

Sample Specifications for On-Demand Electronic Bike Share Lockers

High Level Locker Functions:

- Lockers shall provide for one bike per point of entry.
- Lockers shall be sized to hold a folding style bike. Full size bike lockers are not acceptable.
- Lockers shall be capable of storing a bike up to 50 pounds in weight without damage or failure due to bike leaning or falling against the locker from the inside.
- Lockers shall be structurally resistant to abuses such as kicking, hitting, and being stood or jumped upon.
- Lockers shall have modular subassemblies and be repairable without replacing an entire locker should an accident or vandalism incident occur.
- Lockers shall provide shelter to contents from debris and rain.
- Lockers shall be capable of withstanding exterior weather for the approximate 25-year life-cycle of the locker enclosure.
- Lockers shall minimize costs of power supply replacement and maintenance.
- Lockers shall provide high durability and vandalism resistance, and minimum maintenance of electronic interface hardware and components.

High Level Software and Electronics System Functions:

- The System shall enable 24-hour on-demand user access to folding bicycle rental.
- The System shall log all rental transactions, and link access device transactions to a specific user and facility Owner.
- The System shall enable multiple-location secure-bicycle rental, such that a single access device can be used at multiple locations and multiple facility owners.
- The System shall enable System Administrators to immediately and permanently disable an access device.
- The System shall enable System Administrators to remotely monitor and manage Lockers and rental bikes via the internet.
- The system shall positively and reliably verify the specific bike rented is returned and secured before closing the rental transaction and releasing credit card deposit.
- The System shall permit return of a bike to a different locker or location from which it was rented.
- The System shall permit a user to rent the space, they checked out a bike from, to use for storage of personal items only, and only while they are renting the bike.
- The Lockers shall include a secure emergency bike return compartment, which shall be able to be used even if the Lockers are nonfunctional due to vandalism or other reason.
- The System shall allow users to check current return space or rental bike availability online, make reservations.
- In addition to reservation-based bike rentals and returns, the System shall be capable of completely stand-alone functionality for normal rental and return transaction functions without any wired or wireless communication.
- The System shall not require any wired connections, such as for power or communications.
- The System shall provide a secured web-based central repository for usage, service, and monitoring records, as well as usage data plotting and analysis and user support tools.
- The System shall provide 24/7 email and telephone user support including daytime technical support, and round-the-clock basic and emergency support for registered users.

- The System shall provide for 24/7 phone and web-based access device and add-value vending, as well as auto-reloading of access device value.
- The System shall provide universal User Agreement coverage to all system Owners.
- The System shall provide for access restriction so that Owners are able to limit access to their facilities to a subset of access device holders.
- The system shall be capable of different rental rates by time of day, day of week, or holidays, as well as dynamic bike share pricing to facilitate redistribution of bicycles.

General:

- Lockers shall be of a modular design that allows for easy replacement of components such as doors, top and side panels, electronic controllers, and latching mechanisms.
- Lockers shall be capable of operation in temperatures ranging from -20°C/-4°F to 70°C/158°F.
- Lockers shall be capable of operating in weather exposed conditions and in coastal marine environments.
- Lockers shall restrict the entry of wind-blown debris around their full perimeter.
- Lockers shall have adjustable system for anchoring and leveling on site with adjustment range of up to 3.0% slope.
- Lockers shall provide access for easy removal or cut-off of installed anchors, to facilitate relocation.
- Lockers shall be capable of being installed on concrete substrates.
- Lockers shall provide standard externally mounted number plates made of durable, weather resistant materials, and shall have electronically coded controller, door, location, and Owner ID numbers which are logged on every transaction.
- Lockers shall have no exposed fasteners that would enable locker disassembly from the outside.
- Locker shall have external finishes which facilitate the removal of graffiti.

Locker Materials:

- Locker doors shall be fabricated from 16-gage 304 stainless steel fully perforated with a ¼-inch on 3/8-inch staggered, round-hole pattern. Doors shall have interior reinforcement to reduce warping increase out-of-plane stiffness. Doors shall be at least 1.5" thick to resist prying attacks.
- No portion of door shall displace more than 0.4" when subjected to prying at any location on the door using a 30 lb force on a 36" pry bar with a 1" fulcrum.
- Locker roofs shall be crowned or sloped to enable proper water run-off, and roof system shall be capable of resisting the dropping of a 200lb load from 12 inches without any permanent buckling, cracking, or deformation of the roof or other locker components.
- Locker sides and doors shall be capable of resisting the impact of a 100lb pendulum swinging from a height of 5 inches above the impact point without any permanent buckling, cracking, or deformation of the doors, side panels, or other locker components.
- The latching device shall be capable of resisting a 3000lb pull-out force, such as during an attempt to pry the door open.
- Locker door materials shall allow maximum visual transparency for ease of locker inspection.
- User interface display shall be protected against vandalism by polycarbonate cover. Touch screen displays are not acceptable.

User Interface

- Each locker shall have at least one user interface console per 8 doors.
- Each user interface console shall have an access device reader and a dynamic display of real time rental status, how to use the system, and usage rules.
- System shall provide authorized user access to share bicycle within 15 seconds from initiation of transaction.
- User interface display shall be graphic LCD type, capable of operating in wide temperature range (-20°C/-4°F to 70°C/158°F).
- User interface display shall be readable in bright sunlight, and have a backlight for low light and full darkness readability.
- Locker electronic controllers shall be capable of displaying user-specific information such as value remaining on access device, access device rental state, and if an access device has been blocked.
- Interface shall include on-screen instructions, and in-context warnings.
- User shall be able to flag a bike for repair upon either start or end of a rental transaction.
- Locker user interface shall accommodate multiple access technologies, including phone, text/SMS, chip style credit cards, ISO-7816 and ISO 14443 smart cards, NFC or Bluetooth enabled smart phones.
- User interface shall accept San Francisco Bay Area Clipper Cards.

Locking System and Access

- Any available locker space containing a rentable bike shall be accessible by a valid access device.
- Locker spaces must remain secure while in the 'available' mode, meaning the locker is closed and cannot be opened by anyone except a holder of a valid access device.
- Locker spaces must remain dedicated while in a 'secured' mode, meaning the locker is closed, secure, and cannot be opened by any user except the authorized user who initially started a bike rental and engaged the latch in the 'secured' mode.
- Access devices shall be electronically tagged with their current renting status, and shall not be capable of renting more than an administrator determined number of bicycles at the same time.
- Lockers shall be capable of being opened at any time, while in any mode, by a System Administrator.
- Lockers shall be capable of being field serviced and electronic components shall be easily removed by maintenance staff, with a mechanical key, from the outside of the locker without damaging the locker components, locker, or internal wiring.
- The system shall be capable of being manually opened from the outside of the locker by maintenance staff should power be cut to the locker, or should the electronic system malfunction for any reason.