

Evaluation of the DPR Proposed for the Upgradation of Underground Sewerage System of Aurangabad City

(Job No.: DRD/CE/VJ-5/13-14)

Report

by

Dr. V. Jothiprakash

&

Dr. R.S. Jangid



**Department of Civil Engineering
Indian Institute of Technology Bombay
Powai, Mumbai - 400 076**

For

Aurangabad Municipal Corporation, Aurangabad

July, 2013

Evaluation of the DPR for the Proposed Upgradation of Underground Sewerage System of Aurangabad City

(Job No.: DRD/CE/VJ-5/13-14)

1. INTRODUCTORY REMARKS

Aurangabad Municipal Corporation, Aurangabad approached Indian Institute of Technology Bombay (IITB), Mumbai for evaluation of the Detailed Project Report (DPR) for proposed upgradation of underground sewerage system of Aurangabad City through their letter No. AMC/B&C/B&G/138/2013 dated 11-06-2013. The upgradation of the underground sewerage system for Aurangabad city has 100 percent coverage of population and the area likely to be in planning horizon in the year 2030 as intermediate and in the year 2045 as ultimate demand. M/s Fortress Infrastructure Advisory Services, Mumbai, prepared the DPR keeping in mind to determine a technically and economically viable sewerage project to meet the future requirements. Since the proposed sewerage project is an important project, as a result, consultancy service to evaluate the project is under-taken by the IITB. The specific objectives of the study are summarized as:

1. Evaluation of Detailed Project Report (DPR) proposed for upgradation of underground sewerage system for Aurangabad City prepared by M/s Fortress Infrastructure Advisory Services, Mumbai.

The team of M/s Fortress Infrastructure Advisory Services, Mumbai, made a presentation on the DPR of the proposed sewerage system for Aurangabad City on June 17, 2013 in the Civil Engineering Department, IITB. The detailed technical discussion took place between the team of the M/s Fortress Infrastructure Advisory Services, Mumbai and IITB team comprising of Prof. R.S. Jangid and Prof. V. Jothiprakash.

2. EVALUATION OF DPR AND HYDRAULIC DESIGN PROCEDURES

2.1. General

The following reports were received for evaluation and critically reviewed.

1. Volume I consists of the Detailed Project Report (DPR) on "Underground Sewerage System for Aurangabad City."
 - a. This report approved by *Maharashtra Jeevan Pradhikaran (MJP)* gives the in-depth introduction to the Aurangabad City, design concept including the population projection, sewage estimation, design criteria, existing sewer system, proposed sewer system, sewage treatment plants, pumping stations, detailed design methodology, concept on treatment processes, and recycling of treated water.
2. Volume II – "Design Report and Drawings". This includes the detailed design output of sewer pipe details, manhole details, velocity in each pipe, sewage pumping station and sewage treatment plant (STP) design.

2.2. Detailed Project Report (DPR)

2.2.1. Introduction

The DPR contains in detail about the project, its objectives, scope, approach and methodology. The details about the regional profile, Climate, Topography, Geology, existing infrastructure, natural resource are explained in detailed including the Socio Economic profile of Aurangabad City Corporation area. The project area is complete area of Aurangabad Corporation and covers 85% of the roads, excluding MIDC and CIDCO area. The population growth is also explained in detail.

2.2.2. Existing Sewerage System

The scheme for the collection transportation, and treatment of sewage was commissioned in early seventies. The Municipal Corporation in 1965 has started the laying of underground

sewerage line and completed the first phase in 1972 and second phase in 1976. The population projected at that time for 2001 was 2.0 lacs. The scheme was designed and constructed by Public Health Engineering Department, Govt. of Maharashtra. However, sudden increase in population (in the order of 4 - 5 times) the scheme proved to be insufficient.

Aurangabad Municipal Corporation (AMC) has prepared a comprehensive plan for development of sewerage system covering entire area of AMC through M/S Shah consultants Mumbai in 1987. It was proposed to align the main trunks along the existing slopes and nallahs. Topographically the area of Aurangabad city is divided in to two natural drainage systems.

Zone A: Comprises of Kham River and its tributaries, nallahs,

Zone B: Comprises of Sukhana River and its tributaries.

The majority of area is having slope towards Kham river basin 75 to 80 % sewage flow can be attributed to Kham river and 20 to 25 % flow drains in Sukhana River. The notations used in the sewage system is given in Table 2.1.

Table 2.1 Main Sewers and STP zones in the AMC area

Name of STP Zone	Name of Main Sewers
Banewadi and Part Nakshatrawadi	B,C,D,E
Part Nakshatrawadi	F,K
Cidco and Zalta	L,M
Padegaon	A

2.2.3. Proposed Sewerage System

The planning of new sewerage system has been carried out meticulously and was technically connected to the existing sewerage system. The design includes population projection, sewage load estimation, and field investigation etc. The point wise points discussed during the meeting held at IIT Bombay are as follows:

10. As per CHPEEO recommendation, pipes of diameter 200 to 300 mm were taken as HDPE pipes and other pipes are cement concrete pipes. Thus in the new proposed sewerage system, minimum pipe diameter 150 mm and pipes large than 300 mm are taken as cement pipe.
11. The commercially available software SewerGEMS is used for designing the sewerage system. The data entry is carried out using AutoCAD drawings.
12. Sewers are placed at centre of the road.
13. Manhole spacing, location and size are as per the CPHEEO manual guidelines and recommendation.
14. During the report presentation, the sewer system of Aurangabad City was simulated again for three time period, 2015, 2030 and 2045, incorporating the existing and proposed sewers. The results are as given in Table 2.2, Table 2.3, and Table 2.4. Table 2.2 indicates the diameter of sewer and its length in the existing and proposed system. From Table 2.2, it can be seen that the total length of the sewer would be around 531 km, out of which nearly 40% (around 212 km) of length is existing sewers.

Table 2.2. Diameter wise length of the system and its percentage contribution to the total system

DIAMETER	LENGTH							Total length	%
	ZONE-1	PART - 1	PART - 2	PART - 3	PART - 3R	ZONE-4	ZONE-6		
150 mm	125136	12973	16911	61052	70879	20637	36061	343650	64.7%
175 mm	7680	934	1855	4324	5468	2115	4267	26643	5.0%
217 mm	6308	1055	2904	4779	5592	3502	4576	28715	5.4%
271 mm	7720	1836	1740	4956	3903	4408	3649	28212	5.3%
400 mm	9257	2567	1800	3301	4350	4930	4040	30244	5.7%
450 mm	1591	460	992	248	411	0	0	3702	0.7%
500 mm	1114	228	5898	1332	0	736	4088	13395	2.5%
600 mm	2972	81	688	945	1875	1575	4373	12509	2.4%
700 mm	2623	2069	0	706	1045	334	2882	9658	1.8%
800 mm	567	848	1135	257	661	0	894	4361	0.8%

Table 2.3. Velocity of sewage in the designed system for three period 2015 (Base period), 2030 (half life period) and 2045 (ultimate period)

		2015								
		LENGTH						Total length	%	
		ZONE-1	PART -1	PART -2	PART -3	PART -3R	ZONE-4			ZONE-6
< 0.6 m/s		99659	9631	13576	41356	52369	17144	28359	262093	49.35%
< V < 0.8 m/s		42980	7813	12066	24792	23618	15882	21697	148846	28.02%
< V < 3 m/s		32975	6176	10999	22026	24255	5212	18538	120181	22.63%
> 3 m/s		0	0	0	0	0	0	0	0	0.00%
Total length		175613	23620	36641	88175	100242	38237	68593	531120	100.00%

		2030								
		LENGTH						Total length	%	
		ZONE-1	PART -1	PART -2	PART -3	PART -3R	ZONE-4			ZONE-6
< 0.6 m/s		95290	9216	13368	37930	49285	16906	27797	249791	47.03%
< V < 0.8 m/s		43242	7575	12207	26009	24202	15495	20136	148865	28.03%
< V < 3 m/s		37081	6829	11067	24236	26677	5836	20661	132386	24.93%
> 3 m/s		0	0	0	0	78	0	0	78	0.01%
Total length		175613	23620	36641	88175	100242	38237	68593	531120	100.00%

		2045								
		LENGTH						Total length	%	
		ZONE-1	PART -1	PART -2	PART -3	PART -3R	ZONE-4			ZONE-6
< 0.6 m/s		91191	8840	13196	35863	47417	16646	26921	240074	45.20%
< V < 0.8 m/s		15902	1808	905	10994	9973	497	3263	43343	8.16%
< V < 3 m/s		68520	12971	22540	41319	42774	21093	38409	247626	46.62%
> 3 m/s		0	0	0	0	78	0	0	78	0.01%
Total length		175613	23620	36641	88175	100242	38237	68593	531120	100.00%

To avoid this situation a d/D ratio of 0.6 may be considered in the design. But if the velocity has to be increased then the entire system has to be re-laid with new design. This may be uneconomical, since the existing sewers are in good condition.

The total depth of excavation in the proposed system is given in Table 2.4. From table, it can be seen that the maximum depth of excavation is mostly within three meters and very less percentage is above 3 m (around 5% of network and more over only 2% of network is more than 4.5 m). This shows that the system designed is very economical.

VELOCITY									
2015									
	LENGTH							Total length	%
	ZONE-1	PART-1	PART-2	PART-3	PART-3R	ZONE-4	ZONE-6		
V < 0.6 m/s	0	0	0	13	0	0	0	13	0.00%
0.6 < V < 0.8 m/s	90252	9917	9476	33381	33965	7012	16148	200151	37.68%
0.8 < V < 3 m/s	85361	13703	27165	54781	66277	31225	52445	330957	62.31%
V > 3 m/s	0	0	0	0	0	0	0	0	0.00%
Total length	175613	23620	36641	88175	100242	38237	68593	531121	100.00%

VELOCITY									
2030									
	LENGTH							Total length	%
	ZONE-1	PART-1	PART-2	PART-3	PART-3R	ZONE-4	ZONE-6		
V < 0.6 m/s	0	0	0	0	0	0	0	0	0.00%
0.6 < V < 0.8 m/s	47334	9209	8407	28776	29159	6313	13875	143072	26.94%
0.8 < V < 3 m/s	128279	14411	28235	59399	71083	31924	54719	388049	73.06%
V > 3 m/s	0	0	0	0	0	0	0	0	0.00%
Total length	175613	23620	36641	88175	100242	38237	68593	531121	100.00%

VELOCITY									
2045									
	LENGTH							Total length	%
	ZONE-1	PART-1	PART-2	PART-3	PART-3R	ZONE-4	ZONE-6		
V < 0.6 m/s	0	0	0	0	0	0	0	0	0.00%
0.6 < V < 0.8 m/s	0	0	0	0	0	0	0	0	0.00%
0.8 < V < 3 m/s	175613	23620	36641	88175	100242	38237	68593	531121	100.00%
V > 3 m/s	0	0	0	0	0	0	0	0	0.00%
Total length	175613	23620	36641	88175	100242	38237	68593	531121	100.00%

	Avg. Pipe Cover (t)							Total length	%
	LENGTH								
	ZONE-1	PART-1	PART-2	PART-3	PART-3R	ZONE-4	ZONE-6		
$t \leq 1.5$	63055	8190	7085	39877	33718	3386	15390		
$1.5 < t \leq 3$	61246	8372	11079	30661	35742	7073	20191	170701	32.14%
$3 < t \leq 4.5$	23889	4520	6919	12673	17961	4700	10134	174363	32.83%
$4.5 < t \leq 6$	12622	1673	3457	4184	10210	4184	9144	80797	15.21%
$6 < t \leq 9$	5458	865	2904	779	2611	8310	9760	45473	8.56%
$9 < t \leq 12$	2459	0	2656	0	0	6845	3974	30687	5.78%
$t > 12$	6885	0	2542	0	0	3739	0	15934	3.00%
Total length	175613	23620	36641	88175	100242	38237	68593	531121	100.00%

From the above Table 2.5, it can be seen that during all the period the velocity criteria are met as per CPHEEO manual, but there is a slight difference in depth of excavation. The maximum depth of excavation is more than 12 m and most of the sewer line would be in the depth around 4.5 m. This may be tackled by increasing the number of sewerage zones and intermediate pumping stations which may lead to additional capital and running cost to the AMC. It is suggested that the new design may be implemented for new areas and connected to the existing system, this is possible since the existing system manholes are shallow and the last manhole of the existing manhole alone has to be reconstructed. This is very advantageous since, if the Aurangabad Municipal Corporation is upgrading the old system of sewer, then at that time the present proposed new system requires no alterations. However, a decision and approval is required from the corporation side for this observation.

Since, in the sewerage system design of incorporating the old and new system the velocity is less than 0.6 m/s even at ultimate period, it is suggested to provide flushing arrangement in the areas where ever the velocity is less than 0.6 m/s. The treated STP water may be used for this purpose.

2.2.5 Proposed Sewage Treatment Plant (STP)

1. There are seven sewage treatment plant and one additional intermittent pumping station. The details of the location and name of STP are given in Table 22 and 23 of the DPR.
2. The SBR and MBBR techniques are proposed.
3. It is suggested to provide a table showing the qualities of treated water which has to be met by treating and this should be as per the CPHEEO manual.

Description	Unit
pH	6.5-8.5
BOD	< 20 mg/lit
COD	< 100 mg/lit
TSS	< 30 mg/lit
Oil & Grease	< 10 mg/lit
MPN	< 1000 MPN /100 ml

4. Provide a table showing the minimum quality of treated sewage to be used for recycling. The details may be collected from NEERI Nagpur.

Desired Recycled water Quality for Reuse as recommended by NEERI:-

Use Categories	pH	BODS (ppm)	TSS (ppm)	Turbidity (NT U)	
Grey Water (from bathroom, kitchen, washing machine and non toilet areas)					
Irrigation/Gardening	6.0 to 8.0	<10	<5	<3	
Flushing/ washing of roads/floors	6.0 to 8.0	<20	<10	<5	<500
Recreation	6.0 to 8.0	<10	<5	<5	<50
Construction	6.0 to 8.0	<20	<10	<5	---
Black Water (mixed sewage from toilet and all other grey water from all household sources)					

Irrigation/gardening/ golf courses	6.0 to 8.0	<20	<30	<5	<100 0
Flushing	6.0 to 8.0	<20	<20	<8	<100
Recreation	6.0 to 8.0	<10	<5	<5	<50
Construction	6.0 to 8.0	<30	<15	<10	----

The above norms can be applicable in general, however, the bacterial norms, if the treated waste water is being used in general garden maintenance or for agriculture, can be relaxed as water is not being used directly for potable purposes. However, at any place, where water is likely to be touched or is linked with areas of application where children play, water should be disinfected and the norms for the same shall be less than 10 cfu/100ml.

5. The up gradation method should be parallel line method and then delink the existing sewer.
6. Since the STP & Pumping Station package will be turnkey (Design, Build and Operate).

Following steps may be followed during design and execution:

- Modern Technology for treatment is proposed. Automation may solve day and night uninterrupted running of Plant.
- Layout and Basic Engineering Package (BEP) confirming to tender specification has to be submitted.
- Validation/approval for process design.
- Detailing of all structures
- Vendor/Data Sheets approval
- Execution of the work.

7. The design of STP should be as per the CPHEEO manual, especially the design should be for peak flow for all structures, the hydraulic retention time should be as per CPHEEO manual.
8. All civil structures required for the primary treatment has to be constructed for ultimate period quantity (in-fact except for Process tank like SBR/MBBR) all other structure are proposed for the peak flow during 2045.
9. All electro-mechanical requirements are designed as per CPHEEO manual guidelines.
10. It is informed that, the total project to be implemented in single package or two packages, based on clearly bifurcation of the sewerage system. The project has been proposed to be operated and maintained by the same contractor for 15 years. Two separate costs may be called in the tender, one for capital works and another for O&M for 15 years. The contractor will operate and maintain the sewer pipelines, pumping stations and sewage treatment plant for 15 years.

3. CONCLUDING REMARKS AND RECOMMENDATIONS

A detailed DPR for the upgradation of underground sewerage system of Aurangabad City was received for the evaluation. A presentation was made by the PMC at IIT Bombay on June 17, 2013. The planning has been carried out for three time periods, (i.e) 2015, 2030 and 2045. The sewerage system has been planned and designed by incorporating the existing sewers in the city. Following points are the observations and suggestions which may help to fine tune the project further and will avoid discrepancies in the write up while awarding the project.

1. The DPR contains good information.
2. It was concluded that presently the sewage load could not be disposed by the existing system. Hence, there is a need to upgrade the existing sewerage system to cater the increased population.
3. Most of the design criteria is as per the CPHEEO manual. Except that for, the velocity criteria are not met as per the CPHEEO manual.
4. The following points are recommended and forwarded for consideration.
 - a. Consideration of minimum pipe diameter of 250 mm instead of 150 mm.
 - b. Meet the velocity criteria by redesign during the implementation.
 - c. If the velocity criteria could not be met, flushing arrangement has to be provided; else the system would chock frequently, leading to increased operation and maintenance cost.
5. It is worth suggesting that a topic on Environmental Impact of this project may be added in the DPR.
6. If any unforeseen conditions are met during executions especially laying the pipe networks shall be forwarded to the designer for re-checking the hydraulic safety.
7. It was observed that the structural design of sewerage system is as per the MJP structural design guidelines. These structures should be analyzed and designed as per relevant Indian Standards.

M. R. S. Jangid

(R.S. Jangid)

Dr. R. S. JANGID

Professor
Department of Civil Engineering
I.I.T. Bombay, Powai, Mumbai-76

V. Jothiprakash

(V. Jothiprakash)

V. JOTHIPRAKASH

Associate Professor
Department of Civil Engineering
Indian Institute of Technology, Bombay,
Powai, Mumbai - 400 076, INDIA



45-1307

AURANGABAD MUNICIPAL CORPORATION AURANGABAD



phone 2333536-40-2331281, 2331283. Fax No 0240 - 23231213
Post Box No 125 Town hall Aurangabad 431001 (M.S)

No/AMC/B&C/B&G /149 /2013

Date :- 13/06/2013

To,
The
Head of the Department.
Department of Civil Engineering,
Indian Institute of Technology(IIT)
POWAI, MUMBAI 400076.

Sub :- Request for Technical Appraisal of the DPR for the upgradation of underground sewerage system for Aurangabad City.

Ref :- 1. Letter from the office of the Director of Municipal Administration (DMA) Mumbai Vide No 13 Dated 22 May 2013.
2. This office letter No 138 dated 11.6.2013.

Dear sir,

With reference top above it is to inform you that the Detailed Project Report (D.P.R.) duly Revised by the Aurangabad Municipal Corporation for the upgradation of the under ground sewerage system for the Aurangabad city has already been awarded the technical appraisal by the state level scrutiny committee, i.e. the Maharashtra Jeevan Pradhikaran (MJP) on 13.6.2013 for the revised project cost of Rs. 369.94 crores

As has been further directed by the state level nodal agency i.e. the DMA, the said D.P.R. needs to be technically appraised by the IIIrd Party i.e. by the I.I.T. You are therefore requested to scrutinize the said D.P.R. and accord the technical appraisal to the same. The Aurangabad Municipal Corporation shall bear the necessary fees, as shall be applicable

Thanking you,

D.A. Sanctioned D.P.R. Copy.

Sarav
नगरपालिका प्रशासन, मुंबई
महाराष्ट्र शासन, मुंबई

Yours sincerely

[Signature]
Commissioner

Municipal corporation Aurangabad.

Copy to the : Director of Municipal Administration Worli, Mumbai for information please.

15-13/2



Ratnaprabha Bldg., Kesarsingpura, Opp. LIC Bldg.,
Aurangabad - 431 001 Maha.
IFSC : IBKL0000376

Valid for 3 months from the date of issue

दिनांक
Date 15 06 2013

D. S. SAVANT & SONS, MUMBAI / CTS - 2010

Pay Registrar, IIT Bombay, P.L.C.

या धारक को Or Bearer

रुपये Rupees Rs five lac. Seventy five thousand only.

अदा करें। ₹ 5,75,000=00

खाता सं.
A/c No. 63312010000501

MS. DMC/AMC (GENERAL SAVINGS ACCOUNT)
For Municipal Corporation Aurangabad

Payable At Par At IDBI Bank Branch/es in India

[Signature]
A.O./C.A. Authorised Signatories
Dy. Commissioner

Please sign above this line

⑈ 184045⑈ 431259008⑈ 037600⑈ 29

42.1211



MUNICIPAL CORPORATION AURANGABAD

Tel. No. (0240) 2333536-40, 2348001-05 (PBX)

Fax No. (0240) 2331213

No./AMC/EE(B&C)/2013/ 152

Date : 16 / 6 / 2013

To,
Prof. K.P.Kaliappan,
DEAN (R &D),
Indian Institute of Technology Bombay.
Powai, Mumbai 400076 .

Sub :- Technical Appraisal of the DPR for the upgradation of the under ground sewerage system for Aurangabad City.

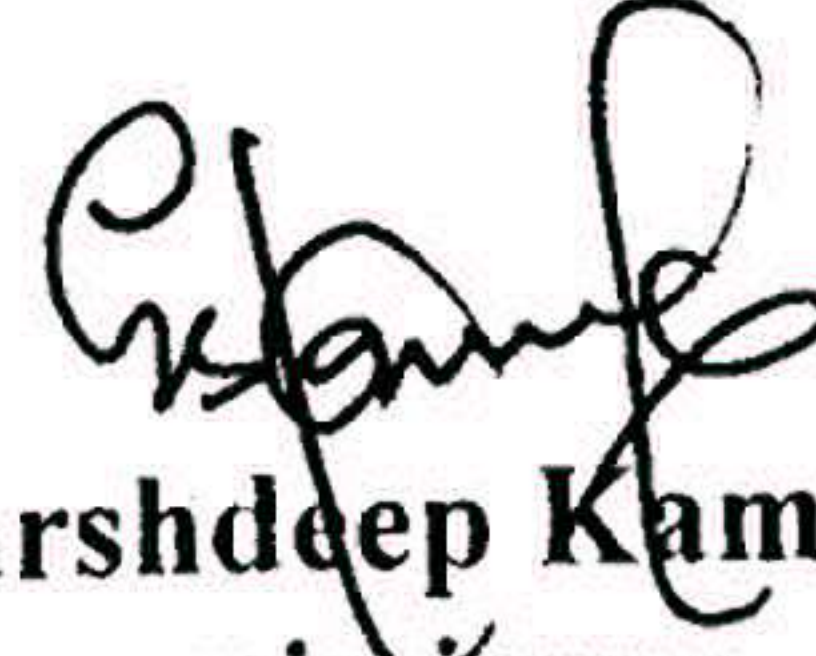
Ref :- Your office Letter vide No Job No :- DRD/CE/VJ-5/13-14 Dt. 12.6.2013.

Dear Sir,

With reference to above the Aurangabad Municipal Corporation is herewith submitting an IDBI Bank's cheque worth Rs. 5,75,000/- vide No 184045 dated 15.6.2013 payable towards your consultancy charges

It is therefore requested to issue the "Third Party" technical appraisal report at the Earliest. Mean time an interim report may be issued to the Aurangabad Municipal Corporation on 17.6.2013 enabling the Aurangabad Municipal Corporation to produce the same before the state level Nodal Agency i.e. the DMA.

Regards.


(Dr. Harshdeep Kamble)
Commissioner
Municipal Corporation
Aurangabad

INDIAN INSTITUTE OF TECHNOLOGY
(Office of Dean R&D)
Powai, Mumbai-400 076

NO.Accts/Cons./ CE/2013
Date : August 14, 2013

To,
The Commissioner
Aurangabad Municipal Corporation, Aurangabad
Post Box No. 125,
Town Hall,
Aurangabad 431001,
Maharashtra State

Sub:- JOB NO DRD/CE/VJ-5/13-14

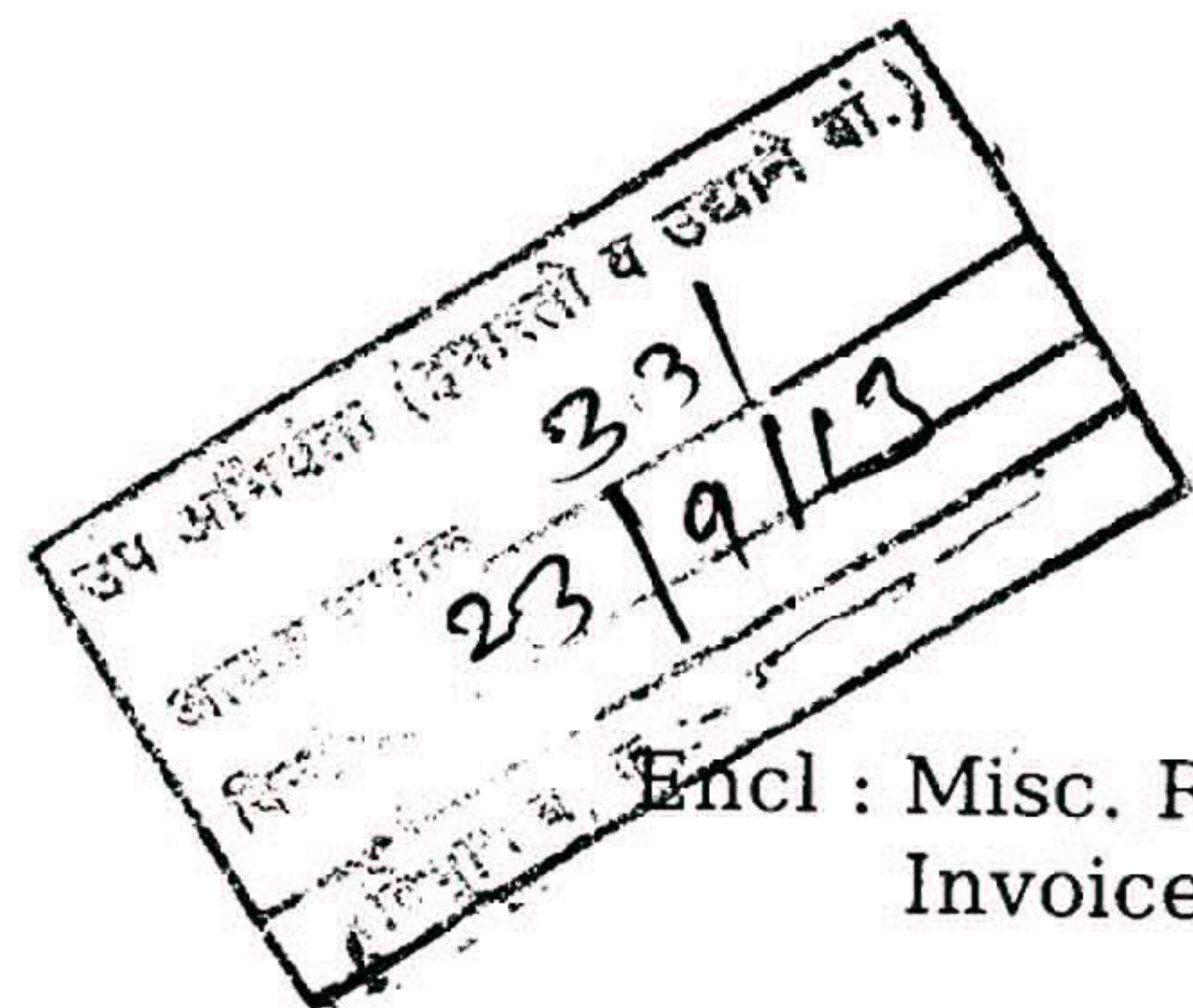
Dear Sir/Madam,

With reference to your letter No No/AMC/B&C/B&G/138/2013 dated June 11, 2013 on the above noted subject, I have pleasure in enclosing Institute's Stamped Receipt No Re/2013-2014/P/01096 dated June 26, 2013 for Rs. 575000 /- (Rs. Five Lakhs Seventy Five Thousand only) towards the payment made in respect of aforesaid Job/Project.

Thanking You,

Yours faithfully,

Sr. Administrative Officer
16/8/2013



Encl : Misc. Receipt.
Invoice

Shri Afsar
V. hump

pl. keep with you in the concern file.

CE/384
20/9/2013

95001-5068
12.9.13

DRB(K) IMP
Ravi Sarode
pl. speak today
23/9

CE
9
13-9
9/2/13

412
21/9/13



Indian Institute of Technology, Bombay

Projects & Consultancy Account Receipt No:Re/2013-2014/P/01096 Date:26/06/2013

Particulars	Amount (₹)
Received from M/S. AURANGABAD MUNICIPAL CORPORATION, AURANGABAD (CE) DRD/CE/VJ-5/13-14	575000.00
Total Amount (₹)	575000.00

Cashier Cheque Number:-
184045

Bank Name:-
CANARA

Cheque Date :-
15/06/2013

Reference
Number: PRJ/22282

Account Details

GroupCode	HeadCode	Account Head Description	Amount (₹)	Cross Refe By
P13CE064	GIA	Grant-in-Aid/DRD/CE/VJ-5/13-14 Technical appraisal of the DPR for the upgradation of underground sewerage system for Aurangabad City	511748.00 CR	----
PGSTX	G	G/SERVICE TAX ON CONSULTATION FEES	63252.00 CR	----

Net Recieved Amount (₹) 575000.00

(₹ Five Lakhs Seventy Five Thousand only.)

DD/Cheque Subject to Realisation
only.

Signature



[Signature]
Sr. Administrative Officer (R&D)



भारतीय प्रौद्योगिकी संस्थान मुंबई
पवई, मुंबई-400 076, भारत

Indian Institute of Technology Bombay
Powai, Mumbai-400 076, India

दूरभाष/Phone : (+91-22) 2572 2545

फैक्स/Fax : (+91-22) 2572 3480

वेबसाईट/Website : www.iitb.ac.in

DRD/CON/0136/2013-14

Date : 2013-08-20

Bill / Invoice

Sub: Invoice for the consultation Job No. DRD/CE/VJ-5/13-14

PAN No. AAATI1446A

S.T. Code No. AAATI1446AST002

S.T. Reg No. S.T/M-II/STC/Reg/512/02 Dt.26-12-2002

Category of Service: Scientific & Technical Consultancy Services

Firm/Organisation on whose behalf the project work has been undertaken	Brief description of the job	Amount
Municipal Corporation Aurangabad Post Box No. 125 Town Hall Aurangabad 431001 Maharashtra State	Technical appraisal of the DPR for the upgradation of underground sewerage system for Aurangabad City	(a) Rs. 511748/-
	Service Tax @ 12%(a)	(b) Rs. 61410/-
	Education Cess @ 2%(b)	(c) Rs. 1228/-
	Secondary and Higher Education Cess @ 1%(b)	(d) Rs. 614/-
	Total (a+b+c+d)	Rs. 575000/-

(Amount in Words - Rupees Five Lakhs Seventy Five Thousand Only)

DEAN (R & D)

Note : The Cheque should be prepared in the name of
"Registrar, IIT Bombay" and should be addressed to
"Dean R&D office , IRCC, IIT Bombay Powai Mumbai-76"



भारतीय प्रौद्योगिकी संस्थान मुंबई
पवई, मुंबई - 400 076, भारत

Indian Institute of Technology Bombay
Powai, Mumbai - 400 076, India

दूरभाष/Phone : (+91-22) 2572 2545
फैक्स/Fax : (+91-22) 2572 3480
वेबसाईट/Website : www.iitb.ac.in

1313
IIT Bombay

Dr. V. Jothiprakash
Associate Professor
Department of Civil Engineering

Dr. R. S. Jangid
Professor

17th Jun. 2013

To

The Commissioner
Aurangabad Municipal Corporation, Aurangabad
Municipal Corporation Aurangabad
Post Box No. 125,
Town Hall, Aurangabad - 431 001(Maharashtra)

Dear Sir,

Sub: Technical Appraisal of the DPR for the upgradation of underground
sewerage system for Aurangabad City.

Ref: 1. No. AMC/B&C/B&G/138/2013 dated 11-06-2013
2. IIT Bombay Letter No. DRD/VJ/CE-5/13-14 Dated 12.06.2013
2. No. AMC/B&C/B&G/149/2013 dated 13-06-2013

With reference to the above-referenced letters, we have gone through the detailed planning report (DPR) of the Upgradation of Underground Sewerage System for Aurangabad City. In general, the design methodology and design parameters adopted in the DPR is as per the CPHEEO manual recommendations and other standards. The detailed comments on the DPR will be submitted in due course of time. We thank you for the opportunity given to us for vetting the DPR.

Please feel free to contact us for any queries.

Thanking you

Yours Sincerely

R. S. Jangid

(Dr. R. S. Jangid)

Dr. R. S. JANGID
Professor
Department of Civil Engineering
I.I.T. Bombay, Powai, Mumbai-76

V. Jothiprakash

(Dr. V. Jothiprakash)

V. JOTHIPRAKASH
Associate Professor
Department of Civil Engineering
Indian Institute of Technology, Bombay
Powai, Mumbai - 400 076 INDIA





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11-1308
IIT Bombay

PAN No. AAAT11446A
Service Tax Reg. No. AAAT11446A - ST002

Job No:- DRD/CE/VJ-5/13-14
12-6-2013

The Commissioner
Aurangabad Municipal Corporation, Aurangabad
Municipal Corporation Aurangabad
Post Box No. 125,
Town Hall
Aurangabad 431001
Maharashtra State

Sub:- Technical appraisal of the DPR for the upgradation of underground sewerage system for Aurangabad City

Dear Sir/Madam,

This has reference to your letter No.No/AMC/B&C/B&G/138/2013 dated 11-06-2013 on the above subject. Prof. V. Jothiprakash of the Civil Engineering Department is in a position to take up the work. Prof. R. S. Jangid of the Civil Engineering Department will be Co-Principal Investigator for the project. The work will involve to Review the Technical content of the Detailed Project Report prepared by Aurangabad Municipal Corporation for the upgradation of the under ground sewerage system for the Aurangabad City.

The duration of the work will be 6 months and the consultation charges will be Rs.5,75,000/- (Rupees Five Lakhs Seventy Five Thousand only) which is payable in advance as per the normal practice of the institute.

This project will be taken up under the standard terms and conditions as stated overleaf.

If the above terms are acceptable, I would appreciate your arranging to deposit the consultation charges of Rs.5,75,000/- by a demand draft drawn in favour of Registrar, IIT Bombay, P&C a/c. and then contact Prof. Jothiprakash (email:- vprakash@civil.iitb.ac.in) for further action in the matter. Invoice will be issued on receipt of the money as per the new rules from *Service Tax Department. This offer is valid for a period of 3 months only.

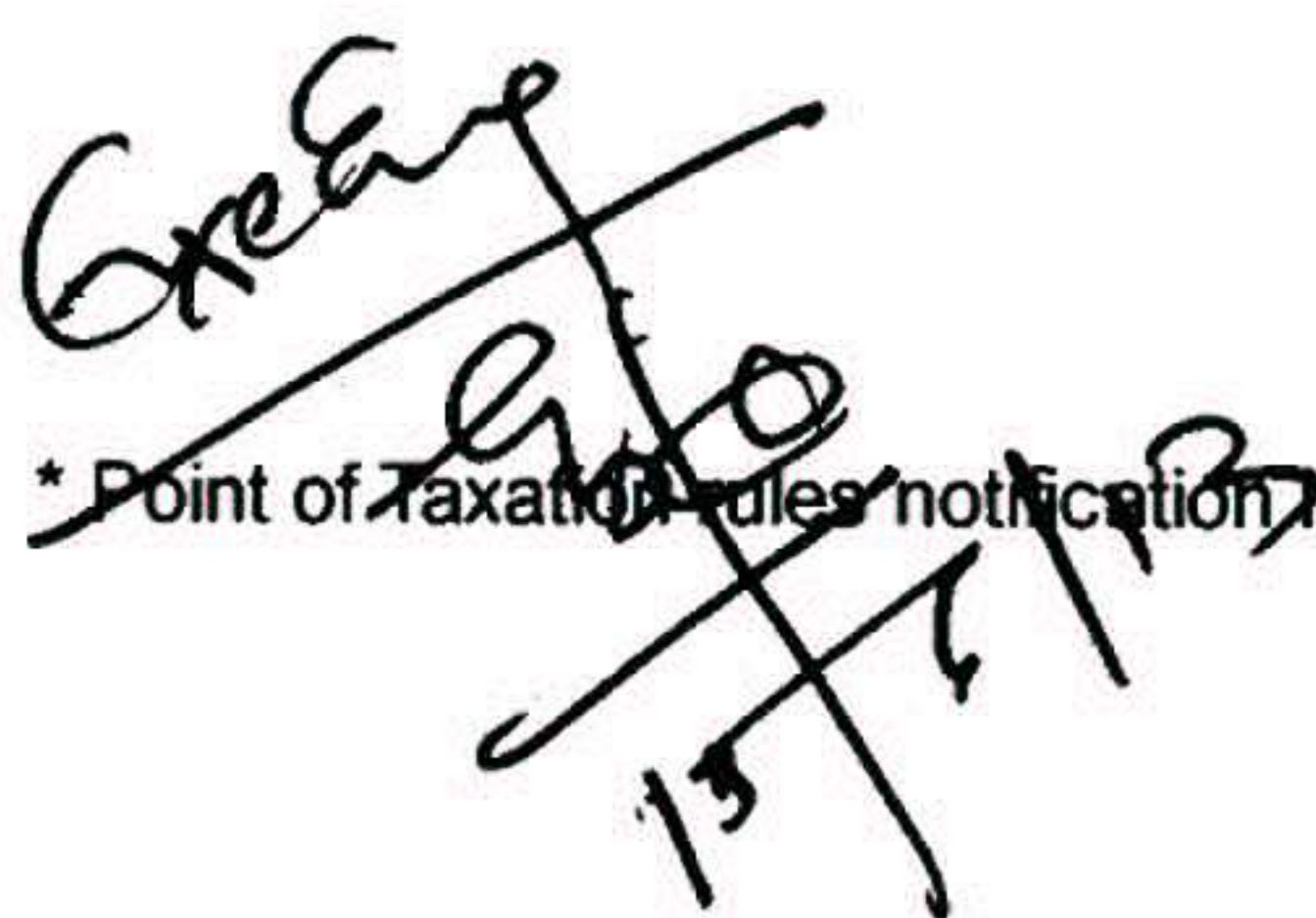
Please note that our charges are inclusive of 12.36% service tax chargeable as per Govt. directives, to be paid to Service-tax Department. Please include your PAN/TAN in the letter accompanying the cheque. IIT Bombay is exempt from payment of Income-tax under 10(23c)(iii ab) of the enclosed CBDT circular and a letter from Government of India. Ministry of Finance, Department of Revenue. Hence TDS** should not be deducted.

With best wishes,

Sincerely yours,


(Prof. K. P. Kaliappan) 13/6/13
Dean R&D

* Point of taxation rules notification No.18/2011 dt.1.3.11 and consequent amendment.


13/6/13

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
STANDARD TERMS AND CONDITIONS applicable for all Projects

- 1. DECLARATION:** All work undertaken by IIT Bombay as part of the project will be in good faith and based on material / data / other relevant information given by the Client requesting for the work.
 - 2. CONFIDENTIALITY:** Due care will be taken by IIT Bombay to maintain confidentiality and discretion regarding confidential information received from the Client, including but not limited to results, reports and identity of the client.
 - 3. REPORTS:** Any test or other consultancy report given by IIT Bombay will be based on work performed according to available standards and / or open domain literature. In any event, this report may not be construed as a legal document, certificate or endorsement and may not be used for marketing of the products or processes, without prior consent from IIT Bombay. The institute reserves the right to retain one copy of the report and use the results of the project for its internal teaching and research purposes.
 - 4. WORK PERFORMANCE:** Every effort will be made to complete the specified work according to the planned time schedule. However, IIT Bombay will not be held responsible for delays caused beyond its reasonable control.
 - 5. CONFLICT OF INTEREST:** IIT Bombay may take up work for other clients also in the same area, provided, to the best of the institute's knowledge, there is no conflict of interest in undertaking such projects.
 - 6. PAYMENT:** The payment of consultation charges to IIT Bombay are to be made in advance and in full before the start of the project, through a demand draft / crossed valid cheque, drawn in favour of The Registrar, IIT Bombay and sent to the Consultant or the address overleaf. The charges will also include any applicable tax as prescribed by the Government of India from time to time.
 - 7. TERMINATION:** The project work may be terminated by either party by giving the other party a notice period of 30 days. However, both parties will meet any residual obligations in connection with the project.
 - 8. LIABILITY:** IIT Bombay shall not be held liable for any loss, damage, delay or failure of performance, resulting directly or indirectly from any cause, which is beyond its reasonable control (Force Majeure). The liability of IIT Bombay shall be limited to the funds received for the project.
 - 9. INTELLECTUAL PROPERTY RIGHTS:** All rights pertaining to any intellectual property generated / created / invented in the due course of the project, will be the joint property of IIT Bombay and the Client. Terms and conditions regarding transferring / assigning / selling these rights to the client shall be governed by a separate written and agreed to document if required.
 - 10. RESOLUTION OF DISPUTES:** Any disputes arising out of the project shall be amicably settled by both the organizations. Any unsettled disputes may be subject to resolution as per the Indian Arbitration and Conciliation Act 1996.
 - 11. DISCLAIMER:** The report on the consultancy project is the technical opinion of the individual faculty member, based on his expertise in the particular area of research and NOT the views of IIT Bombay.
- The above terms and conditions will apply to all projects taken up by IIT Bombay, unless otherwise mutually agreed to in a separate document.



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IIT Bombay

Dr. V. Jothiprakash
Associate Professor
Department of Civil Engineering

Dr. R. S. Jangid
Professor

5th July, 2013

To

The Commissioner
Aurangabad Municipal Corporation, Aurangabad
Municipal Corporation Aurangabad
Post Box No. 125,
Town Hall, Aurangabad - 431 001(Maharashtra)

Dear Sir,

Sub: Final report - Technical Appraisal of the DPR for the upgradation of underground sewerage system for Aurangabad City.

Ref: 1. No. AMC/B&C/B&G/138/2013 dated 11-06-2013
2. IIT Bombay Letter No. DRD/VJ/CE-5/13-14 Dated 12.06.2013
2. No. AMC/B&C/B&G/149/2013 dated 13-06-2013

With reference to the above-referenced letters, we have gone through the detailed planning report (DPR) of the Upgradation of Underground Sewerage System for Aurangabad City. In general, the design methodology and design parameters adopted in the DPR is as per the CPHEEO manual recommendations and other standards.

Three copies of the detailed evaluation report on the DPR is attached for your perusal. We thank you for the opportunity given to us for vetting the DPR.

Please feel free to contact us for any queries.

Thanking you

Yours Sincerely

R. S. Jangid

(Dr. R. S. Jangid)

V. Jothiprakash

(Dr. V. Jothiprakash)

Dr. R. S. JANGID
Professor
Department of Civil Engineering
I.I.T. Bombay, Powai, Mumbai-76

V. JOTHIPRAKASH
Associate Professor
Department of Civil Engineering
Indian Institute of Technology, Bombay,
Powai, Mumbai - 400 076. INDIA



F.No.153/127/2002-TPL
Government of India
Ministry of Finance
Department of Revenue
Central Board of Direct Taxes
(TPL Division)

New Delhi, the 16th July, 2002

To,

Subject: Requirement of tax deduction at source in case of entities whose income is exempt under section 10 of the Income-tax Act.

Subsequent to the amendment to section 197A made by the Finance Act, 2002 whereby a new sub-section (1B) has been inserted with effect from 1st June, 2002, representations have been received seeking clarification whether the prescribed self-declaration under the said section can be submitted by entities exempt from tax under section 10 even if the payments referred to in sub-section (1A) to be made to them exceed the threshold limit not subject to tax.

2. This matter has been examined by the Board. It has been decided that in case of those funds or authorities or boards or bodies, by whatever name called, whose income is unconditionally exempt under section 10 of the Income-tax Act and who are statutorily not required to file return of income as per section 139 of the Income-tax Act, there would be no requirement for tax deduction at source since their income is anyway exempt under the Income-tax Act. The institutions whose income is unconditionally exempt under section 10 and who are statutorily not required to file return of income as per the provisions of section 139 are:

- (i) "local authority", as referred in the Explanation to clause (20);
- (ii) Regimental Fund or Non-public Fund established by the armed forces of the Union referred to in clause (23AA);
- (iii) Fund, by whatever name called, set up by the Life Insurance Corporation of India on or after the 1st August, 1996 or by any other insurer referred to in clause (23AAB);
- (iv) authority (whether known as the Khadi and Village Industries Board or by any other name) referred to in clause (23BB);
- (v) body or authority referred to in clause (23BBA);
- (vi) SAARC Fund for Regional Projects set up by Colombo Declaration referred to in clause (23BBC);
- (vii) Secretariat of the Asian Organisation of the Supreme Audit Institutions referred to in clause (23BBD) till assessment year 2003-2004.

- 2/1
- (viii) Insurance Regulatory and Development Authority referred to in clause (23B8E):
 - (ix) Prime Minister's National Relief Fund referred to in sub-clause (i), Prime Minister's Fund (Promotion of Folk Art) referred to in sub-clause (iii), National Foundation for Communal Harmony referred to in sub-clause (iii), any university or other educational institution, referred to in sub-clause (iiiab) and any hospital or other institution for the reception and treatment of persons as referred to in sub-clause (iiic) of clause (23C):
 - (x) Credit Guarantee Fund Trust for Small Scale Industries referred to in clause (23E8) till assessment year 2006-2007:
 - (xi) Provident fund to which the Provident Funds Act, 1925 (19 of 1925) referred to in sub-clause (i), recognised provident fund referred to in sub-clause (ii), approved superannuation funds referred to in sub-clause (iii), approved gratuity fund referred to in sub-clause (iv) and funds referred to in sub-clause (v) of clause (25):
 - (xii) Employees' State Insurance Fund referred to in clause (25A):
 - (xiii) Corporations referred to in clause (26B8):
 - (xiv) Boards referred to in clause (29A).

3. The contents of this Circular may be brought to the notice of all the officers working in your region.



(DEEPIKA MITTAL)

Under Secretary (TPL-III)

Tel: 3092742

Copy to:

1. The Chairman, Members and all other officers in CBDT of the rank of Under Secretary and above.
2. The Comptroller & Auditor General of India (40 copies).
3. The IT(RSD/PR) for printing in the quarterly tax bulletin and for circulation as per his usual mailing list.
4. All Directorates of Income-tax.
5. JS & Legal Advisor, Ministry of Law.
6. The DCIT (Inspection Div.), Mayapuri, New Delhi.
7. All Chambers of Commerce.
8. Secretary, Settlement Commission, CIT (VT), 3rd Floor, Lok Nayak Bhawan, Khan Market, New Delhi.
9. ITCC Section, CBDT.

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भारत सरकार • वित्त मंत्रालय
राजस्व विभाग

कार्यालय सहायनिर्देशक
(आयकर छुट)
आयकर विभाग,
१०, मिडलटन रो (५वीं मंजिल),
कोलकाता - ७०० ०७१
टेली - २२९-२५९८, २४५-८७४८
फैक्स - २९६-९९८३
टेली-फैक्स - २२९-५६८३

GOVERNMENT OF INDIA • MINISTRY OF FINANCE
DEPARTMENT OF REVENUE

OFFICE OF THE DIRECTOR GENERAL,
(INCOME TAX EXEMPTIONS)
INCOME TAX DEPARTMENT,
10, MIDDLETON ROW (5th Floor)
KOLKATA - 700 071
TELE - 229-2598, 245-8748
FAX - 216-1183
TELE-FAX - 229-5683

NO. DSIT(E)/M-10/10(23C)(vi)/2002/ 6227

January 14, 2004

To
The Registrar,
Indian Institute of Technology, Bombay,
Powai, Mumbai - 400 076.

Sir,

Subject: Application for approval u/s 10(23C)(vi) of the I.T. Act 1961 in the case of Indian Institute of Technology, Mumbai for the assessment years 2000-2001 to 2002-2003 - Matter Regarding -

Reference: Your application in Form 56D dated 04.07.2000.

Please refer to your above.

I am directed to convey that as your major sources of income is grant-in-aid from the Government, your case falls u/s. 10(23C)(iiiab) of the I.T. Act, 1961 and there is no need for Notification u/s. 10(23C)(vi) of the I.T. Act, 1961.

Yours faithfully,

(Signature)
(Sushra Das),

Income Tax Officer, (Hors.) & Admn., Kolkata:
For DGIT(E), Kolkata.