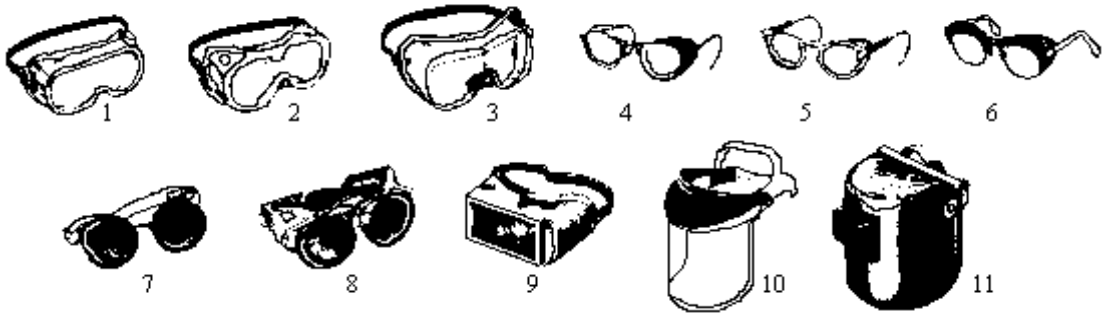
TABLE E-1 : EYE AND FACE PROTECTOR SELECTION GUIDE



1. GOGGLES, Flexible Fitting - Regular Ventilation
2. GOGGLES, Flexible Fitting - Hooded Ventilation
3. GOGGLES, Cushioned Fitting - Rigid Body
4. SPECTACLES, Metal Frame, with Sideshields (*)
5. SPECTACLES, Plastic Frame - with Sideshields (*)
6. SPECTACLES, Metal-Plastic Frame - with Sideshields (*)
7. WELDING GOGGLES, Eyecup Type - Tinted Lenses (**)

7A. CHIPPING GOGGLES, Eyecup Type - Clear Safety Lenses

8. WELDING GOGGLES, Coverspec Type - Tinted Lenses (**)

8A. CHIPPING GOGGLES, Coverspec Type - Clear Safety Lenses

9. WELDING GOGGLES, Coverspec Type - Tinted Plate Lens (**)
10. FACE SHIELD (Available with Plastic or Mesh Window)
11. WELDING HELMETS (**)

Footnote(*) Non-side shield spectacles are available for limited hazard use requiring only frontal protection.
Footnote(**) See Table E-2, in paragraph (b) of this section, Filter Lens Shade Numbers for Protection Against Radiant Energy.

OPERATION	HAZARDS	RECOMMENDED PROTECTORS
Acetylene-Burning Acetylene-Cutting Acetylene-Welding	Sparks, harmful rays, molten metal, flying particles	7, 8, 9
Chemical Handling	Splash, acid burns, fumes	2, 10 (For severe exposure add 10 over 2)
Chipping	Flying particles	1, 3, 4, 5, 6, 7A, 8A
Electric (arc) welding	Sparks, intense rays, molten metal	9, 11, (11 in combination with 4, 5, 6, in tinted lenses advisable)
Furnace Operations	Glare, heat, molten metal	7, 8, 9 (For severe exposure add 10)
Grinding- Light	Flying particles	1, 3, 4, 5, 6, 10
Grinding- Heavy	Flying particles	1, 3, 7A, 8A (For severe exposure add 10)
Laboratory	Chemical splash, glass breakage	2 (10 when in combination with 4, 5, 6)
Machining	Flying particles	1, 3, 4, 5, 6, 10
Molten Metals	Heat, glare, sparks, splash	7, 8 (10 in combination with 4, 5, 6, in tinted lenses)
Spot welding	Flying particles, sparks	1, 3, 4, 5, 6, 10

Harness Inspection (from Miller Fall Protection Website)

To inspect your harness or body belt, perform the following procedures.

1) Webbing

Grasp the webbing with your hands 6 inches (152mm) to 8 inches (203mm) apart. Bend the webbing in an inverted "U" as shown. The surface tension resulting makes damaged fibers or cuts easier to detect. Follow this procedure the entire length of the webbing, inspecting both sides of each strap. Look for frayed edges, broken fibers, pulled stitches, cuts, burns and chemical damage.

2) D-Rings/Back Pads

Check D-rings for distortion, cracks, breaks, and rough or sharp edges. The D-ring should pivot freely. D-ring back pads should also be inspected for damage.

3) Attachment of Buckles

Inspect for any unusual wear, frayed or cut fibers, or broken stitching of the buckle or D-ring attachments.

4) Tongue/Grommets

The tongue receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted or broken grommets. Webbing should not have additional punched holes.

5) Tongue Buckles

Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Roller should turn freely on frame. Check for distortion or sharp edges.

6) Friction and Mating Buckles

Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment points at the center bar.

7) Quick-Connect Buckles

Inspect the buckle for distortion. The outer bars and center bars must be straight. Make sure dual-tab release mechanism is free of debris and engages properly.

Lanyard Inspection (from Miller Fall Protection Website)

When inspecting lanyards, begin at one end and work to the opposite end, slowly rotating the lanyard so that the entire circumference is checked. Additionally, follow the procedures below.

1) Hardware

A) Snaps: Inspect closely for hook and eye distortions, cracks, corrosion, or pitted surfaces. The keeper (latch) should seat into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper. Keeper locks must prevent the keeper from opening when the keeper closes.

B) Thimbles: The thimble must be firmly seated in the eye of the splice, and the splice should have no loose or cut strands. The edges of the thimble must be free of sharp edges, distortion, or cracks.

2) Wire Rope Lanyard

While rotating the wire rope lanyard, watch for cuts, frayed areas, or unusual wearing patterns on the wire. Broken strands will separate from the body of the lanyard.

3) Web Lanyard

While bending webbing over a pipe or mandrel, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Swelling, discoloration, cracks and charring are obvious signs of chemical or heat damage. Observe closely for any breaks in stitching.

4) Rope Lanyard

Rotate the rope lanyard while inspecting from end-to-end for any fuzzy, worn, broken or cut fibers. Weakened areas from extreme loads will appear as a noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in period.

5) Shock Absorber Pack

The outer portion of the pack should be examined for burn holes and tears. Stitching on areas where the pack is sewn to D-rings, belts or lanyards should be examined for loose strands, rips and deterioration.

6) Shock-Absorbing Lanyard

Shock-absorbing lanyards should be examined as a web lanyard (described in item 3 above). However, also look for the warning flag or signs of deployment. If the flag has been activated, remove this shock-absorbing lanyard from service.

Self-Retracting Lifeline Inspection (from Miller Fall Protection Website)

1) Check Housing

Before every use, inspect the unit's housing for loose fasteners and bent, cracked, distorted, worn, malfunctioning or damaged parts.

2) Lifeline

Test the lifeline retraction and tension by pulling out several feet of the lifeline and allow it to retract back into the unit. Always maintain a light tension on the lifeline as it retracts.

The lifeline should pull out freely and retract all the way back into the unit. Do not use the unit if the lifeline does not retract. The lifeline must be checked regularly for signs of damage. Inspect for cuts, burns, corrosion, kinks, frays or worn areas. Inspect any sewing (web lifelines) for loose, broken or damaged stitching.

3) Braking Mechanism

The braking mechanism must be tested by grasping the lifeline above the impact indicator and applying a sharp steady pull downward which will engage the brakes. There should be no slippage of the lifeline while the brakes are engaged, once tension is released, the brakes will disengage and the unit will return to the retractable mode. Do not use the unit if the brakes do not engage.

Check the hardware as directed in 1A under Lanyard Inspection. The snap hook load indicator is located in the swivel of the snap hook. The swivel eye will elongate and expose a red area when subjected to fall arresting forces. Do not use the unit if the load impact indicator has been activated.

VISUAL INDICATIONS OF DAMAGE TO WEBBING AND LANYARDS				
Type of Webbing	**Heat**	**Chemical**	**Molten Metal or Flame**	**Paint and Solvents**
Nylon & Cordula	In excessive heat, nylon becomes brittle and has a shriveled brownish appearance. Fibers will break when flexed. Should not be used above 200 degrees F.	Change in color usually appearing as a brownish smear or smudge. Transverse cracks when belt is bent over a mandrel. Loss of elasticity in belt.	Webbing strands fuse together. Hard shiny spots. Hard and brittle feel. Will not support combustion.	Paint, which penetrates and dries restricts movement of fibers. Drying agents and solvents in some paints will appear as chemical damage.
Polyester (Dacron*)	Same as nylon, except do not use above 180 degrees F.	Same as nylon.	Same as nylon, except will support combustion.	Same as nylon

A. After performing the inspection procedures, any equipment found to be damaged or defective shall be tagged **"DANGER UNSAFE – DO NOT USE"** and removed from service.

B. After performing the inspection procedures, test performed shall be recorded. This record shall be kept by means of color-coding. These inspection procedures should always be completed by the 15th of the appropriate month

Jan	Red	March	Blue	May	White
July	Brown	Sept.	Yellow	Nov.	Orange

C. All required tests shall be performed:

a. Before each use

b. Before equipment is used after any incident which can be reasonably suspected to have caused damage.

c. Once every other month, by the 15th day of the month

Hazard Assessment

Aerial Lifts

Hazards	Describe Specific Hazards	PPE Required
Eye/Face Hazards		
Dust	Dust/debris in eyes from wind	Wear ANSI Z87.1 approved safety glasses w/side shields
		If wind and dust conditions are above normal levels, goggles must also be worn.
Working at Heights		
Fall	Fall from elevation	Wear full body harness and lanyard
Feet		
Electrical Shock	Shock from contact with electrical conductors	Refer to ESCO Group Electrical Safety Program for safe approach distances
Impact	Crushing injury	Wear ANSI approved safety toe shoes
Hands		
Cuts	Contact with sharp edges	Wear gloves
Crushing injury	Hands in between lift rails and stationary objects	Wear gloves and keep hands inside of lift
Electrical shock	Shock from contact with electrical conductors	Refer to ESCO Group Electrical Safety Program for safe approach distances
Head		
Electrical shock	Shock from contact with electrical conductors	Wear the Company issued Class “E” rated hardhats. Refer to ESCO Group Electrical Safety Program for safe approach distances.
Impact	Bumping into objects overhead	Wear the Company issued hardhat

Hazard Assessment
Daily Driving

Hazards	Describe Specific Hazards	PPE Required
Eye Hazards		
Glare/Sun	Driving into glare of the sun.	Wear sunglasses
Hands		
Cuts	Loading material that has sharp edges	If loading sharp edged material into a vehicle, cut resistant gloves must be worn.
Crushing	Getting hands caught in between material that is being loaded in the vehicle	Wear general duty work gloves.
Body		
Crushing	Being ejected from vehicle due to overturned vehicle	A seatbelt must be worn at all times when driving a vehicle
Impact	Being hit by or hitting another vehicle or object	A seatbelt must be worn at all times when driving a vehicle.

Hazard Assessment
Grinding

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Dust	Dust/debris in eye from wind	Wear ANSI Z87.1 approved safety glasses w/side shields or “spoggle” style eyewear
Flying debris	Grinding particles	Wear a face shield
Feet		
Impact	Falling material	Wear ANSI/ATSM approved safety toed shoes
Hands		
Cuts	Cut from handling material with sharp edges	Wear cut resistant gloves
Burns	Hot material	Wear leather work glove
Head		
Impact	Bumping into objects overhead	Wear company issued hardhats

Hazard Assessment
Wire Terminations

Hazards	Describe Specific Hazards	PPE Required
Eye/Face Hazards		
Impact	Excess wire or insulation coming in contact with glasses	Wear ANSI approved safety glasses w/side shields
Dust	Nuisance dust and debris in area	Wear ANSI approved safety glasses w/side shields
Feet		
Crushing injury	Dropping material on toes	Wear ANSI approved safety toed footwear
Hands		
Cuts	Cuts from using knife to strip wire/cable	Wear cut resistant gloves
Pinched	Pinched from getting caught in between tool handles	Wear general duty work gloves
Electrical shock	Shock from contact with electrical conductors	Refer to ESCO Group Electrical Safety Program for safe approach distances.
Head		
Electrical shock	Shock from contact with electrical conductors	Wear the company issued class "G" rated hardhats. Refer to ESCO Group Electrical Safety Program for safe approach distances.
Impact	Bumping into object overhead	Wear the company issued hardhat.

Hazard Assessment
De-Energization

Hazards	Describe Specific Hazards	PPE Required
Eye/Face Hazards		
Arc Flash	Burns or flash from an arc flash accident	Wear an arc flash shield along with safety glasses
Feet		
Electrical Shock	Shock from exposed steel toe on boot/shoe	Wear EH rated boots/shoes which must be in good condition
Impact	Dropped equipment/material	Wear ANSI approved safety toed boots/shoes
Hands		
Electrical Shock	Shock or burns from an arc flash incident or an electrical shock	Wear insulated gloves according to the tables in ESCO Group Electrical Safety Program
Head		
Electrical Shock	Shock from contact with electrical conductors	Wear the Company issued class "G" rated hardhats. Refer to ESCO Group Electrical Safety Program for safe approach distances.
Impact	Bumping into objects overhead	Wear the Company issued hardhat.

Hazard Assessment
Using a Drill (Hammer Drill Included)

Hazards	Describe Specific Hazards	PPE Required
Eye/Face Hazards		
Dust	Dust/debris from drilling procedures	Wear ANSI Z87.1 approved safety glasses w/side shields
	Flying particles, shavings from drilling overhead	Wear ANSI approved safety glasses w/side shields- must be “spoggle” design
Hands		
Caught in between	Hand(s) contacting equipment near drilling procedures (line-of-fire)	Wear general duty work gloves
Cuts	Sharp edges on bit	Wear gloves while preparing the drill
Head		
Impact	Bumping into objects overhead	Wear the company issued hardhat.
Hearing		
Loud Noise	Loud noise from drill motor running and bit drilling into concrete	Wear appropriate hearing protection

Hazard Assessment
Conduit Installation (cutting, threading, bending)

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Dust	Flying particles, shavings from cutting and threading conduit	Wear ANSI approved safety glasses w/side shields
	Nuisance dust	Wear ANSI approved safety glasses w/side shields
	Flying particles, shavings from cutting and threading conduit overhead	Wear ANSI approved safety glasses w/side shields- must be “spoggle” design
Feet		
Impact	Dropping material on toes	Wear ANSI approved safety toed shoes
Hands		
Cuts	Sharp edges	Wear cut resistance gloves
Crushing injury	Handling material pinched between material and bender	Wear general duty work gloves
Head		
Impact	Bumping into objects overhead	Wear Company issued hardhat

Hazard Assessment
Demolition/Site Clear

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Dust	Dust/debris in eyes from wind	Wear ANSI Z87.1 approved safety glasses w/side shields
	Flying particles, shavings from: cutting, removing, drilling equipment overhead	Wear ANSI approved safety glasses w/side shields- must be "spoggle" design
Feet		
Impact	Crushing injury	Wear ANSI approved safety toe shoes
Hands		
Cuts	Cuts from handling sharp material	Wear cut resistant gloves
Crushing injury	Handling material and getting hand caught between two objects (line-of-fire)	Wear general duty work gloves.
Electrical Shock	Checking for presence of voltage with meter before disconnecting wire.	Wear gloves that are rated for the type of work check ESCO Group Electrical Safety Program for correct level of glove.
Head		
Electrical Shock	Shock from contract with electrical conductors	Wear the company issued class "G" rated hardhats. Refer to ESCO Group Electrical Safety Program for safe approach distances.
Impact	Bumping into objects overhead	Wear the company issued hardhat.

Hazard Assessment
General Housekeeping

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Dust	Dust/debris in eyes from wind	Wear ANSI Z87.1 approved safety glasses w/side shields
Feet		
Impact	Crushing injury	Wear ANSI approved safety toed shoes
Hands		
Cuts	Handling sharp material	Wear cut resistant gloves
Crushing Injury	Dropping material or getting hand caught in between two objects (line-of-fire)	Wear general duty work gloves
Head		
Impact	Bumping into objects overhead	Wear the company issued hardhat.

Hazard Assessment
Core Drilling

Hazards	Describe Specific Hazards	PPE Required
Eye/Face Hazards		
Impact	Foreign material entering eyes	Wear ANSI Z87.1 approved safety glasses w/side shields
Dust	Flying particles and shavings from drilling overhead	Wear ANSI approved safety glasses w/side shields- must be "spoggle" design
Feet		
Impact	Crushing injury	Wear ANSI approved safety toe shoes
		Make sure drill is secured.
		Core slug falling
Hands		
Cuts	Cuts from handling core drill bits	Wear general work gloves
Head		
Impact	Bumping into objects overhead	Wear company issued hardhat
	Falling debris from overhead drilling	Wear company issued hardhat

Hazard Assessment
Operating Forklift

Hazards	Describe Specific Hazards	PPE Required
Eye/Face Hazards		
Dust	Dust/debris in eyes from wind	Wear ANSI Z87.1 approved safety glasses w/side shields
Feet		
Impact	Crushing injury	Wear ANSI approved safety toe shoes
Hands		
Cuts	Handling sharp material after loading/unloading	Wear cut resistant gloves
Crushing injury	Placing hands between material and stationary object or equipment	Wear general duty work gloves.
Head		
Impact	Material falling from elevated height above	Wear the company issued hardhat
Body		
Crushing	Falling out of the fork from turning corner to sharp or fast	Wear seatbelt restraint device

	Being ejected from forklift due to overturned equipment	Wear seatbelt restraint device.

Hazard Assessment
Jackhammer

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Dust	Nuisance Dust	Wear ANSI Z87.1 approved safety glasses w/side shields
	Flying particles, shavings from cutting and threading conduit overhead	Wear ANSI approved safety glasses w/side shields- must be "spoggle" design
Feet		
Impact	Crushing injury	Wear ANSI approved safety toe shoes and metatarsal guards
Hands		
Caught in between	Hands(s) contacting equipment near jackhammer procedures	Wear general duty work gloves
	Hands and fingers pinched while removing debris that has been jack hammered	Wear general duty work gloves
Head		
Impact	Bumping into objects overhead	Wear the company issued hardhat.

Hazard Assessment
Material Handling

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Dust	Dust debris from wind or material	Wear ANSI approved safety glasses with side shields
Feet		
Impact/crushing	From dropped material	Wear ANSI approved safety toed shoes
Hands		
Cuts	Cuts from handling material with sharp edges	Wear cut resistant gloves
Crushing injury	Getting hand caught in between equipment of other material (line of fire)	Wear general duty work gloves
Head		
Impact	From falling material or debris	Wear company issued hardhat

Hazard Assessment
Pulling Wire

Hazards	Describe Specific Hazards	PPE Required/Safe Practices

Eye/Face Hazards

Dust	Dust/debris in eyes	Wear ANSI approved safety glasses w/side shields

Working at Heights

Fall	Fall from elevation	Wear full body safety harness and lanyard

Feet

Impact	Crushing injury from dropping material/spools of wire on toes	Wear ANSI approved safety toe shoes

Hands

Crushing injury	Striking hand against equipment or other material in the area	Wear general duty work gloves.
Cuts	Cut from contacting sharp edges(panels)	Wear cut resistant gloves
Electrical Shock	Coming in contact with live electrical components	If pulling wire in live panels, guard the live parts with an insulated blanket and check ESCO Group Electrical Safety Program for clearances for live parts and PPE required.

Head

Electrical Shock	Getting to close to live electrical components	Wear the company issued “G” rated hardhat and check ESCO Group Electrical Safety Program for clearances.
Impact	Contacting material overhead	Wear the company issued hardhat

Hazard Assessment
Skid Loader

Hazards	Describe Specific Hazards	PPE Required
Eye/Face Hazards		
Dust	Dust/debris in eyes from wind	Wear ANSI Z87.1 approved safety glasses w/side shields and if equipped with a door, keep it closed.
Feet		
Impact	Material falling on feet from rolling into cab	Wear ANSI rated safety toed shoes
Hands		
Crushing injury	Hands being caught between machinery	Wear gloves and keep hands inside of equipment.
Head		
Impact	Falling debris from bucket	Wear company issued hardhat
Body		
Impact	Getting thrown out of skid loader by hitting a solid object	A seatbelt restraint must be worn at all times when in the seat of the skid loader
Crushing	Being ejected from a skid loader due to overturned equipment	A seatbelt restraint, must be worn at all times when in the seat of the skid loader.

Hazard Assessment
Using Meters for Voltage Testing

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Arc Flash	Intense light/possible flying material	Wear Arc Flash shield and refer to ESCO Group Electrical Safety Program for clearances
Feet		
Electric Shock	Possible electric shock	Wear EH rated safety footwear required by ESCO Group
Hands		
Electric Shock	Coming in contact with live parts	Wear insulated gloves w/leather protectors and refer ESCO Group Electrical Safety Program for class and clearances.
Head		
Electrical Shock	Shock from contact with electrical conductors	Wear the company issued class "G" rated hardhats. Refer to ESCO Group Electrical Safety Program for Safe Approach Distances.
Impact	Bumping into overhead objects	Wear company issued hardhat.

Hazard Assessment
Welding

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Welding flash	Harmful rays	Proper shaded lens (refer to ESCO Group Personal Protective Program for proper shaded lens
Flying particles	Chipping slag	Wear safety glasses
Feet		
Impact	Dropping material on feet	Wear ANSI approved safety toed footwear.
Hands		
Cuts	Handling sharp material	Wear cut resistant gloves
Crushing injury	Getting hands caught in between material	Wear general duty gloves
Burns	Burn from hot material and burns from welding	Wear welding gloves
Head		
Impact	Falling debris	If welding in an area where there is work overhead, wear a hardhat welding shield.

Hazard Assessment
Battery Inspection and Service

Hazards	Describe Specific Hazards	PPE Required/Safe Practices
Eye/Face Hazards		
Electrolyte Splash	Sulfuric Acid	Wear ANSI approved safety glasses with side shields in conjunction with face shield. Chemical resistant googles can be used in place of face shield and safety glasses
Feet		
Impact	Dropping material on feet	Wear ANSI approved safety toed footwear
Hands		
Burns	Burn from Sulfuric Acid	Wear appropriate chemical resistant gloves
Head		
Impact	Falling debris	If welding in an area where there is work overhead, wear a hardhat welding shield.
Body		
Electrolyte Splash	Sulfuric Acid	Wear appropriate chemical resistant apron