

WALKER
CONSULTANTS

IBEC: EVENT PARKING MANAGEMENT

July 1 2019

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BUILDING ENVELOPE

CONSULTING

FORENSIC RESTORATION

PARKING DESIGN

PLANNING

WALKER'S CONCEPT DESIGN RECOMMENDATIONS (MAY 2019)

- West Deck to be used for non-event day parking (restaurant, team store, community center, small plaza events).
- Designate West and South Decks for prepaid parking for large events. Advertise cash/credit parking only at East Deck or off-site providers.
 - Most operators would guarantee prepaid parking until 30 minutes before event then “quietly” let in cash/credit to maximize parking occupancy. Recommend you do this at West but not South.
 - Also would need to accept cash/credit at West deck for small events not requiring East Deck.
- Traditional method for collecting parking fees for event facilities is gated pay-on-entry.
- Emerging method is gateless, with several possibilities for details. There are problems and legal constraints in CA for gateless that need to be considered before choosing that option. Due to improving technology, and/or changes in state laws, some of the problems may be resolved before opening making it a desirable option. But it is not a “no brainer” today.
- Gated takes a lot more space and has to be planned into the design at concept.
- Therefore we designed concept for gated but recommended that we review gateless at the appropriate time.

GATED (>95% OF US EVENT PARKING)

- Pay on entry using **hand-held devices with staff in lane**
 - Event exiting volume is too high/concentrated to use pay on exit. So flat fee, paid on entry
 - Patron can pay at entry by cash or credit. 350 vph per lane (we assumed 20% cash, 80% credit, receipt only on demand.)
 - Patron can prepay on-line, or have a season parking pass with bar/QR code on phone or paper which will be read by scanner.
 - Initial Assumptions: 435 vph per lane for those that prepay.
 - In queue analysis, we assumed 50% prepaid for concerts, 75% prepaid for NBA. Many are pushing towards 100% prepay.
 - As previously noted: For large events officially 100% prepay at West and South Decks. Cash/Credit only accepted at East Deck or offsite parking by others. With projected off-site parking, will be about 2/3 prepaid, 1/3 cash credit.
 - Most operators however would accept cash/credit at West if deck is not filling up late in the arrivals period.
 - Design West and East for both, but promote West as prepaid, East as cash.
 - Team and South VIP always prepay.
 - Rates can be discounted (or not) for prepay.

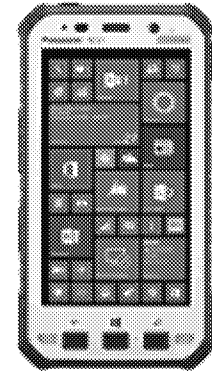


Image Courtesy Amano McGann

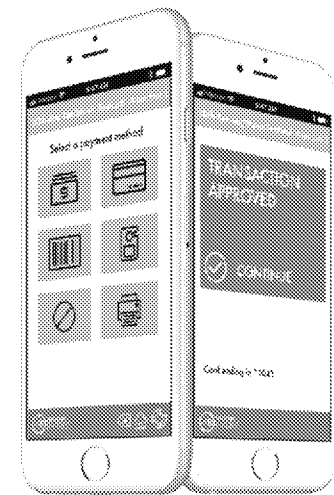


Image Courtesy Ballparc

GATED: PREPAID CREDENTIAL OPTIONS

- Can have unmanned lane(s) with patron presenting prepaid credential at entry. Credential options:
 - Hang tags: Typically used for smaller individual lots. Not desirable for these decks. Person monitoring can let in LOTS of buddies or pocket cash payment and report as prepaid.
 - AVI (same as toll tag technology) is fastest and most accurate at 99.5%; 800 vph per lane
 - Definitely use for team lot (100 spaces at South Deck)
 - For season parkers, could send them AVI sticker for car windshield.
 - Can also register and read FasTrak toll tags but need to plan for that in equipment selection.
 - Not desirable for single-event prepaid parking, e.g. concerts.
 - Prepay on line with bar/QR code on phone or printout on paper that is read by device in lane.
 - Works for both single game prepaid and season parking passes.
 - Unfamiliar patrons and ergonomics of presenting to lane device make it a little slower than staff scanning same code (Think on line boarding pass at airline gates.)
 - 360 vph per lane
 - License Plate Recognition (gated): Works for both single game prepaid on line and season parking passes.
 - Best if all are front plates. Requires much longer lanes to read back plate.
 - Same processing rates as AVI on “good” reads, but only 95% accurate...5% read errors that somebody in office has to resolve. Can be as low as 500 vph per lane. Slows processing compared to AVI.

QUEUE ANALYSIS FOR GATED

Location	Volume vph	Entry				
		Lanes Rec'd	Des Q (V/Ln)	Avg Q (V/Ln)	Wait (Sec)	LOS
Concert 6-7 PM		50% Prepaid at West				
West: Century	672	3	0.7	0.2	1.4	A
West: Prairie	1,436	5	1.0	0.3	2.9	A
South VIP (100% prepaid)	454	3	-	0.0	0.2	A
East	253	2	-	0.1	0.6	A
NBA Game 6-7 PM		75% Prepaid at West				
West: Century	672	3	0.3	0.1	1.0	A
West: Prairie	1,436	5	-	0.0	0.0	A
South VIP (100% prepaid)	454	3	-	0.0	0.2	A
East	253	2	-	0.1	0.6	A
100% prepay at West		100% Cash at West				
West: Century	672	3	-	0.0	0.3	A
West: Prairie	1,436	5	-	0.0	0.4	A
South VIP (100% prepaid)	454	3	-	0.0	0.2	A
East	253	2	-	0.1	0.6	A

Parking Equipment Assumptions

Pay on Entry: 20% cash, 80% credit

Bar Code Scan

Note: Gate up between transactions

Processing Rate

346 Vph/Ln 10.4 Sec/Trans

435 Vph/Ln 8.3 Sec/Trans

Notes

1. Design queue is maximum queue expected in the peak hour and is used to design reservoir.

2. Average queue is converted to average delay and is used to determine Level of Service.

Average Wait	LOS
0 to 10 seconds	A
10 to 30 seconds	B
30 to 60 seconds	C
60 to 120 seconds	D

- Peak hour volumes per Fehr and Peers.
- Multiple options for percent prepaid at West were analyzed. South is always 100% prepaid. East is always 100% cash/credit.
- Uses multichannel queue equations, same as traffic engineers use.
- Does not include adjustment for traffic signal affecting left turn from north bound Prairie. However reservoir at Prairie can accommodate 7 vehicles per lane.
- All other locations are free flow in so queue equations are appropriate.
- Queue does not include service position at gates.
- Design queue is maximum queue expected with 95% confidence.

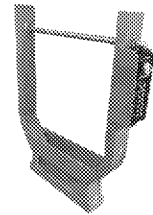
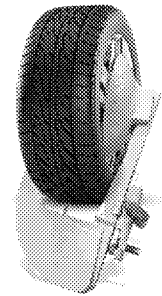
All queues are less than one queue per lane, with average delay of less than 10 seconds.

GATELESS

- Multiple technical options are available today. (see Appendix.)
- Patron pays to “multi-space meter”, by text if registered for this parking, or by phone before going to event.
- Gateless is an honor system; many consider it a “folk crime” to cheat/not pay.
- Rigorous enforcement & likelihood of having to pay higher cost for citation (ticket) is necessary to get reasonable compliance.
 - Enforcement is eased with some technologies but bottom line is you need some enforcement mechanism to make people pay for parking. Once they realize you do enforce, regulars will know to not try to cheat, so violation rates go down. But first time users won't know or believe you'll enforce with boot or towing.
- Typically done by municipality and universities that already have onstreet or ungated lot enforcement/ticket collection capability/systems in place and legal authority to obtain vehicle owner information from DMV.

GATELESS ENFORCEMENT IS A NEGATIVE CUSTOMER SERVICE

- With social media today, failure to enforce will quickly become “you don’t have to pay”
- Collection of unpaid violations is significant effort and expense.
 - Have to charge more than parking fee for citation.
 - And biggest problem is most states don’t let private entities access DMV records to get vehicle owner’s address to mail demand for payment of parking/violations.
- Towing is less desirable than booting.
 - Weight and height of tow trucks is one issue
 - Even more hassle for patrons than booting.
- Most cities only boot/tow after significant number of unpaid tickets. That is not viable for event parking with one-time visitor to concert or fan from visiting team.
- Boots can be “self-release”. Pay fee by phone, send patron code to release boot after parking fee is paid.
 - Newer alternatives include Barnacle™ that goes on windshield instead of tire. Half the weight of boots so easier to cart around and install. Instructions on how to pay on device, once paid remotely released.
 - Patrons may steal device or use it to damage property. (Reason why some manufacturers are putting GPS on devices.)



SEVERAL PRIVATE OPERATORS HAVE OPTIMIZED GATELESS PARKING

- User-friendly pay-by-plate app/texts.
- Supplemented by MSM (pay machine) on site.
- Does require signage to inform re payments.
- Boot or tow every violation found.
 - Can't do in every state!!!



Photo courtesy Premier Parking

BOOTING OR TOWING IS PROBLEMATIC IN CA.....

- Municipalities can only boot after 5 or more unpaid tickets in jurisdiction and various attempts to collect.
 - CA State legislature is considering banning booting **and** towing for municipal parking violations. <https://www.sfchronicle.com/bayarea/article/Chiu-s-bill-bans-towing-or-booting-vehicles-and-13902167.php>
- Opinion issued by CA Attorney General in 2004 stated that private entities **cannot** boot vehicles. <https://oag.ca.gov/system/files/opinions/pdfs/03-1204.pdf>
 - As far as we know, still in force
 - The remedy allowed by law in CA for unpaid parking is towing.
- But law apparently requires local law enforcement to tow or physically approve towing of vehicle. Will that be timely enough to be effective deterrent to not paying for parking if gateless?

Considered unlikely that Team will accept towing of unpaid vehicles. Therefore Gateless is not currently acceptable under CA State Laws... unless... (next slide.)

CAN YOU AVOID BOOTING/TOWING?

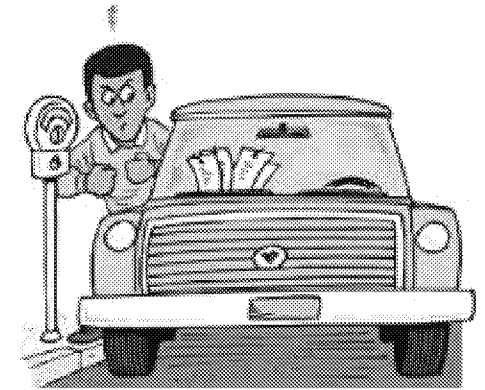
Maybe....

Inglewood Citation Management Services (ICMS)

- City manages citation and collections for 65 cities
 - Currently only for government parking
- Access to DMV registrations to mail citations to vehicle owner.
- Still uses contractor (Servo) to issue citations on own streets.

Questions:

- Does CA Vehicle Code allow any “private” use of plate registration info?
- Can ICMS collect tickets issued on private property by IBEC or its operator?
- What fees would ICMS take?
- What is their collection rate and likely net revenue per violation ticket paid to IBEC?
- Would gateless effectively require IBEC to hire City to collect all parking fees, issue and collect citations? What would be IBEC net revenue then?



SUMMARY

Gated

1. Physical barrier provides highest level of payment compliance, **most revenue from parkers** (rather than using fines to compensate for those who never pay).
2. Reduces throughput due to vehicles stopping at gate. 95% confidence queues are one vehicle per lane or less.
 - Prepaid reduces impact of gated.
3. More costly to procure/install/maintain
4. More space for lanes; reduces parking capacity particularly at West.
5. More staff to collect cash and credit on entry
6. More auditing due to staff at entry lanes
 - Prepaid reduces impact of auditing.

Note: Recommend Team Lot be gated with security guard during critical times in all cases.

Gateless (any option)

1. Fastest throughput at entering, same at exiting. Best environmentally. City and others more confident there is no queuing back onto streets.
2. Patrons who don't prepay must still pay on way to event or shortly after start of event.
3. Honor system. Patrons will try not to pay. Vigilant enforcement required every event especially at opening and for unfamiliar/infrequent patrons. Negative customer experience.
4. Due to private ownership, booting and/or towing would normally be required, but constrained by state laws.
5. Staff required on-site for enforcement tour during event.
6. Least costly to procure/install/maintain.
7. Less staff required during events.
8. Gain spaces, especially at West.
9. With LPR-based ISG get extra benefits: accuracy, data, **dynamic pricing**, while improving cost benefit of ISG.

Recommend against gateless at present time due to State Laws and negative customer experience with towing.

APPENDIX: MORE INFO ON GATELESS PARKING

GATELESS – OPTION 1 MULTI SPACE METERS

- Has been done for years at some event facilities as well as other parking facilities
 - Parking spaces are numbered.
 - Patron stops at (pay-on-foot) multi-space meter (MSM) in elevator core, typically each floor, enters space number and pays for parking ON WAY TO EVENT
 - If prepaid, presents bar code or proximity card to MSM. In past, ALL patrons must stop and confirm payment for specific space.
 - Today can do pay by phone in addition to meter but still have to enter parking space number. Central software adjusts for prepaid. Reduces number of meters required.
 - During event, machine prints out list of unpaid spaces, and enforcement team goes around and “tickets” vehicles that did not pay.
- Lowest equipment cost, even including enforcement vehicles.
- Cities and universities make money on ticket fines that typically compensates for costs of collection and unpaid fees. Would IBEC?
- Still use AVI or something else gated for South deck both VIP and team???

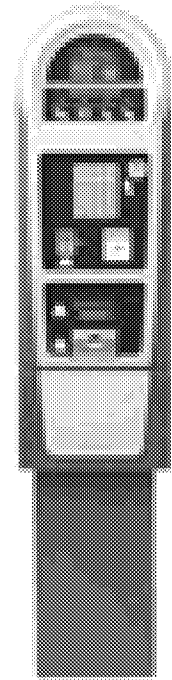


Image Courtesy T2 Systems

GATELESS OPTION 2 – LPR AT ENTRY

- Collect license plates of all vehicles at entry. Those who have prepaid are recognized and immediately considered paid (with up to 10% error rate if gateless)
- Patron pays by plate (i.e., enters plate number instead of space number) by phone, text or at MSM on way to event.
- Patron has to know license plate number. Signage helps, but will be those who don't know plate number and are frustrated.
- During event: system downloads list of plate numbers that entered but have not paid yet to the enforcement module.
 - Staff in office correct plate mismatches using videos.
 - Enforcement personnel circulate in vehicle with LPR system and find plates of unpaid vehicles, and/or plates that are misread.
 - Faster enforcement as vehicle-mounted system automatically checks plates as officers drive the deck.
- Still honor system and thus requires ticketing/collecting tickets or booting or towing or loss of revenue compared to well managed gating.

LIMITATIONS ON LPR READ ACCURACY

Image capture and recognition is not always possible ...

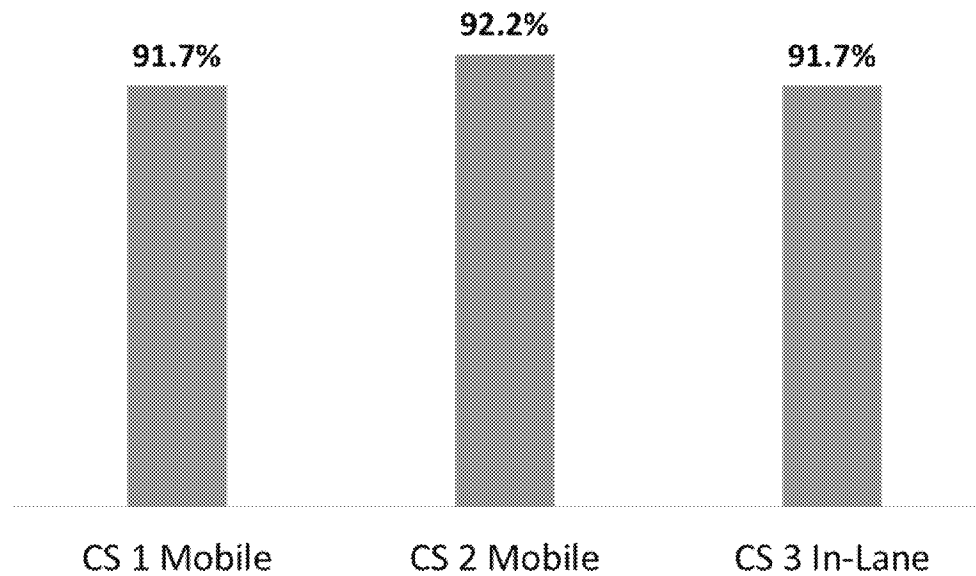
- Variation in state plates
- Partially or completely blocked plate
 - Intentionally with plate “cover”
 - Dust, Mud, Snow etc.
- New cars without plates yet
- Condition of plate
- No front plate
 - MUCH longer lanes at entry/exit
 - Enforcement tour may not be able to see plate.



WALKER STUDY OF ACCURACY (2016)

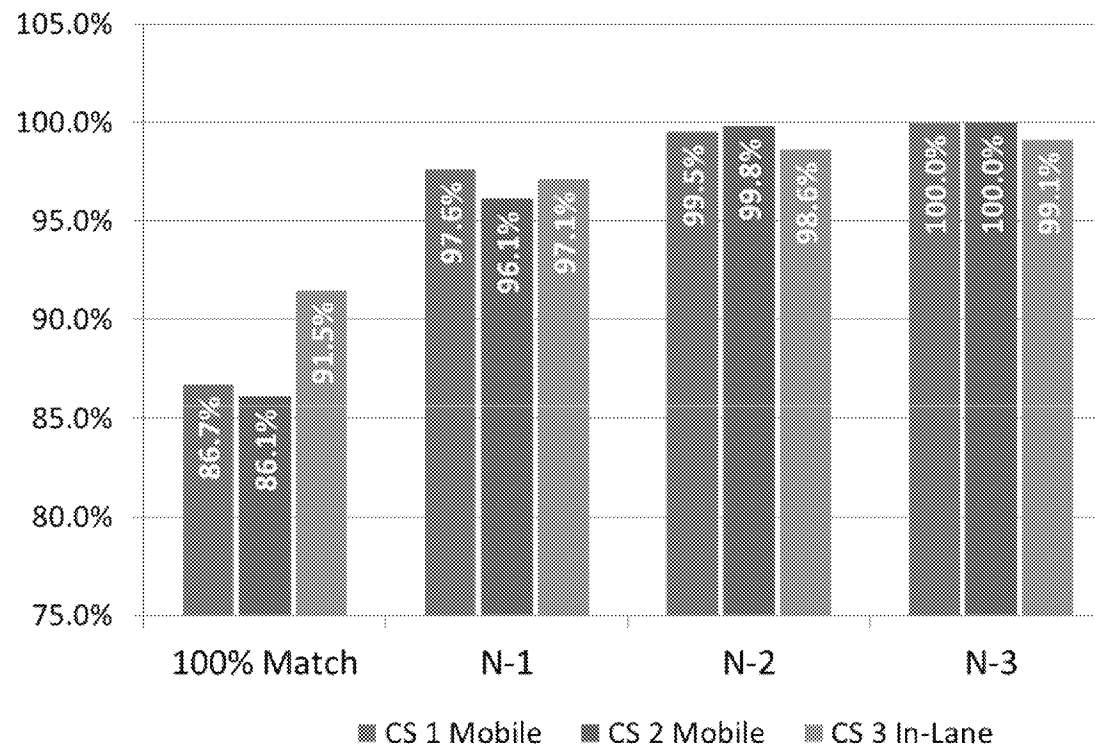
Roughly 92% **Capture Rate** if ungated (mobile and in-lane)

i.e., image is captured (not necessarily that digital recognition is accurate.)



CAN SET NUMBER OF DIGITS MATCHED TO IMPROVE ACCURACY.

i.e. correct recognition of plate number on captured plates.



GATELESS OPTION 3: ISG WITH LPR

- Instead of collecting plates at entry, use individual space guidance (ISG) with LPR at each stall
 - Two vendors but one is aggressively pursuing patent lawsuits.
 - More accurate LPR because plate is read while car is at rest with multiple looks at plate.
 - Still have some mismatches due to missing/shielded/dirty plates, backed in with back only plate, etc.
 - Payment is same as for Option 2.
 - Payment also requires patron to know license plate number.
 - System identifies stalls where cars haven't paid; staff can view questionable plates on line and correct before enforcement tour.
 - Enforcement is directed to unpaid stalls, less time to enforce.
 - Still have to ticket/boot/tow or forego revenue
- Options for dynamic pricing (BUT REQUIRES MORE SIGNS!)
 - Charge less for roof stalls, more for level 2 except for ADA stalls.
 - Discount for Low emission vehicles.
 - Charge flat rate extra fee for EV charging stalls
 - Reservations on specific floor



THANK YOU!

QUESTIONS?