# TABLE OF CONTENTS

**Purpose of Manual** ........................................................................................................................................... 1
**Policy and Procedures** ........................................................................................................................................... 1
**Introduction of the Odyssey Course** .................................................................................................................. 2

I. Design Background .............................................................................................................................................. 2
   A. Flexible Programming ........................................................................................................................................ 2
   B. True Teamwork Off the Ground ...................................................................................................................... 2
   C. High Throughput ............................................................................................................................................... 2
   D. Increased Engagement .................................................................................................................................... 2

II. Warranty ............................................................................................................................................................. 2
III. Repairs .............................................................................................................................................................. 2
IV. Resources .......................................................................................................................................................... 2
V. The Philosophy Behind the Odyssey Course Experience ...................................................................................... 3
   A. Program Opportunities .................................................................................................................................. 3
   B. Challenges and Skill ...................................................................................................................................... 3
   C. Partnering Experience ................................................................................................................................. 3
   D. Groupings ...................................................................................................................................................... 3

**Terms** ................................................................................................................................................................. 4

I. Course Names ...................................................................................................................................................... 4
II. General Terms ...................................................................................................................................................... 4
   A. Tree House ................................................................................................................................................... 4
   B. Gates ............................................................................................................................................................. 4
   C. Siren Poles (a.k.a. zip pole terminations) ..................................................................................................... 4
   D. Pods ............................................................................................................................................................. 4
III. Event Names ....................................................................................................................................................... 4
   A. Level 1 .......................................................................................................................................................... 4
   B. Level 2 ........................................................................................................................................................ 4
   C. Level 3 ........................................................................................................................................................ 4

**Background Information On Managing Facility and Safety Systems** .................................................................... 5

I. The Safety Committee ........................................................................................................................................ 5
II. Management Stretch .......................................................................................................................................... 5
III. Program Isolation ............................................................................................................................................. 5
IV. Staffing ............................................................................................................................................................. 5
V. Program Reviews and Structural Inspections .................................................................................................. 6
VI. Assessing Participants ...................................................................................................................................... 6
VII. Emergency Procedures ................................................................................................................................... 6
VIII. Annual Safety Report ..................................................................................................................................... 6
IX. Moratoriums ..................................................................................................................................................... 6
X. Causes of Accidents ......................................................................................................................................... 7
   A. Time Pressure .............................................................................................................................................. 7
   B. Pleasing Others .......................................................................................................................................... 7
   C. Trying New Methods ................................................................................................................................ 7
   D. Lack of Proper Training and Experience .................................................................................................. 7
   E. Judgment and Maturity ............................................................................................................................... 7
XI. Access Prevention ......................................................................................................................................... 7

**Course Operational Guidelines** .......................................................................................................................... 8

I. General Guidelines ............................................................................................................................................. 8
   A. Approval ...................................................................................................................................................... 8
   B. Assessing Potential Problems .................................................................................................................... 8
   C. Age Requirement ....................................................................................................................................... 8
   D. Assumption of Risk and Medical Screening ............................................................................................. 8
   E. Release and Hold Harmless Agreement ................................................................................................... 8
   F. Medical History Form ................................................................................................................................ 8
   G. Medical Form Screening ........................................................................................................................... 8
   H. Accident/Incident Reporting ......................................................................................................................... 9
II. Inspection and Care of Course, Equipment and Activity Area ............................................................................ 9
   A. External Inspection .................................................................................................................................... 9
   B. Internal Inspection ..................................................................................................................................... 9
   C. Cursory Inspection .................................................................................................................................. 9
   D. Auto Relay Boxes ..................................................................................................................................... 9
   E. Care of Equipment ................................................................................................................................... 10
ACKNOWLEDGEMENTS

The original High Team Challenge manual, written by Alpine Towers International, Inc (ATI) was called the Odyssey Course Instructor’s Manual. This manual has been updated to be site specific to Venture’s High Team Challenge Course and to comply with AEE standards.

Alpine Towers International (ATI) built the High Team Challenge Course at Venture in September 2002.

Alpine Towers International Inc.
Odyssey Course Instructor’s Manual
Second Edition
Updated September 20, 2002

Venture Program
Odyssey Course Instructor’s Manual, Venture Addition
Written by Dave Walsh, Assistant Director
February 10, 2003
(Site-specific information added)

Venture Program
High Team Challenge Course Facilitator Manual
Written by Dave Walsh, Assistant Director
Edited by Kim Judy, Associate Director
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PURPOSE OF MANUAL

The purpose of this manual is to serve as a technical guide for facilitators who will be supervising and facilitating participants during the High Team Challenge Course experience. It also provides general information on safety and managing experiential and adventure-based programs.

This manual is not a substitute for professional training, solid judgment, maturity or experience. The contents of the manual will provide guidelines, standards, training and rescue information. This information is intended to be used for both initial and refresher trainings, as well as to ensure continuity of policies over time.

While some of the guidelines and policies in this manual may also apply to other program activities and ropes course designs, this information is intended solely as reference material for staff trained to supervise the ATI High Team Challenge Course.

In addition to sections aimed directly at operating the High Team Challenge Course, there are a number of valuable program resources listed in the appendix section. These resources may serve as a gauge for assessing your own program but, more importantly, they represent current state-of-the-art guidelines and ideas, which may help to enhance the overall program safety and quality of your organization.

Organizations with Alpine Tower challenge courses and/or climbing walls will receive periodic section revisions of the ATI Instructor’s Manual to replace existing outdated sections. The manual should be kept in the ATI-provided notebook, and all program staff should possess copies of the latest edition.

POLICY AND PROCEDURES

The main focus of this manual is procedural. The procedural portions include how to do various tasks, how to make things work smoothly, and checklists to improve organization and efficiency. Procedural suggestions are intended as useful guidelines and are not mandatory requirements.

Parts of this manual also deal with Policy Issues. These are designated by an asterisk (*) and are highlighted in bold print. All policies must be followed, and are not intended as guidelines unless there are serious extenuating circumstances. Following policy is the standard, though rules need to be tempered with judgment. Individuals with significant outdoor leadership experience and well-developed judgment are typically in a better position than new staff to make decisions on whether to deviate. Any time you deviate from a policy, it must be based on a careful consideration of the situation. Any deviation from policy must be documented in a course report or directly with the Director.

Also, any pre-planned deviation in safety policies should be discussed with Alpine Towers, International prior to implementation.
INTRODUCTION OF THE ODYSSEY COURSETM
Specifications and Features

I. Design Background
Alpine Towers International, Inc. designed the Odyssey Course in the fall of 2001 as an alternative design for traditional high courses. Alpine Towers International (ATI) built the High Team Challenge Course at Venture in September 2002. It represents the next generation of challenge courses and addresses the following themes:

A. Flexible Programming
All clients have unique goals. The High Team Challenge Course can be programmed along a variety of client needs from recreation to intensive teambuilding. Programming for the course can also focus on personal development as well as team development.

B. True Teamwork Off the Ground
There has been strong interest in the challenge course industry to make high courses more team oriented instead of focused mainly on personal development with teamwork delegated to supporting roles (i.e. belaying, cheering, etc). The High Team Challenge Course extends the teamwork honed from low elements and challenges the group to again stretch the boundaries of their comfort zone and work together with the whole team up in the air. Up to six groups of four people can be working together off the ground at the same time.

C. High Throughput
With all these people off the ground, the High Team Challenge Course can accommodate large groups of individuals in a short period of time. And this is while giving true, multiple challenges to each group instead of just an “up and over” experience. The exit event is a double zip line with hydraulic auto belays. Two zips lines greatly reduce the lengthy bottlenecks in getting groups out of the course while the auto belays eliminates the use of moving and climbing ladders to get people disconnected.

D. Increased Engagement
With so many participants up in the air, more people are truly involved and engaged with the experience offered by the High Team Challenge Course. This leads to greater learning opportunities as well as more fun.

II. Warranty
Alpine Towers International, Inc. provides a full two-year warranty on the Odyssey Course.

III. Repairs
The Odyssey Course should require little repair. Conducting monthly inspections using the inspection sheet (see Appendix E) will help to maintain the course. A properly maintained course will create a safer environment for participants and will in most cases lengthen the life of the course. Should there ever be a problem with the High Team Challenge Course, please contact Alpine Towers; we will be happy to help you through this process.

IV. Resources
Challenge Courses are very popular around the country. One organization has been formed to serve as a clearinghouse of information and as a technical resource for owners and builders. The Association of Challenge Course Technology (ACCT) is the trade organization that is attempting to develop standards for challenge and ropes courses. They help create construction and equipment standards that help ropes course providers with safer and more consistent standards. Venture is a member with ACCT. ACCT Membership Office, PO Box 255, Martin, MI 49070-0255, Phone (616) 685-0670, Fax (616) 685-6350, acct@net-link.net
V. The Philosophy Behind the Odyssey Course Experience

Each Odyssey Course offers its own unique opportunity to enhance the learning experience and enjoyment of the participant. Groups, individuals and partners are presented with a powerful experience by challenging each one to learn and grow.

A. Program Opportunities

The Challenge Course experience provides several program opportunities. The process of climbing distinctly provides the framework for program groups to focus specifically on the following objectives:

- Teamwork
- Fun
- Communication
- Trust
- Cooperation
- Respect for others

B. Challenges and Skills

The High Team Challenge Course allows individuals to experience challenges and success that help build leadership skills. Because the course was designed for groups to work together to solve each high element, the course also provides the opportunity for individuals to develop personal skills, lessons, and goals, such as:

- Enhancement of self-esteem
- Promotion of physical fitness
- Encouragement of adventure, risk-taking and innovation
- Encouragement for individuals to simply try their best
- And an experience that serves as a metaphor for discussing lessons learned: trust, communication, teamwork, failure, perseverance

C. Partnering Experience

And finally, the High Team Challenge Course provides an intense partnering experience which dramatically highlights the fore-mentioned objectives of teamwork, cooperation, trust, communication, adventure and perhaps most importantly, compassion.

D. Groupings

It is sometimes difficult to design educational activities that foster the values of compassion and respect. The groupings concept on the High Team Challenge Course is an extension of the popular and highly successful Alpine Tower and Climbing Wall team-climbs. The true potential of the High Team Challenge experience is reached when individuals from differing cultural backgrounds develop compassion, care, respect and understanding for one another as they work together to reach a common goal.
Terms

I. Course Names:
The High Team Challenge is unique in design, is custom built, and there are many possible variations. Venture’s High Team Challenge course is different from others (they vary by events, # of levels, and number of tree houses).

II. General Terms:
A. Tree Houses: Structures with canopies and belay rail terminations. These are places where participants clip-in and transfer.
B. Gates: Goalpost looking structures built between tree houses.
C. Siren Poles [a.k.a. zip pole terminations]: The 2 poles at the end of the Sirens of Zip.
D. Pods: Sub group of 2-8 clients, which work together as a team to traverse the High Team Challenge course.

III. Event Names: [See Appendix C for details]
A. Level 1
1. Complex X – The foot cable makes an “X” as does two lengths of 1 inch Nylon rope for a handline.
2. Giant Swings – The group traverses across the span by using a board to link together the Swinging platforms.
3. Transition events
4. Giant Hammock – pod climbs up third level of course in a giant net.
5. Mini Hammock – smaller hammock used to access 2nd level of course.
6. Transfer Tube [a.k.a. Tom’s Tube] – very short horizontal transfer tube connecting the 2nd level to half way up the Giant Hammock. This leads to either the top level or back down to the ground.

B. Level 2
1. Matrix – pod traverses together across a matrix of small islands
2. Complex Y – pod uses U rope, grapevine ropes and each other to traverse Y; can also be done as a high wild woozy.

C. Level 3
1. Team Traverse [team buddy belay] – Pod holds onto a series a ropes and pulleys and uses everyone’s tension to work together and get across
2. Lateral Limbo – Pod works together to use and get around a series of vertical wooden beams
3. Zip Lines – These are two separate zip lines attached to auto belay units which lower participants to the ground automatically after zipping without the use of ladders.
4. Rappel Station – On the Zip Platform, there are two rappel stations, from which participants could rappel to the ground. The rappel is not used for normal course operation- only for specific groups desiring this option.
BACKGROUND INFORMATION ON MANAGING FACILITY AND SAFETY SYSTEMS

There is much more to climbing safety than simply checking carabiners or monitoring belays. The Challenge Course manager, working together with other Venture staff, formulates policies, guidelines, hires and trains staff and is operationally responsible for managing all aspects of the High Team Challenge Course. In the industry of adventure-based education, safety is of paramount importance. Although many of the activities are “perceived” to be dangerous to participants, program managers often tell clients there is very little "real" risk. The program manager must be on top of all aspects of program quality and safety to insure the accuracy of this assertion.

As a facilitator of the Venture High Team Challenge course, it will be helpful for you to be aware of areas for potential safety problems, to assist in ensuring safe operation of the course. The following topics provided by Alpine Towers are meant to provide a checklist, as well as offering current industry standards, for use in assessing a broad range of risk management systems relating to safe implementation of program activities.

I. The Safety Committee
Venture has a safety committee comprised of group of University administrators, other outdoor program administrators/staff and local professional contacts. The role of the safety committee is to monitor and review all aspects of the program, and to ensure that adequate safety systems are in place. The committee meets twice annually. Any Venture staff can attend and/or give input to this committee.

II. Management Stretch
One of the most dangerous problems facing adventure education programs today is "management stretch." This particularly applies to the world of non-profit organizations, where staff are committed to strong ideals aimed at making the world a better place. Often, these people take on more responsibilities than can be accomplished with safety and quality. Signs of management stretch include the following:

- Reactive vs. proactive mode of operation [e.g. staff are continually “putting out brush fires”]
- Communication and/or personnel problems
- Lack of available program planning time
- Absence of current close-range and long-range plans

III. Program Isolation
Program isolation is another dangerous situation of which to be aware, and one that should be prevented. Many programs suffer from isolation that is often related to management stretch. If a program manager does not reserve time for networking and establishing opportunities for professional/personal development, the program may easily fall behind current industry standards.

IV. Staffing
Recruiting, screening, hiring, and training of staff all play a critical role in the safety matrix. Exemplary staff is the key to a safe, professional and meaningful experience for the participant.

Senior staff at the High Team Challenge course will preferably have a variety of life experiences under their belt, making them better equipped to facilitate a meaningful debrief session, teach technical skills, and monitor program safety. The ideal outdoor staff has built a strong foundation of judgment through long experience in climbing, paddling and camping. With the growing popularity and proliferation of outdoor education programs today, and an increased demand for personnel, it is more and more difficult to acquire staff with ideal characteristics.
Programs should have written criteria for staff selection, annual staff training sessions and regular written evaluations. Each staff’s file should contain an application, reference letters, contracts, driver test forms, evaluations and annual professional development updates. (See the Facilitator Training section for more information on this topic).

V. **Program Reviews and Structural Inspections**

* An external structural inspection, conducted by trained ATI Reviewers, is required annually in order to meet the national standards of the Association for Challenge Course Technology (ACCT). A full, comprehensive review is recommended the first year, and every three years thereafter. The review results in a comprehensive report containing narratives pertaining to staff, training, design structures, etc. These reviews provide excellent opportunities for ATI to assess your program’s safety and standards, and to share information from other program reviews. Venture currently achieves the goals of the more extensive program review through our AEE Accreditation, which provides a comprehensive review of all of our program areas.

VI. **Assessing Participants**

It is very important to carefully screen all participants prior to their high challenge course experience. Venture’s procedures for this are in the Operational section of this manual.

VII. **Emergency Procedures**

Staff should be well versed in first aid, rescue techniques and emergency procedures in the event of problems while programming on the High Team Challenge Course. Programs must have an emergency plan outlining action steps – beginning at the instructor level, continuing through middle and upper management, and ultimately to key trustees [in the event of a serious injury or death.] A critical component of the emergency plan includes the steps taken by the instructor to contact program managers and to contact/request additional medical assistance. Many programs have next-of-kin and media notification procedures in the case of a critical situation. (See Appendix F for Venture’s Emergency Procedures).

* First aid kits must always be present at the site and easily accessible during High Team Challenge Course activities. Staff should be well trained in the use of the kit contents, which should be periodically reviewed by a physician and the safety committee.

VIII. **Annual Safety Report**

This report differs from the annual safety review report written by in-house safety committees or external safety review teams. The Annual Safety Report contains a compilation of data from all yearly accident/incident reports. This is an ideal tool for use in identifying trends within the program, and for in-house refresher training sessions.

Please send copies of all course related accident/incident documentation to ATI. This allows us to identify and respond to potential problem areas, and helps us share information and developments with other organizations.

Venture has consistently produced an annual safety report as above.

IX. **Moratoriums**

As a field instructor, program manager or trustee, it is your responsibility to raise the caution flag if you have either an intuitive feeling or absolute knowledge that safety systems are not up to standard.

Most program managers will experience this uneasy feeling on occasion. In this case, a single problem may be difficult to pinpoint, and often a variety of systems need work – which adds to the apprehension regarding the safety and quality of the overall program being delivered. Middle managers are particularly hesitant to respond to such feelings because they do not feel they have time to thoroughly study the situation, or because they fear actions such as cancelled courses, etc. may lead to revenue loss or generate negative response regarding their own leadership ability.
If you experience this nagging feeling that safety systems are not functioning properly, it is your responsibility to act accordingly – demand that colleagues set aside time to discuss the situation and call for a moratorium of a particular activity [or an entire program] until a solution can be implemented. Delaying the process could result in a serious incident/injury or fatality.

X. **Causes of Accidents**

Studies in the field of outdoor adventure education [and many other industries] have shown that a variety of factors can lead to accidents. Training staff to be aware of these conditions and to use proper safety management systems will significantly lessen the chance of accidents, incidents and near misses.

The following comprise a partial list of factors. Managers are encouraged to brainstorm others with their employees during staff training sessions.

A. **Time Pressure** – Leading up to an event, allow adequate time for professional skills development; design program schedules that allow for extra time; remind staff that they always have the option to postpone or cancel an activity if time does not allow safe or quality programming, or if they feel insufficiently prepared to deliver the program.

B. **Pleasing Others** – Avoid trying to please others [students, peers or supervisors] if pleasing others involves breaking policy or going against one's good judgment [e.g. allowing students to swim on a hot day when swimming is not allowed].

C. **Trying New Methods** – Experimenting with adventure education techniques, though sometimes acceptable, could result in an incident or accident. While attempting new methods, or modifying existing procedures and safety policies, staff has shown poor judgment in the past – sometimes out of complacency or boredom. (E.g. setting up a new climbing route on a cliff without having pre-cleaned it; relinquishing a supervisory post to do a little showing off in front of the participants).

D. **Lack of Proper Training and Experience** – With the growing number of outdoor education programs in the United States, qualified facilitators are increasingly difficult to find. When well-rounded, seasoned facilitators are scarce, any of the following situations may occur: inexperienced assistants or apprentices are promoted to positions of responsibilities; new staff are asked to accept responsibility without the benefit of area specific/program specific orientation and training; unqualified personnel are hired to avoid canceling programs. Each of these situations is unacceptable. Do not allow this to happen in your program. Thorough, well-designed apprenticeships/assistantships are critical to proper staff development.

E. **Judgment and Maturity** – Personnel with sound judgment and maturity are the result of good staff selection, proper training and experience. When an emergency scenario unfolds, judgment and maturity are characteristics that will fundamentally affect the outcome.

XI. **Access Prevention**

The High Team Challenge Course could be considered an "attractive nuisance" and proper precautions must be taken. "No Trespass" signs should be visible and placed in the course area. Locking up ladders and gear will also help deter non-authorized access. In addition, store and lock away any ladders in a locked equipment storage area.
I. General Guidelines
   A. Approval: The Venture Director must approve any use of the Ropes Course by non-Venture personnel.

   B. Assessing Potential Problems: When preparing to use the ropes course, staff must assess the following potential problems and not hesitate to discontinue the activity if necessary:
   1. High winds – above 20 mph or when debris is flying through the air
   *2. Lightning and/or thunder (See Appendix H for Lightning Protocol)
   3. Hypothermia potential.
   4. Time constraints — do not rush through because of tight scheduling. Time pressure is a leading cause of accidents.
   5. Students not prepared mentally or physically

   *C. Age Requirement: Minimum age for course participation is 6th grade. A staff performed clip in is required for all groups below high school age.

   D. Assumption of Risk and Medical Screening
   *1. Each participant 18 years or older must have signed and completed "Release and Hold Harmless" (a.k.a. “waiver”) form, which includes an abbreviated medical history.

   *2. For groups of adults older than traditional college student (18-22 y/o) a full Venture Medical History form is required. This is usually completed prior to the course day, to allow time for staff to review the information [see below].

   *3. In the case of a minor, the Venture “Agreement to Participate” form must be signed by both the participant and a parent or legal guardian.

   E. Release and Hold Harmless Agreement: The “acknowledgment of risk” form provides the participant with information regarding the nature of the upcoming activity and the need to assume responsibility for one’s self. In the oral safety briefing prior to the event, the participant must be made to understand the gravity of the safety procedures, the need for compliance, and the subsequent consequences of non-compliance.

   F. Medical History Form: The Medical History Form is intended to prevent an individual from escalating a current medical condition through participation in a Venture activity. An example of screening situation: Preliminary research indicates that participation in anxiety-producing activities, such as rope courses, can considerably increase the heart rate in some individuals. A participant with a heart condition or heart disease indicated on his/her medical form should be carefully screened.

   G. Medical Form Screening: Venture staff Screen the medical history forms (Main Venture Staff Manual Appendix A-12):
   1. If anyone has indicated yes to any ailments, they should be discussed with the individual. Call the participant if you can’t talk in person.

   2. If there are any conditions that are significant, or about which you have any concern, confusion, or questions [esp. those with an *], contact Venture’s consulting physician and discuss those medicals with him. Any individuals who indicate that they have 3 or more cardiac risk factors need to be reviewed by a medical professional.

   3. If our consulting physician is not available, then another health professional should be contacted. For students, you can send them to Brocker Health Center for a health provider to review their situation, or you can call Brocker with basic questions. If you have concerns about a non-student’s medical form, you can ask
them to bring written approval for their participation from a health professional.

4. The Venture consulting physician, Venture core staff or a health professional can be asked to review anything that is of concern. If they respond “no” to any of the statements at the bottom of the form, check with the Director or Associate Director for how to proceed.

5. Check to see if people are currently under any treatment or taking medication. If not familiar with the medication, find out if it indicates a serious problem or might have side effects, such as drowsiness. Our consulting physician can provide this information.

H. Accident/Incident Reporting:
   *1. An accident/incident report will be filed any time an injury or "near miss" occurs at the course.

2. It is crucial that staff report any accident or incident to the Senior staff person of the day, so that the situation can be recorded and learned from by all staff members. The staff member who observed the incident will write up the report within 48 hours and turn it in to the Challenge Course Manager or other full-time staff person. These are kept on file in the Venture office and reported to the National Safety Database.

II. Inspection and Care of Course, Equipment, and Activity Area

* A. External Inspection: An external inspection of the course takes place annually, which includes replacing zip cables with over 10,000 uses or 1 year, whichever is less.

* B. Internal Inspection: An internal inspection occurs monthly during periods of use.

* C. Cursory Inspection: A cursory inspection of the course is required before every use:
   1. Look at the Course from the ground and make sure nothing has been affected by weather, high winds, earthquakes, flooding or vandals.
   2. Check the tension in each of the guy cables. Guy cables should be taut – neither banjo string tight nor floppy loose. Approximately 6” to 18” of play at face level is acceptable. If you feel that any guy cables need to be tightened, please contact the Challenge Course manager.
   3. Look at all ground anchor screws for signs of changes (ground movement, obvious problems).
   4. Check each pole for obvious signs of changes (large cracking or bending).

* D. Auto Belay Boxes: The auto belay boxes should be cursorily inspected every day before use. Check the following:
   1. Look for any buckling or deformity in the outer boxes.
   2. Look for any leakage of transmission fluid (pink colored fluid).
   3. Check that directional pulley above belay box is positioned so cable is not binding or rubbing anything.
   4. Check the air gauges for the proper air pressure (110 PSI +/- 5) and fill or let air out as necessary.
   5. Check to see that the bleed-off valves on the auto belay units are set at the number indicated on the yellow tape. These numbers are also written on the zip maintenance log form.
   6. A log needs to be kept per box of any changes to settings or maintenance done to these units.
E. **Care of Equipment**: Participants and staff are instructed to care for safety equipment (keep it off the ground during programs), and the equipment is locked and protected between course sessions.

F. **Equipment Purchase Dates**: Equipment purchase dates are recorded in an inventory database.

G. **Rope Log**: A Rope Log is used to monitor rope use [located in the equipment box at the course].

H. **Documentation of Participants**: The number of participants and course sessions are documented and maintained in house on a computer database.

III. **Supervision**

The new High Team Challenge course is designed to be able to handle group sizes ranging from 2-250 participants in a day. There are multiple models for operational procedures and staffing ratios, rather than one fixed method of operating the course. This “Flexible Programming” feature is part of what makes the High Team Challenge Course unique. Therefore, it is not consistent with this flexibility to establish one fixed participant to staff ratio for this course. Rather it is up to the Assistant Director for Challenge Course programs to ensure an adequate staff level for each group of participants.

*A. Staff to Student Ratios*: A typical staff to student ratio would be between 1:4 and 1:8. A staff to student ratio of 1:10 would not be unusual. *A minimum of 2 staff must always be present. The minimum staff to student ratio is 1:15* (e.g. 3 staff could safely operate the course with 45 participants if it was a mature group able to use Transfer Model #4 below).

B. **Guidelines of Supervision Ratios**: The criteria used for guidelines of supervision ratios involve, but are not limited to maturity level of the group, prior experience from participants at the course, experience of staff present, type of transfer procedure to be used, and the size of group. From course operation up to this point, Venture has developed several most commonly used operational models.

C. **Transfer System Models**

1. **Complete Staff Performed Transfers**
   Participants are instructed not to move the safety system themselves. Staff performs all clips-ins and transfers. Participants receive no instruction in the use of the OSHA Clips.

2. **Staff Controlled Transfers**
   Participants are instructed not to move the safety system themselves, unless specifically directed by a staff. Participants are taught how to move the OSHA clips, and the importance of always having one lobster claw attached. Staff performs most transfers, but participants may be instructed to do some (for example, clip one lobster claw into the top of a net, and hand the other up to the staff).

3. **Participant Transfers with Staff as Designated “Watcher”**
   Participants receive full instruction on how to be responsible for their own transfers. When a participant asks for “permission to transfer”, only staff can be asked to watch.

4. **Participant Transfers using peers as “Watchers”**
   Participants receive full instruction on how to be responsible for their own transfers. When a participant asks for “permission to transfer”, any other participant can respond and watch. Staff will have general supervisory responsibility, but not expected to see/hear every single safety transfer.
**D. Maximum Number of Participants for Structure:**
1. 8 people per net.
2. 12 people per platform.
3. 2 people per belay cable.

**E. Example of Staffing per Levels:**
1. Number of Staff: \(_2\) at a minimum:
   a. Staff Location:
      i. 1 staff in the course to monitor participants and be available for a rescue.
      ii. 1 staff on the ground.
   b. Group Size: For up to 2 pods (8-12 participants), both on the same level.
   c. Transfer Model: 1-4, any of the above; staff in the course is always very close to each of the two pods.

2. Number of Staff: \(_3\)
   a. Staff Location:
      i. 2 staff in the course to monitor participants (1 on upper and 1 on middle level).
      ii. 1 staff on the ground.
   b. Group Size: For groups of 12-30 participants.
   c. Transfer Model: 3 or 4 only. (Add 2 more staff: 1 to each platform, and transfer options 1 and 2 become possible).

3. Number of Staff: \(_6\)
   a. Staff Location:
      i. 4 staff in the course to monitor participants (2 on upper and 2 on middle level).
      ii. 2 staff on the ground.
   b. Group Size: For groups of 30-60 participants.

4. Number of Staff: \(_10\)
   a. Staff Location:
      i. 8 staff in the course to monitor participants (1 on each platform, 1 at each gatepost, and 1 in each net)
      ii. 3 staff on the ground (1 at each Level 1 event, 1 at zip line)
   b. Group Size: For groups of 60+ participants.
   c. Transfer Model: 1-4 is possible, (with higher volume, complete staff transfer is most likely).

**IV. Sequence of Course Operation**

**A. Set-up**
1. Do a cursory inspection of the course.
2. Assemble equipment: harnesses, lobster claws, helmets, rescue bags, zip retrieval lines, zip pulleys, all equipment needed to lower access nets, keys, ladder, air pump, first aid kit, communication devices, etc.
3. Check rescue bag contents each day before you take them up into the course.
4. Lower all access nets.

**B. Participant Briefing**
1. Welcome/Brief Overview of the Program, including description of the course itself.
2. Challenge By Choice.
3. Safety Items:
   *a. Sharp objects in pockets, jewelry from wrists, neck and fingers and bandanas, should be removed before climbing. Also remove anything that may fall out of participant clothing like cell phones, pagers, etc.
   b. No gum, hard candy, etc. allowed while participating on the course.
   c. Closed-toe shoes required
   d. No out of control movements.
4. Put on equipment: harness, lobster claws, and helmets.
5. If participants are conducting their own transfers, conduct the thorough briefing on the safety system.
6. Practice Event {Level 1 or Practice area}.
7. If it is staff performed or controlled transfers, conduct the shortened briefing on the safety system.

C. Sequence of Course Participation:
1. Full Sequential: Pods do Level 1, then Level 2, then Level 3 and have completed the course.
2. Abbreviated Sequential: Pods do some pre-designated portion {i.e., Level 2, then Level 3} and have completed the course.
3. Full Random: Pods can start on Level 1, or Level 2, or Level 3 and then go to the other levels, until they have completed the course.
4. Abbreviated Random: Pods can start on and complete any 1 {or 2} Levels.

V. Equipment Details for Staff

A. Equipment Strengths: Knowing the strengths of the different types of equipment used at the course is useful for your own comfort as a staff person and to be able to assure participants of the soundness of the safety systems. Memorizing exact numbers is less important than being able to provide an accurate ballpark estimate of how strong materials are. Numbers given are minimum tensile strength.
   1. Harnesses..........................3,500 lbs.
   2. Steel Oval Carabiners..............6,700 lbs.
   3. Galvanized Steel Cables ......14,000 lbs.
   4. Multi-line rope 3/8"............5,000 lbs. {lobster claws}
   5. OSHA Clips..........................5,000 lbs.
   6. Rescue Rope.......................5,500 lbs.

B. ACCT Equipment Standard: Other than harnesses, all other personal protection equipment must have a minimum breaking strength of 5,000 pounds.
C. **Harnesses**: Staff need to be familiar with multiple designs.

1. Attachment for all of these harnesses is to a clearly defined single attachment point.

2. Do not place harness over bulky clothing that could pull out during the climb and result in a loosened harness
   
   a. Yates Instructional Harness I
      i. Adjust properly - first tighten waist belt while leg loops are loose, then tighten leg loops.
      ii. Waist loop has permanent back-pass buckle design.
      iii. Leg loops should be back-threaded through buckle.

   b. Yates Instructional Harness II
      i. Adjust properly - first tighten waist belt while leg loops are loose, then tighten leg loops.
      ii. Waist loop has permanent back-pass buckle design.
      iii. Leg loops have a “pull-tight” buckle design that does not require a back-pass.

   c. Robertson Guide Harness
      i. Adjust properly - first tighten waist belt while leg loops are loose, then tighten leg loops.
      ii. Waist belt has a “pull-tight” buckle design that requires a back-up knot (overhand tied in the tail, touching the buckle, to prevent accidental loosening of this primary safety system).
      iii. Leg loops have a “pull-tight” buckle design that does not require a back-pass or knot.

D. **Chest Harnesses**: Chest harnesses are available and should be worn by individuals whose shape (stomach and chest) does not allow the waist belt of the sit harness to snug down properly above the hipbones.

E. **Lobster Claws with OSHA Clips**:

1. Attach to harness using a girth hitch.

2. Take care of them by keeping them out of the dirt.

F. **Helmets**:

1. Proper fit - snug fit before chin strap attached, no “bonnets” on back of head
2. Worn by anyone when participating in the course
3. Worn by any staff, participant or observer to protect them from falling or dropped objects (worn when directly underneath or within 10 feet of being underneath the course)
4. Care of helmets - do not sit on, drop or toss, occasional washing.

VI. **Framing the Experience**

Depending on your staff, you may want to take a break at this point and discuss individual and group goals for the High Team Challenge Course experience. The power and magic of all ropes course/limbing events is not in getting to the top, but in the growth that takes place while striving to obtain a goal. Emphasize craftsmanship, pride, and quality while attempting the various events. Discuss various techniques for framing the experience and debriefing tips. The ultimate goal is creating awareness in one’s self and support group by providing challenges that enhance self-esteem and identify transferable values and lessons.
VII. Safety System Briefing

A. Transfer Model 1 or 2: If using transfer model 1 or 2 (Complete Staff Performed or Staff Controlled), participants only need to be given a brief instruction on the safety system.

1. Explain safety system: that claws will support you if you fall
   a. Model 1 (Complete Staff Performed)
      i. Explain that they are not to touch the metal clips (OSHA clips) at all for any reason.
   b. Model 2 (Staff Controlled)
      ii. Show participants how to open and clip the OSHA clip, and how to perform the safety check (shake it)
      iii. Explain that they are not to move the clips at any time, unless staff specifically directs them to (most likely this would be to clip into the net, and hand the other clip to the staff).

*2. Explain everyone must be clipped in (at least 1 clip) at all times in the High Team Challenge Course (except in the nets).

*3. Instruct participants to never flip upside down on any part of the course. Conceivably a participant could fall out of a harness.

*4. Instruct participants that out of control dynamic moves are not allowed. They lead to incidents and accidents. Do not allow participants to purposefully jump up and down on the course.

5. After this basic instruction, pods can begin the course, as directed by the Senior Staff.

B. Transfer Model 3 or 4: If using transfer model 3 or 4 (Participant Transfers with staff as designated “Watcher or Participant transfers using peers as “Watchers”); participants need to be given thorough instruction on how to use the safety system.

1. Explain how to adjust claws and to keep claws as short as possible.

*2. Instruct participants to keep their lobster claws adjusted as short as possible to keep the falling distance limited while still allowing freedom of movement. Participants should not need to extend their claws all the way.

3. Explain static safety system.
4. Explain safety system: that claws will support you if you fall.
5. Explain that they have to ask permission each time they transfer.
6. Explain that one way to avoid errors is to only use 1 hand to move lobster claws, so can’t unclip both clips simultaneously.

*7. Explain that belay cables and clip in points are marked with colored tape or paint and participants should be instructed to only clip on to belay cables (not event cables).

*8. Explain everyone must be clipped in (at least 1 clip) at all times in the High Team Challenge Course (except in the nets).

*9. If participants are performing transfers themselves, students must demonstrate proficiency in transferring techniques before being permitted to enter the High Team Challenge Course.

10. Let the pod practice on their first level by clipping in and testing their safety system by sitting in their harness with their feet off the ground. Check for harness fit and mental status of client. Fix or adjust harnesses or lobster claws as needed. Have individuals practice self-rescues (regaining the course).

11. If clients demonstrate difficulty with responsibility for transferring or don’t say their commands correctly, then report that to the lead facilitator and a decision can be made to change to staff controlled or staff performed clip-ins.
C. **Transfer Commands:** Depending on the group, this may be done client to client, or client to facilitator. Participants will practice these commands when they do the first level, (or at a practice course, if one is built).

   1. **Question** – “Permission to transfer __name__?”
      (Client waits for permission)
   2. **Response** – “Watching __name of client__.”
      (Watcher should now focus completely on this client.)
   3. Client transfers 1st clip
   4. **Question** – “Safety check __name__?”
      (Client jingles claw with clip)
   5. **Response** – “Check __name of client__.”
   6. **Repeat Steps 1-5 above for 2nd clip.**

D. **Practice Area:**

   1. Get the pod to practice on the first section of Practice Course by clipping in and walking across to the middle and testing their safety system by sitting in their harness with their feet off the ground. Check for harness fit and mental status of client. Fix or adjust harnesses or lobster claws as needed.
   2. Have the pod transfer to the second section of the Practice Course and traverse this section as a group without hanging onto their lobster claws.
   3. If clients don’t have maturity to take responsibility for transferring or don’t say their commands correctly, then report that to the lead facilitator and a decision can be made to do a staff controlled or staff performed clip-in.
   4. With a mature group, the lead facilitator may decide to let the group ask permission to transfer from each other instead of the facilitators. This puts more responsibility on the group itself to watch out for each other. **Facilitators still need to always be watchful.**
   5. Review transfer commands again.
   6. Send participants to next station.

VIII. **Facilitator Placement and Responsibilities**

   A. **Levels of Qualifications:** There are 5 different levels of qualification to work at the course:
      1. Transfer Monitor
      2. Ground Staff
      3. Rescue Qualified
      4. Zip Qualified
      5. Senior Staff Qualified

   B. **Transfer Monitor Qualified:** Responsibilities include:
      1. Make sure that all participants are clipped in before they step onto a tree house.
      2. Either perform the transfers (method 1-2) or visually monitor (method 3 or 4) all transfers.
      3. Always do a visual check of each harness as participants reach your platform.
      4. Explain best way to navigate the next elements.
      5. Coach participants in ways to increase or decrease challenge level, as appropriate.
6. Assist participants as needed, up to, but not including performing a rescue or lower to ground. If this is necessary, immediately bring it to the attention of the Rescue Qualified staff on your course level.

7. Explain sequencing rule: a pod must be completely off an element before the next pod begins.

8. Remind participants that there can only be 2 people per belay cable running from tree house to tree house.

C. **Ground Staff Qualified**: Responsibilities include:

1. **Double check harnesses, helmets and claws of all participants in the pod, both before they participate on Level 1 and before they climb either net to enter the course.**
2. Explain that participants should not get out of nets before they are clipped into the net at the top where there is green tape.
3. Check with facilitator in tree house before sending up pod. Group can go together or individually up the nets (8max at one time).
4. Keep an eye out that individuals don’t step onto the tree house platforms unclipped!
5. Hang the fanny pack on the goal post: contains emergency radio (check battery, but keep it off until needed), emergency procedure sheet, and first aid kit.
6. Monitor transfers at any platform that does not have a staff person stationed there.
7. Do not allow participants on the ground to play on the lower level without being clipped in.
8. Monitor participants on the Level 1 (lower) elements providing guidance and coaching to maximize learning and safety.

D. **Ground Staff**: Zip line responsibilities include:

1. Establish runway area and ensure area is clear of all people or obstacles before responding to “zip clear” to zip facilitator.
2. Keep in contact with zip facilitator.
3. Once participant on zip comes to ground:
   a. Make sure haul rope isn’t tangled or wrapped on guy wires.
   b. Clip haul rope biner onto the carabiner in the middle of the zip pulley (important for it to ride smoothly).
   c. Pull down on haul rope to take tension off of the participants lobster claws.
   d. Remove, or have participant remove, lobster claws from zip pulley.
   e. Remove zip pulleys at the end of each program.

E. **Rescue Qualified Staff**: Responsibilities include:

1. Make sure that all participants are clipped in before they step onto tree house.
2. Always do a visual check of each harness as participants reach your platform.
3. Explain best way to navigate the next two elements.
4. Coach participants in ways to increase or decrease challenge level, as appropriate.
5. Assist participants as needed, including performing a rescue or lower to ground.
6. Explain sequencing rule: a pod must be completely off an element before the next pod begins.
7. Remind participants that there can only be 2 people per belay cable running from tree house to tree house.

F. Zip Line Staff: Responsibilities include:

*1. Inspection: **The boxes should be cursorily inspected before every day of use.**
   2. Look for any buckling or deformity in the outer boxes.
   3. Look on platform below for any leakage of transmission fluid (pink colored fluid).
   4. Check that directional pulley above belay box is positioned correctly and that the cable is running freely and not binding or rubbing anything.
   5. Check the air gauges for the proper air pressure (110 psi +/- 5 psi) and fill or let air out as necessary.
   6. Check to see that the bleed-off valves on the auto belay units are set at the number indicated on the yellow tape. These numbers should be stored on log in rescue bag in case the tape falls off. There is a setscrew on these dials, which has been tightened so that they should not move. Allen wrench is in lower bag.
   7. Make sure that the auto belay units have taken up the cable slack. There should only be a little drape in the cable! Shaking the zip cable can do this.
   8. Any adjustment or change made to units needs to be logged on the sheet in the bag and Core staff need to be informed of this change.

9. Set-up for each use:
   a. Bring up and examine zip pulleys at the beginning of each program for any damage or difficulty in the wheels turning.
   b. Set up zip pulleys on each cable: use biner on the haul rope (tether) to hold pulley in place.
   c. **Only use zip pulleys approved by ATI on the Siren (zip) element. Do not substitute!**

10. Sending Participants off:
   a. **There is a maximum participant weight of 250 lbs for anyone on the auto belay units (zip line) on the High Team Challenge course.**
   b. Have pod clip into belay cable, which is hanging beneath the belay beams to get them off of the event belay cables.
   c. Explain to pod what will happen on the Zip line.
   d. **Let them know why standing, jumping off, and flipping upside down are not permitted. Avoid dynamical loads.**
   e. Lean forward when sliding off platform to avoid scraping your back.
   f. Be ready to put feet down and walk or run if necessary to keep from landing on back.
   g. Remove one claw, clip it to the carabiner on middle of the zip pulley, and adjust it all the way short.
   h. **Have participants position themselves sitting down directly under zip cable.**
   i. Remove the tether from the zip pulley; drop it to the ground (call “ROPE!” first).
   j. Re-check participant’s harness and connection to zip line (always double check system).
   k. Communication Commands:
      i. Facilitator in Tree House says: “**Zip Ready?**”
      ii. Facilitator On the Ground responses: “**Zip Clear!**”
*l. Double check that runway is clear.
   m. Double check cable drape.
   n. Remove second claw and clip it to the auto lock carabiner on back of the
      zip pulley-adjust this one slightly looser than the primary claw (this is a
      back up and should not be holding any weight).
   o. Remind them they need to lean forward, keep feet underneath them, and
      be ready to run/walk.
   p. Send participant down Siren.
   *q. If there are any problems with the auto belay units, immediately stop
      using them and contact Alpine Towers for what to do. This includes
      participants descending too quickly to the ground; participants touching
      the far poles, or the zip cable not resetting back into the auto belay boxes.

11. At end of day:
   a. Tie up both zip retrieval lines- store above the auto-belay boxes to keep
      them dry.
   b. Check rescue bags; send them back to ground (keep them neatly organized
      and set up for a lower).

G. Senior Staff Qualified: Responsibilities include:
   a. Making decisions before group arrival:
      i. Staff placement.
      ii. Transfer method to be utilized for the group.
      iii. Method of sequencing participation for the group [will they do level 1,
            then 2, then 3, or start in multiple places].
   b. Same as for Rescue Qualified Staff.
   c. Make call on course evacuations in case of inclement weather.
   d. Monitor entire course flow and make adjustments in operations as needed.
   e. Provide supervision and guidance to staff and as needed to maximize the
      effectiveness and safety of the program.
   f. Coordinate any rescue or emergency procedures [not necessarily as primary
      rescuer] as needed.

IX. Debriefing the Experience

The true learning and retention of newly acquired personal/group insights can be discussed in the
debriefing. Experienced facilitators will create an open, honest atmosphere for the discussion in
which participants are encouraged to share observations of themselves and of the group. A quiet,
comfortable, non-distracting site is best. Many facilitators will relate the debrief to goals set
during the presentation [framing] of the experience. Debriefing themes vary widely, including
trust, cooperation, communication, gender roles, self-esteem, trying one's best and attempting the
routes with quality and style. Try to steer the discussion away from initial group chatter and
technical observations. [E.g. "Boy, the Matrix was really tough." ] Instead, guide the discussion
toward the transference of lessons and values that apply to one's personal and/or professional life.
Volumes have been written on this topic, see the appendix for additional resources.
X. **Rescue Procedures**

Training and periodic refresher sessions will ensure that staff can effectively perform a rescue from any point on the High Team Challenge Course. Standard rescue lowering of the participant with the rescue rope will work in most situations. The following techniques are simple and safe, and may be used for the majority of evacuations. [Note: suspected spinal or neck injury may require other means of evacuation. In the case of an extremely unusual or unprecedented incident for which staff is unprepared, the local fire department or rescue squad may need to be contacted].

A. **Survey the Scene:** The first step of an incident requiring staff intervention is to “Survey the scene” to assess the urgency of the situation. Depending on the severity of situation, staff may go through these steps in sequential order, or may immediately proceed to step B4.

B. **Static Course Rescue Protocol:** Standard static course rescue protocols take place in this order of preference. For a student who can self-rescue and continue, this is preferable to lowering them.
   1. Talk participant into a self-rescue.
   2. See if there are other participants nearby who are able to assist.
   3. Go to participant with an etrier and aid them.
   4. Do a lower if necessary.

C. **Cables Loaded Rescue:** If the safety cables are fully loaded [2 participants per cable] and the staff need to assist someone:

   Understand that the rational for 2 people per cable assumes each person is maximum allowed size [250 lbs each]. The actual weight limit per cable is 500lbs. Particularly for a kids group, this means that the staff can most likely add themselves to a cable with two people, and still be under the load limit. In general, it is still best to stay consistent and not have more than two people on a cable unless absolutely required.

   1. Have a participant transfer onto a tree house cable, opening up a place for staff to clip.
   2. Have participants stand in place they are unlikely to place load on the system (gate post or tree house).
   3. If it is a true urgent emergency, do what it takes to assist the person, even if this means three people on a cable.

D. **Rescue Away from Tree House:** To rescue participants hanging away from tree houses:

   1. Rescuer directs the other participants on the same level to hold onto lobster claws and move to secure position.
   2. If participants are near either end of an element, they should move to the nearby goal post or platform and wait until the rescue is completed.
   3. This will help avoid the situation where the rescuer cannot monitor participants at their normal station or another situation occurring that requires another potential rescue.
   4. Rescuer [facilitator] opens the rescue bag [should have one in each tree house] and takes out the etrier rope ladder and clips it to a belay cable [use the belay cable that you will be traversing to the participant].
   5. Clip the trauma shears to the gear loop on the rescuer's harness.
   6. The rescue bag should contain a pre-tied figure eight on a bight knot with a locking steel carabiner, pre-rigged to a rescue eight also clipped to a steel carabiner.
7. The rescuer clips the figure eight device to a belay cable. Make sure that you clip uphill to your own clips so that the victim does not slide away from you down the drape of the belay cable.
8. Traverse to the victim.
9. Talk to the victim and tell them what you are going to do.
10. Then clip the carabiner with the figure eight on a bight knot to the victim’s harness.
11. Drop the rescue bag to the ground.
12. Rescuer can use the rescue eight “ears” by rapping the free end of the rope (the end running out of the eight device to the ground) around the “ear” once. This gives even more friction when lowering heavy individuals.
13. Set up a ground belay team using one of the ground facilitators.
14. Double check all connections and set-up belay commands. On belay, Belay is on, Lower, Lowering away [in sequence beginning with staff on top].
15. Once on belay:
   a. Rescuer on top can try to remove participant’s claws if participant can take their weight off of their claws by standing on the etrier. It is usually possible, even if the participant can not take their weight off, to tighten the belay [lowering] rope to hold the weight of the participant.
   b. Then push up on the lobster claw prussic knot to loosen it sufficiently to provide enough slack that the clip can be removed from the cable.
   c. If not, top rescuer needs to cut [with rescue scissors] the lobster claws. Be careful and double check so as not to cut the wrong claws or cause further injury.
16. Lower victim to the ground in a controlled fashion.

E. Tree House Rescue: To rescue participants from tree houses:
   1. Rescuer [facilitator] opens the rescue bag [should have one in each tree house] and takes out the etrier rope ladder and trauma shears and clips them to the staples on the tree house poles to get them out of the way.
   2. The rescue bag should contain a pre-tied figure eight on a bight knot with a locking steel carabiner, pre-rigged to a rescue eight also clipped to a steel carabiner.
   3. The rescuer clips the figure eight device to one of the belay cables.
   4. Clip a rope tether [there should be one in each rescue bag] from the tree house belay cable to the carabiner containing the figure eight device so that this device cannot slide away from the tree house.
   5. Talk to the victim and tell them what you are going to do.
   6. Then clip the carabiner with the figure eight on a bight knot to the victim’s harness.
   7. Drop the rescue bag to the ground.
   8. Rescuer should use the rescue eight “ears” by rapping the free end of the rope (the end running out of the eight device to the ground) around the “ear” once. This gives even more friction when lowering heavy individuals.
   9. If possible, set up a ground belay team using one of the ground facilitators. The ground belay facilitator is optional since the rescuer on top is perched on a stable surface and can lower someone easier than they could if they were out on a cable.
The rescuer should make this call based on availability of ground staff and their own comfort level.

10. Double check all connections and set-up belay commands if there is a ground facilitator. On belay, Belay is on, Lower, Lowering away [in sequence beginning with staff on top].

11. Once on belay, rescuer on top should remove participant’s claws.

12. Lower participant to the ground in a controlled fashion.

XI. **High Team Challenge Course: Supplemental Activities**

There are a variety of additional events that may be offered with the High Team Challenge Course. Programs contemplating such events must consult ATI to discuss specific considerations.

A. Group Bivouac – A group of 8 people may spend the night (“bivy”) on the deck of the Tree House. Each individual must be connected to a safety line by a harness and tether. Staff should have two separate lowering systems set up and ready to go in the case of lightening or other emergencies.

B. Night Climbs – For groups who have demonstrated proficiency on the course during the day, night ascents can be offered by adding a new and exciting element to standard program curriculum. Individual headlamps and/or Coleman lanterns placed on the ground provide necessary light.
**Safety Policy Summary**

The safety policies listed below are included already elsewhere in the manual. This list is meant to serve as a checklist for staff to review and know all policies for the course. It is a good idea to review this list prior to the actual activity.

*1. Programs desiring to modify policy should consult with ATI.

*2. A first aid kit and staff trained to use it will be on hand during all activities.

*3. An acknowledgment of risk form should be completed and approved prior to participant involvement.

*4. A more detailed Medical screening [Medical History Form] must be completed for adult groups older than traditional college student age.

*5. Sharp objects in pockets, jewelry from wrists, neck and fingers and bandanas, should be removed before climbing. Also remove anything that may fall out of participant clothing like cell phones, pagers, etc.

*6. Minimum age for course participation is 6th grade. A staff performed clip in is required for all groups below high school age.

*7. Minimum Staffing ratio must be met to operate the course.

*8. There is a maximum of 12 people to a tree house.

*9. There is a maximum of 2 people (including facilitators) per belay cable between tree houses.

*10. A cursory inspection of the High Team Challenge Course must be done prior to each use.

*11. A detailed internal inspection the High Team Challenge Course must be done monthly during periods of use.

*12. Participants will wear equipment approved by Venture staff.

*13. Always provide a thorough safety briefing to each new group/participant, informing them of any safety considerations/policies and the potential consequences if not followed.

*14. Staff and students must be clipped in at all times in the High Team Challenge Course (except in the nets).

*15. If participants are performing transfers themselves, students must demonstrate proficiency in transferring techniques before being permitted to enter the High Team Challenge Course.

*16. Belay cables and clip in points are marked with colored tape or paint and participants should be instructed to only clip on to belay cables (not event cables).

*17. Instruct participants to never flip upside down on any part of the course. Conceivably a participant could fall out of a harness.

*18. Instruct participants that out of control dynamic moves are not allowed. They lead to incidents and accidents. Do not allow participants to purposefully jump up and down on the course.
*19. Instruct participants to keep their lobster claws adjusted as short as possible to keep the falling distance limited while still allowing freedom of movement. Participants should not need to extend their claws all the way.

*20. Staff should inspect all personal safety equipment (knots, harnesses and back-threaded buckles) prior to each ascent.

*21. Chest harnesses, in conjunction with sit harness, should be worn by individuals whose stomach and chest shape does not allow the waist belt of the sit harness to snug down properly above the hipbones.

*22. Only use zip pulleys approved by ATI on the Siren (zip) element. Do not substitute!

*23. There is a maximum participant weight of 250 lbs for anyone on the auto belay units (zip line) on the High Team Challenge course.

*24. All people going down on the zip should be seated. No Standing, running, or jumping while going off the zip line!

*25. Before sending someone off of the zip: always perform a safety check of the system (see zip instructions).

*26. If there are any problems with the auto belay units, immediately stop using them and contact Alpine Towers for what to do. This includes participants descending too quickly to the ground; participants touching the far poles, or the zip cable not resetting back into the auto belay boxes.
ADDITIONAL INFORMATION ON ALPINE TOWERS

I. ATI Newsletter
   Issues of the Alpine Tower Newsletter are mailed during the year to Alpine Tower owners. Originals should be placed in the ATI Newsletter Notebook, and copies of each issue should be dispersed to all program staff members.

   The Newsletter is an extremely important document for legal, safety and training purposes. ATI will inform owners of updated safety policies and ATI Instructor’s Manual revisions through the newsletter. A current Newsletter Index is provided with each issue for quick reference of past articles and topics.

II. Equipment Provided by ATI
   Staff and programs with Alpine Tower courses may order equipment at a discounted price through the Alpine Towers International office. Call for prices and catalogues for gear (828) 733-0953.

   Alpine Towers International has dealerships with PMI, Petzl, Junkin, Yates, Metolius, EntrePrises, Rescue Systems, Inc., Nicros, Franklin, and many ropes course construction suppliers.

III. The main items typically re-ordered by programs:
   A. Petzl Ecrin Roc Helmets
   B. Yates Alpine Instructional sit/chest harnesses
   C. SMC/RA figure-eight descenders (without ears)
   D. PMI E-Z Bend static ropes (11 mm * 150’)
   E. PMI 8 mm prusik hitch rope
   F. SMC locking carabiners
   G. ATI tethers
   H. ATI Instructor’s Manuals
   I. ATI No Trespass signs
   J. ATI T-shirts, fleece vests, hats

ATI
Post Office Box 69
Jonas Ridge, NC 28641
828-733-0953
**ODYSSEY COURSE MONTHLY INSPECTIONS SHEET**

**Purpose**
A permanent staff member with long term program continuity, knowledge about ropes courses, should be designated as the person responsible for monthly Odyssey inspection, when the course is to be used. Seasonal staff should be trained in the inspection process to provide a cursory inspection prior to each use. These monthly inspections sheets should be kept on file in the program office. Any problems should be reported to Alpine Towers, Inc., PO Box 69, Jonas Ridge NC 28641 (704-733-0953)

A formal, more comprehensive safety review which includes inspecting the Odyssey course, program incidents, records, policies and staff teaching ability should be scheduled for one year after construction. This review should be conducted by ATI or another reputable ropes course company or individual approved by Ati.

**Approved By**

<table>
<thead>
<tr>
<th>Name/Date</th>
<th>GROUND</th>
<th>Action to be taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground Cover: mulching is sufficient especially under course and zip area.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Erosion: ground condition around pole legs and guy anchors.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>External Factors: check for any potential problems from nearby trees, people, traffic, etc.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ground Screw Anchors: examine anchor rod and eye for fractures. inspect ground around screw anchor for signs of upheaveal or erosion (mark depth).</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Guy cables: note the tension on each guy. The cables should not be very loose, nor should they be too tight. The cables should be snug and tension should be equal.</td>
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<td>6</td>
<td>Pole Quality: examine all pole members for splitting, decay or unusual stresses or bending</td>
<td></td>
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<td>7</td>
<td>Pole Junctions: examine pole connection points, watch for bolt looseness, bolt bending or pole splits especially near bolts.</td>
<td></td>
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<tr>
<td>8</td>
<td>Internal Guys: check to see that they are all taut and equal tension.</td>
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<tr>
<td>9</td>
<td>Strand Vice Bails: examine the curve of the bail for fractures due to &quot;point loading&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
### COURSE EVENTS

<table>
<thead>
<tr>
<th>Name/Date</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
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<th>15</th>
<th>16</th>
<th>17</th>
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<tbody>
<tr>
<td><strong>Examine as appropriate for wear and tear to any nets, ropes or cords</strong></td>
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<tr>
<td><strong>Nuts and bolts:</strong></td>
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<td>tighten all nuts as needed</td>
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<td><strong>Belay Cables:</strong></td>
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<td>inspect to assure it is properly fastened and functioning correctly</td>
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<td><strong>Wood</strong></td>
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<tr>
<td>Check condition of any wood pieces on elements for significant cracks, damage, or dry rot</td>
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<td><strong>Hardware:</strong></td>
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<tr>
<td>Check tightness of any bolts or cable clamps</td>
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<tr>
<td>fractures or other damage to any metal pieces including:</td>
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<td>Clips</td>
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<td>Pulleys</td>
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<tr>
<td>Rapid links</td>
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<td>Turnbuckle tension</td>
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<td>Severe rusting or pitting</td>
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<td><strong>Action to be taken</strong></td>
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<tr>
<td><strong>APPENDIX A3</strong></td>
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<tr>
<td><strong>Name/Date</strong></td>
<td><strong>TREE HOUSE</strong></td>
<td><strong>Action to be taken</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>18</td>
<td>Tree house platforms:</td>
<td>Examine boards for looseness, splitting or splinters. Check 1” bolts under platforms and tighten as necessary</td>
<td></td>
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<tr>
<td>19</td>
<td>Tree House Tarps:</td>
<td>Examine for rubbing on rough surfaces that may cause holes to form in tarps.</td>
<td></td>
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<tr>
<td>20</td>
<td>Auto Belay Units:</td>
<td>Check casings of the auto belay units for buckling or deformity. Check for signs of leaking fluid. Check air pressure. Check bleed off value setting. Check condition of directional pulley and v-bracket back-up. Check to see that cable in auto belay units.</td>
<td></td>
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<tr>
<td>21</td>
<td>Tape:</td>
<td>Replace any marking tape on auto belay units or belay cables as needed.</td>
<td></td>
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<tr>
<td>22</td>
<td>Zip log</td>
<td>Check auto belay log and replace cables every 10,000 cycles or 1 year of use, whichever is sooner.</td>
<td></td>
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<tr>
<td>23</td>
<td>Zip Log Maintenance:</td>
<td>Keep a maintenance log on any work done to the auto belay units.</td>
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</table>

**EQUIPMENT**

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<table>
<thead>
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<tbody>
<tr>
<td>24</td>
<td>Carabiners:</td>
<td>check locking mechanism.</td>
</tr>
<tr>
<td>25</td>
<td>Harnesses:</td>
<td>examine stitching; report any unusual abrasion; should be ok for 5-7 years.</td>
</tr>
<tr>
<td>26</td>
<td>Helmets:</td>
<td>check condition of each helmet. Spray with sanitizing solution (lysol or other).</td>
</tr>
<tr>
<td>27</td>
<td>Lobster Claws:</td>
<td>check condition of each lobster claw.</td>
</tr>
<tr>
<td>28</td>
<td>Figure eight descenders (rappelling):</td>
<td>examine for wear.</td>
</tr>
<tr>
<td>29</td>
<td>Rescue Bags:</td>
<td>inventory and check contents.</td>
</tr>
<tr>
<td>30</td>
<td>Pulleys:</td>
<td>Check zip pulleys for wear or damage.</td>
</tr>
</tbody>
</table>

**MISCELLANEOUS**

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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>31</td>
<td>Treating poles and wood surfaces:</td>
<td>insure that all poles, drilled holes, pole ends and wood surfaces are treated annually with Total Wood Preservative.</td>
</tr>
</tbody>
</table>

TWP can be obtained at a reduced price from The Glidden Company in Morganton, NC, 828 438-9210. Approximately one half to one full day is needed to apply the 4-6 gallons to all wood surfaces (boards and poles). Drier Odyssey Courses may require 12 gallons. TWP should be applied on a windless day using small rollers or brushes. Wear latex gloves.

Try to keep the TWP off of the nylon harnesses and climbing ropes. The rope manufacturer tells us TWP will not harm the nylon, but to be on the safe side, we recommend using two retired ropes for belay. (The belayer can lower the person applying the TWP from the top.) Mark these ropes well to make sure they are not used for programs. Although it should be avoided, it is not a problem if TWP accidentally gets into handholds, bolts, cables, lash ropes or nets.
Appendix B

Auto Belay Maintenance Log

<table>
<thead>
<tr>
<th>Date</th>
<th>Box #</th>
<th>Maintenance Done on Unit</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

28
High Team Challenge Course
UNC Charlotte

Tree House 1
Giant Hammock
Transfer Tube
Giant Swings
Complex Y
Alpine Towers International Odyssey 3 Level Course
August 2003

Gate
Lateral Limbo
Team Traverse
Matrix
Complex X

Tree House 2
Zip Wire
Mini Hammock
## Course Monitor

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Date/Staff</th>
<th>Notes and/or Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding of safety system and ability to explain safety procedure to individuals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate ability to perform a safe static transfer using appropriate commands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous history with Venture and/or with similar safety system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explain responsibilities of course monitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>QUALIFIED MONITOR</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Ground Staff

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Date/Staff</th>
<th>Notes and/or Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read staff manual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read safety summary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attended formal training (Venture or other organization)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to introduce equipment and get participants properly suited up</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Subjective Questions

- Good communication skills
- Good observation skills
- Ability to appropriately coach participants

- Set up and take down of entrance nets
- Cursory inspection of course
- Ethics: (read section in Team Challenge Manual, pg.8)
- Explain all ground staff responsibilities
- Explain emergency protocol
- Ability to take participants off the zip line
- Debrief individuals/pods as they reach ground
- Ground Apprenticeship observe
- Other apprenticeships (optiona)
- Final Apprenticeship (acting staff)

**QUALIFIED AS GROUND**
## Rescue Qualified

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Date/Staff</th>
<th>Notes and/or Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain responsibilities of platform staff</td>
<td></td>
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</tr>
<tr>
<td>Ability to perform a self-rescue: knowledge and physical fitness</td>
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<tr>
<td>Knots: tie figure eight family (single, on bight, follow-through); bowline; prusik</td>
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<tr>
<td>Coach/ assist participant in regaining course</td>
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<tr>
<td>Rappel out of platform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct a rescue lower from anywhere in the course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform each of these practice rescue lowers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matrix</td>
<td></td>
<td></td>
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<tr>
<td>High Y</td>
<td></td>
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<tr>
<td>Team Traverse</td>
<td></td>
<td></td>
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<tr>
<td>Lateral Limbo</td>
<td></td>
<td></td>
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<tr>
<td>Cut-Away</td>
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<tr>
<td>First Rescue Apprenticeship (observe):</td>
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<tr>
<td>Other apprenticeships (optional)</td>
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<tr>
<td>Final Apprenticeship (acting staff)</td>
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**QUALIFIED RESCUE STAFF**

## Zip Staff

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Date/Staff</th>
<th>Notes and/or Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to inspect zip line</td>
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<td></td>
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<tr>
<td>Demonstrated ability (experience) making adjustments to descent speed setting</td>
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<tr>
<td>Ability to set-up zip line pulleys</td>
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<tr>
<td>Ability to brief and send participants off zip</td>
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<td></td>
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<tr>
<td>First Zip line Apprenticeship (observe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other apprenticeships (optional)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Zip line (acting staff)</td>
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</table>

**QUALIFIED ZIP LINE**
## Senior Staff

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Date/Staff</th>
<th>Notes and/or Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year experience as zip certified staff</td>
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<tr>
<td>Solid working knowledge and experience with ropes systems including belays, rappels and prusiks</td>
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<tr>
<td>Demonstrated good judgment on course</td>
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<tr>
<td>Excellent observation skills, able to monitor entire course</td>
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<tr>
<td>Good group management ability; assertiveness</td>
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<tr>
<td>Understanding of course philosophy and ability to coach participants appropriately</td>
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<tr>
<td>Comfortable moving quickly through all elements and hanging in the course however necessary</td>
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<tr>
<td>Advanced first aid training or equivalent</td>
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<tr>
<td>First Senior Staff Apprenticeship (observe)</td>
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<tr>
<td>Other Senior Staff Apprenticeship</td>
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<tr>
<td>Final Senior Staff (acting staff)</td>
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**QUALIFIED SENIOR STAFF**
High Team Challenge Training
March 1 and 2, 2003

Saturday

8:30am: Staff Meet at Course
9-9:30am: Participants arrive/ intro stuff- Fill out Waivers and Med. Forms
9:30am: Do the course (with goal setting within pod) possible scenario?
   1. Harnessing
   2. Ground School
   3. Trust Sequence for Team Traverse, Complex Y
   4. All a Boords to simulate Matrix
12:00pm: Lunch – at course, review terminology, names of things. Review policies?
12:45pm: Coaching/debriefing along the way
   1. Includes interventions with struggling participants up to the point of rescue lowers
2:45pm: Rescue Lowers- non-emergency. Demo and practice.
   1. From the tree houses
   2. From events
4:15pm: Take down, how to close the course
4:45pm: Review of day. Logistics for Sunday.
5:00pm: End

Sunday

10:00am: Cheryl meets with Campus police
10:30am: Staff meet at the course
11:00am: Participants Arrive
   1. Names again
   2. Course set up
11:20am: Equipment review
   1. Practice area procedures
11:40am: Facilitator Responsibilities
12:00pm: Lunch / Old staff that want to do lowers will come at this time
12:45pm: Past Accident/Incident Reports
1:00pm: Old Staff Arrive
   1. Manual Review
   2. Facilitator Tracking Sheet
1:30pm: Cut –away demonstration (by old staff person)
2:00pm: Emergency Procedures
2:30pm: Emergency Simulation
3:30pm: Debrief experience
   1. Next steps
4:15pm: Take down
4:45pm: Depart
Appendix F2

A. Goals of the OCST

Overview of training- outline
Introductions- with experience level and expectations

B. History of Challenge Courses

C. Equipment
   1. Harness
   2. Lobster Claws with Clips
   3. Helmets

D. Inspecting the Odyssey Course
   1. Look at the Course from the ground and make sure nothing has obviously changed
   2. Check tension in each of the guy cables and check the cables prior to each session.
   3. If cable tension has changed since the last session, it could be a sign that something is not right.

   - Zip Staff- inspection- posted on box
   - Monthly in-house. Annual by ATI.

F. Framing the Experience
   Depending on your staff, you may want to take a break at this point and discuss individual and group goals for the Odyssey Course experience. The power and magic of all ropes course/climbing events is not in getting to the top, but in the growth that takes place while striving to obtain a goal. Emphasize craftsmanship, pride, and quality while attempting the various events. Discuss various techniques for framing the experience and debriefing tips. The ultimate goal is creating awareness in one's self and support group by providing challenges that enhance self-esteem and identify transferable values and lessons.

G. Set-up:
   1. Do a cursory inspection of the course
   2. Assemble equipment: harnesses, lobster claws, helmets, rescue bags, zip retrieval lines, zip pulleys, all equipment needed to lower access nets, keys, ladder, air pump, first aid kit, communication devices, etc.
   3. Check rescue bag contents each day before you take them up into the course.
   4. Check auto belay units for general condition, check gauges for correct air pressure...pump up if needed, check bleed off dials and make sure that they are set to the settings marked on the yellow tape next to the dials.
   5. Lower all access nets
   6. Welcome/Brief Overview of the Program
   7. Challenge By Choice
   8. Remove items from pockets, remove jewelry, and throw away any gum or candy
   9. Put on harness, lobster claws, and helmets
   10. Practice Course Briefing and Run Through

H. Terms:

   Course Names: High Team Challenge Course, or HTC or Ropes Course

   General Terms:
   1. Tree houses: structures with canopies and belay rail terminations. These are places where participants clip-in and transfer.
   2. Gates: goalpost looking structures built between tree houses.
   4. Pods: sub group of 2-8 clients, which work together as a team to traverse the Odyssey course.
Appendix F3

Event Names:
1. **Giant Hammock** – pod climbs up to the course in a giant net.
2. **Mini Hammock** – smaller hammock used on Odyssey 2 courses.
3. **Transfer Tube (a.k.a. Tom's Tube)** – very short horizontal transfer tube on Odyssey 2 courses from the lower level to half way up the Giant Hammock. This leads to either the top level or back down to the ground.
4. **Matrix** – pod traverses together across a matrix of small islands
5. **Team Traverse** (team buddy belay) – pod holds onto a series a ropes and pulleys and uses everyone's tension to work together and get across
6. **Lateral Limbo** – pod works together to use and get around a series of vertical wooden beams
7. **Complex X** – criss-crossing cables with criss-crossing hand-lines
8. **Complex Y** – A wild-woozy ("V") leading to a single cable with a hand-line hanging down from above.
9. **Giant Swings** – Large wooden platforms spaced several feet apart. Group gets a board to help traverse.
10. **Beam Me Down Descent** – only on certain ODY 3 courses, this is a paired auto belayed element to lower individuals from the third level back down to the second level. We may add such a thing - not there now.
11. **Sirens (aka zip lines)** – these are two separate zip lines attached to auto belay units, which lower participants to the ground automatically after zipping without the use of ladders. The name Sirens comes from its tie in with Homer's Odyssey, and is used to represent the voices of fear which we all hear within us which at times we must stop, challenge, and choose to overcome.

J. Facilitator Placement and Responsibilities: Review

K. Debriefing the Experience
The true learning and retention of newly acquired personal/group insights can be discussed in the debriefing. Experienced facilitators will create an open, honest atmosphere for the discussion in which participants are encouraged to share observations of themselves and of the group. A quiet, comfortable, non-distracting site is best. Many instructors will relate the debrief to goals set during the presentation (framing) of the experience. Debriefing themes vary widely, including trust, cooperation, communication, gender roles, self-esteem, trying one’s best and attempting the routes with quality and style. Try to steer the discussion away from initial group chatter and technical observations. [E.g. ‘Boy, the red route was really tough.’] Instead, guide the discussion toward the transference of lessons and values that apply to one’s personal and/or professional life. Volumes have been written on this topic, see the appendix for additional resources.

L. Rescue Procedures
We will do a standard static course rescue protocols:
1. Talk participant into a self-rescue
2. See if there are other participants nearby who are able to assist
3. Go to participant with an etrier and aid them
4. Do a lower if necessary

Course Evacuation:
1. Be careful with weather systems since we have so many participants up in the course at one time.
2. Move people down Giant Hammock and Siren as well as lowering them from tree house #2.
3. Make a plan and practice it on a regular basis.

Review Policy Statements
Appendix G

**Venture HIGH TEAM CHALLENGE COURSE EMERGENCY PROTOCOL**

In the event of a serious accident or emergency at the High Team Challenge, the **Senior staff person** will take charge of the situation and direct others to ensure that the following steps are implemented:

1. **Staff nearest the victim:** assess the condition of the victim immediately.
   a. If unconscious, check for breathing and pulse
   b. If not breathing, provide rescue breathing in the air
   c. If back injury cannot be ruled out, do an attended lower providing neck support and traction in position as best as possible.
   d. In all other cases, lower immediately.

2. **STOP EVERYONE** where they are; demand total attention; no participants should move until instructed to do so.

3. **Ground staff:**
   a. Use the radio to call campus police | turn on and turn to channel 14; hold down transmitter | [if for any reason this doesn’t work, use phone patch or cell phone to dial 704-687-2200].
      i. Tell dispatcher there has been an accident at Venture High Ropes Course, if appropriate: tell them need an ambulance
      ii. Listen and let them ask questions for the rest of the information
      iii. You should communicate what happened, the condition of the victim, and what is being done for him/her.
      iv. If the dispatcher is unsure about our determination that an ambulance is needed, say that Venture staff trained in first aid are on the scene and confident an ambulance is required.
      v. Request that campus police activate the standard Venture Emergency Procedures
      vi. Wait to be the last to hang up
      vii. If radio is not on hand, and no one has a cell phone, send two participants to the public library to call campus police; give them an emergency procedures sheet.
   b. Assist with lower and then render necessary first aid:
      i. Attend to major injuries
      ii. Have someone record information on Field Accident Information form
      iii. Continue attending to victim until relieved by a more qualified person

4. If the senior staff member is stationed in the course:
   a. The 2nd course staff assumes responsibility for monitoring all participants in the course.
   b. The senior staff exits the course to assume responsibility for patient care.

5. Once victim is stable, proceed with a controlled slow evacuation of the course.
   a. All staff not tending to victim should pay close attention to participants who are shaken by the incident.
   b. Keep other participants occupied and calm - remove them from the accident area.

6. A university employee should accompany the victim to the hospital.
Appendix H

LIGHTNING  [see pages 70-71 of the red WMA Field Guide]
(adapted from the NCOBS Instructor Handbook, 1998, pp. 304-311)

A. Lightning protocols:

*1. Whenever there is thunder or lightning noticed during operation of the High Team Challenge course, the course will be evacuated.* Staff should contact campus police (704-687-2200) and ask for a weather update. Depending on what the weather is doing, staff will need to make a decision as to what to do based on the weather. The program may need to be cancelled, postponed, etc.

*2. When the interval between lightning and thunder is less than 15 seconds, staff and participants must seek an appropriate location* [if cars are available this may be the safest place and therefore do not need to prepare for a lightning drill] and prepare for a lightning drill. By the 10-second interval, staff and participants will be in the drill position and will remain in position until the interval is greater than 10 seconds.

B. In a Lightning Drill each individual must:

1. Separate from one another, by approximately 30 feet, but remain in visual and auditory contact with an Instructor. [Separation reduces the probability of multiple hits from a single strike.]

2. Seek the ideal position relative to the immediate surroundings [see section D.3 below].

3. Eliminate contact with metal objects [that could cause burns if exposed to current [e.g. jewelry or watches].

4. Minimize the potential for hypothermia by wearing appropriated raingear and insulating clothing.

5. Assume a lightning drill position. Crouch on available insulation [dry if possible] with feet together and hands and feet off of the ground. Face away from or into the direction of the expected strike, but not at a 90° angle to the strike.

6. Remain in this position until the immediate danger has passed. NOTE: In the event of a hit, the survival of the victim [whose heart or breathing may have stopped] will depend on the prompt action of others. It is quite unlikely that a group of separated individuals will be simultaneously hit and rendered unconscious.

C. Calculating Distance of Storms: Distance in miles, of electrical storms may be calculated by timing the interval between the flash and the following thunder and dividing this number by 5 [5 sec. = 1 mi.].

D. Minimizing Danger:

1. Lightning is most likely to strike the highest object in any given area. Keep from being the highest object to avoid a direct strike and try to stay away from high objects to avoid splash injuries or step [ground] current. Avoid the following specific areas:
   a. Summits, ridges, tops of cliffs.
   b. Overhangs and shallow caves.
   c. Ditches, gullies, and streams.
   d. Tall trees, poles, large boulders, and high objects.
   e. Open areas, fields, and meadows where you are the highest object around.

2. Seek an Ideal Location for a Lightning Drill:
   a. If a direct strike is likely, take advantage of other probable strike points such as: a tree, a pinnacle, or any high projection. The lightning is more likely to strike the high point than the person standing near it if 1) the projection is a least 5 to 10 times higher than the person and 2) the horizontal distance from the person to the projection is approximately half the height of the projection. Locate yourself within this zone [or cone] or protection. A zone with a radius of 100 feet or more is optimal. [See figure below from the red WMA Field Guide 3].
   NOTE: If a person is too close to the projection, s/he could become an alternate path for strong ground currents. If the person moves too far from
Appendix H

the projection [more than half its height] the direct hit may just as likely to strike the person as the projection. (See figures 1 and 2 below).

b. Stay clear of power poles and transformers, and move away from nearby metal objects.

c. When standing amongst trees of similar height, locate yourself in an area that is equidistant between two trees. Avoid the tallest trees.

d. Avoid becoming a “bridge” between an object and the ground (i.e., do not lean against trees or vehicles).

e. Avoid potential paths of conduction: wet ropes and tree roots, wet lichen covered rock, wet or dry cracks and crevices, and all areas subject to a spark gap such as overhanging rocks or mouths of caves.

3. If the storm is upon you before the group has retreated to a reasonably safe location, continue to travel to an appropriate area rather than performing a lightning drill in a high-risk area.

4. Be aware of weather patterns and approaching storms. Actively monitor the distance of approaching storms.

5. When the storm has moved beyond a distance of 2 miles, remain in a relatively safe area where, if necessary, a repeat drill maybe conducted. Once the storm has passed completely, continue activities.

E. Treatment for Lightning Strikes:

1. Electrical currents passing through the body may cause cardiopulmonary arrest (heart stoppage), neurological damage or dysfunction (unconsciousness, seizures, temporary paralysis, amnesia, and confusion), and burns. First aid measures may include artificial respiration, CPR, and treatment for traumatic shock and burns.

F. Background information:

1. Lightning is perhaps the most unpredictable, objective hazard encountered in the field. Venture’s program areas and activities often place participants and staff in areas where lightning is a serious potential hazard. It is, essential therefore, that we educate (and monitor) participants and ourselves in the danger of lightning and the precautions necessary to minimize risk.

2. An estimated 8 million lightning strikes occur each day on Earth. Approximately 400 lightning related fatalities occur in the United States every year. That is more than in any
Appendix H

other natural disaster, including floods, earthquakes, blizzards, tornadoes, and hurricanes. The highest concentration of lightning injuries and fatalities occur in alpine and marine environments, and the majority of victims are individuals participating in outdoor recreation.

3. Dangers from Direct Hit: Lightning will take the easiest path to the ground. A direct hit normally strikes the tallest object in a particular area such as mountain summits, minor peaks or pinnacles, sharp ridges, trees or standing people.

4. Danger from Ground Current: The current in a lightning bolt does not dissipate at the point of the direct hit. The current will continue to travel along the easiest path[s] of electrical conduction on the earth’s surface. Likely paths may include wet lichen-covered rock, ravines, drainages or trails filled with water, natural fissures and chimneys, wet ropes, cables or tree roots, and “spark gap” areas. When a ground current follows a short, direct path through the air [rather than following a longer path through the ground], a “spark gap” effect occurs. This is why being in small caves is NOT a good idea.
   a. Protection: The natural inclination in a heavy storm is to seek shelter under an overhanging rock or large boulder. Unfortunately, this is the wrong thing to do so as such areas are likely conduits for ground currents. By sheltering in them, you become an easy, alternate path for electrical currents.

5. Warning Signs of Lightning: When in an area where positive charges are building [as negative charges develop in the thunderhead] any or all of the following signs could indicate an imminent electrical discharge:
   a. A sudden rush of cold air, or a cloudburst [accompanied by large raindrops, snowflakes, or hailstones] indicating the presence of a cumulonimbus “thundercloud” overhead.
   b. Crackling or buzzing sounds [in the Alps, this is called “the buzzing of the bees”] coupled with small sparks emitted from metal objects caused by the ionization, or breakdown, of air molecules around the potential target.
   c. A bluish glow or corona surrounding objects (“St. Elmo’s Fire”).
   d. An acidic odor of ozone.
   e. Hair crackling or standing on end.

6. Induced Currents: Metal does not “attract” lightning, but it will conduct current. In the immediate vicinity of a strike, metal objects in contact with the body present a hazard of “induced currents”. Although the induced current maybe minimal, it could, in conjunction with ground currents, mean the difference between life and death. Thus, it is important to eliminate contact with all metal objects, when possible. Do not in haste discard climbing equipment [e.g., hardware, ice axes, pack frames, etc.]. It will be needed for the descent.

7. Physiological Aspects of a Lightning Strike: Electrical currents passing through the body may cause burns [entrance and exit wounds], muscle spasms, brain malfunction, cardio-respiratory arrest or paralysis. The extent of injury depends on the amplitude and duration of the current and the path of flow through the body. A direct hit often results in death, regardless of its path, because of the intensity of the current. A ground current is weaker and the direction of its path will significantly affect the outcome of the strike. For example, a current passed from hand to hand will flow through heart, spinal cord and vital organs, yet the same current from foot to knee is not as potentially damaging. Hence, the crouch is the best position for preventing injury.