

# Automated Parking What's the Real Deal?

Canadian Parking Association  
Association canadienne de stationnement



Canadian Parking  
Association  
Association canadienne  
du stationnement

Parking Now  
Stationnement Futur



CHANCE  
Manufacturing America, Inc.



# CHANCE

MANAGEMENT ADVISORS, INC.



# 21<sup>st</sup> Century Technology

- Automated parking is actually much older than this
- A recent book documents the beginnings of “mechanized parking” around the world
- The first modern computerized garage was retrofit into a building in St. Louis in the early 1980s
- Automated garages built in Italy in the 1960s are still in operation

# Purpose of Today's Remarks

## ■ Answer typical questions

- ◆ How many automated garages have been constructed in North America?
- ◆ Why has adoption of this technology been so slow in North America?
- ◆ Who can use these garages?
- ◆ What do they cost?
- ◆ What are positive attributes and concerns
- ◆ How do you get one if you want one?

# Purpose of Today's Remarks

- Provide information about manufacturers
  - ◆ Who they are and where they are
- Discuss some technical issues
  - ◆ How do the garages operate?
  - ◆ Pallet and non-pallet types of garages
  - ◆ Other types
  - ◆ What are the dimensions of the spaces and the floors?
  - ◆ Retrofit and new garages
  - ◆ What do you do if the power goes out?

# Purpose of Today's Remarks

- Discuss advantages and limitations of automated garages
- Describe an example that we are building in Philadelphia
  - ◆ The technology we are using
  - ◆ The type of garage
  - ◆ How it is going to operate
  - ◆ What it will look like
  - ◆ Who is going to use it



# FAQ

## ? What is automated parking?

- ✎ Computerized, mechanized system that stores automobiles similar to the way that everything from ice cream to tractor trailer containers are moved and stored every day
- ✎ The technology is similar to that used in storage warehouses, for moving heavy dies used in the automobile industry, and for performing other automated manufacturing or movement tasks for all types of industries

# FAQ

## ? How does it work?

- 🚗 Drive into an area that resembles your garage, or an area underground
- 🚗 Get out of your car, take your items and your keys
- 🚗 Pull a ticket, use a credit card, use another credential to identify your vehicle
- 🚗 Leave the area, and let the equipment take your car for storage
- 🚗 Return later and use the same credential to retrieve your car







# Underground Garage in Greece



**Video**

# FAQ

 How many automated garages exist in North America?

-  Probably fewer than five are operating
-  Others purported to be under construction
-  Many have been advertised as “happening soon”
-  There are hundreds across Europe, Japan, China, and starting in the Middle East

# Hoboken, NJ

- 314 Spaces
- Built by Robotic for the Hoboken Parking Authority in 2003
- Users are monthly patrons
- Designed to fit with the downtown architecture

# Hoboken, NJ



# Washington, DC

- 74 spaces (instead of 25 conventional spaces that would have fit in the same volume)
- Built by Wohr-Parkhaus for a private developer in 2004
- Users are the residents who live above







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# Washington, DC



**Video**

# Washington, DC



Video

# New York

- 67 spaces
- Built for a private developer in Chinatown
- Users are the residents from the building above

# New York









# FAQ

## ? Why aren't there more?

- ✎ We have more land, and there are fewer tight locations on which owners have wanted to build substantial numbers of parking spaces
- ✎ We are reluctant to adopt new technology from Europe – at least in the parking industry (think how long it took to incorporate multi-space meters or pay-on-foot machines)

# FAQ

## ? Why aren't there more?

- ✎ The technology is little understood or recognized in North America, in part because of the way in which manufacturers have approached the market
- ✎ Many in the parking industry do not benefit from a movement to automated parking (e.g., structural engineers, concrete contractors)
- ✎ The Hoboken example created reluctance to try automated parking, at least in the US



# FAQ

## ? Who can use these garages?

- 🚗 Anyone
- 🚗 Similar to a typical ramped garage, the design must accommodate the intended use
- 🚗 Around the world the facilities are used for transient, monthly, residential, storage, and commercial (auto dealer presentation of vehicles) patrons

# FAQ

## ? What do automated garages cost?

- ✎ A typical “**cost per space**” answer is too simplistic
- ✎ Automated garages can provide 50-100% more spaces in the same volume
- ✎ Smaller spaces (7’2” by 17’), lower floor to floor height, no ramps, no patron elevators, fewer stairs, thinner slabs
- ✎ Less land required for the same number of spaces – half or less, depending on site

# FAQ

## ? What do automated garages cost?

- ✎ For some clients, less required land equals significantly lower costs
- ✎ For other clients, less required land equals ability to place a garage somewhere needed, or ability to keep green space, or ability to add more spaces than anticipated
- ✎ Equipment and installation (depending upon manufacturer) ranges from \$10,000 to \$28,000 per space
- ✎ Building structure is in addition to that

# Primary Automated Garage Cost Factors

- Peak Flow requirements, and therefore the number of lift systems required
- Geometry and dimensions of the site
- Access and Entrance characteristics of the site



# Understanding the Players

- Relatively few actual manufacturers
- Many more representatives – sometimes multiple representatives for the same manufacturers in the same territory
- Typical issues in an industry that has not yet matured in this part of the world

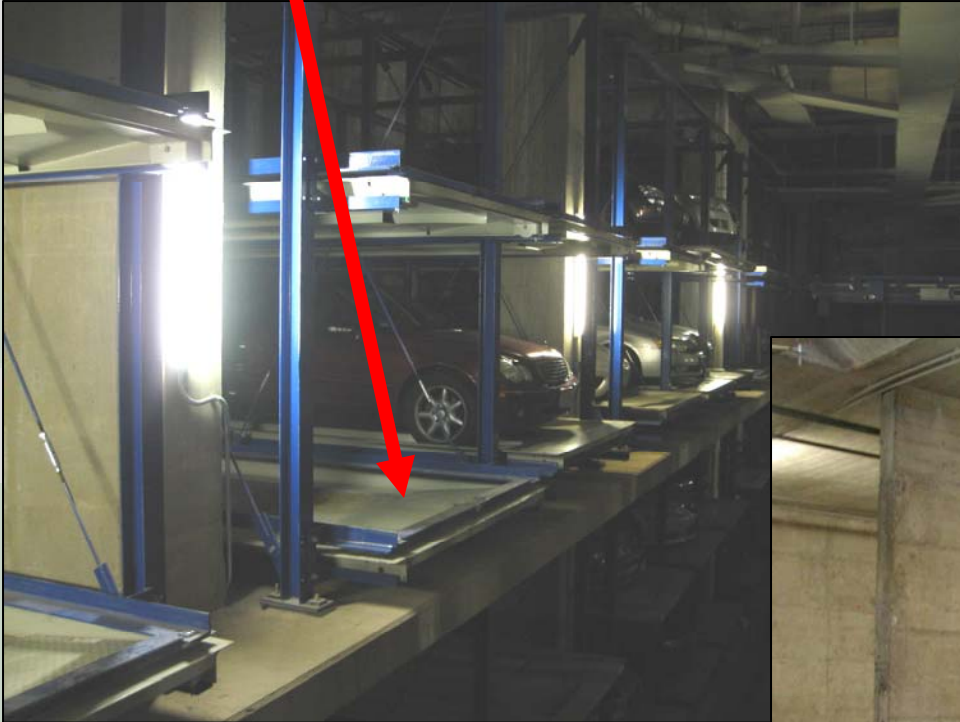
# Manufacturers

- Major designers and manufacturers are primarily European
- They are represented by 10 or more agents in North America – very confusing
- Primary manufacturers:
  - ◆ Stolzer
  - ◆ Westphalia Technologies
  - ◆ Wöhr
  - ◆ Sotefin-Elecon
  - ◆ Robotic (earlier Krupp)
  - ◆ Unitronics

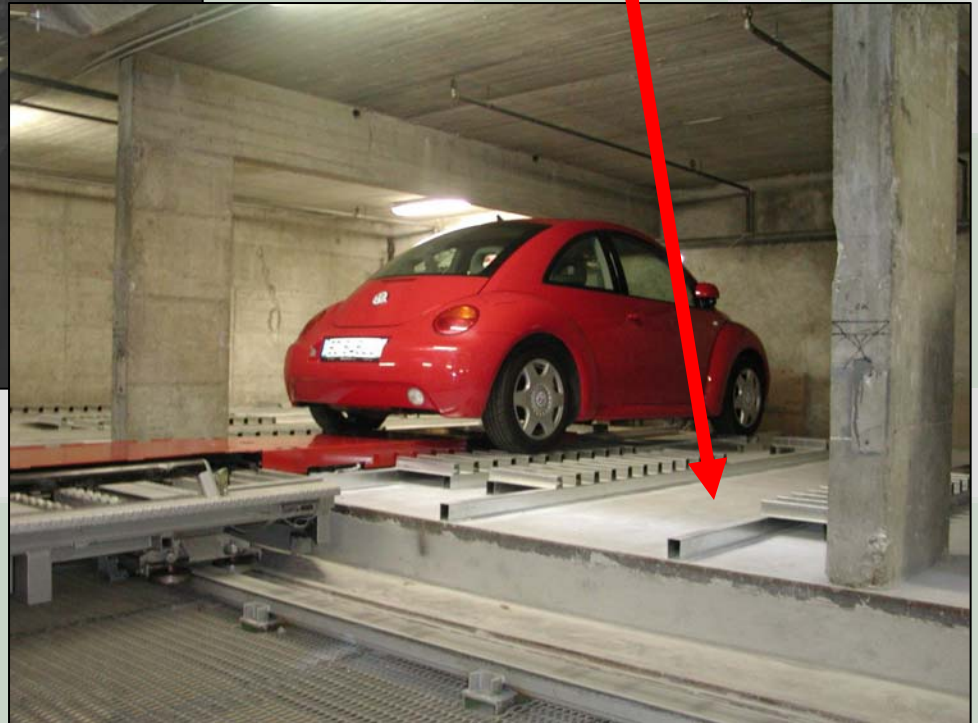
# Technical Issues

- The building to house the automated garage may be concrete or steel
- Façade can be whatever is desired
- Utility use: +/-0.4 kwh per entrance/exit
- Average cycle time: 60 – 120 seconds
- Vehicle size: typical takes up to SUVs, but special designs can take larger
- Service and spare parts: 1.10% per year of initial capital cost, or roughly \$240/space/year

**Pallet**



**No Pallet**





# Advantages of the Technology

- Less land is necessary (50-60 % less for the same number of spaces due to density and no ramps)
- Garage can go up, down, or to either side from entrance
- Lower utility costs compared to a typical garage
- Greater security for patrons and vehicles
- No worries about vandalism or cars being hit in the garage
- Adaptable façade – can look exactly like its neighbors
- Ability to retrofit historical or other buildings
- Convenience for customers – less time to park, less time to retrieve a vehicle, no lost vehicles
- Accelerated depreciation (machinery)

# Advantages of the Technology

## ■ Green parking

- ◆ Avoids the highest causes of car emissions -- driving through the garage or queuing to exit
- ◆ Lower utility use
- ◆ Lighting only at entrance/exit and low levels for periodic maintenance
- ◆ Minimal areas needing housekeeping
- ◆ No light spill-over from high floors

## ■ Simple for the parking patron

## ■ After start-up, few if any personnel are needed

## ■ Excellent for difficult projects: air-rights construction, underground garages, irregular sites, small sites with high demand

# Recently in Buildings.com

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Security Newsletter

For Commercial Buildings



## Your Building's Worst Security Problems

*Experts say that most office-building crimes occur in the parking garage, restrooms, stairwells, and back-of-house corridors*

*By Michael Fickes*

Think about the minor and major incidents and crimes that have occurred in your building. Where did they happen?

Chances are good that the trouble arose in the parking garage, restrooms, stairwells, and back-of-house corridors. "Heinous crimes can occur in these places, so pay particular attention to them," says Jon Lusher, an expert in CPTED and a principal and executive vice president at IPC Intl. Corp., a security consultancy in Bannockburn, IL.

CPTED (Crime Prevention Through Environmental Design) concepts can help make these areas more secure.

### **Uncomfortable?**

Parking garages tend to make people uncomfortable. The odor of oil hangs in the air. The lights are dim. You hear distant footsteps and cars passing. You're by yourself, cut off from others. It's disquieting.

# Limitations or Concerns

- A universal building code does not yet exist
- Column locations can be tricky when fitting the garage into a building
- Sufficient entrances and lifts have to be provided to absorb the queue – depends upon the types of users
- Modular aspect works best in suitable dimensions, although there are almost unlimited configurations

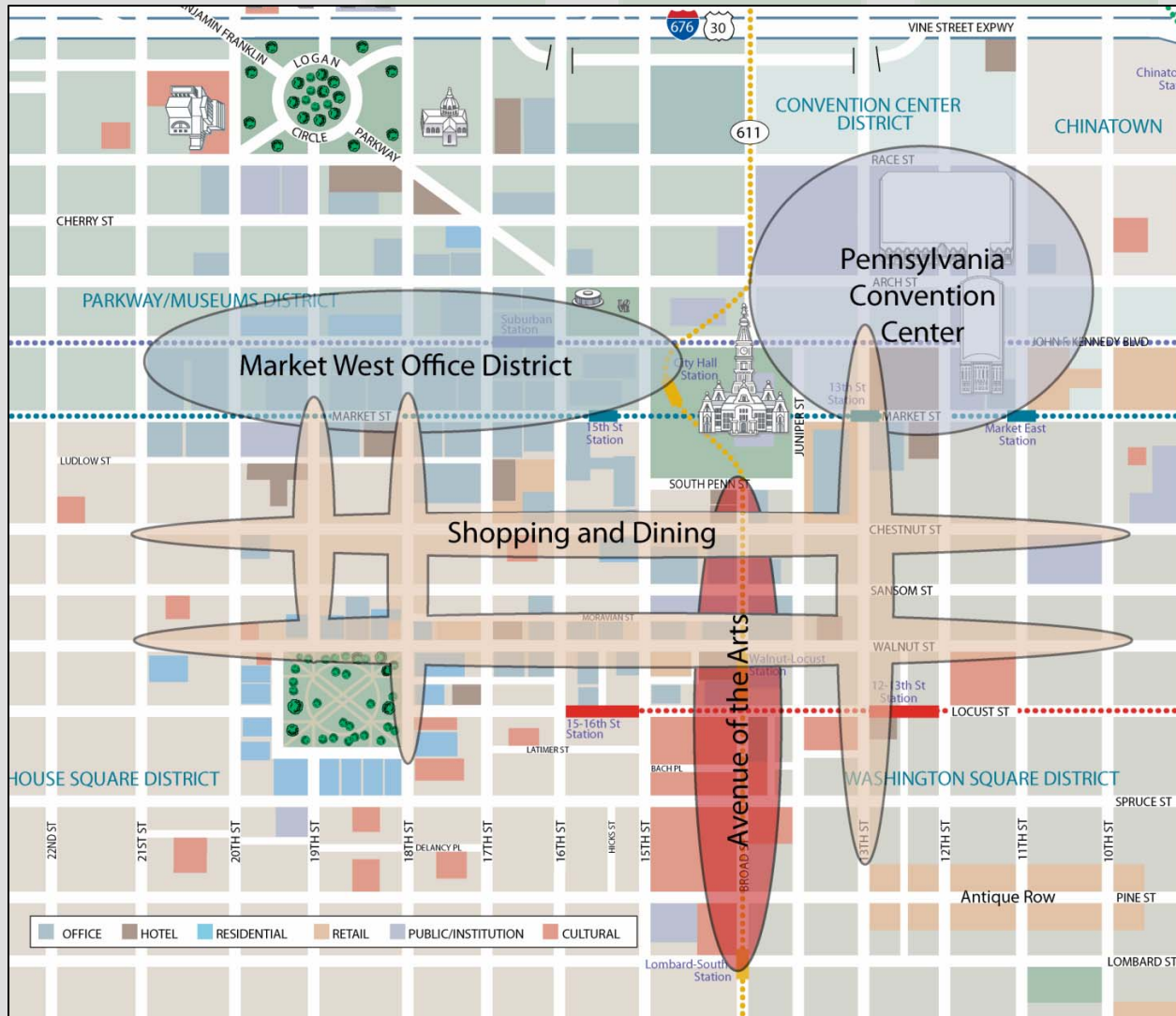
# The Philadelphia Garage

Re-use of an urban building,  
retrofit for new parking





# Downtown Areas Served by Garage



# Installation Underway



# The Philadelphia Garage

- Owner is a national development company, focused on commercial properties
- Manufacturers: Sotefin (Italy) and Atlas Technologies (Michigan)
- Sotefin has 24,000+ automated spaces in operation today around the world, 178 facilities constructed since the 1960s
- Atlas has a 40-year history of sophisticated automated equipment installed around the world, and is a non-exclusive distributor of Sotefin technology



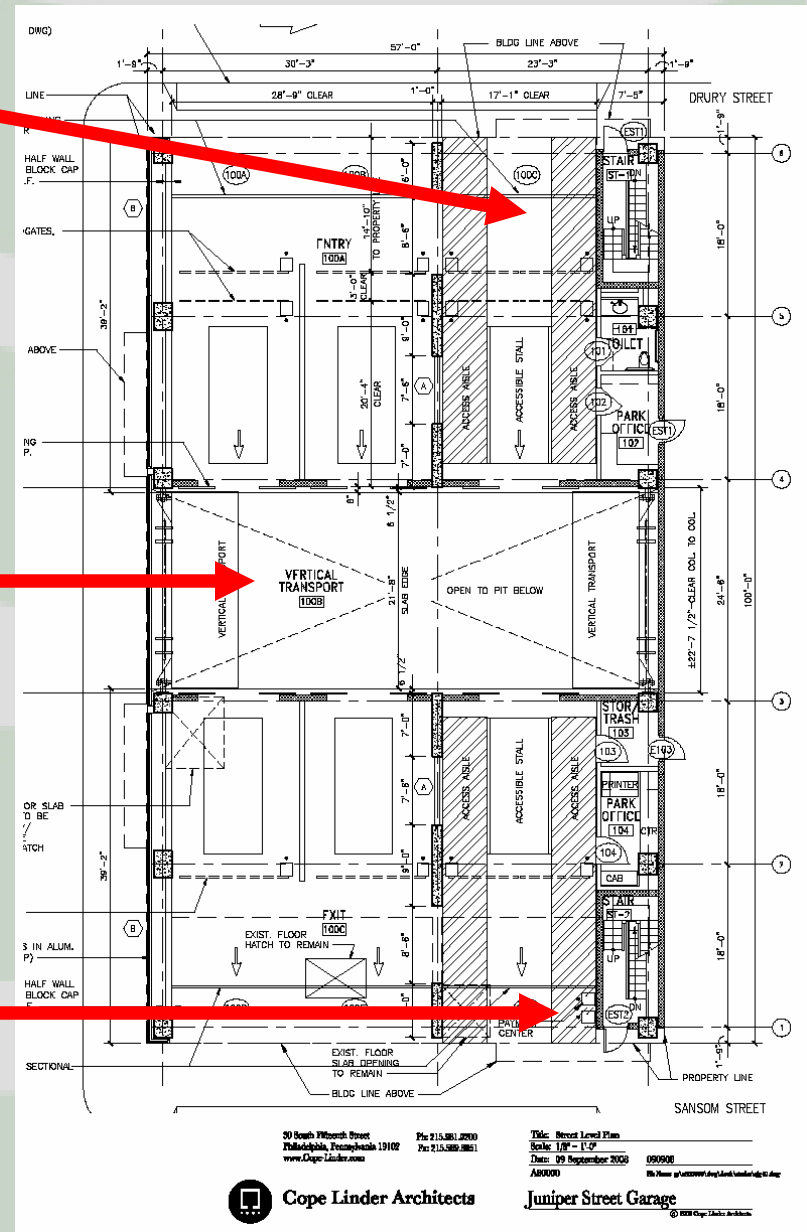
Entry area with ADA space

Three entrance spaces

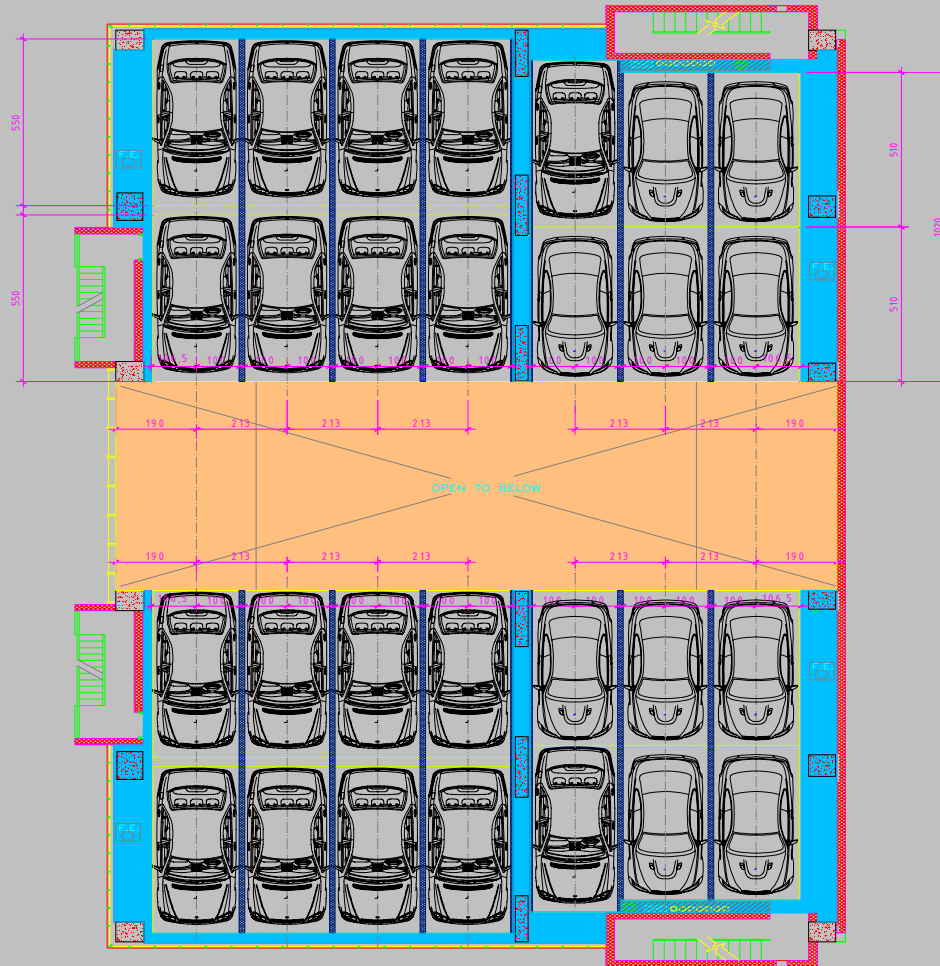
Vertical Transport Area

Exit Areas

POF Machines



# Typical Floor



# The Philadelphia Garage

**224 spaces**

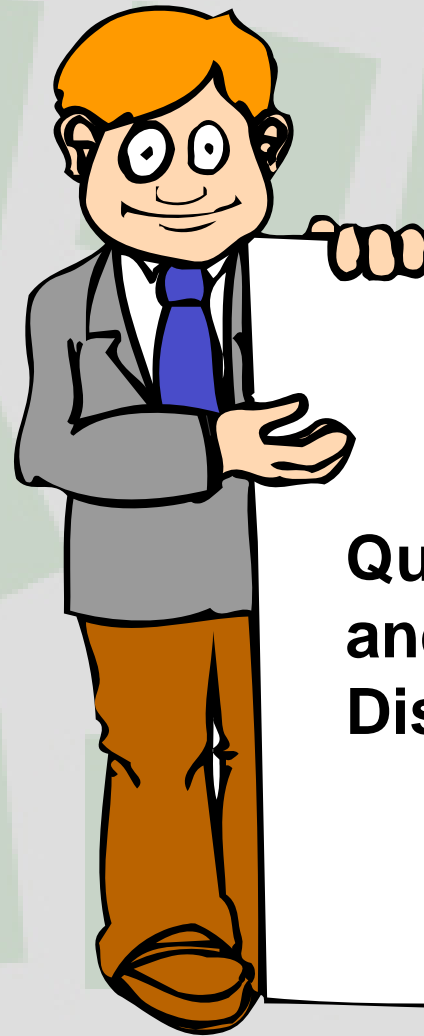
**Sedans and SUVs**

**Monthly, Residential,  
and Transient Patrons**

**Credential or Credit  
Card (no cash)**

**Open 24/7 for  
Residential**





**Questions  
and  
Discussion**

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