

December 11, 2018

Heaven's Trail, LLC

Subject: **Report of Product Testing**
Product Designation: Hang Around Climbing Stick
TEC Project # 18-1471
TEC Lab No. 18-T148

Dear Mr. Berry:

Testing Engineering and Consulting Services, Inc. (TEC Services) is an independent testing laboratory with a quality system accredited by AASHTO R18, ANS/ISO/IEC 17025:2005, and the Army Corp of Engineers. TEC Services is pleased to present this report of our test results for the subject submitted product. The testing was performed at our Lawrenceville, Georgia facility in October of 2018. The product was received on October 6th, 2018. Our services were performed in accordance with the terms and conditions of our Service Agreement TEC PRO 18-1471. The test results presented only pertain to the product tested.

The purpose of our testing was to determine the mechanical properties of the submitted product in accordance with the most recent ASTM Standards. All testing was conducted on the one single submitted product (Photo 1). Product instructions were provided by the manufacturer. The product was assembled and mounted to a wooden pole with a diameter of 10 ± 1 inch in accordance with the provided instructions. It is our understanding that the submitted product has a rated maximum load capacity of 400 lbs and is classified as a "Climbing Stick" intended for single occupancy use. The provided instructions were reviewed for content in accordance with ASTM F2123. Warning labels were also checked to verify compliance with ASTM F2121. Checklists pertaining to the review of both the instructions and warning labels (Photo 2) are attached to this report.

- ASTM F2126-10 *Standard Test Method for Treestand Static Load Capacity*
- ASTM F2128-13 *Stand Test Method for Repetitive Loading Capability*
- ASTM F2124-13 *Standard Practice for Testing Ladder Treestand, Tripod Stand, and Climbing Stick Load Capacity*
- ASTM F2123-13 *Standard Practice for Treestand Instructions*
- ASTM F2121-13 *Standard Practice for Treestand Labels*

ASTM F2126 – Treestand Static Load Capacity (Two Ladder Steps)

Two steps were selected for testing. Load was applied over a 3 inch wide area, covering the full width of the step, and perpendicular to the loading plate by means of a dead load weight stack and the use of a cantilever system. Load transfer through the cantilever arm (Photo 3) was verified by use of an S-type load cell (Photo 5). Load was applied in increments of 25% of the rated load capacity until reaching 100%. The step was then un-loaded and observed for any signs of slipping or permanent deformation. Following the initial seating load the step was then loaded and un-loaded in increments of 150 lbs until reaching 2 times the rated load capacity (800 lbs). This testing process was then repeated on a second step located on the right side of the same section. Test results are reported in Table 1. Photos of the test configuration are shown in Photo 4 attached to this report.

ASTM F2128 - Repetitive Load Testing

For repetitive load testing a 5”x 5” x 0.5” steel plate, which covered the full width of the step, was used for application of the load to the step. The submitted product underwent a total of 10,000 cycles at a load of 400 lbs. The load was applied perpendicular to the loading plate by means of a dead load weight stack incorporated into a cyclic test machine and the use of a cantilever system. Load transfer through the cantilever arm was verified by use of an S-type load cell. The ladder step was loaded and un-loaded at a rate of 15 cycles per minute until achieving 1/3 (3,345 cycles) of the total number of cycles. The stand was then inspected for signs of shifting, cracks in the metal or permanent deformation. This sequence was repeated two more times until reaching a total of 10,035 cycles. No signs of shifting, cracks in the metal or permanent deformation were observed during testing. Information pertaining to the cyclic testing is reported in Table 2. A photo of the repetitive load testing assembly is shown in Photo 6.

Table 1 – Results of Static Load Testing for Climbing Stick Steps

Test Method		ASTM F2126		ASTM F2126	
Area of Load Application		Bottom Right Step		Middle Right Step	
% of Rated Load Capacity	Theoretical Load (lbs)	Actual Load (lbs)	Pass/Fail	Actual Load (lbs)	Pass/Fail
25%	100	100	Pass	100	Pass
50%	200	200	Pass	200	Pass
75%	300	300	Pass	300	Pass
100%	400	400	Pass	400	Pass
125%	500	500	Pass	500	Pass
150%	600	600	Pass	600	Pass
175%	700	700	Pass	700	Pass
200%	800	800	Pass	800	Pass

Table 2 – Information Pertaining to Repetitive Load Testing – ASTM F2123

Cycle Interval	Date	Start Time	End Time	Total Time	# of Cycles	Total # of Cycles	10,000 Cycles
1st Third	08/27/18	1:45 PM	5:28 PM	3:43	3,345	Testing Rate	15 cycles/minute
2nd Third	08/27/18	6:00 PM	9:43 PM	3:43	3,345	Total # of Steps	15
Final Third	08/28/18	9:00 AM	12:43 PM	3:43	3,345	Step # Tested	Right Center
Total				11:09	10,035	Weight Load (lbs)	400 lbs

Summary

- Per ASTM F2126 the steps tested on the submitted product were able to support twice its rated load capacity (800 lbs) without permanent deformation. The factor of safety for the platform is calculated as 2.00.
- Per ASTM F2128 the stand showed no signs of shifting, cracks in the metal or permanent deformation after being loaded and un-loaded for 10,000 cycles at 1.0 times the rated load capacity (400 lbs).
- The instructions supplied with the submitted product comply with the requirements of ASTM F2123.
- The warning labels for the submitted product comply with the requirements of ASTM F2121.

We appreciate the opportunity to provide our services to you on this project. Please do not hesitate to contact us at your convenience if you have any questions about this report or if we may be of further assistance.

Sincerely,

TESTING, ENGINEERING & CONSULTING SERVICES, INC.



James G. McCants III
Laboratory Manager, Chemist



Shawn P. McCormick
Laboratory Principal

Attachments: Photos 1-6
ASTM F2123 Instruction Checklist
ASTM F2121 Warning Label Checklist

Photo 1 – Parts Prior to Assembly



Photo 2 – Warning Label

**WARNING**
Failure to follow all warnings listed could result in serious injury or death. Do not use this product without Full body Harness (Fall Arrest System) that meets ASTM Standards.

Read Instructions before use.
Model: Hang Around Climbing Sticks
ASTM Rated Load Capacity: 400 lbs

DO NOT MODIFY THIS PRODUCT.
Proper maintenance and inspection is required

Control # 184000

Control # 184000

Manufactured by HARCO Metal Products, 162 Jack Cooper Drive, Valley Head, Alabama 35989

Photo 3 – Cantilever Arm Assembly



Photo 5 – Static Load Testing



Photo 6 – Cyclic Load Testing

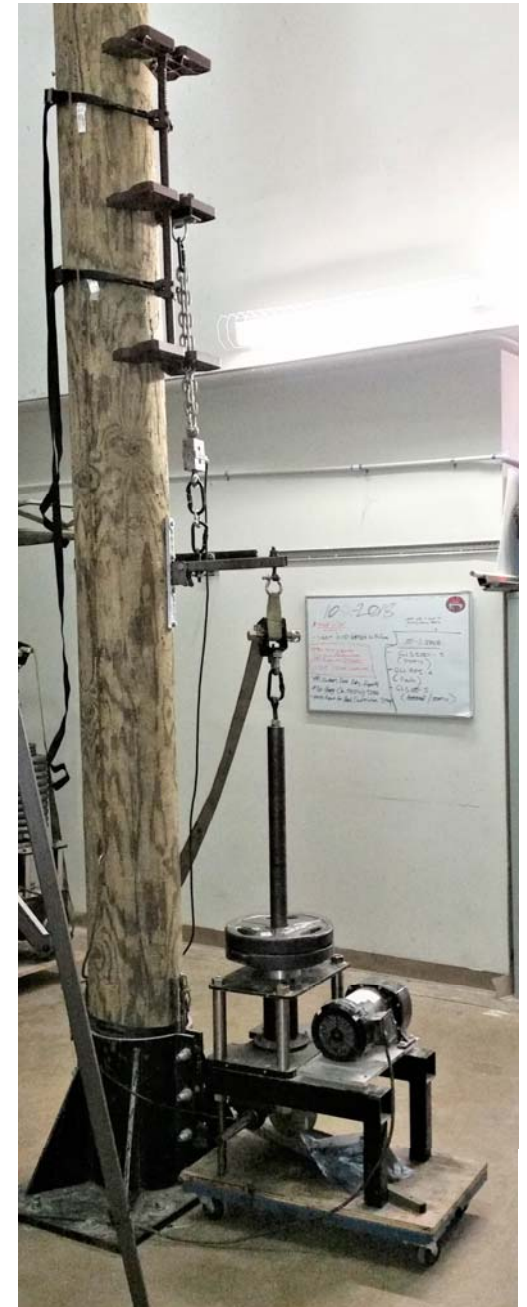


Photo 4 – Load Cell Readout



Client: Heaven's Trail, LLC
 Project No.: TEC # 18-1471
 Project Name: Hang Around Climbing Sticks
 Deer Stand Type: Climbing Stick
 Load Capacity: Single = 400 Multiple = N/A

Laboratory ID: 18-T119
 Date Received: October 8, 2018
 Date Inspected: October 8, 2018
 Inspected By: Zack Mooney
 Reviewed By: Trey McCants

Initial Inspection Form - ASTM F2121 - Warning Label for Treestand

	Yes	No	Affidavit
	Online		
1) Instructions included in packaging			NA
2) DVD included in packaging			NA
3) FAS Model Designation			NA
a) Full Body Harness			NA
b) Suspension Relief Device			NA
c) Anchor Strap			NA
4) All parts included in packaging	✓		
5) Warning Label Content			
a) "WARNING"	✓		
b) "Failure to follow all warnings could result in serious death or injury"	✓		
c) "Do not use without a Full Body Harness that meets ASTM Standards"	✓		
d) "Do not use before reading instructions"	✓		
e) Load Capacity and Weight Limit	✓		
f) Manufacturer's Name, Address, Phone Number	✓		
g) Any other safety specific information	✓		
6) Warning labels attached and placed properly	✓		
a) Location of Warning Label			
7) Date of Manufacture			
Main Support			
2018			



WARNING

Failure to follow all warnings listed could result in serious injury or death. Do not use this product without Full body Harness (Fall Arrest System) that meets ASTM Standards.

Read Instructions before use.

Model: Hang Around Climbing Sticks

ASTM Rated Load Capacity: 400 lbs

DO NOT MODIFY THIS PRODUCT. Proper maintenance and inspection is required

Control # 184000

Manufactured by HARCO Metal Products, 162 Jack Cooper Drive, Valley Head, Alabama 35989

Control # 184000

ASTM F2123 - Review Checklist of Provided Instructions (Climbing Stick)

Client:	Heaven's Trail, LLC	Laboratory ID:	18-T119
Project No.:	TEC # 18-1471	Date Received:	November 15, 2018
Project Name:	Hang Around Climbing Sticks	Date Reviewed:	November 16, 2018
Deer Stand Type:	Climbing Sticks	Reviewed By:	Zack Mooney
Load Capacity:	400 lbs - Single	Project Manager:	Trey McCants

- √ Indicates the item is present in the instructions provided.
- X Indicates the item is not present in the instructions provided.
- NA Indicates the item is not applicable to the product being reviewed.

Start of Review

- All user instructions shall be in English, and included with each unit.

General treestand safety topics/scenes.

- When hunting from a treestand falls can occur any time after leaving the ground causing injury or death.
- Always wear a fall arrest system (FAS) comprising a full body harness at all times after leaving the ground. You must stay connected at all times after leaving the ground while using climbing and hang - on treestands. Single safety belts and chest harnesses are no longer allowed and should never be used. If you are not wearing a full body harness properly attached to the tree that is protecting you from a fall, do not leave the ground.
- Read and understand all of the manufacturer's Warnings and Instructions and use all safety devices provided by the manufacturer. Contact the manufacturer for any questions. Failure to do so could result in injury or death.
- Never exceed the total weight limit of a treestand.
- Never use a treestand while taking drugs (even prescription drugs) or alcohol.
- Never use a treestand during inclement weather such as rain, lightning, windstorms or icy conditions and end your hunt and return to the ground if inclement conditions arise.
- Never use a treestand when feeling ill, nauseous or dizzy, or if you have a prior medical condition that could cause a problem i.e., heart condition, joints that lock - up, spinal fusions, etc. or if you are not well rested.
- Never use a treestand on a dead, leaning, diseased or loose barked tree or on a utility pole.
- Never rely on a tree branch for support.
- Never jump or bounce on a treestand to seat it to the tree.
- Pull up a bow, backpack, firearm or other equipment only after being secure in the treestand and a firearm must be pulled up with it unloaded, chamber open and muzzle down.
- Always inform someone of the hunting location, where the treestand will be located and the expected duration of the hunt.
- A signal device such a mobile phone, radio, whistles, signal flare or personal locator device (PLD) must be on your person and readily available at all times.

- Inspect the treestand and all safety devices each time before use and do not store a treestand outdoors when not in use.
- Never modify your stand in any way by making repairs, replacing parts, or altering adding or attaching anything to it except if explicitly authorized in writing by the manufacturer.
- Practice installing, adjusting and using your treestand at ground level prior to using it at elevated positions.
- Instructions (written and video) should be kept in a safe place and reviewed at least annually. It is the responsibility of the treestand owner to furnish the complete instructions to any person that who borrows or purchases the treestand.

Non - climbing (fixed or hang- on) treestand topics/ scenes.

- The use of a lineman's/climbing belt is required when installing a hang- on treestand to stabilize the user with the tree.
- Correct tightening and adjustments of chains, cables, straps, etc. are critical to stable hang- on treestand installation. All treestand contact points must be in contact with the tree before you step onto your stand.
- Practice the attachment of hang- on treestands at ground level before using in a hunting environment.
- Never leave a treestand in a tree for more than two weeks since weather or animals could cause damage. Tree growth can also stress and damage straps and buckles.
- Use a haul line to raise and lower the treestand. Never climb with anything on your back.
- Climbing aids (stick ladders, sectional ladders, steps, etc.) must extend above the platform to allow the user to step down onto the platform. Never step up to your stand from a climbing aid.

Climbing aids for hang - on treestands – stick ladders, sectional ladders, steps, etc.

- A full body harness with lineman's/climbing belt must be worn at all times while installing or removing any hang- on climbing aids.
- Hang- on climbing aids must be placed on the tree at a height above the platform where the user can maintain a handhold on the unit and step downwards onto the treestand. Never step up from a climbing device to get into your stand.
- When using a climbing/ lineman's belt to ascend the tree, the full body harness should be attached to the tree before stepping down onto the treestand.
- Sectional ladders and steps should be spaced on the tree to insure each step is no more than 18 inches apart.
- Check every stick ladder section connection every time you use the stick ladder before you leave the ground. If stick ladder sections are separating, do not use the stick ladder.

In addition to the content of Section 7.1, b basic instructions shall include, but not be limited to, the following:

- The manufacturers name and address.
- The unit model identification.
- The unit weight limit.
- Clear identification of parts or devices mentioned in the instructions.
- A clear caution, notification or warning of any particular or special condition of assembly, adjustment, inspection or use of the unit that would not be reasonable and/or obvious to an inexperienced person.

- The instructions shall include information on the method of attaching the treestand to the tree. This shall include the use of photographs and/or diagrams to illustrate and further clarify written instructions. Any questions about instructions should be referred to the manufacturer.
- The minimum (and maximum where applicable) tree diameter for proper use shall be specified.
- A procedure for adjusting the unit to fit a given diameter tree shall be specified. This shall include the use of photographs and/or diagrams to illustrate and further clarify written instructions.
- A notation shall be made in this section of the instructions that the user must use a fall protection device, specifically a full body safety harness, and a handclimber or climbing aid while climbing or descending.
- Foot placement and foot harness adjustment instructions (where applicable) shall be included within this section.

Instructions shall include information on the proper care and maintenance of the unit. Information shall include, but not be limited to the following:

- Notice shall be given that inspection for defects from damage, rot, corrosion, cracks, freezing, excessive heat, etc before every use is required and not to use if damage is detected or suspected.
- Minor maintenance that the manufacturer deems reasonably appropriate for users should be recommended. Examples include, but are not limited to: re-tightening or replacement of hardware (specified and supplied by the manufacturer), replacement of rope, straps, cords, etc. (specified and supplied by the manufacturer), preserving or refinishing wood, touch-up painting, lubrication, etc.
- Storage and/or any conditions the unit should not be subjected to.

Additional Content

It is recommended that additional instructions be given as follows:

- Information on the method of securing applicable attachments.
- Information (not given above) about applicable user adjustments.
- Aids or helpful hints that are not obvious to the inexperienced user.