



The Jet Mist Quarry at Rapidan, Virginia

It has been some time since my last CONSTRUCTION NOTE, but the pressing business that accompanies the approaching end of the academic year has diverted me from this task. Nonetheless, the Capitol Crossing project has hit some significant milestones in the interim. As you read, please remember you can also view this CONSTRUCTION NOTE at <https://medium.com/construction-notes>.

Before I begin, I want to thank Austin McCulloch, Michael Munoz, Adam Mikhail, Nick Eckstein, and Ryan Huttar who were the high bidders at the EJF Public Interest Auction for a tour of the project site. I also want to thank Rebecca Nordby, the BBC Project Executive, for joining us and giving the winners a tour to remember.



Progress has occurred on many of the Capitol Crossing sub-projects. The Tower Crane, the workhorse for the erection of 200 Massachusetts Avenue was dismantled at the end of March. Once dewatering has ended in the garage excavation pit, concrete footings will be poured to support a new tower crane. Then it will rise to signal the commencement of the construction of 250 Massachusetts Avenue. A mock-up of the windowed curtain wall has been set and inspected on the northeast corner of 200 Massachusetts Avenue. Sometime in June, installation of the curtain wall will begin and we will start to see what the building will actually look like. Mechanical, electrical, and plumbing utilities continue to be installed. Switch gear for the electrical systems has arrived, and we can now see ductwork attached to the ceiling slabs up to the fifth floor. A materials hoist has been erected to bring studs, drywall, ductwork, and other interior features to the upper floors of the building. I can attest that the ride to the top is very different from the ride in a modern elevator. Only a few feet of concrete on the south end of the platform remains to be poured. Reinforcing steel (rebar) has been set for the roof over sections of the East Concourse. It awaits the concrete that will seal that portion of the structure.



Materials hoist (left side) and window mockup

### Hydrodynamic Separator Tank

Recently, BBC moved part of the 2<sup>nd</sup> Street construction fence onto the Georgetown's property to allow the installation of a hydrodynamic separator tank. As I have mentioned before, the Capitol Crossing project will achieve Leed Platinum status for green buildings. The hydrodynamic separator is part of the LEED package. It is a storm-water management device that removes sediments, hydrocarbons, trash, pollutants, and other debris from the water runoff, preventing their discharge into the sewer system. The internal structure of the separator creates a swirling vortex to screen and separate those materials from the water, thereby lessening pollution in the Potomac and Anacostia Rivers and the Chesapeake Bay. If you want to see how this fascinating system actually works, watch the video at

<http://www.conteches.com/products/stormwater-management/treatment/cds.aspx?clid=CKSA-GjmtMCFZdWDQodi0ADYQ#1822146-videos>

Dewatering and excavation of the garage continues, and tiebacks continue to be installed into the slurry wall to reinforce the foundation. Once the new Massachusetts Avenue highway entrance is completed, the old ramp will be demolished and the excavation for the garage will move toward the south end of the site. The new Massachusetts Avenue entrance portal is nearly complete. Barring any further delays, it should be striped and opened on April 22. If you have used the 2<sup>nd</sup> Street exit from the highway, you will have noticed that except for intermittent work closings, both lanes were opened to traffic on March 31.



Garage Excavation



### Two Views of the Massachusetts Avenue Highway Entrance

It is time to remember that the Capitol Crossing project will also affect the Historic 1876 Synagogue and the Holy Rosary Catholic Church on 3<sup>rd</sup> Street. I have discussed the journey of the Synagogue in an earlier CONSTRUCTION NOTE, *Moving Buildings*, September 5, 2016, <http://www.law.georgetown.edu/campus-services/facilities/construction-info/index.cfm> and will have more to say about the Jewish Historical Museum and the Jewish community in a later CONSTRUCTION NOTE. I have also written about the old Italian neighborhood served by Holy Rosary parish in an earlier CONSTRUCTION NOTE, *Who Lived Here Before Us*, May 5, 2015, <http://www.law.georgetown.edu/campus-services/facilities/construction-info/index.cfm> and will write more in a another later CONSTRUCTION NOTE. If you have walked along 3<sup>rd</sup> Street, you will have noticed rubble and debris where the Rectory of Holy Rosary once stood. The demolished building was not the first parish rectory. The prior Rectory of Holy Rosary was at the rear of the Church. When the I-395 highway was created, the Church was spared but the rectory had to be removed from the right of way. It was replaced in 1968 with a new building that sat in the middle of what had been F Street. Now, that the “new” rectory has been destroyed, it will be replaced again, this time back behind the Church.



Holy Rosary Rectory (to the right)

### Midway Through Demolition

As I have mentioned many times, the old East End is a historic neighborhood. I recently learned that Varina Davis, the wife of Jefferson Davis, stayed at the home of Dr. Thomas Miller at 246 F Street when she came to Washington in 1866. She came with a petition for President Andrew Johnson seeking better conditions for her husband, the traitorous President of the Confederacy, as he sat in prison at Fortress Monroe near Hampton, Virginia. The house would have stood just east of where the new rectory will stand. If you look up and down F Street, you will see a vista, from Union Station to the Treasury Building, that has been blocked for almost 50 years. L'Enfant designed F Street to provide an unobstructed view from the President's office in the White House to the highlands across the Anacostia River. Folklore has it that President Andrew Jackson, hating the Congress, built the Treasury on its current site to block his view of the Capitol. It also terminated the unobstructed view from his desk. He didn't care. Seventy years later, Daniel Burnham sited the Union Station at its current location, further diminishing the vista.

In mid-March, stone pilasters (the vertical elements in the picture below) and lintels (the horizontal elements in the picture below) were set in place on the north face of 200



### Jet Mist Granite Pilasters and Lintels

Massachusetts Avenue and then installed completely around the building's exterior. The stone is fabricated from Jet Mist granite which was quarried in Rapidan, Virginia. The use of stone in construction projects is not new. Various stones have probably been used for simple habitats since the dawn of humans. For at least 6,000 years, civilizations as diverse as Egyptian, European, Central and South American, and Asian honored their gods and announced their greatness and grandeur by the magnificence of their buildings. The properties of stone – its weight, beauty, and durability, and its resistance to fire and decay – secured its role as the material of choice for ancient builders seeking immortality and the favor of their gods.

The earth provides us with more than 300 types of rocks which are derived from three geological activities. Igneous rock is formed from molten lava which cools causing minerals to crystalize. The most common form of igneous rock is granite which is made from quartz and other minerals that give it its variable range of colors. Granite is favored for construction projects today for the same reasons it appealed to the ancients. It is strong, hard, attractive, and generally available. Sedimentary rock is formed when animal skeletons, clay, earlier rock, silt, sand, and even chemicals in lakes or seas become hard rock due to compaction and pressure from water, wind, weathering, and erosion. Limestone, sandstone, travertine, and onyx, all sedimentary rocks, are used for various purposes in the construction industry. Metamorphic rock originates from either igneous or sedimentary rock when it has been transformed by heat, deformation, and pressure. Some granites and gneiss, but especially marble, are metamorphic rocks used in the construction trades.

The great pyramids and temples of the past were almost all built from stone. Egyptian pyramids were made from limestone, pink granite, basalt, and alabaster. The sarsens of Stonehenge are composed of sandstone and a variety of smaller igneous rocks known as the

bluestones. Although the Romans were fond of concrete, Augustus boasted that he found Rome built of concrete and brick and left it made of marble. As the opulence of Rome grew,



The Pyramid of Cheops



Stonehenge

architects used marble from Carrara and Greece and travertine and limestone from Tivoli to construct their buildings. The Roman Colosseum was built mainly from travertine and the Forum of Augustus and the Temple of Mars Ultor were built using the Italian white Luna marble from Carrara.



The Forum of Augustus



The Colosseum

Architects also used stone to build medieval churches, especially in places like Scotland and Ireland where stone was plentiful. The 11<sup>th</sup> century Romanesque Brechin Round Tower in Angus, Scotland made from granite and the Gothic Cathedral at Chartres, France made of

limestone continued the monumental and religious traditions of building with stone. Simpler buildings were also made from stone. Beehive huts dot the Irish countryside and

Washington has its



Brechin Round Tower



Chartres Cathedral

own stone house built in 1765. Houses similar to the Washington Stone House, built during the same era, can be found throughout the villages, towns, and farms of Colonial America.



Skellig Michael in County Clare, Ireland



## Washington Stone House

Concrete, bricks, and steel ultimately reduced the construction industry's reliance on architectural stone for bearing walls, arches, lintels, and sills. Those materials are more flexible and adaptable and easier to use than stone; and they are less costly. They also require less hard manual labor to erect tall structures. Nonetheless, stone continues to have uses in modern architecture because of its unique nature. Stone connotes immortality and invincibility. Poets and philosophers celebrate its strength, its color, and the intricacies of its vein patterns. As the late Romanian historian and philosopher Professor Eliade Mircea once wrote, "for me, the rock, the slab, and the block of granite spoke of infinite duration, permanence and incorruptibility, almost a form of existence independent of future time." Our rationality and the destroyed magnificence of ancient buildings tell us time wears away all things, even the mountains from whence the stone comes. Yet because its existence surpasses our brief time on earth, we marvel at its strength, its beauty, and its timelessness, and continue to use it to enhance the newer materials that enrich the architectural palette of our own era.

Stone remains a mystery unfolding, even in our modern era. And so it is with Capitol Crossing. Stone will adorn both the exterior and the interior of the buildings. As I noted earlier, pilasters and lintels made from Jet Mist granite have already been attached to the face of the building. The Jet Mist granite, sometimes called Virginia Mist granite, was obtained from a quarry in Rapidan, Virginia although the vein runs through the rock from southwest Virginia all the way to Canada. Capitol Crossing lobbies, elevators, terraces, and bathrooms will also be decorated with various other stones including Lasa Venato, a white marble quarried in several locations in Italy, and Goia marble coming from the famous and historical quarries in Carrara, Italy.

Architects from KRJDA, PGP's lead architectural firm, went to the Jet Mist quarry in Rapidan to view the blocks cut from the rock formation, and to inspect them for veins and other inclusions. Inclusions are usually minerals or rocks trapped within the stone; but they may also be liquids, gases, or other substances. Once the blocks are selected, they are shipped to the North Carolina Granite Company located in Mt. Airy, North Carolina, a company

that has



### Blocks Ready for Inspection

### Inspecting a Slab for Inclusions

been in business for more than 125 years. The blocks are inspected again for unacceptable inclusions before the actual fabrication begins. This is done to set the “criteria” for an acceptable visible range of veining and color in the stone slab. Acceptable blocks are then cut into two-inch thick slabs using a saw that can cut multiple slabs from the block at one time. The saw pictured to the left below can cut sixteen slabs out of one block at the same time. The slabs are



## Slab Cutting Saw

then cut with a

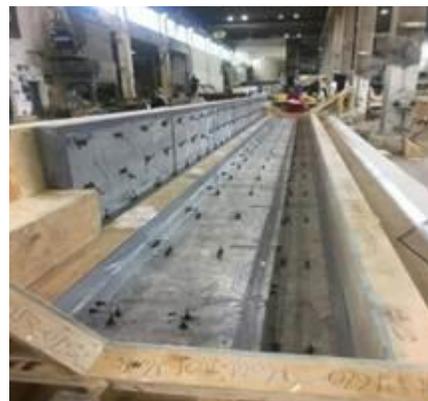
fabrication saw to the specifications for particular uses. The segments on the lintels are five feet long and the segments on the pilasters are four feet long. All the slabs are then passed through a flaming machine. Flaming, or thermaling, sends high temperature to the surface of the slab to roughen the stone. The minerals within the granite all have different heat expansion rates. The heat causes the minerals to expand and flake off roughening the surface to give the stone a natural weathered look.

## Fabrication Sa

Once the stone slabs are fabricated, they journey again, this time to the Arban and Carosi Company in Woodbridge, Virginia. John V. Arban, Sr. and Nicholas Carosi, Sr. were skilled sculptors, plasterers, and stone masons who began two separate companies around 1915. Over time, the companies worked together and eventually merged. Many of Washington's most iconic buildings – the Library of Congress, the Capitol Building, Union Station, the Jefferson Memorial, and the National Gallery of Art – have felt the touch of the company's masons.

The casting of the pilasters and lintels begins with the creation of the form that will shape them. Anchors are set into the slabs which are then laid face down into the forms. Rebar, the reinforcing steel, is placed on top of the stone and

precast concrete plates with anchors are placed on top of the rebar. Finally, concrete is poured into the form to connect the stone slab and create the pilaster or lintel. The finished products are then shipped to the site where



## Crated Stone Ready for Casting

### Slabs Set in Forms

they are installed. Once on site, the pilasters and the lintels are connected to the edges of the building's concrete floors by yet another company, E.E. Marr Erectors, Inc. of Baltimore, Maryland. The entire process, procuring blocks, managing the fabrication of the slabs, creating shop drawings, and calculating the engineering specifications, is supervised by a BBC sub-contractor, Lorton-Stone LLC of Springfield, Virginia.



### Finished Panels Awaiting Delivery

The process for selecting the interior stone begins the same but is slightly less cumbersome since the slabs of marble will not be connected to precast concrete. They will be cut into two- and three-centimeter thick slabs that will be honed or polished rather than flamed to create a higher sheen finish. The Lasa marble will be used primarily for the walls of the lobbies and elevators, while the floors will be made of Jet Mist. The Goia marble will be used for the countertops in the forty-six bathrooms throughout the buildings. The Jet Mist will also be used for the bathroom floors.

Even in our technological age, the immutability of stone continues to fascinate. It provides an eye to the ancient world and offers us a glimpse into the future. It both precedes and surpasses our own mortality, a mystery that we can technically explain but never truly unlock.

Stone is both matter and essence, possessing a soul deep into antiquity, back to the beginning of time.

James O'Hern, a New York poet and author of the book, *HONORING THE STONES*, captures this mystery in his poem, *Stone Mason*.

My stonemason John says  
he uses Elberton granite from Georgia  
It has the best grain and lasts the longest  
How long is long I ask  
Oh he says a thousand years

I want more than hard gray stone  
to guard her silence  
I want stone that stays alive  
a megalith jammed deep into earth  
an antenna to amplify the signals  
emitted from her ash and bone

I went to Ireland  
looking for the perfect stone  
found stone cottages and monuments  
mountains and fields of stone  
continuous rows of stonewalls

wound round the island like an offering

I found stone carvings of mermaids  
and ancient unnamed river gods  
a Sheela-na-Gig I thought I recognized  
having seen her name  
on the walls of a cave in the Dordogne  
along with her portrait cut and shaped  
on the rounded surface of soft white stone

## **SOURCES**

Chad Brophy from BBC Construction contributed to this CONSTRUCTION NOTE and taught me the nuances of stone fabrication.

Abby Yochelson, Reference Librarian at the Library of Congress, helped sort through the many wonderful poems about stone and helped me select Mr. O'Hern's poem for this CONSTRUCTION NOTE.

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