



MARK
BOCO

PORT FOLIO

STRUCTURAL
ENGINEER

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

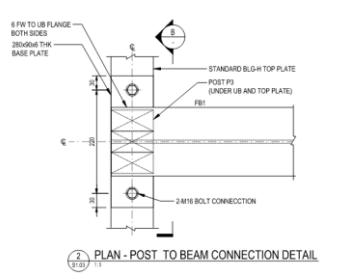
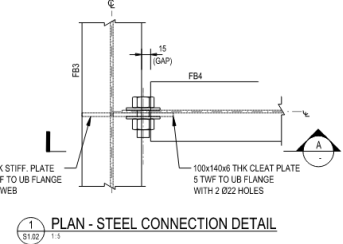
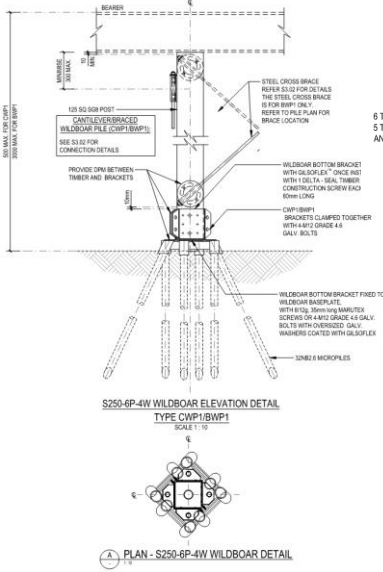
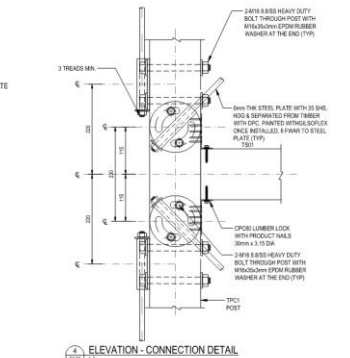
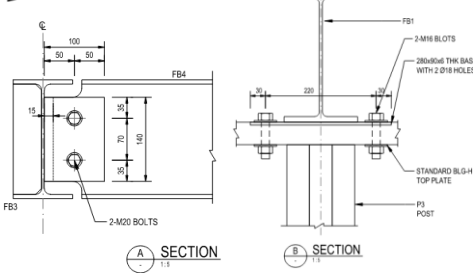
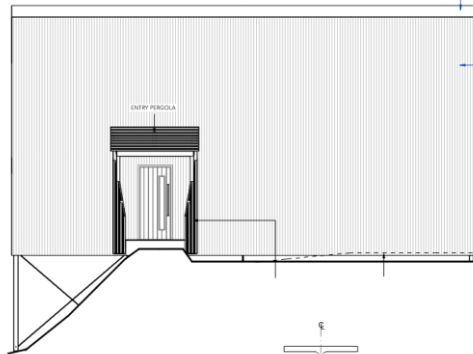
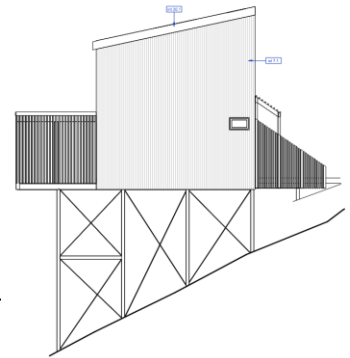
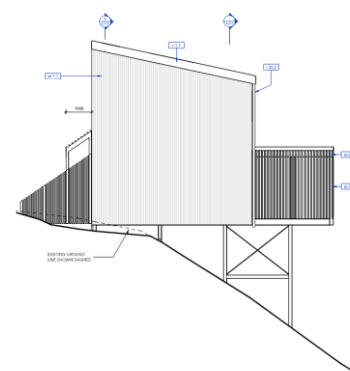
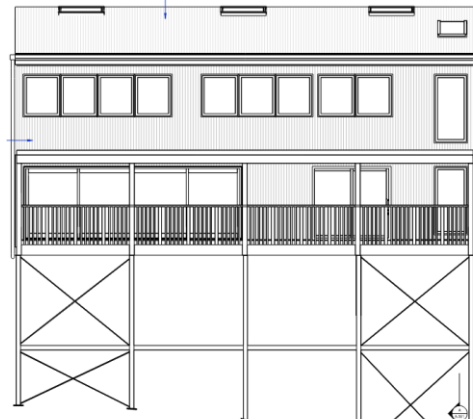
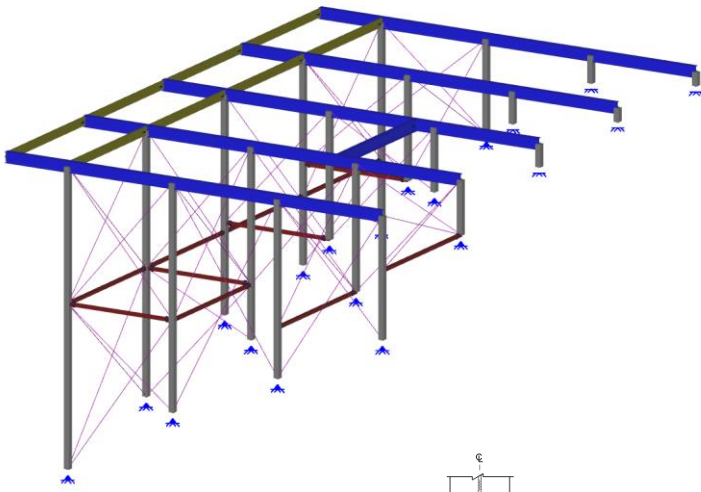
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

🌐 linkedin.com/in/mark-anthony-boco-3316831b1

STRUCTURAL DESIGN OF MIXED-MATERIAL RESIDENTIAL DWELLING - TEC

40 MONTREAL GROVE, KINGSTON, WELLINGTON



- What?**
- Superstructure, subfloor, and foundation design of the mixed-material residential dwelling to be founded using **Surefoot pile foundation system** with steel and timber subfloor framing and cross bracings on a steep sloping site.
 - Future-proof design of ancillary extension structures (**deck pergola & entry deck**) with the addition of fixed roofing and balustrade framing and detailed to be complied to **NZS 3604**.

- Key structural challenges**
- **High lateral loads** due to extra high wind zone and high seismic region near to fault lines.
 - Slope instability and soil potential to **soil creep**.
 - Presence of **rock layer** at shallow depth.

- How?**
- Modelled, analyzed, and designed superstructure members & framing and substructure bracing using **SPACE GASS** software.
 - Perform hand calculations on **SMath** and **MS Excel** for accurate design outcomes
 - Subfloor bracing demand calculation and design as per **NZS 3604** using **GIB EzyBrace® Systems**.
 - Coordinate **structural solutions** with architectural and other design consultants' requirements.
 - Use **Bluebeam Revu** to prepare **structural markups** on architectural drawings to discuss potential changes that simplify the structure and reduce client costs.
 - Obtain client approval of the design to confirm structural systems and prepare structural drawings including plans, sections, and details.
 - Organized the detailed structural design analysis and calculations for Building Consent submission.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

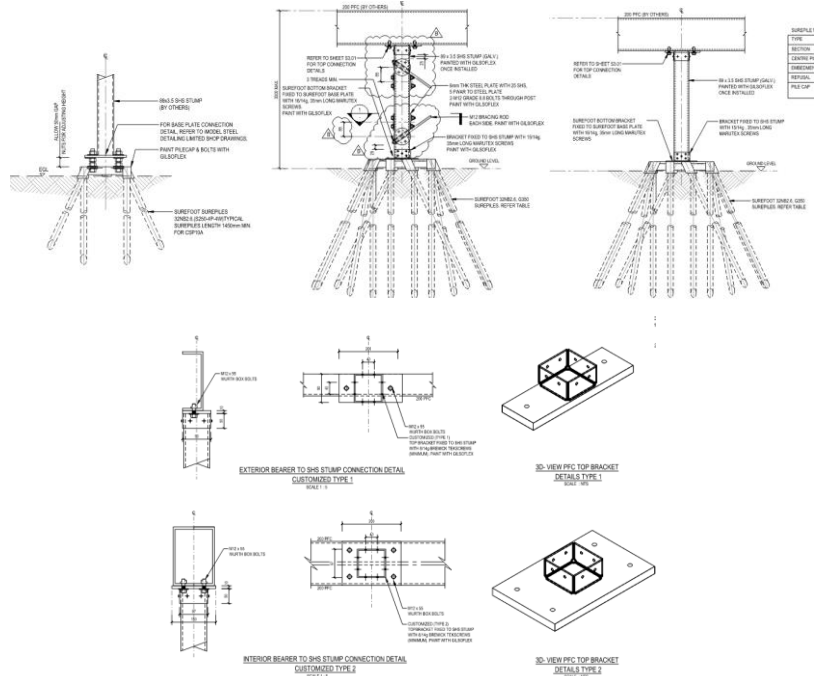
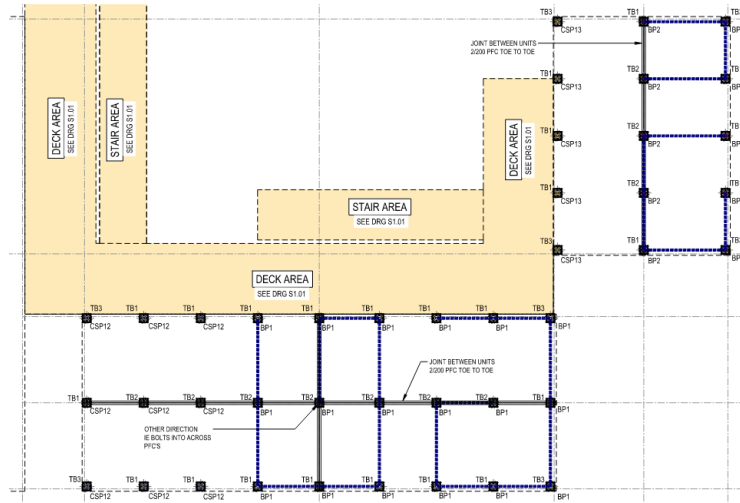
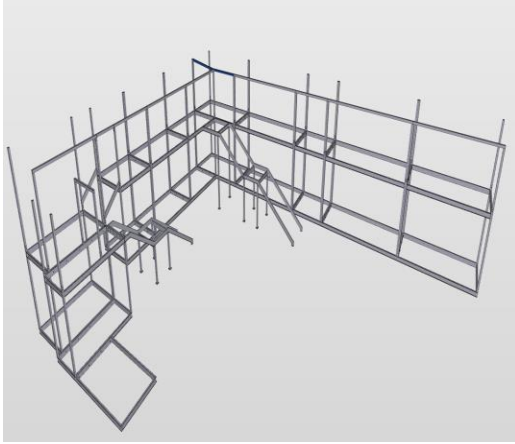
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

🌐 linkedin.com/in/mark-anthony-boco-3316831b1

FOUNDATION DESIGN SYSTEM FOR TWO-LEVEL MODULAR CLASSROOMS - TEC

WELLINGTON GIRLS COLLEGE – 18 PIPITEA STREET, THORNDON, WELLINGTON



What?

- Design of **four two-level modular classrooms** situated on a flat to gently sloping site.
- Coordinate with the geotechnical engineer on **risk of liquefaction** and **settlement** as stated on geotechnical report.
- Provide **detailed mark-up plans** and **hand drawn sketches** of designs for drafting team

How?

- Calculate **pile loads** in coordination with the structural engineer for the superstructure.
- Perform hand calculations on **SMath** and **MS Excel** for accurate design outcomes
- Calculate subfloor bracing demand and design as per NZS 3604 using **GIB EzyBrace® Systems**.
- Develop preliminary design solutions for **subfloor bracing** and **Surefoot piles foundation**.
- Bespoke **cross-bracing** employed to resist **high lateral loads**.
- Providing the **detailed structural design** for the foundation piles and subfloor bracing, including design features and calculations for **Building Consent submission**.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

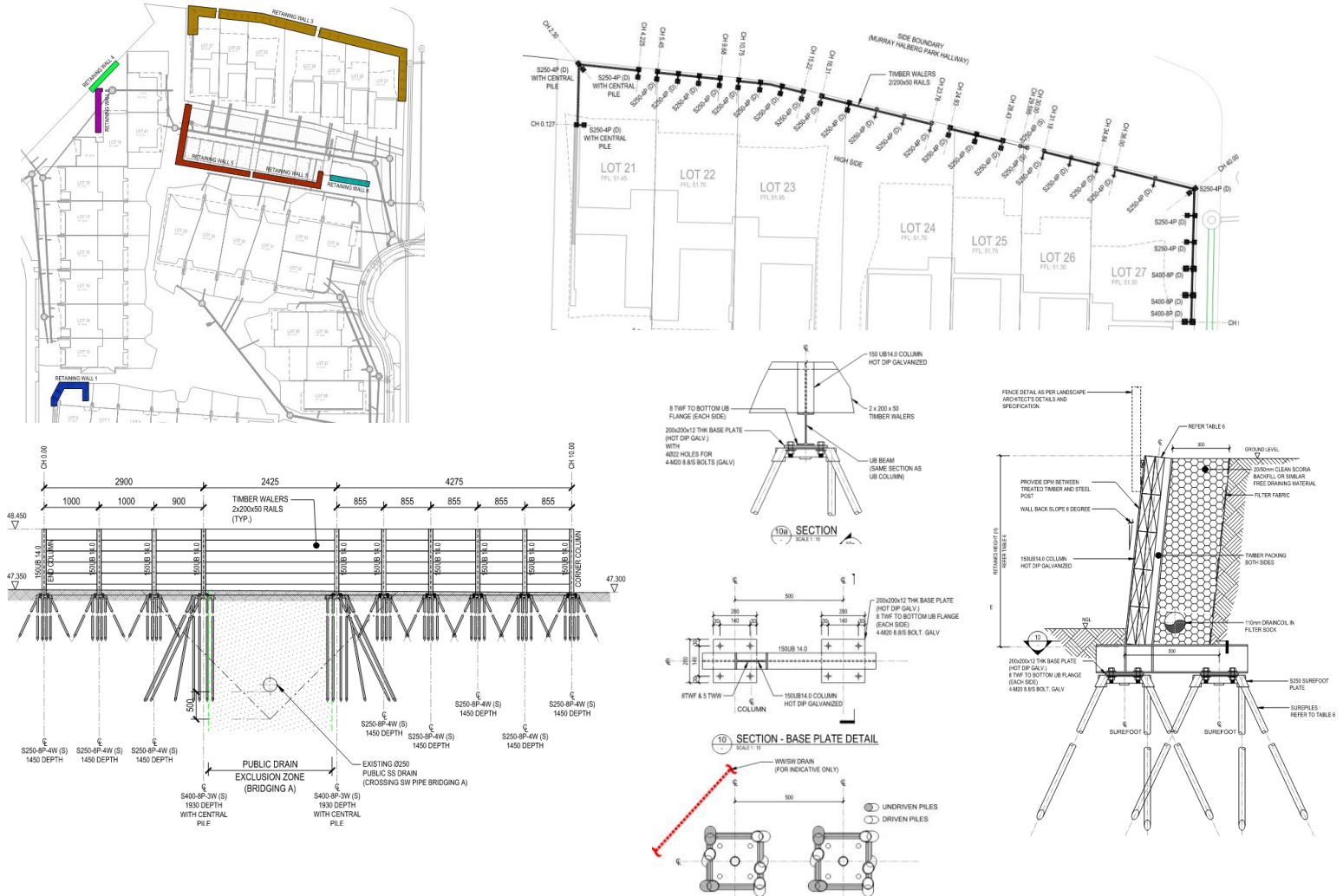
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

🌐 linkedin.com/in/mark-anthony-boco-3316831b1

RETAINING WALL DESIGN ON MULTIPLE RESIDENTIAL DEVELOPMENT - TEC

CASSINO TERRACE, MOUNT ALBERT, AUCKLAND



What?

- Design of retaining walls to be founded on **six different locations** within the with varying soil condition, specifically **AVF soils** and/or **basalt rock**.
- Assess proximity to existing and proposed **underground services**, public and private, and incorporate retaining wall design requirements to meet works over or bridging requirements, if required.
- Provide **detailed mark-ups** of designs for drafting team

How?

- **Derived loads** from hand calculation and used **Excel** to **create critical load case combination table**
- Confirm the required **fence and barrier details** to be incorporated in the retaining wall design and details.
- Confirm the **required surcharge loading** for each wall based on proximity to the boundary and likely future accessways.
- Develop retaining wall layouts, sections and elevations with post & pile spacing and types specified for ease of construction in **BlueBeam**.
- Provide an **efficient and cost-effective** design of the Wildboar retaining wall systems that saves the project significant time and cost in comparison to traditional retaining walls.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

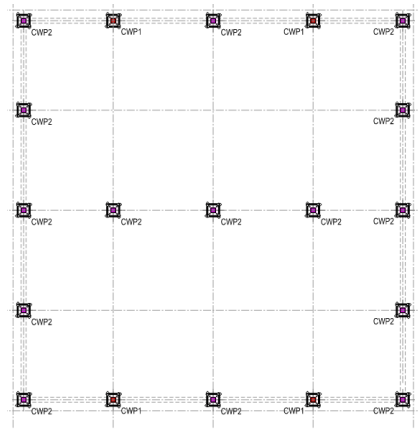
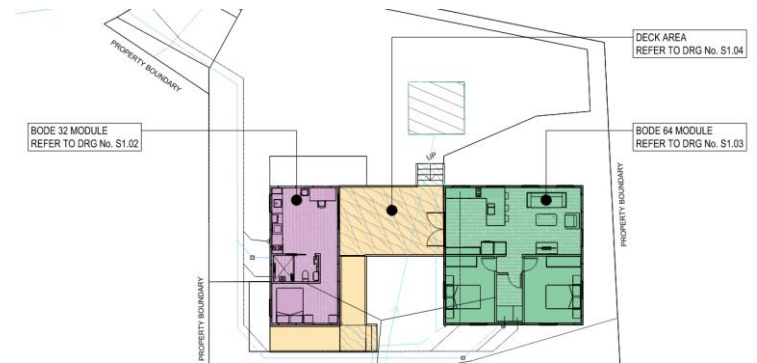
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

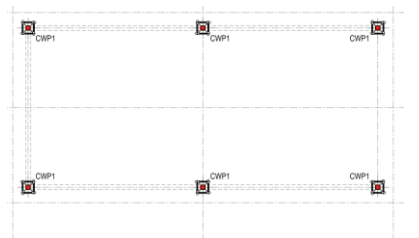
🌐 linkedin.com/in/mark-anthony-boco-3316831b1

FOUNDATION DESIGN SYSTEM FOR MODULAR BUILDINGS (BODE UNITS) - TEC

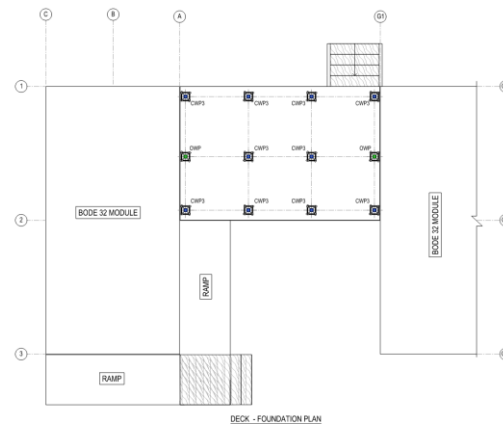
16 KINGI TE AHOAHO PLACE, ŌTAKI, WELLINGTON



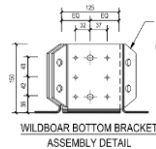
BODE 64 MODULE - FOUNDATION PLAN



BODE 32 MODULE - FOUNDATION PLAN



DECK - FOUNDATION PLAN



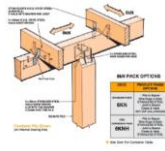
WILDBOAR BOTTOM BRACKET ASSEMBLY DETAIL



3D VIEW WILDBOAR BOTTOM BRACKET



3D - VIEW WILDBOAR ECOPILE BRACKET ASSEMBLY DETAIL



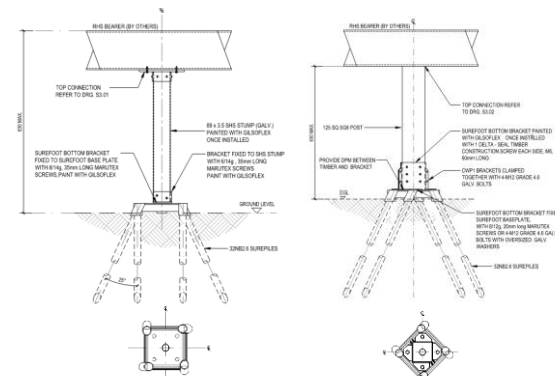
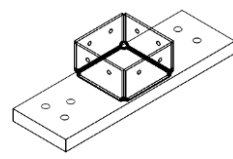
MITEK/LIMBERLOK 6xN PILE FIXING CONNECTION



WILDBOAR ECOPILE BRACKET ASSEMBLY DETAIL



3D - VIEW WILDBOAR - SUREFIX CHANNEL (27679)



What?

- Structural design of the **subfloor bracing** and **pile foundations** for two single-level modular dwellings, the Bode 64 and Bode 32 units, each featuring timber decks and access ramps.
- The bode dwellings will be supported on **steel posts** on top of Surefoot piles.
- The location in Otaki will have **relatively high wind and earthquake demands**.
- No site-specific geotechnical report has been provided.

How?

- Initial coordination with the geotechnical engineer to confirm the design parameters of the Surefoot piles
- Develop preliminary design of **subfloor bracing** and **Surefoot piles**.
- Bespoke **cross-bracing** employed to resist **high lateral loads**.
- Provide an **efficient** and **cost-effective** design of the Wildboar retaining wall systems that saves the project significant time and cost in comparison to traditional retaining walls.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

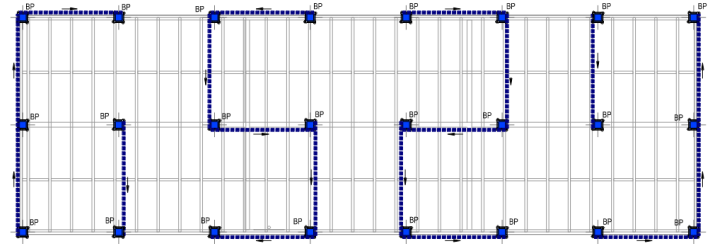
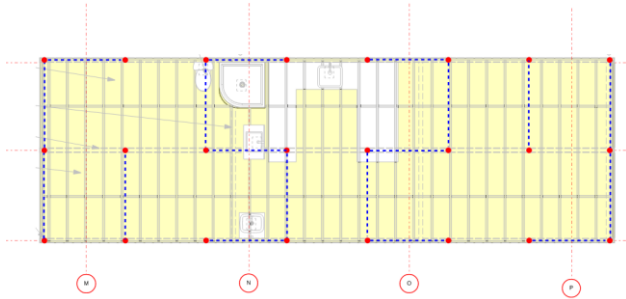
 markanthonydumatolboco@gmail.com

 +63 977 626 1916

 linkedin.com/in/mark-anthony-boco-3316831b1

FOUNDATION DESIGN SYSTEM FOR SINGLE-LEVEL RESIDENTIAL DWELLING - TEC

181 PUTIKI ROAD, EDGE CUMBE, BAY OF PLENTY, 3193, NZL



FOUNDATION PLAN

What?

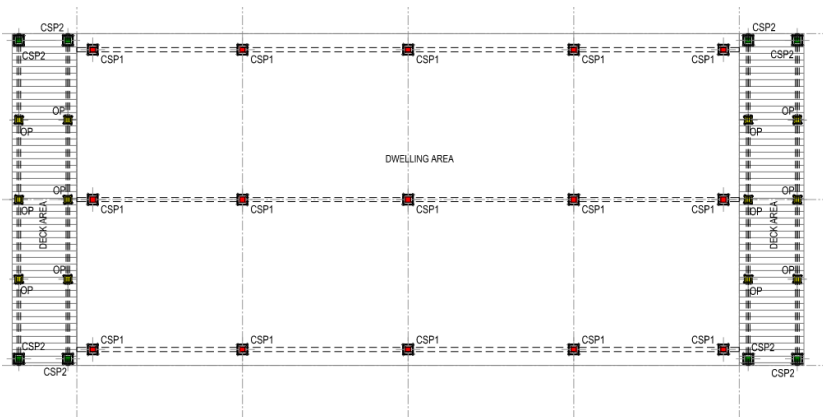
- Subfloor bracing and foundation design for a single-level residential dwelling
- Provide detailed mark-ups for drafting team in Bluebeam.

How?

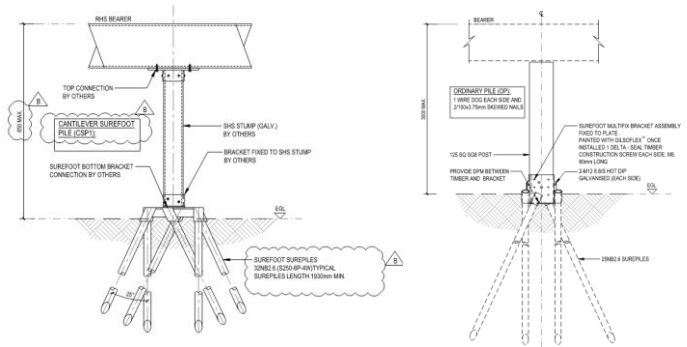
- Obtain design loads and worst-case load combination.
- Confirm geotechnical pile design parameters.
- Develop preliminary design of subfloor bracing and Surefoot piles and obtain client's approval.
- Prepare PS1 Package including calculations and drawings for BC submission.

FOUNDATION DESIGN SYSTEM FOR NEW RESIDENTIAL DWELLING - TEC

45 BALLANCE STREET, LOWER VOGELTOWN, NEW PLYMOUTH



FOUNDATION PLAN



What?

- Structural design of subfloor bracing and foundation for a new residential dwelling with timber verandah at both sides.
- Subfloor steel SHS post for dwelling, while square timber post for verandah decks.
- Develop detailed mark-ups for pile lay-outs, subfloor post heights at various locations.

How?

- Calculate permanent and imposed loads, and also load combinations for each pile type.
- Estimate values of geotechnical parameters and coordinate with the geotechnical engineer.
- Progress to a detailed design of steel and timber subfloor bracing founded Surefoot piles (various pile types according to pile location).
- Finalize PS1 Package including calculations, design features report, and drawings for BC submission.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

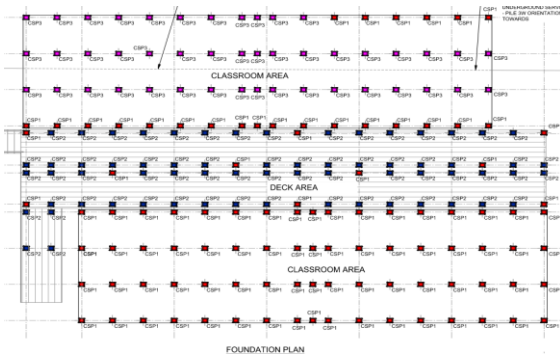
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

🌐 linkedin.com/in/mark-anthony-boco-3316831b1

FOUNDATION DESIGN SYSTEM FOR NEW CLASSROOM BUILDINGS - TEC

PAPAKURA HIGH SCHOOL - 3 WILLIS ROAD, PAPA KURA

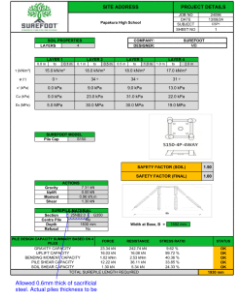


GIB EzyBrace® Bracing Software	
Demand Calculation Sheet	
Job Details	
Name	2026
Sheet and Number	Papakura High School - 3 Willis Road, Papakura
Layered (SP Number)	Alloy 77 (See Sec 1 PFD of Outline)
Client/Architect	Papakura, Auckland
Designer	MB
Company	TEC
Date	Monday, 12 August 2024
Building Specification	
Number of Storeys	1
Floor Loading	3 kN/m ²
Foundation Type	Subfloor
Subfloor Casting Height	1.0m
Cladding Weight	Single
Roof Weight	1.0m
Roof in Roof Space	No
Roof Pitch (degrees)	0
Roof Height above Gases (m)	1.1
Building Height to Apex (m)	4.02
Ground to Level Floor (m)	1
Average Soil Height (m)	3.3
Building Length (m)	22.8
Building Width (m)	7.3
Building Plan Area (m ²)	166

Building Location	
Wind Zone	High
Earthquake Zone 1	Soil Type D & E (Deep to Very Soft)
Annual Prob. of Exceedance: 1 in 500 (Default)	

Bracing Units required for Wind		
	Along	Across
Single Level	291	764
Subfloor Level	574	1660

Bracing Units required for Earthquake		
	Along & Across	
Single Level	821	
Subfloor Level	1211	



What?

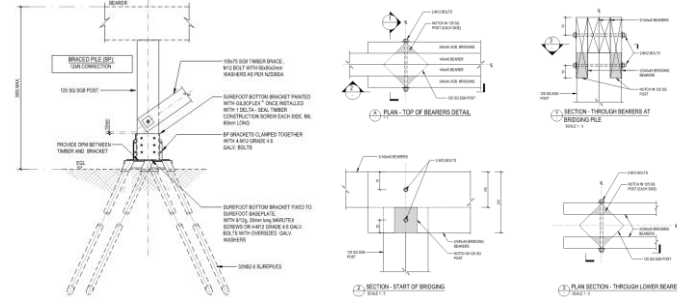
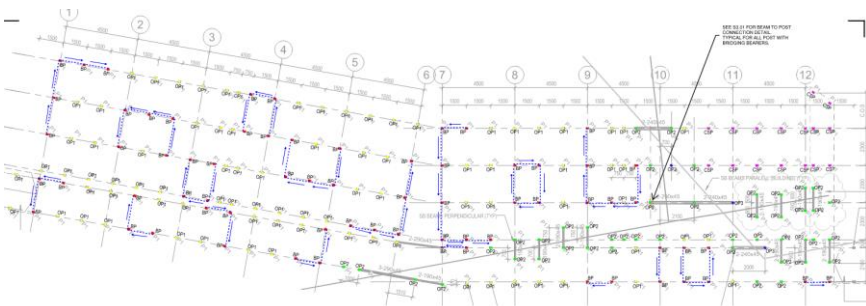
- Design of subfloor bracing and pile system of new **classroom buildings**.
- Propose pile layouts and detailed mark-ups of subfloor and pile connection.

How?

- Calculate **pile design loads** and **bracing demands** of each classroom buildings and common deck.
- Develop **worst-case** load combinations for typical pile types.
- Prepare detailed subfloor bracing, foundation design, and connections for all classroom buildings including decks.
- Prepare **PS1 Package** including calculations and **drawings** for **BC submission**.

FOUNDATION DESIGN SYSTEM FOR NEW CLASSROOM BUILDINGS WITH DECKS - TEC

HOWICK INTERMEDIATE SCHOOL - 15 BOTANY ROAD, BOTANY DOWNS, AUCKLAND



What?

- Foundations and subfloor bracing design for new **modular classroom buildings** and **uncovered decks**.
- Coordination for geotechnical parameters.
- Subfloor bracing through **cantilever piles** and **braced piles** depending on FFL to FGL.

How?

- Prepared **preliminary design markups** and **hand sketches** to illustrate foundation pile and subfloor bracing requirements.
- Coordination with geotechnical engineer to finalize **geotechnical pile design parameters**.
- Develop typical pile load combination for foundation design.
- Prepare detailed subfloor bracing, foundation design, and connections for all classroom buildings including decks.
- Prepare **PS1 Package** including structural calculations, drawings, pile and bracing details, and relevant Architectural drawings (clouded, stamped and signed) for **BC submission**.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

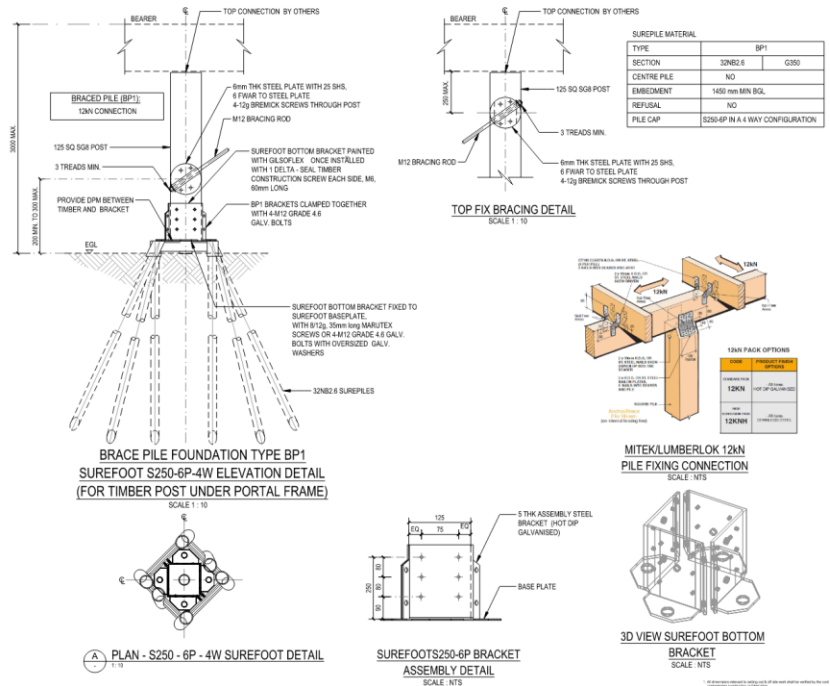
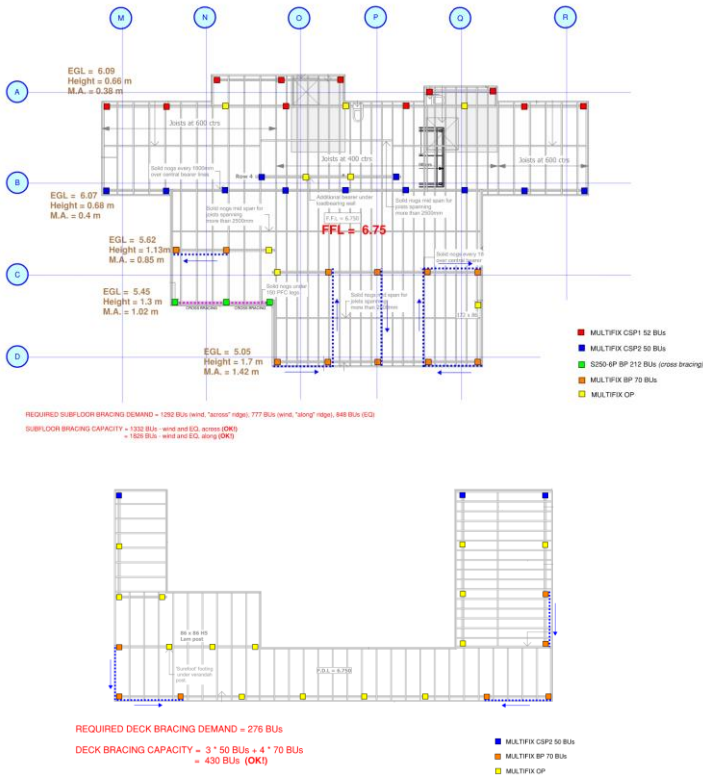
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

🌐 linkedin.com/in/mark-anthony-boco-3316831b1

FOUNDATION DESIGN SYSTEM FOR SINGLE-LEVEL RESIDENTIAL DWELLING - TEC

HAHANGARUA BAY, MOTURUA ISLAND, BAY OF ISLAND



What?

- Structural design of the **subfloor bracing** and **pile foundations** for single-level modular dwelling with deck.
- The standard NZS3604 concrete pile footings are **replaced by Surefoot pile system**.
- The project location is located **near coast**, thus **durability** of material should be taken into account.

How?

- Confirm the **durability requirements** necessary for the design consideration for the subfloor bracing and foundation materials (steel and timber).
- Calculate wind and seismic **lateral loads** for subfloor bracing design.
- Deliver an **efficient, cost-effective** subfloor bracing and foundation design.
- Prepare **PS1 Package** with included structural calculations, structural drawings, and design features report.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

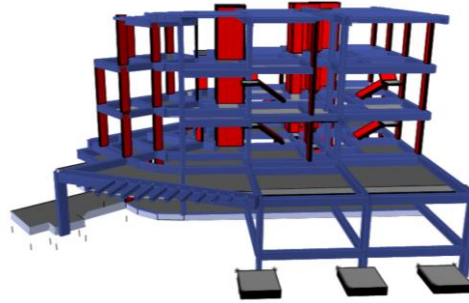
 markanthonydumatolboco@gmail.com

 +63 977 626 1916

 linkedin.com/in/mark-anthony-boco-3316831b1

ANALYSIS AND DESIGN OF THREE-STOREY WITH ATTIC 3-UNIT RESIDENTIAL BUILDING - GNG CONSULTANTS

24 LENGKONG DUA, SINGAPORE



CODES AND SOFTWARES USED:



What?

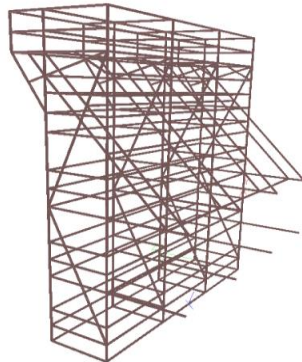
- Structural **design and analysis** of a three-storey residential house with attic.
- Façade structures special engineering design.
- Detail all set of **structural plans**.

How?

- Design and analysis of the superstructure using **ETABS** software, finite element analysis and structural framing design of members using **STAAD.Pro**, and foundation design and analysis using **CSI.SAFE** in accordance with Eurocodes and standards.
- Supporting calculations in **MS Excel**, **Smath**, **Prokon**, and **Tekla Tedds**.
- Prepare structural drawings and details on **AutoCAD**.

DESIGN OF COMMERCIAL MAINTENANCE PLATFORM - GNG CONSULTANTS

MARINE PARADE ROAD, SINGAPORE



CODES AND SOFTWARES USED:



What?

- Structural design and analysis of **maintenance platform** for site construction ongoing **temporary works**.
- Provide **detailed mark-ups** on construction plans as site instructions for ongoing construction.

How?

- Modelled the structure in **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

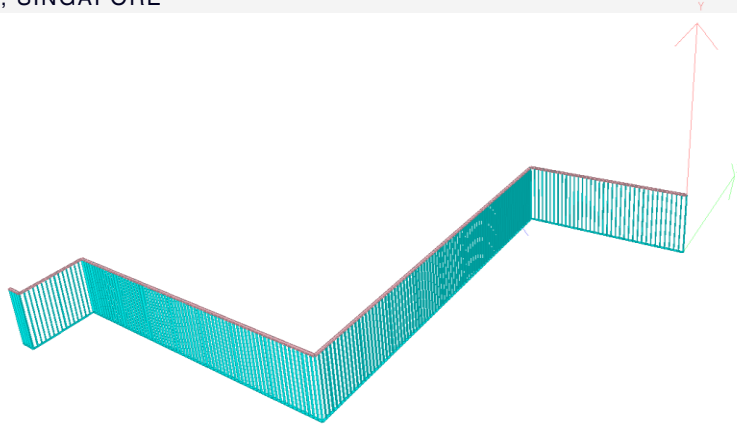
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

🌐 linkedin.com/in/mark-anthony-boco-3316831b1

ANALYSIS AND DESIGN OF E-DECK PLANTER STEEL RAILINGS - GNG CONSULTANTS

HILLVIEW RISE, BUKIT BATOK, SINGAPORE



CODES AND SOFTWARES USED:



What?

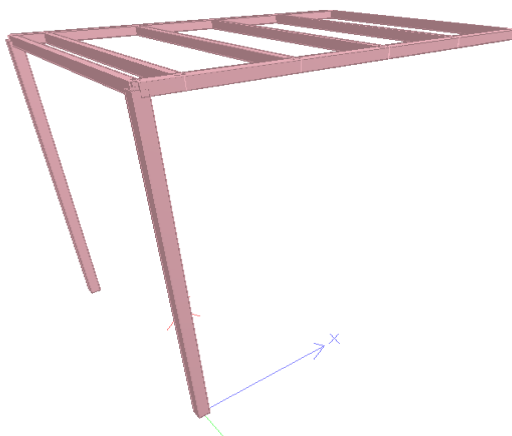
- Analysis and design of safe **steel railings** to be used as a fall protection on roof area of a residential building block.
- Provide **detailed mark-ups** on construction plans as site instructions for ongoing construction.

How?

- Modelled the structure through **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

STEEL FRAME WAITING SHELTER - GNG CONSULTANTS

19 MATTAR ROAD, SINGAPORE



CODES AND SOFTWARES USED:



What?


- Analysis and design of **steel frame shelter** for public school area.
- Provide **detailed mark-ups** on approved plans as guide for construction.

How?

- Modelled the structure in **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

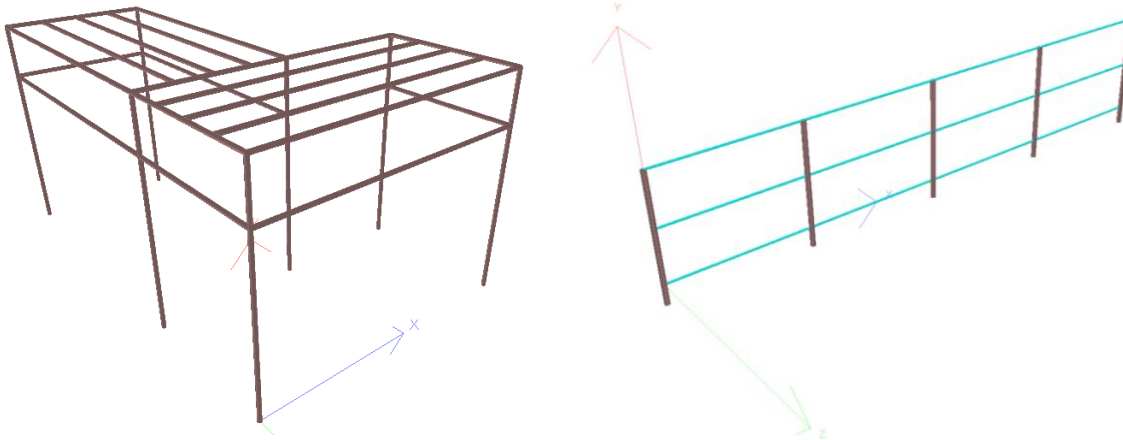
 markanthonydumatolboco@gmail.com

 +63 977 626 1916

 linkedin.com/in/mark-anthony-boco-3316831b1

ROOFTOP BARRICADE AND OVERHEAD SHELTER - GNG CONSULTANTS

AL-JUNIED HOUGANG COUNCIL, SINGAPORE



CODES AND SOFTWARES USED:



What?

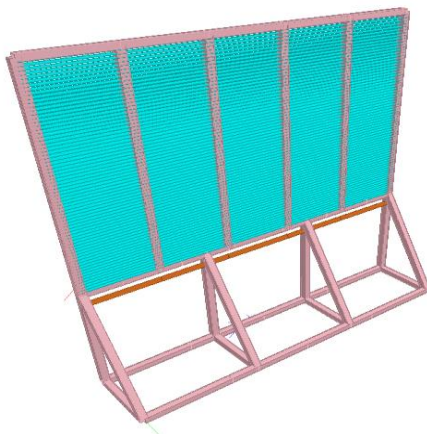
- Analysis and design of **rooftop barricade** and **overhead shelter** for the protection of the public.
- Provide **detailed mark-ups** on approved plans as guide for construction.

How?

- Modelled the structure through **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

SLIDING STEEL CLADDING - GNG CONSULTANTS

300 BISHAN ROAD, SINGAPORE



CODES AND SOFTWARES USED:



What?


- Analysis and design of sliding **steel claddings** to serve as fall protection and barricade for SMRT Bishan Depot.
- Provide **detailed mark-ups** on approved plans as guide for construction.


How?

- Modelled the structure in **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

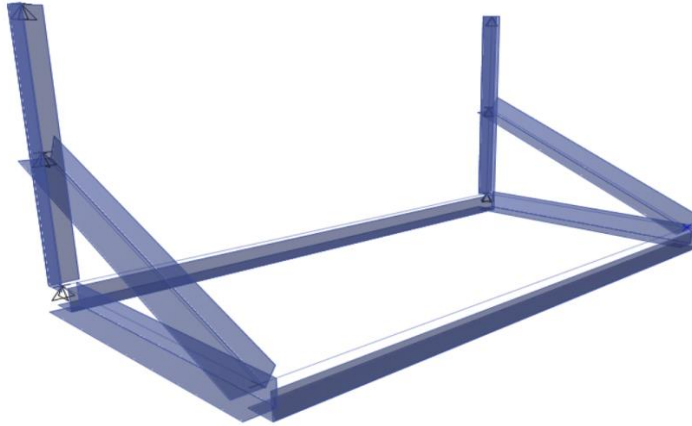
 markanthonydumatolboco@gmail.com

 +63 977 626 1916

 linkedin.com/in/mark-anthony-boco-3316831b1

STEEL BRACKET FRAME FOR CONDENSING UNIT - GNG CONSULTANTS

135 JURONG ROAD, SINGAPORE



CODES AND SOFTWARES USED:



What?

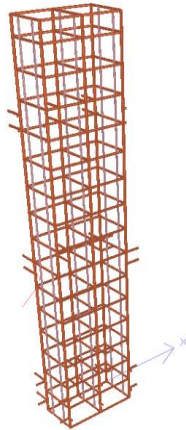
- Analysis and design of **steel frame** used as a bracket to support a condensing unit.
- Provide **detailed mark-ups** on approved plans as guide for construction.

How?

- Modelled the structure through **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

FALSEWORK TEMPORARY WORKS DESIGN AND ANALYSIS - GNG CONSULTANTS

MK 28 TAMPINES AVENUE, SG



CODES AND SOFTWARES USED:



What?

- Analysis and design of **falsework erection** as temporary structure for residential construction.
- Provide **detailed mark-ups** on approved plans as guide for construction.

How?

- Modelled the structure in **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

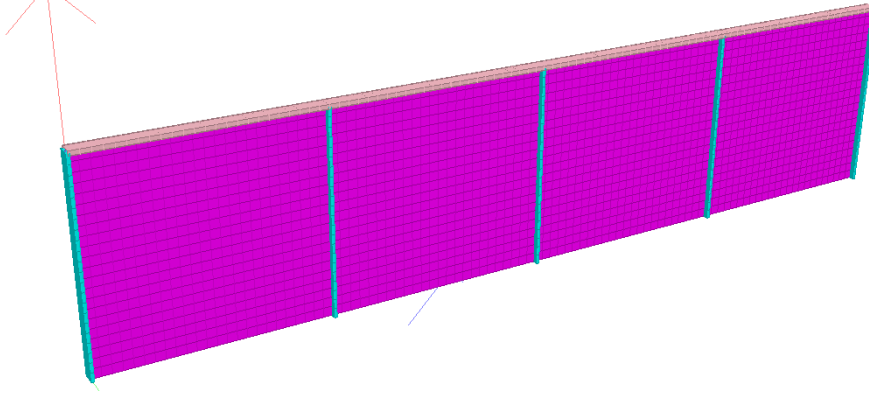
 markanthonydumatolboco@gmail.com

 +63 977 626 1916

 linkedin.com/in/mark-anthony-boco-3316831b1

TEMPERED GLASS RAILINGS - GNG CONSULTANTS

MEYER ROAD, SG



CODES AND SOFTWARES USED:



What?

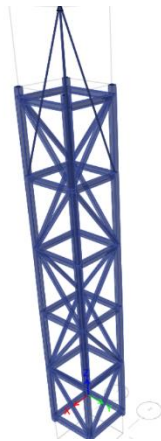
- Finite element analysis and design of **tempered glass railings** supported by steel rectangular section post.
- Provide **detailed mark-ups** on approved plans as guide for construction.

How?

- Finite element analysis and modelled the structure through **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

FALSEWORK TEMPORARY WORKS DESIGN AND ANALYSIS - GNG CONSULTANTS

MK 28 TAMPINES AVENUE, SG



CODES AND SOFTWARES USED:



What?

- Analysis and design of **passenger and material hoist mast** for One Bernam building construction
- Provide **detailed mark-ups** on construction plans as site instructions for ongoing construction.

How?

- Modelled the structure in **STAAD.Pro**
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.
- Prepare structural plans and design calculations and process permits for **BCA submission**.

MARK ANTHONY BOCO

STRUCTURAL ENGINEER

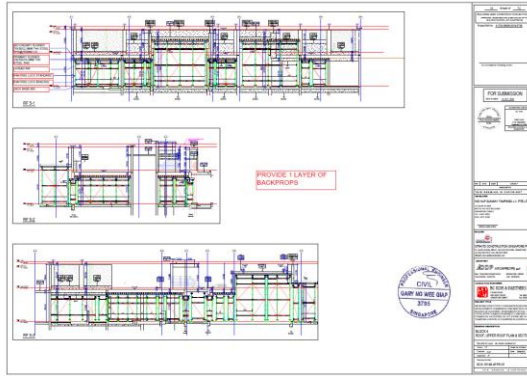
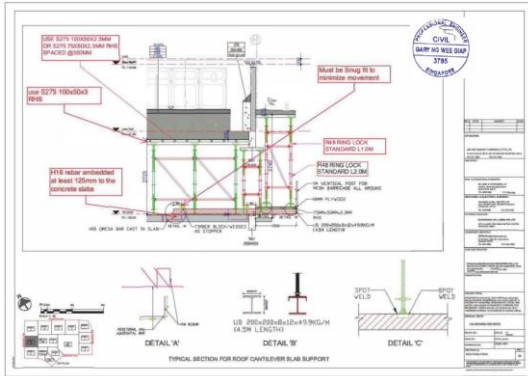
✉ markanthonydumatolboco@gmail.com

☎ +63 977 626 1916

🌐 linkedin.com/in/mark-anthony-boco-3316831b1

ROOF FALSEWORK DESIGN AND ANALYSIS - GNG CONSULTANTS

GEYLANG PLANNING AREA, SINGAPORE



CODES AND SOFTWARES USED:



What?

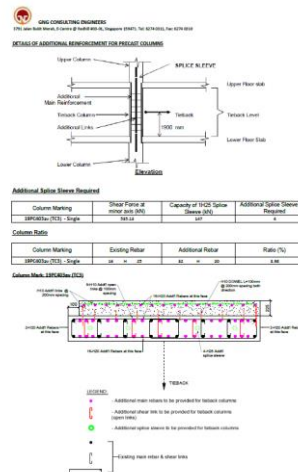
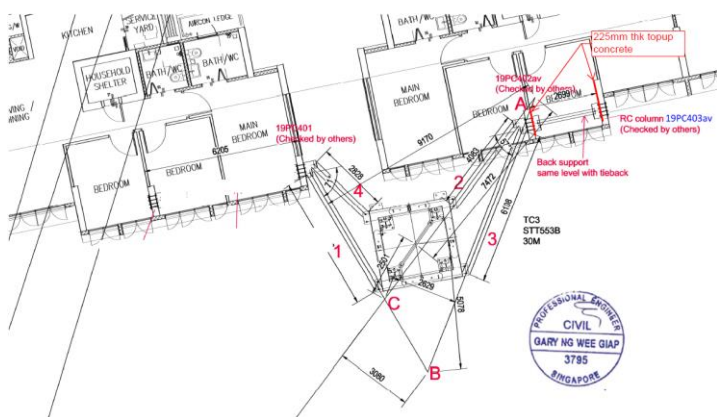
- Design of temporary works and necessary backpropping on existing structure for the construction of new structure.
- Provide **detailed mark-ups** on approved plans as guide for construction.

How?

- Prepare calculations and capacity checking for the falseworks and **backpropping** of a proposed commercial building construction.
- Use MS Excel for load takedowns and efficient calculations.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam** to serve as endorsement drawings for BCA submission.

TOWER CRANE TIEBACK COLUMN DESIGN AND ANALYSIS - GNG CONSULTANTS

GEYLANG ROAD, SINGAPORE



CODES AND SOFTWARES USED:



What?

- Analysis of existing column to be used as **tieback support** for the tower crane for the construction of new condominium blocks.
- Provide **detailed mark-ups** and additional commentaries on the necessary support needed to be installed in the existing column.

How?

- Calculate all **transfer loads** from the tower crane to the columns that will serve as a tieback support using **MS Excel** and **SMath**.
- Modelled and analyzed the structure in **STAAD.Pro**.
- Design for the worst-case governing load combinations, combining effects from disparate load factors and foreseeable accidental actions, with allowances specific to temporary works.
- Prepare detailed mark-ups on constructions plans and details using **Bluebeam**.