PISES New Campus – Basis of Design (BoD)

Version 0.4 – Integrated Site Feasibility + Cost + Code Framework

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00. Document Control

0.1 Purpose of Document

This Basis of Design (BoD) establishes the governing technical, spatial, regulatory, and cost framework for the proposed PISES New Campus located on the Al Safa plot (25,000 m²) in Riyadh, Kingdom of Saudi Arabia.

The BoD serves the following purposes:

• Define the planning logic for a 7,000-student campus structured across Primary, Boys, Girls, and Shared facilities.
• Document all assumptions related to capacity, classroom sizing, circulation, site utilization, and zoning.
• Establish the code compliance framework under applicable Saudi Building Code (SBC) requirements and referenced international standards.
• Define the NET-to-GROSS methodology and resulting Built-Up Area (BUA).
• Provide a structured cost planning and BOQ framework (Core & Shell, First Fix, Second Fix, Third Fix).
• Enable consultants to proceed with schematic design aligned with SMC-approved parameters.
• Provide a defensible baseline for authority submissions, funding review, and contractor engagement.

This document is not a detailed design submission. It is a controlled strategic document that defines boundaries within which design consultants shall operate.

0.2 Project Overview

The proposed development consists of a purpose-built educational campus designed to accommodate approximately 7,000 students.

Key parameters:

• Plot Area: 25,000 m²
• Configuration: 3 floors above grade + 1 basement
• Educational Structure: - Primary (Nursery–Grade 4, including Daycare) - Boys Wing (Grades 2–12) - Girls Wing (Grades 2–12) - Shared Facilities (Administration, Sports, Auditorium, Dining, Library) • Planning Model: NET-first calculation with category-based grossing factors
• HVAC Strategy: Central Chilled Water system (baseline) with VRF alternative option
• Finish Level: Mid institutional standard
• ICT: Included in main contract delivery

• Auditorium AV: Included as specialist line item
• Kitchen Equipment: Optional package

The campus is designed as a compact, high-efficiency urban institutional model due to site constraints.

0.3 Definitions & Abbreviations

BoD – Basis of Design
BUA – Built-Up Area (Gross Floor Area)
NET Area – Usable internal room area excluding walls and circulation
GROSS Area – Total constructed area including structure, circulation, services
C&S – Core & Shell
1st Fix – Rough-in building services installation
2nd Fix – Visible fittings and final service connections
3rd Fix – FF&E, specialist equipment, commissioning
SBC – Saudi Building Code
TBC – Tatweer Buildings Company
SEN – Special Educational Needs
SMC – School Management Committee
HVAC – Heating, Ventilation & Air Conditioning
CHW – Chilled Water System
VRF – Variable Refrigerant Flow
ELV – Extra Low Voltage Systems
FF&E – Furniture, Fixtures & Equipment

0.4 Document Governance & Approvals

This BoD is issued under the authority of the School Management Committee (SMC).

Approval hierarchy:

1. Technical Review – Appointed Planning / Engineering Advisor
2. Financial Review – SMC Finance Subcommittee
3. Governance Approval – SMC Chair & Executive Committee
4. Embassy Oversight (if applicable under governance framework)

Any modification to capacity, area standards, cost assumptions, or site strategy shall require formal revision control.

Design consultants shall not deviate from parameters stated herein without written SMC approval.

0.5 Revision History

Version 0.1 – Initial NET-first space program draft
Version 0.2 – Inclusion of cost framework and fix-stage definitions
Version 0.3 – Integration of site feasibility and density assessment
Version 0.4 – Consolidated governance, cost, site, and code structure

All future revisions shall document: • Section modified
• Nature of change
• Reason for change
• Approval authority

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01. Project Summary

1.1 Site Description – Al Safa Plot (25,000 m²)

The proposed campus is located on a 25,000 m² urban plot in Al Safa, Riyadh. The site is assumed to be a rectangular institutional parcel subject to municipal zoning controls, Civil Defense requirements, and Tatweer Buildings Company (TBC) Category A standards applicable to major cities.

Key site characteristics (planning assumptions at BoD stage):

• Total Plot Area: 25,000 m²
• Urban context with surrounding vehicular access
• High-density educational model required
• Fire tender access required along building perimeter
• Separate vehicular segregation for buses and private vehicles

Due to the constrained plot size relative to target capacity (7,000 students), the campus is designed as a compact vertical institutional model.

1.2 Target Capacity – 7,000 Students

The campus is planned to accommodate approximately 7,000 students.

The student distribution model at this stage follows the existing institutional distribution logic (normal distribution basis). Updated enrollment projections will be incorporated upon formal approval by SMC.

Capacity planning assumptions:

• Maximum students per classroom: 25 (TBC baseline)
• Gender separation applied from Grade 2 onwards

• Co-education model for Nursery–Grade 1
• Classroom counts scaled proportionally from baseline distribution

Estimated classroom count (7,000 student model): ~304 classrooms.

1.3 Educational Structure

The campus is structured into four operational zones:

1. Primary Zone
2. Nursery
3. Kindergarten
4. Grades 1–4
5. Daycare
6. Boys Wing
7. Grades 2–12
8. Girls Wing
9. Grades 2–12
10. Shared Facilities
11. Administration
12. Library / Learning Commons
13. Dining Hall & Kitchen
14. Auditorium
15. Indoor Sports Hall
16. Specialist Labs

The zoning model supports operational separation while enabling shared academic resources.

1.4 Building Configuration – 3 Floors + 1 Basement

The development consists of:

• Three floors above grade
• One basement level

Basement allocation includes:

• Staff parking
• MEP plant rooms
• Water storage & fire tanks
• Service rooms
• Storage areas

Above-grade floors accommodate academic, administrative, and shared educational functions.

Preliminary built-up area (BUA) target: approximately 52,400 m².

Indicative footprint (if evenly distributed across three floors): ~17,500 m² per level.

This results in approximately 70% site coverage, which classifies the campus as a high-density institutional model.

1.5 Design Philosophy – NET First Planning Model

The campus is designed using a NET-first planning methodology.

Step 1 – Calculate NET room areas by educational function.
Step 2 – Apply category-based grossing factors to derive BUA.
Step 3 – Validate circulation, vertical cores, and life safety requirements.
Step 4 – Conduct site feasibility analysis including drop-off, sports, and assembly areas.

This approach ensures:

• Transparent area calculation
• Defensible regulatory compliance
• Cost clarity at early stage
• Efficient design progression into schematic stage

1.6 Density & Urban Campus Model Statement

Given the 25,000 m² plot size relative to the 7,000-student capacity, the campus shall operate as a compact urban model with:

• Structured bus stacking strategy
• Staggered dismissal scheduling
• Shared-use assembly and sports areas
• Basement-based service consolidation
• Optimized circulation cores

Future expansion potential is limited within the current site boundary and must be considered in long-term strategic planning.

END OF SECTION 01

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02. Codes, Standards & References

2.1 Regulatory Hierarchy

The design and development of the PISES New Campus shall comply with the applicable regulatory framework of the Kingdom of Saudi Arabia. In case of conflict between standards, the following hierarchy shall apply:

1. Saudi Building Code (SBC) – Mandatory
2. Civil Defense Regulations – Mandatory
3. Municipal / Balady Requirements – Mandatory
4. Tatweer Buildings Company (TBC) Category A Educational Guidelines
5. Referenced International Codes adopted within SBC (IBC, NFPA, ICC standards)
6. International Best Practice (where not defined by local code)

Where multiple standards apply, the more stringent requirement shall govern.

2.2 Saudi Building Code (SBC)

The project shall comply with the latest approved edition of the Saudi Building Code and its relevant volumes applicable to educational facilities (Group E Occupancy).

Applicable SBC sections include, but are not limited to:

• SBC 201 – General Building Code (Occupancy Classification, Means of Egress, Height & Area Limits)
• SBC 801 – Fire Protection Systems
• SBC Accessibility Requirements
• SBC Electrical Code
• SBC Mechanical Code
• SBC Plumbing Code

Specific compliance items to be addressed in later sections of this BoD:

• Occupant load calculations
• Exit width and number of exits
• Travel distance limitations
• Fire compartmentation

• Stair pressurization and smoke control
• Accessibility routes and provisions

2.3 Civil Defense Requirements

All fire and life safety systems shall be designed to meet Saudi Civil Defense approval requirements.

This includes:

• Fire alarm and voice evacuation systems
• Automatic sprinkler systems
• Fire hose reels and extinguishers
• Fire command center
• Emergency lighting and exit signage
• Fire-rated construction and compartmentation
• Fire tender access around building perimeter

Civil Defense approval is mandatory prior to occupancy certification.

2.4 Tatweer Buildings Company (TBC) – Category A Guidelines

As the project is located in Riyadh, it falls under Category A (Major Cities) planning guidance.

TBC standards inform:

• Area per student benchmarks
• Classroom sizing references
• Educational complex calculation method
• Planning assumptions for multi-level institutions

Where TBC requirements differ from SBC or Civil Defense, the more stringent requirement shall be adopted.

2.5 International References Adopted by SBC

Where SBC references international codes, the following shall be consulted:

• International Building Code (IBC)
• International Fire Code (IFC)
• NFPA standards referenced within SBC
• ICC accessibility guidelines (as referenced)

These references shall be used for interpretation only when not explicitly defined within SBC.

2.6 Accessibility & Inclusion Standards

The campus shall comply with applicable Saudi accessibility requirements.

Design provisions include:

- Barrier-free entrances
- Accessible toilet facilities
- Elevator access to all occupied levels
- Tactile and visual signage
- Accessible parking spaces

SEN planning shall additionally consider international best-practice inclusion standards where local codes are silent.

2.7 Traffic & Municipal Requirements

The project shall comply with municipal planning requirements, including:

- Traffic impact assessment (if mandated)
- Bus stacking and drop-off geometry
- Parking requirements
- Building setbacks and height restrictions
- Stormwater management (if applicable)

Approval through Balady and related municipal platforms shall be required prior to construction permit issuance.

2.8 Bibliography & Citation Format

All technical references within this BoD shall be cited using the following format:

[Code / Standard Name, Edition Year, Section / Table Number]

Example: [SBC 201, 20XX, Section 1006 – Means of Egress]

Extracted requirements shall not be reproduced verbatim unless legally permitted; instead, compliance intent shall be described.

END OF SECTION 02

03. Student Capacity & Classroom Planning Model

3.1 Student Distribution Methodology

The planning model for the proposed campus is based on a target population of approximately 7,000 students.

At this stage, student distribution follows the existing institutional distribution model (normal distribution logic used in prior baseline planning documents). Final enrollment projections shall be incorporated upon formal confirmation by SMC.

The planning model assumes:

• Co-educational structure for Nursery–Grade 1
• Gender separation from Grade 2 onwards
• Even distribution across academic years unless otherwise defined
• Maximum classroom capacity based on TBC planning baseline

This model ensures scalability while preserving operational separation requirements.

3.2 Maximum Students per Classroom

The adopted planning baseline is:

• Maximum 25 students per classroom (TBC reference baseline)

For operational flexibility and educational quality, classroom loading shall not exceed this threshold. Any future increase in capacity per classroom shall require formal review of area standards, life safety calculations, and pedagogical impact.

3.3 Classroom Count Calculation – 7,000 Students

Total target students: 7,000
Maximum students per classroom: 25

Required number of classrooms:

7,000 ÷ 25 = 280 classrooms (minimum theoretical)

Allowing for operational buffer, subject specialization, and gender separation distribution:

Adopted planning classroom count ≈ 300–304 classrooms

This aligns with proportional scaling from the previous 10,000-student baseline model.

3.4 Area per Student – TBC vs Adopted Standard

Tatweer Category A planning references provide area-per-student benchmarks by educational level.

The BoD adopts the following principles:

• Kindergarten and Early Years shall comply with higher area-per-student benchmarks due to safety and activity-based learning requirements.
• Primary and Secondary classrooms shall meet or exceed minimum area-per-student standards while maintaining functional furniture layouts.
• Where multiple benchmarks apply, the more conservative (higher) value shall govern.

At BoD stage, classroom net areas are derived from:

• Standard classroom module sizing
• Student count per room
• Functional furniture layouts

Final confirmation of area-per-student compliance shall be validated during schematic design.

3.5 Classroom Typology Matrix

The campus classroom typologies include:

• Early Years Classrooms (Nursery / KG)
• Primary Classrooms (Grades 1–4)
• Intermediate Classrooms (Grades 5–9)
• Secondary Classrooms (Grades 10–12)

Each typology shall be documented in the Architectural Standards section with:

• Net area
• Furniture layout
• Storage allocation
• Teaching wall configuration
• Services interface points

3.6 Specialist Space Allocation

In addition to standard classrooms, the following specialist learning spaces are included within the program:

• Science laboratories (with prep and storage)
• ICT laboratories
• Art and maker spaces
• Music and performance rooms
• Library / learning commons
• SEN support rooms

Specialist space quantities are derived from curriculum delivery requirements and shared scheduling models.

3.7 Gender Separation Logic

Operational separation is applied as follows:

• Nursery–Grade 1: Co-educational
• Grades 2–12: Separate Boys and Girls wings

Shared facilities (e.g., auditorium, sports hall, library) shall be scheduled and zoned to maintain separation where required.

Circulation, vertical cores, and entry points shall be designed to support controlled separation without duplication of major shared infrastructure.

3.8 Staffing & Support Space Ratios

Staffing ratios shall be determined in accordance with institutional policy and curriculum structure.

Planning allowances include:

• Faculty workrooms
• Department offices
• Administrative offices
• Clinic and student wellbeing rooms
• Security and operations rooms

Detailed staff count assumptions shall be incorporated during schematic design phase.

END OF SECTION 03

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04. Space Program (NET Areas)

4.1 Space Programming Methodology

The space program is developed using a NET-first calculation model. Each room is measured at usable internal area (excluding structural walls and major circulation). Gross area is derived later using defined multipliers (see Section 05).

Room quantities are based on the 7,000-student planning model and classroom distribution logic defined in Section 03.

4.2 Early Years (Nursery, KG, Daycare)

This zone includes:

• Nursery classrooms
• Kindergarten classrooms
• Daycare rooms
• Secure play areas (external)
• Child-sized toilets (attached or clustered)
• Nap/rest rooms (Daycare)
• Early learning resource rooms
• Early years administration / reception desk

Design principles:

• Larger area-per-student allocation
• Direct access to secure outdoor play
• Controlled access points
• Visual supervision

4.3 Primary Zone (Grades 1–4)

Includes:

• General classrooms
• Small group breakout rooms
• Resource room
• Shared activity space

• Clustered toilets
• Faculty workspace

Primary is designed as a semi-contained learning community within the campus.

4.4 Secondary Zones (Grades 5–12 – Boys & Girls)

Each wing includes:

• General classrooms
• Science laboratories (Physics, Chemistry, Biology)
• Laboratory prep rooms
• ICT laboratories
• Art & maker studios
• Music / performance room
• Faculty offices
• Student common space

Shared facilities are centrally located to minimize duplication.

4.5 Specialist Learning Spaces

The campus provides curriculum-driven specialist areas including:

• Science labs with chemical-resistant finishes
• ICT labs with structured cabling density
• Art rooms with wash sinks and storage
• Maker space with enhanced power capacity
• Music rooms with acoustic treatment

Quantities are based on shared scheduling assumptions.

4.6 SEN & Student Support

Dedicated inclusion spaces include:

• Resource rooms
• Assessment rooms
• Therapy rooms
• Counselling rooms
• Calm-down / sensory rooms

These spaces follow international best practice where local codes are silent.

4.7 Administration & Academic Offices

Includes:

• Main reception & waiting
• Principal / leadership offices
• Finance & HR offices
• Admissions office
• Records & storage
• Board room
• Exam cell
• Security office

Public-facing and secure zones are separated.

4.8 Staff Facilities

Includes:

• Faculty lounges
• Department workrooms
• Professional development room
• Lockers & staff toilets

Staff areas are distributed to reduce corridor congestion.

4.9 Dining & Food Services

Includes:

• Main dining hall
• Servery counters
• Kitchen (optional equipment package)
• Cold storage
• Dry storage
• Dishwashing area

Dining capacity assumes staggered lunch scheduling.

4.10 Auditorium & Multipurpose Hall

Includes:

- Stage area
- Seating zone
- Backstage rooms
- Control room
- AV equipment (line item)

Capacity and acoustic performance to be validated in schematic design.

4.11 Indoor Sports & Physical Education

Includes:

- Indoor sports hall
- Changing rooms
- Equipment storage
- Staff office

Outdoor sports fields allocated separately in site planning section.

4.12 Operational & Back-of-House Spaces

Includes:

- IT server room (MDF)
- IDF rooms per floor
- Electrical rooms
- Mechanical rooms
- Fire command center
- Maintenance workshop
- Storage rooms
- Transport office

Operational efficiency and maintenance access are critical planning drivers.

END OF SECTION 04

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05. NET to GROSS Methodology

5.1 NET Area Definition

For the purpose of this Basis of Design, NET Area is defined as the usable internal floor area of a space measured to the internal face of enclosing walls, excluding:

• Structural columns and shear walls
• Main vertical shafts
• Primary circulation corridors
• Staircases and lift cores
• Major MEP plant rooms (unless directly serving the space)

All space programming in Section 04 is based on NET area calculations.

5.2 Grossing Strategy

Gross Floor Area (GFA / BUA) is derived by applying category-based grossing factors to the NET program.

Grossing factors account for:

• Horizontal circulation (corridors, lobbies)
• Vertical circulation (stairs, lifts, cores)
• Structural footprint (columns, walls)
• Toilets (if not included in net clusters)
• Service rooms and shafts
• Wall thickness and envelope build-up

The project adopts differentiated multipliers by space type rather than a single blanket factor.

5.3 Adopted Grossing Factors

The following planning multipliers are applied at BoD stage:

Academic / Administrative / SEN spaces: NET × 1.45

High-service areas (Labs / Kitchen / Auditorium / Sports): NET × 1.65

Operational / Service-heavy spaces: NET × 1.55

These factors reflect a compact high-density urban campus model and shall be validated during schematic design.

5.4 Circulation Allocation

Based on preliminary modeling, circulation components are estimated as:

• Horizontal circulation: 18–25% of GFA
• Vertical cores: 6–10% of GFA

Exact values shall be confirmed through egress calculations (Section 08).

Due to the 7,000-student capacity, peak movement modeling shall influence final corridor widths and stair count.

5.5 Basement Allocation

The basement level is allocated primarily for:

• Staff parking
• MEP plant (chillers, pumps, tanks)
• Electrical rooms
• Storage
• Fire water tanks

Basement area is included within total BUA but excluded from site coverage calculation.

Basement construction cost is expected to be higher per m^2 than above-grade due to excavation, waterproofing, and structural demands.

5.6 Preliminary BUA Summary

Based on the NET program (~33,983 m^2) and adopted multipliers:

Estimated Built-Up Area (BUA): ~52,400 m^2

Distribution (approximate):

• Primary Zone: ~14,700 m^2
• Boys Wing: ~13,100 m^2
• Girls Wing: ~13,100 m^2
• Shared Facilities: ~11,500 m^2

These figures are planning-level estimates and shall be refined during schematic design.

5.7 Density Classification

With a 25,000 m² plot and ~52,400 m² BUA:

Indicative footprint (3 floors): ~17,500 m² per level
Site coverage: ~70%

This classifies the campus as a high-density institutional model requiring careful site and traffic planning.

END OF SECTION 05

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06. Site Feasibility & Land Utilization

6.1 Site Area Overview

Total Plot Area: 25,000 m²
Total Estimated BUA: ~52,400 m²
Estimated Building Footprint (3 floors): ~17,500 m²
Indicative Site Coverage: ~70%

The campus is classified as a high-density urban institutional model.

6.2 Building Footprint Analysis

Assuming three equal floor plates:

52,400 m² ÷ 3 floors ≈ 17,467 m² per floor

Rounded planning footprint: ~17,500 m²

Remaining open site area: 25,000 – 17,500 = 7,500 m² (before allocation to circulation & fire access)

This requires careful multi-use planning of external spaces.

6.3 Fire Access & Emergency Perimeter

Fire tender access shall be provided around the building perimeter in accordance with Civil Defense requirements.

Planning allowance:

• Fire access lanes and maneuvering zones: 3,000–4,000 m²

This area may overlap with drop-off and hardscape zones but cannot be obstructed.

6.4 Bus Drop-off & Stacking Analysis

Assumption:

• 40% of students use school buses = 2,800 students
• 50 students per bus
• Approximate buses required: 56

Bus stacking, maneuvering, and segregation area:

Estimated land requirement: 2,500–3,500 m²

Separate entry and exit loops are recommended to prevent congestion.

6.5 Parent Drop-off & Traffic Flow

Private vehicle drop-off shall be separated from bus traffic.

Estimated land allocation: 2,000–3,000 m²

Traffic engineering study may be required by municipality.

Staggered dismissal scheduling is strongly recommended to reduce congestion.

6.6 Outdoor Sports Allocation

Minimum outdoor allocation target:

• Multi-use pitch (7-a-side equivalent)
• 2–3 courts
• KG shaded play areas

Estimated allocation: 5,000–6,500 m²

Sports and emergency assembly zones may overlap where permitted.

6.7 Emergency Assembly Area

Emergency assembly requirement (planning assumption):

0.8–1.0 m^2 per occupant
7,000 occupants ≈ 5,600–7,000 m^2

Assembly may utilize sports fields and hardscape courts where safe and compliant.

6.8 Site Constraint Summary

Based on current modeling:

• Academic footprint feasible but dense
• Drop-off congestion risk: High
• Sports flexibility: Moderate
• Expansion potential: Limited

Mitigation strategies:

• Compact vertical blocks
• Shared-use external spaces
• Basement parking for staff
• Staggered scheduling
• Efficient traffic engineering design

END OF SECTION 06

07. Circulation & Movement Strategy

7.1 Zoning Framework

The campus circulation strategy is structured around four primary operational zones:

• Primary Zone (Nursery–Grade 4)
• Boys Wing (Grades 2–12)
• Girls Wing (Grades 2–12)
• Shared Facilities Zone

Each zone shall have controlled access points and defined vertical circulation cores.

The design intent is to minimize cross-traffic while preserving efficient shared facility access.

7.2 Peak Arrival & Dismissal Modelling

The circulation model must accommodate peak loads during:

- Morning arrival
- Recess transitions
- Lunch waves
- Afternoon dismissal

Planning considerations:

- Staggered dismissal times between Primary, Boys, and Girls
- Separate bus and parent drop-off systems
- Clear wayfinding and controlled access points
- Adequate queuing space within shaded external zones

Movement modelling shall be validated during schematic design using occupancy-based calculations.

7.3 Horizontal Circulation Strategy

Corridor design principles:

- Primary corridors sized for peak class change periods
- Secondary corridors within classroom clusters
- Visual supervision where required (especially Early Years)
- Avoidance of dead-end corridors beyond permissible code limits

Preliminary planning width targets (to be validated by egress calculations):

- Main corridors: 2.4–3.0 m
- Secondary corridors: 2.0–2.4 m

Final widths shall be governed by SBC egress requirements.

7.4 Vertical Circulation (Stairs & Lifts)

Given the 7,000-student capacity, multiple stair cores are required.

Planning principles:

• Minimum two remote stairs per zone
• Additional stairs based on occupant load calculations
• Pressurized stairs where required
• Elevator access to all occupied levels for accessibility compliance

Stair widths and quantities shall be calculated based on occupant load and exit width factors under SBC.

7.5 Accessibility Routes

The campus shall provide barrier-free movement including:

• Accessible main entrances
• Elevator access to upper floors
• Accessible toilet facilities
• Ramps where level changes occur
• Tactile signage where required

Accessible routes shall connect all primary functions including classrooms, library, auditorium, dining, and sports hall.

7.6 Security & Supervision Strategy

Movement design shall incorporate:

• Controlled entry points
• Security screening at main access
• Visual monitoring of high-traffic areas
• Separation of visitor and student flows
• Integration of CCTV and access control systems

Security zoning shall not compromise life safety egress paths.

7.7 Circulation Risk Assessment

Primary circulation risks identified at BoD stage:

• Congestion during dismissal
• Vertical core overload if under-sized
• Corridor crowding during peak transitions
• Overlapping access to shared facilities

Mitigation measures:

• Adequate stair core redundancy
• Staggered scheduling
• Wide main corridors
• Distributed shared facilities

END OF SECTION 07

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08. Life Safety & Code Compliance

8.1 Occupancy Classification

The primary occupancy classification for the campus shall be Educational (Group E) in accordance with SBC 201.

Additional mixed occupancies may include:

• Assembly areas (Auditorium, Multipurpose Hall)
• Business occupancy (Administrative offices)
• Storage / Utility areas

Where mixed occupancies occur, compliance shall be evaluated in accordance with SBC mixed-use provisions, including separation requirements and fire-resistance ratings.

8.2 Occupant Load Methodology

Occupant load shall be calculated using the factors prescribed in SBC 201 for each functional space type.

Key principles:

• Classroom occupant load based on area factor per person
• Assembly spaces calculated using concentrated and unconcentrated seating factors
• Dining areas calculated per prescribed occupancy factor
• Corridors, stairs, and lobbies sized based on total occupant discharge requirements

Total building occupant load shall be validated against the 7,000-student planning assumption.

8.3 Means of Egress Strategy

Means of egress shall comply with SBC requirements for:

• Minimum number of exits per floor
• Exit separation distance
• Maximum travel distance
• Dead-end corridor limitations
• Exit discharge to public way

Each wing (Primary, Boys, Girls, Shared) shall be evaluated independently for compliance.

8.4 Exit Width & Stair Sizing

Exit width calculations shall be based on:

• Total occupant load per floor
• Prescribed width factors for stairs and level components
• Distribution of occupants across available exits

Multiple stair cores shall be distributed to avoid concentration of occupant load in a single vertical shaft.

Final stair count and width shall be confirmed during schematic design following detailed occupant calculations.

8.5 Travel Distance & Common Path of Egress

Maximum travel distances and common path limitations shall be evaluated in accordance with SBC.

Corridor lengths and classroom cluster layouts shall be arranged to avoid excessive dead ends.

Fire-rated corridor construction shall be applied where required.

8.6 Fire Compartmentation Strategy

The campus shall implement a compartmentation strategy that includes:

• Fire-rated stair enclosures
• Separation between major occupancy types
• Fire-rated shafts and service risers
• Horizontal separation between high-risk areas (kitchen, labs, plant rooms)

Fire resistance ratings shall be determined in accordance with SBC construction type and building height classification.

8.7 Fire Protection Systems

The building shall include:

• Automatic sprinkler system (as required by occupancy and height)
• Fire alarm and voice evacuation system
• Emergency lighting and exit signage
• Fire hose reels and extinguishers
• Fire command center

System design shall be coordinated with Civil Defense requirements.

8.8 Smoke Control & Pressurization

Where required by SBC and building height, the following systems shall be incorporated:

• Stair pressurization systems
• Smoke extraction for large assembly spaces
• Mechanical ventilation interlocks

Detailed smoke control design shall be undertaken at schematic stage.

8.9 Life Safety Risk Assessment

Preliminary risk considerations for a 7,000-student campus include:

• High occupant density during dismissal
• Vertical evacuation loads
• Assembly occupancy surges
• Kitchen and laboratory fire hazards

Mitigation strategies include:

• Distributed stair cores
• Zoned evacuation strategy
• Clear exit signage and redundancy
• Early detection systems

END OF SECTION 08

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09. Architectural Standards

9.1 Design Intent

The architectural standards for the PISES New Campus shall reflect a durable, mid-level institutional finish appropriate for a high-density educational environment in Riyadh.

The design shall prioritize:

• Durability and lifecycle performance
• Ease of maintenance
• Thermal performance for hot climate
• Acoustic comfort for learning
• Safe and clear wayfinding
• Institutional identity and cohesive architectural language

9.2 Standard Classroom Template

Each standard classroom shall include:

• Net area consistent with adopted area-per-student standard
• Clear ceiling height: 2.9–3.0 m
• Teaching wall with writable surface
• Data and power points at teacher location
• Student desk layout with adequate circulation between rows
• Storage cabinets or shelving
• Acoustic ceiling tiles (NRC ≥ 0.70 target)
• 500 lux average illumination level

Furniture layout shall ensure clear egress paths and accessibility compliance.

9.3 Finish Standards (Mid-Level Institutional)

Flooring

• Classrooms: Commercial homogeneous vinyl (3–4 mm)
• Labs: Chemical-resistant vinyl
• Corridors: Heavy-duty vinyl or porcelain tile
• Toilets: Full ceramic tiling with anti-slip rating
• Admin: Vinyl or carpet tiles (acoustic)

Walls

• Washable acrylic paint finish
• Tiled splashbacks in wet areas
• Impact protection where required

Ceilings

• Mineral fiber acoustic ceiling tiles
• Gypsum board ceilings in select areas

Doors

• Solid core laminate doors
• Vision panels where required
• Panic hardware where mandated by code

9.4 Acoustic Standards

Acoustic comfort is critical for educational performance.

Target design criteria:

• Classrooms: Reverberation time ≤ 0.6–0.8 seconds
• Acoustic ceiling NRC ≥ 0.70
• Isolation between adjacent classrooms
• Enhanced acoustic treatment in music and auditorium spaces

Detailed acoustic modeling shall be conducted at schematic stage.

9.5 Lighting Standards

Lighting design targets:

• Classrooms: 500 lux
• Corridors: 300 lux
• Labs: 500–750 lux depending on task
• Offices: 400 lux
• Auditorium: Zoned lighting with dimming control

LED fixtures shall be energy-efficient and DALI-ready for integration with BMS.

9.6 External Envelope & Shading

Given Riyadh climate conditions, façade design shall incorporate:

• Solar shading devices
• High-performance glazing
• Thermal insulation compliant with SBC energy provisions
• Durable external cladding materials

Solar control strategies shall reduce cooling loads and improve comfort.

9.7 Wayfinding & Identity

The campus shall incorporate:

• Clear signage strategy
• Distinct color coding for zones (Primary, Boys, Girls)
• Legible circulation paths
• Institutional branding integration

Wayfinding shall support both operational clarity and emergency evacuation.

END OF SECTION 09

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10. MEP Basis of Design

10.1 Mechanical Systems – HVAC Strategy

10.1.1 Baseline System (Adopted)

The primary HVAC strategy for the campus shall be a Central Chilled Water (CHW) System serving AHUs and FCUs distributed across the building.

System components include:

• Central chiller plant (basement or dedicated plant zone)
• Primary and secondary chilled water pumps
• Air Handling Units (AHUs) for large zones
• Fan Coil Units (FCUs) for classroom zoning
• Fresh air handling units with filtration suitable for Riyadh dust conditions
• BMS-integrated temperature control

Rationale:

• Lower long-term operating cost
• Better indoor air quality control
• Superior zoning capability for large campus
• Improved lifecycle durability

10.1.2 Alternative Option (Value Engineering)

A high-efficiency VRF (Variable Refrigerant Flow) system may be considered as an alternative option.

Pros: • Lower initial capital expenditure
• Flexible modular installation

Cons: • Higher lifecycle maintenance cost
• Outdoor unit placement challenges
• Less robust for large assembly areas

Final system selection shall be confirmed during detailed design following lifecycle cost analysis.

10.2 Ventilation & Indoor Air Quality

• Mechanical fresh air supply to classrooms and occupied spaces
• CO_2 monitoring where appropriate
• MERV-rated filtration suitable for desert climate
• Exhaust ventilation for toilets, kitchens, and labs

Design shall comply with SBC mechanical code requirements.

10.3 Electrical Systems

10.3.1 Power Distribution

• Main LV panel and sub-distribution boards
• Dedicated panels per wing
• Emergency power distribution
• Earthing and bonding system

10.3.2 Lighting

• LED fixtures throughout
• DALI-ready lighting control infrastructure
• Emergency lighting system

10.3.3 Backup Power

Provision for:

• Diesel generator (if required)
• UPS for critical systems (IT, fire alarm, security)

Final generator sizing shall be determined during load calculations.

10.4 ICT & ELV Systems

ICT systems are included within the main construction contract scope.

Infrastructure includes:

• Structured cabling system
• MDF (Main Distribution Frame)
• IDF rooms per floor
• Wi-Fi access points
• Network switches and racks
• CCTV system
• Access control system
• Public address & bell system

Active equipment commissioning shall be included in contractor scope.

10.5 Plumbing & Drainage

Systems include:

• Domestic water supply
• Hot water systems
• Soil and waste drainage
• Rainwater drainage
• Grease trap system (kitchen)
• Laboratory drainage where required

Water storage tanks shall be sized to comply with municipal and Civil Defense requirements.

10.6 Fire Protection Systems

The building shall include:

• Automatic sprinkler system (where mandated)
• Fire alarm and voice evacuation
• Fire hose reels
• Portable extinguishers
• Fire water tanks and pumps

System design shall comply with SBC and Civil Defense approval requirements.

10.7 Building Management System (BMS)

The campus shall include an integrated BMS system controlling:

• HVAC monitoring
• Lighting control (where applicable)
• Energy monitoring
• Alarm integration

BMS shall support long-term operational efficiency and energy management.

10.8 Energy & Sustainability Integration

Mechanical and electrical systems shall be designed to:

• Optimize cooling loads
• Reduce peak demand
• Enable solar PV integration (future-ready)
• Support energy monitoring and reporting

Detailed energy modeling shall be conducted during schematic design.

END OF SECTION 10

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11. Cost Plan & BOQ Framework

11.1 Cost Planning Methodology

The cost plan for the PISES New Campus is structured using a layered methodology aligned with construction delivery stages:

1. Core & Shell (C&S)
2. First Fix (Services Rough-In)
3. Second Fix (Fit-Off & Finishes)
4. Third Fix (FF&E + Specialist Systems + Commissioning)

This structure enables transparency in budgeting, value engineering, and phased procurement strategies.

All figures in this section represent planning-level budget estimates for feasibility and SMC approval purposes.

11.2 Core & Shell (C&S) Scope Definition

Core & Shell includes:

• Substructure (excavation, foundations, basement structure)
• Superstructure (columns, beams, slabs, stair cores)
• External envelope (façade, glazing, insulation, roofing)
• Primary vertical shafts
• Structural provisions for MEP systems
• Main plant room enclosures

Indicative planning allowance (Riyadh, multi-storey institutional):
SAR 2,600–3,200 per m² of GFA

11.3 First Fix Scope Definition

First Fix includes concealed building services installation:

• HVAC ducting and chilled water piping
• Electrical containment and conduits
• Plumbing rough-in
• Fire alarm and sprinkler pipework rough-in
• Data containment systems
• Builders work in connection (BWIC)

This stage prepares the building for final fit-out.

11.4 Second Fix Scope Definition

Second Fix includes visible fittings and system completion:

• Lighting fixtures
• Switches and socket outlets
• Diffusers and grilles
• Sanitary fixtures
• Door hardware
• Ceiling installation
• Final mechanical and electrical connections

Second Fix represents the completion of built-in architectural and MEP finishes.

11.5 Third Fix Scope Definition

Third Fix includes operational readiness elements:

• Classroom furniture
• Specialist lab benches and storage
• ICT active equipment
• Auditorium AV systems (line item)
• Kitchen equipment (optional package)
• Final commissioning and training
• As-built documentation and O&M manuals

This stage transitions the building from construction to operational status.

11.6 Wing-Level Cost Summary (Planning Estimate)

Based on approximately 52,400 m^2 BUA and mid-level institutional finish:

Primary Zone: ~SAR 69M
Boys Wing: ~SAR 62M
Girls Wing: ~SAR 62M
Shared Facilities: ~SAR 56M

Estimated Total Construction Cost (excluding land and fees):
~SAR 240M–260M (mid-scenario)

Professional fees, authority fees, and contingency (7–10%) shall be added separately.

11.7 Scenario Comparison

Scenario 1 – Code Minimum

• VRF HVAC
• Reduced finish specification
• Limited acoustic treatment
• Reduced assembly capacity

Estimated Range: SAR 205M–220M
Higher long-term operational cost

Scenario 2 – Mid-Level Institutional (Adopted Baseline)

• Central CHW HVAC
• Mid institutional finishes
• Full ICT integration
• Auditorium AV included
• Kitchen equipment optional

Estimated Range: SAR 240M–260M
Balanced CAPEX and OPEX

Scenario 3 – Enhanced Campus Model

• High-performance façade
• Expanded learning commons
• Advanced BMS & energy systems
• Premium acoustic treatments

Estimated Range: SAR 270M–295M

11.8 Value Engineering Strategy

11.8.1 Definition of Value Engineering (VE)

Value Engineering (VE) is a structured and systematic process used to optimize project cost without reducing functionality, safety, compliance, or long-term performance.

For the PISES New Campus, VE shall not be interpreted as "cost cutting."
It shall mean achieving the required educational performance, durability, and compliance at the most efficient lifecycle cost.

The objective is to balance:

• Capital Expenditure (CAPEX)
• Operational Expenditure (OPEX)
• Maintenance complexity
• Lifecycle durability
• Educational quality outcomes

11.8.2 VE Principles for PISES

The following principles shall govern all VE decisions:

1. Life safety systems shall not be reduced.
2. Accessibility provisions shall not be reduced.
3. Structural integrity shall not be compromised.
4. Educational space standards (area per student) shall not fall below adopted minimums.
5. Long-term operational cost must be evaluated before reducing CAPEX.

11.8.3 VE Target Areas (Permissible Optimization)

Value engineering may be applied to:

• HVAC system selection (CHW vs optimized VRF in limited zones)
• Façade material selection while maintaining thermal performance
• Structural grid rationalization to reduce column count
• Standardized classroom modules to reduce design repetition cost
• Phasing of non-critical shared facilities
• Selection of durable mid-range finishes instead of premium brands

Each VE proposal must be supported by:

• Cost comparison
• Lifecycle cost analysis
• Impact assessment on student experience
• Compliance verification

11.8.4 VE Risk Controls

Risks associated with improper VE include:

• Higher long-term maintenance costs
• Increased energy consumption
• Reduced acoustic comfort

• Premature material failure
• Future retrofit expenses

To mitigate these risks, all VE proposals shall be reviewed by:

• Project consultant team
• MEP specialist
• SMC technical subcommittee

Formal approval shall be documented before implementation.

11.8.5 VE Decision Matrix

Each VE proposal shall be evaluated against the following criteria:

1. Cost saving percentage
2. Lifecycle impact
3. Compliance impact
4. Educational impact
5. Maintenance complexity

Only proposals achieving a positive lifecycle balance without compromising safety or academic function shall be adopted.

END OF SECTION 11

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12. Phasing & Expansion Strategy

12.1 Strategic Intent

The PISES New Campus is planned for an ultimate capacity of 7,000 students.
This section defines whether full capacity is delivered in a single phase or through controlled modular expansion.

The phasing strategy must balance:

• Capital availability
• Construction timeline
• Enrollment projections
• Operational readiness
• Site density constraints

12.2 Phase 1 – Full Build Strategy (Option A)

Under this approach:

• Entire 7,000-student infrastructure is constructed in Phase 1
• All academic wings completed
• Shared facilities delivered at full scale
• Central plant sized for ultimate load

Advantages:

• Single construction disruption period
• Economies of scale in procurement
• No future structural retrofit
• Full compliance with long-term vision

Risks:

• Higher upfront capital requirement
• Early years under-utilization of some facilities

12.3 Phase 1 + Phase 2 Modular Strategy (Option B)

Under this approach:

Phase 1 capacity target: 4,500–5,000 students
Phase 2 expansion: 2,000–2,500 additional capacity

Phase 1 would include:

• Primary zone
• One full secondary wing
• Scaled shared facilities
• Central plant designed for future expansion

Phase 2 would include:

• Remaining academic wing
• Expanded assembly and sports facilities
• Additional classroom clusters

Advantages:

• Reduced initial CAPEX
• Demand-based growth
• Financial risk mitigation

Risks:

• Future construction disruption
• Higher total lifecycle cost due to remobilization
• Site logistics complexity during expansion

12.4 Infrastructure Pre-Provisioning Requirement

If phased delivery is adopted, Phase 1 must include:

• Oversized electrical infrastructure
• Plant space allowance
• Structural provisions for vertical or horizontal expansion
• Underground utility capacity sized for ultimate build-out

Failure to pre-provision significantly increases future cost.

12.5 Enrollment Sensitivity Analysis

The phasing decision shall consider:

• Current student distribution
• Projected annual growth rate
• Retention trends
• Gender distribution balance

Final decision shall be supported by updated enrollment projections from the existing campus.

12.6 Recommended Approach (Planning Stage)

At Basis of Design stage, the preferred strategy is:

• Structural and infrastructure design for full 7,000 capacity
• Evaluate financial viability of phased academic block delivery
• Avoid downsizing critical shared facilities

This approach preserves long-term flexibility while protecting the institutional vision.

END OF SECTION 12

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13. Risk Register & Governance Controls

13.1 Purpose

This section establishes a structured risk management and governance framework for the PISES New Campus project.

Given the scale (~SAR 240–260M) and stakeholder complexity (SMC, Embassy oversight, consultants, contractors), formal risk controls are mandatory.

The objective is to:

• Protect institutional capital
• Protect SMC decision makers
• Ensure regulatory compliance
• Maintain transparency and accountability
• Prevent scope creep and uncontrolled cost escalation

13.2 Primary Risk Categories

13.2.1 Financial Risks

• Cost overruns due to scope growth
• Underestimation of MEP plant requirements
• Inflation and material price volatility
• Incomplete VE lifecycle evaluation
• Delayed enrollment affecting revenue projections

Mitigation:

• Independent cost consultant review
• 7–10% contingency allowance
• Formal change control process
• Stage-gate approvals before tender

13.2.2 Regulatory & Approval Risks

• Delays in SBC compliance approvals
• Civil Defense design revisions

• Municipal traffic authority objections
• TBC category compliance issues

Mitigation:

• Early authority engagement
• Pre-submission compliance review
• Dedicated approvals tracker
• Third-party code consultant verification

13.2.3 Design & Technical Risks

• Undersized stair cores or corridors
• Insufficient HVAC plant sizing
• Acoustic performance shortfalls
• Structural grid inefficiencies
• Basement waterproofing risks

Mitigation:

• Independent peer review of schematic design
• Detailed load calculations before IFC stage
• Simulation modeling (energy, egress, traffic)

13.2.4 Operational Risks

• Traffic congestion during dismissal
• Underestimated maintenance staffing
• Energy cost escalation
• Future retrofit due to undersizing

Mitigation:

• Lifecycle OPEX modeling
• Facilities management input during design
• Phased commissioning and operational training

13.2.5 Governance & Procurement Risks

• Non-transparent contractor selection
• Conflict of interest concerns
• Inadequate documentation control
• Informal scope changes

Mitigation:

• Formal RFP and tender procedures
• Conflict of interest declarations
• Document control system (version tracked)
• Written SMC resolution for all major decisions

13.3 Change Management Protocol

All scope, cost, or schedule changes shall follow a structured process:

1. Written change proposal
2. Cost impact analysis
3. Lifecycle review
4. Consultant technical endorsement
5. SMC subcommittee review
6. Formal approval recorded in minutes

No verbal approvals shall be binding.

13.4 Decision Gate Structure

The project shall follow formal stage gates:

• Gate 1 – Basis of Design Approval
• Gate 2 – Concept Design Approval
• Gate 3 – Schematic Design Approval
• Gate 4 – IFC Approval & Tender Release
• Gate 5 – Contract Award Approval

Each gate requires documented SMC approval.

13.5 Independent Oversight Recommendation

Given project scale, the following is recommended:

• Independent cost consultant
• Independent code compliance review
• External technical advisor for major VE decisions

This protects the institution and individual SMC members from future audit or governance concerns.

13.6 Risk Monitoring Framework

A live Risk Register shall be maintained including:

• Risk description
• Probability (Low / Medium / High)
• Impact (Financial / Technical / Regulatory)
• Mitigation owner
• Status tracking

The Risk Register shall be reviewed monthly during active design and construction phases.

END OF SECTION 13

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14. Implementation Timeline & Delivery Strategy

14.1 Delivery Objectives

The implementation strategy for the PISES New Campus shall ensure:

• Regulatory compliance
• Cost control
• Quality assurance
• Minimal operational disruption
• Transparent governance reporting

The total project duration is expected to range between 30–36 months depending on phasing and authority approvals.

14.2 Project Stages Overview

Stage 1 – Basis of Design (Completed)

Duration: 2–3 months
Output: Approved BoD document and budget framework

Stage 2 – Concept Design

Duration: 3–4 months
Output: Site masterplan, block diagrams, preliminary elevations, authority pre-consultation

Stage 3 – Schematic Design

Duration: 4–6 months
Output: Detailed space layouts, structural grid, MEP strategy confirmation, updated cost plan

Authority coordination begins formally at this stage.

Stage 4 – Detailed Design / IFC

Duration: 4–5 months
Output: Construction-ready drawings, BOQ, technical specifications

Stage 5 – Tender & Contractor Appointment

Duration: 2–3 months
Output: Contractor selection, contract award, mobilization

Stage 6 – Construction Phase

Duration: 18–22 months (single phase full build)

Includes: • Civil works
• MEP installation
• Finishing
• Testing & commissioning

Stage 7 – Handover & Commissioning

Duration: 2–3 months
Output: Occupancy certification, Civil Defense approval, operational readiness

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14.3 Delivery Models Considered

Model A – Traditional Design-Bid-Build (Recommended Baseline)

• Consultant completes full design
• Competitive tender issued
• Contractor selected based on technical & financial evaluation

Advantages: • Greater cost transparency
• Stronger design control
• Clear governance structure

Model B – Design & Build (D&B)

• Contractor responsible for detailed design and execution

Advantages: • Faster delivery
• Single point of responsibility

Risks: • Reduced design control
• Potential cost ambiguity

Model C – Construction Management (CM)

• Multiple trade packages
• Construction manager oversight

Advantages: • Flexibility in procurement
• Potential cost optimization

Risks: • Higher governance complexity
• Greater management demand on SMC

14.4 Recommended Delivery Approach

At BoD stage, the preferred approach is:

• Traditional Design-Bid-Build
• Independent cost consultant oversight
• Formal stage-gate approvals
• Clear tender evaluation criteria

This approach aligns best with institutional governance and audit protection requirements.

14.5 Procurement Controls

Procurement framework shall include:

• Prequalification of contractors
• Technical scoring matrix
• Financial evaluation transparency
• Conflict of interest declarations
• Documented tender clarifications

Tender evaluation shall be recorded and archived.

14.6 Critical Path Considerations

The following elements are expected to influence timeline risk:

• Authority approvals
• Basement excavation duration
• Chiller plant procurement lead time
• Electrical transformer approvals
• Civil Defense inspection scheduling

Early engagement with utilities and authorities is strongly recommended.

14.7 Operational Readiness Planning

Prior to handover, the following must be completed:

• Facilities management training
• O&M manuals review
• BMS training
• Fire evacuation drills
• ICT system testing
• Mock classroom setup validation

Operational planning shall begin at least 6 months before practical completion.

END OF SECTION 14

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15. Compliance Matrix – Regulatory & Standards Cross-Reference

15.1 Purpose

This section establishes a structured compliance matrix aligning the PISES New Campus Basis of Design with:

• Saudi Building Code (SBC)
• Civil Defense requirements

• TBC Category A Educational Guidelines
• Municipal & utility authority requirements
• Adopted international best practice standards (where applicable)

The objective is to ensure traceability between design intent and regulatory obligations.

15.2 Regulatory Hierarchy (Order of Authority)

The following order of precedence shall apply:

1. Saudi Building Code (SBC) – Mandatory
2. Civil Defense directives – Mandatory
3. Municipal and utility authority regulations – Mandatory
4. TBC Educational Facility Guidelines – Advisory / Programmatic
5. International standards (IBC, NFPA, ASHRAE, etc.) – Reference where not conflicting with SBC

Where conflicts arise, SBC requirements shall prevail.

15.3 Compliance Matrix – Architectural

Design Element	Governing Standard	Section Reference	Compliance Method
Occupancy Classification	SBC 201	Group E	Defined in Section 08
Means of Egress	SBC 201	Egress provisions	Occupant load calculations at SD stage
Accessibility	SBC Accessibility Code	Relevant chapters	Barrier-free routes defined in Section 07
Fire Separation	SBC Fire Code	Mixed occupancy provisions	Compartmentation strategy Section 08
Travel Distance	SBC 201	Egress limits	Corridor planning Section 07

15.4 Compliance Matrix – Mechanical

System	Governing Standard	Compliance Approach
HVAC Design	SBC Mechanical Code	CHW baseline with load calculations
Ventilation	SBC Mechanical	Fresh air rates validated at SD stage

System	Governing Standard	Compliance Approach
Smoke Control	SBC Fire Code	Pressurization & extraction strategy Section 08
Energy Performance	SBC Energy Code	Envelope + system efficiency modeling

15.5 Compliance Matrix – Electrical & ICT

System	Governing Standard	Compliance Approach
Power Distribution	SBC Electrical Code	Load calculations at detailed design
Emergency Power	SBC + Civil Defense	Generator & UPS provisions
Fire Alarm	SBC Fire Code	Integrated life safety system
Structured Cabling	International telecom standards	Included in Section 10 scope

15.6 Compliance Matrix – Site & Traffic

Element	Governing Authority	Compliance Approach
Fire Access	Civil Defense	Perimeter access defined Section 06
Bus Drop-off	Municipality / Traffic Authority	Traffic study required
Assembly Areas	SBC Fire Code	0.8–1.0 m^2 per occupant assumption
Utility Connections	Utility Providers	Early coordination required

15.7 Internal Institutional Standards

In addition to regulatory compliance, the project adopts internal PISES standards including:

- Area per student planning baseline
- Acoustic performance targets
- Mid-level institutional finish specification
- ICT integration requirements
- Governance stage-gate approvals

These standards exceed minimum code requirements where necessary to support long-term educational performance.

15.8 Compliance Verification Process

Compliance verification shall occur at the following stages:

• Concept Design – Preliminary compliance check
• Schematic Design – Formal compliance review
• Detailed Design – Code consultant verification
• Pre-Construction – Authority submission & approval

No construction shall commence without documented compliance confirmation.

15.9 Documentation & Traceability

All compliance-related documentation shall be:

• Version controlled
• Cross-referenced to BoD sections
• Archived within the project document management system
• Available for audit review if required

This ensures institutional protection and regulatory transparency.

END OF SECTION 15

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16. Appendices & Reference Documents

16.1 Purpose

This section consolidates all technical backup, templates, calculation frameworks, and governance documentation supporting the Basis of Design (BoD).

The appendices form the operational backbone of the project and shall be used during Concept, Schematic, Detailed Design, and Tender stages.

APPENDIX A – Academic Space Program Table

A.1 Classroom Planning Matrix (Template)

Wing	Grade Range	Students	Target Class Size	No. of Classrooms	Net Area per Classroom (m^2)	Total Net Area (m^2)
Preschool	KG1–KG3	TBD	20–22	TBD	60–70	TBD
Primary	G1–G4	TBD	24–26	TBD	65–70	TBD
Boys Secondary	G5–G12	TBD	25–28	TBD	70–75	TBD
Girls Secondary	G5–G12	TBD	25–28	TBD	70–75	TBD

Final values to be inserted upon confirmation of real enrollment distribution.

APPENDIX B – Specialist & Shared Facilities Table

Space Type	Quantity	Net Area Each (m^2)	Total Net Area	Notes
Science Labs	TBD	90–110	TBD	Separate boys/girls where required
ICT Labs	TBD	80–100	TBD	Structured cabling integrated
Art Rooms	TBD	80–100	TBD	Wet area sinks required
Music Rooms	TBD	60–80	TBD	Acoustic treatment enhanced
Library / Media Center	1–2	600–900	TBD	Shared facility
Auditorium	1	800–1,200	TBD	Assembly load calculation required
Multipurpose Hall	1	1,000–1,500	TBD	Sports + assembly dual use

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APPENDIX C – MEP Plant Area Allocation

System	Estimated Area (m²)	Location	Notes
Chiller Plant	TBD	Basement	Allow future expansion
Pump Room	TBD	Basement	Fire + CHW pumps
Electrical LV Room	TBD	Basement / Ground	Separate per wing recommended
Generator Room	TBD	Basement / Yard	Acoustic enclosure required
Fire Water Tank	TBD	Basement	Civil Defense compliance
Water Storage Tanks	TBD	Basement	Municipality requirement

APPENDIX D – Basement & Service Allocation

Function	Area Estimate (m²)	Notes
Staff Parking	TBD	If required by municipality
MEP Plant	TBD	As per Appendix C
Storage	TBD	Academic + operations
Maintenance Workshop	TBD	Facilities management use

APPENDIX E – Core & Shell Cost Assumptions

• Excavation depth assumption: Basement full footprint
• Structural system: Reinforced concrete frame
• Façade: Insulated cladding + double glazing
• Roof insulation compliant with SBC Energy Code
• No premium architectural cladding included in baseline

APPENDIX F – Fix Stage Definitions

First Fix Includes: • Concealed MEP infrastructure
• Ducting and piping
• Electrical containment

Second Fix Includes: • Fixtures and fittings
• Final mechanical connections
• Ceiling installation

Third Fix Includes: • Furniture
• ICT active equipment
• AV systems
• Commissioning

APPENDIX G – Scenario Comparison Summary

Scenario	CAPEX	OPEX	Lifecycle Durability	Risk Level
Code Minimum	Lowest	Highest	Moderate	High OPEX risk
Mid Institutional	Balanced	Balanced	Strong	Recommended
Enhanced Campus	Highest	Lowest	Premium	Higher CAPEX

APPENDIX H – Value Engineering Decision Matrix Template

VE Proposal	CAPEX Saving	Lifecycle Impact	Compliance Impact	Educational Impact	Decision
Example	5%	Neutral	None	None	Approve

APPENDIX I – Risk Register Template

Risk ID	Description	Probability	Impact	Mitigation	Owner	Status

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APPENDIX J – Change Control Form Template

Change Reference No: Description: Cost Impact: Schedule Impact: Lifecycle Review: Consultant Endorsement: SMC Approval:

APPENDIX K – Stage Gate Approval Template

Gate Number: Submission Documents Reviewed: Cost Confirmation: Compliance Confirmation: Resolution No: Approval Date:

APPENDIX L – Conflict of Interest Declaration Template

Name: Role: Declaration Statement: Signature: Date:

END OF SECTION 16