STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
(NATIONAL OCCUPATIONAL SKILLS STANDARD)

STAINLESS STEEL INSTALLATION - LEVEL 1
STAINLESS STEEL FABRICATION - LEVEL 2
STAINLESS STEEL FABRICATION and INSTALLATION SUPERVISION - LEVEL 3

Jabatan Pembangunan Kemahiran
Kementerian Sumber Manusia, Malaysia

STANDARD PRACTICE

NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR

BUILDING & CONSTRUCTION

STAINLESS STEEL INSTALLATION - LEVEL 1
STAINLESS STEEL FABRICATION - LEVEL 2
STAINLESS STEEL FABRICATION and INSTALLATION SUPERVISION - LEVEL 3

1. INTRODUCTION

This is a revised NOSS for Building & Construction. Following new format stipulated by Jabatan Pembangunan Kemahiran (JPK) under the Stainless Steel Construction. This is a stainless steel NOSS developed for CIDB. There is a high demand for skilled personnel in this field as the industry is developing rapidly. The stainless steel construction works competency requirements to be at par with international construction industry.

Stainless steel construction involves competency in installation and fabrication works. These competencies require trained personnel at NOSS competency level 1, 2 and 3. Having a competent workforce will renounce Malaysia as a centre of excellence in the region and help towards inward investment in the country.

Consequently, the development of this NOSS Level 1, 2 and 3, Stainless Steel Installation and Fabrication are essential to ensure the sub sector will have complete standards and guidelines to be used by the industry.

Stainless steel is recognised globally as a huge growth area and there is a need for properly trained personnel at level 1, 2 and 3 as well as upper levels. This will provide a structured career path and career guidance for individuals and organizations alike. Having a suitably skilled workforce will improve Malaysia as a centre of excellence in the region and help towards inward investment in the country.

Consequently, the development of this NOSS at Level 1, 2 and 3 (*Refer Figure 1.2* Occupational Area Analysis for stainless steel is essential so that the sub sector will have complete standards and guidelines to be used by the industry.

2. PRE-REQUISITES

Based on the workshop findings, it was decided that the minimum requirement for those interested to enrol into this course are as follows:

- 17 years of age or older.
- Good eyesight.
- Medically and physically fit.
- Able to read, write and do simple calculation.

These pre-requisites are in line with minimum requirements set by Construction Industry Development Board (CIDB) and Department of Occupational Safety and Health (DOSH). With respect to the regulating bodies, the role is as follows:

Construction Industry Development Board (CIDB)
As stainless steel is an essential aspect of the construction industry, the Board has taken into concentration all functions related to waterproofing practices. The functions as laid down under subsection 4 (1) of Act 520 are as follows:

- To promote and stimulate the development, improvement and expansion of stainless steel works;
- To advise and make recommendations to the Federal Government and the State Governments on matters affecting or connected with stainless steel works;
- To promote, stimulate and undertake research into any matter related to Signage Works;
- To promote, stimulate and assist in the export of service related to stainless steel works;
- To provide consultancy and advisory services with respect to stainless steel works;
- To promote quality assurance in stainless steel works;
- To initiate and maintain stainless steel works information systems;
- To encourage the standardisation and improvement of stainless steel works techniques and materials;
- To provide, promote, review and coordinate training programmed organized by the public and private construction training centres for skilled construction workers and construction site supervisors;
- To accredit and register contractors and to cancel, suspend or reinstate the registration of any registered contractor; and
- To accredit and certify skilled stainless steel works personnel.

Department of Occupational Safety and Health (DOSH)
As a regulatory body which enforces the occupational safety and health aspects in Malaysia, the role of DOSH is to study and review the policies and legislations of occupational safety and health. This in particular is enforced in risky occupations such as in the Signage Works. The following acts are been enforced by DOSH:

a) Occupational Safety and Health Act 1994 and its regulations.
b) Factories and Machinery Act 1967 and its regulations.
c) Part of Petroleum Act 1984 (Safety Measures) and its regulations.
d) Guidelines, codes of practice, circulars.

With regard to the respective acts, DOSH comes forward to apply the functions as to:

- Conduct research and technical analysis on issues related to occupational safety and health at the workplace.
- Carry out promotional and publicity programs to employers, workers and the general public to foster and increase the awareness of occupational safety and health.
- Carry out promotional and publicity programs to employers, workers and the general public to foster and increase the awareness of occupational safety and health.
- Become a secretariat for the National Council regarding occupational safety and health

3. OCCUPATIONAL ANALYSIS (OA)

SECTOR	BUILDING & CONSTRUCTION		
SUB SECTOR	STRUCTURE & ARCHITECTURE		
LEVEL/ AREA	STAINLESS STEEL INSTALLATION AND FABRICATION		
LEVEL 5	STAINLESS STEEL PLANT MANAGER	STAINLESS STEEL TECHNOLOGIST	
LEVEL 4	STAINLESS STEEL MANUFACTURING QUALITY CONTROLLER	STAINLESS STEEL QUALITY CONTROLLER	
LEVEL 3	STAINLESS STEEL MANUFACTURING SUPERVISOR	STAINLESS STEEL FABRICATION SUPERVISOR	STAINLESS STEEL INSTALLATION SUPERVISOR
LEVEL 2	STAINLESS STEEL MANUFACTURING TECHNICIAN	STAINLESS STEEL FABRICATOR	STAINLESS STEEL INSTALLATION FOREMAN
LEVEL 1	STAINLESS STEEL MANUFACTURING MACHINE OPERATOR	STAINLESS STEEL FITTER	STAINLESS STEEL INSTALLER

Figure 1.1 Occupational structures for Stainless Steel **In**stallation **a**nd Fabrication

4. OCCUPATIONAL AREA ANALYSIS (OAA)

SECTOR	BUILDING & CONSTRUCTION	
SUB SECTOR	STRUCTURE & ARCHITECTURE	
LEVEL/ AREA	STAINLESS STEEL INSTALLATION AND FABRICATION	
LEVEL 5	STAINLESS STEEL PLANT MANAGEMENT	STAINLESS STEEL PROJECT ADMINSTRATION
LEVEL 4	STAINLESS STEEL MANUFACTURING QUALITY CONTROL	STAINLESS STEEL PROJECT COORDINATION
LEVEL 3	STAINLESS STEEL MANUFACTURING SUPERVISION	STAINLESS STEEL FABRICATION AND INSTALLATION SUPERVISION
LEVEL 2	STAINLESS STEEL MANUFACTURING MAINTENANCE	STAINLESS STEEL FABRICATION
LEVEL 1	STAINLESS STEEL MANUFACTURING OPERATION	STAINLESS STEEL INSTALLATION

Figure 1.2 Occupational Area Structure for Stainless Steel Installation and Fabrication

5. DEFINITION OF COMPETENCY LEVEL

The NOSS is developed for various occupational areas. Candidates for certification must be assessed and trained at certain levels to substantiate competencies. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

Malaysia Skills Certificate Level 1: (Operation and Production Level)	Competent in performing a range of varied work activities, most of which are routine and predictable.
Malaysia Skills Certificate Level 2: (Operation and Production Level)	Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy.
Malaysia Skills Certificate Level 3: (Supervisory Level)	Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.
Malaysia Skills Diploma Level 4: (Executive Level)	Competent in performing a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present.
Malaysia Skills Advanced Diploma Level 5: (Managerial Level)	Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation.

6. MALAYSIAN SKILL CERTIFICATION

Candidates after being competent verified and fulfilled Malaysian Skill Certification requirements shall be awarded with Sijil Kemahiran Malaysia (SKM) for Level 1, 2 and 3 as for Level 4 and 5 shall be awarded with Diploma Kemahiran Malaysia and Diploma Lanjutan Kemahiran Malaysia respectively.

Verified competent candidates who fulfil Malaysian Skill Certification requirements shall be awarded with Level 1, 2 and Level 3 certificate.

Assessment must be in accordance with the following:

NOSS outlines competency unit and competency profile in the Stainless Steel working environment as required by the industry and has been developed as well as documented following extensive collaboration across key Malaysian organisations. It is imperative that the duties and tasks outlined follow a high standard as well as consistency throughout the assessment process. This can only be done by stipulating a precise framework in which the assessment of competency unit and curriculum of competency unit must be conducted. The training & assessment of Stainless Steel construction personnel must be committed in accordance with *JPK* policy and in adherence to Building & Construction rigorous process and standard as follows:

a) The final assessment of competency must include the combination of documented continuous assessment conducted by the facilitator during training and the results of post-training examination;
b) The post-training examination must be practical in nature and involve demonstration & application of the duties and tasks utilizing real equipment and real-world examples;
c) The competency and curriculum unit as outlined in this NOSS must be assessed throughout the training program and during a post-training examination;
d) The learning environment and facilities need to be in accordance with the requirements of the Building & Construction;
e) The development and assessment of the competency and curriculum unit profile must demonstrate transferable skills;
f) The development and assessment of the competency unit & competency profile must include documentation by candidates both during training and examination; and
g) All training and assessment materials must be mapped and verified to be in accordance with the NOSS Stainless Steel construction by a panel of industry subject matter experts appointed by JPK with the support of the Building & Construction industry.

7. JOB COMPETENCIES

a) *Stainless Steel Installation* personnel in Level 1 are competent in performing the following core competencies units:-

- Stainless Steel Assembling Works
- Stainless Steel Surface Preparation
- Stainless Steel Site Installation

Optionally *The Stainless Steel Installation* personnel in Level 1 are competent in performing the following Elective competencies:-

- Stainless steel installation hand tools and equipment servicing

b) *Stainless Steel Fabrication* personnel in Level 2 are competent in performing the following core competencies:-

- Stainless Steel Cutting
- Stainless Steel Bending
- Stainless Steel Joining
- Stainless Steel Site Preparation

Optionally *The Stainless Steel Fabrication* personnel in Level 2 are competent in performing the following Elective competencies:-

- Fabrication, machine & equipment servicing

c) *Stainless Steel Fabrication and Installation Supervision* personnel in Level 3 are competent in performing the following core competencies:

- Stainless Steel Work Scheduling
- Stainless Steel Product Fabrication Quality Assurance

Optionally *The Stainless Steel Fabrication and Installation supervision* personnel in Level 3 are competent in performing the following Elective competencies:-

- Supervisory Functions

8. WORKING CONDITIONS

Generally, Stainless Steel personnel work is according to the work schedule and responsible to meet production and client's requirements. The personnel are also responsible to adhere to workplace standard operating procedure and organization work activities, either in workshops and studios or field works. This covers such matters as creativity, skills, training, communication, presentations, meetings, travel and work-life balance. They may work individually or in an industry with supervision by superior.

Personnel also have the opportunity to develop their career path in other related field in terms of technology innovation in sign making industry and enhance their personal and public relation skills.

The Stainless Steel personnel should be able to concentrate on detailed work for long periods and be able to bend, stoop, and weld in awkward positions. They may work outdoors, and must wear special clothing—safety shoes, gloves, and goggles, face shields or hoods, dust mask—to protect self from the intense light created by arcs, hazardous fumes, and spark burns.
The individual must obtain Permit To Work (PTW) from employers to ensure safe working condition. In order to be employed at work, the individual need to be qualified by the employer via.
Good eyesight is needed for visual inspection to check Stainless Steel condition.

9. EMPLOYMENT PROSPECTS

The stainless steel personnel have a high employment prospect whether locally or internationally. This is because the local expertise workforce is recognised by other countries as being highly knowledgeable and skilled in architectural and building industry. This in turn increases the demand for skilled personnel in this field to be employed locally or internationally.

Other related occupations with respect to employment opportunities are:

- Advertising Agency
- Media Agency
- Interior Design
- Construction
- Vocational training
- Civil & Building Consultant
- Civil Contractor

Other related industries with respect to employment opportunities are:

- Education
- Training Centres
- Lecturers
- Facilitators
- Sales and Marketing
- Building Material Supplier

10. SOURCES OF ADDITIONAL INFORMATION

1. Construction Industry development Board (CIDB)
   Tingkat 7, Grand Seasons Avenue, 72, Jalan Pahang,
   53000 Kuala Lumpur
   Tel: 603-2617 0200
   Fax: 603-2617 0220
   Email: cidb@cidb.gov.my
   Web: http://www.cidb.gov.my
   Department of Occupational Safety and Health (DOSH)

2. Ministry of Human Resource,
   Level 2, 3 & 4, Block D3, Complex D
   Federal Government Administrative Centre
   62530 W. P. Putrajaya
   Tel: 603 - 8886 5000
   Fax: 603 - 8889 2443
   Email: jkkp@mohr.gov.my
   Web: http://www.dosh.gov.my

3. Department of Standards Malaysia (Standards Malaysia)
   Century Square, Level 1 & 2, Block 2300, Jalan Usahawan,
   63000 Cyberjaya, Selangor Darul Ehsan, Malaysia
   Tel: 603-8318 0002
   Fax: 603-8319 3131
   Email: central@standardsmalaysia.gov.my
   Web: http://www.standardsmalaysia.gov.my

11. APPROVAL DATE

The National Skills Development Board (MPKK), Ministry of Human Resources has agreed and endorsed this Standard on …….

12. ACKNOWLEDGEMENT

The Director General of DSD would like to extend his gratitude to the organisations and individuals who have been involved in developing this standard

13. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP), COMPETENCY PROFILE CHART (CPC), COMPETENCY PROFILE (CP)

STAINLESS STEEL INSTALLATION - LEVEL 1,
STAINLESS STEEL FABRICATION - LEVEL 2,
STAINLESS STEEL FABRICATION AND INSTALLATION SUPERVISION - LEVEL 3

PANEL		
1.	Mr. Basharudin bin Abdul Hadi	Pensyarah Kanan Universiti Teknologi MARA UiTM Perlis
2.	Mr. Zabri Adil bin Abdullah	QA & QC Manager Zelleco Engineering Sdn. Bhd. Rawang, Selangor
3.	Tn. Haji Razali bin Karim	Project Director, AM RICH Construction & Dev. Sdn. Bhd. Seremban Negeri Sembilan
4.	Mr. Lim Sooi San (Mark)	Senior General Manager, Hoto Stainless Steel Sdn Bhd. Klang, Selangor.
5..	Mr. Loi Chuan Yew	Operation Advisor Chew Hoong Refractory Engineering Sdn. Bhd. Bukit Kemuning, Selangor
6..	Nur Dalila binti Mukhtar	Engineer Atlas Engineering Consultant Batu Caves Selangor
7.	Nur Azeera binti Yusuf	Drafter Atlas Engineering Consultant Batu Caves Selangor
8.	Mr. Ahmad Husaif bin Anuar	Project Coordinator Chew Hoong Refractory Engineering Sdn. Bhd. Bukit Kemuning, Selangor
9.	Raidah Waznah binti ??	Drafter Atlas Engineering Consultant Batu Caves Selangor
10.	Mr. Lim Sze Teck	Director Procomas Sdn. Bhd. Klang, Selangor
FACILITATOR		
11.	Pn. Siti Rohanah Binti Ahmad	CIDB Kuala Lumpur
CO-FACILITATOR		
12.	En. Mohd Fadil bin Muhamad	CIDB Kuala Lumpur
13	En. Mohd Azry bin Mohd Ariffin	CIDB Kuala Lumpur

14. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP), COMPETENCY PROFILE CHART (CPC), COMPETENCY PROFILE (CP)

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15. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP), COMPETENCY PROFILE CHART (CPC), COMPETENCY PROFILE (CP) AND CURRICULUM OF COMPETENCY UNIT (CoCU)

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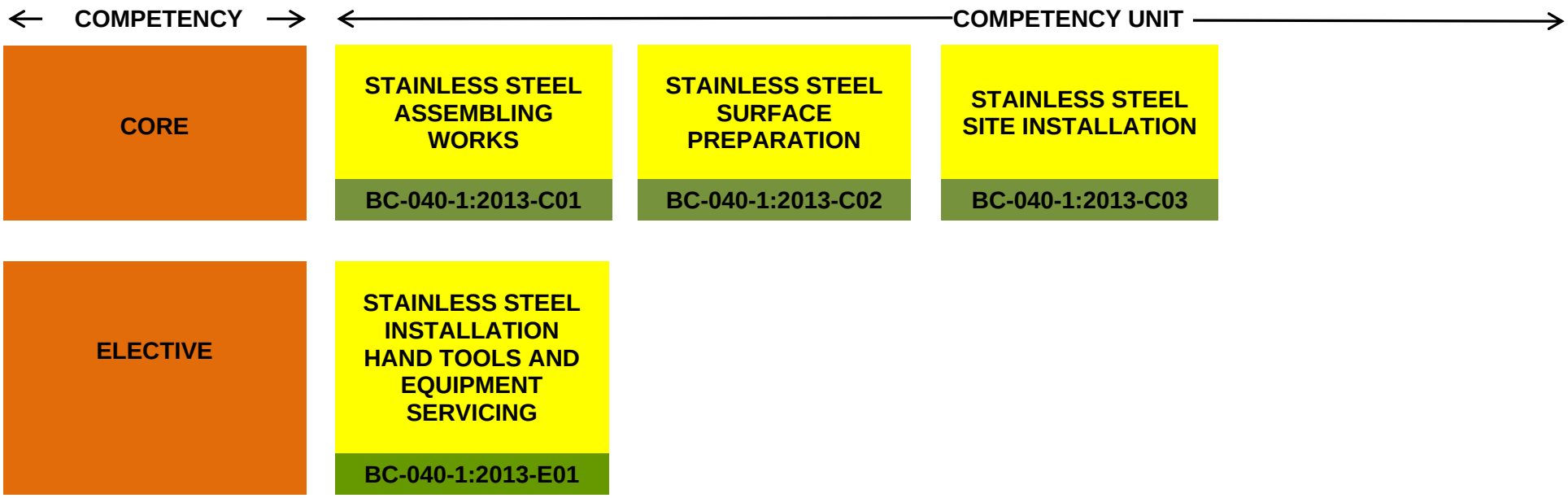
COMPETENCY PROFILE CHART (CPC)

SECTOR	**BUILDING AND CONSTRUCTION**		
SUB SECTOR	**STRUCTURE AND ARCHITECTURE**		
JOB AREA	**STAINLESS STEEL INSTALLATION**		
JOB LEVEL	**LEVEL 1**	**JOB AREA CODE**	



COMPETENCY PROFILE (CP)

Sub Sector	**STRUCTURE AND ARCHITECTURE**			
Job Area	**STAINLESS STEEL INSTALLATION**			
Level	**LEVEL 1**	**JOB AREA CODE**		

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
1. Stainless steel assembling works	**BC-040-1:2013-C01**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel assembling works. The competency requires ability to assemble the stainless steel by knowing the knowledge about the properties of the material. The person who is competent in stainless steel assembly works shall be able **prepare stainless steel assembling works requirements, Perform component installation, check component installation specification, carry out post assembly cleaning, perform product packaging/wrapping and record stainless steel assembling works**	1. Prepare stainless steel assembling works requirements. 2. Perform component installation.	1.1 Specified assembly drawing, packing list, components and toolbox for assembling works collected. 1.2 Specified labelling methods for assembly work are selected. 1.3 Stainless steel assembly workstation are located and set up in accordance with construction safety requirements. 2.1 Specified component work pieces are selected. 2.2 Components work pieces are fixed in accordance with assembly drawing. 2.3 Fixed components are cleaned

	BC-040-1:2013-C01			with specified cleaning agents. 2.4 Jigs are prepared in accordance with product components requirement. 2.5 Joints are welded in accordance with welding method and specification. 2.6 Fastenings are tighten to the required method and specification. 2.7 Components are installed in accordance with drawings and product specification.
			3. Check component installation specification.	3.1 Installation component check list are determined and obtained. 3.2 Component dimension, specification and installation method conformance are inspected. 3.3 Component checklist are filled and compiled as a complete document.

	BC-040-1:2013-C01		4. Carry out post assembly cleaning.	4.1 Specified cleaning agents and components are selected. 4.2 Dust, grease, stain and foreign parts are removed. 4.3 Components surface are cleaned in accordance with cleaning requirement.
			5. Perform product packaging/wrapping.	5.1 Packing materials are prepared in accordance with specified packing list. 5.2 Assembled products are packed in accordance with product specification. 5.3 Works completed are recorded in the product check list. 5.4 Packed products are labelled and store in designated area.
			6. Record stainless steel assembling works.	6.1 Tools used for stainless steel fabrication are separated from others. 6.2 Cleaned tools stored into designated tool

2. Stainless steel surface preparation	**BC-040-1:2013-C02**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel surface preparation. The competency requires ability to know the complete cycle for surface finish and the requirement to fulfill the specification. The person who is competent in stainless steel surface preparation shall be able **Perform stainless steel surface grinding, perform stainless steel surface sanding, perform stainless steel surface buffing, perform stainless steel surface polishing, perform stainless steel surface pickling and perform stainless steel surface passivating**	1. Perform stainless steel surface grinding.	1.1 Job instruction obtained. 1.2 Safety requirements observed and carried out. 1.3 Specified hand tools and grinding materials prepared. 1.4 Technique of grinding observed and applied in the whole grinding process.
			2. Perform stainless steel surface sanding.	2.1 Job instruction obtained. 2.2 Safety requirements observed and carried out. 2.3 Specified hand tools and grit no. of sanding materials are prepared. 2.4 Technique of sanding observed and applied in the whole sanding process.
			3. Perform stainless steel surface buffing.	3.1 Job instruction obtained. 3.2 Safety requirements observed and carried out. 3.3 Specified hand tools and buffing materials from grit 400-600 are

	BC-040-1:2013-C02			prepared. 3.4 Technique of buffing observed and applied in the whole buffing process.
			4. Perform stainless steel surface polishing	4.1 Job instruction obtained. 4.2 Safety requirements observed and carried out. 4.3 Specified hand tools and polishing materials prepared. 4.4 Technique of polishing observed and applied in the whole polishing process.
			5. Perform stainless steel surface pickling	5.1 Job instruction obtained. 5.2 Safety requirements observed and carried out. 5.3 Specified acid bath or paste is prepared. 5.4 Technique of pickling observed and applied in the whole pickling process

	BC-040-1:2013-C02		6. Perform stainless steel surface passivating	6.1 Job instruction obtained. 6.2 Safety requirements observed and carried out. 6.3 Specified acid bath are prepared. 6.4 Technique of passivating observed and applied in the whole passivating process

3. Stainless steel site installation	**BC-040-1:2013-C03**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel site installation. The competency requires ability to know the basic for fitting and knowledge for setting the component. The person who is competent in stainless steel site installation be able to install Stainless Steel structure and architecture install Stainless Steel Fitting and install Stainless Steel Piping	1. Install Stainless Steel structure	1.1 Type of structure which include Beam, Extension, Column, Staircase, Platform and railing installation are identified. 1.2 Types of architecture include architectural facade, railing, frame and curtain wall. 1.3 Structure and architecture installation requirement which include job order, tools, equipment, material and components according to specification are obtained. 1.4 Selected structure and architecture types are installed in accordance to method statement. 1.5 Structures and architectural members installed are checked for alignment and tightening conformity
			2 Install Stainless Steel Fitting	2.1 Installation work order and method statement obtained 2.2 Type of fitting which include Panel, Framing and Skirting installations are identified. 2.3 Fitting and component installation

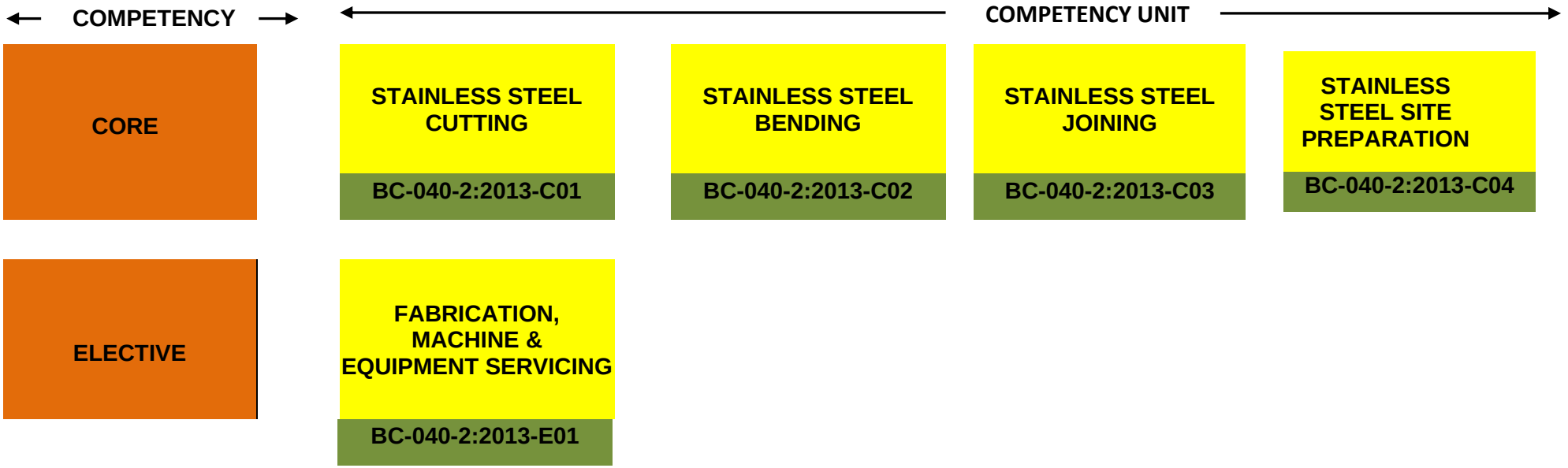
	BC-040-1:2013-C03			tools and equipment are obtained. 2.4 Selected type of fitting and component are installed in accordance to method statement 2.5 Fittings and components installed are checked for alignment and finishing conformity.
			3 Install Stainless Steel Piping	3.1 Work order and method statement were obtained 3.2 Type of piping system which include drainage and plumbing system and component are selected. 3.3 Piping system and component installation tools and equipment are selected 3.4 Piping system and component installation requirements according to specification are checked. 3.5 Piping system and component installed are checked for alignment and connection conformity.

4. Stainless steel hand tools and equipment servicing	**BC-040-1:2013-E01**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel hand tools and equipment servicing The competency requires ability to know the functionality of the hand tools and proper hand tools to use when task been given. The person who is competent in stainless steel hand tools and equipment servicing shall be able to prepare hand tools and equipment servicing requirements, check hand tools and equipment condition , Service hand tools and equipment ,test hand tools and equipment functionality and record serviced hand tools and equipment	1. Prepare hand tools and equipment servicing requirements. 2. Check hand tools and equipment condition. 3. Service hand tools and equipment.	1.1 Specified hand tools servicing equipment are prepared 1.2 Specified hand tools conditions are checked. 1.3 Specified hand tools serviced 1.4 Specified hand tools functionality is tested. 1.5 Service checklist activities recorded. 2.1 Hand tools servicing equipment prepared. 2.2 Hand tools and equipment. 2.3 Test hand tools functionality. 2.4 Record servicing activities. 3.1 Tools are cleaned of dirt and stain 3.2 Tools are greased and oil according to manufacture specification.

	BC-040-1:2013-E01		4. Test hand tools and equipment functionality.	4.1 Worn out consumable parts are replaced with new parts. 4.2 Faulty new parts are reported to supervisor
			5. Record serviced hand tools and equipment.	5.1 Tools used for stainless steel fabrication are separated from others. 5.2 Cleaned tools stored into designated tool

COMPETENCY PROFILE CHART (CPC)

SECTOR	BUILDING AND CONSTRUCTION		
SUB SECTOR	STRUCTURE AND ARCHITECTURE		
JOB AREA	STAINLESS STEEL FABRICATION		
JOB LEVEL	LEVEL 2	JOB AREA CODE	



COMPETENCY PROFILE (CP)

Sub Sector	**STRUCTURE AND ARCHITECTURE**
Job Area	**STAINLESS STEEL FABRICATION**
Level	**LEVEL 2**

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
1. Stainless steel cutting	**BC-040-2:2013-C01**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel cutting (cut, drill & notch) The competency requires ability to know the cutting process meet the requirement of the product. This process is important to get the correct size and as per product specification. The person who is competent in stainless steel cutting (cut, drill & notch) shall be able to prepare stainless steel bending requirements, perform stainless steel cutting, perform stainless steel drilling process, Perform stainless steel notching process and check stainless steel cut (cut, drill & notching) pieces.	1. Prepare stainless steel cutting requirements	1.1 Job instruction including cutting drawing is obtained. 1.2 Safety requirements observed and carried out. 1.3 Cutting equipment and materials are selected. 1.4 All parts and work pieces collected. 1.5 Works station including jigs and clamp are prepared.
			2. Perform stainless steel cutting process.	2.1 The parts for cutting are placed in position. 2.2 The material to be cut is cleaned. 2.3 Cutting equipments are set according to cutting requirements
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	2:2013-C01			2.4 Cutting is carried out according to the specified type of cutting.
			3. Perform stainless steel drilling process.	3.1 Job instruction including drilling drawing is obtained. 3.2 The parts for drilling are placed in position. 3.3 The material to be drilled is cleaned. 3.4 Drilling equipments are set according to requirements 3.5 Drilling are carried out according to the specification as per drawing.
			4. Perform stainless steel notching process.	4.1 Job instruction including notching drawing is obtained. 4.2 The parts for notching are placed in position. 4.3 The material to be notched is cleaned. 4.4 Notching equipments are set according to requirements 4.5 Notching are carried out according to the specification as per drawing.
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	2:2013-C01		5. Check stainless steel cut pieces.	5.1 All drilling and notching conformed to the specification as per job instruction. 5.2 The drilled and notched materials are cleaned.

2. Stainless steel bending	**BC-040-2:2013-C02**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel bending The competency requires ability to understand the fundamental of bending process involved. Type of bending will assign by superior to perform the task. The person who is competent in stainless steel bending shall be able to prepare stainless steel bending requirements, perform stainless steel air bending process (types/method/shape of bending), perform stainless steel bottoming bending process, perform stainless steel bottoming bending process (Roll bending, rotary bending, wiping bending, folding bending, three point bending, Elastomer bending) and check stainless steel bended pieces.	1. Prepare stainless steel bending requirements. 2. Perform stainless steel bending process.	1.1 Job instruction including bending drawing is obtained. 1.2 Safety requirements observed and carried out. 1.3 Bending equipment and materials are selected. 1.4 All parts and work pieces collected. 1.5 Works station including jigs and clamp are prepared. 2.1 Work station space prepared as shop drawing 2.2 Jigs and clamp prepared for parts to be bended and placed in position. 2.3 The material to be bent. 2.4 Bending equipments are set according to bending requirements 2.5 Bending is carried out according to the specified type of bending 2.6 Bending are carried out according to the specification as per drawing.
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	2:2013-C02		3. Check stainless steel bended pieces.	3.1 All bending conformed to the specification as per job instruction. 3.2 The bended materials are cleaned.

3. Stainless steel joining	**BC-040-2:2013-C03**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel joining. The competency requires ability to understand the knowledge of joining and method to use. The person who is competent in stainless steel joining shall be able to perform stainless steel riveting, perform stainless steel fastening, perform stainless steel fastening and perform stainless steel welding.	1. Perform stainless steel riveting	1.1 Job instruction and riveting drawing are obtained. 1.2 Safety requirements are observed and carried out. 1.3 Specified hand tools and riveting materials are prepared. 1.4 Technique of riveting is observed and applied in the whole riveting process.
			2. Perform stainless steel fastening	2.1 Job instruction and fastening drawing are obtained. 2.2 Safety requirements are observed and carried out. 2.3 Specified hand tools and fastening materials are prepared. 2.4 Technique of fastening is observed and applied in the whole fastening process.
			3. Perform stainless steel lamination	3.1 Job instruction and lamination drawing are obtained. 3.2 Safety requirements are observed and carried out.

	BC-040-2:2013-C03			3.3 Specified hand tools and lamination materials including adhesive are prepared. 3.4 Technique of lamination is observed and applied in the whole lamination process.
			4. Perform stainless steel welding	4.1 Job instruction and related drawing collected from source. 4.2 Job instruction, drawing and safety requirements studied as shop drawing requirements. 4.3 Welding equipments and material prepared as per specified welding process. 4.4 Stainless steel welding process carried out in accordance with manufacturer's specification. 4.5 Welded stainless steel joint conformance checked as per shop drawing. 4.6 Stainless steel welding activities recorded according to format.

4. Stainless steel site preparation	**BC-040-2:2013-C04**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel site preparation. The competency requires ability to set up site preparation and the work involved. The person who is competent in stainless steel site preparation shall be able to prepare stainless steel site preparation requirements, prepare temporary storage, coordinate manpower requirements, prepare utility requirements, perform on site survey and structure measurement and record on site survey preparation activities	1. Prepare stainless steel site preparation requirements. 2. Prepare temporary storage.	1.1 Work order and method statement for structural and architectural installation are obtained 1.2 Types of tool, equipment, machinery and component required are selected 1.3 Work instruction is compiled 1.4 Work instruction prepared is signed 2.1 Construction site plan is obtained 2.2 Locations for storage of tool, equipment, machinery and component are identified 2.3 Access to identified storage location is identified 2.4 Approval for proposed storage locations and access method is obtained 2.5 Layout plan for storage and access method are signed

	BC-040-2:2013-C04		3. Coordinate manpower requirements.	3.1 Manpower required is selected 3.2 Manpower to designated work area is identified 3.3 Manpower required to work area is assigned 3.4 Attendance of manpower to designated work area is signed
			4. Prepare utility requirements.	4.1 Utilities required including water, electricity, gas and compressed air are identified. 4.2 Locations of required utilities are determined 4.3 Sources of required utilities are selected 4.4 Proposal for identified sources of required utilities is signed
			5. Perform on site survey and structure measurement	5.1 Approved shop drawings are obtained 5.2 Positions for installation of structure, architectural finished products and fittings are identified

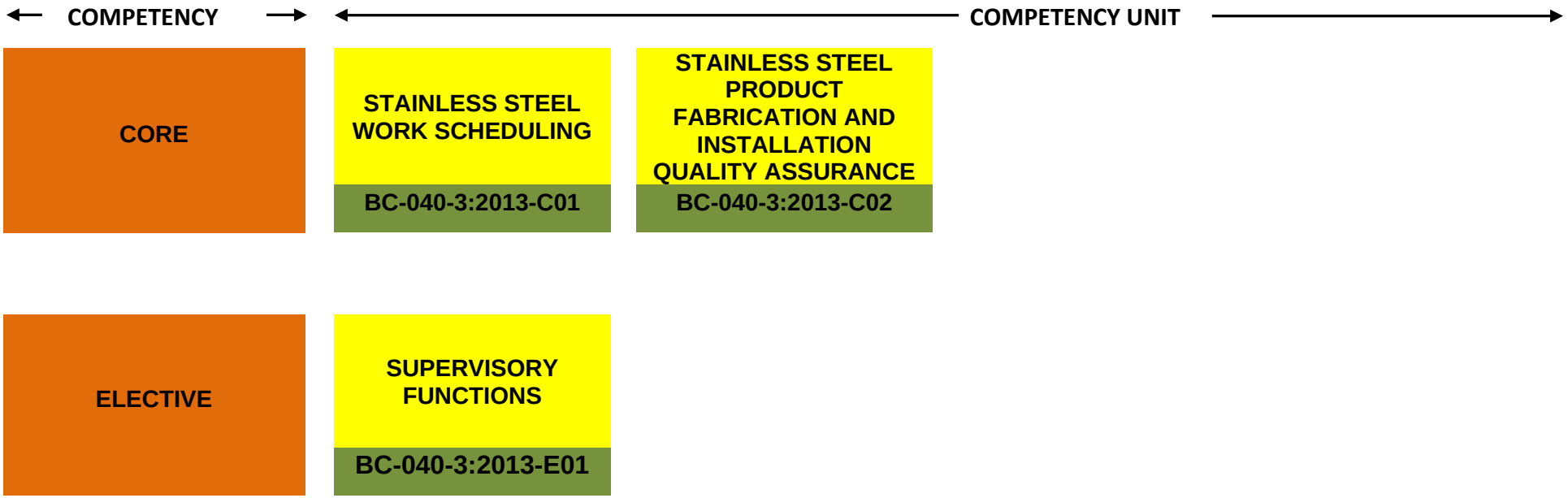
5.Fabrication machine and equipment servicing	**BC-040-2:2013-C04**		6. Record on site survey preparation activities.	5.3 Dimensions and alignment for structure , architectural finished products and fittings are measured 5.4 Discrepancies are identified and reported 6.1 Site survey report activities gathered 6.2 Report on site survey filed according to format

	BC-040-2:2013-E01	This competency unit describes the skills, knowledge and attitude requirements in fabrication machine and equipment servicing. The competency requires ability to service the machine and equipment using the schedule maintenance and checklist given. The person who is competent in fabrication machine and equipment servicing shall be able to prepare fabrication machine and equipment servicing requirements, check machine and equipment condition, serviced fabrication machine and equipment and test serviced fabrication machine, equipment functionality and record servicing activities.	1. Prepare fabrication machine and equipment servicing requirements. 2. Check machine and equipment condition. 3. Service fabrication machine and equipment.	1.1 Servicing check list is prepared. 1.2 Servicing schedule according to machine and equipment specification is prepared. 1.3 Consumable and replacement parts are acquired and labelled. 2.1 Machine and equipment functionality are checked. 2.2 Faulty or worn out machine and equipment parts are reported to supervisor. 3.1 Worn out machine and equipment parts are replaced. 3.2 Any faulty new parts are reported to supervisor. 3.3 Other machine and equipment parts are cleaned, greased and oiled.

	BC-040-2:2013-E01		4. Test serviced fabrication machine and equipment functionality.	4.1 Testing method selected according to machine equipments requirements. 4.2 Testing tools checked for availability and functionality. 4.3 Serviced machine and equipment conformance confirmed in accordance with manufacturer's specification.
			5. Record servicing activities.	5.1 Site survey report activities gathered 5.2 Report on site survey filed according to format

COMPETENCY PROFILE CHART (CPC)

SECTOR	BUILDING AND CONSTRUCTION		
SUB SECTOR	STRUCTURE AND ARCHITECTURE		
JOB AREA	STAINLESS STEEL FABRICATION AND INSTALLATION SUPERVISION		
JOB LEVEL	LEVEL 3	JOB AREA CODE	



COMPETENCY PROFILE (CP)

Sub Sector	**BUILDING AND CONSTRUCTION**
Job Area	**STRUCTURE AND ARCHITECTURE**
Level	**LEVEL 3**

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
1. Stainless steel work scheduling	**BC-040-3:2013-C01**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel work scheduling. The competency requires ability to prepare work scheduling according to job description. The schedule will be analyzed by the job requirement. The person who is competent in stainless steel works scheduling shall be able to gather work order information, analyzed work requirements, prepare work schedule and assign stainless steel work production.	1. Gather work order information. 2. Analyzed work requirements.	1.1 Meeting schedule and agenda are prepared. 1.2 Target group informed. 1.3 Previous minutes confirmed. 1.4 Minute of meeting are recorded and distributed. 2.1 KPI are developed. 2.2 KPI requirements are communicated and made understood. 2.3 Staff performances are reviewed. 2.4 Appraisal is conducted and staffs are graded. 2.5 Improvement areas are discussed and recorded.

	BC-040-3:2013-C01		3. Prepare work schedule.	3.1 Type and quantum of manpower requirements is established. 3.2 Distribution of manpower is determined. 3.3 Man power prioritization is determined.
			4. Assign stainless steel work production.	4.1 Type and quantity of stainless steel material production requirements is established. 4.2 Stock requisition is determined. 4.3 Stock inventory is coordinated. 4.4 Material production prioritization is determined.

2. Stainless steel product fabrication and installation quality assurance	**BC-040-3:2013-C02**	This competency unit describes the skills, knowledge and attitude requirements in stainless steel product fabrication and installation quality assurance. The competency requires ability to understand the fundamental of SOP and the requirement set by product specification. The person who is competent in stainless steel product fabrication and installation quality assurance shall be able to gather quality conformance information, check design conformance, check process compliance, check final product conformance and update quality assurance report.	1. Gather quality conformance information.	1.1 Shop drawing is obtained 1.2 SOP is determined 1.3 Product standard is acquired 1.4 Material origin is determined 1.5 Testing standard requirements specified.
			2. Check design conformance.	2.1 Fabricated parts are as specified in accordance with shop drawing. 2.2 Component is fitted as specified in accordance with shop drawing. 2.3 Product dimension are as specified in accordance with shop drawing.
			3. Check process compliance.	3.1 Works are carried out in accordance to SOP. 3.2 Safety requirements are observed and complied.

	BC-040-3:2013-C02		4. Check final product conformance.	4.1 Feedback from QC Department is obtained. 4.2 Sampling test conducted in accordance with QC requirements. 4.3 Any non-conformity reported.
			5. Update quality assurance report.	5.1 Quality assurance information obtained 5.2 Quality assurance report format selected. 5.3 Quality assurance report finalized in accordance with organizational requirements.

3.Supervisory Functions	**BC-040-3:2013-E01**	This competency unit describes the skills, knowledge and attitude requirements in supervisory functions. The competency requires ability to supervise the project in accordance to the client requirement. This include the monitoring the progress and the manpower requirement. The person who is competent in supervisory functions shall be able to conduct section meeting, prepare appraisal report, plan manpower requirement, plan stainless steel material production, coordinate machine and equipment servicing, conduct on job training, prepare production documentation, conduct staff coaching and counselling, coordinate waste disposal, coordinate production improvision and coordinate project work progress	1. Conduct section meeting. 2. Prepare appraisal report. 3. Plan Manpower requirement.	1.1 Meeting schedule and agenda are prepared. 1.2 Target group informed. 1.3 Previous minutes confirmed. 1.4 Minute of meeting are recorded and distributed. 2.1 KPI are developed. 2.2 KPI requirements are communicated and made understood. 2.3 Staff performances are reviewed. 2.4 Appraisal is conducted and staffs are graded. 2.5 Improvement areas are discussed and recorded. 3.1 Type and quantum of manpower requirements is established. 3.2 Distribution of manpower is determined. 3.3 Man power prioritization is

	BC-040-3:2013-E01			determined.
			4. Plan stainless steel material production.	4.1 Type and quantity of stainless steel material production requirements is established. 4.2 Stock requisition is determined. 4.3 Stock inventory is coordinated. 4.4 Material production prioritization is determined.
			5. Coordinate machine and equipment servicing.	5.1 Maintenance schedules are acquired. 5.2 Responsible parties are identified. 5.3 Machine and equipment servicing prioritization is established. 5.4 Notification for machine and equipment servicing are disseminated. 5.5 Machine and equipment servicing done are recorded.

	BC-040-3:2013-E01		6. Conduct on job training.	6.1 Improvement requirements for every staff are identified and notified. 6.2 On job training schedule is prepared 6.3 Competency of on job training is verified. 6.4 On job training completion are recorded.
			7. Prepare production documentation.	7.1 Stainless steel production processes are identified. 7.2 Production worksheets are generated.
			8. Conduct staff coaching and counselling.	8.1 Improvement requirements for every staff are identified and notified. 8.2 Coaching and counselling schedule are prepared. 8.3 Effectiveness of coaching and counselling provided are verified. 8.4 Coaching and counselling completion are recorded.

	BC-040-3:2013-E01		9. Coordinate waste disposal.	9.1 Types of waste are segregated. 9.2 Method of waste disposal is identified. 9.3 Waste disposals are assigned and carried out. 9.4 Waste disposal documentation are recorded.
			10. Coordinate production improvision.	10.1 Continuous improvement areas are identified. 10.2 Task force are identified and appointed. 10.3 Scope of work are identified and delegated. 10.4 Production improvision is monitored. 10.5 Production improvision is recorded.