ACTIVITY:  ERECTION/DISMANTLING/HOOK CHANGING / PATCH WORK OF ROOF SHEETS

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* Objective : - Safe procedure for roof sheet changing.
* Scope : - All roof structures.
* Ref. : - WIMAINT103, SP44G
* Responsibility : - Engineer in Charge or workmen on job

**PPE –s to be used :**

* Helmet, Safety shoes, Safety belts, Hand gloves, Dust mask, Cotton cloth and goggle

**Aspect – impact :**

|  |  |
| --- | --- |
| Scrap generation | Resource Depletion |
| Hazardous waste | Health |

[Hazards identified](file:///C:\Users\00025330\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\4%20RISK%20ASSESMENT\WIMAINT24%20ROOF%20SHEET.xls) :

**Mechanical Hazard**

1. Fall of person from height
2. Collapsing of scaffolding
3. Slipping of person.
4. Fall of material. (roof sheet, tools, J- hooks)
5. Drowning of person while working on roof above open water tanks.

**Chemical Hazard**

1. Inhalation of Toxic chemicals.
2. CO gas poisoning while doing sheeting job near gas line.
3. Asbestos dust while replacing old asbestos sheets

**Physical Hazard –**

1. Fall of objects in eyes
2. Storm, rainfall

**Electric hazard**

1. Electric shock while use of portable drill machine.

**Human Behavioral hazards**

1. Casual approach of person
2. Horse play
3. working under the influence of alcohol
4. Not using PPE’s

**Procedure**

1. All new sheets used should be non asbestos sheets.
2. Take work permit from user department as per Work Permit System.
3. Inform the workers working in nearby areas, display board “Men working at height” & cordon the area with “work in progress” tape.
4. Wherever scaffolding is required to get access to roof, ensure that scaffolding is ready to use and marked with green tag.
5. Always use certified full body harness while working at height. Check for certification and healthiness of the safety belt before use.
6. Keep one person down for co-ordination. Only trained riggers should work for this activity.
7. All persons working at height should be authorised to work at height after passing required medical fitness & vertigo test and should have a valid height pass.
8. While working on roof Full body harness lanyard to be attached to horizontal lifeline through fall arrester.
9. If the height of the roof is greater than 9 meters a rescue plan is required to be prepared before starting the job.
10. Tie the sheets properly for lifting and lowering For Aluminium/GI sheets put one additional hook at top side of sheet while lifting /lowering.
11. Ensure proper locking and tightening of hooks with structure and sheets. The sheets have to be lifted or locked by 1” manila rope with both side U- clamps.
12. Roof purlins are to be lifted /lowered with proper 1’’ manila ropes / belt slings properly clamped with D-shackles
13. Fix safety nets while working over normal working area (eg. Ore bunkers of sizer plants , coke unloading bunker ) to safeguard person working on top.
14. Carry out the house keeping activity as per procedure WI/MAINT/91.
15. While drilling asbestos sheets wear dust mask as asbestos is hazardous material.
16. Collect all asbestos scrap (hazardous waste) and return to stores.
17. Collect other scraps separately and return to stores.
18. Avoid going to the top of sheeting in rainy season.

**Procedure to use Roof walker**

**ROOF WALKER SAFETY SYSTEM** consists of

* Roof ladder 3 mtrs long -03 nos
* Half ladders 1.5 mtrs long -02 nos
* Working platform 0.6 mtr long - 03 nos
* Quick Action Eccentric clamps - 30 nos
* Elevated Pads - 18 nos
* Hardness 3 mtrs long - 03 nos
* Bolt changing sleeves - 05 nos
* Bolt Extension Accessories - 10 nos

1. Follow procedure 1-14
2. Assess the condition of the roof ladder for any damage. Damaged ladder should not be used for work
3. Climb on to the top of roof with ladder. Follow procedure WI/MAINT/69
4. Assess the condition of the bottom purlin and hook of the sheet at the point of the placing first piece of roof walker.
5. Tie the life line (Safety hardness/safety belt) to the nearby structure above
6. Place the platform in such a way that the purlin bolt could pass though the saddle of the roof ladder. Ensure matching of roof corrugation with saddle corrugation
7. Adjust the spring loaded saddle position of the ladder to suit saddle hole to the Purlin bolt
8. Accommodate the purlin bolt & nut in the hole provided at the saddle of the roof ladder.
9. Fix up the saddle clamps to the top of the purlin bolt, keeping the saddle corrugation matching the roof corrugation through the bolt.
10. Lock the Saddle clamp by moving the side knob.
11. Place the small ladder place on the roof,
12. Trained rigger can climb on the clamped walker and start building the conventional path for carrying out the roof jobs.
13. The spring loaded saddle can be pulled and turned to make the walker section across the roof matching the roof corrugation
14. Connect the required number of the walker by matching interlocked male and female arrangement.
15. This walkers are connected by the sheeting hooks which in turn connected to the purlin hence allows the transfer of the weight being handle by walker to the purlin
16. Each walker is 3 meters long and weighs 8.8 kg appx..
17. Use the elevating pads for working across the roof with the sheet having the slop above 20 % .This elevated pads increase the level the walker which is convenient for working at roof.
18. For changing the roof sheet, Place the walker around the sheet. Unscrew the nut remove the sheet which cares to avoid the fall of the same, replace the new sheet and bolt the sheet with new bolt.
19. For attending the leakages from the bolt , use the sleeve provided with the walker
20. Place the sleeve on the top of the bolt and apply the tar across the bottom of the sleeve and take out the sleeve this will avoid the fixing of tar to the threading of the bolt.
21. Walker is useful and can be safely used only if the same is safely secured. **PLEASE ENSURE THE SAME.**

**Pls follow** SP44G for Working at Height Guidelines

**DO :**

* Inspect sheets before climbing.

**DO NOT :**

bd14753_ Unlock sheets on top.

bd14753_ Throw any thing down while working at top.

bd14753_ Touch asbestos with bare hands.

bd14753_ Walk on old/damaged/corroded sheets.



**Amendement Record**

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| **Date** | **Manual Section Ref. & Para** | **Brief details of Revision** | **New Rev.** |
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| **Prepared By:**  Area Engineer | **Reviewed & Issued By:**  Management Representative | **Approved By:**  Mechanical Head |
| **Signature** | **Signature:** | **Signature:** |
| **Review Date: 12.12.22** | **Review Date: 12.12.22** | **Review Date: 12.12.22** |