FORMAT NO. : HSE-1 REV 1

(Sheet 5 of 6)

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
13.	HANDLING AND STORAGE OF MATERIALS				
a)	Safely stored or stacked				
b)	Passageways clear / free from obstructions				
c)	Fire fighting facility in place				
14.	FLAMMABLE GASES AND LIQUIDS				
a)	Containers clearly identified / protected from fire				
b)	Safe storage & transportation arrangement made				
c)	Fire extinguishers positioned nearby				
d)	Facilities kept away from electric spark, hot spatters & ignition source.				
15.	WORKING AT HEIGHT				
a)	Approved Erection plan and work permit in place				
b)	Safe access, Safe work platform & Safety nets provided				
c)	Life lines, Fall arrester, Full body harness with double lanyards used;				
d)	Health Check record available for workers going up?				
e)	Protective handrails arranged around floor openings				
16.	CONFINED SPACE				
a)	Work Permit obtained from requisite authority				
b)	Test for toxic gas and sufficient availability of oxygen conducted & status				
c)	Supervisor present at site & at least one person outside the confined space for monitoring deputed				
d)	Availability of safe means of entry, exit and ventilation (register for entry & exit maintained)				
e)	Fire extinguisher and first-aid facility ensured				
f)	Lighting provision made by using 24V Lamp				
g)	Proper usage of PPEs ensured				
17.	RADIOGRAPHY				
a)	Proper storage and handling of source as per BARC/ AERB guidelines (authorized radiographer available)				
b)	Work permit obtained				

Safety walk-through performer (Name &Signature).....

Copyright EIL – All rights reserved

FORMAT NO. : HSE-1 REV 1

(Sheet 6 of 6)

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
c)	Cordoning of the area done				
d)	Use of appropriate PPE's ensured				
e)	HSE training to workers/supervisors imparted during the fortnight (indicate topic)				
f)	Minimum occupancy of workplace ensured				
18.	HEALTH CHECKS				
a)	All Workers medically examined and found be fit for working at heights (slinging, rigging, painting etc.) in confined space in excavation / trenching in shot blasting				
b)	Availability of First Aid box with contents				
c)	Proper sanitation at site, office and labour camps				
d)	Arrangement of medical facilities.				
e)	Measures for dealing with illness at site & labour camps.				
f)	Availability of Potable drinking water for workmen & staff.				
g)	Provision of crèches for children.				
h)	Stand by vehicle / ambulance available for evacuation of injured				
i)	Adherence to Govt. Guidelines/procedures during epidemic and pandemic (as applicable).				
19.	ENVIRONMENT				
a)	Chemical and Other Effluents properly disposed				
b)	Cleaning liquid of pipes disposed off properly				
c)	Seawater used for hydro-testing disposed off as per agreed procedure				
d)	Lubricant Waste/Engine oils properly disposed				
e)	Waste from Canteen, offices, sanitation etc. disposed properly				
f)	Disposal of surplus earth, stripping materials, Oily rags and combustible materials done properly				
g)	Green belt protection				

Safety walk-through performer (Name &Signature).....

Copyright EIL – All rights reserved

FORMAT NO. : HSE-2 REV 0

(Sheet 1 of 3)

ACCIDENT REPORT

(To be submitted by Contractor after every Accident within 24 hours to EIL/ Owner)

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 hrsof 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: _____

_____

Copyright EIL – All rights reserved

FORMAT NO. : HSE-2 REV 0

(Sheet 2 of 3)

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? .....

.....

.....

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	

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 oroils		Vehicle accident	
Other/specify					

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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: _____

_____

Copyright EIL – All rights reserved

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	

Copyright EIL – All rights reserved

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	

Copyright EIL – All rights reserved

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 _____

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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)

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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)

Copyright EIL – All rights reserved

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:

Copyright EIL – All rights reserved

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:

Copyright EIL – All rights reserved

FORMAT NO. : HSE-9 REV 1

DEMOLISHING/DISMANTLING WORK PERMIT

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

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

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

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

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

S. No.	Item description	Done	Not Applicable
	Services like power, gas supply, water, etc. disconnected	☐	☐
	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

Copyright EIL – All rights reserved

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,				

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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?				

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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.								

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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 (Receiver)

Contractor (Issuer)

Verification by Contractor Safety Officer

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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	

Copyright EIL – All rights reserved

(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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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		

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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)		

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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		

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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		

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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		

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

निर्माण स्थलों पर सकारात्मक सामग्री पहचान के लिए मानक विनिर्देश

STANDARD SPECIFICATION FOR POSITIVE MATERIAL IDENTIFICATION AT CONSTRUCTION SITES

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
5	10/08/2023	Revised and updated	DK	DG	RKS	SM
4	23/07/2018	Revised and updated	SKG	AP	AKK	RKT
3	12/10/2015	Revised and updated	DJ	SNB	TKS	SC
2	14/11/2011	Revised and updated	SM	SM	MKG	DM
1	02/01/2007	Revised and updated	AS	MPJ	VNP	VC
0	22/07/2002	Issued as Standard Specification	MPJ	MPJ	RSG	GRR

Copyright EIL – All rights reserved

Abbreviations:

API	:	American Petroleum Institute
ASM	:	American Society for Metals
ASME	:	American Society of Mechanical Engineers
ASTM	:	American Society for Testing and Materials
AS	:	Alloy Steel
CS	:	Carbon Steel
EIL	:	Engineers India Limited
ITP	:	Inspection Test Plan
PMI	:	Positive Material Identification
RTJ	:	Ring Type Joint
SS	:	Stainless Steel
TPI/ TPIA	:	Third Party Inspection/Third Party Inspection Agency

Construction Standards Committee

Convenor: Sh. R K 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)

Copyright EIL – All rights reserved

CONTENTS

1.0 SCOPE 4
2.0 DEFINITIONS 4
3.0 SPECIFIC APPLICABILITY 4
4.0 REFERENCES 5
5.0 GENERAL REQUIREMENTS 5
6.0 EXTENT OF PMI 6
7.0 PMI OF PIPING AND HEATER COIL COMPONENTS 6
8.0 TESTING METHODOLOGY 7
9.0 CHARACTERISTIC ELEMENTS 7
10.0 CALIBRATION 7
11.0 SITE VERIFICATION OF ANALYZER 8
12.0 PERSONNEL QUALIFICATION 8
13.0 ACCEPTANCE CRITERIA 8
14.0 REJECTION CRITERIA 8
15.0 DOCUMENTATION 9

ATTACHMENT (REPORTING FORMAT)

FORMAT FOR PMI TEST REPORT - 6-82-0002-F1 REV. 4 (1 SHEET)

Copyright EIL – All rights reserved

1.0 SCOPE

1.1 This specification applies to metallic alloy materials as well as carbon steel materials as defined in this document used in piping, heater coils, storage tanks, vessels etc. at construction sites. Positive Material Identification (PMI) is to be carried out on Owner supplied material as well on materials purchased by the contractor after installation (before testing). PMI may be carried out at the ware house also for identification / segregation of materials as per instruction of Engineer in Charge

1.2 Any deviation from this specification must be approved by Owner/ EIL in the prescribed format.

2.0 DEFINITIONS

2.1 Positive Material Identification (PMI)

The term Positive Material Identification (PMI) refers primarily for determination/ verification of alloy type or its composition using portable or mobile spectrometer/ alloy analyzer. For the purpose of this specification, some carbon steel materials as defined in clause no 3.1.11 in this document are also included for PMI checking to avoid mix up with Alloy steel during installation.

Chemical spot checking, resistivity testing, eddy current testing, electromagnetic alloy sorting, thermoelectric testing shall not be considered as PMI for the purpose of this specification.

3.0 SPECIFIC APPLICABILITY

3.1 The following items (AS/SS from clause 3.1.1 up to 3.1.10 and CS at clause 3.1.11) require PMI unless specifically exempted through a Concession/ Deviation permit by Owner/ EIL.

3.1.1 All pressure containing piping components including, thermowells instrument manifolds, RTJ gaskets, fasteners etc. All valves installed on line.

3.1.2 Tubular products used in the fabrication of heaters.

3.1.3 Pressure - containing instrument housings (e.g. gauge glass housings, orifice meter tubes).

3.1.4 Internal metallic linings/cladding, and weld overlay, done at site, used for protection against corrosive environments. Weather protection jacket (cladding) materials, securement bands /wires, screws, rivets, 'S' & 'J' – clips etc used for insulation works.

3.1.5 Tubing

3.1.6 Stud, bolts and nuts

3.1.7 Plates

3.1.8 All pressure containing welds.

3.1.9 Pipe supports (welded/ bolted) such as pads, saddles, dummy pipes etc.

3.1.10 Any other components or materials specifically designated for PMI on the purchase order/ contract.

3.1.11 a) Pressure containing CS piping components of rating 900# and above
b) Pressure containing CS steel piping items under H_2 service.

Copyright EIL – All rights reserved

c) Pressure Containing CS Piping NACE MR0103 is applicable as per PMS.

3.2 Exclusions

The following items are exempted unless specifically designated for PMI in the purchase order/contract:

3.2.1 Gaskets (spiral wound or carbon steel only).

3.2.2 Internal instrument parts.

3.2.3 Internal machinery parts.

3.2.4 Internal non pressure - containing baffles, trays, tray clips, supports, pall-rings, support rings, etc.

3.2.5 Electrical components.

3.2.6 Internal valve components.

3.2.7 Compression-type ferrules and fittings for use with 3/4 inch (19mm) outside diameter and smaller tubing.

3.2.8 All carbon steel piping components (including carbon steel pipe supports) other than those specified at 3.1.11.

3.2.9 All carbon steel Studs/ bolts/ nuts.

3.2.10 Carbon Steel Plates.

4.0 REFERENCES

American Society of Mechanical Engineers (ASME) BPV Code Section-II Part A, B and C.

ASME B 31.3

American Society for Testing and Materials (ASTM): As applicable

Material Verification Program for New and Existing Alloy Piping Systems: API RP 578

Any other material specification referenced by the Purchase Order/Contract.

IS 1239, IS 3589 and other relevant BIS codes.

5.0 GENERAL REQUIREMENTS

5.1 The test methods outlined in this specification are intended to identify the nominal composition of alloy/ Stainless steel materials. These test methods are not intended to establish the conformance of a material to a particular specification.

5.2 PMI shall not be considered as a substitute for required mill test reports listing chemical composition. In addition, mill test reports shall not be considered as confirming alloy/ composition verification.

5.3 The PMI activity shall be included in the overall quality plan and Inspection & Test Plan for fabrication/ erection. The contractor shall submit to EIL/ Owner, a procedure for PMI to

Copyright EIL – All rights reserved

comply with the requirements of this specification. Approval of PMI procedure shall be obtained from Owner/ EIL prior to commencement of fabrication/ erection as the case may be.

5.4 Contractor shall engage reputed TPIA specified in the contract to witness inspection at site and accordingly submit ITP for review of owner/ EIL. In case list of approved TPIA is not available in contract, prior approval shall be taken before engagement of TPIA.

5.5 A copy of PMI records duly verified by TPIA shall be submitted to Owner/ EIL.

5.6 After installation, but prior to hydrostatic testing/ painting/ insulation, the contractor shall examine all components requiring PMI for proper compliance to this specification. A record of this final check duly endorsed by TPIA, as specified below, shall be submitted to EIL/ Owner and made part of the permanent inspection records.

5.6.1 Owner Supplied Material

Records signed by contractor and duly verified by TPIA (engaged by contractor)/ and reviewed by EIL/ Owner shall be generated as part of the receiving inspection at warehouse.

5.6.2 Contractor Supplied Material

Records signed by contractor and certified by an approved third party inspection agency.

5.7 After acceptance, all components shall be marked with a suitable and readily visible paint mark. These markings are in addition to markings / colour coding required by other codes/ specifications/ Technical Notes.

5.8 Controls shall be established to keep the non conforming items identified till proper resolution of non conformity.

5.9 EIL/ Owner shall have the right to witness the performance of any PMI test.

6.0 EXTENT OF PMI

PMI shall be done on each component (100 percent PMI inspection) including welds (Except carbon steel Piping welds), unless specifically exempted by Owner/ EIL.

PMI shall be done on pipe supports (welded/ bolted) such as pads, saddles, dummy pipes etc. (100 percent PMI inspection) in all piping systems of alloy material

PMI shall be done on all bolts and nuts (100 percent PMI inspection) of flange joints in all piping systems of alloy material.

7.0 PMI OF PIPING AND HEATER COIL COMPONENTS

PMI testing (irrespective of PMI done at earlier stages) shall be carried out when piping loops/ heater coils have been cleared for hydrostatic testing by EIL/ Owner. Hydrostatic Testing shall be carried out only when non conforming components have been replaced with conforming components and subsequent Non Destructive Testing, Post Weld Heat-Treatment, Hardness checking and re verification by PMI etc., as required by specifications have been completed. PMI records shall form a part of piping/ heater inspection records. Contractor shall demonstrate to EIL that each & every component of the piping system and heater coils has been subjected to PMI by providing line wise records of PMI duly endorsed by TPIA .

Copyright EIL – All rights reserved

8.0 TESTING METHODOLOGY

8.1 The method used for PMI examination shall provide a quantitative determination of the alloying elements like chromium, nickel, molybdenum or vanadium in alloy steel items for the characteristic elements specified in clause 9.0

8.2 Instruments or methods used for PMI examination shall be able to provide quantitative, recordable, elemental composition results for positive identification of elements.

8.3 The acceptable instruments for alloy analyzer shall be either "portable X-ray Fluorescence" or "optical Emission type each capable of verifying the percentage of elements within specified range .The instruments must have the printout facility and sensitivity to detect the elements in the specified range.

8.4 Chemical spot testing, magnets, alloy sorters and other methods using eddy current or triboelectric testing methods are not acceptable for PMI examination.

8.5 All PMI instruments shall have been serviced within a 6 month period of the time of use to verify the suitability of batteries, sources,etc, and the date of the last service shall be stated on the PMI report form.

8.6 The surfaces to be examined shall be prepared and cleaned by suitable means before PMI so that surface be free from grease, oil, paint or oxides. Testing shall be done after proper surface cleaning and other requirements as outlined by the manufacturer of the portable alloy analyzer. Modification, if any, of these procedures must be approved by Owner/ EIL.

8.7 Ring type joint gaskets shall be inspected by using portable X-ray fluorescence instrument.

9.0 CHARACTERISTIC ELEMENTS

Material Specification		Characteristic Elements
ASTM A 335	Gr P11	Cr, Mo
	Gr P5	
	Gr P22	
	Gr P9	
	Gr P91	Cr, Mo, V
ASTM A 312	Type 304	Cr, Ni
	Type 316	Cr, Ni, Mo
	Type 321	Cr, Ni, Ti
	Type 347	Cr. Ni, Columbium, Tantalum

9.1 Carbon Steel materials under clause no 3.1.11 shall be checked to confirm that no mix up has taken place with alloy steel components.

9.2 Characteristic elements for materials not listed above shall be proposed by the contractor for approval of the Owner/ EIL

10.0 CALIBRATION

10.1 Instruments used for PMI shall have the sensitivity to detect the alloying elements in the specified ranges. Instruments or methods used for examination shall be of the type that will provide quantitative, recordable, elemental composition results for positive identification of the alloy elements present.

Copyright EIL – All rights reserved

10.2 Each alloy analyzer shall be calibrated using known alloy standards for intended materials to be checked by PMI. A calibration certification from the Manufacturer or his authorized agency shall be submitted to EIL/ Owner for records.

10.3 EIL/ Owner shall review the procedure and qualification and witness sample alloy/ carbon steel materials verification tests to confirm that the procedures, equipment and personnel are capable of providing consistent and accurate results. Certified samples, with full traceability, of a known alloy materials/ carbon steel materials shall be available for use as a random spot checking on instrument calibration.

11.0 SITE VERIFICATION OF ANALYZER

Verification using Standard samples supplied by institutes such as ASM (American Society of Metals) for the intended materials type and grade shall be performed each day before using the analyzer. Such verification shall be done again if PMI test is to be performed on different grade or type of material.

12.0 PERSONNEL QUALIFICATION

The persons performing the PMI test should be knowledgeable about properties of material, all aspects of operation of PMI equipment including the method of testing. Qualification/ experience documents of the person performing the PMI test including his training and experience shall be submitted to EIL/ Owner for review and approval.

13.0 ACCEPTANCE CRITERIA

13.1 Base Metal

PMI test results showing presence of characteristic elements upto 10% less than the minimum specified value in the material specification and upto 10% more than the maximum specified value in the material specification shall be acceptable.

13.2 Deposited Weld Metal

For deposited weld metal between base metals of the same specification using matching consumables, the recorded presence of characteristic elements upto 12.5% less than the minimum specified value in the welding consumables specification and upto 12.5% more than the maximum specified value in the welding consumable specification shall be acceptable.

14.0 REJECTION CRITERIA

14.1 If the PMI test results fall outside the acceptable range as given in 13.0 above, the contractor shall obtain a quantitative check analysis performed by a laboratory acceptable to EIL/ Owner for a complete chemical analysis. Results of this analysis shall be submitted to EIL/ Owner, with contractor's recommendation, for final decision.

Decision of EIL/ Owner shall be final in this regard.

14.2 If any material component or weld is found unacceptable, all other represented materials (e.g. in case of fasteners, supports) or welds shall be considered suspect. In such cases, the contractor has the following options:

14.2.1 Scrapping all those represented materials or components and replacing with new components or welds.

14.2.2 Performing 100% examination of the remainder of the represented materials/ components and replacing each item that fails the PMI check.

Copyright EIL – All rights reserved

14.2.3 If the performance of any verification activity is unacceptable to EIL/ Owner or if any material has been incorrectly identified, all further tests shall be subject to EIL/ Owner approval until the problem is corrected.

15.0 DOCUMENTATION

15.1 Print out from alloy analyzer, in original, duly verified by the TPIA engaged by contractor, Contractor and PMI agency.

15.2 PMI report as per format No. 6-82-0002-F1

15.3 Basis and action for resolving and documenting PMI non conformances.

15.4 Contractor shall demonstrate to EIL/ Owner that all components requiring PMI have been subjected to PMI testing and accepted.

Copyright EIL – All rights reserved

POSITIVE MATERIAL IDENTIFICATION TEST REPORT

REPORT NO: _____

Contractor _____ Date of PMI _____

Project _____ Inspection Agency _____

Location _____ PMI Agency _____

Job No. _____ PMI Equipment Model _____

Line No./ ISO Drg. No./ Make & Serial No. _____

Heater No./ Drawing No. _____ Last Service date _____

Sr. No.	Part Identification	Material As per Drg./ Spec.	Material as per PMI	Result (Accepted/ Rejected/ Retest)

(PMI AGENCY) (CONTRACTOR) (TPI AGENCY)

(EIL/ OWNER *)

*Sample verification

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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)

Copyright EIL – All rights reserved

CONTENTS

S. NO	DESCRIPTION	ITPNO.	PAGE NO.
	SECTION A		
	ITPS FOR CIVIL WORKS		
1.	Land and Topographical survey	3101	6
2.	Soil Investigation	3102	7
3.	Site Grading	3103	8
4.	Excavation	3104	9
5.	Backfilling	3105	10
6.	Underground Piping (RCC/CI)	3106	11
7.	WBM Roads	3107 A	12
8.	WMM Roads	3107 B	13
9.	Black Topping(Premix Carpeting) &	3108	14
10.	Tank Pads	3109	15
11.	Micro Grading	3110	16
12.	Under Ground Piping (Carbon Steel/ AS/ SS)	3140	17-22
	ITPS FOR STRUCTURAL WORKS		
13.	Plain cement concrete	3141	23
14.	RCC(Substructure)	3142	24
15.	RCC(Super structure)	3143	25
16.	Flooring/Pavement	3145	26
17.	Brick Work	3146	27
18.	Structural Works	3147	28
19.	Piling works	3148	29
	ITPS FOR ARCHITECTURAL WORKS		
20.	Antitermite Treatment	3171	30
21.	Plastering	3172	31
22.	Doors and Windows	3173	32
23.	Painting (building works)	3174	33
24.	Sanitary fittings	3175	34
25.	Water proofing	3176	35
26.	False Flooring and False ceiling	3177	36
27.	Under Deck Insulation	3178	37
28.	Roofing Accessories	3179	38
29.	Lighting works (Non plant Buildings)	3199	39
	SECTION B		
	FORMATS FOR CIVIL/STRUCTURAL/ARCHITECTURAL WORKS		**40**
	SECTION C		
	FORMATS FOR UNDERGROUND PIPING WORKS		**55**

Copyright EIL – All rights reserved

SECTION - A

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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)

Copyright EIL – All rights reserved

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"

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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	

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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.

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL -- All rights reserved

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.

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

SECTION - B

Copyright EIL – All rights reserved

FORMATS

FOR

CIVIL, STRUCTURAL &

ARCHITECTURAL WORKS

Copyright EIL – All rights reserved

CONTENTS

S. NO	DESCRIPTION	FORMAT NO.	PAGE NO.
1.	Record of calibration of Measuring/Testing equipment's	C1	43
2.	Surveying and Layout record	C2	44
3.	Test report for determination of dry density & moisture content of sand/soil	C3	45
4.	Record of approval of source(s) for aggregates	C4	46
5.	Sieve analysis report	C5	47
6.	Underground piping – test report (RCC/CI)	C6	48
7.	Cement testing result report	C7	49
8.	Pour card (I) – Programme of concreting	C8	50
9.	Pour card (II) – Observation during concreting	C9	51
10.	Crushing strength testing results of concrete cubes	C10	52
11.	Water absorption, crushing strength & efflorescence testing results of bricks	C11	53
12.	Structural fabrication & erection sheet	C12	54

Copyright EIL – All rights reserved

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								

Copyright EIL – All rights reserved

Page 4596 of 5448 : B957-TENDER DOC-B957-999-69-41-PK-T-9501 : Rev. A

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 :

Copyright EIL – All rights reserved

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 :

Copyright EIL – All rights reserved

Page 4598 of 5448 : B957-TENDER DOC-B957-999-69-41-PK-T-9501 : Rev. A

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 :

Copyright EIL – All rights reserved

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)

Copyright EIL – All rights reserved

Page 4600 of 5448 : B957-TENDER DOC-B957-999-69-41-PK-T-9501 : Rev. A

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 :

Copyright EIL – All rights reserved

Page 4601 of 5448 : B957-TENDER DOC-B957-999-69-41-PK-T-9501 : Rev. A

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 :

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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)

Copyright EIL – All rights reserved

Page 4605 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

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 :

Copyright EIL – All rights reserved

Page 4606 of 5448 : B957-TENDER DOC-B957-999-69-41-PK-T-9501 : Rev. A

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

Copyright EIL – All rights reserved

Page 4607 of 5448 ; B957-TENDER_DOC-B957-999-69-41-PK-T-9501 ; Rev. A

SECTION - C

Copyright EIL – All rights reserved

FORMATS

FOR

UNDERGROUND PIPING WORKS

Copyright EIL – All rights reserved

CONTENTS

S.NO	DESCRIPTION	FORMAT NO.	PAGE NO.
1.	Daily fit up inspection & traceability report	P1	58
2.	Weld visual inspection report	P2	59
3.	Radiography offering report	P3	60
4.	Radiography interpretation report	P4	61
5.	Piping hydrostatic test release record	P5	62
6.	Piping hydrostatic test acceptance record	P6	63
7.	Line wise record	UG1	64
8.	U/G piping system testing record	UG2	65

Copyright EIL – All rights reserved

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)

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

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:

Copyright EIL – All rights reserved

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:

Copyright EIL – All rights reserved

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

Copyright EIL – All rights reserved

Page 4617 of 5448 : B957-TENDER-DOC-B957-999-69-41-PK-T-9501 : Rev.A

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:

Copyright EIL – All rights reserved

INSPECTION & TEST PLAN (ITP) FOR MECHANICAL WORKS (ITEM RATE CONTRACTS-WITH CATEGORIZATION)

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
2	15.06.2022	Revised & Updated	DK	DG	JPV	SM
1	14.01.2019	Revised and Reissued	SKG	AP	AKK	RKT
0	14.01.2014	ISSUED AS STANDARD SPECIFICATION	SM	DJ	RKD	SC

Abbreviations:

A/G	:	Above Ground
AFC	:	Approved for Construction
AS	:	Alloy Steel i.e. Cr-Mo steels like A335 Gr P11, P5, P9,P22,etc.
CFB	:	Ceramic Fibre Blankets
CS	:	Carbon Steel
CSO	:	Car Seal Open
FD	:	Free Draught
GAD	:	General Arrangement Drawings
HIC	:	Hydrogen Induced Cracking
I/S	:	Inner Side
IBR	:	Indian Boiler Regulations
ID	:	Induced Draught
LO/ LC	:	Lock Open/ Lock Close
LTCS	:	Low Temperature Carbon Steel
MRIR	:	Material Receipt Inspection Report
MT	:	Magnetic Particle Testing
NACE	:	National Association of Corrosion Engineers
NDT	:	Non Destructive Testing
NRV	:	Non Return Valve
O/S	:	Outer Side
ODC	:	Over Dimension Consignment
PMI	:	Positive Material Identification
PQR	:	Procedure Qualification Record
PT	:	Penetrant Testing
PWHT	:	Post Weld Heat Treatment
RF	:	Reinforcement
RT	:	Radiographic Testing
SS	:	Stainless Steel like A312 TP 304, 316, 321, 304L, 316L, 316Mo, etc.
SSCC	:	Sulphide Stress Corrosion Cracking
TSR	:	Tray Support Ring
UDFC	:	Under Down Flow Clearance
WPS	:	Welding Procedure Specification

Construction Standards Committee

Convenor: Sh. John Paul V , ED (Construction)

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

Copyright EIL – All rights reserved

CONTENTS

S.NO	DESCRIPTION	DOCUMENT NO.	PAGE NO.
SECTION – A			
	ITPs FOR MECHANICAL WORKS		
1.	Above Ground Piping	6 – 82 - 3210	5
2.	Installation of Column Internals	6 – 82 - 3220	8
3.	Fired Heaters (Fabrication & Erection)	6 – 82 - 3230	10
4.	Refractory & Insulation Works (Fired Heaters)	6 – 82 - 3240	14
5.	Equipment Erection (Static)	6 – 82 - 3250	20
6.	Equipment Erection (Rotary)	6 – 82 - 3260	23
7.	Crane (EOT/HOT)	6 – 82 - 3270	26
8.	Storage Tanks	6 – 82 - 3280	27
SECTION – B			
	FORMATS FOR MECHANICAL WORKS		33

Copyright EIL – All rights reserved

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 given, 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 required reporting formats and job procedures for each activity listed in ITP's to EIL/Owner for approval, well 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 ;

An activity 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

Copyright EIL – All rights reserved

ITP NO: 3210

ABOVE GROUND PIPING

(sheet 1of 3)

Sl. No	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CAT B	
A.	**PRIOR TO FABRICATION**				
1.	Incoming Material a) Owners 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		Format M2
2.	Welding Filler Material Approval/Qualification a) Review of Manufacturer's Test Certificates/Documents& Sampling	WC*	HP*	Rw*	Format M3, M4
	b) Laboratory Testing, if any	WC	W	W	Format M3, M4
3.	WPS/PQR				
	a) Review of proposed procedure	WC	Rw	Rw	Format M5
	b) Welding of Test Coupons and subsequent testing	WC	W	W	Format M6
	c) Approval of final WPS/PQR	WC	HP	HP	Format M5,M6
4.	Welder performance Qualification	WC	W	W	Format M7
5.	Certification & approval of welders.	WC	HP	HP	Format M8
6.	NDT Procedure Qualification				
	i) Review of proposed procedure	WC	Rw	Rw	Yes
	ii) Witnessing of Proposed Procedure Testing	WC	W	W	Yes
	iii) Approval of Qualified Procedure	WC	HP	HP	Yes
7.	Review of Joint numbering in Isometrics (Big & Small bore)/Sketches	WC	Rw	Rw	Yes
8.	Lines where Isometrics not available a) Preparation of sketches	WC	Rw	Rw	Yes
	b) Joint Numbering in sketches	WC	Rw	Rw	
9.	Material traceability & Transfer of Heat Nos.	WC	HP	S	Format M9

* **a)** *Notwithstanding any other tests/documentation required for qualification/approval of filler metals :*

i) For Alloy Steel & Stainless Steel welding filler metals, chemical analysis to be carried-out for every batch.

ii) For Low Temperature Services piping, Impact testing to be carried out for every batch of the filler metal, to be witnessed by PMC/owner

b) *For NACE filler metals, corrosion tests like HIC, SSCC, etc. to be carried out for every batch. However, HIC/SSCC tests done earlier & duly witnessed by a reputed third party, will be acceptable.*

Copyright EIL – All rights reserved

ITP NO: 3210

ABOVE GROUND PIPING

(sheet 2 of 3)

Sl. No.	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CAT B	
B.	**FABRICATION/ERECTION**				
1.	Material as per piping class (check w.r.t. approved colour coding procedure), Fit-up check and Traceability check.	WC	W	**S**	Format M10
	a) Dimensional checks	WC	W	S	
	b) Fit-up check for butt joints and socket joints	WC	W	S	
	c) Fit-up checks for branch joints	WC	W	S	
2.	Pre-heat (if any)	WC	S	--	
3.	Certificate of purity of purging/shielding Gas (if any)	WC	Rw	--	**Yes**
4.	Purging rate (if any) and arrangement	WC	S	--	
5.	Shielding rate (if any)	WC	S	--	
6.	Baking of Electrodes	WC	S	--	
7.	Inter-pass cleaning & Temperature check.	WC	S	--	
8.	Visual Examination of completed welds having				
	a) Random Radiography	WC	W	S	Format M11
	b) 100% Radiography	WC	S	---	Format M11
9.	a)Monitoring of PWHT Cycle	WC	S	--	
	b) Review of Time – Temperature graph	WC	Rw	Rw	**Yes**
10.	Hardness Check a) For CS material	WC	S	--	Format M12
	b)For AS Materials	WC	W	S	Format M12
11.	a) PT/MT (Branch Joints)	WC	W	W	Format M13, M14
	b)PT /MT (Others)	WC	W	S	Format M13, M14
12.	a)Identification of Joints for Radiography (for Random Radiography only)	WC	S	--	Format M15
	b)Check shot for radiography	WC	HP	HP	Format M15
13.	Review of Radiographs interpreted by the Contractor a) For Carbon Steel Piping	WC	HP	W	Format M16
	b) For Alloy Steel/SS Piping	WC	HP	W	Format M16
14.	Check shot for Radiography	WC	W	Rw	Format M16
15.	MUT activities at Site	WC	W	W	--
16.	PAUT/TOFD activity at Site	WC	S	S	--
17.	Interpretation of PAUT/TOFD	WC	HP	W	--
18.	Surface cleaning and primer application	WC	W	S	Format M17
19.	Lifting arrangement (for critical piping only)	WC	Rw	Rw	Yes
20.	Test certificates for lifting tackles	WC	Rw	Rw	Yes
21.	Location and orientation of Branch connections	WC	Rw	Rw	Format M51
22.	Provision of Inst. Tappings	WC	HP	W	Format M51
23.	Provision of vents and drains	WC	Rw	Rw	Format M51
24.	Correctness of type of supports, Anchors, Guides	WC	HP	W	Format M51
25.	Correctness of gaskets/ fasteners	WC	W	S	Format M51
26.	Correctness of valves (NRV, Gate, Globe, control Valves etc), steam traps and their direction of flow. a) C.S. piping	WC	HP	W	Format M51
27.	b) A.S. Piping, S.S Piping, NACE piping	WC	HP	W	Format M51
28.	Provision of cold pull, if any.	WC	HP	W	Format M51

Copyright EIL – All rights reserved

ITP NO: 3210

ABOVE GROUND PIPING

(sheet 3 of 3)

Sl. No.	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CATB	
C	**PROOF TESTING**				
1.	Procedure Review	WC	Rw	Rw	Format M52
2.	Correctness of Testing arrangements	WC	S	--	Format M52
3.	Check all valves kept open and confirm that testing is not done against closed valve seat	WC	W	S	Format M52
4.	Isolation of equipments, control valves, Instruments, bellows. Removal of flappers from check valves	WC	W	S	Format M52
5.	Scrutiny of test packs for Mechanical & NDT Clearance	WC	HP	W	Format M51, Format M21
6.	Positive Material Identification as per specification after completion of installation.	WC	Rw	--	Format M18
7.	Preparation of Punch list .	WC	W	W	Format M53
8.	Review of Punch List prepared by Contractor	WC	Rw	Rw	Format M53
9.	Liquidation of check list, if applicable.	WC	HP	HP	Format M53
10.	Review of Calibration certificates of pressure Gauges	WC	Rw	Rw	Format M1
11.	Field Calibration, if any	WC	S	--	Yes
12.	Air/Water Flushing (preliminary)	WC	S	S	---
13.	Visual inspection of all weld joints for leak during Pneumatic/ Hydrotesting	WC	HP	W	----
14.	Draining of Water & Air Drying	WC	S	S	Format M52
15.	Removal of temporary blinds/supports	WC	W	S	Format M52
16.	Pickling of system, if required	WC	W	S	Format M19
17.	Boxing up including reinstallation of flappers of check valves (After Hydrotest)	WC	W	--	Annex-2
18.	Review of Records of fasteners & gaskets	WC	Rw	Rw	Yes
19.	Torque tightening/ tensioning of flange joints, wherever applicable	WC	W	S	Yes **
20.	System testing	WC	HP		Format M20
21.	Setting of spring supports	WC	HP		Format M52
22.	Modification of Tested lines.	WC	Rw	Rw	Format M54
	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) Pre-commissioning activities such as chemical cleaning, card board blasting, systemtesting are not covered by these ITP's. The contractor shall develop ITP's for such activities and obtain Owner/ PMC/ Licensor's approval.

** Refer Procedure for Identification and Boxing up of flange joints not subjected to hydrostatic test at site No. 5-7700-0120, enclosed elsewhere in the contract.

CAT A: All services involving hydrogen and hydrogen bearing fluid, all SS, AS,NACE,LTCS,clad Inconel, piping,SHP/HP Steam piping.All CS piping for process linesall steam lines under purview of IBR and excluding categoryJacketed piping.

CAT B, Piping for "D" class fluid,Non IBR portion of condensate & steam lines

Copyright EIL – All rights reserved

ITP NO: 3220

COLUMN INTERNALS

Sl. No.	Activity	Contractor	EIL CAT A	Records to be Submitted/ Format No.
INSTALLATION OF COLUMN INTERNALS				
A.	Before Installation			
1.	Internal Installation Procedure including identification of confined space hazards & mitigation thereof	WC	Rw	Yes
2.	Material inspection	WC	HP	Note-1
3.	Level check on TSRs	WC	S	Format M49
4.	Check for downcomer clearance and Tray clearance	WC	S	Format M49
5.	Distance between TSRs	WC	S	Format M49
B.	**After Installation - *Check for***			
1.	Exit weir height	WC	S	Format M49
2.	UDFC	WC	S	Format M49
3.	Tightness of bolts	WC	S	Format M49
4.	Orientation and tightness of clamps	WC	S	Format M49
5.	Provision of lock nuts/seal plates	WC	HP	Format M49

Copyright EIL – All rights reserved

ITP NO: 3220

COLUMN INTERNALS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT A	
6.	Correctness of installation of shimming/bolting for top downcomer	WC	HP**	Format M49
7.	Correctness of gasketing (if any)	WC	S	Format M49
8.	Tray to tray distance and level of trays	WC	S	Format M49
9.	Leak testing of seal pans as applicable	WC	S	Format M49
10.	Damaged, missing valves and valve movements for valve trays	WC	S	Format M49
11	Fitting of proper valve combination	WC	S	Format M49
12	Damage to deck components	WC	S	Format M49
13	Level and alignment of inlet weir and exit weir	WC	S	Format M49
14	Check for slots on tray components to be fully covered	WC	S	Format M49
15	Gaps at downcomer ends	WC	S	Format M49
16	Removal of temporary plugs after testing	WC	S	Format M49
17	Cleaning of all trays & inside of equipment	WC*	HP	Format M49
18	Certification of installation by Vendor's representative, Final boxing up, if any.	WC*	HP**	Format M50
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

* 100% Check for All activities by Vendor Representative pertaining to material receipt, identification, pre-installation checks and installation to be carried out in the presence of Vendor's representative and duly certified and documented for submission as final document

** By Owner/Process Licensor

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

CAT A: All works

Copyright EIL – All rights reserved

ITP NO: 3230

FIRED HEATERS

(sheet 1 of 4)

Sl. No.	Activity	Contractor	EIL CAT A	Records to be Submitted/ Format No.
A.	**PRIOR TO FABRICATION**			
1.	Incoming Material c) Owner's supply	Contractor to check all free issue materials and maintain records of MIV for material issued by owner/EIL		
	d) Contractors supply	WC	Note -1	Format M2
2.	Welding Filler Material Approval/Qualification			
	a) Review of Manufacturer's Test Certificate/Documents	WC	HP*	Yes
	b) Laboratory testing, if any			
	i) Carbon Steel	WC	Rw	Format M3, M4
	ii) Alloy Steel/Stainless Steel	WC	W	Format M3, M4
3.	WPS/PQR			
	a) Review of proposed Procedure	WC	Rw	Format M5
	b) Welding of Test Coupons and subsequent testing			
	i) Carbon Steel	WC	W	Format M6
	ii) Alloy Steel/Stainless Steel	WC	W	Format M6
	iii) All other materials including NACE CS, CS for H_2 Service	WC	W	Format M5, M6
	c) Approval of final WPS/PQR	WC	HP	Format M5, M6
4.	Welder performance Qualification Test	WC	S/Rw	Format M7
5.	Certification & Approval of welders before deployment on job	WC	HP	Format M8
6.	NDT Procedure Qualification			Yes
	a) Review of proposed Procedure	WC	HP	Yes
	b) Witnessing of Proposed Procedure Testing	WC	W	Yes
	c) Approval of Qualified Procedure	WC	HP	Yes
7.	Joint Numbering for coils/ pressure parts	WC	S	Yes
B.	**FABRICATION**			
	STEEL WORK			
1.	Materials as per AFC drawing	WC	S	Format M10
2.	Dimensional check	WC	S	Format M10
3.	Fit-up check	WC	S	Format M10

* *Notwithstanding any other tests/documentation required for qualification/approval of filler metals:*

i) For Alloy Steel & Stainless Steel welding filler metals, chemical analysis to be carried out for very batch.

ii) *For NACE filler metals, corrosion tests like HIC, SSCC, etc. to be carried out for every batch. However, HIC/SSCC tests done earlier & duly witnessed by a reputed third party, will be acceptable.*

Copyright EIL – All rights reserved

ITP NO: 3230

FIRED HEATERS

(sheet 2 of 4)

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT A	
	Weld Visual Inspection	WC	W	Format M11
4.	Radiography, as applicable			Yes
	a) RT Marking (for random/spot radiography only)	WC	S	Format M15
	b) RT Interpretation	WC	W	Format M16
5.	Completion of structures as per AFC drawings(including trial/mock assembly)	WC	W	Yes
6.	Surface cleaning for primer painting	WC	W	Format M17, Note-2
7.	Primer Coating as applicable	*	*	Format M17, Note-2
C	**COIL WORK**			
1.	a) Material as per specification (check w.r.t. approved colour coding procedure)	WC	W	Yes
	b) Dimensional checks	WC	S	---
	c) Fit-up check for butt joints and socket joints	WC	S	Format M10
	d) Fit-up checks for branch joints	WC	S	Format M10
	e) Cold Pull Check	WC	S	----
	f) Supports and anchor location	WC	S	----
2.	Pre-heat (if any)	WC	S	---
3.	Certificate of purity of purging/shielding Gas (if any)	WC	S	Yes
4.	Purging rate (if any) and arrangement	WC	S	---
5.	Shielding rate (if any)	WC	S	---
6.	Baking of Electrodes	WC	S	---
7.	Inter-pass cleaning & Temperature check	WC	S	---
8.	Visual check of completed welds having a) For Random Radiography	WC	S	Format M11
	b) 100% Radiography	WC	S	Format M11
9.	a)Monitoring of PWHT Cycle	WC	S	
	b)Review of Time – Temperature graph	WC	Rw	
10	Hardness Check			
	(i) For C.S. Coils	WC	S	Format M12
	(ii) For A.S. Coils	WC	W	Format M12
11.	PT/MT	WC	W	Format M13, M14
12.	Radiography marking (for Random Radiography only)	WC	W	Format M15
13.	Radiography Interpretation/ Review a)For Random Radiography	WC	HP	Format M16
	b) 100% Radiography	WC	HP	Format M16
14.	Check Shot for Radiography, if applicable	WC	W	Format M16
15.	Clearance for Hydrostatic testing	WC	HP	Format M21, M22
16.	Positive Material Identification for base material and welds, as applicable	WC	HP	Format M18
17.	Hydrostatic testing	WC	HP	Format M22

Copyright EIL – All rights reserved

ITP NO: 3230

FIRED HEATERS

(sheet 3 of 4)

Sl. No	Activity	Contractor	EIL CAT A	Records to be Submitted/ Format No.
D.	**ERECTION**			
1.	Review of foundation check as per AFC drawing and latest heater arrangement drawing	WC	HP	
2.	Lifting arrangements	WC	Rw	Yes
3.	Test certificates for lifting tools and tackles	WC	Rw	Yes
4.	Lifting of radiant section columns and their alignment	WC	S	Yes
5.	Bottom plate fit-up & welding	WC	S	Yes
6.	Radiant shell courses fit-up & welding	WC	S	Yes
7.	Weld visual inspection	WC	S	Yes
8.	Review of radiographs interpreted by the contractors	WC	W	Yes
9.	Cutout			----
	a) Marking for burners, sight doors, soot blowers	WC	S	
	b) Marking for balance cut outs	WC	S	
	c) Cutting	WC	S	
10.	Coil erection in Radiant section			----
	a) Fixing of coil support castings	WC	S	
	b) Clearance for erection of coil	WC	S	
	c) Alignment of completed coil work	WC	W	
11.	Assembly and erection of convection box			
	a) Erection procedure Review	WC	S	Yes
	b) Structural including plate work	WC	S	
	c) End tube sheets and intermediate tube sheets with support brackets	WC	S	
	d) Clearance of coil erection	WC	W	
	e) Erection of box (If applicable)	WC	W	
12.	Check Shot for radiography for coil field joints, if applicable	WC	W	Format M15, M16
13.	Clearance for Hydro test	WC	HP	Format M21& M22
14.	Hydro test for field Joint	WC	HP	Format M23

Copyright EIL – All rights reserved

ITP NO: 3230

FIRED HEATERS

(sheet 4 of 4)

Sl. No	Activity	Contractor	EIL CAT A	Records to be Submitted/ Format No.
15.	Erection, fit-up & welding of stack			
	a) Erection procedure	WC	Rw	Yes
	b) Erection	WC	S	
	c) Alignment	WC	W	
16.	Erection Fit-up, welding of ducts and its support structural	WC	S	Yes
17.	Radiography, as required on steel work			
	a) RT Marking	WC	S	Yes
	b) RT Interpretation	WC	W	Yes
18.	FD & ID Fan	WC	Note 4	Yes
19	Installation of auxiliary equipment			
	a) Burner along with ignition system and transformer	WC	W	Yes
	b) Soot blower alongwith sequential control panel and electrical wirings	WC	W	
	c) Damper and shut-off blades with control panel and winch	WC	W	
	d) Air pre-heater (cast, glass, plate) and steam air heater	WC	W	
	e) Skin thermocouples	WC	W	
	f) Spring Supports	WC	S	
20.	Erection of all platforms. Ladders, Hand rails & miscellaneous structures	WC	S	Yes
21.	Insulation/ refractory lining	WC	Note 3	
22.	Review of Color Codes from Client/EIC	WC	Rw	
23.	Final Painting	WC	Note 2	
24.	Smoke testing of Heater	WC	W	
25.	Liquidation of checklist	WC	HP	Format M26
26.	Final inspection and acceptance	WC	HP	
	INSPECTION & TEST DOCUMENTS			
	Review of Test and Inspection documents	WC	Rw	Yes

NOTE : 1) For Incoming material Inspection please refer ITP no: 6-82-1010
2) For cleaning & painting, please refer ITP No. 3301
3) For Insulation, please refer ITP No. 3305
4) For Rotary Equipment, please refer ITP No. 2160

CAT A: All works

Copyright EIL – All rights reserved

ITP NO: 3240

REFRACTORY & INSULATION WORKS- FIRED HEATER

(sheet 1of 6)

Sl. No.	Activity	Contractor	EIL CAT B	Records to be Submitted/ Format No.
A.	**RADIANT SECTION**			
1.	**RADIANT SHELL**			
	Fixing of Ceramic fibre blanket			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	---
	i) Clearance for hot work	WC	HP	Yes
	ii) Marking of studs	WC	S	Yes
	iii) Welding of studs with approved WPS&PQR	WC	S	Yes
	iv) Surface cleaning	WC	S	Yes
	v) Check for individual layers of ceramic fibre blankets and SS foils	WC	W	Yes
	vi) Check for overlap of ceramic blanket	WC	S	Yes
	vii) Fixing of speed fix washer and cup lock	WC	S	Yes
	viii) Cleaning and final inspection	WC	HP	Yes
2.	**ARCH PLATE**			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	---
	ii) Clearance for hot work	WC	HP	Yes
	iii) Marking of studs/anchors	WC	S	Yes
	iv)Welding of studs/anchors with approved WPS&PQR	WC	S	Yes
	v) Surface cleaning	WC	S	Yes
	vi) Check for individual layers of ceramic Fibre blankets (CFB) modules and SS foils	WC	S	Yes
	vii) Check for overlap of CFB and modules	WC	S	Yes
	viii) Cleaning and final inspection	WC	HP	Yes

Copyright EIL – All rights reserved

ITP NO: 3240

REFRACTORY & INSULATION WORKS- FIRED HEATER

(sheet 2 of 6)

Sl. No.	Activity	Contractor	EIL CAT B	Records to be Submitted/ Format No.
3.	**FLOOR PLATE**			
	Laying of castable/fire bricks			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	---
	ii) Clearance for hot work	WC	HP	Yes
	ii) Surface cleaning	WC	S	Yes
	iv) Check Shelf life prior to application	WC	W	Yes
	v) Check for undulations on floor	WC	S	Yes
	vi) Check for castable mix	WC	W	Yes
	vii) Check for proper compaction	WC	S	Yes
	viii) Check for thickness of castable	WC	S	Yes
	ix) Curing	WC	S	Yes
	x) Cleaning after laying of castable	WC	S	Yes
	xi) Check for cracks and repair	WC	W	Yes
	xii) Fixing of tar paper, if applicable	WC	S	Yes
	xiii) Cleaning and final inspection	WC	HP	Yes
B.	**CONVECTION SECTION**			
	1)CONVECTION WALLS			
	Laying of castable			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any - Manufacturing test certificates	WC	W/ Rw	Yes

Copyright EIL – All rights reserved

ITP NO: 3240

REFRACTORY & INSULATION WORKS- FIRED HEATER

(sheet 3 of 6)

Sl. No.	Activity	Contractor	EIL CAT B	Records to be Submitted/ Format No.
	ii) Clearance for hot work	WC	HP	Yes
	iii) Marking of studs/anchors	WC	S	Yes
	iv) Welding of studs/anchors withapproved WPS &PQR	WC	S	Yes
	v) Surface cleaning	WC	S	Yes
	vi) Check for undulations on wall	WC	S	Yes
	vii) Check for castable mixing	WC	W	Yes
	viii) Check for proper compaction	WC	S	Yes
	ix) Check for thickness of castable	WC	S	Yes
	x) Curing	WC	S	Yes
	xi) Cleaning after laying of castable	WC	S	Yes
	xii) Check for cracks and repair	WC	W	Yes
	xiii) Cleaning and final inspection	WC	HP	Yes
	2) END TUBESHEETS			
	Laying of castable			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	Yes
	ii) Clearance for hot work	WC	HP	Yes
	iii) Marking of studs/anchors	WC	S	Yes
	iv) Welding of studs/anchors withapproved WPR&PQR	WC	S	Yes
	v) Surface cleaning	WC	S	Yes
	vi) Check for castable mixing	WC	W	Yes
	vii) Check for proper compaction	WC	S	Yes
	viii) Check for thickness of castable	WC	S	Yes
	ix) Curing	WC	S	Yes
	x) Cleaning after laying of castable	WC	S	Yes
	xi) Check for cracks and repair	WC	W	Yes
	xii) Cleaning and final inspection	WC	HP	Yes

Copyright EIL – All rights reserved

ITP NO: 3240

REFRACTORY & INSULATION WORKS- FIRED HEATER

(sheet 4 of 6)

Sl. No.	Activity	Contractor	EIL CAT B	Records to be Submitted/ Format No.
	3) BREECHING PLATE			
	Laying of castable			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	Yes
	ii) Clearance for hot work	WC	HP	Yes
	iii) Marking of studs/anchors	WC	S	Yes
	iv) Welding of studs/anchors with approved WPR&PQR	WC	S	Yes
	v) Surface cleaning	WC	S	Yes
	vi) Check for undulations on plate	WC	S	Yes
	vii) Check for castable mixing	WC	W	Yes
	viii) Check for proper compaction	WC	S	Yes
	ix) Check for thickness of castable	WC	S	Yes
	x) Curing	WC	S	Yes
	xi) Cleaning after laying of castable	WC	S	Yes
	xii) Check for cracks and repair	WC	W	Yes
	xiii) Cleaning and final inspection	WC	HP	Yes
	4) HEADER BOX			
	Laying of castable			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	Yes
	ii) Clearance for hot work	WC	HP	Yes
	iii) Marking of studs/anchors	WC	S	Yes
	iv) Welding of studs/anchors with approved WPR&PQR	WC	S	Yes
	v) Surface cleaning	WC	S	Yes
	vi) Check for undulations on box	WC	S	Yes
	vii) Check for castable mixing	WC	W	Yes
	viii) Check for proper compaction	WC	S	Yes
	ix) Check for thickness of castable	WC	S	Yes
	x) Curing	WC	S	Yes
	xi) Cleaning after laying of castable	WC	S	Yes
	xii) Check for cracks and repair	WC	W	Yes
	xiii) Cleaning and final inspection	WC	HP	Yes

Copyright EIL – All rights reserved

ITP NO: 3240

REFRACTORY & INSULATION WORKS- FIRED HEATER

(sheet 5 of 6)

Sl. No.	Activity	Contractor	EIL CAT B	Records to be Submitted/ Format No.
	xiv) Surface cleaning	WC	S	Yes
	xv) Check for undulations on box	WC	S	Yes
	xvi) Check for castable mixing	WC	W	Yes
	xvii) Check for proper compaction	WC	S	Yes
	xviii) Check for thickness of castable	WC	S	Yes
	xix) Curing	WC	S	Yes
	xx) Cleaning after laying of castable	WC	S	Yes
	xxi) Check for cracks and repair	WC	W	Yes
	xxii) Cleaning and final inspection	WC	HP	Yes
C	**STACK**			
	Laying of castable			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	Yes
	ii) Clearance for hot work	WC	HP	Yes
	iii) Marking of studs/anchors	WC	S	Yes
	iv) Welding of studs/anchors with approved WPR&PQR	WC	S	Yes
	v) Surface cleaning	WC	S	Yes
	vi) Check for undulations on stack shell	WC	S	Yes
	vii) Check for castable mixing	WC	W	Yes
	viii) Check for proper compaction	WC	S	Yes
	ix) Check for thickness of castable	WC	S	Yes
	x) Curing	WC	S	Yes
	xi) Cleaning after laying of castable	WC	S	Yes
	xii) Check for cracks and repair	WC	W	Yes
	xiii) Cleaning and final inspection	WC	HP	Yes

Copyright EIL – All rights reserved

ITP NO: 3240

REFRACTORY & INSULATION WORKS- FIRED HEATER

(sheet 6 of 6)

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
D	**HOT AIR DUCT**			
	i) Material inspection			Format M2
	- Manufacturing test certificates	WC	Rw	Yes
	- Testing, if any	WC	W	---
	ii) Clearance for insulation	WC	HP	Format M24
	iii) External Surface cleaning	WC	S	Format M24
	iv) Provide spacer rings/anchors	WC	S	Format M24
	v) Check for thickness of the mineral wool insulation	WC	S	Format M24
	vi) Check for staggering of joints in insulation	WC	S	Format M24
	vii) Check for providing expansion joints	WC	W	Format M24
	viii) Overlapping of metal sheet as per specification	WC	S	Format M24
	ix) Overlap on joints for aluminium sheetingas per specifications	WC	W	Format M24
	x) Sealing aluminium sheeting	WC	S	Format M24
	Final inspection & acceptance	WC	HP	Format M25
E	**INSPECTION & TEST DOCUMENTS**			
	Review Test and Inspection Documents	WC	Rw	Yes

CAT B: All works.

Copyright EIL – All rights reserved

ITP NO: 3250

EQUIPMENT ERECTION (STATIC)

(sheet 1of 3)

Sl. No	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CAT B	
	EQUIPMENT ERECTION (STATIC)				
1.	**BEFORE ERECTION**				
a.	Review of foundation acceptance report	WC	HP	Rw	
b.	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		
c.	Readiness for erection				
	i) Centre line marking on equipment and foundation	WC	S	--	Format M27
	ii) Level of foundation (shims/ packing with marking to be prepared & kept ready)	WC	S	--	Format M27
	iii) Correctness of no. & size of Foundation bolts	WC	S	--	Format M27
	iv) Hole dia and no. of holes in base/ structure of equipment columns	WC	S	--	Format M27
	v) Matching equipment base bolt holes with actualfoundation bolt layout	WC	S	--	Format M27
	vi) Marking orientation	WC	S	--	Format M27
	vii) Checking the threads of bolts & nuts	WC	S		Format M27
	viii) Chipping & roughening of foundation	WC	S	--	Format M27
d.	Outside cleaning, coating/wrapping, painting(for underground equipment only)	WC	HP	W	

Copyright EIL – All rights reserved

ITP NO: 3250

EQUIPMENT ERECTION (STATIC)

(sheet 2 of 3)

Sl. No	Activity	Contractor	EIL		
			CAT A	CAT B	CAT C
2.	**ERECTION SCHEMES FOR CRITICAL EQPTS.**				
	a.Review of rigging procedure	WC	HP		--
3.	**SAFETY TEST**				
	a .Load test of cranes, lifting beams, slings and shackles, length and dia. of sling & condition of wire rope by competent authority	WC	Rw	Rw	Rw
4.	**DURING ERECTION**				
	a. Orientation to be checked	WC	S	--	--
	b. Placement of packing as per AFC drg	WC	S	--	--
	c. Placement of Main & trailing crane as per approved rigging procedure	WC	S	--	--
	d. Orientation of equipment as per AFC drg	WC	S	--	--
5.	**AFTER ERECTION**				
	a. Tightening of Bolts and Providing washers	WC	S	--	--
	b. Levelling and Alignment of equipments	WC	HP	W	--
	c. Corresponding requirement elevation & distance between nozzles in special cases	WC	S	--	--
	d. Cleaning of Sleeves before grouting	WC	S	--	--
	e. Grouting	WC	S	--	--
	i) Acceptance of Specified grouting materials	WC	HP	Rw	Rw
	ii) Placement of grouting	WC	S	--	--
	iii) Curing of grout	WC	S	--	--
	f. Final tightening of bolts	WC	S	--	--

Copyright EIL – All rights reserved

ITP NO: 3250

EQUIPMENT ERECTION (STATIC)

(sheet 3 of 3)

Sl. No	Activity	Contractor	EIL	
			CAT A	CAT B
6.	**PACKED EQUIPMENTS**			
	1. Before Installation			
	a. Identify the material, check thickness, dimensions, no. and angle of fingers of packing rings	WC	S	--
	2. During Installation			
	a. Degreasing and cleaning of packing material	WC	S	--
	b. Check packing support plate	WC	S	--
	c. Check for stacked or dumped packing as per specifications	WC	S	--
	d. Check for nesting	WC	S	--
	e. Check that packings are touching bed limiter	WC	S	--
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Rw

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

CAT A Process columns & Reactors (including internals), Mounded Bullets, ODC's or Any special type of equipment (Project specific)Vessels & exchangers above 5 T, Hoppers /bins, Incinerators, combustion chamber, Boilers

CAT B Seal pots All vessels/exchangers Up to 5T

Copyright EIL – All rights reserved

ITP NO: 3260

EQUIPMENT ERECTION ROTARY

(sheet 1of 3)

Sl. No	Activity	Contractor*	EIL	
			CAT A	CAT B
1.	**PRE – ERECTION ACTIVITIES**			
	a. Review of foundation acceptance report	WC	HP	Rw
	b. Material Supply			
	- Owner's supply including templates, if any	WC	Rw	Rw
	- Contractor's supply & check testing, if any	WC	Note-1	Note-1
	c. Readiness for erection			
	i. Level of foundation (shims/packing with markings to be prepared & kept ready)	WC	W	--
	ii. Marking/Centre line of foundation & equipment	WC	W	--
	iii. No./dia./length of anchor bolts, depth of pockets, verticality of pockets	WC	W	--
	iv. Chipping, roughing & cleaning of pockets/top of foundation	WC	HP	W
	v. Acceptance of grouting materials as per specifications/ Manufacturer's recommendations	WC	HP	Rw
2.	**LIFTING TACKLES**			
	a. Certificate from competent authority	WC	Rw	--
	b. Load test of Cranes/Lifting beams/slings/ shackles/ Wire ropes, etc. for weight of equipments to be handled	WC	Rw	Format- 32
3.	**VISUAL INSPECTION OF EQPT. TAG/IDENTIFICATION NO.**			
	a. For any damage	WC	S	--
	b. Free shaft rotation	WC	S	--
4.	Drilling & Tapping, holes in the base plate of eqpt. (if reqd.)	WC	S	--
5.	Approval of Rigging procedure	WC	HP	Rw

* Inspection by Vendor/Manufacturer for all critical equipments

Copyright EIL – All rights reserved

ITP NO: 3260

EQUIPMENT ERECTION ROTARY

(sheet 2of 3)

Sl. No	Activity	Contractor*	EIL	
			CAT A	CAT B
6.	**DURING ERECTION**			
	a. Level/elevation of base frame	WC	S	--
	b. Checking of foundation bolts (for location, threading, greasing, etc.)	WC	S	--
	c. Checking orientation of equipment	WC	S	--
	d. Placement of Crane(s), if applicable	WC	S	--
	e. Elevation/level of equipment and placement of shims/packings as per AFC drawings	WC	S	--
	f. Distance between couplings	WC	S	--
	g. Rough alignment of equipment	WC	S	--
	h. Availability of Vendor's engineer at site (For critical equipments)	WC	S	--
	i. Cleaning of pockets/ grouting of foundation bolts' pockets/base frame	WC	HP	--
	j. Erection of auxiliary equipment/ Accessories	WC	S	--
	k. Final alignment of equipment	WC	S	--
	- Without piping	WC	W	W
	- With piping (After tightening the flange bolts)	WC	HP	W
	l. All protection & safety guards installation	WC	S	--

Copyright EIL – All rights reserved

ITP NO: 3260

EQUIPMENT ERECTION ROTARY

(sheet 3 of 3)

Sl. No	Activity	Contractor*	EIL	
			CAT A	CAT B
7.	**POST ERECTION ACTIVITIES**			
	a. Curing of grout	WC	S	--
	b. Auxiliary connections to be mounted on eqpts. as per drawing	WC	S	--
	c.Final tightening of bolts	WC	S	--
	d. Chemical cleaning of equipment parts/ connected piping	WC	S	--
	e. Boxing up of equipment & connected piping	WC	S	--
	f. Log book maintenance (For rotating of shaft and any other activity to be performed as per vendor's recommendations)	WC	S	--
	g. No load run of motors	WC	HP	W
	h. Re-coupling of motor & reconfirmation of alignment	WC	HP	W
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	S	--

* Inspection by Vendor/Manufacturer for all critical equipments.

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

CAT A: Compressors, Pumps Turbines & Diesel Engines, Rotary Driers or any special type of equipment (Project specific), Fans & Blowers, Conveyors & Material Handling Equipment.

CAT B: Metering & Dosing Pumps, non-critical pumps/blowers, any other items etc.

Copyright EIL – All rights reserved

ITP NO: 3270

INSTALLATION/ERECTION & TESTING OF CRANES (EOT/HOT)

Sl. No.	Activity	Contractor	EIL	
			CAT A	CAT B
1.	**BEFORE ERECTION**			
	a. Execution scheme of equipment foundation	WC	Rw	
	b. Materials supply	WC	Note-1	Note-1
	c. Readiness for erection	WC	W	--
	i. Structural steel girder span centre to centre& elevation difference	WC	W	--
	ii. Check centre to centre distance of rails, gaps, elevations, crab wheels distances	WC	W	--
	iii. Check buffer stops	WC	W	--
2	a. Erection and assembly of components like LT, Crane Girders, Crab, Platforms, etc.	WC	S	--
	b. Review of hoist ropes and assembly of hook blocks	WC	S	--
3.	a. Electrical installation, testing & no load test of motors	WC	S	--
	b. Coupling of motors to drivers	WC	S	--
4.	NO LOAD TEST			
	a. Winding & unwinding test	WC	W	--
	b. Traversing test	WC	W	--
	c. Travelling test	WC	W	--
5.	LOAD TEST			
	a. Winding & unwinding test	WC	HP	W
	b. Traversing test	WC	HP	W
	c. Travelling test	WC	HP	W
	d. Load & over load testing	WC	HP	W
	e. Deflection of girder	WC	HP	W
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Rw

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

CAT A: Special purpose M/c viz. Pot tending M/c All EOT cranes with capacity 10T and above
CAT B: All EOT /HOT cranes with capacity below 10T.

Copyright EIL – All rights reserved

ITP NO: 3280

STORAGE TANKS

(sheet 1 of 5)

Sl. No	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CAT B	
A.	**PRIOR TO FABRICATION**				
1.	Review Acceptance Report of the tanks foundation	WC	HP	Rw	
2.	Incoming Material	WC	Note-1	Note-1	
3.	Welding Filler Material Approval/Qualification				
	a)Review of Manufacturer's Test Certificate/Documents	WC*	Rw	Rw	Yes
	b) Laboratory testing, if any				
	i) Carbon Steel	WC	W	--	Format M3, M4
	ii) Alloy Steel/Stainless Steel	WC	W	--	Format M3, M4
	iii) Low Temperature Services	WC	W	--	Format M5
4.	WPS/PQR				
	a) Review of proposed procedure	WC	HP	HP	Format M5, M6
	b) Testing				Format M6
	i) Carbon Steel	WC	Rw	Rw	Format M6
	ii) Alloy Steel/Stainless Steel	WC	HP	HP	Format M6
	c) Approval of Final WPS/PQR	WC	HP	HP	Format M5, M6
5.	a) Welder performance Qualification Test	WC	W	W	Format M7
	b) Certification & approval of welders	WC	HP	HP	Format M8
6.	NDT Procedure Qualification				---
	i) Review of proposed procedure	WC	Rw	Rw	Yes
	ii) Witnessing of the proposed procedure testing	WC	W	W	Yes
	iii) Approval of Qualified Procedure	WC	HP	HP	---
7.	Review of Joint numbering in drawings	WC	Rw	Rw	Yes
8.	Review fabrication, erection, testing Procedures for job	WC	HP	HP	
B.	**FABRICATION/ERECTION BOTTOM**				
1.	Blast cleaning & painting of underside of bottom plates	WC	HP	S	

* *Notwithstanding any other tests/documentation required for qualification/approval of filler metals :*

i) For Alloy Steel & Stainless Steel welding filler metals, chemical analysis to be carried-out for every batch.

ii) For Low Temperature application, Impact testing to be carried out for every batch of the filler metal, to be witnessed by PMC/Owner.

iii) For NACE filler metals, corrosion tests like HIC, SSCC, etc. to be carried out for every batch. However, HIC/SSCC tests done earlier & duly witnessed by a reputed third party, will be acceptable.

Copyright EIL – All rights reserved

ITP NO: 3280

STORAGE TANKS

(sheet 2 of 5)

Sl. No	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CATB	
2.	Plate lay out, overlap and fit up	WC	S	--	
3.	Sequence of welding	WC	S	--	
4.	Size and positioning of backing plate for annular plates	WC	S	--	
5.	Baking of electrodes	WC	S	--	
6.	Inter-pass cleaning	WC	W	--	
7.	Visual check of welding	WC	W	S	Format M34
8	PT/MT/NDT of annular plate butt welds and bottom plate butt welds (As applicable)	WC	W	S	
9.	Vacuum box test for bottom plate welding	WC	W	S	
	SHELL				
1.	Shell course alignments and fit-up of vertical and circumferential joints before welding	WC	W	S	
2.	a) Check Shell diameter, circularity, perpendicularity, straight edge before welding.	WC	W	S	
	b) Check Shell diameter, circularity, perpendicularity straight edge after welding,	WC	W	S	
3	Visual check of welding and Back chipping	WC	S	-	Format M 36 & M 37
4.	Inner side welding visual check	WC	S	-	
5.	Location, size, alignment and fit-up of nozzles & other openings	WC	W	W	
6.	R.F. Pads fit-up/welding	WC	S	-	Format M 40
7	PWHT of shell, RF pads, Nozzles, manholes, etc. (As applicable)	WC	W	S	Format M 40
8.	Radiography marking (for Random radiography only)	WC	W	W	Format M 41
9.	Curb angle and Wind girders fit-up/welding	WC	S	Rw	

Copyright EIL – All rights reserved

ITP NO: 3280

STORAGE TANKS

(sheet 3 of 5)

Sl. No	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CATB	
10.	PT/MT of nozzles, wind girders and other attachments (as applicable)	WC	W	S	
11.	RF pads pneumatic test	WC	HP	W	
12.	Shell to bottom fit up	WC	W	S	
13.	Shell to bottom I/S welding root run visual/Oil chalk test	WC	W	S	
14.	Shell to bottom O/S welding visual and PT	WC	W	S	
15.	Fabrication and erection of stair ways	WC	S	--	
16.	Cleats welding for insulation	WC	S	--	
17.	Review of radiographs interpreted by the contractors	WC	HP	Rw	Format M 42
	FIXED ROOF				
1.	Blast cleaning and painting Roof Structure, underside of Roof plates	WC	W	S	
2.	Location and Welding of Roof supports	WC	S	--	
3.	Alignment and welding of Roof structures	WC	S	--	Format M 43
4.	Plate layout, overlap and fit-up	WC	S	--	
5.	Visual check of roof welds	WC	S	--	Format M 43
6.	Location, size and alignment of roof nozzles, man-holes vents, etc.	WC	W	S	
7.	PWHT (as applicable)				
	i) Procedure Review	WC	HP	Rw	
	ii) PWHT cycle monitoring	WC	W	--	
	iii) Time-Temp Chart Review	WC	HP	Rw	
8.	RF pads fit-up & Welding	WC	S	--	Format M 40
9.	RF pad pneumatic testing	WC	W	S	
10.	PT/MT of Nozzles, vents & other attachments	WC	W	S	
11.	Welding of Roof plate with shell/ curb angle	WC	S	--	

Copyright EIL – All rights reserved

ITP NO: 3280

STORAGE TANKS

(sheet 4 of 5)

Sl. No	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CATB	
	FLOATING ROOF				
1.	Temporary staging spacing and levels	WC	S	--	
2.	Plate layout, overlap, fit-up/welding	WC	S	--	
3.	Availability of approved calculations for design of buoys	WC	Rw	--	
4.	Buoys fabrications	WC	S	--	
5.	Vacuum testing of roof-plate welds	WC	W	--	
6.	Location of sleeve supports	WC	S	--	
7.	Pad plate welding with roof and sleeve support	WC	S	--	
8.	Fixing and welding of Buoys	WC	S	--	Format M 44
9.	Initial – lift	WC	S	--	
10.	Supports fixing through sleeves	WC	S	--	
11.	Seal welding of support sleeves from beneath after dewatering	WC	S	--	
12.	Air test of Buoys Pontoon welding	WC	S	--	Format M 44
13.	Location, fixing and welding of man holes, drains etc.	WC	W	--	
14.	Shell to pontoon clearance	WC	HP	--	
15.	Seal fixing	WC	HP	--	
16.	Floating Roof Testing, as required e.g. flooding etc.	WC	HP	--	

Copyright EIL – All rights reserved

ITP NO: 3280

STORAGE TANKS

(sheet 5 of 5)

Sl. No	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CATB	
C.	**TESTING**				
1.	Correctness of testing arrangements especially size of blind flanges/vents/drains/ temporary piping	WC	S	--	
2.	Mechanical / Inspection clearances	WC	HP	HP	
3.	Earthing of ladder & shell	WC	W	W	
4.	Settlement readings during water filling	WC	W	Rw	Format M 47
5.	Hammer test	WC	W	W	Format M 45
6.	Air pressure test	WC	HP	W	Format M 45
7.	Vacuum test	WC	HP	W	Format M 45
8.	Roof collapsibility test in case of floating roof tanks	WC	HP	W	Format M 45
9.	Calibration of tanks from Statutory authorities	WC	Rw	Rw	
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	

NOTE : 1) For Incoming material Inspection please refer ITP No: 6-82-1010
2) For cleaning & painting, please refer ITP No. 3301
3) For Insulation, please refer ITP No. 3305

CAT A: All Site fabricated steel storage tanks for process fluid / Hydrocarbon, floating roof, tanks having capacity 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"

Copyright EIL – All rights reserved

SECTION - B

Copyright EIL – All rights reserved

FORMATS

FOR

MECHANICAL WORKS

CONTENTS

S. NO	DESCRIPTION	FORMAT NO.	PAGE NO.
FORMATS FOR MECHANICAL WORKS			
1.	Record of Calibration of Measuring/Testing Equipments	M-1	36
2.	Incoming Material Inspection Report	M-2	37
3.	Electrode Qualification Test report	M-3	38
4.	Inspection Report - Filler Material Manufacturer's works	M-4	41
5.	Format for Welding Procedure Specification (WPS)	M-5	42
6.	Suggested format for procedure Qualification record (PQR)	M-6	44
7.	Suggested format for manufacturer's record of welder or welding operator qualification tests	M-7	46
8.	Welder's identification card	M-8	47
9.	Material Traceability Report	M-9	48
10.	Daily Fit-up inspection report	M-10	49
11.	Daily Welding inspection report	M-11	50
12.	Hardness test record	M-12	51
13.	Liquid penetrant examination report	M-13	52
14.	Magnetic particle examination report	M-14	53
15.	Radiography offering report	M-15	54
16.	Radiography interpretation report	M-16	55
17.	Daily Painting report	M-17	56
18.	Positive material identification (PMI) report	M-18	57
19.	Pickling above ground piping certificate	M-19	58
20.	System completion report above ground piping	M-20	59
21.	Line wise record	M-21	60
22.	Shop Hydro test report for Coil (Heater)	M-22	61
23.	Mechanical completion record (Heater)	M-23	62
24.	Inspection check sheet – daily inspection record of insulation	M-24	63
25.	Inspection check sheet – installation acceptance certificate for insulation	M-25	64
26.	Erection check list	M-26	65
27.	Execution scheme	M-27	66
28.	Heat exchangers/horizontal vessels Record	M-28	68
29.	Columns/Reactors/Vessels Record	M-29	69
30.	Machinery Alignment record	M-30	70
31.	Permissible tolerance for traveling Rail	M-31	71
32.	Test and inspection record – crane	M-32	72
33.	Sequence of welding for bottom plates & shell of the tanks	M-33	74
34.	Tank bottom/floating roof inspection record	M-34	75

Copyright EIL – All rights reserved

S. NO	DESCRIPTION	FORMAT NO.	PAGE NO.
FORMATS FOR MECHANICAL WORKS			
35.	Tank shell development drawing with radiographic spot location	M-35	76
36.	Inspection record for tank fabrication	M-36	77
37.	Inspection Record for Tank fabrication	M-37	78
38.	Inspection Record for checking roundness of tank	M-38	79
39.	Inspection Record for checking perpendicularity of tank	M-39	80
40.	Openings/Attachments inspection record	M-40	81
41.	Radiography Offering report	M-41	82
42.	Radiography Interpretation report	M-42	83
43.	Fixed Roof tank inspection record	M-43	84
44.	Buoy/Pantoon inspection report	M-44	85
45.	Certificate of pressure tests for tanks	M-45	86
46.	Floating roof tank tolerance record	M-46	87
47.	Tank settlement record	M-47	88
48.	Manufacturer's certification for tank Built to API Standard 650	M-48	89
49.	Installation reporting format for column internals	M-49	90
50.	Installation review check list	M-50	96
51.	Checklist for Mechanical Clearance – A/G piping	M-51	98
52.	Piping HydroTest Record-A/G Piping	M-52	102
53.	Above Ground piping – Punch List	M-53	104
54.	Modification of Piping Joint after Mechanical Clearance	M-54	105
55.	Checklist for Erection of Static Equipment	M-55	106

Copyright EIL – All rights reserved

FORMAT NO. : M-1

RECORD OF CALIBRATION OF MEASURING/TESTING EQUIPMENTS

Report No. : _____
Date : _____

Project : _____
Client : _____
Consultant : _____
Contractor : _____
Work order No. : _____

Name of work : _____
Job No. : _____

Sl. No.	Test Equipment Description	Range	Make/ Model No./ Sr. No.	Calibrated by	Calibration Certificate No./ Date	Calibration Validity Period & Date	Next Calibration Due Date	Accepted		Remarks
								Contr.	EIL	

Note : Ensure measuring/test equipment is sent to laboratory prior to expiry of present certificate

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

Page 4654 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

Format No: M: 02

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.	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

Contractor RCM/Site Incharge

EIL Field Supervisor

EIL Lead Engineer/Area coordinator/Spread Incharge
(counter signed)

Copyright EIL – All rights reserved

Page 4655 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-3

ELECTRODE QUALIFICATION TEST REPORT

(Sheet 1 of 3)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____
Job No. : _____ Work order No. : _____

Site _____ Test started on _____

Sponsoring Contractor _____ Test completed on _____

_____ H.O. Reference _____

Manufacturer _____ Date of approval _____

Brand Name _____ Batch No./Size _____

Ref. Code _____ IS/AWS Classification _____

Colour code _____

All Weld Test

Base material used _____

Buttering used Yes/No

Preheat temp. _____
Interpass temp. _____
Postheat temp/time _____

Visual Inspection _____

Radiographic result :Gr.I/Gr.II/Not required (As per ASME Sec II Part C)

Mechanical Test Results

Identification	Size of Electrode	UTS Kgs/mm^2		YS Kgs/mm^2		% Elongation Gauge length	
		Code	Actual	Code	Actual	Code	Actual

UTS = Ultimate tensile strength YS = Yield strength

Copyright EIL – All rights reserved

(Sheet 2 of 3)

IMPACT TEST RESULTS :°C

Identi-fication	Size of Elect-rode	Cooling Medium	I_1 Kgf-m	I_2 Kgf-m	I_3 Kgf-m	I_4 Kgf-m	I_5 Kgf-m	I Average Kgf-m	Code Kgf-m

CHEMICAL ANALYSIS RESULTS
WELD PAD/FILLER WIRE

Iden-tifi-cation	Size of Elec-trode	C	Mn	P	S	Si	Ni	Cr	Mo	V	Cu	Co/Nb	% As per Code
													% As per Actual Code/Act

FILLET WELD TEST RESULT

Identification	Size of Electrode	F Flat	H Horizontal	V Vertical	OH Over Head

Macro Examinations Result _____

Procedure Test Result

Material _____
Pipe/Plate Size_____ Position _____
In combination if any (ELECTRODE)_____ Current : _____AC/DC
Preheat temp. _____
Post heat temp/time _____
Visual Examination Result _____ Radiographic Examination

Dye Penetrant/Magnetic Particle Testing Result _____
Result _____

Copyright EIL – All rights reserved

(Sheet 3 of 3)

TENSILE AND BEND TEST RESULT

Position	Identification	Tensile Tests Kg/mm²			Bend Tests			
		Code	Actual		F1/S1	F2/S2	R1/S3	R2/S4
			T1	T2				

Impact Test Results _____ **°C**

Identification : _____

Location	I1 Kgf-m	I2 Kgf-m	I3 Kgf-m	I4 Kgf-m	I5 Kgf-m	I average Kgf-m	Code requirements Kgf-m
WELD							
HAZ							

POSITION TEST AS PER IS-814 (M.S. ELECTRODES ONLY)

Material _____
Plate size _____
Visual _____ Radiography Result _____
Identification _____

Position	Identification	Tensile Test T-kg/mm²		Bend Tests				Impact Tests				
		Code	Actual	F1	F2	R1	R2	I1 Kgf-m -oC	I2 Kgf-m -oC	I3 Kgf-m -oC	I ave-rage	Code Kgf-m
1G												
2G												
3G												
4G												

Special Remarks for approval _____
Encl 1)
2)
Strike whichever is not applicable
Suffix indicates specimen number.

Index

T = Tensile Test
S = Side Bend
F = Face Bend
R = Root Bend
I = Impact Test

Witnessed by **Approved by**

Copyright EIL – All rights reserved

FORMAT NO. : M-4

INSPECTION REPORT - FILLER MATERIAL MANUFACTURER'S WORKS

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____
Job No. : _____ Work order No. : _____

1. Date of visit _____ 2. By _____
3. Manufacturer _____ 4. Ref. _____
5. Location _____ 6. Person contacted _____
7. Brand name of electrode/Filler wire/Bare electrode _____
8. Specification _____ 9. Classification _____
10. Current I.S. approval available: (Yes/No) Valid upto _____
11. Testing laboratory: Available/Not available
12. Testing facilities: Including Machining
    A) Mechanical
    i) Tensile _____
    ii) Bend _____
    iii) Impact _____
    B) Chemical elements _____
13. Qualified chemists: Available/No available
    If yes Name _____
14. Quality control procedure: Suitable/Unsuitable
    (copy enclosed for ready reference)
15. Qualified quality control personal: Available/No available
16. Raw material supplier _____
17. List of approvals _____
18. List of users _____
19. Remarks _____

To
Manager of Construction

Through RCM/Site In-charge Signature

Copyright EIL – All rights reserved

FORMAT NO. : M-5

FORMAT FOR WELDING PROCEDURE SPECIFICATIONS (WPS) (Section IX, ASME Boiler and Pressure Vessel Code)

(Sheet 1 of 2)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Company Name _____ By _____
Welding Procedure Specification No. _____ Date _____Supporting PQR No.(s) _____
Revision No. _____ Date _____
Welding Process(es) _____ Type(s) _____
(Manual, Semi-Auto orAutomatic)

JOINTS (QW-402) Details :

Joint Design _____
Backing (Yes) _____ (No.) _____
Backing Material (Type) _____
Sketches, Production Drawings, Weld Symbols or Written Description should show the general arrangement of the parts to be welded. Where applicable, the root spacing and the details of weld groove may be specified.
(At the option of the Mfgr., sketches may be attached to illustrate joint design, weld layers and bead sequence, e.g. for notch toughness procedures, for multiple process procedures. etc.

***BASE METALS (QW-403)**

P.No. _____ Group No. _____to P.No. _____Group No. _____
OR
Specification type and grade _____ to
Specification type and grade _____
OR
Chem. Analysis and Mech. Prop. _____
Thickness Range :
Base Metal : Groove _____ Fillet _____
Deposited Weld Metal
Pipe Dia Range : Groove _____ Fillet _____
Other _____

***FILLER METALS (QW-404)**

F.No. _____ Other _____
A.No. _____ Other _____
Spec. No. (SFA) _____
AWS No. (Class) _____
Size of filler metals _____
_____
(Electrode, Cold Wire, Hot wire etc.)
Electrode-Flux (Class) _____
Flux Trade Name _____
Consumable Insert _____

* Each base metal-filler metal combination should be recorded individually.

Copyright EIL – All rights reserved

(Sheet 2 of 2)

POSITIONS (QW-405)
Position(s) of Groove _____
Welding Progression : Up _____ Down _____
Position(s) of Fillet _____

POSTWELD HEAT TREATMENT (QW-407)
Temperature Range _____
Time Range _____

PREHEAT (QW-406)
Preheat Temp. Min. _____
Interpass Temp. Max. _____
Preheat Maintenance _____
(Continuous or special heating where applicable should be recorded)

GAS (QW-408)
Shielding Gas(es) _____
Percent Composition (mixtures) _____
_____
Flow Rate _____
Gas Backing _____
Trailing Shielding Gas Composition _____

ELECTRICAL CHARACTERISTICS (QW-409)
Current AC or DC _____ Polarity _____
Amps (Range) _____ Volts (Range) _____
(Amps and volts range should be recorded for each electrode size, position, and thickness, etc. This information may be listed in a tabular form similar to that shown below.)
Tungsten Electrode Size and Type _____
(Pure Tungsten, 2% Thoriated, etc.)
Mode of Metal Transfer for GMAW _____
(Spray arc, short circuiting arc, etc.)
Electrode wire feed speed range _____

TECHNIQUE (QW-410)
String or Weave Bead _____
Orifice or Gas Cup size _____
Initial and Interpass Cleaning (Brushing, Grinding etc.) _____
_____
Method of Back Gouging _____
Oscillation _____
Contact Tube to Work Distance _____
Multiple or SinglePass (per side) _____
Multiple or Single Electrodes _____
Travel Speed (Range) _____
Peening _____
Other _____
_____
_____

Weld Layer(s)	Process	Filler Metal		Current		Volt Range	Travel Speed Range	Other
		Class	Dia.	Type Polar.	Amp Range			
								e.g. Remarks, Comments Hot Wire Addition Technique Torch Angle Etc.

Copyright EIL – All rights reserved

FORMAT NO. : M-6

SUGGESTED FORMAT FOR PROCEDURE QUALIFICATION RECORD (PQR)
(Section IX, ASME Boiler and Pressure Vessel Code)

(Sheet 1 of 2)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____
Job No. : _____ Work order No. : _____
Company Name _____
Procedure Qualification Record No. _____ Date _____
WPS No. _____
Welding Process(es) _____
Type (Manual, Automatic, Semi-Auto) _____

JOINTS (QW-402)

Groove Design Used

BASE METALS (QW-403)
Materials Spec. _____
Type or Grade _____
P. No._____ to P.No. _____
Thickness _____
Diameter _____
Other _____
_____
_____
_____

POSTWELD HEAT TREATMENT (QW-407)
Temperature _____
Time _____
Other _____
_____
_____

GAS (QW-408)
Type of Gas or Gases _____
Composition of Gas Mixture _____
Other _____
_____

FILLER METALS (QW-404)
Weld Metal Analysis A No._____
Size of Electrode_____
Filler Metal F No. _____
SFA Specification_____
AWS Classification _____
Other _____
_____

ELECTRICAL CHARACTERISTICS (QW-409)
Current _____
Polarity _____
Amps. _____ Volts _____
Other _____
_____

POSITION (QW-405)
Position of Groove _____
Weld Progression (Uphill, Downhill) _____
Other _____
_____

PREHEAT (QW-406)
Preheat Temp. _____
Interpass Temp. _____
Other _____
_____

TECHNIQUE (QW-410)
Travel Speed _____
String or Weave Bead _____
Oscillation _____
Multipass or SinglePass (per side) _____
Single or Multiple Electrodes _____
Other _____
_____
_____
_____
_____

Copyright EIL – All rights reserved

(Sheet 2 of 2)

Tensile Test (QW – 150)

Specimen No.	Width	Thickness	Area	Ultimate Total Load lb.	Ultimate Unit Stress psi	Character of Failure & Location

Guided Bend Tests (QW-160)

Type and Figure No.	Results

Toughness Test (QW-170)

Specimen No.	Notch Location	Notch Type	Test Temp.	Impact Values	Lateral Exp.		Drop Weight	
					% shear	M/s	Break	No. Break

Fillet Weld Test (QW-180)

Results-Satisfactory : Yes_____ No _____ Penetration into Parent Metal : Yes _____ No _____
Type and Character of Flt: Micro _____ Macro-Results _____

Other Tests

Type of Test _____
Deposit Analysis _____
Other _____

.....

Welder's Name _____ Clock No. _____ Stamp No. _____
Tests conducted by: _____ Laboratory Test No _____
We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Manufacturer _____
Date _____ By _____

(Details of record of tests are illustrative only and may be modified to conform to the type and number of test required by the Code.)

Copyright EIL – All rights reserved

FORMAT NO. : M-7

SUGGESTED FORMAT FOR MANUFACTURER'S RECORD OF WELDER OR WELDING OPERATOR QUALIFICATION TESTS
(Section IX, ASME Boiler and Pressure Vessel Code)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____
Welder Name _____ Check No. _____ Stamp No. _____
Welding Process _____ Type _____
In accordance with Welding Procedure Specification (WPS) _____
Backing (QW-402) _____
Material (QW-403) Spec. _____to _____of P No. _____to P No._____
Thickness _____ Dia _____
Filler Metal (QW-404) Spec.No. _____ Class No. _____ F. No. _____
Other _____
Position (QW-405) (1G, 2G, 6G) _____
Gas (QW-408 type) _____ % Composition _____
Electrical Characteristics (QW-409) Current Polarity _____
Weld Progression (QW-410) _____
Other _____

For Information Only

Filler Metal Diameter and Trade Name _____
Submerged Arc Flux Trade Name _____
Gas Metal Arc Welding Shield Gas Trade Name _____

Guided Bend Test Results QW-462.2(a), QW-462.3(a), QW-462.3(b)

Type and Fig No.	Fault

Radiographic Test Results (QW-305)
For alternative qualification of grove welds

Radiographic Results:

Fillet weld test Results (QW-462.4(a), QW-462.4(b))

Fracture Test (Describe the location nature arrange of any check ring of the specimen)

Length and per cent of defects _____ inches _____%
Macro Test-Fusion _____
Appearance-Fillet size: deg _____in. x_____in. Convexity _____ in. or concavity _____in.
_____
Test conducted by _____ Laboratory – Test No. _____
We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Sections IX of the ASME Code

Organization _____
Date :_____ by _____

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code)
Note : Any essential variables in addition to those above shall be recorded.

Copyright EIL – All rights reserved

FORMAT NO. : M-8

WELDER'S IDENTIFICATION CARD

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

NAME :

Identification :

Date of Testing :

Plate/Pipe size :

Welding process :

Filler material Classification :

Position :

Qualified to weld :

Valid until :

WELDING ENGINEER

_____ _____
(NAME &DATE) EMPLOYERS SIGNATURE WITH SEAL

DETAILS OF QUALIFICATIONS :
BACKSIDE OF IDENTITY CARD

Sr. No.	WPS/PQR No.	Date of Test	Qualified On	EIL Signature	Remarks

Copyright EIL – All rights reserved

Page 4666 of 5448 : B957-TENDER DOC-B957-999-69-41-PK-T-9501 : Rev. A

FORMAT NO. : M-9

MATERIAL TRACEABILITY REPORT

Project : _____ Job No. : _____ Report No. : _____

Contract No. : _____ Date : _____

Contractor : _____

S. No.	Line/ Heater No.	Area No.	Dia.	Joint No.	Spool No.	Piping Component	Manufacturer	Material	Heat/ Batch No.	Colour Code	Verified			Remarks
											Sub-Contractor	Contractor	EIL/ Owner*	

* As per approved Inspection & Test Plans (ITPs)

NOTE : A sketch of the spool may be enclosed.

(Sub-Contractor) **(Contractor)** **(EIL)** **(Owner)**

Copyright EIL – All rights reserved

FORMAT NO. : M-10

DAILY FIT-UP INSPECTION REPORT
(FOR ABOVE GROUND PIPING/HEATER)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Sl. No.	Line/Heater No.	Area No.	Dia	Joint No.	Type (*)	Inch Metre	Inspection Clearance	Remarks
	TOTAL INCH DIA.			TOTAL INCH MTR				

TOTAL INCH DIA. =
PREVIOUS =
TILL DATE =
TOTAL IN MTR. =
PREVIOUS =
TILL DATE =

(*)
G - BUTT WELD
S - SOCKET WELD
B - BRANCH WELD
M - MITRE WELD

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-11

DAILY WELDING INSPECTION REPORT
(FOR ABOVE GROUND PIPING/HEATER)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Sl. No.	Heater/Line No.	Area No.	Dia	JointNo.	Type (*)	Welder No.	Inspection Clearance	Remarks
		Total Inch Dia.						

(*)
G = BUTT WELD
S = SOCKET WELD TOTAL IN DIA. =
B = BRANCH WELD PREVIOUS =
M = MITRE WELD TILL DATE =

_____ _____
CONTRACTOR EIL

Copyright EIL – All rights reserved

Page 4669 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-12

HARDNESS TEST RECORD

Report No. : _____
Date : _____

Project : _____
Name of Work : _____
Job No. : _____

Unit : _____
Contractor : _____
Work order No. : _____

Line No./ Equipment No.	Weld Joint No.	Stress Relief Chart No.	Hardness Bar Factor	Diameter After Impression				B.H.N.		Observation	Remarks
				Bar		Job		0^0	180^0		
				0^0	180^0	0^0	180^0				

_____
CONTRACTOR

_____
EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-13

LIQUID PENETRANT EXAMINATION REPORT

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Item Name/No. **Drg. No.**

Part Name	Method of Examination	Colour Contrast Solvent Removal	Application No.	Material

EXAMINATION DETAIL

Surface Temperature & Penetrant Time _____ °C _____ Minute

Penetrant

Remover

Developer

Sketch	Line No.	Joint No.	Type	Size

CONTRACTOR **EIL**

FORMAT NO. : M-14

MAGNETIC PARTICLE EXAMINATION REPORT

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Name of Item Drg. No.

Item No.

Joint No.

1. **Test Condition**

Tester Type : _____ Magnetizing Type : Not Remained

Method : Prod. Remained

Coil	Exami. Medium	Dry	White
		Wet	Brown
			Fluorescent

Magnetizing Current A Standard JIS A type

Magnetizing Time Sec. Surface Condition Surface Temp.

2. **Acceptance Observations**

3. **Sketch**

4. **Result**

Remarks

_____ _____
CONTRACTOR **EIL**

Copyright EIL – All rights reserved

FORMAT NO. : M-15

RADIOGRAPHY OFFERING REPORT
(FOR ABOVE GROUND PIPING/HEATER)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

TO

_____
_____
_____

Please arrange to radiograph the following welds and submit the results with in 24 hours positively.

Sl. No.	Heater/Line No.	Area	Dia	Joint No.	Welder No.	Radio-graphy No.	Accepted Date	Remarks

_____
EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-16

RADIOGRAPHY INTERPRETATION REPORT
(FOR ABOVE GROUND PIPING/HEATER)

Name of Work: _____ Report No. : _____
RadiographyTechnique : SWSI/DWSI/DWDI Date : _____
Source ☐ IR 192, ☐ X RAY, ☐ COBALT CO Project :_____
Film Type &Name : _____ Contractor : _____
IQI : _____
Radiography Procedure No. _____

Sl. No.	Heater/ Line No.	Area No.	Dia	Joint No.	Welder No.	Radio-graphy No.	Segment	Results	Joint Status A/R/H (*)

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

(*) A - ACCEPTED, R - REPAIR, H - HOLD

_____ _____
CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-17

DAILY PAINTING REPORT

Name of Work :										Report No.			
Contractor :										Date			
Drawing No.										Location			
Specification No.										Procedure			
Job Description :													
Daily weather record :													
Time	Relative Humidity		Ambient temperature		Surface temperature		Dew point temperature		Weather condition				
Surface preparation													
a) Method													
	Blasting		Power tool		Hand clean		Solvent		Emery cloth		Other		
b) Blasting details													
	Abrasive		Sand		Grit		Shot		Certificate No.				
c) Surface standard													
	SIS 05 5900 SA-2 ½		Others		Profile Micron		Result : Accepted /Rejected						
Painting material and application method : Painting System - Temp. Range -													

	Material brand	Manufacturer	Certificate No.	Batch No.	Shelf life upto	Shade/ Colour	Application
Primer (Base/Hardener)							
Intermediate-1st coat							
Intermediate-2nd coat							
Finish -1st coat							
Finish -2nd coat							

Painting Inspection Record :

Item	Area/Joint		Coating Layer	Wet Film Thickness			Dry Film Thickness			Holiday Testing	Visual Inspection	Acceptance
	From	To		Measurements 1,2,3…	Avg.	Reqd	Measurements 1,2,3…	Avg.	Reqd.			
			Primer									
			Intermediate-1st coat									
			Intermediate-2nd coat									
			Finish -1st coat									
			Finish -2nd coat									

Identification colour band & direction marker : Accepted/ Not Accepted

NOTE: All blasting and coating materials shall be approved by the Owner. All measuring and testing equipments shall have valid calibration certificate and shall adhere to relevant specifications.

(Contractor) **(EIL)**

Copyright EIL – All rights reserved

Page 4674 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-18

POSITIVE MATERIAL IDENTIFICATION (PMI) REPORT

Report No: _____

Name of work : _____

Contractor : _____ Date of PMI : _____

Project : _____ Inspection Agency : _____

Location : _____ PMI Agency : _____

Job No.: _____ PMI Equipment Model : _____

Line No. /ISO Drg. No : _____ Make & Serial No.: _____
/Heater No./Drawing No

Sr. No.	Part Identification	Material As per drg./spec.	Material as per PMI	Result (Accepted/Rejected/ Retest)

(PMI AGENCY)	(TPI AGENCY)	(CONTRACTOR)	(EIL/OWNER)

Copyright EIL – All rights reserved

FORMAT NO. : M-19

PICKLING ABOVE GROUND PIPING CERTIFICATE

Report No. : _____
Date : _____

Project : _____ Unit/Plant : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

SYSTEM :_____
LOOP/LINE NOS :_____ LOOP SKETCH - ATTACHED
PICKLING DONE DURING : _____ TEST RESULTS – ATTACHED

CERTIFICATE

Certified that the pickling of the above system has been carried out successfully as per specification and the system is preserved with …….. gas at ……. kg/cm^2 pressure

_____ _____ _____
CONTRACTOR EIL CLIENT

Copyright EIL – All rights reserved

FORMAT NO. : M-20

SYSTEM COMPLETION REPORT ABOVE GROUND PIPING

Report No. : _____
Date : _____

Project : _____ Unit/Plant : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

System : _____ Loop Nos. : _____ Ref. P&ID No. : _____	Area : _____ Unit : _____ Test Reports – Enclosed

The above system has been cleaned/flushed/tested as per the requirement of drawings and specifications and cleared for operation.

_____ _____ _____
CONTRACTOR EIL CLIENT

Copyright EIL – All rights reserved

FORMAT NO. : M-21

LINE WISE RECORD
(FOR ABOVE GROUND PIPING/HEATER)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

HEATER/LINE NO. …… % RADIOGRAPHY _____

Sl. No.	Dia.	Joint No. (**)	Type (*)	Area No.	Welder No.	Date of Welding	Radio-graphy		Stress Relieving Chart No.	BHN	DPT/ MPT	Remarks
							No.	Resol. Date				

(*)
G - BUTT WELD
S - SOCKET WELD
B - BRANCH WELD
M - MITRE WELD

(**) Joint No. are to be posted from the daily fit up reports Where ever lsos are not available

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

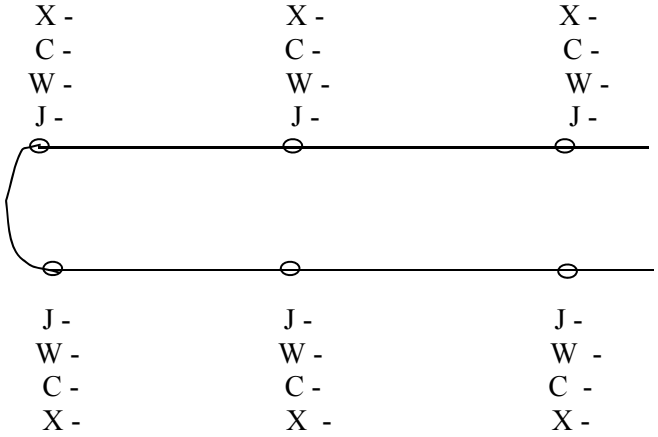
Page 4679 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-22

SHOP HYDRO TEST REPORT FOR COIL (HEATER)

Name of Work : _____
Project : _____
Plant : _____

Report No : _____
Date : _____
Contractor : _____

Sketch	Coil No.
	Test Medium : _____ Test Pressure : _____

Item	Acceptance By	
	Contractor	EIL
Cleared for Hydro/Pneumatic Testing		
Air Blowing and Flushing		
Pneumatic/Hydrostatic Testing		
Dewatering and Drying		
Cleared for Erection		

Legend : J – Joint No, W – Welder No., C – Stress Relief Chart No., X – X-Ray No.

CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-23

MECHANICAL COMPLETION RECORD (HEATER)

Name of work : _____ Report No. : _____
Project : _____ Date : _____
Plant : _____ Area : _____
Contractor : _____ Ref P&ID No. : _____

Loop No. : _____ Inch Mtr. _____
From_____ To _____

Line Nos. : _____

Sl. No.	Activity	Check	Clearance by			
			Contractor		EIL	
			Sign	Date	Sign	Date
1.	Clearance for flushing and testing.					
1.1	Mechanical clearance - Conformity to drawings - Provision of Inst. Tappings - Provision of Vent & Drains - Correctness of gaskets and fasteners - Correctness of type of support anchors, guides, etc. - Correctness of valves - Provision of cold pull - Isolation of equipment, CV, Insts, Bellows, etc.					
1.2	Welding and NDT clearance - Material as per piping class - Fit up checks - Visual check of completed welds - LPT/ MPT checks - Radiography clearance - PWHT& Hardness clearance - Preparatory arrangements for flushing/testing					
2.0	Flushing and testing Medium _____ Pressure _____ KG/CM^2					
3.0	Draining and drying					
4.0	Pickling					
5.0	Box up					

Remarks : ISO/Loop sketches duly filled in data (Jt. No. W. No. XR No. Sr. chart No.) shall be enclosed for item (1)

_____ _____
CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-24

INSPECTION CHECK SHEET –
DAILY INSPECTION RECORD OF INSULATION
(HOT & COLD)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Item No. / Equip. No. / Line No. _____

Surface Preparation : Visual Acc./Not Acc.
Fixing of Support Ring/ Lugs &Spacing : Acc./Not Acc.

Sl. No.	Activity & Item No.	Thickness of Insulation	Visual Inspection	Surface Area Length Insulated			Remarks
				From	To	SA(m^2)	
1.	Lagging of Insulation materials						
2.	Sheeting/Cladding work						
3.	Miscellaneous a) Inspection Window						
	b) Valve boxes						
	c) Flange covers						
	d) Expansion joint						
	e) SS Foil for SS Piping						
	f) Wooden Support						
	g) Vapour Barrier						
	h) Vapour Sealant						
	i) Others						

CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-25

INSPECTION CHECK SHEET –
INSTALLATION ACCEPTANCE CERTIFICATE FOR INSULATION

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

SHEET_____ OF _____

Insulation Items	Result		Remarks
	Contractor	EIL	
Quality control after installation Hot Insulation ☐ (Visual & position of seam to prevent water penetration)			
Cold Insulation ☐ (Visual & Sealing)			

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-26

ERECTION CHECK LIST

Name of work : _____
Project : _____
Plant : _____
Contractor : _____
Loop No: _____
Line Nos.: _____

Report No: _____
Date : _____
Page : _____ of _____
P & ID Ref. No. : _____
Test Pack No: _____

SL. NO.	REMARKS DESCRIPTION OF ERROR FOUND AND ACTION TO BE TAKEN	ACTION TAKEN CONTRACTOR'S SIGN & DATE	RECHECK AND ACCEPTED, DATE

CHECKED BY

REMARKS:

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

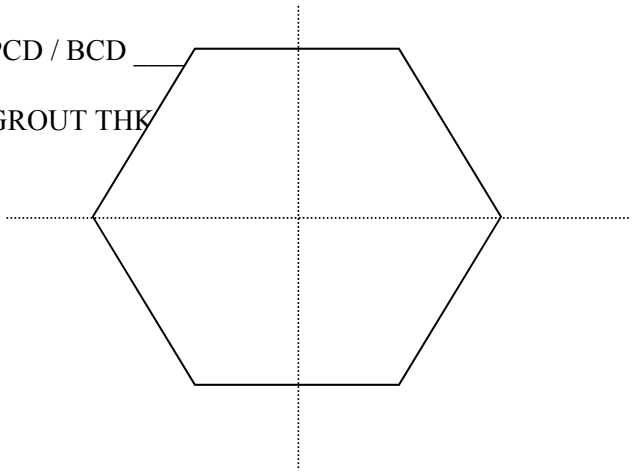
FORMAT NO. : M-27 **(Sheet 1of 2)**

EXECUTION SCHEME

NAME OF WORK :	**EXECUTION SCHEME**	REPORT NO :
PROJECT :		DATE :
PLANT :	**FOR FOUNDATIONS**	DATE OF CHECKING :
CONTRACTOR :		
FDN NO:		DRG NO:

PCD / BCD

GROUT THK



( ) TOP OF BOLT

( ) TOP OF CONCRETE

PITCH CIRCLE DIA (PCD)												
BOLT HT.												

DESCRIPTION	AS PER DRG	ACTUAL	DEVIATION	REMARKS
C/L CO-ORDINATES N				
C/L CO-ORDINATES E				
EL. TOP OF CONCRETE				
NO. OF BOLTS & SIZE				
HEIGHT OF BOLTS				
PCD OF BOLTS				
POCKET CLEARING				
FDN. ROUGHENING				
EL. TOP OF GROUT				

Remarks :

CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-27 **(Sheet 2 of 2)**

EXECUTION SCHEME

Details for pocket (applicable in case of epoxy or special grout)

Sl no	Identification of pocket	Dimension as per drawing	Actual executed dimension	*Volume of grout as per drawing	*Volume of grout as per actual	Variation in volume of grout if nay	Remarks

*** To be filled by grouting execution agency as per actuals**

Copyright EIL – All rights reserved

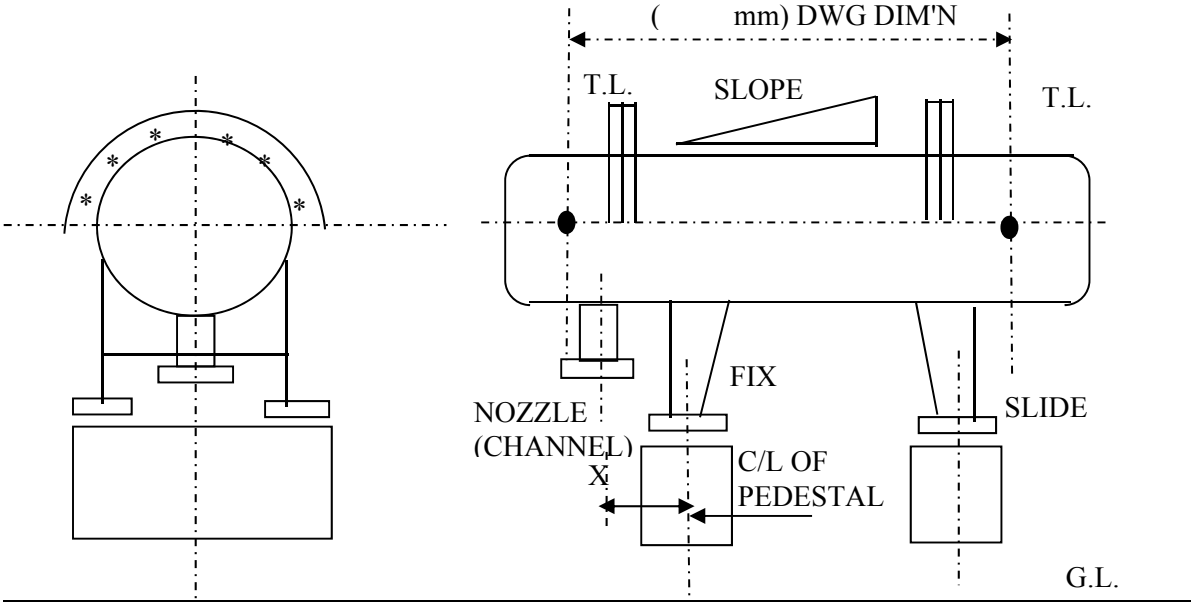
FORMAT NO. : M-28

HEAT EXCHANGERS/HORIZONTAL VESSELS RECORD

Report No. :
Date :

Name of Work : _____ Service : _____
Eqpt. Type & No: _____ Location : _____
Client : _____ Unit/Area : _____
Project : _____ Manufacturer : _____
Contractor : _____
Length/Height : _____ Diameter : _____ Weight : _____
Vender Drg. No: _____

Check Items	Result	Date With Signature	Check Items	Result	Date With Signature
1. Foundations/ Co-ordinates			6. Alignment		
2. Anchor Bolts & Nuts			7. Grouting		
3. Name Plate			8. Sliding Plate Arrangement		
4. Setting of Centre Line			9. Greasing of Bolts/Nuts		
5. Erected on					



NOZZLE NO.	SIZE	DRG. ELV.	ACTUAL ELV	DRG. DIM 'X'	ACTUAL DIM 'X'

NOTES : Deviations on the above dimensions shall be intimated all concerned

REMARKS :

Approvals	Signatures	Designation	Date
Contractor			
EIL			
Client			

Copyright EIL – All rights reserved

FORMAT NO. : M-29

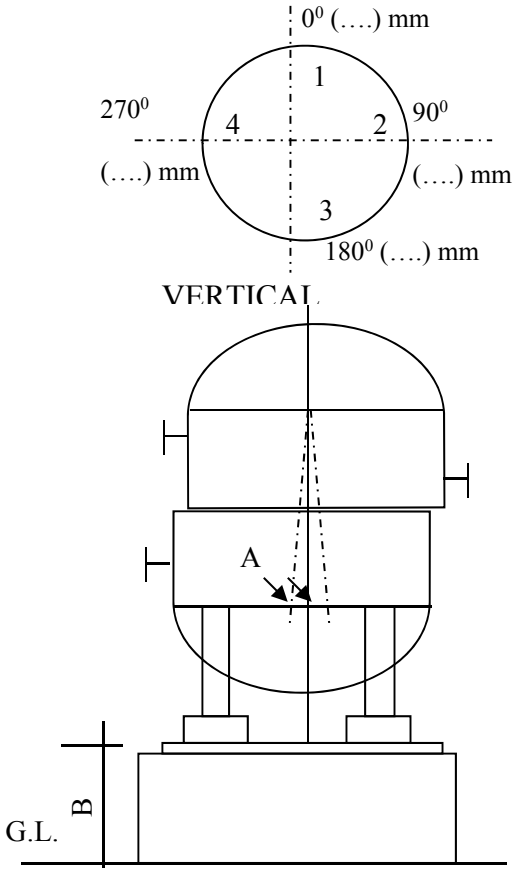
COLUMNS/REACTORS/VESSELS RECORD

Report No. :
Date :

Name of Work : _____ Services : _____
Eqpt. No: _____ Location : _____
Client : _____ Area/Unit : _____
Project : _____ Manufacturers : _____
Contractor : _____
Length/Height : _____ Dia Meter : _____ Weight : _____
Vendor Drg No.: _____

CHECK ITEMS	REMARKS	DATE WITH SIGNATURE	CHECK ITEMS	REMARKS	DATE WIT SIGNATURE
1. FOUNDATION/ CO-ORDINATES			5. VERTICAL ALIGNMENT		
2. ANCHOR BOLTS & NUTS			6. BASE ALIGNMENT		
3. SETTING OF CENTRE LINES WITH TEMPLATE IF REQUIRED.			7. GROUTING		
			8.		
4. ERECTED ON			9.		

NOZZLE NO.	SIZE	DRG. ELV.	ACTUAL ELV.



Approvals	Signatures	Designation	Date
Contractor			
EIL			
Client			

Copyright EIL – All rights reserved

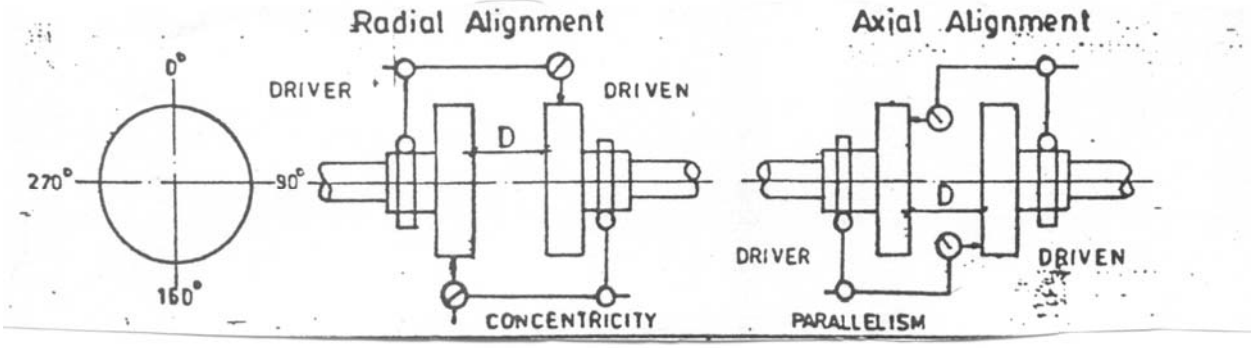
FORMAT NO. : M-30

MACHINERY ALIGNMENT RECORD

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

1) Equipment No. : _____
2) Manufacturer : _____
3) Drive : HP/RPM : _____
4) Weight in M.T. : _____ 7) Type of Coupling : _____
5) Erected on : _____ 8) Distance Between Coupling Halves (D) As/Drg. Actual
6) Aligned & Grouted on : _____Qty_____



Angular Position	Without Piping				With Piping			
	Concentricity		Parallelism		Concentricity		Parallelism	
	A	B	A	B	A	B	A	B
0°								
90°								
180°								
270°								

Tolerances As per Data Sheet/Manual : -
Recoupling of motor and reconfirmation of alignment ☐ Checked

Result :-

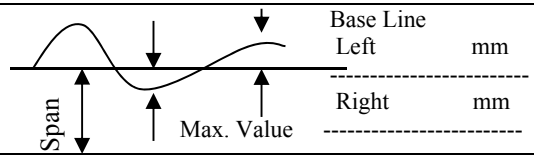
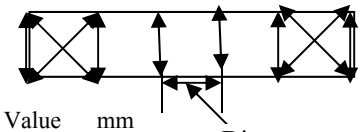
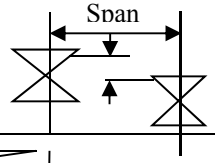
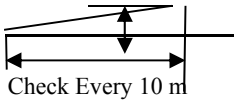
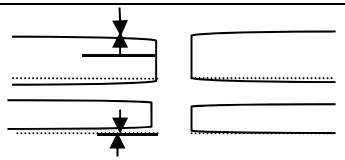
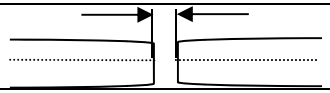
Approvals	Signature	Designation	Date
Contractor			
EIL			
Client			

Copyright EIL – All rights reserved

FORMAT NO.: M-31

PERMISSIBLE TOLERANCE FOR TRAVELLING RAIL

Report No. : _____
Date : _____
Name of work : _____

CHECK ITEM	TOLERANCE AT INSTALLATION	CHECK METHOD		TRUTH DATUM
Straight Degree	For Total Length ≤± 5 mm	 Base Line Left mm ---------- Right mm ----------	By Transit or Piano Wire	
SPAN	≤± 5 mm	CHECK EVERY 5 m  Max. Value mm ---------- Min. value mm Distance	(At two ends of the girders diagonal distance should also be checked) By Steel Tape Scale (JIS Fat Class)	
Elevation difference between rails	For wheel base length ≤ SPAN x 1 ---------- 1000	 Difference Max Value mm ----------	By Transit	
Inclination	≤ 1 ---------- 1000	 Max. value (Railway) Left mm ---------- Right mm ----------	By Transit	
Joint Difference	≤ 0.5 mm		By steel tape scale	
Joint gap	≤ 2 mm		By steel tape scale	

REMARKS : The Span should be measured by steel tape scale stretching with

Crane Span
< 20 mm ---------- 7 kg
≥ 20 mm ---------- 10 kg

(CONTRACTOR) (EIL)

Copyright EIL – All rights reserved

Page 4689 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO.: M-32

TEST AND INSPECTION RECORD – CRANE

Report No. : _____
Date : _____

Project : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

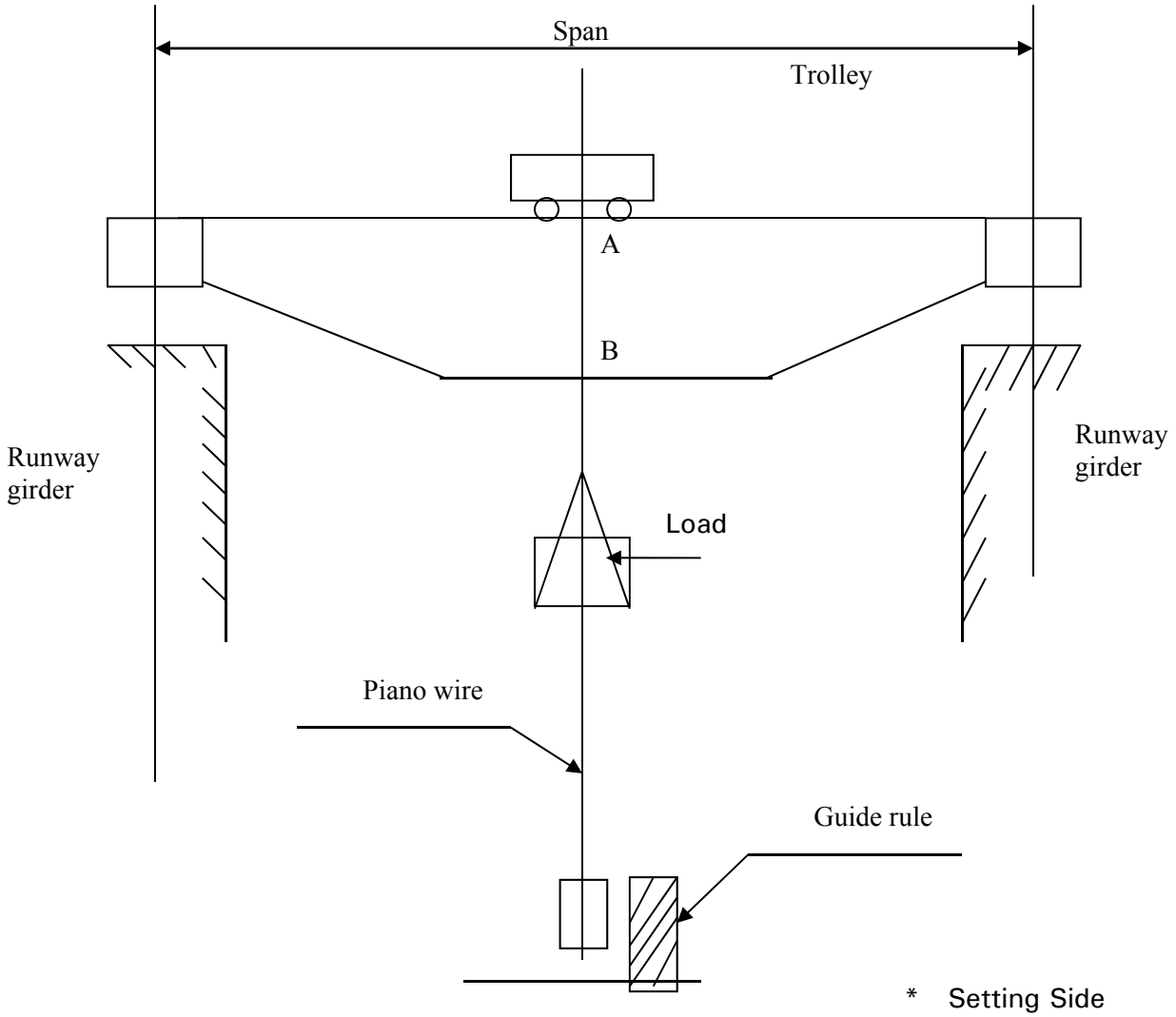
(Sheet 1 of 2)

		No Load		0Ton	Rated Load		Ton	125% Load		Ton
		Speed (m/mm)	Volt (V)	Ampere (A)	Speed (m/mm)	Volt (V)	Ampere (A)	Speed (m/mm)	Volt (V)	Ampere (A)
Hoisting	Upper									
	Lowering									
Traversing	Right									
	Left									
Travelling	Front									
	Back									

Item Name	Hoisting		Traversing	Travelling
	Lowering (m/min.)	Upper (m/min)	(m/min.)	(m/min.)
1. Maintenance Shop Crane				
2. Warehouse Crane				
3. Emergency Generator Crane				
4. Propane Compressor Crane				
5. B.O.G. Compressor Crane				
6. Return Gas Blower Crane				
7. Sea Water Pump Crane				
8. Air Compressor Crane				

Copyright EIL – All rights reserved

(Sheet 2 of 2)



* Setting Side ofwirght

Item Name	Rated Load (Ton)	Allowable Deflection of Girder (m/m) (Drive or Non drive)*	Test Result (m/m)
1. Maintenance Shop Crane			
2. Warehouse Crane			
3. Emergency–Generator Crane			
4. Propane Compressor Crane			
5. B.O.G. Compressor Crane			
6. Return Gas Blower Crane			
7. Sea Water Pump Crane			
8. Air Compressor Crane			

CONTRACTOR

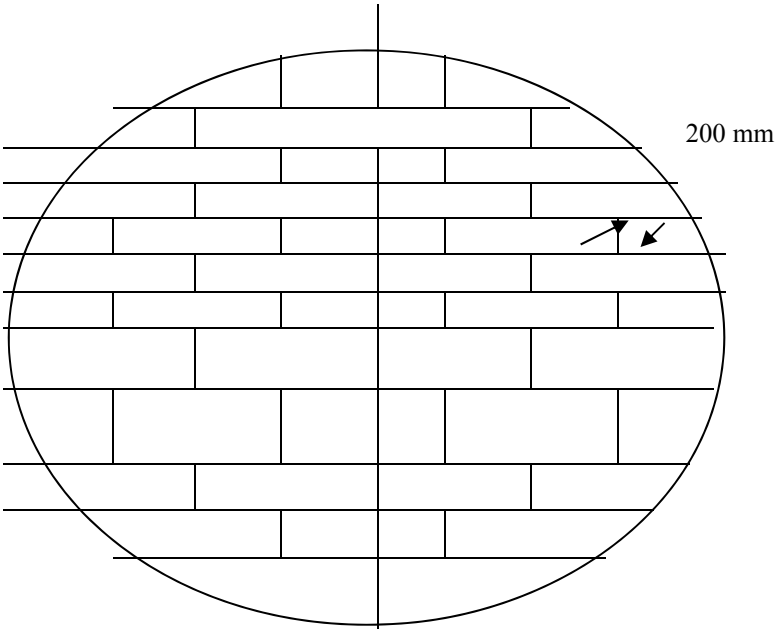
EIL

Copyright EIL – All rights reserved

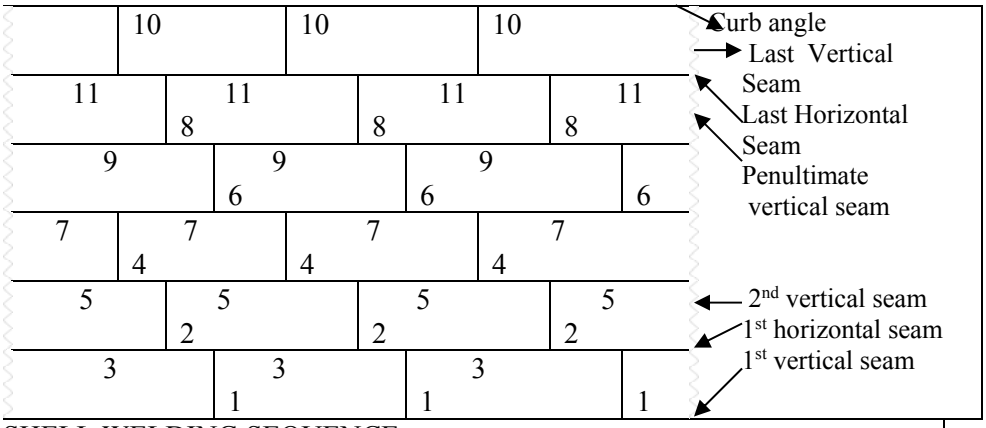
FORMAT NO. : M-33

SEQUENCE OF WELDING FOR BOTTOM PLATES & SHELL OF THE TANKS

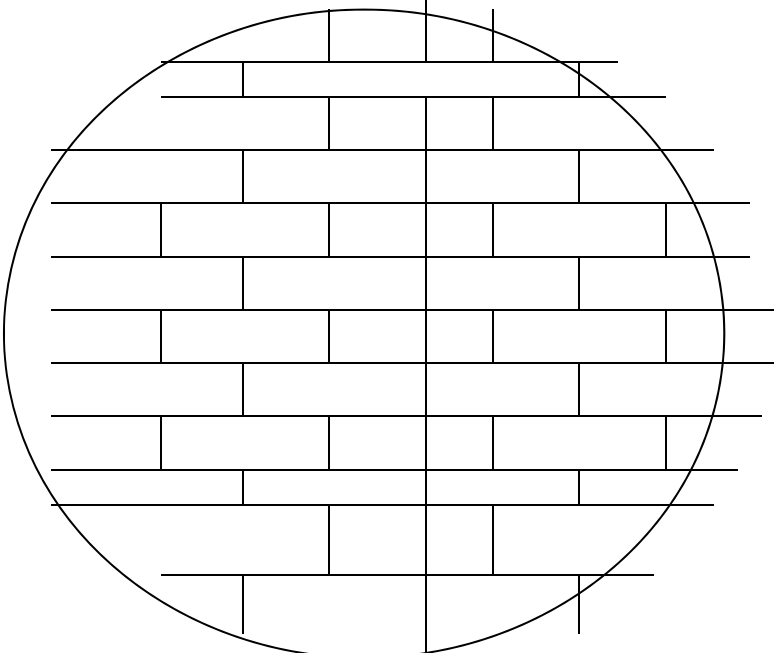
1. All the short seams shall be welded first starting from centre and proceed outwards
2. Then all the long seams shall be welded starting from middle and proceed outwards
3. Joggled Portion when shell erection is to be carried out shall be welded first and then tested before shell erection.



TYPICAL BOTTOM PLATE ARRGT
WITHOUT ANNULAR PLATE



SHELL WELDING SEQUENCE



TYPICAL BOTTOM PLATE ARRGT
WITH ANNULAR PLATE

CONTRACTOR EIL

Copyright EIL – All rights reserved

Page 4693 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-34

TANK BOTTOM/FLOATING ROOF INSPECTION RECORD

Report No. : _____
Date : _____

Project : _____
Name of Work : _____
Job No. : _____

Unit : _____
Contractor : _____
Work order No. : _____

SHORT SEAMS								LONG SEAMS							
Jt. No.	Fit Up		Welding				Remarks	Jt. No.	Fit Up		Welding				Remarks
	Cont.	EIL	Visual		Vacuum				Cont.	EIL	Visual		Vacuum		
			Cont.	EIL	Cont.	EIL					Cont.	EIL	Cont.	EIL	

_____ CONTRACTOR

_____ EIL

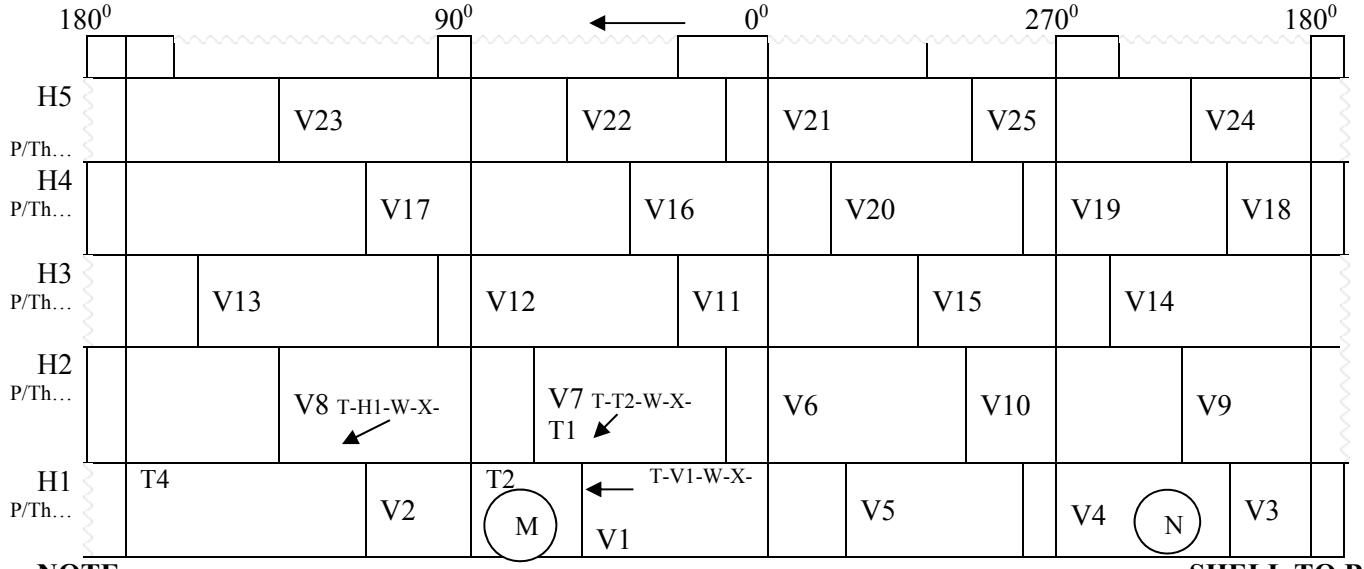
Copyright EIL – All rights reserved

Page 4694 of 5448 : B957-TENDER DOC-B957-999-69-41-PK-T-9501 : Rev. A

FORMAT NO. : M-35

TANK SHELL DEVELOPMENT DRAWING WITH RADIOGRAPHIC SPOT LOCATION (AS BUILT)

Report No. _____
Date : _____
Name of work : ____



EIL Job No :
Tank No. :
Ref. Drg. No. :
Fab. Code :
Capacity :
Tank Height :
Tank Dia :

NOTE :-

T	-	Stands for tank number
V	-	Stands for vertical seam
X	-	Stands for X-ray number
W	-	Stands for welder's number
H	-	Stands for Horizontal seam
<T-T<	-	Stands for in between Tee joints
M	-	Stands for manhole
N	-	Stands for nozzle

SHELL TO BOTTOM PLATE TEST

	Contractor	EIL
1) Fit Up	_____	____
2) Welding (Inside)		
a) Visual	_____	____
b) Oil chalk	_____	____
3) Welding (Outside)		
a) Visual	_____	____
b) D.P.	_____	____
4) Curb Angle/Wind Girders (as per details given in Const./QA/RF/ST/5A)	_____	____
5) Openings (as per details given in Const./QA/RF/ST/5A)	_____	____

Copyright EIL – All rights reserved

FORMAT NO. : M-36

INSPECTION RECORD FOR TANK FABRICATION (VERTICAL JOINTS)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Course No.	Vertical Joint No.	Heat No. (P1,P2)	Fit-up Check		Welder No.	First Side Welding Check		Back Chip Check		Second Side Welding Check		Remarks
			Cont.	EIL		Cont.	EIL	Cont.	EIL	Cont.	EIL	
1	V 1											
	V 2											
	V 3											
	V 4											
	V 5											
	V 6											
2	V 7											
	V 8											
	V 9											
	V 10											
	V 11											
	V 12											
3	V 13											
	V 14											
	V 15											
	V 16											
	V 17											
	V 18											

V - Vertical Joint

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

Page 4696 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-37

INSPECTION RECORD FOR TANK FABRICATION (HORIZONTAL JOINTS)

Report No. : _____
Date : _____

Project : _____
Name of Work : _____
Job No. : _____

Unit : _____
Contractor : _____
Work order No. : _____

Joint NO.	Fit-up Check		First Side Welding						Back Chip Check		Second Side Welding Check		Remarks
			Welder Detail				Check						
	Cont.	EIL	0 – 90	90 – 180	180 – 270	270 - 0	Cont.	EIL	Cont.	EIL	Cont.	EIL	
H 1													
H 2													
H 3													
H 4													
H 5													
H 6													
H 7													
H 8													

H - Horizontal Joint

(CONTRACTOR) (EIL)

Copyright EIL – All rights reserved

FORMAT NO. : M-38

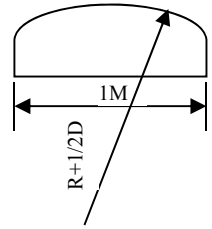
INSPECTION RECORD FOR CHECKING ROUNDNESS OF TANK

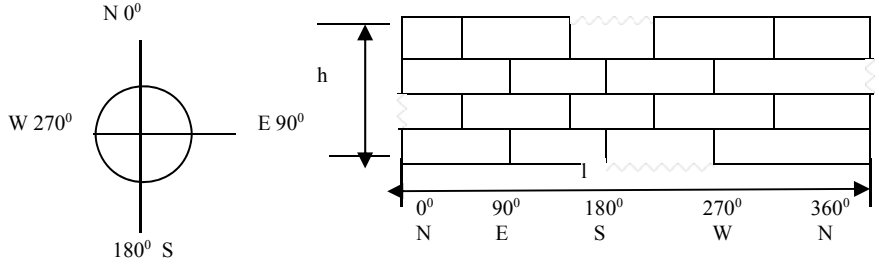
Report No : _____
Date : _____
Name of work : _____

Tank No. : _____
Dia : _____
Height : _____
No of courses : _____

CONTRACT CLAUSE

A template one metre long shall be used representing the area of a circle with theoretical dia. of the tank. When the centre of this template is applied at right angle to a vertical joint, max. gap shall not be more than ……





Course No.	No. of Weld Joints	N-E 0⁰-90⁰								No. of Weld Joints	E-S 90⁰-180⁰								No. of Weld Joints	S-W 180⁰-270⁰								No. of Weld Joints	W-N 270⁰-360⁰								REMARKS
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1																																			
2																																			
3																																			
4																																			
5																																			
6																																			
7																																			

NOTE : Readings should be taken as shown in the sketch indicating the maximum deviation in each shell plate.

(CONTRACTOR) (EIL)

Copyright EIL – All rights reserved

Page 4697 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO.: **M-39**

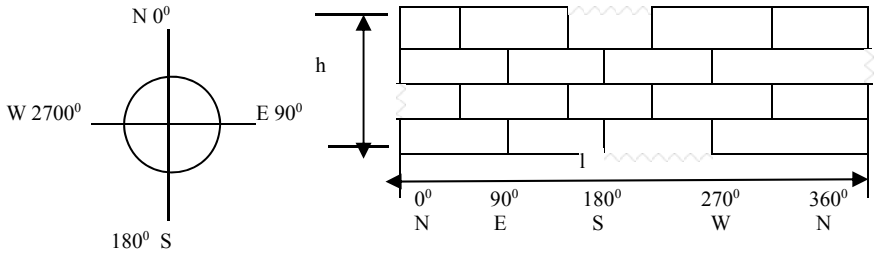
INSPECTION RECORD FOR CHECKING PERPENDICULARITY OF TANK

Report No. : _____
Date : _____
Name of work: _____

Tank No. : _____
Dia : _____
Height : _____
No of courses : _____
Contractor : _____

CONTRACT CLAUSE

Difference in perpendicularity between top & bottom shall not be more than ……. mm per metre of height. When one metre straight edgeor template is applied at rightangles to a horizontal joint, maximum gap shall not be more than …..



Course No.	N-E 0⁰-90⁰								E-S 90⁰-180⁰								S-W 180⁰-270⁰								W-N 270⁰-360⁰								REMARKS
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
1																																	
2																																	
3																																	
4																																	
5																																	
6																																	
7																																	
8																																	

NOTE : The straight edge shall be moved on the horizontal weld joint and any variation in respect to the specified tolerance shall be highlighted. Minimum three readings shall be taken for each full length plate

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

Page 4698 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-40

OPENINGS / ATTACHMENTS INSPECTION RECORD

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Sl. No.	Openings (Nozzles), Attachments - Curb Angle - Wind Girders - RF Pads	Fit-Up		Welding		PWHT		D.P. Test		Remarks
		Contra-ctor	EIL	Contra-ctor	EIL	Contra-ctor	EIL	Contra-ctor	EIL	

CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-41

RADIOGRAPHY OFFERING REPORT
(FOR TANK WELDS)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

To

_____
_____
_____

Please arrange to radiograph the following welds and submit the results within 24 hrs. positively.

Sl. No.	Radiography Spot Identification	Welder No.	Radiography No.	Acceptance Date	Remarks

_____ _____
CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-42

RADIOGRAPHY INTERPRETATION REPORT (FOR TANK WELDS)

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

SOURCE ☐ IR 192, ☐ X RAY, ☐ COBALT CO DATE : _____
FILM TYPE &MAKE : _____
IQI : _____

Sl. No.	Radiography Spot Identification	Welder No.	Radiography No.	Segment	Results	Remarks

_____ _____
CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-43

FIXED ROOF TANK INSPECTION RECORD

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

SHORT SEAMS						LONG SEAMS					
Jt. No.	Fit-up		Welding		Remarks	Jt. No.	Fit-up		Welding		Remarks
	Cont.	EIL	Cont.	EIL			Cont.	EIL	Cont.	EIL	

CONTRACTOR EIL

Copyright EIL – All rights reserved

Page 4703 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-44

BUOY/PANTOON INSPECTION RECORD

Report No. : _____
Date : _____

Project : _____
Name of Work : _____
Job No. : _____

Unit : _____
Contractor : _____
Work order No. : _____

SHELL TO BOTTOM/SLEEVE (BUOY/PANTOON)									OTHER ATTACHMENTS								
Jt. No.	Fit Up		Welding						Jt. No.	Fit Up		Welding				Remarks
	Cont.	EIL	Visual		Oil Chalk		Air Test			Cont.	EIL	Visual		D.P. Test		
			Cont.	EIL	Cont.	EIL	Cont.	EIL				Cont.	EIL	Cont.	EIL	

CONTRACTOR

EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-45

CERTIFICATE OF PRESSURE TESTS FOR TANKS

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

Write N.A. when not applicable

TYPE OF TEST	SIGNATURE OF CONTRACTOR WITH DATE	SIGNATURE OF EIL WITH DATE
Hammer Test Water Height _____		
Fixed Roof Test Air Pressure _____		
Vacuum Test Vacuum _____		
Floating Roof Test As Per _____		
Additional Test if Any		

This is to certify that the subject tank was tested at the above pressures in the presence and to the satisfaction of EIL/Client

_____ _____
CONTRACTOR EIL

Copyright EIL – All rights reserved

FORMAT NO. : **M-46**

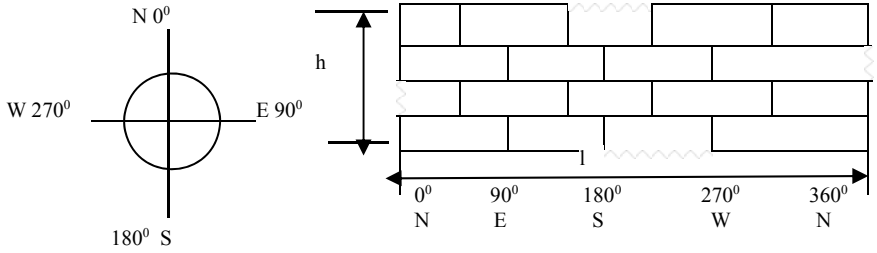
FLOATING ROOF TANK TOLERANCE RECORD(PONTOON CLEARANCE)

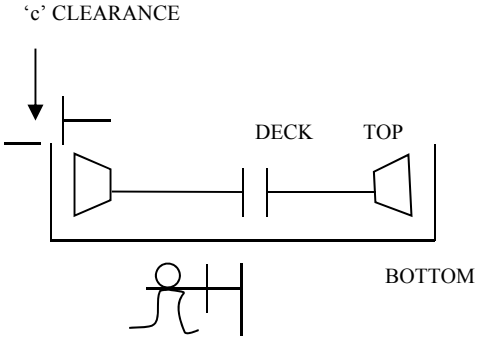
Report No : _____
Date : _____
Name of work : _____

Tank No. : _____
Dia : _____
Height : _____
No of courses : _____
Dia of pontoon : _____

CONTRACT CLAUSE

C = A tolerance of 40 mm will be allowed on the clearance originally provided for the tank shells





Course No.		N-E 0⁰-90⁰								E-S 90⁰-180⁰								S-W 180⁰-270⁰								W-N 270⁰-360⁰								REMARKS
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
	Top																																	
1	Center																																	
	Bottom																																	
	Top																																	
2	Center																																	
	Bottom																																	
	Top																																	
3	Center																																	
	Bottom																																	
	Top																																	
4	Center																																	
	Bottom																																	
	Top																																	
5	Center																																	
	Bottom																																	
	Top																																	
6	Center																																	
	Bottom																																	
	Top																																	
7	Center																																	
	Bottom																																	
	Top																																	
8	Center																																	
	Bottom																																	

NOTE : The gauge plate shall be run through the interior periphery of the tank in order to check the required tolerances. However reading shall be recorded at eight points on each quadrant of the shell and besides this any variation in respect of the specified tolerances shall be highlighted.

(CONTRACTOR) (EIL)

Copyright EIL – All rights reserved

Page 4705 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

Page 4706 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

FORMAT NO. : M-47

TANK SETTLEMENT RECORD

TANK NO. _____

Report No. : _____
Date : _____

Project : _____
Name of Work : _____
Job No. : _____

Unit : _____
Contractor : _____
Work order No. : _____

Date of Observation	Time of Observation	Height of Water During Observation	Location of Observation (*)										Remarks
			1	2	3	4	5	6	7	8	9	10	

(*) No. of Locations area to be decided on the basis of Diameter of the Tank and Specifications/Codes

_____ CONTRACTOR

_____ EIL

Copyright EIL – All rights reserved

FORMAT NO. : M-48

MANUFACTURER'S CERTIFICATION FOR TANK BUILT TO API STANDARD 650

Report No. : _____
Date : _____

Project : _____ Unit : _____
Name of Work : _____ Contractor : _____
Job No. : _____ Work order No. : _____

To _____
(Name & address of purchaser)

_____

We hereby certify that the tank constructed for you at

_____
(Location)

and described as follows: _____
(Serial or contract number, size (diameter x height), capacity,

_____
description of tank, i.e., floating roof or fixed roof)

meets all applicable requirements of API Standard 650 _____

Edition, _____ Revision and Appendix _____

dated _____ including the design, materials, fabrication, and erection.

The tank is further described on the attached as built data sheet dated _____

_____
Manufacturer

_____
Authority Representative

_____
Date

(Sheet 1 of 6)

FORMAT NO. : M-49

INSTALLATION REPORTING FORMAT FOR COLUMN INTERNALS (BEFORE INSTALLATION)

Report No. : _____
Date : _____

Contractor:	Name of Work:
COLUMN NO.:	VENDOR DWG. NO.:
SERVICE:	JOB NO.:
PLANT:	CLIENT:

DISTANCE BETWEEN TRAY SUPPORT RING (BETWEEN CONSECUTIVE TRAYS)

TRAY NO.:								
DWG. DIMENSION:								
AS BUILT DIMENSION AT POINT	A							
	B							
	C							
	D							
	E							
	F							
DIMENSION TO BE TAKEN FROM TOP TO TOP OF TSR WITH POINTS MARKED ON THE SAME ORIENTATION FOR ALL TRAYS MINIMUM AT FOUR POINTS UPTO 2000 Φ & MINIMUM SIX POINTS ABOVE 2000 Φ								
2. LOCATION OF BOLTING BAR								
TRAY NO.								
G1	ACTUAL							
	DIMENSION							
G2	ACTUAL							
	DIMENSION							
G3	ACTUAL							
	DIMENSION							
G4	ACTUAL							
	DIMENSION							
G5	ACTUAL							
	DIMENSION							
G6	ACTUAL							
	DIMENSION							
G7	ACTUAL							
	DIMENSION							
G8	ACTUAL							
	DIMENSION							

INSTALLATION CONTRACTOR..... (SIGNATURE) NAME: DATE:	ENGINEER IN-CHARGE..... (SIGNATURE) NAME: DATE:

Notes:

(1) This format shall be filled for all the Trays by installation Contractor and counter checked by Engineer In-Charge.

(2) Tolerance on various drawing dimensions shall be as per applicable drawing / standard.

Copyright EIL – All rights reserved

FORMAT NO. : M-49

INSTALLATION REPORTING FORMAT FOR COLUMN INTERNALS (BEFORE INSTALLATION)

(Sheet 2 of 6)

PLANT:	CLIENT:

DISTANCE BETWEEN TRAY SUPPORT RING (BETWEEN CONSECUTIVE TRAYS)

3. LEVEL READING:							
LEVEL AT	TSR REF. (TRAY / INTERNAL)						
REF. POINT							
A							
B							
C							
D							
E							
F							
G							
H							
I							
J							
K							
L							
M							
N							
LEVEL AT A, B, C ,D.... TAKEN WITH WATER TUBE WITH "A" AS REFERENCE POINT MINIMUM AT FOUR POINTS UPTO 2000 Φ & MINIMUM SIX POINTS ABOVE 2000 Φ. MINIMUM 3 POINTS PER TSR SEGMENTS SHALL BE SELECTED							

INSTALLATION CONTRACTOR..... (SIGNATURE) NAME: DATE:	ENGINEER IN-CHARGE..... (SIGNATURE) NAME: DATE:

Notes:

(1) This format shall be filled for all the Trays by installation Contractor and counter checked by Engineer In-Charge.

(2) Tolerance on various drawing dimensions shall be as per applicable drawing / standard.

Copyright EIL – All rights reserved

FORMAT NO. : M-49

INSTALLATION REPORTING FORMAT FOR COLUMN INTERNALS (AFTER INSTALLATION)

(Sheet 3 of 6)

Contractor:	Name of Work:
COLUMN NO.:	VENDOR DWG. NO.:
SERVICE:	JOB NO.:
PLANT:	CLIENT:

TRAY NO.:								
A	DWG.	A1, A3, A4, A5, A7, A8						
	DIMENSION:	A2, A6						
HEIGHT OF EXIT WEIR (FROM TOP OF TRAY DECK TO TOP OF WEIR) (mm)			A1					
			A2					
			A3					
			A4					
			A5					
			A6					
			A7					
			A8					
B	DWG.	B1, B3, B4, B5, B7, B8						
	DIMENSION:	B2, B6						
UNDER DOWNFLOW CLEARANCE (DISTANCE BETWEEN DOWNCOMER BOTTOM & TRAY DECK / RECESSED SEAL PAN PLATE) (mm)			B1					
			B2					
			B3					
			B4					
			B5					
			B6					
			B7					
			B8					
C	DWG.	C1, C3, C4, C5, C7, C8						
	DIMENSION:	C2, C6						
HORIZONTAL DISTANCE BETWEEN DOWNCOMER PLATE & RECESSED SEAL PAN (mm)			C1					
			C2					
			C3					
			C4					
			C5					
			C6					
			C7					
			C8					

INSTALLATION CONTRACTOR..... (SIGNATURE) NAME: DATE:	ENGINEER IN-CHARGE..... (SIGNATURE) NAME: DATE:

Notes:

(1) This format shall be filled for all the Trays by installation Contractor and counter checked by Engineer In-Charge.

(2) Tolerance on various drawing dimensions shall be as per applicable drawing / standard.

Copyright EIL – All rights reserved

FORMAT NO. : M-49

INSTALLATION REPORTING FORMAT FOR COLUMN INTERNALS (AFTER INSTALLATION)

(Sheet 4 of 6)

Contractor:	Name of Work:
COLUMN NO.:	VENDOR DWG. NO.:
SERVICE:	JOB NO.:
PLANT:	CLIENT:

TRAY NO.:								
D	DWG. DIMENSION:	D1, D3, D4, D5,D7, D8						
		D2, D6						
UNDER DOWNFLOW CLEARANCE (DISTANCE BETWEEN DOWNCOMER PLATE & SEAL PAN) (mm)			D1					
			D2					
			D3					
			D4					
			D5					
			D6					
			D7					
			D8					
E	DWG. DIMENSION:	E1, E3, E4, E5, E7, E8						
		E2, E6						
CLEAR DISTANCE BETWEEN DOWNCOMER PLATE & SEAL PAN (mm)			E1					
			E2					
			E3					
			E4					
			B5					
			E6					
			E7					
			E8					

INSTALLATION CONTRACTOR..... (SIGNATURE) NAME: DATE:	ENGINEER IN-CHARGE..... (SIGNATURE) NAME: DATE:

Notes:

(1) This format shall be filled for all the Trays by installation Contractor and counter checked by Engineer In-Charge.

(2) Tolerance on various drawing dimensions shall be as per applicable drawing / standard.

Copyright EIL – All rights reserved

FORMAT NO. : M-49

INSTALLATION REPORTING FORMAT FOR COLUMN INTERNALS (AFTER INSTALLATION)

(Sheet 5 of 6)

Contractor:	Name of Work:
COLUMN NO.:	VENDOR DWG. NO.:
SERVICE:	JOB NO.:
PLANT:	CLIENT:

CHECK THE FOLLOWING	TRAY No.					
CHECK EACH BOLT FOR TIGHTNESS						
CHECK ORIENTATION, PROPER MARK (TYPE) AND TIGHTNESS OF EACH CLAMP						
CHECK PROVISION OF LOCK NUTS AND SEAL PLATES WHEREVER SPECIFIED						
CHECK EACH TOP DOWNCOMER PIECE FOR CORRECT INSTALLATION OF SHIMMING INCLUDING TACK WELDING / BOLTING						
CHECK SEAL WELDING / GASKETING WHEREVER APPLICABLE						
CHECK LEAK TESTING OF SEAL PANS RECESSED SEAL PAN, CHIMNEY TRAYS, DISTRIBUTOR, DRAW-OFF BOXES ETC. AS PER DRAWING						
CHECK OVERLAPPING OF DECKS						
CHECK FOR DAMAGED, MISSING VALVES AND VALVE MOVEMENT FOR ALL VALVES FOR VALVE TRAYS						
CHECK FOR FITTING OF PROPER VALVE COMBINATION (MR2, MR6, ETC.)						
CHECK FOR NOTICEABLE DAMAGE TO DECK COMPONENTS						
CHECK LEVELNESS AND ALIGNMENT OF INLET WEIR AND EXIT WEIR AND ADJUST IF NECESSARY						
CHECK BEAM AND CLIPS ARE PROPERLY FITTED						
CHECK THAT TRAY MANWAY CAN BE OPENED FROM TOP AS WELL AS FROM BOTTOM						
CHECK THAT ALL SLOTS ON TRY COMPONENTS ARE FULLY COVERED						
CHECK THAT GAPS AT DOWNCOMER ENDS AND OTHER PLACES ARE WITHIN SPECIFIED LIMITS						
CHECK ORIENTATION IN CASE OF RIPPLE WAYS						
FOR LATTICE GIRDERS, CHECK THE LEVELNESS OF PRIMARY MEMBERS AND COMPLETENESS OF WELDING OF ALL THE BRACINGS AND SECONDARY MEMBERS						
CHECK TEMPORARY PLUGS WHEREVER PROVIDED FOR TESTING HAVE BEEN REMOVED						
CHECK THAT TRAYS HAVE BEEN CLEARED OFF ALL FOREIGN MATERIALS						
INSTALLATION CONTRACTOR ..... (SIGNATURE) NAME: DATE:	ENGINEER INCHARGE …… (SIGNATURE) NAME: DATE:					

Notes:

(1) This format shall be filled for all the Trays by installation Contractor and counter checked by Engineer In-Charge.

(2) Tolerance on various drawing dimensions shall be as per applicable drawing / standard.

Copyright EIL – All rights reserved

FORMAT NO. : M-49

INSTALLATION REPORTING FORMAT FOR COLUMN INTERNALS (AFTER INSTALLATION)

(Sheet 6 of 6)

Contractor:	Name of Work:
COLUMN NO.:	VENDOR DWG. NO.:
SERVICE:	JOB NO.:
PLANT:	CLIENT:

CHECK THE FOLLOWING	BED NO:					
CHECK THAT MULTIBEAM SUPPORT PLATE SITS PROPERLY ON THE TSR WITH NO UNDESIRED GAPS, ALL SPACING AND GAPS ARE EVENLY DISTRIBUTED ACROSS THE VESSEL DIAMETER						
CHECK FOR PROPER LEVELLING OF TOP BED AND GAP BETWEEN TOP OF BED AND BED LIMITER (NO GAPS PREFERRED, MAXIMUM GAP AT FEW LOCATIONS NOT O EXCEED ONE PACKING SIZE)						
CHECK LEVELNESS FOR DISTRIBUTOR / REDISTRIBUTORS / FLASH GALLERIES / SPRAY HEADER. SAME TO BE WITHIN TOLERANCE SPECIFIED IN DRAWINGS / STANDARDS AND TO BE RECORDED IN SHEET ONE.						
CHECK LEVELNESS FOR DISTRIBUTOR / REDISTRIBUTORS / FLASH GALLERIES / SPRAY HEADERS ARE PROPERLY CLAMPED / BOLTED						
CHECK LEVELNESS FOR DISTRIBUTOR / REDISTRIBUTORS / FLASH GALLERIES (IF REQUIRED) ARE PROPERLY GASKETTED AS SPECIFIED IN DRAWINGS						
CHECK LEAK TIGHTNESS OF THE DISTRIBUTOR / REDISTRIBUTOR / FLASH GALLERIES (IF REQUIRED), TO BE ENSURED BY FILLING WATER AND CHECKING LEAKAGES FROM GASKETTED JOINTS						
FOR CHIMNEY COLLECTOR TRAY, DRAW OFF BOXES, WHEREVER APPLICABLE CHECK COMPLETENESS OF SEAL WELDING, GASKETTING, PROPER FITMENT OF VAPOUR RISER COVERS AND REVIEW RECORD FOR LEAK TESTING.						
FOR SPRAY NOZZLE DISTRIBUTOR CHECK FOR: i) HYDROTEST FOR SPRAY HEADER ii) CLOGGING OF SPRAY NOZZLES, BY RUNNING PUMP, IF FEASIBLE iii) CHECK TIP DISTANCE FROM TOP OF THE BED (TO BE WITHIN 25 mm) iv) CHECK GASKET AT FLANGE JOINT, THREAD SEALANT AT THREADED JOINTS v) ANY OBSTRUCTION IN THE UNIFORM SPRAY PATTERN						
REVIEW OF PROPER ORIENTATION OF VARIOUS TOWER INTERNALS LIKE BED LIMITER WRT DISTRIBUTOR / REDISTRIBUTORS, AS PER DETAIL SHOWN IN RESPECTIVE DRAWINGS						
CHECK TEMPORARY PLUGS WHERE EVER PROVIDED HAVE BEEN REMOVED AFTER TESTING.						
INSTALLATION CONTRACTOR ..... (SIGNATURE) NAME: DATE:	ENGINEER IN-CHARGE..... (SIGNATURE) NAME: DATE:					

Notes:

(1) This format shall be filled for all the Trays by installation Contractor and counter checked by Engineer In-Charge.

(2) Tolerance on various drawing dimensions shall be as per applicable drawing / standard.

Copyright EIL – All rights reserved

FORMAT NO. : M-50

INSTALLATION REVIEW CHECK LIST

Report No. : _____
Date : _____

(Sheet 1 of 2)

TRAY INSTALLATION REVIEW CHECKLIST

Sl.	Description	Remarks
1.	Review of filled formats for tray levelness and other tray installation data Formats to be completed by Contractor and duly certified for 100% checking by sites. If any dimension is out of permissible tolerances, specialist to review and suggest remedial action, in consultation with HO (if required)	
2	Provide clarification to site on any matter w.r.t. installation of trays and tower internals.	
3	Random check minimum 25% of trays (subject to minimum two trays per set) (Trays selected shall be true representative)	
	• EWII& Adjustability (permissible deviation =1 mm) • UDFC (permissible deviation = 3, D/C bottom piece to rest on D/C bracket. • Gap at deck joints (max. gap – 3 mm at deck joint, 5 mm at EW location) • Overlapping of tray decks (no overlapping allowed) • Valve movement, missing & damaged valves (check approx. 5% of valves) • For bubble cap trays, check skirt height & locknuts on caps (check approx 5% caps) • Check plugging of holes in case of sieve trays • Noticeable damage in internal components, wooden hammers to be used in case flattening is required • Chord heights (acceptable limit= (Col. ID/200 I 4) • Check inlet weir/outlet weir scale plate at respective location • Check for proper fitting of gaskets for gasketed deck components. • Also check whether same has been leak tested or not. Also check that drain holes are open unless specified otherwise in the drawings. • Light and heavy valves combination adopted at right place • Check provision of lock nuts wherever specified • For ripple trays, check relative orientation of trays • For cartridge trays, check the top tray of each bundle orientation and removal of lifting box. • Check the provision of anti jump baffle wherever specified • Check for seal plates on recessed seal pans • Check temporary plugs wherever provided has been removed after testing	
4	For chimney/collector tray, draw-off boxes, wherever applicable, check completeness of seal welding, gasketting, proper fitment of vapour riser covers and review record for leak testing	
5	Check arrangement for proper feeding and liquid withdrawal Reflux of top tray • Reflux at top tray • Transition arrangement from one tray to other • Intermediate feed including direction/angle of vapour and liquid slots. • Feed from bottom most seal pan to partitioned column bottom • Vapour/reboiler return,if flush, should be parallel to down comer of bottom most tray. • Location/orientation of withdrawal nozzle. Also check provision of vortex breaker. • Drain & vents holes wherever provided in the feed system shall be clear and open	
6	List out all discrepancies in a punch list for individual column	

Signature:
Date: Name:

Copyright EIL – All rights reserved

FORMAT NO. : M-50

INSTALLATION REVIEW CHECK LIST

(Sheet 2 of 2)

Report No. : _____
Date : _____

TOWER INTERNAL INSTALLATION REVIEW CHECKLIST

Sl.	Description	Remarks
1.	Review site record for levelness for distribution/redistributors/flash galleries/spray header. Same to be within tolerance specified in the drawing/ standards	
2	Check that the distributor/redistributors/flash galleries/spray headers are properly clamped/bolted.	
3	Check that the distributor/redistributors/flash galleries (if required) are properly gasketted as specified in the drawing.	
4	Review site record of leak tightness of the distributors/redistributors/flash gallery (if required), to be ensured by filling water and checking leakages from gasketted joints.	
5	For chimney/collector tray wherever applicable, check, if possible, completeness of seal welding, gasketting, proper fitment of vapour riser covers and review record for leak testing.	
6	For spray nozzle distributor check for i) Hydrotest record for spray header ii) Clogging of spray nozzles, by running pump, if feasible ii) Sample check tip distance from top of the bed (to be within ± 25 mm). iii) Check proper gasket fitment at flange joint, thread sealant at threaded joints. Any obstruction in uniform spray pattern	
7.	Review of proper orientation of various lower internals like bed limiter w.r.t. Distributor/redistributors, as per detail shown in respective drawings is mandatory.	

Signature:
Date: Name:

Copyright EIL – All rights reserved

FORMAT NO: M-51
(Sheet 1 of 4)

CHECKLIST FOR MECHANICAL CLEARANCE – A/G PIPING

Project : _____	Report No : _____
Plant/Unit : _____	Date : _____
Contractor : _____	Area : _____
Loop No : _____	INCH MTR : _____

Line No (Isometric No.)	Rev.	GAD No.	Rev.	P&ID No.	Rev.

	Items to be checked		**Compliance Status**	**Accepted by**	
			OK/NA/PL (Note-1)	**Contractor**	**EIL**
1.	**Installation checked as per Isometric w.r.t.** CONFIGURATION : Route, plumb, elevation, Clearance for thermal expansion/ insulation BRANCH : Location, angle, orientation, type, RF pad, etc. STEAM TRAP : Direction				
2.	**Installation checked as per GAD w.r.t.** CONFIGURATION : Route, clearance for thermal expansion/insulation				
3.	Installation checked as per P&ID				
4.	Isometrics completed for **(enclosed**):				
	a. Joint Numbering (Shop & Field Welds)				
	b. Spool Numbering				
	c. As-built routing & dimensions				
5.	**Valves**(Check Rating, Gaskets, Flow Direction, Sheet No., Tag No., Spindle direction, CSO LO/LC, Damage, etc)	Nos			
	Gate Valves				
	Globe Valves				
	Check Valves				
	Control Valves Tag Nos.:				
	Safety Valves Tag Nos.:				
	Any other valves :				
6.	**Strainers** : Check for clearance, flow direction, elements				

Note-1: OK – Accepted, NA-Not applicable, PL – Punch listed

Copyright EIL – All rights reserved

FORMAT NO: M-51
(Sheet 2 of 4)

CHECKLIST FOR MECHANICAL CLEARANCE – A/G PIPING

	Item to check	Compliance Status	Accepted by	
		OK/NA/PL (Note-1)	Contractor	EIL
7.	**Flanged Joints**			
	Total Nos.			
	Check for type of flange			
	Check for Rating			
	Identification of Flange joints not subjected to hydro test in the Test Pack			
	Check for Alignment, (proper gap & parallelity)			
	Check for Correct Studs & nuts – dia., length, Material, uniform protrusion of studs, anti seize compound			
	Check for correct gasket (type, size, spec., thickness, etc.)			
	Torque values used for tightening			
8.	Seal Welding of Screwed Connections (if Required)			
9.	Vents/Drains as per Dwg and Provision of additional high point Vents and/or low point Drains, if reqd.			
10.	Reinforcement pads as per piping class			
11.	**Orifice Flanges :**			
	Check for Tag No., tapping orientation, tap valve, jack screw, straight run length of upstream & downstream			
12.	**Local Gauges :** Check for accessibility			
13.	Slope (When Applicable)			
14.	**Supports**			
	a) Guides, Cross Guides, Trunnion, etc.			
	i) Check for correct type, material & dimension			
	ii) Check welding			
	iii) Check for vent hole on pads (if applicable)			
	iv) Check offset for thermal expansion			
	v) Check clearance of guide			
	vi) Check U bolt for slide support			
	b) Spring Support			
	i) Verify tag no. and check details as per data sheet/spring set			
	ii) Check for locking arrangement and any damage during transit, etc.			
	iii) Check for completeness of installation as per drg. including welding of mounting cleat/ bracket			
	iv) Check for locking during installation and pressure test			
	c) Bracket Support & Inserts with Anchor Fasteners :			
	i) Check for members dimensions and materials			
	ii) Check for welding			
	iii) Check for bolting			
	iv) Check for appearance/ damage			

Note-1: OK – Accepted, NA-Not applicable, PL – Punch listed

Copyright EIL – All rights reserved

FORMAT NO: M-51
(Sheet 3 of 4)

CHECKLIST FOR MECHANICAL CLEARANCE – A/G PIPING

	Item to check	Compliance Status	Accepted by	
		OK/NA/PL (Note-1)	Contractor	EIL
15.	**Vents/ Drains :**			
	- As per drg.			
	- Orientation of valve handles			
	- Clearance for hose			
	- Requirement of additional vents/ drains (highest/lowest pt.)			
16.	**Earthings :**			
	a) Check for location			
	b) Check for dimension of lug welding			
17.	**Joists History sheets enclosed for :**			
17.1	Material Traceability as per Procedure No:_____ (refer enclosed suggested Format)			
17.2	Fit ups checked			
17.3	NDT Complete (Radiography, MT, PT, UT, PAUT)			
17.4	Stress Relieving & Hardness check complete			
17.5	Positive Material Identification **(PMI)**			
	Checked for Removal/Blinding-off of:			
	a. Control, Safety and Check Valves			
	b. In-Line Instruments			
	c. Rupture Discs			
	d. Equipment Nozzles			
	e. Others			
18.	Supports and Weld/Flanged/Screwed connections free from			
	insulation or other coverage`			
19.	Checked Installation of (Indicate Location in Drawings)			
	a. Temporary Blinds/Spades			
	b. Temporary Strainers			
	c. Temporary Dummy-Spools			
	d. Temporary Gaskets			
	e. Others			
20.	**Expansion Bellows -**			
	a) Checks prior to installations			
	- Physical damages			
	- Transit locks are intact			
	- Dimensions as per drgs.			
	b) Check during installation			
	- Parallelity of mating flanges			
	- Face to face dimension of mating flanges			
	- Concentricity of mating flanges			
	- No stress on expansion bellows			
	- Record			

Note-1: OK – Accepted, NA-Not applicable, PL – Punch listed

Copyright EIL – All rights reserved

FORMAT NO: M-51
(Sheet 4 of 4)

CHECKLIST FOR MECHANICAL CLEARANCE – A/G PIPING

	Item to check	Compliance Status	Accepted by	
		OK/NA/PL (Note-1)	Contractor	EIL
	c) Isolation during pressure tests			
	- Bellow mfg. recommendations on isolation of bellow during pr. Test to be followed			
	- If recommended expn. Bellow to be dropped during pr. Test.			
21.	Cleanliness Internally and Externally			
22.	Rotating Equipment Final Alignment Checked with piping			
23.	Removal of unwanted construction supports			
24.	Instrument tapings provided as per Drawing			
25.	**Physical-Walk-Through – The – Line,** checked for gross irregularities including physical damages, unwanted tacks, arc strikes, spatters and space for thermal expansion.			
Other :				
Remarks				
Reviewed by Contractor (minimum one level higher than checker)				
Contractor				
Sign :				
Name :	Designation :			
Date :				
EIL				
Sign :				
Date :				
Name :	Designation :			

Note-1: OK – Accepted, NA-Not applicable, PL – Punch listed

Copyright EIL – All rights reserved

FORMAT NO. : M-52

ABOVE GROUND PIPING

(Sheet 1 of 2)

Piping Hydro Test Record – A/G Piping

Project : _____	Report No : _____
Plan : _____	Date : _____
Contractor : _____	Area : _____
Loop No : _____	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 Hydrotest Signed			
	Punch list Prepared	Yes ☐	No ☐	
	Pre – Hydrotest Punch items Cleared			
	Accessibility to Inspection/Witness Locations			
	Capacity of pressurizing pump checked			
	Cordon off area for high pressure testing, as required			
	Pre-hydrotest 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:

(Sht 1/2)

Copyright EIL – All rights reserved

ABOVE GROUND PIPING

(sheet 2 of 2)

Piping Hydro Test Record – A/G Piping

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. Control & Safety vales b. On line Instruments c. Rupture disks d. Deblinding e. Others		
- Cold setting of spring supports carried out		
- **Test Result**	☐ Acceptable	☐ Not Acceptable

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

(Sht 2/2)

Copyright EIL – All rights reserved

FORMAT NO. : M-53

ABOVE GROUND PIPING

Punchlist

Project : _____	Report No : _____
Plan : _____	Date : _____
Contractor : _____	Area : _____
Loop No : _____	REF P & ID No. : _____

Description : _____

Ref Document : _____

Punch Item No.	Priority	Description of Punch Items	Location	Prepared By	Action By	Due date	Completion Acceptance

Priority: 1. Needed for pressure test 2. Needed for commissioning 3. Needed for startup 4. Needed for plant acceptance

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

FORMAT NO: _____ Sh. 1/1

Copyright EIL – All rights reserved

FORMAT NO. : M-54

ABOVE GROUND PIPING

Indicative format for Authorizing/Recording of Modification of Piping Joints after Mechanical clearance /NDT Clearance/ Hydro Testing /Pneumatic Testing of pressure Test Packages/Loops in piping jobs.

Job No. :	Unit No.:	Report No:	Date:
Owner/Client : PMC : Contractor :		Pressure Test Package No.: System Name/No. : Previous Hydrotest Date :	

Drawing No	:	
Line No.	:	
Joint Nos. to be modified (attach sketch)	:	
Size & type of joint	:	
New Joint Nos.	:	
Deleted Joint Nos.	:	
Modification Joint Nos.	:	
Reason for Modification	:	

A) Proposed checks/NDT / Testing after Modification

1. Fit up and Traceability.:	☐				
2. PMI Checks :	☐			Mark '√' in box as necessary	
3. MPI Test :	☐	PT (root/final) :	☐	RT:	☐
4. PWHT/Hardness : Required. :	☐			Not Required. :	☐
5. Hydrotesting:	☐			Pneumatic Test :	☐

Authorized Signatory (note-1)

Name	
Signature	
Date	

B) Proposal Accepted by EIL (note-2)

	Area Coordinator	**Welding/ NDT Incharge**
Name		
Signature		
Date		

Clearance/Acceptance after modifications (All Supporting Documents enclosed)

Mechanical clearance: Contractor Mech. Signature.	☐	EIL Mech. Signature.	☐
NDT Clearance : Contractor QA/QC Signature.	☐	EIL Welding /NDT Signature.	☐
Testing Acceptance : Contractor Mech. Signature.	☐	EIL Mech. Signature.	☐

Final acceptance after Modification

	Contractor	**EIL**
Name		
Signature		
Date		

Note: 1. Authorized signatory(*): RCM/ Site In charge of execution agency

2. RCM/SIC of EIL may seek opinion of Engineering, prior to acceptance of proposal from contractor as necessary.

Copyright EIL – All rights reserved

FORMAT NO. : M-55

(4 pages)

Checklist for Erection of Static Equipment

S. No.	Description	Status (OK/ Not OK)	Contractor / TPI	EIL / Client	Remarks
1	**Shifting of Equipment (within site)**				
1.1	Equipment inspected at stores for damages (if any), Arrange for rectification at site/stores, including initiation of insurance claim process (if required).				
1.2	Detailed packing list checked & all loose items identified at stores/site.				
1.3	Special lifting tools & tackles (Spreader bar, lifting beams, shackles etc) if any supplied by Manufacturer/Licensor/Package vendor are identified and shifted to site.				
1.4	Manoeuvring plan identified and Checked by the TPI/Erection contractor for shifting the equipment from the store/ owner point to the designated erection area, including removal of site hindrances for safe movement of the equipment.				
1.5	ODC permits taken from all concerned (if applicable).				
1.6	Adequate height in saddle arrangement provided to carry out installation of Brackets/Insulation etc., at site (If applicable).				
2	**Safety/Training**				
2.1	Tool box talk (TBT) done.				
2.2	TBT conducted for shifting of equipment from one place to designated location.				
2.3	TBT conducted to the rigging team before erection of the equipment.				
2.4	Adequate ventilation are provided in the confined space (If applicable)				
2.5	Lower Explosive Limit (LEL) checked in the confined space before erection of the equipment (If applicable)				
2.6	High Tension (HT) line passing nearby erection area are within the safe distance limit (If applicable)				
2.7	Safe Access for removal of the sling after erection of the equipment checked.				
2.8	Health check of Man basket done before the erection of the equipment.				
2.9	Fitness Certificate availability for Rigging Team & crane operator checked.				
2.10	Clear demarcation of risk prone area by HSE personnel & job engineer for barricading & insuring the presence of only designated persons in the barricaded area during erection.				

Copyright EIL – All rights reserved

Page 4724 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

Page 4725 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

S. No.	Description	Status (OK/ Not OK)	Contractor / TPI	EIL / Client	Remarks
3	**Crain Detail Checking**				
3.1	Configuration of the crane				
3.2	Age of the crane				
3.3	Boom length and additional arrangements if any shall be indicated				
3.4	Operating radius				
3.5	Cumulative Lifting capacity within SWL				
3.6	Clearance between the equipment and boom				
3.7	Jacks of the crane are positioned in level and safe				
3.8	Barrication done in erection area				
3.9	Adequacy of Counter weight checked and weight of counter weight is embossed/marked				
3.10	Hindrance due existing facilities like drains, Culverts, trenches, any neighbouring foundation, structures, equipments etc., are identified and hindrance are removed before erection and same shall be marked in the scheme.				
3.11	Swing of Boom & counter weight doesn't foul with existing facilities				
3.12	The load chart of the cranes				
3.13	Capacity of the lifting tackles along with all the test certificates are found in order				
3.14	Availability of valid Load Test Certificate issued from Competent Authority/TPI for Main Crane				
3.15	Availability of valid Load Test Certificate issued from Competent Authority/TPI for Trailing Crane				
3.16	Availability of valid Test Certificate from Competent Authority/TPI for Rigging tools & tackles checked				
3.17	Crane safety indications checked				
3.18	Safe Load Indicator (SLI) checked				
3.19	Wind anemometer working indications checked				
3.2	Swing warning alarm/lights working checked				
3.21	Road block permits (if any) taken				
3.22	Intimated to other contractors nearby				

Copyright EIL – All rights reserved

Page 4726 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

S. No.	Description	Status (OK/ Not OK)	Contractor / TPI	EIL / Client	Remarks
4	**Pre-Erection Activities at site**				
4.1	Ensure latest revision of Equipment drawing is available				
4.2	Ground compaction of crane & equipment placement area (Hard Stand), if applicable.				
4.3	Testing of Hard Stand, if required				
4.4	Work Permit availability before commencement of the job checked.				
4.5	Damages (if any) checked in equipment nozzle, instrument connection, saddles, structural clips etc. (after shifting to site).				
4.6	Damages (if any) checked on foundation bolt and greasing done.				
4.7	Centre line marking on equipment and foundation for checking verticality. If marking is under Insulation transfer marking outside insulation on equipment				
4.8	Ground compaction of crane & equipment placement area. Hard Stand, if applicable.				
4.9	Level/Elevation, Orientation of the foundation checked				
4.10	Correctness of no. & size of foundation bolts checked				
4.11	Check the size of opening is sufficient enough taking into account all projection of nozzles if equipment to be inserted through opening				
4.12	Hole dia. and no. of holes in case / structure of equipment columns checked				
4.13	Equipment base bolt holes matching with actual foundation bolt layout checked				
4.14	Thread of bolts & nuts checked				
4.15	Check any damages observed in the pre fixed internals like grid, Internal distributor, distributors etc.,				
4.16	Cleaning of Sleeves before erection checked				
4.17	Chipping & roughening of foundation checked				
4.18	Shims, levelling plates, wedges, sliding base plates installation checked				

Copyright EIL – All rights reserved

Page 4727 of 5448 ; B957-TENDER DOC-B957-999-69-41-PK-T-9501 ; Rev. A

S. No.	Description	Status (OK/ Not OK)	Contractor / TPI	EIL / Client	Remarks
4.19	Platform brackets installation checked				
4.20	Insulation done before the erection of the equipment				
4.21	Before erection of the equipment, equipment spring support installation at prescribed elevation checked as per the applicable drawings				
4.22	Touch up paint done as per the applicable painting spec and job specification				
5	**Erection Scheme**				
5.1	All details required in the rigging Scheme & procedure provided by agency/contractor				
5.2	Erection Scheme & Rigging procedure submitted by agency/contractor are approved				
5.3	Wire rope slings checked				
5.4	Spreader beam checked				
5.5	D Shackles checked				
5.6	Hook Blocks checked				
5.7	Orientation, length and size of lifting trunions checked for fouling of slings with any nozzle while lifting				
5.8	Equipment orientation w.r.t equipment GAD and piping GAD are matched				
6	**After Erection**				
a	Post erection the Temporary saddles used for equipment shifting and templates are shifted to designated location as per instruction of engineer in charge				
b	Tightening of bolts and providing washers checked				
c	Levelling and alignment of equipments checked				
d	Final tightening of bolts checked				
e	Sub assemblies and Commissioning spares etc., received along with equipment (if any) returned to store/owner				
f	Insulation rings checked and found in order				
g	Sub assemblies are installed & Commissioning spares returned to store/owner				
h	Erection of Davit, Checking welding of Sliding Link (if applicable)				
i	Welding of washers checked (if applicable)				

Copyright EIL – All rights reserved

फील्ड इन्स्ट्रूमेन्टैशन कार्यों का निरीक्षण एवं परीक्षण योजना (आईटीपी) (वर्गीकरण साहित मद्दर संविदा)

INSPECTION & TEST PLAN (ITP) FOR FIELD INSTRUMENTATION WORKS (ITEM RATE CONTRACTS-WITH CATEGORIZATION)

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
2	08.04.2024	Revised and Reissued	DK	AC	RKS	MN
1	27-03-2019	Revised and Reissued	SKG	AP	AKK	RKT
0	14.01.2014	ISSUED AS STANDARD SPECIFICATION	SM	DJ	RKD	SC

Copyright EIL – All rights reserved

Abbreviations:

A/G	:	Above Ground
AS	:	Alloy Steel i.e. Cr-Mo steels like A335 Gr P11, P5, P9,P22,etc
CS	:	Carbon Steel
CSO	:	Car Seal Open
DCS	:	Distributed Control System
DPT	:	Dye Penetration Testing
FTB	:	Field Terminal Block
GAD	:	General Arrangement Drawings
GAD	:	General Arrangement Drawing
HIC	:	Hydrogen Induced Cracking
ITP	:	Inspection & Test Plan
JB	:	Junction Box
LCP	:	Local Control Panel
LO/ LC	:	Lock Open/ Lock Close
MIV	:	Material Issue Voucher
MPI	:	Magnetic Particle Inspection
MPT	:	Magnetic Particle Testing
NACE	:	National Association of Corrosion Engineers
NDT	:	Non Destructive Testing
NRV	:	Non Return Valve
P&ID	:	Piping & Instrumentation Drawings
PLC	:	Programmable Logic Controller
PMI	:	Positive Material Identification
PMS	:	Piping Material Specification
PQR	:	Procedure Qualification Record
PT	:	Penetrant Testing
PVC	:	Poly Vinyl Chloride
PWHT	:	Post Weld Heat Treatment
QA/QC	:	Quality Assurance/ Quality Control
RF	:	Reinforcement
SS	:	Stainless Steel like A312 TP 304, 316, 321, 304L, 316L, 316Mo, etc.
SSCC	:	Sulphide Stress Corrosion Cracking
WPS	:	Welding Procedure Specification
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)

Copyright EIL – All rights reserved

CONTENTS

S.NO	DESCRIPTION	DOCUMENT NO.	PAGE NO.
	Section A		
	ITPs FOR Field Instrumentation Works		
1.	Shop fabrication field instn. Works	3402	6
2.	Calibration of instruments	3403	7
3.	Fabrication and erection of cable ducts	3404	8
4.	Fabrication, erection of cable trays, angle trays for cable and tube laying.	3405	9
5.	Fabrication, installation of instrument support/ stanchions, panel supports, canopies, JB supports	3406	10
6.	Installation of field instruments	3407	11
7.	Installation of impulse tubing	3408	12
8.	Cable laying, glanding and termination	3409	13
9.	Installation of junction boxes, local control panel	3410	14
10.	Fabrication & erection of air lines and tubing of pneumatic lines	3411	15
11.	Installation of level switches, level gauges and float type	3412	16
12.	Installation of test thermo wells, temperature gauges and temperature elements	3413	17
13.	Loop checking	3414	18
14.	Installation of impulse piping	3415	19-22
	ITPs FOR Field Instrumentation Works –Control room		
15.	Inspection & panel erection-control room	3431	30
16.	Fabrication & erection of cable trays-control room	3432	31
17.	Laying, glanding & termination of interconnection cables, prefabricated cables, system cables, power cables and field cables –control room	3433	32
18.	Power 'on' of panels and pre-commissioning of the system-control room	3434	33
19.	For field loop checking and 'system acceptance test'-control room	3435	34
	SECTION - B		
	FORMATS FOR INSTRUMENTATION WORKS		36

Copyright EIL – All rights reserved

SECTION – A

INSPECTION & TEST PLANS

Copyright EIL – All rights reserved

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), 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 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. 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

Copyright EIL – All rights reserved

ITP NO: 3402

SHOP FABRICATION

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT A	
1.	Incoming material Inspection Material supply			
	By Owner	Contractor to check all free issue materials and maintain records of MIV for material issued by owner/EIL		
	By Contractor	WC	NOTE 1	Format I-1
2.	Qualification of WPS, Welders and welding electrodes	WC	Rw	Yes
3.	Usage of approved welding consumables	WC	S	Yes
4.	Job Procedures being followed	WC	Rw	Yes
5.	NDT	WC	Rw	Yes
6.	PWHT & Hardness test	WC	S	Yes
7.	Shop testing	WC	S	Yes
8.	Painting & Storage	WC	Note-2	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
2) For cleaning & painting, please refer ITP No. 3501

CAT A: All works.

Copyright EIL – All rights reserved

ITP NO: 3403

CALIBRATION OF INSTRUMENTS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT A	
1.	Availability of approved standard calibrated testing equipments	WC	HP	Format I-2
2.	Validity of calibration equipments	WC	HP	Format I-2
3.	Dust free environment	WC	S	---
4.	Availability of approved data sheets, calibration procedures, standards, vendor's manuals	WC	Rw	Yes
5.	Usage of appropriate tools and tackles	WC	S	---
6.	Usage of qualified/ trained personnel	WC	S	---
7.	Instrument tag & model	WC	S	---
8.	Checking of instrument ranges, supply & output for proper connections	WC	S	---
9.	Calibration of local gauges	WC	Rw	Format I-3
10.	Calibration of electronic instruments (Smart/FF) / control valves	WC	S	Formats I-4, I-5, I-6, I-7
11.	Calibration of safety valves, shut down valves and instruments initiating trips	WC	W	Formats I-4, I-5, I-6, I-8
12.	Calibration of special instruments/ float type instruments	WC	S	Yes
13.	Ensuring procedure & record including maintaining and updating details of record of calibration of measuring/testing equipments.	WC	Rw	Yes
14.	Plugging of free entries, electric and process	WC	S	---
15.	Stamping of calibration date on instruments	WC	S	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection documents	WC	Rw	Yes

CAT A: All instruments.

Copyright EIL – All rights reserved

ITP NO: 3404

FABRICATION AND ERECTION OF CABLE DUCTS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Incoming material Inspection	WC	Note 1	---
2.	Usage of proper tools and tackles	WC	S	---
3.	Use of approved hardware / consumables	WC	S	---
4.	Correctness of dimensions of duct	WC	S	Format I-9
5.	Welding as per standards/ specifications, if applicable.	WC	S	---
6.	Installation & alignment of support as per structural drawings and documents	WC	S	Format I-9
7.	Painting of support and cable duct as applicable.	WC	Note-2	Format I-9
8.	Grinding of sharp edges before erection	WC	S	---
9.	Assembly/Alignment of cable duct	WC	S	Format I-9
10.	Covering of duct after completion of cable laying/ dressing	WC	S	Format I-9
11.	Usage of appropriate clamp & fasteners	WC	S	---
12.	Installation of guide supports	WC	S	---
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Document	WC	Rw	Yes

Note :1) For Incoming material Inspection please refer ITP no: 6-82-1010
2) For cleaning & painting, please refer ITP No. 2501

CAT B: All cable duct works.

Copyright EIL – All rights reserved

ITP NO: 3405

FABRICATION, ERECTION OF CABLE TRAYS, ANGLE TRAYS FOR CABLE AND TUBE LAYING.

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Correct size and routing of tray/ angle	WC	S	Format I-10
2.	Supports as per standards/ specifications	WC	--	Format I-10
3.	Removal of sharp edges and sharp bends	WC	--	---
4.	Fastening/ welding of trays/ angles	WC	--	Format I-10
5.	Check for fouling with piping & maintain minimum distance between electrical trays, steam lines, structures, equipments etc.	WC	S	---
6.	Check for any obstruction/ free access for maintenance	WC	S	---
7.	Installation & alignment of support as per drawings and documents	WC	S	Format I-10
8.	Painting of support & trays with zinc rich paint wherever welded/cut	WC	Note-2	Format I-10
9.	Clamping/ securing of tubes to supports	WC	S	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Document	WC	Rw	Yes

Note: 1) For cleaning & painting, please refer ITP No. 2501

CAT B: All works.

Copyright EIL – All rights reserved

ITP NO: 3406

FABRICATION, INSTALLATION OF INSTRUMENT SUPPORT/ STANCHIONS, PANEL SUPPORTS, CANOPIES, JB SUPPORTS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Incoming material Inspection	WC	Note 1	---
2.	Usage of proper tools and tackles	WC	--	---
3.	Availability of approved junction box layout and instrument location plan, support drawings/ details	WC	Rw	Yes
4.	Correctness of dimensions, height, etc	WC	--	Format I-11
5.	Approved welder, consumables, standards	WC	Rw	---
6.	Check for installation, hole to hole dimension & alignment/ fit-up	WC	--	Format I-11
7.	Removal of sharp edges	WC	--	---
8.	Painting	WC	Note-2	---
9.	Physical walk through the line	WC	--	---
10.	Easy access for maintenance	WC	S	--
11	Ensure providing vent holes on stanchions	WC	S	---
12	Ensure proper sealing of vent holes	WC	S	Format I-11
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Document	WC	Rw	
				Yes

Note :1) For Incoming material Inspection please refer ITP no: 6-82-1010
2) For cleaning & painting, please refer ITP No. 2501

CAT B: All works.

Copyright EIL – All rights reserved

ITP NO: 3407

INSTALLATION OF FIELD INSTRUMENTS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Availability of approved location plans, piping GADs, P&ID, vendor's manual, etc.	WC	Rw	Yes
2.	Installation of proper support/ instrument stanchion, canopy	WC	S	Format I-12
3.	Instrument tag as per P&ID and model & make as per instrument data sheet	WC	s	Format I-12
4.	Physical walk through the line	WC	--	---
5.	Alignment of the instruments	WC	S	Format I-12
6.	Mounting of accessories as per instrument data sheet	WC	S	Format I-12
7.	Visibility & maintenance clearance	WC	S	---
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Document	WC	Rw	Yes

CAT B: All works

Copyright EIL – All rights reserved

ITP NO: 3408

INSTALLATION OF IMPULSE TUBING

Sl. No.	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CAT B	
1.	Direction of flow, tapping orientation, standard, piping material, installation standard.	WC	HP	S	Format I-13
2.	Availability of materials as per Bill of Material/ Installation Std.	WC	W	S	Yes
3.	Fabrication as per Installation Std.	WC	W	S	Yes *
4.	Mechanical/NDT Clearance	WC	W	S	Yes *
5.	Usage of correct consumable	WC	S	--	Yes *
6.	Welding as per Standard/Spec.	WC	W	S	Yes *
7.	Usage of Gasket, Stud/Bolt as per PMS/BOM	WC	S	--	Yes
8.	Installation of Instrument with canopy wherever required	WC	S	---	Yes
9.	Positive material identification as per specification (if applicable)	WC	W	S	Yes
10.	Upstream & downstream straight runs	WC	W	S	Format I-13
11	Usage of appropriate tools & tackles	WC	S	--	---
12	Removal of burrs & sharp edges on tube bends	WC	S	--	---
13	Smooth bends/ free draining	WC	S	--	---
14	Ferrule punching	WC	S	--	---
15	Supports as per standards/ specifications	WC	S	--	Format I-13
16	Direction of valves/ valve manifolds	WC	W	S	Format I-13
17	Ensure proper tests like PWHT, NDT (DPT, MPI, Radiography, etc.)	WC	Rw	Rw	Yes *
18	Usage of approved sealant, etc	WC	Rw	Rw	---
19	Hydrostatic/ pneumatic testing as per procedure	WC	W	W	Format I-14
	INSPECTION & TEST OCUMENTS				
	Review Test and Inspection Document	WC	Rw	Rw	Yes

(*) As per Welding/NDT formats

CAT A: All services involving hydrogen and hydrogen bearing fluid All SS, AS,NACE,LTCS impulse piping All CS impulse piping for process lines up.

CAT B: All impulse piping for "D" class fluid

Copyright EIL – All rights reserved

ITP NO: 3409

CABLE LAYING, GLANDING AND TERMINATION

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Correctness of cable type as per schedule	WC	Note 1	Format I-16
2.	Measurement & routing	WC	S	Format I-16
3.	Check cable for continuity, insulation resistance.	WC	W/Rw	Format I-15
4.	Identification tags/ tag plates and proper dressing & clamping	WC	S	Format I-16
5.	Separation of signal/ thermocouple and power cables	WC	S	---
6.	Proper glands as per area classification, size of cable, JB entry, etc	WC	HP	Format I-16
7.	Identification/ ferrule and dressing inside junction boxes and instrument	WC	S	Format I-16
8.	Crimpable type lugs and proper crimping	WC	S	---
9.	Telephone wire connection inside JB	WC	S	---
10.	Shield wire dressing/ sleeving and termination	WC	S	Format I-16
11.	Insulation of shield wire on instrument end	WC	S	---
12.	Routing of cables through MCT blocks including ensuring proper size of MCT blocks and location as per MCT details and routing dressing and segregation of cables inside trench/control/rack room wherever applicable.	WC	S	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Document	WC	Rw	Yes

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

CAT B: All works.

Copyright EIL – All rights reserved

ITP NO: 3410

INSTALLATION OF JUNCTION BOXES, LOCAL CONTROL PANEL

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Incoming material Inspection	WC	Note 1	
2.	Check suitability as per specified hazardous area classification	WC	Rw	Format I-17
3.	Correct cable entries	WC	--	---
4.	Alignment & fasteners	WC	--	Format I-17
5.	Tightening of fasteners	WC	--	---
6.	Tightening & numbering of terminal blocks	WC	--	---
7.	Availability of telephone sockets (for JB's) & earthing point	WC	--	---
8.	Earthing of JB/ LCP	WC	S	Format I-17
9.	Plugging of free entries with correct plugs	WC	--	Format I-17
10.	Wiring of various hardwares in LCP as per approved wiring drawings	WC	S	---
11.	Protection of JB and LCP and cable entries during construction phase after installation	WC	S	---
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Document	WC	Rw	Yes

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

CAT B: All works

Copyright EIL – All rights reserved

ITP NO: 3411

FABRICATION & ERECTION OF AIR LINES AND TUBING OF PNEUMATIC LINES

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Availability of AFC drawings for air / pneumatic distribution line and tubing hook-up for CV/SDV	WC	Rw	---
2.	Usage of correct size, thread, etc. Jigs/ die sets for threading of pipes	WC	--	---
3.	Proper packing material/ sealant used at thread joints	WC	--	Yes
4.	Providing three piece union at each loop for easy maintenance	WC	--	Format I-18
5.	Drain & vent assemblies	WC	--	Format I-18
6.	Tightening of joints	WC	--	---
7.	Supporting and clamping	WC	S	Format I-18
8.	Test air lines as per standards/ specifications and record	WC	W	Format I-18
9.	Check for inlet, outlet, signal, test and drain connection on the instrument	WC	S	Format I-18
10.	Correct supply as per data sheets	WC	--	---
11.	Flush lines before connection	WC	--	Format I-18
12.	Punching of ferrules	WC	--	---
13.	Tagging at both ends of tubes	WC	--	---
14.	Test as per standards/ specifications and record	WC	S	Yes, Format I-18
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Document	WC	Rw	Yes

CAT B: All works

Copyright EIL – All rights reserved

ITP NO: 3412

INSTALLATION OF LEVEL SWITCHES, LEVEL GAUGES AND FLOAT TYPE

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Check Tapings provided at vessels/stand pipes are matching with centre to centre distance on respective instruments & connection size ratings are matching with instruments.	WC	S	Yes
2.	Check tapings provided at vessels/stand pipes are matching with process requirements/P&IDs and its Orientation	WC	S	---
3.	Incoming material Inspection	WC	Note 1	Format I-19
4.	Deployment of approved welding man-power, usage of approved consumables & procedures	WC	S	Yes *
5.	Alignment of flanges, visibility of gauges and orientation of instrument	WC	S	Format I-19
6.	Verticality of the instrument	WC	S	Format I-19
7.	Installation of float, displacer, instrument accessories as per data sheet/vendor's instruction manuals	WC	S	Yes, Format I-19
8.	QA/QC clearance for welding & testing	WC	S	Yes *
9.	Tightness of guide wires (as applicable)	WC	S	---
10.	Usage of correct size, rating & type of gasket and stud/ nuts as per PMS	WC	S	Format I-19
11.	Tightness of studs/ nuts	WC	S	---
12.	Check for requirements of Heat Tracing / Insulation/ Illumination for instruments	WC	Rw	Yes
13.	Final inspection	WC	W	Yes, Format I-19
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

(*)As per Welding/NDT procedure/formats

CAT B: All works

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

Copyright EIL – All rights reserved

ITP NO: 3413

INSTALLATION OF TEST THERMOWELLS, TEMPERATURE GAUGES AND TEMPERATURE ELEMENTS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Correctness of range, rating, immersion length (U length) as per P&ID/ Instrument data sheets	WC	Note-1	Format I-20
2.	Check for tapping size, orientation, location as per P&ID, projection above pipe as per drawing/ standard.	WC	--	Format I-20
3.	Usage of correct size, rating & type of gasket and stud/nuts as per PMS	WC	Note-1	Format I-20
4.	Installation of temperature element head & assemblies and checking availability of sufficient space for removal.	WC	S	Yes
5.	Tightness of studs/ nuts	WC	S	Format I-20
6.	Visibility & orientation of gauges	WC	--	---
7.	Plugging of free entries with correct size plugs	WC	--	Format I-20
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

Note :1) For Incoming materia Inspection please refer ITP no: 6-82-1010

CAT B: All works.

Copyright EIL – All rights reserved

ITP NO: 3414

LOOP CHECKING

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT A	
1.	Completeness of installation as per standards & specifications	WC	Rw	---
2.	Liquidation of punch list as per ITP	WC	HP	Yes
3.	Availability of standard calibrated equipment	WC	Rw	Yes, Format I-2
4.	Coordination with DCS vendor	WC	S	---
5.	Loop checking			---
	a) From instrument/field to control room and control room to back	WC	S	Format I-22
6.	Recalibrate/ fine tune instruments for accurate response	WC	W	Yes
7.	Check for inter locks and response of final control element	WC	W	Yes
8.	Ensure proper response and record	WC	Rw	Yes
9.	Loop acceptance	WC	HP	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

CAT A: ALL works.

Copyright EIL – All rights reserved

ITP NO: 3415

INSTALLATION OF IMPULSE PIPING

(Sheet 1 of 4)

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			
	a) **Contractors supply**	WC	Note -1		Format I-1
2.	Welding Filler Material Approval/Qualification				
	a) Review of Manufacturer's Test Certificates/Documents & Sampling	WC*	HP*	HP*	Format IM3, IM4
	b) Laboratory Testing, if any	WC	HP	Rw	Format IM3, IM4
3.	WPS/PQR				
	a) Review of proposed procedure	WC	HP	Rw	Format IM5
	b) Welding of Test Coupens and subsequent testing	WC	W	Rw	Format IM6
	c) Approval of final WPS/PQR	WC	HP	HP	Format IM5,IM6
4.	a) Welder performance Qualification	WC	W	Rw	Format IM7
	b) Certification & approval of welders.	WC	HP	Rw	Format IM8
5.	NDT Procedure Qualification				
	i) Review of proposed procedure	WC	HP	Rw	Yes
	ii) Witnessing of Proposed Procedure Testing	WC	W	Rw	Yes
	iii) Approval of Qualified Procedure	WC	HP	Rw	Yes
6.	Review of Joint numbering Procedure, numbering in Isometrics (Big & Small bore)/Sketches	WC	W	Rw	Yes
7.	Material traceability & Transfer of Heat Nos. (Material Traceability not required for utility services)	WC	W	S	Format IM9

* Notwithstanding any other tests/documentation required for qualification/approval of filler metals :

i) For Alloy Steel & Stainless Steel welding filler metals, chemical analysis to be carried out for every batch.

ii) For low temp. services piping, Impact testing to be carried out for every batch of the filler metal, to be witnessed by Owner/ EIL.

For NACE filler metals, corrosion tests like HIC, SSCC, etc. to be carried out for every batch. However, HIC/SSCC tests done earlier & duly endorsed by a reputed third party, will be acceptable.

Copyright EIL – All rights reserved

ITP NO: 3415

INSTALLATION OF IMPULSE PIPING

(Sheet 2 of 4)

Sl. No.	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CATB	
B	**FABRICATION (SHOP & FIELD)**				
1.	Material as per piping class (check w.r.t. approved colour coding procedure), Fit-up check and Traceability check	WC	S	--	Format IM10
2.	Pre-heat (if any)	WC	S	--	
3.	Certificate of purity of purging/shielding Gas (if any)	WC	S	--	
4.	Purging rate (if any) and arrangement	WC	S	--	
5.	Shielding rate (if any)	WC	S	--	
6.	Baking of Electrodes	WC	S	--	**Yes**
7.	Inter-pass cleaning & Temperature check	WC	S	--	Format IM11
8.	Visual Examination of completed welds	WC	W	S	Format IM11
9.	a) Monitoring of PWHT Cycle	WC	S	--	**Yes**
	b) Review of Time – Temperature graph	WC	Rw	Rw	**Yes**
	c) Hardness Check	WC	S	--	Format IM12
10.	PT/MPT	WC	W	S	Format IM13, IM14
11.	Identification of Joints for Radiography (for Random Radiography only)	WC	S	--	**Format IM15**
12.	Review of Radiographs interpreted by the Contractor	WC	HP	W	Format IM16

Copyright EIL – All rights reserved

ITP NO: 3415

INSTALLATION OF IMPULSE PIPING

(Sheet 3 of 4)

Sl. No.	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CATA	CAT B	
C	**PROOF TESTING (See enclosed checklist in Annex-1)**				
1.	Procedure Review	WC	HP	Rw	Annex-2
2.	Preparation of Punch list **(Ref. Annex-3)**	WC	S	--	Annex-3
3.	Review of Punch List	WC	HP	W	Annex-3
4.	Liquidation of check list, if applicable	WC	HP	W	Annex-3
5.	Correctness of Testing arrangements	WC	S	--	Annex-2,
6.	Scrutiny of test packs for Mechanical & NDT Clearance	WC	HP	W	Annex-I,
7.	Positive Material Identification as per specification after completion of installation	WC	S	Rw	Format IM18
8.	a) Review of Calibration certificates of pressure Gauges	WC	HP	W	Format IM1
	b) Field Calibration, if any	WC	S	--	**Yes**
9.	Air/Water Flushing (preliminary)	WC	S	--	Format IM1
10.	Visual inspection of all weld joints for leak during Pneumatic/ Hydrostatic testing **(See Annex-2)**	WC	HP	W	**Annexure 2**
11.	Draining of Water & Air Drying	WC	S	--	Annex-2
12.	Removal of temporary blinds/supports	WC	S	--	Annex-2

Copyright EIL – All rights reserved

ITP NO: 3415

INSTALLATION OF IMPULSE PIPING

(Sheet 4 of 4)

Sl. No.	Activity	Contractor	EIL		Records to be Submitted/ Format No.
			CAT A	CATB	
13.	Boxing up including reinstallation of flappers of check valves	WC	S	--	Annex-2
14.	Review of Records of fasteners & gaskets	WC	Rw	Rw	Yes
15.	Torque tightening/ tensioning of flange joints, wherever applicable	WC	W	S	Yes **
	INSPECTION & TEST DOCUMENTS				
	Review Test and Inspection Documents	WC	Rw	Rw	Yes

For liquidation of Punch list, see **Annex - 3**

Note : 1) For Incoming material Inspection please refer ITP no: 6-82-1010
2) Pre-commissioning activities such as chemical cleaning, card board blasting, system testing are not covered by these ITP's. The Contractor shall develop ITP's for such activities and obtain Owner/ EIL/ Licensor's approval.

** Refer Procedure for Identification and Boxing up of flange joints not subjected to hydrostatic test at site No. 5-7700-0120, enclosed elsewhere in the contract.

CAT A: All services involving hydrogen and hydrogen bearing fluid All CS SS, AS,NACE, LTCS impulse piping for process lincs

CAT B: Piping for "D" class fluid, Non IBR portion of condensate & steam lines

Copyright EIL – All rights reserved

ANNEX – 1

Checklist for Mechanical Clearance - IMPULSE Piping

Project : _____	Report No : _____
Plant/Unit : _____	Date : _____
Contractor : _____	Area : _____
Loop No/Tag No: _____	Installation Std. No : _____

Line No (Isometric No.) / Tag No	Rev.	Installation Std. No.	Rev.	P&ID No.	Rev.

	Items to be checked		Accept Contractor	Remarks
1.	**Installation checked as per Isometric w.r.t./ITS** CONFIGURATION : Route, plumb, elevation, Clearance for thermal expansion/ insulation BRANCH : Location, angle, orientation, type, RF pad, etc. STEAM TRAP : Direction			
2.	Installation checked as per P&ID			
3.	Hookup completed for (**enclosed**):			
	a. Joint Numbering (Shop & Field Welds)			
	b. Spool Numbering			
	c. As-built routing & dimensions			
4.	**Valves**(Check Rating, Gaskets, Flow Direction, Sheet No., Tag No., Spindle direction, CSO LO/LC, Damage, etc)	Nos		
	Gate Valves			
	Globe Valves			
	Check Valves			
	Any other valves :			
5.	**Strainers** : Check for clearance, flow direction, elements			

FORMAT NO: _____ (Sht 1/4)

Copyright EIL – All rights reserved

Checklist for Mechanical Clearance - IMPULSE Piping

	Item to check	Accept Contractor	Remarks
6.	**Flanged Joints**		
	Total Nos.		
	Check for type of flange		
	Check for Rating		
	Check for Alignment, (proper gap & parallelity		
	Check for Correct Studs & nuts – dia., length, Material, uniform protrusion of studs, anti seize compound		
	Check for correct gasket (type, size, spec., thickness, etc.)		
	Torque values used for tightening		
7.	Seal Welding of Screwed Connections (if Required)		
8.	Vents/Drains as per Dwg and Provision of additional high point Vents and/or low point Drains, if reqd.		
9.	**Orifice Flanges :**		
	Check for Tag No., tapping orientation, tap valve, jack screw, straight run length of upstream & downstream		
10.	**Local Gauges :** Check for accessibility		
11.	Supports as per drg. and specifications		

FORMAT NO: _____ (Sht 2/4)

Copyright EIL – All rights reserved

Checklist for Mechanical Clearance - IMPULSE Piping

	Item to check	Accept Contractor	Remarks
12.	**Vents/ Drains :**		
	- As per drg.		
	- Orientation of valve handles		
	- Clearance for hose		
	- Requirement of additional vents/ drains (highest/lowest pt.)		
13.	**Joists History sheets enclosed for :**		
13.1	Material Traceability as per Procedure No:_____ (refer enclosed suggested Format)		
13.2	Fit ups checked		
13.3	NDT Complete (Radiography, MPT, PT)		
13.4	Stress Relieving & Hardness check complete		
13.5	Positive Material Identification **(PMI)**		
	Checked for Removal/Blinding-off of:		
	a. Control, Safety and Check Valves		
	b. In-Line Instruments		
	c. Rupture Discs		
	d. Equipment Nozzles		
	e. Others		
14.	Supports and Weld/Flanged/Screwed connections free from insulation or other coverage`		
15.	Checked Installation of (Indicate Location in Drawings)		
	a. Temporary Blinds/Spades		
	b. Temporary Strainers		
	c. Temporary Dummy-Spools		
	d. Temporary Gaskets		
	e. Others		

FORMAT NO: _____ (Sht 3/4)

Copyright EIL – All rights reserved

Checklist for Mechanical Clearance - IMPULSE Piping

	Item to check	Accept Contractor	Remarks
17.	Cleanliness Internally and Externally		
18.	Removal of unwanted construction supports		
19.	Instrument tapings provided as per Drawing		
20.	**Physical-Walk-Through – The – Line,** checked for gross irregularities including physical damages, unwanted tacks, arc strikes, spatters and space for thermal expansion.		
Other :			
Remarks			
Reviewed by Contractor (one level higher than checker)			
Name : Designation :			
Date :			
EIL			
Sign :			
Date :			
Name : Designation :			

FORMAT NO: _____ (Sht 4/4)

Copyright EIL – All rights reserved

ANNEX – 2

Piping Hydro Test Release Record – IMPULSE Piping

Project : _____	Report No : _____
Plan : _____	Date : _____
Contractor : _____	Area : _____
Loop No/ Tag No : _____	REF P & ID No. : _____
	INCH MTR : _____
	From _____ To _____

S. No.	Line No. / Tag No	S. No.	Installation standard 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 Hydrotest Signed			
	Punch list Prepared	Yes ☐ No ☐		
	Pre – Hydrotest Punch items Cleared			
	Accessibility to Inspection/Witness Locations			
	Capacity of pressurizing pump checked			
	Cordon off area for high pressure testing, as required			
	Pre-hydrotest flushing carried out			
	Statutory Authorities/Others test Witnessing Required	Yes	No	
System Released for Pressure Testing :				

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

FORMAT NO: _____ **(Sht 1/2)**

Copyright EIL – All rights reserved

Piping Hydro Test Record – IMPULSE Piping

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		
- **Test Result**	☐ Acceptable	☐ Not Acceptable

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

FORMAT NO: _____ (Sht 2/2)

Copyright EIL – All rights reserved

ANNEX - 3

PUNCHLIST

Project : _____	Report No : _____
Plan : _____	Date : _____
Contractor : _____	Area : _____
Loop No/ Tag No : _____	REF P & ID No. : _____

Description : _____

Ref Document : _____

_____

Punch Item No.	Prio-rity	Description of Punch Items	Location	Prepared By	Action By	Due date	Completion Acceptance

Priority: 1. Needed for pressure test 2. Needed for commissioning 3. Needed for start up
4.Needed for plant acceptance

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

FORMAT NO: _____ (Sht 1/1)

Copyright EIL – All rights reserved

ITP NO: 3431

INSPECTION & PANEL ERECTION-CONTROL ROOM

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Receipt of materials/ panels as per purchase requisition, inspection release note, bill of materials, etc	WC	Note 1	Yes, Format I-1
2.	Storage of materials at site	WC	S	---
3.	Shifting of panels into the control room without damage	WC	S	---
4.	Check for Hole to hole dimensions of the base frames with the as built drawings of the panels	WC	S	---
5.	Check alignment, fastening, welding & painting of the base frame.	WC	S	---
6.	Erection & fastening of panels as per approved layout drawing, after completion of all welding works	WC	S	Yes
7.	Tagging/identification of panels	WC	W	Yes
8.	Ensure system & panel earthing connection as per the drawings	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

Copyright EIL – All rights reserved

ITP NO: 3432

FABRICATION & ERECTIONOF CABLE TRAYS-CONTROL ROOM

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Availability of latest revision of approved tray layout drawings	WC	Rw	Yes
2.	Welding & painting of supports before erection of panels	WC	--	---
3.	Installation, Fastening and joining of cable trays	WC	--	---
4.	Removal of sharp edges	WC	--	---
5.	Covering of cable trays used for unarmoured and system cable	WC	W	---
6.	Separate cable trays for power and signal cables with sufficient distance apart	WC	--	---
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

CAT B: All works.

Copyright EIL – All rights reserved

ITP NO: 3433

LAYING, GLANDING & TERMINATION OF INTERCONNECTION CABLES, PREFABRICATED CABLES, SYSTEM CABLES, POWER CABLES AND FIELD CABLES –CONTROL ROOM

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1.	Correct size & type of cables as per cable schedule, preparation of cable cutting schedule as per the available cable drum length & actual cable route length.	WC	Note 1	Format I-1
2.	Testing of cable before laying as per specification (continuity, megger, etc.), as applicable	WC	Rw	Yes, Formats I-15, I-21
3.	Check for exact distance and cables cutting accordingly	WC	Rw	Format I-23
4.	Laying of cables as per the cable schedule & duct/trench/tray layout drawing and Tag on cables as per specification	WC	--	Format I-15
5.	Availability of proper cable gland size, type of specified thread and requirement as per WP and/or FLP	WC	Rw	---
6.	Tightening of check nut (after termination), as applicable	WC	--	---
7.	Cable continuity & insulation resistance, as applicable	WC	--	Yes, Formats I-15, I-21
8.	Dressing of cables inside PVC Duct and covering of PVC Duct after complete cabling.	WC	--	---
9.	Termination of cables as per the interconnection diagram and earthing cable shield as applicable	WC	S	
10.	Ferruling of cables	WC	--	---
11.	Usage of sleeved crimpable type lugs	WC	--	---
12.	Crimping of lugs	WC	--	---
13.	Tightness of cables in the terminal block	WC	S	---
14.	Numbering of terminal blocks	WC	--	---
15.	Continuity of fuses in terminal blocks	WC	S	---
16.	Final Acceptance	WC	W	Format I-21
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	

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

CAT B: All works.

Copyright EIL – All rights reserved

ITP NO: 3434

POWER 'ON' OF PANELS AND PRE-COMMISSIONING OF THE SYSTEM-CONTROL ROOM

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT A	
1.	Check for earth pit resistance	WC	HP	Yes
2.	Earth connection to system earth, panel earth etc	WC	HP	Yes
3.	Ensure proper interconnectivity of panel earth bus	WC	W	Yes
4.	Incoming power supply and termination of the power cables	WC	W	---
5.	Power 'ON' the system and observe system booting and self diagnostic check.	WC	W	Yes
6.	Reload the softwares, if necessary	WC	S	---
7.	Check for alarms by switching 'ON'/'OFF' the sub systems	WC	S	---
8.	Start simulation of individual loops from respective 'Field Terminal Blocks' (FTBs)	WC	S	---
9.	Observe the response and tune the controllers	WC	S	---
10.	Interlocks as per P&ID	WC	S	---
11.	Record the input & outputs	WC	Rw	---
12.	Trend reports, logging reports/shift reports & alarm, sequence and functioning of all peripheral units.	WC	Rw	Yes
13.	Back-up operation of PLC cards, system memory & power supply switch over	WC	W	Yes
14.	Check the functional operation of all aux. load. Lighting and ventilation fan operation	WC	S	Yes
15.	Functioning of Complex loop	WC	W	---
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

CAT A: All works

Copyright EIL – All rights reserved

ITP NO: 3435

FOR FIELD LOOP CHECKING AND 'SYSTEM ACCEPTANCE TEST'- CONTROL ROOM

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT A	
1.	Coordination with field contractor for loop checking.	WC	S	---
2.	Availability of record as per loop checking sheet duly signed	WC	HP	Yes
3.	Availability of record as per loop checking sheet duly signed	WC	W	---
4.	Operation of sub systems and peripheral systems	WC	W	---
5.	'Back-up' system operations	WC	W	---
6.	Ensure feedback/commands from/to electrical system	WC	W	---
7.	System acceptance	WC	HP	Yes
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

CAT A: All works

Copyright EIL – All rights reserved

SECTION - B

Copyright EIL – All rights reserved

FORMATS

FOR

INSTRUMENTATION WORKS

Copyright EIL – All rights reserved

CONTENTS

S. NO	DESCRIPTION	FORMAT NO.	PAGE NO.
FORMATS FOR INSTRUMENTATION WORKS			
1.	Incoming Material Inspection Report	I-1	38
2.	Record of Calibration of Measuring/Testing Equipments	I-2	39
3.	Calibration Report for Local Gauges (PG,DPG, TG)	I-3	40
4.	Calibration Report for Transmitters (PT, DPT, TT, FT, LT)	I-4	41
5.	I/P Converter Calibration Report	I-5	42
6.	Testing Report for Pressure Relief Valves & Safety valve	I-6	43
7.	Calibration Report for Valves (Like control valves, ON/OFF valves, shut down valves)	I-7	44
8.	Calibration Report for Switches (Pressure & Level)	I-8	45
9.	Instrument Duct Installation Report	I-9	46
10.	Instrument Cable Tray Installation Report	I-10	47
11.	Instrument/ Stanchion/ Panel/ JB/ Canopy/ Support Installation Report	I-11	48
12.	Field Instrument Installation Report	I-12	49
13.	Instrument Impulse Line Installation Report	I-13	50
14.	Impulse Line Hydro/Pneumatic Test Report	I-14	51
15.	Instrument Cable Insulation Resistance Check Report	I-15	52
16.	Instrument Cable Laying Report	I-16	53
17.	Junction Box/LCP Installation Report	I-17	54
18.	Instrument Air Line/Pneumatic Tube Erection Report	I-18	55
19.	Level Instrument Installation Report	I-19	56
20.	Installation Report for Test T/W, TG, TC, RTD	I-20	57
21.	Instrument Cable Testing Acceptance Report	I-21	58
22.	Loop Test Report	I-22	59
23.	Cable/Tube Drum Cutting Plan	I-23	60
24.	Electrode Qualification Test report	IM-3	61-63
25.	Inspection Report - Filler Material Manufacturer's works	IM-4	64
26.	Format for Welding Procedure Specification (WPS)	IM-5	65-66
27.	Suggested format for Procedure Qualification record (PQR)	IM-6	67-68
28.	Suggested format for manufacturer's record of welder or welding operator qualification tests	IM-7	69
29.	Welder's identification card	IM-8	70
30.	Material Traceability Report	IM-9	71
31.	Daily Fit-up inspection report	IM-10	72
32.	Daily Welding inspection report	IM-11	73
33.	Hardness test record	IM-12	74
34.	Liquid penetrant examination report	IM-13	75
35.	Magnetic particle examination report	IM-14	76
36.	Radiography offering report	IM-15	77
37.	Radiography interpretation report	IM-16	78
38.	Positive material identification (PMI) report	IM-18	79

Signature Not Verified
Digitally signed by ARITRA DE
Date: 2026.05.18 17:51:16 IST
Location: eProcure-EPROC

Copyright EIL – All rights reserved