



EMBRACE TECHNOLOGY OR YOU BECOME OBSOLETE

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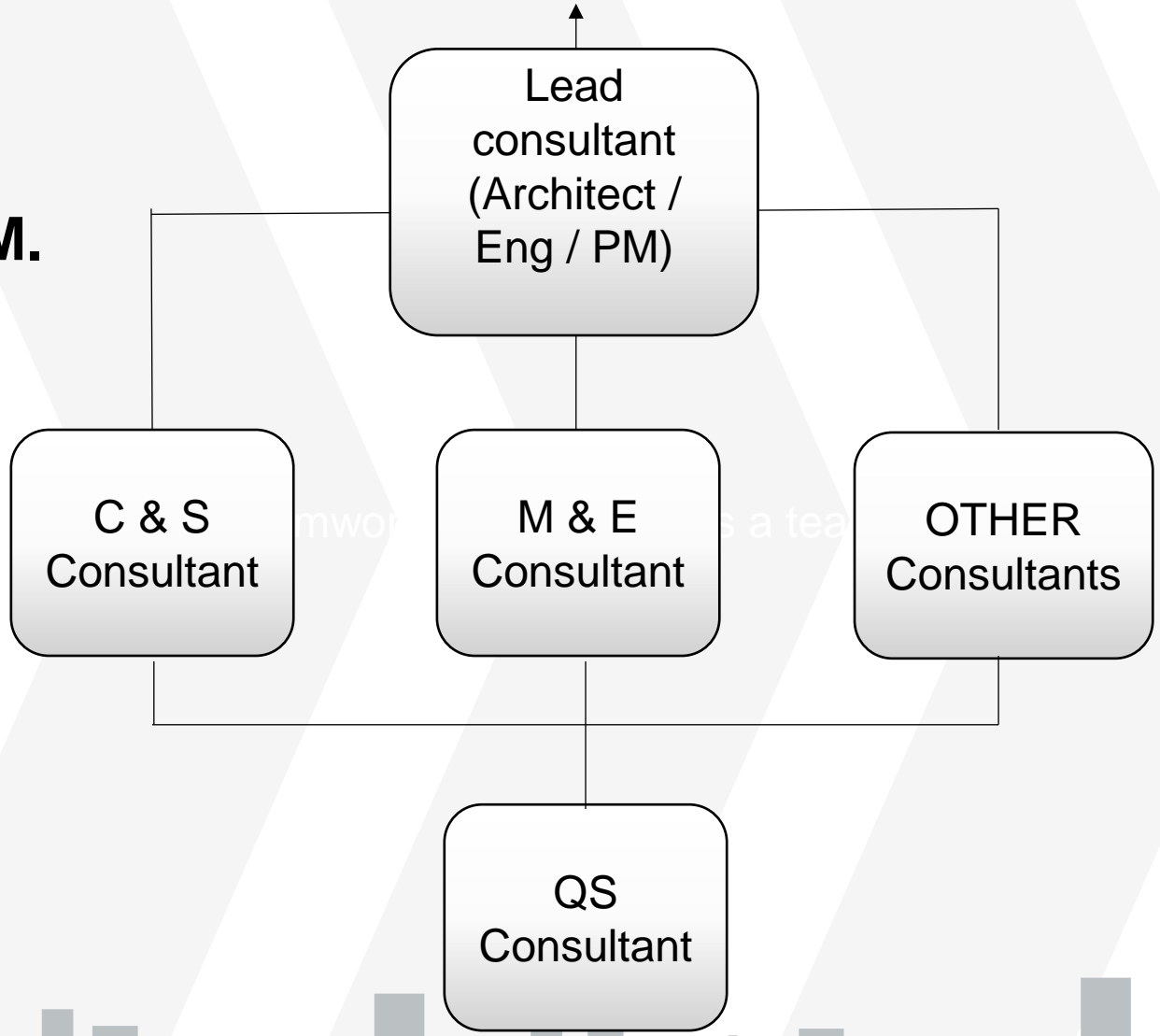
AMD[®]
QUANTITY SURVEYORS
(1995/FP00154)

- Since the invention of Personal Computers over the last four decades, it has changed the landscape of how Quantity Surveyors works. It has been a long way from the traditional method of taking-off to digital taking-off or measurement. Also from hand drawn drawings to digital drawings.
- Quantity Surveyors have to embrace this technology change and innovation in order to stay relevant to the construction industry or will be left out and become obsolete.



**TEAMWORK -
WORKING AS A TEAM.
TEAM MEMBERS**

Timeline ← Estimate/Tender/BQ/VO →



Lead time



DIFFERENCES BETWEEN TRADITIONAL METHOD TO **DIGITAL** MEASUREMENT

Traditional

- Hardcopy drawings required
- Forms and stationaries
- Scale rule
- Calculator
- Squarer & Checker
- Type writer
- Typist
- Telephone -> fax
- Cyclostyle -> Photostat machine
- Despatch boy



Digital

- Soft copy drawings
- Specialized Software
- Digital forms
- Internet / Email / whatsapp
- Personal computer (with 2 monitors)
- Server
- Typist Not required
- Telephone / fax
- Printer / photostat machine
- Courier service/dispatch boy



CHALLENGES IN GOING DIGITAL

The will power to change
from Directors,
Management and Staffs

01

02

Investment cost

1. software
2. hardware
3. training

03

Readiness and
acceptability of client

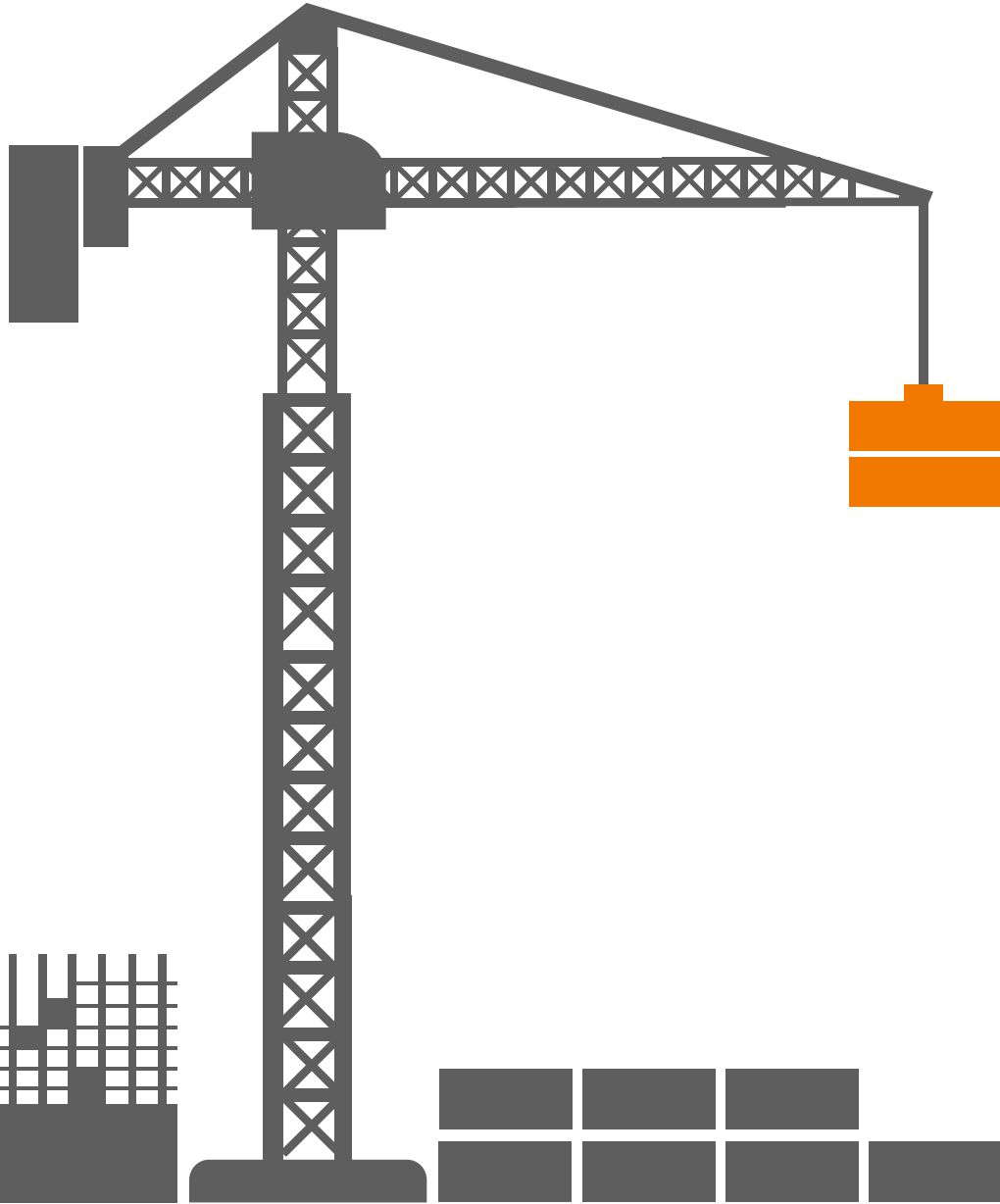
04

Conflict with Client's SOP

05

Maintenance cost

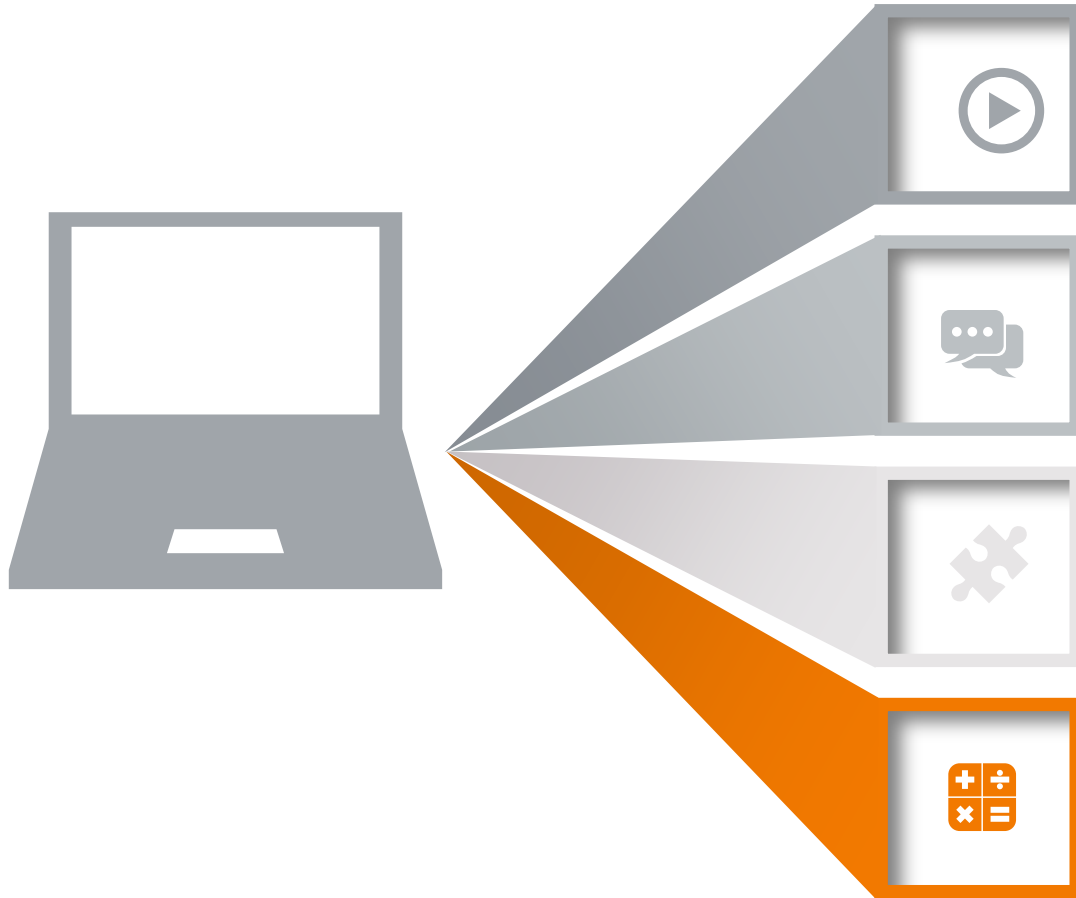




ADVANTAGES OF GOING DIGITAL

- Time saving – faster production
- Eliminate calculation error
- Consistency in build-in formula
- Accuracy
- Shorter lead time
- Help identify conflict with the use of 3D modelling
- 2D VS 3D drawings
- Reduce manpower cost
- Worksheets are presentable
- Space saving

E-TENDERING



Advantages

- Eliminate calculation error
- Faster cost review by tenderer
- Drastically reduce labour for data input for tender report preparation
- Saving on tender documentation cost
- Saving on paper and space



IMPROVEMENT



Estimating

- Floor area
- Approximate quantities



Tendering

- Electronic Tendering



Measurement
of quantities

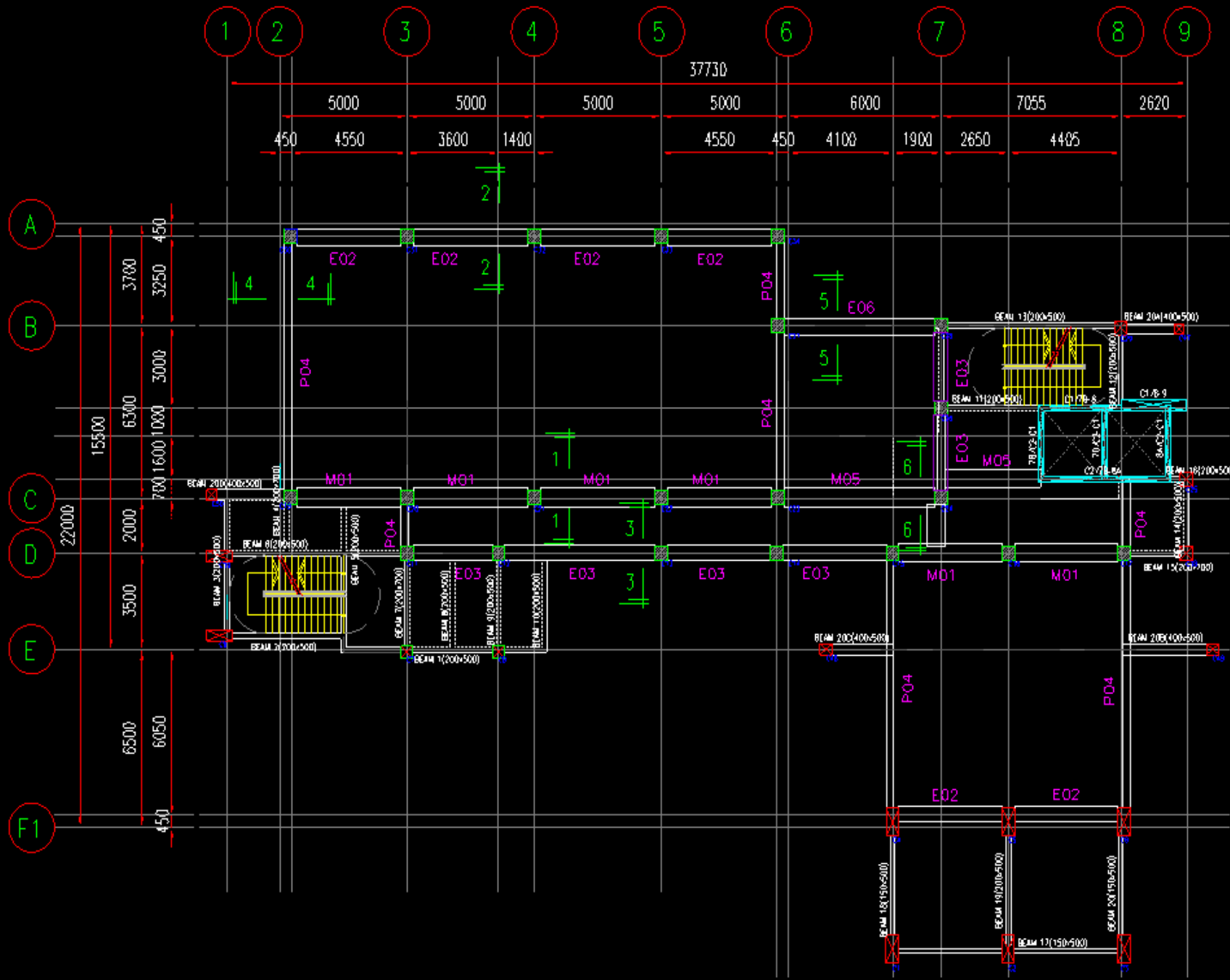
- BQ/Tendering
- Based on establish Standard Method of Measurement



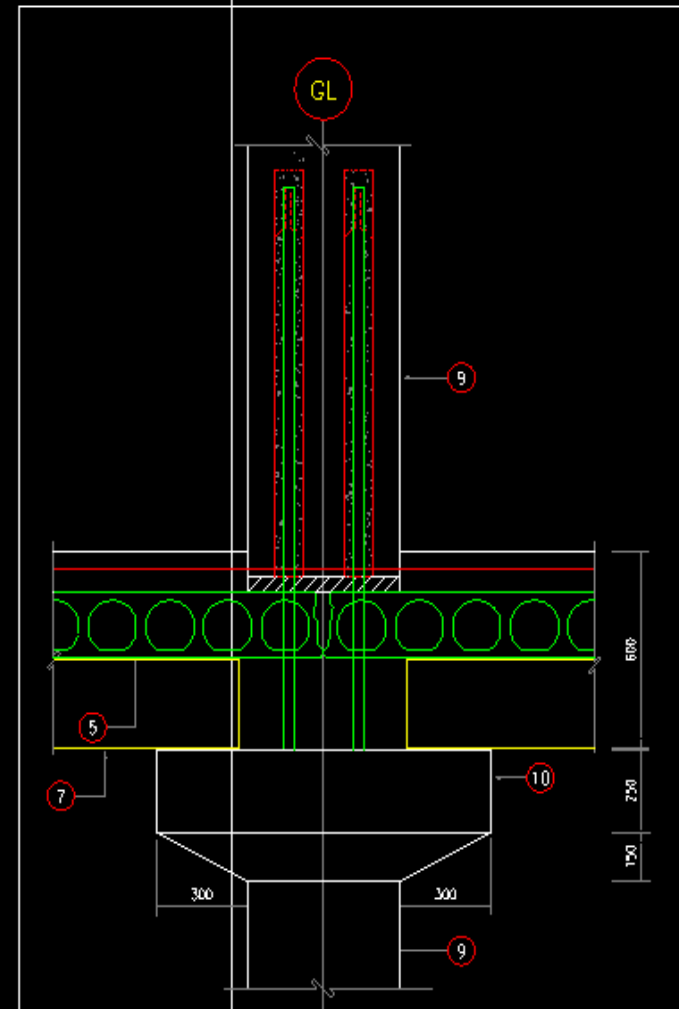
Post
Contract
works

- valuation for interim payment certificates
- measurement for variation work / order

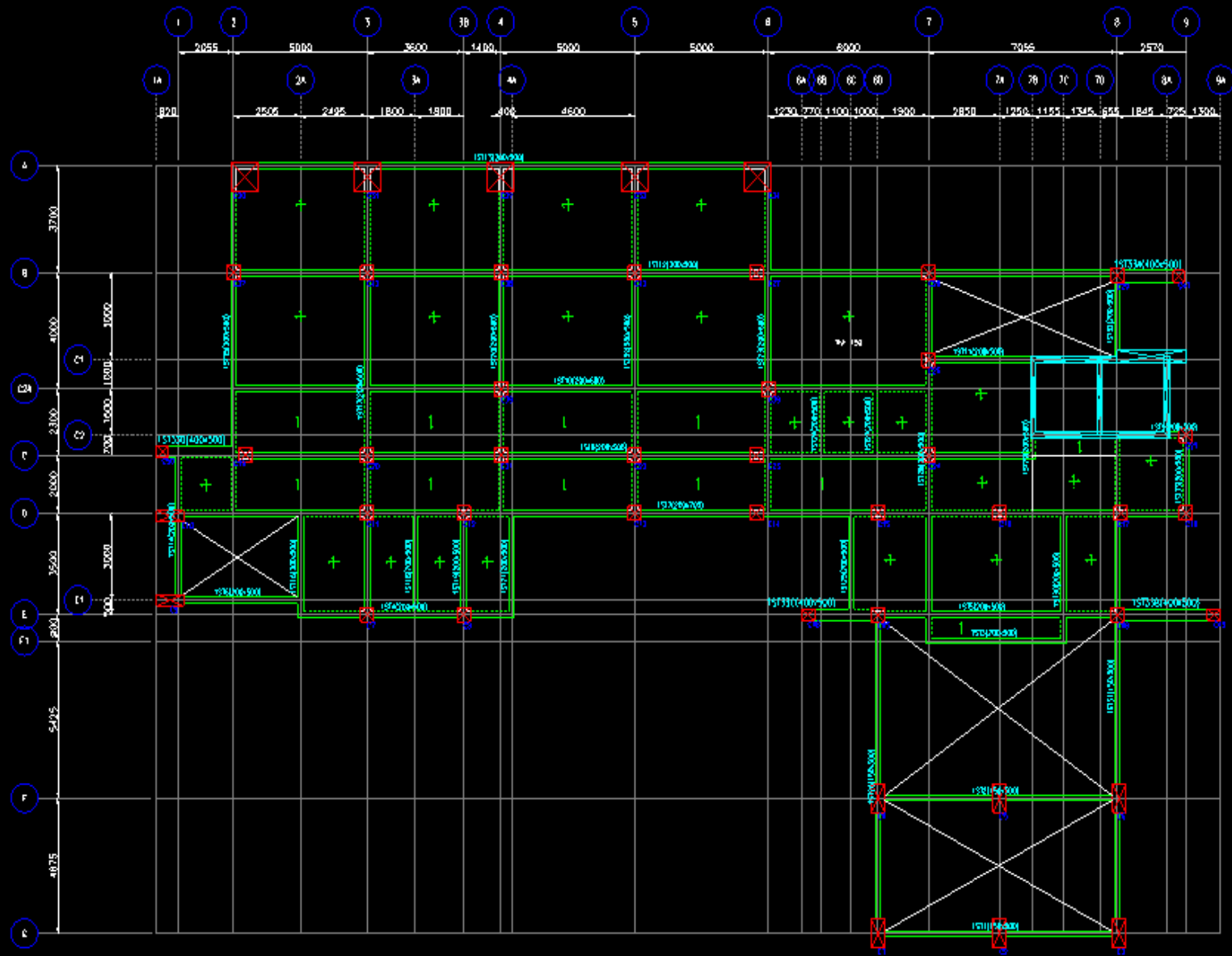




2ND FLOOR BEAM LAYOUT PLAN
SCALE = 1:75

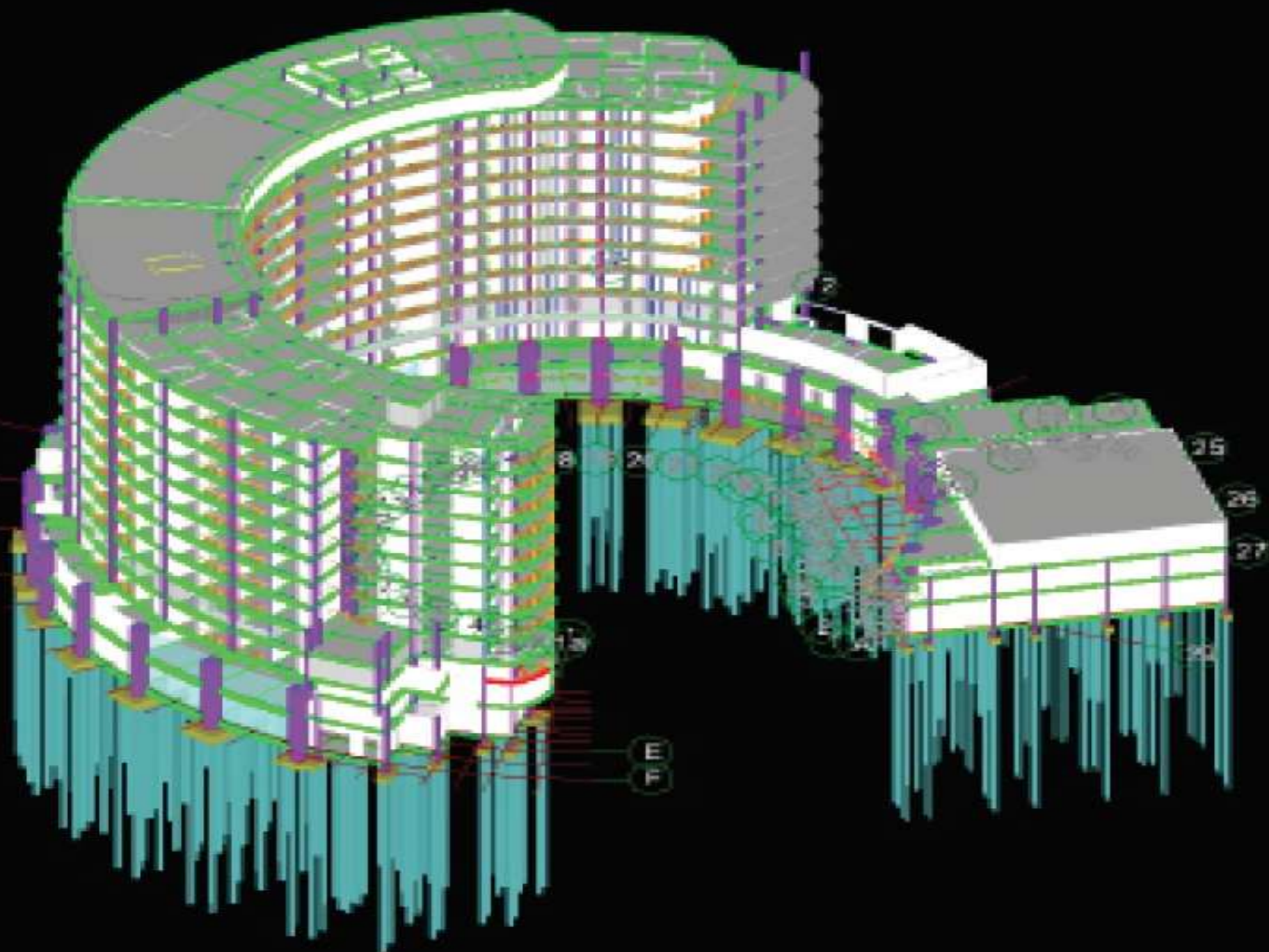


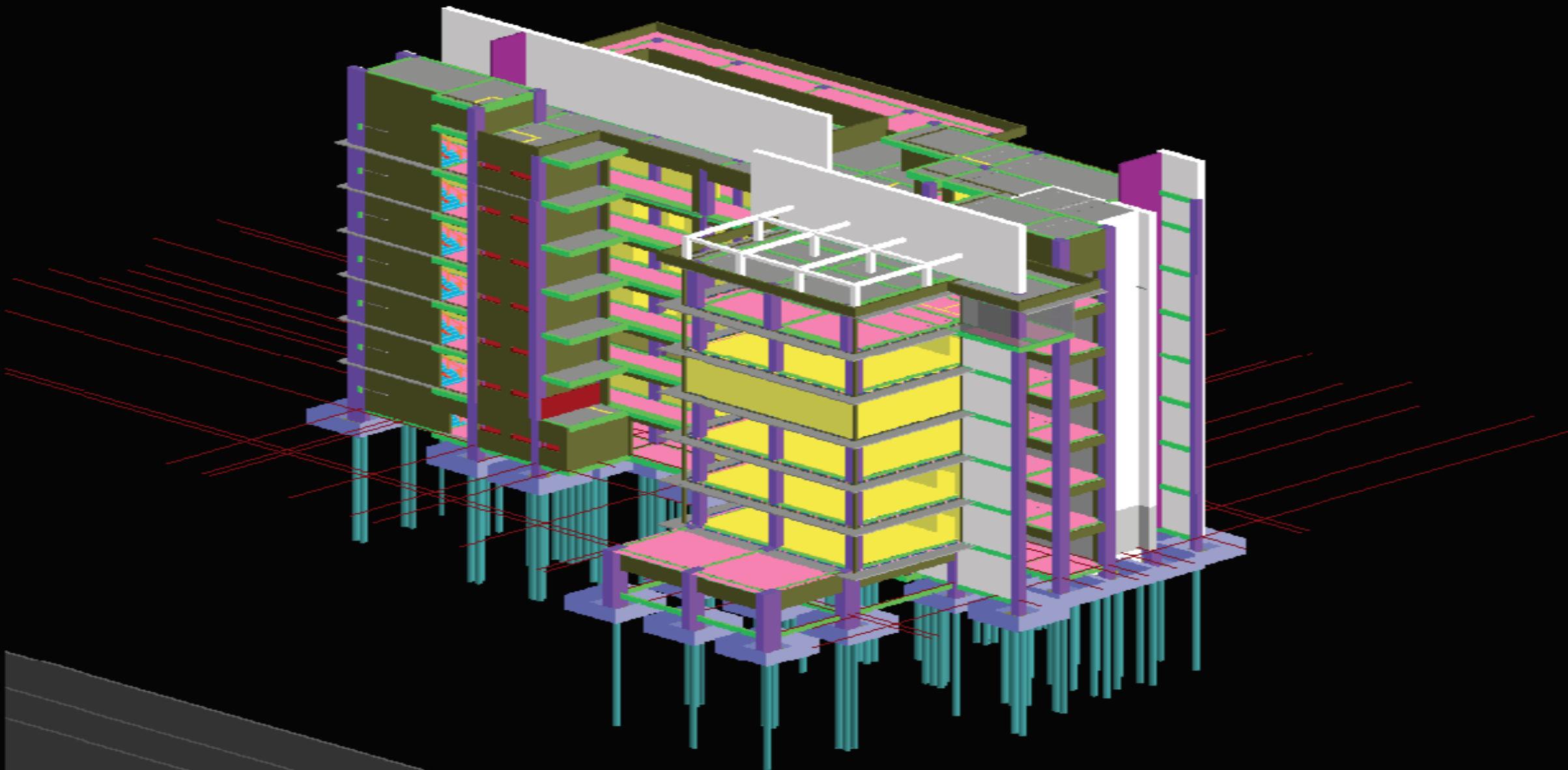
(TYPICAL CORBEL DETAIL)
SCALE = 1:25

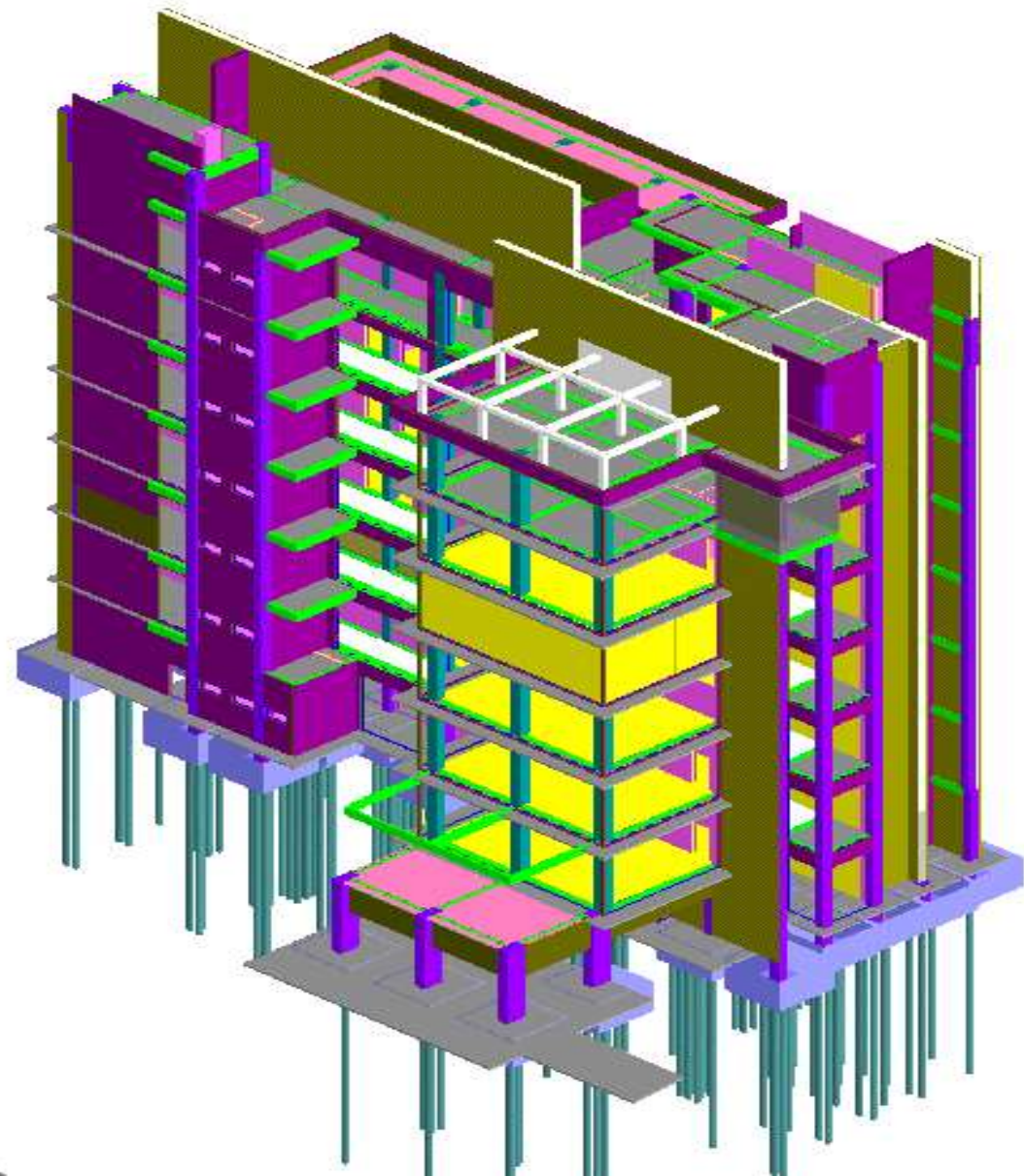


1. COORDINATE SYSTEM: (1000, 1000) TO (10000, 10000)
2. SCALE: 1:100 (FOR BEAMS) AND 1:200 (FOR COLUMNS)
3. MATERIALS:
 - Beams: RC
 - Columns: RC
4. FINISHES:
 - Floor: 100mm concrete
 - Walls: 200mm brick
 - Ceiling: 100mm concrete
5. NOTES:
 1. ALL DIMENSIONS ARE IN METERS.
 2. BEAM CROSS-SECTION: 300x450mm.
 3. COLUMN CROSS-SECTION: 400x400mm.
 4. BEAM SPACING: 5000mm.
 5. COLUMN SPACING: 5000mm.
 6. ALL BEAMS ARE TO BE CAST WITH 100mm CONCRETE SLAB.
 7. ALL BEAMS ARE TO BE CAST WITH 100mm CONCRETE SLAB.
 8. ALL BEAMS ARE TO BE CAST WITH 100mm CONCRETE SLAB.
 9. ALL BEAMS ARE TO BE CAST WITH 100mm CONCRETE SLAB.
 10. ALL BEAMS ARE TO BE CAST WITH 100mm CONCRETE SLAB.

1ST FLOOR BEAM LAYOUT PLAN
 ALL DIMENSIONS IN METERS

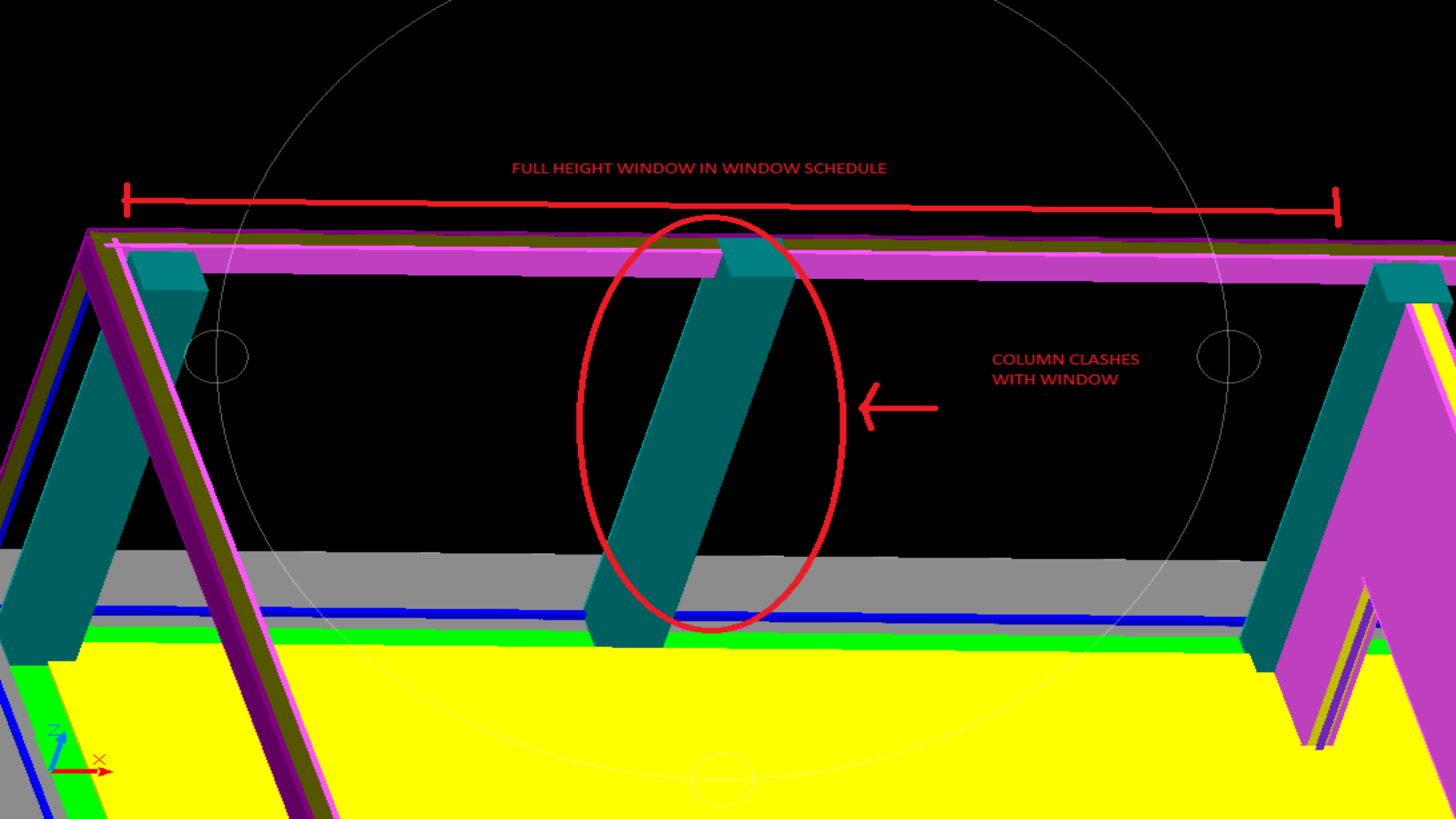






FULL HEIGHT WINDOW IN WINDOW SCHEDULE

COLUMN CLASHES
WITH WINDOW



START PROJECT SETTINGS BIM MODEL IDENTIFY DRAW VIEW QUANTITY

Select Batch Polyline Same-Name Select Measurement Settings Measurement Rules Calculate Calculate Selected Entity View Expression View Quantity by Category View Quantity Lock Unlock

Floor 1 Beam Beam B2.1F-HB1

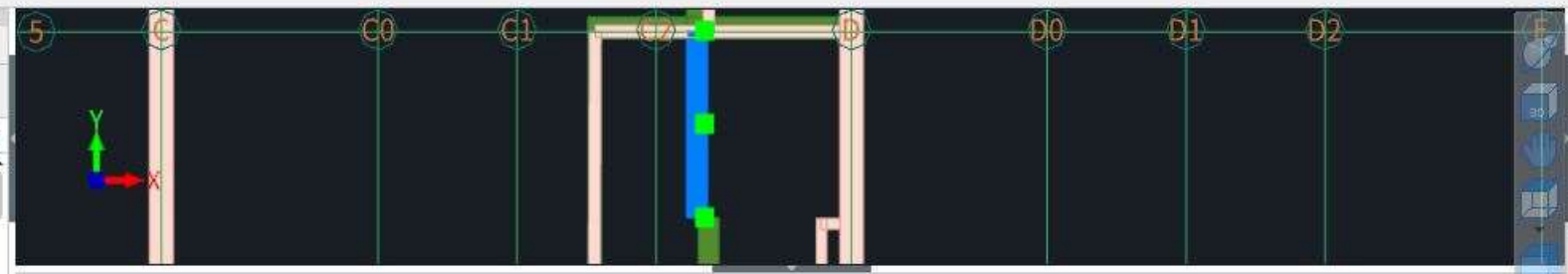
Element List

Searching element...

- Column(C)
- Stiffener(S)
- Corbel(E)
- Wall
 - Wall(W)
 - Curtain Wall
 - Vertical Proj
 - Horizontal P
- Door/Window Op
- Beam
 - Beam(B)
 - Coupling Be
 - Ring Beam(I)
- Slab
- Steel Structure
- Staircase
- Finishes
 - Room(R)
 - Floor Finish
 - Waterproof(F)
 - Skirting(T)
 - Wall Finish(L)
 - Ceiling Finis

Attribute Editor

Attribute	Value
Common Attribute	
Name	B1.1F-VB6-1
Material	In-situ Concrete
Section Width (...)	200
Section Height ...	475
Start Top Elevat...	Floor_Bottom_Elevation(3.670)
End Top Elevati...	Floor_Bottom_Elevation(3.670)
Axis to Left Sid...	175
Concrete Grade	(C30)
Formwork Type	(Sawn Formwork)
Entity Type	(Horizontal)
Entity Shape	Rectangle



View Element Entity Quantity Expression

Element Type: Element Name: B1.1F-VB6-1 Quantity Name: [All] 3D Deduction

Quantity Name	Quantity Expression	Quantity	Unit	Count Tag	Remarks
1 Volume	$(0.200 \times \text{Width} \times 0.475 \times \text{Height} \times 1.725 \times \text{Length of Centerline}) - 0.013 \times \text{Deduct column} - 0.007 \times \text{Deduct beam} - 0.046 \times \text{Deduct in-situ slab}$	0.099	m3	<input checked="" type="checkbox"/>	
2 Area of Formwork(<=3.5m)	$0.819 \times \text{Original Area of Formwork to Left Side} + 0.819 \times \text{Original Area of Formwork to Right Side} + 0.345 \times \text{Original Area of Formwork to Soffit of Beam} + 0.056 \times \text{Area of Formwork to End} - 0.155 \times \text{Deduct column} - 0.083 \times \text{Deduct beam} - 0.472 \times \text{Deduct in-situ slab}$	1.329	m2	<input checked="" type="checkbox"/>	
3 Area of Formwork to Side of Beam	$1.639 \times \text{Original Area of Formwork to Side} - 0.069 \times \text{Deduct beam} - 0.128 \times \text{Deduct column} - 0.455 \times \text{Deduct in-situ slab}$	0.986	m2	<input checked="" type="checkbox"/>	
4 Net Length	$1.725 \times \text{Length of Beam} - 0.135 \times \text{Deduct column} - 0.072 \times \text{Deduct beam}$	1.518	m	<input checked="" type="checkbox"/>	
5 Weight of Rebar	$0.099 \times \text{Volume} \times 150.000 \times \text{Steel Ratio}$	14.797	kg	<input checked="" type="checkbox"/>	
6 Number		1	pc	<input checked="" type="checkbox"/>	

Drawing Manager

Name
1 02) RAFT F
2 Model
3 Layout1
4 TYPE B BL
5 BLOCK C
6 PELANT
7 PELAN E
8 BATH 2,3 &
9 BATH 4 C

Layer Manager

START PROJECT SETTINGS BIM MODEL IDENTIFY DRAW VIEW QUANTITY

Select Batch Polyline Same-Name Select Measurement Settings Measurement Rules Measurement Settings Calculate Calculate Selected Entity Calculate View Expression View Quantity by Category View Quantity Quantity Lock Unlock

Floor 1 | Finishes | Floor Finish | A30R470(BAS)

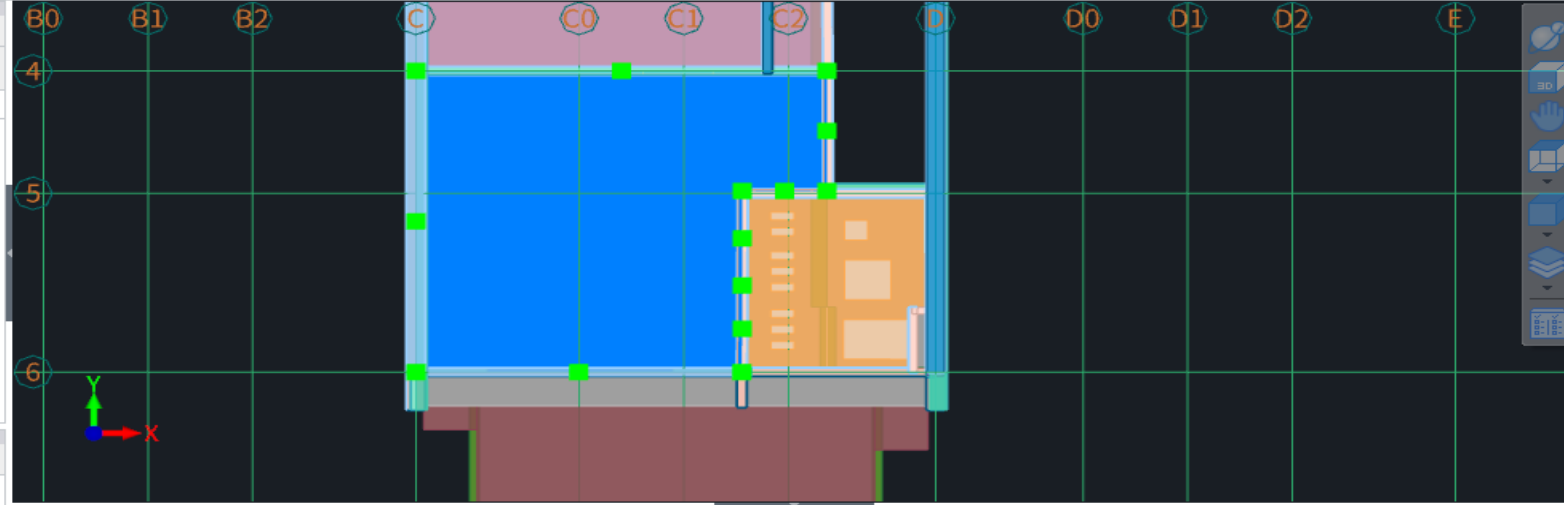
Element List

Searching element...

- Floor Finish
 - A30R470(BASE) [Indoor Floor Finish]
 - A30R440(PATTERN) [Indoor Floor Finish]
 - AT60P100N [Indoor Floor Finish]
 - A59A40L [Indoor Floor Finish]
 - HARDWOOD TIMBER STRIP MERBAU [Indoor Floor Finish]
 - CEMENT RENDER [Indoor Floor Finish]
 - A36MJ1LRE(BASE) [Outdoor Floor Finish]
 - A36MJ2LRE(PATTERN) [Outdoor Floor Finish]
 - A29MJ1LR [Outdoor Floor Finish]
 - A36ADM1DR (Base)

Attribute Editor

Attribute	Value
Common Attribute	
Name	HARDWOOD TIMBER STRIP ...
Type	Horizontal
Thickness (mm)	15
Finish Position	Top
Bottom Elevati...	Slab_Top_Elevation(3.670)
Material of Attac...	(In-situ Concrete)
Parent Entity Type	(Slab)
Associated Uni...	
Material Texture	(double click or right click to assign)
Scale Factor	1



View Element Entity Quantity Expression

Element Type: Element Name: Quantity Name: 3D Deduction

	Quantity Name	Quantity Expression	Quantity	Unit	Count Tag	Remarks
1	Area of Finish to Floor Finish	19.832<Original Area of Finish to Floor Finish>-0.000<Deduct column projecting from wall>+0.045<Add area of side of door>	19.876	m2	<input checked="" type="checkbox"/>	
2	Girth		19.152	m	<input checked="" type="checkbox"/>	

Drawing Manager

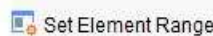
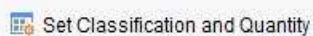
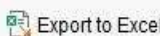
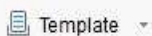
	Name
1	02) RAFT F
2	Model
3	Layout1
4	TYPE B BL
5	BLOCK 6
6	PELAN T
7	PELAN E
8	BATH 2,3 8
9	BATH 4 C

Layer Manager

Modeling | BQ | Report

X = 24842 Y = 2468 | Floor Height: 3.650 | Bottom Elevation: 3.670 | 13 | 1(7) | Hide: 0 | Cross-Element Select | Select entity, right click to cancel | 500 FPS

Floor Finish

 Set Element Range
  Set Classification and Quantity
  Export to Excel
  Template

	Classification Condition			Quantity	
	Floor	Name	Associated Room	Area of Finish to Floor Finish(m2)	Girth(m)
1	Floor 1	A36ADM1DR (Base)	[Null]	6.916	9.219
2			APRON	1.172	1.769
3			Subtotal	8.088	10.988
4		A36ADM2LR (Pattern)	[Null]	2.060	0.602
5			APRON	0.720	
6			Subtotal	2.780	0.602
7		CEMENT RENDER-1[Outdoor Floor Finish]	APRON	1.570	3.545
8			CAR PORCH	24.204	8.713
9			YARD	1.642	3.634
10			Subtotal	27.415	15.892
11		HARDWOOD TIMBER STRIP MERBAU[Indoor Floor Finish]	BEDROOM 2	10.762	13.894
12			BEDROOM 3	9.986	13.536
13			FAMILY LIVING	14.400	14.855
14			MASTER BEDROOM	19.876	19.152
15			STAIRCASE	1.420	2.387
16		Subtotal	56.446	63.825	
17		Subtotal	94.729	91.307	
18		Total	94.729	91.307	

Default Template

- Show Quantities of Room and Assembly
 Show Subtotal
 Only show quantities of one typical floor

Reversely-Check Model

Beam

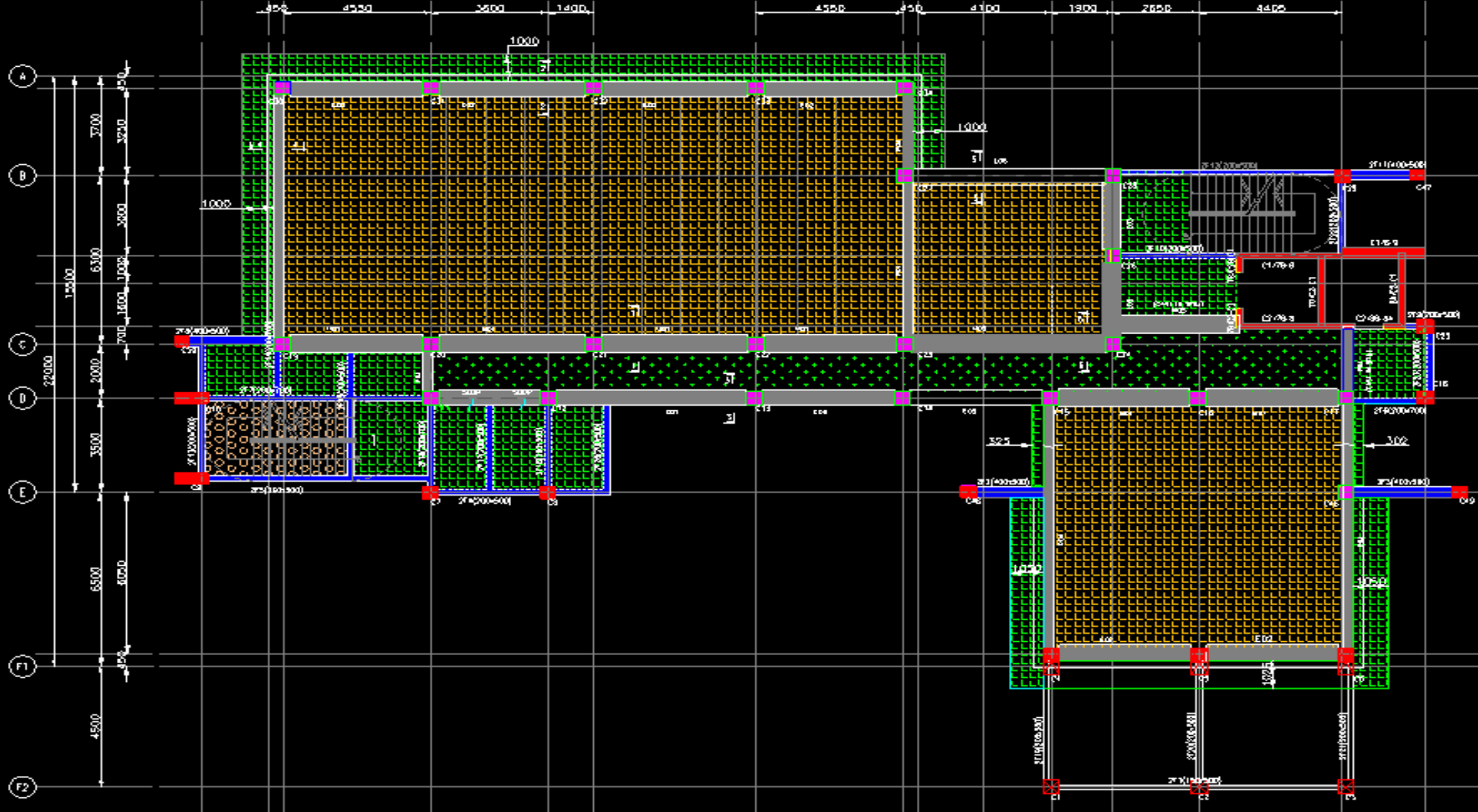
[Set Element Range](#) [Set Classification and Quantity](#) [Export to Excel](#) [Template](#) ▾

	Classification Condition			Quantity					
	Name	Section Width	Section Height	Volume(m3)	Area of Formwork(<=3.5 m)(m2)	Area of Formwork to Side of Beam(m2)	Net Length(m)	Weight of Rebar(kg)	Number(pc)
1	B.1F-HB8a	125	450	0.172	3.321	2.711	4.581	25.768	1
2	B1.1F-HB7	125	450	0.121	2.272	1.950	2.575	18.193	1
3	B1.1F-VB6-1	200	475	0.099	1.329	0.986	1.518	14.797	1
4	B2.1F-VB6-2	200	525	0.238	3.174	2.261	3.647	35.711	1
5	Total			0.630	10.096	7.908	12.321	94.470	4

Default Template

 Show Quantities of Room and Assembly Show Subtotal Only show quantities of one typical floor

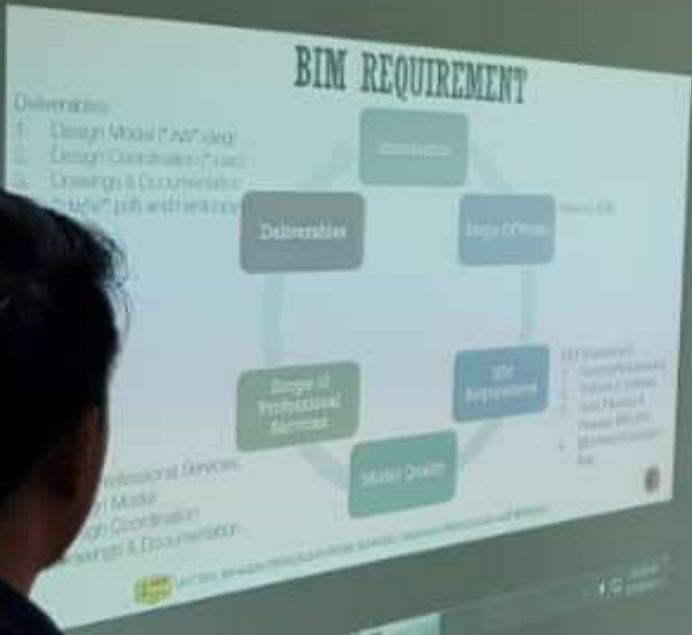
Reversely-Check Model



2ND FLOOR BEAM LAYOUT PLAN

LEGEND:	
	2ND FLOOR IBS BEAM INSTALLED
	2ND FLOOR CIS BEAM CONCRETED
	2ND FLOOR HOLLOWCORE SLAB INSTALLED
	2ND FLOOR HOLLOWCORE TOPPING CONCRETED
	2ND FLOOR PLANK SLAB INSTALLED
	2ND FLOOR PLANK SLAB TOPPING CONCRETED

LEGEND:	
	2ND FLOOR CAST IN-SITU SLAB CONCRETED
	2ND FLOOR PRECAST COLUMN INSTALLED
	2ND FLOOR IBS COLUMN CONCRETED
	STAIRCASE FOR LEVEL 2 TO 3 CONCRETED



Speaker at podium

Attendees



KERAJAAN MALAYSIA
JABATAN KERJA RAYA

TAKLIMAT TENDER PERUNDING
PEMBINAAN RKAT PUSAT HIDROGRAFI NASIONAL

BAHAGIAN KESELAMATAN
CAWANGAN KONTRAK & UKUR BAHAN
IBU PEJABAT JKR MALAYSIA

17 OKTOBER 2019



PERUNDING





WHATEVER
YOU THINK
YOU THINK
THE
OPPOSITE

Thank You

