STANDARD OPERATING PROCEDURE - (FOR CATEGORY "A " JOBS)				
Form No.		Form Rev. No.		Effective date:
Working Agency- MMP REFRATECH			W.O. No.-	
Department		**PDC**	**SOP NO.**	
Section/Location		**Operation**	**Date:**	
Job Title		**2T MELTING FURNACE RELINING**	**Page No.**	**1 of 1**
Step No.	**Activity (WHAT)**	**Associated Hazards.**	**Responsibility (WHO)**	**Process / tools / PPEs / (HOW)**
1	REFRACTORY & INSULATION BRICK LINING	CONFINED SPACE ENTRY TRIPPING & FALLING MORTAR SIPLLAGE MISHANDLING OF BRICKS	Contractor workman	Clean the casing/shell where the Brick Laying needs to be done to remove small bits and pieces of Old Castable/Refractory Bricks/Mortars etc. with a trowel in case of a repair job.Check for the Quality & Dimension of the Bricks and understand the drawing with the Supervisor at Site. Check for the Quality of Mortar before applying on the Bricks. If the Mortar is too thick add water to it and mix with a Trowel properly. Check for the Dimensions of the Brick Wall with the help of a measuring tape. In case of Insulation Brick Wall lining, the bricks should be cut to size manually. Apply Mortar of 2-3 mm thickness on the Refractory/Insulation Bricks. Check for the Quality of the Brick Laying with the help of a Spirit Level, Cotton/Nylon Line Dori, Water Level pipe etc. Apply/Fix Expansion joints with the help of Ceramic Fibre Material as per drawing at appropriate places. Generally expansion joints in the form of Ceramic Fiber Blankets are applied at every 1200 mm. Tub/Ghamela containing mortar has to be placed on platform/scaffolding with stability so that it would not fall down (in stable manner). After mortar application, the spatula/trowel has to be placed in Tub/Ghamela to avoid falling down. When work is done at height, below floor space is to be cordoned off to avoid personnel directly coming below (Chances of Mortar bits would fall on them otherwise).

2	MORTAR MIXING WITH MACHINE FOR BRICK LAYING	ELECTRIC SHOCK CUT INJURY EYE INJURY	Contractor workman	Mortar is of 2 types i.e. Air Setting Mortar & Heat Setting Mortar. Heat Setting Mortar is mixed with water generally in the ratio of 1:3 i.e. one part water to three parts mortar. Air setting Mortar is available in 2 types i.e. Ready Mix & Powder & Binder form. Ready Mix Mortars can be directly applied on the bricks. Binder is usually sodium silicate. Sodium Silicate is already provided in diluted form. Generally Binder is mixed with water in 1:3 ratio with Mortar i.e. one part binder to 3 parts powder. If the consistency is not proper, water is added to achieve the desired consistency. The Mortars are mixed with Hand Mixer Machine or manually in a plastic drum. Around 1.5-2.5 mm thick mortar is applied on bricks for lining. The Mixed Mortar is placed in Plastic/MS Tubs and carried near the Furnace area where the Brick Lining activity is in progress. Do not over fill the Tubs. Some stocked Mortars get dry in mixed form so add water to get the required consistency. To check the required consistency of the Mortar, pick some mortar with a spatula and tilt it downwards and if the Mortar falls down easily then the Mortar is fine but if the Mortar stays in the trowel/spatula then the Mortar is dry so more water needs to be added. After mixing the Mortar, clean the Machine by rinsing the rotary blades inside the water or else the Mortar will start setting & accumulating on the blades which may further jam the Blades which will slow down the Mortar Mixing activity further hampering the Brick Lining Work.
3	BRICK CUTTING WITH BRICK CUTTING MACHINE	ELECTRIC SHOCK CUT INJURY EYE INJURY	Contractor workman	The person operating the Brick Cutting Machine will receive the Fire bricks from the Mason. The Brick will be marked with a marker or a pencil where it needs to be shaped. The part which needs to be discarded will be marked with an X. The discarded part should be kept one side. The Brick part which is needed should be measured via a measuring tape prior to cutting the brick. The Brick should be kept on the trolley and should be properly aligned with the blade where it needs to be cut. The blades can be lowered via an upper handle which can be moved up and down with hand and a lower lever which can be moved up and down with foot. After aligning the brick, the person should start the machine by pressing the Start button on the starter placed behind the handle. Initially the person should lower the blade with the help of the upper handle. If he does so with the lower lever than the blades might be misaligned with the brick. The upper handle is used for better control and more accurate cutting while the lower Lever is used in case more force is needed to cut the brick. Both should be used in co-ordination in order to achieve a clean and accurate cut. The dimensions of the brick should be checked after cutting the bricks. After the brick is cut, the machine should be turned off by pressing the stop button on the starter. Keep on checking the level of water in the water pump which is placed on the backside of the Brick Cutting Machine.
		Prepared by:		Approved by:

Guide lines for filling the format:-

1. This SOP is meant for category "A" jobs being done by company employees or contractor employees.

2. The jobs being done on regular basis by same group of persons at same location where the hazards does not change with time are classified as category "A" jobs.

3. The process for each activity to be decided considering the technical/process requirement as well as safety requirement with respect to associated hazards.

4. This document is to be treated as EHSMS/quality document as per quality management system and should be numbered accordingly.

5.The persons performing the job must be trained on the SOP

6. The training record shall be maintained as per the quality management system.

Remarks/ Reference.

1. Use following PPE's Safety helmet, Safety goggle, shoes, Safety handgloves before starting the job.
2. Ensure that all the Machines are properly connected with earthing and
all the guards are in place.
3. Ensure the proper use of tools for the job.
4. Do not use damaged tools for the job.
5. Do the positive isolation if needed.
6. Ensure others safety if group working or other egencies working with your area.