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Vertical Transportation Back To Work Challenges

Considerations for Organized
Facility Redensification
April 22, 2020

Provided By:
Florida Regional Manager & Consultant
Certified Elevator Inspector
Michael.Lagana@LerchBates.com

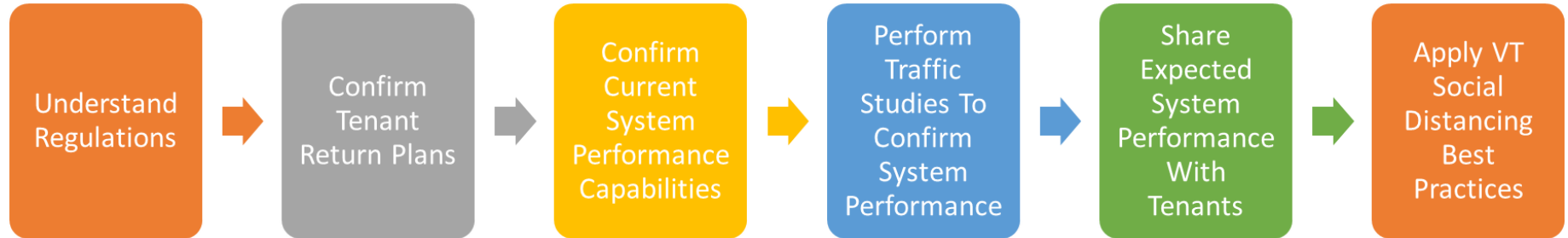


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Building Insight

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Process for Executing an Effective Return to Work Program



Local and National Regulatory Requirements

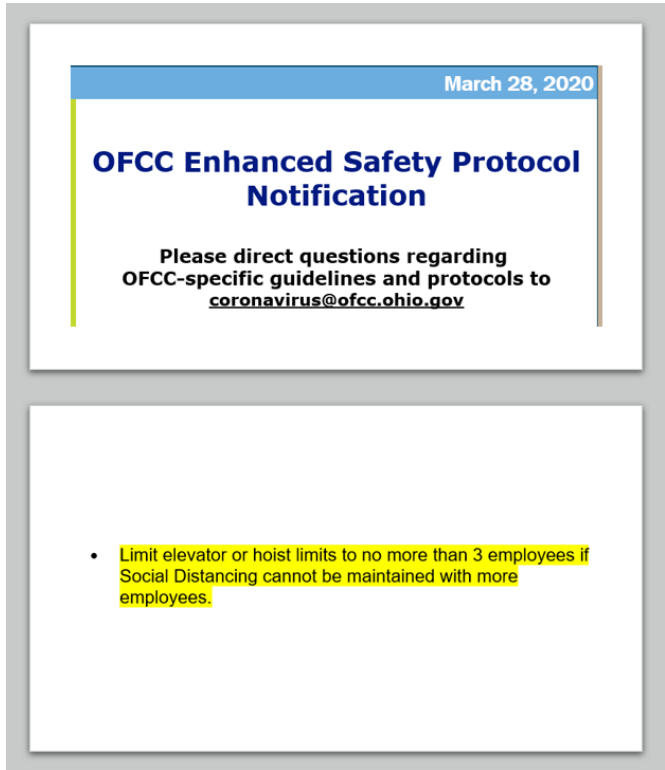
Understanding of new local and national regulatory requirements is mandatory.

- It is anticipated that social distancing requirements will include local criteria beyond the simple maintenance of a 6-foot boundary between pedestrians.
- These new rules for social interaction will play a large role in the establishing best practices for Building Redensification.
- To date, national standards for elevator loading **have not been identified** by ;
 - CDC
 - OSHA
 - BOMA
 - ASME
 - CTBUH
 - National Guidelines for “Opening Up America”

Lerch Bates continues to monitor both national and local guidelines/requirements

Documented “Local” Elevator Loading Requirements

- It is anticipated that States/Local Jurisdictions will develop formal guidelines for elevator loading as pressure builds from property ownership
- State of Ohio has issued guidance on elevator load which limits car loading to 3 people for on-going construction projects.



March 28, 2020

OFCC Enhanced Safety Protocol Notification

Please direct questions regarding OFCC-specific guidelines and protocols to coronavirus@ofcc.ohio.gov

- Limit elevator or hoist limits to no more than 3 employees if Social Distancing cannot be maintained with more employees.

Tenant Return to Work Plans

- A critical understanding of building specific protocols and tenant sensitivities must be addressed to accommodate a broad cross section of vertical transportation users.
- Each building and building type (Commercial Office, Residential, Healthcare, Higher education, etc.) will be required to develop a customized redensification plan and process.
- Understanding **tenant specific** populations by floor, arrival times, building movement patterns (inter-floor traffic requirements), hours of operation (flex time)

Tenant Return to Work Plans (cont.)

- It is absolutely critical that we understand tenant specific re-population plans, in order that we may accurately predict back to work VT system performance.
- It is clear that car loading will be far lighter than normal conditions (more on that later).
- Fewer passengers per trip will directly result in longer lobby waits.
- Performing traffic analysis for projected floor by floor populations will allow ownership/operations to accurately convey VT system performance.

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Tenant Return Plans (continued)

- Staggering tenant arrival and departures times will be critical to controlling lobby overcrowding and optimizing elevator wait times.
- Lobby staging and metering will be required in order to maintain social distancing.
- Post signs in Elevator Lobbies to remind users of recommended procedures and best practices

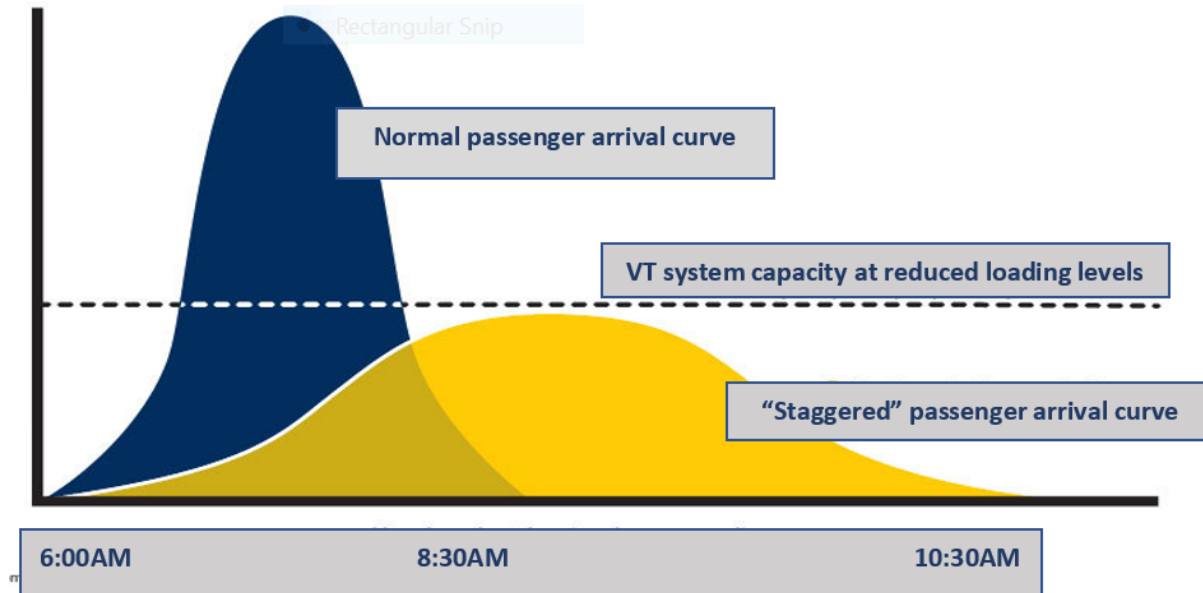


Tenant Return to Work Plans (cont.)

- (Directing tenants to arrive at the building at predetermined times slots
 - 6:00-6:30AM, 6:30-7:00, etc...)
- Directing tenants to depart the building at predetermined times slots
 - (3:30- 4:00, 4:00-4:30, etc...)
- Use Disney Model as the baseline---"Register in advance to schedule your ride"
- We must commit to do all possible to "Flatten The Curve".
 - Gaining commitment from tenants to stagger starting times will play a huge role in addressing system saturation.
 - All tenants to complete "Return to Work Survey/Template"

Tenant Return to Work Plans (cont.)

By “*Flattening the Tenant Arrival Rate Curve*” we are better able to accommodate *lower numbers of passengers per trip*.



Tenant Return to
Work Planning
Template
Morning *Up Peak*
Period

| Tenant Name | ABC Financial |
|---|---------------|
| Tenant Floor Number | 15 |
| Normal Tenant Population | 165 |
| Projected Tenant Population May - July | 25% |
| Projected Tenant Population August -Oct | 45% |
| Projected Tenant Population Nov - Jan | 75% |
| Tenant able to accommodate flex time Arrival/Departure | Yes |
| % Arrival from 6:30 -7:00 | 20% |
| % Arrival from 7:00- 7:30 | 20% |
| % Arrival from 7:30- 8:00 | 30% |
| % Arrival from 8:00- 8:30 | 15% |
| % Arrival from 8:30- 9:00 | 15% |

Tenant Return to
Work Planning
Template
Morning *Down*
Peak Period

| Tenant Name | ABC Financial |
|---|---------------|
| Tenant Floor Number | 15 |
| Normal Tenant Population | 165 |
| Projected Tenant Population May - July | 25% |
| Projected Tenant Population August -Oct | 45% |
| Projected Tenant Population Nov - Jan | 75% |
| Tenant able to accommodate flex time Arrival/Departure | Yes |
| % Departure from 2:30 -3:00 | 10% |
| % Departure from 3:00- 3:30 | 10% |
| % Departure from 3:30- 4:00 | 20% |
| % Departure from 4:00- 4:30 | 20% |
| % Departure from 4:30 – 5:00 | 30% |
| % Departure from 5:00 – 5:30 | 20% |

Confirm Current System Performance Capabilities

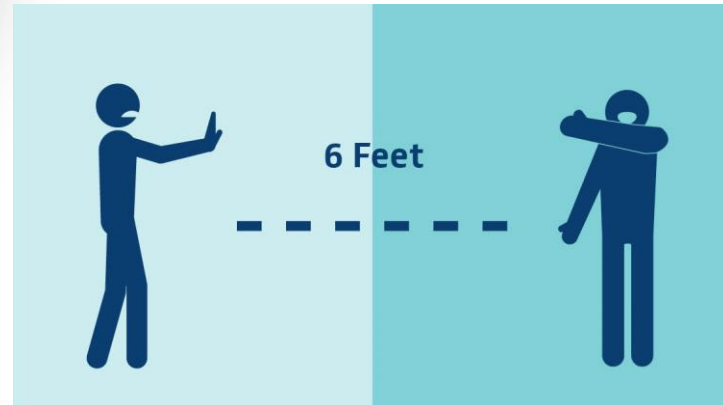
- In order to perform accurate traffic analysis it will be important to document current VT system constraints and conditions;

- Elevator Interior Sizes/Capacities
- Elevator System Availabilities
- Actual Elevator Speed
- Landings Served
- Travel Distances
- Door Sizes
- Door Timing
- Floor to Floor Timing
- Confirm Control System Capabilities
- Confirm Capability To Retrofit Enhanced Hygiene Devices/Systems.

| ELEVATOR INFORMATION | | | | | |
|---|------------|---------------------------------|-----------------------|------------------------------|----------------|
| TYPICAL FLOOR HEIGHT: 12' | | BETWEEN FLOORS: 43 AND 44 | | DOOR OPERATOR SPEED: 2.5 FPS | |
| DOOR TYPE: SSSS | | DOOR WIDTH: 42" AND HEIGHT: 84" | | PRE-OPENING: NONE | |
| MEASURED | CAR EMPTY | TARGET CRITERIA | | MEETS CRITERIA | COMMENTS |
| SPEED UP \pm 3% | 501.37 FPM | 485-515 | | YES | |
| SPEED DOWN \pm 3% | 503.14 FPM | 485-515 | | YES | |
| PERFORMANCE UP | 11.44 SEC | 11.0 SEC | | YES | |
| PERFORMANCE DOWN | 10.71 SEC | 11.0 SEC | | YES | |
| STOPPING ZONE \pm 1/4" | \pm 1/4" | \pm 1/4" | | YES | |
| MEASURED | FRONT | REAR | CRITERIA FRONT / REAR | | MEETS CRITERIA |
| DOOR OPEN | 3.31 SEC | SEC | 2.3 SEC | SEC | NO |
| DOOR CLOSE | 3.59 SEC | SEC | 5.0 SEC | SEC | YES |
| SHORT HOLD OPEN (CAR CALL) | 3.8 SEC | SEC | 3.0-4.0 SEC | 3.0-4.0 SEC | YES |
| INTERRUPTED RAY HOLD OPEN \geq 3.0 INITIAL 5-1.5 SUBSEQUENT | .83 SEC | SEC | \geq 3.0" SEC | \geq 3.0" SEC | YES |
| NUDGING HOLD OPEN | 40.5 SEC | SEC | 20.0-25.0 SEC | 20.0-25.0 SEC | NO |
| STALL PRESSURE | \geq 30 | | 30 MAX | 30 MAX | YES |
| PREDICTIVE LANTERNS: | N/A | N/A | N/A | N/A | N/A |

- Confirmation of current conditions, enhances the analysis deliverable.
- Real data allows the analysis to shift from Theoretical Study to a **Projected Performance Expectation.**

Car Loading During Social Distancing



Social Distancing Guidelines

Coronavirus Disease 2019 (COVID-19)

CDC > Coronavirus Disease 2019 (COVID-19) > Prevent Getting Sick > Cloth Face Covers



Coronavirus Disease 2019 (COVID-19)

Symptoms & Testing



Prevent Getting Sick



How It Spreads

Protect Yourself

Cloth Face Covers



Recommendations for Cloth Face
Covers

Cloth Face Covers FAQs

Cleaning Your Home



Social Distancing

Daily Life & Coping



If You Are Sick



Recommendation Regarding the Use of Cloth Face Coverings, Especially in Areas of Significant Community-Based Transmission

Other Languages

Print Page

CDC continues to study the spread and effects of the novel coronavirus across the United States. We now know from [recent studies](#) that a significant portion of individuals with coronavirus lack symptoms ("asymptomatic") and that even those who eventually develop symptoms ("pre-symptomatic") can transmit the virus to others before showing symptoms. This means that the virus can spread between people interacting in close proximity—for example, speaking, coughing, or sneezing—even if those people are not exhibiting symptoms. In light of this new evidence, CDC recommends wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain (e.g., grocery stores and pharmacies) especially in areas of significant community-based transmission.

It is critical to emphasize that maintaining 6-foot social distancing remains important to slowing the spread of the virus. CDC is additionally advising the use of simple cloth face coverings to slow the spread of the virus and help people who may have the virus and do not know it from transmitting it to others. Cloth face coverings fashioned from household items or made at home from common materials at low cost can be used as an additional, voluntary public health measure.



Use of Cloth Face Coverings to Help
Slow the Spread of COVID-19

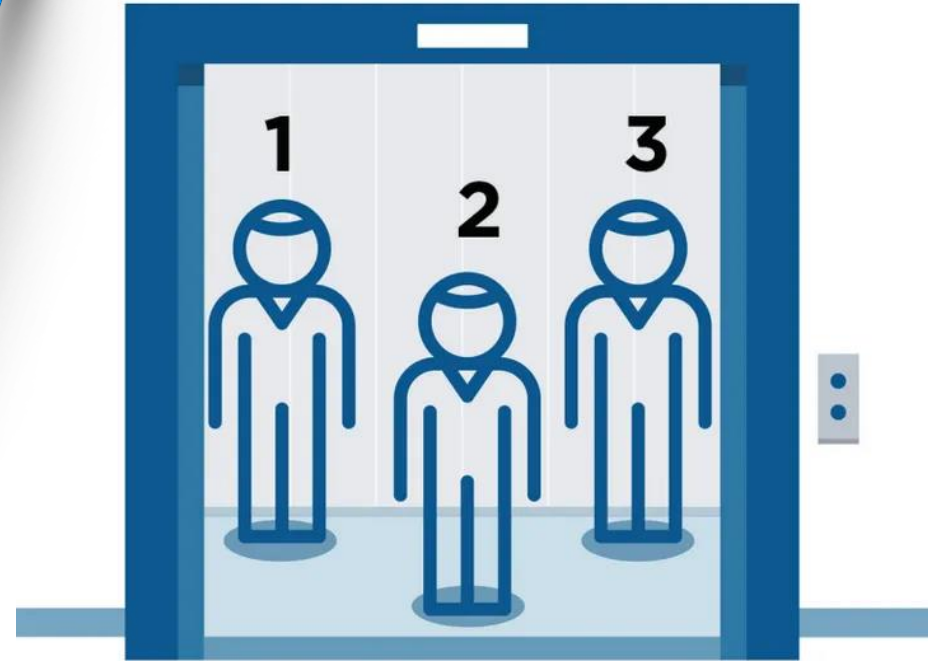
Learn More

Car Loading Options

Adhere to CDC Social Distancing Guidelines....

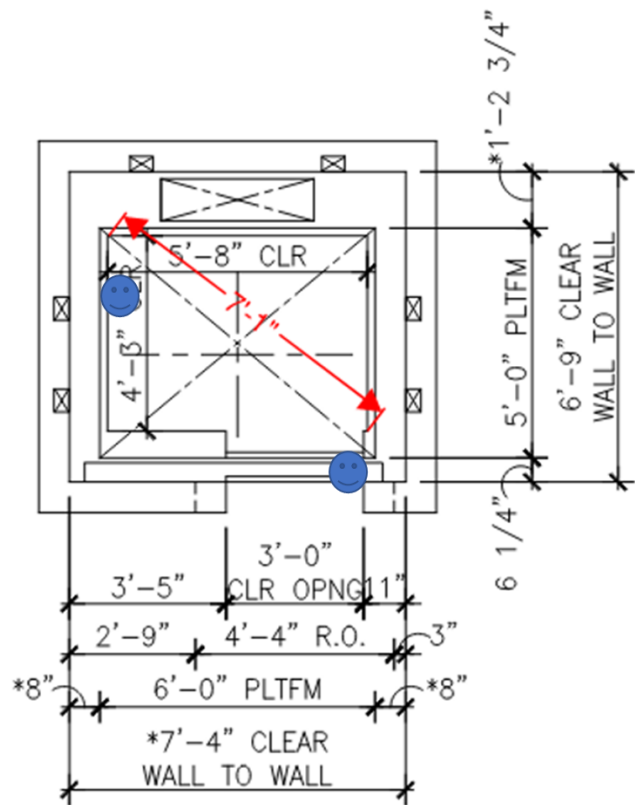
- 6 feet between people not equipped with PPE
- Cloth face masks to be worn in public settings where social distancing measures are difficult to maintain.
 - Yet to be determined if elevator applications apply....
- Load cars in accordance with published State and Local standards

Car Loading Configurations Utilizing 6-foot Spacing Requirements



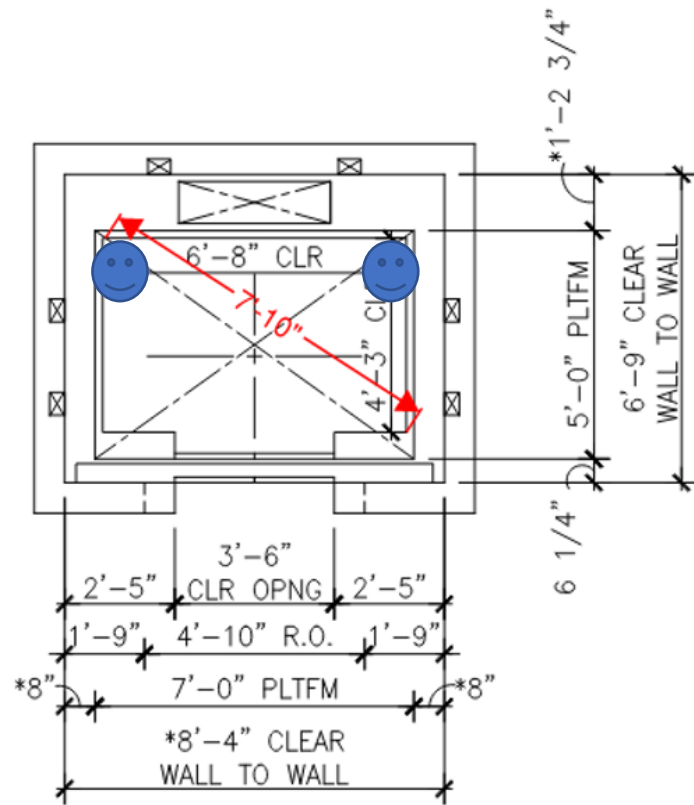
- Rectangular Snip

STANDARD 2000LB PASSENGER CAB

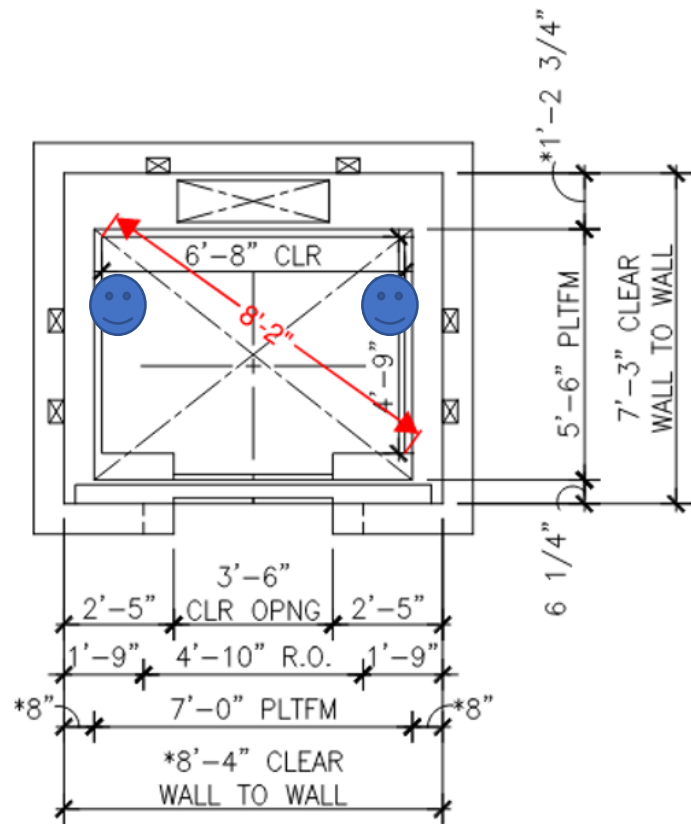


- Rectangular Snip

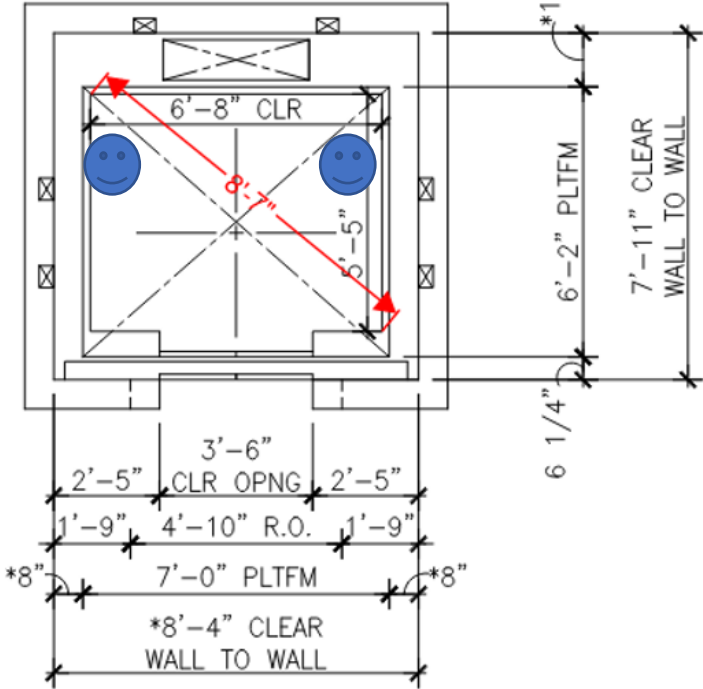
STANDARD 2500LB PASSENGER CAB



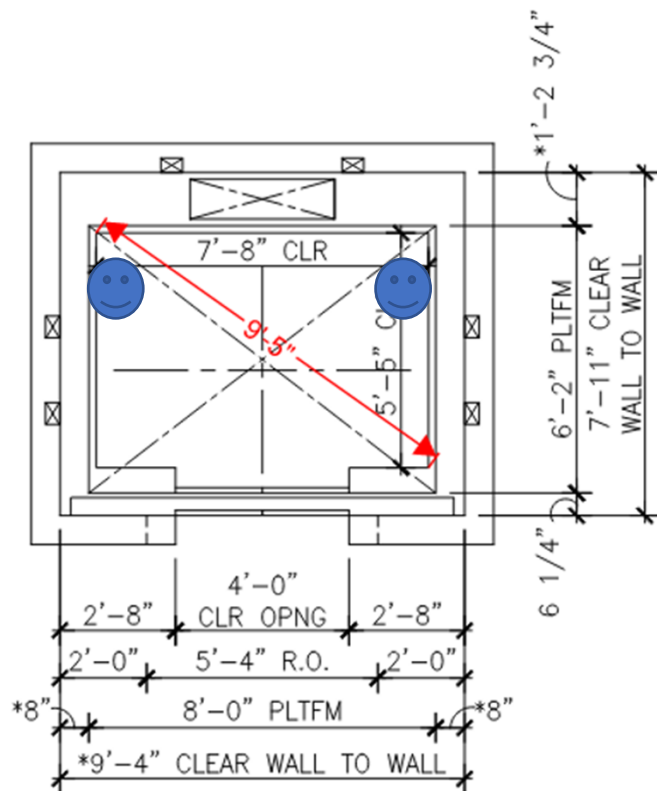
STANDARD 3000LB PASSENGER CAB



STANDARD
3500LB
PASSENGER CAB



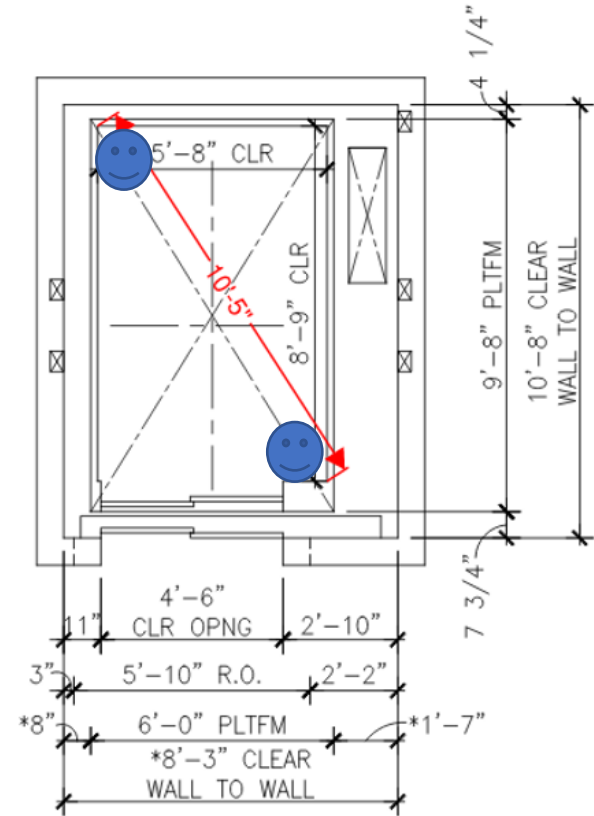
STANDARD 4000LB PASSENGER CAB



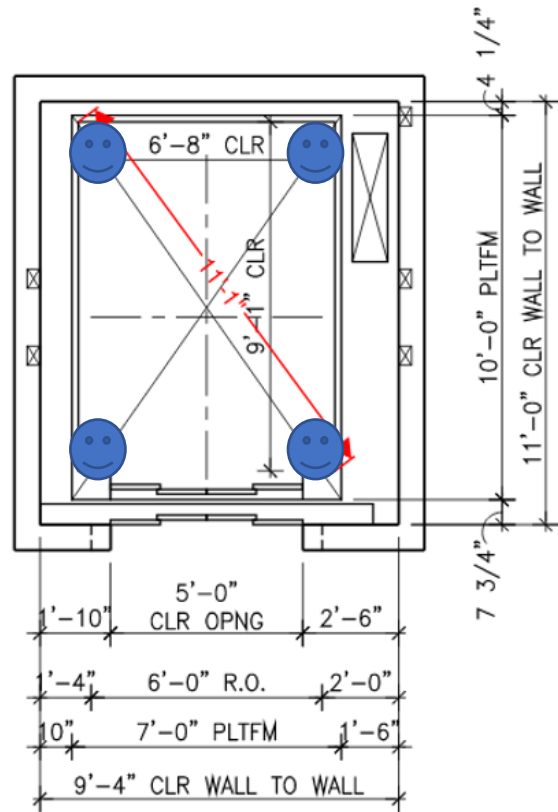
STANDARD
4500LB
SERVICE CAB



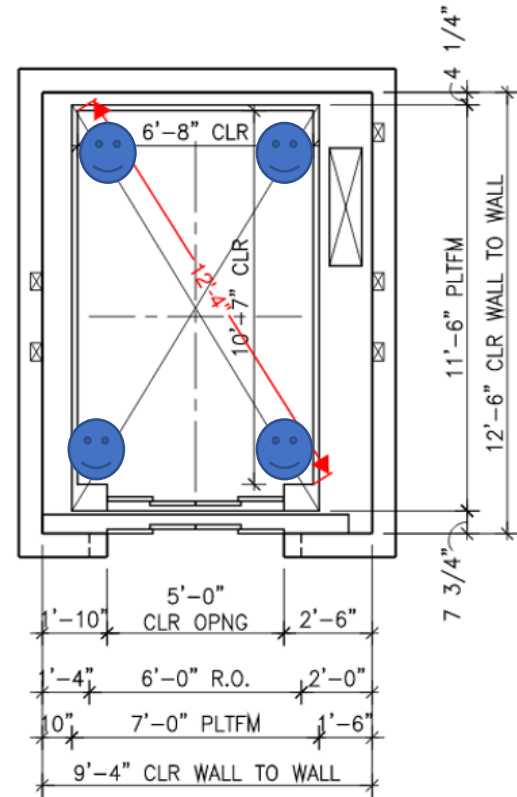
STANDARD 5000LB SERVICE CAB



HOSPITAL 6500LB SERVICE CAB



HOSPITAL 8000LB SERVICE CAB



Perform Traffic Studies

- Using regulatory loading requirements (CDC Guidelines) and LB building specific discovery findings, analysis will be performed for multiple building loading scenarios and arrival/departure rates
- Peak Period Flow Analysis
 - Up Peak
 - Two Way
 - Down Peak
- Analysis reports to provide response time and time to destination projections for varying loading levels and arrival time scenarios

Anticipated Recommendations From Traffic Analysis

- Tenant level/Floor Level flex time recommendations....Staggered arrivals and departures.
- Recommendations on technology enhancements and elevator system usage which will enhance system operation.
- Non-Peak visitor and guest building entry and elevator system usage.
- Stairwells be effectively utilized
 - Stairwells to be designated as UP Direction or Down Direction only, to avoid near contact scenarios
 - All inter-floor traffic to use stairwells...avoid using elevators for short floor to floor runs.
 - Stairwells to ease elevator system demand in low rise bank applications 1-10 floors
- Elevator system operation improvements
 - Adjust door times
 - Adjust floor to floor times
 - Adjust car speeds

Existing VT System Operation Enhancements and Optimization During Low Car Loading Periods



Destination Based Dispatching Systems

- Reprogram car assignment algorithms to limit car loading in accommodation of regulatory requirements
- Enable smart phone interface (where available) to provide “touch free” destination target commands
- Use floor tape to designate riding areas and riding positions that riders should follow during transport.
 - See China example

Existing VT System Operation Enhancements and Optimization During Low Car Loading Periods

Destination Based Dispatching Systems (continued)

- Add Antimicrobial Self-Cleaning Films to all touchpad surfaces



<https://shop.nanoseptic.com/Other-Self-Cleaning-Products-c22648003>

- Owners are advised to confirm compatibility of this technology with the existing equipment.

Existing VT System Operation Enhancements and Optimization During Low Car Loading Periods

Conventional Two Button Dispatching Systems

- Manually channel queuing passengers (depending upon lobby constraints)
 - “Group” arriving passengers by desired destination
 - As cars arrive, direct passengers with like destinations to same elevator
 - This strategy replicates DBD which limits stops and optimizes car loading.
- Utilize building personnel as elevator lobby “starters” to direct traffic to available cars and “police” car loading.... Lobby starters register all hall calls
- In the absence of remote call logging, lobby starters to register car call destinations on behalf of passengers.
- Use floor tape within elevator cabs to designate riding areas

Existing VT System Operation Enhancements and Optimization During Low Car Loading Periods



Conventional Two Button Dispatching Systems (Continued)

- Install Antimicrobial Elevator Button Covers on all hall push buttons and car push buttons.

<https://shop.nanoseptic.com/Other-Self-Cleaning-Products-c22648003>

- Owners are advised to confirm compatibility of this technology with the existing equipment.

Existing VT System Operation Enhancements and Optimization During Low Car Loading Periods

Conventional Two Button Dispatching Systems (Continued)

- Two Way and Down Peak Periods will be highly problematic.
- Very difficult to limit conventional systems from accepting multiple down hall calls.
- Elevators will continue to make multiple stops, after 2 passengers have already loaded elevator, creating high system inefficiency.
- A consideration should be made to utilize operators on each car, that are instructed to run the elevators on Independent Service during this period to limit stops after the cars reach load limit.
- Elevators with operators will be designated to serve certain floors on a continuous loop basis.
 - Example shown for a 6-car group serving 18 floors;

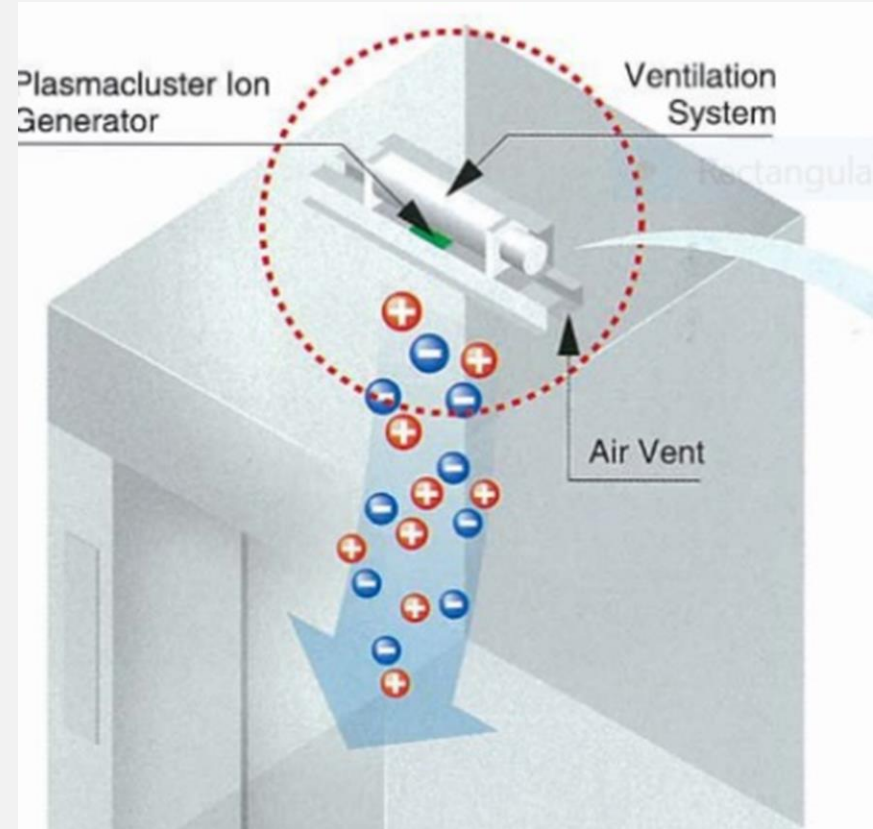
| Car #1 | Car #2 | Car #3 | Car #4 | Car #5 | Car #6 |
|---------------|------------|--------------|---------------|-----------|-----------|
| 1, 2, 3, 4, 5 | 1, 6, 7, 8 | 1, 9, 10, 11 | 1, 12, 13, 14 | 1, 15, 16 | 1, 17, 18 |

Further Considerations



Car Enclosure Air Purification Systems

- Technology is referred to as Plasmacluster Ion Generation
- Purifies air by inactivating airborne molds and viruses
- Can be installed on existing elevators in conjunction with exhaust fan.
- Owners are advised to confirm compatibility of this technology with the existing equipment.



Escalator Handrail Sterilizer

- Utilizes UV light technology
- Non powered device
- Can be installed on existing escalators.
- 10,000 hours of germicidal lamp life
- Owners are advised to confirm compatibility of this technology with the existing equipment.



Walk - Through Body Temperature Detectors

- Unitizes an infrared detection system to detect body temperature
- Noncontact temperature measurement
- Once someone with a suspicious fever passes through the device, an alarm will sound
- Repeated measurement and tie interval of .05 seconds



Elevator Preventative Maintenance Program

- Elevator systems to be under very heavy usage, due to greater numbers of trip per hour
- Maximizing equipment availability will be key.
- Removing cars for routine PM during normal work hours will exacerbate delays
- **Consider shifting PM activities to off peak/afterhours time frames**
 - This action will generate an operating expense impact

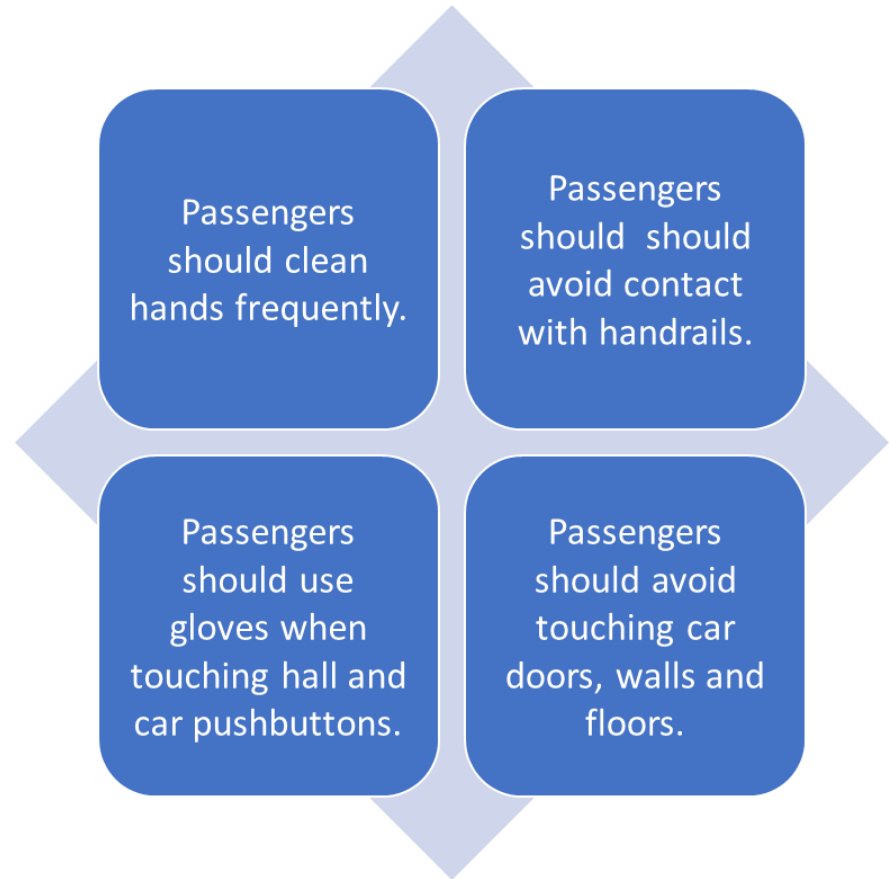


Food Service Challenge

- Leaving the building will generate long departure and return waits.
- Employee productivity will be negatively effected.
- Expanding Food Service / Food Delivery within each facility will help ease burden on VT system.
- Best Practices:
 - Food service on service/freight elevators only.
 - Establish “Pop Up” Food Service every 3-4 floors.
 - Tenants to use stairwells to access “Pop Up” food locations
 - Establish a Bring Your Own Lunch (BYOL) program



Lobby and Elevator Car Signage



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– DO NOT DUPLICATE

Property Management Tips

Continually clean and disinfect pushbuttons and handrails. When surfaces appear to be dirty, thoroughly clean prior to disinfection.

Use disinfecting wipes, to clean pushbutton and faceplate materials, to avoid damage to sensitive electrical components.

It is important to increase air circulation while performing cleaning activities. Keeping the doors in the open position will help alleviate accumulation of cleaning odors.



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– DO NOT DUPLICATE



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COVID -19 Patient Departure

- Establish strategy (exit path) for removing potential infected building populations from facility when sickness occurs during workday.
- Establish 'dirty' temporary holding area.
- Add technology to direct/send Designated COVID Elevator to location where potential to infected building population is minimized.
- Establish in car controls to express potential infected building population to isolation areas
- Provide in-elevator isolation procedure.
- Define elevator car interior cleaning process, post transport



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– DO NOT DUPLICATE

Thank You.

CONTACT INFORMATION

PHONE: 303.795.7956

EMAIL: marketing@lerchbates.com

