

सामान्य कार्यो
का निरीक्षण एवं परीक्षण
योजना (आईटीपी)
(वर्गीकरण सहित मद दर संविदा)

INSPECTION & TEST PLAN (ITP)
FOR GENERAL WORKS
(ITEM RATE CONTRACTS WITH
CATEGORISATION)

0	14.01.2014	ISSUED AS STANDARD SPECIFICATION	SM	DJ	RKD	
Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	

Abbreviations:

AFC	:	Approved For Construction
CF	:	Ceramic Fibre
PMC	:	Project Management Consultant
SS	:	Stainless Steel like A312 TP 304, 316, 321, 304L, 316L, 316Mo, etc.

Construction Standards Committee

Convenor: Mr. RK Das, ED (Construction)

Members : Mr. M Natarajan, GM (C&P)
Mr M Deshpande, GM(Construction)
Mr. Rakesh Nanda, GM (Piping)
Mr. Janak Kishore, DGM (P)
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CONTENTS

S.NO	DESCRIPTION	ITP/ FORMAT NO.	ISSUE DATE	PAGE NO.
SECTION - A				
ITPs FOR GENERAL WORKS				
1.	Painting	3301 Rev 0	14.01.2014	6-7
2.	Insulation	3305 Rev 0	14.01.2014	8
3.	Refractory Lining	3310 Rev 0	14.01.2014	9-10
4.	Ceramic Fibre Lining	3315 Rev 0	14.01.2014	11
SECTION - B				
FORMATS FOR GENERAL WORKS				
1.	Record of Calibration of Measuring/ Testing Equipments	G-1 Rev 0	14.01.2014	13
2.	Incoming Material Inspection Report	G-2 Rev 0	14.01.2014	14
3.	Daily Painting Report	G-3 Rev 0	14.01.2014	15
4.	Inspection Check Sheet – Insulation Works	G-4 Rev 0	14.01.2014	16

SECTION – A

INSPECTION & TEST PLANS

GENERAL NOTE

The enclosed ITP's shall be followed for the works to be performed by the contractor. The provisions indicated for stagewise inspection by EIL/Owner are the minimum and the Engineer-In-Charge may decide to increase Hold Points/ Witness Points. 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.

Contractor to submit required reporting formats and job procedures for each activity listed in ITP's and submit 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 ;

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

ITP NO: 3301 Rev 0

PAINTING WORKS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
A.	BEFORE FABRICATION			
1.	a. Calibration certificate of measuring & testing equipments/instruments	WC	Rw	Format G1
	b. Field calibration, if any	WC	W	Format G1
2.	a) Approved supplier, product and supplier's materials test certificate	WC	Note 1	Format G2
	b) Check manufacturing date, expiry period and shelf life	WC	Note 1	Format G2, G3
3	a) Physical condition of materials; original manufacturers packing/ containers	WC	Note 1	---
.	b) Confirm identification/ Transfer of identification of materials before painting	WC	Note 1	Yes
4.	a) Adequacy of blasting machine capacity for blast cleaning	WC	--	---
	b) Type and quality of abrasive being used for blast cleaning	WC	--	Format G3
	c) Adequacy of Airless spray equipment, air spray equipment and paint brushes	WC	--	---
5.	Performance test of paint applicator and blast cleaning operator	WC	W	Yes
6.	Check quality of dry air for blast cleaning and spray application	WC	--	---
7.	Inspection of blast cleaning operation			
	- Inspect for surface cleanliness by visual stds. of ISO 8501	WC	--	Format G3
	- Measurement of surface profile by Micrometer/Elkometer/Stylus instrument	WC	--	Format G3
8.	Wet film thickness and over coating interval for each coat of paint during application	WC	--	Format G3
9.	Dry film thickness after final coat	WC	W	Format G3
10.	Inspection of final curing/ drying, adhesion, hardness, surface finish, sagging, hiding and pinhole detection	WC	--	Format G3
11.	Painting identification band/ code, etc.	WC	--	Format G3
12	Acceptance prior to shifting to fabrication shop, if applicable	WC	Rw	Yes

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

CAT B: All works

ITP NO: 3301 Rev 0

PAINTING WORKS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
B.	AFTER INSTALLATION			
1.	a) Approved supplier product : Suppliers materials test certificate	WC	Note 1	Format G2
	b) Manufacturing date, expiry period and shelf life	WC	Note 1	Format G1, G3
2.	Physical condition of materials; original manufacturers packing/ containers	WC	Note 1	---
3.	Confirm completion of			
	a) Hydrostatic testing of piping	WC	--	Yes
	b) Mechanical clearance of structure & equipments	WC	--	Yes
4.	a) Adequacy of surface preparation tools and tackles	WC	--	---
	b) Check the quality of surface preparation	WC	--	G3
5.	a) Performance test for paint applicator for spray application	WC	Rw	Yes
	b) Adequacy of airless spray equipment and air spray equipment and paint brushes and quality of dry air for paint application	WC	--	---
6.	Wet film thickness and over coating interval for each coat of application	WC	--	Format G3
7.	Dry film thickness after final coat	WC	S	Format G3
8.	Identification of colour bands, direction marking	WC	--	Format G3
9.	Identification of colour bands, direction marking	WC	--	Format G3
10.	Final Acceptance	WC	HP	Format G3
	INSPECTION & TEST DOCUMENTS			
	Review Test and Inspection Documents	WC	Rw	Yes

CAT B: All works

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

ITP NO: 3305 Rev 0

INSULATION WORKS

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CATB	
1.	PRIOR TO APPLICATION OF INSULATION			
	a. Material Test certificates from supplier of insulation material and acceptance thereof	WC	Note 1	Format G1
	b. Check testing, if required	WC	Note 1	Format G2
2.	DURING APPLICATION OF INSULATION			
	a. Surface preparation	WC	--	Format G4
	b. Fixing of spacer rings and checking their spacing	WC	--	Format G4
	c. Fixing of support rings and checking their spacing in case of vertical piping	WC	--	Format G4
	d. Fixing of insulation lugs and angle rings in case of vessels, tanks, etc	WC	--	Format G4
	e. Thickness of insulation	WC	--	Format G4
	f. Aluminium foil for S.S. Piping/Vessels	WC	--	Format G4
	g. Overlap of cladding at vertical and horizontal joints	WC	--	---
	h. Expansion joints, if any	WC	--	Format G4
	i. Inspection windows	WC	--	Format G4
	j. S.S. foil for S.S. piping	WC	--	Format G4
	k. Final finish	WC	W	Format G4
3.	ADDITIONAL CHECKS FOR COLD INSULATION			
	a. Wooden supports	WC	--	Format G4
	b. Vapour barrier	WC	--	Format G4
	c. Vapour sealant	WC	--	Format G4
	d. Insul coat	WC	--	Format G4
	Review Test and Inspection Documents	WC	Rw	Yes

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

CAT B: All works

ITP NO: 3310 Rev 0

REFRACTORY LINING

(sheet 1 of 2)

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1	PRIOR TO START OF LINING			
	i) Material Test certificates from suppliers	WC	Note 1	Format G1 Format G1
	ii) Field tests and tests from approved laboratories	WC	Note 1	Format G2
	iii) Availability of Refractory specialist at site (Contractor's/ Vendor's)	WC	HP	Yes
2	DURING LINING			---
	A) INSULATING FIRE BRICKS			
	i. Clearance for completion of structural works including cleats/ lugs/ anchors/ hooks, etc.	WC	--	Yes
	ii. Cleanliness of the surfaces to be lined	WC	--	---
	iii. Insulating layer application, wherever applicable	WC	--	---
	iv. Metal foil application, wherever applicable	WC	--	---
	v. Checking of bricks for their soundness (squareness, cracks and for any other damages)	WC	--	Yes
	vi. Mix proportion	WC	S	Yes
	vii. Laying of bricks as per specifications	WC	S	---
	viii. Line and verticality	WC	S	---
	ix. Identifying location of expansion joints	WC	S	---
	x. Filling expansion joints, wherever applicable	WC	S	---
	xi. Finishing works	WC	Rw	- Yes

ITP NO: 3310 Rev 0

REFRACTORY LINING

(sheet 2 of 2)

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
	B) INSULATING CASTABLE CONCRETE			
	i. Clearance for completion of structural steel work including cleats/ support lugs/ anchors/hooks, etc.	WC	S	Yes
	ii. Cleanliness of the surface to be lined	WC	S	---
	iii. Insulating layer application, wherever applicable	WC	--	---
	iv. Metal foil application, wherever applicable	WC	--	---
	v. Fixing of wire mesh	WC	--	---
	vi. Fixing of shuttering/ scaffolding and providing pockets for pouring mortar	WC	--	---
	vii. Mix proportion	WC	S	Yes
	viii. Identifying location of expansion joints	WC	--	---
	ix. Ramming of mortar for achieving uniform density	WC	--	---
	x. Filling expansion joints, wherever applicable	WC	--	---
	xi. Wetting of previous layer prior to casting the Construction joints	WC	--	---
	xii. Pointing	WC	--	---
	xiii. Curing	WC	--	---
	xiv. Final acceptance	WC	HP	Yes
	INSPECTION & TEST DOCUMENTS			Yes
	Review Test and Inspection Documents	WC	Rw	Yes

Note : 1) For Incoming material Inspection please refer ITP no: 6-82-1010
2) Surveillance/witness may be increased in case of boilers, heaters, etc. as per specific requirements given in the specifications.

CAT B: All works

ITP NO: 3315 Rev 0

CERAMIC FIBRE LINING

Sl. No.	Activity	Contractor	EIL	Records to be Submitted/ Format No.
			CAT B	
1	PRIOR TO START OF LINING			
	i. Material Test certificates from suppliers	WC	Note 1	Format G1
	ii. Field tests and tests from approved laboratories, if applicable	WC	Note 1	Format G1, Format G2
	iii. Availability of Refractory specialist at site (Contractor's/ Vendor's/PMCs)	WC	HP	Yes
2	DURING LINING			
	i. Clearance for completion of structural works including welding of cleats/ lugs/ anchors/hooks, etc.	WC	S	Yes
	ii. Cleanliness of surfaces to be lined	WC	--	---
	iii. Laying of Ceramic fibre blanket layer wise (As per AFC drawings)	WC	--	---
	iv. Provision of cups locks/ arrangement for CF lining holding	WC	--	---
	v. Identifying location of expansion joints	WC	--	---
	vi. Filling expansion joints as per specifications/ AFC drawings	WC	--	---
	vii. Finishing works	WC	Rw	---
	viii. Final acceptance	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

CAT B: All works

SECTION - B

FORMAT NO. : G-1 REV 0
RECORD OF CALIBRATION OF MEASURING/TESTING EQUIPMENTS

Report No. :
 Date :

Name of work :
 Job No. :

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

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

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

Format No: G-2 REV 0
INCOMING MATERIAL INSPECTION REPORT

Report No. : Date :

Project : Unit
Contractor : Consultant
Work order No. : 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
(countersigned)

**FORMAT NO. : G-3 REV 0
DAILY PAINTING REPORT**

Drawing No.		Location								
Specification No.		Report No.								
Procedure		Dated								
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										
ISO 8501-1/SIS-05 5900/SSPC-SP		Profile	Micron							
Result : Accepted / Rejected										
Painting material and application method : Painting System -										
Material brand		Manufacturer	Certificate No.							
Batch No.		Shelf life upto	Shade/ Colour							
Application										
Base										
Hardener										
Primer (1 st coat)										
(2 nd coat)										
Paint (1 st coat)										
(2 nd coat)										
Painting Inspection Record :										
Item	Area/Joint		Coating Layer	Wet Film Thickness		Dry Film Thickness		Completion of hydrostatic testing	Visual Inspection	Acceptance
	From	To		Measurements 1, 2, 3...	Avg.	Reqd	Avg.			
			Primer							
			1 st coat (intr)							
			2 nd coat (intr)							
			Finish							
			1 st coat							
			2 nd 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)

(OWNER)

FORMAT NO. : G-4 REV 0
INSPECTION CHECK SHEET – INSULATION WORKS

Report No. :

Date :

Project :
Client :
Contractor :
Name of work :
Unit :

Job No. :
Item No./Equip No./Line No. :
Work order No. :

Surface preparation: Visual inspection : Accepted/Not accepted

Fixing of spacer & support Rings, insulation lugs and Spacing : OK/Not OK

Sl. No.	Activity & Item No.		Thickness of Insulation	Visual Inspection	Surface area insulated			Remarks
					From	To	SA (m ²)	
1.	Lagging of Insulations 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						
4.	FOR COLD INSULATION							
	a)	Wooden support	☐ 					
	b)	Vapour barrier						
	c)	Vapour Sealant						
	d)	Insul coat						

HOT INSULATION (Visual & position of seam to prevent water penetration) ☐

COLD INSULATION (Visual & sealing) ☐

FINAL FINISH: ACCEPTED/NOT ACCEPTED

(Contractor)

(EIL)

(Owner)