

No: UD-H(F)-(2)-15/15 (SWM)-2152

Directorate of Urban Development,  
Himachal Pradesh.

Dated: Shimla-2, the

25<sup>th</sup>

Feb, 2022.

From

Director,  
Urban Development,  
Himachal Pradesh.

To

Executive Officer,  
Municipal Council Rohru,  
Distt. Shimla, H.P.

Subject:

Observations in FCA case for transfer of land in favour of MC Rohru.

Sir,

This is with reference to your letter No. MC/Rohru/2022-232 dated 22.02.2022 on subject cited above.

In this regard, that clarification on the guidance sought by you vide above referred letter are as below:

- a) As per census 2011 the population of 6875. The current population can be estimated to be 8456, considering 23% as the decadal growth rate. Similarly, the population as on 2031 can be estimated to be 10400. Further, even if the floating population is considered, the maximum population to be catered by the ULB by 2031 shall not be more than 15000. Accordingly, the total waste generation by 2031 shall translate to 4.5 Tonnes Per Day (TPD) (@300 per capita per day).
- b) Out of the above calculated waste generation, approx. 55% will be wet/biodegradable waste i.e. 2.5TPD and 45% will be dry/non-biodegradable and other waste i.e. 2TPD. Therefore, the ULB shall plan for SWM plant accordingly.
- c) For wet waste management pit composting is considered as most suitable technology as per the State SWM Strategy. The density of wet waste is approx. 400-500Kg per Cum hence 5Cum space shall be required for One day waste. In order to process One day waste, either one pit or two pits having 5Cum space/volume will required to be constructed. As the aerobic composting method requires 30-45 days period hence pits are required to be constructed accordingly. E.g. if One pit of 1x1.5x1.5mtr is constructed, two pits for one day waste shall be required and total of 90 pits shall be required to be constructed therefore total of 200Sq.Mtr. space shall be required for constructing composting pits. In addition,



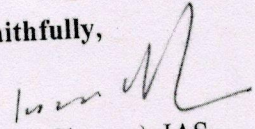
approx. same space shall be required for handling of this waste i.e. for construction of receiving shed, installation of shredder, screening area, storage area etc.

- d) For dry waste management, Material Recovery Facility (MRF) is required to be constructed. In order to develop MRF for handling 2Tonnes of waste per day, area requirement shall be 200-250Sq. Mtr.

In addition to above, space of approx. 400-500Sq.Mtr. shall also be required in the project keeping in view the breakdowns or any other unforeseen events.

You are, therefore, directed to take further action accordingly and get the land parcel transferred for the purpose.

**Yours faithfully,**



(Manmohan Sharma) IAS  
**Director,**  
Urban Development,  
HP, Shimla





# State Strategy on Solid Waste Management – Himachal Pradesh

Department of Urban Development,  
H.P.

May, 2019

A guidebook on Solid Waste  
Management for Urban Local Bodies

## **State Level Strategy for Solid Waste Management Strategy for Urban Local Bodies in Himachal Pradesh.**

### **Background:**

The Ministry of Environment, Forest and Climate Change had notified “Solid Waste Management Rules, 2016” in April, 2016 which specifically defines the roles and responsibility of different stakeholders. Accordingly, state Government has taken following steps at State level till date for compliance of above rules as required under rule-11 of SWM Rules, 2016:

- ✓ H.P. **State Policy** on Solid Waste management notified
- ✓ H.P. State Solid Waste Management **Action Plan** has been prepared
- ✓ Draft **bye-laws** on SWM, incorporating all provisions of SWM Rules, 2016 prepared and circulated to all ULBs
- ✓ Scheme for **registration of rag-pickers** & scrap-dealers developed
- ✓ **Waste Characterization study** conducted in the State through NEERI
- ✓ **ULB wise Action Plans** prepared
- ✓ **Composting guidelines** prepared & circulated to ULBs

In addition, a Plastic Waste Management Action Plan also has been prepared for the State.

Further, in order to establish Solid Waste processing & disposal facilities in the State on PPP mode, the State Govt. had earlier adopted cluster-based approach in the year 2017. The Department of Urban Development jointly with H.P. State Pollution Control Board had identified 5 major clusters and 25 sub-clusters for management of non-biodegradable and biodegradable waste separately. Total 8 clusters were finalized where the adequate land parcels were identified for setting up of these facilities. The pre-feasibility studies for finalized clusters was conducted by HPSPCB and the Tender documents were prepared by H.P. Infrastructure Development Board (HPIDB). The main reasons for adopting cluster-based approach were:

- ❖ To identify common land parcel for cluster of ULBs as finding land parcel in each ULB is difficult.

- ❖ To attract private investment in Solid Waste Management and outsourcing the Operation & Maintenance part by developing the SWM facilities on PPP mode.
- ❖ To address the problem of lack of technical manpower & adequate capacity in ULBs to maintain & operation SWM facilities.

Despite lot of efforts, the State had to abandon the cluster approach due to following reasons:

- × Large land parcel required but adequate land parcels not available.
- × Land identification, transfer and tendering on PPP mode, a time-consuming process.
- × Lesser turn out of developers due to small projects.
- × Smaller land parcels identified in the meanwhile within the ULBs

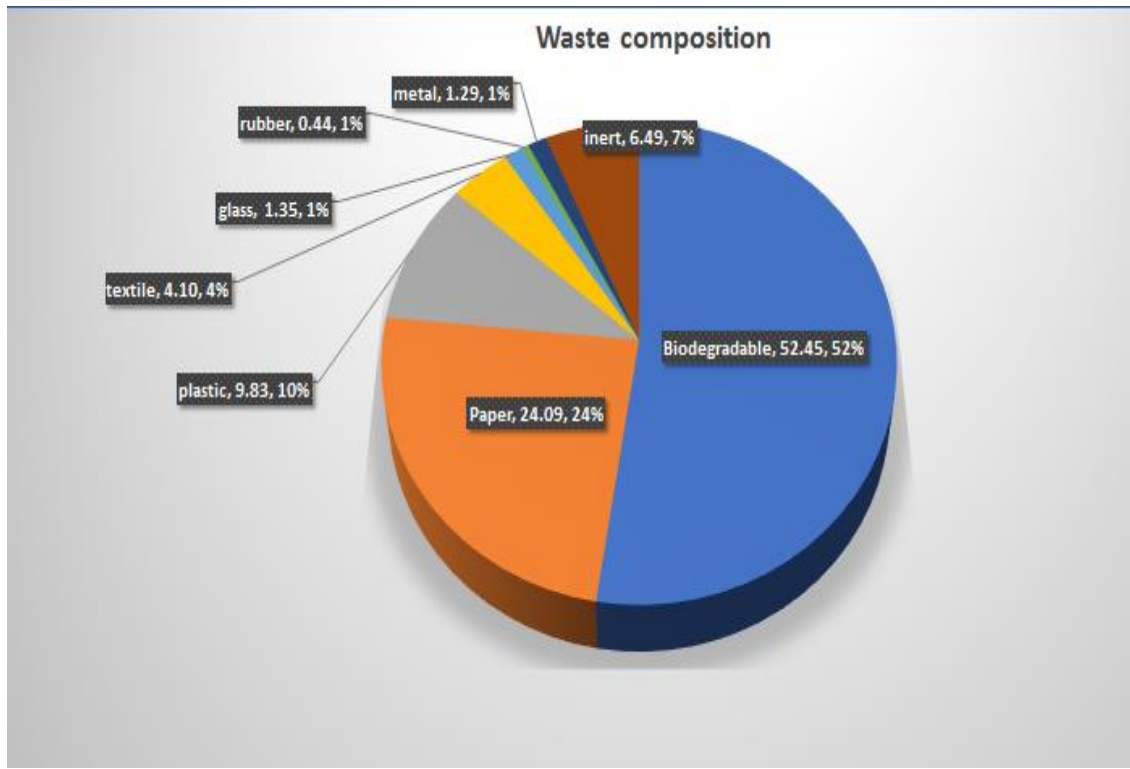
Keeping in view the above factors, the decentralized approach has now been adopted by the State.

### **State Profile:**

- **No. of ULBs** - 54 (2-Municipal Corporations, 31-Municipal Councils & 21-Nagar Panchayats)
- **Population (Urban)** - 7.13 lacs
- **Total Urban Area** - 279.88Sq Km.
- **% of total State population** - 10.38
- **% Decadal Growth (2001 - 2011)** - 15.95
- **Total waste generation** - 370 TPD (approx..) (Quantity shows steep variations during summer & winter season due to huge influx of tourists)
- **Total biodegradable/ wet waste generated** - 190 TPD (approx..)
- **Total non-biodegradable/ dry waste generated** - 150TPD (approx..)

- **Average temperature** - The average temperature in H.P. varies from 22 degrees to 37 degree Celsius in summer and from 0 degree to 15 degree Celsius in winters.

### **Waste Characteristics as per NEERI study:**



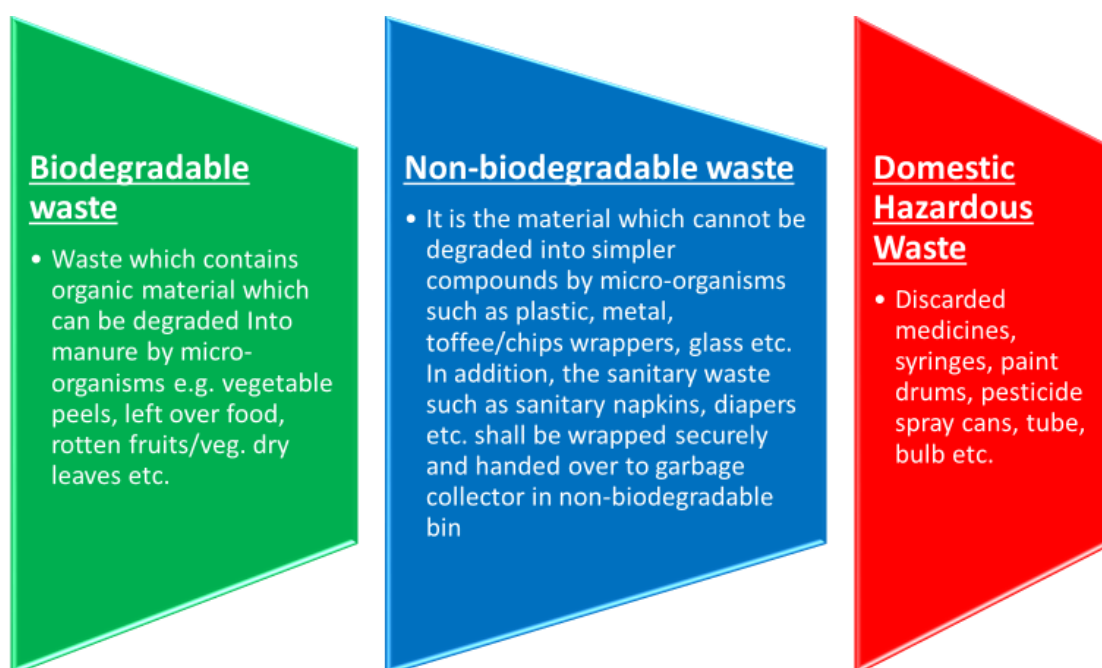
### **Strategy for Management of Solid Waste in the State:**

**Collection:** As per the SWM Rules, 2016 the garbage collection is to be done from the door step of the waste generators and in case of multistory buildings, complexes, the waste shall be collected from the entry gate or any other designated location. In SWM Rules, 2016 the duties of waste generators have been defined as below:

- **Rule 4(1)(a)** - Segregation of waste at source into three separate streams namely bio-degradable, non-biodegradable and domestic hazardous wastes
- **Rule 4(1)(b)** - wrap securely the used sanitary waste like diapers, sanitary pads etc., and hand over the same separately to authorized person of ULB.
- **Rule 4(2)** - Not to throw, burn or bury the solid waste on streets, open public places or in the drain/ water bodies.

- **Rule 4(3)** – Shall pay user fee for solid waste management, as specified in the bye-laws of the local bodies.
- **Rule 4(4)** – Not to organize an event or gathering of more than one hundred persons at any unlicensed place without intimating the local body, at least three working days in advance.
- **Rule 4(5)** - Street vendors to keep suitable containers for storage of waste generated during the course of his activity.
- **Rule 4(6)** – The Bulk Waste Generators i.e. the waste generators generating more than 100Kg waste per day or as specified by ULB in its by-laws, shall manage the biodegradable portion of their waste within their own premises.

To comply with the provisions of SWM Rules within the ULBs, the State Govt. has adopted a strategy of segregation of waste at source into 3 main streams as below:



All the ULBs shall develop mechanism to collect & transport the waste in segregated manner only by making necessary changes, in their collection/transportation system as per locally feasible method.

The door to door collection of segregated waste has been started in most of the ULBs however the source segregation needs to be improved.



The commonly found items in household waste and their segregation into 3 components is illustrated in the picture below:

<h2 style="text-align: center;">कचरा नियोजन विधि (कचरा अलग-2 करके रखें)</h2>		
 <p><b>गीला कचरा बिन</b></p>	 <p><b>सूखा कचरा बिन</b></p>	
<p><b>जैविक (गीला) कचरा</b> Biodegradable (Wet) Waste</p>	<p><b>अजैविक (सूखा) कचरा</b> Non-biodegradable (Dry) Waste</p>	<p><b>घरेलू खतरनाक कचरा</b> Domestic Hazardous Waste</p>
<p><b>रसोई का कचरा</b></p> <ul style="list-style-type: none"> <li>सब्जियों व फलों के छिलके।</li> <li>बचा हुआ भोजन।</li> <li>अंडे के छिलके।</li> <li>चाय पत्ती।</li> <li>चाय बैग।</li> <li>चिकन व हड्डियाँ।</li> <li>इस्तेमाल किए हुए टिशु पेपर।</li> </ul>  <p>पत्ते, पूजा के फूल माला आदि।</p>	<ul style="list-style-type: none"> <li>पुराने अखबार व पुस्तकें, कागज।</li> <li>प्लास्टिक व कांच के डिब्बे, बोतलें, स्टेशनरी, टूथ ब्रश, पेस्ट, क्रीम, शेम्पू, हारपिक आदि।</li> <li>जूस के केन।</li> <li>अटूट गिलास।</li> <li>नारियल के गोले।</li> <li>प्लास्टिक के चम्मच, स्ट्रॉ, गुब्बारे, कटलरी, थर्मोकोल आदि।</li> <li>खाली tetra pack paper कप व प्लेट्स, घूप, माचिस, पेस्ट आदि के छोटे खाली गते के डिब्बे व फॉयल।</li> <li>पुराने कपड़े व जूते।</li> <li>विप्स कुरकुरे के पैकेट व अन्य प्लास्टिक के पैकेट।</li> <li>शेम्पू, सुपारी के छोटे छोटे सैशे।</li> <li>सेनिटेरी नेपकिन एवं डाईपरज (कागज में लपेटकर डालें)।</li> </ul> 	<p><b>सेनिटेरी कचरा</b></p> <ul style="list-style-type: none"> <li>दवाई के खाली रैपर।</li> <li>पेंट के खाली डिब्बे।</li> <li>पेंसिल सैल</li> <li>बैटरी</li> <li>यूजड सिरीज</li> <li>ई-वेस्ट</li> </ul>  <p><b>नोट:</b> बल्ब, ट्यूबलाइट्स, ब्लेडज, सिरिज, इंजेक्शन, टूटा हुआ काँच या कप आदि को कागज में लपेट कर अलग से दें।</p> <p><b>Reuse :</b> कागज के पैकेट और कपड़ों के थैलें दोबारा इस्तेमाल के लिए दुकानदार को वापिस करें।</p>
<p><b>कचरे को बाहर ना फेंके</b></p>	<p><b>कचरे को न जलाएँ</b></p>	<p><b>कचरा केवल मात्र संबंधित कर्मचारी को ही दें</b></p>

Further, in order to assist ULBs, for management of Solid Waste in scientific manner, following strategy has been developed to be adopted by all ULBs for management of Solid Waste in scientific and sustainable manner:

### For Bio-degradable waste:

**Aerobic Microbial Composting Pits:** The Aerobic microbial composting pits are the best suitable method for managing organic/biodegradable/wet waste. These pits shall be developed in the ULBs. ULBs shall practice following:

- Construction only the aerobic honeycomb model pits for composting
- Put only the segregated biodegradable waste in compost pits
- Use enzymes/microbes to decompose the waste faster (Suggestive list of microbes suppliers is at **Annexure-A**.)



*Note: The detail guidelines for developing aerobic pit composting facility has already been issued to all the ULBs and is also available on DUD website.*

The suggestive design for developing honeycomb aerobic compost pits is enclosed at **Annexure-B**.



*Aerobic honeycomb composting pit model*

### **For Non-Biodegradable waste:**

**Development of Material Recovery Facility (MRF):** To manage the non-biodegradable waste, MRF is to be developed in all ULBs. MRF shall be used for following:

- To sort/ segregated dry/non-biodegradable waste further into recyclable and non-recyclable and shall sell/hand over the same to recyclers duly authorized by H.P. State Pollution Control Board (list attached at **Annexure-C** & available on HPSPCB website) or sell the same to the scrap-dealers registered with the ULB.
- The recyclable waste shall be channelized for recycling through rag-pickers/ scrap-dealers.
- Non-recyclable combustible material in non-biodegradable waste shall be tied up and shall send the same to nearby cement industry for co-processing or hand over the plastic waste to HPPWD for road construction.

The suggestive design for developing MRF is enclosed at **Annexure-D**.



*Figure 1: Concept of MRF*



*Figure 2: MRF at Kerala*



## Transforming Garbage Into Gold



*Figure 3: Solid & Liquid Resource Management Centre, Ambikapur, Chhattisgarh*



*Figure 4: SLRM model Ambikapur, Chhattisgarh*





*Figure 5: MRF at Panaji Municipal Corporation*

**Separate collection & treatment of sanitary waste:** For managing sanitary waste, ULBs may install waste incinerators at the Waste Processing / Material Recovery Facilities (MRF) sites., till then all the ULBs may store the sanitary waste separately in suitable containers. All the waste generators have to wrap securely sanitary waste and hand over to authorized waste collector along with non-biodegradable waste. The Department shall install sanitary waste disposal incinerators in all the ULBs where sanitary waste such as sanitary napkins, diapers etc. shall be disposed of.



*Sanitary waste incinerator*



### **For Domestic hazardous waste:**

To manage the domestic hazardous waste, hazardous waste deposition centers/kiosk shall be developed in all ULBs, where waste generators can deposit their domestic hazardous waste. Atleast one kiosk shall be developed in each ULB and in bigger ULBs even more kiosks shall be developed keeping in view the requirement of ULB. In addition, the domestic hazardous waste shall also be collected from the door step of generators through door to door garbage collection (atleast once in a week). All ULBs shall store this waste separately & securely at their dump sites and shall compulsorily have tie-up with hazardous waste treatment, storage & disposal facility (TSDF). At present there is only one authorized TSDF in the State of H.P. i.e. M/s Shivalik Solid Waste Management, Dabhota, Nalagarh. The hazardous waste TSDF shall lift all the hazardous waste and dispose of this waste at their facility. The suggestive design for developing hazardous waste collection center/kiosk is enclosed at **Annexure-E**.

**Operation & Maintenance of above equipment/machineries:** The operation & maintenance of solid waste processing facilities is vital aspect in order to sustain the waste management system. Hence, necessary capacity building at ULB level shall be done by the equipment suppliers by providing them training on operating the machineries. Dedicated manpower shall be deployed by all ULBs in these facilities which shall supervise, operate, maintain records etc. ULBs shall also make efforts to integrate rag-pickers and encourage them to provide their support in managing these facilities.

Further to assist the ULBs, the centralized procurement by the Directorate or Urban Development shall be done in order to have uniformity in specifications and outcome desired out of the machineries.

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**Annexure-A****List of suppliers of enzymes/microbes to fasten the aerobic composting process**

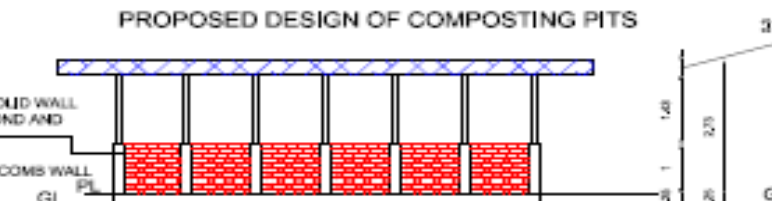
<b>S.No.</b>	<b>Supplier agency</b>	<b>Contact details</b>
1	NARMADA BIOTECH LTD.	8989521999 pranayhiran@rediffmail.com
2	Excel Industries Limited	022-66464342 owc@excelind.com
3	Eco Support Pvt. Ltd.	9920461282/9892831668 ecosupindia@gmail.com
4	Ecoman Enviro Solutions Pvt Ltd	7720999222 parimal@ecoman.in; vaibhav@ecoman.in
5	Shudh-Labh Solutions Pvt Ltd	080-49516689 09880710830 ramanan@sudh-labh.in
6	Smart Enviro Systems	Mr. Rakeshprashar, Email ID: prashar_rakesh@yahoo.inMo bile Number: 09871443052
7	Alfa Therm Limited	Vijay Saroj -9958692424 vijay@alfatherm.in
8	Vermigold Ecotech Pvt Ltd	Mr. Amol Chorghe 919619664810, amol.c@vermigold.com



## PROPOSED DESIGN OF COMPOSTING PITS

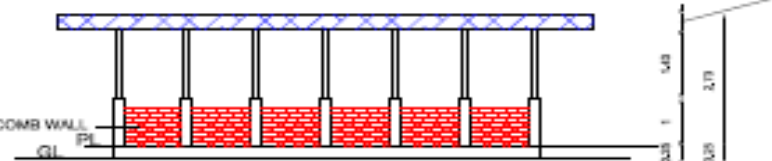
TOP 3 COURSES OF SOLID WALL  
LAID IN STRETCHER BOND AND  
PLASTERED

7 COURSES OF HONEYCOMB WALL

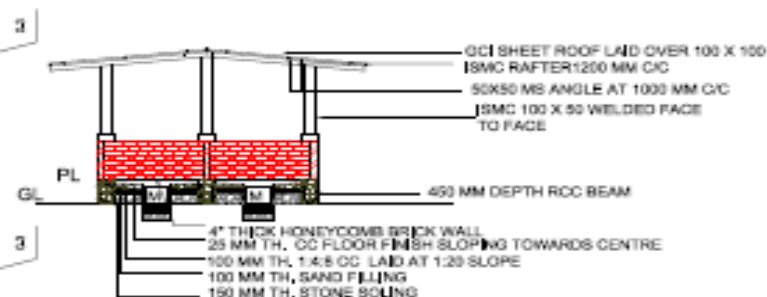


## ELEVATION OF INTERMEDIATE WALL CC

5 COURSES OF HONEYCOMB WALL



## ELEVATION OF OUTER WALL BB



## SECTION AT AA'

PROPOSED DESIGN OF HONEYCOMB  
AEROBIC COMPOSTING PITS

## SPECIFICATIONS

1. THE FLOOR OF THE PITS SHALL SLOPE TOWARDS THE CENTRE TO ALLOW FOR THE COLLECTION OF LEACHATE IN THE MANHOLE CONSTRUCTED FOR THE COLLECTION OF THE SAME.
2. THE MANHOLE IN EACH PIT WILL BE CONNECTED TO THE BIGGER MANHOLE CONSTRUCTED OUTSIDE THE PITS WITH 100 MM DIA PVC PIPES SLOPED AT 1:10.
3. THE BIGGER MANHOLES SHALL BE CONNECTED TO THE MAIN LEACHATE POOL WITH 150 MM DIA PVC PIPES LAID AT THE SLOPE OF 1:20.
4. THE PARTITIONS OF THE PITS SHALL BE 4 INCH THICK HONEYCOMB BRICK WALL.
5. CORNERS OF THE PITS SHALL BE CONSTRUCTED WITH 150X 50 ISMC SECTION WELDED FACE TO FACE CONNECTED WITH THE BOTTOM BEAM WITH GUSSET PLATE.
6. THE CHANNEL PILLARS SHALL HAVE 50 MM COVER TILL THE PIT HEIGHT.
7. THE PLINTH OF THE AEROBIC COMPOST PITS SHALL BE 450 MM ABOVE THE GROUND LEVEL.
8. THERE SHALL BE RCC PLINTH BEAM.
9. ALTERNATIVE LOCAL MATERIALS COULD BE USED TO CONSTRUCT THE PITS AFTER CONFORMING TO THE LOADING DESIGN OF THE PITS.

ALL DIMENSIONS SHALL BE IN METERS UNLESS OTHERWISE SPECIFIED

PLEASE DO NOT SCALE THE DRAWING

## LEGEND

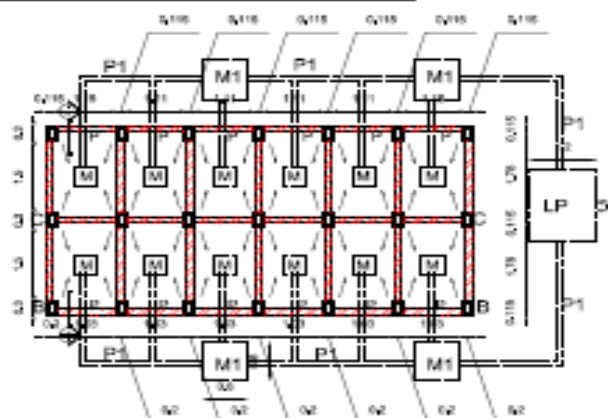
M = MANHOLE 400  
MM X 400 MM

M = MANHOLE 400  
MM X 400 MM

P = 100 MM DIA PVC  
PIPE LAID AT 1:10

P1 = 150 MM DIA  
PVC PIPE LAID AT  
1:20

LP = LEACHATE  
POND, 1200  
MM X 1500 MM



## LAYOUT PLAN

## Annexure-C

### List of Authorized Recyclers/ Utilizers/ Co-processors of Hazardous waste

S. No.	Name and Address of the Facility	Type of Hazardous Waste Recycled	Authorized Recycling/ Utilization/ Co-processing Capacity (MTA)	Quantity Recycled/ Utilized/ Co-processed (MT)	Registration valid upto (DD/MM/YYYY)
1	M/s Rama Metal Company, Village Johron, Behind DIC, Industrial Area, KaLa Amb, Distt. Sirmour (HP)	Lead acid batteries plates and other lead scrap/ residue	550	589.624	10.12.2018
2	M/s Radha Krishna Industries, Village Meerpur Gurudwara, KaLa Amb, Distt. Sirmour (HP)	Lead acid battery plates and other lead scrap	10500	140	20.11.2016
3	M/s Sri Balaji Smelters, Plot No. 90, Industrial Area Lodhimajra, Tehsil Baddi District Solan (HP)	Lead acid batteries plates/ lead scrap/ ashes/ residues	7000	500	01.05.2017
4	M/s Sai Industry, Plot No. 22, Trilokpur Road, IA, Kala Amb, Distt. Sirmour (HP)	Battery Scrap	4800	86.043	16.06.2018
5	M/s Ras Industry, Plot No. 22, Trilokpur Road, IA, Kala Amb, Distt. Sirmour (HP)	Battery Scrap	4800	119.224	16.06.2018
6	M/s Neel Kanth Industries, Plot No. 38, Sector-5, Parwanoo, Distt Solan (HP)	Brass dross, Copper dross, Zinc dross, Zinc ash & Zinc skimming	4000	Nil	01.12.2016
7	SK Engineers, Village Johron, Trilokpur Road, Kala Amb, Tehsil Nahan, Distt. Sirmour (HP)	Lead acid battery plates & Lead scrap	1200	516.233	08.02.2020
8	Span India Scaffoldings, Village Johron, PO Kala Amb, Tehsil Nahan, Distt. Sirmour (HP)	Lead acid battery plates, Lead scrap	1200	488.15	08.02.2020
9	Ekta Enterprises, Plot No. 43, Trilokpur Road, Ind. Area, Kala Amb, Tehsil Nahan, Distt. Sirmour (HP)	Lead acid battery plates, Lead scrap	5000	493	16.11.2019
10	Geon International, Plot No. 65, Bhatoli kalan, Industrial Area, Baddi, Distt. Solan (HP)	Lead acid battery plates, Lead scrap, Lead ash and Lead residue	12000	6544.018	19.04.2021
11	Indo Plast (P) Ltd., Plot No. 46-48, Sector-5, Parwanoo, Distt. Solan (HP)	Zinc ash, Zinc Dross/ Zinc Skimming/ Zinc Scrap; Brass Ash/Brass Dross/Brass scrap; Copper Ash/Copper Dross/Copper Scrap; Aluminium Ash/	6000	Nil	07.03.2021

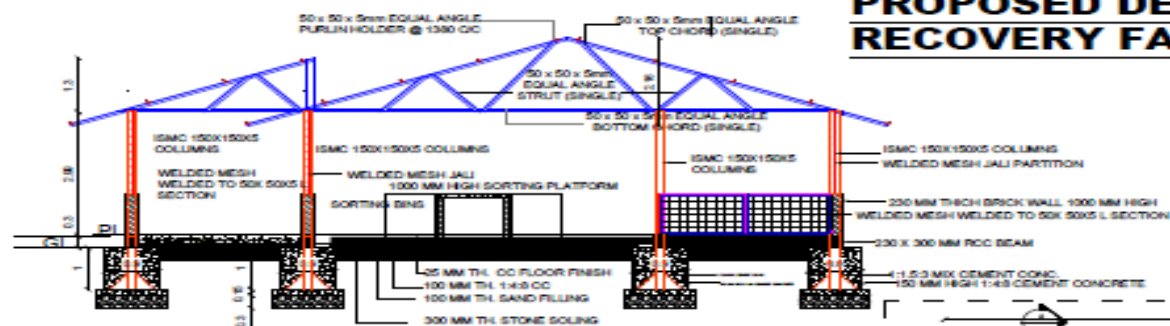


		Aluminium Dross/ Aluminium Scrap			
12	Sarika Industries, Plot No. 111, HPSIDC, Industrial Area, Baddi	Lead acid battery plates, Lead scrap/ ashes/residues	5500	121	14.09.2020
13	Rama Krishna Industries, Village Jattan, Kala Amb, Distt.Sirmour,HP	Lead acid battery including grid plates and other lead scrap	27700	150	31.03.2021
14	K.K. Enterprises, VPO Daslehra, Tehsil Jhandutta, Distt.Bilaspur, HP	Lead acid battery plates and other lead scrap	35	Authorisation granted on 19/12/2017	31.03.2022
15	M Rauf Enterprises Khasra No 1747 -53 Morepen Road, Vill. & P.O. Thana Tehsil Baddi Distt Solan (HP)	Cleaning & Washing of Contaminated Drums	28800 Nos.	27321 Nos.	-
16	Enviro Enterprises Plot No 18 C Ind Area Lodhimajra Tehsil Nalagarh Distt Solan HP	Cleaning & Washing of Contaminated Drums	28800 Nos.	4591 Nos.	31.03.2020
17	Gulshan Trading Co., Village Gullerwala, P.O. Baddi, Distt. Solan, H.P.	Cleaning & Washing of Contaminated Drums	43200 Nos.	840 Nos.	-
18	Him Trading Co Village Sheetalpur Tehsil Baddi Distt Solan (HP)	Cleaning & Washing of Contaminated Drums	28800 Nos.	3019 Nos.	31.03.2022
19	Lucky Enterprises Plot No 42 Ind Area Lodhimajra Tehsil Baddi Distt Solan HP	Cleaning & Washing of Contaminated Drums	21600 Nos.	Not Submitted	31.03.2022
20	Salam Traders Co Village Dattowal Tehsil Nalagarh Distt Solan HP	Cleaning & Washing of Contaminated Drums	38400 Nos.	Not Submitted	-
21	Super Trading Co Vill Gullerwala Sai Raod Tehsil Baddi Distt Solan (HP)	Cleaning & Washing of Contaminated Drums	21600 Nos.	7064 Nos.	-
22	Kamal Enterprises Village Kotla PO Barotiwala Tehsil Baddi Distt Solan (HP)	Cleaning & Washing of Contaminated Drums	43200 Nos.	25542 Nos.	-
23	Shiv Shakti Enterprises Mauja Chakjangi Khasra No 42 Vill Chakjangi Baddi Tehsil Nalagarh Distt Solan HP	Cleaning & Washing of Contaminated Drums	43200 Nos.	Not Submitted	-
24	Balaji Trading Co Vill Suraj Majra Tehsil Baddi Distt Solan (HP)	Cleaning & Washing of Contaminated Drums	9000 Nos.	4187 Nos.	-
25	KK Enterprises Sheetalpur Road Baddi Tehsil Baddi Distt Solan HP	Cleaning & Washing of Contaminated Drums	21600 Nos.	8049 Nos.	31.03.2020
26	M/s Shivalik Solid Waste Management Ltd. Village Majra, PO Dhabhota, Tehsil Nalagarh	Cleaning & Washing of Contaminated Drums	28800 Nos.	26802 Nos.	31.03.2018

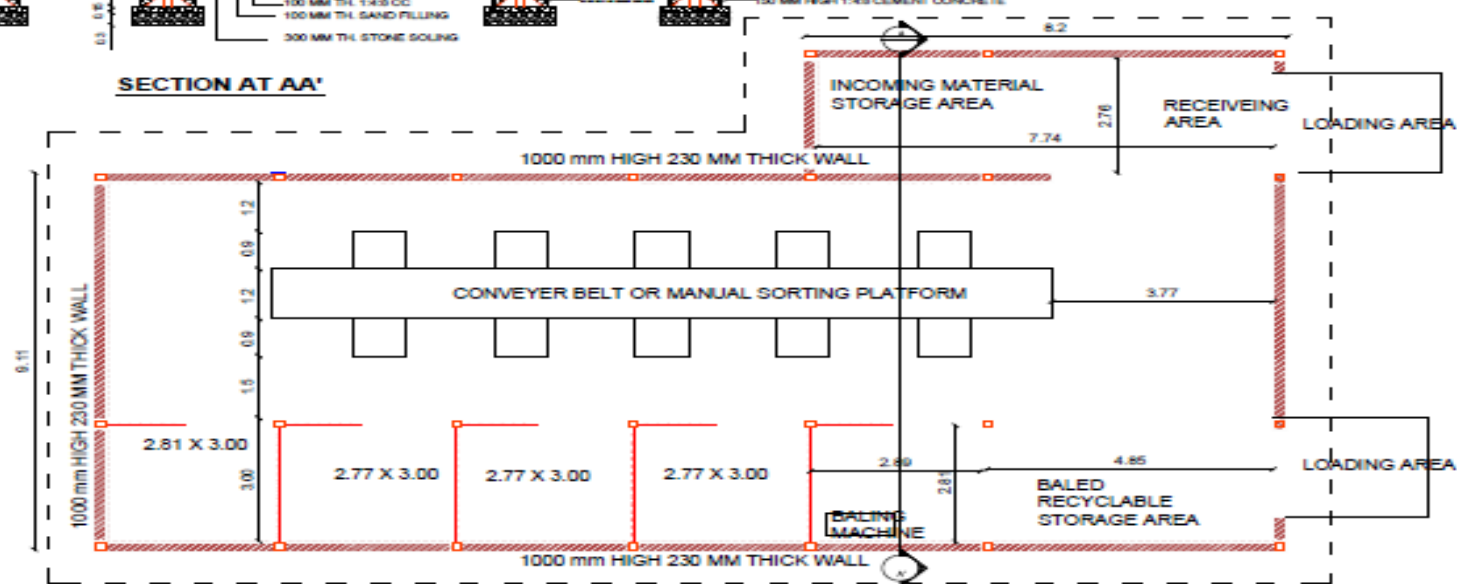
## **PROPOSED DESIGN OF MATERIAL RECOVERY FACILITY CENTRE**

**NOTE:**  
THE SAID STRUCTURE CAN ALSO BE  
CONSTRUCTED BY USING LOCAL  
MATERIALS AVAILABLE LIKE BAMBOO.

THE SIZE OF THE MRF MAY VARY WRT  
REQUIREMENT OF THE TOWN.



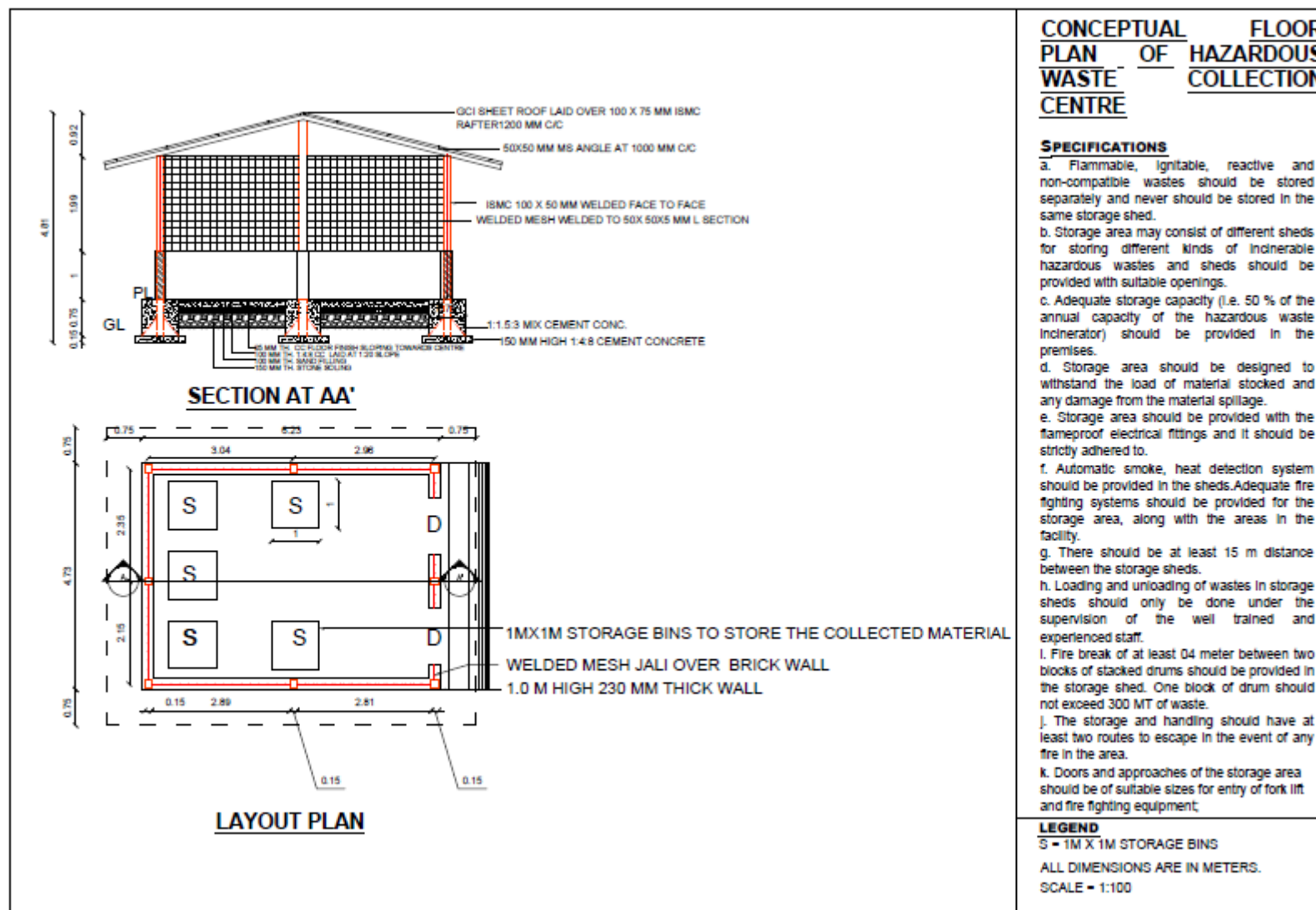
### SECTION AT AA'



### CONCEPTUAL FLOOR PLAN OF MATERIAL RECOVERY FACILITY CENTRE



## Annexure-E



# CONCEPTUAL FLOOR PLAN OF HAZARDOUS WASTE COLLECTION CENTRE

## SPECIFICATIONS

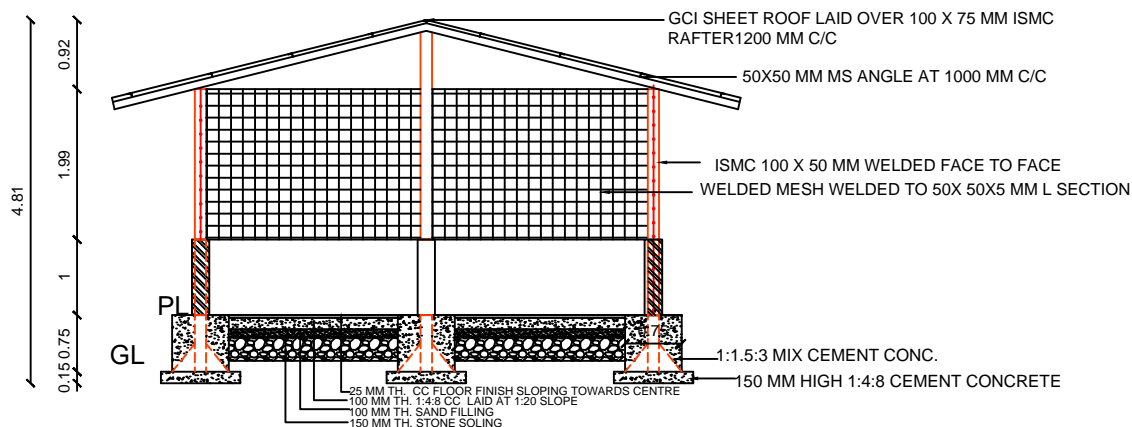
- Flammable, ignitable, reactive and non-compatible wastes should be stored separately and never should be stored in the same storage shed.
- Storage area may consist of different sheds for storing different kinds of incinerable hazardous wastes and sheds should be provided with suitable openings.
- Adequate storage capacity (i.e. 50 % of the annual capacity of the hazardous waste incinerator) should be provided in the premises.
- Storage area should be designed to withstand the load of material stocked and any damage from the material spillage.
- Storage area should be provided with the flameproof electrical fittings and it should be strictly adhered to.
- Automatic smoke, heat detection system should be provided in the sheds. Adequate fire fighting systems should be provided for the storage area, along with the areas in the facility.
- There should be at least 15 m distance between the storage sheds.
- Loading and unloading of wastes in storage sheds should only be done under the supervision of the well trained and experienced staff.
- Fire break of at least 04 meter between two blocks of stacked drums should be provided in the storage shed. One block of drum should not exceed 300 MT of waste.
- The storage and handling should have at least two routes to escape in the event of any fire in the area.
- Doors and approaches of the storage area should be of suitable sizes for entry of fork lift and fire fighting equipment;

## LEGEND

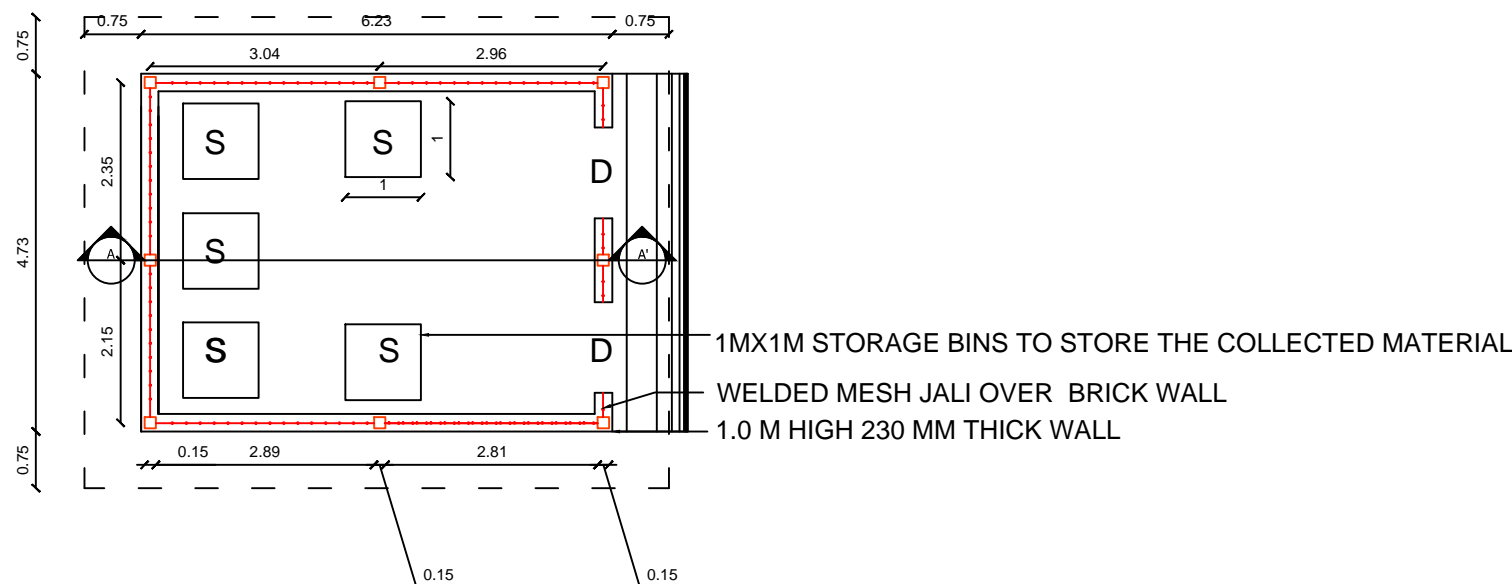
S = 1M X 1M STORAGE BINS

ALL DIMENSIONS ARE IN METERS.

SCALE = 1:100



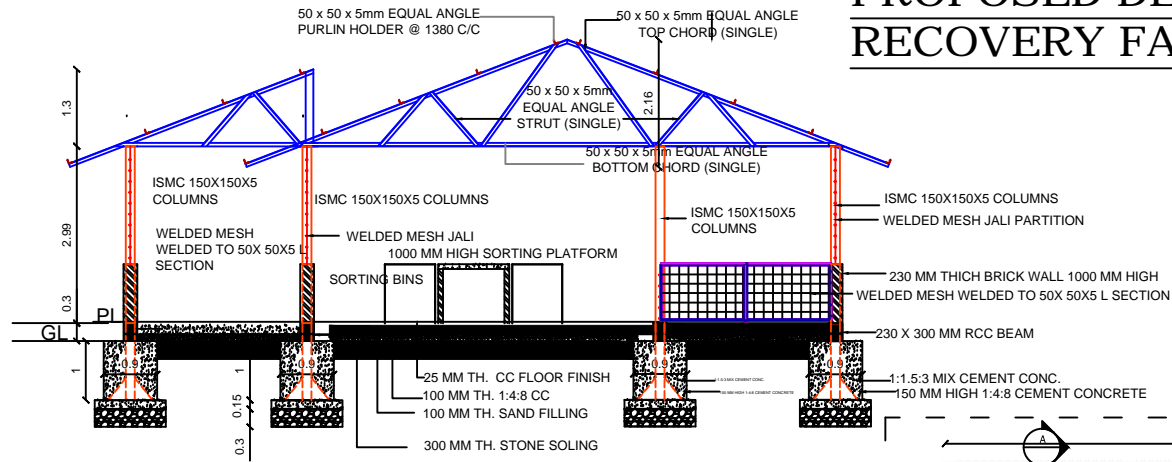
**SECTION AT AA'**



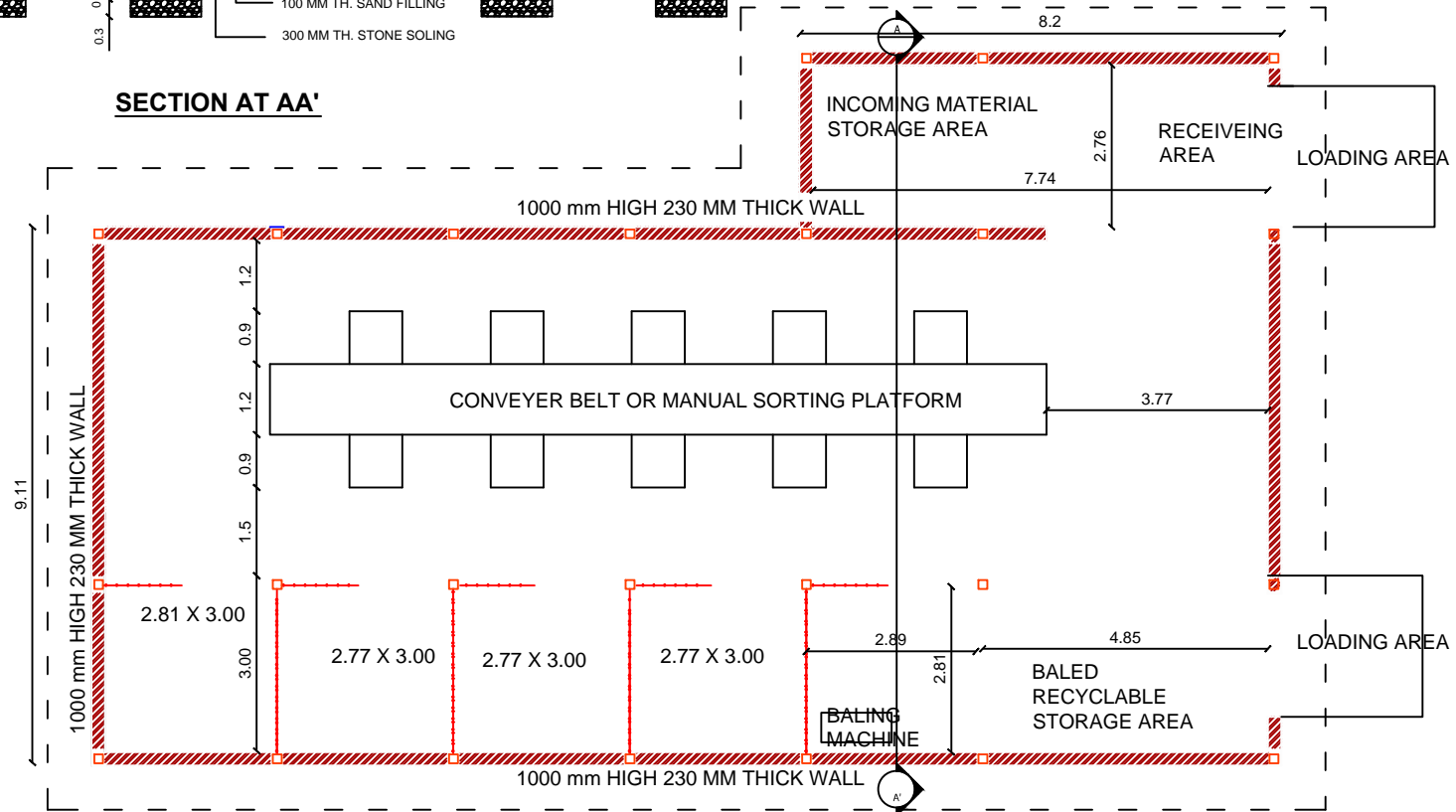
**LAYOUT PLAN**



# PROPOSED DESIGN OF MATERIAL RECOVERY FACILITY CENTRE



**SECTION AT AA'**



**CONCEPTUAL FLOOR PLAN OF MATERIAL RECOVERY FACILITY CENTRE**

## NOTE:

THE SAID STRUCTURE CAN ALSO BE CONSTRUCTED BY USING LOCAL MATERIALS AVAILABLE LIKE BAMBOO.

THE SIZE OF THE MRF MAY VARY WRT REQUIREMENT OF THE TOWN.

## CONCEPTUAL DESIGN OF HAZARDOUS WASTE COLLECTION CENTRE

### SPECIFICATIONS

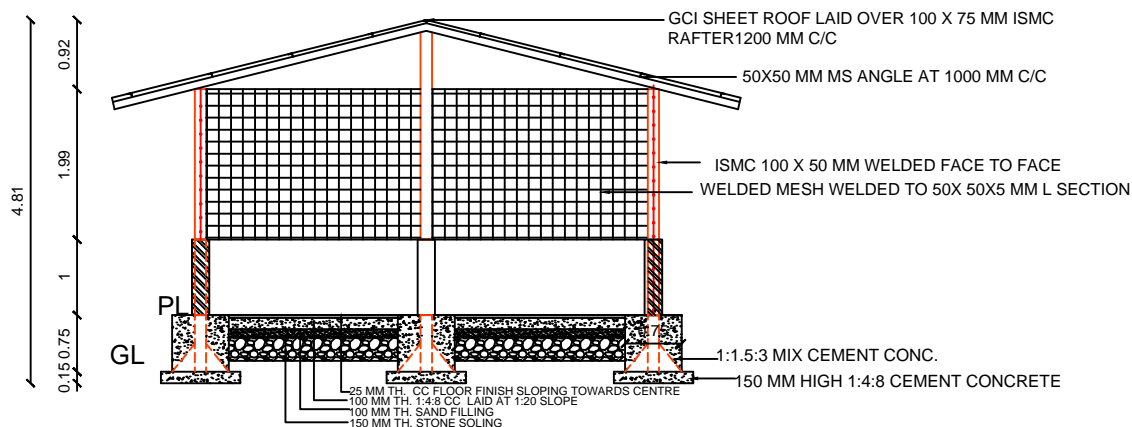
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- The storage and handling should have at least two routes to escape in the event of any fire in the area.
- Doors and approaches of the storage area should be of suitable sizes for entry of fork lift and fire fighting equipment;

### LEGEND

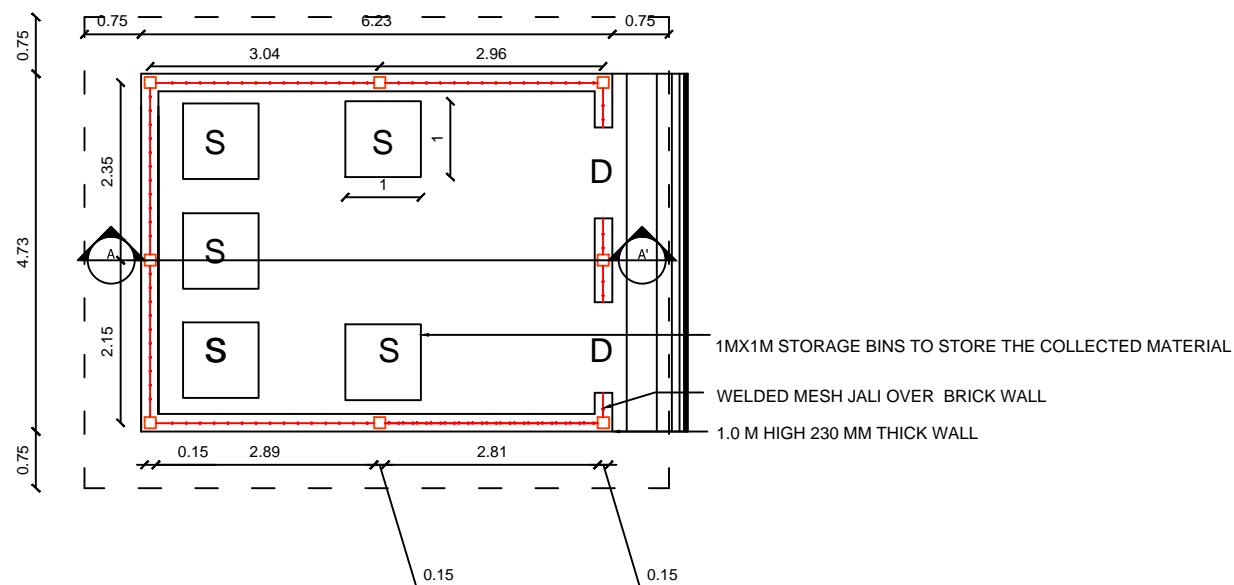
S = 1M X 1M STORAGE BINS

ALL DIMENSIONS ARE IN METERS.

SCALE = 1:100



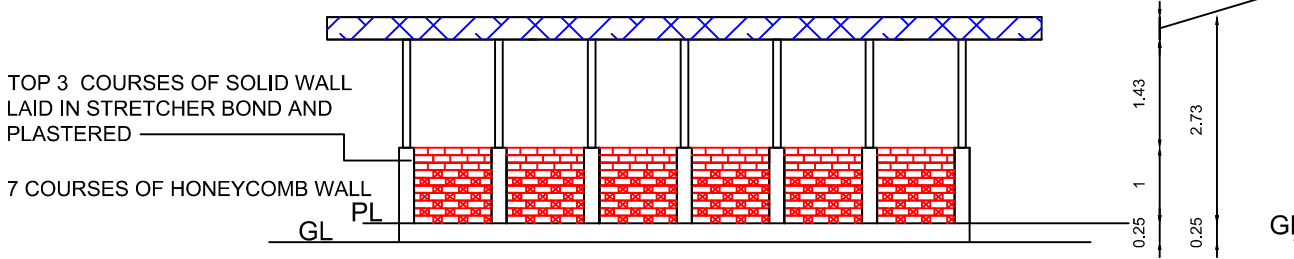
**SECTION AT AA'**



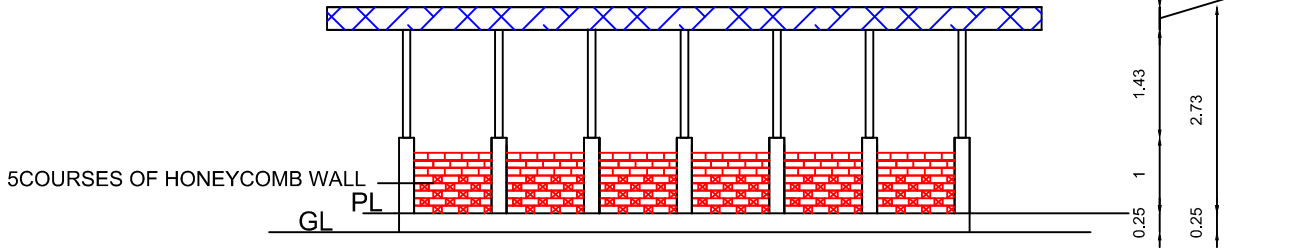
**LAYOUT PLAN**



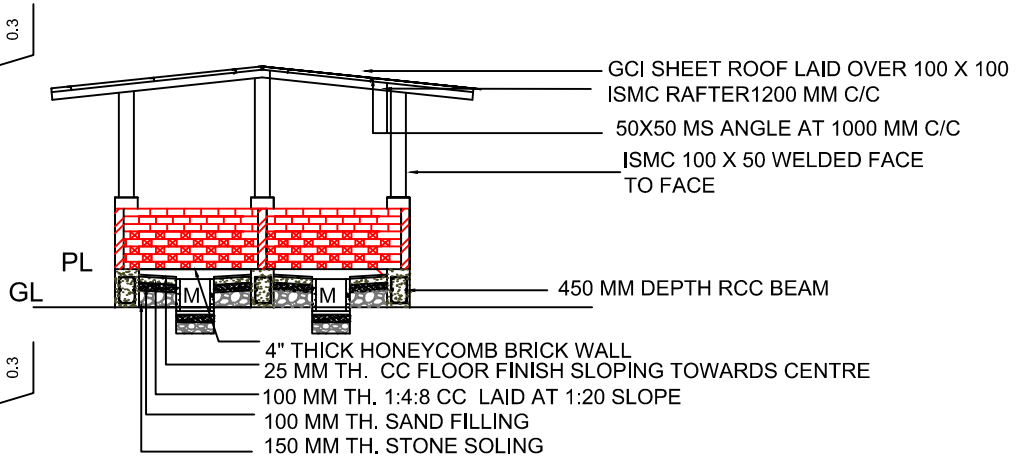
PROPOSED DESIGN OF COMPOSTING PITS



ELEVATION OF INTERMEDIATE WALL CC



ELEVATION OF OUTER WALL BB



SECTION AT AA'

PROPOSED DESIGN OF HONEYCOMB AEROBIC COMPOSTING PITS

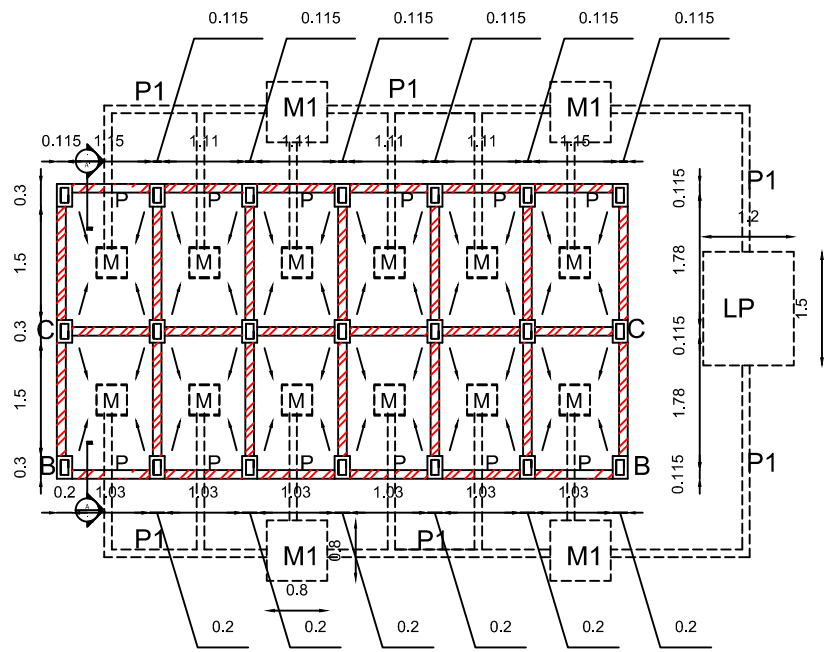
SPECIFICATIONS

1. THE FLOOR OF THE PITS SHALL SLOPE TOWARDS THE CENTRE TO ALLOW FOR THE COLLECTION OF LEACHATE IN THE MANHOLE CONSTRUCTED FOR THE COLLECTION OF THE SAME.
2. THE MANHOLE IN EACH PIT WILL BE CONNECTED TO THE BIGGER MANHOLE CONSTRUCTED OUTSIDE THE PITS WITH 100 M DIA PVC PIPES SLOPED AT 1:10 .
3. THE BIGGER MANHOLES SHALL BE CONNECTED TO THE MAIN LEACHATE POOL WITH 150 MM DIA PVC PIPES LAID AT THE SLOPE OF 1:20.
4. THE PARTITIONS OF THE PITS SHALL BE 4 INCH THICK HONEYCOMB BRICK WALL.
5. CORNERS OF THE PITS SHALL BE CONSTRUCTED WITH 150X 50 ISMC SECTION WELDED FACE TO FACE CONNECTED WITH THE BOTTOM BEAM WITH GUSSET PLATE.
6. THE CHANNEL PILLARS SHALL HAVE 50 MM COVER TILL THE PIT HEIGHT.
7. THE PLINTH OF THE AEROBIC COMPOST PITS SHALL BE 450 MM ABOVE THE GROUND LEVEL .
8. THERE SHALL BE RCC PLINTH BEAM.
9. ALTERNATIVE/LOCAL MATERIALS COULD BE USED TO CONSTRUCT THE PITS AFTER CONFORMING TO THE LOADING DESIGN OF THE PITS.

ALL DIMENSIONS SHALL BE IN METERS UNLESS OTHERWISE SPECIFIED

PLEASE DO NOT SCALE THE DRAWING

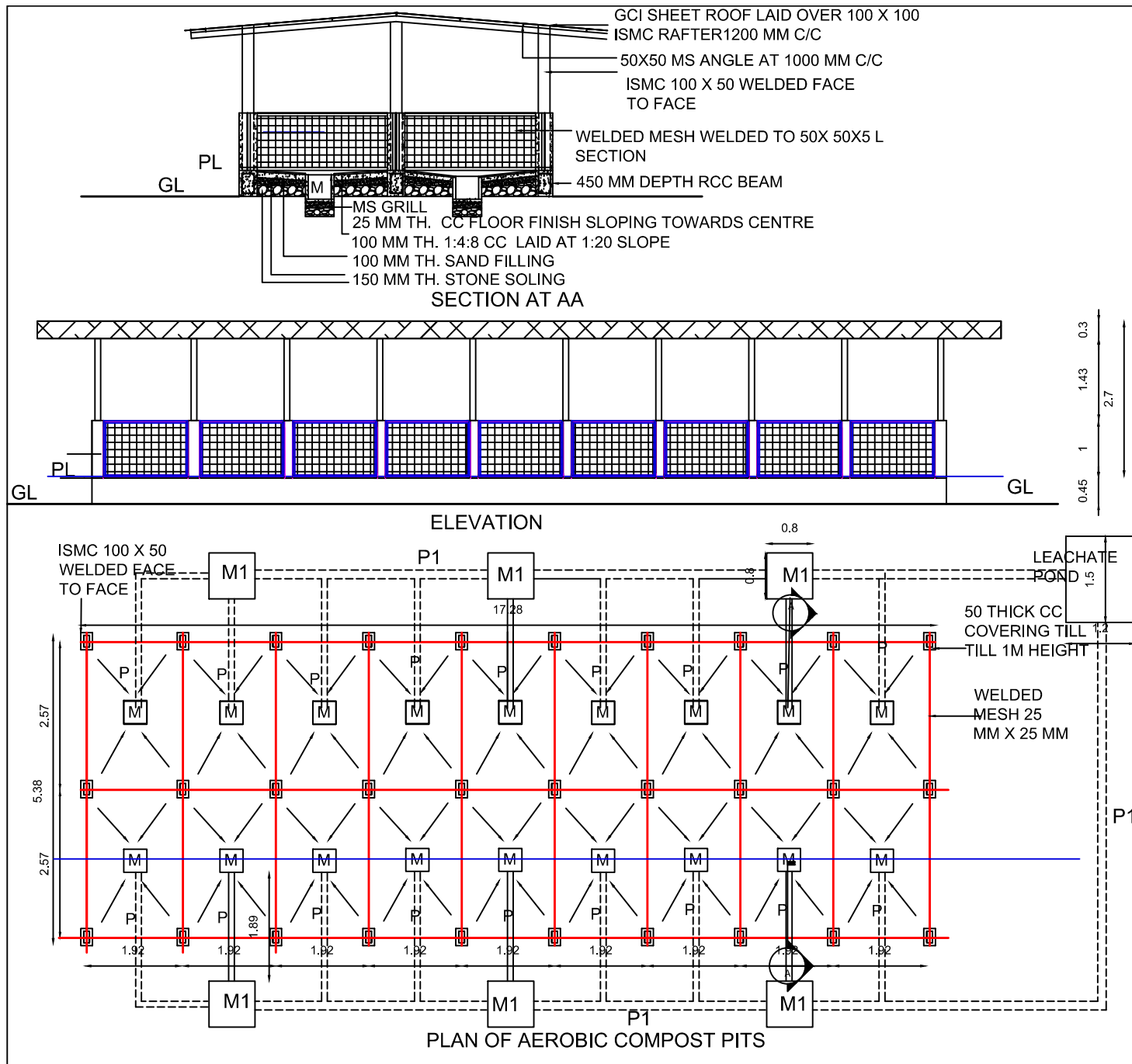
- LEGEND
- M = MANHOLE 400 MM X 400 MM
  - M = MANHOLE 400 MM X 400 MM
  - P = 100 MM DIA PVC PIPE LAID AT 1:10
  - P1 = 150 MM DIA PVC PIPE LAID AT 1:20
  - LP = LEACHATE POND , 1200 MMX1500 MM



LAYOUT PLAN







## PROPOSED DESIGN OF HONEYCOMB AEROBIC COMPOSTING PITS

### SPECIFICATIONS

1. THE FLOOR OF THE PITS SHALL SLOPE TOWARDS THE CENTRE TO ALLOW FOR THE COLLECTION OF LEACHATE IN THE MANHOLE CONSTRUCTED FOR THE COLLECTION OF THE SAME.
2. THE MANHOLE IN EACH PIT WILL BE CONNECTED TO THE BIGGER MANHOLE CONSTRUCTED OUTSIDE THE PITS WITH 100 M DIA PVC PIPES SLOPED AT 1:10 .
3. THE BIGGER MANHILES SHALL BE CONNECTED TO THE MAIN LEACHATE POOL WITH 150 MM DIA PVC PIPES LAID AT THE SLOPE OF 1:20.
4. THE PARTITIONS OF THE PITS SHALL BE WELDED MESH JALI OF 50 X50 MM WELDED TO 50X 50 MS STEEL ANGLE FRAME.
5. CORNERS OF THE PITS SHALL BE CONSTRUCTED WITH 150X 50 ISMC SECTION WELDED FACE TO FACE CONNECTED WITH THE BOTTOM BEAM WITH GUSSET PLATE.
6. THE CHANNEL PILLARS SHALL HAVE 50 MM COVER TILL THE PIT HEIGHT.
7. THE PLINTH OF THE AEROBIC COMPOST PITS SHALL BE 450 MM ABOVE THE GROUND LEVEL .
8. THERE SHALL BE RCC PLINTH BEAM.
9. ALTERNATIVE/LOCAL MATERIALS COULD BE USED TO CONSTRUCT THE PITS AFTER CONFORMING TO THE LOADING DESIGN OF THE PITS.

### LEGEND

M = MANHOLE 400 MM X 400 MM

M = MANHOLE 400 MM X 400 MM

P = 100 MM DIA PVC PIPE LAID AT 1:10

P1 = 150 MM DIA PVC PIPE LAID AT 1:20