

## SKYRIDER PARK

- Applicant: Eric McGee  
Beach Rider Amusements
- When: June 30 - September 28, 2019
- Time: 10:00 a.m. - 12:00 p.m.
- Where: 401 8<sup>th</sup> Avenue North
- Set-up: February 15, 2019
- Take Down: November 15, 2019
- Expected Attendance: Amusement Ride
- Road Closures: None
- SE Committee Vote: 6-0 Approval & 1 Abstained

APPLICATION FOR SPECIAL EVENTS PERMIT  
Within the City of Myrtle Beach, SC  
(Please print legibly or type)  
(Must be submitted 90 days prior to the event)

1. Name of Activity/Event: Skyrider Park

2. Type and Purpose of Event: For profit attraction

3. Location of Event: 401 8th Ave N Myrtle Beach

4. Organization: TBD

5. Applicant: \_\_\_\_\_

6. Eric McGee

|                              |                                 |
|------------------------------|---------------------------------|
| Primary contact person       | Alternate contact person's name |
| PO Box 1032                  |                                 |
| Myrtle Beach SC 29578        |                                 |
| Primary address              | Alternate address               |
| 843-839-2883                 |                                 |
| Primary telephone/fax number | Alternate telephone/fax number  |
| beachridemba@gmail.com       |                                 |
| Primary email address        | Alternate email address         |

7. Date(s) of event: 06/30/19 - 09/28/19 Hours of operation: 10am-12am

8. Date of set-up: 02/15/2019 Take Down Completed By: 11/15/2019

9. Expected attendance: \_\_\_\_\_

10. Charitable Benefactor (if applicable): N/A

Is group a non-profit organization: ☐ Yes ☒ No If yes, attach copy of 501 IRS letter.  
If no, what portion of proceeds will go to charitable organizations: \_\_\_\_\_

11. How will you publicize the event?  
monster truck, billboard, rack cards

12. Are public funds being used? ☐ Yes ☒ No

13. Does the applicant intend to gate the event and charge an admission fee: ☐ Yes ☒ No  
If so, please detail the amount of the fee and describe as to how the event will be gated: \_\_\_\_\_

PREMISES IS OPEN TO PUBLIC, TICKET FOR RIDE ONLY

14. Entertainment Description (show on site plan): Tethered Helium Balloon

Speakers/microphone needed: ☐ Yes ☒ No Electrical hook-ups needed: ☒ Yes ☐ No

15. Is a fireworks display planned in conjunction with this event? ☐ Yes ☒ No  
Fireworks displays require a SC State Permit obtained by a SC Licensed Pyrotechnician.

16. To what extent has the applicant communicated with adjacent property owners, and what responses have been received? Adjacent Myrtle Beach Zipline is a partner in this project

18. Parking requirements:(show on site plan): No. of spaces available WA No. of handicap       
If required, has permission been granted for use of Event location by entity other than the City of Myrtle Beach? ☐ Yes ☐ No      If yes, please attached proof of authorization.

Location: \_\_\_\_\_ Times: \_\_\_\_\_

If so, Name \_\_\_\_\_ Address \_\_\_\_\_  
Telephone \_\_\_\_\_

If so, Name \_\_\_\_\_ Address \_\_\_\_\_  
Telephone \_\_\_\_\_

If yes, please state the day, time, location, and anticipated number of participants, routes, times, staging area, disbanding area, review stand, and alternate dates:

If yes, describe in detail on a separate sheet the number of vendors involved, specify the goods or services being vended and indicate whether the vendors are specifically contracted or regularly

licensed. Please indicate exact location of vendors on the site plan.

## 22. FOOD SERVICE:

Will food be prepared at this event? ☐ Yes ☐ No

If yes, describe in detail on a separate sheet how the food will be prepared, type and location of cooking appliances and type of fuel to be used for cooking.

Will food trucks be present at this event ☒ Yes ☐ No

If yes, Mobile Food Units must meet the requirements of the following safety codes: the International Fire Code (IFC); National Fire Protection Association's NFPA 58 (Liquefied Petroleum Gas Code), NFPA 70 (National Electric Code), and NFPA 96 (Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations); and the Code of Federal Regulations 49 CFR 180.205(d) (General requirements for requalification of specification cylinders) and 49 CFR 180.209 (Requirements for requalification of specification cylinders). The Fire Marshal's office will be responsible for inspections.

## 23. Prior Events:

Is this a first time event? ☒ Yes ☐ No

Has this event occurred five (5) or more times in the preceding years? ☐ Yes ☐ No

If so, please list the years: \_\_\_\_\_

## 24. Emergency Medical Services:

An approved EMS plan is required to receive a permit for the event.

Please attach appropriate documentation (attach additional pages as necessary).

(Call City of Myrtle Beach Fire Department at 918-1109 for questions.)

## 25. Security Plan:

(Call City of Myrtle Beach Police Department at 918-1366 for

questions.) Has the Police Department approved a security plan? ☐

Yes ☒ No Detail your security plans during event. (attach additional pages as necessary). (The plan shall specify

- a. The number of POST-certified off-duty law enforcement personnel and private security guards which the applicant plans to hire – where the number of off-duty law enforcement personnel shall be the same or more than the number of private security guards.
- b. The arrangements the applicant has made for hiring them.
- c. Details of the plan for payment.

If no, you must engage qualified security consultants to provide the Police Department with a security plan for approval. A security plan must be approved in order to receive a permit for this event.

If yes, please attach appropriate documentation.

## 26. Cleanup of Event Area:

Detail your plan to keep site and adjacent public and private property free of trash and debris generated by this activity:

Trash receptacles will be provided. Dumpster delivered and emptied regularly by waste management will be located and screened on site.

If using a private sanitation company, give name, contact person and telephone number: \_\_\_\_\_

Will additional trash receptacles need to be placed in the event area? ☐ Yes ☒ No If Yes, please contact the City of Myrtle Beach Solid Waste Division (843-918-2160), and they will assist in determining the number of receptacles needed as well as the cost for providing the additional service. If this service is used, payment is due five (5) days before the event.



**27. Street Closings:**

(Please attach documents from SCDOT and/or City of Myrtle Beach authorizing this closure.)

Streets to be closed: N/A

Day/Dates: \_\_\_\_\_

Closing Time: \_\_\_\_\_

Opening Time: \_\_\_\_\_

**28. Insurance:** (Certificate of Insurance to be sent to City of Myrtle Beach Risk Department; for questions call 918-1007.)

- 1) Coverage shall be written on an occurrence basis and provide Premises/Operations: Independent Contractors: Products/Completed Operations: Contractual and Broad Form Property Damage.
- 2) Minimum Limits of Liability will be \$1,000,000 combined single limit per occurrence for bodily injury and property damage.
- 3) The City of Myrtle Beach shall be named as "additional insured" and the policy endorsed to require that the City be provided thirty (30) days written notice of coverage modification or cancellation.
- 4) A certificate of insurance will be provided to the City ten (10) days prior to the beginning date of the event permitted herein.
- 5) Additional limits or coverages may be required by the Risk Manager to address specific special or unusual hazards.

**29. Special Requirements:**

Are there any special or unusual requirements that may be imposed or created by virtue of the proposed event activity? ☐ Yes ☒ No

If Yes, please explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**SITE**  
**PLAN**

(The site plan must accompany your Special Event application or the application will be considered incomplete and returned to the applicant.)

**Site Plan Size Requirement:**

The City may be able to provide a base map of the area upon request. Must be presented on 8 1/2" x 11" letter size paper

**Site Plan must include the following:**

- 1) Location and number of all structures with respect to the existing buildings, property lines, roads and walkways, to include
  - ☐ Tents/detail description of size/state if tent is fully or partially enclosed/number of tents; Indicate activity in each tent.
  - ☐ Grandstands/size/capacity
  - ☐ Stage – include electrical hook-ups and engineer certification
  - ☐ All electrical hook-ups/generators
  - ☐ All speakers/hook-ups
  - ☐ Vendor booths, size and description of goods sold
  - ☐ Refreshment stands

Restroom accommodations (include number of handicap accessible); please advise if you will require a source of potable water.

Tables

Trash and recycling receptacles

Signs with size indicated (must identify all signs visible from public roadway)

Parking areas/include handicap spaces available and number

Vehicle/trailer locations

Perimeter fencing, barricades, barriers, and all entry/exit points.

Additional applications/licenses or permits required:

- 1) Tent permit from City Construction Services Department (843-918-1111).
- 2) Business licenses from City Business Office for all vendors (843-918-1151). (The business license form is also available on the City website.
- 3) Liquor license and/or beer/wine license from the State of South Carolina.
- 4) Street closure permits from SCDOT and/or the City of Myrtle Beach.

REVIEW YOUR APPLICATION PRIOR TO SUBMITTAL !!

Please fill out the application completely. All applications are considered new and "same as last year" is not an appropriate answer. A complete application includes the required site plan of the correct size and security plans described herein.

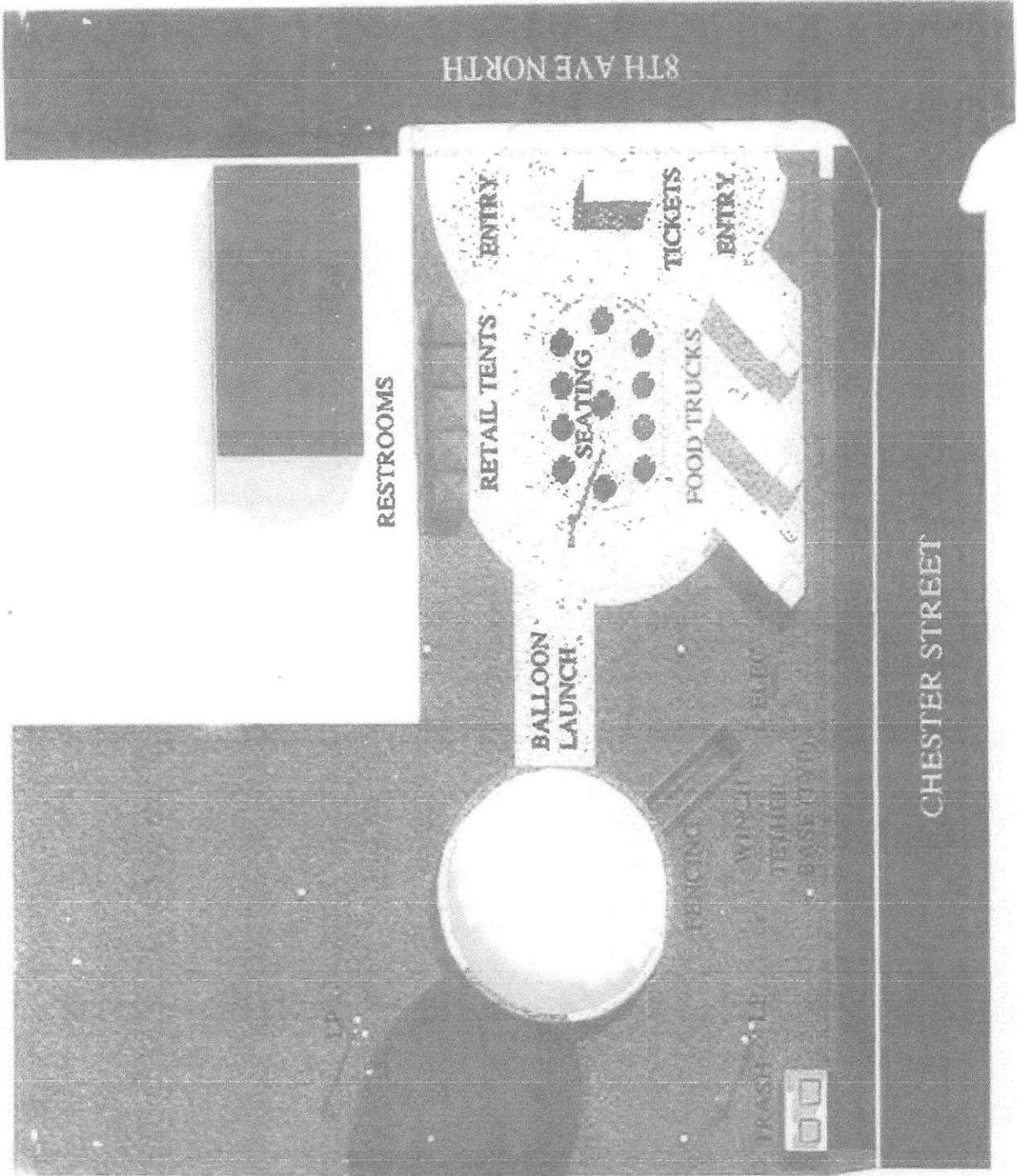
By my signature below, I certify that I have actual authority to make this application, and to bind the organization, if any, sponsoring the event, and that I, or the organization, will be financially responsible for any costs or fees that may be imposed for the Event.

Date Submitted:

12/19/18

Signature of Applicant:





8TH AVE NORTH

RESTROOMS

ENTRY

RETAIL TENTS

SEATING

TICKETS

ENTRY

FOOD TRUCKS

BALLOON  
LAUNCH

FENCING

WINCH

TRASH

BASE

CHESTER STREET

0 10 25 50

# **Sky Rider Park**

## **2019 Sky Rider Event**

### **Security Plan, Parking, Vendors & EMS**

**Start Date: 04/01/2019**

**End Date: 10/31/2019**

**Days: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday**

**Location: 401 8<sup>th</sup> Avenue N Myrtle Beach, SC**

**Times: 10:00 AM - 11:00 PM**

#### **SECURITY:**

**Sky Rider park staff will be on site and 911 will be called if necessary.**

#### **EMS:**

**In case of emergency, EMS will be called.**

#### **ALCOHOL:**

**No alcohol will be served.**

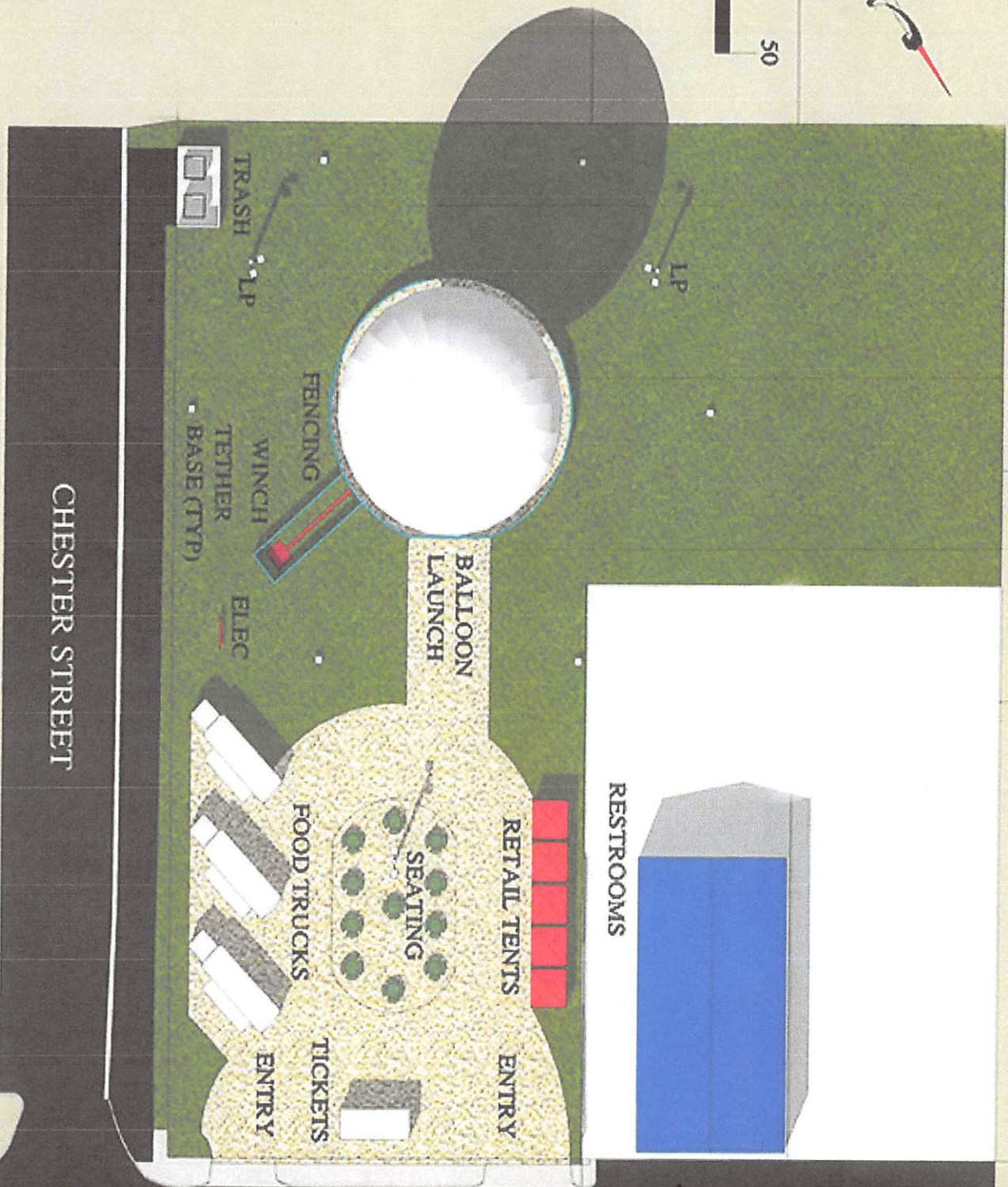
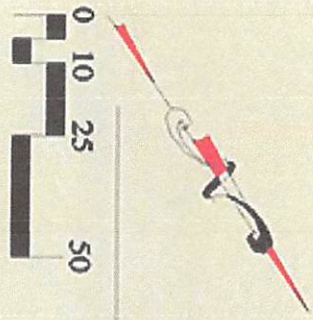
#### **LOAD IN/LOAD OUT:**

**On 02/15/19 equipment will be brought in and training of staff will be performed. Load out will be completed by 11/15/19.**

**VENDORS:**

**Various prepackaged food, drink and merchandise vendors will utilize conex retail units. ie: bottled sodas, popcorn, snow cones**





CHESTER STREET

8TH AVE NORTH

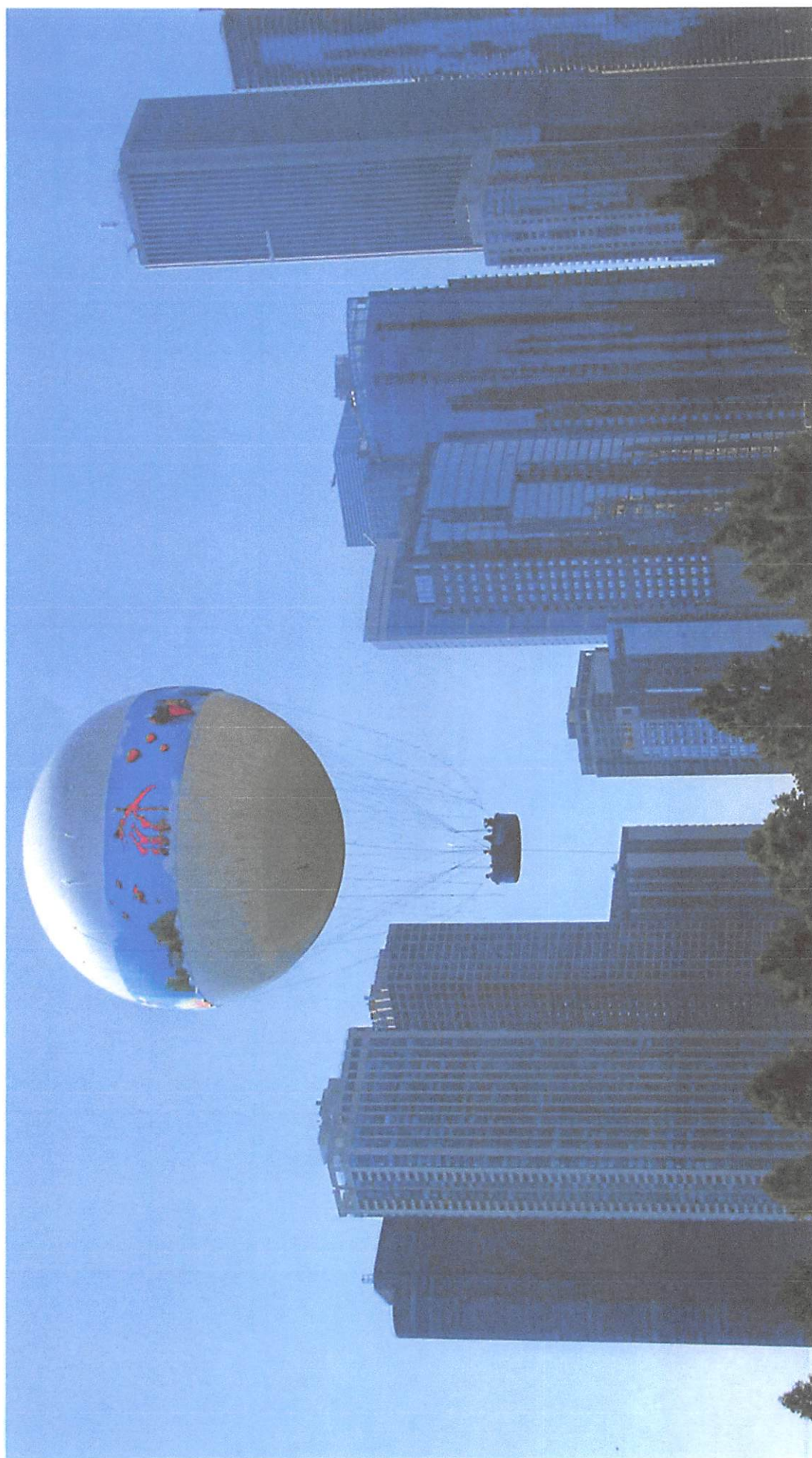






















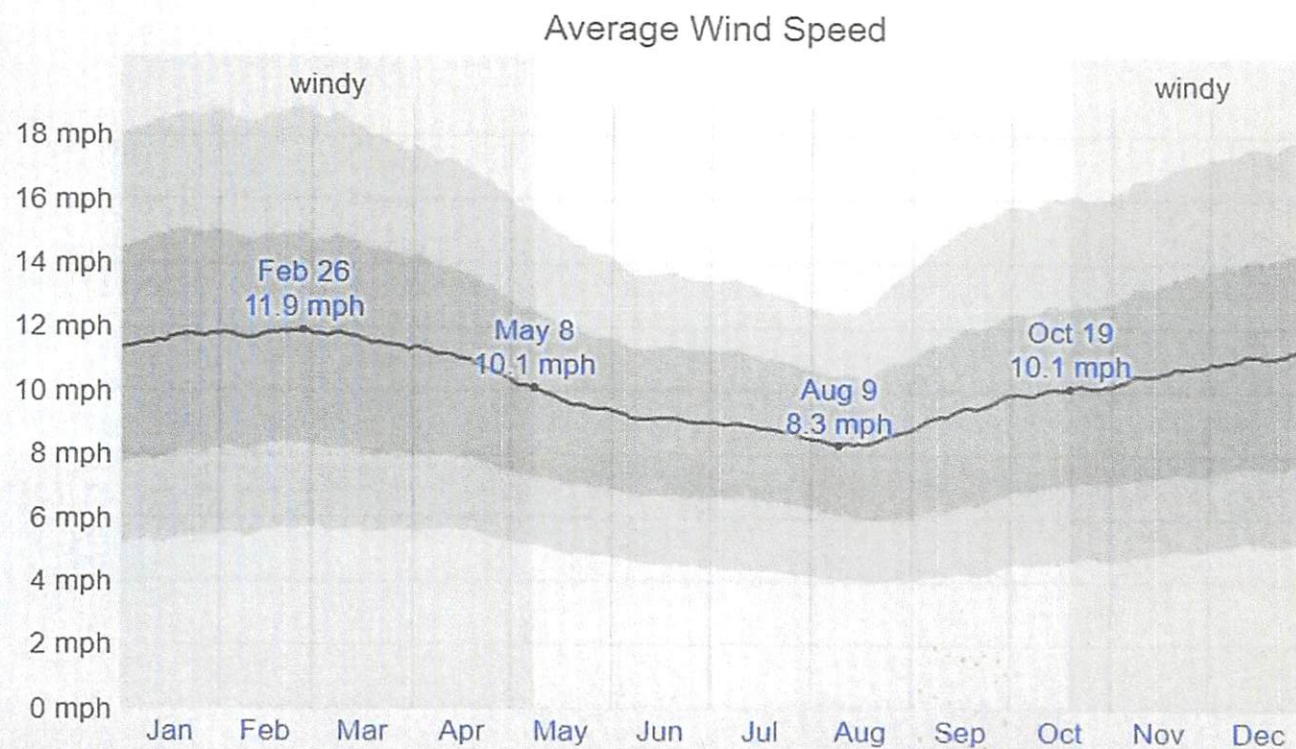
## Wind

This section discusses the wide-area hourly average wind vector (speed and direction) at 10 meters above the ground. The wind experienced at any given location is highly dependent on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages.

The average hourly wind speed in Myrtle Beach experiences significant seasonal variation over the course of the year.

The windier part of the year lasts for 6.7 months, from October 19 to May 8, with average wind speeds of more than 10.1 miles per hour. The windiest day of the year is February 26, with an average hourly wind speed of 11.9 miles per hour.

The calmer time of year lasts for 5.3 months, from May 8 to October 19. The calmest day of the year is August 9, with an average hourly wind speed of 8.3 miles per hour.

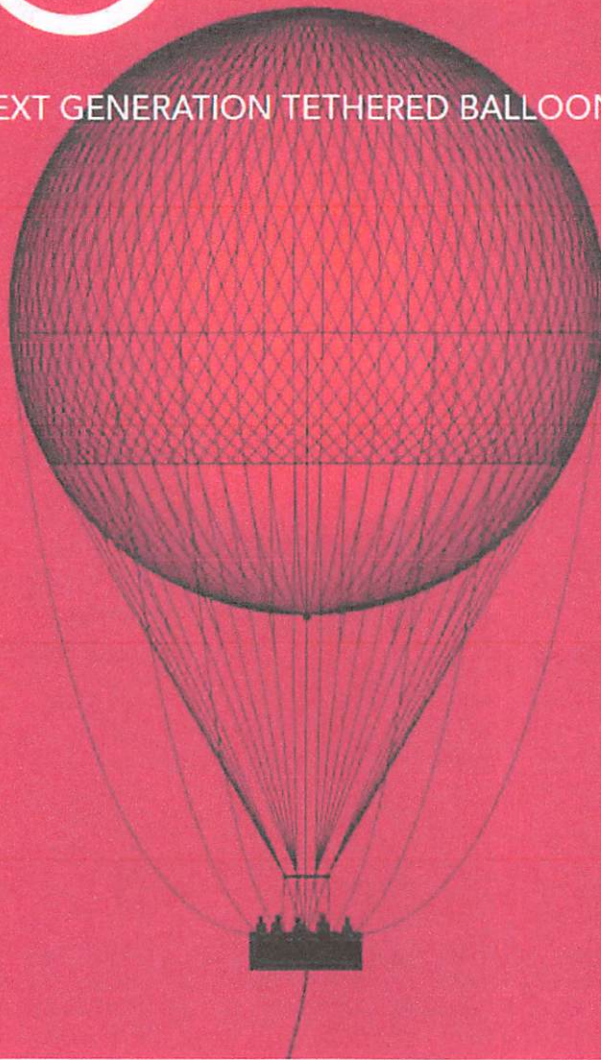


*The average of mean hourly wind speeds (dark gray line), with 25th to 75th and 10th to 90th to*





NEXT GENERATION TETHERED BALLOONS



# AB-20

**Twenty-Passenger Tethered Helium Balloon**

[info@aeroballoon.com](mailto:info@aeroballoon.com)

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- Installation support and training
- Warranty and service
- Services included with your purchase
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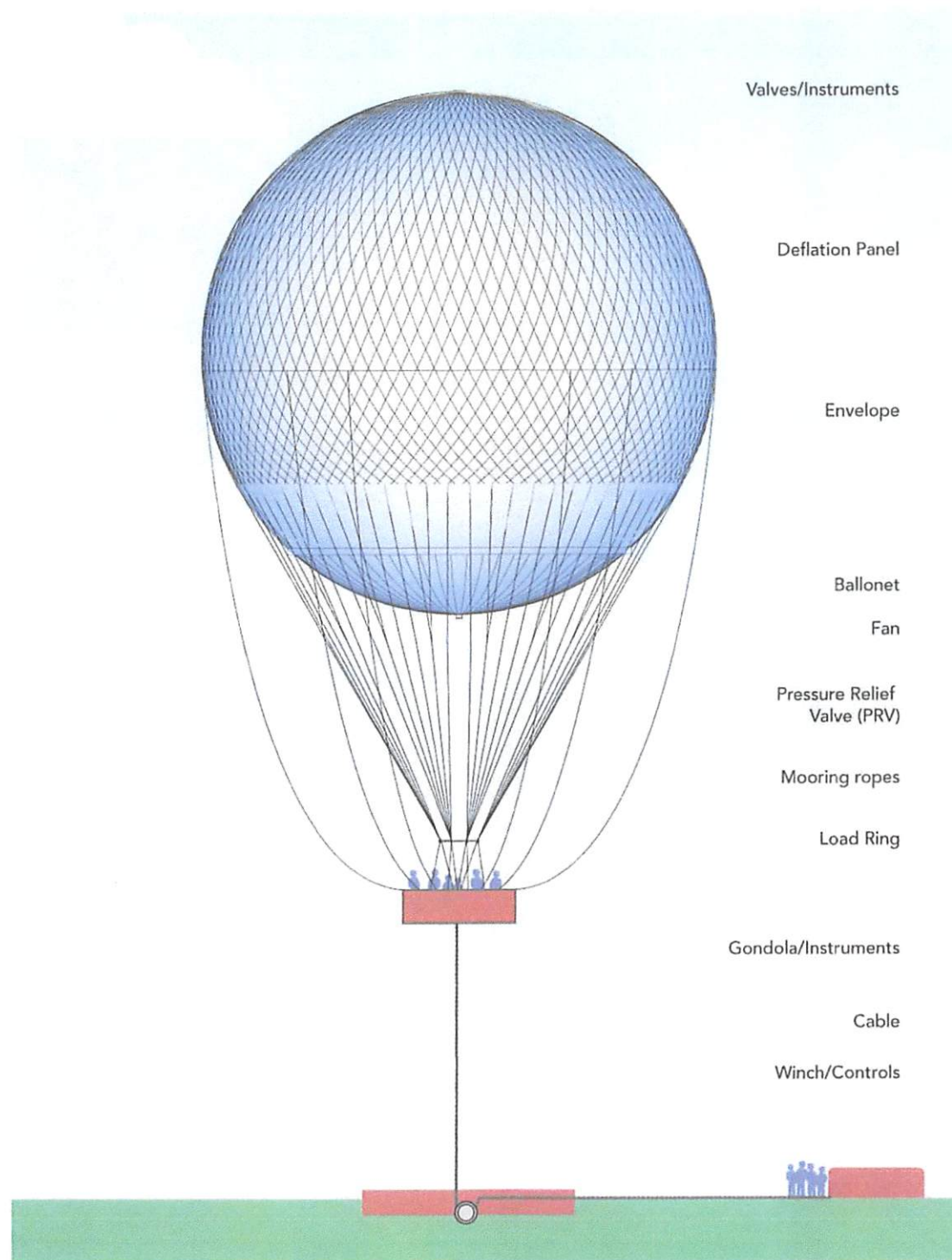
### COMMERCIAL OPERATIONS

- Personnel
- Choosing your balloon site
- Ticket sales channels
- Advertising and partnerships

### PRICING

- Complete AB-20 system
- Included with your purchase
- Warranty

## ILLUSTRATION OF THE COMPONENTS



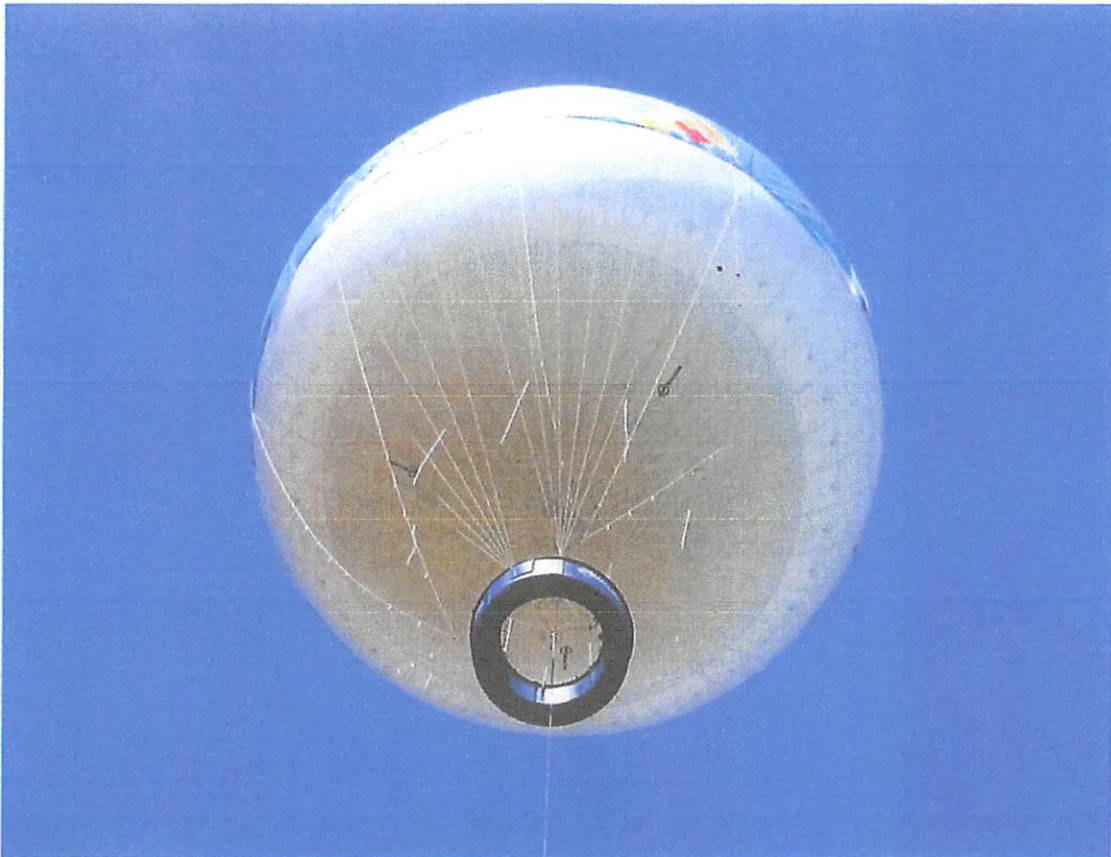


## INNOVATION

AeroBalloon, since 2002, is the youngest of the three worldwide manufacturers of these tethered helium balloons. Arriving late has its advantages as we were able to carefully study our competitors and speak at length with their customers, discovering which features they did and did not like. As such, we were able to begin designs with a fresh perspective. Our newest design, the AB-20, while equally grand in the sky, offers a balloon that can comfortably put up over 1,000 passengers per day weather permitting. The AB-20 is a sleek design which is:

- Easier to ship (1/2 the cost of a 30-passenger balloon)
- Far easier to provide for site preparations (1/5 the cost of a 30-passenger balloon)
- Easier to assemble and inflate (2 engineers with 2 helpers over 2 days, as opposed to 3 engineers with 30 helpers over 3 days for a 30-passenger)
- Far less costly to inflate (3540 m3 of helium, compared with 6200 m3 of helium)
- Easier to operate

The greatest achievement of the AB-20 is its use of modern composite technology which we have utilized to the utmost. The AB-20 total system weight is 1200 kg. Comparatively, Aerophile's Aero30NG has a total system weight of 2700 kg.



*The AeroBalloon AB-20 can fly over 1,000 passengers per day*



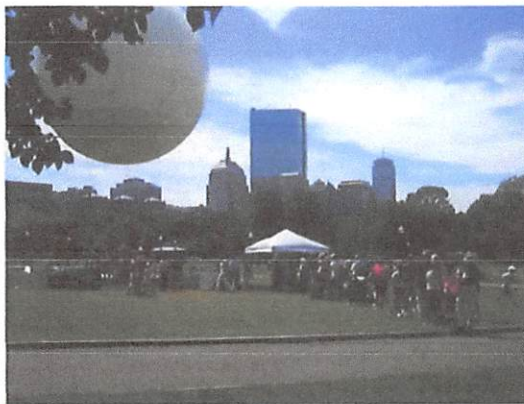


## 1500 KG IN WEIGHT SAVINGS IS EXTREMELY IMPORTANT IN LIGHTER-THAN-AIR TETHERED BALLOONING BECAUSE:

1. Helium is a considered a rare gas and as such, is fairly expensive.
2. Because of the composite technology that we employ, practiced in racing yacht-building, the AB-20 provides 1500 kg in weight savings over the Aero30NG.
3. 1500 kg is the equivalent weight of 23 balloon passengers!
4. This means that the helium contained in the AB-20 is being efficiently used to lift *passengers*, rather than a heavy metallic gondola.
5. Consequently, for the initial balloon inflation, the AB-20 requires just 3540 m3 of helium, compared with 6200 m3 of helium for the Aero30NG in order to achieve nearly equal daily flight capacity.

## QUALITY AND DURABILITY

Our balloon fabric is second to none in the airship industry. Our fabric is extraordinarily strong with a tensile strength of 630 lbf; and a tear strength of 63 lbf. Four coatings are applied to each side of the fabric: On the underside to achieve near zero porosity of helium; on the top side for UV and weather resistance. Helium loss on a monthly basis is less than 40m3. Life expectancy for our balloon envelopes is eight years continuous use, but can vary based on climate. Projected lifespan of our gondola and winch is 15-20 years. Our fabric meets or exceeds all international flame retardant specifications including NFP, CSFM, ASTM, DIN, etc. and is built under strict ISO 9001 standards.



*Boston Common*



*Central Park, NYC*

## TO SUM UP OUR COMPANY AND THE AB-20 MODEL

1. *AeroBalloon is a safety company.* Every decision we make is based on *safety first*.
2. *Lighter than air.* Tethered helium balloons are in the lighter-than-air category. We believe in full utilization of the latest technologies in molded composite engineering that provide the maximum in strength to weight ratio. This way, the helium is put to use lifting your *passengers*, not a heavy steel framework gondola.
3. *Ease of use.* We believe that a balloon system that is easier and straightforward to use, provides less opportunity for human err, and therefore represents a more safe design.
4. *Low-cost to install and easy to install.* With the AB-20 each step of the installation process including shipping, balloon site preparation, assembly, installation, and inflation were well considered at the beginning of the design process. These costs are a small fraction as compared with the 30-passenger balloon models. Many balloon sites operate seasonally, and move their location from time to time. For these reasons the AB-20's low-cost + easy install design are highly financially advantageous over the 30-passenger models.



*View from the AB-20 gondola*





## AEROBALLOON MODELS

### AB-20 (twenty-passenger tethered balloon)

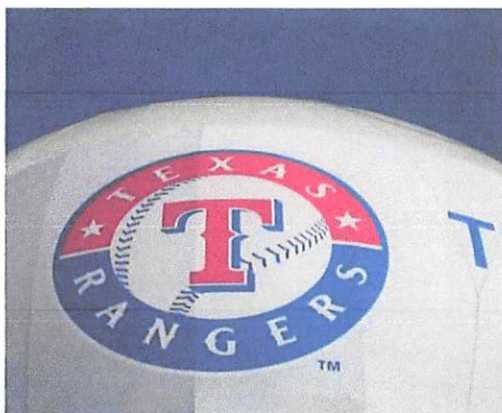
Featured in this brochure, the AB-20 is the latest in tethered helium balloon technology. An excellent fit for the widest range of balloon attraction venues. Because of its super sleek and well thought out design, the AB-20 can affordably and profitably be launched at marquee venues for year-round operation; or even shorter 3-6 month operating seasons.

### AB-5 (five-passenger tethered balloon)

A good fit for pristine city parks, smaller operating areas, and shorter operating seasons anywhere between 1-12 months. The AB-5 can be deployed and removed easily.

### AB-30

Although it is the largest model, the 30-passenger balloon comes with a very high cost of shipping, installation, helium inflation, and operational cost. We only recommend this model for a fully permanent location, never to be moved, and with your venue already attracting millions of visitors per month. Without all of the above criteria, then the AB-20 will be a far better fit as it can well handle the passenger volume, and is a fraction of the cost to install and operate.



## AB-20 SYSTEM INFORMATION

The AeroBalloon is a tethered helium balloon designed to remain moored at all times. It is never in free flight. It is capable of ascending to up to 500 feet and can perform six complete cycles/flights per hour. It is held firmly to the ground by a high-tensile steel wire cable. The AB-20's elevation is carefully controlled using a powerful variable speed winch. The entire system stands 100 feet (30m) high and is 62 feet (19 meters) in diameter.



## AB-20 TECHNICAL SPECIFICATIONS

### Gondola (patent pending)

- Monocoque custom molded composite laminate construction
- Donut shaped, cable passes through center
- All passengers wear easy-on harnesses
- Super strong, super lightweight
- Exterior diameter: 15 ft (4.6 m)
- Weight: 600 lbs (270 kg) including all hardware
- Sleek and elegant in appearance, can be painted any color

### Balloon Envelope

- Total height of system: 100 feet (30 m)
- Envelope diameter: 62 feet (19 m)
- Envelope volume: 125,000 cubic feet (3,540 m<sup>3</sup>)
- Nominal lift: 6,200 lbs (2,820 kg)

### Tether Cable

- Diameter: 18 mm
- Resistance: 62,000 lbs (27,500 kg)
- Useful length: up to 400 feet (130 m)

### Winch

- Dimensions: 8' x 8' x 5' high (2.4m x 2.4m x 1.5m high)
- Power: 3-phase, 460 volts
- Speed: Variable speed control, 0 to 145 feet per minute (44 m/min) in both directions
- Emergency stop and 'absent-man' automatic stop switches
- Redundant winch motor

## GONDOLA

### Technology

Our new AB-20 gondola is an ultra-sleek design using the latest in yacht-building composite technology. 100% custom molded fiberglass, Kevlar, and honeycomb construction with monocoque compartments and additional supporting aircraft aluminum ribs, it is under patent pending. Because these tethered balloons are in the *Lighter Than Air* category, it is only logical to build the gondola with the latest in strength to weight technologies. With such tremendous weight savings in the gondola, the volume of the helium is much more effectively used to lift passengers and for free-lift, instead of lifting a heavy, metal frame gondola. As an additional measure of safety, passengers are provided with an easy-on waist harness.



### Color

We can provide any custom gondola color you request at no additional charge

### Life span

Our gondola is designed to comfortably give you 15+ years of life under normal use.

### Quality control

The gondola is designed and built in accordance with German Lloyd's standards and the requirements of U.S. elevated passenger side-rail heights, and non-skid floor. It is factory load tested to 1.5x the maximum recommended load.

## ENVELOPE (BALLOON)

### Technology

AeroBalloon's sphere shaped envelope contains a volume of 125,000 ft<sup>3</sup> (3,540 m<sup>3</sup>) of helium. This shape retains a traditional balloon appearance and can be decorated any color (white is preferred for UV resistance). Our balloon fabric is second to none in the airship industry. Four coatings are applied to each side of the fabric: On the underside to achieve near zero porosity of helium; on the top side for UV and weather resistance. Hail and rain do not adversely affect the fabric. The ballonnet system, supplied with a continuously running fan and relief valve, maintains the balance of pressure within the envelope. This is standard airship technique used to maintain the spherical shape with variations in temperature and atmospheric pressure. AeroBalloon is designed to remain inflated throughout its life, even in high wind conditions. However, here in North America, most sites operate seasonally during the six months of summer. When the wind speed exceeds 25 knots, the AB-20 is stabilized via our low-mooring system that consists of an independent winch working to bring the envelope down low to the ground. The envelope is designed such that small helium top-offs are required just once per month.

### Rip panel

The envelope is equipped with a deflation "rip panel". The panel is located near the top of the envelope. It is used only for emergency deflation of the balloon. This panel also helps protect the envelope by deflating it in just a few minutes.

### Fabric helium porosity

Monthly helium loss has consistently been recorded at better than 40 m<sup>3</sup> per month. The fabric's porosity level is essential to the profitability of the system. With such a low helium loss, one can budget about \$500/month in helium loss.

### Life-span

Under normal conditions, a reasonable life expectancy for the AB-20 envelope is eight years continuous use. This can vary slightly depending on environmental conditions.



### Color of the balloon

The envelope can be decorated any color although white is preferred for UV resistance. We can paint or print any artwork you desire onto the envelope, subject to separate quote and additional delivery time.

### Certification and quality control

Our envelope fabric is produced under strict ISO 9001 process. Our balloons are certified to meet criteria throughout North America, Asia, Africa, South America and parts of Europe. We are not yet approved in some parts of Europe such as France and Germany as EASA provides regulatory guidance there, but this may change soon. Fabric swatch samples are glued onto the top of the envelope for the purpose of conducting annual fabric testing. We provide this testing for you without charge.



### EQUIPMENT

#### Helium Valve

The helium valve is located at the north pole of the balloon. It can be opened manually using the control rope. It is only opened in the event of over-pressure or for a controlled deflation at the end of an operating season. If manually opened, it is automatically closed by return springs when the operator releases the control rope.



### Ballonet fan and PRV

Both the ballonet fan and pressure relief valve are located at the south pole of the balloon. Their purpose is to regulate pressure within the balloon. When the helium contracts due to drop in temperature or during descent, the ballonet fan automatically activates to re-pressurize. When the helium expands, the PRV automatically releases air inside the ballonet thereby relieving internal pressure. Both valves are protected by machined and welded aluminum housing. The fan is operated from a control box within the gondola.

### Control box

Is located in the gondola and is used to control operation of the ballonet fan and valve. It also displays the anemometer and free lift. When low-moored during storms the internal pressure is increased so that that the balloon retains its hard sphere shape.

### Position lights

Where required, the AB-20 is equipped with a steady red position light identifying it as an elevated airspace obstacle.

### Control ropes

The AB-20 is equipped with the following control ropes: Orange rope enables the operator to open the top helium valve and release helium. This is only required if there is too much helium, or to completely deflate the balloon. Yellow rope used only to prevent any over-pressure in the envelope, in the highly unlikely event of a cable break. White rope used to open the PRV in rare instances where overpressure could occur in the ballonet. Red rope used to open the rip panel used only in the event of deflation during high wind. Once opened it is irreversible will deflate the envelope within a few minutes. It can only be re-sealed by our factory technicians. Use of these ropes is thoroughly explained in the manuals and during training.

### Gondola batteries

A 24V battery is carried in the gondola to supply the ballonet fan and dynamometer. The battery is recharged in the gondola when the balloon is tethered and the ground power cable connected to the grid.

### Mooring points

The AB-20 is supplied with eight outer and eight inner mooring ratchets enabling easy mooring operations. At AeroBalloon we believe that *ease of use* means safe.





*AB-20 in Houston*

## INSTRUMENTS

The balloon is equipped with instruments enabling the operator to clearly monitor and operate the balloon. All readings are displayed at the operator position in the gondola. The instruments are:

- Anemometer (airspeed indicator) located at the top of the balloon for reading wind speed
- Dynamometer (load cell) displays free lift
- Ballonet window located at the south pole allows for viewing of the internal ballonet
- Altitude indicator shows balloon altitude above ground level

## TETHER CABLE

### Cable type

Built to the highest military specifications (mil-spec) the cable is an anti-rotational, high tensile steel cable is made of opposing wound steel and is impregnated with grease. The end is fitted with a load bearing swivel that enables the balloon to rotate while in flight with no adverse affect to the cable such as binding.

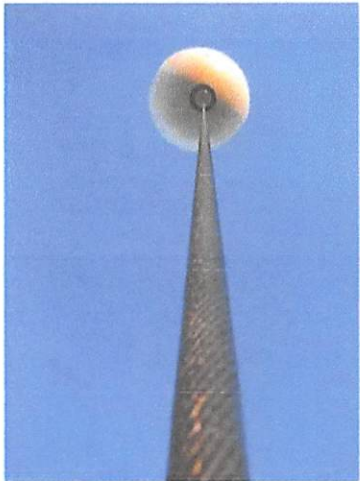


### Factor of safety

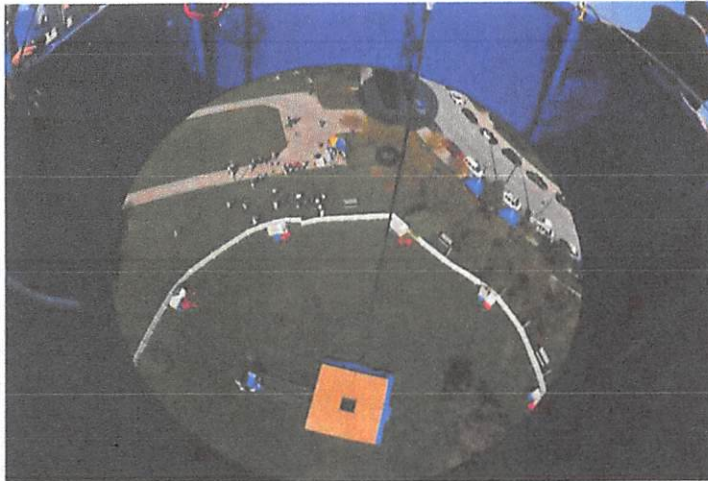
The AB-20 tether cable has a diameter of 18 mm and possesses a minimum safety factor of ten. This means that its break strength is ten times the maximum force that would be applied to the cable under foreseeable extreme conditions. During typical day to day operations, the safety factor is well above twenty.

### Cable termination

The balloon end of the tether cable is terminated into a conical socket basket sealed with poured epoxy. The cable-socket assembly is stronger than the cable itself. The winch end is bolt clamped to the winch drum. This fixing is also stronger than the cable itself.



*Tether cable*



*Looking down through gondola donut hole*

## WINCH

### Design and performance

The AB-20 balloon is permanently affixed to the ground winch via the tether cable. It is outfitted with a command post joystick with which the operator has variable speed control of the balloon's ascent and descent within a range of 0 – 145 feet per minute. The variable speed control is extremely important in that it enables the operator to *feather* in the landings whilst operating in breezy conditions. The winch speed enables a complete flight cycle to be made in less than ten minutes, including gondola exit and entry, or six flights per hour.

### Primary and redundant systems

The balloon system has four independent possibilities for retrieving the balloon. The primary winch operating mode, use of the secondary and fully independent auxiliary winch motor, use of the low-moor winch, or as an unlikely last resort by slow release of helium.

### Primary winch system

- Fully electric variable speed motor – there are no hydraulics involved at all
- grooved drum onto which the tether cable is wound
- positive safety brake
- emergency stop
- absent man switch

The primary system is operated by the operator on the ground whilst in continuous communication with the operator in the gondola. The winch is equipped with absent man controls. This means that the operator must be operating the winch at all times and may not walk away leaving the winch unattended. Should an anomaly be detected, the primary system is equipped with an emergency stop.

### Auxiliary retrieval system

- completely independent electric winch motor
- powered by a completely independent power source
- positive safety brake
- conspicuously located and easy to access and engage
- the auxiliary system is engaged in less than 5-minutes
- May only be operated from the winch control console on the ground

### 3<sup>rd</sup> retrieval option

In the highly unlikely event that both the primary and auxiliary winches fail, a 3<sup>rd</sup> option of utilizing the low-moor winch to retrieve the balloon exists.

### 4<sup>th</sup> retrieval option

In the extraordinarily unlikely event that all of the above are no longer options, the 4<sup>th</sup> option of slowly releasing helium exists. This is only to be done as a last resort as a substantial top-off of the balloon would have to be achieved immediately following descent.



*Sample winch positioning relative to the sheave*



## LANDING DECK

The landing platform required for the AB-20 is a flat deck with the top surface comprised of marine plywood sheets. Owners of the AB-20 may design whatever landing deck shape that they desire: square, hexagon, or octagon, so long as the diameter of the landing deck is 7.3 meters (24 feet) or greater. Clean and crisp in design, it is also quite inexpensive to construct.

## LOW MOOR SYSTEM

In order to safely remain inflated through high winds the AB-20 comes with a low-moor system that lowers the envelope down low to the ground so that the balloon is in a more stable position and better protected from the laminar wind above the tree line. For the AB-20, low-moor is far easier to achieve than with any of the 30-pax balloons. The system is comprised of one fully independent low-moor electric winch, and 24 vertical descent ropes arranged symmetrically with a load rating of 1.5 tons each. The outer mooring points are utilized for lateral stabilization of the balloon while descending into the low-moor position.

## SPARES

The AB-20 is delivered with key spares such as a ballonet fan and mooring ropes so that operations can be continuous even as maintenance and repair are needed over time.

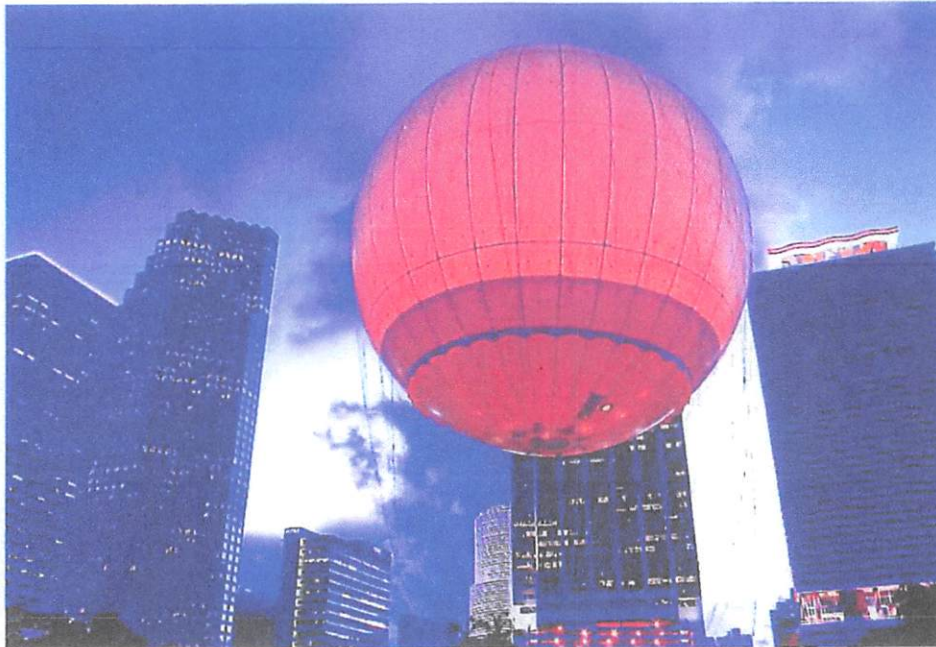
## 1000+ FEET OPTION

Upon special request we can increase the cable length. The 1000 feet option enables flights to be made up to a height of 1000 feet above the ground. Here in the U.S, this is a rare request for three reasons. a) Tethered flight under 500 feet AGL (above ground level) are in uncontrolled airspace and need no FAA approval unless the balloon site is within five miles of the nearest airport. b) Increasing the flight altitude also increases the flight cycle, and thus decreases the number of flights that you can provide on a per hour basis. c) In most instances, the view is more or less the same from either 400 feet or 900 feet.

## INTERNAL NIGHT ILLUMINATION

Our envelope airship fabric is semi-translucent. Our internal night light system of super high-lumen bulbs illuminates the envelope such that it can be seen for miles away at night. In flight, the lights are powered by a whisper generator; and by the grid while on the ground.





## OPERATION

### OPENING FOR BUSINESS

From the high mooring position, which is the most common, the system can begin operations in just a few minutes. Daily pre-flight:

- weather forecasting
- daily inspection of the balloon and winch in accordance with the maintenance manual
- detach the eight mooring ropes
- activate the winch
- carry out a test flight
- about fifteen minutes are needed for this daily start-up procedure

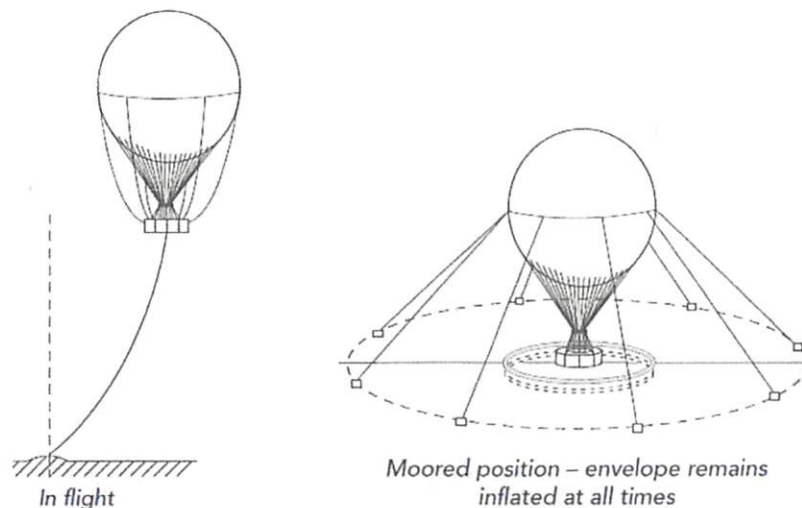
### COMMERCIAL OPERATIONS

The passengers purchase tickets and are then escorted to the take-off area. The maximum number of passengers is 20. As the wind increases the number of passengers is reduced. This is described in detail in the AB-20 Operating Manual, but here is an example operating table:

| peak wind gust | max # of passengers |
|----------------|---------------------|
| 0 – 10 mph     | 20                  |
| 11 – 18 mph    | 10                  |
| 19 – 26 mph    | 5                   |

## MOORING

When the operating period has ended or if the weather conditions deteriorate, the balloon is moored.



### High mooring

For winds not exceeding 30 mph, the balloon is moored in the high moor position. This can be achieved by two people in ten minutes.

### Low mooring

For winds exceeding 30 mph, the balloon must be lowered into the low moor position. This can be achieved by 1-2 people in ten to fifteen minutes.

### Deflation

For winds exceeding 67 mph, deflation of the balloon is recommended as a preventative measure. This can be done through either the helium valve or by the rip panel, depending on conditions at the time the decision to deflate is made. However, because gusts of this magnitude are difficult to forecast, some operators choose to keep the balloon inflated through high wind to avoid the cost of helium re-inflation.

## CLIMATE EFFECTS

### Wind

Wind is the critical factor to the balloon's flying performance. When peak wind gust exceeds 24 mph, flights must be suspended. As already stated the balloon's payload capacity decreases as the wind increases. A site which is not subject to high winds is therefore preferred in order to optimize the number of flying days per year.



### Humidity

Air humidity has little influence on balloon performance. Humid air is better for the fabric than dry air because it mitigates UV radiation.

### Temperature

High temperature slightly improves balloon flying performance because it causes expansion of the helium within the balloon due to solar radiation.

### Ultraviolet radiation

Ultraviolet radiation is the most destructive agent responsible for degradation of the fabric. AeroBalloon airship fabric is specifically coated to defend against UV.

### Precipitation

In light rain, the balloon can fly so long as the wind is low and there is no danger of storm fronts. In areas with severe winters subject to heavy snowfall, it is recommended that the envelope is deflated for the winter. However, in locations such as a ski resort, it is possible to build a quick-erect hangar for the balloon that would shed snowfall.

### Altitude influence

Because the air is less dense at higher altitudes, this reduces lift and balloon performance. If your balloon location is at high altitude we recommend a custom built envelope with added volume to counteract this loss of lift.

## RECOVERY PROCEDURES

### Failure of the primary winch system

If there is a total power failure, or malfunction in the primary winch motor, the winch operator crew can engage the redundant winch motor, which operates on an entirely separate power source. The balloon is returned to the ground using this redundant winch motor. Operations must cease until the malfunction is identified and repaired.

### Failure of the primary system and auxiliary system

In the extremely unlikely event of a simultaneous failure of both primary and redundant winches, the balloon can also be descended via the independent low-moor winch.

### Failure of the 1<sup>st</sup> three recovery options

In the extraordinarily unlikely event of a failure of the above 3 recovery methods, the balloon can be descended via the 4<sup>th</sup> option of slow-release of helium. But this is to be used only as a last means because of the expense of the top up if helium that would be required to return the balloon to service.

### Tether break

In the extremely unlikely event of a cable break, the helium valve automatically vents helium until the altitude gain ceases and the balloon levels off. In addition to this, the pilot opens the





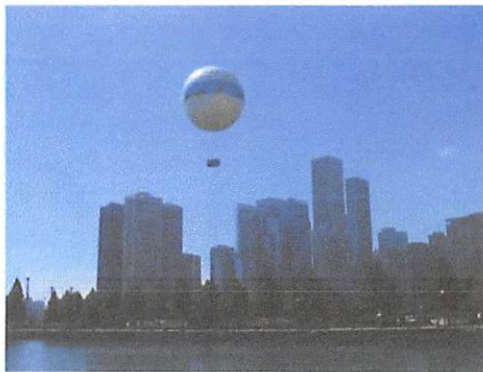
emergency helium panel which expedites the altitude leveling off of the balloon. The pilot then slowly and periodically vents helium to initiate descent. This process is detailed in our training program.

## MOTHER NATURE

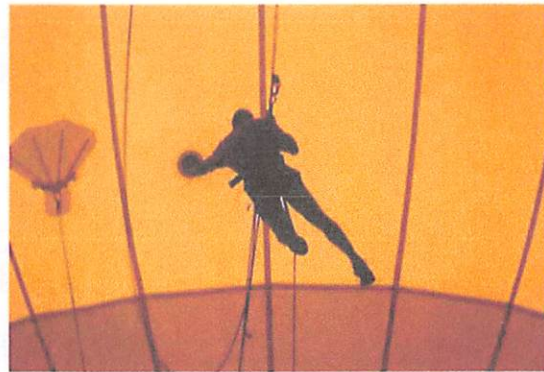
Day in and day out, Mother Nature is your boss. If weather conditions deteriorate with increasing wind, or if there is any risk of storm, operations are suspended until the weather improves and stabilizes.

## ARTWORK

With any of our AeroBalloon models, we can print or paint full color high resolution artwork directly onto the envelope. Or, you can attach interchangeable banners that wrap around the equator.



*High above Chicago*



*Night lighting Central Park, NYC*

## DOCUMENTATION AND CERTIFICATION

The AB-20 installation is certified by Profession Engineer, which is the standard here in the U.S. Our documentation meets or exceeds the criteria for all of the following continents: North America, Asia, Africa, South America, and parts of Europe. Other parts of Europe, such as France and Germany require an airworthiness certificate as issued by EASA. Here in the U.S., where our balloons are manufactured, our governing aviation body, the FAA, ruled that these balloons are stationary and never intended for free flight. As such, they determined that these tethered helium balloons are defined as an amusement ride. Because of this ruling, it is not possible for AeroBalloon to apply for an airworthiness certificate. To sum up, if your company is located in a European country where EASA does require an airworthiness certificate, then unfortunately we are unable to serve you. However, if you are located in North America, Asia, Africa, or South America, we look forward to working with you!

## MAINTENANCE

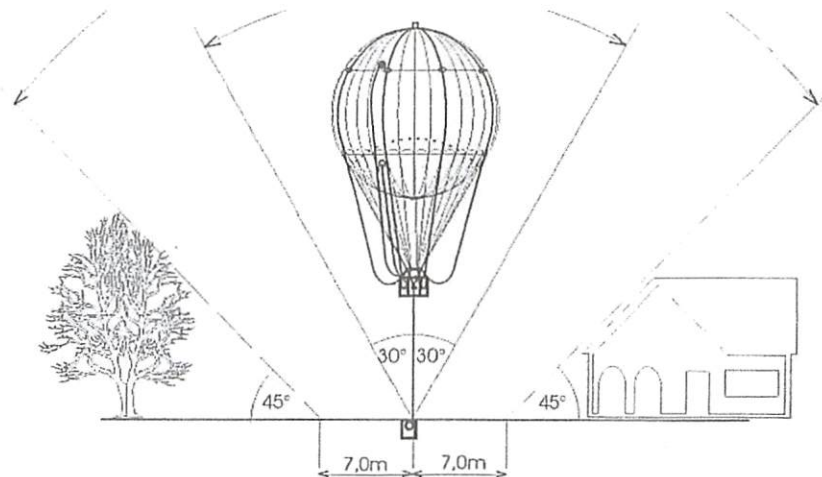
The AB-20 specialized winch is built without any hydraulics at all, meaning much less maintenance is required. The rest of the AB-20 system also requires straightforward maintenance such as scheduled lubrications of the moving parts. X-ray inspection of the tether cable is done in three year intervals. Other details are listed in the manuals provided by AeroBalloon.

## INSTALLATION

### OPERATING SPACE REQUIRED

The site required for the balloon must comply with the following recommendations:

- A minimum clear circular area of 120 feet in diameter. A larger diameter is desired as it will give the balloon more stability while in high moor position.
- Minor sloping ground is ok.
- An aeronautical cone (see below) must be left free and clear of all obstacles.
- No power lines in the immediate adjacent area





## BALLOON SITE PREPARATION

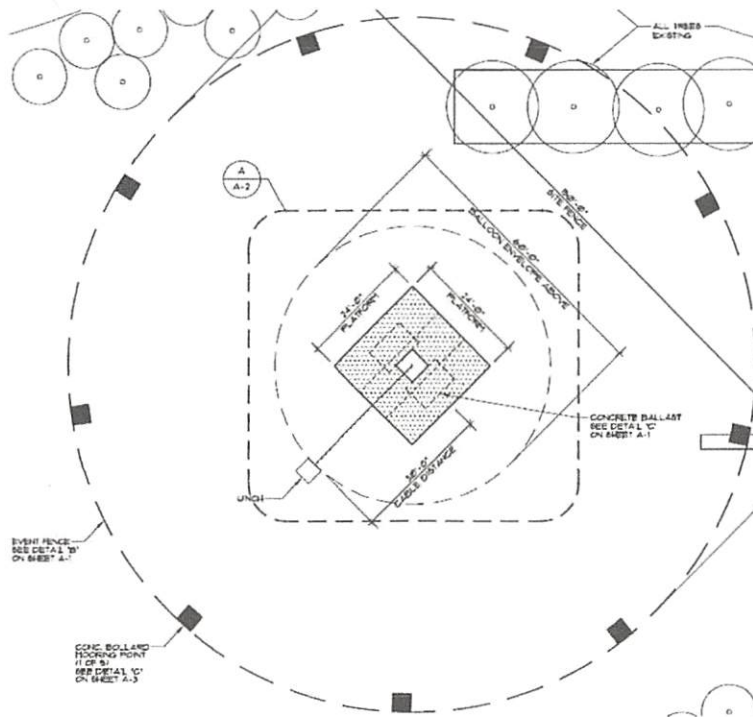
When we designed the AB-20 we gave great thought toward *ease of installation*. We took note of the great expense and substantial civil engineering required to install 30-pass balloons such as Aerophile's Aero30 with a massive 2,700 cubic feet of concrete spread over approximately 38 separate anchoring areas. With Aerophile's Aero30NG, the site preparation alone represents a tremendous time and financial investment. The AB-20 represents a design that, if necessary can even be installed entirely above ground, without penetration of the earth. We have done this at many of the most prestigious city parks here in the U.S. including New York City, Boston, Chicago, and Houston.

### Easy-install anchors and electric

The following describes just how easy the AB-20 is to install. Please take the time to compare these details with those of the 30-passenger balloon models.

- Eight exterior mooring anchors placed equidistant in a circle around the site perimeter. This can be done via earth anchors if the soil allows, or by concrete posts or bollards.
- Foundation concrete block for anchoring the primary balloon pulley and the low mooring winch system.
- Foundation block for anchoring the primary and auxiliary winch.
- 3-phase 460-volt to both the primary and low-moor winches.

## SAMPLE SITE LAYOUT FOR A FULLY ABOVE GROUND INSTALLATION





## INSTALLATION SUPPORT AND TRAINING

As part of our training package, we will provide to you an experienced operator to remain at your site following inflation and commissioning of your AB-20. Our training consists of both structured and hands-on instruction geared to provide operators with knowledge and confidence to operate the AB-20 system. Our instructors will insure that each of your operator students meets our rigorous standards of operational safety. In addition to the operator training, we will share our experience in the day-to-day operation of the balloon with the rest of the crew. We will help you provide your customers with the best ballooning experience possible.

We will work closely with you in developing an installation plan that best fits your site. Since the AB-20 was designed with *ease of use* in mind, installation is not complicated, and drawings can be easily shared via email.

## HELIUM

Helium is the only gas permitted to be used in the AB-20. Helium is a rare inert gas. It is neither flammable nor explosive. Helium is mined as a byproduct of natural gas and is primarily found in the United States, Poland and Algeria. For your initial AB-20 inflation you will want the helium delivered via a tube trailer. Helium may be delivered in compressed gas form (this is the most common), or in liquid gas form. Once inflated, only a few canisters per month are required to keep the balloon topped-up.



*Helium tube trailer – compressed gas form*



*Helium delivered in liquid gas form*

## SHIPPING

The AB-20 can be transported via one closed 40-foot ocean container; or it can be broken down into its various elements and shipped via air freight.





## CERTIFICATION

The AB-20 was developed in the U.S. where it is defined as an amusement ride. Our quality control process utilizes great care and includes redundant steps of re-inspections of the materials and workmanship. Our envelope fabric is built under factory ISO 9001 QC. Our balloons have received certification in North America, South America, Asia, meets criteria for Africa, and parts of Europe. On most continents, the basis for certification is safety criteria for amusement rides. Examples of areas where we have sold and/or operated balloons are Central Park, NYC; The Boston Common Boston, MA; San Francisco Giants Baseball Stadium/AT&T Park San Francisco, CA; Atlanta, GA; Lake Winnepesaukee, NH; Navy Pier Chicago, IL; Orchard Beach, New York; Florida; Texas Rangers Baseball Stadium Dallas, TX, Florida, India, Colombia, etc.

## COMMERCIAL OPERATIONS

### PERSONNEL

The number of employees needed to operate the AB-20 is two to four persons, depending on the particulars of the site. There are three types of personnel: operator/pilot, ground crew, ticket sales.

#### Sky captain

At all times, while open for business, AeroBalloon requires one trained personnel to be on-board the gondola.

#### Ground crew

An AeroBalloon trained operator must be on the ground. This person is responsible for operation of the winch which controls the altitude of the balloon. We recommend one other person to act in command of the revenues and as ground crew when the decision is made to cease operations for the day.

## CHOOSING YOUR BALLOON SITE

### Weather

AeroBalloon can help you determine whether your local region is suitable for a balloon. Climate, oceanic and topographical influence, average regional wind speed, etc. are factors to be considered.

### Foot traffic

Is the site in the vicinity of foot-traffic? Is this foot traffic seeking leisure and entertainment? These factors are to be studied.



## MARKETING

Use the AB-20 in partnerships with local and regional media. Use the balloon as news! For example, have your regional TV weather person conduct live TV broadcasts from the balloon. The balloon is its own marketing as it is visible for miles around.

## TICKET SALES CHANNELS

Ticket sales are achieved through various channels. Individual tickets are sold at the balloon site from foot traffic. Advance sales, sold on internet through Groupon, corporate events, travel agencies, hotel concierge, or other entertainment package partners.

## ADVERTISING AND PARTNERSHIPS

Advertising can be an important source of revenue but revenue potential varies greatly depending on zoning restrictions in particular areas. The balloon is certainly enjoyed by all, can be seen for miles in all directions, is a graceful monument to any skyline, and is quiet and non-polluting. However, passenger ride revenue typically represents the bulk of revenue.

## PRICING

### COMPLETE AB-20 SYSTEM INCLUDES ALL OF THE BELOW

**\$750,000**

#### Envelope, valves, instruments

- 3540 m3 envelope with ballonet, rip panel, emergency opening
- Suspension and mooring system, outer and inner mooring ropes
- Helium top cap valve, fan, pressure relief valve, position lights;
- Instruments: anemometer, dynamometer, altimeter, 24 V battery and charger

#### Gondola

- Composite molded technology, super strength to weight ratio gondola,
- Capacity 20 persons
- Easy-on harnesses for passengers



#### Primary winch, for continuous daily operation

- electric winch needing 3-phase 460 volt power
- variable speed control 0-145 feet/minute
- Back-up winch motor/emergency descent system
- Primary flight pulley
- 130 meters of useful cable

#### Low-Mooring system

- Low-moor winch system needing 3-phase 460 volt power
- Low-moor harness system

### **SERVICES INCLUDED WITH YOUR AB-20 PURCHASE**

1. Providing of sample architectural site preparations drawings
2. AeroBalloon engineer services required to assemble the balloon at your site
3. AeroBalloon engineer services required to inflate the balloon
4. AeroBalloon engineer services required to commission the balloon
5. AeroBalloon engineer services required to train your balloon crew

### **NOT INCLUDED WITH THE PURCHASE OF YOUR AB-20**

1. Helium
2. Insurance
3. Site Preparations
4. AeroBalloon engineer travel expenses (airfare, hotel only)
5. Internal night-lighting system

### **WARRANTY AND SERVICE**

As part of a complete systems solution, AeroBalloon is dedicated to providing world-class service and support. We pride ourselves in our materials and workmanship and provide a 1-year warranty following commissioning and testing. Our technicians are available, as needed, for service and support calls. The AB-20 represents a sleek, easy to use, and reliable system designed for long life and as such, requires very little maintenance. Daily and monthly inspections are recommended to insure the safety and longevity of the system.

<end>