

M.A.P.™

MAKING ACCIDENTS PREVENTABLE

NEW HIRE HANDBOOK




SONGER
SERVICES

CODE 99 PROCEDURE

1. If an emergency should occur and an ambulance or fire truck would be needed, "Code 99" will be the radio call to alert the Safety Department and Songer Services, Inc. base station.
2. DO NOT PANIC, keep calm, give the type of emergency and location.
3. When a "Code 99" is called, ALL radio communication will stop, except between the person that called a "Code 99", the Safety Department, and base station. Radio communication may resume only after an "ALL CLEAR" has been given by the Safety Department.
4. If an ambulance is needed, do NOT move the victim unless there is an existing or potential danger to the victim.
5. If an emergency call is for a fire truck, try to put out the fire if possible. If the fire cannot be put out, evacuate the area. The first person at the scene with a radio will appoint persons to direct the ambulance or the fire truck to the site of the accident or fire.
6. Trained plant personnel will arrive at the scene of the accident and administer appropriate care and direction.
7. The base station operator will telephone the proper emergency number needed.

IN-PLANT EMERGENCY NUMBERS

(In the event the "Code 99" cannot be initiated)

EMERGENCY _____

GAS SERVICES _____

SECURITY _____

Never Dial 911

YOUR CONTACT NAME & NUMBER IS:

This is your MAP to ensure the safety and welfare of all employees allowing you to return home the same condition you arrived. This MAP outlines company and employee expectations that will allow the TEAM to meet our goal of ZERO. This information is important, please read carefully and keep on your person for reference!

Do not hesitate to refer any questions to your supervisor or management representation.

TABLE OF CONTENTS

I. Harassment Policy	4
II. Project Rules	6
III. Construction Conduct Rules	8
IV. General Safety Guidelines	9
V. Life Threatening Programs	12
VI. Resources	14 - 32
• Mobile Crane Hand Signals	14 - 15
• Working Around Power Lines	16
• Weight of Materials Chart	17
• Wire Rope Slings Chart	18
• Safe Working Loads - Wire Rope Slings Chart	19
• Wire Rope Clips Chart	20
• Nylon Web Slings Chart	21
• Eye Bolts Chart	22
• Shackles Chart	23
• Fiber Rope Chart	24
• Rigging Inspection Program	25
• Risk Assessment Tools	26
• Medical Alert Program	32

MY PERSONAL COMMITMENT TO YOU

Our primary concern at Songer Services, Inc. is safety.

I am making my personal commitment to every SSSI employee, that you have my unwavering support in the pursuit of a perfect safety record.

I pledge to uphold this commitment regardless of project deadlines or duration. I extend this pledge from my heart, and will support every Songer Services, Inc. employee to the highest level possible. This company is built on respect and honesty. It is with this respect and honesty that I ask you for your personal commitment to safety as well.

I will ensure we implement all necessary classroom training, site-specific training meetings, and make all employees under our watch, fully aware of their surroundings prior to performing their tasks. As each task is completed and a new task is pre-planned, we must perform a site-specific pre-task safety plan before starting the new activity. I would like to think that all employees understand the importance of pre-task safety planning, however, I am compelled to reiterate its importance and my personal commitment to ensure it happens.

My pledge to you, coupled with your commitment, will lead us toward our goal of being the safety leader in today's construction industry.

Making Accidents Preventable "MAP" will be our goal and our motto to map out each activity during the pre-task safety planning stage of each project, and together we will reach this goal.

Thank you.

Joseph C. Meneskie - President / Chief Executive Officer

I. HARASSMENT POLICY

Policy Statement

It is the policy of Songer Services, Inc. to maintain a workplace that is free from intimidation, coercion, or harassment, including sexual harassment. Incidents of harassment by employees, managers, contractors, vendors, or customers will not be tolerated and should be promptly reported as outlined in this policy.

Procedure

Songer Services, Inc. employees are expected to conduct themselves in a business-like manner at all times. Any behavior that is coercive, intimidating, harassing, or sexual in nature is inappropriate and prohibited. Any verbal, physical, or visual conduct that belittles or demeans an individual because of his or her race, religion, national origin, gender, age, disability, or similar characteristics or circumstances is prohibited.

Incidents of harassment may be subjective in nature. To assist employees and managers in understanding what harassment is, particularly sexual harassment, Songer Services, Inc. is including the federal government's definition in this policy:

Sexual Harassment is: unwelcome sexual advances, request for sexual favors, and other physical, verbal, or visual conduct based on gender when:

1. submission to the conduct is an explicit or implicit term or condition of employment,
2. submission to or rejection of the conduct is used as the basis for an employment decision, or
3. the conduct has the purpose or effect of unreasonably interfering with an individual's work performance or of creating an intimidating, hostile, or offensive working environment.

Sexual harassment can include any of the following kinds of behavior:

- Explicit sexual propositions;
- Sexual innuendo;
- Sexually suggestive comments;
- Sexually oriented teasing or kidding;
- Sexually oriented jokes;
- Obscene gestures or language;
- Obscene or sexually suggestive pictures or drawings; and
- Physical contact, such as patting, pinching, or touching

Supervisors and managers are responsible for maintaining a workplace that is free of harassment, but all employees are responsible for helping to assure that harassment does not occur by conducting themselves in an appropriate manner and by reporting harassment they observe.

If any individual has a complaint or allegation of harassment, he or she should report the incident to the supervisor or manager, the allegation should be promptly taken to the Vice President of Administration:

**Rick Kline,
(724) 884-0184
2755A Park Ave
Washington, PA 15301 USA**

Complaints may also be made directly to the administration office.

Because of their need to conduct a fair, impartial and thorough investigation of all discrimination complaints, the Company cannot promise that complaints and other matters relating to discrimination investigations will be kept confidential.

Information necessary to complete the investigation of discrimination or harassment, including the identity of the alleged employee engaging in the discriminatory or harassing conduct, the employee who is the target of such conduct, and the content of the accusations will be disclosed as necessary during the investigation, including interviews of witnesses. However, the Company will attempt to discuss complaints, the terms of their resolution and the investigation process only to the extent, in management's

judgment, that is appropriate under the circumstances to conduct the investigation. Songer Services, Inc. absolutely forbids retaliation of any kind against any employee who complains about alleged harassment and will take disciplinary action against anyone who attempts to retaliate.

If, after a thorough investigation of the matter, the company determines that harassment has occurred, appropriate disciplinary action will be taken. Discipline may include counseling, written warning, transfer, demotion, discharge, or any other action deemed appropriate. In the event the complaining employee is not satisfied with the results of the action taken or of the investigation, he or she may request a review of the matter by the Company's President.

II. PROJECT RULES

The following project rules apply to all Songer Services, Inc. projects unless modified by site management or requirements of the owner. Site specific additions or modifications would prevail and discussed in the pre-job conference. Violation(s) of any of the specific rules is cause for discipline up to and including discharge. A site specific discipline policy may be established by site management.

ACCESS TO THE PLANT

Parking facilities have been provided by the owner for your use and at your own risk. Please park only in designated areas. Enter the plant at your designated gate and proceed to your work area via SSSI provided transportation. Your plant badges shall be kept on your person at all times.

EMPLOYMENT

Songer Services Inc. authorized representatives will perform all hiring for all projects. Songer will conduct orientation with all employees and provide subsequent paperwork and MAP handbooks that shall be signed before any employee begins work. All orientation and training paperwork will be kept on file by Songer Safety for any employee to view and for audit purposes. Songer Services Inc. will only hire individuals who present proper hiring documentation, are qualified, able, and willing to perform a full day's work and who will work as directed at all times. This includes employees that are required to wear specific PPE to perform a particular job, task, or project.

When a job task requires specific PPE such as wearing a respirator when performing work task that protect employees from hazards such as Lead,

Hexavalent Chromium or Silica; No employee shall don a respirator until proof of training has been documented, a medical questionnaire has been completed and approved by a LHCP, and fit testing has been provided.

Any employee that violates Songer Services Inc. employment requirements before or during their tenure is subject to discipline that may include counseling, written warning, transfer, demotion discharge or any other action deemed appropriate by the company.

HOURS OF WORK

Work hours will greatly fluctuate from project to project. The working schedules will be established by site management and be in accordance to appropriate labor agreements and presented in all pre- job conferences, as applicable. Employees must be at their assigned work location at the scheduled starting time and remain at work until the authorized quitting time. Sufficient time will be allowed for workers to roll back work areas and pick up their tools. Late starts and early quits will not be permitted unless proper authorization is given by site management.

PAYDAY

Specific payroll end dates and pay periods will be established for the project and presented in all pre-job conferences, as applicable. Workers absent from work on their regular pay day will be paid on the first day of work following such absence. Checks for workers who are terminated in absence will be mailed to the address shown on the worker's personnel file.

JOB INJURIES AND SICKNESS

All injuries, no matter how minor, shall be reported immediately to your supervisor and site safety professional for your protection. Proper incident reporting procedures will be handled by designated personnel to meet company and owner requirements. Workers who may be injured and require a doctor's treatment may return to work with a doctor's release. Modified or restricted duty may be arranged with management approval. Return visits will be arranged in accordance with the provisions of appropriate collective bargaining agreements.

REMAINING IN WORK AREAS

Each worker must remain on the job site at his/her designated work location unless authorized to leave by their supervisor. Work areas will be designated and communicated in the foreman's pre task plan for safety. Any other existing/operating portions of the plant will not be entered without proper authorization.

ABSENCE FROM WORK

Unauthorized absence is not permitted. An employee with chronic and/or unexcused absenteeism will be subject to disciplinary action including termination. Chronic absenteeism is considered to be three unexcused absent days or incidents of tardiness or early quitting.

Call Off Number : _____

III. CONSTRUCTION CONDUCT RULE VIOLATIONS

1. Reporting for work in an unfit condition such as under the influence of alcohol or drugs not prescribed for use during working hours.
2. Noncompliance with project Drug & Alcohol Program.
3. Failure to observe safety regulations including smoking or carrying smoking materials where such is prohibited.
4. Neglect or carelessness in performance of assigned duties or in care or use of Company property.
5. Insubordination (refusal or failure to perform work assigned or to comply with supervisory direction) or use of profane, obscene, abusive or threatening language or conduct towards subordinates, fellow employees, or officials of the Company.
6. Gambling or sleeping on Company time.
7. Falsifying or misrepresenting records.
8. Fraudulently obtaining, stealing, misappropriating or wrongfully converting to their own use the property of the Company or of another employee.
9. Fighting, horseplay, or carrying or using weapons.
10. Absence from work, or leaving the work place, without notice to or permission from supervision, except in circumstances which prevent the giving of notice.
11. Offering or soliciting money or other valuable consideration in exchange for better working conditions.

Zero Tolerance Policy

The purpose of this policy which covers all workers is to establish a clear definition of a Zero Tolerance Policy for violating any of the following Cardinal Rules:

- Lockout / Tagout
- Fall Protection (100%)
- Unguarded Floor Openings
- Confined Space Entry
- Crane Safety
- Hot Work
- Excavation
- Safety Device By-pass
- Equipment Operations without authorization and certification
- Railroad Safety
- Railed Equipment Protection
- Personal Protective Equipment
- High Gas Hazard Areas

Those who violate a Construction Conduct or Cardinal Rule will be subject to immediate dismissal from the site.

IV. GENERAL SAFETY GUIDELINES

Safety is the most important aspect of every Songer Steel Service Incorporated project. The prevention of injuries and incidents to all workers on the project and to the public is the primary focus for all work locations. Songer Services, Inc. policy shall be established throughout the organization, that people are the most important resource and shall be provided with a safe and healthy workplace.

Songer Services, Inc. believes that a top-down approach to safety is essential in preventing incidents. Safety begins in the planning stages to identify hazards before work begins, and is subsequently carried out through completion. Safety is everyone's responsibility on the project. Both management and field workers must be familiar with, and follow all safety rules and regulations for both their own safety and that of their fellow worker. The Management of Songer Services, Inc. is committed to the enforcement of the Corporate Safety Program Standards and, as such, each Manager and/or Supervisor is responsible for assuring compliance with the program and is directed to conduct inspections and/or surveys as frequently as is necessary to assure its success. Personnel at all

levels will be held accountable for the implementation, maintenance, and enforcement of a safe and healthful working environment in accordance with all applicable OSHA rules and regulations, those of Songer Services, Inc., Owners, and all governmental agencies.

Safety Program Goals

- Complete each project with zero injuries
- Complete each project with zero incidents which result in damage to property or equipment
- Continuously improve safety performance

GENERAL SAFETY QUESTION CHECKLIST ***“45 TO STAY ALIVE”***

1. Am I responsible and accountable for my own safety?
2. Am I in compliance with the site cell phone policy?
3. Did my Supervisor perform a pre task plan for safety today (safety huddle)?
4. Have we identified potential hazards associated with our task and taken the appropriate measures to control those hazards?
5. Are we in compliance with all life threatening programs?
6. Have I assessed my task for potential pinch points?
7. Am I clear of the line of fire?
8. Have we performed additional pre task plans when scope of work or conditions change?
9. Did I lock out today to protect myself from hazardous energy sources?
10. Did I sign in to the appropriate work area?
11. Do I have all the training required to perform my job safely?
12. Does my job require a confined space, hot work, excavation or critical lift permit?
13. Is there a safe means of access and egress to and from my work area?
14. Do I know my evacuation routes and primary / secondary assembly areas?

15. Do I know where to find a safety shower, eyewash, fire extinguisher, emergency radio and emergency phone?
16. Do I have steel toed work boots in good condition (metatarsal if required)?
17. Do I have Z.87 approved safety glasses with side shields (clear)?
18. Do I have ear plugs in 100%?
19. Do I have an approved hard hat in good condition worn brim forward?
20. Do I have a face shield and secondary eye protection when performing any grinding, chipping or polishing operation?
21. Did I inspect my harness for cuts, frays, or burns?
22. Do I have all the required PPE to do my job safely?
23. Has my CO meter been bumped and am I wearing it in my breathing zone?
24. Am I clean shaven below the upper lip?
25. Have I filled out a medical questionnaire, been fit tested and trained before wearing a respirator?
26. Am I using the proper lifting technique when handling loads and using the buddy system when appropriate?
27. Are gas cylinders transported in an upright position, capped and secured and are they stored properly?
28. Are flashback arrestors being utilized both at the gauges and torch ends?
29. Have I inspected my tools for damage and tagged damaged or defective tools out of service?
30. Am I utilizing GFCI protection?
31. Am I aware of others working above or below me?
32. Am I qualified to perform rigging operations (if applicable)?
33. Are we in compliance with the corporate inspection program?
34. Are all scaffolds inspected and did I read the tag for possible hazards and instructions?
35. Am I tied off properly above 4 foot to perform my job safely?
36. Am I using a retractable lanyard correctly from 4-18½ feet to protect myself from obstructions below?

37. If there is a crane, is it barricaded, are air horns present, and is a trained signal person present?
38. Are we maintaining proper distances from overhead power lines?
39. Have we completed and communicated a JHA for work around power lines?
40. Do I have push/pull sticks or tag lines for my lifts?
41. Did I pick up my tools, perform housekeeping, and leave my work area safe at the end of the shift?
42. Did I remove my lock at the end of my shift?
43. Did I sign out of my work area at the end of my shift?
44. Did I report all incidents to my supervisor and safety department?
45. Was I responsible for my safety and was I my “Brothers Keeper” today?

“45 TO STAY ALIVE”

Pre-Planning, Communication & Teamwork = ONE SONGER TEAM
Report any issues in answering the previous 45 questions to your supervisor or company representative.

*** It is the expectation of employment, without reprimand or retaliation, to report or STOP any work activity that presents a danger to yourself or fellow workers.**

V. LIFE THREATENING PROGRAMS

There are 8 life threatening programs that are critical to all personnel. Incidents involving these programs are usually low frequency; however, they can have a high severity (serious injury or death). By following these life threatening programs, we can prevent the majority of incidents that cause serious injuries and fatalities.

1. **Energy Control**
 - Lockout, Tagout, Tryout required
 - Energy Control Procedure reviewed
 - Lock verification form required
 - All locks clearly labeled (name/company/craft/contact)

2. Confined Space

- Permit completed
- Proper notification
- Meter calibrated and bump tested
- Initial and continuous monitoring performed
- Pre-job meeting held at the job site
- Mechanical retrieval device in place
- All affected personnel trained

3. Electrical Overhead Traveling Cranes

- Runway protection required
- Suspended load hazards in area
- Crane movement protected
- Boarding procedures discussed

4. Gas Hazards

- Personal monitors required (bumped daily)
- Fixed monitors identified in the area
- SCBA requirements followed
- Gas rescue procedures discussed
- Communication – Code 99, fixed radio, hand set

5. Mobile Equipment

- Moving equipment hazards identified
- Flag person / Attendant / Barriers in place
- Coke battery moving equipment
- Pre-use inspection completed

6. In Plant Railroad Equipment

- Track protection required
- Receive yard master permission
- Communication (radio) required
- Maintain proper distances

7. Molten Metal / Hot Pellets / Hot Coke

- Hazards identified
- PPE / Aluminized / FR Required

8. Elevated Work & Fall Protection

- Work area guarded properly
- Harness and lanyard required
- Temporary lifeline / equipment required
- Current competent inspection
- Scaffold or temporary work platform
- Retractable lanyard utilized (4-18½ feet)
- Floor opening / area below protected
- Proper anchor point designated
- Rescue plan reviewed

VI. RESOURCES

MOBILE CRANE HAND SIGNALS



HOIST



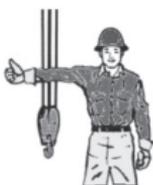
LOWER



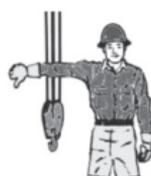
**USE
MAIN HOIST**



**USE
WHIP LINE**



**RAISE
BOOM**



**LOWER
BOOM**



**MOVE
SLOWLY**



SWING



**RAISE BOOM
AND LOWER
LOAD**



**LOWER BOOM
AND RAISE
LOAD**



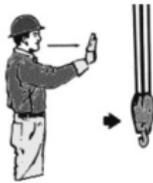
STOP



**EMERGENCY
STOP**



**DOG
EVERYTHING**



TRAVEL



**EXTEND
BOOM**



**RETRACT
BOOM**



**TRAVEL
(BOTH TRACKS)**



**TRAVEL
(ONE TRACK)**



**EXTEND BOOM
(ONE HAND)**



**RETRACT
BOOM
(ONE HAND)**

1. All Signal Persons shall be trained.
2. All lifts shall be planned or mapped out prior to hoisting.
3. There is to be only ONE signal person-more than one will confuse the operator.
4. The signal person must be highly visible to the Operator at all times.
5. Always watch the load - the crane operator is watching you.
6. Never at anytime shall a load pass over the top of any personnel.

WORKING AROUND POWER LINES

Can you get within 20 feet of any power line? If so, you shall:

Option 1: Deenergize & ground

Option 2: Utilize Table A and the following Encroachment

Preventative Measures:

- Planning Meeting
- Non Conductive Tag Lines
- Place elevated warning lines, barricade or line of signs
- PLUS (Choose One): Proximity Alarm / Spotter / Warning Device / Rang Limiter or Isolating Link

TABLE A

Voltage (nominal, kV, alternating current)	Minimum Clearance Distance (feet)
UP TO 50	10
OVER 50 - 200	15
OVER 200 - 300	20
OVER 350 - 500	25
OVER 500 - 750	35
OVER 750 - 1000	45
OVER 1000	(as established by the power line owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

RIGGING CHARTS

Weights of Materials

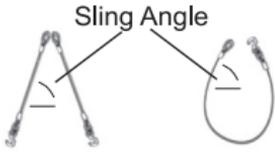
(All weights are approximate)

			ROUND STEEL BARS AND RODS	
			Diameter (Inches)	Weight (lbs.) Per ft. Of Length
ALUMINUM	165	lbs./cu.ft.		
ALUMINUM (1' x 1' x 1")	13.5	lbs.		
ASPHALT AND TAR	80	lbs./cu.ft.		
BRICKS – COMMON	121	lbs./cu.ft.		
CONCRETE	4,050	lbs./cu.yd.		
CONCRETE	150	lbs./cu.ft.		
CONCRETE BLOCK	52-84	lbs./cu.ft.		
CONCRETE BLOCK 4"	24	lbs. a piece	3/16	.1
CONCRETE BLOCK 6"	35	lbs. a piece	¼	.2
CRUSHED ROCK	2,550	lbs./cu.yd.	5/16	.3
CRUSHED ROCK	95	lbs./cu.ft.	3/8	.4
DRYWALL	52	lbs./cu.ft.	7/16	.5
DRYWALL (4' X 8' X ½")	55	lbs.	½	.6
EARTH – DRY	2,050	lbs./cu.yd.	9/16	.8
EARTH – DRY	75	lbs./cu.ft.	5/8	1.0
MORTAR	100	lbs./cu.ft.	¾	1.5
PIPE-STEEL – SCHEDULE 40			7/8	2.0
1" I.D.	1.7	lbs./ft.	1	2.7
2" I.D.	3.7	lbs./ft.	1 1/8	3.4
3" I.D.	7.6	lbs./ft.	1 3/16	3.8
4" I.D.	10.8	lbs./ft.	1 ¼	4.2
PORTLAND CEMENT-LOOSE	94	lbs./cu.ft.	1 3/8	5.1
SAND	3,250	lbs./cu.yd.	1 ½	6.0
SAND	120	lbs./cu.ft.	1 5/8	7.1
STEEL	490	lbs./cu.ft.	1 ¾	8.2
STEEL (1' X 1' X 1")	40	lbs.	2	9.4
WATER	62	lbs./cu.ft.	2 1/8	10.7
WOOD – DRY HARDWOOD	40	lbs./cu.ft.	2 ¼	12.1
WOOD – DRY SOFTWOOD	30	lbs./cu.ft.	2 3/8	13.5
WOOD – WET	50	lbs./cu.ft.	2 ½	15.1
			2 5/8	16.7
			2 ¾	18.4
			2 7/8	20.2
			3	22.1
				24.0

Wire Rope Slings

6 x 19 Classification Group, Improved Plow Steel, IWRC

MAXIMUM SAFE WORKING LOADS – POUNDS
Safety factor = 5 per OH&S Regulations

Rope Diameter (Inches)	Single Vertical Hitch			Single Choker Hitch			Single Basket Hitch (Vertical Legs)			2-Leg Bridle Hitch & Single Basket Hitch with Legs Inclined		
												
										60°	45°	30°
3/16	650	480	1,300	1,100	900	650						
¼	1,150	860	2,300	2,000	1,600	1,150						
5/16	1,750	1,300	3,500	3,000	2,500	1,750						
3/8	2,550	1,900	5,100	4,400	3,600	2,550						
7/16	3,450	2,600	6,900	6,000	4,900	3,450						
½	4,700	3,500	9,400	8,150	6,650	4,700						
9/16	5,700	4,200	11,400	9,900	8,050	5,700						
5/8	7,100	5,300	14,200	12,300	10,000	7,100						
¾	10,200	7,650	20,400	17,700	14,400	10,200						
7/8	13,750	10,300	27,500	23,800	19,400	13,750						
1	17,950	13,450	35,900	31,100	25,400	17,950						
1 1/8	22,750	17,000	45,500	39,400	32,200	22,750						
1 ¼	28,200	21,200	56,400	48,800	39,900	28,200						
1 3/8	34,800	26,100	69,600	60,300	49,200	34,800						
1 ½	41,300	31,000	82,600	71,500	58,400	41,300						
1 5/8	48,600	36,400	97,200	84,200	68,700	48,600						
1 ¾	55,900	41,900	111,800	96,800	79,000	55,900						
1 7/8	65,400	49,000	130,800	113,300	92,500	65,400						
2	72,600	54,500	145,200	125,700	102,700	72,600						

If used with Choker Hitch multiply above values by ¾.



For Double Basket Hitch multiply above values by 2.



Note: Table values are for slings with eyes and thimbles in both ends, Flemish Spliced Eyes and mechanical sleeves.

Safe Working Loads - Wire Rope Slings

The following methods apply to loads with their centre of gravity located at their geometric centre. Lifting irregularly shaped loads will result in unequal sling angles and/or unequal load distributions. If in doubt, don't guess. Seek professional assistance.

SAFE WORKING LOAD OF SINGLE VERTICAL SLINGS (TONS)

$$SWL \text{ (single vertical)} = \text{DIAMETER (inches)} \times \text{DIAMETER (inches)} \times 8 = D^2 \times 8$$

This formula applies to new, improved plow steel wire rope slings with thimbles in both ends. Flemish spliced eyes, mechanical steel sleeves and a factor of safety of 5. For a choker hitch, multiply SWL (single vertical) by 3/4.

SAFE WORKING LOAD OF 2-LEG BRIDLE SLINGS (TONS)

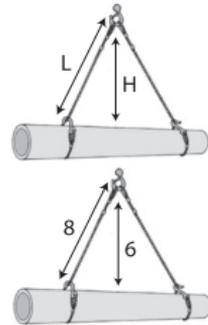
Method 1

$$SWL \text{ (single vertical)} \times h/l \times 2$$

Example 1/2" wire rope slings

$$\begin{aligned} SWL \text{ (single vertical)} &= D^2 \times 8 \\ &= 1/2 \times 1/2 \times 8 \\ &= 2 \text{ tons} \end{aligned}$$

$$\begin{aligned} SWL &= SWL \text{ (single vertical)} \times H/L \times 2 \\ &= 2 \times 6/8 \times 2 \\ &= 3 \text{ tons} \end{aligned}$$



Method 2

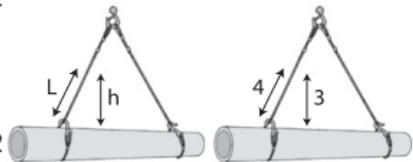
Use this method when it is difficult to measure the entire length of slings.

$$SWL = SWL \text{ (single vertical)} \times h/L \times 2$$

Example 1/2" wire rope slings

$$SWL = SWL \text{ (single vertical)} = 2 \text{ tons}$$

$$\begin{aligned} SWL &= SWL \text{ (single vertical)} \times h/L \times 2 \\ &= 2 \times 3/4 \times 2 \\ &= 3 \text{ tons} \end{aligned}$$

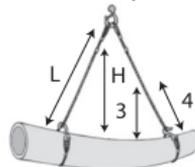


SAFE WORKING LOAD OF 4-LEG BRIDLE SLINGS (TONS)

$$SWL = SWL \text{ (single vertical)} \times H/L \times 3$$

or

$$SWL = SWL \text{ (single vertical)} \times H/L \times 3$$



EFFICIENCIES OF EYE SPLICES

Flemish eye and pressed steel sleeve 100%. Hand-tucked eyes 80%-90%. Eyes formed with cable clips 80%. Hand-tucked eyes must not be used when in the sling or load may rotate.

Wire Rope Clips

(Develop 80% of Rope Strength)

	Rope Diameter (Inches)	Minimum No. of Clips	Amount of Rope Turn Back From Thimble (Inches)	Torque in Foot-Pounds Unlubricated Bolts
 <p>STEP 1 APPLY FIRST CLIP – one base width from dead end of wire rope - U-Bolt over dead end - live end rests in clip saddle. Tighten nuts evenly to recommended torque.</p>	1/4	2	4 3/4	15
	5/16	2	5 1/2	30
 <p>STEP 2 APPLY SECOND CLIP - nearest loop as possible - U-Bolt over dead end - turn on nuts firm but DO NOT TIGHTEN.</p>	3/8	2	6 1/2	45
	7/16	2	7	65
	1/2	3	11 1/2	65
	9/16	3	12	95
	5/8	3	12	95
	3/4	4	18	130
 <p>STEP 3 ALL OTHER CLIPS - space equally between first two.</p>	7/8	4	19	225
	1	5	26	225
	1 1/8	6	34	225
	1 1/4	6	37	360
	1 3/8	7	44	360
	1 1/2	7	48	360

Use only drop-forged steel clips – not cast.



STEP 4
Apply tension and tighten all nuts to recommended torque.



Incorrect
Do Not stagger clips



STEP 5
Recheck nut torque frequently after rope has been in operation.



Incorrect
U-Bolt of all clips on live end of rope.

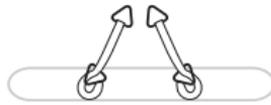
Note: Table values are for slings with eyes and thimbles in both ends, Flemish Spliced Eyes and mechanical sleeves.

Nylon Web Slings - 6600 lb/in material

**MAXIMUM SAFE WORKING LOADS- POUNDS (SAFETY FACTOR= 5)
(Eye & Eye, Twisted Eye, Triangle Fittings, Choker Fittings)**

Web Width (inches)	Single Vertical Hitch	Single Choker Hitch	Single Basket Hitch (Vertical Legs)	2-Leg Bridal Hitch & Single Basket Hitch with Legs Inclined		
				60°	45°	30°
1	1,100	825	2,200	1,905	1,555	1,100
2	2,200	1,650	4,400	3,810	3,110	2,200
3	3,300	2,475	6,800	5,715	4,665	3,300
4	4,400	3,300	8,800	7,620	6,220	4,400
5	5,500	4,125	11,000	9,525	7,775	5,500
6	6,600	4,950	13,200	11,430	9,330	6,600

If used with Choker Hitch multiply above values by 3/4.



For Double Basket Hitch multiply above values by 2.



1. For safe working loads of endless or grommet slings, multiply above values by 2.
2. Values have been adjusted to reflect fabrication efficiency (FE) using formulas and tables developed by the Web Sling Association. This accounts for strength loss due to stitching and manufacture.
3. All web slings must carry a load rating tag as specified in OH&S Regulations.

Eye Bolts

Stock Diameter (Inches)	SAFE WORKING LOADS (LBS) CORRESPONDING TO ANGLE OF PULL				
	Vertical	75°	60°	45°	Less Than 45°
1/4	500	275	175	125	NOT RECOMMENDED
5/16	800	440	280	200	
3/8	1,200	660	420	300	
1/2	2,200	1,210	770	550	
5/8	3,500	1,925	1,225	875	
3/4	5,200	2,860	1,820	1,300	
7/8	7,200	3,960	2,520	1,800	
1	10,000	5,500	3,500	2,500	
1.25	15,200	8,360	5,320	3,800	
1.50	21,400	11,770	7,490	5,350	

1. SWL for plain (shoulderless) eye bolts are the same as for shoulder bolts under vertical load. Angular loading is not recommended.
2. Use only forged steel eye bolts.

Shoulder Bolts

Correct for Shoulder Eye and Ring Bolts Providing loads are reduced to account for angular loading	Incorrect
 <p>Nut must be properly torqued.</p>	 <p>Shoulder must be in full contact with surface.</p>
 <p>Ensure that tap hole is deep enough.</p>	
 <p>Ensure that bolt is tightened into place.</p>	
 <p>Pack with washers to ensure that shoulder is firmly in contact with surface.</p>	

Shoulderless Bolts

Correct Shoulderless eye and ring bolts are designed for vertical loads only.	Incorrect If shoulderless eye and ring bolts are pulled at an angle as shown they will either bend or break
 <p>Shoulderless Eye Bolt</p>	 <p>Shoulderless Eye Bolt</p>
 <p>Shoulderless Ring Bolt</p>	
 <p>Shoulderless Ring Bolt</p>	
 <p>Results in:</p>	

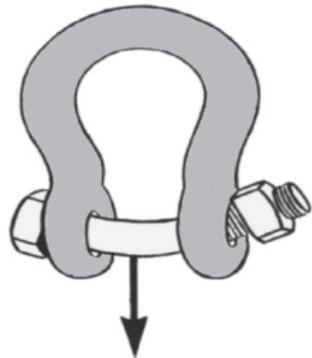
Shackles

SHACKLES (ALL TYPES)

- Weldless Construction
- Forged Alloy Steel

Stock Diameter (Inches)	Inside Width At Pin (Inches)	Max. Safe Working Load Single Vertical Pull (Pounds)
3/16	3/8	665
1/4	15/32	1,000
5/16	17/32	1,500
3/8	21/32	2,000
7/16	23/32	3,000
1/2	13/16	4,000
5/8	1 1/16	6,500
3/4	1 1/4	9,500
7/8	1 7/16	13,000
1	1 11/16	17,000
1 1/8	1 13/16	19,000
1 1/4	2 1/32	24,000
1 3/8	2 1/4	27,000
1 1/2	2 3/8	34,000
1 3/4	2 7/8	50,000
2	3 1/4	70,000
2 1/2	4 1/8	100,000
3	5	150,000
3 1/2	5 3/4	200,000
4	6 1/2	260,000

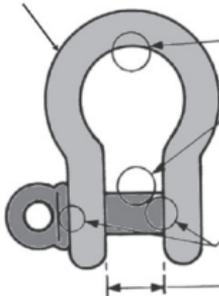
Never replace a shackle pin with a bolt.



The load will bend the bolt.

Size by stock diameter- not pin diameter. Never replace a shackle pin with a bolt. The load will bend the bolt.

Check wear



Check cracks, bending, twisting

Check wear and straight

Pin always seated

Check opening width

Fiber Rope

APPROXIMATE SAFE WORKING LOADS OF NEW FIBER ROPES- POUNDS
3-Strand Ropes Safety Factor = 5

Normal Rope Diameter (Inches)	Manila	Nylon	Polypropylene	Polyester	Polyethylene
3/16	100	200	150	200	150
¼	120	300	250	300	250
5/16	200	500	400	500	350
3/8	270	700	500	700	500
½	530	1,250	830	1,200	800
5/8	880	2,000	1,300	1,900	1,050
¾	1,080	2,800	1,700	2,400	1,500
7/8	1,540	3,800	2,200	3,400	2,100
1	1,800	4,800	2,900	4,200	2,500

Remember - Knots cut rope strength in half.

Rules of Thumb for SWL

The following rules of thumb work well for new ropes when load tables are not available.

MANILA ROPE

- Change the rope diameter into eighths of an inch.
- Square the numerator and multiply by 20.

Example

- (a) ½ inch manila rope = 4/8 inch dia.
SWL = 4 x 4 x 20 = 320 lb.
- (b) 5/8 inch manila rope
SWL = 5 x 5 x 20 = 500 lb.
- (c) 1 inch manila rope = 8/8 inch dia.
SWL = 8 x 8 x 20 = 1280lb.

POLYPROPYLENE ROPE

- Change the rope diameter into eighths of an inch.
- Square the numerator and multiply by 40.

Example

- (a) ½ inch polypropylene rope = 4/8 inch dia.
SWL = 4 x 4 x 40 = 640 lb.

NYLON AND POLYESTER ROPE

- Change the rope diameter into eighths of an inch.
- Square the numerator and multiply by 60.

Example

- (a) ½ inch nylon rope = 4/8 inch dia.
SWL = 4 x 4 x 60 = 980 lb.

POLYETHYLENE ROPE

- Change the rope diameter into eighths of an inch.
- Square the numerator and multiply by 35.

Example

- (a) ½ inch polyethylene rope = 4/8 inch dia.
SWL = 4 x 4 x 35 = 560 lb.

INSPECTION PROGRAM

There are requirements from federal regulations, owner and corporate procedures that certain equipment be inspected periodically by a competent person. The following chart will be your reference to the corporate color code inspection scheme:

Color Code Inspection Scheme	
Quarterly	
Quarter (Jan to Mar)	Red
Second Quarter (Apr to Jun)	Blue
Third Quarter (Jul to Sep)	White
Fourth Quarter (Oct to Dec)	Orange
Six-Month Interval	
First Half (Jan to Jun)	Yellow
Second Half (Jul to Dec)	Green

All corporate inspection programs will apply and appropriate personnel will be trained on these program requirements.

***It is always an expectation that workers inspect all equipment before each use and tag any damaged or defective equipment out of service.**

RISK ASSESSMENT TOOLS

Task Planning Guide

Involvement / Understanding	<ul style="list-style-type: none"> • Work team engagement in task planning? • Team members understand their task?
Hazard ID / Risk Control	<ul style="list-style-type: none"> • All significant hazards identified? Permits in place? • Suitable hazard controls specified?
Availability of Resources	<ul style="list-style-type: none"> • All necessary PPE available? • All familiar with and know how to use the tools / equipment? • Critical resources missing?
Change & Impact Others	<ul style="list-style-type: none"> • Changed conditions identified / reviewed? • Impact on others (above / below / nearby)?
New Starters / Emergency	<ul style="list-style-type: none"> • New starters have a buddy? • Emergency actions known? • Access / egress routes

**Everybody agrees it is safe to start?
No One Hurt On My Shift Today**

Task Planning Audit Some Questions

- Tell me about your task today? What are you doing?
- How can you make your task more safe?
- How can you be hurt in this task?
- Have you been hurt before doing a similar task? How serious?
- Can this task harm the environment?
- Who else can be affected? Do you know what other crews are doing in the area?
- How can you manage the risks of this task?
- Are further controls needed?
- What if an unexpected situation occurs?
- What will you do in an emergency situation?
- Do you agree it is safe to do this task?

**Everybody agrees it is safe to start?
No One Hurt On My Shift Today**

CORPORATE OVERVIEW

It is our mission to be the preferred supplier of construction services to steel and related heavy industrial manufacturers. Songer Services, Inc. continuously strives to provide value added services by utilizing state of the art construction techniques in conjunction with employment and retention of the most qualified union craftsmen in executing the most cost effective projects to satisfy or surpass our customer's expectations.

Songer Services, Inc. provides multi-discipline project engineering services, to facilitate the steel and heavy industrial market. Our services include design, project management, constructability planning, field engineering, and procurement.

NOTES

MEDICAL ALERT PROGRAM (Voluntary)

Employee Name: _____

Emergency Contact: _____

Emergency Contact Phone: _____

MEDICAL CONDITIONS INDICATED BELOW:

- Heart Patient
- Diabetic
- Epileptic
- Allergy to Insects
- Allergy to Penicillin
- Heat Disorder
- IDD
- Free Bleeder
- Respiratory Disorder
- Pace Maker
- Other: _____

Note: Information is private and will be kept on the worker at all times and will only be used in case of a medical emergency.

ACKNOWLEDGEMENT

This is to acknowledge that I have received my copy of the MAP Handbook and will keep this handbook on my person at all times as a condition of employment. I have been given an orientation on its contents along with applicable site specific policies, procedures, and expectations. I acknowledge that I have reviewed and understand this MAP handbook, harassment policy, conduct rules and the site specific orientation.

I understand that this handbook and orientation are not intended to cover all possible situations. I also understand that I shall not engage in any activity that could create a safety hazard and that I have the obligation to report such acts or conditions to my supervisor. Violation of company HSE standards, policies, or procedures could result in disciplinary action including termination of employment.

Print Full Name _____

Sign _____

Craft _____

Date _____

Witnessed (Trainer) _____

Title _____

Note: After being properly endorsed, this page is to be removed and becomes a part of your personnel file.

ASK, IF YOU HAVE QUESTIONS!



SONGER

S E R V I C E S

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