OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA VIKAS KUTEER : NEW DELHI

No. CE/QC/3/DDA/83/ 1096 Dated: 27-10

Circular No. 51.

Sub.:- Quality control circulars-Vitreous China fittings.

The field staff should ensure that fittings with an ISI mark stamped on the body of the fittings are allowed to be brought to the site. These fittings should also be procured from firms on the approved list of the C.P.W.D.

(J.L. Pinto)
Chief Engineer(QC).

Copy to:-

1. P.S. to E.M.
2. C.E., DDA.
3. All ACEs, DDA.
4. All SEs (Civil),DDA.
5. All EEs(Civil),DDA
6. All EE(QC),DDA.
7. All AEs(Civil),DDA.

(J.L. Pinto)
Chief Engineer(QC).

O FICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
I A: VIKAS KUTEER: NEW DELHI

C I R C U L A R NO - 52

No: CE/QC/1/Cir./1304 Dt:- 26-10.83

Sub:- QUALITY CONTROL CIRCULARS-DRY BRICK P VING.

According to paras 11.1.5.4 and 11.1.6 of the C.P.W.D. specifications 1977 Vol.-I, dry brick flooring shall be laid on a bed of 12 mm thick mud mor r laid to required slope. The joints shall s s fine as possible not exceeding 5 mm and l be filled with fine sand.

Therefo wherever the brick-on-edge paving is not laid on 12 mm thick mud mortar or the joints ot filled with fine sand, Reduced Rate statemer s will have to be prepared. If any of these items are not intended to be executed, a specific stipulation to that effect should be made in the additional specifications attached to th tender and the rate estimated accordingly.

J.L.PINTO)
HIEF ENGINEER(QC)

1. S.E. D D.A.
2. All C E, D.D.A.
3. Al (Civil), D.D.A.
4. Al (Civil), D.D.A.
5. Al (QC), D.D.A.
6. All .Es Civil), D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC).

CONFIDENTIAL

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI

No: F.73(41)/CE/QC/83/DDA/ 1104 Date: ~~26~~ 28.10.83

C I R C U L A R

The functions of the Quality Control Cell in respect of technical audit of works and records, investigation of complaints from the vigilance angle and comments on vigilance cases etc. have been under consideration for some time. The Vice-Chairman, DDA has been pleased to decide the following:-

1. Until the technical wing under the CVO is formed the Quality Control Cell will perform the functions of investigation of complaints about quality, investagation of complaints from the vigilance angle, giving assistance/comments/advice on vigilance cases and technical audit of works and records against specific complaints only.
2. Any matter pertaining to technical audit coming to light during inspection of works will be brought out by the Quality Control Cell.
3. Powers of a Vigilance Officer will be exercised by the Quality Control Officers in respect of seizure of records extraction of documentary evidence and collection of information from the concerned offices and persons.

This is being brought to the notice of all concerned offices for information.

27/x

(J.L.PINTO)
CHIEF ENGINEER(Q.C.)

Copy to:-

1. P.S. to E.M., D.D.A.
2. C.E., D.D.A.
3. All A.C.E's, D.D.A.
4. Director(Vigilance), D.D.A.
5. All S.E's and S.S.W's, D.D.A.
6. All E.E's and S.W's, D.D.A.
7. All E.E's(QC), D.D.A.

27/x

(J.L.PINTO)
CHIEF ENGINEER(Q.C.)

DDA, VIKAS KUTEER, NEW DELHI.
****

No.C.E.(Q.C.)/3/DDA/2020 Dated: ~~22-11-1983~~.

CIRCULAR No.53

Sub:- Quality Control Circulars - Lintel band reinforcement.

To ensure proper bonding and box action of cross-walls the detailing of reinforcement in lintel bands at the junctions of walls should be done as per sketch enclosed. The full lap length of 69-D for Tor Steel bars should be provided.

(J.L. Pinto)
Chief Engineer(Q.C.)

Copy to:-

1. P.S. to E.M.
2. Chief Engineer, D.D.A.
3. All Addl.Chief Engineers, D.D.A.
4. All Supdtg.Engineers(Civil).
5. All Ex.Engineers(Civil).
6. All Ex.Engineers(Q.C.).
7. All Asstt.Engineers(Civil).

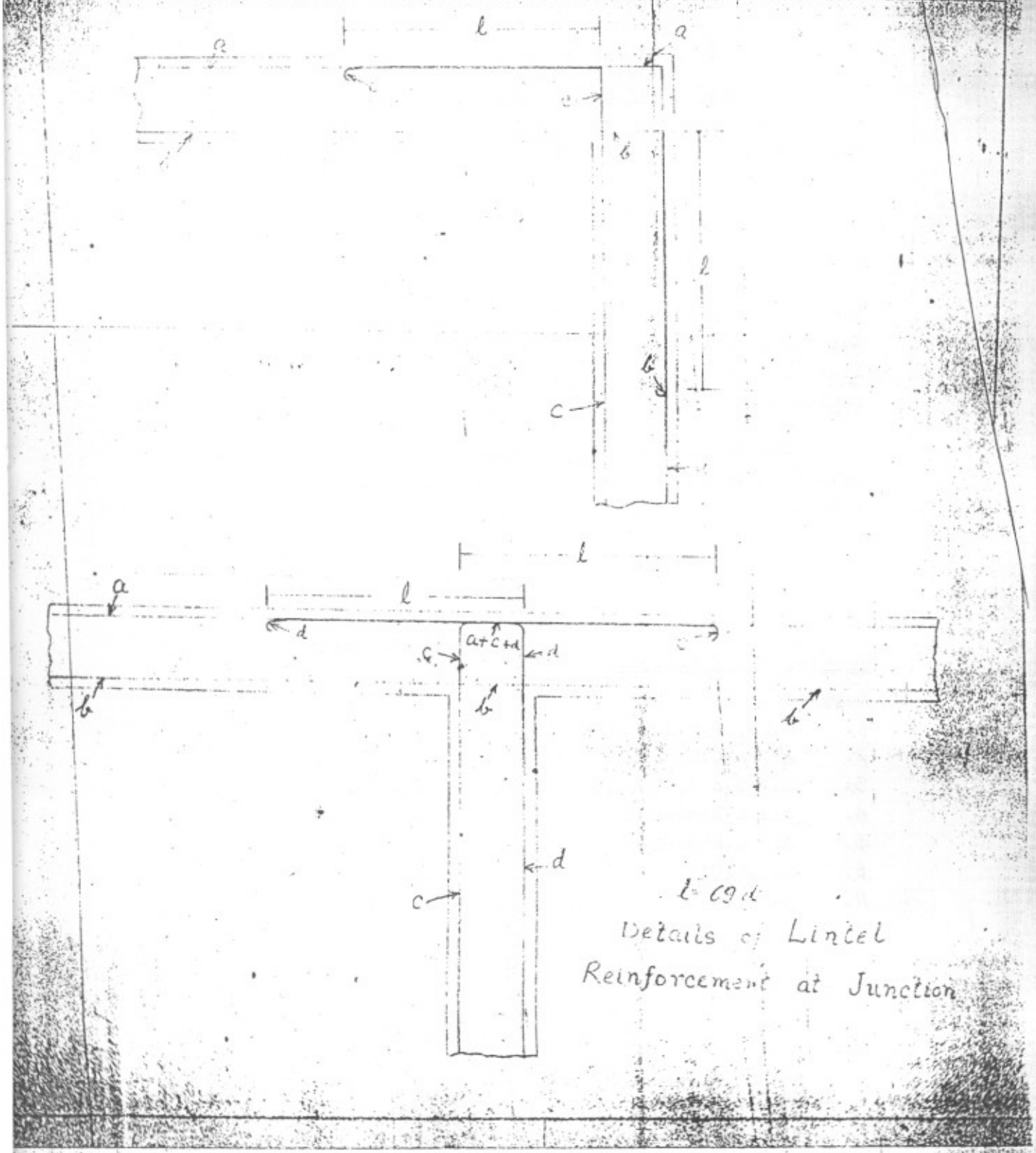

Fig 9 d

Details of Lintel Reinforcement at Junction

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER:DDA:NEW DELHI

No. C.E.(Q.C.)/3-/83/DDA/839 Date:- 19/12/83

Circular No.53. - A

During technical examination of works by the E.E.(QC), it is seen that certain common defects keep recurring on almost all works. A list of such commonly occurring defects is enclosed.

The field staff should give special attention to these points & ensure that such defects do not occur in future.

(J.L.PINTO)
CHIEF ENGINEER(QC).

Encl:-List of defects.

Copy to:-

1. C.E., D.D.A., Encl:List of defects.
2. All A.C.E's, Encl:List of defects.
3. All S.E's(Elect) Encl:List of defects.
4. All E.E's(Elect) Encl:List of defects.
5. All A.E's(Elect) Encl:List of defects.
6. E.E.(QC)Elect., Encl:List of defects.
7. A.E.(QC)Elect., Encl:List of defects.

(J.L.PINTO)
CHIEF ENGINEER(QC)

LIST OF COMMON DEFECTS OBSERVED DURING INSPECTION OF INTERNAL E.I.WORKS IN RESIDENTIAL BY QUALITY CONTROL CELL.

1. EARTHING:-
The masonry chamber for earthing is generally not constructed as per CPWD specifications.

a. The brick masonry foundation is not provided.

b. Wire mesh is just kept loose over the funnel instead of making arrangements for proper fixing of Wiremesh.

c. M.S.strip is provided for locking arrangement of the cover for earth chamber. As this gets rusted & corroded G.I.strip should be provided instead.

d. The G.I.Earth wire & the G.I.protective pipe are brought at the top of the masonry chamber instead of through the foundation of masonry chamber..

e. The cost Iron cover of the earth chamber is found less than 10mm.thick.

f. The depth of the chamber is foundless than required 30 cm.

g. G.I.wire is found rusted.

2. MAIN/SUBMAIN BOARD:-

i. Spare knocked out holes are being left.

ii. Colour coding is not adopted in three phase wiring.

iii. Internlooping for earthing should be done with lugs.

iv. Marking of switches, circuits in DBS is either not done or if done is not satisfactory.

v. Painting of the boards is done without first scrapping the cement mortar from its surface. The paints used are not of standard Quality.

vi. The surface of the wall/niche is not plasted before fixing of the main board/submain board.

3. WIRING:-

i. PVC/Rubber bushes & check nuts used are of inferior Quality.

ii. Proper mortar filling is not done behind switch boxes while fixing them in wall.

iii. The light circuit is sometimes not terminated in the nearest switch board.

iv. The height of the power plug/light plug is not kept 23 cm above the floor/kitchen plat form level.

Contd...2.....

v. The height of the light control switch box is kept either less than 125 cm or much more.

vi. Sometimes the bell push, light control switch or sockets are provided in an area exposed to rain and are not suitably protected by providing covers etc.

vii. Proper entry of conduit is not made in the adopter box/switch box for fixing of check nuts.

viii. The wood batten is not given two coats of varnish before being fixed.

ix. The wooden back plates for the light-fittings is not varnished/painted at the back side.

4. GENERAL:-

i. Material is not approved by Engineer-in-charge before allowing their use at site.

ii. Site order book is not maintained properly & on proper proforma. No remarks regarding compliance are mentioned.

iii. Insulation, earth & polarity tests record is not maintained properly & if maintained is not signed by concerned officials.

iv. Cement register is not maintained properly.

Sd/-
(M.L.PURI)
EXECUTIVE ENGINEER(E)
QUALITY CONTROL.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA VIKAS KUTEER NEW DELHI.
.....

No. CE(3)/QC/DDA/Cir./83/840 Dated: 8.12.83.

CIRCULAR NO.54

Subject: Quality Control Circulars - Use of Y-Junctions.

It is observed that the general practice in the DDA is to use T or L junctions in soil pipes and drain pipes. The result is that the connecting pipes have to be horizontal. In many cases these pipes are found to have a reverse slope. This will result in sedimentation of solids in stagnant water at the bend and choking of the drain pipe.

It is therefore essential to provide Y-junctions for drain pipes so that an adequate slope is always achieved. Provision of Y-junctions should be made in the detailed estimate and tender document.

(J.L.Pinto)
Chief Engineer (QC)

Copy to:-

1. P.S. to E.M. for information.
2. C.E., DDA for information.
3. All A.C.E.s for information.
4. All S.E.s(Civil), DDA.
5. All S.S.Ws, DDA.
6. All E.E.s(C), DDA.
7. All E.E.s(QC),DDA.
8. All A.E.s(C), DDA.
9. All S.W.s, (C),DDA.

(J.L.Pinto)
C.E.(QC)

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No. CE/3/QC/DDA/Civ/1664 Dated:22-12-1983.

CIRCULAR NO.55

Sub:- Quality Control Circulars - use of lifting hopper mixers.

Practically all the contractors of the D.D.A. use concrete mixers without lifting hoppers. As the boxes filled with sand or aggregate are very heavy, it becomes difficult for the labourz to feed the mixer and they resort to the use of tokries or wicker baskets of indeterminate capacity resulting in weak concrete.

If concrete of acceptable quality is to be produced, the use of lifting hopper mixers should be insisted upon for all works costing more than Rs. 15 lakhs.

(J.L. Pinto)
Chief Engineer(Q.C.)

Copy to:-

1. P.S. to E.M., for information of E.M.
2. Chief Engineer, D.D.A.
3. All A.C.Es., D.D.A.
4. All S.Es.(Civil), D.D.A.
5. All Ex.Engineers(Civil), D.D.A.
6. All E.Es.(Q.C.).
7. All A.Es.(Civil), D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA VIKAS KUTEER NEW DELHI.

No.CE(3)/QC/DDA/Cir./82/1838 Dated:~~19.11.83.~~ 1(-12-83

From

J.L.Pinto,
Chief Engineer(QC),

To

Sh.S.C.Gupta,
Additional Chief Engineer(Design),
Delhi Development Authority,
Vikas Bhawan Annexe,
New Delhi.

Sub: Quality Control Circulars -Structural provision for Electrical works.

It has been observed that in number of Residential building works, niches for the electrical Sub-Distribution Boards are not provided during construction of building and these boards are fixed on surface of wall. Such SDBs not only give a shabby appearance but also cause hindrance in proper movement particularly when the passages are narrow. It is, therefore essential that provision of niches for SDBs is made invariably in the architectural/structural drawing of the building. The size of the niches for each work can be obtained from the respective Superintending Engineer (Electl.) and the reduction in wall section due to the niches can be taken in to account in the design.

As per the Indian Electrical Rules there has to be a clear space of one meter in front of any electrical board. However, in the case of the electrical main boards being provided under the staircases, the required clearance is not available which is a contravention of the said rules. It is therefore requested that this aspect may be kept in view when making provision for the space for the electrical main board. If the space under the staircase is insufficient a separate room on the ground floor may have to be provided.

19/11

(J.L.Pinto)
Chief Engineer (QC)

Copy to:

1. Sh.Ved Prakash, Chief Architect, DDA.
2. Shri Auluck, Sr.Architect, DDA.
3. Shri M.N.Khullar, Sr.Architect, DDA.
4. Shri Kardam, Senior Architect, DDA.
5. Sh.M.P.Gandhi, Suptdg.Engineer(Electl.), DDA,Circle-I, for necessary action.
6. Sh.N.K.Krishnamurthy, Suptdg.Engineer(Electl.)C-II,DDA.
7. Shri Khurana, S.E.(Electl.)C-III, DDA, for necessary action.
8. Sh.M.L.Puri, EE.(Electl),Q.C.Cell, Ashok Vihar,N.Delhi.
9. S.W.Electrical Circle-I,DDA.
10. S.W.Electl.,Circle-II, DDA.
11. S.W.Electl.Circle-III,DDA.
12. All S.S.Ws(Civil) and S.W.s(Civil)of the DDA.

IMPORTANT

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI

No:CE/3/QC/Cir./1235/DDA. Date:- 9-11-83

CORRIGENDUM TO CIRCULAR NO.44.

SUB:- FLUSH DOOR SHUTTERS.

A list of suppliers of flush door shutters approved by the C.P.W.D. was circulated vide T.O. Circular No:44 dated 19.10.83. In the said list, the name of M/s. Wood Craft Products Ltd., (at Sl. No.1 under para L-i, and at Sl.No.9 under para 3) with their office at 9/1, R.N.Mukherjee Road, (7th floor), Calcutta-700001 was erroneously mentioned. The name of this supplier has since been removed from the approved list of C.P.W.D. vide DG(W) Memo No.SSW(MDS)/SWI/ASWI/18/1325 date 16.7.82 and accordingly stands deleted from Circular No:44 dated 19.10.83 of this Cell.

All concerned may carefully note the change.

(J.L.PINTO)
CHIEF ENGINEER(QC)

Copy to:-

1. P.S. to E.M.
2. CE, D.L.A.
3. All A.C.Es, D.D.A.
4. All S.Es(Civil), D.D.A.
5. All E.Es(Civil), D.D.A.
6. All E.Es(Q.C.), D.D.A.
7. All A.Es, D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI

No:CE(3)/QC/84/Cir./ 104 Dt:- 16-1-84

CIRCULAR NO: 56

Sub:- Quality Control Circulars use of measuring boxes instead of tokries or wicker baskets.

It is observed that practically all the Contractors of the DDA use tokries or wicker baskets instead of measuring boxes for pouring aggregates into the concrete mixers. These tokries are of indeterminate capacity & cannot be levelled with the result that the quantities of aggregates poured into the mixer are more than specified. This results in weak & poor concrete. As per CPWD specifications the use of measuring boxes is mandatory. While enforcing the use of measuring boxes, it should also be ensured that only concrete mixers with mechanically lifted skips are allowed to be used at the work site.

The use of tokries or wicker baskets should be totally banned and only measuring boxes used as specified in the CPWD specification for feeding materials into the concrete mixer fitted with a mechanically lifted skip.

(J.L.PINTO)
CHIEF ENGINEER(QC)

Copy to:-

1. P.S. to E.M., D.D.A.
2. All A.C.E's, D.D.A.
3. All S.E's, D.D.A.
4. All E.E's, D.D.A.
5. All E.E's(QC), D.D.A.
6. All A.E's, D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC)

CE(QC)/Q-c/circ/321 6/2/84.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER:DDA:NEW DELHI

CIRCULAR NO.57.

Sub: Quality Control Circulars-Weak concrete in columns.

From the Observation Memos of the Quality Control Cell, it is seen that weak concrete in columns has been observed in a number of works. This indicates that due importance is not being given to column concrete by the field staff.

While failure of a slab may be preceded by yielding of steel and formation of cracks which gives some warning about the impending failure, the collapse of a column is sudden and without any warning. It is therefore very important to ensure that concrete of good quality is placed in columns.

The weak concrete is mainly due to the use of excessive fine and coarse aggregate and less cement than specified. Poor quality of sand and a higher water content also contribute to the poor strength.

The Asstt.Engineer and Junior Engineer shall invariably be present during concreting operations and one of them should stand at the mixer to ensur that the materials are mixed in the specified proportions. The Executive Engineer should also conduct surprise checks to ensure that the materials are mixed in the specified proportions. It should also be ensured that concrete is properly cured. This is a general issue. If the quality of concrete does not improve to the required standard SE/ACE/CE will have to accept responsibility which may please be noted.

(K.D.BALI)
ENGINEER MEMBER.
DDA, Vikas Minar.

Copy to:-
1. C.E., D.D.A.
2. C.E.(QC), D.D.A.
3. All ACEs.
4. All SEs(Civil).
5. All EEs(Civil).
6. AEs(QC).
7. All AEs(Civil).
8. All JEs(Civil).

(K.D.BALI)
ENGINEER MEMBER.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No. Dated: 7-2-1984.

CIRCULAR NO.58

Sub:- Quality Control Circulars - Structural deviations.

During inspection of various works, it has been observed that dangerous deviations from the structural scheme are often being allowed by the field staff.

A frequently occuring design provides for two bedrooms separated by a Z shaped wall which is meant to house cupboards. According to the structural scheme the bedroom slabs are designed as two-way slabs supported on flat concealed beam which also supports the half brick walls of the Z shaped wall. This flat concealed beam is supported at midspan by a 9" pillar forming the rib of the Z-shaped wall. Hence this pillar is to be raised up to support the flat concealed beam before the floor slab is cast. If this is not done the flat concealed beam becomes dangerously overstressed and may result in the collapse of the slabs and walls.

Another dangerous practice is to punch holes in the staircase walls to support the landing slabs which are designed as flat beams. This results in overstressing of the wall on both sides of the hole which could develop crushing and shear cracks in this highly stressed wall.

Another dangerous practice is to leave openings in load bearing walls for the labour to pass from one flat to the other. This results in reduction of the wall area designed for, and reduces the horizontal strength of the wall.

The S.E.s, EEs and field staff may ensure that structural deviations from the scheme envisaged by the designer are not allowed.

(J.L.Pinto)
Chief Engineer (QC)

Copy to:-
1. P.S. to E.M. for information.
2. C.E., DDA, for information.
3. All A.C.E.s, DDA.
4. All S.E.s (Civil), DDA.
5. All E.E.s(QC).
6. All E.E.s(Civil), DDA.
7. All A.E.s(Civil), DDA.

(J.L.Pinto)
Chief Engineer (QC)

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No.CE(Q.C.)/3/DDA/Cir/559 Dated: 23-2-1984.

CIRCULAR NO.59

Sub:- Quality Control Circulars - detailing of reinforcement.

Very often it is noticed that bars are not properly bent and placed in position.

When column bars are lapped, it is seen that the bottom bar is given a sharp bend or kink to accomodate the top bar in the proper position. This is basically wrong detailing. The bottom or top bar should be cranked with a slope not steeper than 1 in 12 to accomodate the over-lapping bar. Sharp bends and kinks are harmful and should be avoided.

It is generally seen that the dimensions of rings and binders are not in conformity with the drawings. The inside dimensions of rings and binders should be carefully calculated by the A.E. after allowing for the appropriate cover so that the specified cover to the main bar is achieved.

In the case of column reinforcement, the cage should be tied with binders at least 30 cms. above the final concreting level and cover blocks with embedded binding wire tied to the main reinforcement and placed against the shuttering so as to ensure that the bars are not displaced from position.

(J.L. Pinto)
Chief Engineer(Q.C

Copy to:-

1. P.S. to V.C., for V.C.'s information.
2. P.S. to E.M., for E.M.'s information.
3. Chief Engineer, D.D.A.
4. All A.C.Es., D.D.A.
5. All S.Es., D.D.A.
6. All E.Es.(Civil), D.D.A.
7. All E.Es. (Q.C.), D.D.A.
8. All A.Es.(Civil), D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No.C.E.(Q.C.)/3/DDA/Cir./58 Dated: 24-2-1984.

CIRCULAR NO.60

Sub:- Quality Control Circulars - Shuttering.

It is seen that sufficient attention is not being paid by the field staff to shuttering work.

Very often columns are mis-shaped or out of plumb. The verticality of the column shuttering should be checked in two directions at right angles and the shuttering immovably sbrutted on all sides to wooden blocks nailed into the concrete floor. Adjustment for verticality after pouring the concrete should be avoided as it disturbs the partially set concrete at the bottom.

Very often beam sides are out of plumb and bulging out. The bottom plate of the beam should be wider than the finished width of the beam and the side shuttering should be prevented from bulging out by wooden blocks nailed to the bottom plate. The top of the side shuttering should be prevented from tilting outwards by inclinded wooden streets nailed to the side shuttering and the bottom plate.

The lines and levels of the bottom shuttering should be carefully checked before the side shuttering is fixed and reinforcement laid.

24/2

(J.L. Pinto)
Chief Engineer(Q.C.)

Copy to:-

1. P.S. to V.C.,for V.C.'s information.
2. P.S. to E.M.,for E.M.'s information.
3. Chief Engineer, D.D.A.
4. All A.C.Es., D.D.A.
5. All S.Es.(Civil), D.D.A.
6. All E.Es(Civil), D.D.A.
7. All E.Es. (Q.C.), D.D.A.
8. All A.Es. (Civil), D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER:DDA:NEW DELHI

No. CE/QC/3/Civ/910 Dt:- 12-3-84

Circular No.61.

Sub: Ban on use of PVC pipes.

Two pockets of LIG flats were inspected in which PVC pipes have been used in the buildings. The condition of the houses was shocking with a huge number of leakage points, large scale dampness of walls, floors etc with mould, dampness & smell inside the flats making them unfit for human habitation.

This experience proves conclusively that PVC pipes are unfit for use in buildings & therefore such pipes should not be provided in any building.

PVC pipes used for external water supply also burst & get damaged very frequently & a lot of complaints are received. These also may be discontinued in new works yet to be taken up& spun iron CI pipes or GI pipes adopted.

6/3

(J.L.PINTO)
CHIEF ENGINEER(QC).

Copy to:-

1. P.S. to V.C. for information.
2. P.S. to E.M. for information.
3. C.E.,D.D.A.
4. All ACEs, D.D.A.
5. All SEs, D.D.A.
6. All SSWs, D.D.A.
7. All Executive Engineer(QC).
8. All Executive Engineer, D.D.A.

6/3.

(J.L.PINTO)
CHIEF ENGINEER(QC).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER:DDA:NEW DELHI

No. CE/QC/3/Circ/713 Dt:- 13/3/84

Circular No.62.

Sub: Q.C.Circulars-Flush door shutters.

It is observed that all samples of flush door shutters collected by the Q.C.Cell from various work sites have failed because they have been fabricated with Urea Formaldehyde and not with Phenol Formaldehyde.

Executive Engineers should ensure that shutters are procured from only those firms on the approved list of the CPWD. The Executive Engineer should write to the firm so selected & get a confirmation from the firm that they will be supplying the full quantity of shutters for the work & also an assurance regarding the quality of each shutters. The firm should also be informed that some shutters at random will be sent by the field staff and the Q.C. staff for testing & that the firm will be held responsible if any shutter fails to pass the test.

13/3

(J.L.PINTO)
CHIEF ENGINEER(QC)

Copy to:-

1. P.S. to E.M. for information.
2. C.E., D.D.A.
3. All ACEs D.D.A.
4. All SEs (Civil)D.D.A.
5. All EEs(QC).
6. All EEs(DDA).
7. All AEs(DDA).

13/3

(J.L.PINTO)
CHIEF ENGINEER(QC).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No.C.E.(Q.C.)/Cir./79 Dated:22-3-1984.

CIRCULAR NO.63

Sub:- Barbed Wire Fencing

The C.T.E. has recently checked some works of barbed wire fencing and has found that the barbed wire is sub-standard.

The barbed wire has failed to pass the tests in respect of size of line wire, distance between two barbs and weight per metre of the wire.

Whenever barbed wire fencing work is undertaken samples should be collected as laid down in the C.P.W.D. specifications. The tests in respect of weight and dimensions can be carried out by the field staff and the material brought to site should be rejected if it does not conform to specifications.

For getting the other tests done such as chemical analysis, tensile strength, etc., samples should be sent to a recognised Test House for testing.

20/3

(J.L. Pinto)
Chief Engineer(Q.C.)

Copy to:-

1. Chief Engineer, D.D.A.
2. All A.C.Es., D.D.A.
3. All S.Es.(Civil), D.D.A.
4. All E.Es.(Civil), D.D.A.
5. All E.Es.(Q.C.). D.D.A.
6. Director (Hort.)
7. All Dy.Director(Hort.)
8. All Asstt.Directors(Hort.)

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No.C.E.(QC)/3/Cir./770 Dated: 22-3-1984.

CIRCULAR NO.64

Sub:- Quality Control Circulars - Deep excavation.

Para 2.7.2 of the C.P.W.D. Specifications, Vol.I states that in firm soils the sides of the trench may be kept vertical if the depth of the trench does not exceed 2 metres. For a greater depth the sides of the trench should be sloped.

In firm soil, if the total depth of the trench is 4 m. the side slope may be kept at 85° with the horizontal end when the total trench depth is 9 metres the side slope should be 60°. Slopes to be maintained for intermediate depths may be obtained by interpolation. The excavated material should not be kept closer to the top edge of the excavation than the total depth of the trench.

The above side slopes should be made flatter in case of saturated clay, clay with tension cracks, presence of surface water, presence of surcharge load or traffic vibrations, and in the case of soft clay, loose soil or slushy soil. In such cases the slopes to be maintained should be determined by stability analysis.

Para 2.13 of the C.P.W.D. Specifications states that when the depth of the trench exceeds 2 metres and stepping or sloping of sides is not possible, planking and strutting of sides should be done.

The planks, walings and struts should be designed for the following pressures when the soil is not saturated:-

Soft clay - 0.8 w.H.

Medium & stiff clay - 0.5 w.h.

Sand - 0.25 w.H.

where w= bulk density of the soil

h= depth of the point considered below the surface.

H= total depth of the trench.

If the soil is saturated, hydrostatic pressure is to be considered in addition.

.....2/-

The timber members should be designed on the basis of IS: 883 - 1970 - Code of Practice for design of structural timber in building. The ballie struts should be designed based on the formula in the above code or the seeant formula. The permissible stresses for various timbers are also given in the same code, e.g. the permissible bending stresses for sal wood and kail wood are 94 kg./sq.cm. and 46 kg./sq.cm. respectively.

21/3

(J.L. Pinto)
Chief Engineer(Q.C.)

Copy to:-

1. P.S. to V.C. in compliance with his instructions.
2. P.S. to E.M. for information.
3. Chief Engineer, D.D.A.
4. All A.C.Es., D.D.A.
5. All S.Es., D.D.A.
6. All E.Es., D.D.A.
7. All E.Es., D.D.A.
8. All A.Es., D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No.C.E.(QC)3/Cir./791 Dated: 28-3-1984.

CIRCULAR NO.65

Sub:- Quality Control Circulars - Double stage or cantilever centring.

In many cases it has been observed that scant attention is given to the design of two stage or cantilever centring. Two stage centring is provided without bracing and with inclined ballies and cantilevers centring provided without any anchorage. Such carelessness can result in the death of workmen.

Such complex types of centring should be carefully designed based on IS-883 - 1970 - Code of Practice for design of structural timber in building. Particular attention should be given to bracing against sideway and to joints in the columns. The permissible stresses for various types of timber are given in I.S.883-1970, e.g. the permissible stresses in compression for sal wood and kail wood are 94 kg./sq.cm. and 46 kg./sq.cm. respectively.

The design calculations and drawings should be got approved by the S.E. before the drawings are handed over to the contractor for execution.

26/3

(J.L. Pinto)
Chief Engineer(Q.C.)
D.D.A.

Copy to:-

1. P.S. to V.C in compliance with V.C.'s instructions.
2. P.S. to E.M for information.
3. Chief Engineer, D.D.A.
4. All A.C.Es. D.D.A.
5. All S.Es.(Civil), D.D.A.
6. All E.Es.(C), D.D.A.
7. All E.Es.(Civil), D.D.A.
8. All A.Es. (Civil), D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI.

No:CE/3/QC/Cir./897 Dt:- 4.4.84

C I R C U L A R NO - 66

QUALITY CONTROL CIRCULARES

Sub:- METAL PRIMER - LIST OF APPROVED PRODUCTS.

1. A copy of the list of metal primers approved by the C.P.W.D. as on 1.2.1978 is enclosed herewith for information and guidance. Contrectors may be directed to precure primers from these firms only.

2. Departmential officers may permit use of products with I.S.I. certificate marking even if they are not included in this list.

3. According to para 13.34.1.2 of the CPWD specifications 1977 the approved primer for steel work is Zinc Chromate primer only conforming to I.S. 104-1962. It should be ensured that only Zinc chromate primer of on approved brand and manufacture is allowed to be used as a priming cost on steel work.

4. A careful watch should be kept on the quality and performence standards of the products. The field staff should satisfy them selves that actually confirms to ~~the~~ ~~laid~~ by them

(J.L.PINTO)
CHIEF ENGINEER(QC)

Copy forwarded to:-

1. P.S. to E.M. for information.
2. Chief Engineer, DDA, A.C.Es/C.P.Es.
3. All S.Es (Civil)/Elect.
4. All E.Fs (Civil)/Elect.
5. All A.Es (Civil)/Elect.
6. All E.Es (Q.C.).

(J.L.PINTO)
CHIEF ENGINEER(QC).

LIST OF APPROVED METAL PRIMERS

1. Products of M/s. Jenson & Nicholson (India) Ltd. Culcutta.
2. Products of M/s. British Paints (India) Ltd., Culcutta.
3. Products of M/s. Shalimar Paints Ltd., Culcutta.
4. Products of M/s. Goodlas Nerolac paints Pvt.Ltd. Bombay.
5. Products of the following firms & of brands indicated.

	BRAND NAME	NAME OF FIRM
5.1.	Nomite	M/s. Nagrath Paints (P) Ltd. Kanpur
5.2.	Roshanara	M/s. Roshanara Paints and Varnish works Delhi.
5.3.	EPIL	M/s. Eagle Paint and Pigment Industries Pvt.Ltd. Culcutta
5.4.	Sparton	M/s. Addison Paints Pvt.Ltd. and Chamicals Ltd. Madras.
5.5.	Noble R/M Paint Zinc Chromate	M/s. Noble Paint and Varnish Co. Pvt. Ltd. Bombay.
5.6.	Eomite	M/s. Blundell Eomite Paint (P) Ltd. Bombay.
5.7.	Zinc Crome	M/s. Hoylis Paints Ltd. Culcutta.
5.8.	Zinc Chromate Primer	M/s. Nagrath Paints (P) Ltd. Fazal Ganj, Kanpur.
5.9.	Zinc Chromate	M/s. Gillandors Arbuthnot & Co. Ltd. Gillandor House Netaji Subash Road, Culcutta.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA VIKASKUTEER NEW DELHI.

.....

No.CE(QC)(3)/DDA/Cir./ 898 Dated: 3/4.4.84.

CIRCULAR No.67

Subject: PVC pipes for External work.

The matter regarding the use of rigid P.V.C. pipes for external works was discussed with Shri R.A.Khemani, Chief Engineer, DDA, and it was decided that, in partial modification of Circular No.61 dated 6.3.84, Rigid P.V.C. pipes shall be used for External water supply installations.

Care should be taken to see that the pipe is bedded in sand or soft soil free from rock and gravel and that the back fill up to 150 mm above the pipe consists of sand or soft soil and that the pipes are laid at least 90 cm. below ground level. In summer months jointing shall preferably be made in the m ing or evening when it is cooler so that the joint do not pull apart at night. Where the pipe line crosses a road or drain it shall be passed through a C.I. or R.C.C. pipe.

Valve & hydrant tees shall be supported by brick masonry walls as shown in the spefifications so that the torque applied in operating a valve is not transmitted to the pipe line.

The pipe and joints should be pressure tested to 1½ times the working pressure. There should be no seepage from joints and the pressure should not drop by more than 0.2 kg/cm2 at the end of one hour.

Thrust blocks shall be provided at tees and elbows to prevent the joints from working loose due to unbalanced thrust and centrifugal pressure.

(J.L. Pinto)
Chief Engineer(Q.C.)

Copy to:-

1. All C.Es./A.C.Es., D.D.A.
2. All S.Es(Civil), D.D.A.
3. All E.Es.(Q.C.), D.D.A.
4. All E.Es.(Civil), D.D.A.
5. All A.Es.(Civil), D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER:DDA:NEW DELHI

No.CE(QC)/DDA/Cir./~~1235~~ 1253 Dated:- 16.5.

CIRCULAR NO.68.

Sub: Quality Control Circulars-stage by stage inspection of works.

To ensure that buildings being constructed are structurally sound, regular stage by stage inspection of various members should be carried out.

Before slab shuttering is allowed, the AE & JE should check the masonry, strength of mortar and the column strength & verticality. Weak members should be got dismantled.

Before laying of reinforcement is allowed the shuttering should be thoroughly checked for lines & levels, proper racing & strutting etc. Reinforcement may be laid only after all defects are removed.

Before concreting is allowed the reinforcement placed should be thoroughly checked against the structural drawings. Proper cover & lever arm should be maintained with cover blocks & steel chairs & the reinforcement should be tightly bound.

During concreting the AE & JE should be present and one of them should be at the mixer to ensure that the specified quantities of materials are used.

The V.C.has instructed that such stage by stage inspection is mandatory & the SEs & EEs should enforce the system & see that it is carried out scrupulously.

(J.L.PINTO)
CHIEF ENGINEER(QC).

Copy to:-
1. P.S. to V.C. for information.
2. P.S. to E.M. for information.
3. C.E.,D.D.A.
4. All CE's DDA.
5. All SE's(Civil) D.D.A.
6. All EE's(Q.C.).
7. All E.E's(Civil), D.D.A.
8. All AE's(Civil), D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER:DDA:NEW DELHI

No.CE(QC)/DDA/Cir./1252 Dated:-16-5-84

CIRCULAR NO.69.

Sub: Quality Control Circulars-Registers for consumption of costly materials like lead, paint & bitumen.

During inspection of works, it is seen that the required attention is not being paid by the field staff to the maintenance of proper records for the consumption of various costly items in works such as lead, paint, bitumen, water proof cement paint etc.

2. The maintenance of Registers to ensure that these costly materials are actually used at the specified rate of consumption specified in the Agreement or specifications is mandatory under the specifications for the relevant items.

3. The Register should show a day by day account of the material received, issued for work and balance at the end of the day. For this purpose the materials should be kept in the joint custody of the JE and the contractor. At the end of the day the outturn should be approximately assessed by the JE & recorded in the Register & the rate of consumption calculated & compared with the specified rate of consumption The daily outturn should be in terms of area for paint, bitumen etc. and in terms of number of joints in 75mm & 100 mm pipes for lead.

The Registers should be maintained in performa attached.

(J.L.PINTO)
CHIEF ENGINEER(QC).

Copy to:-

1. P.S. to V.C. for information
2. P.S. to E.M. for information.
3. C.E.,D.D.A.
4. All CEs, D.D.A
5. All SEs.(Civil), D.D.A.
6. All EEs(QC)
7. All EEs(Civil)DDA.
8. All Dy.Dirs.(Hort.),DDA.
9. All AEs(Civil),D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA VIKAS KUTEER NEW DELHI.
.....

No.CE(QC)/(3)/DDA/Cir.//352 Dated: 25.5.84.

CIRCULAR NO.70

Subject: Quality Control Circulars - Use of stone screenings in Water Bound Macadam.

In all road work in the D.D.A it is observed that stone screenings are not being used in the top layer of the W.B.M. as provided under para 17.7.2.5 of the C.P.W.D. specifications Vol.II. When the top layer of W.B.M. is cleaned and brushed to receive the tack coat, a major portion of the exposed area consists of earth which is used as a binding material. As a result the premix carpet does not bond with the W.B.M.

As laid down in para 17.7.2.3 of the CP.W.D. specifications Vol.II, the W.B.M. shall be constructed in layers not exceeding 100 mm compacted thickness. The top layer of the W.B.M. should be constructed using stone screenings to fill up the voids between the pieces of stone aggregate as laid down in para 17.7.2.5 of the C.P.W.D. Specifications Vol.II. It should also be ensured that the size range of aggregate in the top layer does not exceed 50mm to 20 mm as defined in para 17.1.1 of the C.P.W.D. specifications Vol.II. This will make available a larger area of stone to receive the tack coat.

(J.L.Pinto)
Chief Engineer (QC)

Copy to:

1. C.E., DDA.
2. All C.E.s, DDA.
3. All S.E.s(Civil), DDA.
4. All E.E.s,(Civil), DDA.
5. All E.E.s(QC), DDA.
6. All A.E.s(Civil), DDA.

(J.L.Pinto)
C.E.(QC)

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No.C.E.(QC)/3/Circular/1502 Dated:25-5-1984.
14-6-1984

CIRCULAR NO.71

Sub:- Quality Control Circulars - Achieving Zone IV with Ghaggar sand.

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of the C.P.W.D. Specifications,

According to para 3.1.5.1., the grading of fine sand used in masonry and plaster work shall be within the limits of grading Zone IV of Table I. This can be achieved by adding a coarse sand to Jamna sand. The minimum quantity of coarse sand to be added to Jamna sand to achieve Grading Zone IV should be determined by sieve analysis of each ingredient.

As a general guide line for small works, it has been found that Zone IV can generally be achieved by mixing 1.25 parts of the light brown Ghaggar sand generally available in Delhi with one part of Jamna sand.

For large works the proportions should be determined by sieve analysis.

25/5

(J.L. Pinto)
Chief Engineer(Q.C.)

Copy to:-

1. P.S. to V.C. for V.C's information.
2. P.S. to E.M. for E.M's information.
3. Chief Engineer, D.D.A., for information.
4. All Chief Engineers of D.D.A. for informn.
5. All Supdt.Engineers(Civil), D.D.A. for informn.
6. All Ex.Engineers(Civil), D.D.A. for informn.
7. All Ex.Engineers(Q.C.), D.D.A.
8. All Asstt.Engineers(Civil), D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI.

No: CE/3/QC/Cir./1503 Dt. 4-6-1984.

QUALITY CONTROL CIRCULAR NO:- 72

SUB:- QUALITY CONTROL CIRCULARS - LAYING OF KOTA STONE & CEMENT CONCRETE TILES.

While checking some works of Kota Stone flooring and Cement Concrete Tile flooring it was observed that the tiles and stones were being laid on a bedding of dry mortar. The result was that the flooring sounded hollow, some tiles worked loose, and there was no bond between the stone and tiles and the subgrade or R.C.C. slab.

Wherever cement mortar is used as a bedding the procedure laid down in para 11.19.3.3. of the C.P.W.D. specifications, 1977, Vol.I shall be followed.

Mortar mixed with adequate water to ensure hydration shall be spread over an area and the stones/tiles shall be laid on it, pressed and tapped with a wooden mallet and brought to level. The stones/tiles shall then be lifted and laid aside, the top surface of the bedding corrected by filling hollows, and the bedding mortar allowed to harden a bit before finally setting the tiles/ stone in neat cement paste.

Cement concrete tiles and Kota Stone should not be laid on a dry cement mortar bedding.

(J.L.PINTO)
CHIEF ENGINEER(QC).

Copy forwarded to:-

1. P.S. to V.C. - for information.
2. P.S. to E.M. - for information.
3. C.E., D.D.A.
4. All CEs, D.D.A.
5. All S.Es(Civil), D.D.A.
6. All EEs(Quality Control Cell).
7. All EEs(Civil), D.D.A.
8. All AEs, D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI.

No:CE(3)/QC/82/Circular/DDA/1570 Dt:25.6.84.

CIRCULAR NO. 73.

Sub:- Supply of Doors Windows & Ventilator Shutters.

****

Please refer to the letter from F.O. to Chief Engineer, D.D.A. vide No.CE.5(2)80/Vol.III/4751 dated 29.5.1984 addressed to M/s. Mukand Wood Products regarding supply of doors, windows and ventilator shutters. It may please be ensured that the necessary tests as per terms and conditions of the contract and as specified in the C.P.W.D. specifications are conducted before the shutters are accepted. Further as soon as shutters are received at site this office may be informed about the receipt of shutters as per the proforma enclosed.

15/6

(J.L.PINTO)
CHIEF ENGINEER(QC)

Encl: One Profarma.

Copy to:-

1. All CEs, D.D.A.
2. All SEs(Civil), D.D.A.
3. All EEs(QC), D.D.A.

15/6

(J.L.PINTO)
CHIEF ENGINEER(QC).

PROFARMA FOR INFORMATION TO BE SENT BY EXECUTIVE ENGINEER TO C.E.(QC) ON RECEIPT OF DOORS, WINDOWS AND VENTILATOR SHUTTERS FROM THE SUPPLIER.

Sl. No.	Name of the firm supplying the shutter	Date of Receipt of Shutters.	Qty. Received	No of sample sent for testing & date	Name of the Laboratory/ Test house where samples sent for testing	Result of tests conducted	Action taken on the result	Remarks.
1.	2.	3.	4.	5.	6.	7.	8.	9.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI.

No:CE(3)/QC/Circular/1770 Dt:- 13-7-84

C I R C U L A R NO - 74

Sub:- QUALITY CONTROL CIRCULAR - DEPTH GAUGE AND REMOVABLE CHAIRS.

In a number of works it has been observed that during casting of R.C.C. slabs, labourers and workers generally move on the Reinforcement bars during casting either direcly or on wooden planks/bamboo challis placed on the reinforcement resulting in displacement of the reinforcement as well as disturbance to the green concrete. In R.C.C. work, proper placement of reinforcement is of vital importance and depression of the negative moment reinforcement can result in cracks in the slab and sagging of the slab. To achieve this, wooden planks/bamboo challies may be placed on removable angle iron chairs as per sketch(figure-1) attached to facilitate easy movement of labourers without disturbing the reinforcement.

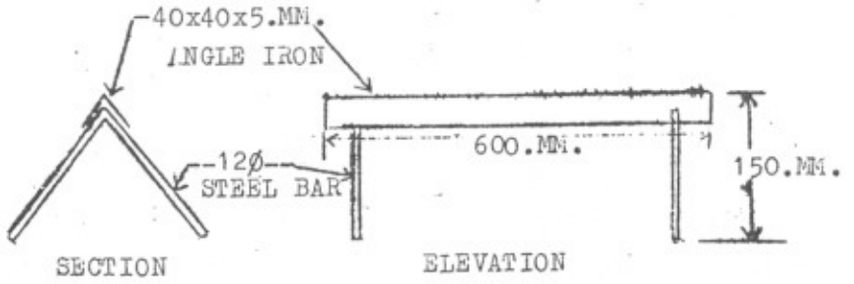
For checking of depth of slab during concreting a suitable depth gauge may also be prepared as per enclosed sketch(figure-2) so that the actual depth of concrete can be checked conveniently at any point of time without disturbing the green concrete.

(J.L.PINTO)
CHIEF ENGINEER(QC).

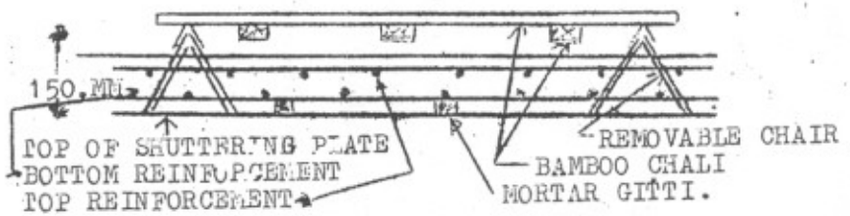
Encl: Sketch of chair and depth gauge.

Copy to:-
1. P.S. to V.C.
2. P.S. to E.M.
3. All Chief Engineers, D.D.A.
4. All SEs Civil, D.D.A.
5. All EEs Civil, D.D.A.
6. All AEs Civil, D.D.A.
7. All EEs(Q.C.), D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC).

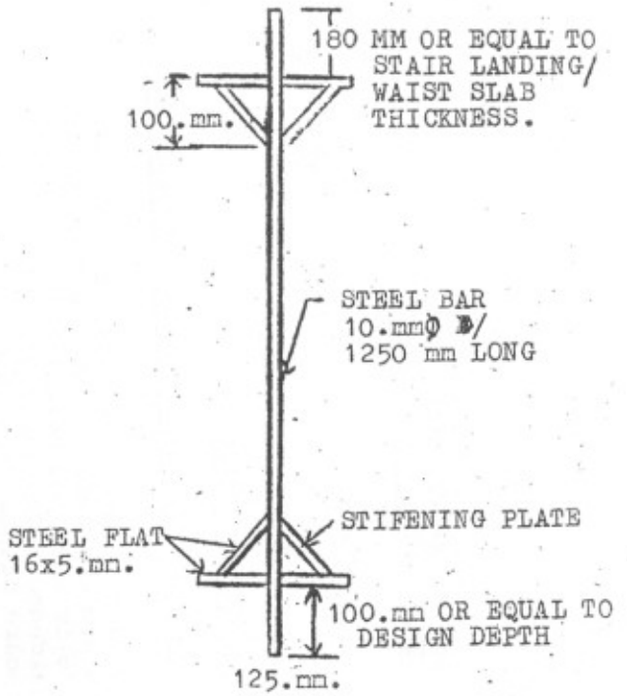


NOTE:HEIGHT OF CHAIR ADJUSTABLE FOR VARYING THICKNESS OF SLAB



PLACEMENT OF REMOVABLE CHAIRS FOR SUPPORTING BAMBOO CHALIS & WOODEN PLANKS FOR MOVEMENT OF LABOUR WHILE LAYING R.C.C.SLAB.

FIG.1



DEPTH GAUGE FOR CHECKING DEPTH OF R.C.C.SLAB

FIG.2.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI.

No:-CE/3/QC/Cir./3683 Dt:- 19-X

C I R C U L A R NO - 75

QUALITY CONTROL CIRCULARS

Sub:- APPROVED LIST OF PAINTS AND ALLIED PRODUCTS.

1. A copy of the upto date list of firms whose paints are approved by the C.P.W.D. as on 12.2.78 is enclosed herewith for information and guidance. Contractors may be directed to procure paints from these firms only.

2. Departmental officers may permit use of products with I.S.I. certificate marking even if they are not included in the list.

3. A careful watch should be kept on the quality performance standards of these products. The field staff should satisfy themselves that the products allowed to be used by them actually confirm to therelevent specifications. Whenever they fail to do so an intimation should be sent to the firm, the I.S.I., to this office and to the DG(Works) C.P.W.D.

(J.L.PINTO)
CHIEF ENGINEER(QC).

ENCL:-LIST OF APPROVED PAINTS.

Copy forwarded to:-

1. P.S. to V.C., DDA - for information.
2. P.S. to E.M., DDA - for information.
3. Chief Engineer, DDA, A.C.Es/C.P.Es.
4. All S.E.(Civil)/Elect.,Director of Horticulture.
5. All E.Es(Civil)/Elect.,Dy.Director of Hort.
6. All A.Es(Civil)/Elect., Asstt.Director of Horticulture.
7. All Executive Engineer(Q.C.), D.D.A.

(J.L.PINTO)
CHIEF ENGINEER(QC).

***

Annexure-I.

LIST OF APPROVED PAINTS AND ALLIED PRODUCTS FOR USE ON C.P.W.D. WORKS/D.D.A. WORKS.

S.No.	Product	I.S.Specification.	Name of Firm.
1.	Enamel-Interior	IS: 133-1965	i) M/s. Bhagsons Paint Industries (India) 16-A, DLE Industrial Area, Najafgarh Road, New Delhi-110015. ii) M/s. Kohi-noor Paints Pvt. Ltd., 13, R.B.Rattan Chand Road, The Mall, Amritsar.
2.	Synthetic Enamel.	IS:2932-1964	i) M/s. Kohi-noor paints Pvt. Ltd., 13, R.B.Rattan Chand Road, The Mall, Amritsar.
3.	Enamel-exterior Type-2.	IS:2933-1964	i) M/s. Kohi-noor paints Pvt. Ltd., 13, R.B.Rattan Chand Road, The Mall, Amritsar.
4.	Ready mixed Paint	IS: 123-1962 & IS:3537-1966	i) M/s. Bhagsons Paint Industries (India) 16-A, DLF Industrial Area, Najafgarh Road, New Delhi-110015. ii) M/s. U.K.Paint Industries, Amritsar.
5.	Black Japan	IS: 341-1973	i) M/s. Kohi-noor Paints Pvt. Ltd., 13, R.B.Rattan Chand Road, The Mall, Amritsar.
6.	Distemper Dry.	IS: 427-1965	i) M/s. Bright & Co.(P) Ltd. Sakivihar Lake Road, Bombay-400072. ii) M/s. Central Paint Co.(P) Ltd., 110, Industrial Estate, Indore-452003. iii) M/s. Comet Paints (P)Ltd., Anand Sajitra Road, Vallabh Vidyanagar, Distt. Kaira-388120(Gujrat). iv) M/s. Dhingra Paints (India), 14/6, Mathura Road, Faridabad(Haryana). v) M/s. Godden Chemical Works, Outside Chatiwind Gate, Kot Mehna Singh, Amritsar. vi) M/s. Kohi-noor Paints (P)Ltd., 13, R.B.Rattan Chand Road, The Mall, Amritsar. vii) M/s. N.B.S.P.(Paint Divn.) A-5/3, Jhilmil Industrial Area, Delhi- viii) M/s. U.K.Paint Industries, Post Box No.37, G.T.Road, Amritsar(Punjab).

***

1.				
			ix)	M/s. Alka Industries, Rai Parkash Nagar, Alam Bagh, Lucknow.
7.	Distemper-Oil emulsion	IS: 428-1969	i)	M/s. Bright And Co.(P)Ltd.
			ii)	M/s. Cement Paints(P)Ltd.,
			iii)	M/s. Kohi-noor Paint(P)Ltd.
8.	Aluminium Paint	IS:2339-1963	i)	M/s. Kohi-noor Paint(P)Ltd.
			ii)	M/s. U.K.Paint Industries.
			iii)	M/s. Ganesh Paint Works, Nagal Road, Kangra.
9.	Wood Primer-pink.	IS:3536-1966	i)	M/s. U.K.Paint Industries.
10.	Cement Paint	IS:5410-1969	i)	M/s. Jayant Colour & Chemical Industries Tulsiram Gupta Mills Estate, Ready Road, Darukhana, Bombay-400010.
			ii)	M/s. M.B.S.F.(Paint Divn.)
			iii)	M/s. U.K.Paint Industries.
			iv)	Hindustan Colour & Chemical Industries.

PRODUCTS WITHOUT I.S.I. CERTIFICATION MARKINGS — Annexure-II

1. Products of M/s. Jenson & Nicholson(India) Ltd., Calcutta.
2. Products of M/s. British Paints(India) Ltd., Calcutta.
3. Products of M/s. Shalimar Paints Ltd., Calcutta.
4. Products of M/s. Goodlas Nerolac Paints Pvt.Ltd., Bombay.
5. Cement Paint of M/s. Snowcem India Ltd., Bombay.
6. Distember of M/s. Blundell's Bombay Paints Ltd., Bombay.

		Brand Name		Name of Firm
7.	Dry distemper of approved quality.	Fastolene	i)	M/s. Nagarth Paints Pvt.Ltd., Kanpur.
		Parijat	ii)	M/s. Parijat Manufacturing Co. Vankaner(Saurashtra).
			iii)	M/s. Metro Paints Industries, New Delhi.
			iv)	M/s. Noble Paint & Varnish Co(P) Ltd., Bombay.
		Himalayan	v)	M/s. Hole's Paints Ltd., Calcutta.
		Dukal-in Elephant Brand	vi)	M/s. Dukart & Co.Pvt.Ltd., Calcutta.
			vii)	M/s. Khurana Brothers, Delhi-6.
		Dayton	viii)	M/s. Bhagsons Paint Industries (India) 16-A, D.L.F. Industrial Area, Najafgarh Road, New Delhi-110016.
		Cherry Bloosem	ix)	M/s. Sigma Paints Ltd., 221, Dr. D.N.Road, Bombay.

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8.	Primer of approved quality	Petrifying Liquid	i)	M/s. Blundell Eomite Paint (P) Ltd., Bombay.
		Primecote	ii)	M/s. Noble Paint & Varnish Co.(P)Ltd., Bombay.
		Hoyle's Wall	iii)	M/s. Hoyle's Paint Ltd., Calcutta.
		Sparsal White	iv)	M/s. Addisons Paints and Chemical Ltd., Madras.
		Tractor	v)	M/s. Asian Paints(India) Priva Ltd., Bombay.
9.	Oil bound wood preservative of approved quality.	King Brand	i)	M/s. Blundell Eomite Paints (P) Ltd., Bombay.
		DIMCO	ii)	M/s. Kohinoor Paint Colour & Varnish Co.Ltd., Bombay.
		Vermicides	iii)	M/s. Noble Paint and Varnish Co.Ltd., Bombay.
		Naffiproof	iv)	M/s. Addisons Paints and Chemicals Ltd., Madras.
10.	Ready mixed priming Coat Pink primer of approved quality	Everbrite	i)	M/s. Kohinoor Paints Colour & Varnish Works, Amritsar.
		Eomite	ii)	M/s. Nagrath Paint(P)Ltd., Kanpur.
		Trade	iii)	M/s. Ravi Paints & Chemicals Pvt.Ltd., Madras.
			iv)	M/s. Bhagsons Paints, New Delhi-110015.
			v)	M/s. Bombay Paints, Bombay-74
			vi)	M/s. The National Tile Works, Delhi.
			vii)	M/s. Hoyle's Paints Ltd., Calcutta.
			viii)	M/s. Macfarlane & Co.Ltd., Calcutta.
		S.P.P.	ix)	M/s. Addisons Paints & Chemicals, Madras.
		Pink Primer	x)	M/s. East India Paints & Chemicals Works Ltd., Calcutta.
		R/P Brushing Wood Primer Pink	xi)	M/s. Asian Paints(P)Ltd., Bombay.
11.	Chocolate red Grey or Buff Paint of approved quality.	Teak Coat	i)	M/s. Nagarath Paints Pvt. Ltd., Kanpur
		Ready mixed paint	ii)	M/s. Noble Paints & Varnish Co. Bombay.
		Roshanara	iii)	M/s. Roshanara Paint & Varnish Works, Delhi.
		Dark Admira-abity grey & cover all silver grey.	iv)	M/s. East India Paint & Chemical Works Ltd., Calcutta.

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1.	2.	3.	4.
11.		Brush Band v)	M/s. Modi Paint Works, Modinagar.
		Moonlite vi)	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		Bomite vii)	M/s. Blundell Bomite Paints Ltd., Bombay.
		Dark admi-ralty grey. viii)	M/s. Asian Paints Pvt.Ltd., Bombay.
		EPIL ix)	M/s. Eagle Paint & Pigment Industries Pvt.Ltd., Calcutta-1.
		Dark Admiralty Grey x)	M/s. Ideal Paint Co. 17/31-K,New Rohtak Road, New Delhi-5.
		R.M.P. xi)	M/s. Bhagson Paint Industries, New Delhi.
		R.M.P. xii)	M/s. Newshine Varnishes.
		Duka Paint xiii)	M/s. Dukrat & Co. Pvt.Ltd., 42-A, Madan Bopel Lane, Calcutta-12.
		Light Bottle-ship grey.	M/s. BECO Chemicals Pvt.Ltd., Calcutta.
			M/s. Paints & Lacquers, Calcutta.
		Alcolan	M/s. Addisons Paints & Chemioals Pvt.Ltd., Madras.
			M/s. Saurashtra Paints Pvt.Ltd., Jamnagar(Gujarat).
		Lion Brand	M/s. Hoyle's Paints Ltd., Calcutta (Except White & Green).
			M/s. The India Paint Colour & Varnish Co. Ltd., Calcutta.
			M/s. Macferlane & Co. Ltd., Calcutta.
		Interior Oil Glass	M/s. Sigma Paint Ltd., Bombay.
		R.M.P. Black	M/s. Sakow Industries Pvt.Ltd., Unit Tochl, 10, Middleton Row, Calcutta-16.
		R.M.P.	M/s. Alka Industries, Jay Parkash Nagar, Alambagh, Lucknow.
		R.M.P.	M/s. Dhagsons Paint Industries(India) 16-A, D.L.F. Industrial Area, Najargarh Road, New Delhi-110015.
		R/M Paint Red Oxide	M/s. Sakow Industries(P) Ltd., 10, Middleton Row, Calcutta-16.
		R/M Paint Chocolate	M/s. Kohinoor Paint Colour & Varnish works, Amritsar.
		R/M Paint Interior use	M/s. Sakow Industries(P)Ltd., 10, Middleton Row, Calcutta-16.
		Everbrite	M/s. Kohinoor Paints Colour & Varnish Works, Amritsar.
		Dayton Golden Brown	M/s. Dhagsons Paint Industries(India) 16-A, DLF Industrial Area, Najafgarh Road, New Delhi-110015.
		R/M Paint Golden Brown	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		Dayton post office Red.	M/s. Dhegsons Paint Industries(India) 16-A, DLF Industrial Area, Najafgarh, Road, New Delhi-110015.
		R/M Paint Hight & Dark Grey.	M/s.Sakow Industries(P)Ltd., 10, Middleton Row, Calcutta-110016.

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11.		R/M Paint Lemon Yellow	M/s. Sakow Industries(P)Ltd., 10, Middleton Row, Calcutta-16.
		R/M Paint Middle graphite	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		R/M Paint Admiratty Grey	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		R/M Paint Zinc Oxide	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		R/M Paint Non alkyd grade-II	M/s. Nagarath Paints Pvt. Ltd., Kanpur.
12.	White or green Paint of approved quality	Fan Brand	M/s. Nagrath Paints(Pvt.) Ltd., Kanpur.
		Ready mixed paint	M/s. Asian Paints(India) Pvt.Ltd., Bombay.
		Moonlight	M/s. Kohinoor Paint Colour & Varnish Works, Delhi.
		Roshanara	M/s. Roshanara Paint & Varnish Works, Delhi.
		303 Brand	M/s. Eagle Paint & Pigment Industries, Calcutta.
		R.M.P.	M/s. The India Paint Colour & Varnish Co.Ltd., Calcutta.
		Lion Brand White & Green	M/s. Hoyle's Paints Ltd., Calcutta.
		S.P.P.	M/s. Addisons Paints & Chemicals Ltd., Madras.
		R.M.P.(White)	M/s. Necshing Varnishes, Bombay-69.
		R.M.P. Brushing Finshing exterior Allkyd grade I glassing white interior sea green	M/s. Asian Paints(India) Pvt. Ltd., Bombay.
		R.M.P.(Green)	M/s. Kohinoor Paint Colour & Varnish Work, Amritsar.
		R/M Paint (Brilliant Green)	M/s. Sakow Industries(P)Ltd., 10, Middleton Row, Calcutta-16.
		R/M Paint White Lead	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		Dayton Green	M/s. Dhagsons Paint Industries(India) 16-A, DLF, Industrial Area, Najafgarh Road, New Delhi-110015.
		R/M Paint White	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		Dayton Exterior white.	M/s. Dhagsons Paint Industries(India) 16-A, DLF, Industrial Area, Najafgarh Road, New Delhi-110015.
		R/M Paint Sage Green	M/s. Blundell Bonite Paints Ltd., Ruston Building, 29, Veer Nariman Road, P.B.No.663, Bombay.1.

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1.	2.	3.	4.
13.	Superior quality ready mixed paint for wood work of approved quality.	Wood Shine	M/s. Bombay Paints and Allied products Ltd., Bombay.
		Sparton Enamel	M/s. Addisons Paints & Chemicals (Pvt.)Ltd., Madras.
		Wood-orite	M/s. Asian Paints (India)Pvt.Ltd., Bombay.
		Natural Resin	M/s. Machinery Paint & Chemicals (India) Ltd., Bombay-1.
		Timber core ready mixed paint	M/s. Noble Paint & Varnish Co., Bombay.
		Enamel Spraying	M/s. Holye's Paints Ltd., Calcutta.
		Eomite	M/s. Blundell Eomite Paint(P)Ltd., Bombay.
		Teak Coat	M/s. Nagrath Paints Pvt. Ltd., P.B.No.241, Kanpur(U.P.).
14.	Superior quality ready mixed paint for steel of approved quality.	Steel-shine	M/s. Bombay Paints & Allied Products Ltd., Bombay.
		Loharite	M/s. Asian Paints (India)Pvt.Ltd. Bombay.
		Eomite	M/s. Blundell Eomite Paints (P)Ltd., Bombay.
		Metal Eros	M/s. Hoyle's Paints Ltd., Calcutta.
		S.P.P.	M/s. Addisons Paints & Chemicals Ltd. Madras.
		Iron Cote ready mixed Paint.	M/s. Noble Paint & Varnish Co.Bombay.
15.	Superior white grey or green paint for iron sheets of approved quality.	Galve	M/s. Hoyle's paints Ltd., Calcutta.
		Roofcote	M/s. Noble Paint & Varnish Co.Pvt.Ltd. Bombay.
		S.P.P.	M/s. Addisons Paints and Chemicals Ltd., Madras.
		Roofirite	M/s. Asian Paints (India) Pvt.Ltd., Bombay.
		Ready mixed paint mart finish interior.	M/s. Asian Paints (India) Pvt.Ltd. Bombay.
		Ready mixed paint	M/s. Kohinoor paint colour & Varnish works, Amritsar.
		Ready mixed paint	M/s. Bhagsons Paints Industries (India) 16-A, DLF Industrial Area, Najafgarh Road, New Delhi.

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16.	Synthetic Enamel Enamel paint of approved quality of black or Chocolate.	Enamel	M/s. DECO Chemicals Pvt.Ltd.Calcutta.
		Enamel	M/s. East India Paint & Chemicals works Ltd., Calcutta.
			M/s. Magfarlane & Co.Ltd., Calcutta.
			M/s. Addisons Paints & Chemicals Pvt. Ltd., Madras.
		Apcolite	M/s. Asian Paints (India) Pvt.Ltd., Bombay.
		Chamak Synthetic Paint	M/s. Noble paint and Varnish Co.Ltd., Bombay.
			M/s. India Paint Colour & Varnish Co. Ltd., Calcutta.
		D & D	M/s. Gillander prbuthnot & Co.Ltd., Calcutta.
		Syntheo-mite	M/s. Blundell Eomite Paints (P)Ltd., Bombay.
		Haysynth	M/s. Hoyle's Paint Ltd., Calcutta. M/s. Sakow Industries, Calcutta-16.
		Dulux.	M/s. Imperial Chemicals Industries Pvt. Ltd., New Delhi.
17.	Synthetic Enamel paint of approved quality of all shades execpt black & chocolate.	Girafce	M/s. Mercury Paint & Varnishes Ltd., Bombay.
		Apcolite	M/s. Asian Paints (India) Pvt.Ltd., Bombay.
		Synmorite	M/s. Nagrath Paint (P)Ltd.,Kanpur.
		Dacalac	M/s. Noble Paint & Varnish Co. Pvt. Ltd., Bombay.
		Syndex-II	M/s. Eagle Paints & Pigment Industires (P)Ltd., Calcutta.
		Gulf red & brilliant green	M/s. East India Paints & Chemical works Ltd., Calcutta.
		Autolac	M/s. P.C.Chanda & Co. Calcutta.
		Enamel Drushing	M/s. East India Paint & Chemical works Ltd., Calcutta.
		Autolac	M/s. Bombay paints & Allied Products Ltd., Bombay.
		Hoyle's	M/s. Hoyle's Paints Ltd., Calcutta. M/s. Modi Industries Ltd., Modinagar. M/s. DECO Chemicals Pvt.Ltd., Calcutta.
		Pale Cream	M/s. Neoshine Varnishes, 45-A Old Nagrades Road, Bombay.69.
		Dark admiralty grey	M/s. Sakow Industries, 10, Middleton Row, Calcutta-16.

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1.	2.	3.	4.
17.		Kapolac	M/s. Raghumath Enamels Ltd., Kanpur. M/s. Paints & Lacquers, Calcutta. M/s. Macferlane & Co.Ltd., Calcutta. M/s. Addisons Paints & Chemicals Pvt.Ltd., Calcutta, Madras. M/s. the Indian Paint Colour & Varnish Co. Ltd., Calcutta.
		DOD & Mulac	M/s. Gillander Arbuthnot & Co. Ltd. Calcutta. M/s. Machinery Paints & Chemicals (India) Ltd., Bombay. M/s. BECO Chemicals Pvt.Ltd., Calcutta.
		Syntheo-mite	M/s. Blundell Eomite Paints(P) Ltd. Bombay.
		Teak Coat	M/s. Nagrath Paints, 46, Fazalganj, Kanpur.
		Dulux	M/s. Imperial Chemical Industries. New Delhi.
18.	Aluminium paints of approved quality	Everbrite	M/s. Kohinoor Paint Colour and Varnish works, Amritsar.
		3 Mangoes	M/s. Asian Paints(India) Pvt. Ltd., Bombay.
		Silvo	M/s. Star Paints & Oil Industries, Bombay.
		Aluminium Paint for brushing	M/s. East India Paint & Chemicals works Pvt. Ltd., Calcutta.
		Mercury	M/s. Mercury Paint & varnish Pvt. Ltd., Bombay.
		Brilliant	M/s. Roshanara Paints & Varnish works, Delhi.
		Noble Lustrous aluminium	M/s. Noble Paints & Varnish Co. Pvt. Ltd., Bombay.
		Almonite	M/s. Nagrath Paints(P)Ltd, Kanpur. M/s. India Paint & Chemicals. M/s. Ravi Paint & Chemicals Ltd. Madras. M/s. Blundell Eomite Paints Ltd., Bombay.
		EPIL	M/s. Eagle Paint & Pigment Industries Pvt.Ltd., Calcutta.
		D.R.Brand	M/s. Raghunath Enamels Ltd., Kanpur. M/s. Paint & Lacquers, Calcutta.
		Silvotex	M/s. Saurashtra Paints Pvt.Ltd., Jamnagar. M/s. Neoshine Varnishes. M/s. Lakow Industries, Calcutta-16.
		Silvengl	M/s. Sigma Paints Ltd., Bombay. M/s. P.C.Chanda & Co.Ltd.,Calcutta. M/s. Hoyle's Paints Ltd., Calcutta. M/s. Macfarlane and Co.Ltd., Calcutta.

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1.	2.	3.	4.
18.	Salvaline	Salvaline	M/s. Paint & Chemicals Ltd.,Madras. M/s. Addisons Paint & Chemicals Ltd., Madras. M/s. Bombay Paints & Allied Products Ltd., Bombay.
19.	Anticorrosive Bitumastic Paint of approved quality.	Bitomac green	M/s. Nagrath Paint(P)Ltd., Kampur.
		Dituminious Black.	M/s. Noble Paint & Varnish Co. Pvt.Ltd., Bombay.
		Permaseal	M/s. Mermaid Paints(P)Ltd.
		Dituminious black	M/s. Asian Paints(India)Pvt.Ltd. Bombay.
		Everbrite	M/s. Kohinoor Paint Colour & Varnish works, Amritsar.
		Dituminious black	M/s. East India Paint & Chemical Works, Calcutta.
		Bitumonious black	M/s. Neoshine Varnishes, Bombay-69.
		black bitumenous	M/s. Alka Industries, Luckow.
		Bitumenous black	M/s. Bhagson Paint Industries, New Delhi-15.
		-do-	M/s. Sakow Industries, Calcutta. M/s. Remani Paint & Varnish works M/s. India Paints & Chemicals, Madhupatna, Orissa.
		Ready mixed Black	M/s. Hoyle's Paints Pvt.Ltd. Calcutta.
		Black Bitumenous	M/s. Blundell Ecmite Paints Ltd. Bombay.
		Paint ready mixed	M/s. Saurashtra Paint Pvt.Ltd., Jamnagar.
		A.C.Black	M/s. Addisons Paints & Chemicals Madras.
20.	Enamel paint of approved quality	Queen brand 3 MGS. G.P. Synthetic enamel	M/s. Nagrath Paints(P)Ltd., Kanpur. M/s. Asian Paints(India) Pvt.Ltd., Bombay.
		Jack Dox	M/s. Mercury Paints & Varnish Works Bombay.
		Enamel	M/s. East India Paint & Chemical Works Ltd., Calcutta.
		Signal red	M/s. India Paints & Chemicals Madhupatna, Cuttack-3, Orissa.
		Enamel paint	M/s. Noble Paint & Varnish Co. Pvt. Ltd., Bombay.
		PELICAN	M/s. P.C.Chanda & Co. Ltd.,Calcutta. M/s. Bombay Paints & Allied Products Ltd.mBombay. M/s. Hoyle's Paints Ltd.,Calcutta. M/s. Modi Paints Ltd., Modinagar.

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1.	2.	3.	4.
20.			M/s. Blundell Eomite Paint Ltd., Calcutta.
		Natural Resin	M/s. EECO Chemicals (P)Ltd.,Calcutta.
			M/s. Raghunath Enamels Ltd., Canpur.
			M/s. Saurashtra Paints Ltd.,Gujarat.
			M/s. The India Paint Colour & Varnish Co.Ltd,Calcutta.
		Rajdoot	M/s. U.K.Paint Industries, Amritsar.
		Enamel black	M/s. Sigma Paints Ltd., 221-D, D.N. Road, Bombay-1.
			M/s. Macfarlane & Co.Ltd., Calcutta.
		Interior finishing Class-II	M/s. Sigma Paints (India) Ltd., Bombay.
		Duraflex	M/s. Addisons Paints & Chemicals Ltd., Madras.
21.	Black Japan	Varnish black japan	M/s. Raghunath Enamels Ltd.,Kanpur.
		Black Japan	M/s. Asian Paints (India)Pvt.Ltd., Bombay.
		King Brand	M/s. Blundell Eomite Paints Ltd., Bombay.
		Black Japan	M/s. East India Paints & Varnish Chemical Works Ltd., Calcutta.
		All India Black japan	M/s. Hoyle's Paints Ltd.,Calcutta.
		Dayton	M/s. Bhagsons Paints Industries (India) New Delhi-15.
22.	Gopal Superior Varnish of approved quality	Moonlight	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		Noble exterior oil Varnish	M/s. Noble Paint & Varnish Co. Ltd., Bombay.
		Exterior clear varnish	M/s. Addisons Paints & Chemicals Ltd. Madras.
		Dayton	M/s. Bhagsons Paint Industries, New Delhi-15.
		Varnish finishing exterior & G.P. Type	M/s. Asian Paints (India) Pvt.Ltd., Bombay.
		Blundell's Garton Brand	M/s. Blundell Eomite Paints Ltd., Bombay.
		Bright Gopal Varnish	M/s. Hoyle's Paints (P)Ltd., Bombay.

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1.	2.	3.	4.
23.	Superior spar varnish of approved quality	Synthetic Varnish	M/s. Bombay Paints & Allied Products Ltd., Bombay.
		Noble chamak super synthetic varnish	M/s. Noble Paints & Varnish Co.Ltd., Bombay.
			M/s. Kohinoor Paint Colour & Varnish Co. Works, Amritsar.
		Varnish finishing exterior	M/s. East India Paint & Chemical works Ltd., Calcutta.
		Synthetic clear varnish	M/s. Hoyle's Paints Ltd., Calcutta.
		Varnish finishing exterior	M/s. Asian Paints (India) Pvt.Ltd., Bombay.
			M/s. DECO Chemicals Pvt.Ltd., Calcutta.
			M/s. Raghunath Enamel Ltd., Kanpur.
			M/s. Paints & Lacquers, Calcutta.
			M/s. Macfarlane & Co.Ltd., Calcutta.
		Sparton Duraflex.	M/s. Addisons Paints & Chemicals Ltd., Madras.
			M/s. Saurashtra Paints Pvt.Ltd., Jamnagar.
		Ecmite	M/s. Blundell Ecmite Paints Ltd., Bombay.
			M/s. Neoshine Varnishes, 45-A, Old Nagardas Road, Mogra Pada, Andheri (West) Bombay.
			M/s. Dhagsons Paint Industries (India) 16-A, DLF, Industrial Area, Najafgarh Road, New Delhi-15.
24.	Trans-parent wood filler	Hoyle's Liquid wood filler	M/s. Hoyle's Paints Ltd., Calcutta.
		Noble wood filler	M/s. Noble Paint & Varnish Co.Ltd., Bombay.
			M/s. Dhagsons Paint Industries (India) 16-A, DLF Industrial Area, Najafgarh Road, New Delhi-15.
		Wood filler transparent liquid	M/s. Asian Paints (India) Pvt.Ltd. Bombay.
25.	Plastic emulsion paint of approved quality		M/s. Eagle Paint & Pigment Industries Ltd., Calcutta.
			M/s. Hoyle's Paints Ltd., Calcutta.
		Synthecmite	M/s. Blundell Ecmite Paints (P) Ltd., Bombay.
		Apcolite	M/s. Asian Paints (India) Pvt.Ltd., Bombay.
		Dayton	M/s. Dhagsons Paint Industried, New Delhi.
		Acrylic	M/s. Sigma Paints, Bombay.1.
		Waltone	M/s. P.C.Chanda & Co.(P)Ltd., Dudge Road Taratola Road Exen, Calcutta-60.
		Sparton	M/s. Addisons Paints & Chemicals Ltd., Madras.

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1.	2.	3.	4.
26.	Metal primer	Nomite	M/s. Nagrath Paints (P)Ltd.,Kanpur.
		R.M.P.Red oxide Zinc chrome priming	M/s. Asian Paints (INDIA) Pvt.Ltd., Bombay.
		Roshanara	M/s. Roshanara Paints & Varnish Works, Delhi.
		EPIL	M/s. Eagle Paint & Pigment Industries Pvt. Ltd., Calcutta.
		R.M. Paint Red Oxide Zinc Chome	M/s. East India Paint & Chemical Works Ltd., Calcutta.
		Primer	M/s. Bombay Paints & Allied Products Ltd., Bombay. M/s. Modi Industries, Modinagar.
		Spartan	M/s. Addisons Paints Pvt.Ltd., & Chemicals Ltd., Madras.
		Noble R/M Paint Zinc chromate brushing red oxide priming	M/s. Noble Paint & Varnish Co. Pvt. Ltd., Bombay.
			M/s. Saurashtra Paints Pvt. Ltd., Gujarat.
		Red Oxide Zinc	M/s. Nagrath Paints Pvt. Ltd., Kanpur.
		Chrome priming	M/s. Machinery Paints & Chemicals (India) Ltd., Bombay.
		Eomite	M/s. Blundell Eomite Paints (P) Ltd., Bombay.
		Zincrome	M/s. Hoyle's Paints Ltd., Calcutta.
		Red Oxide Zinc Crome	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		Zinc Cromate Primer	M/s. Nagrath Paints (P) Ltd., Fazal Ganj, Kanpur.
		Zinc Cromate	M/s. Gillanders Arbuthnot & Co. Ltd., Gillander House, Netaji Subhash Road, Calcutta-1.
		Zinc Crome primer for aluminum & light alloys	M/s. Kohinoor Paint Colour & Varnish Works, Amritsar.
		Wood Primer	M/s. Kohinoor Paint Colour & Varnish works, Amritsar.
27.	Cement Primer of approved quality		M/s. Eagle Paint and Pigment Industries Pvt.Ltd., Calcutta.
		Priming Plaster	M/s. Noble Paint & Varnish Co.Pvt.Ltd. Bombay.
		Eomite	M/s. Nagrath Paints Pvt. Ltd., Kanpur.
		R.M.P. Drushing primer	M/s. Asian Paints (India) Pvt.Ltd., Bombay.
		Hoyle's	M/s. Hoyle's Paints Ltd., Calcutta.
		Waltone	M/s. P.C.Chanda & Co. (P)Ltd., Budge Budge Road (Taratola Road) (Extn.), Calcutta-60

1.	2.	3.	4.
27.		Dayton	M/s. Dhagsons Paint Industries (India) 16-A, DLF, Industrial Area, Najafgarh Road, New Delhi-15.
28.	French Polish		M/s. Kohinoor Paint Colour & Varnish Works, Amritsar. M/s. Dhagsons Paint Industries, New Delhi.
29.	Water proof cement paints of approved quality	SUPERCEM	M/s. Snow white Industrial Corporation, Madras.
		FEROCEM	M/s. The Parresite Co. Pvt.Ltd., 10 Clive Row, Calcutta.
		SEACEM	M/s. Seacem Paints (India) Pvt.Ltd., Calcutta.
		FASTOCEM	M/s. Nagrath Paints Pvt.Ltd., 46, Fazal Ganj, Kanpur.
		AQUACEM	M/s. National Colour & Chemical Industries, Delhi.
		EVERCEM	M/s. Dhagsons Paints Industries (India) 16-A, Najafgarh Road, New Delhi-15.
		SILVERERE	M/s. Special Cement & Allied Products, Bombay.
		SWADCEM	M/s. Dukart & Co. Pvt.Ltd., Calcutta.
		CECOCEM	M/s. Metro Paint Industries, New Delhi.
		HOYCEM	M/s. Hoyle's Paints Limited, Calcutta.
		DEKOCEM	M/s. Cement Research Corporation Pvt. Ltd., Calcutta.
		WALTONE	M/s. P.C. Chanda & Co. Pvt.Ltd., Calcutta.
		INDOCEM	M/s. Alok Cemi Paints (P)Ltd., Calcutta.
		RENOCEM	M/s. Rainbow Colour Manufacturing Co. Dhayander (W.Rly.) Distt. Thanna.
		DECCEM	M/s. M.M.Ramesh & Co., New Delhi.
		PERMACEM	M/s. Killick Mixon & Co. Ltd., Bombay.
		CICOCEM	M/s. Structural Water Proofing Co. Pvt. Ltd., 21/1, Dover Road, Ballygunje, Calcutta-19.
		SEIKOCEM	M/s. Seiko Paint and Chemcial Industries 262, Model Town, Sonepat.
		Stucocem	M/s. Globe Paints, 24, Najafgarh Road, New Delhi-15.
		SEALCEM	M/s. Sigma Paints Ltd., Bombay.
30.	Cement water proofing material of approved quality	Water lock	M/s. Paulson Paints Cellulose Works, Bombay.
		IMPERMO	M/s. Snowcem India Pvt. Ltd., Bombay.
		Water seal	M/s. National Colour & Chemicals Indistries, Delhi.
		Rela (CW)	M/s. The Cement Research Corporation Pvt.Ltd., Calcutta.

.....14.....

1.	2.	3.	4.
30.		SCOTT NO.1.	M/s. Pegssus India & Co.(P)Ltd., Calcutta.
		SWADCO	M/s. Dukart & Co. Ltd., Calcutta.
		CEMTCO	M/s. Cement Water-Proof of India, Calcutta.
		ACCOPROOF	M/s. The Associated Cement Companies Ltd., Porbander.
		FERROSEAL	M/s. Ferrosite Co. Pvt.Ltd.,Calcutta.
		NORMAL SETTING	M/s. The Structure Water-Proofing Co. Pvt.Ltd. Calcutta.
		DANGO	M/s. Damseal Waterproofing Co., Calcutta-33.
		SASCO(NS)	M/s. Moda Chemical Indistries 19, Mullick Street, Calcutta-1.
		EVERSEAL	M/s. DhagsonsPaint Industries(India) 16-A, DLF Industrial Area, Najafgarh Road, New Delhi.
		HARD CRETE	M/s. Snowcem India Ltd., Killick, Home Street, Dombay.
		LILAX	M/s. Sahara Chemicals 12, Dalhousie Square East Calcutta-1.

DELHI DEVELOPMENT AUTHORITY

No. CE/AC/Civ/3/2566 Dt., the 13th August,84.

CIRCULAR NO:76.

Sub: Quality Control Circulars - Measurement of aggregates for mortar concrete.

During surprise inspections of various sites it was observed that tokris and baskets were still being used for measurement of sand and stone aggregate. As the cubical contents of such tokris and baskets are variable and indeterminate, the mortar or concrete prepared will not conform to specifications.

Para 3.5.1 of the CPWD specifications Vol.I for mortar states that sand in the specified proportions shall be measured in boxes of suitable size, (35x25x40 cm).

Para 4.3.1 of the CPWD specifications Vol.I for concrete states as under:-

> "Proportioning shall be done by volume. Boxes of suitable size shall be used for measuring sand and aggregate. The internal dimensions of the boxes shall be generally 35x25x40 cm or as otherwise approved by the Engineer-in-charge. While measuring the aggregate, shaking, ramming or heaping shall not be permitted.

These specifications shall be complied with strictly at all sites. Stringent action shall be taken against the supervisory staff and contractors by senior inspecting officers if any violation of these specifications is detected.

(J.K.VARSHNEYA)
Engineer Member,DDA.

Copy to:-

1. PS to VC for information.
2. PS to EM for information.
3. CE,DDA
4. All CEs, DDA
5. All SEs,DDA
6. Director(Hort),DDA
7. All EEs,DDA
8. All Dy.Directors(Hort),DDA
9. All AEs,DDA.

Engineer Member,DDA

DELHI DEVELOPMENT AUTHORITY

No. [illegible] Dt., the 13th August, 1984.

CIRCULAR NO.77

Sub: Quality Control Circulars-Parapets & railings.

During inspection of a work it was seen that railings have been constructed with R.C.C. precast planks imperfectly fixed at either end to the outside of the masonary parapet wall. These planks can easily be pushed out by anyone leaning against them or striking against them.

Similarly very often half brick or brick-on-edge parapets are provided without vertical reinforced pillars which are unsafe against the horizontal force of 75 Kg/Metre specified in para 3.3 of I.S.875- 1964.

These unsafe parapets and railings can result in loss of life for which the supervisery staff will be held responsible.

The precast R.C.C. planks should be embedded and anchored in vertical R.C.C. posts designed for above forces. Brick-on-edge parapets should be avoided and half brick parapets should be reinforced with R.C.C. horizontal bands and vertical posts anchored into the floor slab.

(J.K.Varshneya)
Engineer Member
10.8.84.

Copy to:-

1. PS to VC for information.
2. C.E.,DDA.
3. All CEs, DDA.
4. All SEs,DDA.
5. All S.S.Ws, DDA.
5. All EEs(C),DDA.
6. All SWs,DDA.

DELHI DEVELOPMENT AUTHORITY

No. CE/31/QC/CD/2068 Dt., the 13th 21 Aug., 1984.

C I R C U L A R NO.78.

Sub: Quality Control Cinculars-Lintels and beams at bearings.

During inspection of works recently it was seen that the depth of the R.C.C. beam over the masonary at the bearing was much less than the specified depth and that the beam reinforcement was placed directly on the masonary bearing without the specified cover. Also for casting of a staircase beam a hole was punched in the supporting wall which had already been taken up previously, the reinforcement cage was pushed into the hole and the dimensions of the concrete in the hole were much less than specified.

This type of shoddy work should be stopped forthwith.

The reinforcement cage should be constructed of the specified dimensions and placed on cover blocks over the bed-block at the bearing. It should be ensured that the dimensions of the beams over the bearings are not less than the specified dimensions.

Punching of holes for construction of RCC beams subsequently shall not be allowed. Masonary shall not be constructed above the beam bearing until after the beam has been cast.

(J.K. Varshneya)
Engineer Member.
13.8.84.

Copy to:-

1. PS to VC for information.
2. All CEs.
3. All SEs(C).
4. All EEs(C).
5. All EEs(QC).
6. All AEs(C).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
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No.C.E.(QC)/3/Circular/219 Dated: 8-8-1984.

CIRCULAR NO.79

Sub:- Cast Iron fittings for Soil and drain pipes.

It is seen that non I.S.I. Cast iron fittings for soil and drain pipes are considerably below the I.S. Standard in dimensions, in weight and in respect of the anticorresive bitumastic coating on the inner and outer surfaces.

I.S.I. marked fittings are now available in sufficient quantities in the market. Therefore only I.S.I. marked C.I. fittings should be allowed for use in works and non-ISI fittings should be completely banned.

This may be complied with strictly on all works.

(J.L. Pinto)
Chief Engineer(Q.C.)
D.D.A.

Copy forwarded to:-

1. P.S. to V.C. for V.C.'s information.
2. P.S. to E.M., for E.M.'s information.
3. Chief Engineer, D.D.A.
4. All Chief Engineers, D.D.A.
5. All Supdtg.Engineers(Civil), D.D.A.
6. All Ex.Engineers(Civil), D.D.A.
7. All Ex.Engineers(Q.C.), D.D.A.
8. All Asstt.Engineers(Civil), D.D.A.

C.E.(Q.C.)

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.
****

No.C.E.(3)/Q.C./Cir./DDA/ Dated: 29-10-1984.

CIRCULAR N..80

Sub:- Cold weather concret ng.

Another multi-storeyed building in Delhi has collapsed with the loss of several lives.

Field staff should ensure that aggregates for concrete are measured in boxes strictly in the specified proportions. Even excess of sand or poor quality sand is harmful and reduces the strength of the concrete considerably.

With the advent of the cold season, field staff should ensure that the extra periods to be allowed for striking of form work as reproduced in Quality Control Circular No.47 are strictly followed.

The greatest care should be exercised in concreting of columns by ensuring that rubbish, mortar, aggregate, etc. collected in the column section are thoroughly cleaned and a thick paste of cement is provided at all construction joints.

29/x.

(J.L. Pinto)
Chief Engineer(Q.C.)
D.D.A.

Copy forwarded to;-

1. P.S. to V.C., for information.
2. P.S. to E.M., for information.
3. All Chief Engineers, D.D.A., for infn.
4. All S.Es.(C), D.D.A, for n.a.
5. All E.Es.(C), D.D.A., for necessary action.
6. All A.Es.(C), D.D.A., for necessary action.

s.p.

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL
VIKAS KUTEER NEW DELHI.

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CIRCULAR NO. 81

No.CE(QC)/3/Cir./DDA/ 2019 Dated: 26-11

Subject: Quality Control Circulars - R.C.C. columns.

It is frequently found that the concrete in R.C.C. columns is oversanded and very weak. It is seen that due importance is given to only R.C.C. slabs and beams and concreting of columns is left to masons and mistries.

While a slab or beam generally gives a warning before failure in the form of sagging, cracks etc. the collapse of a column is sudden & catastrophic as has occurred in the case of the four storeyed framed structure which collapsed recently with the loss of several lives.

It is often seen that column bars are given a sharp bend at the transition from the lower to the upper column. This is dangerous as the column can fail in bending apart from the fact that smooth transfer of stress does not take place. Bars should be cranked to a gradual slope not exceeding 1 in 12 well away from the point of overlap with the next bar. Sharp bends in reinforcement should never be permitted. The reinforcement cage should be centred in the shuttering box with wired cover blocks tied to the reinforcement and pressing against the shuttering. The column reinforcement above slab level should be kept in position by binders.

The concrete starters at the base are often constructed by masons with poor concrete and are not cured at all. These should be cast with good quality concrete. The column boxes should be fixed immovably in position by bracing with each other & by strutting & the size & verticality should be carefully checked by the J.E. & A.E. No movement of the box should be permitted after concrete has been deposited.

All rubbish such as brick bats, loose aggregate, wood chips, earth etc. on the column crossection should be carefully removed. The surface of the construction joint shall be coated with a neat cement paste before the concrete is poured.

Graded aggregate and sand shall be measured in boxes to give the specified proportions and the concrete shall be compacted with mechanical vibrators. A continuous check should be kept on the verticality of the box during concreting.

The A.E. & J.E. will be held personally responsible for the concrete and reinforcement of R.C.C. columns.

20/11

(J.L.Pinto)
Chief Engineer (QC)

Copy to:-
1. P.S. to V.C. for information.
2. P.S. to E.M, for information.
3. All C.Es, DDA.
4. All S.E.s, DDA.
5. All E.Es(C), DDA.
6. All A.Es,(C),DDA.

OFFICE OF THE ENGINEER MEMBER,
D.D.A.

No.C.E.(1)/Cir/DDA/ 290 Dt:16-1-1985.

C I R C U L A R NO.- 82.

SUB:-QUALITY CONTROL CIRCULARS -
DOUBLE STAGE CENTRING.
****

From the various Quality Control Observation Memos it is seen that scant attention is being given to design and erection of two or three-stage centring and cantilever centring and the design and erection is generally left to the contractor's carpenters. Engineers are already aware of the large number of collapses that have occurred in Delhi due to inadequate design and faulty erection of such centring.

It is hereby enjoined that for all such centring, the contractor shall be directed to prepare a structural design and drawings of the centring based on I.S.883 - 1970 - structural timber in Building or the I.S. - 800 - structural steel in building or the corresponding code for Tubular designs. These designs and drawings shall be got approved by the Supdt.Engineer concerned before erection of the centring is commenced.

Any lapse noticed in this regard in future will be viewed seriously.

ENGINEER MEMBER.
D.D.A.

Copy to:-

1. Chief Engineer, D.D.A.
2. All C.Es.(Civil), D.D.A.
3. All S.Es.(Civil), D.D.A.
4. All E.Es.(Civil), D.D.A.
5. All A.Es.(Civil), D.D.A.

ENGINEER MEMBER.
D.D.A.

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OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA VIKAS KUTEER NEW DELHI.

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No.CE(QC)(3)/Cir./84/ 229 Dated: 24.1.85.

CIRCULAR NO.83

Subject: Q.C.Circulars - Half brick walls.

In many Housing projects of the DDA it has been observed that some portions of external walls such as wardrobe walls & portions below windows are constructed to half brick thickness.

Apart from the consequent lack of security on the ground floors, experience has shown that considerable dampness occurs on the inside of such half brick walls.

In a prestigious South Delhi, DDA Colony, the DDA has come in for bitter criticism from the residents because of heavy seepage of rain water through the half brick walls of the wardrobes.

In order to avoid such criticism, it is requested that the minimum thickness of all external walls may be kept as 230mm. (full brick thickness).

(J.L. Pinto)
Chief Engineer(Q.C.)
D.D.A.

Copy forwarded to:-

1. P.S. to V.C., for V.C's information.
2. P.S. to E.M., for E.M's information.
3. All Chief Engineers, D.D.A.
4. Chief Engineer(Designs), D.D.A.
5. All S.S.Ws., D.D.A.
6. All S.Ws., D.D.A.
7. All Executive Engineers(Civil), D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.

No.72(189)CE(QC)/Inpn./E.E.I/85/605 Dated:7-6-1985.

CIRCULAR No.84:

Sub:- Inspection by Quality Control Cell

In one of the inspections carried out by the Ex.Engineer(Q.C.), he made an observation that slabs were observed to be cracked and require attention of the Executive Engineer to immediately ascertain their structural adequacy and safety. Shortly after this inspection when this work was inspected by the Chief Engineer(Q.C.) along with the Zonal Chief Engineer concerned, the Executive Engineer informed that he got all the slabs checked and found that cracks did not extend to structural slabs and after this verification he has replastered the slabs wherever any cracks were noticed on the surface. Chief Engineer(Q.C.) advised the field Executive Engineer that in such a situation he should have contacted the Executive Engineer(Q.C.) and p-osition shown to him before replastering. When a note on this inspection was sent to Vice-Chairman, D.D.A., Vice-Chairman, DDA has desired that in such cases, field Executive Engineers should always show the position to the Executive Engineer(Q.C.) before replastering.

2. This instructions of the Vice-Chairman, D.D.A. are therefore brought to the notice of all the Executive Engineers, D.D.A. for strict compliance in future.

(S.C. Gupta)
Chief Engineer(Q.C.)

All Executive Engineers(Civil), D.D.A. including Quality Control and Designs.

Copy for information and necessary action to:-

1. All Supdtg.Engineers(Civil), D.D.A.
2. All Chief Engineers, D.D.A.

Copy also for information to The Engineer Member, D.D.A.
Copy to Guard file.

(S.C. Gupta)
Chief Engineer(Q.C.)

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER:NEW DELHI.

NO:- CE/3/QC/Civ/1277 Dt:- 14/8/05

Attention is drawn towards this Office Circular No.F.68(203)HD-XII/C.VI/3239-41 dt:28.2.83 wherein it was indicated that the replies to the observation of the Q.C.C. are to be sent within 30 days of the issue of the observation memo. A copy of the circular is being enclosed herewith for strict compliance.

It has been observed that the observation memos of the Quality Control Cell are pending in the Division Offices without any action, for months together inspite of the serious note taken by the V.C. regarding such delays.

It is therefore further enjoined upon the concerned EEs that all the pending references of the Q.C.C. in their offices be disposed off within 30 days from the issue of this letter failing which the matter will be brought to the notice of E.M./V.C.

(P.KRISHNAN)
CHIEF ENGINEER(QC).

Copy forwarded to:-
1. All C.E.s.
2. All S.E.s.
3. All E.Es.

(P.KRISHNAN)
CHIEF ENGINEER(QC),
D.D.A.

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL
VIKAS KUTEER NEW DELHI.

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No.CE(3)QC/Circular/ 7/410 Dated:13.3.86

CIRCULAR NO.85

Subject: Quality of coarse sand.

Samples of coarse sand collected from various work sites recently have revealed that many of them contain excessive silt, much beyond the permissible limit of 8% and hence are unacceptable. Use of such sand would result in reduction in the strength of concrete and mortar.

2. Executive Engineers should ensure that sand containing more than the permissible percentage of silt is not used on any work. Where the excess silt is within reasonable limits washing of sand should be insisted upon to bring down the silt content within 8%. The Executive Engineers are advised to keep a strict vigil over the quality of coarse sand.

13.3.86

(P.Krishnan)
Chief Engineer(QC)

Copy to:-

1. P.S. to V.C.,DDA, for information.
2. P.S. to E.M.,DDA, for information.
3. All Chief Engineers, DDA.
4. All S.E.(Civil),DDA.
5. All Executive Engineers(Civil),DDA.
6. All Ex.Engineers (QC),DDA.

(P.Krishnan)
C.E.(QC)

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA VIKAS KUTEER NEW DELHI.

.....

No.CE(QC)(3)/Cir/ 7689 Dated:31.3.86.

CIRCULAR NO.86

Subject: Cement plastering of the ceiling of RCC slab before casting slab at next floor level.

It has been observed in some of the works that plastering the ceiling of RCC slab at lower levels is being done before casting the slab at the next higher level. This is not advisable as the plastering is likely to be disturbed while erecting the centring/shuttering, placing reinforcement and casting of RCC slab at the next higher level. Moreover, the weight of concrete, centring/shuttering etc. of any upper floor being cast, is to be supported on one floor below the topmost floor already cast.

In this connection the following provisions of CPWD Specification 1977 are relevant:-

Para 5.2.2.2:

"In case of structures with two or more floors, the weight of concrete, centring and shuttering of any upper floor being cast shall be suitably supported on one floor below the topmost floor already cast. In such cases normal props as per 5.2.2.1 shall be provided for supporting the floor to be cast on the topmost floor already cast. Suitable supports below this floor shall be provided preferably to come below the props of the upper floor. Planks at top ends of these props shall be provided so as to give even distribution of load.

Form work and concreting of upper floor shall not be done until concrete of lower floor has set for atleast 14 days. In case of balconies and cantilever beams, coming one above the other, the members being cast shall be supported by props on two floors below the floor where initial supporting has been done. Ballies shall rest squarely on wooden sole plates of 40mm thickness and with minimum bearing area of 0.1 square metre."

Para 13.8.4:

Ceiling plaster shall not be commenced until the slab above has been finished and centring has been removed. In the case of ceilings of roof slabs, plaster shall not be commenced until the terrace work has been completed. These precautions are necessary in order that the ceiling plaster is not disturbed by the vibrations set up in the above operations."

(P.Krishnan)
Chief Engineer(QC).

C.C: 1.P.S. to V.C.,DDA.for inf.
2.P.S. to E.M.,DDA.for inf.
3.All Chief Engineers,DDA. and C.E.(Design).
4.All S.S.Ws,DDA.
5.All S.W.s,DDA.
6.All Executive Engineers(Civil),DDA.

C.E.(QC)

DELHI DEVELOPMENT AUTHORITY
(QUALITY CONTROL CELL)

No.CE(QC)(3)/Cir./ 788 Dated:29-7-1986.

CIRCULAR NO.87

Sub:- Replies to Observation Memos issued by the Quality Control Cell.

It has been observed that inspite of instructions issued earlier on this subject, replies to the inspection notes issued by the Quality Control Cell are not being sent by the Executive Engineers within the stipulated period of 30 days from the date of issue of the Observation Memo. There have been instances where replies have not been received even after a year. The very purpose of inspection by Quality Control Cell will be defeated unless prompt action is taken by the field staff to take remedial measures on the defects pointed out during inspection.

2. The Chief Engineers are requested to ensure that replies to the Observation Memos issued by the Quality Control Cell are sent by the Executive Engineers within 30 days from the date of issue. They are also requested to bestow their personal attention to the major defects brought to their notice in the forwarding note of the Observation Memo.

(P. Krishnan)
Chief Engineer(Q.C.)
D.D.A.

Copy to:-

1. P.S. to V.C.
2. P.S. to E.M.
3. All Chief Engineers, D.D.A.
4. All S.Es. & S.S.Ws., D.D.A.
5. All E.Es.(Civil), D.D.A.
6. E.Es. of Quality Control Cell.

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL
DDA, VIKAS KUTEER, NEW DELHI.

No.CE(QC)/3/Circular/86/1069 Dated:20-8-1986.

CIRCULAR NO.88.

Sub:- Seepage and dampness from roofs.

During inspections by Quality Control Cell, dampness and seepage from roofs have been observed in many schemes. This is mainly due to defects in construction and inadequate supervision. Special attention is required on the following items to prevent such complaints:-

1. The top of R.C.C. roof slab should be finished with trowel. Compaction of the R.C.C. slab including the bearings over the walls should be carried out properly.

2. On many works it has been noticed that brick work above lintel level has hollow joints. It is necessary to ensure that brick work of walls including parapets is constructed with all joints filled with mortar of the specified ratio.

3. Painting of top of roof slab should be done with bitumen of proper quality @ 17 Kg./10 sq.mtr.

4. Mudphuska should be compacted at the optimum moisture content and laid to the required slope (1 in 48).

5. The soil for the mud plaster should be mixed with Bhusa @ 35 Kg./cu.mtr. and allowed to mature for 7 days. After the mud plaster has dried gobri leaping should be applied over the entire surface so that cracks, if any, in the mud plaster are sealed in this process.

6. The tiles over the mudphuska should be laid on mud mortar to proper slopes without any depression. The mud mortar should not rise in the joints more than 12 mm. so that a depth of about 32 mm. is available for the cement mortar grouting of mix 1:3 (1 cement : 3 fine sand) - cement to be mixed with 5% crude oil by weight.

7. The concrete for the khurras should be laid before the construction of parapet and laying of mudphuska and tiles. The tiles over the mudphuska shall overlap the concrete of the khurra by not less than 7.5 cms. It has been noticed that in many cases PVC sheet of the required thickness (400 microns) is not provided under the Khurras.

8. The chase for the cement concrete gola should be 75 mm. wide and 75 mm. deep. Very often it has been noticed that the required chase has not been provided. Expansion joints should be provided in the gola at every 3.5 to 4.5 mtrs. and filled with mixture of bitumen, cement and coarse sand.

Contd.....2/-

9. Cement concrete coping should be provided over the masonry parapet wall with slope towards inside.

10. In many instances, finishing of mudphuska work and gola under and around the over-head tanks is not carried out before casting the beam and placing the tank. Later, this work cannot be done properly and hence it is necessary that mudphuska work should be completed before placing over-head tanks in position.

(P. Krishnan)
Chief Engineer(Q.C.)
D.D.A.

S.P.

Copy to:-

1. P.S. to V.C.
2. P.S. to E.M.
3. All Chief Engineers, D.D.A.
4. All S.E.s & S.S.Ws., DDA.
5. All E.Es.(Civil),DDA.
6. E.Es of Quality Control Cell.

(P.Krishnan)
Chief Engineer (Q.C.)
D.D.A.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
DDA: VIKAS KUTEER: NEW DELHI

No. CE(3)/QC/Circular/ 598 Dated : 25/3/07

Replies to the observation memos of Quality Control Cell are not sent by the various EEs, DDA promptly and in a systematic way, inspite of clear instructions issued by this office. It is observed that copies of replies of observation memos sent to this office are not endorsed to EE(QC) concerned. Similarly copies of rejoinders sent to Executive Engineers (QC) are not forwarded to this office.

It is again emphasised that all replies of observation memos, hence forth, shall be sent to Chief Engineer(QC) with a copy endorsed to EE(QC) concerned and in case of rejoinders the replies shall be sent to EE(QC) and copies endorsed to this office.

It is enjoined upon all EEs that these instructions may be followed strictly.

(P. Krishnan)
Chief Engineer(QC), DDA.

Copy forwarded to :

1. All Chief Engineers, DDA.
2. All Superintending Engineers, DDA.
3. All Executive Engineers, DDA.
4. All Deputy Director (Hort.), DDA.

Chief Engineer(QC), DDA.

YK.

Annexure-1

_____Zone

Sr.No.	Name of division	April,86	May,86	June,86	July,86	Aug.86	Sept.86	Oct.86	Nov.86	Dec.86	etc.

Annexure-2

Division No._____

Sr.No.	Name of work	Agency	Estimated amount / Tender amount	Date of start / Stipulated date of completion	Progress of work I Qr.87	II Qr./87	etc.	Dates of Inspections

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL
VIKAS KUTEER NEW DELHI.

No.CE(3)QC/Circular/[illegible]87 Dated: 6.4.87

CIRCULAR NO. 89

Subject: Providing & fixing of floor traps.

It has been noticed that floor traps used in many of our works are not as per specifications and these are also not fixed properly, leading to seepage and dampness. The Executive Engineers may ensure that providing and fixing of floor trap is carried out as indicated below:-

1. The dimensions of the floor trap shall be as indicated in I.S.1729-1979. Trap with constriction at the outlet shall not be accepted.

2. The depression in the R.C.C. slab for fixing of floor traps in kitchen and bath should be adequate. The overall depth of 75mm outlet trap is 225mm.

3. The floor trap shall be encased with 75mm thick cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20mm nominal size).

4. The top of this concrete shall bethoroughly cleaned with wire brush and cement slurry applied before laying the flooring in the bath/kitchen so that the concrete encasing around the trap and the flooring act integrally.

5. Discharging of one floor trap in to another should be avoided.

6. The pipe from the floor trap to the stack should have a slope of at least 1 in 5[illegible].

7. Collar joints shall be avoided in the pipe from the trap to the stack.

8. Smoke test shall be carried out before covering the joints from the trap to the stack.

(P.Krishnan)
Chief Engineer (QC)

Copy to:-

1. P.S. to V.C., DDA, for information.
2. P.S. to S.E., DDA, for information.
3. All Chief Engineers, DDA.
4. All S.E.(Civil), DDA. 5. All Ex.Engineers(C), DDA.
6. All Exen.Engineers.(QC), DDA.

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER, D.D.A., NEW DELHI.

No.C.E.(3)Q.C./Circular/87/ 2207 Dated:27-5-1987.

CIRCULAR NO.90

Sub:- Verticality of walls.

One of the defects noticed by the Quality Control Cell during their inspections is 'out of plumb walls'. The Lt.Governor has observed that this is a common defect and not much attention is being paid.

It is therefore emphasised that proper care should be taken by the field staff, during construction to ensure verticality of walls. The Junior Engineer and Asstt.Engineer should get the masonry walls built truly plumb. The Executive Engineer should also see this aspect during his inspections. Deviation from vertical within a storey shall not exceed ± 6 mm. per 3 m. height.

(P. Krishnan)
Chief Engineer(Q.C.)

Copy to:-

1. P.S. to V.C., for information.
2. Engineer Member, for information.
3. All Chief Engineers, D.D.A.
4. All Supdt.Engineers(Civil).
5. All Executive Engineers(Civil).

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS KUTEER:DDA:NEW DELHI

No. CE(3)QC/Circular/87/ Dt:- 15.6.87

CIRCULAR NO.91.

Sub:Provision of bracings for form work.

Some of the Field Engineers are under the misconception that bracings are not required for centring where spans are less than 4.5 mtrs. and heights are within 3.5 mtrs. Para 5.2.2.3 of the C.P.W.D.Specifications, only clarifies, that beyond spans of 4.5 mtrs. and height above 3.5 mtrs, the form work shall be properly designed, taking into consideration all the factors and suitable sections provided; while, for spans and heights less than given above, the sizes indicated in the earlier paras could be provided.

It would be abundantly clear from para 5.2.0 of CPWD Specifications that all form work shall be of rigid construction and strong enough to withstand dead and live loads and forces caused by ramming and vibration of concrete and other incidental loads, imposed upon it during and after casting of concrete. It has been clearly stipulated in this para that the form work shall be made sufficiently rigid by using adequate number of ties and braces. It may, therefore, be ensured that ties and braces are provided for all form work irrespective of span and height.

(P.KRISHNAN
CHIEF ENGINEER(QC).

Copy to:-
1. P.S. to V.C., D.D.A., for information.
2. P.S. to E.M., D.D.A.,for information.
3. All Chief Engineers.
4. All S.E.(Civil).
5. All E.E.(Civil).
6. All E.Es(QCC), D.D.A.

CHIEF ENGINEER(QC).
D.D.A.

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL

No.CE(3)QC/DDA/87/3167-72 Dt.7.8.87

CIRCULAR NO. 92

Subject: Earthing

Some of the common defects in earthing, noticed during inspections of Quality Control Cell are given below:-

1. Brick masonry chamber is not constructed as per C.P.W.D. specifications.
2. Brick masonry foundation is not provided for the chamber.
3. The chamber is not constructed in such a manner that 40mm dia G.I. pipe earth electrode is at the centre of the chamber.
4. The pipe electrode is not buried to the correct level such that its top is not less than 20 cm below ground level.
5. Either wiremesh is not provided or it is kept loose over the [illegible] instead of fixing it properly.
6. The G.I. earth wire and protective pipe are brought at the top of the chamber instead of bringing it through the foundations of the masonry chamber.
7. Fixing of the earth wire is not done properly with lug and spring washer.

The field staff should take care in providing earthing stations and avoid defects as indicated above by ensuring adequate supervision at the appropriate time.

(P.Krishnan)
Chief Engineer (QC)

Copy to:-

1. V.C. for information.
2. E.M., for information.
3. All Chief Engineers.
4. S.E.(Electl.) I,II,III.
5. All Executive Engineers (Electrical).
6. E.E.(Electl.) Quality Control Cell.

(P.Krishnan)
C.E.(QC)

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL

No.CE(3)QC/DDA/87/ 3255-60 Dt. 13.8.87.

CIRCULAR NO.93

Subject: Examination of RCC work on removal of form work.

1. It has been noticed during the inspections, by the Quality Control Cell that prompt action is not taken by the field staff to examine the RCC work on removal of form work. The C.P.W.D. Specifications clearly stipulates that immediately on removal of forms, the RCC work shall be examined by the Engineer-in-charge. As a matter of fact, RCC work can be accepted only if the Engineer-in-charge is satisfied, on the basis of such an inspection, that the work has neither sagged nor contains honey-combing to an extent detrimental to structural safety or architectural concept.

2. If as a result of inspection, it is observed by the Engineer-in-charge that there are only surface defects of a minor nature which can be accepted, rectification of such defects should be taken in hand immediately as indicated in Para 5,4.7.2 of C.P.W.D. Specification, 1977 Vol.I.

3. The surface of the RCC work which has to receive plaster should be hacked immediately after the shuttering is removed with a pointed tool with spacing of not more than 5 cm. centres, the pocks being made not less than 3mm deep.

4. The field staff should ensure that rectification of minor surface defects and hacking are carried out immediately on removal of form work and should not be postponed till the time of rendering. Any RCC work where such action has not been taken shall be considered to be work done not according to Specifications.

(P.Krishnan)
Chief Engineer (QC)

Copy to:-

1. V.C. for information.
2. E.M., for information.
3. All Chief Engineers. (QC)
4. All S.E.(Civil).
5. All Executive Engineers (Civil).
6. All Ex.Engineers, Quality Control Cell.

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL

No.CE(3)QC/DDA/87/ 900 Dt 15.3.88.

CIRCULAR NO.94

Subject: Identification of recorded measurements.

For purposes of measurements, numbers are assigned to individual blocks in housing projects and to lines in respect of water supply and sewerage works. These numbers are marked on some plans, which in due course of time, may not be traceable. It is therefore, enjoined on the field officers that in future, a sketch plan indicating the block numbers, line numbers etc. be drawn in the measurement book itself and while recording detailed measurements, a reference to this plan be made, so that a permanent record is available.

(P.Krishnan)
Chief Engineer (QC)

Copy to:-

1. V.C. for information.
2. E.M., for information.
3. All Chief Engineers.
4. All S.E.(Civil).
5. All Executive Engineers(Civil).
6. All Ex.Engineers, Q.C.Cell.

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL

No.CE(3)QC/DDA/87/ 901 15/3 Dated 30.

CIRCULAR NO.95

Subject: Use of ISI marked RCC pipes in sewerage works.

It has been brought to notice that in some works non ISI marked pipes are being used. The field officers should ensure that only ISI marked RCC pipes are used in DDA works. While laying these pipes, ISI mark be kept at the top, to facilitate checking during inspections.

(P.Krishnan)
Chief Engineer(QC)

Copy to:-

1. V.C. for information.
2. S.M. for information.
3. All Chief Engineers.
4. All S.E.(Civil).
5. All Executive Engineers (Civil).
6. All Executive Engineers, Q.C.Cell.

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL

No. F.CE(QC)3/DDA/341x Dt.18.8.88.

CIRCULAR NO.96

Subject: Use of ISI marked Asbestos cement pipes.

During inspections by Quality Control Cell, it has been observed that non-ISI A.C. pipes are being used in many works. The E.E.s have been advancing the plea that ISI marked pipes are not available in the market. The issue was taken up with ISI who have stated that there are three manufacturers of Asbestos Cement Building Pipes as per ISI - 1626 - 1980 (Part I). The list of manufacturers is given below:-

1. Indian Asbestos Products,
   Plot No.C-5, Block-III, IDA,
   Uppal, Hyderabad - 5000 39.
2. Calcutta Concrete Industries,
   180, M.B.Road, Brindi,
   Calcutta - 700031.
3. Hyderabad Asbestos Cements Pipes,
   Plot No. 43/A, Road No.1 SEIE,
   Kattedan Industrial Estate,
   Rajendranagar Tq.
   Ranga Reddy District.

These pipes are available in the market.

It may be ensured that only ISI marked A.C. pipes are used in our works.

(P.Krishnan)
Chief Engineer (QC)

Copy to:-

1. V.C., DDA, for information please.
2. E.M., DDA, for information please.
3. All C.E.s, S.E.s, E.E.s for necessary action.

(1) Sent to Rohini Zone/22-8-88
(2) All CE & SE-V, EE/HQ.

(P.Krishnan)
C.E.(QC)
22/8

OFFICE OF THE CHIEF ENGINEER
QUALITY CONTROL CELL
VIKAS SADAN-2ND FLOOR, I.N.A. DELHI.

NO.CE(3)/QC/Circular/3413 Dated. 19-8-88.

CIRCULAR NO. 97

Sub.:- Steel doors and windows

The following defects have been commonly observed in the item of steel work for door & windows during the inspections by Quality Control Cell. The same have been reviewed with C.P.W.D. specification Vol. I, 1977 as applicable to D.D.A. works and its relevent para are mentioned against each below:-

1. The Brass striking plates are either not fixed at all or M.S. plates are used instead (Para 10.10.2.3).
2. The fixing lugs are generally not provided at the top and bottom. They do not conform to the relevant spe-ci-fications and the lugs/screws are not located at the standard distances prescribed in the I.S.1038 of 1983 as indicated in fig.29 therein. The lugs/screw/dash fasteners/rawl plugs are not fixed at top and bottom (Figure 18 of specification 1977 Vol.I).
3. Wide gaps between steel window and brick work/RCC work are noticed. C.P.W.D. specification 1977, Volume-I para 10.10.2.2 specifies that gap should not be more than 12.7mm wide. MS steel spacers or templates be used for door/window opening at the time of R.C.C. such gaps could be avoided.
4. Cement concrete block for hold fasts are of size lesser than specified i.e 15x10x10cm. The lugs are invariably not fixed in the center of the cement concrete block.
5. As per C.P.W.D. specification 1977 (para 10.10.2.3) the steel hinges are to be welded to the frame after cutting a slot in the frame and inserting the hinge therein, however the hinges are generally being welded directly on the frames without cutting any slot.
6. The hinge pins have to be made of electro galvanised steel (para 10.10.2.3 b) whereas these are found provided simply of mild steel [illegible] the movement of shutters.
7. The window frames are to be applied with a coat of [illegible]

8. C.P.W.D. specification 1977 Volume.1 (stipulated in D.D.A. Agreements) para 10.10 specifies the use of window section in frame of weight 1.532 Kg./m. It has been observed that window sections in frames, though of I.S.I. mark, are less in weight and require cost adjustment while accepting such under weight sections.

9. For steel window of composite patterns, having ventilators of fixed glazing above the openable portion, as per C.P.W.D. specification 1977 Volume-I para 10.10.2.5 a horizontal transome coupling bar (K-12 B) is required to be provided between two F 7 B sections, but instead just a mullion (F-4B) is used horizontally replacing the 2 No.F 7 B and K-12B sections.

Similarly the coupling section is not being provided at the junction of openable door on one side and fixed glazing or windows on the other in the composite section.

10. The corne-rs of fixed and openable frames are required to be mitred and welded to achieve a solid fused welded joints either by " flash butt welding" or any other suitable method. These have also to be properly ground. It has been observed that welding is not done all along the place of meeting the members but only tack welding is done.

11. Frames are some times deformed/damaged by resting scaffolding members and hinges are jammed by mortar droppings, resulting in improper or inadequate opening/closing of shutters which is one of the major irritants to the allottees. This defect occurs mainly due to not foll-owing the precautions as provided in para 10.10.6 of C.P.W.D. specifications 1977 Vol.I. The fittings and hinges have to be protected by alkathene sheets during execution, as provided in this para.

12. The peg stay is required to be fixed in proper relation to the peg & the hinge. Proper care is not taken and this affects the operation of the window.

The field staff should ensure that such defects are not permitted in their works and wherever noticed, rectifications are carried out immediately.

(P.KRISHNAN)
CHIEF ENGINEER
QUALITY CONTROL CELL
D.D.A.

Copy to:-

1. Vice Chairman, D.D.A. for information.
2. E.M., D.D.A. for information.
3. All Chief Engineer, D.D.A.
4. S.E.(Q.C.)/D.D.A.
5. All SEs(Civil)/D.D.A.
6. All Ex.Engineer, D.D.A.
7. All Ex.Engineer, Quality Control Cell, D.D.A.
8. With spare copies.

(P.KRISHNAN)
CHIEF ENGINEER
QUALITY CONTROL CELL
D.D.A.

OFFICE OF THE CHIEF ENGINEER(QC)
QUALITY CONTROL CELL:DDA:C.BLOCK
2ND FLOOR: VIKAS SADAN:NEW DELHI

NOL-CE(3)QC/Circular/ 3672 Dt:- 7.9.88

CIRCULAR NO.93.

It has been observed that for items like weak plaster, lesser thickness of plaster, incorrect lines of levels, lesser height of fittings, non-provision of primer coat, improper lapping of tiles over khurras, irregular casting of RCC work etc. EEs are proposing payments at reduced rates in his reply. Recovery of money from contractor is not the substitute for correct work according to specifications. Power of acceptance of substandard work at reduced rates is vested only in the SEs. It is requested that SEs should use this power very judiciously keeping in view the guidelines given in CPWD mannual Vol.II. In future, reply of EEs that reduction in rate would be proposed, shall not be accepted. After the receipt of inspection memo, EEs should discuss the points with his SE and later should take immediate dicision weather to re-do an item or to accept at reduced rate and intimate to this office about his decision. This shall help us in reducing correspondence with the EEs again & again. However para shall be finally dropped only after getting information regarding voucher no. or MB page vide which recovery made from the Contractor.

(S.C.PRASAD)
CHIEF ENGINEER(QC)
D.D.A.

Copy to:-

1. Vice Chairman, DDA.
2. E.M, D.D.A.
3. All the CEs, DDA.
4. All the EEs, DDA.
5. S.E.(QC),DDA.
6. All the EEs(QC),DDA.

CHIEF ENGINEER(QC)
D.D.A.

DELHI DEVELOPMENT AUTHORITY
OFFICE OF THE
CHIEF ENGINEER(QUALITY CONTROL)
C-2 BLOCK:VIKAS SADAN:N.DELHI

No. CE(3)QC/Circular/4249- . Dated: 21.10.88

CIRCULAR NO. 99

SUB: Return for award of works and progress report of works.

Henceforth, the return for award of works costing more than Rs. 10 lacs should be sent to this office by 1st week of the month pertaining to previous month.

The progress reports for the works costing Rs. 10 lacs and above is required to be sent bimonthly and not monthly.

The reports/statements should be sent to the Chief Engineer(QC) with a copy endorsed to E.E.(QC)concerned.

It is enjoined upon all the Executive Engineers to send these returns in time.

(S.C. PRASAD)
CHIEF ENGINEER(QC)

Copy to:-

1. The Engineer Member, DDA
2. All Chief Engineers, DDA
3. All Superintending Engineers, DDA
4. All Executive Engineers, DDA.
5. All Deputy Directors(Hort.), DDA

DELHI DEVELOPMENT AUTHORITY
QUALITY CONTROL CELL

NO. QC(3)/03/Circular/4625 Dated: 3rd Oct. '1988

CIRCULAR - 100

In DDA we have been insisting from time to time for use of only I.S.I. marked products. It is still seen during inspections by Quality Control Cell that S.W. pipes being used in our works are not I.S.I. marked. In this regard it is brought to the notice of all concerned that there are a number of manufacturers who are holding I.S.I. licence for manufacturer of S.W. pipes as per I.S. 651-1980. A copy of the list is enclosed.

As far as availability of these pipes in Delhi is concerned these are readily available. Names of a few stockists who are supplying I.S.I. marked S.W. pipes in Delhi are given below:-

1. M/s. Subhash Chand Gupta & Bros.
   Shop No.4619-20, Gali no.50 & 51
   Near Ganga Mandir Marg,
   Regharpura Karol Bagh,
   New Delhi.

2. M/s.Rameshwardayal Aggarwal & Sons,
   4574-75, Arya Samaj Road,
   Regharpura Karol Bagh,
   New Delhi.

3. M/s.Goojarmal Ganpat Rai,
   3371, Hauz Qazi,
   Delhi-110 006.

4. M/s. Kailash Builders,
   HS-11, Kailash Colony Market,
   New Delhi-110 048.

As such it is once again enjoined onfield staff that use of non I.S.I. marked S.W. pipes should be discontinued immediately.

(S.C.TAYAL)
SUPERINTENDING ENGINEER(QC)

Copy to:-

1. E.M.,DDA for information.
2. CE(QC) for information.
3. All CEs/SEs/EEs, DDA for necessary action.

Tayal

SUPERINTENDING ENGINEER(QC)

LIST SHOWING I.SI LICENCE HOLDERS FOR S.W. PIPES

IS:651-1980, SALTGLAZED STONEWARE PIPES AND FITTINGS (FOURTH REVISION)

BU 006	BINARY UDYOG PRIVATE LIMITED VILL & P.O. ANSANT P.S. JAGACHA, HOWRAH	1688372	15.5.88
HC 026	HIND CERAMIC LIMITED	1268552	31.1.89
KC 045	KASHIMIRA CERAMIC PRODUCT SWAMI VIVEKANAND ROAD MIRA 401 104 DISTT. THANE	1418848	30.4.86
KC 055	KRISHNA CERAMICS & REFERACTO-RIES 4-96, HUKUMPETA RAJAHMUNDARY 533 103	1511535	15.2.88
KP035	KIRAN POTTERIES UNIT K-5,IDA UPPAL HYDERABAD	1776167	15.1.89.
OC 010	ORISSA CERAMICS INDS LTD. P.O. JHARSUGUDA, 708 201 DISTT. SAMABALPUR	1222629	15.8.88
PS 046	PERFECT SANITARY PIPES INDUSTRIAL AREA BHARATPUR (RAJASTHAN)	1687370	15.5.88
PS 032	PERFECT SANITARY WARES INDUSTRIAL AREA POST BOX NO. 10, RATLAM (M.P.)	1376959	28.2.89
PS 047	PERFECT STONEWARE PRODUCTS MEDCHAL (P.O.) RANGA REDDY DISTT.	1690561	15.5.88
SC 090	SONYA CERAMICS 711, ANIL ROAD AHMEDABAD-380 025	1445851	31.8.88
SK 010	SHRI KAMAKSHI AGENCIES PVT.LTD. 14, SHEROY ROAD HUNGAMABAKKAM MADRAS 600 034	0541539	31.7.88
TM 004	TERUMATI MOULDS(P)LTD. PLOT NO.4 MIDC INDL. AREA NAGAPUR	1339148	31.10.88
TS 020	TUBE SUPPLIERS LIMITED WALAJAPET CERAMIC WORKS WALAJAPET 67 AMMANATHANGRI VILLATES P.O. WALJAPET.	1690460	15.5.88

A.B.B.