

Optimized Connectivity for Changing Office Spaces

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LEARNING OBJECTIVES

After completing this course, you should be able to:

- Examine the traditional challenges for power and data placement in open plan offices.
- Review the most common cabling requirements for office spaces, including power and data for workstations, meeting rooms, training rooms, and collaborative areas.
- Discuss the typical issues that flexible spaces face to change power configurations.
- Understand how floor-mounted raceways allow easier renovation as the workspace evolves.
- Cite some examples of how to create high-powered workstations by pairing raceways with simple furnishings.

WHAT DO OFFICES NEED?

- Flexibility
 - Multipurpose spaces that can transform throughout the day
 - Design and space layouts that are easy to reconfigure
- Ability to meet the needs of many different jobs
 - Hot-desking and hoteling offices
 - Open office layouts with workstation clusters
- Maximum ROI
 - Workstation density that makes sense for the organization and the types of work done in each space
 - Supporting productivity



TRADITIONAL POWER/DATA SOLUTIONS

Delivering power and data to new places in existing buildings usually requires one of two strategies:

- Core drilling
 - Punches a hole in the concrete floor to run wires through the ceiling of the floor below
 - Used for upper floors
- Trenching
 - Digging a trench into the floor to hold cabling
 - Used for the ground floor

COMMON CHALLENGES

Core drilling and trenching will hide wires and cables instead of leaving them out in the open, but they also leave you vulnerable to:

- High costs
 - Digging up concrete is not cheap
 - Requires specialized equipment
- Hidden costs
 - Initial drilling/trenching plan may need to be reworked after the floor is examined for integrity issues and obstructions



COMMON CHALLENGES

Core drilling and trenching will hide wires and cables instead of leaving them out in the open, but they also leave you vulnerable to:

Disruption

- Both strategies are disruptive, loud, and dusty.
- They cannot be done in occupied spaces.
- They impact productivity and prevent the whole building from being utilized.
- They require extra attention to dust containment, water protection, and other safety considerations.
- Downstairs tenants may not sign off on the plan at all because of the disruption to their space.

COMMON CHALLENGES

Core drilling and trenching will hide wires and cables instead of leaving them out in the open, but they also leave you vulnerable to:

Permanence

- You cannot un-drill the concrete.
- There are consequences to drilling in the wrong place.
- Owners of non-owner-occupied buildings may not allow you to drill into the concrete.

COMMON CHALLENGES

Core drilling and trenching can provide power and data, but they also leave you vulnerable to:

- Limited application
 - Future reconfiguration is limited; the floor can only hold so many holes.
 - Drilled areas act as anchors, which means less flexibility.
 - There are few options once core drilling and trenching are no longer possible.
 - Power poles are a common choice but can create visual obstructions and make walkways too narrow for people with mobility aids.
 - Just because you can core drill does not mean you should!

HOW RACEWAYS CAN HELP

Raceways emerged as a solution to the problems inherent to core drilling and trenching.

What is a raceway?

- Metal trough that holds wires and cables
- Removable cover
- Screwed into concrete slab

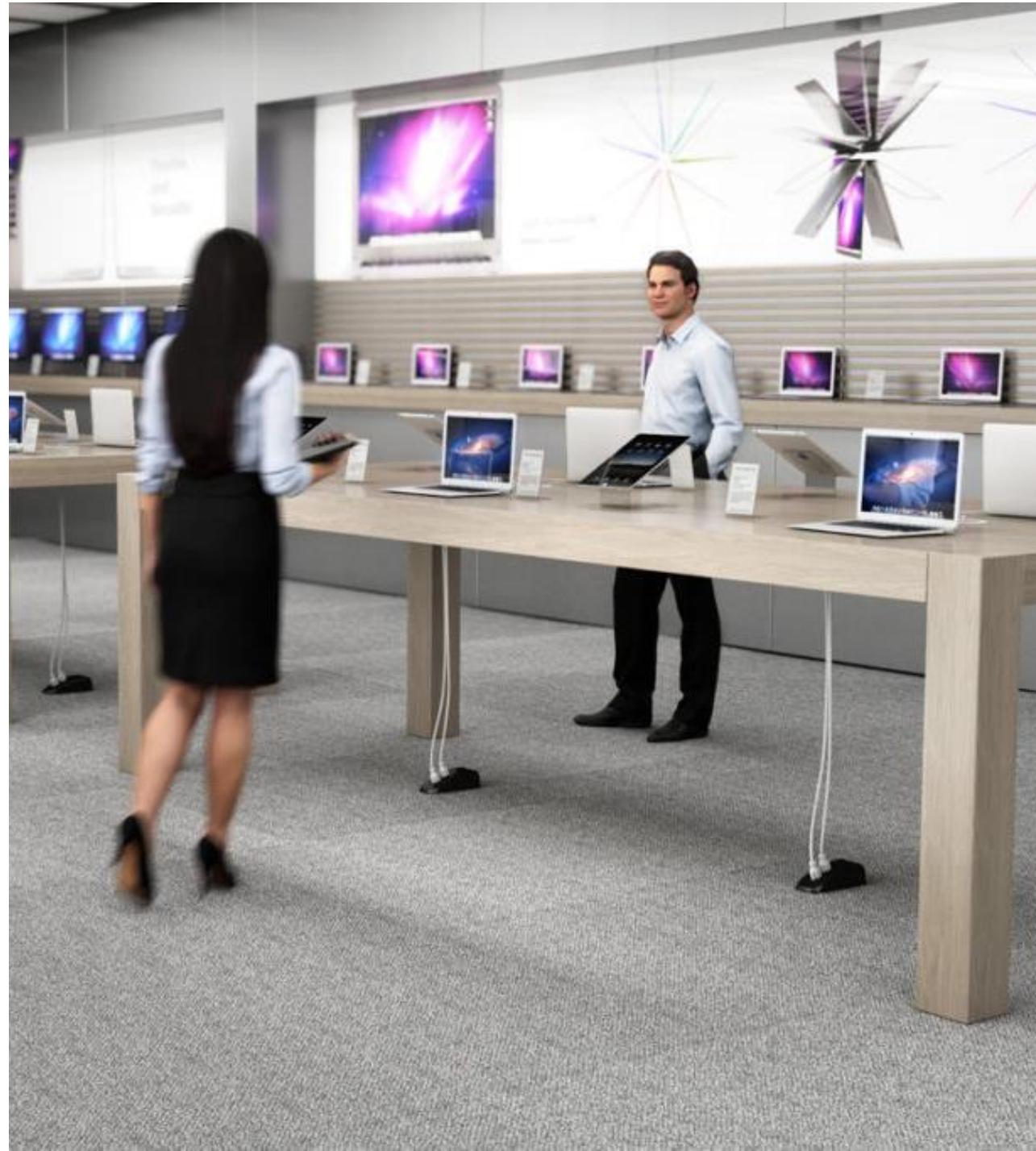


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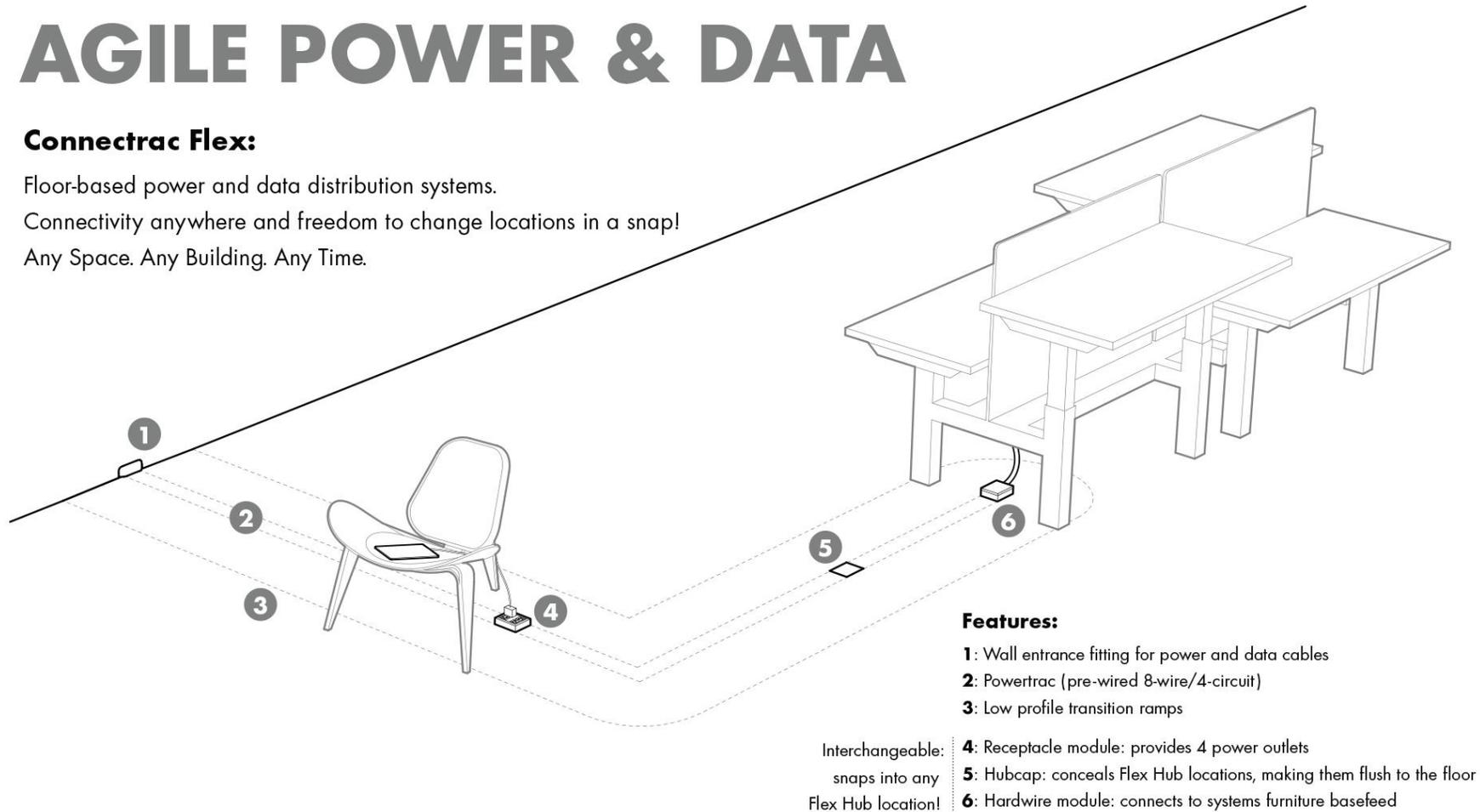
AGILE POWER & DATA

Connectrac Flex:

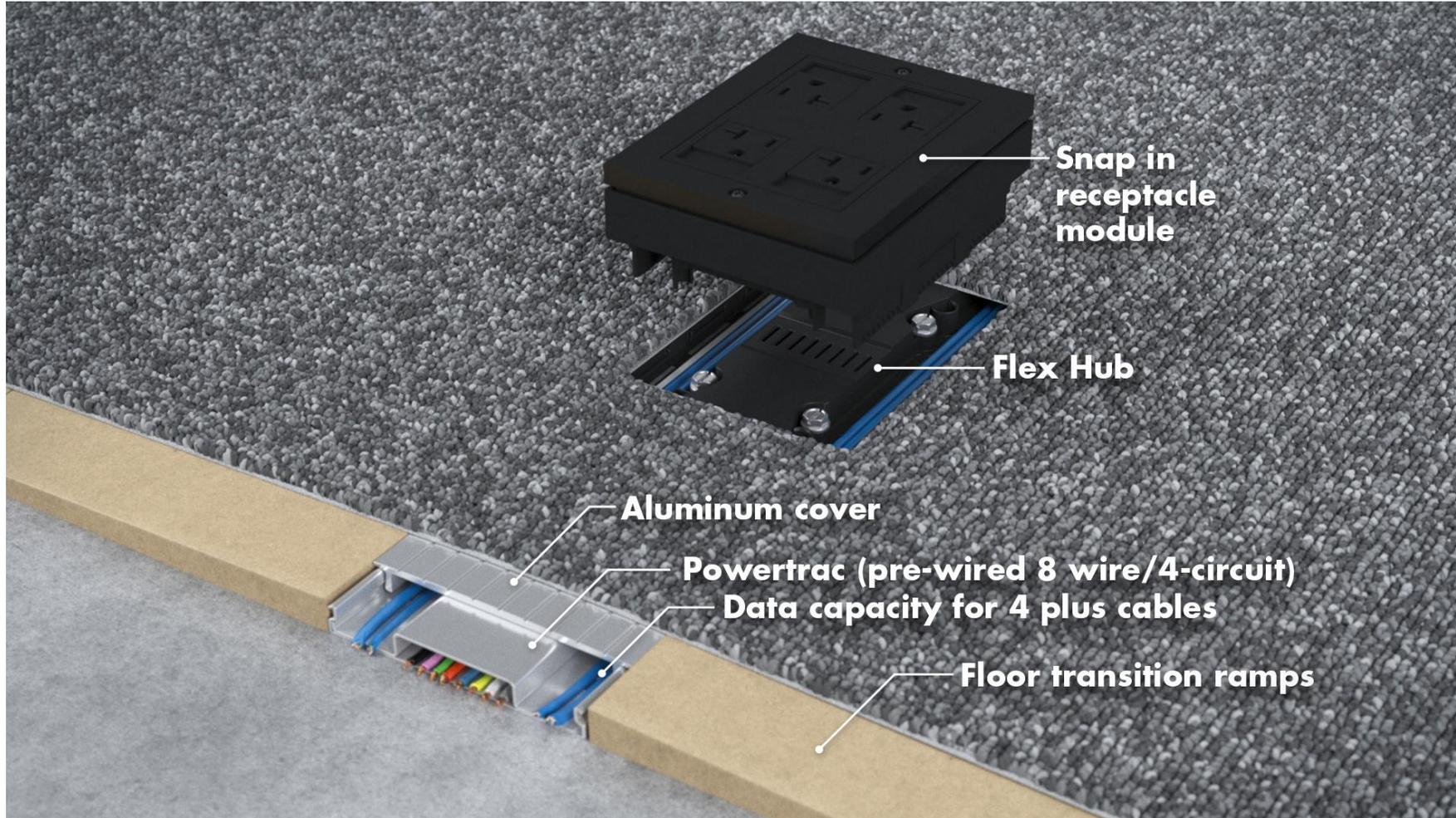
Floor-based power and data distribution systems.

Connectivity anywhere and freedom to change locations in a snap!

Any Space. Any Building. Any Time.



HOW RACEWAYS CAN HELP



HOW RACEWAYS CAN HELP

- Installed by electrical contractor or facilities engineer with electrical training
- Faster and easier than drilling through concrete
- Steps include:
 - Cut small hole into the base of the wall to run wires through.
 - Connect wiring and prewired raceway to junction box.
 - Add data cabling to raceway using preinstalled divider.
 - Temporarily remove carpet tile where you plan to put raceway and transition ramps.
 - Screw down raceway and adhere transition ramps to side of raceway.
 - Cut small hole in one carpet tile where cables will terminate.
 - Install electrical device for end users.

HOW RACEWAYS CAN HELP

Raceways address the two most common pain points for owners and managers who need new power and data connections in existing buildings:

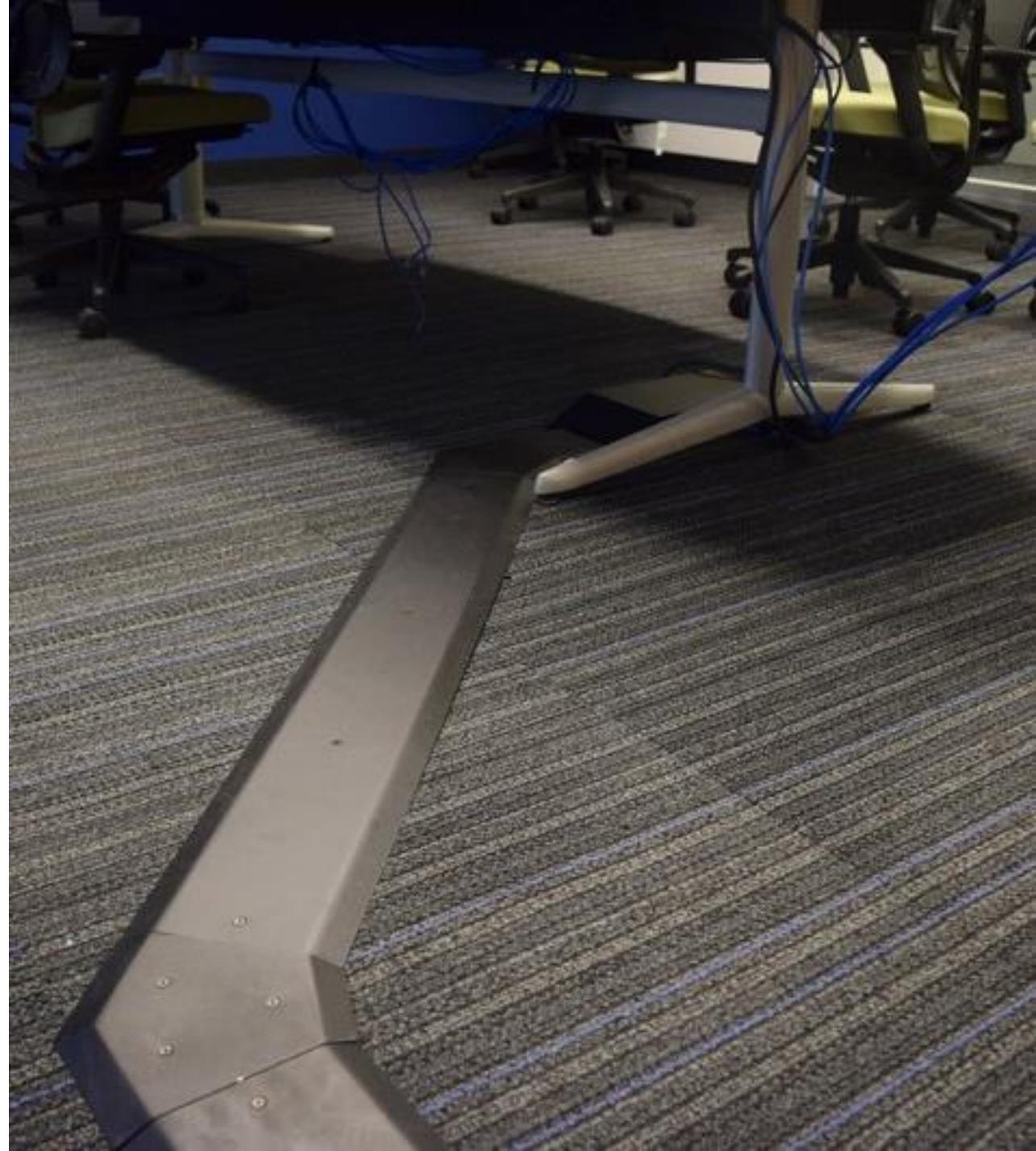
- Reconfiguring without core drilling or trenching
- Avoiding the consequences of loose or uncontrolled wires and cables



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CHALLENGE 1: RENOVATION WITHOUT DISRUPTION

Agile workplaces must address many different work modes, including:

- Hoteling
- Hot-desking
- Needs that change throughout the day:
 - Collaboration
 - Heads-down/focus work
 - Learning
 - Socializing



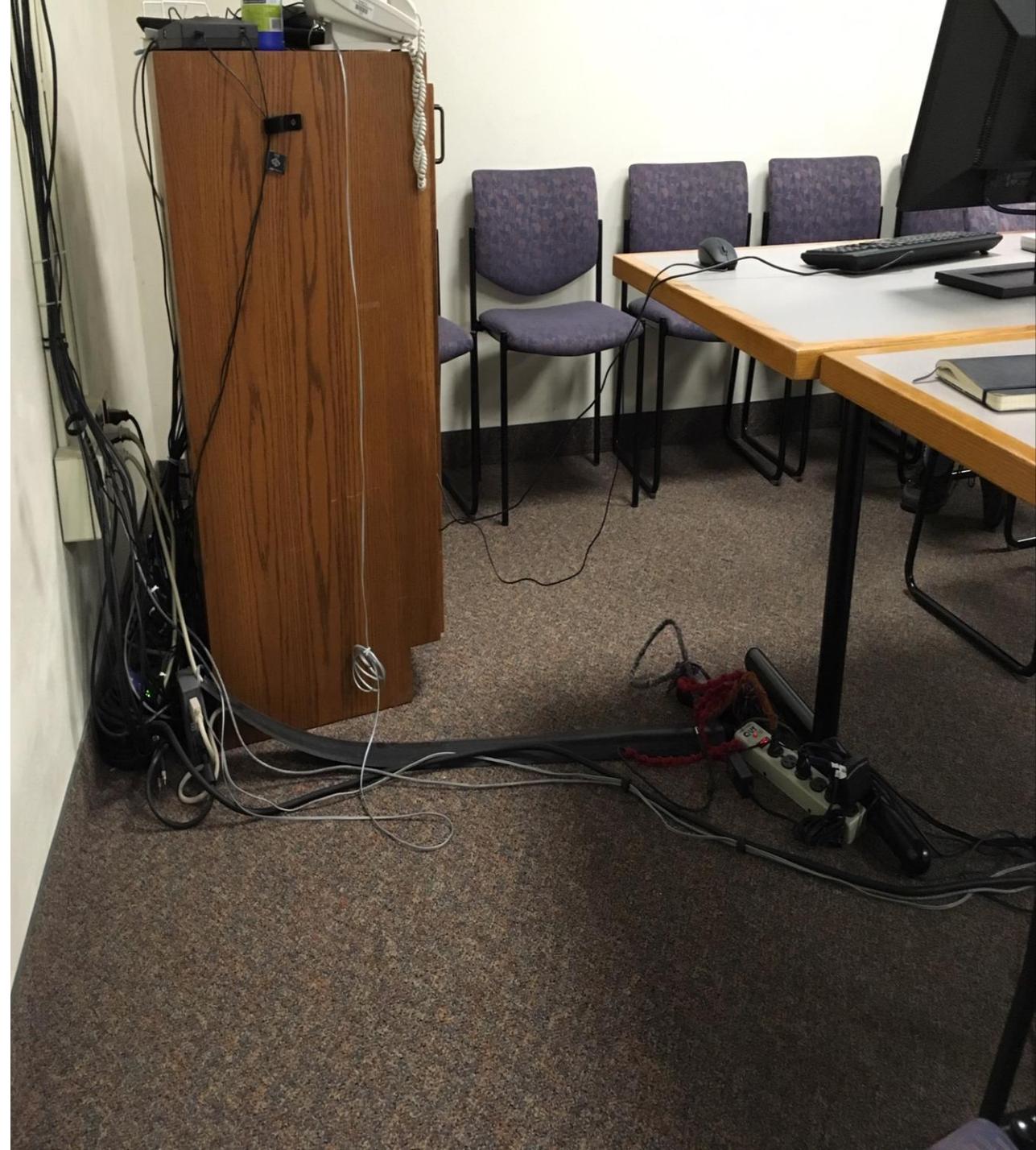


KIMBALL NARRATE

CHALLENGE 1: RENOVATION WITHOUT DISRUPTION

Accommodating different work modes means putting power, data, and AV in places where you did not need it before.

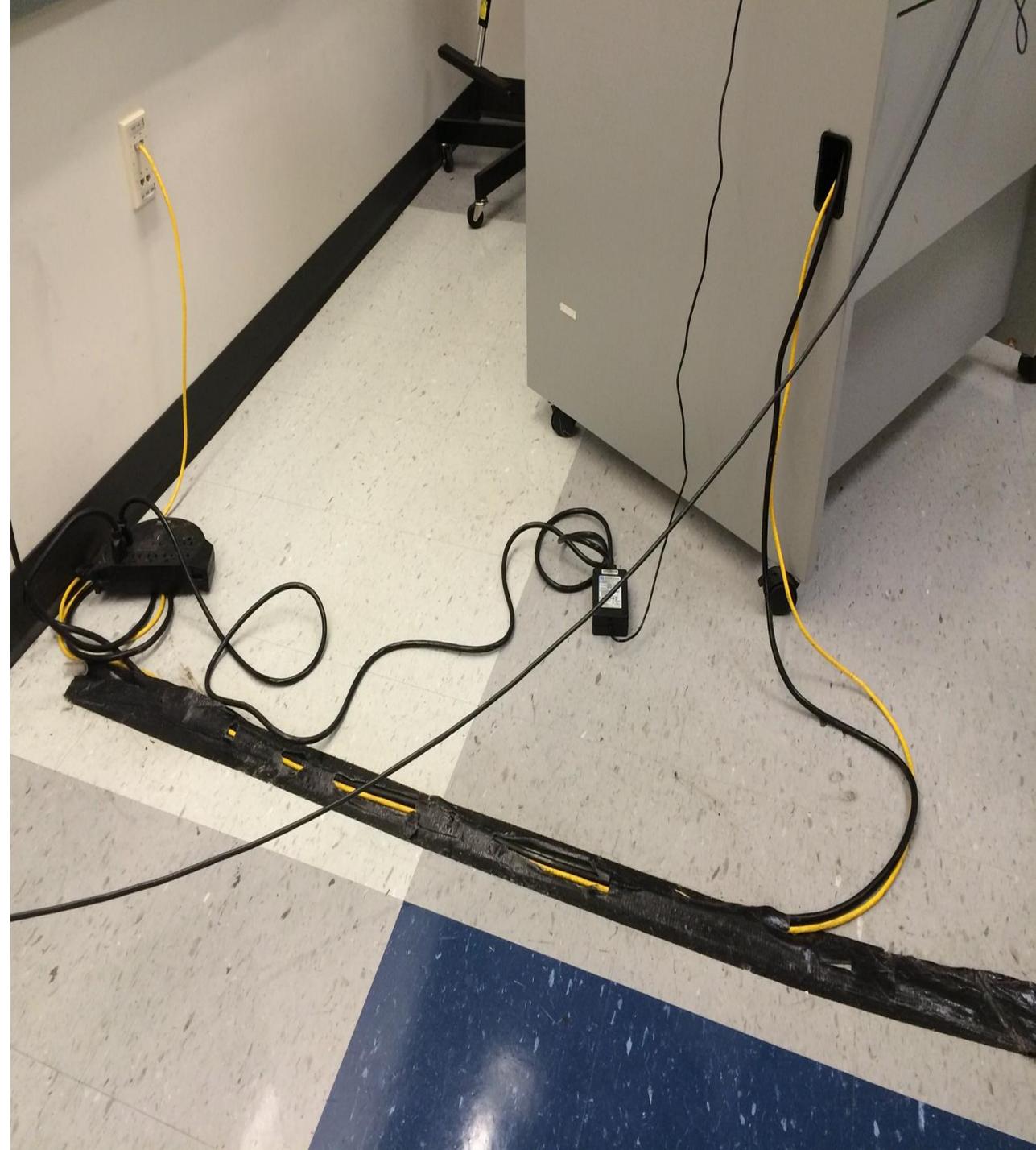
- Not only do work modes change, but the use of each space can also change.
- Furnishings will move to enable different space uses.
- Cables and wires need to be readily available but not in the way.



CHALLENGE 1: RENOVATION WITHOUT DISRUPTION

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CHALLENGE 1: RENOVATION WITHOUT DISRUPTION

Common cabling needs in office spaces include:

- Small huddle rooms and executive offices
- Conference rooms
- Portable office pods
- Open office layouts
- Rows of seating
- Call centers
- Training rooms and classrooms



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CHALLENGE 2: CABLE CONTROL CONSEQUENCES

What happens if your cables are exposed?

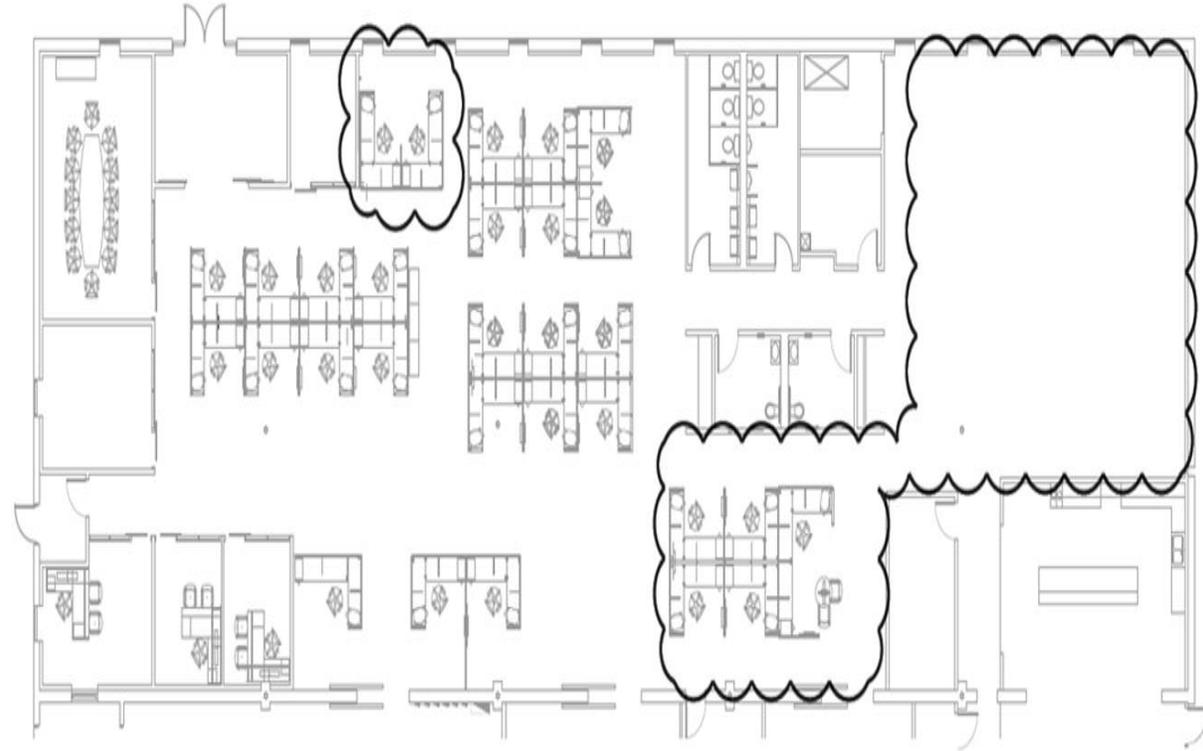
- Crush damage from foot traffic, furniture, and mobile tech carts
- Trip hazards (and liability for any injuries)
- ADA lawsuits from walkway obstruction
 - Remember the 1:12 rise-run ratio
 - Raceways with no tapered ramps are still an obstruction



HOW TO SPECIFY RACEWAYS

Assess the needs of each space first.

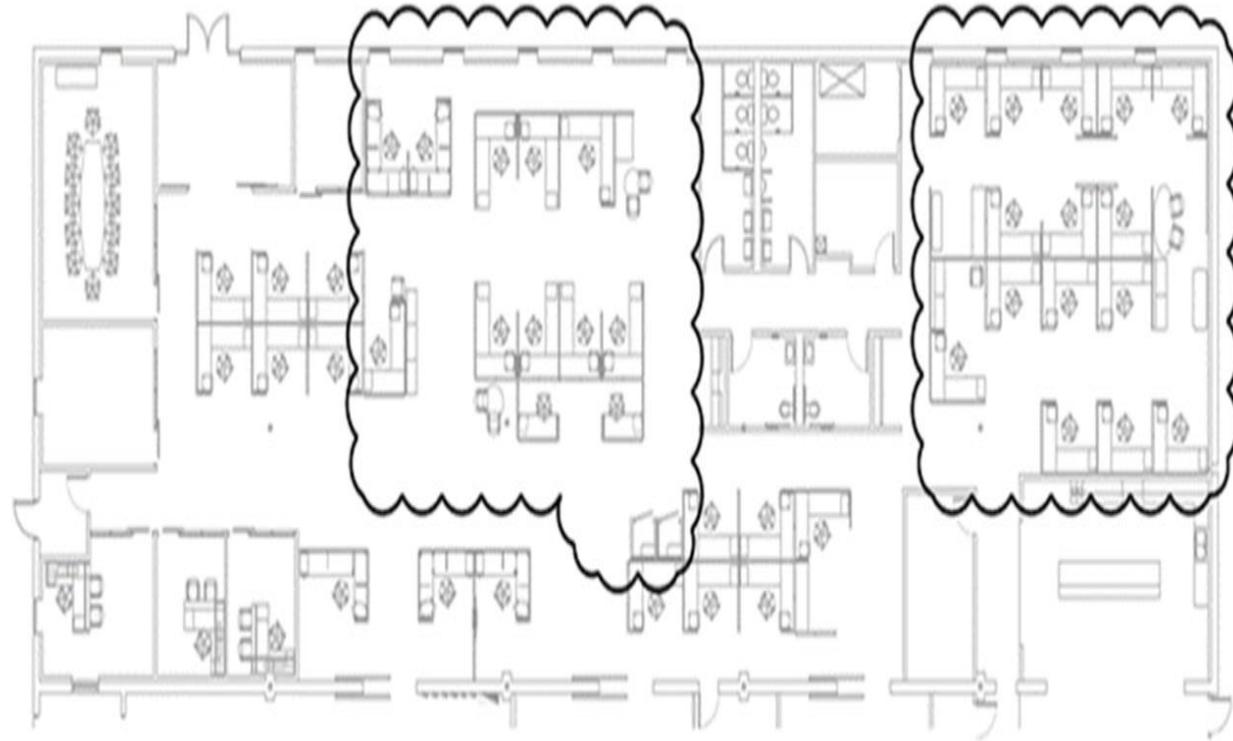
- What is the primary use of this space?
- What else might I use the space for in the future?
- How would those alternate uses affect the way I arrange furniture in this space? How would it affect how people navigate through the space?
- How will this space affect my ability to market the building to future tenants?



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HOW TO SPECIFY RACEWAYS

Next, look at specific raceway products. Figure out which model fits your needs best and where you might place it. This deeper dive into your raceway options should take into consideration:

1. ADA compliance

- Is the raceway poking into a walking path?
 - Models that cap flat at the floor level when they are not in use will not be a trip hazard.
- Ramp size
 - Have nothing steeper than 1:12.

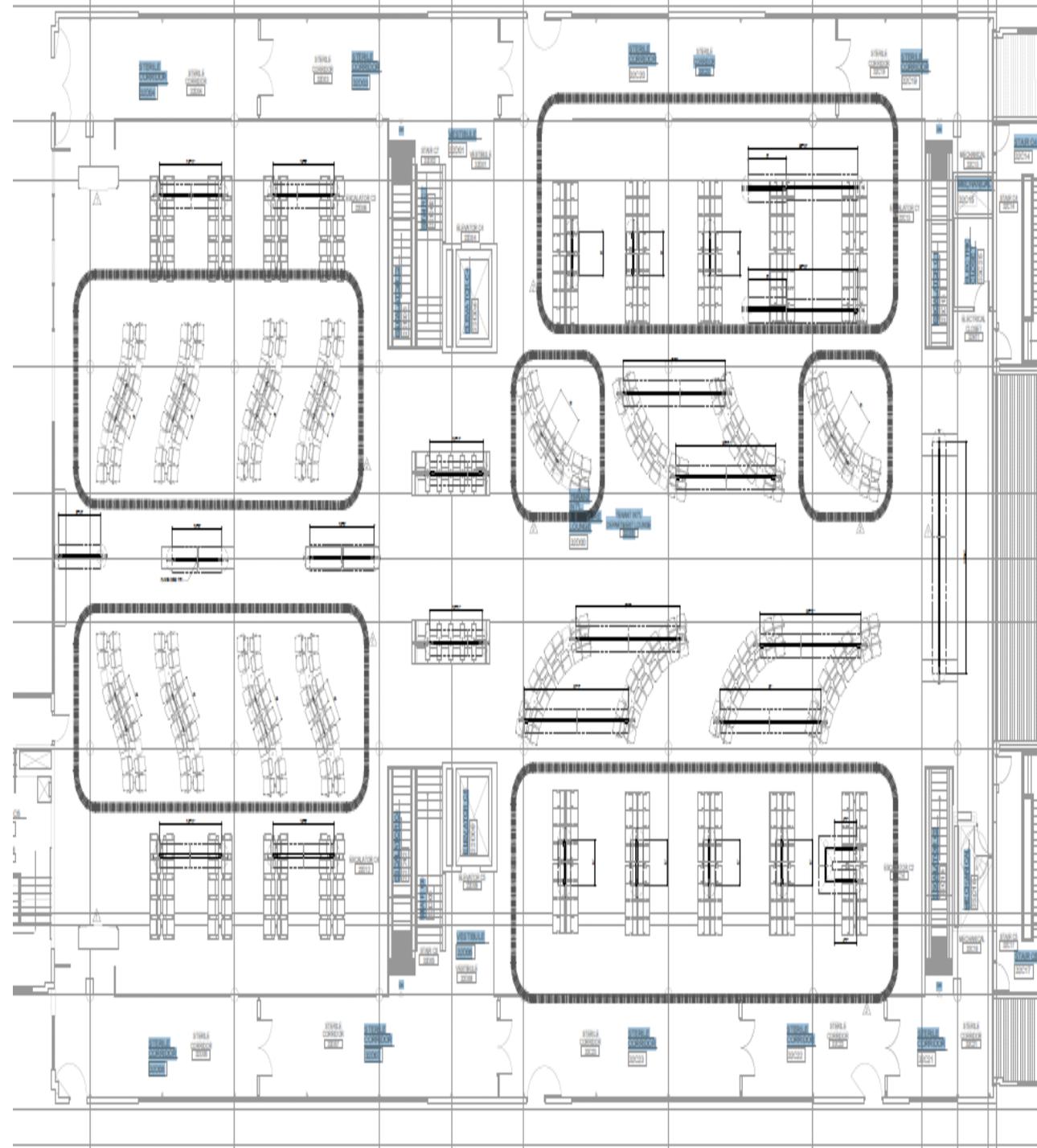


HOW TO SPECIFY RACEWAYS

Next, look at specific raceway products. Figure out which model fits your needs best and where you might place it. This deeper dive into your raceway options should take into consideration:

2. Layout options

- Look at how you might rearrange the space for each planned use.
 - This could affect which model/style you ultimately specify.
- Call the manufacturer if you get stuck.
 - Some have in-house design teams to advise you on placement, product choice, etc.



HOW TO SPECIFY RACEWAYS

Next, look at specific raceway products. Figure out which model fits your needs best and where you might place it. This deeper dive into your raceway options should take into consideration:

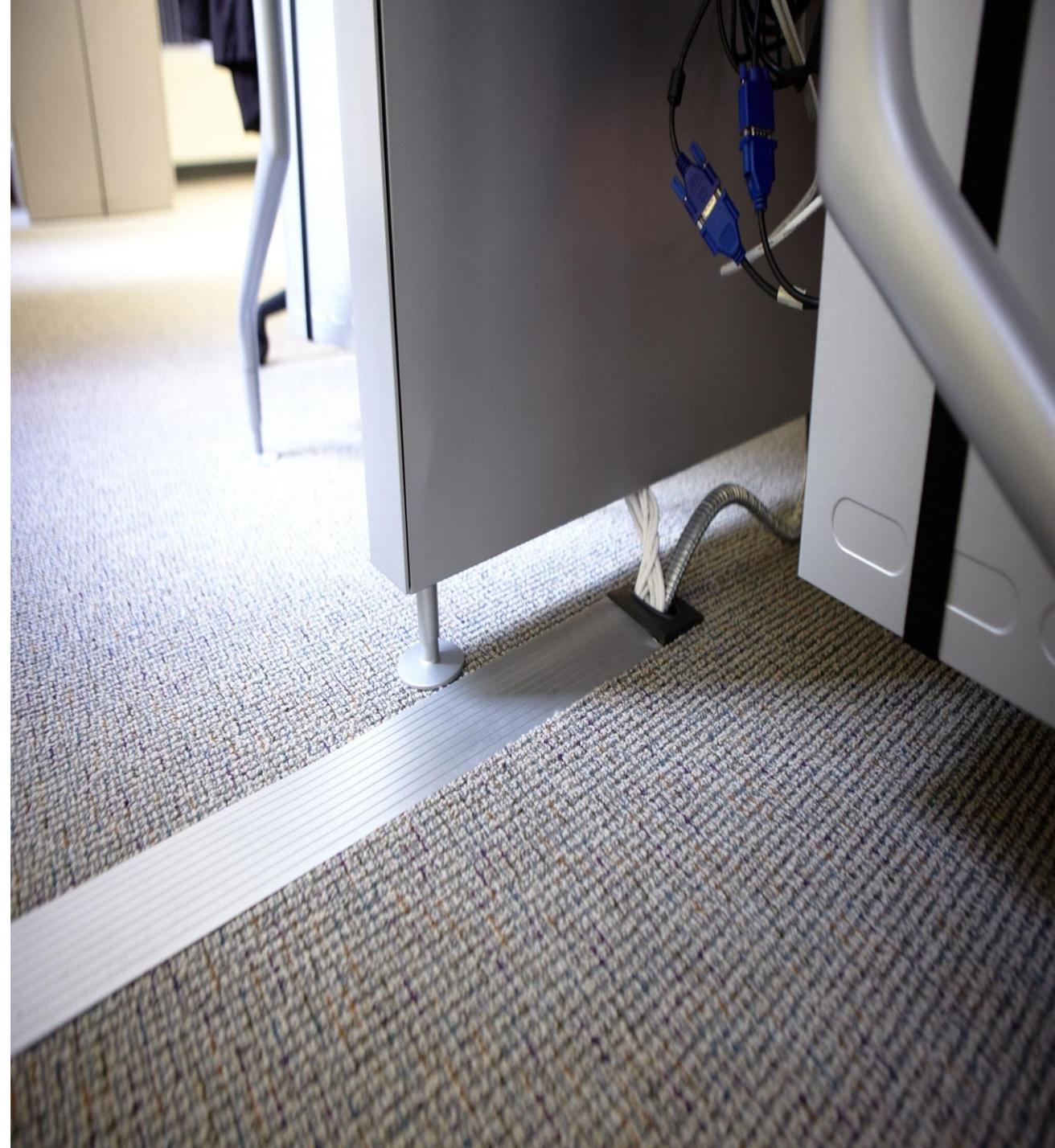
3. Space upgrades

- Will you make any other upgrades in the space?
 - Powered seating and desks are popular furniture upgrades.
- Does space utilization ever change?
- What changes do you predict, considering your history and future plans?
 - Do you expect staff growth or shrinkage?

HOW TO SPECIFY RACEWAYS

Next, look at specific raceway products. Figure out which model fits your needs best and where you might place it. This deeper dive into your raceway options should take into consideration:

4. Cable quantity
 - How many cables/wires will you need to run for each use of the space?
 - This is much easier if you have already thought through upgrades and alternate uses.
 - Power and data can go in the same raceway if they are separated.



HOW TO SPECIFY RACEWAYS

Next, look at specific raceway products. Figure out which model fits your needs best and where you might place it. This deeper dive into your raceway options should take into consideration:

5. Last-minute changes
 - You can still use raceways even if you are midway through a renovation.
 - Technology is well-suited to retrofits and renovation.
 - Ideally, specify early in the process, but installation is not disruptive if you do not realize you need them until late in the game.



TIPS FROM REAL PROJECTS

Facilities of all sizes and types are implementing raceways for the same basic reasons:

- Freedom from core drilling and trenching
- Cost
- Lack of disruption
- Easy to reconfigure spaces
- Simplified cable control

Stick to best practices like these when you are using raceways in your own building.

TIPS FROM REAL PROJECTS

Account for other design components.

Project: Pittsburgh International Airport

Concern: Rolling out raceway implementation after successful 30-day trial. Technology needed to work with multiple types of floor coverings.

Solution:

- Some areas had carpet, some had LVT.
- The airport collaborated with the manufacturer to develop solutions for all surfaces.



TIPS FROM REAL PROJECTS

Maintain design intent.

Project: Metro Vancouver

Concern: Control wires and cables without interfering with modern design elements.

Solution:

- Client chose under-carpet raceways for conference rooms and executive offices.
- Also selected raceways with exposed top cap to power systems furniture.
- Subtle appearance with reliable cable control.



TIPS FROM REAL PROJECTS

Identify existing limitations.

Project: Leo Cain Library

Concern: To meet the power and data demands students need at their fingertips to be successful.

Solution:

- Power availability in study areas, grand reading rooms, 1,600 reader stations, 250 computer workstations, and two dedicated computer labs.
- Power receptacles placed under tables for easy access.
- Students stopped bringing in extension cords because receptacles were literally at their feet.



TIPS FROM REAL PROJECTS

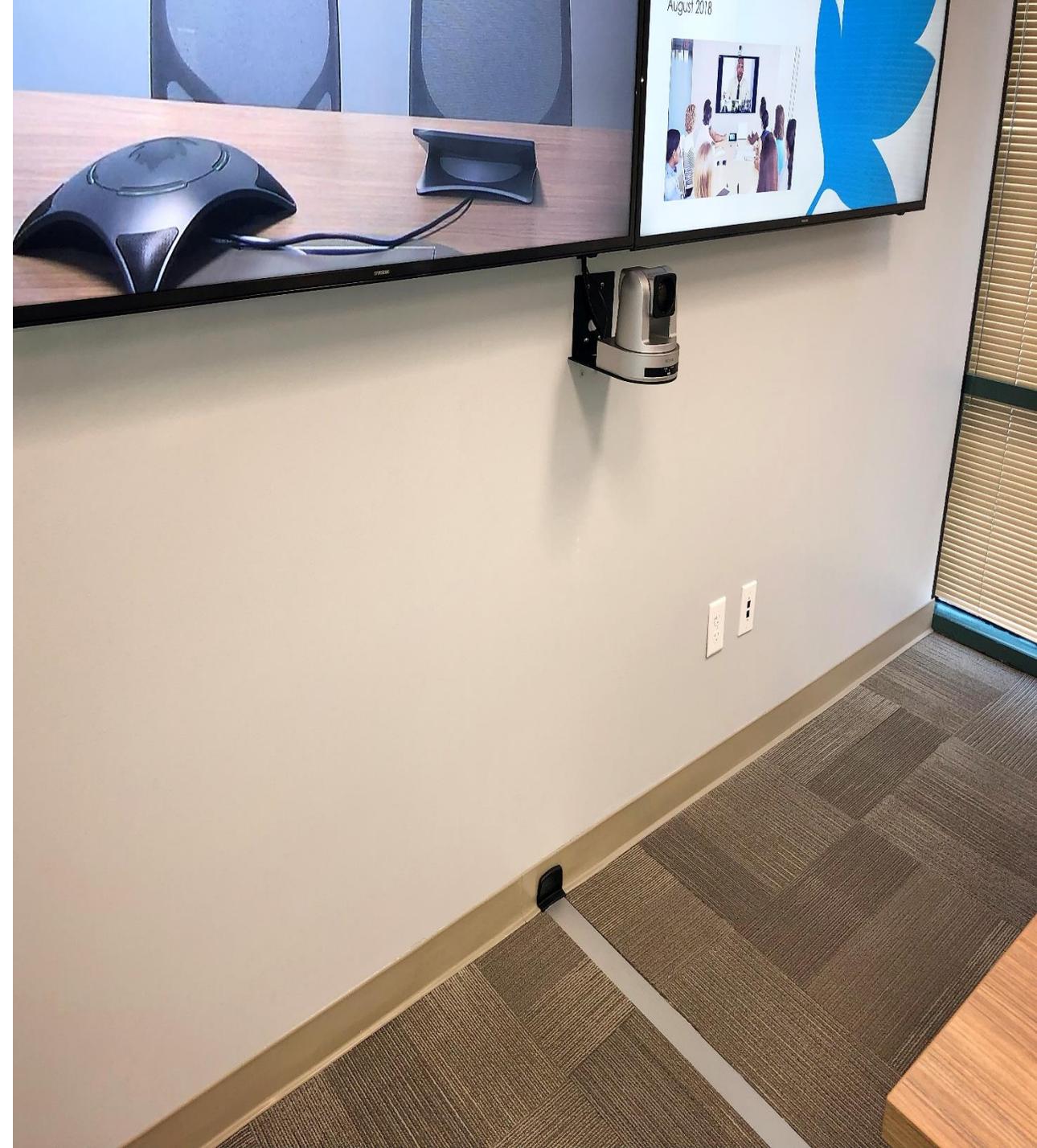
Find a solution that is flexible.

Project: StarLeaf

Concern: Dual-screen setup for video conferencing and cable quantity limited options to only trenching, which is costly and disruptive.

Solution:

- The raceway installation brought power, multiple Cat 5 cables for laptop network access, and the video conference touch panel and microphones to the conference table.
- Power receptacles are under conference table and out of the way.
- Can easily walk around table.



TIPS FROM REAL PROJECTS

Preserve historic architecture.

Project: Miami University (Ohio)

Concern: The architecture department needed power/data connectivity but is located in a 107-year-old building with historic architecture and detailed wood paneling.

Solution:

- Raceways conceal power and data that originate at the wall.
- Cables are routed to receptacles under desks.
- **Students can plug in, and the architecture's integrity is preserved.**



TIPS FROM REAL PROJECTS

Know your walls.

Project: Université de Saint-Boniface

Concern: The client wanted raceways, but the most common solution (getting power and data from the wall) was impossible because of the radiant heat system in the side walls.



TIPS FROM REAL PROJECTS

Know your walls.

Solution:

- Power and data run perpendicular to the desks, originating from the back wall.
- Transition ramps are concealed under desks.
- Receptacles sit in the middle of the two-person desks so both people can reach them easily.



TIPS FROM REAL PROJECTS

Schedule smarter.

Project: University of Louisville

Concern: Short project turnaround. Renovation of 125-seat lecture hall with powered furniture and raceways scheduled for winter break. Polished concrete and carpet were already in place.

Solution:

- ADA-compliant raceways installed on top of the floor for easy access.
- 24 circuits run through auditorium.
- Project finished before end of winter break.



TIPS FROM REAL PROJECTS

Customize to occupants' needs.

Project: U.S. Military Academy at West Point

Concern: Project called for power connections in 14 classrooms. All 14 spaces have vinyl composition tile flooring. Floors are subjected to military boots, salt and snow.

Solution:

- Raceways keep cables and wires secure and protected.
- The raceway products specified can be wiped clean with a damp rag when students track in snow, ice, and dirt.



TIPS FROM REAL PROJECTS

Customize to occupants' needs.

Project: 36° North

Concern: 36° North in Oklahoma needed a cable management solution in a historic building to accommodate all users with power, data, and telecommunications access without intruding on workspaces. Core drilling was not an option.

Solution:

- In-carpet raceways were installed in all conference rooms and workstations.
- Staff can change and update cabling by removing the cap on the raceway.
- Ability to channel data in a way that is ADA compliant.



TIPS FROM REAL PROJECTS

Call in the experts.

Project: Major vacation rental provider

Concern: Connectivity for four corporate campuses.

Solution:

- Company utilized raceways to power everything in all four campuses.
- Design teams worked to recommend the correct products for high power/data requirements as well as minimum Wi-Fi areas.
- The raceways blend with the unique building design.



TIPS FROM REAL PROJECTS

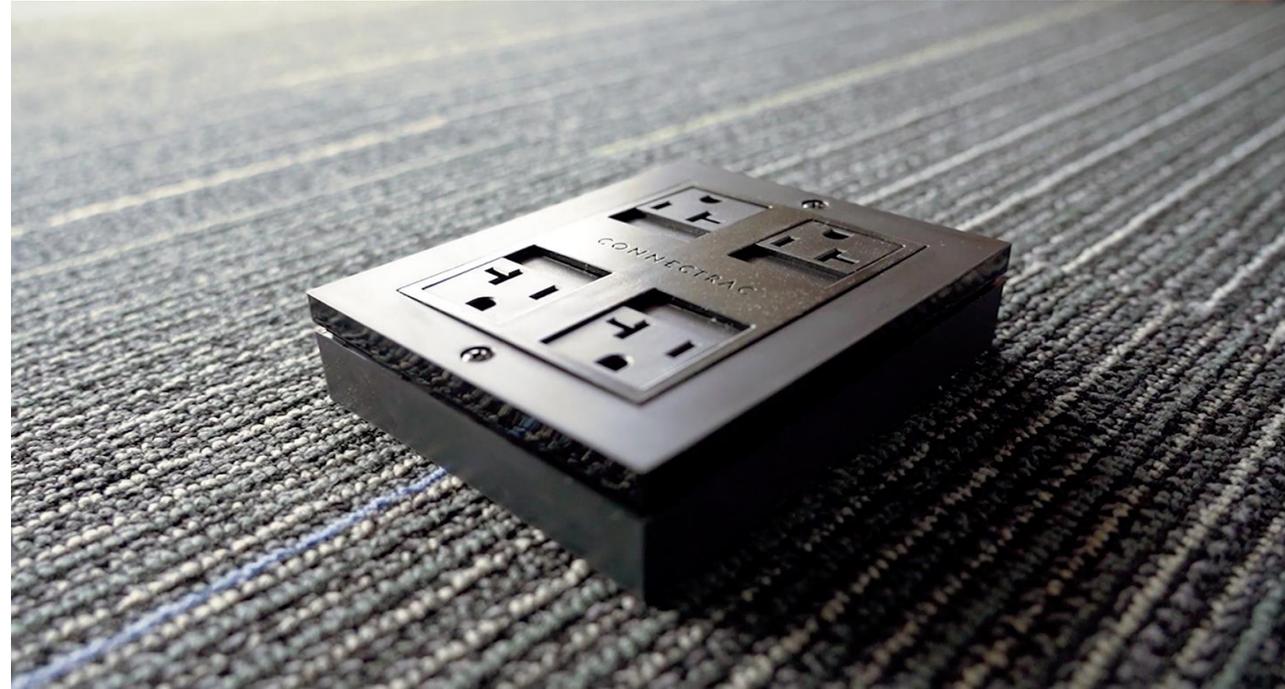
Think about future needs.

Project: Garrett-Heilbrun

Concern: Future proofing new corporate office for future expansion.

Solution:

- Moved to new, larger office space and needed flexibility for future growth.
- Needed a solution that would allow for reconfiguring furniture with power access.
- Installed all under-carpet raceways throughout space.



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THANK YOU FOR PARTICIPATING.