

FORMAT NO. : HSE-4 REV 0

NEAR MISS INCIDENT/ DANGEROUS OCCURRENCE REPORT PROFORMA
(to be submitted within 24 hours)

Report No.: _____

Name of Site: _____

Date: _____

Name of work: _____

Contractor: _____

Incident reported by : _____

Date & Time of Incident : _____

Location : _____

Brief description of incident

Probable cause of incident

Suggested corrective action

Steps taken to avoid recurrence

Yes

No

Safety Officer

Site Head / Resident Construction Manager

(Signature and Name)

(Signature and Name)

Stamp of Contractor

Note:

- **Near Miss:** Human injury escaped & no damage to property, equipment or interruption to work.
- **Dangerous Occurrence:** Occurrences as mentioned below shall be considered as "Dangerous occurrences"
 - a. collapse or failure of lifting appliances or hoist or conveyors or other similar equipment for handling building or construction material or breakage or failure of rope, chain or loose gears; overturning of cranes used in building or other construction work; falling of objects from height;
 - b. collapse or subsidence of soil, any wall, floor, gallery, roof or any other part of any structure, platform, staging, scaffolding or any means of access including formwork;
 - c. collapse of transmission tower;
 - d. fire and explosion causing damage to property at Construction site.
 - e. spillage or leakage of hazardous substances and damage to their container;
 - f. Collapse, capsizing, toppling or collision of transport equipment;
 - g. Leakage or release of harmful toxic gases at the construction site.

To : Owner

:RCM/Site-in-charge EIL (3 copies)

Divisional Head (Const.) through RCM
Project Manager EIL, through RCM

} (Applicable for Dangerous Occurrence only)

FORMAT NO. : HSE-5 REV 0
MONTHLY HEALTH, SAFETY & ENVIRONMENTAL (HSE) REPORT

(To be submitted by each Contractor)

Actual work start Date: _____ For the Month of: _____

Project: _____ Report No: _____

Name of the Contractor: _____ Status as on: _____

Name of Work: _____ Job No : _____

(Contractor in consultation with EIL shall generate the reports through web basedpackage (www3.eil.co.in/eilhse)only.

ITEM	UPTO PREVIOUS MONTH	THIS MONTH	CUMULATIVE
1) Average number of Staff & Workmen (average daily headcount, not man days)			
2) Total Man-hours worked			
3) Number of site personnel undergone HSE Induction			
4) Number of HSE meetings organized at site			
5) Number of HSE awareness programmes conducted at site			
6) Number of Tool Box Talks conducted			
7) Number of Loss Time Injuries (LTI)	Fatalities		
	Other LTI		
8) Number of Non disabling injury (Non-LTI)			
9) Number of First Aid Cases			
10) Number of Near Miss Incidents			
11) Number of Dangerous Occurrences			
12) No. of unsafe acts/ practices detected			
13) No. of disciplinary actions taken against staff/ workmen			
14) Man-days lost due to injury			
15) LTI Free man-hours i.e. LTI free man-hours counted from the Last LTI (enter date:)			
16) Frequency Rate (No. of reportable LTI per 10lacs man-hours worked)			
17) Severity Rate (No. of man days lost due to LTI per 10lacs man-hours worked)			
18) No. of activities for which HIRAC Completed			
19) No. of incentives/ awards given			
20) No. of occasions on which penalty imposed by EIL/ Owner			
21) No. of Audits conducted			
22) No. of pending NCs in above Audits			
23) Compensation cases raised with Insurance			
24) Compensation cases resolved and paid to workmen			
25) No of Vehicular Accident cases			
26) No of fire/Explosion cases			
27) Whether workmen compensation policy taken		Yes	No
28) Whether workmen compensation policy is valid		Yes	No
29) Whether workmen registered under ESI Act, as applicable		Yes	No
30) Whether HIRAC Register prepared and updated		Yes	No
31) Whether Environment Aspect Impact Register prepared and updated		Yes	No
32) Whether Legal Register prepared and updated		Yes	No
Remarks, if any			

Date:

Prepared by Safety Officer Approved by Site Head / Resident Construction Manager
(Signature and Name)(Signature and Name)

To: -
- RCM EIL

FORMAT NO. : HSE-6 REV 1

PERMIT FOR WORKING AT HEIGHTS (ABOVE 2.0 METER)

(In duplicate to be issued daily for site and for office)

Permit No..... Name of Main Contractor.....
Name of work executing agency / sub agency / vendor:.....
Date..... Exact Location of work.....
Nature of workDuration of work (from) (to)
Number of workers covered within this permit.....
(List enclosed with name & gate pass numbers.)

Sl. No.	Items / Subjects	Status of compliance (Yes / No)	
1	Work areas / Equipment's inspected		
2	Work area cordoned off		
3	Adequate lighting is provided		
4	Precautions against public traffic taken		
5	Concerned persons in & around have been alerted & cautioned		
6	Hazards / risks involved in routine / non-routine task assessed and control measures have been implemented at specific task		
7	ELCB provided for electrical connection & found working		
8	Ladder safely attached / fixed		
9	Scaffoldings are checked and TAGs are found used correctly		
10	Working platforms are provided and are found sound /safe for use		
11	Safe access & egress arrangements (e.g. ladders, fall arresters, life-lines etc.) are satisfactorily incorporated		
12	a. Openings on platform / floors are effectively cordoned / covered		
	b. Safety Nets are provided wherever required		
13	Use of following safety gadgets by people working at area under this permit, is checked and found satisfactory -		
	Safety helmet		
	Safety harness (full body) with double lanyard		
	Safety Shoes		
	Safety gloves		
14	Housekeeping of work area found satisfactorily tidy / clean & clear		
15	Adequate measures have been taken for works being continued at the ground level, when simultaneous works are permitted overhead at that very location.		
16	Materials are not thrown from heights on to ground		
17	Medical examination of workers are made & found satisfactory		
18	Responsible job engineer / supervisor found physically present at work spot for overall administration of work as well as safety of people.		

Above items have been checked & compliance has been found in place. Hence work is permitted to start / continue at the above-mentioned location. Work shall not start till identified lapses are rectified.

Additional Precautions, if any

Work Permit Receiver Verification By Work Permit issuer
Contractor Job Supervisor Contractor Safety Officer Contractor Engineer/RCM

AT THE END OF THE DAY/WORK:

All works at height are completed & workmen have returned safely from work location at (time)..... (date).....

(Sig. Contractor Engineer)

FORMAT NO. : HSE-7 REV 1

CONFINED SPACE ENTRY PERMIT

Project site _____ Sr. No. _____
 Name of the work _____ Date _____
 Name of Contractor _____ Nature of work _____
 Exact location of work _____

Safety Requirements POSITIVE ISOLATION OF THE VESSEL IS MANDATORY							
(A) Has the equipment been ?							
Y NR	Y NR	Y NR					
<input type="checkbox"/> <input type="checkbox"/> Isolated from power/steam/air	<input type="checkbox"/> <input type="checkbox"/> water flushed &/or steamed	<input type="checkbox"/> <input type="checkbox"/> radiation sources removed					
<input type="checkbox"/> <input type="checkbox"/> isolated from liquid or gases	<input type="checkbox"/> <input type="checkbox"/> Man ways open & ventilated	<input type="checkbox"/> <input type="checkbox"/> proper lighting provided					
<input type="checkbox"/> <input type="checkbox"/> depressurized &/or drained	<input type="checkbox"/> <input type="checkbox"/> cont. inert gas flow arranged	<input type="checkbox"/> <input type="checkbox"/>					
<input type="checkbox"/> <input type="checkbox"/> blanked/ blinded/ disconnected	<input type="checkbox"/> <input type="checkbox"/> adequately cooled	<input type="checkbox"/> <input type="checkbox"/>					
(B) Expected Residual Hazards							
<input type="checkbox"/> <input type="checkbox"/> lack of O ₂	<input type="checkbox"/> <input type="checkbox"/> combustible gas/ liquid	<input type="checkbox"/> <input type="checkbox"/> H ₂ S / toxic gases					
<input type="checkbox"/> <input type="checkbox"/> corrosive chemicals	<input type="checkbox"/> <input type="checkbox"/> pyrophoric iron / scales	<input type="checkbox"/> <input type="checkbox"/> electricity / static					
<input type="checkbox"/> <input type="checkbox"/> heat/ steam / frost	<input type="checkbox"/> <input type="checkbox"/> high humidity	<input type="checkbox"/> <input type="checkbox"/> ionizing radiation					
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>					
(C) Protection Measures							
<input type="checkbox"/> <input type="checkbox"/> gloves	<input type="checkbox"/> <input type="checkbox"/> ear plug / muff	<input type="checkbox"/> <input type="checkbox"/> goggles / face shield					
<input type="checkbox"/> <input type="checkbox"/> protective clothing	<input type="checkbox"/> <input type="checkbox"/> dust / gas / air line mask	<input type="checkbox"/> <input type="checkbox"/> personal gas alarm					
<input type="checkbox"/> <input type="checkbox"/> grounded air duct/blower /AC	<input type="checkbox"/> <input type="checkbox"/> attendant with SCBA/air mask	<input type="checkbox"/> <input type="checkbox"/> rescue equipment/team					
<input type="checkbox"/> <input type="checkbox"/> Fire fighting arrangements	<input type="checkbox"/> <input type="checkbox"/> safety harness & lifeline	<input type="checkbox"/> <input type="checkbox"/> communication equipment					
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>					
Authorization / Renewal (It is safe to enter the confined space)							
No. of persons allowed	Name of persons allowed	Signature			Time		Signature
		Work Permit Receiver(Contractor Supervisor)	Verification by Contractor Safety officer	Work permit issuer Contractor Engineer/RCM	From	To	Workman
Permit Closure :							
(A) Entry <input type="checkbox"/> was closed <input type="checkbox"/> stopped <input type="checkbox"/> will continue on ...							
(B) <input type="checkbox"/> Site left in a safe condition <input type="checkbox"/> Housekeeping done							
(C) Multi lock <input type="checkbox"/> removed <input type="checkbox"/> key transferred							
<input type="checkbox"/> Ensured all men have come out <input type="checkbox"/> Man-ways barricaded							
Remarks, if any:							

FORMAT NO. : HSE-8 REV 0

RADIATION WORK PERMIT

Project : Sr. No. :
Name of the work : Date :
Name of site contractor : Job No.:

Location of work :

Source strength :

Cordoned distance (m) :

Name of Radiography agency : Approved by Owner/EIL

No. of workers engaged :
(List enclosed with name & gate pass numbers.)

The following items have been checked & compliance shall be ensured during currency of the permit:

S. No.	Item description	Done
	Safety regulations as per BARC/AERB ensured while source in use/in transit & during storage	<input type="checkbox"/>
	Area cordoned off / safe working platform provided	<input type="checkbox"/>
	Lighting arrangements for working during nights ensured	<input type="checkbox"/>
	Warning signs/ flash lights installed	<input type="checkbox"/>
	Cold work permit taken (if applicable)	<input type="checkbox"/>
	PPEs like film badges, dosimeters used	<input type="checkbox"/>

Additional precautions, if any _____

(Radiography Agency's BARC/AERB authorized Supervisor)

Permission is granted.

Permit is valid from _____ AM/PM _____ Date to _____ AM/PM _____
Date

(Signature of permit issuing authority-RCM of contractor)

Name : Designation: Date:

Permit renewal:

Permit extended up to		Additional precautions required, if any	Sign of issuing authority with date (of site contractor)
Date	Time		

Work completed/ stopped/ area cleared at _____ Hrs of Date _____

(Sign. of permit issuing authority)
Name & Signature of site contractor:

FORMAT NO. : **HSE-9 REV 1**
DEMOLISHING/DISMANTLING WORK PERMIT

Project : Sr.No. :
 Name of the work : Date :
 Name of contractor : Job No. :

Name of sub-contractor : No. of workers to be engaged:
(List enclosed with name & gate pass numbers.)

Line No./ Equipment No./ Structure to be dismantled :

Location details of dismantling/ demolition with sketch : (clearly indicate the area)

The following items have been checked & compliance shall be ensured during currency of the permit:

S. No.	Item description	Done	Not Applicable
	Services like power, gas supply, water, etc. disconnected	<input type="checkbox"/>	<input type="checkbox"/>
	Dismantling/ Demolishing method reviewed & approved	<input type="checkbox"/>	<input type="checkbox"/>
	Usage of appropriate PPEs ensured	<input type="checkbox"/>	<input type="checkbox"/>
	Precautions taken for neighboring structures	<input type="checkbox"/>	<input type="checkbox"/>
	First-Aid arrangements made	<input type="checkbox"/>	<input type="checkbox"/>
	Fire fighting arrangements ensured	<input type="checkbox"/>	<input type="checkbox"/>
	Precautions taken for blasting	<input type="checkbox"/>	<input type="checkbox"/>

Work Permit Receiver
 (Contractor's Supervisor/Engineer)

Verification by Contractor
 (Contractor's Safety Officer)

Permission is granted.

(Work Permit issuer-Client)

Name :
 Date :

Completion report:

Dismantling/ Demolishing is completed on _____ Date at _____ Hrs.

Materials/ debris transported to identified location Tagging completed (as applicable)

Services like power, gas supply, water, etc. restored

(Permit issuing authority-Client)

CONTRACTOR'S NAME

FORMAT NO. : HSE-10 REV 0

DAILY SAFETY CHECKLIST

(To make use of before start of day's work)

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No.:

Description of Job decided to perform : -

- Use of PPE / Safety Gadgets

Sl. No	PPEs	Compliance (Yes / No)	Sl. No	PPEs	Compliance (Yes / No)
1	Safety Helmets		6	Face Shield	
2	Safety Shoes		7	Full body harness	
3	Hand Gloves		8	Fall Arrest System	
4	Dust Musk		9	Safety net	
5	Safety Goggles		10	Horizontal life-line made of steel wire, (dia not less than 8.0 mm.)	

(Serial No. 1 & 2 are compulsory for everyone. Specify & ensure use of other safety gadgets as required for the job)

- Identify following important unsafe conditions: -

Sl. No	Conditions	Yes / No
1	Access to work site / emergency escape clear	
2	Soil / Loose earth kept away from excavated pit / slope / ladder provided	
3	Electrical wire / welding lead lying entangled on ground / welding m/c. booth accessible	
4	Elevated work platform / open ends are protected	
5	Ground area cordoned off before lifting works or erection at height / ground area checked & cordoned-off before start of height works	
6	Structural members / erected pipes / wooden boards/pieces etc. are safely anchored at heights and are not likely to fall down on people when working beneath	
7	Ladders tied-up on tall steel structures, long before are removed to get rid of their use	
8	Any Other	

- Indicate actions taken, if status of any of the above items is found "No"
.....
- Specific Safety guidelines / precautions, if any (communicated thro' TBT)
.....
- Above conditions and PPE compliances are checked by undersigned and correct status are indicated after verification

Prepared by
Contractor Site Engineer

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-11 REV 0

(Sheet 1 of 2)

HOUSEKEEPING ASSESSMENT & COMPLIANCE

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :
Name of contractor : Fortnightly

Sl. No.	Subjects of Review	Satisfactory/ Yes	Non satisfactory/No	Remarks	Action
1.	Cleanliness at the Main entry / access of site				
2.	Ground condition / floor areas free from water-logging / oil spillage				
3.	Ground & elevated floors free from rubbish / wastes / accumulated debris / scraps.				
4.	Manholes / openings are covered / fenced				
5.	Trenches are barricaded / walkways are in place				
6.	Drains are cleaned / not choked / not occupied by dumped materials				
7.	Sufficient CAUTION boards / instructions displayed				
8.	Construction machinery are maintained & parked in orderly manner.				
9.	Movement of site people are not obstructed because of dumping / storing of construction materials				
10.	Access / egress to Electrical Distribution Boards / Panels clear from wires / cables / earth-strips etc.				
11.	Electrical panel rooms / sheds / MCC / Control rooms / Substations etc. are clean & tidy and not used for storing dress / clothes, tiffin-box or bicycles.				
12.	Passage behind Elec. panels are free for access				
13.	Fire extinguishers / fire-buckets are accessible without any difficulty.				
14.	Stair-steps, platforms & landings are clear & tidy				
15.	Sheds / rooms & work areas have got sufficient illumination as well as ventilation				
16.	Cables / Wires / welding leads are routed / hanged appropriately & are not creating unsafe condition.				
17.	Stacking / storing of insulation materials or their packing.				
18.	Removal or cleanliness of left-over sand, concrete, brick-bats, insulation-materials, excess earth, wastes etc.				
19.	Storing / stacking of sand, metal chips, re-bars, steel pipes, valves, fittings etc.				
20.	One escape route at ground & minimum two escape routes at elevation available,				

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Sl. No.	Subjects of Review	Satisfactory/ Yes	Non satisfactory/No	Remarks	Action
21.	Captions / Posters / Slogans on various safety instructions are displayed legibly in local language				
22.	Cable trenches are water-free or regular arrangement for taking out accumulated water exists.				
23.	Windows of rooms / offices are regularly cleaned				
24.	Facilities for cycle sheds, drinking water, washing, rest-rooms etc. are maintained in tidy manner.				
25.	Toilet, Urinals, Canteen / kitchen / pantry etc. are maintained & free from obnoxious smell.				
26.	Construction tools / tackles are stored systematically - the items are tagged / tested / certified by competent third party.				
27.	Sufficient numbers of Dust-bins / Waste-bins found at site and are regularly emptied.				

Additional remarks, if any -

.....
.....
.....

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-12 REV 0

INSPECTION OF TEMPORARY ELECTRICAL BOOTH / INSTALLATION

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :
Sub Station No:/Booth No Location:

SL NO	SUBJECTS	OBSERVATION (YES /NO)	ACTION TAKEN
1	Switchboards installed properly are in order and protected from rain & water-logging.		
2	Adequate illumination provided for switchboard operation during night hours & the lamps are protected from direct human contact.		
3	Voltage ratings, DANGER signs, Shock-Treatment-Chart displayed in the installation / booth		
4	Fire extinguisher (DCP or CO ₂) & Sand Bucket kept in close vicinity of Switchboards		
5	Valid License & Competent Electrician / Wireman available & name/ license no. displayed at booth / installation.		
6	General housekeeping in & around booth / installation found in order.		
7	Cable-route-markers for U/G cables provided.		
8	Monthly inspection report of Electrical hand tools available in booth / installation.		
9	Electrical Panel door to be in closed condition and Insulated Mat to be provided in front of panel.		
10	Rubber hand gloves available/ used by Electricians		
11	Availability of CAUTION boards for shutdown & / or repairing works.		
12	All incoming & outgoing feeders have proper MCCB / HRC fuses / Switches.		
13	Switchboards "earthed" at two distinctly isolated locations.		
14	Switchboards have adequate operating space at the front face & at the rear face too.		
15	All connections provided through 30mA ELCB.		
16	Testing records of all ELCBs available at site		
17	Only industrial type plugs & sockets are used.		
18	Temporary connections are 3-core double insulated & free from cuts & joints and 3 rd core is earthed at both ends		
19	Socket boards are properly mounted on stand & protected from water ingress.		
20	Electrical equipments operating above 250V have two earthing / double earthing.		
21	All incoming / outgoing cables are properly glanded& terminated with "lugs".		
22	Switch-boards are of industrial variety / type.		
23	Sketch for installation / connection (SLD) made & pasted& other safety labels/display boards		
24	Labeling of incoming / outgoing feeders made.		
25	All hand lamps are protected from direct contact.		
26	All electrical cable / joints are in safe condition		

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

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INSPECTION FOR SCAFFOLDING

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :

Sl. No	Description	Yes	No	N.A.	Actions taken
1	Whether work permit is obtained to take up work at height above 1.5 Mts?				
2	Whether atmospheric condition is "stormy" or "raining" and works at heights have been permitted?				
3	Whether steel pipes scaffoldings are used for units /off-site areas?				
4	Whether scaffolding has been erected on rigid/firm/leveled surfaces / ground? Whether "foot-seals" or "base-plates" are used beneath the up-rights (vertical steel pipes)				
5	Whether scaffold construction is as per IS specification with toe-board and hand-rails (top-rail as well as mid-rail)?				
6	Whether distance between two successive up-rights are less than 2.5 Mts (height of scaffold & load carrying capacity governs the distance between two uprights)				
7	Whether all uprights are extended at least 900 mm above the top most working platform (to enable fitting of handrails)?				
8	Whether vertical distance of two successive ledgers is satisfactory? (varying between 1.3 Mts. To 2.1 Mts)				
9	Whether the peripheral areas of working at height are cordoned-off? (for avoiding accident to people arising out of dropped / deflected materials)				
10	Whether platform is provided? Is it safely approachable?				
11	Whether end of scaffold platform / board are extended beyond transoms? (125mm to 150 mm)				
12	Whether CE / IS approved quality and worthy conditioned full-body safety harness (with double lanyard & karabiners) are used while working at heights?				
13	Whether life-line of safety harness is anchored to an independent secured support capable of withstanding load of a falling person?				
14	Whether the area around the scaffold is cordoned off to prohibit the entry of unauthorized person / vehicle?				
15	Whether clamps used are of good condition, of adequate strength and free from defects?				
16	Whether ladder is placed at secured and leveled surface?				
17	Whether water-pass and oil-spills are avoided around the scaffold structure?				
18	Whether ladder is extended 1.5mts. above the landing point at height?				
19	Whether more than one access/egress provided to the scaffold?				
20	Whether ladder used are of adequate length and overlapping of short ladders avoided?				
21	Whether metallic ladders are placed much away from near-by electrical transmission line?				
22	Whether rungs of ladder are inspected and found in good order?				
23	Whether fall-arresters provided on both the access/egress routes?				
24	Whether diagonal (cross) bracings are provided at regular interval on the scaffold?				
25	Whether working platform on the scaffold has been made free from "jolt" or "gap"?				
26	Whether tools or materials are removed after completion of the day's job at heights?				
27	Whether a valid Permit for Work (PFW) is obtained before taking up work over asbestos or fragile roof?				
28	Whether sufficient precaution is taken while working on fragile roof?				

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Sl. No	Description	Yes	No	N. A	Actions taken
29	Whether provision is made to arrange duck ladder, crawling board for working on fragile roof?				
30	Whether scaffold has been inspected by qualified civil engineers prior to their use?				
31	Whether the scaffolding has been designed for the load to be borne by the same?				
32	Whether the erection and dismantling of the scaffolding is being done by trained persons and under adequate supervision?				
33	Whether safety net with proper working arrangement and life-line has been provided?				
34	Whether TAGS (Green for acceptable and Red for incomplete/unsafe scaffolds) are used on scaffolds?				
35	Whether sufficient illumination is provided in and around the scaffold and access?				
36	Whether emergency rescue / response arrangements are made in place				

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-14 REV 1

(sheet 1 of 2)

PERMIT FOR ERECTION / MODIFICATION & DISMANTLING OFSCAFFOLDING

Project : Sr.No. :
 Name of the work : Date :
 Name of contractor : Job No. :
 Nature of activities : Duration: From.....To.....

SL. No.	SUBJECTS / ITEMS	DONE	NOT DONE	REMARKS
1	Specific task of Erection / Modification / Dismantling of scaffolds, identified & TAGGED accordingly (before as well as after carrying-out jobs).			
2	People engaged in doing the job are identified & are certified by Job Engineer of Main Contractor as experienced / trained.			Names to be noted
3	Concerned persons are alerted by the Job Engineer of Main Contractor in connection with possible hazards & what the workmen MUST do / MUST not do.			
4	Verification by Job Engineer of Main Contractor made for confirming that all persons permitted to carry-out the jobs are making use of Helmet, Safety Shoes, Goggles, Gloves & Double lanyard safety harness and other relevant PPEs.			
5	Area of work is effectively cordoned-off / barricaded / illuminated.			
6	For taking-up / lowering down Scaffolding members / clamps / couplings etc. appropriate ropes / pulleys/ chains etc. have been arranged for use (not to throw any item) & the same have been verified as "fit for purpose".			
7	Items / members of scaffold, being lowered are removed from the area & stacked correctly.			
8	Ropes, chains, pulley blocks etc. being used for lifting or lowering scaffold items, are inspected by the Job Engineer & their certifications as well as physical conditions have been found O.K. before signing this PERMIT.			
9	Safety Net / Life-line / Fall Arresters etc. are arranged in position and Job Engineer has found working conditions favorable for activities to start.			
10	Scaffold erection or dismantling tasks are being supervised by Experienced Engineer / Competent person.			
11	Only competent & experienced people have been selected / engaged in Scaffolding erection, modification or dismantling tasks.			
12	Adequate & effective actions for traffic and movement of people around the cordoned-off area taken to avoid inadvertent incident			
13	Working platforms are protected with handrails & toe-boards.			
14	Access & Exit (for reach & escape) are safe for use by people.			
15	Tools, tackles to be used for above jobs are verified by job Engineers of Main contractor as genuinely good and tied-up at height (to prevent their fall).			
16	Site important Telephone Nos. are made known to everyone			
17	SOP (Safe Operating Procedure) for the specific task is made & followed too.			
18	Emergency vehicle has been arranged at work locations.			

- This permit for work shall be available at specific work location all the time.
- After completion of work, permit shall be returned to safety cell of main contractor, without fail.
- This Permit shall be issued maximum upto (Monday to Sunday).
- Additional Precautions, if any

.....
 • **ACCORD OF PERMISSION** (to be ticked) - YES () / NO ()
 Work Permit Receiver Verification By Work Permit issuer Contractor Job Supervisor
 Contractor Safety Officer Contractor Engineer/RCM

FORMAT NO. : HSE-14 REV 1

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Everyday Site working conditions & performance of workmen shall be assessed / checked by Contractor Site Engr. and Safety Officer shall verify the same.

	Name / Sign.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Site Engr.								
Safety Off.								

FORMAT NO. : HSE-15 REV 1

PERMIT FOR HEAVY LIFT/CRITICAL ERECTION

Project : Sr. No. :
Name of the work : Date :
Name of contractor : Job No. :
Nature of activities : Duration: From..... To.....
Location of work : Name /Type of crane :
Equipment/Structure to be erected: Wt. of equipment/ structure to be erected

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
1)	Is the crane type suitable for lift or as per erection procedure?				
2)	Is the crane have the correct number of counterweights fitted?				
3)	Availability of Load Certification of crane from authorized agency.				
4)	Is the load chart of crane available in crane cabin/or with Crane operator?				
5)	Is the device to check the Wind speed in crane is working? Is the safety features in crane are working?				
6)	Availability of Load certification of slings and other accessories from authorized agency				
7)	Availability of Licensee/certificate for crane operator from authorized agency.				
8)	Availability of approved HIRAC for the subject activities.				
9)	Availability of approved erection/rigging procedures.				
10)	Availability of temporary gratings/ platforms for critical lifting(as applicable)				
11)	Tool Box conducted before erection?				
12)	Has the area been cordoned off?				
13)	Are the authorized persons during erection are identified?				
14)	Does each person identified for erection understand their roles and responsibilities?				
15)	Is the ground on which crane will rest or outrigger support are correct?				
16)	Is hard stand requirement (if any) complied?				
17)	Is the communication system (viz walkie-talkies, etc. are working properly?				
18)	If more than one crane is lifting the load, is an Intermediate rigger will supervise the lift?				
19)	If there is other obstruction within the operating radius of the crane, have correct precautions been taken to prevent collision?				
20)	All the persons are wearing the requisite PPE?				

Work Permit Receiver
Contractor Safety Officer

Verification By
Contractor Engineer/RCM

Work Permit issuer Contractor Job Supervisor

FORMAT NO. : HSE-16 REV 1

PERMIT FOR ENERGY ISOLATION & DE-ISOLATION

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :

ENERGY ISOLATION PERMIT	
<ul style="list-style-type: none"> • Clearance required from:.....HrsDate ToHrsDate • Name of equipment/ energy source etc. • Nature of job to be done: • Area.....Location:..... 	
<p>PERMIT VALIDATION</p> <p>I hereby authorize thepersonnel(performer) to isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for maintenance/repair.</p> <p>Issuing authority Client/Contractor RCM (as applicable) Signature: Date: Name:</p>	<p>PERFORMING AUTHORITY</p> <p>The work and precautions will be carried out under my overall responsibility.(Testing/execution engineer)</p> <p>Signature: Date: Name:</p>

SAFETY PRECAUTIONS FOR CLEARANCE	NORMALISING AFTER CLEARANCE
<ol style="list-style-type: none"> 1. Notify workers of intent to de- energize <input type="checkbox"/> 2. Obtain lock, tag or locking/tagging devices <input type="checkbox"/> 3. Shut down, de-energize, dissipate any residual energies. <input type="checkbox"/> 4. Apply lock ,tag and locking and/or tagging devices <input type="checkbox"/> 5. *Any other job specific precautions <input type="checkbox"/> 6. Verify effectiveness of lockout by attempting to restart. <input type="checkbox"/> 7. Proper PPE is ensured <input type="checkbox"/> <p>I certify that the energy source mentioned above is isolated from all sources and is safe to start the work.</p> <p>Tag No:..... Lock No:.....</p> <p>Issuing authority Client/Contractor RCM (as applicable) Signature: Date: Name: (*to be included by contractor in consultation with issuing authority)</p>	<ol style="list-style-type: none"> 1. Notify workers of intent to re- energize <input type="checkbox"/> 2. Conduct visual inspection to confirm that the danger zone is clear of workers <input type="checkbox"/> 3. Conduct visual inspection to confirm that tools ,equipment’s danger zone is clear of workers <input type="checkbox"/> 4. Reposition the safety devices(interlocks, valves, guards, covers ,sensors, as applicable, etc.) <input type="checkbox"/> 5. *Any other job specific normalizing details <input type="checkbox"/> 6. Remove lock, tag and locking and/or tagging devices. <input type="checkbox"/> 7. Re-energize. <input type="checkbox"/> 8. Confirm system is operating properly& safely <p>I certify that the energy source mentioned above is isolated from all sources and is safe to start the work.</p> <p>Tag No:..... Lock No:.....</p> <p>Issuing authority Client/Contractor RCM (as applicable) Signature: Date: Name: (*to be included by contractor in consultation with issuing authority)</p>

ENERGY DE-ISOLATION PERMIT	
<p>PERMIT VALIDATION</p> <p>I hereby authorize thepersonnel(performer) to de- isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for normal operation..</p> <p>Issuing authority Client/Contractor RCM (as applicable) Signature: Date: Name:</p>	<p>PERFORMING AUTHORITY</p> <p>I hereby certify that the equipment/energy source mentioned above has been de-isolated and is ready for normal operation.(Testing/execution engineer)</p> <p>Signature: Date: Name: Countersigned by Issuing authority</p>

FORMAT NO. : HSE-17 REV 1

PERMIT FOR EXCAVATION (depth 2m and above)

(Sheet 1 of 2)

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :
Job Description : Location :
Size of excavation :

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
1)	Suitable and sufficient risk assessments and method statements has been carried to ensure that the work shall be undertaken in accordance with specification and standard.				
2)	Are plans/details of underground services available and the same has been reviewed?				
3)	Has survey done to locate the services/obstacles etc.				
4)	Has the live services (electrical, water line, air line, telephone line, etc)has been disabled for carrying out the job.				
5)	Is adequate barriers/fences to protect the excavation are in place?				
6)	Is Adequate warning signs are in place?				
7)	Is Assessment of ground conditions done and remedial action(if any) taken?				
8)	Safe access / egress (e.g. ramp / steps / ladders etc.) provided for site workmen & supervisors.				
9)	Is the excavation work being undertaken in proximity of structure, etc. ?If Yes, it's effect is considered?				
10)	Availability of competent person for supervising the excavation work?				
11)	Adequate safe arrangement to prevent collapse of edges (e.g. shoring / strutting / benching / sloping etc.) made at site.				
12)	Hard barricades (at least 1.0M away from edge & for excavation near site access roads) with warning signs/caution boards are provided				
13)	Accumulation / passage-ways of water at periphery of excavation / trench stopped/ restricted.				
14)	Is the equipment being used for excavation has been checked for adequacy and is in good working condition having all the safety features?				
15)	Age & fitness of workmen ensured by medical test before engagement in job ?				
16)	Arrangement of Monitoring of possible oxygen deficiency or obnoxious gases done & action taken?				

PERMIT GRANTED - Yes / No

(List enclosed with name & gate pass numbers.)

Name & Signature of Site Engr.

Name & Signature of Area – In charge/RCM of

Contractor (Receiver)

Contractor (Issuer)

Verification by Contractor Safety Officer

FORMAT NO. : HSE-17 REV 1

PERMIT FOR EXCAVATION

(Sheet 2 of 2)

NOTES: -

1. Slopes or benches for excavation beyond 2.0M depth shall be designed & approved by Contractor's site head.
2. Excavated earth to be kept at least 1.5M away from edges
3. Safety helmets, Safety shoes or gum-boots, gloves, goggles, Face shield, Safety Harness shall be essential PPEs.
4. Permit shall be made in **duplicate** and original shall be available at site of work.
5. Permit shall be issued for maximum **one week** only (Monday to Sunday)
6. After completion of works, permit shall be closed & preserved for record purpose

GRANT OF PERMIT AND EXTENSIONS

Sl. No.	Validity period From ____ To ____	Working Time From ____ To ____	Receiver (site Engr. of Main Contractor)	Issuer(Area In charge/RCM of Main Contractor)	Review by EIL / Owner (Remarks with date
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Additional safety instructions if any: -

- 1.
- 2.
- 3.

FORMAT NO. : HSE-18 REV 0

(Sheet 1 of 2)

IDENTIFICATION OF ENVIRONMENTAL ASPECTS, IMPACT ASSESSMENT AND CONTROL MEASURES

S.No	Activity	Environmental Aspect	N/A/E	Environment Impact	Control Measures	Consequences						Risk Level	Significant	Gaps/ Recommendations
						A	B	C	D	E	F	G	Yes/No	

(Sheet 2 of 2)

INITIAL ENVIRONMENT REVIEW TECHNIQUE

Environmental Impacts	AP = Air Pollution	WP = Water Pollution	LC = Land Contamination	DNR = Depletion of Natural Resources	NP = Noise Pollution
-----------------------	--------------------	-------------------------	-------------------------	---	----------------------

Scale	Quantity (A)	Occurrence (B)	Severity of Impact (C)	Detection (D)	Control (E)	Legal and other requirements (F)
1	Negligible	Very Rare	Negligible visual impact	Immediately	Available & effective at place	In compliance or not applicable
2	Low	Once a month or less	Causes Discomfort or Nuisance	Within 1 hour	Has in-built Secondary control	
3	Moderate	Once a day	Resource Depletion	Within 8 hours	Needs human Intervention	
4	High	Several times a Day	Affects Aquatic Life, flora, fauna or global issue	Within 24 hours	Mechanism in place but not reliable	
5	Excessive	Continuous	Human health effect	More than 24 hours	Absent or no effective control	Not in compliance

Risk Level - $G : A \times B \times C \times D \times E \times F$

Aspects with score of **100 and above** are considered as significant.

Also, Irrespective of the score, all legal noncompliance's to be considered as significant

Condition	
N	NORMAL
A	ABNORMAL
E	EMERGENCY

FORMAT NO. : HSE-19 REV 0 HIRAC

Risk Identification						Desired Controls & Existing Gaps, If Any		Risk Assessment				Recommended Control Actions To Reduce The Risk Level	Action By	Remarks
SN	Activity	Activity Type (R/NR)	Hazards	Condition (N/AN/E)	Associated Risk	Desired Control Measures	Gaps If Any	Probability (P)	Impact (I)	Risk R= P*I	Risk Classification			

Likelihood – Possibility of occurrence of risks based on present gaps (technological / operational / competence / measurement and monitoring);

UL: Unlikely, **L:** Likely, **VL:** Very Likely, **FR:** Frequent, **C:** Continuous

Impact –

SI: Slight Injury, **MI:** Minor Injury, **MJ:** Major Injury, **SF:** Single Fatality, **MF:** Multiple Fatalities

Level of consequence – Refer Guidance criteria for this i.e. possible degree of damage;

Condition- **N:** Normal, **AN:** Abnormal, **E:** Emergency

Activity Type: **R-** Routine, **NR-** Non Routine

RISK –

L: Low Risk, **M:** Moderate Risk, **H:** High Risk

FORMAT NO.: HSE-20 REV 0

Inspection of Tower Crane

Name of Contractor:

Project:

Name of Work:

Job No:

Vehicle Identification/Registration No:

Date:

Sr. No.	Description	Observation	Remarks & Suggestions
1	Serial number plate & SWL marking		
2	Valid TPI Certificate		
3	Valid Insurance		
4	Safe access and egress are provided to the crane operator.		
5	Front glass of Operator cabin		
6	Operator crane cabin is provided with a locking mechanism so as to prevent unauthorised entry.		
7	A safety bar is fitted across the operator's cabin window where there is likelihood of the operator falling through it.		
8	Manufacturer Operating Manual and Maintenance Manual are made available.		
9	An updated Operation and Maintenance log book is available in the operator cabin.		
10	All mounting bolts are in good condition.		
11	Load chart provided		
12	SLI available		
13	Crane hooks have got smooth surface and no dent		
14	Hook-latch / Dog-clamp in hook is effective		
15	Over hoist limit switch		
16	Double body earthing of Tower Crane		
17	Jib angle indicator is provided (For Luffing Jib Tower Crane).		
18	Emergency stop button, which will terminate the operation of the crane engine, is installed in the operator cabin and correctly identified.		
19	Effective braking mechanisms for Hoisting, Derricking, Slewing, Trolley Travelling maintained:		
20	Trolley Travelling limiter to prevent over-travelling of trolley is functional.		
21	Limit switches to prevent over-derricking and over-lowering of jib (For Luffing Jib Tower Crane) is functional.		
22	Slewing limiter to restrict slewing of crane is functional.		
23	Over load Limiter to prevent overloading of crane is functional.		
24	Load Moment Limiter to prevent over-turning moment is functional.		
25	Anti-collision devices are tested to stop the tower crane's operation such that the crane-to-crane interference must be maintained at not less than 3 m.		
26	Condition of boom		
27	Counter weight placement and pins		
28	Winches, pulleys and wire ropes are in good working condition.		
29	Colour coding		
30	Leakage in hydraulic cylinder		

31	Fire Extinguisher		
32	Tower crane is adequately grounded or protected against lightning.		
33	Wind anemometer is installed and is in good working condition.		
34	Aviation lamp is functional (Reqd. for 30mt and above)		
35	Pre Medical Check-up & Periodic Medical check-up (every 6 months) including vision test for Operator		
36	Safety Induction for Operator		
37	Others		

Signature & Name of
Operator:

Signature and name of Job
Engineer

Signature & Name of Contractor's Safety Officer



FORMAT NO. : HSE-21 REV 0

Crane Inspection Checklist

Name of Contractor:

Project:

Name of

Work:

Job No:

Vehicle Identification/Registration No:

Date:

Sr. No.	Description	Observation	Remarks & Suggestions
1	Crane hooks have got smooth surface and no dent		
2	Hook-latch / Dog-clamp in hook is effective		
3	Over hoist limit switch		
4	Over Load Indicator		
5	Over Boom limit switch		
6	Boom angle indicator		
7	Colour coding		
8	Condition of boom		
9	Condition of wire rope		
10	Rope drum / sheaves are in good working condition		
11	Swing break & lock		
12	Swing Alarm		
13	Over hoist break & lock		
14	Boom break & lock (For Telescopic Boom)		
15	Leakage in hydraulic cylinder		
16	Condition of Outrigger (For Tyre Mounted Crane)		
17	Outrigger fully extended Marking (For Tyre Mounted Crane)		
18	Condition of Tyre (For Tyre Mounted Crane)		
19	Wheel chokes are present and are used whenever required (For Tyre mounted)		
20	Battery & lamps		
21	Moving & rotating parts guarded		
22	Load chart provided		
23	Reverse horn (For Tyre Mounted Crane)		
24	Body Condition of crane		
25	Front glass of Operator cabin		
26	Both side Mirror		
27	Number Plate (For Tyre Mounted Crane)		
28	Fire Extinguisher		
29	Horn		
30	Windshield and wipers		
31	Working of light & Indicator		
32	SLI		
33	Spark Arrestor(For Running Refinery/ Petrochemical/Chemical Plant)		

34	Foot-steps and hand-holds are in good working condition for exit /enter in to cabin		
35	TPI,Certificate		
36	RC Document (For Tyre Mounted Crane)		
37	Fitness Certificate of Vehicle by authority		
38	Insurance		
39	PUC		
40	HMV License for Operator		
41	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
42	Safety Induction for Operator		
43	Others		

Signature & Name of
Operator:

Signature & Name of Contractor's
Concern Engineer

Signature & Name of Contractor's Safety Officer

FORMAT NO. : HSE-22 REV 0

Hydraulic Mobile Crane- Inspection Checklist

Name of Contractor:

Project:

Name of Work:

Job No:

Vehicle Identification/Registration No:

Date:

Sr. No.	Description	Observation	Remarks & Suggestions
1	Identification number of Hydraulic Mobile crane boldly scribed in front and rear end of machine		
2	Operator has got adequate document in support of his competency (i.e. HMV driving license, knowledge & training)		
3	Marking of SWL on hook position is clearly visible		
4	Test & examination of Hydraulic Mobile crane by statutory / competent authority is carried out & document is valid		
5	Colour Coding		
6	RC Document		
7	Fitness Certificate of Vehicle by authority		
8	Valid Insurance		
9	Valid PUC		
10	Pre Medical Check-up & Periodic Medical check-up (every 6 months) including vision test for Operator		
11	Safety Induction for Operator		
12	Crane hooks have got smooth surface and no dent		
13	Hook-latch / Dog-clamp in hook is effective		
14	Over hoist limit switch		
15	Over Load Indicator		
16	SLI		
17	Condition of boom		
18	Condition of wire rope		
19	Rope drum / sheaves are in good working condition		
20	Leakage in hydraulic cylinder		
21	Tyre condition		

22	Battery		
23	Moving & rotating parts guarded		
24	Break		
25	Parking Break		
26	Front horn		
27	Reverse horn		
28	Hydraulic Mobile Crane cabin body and frame of machine is in good order		
29	Both side Mirror		
30	Fire Extinguisher		
31	Front glass pane of the Hydraulic Mobile operator's cabin is clean & clear (i.e. not cracked / damaged / broken)		
32	Windshield and wipers condition		
33	Working of front & back lights, turn Indicators, parking lights & fog lamps		
34	Spark Arrestor(For Running Refinery/ Petrochemical/Chemical Plant)		
35	Wheel chokes are present and are used whenever required		
36	Foot-steps and hand-holds are in good working condition for exit /enter in to cabin		
37	Others		

Signature & Name of Operator

**Signature & Name of
Contractor's Concern
Engineer**

Signature & Name of Contractor's Safety Officer

FORMAT NO. : HSE-23 REV 0

Hydraulic Rig Inspection Checklist

Name of Contractor:

Project:

Name of Work:

Job No:

Vehicle Identification/Registration No:

Date:

Sr. No.	Description	Observation	Remarks & Suggestions
1	Control panel is clean & all buttons/switches are clearly visible (no paint over spray, etc.)		
2	All switch & mechanical guards are in good condition and properly installed		
3	All Safety Indicator lights work		
4	Drive controls function properly & accurately labelled (up, down, right, left, forward, back)		
5	Motion alarms are functional		
6	Safety decals are in place and readable		
7	Any defects such as cracked welds, fuel leaks, hydraulic leaks, damaged control cables or wire harness, etc.		
8	Braking devices are operating properly		
9	Winches, pulleys and wire ropes are in good working condition.		
10	Function of interlocks and limit switch		
11	The manufacturer's operations manual (in all languages of the operators)		
12	Oil level, Hydraulic Oil Level, Fuel Level, Coolant Level		
13	Battery Charge		
14	Outriggers in place or functioning. Associated alarms working		
15	Moving & rotating parts guarded		

16	Load chart provided		
17	Fire Extinguisher		
18	Spark Arrestor, if operated by using fuel(For Running Refinery/ Petrochemical/Chemical Plant)		
19	Serial number plate		
20	SLI		
21	TPI Certificate		
22	Colour Coding		
23	Insurance		
24	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
25	Safety Induction for Operator		
26	Others		

**Signature & Name
of Operator:**

**Signature & Name of Contractor's Concern
Engineer**

Signature & Name of Contractor's Safety Officer

FORMAT NO. : HSE-24 REV 0

Boom Lift Inspection Checklist

Name of Contractor:

Project:

Name of Work:

Job No:

Vehicle Identification/Registration No:

Date:

Sr. No.	Description	Observation	Remarks & Suggestions
1	Operating and emergency controls are in proper working condition, EMO button or Emergency Stop Device		
2	Functional upper drive control interlock (i.e. foot pedal, spring lock, or two hand controls)		
3	Emergency Lowering function operates properly		
4	Lower operating controls successfully override the upper controls		
5	Both upper and lower controls are adequately protected from inadvertent operation.		
6	Control panel is clean & all buttons/switches are clearly visible (no paint over spray, etc.)		
7	All switch & mechanical guards are in good condition and properly installed		
8	All Safety Indicator lights work		
9	Drive controls function properly & accurately labelled (up, down, right, left, forward, back)		
10	Motion alarms are functional		
11	Safety decals are in place and readable		
12	Guardrails and anchor points are in place, and in good condition		
13	Work platform & extension slides are clean, dry, & clear of debris		
14	Work platform extension slides in and out freely with safety locking pins in place to lock setting on models with extension platforms.		
15	Any defects such as cracked welds, fuel leaks, hydraulic leaks, damaged control cables or wire harness, etc.		
16	Braking devices are operating properly		
17	The manufacturer's operations manual is stored on AWP (in all languages of the operators)		
18	Oil level, Hydraulic Oil Level, Fuel Level, Coolant Level		

19	Battery Charge		
20	Outriggers in place or functioning. Associated alarms working		
21	Tyres and wheels are in good condition, with adequate air pressure if pneumatic		
22	Wheel chokes are present and are used whenever required		
23	Moving & rotating parts guarded		
24	Load chart provided		
25	Fire Extinguisher		
26	Spark Arrestor, if operated by using fuel(For Running Refinery/ Petrochemical/Chemical Plant)		
27	Serial number plate with Load capacity		
28	TPI Certificate		
29	Colour Coding		
30	Insurance		
31	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
32	Safety Induction for Operator		
33	Others		

**Signature & Name of
Operator:**

**Signature & Name of
Contractor's Concern
Engineer**

Signature & Name of Contractor's Safety Officer

सिविल, संरचना एवं वास्तुकला कार्यों
के लिए निरीक्षण एवं परीक्षण योजना
(आईटीपी)
(वर्गीकरण साहित्यमद्दर संविदा)

INSPECTION & TEST PLAN (ITP) FOR
CIVIL, STRUCTURAL &
ARCHITECTURAL WORKS
(ITEM RATE CONTRACTS-WITH
CATEGORIZATION)

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
2	08.04.2024	REVISED AND REISSUED	DK	AC	RKS	MN
1	30.01.2019	REVISED AND REISSUED	SKG	RK	AKK	RKT
0	14.01.2014	ISSUED AS STANDARD SPECIFICATION	SM	DJ	RKD	SC
Approved by						

Abbreviations:

AFC	:	Approved For Construction
BM	:	Bench Mark
CI	:	Cast Iron
CPT	:	Cone Penetration Test
GI	:	Galvanised Iron
IRC	:	Indian Road Congress
JB	:	Junction Box
MS	:	Mild Steel
MPT	:	Magnetic Particle Testing
NDT	:	Non Destructive Testing
PCC	:	Plain Cement concrete
PQR	:	Procedure Qualification Record
PT	:	Penetration Testing
PVC	:	Poly Vinyl Chloride
PWHT	:	Post Weld Heat Treatment
RCC	:	Reinforced Cement Concrete
RF	:	Reinforcement
SPT	:	Standard Penetration Test
U/G	:	Under Ground
WBM	:	Water Bound Macadam
WPS	:	Welding Procedure Specification

Construction Standards Committee

Convenor: Sh. R K Singh, ED (Construction)

Members: Sh. D S N Murthy, GGM (Projects)
Sh. Chinmoy Kapuria, CGM (SCM)
Sh. Udayan Chakravarty, CGM (Piping)
Sh. Abhijit Chakraborty, GM (Construction)
Sh. Pankaj Kumar Rai, DGM (Construction)
Sh. Dhananjay, AGM (Construction)

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SECTION - A

GENERAL NOTE

The enclosed ITP's shall be followed for the works to be performed by the contractor. The provisions indicated for stage wise inspection by EIL/Owner (For specific activities), which may be modified in line with EIL scope of services as per the contract between EIL and Owner. Activities for which ITP's are not provided in this specification, contractor to develop and get the same approved by EIL/Owner well before start of the work. In general role of EIL has been specified in the document. The role of owner to be specified during preparation of site specific ITPs.

Contractor to submit job procedures for the jobs for which ITP's are attached & job specific reporting formats with the aid of enclosed sample reporting formats to EIL/Owner for approval, before commencement of the activity. If the contractor has to deviate from the given ITP for a valid reason, he shall obtain prior written approval of EIL/Owner. Contractor to carry out 100% examination of all activities.

LEGEND

HP : **Hold Point ;**

A point which requires witnessing/inspection/verification and acceptance by Owner/EIL before any further processing is permitted.

The Contractor shall not process the activity/item beyond a Hold Point without written approval by Owner/EIL except where prior written permission for further processing is available.

W : **Witness Point ;**

An activity which requires witnessing/inspection/verification by Owner/EIL when the activity is performed.

After proper notification has been provided (notification modalities and period shall be finalized beforehand), the Contractor is not obliged to hold further processing if Owner/EIL is not available to witness the activity or does not provide comments before the date notified. Basis of acceptance shall be as per relevant technical specification.

Rw : **Review of Contractor's documentation.**

S : **Surveillance Inspection by Owner/ EIL.**

Monitoring or making observations to verify whether or not material/items or services conform to specified requirements. Surveillance activities may include audit, inspections, witness of testing, review of quality documentation & records, personnel qualifications, etc.

WC : **100% Examination by Contractor.**

Responsibility for execution of the inspection/testing is with the Contractor; Owner/EIL only verifies examination or testing done by the Contractor at important stages

LAND & TOPOGRAPHICAL SURVEY

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1	Boundary markings and submission of drgs./sketches	WC	S	Yes
2	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	Yes/ Format C1
	b) Field calibration, if any	WC	W	Yes
3	Block levels, contour plans, establishing permanent bench marks with ref. to Survey of India B.Ms. by check levels and submission of relevant drgs. & records	WC	W	Format C2
4	Protection of control points, permanent bench marks and regular rechecking	WC	S	-
5	Submission of Master plan showing monuments, structures exposed rocks, weirs, water works, ponds, underground services if crossing that area, etc.	WC	S	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

ITP NO.: 3102

SOIL INVESTIGATION

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	Positioning of test location	WC	S	-
2.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	Yes /Format C1
	b) Field calibration, if any	WC	W	Yes
3.	Boring & sampling	WC	S	-
4.	In-situ testing (SPT, CPT, Plate load test, Soil Resistivity, Block vibration test, etc.)	WC	S/Rw	Yes
5.	Lab testing (as applicable)	WC	W/Rw	Yes
6.	Monitoring of water level	WC	S	-
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

ITP NO.: 3103

SITE GRADING

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Clearing and stripping of soil including disposal of unsuitable material	WC	S	-	-
2.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	HP	Yes/Format C1
	b) Field calibration, if any	WC	S	-	Yes
3.	Taking and plotting of initial levels at specified intervals for cutting as well as filling areas	WC	HP	HP	Yes
4.	Classification (Levels of strata) and testing of filling soil for suitability including preparation of Lead Charts to filling/disposal areas.	WC	W/Rw	-	Yes
5.	Proper warning of explosions, misfires and storage of explosive materials (As applicable).	WC	-	S	-
6.	Breaking up of clods, lumps, etc. at the time of filling and compaction.	WC	S	-	-
7.	Identification and suitability of borrow areas for filling soil/murum including verification of payments for royalty, etc.	WC	S/Rw	-	Yes
8.	Compaction test for earth filling in specified layers including finished areas.	WC	W/Rw	-	Format C3
9.	Verification of final finished grade levels.	WC	HP	HP	Yes
10.	Computation of Earth works.	WC	Rw	Rw	Yes
11.	a) Record of tree cuttings	WC	W	W	
	b) stacking of blasted rocks and other quarry materials including handing over to Owner	WC	S	S	Yes
12.	Preparation of "As built drawings	WC	Rw	Rw	Yes
13.	Removal of Surplus earth/excavated material and leveling in disposal areas.	WC	S	-	-
14.	Resolutions of obstacles/hindrances	WC	S	-	-
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

CAT A: All fillings

CAT B: All cuttings.

ITP NO.: 3104

EXCAVATION

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	HP	Yes
	b) Field calibration, if any	WC	W	W	Yes/Format C1
2.	Layout checking	WC	S	S	Format C2
3.	Taking initial levels	WC	W	W	Yes
4.	Slopes of excavation, benching, overburden, shoring & strutting (in case of deep excavation)	WC	S	S	-
5.	Check for sub-soil water, dewatering requirements as per specifications.	WC	S	S	-
6.	Bottom level of excavation and compaction	WC	S	S	-
7.	Stacking of different type of soils separately	WC	S	S	-
8.	List of obstacles encountered (cables, pipes, conduits, etc)	WC	S	S	Yes
9.	Barricading of excavated pits for safety & protection from rain	WC	S	S	-
	FOR HARD ROCK				
1	Obtaining license from district authorities for undertaking blasting operations	WC	Rw	Rw	Yes
2	Storing of explosive materials as per explosive rules	WC	S	S	-
3	Prominent display of red flags around the area to be blasted	WC	S	S	-
4	Check the dimensions of bore holes	WC	S	S	-
5	Stacking of hard rock for useable/non useable including handing over to owner	WC	S	S	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

CAT A: Equipment foundations, Plant buildings, Technological structures, piperacks, etc.

CAT B : Non Plant buildings, Boundary walls, wing walls, manholes, drains, pipe culverts ,bridges, etc

ITP NO.: 3105

BACK FILLING

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Selection of materials/selected earth	WC	W	S	Format C4, C5
2.	Check for treatment of soil, if any	WC	S	S	Yes
3.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	HP	Yes /Format C1
	b) Field calibration, if any	WC	W	W	Yes
4.	Filling in specified layers, consolidating, watering.	WC	S	S	-
5.	Compaction tests for layers	WC	W/Rw	S/Rw	Format C3
6.	Filling to required levels	WC	S	S	-
INSPECTION & TEST DOCUMENTS					
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

CAT A :Equipment foundations, Plant buildings, Technological structure, Pipe racks, etc.

CAT B :Non Plant buildings, pipe racks ,Boundary walls, wing walls, manholes, drainpipe culverts, bridges etc.

ITP NO.: 3106

UNDERGROUND PIPING (RCC/ CI)

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Incoming Material a) Owner's supply b) Contractors supply	Contractor to check all free issue materials and maintain records of MIV for material issued by owner/EIL WC		Note -1	
2.	Adequate slope, benching in excavation for safety purposes (if required)	WC	S	-	-
3.	a) Review of calibration certificates of instruments/ testing equipment's b) Field calibration, if any	WC	Rw	Rw	Yes/ Format C1 Yes
4.	Layout, line & level	WC	S	S	Format C2
5.	Laying & jointing, grouting at manholes/chambers	WC	S	-	-
6.	Check for supports/ firm bed/ sub soil water level	WC	S	-	-
7.	Testing for leakages by blocking pipe ends	WC	W	W	-
8.	Hydro-testing and other tests, Removal of blockages, Cleaning & flushing of system	WC	HP	HP	Format C6
9.	Backfilling in layers	WC	Rw	Rw	Format C3
10.	Check for MS rungs in proper position, inlet/outlet pipe levels in manholes	WC	S	S	-
11.	Preparation of "As-built drawings"	WC	Rw	Rw	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE: 1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Main plant buildings, Utilities ,offsites, etc.

CAT B: Non plant buildings, technological buildings admn. Buildings, Gate house, security rooms, etc.

ITP NO.: 3107A

WBM ROADS

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	Rw	Yes /Format C1
	b) Field calibration, if any	WC	W	W	Yes
2.	Layout checking including Road crossings and taking initial levels	WC	W	W	Yes
3.	Approval of source & checking/testing of materials (wherever required)	WC	NOTE 1	NOTE 1	Format C4 Format C5
4.	Filling (if any), compaction, providing cambers in sub-base including levels	WC	W/Rw	W/Rw	Format C3
5.	Spreading metal to required thickness, line & levels, dry rolling including spreading of screening material	WC	S	-	Yes
6.	Check for camber and levels over metalling	WC	S	S	-
7.	Spreading murrum/ sand, watering and rolling	WC	S	-	-
8.	Checking thickness after each layer and rectification thereof (if any)	WC	S	S	Yes
9.	Checking quantity of aggregate by excavation of trial pits as per IRC Code	WC	W	W	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Roads subjected to heavy loading, connected to main highway, main plant roads,etc

CATB: Balance Roads

ITP no: 3107 B

WMM for Roads

SL. NO.	ACTIVITY	CONTRACTOR	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	a.) Review of calibration certificates of instruments/testing equipment's.	WC	HP	Rw	Yes /Format C1
	b)Field calibration, if any.	WC	W	W	
2.	Layout Checking including Road Crossing & taking initial levels.	WC	W	W	
3.	Approval of source & checking /testing of materials (wherever required)	WC	NOTE 1	NOTE 1	Format C4 Format C5
4.	Design Mix to fix the properties of Ingredients	WC	HP	HP	
4.	Filling (if any), compaction, providing chambers in sub-base including levels.	WC	W/Rw	W/Rw	Format C3
5	Spreading metal to required thickness, line & levels, dry rolling including spreading of screening material.	WC	S	-	
6.	Check for camber levels.	WC	S	S	
7.	Spreading, watering & rolling.	WC	S	-	
8.	Checking thickness after each layer and rectification thereof (if any).	WC	S	S	
9.	Compaction Test for Each layer	WC	S/Rw	S/Rw	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT- A –Roads subjected to heavy loading connected to main High way, main plant roads etc.

CAT B- Balance roads

ITP NO.: 3108

BLACK TOPPING (PREMIX CARPETING) & BITUMINOUS MACADAM (BM)

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	Approval of source of materials (aggregate, bitumen, etc.)	WC	Note 1	Format C4
2.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	Yes /Format C1
	b) Field calibration, if any	WC	S	Yes
3	Design Mix of PC/BC/BM/DBM	WC	HP	Yes
3.	Surface preparation & check for camber/level	WC	S	-
4.	Checking/ testing of material wherever required	WC	W	Format C5, Yes
5.	Tack coat application	WC	S	-
6.	Laying of Premix carpeting/ BM including rolling	WC	S	Yes
7.	Application of Seal coat	WC	S	Yes
8.	Check for camber and levels	WC	S	-
9.	Check for bitumen temperature and consumption	WC	S	Yes
10.	Thickness check (random)of Premix carpet/ BM	WC	W	Yes
11.	Removal of surplus earth	WC	-	-
12.	Berm preparation	WC	S	-
13.	Final Inspection	WC	W	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT B: All works

Black Topping -- Premix Carpeting (PC), Bituminous Concrete (BC),
Bituminous Macadame (BM), Dense Bituminous Macadame (DBM)

ITP NO.: 3109

TANK PADS

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Approval of source of materials (aggregate, bitumen etc.)	WC	NOTE 1	NOTE 1	Format C4
2.	Stripping the area	WC	-	-	-
3.	a) Review of calibration certificates of instruments/ testing equipment's b) Field calibration, if any	WC	HP	Rw	Yes/ Format C1
4.	Layout and marking of ground level	WC	W	S	Yes
5.	Excavation to required level, compaction of sub-base	WC	S	-	Format C2
6.	Excavation to required level, compaction of sub-base	WC	W	S	-
7.	Checking/ testing of materials	WC	W	S	Format C5
8.	Filling selected materials in specified layers, rolling, watering	WC	S	-	-
9.	Compaction tests	WC	W	Rw	Format C3
10.	Gravel filling under annular ring with compaction and adding graded filler material (As applicable)	WC	W	S	Yes
11.	Anti-corrosive layer, consolidation	WC	S	-	-
12.	Premix carpeting on side slopes	WC	S	S	-
13.	Preparation of "As-built drawing" for erection	WC	Rw	Rw	Yes
14.	Check for settlement of pads during hydro testing of tanks	WC	W	W	Yes
INSPECTION & TEST DOCUMENTS					
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: All Site fabricated steel storage tanks for process fluid /Hydrocarbon, floating roof tanks having capacity more than 600cum or 10m dia and 8 m height.

CAT B: Site fabricated steel storage tanks for Raw water, Fire water, waste water, DM water, etc. and all tanks not covered under "CAT A"

ITP NO.: 3110

MICRO GRADING

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	a) Review of calibration certificates of instruments/ testing equipment's	WC	RW	Yes/ Format C1
	b) Field calibration, if any	WC	-	Yes
2.	Taking initial levels	WC	W	Yes
3.	Clearing/ Removal of extra soil, debris, etc. from site by transportation	WC	S	Yes
4.	Taking final levels	WC	S	Yes
5.	Verification of gradient of ground	WC	S	-
6.	Finishing of ground surface by hand compactor/ Roller (As applicable)	WC	S	-
7.	Final inspection	WC	W	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

CAT B: All works

ITP NO.: 3140

FOR UNDERGROUND PIPING (CARBON STEEL/ AS/ SS) (Sheet 1 of 6)

Sl. No	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
A.	PRIOR TO FABRICATION				
1	Incoming Material a) Owner's supply b) Contractors supply	Contractor to check all free issue materials and maintain records of MIV for material issued by owner/EIL			
		WC	Note -1		
2.	Welding Filler Material Approval/Qualification				
	i) Review of Manufacturer's Test Certificates/ other documents	WC	Rw	Rw	Yes
	ii) Testing, if any	WC	Rw	Rw	Yes
3.	WPS/PQR				
	i) Review of proposed Procedure	WC	HP	HP	Yes
	ii) Testing	WC	HP	HP	Yes
	iii) Approval of Final WPS/PQR	WC	HP	HP	Yes
4.	Welder Performance Qualification Test	WC	W	W	Yes
4a.	Certification & approval of welders	WC	W	W	Yes
5.	NDT Procedure Qualification				
	i) Review of proposed Procedure	WC	Rw	Rw	Yes
	ii) Testing	WC	Rw	Rw	Yes
	iii) Approval of NDT procedure	WC	HP	HP	Yes
6.	Preparation of sketches from General Arrangement drawings	WC	Rw	-	Yes
7.	Joint numbering	WC	Rw	-	Yes
8.	Approval of colour coding scheme	WC	Rw	-	Std spec
9.	Monitoring of colour coding on pipes & fittings	WC	S	-	
B.	FABRICATION (SHOP & FIELD)				
1.	Material as per piping class (check w.r.t. approved colour coding procedure)	WC	W		Format P1
	i) Fit-up check	WC	S	Rw	
	ii) Dimensional check	WC	S	Rw	

ITP NO.: 3140

FOR UNDERGROUND PIPING (CARBON STEEL/ AS/ SS) (Sheet 2 of 6)

Sl. No	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
2.	Pre-heat (if any)	WC	S	-	Yes
3	Check for purity of purging/shielding Gas (if any)	WC	S		
4.	Purging (if any)	WC	S		
5.	Shielding rate (if any)	WC	S	-	--
6.	Baking of Electrodes	WC	S	-	Yes
7.	Inter-pass cleaning & Temperature check.	WC	S		--
8.	Visual check of completed welds - For welds with Random Radiography	WC	W	-	Format P2
	-For welds with 100% Radiography	WC	S	S	Format P2
9.	PT/MPT	WC	S	-	Yes
10.	Radiography marking (for Random Radiography)	WC	W	W	Format P3
11.	Radiography Interpretation	WC	W	W	Format P4
C.	HYDROSTATIC/ PNEUMATIC TESTING				
1.	Procedure Review	WC	Rw	Rw	Yes
2.	Correctness of Testing arrangements	WC	S	-	---
3.	Calibration of Pressure Gauges	WC	-	-	Format C1
4.	R.F. Pad testing, if any	WC	W	W	--
5.	Scrutiny of test packs for Mechanical & NDT Clearance (Refer Annexure-1)	WC	HP	HP	Annex-1, Format P5, UG1
6.	Air/Water Flushing (preliminary)	WC	S	S	-
6a.	Addition of corrosion inhibitors, if required – Approval of make & quality	WC	S	S	Yes

ITP NO.: 3140

FOR UNDERGROUND PIPING (CARBON STEEL/ AS/ SS) (Sheet 3 of 6)

Sl. No	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
7.	Pneumatic/ Hydrostatic testing	WC	W	W	Format P6
8.	Draining of water & Air drying	WC	S	S	Format P6
D.	LAYING				
1.	Trench excavation and levels	WC	S	-	Yes
2.	Cleaning of pipe surface	WC	S	-	-
3	Approval of wrapping/coating material/ epoxy coating manufacturers	WC	Note 1	Note 1	Yes
4.	Approval of agency for wrapping & coating /epoxy coating	WC	Rw	Rw	Yes
5.	Sample test of coating materials in approved laboratory	WC	Rw	Rw	Yes
6.	Procedure qualification for wrapping & coating /epoxy coating	WC	HP	HP	Yes
7.	Application of primer	WC	S	S	--
8.	Coal tar temperature	WC	S	-	---
9.	Coating & wrapping /epoxy coating for 3LDPE coated pipes	WC	S	S	---
10.	Check Thickness of coating (if applicable)	WC	S	-	Yes
11.	Calibration of Holiday tester	WC	Rw	Rw	Format C1
12.	Holiday testing	WC	W	W	Yes
13.	Peel test	WC	W	S/Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: All pressure lines, Fire Water line, Cooling Water line, CB & ABD.

CAT B: Balance Works

ITP NO.: 3140

FOR UNDERGROUND PIPING (CARBON STEEL/ AS/ SS) (Sheet 4 of 6)

Sl. No	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
14.	Lifting arrangement	WC	S	-	Yes
15.	Lowering (levels & orientation of branches)	WC	S	-	--
16.	Checking of wrapping & coating for damages during lowering, their repair, Holiday Testing, etc.	WC	W	W	--
17.	Back filling & compaction	WC	S	-	Yes
18.	Location, Brickwork, plaster of valve pit	WC	-	-	Yes
19.	Top cover & Finish of valve pit	WC	S	S	--
E.	SYSTEM COMPLETION				
1.	Tie in joints (Refer Annexure-2)	WC	Annex-2	Annex-2	
2.	Scrutiny of test packs for system testing (Refer Annexure-1)	WC	Annex-1	Annex-1	
3.	System testing	WC	W	S/Rw	Format UG2
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

CAT A: All pressure lines, Fire Water line, Cooling Water line, etc.

CATB: Balance Works

ITP NO.: 3140

FOR UNDERGROUND PIPING (CARBON STEEL/ AS/ SS) (Sheet 5 of 6)

ANNEXURE – 1

Sl. No.	Activity	Contractor	EIL	
			CAT A	CAT B
F.	MECHANICAL COMPLETION RECORD (U/G Piping)			
1.	Clearance for flushing & testing	WC	Rw	Rw
1a.	Mechanical clearance			
	- Conformity with drawing	WC	Rw	Rw
	- Material as per Specification	WC	Rw	Rw
1b.	Welding & NDT clearance			
	- Material as per Specification	WC	Rw	Rw
	- Fit-up check record	WC	Rw	Rw
	- Visual check of completed welds	WC	Rw	-
	- PT/MPT	WC	Rw	Rw
	- Radiography	WC	Rw	Rw
	- PWHT & hardness	WC	Rw	Rw
	- RF pad testing	WC	Rw	Rw
2.	Flushing & Pressure testing	WC	Rw	Rw
3.	Coating & wrapping			
	- Surface preparation	WC	Rw	-
	- Primer application	WC	Rw	Rw
	- Coating, wrapping & peel test	WC	Rw	-
	- Holiday check	WC	Rw	Rw
4.	Laying			
	- Trench leveling	WC	Rw	Rw
	- Lowering & checking for damages in wrapping & coating, their repair; Holiday testing, etc.	WC	Rw	Rw
	- Backfilling	WC	Rw	Rw

CAT B: All pressure lines, Fire Water line, Cooling Water line, etc.

CAT C: Balance works

ITP NO.: 3140

FOR UNDERGROUND PIPING (CARBON STEEL/ AS/ SS)

(Sheet 6 of 6)

ANNEXURE – 2

TIE-IN

Sl. No.	Activity	Contractor	EIL
A.	FIT UP	WC	W
B.	ROOT RUN DP	WC	W
C.	FINAL RUN DP	WC	W
D.	RADIOGRAPH REVIEW	WC	HP
E.	PWHT HARDNESS	WC	Rw
F.	RF PAD TESTING	WC	HP
G.	CLEANING & PRIMING	WC	S
H.	COATING, WRAPPING	WC	W
I.	PEEL TEST	WC	HP
J.	HOLIDAY TESTING	WC	HP
K.	CHECKING FOR ANY DAMAGE IN WRAPPING & COATING AFTER LOWERING, THEIR REPAIR HOLIDAY TESTING, ETC.	WC	W
L.	BACK FILLING	WC	S

For CAT A as well as CAT B

Note : Job specific ITP to be developed in case of Non-CS/AS/SS MOC of piping materials.

ITP NO: 3141

PLAIN CEMENT CONCRETE

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ format no.
1.	a) Review of calibration certificates of instruments/ testing equipment's	WC	Rw	Yes /Format C1
	b) Field calibration, if any	WC	S/Rw	Yes
2.	Checking of layout and materials, compaction of sub -grade	WC	S	Format C2, C3, C5, C7
3.	Mix proportion	WC	S	-
4.	Check for shuttering, dewatering if any.	WC	-	Yes
5.	Concreting with proper compaction	WC	-	-
6.	Checking of top level of PCC	WC	Rw	Yes
7.	Curing	WC	-	-
INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Yes

ITP NO: 3142

REINFORCED CEMENT CONCRETE (SUBSTRUCTURE)

Sl. No	Activity	Contract or	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1	Approval of source of materials	WC	HP	HP	Format C4
2.	Approval of agency for providing Ready Mixed Concrete (RMC), as applicable	WC	HP	HP	Yes
3.	a) Review of calibration certificates of instruments/ testing equipment's / Batching Plant	WC	HP	HP	Yes /Format C1
	b) Field calibration, if any	WC	W	W	Yes
4.	Checking of layout & condition of PCC/ leveling course	WC	S	S	Yes
5.	Incoming material checking	WC	NOTE 1	NOTE 1	Format C5 , C7
6.	Design of mix & establishment of strength at site by trial mix	WC	HP	HP	Yes
7.	Check for line & level of shuttering including its condition, quality and rigidity.	WC	S	S	
8.	Check for sub-soil water & dewatering arrangement, if any	WC	S	S	-
9.	Reinforcement & covers to reinforcement	WC	S	S	Yes
10.	Inserts, Anchor bolts and pipe sleeves, pockets, dowels, etc.	WC	W	S	-
11.	Pour Card	WC	W	W	Format C8, C9
12.	Quality Records of RMC like Delivery Ticket Formation, If applicable	WC	Rw	Rw	Yes
12.	Check for obstacles encountered (Electrical conduits, pipe lines, etc.)	WC	S	S	Yes
13.	Concreting, ,compaction & finishing of concrete	WC	W	S	Yes
14.	Casting of cubes/Slump	WC	S	S	Yes
15.	Curing	WC	S	S	
16.	Testing of cubes- 7 days	WC	S/Rw	S/Rw	Format C10
17	Testing of cubes- 28 days	WC	W	W	Format C10
18.	Removal of shuttering	WC	S	-	-
19.	Check for water tightness, rendering, if any	WC	W	W	-
20.	Preparation of As-built drawings	WC	Rw	Rw	Yes
INSPECTION & TEST DOCUMENTS					
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Critical foundations of equipment's i.e compressors, reactors, columns, stacks, Unit Pipe racks, plant buildings and other equipment foundations with RCC Quantity > 250 Cum, tank foundations

CAT B: Non critical pipe racks(branch pipe, offsite pipe rack, etc.) non plant buildings ,pipe sleepers, manhole, catch pit, pipe culverts ,bridges other equipment foundations not covered in CAT A, and balance works

ITP NO: 3143

REINFORCED CEMENT CONCRETE (SUPER STRUCTURE)

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CATA	CATB	
1	Approval of source of materials	WC	HP	HP	Format C4
2.	Approval of agency for providing Ready Mixed Concrete (RMC), as applicable	WC	HP	HP	Yes
3.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	HP	Yes/ Format C1
	b) Field calibration, if any	WC	W	W	Format C1
4.	Checking of layout	WC	S	S	Yes
5.	Incoming material inspection	WC	Note 1	Note 1	Format C5, C7
6.	Design of mix & establishment of strength at site by trial mix	WC	HP	HP	Yes
7	Staging as per Drawing	WC	S	S	
7.	Check for line & level of shuttering and scaffolding/ vertical bracing including hoisting arrangements.	WC	S	S	--
8.	Reinforcement & covers to reinforcement	WC	S	S	Yes
9.	Inserts, bolts, pipe sleeves, MS rungs, concealed electrical conduits, fan hooks, dowels, etc. including welding if any	WC	S	S	Yes
10.	Pockets/ openings	WC	S	S	Yes
11.	Expansion joints, if any	WC	S	S	Yes
12.	Check for water stops, slopes, stoppers, if any	WC	S	S	Yes
13.	Pour Card	WC	W	W	Format C8, C9
14.	Quality Records of RMC like Delivery Ticket Information, if applicable	WC	Rw	Rw	Yes
15.	Concreting, testing, compaction & finishing of concrete	WC	W	S	Yes
16.	Casting of cubes/ Slumps	WC	S	S	Yes
17.	Curing	WC	S	S	-
18	Testing of cubes- 7 days	WC	S/Rw	S/Rw	Format C10
19.	Testing of cubes- 28 days	WC	W	W	Format C10
20.	Removal of formwork/ staging	WC	S	-	-
21.	Verification of dimensions viz AFC drawings and tolerances	WC	S	S	-
22	Check for water tightness, rendering, if any	WC	W	W	--
23	Preparation of As built drawing .	WC	Rw	Rw	Yes-
	INSPECTION & TEST DOCUMENTS				Yes
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Super structure of foundations for Critical equipment's i.e compressors, reactors, columns, stacks, foundations, Slabs of plant and non plant buildings, tank foundations, Unit Pipe racks, plant buildings and super structure of any other equipment, etc.

CAT B: not covered in category A Non critical pipe racks(branch pipe, offsite pipe rack, etc) non plant buildings other than slab, catch pit and balance works, pipe sleepers, pipe culverts, bridges, manhole etc.

ITP NO: 3145

RCC PAVEMENT/FLOORING

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	Approval of source of materials	WC	Rw	Format C4
2	Approval of agency for providing Ready Mixed Concrete (RMC), as applicable	WC	HP	Yes
3.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	Yes
	b) Field calibration, if any	WC	S	Format C1
4.	Layout checking/ excavation of all new foundations	WC	-	Yes
5.	Incoming material inspection	WC	NOTE 1	
6.	Design of mix & establishment of strength at site by trial mix	WC	HP	Yes
7.	Check for proper back filling/compaction/ completion of sub - Structure works	WC	S	Format C3, Yes
8.	Check for edges of shuttering, alternate panels	WC	-	-
9.	Check for slopes, thickness of flooring / pavement	WC	S	-
10.	Shuttering, reinforcement (as applicable)	WC	-	-
11.	Check for expansion joints/ Construction joints	WC	S	-
12.	Check for concealed pipe embedment, earthing, if any	WC	- S	-
13.	Check for dividing strips, as applicable	WC	S	-
14.	Concreting, finishing, etc.	WC	S	Format C8, C9
15.	Quality Records of RMC like Delivery Ticket Information	WC	Rw	Yes
16.	Concreting, testing, finishing, test cubes	WC	W	Yes
17.	Checking for line, levels, slopes, joints, thickness of flooring viz. AFC drawings	WC	S	-
18	Curing	WC	S	-
19.	Grinding & polishing, as applicable	WC	S	-
20.	Testing of concrete cubes (as applicable)	WC	W	Format C10
21.	Testing of vacuum dewatering flooring (as applicable)	WC	Rw	Yes
22.	Preparation of "As Built Drawings"	WC	Rw	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT B: All works.

ITP NO: 3146

BRICK MASONARY

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	a) Review of calibration certificates of instruments/ testing equipment's	WC	Rw	Rw	Yes/ Format CI
	b) Field calibration, if any	WC	Rw	Rw	Yes
	c) Field testing of Materials, if any	WC	Rw	Rw	
2.	Incoming material inspection	WC	Note 1	Note 1	
3.	Cleaning of surface	WC	-	-	-
4.	Wetting/soaking of bricks	WC	S	S	-
5.	Cement mortar proportion	WC	S	S	-
6.	Staging & scaffolding	WC	-	-	-
7.	Hacking of adjacent concrete surface	WC	S	S	-
8.	Check for bond/closers, thickness of joints .	WC	S	-	-
9.	Line, level & plumb	WC	S	S	-
10.	Raking out joints, keys in brick work, if any	WC	S	S	-
11.	Check for placement of Reinforcement bars in case of partition brick work	WC	S	S	-
12.	Embedment of fixtures	WC	S	S	-
13.	Curing	WC	-	-	-
14.	Preparation of 'As Built' Drawings	WC	Rw	Rw	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw		Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Load bearing walls

CAT B: Balance works

ITP NO: 3147

STRUCTURAL STEEL WORKS

S. No	Activity	Contractor	EIL		Records to be submitted/
			CAT A	CAT B	
A	PRE – FABRICATION ACTIVITIES				
1.	a) Review of calibration certificates of instruments/ testing equipment's	WC	HP	HP	Yes/ Format C1
	b) Field calibration, if any	WC	S	S	Yes
2.	Incoming material inspection	WC	Note 1	Note 1	Yes
3.	Welding Filler material approval/ qualification				
	a) Manufacturing test certificates/ documents	WC	Rw	Rw	Yes
	b) Testing, if any	WC	W	W	Yes
4.	WPS/ PQR	WC	HP	HP	Yes
5.	Welders performance qualification	WC	W	W	Yes
6.	Layout checking	WC	S	-	Yes
7.	Welding equipment and accessories	WC	S	-	-
8.	Preparation and approval of Fabrication drawings	WC	Rw	Rw	Yes
B	FABRICATION ACTIVITIES				
1	Materials as per design drawing	WC	Rw	Rw	Format C12
2	Check straightness and non-warping of members	WC	S	S	Format C12
3	Dimensional and fit-up checks including provision of slopes for deflection wherever required	WC	S	S	Format C12
4	Visual check for welding	WC	S	S	Format C12
5	Grinding including surface preparation for painting and application of primer	WC	S	S	Format C12
6	Checking paint as per specs, shelf-life, etc.	WC	S	S	Yes
7	Application of specified paint, painting thickness, etc.	WC	S	S	Format C12
C	FIELD ERECTION ACTIVITIES				
1	Lifting arrangements including test certificates of lifting tackles	WC	S/Rw	S/Rw	Yes
2	Correctness of location	WC	S	-	Format C12
3	Orientation of bracing, lugs	WC	S	-	-
4	Alignment & levels	WC	S	-	Format C12
5	Field welding (if any)	WC	S	S	Format C12
6	Grouting	WC	S	S	Format C12
7	Finishing coat of paint, thickness of paint etc.	WC	S	S	Format C12
8	Preparation of As-built drawings	WC	Rw	Rw	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Steel structures pertaining to equipment site compressors, reactors, columns, Unit Pipe racks, stacks, Technological structures.

CAT B: Steel structures of Non critical pipe racks(branch pipe, offsite pipe rack, etc. non plant buildings ,walkways, platforms ,etc.

ITP NO: 3148

PILING WORKS

Sl. No.	Activity	Contract or	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1	Approval of source of materials	WC	Rw	Rw	Format C4
2	Approval of agency for providing Ready Mixed Concrete (RMC), if applicable	WC	HP	HP	Yes
3	a) Calibration certificate of measuring & testing equipment's/ instruments	WC	HP	HP	Yes/ Format C1
	b) Field calibration, if any	WC	W	S	Yes
4	Layout and ground level	WC	S	S	Yes
5	Incoming material inspection	WC	Note 1	Note 1	
6	Design of mix & establishment of strength at site by trial mix	WC	HP	HP	Yes
7	Driving of piles & check for set point	WC	S	S	-
8	Check for depth of bore and lowering of cage measuring	WC	S	-	-
9	Check for cage reinforcement, its length, overlaps	WC	S	S	-
10	Pour Card	WC	HP	HP	Format C8, C9
11	Quality records of RMC like Delivery Ticket Information, if applicable	WC	Rw	Rw	Yes
12	Concreting,	WC	W	S	Yes
13	Casting of cubes/Slumps	WC	S	S	Format C10
14	Testing of cubes- 7 days	WC	S/Rw	S/Rw	Format C10
15	Testing of cubes- 28 days	WC	W	W	Format C10
16	Check for cut off level of concreting & quantity of concrete poured	WC	S	-	Yes
17	Lifting of casing pipe	WC	S	S	-
18	Pile load tests (lateral/vertical/cyclic/pull out)	WC	W	W	Yes
18	Pile Integrity test, If applicable	WC	Rw	Rw	Yes
19	Submission of pile load test report	WC	Rw	Rw	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Critical foundations of equipment's i.e compressors, reactors, columns, stacks, Technological structures, Unit Pipe racks, plant buildings and other equipment foundations.

CAT B: Non critical pipe racks(branch pipe, offsite pipe rack, etc) non plant buildings

ITP NO: 3171

ANTITERMITE TREATMENT

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	Testing of material & spraying devices including personal protective equipment's like facemask, gloves, shoes, etc.	WC	HP & Note 1	Yes
2.	Preparation of surface for taking dosage of emulsion by ramming of each layer of soil by roding the earth at specified intervals	WC	-	-
3.	Backfilling and compaction in specified layers along with application of emulsifier along the sides of masonry & RCC structures	WC	S	Format C3
4	Compaction of top surface for taking dosage of emulsifier by roding the earth at specified intervals for the entire floor area before concreting	WC	-	-
5	Check for consumption of emulsifier utilized	WC	Rw	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT B: All works

ITP NO: 3172

PLASTERING

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1	Calibration of testing equipment's	WC	Rw		Format C1
2.	Checking/ testing of materials	WC	W		Format C5, C7
3	Check for completeness of all hidden jobs like piping, conduiting, etc.	WC	-	-	-
4	Check for grading of sand, Mix proportion	WC	S	S	-
5.	Sample preparation for finish and its approval	WC	W	S	-
6.	Neeru application on plaster (as applicable)	WC	S	-	-
7.	Chicken Wire Mesh at joints of brick/stone and concrete / steel	WC	S	-	-
7.	Hacking and cleaning the surface, removing loose particles, wetting the surface	WC	-	-	-
8	Checking of plaster thickness, plumb & even surface	WC	S	-	Yes
9	Check for grooves, openings, rounding off the corners, hollowness in plaster	WC	S	S	-
10	Curing	WC	S	S	-
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw		Yes

CAT A: Area requiring special finish

CAT B: Balance works.

ITP NO.: 3173

DOORS, WINDOWS AND VENTILATORS

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Incoming material inspection	WC	Note 1	Note 1	
2.	Calibration of testing equipment's	WC	HP	HP	Yes
3.	Check for sections & dimensions	WC	S	-	Yes
4.	Line, level & plumb	WC	-	-	-
5.	Section joinery details	WC	Rw	-	-
6.	Grouting with lugs/ dash fasteners	WC	-	-	-
7.	Check for fixtures & fittings	WC	S	S	Yes
8.	Check for thickness & type of glazing	WC	-	-	Yes
9.	Check for rubber gasket, anodizing (as applicable)	WC	-	-	-
10.	Brand/ shade of paints, no. of coats including surface preparation	WC	S	Rw	-
11.	Final inspection	WC	HP	HP	Yes
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CATA: Main plant buildings

CATB: Balance works

ITP NO.: 3174

PAINING (BUILDING WORKS)

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Completion of surface preparation	WC	-	-	-
2.	Incoming material inspection	WC	Note 1	Note 1	
3.	Confirmation of colour, shade & brand	WC	HP	HP	-
4.	Check for number of coats	WC	S	S	Yes
5.	Curing, if any	WC	S	-	-
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Main plant buildings, Major non plant building (viz: Administrative building, Training center etc

CATB: Balance works

ITP NO. : 3175

SANITARY FITTINGS

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Incoming material inspection	WC	Note 1	Note 1	
2.	Checking of sample (as applicable)	WC	S	-	Yes
3.	Check completeness of finishing works w.r.t. line, level & position	WC	S	-	-
4.	Check proper fixing of the sanitary fittings to give aesthetic appeal	WC	S	-	-
5	Check for leakage	WC	S	Rw	-
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

CAT A: Main plant buildings, Major non plant building (viz: Administrative building, Training center etc)

CATB: Balance works

ITP NO. : 3176

WATER PROOFING (ROOF)

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	Approval of materials	WC	HP	Format C4
2.	a) Calibration certificate of measuring & testing equipment's/application instruments (if applicable)	WC	HP	Yes/ Format C1
	b) Field calibration, if any	WC	W	Yes
3	Surface preparation for screeding/ water proof plastering	WC	W	-
4.	Mix proportion, thickness of screeding/ plastering & slope towards rain water pipes	WC	S	Yes
5.	Formation of groove at specified height on parapet wall	WC	-	-
6.	Incoming material inspection, no. of coats, application procedure and consumption.	WC	Note 1	Yes
7.	Termination of material in groove on vertical plane	WC	S	-
8.	Check for hollowness, bubbles in water proofing, if any	WC	S	-
9.	Conducting a sample of water proofing test by flooding the area for specified interval (as applicable)	WC	W	
10	Cleaning of surface	WC	-	--
11	Submission of Guarantee in the requisite Performa	WC	Rw	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

ITP NO: 3177

FALSE FLOORING AND FALSE CEILING

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
	FALSE FLOORING			
1.	Manufacturers Test Certificate	WC	Rw	Yes
2.	Incoming material inspection	WC	Note 1	Yes
3.	Cleaning base floor	WC	-	-
4.	Painting base floor with Polyurethane based paint (as specified)	WC	S	Yes
5.	Check for installation of grid framework	WC	S	-
6	Proper line, level & layout	WC	S	-
7	Final inspection	WC	HP	Yes
	FALSE CEILING			
1.	Manufacturers Test Certificate	WC	Rw	Yes
2.	Incoming material inspection	WC	Note 1	Yes
3.	Surface preparation of panel boards	WC	-	-
4.	Proper line, level & cut-outs	WC	S	-
5.	Painting of panel boards	WC	S	Yes
6	Final inspection	WC	HP	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

ITP NO.: 3178

UNDER DECK INSULATION

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	Incoming material checking including density	WC	Note 1	Yes
2.	Checking of adhesive, fasteners for anchorage	WC	S	Yes
3.	Fixing of scaffolding, ladders, platforms	WC	S	-
4.	Fixing of under-deck insulation with adhesive	WC	-	-
5.	Fixing of dash fasteners at defined spacing	WC	-	-
6.	Finishing	WC	S	-
7.	Final inspection	WC	W	Yes
INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Yes

NOTE :1) For Incoming material Inspection please refer ITP no: 6-82-1010

ITP NO.: 3179

ROOFING ACCESSORIES

Sl. No.	Activity	Contractor	EIL		Records to be submitted/ Format No.
			CAT A	CAT B	
1.	Incoming material inspection	WC	HP/ Note 1	HP/ Note 1	Yes
2.	Ensure proper sequence of sheeting	WC	W		
3.	Check for mitring, overhang, laps, etc.	WC	S	-	-
4.	Slopes line, level of sheets, barge boards, ridges & gutters, overhang of sheets	WC	S	-	-
5	Bolting by drilling only, length of bolts, nos., anodizing and type of washers	WC	S	-	-
6.	Fixing of Wind Ties at the two caves end of the sheet	WC	S	-	-
6	Check for slopes of rain gutters, down take pipes, north lighting curves/ supports for gutters	WC	S	-	-
7	Check for leakage/ passing of light	WC	S	-	-
8.	Final inspection	WC	W	W	Yes
	INSPECTION & TEST DOCUMENTS				-
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

NOTE : 1) For Incoming material Inspection please refer ITP no: 6-82-1010

2) Fixing arrangement need to be reviewed with respect to contract specifications.

CAT A: Important structures (e.g Compressor House, Ware house, workshop and Pump house etc.), main plant buildings, etc

CAT B: Balance works.

ITP NO.: 3199

LIGHTING WORKS (NON PLANT BUILDINGS)

Sl. No.	Activity	Contractor	EIL	Records to be submitted/ Format No.
1.	Prepare detailed conduit layout diagram as per the approved electrical drawing	WC	Rw	Yes
2.	Provide GJ/PVC sleeves in columns/beams at identified locations to facilitate laying of conduit on later date.	WC	S	-
3.	Incoming material inspection	WC	Note 1	Yes
4.	Ensure that the conduit is laid in line with execution drawings & provide pull-wires as per requirement.	WC	S	-
5.	Check correctness of drop/JB locations	WC	S	-
6.	Check threaded joints are proper	WC	S	-
7.	Ensure all JB/Fan box are properly stuffed with jute	WC	S	-
8.	Ensure conduits are properly tied to reinforcement bars to prevent floating during concrete	WC	S	-
9.	Ensure proper supporting of conduit lengths wherever required	WC	S	-
10.	Ensure adequate chasing depth for conduit portion coming inside brick walls	WC	S	-
11.	Check workmanship towards joints and presence of any foreign material inside the conduits	WC	S	-
12.	Ensure wiring material is inspected at site before use	WC	W	Yes
13.	Ensure correctness of lighting wire size and no. of wires as per the drawing in each conduit portion	WC	S	-
14.	Preparation of "As Built" drgs.	WC	Rw	Yes
INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Yes

NOTE : 1) For Incoming material Inspection please refer ITP no: 6-82-1010

SECTION - B

FORMATS

FOR

CIVIL, STRUCTURAL &

ARCHITECTURAL WORKS

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FORMAT NO.: C1

RECORD OF CALIBRATION OF MEASURING/TESTING EQUIPMENTS

Project :
 Client :
 Name of Work :

Job No. :
 Contractor :

Sl. No.	Name of Equipment/Apparatus	Model No.	Certificate No.	Calibrated By	Calibration Date	Next Calibration Due on	Remarks	Accepted	
								Contractor	EIL
	Total Station								
	Auto Level								
	Steel measurement tapes								
	Cross staff								
	Distomat								
	All balances								
	Weigh Batcher								
	Cube testing Machine								
	Pressure Gauges								
	Dial gauges								
	Dead weight tester								
	Vernier caliper/ screw gauge								
	Holiday tester								
	Universal Testing Machine								
	Charpy V-notch Impact testing machine								
	Hardness Testing Machine								
	Various Digital and Analog meters								
	Variable current, voltage and resistance generators								
	Temperature/ Pressure Recorders								
	Temperature gauges including RTDs								
	Thermocouples								
	Vibration probes								
	Decibel-meter								
	Any other								

FORMAT NO.: C2

SURVEYING AND LAYOUT RECORD

Project :

Job No :

Client :

Contractor :

Name of Work :

1. Reference Drawing :
2. Reference Grid Pillars :
3. Reference Bench Mark/Reduced Level :
4. Co-ordinates :
5. Reduced Level :
6. Closing error, if any :
7. Layout Sketch :

(CONTRACTOR)

(EIL)

(CLIENT)

Date :

FORMAT NO. : C3

TEST REPORT FOR DETERMINATION OF DRY DENSITY & MOISTURE CONTENT OF SAND/SOIL

Project :
Client :
Name of Work :
Location :
Job No :
Contractor :
Layer No :

S. No.	Description	Relation	Test Nos:						Remarks
			1	2	3	4	5	6	
1.	Wt. of mould + wt. of wet soil/sand	W_1 gm							
2.	Wt. of mould	W_2 gm							
3.	Wt. of wet soil/sand	$(W_1 - W_2)$ gm							
4.	Volume of mould	V cc							
5.	Density of wet soil/sand	$D_w = (W_1 - W_2)/V$ gm/cc							
6.	Wt. of wet sample taken	W_w gm							
7.	Wt. of sample after drying	W_d gm							
8.	Moisture Content (or directly by moisture meter)	$Mc = (W_w - W_d)/w_d \times 100\%$ (or "R" directly by rapid moisture meter)							
9.	Moisture Content after correction (in case of rapid moisture meter)	$MC = R/(100-R) \times 100$							
9.	Dry density	$D_d = D_w/(1+Mc)$ gm/CC							
10.	Laboratory Max dry density	gm/cc							
11.	Degree of Compaction	%							
12.	Required degree of compaction	%							
13.	Obtained degree of compaction	$DOC = D_{fd} / D_{id} \times 100$							
13.	Optimum Moisture Content (OMC)	%							

(CONTRACTOR)

(EIL)

Date :

(TESTED BY/LAB-IN-CHARGE)

FORMAT NO. : C4
RECORD OF APPROVAL OF SOURCE(S) FOR
AGGREGATES,SOIL

Project : Job No :
Client : Contractor :

Name of Work :

1. Reference :
 2. Material :
 3. Location of Source :
 4. Approx. distance from the site :
 5. Physical Properties
 - a) Colour (as applicable) :
 - b) Shape (as applicable) : Rounded/Irregular
 - c) Texture (as applicable) : Glossy/Smooth/Granular
 6. Tests conducted at :
 7. Code of Conformance :
 8. Test Report Reviewed : Satisfactory/Un-satisfactory
 9. Remarks : The source is approved/not approved
 10. Explanation if any :
- Enclosures :
 - a) Reviewed Test Reports
 - b) Request of contractor, if available

COMMITTEE MEMBERS :

APPROVED :

- i) EIL :
- ii) Client :

Signature of the contractor :

Date :

Place :

FORMAT NO. : C5
SIEVE ANALYSIS REPORT

Project : _____ Name of Work : _____
 Client : _____ Contractor : _____
 Wt. of Sample taken : _____ Date : _____
 Date on which sample taken : _____

FINE AGGREGATE

S. No.	Sieve Size	Weight Retained (gm)	Percentage Retained	Cumulative % Retained	% Passing	Fineness Modulus	Zone (As per IS:383)	Remarks
1.	4.75mm							
2.	2.36mm							
3.	1.18mm							
4.	600 u							
5.	300 u							
6.	150 u							
7.	Pan							

COARSE AGGREGATE/ROAD METAL

		Wt. of Sample taken :			Passed/ Failed	Remarks
					(As per IS:383/EIL Spec 6-64-0018)	
1.	125mm					
2.	90mm					
3.	80mm					
4.	63mm					
5.	53mm					90-45 (Gr-I), 63-45 (Gr-II), 13.2mm (screening) for road work
6.	45mm					
7.	40mm					
8.	22.4mm					
9.	20mm					
10.	16mm					
11.	13.2mm					
12.	12.5mm					
13.	11.2mm					
14.	10mm					
15.	5.6mm					
16.	4.75mm					
17.	2.36mm					
18.	180 u					40mm down for PCC 20mm down for RCC

(TEST BY/LAB-IN-CHARGE)

(CONTRACTOR)

(EIL)

FORMAT NO. : C6
UNDERGROUND PIPING-TEST REPORT (RCC/CI)

Project :
 Client :
 Name of Work :

Job No :
 Contractor :

1. Reference Drawing : :
2. Location : :
3. Line Designation : :
4. Type of Pipe & System : :
5. Specification : :
6. Dia of Pipe : :
7. Gradient : :
8. Type of Manhole : :
9. Test (s) Conducted : :
10. Date of Testing : :
11. Remarks, if any : :

CONTRACTOR

CLIENT

Date :

EIL

FORMAT NO. : C7
CEMENT TESTING RESULT REPORT

Project : Job No :
Client : Contractor :
Name of Work :
Brand of Cement : Consignment No. :
Wt. of sample taken : Sample Collected on :
Room Temperature :

A. CONSISTENCY

Trial No.	Wt. of Cement (gm)	Wt. of Water Added (gm)	% of Water	Reading on Indicator (mm)	Consistency	Remarks

B. SETTING TIME

Trial No.	Wt. of Cement (gm)	Wt. of Water Added (gm)	W/C Ratio	Time Recorded When Water Added	Time Recorded At set	Initial Set	Final Set	Setting Time	Remarks

C. FINENESS

Trial No.	Wt. of Cement <i>Sample Used</i>	Retained on 90 μ IS sieve in gm	% Retained	Remarks

D. COMPRESSIVE STRENGTH

Cube Size : 7.06X7.06X7.06 cm

Trial No.	Mix Proportion	Date of		Age of Specimen	Crushing Surface Area (Cm ²)	Crushing Load (Kg)	Crushing Strength (Kg/Cm ²)	Remarks
		Casting	Testing					

(TESTED BY)/LAB-IN-CHARGE

(CONTRACTOR)

(EIL)

Date :

FORMAT NO. : C8
POUR CARD-I (PROGRAMME OF CONCRETING)

Contractor :		Client :		
Name of work :				
1.	Reference document :			
2.	Type of structure :	Location :		
3.	Levels	From :	To :	
4.	Grade of concrete/ Approved Design Mix			
5.	Brand name, Grade and Consignment no. of cement			
6.	Estimated volume of concrete :			
7.	Quantity of cement required :			
8.	Reinforcement checking details :			
		No.	Dia.	Length
	a) Laps			
	b) Separators			
	c) Chairs			
	d) Any other			
	Remarks			
9.	Pre pour inspection details	Checked		NA
	a) Survey/ Layout			
	b) Sub soil compaction			
	c) Completion of underground works			
	d) Cleanliness			
	e) Cover to reinforcement			
	f) Anchor bolts/Insert plates			
	g) Sleeves/ pockets			
	h) Water stops			
	i) Formwork			
	j) Slopes			
	k) Construction/ Expansion joints			
	l) Admixtures			
	m) Any other			
	Remarks			
10.	Clearance for Electrical/ Mechanical works required/ not required :	<i>Electrical</i>		<i>Mechanical</i>
11.	The above structure is finally inspected on _____ at _____ AM/PM and found/ not found satisfactory for concreting.			
	Remarks, if any			

(Contractor)
Name
Designation
Date

(EIL)
Name
Designation
Date

(Client/ Owner)
Name
Designation
Date

FORMAT NO. : C9

POUR CARD-II (OBSERVATIONS DURING CONCRETING)

Contractor :		Client :	
Name of work :			
1.	a) Quality of coarse aggregates	Satisfactory <input type="checkbox"/>	Not satisfactory <input type="checkbox"/>
	b) Quality of fine aggregates	Satisfactory <input type="checkbox"/>	Not satisfactory <input type="checkbox"/>
	c) Bulkage of sand taken into account	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.	Quality of water	Satisfactory <input type="checkbox"/>	Not satisfactory <input type="checkbox"/>
3.	Machinery mobilization	Nos.	Stand by
	a) Mixture machine		
	b) Ready mixed concrete dumpers		
	c) Vibrators		
	d) Pumps		
	e) Hoists		
4.	Pour start time	: AM/PM ;	Date :
5.	Slump		
6.	W/C Ratio		
8.	Type of weather	Normal <input type="checkbox"/>	Abnormal <input type="checkbox"/>
	Details of abnormality : (Precautions taken for <5°C and >40°C, rainy season)		
10.	Number of cubes taken & Cube identification number/marks	:	
11.	Quantity of concrete poured	:	
12.	Pour completion time	: AM/PM ;	Date :
13.	Curing method :		
	<input type="checkbox"/> Traditional	<input type="checkbox"/> Curing compound	
	<input type="checkbox"/> Blankets/ foils/ gunny bags	<input type="checkbox"/> Others (specify)	
14.	Period for removal of form work	:	
15.	Any defect(s) observed during concreting :		

(Contractor)
Name
Designation
Date

(EIL)
Name
Designation
Date

(Client/ Owner)
Name
Designation
Date

FORMAT NO. : C12
STRUCTURE FABRICATION & ERECTION SHEET

Project : Job No :
Client : Contractor :
Name of Work :
Reference Drawing : Location/Coordinates/Grids :
Layout Clearance obtained : Yes/No

S. No.	Item No.	Material & Dimensional clearance	Shop Fit up		Shop welding		Cleaning & primer painting		Erection Fit up		Alignment & leveling		Field welding		Grouting clearance		Final Painting & thickness		Remarks
			Con	EIL	Con	EIL	Con	EIL	Con	EIL	Con	EIL	Con	EIL	Con	EIL	Con	EIL	

Abbreviations:
Con : Contractor's signature with date

SECTION - C

FORMATS

FOR

UNDERGROUND PIPING WORKS

CONTENTS

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2.	Weld visual inspection report	P2	59
3.	Radiography offering report	P3	60
4.	Radiography interpretation report	P4	61
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6.	Piping hydrostatic test acceptance record	P6	63
7.	Line wise record	UG1	64
8.	U/G piping system testing record	UG2	65

FORMAT NO. : P2
WELD VISUAL INSPECTION REPROT

Project : Job No :

Client : Contractor :

Name of Work :

Report No. : Date :

WPS No. :

Sl. No.	Service/Line No.	Dia.	Joint No.	Type	Welder No.	Visual Inspection Clearance	Remarks
Total inch Dia							

WORK LOAD =
PREVIOUS =
TILL DATE =
% PROGRESS =

- G - BUTT WELD
- S - SOCKET WELD
- B - BRANCH WELD
- M - MITRE WELD

CONTRACTOR

EIL

FORMAT NO. : P4
RADIOGRAPHY INTERPRETATION REPORT

Project : Job No :

Client : Contractor :

Name of Work :

Radiography Technique : SWSI/DWSI/DWDI

Source : Ir192 , X-Ray , Cobalt 60

Film Type & Make :

IQI : Date :

Radiography Procedure No. :

Sl. No.	Service/Line No.	Dia.	Joint No.	Welder No.	Radiography No.	Segment	Results	Joint Status A/R/H

SWSI - SINGLE WALL SINGLE IMAGE
DWSI - DOUBLE WALL SINGLE IMAGE
DWDI - DOUBLE WALL DOUBLE IMAGE

A - ACCEPTED
R - REPAIR
H - HOLD
S/C - SURFACE CHECK
RT - RETAKE

CONTRACTOR

EIL

**FORMAT NO. : P5
PIPING HYDROTESTATIC TEST RELEASE RECORD**

Project : Job No :

Client : Contractor :

Name of Work :

Plan : _____		Date : _____	
Loop No : _____		Area : _____	
		REF P & ID No. : _____	
		INCH MTR : _____	
		From _____ To _____	
	Line No. (s)	Isometric No. (s)	P&ID No. (s)
Test Medium :		Test Duration :	
Test Pressure Gauge No.		Design/Test Pressure :	
Range	Calibration Certificate No.:	Gauge Calibration Date:	
Items to check		Accept	Witness
		Contractor	EIL
Field Installation Checklist Prior to Hydrostatic test Signed			
Punch list Prepared		Yes	No
Pre – Hydrostatic test Punch items Cleared			
Accessibility to Inspection/Witness Locations			
Capacity of pressurizing pump checked			
Cordon off area for high pressure testing, as required			
Pre-hydrostatic test flushing carried out			
IBR/Others test V/witnessing Required		Yes	No
System Released for Pressure Testing :			
Contractor :		EIL:	
Sign :	Name :	Sign :	Name :
Date :		Date :	
Designation :		Designation:	

FORMAT NO. : P6
PIPING HYDROSTATIC TEST ACCEPTANCE RECORD

ACTIVITY	Date	Time
Water Filling and Venting started at		
Water Filling Completed		
Vents Closed		
Isolation of Pressurizing pump		
Test completed at :		
- Water drained		
- Air		
- Temp Blinds Removed		
- Checked for reinstallation of a. Valves b. Others		
- Cold setting of spring supports carried out		
Contractor :	EIL :	
Sign :	Sign:	
Date :	Date:	
Name : Designation	Name:	Designation:
	Reviewed by EIL Lead Engineer/ Area Coordinator :	
	Sign:	
	Date:	
	Name:	Designation:

**FORMAT NO. : UG1
LINEWISE RECORD**

Project : Job No :
Client : Contractor :
Name of Work:
Plant : % Radiography :
Loop No. :

Sl. No.	Dia.	Jt. No	Type	Fit-up Clearance Date	Welder No.	Date of Welding	Radiography		Stress Relieve Chart No.	Hardness	Hydro-static test Date	Clearance date for				Remarks	
							No.	Result & Date				Cleaning & Priming	Wrapping / Coating / Epoxy Coating & repair (if any) for 3LPE Pipe	Trench Level Checking	Holiday Checking		Lowering Back-Filling

CONTRACTOR
Date:



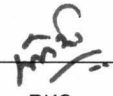
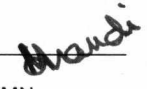
EIL

FORMAT NO. : UG2
U/G PIPING SYSTEM TESTING RECORD

ACTIVITY	Date	Time
Air/Water Filling and Venting started at		
Water Filling Completed/Air pressure achieved		
Vents Closed (for water testing)		
Isolation of Pressurizing pump/compressor		
Visual Test/Soap Bubble check completed at :		
- Water drained/Air depressurized		
- Drying, if applicable		
- Temp Blinds Removed		
- Checked for reinstallation of a. Valves b. Others		
Contractor :	EIL :	
Sign :	Sign:	
Date :	Date:	
Name : Designation	Name:	Designation:
	Reviewed by EIL EIL Lead Engineer/Area Coordinator :	
	Sign:	
	Date:	
	Name:	Designation:

मानक गुणवत्ता आश्वासन योजना
(आइटम रेट ठेकेदारों के लिये)

STANDARD QUALITY ASSURANCE PLAN
(FOR ITEM RATE CONTRACTORS)

4	29.03.2024	REVISED AND UPDATED	 DK	 AC	 RKS	 MN	
3	30/03/2019	REVISED AND UPDATED	SKG	AP	AKK	RKT	
2	26/02/2014	REVISED AND UPDATED	SM	DJ	RKD	SC	
1	23/05/2008	REVISED AND UPDATED	AS	RK	SCB	VC	
0	05/12/2002	ISSUED FOR IMPLEMENTATION	AB	MPJ	RSG	GRR	
Rev. No.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman	Approved by

Abbreviations :

CI	:	Cast Iron
EHT	:	Extra High Tension
EMCC	:	Emergency Motor Control Centre
EOT	:	Electrically Operated Traveling
GI	:	Galvanized Iron
HOT	:	Hand Operated Traveling
HT	:	High Tension
JB	:	Junction Box
M	:	Supervisor (Mechanical)
MCC	:	Motor Control Centre
PCC	:	Power Control Centre
QAP	:	Quality Assurance Plan
RCC	:	Reinforced Cement Concrete
VSD	:	Variable Speed Drives
WBM	:	Water Bound Macadam

Construction Standards Committee

Convenor: Sh. R K Singh, ED (Construction)

Members: Sh. D S N Murthy, GGM (Projects)
Sh. Chinmoy Kapuria, CGM (SCM)
Sh. Udayan Chakravarty, CGM (Piping)
Sh. Abhijit Chakraborty, GM (Construction)
Sh. Pankaj Kumar Rai, DGM (Construction)
Sh. Dhananjay, AGM (Construction)

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3.	Quality Assurance Plan for Architectural Works	6-82-6110	9
4.	Quality Assurance Plan for Mechanical Works	6-82-6115	10
5.	Quality Assurance Plan for Electrical Works	6-82-6120	11
6.	Quality Assurance Plan for Instrumentation Works	6-82-6125	12
7.	Quality Assurance Plan for General Works	6-82-6130	13

GENERAL NOTE

1. *These are only sample Quality Assurance Plans (QAPs). Contractor to prepare job specific QAP depending upon the contract specification, scope, technology, etc. and submit the same for approval of the Engineer-in-Charge well before commencement of the activity*
2. *Specifications mentioned under 'Code of conformance' column are only for the purpose of illustration. The applicable specification(s) shall be followed by the contractor.*

LEGEND

RE	:	Resident Engineer / Resident Construction Manager
SC	:	Engineer/Supervisor (Civil)
SM	:	Engineer/Supervisor (Mechanical)
SE	:	Engineer/Supervisor (Electrical)
SI	:	Engineer/Supervisor (Instrumentation)
SQ	:	Engineer/Supervisor (Quality)
SS	:	Engineer/Supervisor (HSE)
LE	:	Lead Discipline Engineer