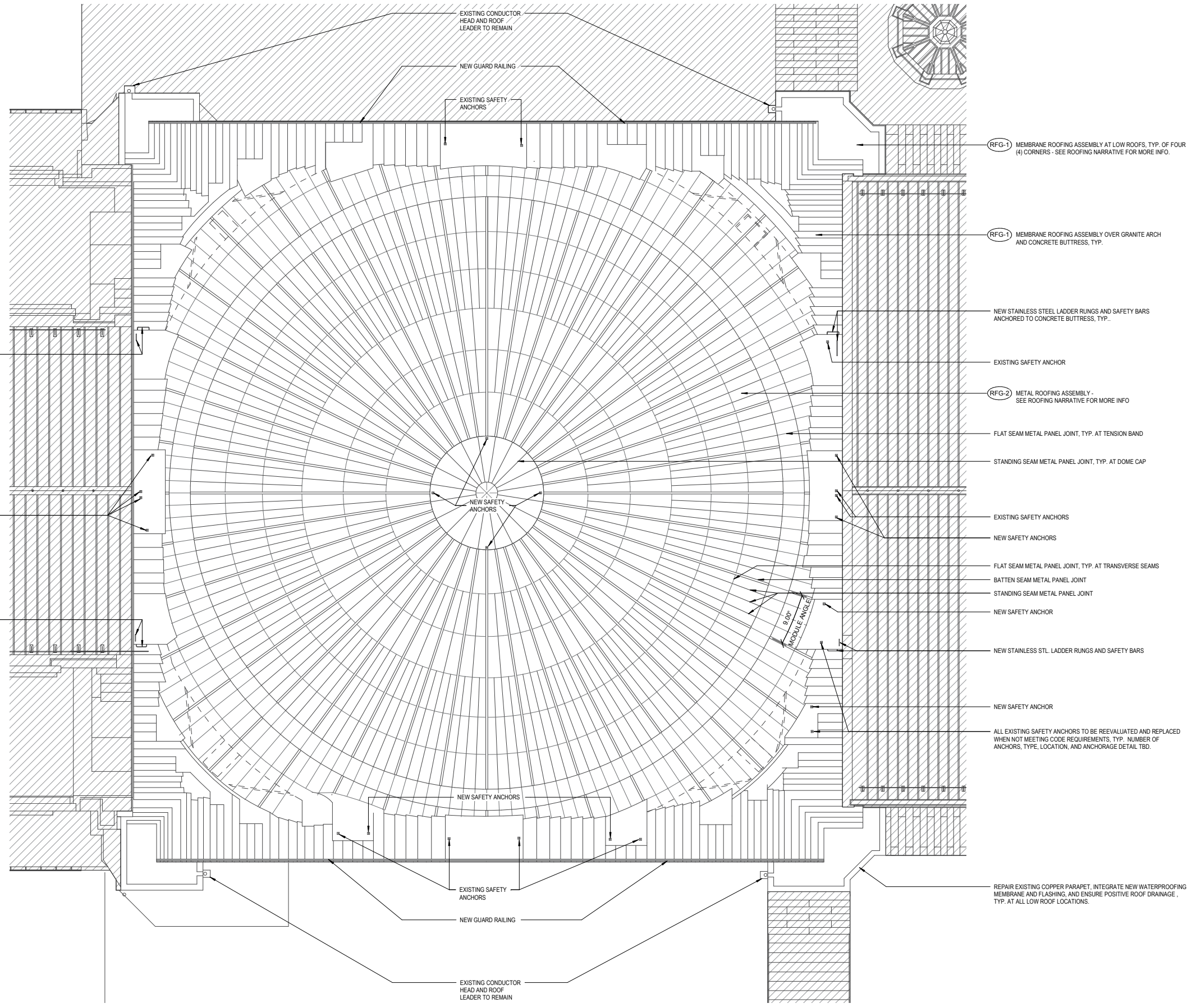


Water droplets on original waterproofing membrane



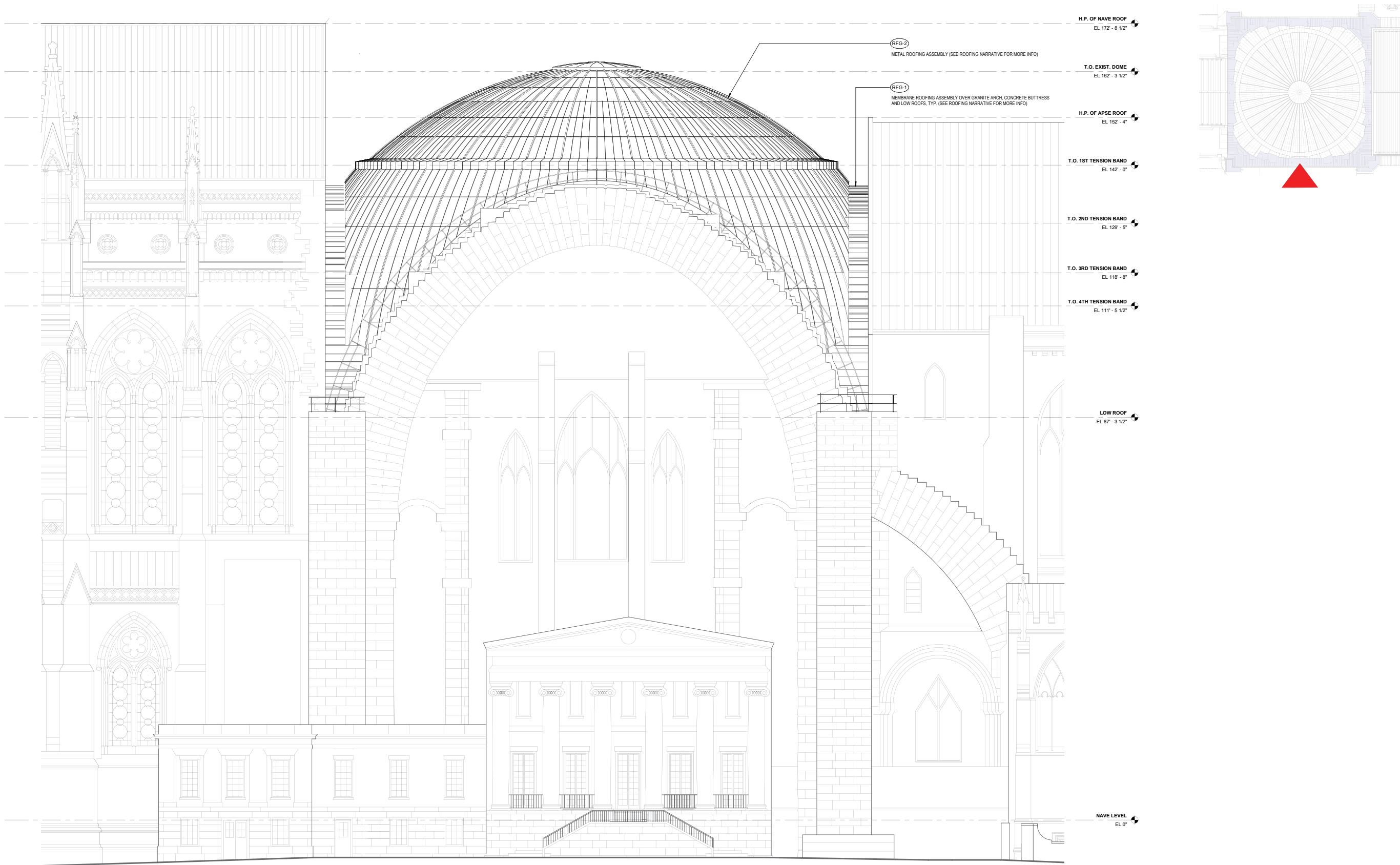
Outer waterproofing membrane is completely separated from Foamglass Insulation

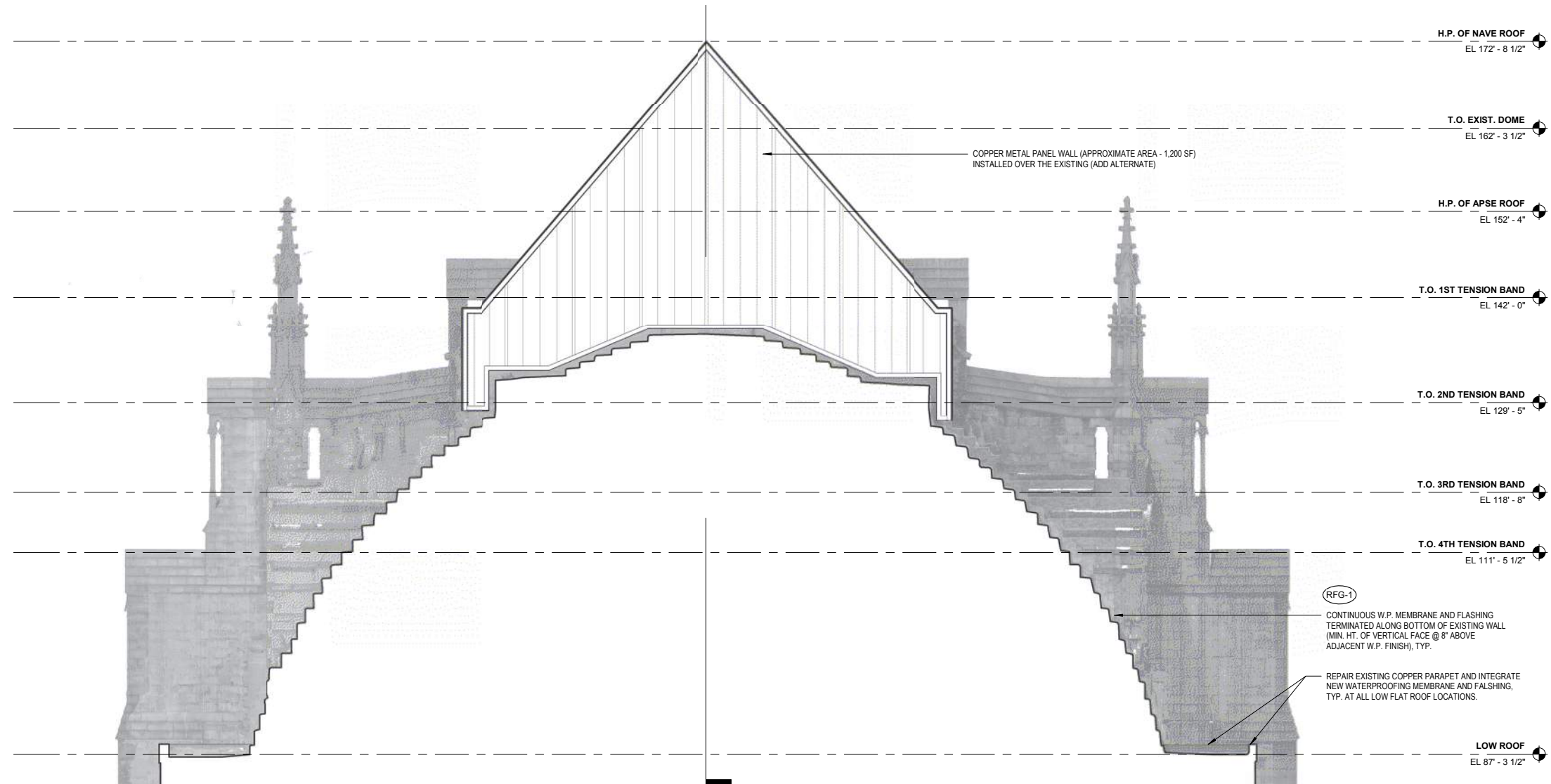
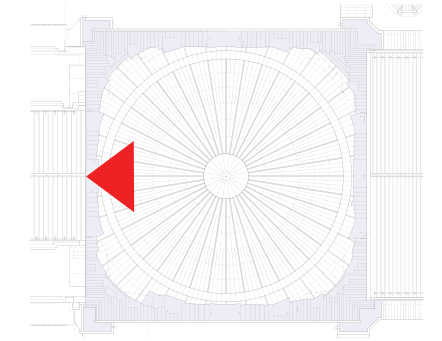


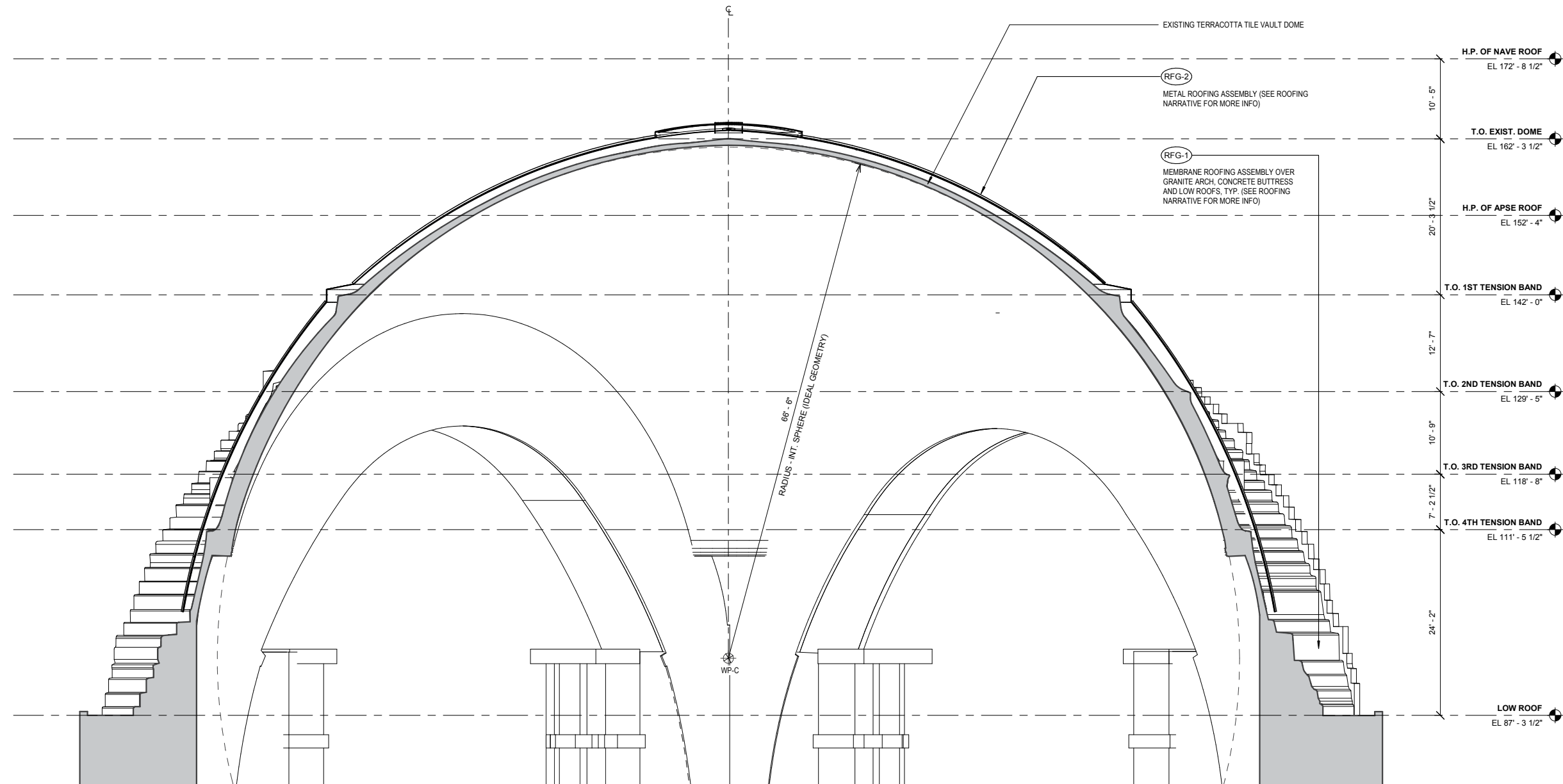
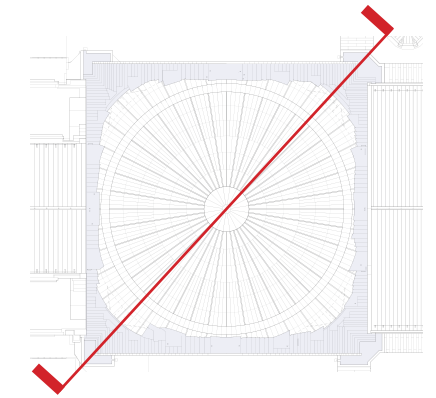


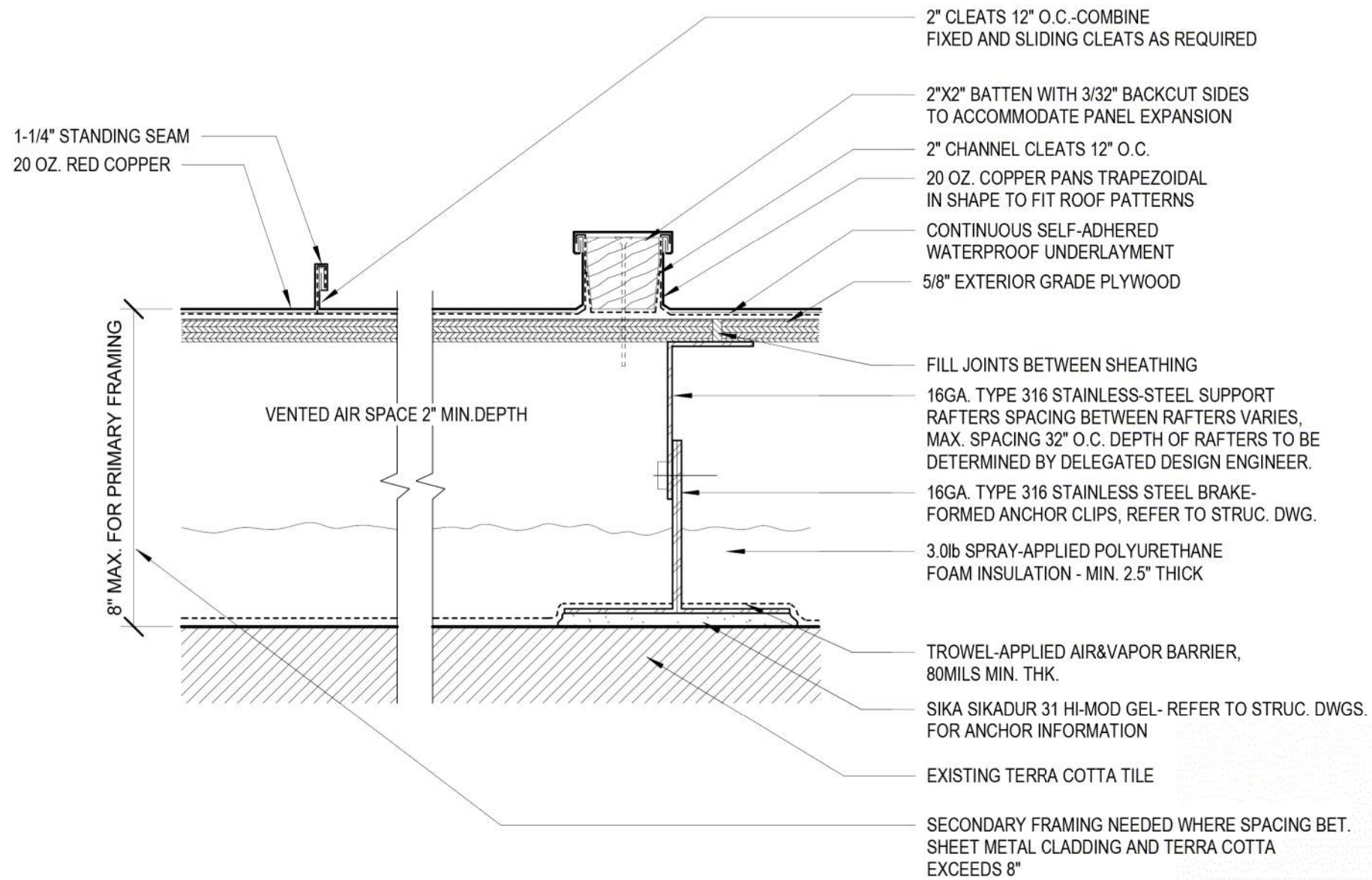
- (RFG-1) MEMBRANE ROOFING ASSEMBLY AT LOW ROOFS, TYP. OF FOUR (4) CORNERS - SEE ROOFING NARRATIVE FOR MORE INFO.
- (RFG-1) MEMBRANE ROOFING ASSEMBLY OVER GRANITE ARCH AND CONCRETE BUTTRESS, TYP.
- NEW STAINLESS STEEL LADDER RUNGS AND SAFETY BARS ANCHORED TO CONCRETE BUTTRESS, TYP.
- EXISTING SAFETY ANCHOR
- (RFG-2) METAL ROOFING ASSEMBLY - SEE ROOFING NARRATIVE FOR MORE INFO
- FLAT SEAM METAL PANEL JOINT, TYP. AT TENSION BAND
- STANDING SEAM METAL PANEL JOINT, TYP. AT DOME CAP
- EXISTING SAFETY ANCHORS
- NEW SAFETY ANCHORS
- FLAT SEAM METAL PANEL JOINT, TYP. AT TRANSVERSE SEAMS
- BATTEN SEAM METAL PANEL JOINT
- STANDING SEAM METAL PANEL JOINT
- NEW SAFETY ANCHOR
- NEW STAINLESS STL. LADDER RUNGS AND SAFETY BARS
- NEW SAFETY ANCHOR
- ALL EXISTING SAFETY ANCHORS TO BE REEVALUATED AND REPLACED WHEN NOT MEETING CODE REQUIREMENTS, TYP. NUMBER OF ANCHORS, TYPE, LOCATION, AND ANCHORAGE DETAIL TBD.
- REPAIR EXISTING COPPER PARAPET, INTEGRATE NEW WATERPROOFING MEMBRANE AND FLASHING, AND ENSURE POSITIVE ROOF DRAINAGE, TYP. AT ALL LOW ROOF LOCATIONS.



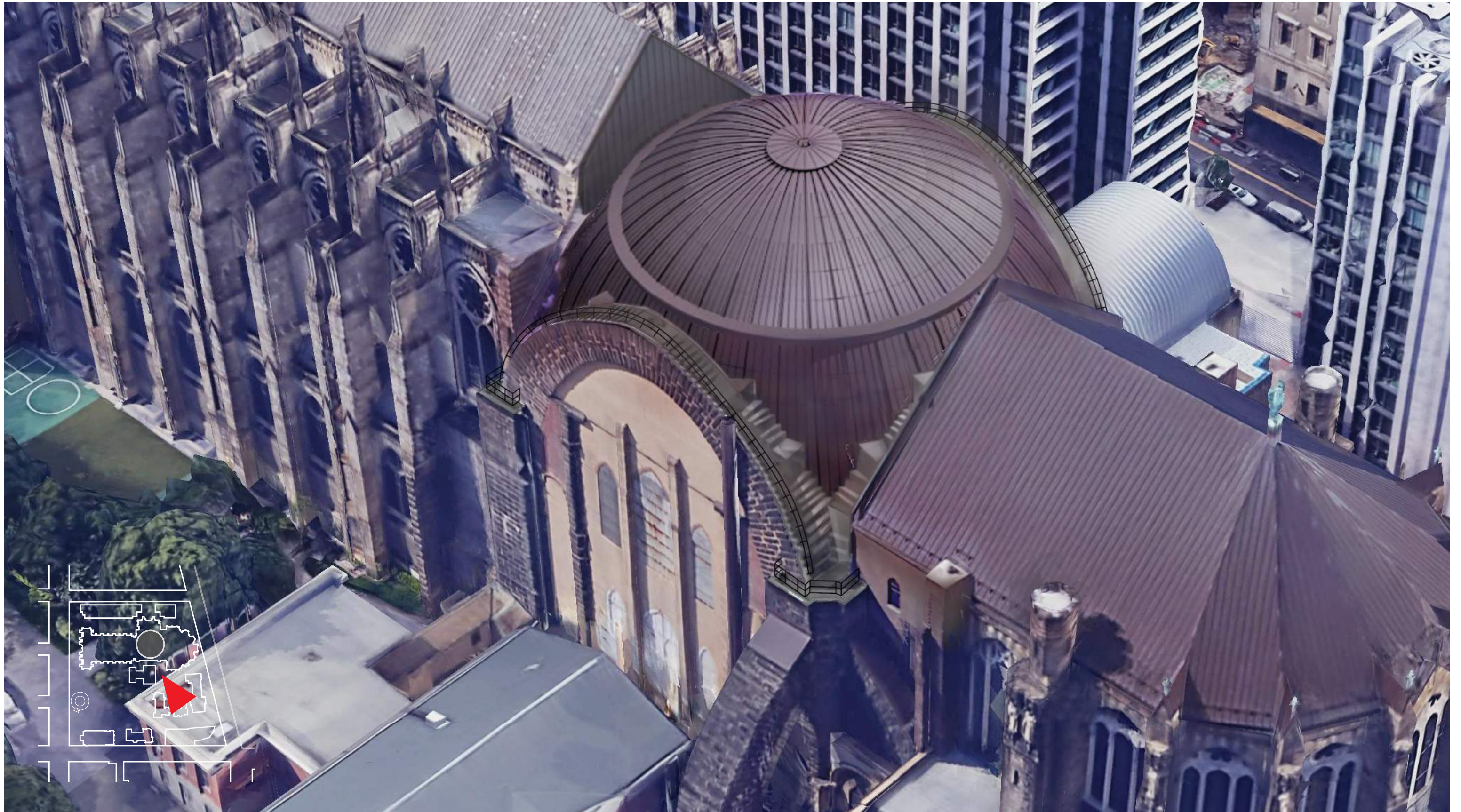








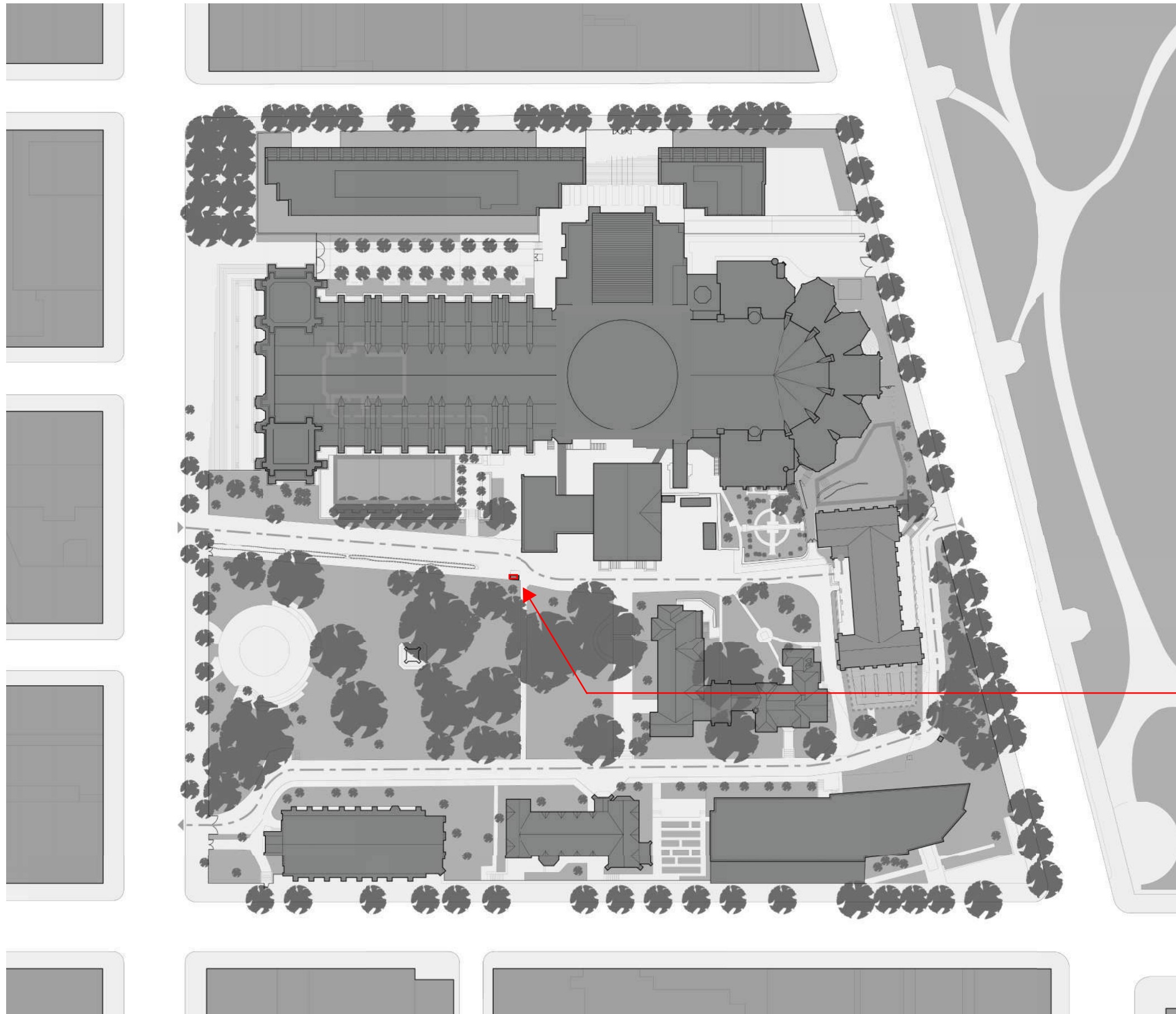




# **GUARD BOOTH**

**NYC LANDMARKS PRESERVATION COMMISSION PUBLIC HEARING**

March 26 , 2019



GUARD BOOTH  
LOCATION

The Cathedral Church of Saint John The Divine - **GUARD BOOTH**



EXISTING GUARD BOOTH



VIEW OF EXISTING BOOTH FROM SIDEWALK

**The Cathedral Church of Saint John The Divine - GUARD BOOTH**



EXISTING GUARD BOOTH



VIEW OF EXISTING BOOTH FROM STREET

**The Cathedral Church of Saint John The Divine - GUARD BOOTH**



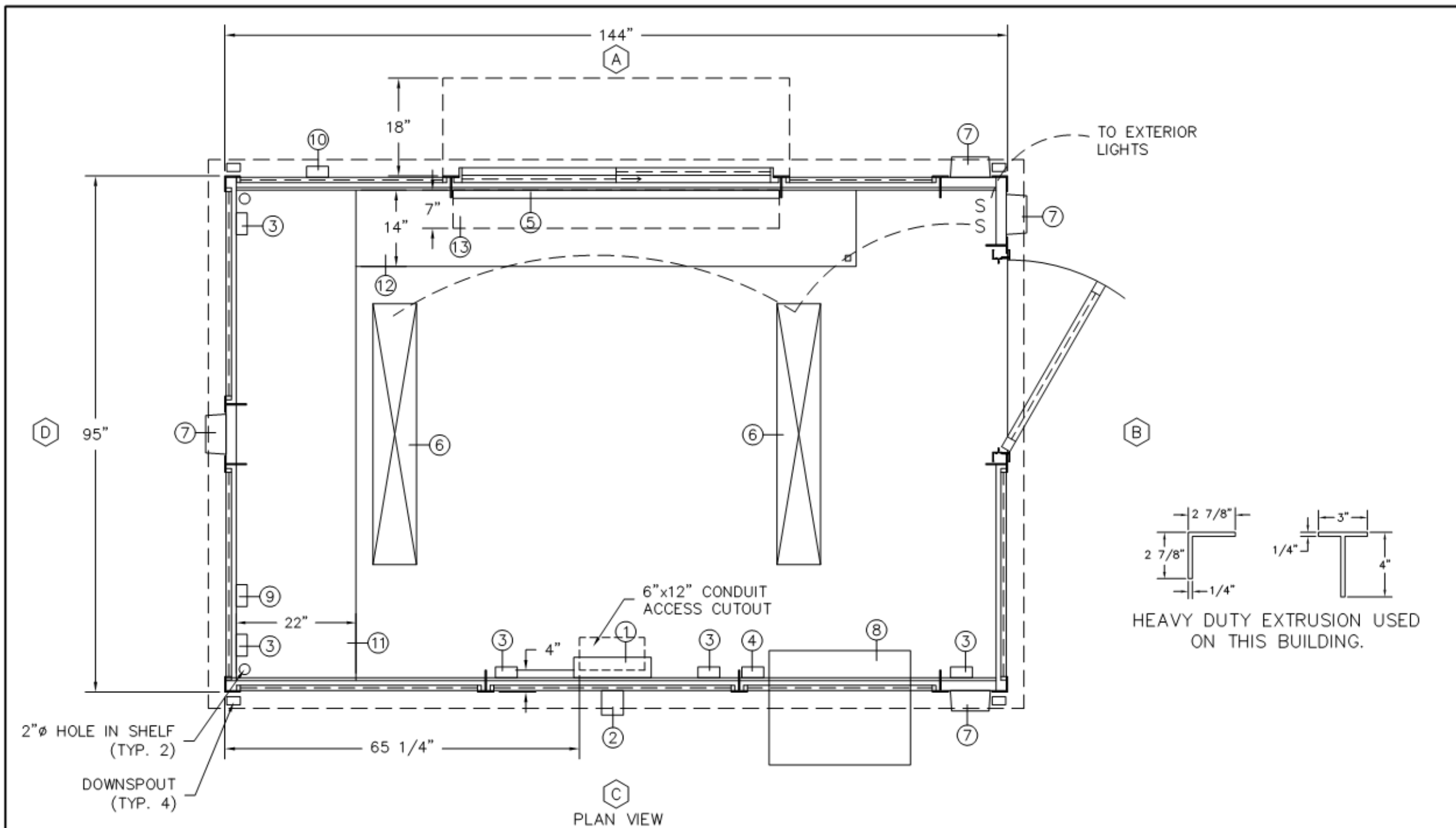
PROPOSED STANDING SEAM ROOF



PROPOSED EXTERIOR FINISH AND COLOR



VIEW OF PROPOSED BOOTH FROM STREET



THESE DRAWINGS & SPECIFICATIONS HAVE BEEN PRODUCED IN ACCORDANCE WITH PORTA-KING'S PROPOSAL & THE PROJECT DESIGN. THE PROJECT WILL BE MANUFACTURED IN ACCORDANCE TO THIS INFORMATION AS SUBMITTED. THE SECURING OF BUILDING PERMITS & COMPLIANCE WITH APPROPRIATE BUILDING CODES IS NOT THE RESPONSIBILITY OF PORTA-KING, BUT IS THE RESPONSIBILITY OF THE PURCHASER OF THE BUILDING.

APPROVED AS SUBMITTED, RELEASE FOR MANUFACTURING  
 APPROVED AS NOTED, RELEASE FOR MANUFACTURING  
 DREVISE AND RESUBMIT

SIGN : \_\_\_\_\_ DATE : \_\_\_\_\_

PROJECT: GUARD BOOTH  
 PATERSON, NJ

CUSTOMER: CATHEDRAL OF ST. JOHN  
 SYSTEM: DURALUMINUM  
 MODEL: 14496SW

DURALUMINUM MODEL 14496SW BUILDING NOTES:

- ① — 100 AMP, SINGLE PHASE 12 SPACE LOAD CENTER w/ MAIN BREAKER & GEN. INTERLOCK KIT
- ② — EXTERIOR 60A FLANGED POWER INLET
- ③ — 115V QUAD OUTLET
- ④ — 230V 20AMP SINGLE OUTLET
- ⑤ — 5' LONG PLUG STRIP w/ 5qty OUTLETS
- ⑥ — 4' SURFACE MOUNTED LED WRAPAROUND LIGHT w/ SWITCH
- ⑦ — EXTERIOR LED WALL PACK LIGHT w/ SWITCH & PHOTOCCELL
- ⑧ — 230V, 12,000 C / 11,200 H BTU THRU-WALL HVAC UNIT
- ⑨ — DATA/PHONE JACK COMBO w/ CONDUIT & PULL WIRE TO ACCESS CUTOUT
- ⑩ — EXTERIOR 2"x4" J-BOX w/ CONDUIT & PULL WIRE TO ACCESS CUTOUT
- ⑪ — 22" DEEP PAINTED STEEL SHELF (32" A.F.F.)
- ⑫ — 14" DEEP PAINTED STEEL SHELF (32" A.F.F.)
- ⑬ — 7" DEEP PAINTED STEEL SHELF (ADVISE HEIGHT)

- \* EXTERIOR STANDING SEAM ROOF w/ 3" OVERHANG 4qty DOWNSPOUTS
- \* 5' LONG x 18" DEEP BOLT ON AWNING (SHIPS LOOSE)
- \* 90" INTERIOR HEIGHT
- \* EXTERIOR URESTONE FINISH BELOW WINDOWS (SLATE GRAY STACKED STONE)
- \* STANDING SEAM ROOF COLOR (ADVISE COLOR)
- \* INTERIOR PANEL FINISH: GRAY VINYL COVERED HARDBOARD
- \* 1/2" GRAY PAINTED PLYWOOD BELOW WINDOWS ON INSIDE OF 12' WALLS
- \* 3068 HEAVY DUTY ALUMINUM SWING DOOR w/ HALF GLASS, ADA CLOSER, CHECK CHAIN & LEVER LOCKSET
- \* GLAZING: 3/16" TEMPERED GLASS
- \* INSULATION: WALLS & CEILING R-10
- \* RAISED RUBBER DISK FLOOR (BLACK)
- \* STANDARD CONDUIT ACCESS CUTOUT

**PORTA-KING**  
 BUILDING SYSTEMS

4133 SHORELINE DRIVE  
 EARTH CITY, MO 63045  
 1-800-456-5464  
 www.portaking.com

ESTIMATE: MH2291  
 ORDER:  
 JOB:  
 DATE: 12-13-18  
 REVISED:  
 DRAWN BY: DGR  
 SHEET 1 OF 3