



TENT PERMIT SUBMITTAL GUIDE



Overview

This guide is designed to familiarize you with the documents needed in many jurisdictions for the proper submission of your permit for a temporary tent installation. This document can not guess the specific requirements of your Authority Having Jurisdiction (AHJ), but it serves as a comprehensive guide on the documents that are most often required when submitting a tent permit.

Tent permits are required so that a review and inspection can be completed by an inspector of the installed tent(s) or structure(s) and to make sure that the installation is correct and safe for occupancy. Some of the information needed to obtain a permit include: a completed application, required fees, layout diagram of the interior of the tent including egress aisles, placement of the tent on the parcel including property lines and buildings, flame resistance certificates for the tent fabric and an anchoring plan. More in depth information may be needed like structural drawings, engineering for the tents being used, and how you intend to resist the forces needed to hold the tent in place. Each of these elements are discussed in further detail in this guide.

The following sections help explain the "What", "Why", and "How" of the many different elements of a comprehensive permit submittal package and provide samples that you can use to prepare your own package of documents for your next permit application.

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- A. Permit Application
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- D. Certificate of Insurance
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Permit Application

The primary submittal document for most any temporary tent permit is the permit application. This document is obtained from the Authority Having Jurisdiction (AHJ) and likely administered through the city, county, or other municipality in which the tent will be installed. Permits are typically processed by the Fire Safety Department, Building Safety Department, or both. Depending on the municipality, other departments like Planning and Zoning may also require separate applications to be filed. Most municipalities offer these documents on their respective websites while others might require you to visit their office to obtain the permit application in person. Many municipalities require permits to be issued before installing a tent, canopy, or membrane structure on private and/or public property.

The application document itself serves as a general information gathering form that will require specific information about the temporary tent installation location, address, dates of installation, dates of the event, dates of removal, etc. This form will serve as the permanent record and the basis for the actual permit and potential inspection at a later date. The application may or may not outline any fees that are required when submitting the application for a formal permit, so if there is any doubt, inquire about associated fees in the beginning of the process.

Contact the municipality you are working in to find out what their requirements are and what documents are needed for the approval process.

Permit Application (Sample)

WORKERS' COMPENSATION INSURANCE ON
FILE WITH BUILDING DEPT.

YES NO

INSURANCE COMPANY

POLICY #

EXPIRATION DATE:

CITY OF TORRANCE FIRE PREVENTION DIVISION

APPLICATION FOR PERMIT

DATE:

PERMIT CODE:

PERMIT FEE:

BUSINESS NAME:

BUSINESS ADDRESS:

CITY:

STATE:

ZIP:

PHONE:

APPLICANT OR DESIGNATED REPRESENTATIVE:

PERMISSION IS REQUESTED TO:

DATE(S)

AT:

(LOCATION/ADDRESS)

USE REVERSE SIDE OF FORM FOR PLOT PLAN OR FOR ADDITIONAL REMARKS

Applicant hereby agrees that the above request, if granted, will be carried out in accordance with the UNIFORM FIRE CODE, City of Torrance (City Ordinance No. 3000) and any other City ordinances applicable in addition to any SPECIAL CONDITIONS which may be DEEMED NECESSARY by the inspecting authority. Failure to do so may result in revocation of the permit or legal action.

SIGNATURE OF APPLICANT OR
DESIGNATED REPRESENTATIVE:

FOR OFFICE USE ONLY

DATE OF INSPECTION:	FOR ANNUAL PERMIT BILLING ONLY	
INSPECTED BY:		
APPROVED: <input type="checkbox"/>	REJECTED: <input type="checkbox"/>	ENTERED INTO BUSINESS LICENSE INTERFACE
CAUSE:	BY:	DATE:
PERMIT ISSUED:	PERMIT PAID:	
	CHECK #	RECEIPT #

3031 TORRANCE BOULEVARD • TORRANCE CA 90503 • 310 618-2973 • FAX 310 781-7506

Permit Application (Sample)



Hillsborough
County Florida

Hillsborough County Fire Rescue • Fire Marshal's Office

Tent Application

9450 E. Columbus Dr., Tampa, FL 33619 • (813) 744-5541 Fax: (813) 744-5794
FireMarshal@HCFLGov.net

Date of Application: _____

Tent Company Name: _____

Billing Address: _____

Tent Location: _____

Use of Tent: Assembly(50-300ppl) Assembly(301-1,000persons) (>1,000people) Mercantile Sales

of Tents: _____

Tent Sizes: 1. _____ 2. _____ 3. _____ 4. _____

Setup Date: _____ Take Down Date: _____

Fax Number: _____ Email Address: _____

Contact Phone Number: _____

A Site Plan of area in which tent will be erected shall be attached to this permit application.

1. The site plan shall include the proposed location of the tent, as well as the distance (in ft.) between the tent and other structures on the site.

The completed application shall be submitted with the following items:

1. Certificate of Flame Resistance
2. Letter of Authorization

Note:

- The validated receipt shall be at the site along with a copy of this packet.
- Tent permits are good for 30 days at a time not to exceed 180 days.
- Tent permit applications shall be submitted a minimum of 3 business days prior to setup date.
- There shall be a minimum of 10 ft. between the tent and any structures.
- There shall be a minimum of 10 ft. between stake lines.

The Authority Having Jurisdiction (AHJ) has the right to deny this permit and any future permits if any of the above requirements are not adhered to.

I CERTIFY I WILL COMPLY WITH ALL REQUIREMENTS ABOVE.

Name: _____ Signature: _____ Date: _____

OFFICIAL USE ONLY

APPROVED: _____ REJECTED: _____ ZONE: _____ RMS #: _____

Signature of Fire Rescue Representative/Date

See attached list of Code Requirements for sparklers in tents.

If a burn ban is in effect, permit may be revoked.

HCFLGov.net/Fire

Site Layout

The site layout serves as a graphical representation of what you plan to build and will help convey your plan to the AHJ in a clear and concise manner. The plan will address specific safety requirements that the AHJ will be looking for in review of the permit application as well as during any subsequent physical inspections of the tent/event site. The primary focus for this and all elements of this submittal and the permit process is to protect public safety. If and when there is an emergency, the AHJ wants to make sure there is ample egress out of the tented space and there is ample space for emergency vehicles to gain access to the location in the event of an emergency.

The Site Layout will consist of two primary elements, the site overview, and the site detail. These layouts are most often produced using a computer aided drafting program such as AutoCAD, PartyCAD, or Vectorworks, but can also be submitted using a hand drawn plan on graph paper. Overhead or satellite imagery available from internet sources can also be used or incorporated in this part of your submittal package. Many larger public locations, venues, and corporate spaces may have existing CAD plans that can be used as a basis for your drawings. Always be sure to double check any provided plans with physical measurements to confirm the plans match "as-built" conditions. For smaller installations, the overview and detail can be combined on one drawing.

SITE OVERVIEW

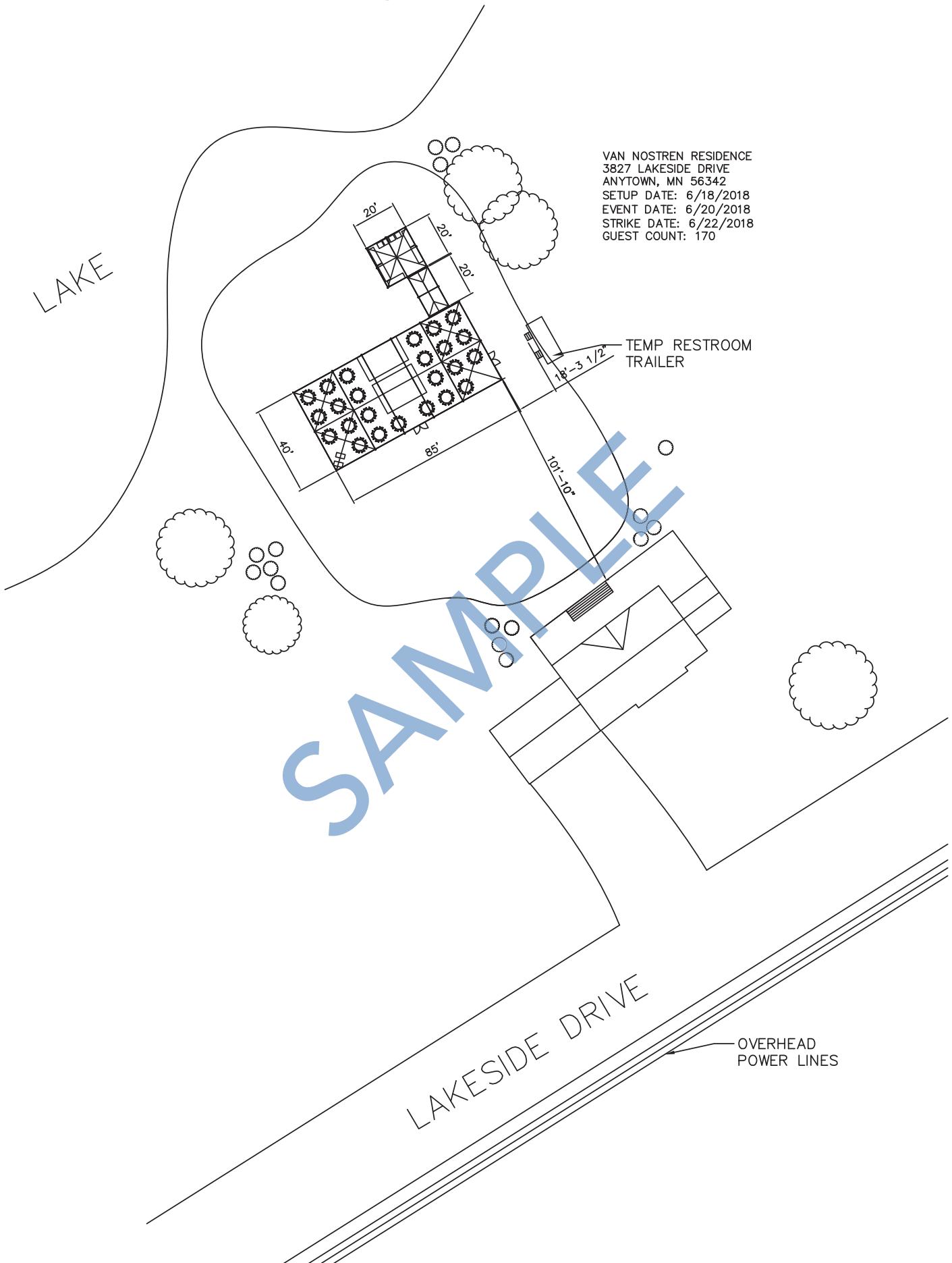
The site overview establishes a wide overhead view of the entire event site and will show all adjacent permanent structures, trees, property lines, streets, overhead power lines, fire lanes, light poles, and any other permanent obstructions. This drawing will also show all of the temporary elements you plan to add for the event. These would include all applicable tents, ballasting, guy lines, general exit locations, temporary rest room facilities, cooking areas, fencing, walkways, ramps, fuel storage, and temporary flooring.

SITE DETAIL

The detail plan for the tented space will include much more specific information about what will be inside and immediately outside the tent and how guests will be entering and exiting the tented space. For larger events that might have several different tents, it should be encouraged to submit a separate detail drawing for each individual tent or each grouping of tents. Each of the following elements should be included (if applicable) on the detail drawing:

- Table/chair/furniture layout
- Maximum occupancy
- Stages and/or dance floor locations & size
- Sidewall location(s)
- Exit locations specifying height and width of exit
- Fire extinguisher location(s)
- Exit sign location(s)
- "No Smoking" sign location(s)

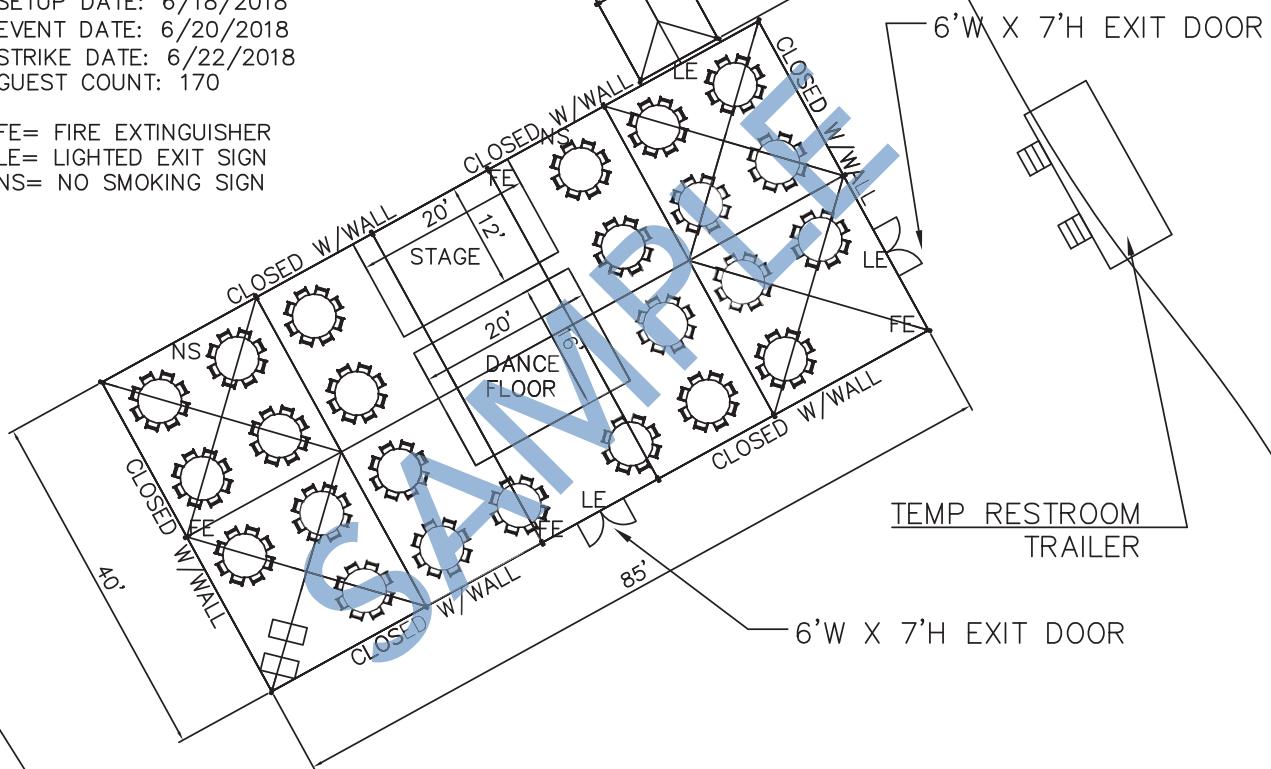
Site Overview Drawing (Sample)



Site Detail Drawing (Sample)

VAN NOSTREN RESIDENCE
3827 LAKESIDE DRIVE
ANYTOWN, MN 56342
SETUP DATE: 6/18/2018
EVENT DATE: 6/20/2018
STRIKE DATE: 6/22/2018
GUEST COUNT: 170

FE= FIRE EXTINGUISHER
LE= LIGHTED EXIT SIGN
NS= NO SMOKING SIGN



Certificate of Flame Resistance

Flame Retardant Certification is the acknowledgement that a piece of material has been tested and has passed the requirements of the flame propagation testing standard notated on the certificate. This certification is conducted in a laboratory setting with specific instrumentation and procedures as outlined in the testing standard. Typically, these standards do not require that a product be noncombustible, but rather that when the source of the flame has been removed from the tested sample, the burning edge of the tested material self extinguishes in a specific allotment of time. Products can be treated with a chemical to inhibit flame propagation or they can be constructed with materials that naturally meet the flame propagation standard without any chemical treatment.

In the case of treatment with a topical chemical, the material is sprayed or submerged in a flame retardant chemical solution that adheres to the fibers of the material. Once dried, this material can be tested against the flame propagation testing standard. When washed, the material may lose its flame retardant properties and thus needs to be retreated after washing. This process in which material is topically treated is referred to as "FR" Fire Retardant (aka Flame Retardant) is mainly used on fabric material and is subject to dissolving over time due to repeated cleaning. This fabric must be re-tested periodically for flame retardancy, as re-treatment may be required. For this reason, "FR" flame retardancy is certified for only one year.

Most vinyls used in the construction of temporary tents are constructed of polyester and polyvinyl chloride (PVC) that has been specifically engineered to meet the requirements of flame propagation testing standards without any additional treatment. In addition, these fabrics and their flame propagation properties are not affected by washing and will remain "inherently" or "permanently" in the fabric. Inherently Flame Retardant (IFR) and Permanently Flame Retardant (PFR) items like tent vinyl are constructed with materials that are naturally inherently flame retardant fibers and will not wash out over time. This rating is good for the life of the material.

Providing proof of Certification of Flame Resistance is required by fire code for most tent permit applications. This is generally done with a paper certificate that matches up with the certification label affixed to the tent by the tent manufacturer. This certification provides the AHJ with the documents needed for code compliance. Different jurisdictions have different code requirements, so make sure you are aware of the testing standard required in your jurisdiction. Since most Certificates of Flame Resistance are issued by the tent manufacturer at the time of purchase, rental tent operators generally have many of these certificates in their possession. A common industry best practice is to consolidate all certifications into one binder or digital file to make them easy to find and access. Some rental operators duplicate this binder and submit it in entirety with the AHJ in cities they operate in frequently. This can help in finding the exact certificate for each piece of tent vinyl

The most common flame propagation testing standards/requirements are listed below:

NFPA 701 Large Scale by National Fire Protection Association (NFPA)- USA

Title 19 by California State Fire Marshall- California

CAN ULC S109-03- Canada

UK BS7837- United Kingdom

M2- European Union

Certificate of Flame Resistance (Sample)

Certificate of Flame Resistance

Date Manufactured

AZTEC TENTS
2665 COLUMBIA ST
TORRANCE, CA 90503
(800) 228-3687

Invoice Number:

Customer P.O.:

Customer Number:

This is to certify that the materials described below have been flame retardant treated (or are inherently flame retardant).

Certification is hereby made that the articles described below hereof are made from a flame-retardant fabric or material registered and approved by the California State Fire Marshal for such use. The fabric has been tested and passes NFPA 701 Large Scale. See chart to right for trade name of flame-resistant fabric or material used and additionally referenced on the label of the fabric panel.

Vendor	Trade Name	CA Cert. #
Bruin	Mardi Gras	F-222.02
Bruin	Mesh	F-222.04
California Comb.	Lam-Tex 12, 14, 16, 18oz	F-419.01
Coated Fabrics	Clear Vinyl 16ga / 20ga	F-570.02
DAF	Clear Vinyl 16ga / 20ga	F-593.01
DAF	DAF	F-593.02
Exclusively Expo	PolySateen Liner	F-434.01
Ferrari	Preconstraint 502	F-444.01
Ferrari	Preconstraint 702	F-444.08
Phillips Textiles	Phil-Tex Liner	F-500.01
PVC Tech.	Deco Cloth / Velon	F-504.01
Snyder	Weatherspan	F-140.01
Tri Vantage	Firesist Sunbrella	F-368.05
Tri Vantage	Patio 500	F-121.02
Tri Vantage	Big Top	F-121.10
Tri Vantage	Vanguard Weblon	F-069.01
Tri Vantage	Weblon / Coastline	F-069.01
Verseidag	Duraskin B1673, B1515	F-530.01

THE FLAME RETARDANT PROCESS USED WILL NOT BE REMOVED BY WASHING

David Bradley

General Manager- Manufacturing

Name of Applicator or Production Superintendent

Title of Applicator or Production Superintendent

ITEM CODE	ITEM DESCRIPTION	UNIT	ORDERED	PRODUCED
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Certificate of Insurance

A certificate of insurance (COI) is a document issued by an insurance company or broker verifying the existence of an insurance policy and summarizing key aspects and conditions of the policy. For example, a standard certificate of insurance lists the policyholder's name, policy effective date, the type of coverage, policy limits, as well as other important details of the policy.

Situations, where liability and significant losses are of concern, may require a certificate of insurance. Small-business owners and contractors often have a certificate of insurance granting protection against liability for workplace accidents or injuries. The purchase of liability insurance will usually trigger the issuance of a COI.

A COI is often required for business owners and contractors to be awarded contracts. As many companies and individuals hire contractors, the client may need to know that the business owner/contractor has sufficient insurance coverage in the event there is an accident or claim for damage of property.

A COI contains separate sections for different types of liability coverage listed as general, auto, umbrella, and workers' compensation. "Insured" refers to the policyholder, the person or company who appears on the certificate as being covered by the insurance.

In addition to coverage levels, the certificate includes the policyholder's name, mailing address, and describes the operations the insured performs. The address of the issuing insurance company is listed, along with contact information for the insurance agent or the insurance agency's contact person. If several insurance companies are involved, all names and contact information are listed.

When a client requests a COI, they become a certificate holder. Name and contact information appears in the bottom left-hand corner along with statements showing the insurer's obligation, if any, to notify of policy cancellations.

The certificate briefly describes the insured's policies and limits provided for each type of coverage. For example, the general liability section summarizes the six limits the policy offers by category and indicates whether coverage applies on a per claim or per occurrence basis. Because state laws determine the benefits provided to injured workers, the worker's compensation coverage will show no limit. However, employer's liability coverage limits should be listed.

Before supplying a COI to a customer, contact your insurance professional to better understand what is being requested, how your liability might change with the issuance of a COI, and what costs might be involved.

Certificate of Insurance (Sample)



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERNS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER		CONTACT NAME: PHONE (A/C, No. Ext): E-MAIL ADDRESS:	FAX (A/C, No):
		INSURER(S) AFFORDING COVERAGE	
		INSURER A :	NAIC #
		INSURER B :	
		INSURER C :	
		INSURER D :	
		INSURER E :	
		INSURER F :	

COVERSSES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS													
GENERAL LIABILITY																				
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		CLAIMS-MADE					AGGREGATE													
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WORKERS COMPENSATION AND EMPLOYERS' LIABILITY																				
ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICE/MEMBER EXCLUDED? (Mandatory in NH)		<input type="checkbox"/>	N/A				WC STATUTORY LIMITS													
If yes, describe under DESCRIPTION OF OPERATIONS below							OTHR													
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)																				

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Evacuation Plan

Perhaps the single most important element to your submittal package is the evacuation plan. This document serves a dual role in this process. First, and foremost, the evacuation plan establishes a procedure and a level of accountability between your company and your customer for safety of the guests that will be occupying the tented event. Secondly, the evacuation plan serves as an additional professional element of the submittal that demonstrates to the AHJ your company's understanding of outdoor events and the safety concerns that need to be considered. The importance of both of these points cannot be overstated.

In very general terms, the evacuation plan needs to pass on critical information to the customer about general tent safety, the conditions that would warrant an evacuation, assigns a point person(s) that will be in charge of executing the evacuation order, assigns the location that guests will evacuate to, and what to do once an evacuation has occurred.

GENERAL TENT SAFETY:

It is important for the customer to know that the installing company took great care to provide a safe environment to protect the guests for this event. The customer should be made aware that they should not modify the installation of the tent for any reason. This includes removing any portions of the tent structure or anchoring system, hanging any additional loads from the tent that were not authorized by the tent company, or moving the tent once it is installed by the tent supplier. The customer should also be made aware of the emergency exits that have been created by the tent supplier, and the locations of any safety equipment (i.e. fire extinguishers, exit signs, etc) that have been provided by the tent supplier. Tent safety shall be considered not only for the actual event, but in the days and weeks leading up to and after the event while the tent is installed.

EVACUATION CONDITIONS:

The most common conditions that necessitate the evacuation of a tent would be related to inclement weather notably: high winds, heavy rainfall, and snow. Although most rental tents are engineered to withstand strong weather, they are not intended to be used as a shelter for severe weather. It is for this reason that evacuation orders are recommended well below the engineered strength of the tent system. Other conditions that would require evacuation include, but are not limited to, fire in close proximity to the event, smoke accumulation, gas leaks, electrical storms, and other natural disasters.

POINT PERSON:

It is very important that a point person be assigned to monitor the safety of the event space and ultimately the person that will discharge an evacuation order. Although this person could be an employee of the installing tent company, it is often a better solution to have the customer holding the event to appoint a person responsible for the safety of the event. In larger events this might be the event producer, party planner, or even a dedicated safety person in charge of the overall safety of the event.

EVACUATION POINT:

It is natural instinct for people to want to congregate under a tent in inclement weather and it is important for the evacuation plan and the team that will execute the plan to understand this natural tendency. From a safety perspective, guests will need to be directed to an evacuation point that minimizes the risk for personal injury. The evacuation point can be a permanent building, open outdoor space, or even the personal vehicles that the guests used to arrive at the event. An appropriate notification system should be in place to notify the guests of the evacuation and clearly communicate to them the necessary steps for evacuation. This can be done with a bullhorn, public address system, or other loud audible notification.

Evacuation Plan Continued

POST EVACUATION:

Instructions should be clear on what to do after an event has been evacuated. In addition to providing contact information for local emergency response, an after hours contact number should be provided for your company and any other companies that have supplied equipment for the event. After responding to any immediate life safety issues, it should be recommended that the point person, identified in the plan, contact the tent provider to discuss the nature of the emergency and the cause for evacuation. Only after the instruction has been given by the tent rental provider that the tent is suitable for occupancy should anyone attempt to reoccupy the evacuated space.

Evacuation Plan (Sample)

HOW TO BE PREPARED:

The objective of this plan is to prepare event organizers with a process and direction of what to do if a situation arises that might require the event space to be evacuated. This plan is designed to provide a basic procedure that is suitable for most smaller events with less than 200 guests. Larger events and events that cover larger areas most likely will require a more substantial plan. Our interests are in the safety of the guests of the event and want event organizers to understand that the evacuation plan is in place to remove guests from danger before conditions arise that could cause harm to the guests.

MONITOR THE WEATHER:

The most common causes requiring evacuation of event spaces are from forces of mother nature. The organizer's plan should use any and all resources to monitor the weather during the event, including set-up and take down. Common websites that can provide live weather updates are weather.com and weather.gov.

BE PREPARED TO ACT:

Know how guests are going to be notified when they need to evacuate. Determine a location for guests to evacuate. How are guests going to get to this location?

SIGNALS PROMPTING EVACUATION:

- Wind speed > 38mph actual or forecasted.
- Twigs and small branches breaking and falling from trees.
- Lightning or electrical storms within 5 miles of event venue
- Flooding
- Any change in the structure of the tent.
- Any movement or failure of any anchoring devices.
- Any snow accumulation on the tent.
- Any water ponding on the tent fabric.
- Any smoke or gas accumulating in the tent.
- Fire within the tent or anywhere in close proximity.

WHAT TO DO AFTER EVACUATION:

Call 9-1-1 for any emergencies requiring police, fire, or medical support.

Call the event rental company emergency number (monitored 24hrs/day):_____

Seek direction from the event rental company on further steps.

Do not reoccupy any tent if any damage to the tent structure or anchoring system has taken place.

Plan Organizer:_____

Event Location:_____ Event Date(s):_____

How will you broadcast the evacuation call: Public Address System Bullhorn Other

Evacuation Point:_____

Evacuation Path of Travel:_____

Statement of Structural Stability

The statement of structural stability is provided to the AHJ to assure them of the structural capacity of the tent system you are proposing to install. Items considered here include the wind performance of the tent system, hanging loads allowed in the tent system, the overall design of the system and compliance with applicable codes. It is in your and their interest to protect public safety and the potential occupants that might be in or near your installed tent.

The statement of structural stability can come with different requirements depending on the AHJ and their individual procedural requirements from the municipality. The three primary forms of this documentation are discussed in further detail below.

STRUCTURAL DRAWING

The easiest form to demonstrate the structural stability of your tent system is with a single page structural drawing. This document is the summary of the structural analysis of the tent system and provides the information to the AHJ regarding the characteristics under which the product was designed and engineered. It will specify the specific building code used for the analysis, wind speed that the design was engineered for, the duration of installation the product is eligible for, details of the tent design, member dimensions and will give reaction forces at the load points which need to be resisted by the ground/floor/anchoring system discussed later. This document is available from your Regional Area Manager (RAM) for the tent style and width that you have purchased. We would recommend printing this document in tabloid format on 11" x 17" paper to allow the AHJ to properly read and understand the document.

STRUCTURAL CALCULATIONS

This package of calculations is the backup or work behind the Structural Drawing mentioned above. Here, an independent structural engineer documents their work of how they analyzed the tent system for the specific code being tested. Additionally, the calculation package addresses all applicable joint stresses, member stresses, and ultimately determines if the design can resist the applied forces. Although this document is usually many pages long, its relatable content for the layperson or non-engineer is quite limited.

SITE SPECIFIC WET STAMP STRUCTURAL CALCULATIONS

This set of documentation provides the same calculation package as above but requires a specific analysis to be performed with the job specific information of the specific installation you are submitting for. The job specific information includes but is not limited to: tent size, leg height, installation address, install date, strike date, event date(s), and any information related to the hanging load requirements for suspended equipment. This information is included on the cover page of the engineering package and is stamped with an original engineer's stamp by the structural engineer. There is always a fee for this type of engineering from our engineer that we pass on to the applicant needing the engineering. If you have multiple width tents and multiple designs on a job, these engineering fees can be quite substantial. If your AHJ requires site specific wet stamped engineering documentation, please also inquire if the engineer needs to be registered in the state where you are applying for the permit. Our engineers hold certifications in most states, but in rare circumstances our engineers will require the services of a third party engineer to stamp the final documents. For more information on structural calculations please consult with your product sales and support personnel.

Structural Drawing (Sample)

Anchoring Plan

Along with providing assurances to the AHJ that your tent system will comply with code requirements, it is also imperative that you can demonstrate how you will resist the forces that the tent will encounter under those loads with the anchoring system. The structural drawing will indicate a specific load that needs to be resisted and you'll need to supply backup methodology demonstrating how your anchoring system will meet or exceed those load values.

The AHJ is looking for the science, testing and evidence that supports your plan of anchorage. It should be known that it is quite possible that an AHJ does not ask about an anchoring plan or if your submittal might be the first time an AHJ ever sees such a plan. Although it is not always required, it serves as a key responsibility of the tent installer to understand the shifting dynamics of anchoring to be able to provide a product that is safe for the occupants it will cover. This process will also set the bar for other companies that might be in your competitive marketplace to level the playing field with respect to how products are installed.

At the other extreme, you might also encounter an AHJ that will only accept an anchorage plan after it has been reviewed and stamped by a structural engineer. Often times, the extent of this plan might go as far as requiring that a testing company visit the tent site and physically pull on the anchors to determine their holding power. This process can be quite extensive and require advanced planning so its always best to have a plan in place if your AHJ so requires.

STAKING:

Perhaps the most widely used and most efficient ways to anchor a tent is with the use of various sized steel stakes. These stakes are driven into the ground using a sledgehammer or other mechanized device and the surface friction between the stake and the displaced surrounding soil creates the holding power. The dilemma tent operators face is quantifying the actual holding power from one job site to another as soil types and conditions change.

An excellent resource for anchoring with stakes comes from the Tent Rental Division (TRD) of the Industrial Fabrics Association International (IFAI) who published an industry study in the early 2000's to provide the backup and scientific evidence of how stakes react in different soils. It is from this study that many myths have been dispelled and real data has been gathered to help you formulate an anchoring plan with baseline data rather than conducting individual pull tests at each job site.

BALLASTING:

The concept of ballasting a tent to hold it in place is in no way new, but its popularity over the last decade has risen sharply. This has been caused by a greater familiarity with end users and tent operators alike that ballasting is an option for many applications. Coupled with an increased awareness of this anchoring method also comes new venues and locations that were previously not possible with ground penetrating anchoring. Looking at the physics and mechanics of anchoring, most any tent can be anchored with ballast, but the design of the ballasting system might make certain applications cost prohibitive or other applications not practical as the size and locations of the ballast might inhibit use or egress from the tent. From a strictly operational perspective ballasting is generally inefficient when compared to traditional staking or other ground penetrating anchors. This is rooted in the fact that the ballast needs to be transported to and from the job site and often requires mechanical means to move the ballast around the job site. Additionally, ballast tends to occupy significantly more space around the tent when compared to ground penetrating anchoring. This alone could inhibit the amount of ballast used and thus provide insufficient resistance to properly hold the tent system in place. The impact of ballasting is likely lessened on small projects that are close to the tent suppliers location, but on large projects the cost to move ballast to and from the job site comes at a huge expense to the tent operator.

An excellent resource for anchoring with ballast, comes from the Tent Rental Division (TRD) of the Industrial

Fabrics Association International (IFAI). The ballasting tool made available in late 2012 provided a variable input method to tailor the ballast configuration style, required load value, surface conditions and the physical ballast characteristics with an output that provided the weight required to meet the input load value. The values and coefficients were all derived from physical testing of hundreds of different combinations in a 2011 study conducted by the Department of Engineering at Clemson University in Clemson, South Carolina.

OTHER ANCHORING FORMS:

There are other anchoring solutions that might prove to be viable solutions for anchoring a tent system. On concrete surfaces chemical adhesive anchors, compression drop-in anchors, and/or custom designed and poured foundations can be used. Often these types of anchors will have built in allowable use loads and ultimate holding loads that are part of the product documentation. In traditional soil, products such as Duckbill®, Manta Ray®, and Stingray® anchors are designed to be driven into the ground with a drive rod and are able to achieve very high holding power but are generally unrecoverable for reuse. Other products like helix augers and screw anchors can provide a recoverable anchoring solution that can prove to be very effective in certain conditions.

TESTING:

Regardless of your method of anchoring, values can be estimated using the tools mentioned above. In every case, verification of these loads can only be achieved by testing individual anchors as they are used on the job site. Some structural drawings will provide a recommendation as to the testing of individual anchors to a specific percentage of the total load resistance requirement while others do not indicate a method and should be tested to failure or until they reach the ultimate load required for resistance for its intended use.

It is important to note that the testing of the anchors should be done in a way to mimic the resistance force that will be needed when the anchor is used to hold the tent system. If the structural drawing shows a guy line to be placed out at a 45°, the angle of the test on the anchor/ballast needs to remain at 45° as well. In the case of many clearspan structures where most of the resistance force pulls straight up on the anchor, this is the same pull that should be mimicked in the test. If the tent system requires resistance at both a guy line and at a leg or other point your test should address each resistance point.

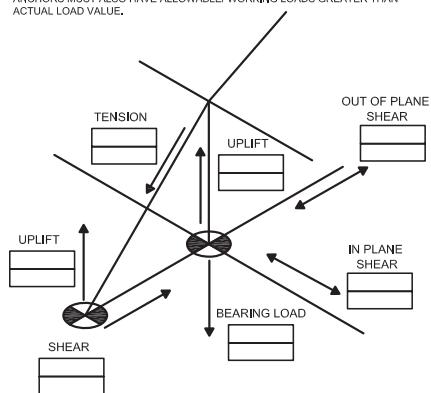
The physical testing of anchors can come in several forms depending on the use of the anchor. Typically a device called a mechanical dynamometer is used in conjunction with a pulling device to pull on the anchor at the intended angle of test. A tow-truck, forklift, pneumatic cylinder, or high capacity come-a-long using a mechanical test frame can be used to generate the pulling force. As force is applied to the anchor the dynamometer (connected to the anchor on one side and connected to the pulling mechanism on the other) displays the force being applied often in pounds (lbs), kilograms (kg), or kilonewtons (kN). The ultimate load of an anchor shall be recorded as the highest load value achieved whether the anchor moves slightly or not when under test. Often an anchor will move slightly as load is applied but additional load can still be applied and the anchor holds. The point at which the load on the anchor falls below the highest load value will mean that the anchor is no longer holding and as force continues to be applied the anchor has effectively failed and cannot sustain further load. The highest load is calculated as the ultimate load of the anchor.

Although the practice of testing can be utilized to confirm your calculated estimates for any job site, when an AHJ requires an engineer's certification of this plan you will most likely need to coordinate this testing with an approved testing lab to document the results and formally report back to the engineer. Once the engineer receives this data they can formulate an anchoring plan that will resist the required loads and can formally provide you with a stamped calculation review of the anchoring system for the specific installation.

Anchoring Plan | Staking (Sample)

SAMPLE

 ACTUAL LOAD VALUE
 MINIMUM DESIGN LOAD FOR ANCHORING SYSTEM
 * MINIMUM DESIGN LOAD FOR ANCHORING SYSTEM IS CALCULATED USING A FACTOR OF SAFETY = 2.0. SOME FIXED MECHANICAL ANCHORS HAVING ULTIMATE LOADS IN EXCESS OF THIS SPECIFIED LOAD CAN BE USED, BUT THOSE ANCHORS MUST ALSO HAVE ALLOWABLE/ WORKING LOADS GREATER THAN ACTUAL LOAD VALUE.



Project Name: _____

Installation Address: _____

Installation Date: _____

Event Date(s): _____

Take Down Date(s): _____

Date of anchoring test: _____

On the above date, the following anchoring testing were conducted to ascertain the holding power of the soil for the above named project. Using the guidelines specified in "The IFAI Procedural Handbook for the Safe Installation and Maintenance of Tentage" as published by the Tent Rental Division of the Industrial Fabrics Association International (IFAI) stake testing was performed. In accordance with Chapter 3 Section 2 of this procedural handbook sample stakes identical to those to be used on this installation were driven in several locations around this job site and in locations adjacent to where they will be driven to anchor the tent for this project. The results of the testing are noted below. The testing results have been extrapolated by comparing the physical soil assessment and Stake Penetration Distance from Table 1 of Section 3.2 of the Procedural Handbook to determine the Pullout Capacity Baseline.

Table 1. Simple Method for Estimating Pullout Capacity for Baseline Case

Consistency	Soil Resistance	Stake Penetration Resistance (inches per blow**)	Pullout Capacity for Baseline, P (lbs)
Hard (Very Dense)	Indented with difficulty by thumbnail	less than 0.2"	2500
Very Stiff (Dense)	Readily indented by thumbnail	0.2-0.5	1600
Stiff (Medium-Dense)	Readily indented by thumb but penetrated only with great effort	0.5-1.5	800
Medium (medium)	Can be penetrated several inches by thumb with moderate effort	1.5-3.0	400
Soft (Loose)	Easily penetrated several inches by thumb	3.0-6.0	200
Very Soft (Very Loose)	Easily penetrated several inches by fist	Greater than 6"	100

*Note - Field identification is subjective. For fine-grained soils, use both the verbal description and the inches per blow to select the appropriate consistency of soil in determining the baseline capacity. For coarse grained soils, use the penetration per blow to assess soil consistency. **Note - Stake Penetration Resistance is based on the average penetration of the stake per blow with a 16 lb. sledge hammer with a normal swing

Table 2. Effectiveness factor for group staking

Group Configuration	Effectiveness Factor
Double Staking	1.22
Three Stakes installed in a line perpendicular to direction of pull	2.76
Three Stakes installed in a line perpendicular to direction of pull, stakes are inclined at 15 degrees	2.46
Six Stakes installed in a line perpendicular to direction of pull	4.68
Four Stakes installed in two columns and two rows and connected with a gang plate	3.48
Six Stakes installed in two columns and three rows and connected with a gang plate	4.56

Testing Results

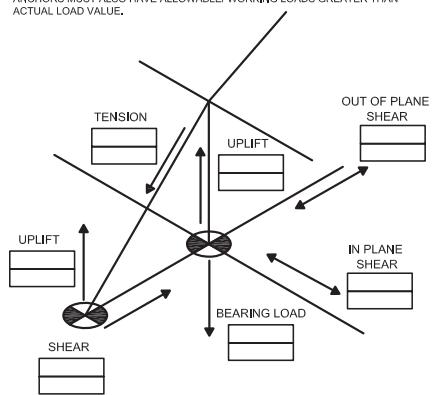
Test	Avg Penetration
Test #1	
Test #2	
Test #3	
Test #4	
Test #5	
Test #6	

Baseline Value: _____

INSTALLER NOTES: _____

Anchoring Plan | Ballasting (Sample)

SAMPLE
 ACTUAL LOAD VALUE
 MINIMUM DESIGN LOAD FOR ANCHORING SYSTEM
 * MINIMUM DESIGN LOAD FOR ANCHORING SYSTEM IS CALCULATED USING A FACTOR OF SAFETY = 2.0. SOME FIXED MECHANICAL ANCHORS HAVING ULTIMATE LOADS IN EXCESS OF THIS SPECIFIED LOAD CAN BE USED, BUT THOSE ANCHORS MUST ALSO HAVE ALLOWABLE/ WORKING LOADS GREATER THAN ACTUAL LOAD VALUE.



Project Name: _____

Installation Address: _____

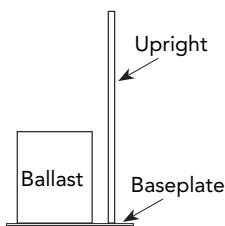
Installation Date: _____

Event Date(s): _____

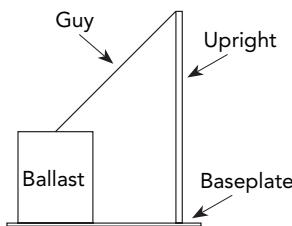
Take Down Date(s): _____

Date of Analysis: _____

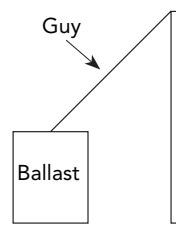
The following ballasting testing was conducted to ascertain the configuration and ballast weight required to adequately anchor the tent for the forces described in the structural drawing for this project. Using the guidelines specified in "The IFAI Procedural Handbook for the Safe Installation and Maintenance of Tentage" as published by the Tent Rental Division of the Industrial Fabrics Association International (IFAI) a ballast analysis was performed. In accordance with Chapter 3 Section 4 of this procedural handbook a loading configuration shown below was selected to resist all loads shown on the structural drawing for this tent system. The value inputs for the surface, the type of ballast, dimensions of the ballast, and load resistance data pulled from the product's structural drawing were inserted into the IFAI On-Line Ballasting tool to determine the weight of ballast required to resist the input loading values. The results of the analysis are noted on the attached following page. The summary of the report load value is listed below along with the amount of ballast to be used to secure this tent.



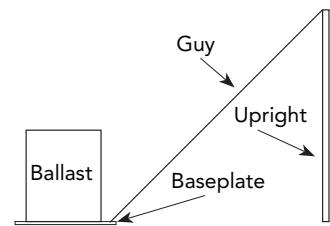
CONFIGURATION A



CONFIGURATION B



CONFIGURATION C



CONFIGURATION D

Configuration Model Utilized: _____

Ballast Requirement (per leg): _____ (per attached report)

Ballast Provided (per leg): _____

Ballast Material: _____ Ballast Dimensions: _____

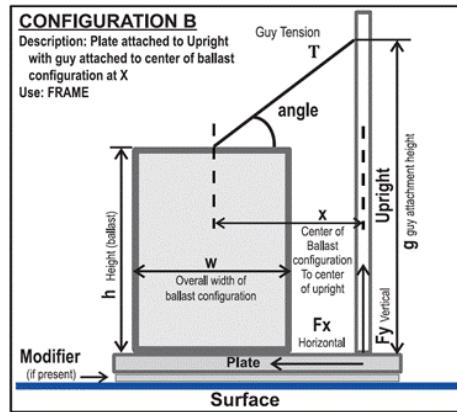
INSTALLER NOTES: _____

Anchoring Plan | Ballasting (Sample)

8/31/2018

Ballasting Tool – Tent Rental

Configuration B



STEEL PLATE IS REQUIRED FOR THIS CONFIGURATION.

Results:

Required Weight: 2881 lbs
Mu Value: 0.86
Angle: 45 °

Surface Type

Asphalt ▾

Ballast Type

Concrete Block ▾

Surface Condition

Wet ▾

Modifier

None ▾

Width of the Ballast (w) (in)

40

Height of the Ballast (h) (in)

29

Distance from Center of Ballast to Center of Upright (x) (in)

67

Height from Ground to Connection Point of Guy on Upright (g) (in)

96

Horizontal Reaction Force (Fx) (lbf)

220

Vertical Reaction Force (Fy) (lbf)

500

Tension of Guy (T) (lbs)

1100



Aztec Tents
2665 Columbia Street
Torrance, CA 90503
Toll Free (800) 228-3687
Direct (310) 347-3010