05.04.2012

Specifications for External Painting Works

1. Minimum acceptable specifications for external painting works

Parameter	Minimum acceptable specifications
Texture	
Type of Texture	As specified by the Design team (choices include: Rough Tex, Cross Tex, Bubble, Dholpur etc.)
Thickness of texture coat	2.00 mm (preferably 2.25 mm)
Type of resin used	Acrylic based resin to be used
% weight of resin	12% of total weight of texture material
Top Coats	
Dry Film Thickness (2 coats)	60 microns DFT (preferably 70 microns)
UV resistance	Should resist min. 500 hours of exposure in QUV machine as per ASTM standards (equivalent to 5 yrs of resistance)
Water Resistance	Should resist minimum 10 days of continuous showering (equivalent to 5 years of resistance in set up as per ASTM standards
Anti Fungal & Anti Algae Properties	Should resist minimum 30 days in an algae chamber (equivalent of 5 years of resistance)

NOTE:

1. It is expected that the external paint will provide:
    - Significant water proofing to the applied surfaces.
    - Good aesthetic appearance (without discoloration / fungal formation etc.) for a period of minimum of 5 years.
2. The paint manufacturer will supply his Material Test Certificates for UV resistance, Water Resistance, Anti Fungal and Anti Algae properties.
3. The employer is free to test materials delivered for adherence to the stated minimum acceptable specifications. In case a failure is observed, second test shall be carried out after information to the manufacturer and in presence of its representative (if representative chooses to remain present after 48 hours notice from employer). The results of these two tests, seen together, will be binding on all concerned.
4. Irrevocable corporate Guarantee to be provided by the paint manufacturer against failure of its product (either in visible performance or test parameters wrt minimum acceptable parameters) with 5 yrs warranty. The corporate guarantee shall enable the employer to claim any repairs/restoration to make good the defective work/product free of cost by the paint manufacturer to the satisfaction of the employer within a period of 4 months of the same being pointed out by the employer or entitle the employer to claim the cost of reworks plus overheads as per the General Conditions of Contract (GCC) from the paint manufacturer in case the repairs/ restoration is not carried out within 4 months of the same being pointed out.

2. Warranties to be provided by the paint manufacturer

Warranties (valid for 5 years) for following parameters will be provided by the paint manufacturer.

S. No.	Parameter
1	No Peeling of paint film
2	No Flaking of paint film
3	No Shade Fading (UV resistance)
4	No visible fungal or algal growth on paint film.

3. Parameters defining Employer Deliverables to Contractor:

a). Surface for external painting works subject to following:

Parameter	Acceptable specifications
pH of surfac	to be between 8 and 10
Dampnes s of	% moisture content to be less than 10% as per dampness gauge available with paint manufactures
Deposits on surface	No salt deposits, efflorescence, lime blooming or algal/ fungal growth on surface.
No cracks in	No cracks observed on surface (above 0.25 mm thickness)
Adjacent Works	No works that lead to water or any other material dripping from above to be carried out on the same surface during the duration of external painting works.
Preparation of surface	Minimum 7 days of curing and 21 days of drying for conventional surfaces after plaster.
	All visible honey combs and surface undulations beyond 5 mm to be rectified by the employer.

b). Process for determining readyness of surface for external painting works:

1. The paint manufacturer's representative will inspect the surface for readiness and inform its acceptance/lack thereof within 3 working days of the surface being offered for external painting works by Construction Management team of the site.
2. If rejection of surface is not conveyed in written/email form within 3 days of offer, it will be deemed to be accepted.
3. If paint manufacturer accepts the surface, the start date of implementation wrt that surface (and consequently the incentives/penalties) shall be this date.
4. If paint manufacturer does not accept the surface, binding decision of procurement on acceptance/rework will be given within 4 days thereafter. If procurement ask Const mgmt to further prepare surface, steps 1-3 shall stand repeated.
5. Const Mgmt shall be free to provide any surface having height > 70 m in two tiers/installments, subject to the lower tier being physically separated from the upper tier so as to enable work to be carried on in the lower tier.
6. Date of acceptance of surface (as per steps 1-5 above) will be treated as the start date of works for the contract.
7. 'Surface' is any one side of a wing.

4. Minimum equipment required to be used by the Contractor:

Material	Specifications
Bamboo	• Fully matured, straight with uniform diameter of 2 to 2.5". • No split ends or cracks along length and no sign of decay or excessive moisture.
Ballis, if required	• Minimum 3" in diameter, straight and of matured wood. • Ballis will be of exact length required for bracing the horizontal ties • Ballis shall be firmly wedged between floor slabs.
Coir rope	• Coir rope shall be new and not less than 3/8" in diameter. • Reuse of this coir rope for next face of scaffolding is allowed only if it has not suffered any monsoons or part thereof.

For buildings with conventional surfaces

- Work on single bamboo scaffolding on buildings above 30 meters shall be allowed only with each worker having operational slide fall arrestors. If contractor is not willing to do this, double scaffolding is compulsory.
- For buildings with height upto 30 meters, we will continue to use only Single Scaffolding with safety harness. For buildings with Mivan surfaces
- In case repairs to the Mivan surface are required to correct visible undulations, external painting work will be carried out with double scaffolding with safety harness due to the requirement of double scaffolding by the civil works agency for carrying out the surface repairs. (UNDER REVIEW BY KPT AND AML).
- Such surface repairs to be carried out by the civil works agency should be completed within 7 days of the scaffolding being erected by the external painting agency. Date of erection of scaffolding by the external painting vendor must be signed off by the construction team at site. (UNDER REVIEW BY KPT AND AML).

- Limited amount of double scaffolding will have to be erected for work at ducts, shafts and fins areas due to requirement of higher support for the workers undertaking external painting works in these areas.
- The vendor will be penalized by the employer in case the above mentioned specifications are not met or in case the scaffolding buckles on site , at the rate of one percent of the contract value for every week or part thereof the same remains to be rectified as per the specifications given above.

- Minimum 50% of the scaffolding requirement for the building must be mobilized by the vendor at the start of works.
- The vendor must ensure that the scaffolding is approved by the quality control team at site before commencement of works. Approval of scaffolding by the employer shall in no way whatsoever absolve the contractor from the liabilities arising due to failure of the scaffolding or any accident for which the contractor shall keep the employer fully indemnified at all the times during the period of this contract.

5. Materials to be supplied by Employer: None

6. Wastage Norms: Not applicable since no material is to be supplied by Employer

7. Payment Items: (included in Special Conditions of Contract)

- 95% of the billed value will be payable on approval of completed works as per R.A. bills (texture, if applicable along with the required number of top coats)
- 5% of the billed value will be will be retained as applicable on each R.A. bill
    - Of the retention amount, 2.5% of the billed value will be payable on successful completion of the works
    - The remaining 2.5% of the billed value will be payable on successful completion of the DLP period of 12 months.

a. Rate for application of texture coat + 2 paint coats:
b. Rate for application of 2 paint coats (no texture): __

8. Other terms to be agreed with contractor: (included in Special Conditions of Contract)
    a. Timeline: ____ days / month
    b. Protection of works: Not Applicable
    c. Safety Requirements: See Annexure A
    d. Adherence to Transparency & Ethics policy
    e. Adherence to Safety policy

9. Activities included in standard work order

Standard work orders for external painting works to include the following activities

S. No.	Description	Qty	Rate	Amount
	Providing and applying Texture coat of .... type of minimum ... mm thickness as per specifications & two top coats of minimum ... microns Dry Film Thickness as per the approved color, sample and specifications. Rate inclusive of single scaffolding and operational slide fall arrester for each worker as per specifications.			

10. Type of Textures:

Type	Texture Thickness (mm)	Indicative Cost Per Unit for 70 m building (2012 Rs. psf)	Vendors who are willing to provide this
Dholpur	Min 3 mm	35-40	Asian Paints, AkzoNobel, Damani
Pebble	0.5 – 1 mm	19.5-21	Asian Paints, AkzoNobel
Rough Tex	2.3 – 2.5 mm	32-35	Asian Paints, AkzoNobel
Cross Tex	2 mm – 2.5 mm	22-24	Asian Paints, AkzoNobel, Damani
Swirl Tex	1.5 – 2 mm	20-22	Asian Paints, AkzoNobel

11. Incentives / Penalties: (included in Special Conditions of Contract)

Incentive / Penalty	Applicable if (event / milestone)	Quantum
1. Incentives		
1.1 Timely completion of Works	No. of days of early completion of works before the contractually agreed end date (as defined in Section 9 of the General Conditions of Contract) being `equal to or more than 10% of the contractually agreed duration of works (with start date of works as per Section 3 (b). of this document)[1] To be decided by the project in charge.	Incentive upto 1% of contract Value
1.2 Quality of works executed	Adherence to the stated parameters defining the quality of works (as per table below) at all application areas. To be decided by the project architect in mutual agreement with the procurement team.	Incentive not exceeding 1.5% of contract value
Total Incentives		Not exceeding 2.5% of contract value
2. Penalties		
2.1 Timely completion of Works	No. of days of delay in completion of works after the contractually agreed end date (as defined in Section 9 of the General Conditions of Contract) being `equal to or more than 10% of the contractually agreed duration of works (with start date of works as per Section 3 (b). of this document)[1]. To be decided by the project in charge.	Penalty not exceeding 1.5% of contract Value[2]
2.2 Quality of works executed	Non-adherence to the stated parameters defining the quality of works (as per table below) at any part of the application areas as certified by the project architect. To be decided by the project architect in mutual agreement with the procurement team.	Penalty not exceeding 1.5% of contract value
Total Penalties		Not exceeding 3% of contract value

NOTES:

[1] The number of days of early completion and delays will be rounded off to the nearest whole number for the purpose of the computation of incentives/ penalties. Eg. For a contract of 45 days duration, Incentives and penalties will be applicable for 5 days or higher of early completion/ delays beyond the contractually agreed completion date of works.

[2] Additional liquidity damages per week of delay upto 5% of the contract value will be applicable for delay of works as per the General Conditions of Contract.

Parameters defining quality of works executed

S.	Parameter defining quality of works	Allowable

No.		Tolerances
1	Texture application to be uniform and as per specifications	Nil
2	No shade variation or color patches along painted faces to be observed	Nil
3	No visible brush / roller marks to be observed	Nil
4	No damp spots to be observed on the painted surface.	Nil

Note: All aforesaid conditions are to be implemented for all contracts finalized/awarded after 29.2.2012. For contracts awarded prior to 29.2.12, these may be implemented on best effort/practical basis.

Annexure A

Method statement for installation of single scaffolding

- Ground should be leveled and compacted where scaffolding is to be erected.
- It is preferable to use bamboos of equal length in each tier.
- At the base, verticals shall be supported by cross bracing at the mid height of the base bay.
- It is to be ensured that scaffolding is horizontally braced to firm supports inside the building in secured manner in such a way that horizontal and vertical distance between two adjacent ties (brace) does not exceed floor to floor height of the building.
- For horizontal ties to the building, holes will not be made in masonry or concrete. Scaffolding can be tied to vertical props through window opening, vertical props being securely wedged between the floor slabs. It is important to tie the braces to scaffolding in such a manner that it restricts outward buckling of the scaffolding.
- It is necessary to ensure that the vertical props to which scaffolding is tied, will not get pulled or displaced due to horizontal pressure exerted by buckling of the scaffolding.
- While tying two bamboos together, the joint and overlap should be so positioned and adjusted that the normal knots in bamboos prevent sliding of one bamboo against / across the other due to the knot obstructing the path in which the movement is most likely to occur.
- The spacing between horizontal and vertical bamboo will depend on work requirement. However spacing more than 1.2 mtr for verticals and 750mm for horizontals is not advisable.
- Cross bracings, if reqd. to avoid buckling of vertical members in their own plane, need to be provided in such a manner that unsupported length between two cross brace / vertical intersections does not exceed 10'.
- Work on single bamboo shall be allowed only when each worker has full body harness with individual personal protection rope with fall arrestors.

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