FORMAT NO. : HSE-2 REV 0

(Sheet 3 of 3)

Medical Aid provided:-(indicate specific aids / treatment etc.)-

.....

.....

Actions taken to prevent recurrence of similar incident / accident:.....

.....

.....

.....

.....

.....

.....

Intimation to local authorities (Dist. Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom .....

Safety Officer
(Signature and Name)
Stamp of Contractor

Site Head / Resident Construction Manager
(Signature and Name)

To : Owner
: RCM/Site-in-charge EIL (3 copies)
- Nodal Officer HO through RCM (In case of major accident)
- Divisional Head (Constn) through RCM
- Project Manager, EIL, through RCM

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FORMAT NO. : HSE-3 REV 0

(Sheet 1 of 5)

SUPPLEMENTARY ACCIDENT INVESTIGATION REPORT
TICK THE APPROPRIATE ONEAS APPLICABLE (furnish within 72 hours)

Supplementary to Incident / Accident Report No: _____ (Copy enclosed)

Report No.: _____ **Date**: _____

Project site: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

Non-disabling injury (Non-LTI **)**	Hospitalized but resumed duty before end of 48 hrs of accident.	
Disabling injury (other LTI**)**	Hospitalized & failed to resume duty within next 48 hrs.	
Fatal (LTI)	Death / Expiry	
First Aid case	Resume duty after first aid	

Name of the injured: _____ Father's name of victim: _____

Sub Contractor's Name: .....

Gate Pass No.:..... Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

Date & time of Accident / Incident: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

Profession of victim:

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c. operator	
Engineer		Manager		Other/specify	

Qualification

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

Job Experience

NIL		Less than 2 yrs.		2-5 yrs.	
5-10 yrs.		11-15 yrs.		15 years and above	

Location where the incident happened: _____

_____

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FORMAT NO. : HSE-3 REV 0

(Sheet 2 of 5)

Activity / Works that were continuing during incident / accident: -

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

What exactly the victim was doing just before the incident / accident? .....

.....

.....

Particular of tools & tackles being used and condition of the same after incident/accident:

.....

.....

Description of Incident/Accident (How the incident was caused) : .....

.....

.....

.....

Nature of injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

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FORMAT NO. : HSE-3 REV 0

(Sheet 3 of 5)

Accident type:

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

Name & Designation of person who provided First-Aid to the victim: _____

Name & Telephone number of Hospital where the victim was treated _____

Mode of transport used for transporting victim – Ambulance / Private car / Tempo / Truck / Others

How much time taken to shift the injured person to Hospital_____

In case of FATAL incident, indicate clearly the BOCW Registration No. of the victim/Company.....
...

Comments of Medical Practitioner, who treated / attended the victim/injured (attached / described here)_____

What actions are taken for investigation of the incident, please indicate clearly – (Video film / Photography / Measurements taken etc. .....)

Immediate cause (Please tick the right applicable) –

Hazardous methods or procedures inadequately guarded		Poor housekeeping		Inadequate or improper PPE	
Environmental hazards (excess noise/ space constraint/ inadequate ventilation		improper illumination/Moving on oval surface		Working on dangerous equipment	

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FORMAT NO.: HSE-3 REV 0

(Sheet 4 of 5)

Failure to secure		Horse-play		Failure to use PPE	
Inattention to surroundings		Improper use of hands & body-parts		By-passing safety devices	
Unsafe mixing or placement of tools & tackles		Bypassing standard procedures		Failure in communication	
Operating without authority		Improper use of equipment or tools & tackles		drug or alcoholic influence	
excessive haste		Others(specify)			

Basic cause

Over confidence		Impulsiveness		over-exertion	
Faulty judgement or poor understanding		Failing to keep attention constantly		Nervousness & Fear	
Fatigue		Defective vision		Ill health or sickness	
Slow reaction		Others(specify)			

Root cause

Inadequate Engg.		Improper Design		Inadequate Planning & organization	
Inadequate knowledge		Inadequate skill		Inadequate training	
Inadequate supervision		Improper work procedure		Inadequate compliance with standard	
Substandard performance		Inadequate maintenance		Improper inspection	
Others(specify)					

Loss of man days and impact on site works, (if any) –

_____

Remarks from Contractor's Safety Officer/ Engineer –

Was the victim performing relevant tasks for which he was engaged /employed? Yes / No
Was the Supervisor present on work-site during the incident? Yes / No
Have the causes of incident rightly identified? Yes / No
Cause of Accident was _____

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FORMAT NO. : HSE-3 REV 0

(Sheet 5 of 5)

Remedial measures recommended by **Safety Officer of Contractor** for avoiding similar incident in future

: .....

.....

.....

.....

.....

.....

.....

Intimation to local authorities (Dist. Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom .....

Safety Officer
(Signature and Name)

Site Head / Resident Construction Manager
(Signature and Name)
Stamp of Contractor

To : Owner
: RCM/ Site-in-charge of EIL (3 copies)
Nodal Officer HO through RCM (In case of major accident)
Divisional Head (Constn.) through RCM
Project Manager EIL, through RCM

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FORMAT NO. : HSE-4 REV 0

NEAR MISS INCIDENT/ DANGEROUS OCCURRENCE REPORTPROFORMA

(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
(Signature and Name)
Stamp of Contractor

Site Head / Resident Construction Manager
(Signature and Name)

Note:

- **Near Miss:** Human injury escaped & no damage to property, equipmentor 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)

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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

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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 work ……..Duration 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 Safety goggles		
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)

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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	
☐	☐	Isolated from power/steam/air	☐	☐	water flushed &/or steamed	☐	☐	radiation sources removed
☐	☐	isolated from liquid or gases	☐	☐	Man ways open & ventilated	☐	☐	proper lighting provided
☐	☐	depressurized &/or drained	☐	☐	cont. inert gas flow arranged	☐	☐	
☐	☐	blanked/ blinded/ disconnected	☐	☐	adequately cooled	☐	☐	

(B) Expected Residual Hazards

☐	☐	lack of O_2	☐	☐	combustible gas/ liquid	☐	☐	H_2S / toxic gases
☐	☐	corrosive chemicals	☐	☐	pyrophoric iron / scales	☐	☐	electricity / static
☐	☐	heat/ steam / frost	☐	☐	high humidity	☐	☐	ionizing radiation
☐	☐		☐	☐		☐	☐	

(C) Protection Measures

☐	☐	gloves	☐	☐	ear plug / muff	☐	☐	goggles / face shield
☐	☐	protective clothing	☐	☐	dust / gas / air line mask	☐	☐	personal gas alarm
☐	☐	grounded air duct/blower /AC	☐	☐	attendant with SCBA/air mask	☐	☐	rescue equipment/team
☐	☐	Fire fighting arrangements	☐	☐	safety harness & lifeline	☐	☐	communication equipment
☐	☐		☐	☐		☐	☐	

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 ☐ was closed ☐ stopped ☐ will continue on ...

(B) ☐ Site left in a safe condition ☐ Housekeeping done

(C) Multi lock ☐ removed ☐ key transferred

☐ Ensured all men have come out ☐ Man-ways barricaded

Remarks, if any:

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FORMAT NO. : HSE-8 REV 0

RADIATION WORK PERMIT

Project :
Name of the work :
Name of site contractor :

Sr. No. :
Date :
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	
	Area cordoned off / safe working platform provided	
	Lighting arrangements for working during nights ensured	
	Warning signs/ flash lights installed	
	Cold work permit taken (if applicable)	
	PPEs like film badges, dosimeters used	

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:

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FORMAT NO. : HSE-9 REV 1

DEMOLISHING/DISMANTLING WORK PERMIT

Project :
Name of the work :
Name of contractor :

Sr.No. :
Date :
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	☐	☐
	Dismantling/ Demolishing method reviewed & approved	☐	☐
	Usage of appropriate PPEs ensured	☐	☐
	Precautions taken for neighboring structures	☐	☐
	First-Aid arrangements made	☐	☐
	Fire fighting arrangements ensured	☐	☐
	Precautions taken for blasting	☐	☐

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 :
Name of the work :
Name of contractor :

Sr.No. :
Date :
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

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FORMAT NO. : HSE-11 REV 0

(Sheet 1 of 2)

HOUSEKEEPING ASSESSMENT& COMPLIANCE

Project :
Name of the work :
Name of contractor :
Name of contractor : Fortnightly

Sr.No. :
Date :
Job No. :

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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FORMAT NO. : HSE-11 REV 0

(Sheet 2 of 2)

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

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FORMAT NO. : HSE-12 REV 0

INSPECTION OF TEMPORARY ELECTRICAL BOOTH / INSTALLATION

Project :
Name of the work :
Name of contractor :
Sub Station No:/Booth No

Sr.No. :
Date :
Job 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 3rd 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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FORMAT NO. : HSE-13 REV 0

(Sheet 1 of 2)

INSPECTION FOR SCAFFOLDING

Project :
Name of the work :
Name of contractor :

Sr.No. :
Date :
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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FORMAT NO. : HSE-13 REV 0

(Sheet 2 of 2)

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

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FORMAT NO. : HSE-14 REV 1

(sheet 1 of 2)

PERMIT FOR ERECTION / MODIFICATION & DISMANTLING OFSCAFFOLDING

Project :
Name of the work :
Name of contractor :
Nature of activities :

Sr.No. :
Date :
Job No. :
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

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FORMAT NO. : HSE-14 REV 1

(sheet 2of 2)

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.								

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FORMAT NO. : HSE-15 REV 1

PERMIT FOR HEAVY LIFT/CRITICAL ERECTION

Project :
Name of the work :
Name of contractor :
Nature of activities :
Location of work :
Equipment/Structure to be erected:

Sr. No. :
Date :
Job No. :
Duration: From.....To.....
Name /Type of crane :
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 carne 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 Verification By Work Permit issuer Contractor Job Supervisor
Contractor Safety Officer Contractor Engineer/RCM

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FORMAT NO. : HSE-16 REV 1

PERMIT FOR ENERGY ISOLATION & DE-ISOLATION

Project :
Name of the work :
Name of contractor :

Sr.No. :
Date :
Job No. :

ENERGY ISOLATION PERMIT

- Clearance required from:.....Hrs .....Date To .....Hrs ....Date
- Name of equipment/ energy source etc. .....
- Nature of job to be done: .....
- Area.....Location:.....

PERMIT VALIDATION	PERFORMING AUTHORITY
I hereby authorize the .....personnel(performer) to isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for maintenance/repair. Issuing authority Client/Contractor RCM (as applicable) Signature: Date: Name:	The work and precautions will be carried out under my overall responsibility.(Testing/execution engineer) Signature: Date: Name:

SAFETY PRECAUTIONS FOR CLEARANCE	NORMALISING AFTER CLEARANCE
1. Notify workers of intent to de- energize ☐ 2. Obtain lock, tag or locking/tagging devices ☐ 3. Shut down, de-energize, dissipate any residual energies. ☐ 4. Apply lock ,tag and locking and/or tagging devices ☐ 5. *Any other job specific precautions ☐ 6. Verify effectiveness of lockout by attempting to restart. ☐ 7. Proper PPE is ensured ☐ I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:..... Lock No:..... Issuing authority Client/Contractor RCM (as applicable) Signature: Date: Name: **(*to be included by contractor in consultation with issuing authority)**	1. Notify workers of intent to re- energize ☐ 2. Conduct visual inspection to confirm that the danger zone is clear of workers ☐ 3. Conduct visual inspection to confirm that tools ,equipment's danger zone is clear of workers ☐ 4. Reposition the safety devices(interlocks, valves, guards, covers ,sensors, as applicable, etc.) ☐ 5. *Any other job specific normalizing details ☐ 6. Remove lock, tag and locking and/or tagging devices. ☐ 7. Re-energize. ☐ 8. Confirm system is operating properly& safely I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:..... Lock No:..... Issuing authority Client/Contractor RCM (as applicable) Signature: Date: Name: **(*to be included by contractor in consultation with issuing authority)**

ENERGY DE-ISOLATION PERMIT

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

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FORMAT NO. : HSE-17 REV 1

PERMIT FOR EXCAVATION (depth 2m and above)

(Sheet 1of 2)

Project :
Name of the work :
Name of contractor :
Job Description :
Size of excavation :

Sr.No. :
Date :
Job No. :
Location:

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 (Issuer)

Contractor (Receiver)

Verification by Contractor Safety Officer

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FORMAT NO. : HSE-17 REV 1

PERMIT FOR EXCAVATION

(Sheet 2of 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.

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FORMAT NO. : HSE-18 REV 0 **(Sheet 1of 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	

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(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 x B x C x D x Ex 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

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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

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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		

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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

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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)		

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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

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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		

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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

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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		

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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

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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		

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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

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ठेकेदार द्वारा सप्लाई की गई सामग्रियों के लिए निरीक्षण एवं परीक्षण योजना (आईटीपी) अथवा आवक सामग्री की जांच

INSPECTION & TEST PLAN (ITP) FOR INCOMING MATERIAL CHECKING FOR CONTRACTOR'S SUPPLIED MATERIALS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
3	29.08.2023	REVISED AND REISSUED	DJ	DG	RKS	SM
2	27.07.2018	REVISED AND REISSUED	SKG	AP	AKK	RKT
1	14.10.2015	REVISED AND REISSUED	DJ	MKG	TKS	SC
0	04.07.2011	ISSUED FOR IMPLEMENTATION	SM	SM	MKG	

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Abbreviations:

ATT	:	Anti Termite Treatment
CGI	:	Corrugated Galvanized Iron
CS	:	Carbon Steel
EOT	:	Electric Operated Traction
FLM	:	Flood Light Mast
HOT	:	Heat Operated Traction
HT	:	High Tension
HV	:	High voltage
IMIR	:	Incoming Material Inspection Report.
IRN	:	Inspection Release Note
ITP	:	Inspection Test Plan
KW	:	Kilo Watt
LR	:	Lorry Receipt
LT	:	Low Tension
LV	:	Low Voltage
LEL	:	Low Explosive Limit
MOC	:	Material of Construction
MTC	:	Manufacture Test Certificate
NACE	:	National Association of Corrosion Engineers
PLC	:	Programmable Logic Control
PRDS	:	Pressure Reducing and De-superheating Stations
QAP	:	Quality Assurance Plan
RCC	:	Reinforced Cement Concrete
SS	:	Stainless Steel
SOR	:	Schedule Of Rates
TC	:	Test Certificate
TPIA	:	Third Party Inspection Agency

Construction Standards Committee

Convenor: Sh. Rupesh Kumar Singh , ED (Construction)

Members: Sh. Janak Kishore, ED (Projects),
Sh. Chinmoy Kapuria, CGM (SCM),
Sh. Udayan Chakravarty, Sr. GM (Piping),
Sh. Debasish Ghosal, GM (Construction),
Sh. Pankaj Kumar Rai, DGM (Construction),

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2.	Inspection & Test Plan	05
	Format for Incoming Material Inspection Report	08

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GENERAL NOTE

The enclosed ITPs 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), 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 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 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 by Owner/EIL when the activity is performed.
After proper notification has been provided (notification modalities and period shall be finalized before hand), 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. In such cases basis of acceptance shall be review of Contractor generated report/document 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.

WC **: 100%** Supervision and 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.

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SL NO	ACTIVITY	CONTRACTOR	EIL/OWNER($)			Records to be submitted/ Format No:
			CAT 1	CAT2	CAT 3	
A	**Document Checking**					
1	Check whether vendor/source is approved.	WC	HP	Rw	Rw	G-01
2	Availability of QAP/ITP duly approved by TPIA.	WC	Rw	Rw	Rw	G-01
3	Availability of MTC / IRN (Availability of stage wise Inspection Reports/certificates in case of inspection by TPIA, Inspection reports of Contractor).	WC	Rw	Rw	Rw	G-01
4	Availability of certificates from statutory bodies, if applicable	WC	Rw	Rw	Rw	
5	Delivery challan /LR/ E-way Bill/ Tax Invoice	WC	Rw	Rw	-	G-01
6	For Foreign Items: Bill of landing, Country of origin, Packing List, phytosanitary certificate, bill of entry, customs invoice (as applicable)	WC	Rw	Rw	-	
B	**Physical Verification**					
1	Checking for Inspection stamp/Identification mark	WC	W*	S	S	G-01
2	Correlation of MTC w.r.t. Heat nos/ Batch no /lot no.	WC	HP	Rw*	Rw*	G-01
3	Physical assessment of Quantity.	WC	S	S	-	G-01
4	Certification of condition of material.	WC	S	S	S	G-01
C	Sampling for Field tests / tests from approved laboratories, if applicable.	WC	W	W	W	G-01
D	Review of Field Test reports/Test reports if applicable.	WC	Rw	Rw	Rw	G-01
E	Review MTC/IRN/TC etc.	WC	Rw	Rw	Rw	G-01
F	Endorsement on IMIR	WC	HP	HP	Rw	G-01

NOTE:

- **($)**A generic categorization plan could be firmed based on following guideline and as per Table A:-
- **(*)**Sampling plan for checking of bulk items shall be as per discretion of EIL
- General :

1) EIL/OWNER and contractor shall jointly finalize the list of incoming materials and categorize in line with inspection categorization plan for bought out items. The items not covered in Table A shall be finalized by Engineer In charge /Owner.
2) In general Sl no of the ITP: A (1, 3, 4 & 5) B, E and F shall be applicable to both (#) and (@) i.e. Items with and without TPI/EIL inspection
3) In general Sl no of the ITP: A (2), shall be applicable to (@) ie. Items with TPI/EIL inspection
4) In general Sl no. of ITP: C and D shall be applicable to (#) ie. Items without TPI/EIL inspection.

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5) All items to be procured from approved vendors / source as per list enclosed in the contract / approved vendor list. Prior approval for the source / vendor to be taken for items not listed in the contract / approved vendor list.

6) Anodisation / galvanization shall be ensured in shops having proven track record and samples are to be tested to check galvanizing / anodizing prior to dispatch to sites.

CAT 1 CRITICAL: The materials requiring long time impact to meet the stipulation of end user. Completely engineered and inspected as per the contract.

CAT 2 MAJOR: The materials requiring lesser time impact on end user. Specified to Industry standards, lower design category (not fully reviewed of detailed Engg but all interfaces checked) and with complete compliance with code, however requiring limited inspection.

CAT 3 MINOR: Standard items, fit for the purpose with minimal Engg review.

TABLE: A

SL NO	CAT 1 (CRITICAL)	CAT 2 (MAJOR)	CAT 3 (MINOR)
		Items without TPI/EIL inspection (#)	
1	Refractory materials	• Cement • Reinforcement • Structural steel • Brick and tile brick • Asphalt(bitumen) • Paint • Sanitary wares • sanitary fittings(pipes & fittings) • Chemicals for ATT • Acid resistant tiles and mortar • Marble/ Granite/ Ceramic Tiles • Chemical hardener for flooring • Grouting compound • Wood for doors and windows • Ventilator • Flush door • Paneled door • Roof treatment materials • False ceiling & flooring materials • RCC Hume pipes • Anchor fasteners • Foundation bolts • Waterproofing Materials • Underdeck insulation materials • Water stopper/ HDPE/ LDPE Sheet • Vermiculite based cementious fireproofing materials	• AC sheets/CGI sheets • Particle board • Glazing glass • All galvanized • anodized items like GI pipes • door/window frames • Pre-coated sheets • Steel doors • Rolling shutters • Cable ducts/trays • lightning arrestors • street light poles • Earthing items • Conduits/wire/Metsec Channels • Safe area Lightning fixtures • SS Handrails • UPVC/CPVC Pipe • HDPE Pipes • PPR Pipes

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SL NO	CAT 1 (CRITICAL)	CAT 2 (MAJOR)	CAT 3 (MINOR)
		Items with TPI/EIL inspection (@)	
1	• All process Compressor, pumps (with drive above 110 KW). • Diesel Generators Vessels (thickness more than 50 mm) and all Vessels with MOC NACE, alloy steel, clad steels, Inconel. • All Columns, Reactors, Heat Exchangers,	• All types of pumps, compressors excluding category 1 • Fans, blowers, Conveyors and material handling equipment's.Vessels (thickness less than 50 mm) and other vessels excluding category 1 • Trays and tower Internals • Burners for fired heaters • EOT/HOT crane • De super heaters & PRDS Air pre heaters, Damper, Soot blowers • Expansion joint ,Gas and Liquid Filters • Pipes /Piping material (flanges, fittings etc. AS, SS, clad steel, Inconel, NACE) • All types of valves All Fire Fighting equipment's, including Deluge valves LRM, Sprinklers. • FLM with fittings • HT/LT switch gear, Bus ducts • Fire alarm system • HV / LV Motors • DC System including consoles • PLC ,Batteries & battery Chargers, Capacitor banks • Plant communication system, UPS & Transformer • Variable speed drives • Tank level indicator/Instruments • All Control valves, pressure relief valves, breather valves • Meter-flow-annubar, Solenoid valve, Annunciators with panels, Self-actuating pressure control valves. • Temperature sensing Element RTD's • Thermowell and thermocouple • Mass flow meters , Pressure switches, Flow switches , Level switches (explosion Proof) • Flow sensing Element Orifice Plate & Flanges, Pitot Tube Analyzers - LEL Detectors, Level Instruments • Transmitters • Flame arrestors • Panel Control and accessories • All HV/HT and LV/LT cables and control cables. All types of flameproof fittings & fixtures.	• Hoists • Pipes & Piping materials (carbon steel & other) excluding category2 • Gauges Glass • Pressure gauges, Temperature Gauges, Draft Gauges. • Tape coat materials • Gratings • Insulation materials All fasteners, gaskets. • Hand railings

Note: For any material not covered above, the inspection requirement shall be decided by EIC based on the criticality.

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Format No: **G: 0 1 REV 0**

INCOMING MATERIAL INSPECTION REPORT

Report No. :
Date :

Project :
Contractor :
Work order No. :
:

Unit :
Consultant :
P.O. No. & Date :

Name of Work :
Job No. :
LR No. :

Sl. No.	SOR Item No.	Material description/Tag no	Date of Receipt	Qty. Received	Qty. Accepted	Manufacturer/ Vendor	MTC No./ IRN No. with Date/ Field, Lab test, etc.	Heat/ Batch No.	Ref. Invoice, Challan No., E-Way Bill (as applicable)	Observation/Remarks/ Storage Instruction

Notes :

INSPECTION ACTIVITY AT SITE (Tick as applicable)

1. Quantity verified and found in order ☐
2. Material condition appears to be good ☐
3. Heat/Batch/Tag No. mentioned on the material ☐
4. Color coding done as applicable ☐
5. Site identification mark on material ☐
6. Correlation w.r.t. IRN/MTC/Lab Tests report ☐
7. TC verification w.r.t. IRN/Spec/QAP, etc. ☐
8. Check for Vendor/Source approval ☐
9. Special Requirement if any. ☐

Based on above, materials are accepted.

Contractor Field Engineer
Name:

Contractor RCM/Site In charge
Name:

EIL Field Engineer
Name:

EIL Lead Engineer/Area coordinator/Spread In charge
Name:

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

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

Rev. No	Date	Purpose	Prepared by	Checked by	Approved by: Standards Committee Convenor	Approved by: 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

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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

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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

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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

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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

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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/murrum 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 b) stacking of blasted rocks and other quarry materials including handing over to Owner	WC WC	W S	W 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.

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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

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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.

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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**	Contractor to check all free issue materials and maintain records of MIV for material issued by owner/EIL			
	b) Contractors supply	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	WC	Rw	Rw	Yes/ Format C1
	b) Field calibration, if any	WC	S	S	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.

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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

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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

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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)

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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	WC	HP	Rw	Yes/ Format C1
	b) Field calibration, if any	WC	W	S	Yes
4.	Layout and marking of ground level	WC	S	-	Format C2
5.	Excavation to required level, compaction of sub-base	WC	W	S	-
6.	Checking/ testing of materials	WC	W	S	Format C5
7.	Filling selected materials in specified layers, rolling, watering	WC	S	-	-
8.	Compaction tests	WC	W	Rw	Format C3
9.	Gravel filling under annular ring with compaction and adding graded filler material (As applicable)	WC	W	S	Yes
10.	Anti-corrosive layer, consolidation	WC	S	-	-
11.	Premix carpeting on side slopes	WC	S	S	-
12.	Preparation of "As-built drawing" for erection	WC	Rw	Rw	Yes
13.	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"

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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

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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**	Contractor to check all free issue materials and maintain records of MIV for material issued by owner/EIL			
	b) Contractors supply	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 ii) Dimensional check	WC WC	S S	Rw Rw	

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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

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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

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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

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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 repai ; 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

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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.

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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

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ITP NO: 3142

REINFORCED CEMENT CONCRETE (SUBSTRUCTURE)

Sl. No.	Activity	Contractor	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

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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.

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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.

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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 C1
	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

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ITP NO: 3147

STRUCTURAL STEEL WORKS

S. No	Activity	Contractor	EIL		Records to be submitted/
A	**PRE – FABRICATION ACTIVITIES**		CAT A	CAT B	
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.

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ITP NO: 3148

PILING WORKS

Sl. No.	Activity	Contractor	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
19	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

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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

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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.

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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

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ITP NO.: 3174

PAINTING (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

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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

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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

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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

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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

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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.

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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

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SECTION - B

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FORMATS

FOR

CIVIL, STRUCTURAL &

ARCHITECTURAL WORKS

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FORMAT NO.: C1

RECORD OF CALBIRATION 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								

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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 :

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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: 1	2	3	4	5	6	Remarks
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	$Dw = (W_1 - W_2)/V$ gm/cc							
6.	Wt. of wet sample taken	Ww gm							
7.	Wt. of sample after drying	Wd gm							
8.	Moisture Content (or directly by moisture meter)	Mc = (Ww – Wd)/wd x 100% (or "R" directly by rapid moisture meter)							
9.	Moisture Content after correction (in case of rapid moisture meter)	MC = R/(100-R) X 100							
9.	Dry density	Dd = Dw/(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 = Dfd / Did X 100							
13.	Optimum Moisture Content (OMC)	%							

(TESTED BY/LAB-IN-CHARGE) (CONTRACTOR) (EIL)

Date :

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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 :

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FORMAT NO. : C5

SIEVE ANALYSIS REPORT

Project :
Client :
Wt. of Sample taken :
Job No :
Date :
Name of Work :
Contractor :
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 (As per IS:383/EIL Spec 6-64-0018)	Remarks
1.	125mm							
2.	90mm							
3.	80mm							90-45 (Gr-I), 63-45 (Gr-II), 13.2mm (screening) for road work
4.	63mm							
5.	53mm							
6.	45mm							
7.	40mm							
8.	22.4mm							
9.	20mm							
10.	16mm							40mm down for PCC
11.	13.2mm							
12.	12.5mm							20mm down for RCC
13.	11.2mm							
14.	10mm							
15.	5.6mm							
16.	4.75mm							
17.	2.36mm							
18.	180 u							

(TEST BY/LAB-IN-CHARGE) (CONTRACTOR) (EIL)

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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 EIL CLIENT

Date :

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FORMAT NO. : C7

CEMENT TESTING RESULT REPORT

Project :
Client :
Name of Work :
Brand of Cement :
Wt. of sample taken :
Room Temperature :

Job No :
Contractor :

Consignment No. :
Sample Collected on :

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 *Sample Used*	Retained on 90 µ IS sieve in gm	% Retained	Remarks

D. COMPRESSIVE STRENTH

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 :

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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 :	***Electrical***	***Mechanical***
11.	The above structure is finally inspected on at AM/PM and found/ not found satisfactory for concreting.		
	Remarks, if any		

(Contractor)	**(EIL)**	**(Client/ Owner)**
Name	Name	Name
Designation	Designation	Designation
Date	Date	Date

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FORMAT NO. : C9

POUR CARD-II (OBSERVATIONS DURING CONCRETING)

Contractor :			***Client :***	
Name of work :				
1.	a) Quality of coarse aggregates	Satisfactory ☐	Not satisfactory ☐	
	b) Quality of fine aggregates	Satisfactory ☐	Not satisfactory ☐	
	c) Bulkage of sand taken into account	Yes ☐	No ☐	
2.	Quality of water	Satisfactory ☐	Not satisfactory ☐	
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 ☐	Abnormal ☐	
	Details of abnormality : (Precautions taken for <5^{0}C and >40^{0}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 :			
	☐ Traditional	☐ Curing compound		
	☐ Blankets/ foils/ gunny bags	☐ Others (specify)		
14.	Period for removal of form work :			
15.	Any defect(s) observed during concreting :			

(Contractor)	**(EIL)**	**(Client/ Owner)**
Name	Name	Name
Designation	Designation	Designation
Date	Date	Date

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FORMAT NO. : C10

CRUSHING STRENGTH TESTING RESULTS OF CONCRETE CUBES

Project :

Job No :

Client :

Contractor :

Name of Work :

Grade of Concrete :

Type of Cement :

W/C Ratio :

Max. size of Aggregate :

Cube No.	Id. Mark on cube	Type & Location of Structure	Date of		Age (days)	Dimensions of Cube			Vol. of Cube (m^3)	Wt. of Cube (Kg)	Unit WT. (Kg/ m^3)	Surface Area (mm^2)	Crushing Load (Kn)	Crushing Strength (N/mm^2)	Average Compressive Strength	Remarks
			Casting	Testing		L (Cm)	B (Cm)	H (Cm)								

(TESTED BY)/LAB-IN-CHARGE

(CONTRACTOR)

(EIL)

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FORMAT NO. : C11

DIMENSIONAL, WATER ABSORPTION, CRUSHING STRENGTH & EFFLORESCENCE TESTING RESULTS OF BRICKS

Project :

Job No :

Client :

Contractor :

Name of Work :

S. No.	Frog Mark	Wt.of oven *Dried Brick* (gm)	Absorption Period (hr)	Wt. of wet Brick (gm)	% of Water Absorption	Efflorescence Observed After Drying	Size of Brick (L X B X H) Cm	Crushing Surface Area (Cm^2)	Crushing Load (Kg)	Crushing Strength (Kg/Cm^2)	Remarks

NOTE : i) Water absorption shall not be more than 20% by its dry weight. Bricks should be soaked in cold water for 24 hrs.
ii) Code of conformance shall be IS:3495 (for conducting tests) and IS:5454 (for collecting samples)

(TESTED BY/LAB-IN-CHARGE) CONTRACTOR EIL

Date :

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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

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SECTION - C

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FORMATS

FOR

UNDERGROUND PIPING WORKS

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FORMAT NO. : P1

DAILY FIT UP INSPECTION & TRACEABILITY REPORT

Project :
Client :
Name of Work:
Report No. :

Job No :
Contractor :

Date :

Sl. No.	Service/Line No.	Dia.	Joint No.	*Type*	Inch Mtr.	Manufacturers Heat No.	Clearance	Remarks
	TOTAL INCH DIA.				TOTAL INCH MTR.			

Total Inch	Previous	Till Date
Diameter		
Meter		

G – Butt Weld	S – Socket Weld	B – Branch Weld	M – Mitre Weld

(CONTRACTOR) (EIL)

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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

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FORMAT NO. : P3

RADIOGRAPHY OFFERING REPORT

Project :

Job No :

Client :

Contractor :

Name of Work :

Report No. :

Date :

Sl. No.	Service/Line No.	Dia.	Joint No.	Welder No.	Radiography No.	Accepted Date	R.A. Bill No.

CONTRACTOR

EIL

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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

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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 :	Design/Test Pressure :
Test Pressure Gauge No.	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 Witnessing Required Yes No			

System Released for Pressure Testing :

Contractor :	**EIL:**
Sign : Name :	Sign : Name :
Date :	Date :
Designation :	Designation:

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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:

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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

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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:

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मानक गुणवत्ता आश्वासन योजना

(आइटम रेट ठेकेदारो के लिये)

STANDARD QUALITY ASSURANCE PLAN
(FOR ITEM RATE CONTRACTORS)

Rev. No.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
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

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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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1.	Quality Assurance Plan for General Civil Works	6-82-6101	5 - 6
2.	Quality Assurance Plan for Structural Works	6-82-6105	7 - 8
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

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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**

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QAP No. : 6101

QAP FOR GENERAL CIVIL WORKS

(Sheet 1 of 2)

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
1.	Survey works	Contractor's Procedure	EIL Spec. No. 6-65-0002	SC	LE/SQ	RE	Yes
2.	Earthwork for underground piping	- Do -	EIL Spec. No. 6-65-0006	SC	LE/SQ	RE	Yes
3.	Compound wall	- Do -	EIL Spec. No. 6-65-0010	SC	LE/SQ	RE	Yes
4.	Classification of soil for Earth Work in site grading	- Do -	EIL Spec. No. 6-65-0016	SC	LE/SQ	RE	Yes
5.	Site grading & rock cutting for site grading	- Do -	EIL Spec. No. 6-65-0017	SC	LE/SQ	RE	Yes
6.	Road & flexible pavements (upto WBM layer)	- Do -	EIL Spec. No. 6-65-0018	SC	LE/SQ	RE	Yes
7.	Road & flexible pavements (upto WMM layer)	- Do -	EIL Spec. No. 6-65-0014	SC	LE/SQ	RE	Yes
8.	Concrete Pavement	- Do -	EIL Spec. No. 6-65-0019	SC	LE/SQ	RE	Yes
9.	Flexible pavements with bitumen premix carpet	- Do -	EIL Spec. No. 6-65-0020	SC	LE/SQ	RE	Yes

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QAP No. : 6101

QAP FOR GENERAL CIVIL WORKS

(Sheet 2 of 2)

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
9.	Tank Pads	Contractor's Procedure	EIL Spec. No. 6-65-0022	SC	LE/SQ	RE	Yes
10.	Underground and above ground G.I. pipeline system (water services)	- Do -	EIL Spec. No. 6-65-0027	SC	LE/SQ	RE	Yes
11.	Fabrication and laying of Underground piping	- Do -	EIL Spec. No. 6-65-0030	SC/SM	LE/SQ	RE	Yes
12.	Corrosion protection tape coating for underground steel piping	- Do -	EIL Spec. No. 6-79-0011	SC/SM	LE/SQ	RE	Yes
13.	Underground C.I. piping system	- Do -	EIL Spec. No. 6-65-0036	SC	LE/SQ	RE	Yes
14.	Underground sewer system - pre cast R.C.C. pipes	- Do -	EIL Spec. No. 6-65-0042	SC	LE/SQ	RE	Yes
15.	Underground sewer system-HDPE Pipes	- Do -	EIL Spec. No. 6-65-0044	SC	LE/SQ	RE	Yes
16.	Film lining covered with concrete lining for earthern reservoir	- Do -	EIL Spec. No. 6-65-0046	SC	LE/SQ	RE	Yes
17.	Plumbing and building drainage	- Do -	EIL Spec. No. 6-65-0053	SC	LE/SQ	RE	Yes

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QAP No. : 6105

QAP FOR STRUCTURAL WORKS

(Sheet 1 of 2)

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
1.	Civil & structural works – materials	Contractor's Procedure	EIL Spec. No. 6-68-0002	SC	LE/SQ	RE	Yes
2.	Earth work	- Do -	EIL Spec. No. 6-68-0003	SC	LE/SQ	RE	Yes
3.	Plain & reinforced cement concrete	- Do -	EIL Spec. No. 6-68-0004	SC	LE/SQ	RE	Yes
4.	Reinforced cement concrete in liquid retaining structures	- Do -	EIL Spec. No. 6-68-0005	SC	LE/SQ	RE	Yes
5.	Structural steel works	- Do -	EIL Spec. No. 6-68-0006	SC/SM	LE/SQ	RE	Yes
6.	Structural steel works (tubular/ hollow sections)	- Do -	EIL Spec. No. 6-68-0007	SC/SM	LE/SQ	RE	Yes
7.	Miscellaneous steel works	- Do -	EIL Spec. No. 6-68-0008	SC/SM	LE/SQ	RE	Yes
8.	Brick masonry	- Do -	EIL Spec. No. 6-68-0009	SC	LE/SQ	RE	Yes

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QAP No. : 6105

QAP FOR STRUCTURAL WORKS

(Sheet 2 of 2)

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
9.	Demolition and dismantling	Contractor's Procedure	EIL Spec. No. 6-68-0012	SC	LE/SQ	RE	Yes
10.	Miscellaneous items (like Anti-termite treatment)	- Do -	EIL Spec. No. 6-68-0013	SC	LE/SQ	RE	Yes
11.	Fire proofing of steel structures	- Do -	EIL Spec. No. 6-68-0033	SC	LE/SQ	RE	Yes
12.	Shotcreting (guniting)	- Do -	EIL Spec. No. 6-68-0055	SC	LE/SQ	RE	Yes
13.	Vacuum dewatering concrete system	- Do -	EIL Spec. No. 6-68-0062	SC	LE/SQ	RE	Yes
14.	Materials for reinforced concrete piles	- Do -	EIL Spec. No. 6-74-0006	SC	LE/SQ	RE	Yes
15.	Construction and installation of driven cast-in-situ piles	- Do -	EIL Spec. No. 6-74-0010	SC	LE/SQ	RE	Yes
16.	Testing of concrete piles	- Do -	EIL Spec. No. 6-74-0013	SC	LE/SQ	RE	Yes

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QAP No. : 6110

QAP FOR ARCHITECTURAL WORKS

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
1.	Floor finishing	Contractor's Procedure	EIL Spec. No. 6-75-0002	SC	LE/SQ	RE	Yes
2.	Steel/Aluminium Doors, Windows and Ventilators	- Do -	EIL Spec. No. 6-75-0004	SC	LE/SQ	RE	Yes
3.	Plastering and pointing	- Do -	EIL Spec. No. 6-75-0005	SC	LE/SQ	RE	Yes
4.	Roofing Treatment	- Do -	EIL Spec. No. 6-75-0006	SC	LE/SQ	RE	Yes
5.	Whitewashing, Colour Washing Distempering, Painting and Polishing	- Do -	EIL Spec. No. 6-75-0007	SC	LE/SQ	RE	Yes
6.	Roofing	- Do -	EIL Spec. No. 6-75-0008	SC	LE/SQ	RE	Yes
7.	Sanitary Fittings and Fixtures	- Do -	EIL Spec. No. 6-75-0009	SC	LE/SQ	RE	Yes
8.	False Ceiling, False Flooring Under deck Insulation & Partitioning	- Do -	EIL Spec. No. 6-75-0010	SC	LE/SQ	RE	Yes

Please refer Page 4 of 13 for General Notes and Legend

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QAP No. : 6115

QAP FOR MECHANICAL WORKS

ACTIVITY DESCRIPTION		PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
1.	Above Ground & Underground Piping	Contractor's/ Vendor's Procedure	EIL Spec. Nos. 6-44-0005, 0012,0013, 0016	SM	LE/SQ	RE	Yes
2.	Column Internals	- Do -	EIL Spec. No. 6-14-0016	SM	LE/SQ	RE	Yes
3.	Fired Heaters	- Do -	EIL Spec. No. 6-17-0001	SM	LE/SQ	RE	Yes
4.	Refractory & Insulation Works-Fired Heaters	- Do -	EIL Spec. No. 6-17-0001, 6-79-0001	SM	LE/SQ	RE	Yes
5.	Equipment Erection (Static)	- Do -	EIL Spec. No. 6-76-0001	SM	LE/SQ	RE	Yes
6.	Equipment Erection (Rotary)	- Do -	EIL Spec. No. 6-76-0001	SM	LE/SQ	RE	Yes
7.	Crane (EOT/HOT)	- Do -	EIL Spec. No. 6-48-0002, 0003	SM	LE/SQ	RE	Yes
8.	Storage Tanks	- Do -	EIL Spec. No. 6-13-0053	SM	LE/SQ	RE	Yes

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QAP No. : 6120

QAP FOR ELECTRICAL WORKS

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
1.	Transformer (Power/Distribution/Lighting)	Contractor's/Vendor's Procedure	EIL Spec. No. 6-51-0081	SE	LE/SQ	RE	Yes
2.	Motor (HT/LT)	- Do -	EIL Spec. No. 6-51-0081	SE	LE/SQ	RE	Yes
3.	Generator	- Do -	EIL Spec. No. 6-51-0035, 0040, 6-51-0081	SE	LE/SQ	RE	Yes
4.	Switch Gears (HV/MV)/ VSD	- Do -	EIL Spec. No. 6-51-0081	SE	LE/SQ	RE	Yes
5.	EHT/HT Main Bus &Allied Equip.	- Do -	EIL Spec. No. 6-51-0081	SE	LE/SQ	RE	Yes
6.	Cable Laying	- Do -	EIL Spec. No. 6-51-0082	SE	LE/SQ	RE	Yes
7.	Lighting	- Do -	EIL Spec. No. 6-51-0083	SE	LE/SQ	RE	Yes
8.	Earthing	- Do -	EIL Spec. No. 6-51-0084	SE	LE/SQ	RE	Yes
9.	Field inspection, testing and commissioning of electrical installations	- Do -	EIL Spec. No. 6-51-0087	SE	LE/SQ	RE	Yes

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QAP No. : 6125

QAP FOR INSTRUMENTATION WORKS (FIELD)

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
1.	Installation of field instruments including calibration	Contractor's Procedure	EIL Spec. No. 6-52-0060	SI	LE/SQ	RE	Yes
2.	Cable works	- Do -	EIL Spec. No. 6-52-0060	SI	LE/SQ	RE	Yes
3.	Impulse piping/tubing works	- Do -	EIL Spec. No. 6-52-0060	SI	LE/SQ	RE	Yes
4.	Panel/Console works including DCS/PLC works	- Do -	EIL Spec. Nos. 6-52-0049, 6-52-0060	SI	LE/SQ	RE	Yes

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QAP No. : 6130

QAP FOR GENERAL WORKS

	ACTIVITY DESCRIPTION	PROCEDURE NO.	CODE OF CONFORMANCE	PERFORMER	CHECKER	APPROVER	RECORDS TO BE SUBMITTED
1.	Painting	Contractor's/Vendor's Procedure	EIL Spec. No. 6-79-0021	SC/SM	LE/SQ	RE	Yes
2.	Insulation	- Do -	EIL Spec. Nos. 6-79-0026, 0027	SC/ SM	LE/SQ	RE	Yes
3.	Refractory Lining	- Do -	EIL Spec. No. 6-79-0001	SC/SM	LE/SQ	RE	Yes
4.	Ceramic Fibre Lining	- Do -	EIL Spec. No. 6-79-0005	SC/SM	LE/SQ	RE	Yes
5.	Incoming material Inspection	- Do -	EIL Spec. No. 6-82-1010	SC/SM/SI/SE	LE/SQ	RE	Yes
6.	Health, Safety & Environmental Management	- Do -	EIL Spec. No. 6-82-0001	SS/SC/SM/SE/SI	LE/SQ	RE	Yes

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अपकेंद्रीय क्षैतिज पम्प के लिए निरीक्षण और परीक्षण योजना

(सामान्य जल सेवा)

INSPECTION AND TEST PLAN FOR PUMP CENTRIFUGAL HORIZONTAL (GENERAL WATER SERVICE)

Rev. No.	Date	Purpose	Prepared by	Checked by	Convener Standards Committee	Chairman Standards Bureau
					Approved by	
5	23.05.20	REVISED AND RE-ISSUED	TV	RMR	RKS	SKS
4	20.03.14	REVISED AND RE-ISSUED	TKK	RKS	SCG	SC
3	19.08.13	REVISED AND RE-ISSUED	TKK	RKS	SCG	DM
2	15.07.11	REVISED AND RE-ISSUED	RMR	SCG	AKC	DM
1	21.01.08	REVISED AND RE-ISSUED	SMG	SS	MVKK	VC
0	23..07.02	ISSUED FOR IMPLEMENTATION	VKJ	TVD	AKB	GRR

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Abbreviations:

AS	:	Alloy Steel	NPSH	:	Net Positive Suction Head
COC	:	Certificate of Compliance	PESO	:	Petroleum and Explosives Safety Organization
DFT	:	Dry Film Thickness	PMI	:	Positive Material Identification
EIL	:	Engineers India Limited	PO	:	Purchase Order
EPC	:	Engineering Procurement Construction	PQR	:	Procedure Qualification Record
EN	:	European Norms	PR	:	Purchase Requisition
HT	:	Heat Treatment	QAP	:	Quality Assurance Plan
HV	:	High Voltage	RT	:	Radiography Testing
IC	:	Inspection Certificate	Specs.	:	Specifications
IRN	:	Inspection Release Note	SS	:	Stainless Steel
ITP	:	Inspection and Test Plan	Temp	:	Temperature
LCP	:	Local Control Panel	TPI or TPIA	:	Third Party Inspection Agency
MOM	:	Minutes of Meeting	UCP	:	Unit Control Panel
KW	:	Kilo Watt	UT	:	Ultrasonic Testing
MRT	:	Mechanical Run Test	VDR	:	Vendor Data Requirement
MTC	:	Material Test Certificate	VFD	:	Variable Frequency Drive
MV	:	Medium Voltage	WPS	:	Welding Procedure Specification
NDT	:	Non Destructive Testing	WPQ	:	Welders Performance Qualification

Inspection Standards Committee

Convener: Mr. R.K. Singh

Members:

Mr. Rajesh Sinha	Mr. Himangshu Pal	Mr. Chandrashekhar	Mr. Avdhesh Agrawal
Mr. Mahendra Mittal	Mr. R Muthuramalingam (RPO Representative)	Mr. Tarun Kumar / Mr. Mahesh Gupta, Eqpt Div	

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1.0 SCOPE:

This Inspection Test Plan covers the minimum testing requirements of Pump Centrifugal Horizontal (General Water Service).

2.0 REFERENCE DOCUMENTS:

PO/PR/ Standards referred there in/ Job specifications /Approved documents.

3.0 INSPECTION AND TEST REQUIREMENTS:

SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
1.0	**Procedures / Documents**						
1.1	Pressure test, MRT, Performance test, NPSH tests, NDT as applicable, Heat Treatment as applicable, Dynamic Balancing Test of Impeller, String Test as applicable and other procedure as applicable	Documented Procedures	100%	Procedures	-	H	R
1.2	WPS, PQR,WPQ - 1) Qualification for Overlay 2) Repair welding procedures	Welding procedure Qualification, Welder parameters	100%	WPS/PQR/ WPQ Records	-	H	W- New, R – Existing (Note-3)
1.3	Pre-Inspection meeting	Verification of technical requirements as per PR/contract	100%	MOM	-	H	W/R (For <160KW) H (For >160KW)

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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
2.0	**Material Inspection**						
2.1	Incoming Material Casing, Stuffing Box, Impeller, Shaft Material, Wear rings & Bearing Housing (As applicable)	Visual & Dimensions, Chemical Properties / Physical Properties, Heat Treatment as per Specs, UT for Shaft & Other Forgings and (#)Wear ring differential hardness	100%	MTC, HT Chart, Inspection Report, COC for #	H	H	R (Note-4)
2.2	Accessories- Mechanical Seal, Coupling (As applicable)	Pressure Test of Mechanical Seal, Dynamic balancing of seal and coupling	100%	MTC/ Inspection & Test Record, Pressure test report and COC for Mechanical Seal	H	H	R (Note-4)
2.3	Piping & Hardware Items- Valves, Flanges, Pipes, Fittings, Gaskets, Fasteners etc (As applicable)	Visual & Other Requirement as per purchase specification / Approved Documents	100%	MTC & Inspection Report	H	H	R (Note-4)
2.4	Motor / VFD (As applicable) *(supplier/sub supplier to arrange TPIA certification)	1) Type test/ Routine test of Motor, VFD & Other test requirement as per purchase specification / Approved Documents 2) MTC review 3) PESO certificate review (As applicable)	100%	MTC & Inspection Report	H	H*	W / R (Note-7)
2.4.1	Combined testing of motor & VFD (As applicable) *(supplier/sub supplier to arrange TPIA certification)	1) Routine Test & Type Test 2) PESO requirement (As applicable)	100%	MTC & Inspection / Test Records	H	H*	W (Note-7)

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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
2.5	Steam Turbine (As applicable)	MRT of Turbine & & Other checks as per approved QAP	100%	MTC & Inspection Report / Test Records	H	H	W (Note-6,9)
2.6	Diesel Engine with governor & accessories (As applicable)	MRT of Diesel Engine & Other checks as per approved QAP	100%	MTC & Inspection Report	H	H	R (Note-8,9)
2.7	Gear box (As applicable)	MRT of gear box & Other checks as per approved QAP	100%	MTC & Inspection Report	H	H	W (Note-6,9)
2.8	Lube Oil system (As applicable)	Functional test & Other checks as per approved QAP	100%	MTC & Inspection Report	H	H	W (Note-6,9)
2.9	LCP/UCP (As applicable)	Functional Test & Other checks as per approved QAP	100%	MTC & Inspection Report	H	H	W (Note-6,9)
3.0	**In Process Inspection**						
3.1	NDT (As applicable) for Casing, Impeller, Stuffing Box, Shaft Casing to Nozzle butt weld	Surface and Internal imperfections	100%	Test Reports, RT films & NDT report	-	H	R
3.2	Pressure test before Assembly of Pump casing (In un-painted condition) & stuffing box	Leak Tightness check	Each Set	Inspection and Test Records	-	H	R
3.3	Impeller / Rotor assembly	Dynamic Balancing	Each Impeller / Rotor assembly	Inspection and Test Records	-	H	W - 1 per Tag R - Spare (Note – 10)

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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
4.0	**FINAL INSPECTION**						
4.1	Testing of Pumps	1) Performance test 2) NPSH (R) (As applicable) 3) MRT for 4 hours duration (To measure Vibration Limits, Noise level, Bearing Temp Rise)	Each Pump	Inspection and Test Records, Calibration records of Driver	-	H	H (Note-11)
4.2	Dismantle inspection of pump after performance test / MRT (4 Hours)	1) Visual insp. of casing inside surface 2) Wear ring area visual Check 3) Clearance measurement 4) Examination of Mechanical seal	Each Pump	Inspection and Test Records	-	H	W (Note-12)
4.3	Performance testing of pump after corro-coating (As applicable if specified in PR/pump datasheets)	Performance /Power consumption	One / Tag	Inspection and Test Records	-	H	W (One / Tag)
4.4	Unitization of Pump with job driver on a common job base Frame	Alignment of pump with driver and Check Direction of Rotation	Each Set	Inspection and Test Records	-	H	W
4.5	Complete Unit String Test along with all accessories (If applicable as per PR)	Mechanical Performance of the Train (Vibration Limits, bearing / Oil temperature, driver parameters and controls)	Each Set	Inspection and Test Records	-	H	H
4.6	Testing of auxiliary piping (As applicable)	Leak Tightness	Each Set	Inspection and Test Records	-	H	R

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Page 2593 of 2811 : B895-TENDER DOC-B895-999-81-46-CE-T-8202 : Rev. A

SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
4.7	Job Instruments if applicable	Compliance to PR requirements	100%	MTC & Statutory certification (As applicable)	W	H	R
4.8	Testing and Measuring Instruments	Validity of calibration & accuracy	100%	Calibration Report	W	H	R
4.9	Final Pump skid Assembly & Spares verification	Visual, Nozzle dimensions including foundation dimensions of base frame, Battery Limits Check, Overall skid completeness check and PMI check of all SS & AS components and welds on skid	100%	Inspection Report	-	H	H
5.0	**Painting**						
5.1	Surface Preparation & Painting of all Carbon Steel Parts of Skid	Visual Inspection for workmanship, Panting Scheme, Paint Shade, Painting DFT Check	100%	Inspection Report	-	H	R
5.2	Pickling & Passivation for Stainless Steel Parts(As applicable)	Visual Inspection for workmanship	100%	Inspection Report	-	H	R
5.3	Packing & Preservation	Visual Inspection for workmanship	100%	Inspection Report	-	H	-
6.0	**Documentation & IC / IRN**						
6.1	Stamping and review of inspection documents, issue of IC	Review of documents for compliance as per PR.	100%	Inspection Certificate (IC)	-	-	H
6.2	Review of final documentation of supplier	Compilation of documents as per VDR attached with PR.	100%	Dossier / Completion certificate	-	H	H

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Legend: H- Hold (Do not proceed without approval), P-Perform, RW - Random Witness (As specified or 10% (minimum 1 number of each size and type of Bulk item)), R-Review, W-Witness (Give due notice, work may proceed after scheduled date).

NOTES (As applicable):

1. This document describes the generic test requirements. Any additional test or Inspection scope if specified in contract documents shall also be applicable.(Unless otherwise agreed upon)
2. Acceptance Norms for all the activities shall be as per PO/PR/Standards referred there in /Job Specification /Approved Documents.
3. WPS/PQR/WPQ Shall be qualified & certified by a reputed TPIA.
4. Certifications shall be as per EN 10204 Type 3.1 except for Mechanical seal & wear ring hardness.
5. Bought out items to be procured from EIL/Client approved suppliers.
6. Third Party Inspection Certifications shall be as per EN 10204 Type 3.2 and TPIA shall be arranged by supplier.
7. Inspection Test Requirements of Motors shall be as per EIL ITP 6-81-1064 (MV Motors), 6-81-1031 (HV Motors), 6-81-1038 (MV VFDs), 6-81-1050 (HV VFDs).
8. Inspection Test Requirements Diesel Engine Starting Battery shall be as per EIL ITP 6-81-1046 (For Lead Acid Battery Type).
9. Separate QAP/ITP of bought out items like Steam turbine, Diesel engine, Gear box, Lube Oil System & LCP/UCP shall be submitted for approval of TPIA/EIL.
10. Final balancing of impeller/shaft shall be done after corro-coating if applicable & specified in PR/datasheets.
11. For Pump up to 55KW, Performance test, Mechanical Run Test, NPSH tests (As applicable) and dismantling inspection shall be reviewed by EIL/TPIA. Pump above 55KW and up to 160KW, Performance test, Mechanical Run Test and NPSH test (As applicable) shall be witnessed by EIL/TPIA and shall be limited to one per PR Sr. No. excluding engine driven pump. Engine driven pump & Pump above 160KW, Performance test, Mechanical Run Test and NPSH test (As applicable) for each pump shall be witnessed by EIL/TPIA.
12. Dismantle inspection of pump after performance test shall be applicable only in case of abnormality in mechanical behavior (such as excessive noise & vibration, bearing temperature rise etc.) during performance test.
13. For EPC jobs, all inspection shall be carried out by TPIA, unless notified otherwise.

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वातानुकूलन पैकेज
के लिए
निरीक्षण व परीक्षण योजना

INSPECTION AND TEST PLAN
FOR
AIR CONDITIONING PACKAGE

Rev. No.	Date	Purpose	Prepared by	Checked by	Convenor Standards Committee	Chairman Standards Bureau
					Approved by	
2	10.03.2026	REVISED AND RE-ISSUED	AK	RM 10/3/26	HP	NK
1	14.12.2020	REVISED AND RE-ISSUED	SK	CS	RKS	SM
0	02.07.2015	Issued for Implementation	PKS	RKS	RKM	SC

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Abbreviations:

AS/CS/SS	:	Alloy Steel/ Carbon Steel/ Stainless Steel
AC	:	Air Conditioning
ANSI	:	American National Standards Institute
ASHRAE	:	American Society for Heating, Refrigeration & Air Conditioning Engineers
ASTM	:	American Society for Testing & Materials
BIS	:	Bureau of Indian Standards
BOM	:	Bill of Materials
CEIL	:	Certification Engineers International Limited
COC	:	Certificate of Compliance
DFT	:	Dry Film Thickness
DPT	:	Dye Penetrant Testing
EIL	:	Engineers India Limited
EN	:	European Standard
EPC	:	Engineering, Procurement & Construction
HT	:	Heat Treatment
HV	:	High Voltage
IC	:	Inspection Certificate
ITP	:	Inspection and Test Plan
IR	:	Insulation Resistance
MOC	:	Material of Construction
MPT/MT	:	Magnetic Particle Testing
MTC	:	Material Test Certificate
MRT	:	Mechanical Run Test
NACE	:	National Association of Corrosion Engineers
NDT	:	Non Destructive Testing
PESO	:	Petroleum Explosive Safety Organization
PLC	:	Programmable Logic Control
PMI	:	Positive Material Identification
PO	:	Purchase Order
PQR	:	Procedure Qualification Record
PR	:	Purchase Requisition
RT	:	Radiography Testing
TC	:	Test Certificate
TPI or TPIA	:	Third Party Inspection Agency
UL	:	Underwriters Laboratories
UT	:	Ultrasonic Testing
WPS	:	Welding Procedure Specification
WPQ	:	Welders Performance Qualification

Inspection Standards Committee

Convenor : Mr. Himangshu Pal

Members:

Mr. G. Suresh

Mr. R Muthuramalingam

Mrs. Rajeshwari Venkatasubramanian

Mr. Themballi Basu

Mr. T. Kamalakannan

Mr. Aravazhi V

Mr. Shishupal Choudhary (Engg. Representative)

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1.0 SCOPE

This Inspection and Test Plan covers the minimum testing requirements of Air Conditioning Package (Comprising of Chilling Unit, Air Handling Unit, Control System & Ducts).

2.0 REFERENCE DOCUMENTS

PO/PR/ Standards referred there in/ Job specifications /Approved documents.

3.0 INSPECTION AND TEST REQUIREMENTS

SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
1.0	**Procedure**						
1.1	Functional/Performance test, Hydrostatic/Leak Test, Heat Treatment, NDT, Painting and other procedures, as applicable	Documented Procedures	100%	Procedure Documents	-	H	R
1.2	WPS/ PQR /WPQ for Equipments, piping & ducting	Documented Procedures	100%	Procedure documents	-	H	R-Existing W-New
1.3	Categorization Plan for bought out items	Documented Inspection Category	100%	.Categorization Plan	-	H	H
2.0	**Inspection at manufacturer's works-Chilling unit**						
2.1	**Refrigeration System- Vapour Compression System (as applicable)-Material/Bought outs**						

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
2.1.1	Refrigerant Compressor , Chilled water & Condensate Pump & Motor (as applicable)	Compressor/Pump: Model/Type & Capacity/ rating, (MOC compliance, Dynamic Balancing, Leak Test, Performance characteristics (as applicable), Mechanical Run Test), Statutory certificate (as applicable) Motor: Type/rating/frame size-wise Type & Routine testing	100%	Manufacturer Test Certificate/ Inspection reports	H	As per Note - 1	As per Note - 1
2.1.2	Heat Exchangers like Refrigerant Condenser, Shell & Tube Economizer, Evaporator, Oil Cooler, High Pressure Absorber Chiller (as applicable)	Physical & Chemical properties for pressure parts, , Visual, Dimensions, Hydrostatic test	100%	Manufacturer Test Certificate/ Inspection reports	H	As per Note - 1	As per Note - 1
2.1.3	Vessels like Refrigerant Receiver, Compressor Knock-Out Drum, Oil Separator, Flash Vessel, Oil Recovery Vessel, Oil Reservoir / Sump, Oil Filters, etc. (as applicable)	Physical & Chemical properties for pressure parts, Visual, Dimensions, Hydrostatic test	100%	Manufacturer Test Certificate/ Inspection reports	H	As per Note - 1	As per Note - 1

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
2.1.4	Fan/Blower & drive motor/Pump for Condenser/Evaporator (as applicable)	Fan/Blower/Pump: Model/Type & Capacity/rating, MOC Compliance, Dynamic Balancing, Leak Test, Performance, Mechanical Run Test (as applicable) Motor: Type/rating/frame size-wise Type & Routine testing	100%	Manufacturer Test Certificate/ Inspection reports	H	As per Note - 1	As per Note - 1
2.1.5	Oil Pump Set Assembly (as applicable)	Pump: Model, MOC compliance, Dynamic balancing, Leak Test, Performance characteristic, Mechanical Run Test (as applicable) Motor: Type/rating/frame size-wise Type & Routine testing	100%	Manufacturer Test Certificate/Inspection reports	H	As per Note - 1	As per Note - 1
2.1.6	Piping items viz. Valves, Pressure Safety Valves, Strainers, Pipes, Flanges, Fittings, Fasteners & Gaskets (as applicable)	Physical & Chemical properties for parts, Hydrostatic test, Functional Test (as applicable)	100%	Manufacturer Test Certificate	H	As per Note - 1	As per Note - 1
2.1.7	Miscellaneous items viz. Compressor Couplings, Base Frame for Skid, V- Belt, Pulleys Insulation (Cold & Hot) & Structural Materials (as applicable)	Visual, Dimension, Dynamic Balancing of Coupling	100%	Manufacturer Test Certificate	H	As per Note - 1	As per Note - 1

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
2.2	**Refrigeration System- Vapour Absorption System (as applicable)- Materials/Bought Outs**						
2.2.1	Plates, Pipes/Tubes, Valves, Pump (Hydraulic/Vacuum),	Pump: Model/Type & Capacity/ rating, MOC compliance, Performance Characteristics, Mechanical Run Test (as applicable) Other items: Physical & Chemical properties, Hydrostatic test (as applicable)	100%	Manufacturer Test Certificate/Inspection reports	H	As per Note - 1	As per Note - 1
2.2.2	Expansion Tank, Cooling Tower (as applicable)	Tank: Physical & Chemical properties for parts, Visual, Dimensions, Hydrostatic test Cooling Tower: Performance characteristics for Fan, Type/Routine testing of Motor, Functional cum Mechanical Run Test, MOC compliance, Type test certificate for cooling capacity	100%	Manufacturer Test Certificate/Inspection reports	H	As per Note - 1	As per Note - 1

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
2.3	Instrumentation Items like Local Control Panel, PLC, Transmitters (Pressure, Differential Pressure, Temperature, Level), Pressure Gauges, Temperature Gauges, Level Gauges, Thermo Wells, Temperature Elements, Control Wiring & Junction Boxes, Control Valves, Solenoid Valves, Orifice Plates, Cable Trays, Instrument Tubing/ Fittings/Valves (as applicable)	Panel: HV/IR, Logic Check, BOM verification Other Instruments/items: Calibration & applicable statutory certificates, Leak testing, Functional test (as applicable)	100%	Manufacturer Test Certificate/Inspection reports	H	As per Note - 1	As per Note - 1
2.3.1	Package AC & Split/Window AC's	Manufacturer's certificate for Leak Test, Trial run, HV/IR, Logic check. Type test report for model/type w.r.t. refrigeration capacity.	100%	Manufacturer Test Certificate/Inspection reports/ COC	H	As per Note - 1	As per Note - 1
2.4	Pre-Fabricated Interconnecting Piping at shop	NDT (RT for Butt welded joint & MPT/DPT for Socket weld joint), Heat Treatment & Helium/Pneumatic/Hydrostatic Test	As per Spec.	Inspection Report	H	W	R

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
2.5	Final inspection of Complete Refrigeration Package	Visual, Dimensions, Completeness as per Piping & Instrument Drawing & Performance test (Type tests as per applicable standards, as applicable), Helium Spray/Shroud Test (For Vapor Absorption Chillers), Pneumatic test (soap bubble using Nitrogen for VAC system).	100%	Test Report	H	H	H
3.0	**Inspection at Works-Air Handling Unit**						
3.1	Plates, Filters (Fine/Chemical), Dampers etc.	- Compliance Certificate for Filtration capacity. - Compliance Certificate for removal of gases for Chemical Filter. - Functional test report, Material compliance, Statutory certificate UL555/UL555S for Dampers.	100%	Manufacturer's Test Certificate/Inspection Report/ COC	H	As per Note - 1	As per Note - 1
3.2	Heating Unit (Electric Heater)	Model/Type, Visual, Dimensions, Electrical Characteristics, Statutory approvals	100%	Manufacturer's Test Certificate/Inspection Report	H	As per Note - 1	As per Note - 1

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
3.3	Humidifier/De-humidifier Unit	Physical & Chemical properties for parts, Leak Testing, Compliance for Material/Insulation/Wiring - Statutory certificate for terminal box (as applicable).	100%	Manufacturer's Test Certificate/Inspection Report/ COC	H	As per Note - 1	As per Note - 1
3.4	Fan/Blower & Drive motor	Fan/Blower: Model/Type & Capacity/rating, MOC Compliance, Dynamic Balancing, Leak Test, Performance, Mechanical Run Test (as applicable) Motor: Type/rating/frame size-wise Type & Routine testing	100%	Manufacturer's Test Certificate/Inspection Report/COC	H	As per Note - 1	As per Note - 1
3.5	Complete Air Handling Unit	Visual, Dimensions, Completeness as per Piping & Instrument Drawing, Mechanical Run Test	As per PR/ Purchase Specification	Inspection report	-	H	H
4.0	**Inspection at manufacturer's works-Air Distribution Ducting/Diffuser/Grills**						
4.1	Sheets/Dampers/Louvers/ Insulation/Cladding	Physical & Chemical properties, Visual, Dimensions, Size, Quantity	100%	Manufacturer's Test Certificate/Inspection Report	H	R	R

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
4.2	Blower & Drive motor	Fan/Blower: Model/Type & Capacity/rating, MOC Compliance, Dynamic Balancing, Leak Test, Performance, Mechanical Run Test (as applicable) Motor: Type/rating/ frame size-wise Type & Routine testing	100%	Manufacturer's Test Certificate/Inspection Report	H	W	R
5.0	**Painting**						
5.1	Surface Preparation & Painting of all Carbon Steel Parts and Pickling & Passivation for Stainless Steel Parts	Visual Inspection for Workmanship / Paint Shade / Painting DFT/Adhesion/Holiday Check (as applicable)	100%	Inspection Report	-	H	W/R
6.0	Verification of Spares as per Approved spare list	Verification of make /size /rating /quantity (As applicable)	100%	Packing List	H	H	R
7.0	**Documentation & IC**						
7.1	Submission of Certificates (as applicable)	• Certificate of Statutory testing agency for suitability of area classification • Certificate of Statutory approval authority like PESO (as applicable) • Valid BIS License (as applicable) • Degree of protection certificate (as applicable)	Each Model	Certificates from Statutory Bodies	R	R	R

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/ TPIA
7.2	Documentation & Inspection Certificate(IC)	Issue of IC	100%	Inspection Certificate	-	H	H
7.3	Final documents as per PR	Verification & compilation of inspection & test records for submission to customer	100%	Manufacturer data book		H	H
8.0	**Final inspection of package (AT SITE)**						
8.1	Inspection of welds & Pressure Testing	Fit up/NDT/Heat Treatments	As per specification	Inspection report	-	H	H
8.2	Installation of items/units	Installation of units as per lay out/location/Insulation	100%	Inspection report	-	H	H
8.3	Balancing of Air Distribution system	Verification of air quantities across various air terminals	100%	Inspection report	-	H	H
8.4	Inspection of Electrical circuits/installation	Verification of circuits & installations	100%	Inspection report	-	H	H
8.5	Performance Run test	Performance guarantee run test for 72 hours	100%	Inspection report	-	H	H
8.6	Spares (Mandatory, Commissioning, Operational), Special Tools & Tackles (as applicable)	Verification for quantity	100%	Inspection Reports	-	H	H

Legend: H- Hold (Do not proceed without approval), P-Perform, RW - Random Witness (As specified or 10% (minimum.1 no. of each size and type of Bulk item)), R-Review, W-Witness (Give due notice, work may proceed after scheduled date).

NOTES (As applicable):

1a. For Non NACE & Non Hydrogen service, following items shall be procured with EN 10204 type 2.2 certification.

Items	Dimensions	Material
Seamless Pipes	Size Upto 12"	Carbon Steel

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Seamless Fittings	Size upto 14" and Socket welded fittings of all sizes	Carbon Steel
Flanges	Size Upto 24" 300 – ANSI Class & Socket Welded Flanges of all rating.	Carbon Steel
Valves	Size Upto 12" – 300 ANSI Class & All Forged Valves with socket welded ends upto 1500 ANSI Class (Other than Jacketed Valves)	Carbon Steel
Fasteners	All sizes	All material except Fasteners as per ASTM A453
Gaskets	All sizes	All material
Motor	Upto 55kiloWatt	For safe area
Catalogued Item	Electrical/ Mechanical Items	For safe area

1b. All other materials which are not covered in 1a and categorized as 'A' or 'B' shall be procured with EN10204 type 3.1 certification.

2. This document describes the generic test requirements. Any additional test or Inspection scope if specified in contract documents shall also be applicable (unless otherwise agreed upon).
3. Acceptance Norms for all the activities shall be as per PO/PR/STANDARDS referred there in /Job Specification /Approved Documents.
4. Site activities covered under 7.0 shall be witnessed by EIL Construction Inspection or TPIA, as the case may be.
5. For EPC jobs, all inspection shall be carried out by TPIA, unless notified otherwise.

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अग्निरोधक लाइटिंग एवं पावर पैनलों के लिए निरीक्षण एवं परीक्षण योजना

INSPECTION AND TEST PLAN FOR FLAMEPROOF LIGHTING AND POWER PANELS

Rev. No.	Date	Purpose	Prepared by	Checked by	Standards Committee Convener	Standards Bureau Chairman
			Approved by			
4.	28.08.2024	Revised and Reissued	RP	GS	RK	MN
3.	14.01.2020	Revised and Reissued	MM	RS	RKS	RKT
2.	21.11.2013	Revised and Reissued	MJ	RS	SCG	SC
1	15.07.2011	Revised and Reissued	GS	SA	AKC	DM
0	07.10.2008	Issued for implementation	SA	SKD	SKP	VC

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Abbreviations

BIS	:	Bureau of Indian Standard	MTC	:	Material Test Certificate
CIMFR	:	Central Institute of Mining & Fuel Research	NEMA	:	National Electrical Manufacturers Association
DFT	:	Dry Film Thickness	PO	:	Purchase Order
ERTL	:	Electronics Regional Test Laboratory	PESO	:	Petroleum Explosive Safety Organization
FM	:	Factory Mutual	PQR	:	Procedure Qualification Record
FLP	:	Flame Proof	PR	:	Purchase Requisition
FRLS	:	Flame retardant low smoke	PVC	:	Poly Vinyl Chloride
ITP	:	Inspection and Test Plan	QC	:	Quality Control
IP	:	Ingress Protection	TC	:	Test Certificate
IS	:	Indian Standard	TPI or TPIA	:	Third Party Inspection Agency
IC	:	Inspection Certification	VDR	:	Vendor Data Requirement
IEC	:	International Electro technical Commission	XLPE	:	Cross Linked Poly Ethylene
JEC	:	Japanese Electro technical Committee			

Inspection Standards Committee

Convenor : Mr. Rajeev Kumar

Members:

Mr. G Suresh	Mr. Himangshu Pal	Mr. Chandrashekhar	Mr. R Muthu Ramalingam
Mr. Mahendra Mittal	Mr. Avdesh Agrawal	Mr. Anil Kumar	Mr. Arvind NP Singh (Engg)

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1.0 SCOPE

This Inspection and Test Plan covers the minimum inspection and testing requirements for Flameproof Lighting And Power panels.

2.0 REFERENCE DOCUMENTS

PO/PR / Standards referred there in /Job specifications / Approved documents/Relevant IS/IEC Standards.

3.0 INSPECTION AND TEST REQUIREMENT:

SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
1.0	**Procedures**	---	---	---	---	---	---
2.0	**Material Inspection**						
2.1	Incoming Materials like Castings, Glass, Meters, Wires/ Cables, Bus-Bars, Gaskets, Isolators, MCBs, MCCBs, RCCBs, CTs/ PTs etc (As applicable)	Visual, Dimensional, Physical, chemical & functional checks (as applicable)	100%	Material test certificates / Manufacturer's Test records/	H	H	R
3.0	**In process Inspection**						
3.1	Machining, Joints, Sealing methods	As per Test Lab Certified Drawings for Hazardous Area Applications	100%	Test records	-	H	---
3.2	Panel assembly	Visual, Dimensional, Bill of Material, Rating of Components.	100%	Test Records	-	H	---
3.3	Wiring Checks	Size, type (FR/FRLS), make, termination tightness, ferruling, continuity, color coding	100%	Test Records	-	H	----
3.4	Pressure Check	Over Pressure test on individual enclosures as per relevant standard	100%	Test Records	-	H	R

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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
4.0	**Final Inspection**						
4.1	Final Inspection	• Visual and Dimensional check • Adherence of panels to Hazardous Area Certification conditions including Flame Path, Flame Gap, Thread Check, Thickness of Enclosure, No. of Cable Entries, Rating of mounted components, Maximum number of door/ cover mounted components, Joints, Sealing etc. • Bill of material. • Wiring checks • Paint shade, adhesion and thickness. • Verification of mechanical and electrical operations • Dielectric test (High Voltage) • Insulation check before & after High Voltage • Correctness of nameplate • Annunciation/ Indication Checks	100%	Test Records	-	H	H
4.2	Submission of Certificates & Documents	• Test Certificate of testing agency (CIMFR/ KLPL etc) for suitability of model to intended Hazardous area classification as per latest IS/IEC standards. • Certificate of Statutory authority (PESO). • Valid BIS License.	For each Type/Model	Certificates from Test Labs/ Agencies	-	H	R

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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
5.0	**Painting**						
5.1	Painting and Packing	• Visual checks for compliance to Painting requirements as per contract. • Suitable protection to prevent entry of foreign material. • Proper packing to prevent any damage during transportation and storage as per contract.	100%	Packing list / Supplier's Records	-	H	-
6.0	**Documentation and IC**						
6.1	Documentation and IC	• Review of Internal Test Reports & MTC • IC Issuance	100%	Supplier's Test Records / Inspection Certificate	-	H	H

Legends: H- Hold (Do not proceed without approval), Random -10%, R-Review, RW-Random witness, W- Witness (Give due notice, work may proceed after scheduled date).

NOTES :-

1. This document describes the generic test requirements. Any additional test or inspection scope if specified in contract documents shall also be applicable. (Unless otherwise agreed upon).
2. Acceptance Norms for all the activities shall be as per PO/PR/ Standards referred there in/ Job specifications /Approved documents/ Hazardous Area certifications.
3. Supplier has to furnish internal test reports before scheduled inspection date.

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पैकेज उपस्कर के मध्यम वोल्टेज वाले फिक्स किस्म के स्विचबोर्ड के लिए निरीक्षण एवं परीक्षण योजना

INSPECTION AND TEST PLAN FOR MV FIXED TYPE SWITCHBOARD FOR PACKAGE EQUIPMENT

Abbreviations

Rev. No.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
3	09.06.2020	Revised and Reissued	SA	RS	RKS	SKS
2	21.11.2013	Revised and Reissued	MJ	RS	SCG	SC
1	29.06.2012	Revised and Reissued	RKP	RJD	AKC	DM
0	01.12.2008	Issued for implementation	SA	SKD	SKP	VC

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BIS	:	Bureau of Indian Standards	MTC	:	Material Test Certificate
EIL	:	Engineers India Limited	MV	:	Medium Voltage
EPC	:	Engineering Procurement Construction	No	:	Number
FLP	:	Flame Proof	PO	:	Purchase Order
HV	:	High Voltage	PR	:	Purchase Requisition
ITP	:	Inspection and Test Plan	QC	:	Quality Control
IC	:	Inspection Certification	TC	:	Test Certificate
IP	:	Ingress Protection	TPI or TPIA	:	Third Party Inspection Agency
IR	:	Insulation Resistance	XLPE	:	Cross Linked Poly Ethylene
Min	:	Minimum			

Inspection Standards Committee

Convenor : Mr. R.K. Singh

Members: Mr. Rajesh Sinha, Mr. Himangshu Pal, Mr. Chandrasekhar, Mrs. Arvind NP Singh (Electrical), Mr. R Muthuramalingam, Mr Avdhesh Agrawal, Mr. Mahendra Mittal

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1.0 SCOPE

This Inspection and Test Plan covers the minimum testing requirements of MV fixed type switchboard for package equipment.

2.0 REFERENCE DOCUMENTS

PO/PR/ Standards referred there in/Job specifications/Approved documents.

3.0 INSPECTION AND TEST REQUIREMENTS

SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
1.0	**Procedures**	--	--	--	--	--	--
2.0	**Material Inspection**						
2.1	Incoming Material like Insulators, Bus Bars, Fabricated items, Bus bar sleeves and supports, Instrument Transformers, Relays, Indicating Instruments, Switches, Breakers, Contactors etc.	Visual, Dimensional, operational checks, Manufacturer's test certificates etc. as applicable	100%	Material Test Certificates / Test Records	H	H	R
3.0	**In process Inspection**						
3.1	Switch board assembly	Visual, Dimensions, Bill of Material.	100%	Suppliers Test Records	--	H	-

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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
3.2	Wiring checks	Size, termination, ferruling, continuity, Functional checks/ Scheme checking, HV and IR	100%	Suppliers Test Records	--	H	-
4.0	**Final Inspection**						
4.1	Switchgear Assembly	• Physical and Dimensional Verification, Verification of Bill of material. • Checking of the schemes and simulating them. • Operation check/Functional checks. • Power frequency voltage test. • Insulation resistance test before and after the HV test. • Current injection test. • Verification of Safety Features/Electrical and Mechanical Interlocks • Tests on Breakers(if applicable). • Interchangeability of Identical Modules.	100% by Supplier and on Random Basis by EIL/TPIA	Test Records / Inspection Witness Record	-	H	H
4.2	Submission of Cerificates/Documents	• Type Test Reports • Enclosure TC • Fault Level Certificate • Temperature Rise Certificate • Short Circuit Making and Breaking capacity of Isolators/Breakers (if Applicable)	1 No. of Sample/Rating	Inspection test records	-	H	R

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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
5.0	**Painting**						
5.1	Painting and Packing	• Visual • Suitable protection to prevent entry of foreign material. • Proper packing to prevent any damage during transportation and storage.	100%	Packing list / Supplier's Records	-	H	-
6.0	**Documentation and IC**						
6.1	Documentation and IC	• Review of Internal Test Reports • IC Issuance	100%	Supplier's Test Records / Inspection Certificate	-	H	H

Legends: H- Hold (Do not proceed without approval), Random 10% , R-Review, RW-Random witness, W- Witness (Give due notice, work may proceed after scheduled date).

NOTES :-

1. This document describes the generic test requirements. Any additional test or inspection scope if specified in contract documents shall also be applicable. (Unless otherwise agreed upon).
2. Acceptance Norms for all the activities shall be as per PO/PR/ Standards referred there in/ Job specifications /Approved documents.
3. For EPC jobs scope of inspection shall be under TPIA, unless specified otherwise.

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औद्योगिक नियंत्रण स्टेशनो
के लिए
निरीक्षण व परीक्षण योजना

INSPECTION AND TEST PLAN
FOR
INDUSTRIAL TYPE CONTROL STATIONS

Rev. No.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
4	18.05.2020	Revised and Re-issued	NP	RS	RKS	SKS
3	30.01.2014	Revised and Re-issued	MJ	RS	SCG	SC
2	03.10.2012	Revised and Re-issued	RKP	HVJ	AKC	DM
1	28.09.2007	Revised and Re-issued	AKG	PPM	MVKK	VC
0	30.04.2002	Issued for implementation	RG	AKC	AKB	GRR

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Abbreviations

BIS	:	Bureau of Indian Standards	MTC	:	Material Test Certificates
BOM	:	Bill of Material	MFR	:	Manufacturer
CEIL	:	Certification Engineers International Limited	NO.	:	Number
CT	:	Current Transformer	NEMA	:	National Electrical Manufacturers Association
EPC	:	Engineering Procurement Construction	PO	:	Purchase Order
HV	:	High Voltage	PR	:	Purchase Requisition
IC	:	Inspection Certification	PT	:	Potential Transformer/Voltage Transformer
IEC	:	International Electro technical Commission	PVC	:	Poly Vinyl Chloride
IP	:	Ingress Protection	QC	:	Quality Control
IRN	:	Inspection Release Note	TC	:	Test Certificate
ITP	:	Inspection and Test Plan	TPI or TPIA	:	Third Party Inspection Agency
Lab.	:	Third Party Laboratory	UL	:	Under writer Laboratories
MOC	:	Material of Construction	VDR	:	Vendor Data Requirement

Inspection Standards Committee

Convenor : Mr. R.K. Singh

Members :

Mr. Rajesh Sinha	Mr. Himangshu Pal	Mr. Chandrashekhar
Mr. R. Muthuramalingam	Mr. Avdhesh Agrawal	Mr. Mahendra Mittal
Ms. Arvind NP Singh (Engg.)		

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1.0 SCOPE:

This Inspection and Test Plan covers the minimum testing requirements of Industrial type control stations.

2.0 REFERENCE DOCUMENTS:

PO/PR & Standards referred there in /Job specifications / Approved documents

3.0 INSPECTION AND TEST REQUIREMENTS:

SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
1.0	**Procedure**	-	-	-	-	-	-
2.0	**Material Inspection**						
2.1	Incoming material : Sheet steel, Circuit Breaker, CT/PT, Ammeter, Voltmeter as applicable	Physical & Chemical Properties for Sheet Steel. Make, Model, Rating, Serial, Accuracy etc. as applicable	100%/	MTC / Mfr's TC / Lab. TC	H	H	R
3.0	**Inprocess Inspection**						
3.1	Fabrication of Enclosure and painting /Powder Coating (as applicable)	Visual, Dimension and Routine tests	100%	Supplier's Test Records	H	H	-
3.2	Assembly/Wiring work	Wiring Check & Routine electrical Tests	100%	Supplier's Test Records	H	H	-

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
4.0	**Final Inspection**						
4.1	Acceptance Tests	• Visual Check • BOM Verification. • Dimensional Verification. • Electrical Check/Test : a. Wire Continuity, b. Functional Check of Components and Control Schemes, c. HV Test d. IR Test (before & after HV) • Paint Thickness & Paint Shade	100%	Inspection witness Test Records	-	H	RW
4.2	Submission of Certificates	• Certificate of testing agency for suitability of degree of protection (as specified)	Samples / Prototype	Type Test Certificates	-	H	R
5.0	**Painting and Packing**						
5.1	Painting and Packing	• Visual • Suitable protection to prevent entry of foreign material. • Proper packing to prevent any damage during transportation.	100%	Test records	-	H	-

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SL. NO.	STAGE/ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	EIL/TPIA
6.0	**Documentation**						
6.1	Documentation and IC/IRN	• Review of Internal Test Report • Issuance of IC/IRN	100%	Supplier's Test Records / IC/IRN	-	H	H
6.2	Final Document submission (if applicable)	Compilation of Inspection reports ,drawings, etc as per VDR / PR	100%	Final data folder /Completeness certificate	-	H	H

Legends: H- Hold (Do not proceed without approval,R-Review, RW-Random witness (As specified or 10 %-Samples must include minimum 1 No. of each type) , W-Witness (Give due notice, work may proceed after scheduled date).

NOTES :

1. This document describes the generic test requirements. Any additional test or inspection scope if specified in contract documents shall also be applicable. (Unless otherwise agreed upon).
2. Acceptance Norms for all the activities shall be as per PO/PR/ Standards referred there in/ Job specifications /Approved documents
3. For EPC Jobs, Scope of Inspection shall be under TPIA only, unless specified otherwise.

Signature Not Verified
Digitally signed by MD MAZHER ALI
Date: 2026.05.14 16:22:44 IST
Location: eProcure-EPROC

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