110

OFFICE OF THE FIRE OFFICER,
CENTRAL RANGE, BUXI BAZAR, CUTTACK-753001
***

FORM-II
[See rule-12 (5)]
Fire Safety Recommendation

File No. IX-3-B-238-2018/FPS

1.	Address of the proposed building/premises	: -	Mouza-Argul, Bhubaneswar Dist-Khurda
2.	Name and Address of the applicant (s)	: -	Sri M.S Rathee, DGM, (Engg) Zonal Office, IIT Bhubaneswar, Argul, Jatani, Dist-Khordha.
3.	Date of receipt of application	: -	14th September 2018
4.	Proposed Occupancy (type of building	: -	**G+1 floor Auditorium building** BDA P&BS Regulations, 2018 - Assembly (Incidental to main occupancy i.e Educational) NBCI-2016 - Assembly (Group-D, Sub-Division-D1) **Ground floor only Central Research & Instrumentation Facility building** BDA P&BS Regulations, 2018 - Educational NBCI-2016 - Educational (Group-E, Sub-Division-E2) **G+1 floor Dispensary building** BDA P&BS Regulations, 2018 - Institutional (Incidental to main occupancy i.e Educational) NBCI-2016 -Institutional (Group-C, Sub-Division-C1) **Ground floor only Central Workshop building** BDA P&BS Regulations, 2018 - Industrial (Incidental to main occupancy i.e Educational) NBCI-2016 - Industrial (Group-G, Sub-Division-G1) **G+7 floor Housing Type-A staff quarter building (02 Tower)** BDA P&BS Regulations, 2018 - Residential NBCI-2016 -Residential (Group-A, Sub-Division A4) **G+7 floor Housing Type-B staff quarter building (04 Tower)** BDA P&BS Regulations, 2018 - Residential NBCI-2016 - Residential (Group-A, Sub-Division A4) **G+7 floor Housing Type-C staff quarter building (04 Tower)** BDA P&BS Regulations, 2018 - Residential NBCI-2016 - Residential (Group-A, Sub-Division A4) **G+7 floor Housing Type-D staff quarter building (02 Tower)** BDA P&BS Regulations, 2018 - Residential NBCI-2016 - Residential (Group-A, Sub-Division A4) **Ground floor only Directors Bunglow** BDA P&BS Regulations, 2018 - Residential NBCI-2016 - Residential (Group-A, Sub-Division A2)

21.1.2019

109

G+1 floor Student Activity Centre building

BDA P&BS Regulations, 2018 - Assembly (Incidental to main occupancy i.e Educational).

NBCI-2016 - Assembly (Group-D, Sub-Division D3)

G+7 floor Boys Hostel Building

BDA P&BS Regulations, 2018 - Residential

NBCI-2016 - Residential (Group-A, Sub-Division A3)

G+6 floor Girls Hostel Building

BDA P&BS Regulations, 2018 - Residential

NBCI-2016 - Residential (Group-A, Sub-Division A3)

G+7 floor Boys Hostel Building

BDA P&BS Regulations, 2018 - Residential

NBCI-2016 - Residential (Group-A, Sub-Division A3)

G+1 floor School of Earth Ocean and Climatic Sciences

BDA P&BS Regulations, 2018 - Educational

NBCI-2016 - Educational (Group-B, Sub-Division B2)

G+1 floor School of Mineral & Material Sciences

BDA P&BS Regulations, 2018 - Educational

NBCI-2016 -Educational (Group-B, Sub-Division B2)

G+1 floor School of Humanities, Social Science and Management

BDA P&BS Regulations, 2018 - Educational

NBCI-2016 - Educational (Group-B, Sub-Division B2)

G+2 floor Lecture Theatre Block-1

BDA P&BS Regulations, 2018 - Educational

NBCI-2016 - Educational (Group-B, Sub-Division B2)

G+2 floor Lecture Theatre Block-2

BDA P&BS Regulations, 2018 - Educational

NBCI-2016 - Educational (Group-B, Sub-Division B2)

G+2 floor Lecture Theatre Block-3

BDA P&BS Regulations, 2018 - Educational

NBCI-2016 - Educational (Group-B, Sub-Division B2)

5. Area with plot number and khata number : - Plot Area - 2092044.5 sqm.
Over Plot No. 857, 916 & others
Khata Number - 405, 160 & others

6. Date of Inspection : - 11th April 2019

7. Recommendation: -

The fire safety recommendation is as follows: -

A.	Floor wise occupancy with area	**G+1 floor Auditorium Building** ➢ Ground - 3724.05 sqm. Usage - Assembly ➢ **1st floor** - 1553.54 sqm. Usage - Assembly **Total B.U.A-5277.59 sqm**
		Ground floor only Central Research & Instrumentation Facility Building ➢ **Ground** - 2506.85 sqm. Usage - Research laboratories ➢ **Terrace**- 217.87 sqm No usage. **Total B.U.A-2724.72 sqm**
		G+1 floor Dispensary Building ➢ **Ground** - 953.504 sqm.

7/1/2020

		Usage - X-Ray room, Ultrasound room, Delivery room, physiotherapy room, electrical room, Minor O.T, Emergency room, Pharmacy, O.P.D ➢ **1st floor** - 885.306 sqm. Usage - Rooms having 23 bedded facility, I.C.U, Electrical Room, Nurses Room, Doctors Room. ➢ **Terrace**- 62.261 sqm No usage **Total B.U.A-1901.072 sqm**
		Ground floor only Central Workshop Building ➢ **Ground** - 2505.36 sqm Usage - Workshop, Raw material storage room, Faculty room, Technician room ➢ **Terrace**- 39.64 sqm No usage **Total B.U.A-2545 sqm**
		G+7 floor Housing Type-A Building (02 Towers typical building) ➢ **Ground floor** - 680.181 sqm. Usage - Parking, Services & Residential ➢ **1st floor** - 716.087 sqm. Usage - Residential ➢ **2nd floor** - 716.087 sqm. Usage - Residential ➢ **3rd floor** - 716.087 sqm. Usage - Residential ➢ **4th floor** - 716.087 sqm. Usage - Residential ➢ **5th floor** - 716.087 sqm. Usage - Residential ➢ **6th floor** - 716.087 sqm. Usage - Residential ➢ **7th floor** - 716.087 sqm. Usage - Residential **Total B.U.A-5692.79 sqm** **Total B.U.A of 02 towers= 11385.58 sqm**
		G+7 floor Housing Type-B Building (04 Towers typical building) ➢ **Ground floor** - 623.762 sqm. Usage - Parking, Services & Residential ➢ **1st floor** - 670.704 sqm. Usage - Residential ➢ **2nd floor** - 670.704 sqm. Usage - Residential ➢ **3rd floor** - 670.704 sqm. Usage - Residential ➢ **4th floor** - 670.704 sqm. Usage - Residential ➢ **5th floor** - 670.704 sqm. Usage - Residential ➢ **6th floor** - 670.704 sqm. Usage - Residential ➢ **7th floor** - 670.704 sqm. Usage - Residential **Total B.U.A- 5318.69 sqm** **Total B.U.A of 04 towers= 21274.76 sqm**
		G+7 floor Housing Type-C Building (04 Towers typical building) ➢ **Ground floor** - 562.44 sqm. Usage - Parking, Services & Residential ➢ **1st floor** - 571.183 sqm. Usage - Residential ➢ **2nd floor** - 571.183 sqm.

2/11/2020

		Usage - Residential ➢ **3rd floor** - 571.183 sqm. Usage - Residential ➢ **4th floor** - 571.183 sqm. Usage - Residential ➢ **5th floor** - 571.183 sqm. Usage - Residential ➢ **6th floor** - 571.183 sqm. Usage - Residential ➢ **7th floor** - 571.183 sqm. Usage - Residential **Total B.U.A-4560.721 sqm** **Total B.U.A of 04 Towers=18242.884 sqm**
		G+7 floor Housing Type-D Building (02 Towers typical building) ➢ **Ground floor** - 419.068 sqm. Usage - Parking, Services & Residential ➢ **1st floor** - 416.052 sqm. Usage - Residential ➢ **2nd floor** - 416.052 sqm. Usage - Residential ➢ **3rd floor** - 416.052 sqm. Usage - Residential ➢ **4th floor** - 416.052 sqm. Usage - Residential ➢ **5th floor** - 416.052 sqm. Usage - Residential ➢ **6th floor** - 416.052 sqm. Usage - Residential ➢ **7th floor** - 416.052 sqm. Usage - Residential **Total B.U.A-3331.432 sqm** **Total B.U.A of 02 Towers= 6662.864 sqm**
		Ground floor only Director's Bunglow ➢ **Ground** - 500.10 sqm. Usage - Residential
		G+1 floor SAC Building ➢ **Ground** - 3849.03 sqm. Usage- Gym, Sports hall, Lounge, Presidents office, Sport officers' room, Electrical room, Cafeteria. ➢ **1st floor**-603.63 Usage - Equipment store, rooms, squash court ➢ **Terrace**- 56.32 sqm No usage **Total B.U.A-4508.98 sqm**
		G+7 floor Boy's Hostel Building ➢ **Ground** - 4960.5993 sqm. Usage - Services, Kitchen, dining hall, Gas bank, store rooms, staff rooms, Utensil and Pot wash rooms, multipurpose hall, lobby, warden office, conference room, guest rooms, Manager rooms, Supervisor room, Server room, Laundry, Isolation rooms and Hostel rooms. ➢ **1st floor** - 2823.772 sqm. Usage - Hostel rooms and Server room ➢ **2nd floor** - 2762.878 sqm. Usage - Hostel rooms and Server room ➢ **3rd floor** - 2854.722 sqm. Usage - Hostel rooms and Server room ➢ **4th floor** - 2762.878 sqm. Usage - Hostel rooms and Server room

21.1.2020

10

		➢ **5th floor** - 2854.722 sqm. Usage - Hostel rooms and Server room ➢ **6th floor** - 2762.878 sqm. Usage - Hostel rooms and Server room ➢ **7th floor** - 2854.722 sqm. Usage - Hostel rooms and Server room ➢ **Terrace**- 182.963 sqm No usage **Total B.U.A- 24820.1343 sqm**
		G+7 floor Girls Hostel Building ➢ **Ground** - 3390.97 sqm. Usage - Services, Kitchen, dining hall, Gas bank, store rooms, staff rooms, Utensil and Pot wash rooms, multipurpose hall, lobby, warden office, conference room, guest rooms, Manager rooms, Supervisor room, Server room, Laundry, Isolation rooms and Hostel rooms. ➢ **1st floor** - 1971.59 sqm. Usage - Hostel rooms, Store, Utility and Server room ➢ **2nd floor** - 1896.281 sqm. Usage - Hostel rooms, Store, Utility and Server room ➢ **3rd floor** - 1328.393 sqm. Usage - Hostel rooms, Store, Utility and Server room ➢ **4th floor** - 1896.281 sqm. Usage - Hostel rooms, Store, Utility and Server room ➢ **5th floor** - 1328.393 sqm. Usage - Hostel rooms, Store, Utility and Server room ➢ **6th floor** - 1896.281 sqm. Usage - Hostel rooms, Store, Utility and Server room ➢ **Terrace**- 1328.393 sqm No usage ➢ **Mumty**-175.7 sqm No usage **Total B.U.A- 15212.282 sqm**
		G+7 floor Boy's Hostel Building ➢ **Ground** - 4960.5993 sqm. Usage - Services, Kitchen, dining hall, Gas bank, store rooms, staff rooms, Utensil and Pot wash rooms, multipurpose hall, lobby, warden office, conference room, guest rooms, Manager rooms, Supervisor room, Server room, Laundry, Isolation rooms and Hostel rooms. ➢ **1st floor** - 2823.772 sqm. Usage - Hostel rooms and Server room ➢ **2nd floor** - 2762.878 sqm. Usage - Hostel rooms and Server room ➢ **3rd floor** - 2854.722 sqm. Usage - Hostel rooms and Server room ➢ **4th floor** - 2762.878 sqm. Usage - Hostel rooms and Server room ➢ **5th floor** - 2854.722 sqm. Usage - Hostel rooms and Server room ➢ **6th floor** - 2762.878 sqm. Usage - Hostel rooms and Server room ➢ **7th floor** - 2854.722 sqm. Usage - Hostel rooms and Server room ➢ **Terrace**- 182.963 sqm No Usage **Total B.U.A- 24820.1343 sqm**

7/1/2020

105

		G+1 floor School of Earth Ocean and Climatic Sciences Building ➢ **Ground** – 2995.86 sqm. Usage – Laboratories, class rooms, Seminar room, Students lounge, Services, Faculty rooms, Faculty lounge, Record room, Visitors Lounge, HOD's room, Meeting room, Cluster Server room, Pantry, Office room. ➢ **1st floor** – 2846.50 sqm. Usage – Laboratory, class rooms, Seminar room, Faculty rooms, Pantry, Services. ➢ **Terrace**-159.08 sqm No usage **Total B.U.A-6001.44 sqm**	
		G+1 floor School of Mineral and Material Sciences Building ➢ **Ground** – 2995.86 sqm. Usage – Laboratories, class rooms, Seminar room, Students lounge, Services, Faculty rooms, Faculty lounge, Record room, Visitors Lounge, HOD's room, Meeting room, Cluster Server room, Pantry, Office room. ➢ **1st floor** – 2929.90 sqm. Usage – Laboratory, class rooms, Faculty rooms, Pantry, Services ➢ **Terrace**- 159.08 No usage **Total B.U.A-6084.84 sqm**	
		G+1 floor School of Humanities, Social Sciences and Management Building ➢ **Ground** – 865.69 sqm. Usage – Laboratories, Library, Faculty lounge, Meeting room, HODs room, Visitor's lounge, Pantry, Record room, Office, Faculty room, Services, ➢ **1st floor** – 769.18 sqm. Usage – Laboratory, class rooms, Faculty rooms, Services ➢ **Terrace**- 80.16 sqm No usage **Total B.U.A-1715.03 sqm**	
		G+2 floors Lecture Theatre Block -1 Building ➢ **Ground** – 2599.01 sqm. Usage – Class rooms, 04 Nos. AHU, Teachers' lounge, Kitchen, Pantry ➢ **1st floor** – 2529.595 sqm. Usage – Class rooms, 04 Nos. AHU ➢ **2nd floor** – 2529.595 sqm. Usage – Class rooms, 04 Nos. AHU **Total B.U.A-7658.2 sqm**	
		G+2 floors Lecture Theatre Block -2 Building ➢ **Ground** – 3711.10 sqm. Usage – Class rooms, 04 Nos. AHU, Supervisor room ➢ **1st floor** – 3535.24 sqm. Usage – Class rooms, 04 Nos. AHU, Supervisor room ➢ **2nd floor** – 1961.80 sqm. Usage – Class rooms, 04 Nos. AHU ➢ **Mumty**-107.17 sqm No usage **Total B.U.A-9315.31 sqm**	
		G+2 floors Lecture Theatre Block -3 Building ➢ **Ground** – 2599.01 sqm. Usage – Class rooms, 04 Nos. AHU, Teachers' lounge, Kitchen, Pantry ➢ **1st floor** – 2529.595 sqm. Usage – Class rooms, 04 Nos. AHU ➢ **2nd floor** – 2529.595 sqm. Usage – Class rooms, 04 Nos. AHU **Total B.U.A-7658.20 sqm**	
B.	Height	G+1 floor Auditorium Building	15 mtrs.
		Ground floor only Central Research & Instrumentation Facility Building	5.9 mtrs.

2/11/2020

		G+1 floor Dispensary Building	9.15 mtrs.
		Ground floor only Central Workshop Building	5.10 mtrs.
		G+7 floor Housing Type-A Building (02 Tower)	24.45 mtrs. each
		G+7 floor Housing Type-B Building (04 Tower)	24.45 mtrs. each
		G+7 floor Housing Type-C Building (04 Tower)	24.45 mtrs. each
		G+7 floor Housing Type-D Building (02 Tower)	24.45 mtrs. each
		Ground floor only Director's Bunglow	3.95 mtrs.
		G+1 floor SAC Building	11.75 mtrs.
		G+7 floor Boy's Hostel Building	27 mtrs.
		G+6 floor Girls Hostel Building	24 mtrs.
		G+7 floor Boy's Hostel Building	27 mtrs.
		G+1 floor School of Earth Ocean and Climatic Sciences Building	8.80 mtrs.
		G+1 floor School of Mineral and Material Sciences Building	8.80 mtrs.
		G+1 floor School of Humanities, Social Sciences and Management Building	8.80 mtrs.
		G+2 floors Lecture Theatre Block -1 Building	14.60 mtrs.
		G+2 floors Lecture Theatre Block -2 Building	15.50 mtrs.
		G+2 floors Lecture Theatre Block -3 Building	14.60 mtrs.

C. Parking

- Provision of part ground floor parking have been proposed in Housing Type-A, B, C & D buildings & open parking (in the campus) have been proposed in the plan.
- Provision of parking shall be made in accordance to Regulation-37 of BDA(P&BS) Regulations, 2018.
- The parking space to be provided shall be in addition to the minimum setbacks as required under Regulation-32 & 33 of BDA(P&BS) Regulations, 2018.

D. Access to the buildings

- Width of abutting Road or Means of Access proposed – 13.2 mtrs.
- **Dimension of main entrance to the plot has not been mentioned in the plan.**
- **As per BDA (P&BS) Regulations, 2018, main entrance to the premises shall not be less than 06 mtrs. in width for easy access to fire engine.**
- The main gate shall fold back against the compound wall of the premises.
- If archway is provided over the main entrances, the height of the archway shall not be less than 05 mtrs.
- **Parameter of accessway/internal road has not been mentioned in the plan.**
- **As per BDA (P&BS) Regulations, 2018, the accessway within the premises shall not be less than 7.5 mtrs. in width and made hard surface capable of taking the mass of fire tender, weighing 45 ton minim um and the same shall be kept unbuilt.**
- **Provisions for access to the buildings shall be as per Regulation-30, 32 & 33 of BDA(P&BS) Regulations, 2018**

E. Setbacks (in mtrs.)

- As per the plan, provision of the following setbacks have been proposed:-

Name of the Building	Front In mtrs.	Rear In mtrs.	Left In mtrs.	Right In mtrs.
Auditorium Building	36.773	103.373	277.334	22.638
CRIF Building	149.753	65.046	69.481	97.842
Dispensary Building	37.04	138.777	41.351	46.735
Central Workshop Building	65.046	199.128	245.856	113.031
Housing Type-A Building (02 Tower)	12.423	17.784	103.295	170.845
Housing Type-B1 & B2 Building (02 Tower)	17.784	40.776	37.312	89.344
Housing Type-B3 & B4 Building (02 Tower)	108.780	57.300	63.025	27.800
Housing Type-C1 & C2 Building (02 Tower)	42.569	19.223	72.272	37.312
Housing Type-C3 & C4 Building (02 Tower)	52.605	185.430	72.272	32.665
Housing Type-D Building (02 Tower)	78.416	46.687	170.845	163.568
Director's Bunglow	40.776	69.297	39.823	131.669
SAC Building	27.119	35.952	60.28	45.274

2/11/2020

		Boy's Hostel Building-1	59.69	84	74.311	44.013
		Girls Hostel Building	138.777	207.084	93.034	60.28
		Boy's Hostel Building-2	113.400	106.365	101.825	325.480
		School of Earth Ocean and Climatic Sciences Building	98.624	86.835	41.391	58.965
		School of Mineral and Material Sciences Building	38.899	41.114	19.379	135.956
		School of Humanities, Social Sciences and Management Building	149.753	65.046	69.481	97.842
		Lecture Theatre Block -1 Building	61.993	31.652	136.752	45.946
		Lecture Theatre Block -2 Building	61.993	31.652	136.752	45.946
		Lecture Theatre Block -3 Building	61.993	31.652	136.752	45.946
		➢ **The aforementioned setback has been intimated by the G.M (Engg.), NBCC India Ltd., Argul, Jatni, Khordha vide letter No. NBCC/SBG/IIT-BBSR/2019/272 Dt. 28.06.2019 which satisfies the requirement as per Regulation-33 of BDA(P&BS) Regulations, 2018. But in plan setback for each building has not been mentioned.** ➢ The covering slabs of underground water tank, soak pit, recharge tank, septic tank etc, if any which are proposed to be positioned in the compulsory open space area must have appropriate load bearing capacity. ➢ The space set apart for providing access within the premises shall be open to the sky and not to be used as parking space and shall be free from obstruction at all the time. ➢ Besides, the entire specified compulsory open space area and driveway 7.5 mtrs shall be kept unbuilt and the driveway shall be constructed of hard surface capable of taking load of fire engine weighing up to 45 tons for easy access of fire engine as per Regulations-33 of BDA(P&BS) Regulations, 2018. Load bearing capacity certificate from the competent authority shall be obtained to that effect ➢ The space set apart for providing access within the premises shall not be used as parking space or spaces for other amenities required for the building.				
F.	Exits (Type, Number, Dimension & arrangement)	➢ As shown in the plan provision of type of exit of each building, their dimensions and connectivity between floor are as follows.				

Name of the Building	Exits Type, Number, Dimension & arrangement
Auditorium Building	02 Nos. Staircase connected from ground to mezzanine floor. Width-2.40 mtrs. Tread-319 mm Riser-150 mm
Central Research & Instrumentation Facility Building	03 Nos. staircases connected from ground to loft. Width-1.2 mtrs. Tread-300 mm Riser-150 mm
Dispensary Building	02 Nos. Staircase connected from ground to top floor. Width-1.5 mtrs. Tread-300 mm Riser-150 mm
Central Workshop	01 No. staircase connected from ground to loft. Width-1.8 mtrs. Tread-300 mm Riser-150 mm
Housing Type-A Building (02 Tower)	02 Nos. Staircase connected from Ground to top floor. Width-1.25 mtrs. Tread-300 mm Riser-150 mm

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2/1/2020

Housing Type-B Building (04 Tower)	02 Nos. Staircase connected from Ground to top floor. Width-1.25 mtrs. Tread-300 mm Riser-150 mm
Housing Type-C Building (04 Tower)	02 Nos. Staircase connected from Ground to top floor. Width-1.25 mtrs. Tread-300 mm Riser-150 mm
Housing Type-D Building (02 Tower)	02 Nos. Staircase connected from Ground to top floor. Width-1.25 mtrs. Tread-300 mm Riser-150 mm
SAC Building	01 No. Staircase connected from Ground to top floor. Width-1.80 mtrs. Tread-300 mm Riser-150 mm
Boy's Hostel Building	04 Nos. Staircase connected from Ground to top floor. Ground to 1st floor Width-1.80 mtrs. Tread-300 mm Riser-151.7 mm 1st floor to top floor Width-1.80 mtrs. Tread-300 mm Riser-150 mm
Girls Hostel Building	04 Nos. Staircase connected from Ground to top floor. Staircase-1 & 2 from ground up to 2nd floor. Width-1.80 mtrs. Tread-300 mm Riser-151.7 mm approx Staircase-3 & 4 from ground up to 1st floor. Width-1.80 mtrs. Tread-300 mm Riser-152 mm Staircase-1 & 2 from 2nd floor to top floor. Width-1.80 mtrs. Tread-300 mm Riser-150 mm Staircase-3 & 4 from 1st floor to top floor. Width-1.80 mtrs. Tread-300 mm Riser-150 mm
Boy's Hostel Building	04 Nos. Staircase connected from Ground to top floor. Ground to 1st floor Width-1.80 mtrs. Tread-300 mm Riser-151.7 mm 1st floor to top floor Width-1.80 mtrs. Tread-300 mm Riser-150 mm
School of Earth Ocean and Climatic Sciences Building	03 Nos. Staircases connected from Ground to top floor Staircase- 1 & 2 Width-1.85 mtrs. Tread-300 mm Riser-150 mm Staircase-3 Width-2.4 mtrs. Tread-300 mm Riser-150 mm
School of Mineral and Material Sciences Building	03 Nos. Staircases connected from Ground to top floor Staircase- 1 & 2 Width-1.85 mtrs.

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2/1/2020.

			Tread-300 mm Riser-150 mm Staircase-3 Ground to 1st floor Width-2.40 mtrs. Tread-300 mm Riser-150 mm 1st to top floor Width-2.49 mtrs. Tread-300 mm Riser-150 mm
		School of Humanities, Social Sciences and Management Building	01 No. Staircase connected from Ground to top floor Ground floor to 1st floor Width-2.49 mtrs. Tread-300 mm Riser-150 mm 1st floor to top floor Width-2.40 mtrs. Tread-300 mm Riser-150 mm
		Lecture Theatre Block -1 Building	03 No. Staircases connected from Ground to top floor **Staircase 1 & 2** Width-2.70 mtrs. Tread-300 mm Riser-150 mm **Staircase 3** Width-1.80 mtrs. Tread-300 mm Riser-150 mm
		Lecture Theatre Block -2 Building	02 No. Staircases connected from ground to top floor 02 Nos. Staircases connected from ground to 1st floor Width-1.80 mtrs. Tread-300 mm Riser-150 mm
		Lecture Theatre Block -3 Building	03 No. Staircases connected from Ground to top floor **Staircase 1 & 2** Width-2.70 mtrs. Tread-300 mm Riser-150 mm **Staircase 3** Width-1.80 mtrs. Tread-300 mm Riser-150 mm
			➢ Provision of exits proposed in the buildings except C.R.I.F and Dispensary building satisfies the requirement as per BDA(P&BS) Regulations, 2018. ➢ ***Width of staircases proposed for C.R.I.F and Dispensary building shall be provided as per Regulation-71 and Annexure-XI of BDA(P&BS) Regulations, 2018.*** ➢ ***Width of staircases shall not be less than 1.5 mtrs. for Educational building and 02 mtrs. for Assembly, Institutional (Dispensary) building as per BDA (P&BS) Regulations, 2018.*** ➢ Travel distance shall be maintained in each building as per BDA (P&BS) Regulations-2018. ➢ No exit doorways shall be less than 01 mtr. in width and height less than 02 mtrs. ➢ The staircases are required to be pressurized or provision of natural ventilation be made at each floor landing. The natural ventilation requirement of the staircases shall be achieved through opening at each landing of an area 0.5 m^2 in the external wall. ➢ Mechanism for pressurizing the staircase shall operate automatically with the fire alarm. ➢ Access to the main staircases be gained through automatic closing fire check doors of 02 hrs. rating with panic bar. ➢ External exit door of staircase enclosure at ground level shall open directly to the open spaces or can be reached without passing through any door other than a door provided to drought lobby.

21/1/2020

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➢ Every doorway shall open into and enclosed stairway, a horizontal exit, on a corridor or passageway providing continuous and protected means of egress.
➢ The exit sign with arrow indicating the way to the escape route shall be provided at all conspicuous places and shall be illuminated by electric light connected to corridor circuits. Provision of escape lighting and exit signage needs to be made in accordance to Clause 3.4.7.1 to 3.4.7.4 of Part-4, NBCI-2016 & IS 9457:1980, IS 12349:1988, IS 12407:1988.
➢ All landings of floor shall have floor indication boards indicating the number of floor.
In addition to above all other provisions for exits/doorways/stairways shall be made as per Clause 4.2 to 4.6.2 of NBCI-2016 and as per BDA(P&BS) Regulations, 2018.
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<tr><td>6.</td><td>Lifts</td><td>
➢ Provision of lifts in the proposed buildings are as follows:-
<table>
<tr><td>G+1 floor Auditorium Building</td><td>01 lift running from ground floor to mezzanine floor.</td></tr>
<tr><td>Ground floor only CRIF Building</td><td>01 No. lift running from ground floor to top floor.</td></tr>
<tr><td>G+1 floor Dispensary Building</td><td>01 No. lift running from ground floor to top floor.</td></tr>
<tr><td>Ground floor only Central Workshop Building</td><td>01 No. lift running from ground floor to top floor.</td></tr>
<tr><td>G+7 floor Housing Type-A Building (02 Tower)</td><td>02 Nos. lift for each tower running from ground floor to top floor.</td></tr>
<tr><td>G+7 floor Housing Type-B Building (04 Tower)</td><td>02 Nos. lift for each tower running from ground floor to top floor.</td></tr>
<tr><td>G+7 floor Housing Type-C Building (04 Tower)</td><td>02 Nos. lift for each tower running from ground floor to top floor.</td></tr>
<tr><td>G+7 floor Housing Type-D Building (02 Tower)</td><td>02 Nos. lift for each tower running from ground floor to top floor.</td></tr>
<tr><td>G+1 floor SAC Building</td><td>01 No. lift running from ground floor to top floor.</td></tr>
<tr><td>G+7 floor Boy's Hostel Building</td><td>06 Nos. lift running from ground floor to top floor.</td></tr>
<tr><td>G+6 floor Girl's Hostel Building</td><td>04 Nos. lift running from ground floor to top floor.</td></tr>
<tr><td>G+7 floor Boy's Hostel Building</td><td>06 Nos. lift running from ground floor to top floor.</td></tr>
<tr><td>G+1 floor School of Earth Ocean and Climatic Sciences Building</td><td>02 Nos. lift running from ground floor to top floor.</td></tr>
<tr><td>G+1 floor School of Mineral and Material Sciences Building</td><td>02 Nos. lift running from ground floor to top floor.</td></tr>
<tr><td>G+1 floor School of Humanities, Social Sciences and Management Building</td><td>No lift</td></tr>
<tr><td>G+2 floors Lecture Theatre Block -1 Building</td><td>02 Nos. lift running from ground floor to top floor.</td></tr>
<tr><td>G+2 floors Lecture Theatre Block -2 Building</td><td>02 Nos. lift running from ground floor to top floor.</td></tr>
<tr><td>G+2 floors Lecture Theatre Block -3 Building</td><td>02 Nos. lift running from ground floor to top floor.</td></tr>
</table>
➢ Grounding switch at ground floor level shall be provided.
➢ Lift car door shall have a fire resistance rating of 01 Hr.
➢ Collapsible gates shall not be permitted for lifts and shall have solid doors with fire resistance of at least 01 Hr.
➢ A sign shall be posted and maintained on every floor at or near the lift indicating floor plan of each floor showing the locations of the stairways.
➢ If the lift shaft and lobby is in the core of the building, a positive pressure between 25 and 30 pa shall be maintained in the lobby and a positive pressure of 50 pa shall
</td></tr>
</table>

21.1.2020

		be maintained in the lift shaft. The mechanism for pressurization shall act automatically with the fire alarm; it shall be possible to operate this mechanically also. ➢ Exit from the lift lobby, if located in the core of the building, shall be through a self-closing smoke stop door of half an hour fire resistance. ➢ The required fire safety measures in fireman lift shall be made as per Clause-7.1 of Part-8, Section-5 of NBCI-2016 and as per Annexure- XI & IV of Bhubaneswar Development Authority (Planning and Building Standards) Regulations-2018. ➢ The word "FIRE LIFT" shall be conspicuously displayed in fluorescent paint on the lift landing doors at each floor level. ➢ The speed of the fire lift shall be such that it can reach to the top floor from ground level within one minute. ➢ The lift lobbies shall be pressurized or cross-ventilated as per Table-6 and clause-4.4.2.5 & E-2 of Part-IV of NBCI-2016. ➢ Provision and requirement of lift shall be made as per BDA (P&BS) Regulations, 2018. In addition to above, other provisions of lift shall comply to the requirements as specified in 'Building Services, Section 5 Installation of Lifts, Escalators and Moving Walks, Sub-Section 5 A Lifts of Part-8 of National Building Code of India, 2016 and as per of BDA(P&BS) Regulations, 2018.
H.	Firefighting Shaft (Fire Tower)	➢ **Provision of at least one firefighting shaft shall be made in Auditorium building, Housing Type-A (2-Tower), Housing Type-B (4-Tower), Housing Type-C (4-Tower), Housing Type-D (2-Tower), 02 Nos. Boy's Hostel, 01 No. Girl's Hostel and Lecture Theatre Block-2.** ➢ **Provision of firefighting shaft shall comply to the requirements as specified in Clause-2.24 Part-4 of NBCI-2016.**
I.	Construction	➢ During construction of the proposed high rise buildings the following fire protection measures shall be provided: - i. Dry riser of minimum 100 mm diameter pipe with hydrant outlets on the floors. ii. Drums of 2000 litter capacity filled with water with 02 fire buckets on each floor. iii. A water storage tank of minimum 20,000-liter capacity ➢ The minimum fire resistance ratings of structural and non-structural Elements (minute) shall be as given in Table-1 of NBCI-2016. ➢ All floors shall be compartmented/zoned with area of each compartment being not more than 750 m^2. ➢ The provision of fire safety measures and other requirements for kitchen and use of LPG in the building shall comply to the provisions given in Annexure-G of Part-IV of NBCI-2016 and IS:6044. ➢ Refuse chutes if any provided in the building shall complied with Clayuse-3.4.5.5 of Part-IV of NBCI-2016. ➢ The false ceiling, including all fixtures used for its suspension shall be of non-combustible material and shall provide adequate fire resistant to the ceiling in order to prevent spread of fire across ceiling. The structural safety design and construction of the building shall be done as per Clause-3.3 & 3.4 of NBCI-2016 and Regulation-73 of BDA(P&BS) Regulations, 2018.
J.	Refuse Area	➢ **Refuse area shall be provided in buildings of height more than 24 mtrs.** ➢ Provision of refuse area shall comply to the requirements as specified in Annexure-E (E4), Part-4 of NBCI-2016.

K.	Building Services	**Electrical Services**: - ➢ Stand-by electric generator shall be installed to supply power to staircase and corridor lighting circuits, fire lifts, the stand-by fire pumps, pressurization fans and blowers, smoke extraction and damper system in case of failure of normal electric supply. ➢ The staircase and corridor lighting shall be on separate service and shall be independently connected so as it could be operated by one switch installation on the ground floor, easily accessible to firefighting staff at any time irrespective of the position of the individuate control of the light points, if any. ➢ Staircase and corridor lighting shall also be connected to alternate supply from parallel high-tension supply or to the supply from the stand-by generator. All wires and other accessories used for emergency light shall have fire retardant property. ➢ The electric distribution cables or wiring shall be laid in separate duct which shall be sealed at every floor with non-combustible materials having the same fire resistance as that of the duct. Low and medium voltage wiring running in shaft and in false ceiling shall run in separate conduits. Water mains, telephone cables, intercom cables, gas pipes or any other service line shall not be laid in the duct for electric cables. ➢ Transformer shall be installed as per the National Building Code of India -2016, Indian Electricity Rule and required fire protection measures be taken for the transformer. ➢ Electrical M. V. Panels shall be provided with Co_2/Inert Gas flooding system for all panel compartments. ➢ Electrical Installations in the building shall comply to the provisions given in Clause 3.4.6 to 3.4.7.4 of part-4 NBCI-2016 and as per BDA(P&BS) Regulations, 2018. ➢ Provision for lightning protection shall be made in the proposed building as per IS/IEC 62305-4:2010. **Air Conditioning**: - If Central Air Conditioning system provided, ➢ Escape routes like staircases, common corridors, lift lobbies shall not be used as return air passage. ➢ Air ducts serving main floor areas, corridors, shall not pass through the staircase enclosure. ➢ The air-handling units shall be separate for each floor and air ducts for every floor shall be separated and in no way inter-connected with the ducting of any other floor. ➢ Wherever the ducts pass through fire walls or floors, the opening around the ducts shall be sealed with materials having fire resistance rating of the compartment. Such duct shall also be provided with fire dampers at all fire walls and floors unless such ducts are required to perform for fire safety operation. ➢ The Air Conditioning shall also be coupled with fire detection and alarm system. ➢ Metallic ducts shall be used even for the return air instead of space above the false ceiling. ➢ The materials used for insulating the duct system (inside or outside) shall be of non-combustible material. ➢ Air Conditioning system in the building shall comply to the provisions given in Clause 3.4.8 to 3.4.8.4.2 of part-4 NBCI-2016 and as per BDA(P&BS) Regulations, 2018. **Service Ducts and Shafts**: - ➢ Openings in walls or floors which are necessary to be provided to allow passages of all building services like cables, electrical wirings, telephone cables, plumbing pipes, etc. shall be protected by enclosure in the form of ducts / shafts and such shaft and inspection doors fitted thereto shall have fire resistance rating not less than as specified in Clause 3.4.5.4 of NBCI-2016 and BDA(P&BS) Regulations,2018.
L.	Fixed Fire Fighting Installations	The following fixed firefighting installations are required to be provided against each building as mentioned hereunder as per NBCI-2016 and BIS. **Auditorium building**

Student Activity Centre building

i. **Fire Extinguisher**: - Provision of fire extinguishers shall be made in entire building. **(BIS:2190:2010)**

ii. **First-aid Hose Reel**: - First-aid hose reel shall be provided on all floor of each building. **(BIS 884:1985 & BIS 3844:1989)**

iii. **WET RISER**: - The proposed buildings are required to be provided wet riser with provision of hydrant outlet and hose reel on each floor landing connected to the fire pump. Fire Service inlets at ground level fitted with non-return valves shall also be provided to the rising main for charging it by Fire Service pump in case of failure of static fire pump. The riser should be fully charged and automatic in operation with adequate pressure at all times **(BIS:3844:1989)**.

The internal diameter of the riser main should be not less than 100 mm. Each hydrant should be preferably of single outlet and comprise of 63 mm. Gun metal landing valve fitted with 63 mm instantaneous coupling conforming to IS:901:1988.

Sufficient length of rubber lined fire hoses subject to minimum two lengths of 15 mtrs length fitted with coupling together with branch pipe and nozzle conforming to IS:903:1984 should be provided and kept adjacent to the hydrant in hose boxes.

iv. **Manually Operated Electronic Fire Alarm System**: - Manually Operated Electronic fire alarm system at conspicuous places in all floor of each building shall be provided Manually operated electronic fire alarm system shall also include talk-back and Public Address System. **(IS/ISO 7240-11:2011)**

v. **Automatic Detection & Alarm System**: - Automatic Detection & Alarm system shall require to be provided both below and above the false ceiling (if void space exceeds 800 mm) in entire building including inside the electrical shafts & lift machine rooms etc. Electrical rooms, cabins & other areas in car parking shall have also provision of fire detection system. Installation of automatic fire detection and alarm system shall be in accordance with **BIS 2189:2008**.

vi. **Under Ground Static Water Storage Tank:-** Static underground storage tank of 1,00,000 ltrs. capacity shall be provided for each building. The tanks shall entirely be accessible to fire appliances of the local Fire Service. Provision of suitable manhole shall be made available for inspection, repair and insertion of suction hose etc. The covering slab shall be able to withstand the vehicular load of 45 tons. Static underground tank shall be constructed in accordance with Clause-5.1.2.1 of Part-4, NBCI-2016.

vii. **Terrace Tank**: - Terrace Tank of 5,000 ltrs. Capacity shall be provided at the top of each building for firefighting purpose. It should be ensured that water in the tank is not utilized for any other purpose other than firefighting.

viii. **Fire Pumps**: - Pump house should preferably be installed at ground level. It shall be situated so as to be directly accessible from the surrounding ground level. Required number of sets of pumps each consisting of one Electric & one Diesel pump (Stand by) of capacity 2280 lpm. & one electric pump of capacity 180 lpm shall be provided. Installation of pumps shall be made in accordance to Clause-5.1.2.2 of Part-IV, NBCI-2016 and relevant BIS specification.

ix. **Terrace Pump**: - Provision of terrace pump of 450 lpm. Capacity having connectivity to terrace tank shall be made in the building.

Central Research & Instrumentation Facility building,
Central Workshop building,

i. **Fire Extinguisher**: - Provision of fire extinguishers shall be made in entire building. **(BIS:2190:2010)**

ii. **First-aid Hose Reel**: - First-aid hose reel shall be provided on each floor of the buildings. **(BIS 884:1985 & BIS 3844:1989)**.

iii. **Down Comer :-**

Down Comer shall be provided in each floor of the building. The distribution of down comer installation in the proposed building shall be so situated as not to be farther than 30 meters from any point in the area covered and shall not be more

than 50 meters apart in horizontal. At each floor landing there shall be provision of hose box to accommodate 02 Nos. RRL Delivery Hoses of 15 meters length each of 63 mm dia and 01 Nos. branch pipe. **(BIS 3844:1989)**

iv. **Manually Operated Electronic Fire Alarm System**: - Manually Operated Electronic fire alarm system at conspicuous places in each floor of the building shall be provided Manually operated electronic fire alarm system shall also include talk-back and Public Address System. **(IS/ISO 7240-11:2011)**

v. **Terrace Tank**: - Terrace Tank of 10,000 ltrs. capacity shall be provided at the top of C.R.I.F building and Terrace Tank of 20,000 ltrs. capacity shall be provided at the top of Central Workshop building for firefighting purpose. It should be ensured that water in the tank is not utilized for any other purpose other than firefighting.

vi. **Terrace Pump**: - Provision of terrace pump of 450 lpm. Capacity having connectivity to terrace tank shall be made in the building

School of Earth Ocean and Climatic Sciences,
School of Mineral & Material Sciences,
School of Humanities, Social Science and Management,
Lecture theatre Block-1,
Lecture Theatre Block-3

i. **Fire Extinguisher**: - Provision of fire extinguishers shall be made in entire building. **(BIS:2190:2010)**

ii. **First-aid Hose Reel**: - First-aid hose reel shall be provided on each floor of the buildings. **(BIS 884:1985 & BIS 3844:1989)**

iii. **Terrace Tank**: - Terrace Tank of 10,000 ltrs. Capacity shall be provided at the top of each building for firefighting purpose. It should be ensured that water in the tank is not utilized for any other purpose other than firefighting.

iv. **Terrace Pump**: - Provision of terrace pump of 450 lpm. Capacity having connectivity to terrace tank shall be made in the building.

Lecture Theatre Block-2

i. **Fire Extinguisher**: - Provision of fire extinguishers shall be made in entire building. **(BIS:2190:2010)**

ii. **First-aid Hose Reel**: - First-aid hose reel shall be provided on each floor of the building. **(BIS 884:1985 & BIS 3844:1989)**

iii. **Down Comer**: -
Down Comer shall be provided in each floor of the building. The distribution of down comer installation in the proposed building shall be so situated as not to be farther than 30 meters from any point in the area covered and shall not be more than 50 meters apart in horizontal. At each floor landing there shall be provision of hose box to accommodate 02 Nos. RRL Delivery Hoses of 15 meters length each of 63 mm dia and 01 Nos. branch pipe. **(BIS 3844:1989)**

iv. **Manually Operated Electronic Fire Alarm System**: - Manually Operated Electronic fire alarm system at conspicuous places in each floor of the building shall be provided Manually operated electronic fire alarm system shall also include talk-back and Public Address System. **(IS/ISO 7240-11:2011)**

v. **Terrace Tank**: - Terrace Tank of 25,000 ltrs. Capacity shall be provided at the top of building for firefighting purpose. It should be ensured that water in the tank is not utilized for any other purpose other than firefighting.

vi. **Terrace Pump**: - Provision of terrace pump of 900 lpm. Capacity having connectivity to terrace tank shall be made in the building.

Housing Type A staff quarter (2-Towers),
Housing Type B staff quarter (4-Towers),
Housing Type C staff quarter (4-Towers),
Housing Type D staff quarter (2-Towers),
02 Nos. Boy's Hostel,
01 No. Girl's Hostel.

21/1/2022

		i. <u>Fire Extinguisher</u>: - Provision of fire extinguishers shall be made in entire building. **(BIS:2190:2010)** ii. <u>First-aid Hose Reel</u>: - First-aid hose reel shall be provided on all floor of each building. **(BIS 884:1985 & BIS 3844:1989)** iii. <u>Down Comer</u>: - Down Comer shall be provided in each floor of the buildings. The distribution of down comer installation in the proposed buildings shall be so situated as not to be farther than 30 meters from any point in the area covered and shall not be more than 50 meters apart in horizontal. At each floor landing there shall be provision of hose box to accommodate 02 Nos. RRL Delivery Hoses of 15 meters length each of 63 mm dia and 01 Nos. branch pipe. **(BIS 3844:1989)** iv. <u>Manually Operated Electronic Fire Alarm System</u>: - Manually Operated Electronic fire alarm system at conspicuous places in all floors of each building shall be provided Manually operated electronic fire alarm system shall also include talk-back and Public Address System. **(IS/ISO 7240-11:2011)** v. <u>Terrace Tank</u>: - Terrace Tank of 25,000 ltrs. Capacity shall be provided at the top of each building for firefighting purpose. It should be ensured that water in the tank is not utilized for any other purpose other than firefighting. vi. <u>Terrace Pump</u>: - Provision of terrace pump of 900 lpm. Capacity having connectivity to terrace tank shall be made in each building. <u>Dispensary Building.</u>**(Considering occupancies as shown in the plan)** i. <u>Fire Extinguisher</u>: - Provision of fire extinguishers shall be made in entire building. **(BIS:2190:2010)** ii. <u>First-aid Hose Reel</u>: - First-aid hose reel shall be provided on each floor of the building. **(BIS 884:1985 & BIS 3844:1989** iii. <u>Manually Operated Electronic Fire Alarm System</u>: - Manually Operated Electronic fire alarm system at conspicuous places in each floor of the building shall be provided Manually operated electronic fire alarm system shall also include talk-back and Public Address System. **(IS/ISO 7240-11:2011)** iv. <u>Terrace Tank</u>: - Terrace Tank of 10,000 ltrs. capacity shall be provided at the top of the building for firefighting purpose. It should be ensured that water in the tank is not utilized for any other purpose other than firefighting. v. <u>Terrace Pump</u>: - Provision of terrace pump of 900 lpm. Capacity having connectivity to terrace tank shall be made in the building. vi. <u>Automatic Sprinkler System</u>: - Automatic water sprinkler system with sprinkler heads shall be provided in all floors of the building both below & above the false ceiling (Where void space exceeds 800 mm) at suitable intervals and height. Installation of Sprinklers shall be provided in accordance to BIS specification 15105:2002 and 9972:2002. vii. <u>Automatic Detection & Alarm System</u>: - Automatic Detection & Alarm system shall require to be provided both below and above the false ceiling (if void space exceeds 800 mm) in entire building including inside the electrical shafts & lift machine rooms etc. Electrical rooms, cabins & other areas in car parking shall have also provision of fire detection system. Installation of automatic fire detection and alarm system shall be in accordance with **BIS 2189:2008**.
M.	Fire Command Centre	➢ There shall be a Fire Command Centre on entrance floor of the building having direct access. The Fire Command Centre shall have the main fire alarm panel with communication system (suitable public-address system). All controls and monitoring of fire alarm systems, pressurization systems, smoke management systems shall happen from this room. Fire Command Centre shall have provisions in accordance with Clause-3.4.12 of Part-4, NBCI-2016. The owner/occupier shall provide any additional fire requirements in future if the recommendation is issued by this department.
N.	Provision for Gas Bank	➢ Construction and provision of fire safety measures and firefighting measures shall be of IS-6044 of 2000.

21/1/2022

O.	Provision for fire safety measures of the Special nature of the area.	➢ Gas based suppression system shall be provided in accordance with good practice on premises where water cannot be used for fire extinguishing because of special nature of building

After completion of the construction work including installation of fixed firefighting measures as suggested, the applicant shall be required to apply for Fire Safety Certificate as per Rule 13 (1) of Odisha Fire Prevention and Fire Safety Rules, 2017, along with following documents: -

i. The applicant shall produce a certificate to be issued by the person concerned to the effect that all the provisions of Bye-Laws / Regulations of Bhubaneswar Development Authority and Recommendations issued from this Directorate General have been incorporated in the building.

ii. The applicant shall produce a certificate of the Competent Authority concerned to the effect that electrical installations have been done as recommended and as per provisions given in Part-8 "Building Services, Section-2 Electrical and allied installations" of NBCI-2016 and Section-7 of National Electrical Code, 2011.

iii. The applicant shall produce a certificate of the agency concerned to the effect that installation of firefighting measures has been done as recommended and as per provisions given in Part-4 of National Building Code of India – 2016 and relevant BIS specifications.

7/1/2020.
Fire Officer,.
Central Range, Cuttack
Date. 07..01.2020

Memo No. 488 /CR-FPS
Copy to the Dy. General Manager (Engg.) NBCC India Ltd., Argul, Jatni, Dist-Khordha for information and necessary action.

7/1/2020.
Fire Officer,
Central Range, Cuttack.
Date. 07..01.2020

Memo No. 489 /CR-FPS
Copy to Planning Member, Bhubaneswar Development Authority, Bhubaneswar for information and necessary action.

7/1/2020.
Fire Officer,
Central Range, Cuttack.
Date. 07..01.2020

Memo No. 490 /CR-FPS
Copy submitted to the Chief Fire Officer, Fire Prevention Wing, Odisha, Cuttack for kind information please.

7/1/2020
Fire Officer,
Central Range, Cuttack.

O/C
07/1/2020