1800 K Street NW
CASE STUDY

SYCNRO EXCHANGE 2015 VISUAL PLANNING AWARDS
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Project Description

1800 K Street is a commercial office building located in the heart of downtown Washington, DC. For this multiphased repositioning project, Forrester Construction Company renovated the central chiller plant and replaced the existing building envelope with a new high-performance building skin. Work is being performed while the building remains fully occupied.

During the first construction phase, the building’s two main chillers were removed and replaced with new frictionless centrifugal units. All related pumps and piping for the chillers and cooling towers were changed and new Variable Frequency Drives (VFDs) were added. The system’s pneumatic controls were swapped with DDC electronic controls and the main air handler and chiller rooms received new dampers.

In the second phase, the existing curtain wall and precast concrete façade is being removed and an all glass system will be put in place. On the ground level, a glass storefront will be installed and sidewalk and hardscape improvements will be made. To enhance the building’s high-end appeal, a penthouse terrace will be added and the main lobby will receive elevator and finish upgrades.

1800 K Street is expected to earn LEED™ EB Silver certification thanks in part to the chiller plant upgrades and other efficiency improvements made during the project.
Challenges & Outcomes

CHALLENGE & OUTCOME #1
It was critical to convey the schedule and work flow as planned to allow stakeholders understand the demolition’s direction, curtain wall construction progress and its impact on each suite. By using the Synchro’s unique ‘Grow’ feature and creating temporary partition items, Forrester’s team demonstrated not only the vertical section drop effected, but also clearly explain when and how each floor would be impacted as well as the work flow’s direction. Knowing the work flow helped the end user interpret work progress would impact them and plan their schedule accordingly.

CHALLENGE & OUTCOME #2
The new curtain wall deviated from the old substantially in a new design that maximized the floor plate on the 2nd and 3rd Floors. For this reason, it was beneficial for the owner to understand both the overall schedule impact of extending the floor slabs and as well as the impact on each separate vertical work sequence. Using the cutting feature within Synchro to subdivide the design model objects, the project team better illustrated the timing of each vertical sequence in reference to the schedule on both 18th and K Streets.

CHALLENGE & OUTCOME #3
Maintaining occupancy during construction required development of a tenant / stakeholder communications plan and schedule. Leveraging Synchro’s 4D movie output in conjunction with a micro 4D model produced in Sketch-Up for concept purposes, the project team created individual snapshots of impact at the beginning and end of the sequence for each suite with a narrative description of work as a deliverable to the owner and tenants.

CHALLENGE & OUTCOME #4
Adapting new systems to an existing occupied building required resolving engineering issues and determining optimal sequencing. For example, the team used a multiple sequence schedule to investigate the alley side of the building and determine if the conventional floor to floor system in this location would be more efficiently constructed in vertical segments, like the curtain wall, as opposed to working horizontally floor by floor. Thanks to this comparison, the team decided that the vertical work flow would be more appropriate due to the time savings partially illustrated in the 4D model.
CHALLENGE & OUTCOME #5

Syncro 4D was also used to assist the owner for marketing offices spaces as part of a larger sales effort which focused on added features such as the roof terrace shown below.

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CHALLENGE & OUTCOME #6

During the façade renovation, maintaining maximum access to the building for tenants and visitors was the owner’s top priority. As a result, Forrester prepared two alternatives to achieve this goal. The first was the overhead protection concept that allowed a constrained path for both occupants and the construction team. The second option used a work platform solution that allowed greater freedom of access and improved safety conditions for all individuals on site. The 4D model investigated both alternatives efficiently conveying the merits of each option. This ultimately resulted in the selection of the work platform approach since it granted better site access, safety and schedule efficiency.
How has 4D changed your planning process?

This was Forrester’s first project to use Syncro Pro. Syncro adds features not available in other 4D software solutions such as the grow, multiple view, multiple output and scheduling. It is also compatible with Primavera 6 which made it easier for stakeholders to understand the actual construction work flow. The scheduling software compatibility made for smoother updates and improved overall efficiency.

What is unique about this 4D?

This is a building reskin, not a ground up construction project. The building envelope and typical office 4D’s allow us to tell the story, in real time, of how and when we will be impacting the tenants / stakeholders throughout the life of the project, allowing us to fully manage their expectations and understanding of the work.

The elevator extension and modernization 4D allow us to build each segment of the work virtually, to identify and resolve technical or sequencing issues before mobilizing on site, allowing us to minimize our exposure to time and cost risk.