INTER PLANT STANDARD – STEEL INDUSTRY		
IPSS	**SAFETY STANDARD FOR TRANSPORTATION IN STEEL INDUSTRY**	**IPSS: 1-11-023-16**
	Corresponding IS does not exist	

0. FOREWORD

0.1 This Inter Plant standard, prepared by the Standards Committee on Safety Appliances and Procedures IPSS 1:11, with the active participation of the representatives/ experts of all member steel plants and associated organizations in the field, was adopted in October, 2016.

0.2 This standard has been prepared to provide guidelines & the minimum acceptable mandatory requirements to develop and maintain Safe method of Transportation of material by Heavy vehicles such as Truck, Trailer, Dumper, etc. This standard is intended to supplement, but not supersede, any applicable government regulations.

1. SCOPE

1.1 This document provide guidelines & the minimum acceptable mandatory requirements to develop and maintain Safe method of Transportation of material by Heavy vehicles such as Truck, Trailer, Dumper, etc. and it also ensure safety involving movement of all size of vehicles, mobile machinery, forklift & engineering equipments.

2.0 RISK ASSESSMENT

2.1 Line Manager should identify the risks associated with the activities and possible danger involved & what is causing those dangers. For example, could someone be hit by a moving vehicle? Could someone fall from a vehicle, e.g. while getting in or out, or during loading or unloading? Or be hit by an object falling from a vehicle? Could a vehicle tip over?

3.0 IDENTIFICATION OF ASSOCIATED HAZARD

3.1 Here some associated hazards are identified which can cause danger during transportation:

Sl. No.	Materials	Mode of Transportation	Types of Vehicle Used for Transportation through Road	Associated Hazard
1	**Raw Materials**			
1.1	Iron Ore	Road, Rail, Conveyor	Dumper, Truck, Trailer, Container	Spillage, Dust, Toppling, Dashing, Collision, Break Down
1.2	Coke, Coal	Road, Rail, Conveyor	Dumper, Truck, Tipper Trailer	Spillage, Dust, Toppling, Dashing, Collision, Break Down
1.3	Lime	Road, Rail, Conveyor	Dumper, Truck, Tanker	Spillage, Dust,Toppling, Dashing, Collision, Break Down
1.4	Sinter	Conveyor		Spillage,Dust, Toppling, Dashing, Collision,Break Down
1.5	Flue Dust	Road	Dumper, Truck	Spillage, Dust, Toppling, Dashing, Collision, Break Down
1.6	Hot metals	Road, Rail	Camag Car, Hot Metal Ladle Vehicle	Spillage, Toppling, Dashing, Collision, Break Down
2	**Finished Product**			
2.1	Slab	Road, Rail	Trailer	Falling of Materials, Toppling, Dashing, Collision, Break Down
2.2	Billet	Road, Rail	Trailer	Falling of Materials, Toppling, Dashing, Collision, Break Down
2.3	Coils	Road, Rail	Trailer	Falling of Materials, Toppling, Dashing, Collision, Break Down

2.4	Sheet	Road, Rail	Trailer	Falling of Materials, Toppling, Dashing, Collision, Break Down
2.5	Bar	Road, Rail	Trailer	Falling of Materials, Toppling, Dashing, Collision, Break Down
2.6	Wire	Road, Rail	Trailer	Falling of Materials, Toppling, Dashing, Collision, Break Down
2.7	rod	Road, Rail	Trailer	Falling of Materials, Toppling, Dashing, Collision, Break Down
3	**Miscellaneous**			
3.1	Supply Materials	Road	Dumper, Truck	Falling of Materials, Toppling, Dashing, Collision, Break Down
3.2	Refractory Material	Road	Dumper, Truck	Falling of Materials, Toppling, Dashing, Collision, Break Down
3.3	Sand	Road	Dumper, Truck	Spillage of Materials, Toppling, Dashing, Collision, Break Down
3.4	Bricks	Road	Dumper, Truck	Spillage of Materials, Toppling, Dashing, Collision, Break Down
3.5	Slag	Road, Rail	Dumper, Truck	Spillage of Materials,Toppling, Dashing, Collision, Break Down
3.6	Granulated Slag	Road, Rail	Dumper, Truck	Spillage of Materials, Toppling, Dashing, Collision, Break Down
3.7	Scrap Uneven	Road	Dumper, Truck, Trailer	Spillage of Materials, Toppling, Dashing, Collision, Break Down
3.8	Scrap Mill	Road	Dumper, Truck	Spillage of Materials, Toppling, Dashing, Collision, Break Down
3.9	Descale of Tundish	Road	Dumper, Truck, Trailer	Spillage of Materials, Toppling, Dashing, Collision, Break Down

3.10	Pig Iron Scrap	Road	Dumper, Truck	Spillage of Materials, Toppling, Dashing, Collision, Break Down
3.11	Biodegradable Scrap	Road	Dumper, Truck	Spillage of Materials, Toppling, Dashing, Collision, Break Down
3.12	Coal Tar	Road	Dumper, Truck	Spillage of Materials, Toppling, Dashing, Collision, Break Down
4	**Chemical & Gases**	Road, Pipe lines	Tanker, Truck, Container	Spillage of Materials, Toppling, Dashing, Collision, Break Down, Fire
5	**Petroleum Product**	Road, Rail, Pipe Lines	Tanker, Container	Spillage of Materials, Toppling, Dashing, Collision, Break Down, Fire

4.0 APPLICABILITY

4.1 This standard applies to all contractors, Transporters, Suppliers, Vendors, Customers, User department or any other who are involved in transportation of material through heavy and medium power driven vehicle.

5.0 RESPONSIBILITY

i. Line Management

ii. Transporters/Contractor/Suppliers/Vendors/Customers/ User department

6.0 Responsibility of Management

6.1 Develop and ensure implementation of Transportation Safety Standards

i To ensure that this standard is made available to and understood by all transporters/ Contractor/ Suppliers/ Vendors/Customers/ User Department

ii To ensure that Transporters /Contractor/ Suppliers/ vendors/customers/ User Department are appropriately trained to transport materials

iii Investigate thoroughly all motor vehicle incidents and collisions

iv Recognize and reward excellence in motor vehicle operations and in safe transportation skills

v Audit of loading, unloading , transportation of material and audit of fitness of vehicles as per check list on an established frequency

vi All concerned party should be informed about the hazards prevailing while transportation of material in general and specific

6.2 Responsibility of Contract Owner

i To provide direction & coordination related to vehicle movement in his work area.

ii To ensure that the vehicle is fit & road worthy and is driven by the authorized personnel only in his work area.

iii To ensure traffic management for safe movement of vehicles in his work area.

iv To carry out audit of vehicles and mobile machinery and stop the use of faulty vehicle when it is deemed necessary.

v To ensure all vehicles & mobile machinery working under his work area are registered with Security.

vi To ensure contractor is briefed with guidelines of Safe transportation before performing any work.

vii To report and / or to lead for investigation of near miss and / or accident at their work area.

viii Ensure that no driver under influance of alcohal or drugs enter the Plant Premises.

6.3 Responsibility of Transporters/Contractor/Suppliers/Vendors/Customers

i Adhere to mandatory requirements of road safety standards and other

ii Government's Road Safety Rules and Regulations and guidelines given in Central Motor vehicle Rule 1989

iii Comply with driving laws and regulations both inside and outside works

iv Ensure adequate and appropriate defensive driving safety training has been received and successfully completed

v Report all incidents and collisions to concerned line managers of department or Safety Office.

6.4 Responsibility of Driver / Operator:

i To adhere all rules & regulations, and Safe work procedures whilst operating the vehicles and mobile machinery.

ii To conduct daily inspection of vehicles & mobile machinery once in a shift as per check list made available by line management.

iii To ensure all loads are tied and securely transported.

iv To ensure all unattended vehicles and mobile machineries have the hand brake or emergency brake applied & Scotch block provided under the wheel to avoid roll down.

v Driver carrying hazardous material must carrying tremp card/ MSDS

vi To inform and request to line management / contractor for repair of any fault or deviation observed.

vii To inform all incidents and near miss to line management / Contractor.

viii All drivers & Operators must observe the Safety of other road user also.

7.0 DEFINITIONS

i **Heavy Motor Vehicle** : Any goods carriage the gross vehicle weight of which or a tractor or a road roller the tare weight of either of which exceeds 12 Ton.

ii **Projected Materials:** Any over dimensional consignment which are of extra ordinary dimensions and tonnage.

iii **Side Projection:** Any load which is project more than 150 mm over the sides of the trailer, and must not be more than 2.5 meters in total width.

iv **Rear Projection**: Any load projected more than 1.2 meters over the rear side of the trailer. If measured from the centre of the trailer axle or axle group, a load must be Not more than 3.7 meters, and not longer than the length of the load in front of the axle, or axle group.

v **Height Projection** : The height of the materials should not exceed above the height of the Vehicle cabin.

8.0 REGULATORY REQUIREMENTS

8.1 All Transporters/Contractor/Suppliers/vendors/customers must follow all government laws and regulation concerning driving, including

i Alcohol/illegal drug prohibitions
ii Having a valid vehicle pass, driver's license or permit to operate the vehicle being driven.
iii Obeying all traffic signage and regulations
iv No loose clothing and improper PPE.

8.2 Painting of vehicle registration number

Registration number of motor vehicles must be marked as per the guide-lines of Central Motor Vehicle Rules, 1989.

8.3 Motor vehicle records

The Department/Division must keep a record of heavy vehicles of Transporters / Contractors / Suppliers / Vendors /Customers operating under the specific department.

8.4 Driver Training

8.4.1 Drivers must undergo defensive driving training as appropriate to their levels of use. Line managers must organize training in regular interval for their heavy vehicle's driver operating under their department.

8.5 Safe driving audit

8.5.1 Each Department/Division/other locations may establish and ensure a Transportation audit schedule. It must be carried out at loading, unloading, parking, and during movement of the vehicles inside as well as outside the plant.

All collisions or incidents shall be reported to line management and the safety department promptly (e.g., within 24 hours).

9.0 HUMAN

9.1 General Safety Requirement for Heavy Vehicle Drivers

9.1.1 Following are the some safety requirements for Heavy Vehicle Drivers:

i Do not drive vehicle during the restricted hours of the respective plants.

ii Do not allow any person to stand at foot rest or sit on the loaded material of the vehicle.

iii Do not allow any body to get ON and OFF during running of vehicle.

iv At all Railway level crossing follow the principle of STOP LOOK AND PROCEED

v Never overload the vehicle beyond its carrying capacity

vi Before coming out or going inside Factory, stand in queue

vii Before starting vehicle ensure that the material loaded on vehicle is properly secured

viii Never drive vehicle beyond speed limit (Please know the speed limit before entering inside Works and similarly to all out locations.)

ix Ensure about the route for destination, if not sure, ask the concern department for guide.

x Give prior signal at least 30 meter before taking turn at right or left side

xi Keep a safe distance of 2 seconds to the vehicle ahead

xii Never sit or take rest under the vehicle or within the vicinity of 10 feet of the vehicle or at any parking place area

xiii While taking a turn speed should be below 10 km/hr.

xiv When turning to the left, drive as close as to the left hand side of the road from which the turn is being made and of the road which is being taken.

xv When turning to the right draws as near as may be to the centre of the road and arrive as near as may be at the left hand side of the road which is being taken.

xvi Driver of the vehicle shall not, when being overtaken or being passed by another vehicle, neither increase speed nor do anything in any way to prevent the other vehicle from passing it.

xvii Use seat belt while driving vehicle and all the vehicles must be fitted with seat belt for all the Crew members, if allowed.

9.2 **General Safety requirement for Fork lift Operation:**

i Fork lift operation will be restricted only for in plant operation.

ii Fork lift will not allow moving on road inside works with load.

iii Fork lift will be operated by only authorized trained & licensed personnel.

iv Use of seat belt is mandatory while operating Fork lift.

v Speed of the Fork lift should not be more than 5 KM/ hr.

vi Keep arms and legs inside the Fork lift while operating.

vii Fork lift will be used to handle only stable loads.

viii Be careful while negotiating sharp turns with load.

ix Load should be placed on fork in such a way that it should not block your view.

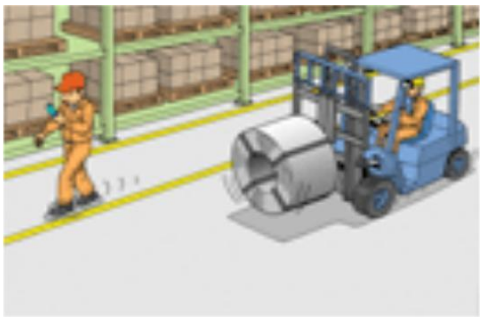
x No person will be allowed to seat on fork lift other than operator.

xi While operating fork lift with load, Center the load on the forks and as close to the mast as possible to minimize the potential for the forklift tipping or load falling.

xii Overloading a Fork lift makes it hard to control and could make it tip over.

xiii Place the load at the lowest position for traveling.

xiv Don’t place extra weight on the rear of a counterbalanced forklift to allow an overload.



9.3 Safety precaution during parking of vehicle

9.3.1 Every vehicle needs to be parked at parking or any other place. Driver must know that where to park the vehicle. Following precautions before parking the vehicle to be observed

i Do Not park the vehicle where there is “No Parking” board displayed
Park at designated parking place or at safer place and not on road.

ii Do not park the vehicle in such a way that it is obstructing the movement of other vehicle or narrowing the width of road.

iii Keep the parking light ON.

iv Before parking please ensure that no one is at the rear side of the vehicle.

v After parking apply the hand brake.

vi Place scotch block under the wheel at both side of wheel.

vii Reverse the vehicle slowly

9.4 Safety at Railway level crossing for all

i Stop your vehicle before crossing all railway level crossings.

ii First look left, then right and again left before crossing Rail-

iii Road junction Allow the loco to cross the level crossing first

iv Do not park your vehicle near / on railway tracks

v Do not enter into level crossing while the drop gates are lowering down.

vi Stop your vehicle before STOP line when the drop gate is being closed/closed
Do not cross railway tracks at any other places than specified

vii Follow the ground crew instruction at level crossing

9.4 Rules for Using Mobile Phone while driving

i Do NOT use mobile phones while driving, with or without accessories like hands free, wireless, headset and Bluetooth etc. as it causes distraction while driving which in turn can cause accidents.

ii In case of emergency, one should park the vehicle at safe place and then attend the call.

9.5 Defensive driving method

Defensive driving is the practice of safe driving techniques. These techniques are used regardless of the actions of others or of adverse conditions created by the environment or vehicle condition. Safe driving techniques call for the driver to be prepared for a variety of potentially dangerous and often life threatening driving situations. The following things must be ensured apart from the learning of the defensive driving method.

i Ensure the checklists that have been appended with this standard.

ii Keep the space on either side of your vehicle free.

iii Do not drive parallel to other vehicle except while overtaking.

iv Always Stop, Look and Listen at railroad crossings unmanned before proceed.

v Crash and vehicle break-down scenes

vi If the vehicle develops mechanical or tire trouble and begins to slowdown, drive it to the side of the road as far as possible from traffic.

vii Activate the vehicles hazard-warning lights.

viii Switch off the ignition of immobilized crashed vehicles to reduce risk of fire.

ix Wear High Visibility Jacket while attending the breakdown.

x Place a hazard-warning triangle (with Reflector) to the both side of the road, 50 meters from the scene.

xi Barricade the vehicle with red tapes.

xii Avoid working on the traffic side of your vehicle.

xiii Remove all the barriers and clean the oils from the road before moving ahead.

10.0 PHYSICAL

10.1 Vehicle Maintenance

Vehicle servicing must be performed at least according to the manufacturer's requirements and at the appropriate time, mileage, and driving condition intervals specified in the vehicle's operator's manual. Record must be available with the driver.

10.2 Vehicle fitness

All vehicle must be fit enough to transport the specific load. Vehicle must be selected as per requirement of materials to be transported. All Vehicles must comply the mandatory requirement of Transport Authority as per attached check list.

Sl. No.	Criteria	OK	Not Ok	NA	Remarks
1	Steering Bush Play (No Play)				
2	Steering Wheel Play (20 – 30 mm)				
3	Rear view mirror (Driver side)				
4	Three Piece Mirror (left side)				
5	Horn (Physical Condition)				
6	Cabin door (Physical condition)				
7	Body (Standard Physical Condition)				
8	Material Body (Physical Condition)				
9	Seat Belt (Retractable Type)				
10	Reversing Buzzer (Audible) connected with Reverse Gear				
11	Side Indicator with Audible Buzzer				
12	Wiper Blade assembly Should be in working condition)				
13	Front wind Glass (Clear without scratch mark)				
14	Spring Pin bolt, Clamp (Looseness to be checked)				
15	Tire condition (Physical with visible tread) condition				
16	Self Start (Within 5 – 8 Sec)				
17	Head Light (Focus should be equal of the light)				
18	Emission check (< 65 HSU)				
19	Brake & Parking Light (Should be visible from 30meter)				
20	Oil Leakage				
21	Number Plate (Should be clear & as per MV Act)				
22	Foot rest (Physical Condition)				
23	Side & Rear side material body cover hinge & locking pin				
24	Hand / Parking Brake				
25	Main Wheel Brake				
26	Fail Safe Brake				
27	Trailer Brake				
28	Brake Air Line (Physical condition)				

10.3 **General requirement to ensure road worthiness of vehicles**:

i Vehicle must be fit enough to transport the specific load. Vehicle fitness certificate must be issued by a competent person.

ii Retraded tyres should not be used in front wheel.

iii Rear view mirror & three piece mirror should be fitted for clear visibility.

iv Horn sound should be audible from at least 30 meter distance. Intensity of sound should not be more than 90 db. Presser horn should not be used in vehicle.

v Vehicle's cabin, cabin door, cabin door handle, material body etc should be physically in good & working condition. Vehicles having bulged body should not be used for transporting the materials.

vi Vehicle's number plate, parking light, side indicator, brake light etc should be cleaned at regular interval for clear visibility. Light reflacting radium tape to be past on peripheral of must.

11.0 SYSTEM

11.1 Safety during transportation of Materials

11.1.1 Transportation of hazardous materials

Transportation of hazardous materials/dangerous goods must be done in accordance with applicable laws and regulations. Dangerous or hazardous goods specified in column 3 Table 1 to rule 137 of CMVR 1989 must be transported as per guideline given in sec 129 to sec 137 of Central Motor Vehicle Rule 1989.

11.1.2 Safety during transportation of CR/HR Coils

Associated Hazards

i Poor site layouts

ii Fall of coils from Vehicle

iii Height Restriction

iv Overturning

v Collisions

vi Striking people and equipment

vii Vehicle roll down

Loading/Unloading of CR/HR coils

Do's

i Wear personnel protective equipment

ii Wear High Visibility Jacket for better visibility to other crew member

iii No person will be on trailer during loading/unloading of material

iv All sticker pasting, painting of the coil will be done on ground by keeping at safe distance.

v For positioning the coil at center of the bed, signal will be given from ground

vi Put scotch block under the wheel to prevent rolling down of vehicle

vii Vehicle will be allowed to go only after ensuring that material is properly secured and tightened.

viii Materials to be loaded as per trailer capacity

ix Use proper De-shackles, Pins, Chains and Links

x Each Coils to be tied to trailer bed individually with two chains at an angle of 45 degree.

xi Three chains to be used for each coils

xii Rubber pads to be provided for edge protection.

xiii Drivers should sit at drivers rest point during loading of coil.

xiv Never over load the trailer beyond Safe work load.

Don’ts

i Do not cook food at in the trailer at loading/unloading point.

ii Do not lash the coil with the hook of the bed.

iii Do not allow crew member and others in loose clothing.

iv No person will move under the hanging material

v Do not sleep /take rest in front of or below or side of the vehicles.

vi Do not park at unauthorized parking place

vii Do not move here & there after placing the trailer at loading point.

Loading/ Unloading point design/ condition

i Wherever possible, loading areas should be selected and designed to be flat / level. Where vehicle alignment is critical from safety point of view (e.g. when using twin hoist cranes), alignment lines must be clearly marked and the Safe Working Procedure must incorporate this requirement.

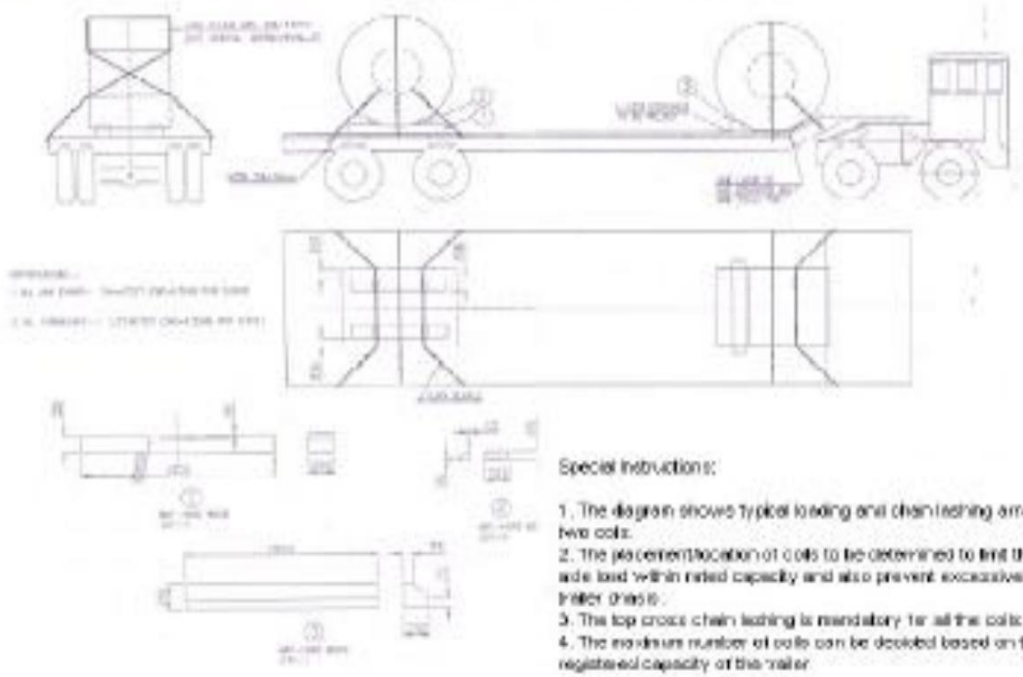
ii The loading / unloading area design must be subjected to a full risk assessment. The loading / unloading risk assessment must consider the following attributes of the loading point:

iii **Side slope / Long slope** When loading areas are not flat / level, load stability may be compromised dependending on the nature of the load.

iv **Road Camber:** This can have a similar effect to side slope, and needs to be taken into account particularly if moving loads without full load restraint.

v **Surface condition**: Potholes, ruts and drains can have a destabilizing effect on forklifts (and any load being carried) as well as being slip/trip hazards for pedestrians.

Typical Trailer Loading Arrangement of Coils for two parent coils:



Special Instructions:

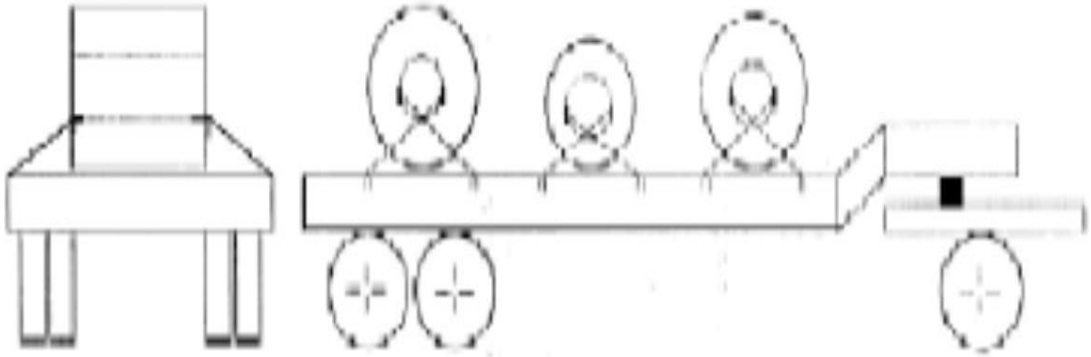
1. The diagram shows typical loading and chain lashing arrangement for two coils.
2. The placement/location of coils to be determined to limit the maximum axle load within rated capacity and also prevent excessive deflection of trailer chassis.
3. The top cross chain lashing is mandatory for all the coils.
4. The maximum number of coils can be decided based on the maximum registered capacity of the trailer.

Lashing Arrangement

The lashing should be done with the help of three chains, as discussed in dos in case of loading/unloading of HR/CR coils.

Covering Arrangement

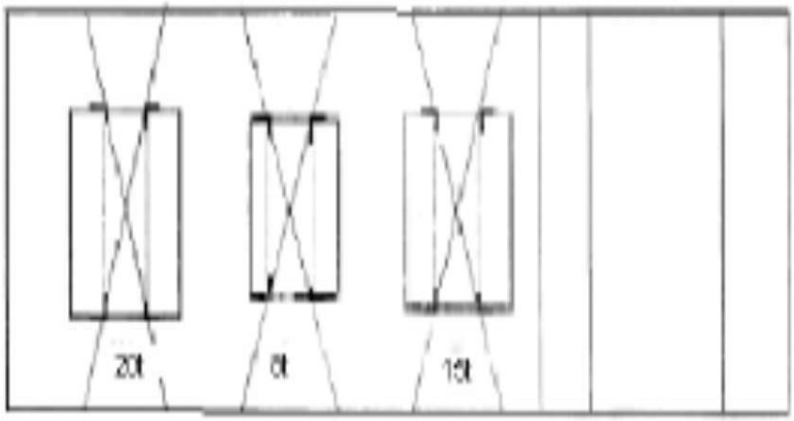
Unitization of Galvanized Plain and CRCA Coil



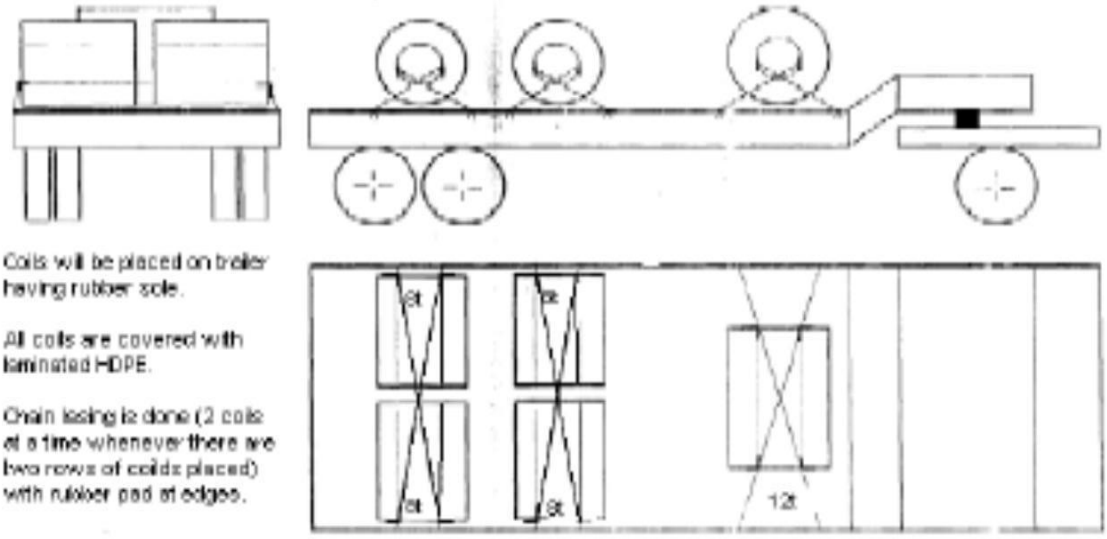
Coils will be placed on trailer having rubber sole

All the coils are covered with laminated HDPE

Chain lashing is done (2 coils at a time whenever two rows of coils are placed) with the rubber pad at the edges.



4 light weight coil (8t) and 1 medium weight coil (12t)

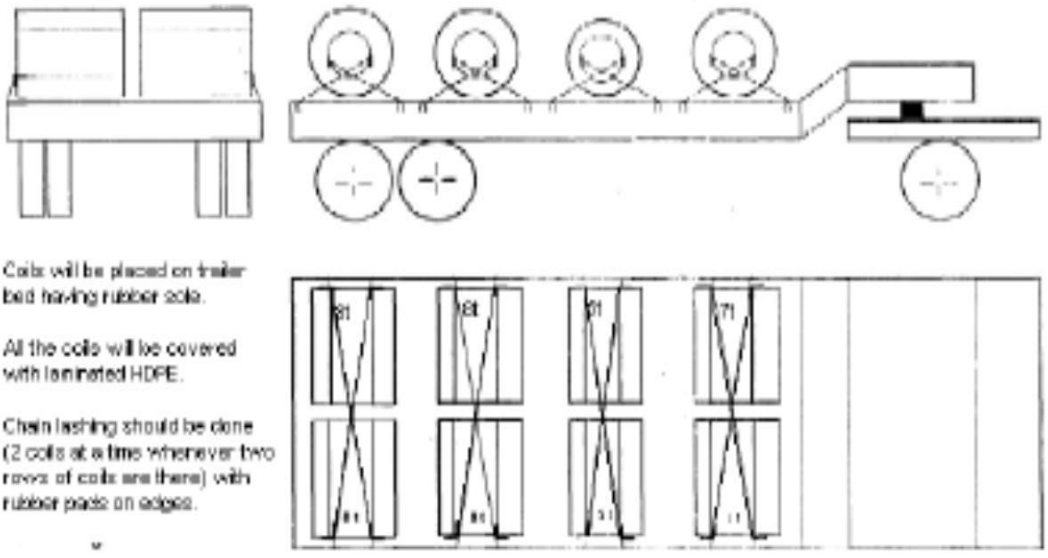


Coils will be placed on trailer having rubber sole.

All coils are covered with laminated HDPE.

Chain lasing is done (2 coils at a time whenever there are two rows of coilds placed) with rubber pad at edges.

8 light weight coils (8-8t)



Coils will be placed on trailer bed having rubber sole.

All the coils will be covered with laminated HDPE.

Chain lashing should be done (2 coils at a time whenever two rows of coils are there) with rubber pads on edges.

Use of ladder at loading point

The ladder should be of the kind as shown above.

11.2 Safety during transportation of Wire coil / Wire rod

Associated Hazards

i Poor site layouts

ii Fall of coils from Vehicle

iii Opening of coil

iv Height Restriction

v Overturning

vi Collisions

vii Striking people and equipment

viii Vehicle roll down

11.3 Loading/Unloading of Wire coils

Do's

i Wear personnel protective equipments

ii Wear High Visibility Jacket for better visibility to other crew member No person will be on trailer during loading/unloading of material.

iii All sticker pasting, painting of the coil will be done on ground by keeping at safe distance For positioning the coil at center of the bed, signal will be given from ground.

iv Put scotch block under the wheel to avoid rolling down of vehicle

v Vehicle will be allowed to go only after ensuring that material is properly secured and tightened Materials to be loaded as per trailer capacity.

vi Use proper De-shackles, Pins, Chains and Links.

vii Coils to be tied to trailer bed with chains as shown in figure.

viii Rubber pads to be provided for edge protection.

ix Drivers should sit at drivers rest point during loading of coil

x Proper packing to be provided at site & rear to protect the wire coils from falling.

xi Contract owner should insure the proper lashing & packing before leaving the vehicle from loading point.

Don'ts

i Do not cook food at in the trailer at loading/unloading point.

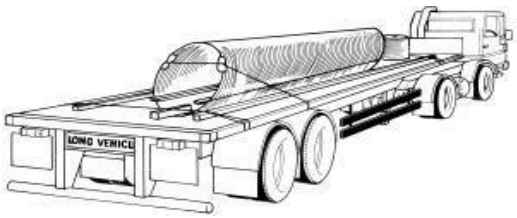
ii Do not allow crew member and others in loose clothing

iii No person will move under the hanging material

iv Do not sleep /take rest in front of or below or side the vehicles. Do not park at unauthorized parking place

v Do not move here & there after placing the trailer at loading point.

vi Do not transport wire rod without providing red flag on both side of rear part.



11.4 **Transportation of Pipes:**

Specific requirement for safe transportation of pipes :

1. Pipes upto 200mm dia shall be unitized before transporting. These are normally available at 6m length. There shall be 6 straps in a length of 6.0m. The largest dimension of the bundle shall not exceed 800mm.These bundles shall be transported on trucks having full height side and back 'dala'. The posts of the dala shall be laterally fastened at the top(**sketch no.1**)

2. Pipes more than 200mm dia shall be transported on trailer bed, without being unitized.

   a) For 6.0m long pipes, there shall be 2-chain lashings and 2 wooden dunnages.

   b) For 12.0m long pipes, there shall be 3-chain lashings and 3 wooden dunnages.

3. Flat bed trailer shall be used for transporting pipes over long distance. Semi flat bed trailer can be used for local transportation. Semi flat bed trailers shall

have 3 nos. of wooden logs in addition to the log for dunnage to make up level.(**Sketch no. 2**).

4. Two types of wooden dunnage may be used on a trailer bed.

   a) Grooved Dunnage: (**Sketch no. 3a and 3b**).

   b) Flat Dunnage with side choker blocks: (**Sketch no. 4a and 4b**).

5. Pipes of 1300mm or greater diameter will be transported over steel saddles with seating arrangement as shown in **sketch no. 5**

6. Proper platform with ladder shall be used for working on the trailer bed, for placing dunnage for the pipe, for lashing and for rigging work for loading and unloading.

7. Chain lashing of minimum 12mm φ links or web lashing of equivalent strength shall be used. With chain lashings, necessary fixtures like bracket, D-Shackles, turn buckles shall be provided. The link chain shall be tightened with turn buckle and web lashing with standard ratchet.

8. The trailer shall be fitted with head boards to prevent injury to the driver by sliding of pipes in case of sudden braking

9. Height of stacking on trailer bed: No. of tiers of pipes loaded on trailer shall not be more than the no. of pipes in the bottom row. In no case the carrying capacity of the trailer shall be exceeded. Any projection of pipe beyond trailer bed shall not be allowed. Single pipe having width and/or length more than the trailer bed shall be treated as an oversized consignment and arrangement for transportation shall be made accordingly.

10. Loading and unloading of pipes shall be done using C- hooks and slings of adequate length. The C- hooks shall be anchored at the end of the pipes.

11. The arrangement of loading, depending on diameter of the pipe is given in table: 1

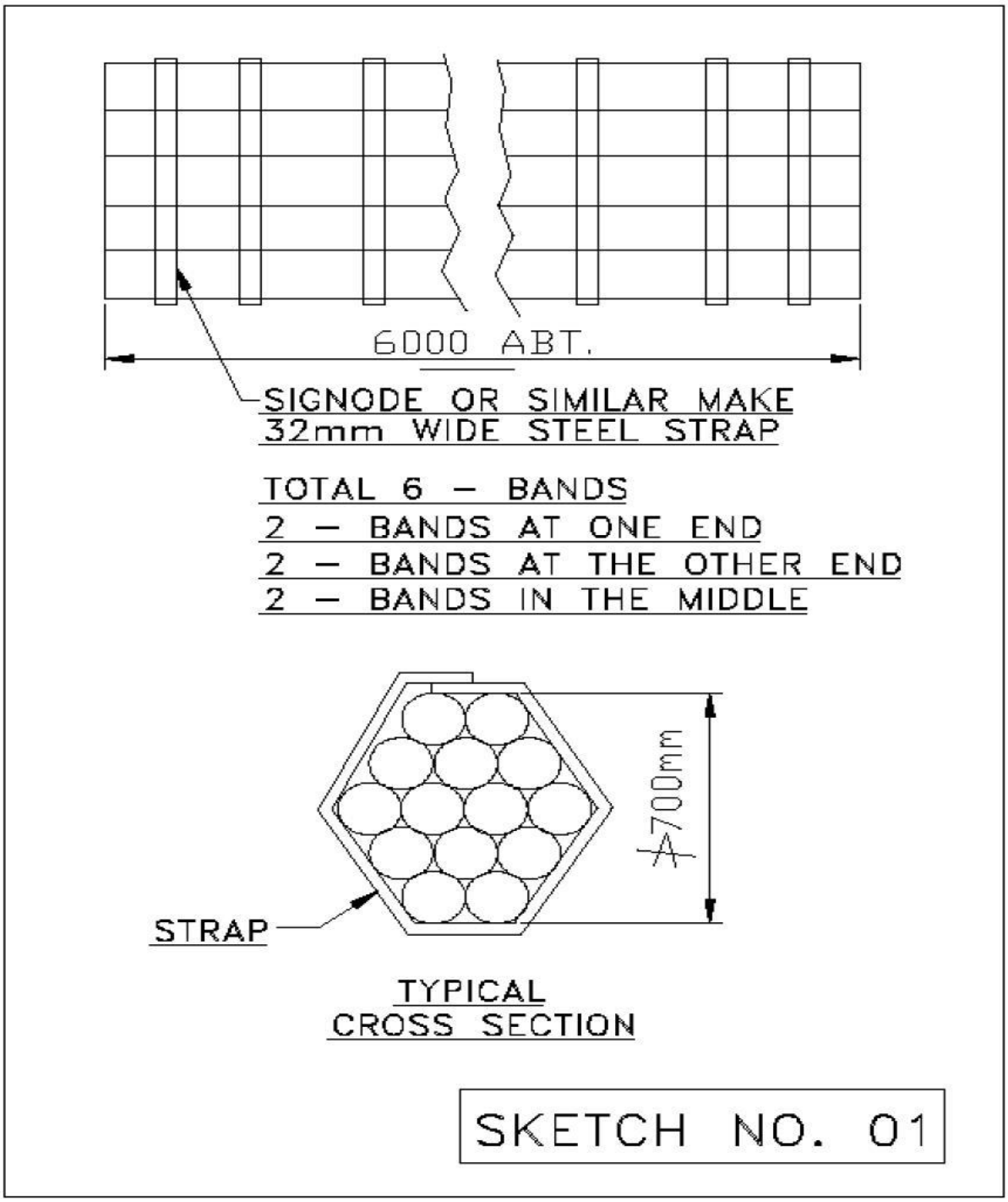
TABLE: 1
CHECK LIST

Category	Diameter(mm)	Arrangement of loading
a.	D≤200	To be unitized and transported on truck with full height dala.
b.	200<D≤1200	Transport on trailer bed with number of lashings as specified. Based on available width of trailer bed between number of posts as 2400mm ,following configuration may be followed:

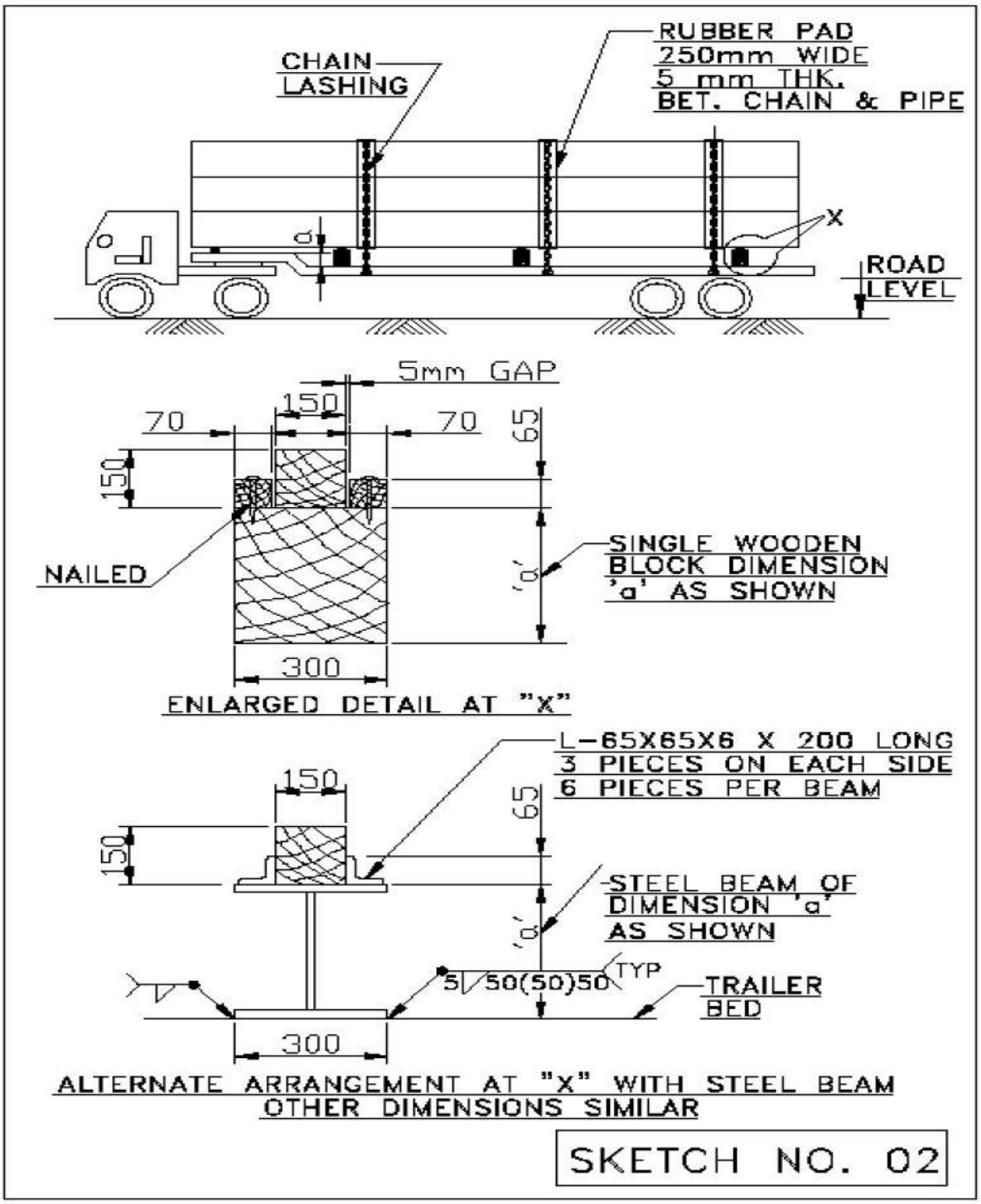
Diameter of pipe	No. of Horizontal Rows	Max. No. of tier
250	9	9
500	4	4
700	3	3
900	2	2
1000	2	2

Points	Yes	No	NA
1. Are the pipes upto 200mm diameter unitized before transporting? Is the largest dimension of the bundle exceeding 800mm? Are the bundles being transported on trucks having full height side and back 'dala'?. Are the posts of the dala laterally fastened at the top as shown in(**sketch no.1**)?			
2. Are 2 chain lashings and 2 wooden dunnages used for transporting pipes with dia more than 200mm and 6.0 m in length on trailer bed?			
3. Are 3 chain lashings and 3 wooden dunnages used for transporting pipes with dia more than 200mm and 12.0 m in length on trailer bed?			
4. Is proper platform with ladder being used for working on the trailer bed, for placing dunnage for the pipe, for lashing and for rigging work for loading and unloading?			
5. Is the chain lashing of minimum 12mm φ links or web lashing of equivalent strength being used?			
6. Are chain lashings provided with necessary fixtures like bracket, D-Shackles, turn buckles ?			
7. Is the link chain tightened with turn buckle and web lashing with standard ratchet?			
8. Is the trailer fitted with head board?			
9. Is the no. of tiers of pipes loaded on trailer not more than the no. of pipes in the bottom row?			
10. Is it ensured that the carrying capacity of the trailer is not exceeded?			

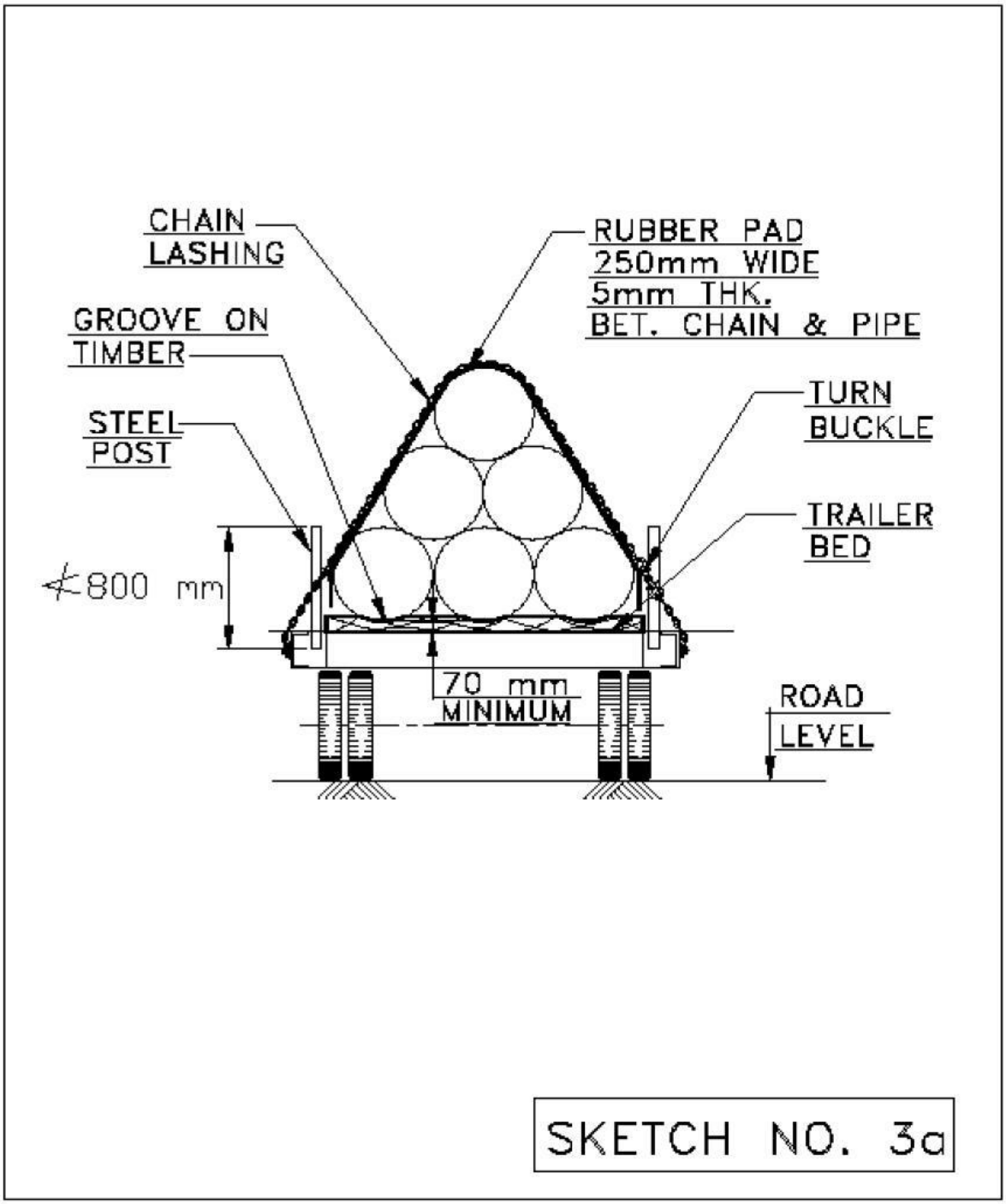
ANNEXURE-I


6000 ABT.
SIGNODE OR SIMILAR MAKE
32mm WIDE STEEL STRAP
TOTAL 6 – BANDS
2 – BANDS AT ONE END
2 – BANDS AT THE OTHER END
2 – BANDS IN THE MIDDLE
≈700mm
STRAP
TYPICAL
CROSS SECTION
SKETCH NO. 01

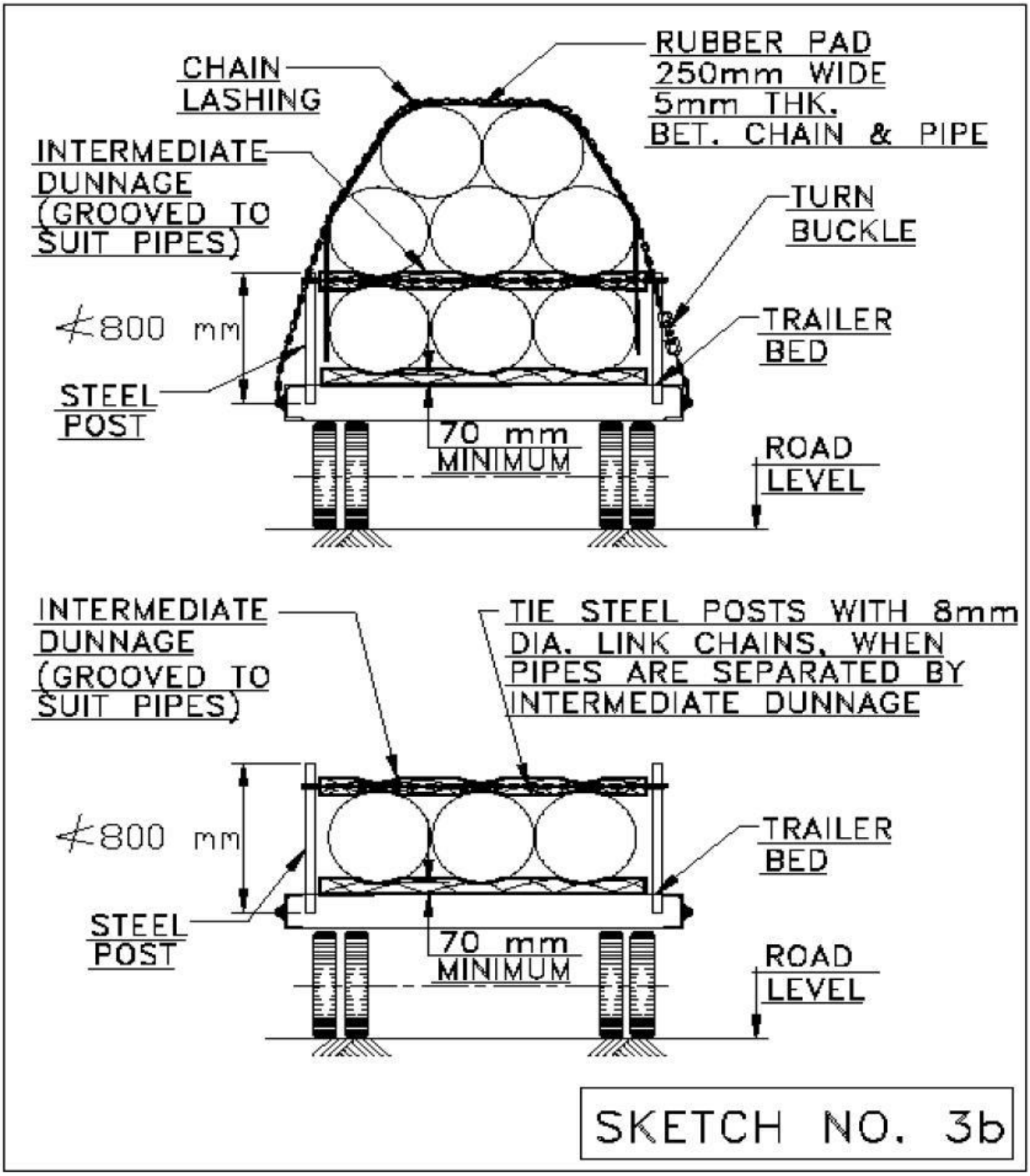
ANNEXURE-II


CHAIN LASHING
RUBBER PAD 250mm WIDE 5 mm THK. BET. CHAIN & PIPE
X
ROAD LEVEL
5mm GAP
150
70
70
65
150
NAILED
'a'
SINGLE WOODEN BLOCK DIMENSION 'a' AS SHOWN
300
ENLARGED DETAIL AT "X"
L-65X65X6 X 200 LONG
3 PIECES ON EACH SIDE
6 PIECES PER BEAM
150
65
150
'a'
STEEL BEAM OF DIMENSION 'a' AS SHOWN
5
50(50)50
TYP
TRAILER BED
300
ALTERNATE ARRANGEMENT AT "X" WITH STEEL BEAM
OTHER DIMENSIONS SIMILAR
SKETCH NO. 02

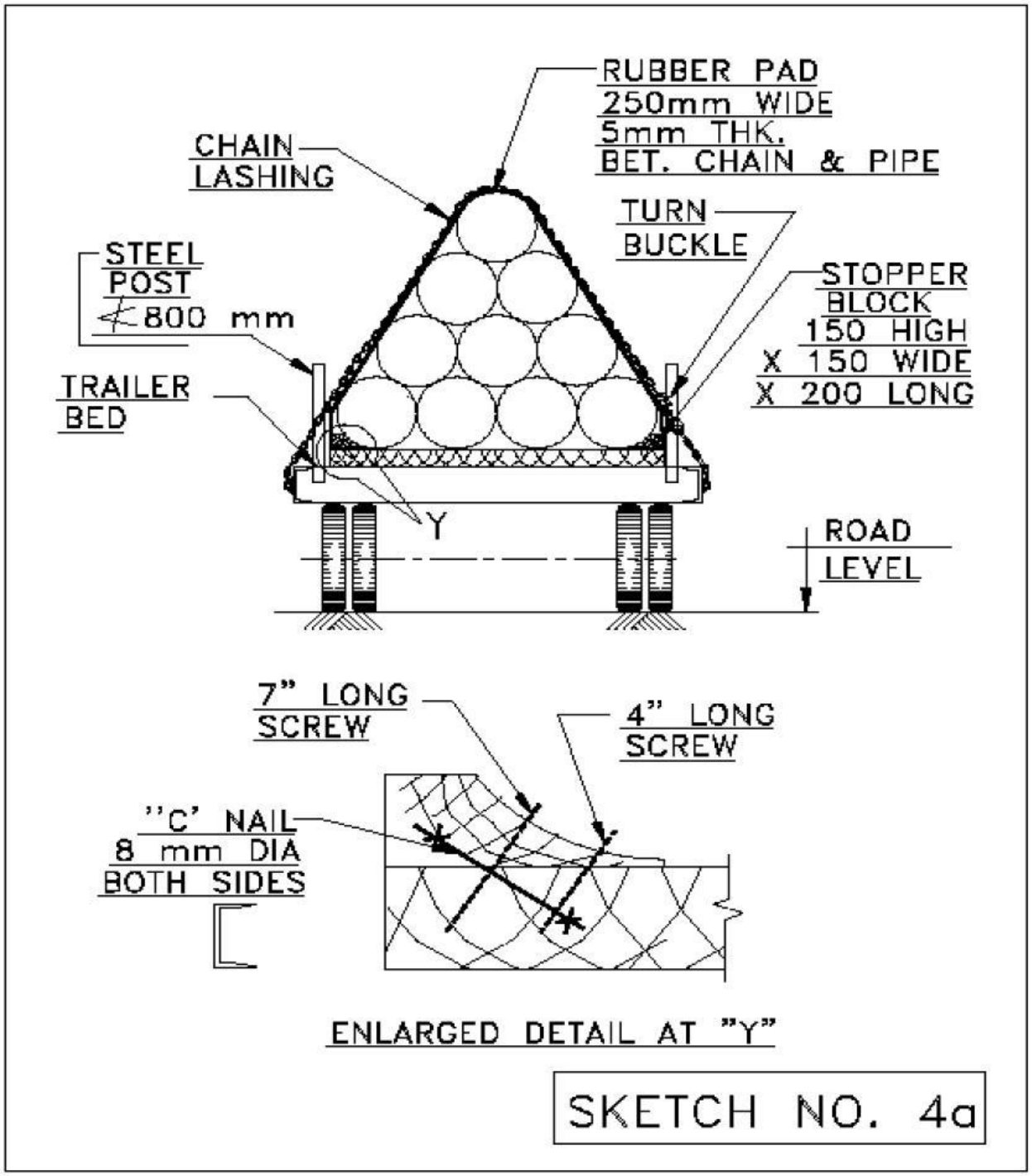
ANNEXURE-III



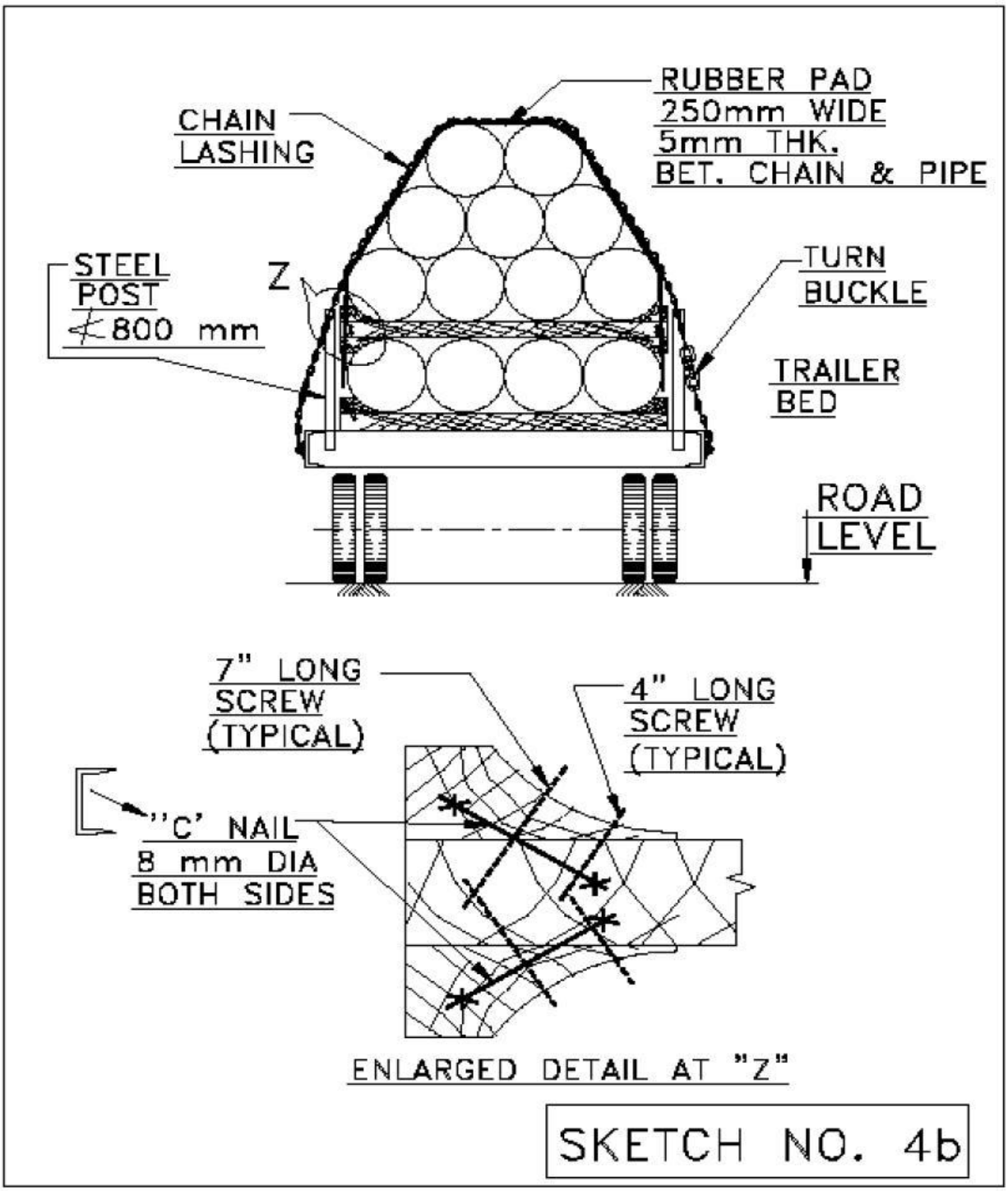
ANNEXURE-IV


CHAIN LASHING
RUBBER PAD 250mm WIDE 5mm THK. BET. CHAIN & PIPE
INTERMEDIATE DUNNAGE (GROOVED TO SUIT PIPES)
TURN BUCKLE
≮800 mm
TRAILER BED
STEEL POST
70 mm MINIMUM
ROAD LEVEL
INTERMEDIATE DUNNAGE (GROOVED TO SUIT PIPES)
TIE STEEL POSTS WITH 8mm DIA. LINK CHAINS, WHEN PIPES ARE SEPARATED BY INTERMEDIATE DUNNAGE
≮800 mm
TRAILER BED
STEEL POST
70 mm MINIMUM
ROAD LEVEL
SKETCH NO. 3b

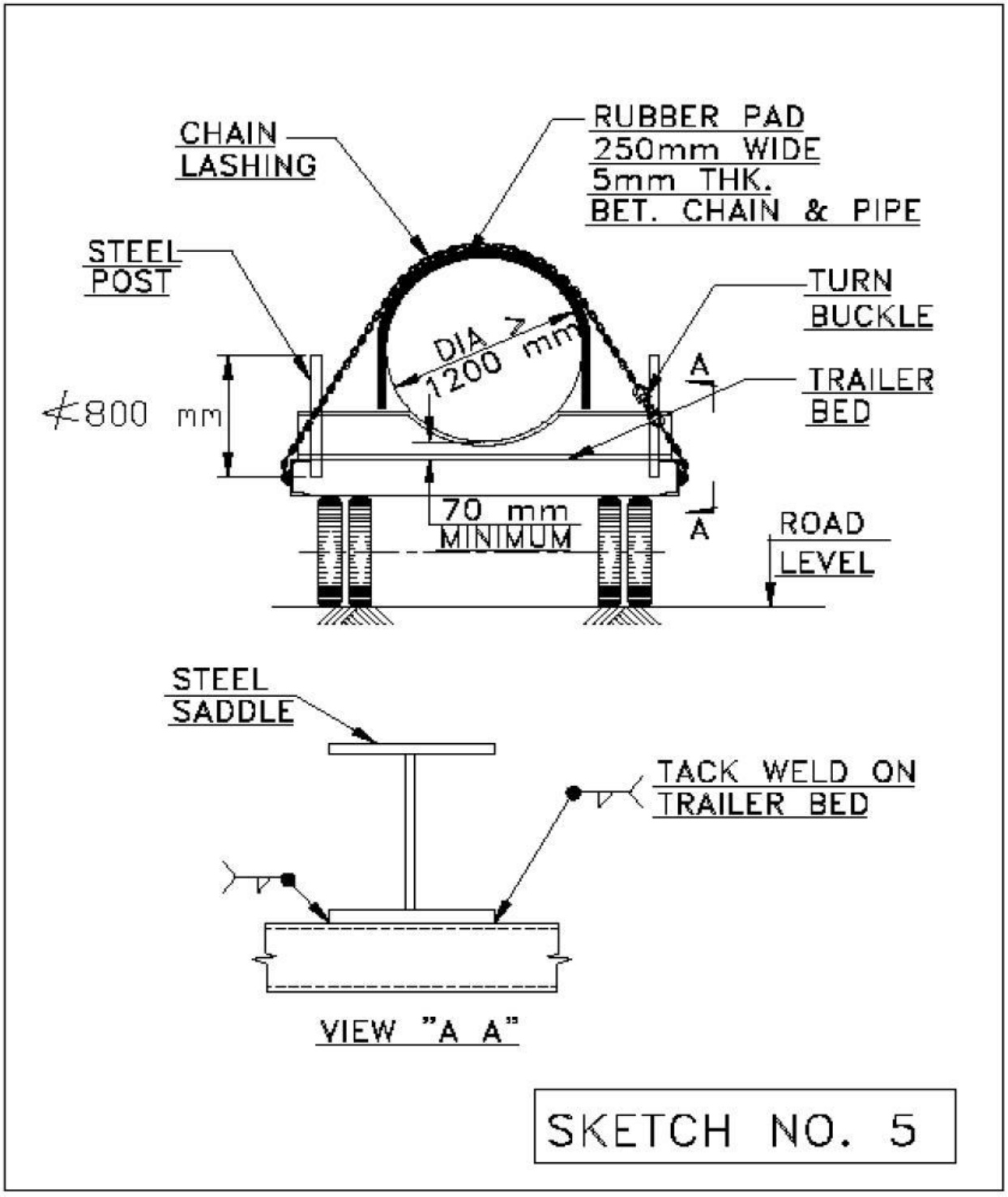
ANNEXURE-V


RUBBER PAD
250mm WIDE
5mm THK.
BET. CHAIN & PIPE
CHAIN
LASHING
TURN
BUCKLE
STEEL
POST
≤800 mm
STOPPER
BLOCK
150 HIGH
X 150 WIDE
X 200 LONG
TRAILER
BED
Y
ROAD
LEVEL
7" LONG
SCREW
4" LONG
SCREW
''C' NAIL
8 mm DIA
BOTH SIDES
ENLARGED DETAIL AT "Y"
SKETCH NO. 4a

ANNEXURE-VI


RUBBER PAD
250mm WIDE
5mm THK.
BET. CHAIN & PIPE
CHAIN
LASHING
STEEL
POST
≤800 mm
Z
TURN
BUCKLE
TRAILER
BED
ROAD
LEVEL
7" LONG
SCREW
(TYPICAL)
4" LONG
SCREW
(TYPICAL)
"C' NAIL
8 mm DIA
BOTH SIDES
ENLARGED DETAIL AT "Z"
SKETCH NO. 4b

AN ANNEXURE-VII



11.5 Transportation of freight materials (Granulated Slag, Coal, Coke, Flue dust, Scrap etc):

Loading and unloading areas should be:

i Clear of other traffic, pedestrians and people not involved in loading or unloading.

ii Clear of overhead cables, pipes, or other dangerous obstructions.

iii Level to maintain stability, vehicles should be parked on firm level ground; fenced or provided with other edge protection where there is a danger of people falling;

iv If necessary, protected against bad weather, e.g. strong winds can be very dangerous during loading.

v Loads should be spread as evenly as possible, during both loading and unloading. Uneven loads can make the vehicle or trailer unstable. Loads should be secured or arranged so that they do not slide around.

vi All such materials must be transported with cover on it. In no case materials should fall on road.

vii For transporting materials like flue dust which is hot in nature, special arrangement should be made by line management / process owner to stop spillage of materials.

11.6 Transportation of Projected material

i Check and ensure that material has been properly tied with chain and shackle

ii Fitness of vehicle must be checked and ensured that vehicle is fit to transport such material

iii Measure, the dimension of loaded material, projected outside dala body at all or any sides (Rear, sideward, above the driver's cabin).

iv Driver must know the dimension of projected material

v Centre of Gravity of the material must lie in the centre of vehicle to maintain the balance

vi Route survey to be done from start to destination and must be ensured that through selected route there is adequate side & height clearance and material can be transported.

vii A Flag man must move at least 30 feet ahead of vehicle to escort the vehicle to destination and caution the Oncoming traffic (Red/Green flag in day time and Red/ Green torch in night time)

viii All such material should be transported in night time from 10.30pm to 5.00am. If it is being transported in day time, one must take permission from appropriate Authority.

ix While transporting in night time red bulb in working condition must be fitted at both side and rear of the outer most projected material. While in day time, red flag of appropriate size must be fastened up at outer most part of all projected material at both side and rear side.

x Flag man must wear personnel protective equipments

xi Flag man must wear high visibility jacket for better visibility to other crew member

xii Use red / green light battery operated torch for signaling

11.7 **Transportation of Hot metal / hot slag**

i Check & ensure that ladle has been properly placed on its foundation.

ii Check the material has been covered properly & there is no chance of heat emission.

iii Check for any spillage of materials from the ladle. Material should not spill out of ladle.

iv Movement of vehicle should be clear from other traffic.

v Flagman must accompany the vehicle to warn the other road users.

vi Provision of siren must be there which should be audible from safe distance. Siren must be in operation while vehicle will move on road.

vii In case of break down of vehicle, immediate action should be taken to remove the vehicle at safe place.

viii Vehicle should not be stop under any gas pipe lines or cable bridge.

ix Both operator & Flagman must be trained for safe operation of vehicle & can take appropriateaction in case of emergency.

12.0 SAFETY PRECAUTION WHILE MOVEMENT OF HYDRA CRANE AND OTHER CRANES

Do's while operating Hydra/Ace crane

i Use of hydra cranes at construction sites to be restricted, so that there is no movement of persons around the hydra. Area around hydra crane operations should be identified and barricaded to prevent unauthorized person in the hazardous zone.

ii Hydra crane is not alllowed to move on road with load.

iii The operator should have only one helper to move ahead of Hydra crane at a distance of 3.0m ahead of boom length on road at right side to guide the operator. While two helper is allowed at Construction site only.

iv The helpers should wear fluorescent jacket. The Helpers should be provided with whistle at ground to caution the surroundings & his own presence to the operator.

v The operator should have a valid HMV driving license.

vi The operator and Helper shall be well trained.

vii Extended guard on front & rear wheel and Bumper must be provided as per attached sheet.

viii Guy ropes of required length on both sides of object shall be provided for lowing and lifting of material only.

ix Clear access while movement of the equipment to be ensured.

x Extra reflective mirrors in operator's cabin to overcome the difficulties pertaining to the left side view shall be provided.

xi Automatic reverse horn should be provided

xii The operator should stop the movement of the crane if the helper's signal is not visible.

xiii Always keep the loading area as level as possible.

xiv The terrain should be reasonably hard. The undulation of path across the direction of travel ways should be less than 10 degrees.

xv The Centre of Gravity of the load shall always be within the wheel load.

xvi Before lifting load, check if connecting string / tackle are properly hooked and are strong enough to take the load.

xvii Before using Hydra cranes, proximity hazards and obstructions to the movement should be identified and corrected.

xviii Apply parking brake and scotch block when the machine is parked.

xix Lift loads as far as possible with crane in unscrewed position.

xx Helper to ensure avoidance of man movement within the vicinity of crane.

xxi Tyre pressure to be checked on daily basis.

xxii Keep the load to the minimum height

xxiii Length of slings should not be too long to avoid swinging

xxiv Avoid going over extremely rough tracks consisting of pot holes or sudden dumps. If at all such path is to be negotiated, minimum speed and lowest gear should be used

Don'ts while operating Hydra/Ace crane

i Engagement of two Hydras to lift single object should not be done.

ii Overloading of the machine should not be done

iii Do not start the crane unless all routine pre-operation are done

iv Do not drive the crane too close to the edge of ditch or excavated pit

v Do not coast down a gradient in neutral gear.

vi Do not leave the crane seat with the load raised and never leave the crane unattended while engine is running.

vii Mobile phone and radios should not be used by the operator and helper while crane is in operation.

viii No other person should be in driver's cabin during operation.

ix No oblique pulling on boom.

12.1 **Dimension of Hydra Crane's Guard**

9.1. **Dimension of Hydra Crane's Guard**

12.2 Hydra Crane Checklist

Equipment Number **Contractor Name** **Date of Inspection**

Sl	ITEMS	OK	NOT OK	REMARKS
	General			
1	Run under protection guard in front and rear wheel			
2	Run under protection guard at front and rear			
3	Rear View mirror			
4	Left- Front view Mirror by sitting at driver s seat			
5	Reverse Alarm			
6	Tire condition and Air Pressure			
7	Wheel Mounting Stud and Nuts			
8	Front Wind sheild Glass condition			
	Boom			
9	Overall structure of the boom			
10	Boom Alignment			
11	Boom Pin Lock			
	Wire Rope			
12	Condition of Hoist Rope & sheave(Pulley)			
13	Wire Rope Clamps			
14	Rope Dia should not be less than10% of Actual dia			
	Hydraulic System			
15	Any oil leakage from hoist drum motor			
16	Any oil leakage from boom hoist cylinder			
17	Oil leakage from steering cylinders			
18	Condition of Hydraulic hoses			
19	Internal leakage in hoist & telescopic boom cylinder			
	Brake			
20	Main Hoist Brake			
21	Foot Brake			
22	Parking Brake			
23	Hoist (Kuppa) brake condition			
	Safety Devices			
24	Rope Guard			
25	Display of Load at different load point in the boom			
26	Over load alarm			
27	Kuppa Over Hoist Alarm			
28	Boom Light Fittings, Blinker & Back light			

12.3 **Some important points for loading cranes(e.g. Ace Crane) on trailer**

i Examine the trailer for tyre condition, general health, road worthiness and conformance to all safety requirements

ii Examine the under frame of the trailer to ensure that it can take the load of the crane at the edges. For transporting crane the loading will be mostly on the edges of the trailer

iii Width of the trailer bed should be such that when the center line of the track chain is parallel to the length of the trailer, most of the track chain will be within the width of the trailer

iv The trailer should be parked on the level ground at the time of the loading. Necessary wedges should be put on the wheel to prevent movement during loading

v No one should be on the trailer bed while loading the crane on the trailer

vi The loading crane and lifting arrangement should be checked as per the relevant safety standards

vii All fastening between the trailer and the crane like D – Shackles, chains, hooks etc. should be checked before hand

viii The counter weight, boom etc. of the crane being loaded should be removed before hand

ix The cabin should be locked with the base to prevent any rotation.

x After the crane is loaded on the trailer, necessary cleats and stoppers of adequate strength shall be welded on all four sides to prevent any movement of the crane during transit. The cleats shall be welded without any movement of the trailer

xi Necessary lashing, chain etc. Shall be used to hold the load in desired condition. These should be of adequate strength to prevent toppling on transit

xii All other jobs related to this shall be done as per the requirement of relevant safety standards

13.0 VEHICLE INCIDENT / COLLISION REPORT

Sl.	Criteria	Details
1	Registration Number of vehicle	
2	Type of vehicle	
3	Vehicle pass number	
4	Safety Number	
5	Department under which vehicle is operating	
6	Name of the driver/employee to whom vehicle is assigned	
7	P.No./ Gate Pass number	
8	Brief description of collision /incidents	
9	Damage report of company property	
10	If the operator injured then details of injury by first Aid Station	
11	Doctor's report if any	
12	Damage report of vehicle	
13	Is the vehicle collided with other vehicle?	
14	If Yes , Details of the other vehicle in the same format	
15	Weather conditions at time of collision/incident	
16	Were seat belts worn?	
17	Was the accident alcohol related?	
18	Was speeding involved?	
19	Road conditions	
20	Last time the vehicle operator received driver training:	