

# PLANNING FOR HOSPITAL CAMPUS ACCESS THAT WORKS FOR PEOPLE



## LEARNING OBJECTIVES

After reading this article, you should be able to:

- + **IDENTIFY** features of the built environment that can help users physically access hospital services and elevate their customer service levels.
- + **DETERMINE** key features of promoting customer-friendly wayfinding.
- + **LEARN** how to adequately plan for parking capacity, not only in aggregate terms, but by user group and appropriate geographic distribution, under both current and future conditions.
- + **UNDERSTAND** how the mobility, transportation, and parking systems can all work together to provide multi-modal access.

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**W**ell-functioning hospitals and medical centers are no accident that a team of healthcare professionals bandaged and fixed up in the emergency room. These hospitals have been carefully planned to deliver access that works—access that is sufficient in capacity and delivers qualitatively.

This course defines the elements of hospital campus access that are essential to promoting the efficient, stress-free movement of patients, staff, family, and



visitors. Campus access elements include signage and wayfinding, parking facilities, transportation demand management, shuttle buses, curb access, valet parking management, roadways, and pedestrian walkways.

### SIGNAGE AND WAYFINDING

Ease of access begins with a top-notch signage and wayfinding system, a feature that is extremely important to new or infrequent visitors—which in healthcare includes the lion's share of patients and families, in addition to new employees and physicians who have not yet established familiarity with the campus.

Ideally, hospital visitors should be able to scout out the campus prior to a planned trip, identifying their final destination, route, means of ingress/

should include written instructions to help infrequent visitors navigate points of ingress and egress. For example, the elevator that visitors might have to take in a hospital parking structure will likely differ from the elevator required to reach the final destination. In this scenario, a detailed explanation of the dual-elevator route will be necessary to avoid confusion.

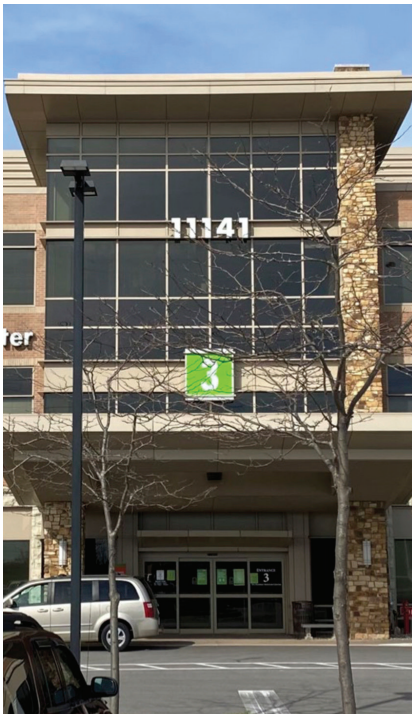
- Roadways should include monument signage that provides directional information, referencing buildings, street addresses, and parking facilities by name and user group.
- Addresses should be clearly marked on all buildings and include the street number and name of the street.
- Building names should be affixed to the exterior façade of the building. Signage lettering needs to be large enough so that it is easily legible from inside a vehicle passing the building via the nearest street.
- Building names and entrances should be clearly numbered or lettered, and designated on building façades, above doorways, on hospital maps, on signage, and on the hospital website.
- Signage and building addresses should also be lit or backlit so that information is legible during periods of darkness.

### PARKING PLANNING AND DESIGN

#### **Parking Needs Analysis**

Every hospital needs sufficient parking capacity, which is defined as:

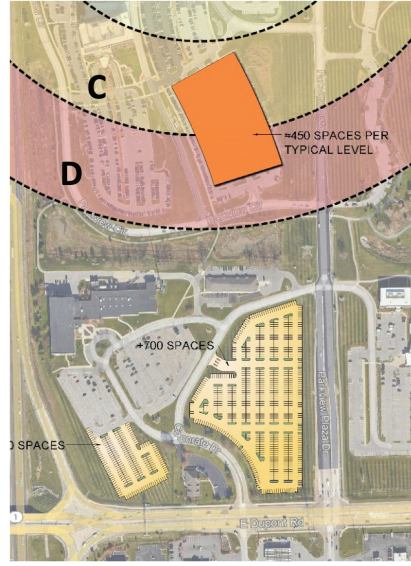
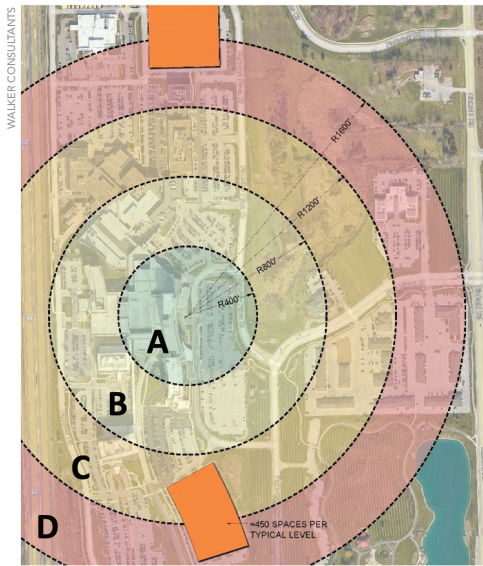
- Adequate in number so that a motorist is never turned away because there are zero available parking spaces
- Reasonable proximity to the ultimate destination and hospital entryway. A large, sprawling campus that has available parking spaces on one end of its campus cannot legitimately consider these spaces available for use for someone needing to access the hospital on the opposite end of the campus. Parking space availability must be proximate to each entry portal.
- Clearly marked and understood by all people using the system
- Satisfactory in condition, meaning they are safe, secure, and well-maintained
- Sufficiently accessible for special interest groups, including persons with disabilities and those requiring electric-vehicle charging.
- Satisfactory in terms of geometry. Spaces must meet minimum geometric standards that allow for reasonable vehicular maneuvers. Minimum stall



Well-done signage can make the wayfinding process much easier for patients, families, and new staff members.

egress, and parking location. In most cases, people will perform this scouting exercise via the Internet, using either Google Maps or Microsoft Bing mapping software and the hospital's website. It is helpful when signage and wayfinding and associated materials clearly communicate the following items to prevent confusion and facilitate ease of access for all:

- Maps and published website information



Level of Service	Walking Time (approximately)
LOS A (400')	1 minute 30 seconds
LOS B (800')	3 minutes
LOS C (1200')	4 minutes 30 seconds
LOS D (1600')	6 minutes

Average Walking Speed: 3.1 mph (4.6 ft/s)

The table and maps above depict acceptable walking distances from the main entrance of the hospital to available parking within various distances, each representing a different level of service.

widths, stall lengths, and drive aisles are necessary to mitigate vehicle damage and provide user comfort.

### Parking Adequacy by User Group

Each user group requires sufficient parking. This means available physician parking spaces cannot be accessed by patients, visitors, or employees, and spaces designated for patient/visitor use cannot be used by employees.

A rule of thumb in the mobility and parking planning profession is that a hospital parking supply should contain what is called an “effective supply cushion.” This cushion is generally 5-15 percent of the total parking capacity. The cushion should be vacant regularly, including during the busiest hour on a typical busy day.

Small parking facilities, say 50 or fewer spaces, should have the smallest cushion (5-10 percent), because it is easy to determine if there are any vacancies. Same goes for employee parking facilities, because the number of users is known and reasonably consistent.

Patient, visitor, and physician parking typically commands a 10-15 percent cushion, because these are either infrequent users or, in the case

of physicians, are some of the busiest and highest-cost professionals who require a higher level of service.

### Acceptable Walking Distances

Patients, visitors, and employees each have a unique perception of what an acceptable parking location is in relation to their destination. Employees are typically encouraged to park farther away, while patients and visitors desire access to the closest parking spots available.

In the table at left, walking distances are presented to help provide a common context of acceptable walking distances from the main entrance of the hospital to available parking within various distances, each representing a different level of service (LOS). The levels of service, as defined in the exhibit, are indicators of the willingness of an individual to walk to/from their destination with both physical and perceived effort considerations, with LOS A being most desirable.

Generally speaking, the smaller the hospital the shorter the acceptable walking distance; the larger the hospital, the longer the acceptable walking distance. Patients and visitors are the customers, so, in theory, they should have the shortest distance to walk. Many patients and visitors have ambulatory challenges, some of which are addressed through accessible parking.

### ADA Accessible Parking

The Americans for Disabilities Act is civil rights legislation that became U.S. federal law in 1990. The intent of the accessibility guidelines portion of the law is to provide persons with disabilities access to buildings and infrastructure. Subsequent to 1990, there have been several additions and refinements to the original legislation. To legally comply, parking facilities must be designed with ADA accessibility standards in mind. Some of the more important requirements include:

- Federal standards must be met at a minimum
- Some states have standards that exceed federal standards. In those cases, the higher state standards must be met.
- Accessible parking spaces are required on a facility basis in accordance with the table shown on the next page.

Total Number of Parking Spaces Provided in Parking Facility	Minimum Number of Required Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2 percent of total
1,001 and over	20, plus 1 for each 100, or fraction thereof, over 1,000

- Ten percent of visitor/patient spaces for hospital-based outpatient facilities and emergency rooms must be accessible spaces.
- Rehabilitation and outpatient physical therapy facilities have a requirement that 20 percent of visitor/patient spaces be accessible spaces.
- One of every six accessible spaces must be van accessible.
- Accessible spaces must be a minimum of 96 inches wide and include the full length of a standard parking space.
- Van-accessible spaces must be a minimum 132 inches wide.
- Accessible spaces require an access aisle that may be shared with one other accessible space.
- Access aisles must be a minimum of 60 inches for standard and van-accessible spaces; be at least as long as the parking space is required on either side of the parking space; and must be marked to discourage parking in it. Access aisles cannot overlap vehicular ways.
- Curb ramps may not be located in access aisles.
- The floor slope of clear space at doors and access aisles cannot exceed two percent in any direction.
- Access aisles and stalls must be marked separately and cannot be shown as one extra wide stall that co-mingles the parking stall and access aisle.
- Accessible spaces must be identified by signs with the International Symbol of Accessibility. An

accessible parking sign must be provided for each accessible parking space, and the sign must be a minimum of 60 inches from the pavement.

- The accessible path of travel from the parking area to the hospital entrance must always be equal to or greater than 36 inches in width and without obstructions (e.g., protruding equipment, signage, metering devices, EV charging stations).

### **Parking Management Best Practices**

There are a number of best practices that have been effectively employed by hospitals to optimize access. These include:

**Pedestrian access:** Reassign selected employees to park at medical office buildings with appropriate pedestrian access to the buildings where associates work. To head off potential employee complaints about parking facilities being too remote, particularly after dark, take stock of employees with shifts ending in the late-evening hours, and formally assign “shift buddies” to enable built-in company on the walk to the lot.

**Parking facility striping and restriping:** In parking areas that are shared by different user groups, stripe spaces designated for employee use with a different color of paint. For example, one hospital uses green paint to designate employee spaces and white paint for visitor/patient spaces. Perform annual walkthroughs of surface parking lots and restripe areas with excess wear and tear. Not doing so can lead to a reduction in parking space inventory and increases in mis-parking.

**Signage and wayfinding:** Signage and wayfinding are subtle but impactful ways of clearly delineating parking facility user groups and reducing infractions. Signage should focus on directing first-time parkers to designated visitor and patient parking areas and helping them find their way to building entries. Clear signage serves as a delicate way of reminding employees to avoid visitor and patient parking resources.

**Maps:** Develop and post to the hospital website an easily downloadable PDF version of a parking map that designates locations of parking facilities and user assignments.

**Peripheral parking with solar carports:** Covered surface parking can be a strong incentive for employees to park in less conventionally attractive spaces in remote locations, particularly in hot summer months. A solar panel system is a covered parking solution that can provide additional financial and practical benefits to hospital campuses,



compensating, in part, for any regression during colder months. It is worth noting that solar panel installations are more expensive than other covered surface parking options.

**Rideshare and carpool incentives:** Preferred spaces such as those closest to the main hospital building can be made available to rideshare and carpool users. Users can register their vehicles' license plate numbers (LPNs) with the hospital administration and, in turn, be provided with a single hangtag that is transferable to each vehicle included in the rideshare or carpool group.

**Park farther program:** Adorning the most remote spaces with a statement similar to "Park here to walk farther and be healthier" reminds parkers of the various health benefits associated with parking in a far-away space. This positive reinforcement is effective in improving utilization rates in remote spaces and freeing up more convenient spaces for parkers most in need, such as hospital patients.

**Enforcement:** Standardized, strict, and consistent enforcement and consequences for violators are essential to a properly managed parking system. Hospitals should focus enforcement resources on visitor- and patient-designated parking areas. Many hospitals have effectively used security personnel positioned at entrances to visitor and patient parking areas to deter employees from parking in these spaces. When it is not possible to station human monitors, use traffic cones to deter nonpatient and visitor use of selected spaces. It is critical to keep employees out of spaces intended for patient and visitor use, especially early in the morning, at the time when many employees are still arriving and before many patients and visitors have arrived. Also, a clearly written employee parking policy can be an effective tool.

**Automated Gates and Credentials:** Use technology to keep unauthorized users out of parking areas not intended for their use. Install automated gates and credential readers at the entry and exit of physician parking areas to keep employees, patients, and visitors from using these premium spots.

**Charge for parking:** Paid parking can be one of the most effective strategies for limiting access to parking areas, when coupled with parking access controls. Some hospitals charge for patient and visitor parking, but then offer reimbursement through a parking validation program funded by various hospital departments. When employee

parking areas are provided at no charge to employees but patient/visitor parking areas require a fee, employees are significantly less attracted to park in the patient/visitor-designated parking areas.

**System check-ups:** Walker recommends that hospital staff assess and record parking inventory utilization rates at regular intervals—say every first Tuesday and Wednesday of the month at 10:30 a.m.—to stay ahead of potential issues and ramp up enforcement if necessary. As an alternative, professional help could be hired to carry this out. Vacant spaces may be counted and recorded by lot and date and stored in a spreadsheet for future review and analysis, and also posted to the hospital website for purposes of communicating space availability to staff, visitors, and patients.

## TRANSPORTATION DEMAND MANAGEMENT

Adding parking supply is not the only way to accommodate hospital parking needs. It is possible (and often less costly) to make existing parking supply—or at least the most convenient parking supply—adequate to meet hospital needs by shifting demand and reducing the number of single-occupancy vehicles (SOVs) brought to campus each day. This is referred to as transportation demand management (TDM).

The average car spends 95 percent of its time parked, and only five percent actually transporting us someplace. But, we know it is there if we need it. It is this sense of security that keeps some people driving every day, even if they know that transit, carpooling, vanpooling, or cycling can work perfectly well for them—and even if they know that changing commuting modes could save them hundreds, even thousands of dollars per year.

With an investment of effort, it may be possible to enhance parking demand reductions through policy changes, targeted communications, programmatic enhancements and incentives, and pricing disincentives. TDM thrives in an environment when users are given choices. Allowing users to make daily decisions means that they may decide to bike one day, take transit another, and drive their own vehicle on another day. These decisions are encouraged through "carrot and stick" methods, whereby the carrots encourage users to want to take another mode and the stick discourages users to drive (alone) on a daily basis.

TDM programs tend to work best when they are accompanied by support services, or TDM

## Contemporary Considerations: Remote Work, Telemedicine, Electric Vehicle Charging, Autonomous Vehicles, and Transportation Network Companies

**W**hen considering future hospital access needs, there are several emerging trends that stand to have impacts. The COVID-19 pandemic has accelerated the number of employees working remotely and the number of patients receiving healthcare services through telemedicine. This was especially true during the first three months of the COVID-19 pandemic.

Remote work is an option for a minority of hospital employees, as it is necessary for a

majority of clinical staff to be at the hospital. We can expect to see remote work delivered by non-clinical employees, as well as continued growth in telemedicine.

While a number of auto manufacturers and tech companies are actively pursuing research and development of fully-autonomous vehicles, mass adoption of self-driving cars is still decades away. As such, it is not possible to plan hospital access around this type of transportation. Assuming fully-autonomous vehicles

exist at some point in the future, we can expect this technology to have a significant impact on hospital access.

The more immediate need is parking and charging stations for electric vehicles (EVs). Although EVs constitute less than one percent of the total vehicle population in the U.S., auto manufacturers and policymakers are eyeing the transition from internal combustion engines to all-electric engines. It may be beneficial for health systems to offer EV charging stations as

a convenience, and at a charge.

Health systems also need to accommodate ride-sharing transportation, such as Uber and Lyft. While these services account for a small share of hospital trips, these vehicles should be accommodated at the curb similar to how hospitals make provisions to provide taxi-cabs with access. In some markets, ride-sharing companies have partnered with hospitals to provide patient access.

enablers, which can act as a security blanket for commuters who leave their personal vehicles at home. These can include a guaranteed ride home (GRH) program, park-and-ride lots, commuter ride matching, one-day parking permits for alternative commuters, a bike-share program, and carshare vehicles available on campus.

While the TDM programs themselves reduce single-occupancy vehicle presence, the support services help attract and retain program participants.

### CAMPUS SHUTTLE BUSES

Some hospital systems cannot provide adequate parking within walking distance to their buildings, so they build or lease remote parking and then establish a campus shuttle bus service.

Shuttle bus programs generally are less desirable than other campus access solutions for two reasons: 1) the total life cycle costs of these programs are often more expensive to operate than

one might think intuitively, and 2) users dislike the inconvenience of having to wait for and take a shuttle.

In cases where shuttles are essential, the cost to build and operate the shuttle parking lot should be weighed against the cost to build and maintain a parking structure. Sometimes a parking structure can be more cost effective, and will certainly provide a higher level of service.

When planning for a shuttle bus parking lot, consider the following operational requirements and costs:

- Cost of the land
- Cost to build the parking lot, including bus shelters
- Cost to purchase an adequate number of shuttle buses
- Cost to maintain shuttle operations, including fuel and maintenance for the buses, amortization, and bus driver wages and benefits. (Autonomous shuttle buses are starting to roll out on a limited



basis. These reduce driver wages and benefits expenses.)

The number of buses and drivers varies depending on the size of the parking lot, the seating capacity of the buses, the distribution of the parking demand, and the distance traveled from the lot to the hospital entrance. Headway (or bus wait times) should not exceed 10 minutes.

Commercial operators offer contracts to owners that include a shuttle bus operation. Charges are often stated on a per-hour basis, which varies depending on the size of the bus.

### **CURB ACCESS MANAGEMENT AND VALET PARKING**

It is important that hospitals have ample curbspace to allow for vehicles to access hospital entrances and to help mitigate pedestrian and vehicular conflicts, which increase with congestion and impeded sightlines. Pick-up and drop-off space should be designated near the front door of buildings that will be accessed by patients and visitors.

Bollards, rather than curbs, are preferred to control vehicular access. Curbs can be trip hazards, particularly for people with limited ambulatory capabilities.

Valet parking is used by many hospital systems to offer a higher level of service and convenience to patients and visitors. However, these programs require significant manpower and are expensive to operate.

### **ROADWAY AND PEDESTRIAN WALKWAY PLANNING AND DESIGN**

Safety and user convenience are the key considerations in planning for workable pedestrian movements on a hospital campus.

It is critical to mitigate pedestrian and vehicular conflicts. This can be achieved by creating separate paths for pedestrian and vehicle movements and minimizing the number of intersecting points. When intersections are inevitable, care must be taken to avoid elements that could obstruct either

pedestrian or motorist views. Vehicular traffic must be managed at reasonable speeds through signage and roadway design (e.g., straight roads promote higher vehicle speeds in comparison to winding, curvilinear roads).

Left-hand vehicular turns should be avoided where possible. Pedestrian traffic signals, crosswalks, and warning-signage-activated pedestrian crosswalks can help improve safety conditions.

Consideration should be given to designing and building parking lots so that pedestrians can walk down drive aisles or designated pedestrian footpaths from their parked cars to their destination, and without repeatedly walking between rows of parked vehicles. This practice makes for a safer walking experience and mitigates vehicle damage.

A wellness focus can be promoted by integrating walking trails adjacent to parking facilities to promote the benefits of walking. Signage can be used to communicate items such as walking distances, steps, and calories consumed.

Traffic signalization can help at intersections where left-hand turns are required.

### **PLANNING FOR FUTURE GROWTH AND FLEXIBILITY**

As patient and employment volumes grow, parking demand and access needs grow. The aging of the U.S. population is expected to propel future growth in healthcare services.

To address these growing parking and access needs, hospital administrations should continuously have a pulse on parking occupancy. User assignments can be adjusted based on changing needs. Employees may need to vacate certain parking areas to make room for additional patients and visitors. Access controls, parking management practices, and signage and communications materials require updating as these changes are implemented.

When walking distances from parking areas to hospital entrances become intolerable, then it's time to plan for increased densities that can be gained through parking structures.+