

**General Guideline on Pre-Defined Learning Outcomes for [Project Management](#) Students Interning  
in [Contractor Built Environment Firms](#)**

**1. UNDERSTANDING INDUSTRY DOCUMENTATION/ DRAWING STANDARD**

- Interpret as-built drawings
  - Understand the functions of common BIM/CAD softwares (such as Xref, block tools, layer system and etc.)
  - Interpret the scale, dimension, text and annotation in civil engineering drawings
  - If other, please specify\*
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**2. COMMUNICATION SKILLS FOR WORK**

- Learn formal report writing
  - Learn business email writing
  - Make oral presentation to seniors / management / clients
  - If others, please specify\*
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**3. SUPERVISION SKILL AT WORK**

- Observe actual site condition
  - Approach and propose solution to resolve error without compromising the quality of design
  - If other, please specify\*
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**4. EXPERIENCING/ EXPLOSURE IN FACILITY MANAGEMENT**

❖ Programme Documentation

- Identify and review programme with end user/ department for approval
  - Communicate budget, schedule, programme assumption and constraints to users/ department
  - Ensure the requirement are being met
  - If other, please specify
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❖ Contracting and Purchasing

- Manage contract
  - Negotiate contracts, monitor contract performance and ensure delivery services
  - Initiate purchase orders and provide all supporting documentation required
  - If other, please specify
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❖ Building Information Modelling (BIM)/ Computer-Aided Design (CAD)

- Understand BIM/AutoCAD drawings
  - Familiarise the Building Information Model
  - Understand BIM visualization
  - If other, please specify\*
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❖ Integrated Digital Delivery(IDD)

- Understand the concept and objectives of IDD

- Understand the scope of IDD in digital design/digital manufacturing and fabrication/digital construction/digital asset delivery and management
  - Understand the roles and responsibilities of project facility manager in IDD
  - Understand the roles and responsibilities of team members from other disciplines in IDD
  - Carry out / support collaborative and coordinated design via BIM/Virtual Design & Construction (VDC) and other computation tools. Understand how digital design tools help to optimise downstream process (manufacturing, fabrication, construction and maintenance)
  - If other, please specify\*
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❖ Design for Manufacturing and Assembly (DfMA)

- Understand the concept and objectives of DfMA
  - Understand the DfMA continuum and different DfMA construction technologies from prefabricated components to fully-integrated assemblies such as (Prefabricated Prefinished Volumetric Construction (PPVC))
  - Application of DfMA construction technologies to different types of developments
    - Understand design considerations and limitations for different DfMA technologies
    - Identify the suitable type of DfMA modules to be considered and the choice of material (e.g. reinforced concrete PPVC module or Steel PPVC Module)
    - Assist in development of design options for the modules and estimate the size and number of modules
    - Explore different design layout and module configuration to meet design objectives and user requirements
    - Understand project management consideration in site planning (e.g. staging areas for hoisting machinery and modules) and construction sequencing
  - If other, please specify\*
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❖ Project Team Management

- Determine project process, establish project team and ensure understanding of roles and responsibilities
  - Oversee agenda and documentation of project team meetings
  - Set-up and lead of series of meetings with client/users when necessary
  - Monitor team performance and intervene when necessary to ensure successful delivery
  - Provide “single point of contact” to client / users
  - Coordinate submission of drawing and appropriate forms to governing agencies if necessary
  - If other, please specify
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❖ Financial Management

- Create project budget and track project costs on any variances that arise
- Review and approve project invoices and ensure timely payment
- Request funding for authorisation

- Project final cost review compared with previously agreed budget
  - If other, please specify
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❖ Schedule Management

- Establish and monitor project schedule and ensure routine updates and reporting
  - Lead mitigation planning efforts for critical path items
  - Develop recommendation for schedule mitigations
  - If other, please specify
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❖ Decision support

- Direct consultants and contractors efforts as need for project analysis
  - Prepare and present project information for client /user decisions
  - If other, please specify
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❖ Construction Administration and Quality Assurance

- Establish and manage change order and submittal process
  - Ensure quality performance and address issue
  - If other, please specify
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❖ Project Coordination

- Manage vendors on the project and coordinate these activities with the project schedule
  - Provide detailed guidance on issues that arises
  - If other, please specify
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❖ Understand the Overview of Safety, Health & Environment Management

- Aware about Workplace Safety and Health (WSH) Management System
  - Understand the Workplace Risk Assessment (RA)
  - If other, please specify
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❖ Design for Maintainability

- Understand the basic principles of design for maintainability
    - Plan for downstream maintenance
    - Acquire knowledge on the different material and system types to reduce downstream maintenance
    - Account for early access for maintenance
    - Understand design for simple maintenance
  - Identify maintenance issues associated with lack of considerations at design and implement possible corrective measures
  - Carry out Life cycle costing justify the case for maintainable designs
  - If other, please specify
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❖ Smart FM

- Understand the basic principles of Smart FM
  - Understand the concepts of IoT, Sensor/Transducer for air/fluid temperature
  - Identify the potential areas for integration of the various building services
  - Understand the various sensors and various building services (i.e. ACMV, Fire Protection, Plumbing, Lift and Escalators, Surveillance etc.)
  - If other, please specify
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❖ Digital Asset Delivery

- Understand the concepts of Digital Asset Delivery and benefits in integrating BIM data
  - Basic understanding of BIM modelling concepts
  - Understand the Asset Information Model (AIM)
  - If other, please specify
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