

TIPPING ON STOCKPILES HIF AUDIT - 17/06/2003 03:02:51 PM**1. DESIGN**

Point	Standard	Guideline
1.1	The design is such that potential instability due to the physical properties of the material dumped is minimised.	Intent : To verify compliance with MSIR 13.5(1)(a) for new and expanding structures. Waste dumps and heap leach dumps etc must last forever and constitute far greater volume than mineralised material, for which physical properties should be known from mine feasibility and planning studies. Personnel : Geotechnical engineers, mine planning engineers, geologists, Quarry Manager. Method : View technical and design documentation.
1.2	The design is such that potential instability due to the size and weight of the equipment used is minimised.	Intent : To verify compliance with MSIR 13.5(1)(b) for new and expanding structures. Compaction of dumped material will relate to type and size of equipment used in construction. This should have been considered in the planning stage. Personnel : Geotechnical engineers, mine planning engineers, geologists, Quarry Manager. Method : View technical and design documentation, future equipment plans.
1.3	The design is such that potential instability due to natural terrain and ground stability is minimised.	Intent : To verify compliance with MSIR 13.5(1)(c) for new and expanding structures. Old underground workings, natural drainage channels, soft, weak soils, etc. can all produce problems for dumps located on them. Personnel : Geotechnical engineers, mine planning engineers, geologists, Quarry Manager, surveyors. Method : View technical and design documentation and plans.
1.4	The design is such that potential instability due to material drainage is minimised.	Intent : To verify compliance with MSIR 13.5(1)(d) for new and expanding structures. Drainage planning is an essential part of dump design. Personnel : Geotechnical engineers, mine planning engineers, Quarry Manager. Method : View technical and design documentation.
1.5	The design is such that potential instability due to climatic conditions is minimised.	Intent : To verify compliance with MSIR 13.5(1)(e) for new and expanding structures. Material susceptible to movement from rain and wind erosion may require protection. Personnel : Environmental engineers, mine planning engineers, Quarry Manager. Method : View climate records for rain, wind may be contained in an NOI.
1.6	The design is such that hazards due to hazardous material are minimised.	Intent : To verify that recognised hazardous materials are properly managed. Material contaminated by radioactivity, asbestiform mineral, spontaneous combustion, etc. must be properly designed for. Personnel : Geologists, Environmental engineers, Quarry Manager. Method : View technical and design documentation.

1.7	The design is such that hazards due to dust generation are minimised.	Intent : To verify that possible dust generation within the operation is properly managed. Prevailing winds should not carry dump dust over haulroads, pit or plant operations, offices, workshops, camp, towns, public roads, etc. Material with special dust problems may require constant watering with sprays. Personnel : Geologists, mine planning engineers, environmental engineers, ventilation officer, Quarry Manager. Method : View technical and design documentation and plans.
1.8	The design is such that hazards due to drainage contamination are minimised.	Intent : To verify that any potential contamination is properly managed. . The potential for acid rock drain water must be assessed and dealt with if required. Other water borne contaminants may leach out. Personnel : Geologists, mine planning engineers, environmental engineers, Quarry Manager. Method : View technical and design documentation, plans etc.
1.9	The design is such that hazards to other infrastructure from instability are minimised.	Intent : To verify that new and expanding structures are appropriately located. There must be no potential risk to offices, workshops, power lines, roads, railways, houses, magazines, etc. Personnel : Mine planning engineers, surveyors, Quarry Manager etc. Method : View plans.

2. LAYOUT

Point	Standard	Guideline
2.1	Day and night effective route marking is provided for approach to tipping areas.	Intent : To verify compliance with MSIR 13.5(3) for all existing structures. Personnel : N/A Method : Visually inspect facility for adequacy. Look for route and dumping area demarcation and provision for night dumping.
2.2	Demarcated access and exit routes are used to separate traffic flows.	Intent : To verify that traffic hazards are properly managed. To prevent traffic congestion, especially at ROM pads. Written procedures required. One way systems are also possible on large dumps and confine movement to defined roads thus reducing grading and watering requirements. Personnel : Quarry Manager Method : Visual inspection of dump areas and written procedures.
2.3	Turning and reversing areas are compatible with the largest equipment used.	Intent : To verify that driving hazards are properly managed. Written procedures where dozers and/or loaders are permanently used are required. Personnel : Quarry Manager Method : Visual inspection of dump areas and written procedures.
2.4	Traffic control measures are implemented on site.	Intent : To verify that traffic hazards are properly managed. Written procedures are required. Can incorporate light vehicle lanes, roundabouts, traffic lights, etc. To verify compliance with MSIR 13.7(4). Personnel : Quarry Manager Method : Visual inspection of dump areas and written procedures.

2.5	Access is restricted to bottom of tipping area.	Intent : To verify that the hazards of free falling material on slopes are properly managed. Access is required for inspection of toe and in an emergency but should be restricted for only these purposes due to hazards from rocks rilling down. Personnel : Quarry Manager. Method : Visual inspection.
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3. OPERATION

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3.1	Where no spotter is used, an effective back stop is provided.	Intent : To verify compliance with MSIR 13.5(2). Windrow or backstop should be half truck tyre height and not show signs of being used for stopping. Personnel : Quarry Manager Method : Visual inspection for adequacy.
3.2	Where night time tipping is carried out, the work area and dump edge are illuminated by stationary lighting.	Intent : To verify compliance with MSIR 13.5(4) Personnel : Quarry Manager. Method : Visual inspection for presence of lighting plant.
3.3	Each working shift the dump edges are inspected for evidence of instability.	Intent : To verify compliance with MSIR 13.5(5) There should be written inspection duties for supervisors and shift logs (samples required). Personnel : Supervisors, truck operators etc. Method : Interview personnel and procedure/record check.
3.4	Simultaneous dumping over the edge of a stockpile and loading out from the base is only carried out at sufficient separation such that undermining of the dumping location is not possible.	Intent : To verify compliance with MSIR 13.5(6). There should be written procedures and physical signs, barriers where carried out. Personnel : Quarry Manager, supervisor and operators etc Method : Visual inspection for adequacy and procedure check.
3.5	There are written procedures for tipping.	Intent : To verify that personnel are instructed. Personnel : Quarry Manager, Training officer, supervisor, operators etc. Method : View procedures for haultrucks, dozers, loaders, spotters, etc. (samples required) interview personnel.
3.6	Operators of equipment are tested on the procedures before being authorised to tip.	Intent : To verify that personnel are deemed competent. Personnel : Quarry Manager, Training officer, supervisor, operators etc. Method : Written and practical competency test sheets and results (samples required). Interview personnel.
3.7	There is restricted access to the tipping area for light vehicles and personnel.	Intent : To verify that traffic hazards are properly managed. Personnel : Quarry Manager and operators. Method : Written procedures (perhaps in pit permit). Signs, barriers - visual inspection for adequacy. Interview personnel.
3.8	There is a rising, or at least flat, grade towards the dump edge.	Intent : To verify that driving hazards are properly managed. Personnel : Quarry Manager and operators. Method : Visual inspection of dump surface. Should be in dozer/grader procedures. Interview personnel.
3.9	No dumping directly into water filled pits is carried out.	Intent : To verify that procedural hazards are properly managed. Personnel : Quarry Manager and operators. Method : Visual inspection, view procedures. Interview personnel.

3.10	Each working shift there is an inspection of dump surfaces for sink holes.	Intent : To verify that hazards to traffic are properly managed.. Personnel : Equipment operators and supervisors. Method : View procedures and shift logbook etc. Interview personnel.
3.11	There is control of dust generation.	Intent : To verify that hazards from dust generation are properly managed. To reduce nuisance dust and visibility hazards. Dust control around truck tipping at least equal to that at truck loading. Personnel : Quarry Manager, Ventilation Officer, supervisor etc. Method : Visual inspection. Interview personnel.
3.12	There is weather protection for spotters.	Intent : To verify that climatic hazards to personnel are properly managed. Personnel : Spotters. Method : Visual inspection for protection from - sun, wind, rain.
3.13	Spotters are protected from dust.	Intent : To verify that hazards to personnel are properly managed. Personnel : Spotters. Method : Written procedures - up wind of tipping. Vehicle provided, water truck, PPE, etc.
3.14	Spotters use reflective clothing.	Intent : To verify that hazards to personnel are properly managed. Personnel : Spotters Method : Visual inspection.
3.15	There is a standard signal code for use by spotters and operators.	Intent : To verify that hazardous procedures are properly managed. Personnel : Spotters and operators. Method : View written procedures (sample required.) Interview personnel.
3.16	Spotters are required to be stationed in a safe location.	Intent : To verify that hazardous procedures are properly managed. Personnel : Spotters. Method : Visual inspection. Written procedures.