

# DESIGN BASIS REPORT FOR

Proposed Construction of Fire station cum Training & Classroom, Industrial Training Tower, Rescue Tower ,Change room & Visitor Gallery, B.A. Training Gallery and Simulation Building for Fire Training Institute at Bihta and other infrastructure including Parade Ground and Fire Hydrant facilities in the state of Bihar.

AT BIHTA, PATNA, BIHAR



बिहार पुलिस भवन निर्माण

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# 1. ARCHITECTURAL DBR

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## 1. PROJECT BRIEF

The Bihar Fire Training Academy is planned as a high-performance institutional facility designed to serve as the premier destination for fire engineering education, structural firefighting drills, and disaster management simulation in Bihar. The architecture balanced rigorous operational efficiency with advanced environmental and safety performance.

## 2. DESIGN CONCEPT

The project consists of Fire station cum Training & Classroom, Industrial Training Tower, Rescue Tower ,Change room & Visitor Gallery, B.A. Training Gallery and Simulation Building for Fire Training Institute at Bihta and other infrastructure including Parade Ground and Fire Hydrant facilities.

The existing trees transplanted inside the campus shall be retained wherever possible, as per the Landscape tender drawing.

All buildings have a high plinth to keep them safe in case of flood. Solar panels have been proposed for support electricity, for reducing dependency on grid power.

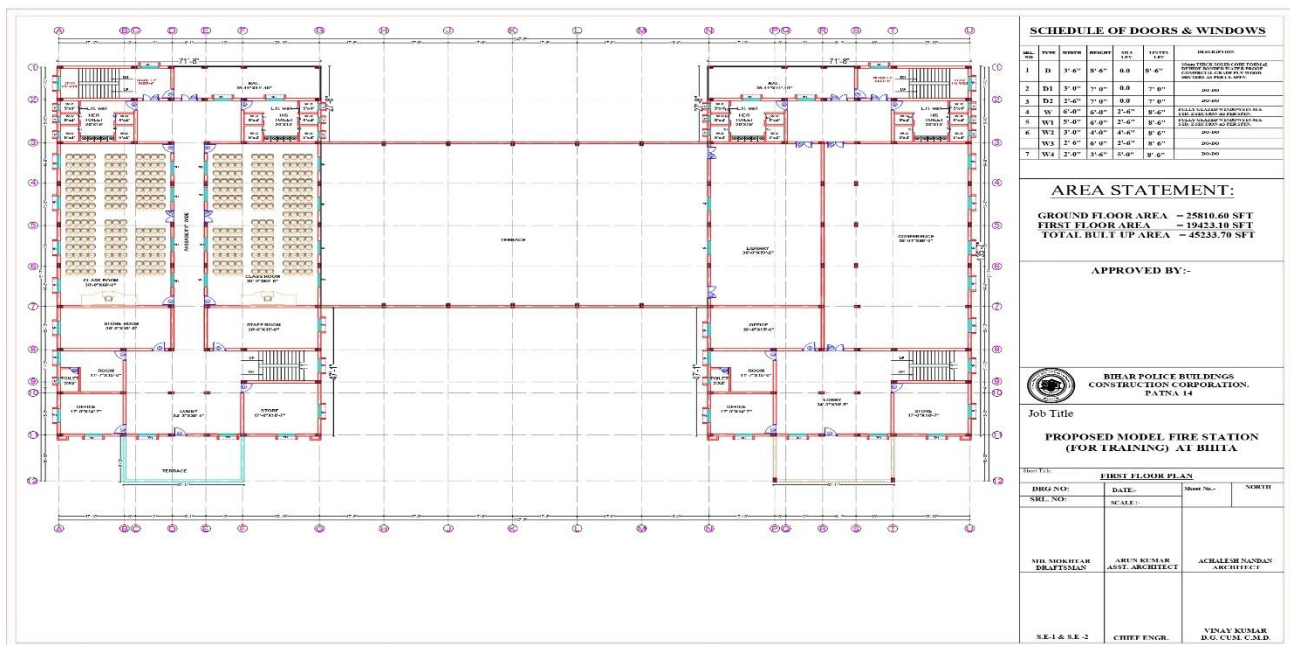
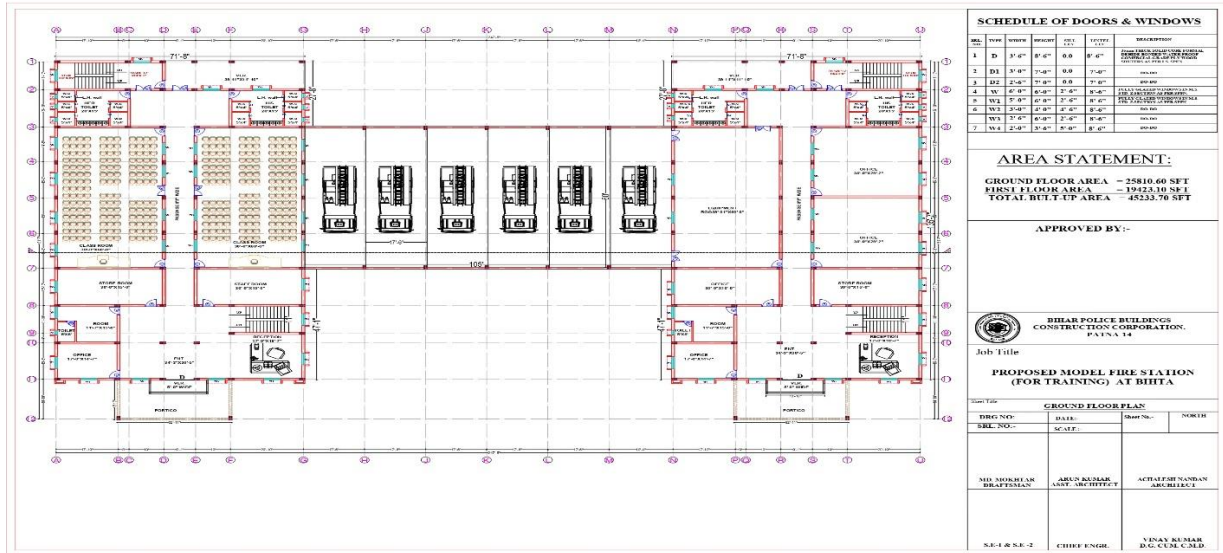
Wherever required, translocation of trees shall be carried out taking due approval from forest Department. No extra claim shall be admissible. Furniture & Furnishing is also in scope of EPC Contract.

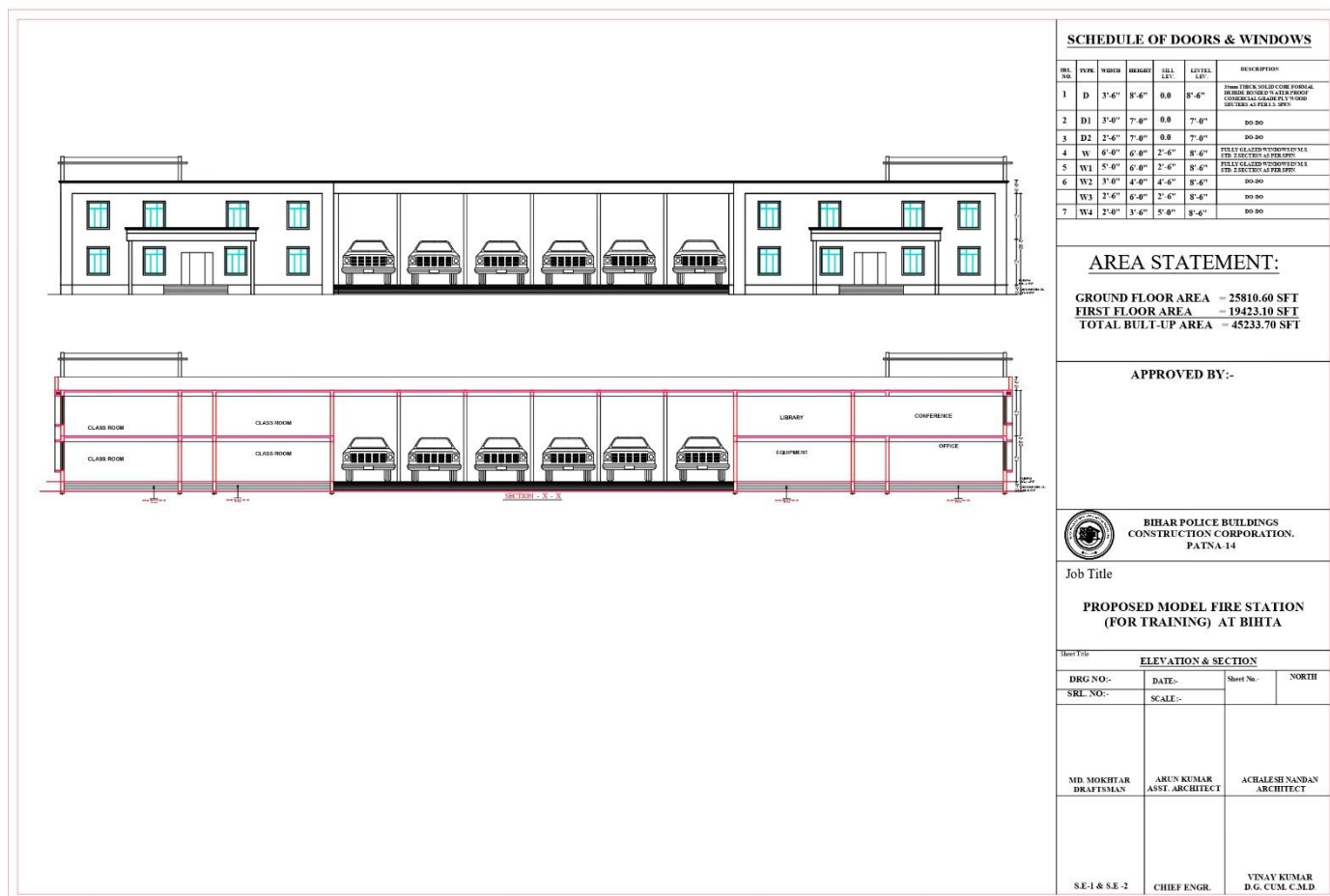
- All detail drawing/working drawing including shop drawing shall be provided by contractor.
- Project shall be based on net zero campus. All detail shall be based on green building norms.
- Design must be compiled with Bihar Building Bye-Laws.
- NBC 2016 and fire safety act.
- Design of the building must be compiled with RPWD act 2016 (Rights of Person with disabilities act.)

## DETAILED AREA STATEMENT

### Area\_statement

Building Name	Floor	Area (Sqft)	Area (Sqm)
Fire station cum Training & Classroom	Ground Floor Part 1	25420.8	2455.45
	Ground Floor Part 2	21033.1	1861.81
	Total Built-Up Area	46453.7	<b>4317.26</b>
Industrial Training Tower	Ground Floor	1866.02	173.42
	First Floor	1866.02	173.42
Rescue Tower	Second Floor	1130.01	105.02
	Total Built-Up Area	4862.05	<b>451.86</b>
	Ground Floor	596.85	55.47
	First Floor	530.94	49.34
	Second Floor	530.94	49.34
	Third Floor	530.94	49.34
	Fourth Floor	530.94	49.34
	Fifth Floor	530.94	49.34
	Total Built-Up Area	3251.55	<b>302.19</b>
Change room & Visitor Gallery	Ground Floor Only	6611.15	614.42
	Total Built-Up Area	6611.15	<b>614.42</b>
B.A. Training Gallery	Ground Floor Only	4542.41	422.16
Simulation Building	Total Built-Up Area	4542.41	<b>422.16</b>
	Ground Floor	9588.15	891.09
	First Floor	7478.49	695.03
	Second Floor	8771.58	815.2
	Third Floor	8771.58	815.2
	Total Built-Up Area	34609.8	<b>3216.52</b>
Grand total of built up area			<b>9324.41</b>





#### 4. SITE LEVELS

The EPC Contractor shall get detailed site survey done with existing contour levels, immediate surrounding features, site access road, existing site features and tree positions (mentioning the variety & girth), prior to any construction activity at site.

The Finished Ground Level of the site shall be maintained 150mm to 600mm (to be decided as per the site conditions by engineer in charge) above the level of the existing approach road at the entrance gate of the campus. The gradient of the site shall be designed such that there are no pockets of waterlogging and the storm water is properly drained off.

The EPC contractor shall provide the site plan with proposed FGL, road levels & plinth levels of all buildings, for approval from BSPCCL and the primary consultant, prior to execution.

The top of Interval road level shall be maintained at 75mm to 150mm (to be decided as per the site conditions by engineer in charge )above the FGL. The building plinth levels shall be measured from the FGL at the building entrance.

#### 5. CIVIL SPECIFICATIONS – ALL BUILDINGS

- Foundation - Isolated/ Raft foundation/ Pile/ Piled Raft/as per soil investigation report

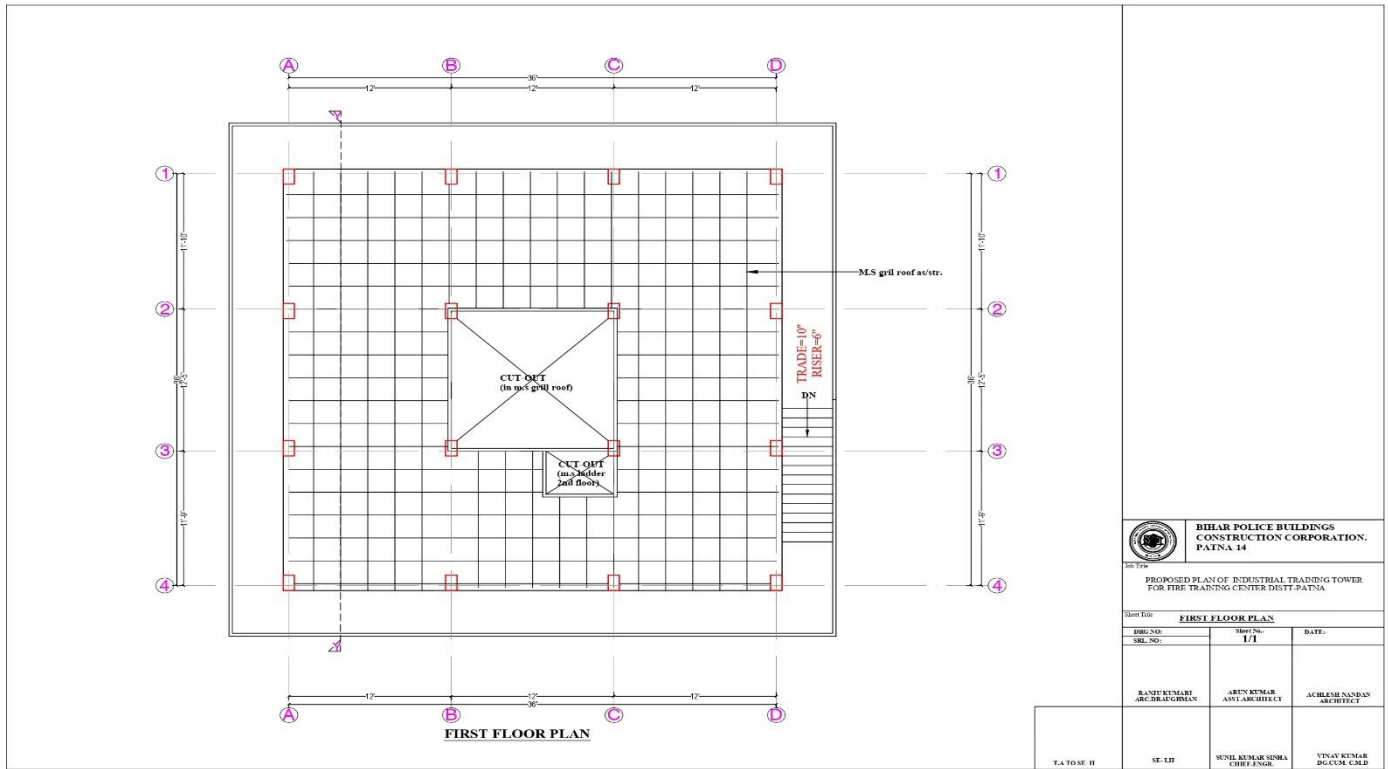
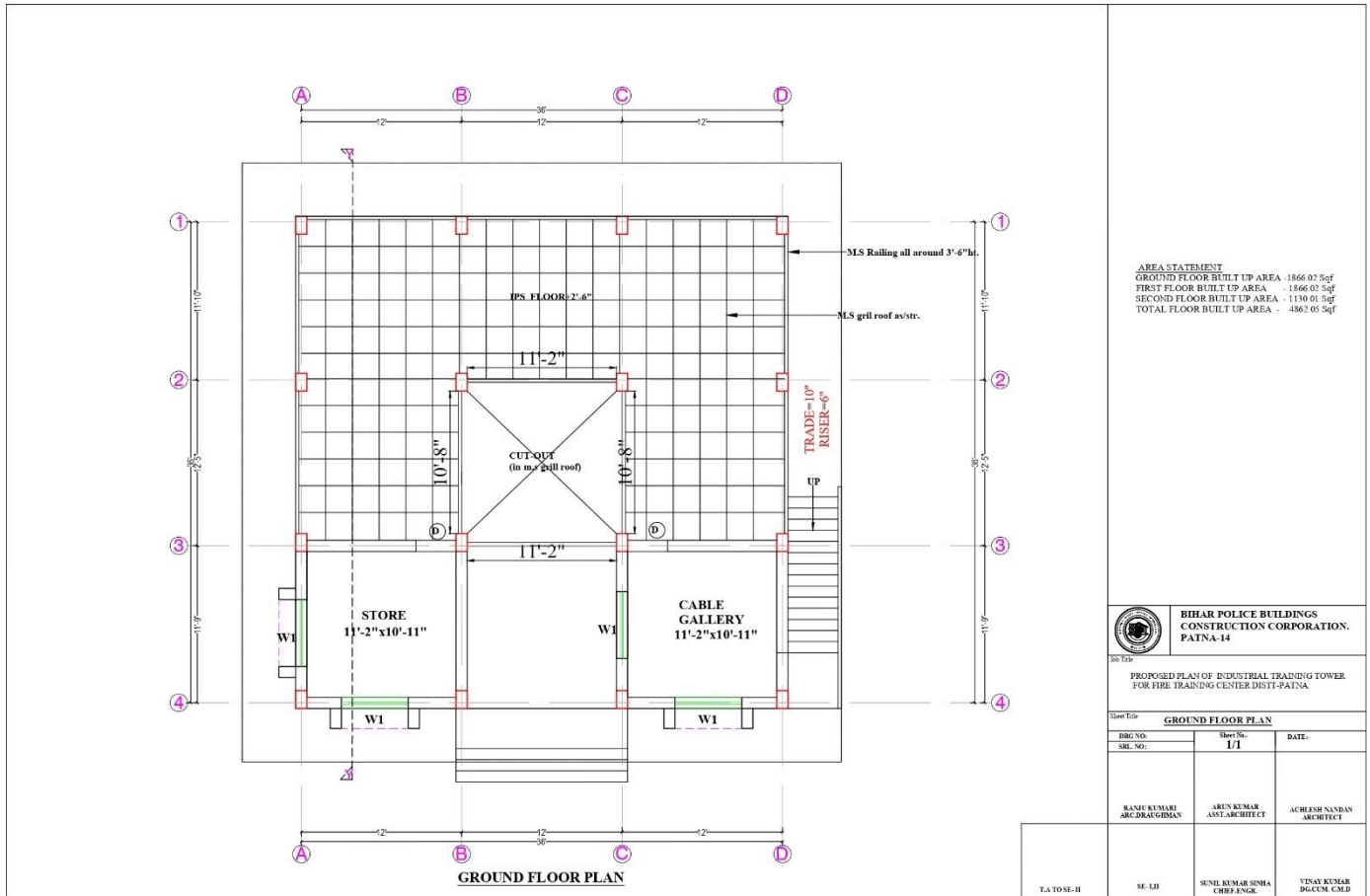
- Super Structure - RCC Framed Structure
- External brickwork - 250mm thick flyash brickwork in C.M. (1:6)
- Internal brickwork - 250mm brick work or 125mm reinforced brick work with flyash brick in C.M. (1:4)
- Flooring Subbase - 100mm PCC (1:2:4) over brick flat soling and 100mm sand (alongwith nominal reinforcement)
- Damp proof course - 50 mm thk. cement concrete 1:2:4 (cement to be mixed with required waterproofing chemical as per manufacturer spec. alongwith nominal reinforcement)
- Anti-termite treatment - Preconstruction application in Foundation, plinth filling & external periphery
- Plinth/ floor to floor/ parapet heights – as per drawing
- Door frames (except for glazed entrance doors/ toilet doors) – MS Hollow Section (Profile B) as per DSR item no. 10.14.1, with wooden lipping covering joints with masonry.
- Door shutters (except for glazed entrance doors/ toilet doors) - 35mm thk Decorative, Both side veneered. Factory made flush door. Vision panels to be provided as required.
- Door shutters (Canine rooms) - 35mm thk. Factory made flush door, Decorative both sides veneered & painted.
- Hardware fittings – Stainless Steel SS 304 hardware 2mm thick.
- Entrance Doors – Fully Power Coated Aluminium Doors
- Terrace Door – MS Sheet Door
- Toilet door frames - WPC frame (density 750-1000 kg/cu.m.)/ FRP
- Toilet door shutters - 30mm thk WPC door shutter/ FRP.
- Windows - UPVC Sliding windows with 5mm thk. Low E reflective glass (in administrative block, training block, Officers Mess & SO Mess) & 5mm thk. Clear float glass for other buildings
- All building Components must be fire rated (Like Door, Window, False Ceiling, Partition wall and others)
- Ventilators – UPVC Ventilators – Top hung/ Louvered with frosted glass (in toilets)/ with same glass as windows (in rooms other than toilet)
- MS Grills to be provided for all windows & ventilators

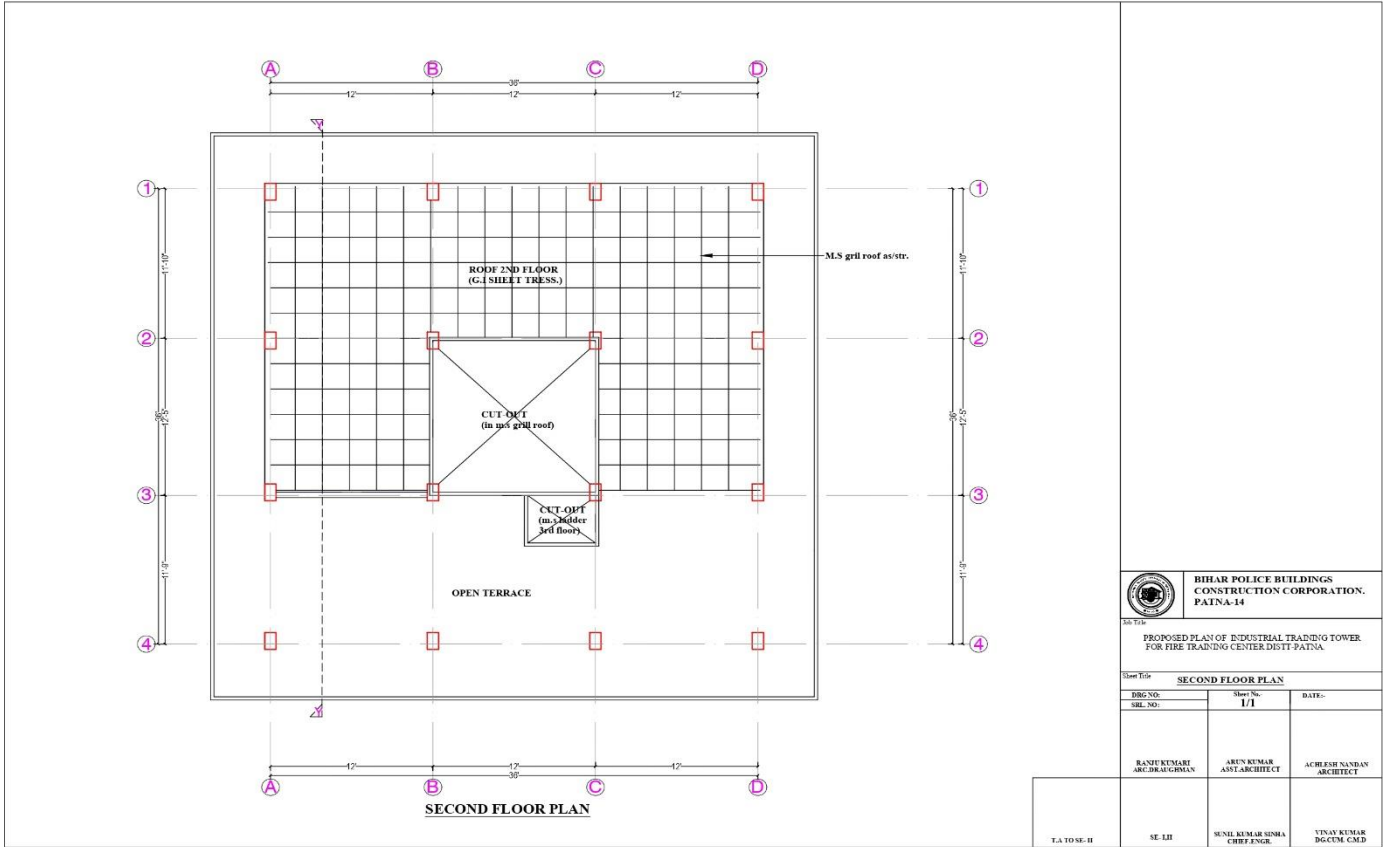


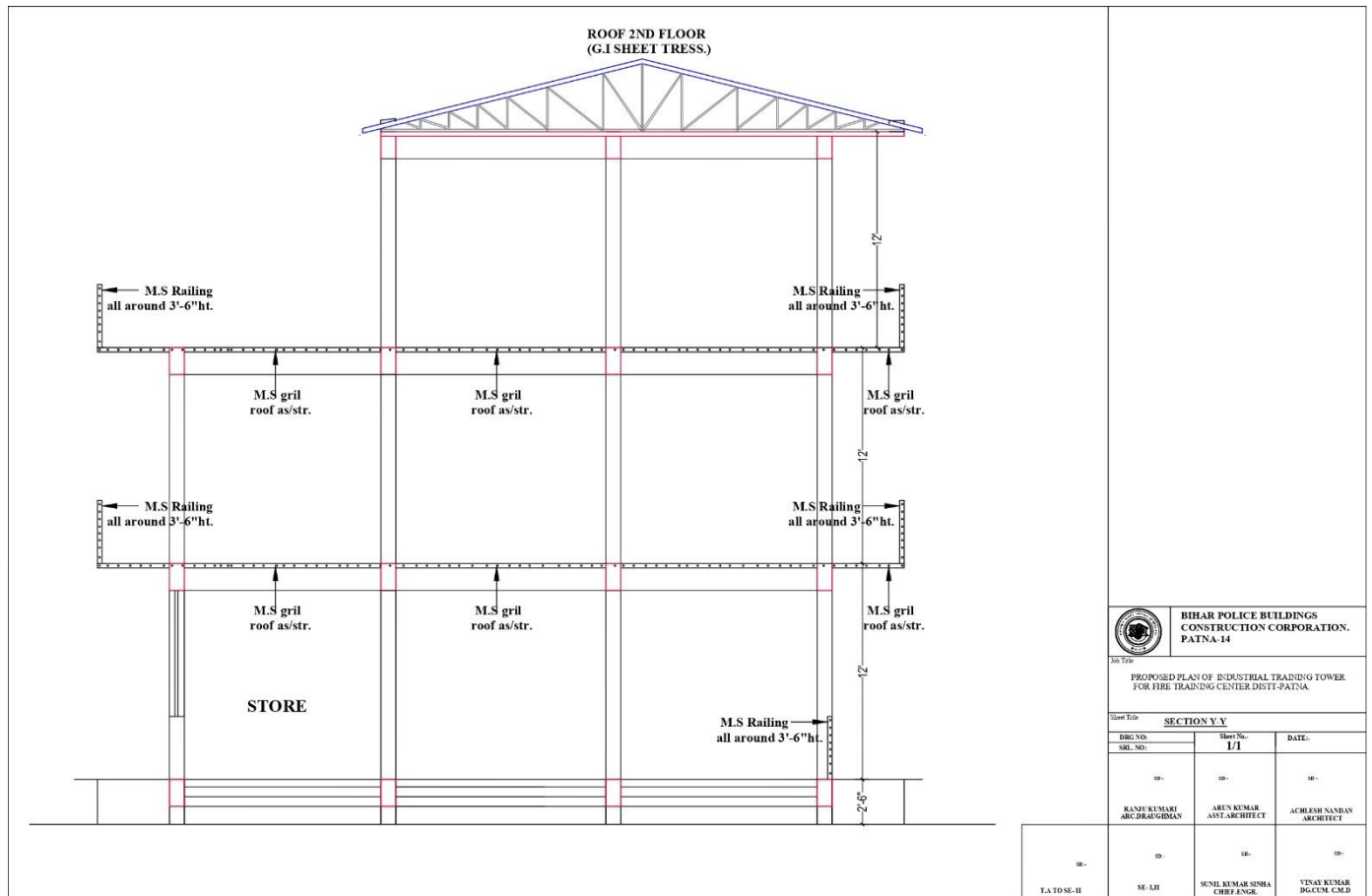
- Window sills - 18mm thk. Granite
- Railings – Stainless steel SS 304
- Lifts - MRL Lifts, with capacity as per Approved drawing, Speed 0.8m/s or 1m/s speed

#### Finishing\_Schedule\_Fire station cum Training & Classroom

SL. NO.	COMMON AREAS	FLOOR FINISH	SKIRTING/ DADO FINISH	WALL FINISH	CEILING
1	All ramps, Parking, Portico	Kota flooring with GSB layers with appropriate load taking capacity	Same as flooring upto 500mm	Acrylic emulsion paint	Acrylic emulsion paint
2	Entrance steps, Verandah, Entrance foyer, Reception area	18mm thk. Pre-polished granite flooring (nosing as required)	Same as flooring upto 150mm for entrance steps; Pre-polished granite upto 1000mm for foyer and reception (molding as required)	Acrylic emulsion paint	Calcium silicate false ceiling with gypsum board on edge as per design with cove lighting
3	Main staircase	18mm thk. Single piece granite stone in flooring in treads & Risers (nosing as required)	Pre-polished granite upto 1000mm (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
4	All internal areas	Dimension about size Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm	Acrylic emulsion paint	Acrylic emulsion paint
5	All other rooms	Dimension About Size Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm in rooms; Same as flooring upto 1000mm in Passage (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
6	All toilets	300x300mm rectified matt finish ceramic tiles in floor, 18mm thk. Black granite for toilet counters	Gloss finish Ceramic tiles 600x300 upto ceiling	Acrylic emulsion paint	Acrylic emulsion paint
8	Drinking water counter & dado	18mm thk. Granite flooring	Pre-polished granite upto 600mm ht. above counter slab (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint







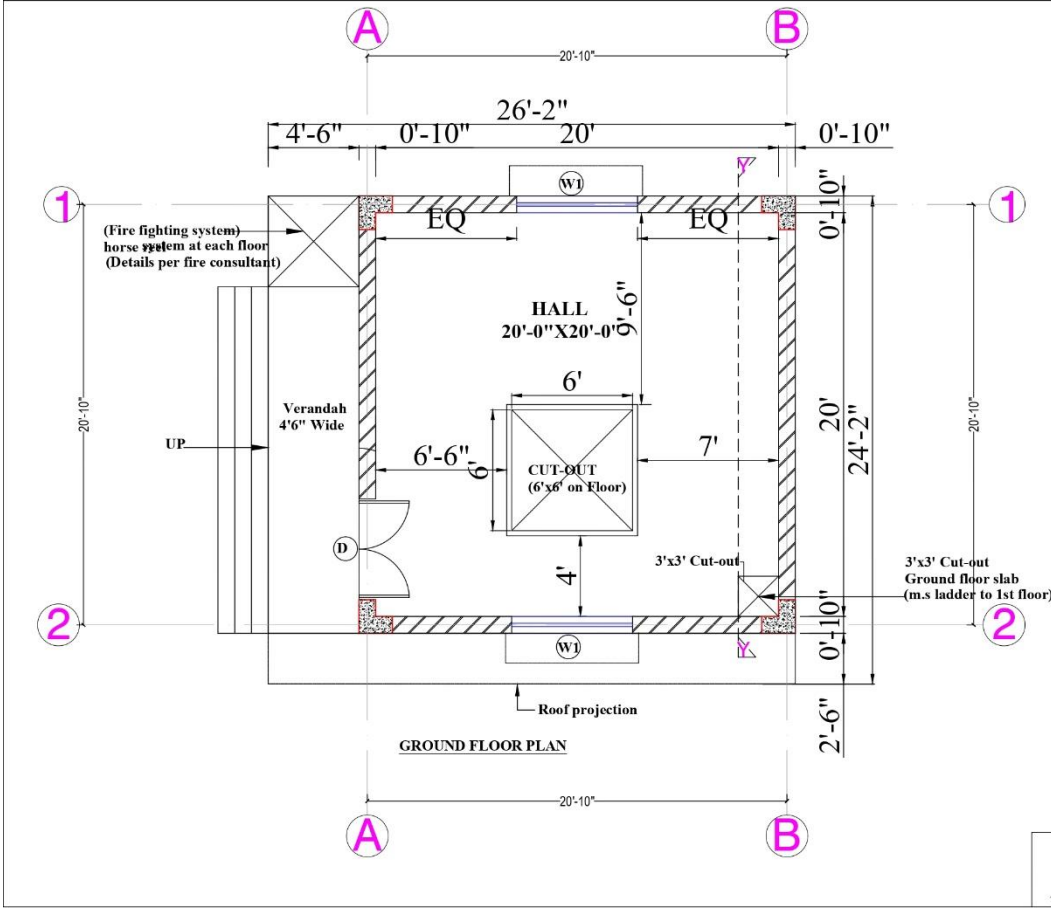
## 6. FINISHING SCHEDULE – ALL BUILDINGS

### Finishing\_Schedule\_ Industrial Training Tower

SL. NO.	COMMON AREAS	FLOOR FINISH	SKIRTING/ DADO FINISH	WALL FINISH	CEILING
1	All ramps, Parking, Portico	Kota flooring with GSB layers with appropriate load taking capacity	Same as flooring upto 500mm	Acrylic emulsion paint	Acrylic emulsion paint
2	Entrance steps, Verandah, Entrance foyer, Reception area	18mm thk. Pre-polished granite flooring (nosing as required)	Same as flooring upto 150mm for entrance steps; Pre-polished granite upto 1000mm for foyer and reception (molding as required)	Acrylic emulsion paint	Calcium silicate false ceiling with gypsum board on edge as per design with cove lighting
3	Main staircase	18mm thk. Single piece granite stone in flooring in treads & Risers (nosing as required)	Pre-polished granite upto 1000mm (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
4	All internal areas	600x600mm Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm	Acrylic emulsion paint	Acrylic emulsion paint
5	All other rooms	600x600mm Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm in rooms; Same as flooring upto 1000mm in Passage (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
6	All toilets	300x300mm rectified matt finish ceramic tiles in floor, 18mm thk. Black granite for toilet counters	Gloss finish Ceramic tiles 600x300 upto ceiling	Acrylic emulsion paint	Acrylic emulsion paint
8	Drinking water counter & dado	18mm thk. Granite flooring	Pre-polished granite upto 600mm ht. above counter slab (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint

### Finishing\_Schedule\_ Rescue Tower

SL. NO.	COMMON AREAS	FLOOR FINISH	SKIRTING/ DADO FINISH	WALL FINISH	CEILING
1	All ramps, Parking, Portico	Kota flooring with GSB layers with appropriate load taking capacity	Same as flooring upto 500mm	Acrylic emulsion paint	Acrylic emulsion paint
2	Entrance steps, Verandah, Entrance foyer, Reception area	18mm thk. Pre-polished granite flooring (nosing as required)	Same as flooring upto 150mm for entrance steps; Pre-polished granite upto 1000mm for foyer and reception (molding as required)	Acrylic emulsion paint	Calcium silicate false ceiling with gypsum board on edge as per design with cove lighting
3	Main staircase	18mm thk. Single piece granite stone in flooring in treads & Risers (nosing as required)	Pre-polished granite upto 1000mm (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
4	All internal areas	600x600mm Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm	Acrylic emulsion paint	Acrylic emulsion paint
5	All other rooms	600x600mm Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm in rooms; Same as flooring upto 1000mm in Passage (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
6	All toilets	300x300mm rectified matt finish ceramic tiles in floor, 18mm thk. Black granite for toilet counters	Gloss finish Ceramic tiles 600x300 upto ceiling	Acrylic emulsion paint	Acrylic emulsion paint
8	Drinking water counter & dado	18mm thk. Granite flooring	Pre-polished granite upto 600mm ht. above counter slab (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint



#### SCHEDULE OF DOORS & WINDOWS

SL. NO.	TYPE	WIDTH	HEIGHT	DOOR LEV.	WINDOW LEV.	DESCRIPTION
1	D	3'-6"	8'-0"	0.0	8'-0"	DOOR TRICKER DOOR CORE FIREFIGHTER DOOR WITH GLASS PANEL (SEE T&E-11 FOR DETAILS)
2	DL	3'-6"	7'-0"	0.0	7'-0"	DOOR
3	DL	3'-6"	7'-0"	0.0	7'-0"	DOOR
4	W	6'-0"	6'-0"	2'-4"	8'-0"	FULL GLASS WINDOW IN HALL (SEE T&E-11 FOR DETAILS)
5	W1	5'-0"	6'-0"	2'-4"	8'-0"	FULL GLASS WINDOW IN HALL (SEE T&E-11 FOR DETAILS)
6	W2	3'-6"	4'-0"	2'-4"	8'-0"	DOOR
7	W3	3'-6"	4'-0"	2'-4"	8'-0"	DOOR
7	W4	3'-6"	5'-0"	2'-4"	8'-0"	DOOR

AREA STATEMENT  
GROUND FLOOR BUILT UP AREA - 506.53 Sqf  
FIRST FLOOR BUILT UP AREA - 530.94 Sqf  
SECOND FLOOR BUILT UP AREA - 530.94 Sqf  
THIRD FLOOR BUILT UP AREA - 530.94 Sqf  
FOURTH FLOOR BUILT UP AREA - 530.94 Sqf  
FIFTH FLOOR BUILT UP AREA - 530.94 Sqf  
TOTAL FLOOR BUILT UP AREA - 2751.35 Sqf

BIHAR POLICE BUILDINGS  
CONSTRUCTION CORPORATION,  
PATNA-14

PROPOSED PLAN OF RESCUE TOWER FOR FIRE  
TRAINING CENTER DIST-PATNA

Sheet Title: GROUND FLOOR PLAN

DRG. NO. 1/1 DATE:

REL. NO.

RANJAN KUMARI ARCH. DR. RAJIB KUMAR ARCH. ARCHITECT

ARUN KUMAR ARCHITECT

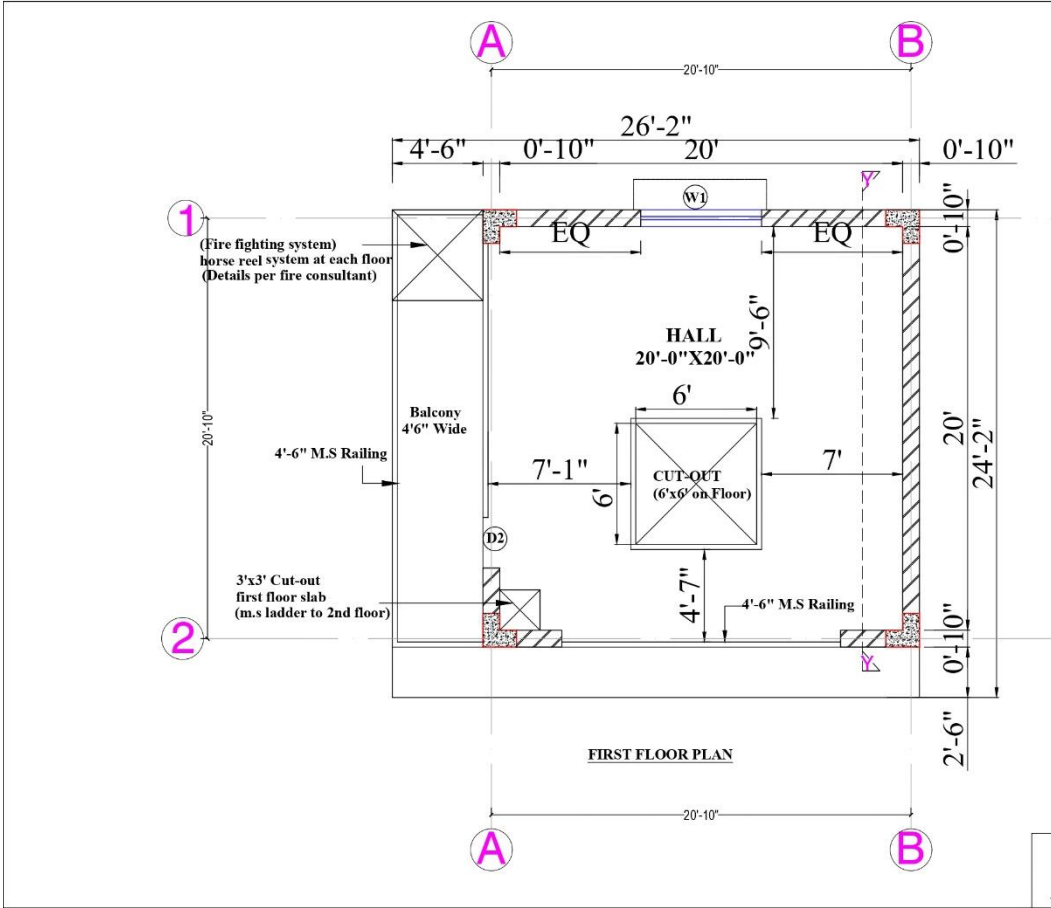
ACHIN KUMAR ARCHITECT

SE. LH

SUNIL KUMAR SINHA CHIEF ENGR.

VENAY KUMAR DEPUTY CHIEF ENGR.

T.A. TO SE-II



#### SCHEDULE OF DOORS & WINDOWS

SL. NO.	TYPE	WIDTH	HEIGHT	DOOR LEV.	WINDOW LEV.	DESCRIPTION
1	D	3'-6"	8'-0"	0.0	8'-0"	DOOR TRICKER DOOR CORE FIREFIGHTER DOOR WITH GLASS PANEL (SEE T&E-11 FOR DETAILS)
2	DL	3'-6"	7'-0"	0.0	7'-0"	DOOR
3	DL	3'-6"	7'-0"	0.0	7'-0"	DOOR
4	W	6'-0"	6'-0"	2'-4"	8'-0"	FULL GLASS WINDOW IN HALL (SEE T&E-11 FOR DETAILS)
5	W1	5'-0"	6'-0"	2'-4"	8'-0"	FULL GLASS WINDOW IN HALL (SEE T&E-11 FOR DETAILS)
6	W2	3'-6"	4'-0"	2'-4"	8'-0"	DOOR
7	W3	3'-6"	4'-0"	2'-4"	8'-0"	DOOR
7	W4	3'-6"	5'-0"	2'-4"	8'-0"	DOOR

BIHAR POLICE BUILDINGS  
CONSTRUCTION CORPORATION,  
PATNA-14

PROPOSED PLAN OF RESCUE TOWER FOR FIRE  
TRAINING CENTER DIST-PATNA

Sheet Title: FIRST FLOOR PLAN

DRG. NO. 1/1 DATE:

REL. NO.

RANJAN KUMARI ARCH. DR. RAJIB KUMAR ARCH. ARCHITECT

ARUN KUMAR ARCHITECT

ACHIN KUMAR ARCHITECT

SE. LH

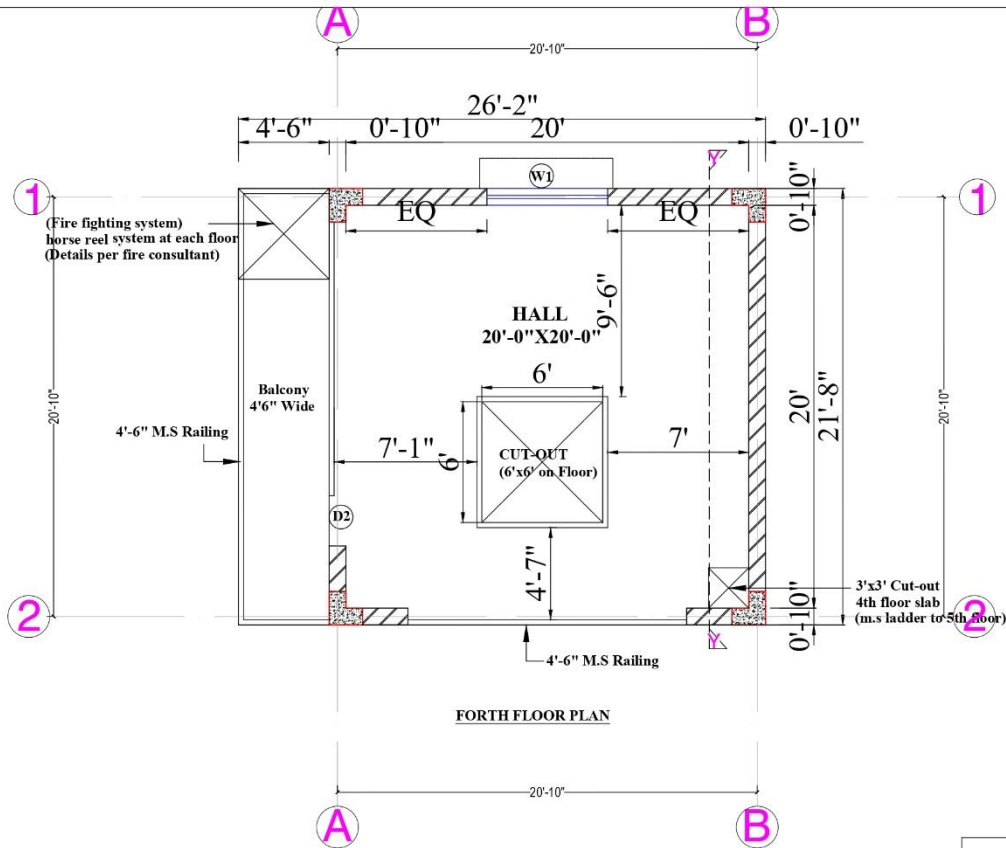
SUNIL KUMAR SINHA CHIEF ENGR.

VENAY KUMAR DEPUTY CHIEF ENGR.

T.A. TO SE-II







#### SCHEDULE OF DOORS & WINDOWS

SL. NO.	TYPE	WIDTH	HEIGHT	NO. OF	LEVEL	DESCRIPTION
1	D	3'-6"	8'-6"	0.0	8'-6"	DOOR TO HALL FROM CORRIDOR
2	D1	3'-6"	7'-0"	0.0	7'-0"	DOOR TO HALL FROM CORRIDOR
3	D2	2'-6"	7'-0"	0.0	7'-0"	DOOR TO HALL FROM CORRIDOR
4	W	6'-0"	2'-4"	8'-4"	8'-4"	WALL GLAZED WINDOW IN HALL
5	W1	5'-0"	6'-0"	2'-4"	8'-4"	WALL GLAZED WINDOW IN HALL
6	W2	3'-0"	4'-0"	4'-4"	8'-4"	DOOR
7	W3	2'-6"	8'-0"	2'-4"	8'-4"	DOOR
7	W4	2'-6"	3'-6"	5'-4"	8'-4"	DOOR



**BIHAR POLICE BUILDINGS  
CONSTRUCTION CORPORATION,  
PATNA-14**

PROPOSED PLAN OF RESCUE TOWER FOR FIRE  
TRAINING CENTER DISTT. PATNA

#### FORTH FLOOR PLAN

DRG. NO.	REV. NO.	DATE
1/1	1/1	

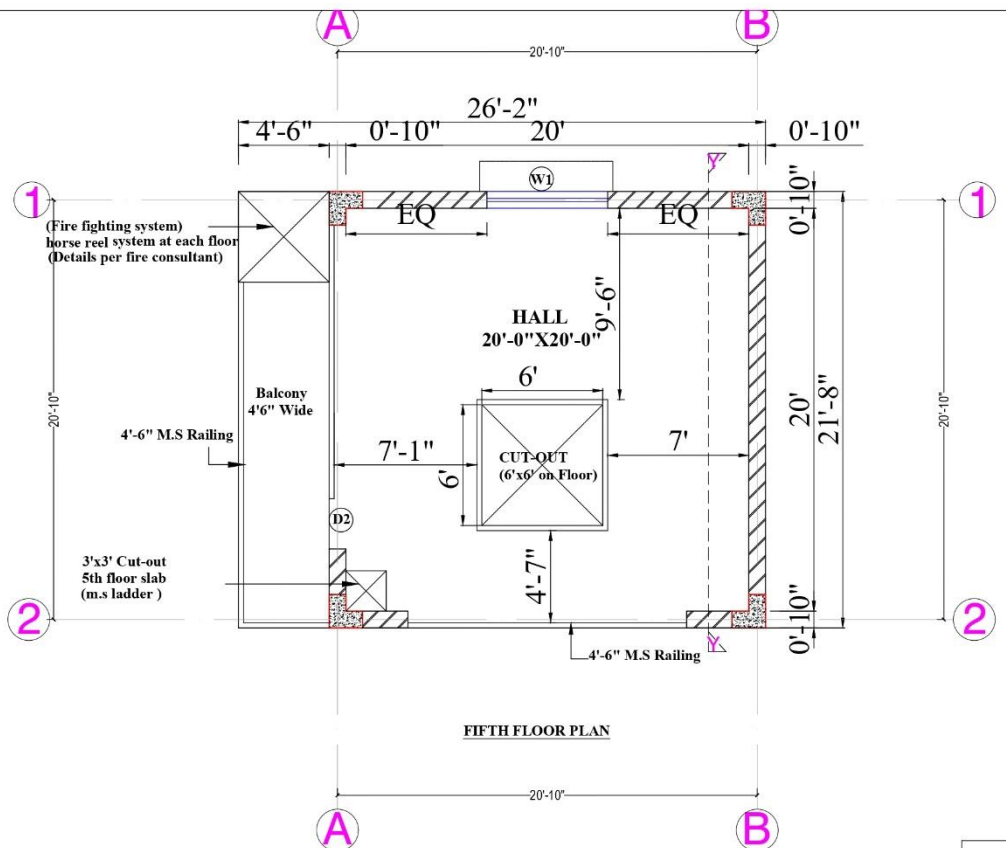
RANU KUMARI  
ARCH. DRAUGHTSMAN

AREN KUMAR  
ASST. ARCHITECT

ACHRESH NANDAN  
ARCHITECT

SUNIL KUMAR SENHA  
CHIEF ENGINEER

VENAT KUMAR  
DEPUTY CHIEF



#### SCHEDULE OF DOORS & WINDOWS

SL. NO.	TYPE	WIDTH	HEIGHT	NO. OF	LEVEL	DESCRIPTION
1	D	3'-6"	8'-6"	0.0	8'-6"	DOOR TO HALL FROM CORRIDOR
2	D1	3'-6"	7'-0"	0.0	7'-0"	DOOR TO HALL FROM CORRIDOR
3	D2	2'-6"	7'-0"	0.0	7'-0"	DOOR TO HALL FROM CORRIDOR
4	W	6'-0"	2'-4"	8'-4"	8'-4"	WALL GLAZED WINDOW IN HALL
5	W1	5'-0"	6'-0"	2'-4"	8'-4"	WALL GLAZED WINDOW IN HALL
6	W2	3'-0"	4'-0"	4'-4"	8'-4"	DOOR
7	W3	2'-6"	8'-0"	2'-4"	8'-4"	DOOR
7	W4	2'-6"	3'-6"	5'-4"	8'-4"	DOOR



**BIHAR POLICE BUILDINGS  
CONSTRUCTION CORPORATION,  
PATNA-14**

PROPOSED PLAN OF RESCUE TOWER FOR FIRE  
TRAINING CENTER DISTT. PATNA

#### FIFTH FLOOR PLAN

DRG. NO.	REV. NO.	DATE
1/1	1/1	

RANU KUMARI  
ARCH. DRAUGHTSMAN

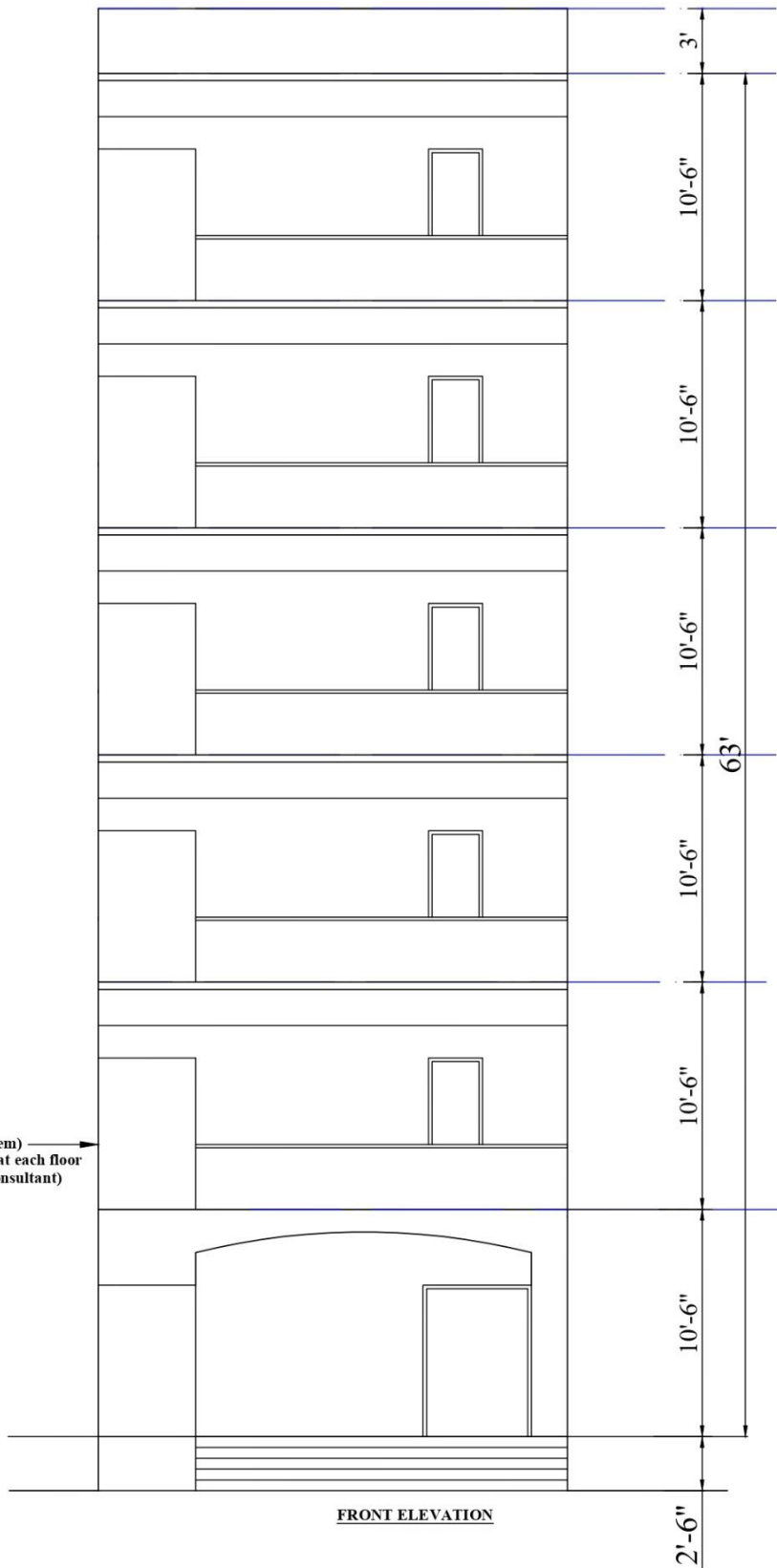
AREN KUMAR  
ASST. ARCHITECT

ACHRESH NANDAN  
ARCHITECT

SUNIL KUMAR SENHA  
CHIEF ENGINEER

VENAT KUMAR  
DEPUTY CHIEF

(Fire fighting system)  
horse reel system at each floor  
(Details per fire consultant)



BIHAR POLICE BUILDINGS  
CONSTRUCTION CORPORATION,  
PATNA-14

Sheet Title

PROPOSED PLAN OF RESCUE TOWER FOR FIRE  
TRAINING CENTER DISTT-PATNA.

Sheet Title

FRONT ELEVATION

DRG NO:

SRL NO:

Sheet No -

1/1

DATE:

RANJU KUMARI  
ARC. DRAUGHTSMAN

ARUN KUMAR  
AST. ARCHITECT

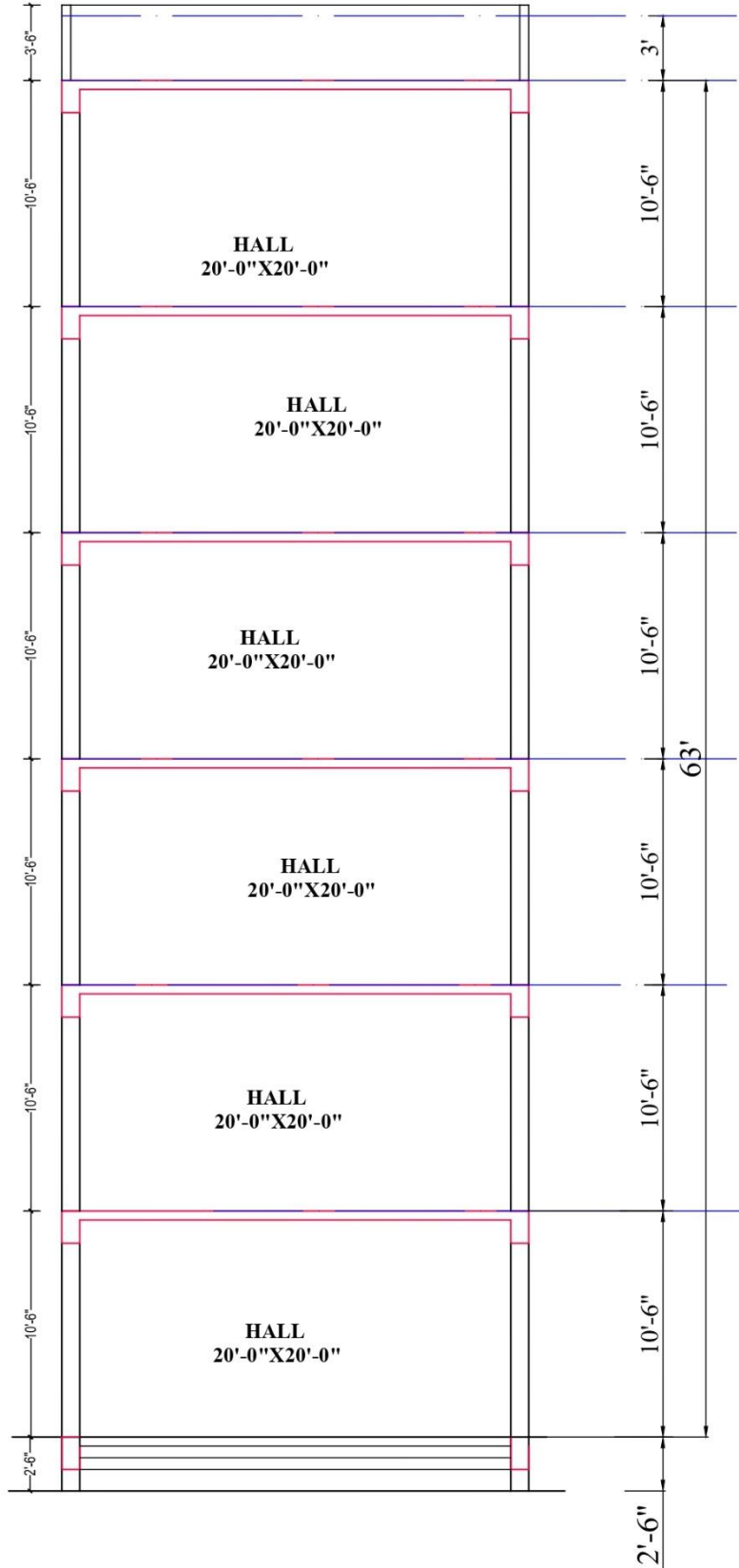
ACHINSH NAGAN  
ARCHITECT


T.A. TO SE-II

SE-I-II

SUNIL KUMAR SINHA  
CHIEF ENGINEER

YUNAY KUMAR  
DG. CEM. C. MD.

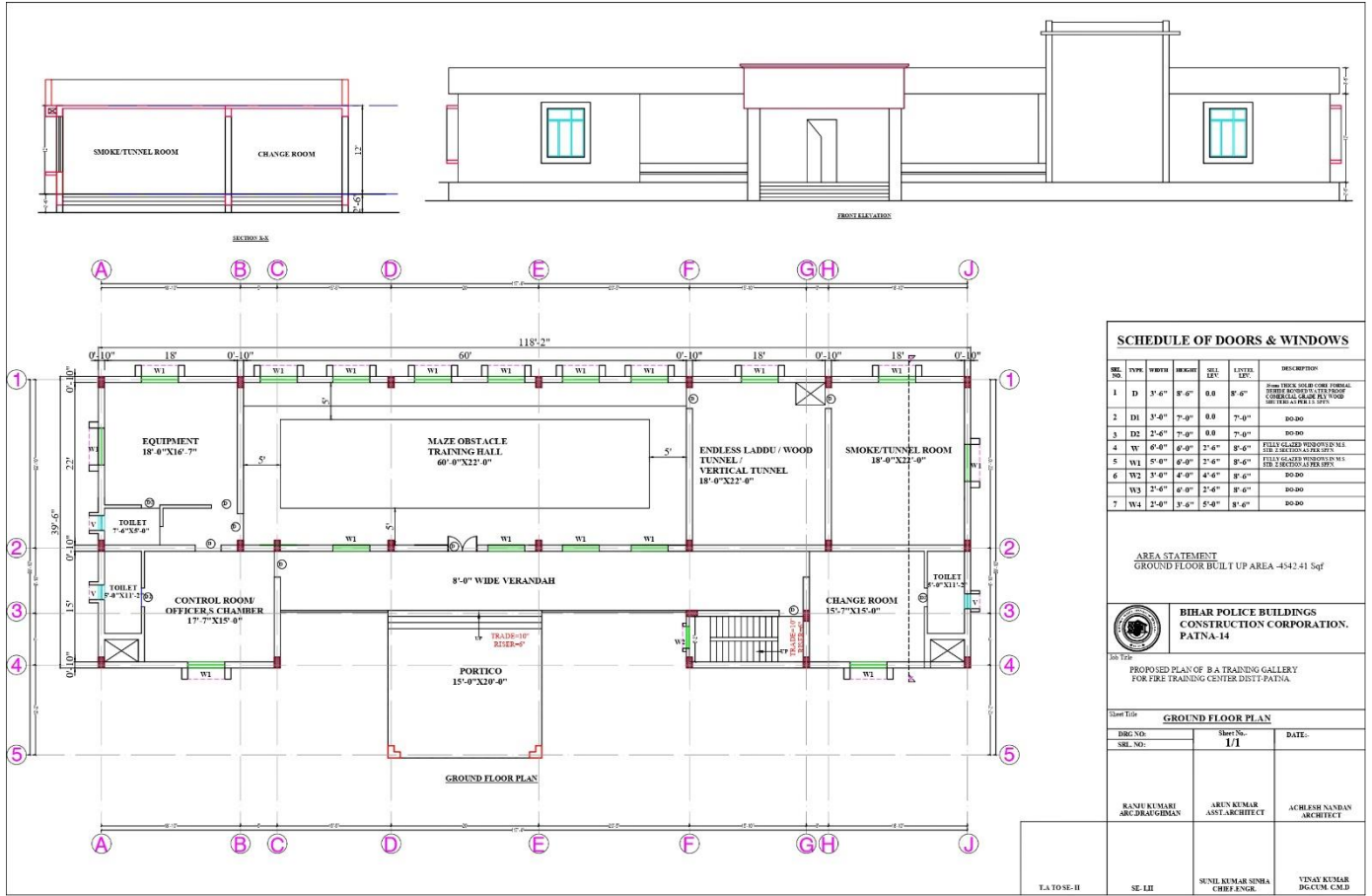


 <b>BIHAR POLICE BUILDINGS CONSTRUCTION CORPORATION, PATNA-14</b>		
Sheet Title <b>PROPOSED PLAN OF RESCUE TOWER FOR FIRE TRAINING CENTER DISTT-PATNA.</b>		
Sheet No. <b>SECTION Y-Y</b>		
DRG NO. SRL NO.	Sheet No - <b>1/1</b>	DATE:-
RANJU KUMARI ARC. DRAUGHTSMAN	ARUN KUMAR ASST. ARCHITECT	ACHYESH NANDAN ARCHITECT
T.A TO SE-II	SE-I-II	SUNIL KUMAR SINHA CHIEF ENGINEER
		VINAY KUMAR DG. CEM. C MD

## Finishing\_Schedule\_ Change room & Visitor Gallery

SL. NO.	COMMON AREAS	FLOOR FINISH	SKIRTING/ DADO FINISH	WALL FINISH	CEILING
1	All ramps, Parking, Portico	Kota flooring with GSB layers with appropriate load taking capacity / VDF	Same as flooring upto 500mm	Acrylic emulsion paint	Acrylic emulsion paint
2	Entrance steps, Verandah, Entrance foyer, Reception area	18mm thk. Pre-polished granite flooring (nosing as required)	Same as flooring upto 150mm for entrance steps; Pre-polished granite upto 1000mm for foyer and reception (molding as required)	Acrylic emulsion paint	Calcium silicate false ceiling with gypsum board on edge as per design with cove lighting
3	Main staircase	18mm thk. Single piece granite stone in flooring in treads & Risers (nosing as required)	Pre-polished granite upto 1000mm (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
4	All internal areas	600x600mm Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm	Acrylic emulsion paint	Acrylic emulsion paint
5	All other rooms	600x600mm Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm in rooms; Same as flooring upto 1000mm in Passage (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
6	All toilets	300x300mm rectified matt finish ceramic tiles in floor, 18mm thk. Black granite for toilet counters	Gloss finish Ceramic tiles 600x300 upto ceiling	Acrylic emulsion paint	Acrylic emulsion paint
8	Drinking water counter & dado	18mm thk. Granite flooring	Pre-polished granite upto 600mm ht. above counter slab (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint

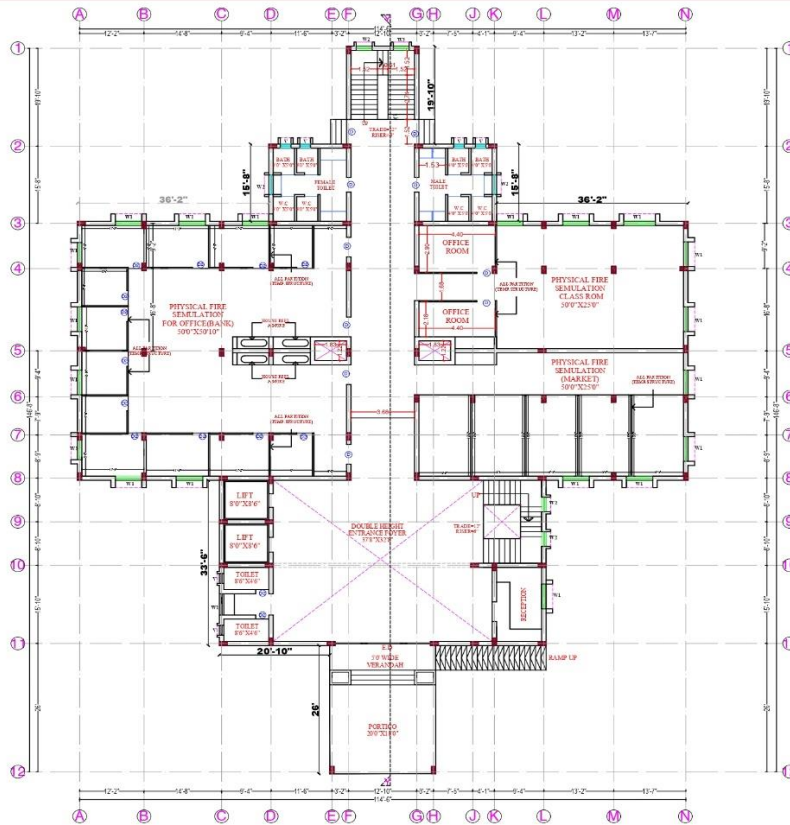




### Finishing\_Schedule\_ B.A. Training Gallery

SL. NO.	COMMON AREAS	FLOOR FINISH	SKIRTING/ DADO FINISH	WALL FINISH	CEILING
1	All ramps, Parking, Portico	18mm thk. Pre-polished granite flooring (nosing as required)	Same as flooring upto 500mm	Acrylic emulsion paint	Acrylic emulsion paint
2	Entrance steps, Verandah, Entrance foyer, Reception area	18mm thk. Pre-polished granite flooring (nosing as required)	Same as flooring upto 150mm for entrance steps; Pre-polished granite upto 1000mm for foyer and reception (molding as required)	Acrylic emulsion paint	Calcium silicate false ceiling with gypsum board on edge as per design with cove lighting
3	Main staircase	18mm thk. Single piece granite stone in flooring in treads & Risers (nosing as required)	Pre-polished granite upto 1000mm (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
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5	All other rooms	600x600mm Polished Glazed vitrified tiles (PGVT)	Same as flooring upto 150mm in rooms; Same as flooring upto 1000mm in Passage (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint
6	All toilets	300x300mm rectified matt finish ceramic tiles in floor, 18mm thk. Black granite for toilet counters	Gloss finish Ceramic tiles 600x300 upto ceiling	Acrylic emulsion paint	Acrylic emulsion paint
8	Drinking water counter & dado	18mm thk. Granite flooring	Pre-polished granite upto 600mm ht. above counter slab (molding as required)	Acrylic emulsion paint	Acrylic emulsion paint



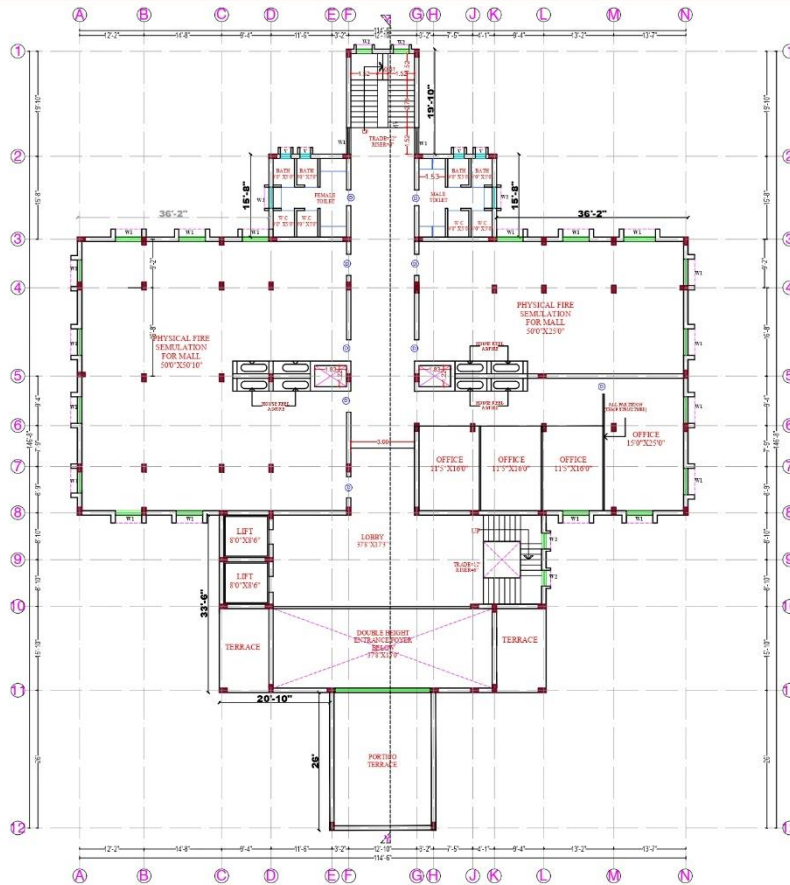


SCHEDULE OF DOORS & WINDOWS						
SER. NO.	TYPE	WIDTH	HEIGHT	FILL	LEVEL	DESCRIPTION
1	D	3'-6"	8'-6"	0.0	5'-6"	FROM TERRACE TO GROUND FLOOR. DOUBLE HEIGHT ENTRANCE TOWER. CORNER GLASS DOOR. SEE PLAN FOR 1:1. SFT.
2	D1	3'-0"	7'-0"	0.0	7'-0"	DOOR
3	D2	2'-6"	7'-0"	0.0	7'-0"	DOOR
4	W	6'-0"	6'-0"	2'-6"	8'-6"	FULL GLASS WINDOW 2 IN. SEE 1:1 SECTION AT PER. SFT.
5	W1	5'-0"	6'-0"	2'-6"	8'-6"	FULL GLASS WINDOW 1 IN. SEE 1:1 SECTION AT PER. SFT.
6	W2	3'-0"	4'-0"	4'-6"	8'-6"	DOOR
7	W3	2'-6"	6'-0"	2'-6"	8'-6"	DOOR
7	W4	2'-0"	3'-6"	5'-0"	8'-6"	DOOR

AREA CALCULATION	
GROUND FLOOR AREA	=9588.15 SFT
FIRST FLOOR AREA	=7478.49 SFT
SECOND FLOOR AREA	=8771.58 SFT
THIRD FLOOR AREA	=8771.58 SFT
TOTAL FLOOR AREA	=34609.80 SFT

APPROVED BY:-	
<div><div></div><div><div>BIHAR POLICE BUILDINGS CONSTRUCTION CORPORATION. PATNA-14</div></div></div>	
Job Title	
PROPOSED FIRE SIMULATION BUILDING	

Sheet Title			
GROUND FLOOR PLAN			
DRG NO.:-	DATE:-	Sheet No.:-	NORTH
SRL NO.:-	SCALE:-		
MD. DANISH DRAFTSMAN	ARUN KUMAR ASST. ARCHITECT	ACHALESH NANDAN ARCHITECT	
S.E-1 & S.E-2	CHIEF ENGR.	VINAY KUMAR D.G. CUM. C.M.D	




SCHEDULE OF DOORS & WINDOWS						
SER. NO.	TYPE	WIDTH	HEIGHT	FILL	LEVEL	DESCRIPTION
1	D	3'-6"	8'-6"	0.0	8'-6"	FROM TERRACE TO GROUND FLOOR. DOUBLE HEIGHT ENTRANCE TOWER. CORNER GLASS DOOR. SEE PLAN FOR 1:1 SFT.
2	D1	3'-0"	7'-0"	0.0	7'-0"	DOOR
3	D2	2'-6"	7'-0"	0.0	7'-0"	DOOR
4	W	6'-0"	6'-0"	2'-6"	8'-6"	FULLY GLAZED WINDOW 2 IN. SEE 1:1 SECTION AT PER. SFT.
5	W1	5'-0"	6'-0"	2'-6"	8'-6"	FULLY GLAZED WINDOW 1 IN. SEE 1:1 SECTION AT PER. SFT.
6	W2	3'-0"	4'-0"	4'-6"	8'-6"	DOOR
7	W3	2'-6"	6'-0"	2'-6"	8'-6"	DOOR
7	W4	2'-0"	3'-6"	5'-0"	8'-6"	DOOR

AREA CALCULATION

GROUND FLOOR AREA	=9588.15 SFT
FIRST FLOOR AREA	=7478.49 SFT
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TOTAL FLOOR AREA	=34609.80 SFT

APPROVED BY:-



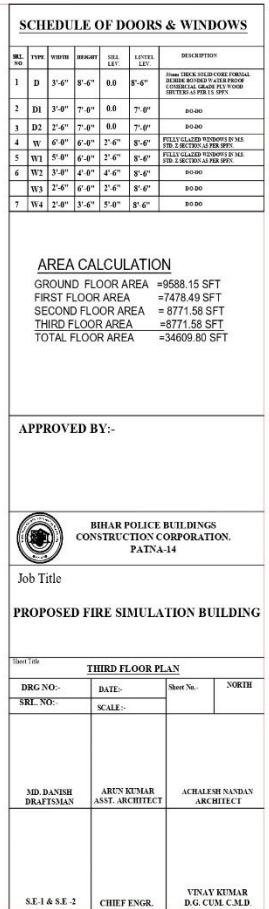
BIHAR POLICE BUILDINGS  
CONSTRUCTION CORPORATION.  
PATNA 14

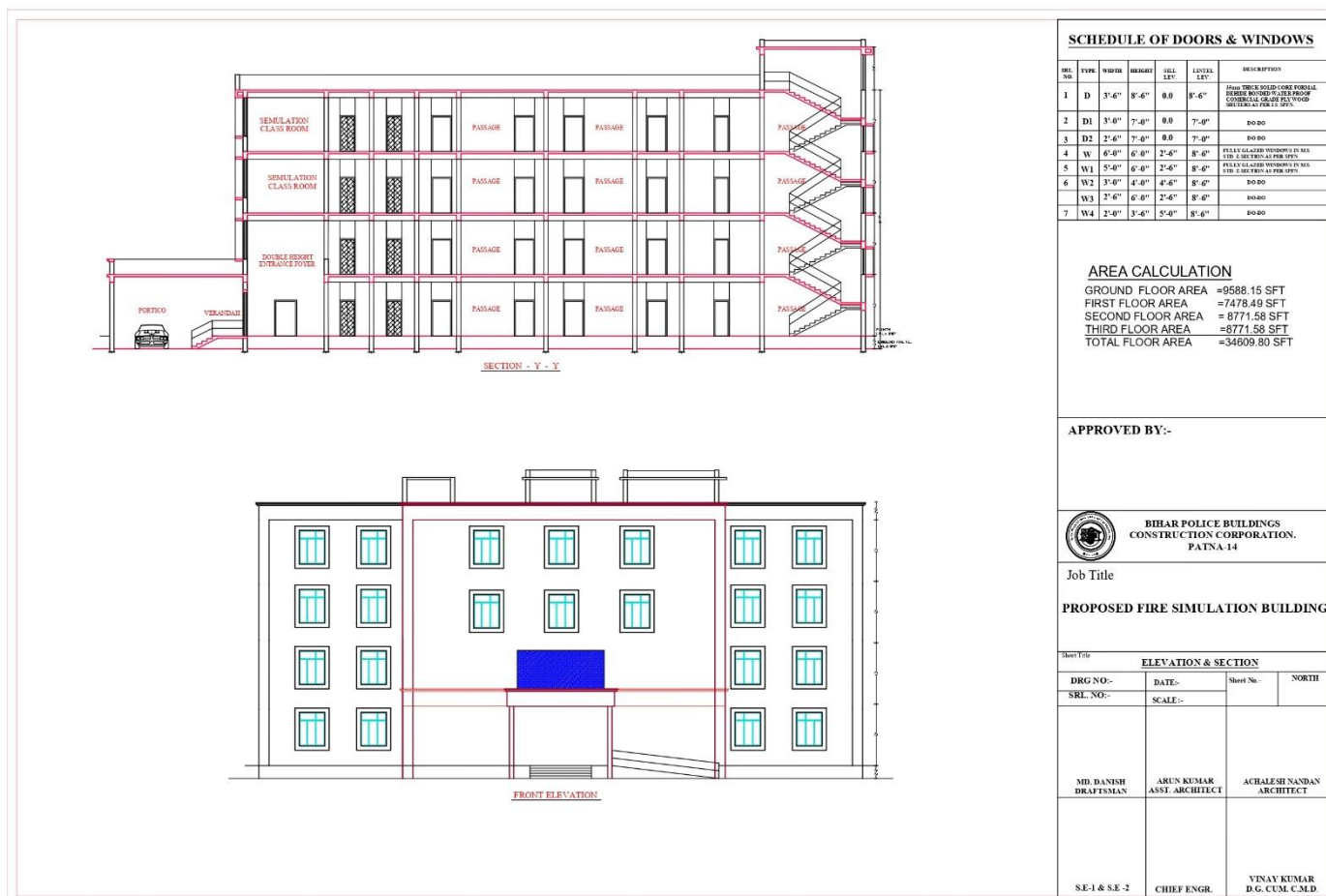
Job Title

PROPOSED FIRE SIMULATION BUILDING

Sheet Title			
DRG NO.:-	DATE:-	Sheet No.:-	NORTH
SRL NO.:-	SCALE:-		
MD. DANISH DRAFTSMAN	ARUN KUMAR ASST. ARCHITECT	ACHALESH NANDAN ARCHITECT	
S.E-1 & S.E-2	CHIEF ENGR.	VINAY KUMAR D.G. CUM. C.M.D	







## Note:

1. Acrylic emulsion paint is to be applied over 1mm white cement based putty (over plastered surface). All paints should be low VOC.
2. Columns/ wall corners in stilted parking should have rubber/ PVC protection.
3. False ceiling can be provided additionally in any room/ space as per design; to be approved

## Finishing\_Schedule\_ Simulation Building

SL. NO.	COMMON AREAS	FLOOR FINISH	SKIRTING/ DADO FINISH	WALL FINISH	CEILING
1	All ramps, Parking, Portico	Kota flooring	Same as flooring upto 1200mm	Acrylic emulsion paint	Acrylic emulsion paint
2	Entrance steps, Verandah, Entrance foyer, Reception area	Kota flooring	Same as flooring upto 1200mm	Acrylic emulsion paint	Calcium silicate false ceiling with gypsum board on edge as per design with cove lighting
3	Main staircase	Kota flooring	Same as flooring upto 1200mm	Acrylic emulsion paint	Acrylic emulsion paint
4	All internal areas	Kota flooring	Same as flooring upto 1200mm	Acrylic emulsion paint	Acrylic emulsion paint
5	All other rooms	Kota flooring	Same as flooring upto 1200mm	Acrylic emulsion paint	Acrylic emulsion paint
6	All toilets	Kota flooring	Same as flooring upto 1200mm	Acrylic emulsion paint	Acrylic emulsion paint
8	Drinking water counter & dado	Kota flooring	Same as flooring upto 1200mm	Acrylic emulsion paint	Acrylic emulsion paint

by BSPCCL.

4. Any changes in finishing or specifications due to green building certification requirement shall be made with approval of BSPCCL. No additional payment shall be made for such changes.
5. Generic requirement even though not mentioned in DBR for proper functionality of building has to be adhered.

**Mock-up for approval:** One typical room of every building is to be finished first as a mock-up for approval of BSPCCL and The Department Architect. The finishing works of rest of the spaces are to be executed only once the model mock-up room is approved physically.

Additional note:

1. Columns/ wall corners in parking should have rubber/ PVC protection/Provision of Corner Guard.

## **9. Phasing of construction**

Since this is an existing campus, the construction work is to be undertaken in such a manner that the existing campus remains functional through the entire duration of construction. A construction management plan is to be submitted by the EPC agency indicating the phase wise construction so that the existing structures may be retained/ placed in the open ground area as per the master plan. Once the buildings are constructed and available for relocation of Bihar Fire Training Academy personnel, the structures may be dismantled on basis of client's requirement and the open spaces can be developed. Existing trees of the site are to be relocated along roads. The cost for shifting and relocation of existing infrastructure is to be borne by the EPC agency.

The tender landscape plan is to be referred for transplantation of existing trees getting disturbed due to new buildings and roads, and also for new plantation.

## **10. Gate & Boundary Wall As per Approved Drawings.**

Boundary wall is to be provided upto 3m height from the FGL with concertina wiring above if found. No extra payment shall be done for this.

## **11. Expansion Joint Specification**

Providing and fixing and all height and depth between beam and column and foundation 50 mm thick filler board (BIS : 1838- part 3) (Supreme DURABoard HD 100 or equivalent), having minimum density  $100 \pm 10$  kg/cum, Non staining with maximum water absorption 0.080kg/sq.mt when tested as per ASTM-D 3575 including cost and conveyance of all materials, cutting and placing to the required size, labour charges, Sundries ,wastage etc. at all levels complete as per drawings and as direction and satisfaction of engineer in-charge. The filler board will become one side of the shuttering while the expansion joint is being created or has to be pressed inside the expansion joint cavity if the slab construction is already over. Providing and laying EPDM-150 grade (175 Width) having elongation at break 120% Tensile strength at break 5.5 kg/cm<sup>2</sup>, 3 mm thick to cover the expansion joint gap appropriate epoxy adhesive should

be used to bond EPDM with the concrete surface as directed by Engineer- in- charge as per manufacture's specification at all heights and fastener. Cladding - Providing and fixing 2 mm thick Aluminium sheet to cover EPDM. The MS sheet should have round shape slots for fastener at one end and oval shape slots at another end for free movement of MS sheet covering

## **12. Waterproofing**

### Terrace (As per DSR item 22.7)

Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc. consisting of following operations:

(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.

(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand )admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.

(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS: 2645 and approved by Engineer-in-charge.

(d) Finishing the surface with 20 mm thick joint less cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.

(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge :

1. With average thickness of 120 mm and minimum thickness at khurra as 65 mm.

Top coat to be finished with Acrylic based flexible elastomeric liquid applied waterproofing with high SRI. (Dr. Fixit NewCoat Cool or equivalent)

#### Toilet Sunken Slab (As per DSR item 22.3)

Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of:

1. 1st course of applying cement slurry @ 4.4 kg/sqm mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface.
2. 2nd course of 20 mm cement plaster 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.
3. 3rd course of applying blown or residual bitumen applied hot at 1.7 kg. per sqm of area.
4. 4th course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 kg/sqm).

## **16. Elevation**

The proposed 3D views of all buildings shall be generated by the EPC consultant appointed by the contractor. The EPC architect shall prepare working drawings as per the 3D views using the following item specifications. The final shades, textures & materials are to be approved by the Primary Architect & BSPCCL after sampling at site, prior to execution.

## 18. Roofing Sheet Specifications

### 18.1. Polycarbonate sheet

Wherever covering of light weighted sheet is required, polycarbonate sheet with following specifications shall be followed.

Supply and Installation of 16mm thick (No. of cell) Minimum 6 cell polycarbonate panels having U value of 2.1 W/m<sup>2</sup>K as per EN 16153 & EN ISO 10077-2. Panel shall be 900mm wide with standing seam on both sides for better wind uplift. Panels shall have minimum six layers with truss bridge design for higher flexibility and strength. The panels should work on angular daylighting concept with translucent and opaque combination, for better thermal insulations and diffusion of light especially **with white and clear combination** designed for tropical regions & shading throughout the day for better ambient temperature below the roof. The system shall be secured using suitable connectors with double tooth grip lock locking mechanism and fixed on purlin (will be paid separately in other item) with trapezoid SS fasteners & 3 numbers self-drilling screws holding the base of the standing seam offering best stability with pull out load of min 7000N tested as per ISO 6892-1998 and IS 1608-2005. Panels must satisfy dart drop impact test as per IS 14443-97 shall show no sign of breakage which have been exposed to UV for 500 hours (min) as per ASTM G155. Panels shall have yellowness index of not more than 15 units as per ASTM D 1925 when tested on sample exposed to UV for 500 hours as per ASTM G155. Panel shall be closed at the end with additional Aluminium U profile as required. All Aluminium profiles should be factory finished or mill finished. Panel shall be fixed over MS structural steel / MS purlin conforming to the detail technical specifications as per approved architectural drawings.

### 18.2. Coverup/Roof Covering for parking sheds.

Providing and fixing colour coated trapezoidal ‘‘LYSAGHT TRIMDEK 1072’’ Profile sheet manufactured by Tata BlueScope steel having nominal 1072 mm supply width nominal 28 mm deep ribs with subtle square fluting in the five pan at nominal 203 mm centre- to- centre. The end rib shall be designed for anti-capillary action, to avoid any seepage of water through the lateral overlap. The feed material shall be made out of COLORBOND Steel. The base metal shall be of High Tensile Steel of 550 MPa minimum yield strength with hot dip metallic coating of Zinc-Aluminum alloy (55% Aluminum, 43.5% Zinc and 1.5% Silicon) AZ150, of minimum 150 Gms./ Sq.mtr total of both side as per ASTM A792 or AS 1397. The Base Metal Thickness shall be 0.45 mm (BMT) and the Total Coating Thickness (TCT) shall be 0.50 mm. The Paint shall be Super Durable Polyester paint system, factory painted and oven backed with a total coated thickness of 35microns (nominal) as per AS/NZS 2728 Type 4. The exterior side shall comprise of 20 microns (Nominal) paint over 5 Microns (Nominal) corrosion inhibitive solvent based primer. The interior side shall comprise of 5 Microns (nominal) reverse / back coat over 5 microns (nominal) corrosion inhibitive solvent based primer.

The pigments shall be in- organic ceramics based pigments. There shall be no lead content in the paint system. The sheet shall be fixed over a layer of Glass wool 50 mm thick using self-drilling /self-tapping screws of size (5.5 x 55 mm) with EPDM seal, complete up to any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.

Using -Fasteners: Self Drilling Screw with nominal 40-micron zinc coated, Hex head, as per AS 3566-2002 Class 3 fasteners of approved make (Boustead or equivalent) with EPDM washer. (12- 14x55)

## **19. Signages**

All building names to be mentioned in steel letters of a suitable size and position. To be illuminated at night, using façade lighting.

Directional signages to be placed at road turnings. (Reflective Signages for night visibility)

Site Map to be placed near entrance gate.

Names of all rooms in public buildings to be mentioned in acrylic letters on doors.

Signages should be mentioned in Hindi, English and Braille.

Content of all signages to be approved by Bihar Fire Training Academy. All signages as per approved drawings.

## **20. Standards and Guidelines to be followed by the EPC Contractor**

- All relevant statutory approvals (Environmental Clearance, Municipal Approval, Fire Approval & any other as required) to be taken prior to execution
- BCD EPC SOP to be followed for approval of all drawings.
- NBCS & Bihar Building Byelaws 2014 (amended in 2022) to be followed.
- CPWD Civil Specifications 2019 (Volume 1 and 2) to be followed for all civil works
- CPWD handbook on barrier free and accessibility to be followed for universal accessibility
- Generic requirement even though not mentioned in DBR for proper functionality of building has to be adhered.
- Net zero campus.

approved\_materials\_makes\_list

Sl. No.	Description of Item	Approved Makes/Manufacturers
	CEMENT/WHITE CEMENT	
1	Ordinary Portland Cement or PSC with fly ash content	Ultratech, Lafarge, A.C.C., Dalmia
2	White Cement	J.K., Birla, Dalmia
3	Wall Putty	Birla Putty, White JK White
	STEEL	
4	Reinforcement Steel (TMT- Fe500)	SAIL, Tata Tiscon, Vizag, Shyam
5	Structural Steel/M.S Tube	TATA, JSW Steel Ltd., SAIL, Jindal Steel & Power Ltd.
	ROOFING SHEETS	
6	Galvalume Sheet	Tata Bluescope Lysaght, Everest, JSW
7	Polycarbonate Sheets	DPI Daylighting, Lexan, Tuflite
	ACC BLOCKS	
8	AAC Block	Aerocon, Builtech, Krrish
9	AAC Mortar	Ferrouscrete, Krrish
	CONSTRUCTION CHEMICALS	
10	Waterproofing Chemical/ Admixtures/Pigments/Adhesives	Fosroc, Sika, Dr. Fixit , BASF.
11	Rebaring Chemical	Hilti, Wurth, Fischer
12	Fire Sealant	Hilti, Wurth, Fischer
13	Silicon Sealants	Dow Corning, Wacker, GE Silicon
	ANTI TERMITE	
14	AntiTermite Treatment	Pest Control Services, Pest Con India, Orion Pest Control
	FLOORING/TILES	
15	Ceramic Tiles	Kajaria, Somany, RAK, Orient, Asian
16	Vitrified tiles	Kajaria, Somany, RAK, Orient , Asian
17	Composite marble/granite/engineered stone	Asian, Johnson, Kalinga
18	Engineered Wood/ Wooden Laminate Flooring	Armstrong, Greenlam Mikasa, Action Tesa
	DOORS & WINDOWS	
19	uPVC Sections Doors and Windows	Fenesta, Veka India Pvt Ltd, Kommerling, PSP
20	Aluminium Extrusions/Structurals	Hindalco, Jindal, Indalco
21	Aluminium Louvers	Hunter Douglas, Hindalco
22	Flush Door Shutter	Greenply, Century, Green Panel, Kit Ply
23	PVC Door Frame & Shutter	Rajshri, Sintex
24	Fully Glazed Fire Rated Doors Frame and Shutter	Navair, Sukriti, Saint Gobain
25	WPC	Alstone, Ecoste, Floresta, Polyline



## approved\_materials\_makes\_list-1

25	WPC	Alstone, Ecoste, Floresta, Polyline
	HARDWARE	
26	Locks/ Accessories/ Hardware for doors	Dorma, Godrej, Dorset
27	SS Hardware Fittings	Dorma, Godrej, Dorset
28	SS Spider Fittings	Dorma, Dorset, Ozone
29	Fastners	Hilti India Pvt Ltd, Fischer India, Wuerth
	GLASS	
30	Glass	Saint Gobain, AIS, Modi Guard
31	Fire Rated Glass	Saint Gobain, AIS, Modi Guard
	PAINTS	
32	Paints	Asian Paint, Berger Paint, Nerolac Paints
33	Cement/ Acrylic/ Resin based texture Paints	Bakelite Hylam (Heritage), Asian Paint, NCL (Altek)
34	Cement based paint	Berger, Seacem, Snowcem
35	Cement Primer	Asian Paints, Nerolac, Berger
	BOARDS/ LAMINATE/ VENEER	
36	PreLaminated Particle Board/ Plywood/BlockBoard, Soft Board (All Wood Work)	Greenply, Century, GreenPanel, Kit Ply
37	Decorative Veneered Ply	Green Ply, Archid Ply, GreenPanel, Kit Ply
38	Decorative Laminates	Greenlam, Century Laminates Co, Merino, Kit Ply
39	MDF Board	Archid, GreenPly, Century
40	Gypsum Board	Saint Gobain, Boral, Lafarge
41	Moisture Resistant Board	Saint Gobain, USG Boral, Merino
	FALSE CEILING	
42	False Ceiling	Armstrong, Saint Gobain, Aerolite, USG Boral
	FAÇADE	
43	Aluminium Composite Panel	Viva, Alstone, Timex, Century, green, greenply
44	GRC	Unistone, Everest Composite
	MISC.	
45	Furnitures	Durian, Godrej, Featherlite, nilkamal
46	Window Blinds	Vista, Hunter Douglas, Marvel
47	Toilet Cubicles	Merino, Greenlam, Dorma
48	Modular Kitchen	Godrej, Kutchina, Hafele