



PURPOSE OF THE CEEES JUNIOR CLASS ANNUAL FIELD TRIP: To expose students to some of the biggest and most innovative infrastructure design and construction efforts going on in the United States; to provide an opportunity to see first-hand that the need to rebuild our often failing infrastructure is huge; to learn about the complexity of the structural, transportation, water resources, and environmental projects that keep our nation productive, efficient and healthy; and to interact one on one with project and design engineers. These trips help students see the wide range of opportunities available to become innovative leaders and also help connect the classroom to the outside world.



WEDNESDAY, NOVEMBER 1

photo credit: <https://www.nycurbanism.com/blog/2019/10/15/270-park-rendering>

Wear: Comfortable clothes, comfortable walking shoes

Pack to bring along: layers for clothing, construction attire (long pants, rain jacket, coat, closed toe sturdy shoes or boots), also comfortable walking shoes, nicer clothes for Mass on Sunday, government issued ID, **PPE bag**, food/drinks/snacks and money for food for on the bus along the way and during open times in Manhattan. There is a good amount of luggage space under the bus, so you can plan to put luggage there. A small bag or backpack is fine on the bus.

5:00am

Bus departs to NYC, meet at McKenna Hall (across from Morris Inn)

(13 hour trip, 11 ½ hours of driving time)

7:30pm

Dinner at Katz's Delicatessen

205 E. Houston Street, New York, NY 10002

Founded in 1888, one of New York's oldest kosher-style delis, each week serves 15,000 pounds of pastrami, 8,000 pounds of corned beef, 2,000 pounds of salami and 4,000 hot dogs.



By Urbankayaker - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=36134844>

Note about the food at Katz's deli: Katz's, founded in 1888, is one of New York's oldest kosher-style delis, and we will have a section at the back of the deli for our group. Once seated, we will be served assorted corned beef, pastrami, and other meat sandwiches, and assorted sides and salads served family style. For those who prefer vegetarian, you can order egg salad or tuna salad, and the tossed green salad, omelets, knishes, latkes, potato salad, coleslaw and macaroni salad are also available. When we walk into Katz's deli, each person will receive a small ticket. This ticket would normally be used to get items at the counter, stamped at that point, and then you would pay on the way out. We've arranged for a group seating and group rate. Please hold onto this ticket, however, as we will need to collect them to present at the door when we leave.

8:30pm-9:00pm

Bus to Brooklyn Bridge (15 minutes from Katz's) and walk to midway point of bridge for views of Manhattan and to see this iconic bridge up close, back to bus by 9:30pm



<https://triptins.com/walking-the-brooklyn-bridge/>



BROOKLYN BRIDGE

Considered a brilliant feat of 19th-century engineering, the Brooklyn Bridge was a bridge of many firsts. It was the first suspension bridge to use steel for its cable wire. It was the first bridge to use explosives in a dangerous underwater pressurized containment structure called a caisson. At the time it was built, the 3,460-foot Brooklyn Bridge was also crowned the longest suspension bridge in the world. But the Brooklyn Bridge was plagued with

its share of problems. Before construction even began, the bridge's chief engineer, John A. Roebling, died from tetanus which resulted from a construction site accident. The project was taken over by his son, Washington Roebling. Three years later, Roebling developed a crippling illness called caisson's disease, known today as "the bends," caused by a person going too quickly from the pressurized caisson to the surface. Bedridden but determined to stay in charge, Roebling used a telescope to keep watch over the bridge's progress. He dictated instructions to his wife, Emily, who passed on his orders to the workers. During this time, an unexpected blast damaged one caisson, a fire damaged another, and a cable snapped from its anchorage and crashed into the river. Despite these problems, construction continued at a feverish pace. By 1883, 14 years after it began, Roebling successfully guided the completion of one of the most famous bridges in the world -- without ever leaving his apartment. The bridge opened to the public on May 24, 1883, at 2:00 p.m. A total of 150,300 people crossed the bridge on opening day. Each person was charged one cent to cross. The bridge opened to vehicles on May 24, 1883, at 5:00 p.m. A total of 1,800 vehicles crossed on the first day. Vehicles were charged five cents to cross. www.pbs.org/wgbh/buildingbig/wonder/structure/brooklyn.html According to the New York City Department of Transportation, currently an average of over 116,000 vehicles, 30,000 pedestrians, and 3,000 cyclists travel over the bridge each day.



9:30pm Bus to Hilton Garden Inn New York/Midtown Park Avenue, 45 East 33rd Street

10:00pm Check-in to hotel
 Bus driver will be staying in New Jersey. All items must be taken off of bus!! We will not see the bus again until the morning.

Rooming List – may the first person on the list in each room pick up the room keys upon arrival at hotel!

Notre Dame rooming List	Confirmation
1 Akerman, Jacqueline-Cernicky, Ashley- Kane, Lauren- McGuckin, Megan	3423693619
2 Braccia, Lucas- DePaola, Michael- Hillenmeyer, Samuel- Mahoney, Ryan	3425810115
3 Chen, Liz-Marquez, Serra- Speyrer, Emma- Sullivan, Katherine	3428180714
4 Long, Caroline- Que, Elena- Quinn, Emma	3430694574
5 Gonzalez Rodriguez, Angel Hollenback, Noah Nicholson, Nolan Wang, David	3424872126
6 Christenson, Emmett Corcoran, Daniel Heffernan, William	3425073212
7 Carreon, Armani Castronovo, Alexandra Nguyen-Tran, Joanna	3423848701
8 Almeida, Santana Eglinton Manner, Macy Handt, Amanda Vandavelde, Riley	3425672103
9 Bolster, Diogo	3429481443
10 Weldon, Brad	3424720529
11 Bartolini, Andrew	3426452805
12 Seh, Rolf Tejaswi, Aman	3424095791
13 Duarte, Camila Martins, Henrique	3423939386
14 Westerink, Diane Westerink, Joannes	3432405811
15 Abujawdeh, Liam, arrive 11/2, depart 11/3	3440835659
Mike and Reba Ryan staying elsewhere	

Trip Coordinators: Diane Westerink 574-286-9696; Joannes Westerink 574-532-3160

THURSDAY, NOVEMBER 2

Are you in Afternoon Group One or Two? The groups will split for the afternoon.

Wear: BOTH groups will need PPE and construction attire for morning bridge site visit, and Group Two will need construction attire and PPE for the afternoon Severud visit.

Wear for dinner: casual clothes, comfortable walking shoes

FOR THURSDAY/FRIDAY AFTERNOON SPLIT GROUPS

Group One	Group Two
Braccia, Lucas S.	Akerman, Jacqueline R.
Christenson, Emmett	Chen, Liz
DePaola, Michael R.	Gonzalez Rodriguez, Angel
Eglinton Manner, Macy	Hillenmeyer, Samuel B.
Handt, Amanda E.	Kane, Lauren G.
Hollenback, Noah R.	Mahoney, Ryan J.
Long, Caroline R.	Nicholson, Nolan A.
Marquez, Serra M.	Speyrer, Emma C.
Quinn, Emma G.	Wang, David
Sullivan, Katherine A.	Carreon, Armani A.
Almeida, Santana B.	Cernicky, Ashley J.
Castronovo, Alexandra	Heffernan, William E.
Corcoran, Daniel J.	Nguyen-Tran, Joanna T.
McGuckin, Megan A.	Vandavelde, Riley M.
Que, Elena C.	Westerink, Joannes
Westerink, Diane	Bolster, Diogo
Weldon, Brad	Tejaswi, Aman
Duarte, Camila	Ryan, Mike
Martins, Henrique	Ryan, Reba
Bartolini, Andrew	Seh, Rolf
Abujawdeh, Liam	

6:00am-7:45am Continental breakfast available in hotel, let attendant know you are with the Notre Dame engineering group and they will find your name on the list

7:45am Be ready to board bus once it arrives.

8:00am Both Groups Bus departs for Portal North Bridge, 500 Supor Blvd, Harrison, NJ

9:00am – 12pm Job site tour followed by project presentation and Pizza Lunch



Portal North Bridge replacement in Hudson County, New Jersey

Photo Credit: NJ Transit

PORTAL NORTH BRIDGE REPLACEMENT: Construction began in August 2022 on the Portal North Bridge replacement, a long-delayed replacement of an 111-year-old rail bridge connecting Secaucus and Kearny, New Jersey above the Hackensack River. The project is expected to last approximately five and a half years. The existing two-track movable swing-span bridge was completed by the Pennsylvania Railroad in 1910. Prior to the pandemic, the train span was the busiest in the Western Hemisphere, carrying more than 450 NJ Transit and Amtrak Trains and roughly 200,000 passengers daily. The aging bridge has been the cause of delays, particularly when the span malfunctions while opening and closing for maritime traffic.

The new Portal North Bridge will be a fixed span that will not open or close, to eliminate the risk of malfunction. The bridge will rise 50 feet over the river and span nearly 2.5 miles of the Northeast Corridor. In October 2021, NJ Transit approved a contract with Skanska and Traylor Bros. The joint venture contract is valued at more than \$1.56 billion, the largest award in NJ Transit's history. The contract costs will cover construction of retaining walls, deep foundations, concrete piers, structural steel bridge spans, rail systems, and demotion of the existing bridge. (Sebastian Morris, "Officials Celebrate Groundbreaking For Portal North Bridge in Kearny, New Jersey," New York YIMBY, August 6, 2022, <https://newyorkyimby.com/2022/08/officials-celebrate-groundbreaking-for-portal-north-bridge-in-kearny-new-jersey.html>)

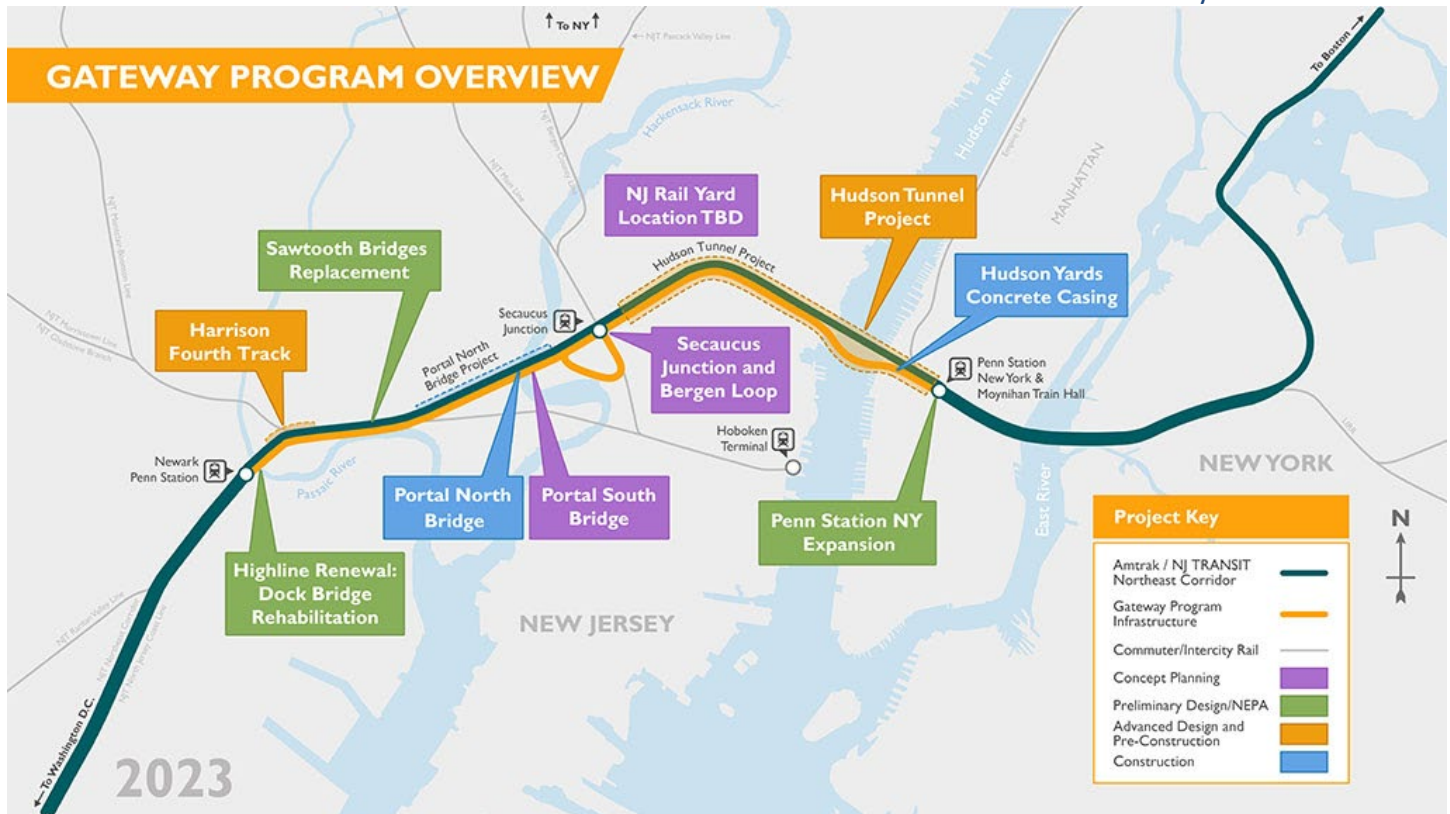
The new bridge will allow trains to travel at 90 mph, which is 30 mph faster than the current limit. While still only two tracks, there is a plan for a Portal South Bridge, which is in the planning stages.



Aerial rendering of the new Portal North Bridge, courtesy of the NJ Governor's Office

The Portal North Bridge is part of the Gateway Program, a larger effort to double rail capacity between Newark, New Jersey and New York City to improve the most congested 10-mile section of the Northeast Corridor. The series of Gateway projects also includes plans to create two new rail tunnels under the Hudson River and rehabilitate existing 110-year old tunnels. ("Skanska/Traylor Bros. chosen for \$1.6B Portal North Bridge project in New Jersey," ConstructionDive, October 19, 2021, <https://www.constructiondive.com/news/northeast-corridor-nj-transit-rail-skanska-traylor-bros-chosen-16b-portal-north-bridge-project/608479/>)

The Gateway Program is a series of rail infrastructure projects that will improve the most congested 10-mile section of the Northeast Corridor, adding needed resiliency and creating the capacity for a doubling of passenger trains under the Hudson River into New York – Penn Station – the nation’s busiest rail facility.



<https://www.amtrak.com/gateway-program>

12pm – 12:15pm Depart for Midtown

Once back in Midtown, groups will split as follows:

Group One:

1:15pm Walk to Langan design offices, 360 W 31st St. 8th fl, expected arrival time is 1:30pm

1:30pm – late afternoon Langan office visit and walk part of the High Line

Walk back to hotel, free time until dinner

Group Two:

1:15pm Walk to Severud, 469 Seventh Ave (between W35th & W36th)

1:30pm – late afternoon Severud Associates Consulting Engineers, 469 Seventh Ave for an overview presentation, followed by 25 minute walk to construction site visit of 270 Park

Walk back to hotel, free time until dinner

LANGAN, an engineering and environmental consulting firm, was founded as a geotechnical specialty firm in 1970. Their projects include airports, brownfield redevelopment, colleges and universities, energy, environmental remediation, environmental compliance, hospitals and healthcare, infrastructure, residential, renewable energy, tall buildings, waterfront and marinas, among others. The company provides services in Site/Civil, Geotechnical, Environmental, Earthquake/Seismic, Demolition, Traffic and Transportation, Surveying and 3D Scanning, Information Management, Landscape Architecture and Planning, Environmental Planning, Natural Resources and Permitting.



SUSTAINABILITY: Langan is a leader in providing sustainable engineering services on urban infill, brownfield, and landfill development projects. These projects help clients and

communities reuse impacted lands and combat urban sprawl by allowing communities to densify from within instead of expanding. The sustainability benefits are many – from reducing traffic, lowering reliance on cars, preserving undeveloped open space, reducing pollution and carbon emissions, and promoting health and quality of life.

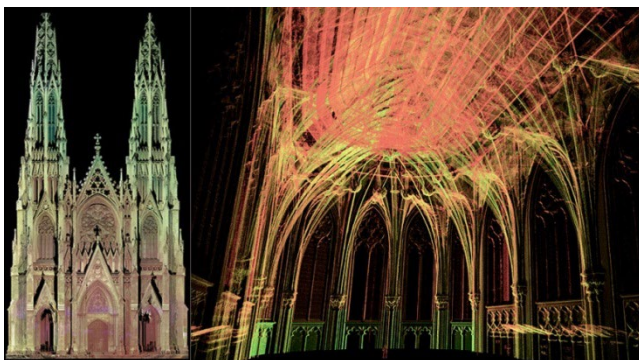
Projects include LEED site feasibility analysis, air quality assessments, ecological wastewater treatment design, low impact stormwater design and master planning, brownfield redevelopment, green roof design, high efficiency site lighting and irrigation design, wildlife and habitat evaluations, wetland delineation, design, and mitigation, geothermal feasibility studies and system design support, landfill post-closure redevelopment, carbon footprinting, green and sustainable remediation, climate change resiliency. <https://www.langan.com/sustainability-2/>



We will learn about some of Langan’s ongoing work, but here are a couple of their projects involving places that we will see on this trip, and after the office visit, we will walk along portions of the High Line near Hudson Yards

LANGAN

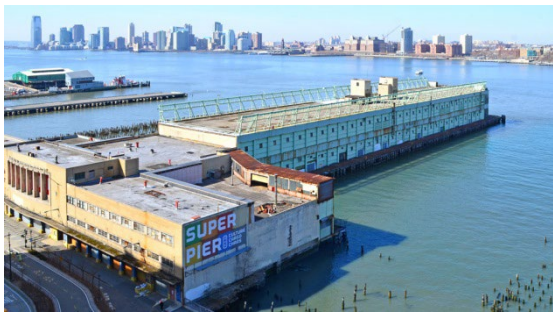
ENGINEERING & ENVIRONMENTAL SERVICES



St. Patrick’s Cathedral publicly announced its restoration in 2012 after years of pollution critically deteriorated both the interior and exterior. Langan performed 3D laser scans of the façade, sanctuary, and attic spaces to document the conditions and model the building’s unique layout. This highly detailed data saved the project team time and money, and the deliverables were regularly compared to the base survey to maintain accuracy.



An abandoned railroad structure spanning 19 blocks on Manhattan's West Side, the High Line overpass, became the nation's first elevated park. Langan site/civil engineers assisted with the design and permitting of three plazas within the High Line (the Gansevoort Street, 19th Street, and 10th Avenue Square plazas). Working with the developers, Langan obtained DEP drainage plan permits to connect drains for the project areas and at street level for the length of the high line structure. Langan environmental engineers provided remediation design and oversight.



Pier 57, an approximately 560,000-GSF pier, a once abandoned shipping and passenger terminal, is now the site for public green space.

rooftop beach, rock-climbing wall, and 200 stores and businesses. Langan's environmental engineers performed extensive due diligence services for this location, including a Phase I Environmental Site Assessment and Phase II Environmental Site Investigation. As a result of flooding associated with Superstorm Sandy, Langan provided an emergency spill response team when six above-ground storage tanks became buoyant and spilled approximately 31,000-gallons of fuel oil into the pier's Head House caisson and elevator pits.



Hudson Yards, the largest private development in the US opened in 2019, and was constructed on 28-acres over a working rail yard with 300 caissons supporting the platform and buildings. Langan supported this redevelopment since 2002.



The highest sky deck in the Western Hemisphere is located at 30 Hudson Yards. The Edge looks down 100 stories from a glass floor

<https://www.hudsonyardsnewyork.com/discover/edge>

HIGH LINE, Out of Use Railroad Trestle to Public Landscape (from *thehighline.org*)

The High Line is a public park built on a historic freight rail line elevated above the streets on Manhattan's West Side. The High Line is now one continuous 1.45 mile long greenway that features 500+ species of plants and trees. High Line Art commissions and produces 30+ public art projects each year, including site-specific commissions, exhibitions, performances, and video programs.



1934 As part of the West Side Improvement Project, the High Line opens to trains. It runs from 34th Street to St John's Park Terminal, at Spring Street. It is designed to go through the center of blocks, rather than over the avenue, carrying goods to and from Manhattan's largest industrial district.



1980s Following decades-long growth in the interstate trucking industry, the last train runs on the High Line in 1980, pulling three carloads of frozen turkeys. A group of property owners lobbies for demolition while Peter Obletz, a Chelsea resident, activist, and railroad enthusiast, challenges demolition efforts in court.



1999-2014 From conception by two residents of the High Line neighborhood, Joshua David and Robert Hammond, to planning studies, to ideas competition, to design selection, to ownership transfer to the City, to groundbreaking, and finally

development in four stages/sections, the dream becomes a reality. **SUSTAINABLE PRACTICES:** Self-seeded grass, trees and other plants grew on the out-of-use elevated rail track during the 25 years after the trains stopped running. These grasses and trees inspired the planting designer Piet Oudolf to “keep it wild.” Nearly half of the plant species and cultivars planted on the High Line are native to the United States.



HOW ARE THE PLANTS WATERED? The High Line’s green roof system is designed to allow the plants to retain as much water as possible. In addition, there is an irrigation system installed with options for both automatic and manual watering.



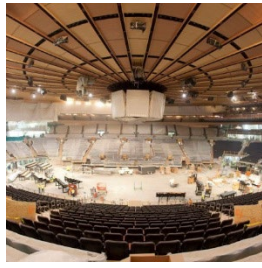
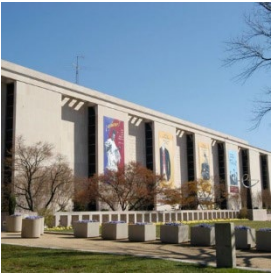
HOW IS THE HIGH LINE SUSTAINABLE? The High Line is inherently a green

structure. It re-purposes a piece of industrial infrastructure as a public green space. The High Line landscape functions essentially like a green roof; porous pathways contain open joints, so water can drain between planks and water adjacent planting beds, cutting down on the amount of storm-water that runs off the site into the sewer system. The High Line has on-site **COMPOSTING FACILITIES**, an **INTEGRATED PEST MANAGEMENT PROGRAM**, uses **GREEN SEAL CERTIFIED CLEANING SOLUTIONS** and **POST-CONSUMER PAPER PRODUCTS**.



SEVERUD ASSOCIATES Consulting Engineers P.C. Started in 1928 by Fred N.

Severud, an engineer known for his skill at devising structural solutions for damaged masonry on the masonry and brick facades of buildings around NYC. Later the firm became known for its bold and ingenious designs, developing a reputation for engineering innovative structural designs for complex and unusual buildings. Renowned architects such as Eero Saarinen, Mies van der Rohe, Charles Luckman, and Philip Johnson became faithful clients. Together, these architectural innovators and the firm’s talented engineers designed many iconic structures, including the Gateway Arch in St. Louis, the Seagram Building and Madison Square Garden in NYC, and the Crystal Cathedral in Garden Grove, California. Severud Associates has also designed more buildings on the National Mall in Washington, DC than any other structural engineering firm. Recent notable projects include One Vanderbilt, 20 Times Square, the Bank of America Tower at One Bryant Park, and the Transformation of Madison Square Garden, all in New York City; the Novartis East Hanover Campus and redevelopment of Terminal A at Newark Liberty International Airport, both in New Jersey; and the Los Angeles Forum renovations in California.



270 Park Avenue is set to be the new state-of-the-art global headquarters for JPMorgan Chase. The 1,388-foot (423 meter), 60-story skyscraper will be New York City's largest all-electric tower with net zero operational emissions and exceptional indoor air quality that exceeds the highest standards in sustainability, health and wellness. It will help define the modern workplace with 21st century infrastructure, smart technology and 2.5 million square feet of flexible and collaborative space that can

<https://www.tinkercad.com/things/4p3nVanpcop-270-park-avenue>

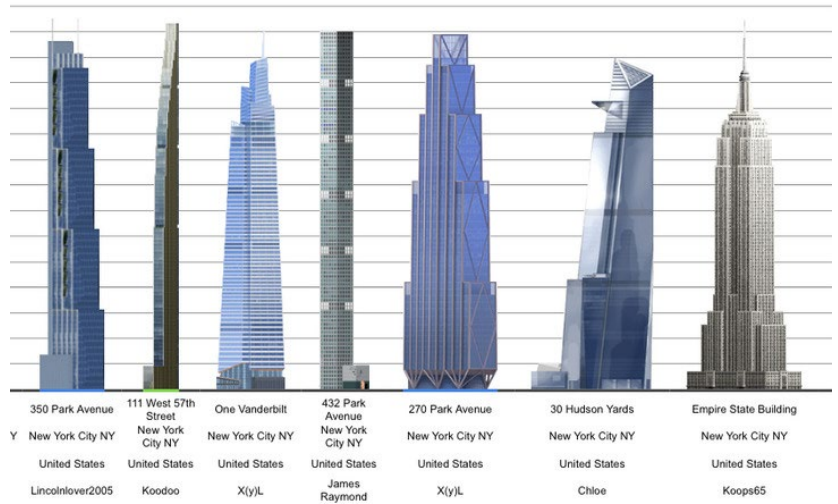
easily adapt to the future of work. The new building will house up to 14,000 employees – replacing an outdated facility designed in the late 1950s for about 3,500 employees. It will offer 2.5 times more outdoor space on the ground level of Park and Madison Avenues, featuring wider sidewalks and a large public plaza on Madison Avenue with natural green space and other amenities geared toward the residents, workers and visitors who frequent the neighborhood on a daily basis. The concept for the new design was to create a timeless addition to Park Avenue, which celebrates the city's iconic architectural history and serves as a powerful new symbol for the next generation of office towers in New York. Using a state-of-the-art structural system to negotiate the site constraints below and at ground level, the innovative fan-column structure and triangular bracing allow the building to touch the ground lightly across the entire block. By lifting the building about 80 feet (24 meters) off the ground, it extends the viewpoint from the Park Avenue entrance through to Madison Avenue. **270 Park Avenue will be 100 per cent powered by renewable energy** sourced from a New York State hydroelectric plant. In addition to operating on net zero carbon emissions, the building will use state-of-the-art building technology and systems to ensure it operates as efficiently as possible, including intelligent building technology that uses sensors, AI and machine learning systems to predict, respond and adapt to energy needs; advanced water storage and reuse systems to reduce water usage by more than 40 per cent; triple pane glazing on the façade and automatic solar shades connected to HVAC systems for greater energy efficiency; and outdoor terraces featuring natural green space and plantings. **The project also recycled, reused or upcycled 97% of the building materials from the demolition** – far exceeding the 75% requirement of the leading green building standard.

<https://www.fosterandpartners.com/projects/270-park-avenue/> This building's supertall status comes from 700,000 square feet of unused development rights purchased from nearby landmarked properties, as the 2017 Midtown East Rezoning plan allows. JP Morgan acquired 680,000 square feet of air rights from Grand Central



270 Park Avenue, Photo by Michael Young

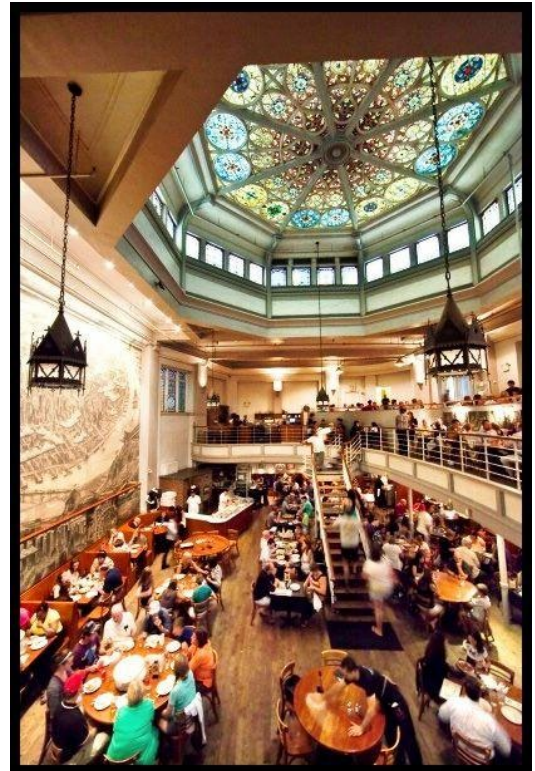
and another 50,000 square feet from St. Bartholomew's Episcopal Church. Proceeds from the air rights will then be used to finance the city's public space improvements in Midtown.



Both Groups:

7:30pm Meet in hotel lobby to walk to John's Time Square, 260 W 44th Street for dinner

8:00pm – 9:30pm Dinner at John's of Times Square, 260 W 44th Street
(we all have to arrive as a group in order to be seated)



Trip Coordinators: Diane Westerink 574-286-9696; Joannes Westerink 574-532-3160

FRIDAY, NOVEMBER 3

Are you in Group One or Two for the afternoon split?

Group One will need construction attire with PPE in the afternoon, so you can wear construction attire for the full day, or wear clothes appropriate for an engineering office visit in the morning, and then take a quick walk back to the hotel to change for the afternoon and pick up PPE.

Group Two can wear clothes appropriate for the engineering office visits in the morning and afternoon.

For best flow for our morning office visit to HNTB, we will form into three groups as below.

6:00am-8:15am Continental breakfast available in hotel, let attendant know you are with the Notre Dame engineering group

8:30am All Leaving from lobby for 5 minute walk to the Empire State Building to HNTB's design offices – need QR code for entry – found in text

9:00am What to do upon entry to Empire State Building: Go to the elevator bank with the sign which shows "55 to 67." Scan the QR code from your text/email, proceed to the keypad and enter 62, which will then show which elevator to take and go up to the 62nd floor

Make a right after you enter the office, go straight to the end, the big conference room facing you on the left is "Discover conference room" where Ted Zoli will give welcome remarks to start the program.

9:00am – 11:30am HNTB design offices presentations

We divide into three groups following the introductions:

FOR FRIDAY MORNING - HNTB 3 GROUPS

Group One	Group Two	Group Three
Braccia, Lucas S.	Akerman, Jacqueline R.	Christenson, Emmett
DePaola, Michael R.	Gonzalez Rodriguez, Angel	Chen, Liz
Eglinton Manner, Macy	Hillenmeyer, Samuel B.	Handt, Amanda E.
Hollenback, Noah R.	Mahoney, Ryan J.	Kane, Lauren G.
Long, Caroline R.	Nicholson, Nolan A.	Marquez, Serra M.
Quinn, Emma G.	Wang, David	Speyrer, Emma C.
Sullivan, Katherine A.	Carreon, Armani A.	Almeida, Santana B.
Castronovo, Alexandra	Heffernan, William E.	Cernicky, Ashley J.
Corcoran, Daniel J.	Nguyen-Tran, Joanna T.	McGuckin, Megan A.
Que, Elena C.	Westerink, Joannes	Vandevelde, Riley M.
Westerink, Diane	Tejaswi, Aman	Bolster, Diogo
Duarte, Camila	Ryan, Mike	Weldon, Brad
Martins, Henrique	Ryan, Reba	Bartolini, Andrew
	Abujawdeh, Liam	Seh, Rolf

11:30am – 12:30pm Box lunches in HNTB Spark Café 58th floor

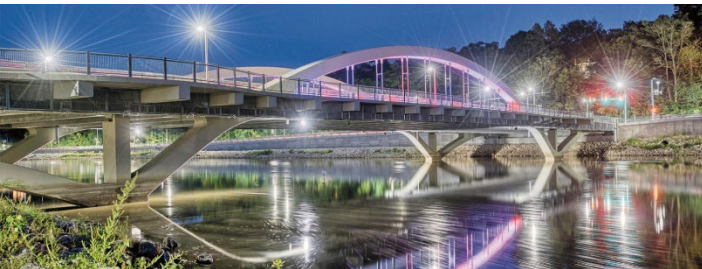
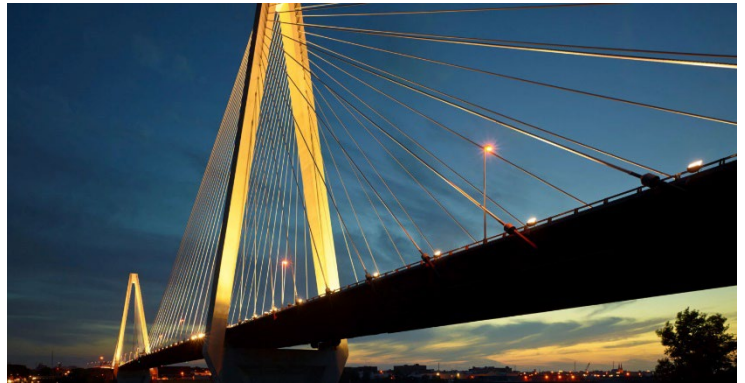


HNTB

HNTB CORPORATION is an architecture, engineering, planning, and civil engineering consulting management firm that was founded in 1914. Their areas of expertise range from architecture, aviation, bridges, construction management, design build, environmental planning, highways, intelligent transportation systems, program management, tolls, rail and transit, tunnels and water. HNTB's bridge practice includes experts in accelerated bridge construction, cable-stayed, truss, girder, movable, suspension, pedestrian, transit, segmental, reconstructed and cantilever bridges.



<https://www.hntb.com/project-list-bridges/>



At completion of HNTB visit/lunch, groups will split for the afternoon.

Group One:

- 12:30pm** **Walk (quickly) to hotel to pick up PPE and change into construction attire**
- 1:00pm** **Walk to Severud, 469 Seventh Ave (between W35th & W36th)**
- 1:30pm – late afternoon** **Severud Associates Consulting Engineers, 469 Seventh Ave for an overview presentation, followed by 25 minute walk to construction site visit of 270 Park**
- Walk back to hotel, free time for evening**

Group Two:

- 1:00pm** **Leisurely walk to Langan design offices, 360 W 31st St. 8th fl**
- 1:30pm – late afternoon** **Langan office visit and walk part of High Line**
- Walk back to hotel, free time for evening**

Open time this evening.

Homework time, relaxation or city exploring.

Some suggestions of things to do on page 21

Keep safety in mind! Don't go out alone, go out only with others, be extra careful with traffic and all crossings, and keep in touch with your hotel mates about your whereabouts!

Trip Coordinators: Diane Westerink 574-286-9696; Joannes Westerink 574-532-3160

SATURDAY, NOVEMBER 4

Wear: *comfortable clothes (jackets/raingear if needed) for outside walking*

- 6:00am-7:45am** Continental breakfast available in hotel, let attendant know you are with the Notre Dame engineering group
- 8:00am** Depart for walk to Grand Central Madison (under Grand Central Terminal) to take Long Island Railroad to Rockville Centre. We will be visiting Smith Pond restoration site with CEEES alum Robert Wachter and other engineers from WSP
- 8:55am – 9:34am** Train to Rockville Center – towards Babylon. Rockville Centre is the 4th stop. It will be Grand Central, Woodside, Jamaica, Lynbrook, then Rockville Centre.
- 9:34 – 11:30** Walk to and tour Smith Pond Rehabilitation project with WSP



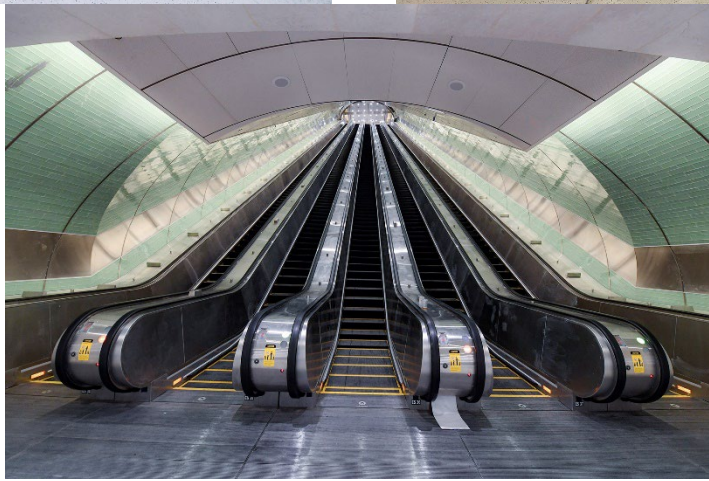
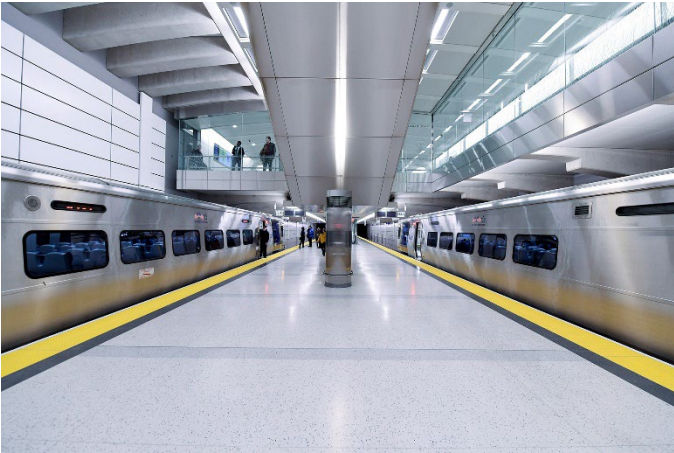
THE TRAIN STATION UNDER GRAND CENTRAL TERMINAL: GRAND CENTRAL MADISON EAST SIDE ACCESS – LONG ISLAND RAILROAD

East Side Access was the MTA’s largest capital project, providing the Long Island Railroad riders with 40 miles of new tracks, a new terminal beneath Grand Central, and the modernization of the busiest intersection of passenger train lines in North America. The Long Island Rail Road is the busiest commuter railroad in North America, carrying approximately 200,000 customers each weekday on 947 trains. **Notre Dame’s CEEES Juniors had the fortune to visit the Queens site in 2011, and the Caverns and project under Grand Central Terminal in 2014, 2015, 2016, 2017, 2018, 2019.**



In 1998, the decision was made to complete the East Side Access project. In 2001 the Environmental Impact Statement was approved and construction began. Tunneling between Manhattan and Queens began in 2007, and completion of the project has just been this year – 2023.

Long Island Rail Road service to **Grand Central Madison**: The new LIRR service to Manhattan's east side is the most transformative change to Long Island Railroad service in over a century. Two new tunnels between Manhattan and Queens have increased train capacity to and from New York City by 50%.



Notre Dame Juniors visited the East Side Access project in Queens 2011

We went back in **2014** and **2015** but weren't allowed to take any photos, but were sent these from the MTA after our **2016** visit.





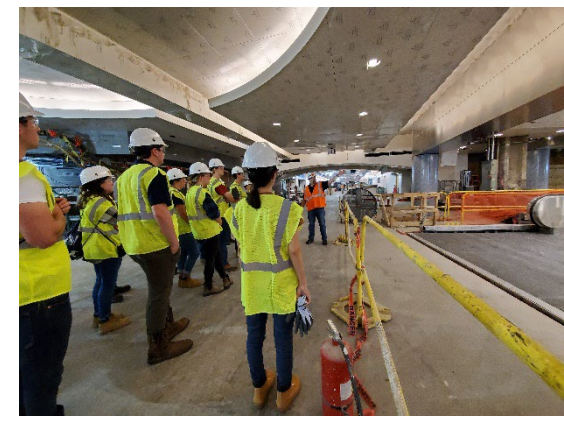
Notre Dame Juniors visited the East Side Access project again in 2017



2018



2019



OUR DESTINATION: ROCKVILLE CENTRE



and NEW YORK STATE GOVERNOR'S OFFICE OF STORM RECOVERY SMITH POND REHABILITATION PROJECT

Louis Berger and Assoc., P.C., a [WSP](#) Company (WSP), was contacted by the Governor's Office of Storm Recovery (GOSR) to provide design phase services, inclusive of final contract documents, for the design of various site and ecological improvements at the Morgan Days Park in the Village of Rockville Centre (Village) for GOSR and the Housing Trust Fund Corporation (HTFC). The project was identified and is known as the Smith Pond Rehabilitation Project in the Rebuild by Design Living with the Bay Resiliency Strategy Summary Report. GOSR/HTFC received a federal grant to assist New York State in the implementation of this project.



The improvements included installation and construction of floodwalls and floodgates, an access road to an existing weir, rehabilitation of the weir and surrounding area, a fish ladder, porous pavement parking lots, greenway path enhancements, improvements at the northern overlook and the culvert headwall, and removal of invasive plant species and planting of native vegetation. The 100% design includes the following:

- Construction of floodwalls and a floodgate designed to keep the 100-year flood elevation of the pond within the park property.
- An access road to provide improved access to the existing weir for routine maintenance.
- Weir improvements to repair areas of weakness and increase the life and longevity of the structure. Debris and sediment removal with a surface repair of the receiving concrete pad downstream of the weir.
- Timber bulkhead replacement with a concrete bulkhead around the weir to remove the deteriorated structures.
- A fish ladder to improve fish habitat in the river by allowing for migration of American eel and herring.
- Porous pavement in the existing parking lots to provide water quality treatment and groundwater infiltration.

- Greenway enhancements to allow for a continuous pedestrian passage from north to south in the park along the pond and to the fish ladder for public viewing.
- Pedestrian outlook enhancements to provide a public viewing and fishing location in the northeast section of the pond.
- Removal of invasive plants species to improve the ecological health of the pond and its buffer, allowing existing native plantings to thrive. Areas were replanted with native species.
- Structural repair of the upstream culvert headwall and wing walls to improve longevity and park aesthetics;
- The incorporation of bollard lighting and electrical systems along the Greenway.
- Additional security system conduit along the Greenway and within the park for the Village to upgrade their security system.



11:54pm – 12:31pm

LIRR train back to Grand Central.

Once back at Grand Central, you can find lunch in the food court, and head off for some city exploring. This will be your last open time period of the trip, as on Sunday we'll be checking out of the hotel, going directly to Mass, and then heading back to campus immediately following Mass. So if there is any shopping or exploring you want to do, do it today!



**Open time once back at Grand Central.
Homework time, relaxation or city exploring.**

Keep safety in mind! Don't go out alone, go out only with others, be extra careful with traffic and all crossings, and keep in touch with your hotel mates about your whereabouts!

Trip Coordinators: Diane Westerink 574-286-9696; Joannes Westerink 574-532-3160

A Few Places You Might Consider Visiting

<p><u>Staten Island Ferry</u> free views city, bridges, <u>Statue of Liberty</u></p> 	<p><u>Ellis Island and Guastavino Tile Arches</u> in the Registry Room</p>  <p>Guastavino tiles can be found at over 250 locations in NYC!</p>	<p><u>One World Trade Center</u> (amazing observation deck)</p> 	<p><u>Summit One Vanderbilt</u></p>  <p>1200 feet above the sidewalk</p>	<p><u>National September 11 Memorial and Museum</u></p> 
<p><u>Metropolitan Museum of Art</u></p>  <p>or <u>Museum of Modern Art</u></p> 	<p><u>Walk through Central Park</u></p> 	<p><u>Skinny high rise buildings</u></p> 	<p><u>Top of the Rock</u> – spectacular views – 3 levels – you can see St. Patrick’s Cathedral, Yankee Stadium, WTC, Brooklyn Bridge, Central Park – civil engineering in every direction!</p> 	<p><u>The Newtown Creek Digester Eggs and nature walk, Greenpoint, Brooklyn</u></p> 
<p><u>Moynihan Train Hall</u></p>  <p>Expansion of Penn Station, city’s former main post office</p>	<p><u>American Museum of Natural History</u></p> 	<p>New York’s Catholic Heritage: <u>St. Peter’s Roman Catholic Church, St. Elizabeth Ann Seton Shrine, Tammany Hall, Lower East Side Tenement Museum</u></p> 	<p><u>Grand Central Terminal</u></p> 	<p><u>Catacombs Tour of Old St. Patrick’s Cathedral</u></p> 

SUNDAY, NOVEMBER 5

Wear: *Clothes for Mass*

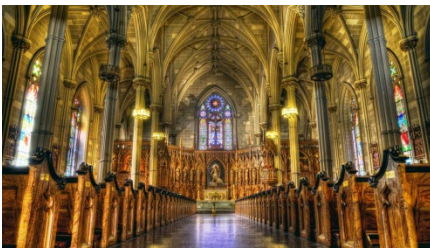
Bring: *All luggage, everything from your room, we'll be checking out of hotel before we head to Mass. We will be stopping when we are on our way back to campus, and you can change clothes then if you would like.*

6:00am – 8:15am Continental breakfast available in hotel, let attendant know you are with the Notre Dame engineering group

8:30am Meet in lobby for departure! *with all luggage – checking out of hotel to board bus for 15 minute drive to St. Patrick's Cathedral*

9:00am Mass at St. Patrick's Cathedral

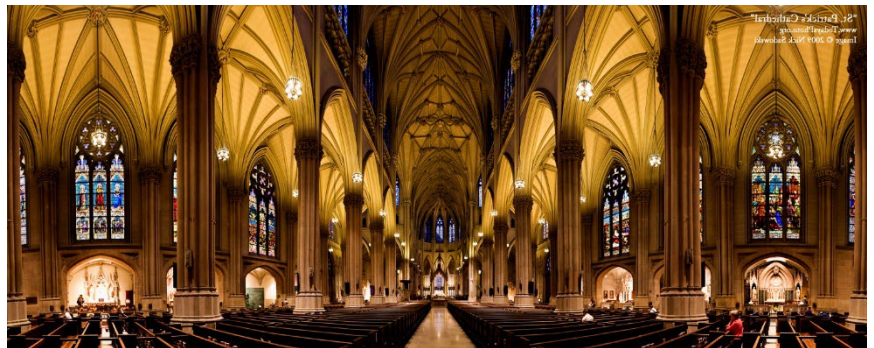
New York City has two Saint Patrick's Cathedrals



The Basilica of St. Patrick's Old Cathedral, located in lower Manhattan, is the original Cathedral of the Archdiocese of New York and was built in 1840 to replace the original wood frame building of St. Peter's Church, the first Catholic house of worship in the city. St. Peter's was built in 1785 at a time when there were only two hundred Catholics and one priest in the city. In 1805, Mrs. Elizabeth Bayley Seton, founder of the Sisters of Charity in this country, was converted to Catholicism and made her profession of faith, received her first communion, and was confirmed in the old Saint Peter's Church. In the early 1800s, the Diocese of New York was created, which inspired the increasing Catholic population. In 1842, Bishop John Hughes became Bishop of New York. At that time, his cathedral was the largest church structure in New York City. When New York became an archdiocese in 1850, Bishop Hughes became the first archbishop. In 1853, when Archbishop John Hughes announced his ambition to build a new **St. Patrick's Cathedral**, the idea was ridiculed as "Hughes' Folly," as the proposed, near-wilderness site was considered too far outside of the

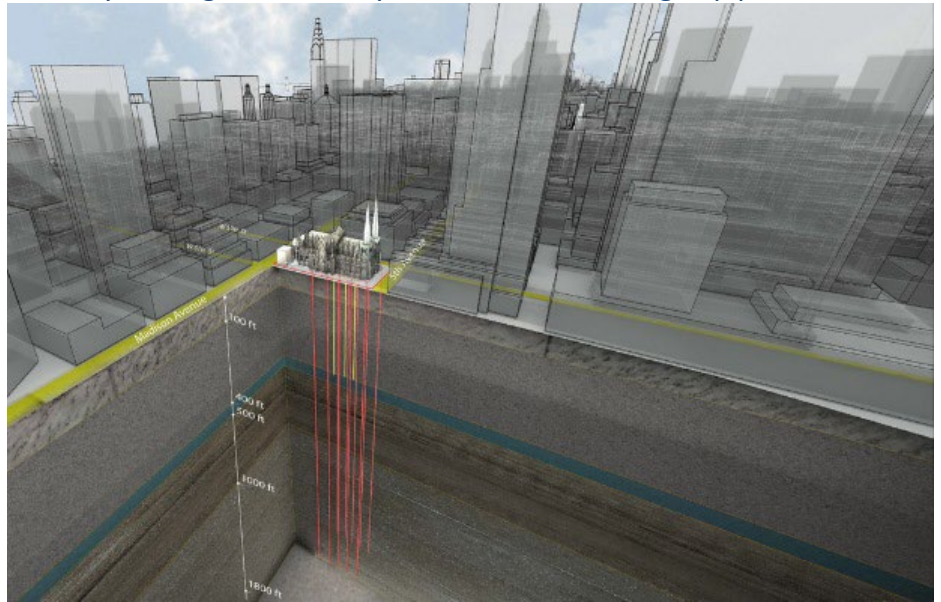


city. Archbishop Hughes, nonetheless, persisted in his vision to build the most beautiful Gothic Cathedral in the New World in what he believed would one day be "the heart of the city." Construction started in 1858, but was stalled for five years because of the Civil War and the need for additional funding. The workers needed to go fight in the war, and the war put a financial strain on the entire country.



Money was so tight that the archdiocese had to settle for a plaster ceiling for the cathedral rather than continuing to use marble. The Cathedral was formally opened in 1879.

St. Patrick Cathedral facts: More than five million visitors each year step inside; The cathedral seats 2,400 people and conducts seven masses on weekdays on eight on Sundays; There are 9,000 organ pipes, more than 20 altars, 3,700 stained-glass panels, 19 bells, and the 9,000 pound bronze doors at the main entrance were designed to be opened using only one hand. **Going Green:** From “The New, Green Pride of St. Patrick’s Cathedral Is Underground,” Sharon Otterman, NYTimes, March 4, 2018: “One year ago, as part of its almost \$200 million dollar renovation, St. Patrick’s Cathedral launched a state-of-the-art geothermal heating and cooling system to replace its system of steam radiators and 1960s-era air conditioning. Around the cathedral’s perimeter are now 10 wells as deep as



2,200 feet into the Manhattan bedrock, collecting groundwater that helps the church efficiently heat and cool. The cathedral now reaches six times deeper than its Gothic spires soar high...At the heart of St. Patrick’s new system is its geothermal plant, a tightly packed former boiler room under the church’s campus that is loaded with pumps, compressors and other equipment that makes the system work. A computer system automatically determines whether to cool or heat based on thermostats set around the 76,000-square-foot cathedral campus. It can switch various wells on and off, and it can heat some areas while cooling others...Four separate loops of water propel heat and cooling through the system. The first loop brings the groundwater, measuring about 55 degrees year round, from the wells into the geothermal plant. The second loop leads to a machine that cools the water down to about 45 degrees in summer, or heats it up to 130 degrees in winter. That water is then piped through the campus and into fan coils scattered around the buildings.

With a system this complex, its designers weren’t sure if it was going to work all the time. What about a heat wave? Or in a cold snap? So they also installed a traditional cooling tower and a natural gas boiler system as backup. But the backup has not yet been necessary. Since the geothermal launched in February 2017, it has provided all of the cathedral’s heating and cooling, to the delight of its engineers. The project, designed by the Landmark Facilities Group and P.W. Grosser Consulting, won a 2018 honor from the New York Chapter of the American Council of Engineering Companies...[T]he engineers estimate that the new system will reduce energy use over a traditional system by about 30 percent annually. For St. Patrick’s, that totals roughly 94,000 kilograms in the carbon dioxide emissions, or about as much created when burning 218 barrels of oil. According to the mayor’s office, approximately 20 geothermal systems have been installed in New York City in the past five years, but St. Patrick’s is believed to be the largest.”

10:00am **Drive back to Notre Dame** (11 ½ hour drive without stops, but we will be stopping)

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