



CORE CURRICULUM

for

MASONS

(Brick work, Block work & Stone work)

National Vocational & Technical Education Commission (NAVTEC)

Prime Minister Secretariat, Islamabad.



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Introduction

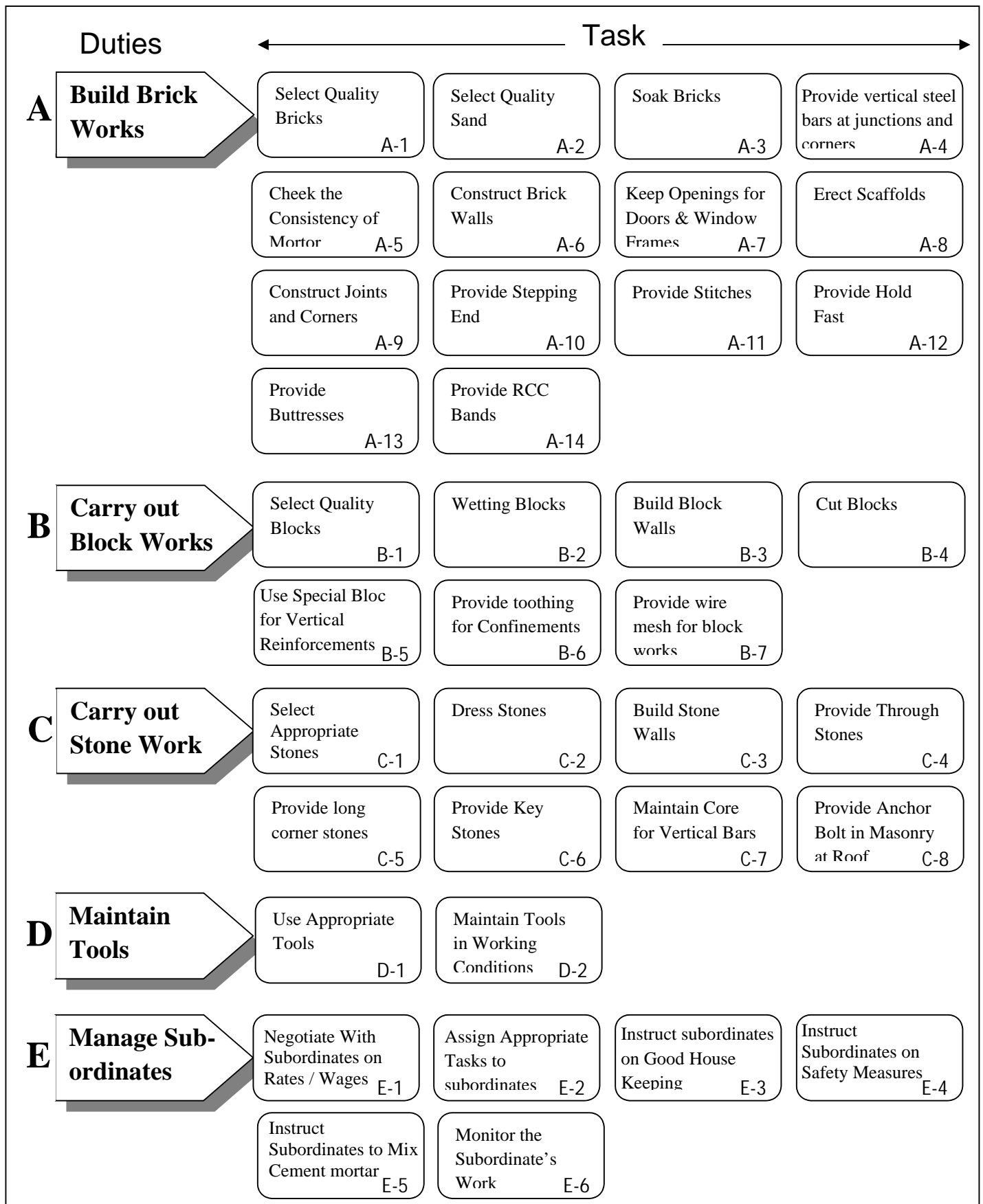
This is the basic document developed for training the craftsmen of the Masonry Occupation in the areas of Brick work, Block work and Stone work. The main objective of this document is to provide an idea to any body on the Content of this Course.

In this document, a page or several pages have been allocated to mention the following details of each and every module.

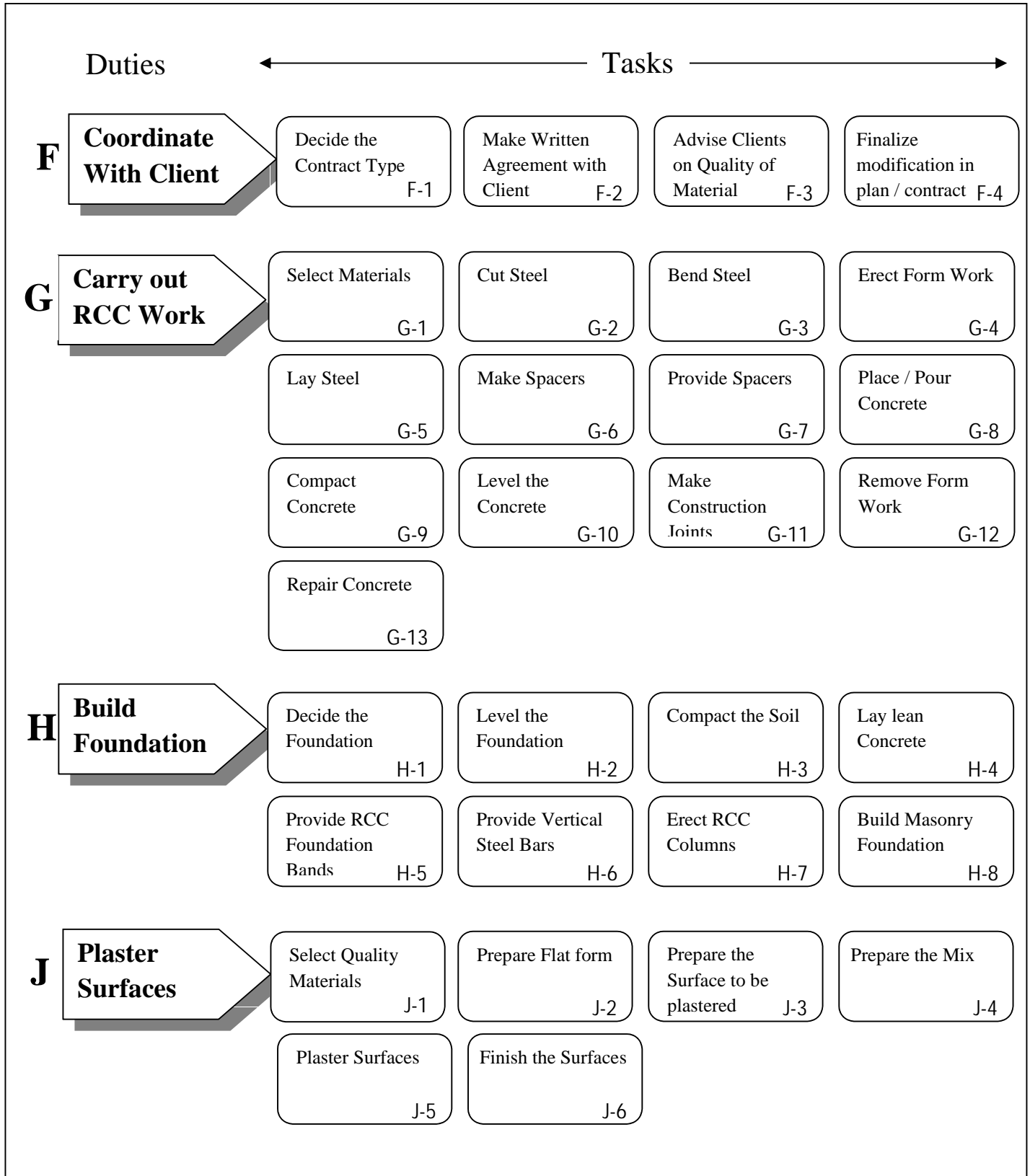
- The task related to the module.
- The Standards which have to be maintained in performing them.
- The basic knowledge required to perform them.
- The tools, machines and training aids required to complete the module.
- The time recommended for completing the module.

The task and standards have not been identified for the basic modules, BM-01 & BM-02 and the instructor can decide them according to his/her wish.

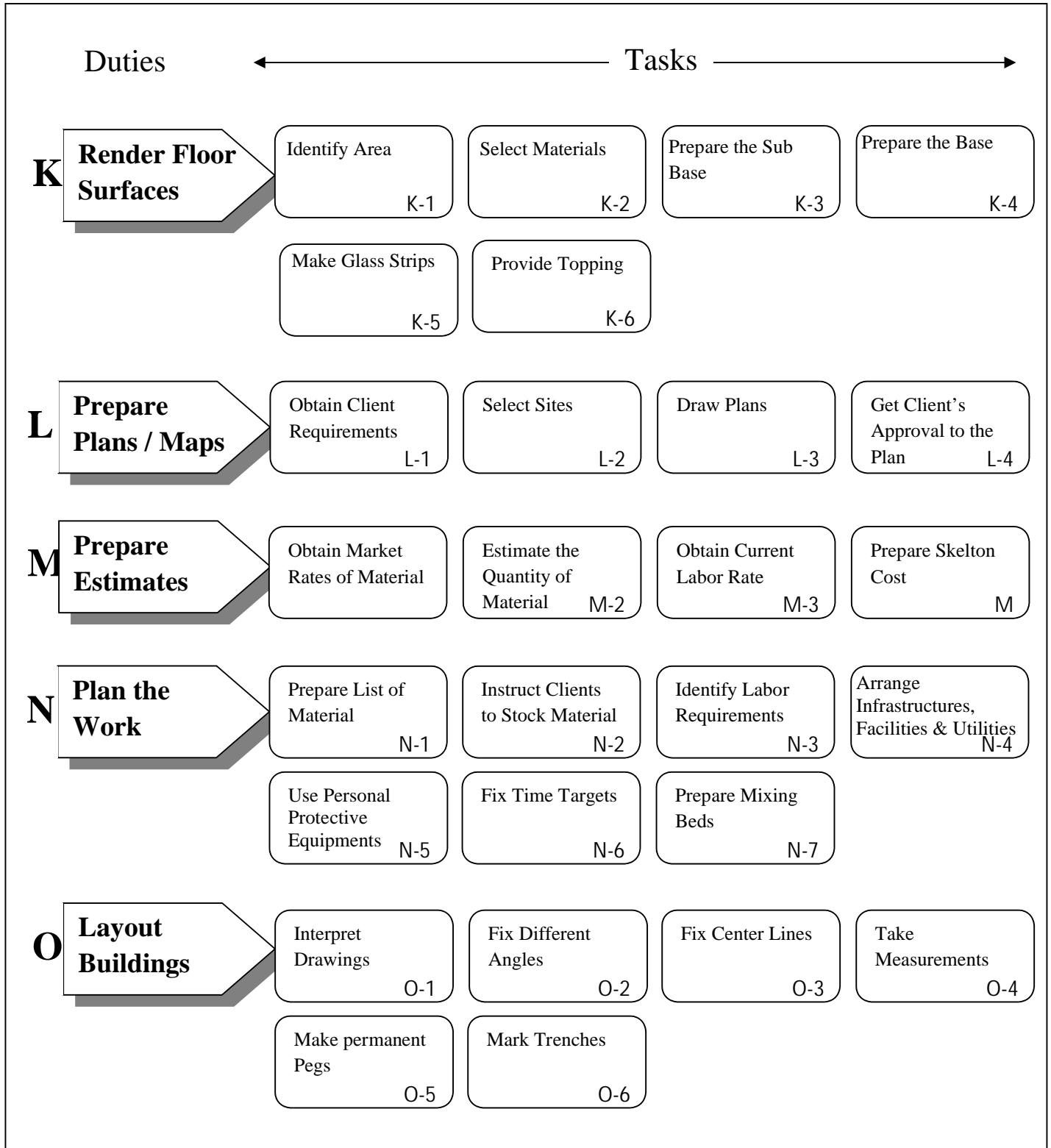
RESEARCH CHART FOR MASONS (Brick work, Block work & Stone work)



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Relationship between Qualifications and Modules

Qualification		Modules have to be followed
i	F45PS002Q1G III	BM ₁ + BM ₂ + M-1 + M-2 + M-3 + M-4 + M-5 + M-6 + M-7 + M-8
ii	F45PS002Q2G II	BM ₁ + BM ₂ + M-1 + M-2 + M-3 + M-4 + M-5 + M-6 + M-7 + M-8 + M-9 + M-10 + M-11 + M-12
iii	F45PS002Q3G I	BM ₁ + BM ₂ + M-1 + M-2 + M-3 + M-4 + M-5 + M-6 + M-7 + M-8 + M-9 + M-10 + M-11 + M-12 + M-13 + M-14 + M-15 + M-16

Relationship between Competency Standards Units and Curriculum Modules

Competency Standards Unit Numbers and Titles	Corresponding curriculum Module / s Number and Titles	Grade Level	Remarks
	Basic Module no.01 (BM ₁)	-	This module is an optional one. It helps to improve the competencies on numerical required by a Mason.
	Basic Module no.02	-	This module helps to improve the competencies on reading and understanding a simple drawing, required by a mason.
F45PS002U01, Carry out Brick Work	M-1, Construction of Straight Brick walls	III	
	M-2, Construction of Corners and junctions of Brick walls.	III	
F45PS002U02, Carry out Block Work	M-3, Block Work	III	
F45PS002U03, Carry out Stone Work	M-4, Stone Work.	III	
F45PS002U04, Maintain Tools	M-5, Maintenance of Tools	III	
F45PS002U05, Manage Subordinates	M-6, Handling Subordinates	III	

F45PS002U06, Co-ordinate with clients	M-7, Co-ordination with clients	III	
	M-8, scaffolding		This module help to gain the competencies on erecting scaffoldings (Independent type)
F45PS002U07, Carry out Reinforced cement concrete works	M-9, RCC work	II	
F45PS002U08, Build Foundation	M-10, Foundations	II	
F45PS002U09, Plaster Surfaces	M-11, Plastering work	II	
F45PS002U10, Render Floor Surfaces	M-12, Rendering Work	II	
F45PS002U11, Prepare plan / map	M-13, Preparation of plan	I	
F45PS002U12, Prepare Estimates	M-14, Estimating	I	
F45PS002U13, Plan the works	M-15, Work planning	I	
F45PS002U14, Layout buildings	M-16, Setting out works	I	

Program Structure

Occupation: Mason (Brick Work, Block Work, Stone Work)

Competency Area (Duty)	Module No:	Module Title	Tasks	Recommended Time (Hours)
Perform four basic mathematical operations	BM-01	Basic Module No. 01 (optional)	Competencies on doing four basic mathematical operations and Knowledge on Imperial & Metric System.	18
Read & understand the Simple drawings	BM-02	Basic Module No. 02	Competencies on reading and understanding a simple drawing.	24
A Build Brick Work	M-01	Construction of Straight Brick Walls	A-01 A-02 A-03 A-05 A-06 A-07	58
	M-02	Construction of Brick Corners and Junctions	A-09 A-10 A-11 A-12 A-13	83
B Carry out Block work	M-03	Block Work	B-01 B-02 B-03 B-04 B-05 B-06 B-07	35
C Carry out Stone Work	M-04	Stone work	C-01 C-02 C-03 C-04 C-05 C-06 C-07 C-08	40
D Maintain tools.	M-05	Maintenance of tools	D-01 D-02	08

Program Structure

Occupation: Mason (Brick Work, Block Work, Stone Work)

Competency Area (Duty)	Module No:	Module Title	Tasks	Recommended Time (Hours)
E Manage Subordinates.	M-06	Handling Subordinates	E-01 E-02 E-03 E-04 E-05 E-06	10
F Co-ordinate with Clients	M-07	Co-ordination with Clients	F-01 F-02 F-03 F-04	30
	M-08	Scaffoldings	A-08	20
G Carry out Reinforced Cement Concrete Work	M-09	RCC Work	G-01 G-02 G-03 G-04 G-05 G-06 G-07 G-08 G-9 G-10 G-11 G-12 G-13	60
H Build Foundations	M-10	Foundations	H-01 H-02 H-03 H-04 H-05 H-06 H-07 H-08	30
J Plaster Surfaces	M-11	Plastering Work	J-01 J-02 J-03 J-04 J-05 J-06	22

Program Structure

Occupation: Mason (Brick Work, Block Work, Stone Work)

Competency Area (Duty)	Module No:	Module Title	Tasks	Recommended Time (Hours)
K Render Floor Surfaces	M-12	Rendering Work	K-01 K-02 K-03 K-04 K-05 K-06	38
L Prepare Plan/Map	M-13	Preparation of Plan	L-01 L-03 L-03 L-04	60
M Prepare Estimates	M-14	Estimating	M-01 M-02 M-03 M-04	80
N Plan the work.	M-15	Work Planning	N-01 N-02 N-03 N-04 N-05 N-06 N-07	20
O Plan the work.	M-16	Setting out works	O-01 O-02 O-03 O-04 O-05 O-06	32

Occupation: Mason
(Brick work, Block work & Stone work)

Competency Area: Build Brick walls - G III

Module Title: Construction of Straight Brick walls

Performance objective: After completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standards and specifications given under “standard” column.

Tasks to be performed:

Task No.	Task	Standards	Suggested Training / Learning Activities
A-01	Select Quality Bricks	At the end of task A-01, <ul style="list-style-type: none"> Him / her self is made fully aware on the qualities and specifications of bricks such as size, color, shape and finish of the bricks. Strength of the bricks is assured through informal tests. 	<ul style="list-style-type: none"> Brief awareness on the qualities and specifications of bricks and sand Skill demonstration on how to select quality bricks and sand Conducting informal test related to this area
A-02	Select Quality Sands	At the end of task no A-02, <ul style="list-style-type: none"> Him/herself is be fully made aware on the qualities and specifications of sand such as particle size and cleanliness of sand. Cleanliness and amount of bulking is checked and assured through informal tests. 	
A-03	Soak bricks	At the end of task no A-03, <ul style="list-style-type: none"> Him/herself is be fully made aware on the qualities and specifications of sand such as particle and cleanliness of sand. Cleanliness and amount of bulking is checked and assured through informal tests. 	<ul style="list-style-type: none"> Giving reasons on why the bricks are soaked before using them. Skills demonstration on soaking bricks
A-05	Check the Consistency of mortar	At the end of task no A-05, <ul style="list-style-type: none"> The consistency of cement & sand motor is checked through informal tests to assure the suitability for the work. 	<ul style="list-style-type: none"> Skill demonstration on checking the consistency of cement & sand mortar.

A-06	Construct Brick Walls	<p>At the end of the task No A-06</p> <ul style="list-style-type: none"> • The brick wall is located at appropriate location. • 4 ½" thick brick wall is constructed according to the English bond pattern. • 9" thick brick wall is constructed according to the English bond Pattern. • 9" thick brick wall is constructed according to the Flemish bond. • 13 ½" thick brick wall is constructed according to the English bond. • 18" thick brick wall is constructed according to the English bond pattern. • The measurements of the wall are equal to the measurements given in Drawing /Plan/ Map with the tolerance of ± ½". • All the courses of the wall are laid horizontally with the thickness of 3". • The surfaces of the walls are ranged within the tolerance of ± ¼". • All brick walls are cleaned. • The surfaces of the walls are plumbed with in the tolerance of ± ¼". • Thicknesses of all vertical and horizontal grooves are 3/8". • The walls and its surrounded area are cleaned. • RCC bands are provided at plinth, sill, lintel and roof levels. • Buttresses are provided for the walls longer than 12 times the thickness of the wall. 	<ul style="list-style-type: none"> • Briefing session on the bond patterns, English and Flemish • Skill demonstration on building following walls respectively <ul style="list-style-type: none"> - 4 ½" thick - English bond - 9" thick - English bond - 13½" thick - English bond - 18" thick - English bond - 13½" thick - Flemish bond • Skill demonstration on providing a RCC band and a buttress for the brick wall.
A-07	Keep opening for doors & windows	<p>At the end of the task No A-07,</p> <ul style="list-style-type: none"> • Openings for doors & windows frames are made at the locations at least 2feet a part from corners / junctions and with the dimensions according to the Drawings / Plan / Maps. • The openings for the door and window frames are located at minimum 2 ft away from corners and junctions. 	<ul style="list-style-type: none"> • Skill demonstration on providing on opening for a door/window

Related knowledge for the Module

- Types of bricks and their standard measurements and specifications.
- Standards and specifications of sand.
- Characters of bricks and sand and the field tests can be performed to identify such characters.
- The reason for soaking bricks.
- The required consistency of cement sand mortar and the field tests can be used to check the consistency.
- English and Flemish bonds.
- Notations, Abbreviations, Symbols used to indicate the brick works in Drawings/Plans / Maps.
- The tools and implements used to construct brick walls.
- Safety precautions to be followed while constructing brick walls.
- The advantages and disadvantages of various bond pattern.
- Load bearing and non load bearing walls.
- Providing openings, size limitation and location for door and window frames.
- RCC band, their locations, sizes, types of materials required, reinforcement and there applications.

Pre Requisite

- Taking and reading measurements.
- Ability to use appropriate tools and implements.
- Ability to mix cement sand mortar.
- Ability to erect the scaffoldings in small scale.
- Ability to work on scaffoldings at higher level.

List of tools, Equipments, teaching and learning material for the module

Tools

- | | |
|----------------------------|--|
| • Gauge box | • Leveling rod (Guz) |
| • Shovel | • Brick hammer (Teshi) |
| • Pans (Tagari) | • String (Sutar) |
| • Mortor boards | • Tri square and Builders Square (Gunya) |
| • Masonry trowel (karandi) | • Brush |
| • Pointing trowel | • Measuring tape “30m and 3m” (Fita) |
| • Float (Garmala) | • Levels Spade (Belcha) |
| • Plumb bob (Saal) | • Wheel barrows (Rairy) |

Teaching and Learning Materials

- Hand outs prepared (including the knowledge parts mentioned earlier in this module) work sheets including exercises or assignments, Construction drawings, Bricks samples in various sizes and types, Wall charts or photographs including bond pattern, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flip Chart Stand, White /Black boards, Markers.

Recommended Time: 58 Hours

Occupation: Mason
(Brick work, Block work & Stone work)

Competency Area: Build Bricks Walls - G III

Module Title: Construction of Brick Corners and Junctions.

Performance objective: After completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standards and specifications given under “standard” column.

Tasks to be performed:

Task No.	Task	Standards	Suggested Training / Learning Activities
A-09	Construct Joints and Corners	<p>At the end of task A-09,</p> <ul style="list-style-type: none"> • Corners and junctions are at appropriate places. • 4 ½” width right angle corner is built according to the English bond. • 4 ½”x 4 ½”, T junction is built according to the English bond. • 9” width right angle corner is built according to the English bond. • 9”x9” T junction is built according to the English bond. • 13 ½” width right angle corner is built according to the English bond. • 13 ½”x13 ½” T-Junction is built according to the English bond. • 9” width right angle corner is built according to the Flemish bond. • 9”x9” T-Junction is built according to the Flemish bond. • The measurements of the walls are equal to the measurements given in the Drawing / Plan / Map with the tolerance of ± ½”. • All the courses of the wall are laid horizontally with the thickness of 3”. • The surface of the wall are ranged within the tolerance of ± ½”. • All brick walls are cleaned. • The surface of the walls are plumbed within the tolerance of ± ¼”. • The thicknesses of all vertical 	<ul style="list-style-type: none"> • Skill demonstration on building following junctions / corners respectively <p><u>English bond</u></p> <ul style="list-style-type: none"> - 4½ “ width right angle corner - 4½” x 4½” Tee junction - 9” width right angle - 9” x 9” Tee junction - 13½” width right angle - 13½” x 13½” Tee junction <p><u>Flemish bond</u></p> <ul style="list-style-type: none"> - 9” width right angle corner - 9” x 9” width Tee junction <ul style="list-style-type: none"> • Skill demonstration on providing a core at a corner of the brick wall after a briefing session.

A-10	Provide Steeping End	<p>and horizontal grooves are 3/8".</p> <ul style="list-style-type: none"> • The walls and its surrounded area are cleaned. • A Core is provided at each corner / junction to accommodate vertical steel bars. • A core is filled with concrete. <p>At the end of task no A-10,</p> <ul style="list-style-type: none"> • A stepping is provided at each corner / junctions to accommodate the straight wall. 	<ul style="list-style-type: none"> • Skill demonstration on providing a steeping end.
A-11	Provide Stitches	<p>At the end of task no A-11,</p> <ul style="list-style-type: none"> • Stitches are provided at right angle and T-junctions. 	<ul style="list-style-type: none"> • Skill demonstration on providing a stitch.
A-12	Provide Holdfast	<p>At the end of task no A-12,</p> <ul style="list-style-type: none"> • Holds fast are provided to the door and windows frame at suitable intervals. 	<ul style="list-style-type: none"> • Skill demonstration on providing a hold test
A-13	Provide Buttresses	<p>At the end of task no A-13,</p> <ul style="list-style-type: none"> • Buttress walls are provided to the unsupported walls when its length is more than 12 times of thickness. • Buttress wall and main wall are built with together. • The width of the buttress is decided taking into consideration the height and the thickness of the main wall. 	<ul style="list-style-type: none"> • Introduction on providing buttress walls • Skill demonstration on constructing buttress walls.

Related knowledge for the Module

- Types of bricks and their standard measurements and specifications.
- Standards and specifications of sand.
- Characters of bricks and sand and the field tests can be performed to identify such characters.
- The reason for soaking bricks.
- The required consistency of cement sand mortar and the field tests can be used to check the consistency.
- English and Flemish bonds.
- Notations, Abbreviations, Symbols used to indicate the brick works in Drawings/Plans / Maps.
- The tools and implements used to construct brick walls.
- Safety precautions to be followed while constructing brick walls.
- The advantages and disadvantages of various bond pattern.
- Load bearing and non load bearing walls.
- Providing openings for door and window frames.
- Steeping end & its usage.
- Stitches & its usage.
- Hold fasts & its usage.
- Characters of buttresses, height to width ratio and its application.

List of Tools, Equipments, Teaching and learning material for the module

Tools

- Gauge box
- Shovel
- Pans (Tagari)
- Motor boards
- Masonry trowel (karandi)
- Pointing trowel
- Float (Garmala)
- Plumb bob (Saal)
- Wheel barrow (Rairy)
- Leveling rod (Guz / Gaz)
- Brick hammer (Teshi)
- String (Sutar)
- Tri square and Builders Square (Gunya)
- Brush
- Measuring tape "30m and 3m" (Fita)
- Levels Spade (Belcha)

Teaching and Learning Materials

- Hand outs prepared (including the knowledge parts mentioned earlier in this module) work sheets including exercises or assignments, Construction drawings, Bricks samples in various sizes and types, Wall charts or photographs including bond pattern, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flip Chart Stand, White /Black boards, Markers.

Recommended Time: 83 Hours

Occupation: Mason
(Brick work, Block work and Stone work.)

Competency Area: Carry out Block work - G III

Module Title: Block Work

Performance objective: After the completion of this module, the trainee will be able to perform each task mentioned under the “task” column according to the standards and specifications given under “Standards” column.

Tasks to be performed:

Task No.	Task	Standards	Suggested Training / Learning Activities
B-01	Select quality blocks	At the end of the task no B-01, <ul style="list-style-type: none"> • Him/her self is made fully aware on the quality of blocks and their appropriate usage. • The qualities of the blocks such as shape and edges are checked to get assure the quality. • Each and every block to be used and checked assured that there are no any damages or cracks. 	<ul style="list-style-type: none"> • Briefing session on the qualities of blocks their usages and the bond pattern used.
B-02	Wetting block	At the end of task no B-02, <ul style="list-style-type: none"> • Him/her self is made fully aware on the necessity of wetting block before use. • Entire surface of the blocks are wetted 	<ul style="list-style-type: none"> • Skill demonstration on wetting blocks
B-03	Build Block wall	At the end of task No B-03, <ul style="list-style-type: none"> • The block wall is located at appropriate place according to the Drawing/Plan/Map or instructions. • Right angle block wall is constructed • ‘T’ junction block wall is constructed. • The measurements of the wall are equal to the measurements given in Drawing/plan/map with the tolerance of $\pm\frac{1}{2}$ “. • All the courses of the wall have uniform thickness. • The surface of the wall are laid 	<ul style="list-style-type: none"> • Skill demonstration on constructing the following junctions and corners <ul style="list-style-type: none"> - Right angle - Tee junction • Skill demonstration on providing the following respectively. <ul style="list-style-type: none"> - A core at a junction / corner - A RCC bond - A Stitch - A buttress wall - Another bolts

		<p>vertically and are plumbed within the tolerance of $\pm 1/4$"</p> <ul style="list-style-type: none"> • The surface of the walls are ranged within the tolerance of $\pm 1/4$" • Thicknesses of vertical and horizontal grooves are maintained as $1/2$" • The walls and its surrounded area are cleaned. • The measurements of the wall are equal to the measurements given in drawings/plan/maps. • A core is provided at each corner/junction to accommodate vertical steel bars. • RCC bands are provided at plinth, sill, lintel, and roof levels. • Stitches are provided at junctions and corners at every 2 ft intervals. • Anchor bolts are provided at top corners to facilitate the trusses. • Buttresses are provided for walls longer than 12 times the thickness of wall. 	
B-04	Cut blocks	<p>At the end of task no B-04,</p> <ul style="list-style-type: none"> • The cutting line is marked according to the required measurements on all the surfaces of the block clearly. • The block is cut along the line marked having the clean cut and without any damage. 	<ul style="list-style-type: none"> • Skill demonstration on cutting a block
B-05	Use special block for a vertical reinforcements	<p>At the end of task No B-05</p> <ul style="list-style-type: none"> • His/her self is made fully aware on special block and their usage. • Special blocks are fixed at junctions and corners. 	<ul style="list-style-type: none"> • Briefing session on the features of the special blocks and their usage.
B-06	Provide wire mesh for block work	<p>At the end of the task No B-06</p> <ul style="list-style-type: none"> • The cutting line is marked on the wire mesh according to the measurements. • Wire mesh is cut along the cutting line marked and having the cleaned edges. • Wire mesh is laid /fixed at appropriate positions/or every three course intervals. • Wire mesh is covered with concrete. 	<ul style="list-style-type: none"> • Briefing session on the usage of wire mesh for block work. • Skills demonstration on providing wire mesh constructed with blocks.
B-07	Provide Tothing for confinement	<p>At the end of task No B-07</p> <ul style="list-style-type: none"> • Tothing is provided at the openings considering the size of the openings 	<ul style="list-style-type: none"> • Skill demonstration on providing tothing.

Related Knowledge for the module

- Types of blocks and bond pattern.
- Standard sizes of blocks and their strength.
- Bond patterns have to be followed in constructing joints and corners.
- Qualities of the blocks.
- The matters to be considered when block work is constructed.
- The reasons for wetting blocks.
- The mortar for mix used for block work.
- Notations, Abbreviations, symbols used to indicate the block work in Drawings/Plan/Maps.
- Safety precautions to be followed while constructing block walls.
- Load bearing and non load bearing walls.
- Providing openings for door and window frames.(Location of openings at least 2ft from the corners / junctions. Sizes limited to seismic requirements.
- Requirement of Buttresses for long walls.
- Cutting blocks.
- RCC bands, their location, sizes, types of materials required, reinforcement and their applications
- Stitches, location, size and their applications.
- Special blocks and their applications.
- Wire mesh used.

Prerequisite

- Taking and reading measurements.
- Ability to use appropriate tools and implements.
- Ability to work on scaffoldings (working pads at higher level)

List of Tools, Equipment, Teaching and Learning Material to the module

Tools

- | | |
|----------------------------|---|
| • Gauge box | • Leveling rod (Guz / Gaz) |
| • Shovel | • Brick hammer (Teshi) |
| • Pans (Tagari) | • String (Sutar) |
| • Mortar boards | • Tri square and Builders Square (Gunya) |
| • Masonry trowel (karandi) | • Brush, Measuring tape “30m and 3m” (Fita) |
| • Pointing trowel | • Levels Spade (Belcha) |
| • Float (Garmala) | • Wheels barrow (Rairy). |
| • Plumb bob (Saal) | |

Teaching and Learning Materials

- Hand outs prepared (including the knowledge parts mentioned earlier in this module) work sheets including exercises or assignments, Construction drawings, Blocks samples in various sizes and types, Wall charts or photographs including bond pattern, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flip Chart Stand, White /Black boards, Markers.

Recommended Time: 35 Hrs

Occupation: Mason
(Bricks works, Block work and Stone work)

Competency Area: Carry out Stone Work - G III

Module Title: Stone Work

Performance objective: After the completion of this module, the trainee will be able to perform each task mentioned under the “task” column according to the standards and specifications given under “Standards” column.

Tasks to be performed:

Task No.	Task	Performance Standards	Suggested Training / Learning Activities
C-01	Select appropriate stone	<p>At the end of task C-01</p> <ul style="list-style-type: none"> • Stones are selected in considering following qualities <ul style="list-style-type: none"> ○ Having regular shapes likes rectangle / Square. ○ Having bluish color. ○ Having dressed properly. 	<ul style="list-style-type: none"> • Briefing the qualities of the stone expected / required • Assignments can be given to trainees to select stones on predetermined aspects
C-02	Dress Stone	<p>At the end of task no. C-02</p> <ul style="list-style-type: none"> • Stones are cut to similar height. • The edges of stones are cut for facilitating the fixing. • Aesthetic view is obtained on the surface of the stone with chiseling. 	<ul style="list-style-type: none"> • Skills demonstration on dressing stones.
C-03	Build stone walls.	<p>At the end of task no. C-03</p> <ul style="list-style-type: none"> • Stone work is located according to the instructions/Drawing/Plan/Map. • Corner stones are fixed. • The length, width and height of the wall are equal to the dimensions given in Drawing/Plan/Map or verbally with in the tolerance. ± 1" • Vertical surfaces of the stone wall are plumbed. • Uniformity of the thicknesses of the mortar joints are maintained • Vertical joints are not continued. • 4" thick seismic bands are provided at plinth, sill and roof levels. • Stitches are provided at every 2ft in b/w band. • Junctions are constructed as a whole. • Buttresses are provided for walls longer than 12 times of thickness of wall. 	<ul style="list-style-type: none"> • Skill demonstration on constructing stone walls including corners and junctions. • Skills demonstration on providing seismic band, stitches and buttresses.

C-04	Provide through Stones.	<p>At the end of the task no. C-04</p> <ul style="list-style-type: none"> • Stones having the length equal to the width of the wall are selected as through stones. • Through stones are cast with concrete. • Through stones are provided at 4ft and 2 ft intervals horizontally and vertically in staggered form. 	<ul style="list-style-type: none"> • Skill Demonstration on providing the followings <ul style="list-style-type: none"> - Through stones - Long corner stones - Key stone - Another bolt. 	
C-05	Provide long corner Stones.	<p>At the end of the task no C-05,</p> <ul style="list-style-type: none"> • Stones are selected to use as long corner stones considering the length. • Long corner stones are provided at corners 		
C-06	Provide key stone.	<p>At the end of the task No. C-06,</p> <ul style="list-style-type: none"> • Key stones are made to appropriate sizes. • Key stones are fixed at near the corners. 		
C-07	Maintain core for vertical bars.	<p>At the end of the task no C-07,</p> <ul style="list-style-type: none"> • 3"dia core are formed through walls to accommodate vertical steel bars. • Cores are filled with 1:2:4 cement concrete. When one course / layer of the stone worked is completed. 		<ul style="list-style-type: none"> • Skill demonstration on maintaining the core.
C-08	Provide Anchor bolt	<p>At the end of the task no C-08,</p> <ul style="list-style-type: none"> • Anchor bolts are prepared. • Anchor bolts are provided at 4 ft intervals and aligned them 		

Related knowledge to the module

- Quality of the stone.
- Notations abbreviations and symbols used to indicate the stone work in drawings /plans/maps.
- The purpose of the dressing and dressing methods.
- Bond pattern related to stone work.
- Corner stones and its applications.
- Seismic bands required reinforcement and its applications.
- Stiches and its applications.
- Through stones and its applications.
- Long corner stones and its application.
- Key stones and its applications.
- Anchor bolts and its application.
- Safety precautions to be followed when constructing stone work.

Prerequisite

- Ability to take and read measurements.
- Ability to understand and follow the simple mathematical principles.

List of Tools, Equipment, Teaching and Learning Material for the module

Tools

- Square (gunya)
- Level
- Masonry trowel 9"/10" (karandi)
- Pointing trowel (karandi)
- Bricks hammer (teshi)
- Float (garmala)
- Plumb bob (saal)
- Tri square (right angle)
- Leveling rod (Guz)
- Water level
- Measuring tape (fita)
- Pan (taqari)
- Spade (belcha)
- Wheel barrows (rairy)
- Chisel

Teaching and Learning Materials

- Hand outs prepared (including the knowledge parts mentioned earlier in this module) work sheets including exercises or assignments ,construction drawings related to stone work , stone samples in various sizes and types , wall charts and photographs including bond pattern and dressing, transparencies prepared ,flip charts prepared ,relevant presentations.
- OHP, screen, flipchart stand, white/black board, markers, computers and multimedia (Optional.)

Recommended time: 40 Hours

Occupation: Mason
(Brick work, Block work and stone work)

Competency Area: Maintain tools - G III

Module Title: Maintenance of Tools.

Performance objective: After completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standard and specifications given under “standard” column. It confines to maintain only the tools used by masonry craftsman.

Tasks to be performed:

Task No	Task	Standards	Suggested Training / Learning Activities
D-01	Use of appropriate tools	At the end of task No D-01 <ul style="list-style-type: none"> • The tools are used appropriately. • Tools are selected for each and every task considering the following issues <ul style="list-style-type: none"> ○ Nature of the work. ○ Effectiveness. ○ Magnitude of work. ○ Finish of the work. 	<ul style="list-style-type: none"> • Brief introduction on selecting tools related to the different aspects.
D-02	Maintain the tools in working conditions	At the end of task No D-02 <ul style="list-style-type: none"> • Each and every tool is maintained in working conditions. • Broken and unusable parts of Tools/Machines are replaced with good ones. 	<ul style="list-style-type: none"> • Briefing the importance of maintaining tools in good working condition. • Observing and monitoring on the maintenance of tools used.

Related knowledge for the module

- Construction items and techniques.
- Knowledge on PPE
- Matters on safety.
- Knowledge on tools equipments and implements used by MASON

Prerequisite

- Ability to read and write
- Ability to organize the work.

List of Tools, Equipment, Teaching and Learning Material for the module.

Tools

Each and Every tools falls under the occupation of mason.

Teaching and Learning Material

- Hand out prepared (including the knowledge parts mentioned earlier in this module.) work sheet including exercises or assignments, Tools catalogues, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flipchart stand, White/Black board, Markers, Computer and Multimedia (optional)

Recommended Time: 08 hours

Occupation: Mason
(Brick work, Block work and stone work)

Competency Area: Manage Subordinates - G III

Module Title: Handling Subordinates

Performance objective: After completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standard and specifications given under “standard” column. It confines the performance of the tasks to perform at where the senior level technical person/s is not employed. It limits only to the small scale construction works such as the construction of domestic building.

Tasks to be performed:

Task No	Task	Standards	Suggested Training / Learning Activities
E-01	Negotiate with subordinates on rates	At the end of the task no. E-01, <ul style="list-style-type: none"> • All the terms and conditions are clearly and completely explained to the subordinates including working hours, leave and mode of payment. • Daily wages/Rates are communicated to each and every person separately. • Agreements are made with subordinates clearly. 	<ul style="list-style-type: none"> • Brief introduction on the following areas. <ul style="list-style-type: none"> ○ Terms and conditions. ○ Daily wages / rates. ○ Agreements. • Giving case studies related.
E-02	Assign appropriate tasks to subordinates	At the end of task no. E-02, <ul style="list-style-type: none"> • Day works and activities are identified in quantities as per the work plan and the necessity. • Human resources required are identified according to the labour categories. • Tasks and targets are assigned to each & every working groups. 	<ul style="list-style-type: none"> • Brief introduction on the following areas. <ul style="list-style-type: none"> ○ Labour norms. ○ Establishing work targets.
E-03	Instruct subordinates on good house keeping	At the end of task no. E-03, <ul style="list-style-type: none"> • All the subordinates are made aware on the necessity of having good house keeping system. • All the facilities required to maintain the system are provided • All the subordinates are advised to clean the tools after usage. 	<ul style="list-style-type: none"> • Brief introduction on the necessity of having a good house keeping system and its advantages.

E-04	Instruct subordinates on safety measures	<p>At the end of task No E-04</p> <ul style="list-style-type: none"> All the risks related to tasks are evaluated before commencement the work. 	<ul style="list-style-type: none"> Brief introduction on the risk related to the activities have to be performed by a masonry craftsman.
E-05	Instruct subordinates to mix cement motor	<p>At the end of task No E-05</p> <ul style="list-style-type: none"> Concrete platform /G I sheet is used as the base for mixing. Batching container is selected. Quantities of cement and sand are selected considering the following points <ul style="list-style-type: none"> Mortar ratio Plat form size Quantity of Mortar where is consumed within 45 mints time. Cement and sand are placed on platform as cement on the top of sand. Mix is made as homogenous. Measured quantity of water is added. Mortar is mixed until the uniform consistency is reached. 	<ul style="list-style-type: none"> Brief introduction on the qualities of aggregates to be used for cement mortar. Skill demonstration on mixing cement mortar.
E-06	Monitor the sub ordinates work	<p>At the end of task E-06</p> <ul style="list-style-type: none"> Subordinates are monitored regularly for quality and the progress from the start up to the end Mistakes are rectified. 	<ul style="list-style-type: none"> Brief introduction on maintaining good relationship with the subordinates.

Related knowledge for the module

- Labour requirement.
- Knowledge on Personal Protective Equipment
- Labour rules.
- House keeping system.
- Matters on safety.

Prerequisite

- Ability to read and write
- Ability to organize the work.

List of Tools, Equipment, Teaching and Learning Material for the module

Tools

Each and Every tools falls under the occupation of mason.

Teaching and Learning Material

- Hand out prepared (including the knowledge parts mentioned earlier in this module.) work sheet including exercises or assignments, Tools catalogues, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flipchart stand, White/Black board, Markers, Computer and Multimedia (optional)

Recommended Time: 10 hours

Occupation: Mason
(Brick work, Block work & Stone Work)

Competency Area: Co-ordinate with clients – G III

Module Title: Co-ordination with Clients

Performance objective: After Completion of this Module, the trainee will be able to perform each task mentioned under the “task” column according to the standards and Specifications given under “Standards” Column.

Tasks to be performed:

Task No	Task	Standards	Suggested Training / Learning Activities
F-01	Decide the contract type.	<p>The competencies should be limited to the small scale Construction work such as two storied building under these tasks.</p> <p>At the end of task No F-01</p> <ul style="list-style-type: none"> • Both parties ie Contractor and client are agreed on proposed house plan clearly without any doubt. • Details of the construction activates such as construction techniques going to be adopted, Specifications, Contractor's input ,Client's input, Supply of materials are communicated and described to the client/s Clearly. • Client/s are made fully aware on the following Contract methods. <ul style="list-style-type: none"> ○ Daily wages system. ○ Item measure and pay. ○ Lump sump methods. 	<ul style="list-style-type: none"> • Make aware on the following types of contract <ul style="list-style-type: none"> ○ Daily wages system ○ Item measure and pay ○ Lump sump method • Giving the assignments or case studies related to the above types of contract

F-02	Make written agreement with client	<p>At the end of task No F-02,</p> <ul style="list-style-type: none"> • Written agreement is made negotiating with client/s considering the factors mentioned above. • The agreement is included the following <ul style="list-style-type: none"> ○ Client's input. ○ Contractor's input. ○ Facilities provided by the client. ○ Supply of material. ○ Standards on work items ○ Making payments how, when ○ Period of construction ○ Impact from weather ○ The way of mutual termination ○ The actions taken when the agreement is breached by any of party 	<ul style="list-style-type: none"> • Make aware on the agreements used in minor contracts • Giving the assignments
F-03	Advise client/s on quality of materials	<p>At the end of task No F-03,</p> <ul style="list-style-type: none"> • Client is made fully aware on the construction material including followings <ul style="list-style-type: none"> ○ Quality standards on materials ○ Specifications on material ○ Market sources. ○ Alternative approaches ○ Current rates on material ○ Advantages and disadvantages of alternative approaches ○ Amount of stocks. 	<ul style="list-style-type: none"> • Make aware on the quality and specifications of construction materials • Giving the assignments
F-04	Finalize modification in Plan/Contract.	<p>At the end of task No F-04</p> <ul style="list-style-type: none"> • The information on the modification required is obtained from the client completely and accurately as well as in advance. • The information on the modification are consisted with the followings <ul style="list-style-type: none"> ○ What is the modification required. ○ Why it is required. • The possibility/impossibility of the modification/s proposed and its impact is communicated to the client clearly with the facts. • Both parties are agreed on proposed modifications understanding completely. • Agreement is updated and modified including the modification. 	

Related knowledge for the module

- Construction technique/methods related to two storied houses.
- Work specifications.
- Contract type, daily wages system, measure and pay system lump sump method.
- Agreements
- Quality standards and specifications of material
- Market sources on construction materials.
- Survey Methods/Findings
- Current rates on material,
- Human needs on houses.
- Communication and presentation methods

Prerequisite

- Ability to write, read and understand

List of Tools, Equipment, Teaching and Learning Material for the module

Tools

- Communication tools

Teaching and learning Materials

- Hand outs prepared (including the knowledge parts mentioned earlier in this module) work sheets including Exercises or Assignments, Specification on construction material, material sample, Transparencies prepared, Flip Charts prepared.
- OHP, Screen, Flipchart stand, White/Black board, Markers, Computer and Multimedia (optional)

Recommended time: 30 hours

Occupation Mason
(Brick work, Block work and Stone work.)

Competency Area: Erect Scaffoldings - G III

Module Title: Erection of Timber Scaffoldings.

Performance objective: After Completion of this module, the Trainee will be able to perform the task mentioned under the “task” column according to the standards and specifications given under “standards” column. The task related to this module is limited only to the erection of the scaffoldings made out of timber and only up to the height of 10 feet (independent type)

Tasks to be performed:

Task No.	Task	Standards	Suggested Training / Learning Activities
A-08	Erect Scaffoldings	At the end of task No A-08 <ul style="list-style-type: none"> • The scaffoldings are erected according to the instructions and specifications given. • The Length of the vertical members should be 8 ft minimum or 4 ft more than the required height. • The span of between two vertical members should be compiled with the nature of the work. • All the vertical members are tied at a lower level with other members. • Horizontal members are anchored to the Building or any other rigid objective/s • All any joints are tied firmly with using of appropriate knots. • No gaps between working pad. • The level of the working pad is compatible with the working level. • The working pad is extended from its support only up to the length equal of the 4 times of their thicknesses. 	<ul style="list-style-type: none"> • Brief introduction on the independent type of scaffolding and its usage • Skill demonstration on erecting timber scaffolding (independent type) up to the height of 10 ft.

Related knowledge for the module

- The features of the place at where the scaffoldings is erected.
- The safety precautions to be followed when the scaffoldings is erected.
- The knots used for tying the scaffoldings.
- The methods used to distribute loads on the ground.
- The matters on distribution the load.
- The matters on provision of working pads.
- The sign boards used to inform the matters related to the safety.

Prerequisite

- Physical fitness for the work, Safety concerned, Ability to take measurements, Ability to work at high levels, Ability to cut timber members using Hand saw.

List of Tools, Equipment, Teaching and Learning material for the module

Tools

- Crow bar
- Mamoty
- Hand saw
- Measuring tape
- Club hammer

Teaching and Learning Material and Equipment

- Information sheets on the knowledge included in the module, Transparencies, Flip charts
- Flip chart stand, white board, OHP, computer & multimedia.(optional)

Recommended Time: 20 Hours

Occupation: Mason
(Brick work, Block work and Stone work)

Competency Area: Carry out RCC work - G II

Module Title: RCC Work

Performance objective: After the completion of this module, the trainee will be able to perform each task mentioned under the “task” column according to the standards and specifications given under “Standards” column.

Tasks to be performed:

Task No.	Task	Standard	Suggested Training / Learning Activities
G-01	Select the material	<p>At the end of task no G-01,</p> <ul style="list-style-type: none"> Materials required for concreting work are selected according to the specifications appropriated to each type of material respectively. The qualities of the selected material are assured through the field tests which can be conducted at the sites. The required quantities from each and every type of material are measured according to the drawings/plan/maps or instructions given. 	<ul style="list-style-type: none"> Introduction on selecting material for concrete covering the following criterias. <ul style="list-style-type: none"> Specification of materials. Field tests related to quality of materials. Batching methods. Giving the assignments and case studies related to the quality of the materials used for concrete.
G-02	Cut steel	<p>At the end of task No G-02,</p> <ul style="list-style-type: none"> Steel cutting schedule (cutting list) is prepared according to the drawing/plan/map or the instructions given. All the necessary information required for selecting and cutting steel bars included in to the steel cutting schedule. Steel bars are selected as per the information mentioned in steel cutting schedule (cutting list) as per the types, size and length required. Steel bars are cut according to the measurements given in the schedule with the tolerance of $\pm\frac{1}{2}$". 	<ul style="list-style-type: none"> Introduction on preparing cutting list Giving the assignments Skill demonstration on cutting steel bars.
G-03	Bend steel	<p>At the end of task No G-03</p> <ul style="list-style-type: none"> Bar bending schedule is prepared as per the drawing/plan/map or instructions given. Steel rods are bent to the measurements given in the schedule with the tolerance of $\pm\frac{1}{2}$" 	<ul style="list-style-type: none"> Introduction on preparing bar bending schedule. Giving the assignments Skill demonstration on bending steel bars.

G-04	Erect form work	<p>At the end of task No G-04,</p> <ul style="list-style-type: none"> All dimensions required are taken to erect/Fix the form work. The form work is erected compiling to all dimensions with in the tolerance of $-\frac{1}{2}$". It is assured that there is no any gap in the sides and bottom of the form work. 	<ul style="list-style-type: none"> Brief introduction on form work. Assignments. Skill demonstration on erecting form work for the simple components mentioned in the competency standards.
G-05	Lay steel	<p>At the end of task No G-05,</p> <ul style="list-style-type: none"> The main bars are laid at the appropriate positions according to the Drawing/Plan/Map or instructions given. Laps are provided as per the information given in drawings or instructions received. End anchorage provided as per drawings and instructions. The stirrups are selected according to the schedule and fixed to the main bars as per the drawings with the tolerance of $\pm\frac{1}{4}$". Distribution bars are laid over the main bars as per the drawing. 	<ul style="list-style-type: none"> Introduction on the following aspects. <ul style="list-style-type: none"> Main steel Distribution steel Laps End anchorage Stirrups Space Bar marks Skill demonstration on laying steel according to the simple reinforcement drawing given.
G-06	Make spacers	<p>At the end of task no. G-06,</p> <ul style="list-style-type: none"> Spacers are made out of appropriate material such as cement mortar, concrete or rubber. Spacers are cast / prepared according to the cover given in drawing/plan/map or instructions given. Spacer blocks are provided with the binding wire sunk to the spacers block at the centre Spacers are cured well, if the material is either concrete or cement sand mortar. 	<ul style="list-style-type: none"> Introduction on the features and aspects of spacers.
G-07	Provide spacers	<p>At the end of the task No G-07</p> <ul style="list-style-type: none"> The spacers are selected as per the cover given in drawing/plan/map or instructions given. The spacers are tide to the external sides of stirrups at the appropriate intervals. 	<ul style="list-style-type: none"> Skill demonstration on providing spacers
G-08	Place concrete	<p>At the end of task No G-08</p> <ul style="list-style-type: none"> Concreting is carried out as per the instructions, measurements, shapes and specifications. All the concrete mix is prepared according to the mixing ratio or grade given and placed within specified time after mixing. The compressive strength of the concrete mix should be within the standard range of value as per the no of days and the grade. It must be successes at the slump test. 	<ul style="list-style-type: none"> Skill demonstration on placing concrete

		<ul style="list-style-type: none"> • Concrete mix should have uniform colour. • At the end, the concrete should be free from honey combs. • Reinforced concrete structures are poured concrete with providing the safety distance needed from the surface to steel bars. 	
G-09	Compact concrete	<p>At the end of task No G-09</p> <ul style="list-style-type: none"> • At the concreting, it should be vibrated properly. 	<ul style="list-style-type: none"> • Skill demonstration on compacting concrete.
G-10	Level the concrete	<p>At the end of the task No G-10</p> <ul style="list-style-type: none"> • The top surface is prepared according to the level given. • Concreting is carried out according to the measurements given in the drawing/plan/map or instructions given. • Each concrete should have neat and clean finish. 	<ul style="list-style-type: none"> • Skill demonstration on leveling concrete
G-11	Make construction joints	<p>At the end of task No G-11</p> <ul style="list-style-type: none"> • The places at where the construction joints have to be provided are decided referring the drawings/plan/maps or according to the instructions received. • The places are marked according to the appropriate measurements. • The separators are fixed at the located positions with binding wire. 	<ul style="list-style-type: none"> • Introduction on the impotency of the construction joint. • Skills demonstration on providing construction joints
G-12	Remove from work	<p>At the end of task No G-12</p> <ul style="list-style-type: none"> • The day is decided to remove the form work according to the specifications or instructions received. • Forms/shuttering are removed without damaging to the forms/shattering as well of to the surface of concrete. • All the removed forms / shuttering are cleaned and applied mould oil. 	<ul style="list-style-type: none"> • Introduction on removing concrete.
G-13	Repair concrete	<p>At the end of task No G-13</p> <ul style="list-style-type: none"> • The places/portions of the concrete to be repaired are identified and marked according to the instructions of superior. • The filling material is prepared / obtained according to the instructions of superior. • The places/portions of the concrete are repaired with the material according to the instructions of superior. 	<ul style="list-style-type: none"> • Introduction repairing concrete and the materials can be used for repairing the concrete.

The related knowledge for the module

- The materials used to prepare concrete and their qualities and specifications.
- Different type of mix and their characters.
- The matters to be considered when doing the concrete and shortcomings possible.
- Field tests performed to select good materials.
- Batching methods.
- Mixing concrete.
- Transport concrete.
- Placing and curing concrete.
- Slump test.
- Preparation of steel cutting schedule (cutting list)
- Type of steel bars and sizes.
- Tools/machines used for cutting steel bars.
- Preparation of bar bending schedule (standard and code type)
- Bending methods.
- Tools and machines used to bend steel bars.
- Allowable tolerances
- Material used for form work and their applications.
- The features of a shuttering.
- Standard laps to be provided for steel
- Spacers
- Compaction methods
- Different tools used to compact concrete.
- Finishing the concrete.
- Providing construction joints.
- Removal of formwork.
- Types of mould oil.
- Repairing concrete.

Pre requisites

- Ability to make and read the measurements.
- Ability to read and write.

List of Tools, Equipment, Teaching and Learning Material to the module

Tools

- Measuring module (CFT) [gauge box]
- Steel cutter
- Hammer (hathauri)
- Atta+Tappa measuring tape
- Bar bender (bari)
- Hand saw (aari)
- Pliers
- Sledge hammer
- Spacer
- Pliers
- Claw hammer (hathauri)
- Masonry trowel (karandi)
- Pan (taqari)
- Float (gurmala)
- Concrete mixer
- Wheels barrow
- Leveling rod
- Kanda
- Vibrator
- Phatti
- Slump test apparatus

Teaching and learning materials

- Hand outs prepared (including the knowledge part mentioned under this module), work sheets including exercise and assignments, samples of bar bending schedules (standard and code type) samples of cement, sand, metal, samples of different types and sizes of steel bars. Wall charts or photographs including the mistakes occurred in concrete. Transparencies prepared flip charts.

Recommended Time: 60 Hours

Occupation: Mason
(Brick work, Block work and Stone work)

Competency Area: Build Foundations - G II

Module Title: Foundations

Performance objective: After the completion of this module, the trainee will be able to perform each task mentioned under the “task” column according to the standards and specifications given under “Standards” column.

Tasks to be performed:

Task No.	Task	Standard	Suggested Training / Learning Activities
H-01	Decide the Foundations	At the end of task no. H-01, <ul style="list-style-type: none"> Foundation is decided according to the drawing/plan/map. All information and details required are taken from drawing/plan/map. Measurement of plot is carried out. Centre lines and excavation lines are marked on the ground as per the drawing/plan/map. Bench mark lines are marked on the ground for future references. 	<ul style="list-style-type: none"> Introduction on different types of foundations and their usages. Giving assignments related to the identification of the types of foundations referring plans / maps. Skill demonstration on making centre lines and bench mark lines.
H-02	Level the foundation.	At the end of task no. H-02, <ul style="list-style-type: none"> Bottom of the trench is leveled. Foundation is cleaned and without any foreign materials. 	<ul style="list-style-type: none"> Introduction on leveling foundations.
H-03	Compact the soil.	At the end of task no. H-03, <ul style="list-style-type: none"> Foundation is compacted with 6” thick layers. Compaction of the layers is carried out with adding water. 	<ul style="list-style-type: none"> Skill demonstration on compacting soil.
H-04	Lay lean concrete.	At the end of task no. H-04, <ul style="list-style-type: none"> Required tools, labor and materials are arranged. Flat form is prepared to mix the concrete. Flat form should be hard & level. Mix is prepared according to the ratio given in drawing or the instructions received. Lean concrete is laid at the bottom of the trenches to the thickness given and compacted and leveled properly 	<ul style="list-style-type: none"> Skill demonstration on laying lean concrete.

H-05	Provide RCC foundation bands	At the end of task no. H-05, <ul style="list-style-type: none"> RCC bands are provided with necessary reinforcements as specified in drawing/plan/map at plinth level. 	<ul style="list-style-type: none"> Introduction on RCC foundation band.
H-06	Provide vertical steel bars.	At the end of the task no. H-06, <ul style="list-style-type: none"> Steel bars are connected to the bands and aligned true vertically. Vertical bars are placed at all the corners, junctions, buttresses and at the locations where cross beams are supposed to be resting. 	<ul style="list-style-type: none"> Skill demonstration on providing vertical steel bars.
H-07	Erect RCC column.	At the end of the task no. H-07, <ul style="list-style-type: none"> Seismic rings are provided at intervals specified in the drawings/plan/maps or instructions received. Columns are placed at the points specified in the drawing/plan/map. Columns are aligned vertically. 	<ul style="list-style-type: none"> Skill demonstration on erecting RCC column.
H-08	Build Masonry Foundations	At the end of the task no. H-08, <ul style="list-style-type: none"> Toothing is provided near at each column. Plinth bands are provided according to the specifications. 	

The related knowledge for the module

- Methods on measuring Plot/s.
- Methods of establishing centre lines and excavation lines.
- Methods of establishing bench mark lines.
- Centre lines, excavation lines and bench mark line.
- Methods of cleaning Foundation.
- Soil compaction.
- Lean concrete and its application.
- RCC band and its usage.
- Vertical reinforcement locations
- Seismic rings and its usage.
- Plinth band and its usage.
- Security precautions to be followed.

Prerequisites

- Ability to read and understand drawings/plan/map.
- Ability to read and write.

List of Tools , Equipment , Teaching and Learning Material to the module

Tools

- | | |
|--|---|
| <ul style="list-style-type: none"> • Meter • Right angle • Measuring tape • Hand level | <ul style="list-style-type: none"> • Concrete Mixer • Float • Cutter • Hammer |
|--|---|

- Water level
- Compactor
- Shovel
- Wheel barrow
- Trowel
- Bucket
- Water level
- Bar Bending tool (Barri)
- Pliers
- Thiya
- Plumb bob
- Angle
- Brick Trimmer (Brick hammer)

Teaching and Learning Materials

- Hand outs prepared (including the knowledge part mentioned under this module), work sheets including exercises and assignments, samples for soil, wall charts/ photographs including RCC foundation bands, vertical steel bars, seismic rings, tooting, transparencies/flip charts prepared.

Recommended Time: 30 Hours

Occupation: Mason
(Brick work, Block work and stone work)

Competency Area: Plaster surfaces - G II

Module Title: Plastering Work

Performance objective: After completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standard and specifications given under “standard” column.

Tasks to be performed:

Task No	Task	Standards	Suggested Training / Learning Activities
J-01	Select Quality Material	<p>At the end of the task J-01</p> <ul style="list-style-type: none"> • Him / her self is made fully aware on the qualities and specifications of the material used for plastering such as cement, sand and lime. • Materials are selected in right quantities and according to the quality specifications. 	<ul style="list-style-type: none"> • Introduction on Qualities of materials used for plastering work • Assignments related to the quality of material used for plastering work
J-02	Prepare flat form	<p>At the end of the task J-02</p> <ul style="list-style-type: none"> • A cleaned and hard surface is selected or constructed for mixing the material. • Mixing bed is located or constructed at a place considering the convenience for the work. 	<ul style="list-style-type: none"> • Introduction on the features of the place used for mixing
J-03	Prepare the surface to be plastered	<p>At the end of task J-03</p> <ul style="list-style-type: none"> • The surface is checked and identified the protrusions, if any. • The surface to be plastered is free from loose materials. • Wedges, nails and solid items (fixed temporarily during construction) are removed by suitable means without damaging the surface. • Water is applied to the entire surface evenly to wet the surface. • Cement mortar plumb points at the suitable places are fixed considering the thickness required of the plaster and the length of straight edge used. 	<ul style="list-style-type: none"> • Skill demonstration on preparing the surface for the plastering

J-04	Prepare the mix	At the end of the task J-04 <ul style="list-style-type: none"> Him / her self is fully made aware on the characters, mixing ratios and the consistency of the mixtures used. 	<ul style="list-style-type: none"> Skill demonstration on preparing the mix for plastering.
J-05	Plaster surfaces	At the end of task J-05, <ul style="list-style-type: none"> Plaster is applied and spread in vertical rows. The width of the band is about 5" – 6". Plaster is ironed out using straight edge. 	<ul style="list-style-type: none"> Skill demonstration on plastering walls & soffits and finishing the plaster
J-06	Finish the surface	At the end of the task J-06, <ul style="list-style-type: none"> The plastered surface is in the same plane as that of the plumb point with in the tolerance of $\pm \frac{1}{4}$". The surface is free from any marks or patches. The required finish is obtained. 	<ul style="list-style-type: none"> Skill demonstration on plastering walls & soffits and finishing the plaster

Related knowledge for the module

- Qualities of materials used for plastering.
- Specification of materials used for plastering.
- Different mixtures used and mixing methods.
- The advantages and disadvantages of different finishes.

Prerequisite

- Taking and reading measurements
- Ability to work on scaffoldings at higher levels.

List of Tools, Equipment, Teaching and Learning Material for the module

Tools

- Sieves of different sizes
- Concrete pans
- Shovels
- PPE
- Chisel
- Hammer
- Plumb bob with Mackily
- Masonry trowels (10" / 12")
- Straight edge
- Wooden float
- Sprit level
- Water tube
- Wheel barrows
- Buckets

Teaching and Learning Material

- Hand out prepared (including the knowledge parts mentioned earlier in this module.), work sheet including exercises or assignments, photographs including different finishes, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flipchart stand, White/Black board, Markers

Recommended Time: 22 hours

Occupation: Mason
(Brick work, Block work and stone work)

Competency Area: Render floor surfaces – G II

Module Title: Rendering Work

Performance objective: After completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standard and specifications given under “standard” column.

Tasks to be performed:

Task No	Task	Standards	Suggested Training / Learning Activities
K-01	Identify Area	At the end of the task K-01 <ul style="list-style-type: none"> Area to be rendered is identified according to the instructions. 	<ul style="list-style-type: none"> Assignments related to the identification of areas to be rendered from plan / maps.
K-02	Select Material	At the end of the task K-02 <ul style="list-style-type: none"> His / Her self is fully made aware on the qualities of materials used in rendering. Materials required are selected according to the specifications and the quantity required for the job. 	<ul style="list-style-type: none"> Introduction on selecting materials for rendering work
K-03	Prepare the sub base	At the end of task K-03 <ul style="list-style-type: none"> The level of the sub base is marked on the walls correctly. The sub base is filled with sand & stone soling. The base is leveled accurately. The surface of the sub base is compacted thoroughly with adding water. 	<ul style="list-style-type: none"> Skill demonstration on preparing sub base for rendering.
K-04	Prepare the base	At the end of the task K-04 <ul style="list-style-type: none"> Cement concrete in the given grade is mixed properly. Concrete mixture is in uniform color. Concrete is placed all over the sub base. Concrete is compacted to make dense. 	<ul style="list-style-type: none"> Skill demonstration on preparing base.

K-05	Make Glass Strips	<p>At the end of task K-05,</p> <ul style="list-style-type: none"> • Glass strips are cut according to the width and length required. • Glass strips are fixed placed as the top levels of them are in same level. • All the glass strips are fixed to the base rigidly. 	<ul style="list-style-type: none"> • Skill demonstration on making glass strips
K-06	Provide topping	<p>At the end of the task K-06,</p> <ul style="list-style-type: none"> • Rendering material is prepared according to the instructions. • Rendering material is placed all over the base. • The surface is leveled through out the area with in the tolerance of $\pm \frac{1}{4}$". • The surface is free from any patches or marks. 	<ul style="list-style-type: none"> • Skill demonstration on providing topping

Related knowledge for the module

- Different finishes and its usage
- Quality of materials.
- Material norms
- Components of sub-base.
- Compacting methods
- Sand & stone soling
- Concrete grades used in rendering
- Concrete mixing methods
- Transporting, placing and compacting of concrete.
- The reasons for having glass strips.
- Mixtures used in rendering.

Prerequisite

- Ability to take and reading measurements.

List of Tools, Equipment, Teaching and Learning Material for the module

Tools

- | | |
|--|--|
| <ul style="list-style-type: none"> • Shovel • Straight edge • Masonry trowel • Tamper • Wheel barrows • Personal Protective Equipment • Concrete pans | <ul style="list-style-type: none"> • Builders square • Wetting brush • Glass cutter • Sprit Level • Finishing trowel • Water level • Measuring Tape |
|--|--|

Teaching and Learning Material

- Hand out prepared (including the knowledge parts mentioned earlier in this module.) work sheet including exercises or assignments, models on different finishes, wall charts and photographs including different finishes, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flipchart stand, White/Black board, Markers

Recommended Time: 38 hours

Occupation: Mason
(Brick work, Block work and Stone work)

Competency Areas: Prepare Plan/Map - G I

Module Title: Preparation of Plans

Performance objective: After Completion of this module the trainee will be able to perform each task mentioned under the "task" column according to the standards and specifications given under "standards" column.

Tasks to be performed:

Task No.	Task	Standard.	Suggested Training / Learning Activities
L-01	Obtain client requirements.	<p>Preparing plan/map is limited to single storied building with the sloping roof.</p> <p>At the end of task L-01,</p> <ul style="list-style-type: none"> • A meeting is held as convenient to both parties to receive the information on client requirements. • The information of the client requirements on the proposed house are obtained from the client at the meeting. • The information about shall consist with the followings <ul style="list-style-type: none"> ○ Total area of the proposed house. ○ No of rooms required. ○ Site location and its content. ○ Facilities required. ○ The cost expected. • A rough sketch is drawn fulfilling the client requirements as much as possible. 	<ul style="list-style-type: none"> • Introduction on obtaining the requirements from the client • Assignment / case studies related to the obtaining client requirement.

L-02	Select site	<p>At the end of task no. L-02,</p> <ul style="list-style-type: none"> • A proposed site is visited with the client alone with the sketch drawn on a day as convenient to both parties. • Advantages and disadvantages of the site are discussed with the client on this site visit. • Advantages and disadvantages of the site must be followings. <ul style="list-style-type: none"> ○ Accessibility ○ Sufficiency of the extent ○ Possibility of getting services required. ○ Type of the soil. ○ Ground water table. ○ Nature of the land. ○ Surrounding environment. • Location is selected and marked for the proposed house with the Consensus of the client. 	<ul style="list-style-type: none"> • Introduction on selecting the sites. • Case studies related to the selection of sites
L-03	Draw the plan/map.	<p>At the end of task no. L-03,</p> <ul style="list-style-type: none"> • A plan is drawn taking into consideration the client requirements and data gathered during the site visit. • The plan should comply council requirements and conditions as well as with the other health, safety and environmental regulations and disaster safety cords / provisions available. 	<ul style="list-style-type: none"> • Introduction on the features, components and characters of the plan. • Drawing - practice sessions.
L-04	Get clients approval to the plan/map.	<p>At the end of the task no. L-04,</p> <ul style="list-style-type: none"> • A meeting is arranged with the client as convenient to the both parties. • A logic/concept behind the plan is explained to the client completely. • The technical terms should be illustrated completely. • All the questions/issues raised by client should be answered honestly and clearly. • Complete attention should be given for the suggestions made by clients. • Final drawing/map is made with accommodating all the possible suggestions/alliterations made by client. • Drawing/map is finalized with taking the clients approval. 	<ul style="list-style-type: none"> • Introduction on getting clients approval. • Assignments / case studies related to the getting clients approval.

Related knowledge for the module

- Communication methods.
- Human needs on houses.
- Characters of a good site.
- Council Requirements, rules and Regulations related to the construction of a house.
- Disaster / seismic safety guidelines, cords.
- Matters to be considered in designing houses.

Prerequisite

- Mathematical back ground.
- Ability to analyze
- Deep observation.

List of Tools, Equipment, Teaching and Learning material for the module

Tools

- Communication tools
- Drawing Equipment and Apparatus
- Models on Houses
- Scale
- Stationery
- Measuring tape (30m)

Teaching and Learning Materials

- Hand out prepared (including the knowledge parts mentioned earlier in this module.), work sheets including Exercises or Assignments, Specification on construction materials, Catalogs on houses, Drawings on house designs, Transparencies prepared, Flip charts prepared
- OHP, Screen, Flip chart stand, White/Black Boards, Markers, Computer and Multimedia (optional)

Recommended Time: 60 Hours

Occupation: Mason
(Brick work, Block work and Stone work)

Competency Areas: Prepare Estimates - G I

Module Title: Estimating

Performance objective: After Completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standards and specifications given under “standards” column. Preparing Estimates is limited to single storied building with the slopping roof.

Tasks to be performed:

Task No	Task	Standard	Suggested Training / Learning Activities
M-01	Obtain market rates of materials.	<p>At the end of task no. M-01,</p> <ul style="list-style-type: none"> • Agreement is made with the clients on types, quality and quantity of material to be used. • Availability of the material in the market is assured conducting market survey. • Market survey reasonably should be covered whole of the market. • Him/her self is fully made aware on the rates of the material through market findings. • Agreement is made with suppliers on the rate of materials and mode of payments. • Rates of the materials at the site are finalized 	<ul style="list-style-type: none"> • Introduction on market rates and the market related to the construction work. • Assessments related to the obtaining market rates of the construction materials.
M-02	Find out the quantities of materials.	<p>At the end of task no. M-02,</p> <ul style="list-style-type: none"> • Relevant drawing/map is read and understands correctly. • Each and every work items included in the construction of house are identified separately and correctly. • The quantities of work involved with each and every item are taken from the relevant drawings. • Standard methods of measurement should be used to derive the quantities from the drawing. 	<ul style="list-style-type: none"> • Introduction on Taking off sheets / standards method of measurements (SMM) • Practice on taking quantities from drawings / maps

M-03	Obtain current labour rates	<p>At the end of task no. M-03,</p> <ul style="list-style-type: none"> • House owners built their houses recently are consulted to obtain labour rates. • Government's schedules are gone through to find out the government labour rates. • The rates should be available according to the type of labour and the level of the competency. • The rates should be compatible with according to the area, and the type of contracts. • The rates should be realistic, current and reasonable. 	<ul style="list-style-type: none"> • Assignments related to the labour rates • Introduction to the standard labour norms
M-04	Prepare Skelton cost.	<p>At the end of task no. M-04,</p> <ul style="list-style-type: none"> • The quantities must be identified according to each and every work items. • The work items are identified according to each and every work involved. • The work items should be covered the followings. <ul style="list-style-type: none"> ○ Specifications of the work. ○ Nature of the work. ○ Conditions of the work. • The units of each and every work item should be decided according to the standard methods of measurement • The material costs calculated to the unit of each and every item considering the related work item. • The labour cost is calculated to the unit of each and every item considering the related work items. • The basic cost of the unit of each and every item is calculated to each and every item using the labour and material separately cash derived. • The cost of each and every work item is calculated using appropriate unit rate and the quantity. • The Skelton cost of the house is calculated using the cash of each and every item of the project. • The over head ratio is decided considering the following points <ul style="list-style-type: none"> ○ Variable cost related ○ Invariable cost related • The project cost is calculated using Skelton cost and overhead ratio. 	<ul style="list-style-type: none"> • Introduction to the Skelton cost • Practice on the preparation of Skelton cost.

Related knowledge for the module

- Communication methods.
- Market and Markets rates related to the construction of houses.
- Market survey methods.
- Read and interpreting drawing
- Identification of work items related to the construction of houses.
- Methods of taking off quantities.
- Labour market rates.
- Estimation methods.
- Cost identification and calculation related to the construction of houses.
- Standard methods of measurements
- Identification of variable and fixed costs related to the over heads.
- Calculating overhead ratio.

Prerequisite

- Mathematical back ground.
- Ability to analyze
- Deep observation.

List of Tools, Equipment, Teaching and Learning material for the module

Tools

- Communication tools
- Drawing Equipment and Apparatus
- Models of Houses
- Scale
- Stationeries
- Measuring tape (30m)

Teaching and Learning Materials

- Hand out prepared (including the knowledge parts mentioned earlier in this module.), work sheets including Exercises or Assignments, Specification on construction materials, Catalogs on houses, Drawings on house designs, Transparencies prepared, Flip charts prepared
- OHP, Screen, Flip chart stand, White/Black Boards, Markers, Computer and Multimedia (optional)

Recommended time: 80 Hours

Occupation: Mason
(Brick work, Block work and stone work)

Competency Area: Plan the work - G I

Module Title: Work Planning

Performance objective: After completion of this module the trainee will be able to perform each task mentioned under the “task” column according to the standard and specifications given under “standard” column. It confine to perform at where the senior level technical personal is not employed and it limits only to the small scale construction works such as the constructing works of domestic buildings.

Tasks to be performed :

Task No	Task	Standards	Suggested Training / Learning Activities
N-01	Prepare the list of material.	<p>At the end of the task No N-01</p> <ul style="list-style-type: none"> • Drawing/Plan/Map is studied and interpreted correctly. • Each and every work items related to the construction are identified separately. • Each and every work items are analyzed. • The materials needed to each and every work item are derived using standard material schedules. • The material requirements of each and every type of material are obtained with their specifications and quantities separately. • Detailed chart on supply of material is made including followings. <ul style="list-style-type: none"> ○ Quantity to be delivered. ○ Dates to be delivered. • The charts prepared is handed over to the client well in advance 	<ul style="list-style-type: none"> • Introduction on the preparation of the list of materials, its format, and components • Assignments related to the preparation of list of materials.
N-02	Instruct client to stock material	<p>At the end of the task No N-02</p> <ul style="list-style-type: none"> • Amount of material stocks are decided according to the following <ul style="list-style-type: none"> ○ Availability of the space. ○ Rate of consumption. ○ Financial ability of the client. ○ Transport cost. 	

N-03	Identify labour requirement	<p>At the end of task No N-03</p> <ul style="list-style-type: none"> • The work items and quantities to be finished on each and every day are identified during the construction period. • The labour requirements needed to each and every day are identified as follows <ul style="list-style-type: none"> ○ According to the labour categories. ○ According to the competency level. 	<ul style="list-style-type: none"> • Introduction on the labour requirements • Assignments.
N-04	Arrange infrastructure Facilities and utilities	<p>At the end of the task No N-04</p> <ul style="list-style-type: none"> • The list of infrastructure facilities and utilities is prepared. • Agreement is made with the client and on the infrastructure facilities/ utilities required discussing with him. • Infrastructure facilities/ utilities agreed with the client are made /provided/constructed before the commencement of work. 	<ul style="list-style-type: none"> • Introduction on the infrastructure facilities and utilities • Visits to the construction sites. • Documentaries related to the infrastructure facilities and utilities.
N-05	Use personal protective Equipment (PPE)	<p>At the end of task no. N-05,</p> <ul style="list-style-type: none"> • All the subordinates are made aware on the risks related to the construction site. • All the subordinates / colleagues are provided complete and necessary kit of personal protective equipments. 	<ul style="list-style-type: none"> • Introduction on the importality of PPE.
N-06	Fix time targets	<p>At the end of the task no. N-06,</p> <ul style="list-style-type: none"> • Agreement is made with the client on the targets related to the completion of work items separately. • The time targets are identified considering the following factors. <ul style="list-style-type: none"> ○ Material supply. ○ Availability of human resources. ○ Facilities available at site. • The time target should be realistic. 	<ul style="list-style-type: none"> • Introduction on the work programmes • Assessments.
N-07	Prepare Mixing bed	<p>At the end of task no. N-07,</p> <ul style="list-style-type: none"> • The mixing bed is prepared within the site. • The mixing bed should be close to the material dumping yard as much as possible. • The base of the bed should be hard. • The mixing bed has sloped slightly to the inner side of it. 	<ul style="list-style-type: none"> • Skills demonstration on preparing mixing bed

Related knowledge for the module

- Read and interpret drawing.
- Construction items and techniques.
- Matters on stocking materials.
- Labour requirement.
- Infrastructure facilities and utilities required at the sites.
- Knowledge on PPE
- Planning methods/techniques.
- Mixing mortar

Prerequisite

- Ability to read and write
- Ability to organize the work.

List of Tools, Equipment, Teaching and Learning Material for the module

Tools

Each and Every tools falls under the occupation of mason.

Teaching and Learning Material

- Hand out prepared (including the knowledge parts mentioned earlier in this module.) work sheet including exercises or assignments, Tools catalogues, Transparencies prepared, Flip charts prepared.
- OHP, Screen, Flipchart stand, White/Black board, Markers, Computer and Multimedia (optional)

Recommended Time: 20 hours

Occupation: Mason
(Brick work, Block work and Stone work)

Competency Area: Layout buildings - G I

Module Title: Setting out Work

Performance objective: After Completion of this module The Trainee will be able to perform the task mentioned under the “task” column according to the standards and specifications given under “standards” column. The tasks related to this module are limited only for the setting out work done by using general tools and equipments other then theodolite and engineers level.

Tasks to be performed:

Task No.	Task	Standards	Suggested Training / Learning Activities
O-02	Fix different angles.	At the end of task no O-02, <ul style="list-style-type: none"> Right angles and other angles are set out on the grounds according to the Drawing/Plan/Map. 	<ul style="list-style-type: none"> Introduction on setting out angles including right angle and other important angles. Skill demonstration on setting out angles including right angle and other important angles.
O-03	Fix centre lines.	At the end of task no O-03, <ul style="list-style-type: none"> All necessary centre lines are drawn on the ground in accordance with the Drawings/Plan/Map. The distances between centre lines are compiled with relative measurements given in the Drawing/Plan/Map. In the setting out having the shape of rectangles, the diagonals are equal. In the setting out having the shape other than rectangles, centers, diameters and other distances are set out in accordance with the Drawing/Plan/Map. 	<ul style="list-style-type: none"> Introduction on the fixing of center lines. Skill demonstration on fixing center lines.
O-04	Take Measurements	At the end of task no O-04, <ul style="list-style-type: none"> All the measurements required to set out other lines are derived from the Drawing Plan/Map. All other lines are drawn on the ground with referring the centre lines. 	<ul style="list-style-type: none"> Introduction on taking measurements Skill demonstration on taking measurements.

O-05	Make Permanent Pegs	<p>At the end of tasks no O-05,</p> <ul style="list-style-type: none"> • All the pegs are vertical. • All the pegs are located appropriate to the Drawing/Plan/Map. • Tops of all pegs are at same level. • Pegs are permanently placed at the appropriate locations putting cement mortar/concrete. • Nails are sunk at the centre of the top surface of pegs. 	<ul style="list-style-type: none"> • Introduction on pegs. • Skill demonstration on fixing permanent pegs and marking trenches.
O-06	Mark Trenches	<p>At the end of task O-06,</p> <ul style="list-style-type: none"> • Strings are drawn at the both sides of the centre line keeping the half of the width of the foundations given in the Drawing/Plan/Map on either side of the centre line. • The distance between strings is equal to width of the foundation given in the Drawing/Plan/Map appropriately. • The strings are drawn with required amount of tension. • The two edge lines of each trench are marked on the ground. 	<ul style="list-style-type: none"> • Introduction on pegs. • Skill demonstration on fixing permanent pegs and marking trenches.

Related Knowledge for the Module:

- The methods on establishing right angles and other necessary angles and the matters to be considered in setting angels.
- The notations, abbreviations and symbols used to indicate base line & centre lines in the Drawings/Plans/Maps and the matters to be considered in establishing these lines on the ground.
- The methods used to check the accuracy when the centre lines got established.
- Taking the measurements from Drawing/Plans/Maps.
- Establishing the measurements on the ground and the points to be followed there.
- The matters to be considered and followed when drawing strings and establishing pegs.
- The importance of having centre pegs (Permanent Pegs).
- The qualities of centre pegs.
- The points to be considered in marking centre lines and trenches in flat as well as sloping areas.
- The methods used to transfer levels from one point to another.
- The Guidance and methods to be considered and followed when the circular shapes are established and the pegs are fixed.

Prerequisites:

- The ability to use simple hand tools.
- Reading, writing and Understanding skills.
- The ability to take measurements.
- Good eye sight.
- The ability to apply simple mathematical principals.

List of Tools, Equipment, Teaching and Learning material for the module

Tools

- Crow bar
- Mamoty
- Hand saw
- Sledge hammer
- Claw hammer
- Wheel Barrow
- Cement sand motor
- Concrete
- Nails
- Shovel
- Water level
- Measuring tape
- Builders Square
- Tri Square
- Nylon Strings
- Pegs

Teaching and Learning Material and Equipment

- Hand outs, work sheets, Drawings/Plan/Maps related to small houses, Transparencies, OHP, Flip charts with the stand, screen.

Recommended Time: 32 Hours