

# Bar Bending & Concreting Level II

# Learning Guide #1

Unit of Competence: Standard and Sustain 3S

Module Title: Standardizing and Sustaining 3S LG Code: EIS BBC2 M01 LO1- LG 1 TTLM Code: EIS BBC2 TTLM 1019 v1

# LO 1: Prepare for work

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# Instruction Sheet Learning Guide # 1

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- 1.1 Using work instructions determine job requirements, including method, material and equipment
- 1.2 Reading and interpreting Job specification
- 1.3 Observing OHS requirements
- 1.4 Identifying and checking safety equipment and tools
- 1.5 Preparing and using tools and equipment to implement 3S

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- 1.1 Use Work instructions to determine job requirements, including method, material and Equipment.
- 1.2 Read and interpret job specifications following working manual.
- 1.3 Observe OHS requirements, including dust and fume collection, breathing apparatus and eye and ear Personal protection needs throughout the work.
- 1.4 Identify and check safety equipment and tools for safe and effective operation.
- 1.5. Prepare and use tools and equipment to implement 3S

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	Using work instructions determine job requirements, including method, material and equipment
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# 1.1 Using work instructions determine job requirements, including method, material and equipment

• Work Instruction

# Information about the work

- Describe what workers need to be able to do on the job
  - Work functions
  - > Key activities of each work function
  - Performance indicators
- Describe what task to be done or work roles in a certain occupation

Work instruction is a description of the specific tasks and activities within an organization. A work instruction in a business will generally outline all of the different jobs needed for the operation of the firm in great detail and is a key element to running a business smoothly.

In other words it is a document containing detailed instructions that specify exactly what steps to follow to carry out an activity. It contains much more detail than a Procedure and is only created if very detailed instructions are needed. For example, describing precisely how a Request for Change record is created in the Change Management software support tool.

# **Procedures vs. Work Instructions**

Many people confuse "procedures" with "work instructions". In fact, most people write work instructions and call them procedures. Knowing the differences of procedures vs work instructions can help you understand the documentation process much better and, therefore, procedure documentation.

Procedures describe a process, while a work instruction describes how to perform the conversion itself. Process descriptions include details about the inputs, what conversion



takes place (of inputs into outputs), the outputs, and the feedback necessary to ensure consistent results. The PDCA process approach (Plan, Do, Check, Act) is used to capture the relevant information.

Questions that need to be answered in a procedure include:

- Where do the inputs come from (suppliers)?
- Where do the outputs go (customers)?
- Who performs what action when (responsibilities)?
- How do you know when you have done it right (effectiveness criteria)?
- What feedback should be captured (metrics)?
- How do we communicate results (charts, graphs and reports)?
- What laws (regulations) or standards apply (e.g., ISO 9001, 8th EU Directive, IFRS, Sarbanes-Oxley)?

# • Job requirements

A Job can be defined as:

- A piece of work, especially a specific task done as part of the routine of one's occupation or for an agreed price.
- A post of employment; full-time or part-time position
- Anything a person is expected or obliged to do; duty; responsibility
- An affair, matter, occurrence, or state of affairs.
- The material, project, assignment, etc., being worked upon.
- The process or requirements, details, etc., of working.
- The execution or performance of a task.

The requirements for a job vary according to the nature of the job itself. However, a certain work ethic must be cultivated to succeed in any job and this is fundamental to an individual's sense of himself as a worker, as part of production relations and a fundamental economic being. The basic requirements for a job remain the same no matter what the job is, where it is located or what professional and educational qualifications are required for it. These are as follows:

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**Discipline**: Nothing is possible without discipline. Any job requires a fundamental core of discipline from the worker or the employee and this is a quality which is independent of age, post, stature, job and so on. Discipline is absolutely indispensable and provides the impetus for work that can be strenuous, repetitive, boring and even unsatisfactory at times.

**Enthusiasm**: Enthusiasm for work is also a pre-requisite for any job. An innate love for the job, which in modern parlance is known as job satisfaction, is a core requirement for any job. The drive to succeed, to innovate, to do well and to make one's profession into one's livelihood is a critical drive which needs to be present in the employee or cultivated as soon as possible. No job, however perfectly carried out, can evoke the feeling of satisfaction of a job well done without the instinct for success.

**Qualifications:** This is a more material, tactile need for a job which can be conveyed through degrees and certificates. However education is not limited to what is taught in colleges or vocational training courses. It is the burning desire to learn more, to reach the depths of knowledge about a particular field of interest, to complete the job and learn from it that marks the true enthusiast and the truly learned.

**Soft Skills:** Soft skills include those skills which ensure that a job is executed well, and the employee can carry himself in the proper manner too. For example, good and smooth communication, computer skills, proficiency in language if needed, presentable appearance, the ability to manage crises are all soft skills which are fundamentally important in any job and which must be cultivated consciously.

Thus, the requirements of a job, though specific to it, cover also a general spectrum. These make for better employees and better individuals.

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Self-Check 1

Matching Type Questions

**Instructions:** Match column A with column B. Select the letter of the correct answer from column B & write your answer on the provided space in column A

Column A	Column B
1. The execution or performance of a task.	A. Plan, Do, Check & Act
2. Describe what task to be done or work roles in a certain occupation	B. Soft Skills
3. A statement of employee/workers characteristics and qualifications required for satisfactory performance of defined duties and tasks comprising a specific job or function.	C. Job Specification
4 is used to capture the relevant information.	D. Work Instruction
4 is used to capture the relevant mormation.	E. Job

Note: Satisfactory rating - 2 pointsUnsatisfactory - below 2 pointsYou can ask you teacher for the copy of the correct answers.

Answer Sheet

Score =	
Rating:	

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# Information Sheet-2 Reading and interpreting Job specification

1.2. Reading and interpreting Job specification

# **Job Specification**

A statement of employee/workers characteristics and qualifications required for satisfactory performance of defined duties and tasks comprising a specific job or function

# **Specification Sample**

- 1. Rebar Ø10mm & length 12m
- 2. 10m<sup>3</sup> sand
- 3. 20kg stirrup etc

# SITE DESCRIPTION

The specified shall indicate the following in detail.

A location map of the area shall be attached and possible sources of stone for masonry & aggregate, sand, timber, etc., shall be indicated.)

Region, particular name and geographic bearing

#### **Elevation of area**

Geological & geotechnical conditions as last established by surveys & tests.

**Access Road** - specify distance of tarmac, gravel & dust road and no access distances in Kilometers. If in the opinion of the specified, the project Area is located in an area known to all prospective Contractors, only the required details shall be given.

> Availability of services like water, power, telephone, etc.

The climatic condition indicating the following details:-

> Seasons of rain, indicating the heaviest month of rain.

> Seasons of lowest & highest temperature.

> Months of high and low humidity.

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- Prevailing wind and months of high wind velocity.
- > Records of monthly rainfall, wind speed & humidity.

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Self-Check 1

# Instruction: Say True or False

- 1. The specification for measuring Sand is meter cubic.
- 2. Rebar is measured in kg
- 3. Access Road specifies distance of tarmac, gravel & dust road and no access distances in Kilometers.

Note: Satisfactory rating - 2 pointsUnsatisfactory - below 2 pointsYou can ask you teacher for the copy of the correct answers.

**Answer Sheet** 

Score =	
Rating:	

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# Information Sheet-3 Ot

# 1. 3 Observing OHS requirements

# OHS Requirements

OHS requirements are legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of firefighting equipment, enterprise first aid, hazard control and hazardous materials and substances.

Personal protective equipment includes those prescribed under legislation/ regulations/codes of practice and workplace policies and practices. Safe operating procedures include the conduct of operational risk assessment and treatments associated with workplace organization. Emergency procedures include emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.

Occupational safety and health (OSH) also commonly referred to as occupational health and safety (OHS) or workplace health and safety (WHS) is an area concerned with the safety, health and welfare of people engaged in work or employment. The goals of occupational safety and health programs include fostering a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment. In the United States the term occupational health and safety is referred to as occupational health and occupational and non-occupational safety and includes safety for activities outside work.

Occupational safety and health can be important for moral, legal, and financial reasons. In common-law jurisdictions, employers have a common law duty (reflecting an underlying moral obligation) to take reasonable care for the safety of their employees. Statute law may build upon this to impose additional general duties, introduce specific duties and create government bodies with powers to regulate workplace safety issues: details of this will vary from jurisdiction to jurisdiction. Good OSH practices can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs

#### Workplace hazards

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Although work provides many economic and other benefits, a wide array of workplace hazards also present risks to the health and safety of people at work. These include "chemicals, biological agents, physical factors, adverse ergonomic conditions, allergens, a complex network of safety risks," and a broad range of psychosocial risk factors.

## The Act

The Occupational Health and Safety Act 2004 (the Act) is the cornerstone of legislative and administrative measures to improve occupational health and safety in Victoria.

The Act sets out the key principles, duties and rights in relation to occupational health and safety. The general nature of the duties imposed by the Act means that they cover a very wide variety of circumstances, do not readily date and provide considerable flexibility for a duty holder to determine what needs to be done to comply.

# The Regulations

The Occupational Health and Safety Regulations 2007 are made under the Act. They specify the ways duties imposed by the Act must be performed, or prescribe procedural or administrative matters to support the Act, such as requiring licenses for specific activities, keeping records, or notifying certain matters.

#### Guidance

Effective OHS regulation requires that Work Safe provides clear, accessible advice and guidance about what constitutes compliance with the Act and Regulations. This can be achieved through Compliance Codes, Work Safe Positions and non-statutory guidance ("the OHS compliance framework"). For a detailed explanation of the OHS compliance framework, see the Victorian Occupational Health and Safety Compliance Framework Handbook.

# Policy

Not every term in the legislation is defined or explained in detail. Also, sometimes new circumstances arise (like increases in non-standard forms of employment, such as casual, labour hire and contract work, or completely new industries with new technologies which

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produce new hazards and risks) which could potentially impact on the reach of the law, or its effective administration by Work Safe. Therefore, from time to time Work Safe must make decisions about how it will interpret something that is referred to in legislation, or act on a particular issue, to ensure clarity. In these circumstances, Work Safe will develop a policy. A policy is a statement of what Work Safe understands something to mean, or what Work Safe will do in certain circumstances.

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Self-Check 1

# Instruction: Say True or False

- 1. Occupational safety and health can be important for moral, legal, and financial reasons
- 2. Personal protective equipment is one of the basic important thing for bar bender
- 3. The Occupational Health and Safety Regulations 2007 are made under the Act of Occupational Health and Safety Act
- 4. A policy is a statement of what Work Safe understands something to mean, or what Work safe will do in certain circumstances.

*Note:* Satisfactory rating - 2 points Unsatisfactory - below 2 points You can ask you teacher for the copy of the correct answers.

**Answer Sheet** 

Score = _	 _
Rating: _	 

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# **Information Sheet-4**

1.4 Identifying and checking safety equipment and tools

# Tools and Equipment used to implement 3S

You are required to prepare and use tools and equipment to implement sort, set in order and shine activities in to your work station. The following are some tools and equipment that help you in the implementation of 3S.

# Tools and materials used to implement Sort activity

Tools and materials are required to implement sort, set in order and shine activities in work stations. The following are some tools and materials used to implement the first pillar of 5S-Sort.

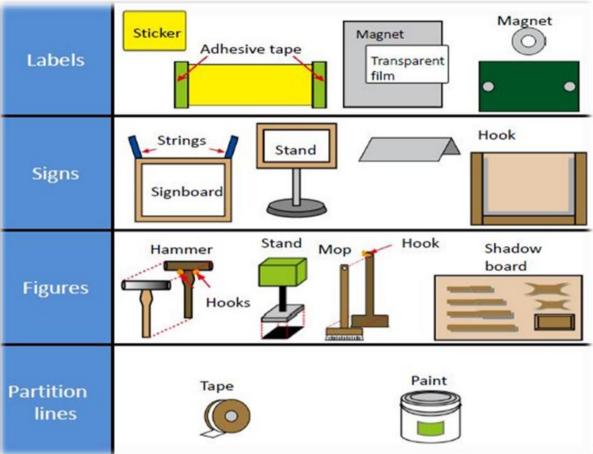
•	red tags	sticker
•	hook	nails
•	shelves	chip wood
•	sponge	broom
٠	pencil	shadow board/ tools board
٠	formats (for recording necessary	
	and unnecessary items, plans etc.	)

# Tools and materials used to implement set in order

The following are some tools and materials used to implement the second pillar of 5S set in order.

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# Tools and materials used to implement shine

The following are some tools and materials used to implement the third pillar of 5S-Shine.

- sponges
- brooms
- brushes
- spades
- vacuum cleaners
- waste baskets
- dust bins
- gloves
- dust masks
- detergents
- containers
- oils

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- bolts
- screws
- boots shoes
- Etc...

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Self-Check 1

# **Multiple Choice**

# Instruction: Select the best answer and encircle the letter

- 1. One of the following is tools and equipment that help you in the implementation of 3S?
  - A/ Brooms B/ Brushes C/ Spades D/ All of the above are correct
- 2. One of the following tools and materials used to implement Sort activity?
  - A/ Red tags
  - B/ Sticker
  - C/ Shelves
  - D/ All of the above are correct
- 3. One of the following are not tools and materials used to implement the third pillar of 5S-Shine.
  - A/ Sponges
  - B/ Brooms
  - C/ Waste baskets
  - D/ None of the above

Note: Satisfactory rating - 2 pointsUnsatisfactory - below 2 pointsYou can ask you teacher for the copy of the correct answers.

**Answer Sheet** 

Score =	
Rating: _	

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# **Information Sheet-5**

# 1.5 Preparing and using tools and equipment to implement 3S

# Implementing of 3S

# SORT

#### **Overview of red tagging**

The Red-Tag Strategy is a simple method for identifying potentially unneeded items in the factory or workshop, evaluating their usefulness and dealing with them appropriately. Red-tagging means putting red tags on items in the factory or workshop that need to be evaluated as being necessary or unnecessary. A Red tag is a red colored tag used to identify items no longer needed in a particular work area. The red tags catch people's attention because red is a colour that stands out. An item with a red tag is asking three questions:

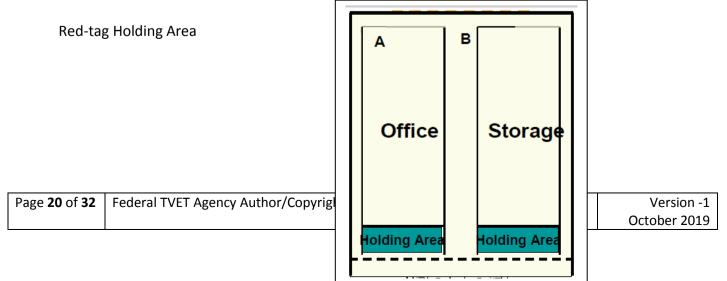
- Is this item needed?
- If it is needed, is it needed in this quantity?
- If it is needed, does it need to be located here?

Once these items are identified, they can be held in a "Red Tag Holding Area" for a period of time to see whether they are needed, disposed of, relocated, or left exactly where they are.

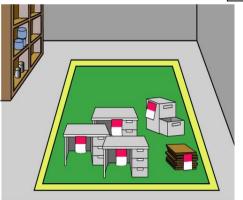
#### **Red-tag Holding areas**

In order to implement the red-tag strategy effectively, a red-tag holding area must be created. A redtag holding area is an area set aside for use in storing red-tagged items that need further evaluation. Red-tagging is helpful when the need or frequency of need for that item is unknown. When an item is set aside in a red-tag holding area and watched for an agreed-upon period of time people tend to be more ready to let it go when that time is over.

There are two red-tag holding areas: local and central holding areas. Local red-tag holding area is used to manage the flow of red-tagged items with in a local department or production area. Central red-tag holding area is used to manage the flow of items that cannot or should not be disposed of by individual departments or production area. Usually central red-tag holding area is used by an organization that is launching a companywide red-tagging effort.







## Steps/procedures in Red tagging

The red-tagging process in a department or work area can be broken down into seven steps.

- Step 1: Launch the red-tag project.
- Step 2: Identify the red-tag targets.
- Step 3: Set red-tag criteria.
- Step 4: Make red tags.
- Step 5: Attach red tags.
- Step 6: Evaluate red-tagged items.
- Step 7: Document the results of red-tagging.

#### Step 1: Launch the red-tag project

Red-tag campaigns are started and coordinated by the upper-level management of a company. Even when a red-tag campaign is companywide, local campaigns need to be organized in each department or production area. This involves

- Organizing a team
- Organizing supplies
- Organizing a time or schedule to perform red-tagging
- Deciding a local-tag holding area
- Planning for disposal of red-tagged items

People from outside a department can be valuable members on a red-tagging team since they tend to see the area with a fresh eye. Hence, it is helpful to partner with other departments or production areas in creating red-tagging teams.

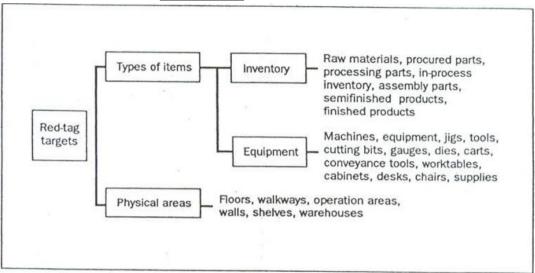
#### Step 2: Identify red-tag targets

There are two red-tag targets:

- a) Items: in the manufacturing area items like inventory (warehouse and in-process inventory), equipment, and space are targets for red tags. Warehouse inventory include material, parts, products etc.
- b) Areas: It is better to define a smaller area and evaluate it well than to define a larger area and not be able to evaluate it fully in available time.

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#### Step 3: Set red-tag criteria

As already mentioned, the most difficult thing about red-tagging is differentiating what is needed from what is not. This issue can be managed by establishing clear-cut criteria for what is needed in particular area and what is not. The most common criterion is the next month's production schedule.

- Items needed for that schedule are kept in that location.
- Items not needed for the schedule can be disposed of or stored in a separate location.

Three main factors determine whether an item is necessary or not. These factors are:

- The usefulness of the item to perform the work at hand. If the item isn't needed it should be disposed of.
- The frequency with which the item is needed. If it is needed infrequently it can be stored away from the work area.
- The quantity of the item needed to perform this work. If it is needed in limited quantity the excess can be disposed or stored away from the work area.

Each company must establish its own red-tagging criteria and each department may customize this standard to meet its local needs.

#### Step 4: Make red-tags

Each company has specific needs for documenting and reporting the movement, use, and value of materials, equipment, tools, inventory and products. The company's red tags should be designed to support this documentation process.

Various types of information on a red tag may include:

- Category: provides a general idea of the type of item (e.g., a warehouse item or machine). Categories include raw materials, in-process inventory, products, equipment, jigs, tools and dies.
- Item name and manufacturing number.
- Quantity: indicates the number of items included under this red tag.
- Reason: describes why a red tag has been attached to this item.
- Division: includes the name of the division responsible for managing the red-tagged item.
- Value: includes the value of the red-tagged item.
- Date: includes the red-tagging date.

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The material used for red tags can be red paper, thick red tape, or others. Red tags can be laminated with plastic or another material to protect them during repeated use.

#### Step 5: Attach the red tags

The best way to carry out red-tagging is to do the whole target area quickly, if possible, in one or two days. In fact, many companies choose to red-tag their entire factory during a one or two day period. Red-tagging should be a short and powerful event. You should red-tag all items you question, without evaluating what to do with them.

#### Step 6: Evaluate the red-tagged items

In this step, the red-tag criteria established in step 3 are used to evaluate what to do with red-tagged items. Options include:

- Keep the item where it is.
- Move the item to a new location in the work area.
- Store the item away from the work area.
- Hold the item in the local red-tag holding area for evaluation.
- Dispose of the item.

Disposal methods include:

• Throw it away.

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- Sell it.
- Return it to the vendor.
- Lend it out.
- Distribute it to a different part of the company.
- Send it to the central red-tag holding area.

The next table shows disposal methods.

Treatment	Description
Throw it	Dispose of as scrap or incinerate items that are
away	useless or unneeded for any purpose.
Sell	Sell off to other companies items that are useless or
	unneeded for any purpose.
Return	Return items to the supply company.
Lend out	Lend items to other sections of the company that
	can use them on a temporary basis.
Distribute	Distribute items to another part of the company on
	a permanent basis.
Central red-	Send items to the central red-tag holding area for
tag area	redistribution, storage, or disposal.

Evaluation format for red-tag items (sample)

Ideally, unnecessary equipment should be removed from areas where daily production activities take place. However, large equipment and equipment or machine attached to the floor may be expensive to move. It is sometimes better to leave this equipment where it is unless it interferes with daily production activities or prevents workshop improvements. Label this unneeded and difficult to move equipment with a "freeze" red tag, which indicates that its use has been "frozen," but that it will remain in place for the time being.

#### Step 7: Document the results of red-tagging

Each company or organization needs to create its own system for logging and tracking necessary information as red-tagging takes place. The documentation system may involve a written logbook in each department and in the central red tag holding area. Or it may involve entering data from the red-tags into a computer system. Whatever the system, documenting results is an important part of the red-tagging process. It allows the company to measure the improvement and savings produced as a result of the red-tagging effort. As it is indicated in step 4, the red-tags should be designed to support the documentation process.

Determine in advance approximately how many red-tags each workplace should use. An average of four red-tags per employee should be used. This means a workshop with 30 employees should need about 120 red tags. In addition when you find a shelf full of items which are difficult to decide, we don't have to be tempted to attach one red-tag for the whole shelf. Because this can lead to confusion when we want to dispose of these items in the shelve. Therefore, avoid this temptation and attach individual tags to individual items.

When red-tagging is completed the factory or workshop is usually dotted with empty spaces – a sign of real progress. Then the layout of equipments and worktables can be changed to occupy the free

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space. Companies or organizations who think they need to build a new factory for a production of new products/ services should first apply the sort activity or the red-tag strategy so that they could get plenty of free space.

# SET IN ORDER

There are some principles for deciding best locations for tools and equipments. Jigs, tools and dies differ from materials, equipments, machinery and parts in that they must be put back after each use. Some of the principles for jigs, tools and dies also apply to parts, equipments, and machinery. These are:

- Locate items in the workplace according to their frequency of use. Place frequently used items near the place of use. Store infrequently used items away from the place of use.
- Store items together if they are used together, and store them in sequence in which they are used.

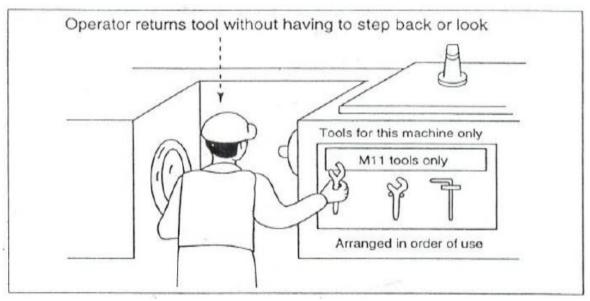


Fig. Tools kept at hand and stored in the order used.

- Device a "just let go" arrangement for tools. This approach involves suspending tools from a retractable cord just within reach so that they will automatically go back in to their correct storage position when released.
- Make storage places larger than the items stored there so that they are physically easy to remove and put back.
- Eliminate the variety of jigs, tools and dies needed by creating a few jigs, tools and dies that serve multiple functions.
- Store tools according to function or product. Function-based storage means storing tools together when they have similar functions. This works best for job-shop production. Product-based storage means storing tools together when they are used on the same product. This works best for repetitive production.

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# . Set In Order Samples



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# SHINE

Shine activities should be taught as a set of steps and rules that employees learn to maintain with discipline.

# Step 1: Determine shine target areas

Shine target areas are grouped in to three categories: warehouse item, equipments and space. *Warehouse items* include raw materials, procured subcontracted parts, parts made in-house, and assembly components, semifinished and finished products. *Equipment* includes machines, welding tools, cutting tools, conveyance tools, general tools, measuring instruments, dies, wheels and casters, worktables, cabinets, desks, chairs and spare equipment. *Space* refers to floors, work areas, walkways, walls, pillars, ceilings, windows, shelves, closets, rooms and lights.

# Step 2: Determine Shine Assignments

Workplace cleanliness is the responsibility of everyone who works there. Each employee should be assigned specific area to clean. To do this two methods can be used:

- A 5S Assignment Map shows all the target areas for shine activity and who is responsible for cleaning them. By marking on 5S Map, the shine assignments can be shown.
- A 5S schedule shows in detail who is responsible for cleaning which areas on which days and times of the day. Then this schedule should be posted in the work area.

## Step 3: Determine shine methods

Shine activities should be a natural part of the daily work. Shine activities and inspection should be done before a shift starts, during work time and at the end of the shift.

Determining shine methods include:

- Choosing targets and tools define what will be cleaned in each area and what supplies and equipments will be used.
- *Performing the five-minute shine* cleaning should be practiced daily and should not require a lot of time.
- Creating standards for shine procedures people need to know what procedures to follow in order to use their time efficiently. Otherwise, they are likely to spend most of their time getting ready to clean.

#### Step 4: prepare tools

The cleaning tools should be placed properly or set in order where they are easy to find, use and return.

#### Step 5: Start to shine

When implementing the shine procedures, consider the following suggestions:

- Be sure to sweep dirt from floor cracks, wall corners, and around pillars.
- Wipe off dust and dirt from walls, windows, and doors.
- Be thorough about cleaning dirt, scraps, oil, dust, rust, cutting shavings, sand, paint, and other foreign matter from all surfaces.
- Use cleaning detergents when sweeping is not enough to remove dirt.

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Self-Check 1

# Instruction: Say true or False

- 1. The Red-Tag Strategy is a simple method for identifying potentially unneeded items in the factory or workshop
- 2. The first steps for the red-tagging process in a department or work area is launch the red-tag project.
- 3. There are two types of red-tag targets
- 4. Sort is separating of what is needed and what is not needed, and keep only those things that are needed in the workplace.

Note: Satisfactory rating - 2 pointsUnsatisfactory - below 2 pointsYou can ask you teacher for the copy of the correct answers.

**Answer Sheet** 

Score =	 _
Rating: _	 _

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Operation Sheet- 1	Performing red tagging		
PROCEDURE for Perfo	rming red tagging		
Step 1: launch the red-tag project.			
Step 2: identify the red-tag targets.			
Step 3: set red-tag criteria.			
Step 4: make red tags.			
Step 5: attach red tags.			
Step 6: evaluate red-tagged items.			
Step 7: document the results of red-tagging			

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LAP Test	Practical Demonstration		
		Name	
:	Date:		
Time started:	Time finished:		
Instructions: Given necess	ary templates, tools and materials	you are required to	
perform the following tasks within 2 hour.			

Task 1: Performing red tagging

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# List of Reference

- ➢ 5S for operators (1995)
- Journals/publications/magazines
- Job specifications
- Safety Manual and Guide

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N0	Name	Qualification	Region	E.mail
1	Tesfaye Assegidew	MSC in CoTM	SNNPR	tesfayeassegidew@gmail.com
2	Habtamu Wendmagegn	BSc in Civil Eng	Dire Dawa	Joniyitna9@gmail.com
3	Yazachew Geneti	MSc in CoTM	BGRS	0917858176
4	Gebresilasie Jemal	BSc in Con. Tech	Addis Abeba	Gebrajemal@gmail.com
5	Getachew Mohammed	MSC in CoTM	Amhara	Gerimom07@gmail.com
6	Kibryisfaw Tulema	BSc in ConTech	Somalie	kibrutulema@gmail.com

# The Name of trainers who prepared this Learning Guide

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