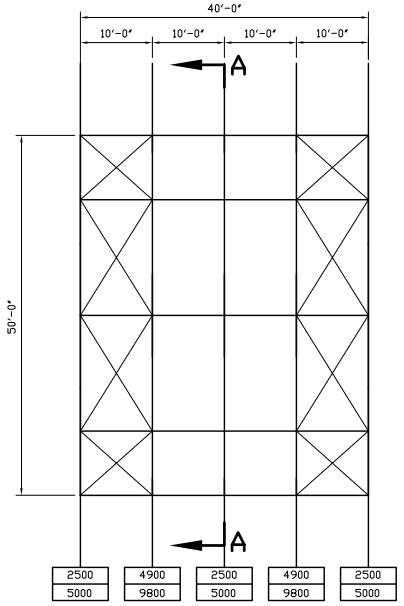
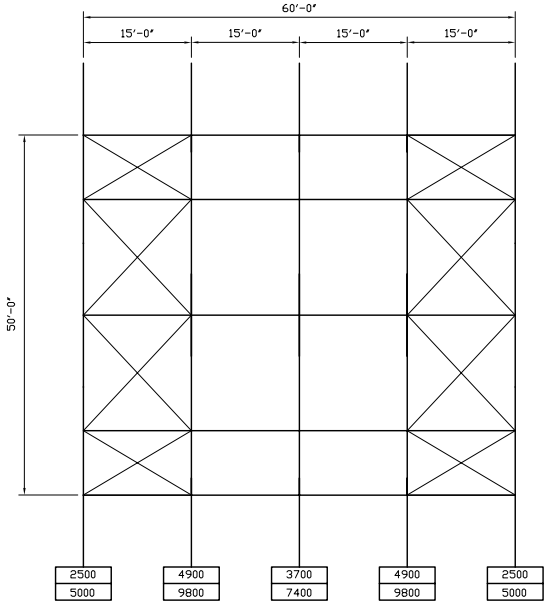


GABLE ENDS
10' MID BAYS

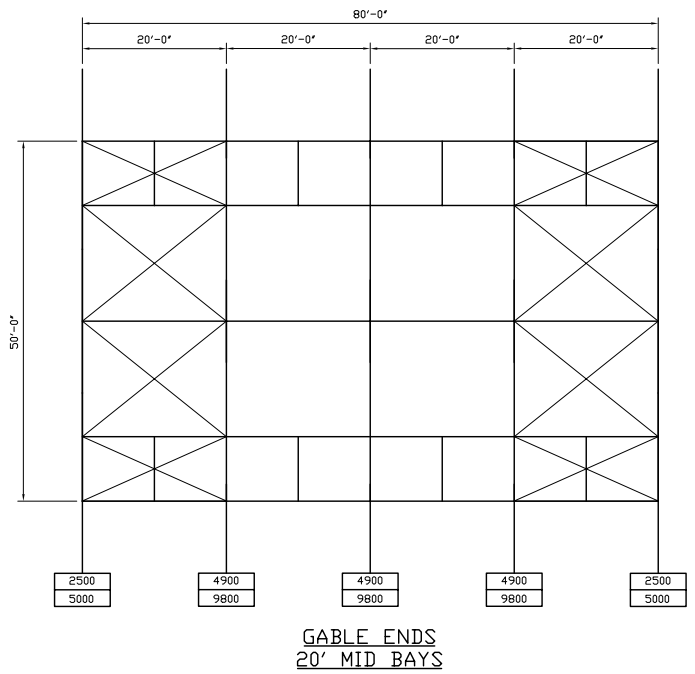
ILLUSTRATIONS SHOWN ARE FOR STRUCTURES WITH TWO MID BAYS OF 10', 15' OR 20' LENGTHS. SQUARE STRUCTURES MAY BE INSTALLED OR STRUCTURES WITH MID BAYS OF 10', 15, OR 20' LENGTHS MAY BE ADDED AS REQUIRED TO ACHIEVE DESIRED LENGTH, AS LONG AS ALL OTHER REQUIREMENTS ARE MET.

This number represents the total guying load anticipated under maximum design load at this location (not per guy).

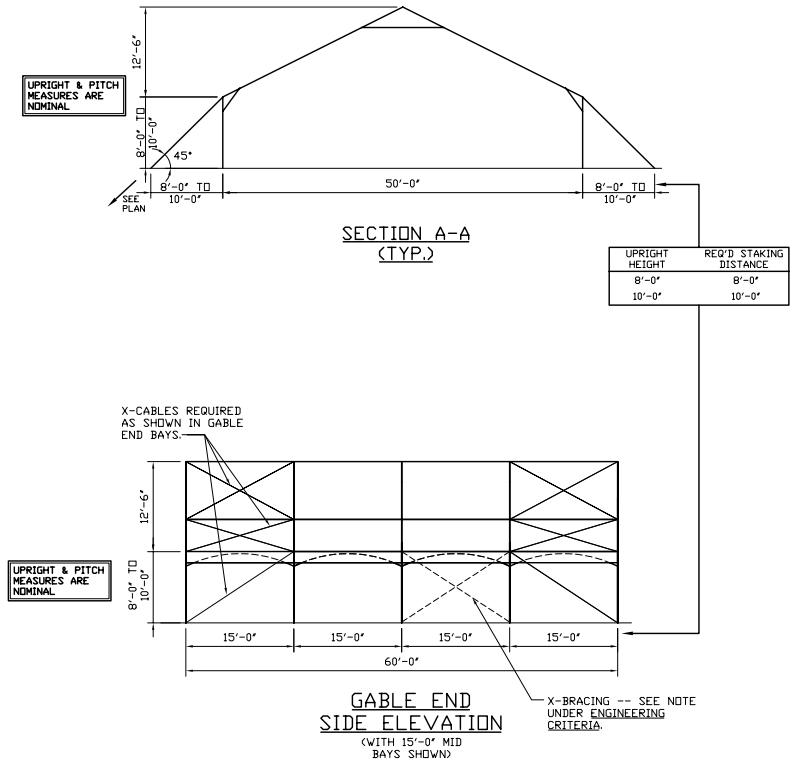
This number represents the actual pull-out load that the anchoring devices must resist in the direction of their corresponding guys under full load (includes Factor of Safety = 2).



GABLE ENDS
15' MID BAYS



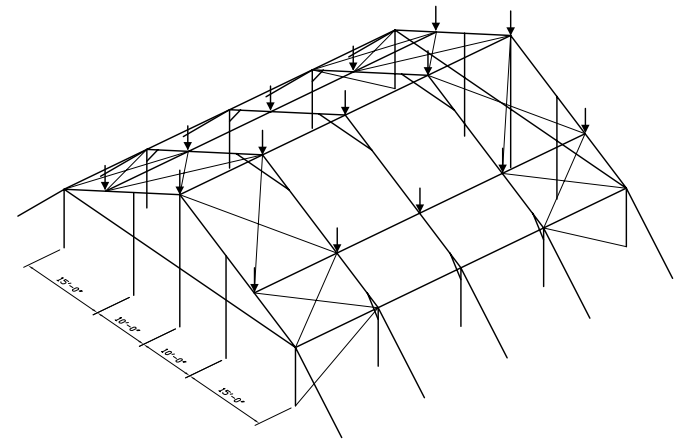
GABLE ENDS
20' MID BAYS



SECTION A-A
(TYP.)

UPRIGHT HEIGHT	REQ'D STAKING DISTANCE
8'-0"	8'-0"
10'-0"	10'-0"

GABLE END
SIDE ELEVATION
(WITH 15'-0" MID BAYS SHOWN)



GABLE END
SUSPENDED EQUIPMENT LOAD POINTS.
100 LBS. PER

GENERAL:

The Navi Trac® is a channeled aluminum beam frame structure designed and manufactured by Anchor Industries, Inc. Evansville, Indiana. This blueprint (drawing) information has been prepared/approved by a registered professional engineer and is accompanied by the assurance of the manufacturer that the materials, sizes and specification requirements on this print and the supporting calculation report will be met or exceeded and by the assurances of the installer's engineer that the anchoring requirements, installation and maintenance recommendations will also be met or exceeded for code compliance. The adequacy and appropriateness of the engineering criteria selected for the structure should be reviewed for each installation and site based on local climate, wind conditions, geographical locations, exposure, duration of installation, occupancy and building code requirements.

Although this is an engineered product, it remains a temporary structure and for public safety considerations, evacuation is recommended at any time the weather becomes threatening or there is any doubt concerning the safe use of this product.

ENGINEERING CRITERIA - 40 Foot Structure

Structure Type	- Navi Trac®
User or Site Location	- Standard Rental Calculations
Span	- 50 Ft.
Overall Length	- (2) Bay minimum
Bay Widths, Max	- Gable - 10 Ft. & 15 Ft. End Bays & 10 Ft., 15 Ft. & 20 Ft. Interior Bays - A Gable end requires a minumum of one end bay & one extending bay.
Upright Height, Max	- 8.0 to 10.0 Ft.
Upright Anchor	- Single 1" x 30" steel stake at each Base Plate.
Applicable Code	- ASCE 7-98
Wind Speed	- 90 MPH Gust Wind Zones, Exposure "C" (70 MPH fastest-mile Wind Zones) See Appendix A below for detail
Additional Loads:	- Snow Load - None - Seismic Load - Not Significant, Available of Request - Suspended Equipment - 100 Pound Point Loads per calculations
Occupancy Category	- Rental Applications, 180 Days Maximum Duration
X-Bracing	- X-Bracing cables or webbing required between side columns every 100' of building length. - X-Bracing cables required between rafters on gable structures
Wall Configuration	- Closed Four Sides Supported @ Top & Sides
Anchor Loads	- See Plan Views
Column Loads	- See Base Load Sheet in calculations provided.
Special Features	- Guys required - See Plan View

APPENDIX A - Derivation of Wind Loads for Short-Term Use

This frame system has been designed to comply with wind loads chosen to be appropriate for frame-supported tents erected in areas of the United States with design 3-second gust wind speeds of 85 or 90 mph (ref. ASCE 7-98, Figure 6-1). This design wind speed is that which has a 50-year mean recurrence interval (See ASCE 7-98 Commentary, paragraph C6.5.5). Table C6-3 presents a method to determine a wind speed having a different mean recurrence interval. The factors in the "**V=85-100**" column can be applied to the wind speeds of Figure 1 (when they do not exceed 100 mph) to obtain these speeds.

We have selected a 2-1/2 year mean recurrence interval as appropriate for an installation of less than 180 days duration. In other words, the wind loads developed herein have an equal probability of being exceeded in 2-1/2 years as the 90-mph wind does in 50 years.

Extrapolating the values from Table C6-3 to 2-1/2 years yields a coefficient of 0.72. The factor "I" is used in Equation 6-13 adjusts the wind speed for differing mean recurrence intervals. Since the wind speed, "V" is squared in this equation and "I" is not, the appropriate value of "I" equivalent to factoring "V" by 0.72 is$\sqrt{0.72}$ = 0.52. 3103). Calculations prepared for this product are not valid for such applications.

Please note that the results of these calculations are **not** valid for structures located on isolated hills, ridges and escarpments as defined in ASCE 7-98 paragraph 6.5.7.1. For installation in such locations, please contact Anchor Industries for recommendations. Also note that the structure may be located in regions with design wind speeds in excess of 90 mph, with written approval from Anchor Industries. For those installations though, the duration may be limited to less than 180 days.

APPENDIX A - Derivation of Wind Loads for Short-Term Use (cont'd)

Model Building Codes (Uniform Building Code, Standard Building Code and BOCA) published through 1997 are based on "fastest mile" wind speeds. The 90 mph 3-second gust speed used in this report is approximately equivalent to a 75 mph fastest-mile speed.

Any structure that is to remain in place for more than 180 days should **not** be considered a temporary building (ref. International Building Code 2000, Section 3103). Calculations prepared for this product are not valid for such applications.

FRAME MATERIAL SPECIFICATION

Extrusion:	- Eave, Hips, Columns, Ridge and Rafters - See section analysis in calculation report - 2.31" x 5.03" overall Beam size.
Aluminum:	- 6005-T5 or equal.
Steel tube:	- ASTM A500, GRB
Steel Pins:	- 75 ksi ultimate
Guys:	- See "Guy Lines & Hardware"
Base Loads:	- See "Baseload" Cross Section
Weldments & Inserts:	- Steel tube 2" x 3" x ¼" - Steel tube 2" x 3" x 3/16"
Purlins:	- 20' Bays - 2 1/2" x 2 1/2" x 1/8" Aluminum - 10' & 15' Bays - 2" x 2" x 1/8" Aluminum
X- Cables	- ¼" Galvanized 7 x 19 Aircraft Cable

GUY LINES AND HARDWARE

The Guying load shown in the plan views can be resisted by using single or multiple guys per location and by using different materials such as polyester webbing, polyester/polypropylene ropes or steel wire ropes for guy position design loads refer to the plan drawing loading blocks.

Recommended factor of safety on breaking load for guy components are listed below:

Material	Factor of Safety
Polyester Webbing	3.0
Polyester/Polypropylene Ropes	3.0
Wire Ropes	2.5
Connecting Hardware	2.0

The structure will be supplied with webbing guys that meet or exceed the criteria on this print.

All connecting hardware such as snaps, turnbuckles rings and fabricated metal plates be rated to 2.0 times the maximum design loading.

INSTALLATION

1. "All" Navi Trac® frame orders shall be supplied with the appropriate assembly instructions to guide and assist in installing each structure.

2. Careful attention should be given to these instructions to assure proper and safe installation and use of this product.

3. Due to varying soil conditions at each installation site, the stakes provided may not meet the loading requirement shown on the blueprint and engineer's analysis.

It is the installer's responsibility to verify the soil conditions and proper anchoring devices required at each site to insure a safe installation.

4. Certification of this frame structure is valid only with the use of Anchor Industries, Inc. supplied components or those which meet or exceed the requirements of this blueprint and/or analysis report, with the exception of the anchoring devices which must be determined by the installer as defined in #3 above.

INSTALLATION (cont'd)

5. General Guidelines:
- Clear the site to prepare for the planned activity.
- Use drop cloths to prevent soiling or damaging the fabric panels.
- Pad and tape any object with sharp projections which remain on site under the tent.
- Check for sub-grade utilities before installing anchors.
- Install anchors.
- Locate the public circulation routes with clearance from anchoring devices and guy ropes. Identify clearly.
- Cover sharp edges on anchoring devices with protective material.
- Check all equipment for operational condition before lift up.
- Follow the assembly instructions provided by Anchor Industries, Inc. to facilitate a more efficient and safer installation of the structure.

INSPECTION

Each component of the Navi Trac® should be inspected at the beginning and at the end of each installation for visual signs of damage by the installer. All damaged materials should be immediately replaced.

ANCHORING

A Factor of Safety of 2.0 times the design load is recommended for ground anchors of temporary structures.

A wide variety of ground anchoring devices are commonly used. Soil conditions and resulting ground anchor holding capacities vary from site to site, and can vary within a particular site. The Owner and/or Installer of the Navi Trac® is fully responsible for assuring that the selection and installation of the anchoring devices is adequate and appropriate to resist the pull-out loads on this drawing, for typical installations.

Among other considerations, the Factor of Safety for the anchoring device has to do with the possibility of reduced anchor performance under wet soil conditions. Care should be taken that water is not allowed to drain or collect near anchors.
Anchoring device holding capacity can be developed using s single large device or by using multiple smaller devices.

MAINTENANCE

Since a variety of material and weather factors can result in fabric stretch, webbing belt stretch, anchor settling, etc., changes to the design geometry and consequently to the structural performance characteristics of the structure can occur while the structure is unattended by the professional installer.

It is recommended that for many installations, a Maintenance Agreement be arranged between the Client and the Installer involving periodic inspections and adjustments.

The weather should be carefully considered by the Owner and/or Installer before raising or lowering the structure since the fabric cannot transmit design wind loads and shed water loads (ponding) when it is untensioned. It is generally recommended that raising or lowering the fabric top be performed when the wind speed is less than 15 mph. The decision of when to raise or lower the fabric top should be the responsibility of the experienced rental tent installation supervisor based on safety considerations.

Proper safety equipment should be used at all times to ensure a safe installation and take down. We suggest a careful examination be made to determine the safety equipment needed such as hard hats, steel toe shoes, safety glasses and others as required.

Adequate and appropriate installation and maintenance procedures are necessary to achieve and sustain full design load capability for the Navi Trac®. The Owner and/or Installer are fully responsible for assuring that the structure is properly installed and maintained.

REVISIONS		
EC/PR NO.	DATE	BY
1	09-15-03	DMS

ANCHOR INDUSTRIES INC.

NAVI-TRAC
50' WIDE GABLE END

MACKINTOSH & MACKINTOSH
CONSULTING STRUCTURAL ENGINEERS
3808 DAVIDSON AVE.
LOS ANGELES, CA 90066

DRAWN BY: DMS	CHECKED BY:		DRAWING NO.
APPROVED BY:	EC/PR NO.	DATE: 05-28-03	03-211-3

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