TEREX MPS

TEREX WASHING SYSTEMS

RAJASTHAN STATE M-SAND POLICY: THE WAY AHEAD

Technical Seminar on Manufactured Sand

Presented by :- Terex MPS
Terex Washing System

SAND- A CRITICAL RESOURCE

TEREX
Materials Processing

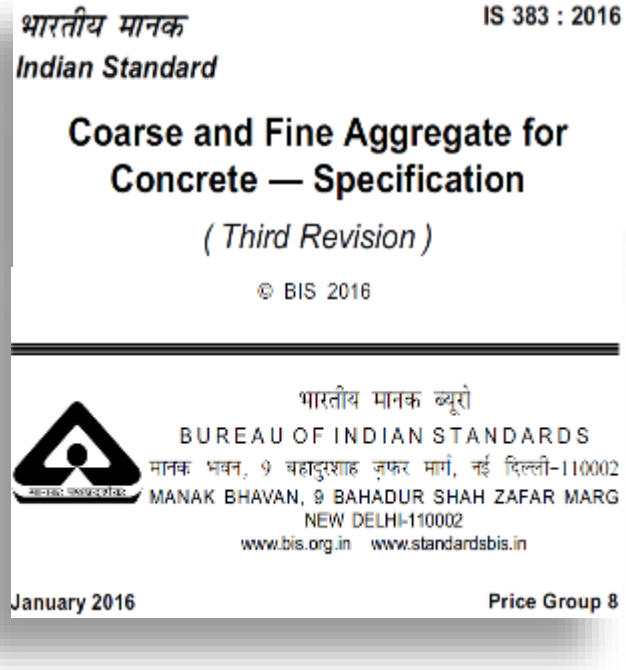
- Sand:- An Important resource and one of the most exploited
- High consumption Low Production
- Massive impact on the planet and thus people's lives
- Extraction is causing Significant loss of biodiversity
- Important to have Substitutes for Natural Sand

Definition of Sand As per IS383(Rev 2016)

TEREX Materials Processing

Fine Aggregate - Aggregate most of which **passes** 4.75 mm IS Sieve and contains only so much ***coarser material*** as permitted in ***Clause 6.3.***

- **Natural Sand** :- Fine aggregate resulting from the natural disintegration of rock and which has been deposited by streams or glacial agencies. ***This may also be called as uncrushed sand/River Sand***
- **Crushed Sand**
  - **Crushed stone sand** - Fine aggregate produced by crushing **hard stone**.
  - **Crushed gravel sand** - Fine aggregate produced by crushing **natural gravel**
- **Mixed Sand** :- Fine aggregate produced by blending ***natural sand*** and ***crushed stone sand*** or crushed gravel sand in suitable proportions.
- **Manufactured Sand *(Manufactured Fine Aggregate)*** :Fine aggregate manufactured from ***other than*** natural sources, by processing materials, using thermal or other processes such as separation, washing, crushing and scrubbing.


भारतीय मानक
Indian Standard

IS 383 : 2016

Coarse and Fine Aggregate for Concrete — Specification

(Third Revision)

© BIS 2016

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली-110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.org.in www.standardsbis.in

January 2016 Price Group 8

Clause-4

TEREX
Materials Processing

Cl. 4.1 - Aggregates from Natural Sources

TEREX
Materials Processing

Fine Aggregate

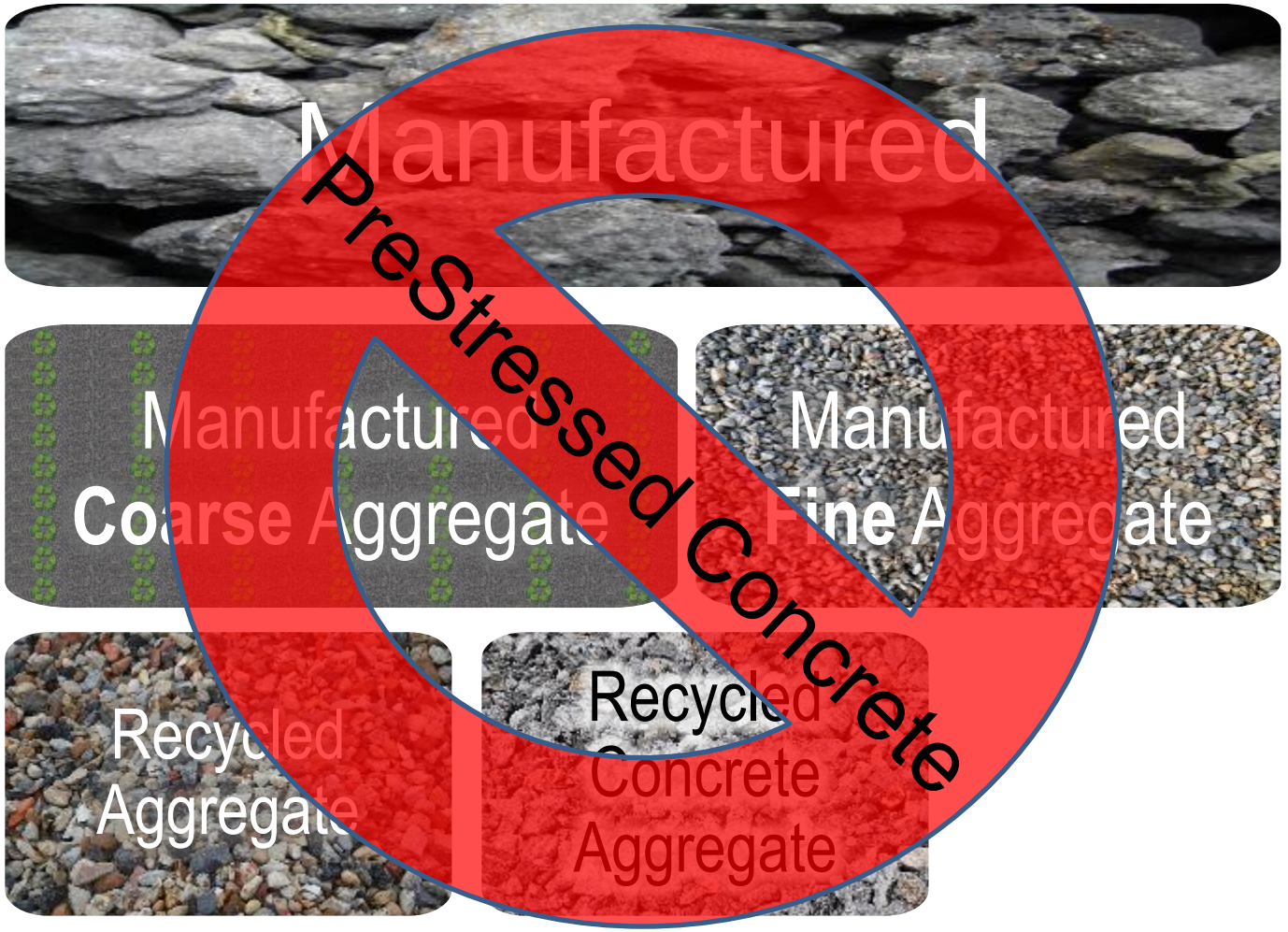
Mixed Sand

Mixed Gavel/Stone

Cl. 4.2 - Manufactured Aggregates

TEREX
Materials Processing

New in 2016 Revision



Crushed Sand Vs River (Natural) Sand

TEREX
Materials Processing

Parameters	Crushed Sand	River Sand
Process	Manufactured by crushing naturally occurring rocks such as Granite, Basalt , Sandstone ,Quartzite etc .	Naturally Available on river banks
Shape	Angular and has rougher texture. Angular aggregates demands more water. Water demand can be compensated with cement content	Smoother texture with better shape. Demands less water.
Moisture Content	Moisture is available only in Water washed crushed-Sand	Moisture is trapped in between the particles which is good for concrete purposes
Concrete Strength	Higher concrete strength compared to river sand used concrete	Lesser compared to Crushed Sand used concrete

Crushed Sand Vs River (Natural) Sand

TEREX
Materials Processing

Parameters	Crushed Sand	River Sand
Eco Friendly	Causes less damage to environment as compared to River Sand, as it used by Repurposing a industrial By-Product	Extracting it from source is Harmful to environment causing Eco imbalances, reduced ground water level, and rivers water gets dried up.
Applications	Highly Recommended for RCC Purposes and Brick/Block Works.	Recommended for RCC, Plastering and Brick/Block Work.

Crushed Sand

TEREX
Materials Processing

Crushed Sand are generally produced :-

- by Use of modern Fixed shaft types of Cones & Vertical shaft Impactors(VSI)
- All the gradations are present in the range of 0 ~ 4.75mm (5mm)
- Consistent Quality
- Ultra fines(Particles<150 microns) in excess of 20%, are generally washed/Classified
- Washed

Producing Crushed Sand

TEREX
Materials Processing

Primary Crushing

Secondary Crushing

Tertiary Crushing

Washing/ Classification

ADDING VALUE TO MATERIALS

AutoSand Vs Vertical Shaft Impactor

TEREX
Materials Processing

	AUTOSAND CONE CRUSHER	VERTICAL SHAFT IMPACTOR
Feed Size	+5-63mm/GSB	+5-20 mm
Power	160 KW	220 KW/2X185 KW
Output	50TPH	50TPH
% of 600 Microns	40 %	45%
% of -150 micron	18%	25%
Loss due to washing/Classification	Less	High
Particle Shape	★★★	★★★★
Operation Cost	★★★★	★★★

Terex Autosand Cone For Sand Production

TEREX
Materials Processing

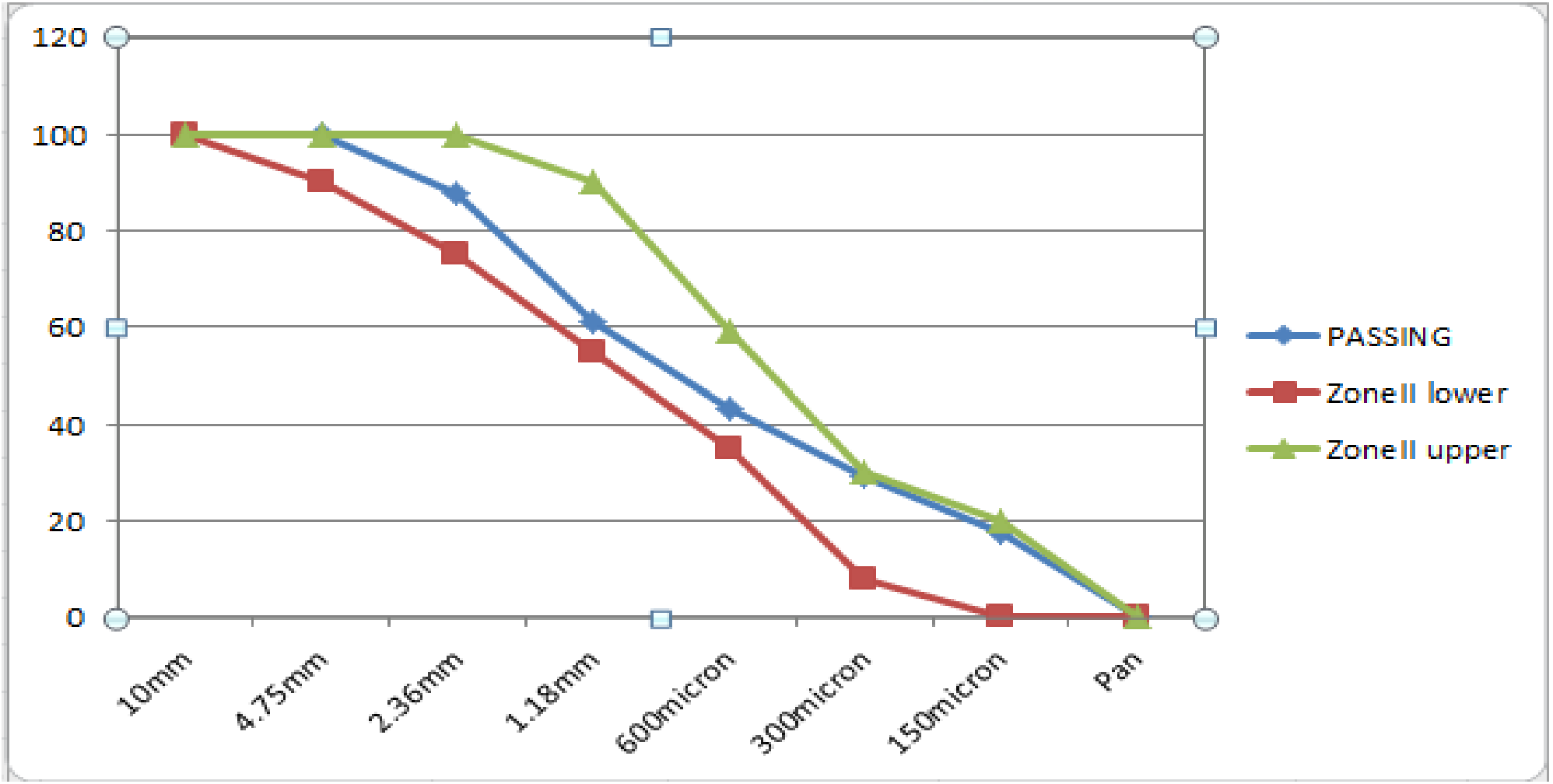
ADDING VALUE TO MATERIALS

Terex Autosand Cone For Sand Production

TEREX
Materials Processing

SAND FROM AUTOSAND VS IS383-2016
(ZONE II GRADATION)

TEREX
Materials Processing



Terex Autosand Cone For Sand Production

TEREX
Materials Processing

BUREAU VERITAS

Ref:BVIPL:FA: BL/1033/4/2017
Test Order dated: 11.04.2017

Date: 17.04.2017

M/s. Terex India Pvt. Limited
5th Floor, West Wing, E-City Tower 2,
No. 94/2, 95/2, Electronic City,
Phase-1, Bangalore – 560 100.

PHYSICAL TEST REPORT ON FINE AGGREGATE SAMPLE
(Manufactured Sand)

Source of sample	:	Sample supplied by the customer
Customer's Reference	:	Letter Dated 11.04.2017
UIN	:	17011488
Project*	:	SAV, Nagarcoil
Sample Identification*	:	(0-4) SAV OLD PLANT
Date of test	:	15.04.2017
Condition of sample	:	Satisfactory
Test Method	:	IS:2386 (Part I)-1963 (Reaffirmed – 2011)

SIEVE ANALYSIS:

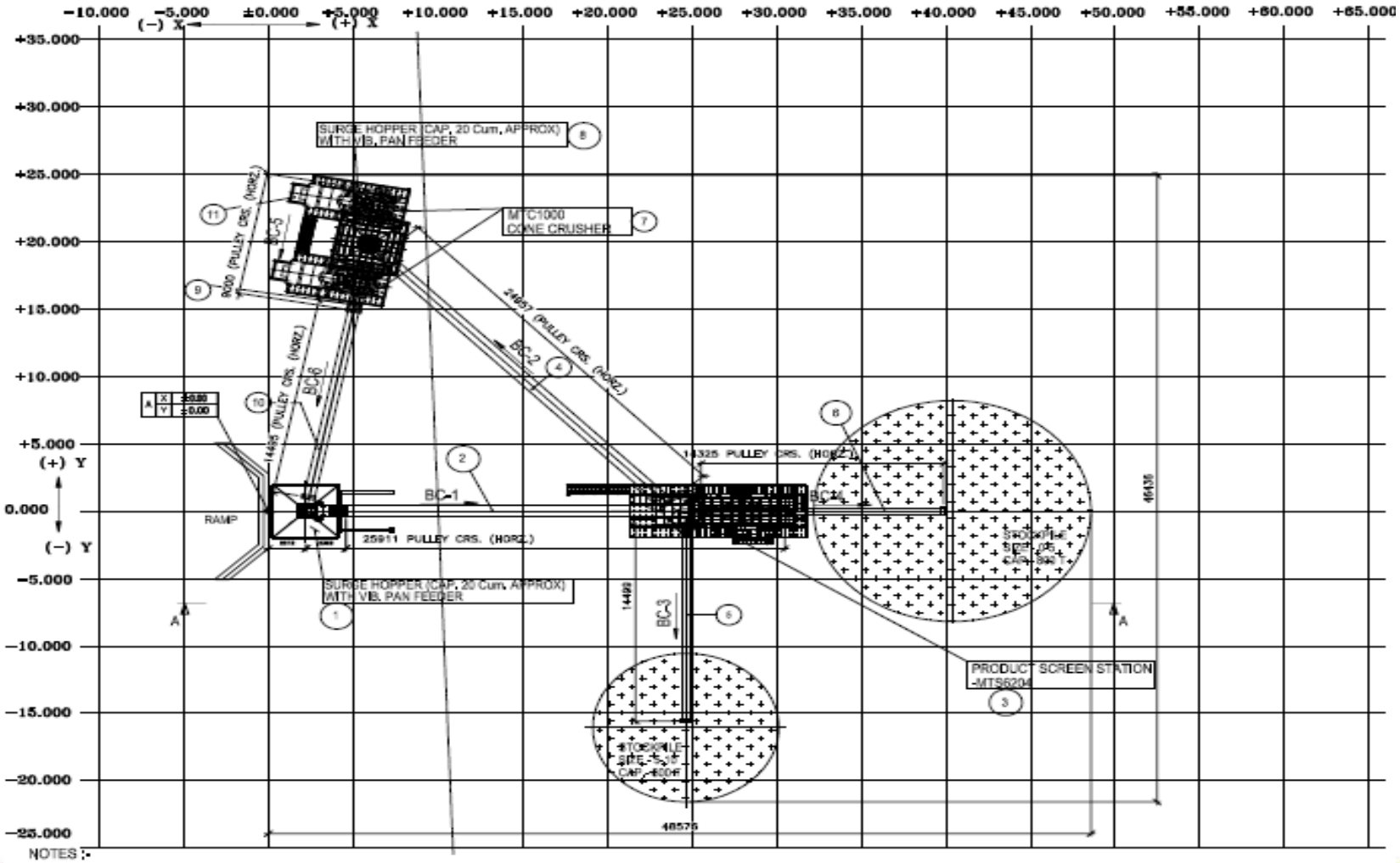
IS Sieve Designation	Cumulative Percent		Specification as per IS:383-2016 for Fine Aggregate (Percentage Passing)			
	Retained	Passing	Zone-I	Zone II	Zone-III	Zone IV
10.00 mm	0	100	100	100	100	100
04.75 mm	0.1	99.9	90-100	90-100	90-100	95-100
02.36 mm	12.5	87.5	60-95	75-100	85-100	95-100
01.18 mm	38.7	61.3	30-70	55-90	75-100	90-100
600 microns	56.7	43.3	15-34	35-59	60-79	80-100
300 microns	71.1	28.9	5-20	8-30	12-40	15-50
150 microns	82.6	17.4	0-10	0-10	0-10	0-15

REMARKS: The sample supplied satisfies the requirements of grading **Zone II** as per IS:383- 2016.
According to IS:383-2016 for Crushed Stone Sands, the permissible limit on 150 micron IS Sieve is increased to 20%. This does not affect the 5% allowance permitted in Cl. 6.3

REMARKS: The sample supplied satisfies the requirements of grading **Zone II** as per IS:383- 2016.

100 TPH ADD ON MODULAR SAND CIRCUIT

TEREX
Materials Processing



100 TPH ADD ON MODULAR SAND CIRCUIT

TEREX
Materials Processing

ADDING VALUE TO MATERIALS

Manufacturing Sand from -63mm Feed

TEREX
Materials Processing

ADDING VALUE TO MATERIALS

Sand Washing /Classification

TEREX Materials Processing

- Why to wash: To remove particles ranging from 0-150micron, clay, metals, rubber, plastics, organic, paper, polystyrene etc.
- What to wash: Washing of natural sand, M-sand, Crusher dust, Silica sand, iron ore and C&D waste is done.
- How to wash: Can be done by either air or water medium. But water is considered as efficient because of its dipolar and viscous characteristics.

WASHING	Material	Contaminants to be removed
	Natural Sand	Silt, clay, mica & organic matters
	M-Sand	Majorly silt & clay
	Silica sand	Silt ,clay and oversize
	Iron ore	silica
	C&D waste	clay, metals, rubber, plastics, organic, paper, polystyrene

Sand Washing /Classification

TEREX
Materials Processing

Fine Master FM200DF
Cyclone Type washing Plants

Terex T150
(Bucket wheel dewatering + Augur screw)

Sand Washing & Water Recovery System

TEREX
Materials Processing

ADDING VALUE TO MATERIALS

Sand Washing & Water Recovery System

TEREX
Materials Processing

High Frequency Screen-MHFS2618

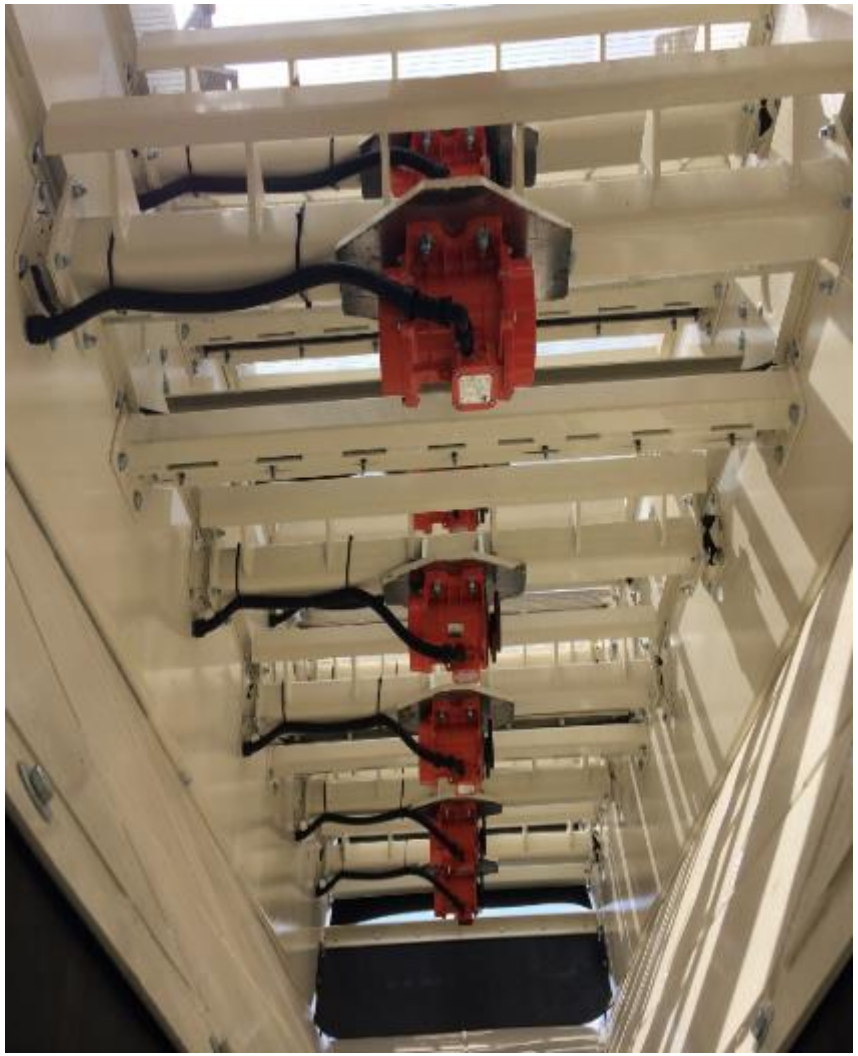
TEREX
Materials Processing

- Screen Mesh Size : 800micron/600 Micron /400 Micron

- Capacity Handled : 80mtph to 50 mtph depending on feed source

High Frequency Screen-MHFS2618

TEREX
Materials Processing



ADDING VALUE TO MATERIALS

High Frequency Screen-MHFS2618

TEREX
Materials Processing

For -75micron removal

High Frequency Screen-MHFS2618

TEREX
Materials Processing

RE: Some improvements need in HFS plant

File | Message | McAfee E-mail Scan

You forwarded this message on 11/29/2016 5:50 PM.
Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

From: Kumaresan R Ramalingam <srkumaresan@lntecc.com>
To: Sati, Tribhuwan; Sudhansukumar Muduli; Stalinraj R
Cc: Kumar, Mahendra; Banerjee, Soumitra; Singh, Karan
Subject: RE: Some improvements need in HFS plant

Dear Sir,

Find the below test report of HFS plant.

HFS Testing Report (CP-1)					
Date 10.11.16		Belt Sample	Wt of Sample in gm		602
Sieve (mm)	Wt of Retained	% of Retained	% of Cummlative Retained	% of Passing	Limit Zone -II
10.0	0	0	0	100	100
4.75	49	8.14	8.14	91.86	90-100
2.36	81	13.46	21.60	78.40	75-100
1.18	220	36.54	58.14	41.86	55-90
0.600	72	11.96	70.10	29.90	35-59
0.300	23	3.82	73.92	26.08	8,-30
0.150	30	4.98	78.90	21.10	0-20
0.075	31	5.15	84.05	15.95	0-15

Remark: Material feed from CP 4 PLANT

Feed material Testing Report (CP-4)					
Date 10.11.16		Belt Sample	Wt of Sample in gm		550
Sieve (mm)	Wt of Retained	% of Retained	% of Cumulative Retained	% of Passing	Limit Zone -II
10.0	0	0	0	100	100
4.75	27	4.91	4.91	95.09	90-100
2.36	40	7.27	12.18	87.82	75-100
1.18	82	14.91	27.09	72.91	55-90
0.600	38	6.91	34.00	66.00	35-59
0.300	41	7.45	41.45	58.55	8,-30
0.150	76	13.82	55.27	44.73	0-20
0.075	75	13.64	68.91	31.09	0-15

Remark: sample of CP 4 PLANT

HFS Testing Report (CP-1)					
Date 15.11.16		Belt Sample	Wt of Sample in gm		620
Sieve (mm)	Wt of Retained	% of Retained	% of Cumulative Retained	% of Passing	Limit Zone -II
10.0	0	0	0	100	100
4.75	78	12.58	12.58	87.42	90-100
2.36	121	19.52	32.10	67.90	75-100
1.18	200	32.26	64.35	35.65	55-90
0.600	55	8.87	73.23	26.77	35-59
0.300	20	3.23	76.45	23.55	8,-30
0.150	26	4.19	80.65	19.35	0-20
0.075	30	4.84	85.48	14.52	0-15

Remark: Material feed from STOCK YARD

Feed material Testing Report (CP-4)					
Date 14.11.16		Belt Sample	Wt of Sample in gm		550
Sieve (mm)	Wt of Retained	% of Retained	% of Cumulative Retained	% of Passing	Limit Zone -II
10.0	0	0	0	100	100
4.75	23	4.18	4.18	95.82	90-100
2.36	52	9.45	13.64	86.36	75-100
1.18	122	22.18	35.82	64.18	55-90
0.600	60	10.91	46.73	53.27	35-59
0.300	41	7.45	54.18	45.82	8,-30
0.150	61	11.09	65.27	34.73	0-20
0.075	65	11.82	77.09	22.91	0-15

Remark: sample of CP 4 PLANT

HFS Testing Report (CP-1)

Cl. 4.2 - Manufactured Aggregates

TEREX
Materials Processing

Manufactured **Coarse** Aggregate	Extent of Utilization		
	Reinforced Concrete	Plain Concrete	Lean Concrete < M15 Grade
 Recycled Concrete Aggregate	**20%** **upto M25 Grade**	**25%**	**100%**
Recycled Aggregate	**Nil**	**Nil**	**100%**
 Iron Slag Aggregate	**25%**	**50%**	**100%**
 Steel Slag Aggregate	**Nil**	**25%**	**100%**
Bottom Ash	**Nil**	**Nil**	**25%**

Cl. 4.2 - Manufactured Aggregates

TEREX Materials Processing

Manufactured Fine Aggregate	Extent of Utilization		
	Reinforced Concrete	Plain Concrete	Lean Concrete < M15 Grade
Recycled Concrete Aggregate	20% upto M25 Grade	25%	100%
Iron Slag Aggregate	25%	50%	100%
Steel Slag Aggregate	Nil	25%	100%
Copper Slag Aggregate	35%	40%	50%

Notes about Utilization

The concrete rubble has to be properly processed, including **scrubbing** to remove the adhered hydrated cement as much as possible

The broad steps involved in the manufacture of aggregates from **C&D waste** may be:

- Dry and **Wet** processing.

Desirable to source the Recycled Concrete Aggregates from sites being redeveloped for use in the **same site.**

NOBODY BUT US.

Our expertise lies in offering complete solution, not just for sand washing, but manufacturing too.

At Terex, "Works For You" is more than a slogan - it's a promise