

## Project Overview

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1099 New York Avenue is to be Tishman Speyer's new premier office building located in the heart of Washington, D.C. near the newly constructed convention center. The New York based company is looking for the opportunity to establish itself in the D.C. market.

The ground floor will serve as a main lobby for the ten stories of office space above and will include two retail spaces that will have separate street access located on both New York Avenue and 11th street. Below grade will be four levels of parking structure and a fitness center accessible to all future tenants. The primary feature of the building is a state of the art high performance glass curtain wall in which each piece of glass lies in a different horizontal plane. The construction of the 173,260 sq ft structure is projected to cost \$31,600,000 and has an expected duration dating from June 2006 to March 2008.

## Project Team

**Owner** – Tishman Speyer Properties

**Architect** – Thomas Phifer & Partners

**Structural Engineer** – Tadjer-Cohen-Edelson

**MEP Engineer** – Syska Hennesy Group

**Civil Engineer** – Miles Wensch Corporation

**General Contractor** – James G. Davis Construction Corporation

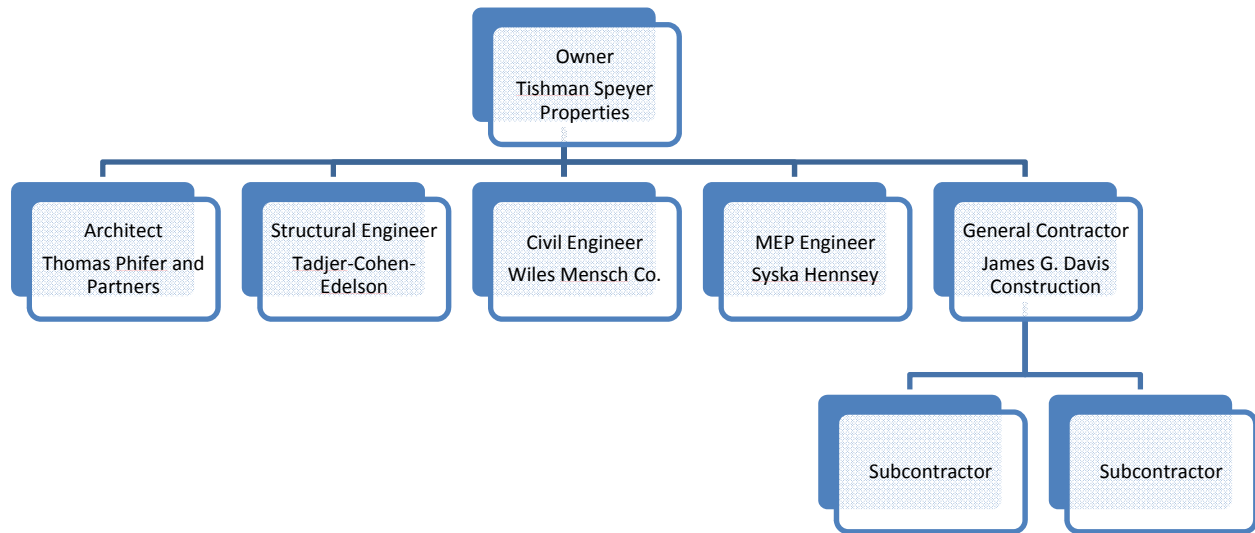
## Client Information

Tishman Speyer Properties is the owner of the project. They consider themselves to be one of the leading owners, developers, operators, and fund managers of first-class real estate in the world. They pride themselves in seeking opportunity where others see difficulties and transforming those opportunities into assets of even greater value. They feel that vertical integration is the key to their success and their ability to envision a broader array of possibilities than others. The project is to be one of Tishman Speyer's premier office buildings in the District from both a design and functional standpoint.

## Project Delivery

The delivery method selected by the owner was Design-Bid-Build with a General Contractor (CM @ Risk). This method is preferred on a company-wide scale because Tishman Speyer

typically wants control of the design consultants. They do not wish to take on the risks an owner might encounter in a Design-Build delivery. **Figure 1** shows the breakdown of the project team organization.



**Figure 1** Project Organization Chart

Tishman Speyer holds standard lump sum contracts with the architect and each of the engineers whereas Davis Construction holds a guaranteed maximum price contract. The details of the contract with Davis include a savings clause in which 25% of all savings earned on the project stay with Davis as an incentive to complete the project under budget. No payment and performance bond is required.

With each of the subcontractors, Davis holds a lump sum contract. The doors, frames, and hardware contractor is under a lump sum purchase agreement since they install the materials themselves. Each subcontractor was picked based on the lowest bid with regards to Davis' budget estimate. Every contractor is required to be insured, but bonds were only purchased on the larger contracts (\$200,000 or more) to provide cost savings. The major subcontractors are listed below.

**Concrete:** ONCORE Construction

**Electrical:** Freestate Electrical Co.

**Mechanical:** W.E. Bowers

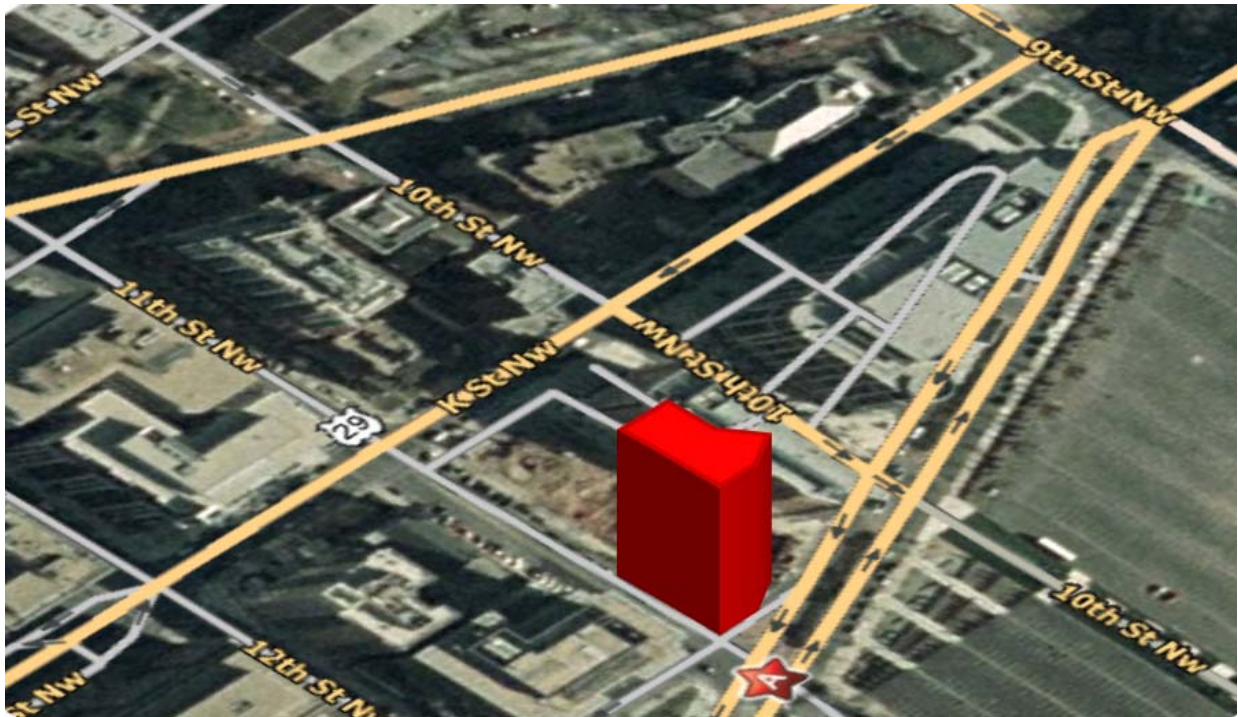
**Fire Protection:** Strickland Fireproofing

**Curtain Wall:** Antamex International

**Earthwork:** National Wrecking

## Site Plan and Existing Conditions

The site for the project is located at the corner of 11<sup>th</sup> Street NW and New York Avenue NW in Washington, D.C. Neighboring on the east side is the Embassy Suites Hotel, a recently constructed 14 story structure. The only space between these two areas is a 10 ft public alleyway. To the north is another active construction site. This project began just weeks after mobilization on 1099 New York Avenue, so careful coordination had to be taken into consideration while excavating.



**Figure 2** Location of 1099 New York Avenue

Due to a congested site, one of the north bound lanes on 11<sup>th</sup> Street will be closed for the duration of the project. This will allow for more flexibility in material staging and room for a covered pedestrian walkway. This will provide a steady flow of pedestrian traffic. Because it is a downtown location, parking is scarce and only available at the meters on New York Avenue and the public parking lot across the street.

Gates are positioned at three locations around the site: one at each of the southeast, southwest and northeast corners. Material deliveries are to enter the site via the southwest gate, travel northbound and exit via the northwest gate. This allows trucks to continue through the site and avoid turning around. Unless permission is given, materials will be stored outside.

Dumpsters are also positioned along this driveway for easy access to both the construction workers and the trash removal crews. A detailed site plan can be found in **Appendix A**.

## **Building Systems Summary**

### **Cast in Place Concrete**

The garage levels are short-spanned reinforced concrete slabs varying between thicknesses of 4", 8" and 12". The typical bay size is 25'-0" x 30'-0". Slabs on grade are to be 3,000 psi in strength whereas suspended slabs are 5,000 psi. 8" drop panels at each of the columns are incorporated into the structure.

All slabs above grade are 8" thick and scheduled to be post-tensioned with an effective strength between 100 and 1000 kips. The typical bay above grade is spanned longer and sized at an average of 25'-0" x 40'-0".

### **Curtain Wall System**

The curtain wall on the west and south facades is a very complex system. It consists of a "fish-scale" frame on which each corner on each piece of glass lies in a separate plane (except for the upper left hand corner). Each panel is constructed of a high performance, low-e coated, insulated glass assembly which rests on structurally glazed aluminum frame. The design of the system was completed by a separate architect and requires its own consulting firm. Because of the great detail required, phasing began before the building permit was even obtained. To keep the project on schedule, construction of the west and south elevations must begin as soon as the superstructure is complete and be erected simultaneously. The system is being fabricated in Toronto and requires considerable coordination during the shipping, staging, and construction process on behalf of the contractor.

### **Electrical System**

The main service feeder for the building enters from the Pepco transformer vaults on New York Avenue at the B2 level. The service is a 3-Phase, 4-Wire, 460/265 Volt, 4000A Main Bus that steps down through (3) 30KVA, 3-Phase 460-208/120 V Transformers. The power supply for the retail area is separate from that of the office space. Emergency power is supplied by a 350/438 KW/KVA 480/277V Generator located at the penthouse.

### **Mechanical System**

The primary mechanical room for this project is located at the penthouse. Located there are (2) 1440 GPM 500 ton Cooling Towers which serve 15 Self-Contained Water Cooled Air-

Conditioning Units throughout the building. The AC unit at the penthouse provides conditioned outdoor air to the smaller units at each of the 15 levels at a rate of almost 30,000 CFM. From each of these units, Variable Air Volume (VAV) Boxes with reheat coils distribute air throughout the occupied spaces.

## **Transportation**

The Building is served by four traction elevators at the core of the building. There are three passenger cars rated for a capacity of 3,500 lbs. whose hoist way rises from the B4 level to the 11<sup>th</sup> floor. The one service car is rated for 4,500 lbs. and serves all levels, including the mechanical penthouse. All four elevator systems are gearless and do not require a machine room. They are each rated as Class A Loading and are contracted to travel at a speed of 350 FPM.

## **Project Schedule Summary**

The design of the project began in early 2004 after the site was purchased from Hertz Rental Company. Construction services had been procured by early 2006.

Construction activity on the project began on June 22, 2006. Demolition of the existing 2 story structure was required as well as the removal of the surrounding sidewalk areas. Demolition took 26 days and was completed by early August. Excavation began at the end of August shortly before all of the soldier beams had been driven.

Foundation work was scheduled to begin once excavation was completed in mid December. Immediately following is the forming, reinforcing, and pouring of the garage level. The substructure was complete to grade by early April. The superstructure ensued and was complete 4 months later in August.

Curtain wall construction began once the superstructure had been completed and was expected to be finished as of October 30, 2007. Because of its complexity, the 11<sup>th</sup> Street and New York Avenue façade elevations were constructed simultaneously in order to enclose the building sooner. Once weatherproofed, interior core construction was only expected to take 3 months. This includes the monumental lobby at the ground floor. Substantial Completion was scheduled for March 3, 2008. A summary of the key project dates and details for the major systems are listed below.

<b>Key Project Dates</b>	
Issue to proceed	6/22/2006
Substructure Construction Begins	12/12/2006
Excavation Complete	12/20/2006
Superstructure Construction Begins	4/10/2007
Interior Construction Begins (B4 Level)	6/6/2007
Curtainwall Construction Begins	6/14/2007
Topping Out	8/24/2007
Sitework Complete	11/15/2007
Tenant Contractors Granted Access	11/21/2007
MEP Complete	1/21/2008
Substantial Completion	3/6/2008

A detailed project schedule can be seen in **Appendix B**.

### Structural

The building is broken down into four pour zones below grade and three above based on the amount of concrete ONCORE Construction can pour in the period of one day. Concrete placement begins at the north end of the site at each level and moves south. Work on the substructure was scheduled to commence on 12/12/2006 and be complete by 8/24/2007.

<b>Task</b>	<b>Duration</b>	<b>Start</b>	<b>Finish</b>
Frame, Reinforce, Cast, Cure, Stress, Strip Floor Pour #1	11 days	4/10/07	4/24/07
Frame, Reinforce, Cast, Cure, Stress, Strip Floor Pour #2	11 days	4/16/07	4/30/07
Columns/Interior Walls to Next Level	12 days	4/19/07	5/4/07
Frame, Reinforce, Cast, Cure, Stress, Strip Floor Pour #3	11days	4/20/07	5/4/07

**Table 1** Typical Structural Sequencing

### Façade

Construction of the Façade was set to begin on 6/14/2007. It was necessary to begin prior to the completion of the superstructure because each façade takes approximately 100 days to be

constructed and building enclosure was required before the winter season. The south elevation was expected to take the longest to complete.

### Interior Construction

Interior construction moves from the inside out. Mechanical and plumbing trades were the first to begin. As they progress outwards from the core, the fire protection and drywall contractors begin, followed by the electrician. The only trade performing work on the perimeter of the building is the drywall contractor. Since this is a base build project, tenants were responsible for their own interior construction sequencing. Information on the tenant construction schedule beyond the start date of 11/21/2007 was not provided.

<u>Task</u>	<u>Duration</u>	<u>Start</u>	<u>Finish</u>
Hang Risers/Install Core Mechanical System	13	6/25/07	7/11/07
Install Core Plumbing/Pipe Fixtures	73	6/25/07	10/2/07
Install/Hydro Core Sprinkler	12	7/5/07	7/20/07
Frame/Hang Core Walls and Ceiling	42	7/30/07	9/25/07
Install Electrical/Fire Alarm	44	8/2/07	10/1/07
Install Toilet Partitions and Counters	49	8/2/07	10/8/07
Install Doors and Hardware	3	9/12/07	9/14/07
Frame, Hang, Finish Perimeter Drywall	42	10/11/07	12/7/07

**Table 2** Typical Interior Construction Sequencing

### Project Cost Summary

The building construction cost for the project as reported by Davis Construction is approximately \$31,600,000. This amount does not include land costs, site work, or design fees that are the responsibility of the owner. The total project cost to Tishman Speyer Properties is an estimated \$65,000,000. This number includes all costs including construction, design and land acquisition. With an approximate value of 173,260 square feet of above grade space, the construction cost and total project cost are roughly \$182.38/sq ft and \$375.16/sq ft respectively. This analysis as well as a breakdown of the building's major system cost can be seen below in **Table 3**.

<u>Building System</u>	<u>Cost</u>	<u>Cost Per SF (173,260 SF)</u>
-	-	-
<b>Overall Project</b>	<b>\$65,000,000.00</b>	<b>\$375.16</b>
Building Construction Costs	\$31,600,000.00	\$182.38
Owner's Additional Costs	\$33,400,000.00	\$192.77
<b>Structural</b>	<b>\$9,056,926.00</b>	<b>\$52.27</b>
Concrete	\$7,500,000.00	\$43.29
Masonry	\$836,926.00	\$4.83
Miscellaneous Metals	\$445,000.00	\$2.57
Roofing	\$275,000.00	\$1.59
<b>Curtainwall</b>	<b>\$5,405,662.00</b>	<b>\$31.20</b>
Antamex Glazing	\$5,205,662.00	\$30.05
UAD Storefront Glazing	\$200,000.00	\$1.15
<b>Finishes</b>	<b>\$1,005,397.00</b>	<b>\$5.80</b>
Drywall	\$826,325.00	\$4.77
Ceramic & Stone Tile	\$111,200.00	\$0.64
Carpet and Resilient Tile	\$6,372.00	\$0.04
Paint	\$61,500.00	\$0.35
<b>Elevator</b>	<b>\$1,198,700.00</b>	<b>\$6.92</b>
Elevators	\$1,173,700.00	\$6.77
Parking Attendant Lift	\$25,000.00	\$0.14
<b>Mechanical</b>	<b>\$4,090,000.00</b>	<b>\$23.61</b>
HVAC/Plumbing	\$3,600,000.00	\$20.78
Sprinkler	\$490,000.00	\$2.83
<b>Electrical</b>	<b>\$1,895,000.00</b>	<b>\$10.94</b>
Electrical Systems	\$1,895,000.00	\$10.94

**Table 3** Project Cost Breakdown