

PCE's Circular No.13 /2007/Works

Sub:- Construction of Bio- latrines in quarters.

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Septic tanks are recommended only where piped water supply with separate water tanks for the quarter is available. At other locations only Bio-latrines (also aqua-privy) should be constructed. Specially at road side stations where there is shortage of water, Bio-latrines only be constructed. Bio- latrines should be constructed as per PCE drg. no SKS/Misc/115/06 (in fourth sheets) with the following details.

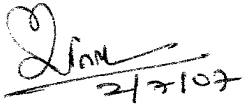
1. These toilets do not need vent pipes as gases are dispersed into the soil.
2. Pan with steep slope of 25- 28 degree and specially designed trap with 20 mm water seal will require only 1.5-2.0 liter of water for flushing. The pan and trap of conventional design, used with flushing cisterns, should not be used as it would need more water for flushing and the leach pit may not function properly.
3. The pan and trap should be of ceramic material because ceramic is smooth & require less water for flushing.
4. To ensure 20mm water seal, the trap should be fixed keeping the top of inlet and top curvature of the trap horizontal. The pan is fixed over the trap keeping its rim horizontal and flush with the floor.
5. Two separate circular pits should be constructed, as these are structurally more stable. Minimum space between the two pits center to center should be 2500mm.
6. Only in rare case where it is not possible to construct two pits separately (Para 5), a rectangular pit, divided into two equal compartments of square shape by a partition wall, will be provided. The partition wall should be taken 400 mm below the bottom of pit and be fully plastered on both sides with cement mortar of 1:6. The partition wall and pit lining in 300mm width adjoining the partition wall should not have holes. However, the possibility of water from one pit finding its way to the other pit is very much there. Therefore, the de-sludging of the filled up pit has to be done with care to avoid health hazards.
7. 12-15mm wide holes should be provided in alternate brick courses by laying bricks 12-15mm apart. Above the invert of incoming drains, no holes should be provided. Brickbats envelop of 150mm and behind that 0.2mm sand size envelop of 350mm thickness should be provided.

8. To check pollution of drinking water sources, the pits should be located at a distance of 5.0m, but never less than 3.0m, from open wells and shallow hand pumps. In coarser soils (effective size more than 0.2mm), sealing of the pit bottom should be done by some impervious material like puddled clay, polythene sheet, lean cement concrete or cement stabilized soil.
9. The sizes of pits as given below, are applicable where (i) ground water level is always below the bottom of the pit, (ii) infiltration rate of soil is 30 Lit./Sq.m/day and (iii) sludge storage is for 3 years:
 - (a) Circular pits will have diameter of 1200mm for 5 users, 1350 mm for 10 users and 1500 mm for 15 users.
 - (b) Each square shape of combined two pits of 1000 mm depth will have size of 1000mm x 1000mm for 5 users, 1200mm x 1200mm for 10 users and 1300mm x 1300 mm for 15 users.
 - (c) To provide free space above the invert of drains, these depths should be further increased by 250 mm.
10. In water logged, flood prone and high subsoil water areas, the pits should be raised so that the invert of drain is just above the likely water level. The raising of pits will necessitate raising of toilet floor also. Earth should be filled and well compacted all around the pit.
11. The trap should be connected to leach pits through 'U' shape covered brick drains. The drains should have a minimum gradient of 1:15.
12. शौचालय ठीक से कार्य करता रहे इसके लिए निम्न सावधानियां हिन्दी में लिखकर शौचालय के अन्दर टांग दें:-
 1. शौचालय उपयोग करने के पहले पैन को गीला करने के लिए थोड़ा पानी उसमें डालें।
 2. शौचालय के उपयोग करने के बाद उसमें डेढ़ से दो लीटर पानी फ्लश करने के लिए डालें।
 3. पैन को साफ करने के लिए पानी/साबुन/पाउडर का प्रयोग करते हुए ब्रश से साफ करें। एसिड का प्रयोग न करें।

4. एक बार में एक ही गड्ढे का उपयोग करें। दूसरे गड्ढे के नाली के मुँह को बंद रखें।
5. रसोई, स्नान घर या वर्षा का पानी इन गड्ढों में न जाने पाए।
6. शौचालय में कपड़ा, कूड़ा करकट जैसे ठोस पदार्थ न डालेय नहीं तो शौचालय जाम हो जाएगा।
7. यदि शौचालय जाम हो गया हो तो बॉस का फटा हुआ डंडा द्वारा जाम साफ करें।
8. जब पहला गड्ढा भर जाय तो उसके नाली का मुँह बन्द कर बहाव को दूसरे गड्ढे में कर देना है।
9. भरे हुए पहले गड्ढे को डेढ़-दो वर्ष के उपरान्त, जब उसके अन्दर का सामान पूर्णतया सड़कर हटाने / निकालने के लिए सुरक्षित हो जाता है, खाली कर देना चाहिए। जब दूसरा गड्ढा भर जाय तो पुनः पहले गड्ढे का उपयोग किया जाना है। इस प्रकार दोनों गड्ढे एक के बाद एक उपयोग में लाए जाने हैं।

बायो शौचालय का निर्माण का निर्णय तुरन्त से प्रभावी होगा ।

Note:- After 18 months the sludge collected in the pits is converted into manure, it can be used in cultivation.


21/7/07
(Anil Kumar Dubey)
Chief Engineer/Works

संलग्नक:-PCEs drg. no.SK/Misc/115/2006 in four sheets.

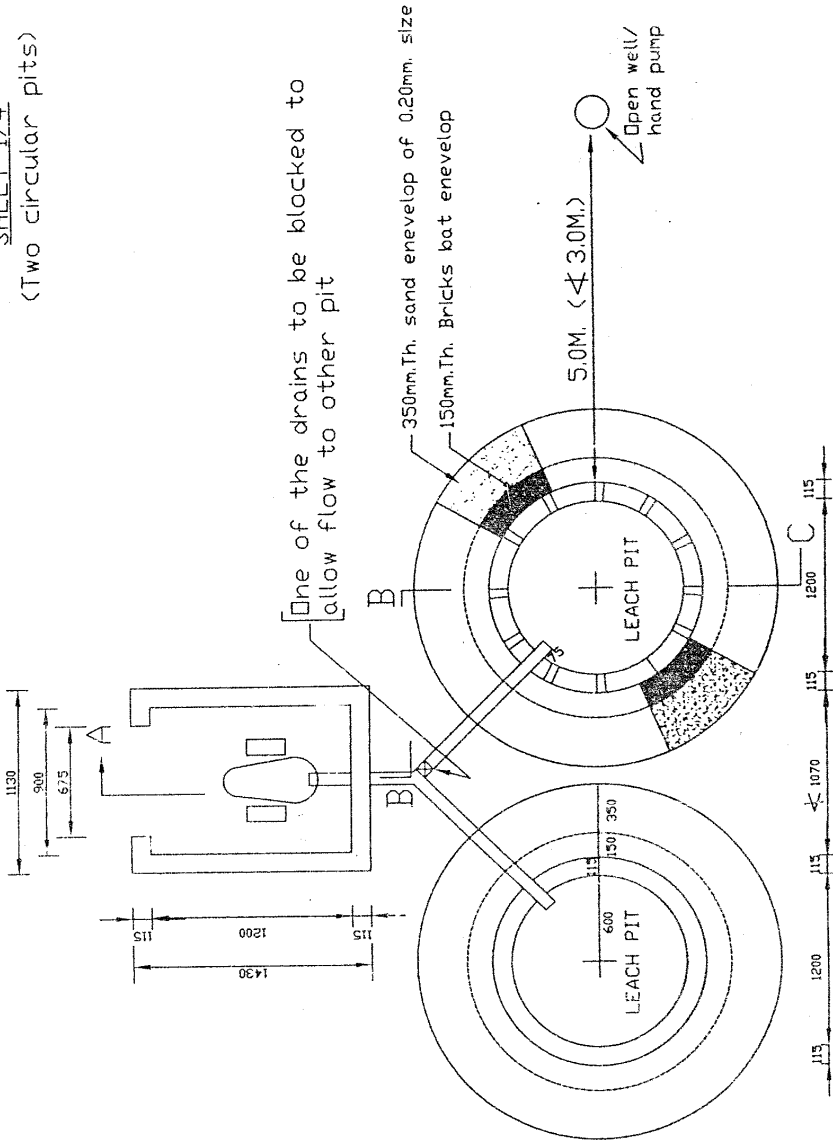
Docket no.W-2/118/09/Works Policy

dt. 02.07.07

Copy:-

1. CAO/Con/ECR/MHX for information & necessary action please.
2. Sr.DEN/Co./ECR/DNR,MGS,DHN,SPJ & SEE for information & necessary action.

SHEET-1/4
(Two circular pits)



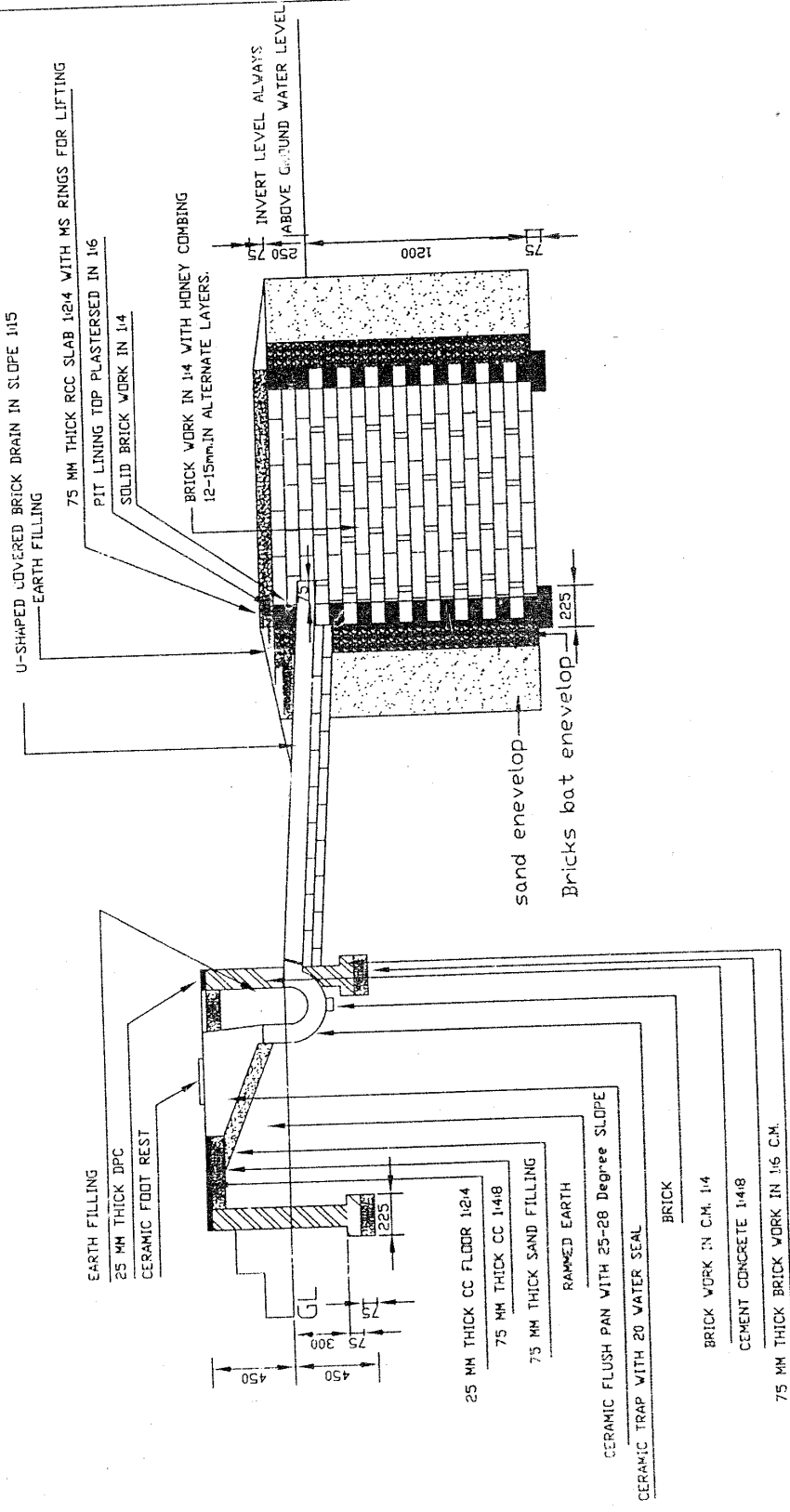
NOT TO SCALE

PLAN

EAST CENTRAL RAILWAY	
BIO-	
CE'S DRG. NO. - SK/MISC/ / 2006	
DRY CE(W)	CE (W)

Handwritten signatures and initials:
 S.S.E./W
 S.S.E./DRG.
 S.S.E./W
 S.S.E./DRG.

SHEET-2/4
(Two circular pits)



NOT TO SCALE

SECTION
ON ABC OF SHEET NO. 1/4

EAST CENTRAL RAILWAY	
BIO-	
CE'S DRG. NO. - SK/MISC/ /2006	
Submitt	CE (W)
DY CE(W)	

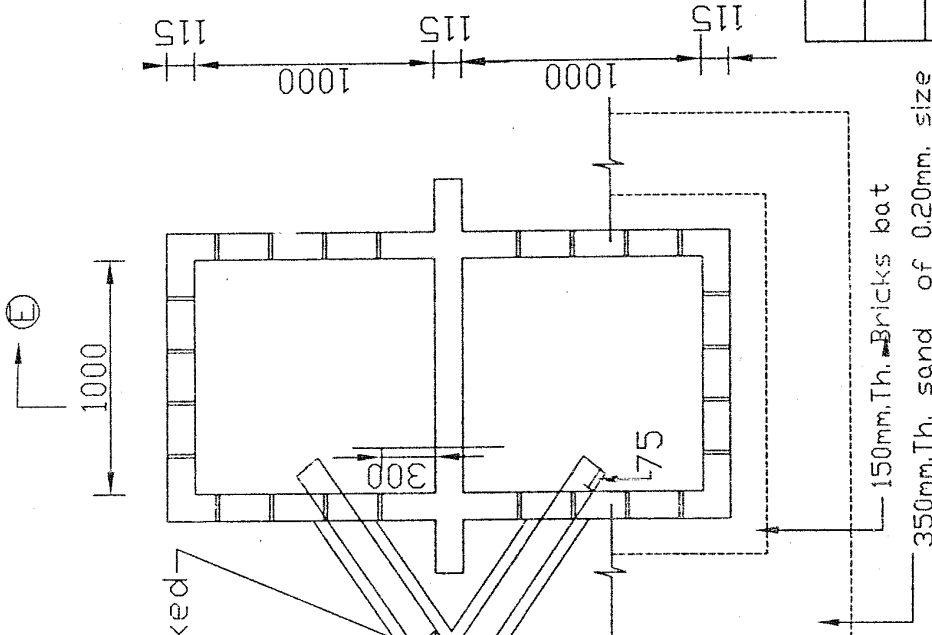
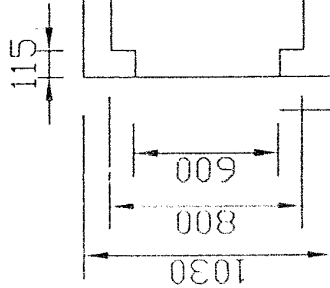
Handwritten signature
S.S.E./W

Handwritten signature
S.S.E./DRG.

SHEET-3/4

(COMBINED SQUARE SHAPE)

One of the drains to be blocked to allow flow to other pit



PLAN

NOT TO SCALE

EAST CENTRAL RAILWAY

BIO-

CE'S DRG. NO. - SK/MISC/ /2006

S.S.E./W

 S.S.E./DRG.

(Handwritten initials)

DY CE(W) CE (W)

SHEET-4/4
(COMBINED SQUARE SHAPE)

PIT LINING TOP PLASTERED IN C.M. 1:6

R.C.C. SLAB 1/2-4 TOP FINISHED SMOOTH WITH CEMENT PUNNING

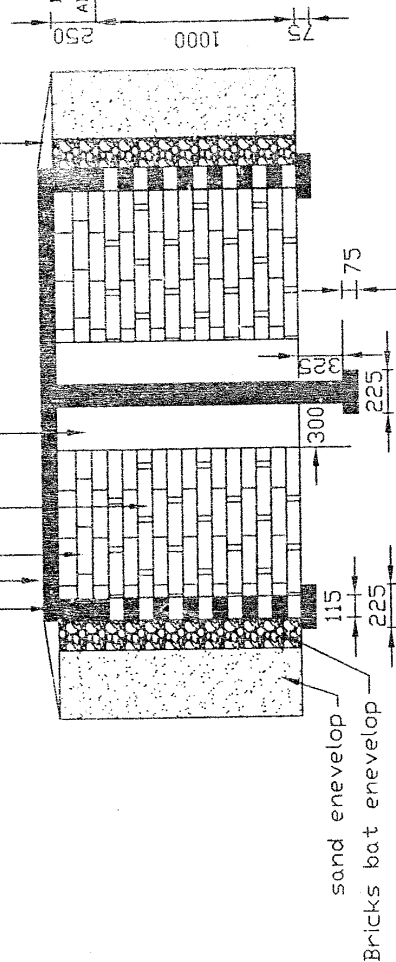
SOLID BRICK WORK IN C.M. 1:6

BRICKWORK IN C.M. WITH HONEYCOMBING 12-15MM. IN ALTERNATE LAYERS

12 TH. CEMENT PLASTER 16 ON BOTH SIDES AND TOP OF PARTITION WALL AND 300 ON BOTH SIDES ADJOINING IT - NO HOLES IN THE WALLS

EARTH FILLING

INVERT LEVEL ALWAYS ABOVE GROUND WATER LEVEL



SECTION

NOT TO SCALE

EAST CENTRAL RAILWAY

ON DE OF SHEET NO. 3/4

BIO-

CE'S DRG. NO. - SK/MISC/ /2006

S.S.E./W
S.S.E./DRG.

Handwritten signature
DY CE(W)

CE (W)