Proposal Generation Framework

How we built the Kingsford BMS proposal — a walkthrough

Agenda

- 1. The challenge — why we needed a new approach
- 2. The solution — a structured, agent-driven framework
- 3. Tier 0 — the customer's inputs (what we received)
- 4. The end-to-end flow
- 5. Tier 1 — the agent's first interpretation
- 6. Tier 2 — the engineering basis (working documents)
- 7. Tier 3 — derived working documents
- 8. Tier 4 — scope modules and integrated outputs
- 9. Tier 6 — the costed Bill of Quantities
- 10. Tier 7–8 — the customer-facing proposal and final deliverables
- 11. Design principles — applicability, determinism, mechanical/agent split
- 12. Quality and trust — why this approach is auditable
- 13. Time savings — before vs. after
- 14. v0 — this is the worst version this system will ever be
- 15. Vision — per-customer × per-discipline tracks (megaworld-bms, etc.)

The Challenge: proposals took too long, and quality was inconsistent

Why the old way wasn't working

Pain points

• Proposal preparation took 2–3 weeks per project, repeating much of the same work.

• Each estimator started from scratch, often with different assumptions.

• Junior staff had no structured framework to learn from.

• Customer asks 'where did this number come from?' — answer required digging through emails.

Hidden costs

• No clear inventory of what we'd assumed vs. confirmed.

• Schedule estimates didn't reconcile with manpower didn't reconcile with cost.

• Each new project forgot the lessons of the last.

• Customer clarifications were missed, ad-hoc, or sent late.

The Solution: structured, agent-driven, tier-based

Each step is a sub-routine the AI agent follows; documents flow in tiers

• • Two-layer separation: a reusable Master Playbook (sub-routines / agent instructions) + per-project workspace (working files)

• • 10 sequential phases (sub-routines) from intake to deliverables

• • Documents are organized in TIERS — Tier 0 = customer inputs, each generated tier reads only from lower tiers (strict DAG, no circular references)

• • Working documents capture the engineering basis at each tier

• • Mechanical helpers handle safe data aggregation between standardized formats

• • Engineering judgment stays in the agent's adaptive markdown sub-routines

• • Standard formats are the contract that lets it all stay deterministic

Tier 0

What we received from the customer

5 documents (~165 MB) — the raw material the agent reads but never produces

The 5 Tier 0 documents

What the customer sent — the agent's input boundary

Document	From	What it tells us
Customer Enquiry Letter (Requirement.rtf)	Megaworld	Scope statement: Complete supply, install, T&C of BMS
BMS Points list (TUEC).pdf, 3 sheets, 22 MB	R.J. Calpo & Co.	BMS-01 spec + I/O tabulation; BMS-02 more I/O; BMS-03 P&IDs
EE Plan (TUEC).pdf, 22 pages, 38 MB	Mario A. Alix Phils.	Construction Bulletin No.8 — revised electrical layouts and load schedules
MC Standards — ME Points List.pdf, 7 pages	Megaworld portfolio standard	Mechanical points-list baseline (DOAS, AHU, EAS, BOH templates)
MC Standards — PL Points List.pdf, 1 page	Megaworld portfolio standard	Plumbing points-list baseline (calorifiers, heat pumps, recirc pumps)

Tier 0 — Customer Enquiry Letter (Requirement.rtf)

Customer Enquiry Letter

Tier 0 — what the customer sent us

We would like to request your proposal for the Complete Supply, Delivery, Installation, Testing and Commissioning for the Rehabilitation of Building Management System for the Kingsford Ho

Source: 2026-04-kingsford-bms-AB6/_deliverables/screenshots/tier0-requirement.txt

One-paragraph scope statement. Note the word 'Rehabilitation' — the trigger for our triangulation rule on stage classification.

Tier 0 — BMS Points list (TUEC), Sheet BMS-01

el-rivera/RTRX13-Shared/Proposals/projects/2026-04-kingsford-bms-AB6/00-customer-inputs/_extracted/pages/BM

A1-format Construction Bulletin from R.J. Calpo & Co. — General BMS specifications + I/O tabulation per system.

Tier 0 — EE Plan (TUEC), Cover Letter

MARIO A. ALIX PHILIPPINES, INC.
ELECTRICAL ENGINEERS • DESIGN • CONSULTANCY
2/F MAAP Bldg, 2220 Angel Linao Ext., Bgy.731, Malate, Manila, 1004 Philippines
(02) 8995 3300
(02) 8565 2538
electrical@maaphils.com
www.maaphils.com

November 05, 2025

Megaworld Corporation
9/F Two World Square
24th Upper Mckinley Road,
Taguig City

To : Rome Amiel P. Gonzales

Projects : Kingsford Hotel Bacolod
Manhattan Street, The Upper East, Bacolod City, Negros Occidental

Subject : Construction Bulletin No.8

Good day,

We issue the following construction bulletin to provide information on the "For Construction" documents reflecting the electrical revisions due to the adjusted mechanical layout and the added power provisions for the kitchen layouts from Basement to 3rd floor. Refer to the attached EE sheet drawings for reference.

Sheet No.	Remarks
EE-03	Revised Basement 1 Floor Power System Layout
EE-06	Revised Ground Floor Power System Layout
EE-09	Revised Second Floor Power System Layout
EE-12	Revised Third Floor Power System Layout
EE-21	Revised Load Schedule (Part 1 of 3)
EE-22	Revised Load Schedule (Part 2 of 3)
EE-23	Revised Load Schedule (Part 3 of 3). Application of new scheme for fire pump power supply, single feeder with terminal lugs.
EE-24	Revised Power Riser Diagram (Part 1 of 2). Application of new scheme for fire pump power supply, single feeder with terminal lugs.

Note: Coordinate with the consultant to verify any queries or discrepancies related to the previously approved plan arising from the issuance of revised drawings under the Construction Bulletin. The latest issued plan shall always govern for reference and implementation.

Very truly yours,

John Paul P. Dres, REE
Design Engineer In-charge

MEGAWORLD
ENGINEERING DESIGN DEPARTMENT
CONSTRUCTION BULLETIN NO. 8
BY: F.L.DILIDILI DATE: 11.18.25

DESIGN ALLIANCE
ARCHITECTURE & PLANNING
~~APPROVED~~
~~DISAPPROVED / RESUBMIT~~
~~WITH COMMENT~~
~~FOR CONSTRUCTION~~
✓ NOTED
PROJECT: TUEC
DATE: 20Nov2025 APPROVED BY: CABuencorsejo - APD

APD: 11-19-2025
-Completed released of EE-CB #8.

Construction Bulletin No.8 cover from Mario A. Alix Phils. — adjusts mechanical layout and adds kitchen power provisions.

Tier 0 — MC Standards, Mechanical Points List

jel-rivera/RTRX13-Shared/Proposals/projects/2026-04-kingsford-bms-AB6/00-customer-inputs/_extracted/pages/M

Megaworld's CONDOTELS BMS standard for mechanical systems — applies as baseline where the project-specific is silent.

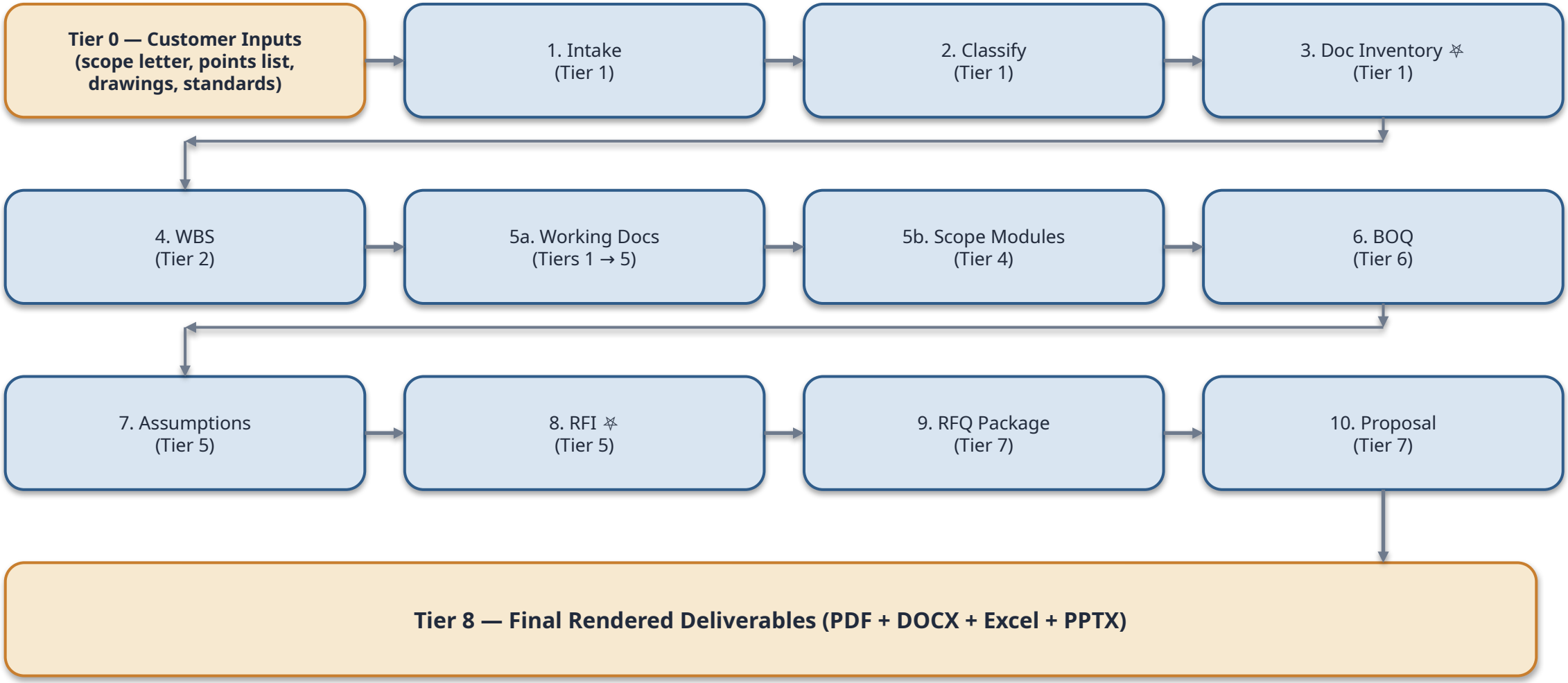
Tier 0 — MC Standards, Plumbing Points List

ojel-rivera/RTRX13-Shared/Proposals/projects/2026-04-kingsford-bms-AB6/00-customer-inputs/_extracted/pages/M

Megaworld's CONDOTELS BMS standard for plumbing — calorifiers, heat pumps, recirculating pumps.

End-to-End Flow

Each box is a sub-routine. ✲ marks gates where the team validates before continuing.



Tier 1

The agent's first interpretation

Documents produced directly from customer inputs — what the agent understands the project to be

Tier 1 — Project Requirement Brief

Project Requirement Brief

Tier 1 — agent's parsed understanding of the customer's enquiry

01 — Requirement Summary

Project: Kingsford Hotel Bacolod — Building Management System **Customer:** Megaworld Corporation **Location:** Manhattan Street, The Upper East, Bacolod City, Negros Occidental **Date prepared:** 2026-04-28

Explicit request

> We would like to request your proposal for the Complete Supply, Delivery, Installation, Testing and Commissioning for the Rehabilitation of Building Management System for the Kingsford Hotel Bacolod project.

— Source: `00-customer-inputs/Requirement.rtf`

Parties

Role	Entity	Notes
Owner / Developer	Megaworld Corporation (Two World Square, 24th Upper McKinley Road, Taguig City)	Per EE Plan cover letter; APD = Megaworld's Architectural & Project Design group
BMS / ME consultant	TUEC	Points-list document set authored under TUEC reference `TUEC-PR-AUX-010 - BMS.xlsx` ; reviewer F. Villa-Real II (05Dec25)
Electrical consultant	MARIO A. ALIX PHILIPPINES, INC. (MAAP)	Issued EE Construction Bulletin No.8 dated 2025-11-05; Design Engineer In-charge: John Paul P. Dres, REE
Standards owner	Megaworld APD	DRC-004-2024 *Revised BMS Standards Condotels* governs the BMS scope
Main contractor	(not stated)	Proposal solicited directly from BMS contractor — main-contractor identity not in the inputs
Customer contact	Rome Amiel P. Gonzales (Megaworld)	Addressee on EE Construction Bulletin

Project context

- Building type: **Hotel / Hospitality** (Megaworld condotel-grade hotel)
- Stage: **Cover letter says "Rehabilitation"; technical evidence indicates Greenfield / new construction.** EE Plan is *Electrical Construction Bulletin No.8* dated 2025-11-05, "For Construction" status, addressing "adjusted mechanical layout and added power provisions for the kitchen layouts from Basement to 3rd floor." BMS Points List bears stamp "Construction Bulletin / DATE OCTOBER 2025" reviewed 05Dec25. No existing-system inventory in the inputs. Triangulation per Phase 2 rules → classify as Greenfield, raise clarification on the wording mismatch. (Same triangulation logic the playbook documents in its worked example.)
- Reference standards mentioned:
  - Megaworld DRC-004-2024 *Revised BMS Standards Condotels* (governs BMS, embedded in the points-list pages titled "PART B / PART C BMS POINTS LIST")

Generated from Tier 0 customer enquiry letter + supporting docs. The agent's parsed understanding of who, what, and where.

Tier 1 — Project Classification (with triangulation evidence)

Project Classification

Tier 1 — discipline × stage tagging with triangulation evidence

02 — Classification

Project: Kingsford Hotel Bacolod — Building Management System **Customer:** Megaworld Corporation (slug: `megaworld` ; customer-kb entry: yes — STUB at `_customer-kb/megaworld/approved-brands.md`) **Date:** 2026-04-28

Discipline

- **Primary:** BMS
- **Secondary:** none — but the BMS scope spans HVAC monitoring, plumbing (domestic hot-water), and electrical-coordination boundaries documented in C1/C2.

Stage

- **Greenfield (new construction)**
- Cited evidence:
  - EE Plan cover letter — *"Construction Bulletin No.8"* dated 2025-11-05, "For Construction" status referencing *"electrical revisions due to the adjusted mechanical layout and the added power provisions for the kitchen layouts from Basement to 3rd floor"* (`00-customer-inputs/EE Plan (TUEC).pdf` , page 1).
  - BMS Points list bears stamp *"CONSTRUCTION BULLETIN / DATE OCTOBER 2025"* with reviewer signature dated 05Dec25 on sheets BMS-01 / BMS-02 / BMS-03 (`00-customer-inputs/BMS Points list (TUEC).pdf`).
  - **Absence** of any existing-system inventory, demolition scope, phasing/cutover plan, or "as-is" documentation in the inputs.
- Cover-letter wording mismatch: requirement letter uses the word *"Rehabilitation"* but the technical evidence is unambiguously new construction. **Per Phase 2 triangulation rule, technical evidence wins.** Raise `Q-001` to confirm wording vs intent with the customer.

Scope type (legacy multi-select)

- [x] Supply
- [x] Installation
- [x] Programming
- [x] Testing & Commissioning
- [x] Training (assumed unless stated — refine in Phase 8)
- [ ] Maintenance / O&M post-handover (not stated — flag for Phase 8)

Scope shape (Op#12)

```
scope_shape:
  supply: full
```

Discipline × stage tagging. Note the triangulation table: technical-document evidence (Construction Bulletins) overrides the cover letter's 'rehabilitation' wording.

Tier 1 — A1 I/O List (the foundation)

A1 — I/O List (the foundation)

Tier 1 — translated from customer's BMS Points list and MC Standards into our standard YAML schema · showing field: io_list · 744 record(s)

project: Kingsford Hotel Bacolod — BMS · **date:** 2026-04-28 · **source:** BMS-01 / BMS-02 / BMS-03 (TUEC Construction Bull… · **status:** draft

id	system	equipment_class	equipment_instance	location	point_description	type	field_device
P-0001	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Entering Chilled Water Temperature	AI	Temperature Sensor
P-0002	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Leaving Chilled Water Temperature	AI	Temperature Sensor
P-0003	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Isolation Motorized Valve Status CHW Return & Su…	DI	Electric Valve Actuator
P-0004	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Entering Condenser Water Temperature	AI	Temperature Sensor
P-0005	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Leaving Condenser Water Temperature	AI	Temperature Sensor
P-0006	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Isolation Motorized Valve Status COW Return & Su…	DI	Electric Valve Actuator
P-0007	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Chilled Water Return Flow Metering	AI	Flow Sensor
P-0008	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Chilled Water Supply Flow Metering	AI	Flow Sensor
P-0009	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Condenser Water Supply Flow Metering	AI	Flow Sensor
P-0010	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Network drop (BACnet/IP — chiller plant manager …	Network	Chiller PLC + BACnet gateway
P-0011	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Chiller Compressor Pump On/Off Status	HLI	Chiller PLC
P-0012	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Chiller Compressor Hand/Off/Auto Status	HLI	Chiller PLC
P-0013	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Chiller Compressor Trip Alarm Status	HLI	Chiller PLC
P-0014	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Motor Load Current	HLI	Chiller PLC
P-0015	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Motor Consumption — KW / BTU Meter	HLI	Chiller PLC + BTU meter
P-0016	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Winding Temperature	HLI	Chiller PLC
P-0017	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Evaporator Approach Delta Temperature	HLI	Chiller PLC
P-0018	AC	Chiller (Package Water-Cooled)	CH-1	2nd Level Chiller Room	Evaporator Approach Delta Pressure	HLI	Chiller PLC

… showing 18 of 744 rows

Translated from BMS Points list + MC Standards into our standard YAML schema. 716 points; every row cites its source. Most downstream documents read from this.

Tier 2

The engineering basis begins

WBS, applicability matrix, and the first round of derived working documents

Tier 2 — Working Documents Applicability Matrix

Working-Documents Applicability Matrix

Tier 2 — what we need × what the customer gave us × what we generate

Working-Documents Applicability Matrix

Project: Kingsford Hotel Bacolod — BMS (AB-Run-6) Classification: `bms-greenfield-hospitality` Scope shape: Pattern 1 (Turnkey BMS — supply: full / installation: full / services: full) Date: 2026-04-28

For each working doc in `_playbook/checklists/working-documents.md`, indicate per project whether it applies (R / N/A) and where the content comes from (CP / AG / CP+AG).

Working doc	R/N-A	CP/AG	Source if CP / location if AG	Notes (incl. pathway-activation row)
A1 — Consolidated I/O list	R	AG	`05-working-docs/A1-io-list.yaml`	Generated by `_scripts/build-a1.py` from MC Standards ME/PL + BMS-01/02 + BMS-03. Per-instance per D-005. Pathway: ACTIVE (Pattern 1).
A2 — Equipment Takeoff	R	AG	`05-working-docs/A2-equipment-takeoff.yaml` (helper-generated)	Pathway: ACTIVE.
A3 — Cable Schedule	R	AG	`05-working-docs/A3-cable-schedule.yaml` (helper-generated) + `A3-route-lengths.yaml` (per-project context) + `A3-cable-spec-rules.yaml` (per-project context)	Pathway: ACTIVE.
A4 — Panel Schedule	R	AG	`05-working-docs/A4-panel-schedule.yaml` (helper-generated)	Pathway: ACTIVE.
A5 — Network Architecture	R	AG	`05-working-docs/A5-network-architecture.md` (mermaid + inventory)	Pathway: ACTIVE.
A6 — Head-End Equipment	R	AG	`05-working-docs/A6-head-end-equipment.yaml`	Pathway: ACTIVE.
A7 — Power Provisions	R	AG	`05-working-docs/A7-power-provisions.yaml`	Pathway: ACTIVE. Per-circuit IDs flagged pending Q-014.
B1 — Programming Object Inventory	R	AG	`05-working-docs/B1-programming-objects.yaml` (helper-generated) + `B1-trend-strategy.yaml` (per-project context)	Pathway: ACTIVE.
B2 — Graphics Page Inventory	R	AG	`05-working-docs/B2-graphics-pages.yaml`	Pathway: ACTIVE.
B3 — Commissioning Point Inventory	R	AG	`05-working-docs/B3-commissioning-points.yaml` (helper-generated)	Pathway: ACTIVE.
B4 — Installation Manhours	R	AG	`05-working-docs/B4-installation-manhours.md` (helper-generated) + `B4-site-factors.yaml` (per-project context)	Pathway: ACTIVE.
C1 — C/O Matrix	R	AG	`05-working-docs/C1-co-matrix.yaml` (helper-generated)	Pathway: ACTIVE.
C2 — Inter-discipline Coordination	R	AG	`05-working-docs/C2-coordination-matrix.md`	Pathway: ACTIVE.
C3 — Inclusions / Exclusions	R	AG	`05-working-docs/C3-inclusions-exclusions.md`	Pathway: ACTIVE.

The agent's check-and-translate-and-generate plan. R/N-A × CP/AG/CP+AG marking for all 17 working-doc types.

Tier 2 — Work Breakdown Structure

Work Breakdown Structure

Tier 2 — 94 leaves across 7 lifecycle-phase branches

04 — Work Breakdown Structure

Project: Kingsford Hotel Bacolod — BMS **Date:** 2026-04-28 **Classification:** `bms-greenfield-hospitality`

Level-1 outline

1.0 Project Management & Engineering 2.0 Material Supply 3.0 Installation 4.0 Programming & Configuration 5.0 Testing & Commissioning 6.0 Training & Handover 7.0 Optional / Out-of-scope

Detailed WBS

1.0 Project Management & Engineering

WBS	Title	Module	Source	Working docs	Status
1.1	Project management	`modules/bms/project-management-engineering.md`	Cover-letter scope (S+I+P+T&C); A-002	D1, D2	In scope
1.2	Engineering, design, shop drawings & coordination	`modules/bms/programming-engineering.md + project-management-engineering.md`	BMS-01/02 spec (Software Manual / Hardware), DRC-004 standard	A1, A2, A4, A5, B1, B2	In scope
1.3	Submittals, approvals & document control	`modules/bms/project-management-engineering.md`	BMS-01 narrative (“submittals” implied by “Megaworld REVIEWED” stamp workflow)	—	In scope
1.4	Factory Acceptance Test (FAT)	`modules/bms/testing-commissioning.md`	BMS-01 “Testing and Commissioning” spec; medium-tier project	B3	In scope

2.0 Material Supply

WBS	Title	Module	Source	Working docs	Status
2.1	Head-end equipment (BMS server, operator workstation, redundant LAN switch, head-end UPS)	`modules/bms/head-end.md`	BMS-01 spec (“UPS”, “System Configuration”, “Hardware”, “Backups”); DRC-004 head-end conventions	A6	In scope
2.2	Network infrastructure (BACnet/IP backbone, edge	`modules/bms/network-infrastructure.md`	BMS-03 NETWORK row at every equipment skid; DRC-004	A5	In scope

94 leaves across 7 lifecycle-phase branches (PM, Supply, Install, Programming, T&C, Training, Optional). Each leaf cites a module template.

Tier 2 — A2 Equipment Takeoff

A2 — Equipment Takeoff

Tier 2 — derived from A1 (135 equipment instances grouped by class, location, panel) · showing field: takeoff · 109 record(s)

project: Kingsford Hotel Bacolod — BMS

id	equipment_class	quantity	location	system	panel	primary_co	io_summary
AHU-1.1	AHU (Chilled-Water-Served)	1	Ground Floor BOH	AC	DDC-GF-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-1.2	AHU (Chilled-Water-Served)	1	Ground Floor BOH	AC	DDC-GF-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-1.3	AHU (Chilled-Water-Served)	1	Ground Floor BOH	AC	DDC-GF-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-2M.1	AHU (Chilled-Water-Served)	1	2nd Mezzanine (Casino)	AC	DDC-2M-CASINO	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-2M.2	AHU (Chilled-Water-Served)	1	2nd Mezzanine (Casino)	AC	DDC-2M-CASINO	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-B.1	AHU (Chilled-Water-Served)	1	2nd Level BOH	AC	DDC-2F-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-B.2	AHU (Chilled-Water-Served)	1	2nd Level BOH	AC	DDC-2F-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-B.3	AHU (Chilled-Water-Served)	1	2nd Level BOH	AC	DDC-2F-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-EL	AHU (Chilled-Water-Served)	1	2nd Level Executive Lounge	AC	DDC-2F-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-FR2	AHU (Chilled-Water-Served)	1	2nd Level Function Room 2	AC	DDC-2F-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-FR3	AHU (Chilled-Water-Served)	1	2nd Level Function Room 3	AC	DDC-2F-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AHU-PF	AHU (Chilled-Water-Served)	1	2nd Level Pre-Function	AC	DDC-2F-BOH	Equipment Supplier	{'physical_io': 12, 'hli_subpoints': 2, 'network…
AIR-ION-2M.1	Air Ionizer (Casino)	1	2nd Mezzanine (Casino)	AC	DDC-2M-CASINO	Equipment Supplier	{'physical_io': 3, 'hli_subpoints': 0, 'network_…
AIR-ION-2M.2	Air Ionizer (Casino)	1	2nd Mezzanine (Casino)	AC	DDC-2M-CASINO	Equipment Supplier	{'physical_io': 3, 'hli_subpoints': 0, 'network_…
CH-1	Chiller (Package Water-Cooled)	1	2nd Level Chiller Room	AC	DDC-2F-CHILLER	Equipment Supplier	{'physical_io': 9, 'hli_subpoints': 18, 'network…
CH-2	Chiller (Package Water-Cooled)	1	2nd Level Chiller Room	AC	DDC-2F-CHILLER	Equipment Supplier	{'physical_io': 9, 'hli_subpoints': 18, 'network…
CH-3	Chiller (Package Water-Cooled)	1	2nd Level Chiller Room	AC	DDC-2F-CHILLER	Equipment Supplier	{'physical_io': 9, 'hli_subpoints': 18, 'network…
CHW-DIFF	CHW Bypass Header	1	2nd Level Chiller Room	AC	DDC-2F-CHILLER	BMS Contractor	{'physical_io': 3, 'hli_subpoints': 0, 'network_…

… showing 18 of 109 rows

Auto-derived from A1: 135 equipment instances grouped by class, location, panel, and primary supplier.

Tier 2 — A4 Panel Schedule

A4 — Panel Schedule

Tier 2 — derived from A1 (18 panels with I/O density + controller estimates) · showing field: panels · 8 record(s)

project: Kingsford Hotel Bacolod — BMS

id	location	system_scope	equipment_served	io_summary	controller_estimate	power_estimate_w	enclosure_assumption
DDC-2F-BOH	2nd Floor / 2nd Floor BOH / 2nd Floor BOH Toilet…	['AC', 'EL', 'VENT']	{'instance_count': 25, 'instances': ['AHU-B.1', …	{'physical_io': 165, 'hli_subpoints': 25, 'netwo…	{'ddc_controllers': 5, 'network_gateway': 1, 'to…	190	Wall-mount IP54 metal cabinet, sized per control…
DDC-2F-CHILLER	2nd Level Chiller MCC / 2nd Level Chiller Room	['AC', 'EL']	{'instance_count': 16, 'instances': ['CH-1', 'CH…	{'physical_io': 72, 'hli_subpoints': 65, 'networ…	{'ddc_controllers': 2, 'network_gateway': 1, 'to…	95	Wall-mount IP54 metal cabinet, sized per control…
DDC-2M-CASINO	2nd Mezzanine (Casino)	['AC', 'VENT']	{'instance_count': 5, 'instances': ['AHU-2M.1', …	{'physical_io': 47, 'hli_subpoints': 8, 'network…	{'ddc_controllers': 2, 'network_gateway': 1, 'to…	75	Wall-mount IP54 metal cabinet, sized per control…
DDC-3F	3rd Floor / 3rd Floor Amenity Toilet / 3rd Floor…	['VENT']	{'instance_count': 12, 'instances': ['EF-3.1', '…	{'physical_io': 36, 'hli_subpoints': 0, 'network…	{'ddc_controllers': 1, 'network_gateway': 0, 'to…	25	Wall-mount IP54 metal cabinet, sized per control…
DDC-B1-BOH	Basement / Basement Battery Room / Basement FOST…	['VENT']	{'instance_count': 17, 'instances': ['EF-B.1', '…	{'physical_io': 57, 'hli_subpoints': 2, 'network…	{'ddc_controllers': 2, 'network_gateway': 1, 'to…	55	Wall-mount IP54 metal cabinet, sized per control…
DDC-GF-BOH	GF Main Lobby Toilet / Ground Floor AHU MCC / Gr…	['AC', 'EL', 'FDAS', 'VENT']	{'instance_count': 9, 'instances': ['AHU-1.1', '…	{'physical_io': 48, 'hli_subpoints': 10, 'networ…	{'ddc_controllers': 2, 'network_gateway': 1, 'to…	75	Wall-mount IP54 metal cabinet, sized per control…
DDC-LG-PLANT	Lower Ground Boiler Room / Lower Ground HWL Room…	['EL', 'HWL', 'VENT']	{'instance_count': 9, 'instances': ['HP-LZ', 'HW…	{'physical_io': 26, 'hli_subpoints': 19, 'networ…	{'ddc_controllers': 1, 'network_gateway': 1, 'to…	75	Wall-mount IP54 metal cabinet, sized per control…
DDC-RD-PLANT	Roof Deck / Roof Deck CT Area / Roof Deck HWL Area	['AC', 'HWL', 'VENT']	{'instance_count': 16, 'instances': ['CT-1', 'CT…	{'physical_io': 110, 'hli_subpoints': 12, 'netwo…	{'ddc_controllers': 3, 'network_gateway': 1, 'to…	95	Wall-mount IP54 metal cabinet, sized per control…

Auto-derived from A1: 18 BMS panels with I/O density, controller estimate, power consumption.

Tier 2 — C1 Contractor / Owner Matrix

C1 — Contractor / Owner Matrix

Tier 2 — supplier responsibility per equipment class (BMS / ME / EE / Equipment Supplier / Owner)

C1 — Contractor / Owner-Supplied Matrix

Project: Kingsford Hotel Bacolod — BMS **Generated from:** A1-io-list.yaml **Generator:** `_playbook/tools/generate-c1-co-matrix.py`

This matrix shows, per equipment class, which **BMS-side field devices** are supplied by which party. It is the contractual-scope-boundary view derived from the points list `C/O` column.

Suppliers: - **BMS Contractor** — we (the proposing party) supply - **ME Contractor** — Mechanical contractor supplies (typically valves, dampers, motorized actuators) - **EE Contractor** — Electrical contractor supplies (power metering related — varies by project) - **Equipment Supplier** — Manufacturer / Equipment vendor supplies (auxiliary contacts on motors/pumps, native equipment data via BACnet/Modbus, VFDs) - **Owner** — Customer / building owner supplies

Overall Summary

Supplier	Total BMS I/O Points	Share
Equipment Supplier	490	65.9%
BMS Contractor	183	24.6%
ME Contractor	67	9.0%
EE Contractor	4	0.5%
Total	**744**	**100%**

Per-Equipment-Class Breakdown

AHU (Chilled-Water-Served) · 12 units, 180 I/O points

Instances: AHU-1.1, AHU-1.2, AHU-1.3, AHU-2M.1, AHU-2M.2, AHU-B.1, AHU-B.2, AHU-B.3, AHU-EL, AHU-FR2, AHU-FR3, AHU-PF

Supplier	I/O Count	Provides
Equipment Supplier	84	Damper Controller (24×), Auxiliary Contact (24×), VFD (24×), VFD BACnet card (12×)
BMS Contractor	60	Temperature Sensor (48×), CO2 Sensor (12×)
ME Contractor	36	Damper Controller (24×), Electric Valve Actuator (12×)

Auto-derived from A1: per-equipment-class supplier responsibility — BMS / ME / EE / Equipment Supplier / Owner — with I/O counts.

Tier 3

Derived working documents

Cable schedule, network architecture, commissioning inventory — built on Tier 2

Tier 3 — A3 Cable Schedule

A3 — Cable Schedule

Tier 3 — derived from A1+A2+A4 (200 cables, 6,810 m total, with cable types and lengths per A-001) · showing field: field_cables · 205 record(s)

project: Kingsford Hotel Bacolod — BMS

id	from	to	equipment_class	system	location	cable_type	spec_source
C0001	DDC-GF-BOH	AHU-1.1 (BMS Contractor)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² shielded FRLS (BMS signal — BMS-sup…	rule:bms_signal_default
C0002	DDC-GF-BOH	AHU-1.1 (Equipment Supplier)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² FRLS (equipment auxiliary contacts …	rule:equipment_aux_default
C0003	DDC-GF-BOH	AHU-1.1 (ME Contractor)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² FRLS (ME-supplied valves/dampers — …	rule:me_actuator_default
C0004	DDC-GF-BOH	AHU-1.2 (BMS Contractor)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² shielded FRLS (BMS signal — BMS-sup…	rule:bms_signal_default
C0005	DDC-GF-BOH	AHU-1.2 (Equipment Supplier)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² FRLS (equipment auxiliary contacts …	rule:equipment_aux_default
C0006	DDC-GF-BOH	AHU-1.2 (ME Contractor)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² FRLS (ME-supplied valves/dampers — …	rule:me_actuator_default
C0007	DDC-GF-BOH	AHU-1.3 (BMS Contractor)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² shielded FRLS (BMS signal — BMS-sup…	rule:bms_signal_default
C0008	DDC-GF-BOH	AHU-1.3 (Equipment Supplier)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² FRLS (equipment auxiliary contacts …	rule:equipment_aux_default
C0009	DDC-GF-BOH	AHU-1.3 (ME Contractor)	AHU (Chilled-Water-Served)	AC	Ground Floor BOH	4C × 1.5 mm² FRLS (ME-supplied valves/dampers — …	rule:me_actuator_default
C0010	DDC-2M-CASINO	AHU-2M.1 (BMS Contractor)	AHU (Chilled-Water-Served)	AC	2nd Mezzanine (Casino)	4C × 1.5 mm² shielded FRLS (BMS signal — BMS-sup…	rule:bms_signal_default
C0011	DDC-2M-CASINO	AHU-2M.1 (Equipment Supplier)	AHU (Chilled-Water-Served)	AC	2nd Mezzanine (Casino)	4C × 1.5 mm² FRLS (equipment auxiliary contacts …	rule:equipment_aux_default
C0012	DDC-2M-CASINO	AHU-2M.1 (ME Contractor)	AHU (Chilled-Water-Served)	AC	2nd Mezzanine (Casino)	4C × 1.5 mm² FRLS (ME-supplied valves/dampers — …	rule:me_actuator_default
C0013	DDC-2M-CASINO	AHU-2M.2 (BMS Contractor)	AHU (Chilled-Water-Served)	AC	2nd Mezzanine (Casino)	4C × 1.5 mm² shielded FRLS (BMS signal — BMS-sup…	rule:bms_signal_default
C0014	DDC-2M-CASINO	AHU-2M.2 (Equipment Supplier)	AHU (Chilled-Water-Served)	AC	2nd Mezzanine (Casino)	4C × 1.5 mm² FRLS (equipment auxiliary contacts …	rule:equipment_aux_default
C0015	DDC-2M-CASINO	AHU-2M.2 (ME Contractor)	AHU (Chilled-Water-Served)	AC	2nd Mezzanine (Casino)	4C × 1.5 mm² FRLS (ME-supplied valves/dampers — …	rule:me_actuator_default
C0016	DDC-2F-BOH	AHU-B.1 (BMS Contractor)	AHU (Chilled-Water-Served)	AC	2nd Level BOH	4C × 1.5 mm² shielded FRLS (BMS signal — BMS-sup…	rule:bms_signal_default
C0017	DDC-2F-BOH	AHU-B.1 (Equipment Supplier)	AHU (Chilled-Water-Served)	AC	2nd Level BOH	4C × 1.5 mm² FRLS (equipment auxiliary contacts …	rule:equipment_aux_default
C0018	DDC-2F-BOH	AHU-B.1 (ME Contractor)	AHU (Chilled-Water-Served)	AC	2nd Level BOH	4C × 1.5 mm² FRLS (ME-supplied valves/dampers — …	rule:me_actuator_default

… showing 18 of 205 rows

Auto-derived from A1+A2+A4 with cable-length assumption A-001. 200 cable runs; 6,810 m total.

Tier 3 — A5 Network Architecture (formatted MD)

A5 — Network Architecture

Tier 3 — topology (1 core + 6 edge switches), riser fiber, IP plan, switch schedule

A5 — Network Architecture

Project: Kingsford Hotel Bacolod — BMS **Date:** 2026-04-28 **Status:** draft **Sources:** A1 I/O list (744 points), A4 panel schedule (8 panels, 19 controllers), EE-24 power riser, ECE-05..ECE-15 auxiliary IDF stack, Megaworld DRC-004 BACnet/IP + MS/TP standard

Topology

Star-and-tree backbone. Head-end at the Lower Ground IT/BOH room (per Q-011) hosts the BMS server, operator workstation, redundant LAN core switch, and head-end UPS. The core switch terminates a fibre + Cat6 backbone routed up the building's west-end service-core IDF stack (visible in ECE auxiliary layouts) to per-floor IDF edge switches. Each DDC field panel taps the floor's IDF edge switch via Cat6.

Field-side BACnet MS/TP daisy-chains run from each DDC panel out to the equipment skids in that panel's served zone (chiller plant at 2F, casino MVAC at 2M, BOH AHU/PAHU at GF/2F, Roof Deck plant, etc.). VFDs, Air Ionizers, and the chiller plant manager terminate on MS/TP.

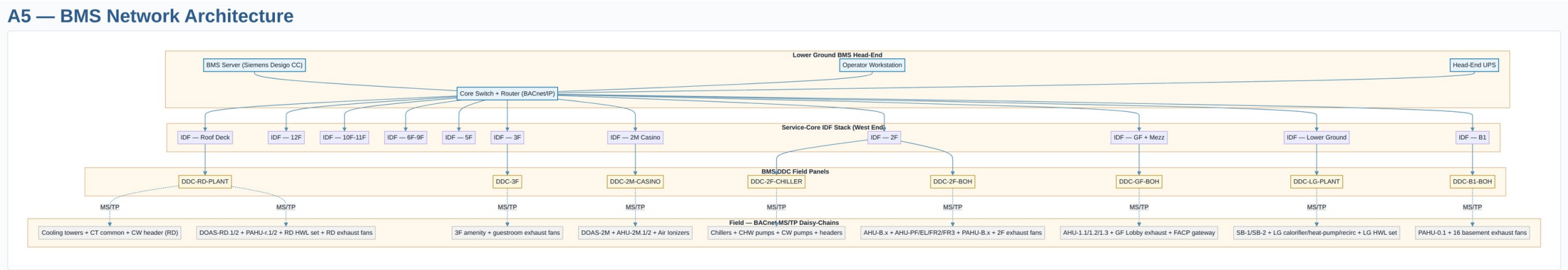
Power-meter Modbus daisy-chains run from DDC-LG-PLANT and DDC-2F-CHILLER along the metering panel locations.

```
graph TD
    subgraph HEAD_END["Lower Ground BMS Head-End"]
        SRV["BMS Server (Siemens Desigo CC)"]
        WS["Operator Workstation"]
        UPS["Head-End UPS"]
        CORE["Core Switch + Router (BACnet/IP)"]
        SRV --- CORE
        WS --- CORE
        UPS --- CORE
    end

    subgraph TWR["Service-Core IDF Stack (West End)"]
        IDF_RD[IDF — Roof Deck]
        IDF_12[IDF — 12F]
        IDF_11[IDF — 10F-11F]
        IDF_9[IDF — 6F-9F]
        IDF_5[IDF — 5F]
        IDF_3[IDF — 3F]
        IDF_2M[IDF — 2M Casino]
        IDF_2[IDF — 2F]
        IDF_GF[IDF — GF + Mezz]
        IDF_LG[IDF — Lower Ground]
```

Hand-curated topology and switch schedule. 1 core + 6 edge switches, OM3 fiber backbone, flat /24 IP plan.

Tier 3 — A5 Network Architecture (visual diagram)



uto-rendered from the A5 mermaid block. Star-and-tree centered on the core switch; riser fiber to per-floor edge switches; BACnet/IP equipment direct to the floor switch

Tier 3 — B3 Commissioning Point Inventory

B3 — Commissioning Point Inventory

Tier 3 — 666 test items (P2P + functional + integrated) → 313 hours of T&C · showing field: functional_test_inventory · 109 record(s)

project: Kingsford Hotel Bacolod — BMS

equipment	equipment_class	location
AHU-1.1	AHU (Chilled-Water-Served)	Ground Floor BOH
AHU-1.2	AHU (Chilled-Water-Served)	Ground Floor BOH
AHU-1.3	AHU (Chilled-Water-Served)	Ground Floor BOH
AHU-2M.1	AHU (Chilled-Water-Served)	2nd Mezzanine (Casino)
AHU-2M.2	AHU (Chilled-Water-Served)	2nd Mezzanine (Casino)
AHU-B.1	AHU (Chilled-Water-Served)	2nd Level BOH
AHU-B.2	AHU (Chilled-Water-Served)	2nd Level BOH
AHU-B.3	AHU (Chilled-Water-Served)	2nd Level BOH
AHU-EL	AHU (Chilled-Water-Served)	2nd Level Executive Lounge
AHU-FR2	AHU (Chilled-Water-Served)	2nd Level Function Room 2
AHU-FR3	AHU (Chilled-Water-Served)	2nd Level Function Room 3
AHU-PF	AHU (Chilled-Water-Served)	2nd Level Pre-Function
AIR-ION-2M.1	Air Ionizer (Casino)	2nd Mezzanine (Casino)
AIR-ION-2M.2	Air Ionizer (Casino)	2nd Mezzanine (Casino)
CH-1	Chiller (Package Water-Cooled)	2nd Level Chiller Room
CH-2	Chiller (Package Water-Cooled)	2nd Level Chiller Room
CH-3	Chiller (Package Water-Cooled)	2nd Level Chiller Room
CHW-DIFF	CHW Bypass Header	2nd Level Chiller Room

... showing 18 of 109 rows

Auto-derived from A1+A2: every physical I/O for P2P, every equipment for functional tests, plus 8 cross-system integrated sequences. 313 hours of T&C.

Tier 4

Integrated outputs and scope modules

Manpower, schedule, risks, and the 11 scope-module instances

Tier 4 — B4 Installation Manhour Takeoff

B4 — Installation Manhour Takeoff

Tier 4 — 3,336 hours derived from A2+A3+A4 with standard production rates · showing field: line_items · 13 record(s)

project: Kingsford Hotel Bacolod — BMS

task	quantity	unit	rate_h_per_unit	hours	notes
Cable pulling (control + network + power feeds)	5173	m	0.34650000000000003	1792.4	Total 5173 m. Includes 4293 m field, 800 m trunk…
Conduit installation (BMS-scope branch conduit)	1293	m	0.1365	176.5	Conduit fraction = 25% of total cable. Basis: Gr…
BMS field panel installation	8	panels	5.25	42.0	Mount, dress, internal verification. Pre-built i…
Field device installation (per equipment class)	109	devices	per-class (see notes)	223.0	Per-class breakdown: Exhaust Fan (General)=32×1.…
Cable termination (both ends per cable)	410	ends	0.2625	107.6	205 field cables × 2 ends
Cable continuity / insulation testing	205	cables	0.2625	53.8	Pre-terminate continuity + post-terminate insula…
Panel power-up + smoke test (pre-commissioning)	8	panels	1.05	8.4	Initial energization, smoke check, controller bo…
Network drop setup (patch + label + connectivity)	42	drops	0.525	22.1	BACnet/IP and Modbus drops
Field analog sensor calibration	200	AI points	0.75	150.0	Calibrate 200 analog sensors against reference; …
Fire-stopping / sealed cable penetrations	143	penetrations	0.5	71.5	Estimated 35% of cable ends require sealed penet…
Site safety attendance (toolbox, JHA, HSE briefi…	2647.3	h	0.06	158.8	6% uplift on labor base hours
Punch-list / rework allowance	2647.3	h	0.05	132.4	5% of base labor for as-installed deviations and…
As-built documentation (red-line + point DB expo…	2647.3	h	0.05	132.4	5% of base labor for as-built drawings, red-line…

Auto-derived from A2+A3+A4 using standard production rates. 3,336 hours installation labor; 417 person-days.

Tier 4 — D1 Project Schedule

D1 — Project Schedule

Tier 4 — 16-week Gantt reconciled with B4 manhours (peak 11 personnel weeks 9–10)

D1 — Project Schedule

Project: Kingsford Hotel Bacolod — BMS **Date:** 2026-04-28 **Status:** draft (assumed comfortable schedule pending Q-002 NTP confirmation)

Gantt

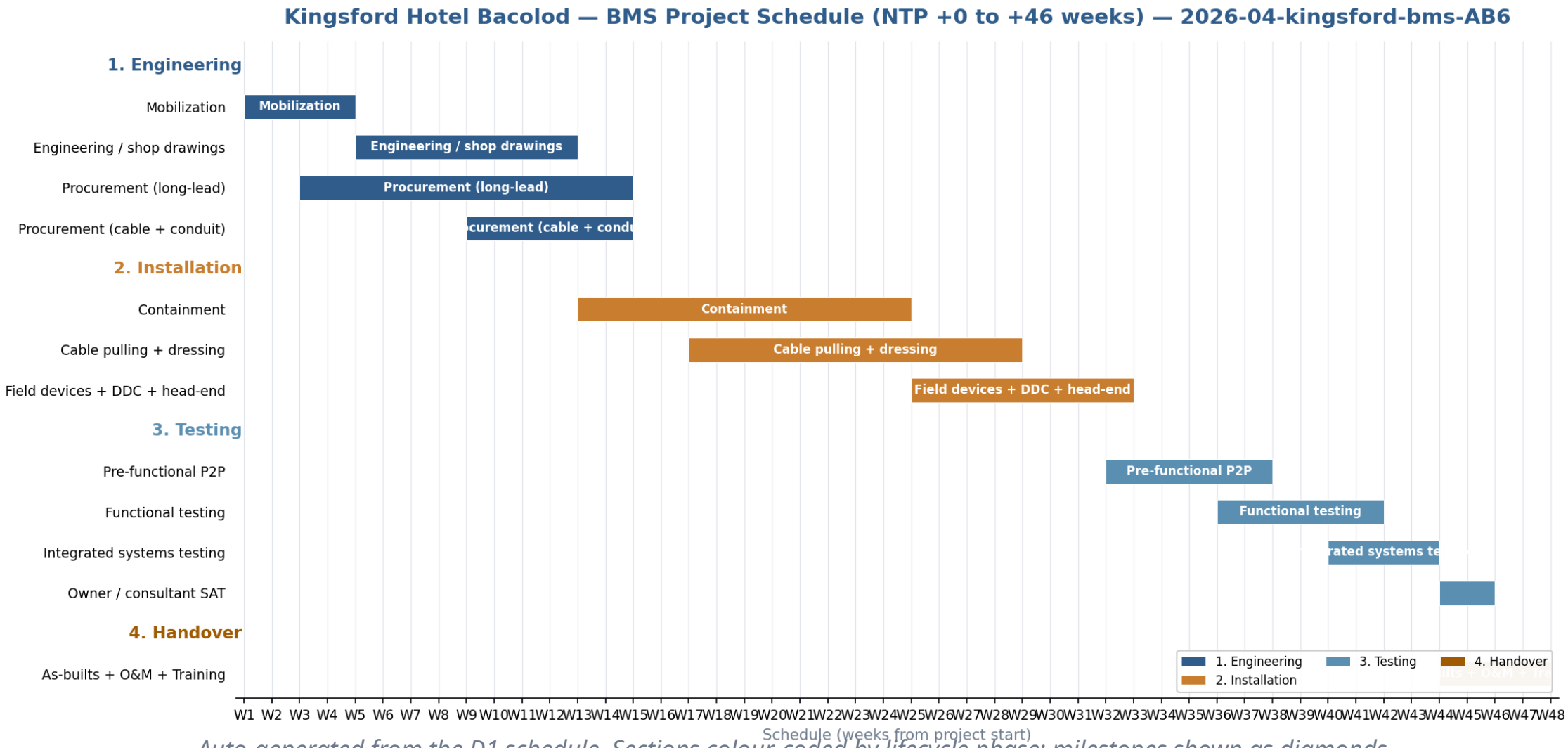
```
gantt
    title Kingsford Hotel Bacolod — BMS Project Schedule (NTP +0 to +46 weeks)
    dateFormat  YYYY-MM-DD
    axisFormat  W%U
    section 1. Engineering
    Mobilization                  :a1, 2026-06-01, 4w
    Engineering / shop drawings   :a2, after a1, 8w
    Procurement (long-lead)       :a3, 2026-06-15, 12w
    Procurement (cable + conduit) :a4, 2026-07-27, 6w
    section 2. Installation
    Containment                   :b1, 2026-08-24, 12w
    Cable pulling + dressing      :b2, 2026-09-21, 12w
    Field devices + DDC + head-end :b3, 2026-11-16, 8w
    section 3. Testing
    Pre-functional P2P            :c1, 2027-01-04, 6w
    Functional testing            :c2, 2027-02-01, 6w
    Integrated systems testing    :c3, 2027-03-01, 4w
    Owner / consultant SAT        :c4, after c3, 2w
    section 4. Handover
    As-builts + O&M + Training    :d1, 2027-03-29, 4w
```

Phases

#	Phase	Duration	Start	End	Notes
1	Mobilization + Engineering kick-off	4 weeks	T+0	T+4	PO + design freeze on points list final revision; site mobilization meeting
2	Engineering, design, shop drawings	8 weeks	T+1	T+9	A1-A7 working docs translated to shop-drawing package; Megaworld Engineering

Hand-curated 16-week schedule reconciled with B4 manhours. Reveals: 4-person crew can't fit; need 6-person.

Tier 4 — D1 Project Schedule (visual Gantt)



Auto-generated from the D1 schedule. Sections colour-coded by lifecycle phase; milestones shown as diamonds.

Tier 6

Bill of Quantities — the costed output

86 line items aggregated from working docs + pricing rate library — PHP 21.98 M grand total

Tier 6 — Bill of Quantities

06 — Bill of Quantities

Tier 6 — 86 line items aggregated from working docs + pricing rate library; PHP 21.98 M grand total

06 — Bill of Quantities (BOQ)

Project: Kingsford Hotel Bacolod — BMS **Currency:** PHP **Total line items:** 86 · **RFQ-required:** 63 (73.3%) **Generated:** by `_playbook/tools/generate-06-boq.py` from working docs A1–B4 + pricing defaults

Pricing structure

- Base subtotal: **PHP 15,468,260**
- Overhead & margin (20%): PHP 3,093,652
- Cost + overhead: PHP 18,561,912
- Contingency (6.0%): PHP 1,113,715
- Cost + contingency: PHP 19,675,627
- VAT (12%): PHP 2,361,075
- **Grand total: PHP 22,036,702**
- *Optional items (7.x), priced separately:* PHP 0 (most TBD per Q-012/Q-015/Q-016)

Section subtotals

Section	Subtotal	% of base
1.0	PHP 1,688,000	10.9%
2.0	PHP 10,829,165	70.0%
3.0	PHP 1,845,295	11.9%
4.0	PHP 557,880	3.6%
5.0	PHP 456,720	3.0%
6.0	PHP 91,200	0.6%
Base total	**PHP 15,468,260**	**100.0%**

Cost pool breakdown (base, excl. optional)

Mechanical aggregation: the BOQ generator reads working docs A1–B4 and applies the pricing rate library. Every line cites its source.

Tier 7

Customer-facing synthesis

The proposal narrative + supplier RFQ package

Tier 7 — Customer Proposal Draft

10 — Customer Proposal Draft

Tier 7 — synthesizes 01–09 into customer-facing narrative with cover letter, technical proposal, commercial summary

Proposal — Building Management System

To: Megaworld Corporation, 9/F Two World Square, 24th Upper McKinley Road, Taguig City **Attention:** Mr. Rome Amiel P. Gonzales **Project:** Kingsford Hotel Bacolod — Manhattan Street, The Upper East, Bacolod City, Negros Occidental **Subject:** Complete Supply, Delivery, Installation, Testing and Commissioning of the Building Management System **Date:** 2026-04-28 **Proposal validity:** 60 days from issue

1. Cover letter

We thank Megaworld Corporation for the opportunity to propose on the BMS scope of the Kingsford Hotel Bacolod project. This proposal addresses the complete supply, delivery, installation, testing and commissioning of the Building Management System per the Construction Bulletin documents issued by the project's MEP consultant (RJ Calpo & Company, Inc.) and the standards published in Megaworld's DRC-004-2024 *Revised BMS Standards Condotels*.

Our scope covers the eight DDC field-panel zones identified in the consultant's points-list package — chiller plant, roof-deck plant, lower-ground steam-boiler / hot-water plant, casino MVAC, basement / ground-floor / second-floor BOH, and the third-floor amenity zone — together with the head-end at the Lower Ground IT/BOH room and the BACnet/IP backbone routed through the building's service-core IDF stack.

We have flagged 15 clarification items in Section 8 of this proposal. None are scope-redefining; addressing them refines the BOQ at shop-drawing stage. The most material is the wording mismatch between the cover letter ("Rehabilitation") and the technical evidence (Construction Bulletin No.8 dated 2025-11-05 with no existing-system inventory) — we have proceeded on the basis of new construction.

We look forward to your review.

2. Executive summary

Item	Value
Project type	Greenfield BMS for a hospitality property with casino-floor adjacency
BMS point count	744 monitored / controlled points across 109 equipment instances
BMS DDC field panels	8 panels at plant rooms and per-floor BOH IDF positions
BACnet/IP backbone + 11 IDF edge switches	Riser through service-core stack from Basement-1 to Roof Deck
BACnet MS/TP field bus	~250 m total backbone distributed across 8 segments
Field cable installed	~5,170 m of FRLS cable
Project duration (NTP to handover)	46 weeks
Proposal grand total (incl. 12% VAT)	PHP 22,036,702

The proposal addresses the consultant's full BMS scope as issued — Mechanical (Part B), Plumbing (Part C, domestic hot water), and the equipment-level P&IDs in BMS-03. Energy submetering is included for the major load centers

sizes Tiers 1–6 into a customer-facing narrative: cover letter, executive summary, technical proposal, schedule, commercial summary, stated assumptions, inclusions/excl

Tier 8

Final rendered deliverables

13 customer-ready files produced from a single command

Tier 8 — Final Deliverables Package

Mechanical helpers render Tier 7 markdown/YAML into PDF / DOCX / Excel / PPTX

File	Format	Size	Pages / Sheets / Slides
01-Initial-Overview	PDF	80 KB	7 pages
02-Proposal-Draft	PDF	239 KB	30 pages
03-BOQ-Bill-of-Quantities	Excel	29 KB	11 sheets
04-A1-IO-List	Excel	51 KB	2 sheets
05-A2-Equipment-Takeoff	Excel	18 KB	2 sheets
06-A3-Cable-Schedule	Excel	20 KB	4 sheets
07-A4-Panel-Schedule	Excel	10 KB	3 sheets
08-Open-Items-RFI	Word	15 KB	—
09-Stated-Assumptions	Word	16 KB	—
10-Proposal-Comprehensive	PDF + DOCX	1.5 MB + 50 KB	92 pages
11-Customer-Proposal-Presentation	PowerPoint	74 KB	31 slides
12-Internal-Methodology-Presentation	PowerPoint	70 KB	this deck

Tier 8 — Comprehensive Proposal (PDF cover page)

Kingsford Hotel Bacolod — BMS

Comprehensive Technical & Commercial Proposal

Document version: 1.0 (initial issue) **Date of issue:** 2026-04-28 **Prepared for:** Megaworld Corporation **Project reference:** TUEC-PR-AUX-010 — Building Management System **Site:** Manhattan Street, The Upper East, Bacolod City, Negros Occidental **Proposal validity:** 90 days from date of issue **Currency:** Philippine Peso (PHP)

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1. Cover Letter

To Megaworld Corporation

Attention: Mr. Rome Amiel P. Gonzales

Dear Sir,

Subject: Proposal — Building Management System, Kingsford Hotel Bacolod

This proposal covers the supply, installation, testing, and commissioning of the BMS for the Kingsford Hotel Bacolod project. It is based on the documents you provided:

- **BMS Points list (TUEC)** — sheets BMS-01, BMS-02, and BMS-03 (Process and Instrumentation Diagrams), dated October 2025, prepared by R.J. Calpo & Company under the seal of Reynaldo J. Calpo, Professional Mechanical Engineer (License No. 0001784)
- **EE Plan (TUEC)** — Construction Bulletin No.8, dated 5 November 2025, prepared by Mario A. Alix Philippines, Inc., covering revised electrical layouts, load schedules, and power riser diagrams
- **Megaworld MC Standards** — DRC-004-2024 Revised BMS Standards Condotels, including Mechanical and Plumbing Points Lists

The project-specific points list governs the scope. The MC Standards serve as the baseline where the project-specific specification is silent. Where the documents are silent or ambiguous, we made the assumptions catalogued in **Section 11 (Stated Assumptions)** with their cost impact. Review those before contract execution.

The customer-facing PDF. ~92 pages: cover letter, executive summary, technical proposal, schedule, commercial summary, stated assumptions, inclusions/exclusions.

Principles

Why the framework holds together

Five design principles that govern every project

Design Principles A–F

These principles govern when to extend the framework and what to keep adaptive

	Principle	Why it matters
A	Mechanical helpers operate only on standardized agent-prepared data	Customer document interpretation stays adaptive, in agent instructions
B	Engineering judgment lives in agent instructions	Agent CAN write project-specific helpers when needed; permanent tools are mechanical
C	The applicability check is foundational	Phase 5a always begins with 'what we need vs. what's given'
D	Determinism through standard formats — and translation when needed	Customer-provided docs are translated to standard format BEFORE downstream work
E	Document tier classification (the dependency DAG)	Strict tier ordering; no circular references; build order is known
F	Transparency and auditability — never hide weak spots	Auto-generated quantities the team must verify get a verification overlay + sibling audit workbook

Determinism through standard formats

Standard formats are the contract that lets mechanical helpers run reliably

Standard formats (the contract)

Every working-doc type has ONE canonical format:

• I/O list — standard YAML schema (id, system, equipment, location, point description, type, field device, C/O, source, ...)

• BOQ — standard YAML schema (line items with WBS, qty, unit, rate, source, RFQ flag)

• Cable, panel, equipment takeoff — each has a single canonical format

• Pricing rate library + equipment-class defaults — standard YAML, peer-reviewable

Translation at the entry boundary

When the customer supplies a document that covers a working-doc type:

1. The agent transcribes it into our standard format BEFORE proceeding.

2. Each translated row cites the customer's source file for traceability.

3. Schema mismatches surface as assumptions and clarifications.

4. Downstream work always operates on the standardized representation, never on the customer's native format.

Result: regardless of customer format variation, downstream pipeline stays deterministic.

Where mechanical automation ends and judgment begins

We're conservative about what we automate

Mechanical (Python helpers)

Pure data aggregators on standardized YAML — no customer-document interpretation:

- BOQ aggregator
- RFQ packager
- Excel exporters
- PDF / DOCX rendering
- Presentation builders

Why safe:

- No customer-document interpretation
- Input/output formats are fixed
- Every quantity is sourced from agent-prepared data

Agent-driven (sub-routines / instructions)

Adaptive instructions in the playbook — sub-routines the agent follows:

- Customer document extraction protocol
- Project classification (triangulation)
- Required-doc checklist comparison
- WBS scope decomposition
- Working-document applicability matrix
- Working-document content (e.g., interpreting a points list into an I/O list)
- Module instance parameter selection
- Assumption rationale and impact assessment
- Customer clarification framing

When format/scope is genuinely unique, the agent writes a project-specific helper script.

Principle F — Transparency & auditability layer

Some auto-generated quantities are inherently soft. We don't pretend; we make them visible and editable.

The honest framing

The named weakest spot: cable lengths.

Today the agent uses assumption A-001 — 30 m average panel-to-device run, 80 m trunk per floor — because we don't always have scaled drawings or a site walkthrough yet.

Field-verified lengths typically vary ±20% per cable. If we hide that, the BOQ looks more confident than it is.

The fix is a transparency layer that makes weak spots obvious and editable — not buried in a YAML footnote.

The mechanism (Principle F)

How it works:

1. Every team-verifiable working doc (A1, A2, A3, A4, A6, B4, D1) supports a verification: overlay block per row — status / corrected_<field> / verified_by / drawing_ref / notes.

2. Mechanical helpers respect the corrected value when present — corrections flow into B4 manhours, BOQ, and final deliverables automatically.

3. A sibling Excel audit workbook is generated alongside each YAML — that's the team's review surface.

4. Audit workbook is regenerable; canonical YAML is the single source of truth.

The audit workbook — what the team actually opens

XLSX, multi-sheet, filterable. Built for how the proposal team works in Excel daily.

What's in the workbook

Each audit workbook contains:

• Summary — totals, status counts (colour-coded), known weak points, correction workflow

• Per-axis rollups — e.g., A3 cable schedule has By Panel / By Floor / By Cable Type

• Detail — every row with auto-filter + frozen header; status cells colour-coded (green=verified, red=needs correction, yellow=uncertain, grey=unverified)

• Verification schema — copy-pasteable YAML template + priority-ordered verification methods

How the team uses it

Workflow in practice:

• At desk: open A3-cable-schedule-AUDIT.xlsx, filter Detail by panel, cross-check totals against architectural drawings.

• On site: print or open on tablet, walk the building, mark up.

• Back at desk: edit A3-cable-schedule.yaml — add a verification: block with corrected_length_m, status, drawing_ref.

• Re-run the deliverables generator — corrections propagate.

Where this is going — the proposal cockpit (v1+)

v0 surfaces ask the user to think like the agent. The cockpit inverts that.

Where we are

Today (v0):

• Customer drops files in a folder
• Agent runs in a terminal
• Outputs land as XLSX / PDF / DOCX
• Verification = open Excel + edit YAML

Honest, but technical. The user has to think in our shapes.

Where we're going

Tomorrow (v1+ journey-style UX):

1. Drop-zone intake — drag-and-drop with auto-classified document tiles.

2. One 'Generate proposal' button — live phase-by-phase progress.

3. Tier walk — visual timeline Tier 0 → Tier 8, click any node to inspect lineage.

4. Audit cockpit — split-pane: drawing on left ~70%, filterable row list on right ~30%; click a row, drawing pans to the grid reference; inline-edit writes back to YAML.

5. Regen loop — one button refreshes downstream artifacts; diffs are visible per phase.

Quality and Trust

Why this approach delivers a defensible, auditable proposal

- ✓ Every quantity is traceable — each BOQ line cites its working doc; each working doc cites the customer's source document
- ✓ Assumptions are explicit — 19 stated assumptions in the proposal, each with cost-impact-if-wrong
- ✓ The basis is reproducible — re-run the aggregators and the same input produces the same output
- ✓ No hidden magic in labor / rates — pricing defaults are a peer-reviewable rate library
- ✓ Customer questions have documented answers — each clarification has a default assumed and a rationale
- ✓ Audit trail — every change committed with a 'why' message
- ✓ Deliverables are internally consistent — the BOQ in the PDF equals the BOQ in the Excel equals the BOQ in the proposal narrative

Time Savings: before vs. after

What used to take 2–3 weeks now takes 5–7 working days

Phase	Before (hand-rolled)	After (this framework)
Phases 1–4: Intake → WBS	2–3 days, often inconsistent	1 day with structured walkthrough
Phase 5a: Working docs	5–7 days hand-typing	2–3 days (about half are auto-aggregated)
Phase 5b: Module instantiation	Skipped or hand-built	0.5 day (templates)
Phase 6: BOQ	2–3 days hand-Excel	Hours (one command)
Phases 7–8: Assumptions + RFI	Often missed, ad-hoc	Hours (auto-organized)
Phase 9: RFQ to suppliers	Manual emails per category	Hours (12 docs auto-categorized)
Phase 10: Proposal narrative	3–5 days hand-write	1 day (templates + auto-populate)
Total typical	2–3 weeks	5–7 working days

Kingsford BMS Pilot — what we produced

From 5 customer documents (~165 MB) to a 13-file deliverables package

744
BMS I/O points enumerated

109
Equipment instances cataloged

8
Field panels designed

6,810 m
Cable footage estimated

4,648 hr
Project effort calculated

PHP 21.98M
Grand total proposal value

63 / 86
BOQ items / RFQ-flagged

12
Supplier RFQ docs generated

19
Customer clarifications cataloged

This is version 0. It will be the worst version of this system.

Every project from now on patches the agent instructions where edge cases surface

- What v0 IS:
  - A working end-to-end pipeline that produced the Kingsford proposal
  - A baseline of the 17 working-doc types and 11 scope modules for BMS
  - A pricing rate library that's defensible at mid-market
  - A complete deliverables package the customer can act on
- What v0 is NOT yet:
  - Calibrated against won-bid actuals (so pricing defaults will tighten)
  - Tested across customer formats beyond Megaworld's TUEC convention
  - Tracking edge cases that haven't been encountered yet
  - Handling rehab/retrofit scope (modules retired during Kingsford classification will be re-activated)
-
- Every project from here is an opportunity to improve. When an edge case surfaces, we patch the agent's instructions immediately so the next project benefits.

The vision: per-customer × per-discipline tracks

Soon the agent will recognize which 'track' a project belongs to and apply tuned defaults

Tracks the framework will support

Examples of future tracks:

• megaworld-bms
→ Tuned for TUEC points-list convention, Megaworld portfolio standardization, hotel/condotel scope patterns

• san-miguel-electrical
→ Tuned for SMC's switchgear standards, motor-control specifications, plant electrical typology

• dmci-automation
→ Tuned for DMCI's process-automation conventions, PLC + SCADA standards

Each track tunes:
– the required-docs checklist
– the equipment-class defaults
– the pricing rate library
– the module templates

How tracks emerge from real projects

How tracks emerge:

1. After 2–3 projects on the same (customer × discipline) pair, patterns become clear:
   – Which docs they always supply
   – Which they never supply
   – Their preferred brands
   – Their typical project profile
   – Their commercial term defaults

2. We capture those patterns as a track configuration in the playbook (still markdown / YAML).

3. The agent loads the track at project kickoff and starts with track-tuned defaults instead of framework-wide defaults.

4. Over time, every major customer-discipline combination has its own track, and the agent's first proposal on that pairing is already 80% calibrated.

Next Steps

What we're asking the team to do

- ☐ Review this Kingsford pilot — proposal narrative, BOQ, working documents
- ☐ Validate the pricing defaults against your last 2–3 won bids
- ☐ Provide feedback on module templates (anything missing? anything redundant?)
- ☐ Identify the next project to pilot the framework on
- ☐ Identify 2–3 estimators willing to learn the framework
- ☐ Decide on adoption pace: opt-in pilot, then mandate
- ☐ Approve the pricing rate library for inclusion in the playbook
- ☐ Schedule a follow-up review in 2 weeks after a second pilot
- ☐ Begin curating the first track — likely megaworld-bms, given Kingsford as the seed

Questions, Feedback, Discussion

Let's discuss how we make this stick — and which project to run next.