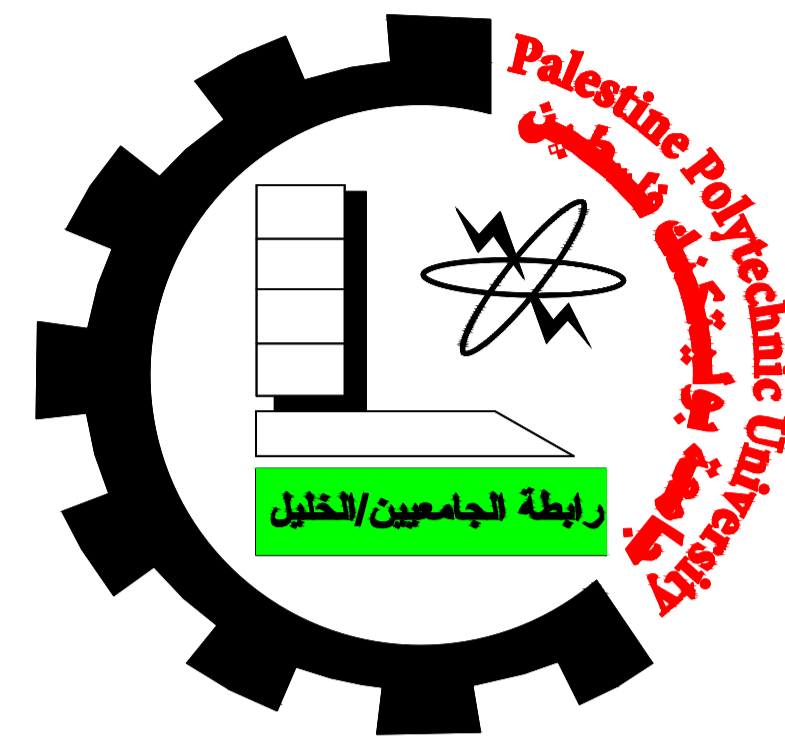


Palestine Polytechnic University



Civil Engineering Department

Done by :

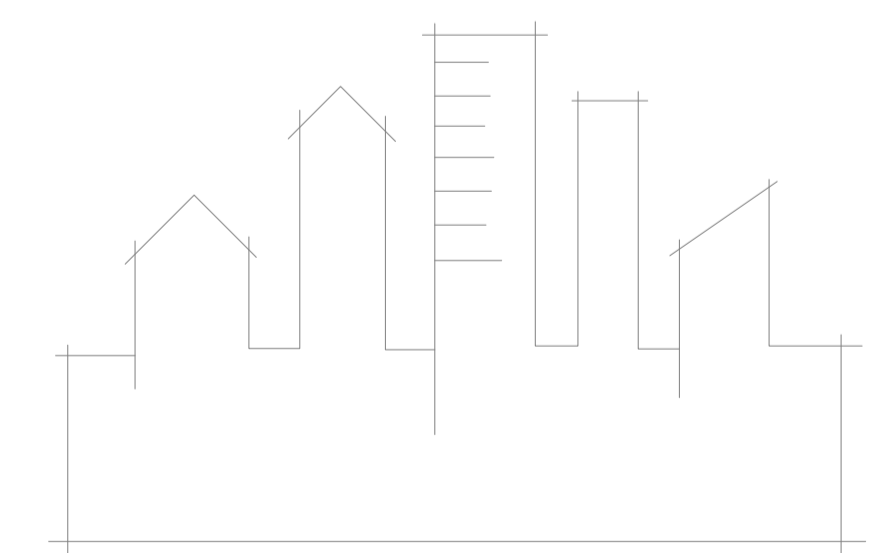
Mahdi Y. Rajabi

Ribhi M. Haddad

*Supervisor:
Eng. Hamdi Ideas*

*GRADUATION
PROJEECT*

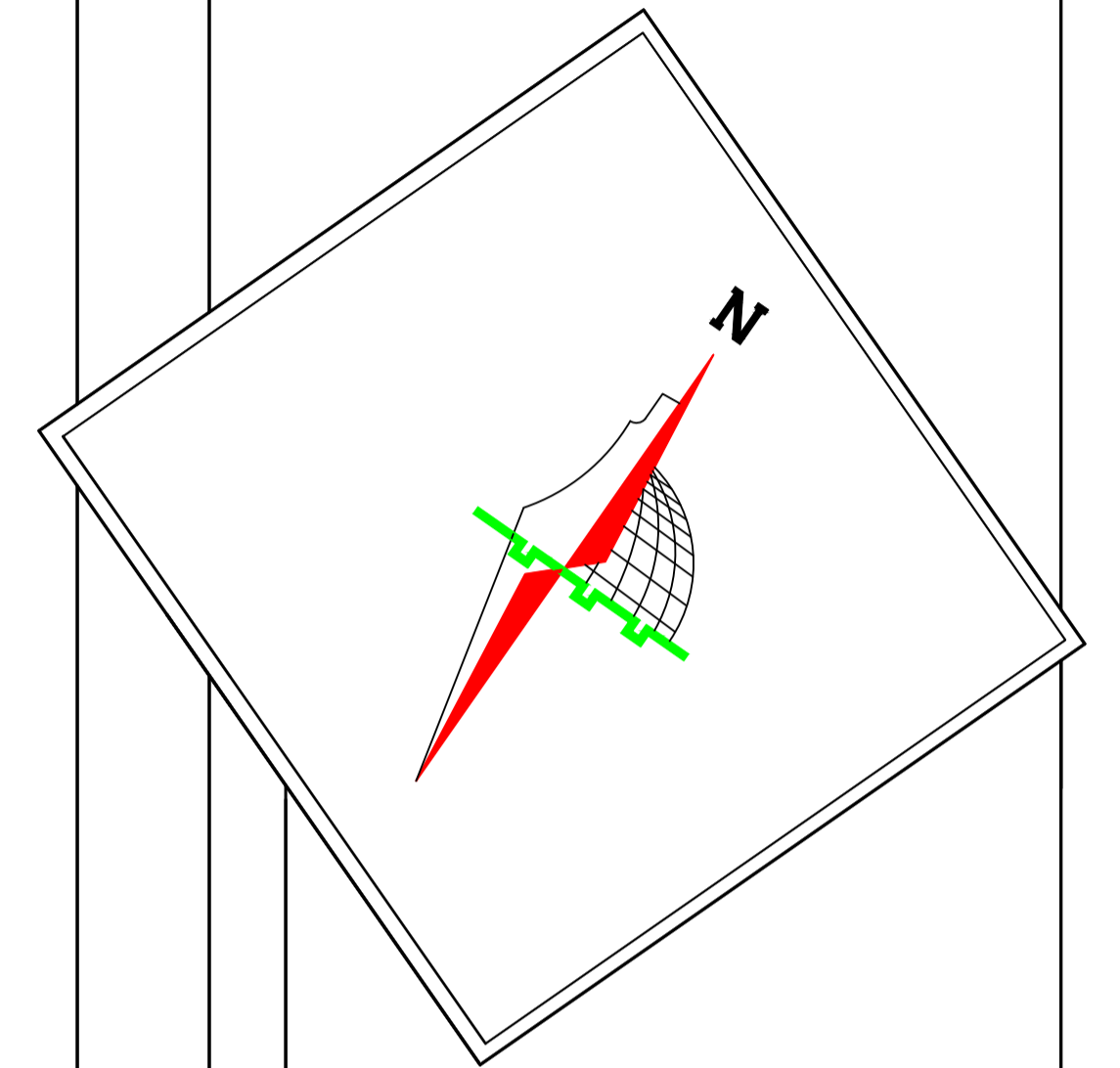
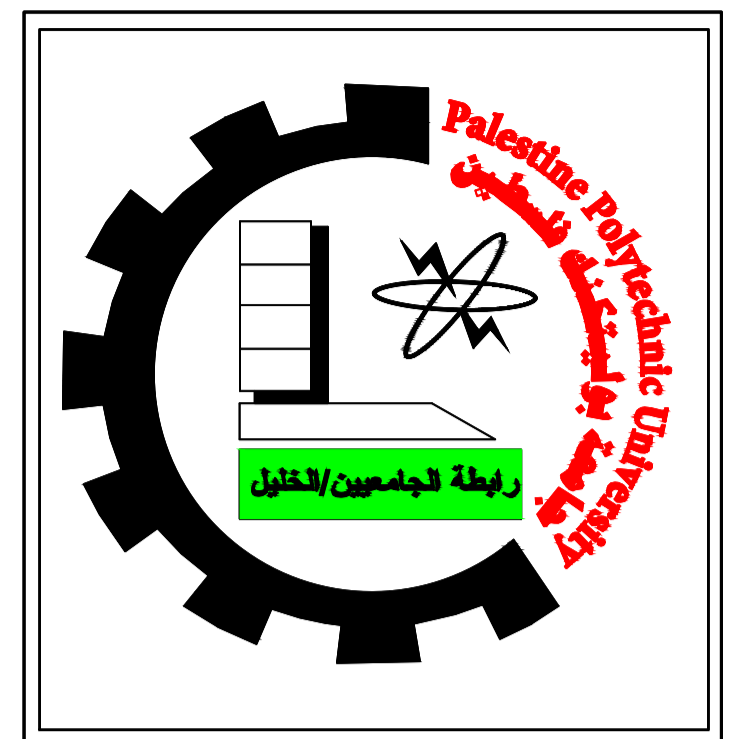
MAY 2022-2023



PROJECT INDEX

LIST OF DRAWINGS

A00	Project Index	S00	General Notes	S25	Ribs Of Slab Of Second Floor
A01	Basement Floor Dimensions Plan	<i>FOUNDATIONS</i>		S26	Reinforcement Of Slab Of Second Floor
A02	Ground floor dimension plane	S01	Basement Floor Foundation Plan	S27	Ribs Of Slab Of Third Floor
A03	First Floor Dimensions Plan	S02	Ground floor Foundation plane	S28	Reinforcement Of Slab Of Third Floor
A04	Second Floor Dimensions Plan	S03	F1 & F2 & F3 DETAILES	S29	Reinforcement Of Staircase Floor Slab
A05	Third Floor Dimensions Plan	S04	F4 & F5 DETAILES	<i>BEAMS</i>	
A06	Staircase Floor Dimensions Plan	S05	Combined Footing DETAILES	S30	Beam 1 & Beam 2
A07	Basement Floor Furniture Plan	S06	Mat Footing (1) DETAILES	S31	Beam 3 & Beam 4 & Beam 5
A08	Ground Floor furniture Plan	S07	Mat Footing (2) DETAILES	S32	Beam 6 & Beam 7 & Beam 8
A09	First Floor Furniture Plan	<i>WALLS</i>		S33	Beam 9 & Beam 10 & Beam 11
A10	Second Floor Furniture Plan	S08	Walls paln	S34	Beam 12 & Beam 13
A11	Third Floor Furniture Plan	S09	Shear Wall (1) DETAILES	S35	Beam 14 & Beam 15
A12	South-East Elevation	S10	Shear Wall (2) DETAILES	S36	Beam 16 & Beam 17
A13	North-West Elevations	S11	Shear Wall (3) DETAILES	S37	Beam 18 & Beam 19 & Beam 20
A14	South-West Elevation	S12	Shear Wall (4) DETAILES	S38	Beam 21 & Beam 22 & Beam 23 & Beam 24
A15	North-East Elevations	S13	Shear Wall (5 & 6 & 7) DETAILES	S39	Beam 25 & Beam 26
A16	Surface Inclination Plane	S14	Basement Wall DETAILES	S40	Beam 27 & Beam 28
A17	Section A - A	<i>COLUMNS</i>		S41	Beam 29 & Beam 30
A18	Section B - B	S15	Columns TABLE (1)	S42	Beam 31 & Beam 32
A19	Area & Volume Plane (1)	S16	Columns TABLE (2)	S43	Beam 33 & Beam 34 & Beam 35 & Beam 36
A20	Area & Volume Plane (2)	S17	Column (2 & 4) DETAILES	S44	Beam 37 & Beam 38 & Beam 39 & Beam 40
		S18	Column (14) DETAILES	S45	Beam 41& Beam 42& Beam 43& Beam 44& Beam45
		<i>SLABS</i>		S46	Beam 46 & Beam 47 & Beam 48
		S19	Ribs Of Slab Of Basement Floor	S47	Beam 49& Beam 50& Beam 51& Beam 52& Beam53
		S20	Reinforcement Of Slab Of Basement Floor	<i>STAIRS</i>	
		S21	Ribs Of Slab Of Ground Floor	S48	Staircase DETAILES
		S22	Reinforcement Of Slab Of Ground Floor	S49	Semi-circular stair DETAILES
		S23	Ribs Of Slab Of First Floor		
		S24	Reinforcement Of Slab Of First Floor		



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

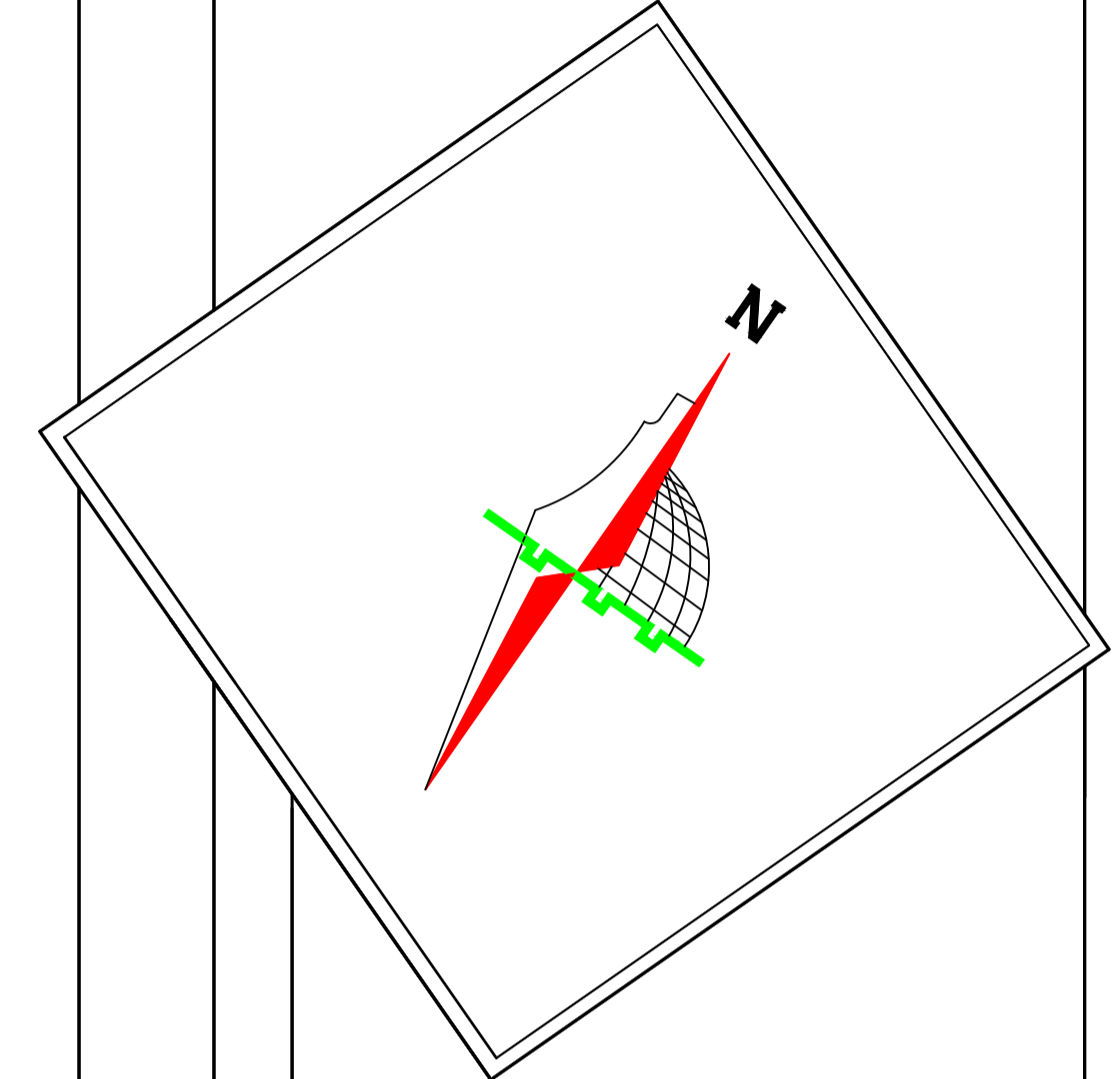
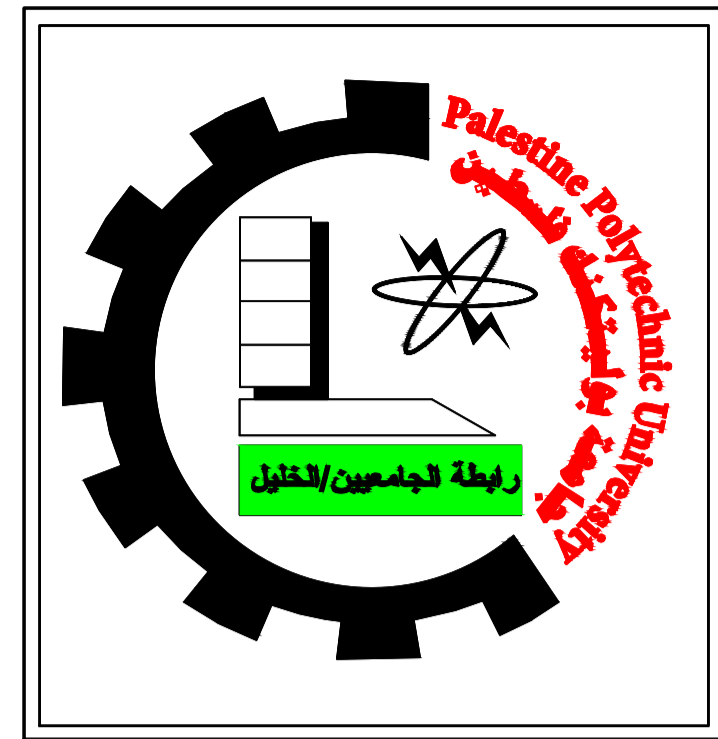
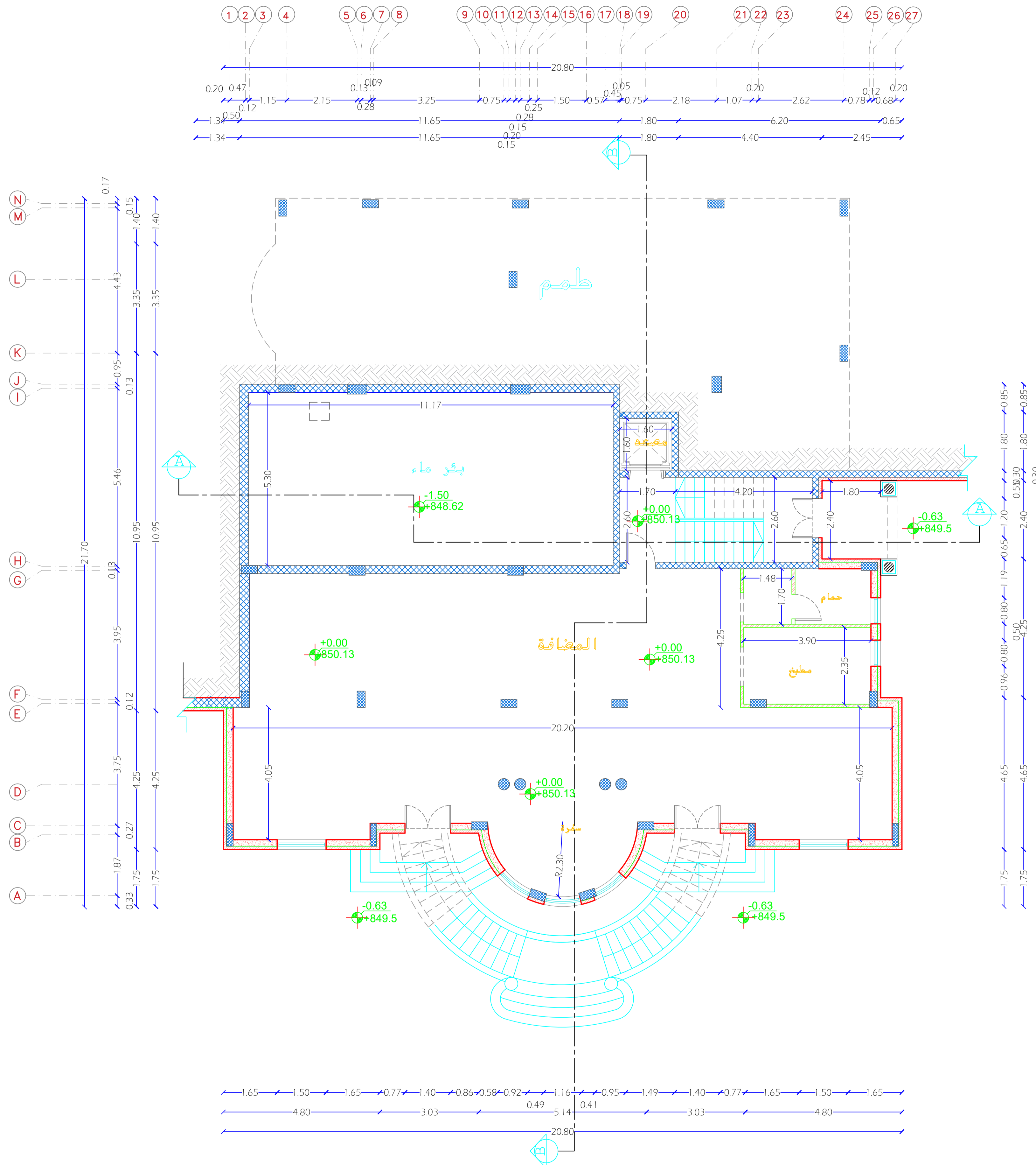
Drawing Title:
Basement Floor Dimension Plan

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/100

Drawing # **A00**



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

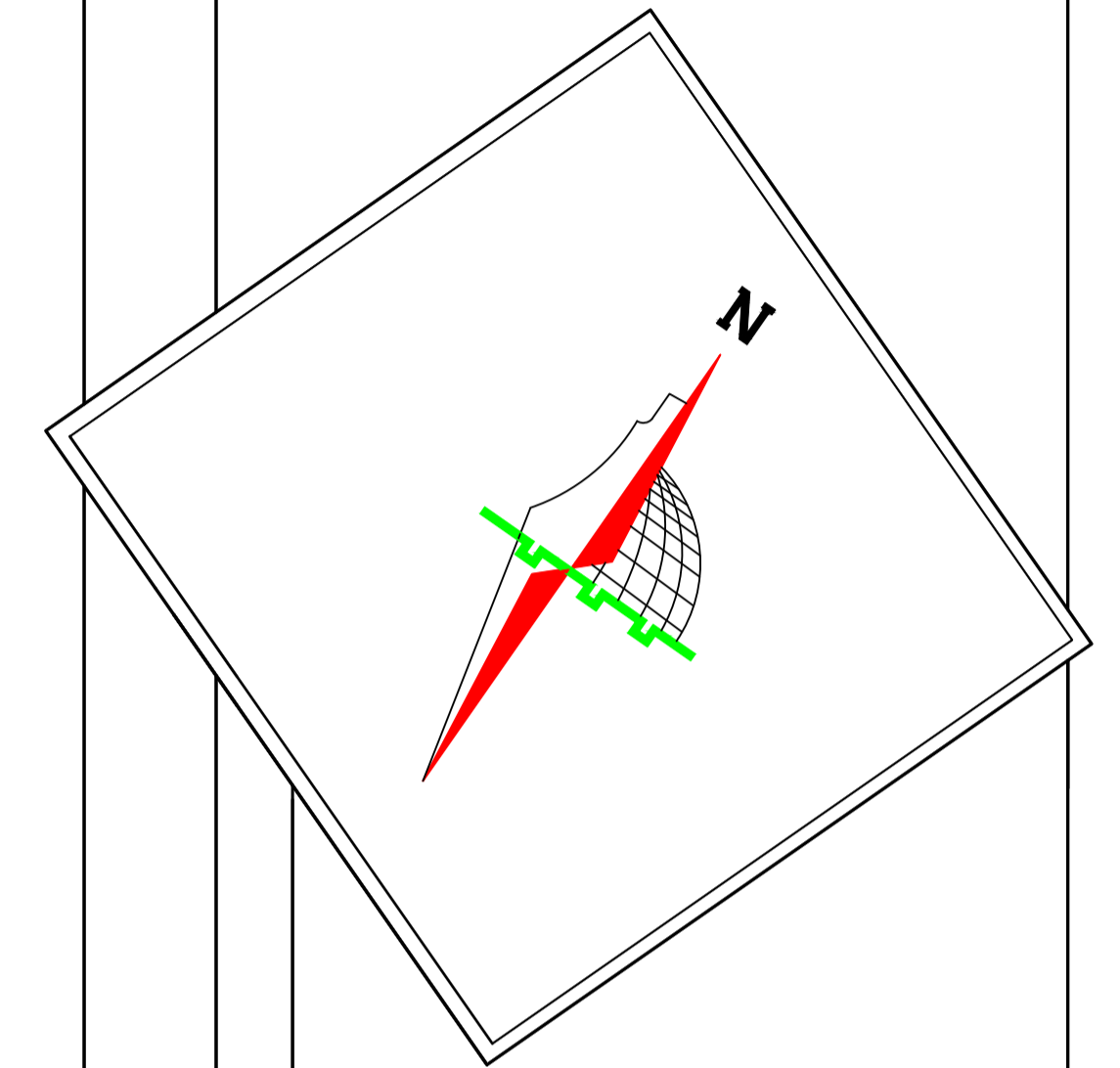
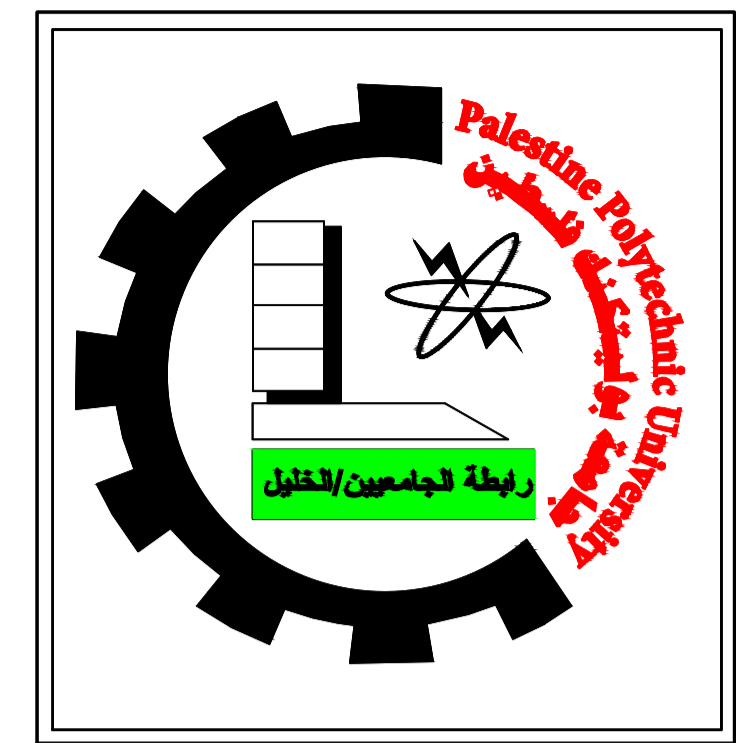
Drawing Title:
Basement Floor Dimension Plan

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A01**



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

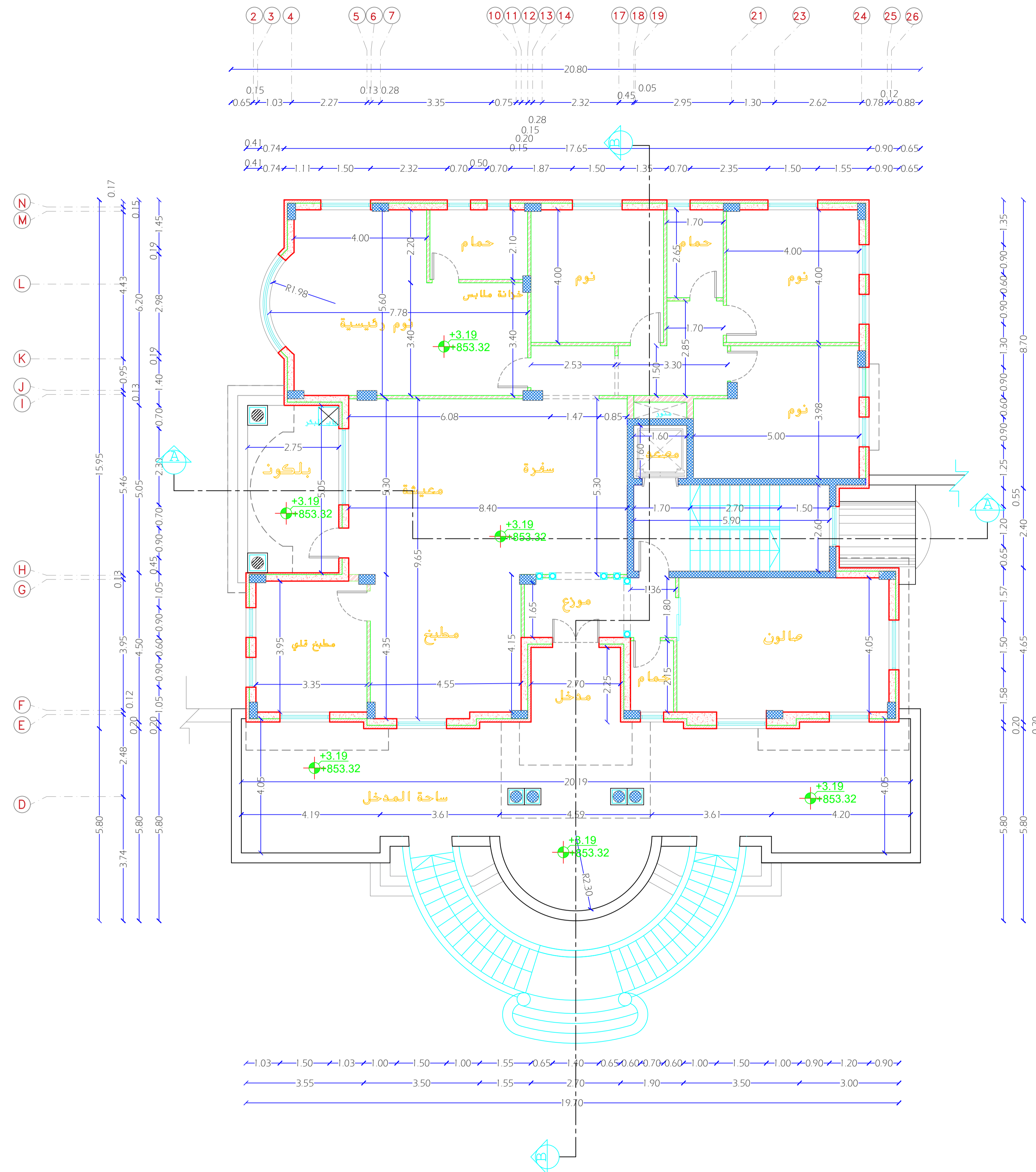
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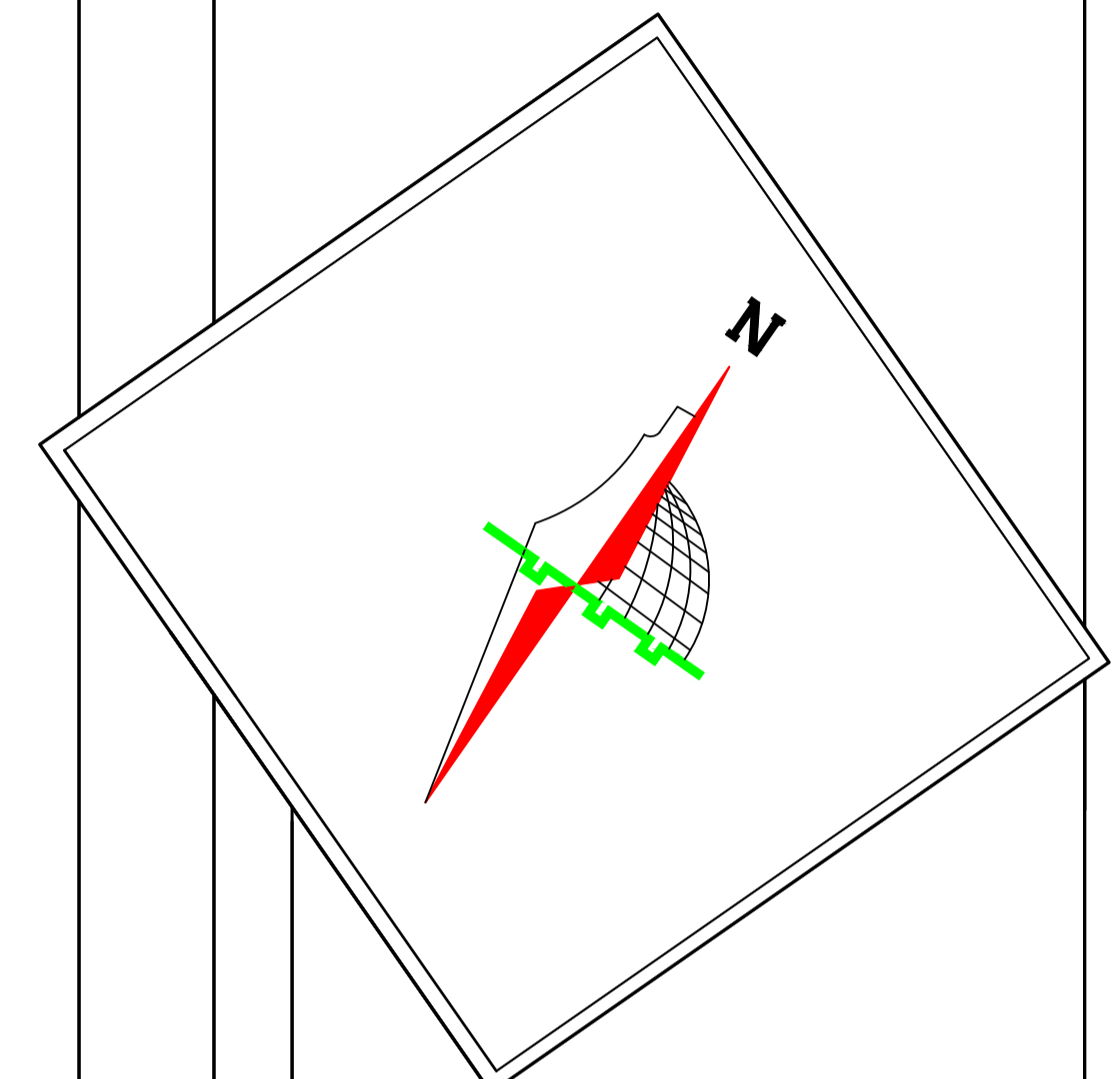
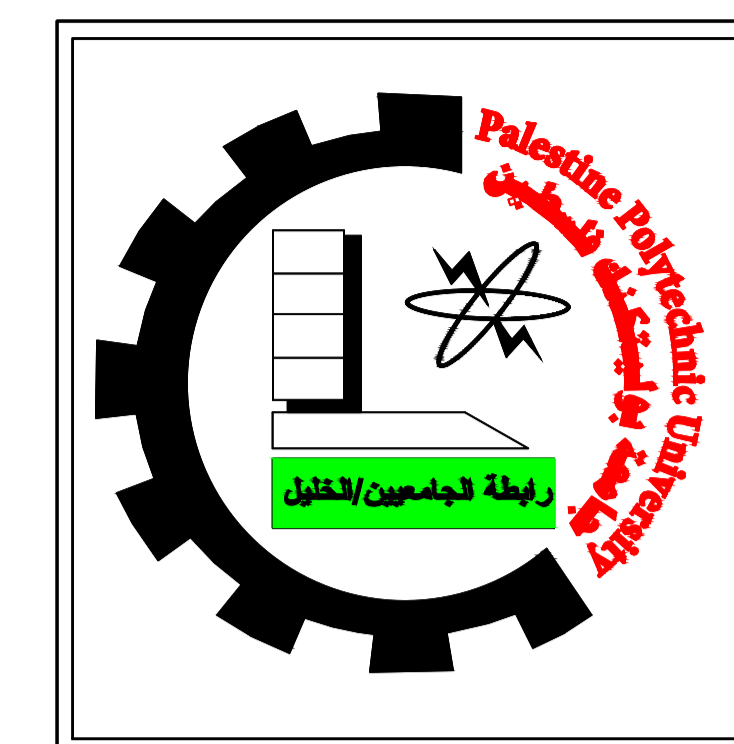
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A02**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

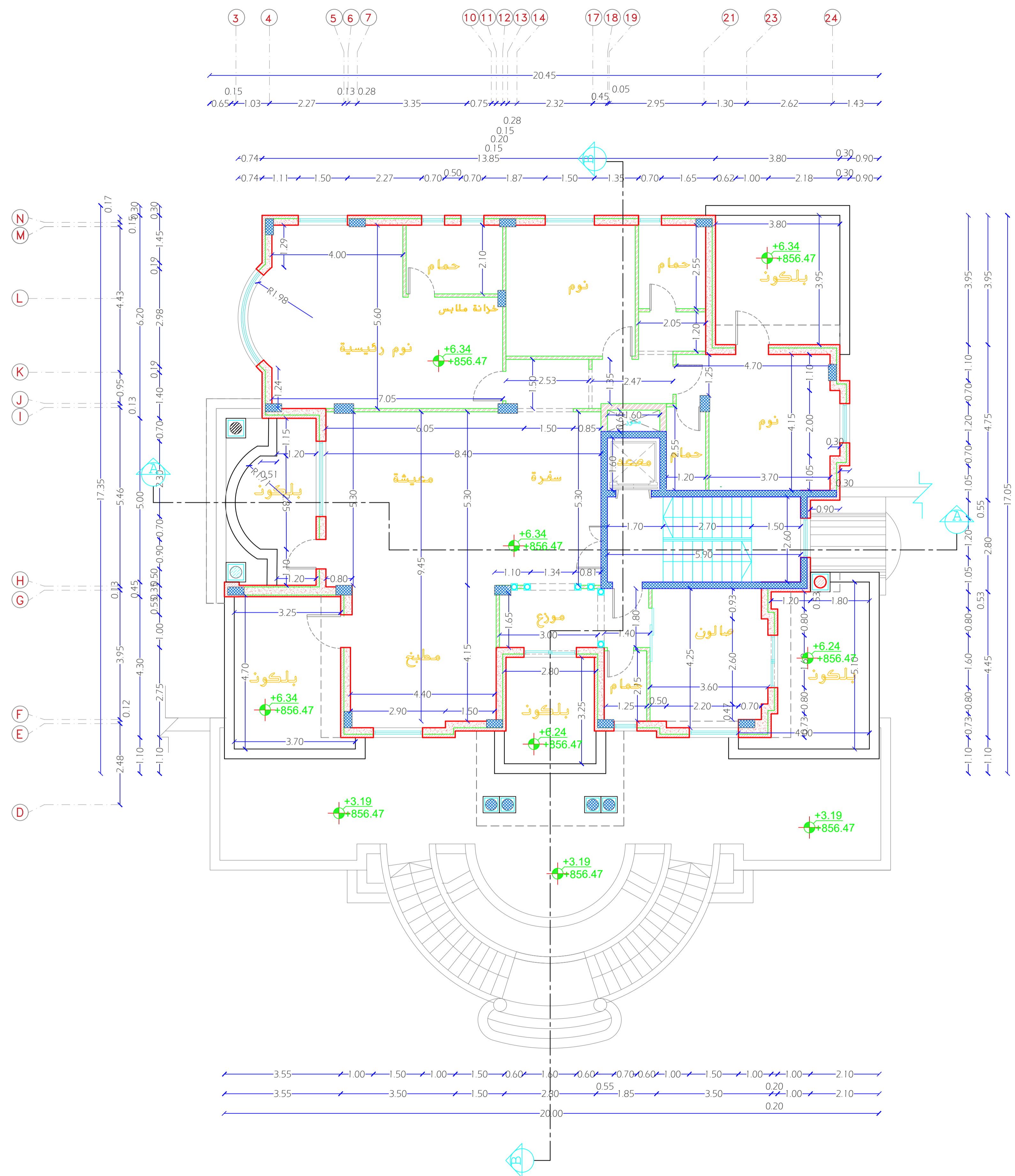
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First Floor Dimension Plan

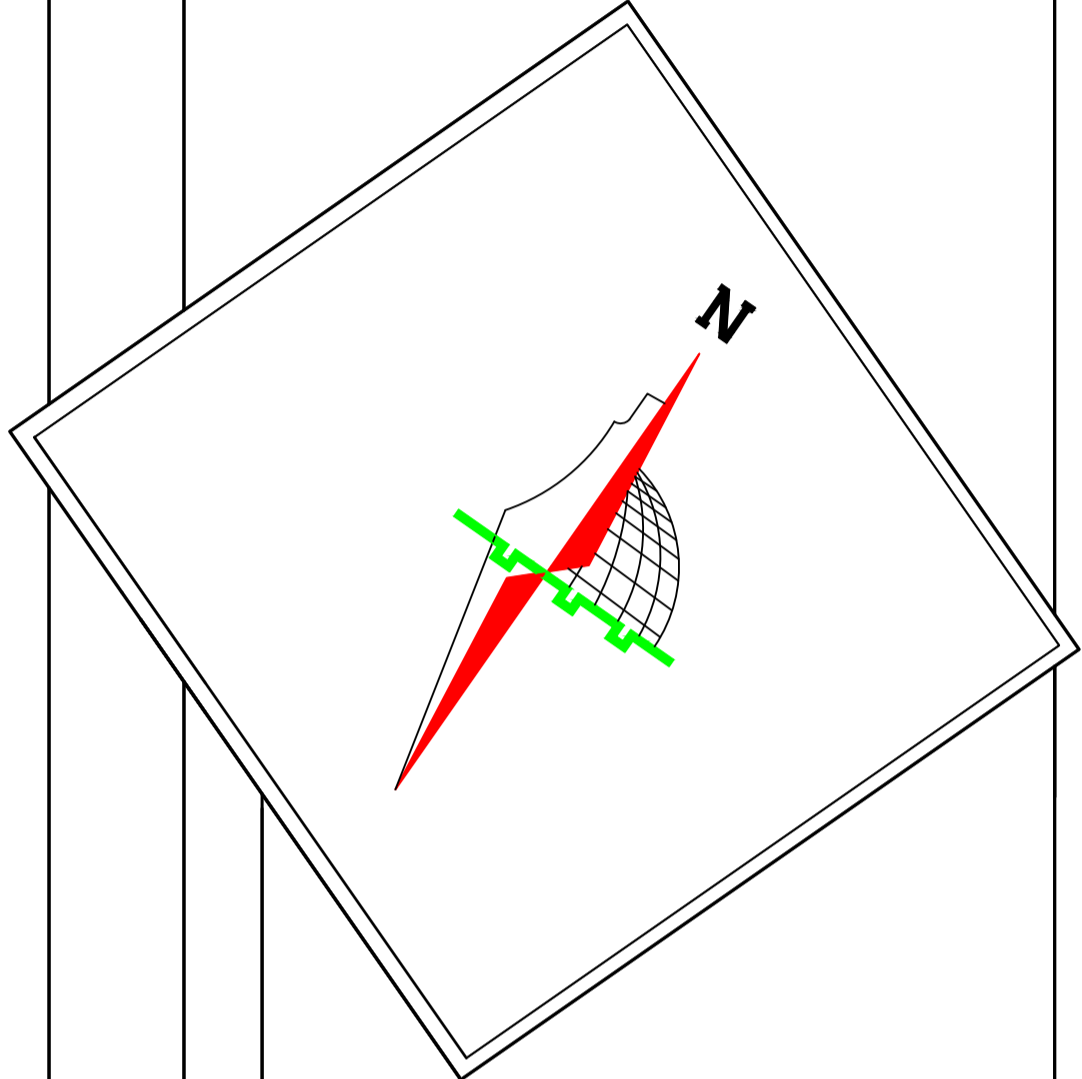
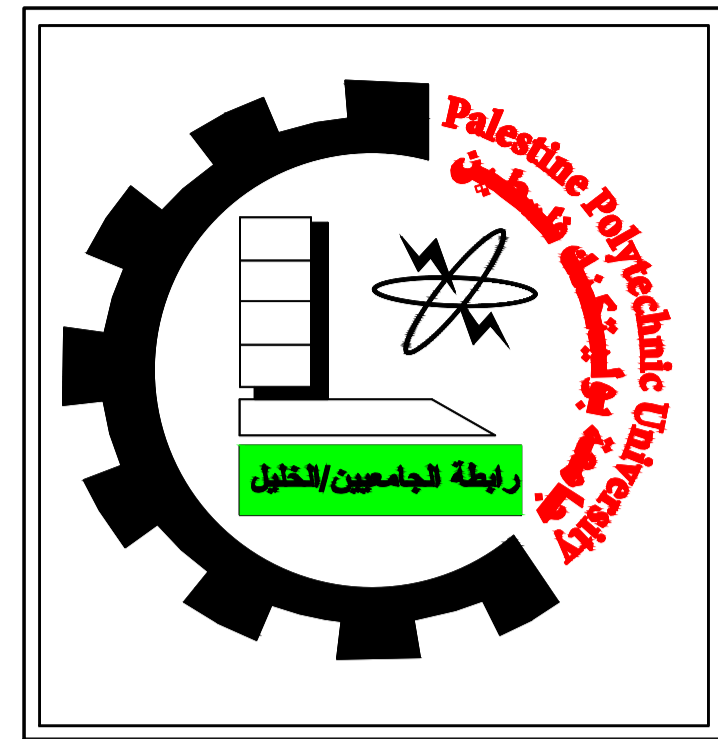
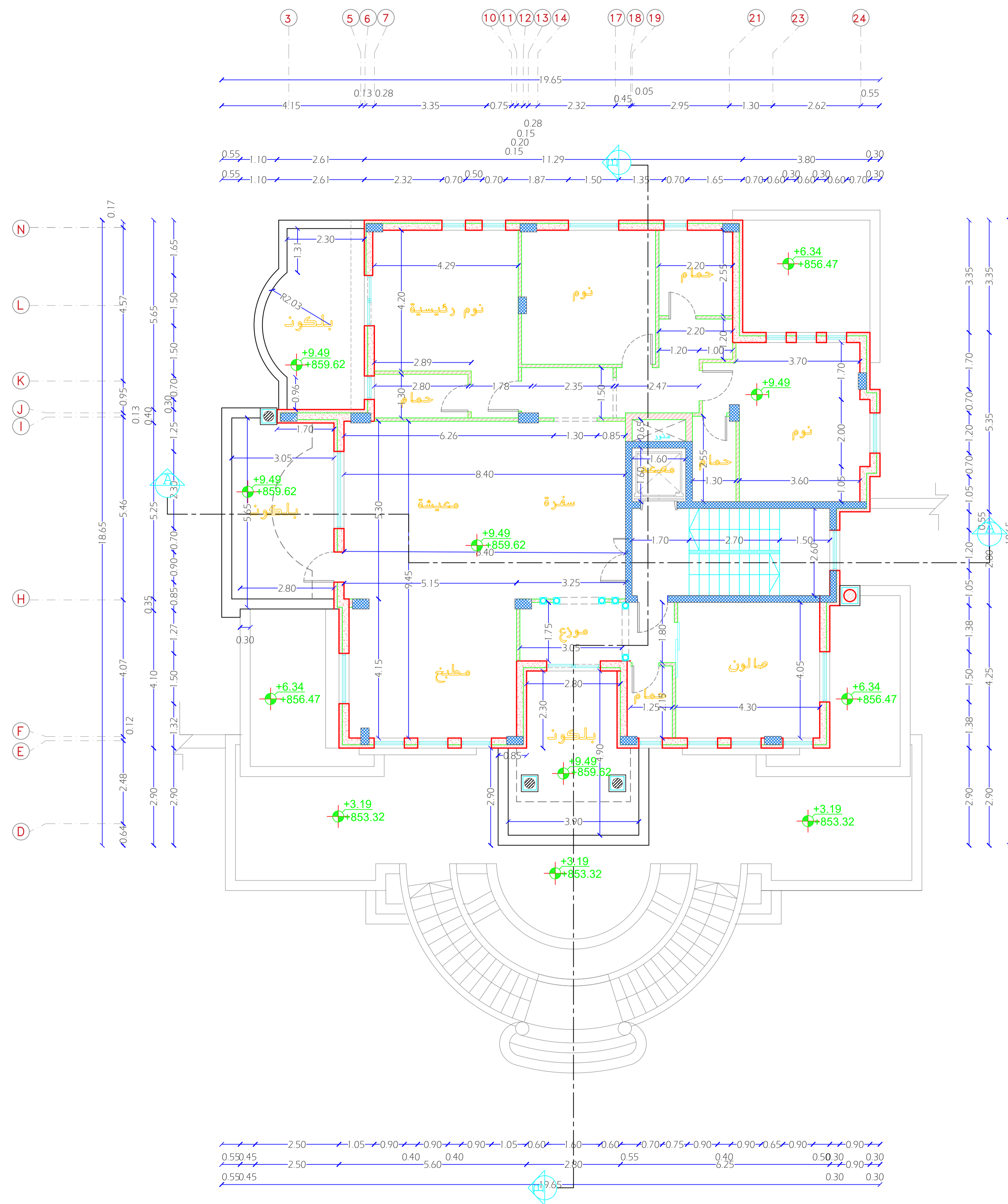
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A03**





Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

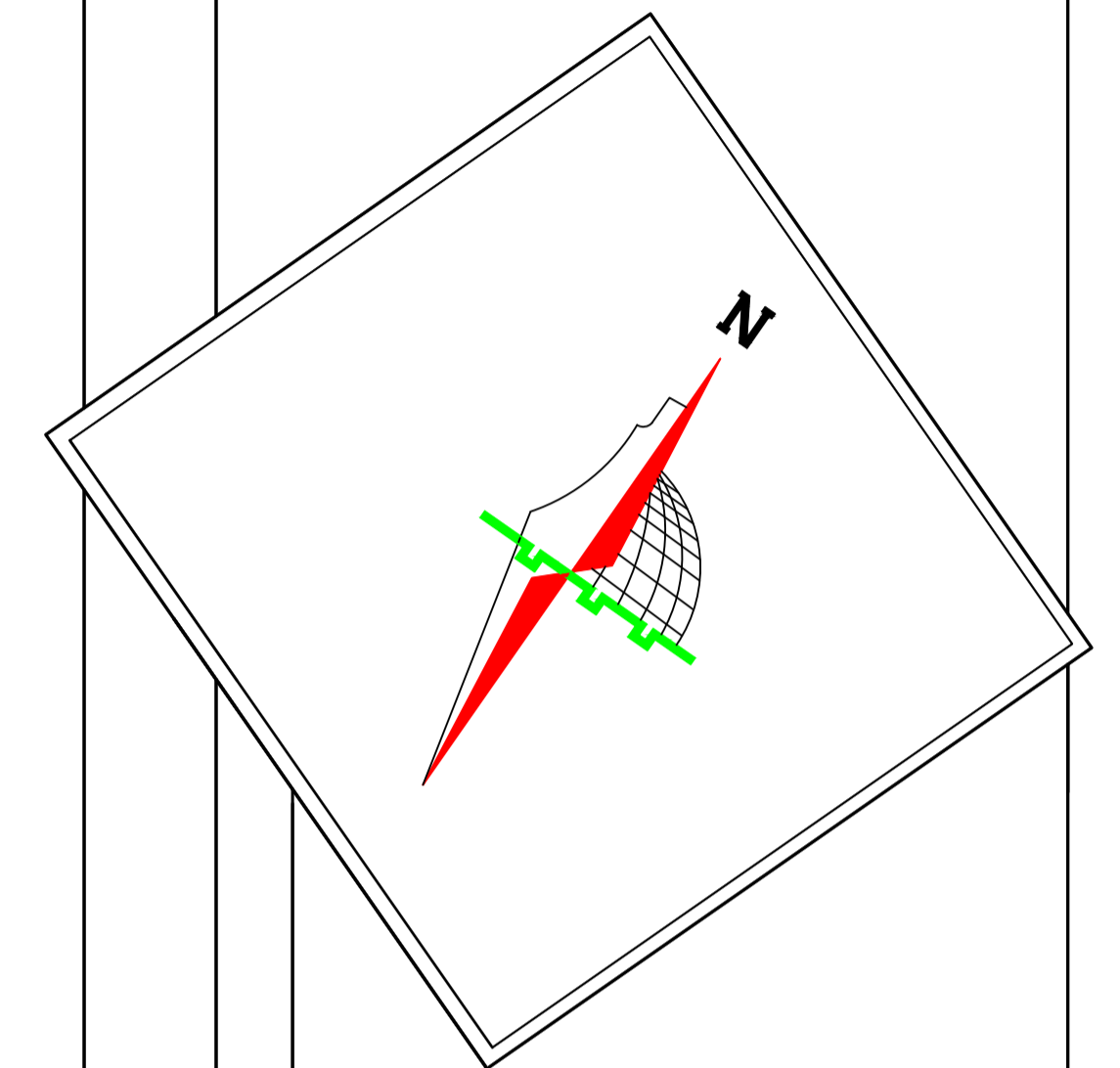
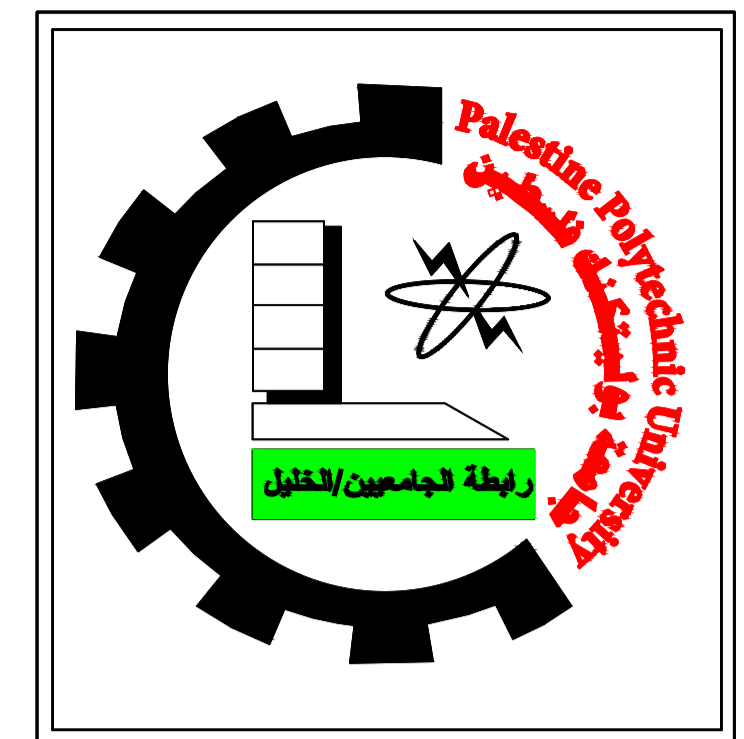
Drawing Title:
Second Floor Dimension Plan

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A04**



Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

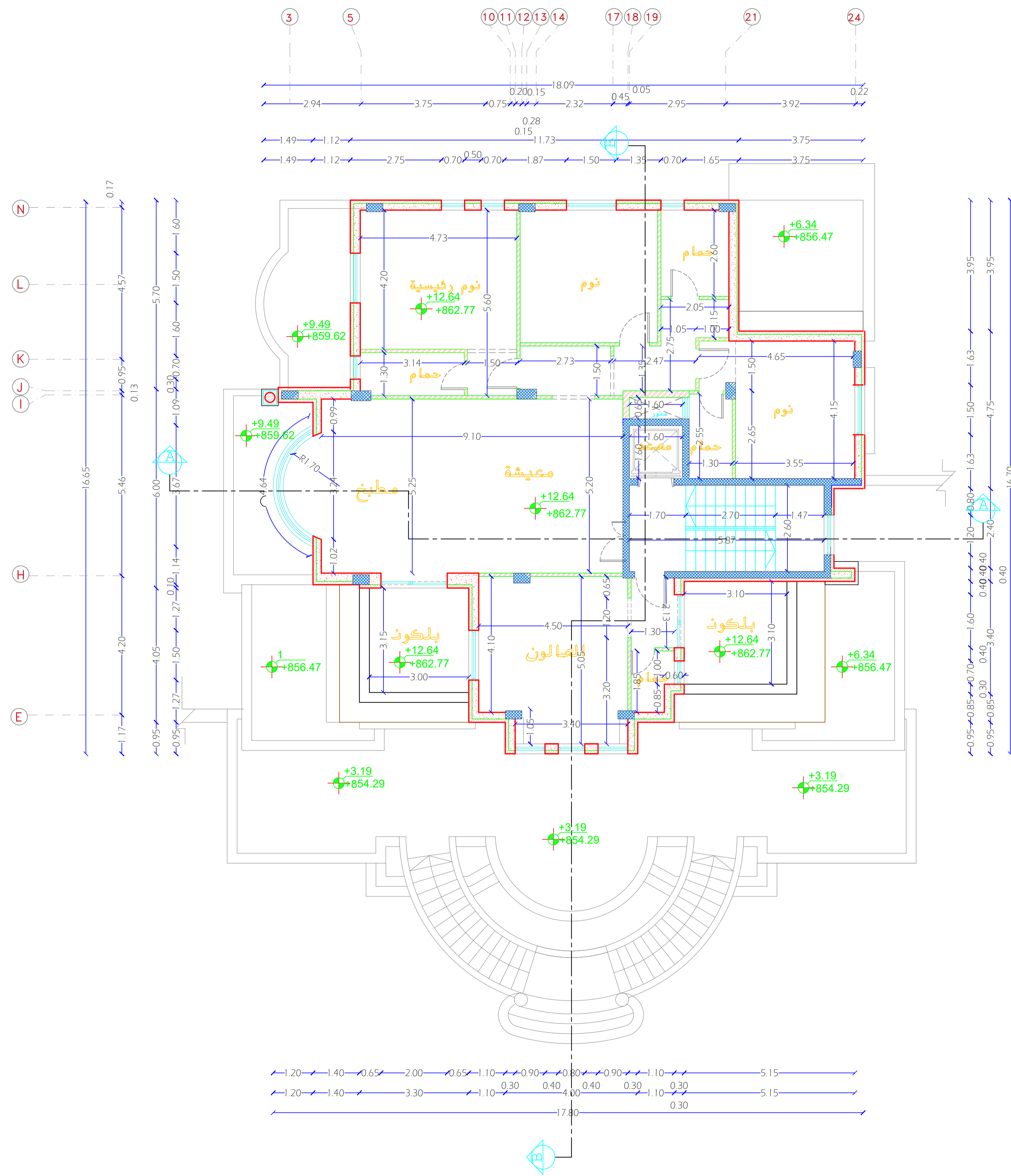
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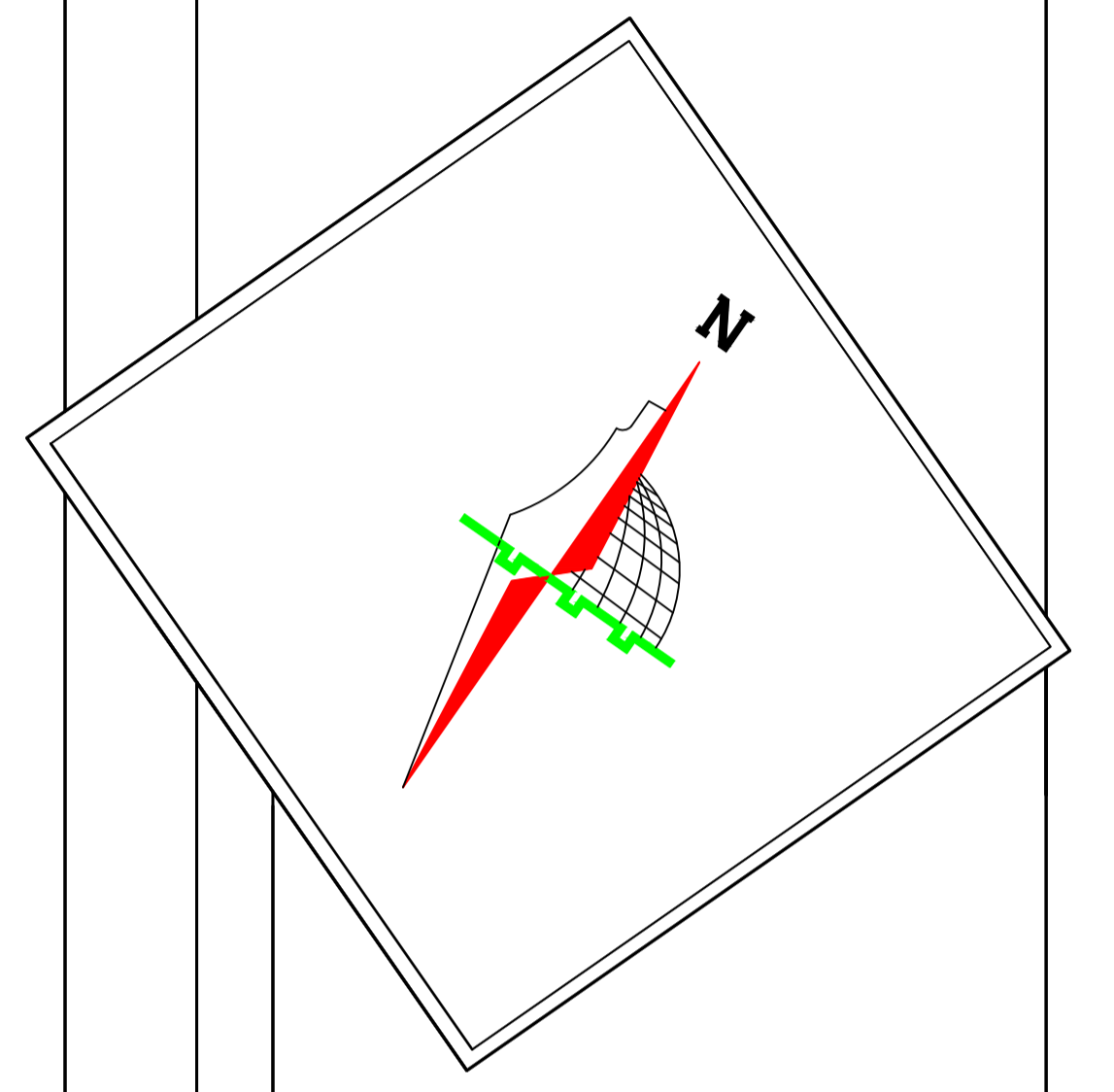
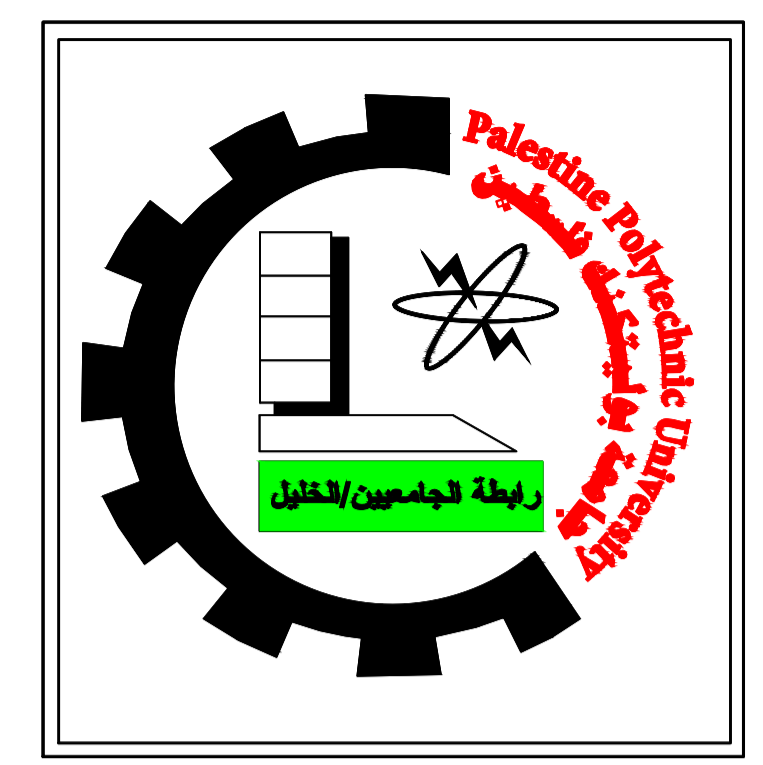
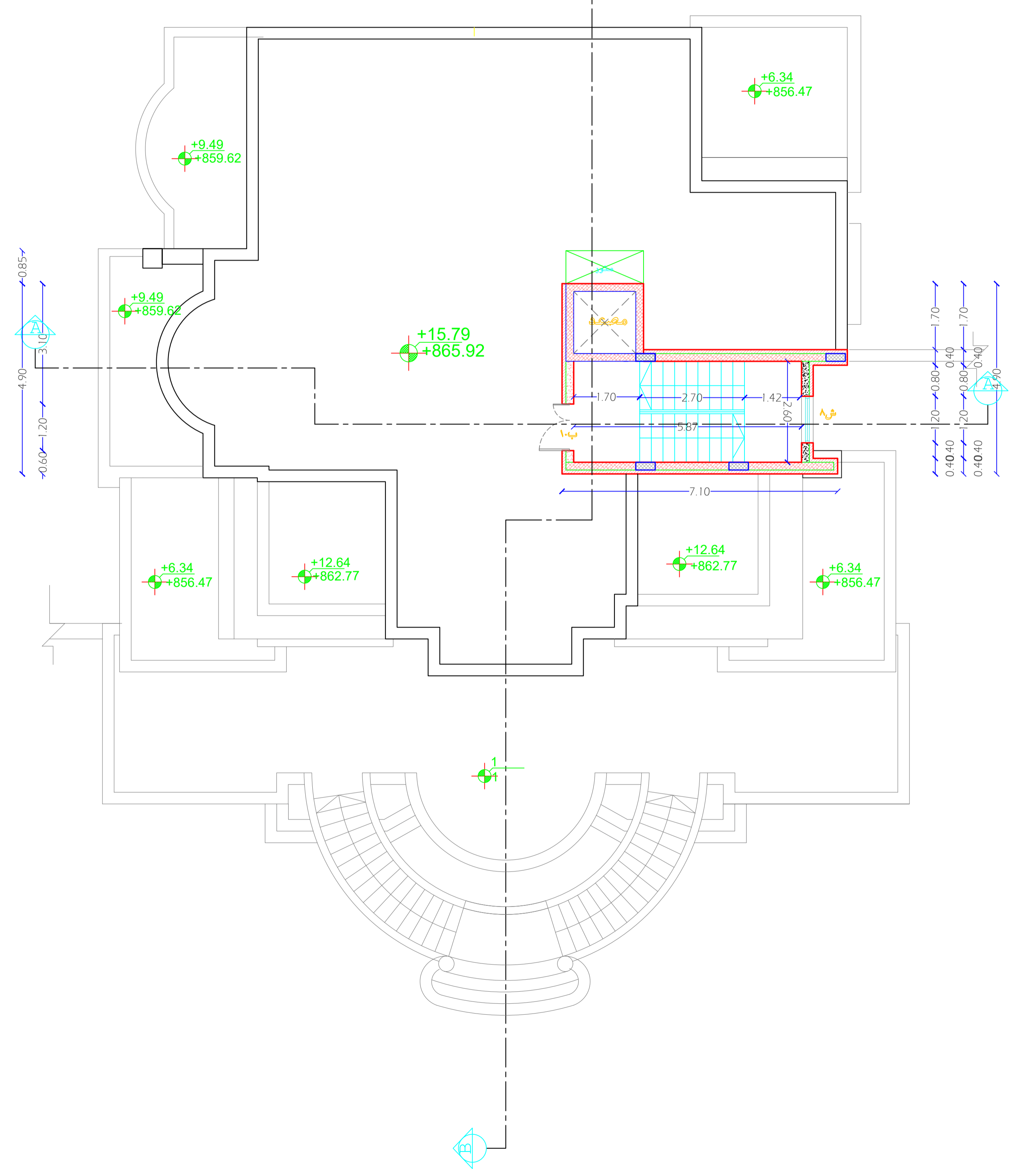
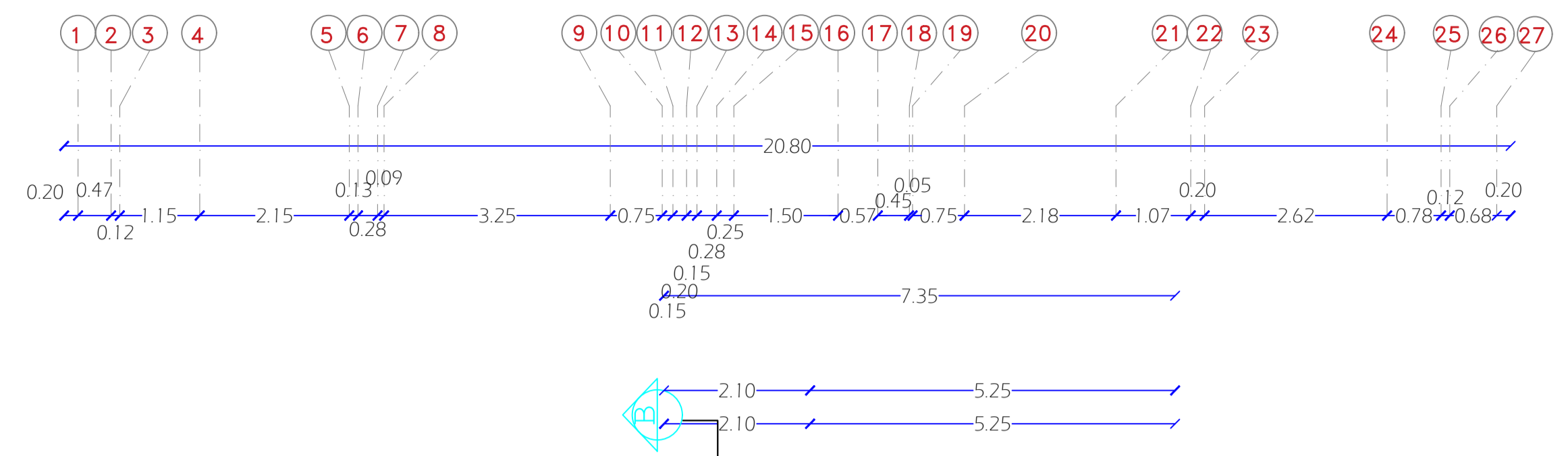
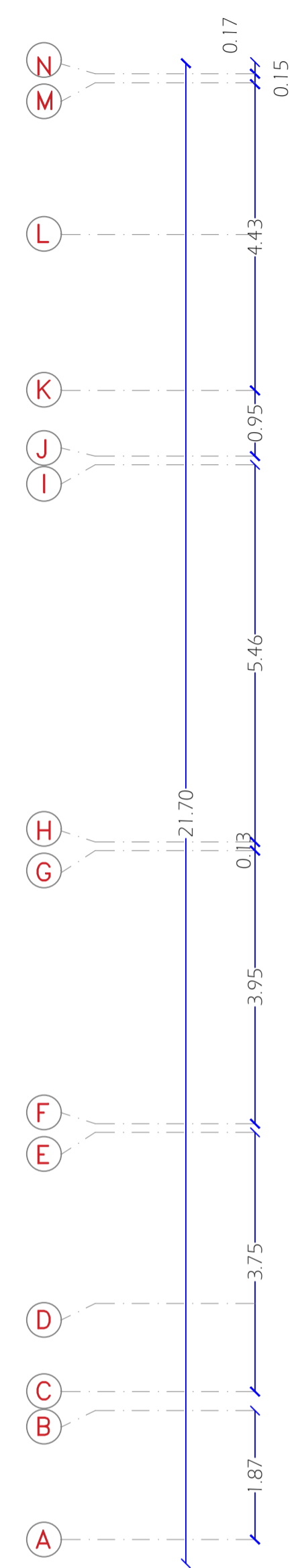
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A05**





Palestine Polytechnic University
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Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

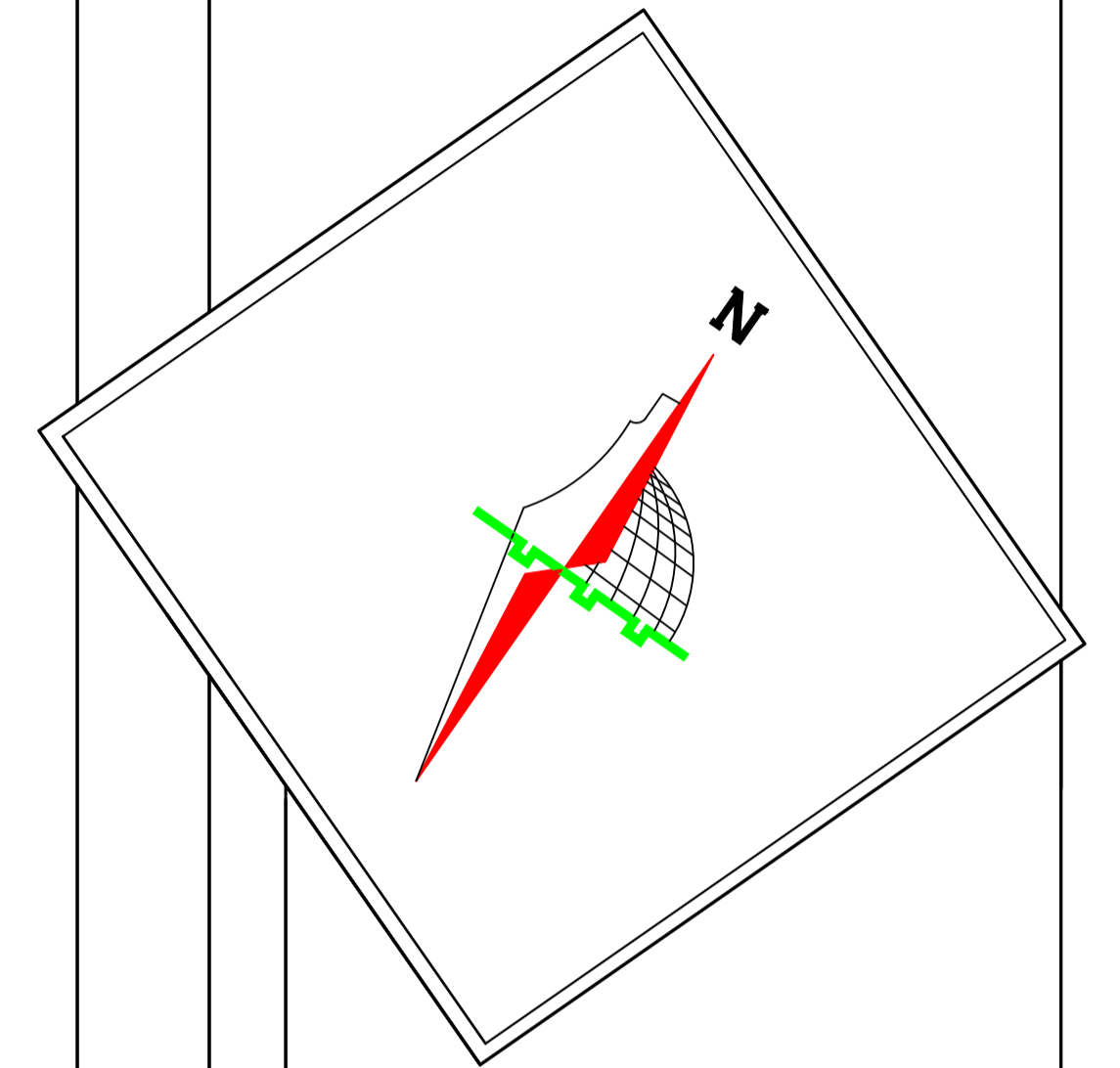
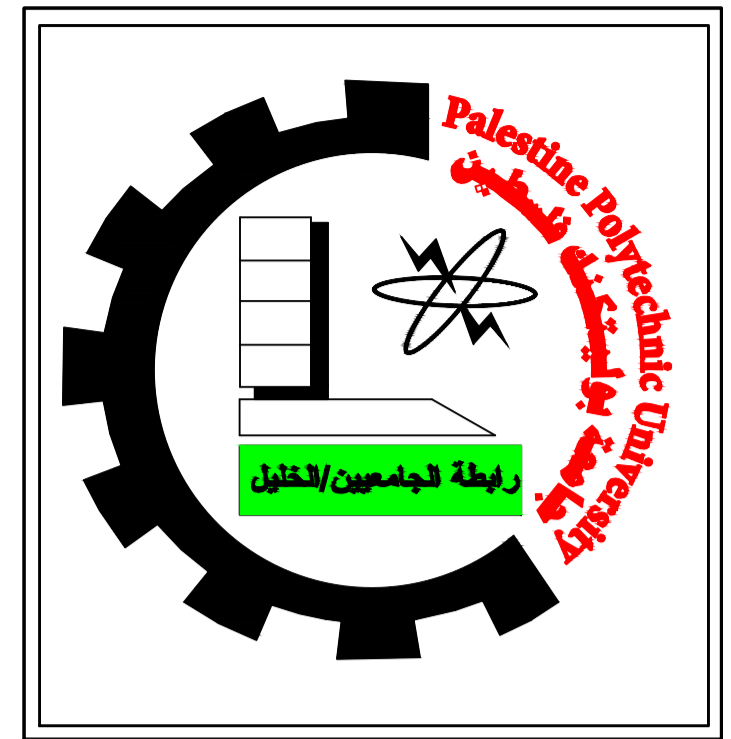
Drawing Title:
Staircase Floor Dimension Plan

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/100

Drawing # **A06**



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:

Basement Floor Furniture Plan

Supervised by :

HAMDI IDAIS

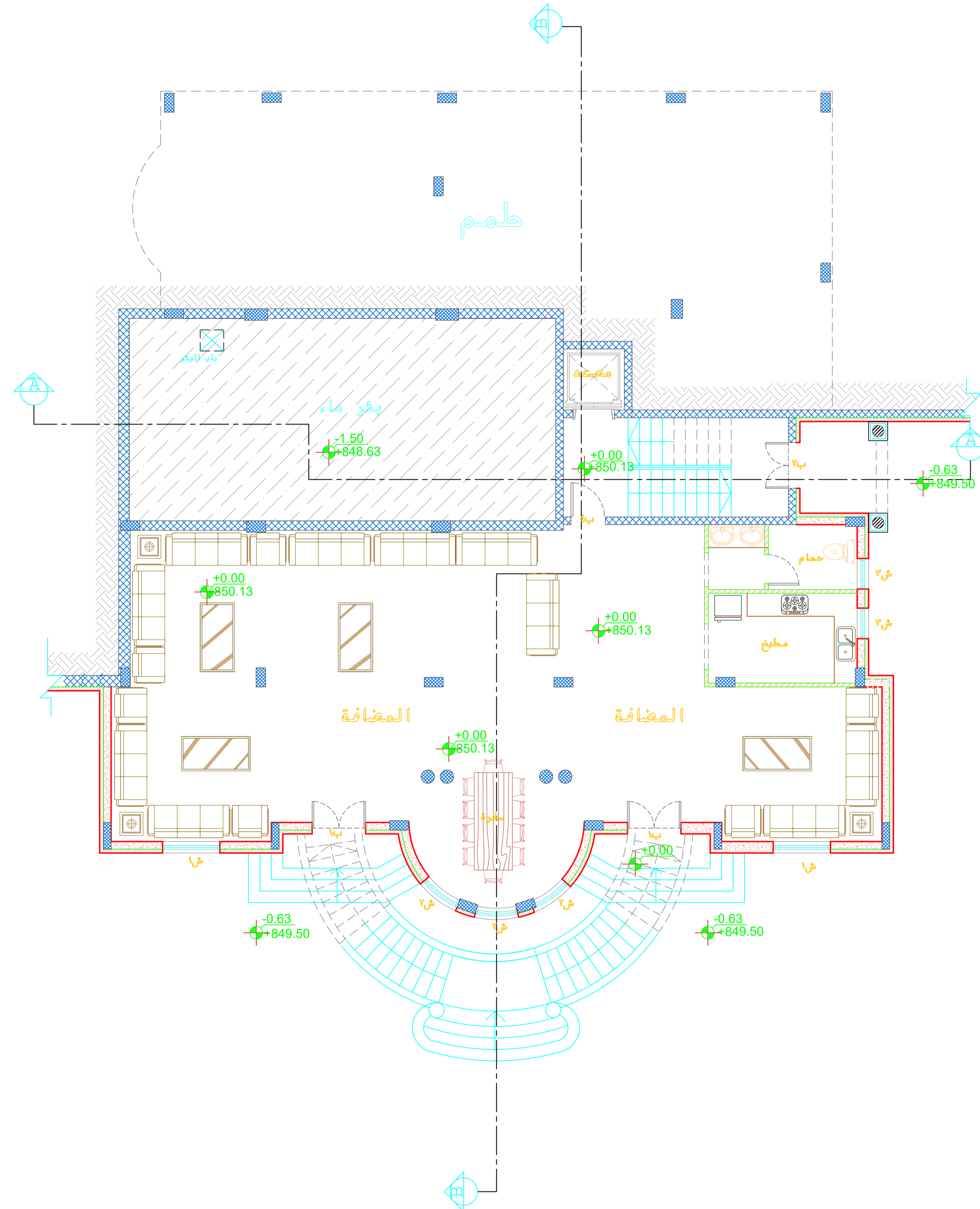
Done by :

Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/100

Drawing # **A07**

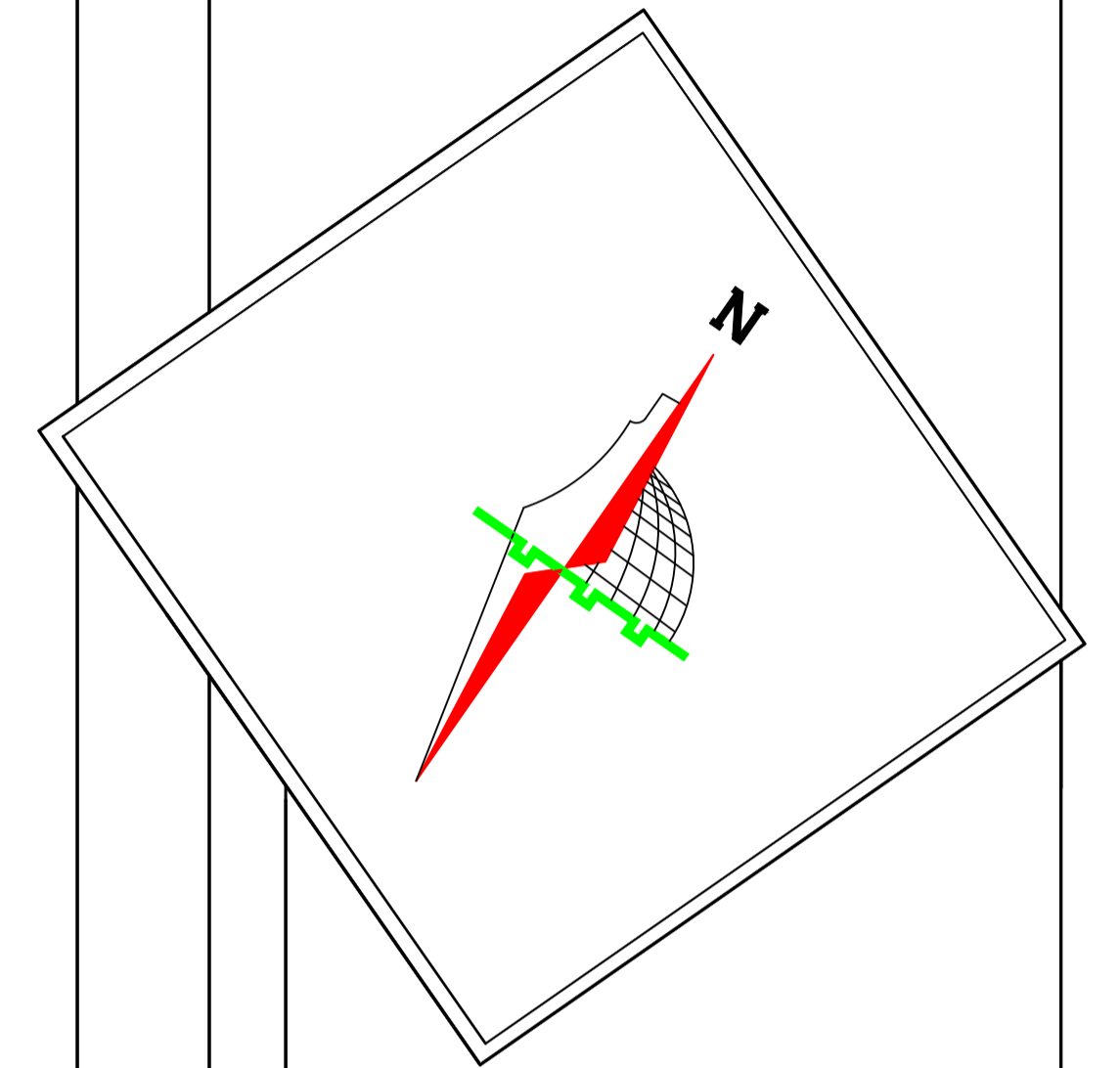
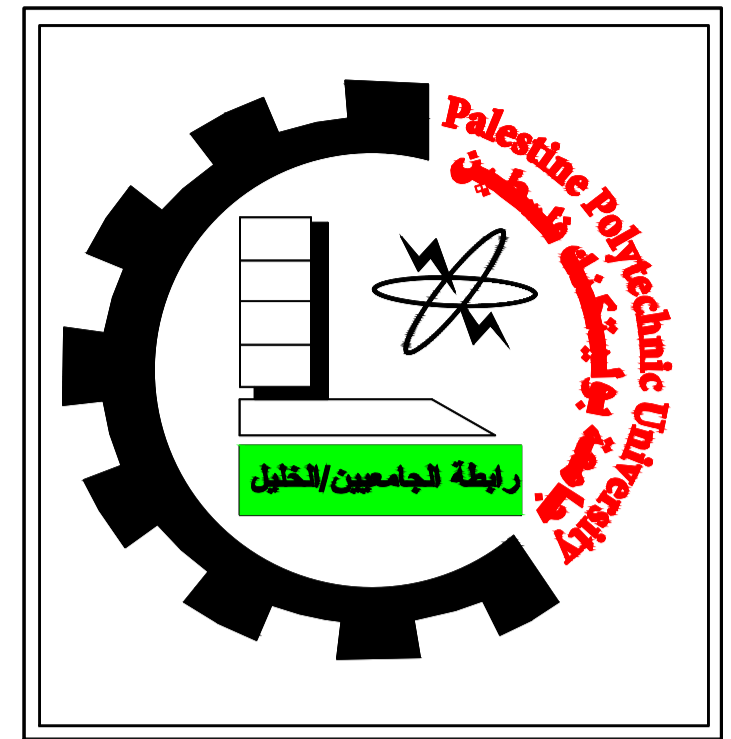


جدول قياسات الأبواب

الرقم	العرض	الارتفاع	مادة التشطيب
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٢ب	1.20	2.34	حديد
٣ب	1.30	2.20	خشب
٤ب	1.00	2.34	حديد
٥ب	1.50	2.34	المنيوم
٦ب	2.00	2.34	المنيوم
٧ب	0.90	2.20	خشب
٨ب	0.70	2.20	خشب
٩ب	1.00	2.20	خشب
١٠ب	1.30	2.34	حديد

جدول قياسات الشبابيك

الرقم	العرض	الارتفاع	مادة التشطيب
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ش٢	1.20	1.68	المنيوم
ش٣	0.80	1.68	المنيوم
ش٤	0.90	1.68	المنيوم
ش٥	0.70	1.26	المنيوم
ش٦	3.25	1.68	المنيوم
ش٧	2.30	1.68	المنيوم
ش٨	1.20	14.17	المنيوم
ش٩	4.64	1.68	المنيوم



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:

Ground Floor Furniture Plan

Supervised by :

HAMDI IDAIS

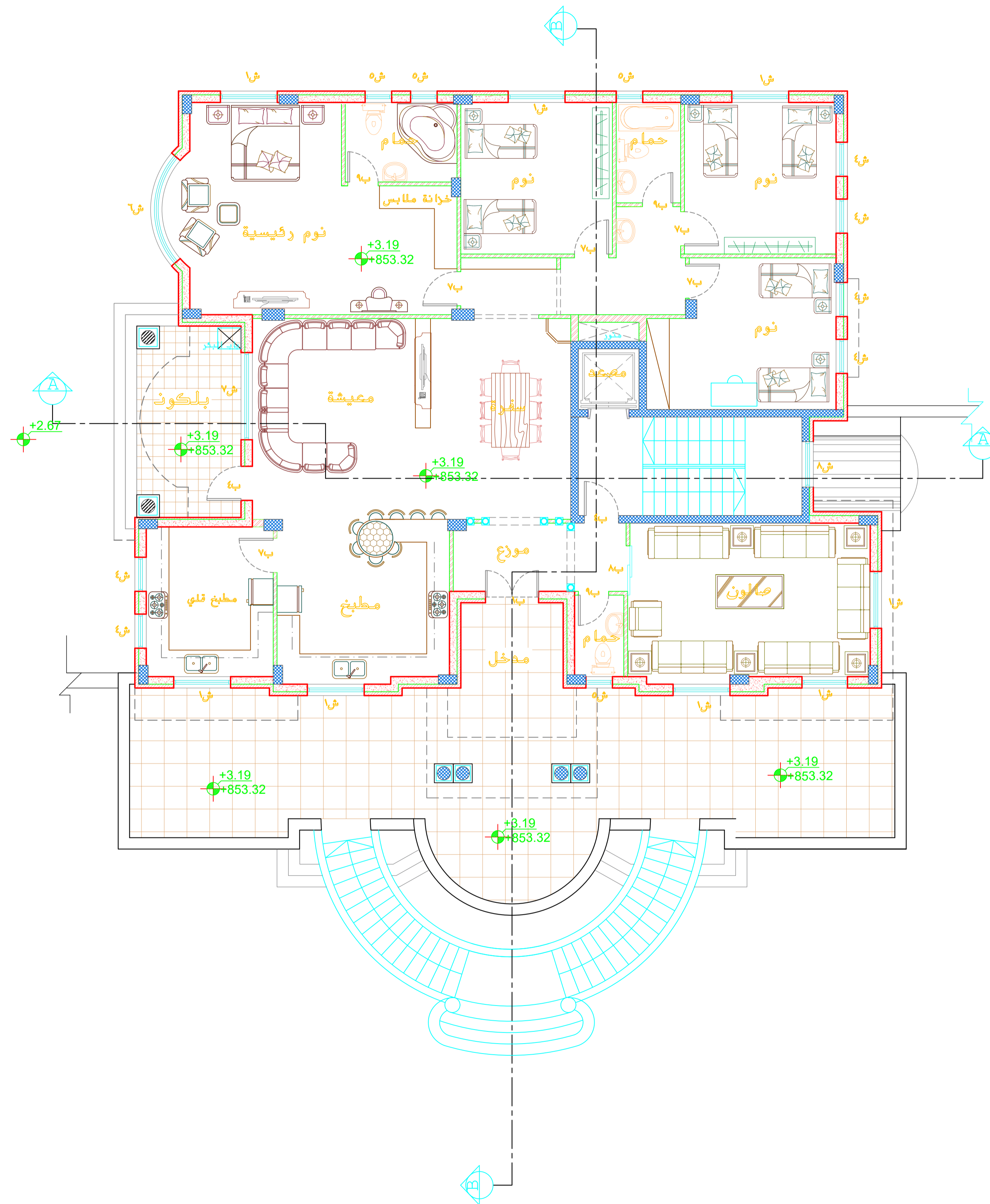
Done by :

Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/100

Drawing # **A08**

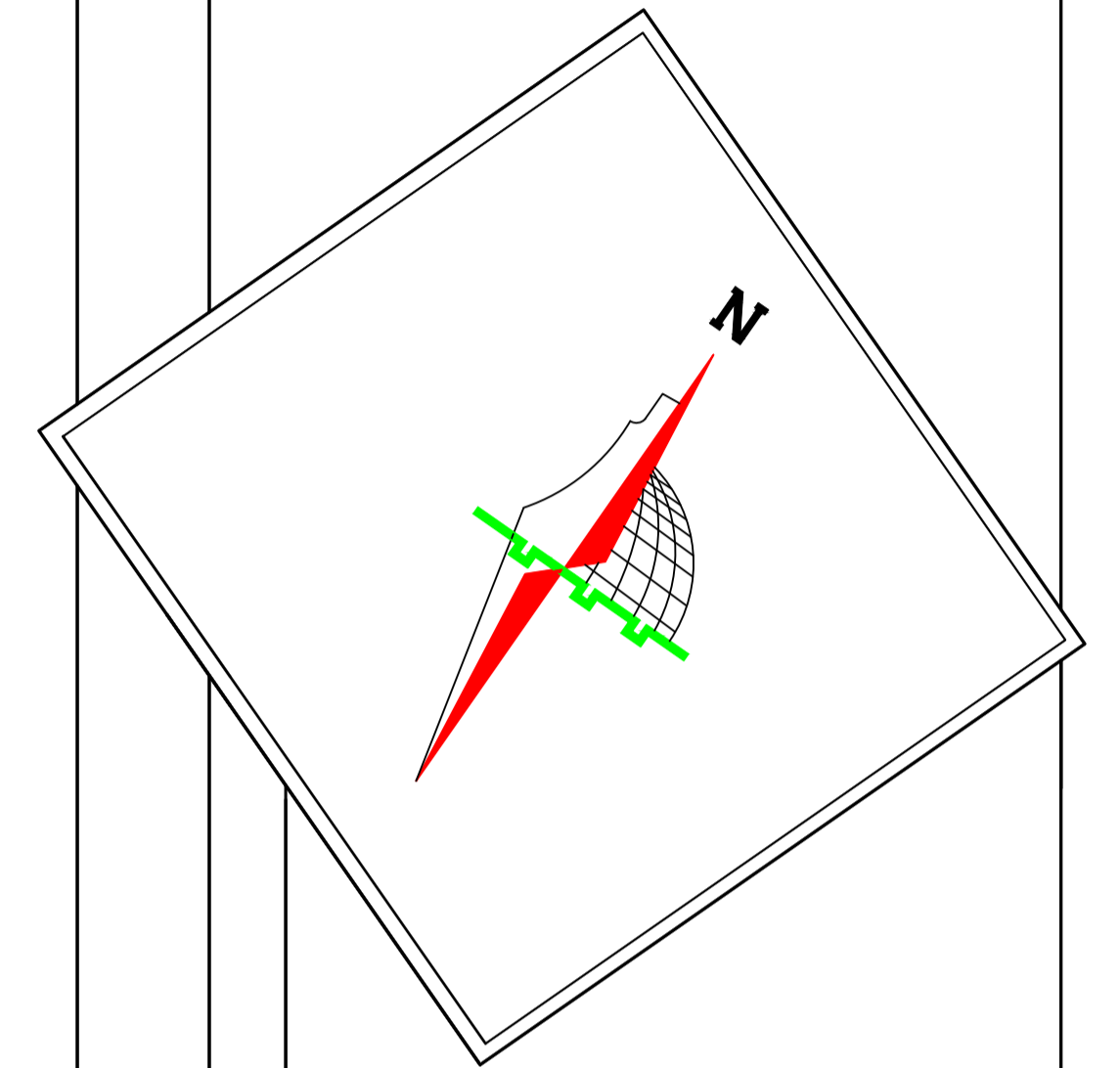
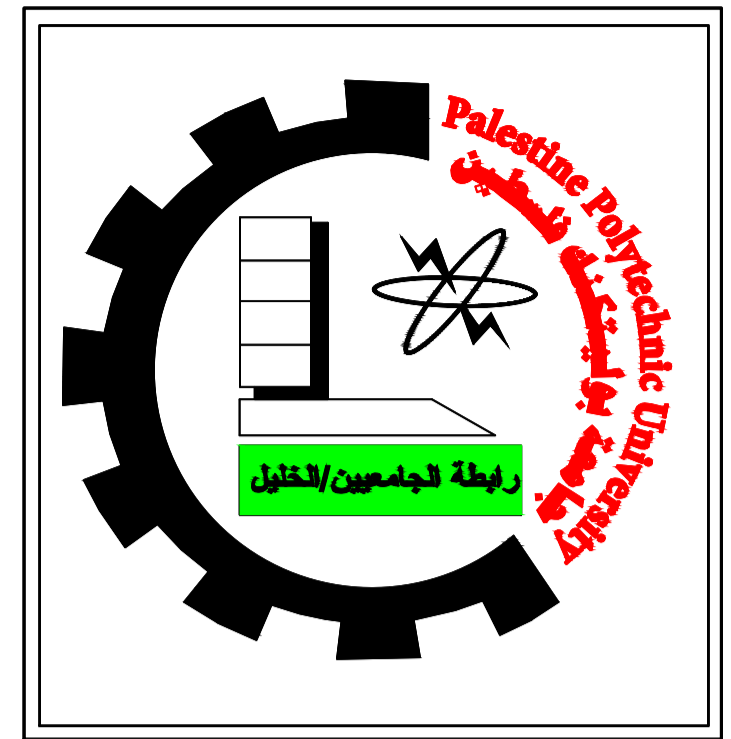


جدول قياسات الأبواب

الرقم	العرض	الارتفاع	مادة التشطيب
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٣ب	1.30	2.20	خشب
٤ب	1.00	2.34	حديد
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٦ب	2.00	2.34	المنيوم
٧ب	0.90	2.20	خشب
٨ب	0.70	2.20	خشب
٩ب	1.00	2.20	خشب
١٠ب	1.30	2.34	حديد

جدول قياسات الشبابيك

الرقم	العرض	الارتفاع	مادة التشطيب
١ش	1.50	1.68	المنيوم
٢ش	1.20	1.68	المنيوم
٣ش	0.80	1.68	المنيوم
٤ش	0.90	1.68	المنيوم
٥ش	0.70	1.26	المنيوم
٦ش	3.25	1.68	المنيوم
٧ش	2.30	1.68	المنيوم
٨ش	1.20	14.17	المنيوم
٩ش	4.64	1.68	المنيوم



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:

First Floor Furniture Plan

Supervised by :

HAMDI IDAIS

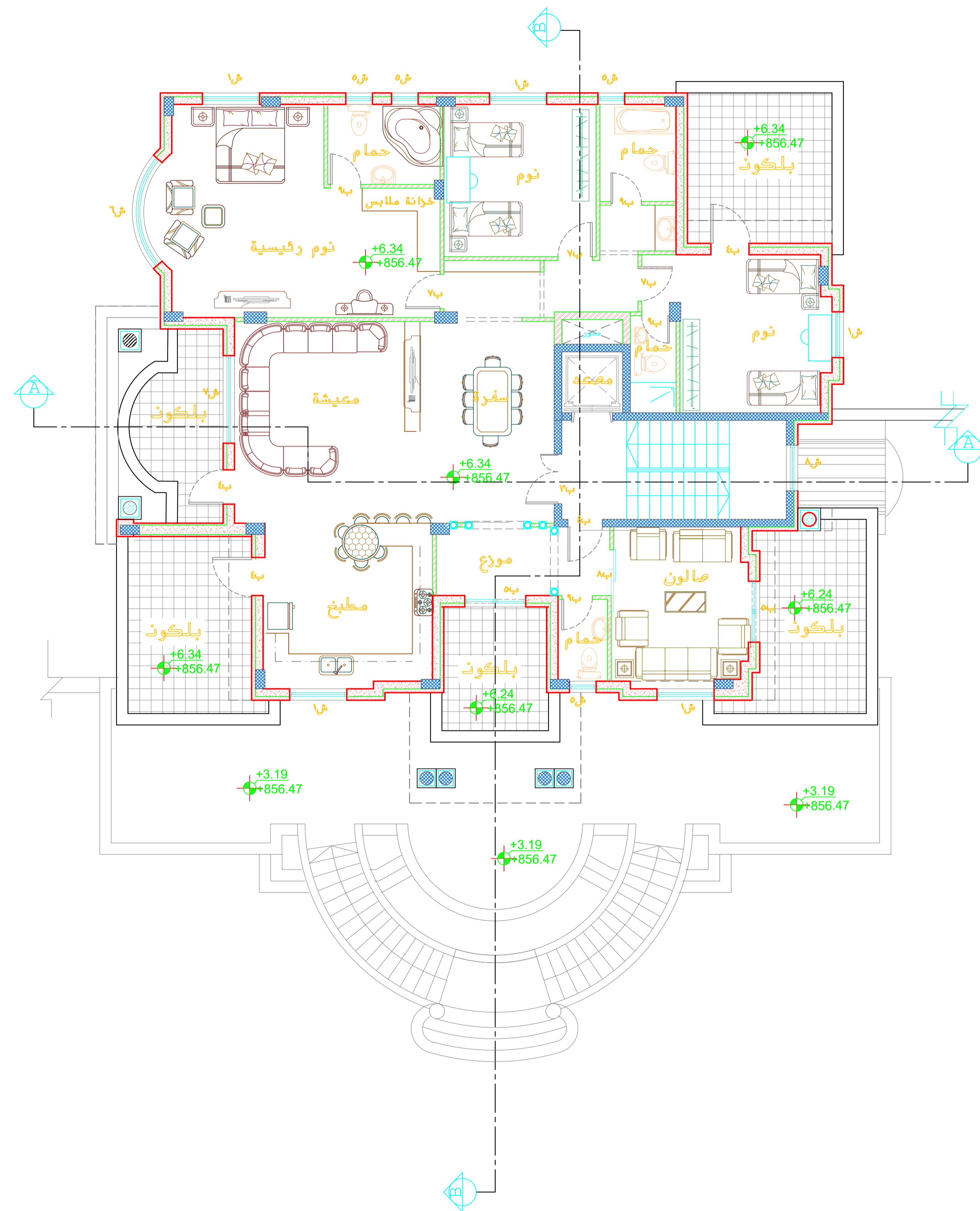
Done by :

Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/100

Drawing # **A09**

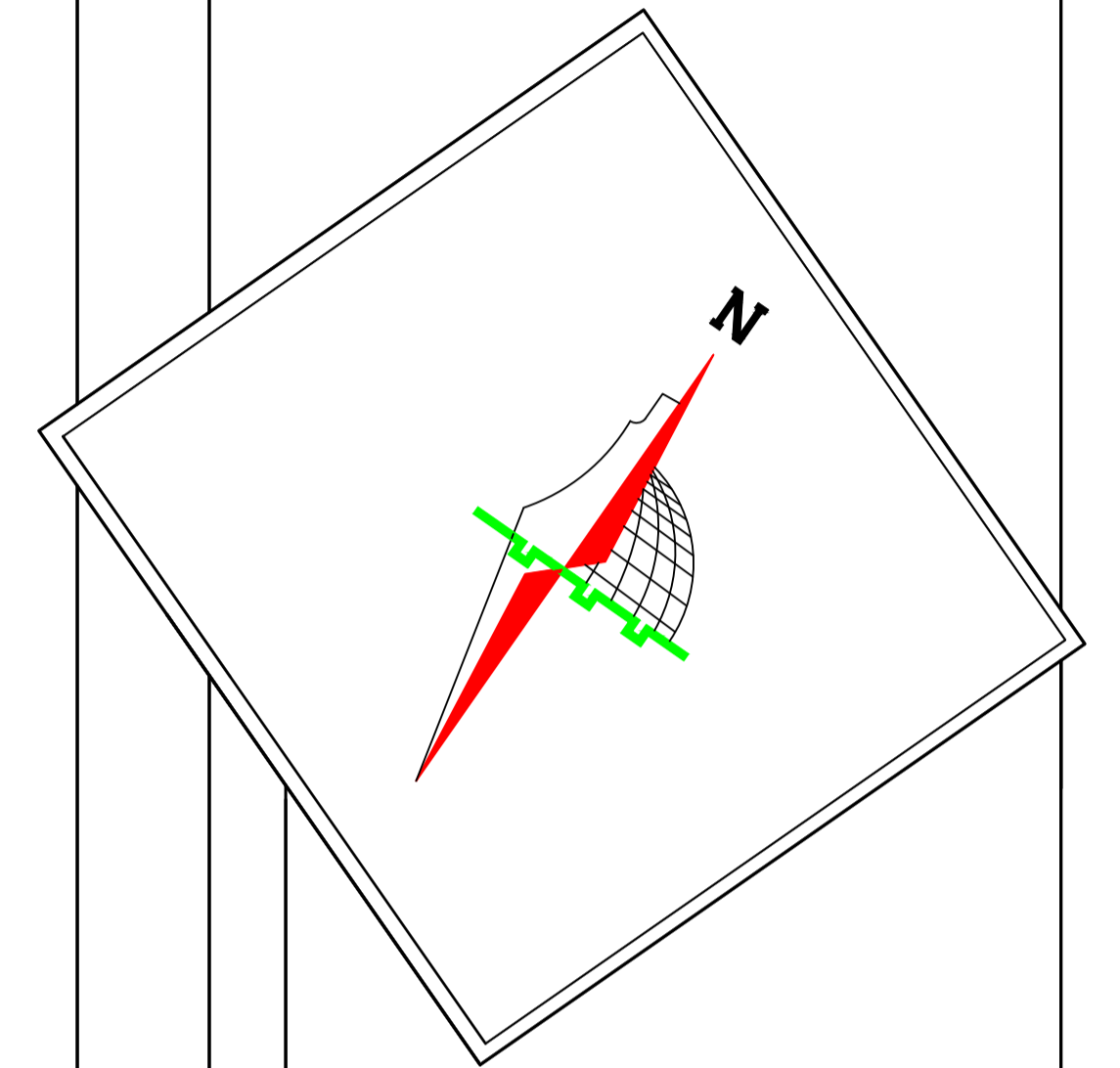
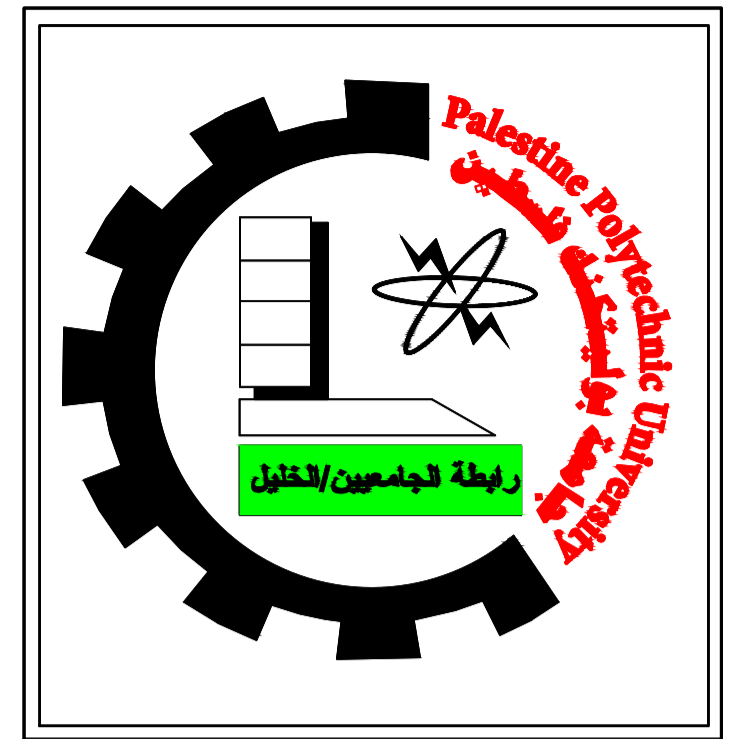


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الرقم	العرض	الارتفاع	مادة التشطيب
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٤ب	1.00	2.34	حديد
٥ب	1.50	2.34	المنيوم
٦ب	2.00	2.34	المنيوم
٧ب	0.90	2.20	خشب
٨ب	0.70	2.20	خشب
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١٠ب	1.30	2.34	حديد

جدول قياسات الشبابيك

الرقم	العرض	الارتفاع	مادة التشطيب
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ش٢	1.20	1.68	المنيوم
ش٣	0.80	1.68	المنيوم
ش٤	0.90	1.68	المنيوم
ش٥	0.70	1.26	المنيوم
ش٦	3.25	1.68	المنيوم
ش٧	2.30	1.68	المنيوم
ش٨	1.20	14.17	المنيوم
ش٩	4.64	1.68	المنيوم



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:

Second Floor Furniture Plan

Supervised by :

HAMDI IDAIS

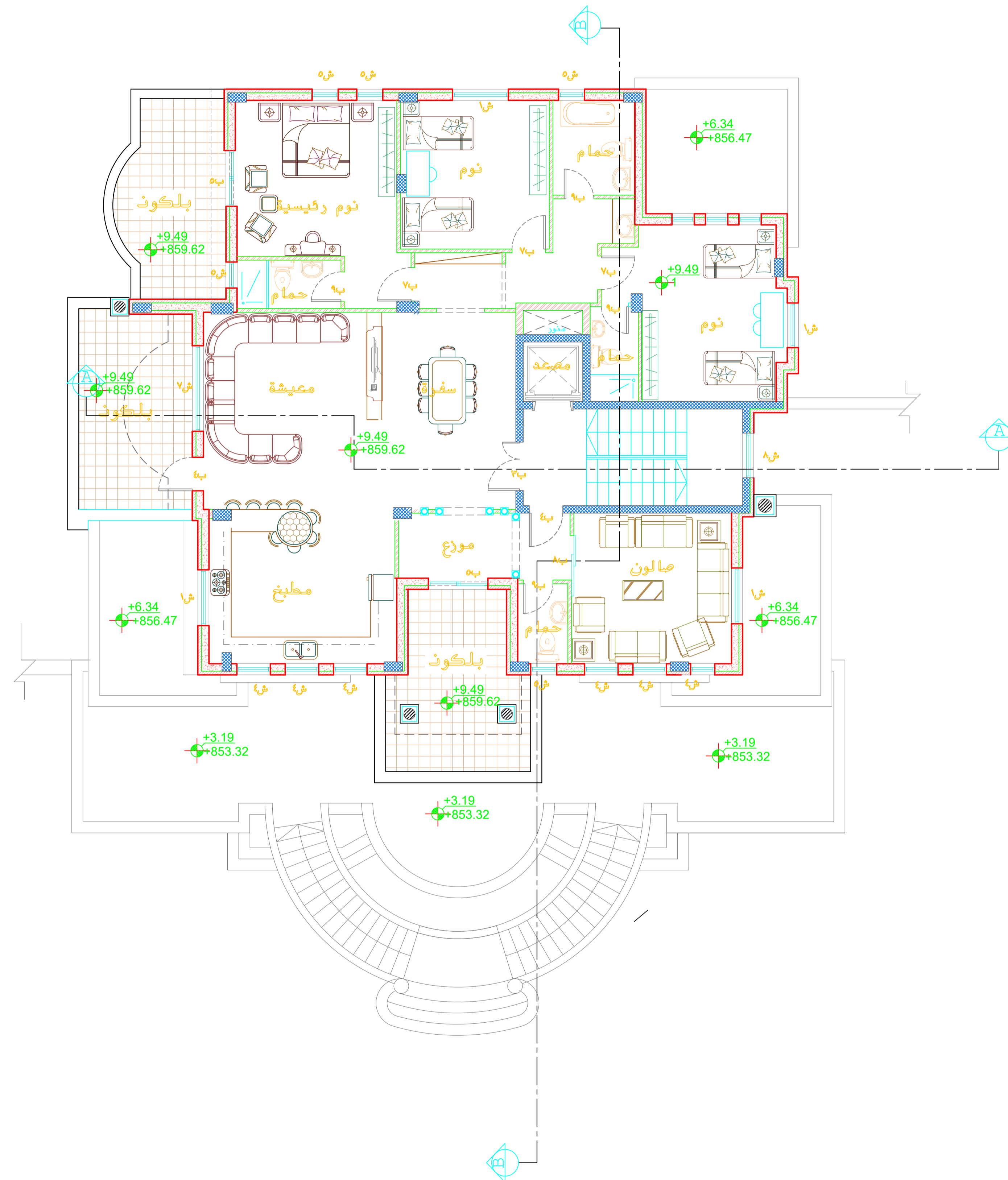
Done by :

Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/100

Drawing # **A10**

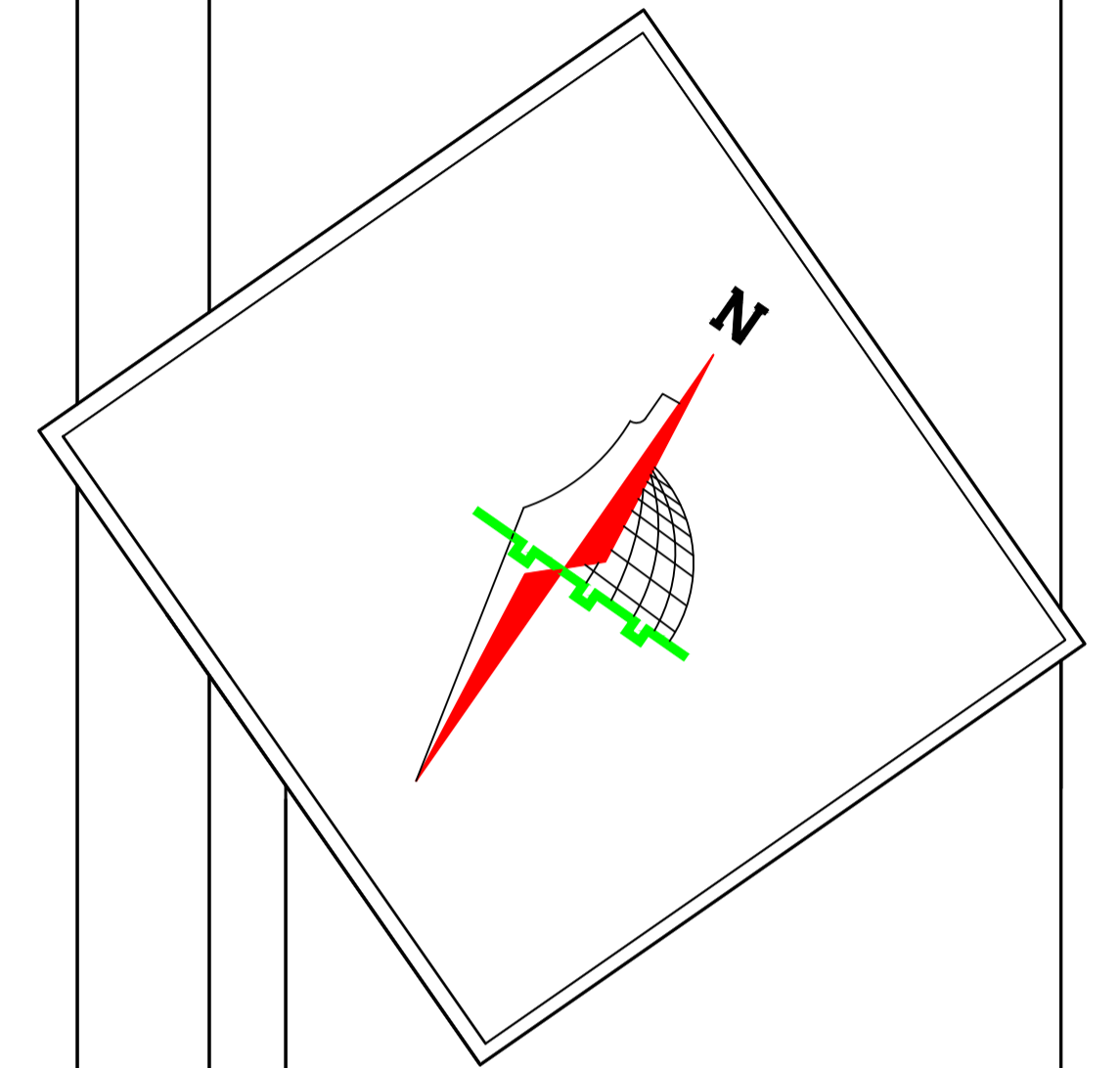
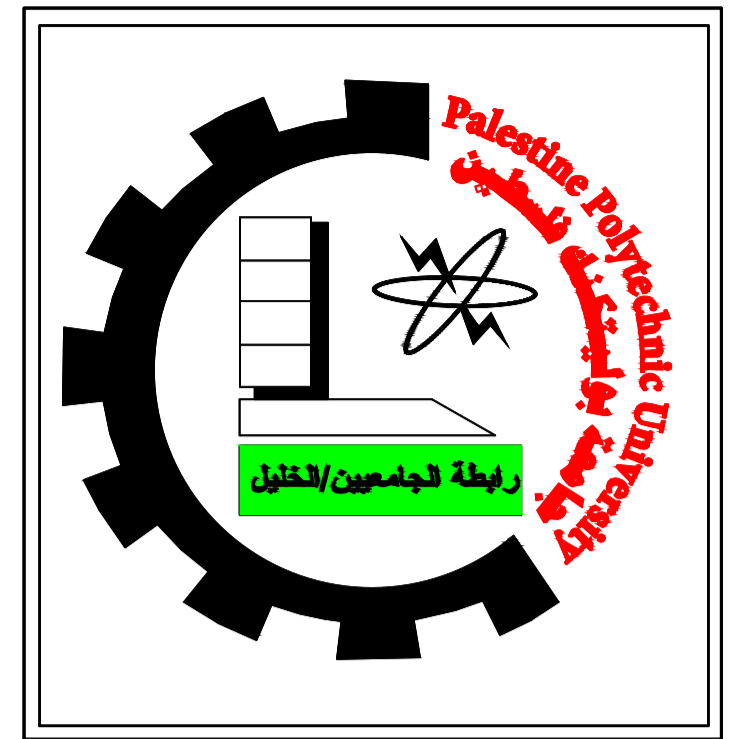


جدول قياسات الأبواب

الرقم	العرض	الارتفاع	مادة التشطيب
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٧ب	0.90	2.20	خشب
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١٠ب	1.30	2.34	حديد

جدول قياسات الشبابيك

الرقم	العرض	الارتفاع	مادة التشطيب
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ش٢	1.20	1.68	المنيوم
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ش٥	0.70	1.26	المنيوم
ش٦	3.25	1.68	المنيوم
ش٧	2.30	1.68	المنيوم
ش٨	1.20	14.17	المنيوم
ش٩	4.64	1.68	المنيوم



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Construction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:

Third Floor Furniture Plan

Supervised by :

HAMDI IDAIS

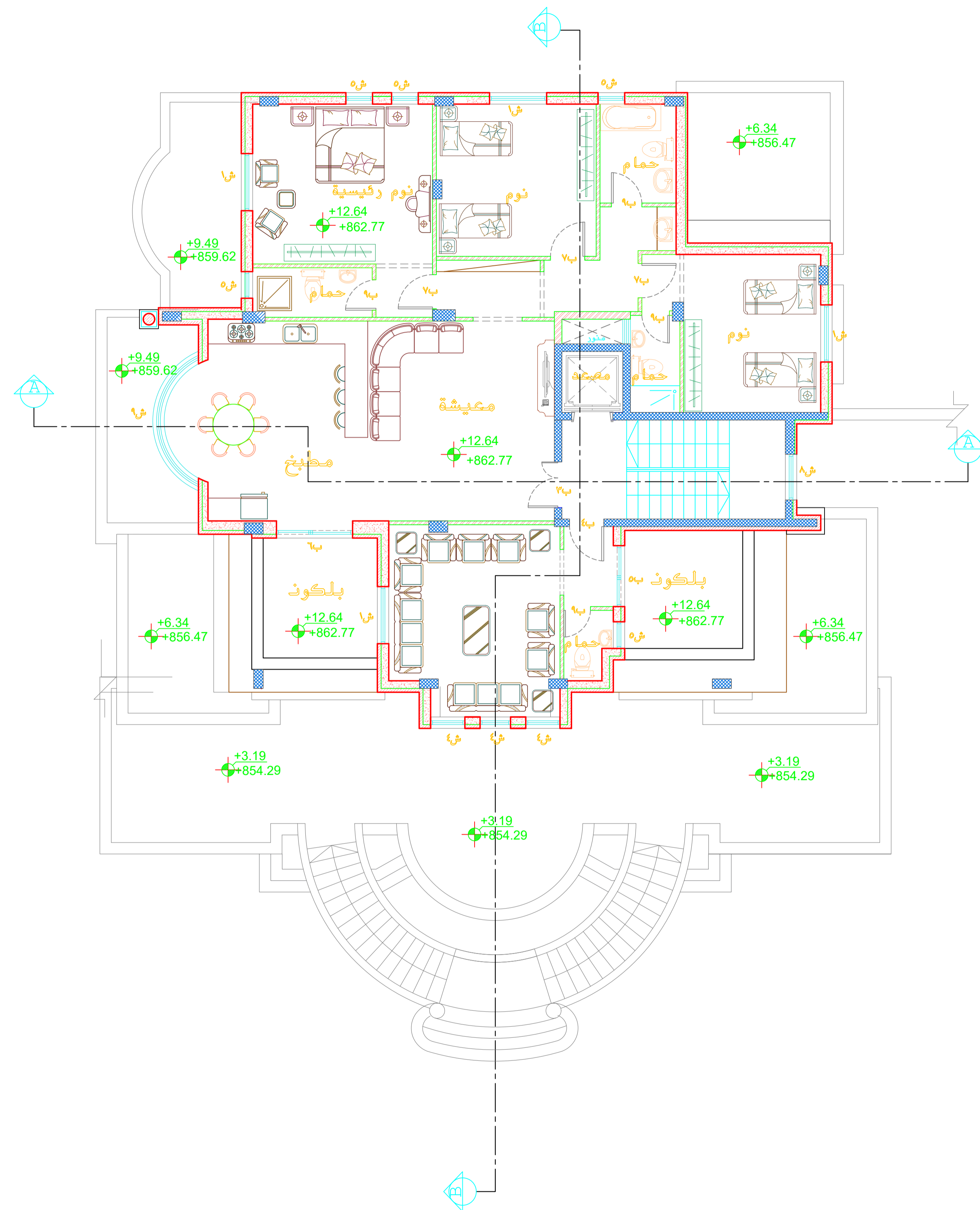
Done by :

Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/100

Drawing # **A11**

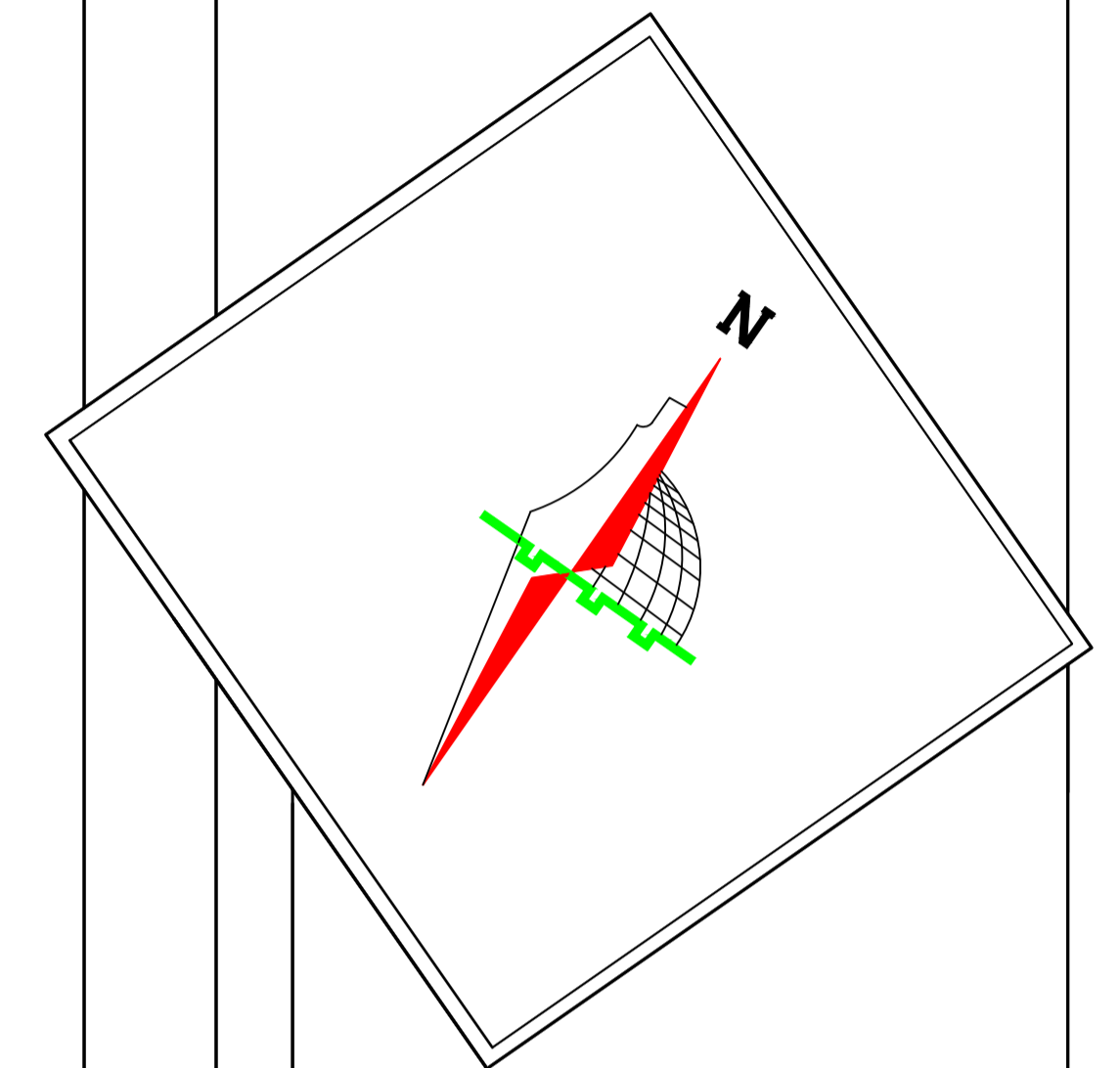
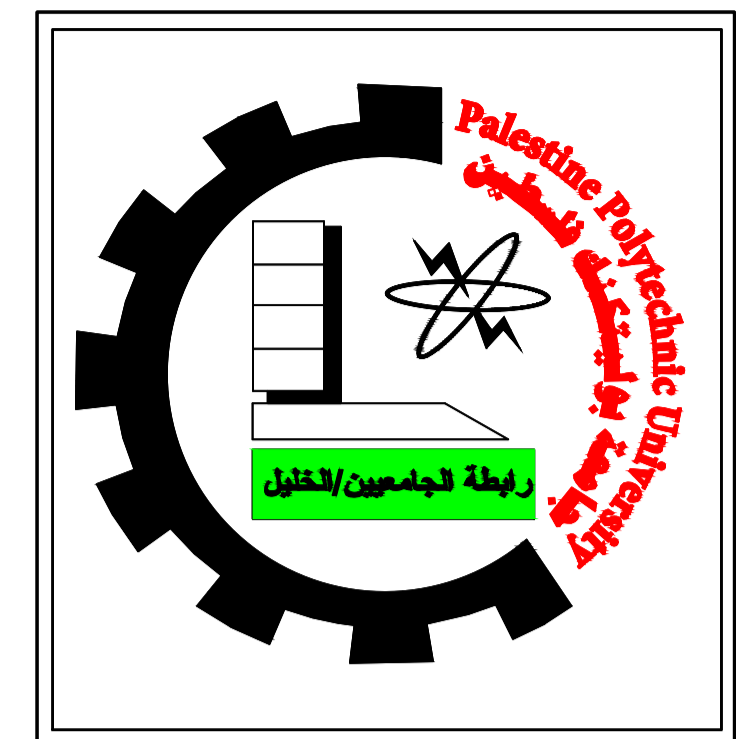


جدول قياسات الأبواب

الرقم	العرض	الارتفاع	مادة التشطيب
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٥ب	1.50	2.34	المنيوم
٦ب	2.00	2.34	المنيوم
٧ب	0.90	2.20	خشبي
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١٠ب	1.30	2.34	حديده

جدول قياسات الشبابيك

الرقم	العرض	الارتفاع	مادة التشطيب
١ش	1.50	1.68	المنيوم
٢ش	1.20	1.68	المنيوم
٣ش	0.80	1.68	المنيوم
٤ش	0.90	1.68	المنيوم
٥ش	0.70	1.26	المنيوم
٦ش	3.25	1.68	المنيوم
٧ش	2.30	1.68	المنيوم
٨ش	1.20	14.17	المنيوم
٩ش	4.64	1.68	المنيوم



Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
South-East Elevation

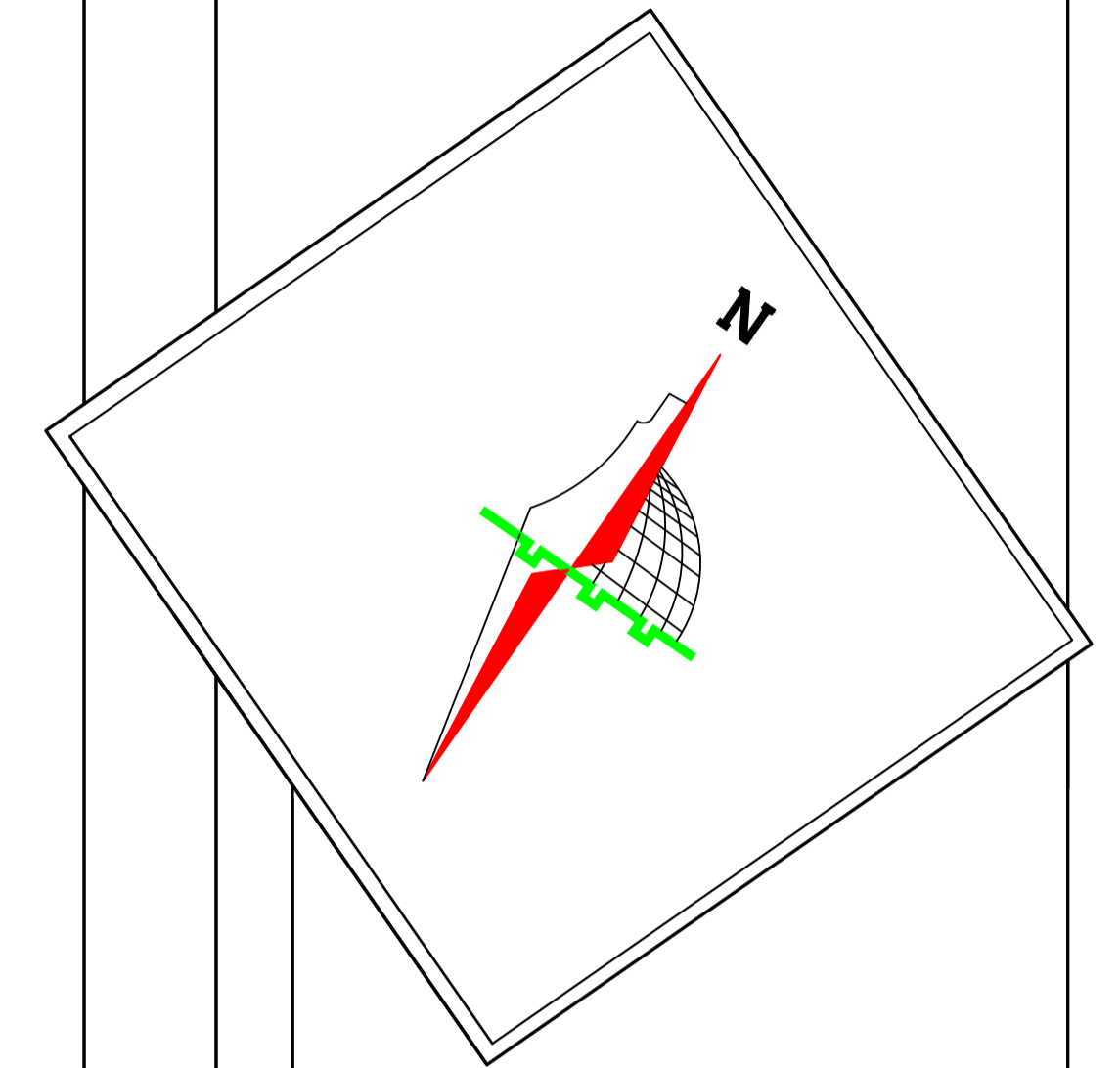
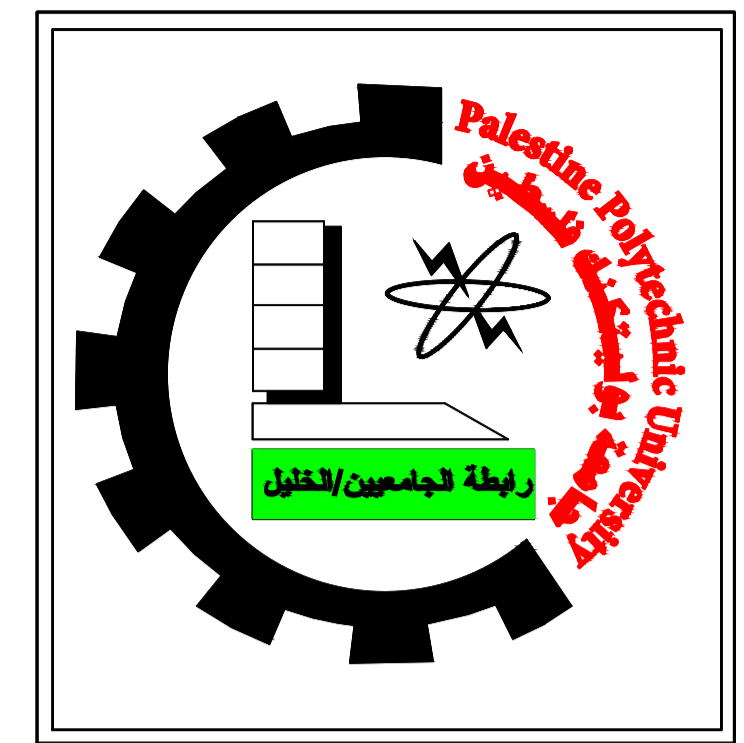
Supervised by :
HAMD IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A12**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
North-West Elevation

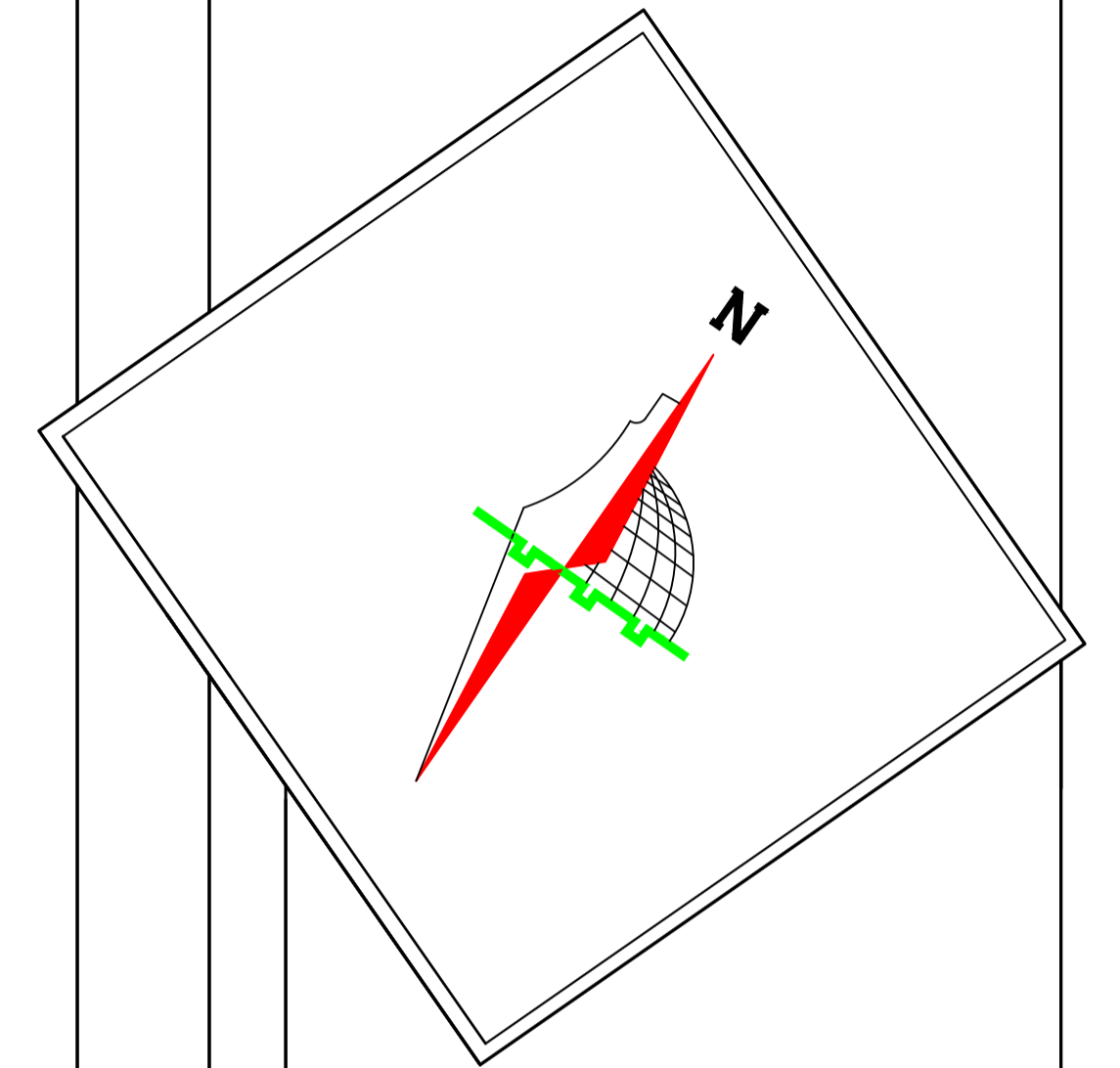
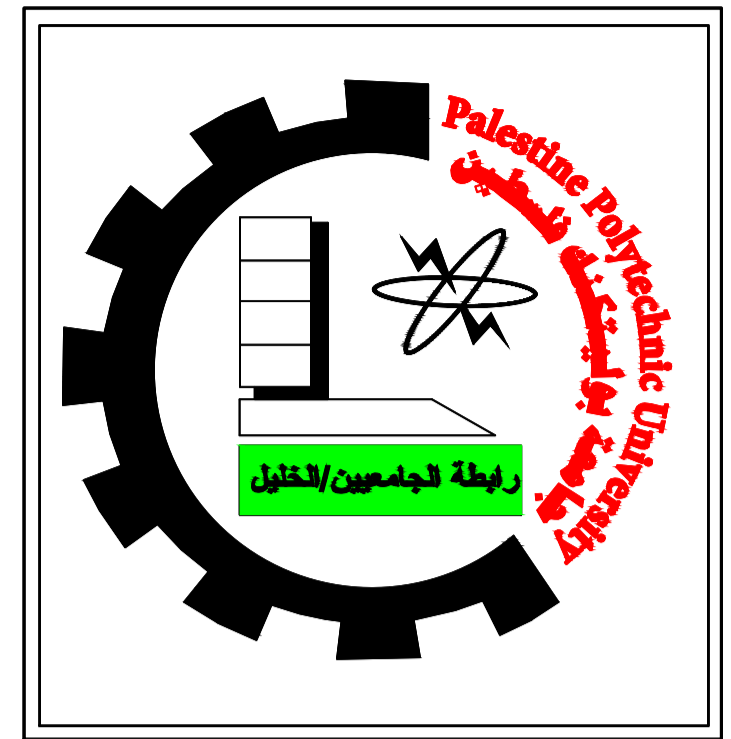
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A13**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
South-West Elevation

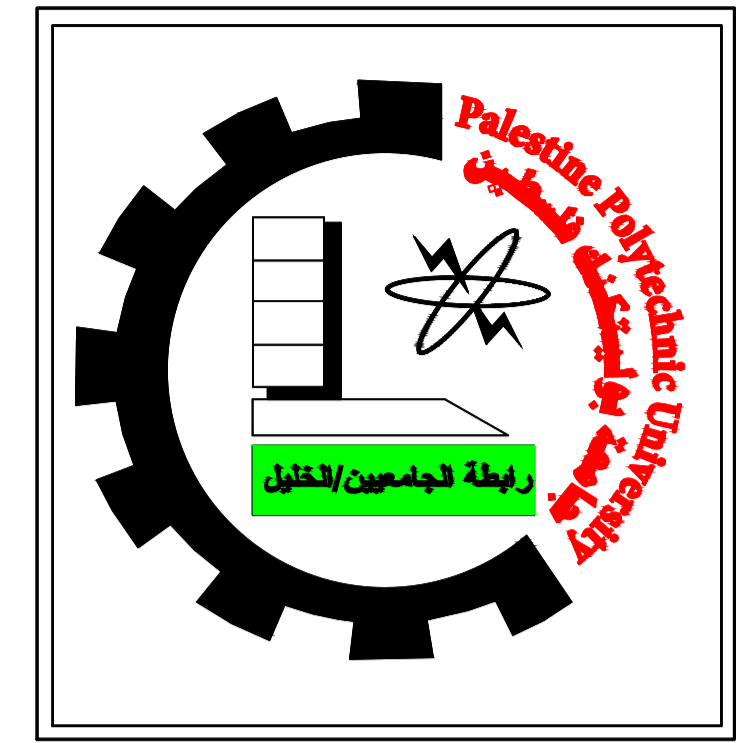
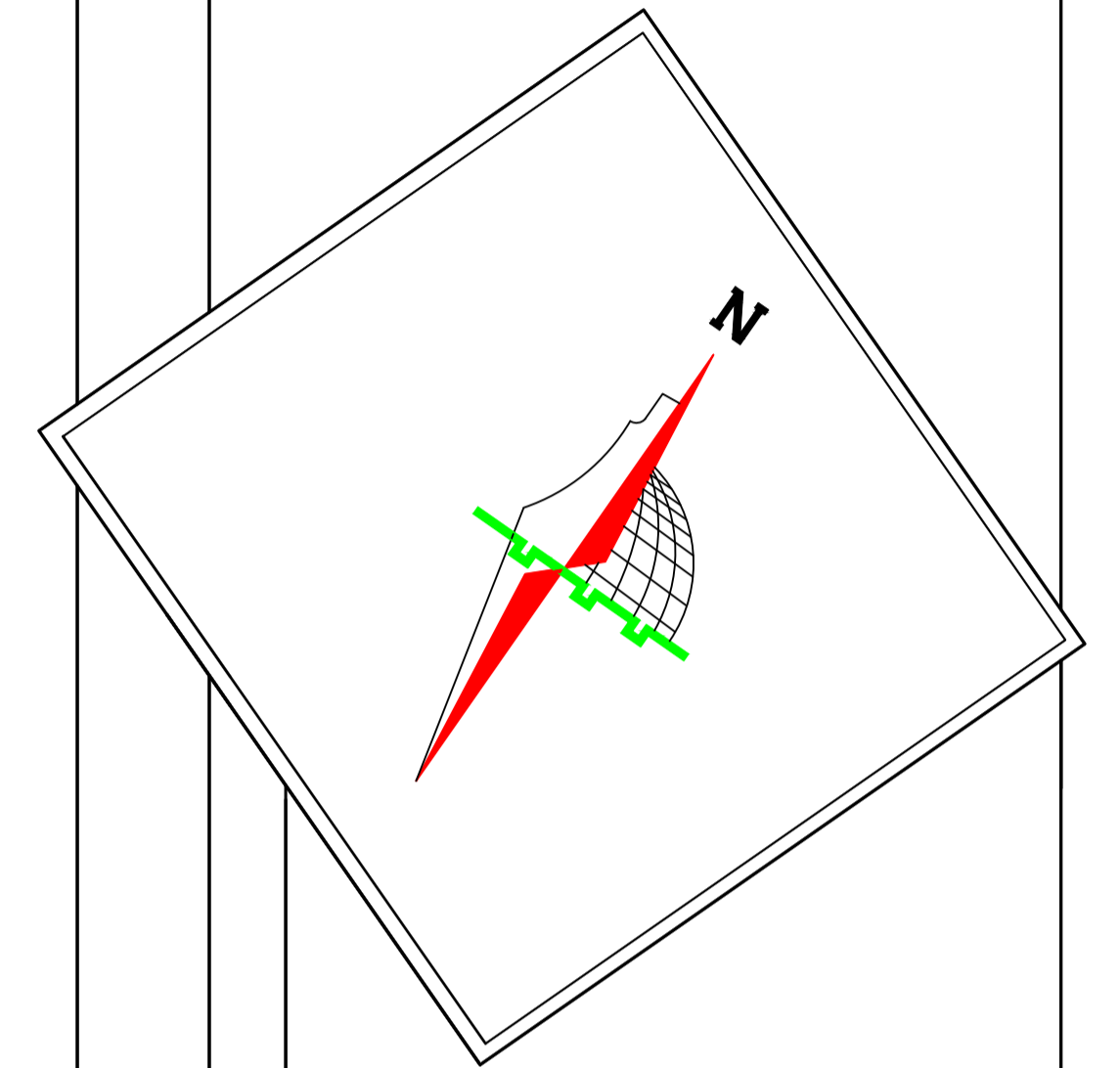
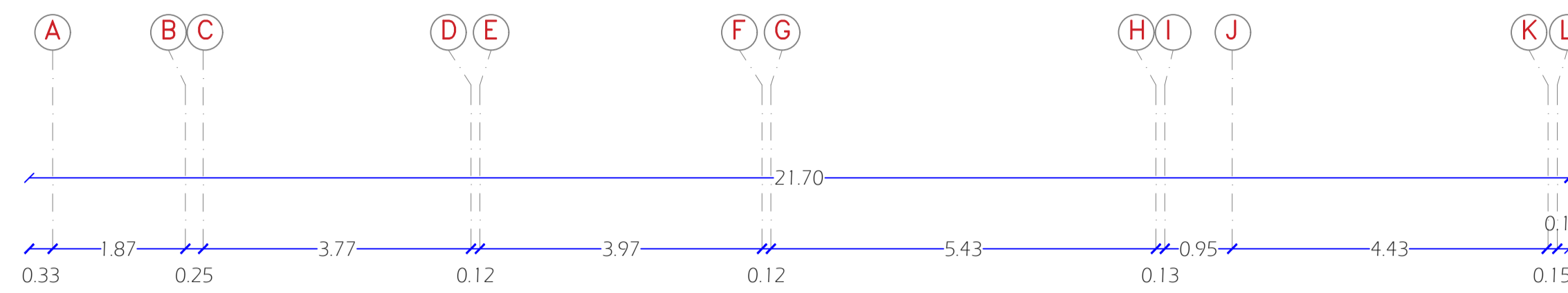
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A14**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

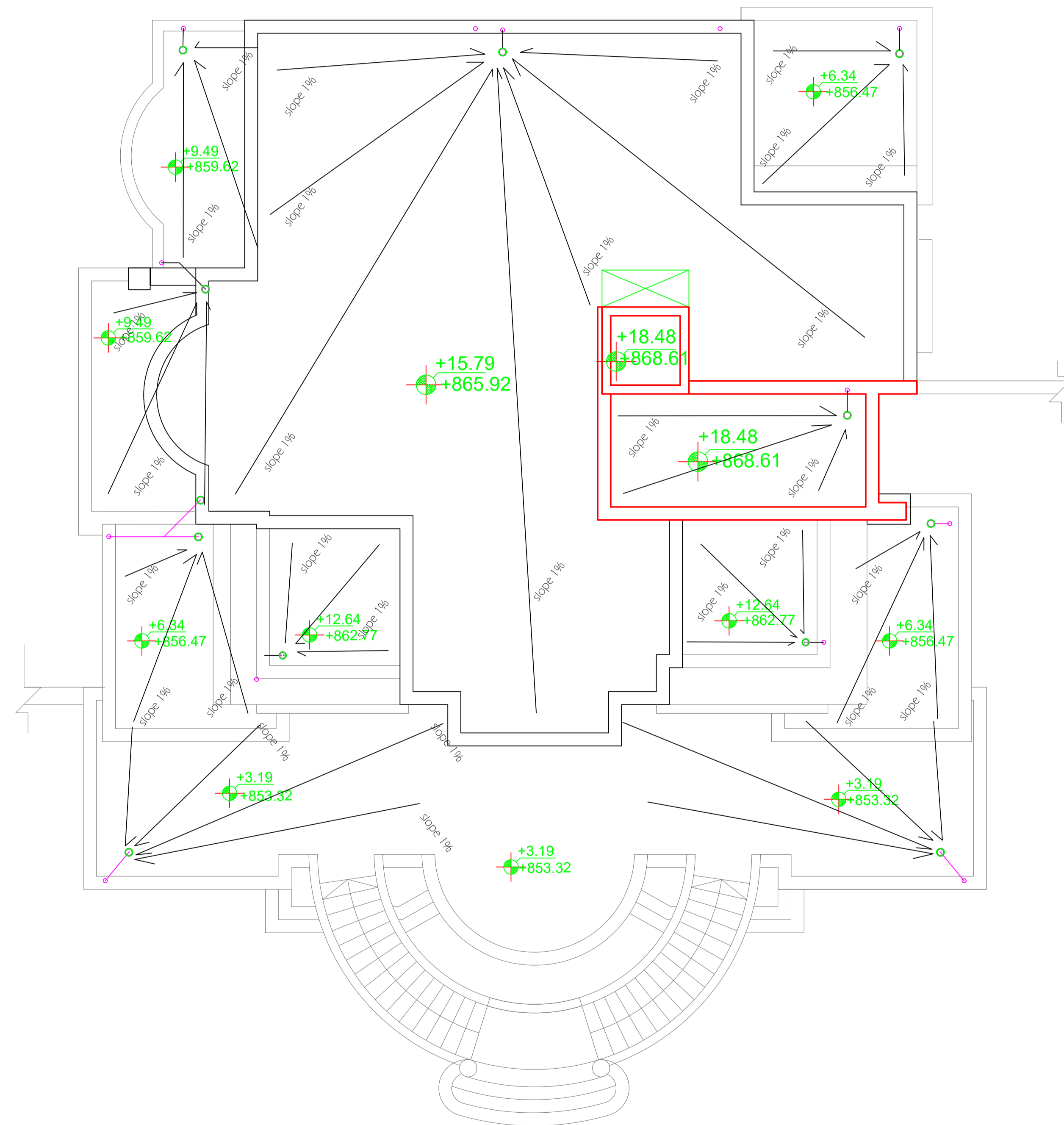
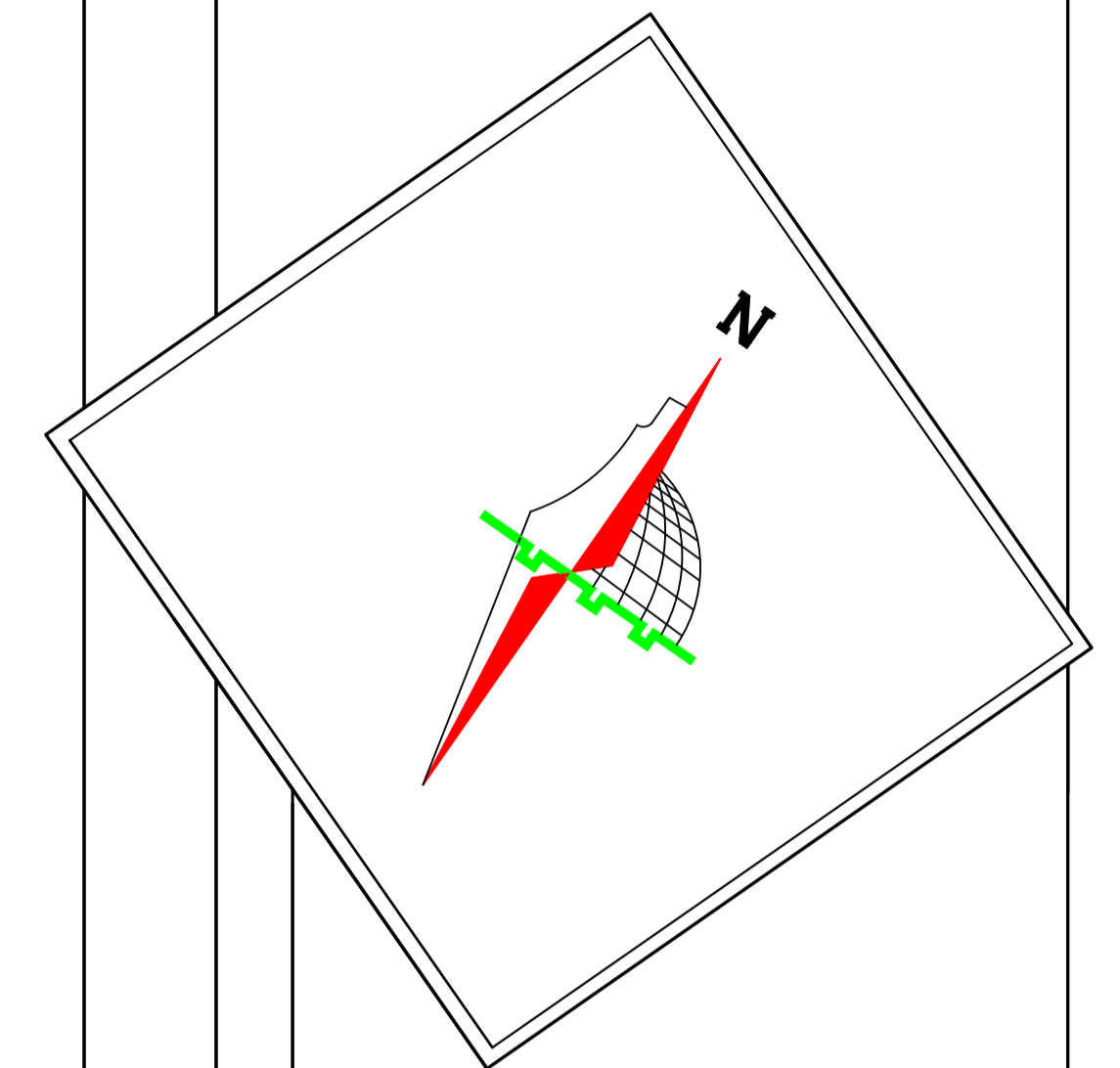
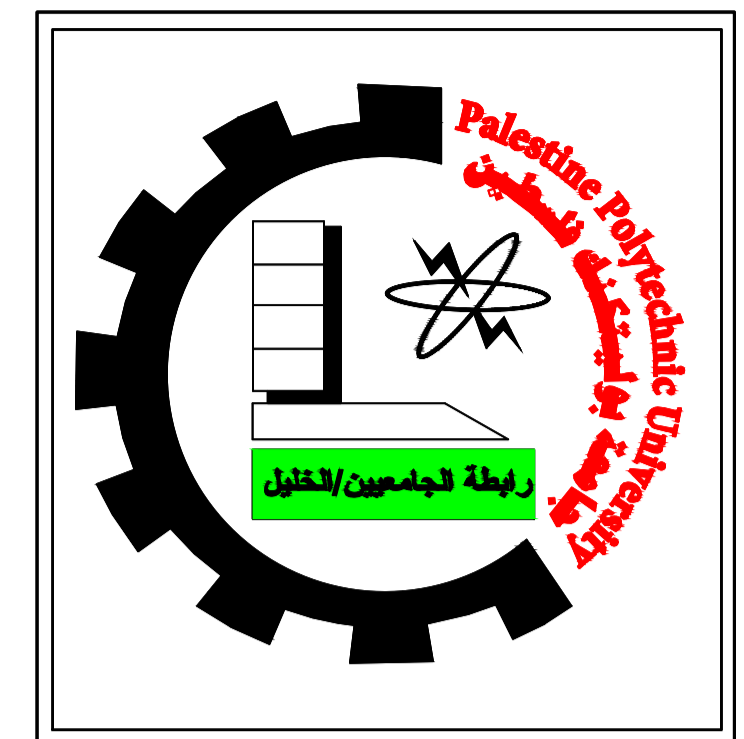
Drawing Title:
North-East Elevations

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A15**



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

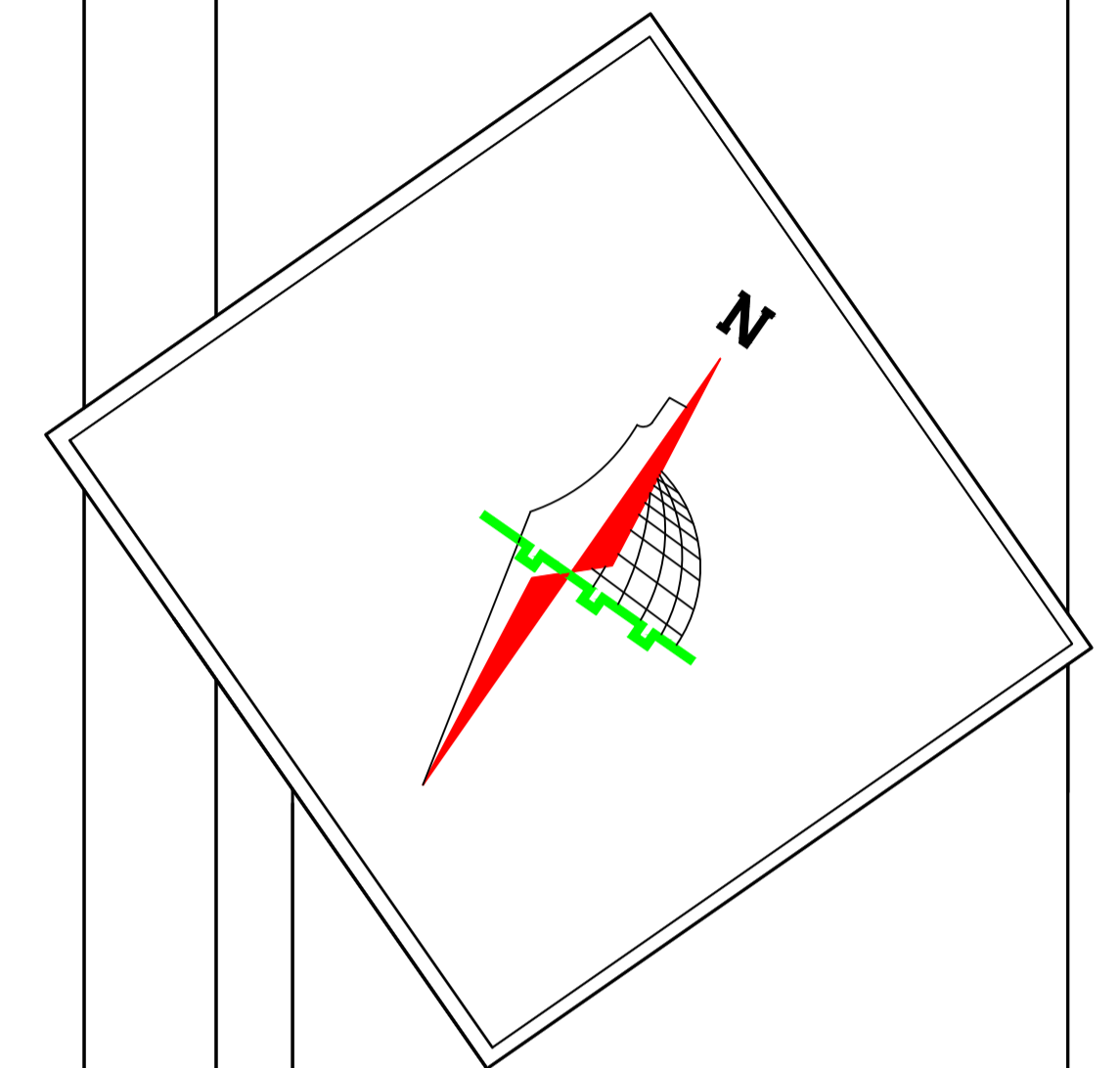
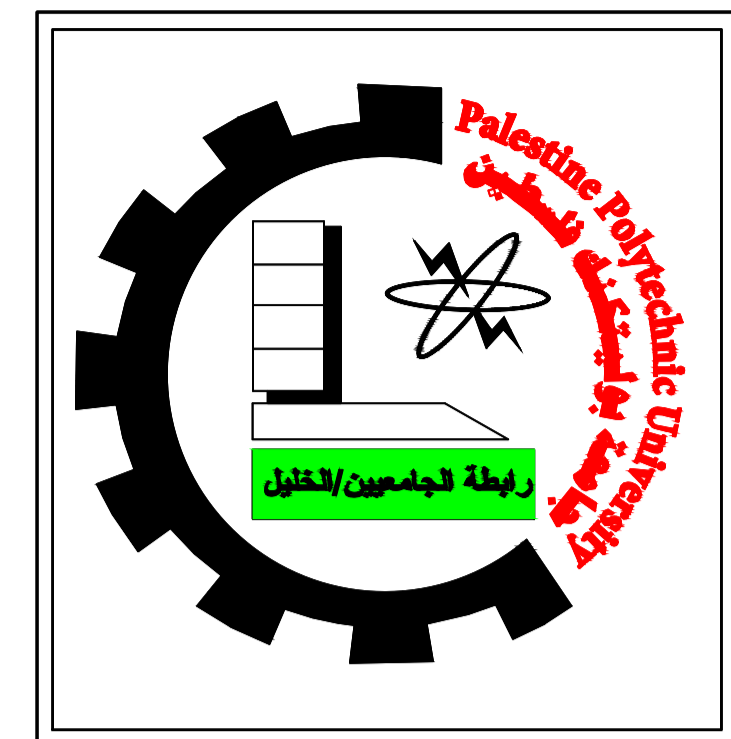
Drawing Title:
Surface Inclination Plan

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A16**



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

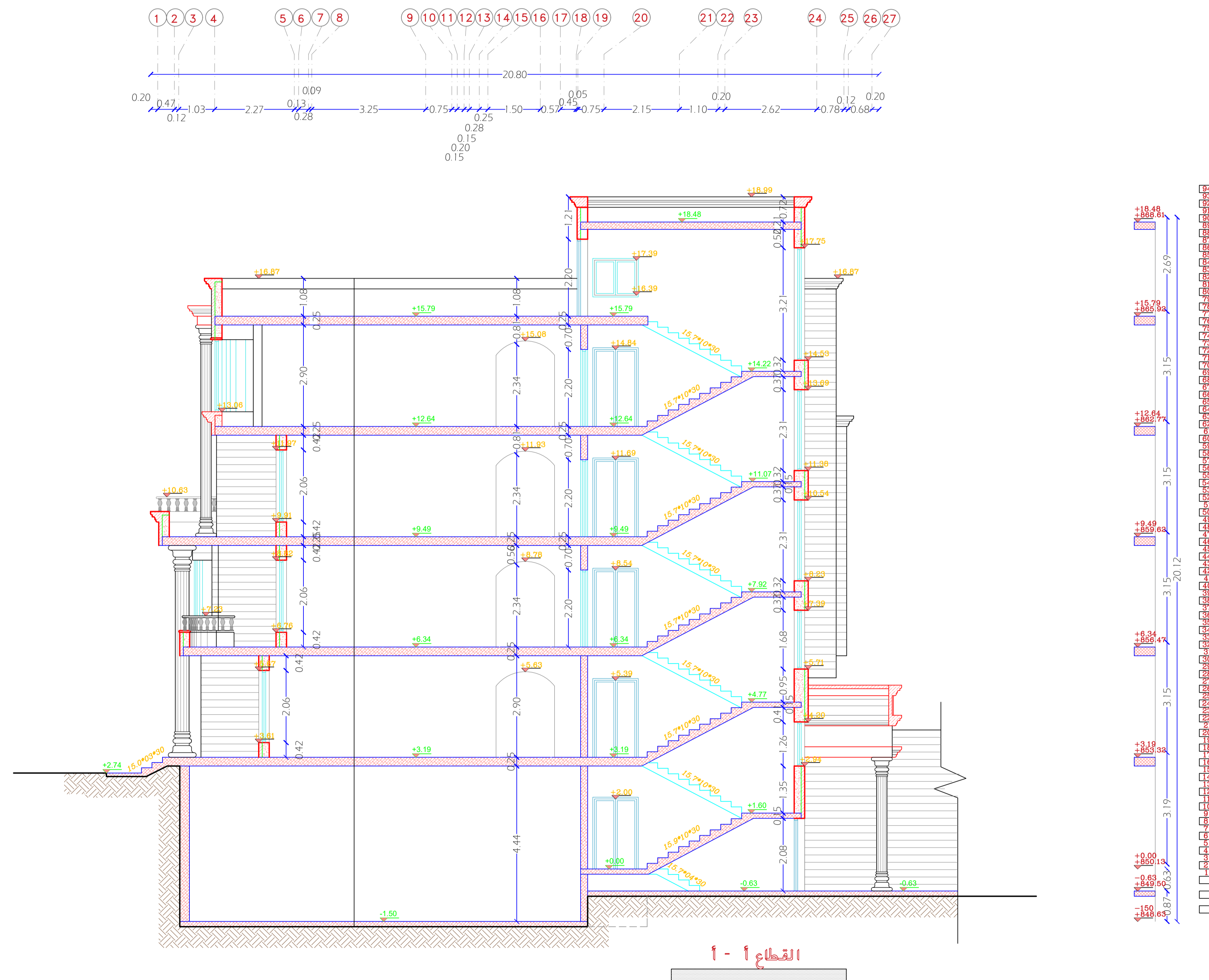
Drawing Title:
Section A-A

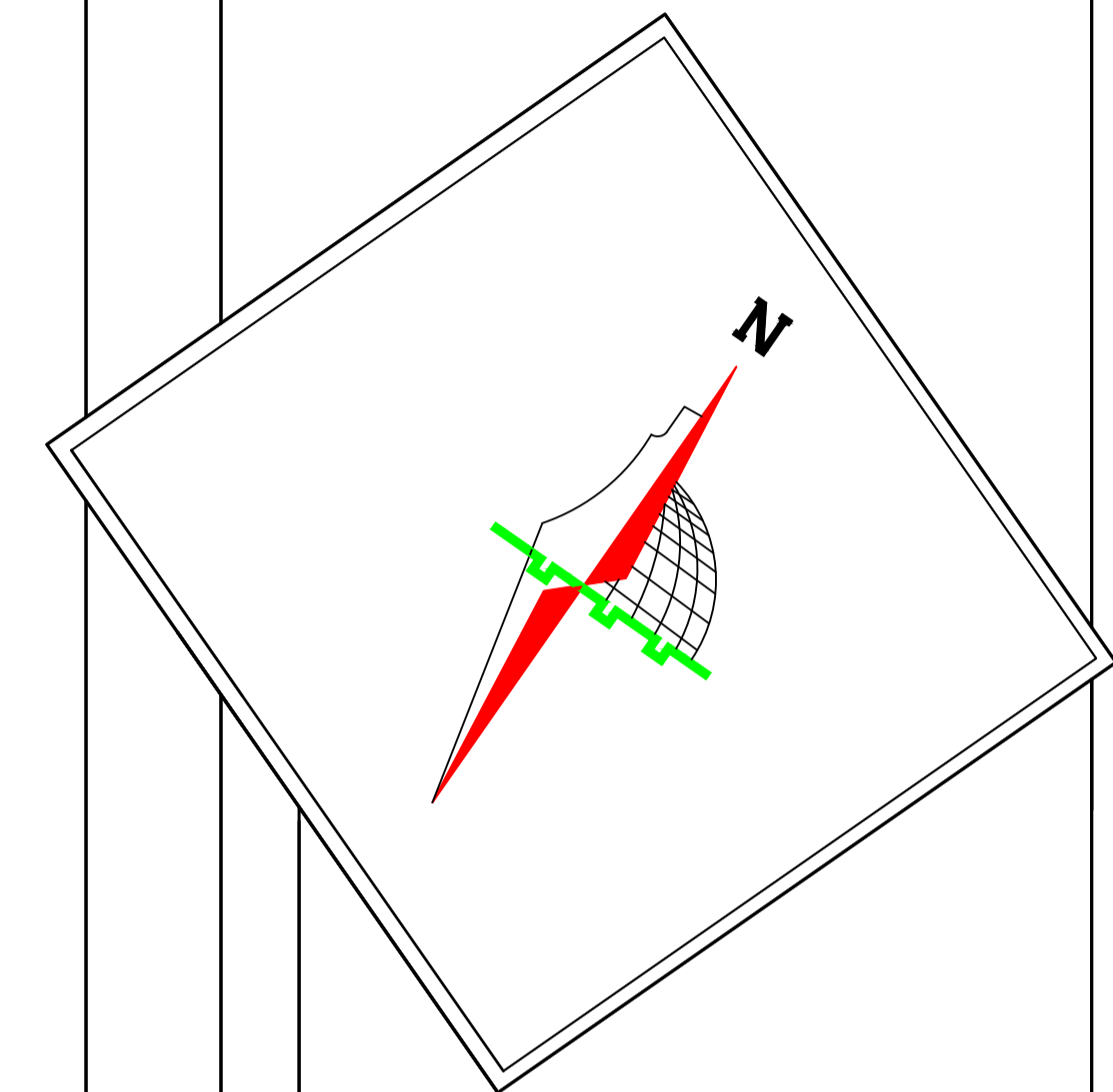
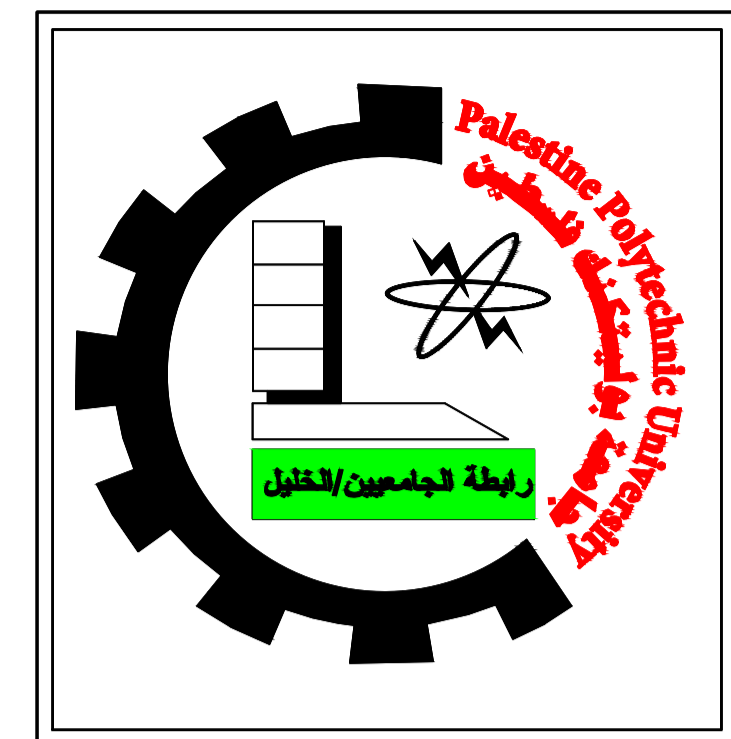
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A17**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

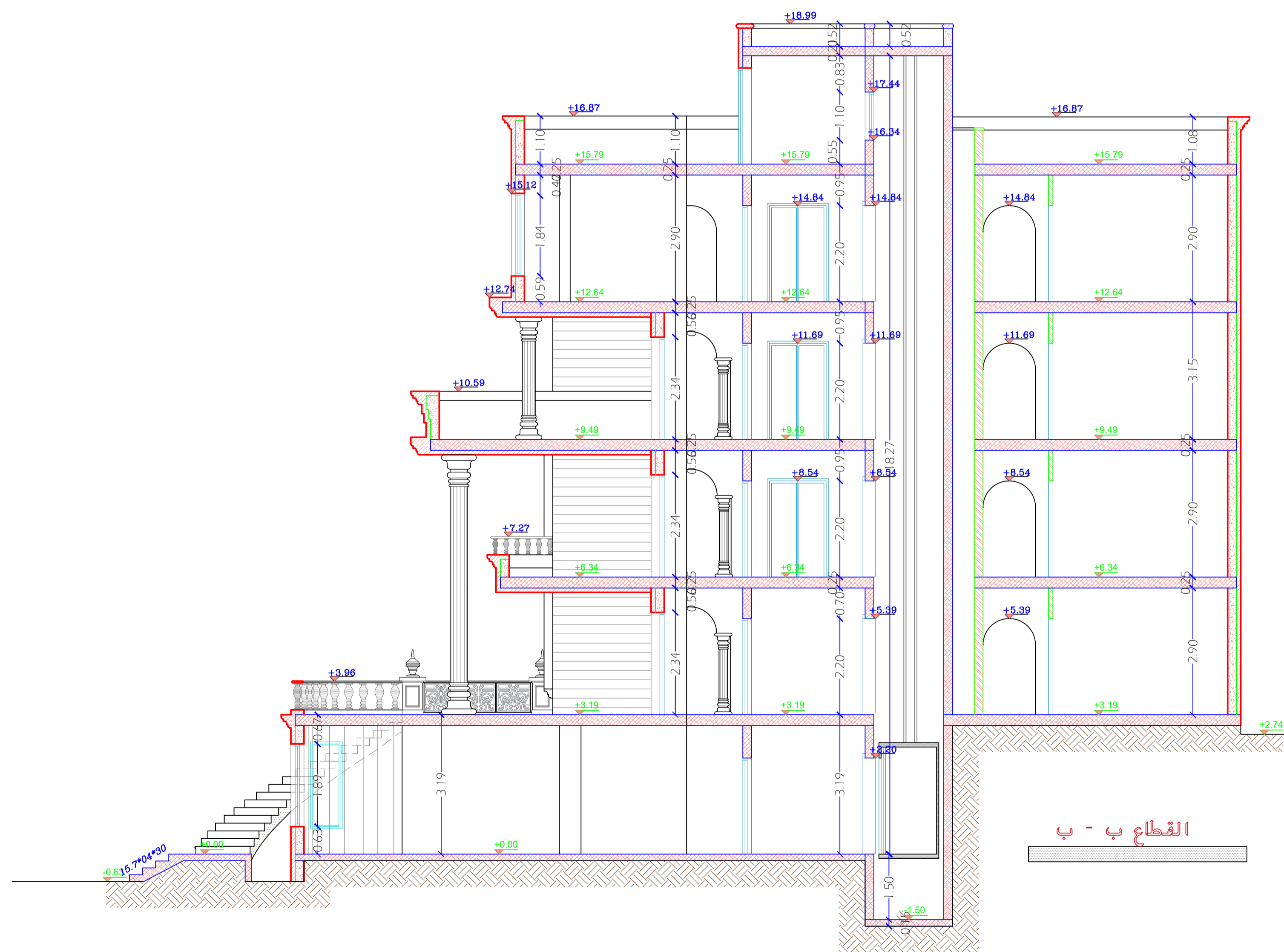
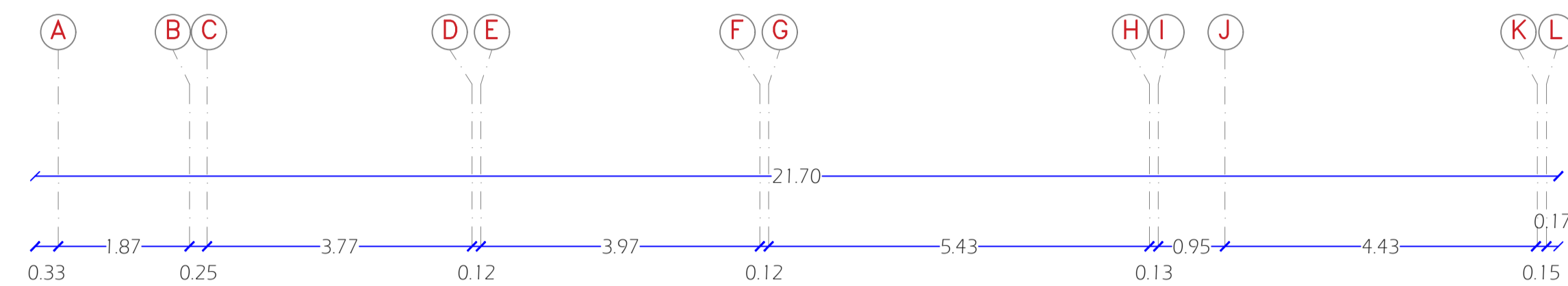
Drawing Title:
Section B-B

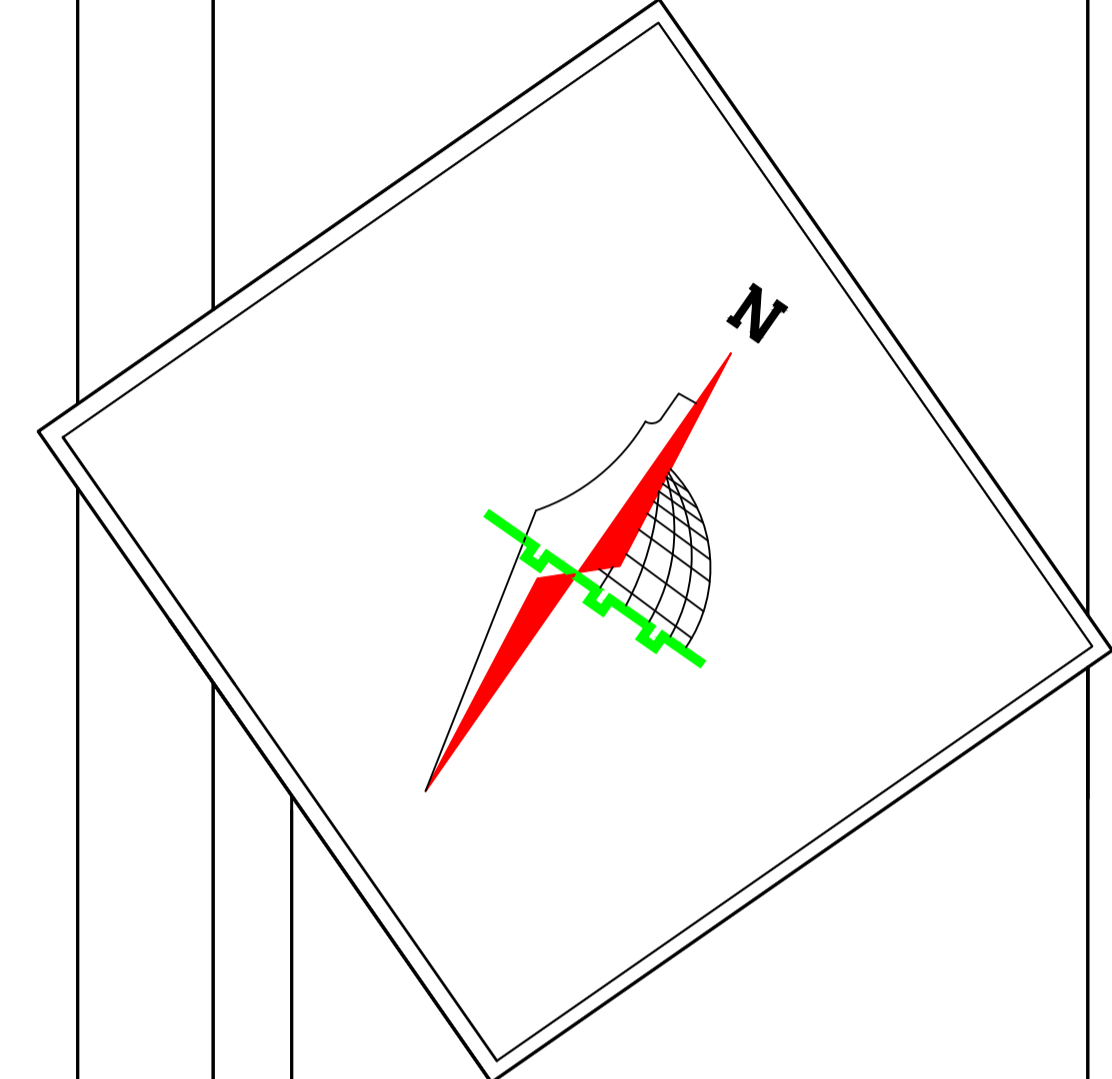
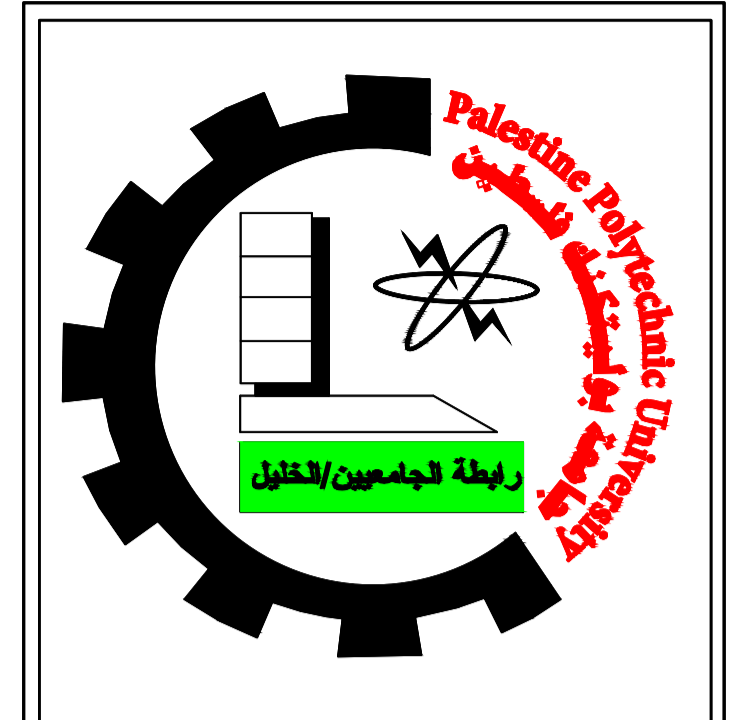
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A18**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

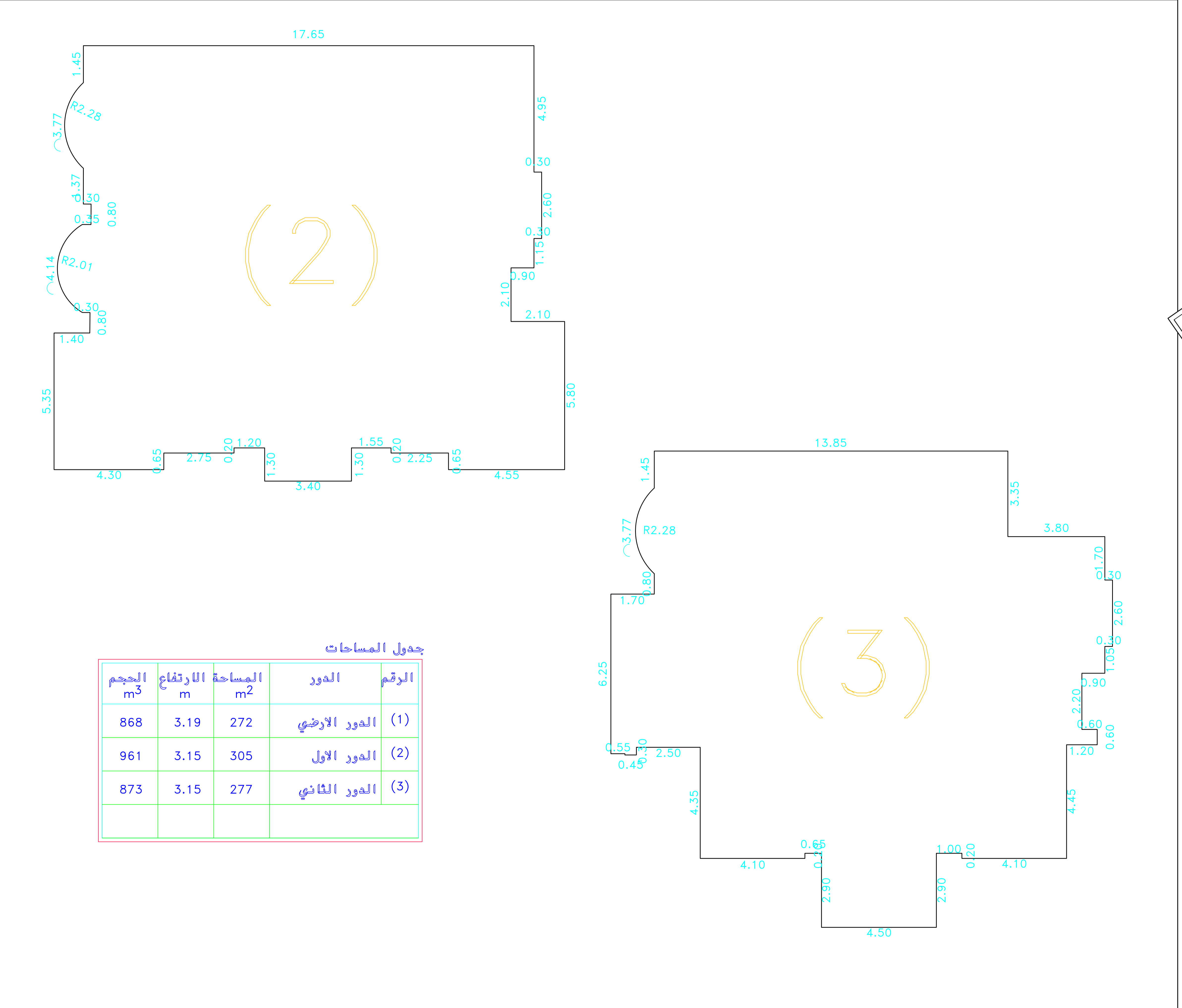
Drawing Title:
Area & volume Plan (2)

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **A20**



جدول المساحات

الرقم	الدور	المساحة m ²	الارتفاع m	الحجم m ³
(1)	الدور الارضي	272	3.19	868
(2)	الدور الاول	305	3.15	961
(3)	الدور الثاني	277	3.15	873

STRUCTURAL DESIGN CRITERIA AND CONSTRUCTION REQUIREMENTS

1. GENERAL:

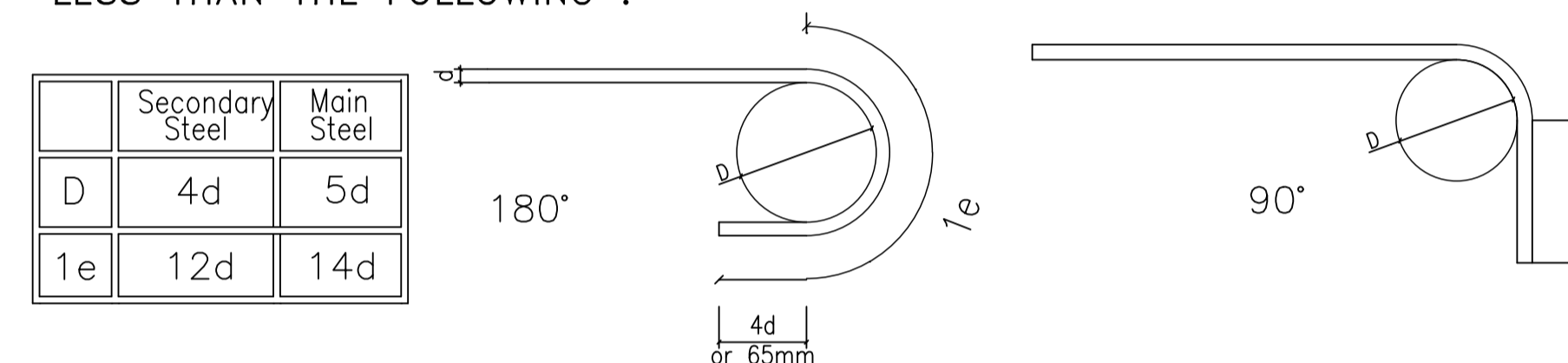
- 1.1 ALL DIMENSIONS ARE METRIC.
- 1.2 ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS.
- 1.3 THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCEMENT OF WORKS AND ANY DISCREPANCIES SHALL BE REPORTED TO TO THE ENGINEER BEFORE EXECUTION.
- 1.4 ALL OPENINGS FOR PIPING AND CONVEYANCE SHALL BE FORMED IN POSITION BEFORE THE CASTING OF CONCRETE.
- 1.5 NO HOLES OR CHASES ARE PERMITTED IN THE CONCRETE MEMBERS UNLESS OTHER THAN AS DETAILED OR UNLES APPROVED BY THE ENGINEER.
- 1.6 ELECTRICAL CONDUITS SHOULD NOT BE PROVIDED WITH IN THE COVER TO THE REINFORCEMENT OF STRUCTURAL ELEMENTS.

2. DESIGN:

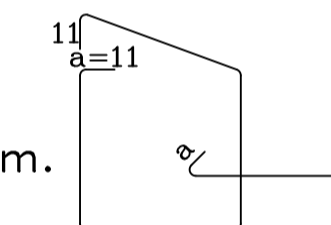
- 2.1 CODES OF PRACTICE AND STANDARDS USED:
 - a. DESIGN AND DETAILING ARE IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-14) .
 - b. GRAVITY LOADS ESTIMATION ARE IN ACCORDANCE OF JORDANIAN CODE .
 - c. FOR THE DEFINITION OF LATERAL SEISMIC LOADING (ASCE7-16) IS USED.
- 2.2 THE DESIGN ALLOWABLE BEARING CAPACITY OF THE SUPPORTING SOIL UNDER THE FOUNDATION 400 kN/m^2
- 2.3 STRUCTURAL MEMBERS ARE DESIGNED TO RESIST ITS SELF WEIGHT IN ADDITION TO :
 - a. LIVE LOAD OF 2.5 kN/m^2
- 2.4 ALL STRUCTURAL MEMBERS ARE DESIGNED TO WITHSTAND TOTAL NUMBER OF TWO STORIES.

3. CONCRETE & REINFORCEMENT:

- 3.1 CONCRETE GRADE ARE B300 FOR ALL MEMBERS.
- 3.2 DEFORMED REINFORCING BARS SHALL CONFORM TO THE ASTM SPECIFICATIONS.
- 3.3 ALL STEEL REINFORCEMENT BARS SHALL BE FROM HIGH TENSILE DEFORMED BARS OF YIELD STRENGTH = 420 MPa
- 3.4 LAP SPLICE LENGTHS OF REINFORCEMENT BARS SHALL BE AS SHOWN ON THE DRAWINGS BUT NOT LESS THAN 60ϕ .
- 3.5 ALL REINFORCING BARS ANCHORING TWO DIFFERENT STRUCTURAL ELEMENTS SHALL BE ENDED WITH 90 OR 180 HOOK AS SHOWN ON DRAWINGS BUT NOT LESS THAN THE FOLLOWING :

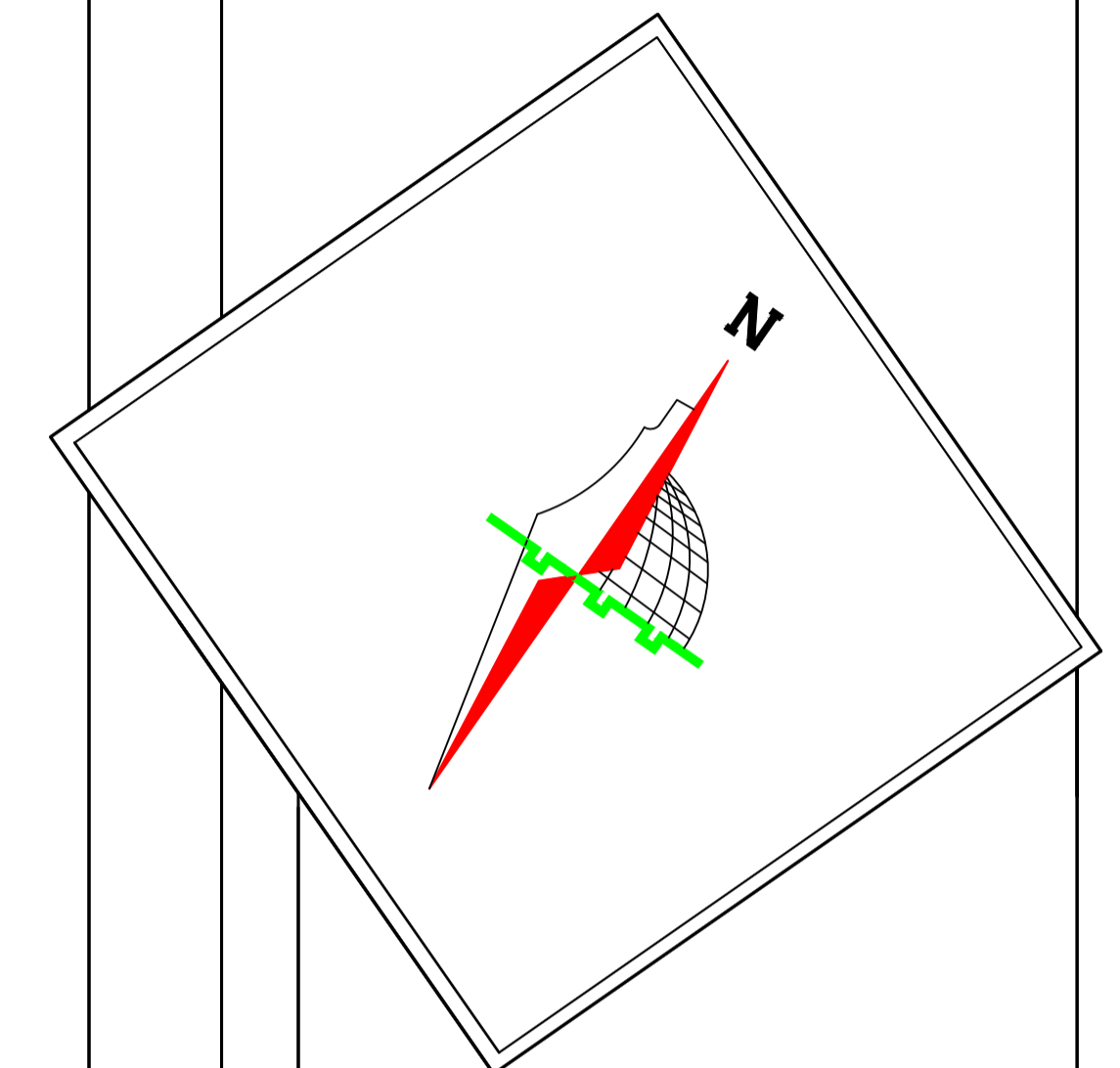
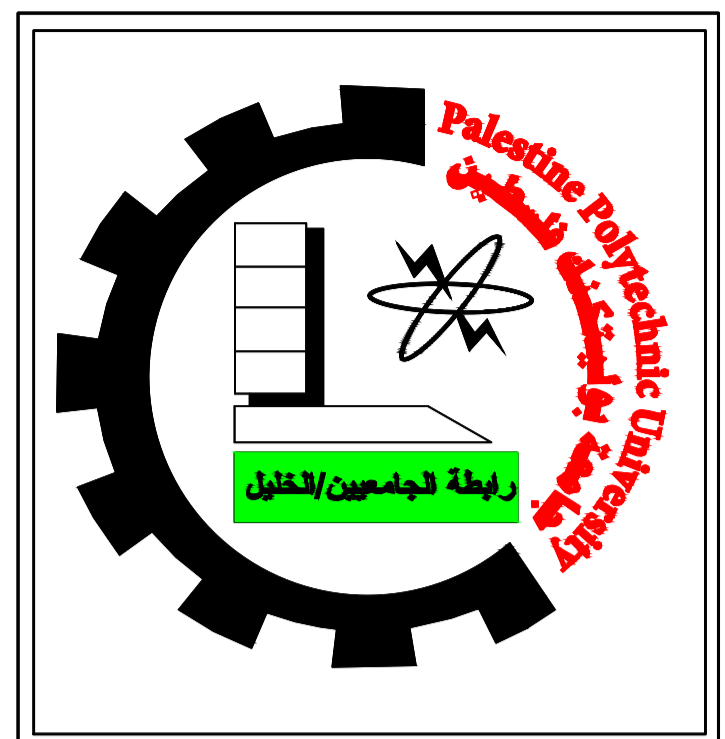


- 3.6 MINIMUM CLEAR CONCRETE COVER TO STEEL REINFORCEMENT SHALL BE AS FOLLOWS :
 - 50mm. FOR FOUNDATIONS .
 - 40mm. FOR BEAMS & COLUMNS.
 - 20mm. FOR SLABS.
- 3.7 IN ALL STIRRUPS $\phi 10$ IN BEAMS & COLUMNS THE LENGTH OF $a = 11 \text{ cm}$.



4. SYMBOLS & ABBREVIATIONS:

- R.S RIBBED SLAB
- F FOOTING
- S.F. STRIP FOOTING
- C COLUMN
- B BEAM
- S.W SHEAR WALL
- T.B TOP REINFORCEMENT
- B.B BOTTOM REINFORCEMENT
- T.O.F Top o Footing
- L Level
- ϕ REINFORCEMENT BAR DIAMETER (mm)
- @,/ REINFORCEMENT SPACING



Palestine Polytechnic University
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Civil and Architectural Engineering Department
Construction Engineering

Project Name: Structural Design Of
Residential Villa

Drawing Title:

GENERAL NOTES

Supervised by :

HAMD I DAIS

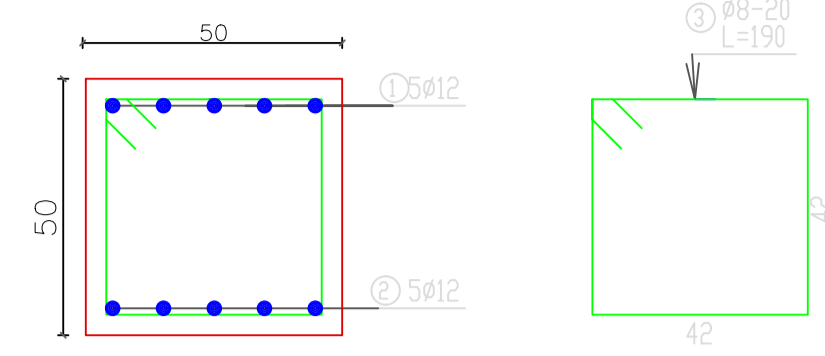
Done by :

Mahdi Y. Rajabi

Ribhi AL-haddad

Scale	1/100
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Drawing #	S00
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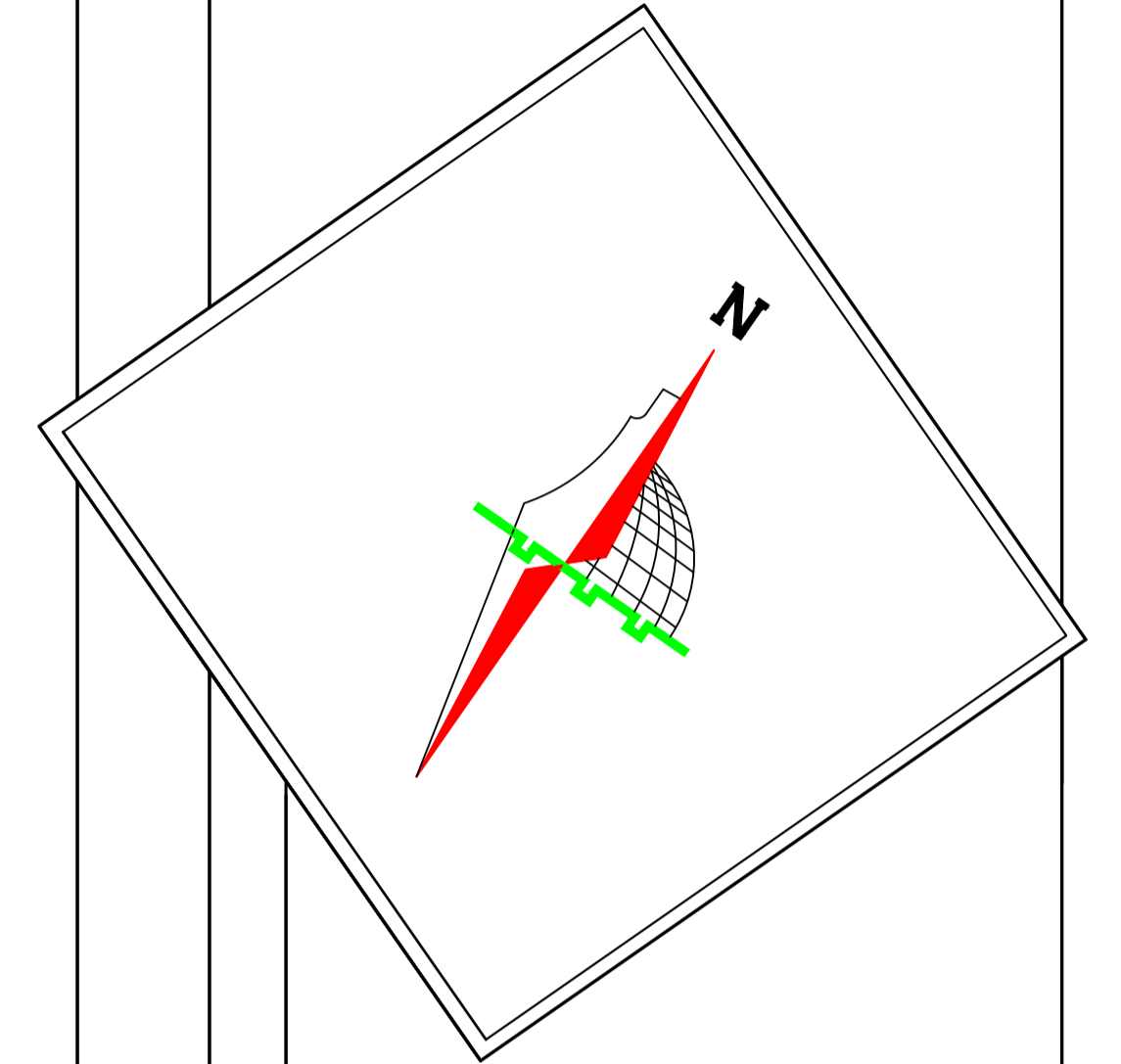
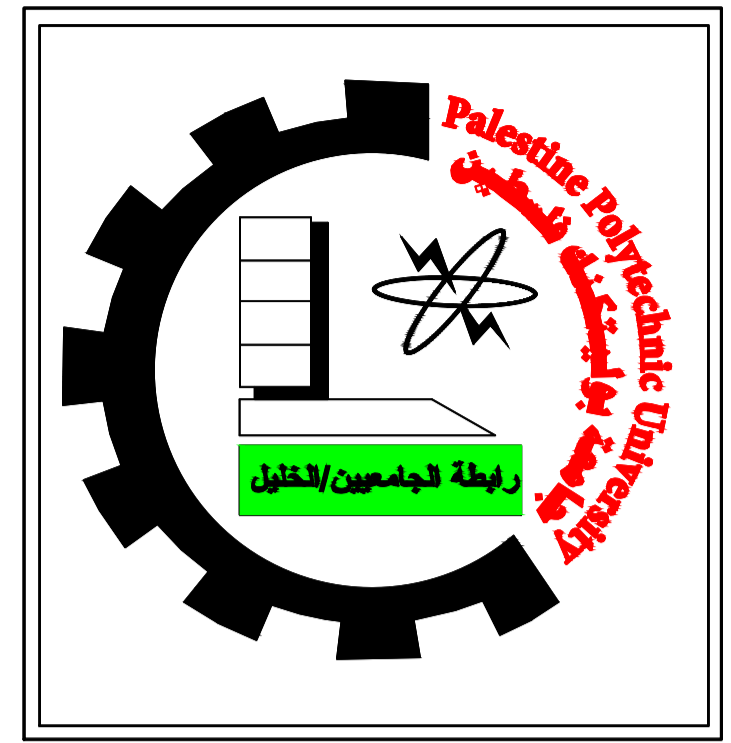
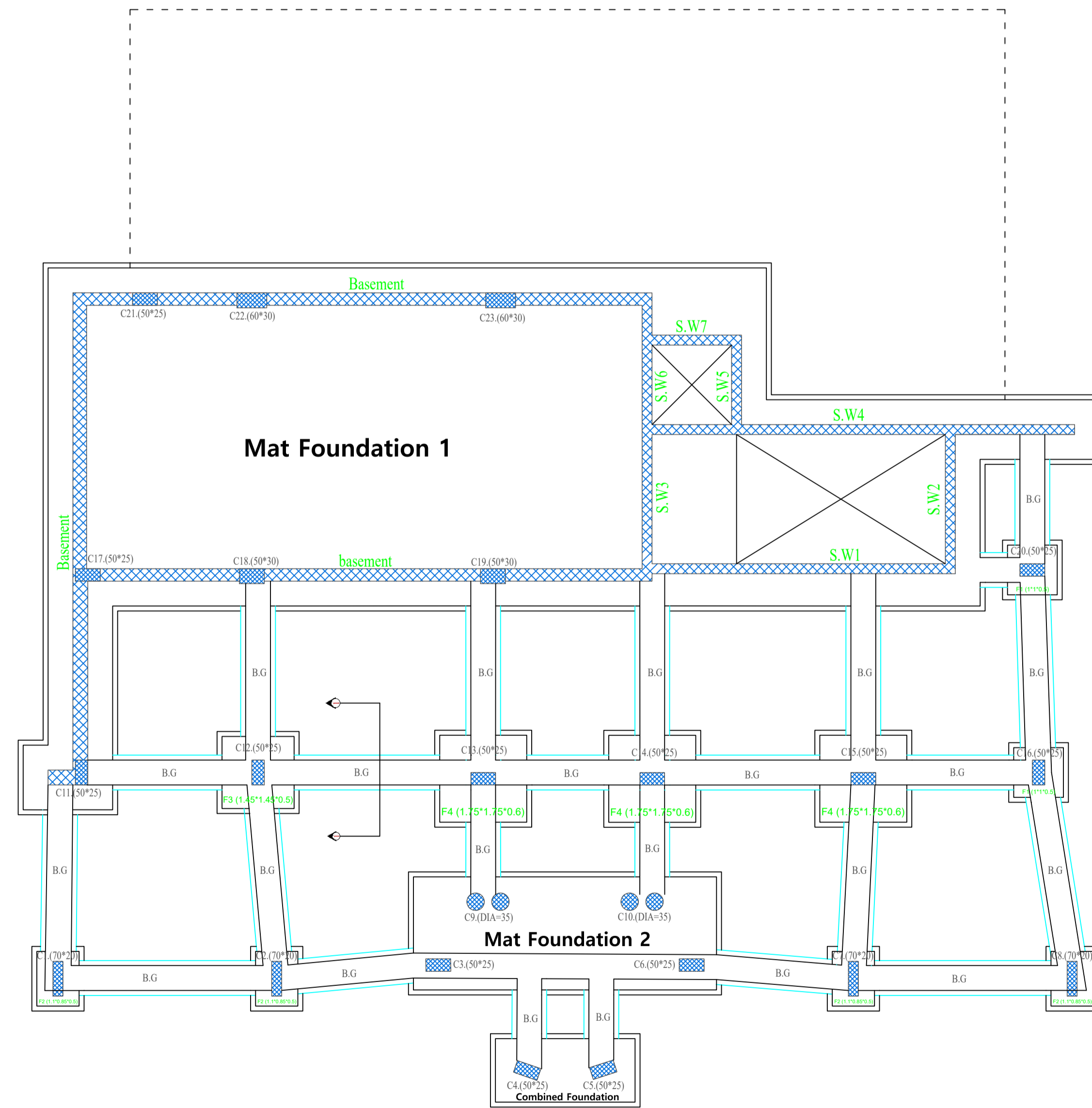
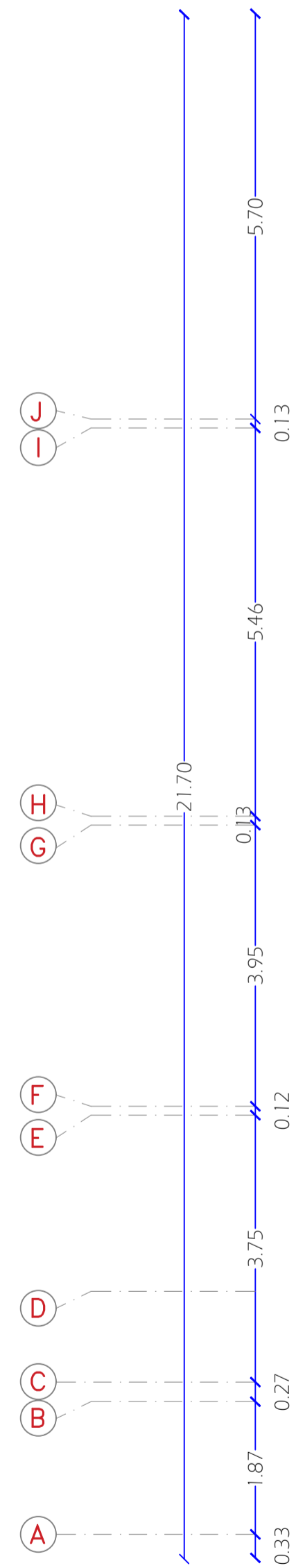
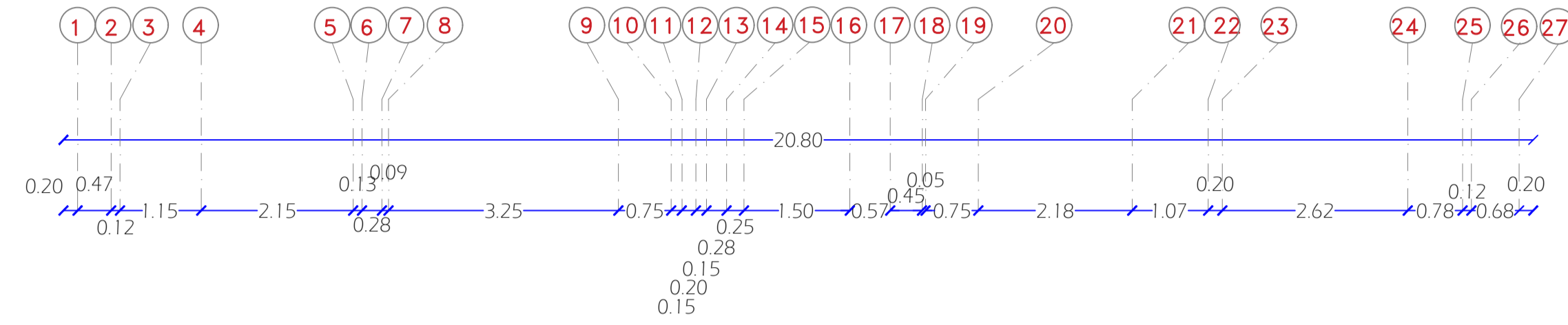
B.G

Scale: 1/20

Section 1-1

BASEMENT Foundations Plan

SCALE 1:100



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Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

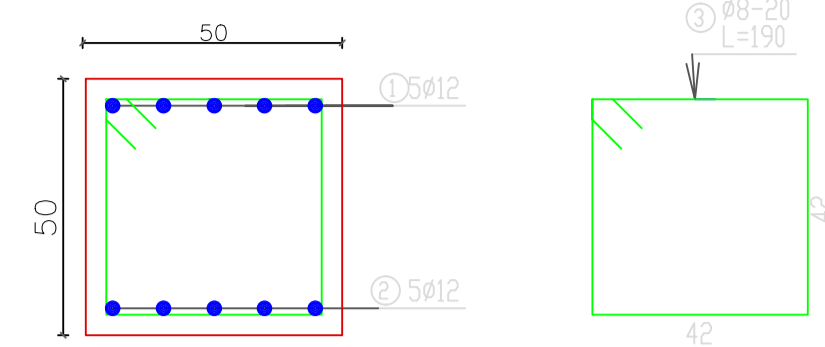
Drawing Title:
Basement Floor Foundation Plan

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/100

Drawing # **S01**



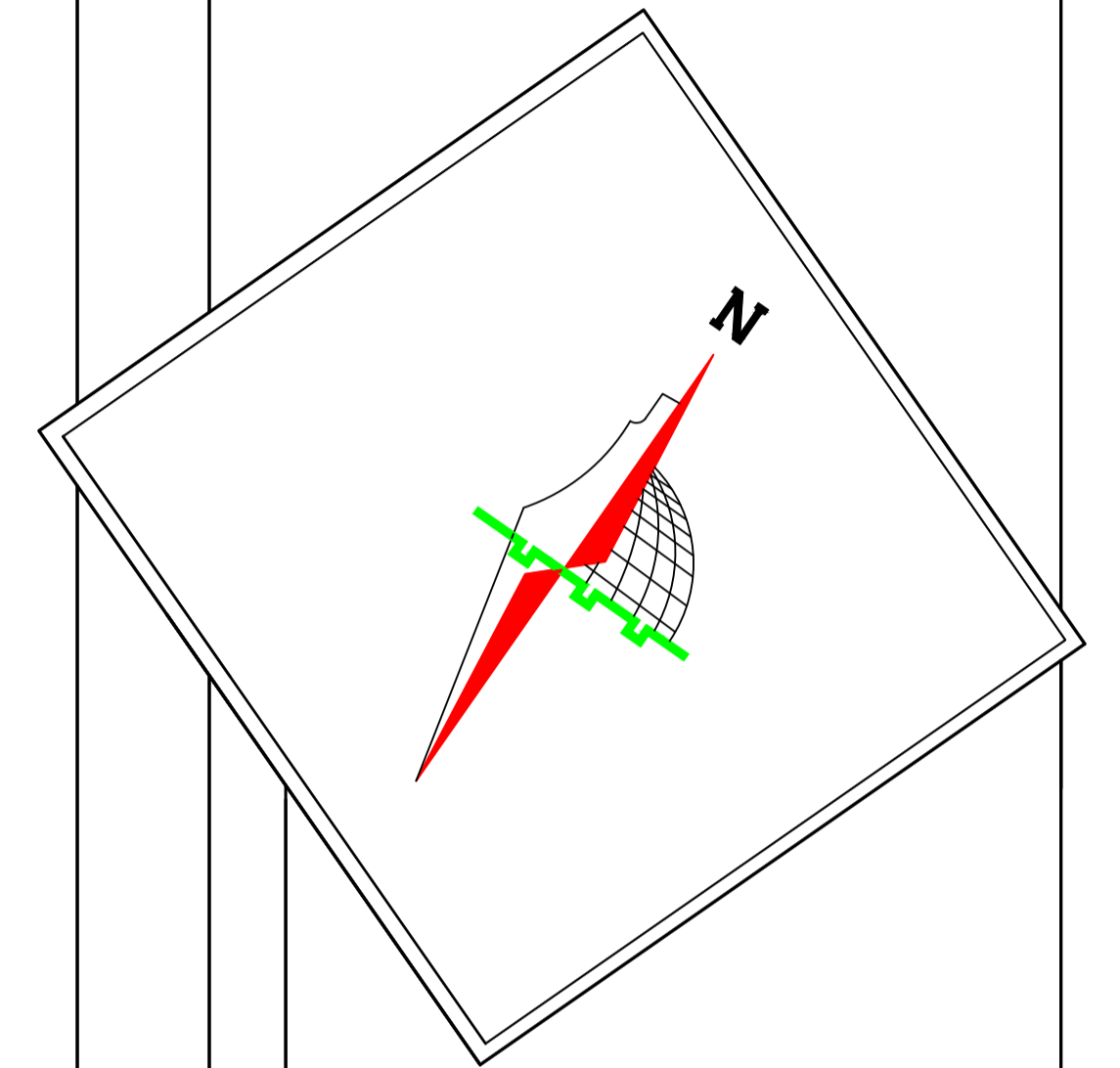
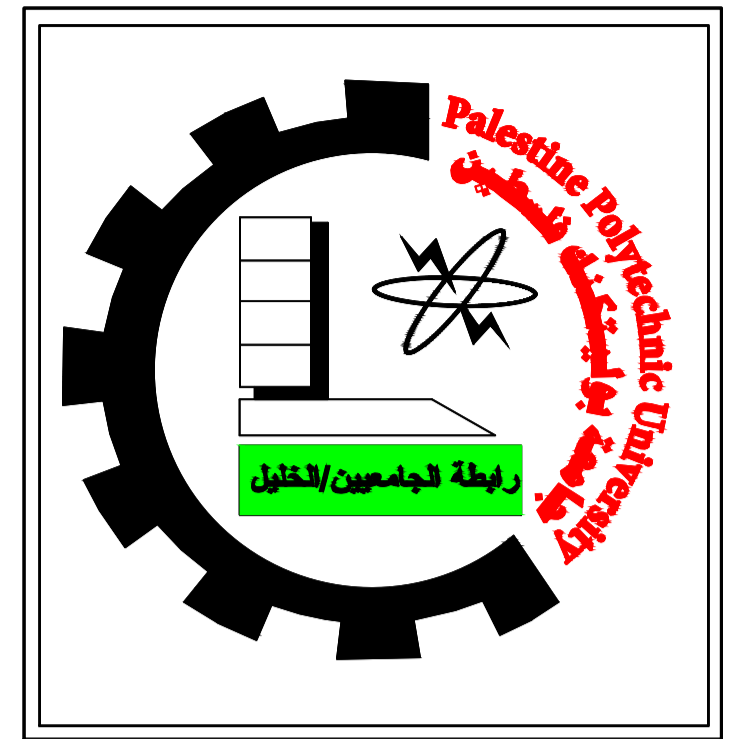
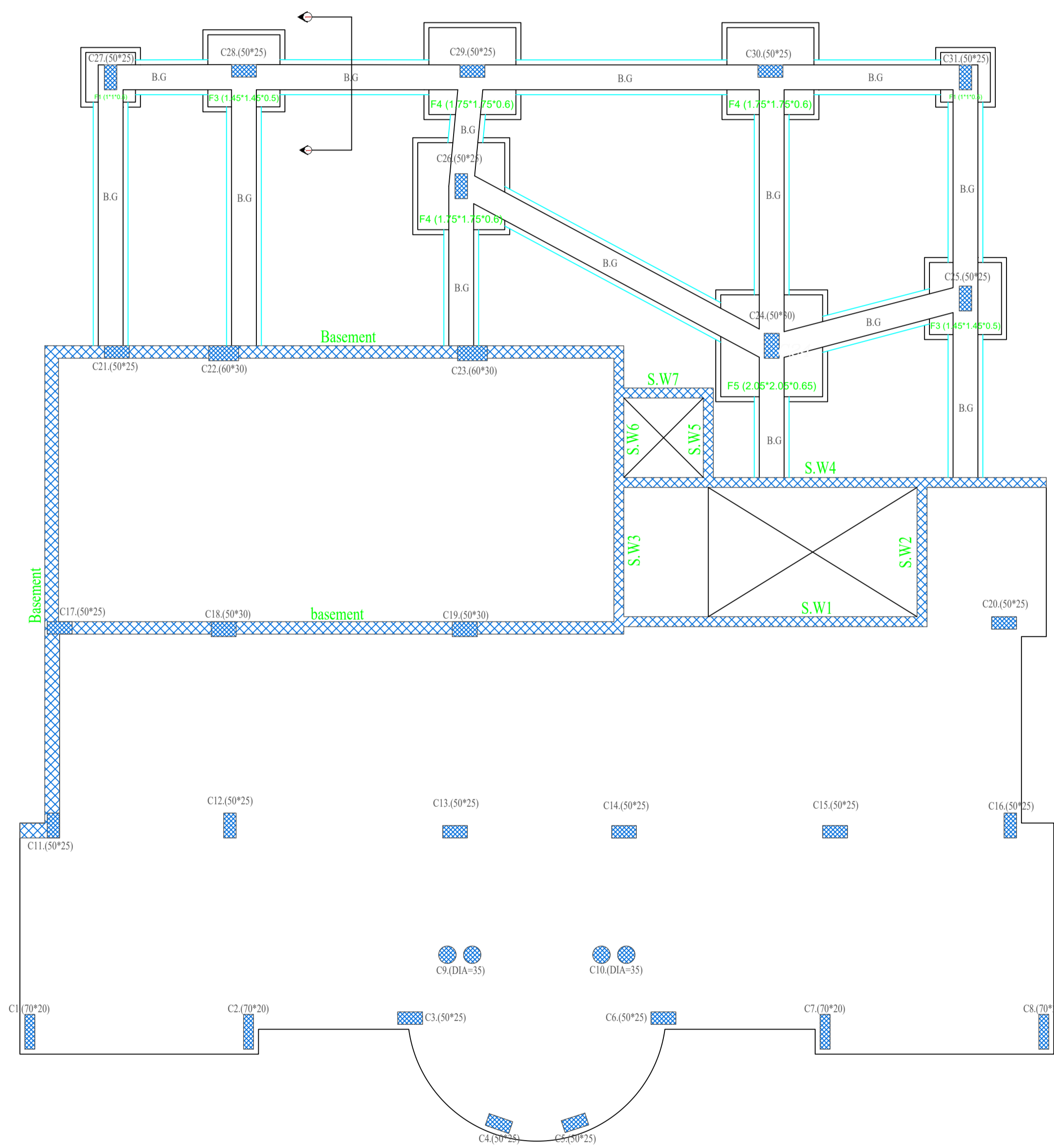
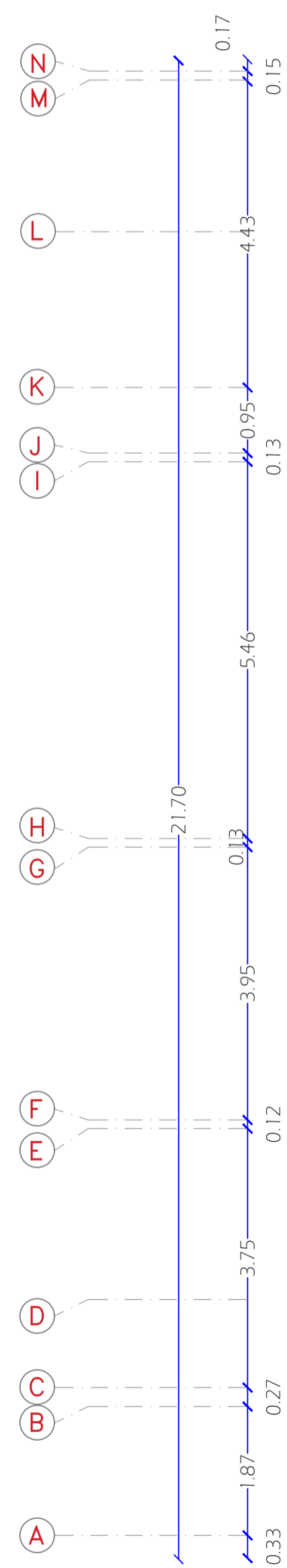
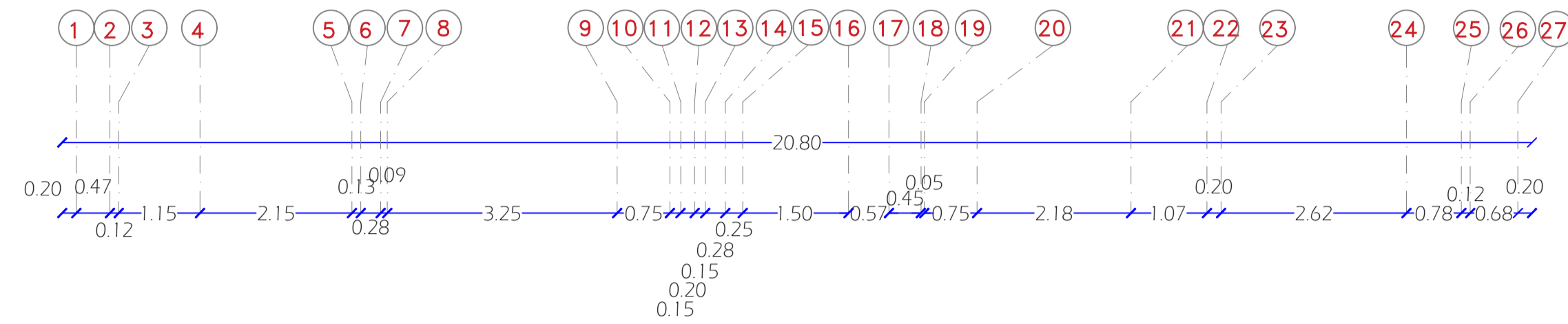
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Scale: 1/20

Section 1-1

Ground Floor Foundations Plan

SCALE 1:100



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Civil and Architectural Engineering Department
Construction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
Ground Floor Foundation Plan

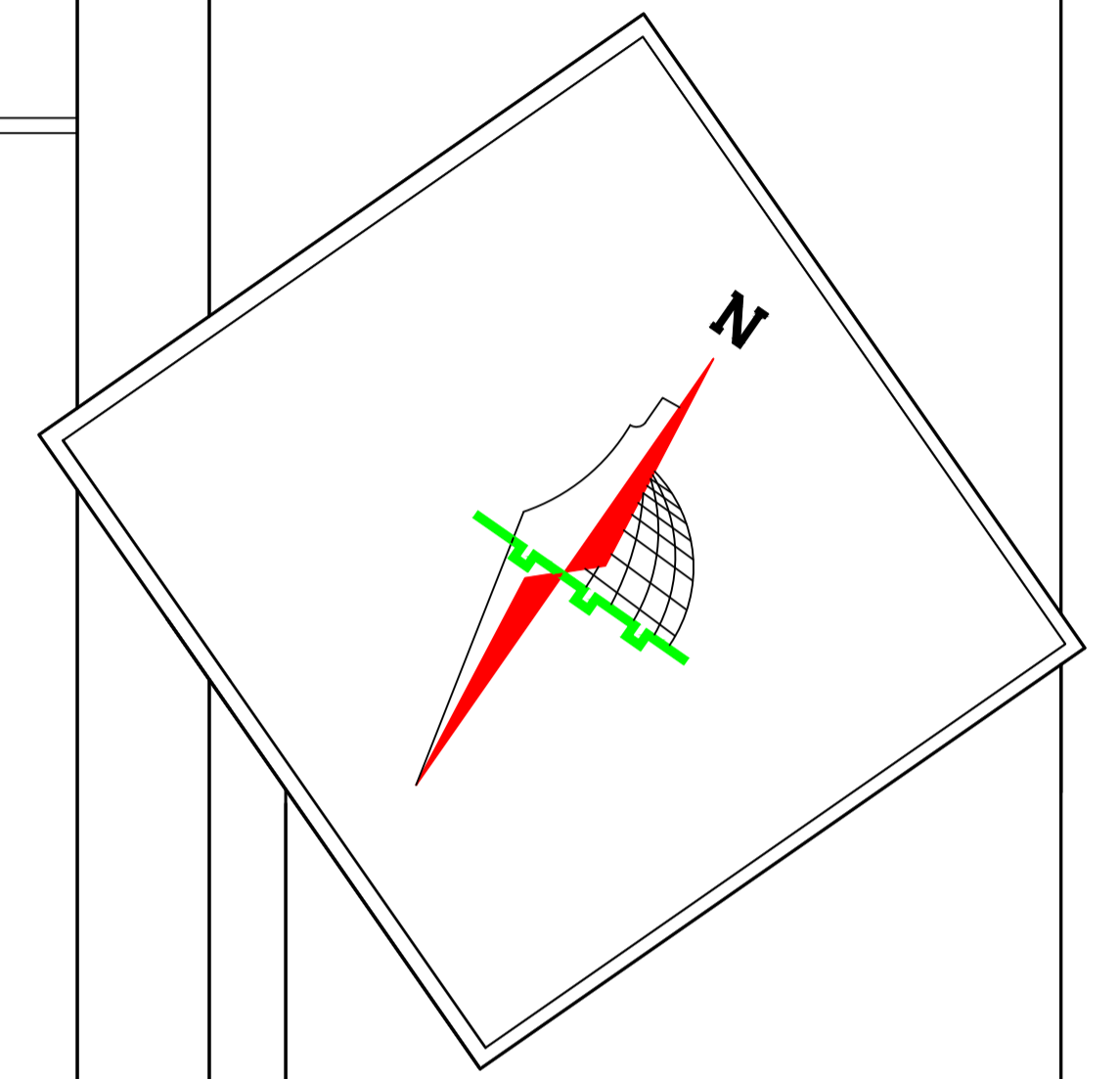
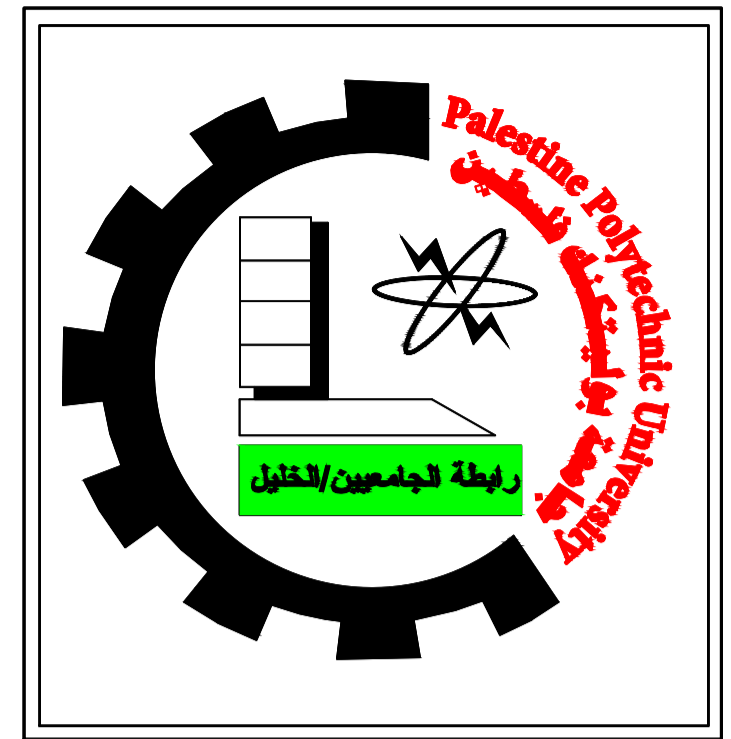
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/100
Drawing #	S02

F1 & F2 & F3 DETAILIES

SCALE 1:25



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Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
F1 & F2 & F3 DETAILIES

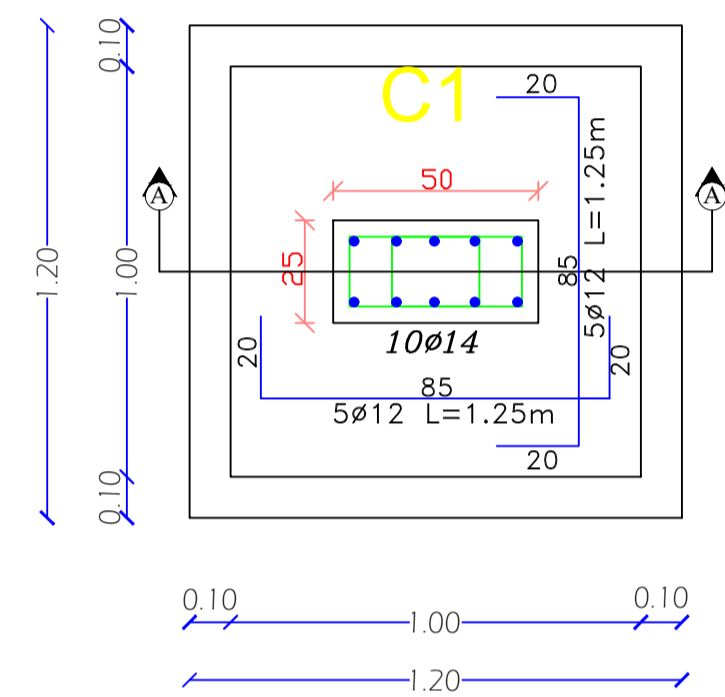
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

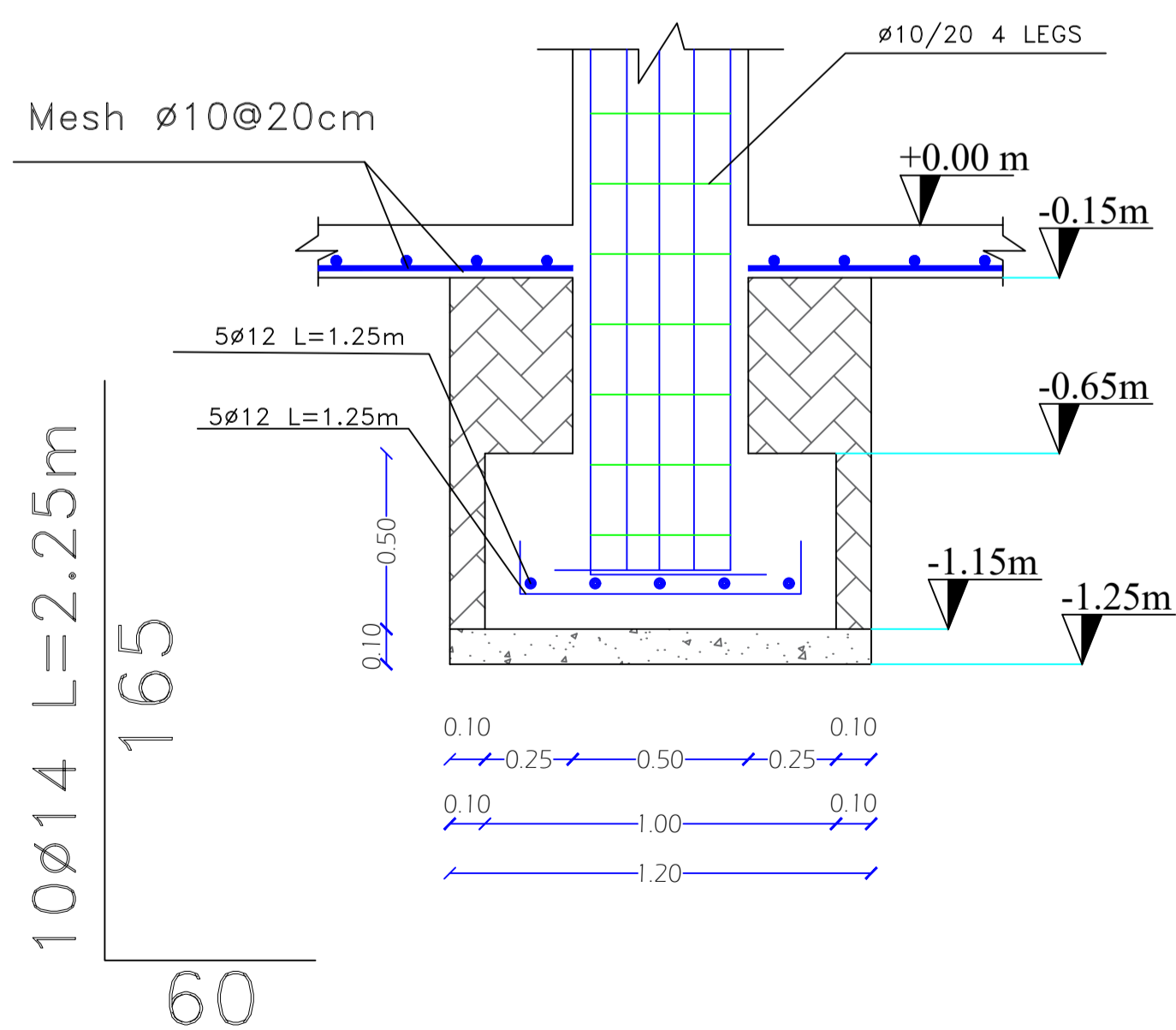
Scale 1/25

Drawing # **S03**

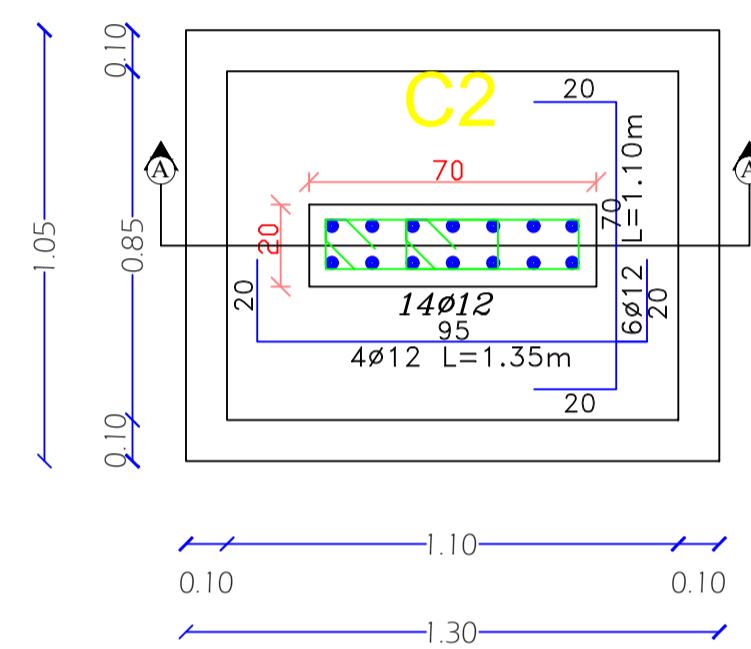
FOOTING - F1 (1.00x1.00)m



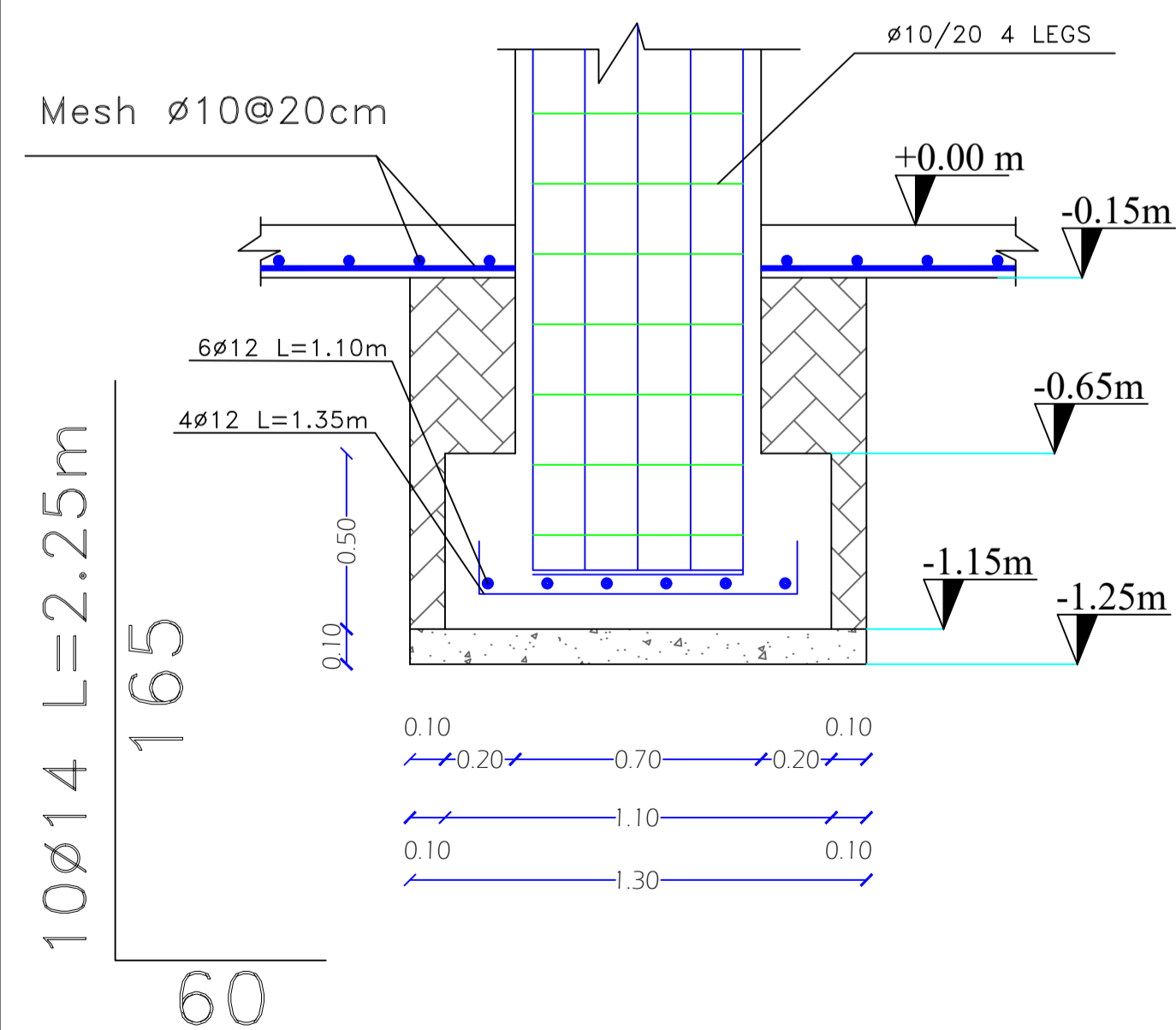
Section A-A



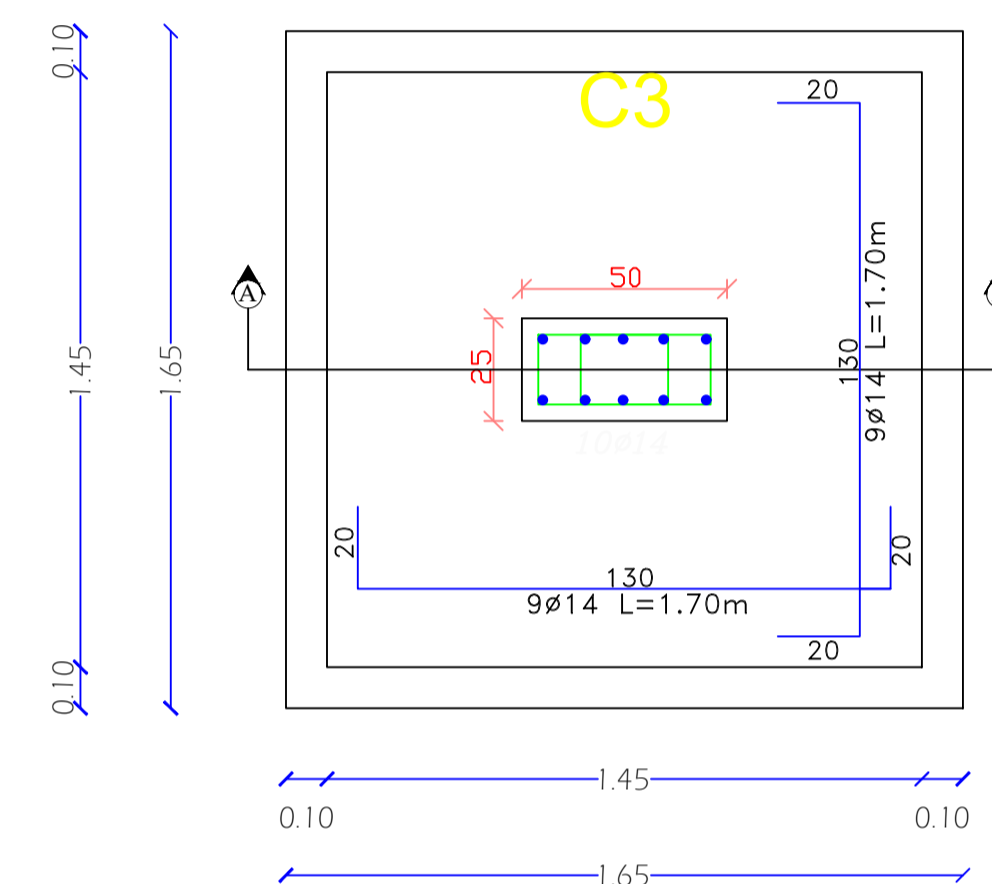
FOOTING - F2 (1.10x0.85)m



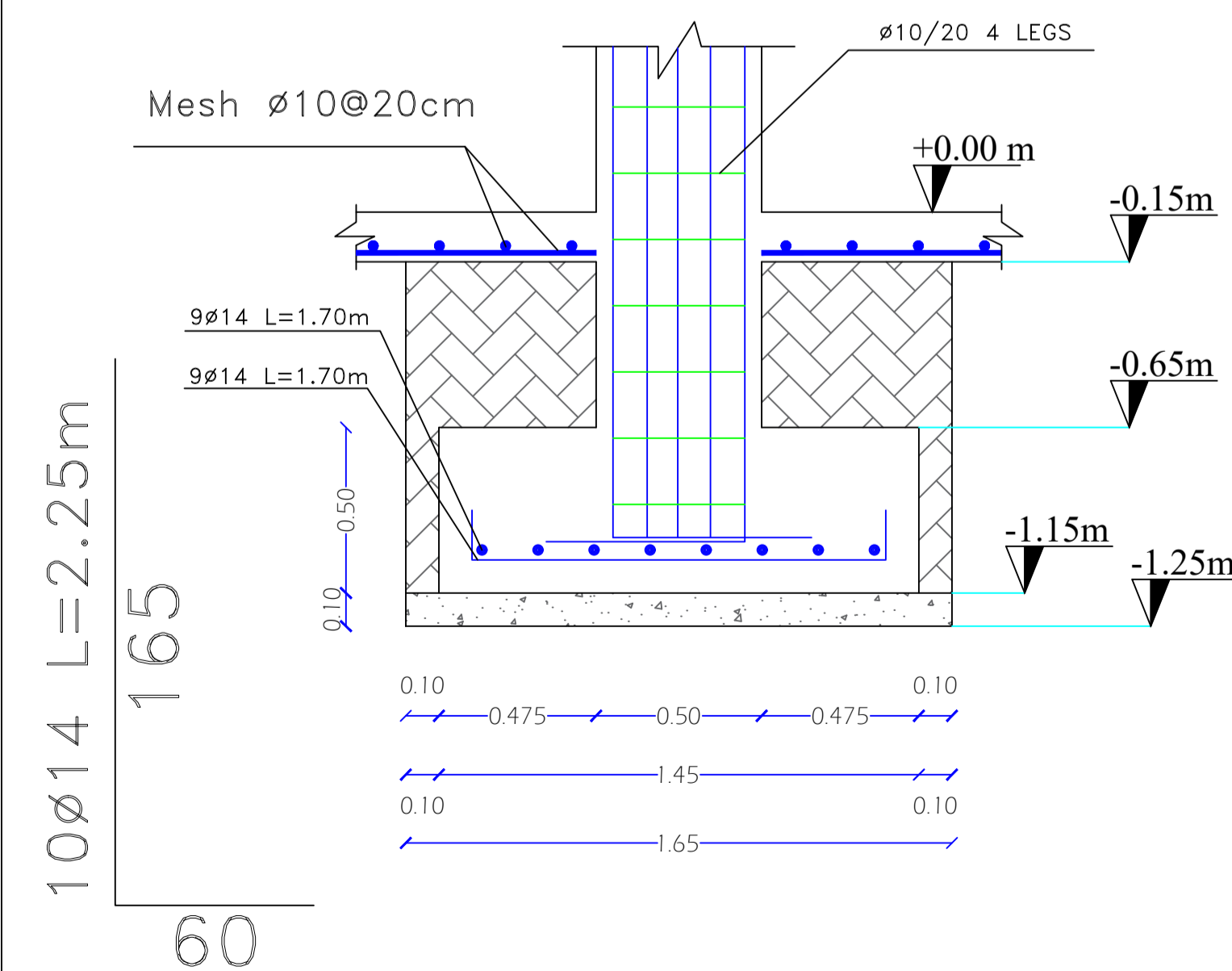
Section A-A



FOOTING - F3 (1.45x1.45)m

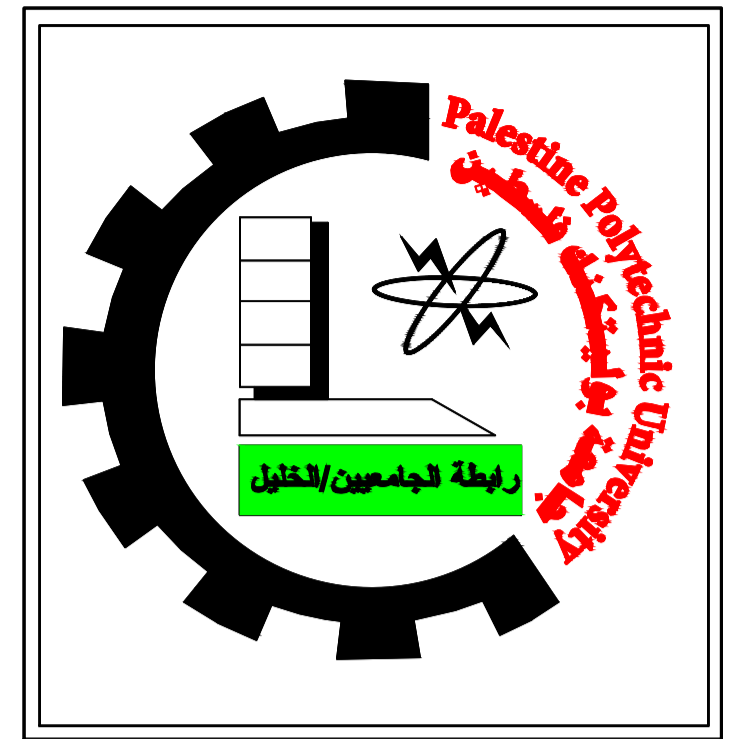


Section A-A

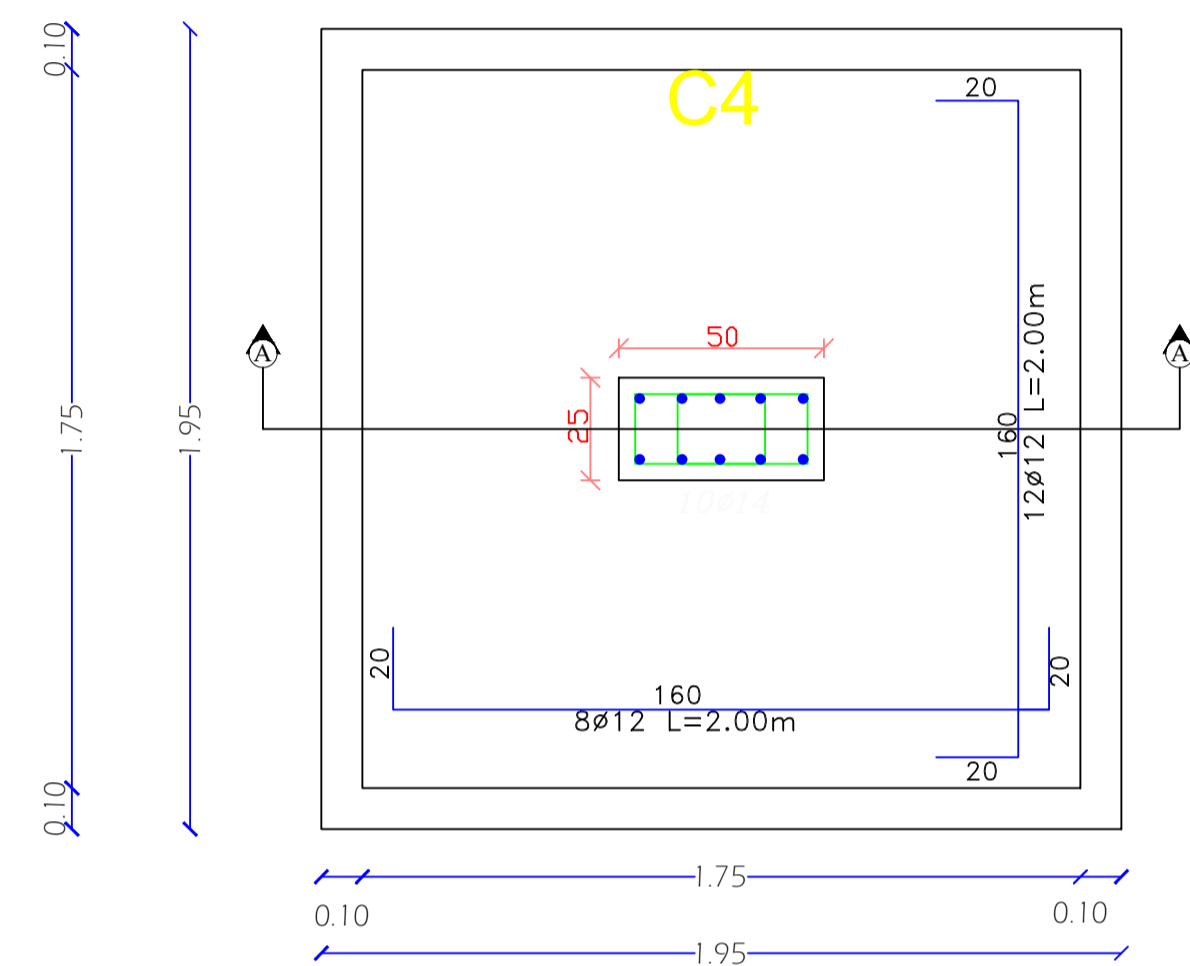


F4 & F5 DETAILIES

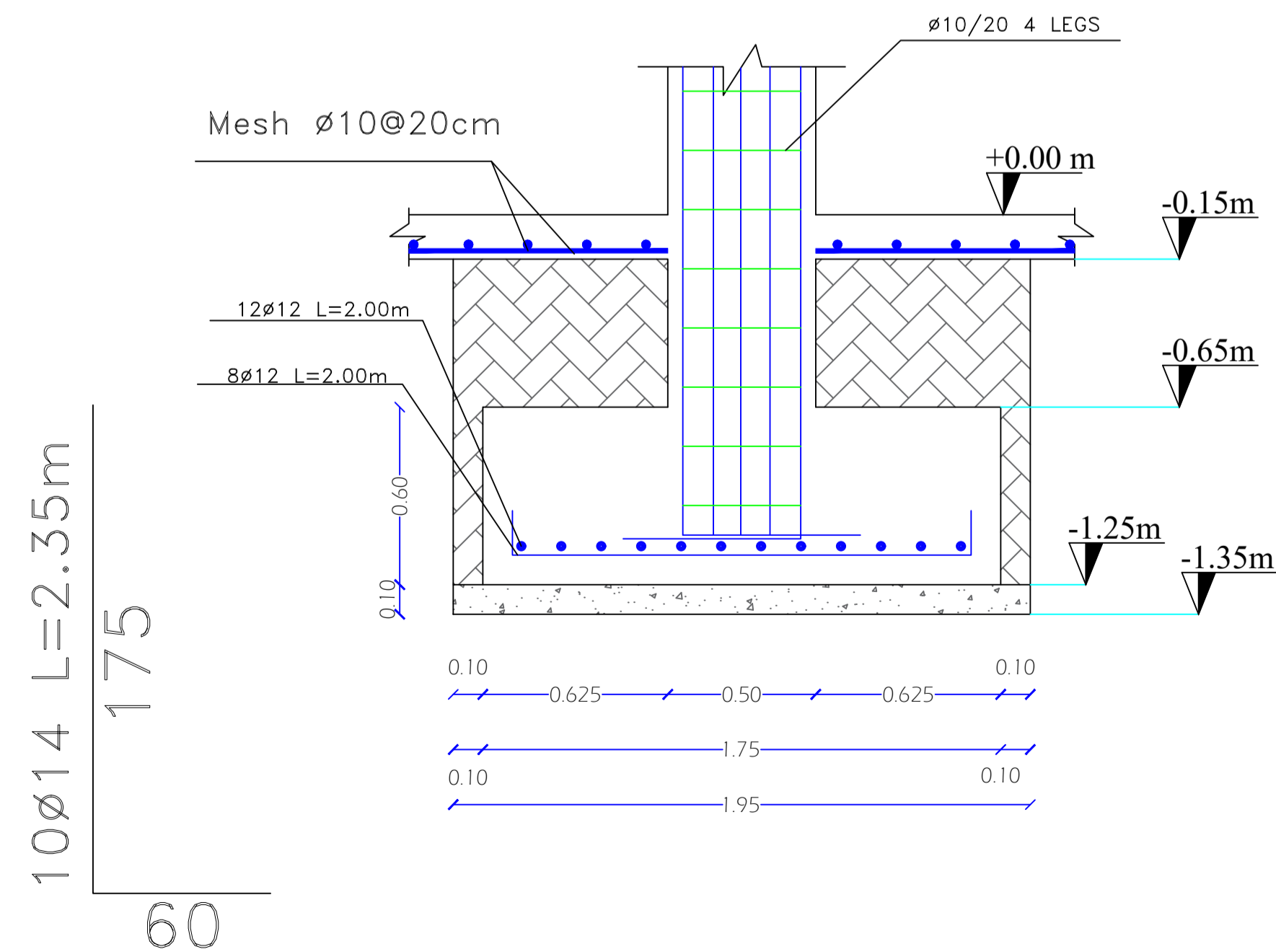
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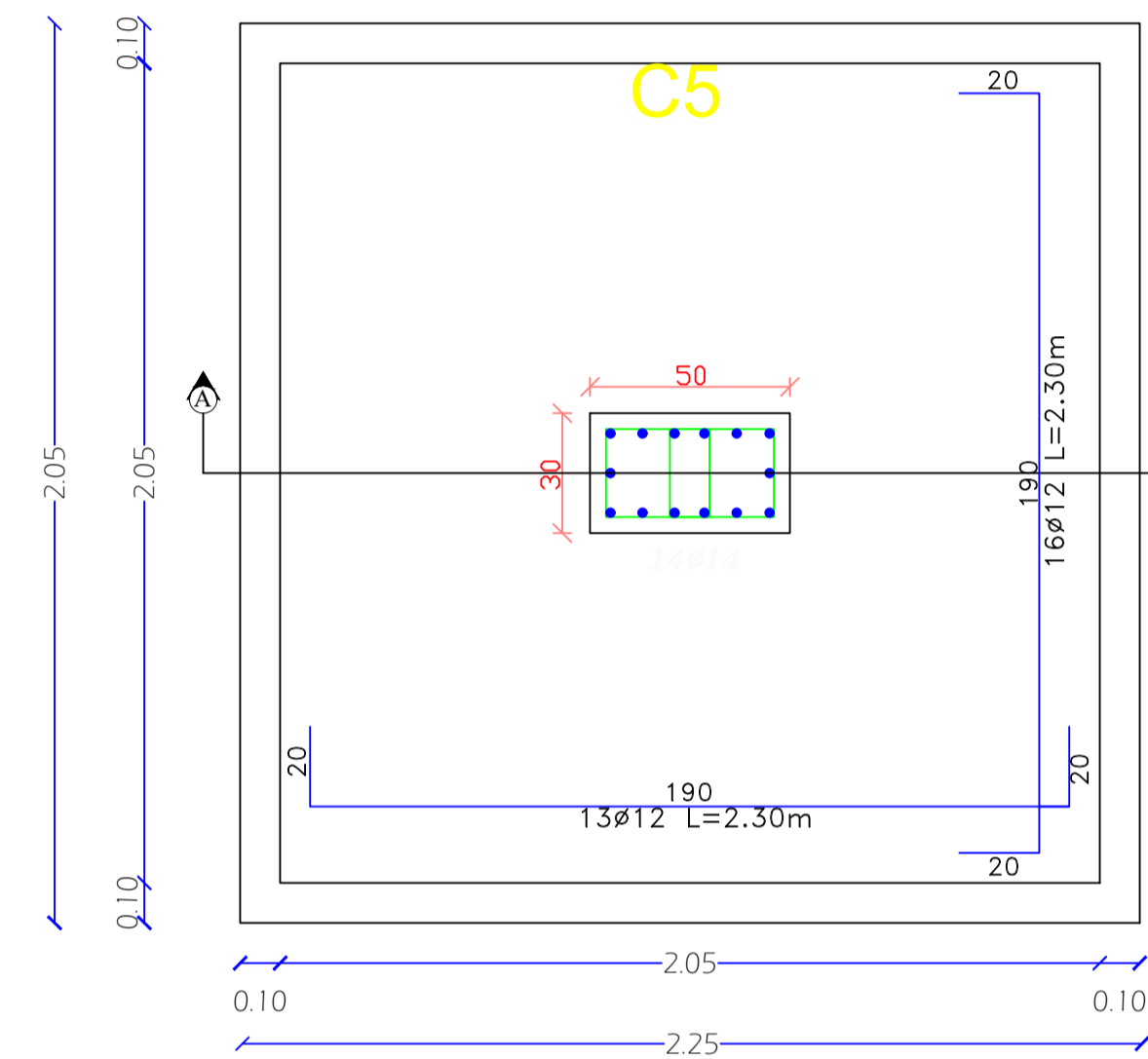
FOOTING - F4 (1.75×1.75)m



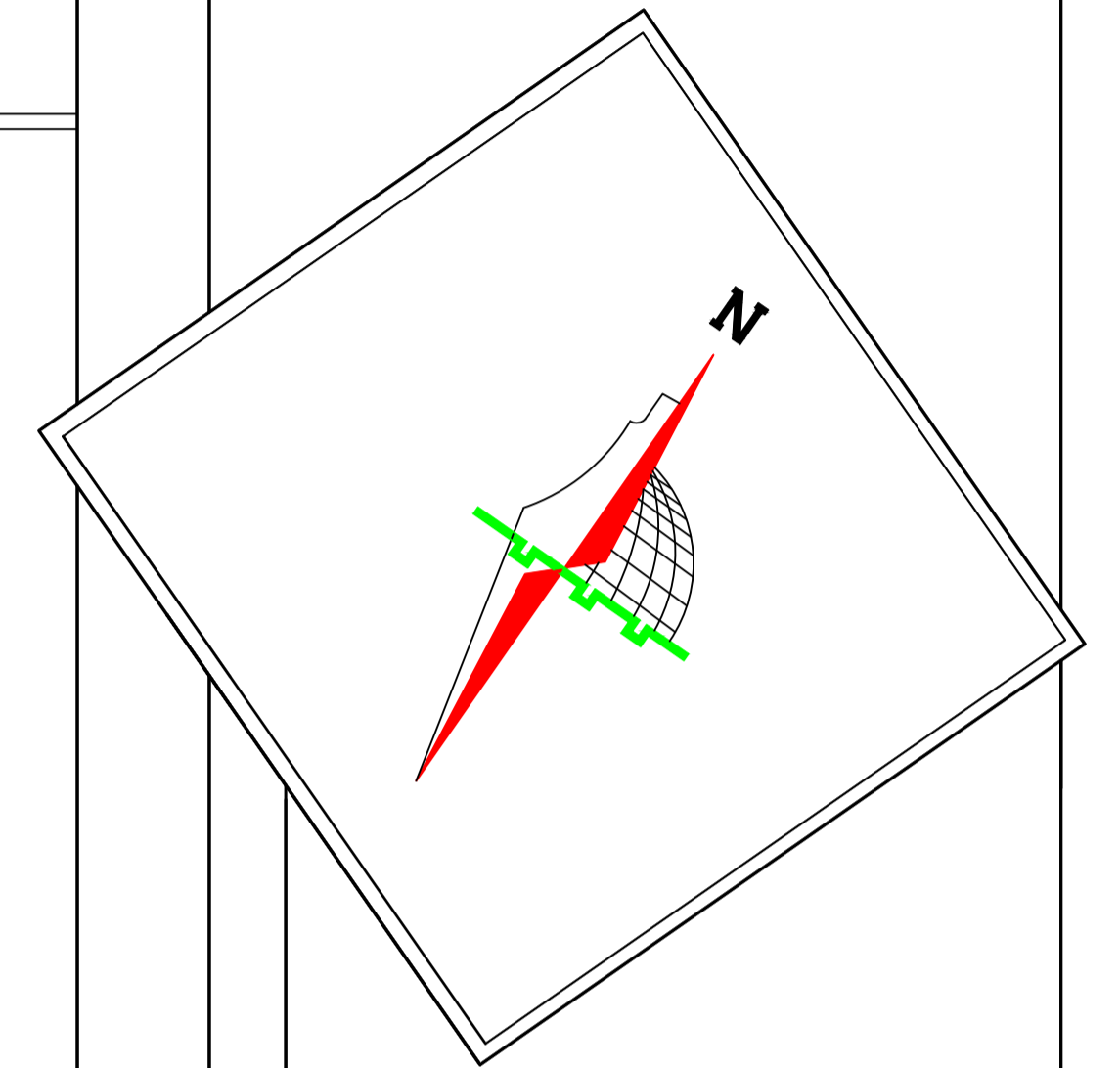
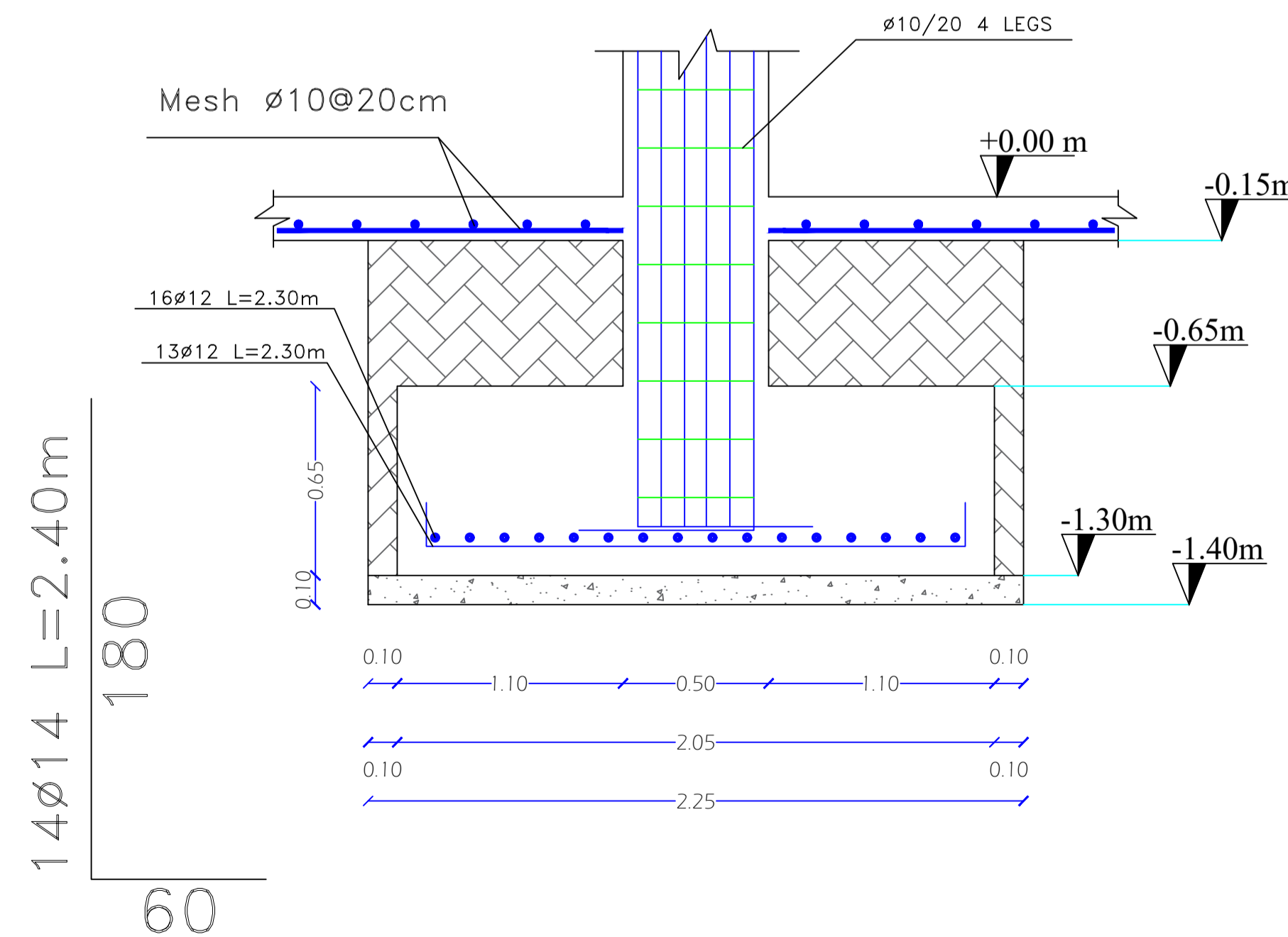
Section A-A



FOOTING - F5 (2.05×2.05)m



Section A-A



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Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
F4 & F5 DETAILIES

Supervised by :
HAMDI IDAIS

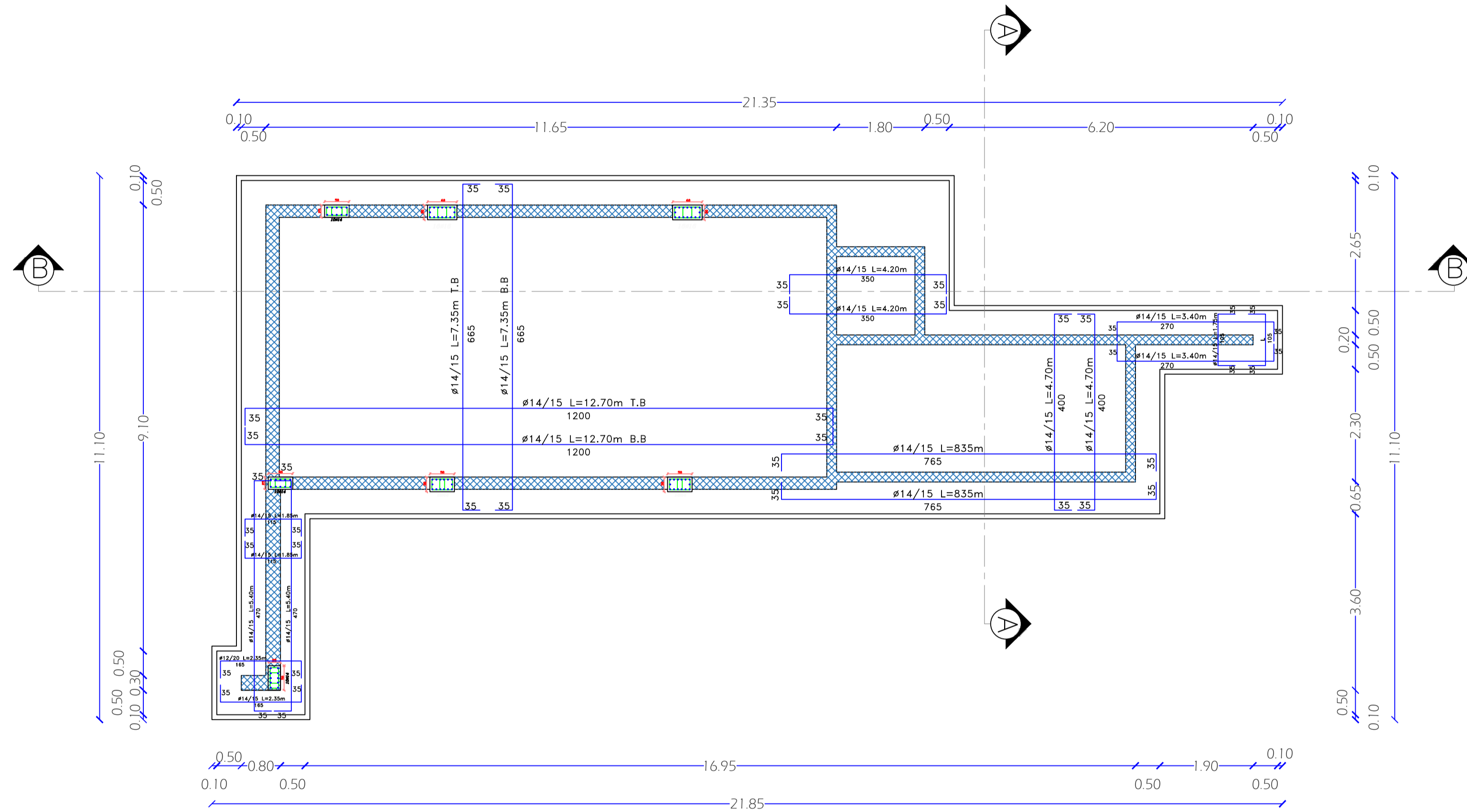
Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/25
Drawing #	S04

Mat Footing (1) DETAILS

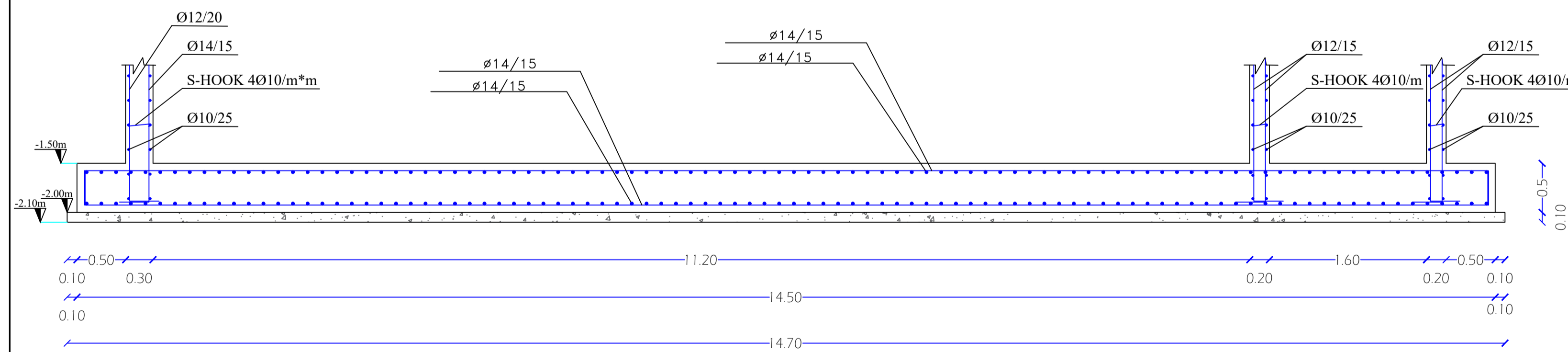
SCALE 1:50

Mat Footing 1



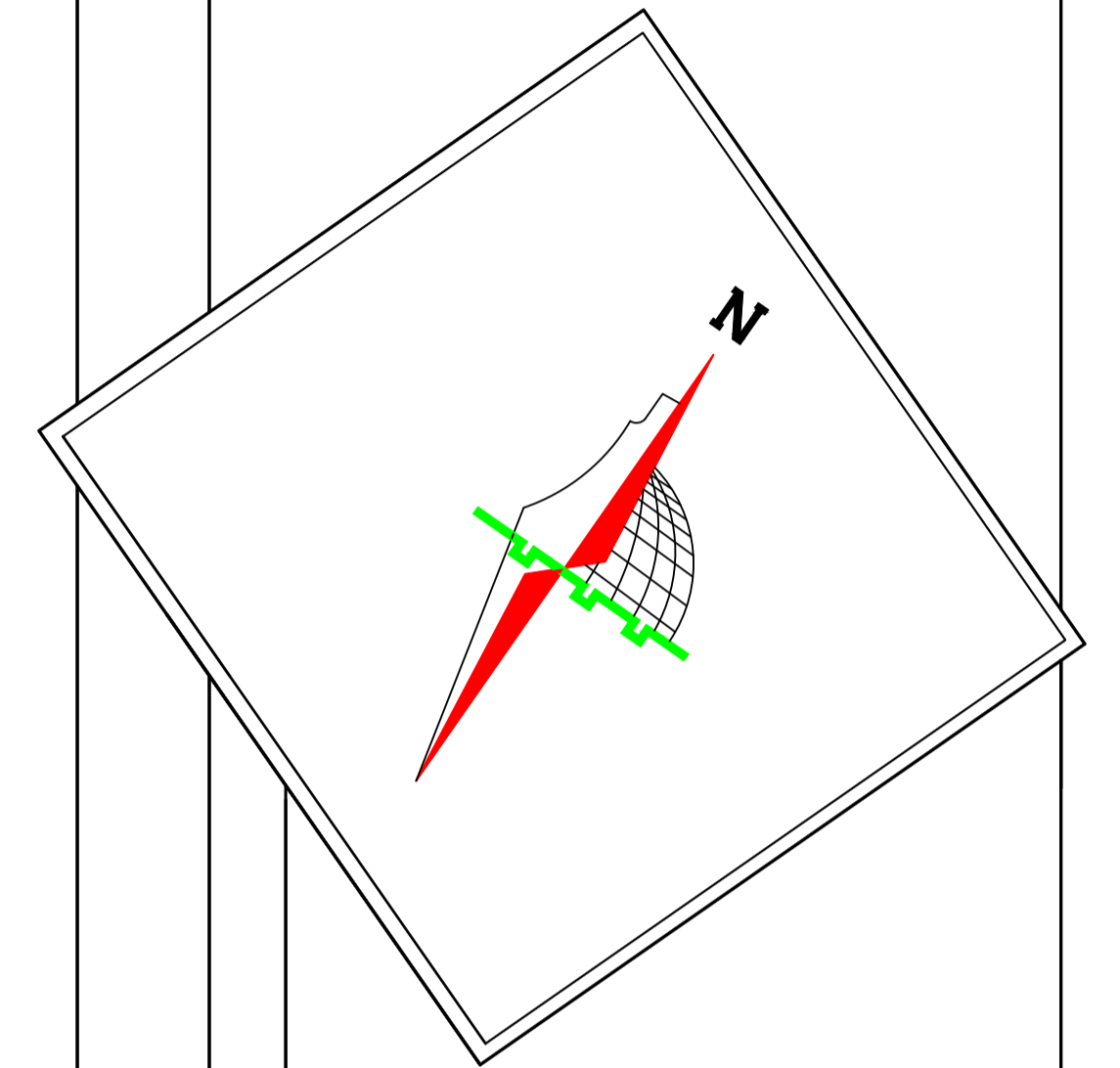
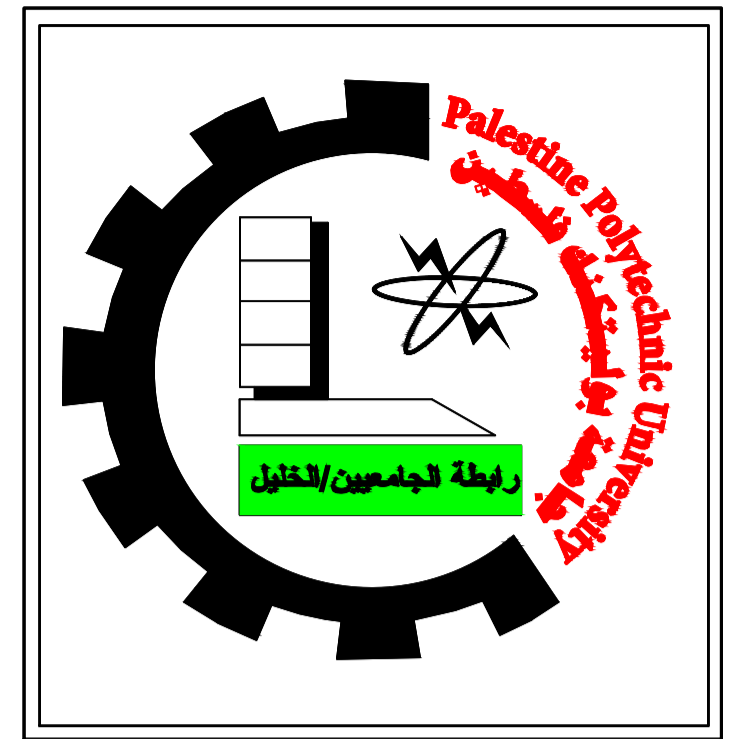
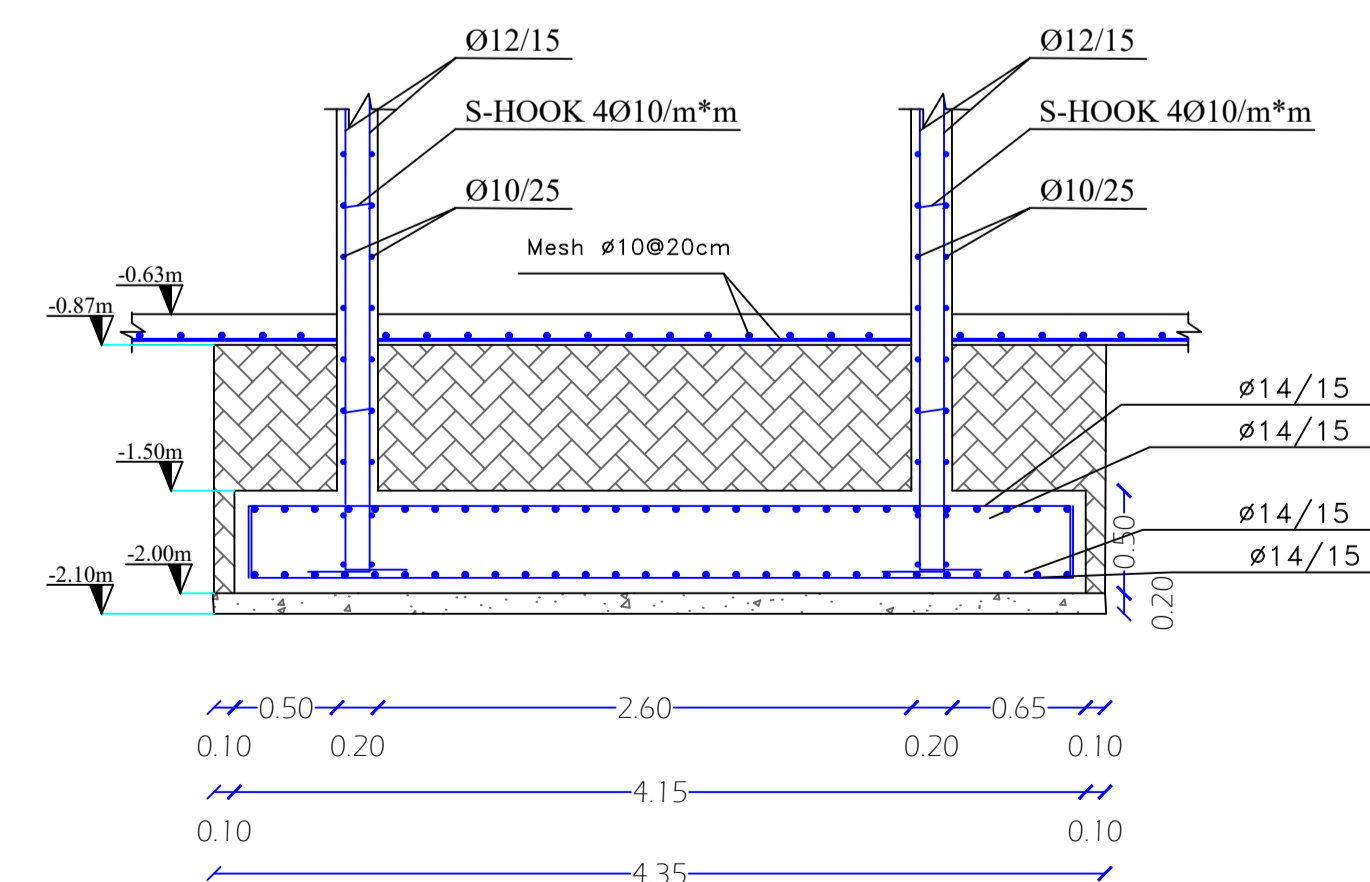
Section B-B

SCALE 1:25



Section A-A

SCALE 1:25



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Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
Mat Footing (1) DETAILS

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

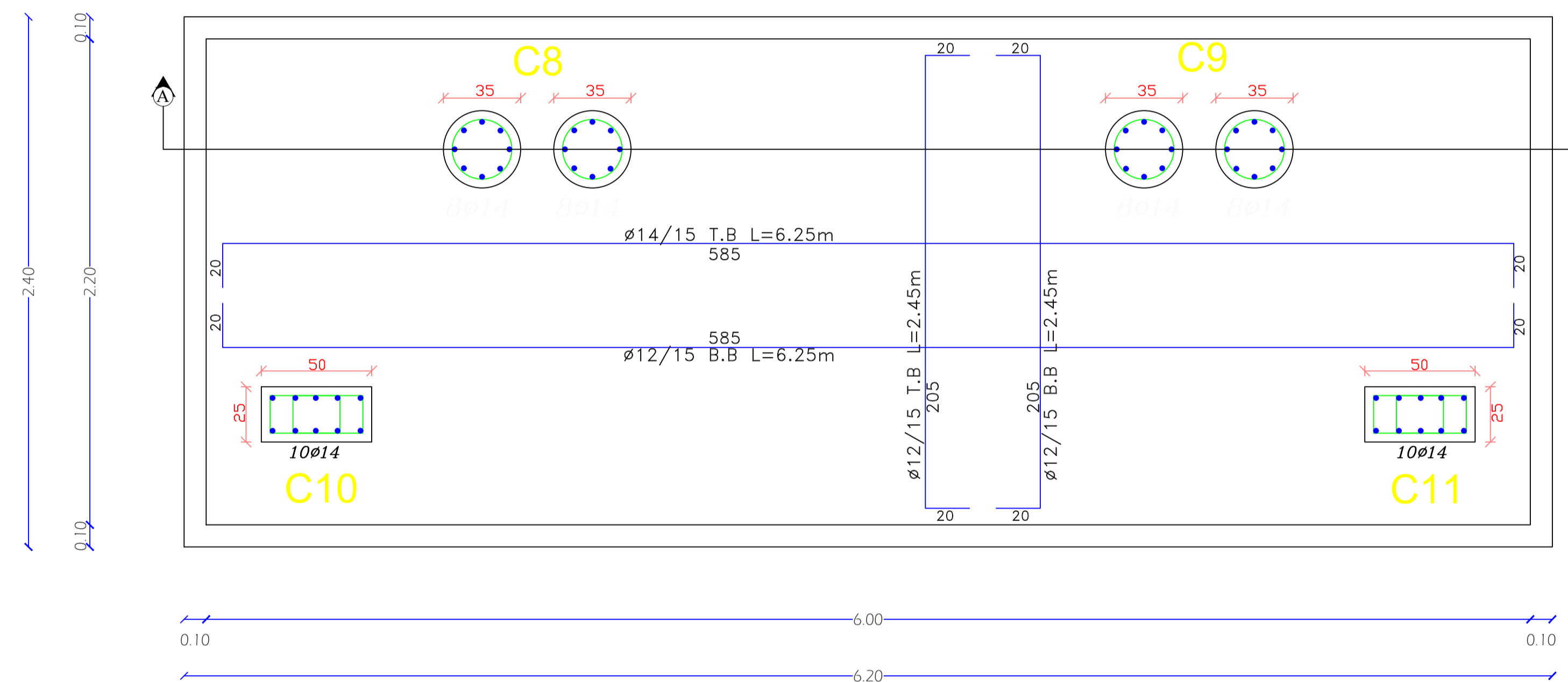
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Drawing # S06

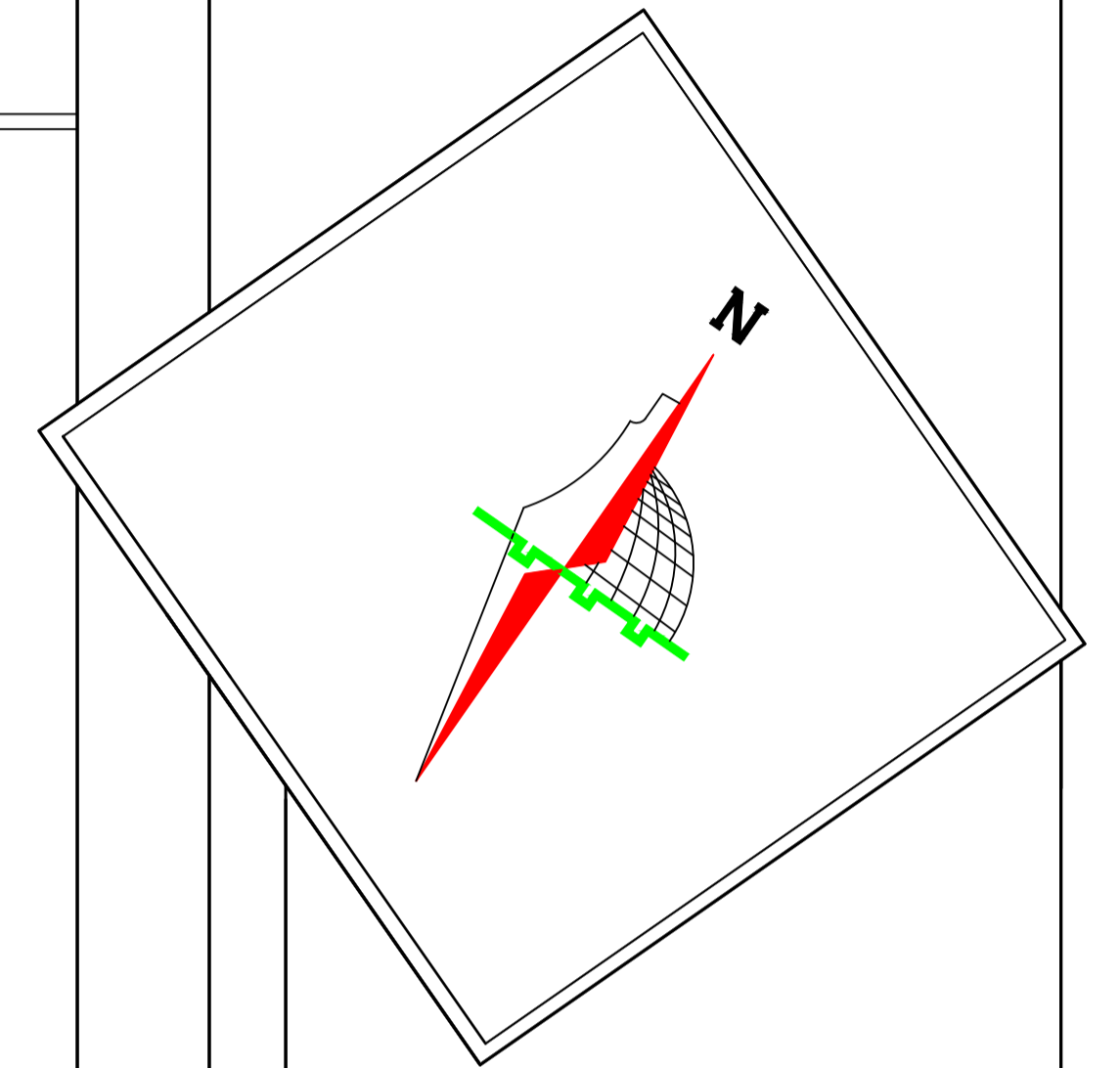
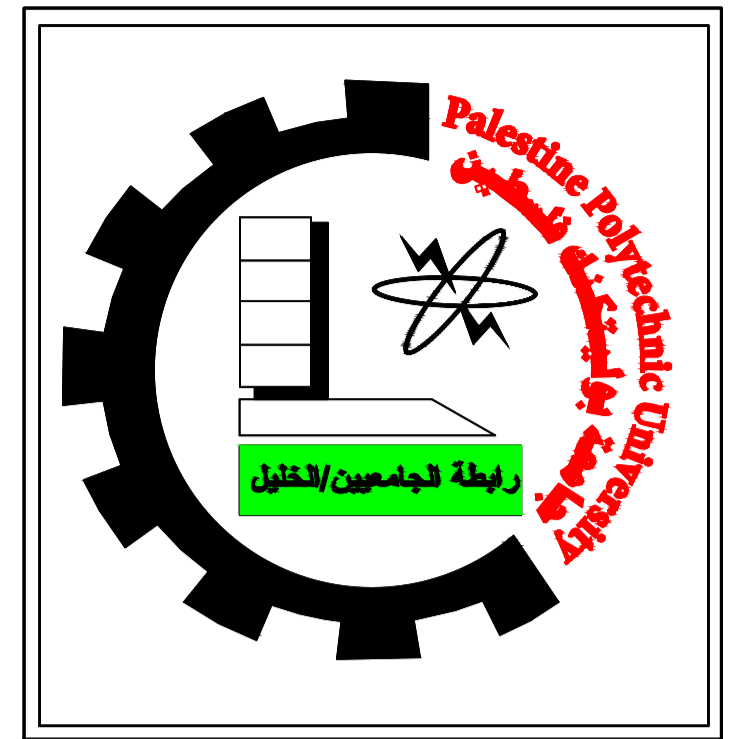
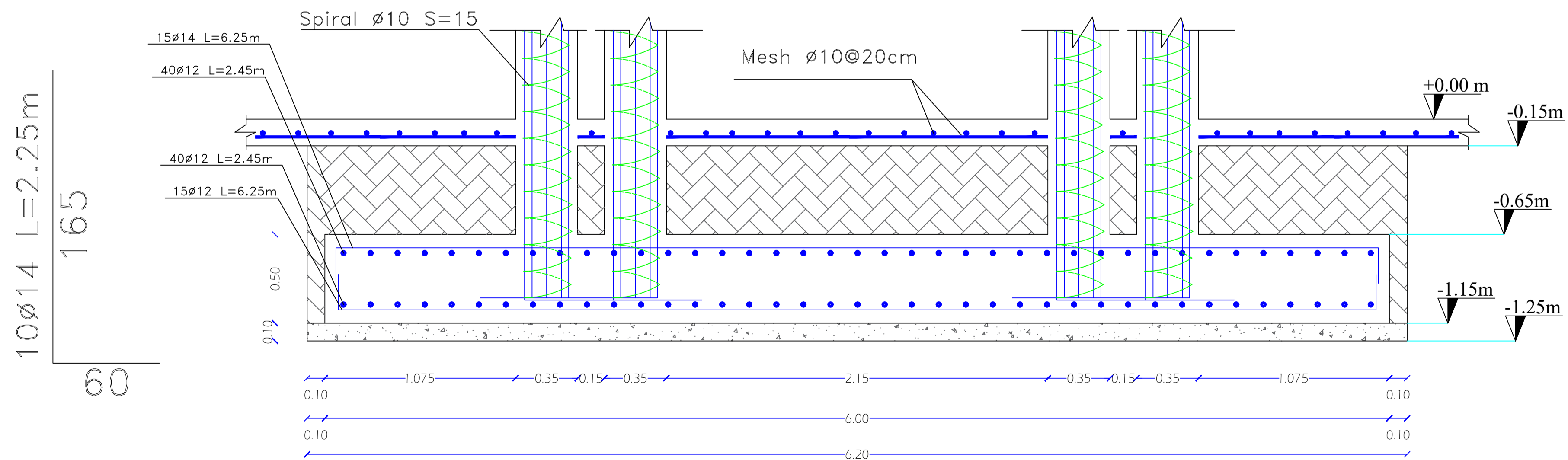
Mat Footing (2) DETAILS

SCALE 1:25

Mat Footing 2



Section A-A



Palestine Polytechnic University
College of Engineering
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Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
Mat Footing (2) DETAILES

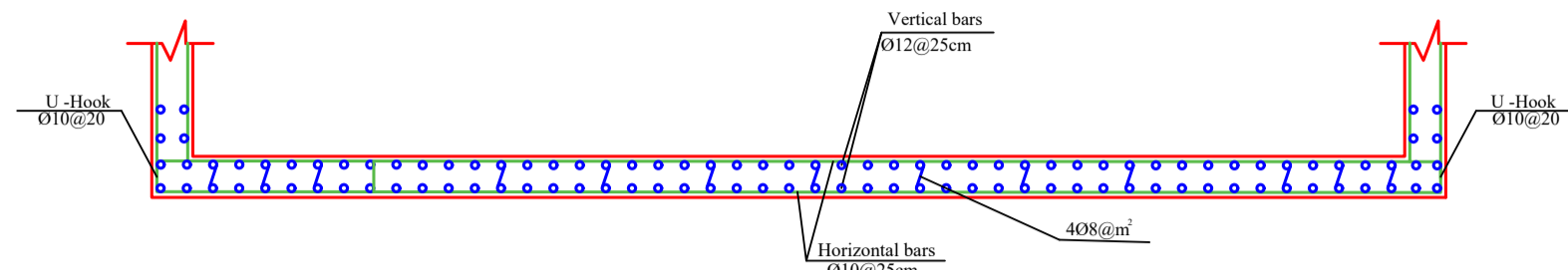
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

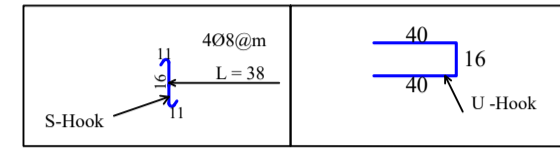
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Drawing #	S07

DETAILING OF SHEAR WALL (S.W 1)

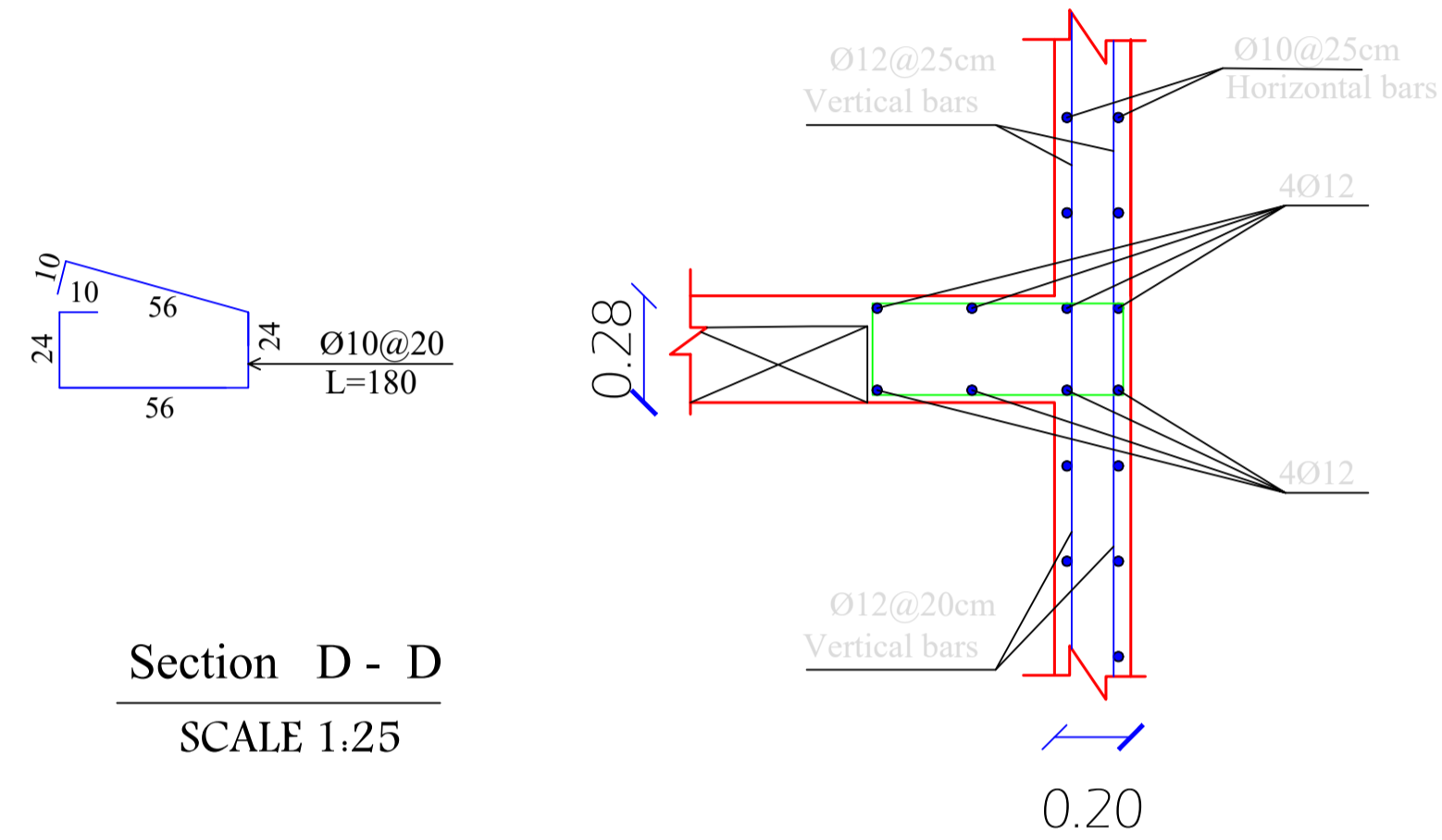
SCALE 1:50



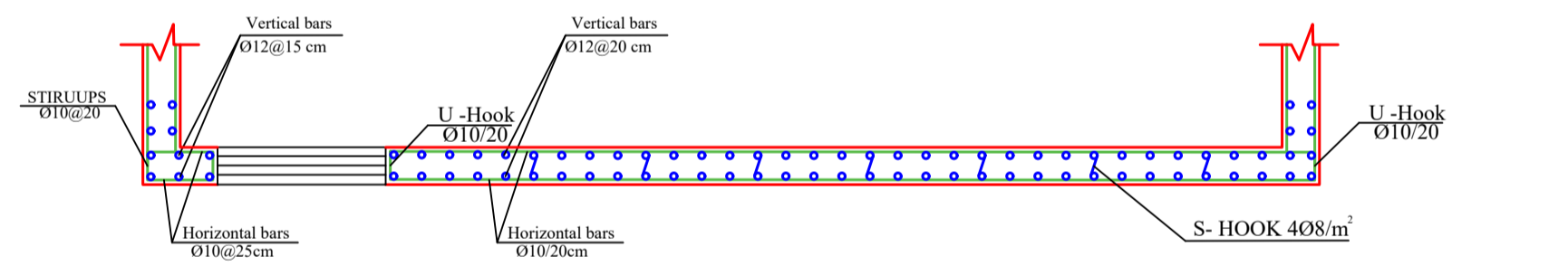
Section C - C
SCALE 1:50



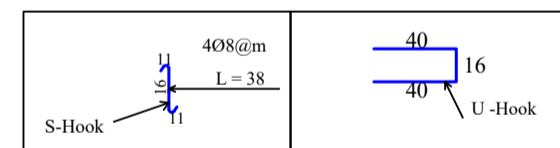
Connection between the Slab and the Wall



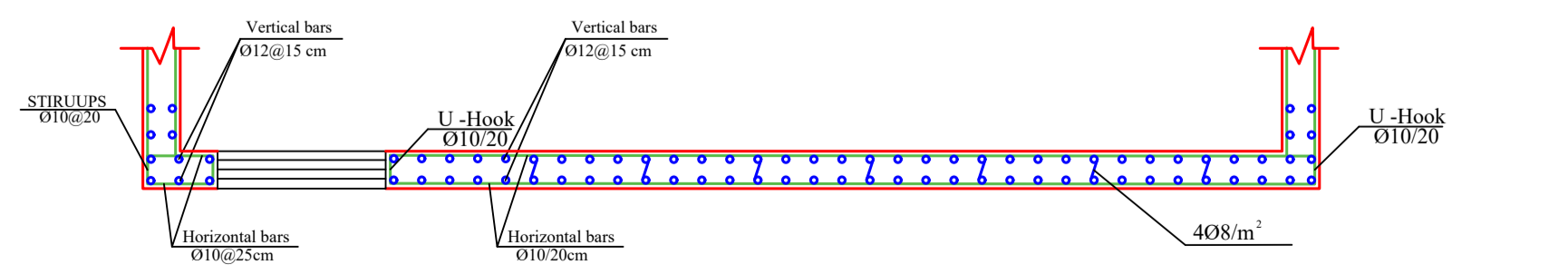
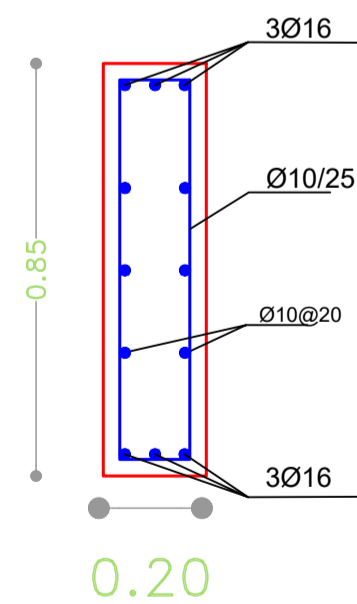
Section D - D
SCALE 1:25



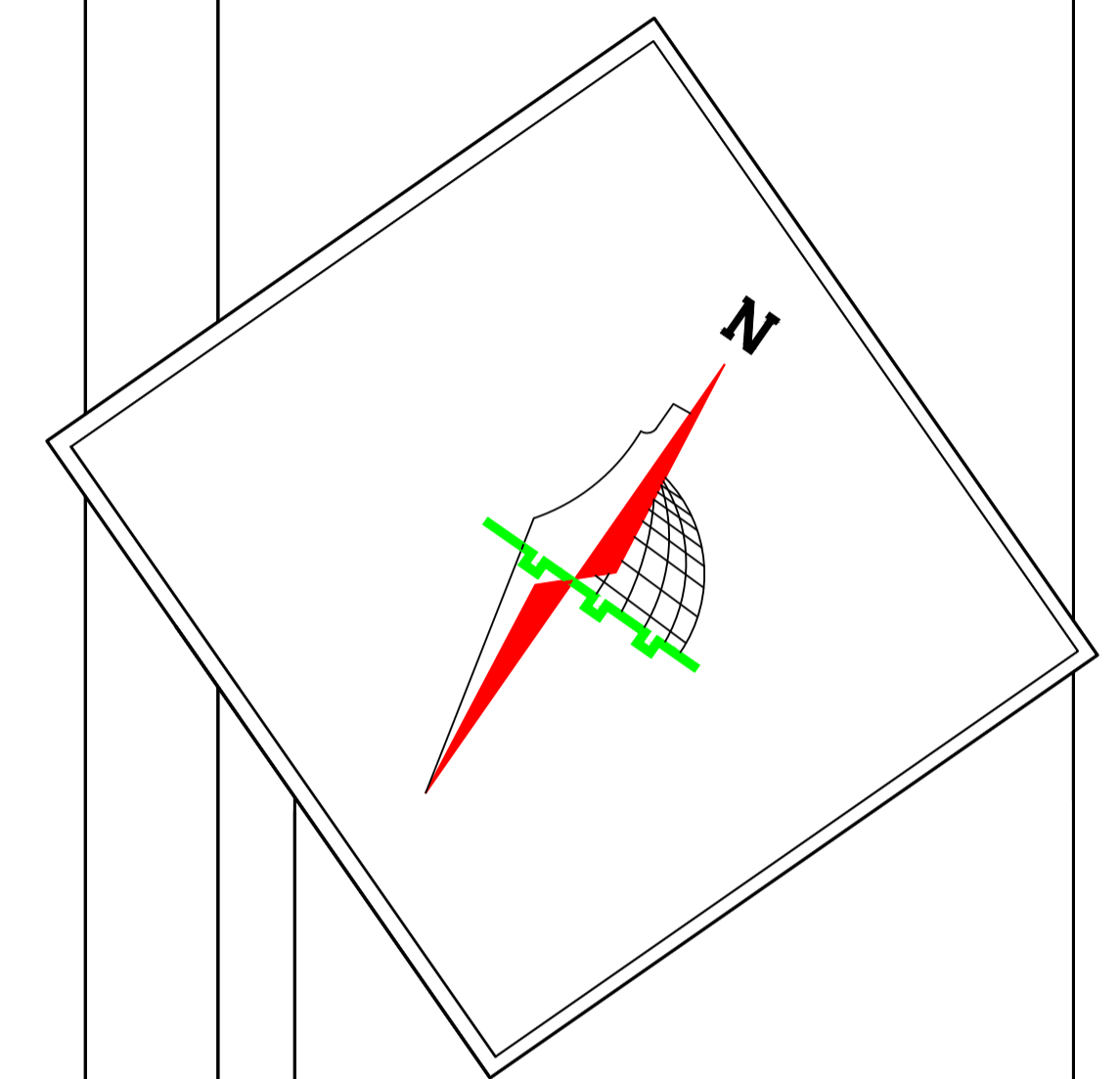
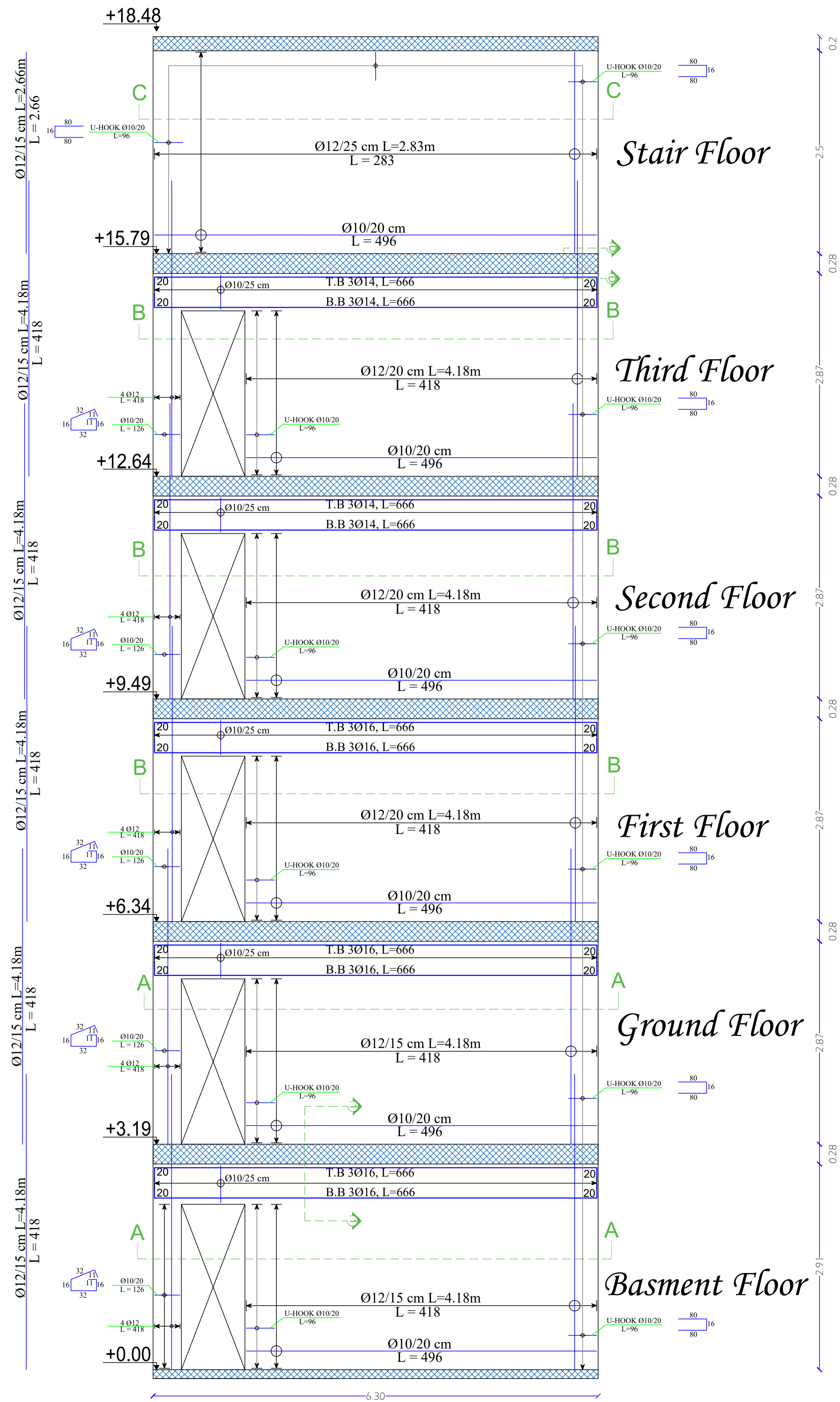
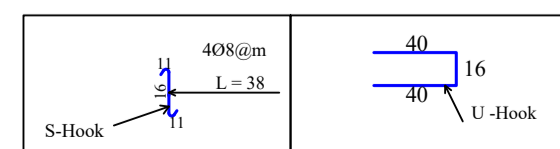
Section B - B
SCALE 1:50



Section 1 - 1
SCALE 1:25



Section A - A
SCALE 1:50



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF SHEAR WALL (S.W 1)

Supervised by :

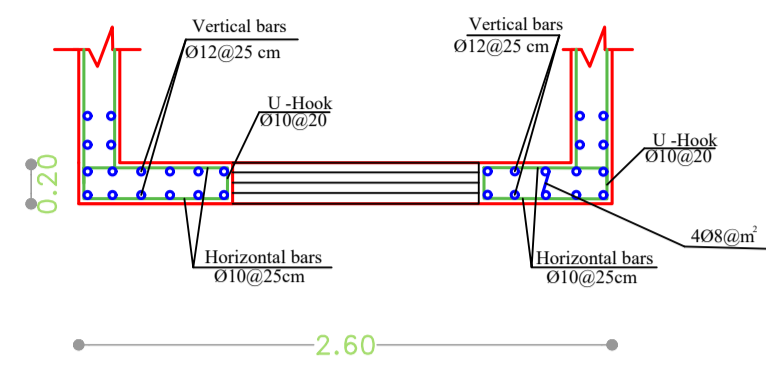
HAMD I DAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/50
Drawing #	S09

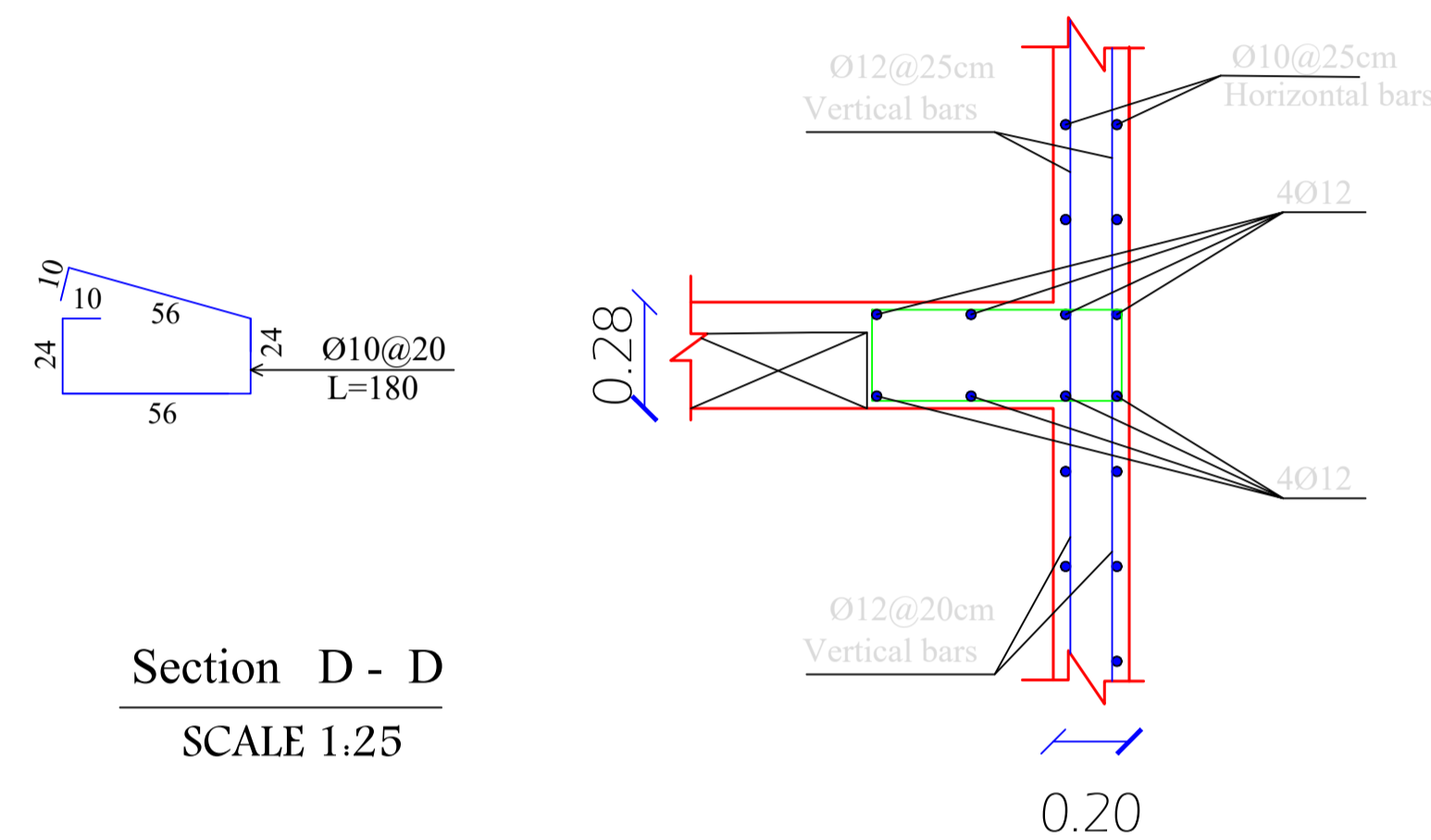
DETAILING OF SHEAR WALL (S.W 2)

SCALE 1:50

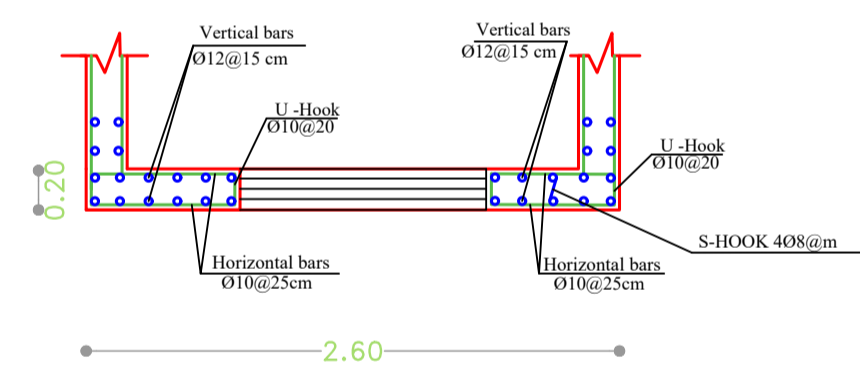


Section C - C
SCALE 1:50

Connection between the Slab and the Wall

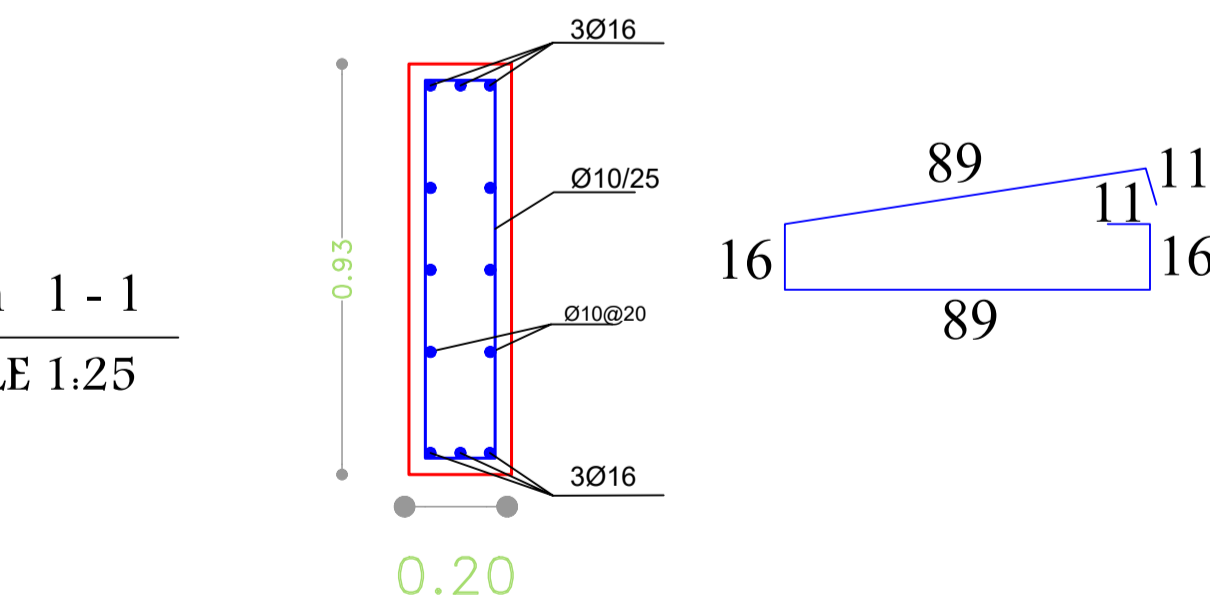


Section D - D
SCALE 1:25

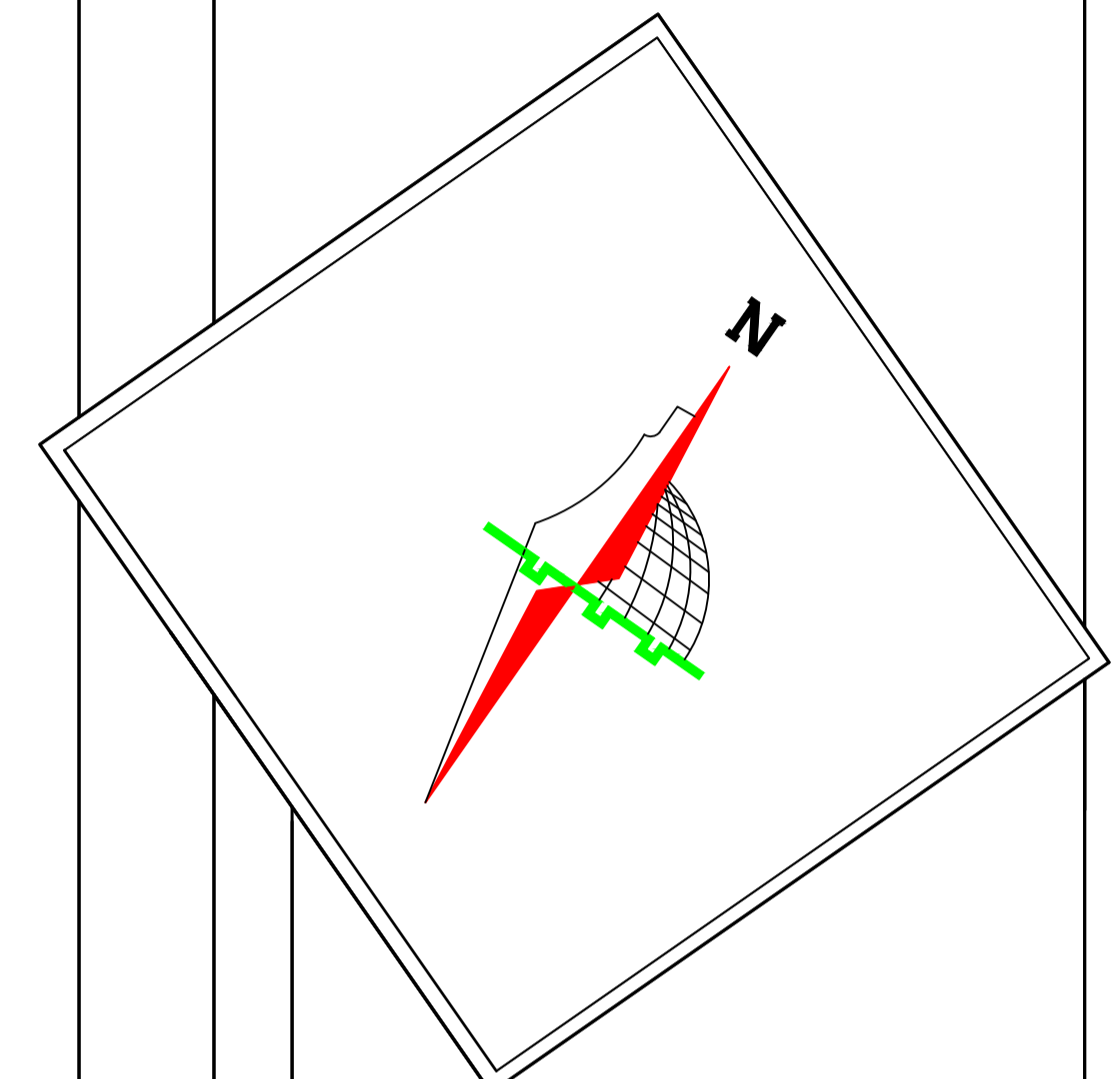
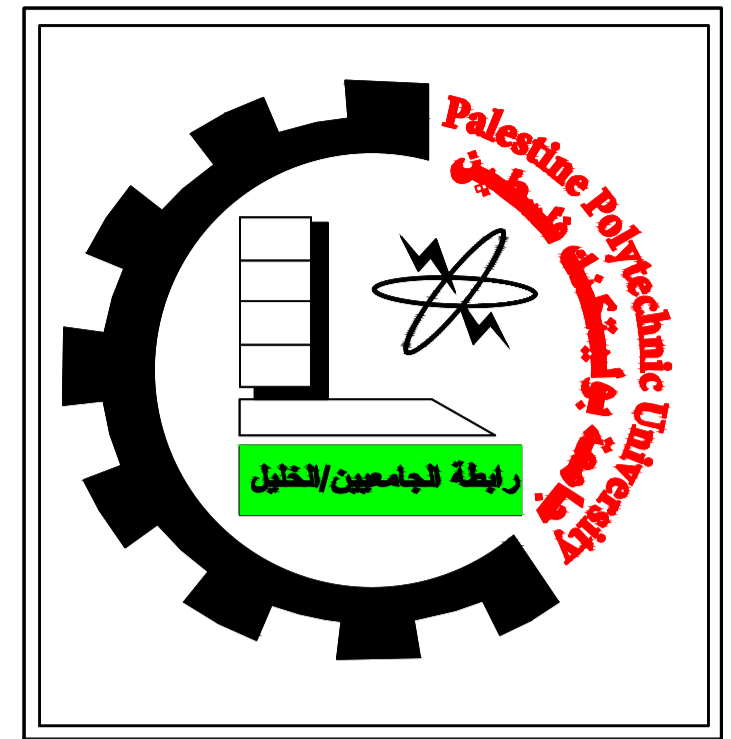
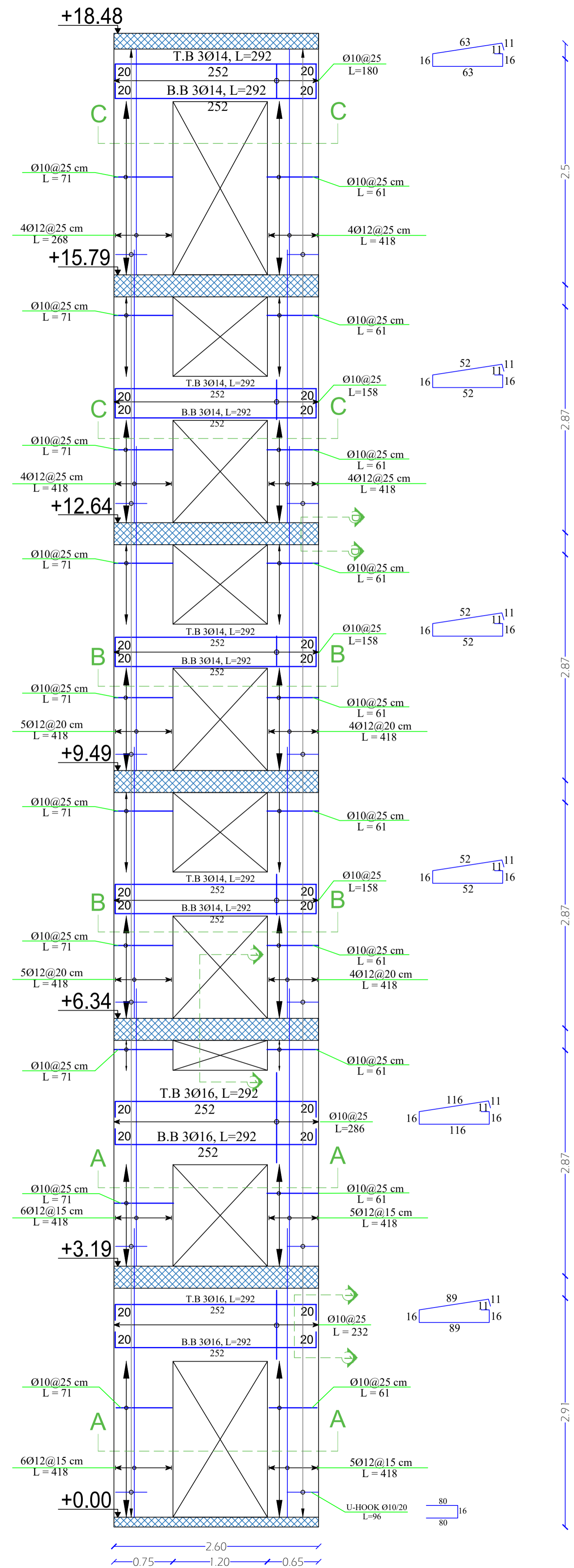
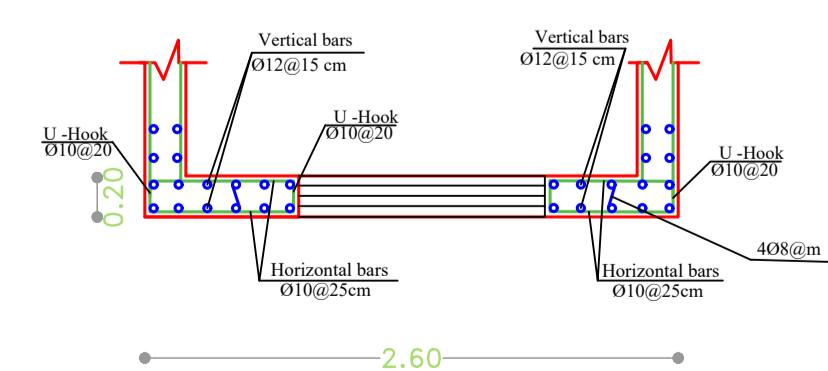


Section B - B
SCALE 1:50

Section 1 - 1
SCALE 1:25



Section A - A
SCALE 1:50



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF SHEAR WALL (S.W 2)

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

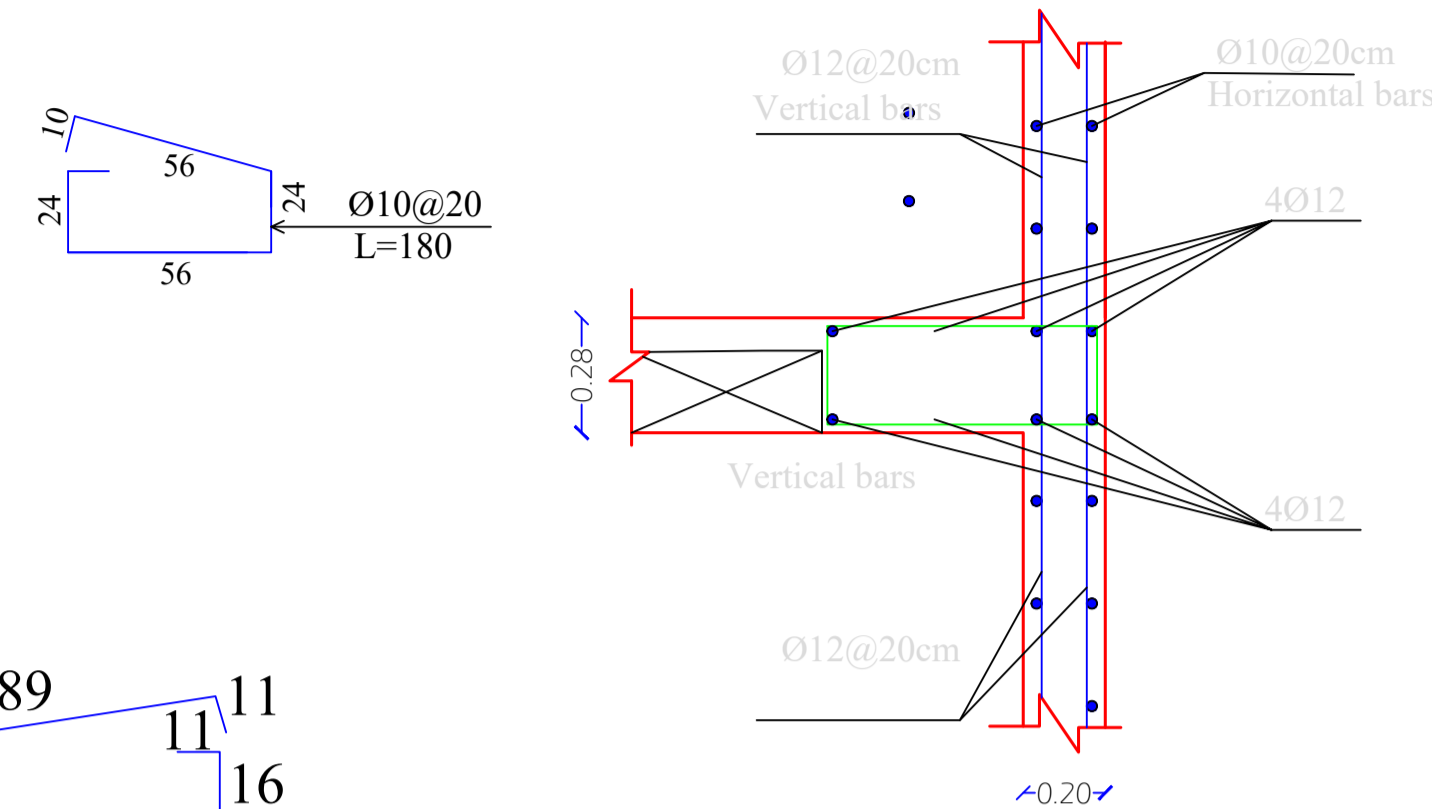
Scale 1/05

Drawing # **S10**

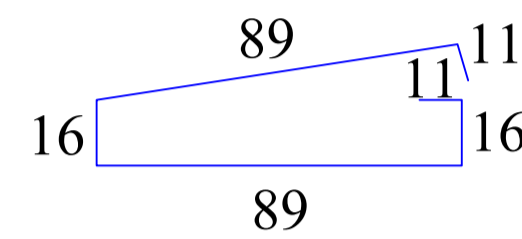
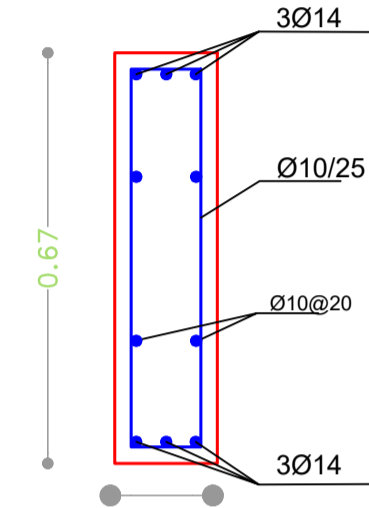
DETAILING OF SHEAR WALL (S.W 3)

SCALE 1:50

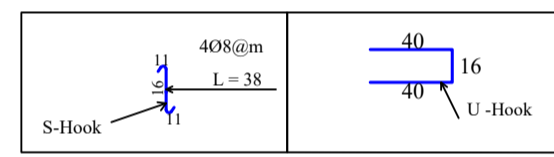
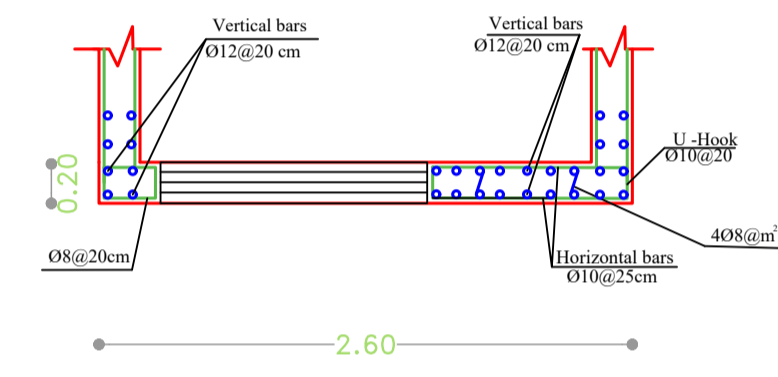
Section E - E
SCALE 1:25



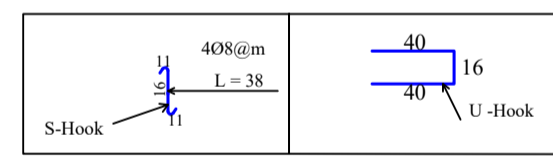
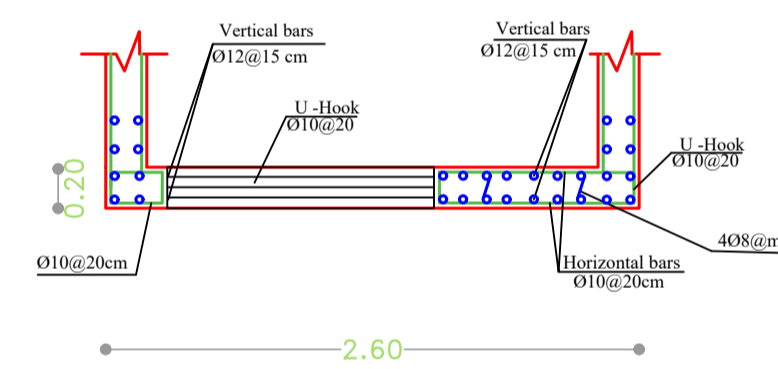
Section 1 - 1
SCALE 1:25



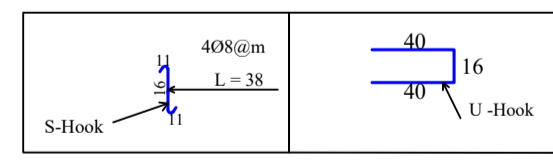
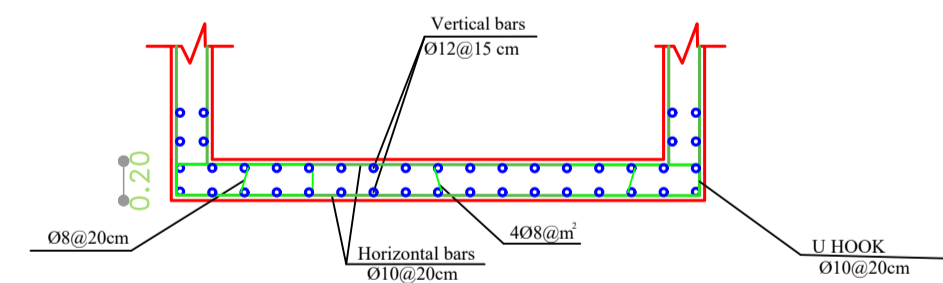
Section D - D
SCALE 1:50



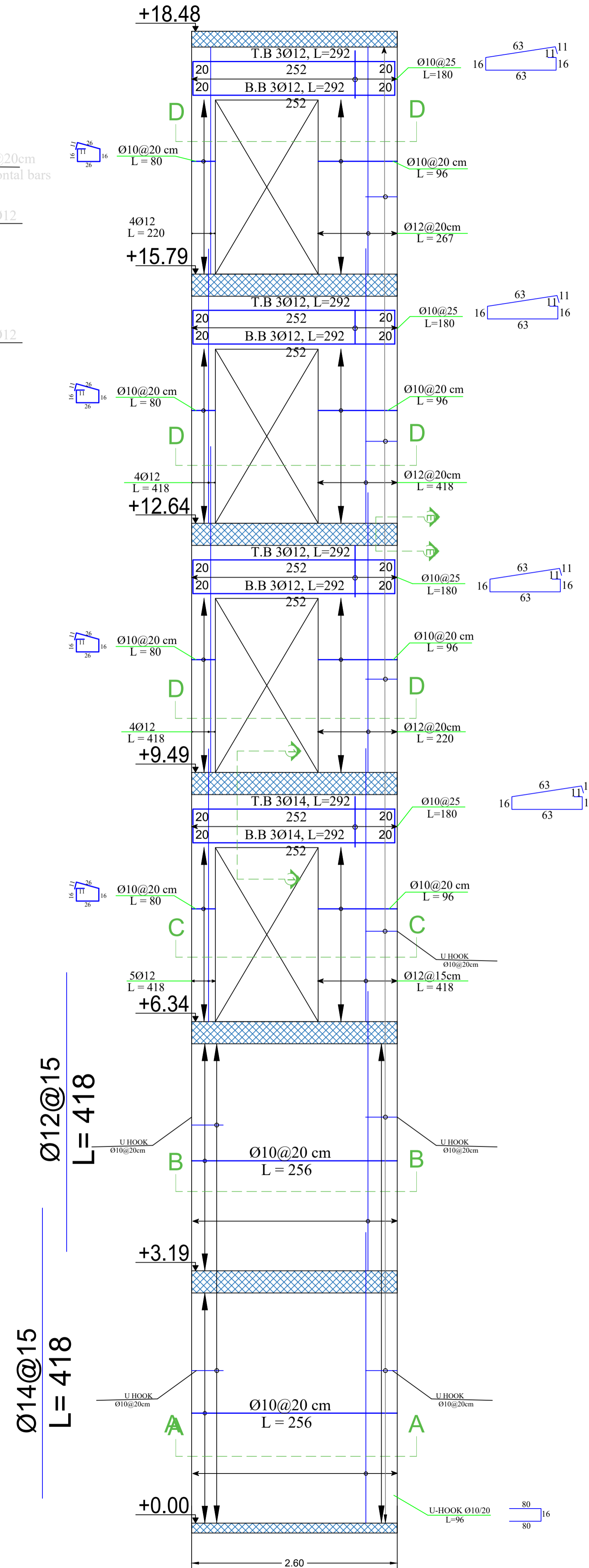
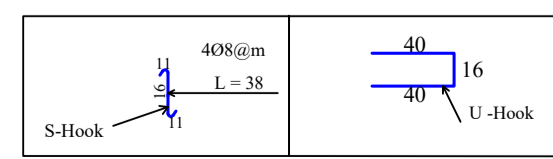
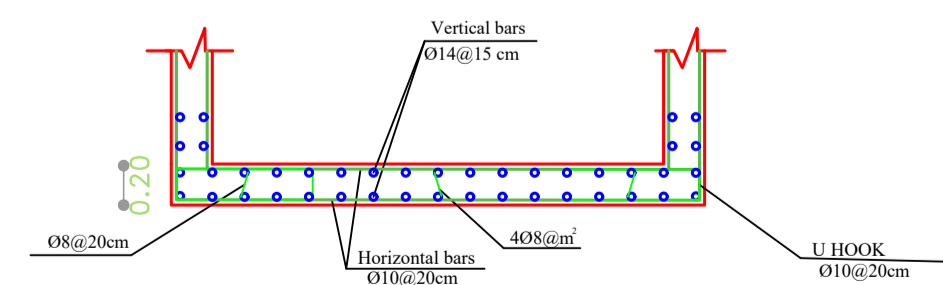
Section C - C
SCALE 1:50



Section B - B
SCALE 1:50



Section A - A
SCALE 1:50



Stair Floor

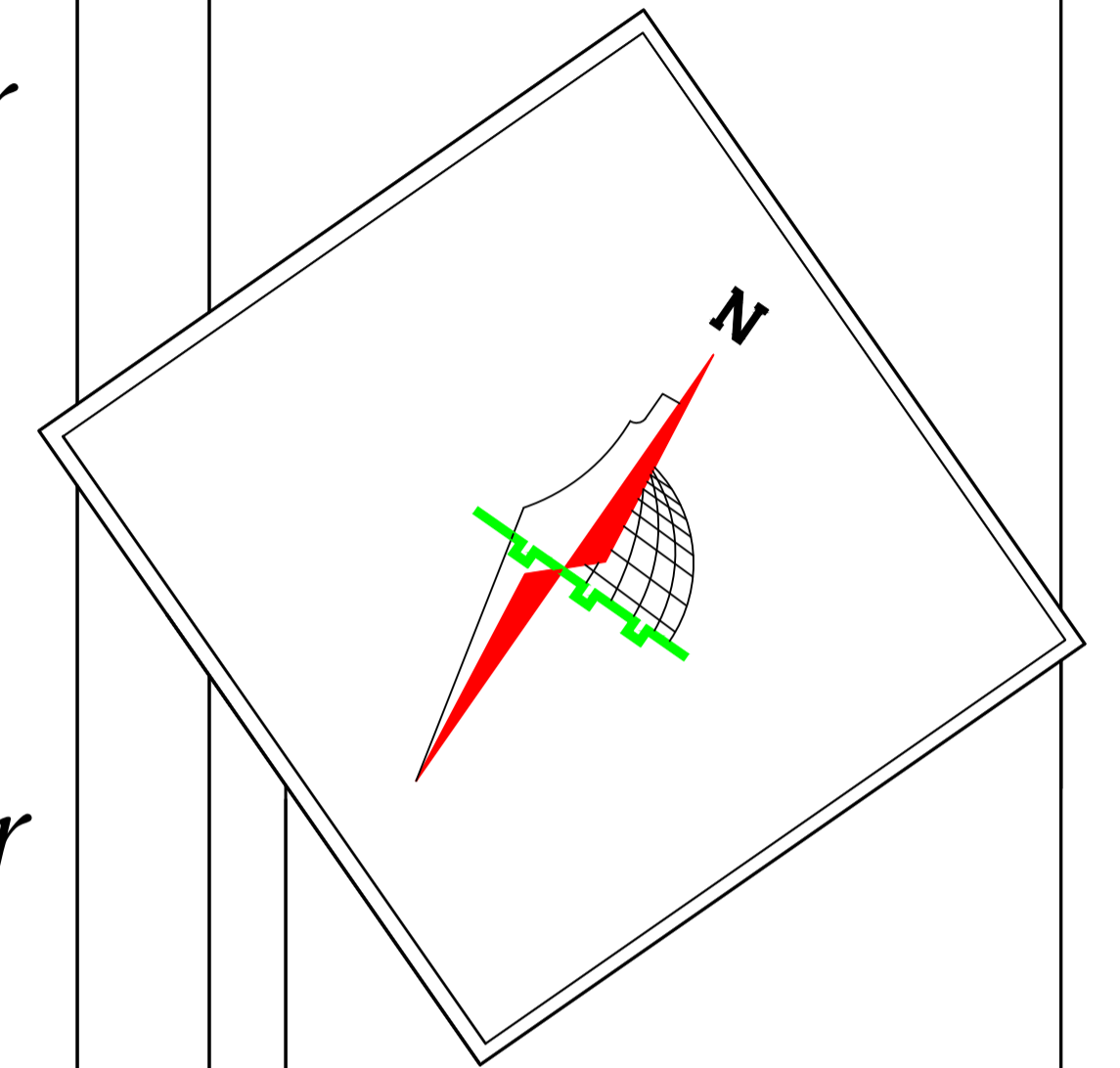
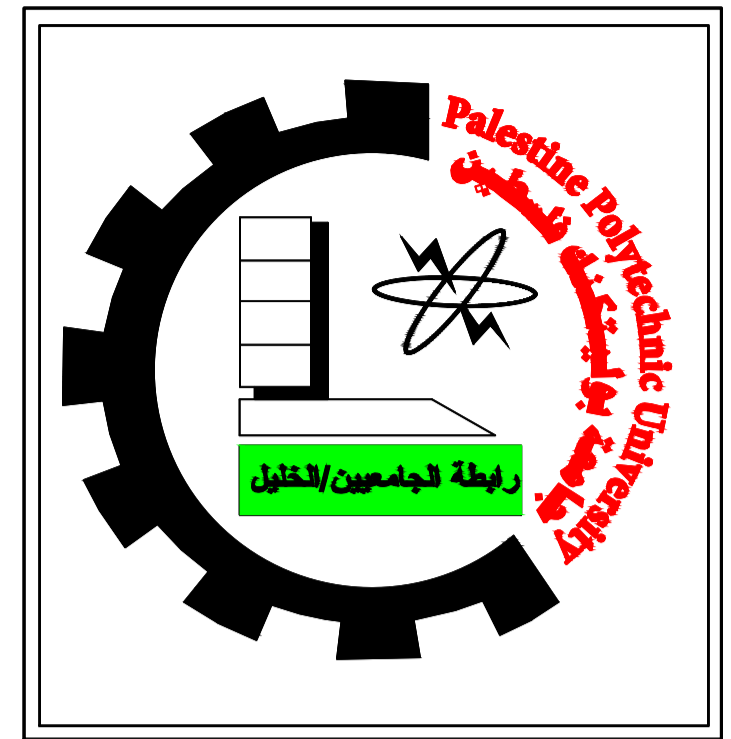
Third Floor

Second Floor

First Floor

Ground Floor

Basement Floor



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Construction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF SHEAR WALL (S.W 3)

Supervised by :
HAMDI IDAIS

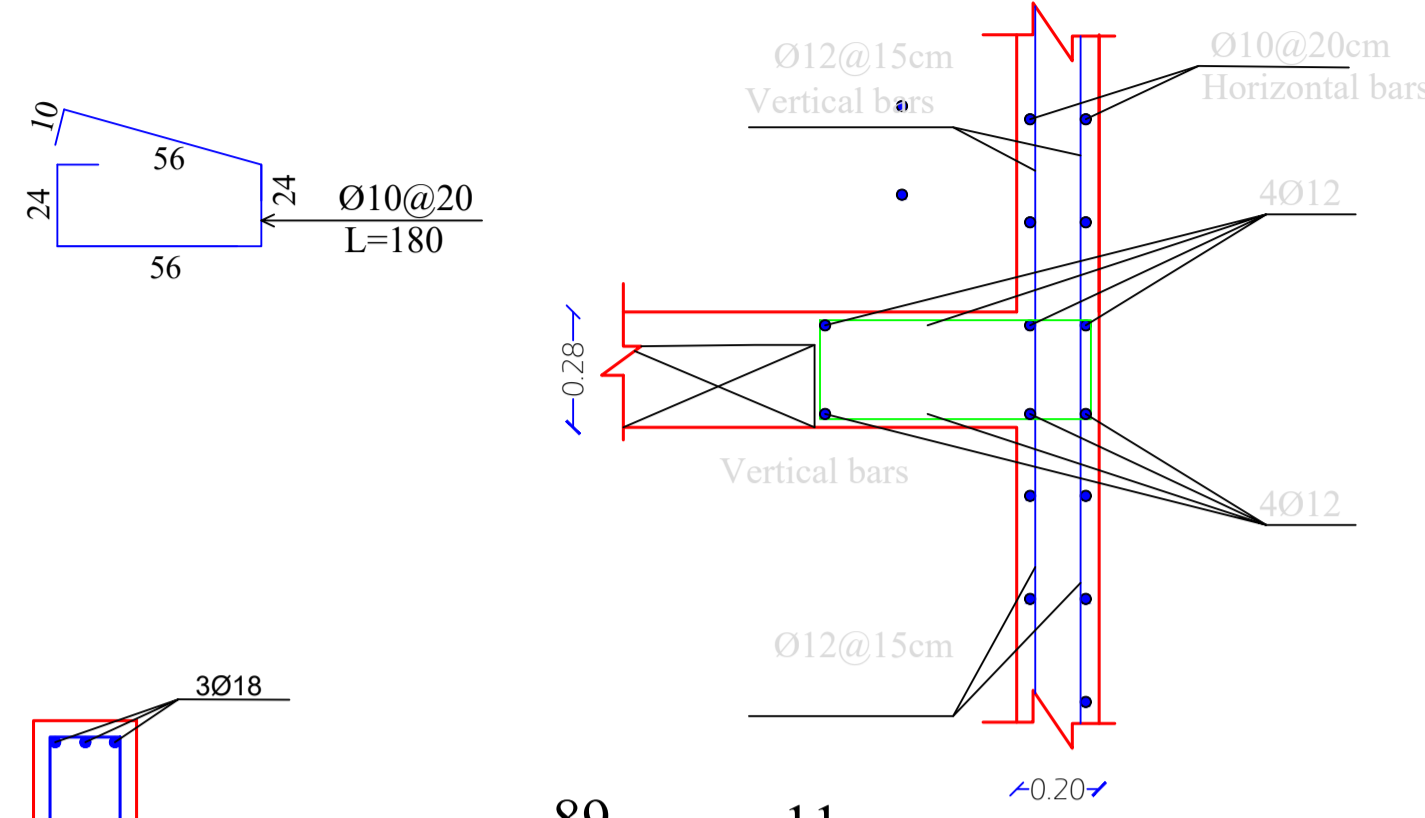
Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/05
Drawing #	S11

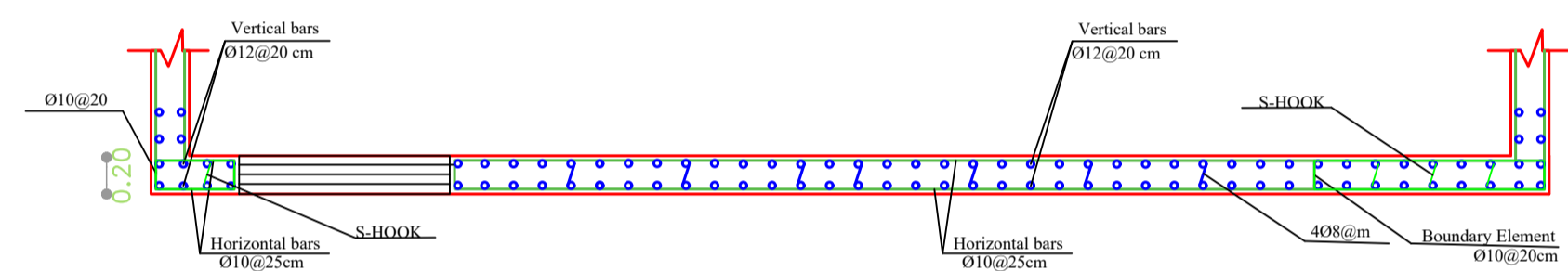
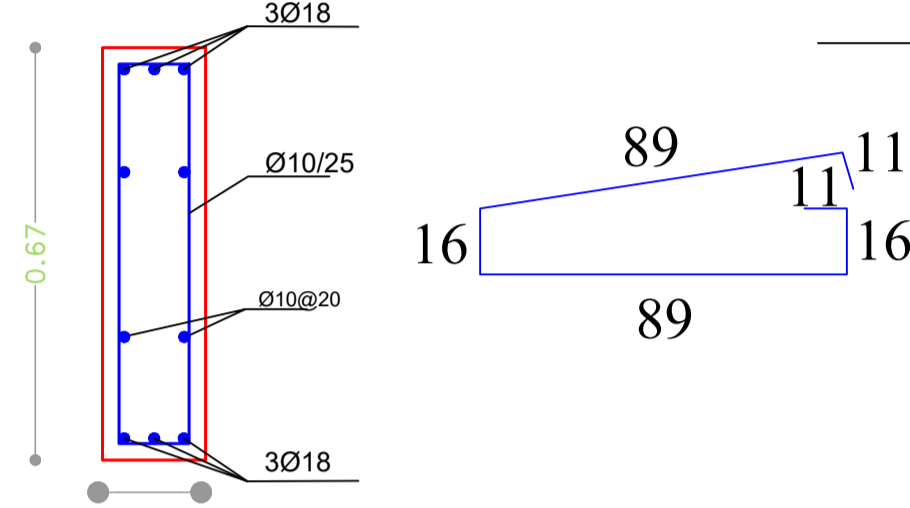
DETAILING OF SHEAR WALL (S.W 4)

SCALE 1:50

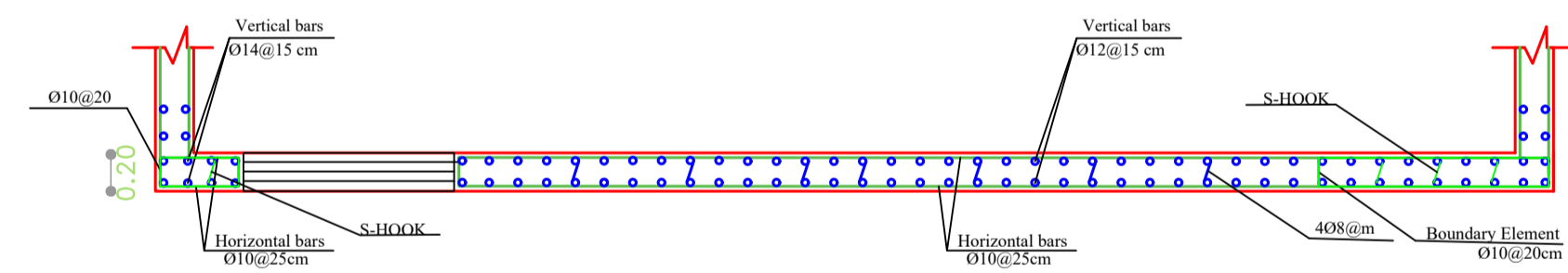
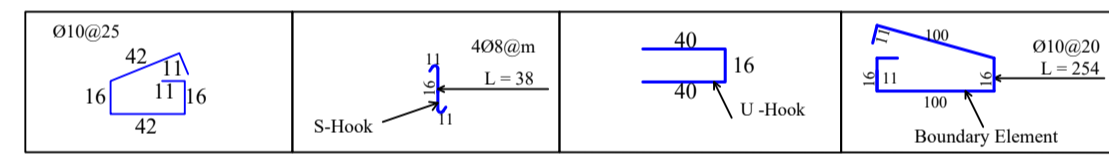
Section D - D
SCALE 1:25



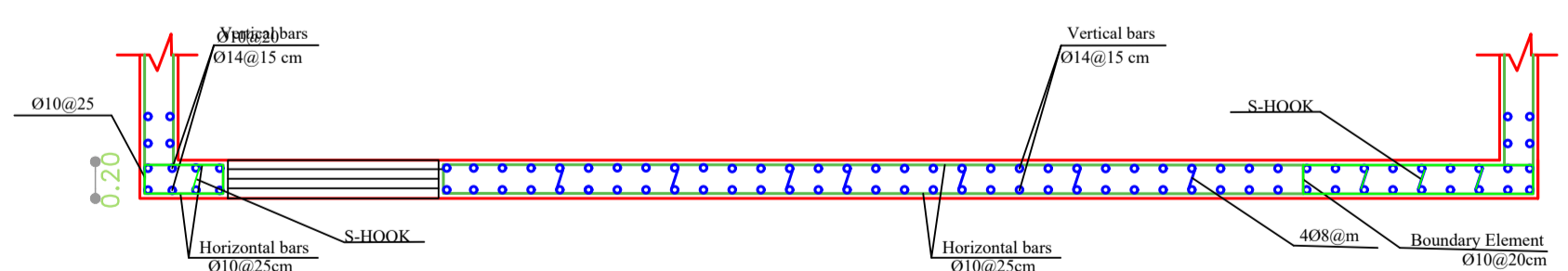
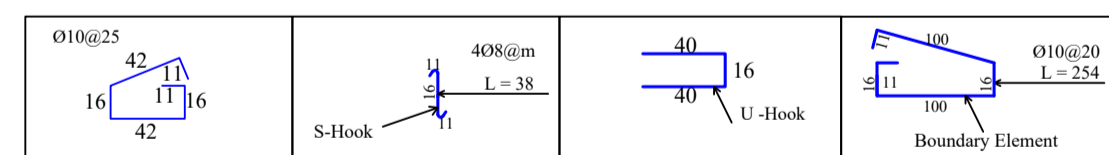
Section 1 - 1
SCALE 1:25



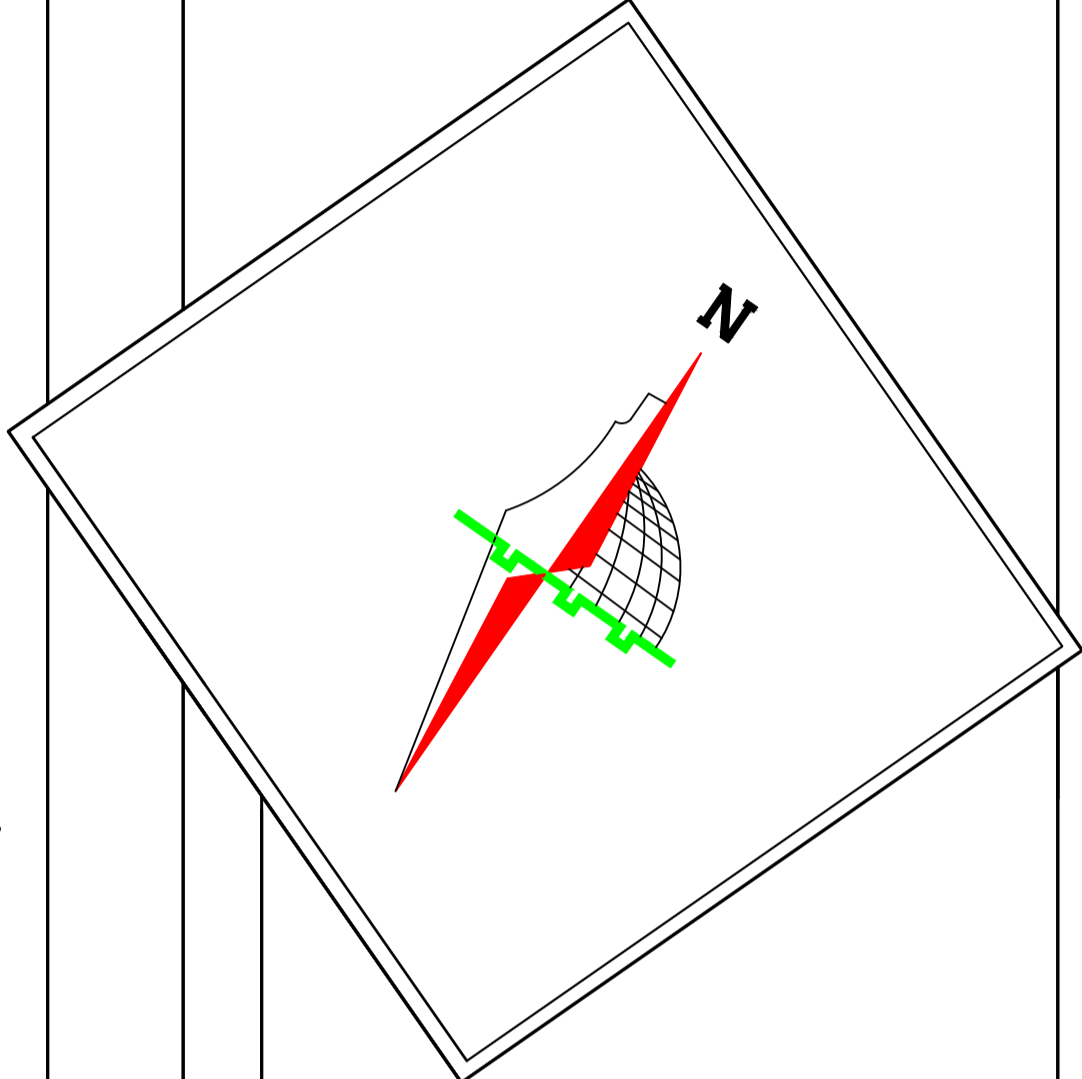
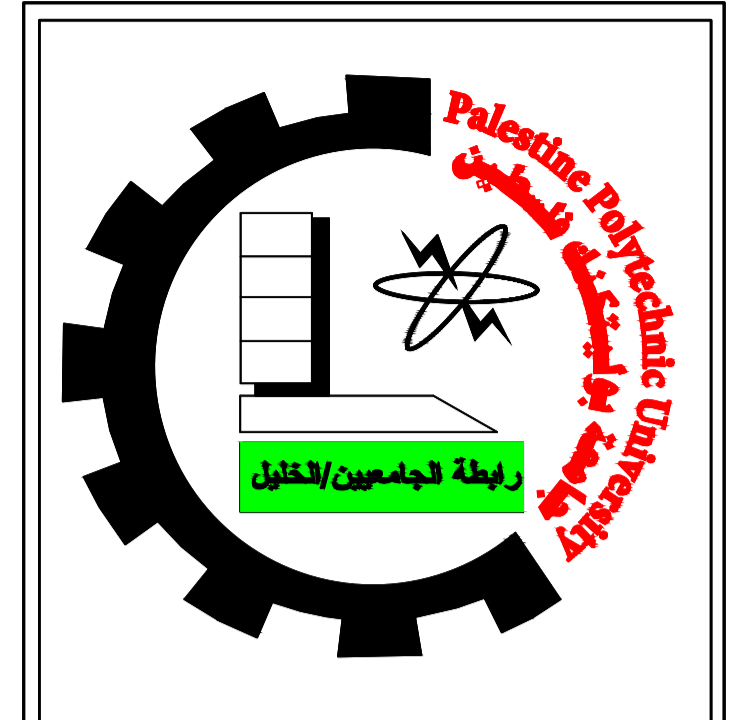
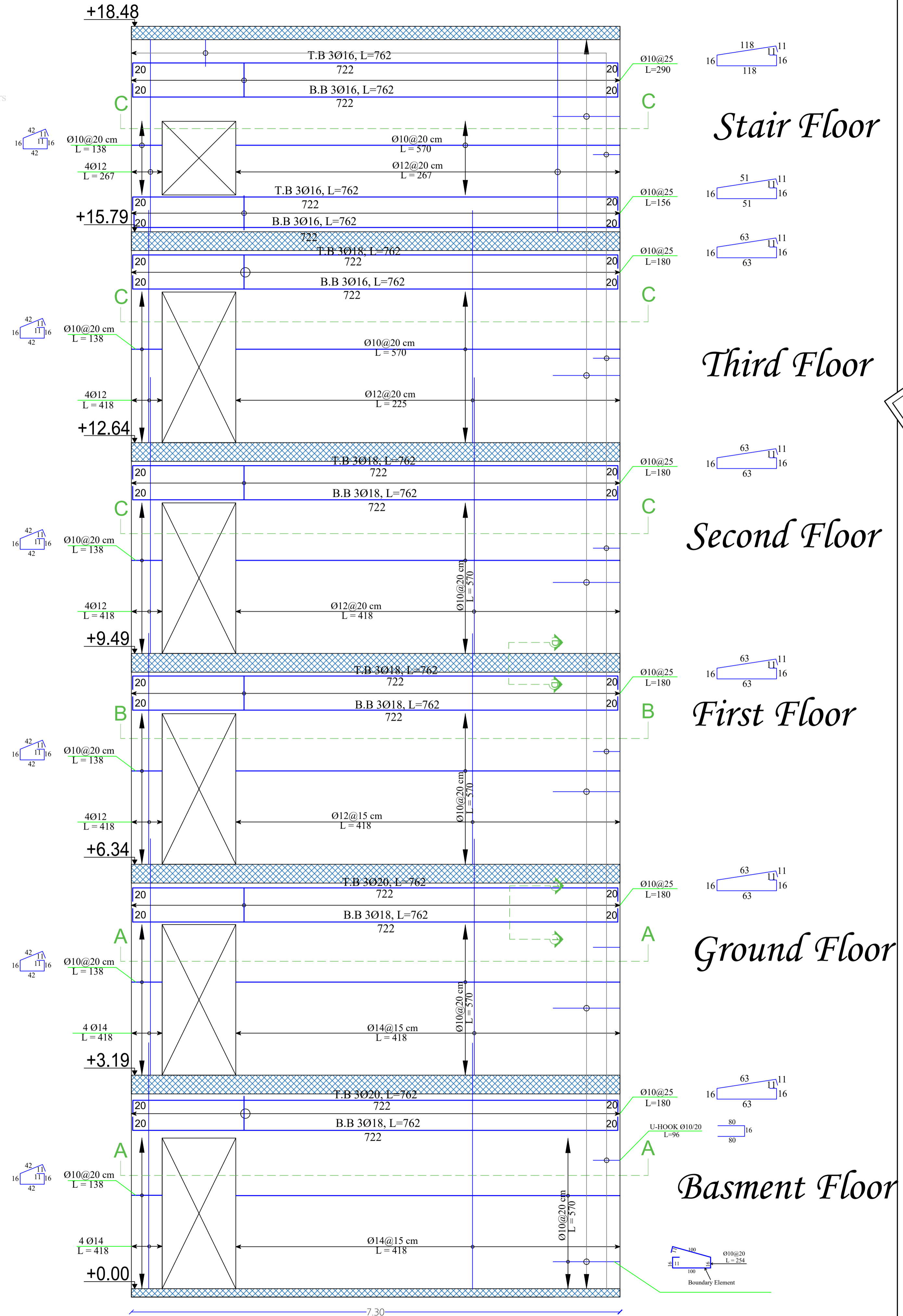
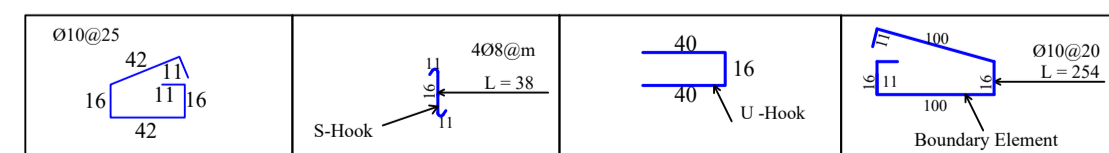
Section C - C
SCALE 1:50



Section A - A
SCALE 1:50



Section A - A
SCALE 1:50



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF SHEAR WALL (S.W 4)

Supervised by :

HAMD I IDAIS

Done by :

Mahdi Y. Rajabi

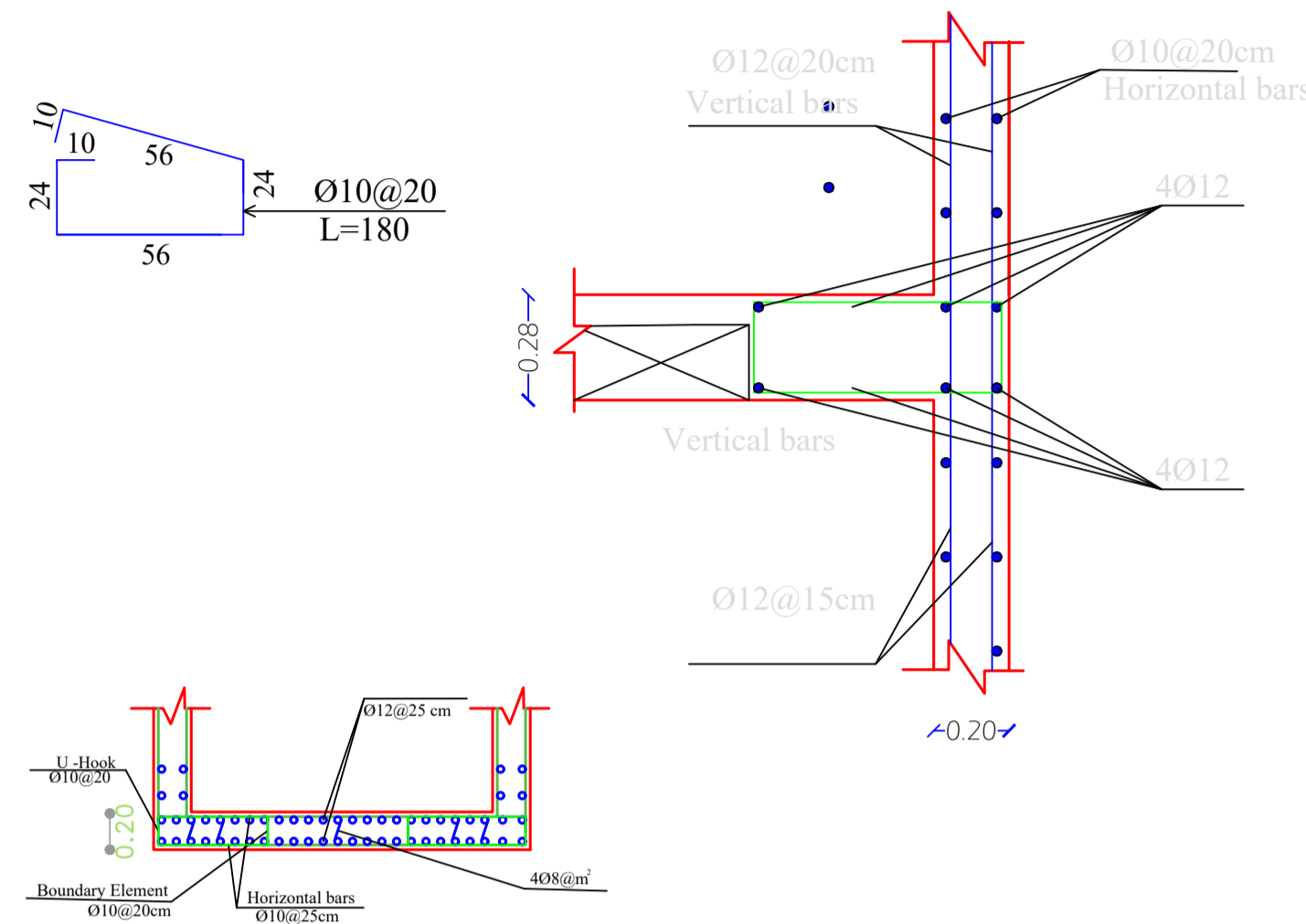
Ribhi AL-haddad

Scale	1/50
Drawing #	S12

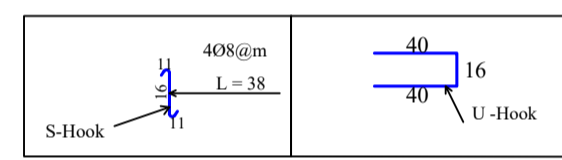
DETAILING OF SHEAR WALL (S.W 5&6&7)

SCALE 1:50

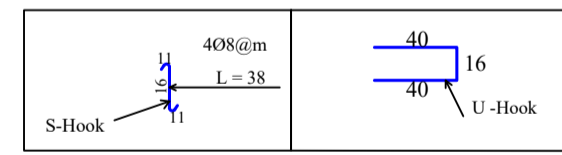
Section E - E
SCALE 1:25



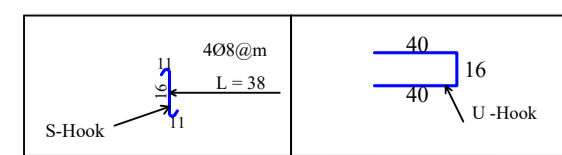
Section C - C
SCALE 1:50



Section B - B
SCALE 1:50



Section A - A
SCALE 1:50



Ø12@25
L= 267

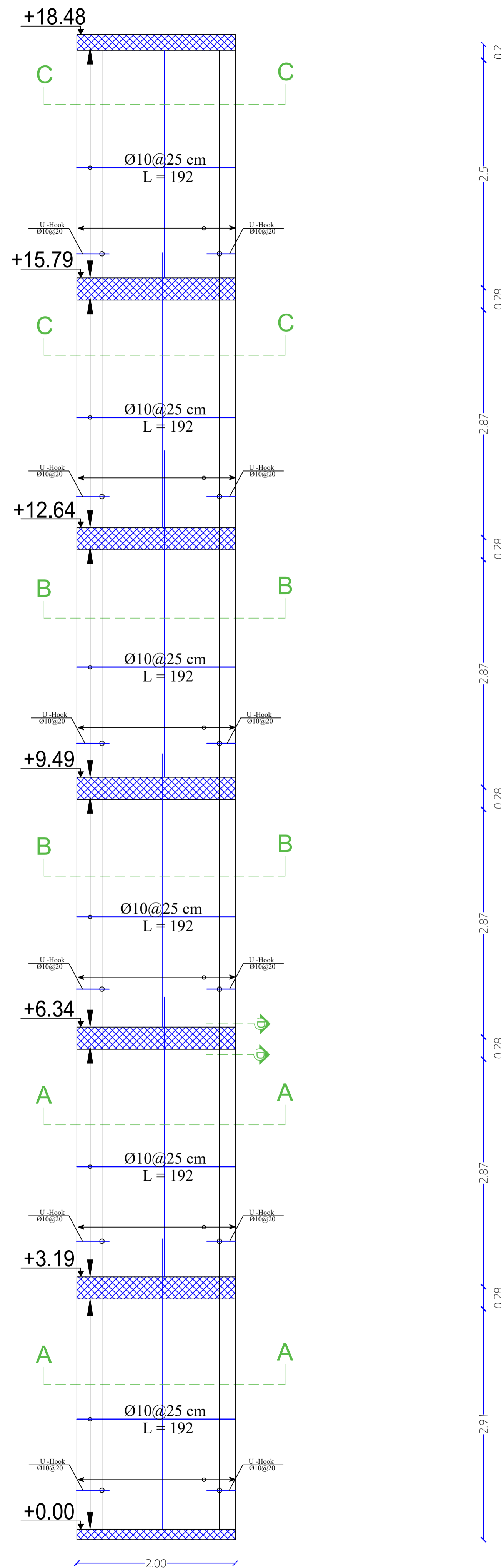
Ø12@25
L= 418

Ø12@20
L= 418

Ø12@20
L= 418

Ø12@15
L= 418

Ø12@15
L= 418



Stair Floor

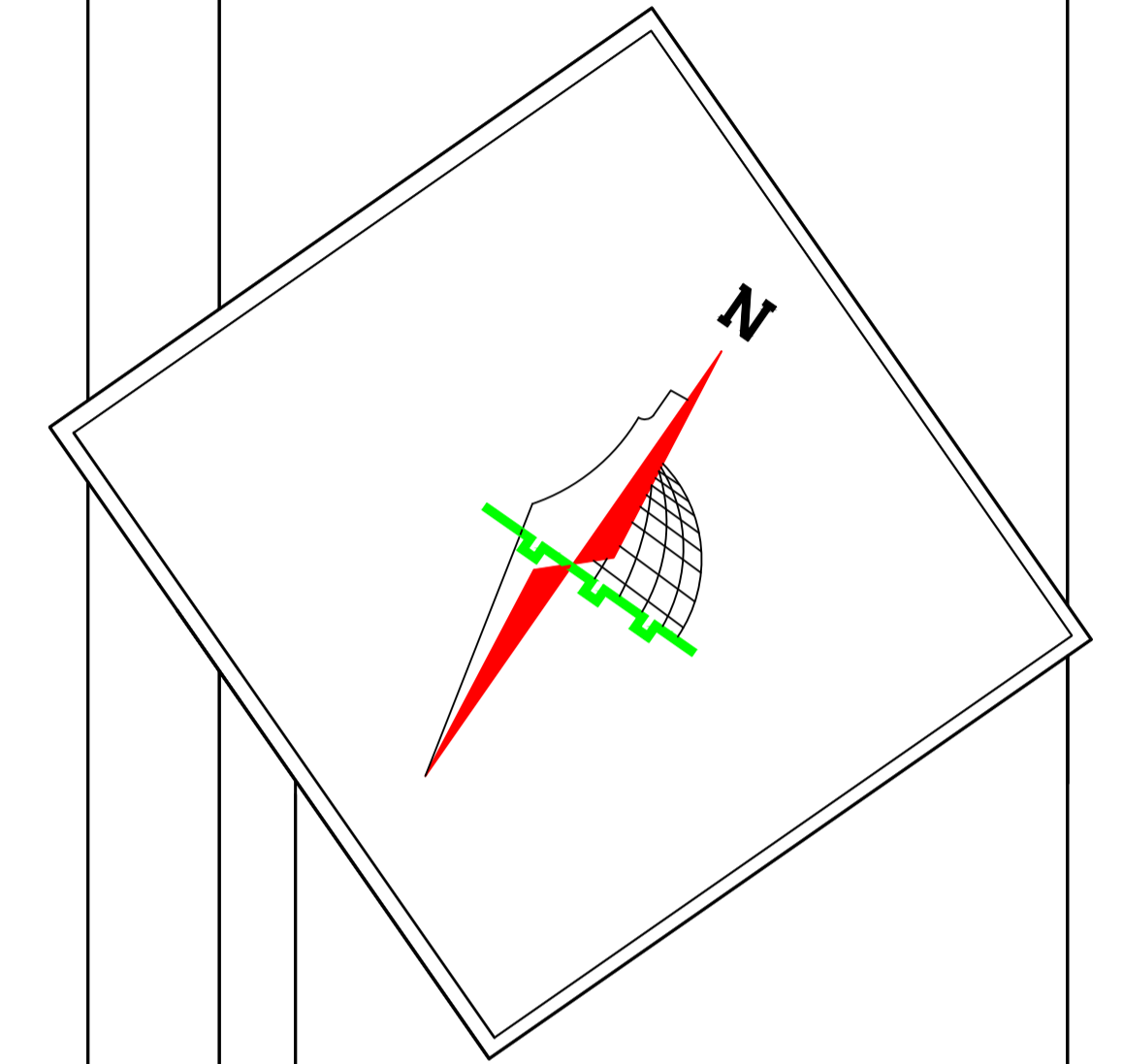
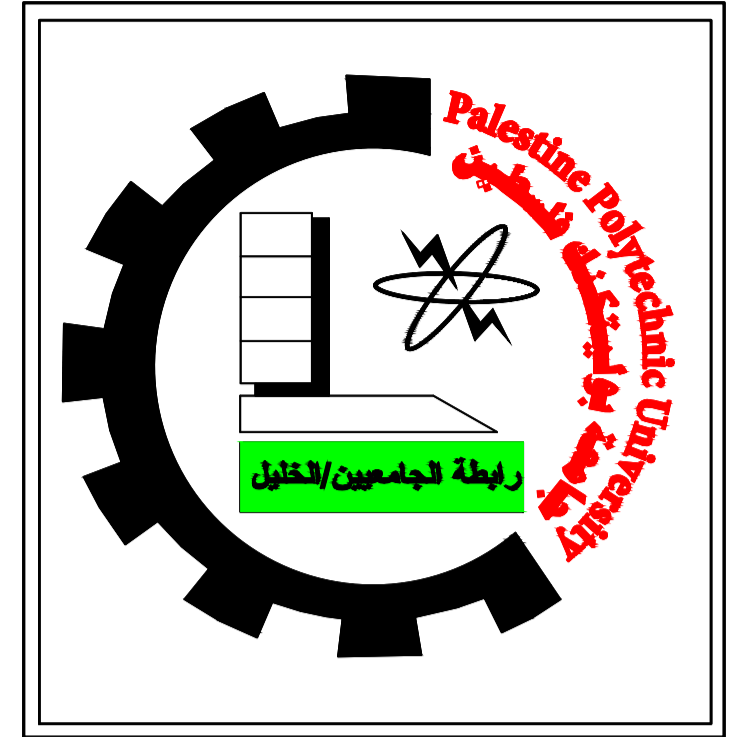
Third Floor

Second Floor

First Floor

Ground Floor

Basement Floor



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF SHEAR WALL (S.W 5&6&7)

Supervised by :
HAMD IDAIS

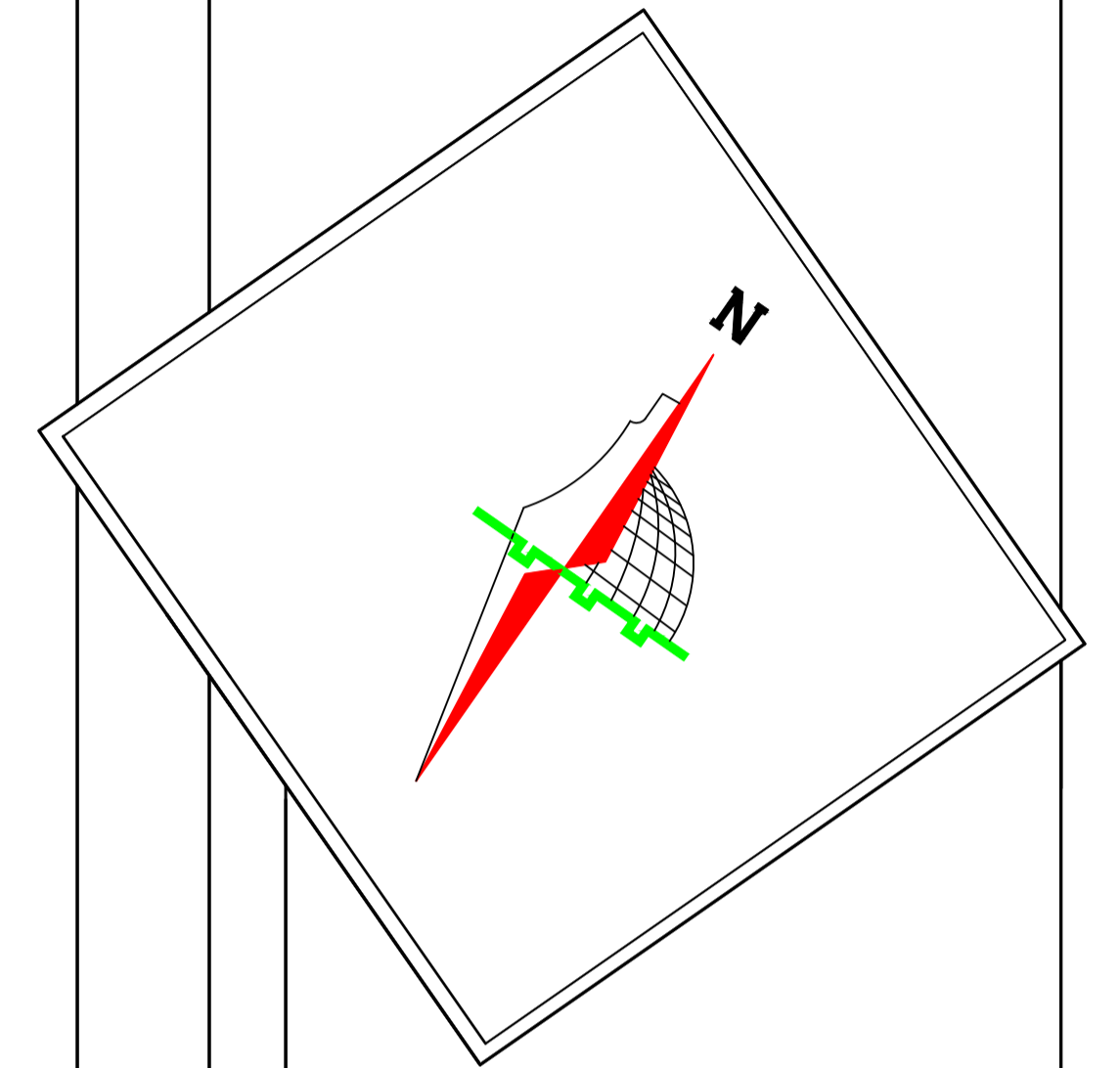
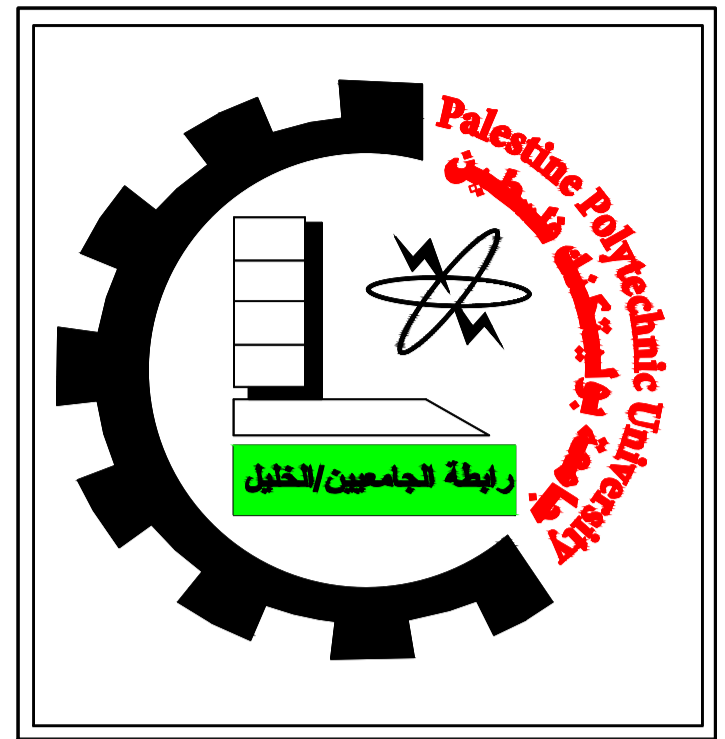
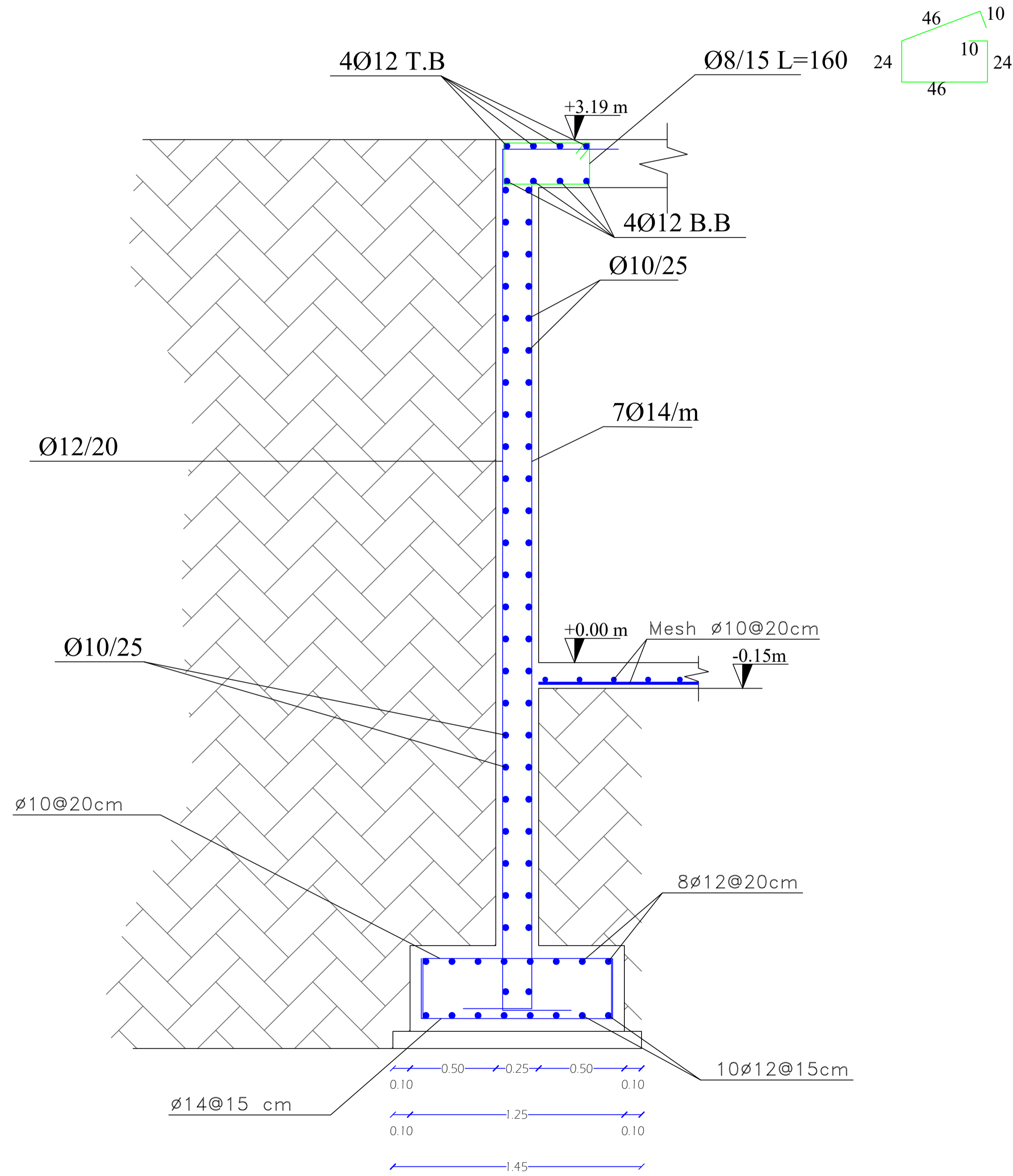
Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # S13

DETAILING OF BASEMENT WALL

SCALE 1:25



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF BASEMENT WALL

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

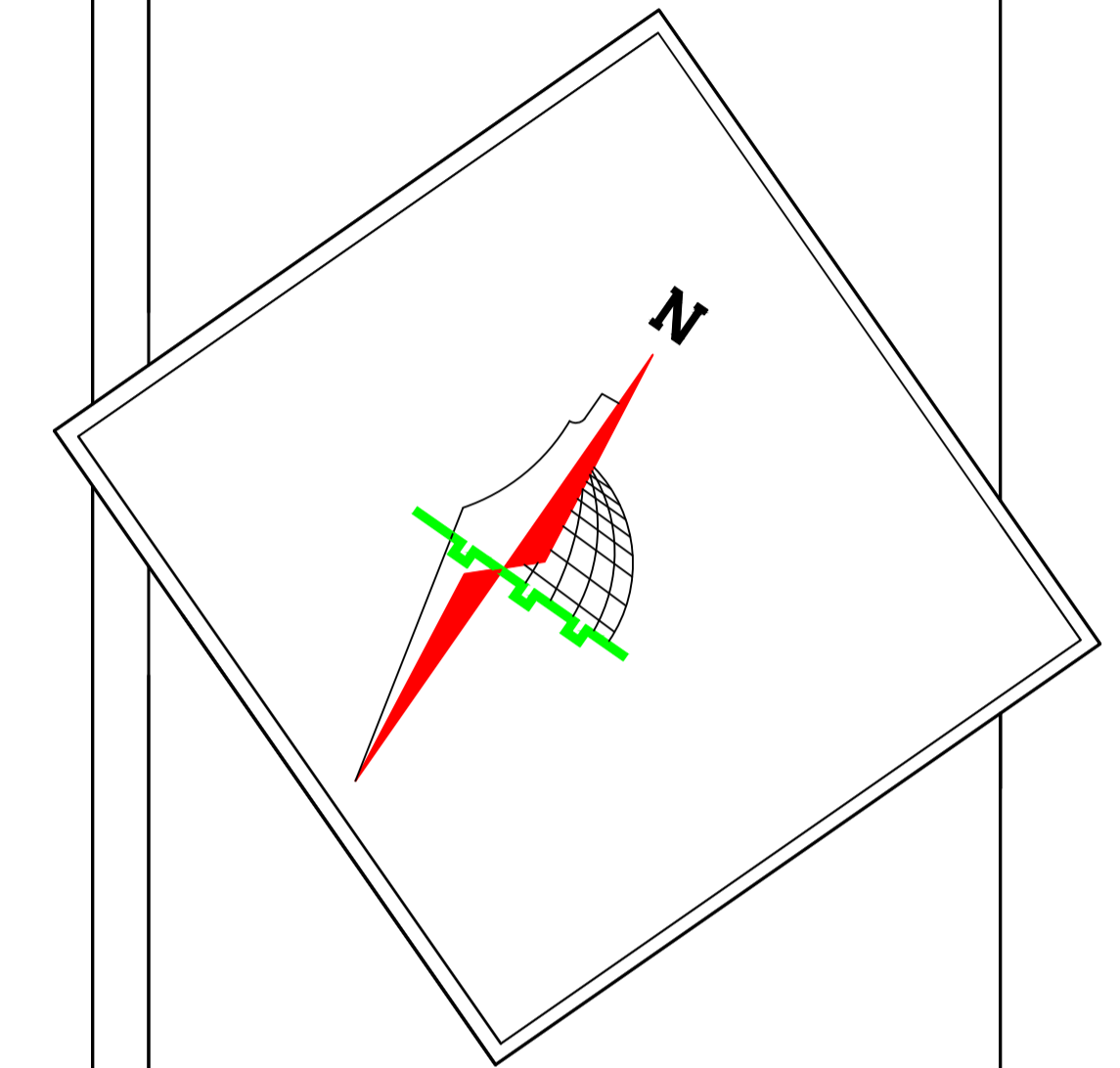
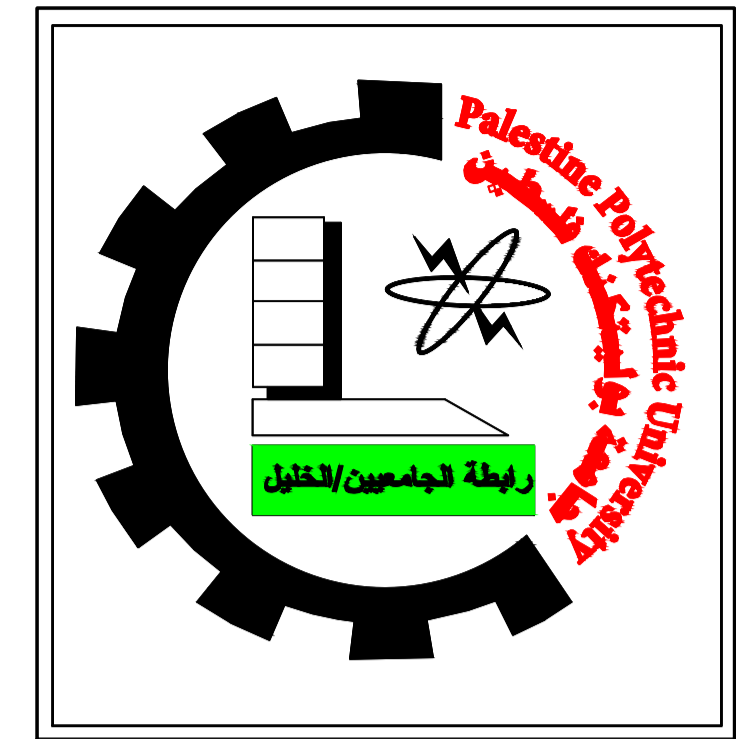
Scale 1/25

Drawing # **S14**

COLUMN DETAILS

scale 1:40

	Group A					Group B		
Column name Floor name	C1 Col (1.2.7.8) Pu = 500 KN	C2 Col (9.10) Pu = 500 KN	C3 Col (3.4.5.6) Pu = 500 KN	C4 Col (11.16.20) Pu = 500 KN	C5 Col (17) Pu = 500 KN	C6 Col (27.31) Pu = 500 KN	C7 Col (12) Pu = 1000 KN	C8 Col (25.28) Pu = 1000 KN
Basement Floor								
Ground Floor								
First Floor								
Second Floor								
Third Floor								



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
COLUMNS TABLE (1)

Supervised by :

HAMDI IDAIS

Done by :

Mahdi Y. Rajabi

Ribhi AL-haddad

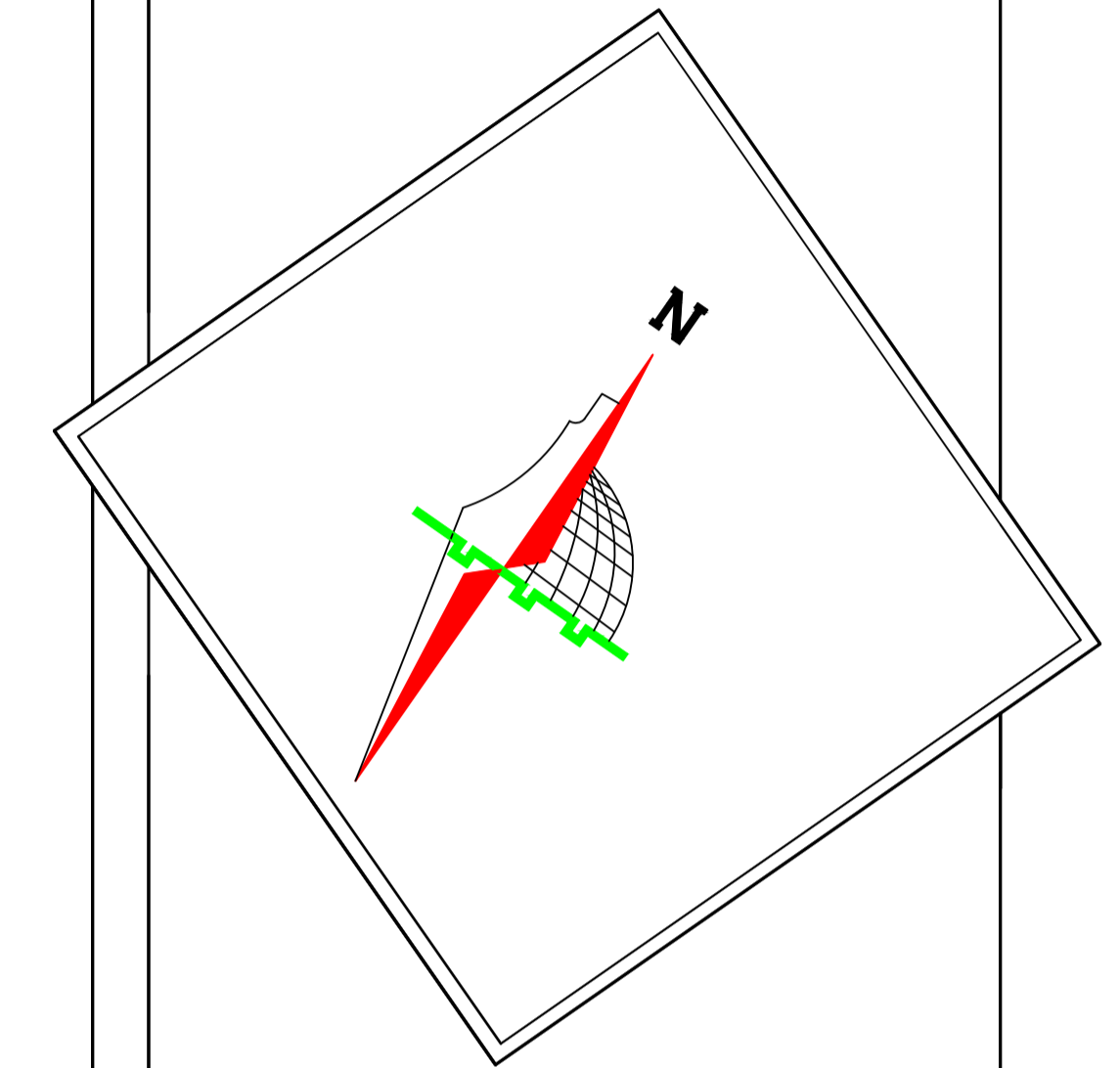
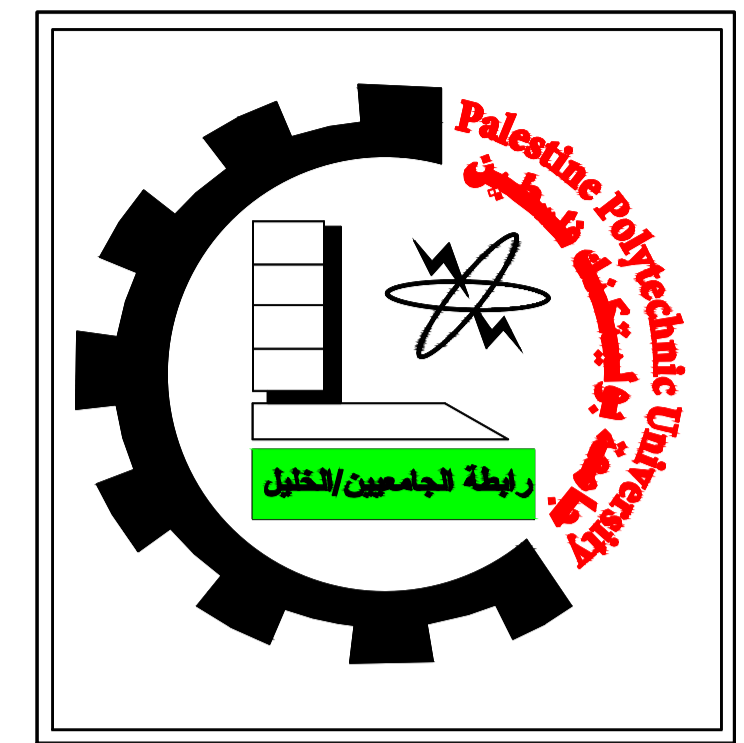
Scale 1/40

Drawing # **S15**

COLUMN DETAILS

scale 1:40

	Group C			Group D		Group E
Column name Floor name	C9 Col (13.14) Pu = 1500KN	C10 Col (15.21) Pu = 1500 KN	C11 Col (26.29.30) Pu = 1500 KN	C12 Col (18.19) Pu = 2000 KN	C13 Col (24) Pu = 2000 KN	C14 Col (22.23) Pu = 2500 KN
Basement Floor						
Ground Floor						
First Floor						
Second Floor						
Third Floor						



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
COLUMNS TABLE (2)

Supervised by :
HAMD I DAIS

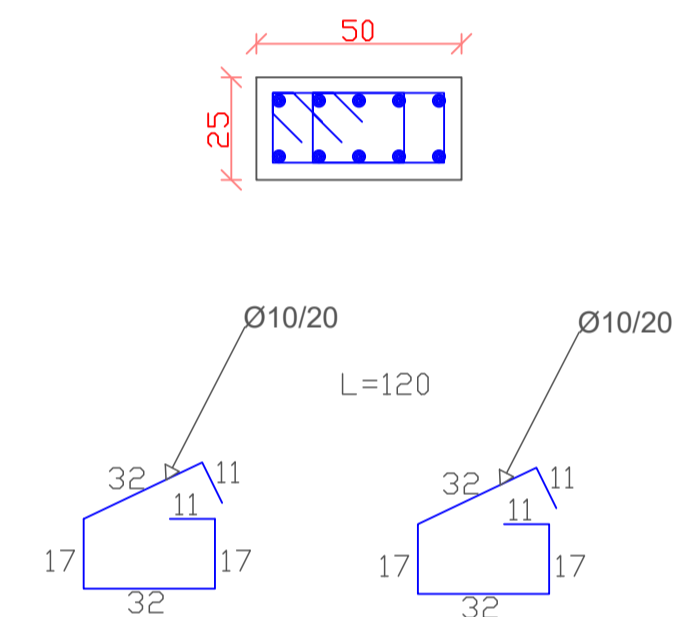
Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/40
Drawing #	S16

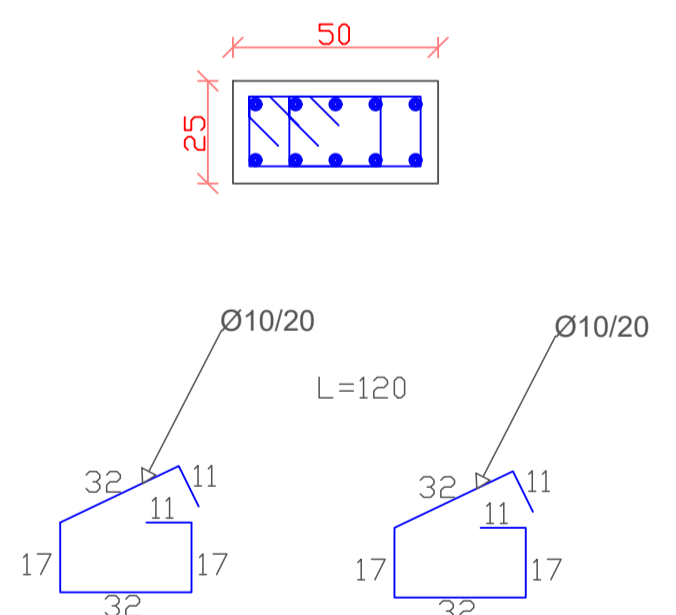
COLUMN DETAILS

DETAILING OF COLUMNS (C4)

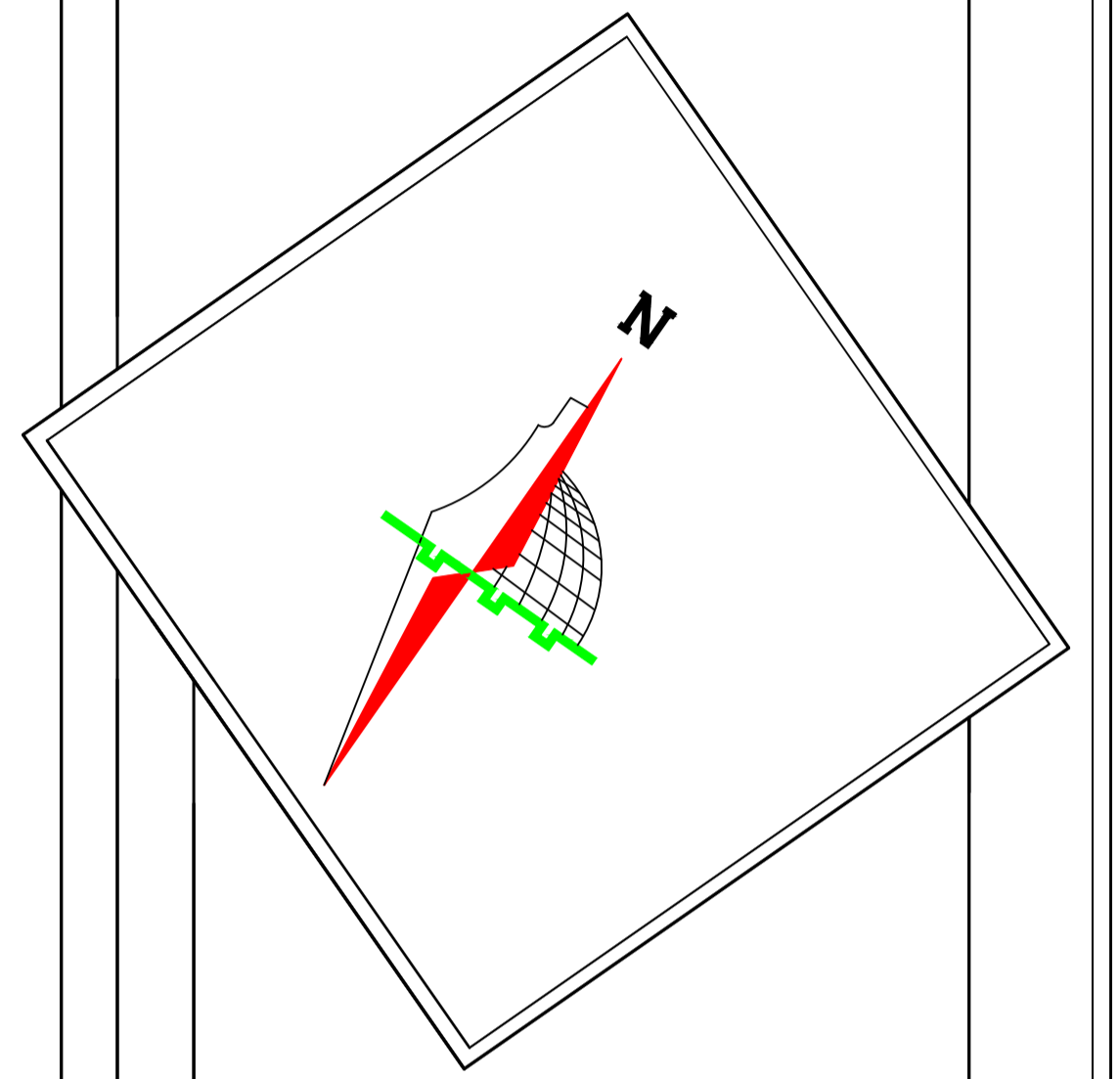
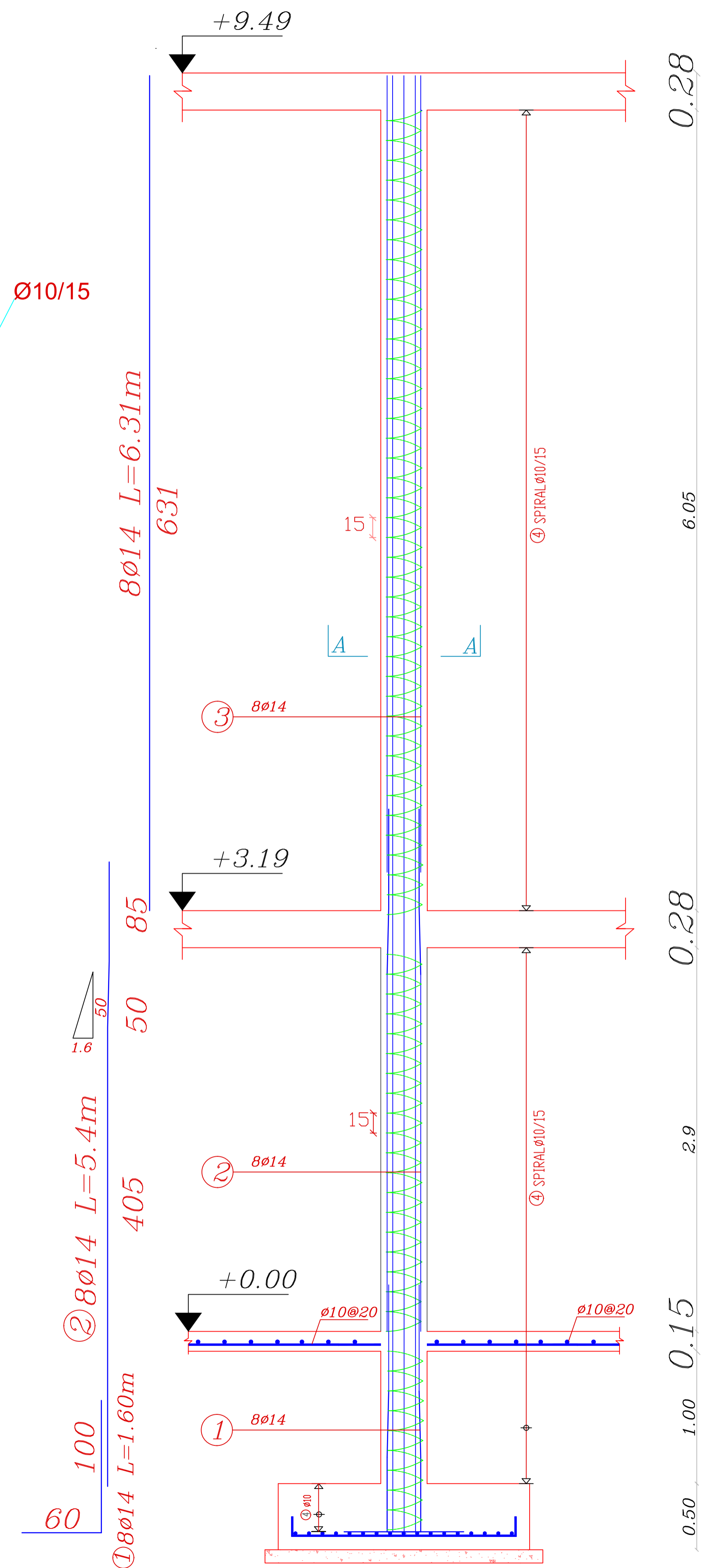
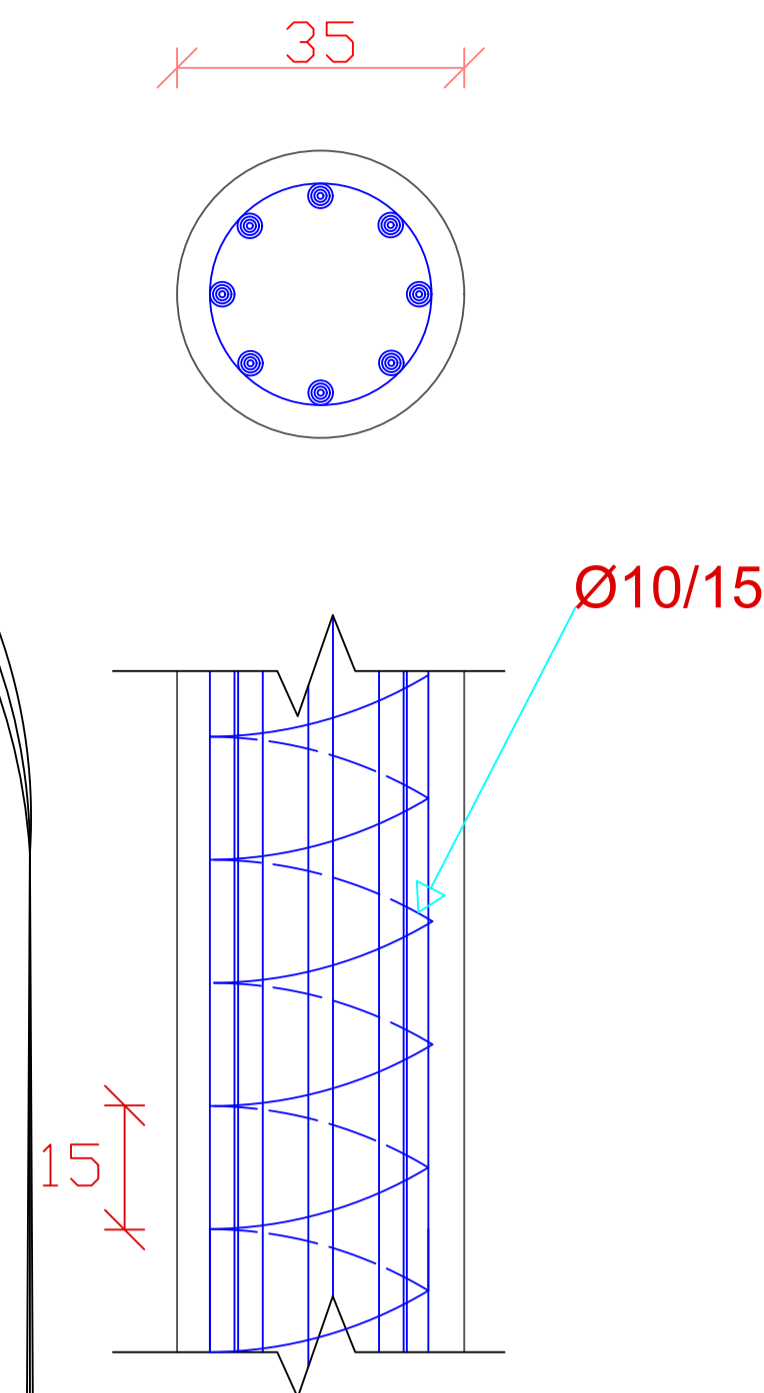
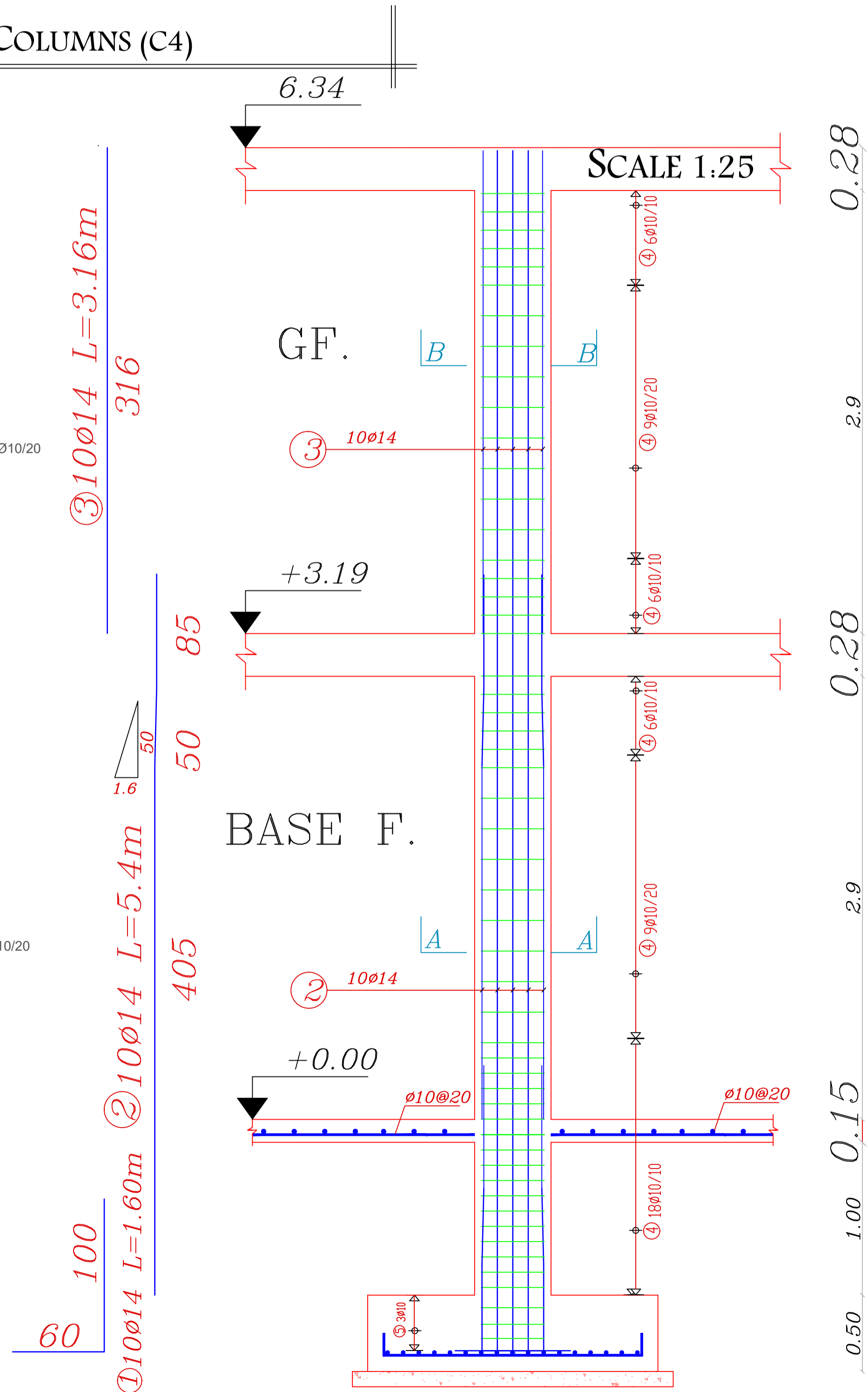
SCALE 1:25

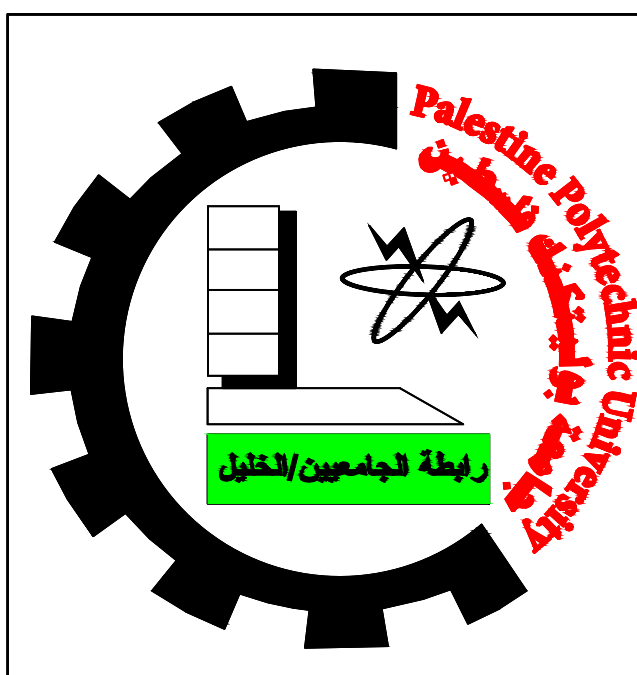


Section :B-B
SCALE 1:20



Section :A-A
SCALE 1:20




 Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Construction Engineering

Project Name: Structural Design of Residential Villa

Drawing Title:
DETAILING OF COLUMNS (C4)&(C2)

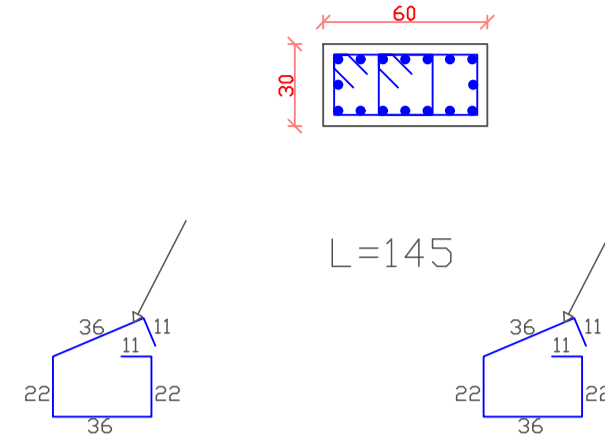
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

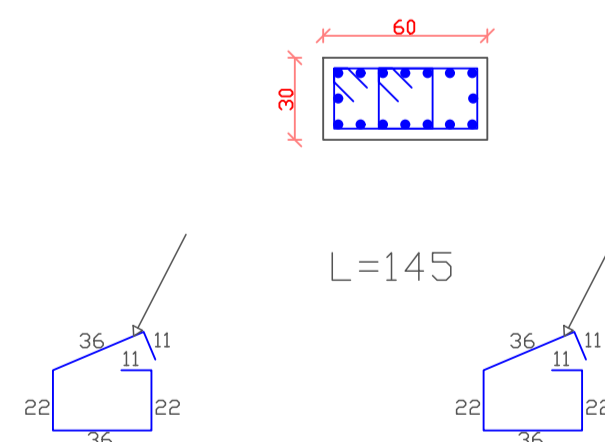
Scale	1/25
Drawing #	S17

DETAILING OF COLUMNS (C14)

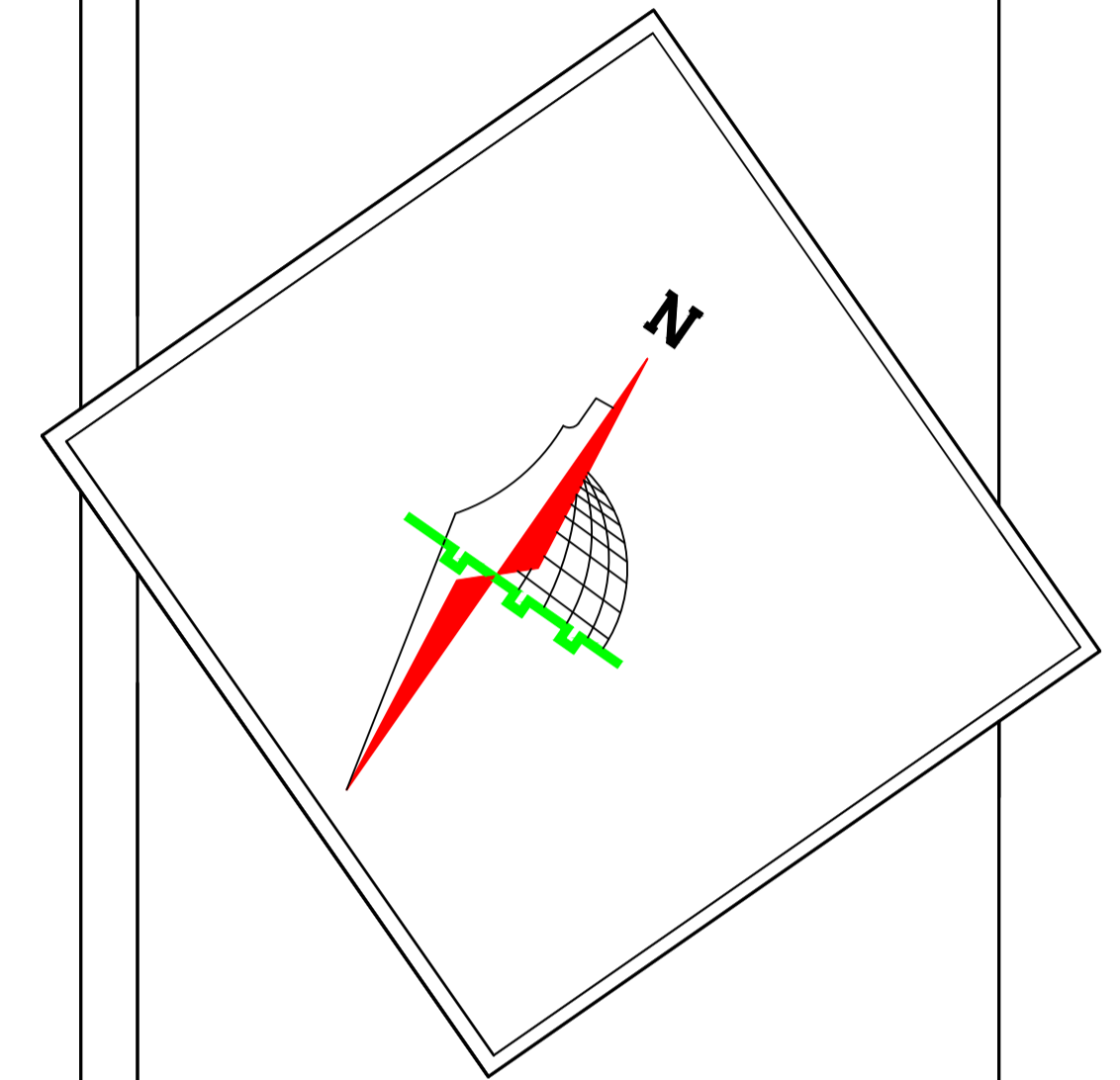
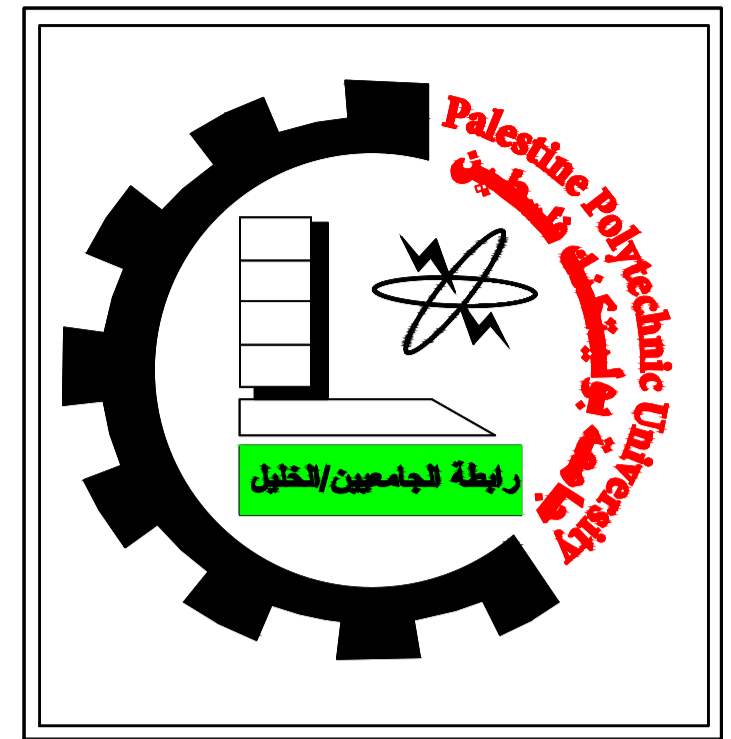
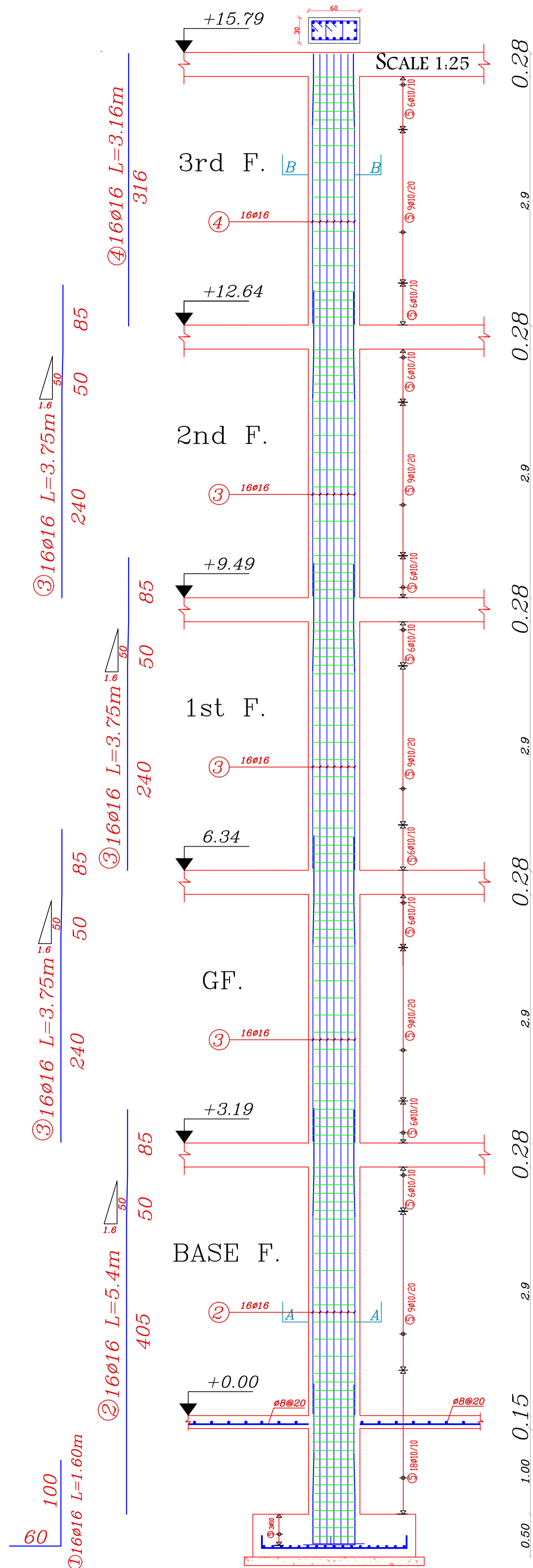
SCALE 1:25



Section .B-B
SCALE 1:20



Section .A-A
SCALE 1:20



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

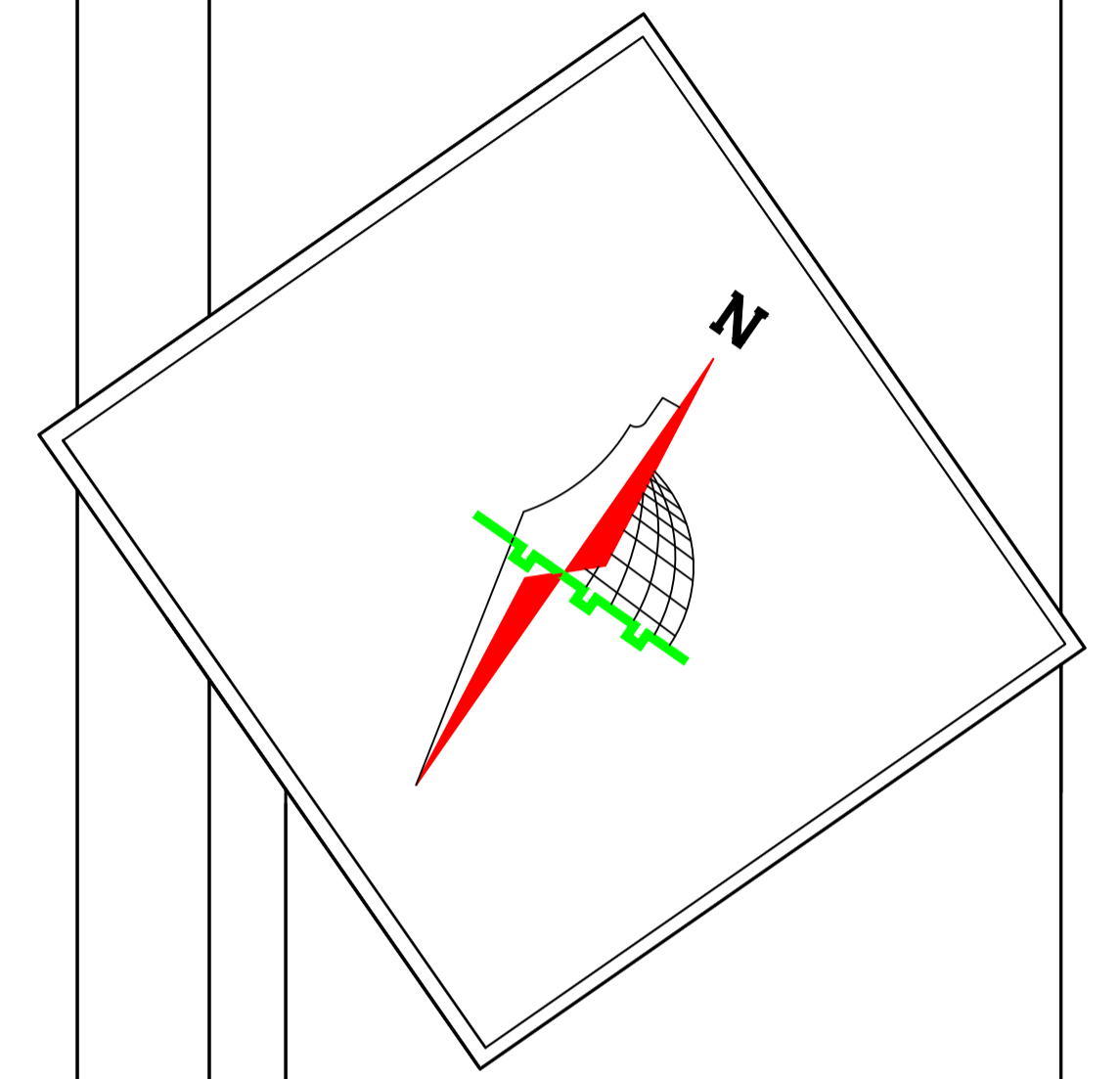
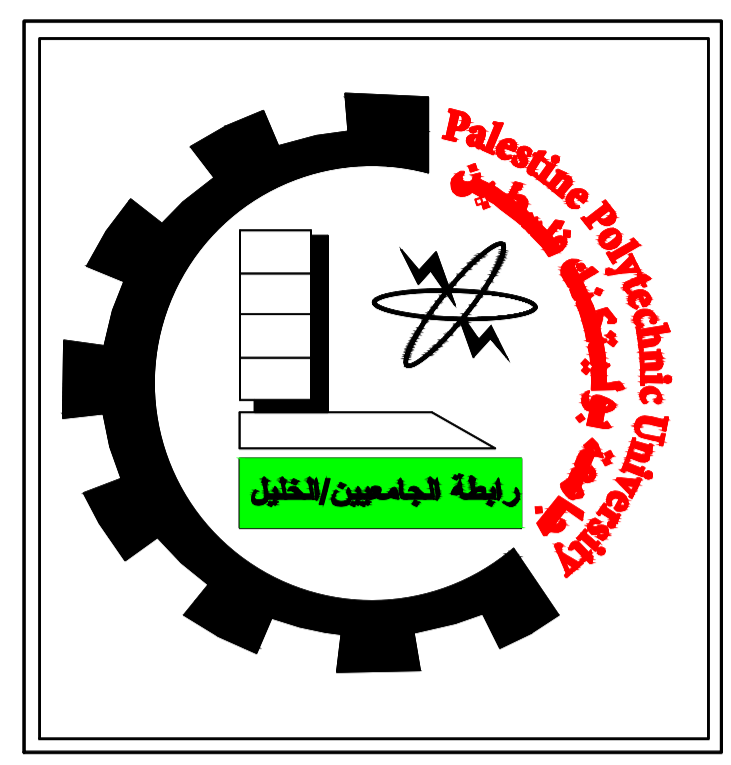
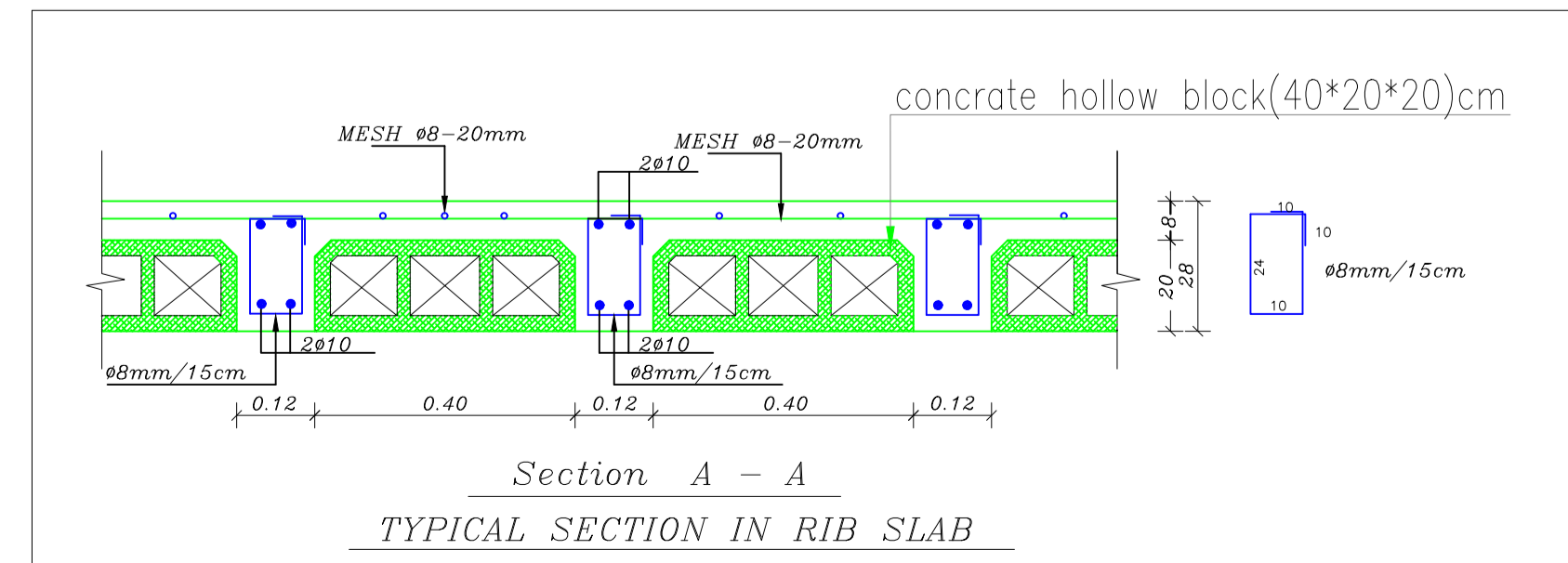
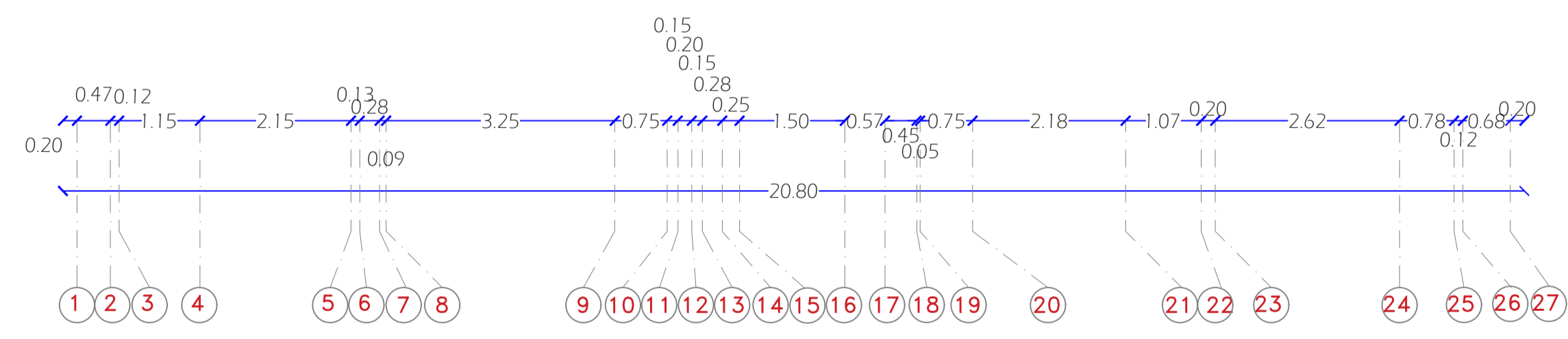
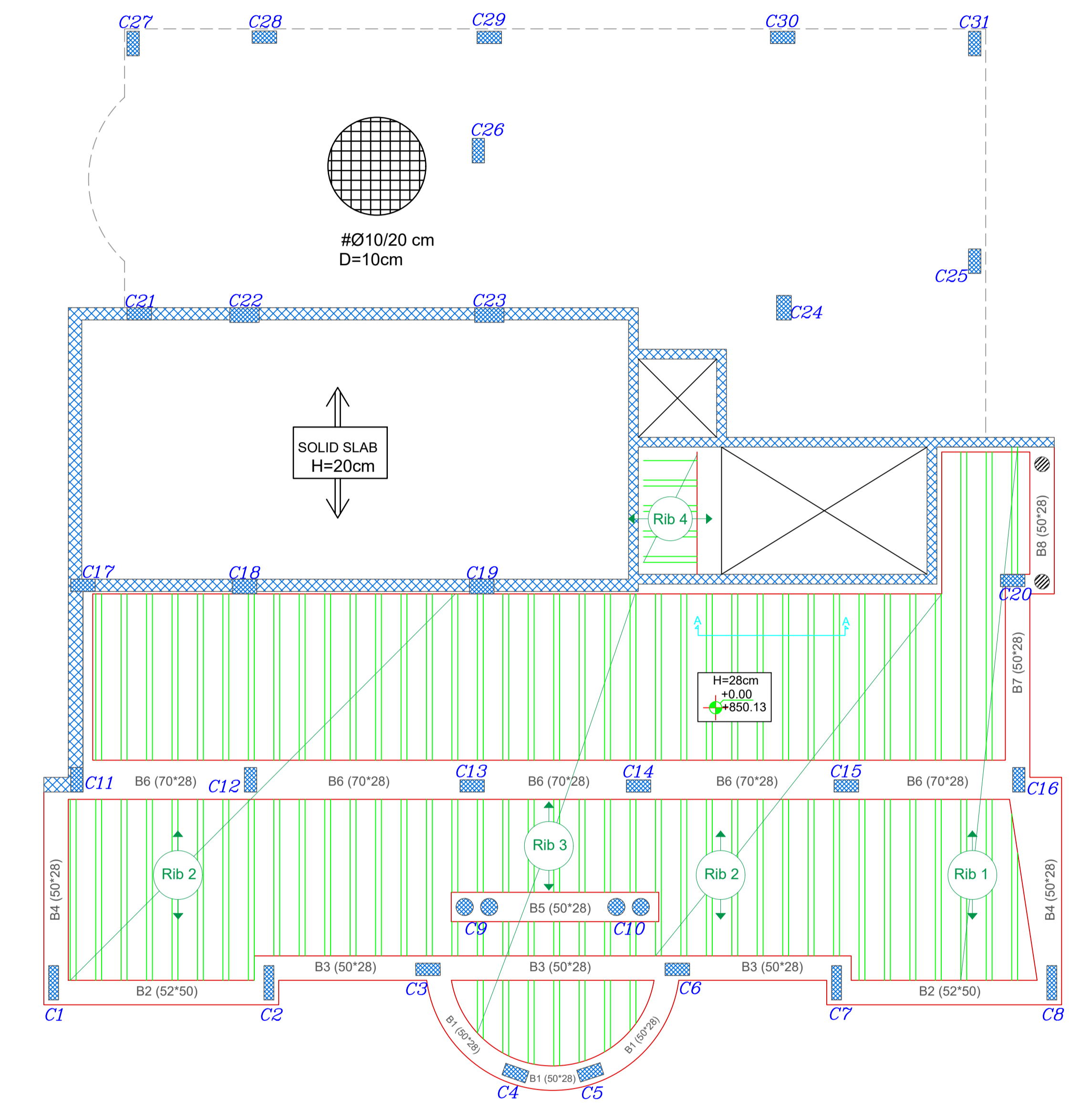
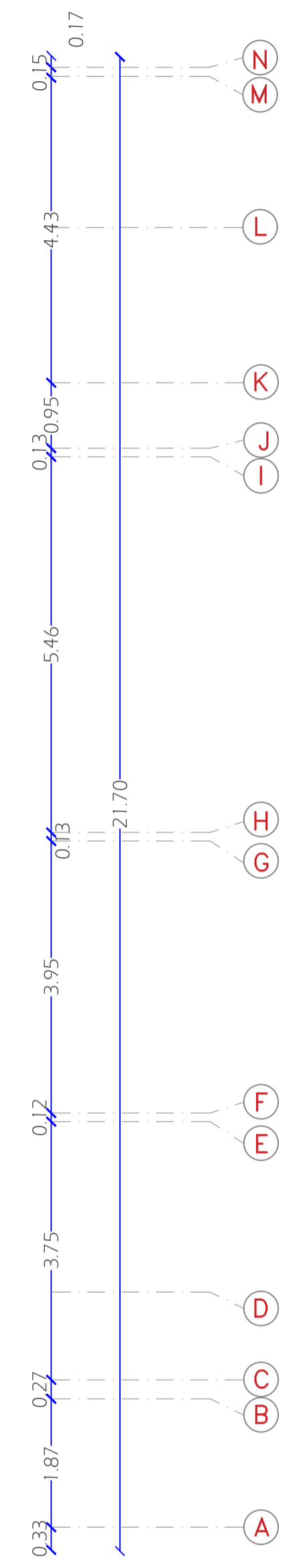
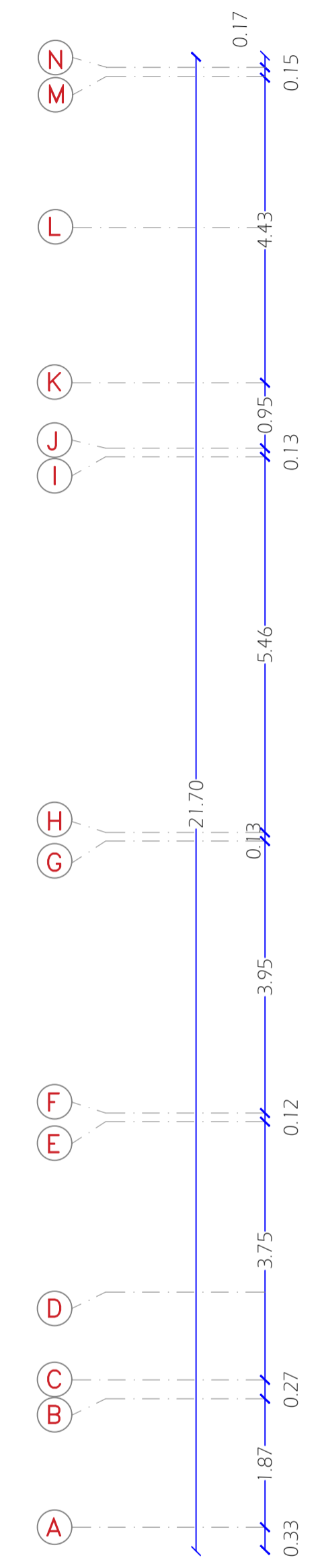
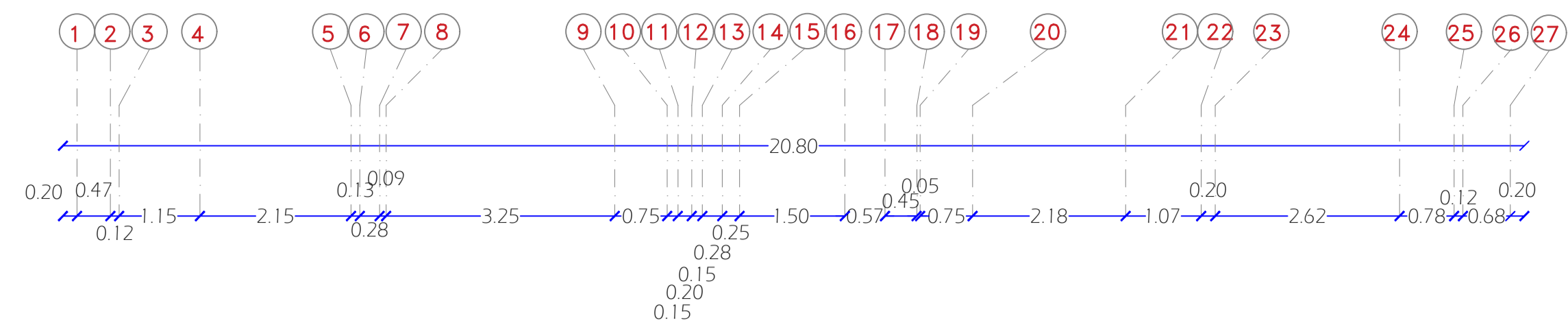
Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF COLUMNS (C14)

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/25
Drawing #	S18



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

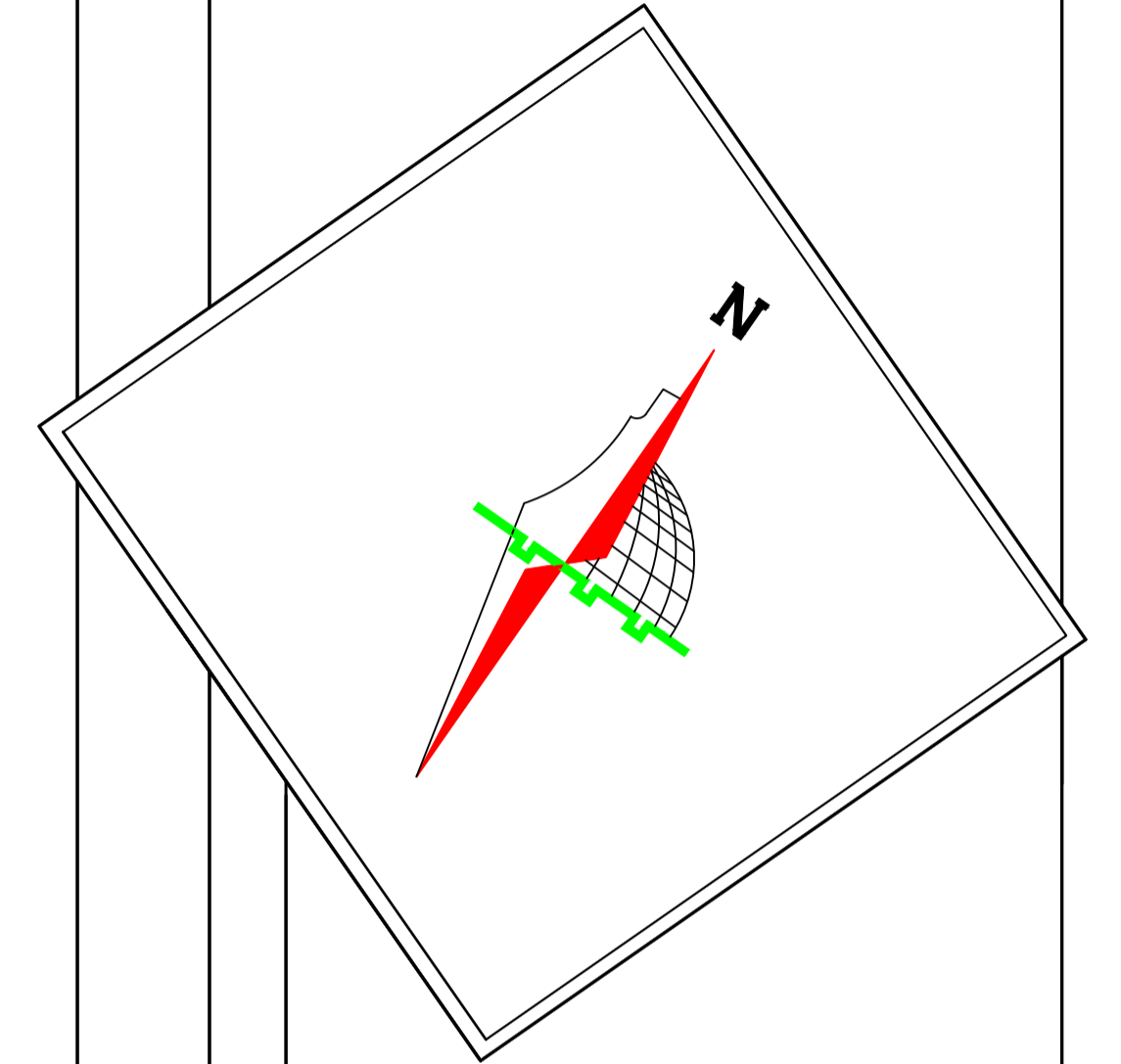
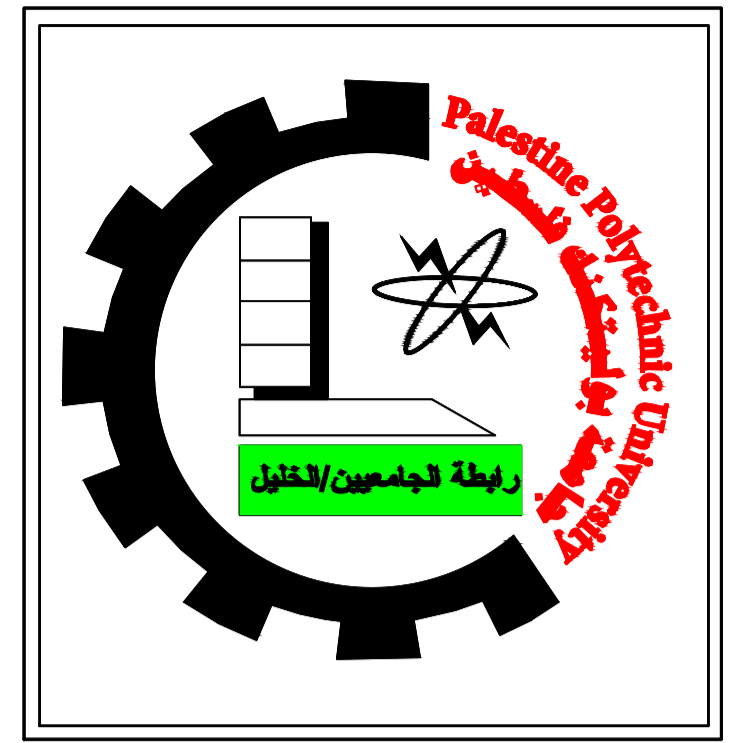
Drawing Title:
Ribs Of Slab Of Basement Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **S19**



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

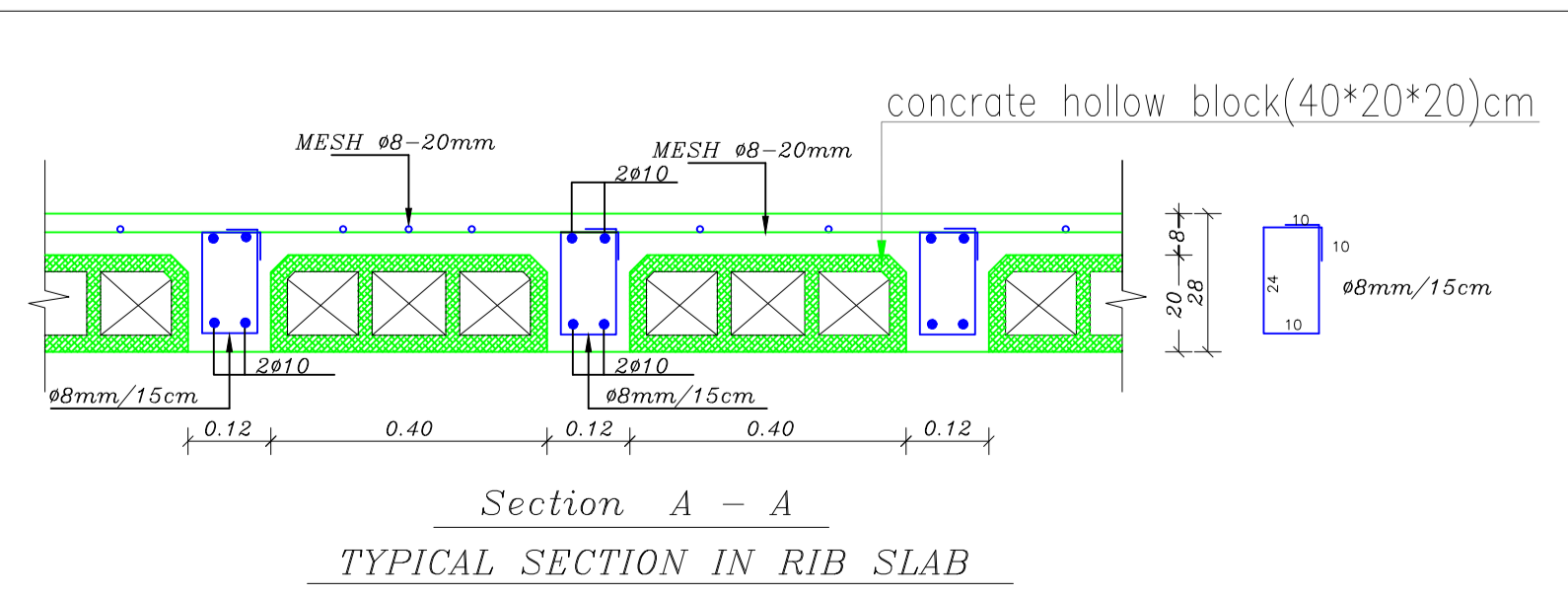
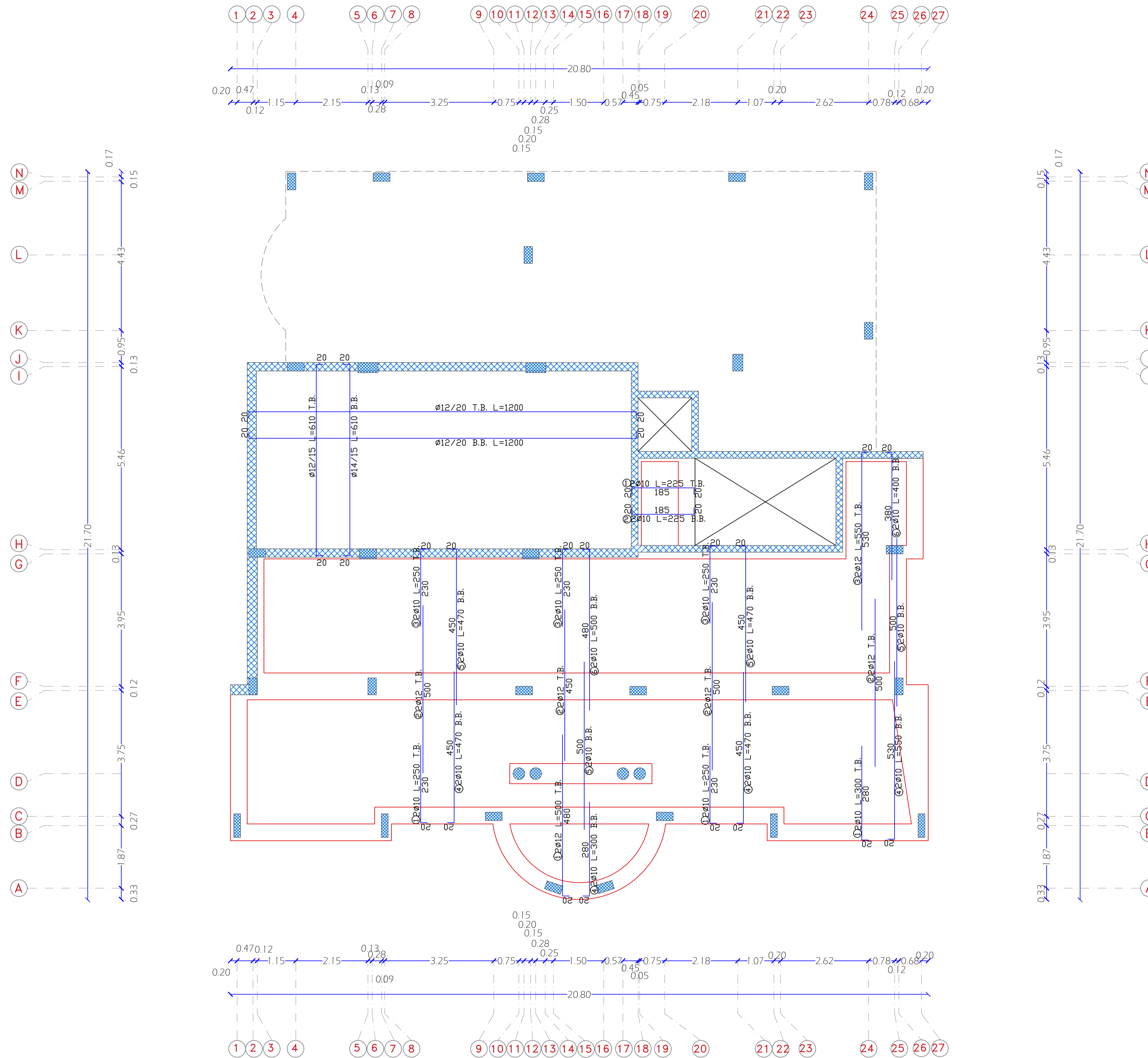
Project Name: Structural Design Of Residential Villa

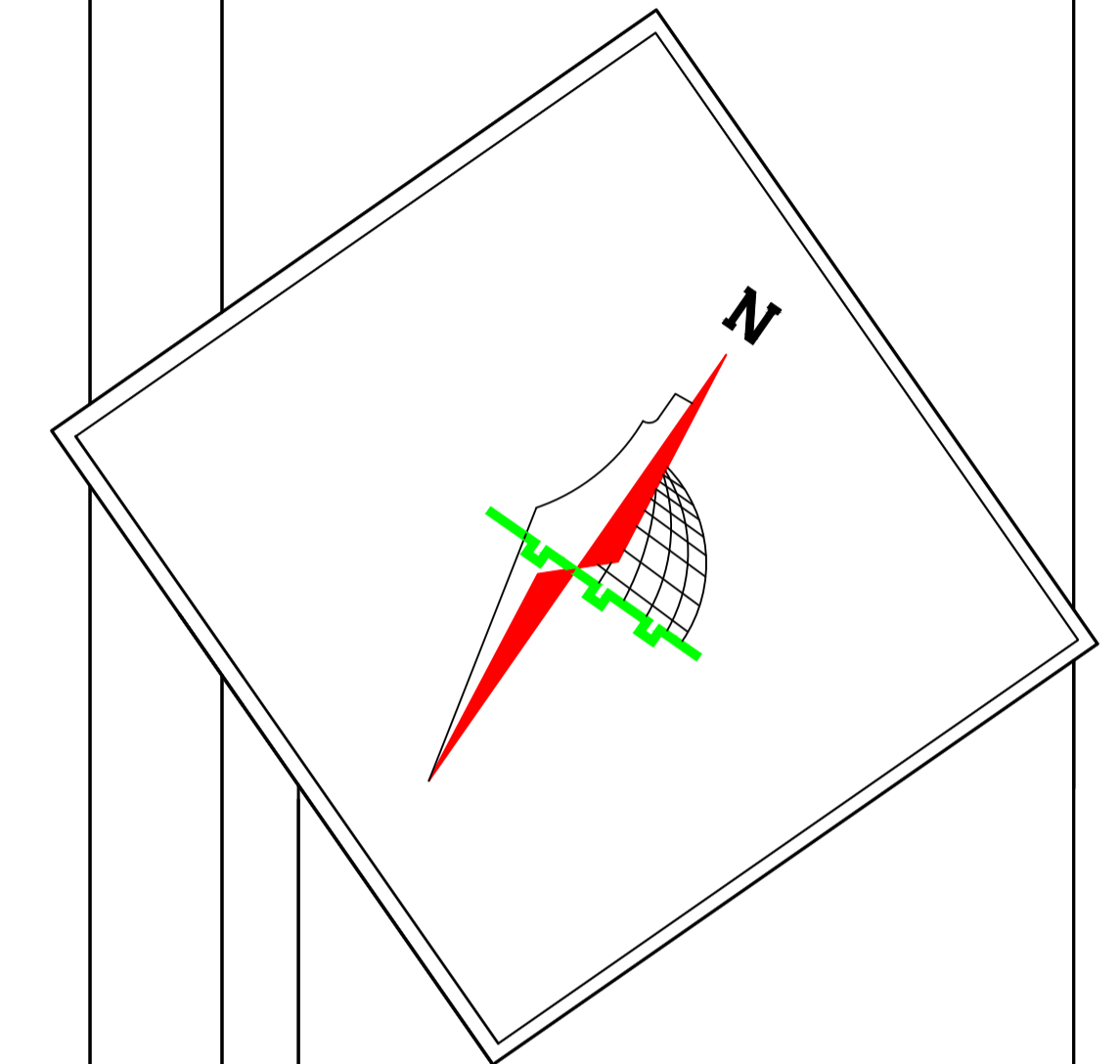
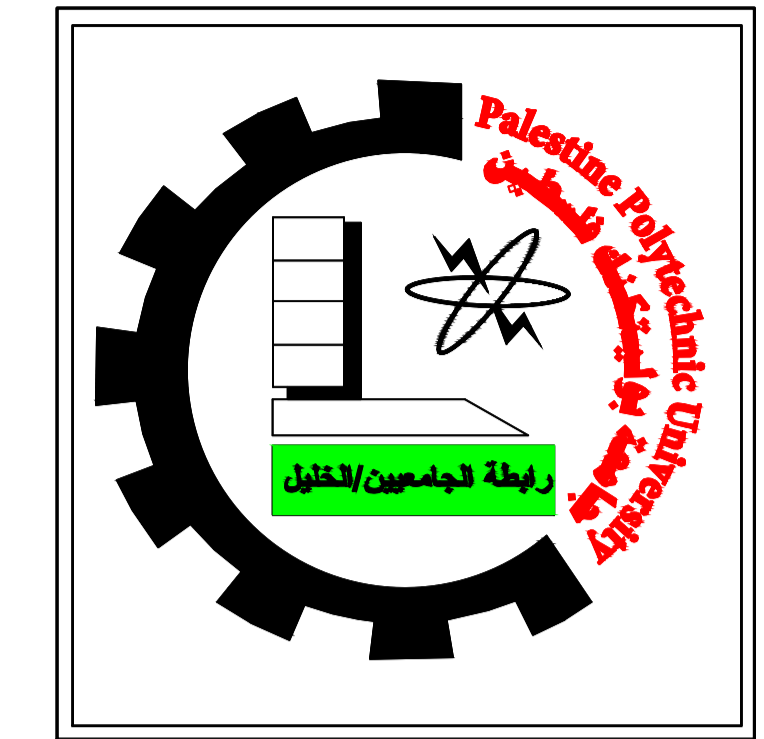
Drawing Title:
 Reinforcement Of Slab Of Basement Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/100
Drawing #	S20





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

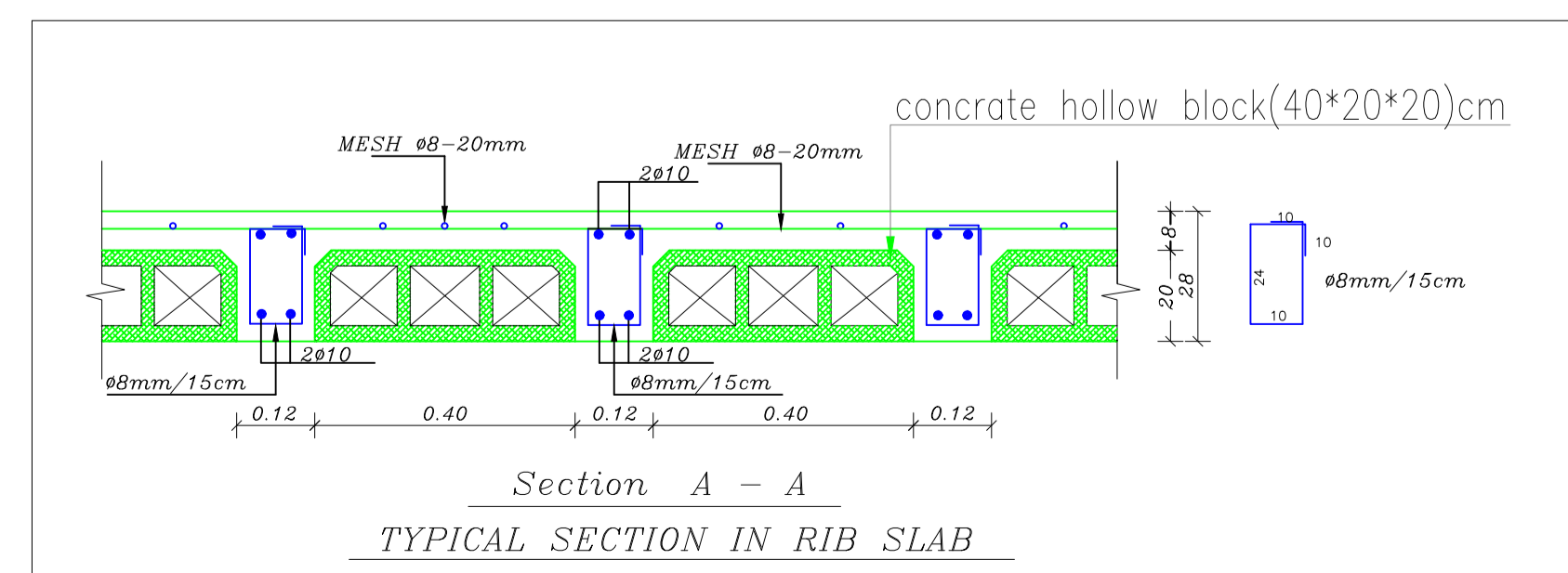
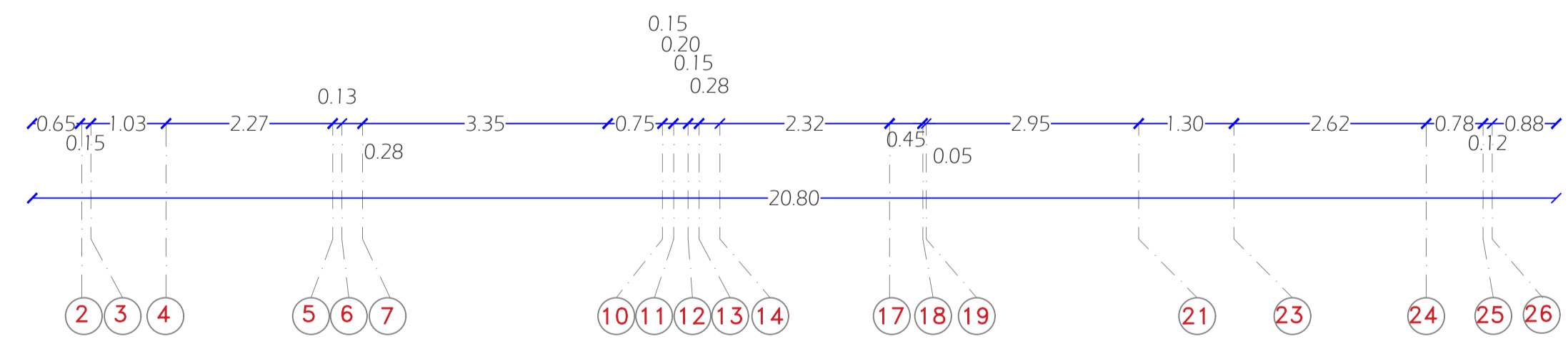
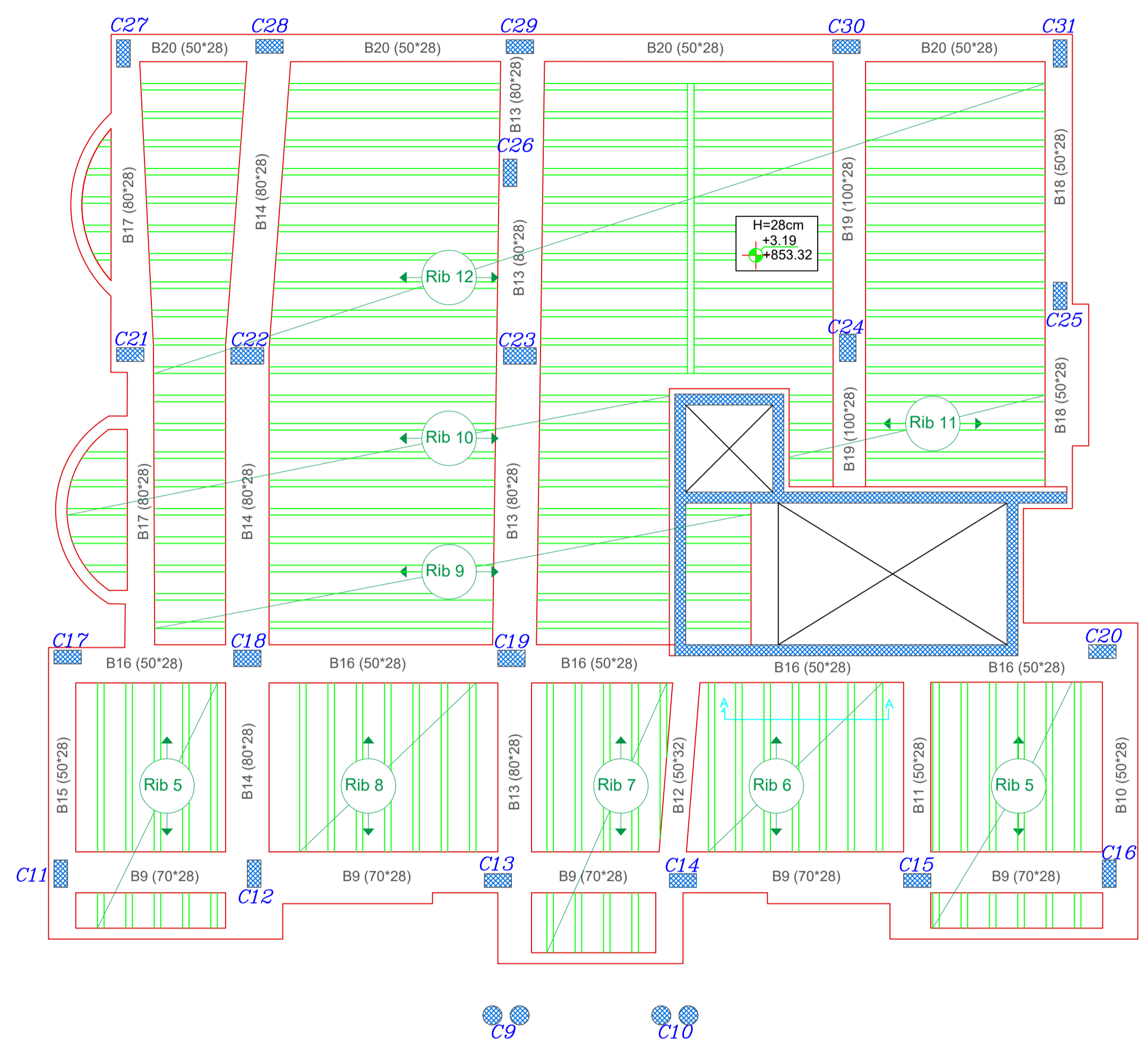
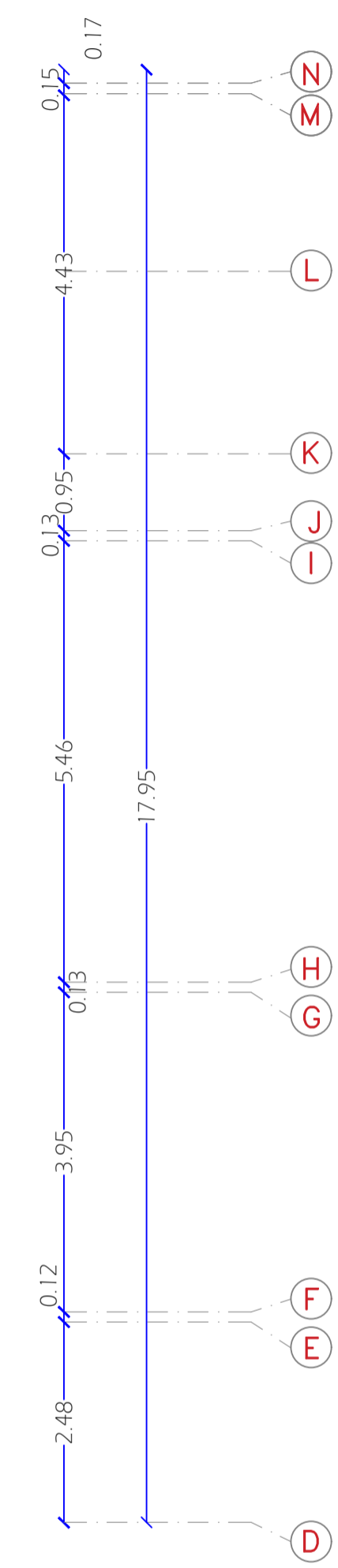
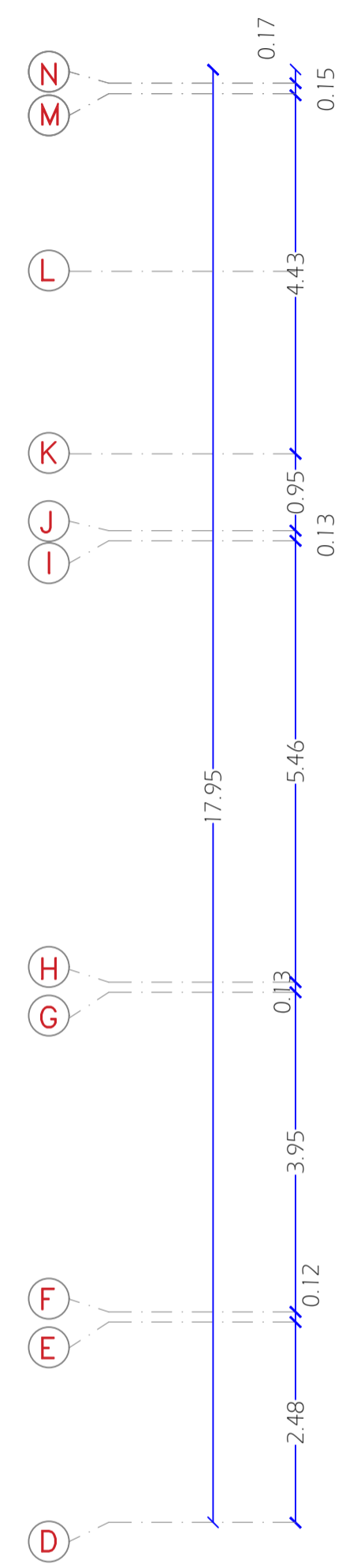
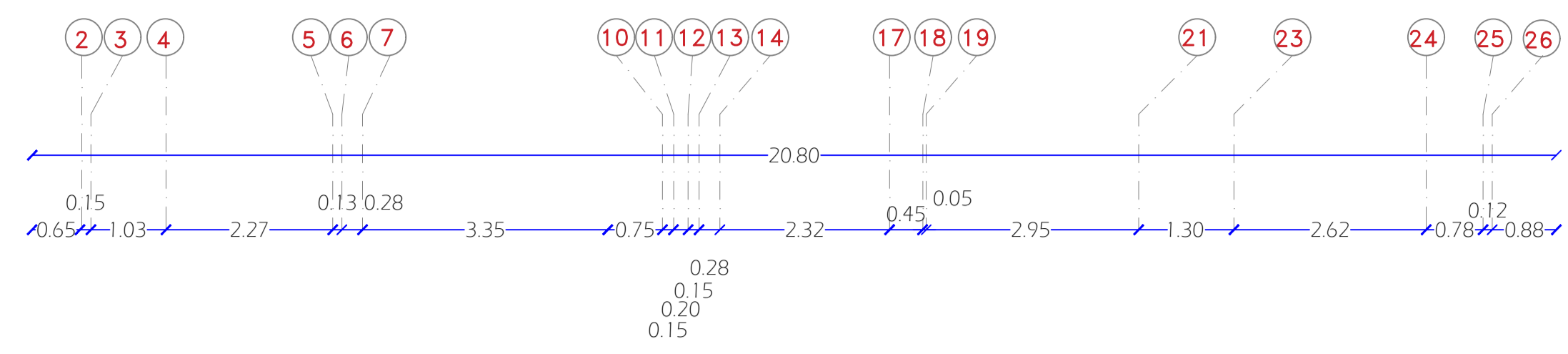
Drawing Title:
Ribs Of Slab Of Ground Floor

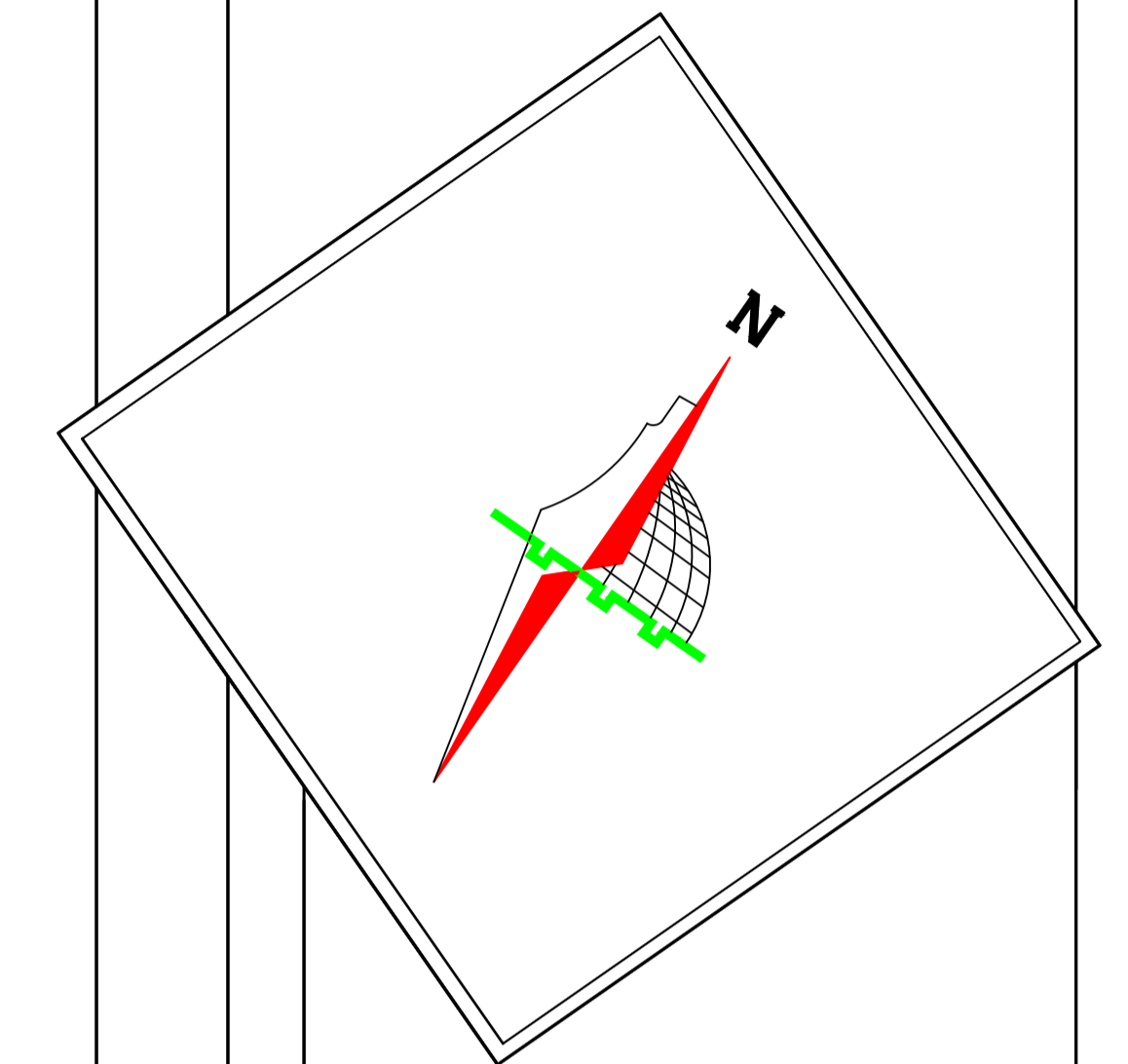
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **S21**





Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

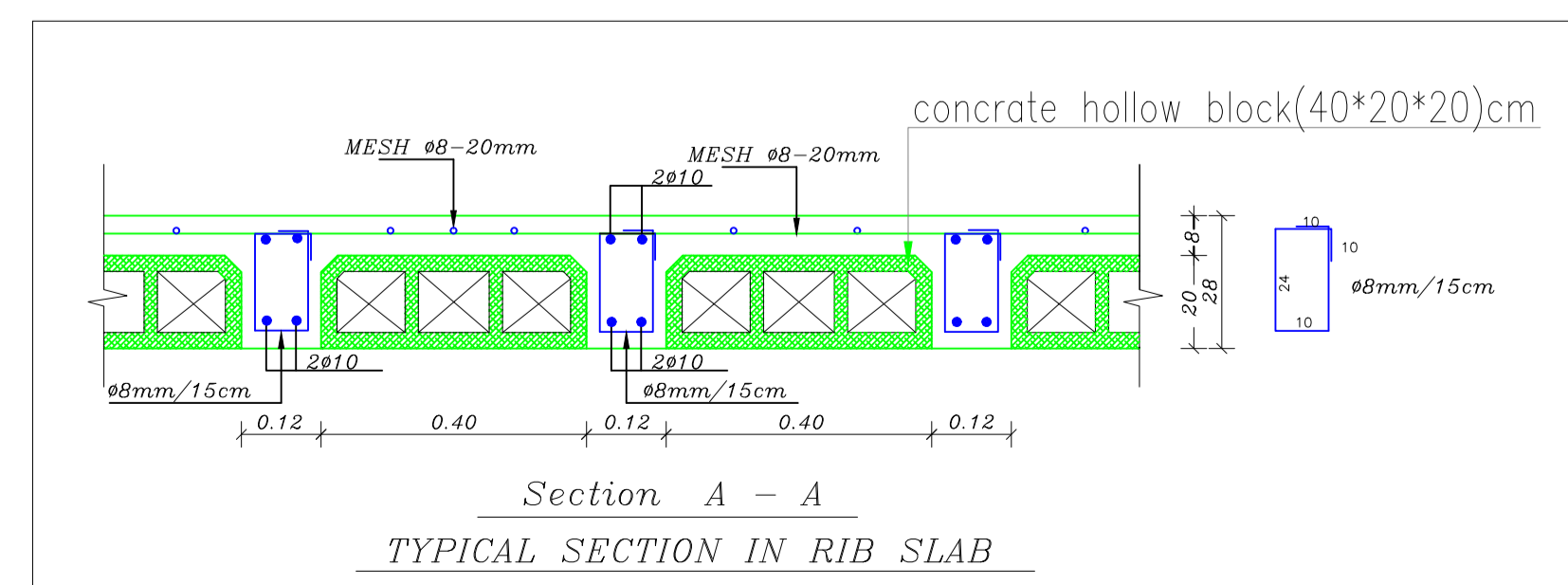
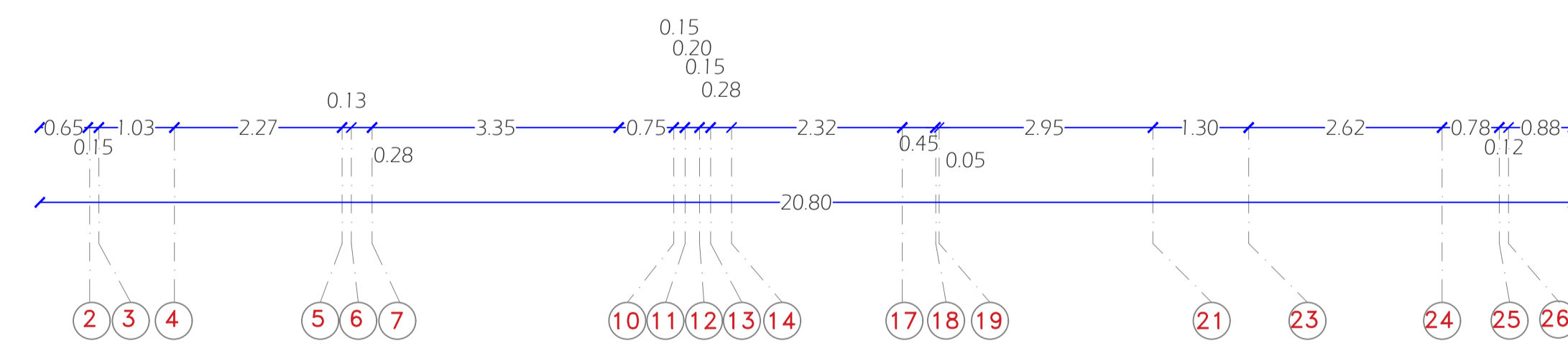
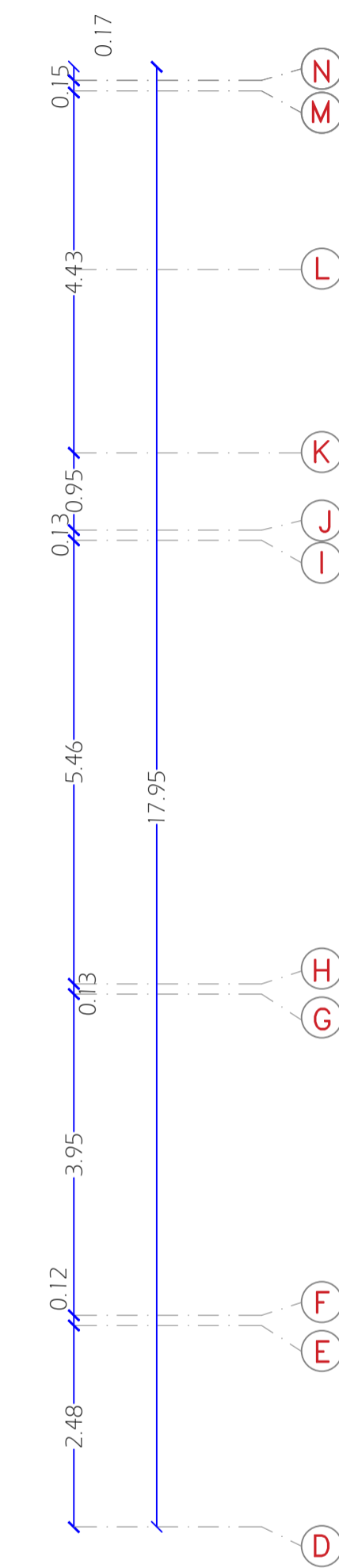
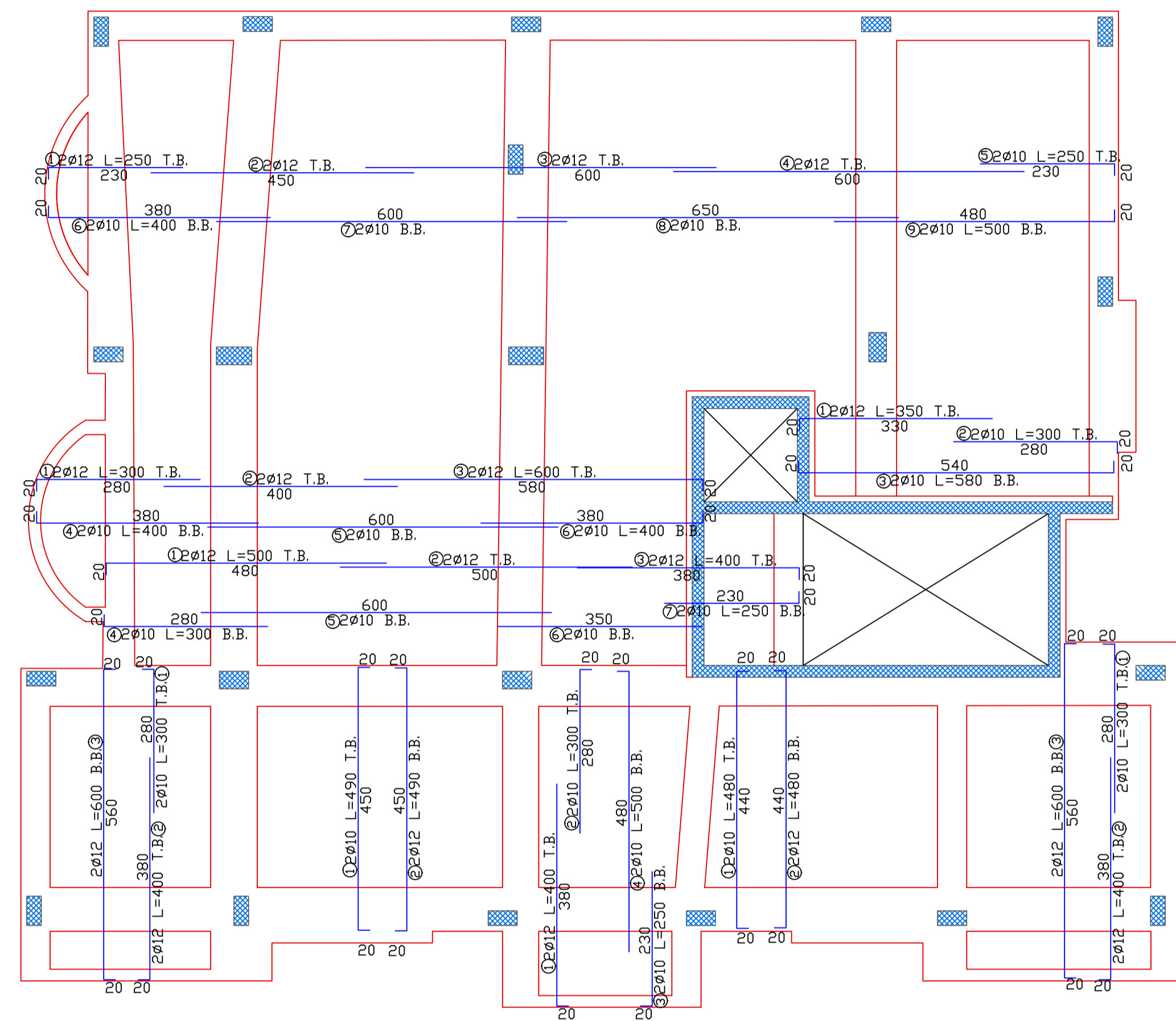
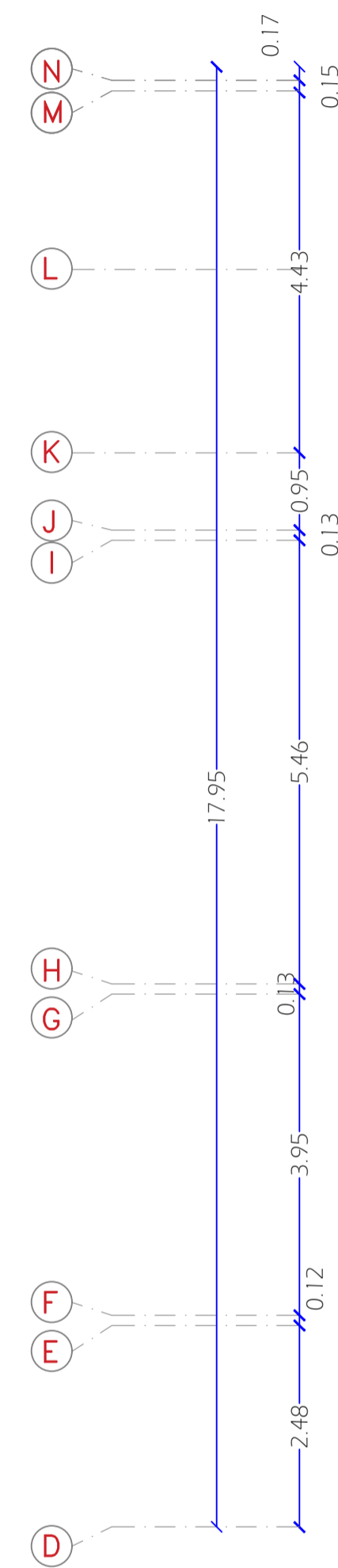
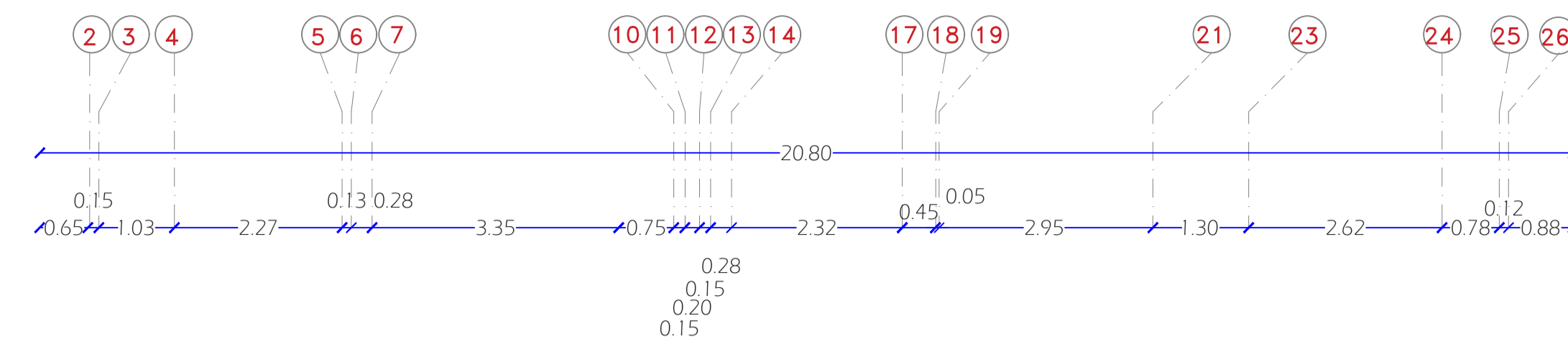
Project Name: Structural Design Of Residential Villa

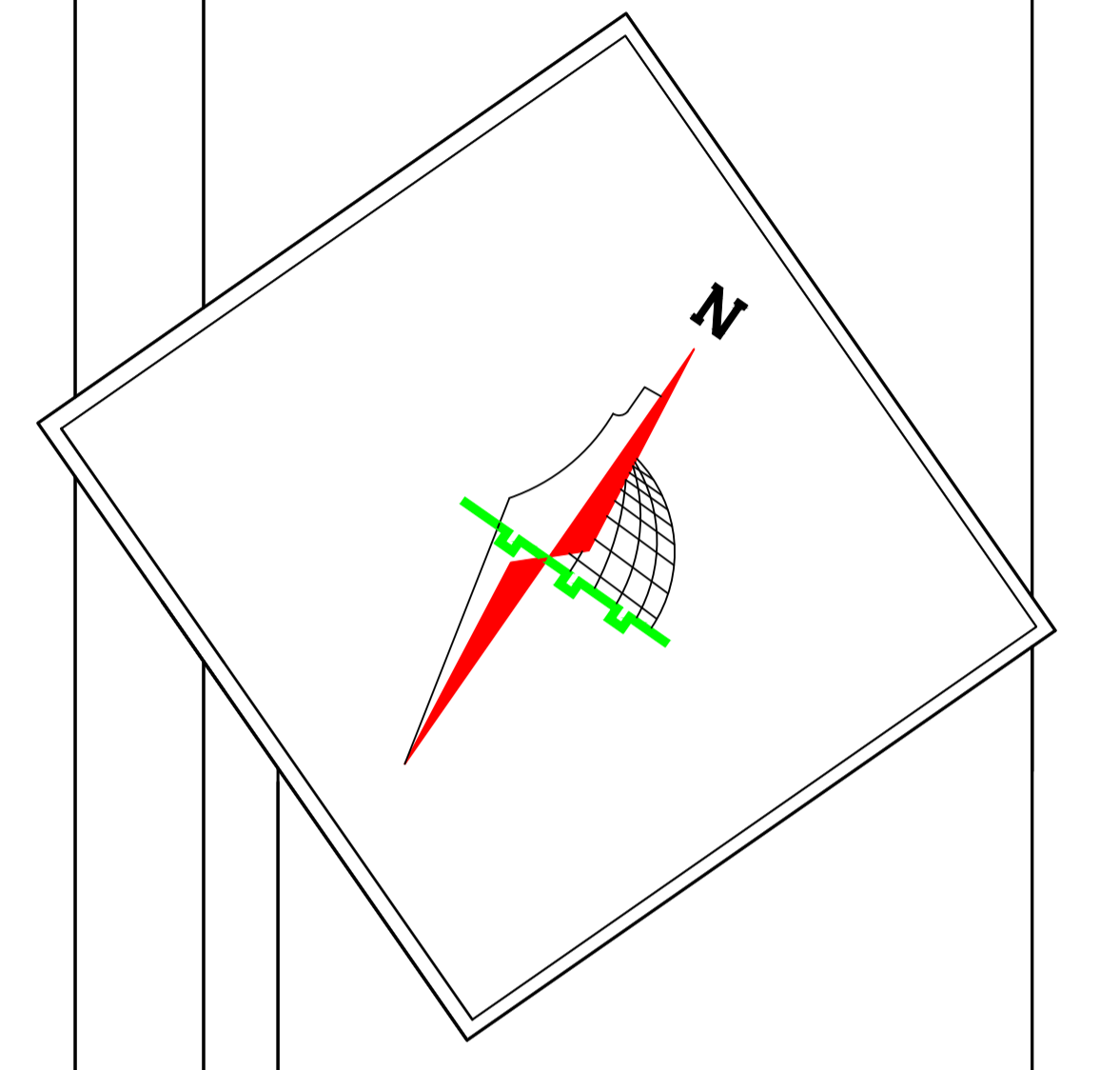
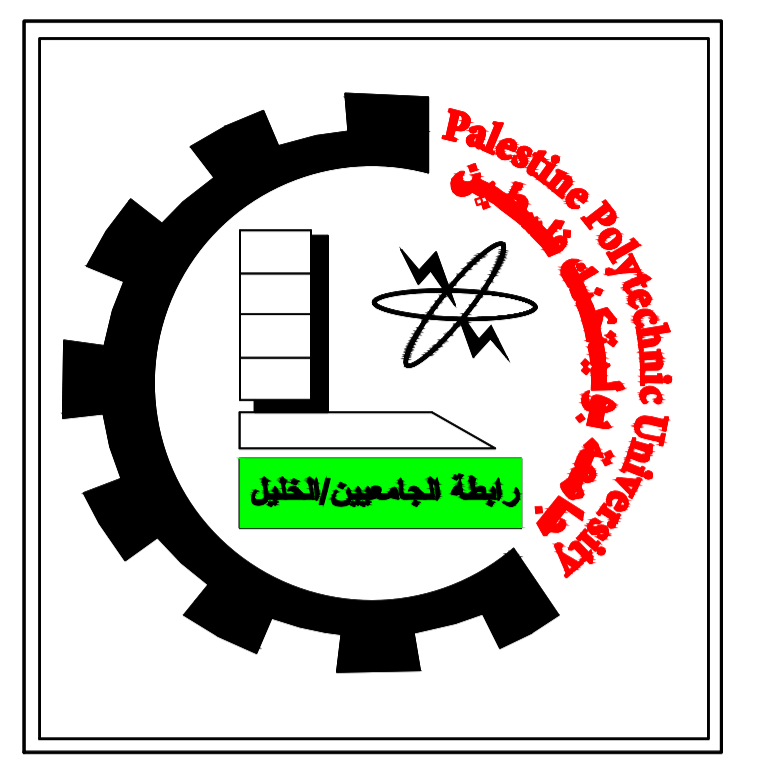
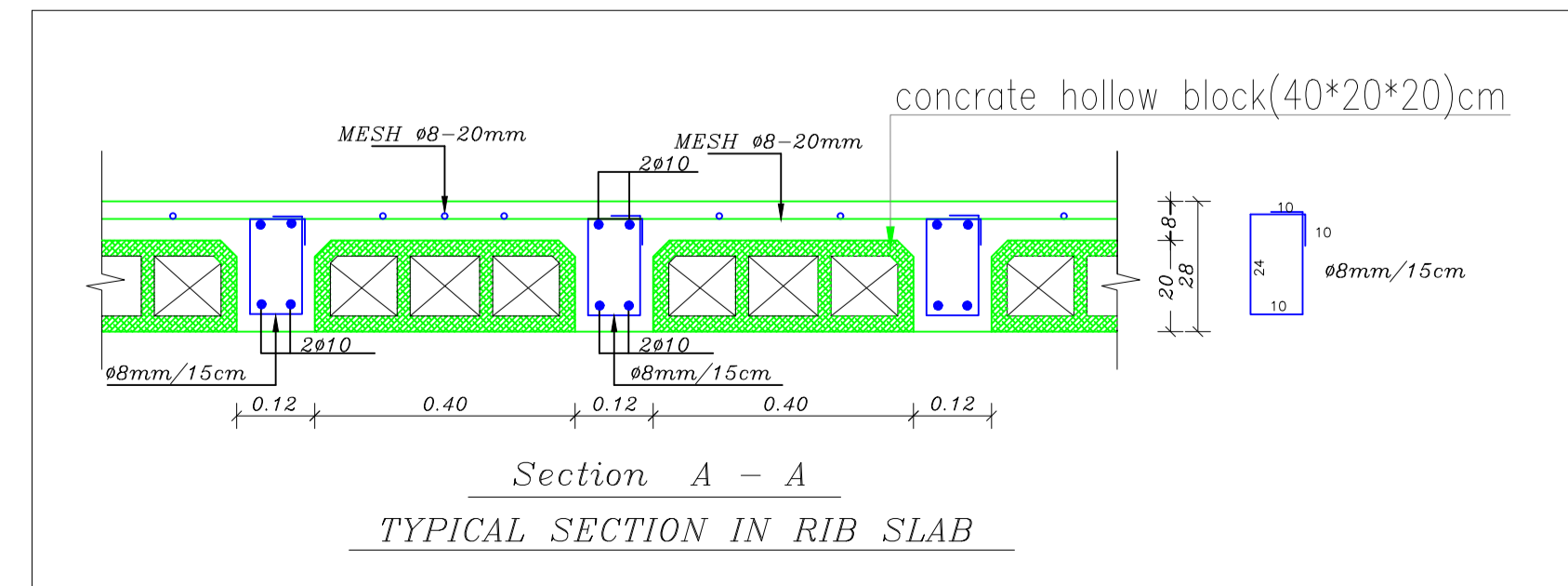
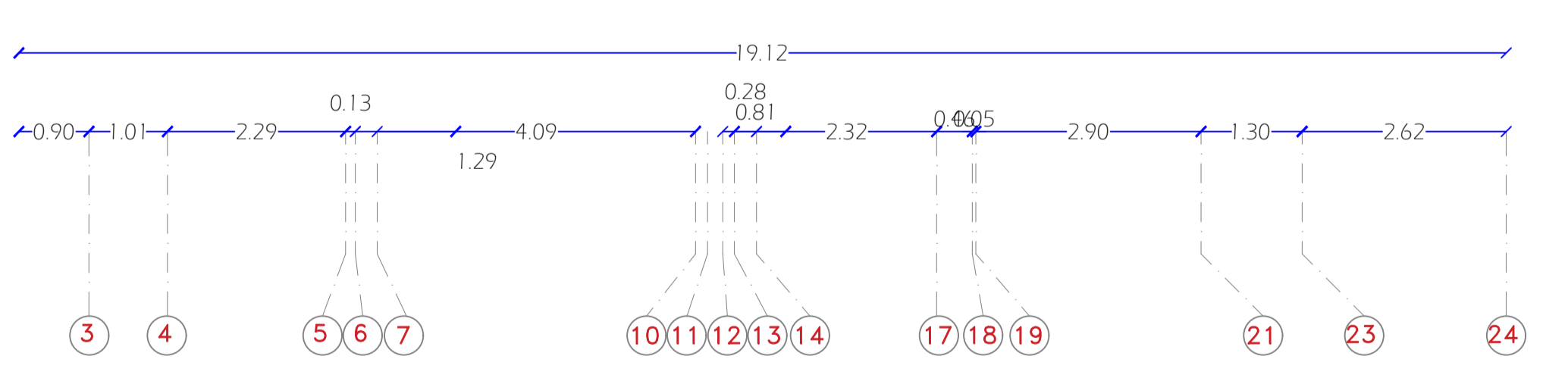
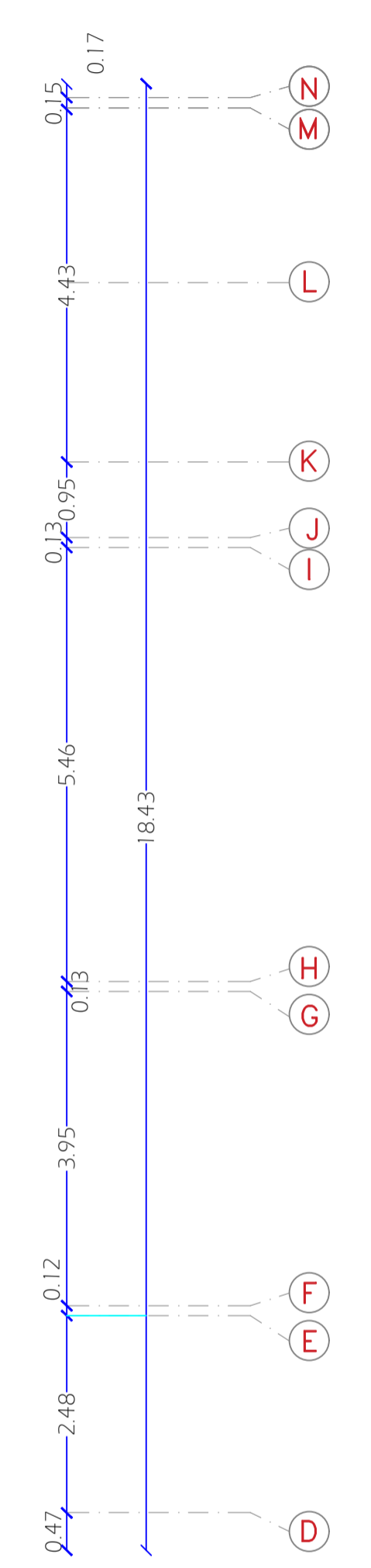
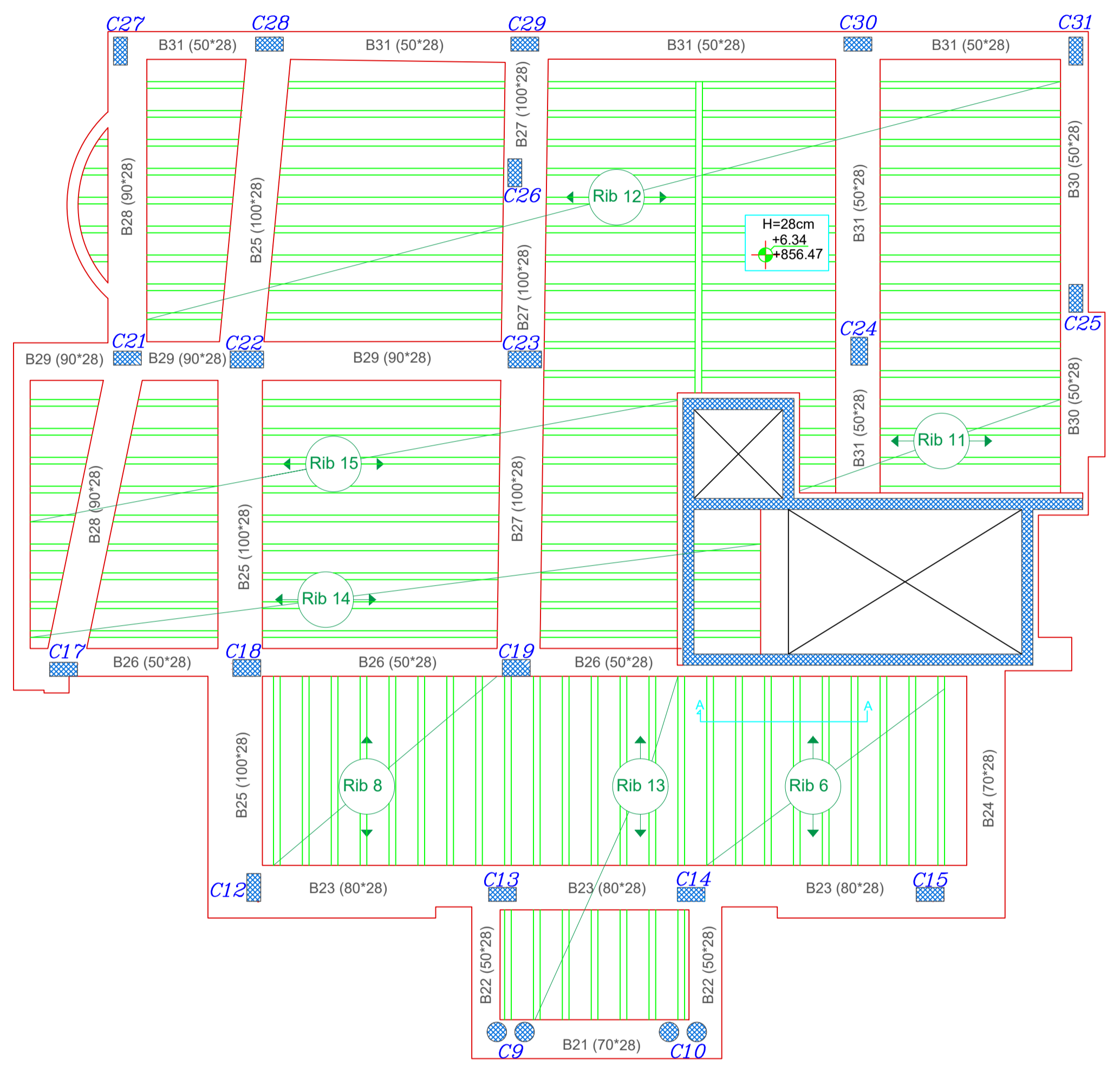
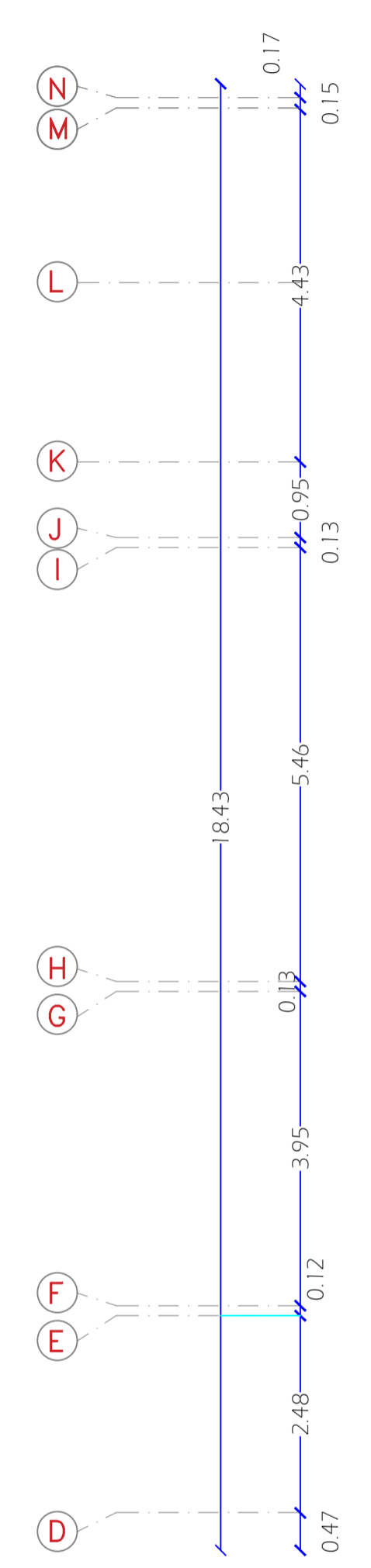
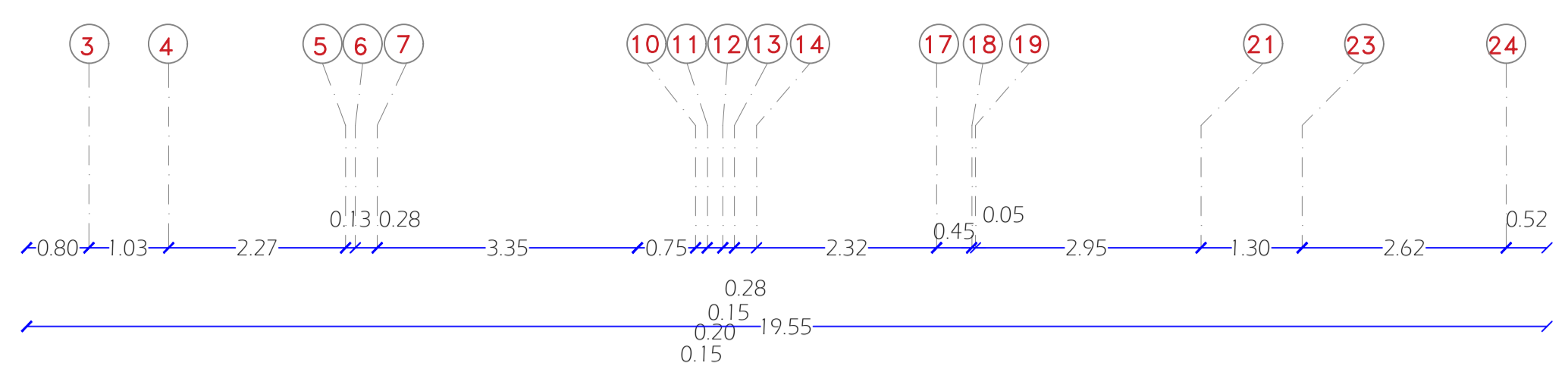
Drawing Title:
Reinforcement Of Slab Of Ground Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/100
Drawing #	S22





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

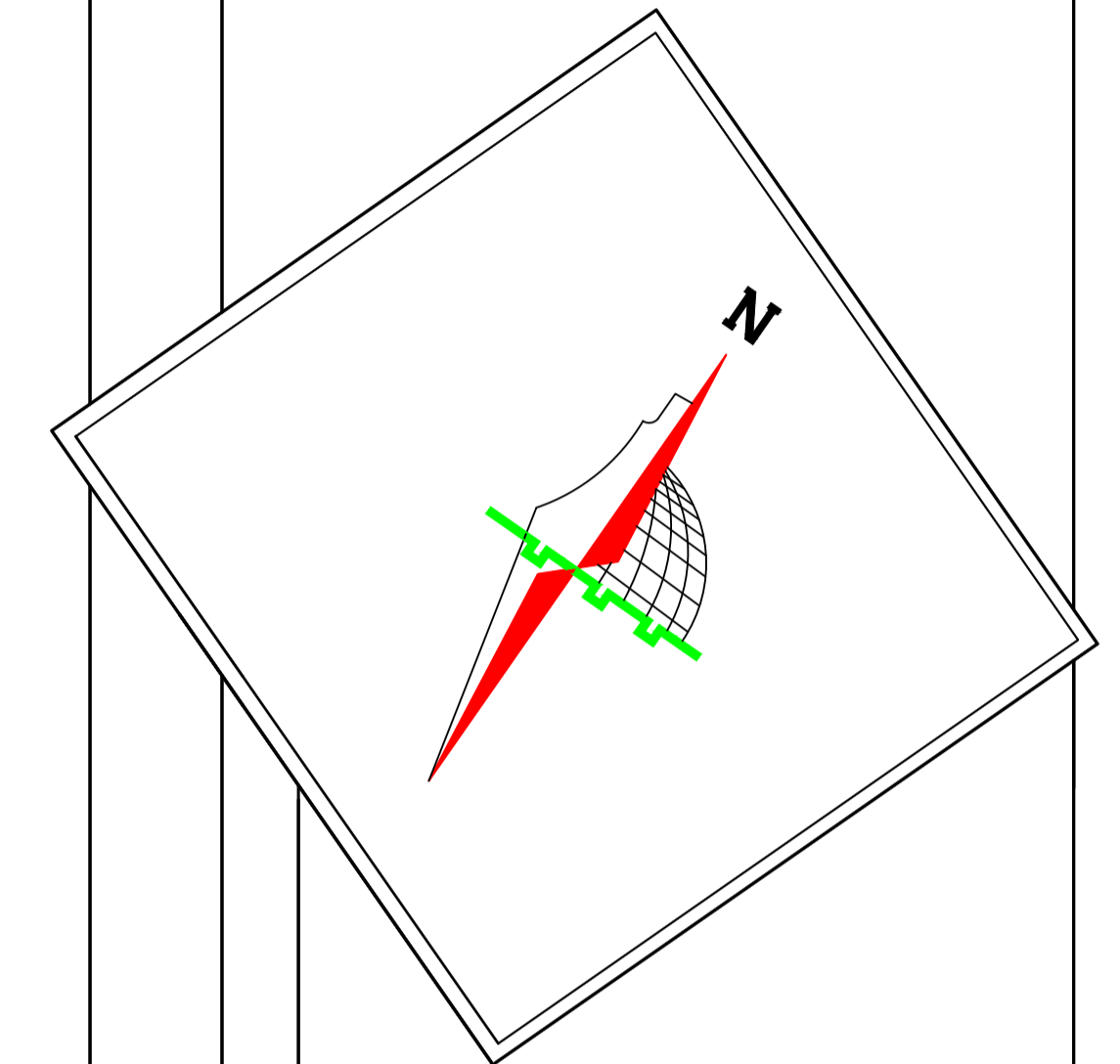
Drawing Title:
Ribs Of Slab Of First Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/100

Drawing # **S23**



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

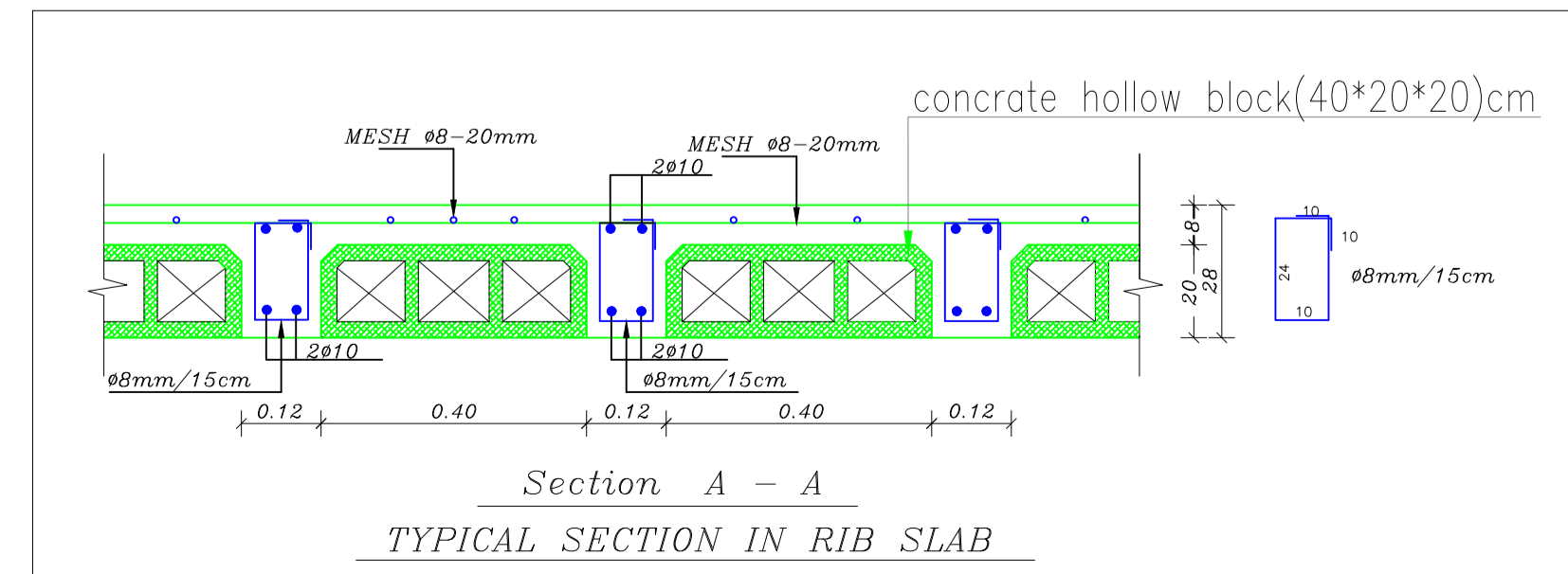
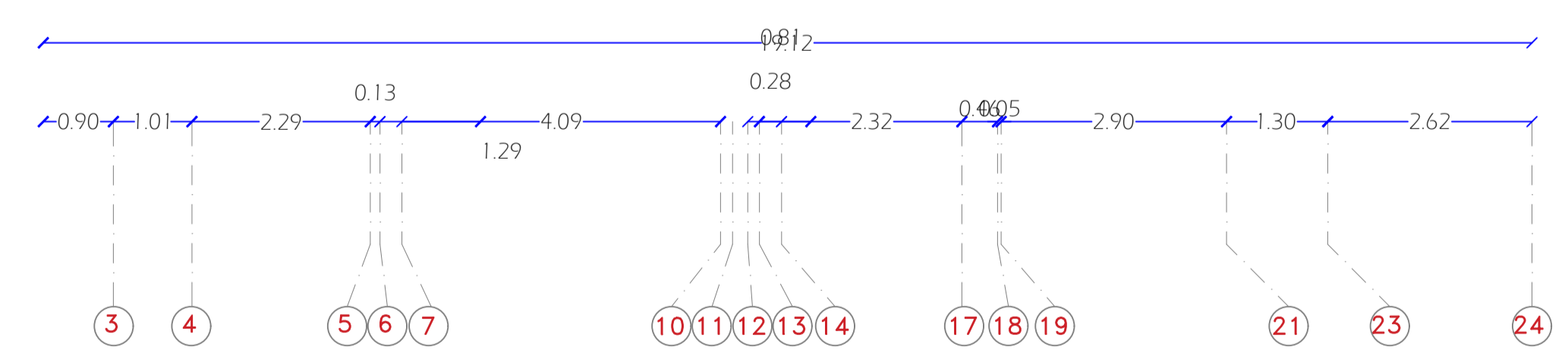
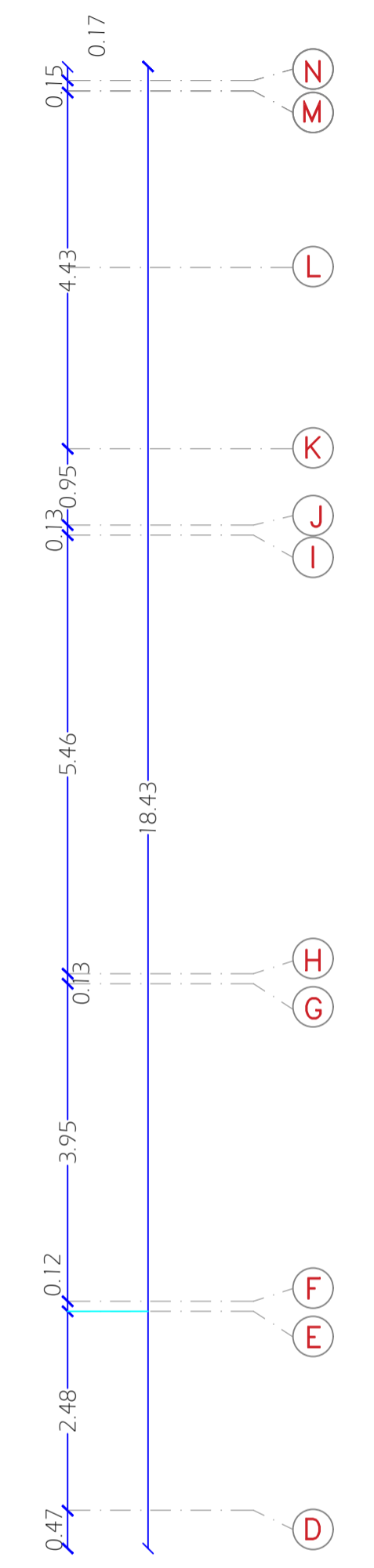
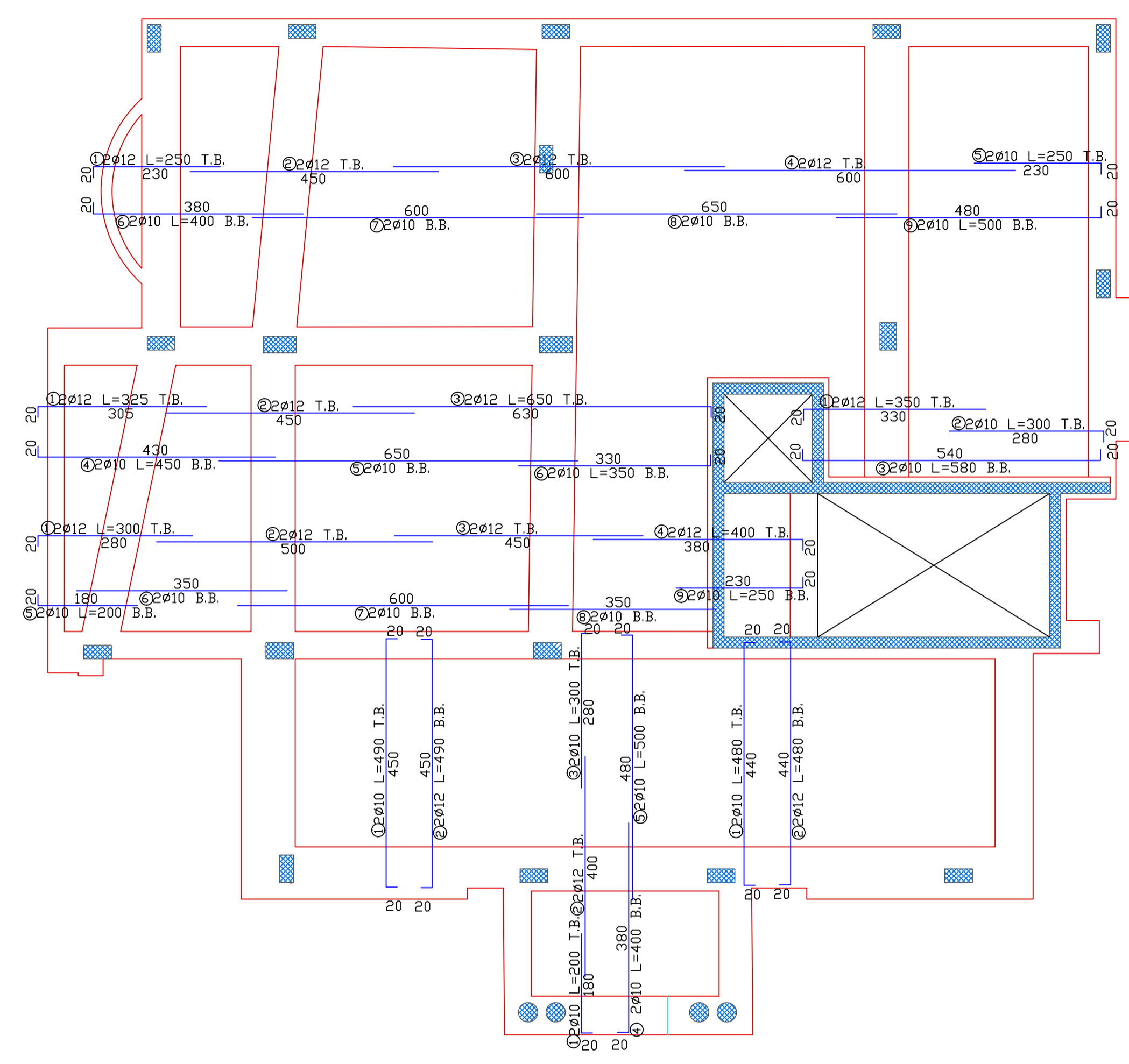
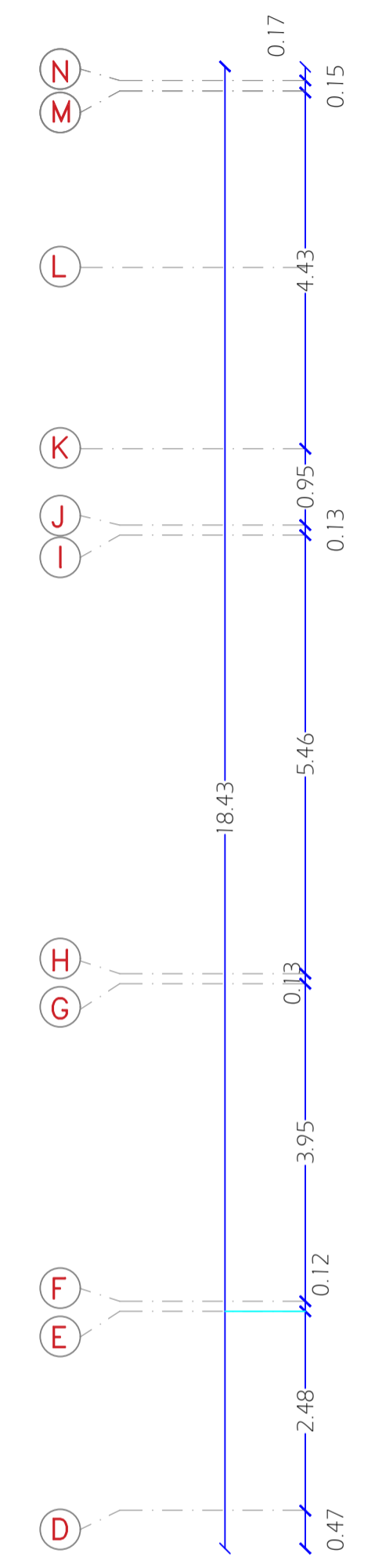
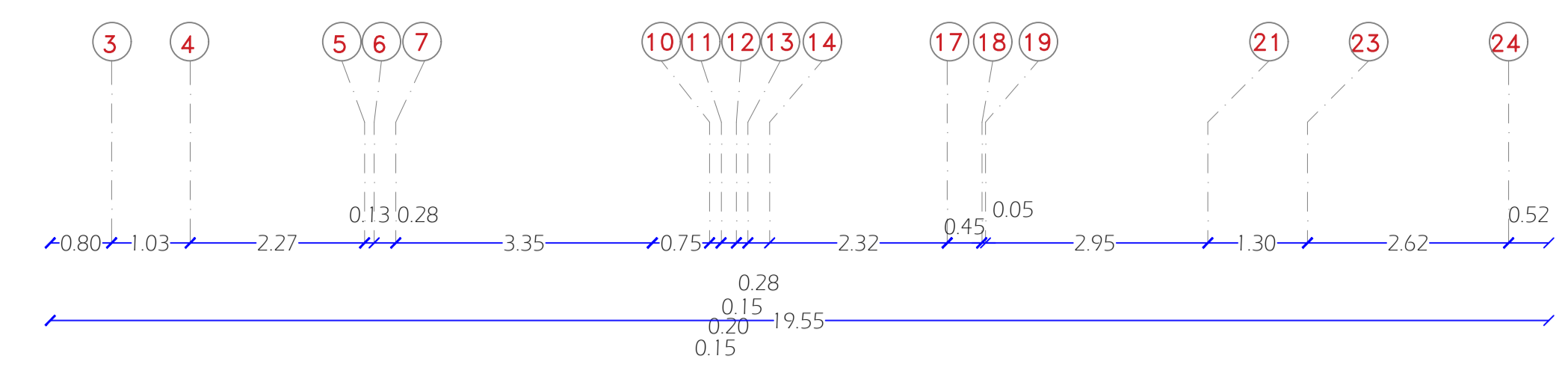
Project Name: Structural Design Of Residential Villa

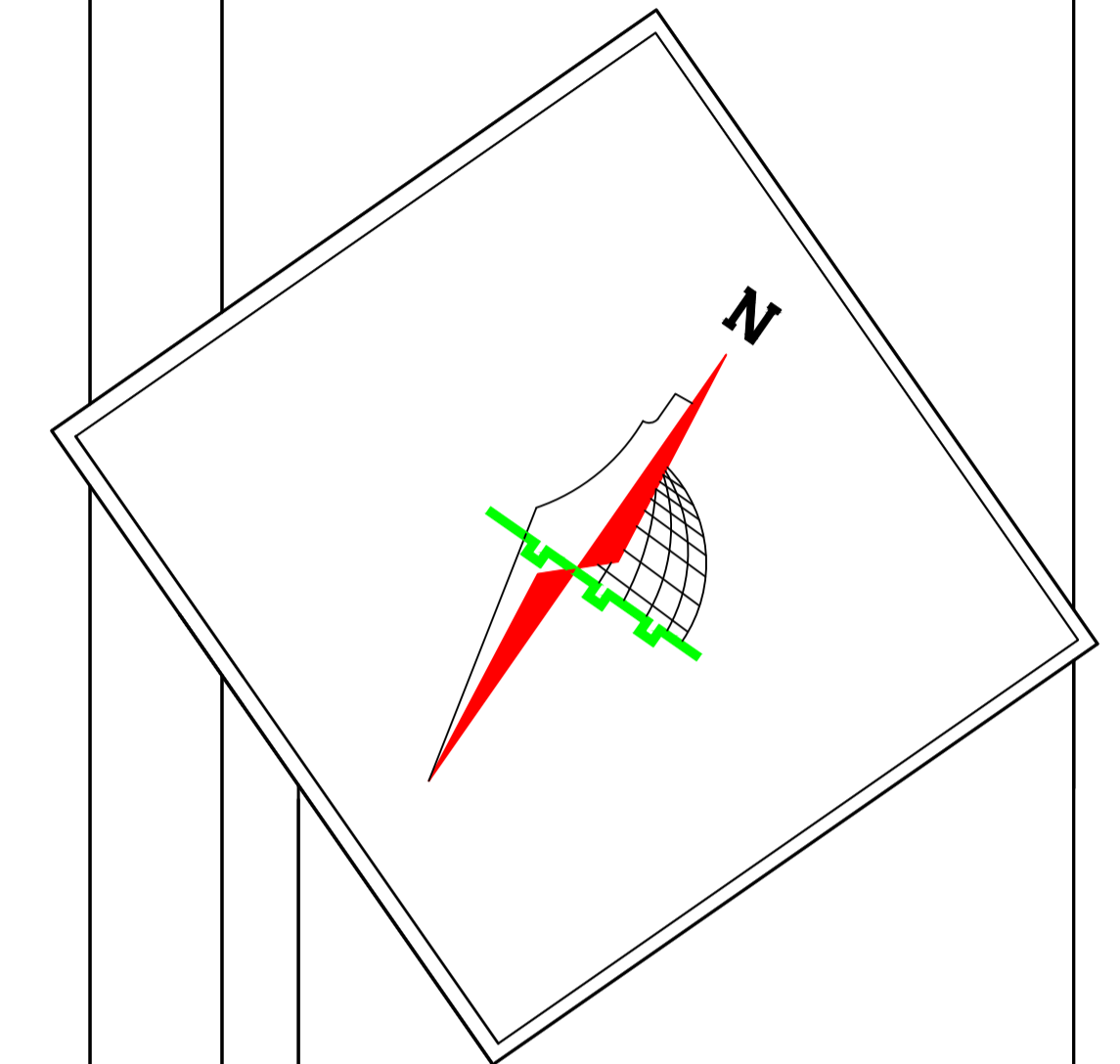
Drawing Title:
Reinforcement Of Slab Of First Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/100
Drawing #	S24





Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

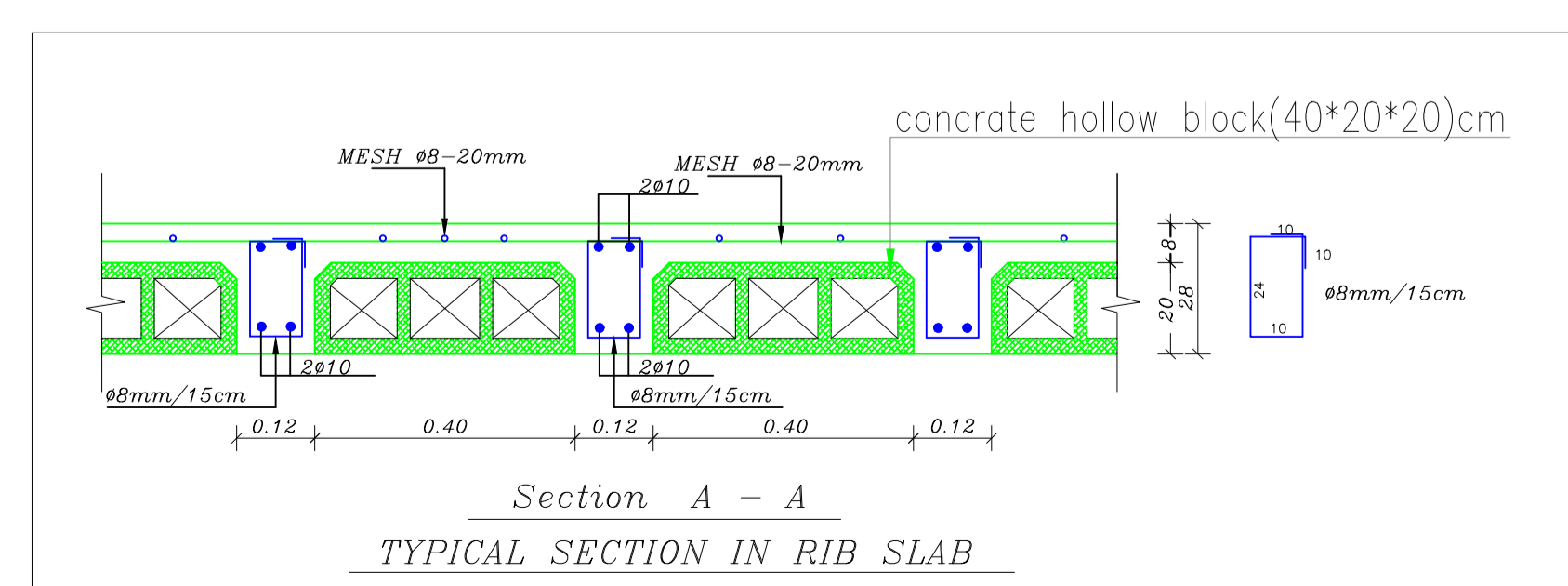
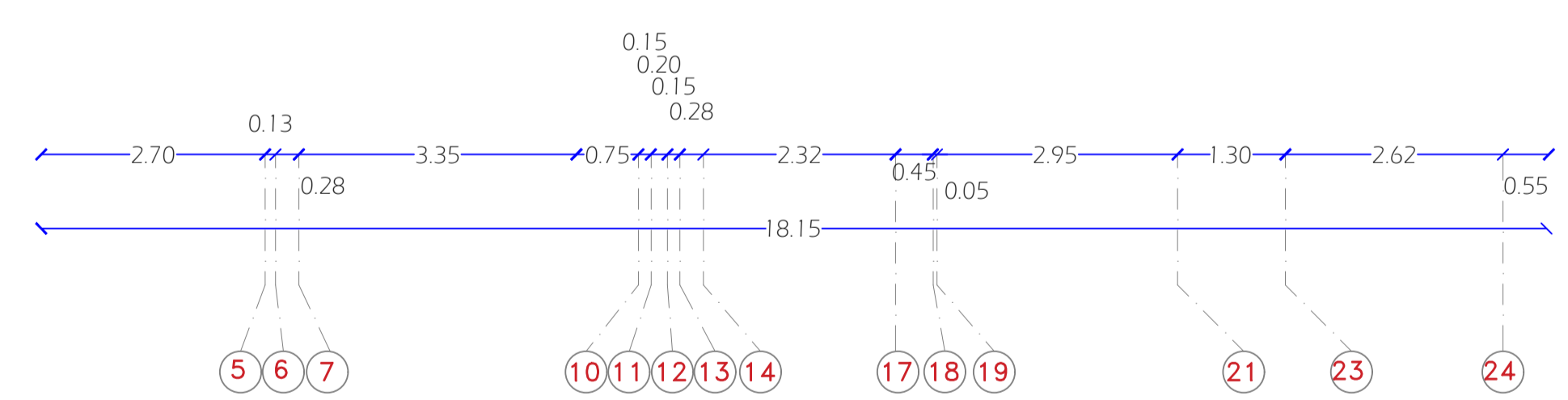
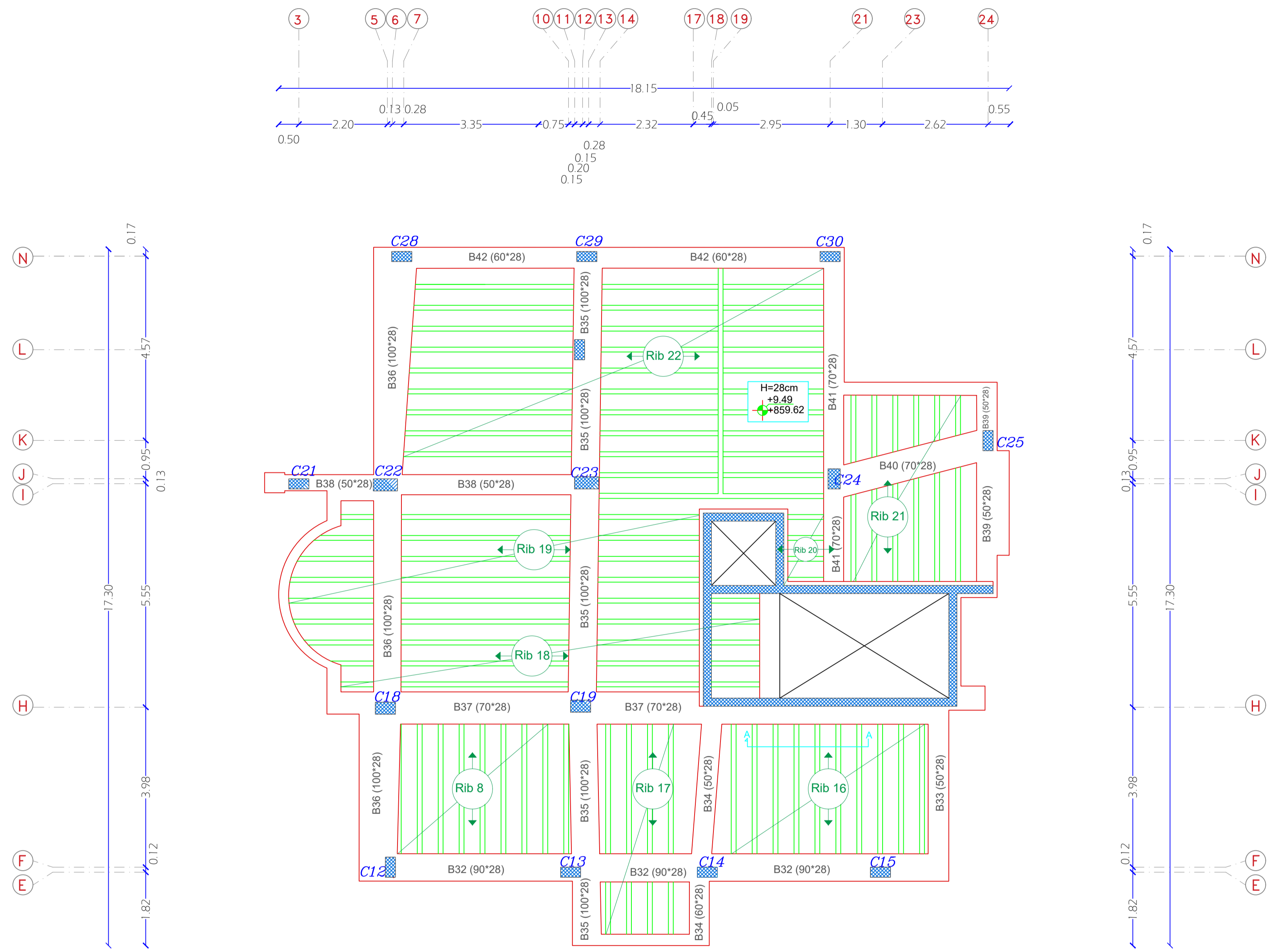
Project Name: Structural Design Of Residential Villa

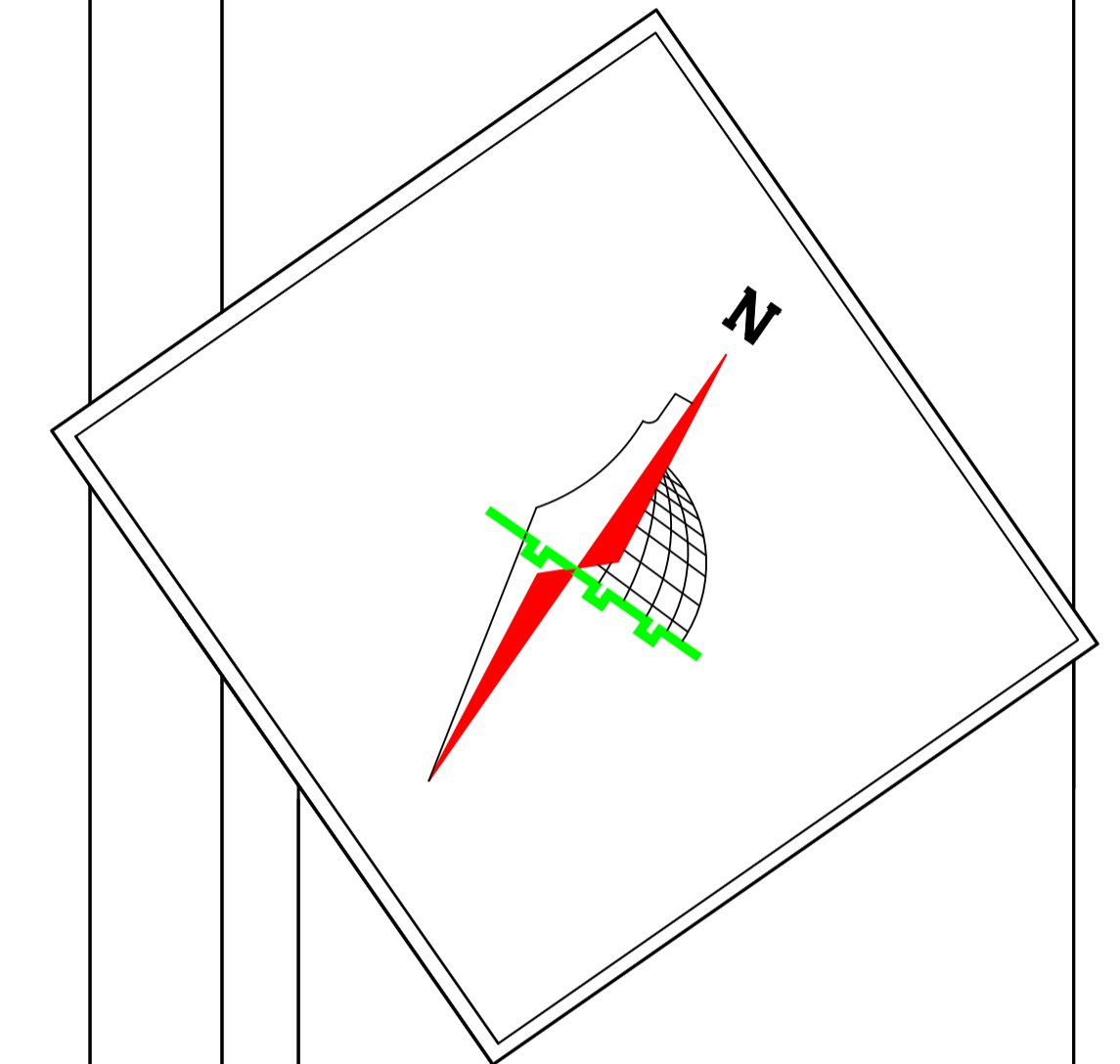
Drawing Title:
Ribs Of Slab Of Second Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/100
Drawing #	S25





Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

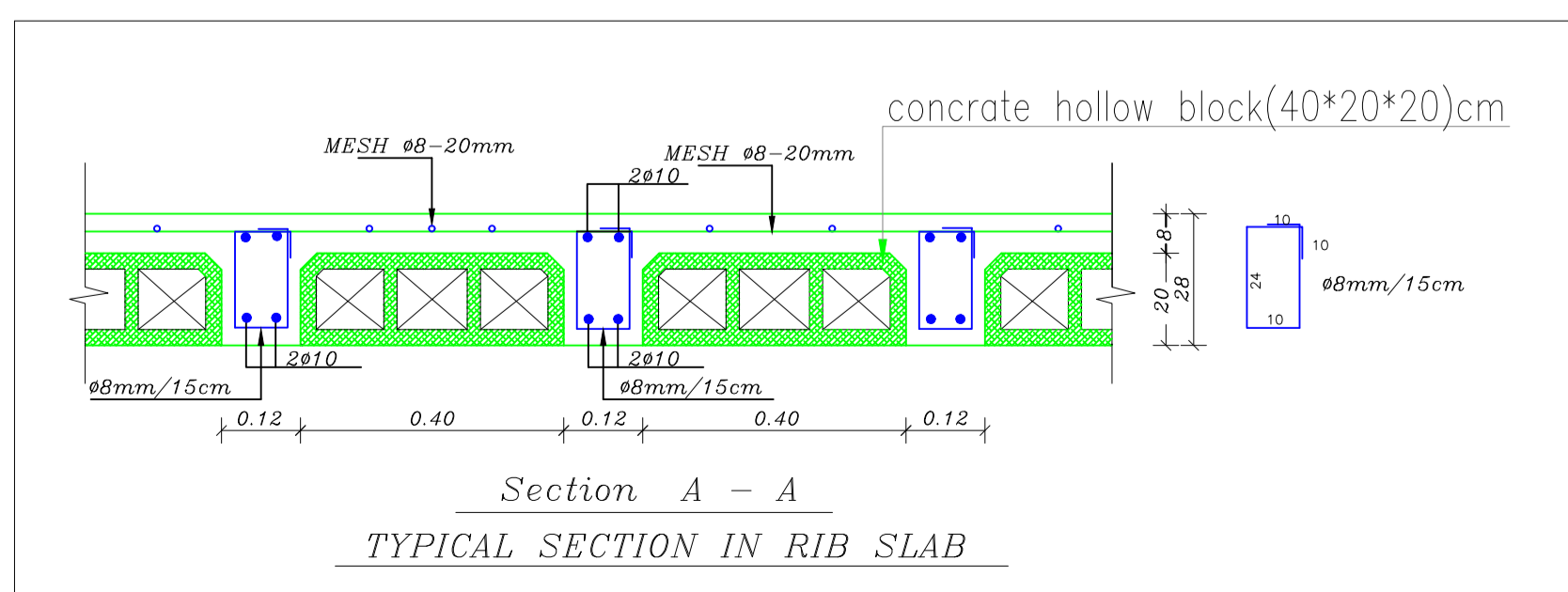
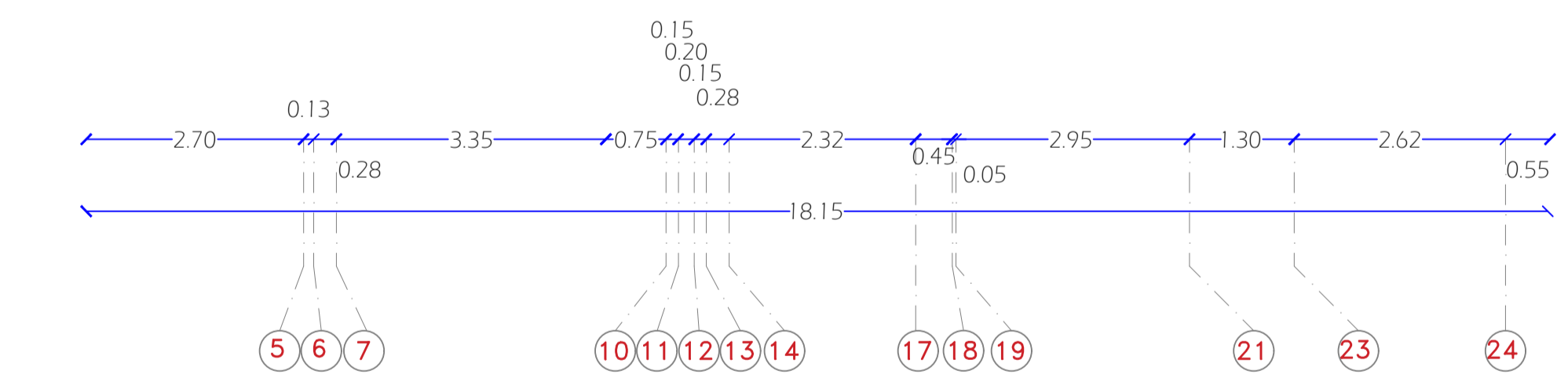
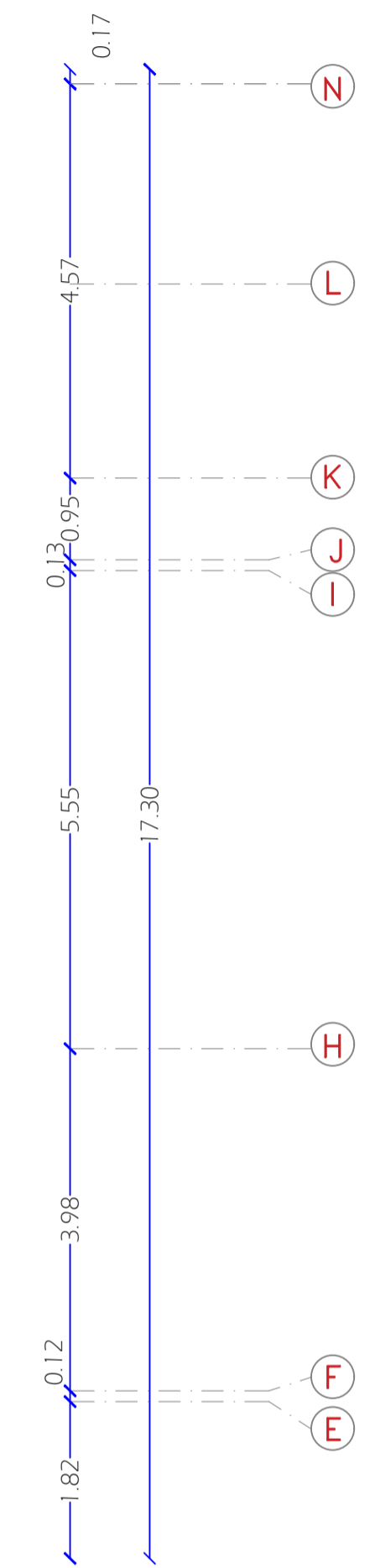
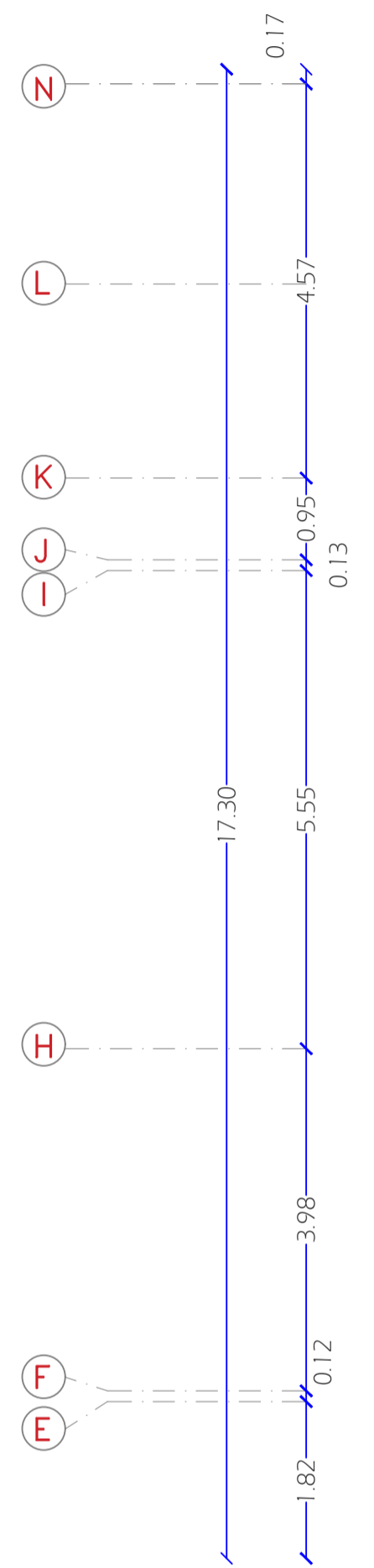
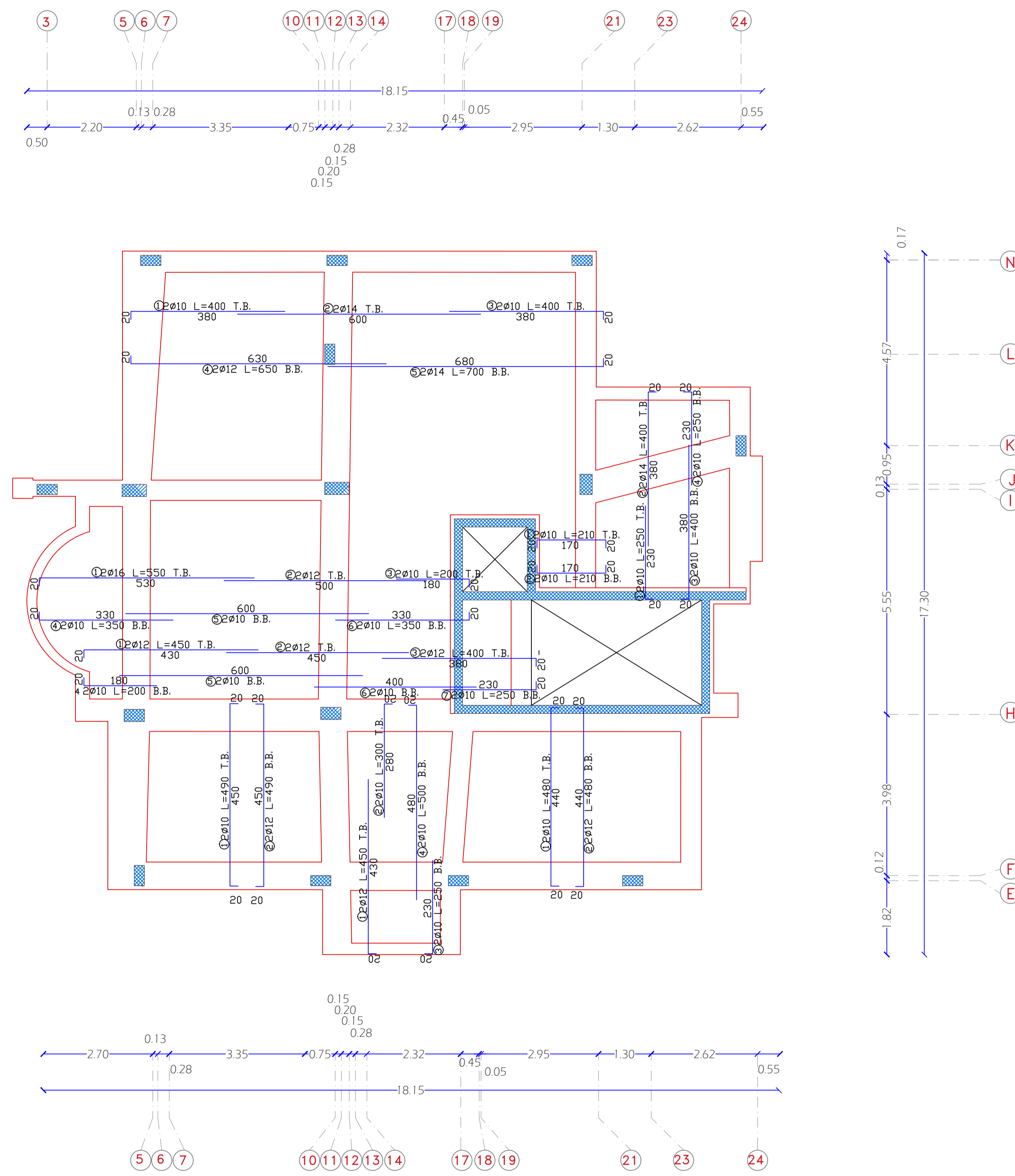
Project Name: Structural Design Of Residential Villa

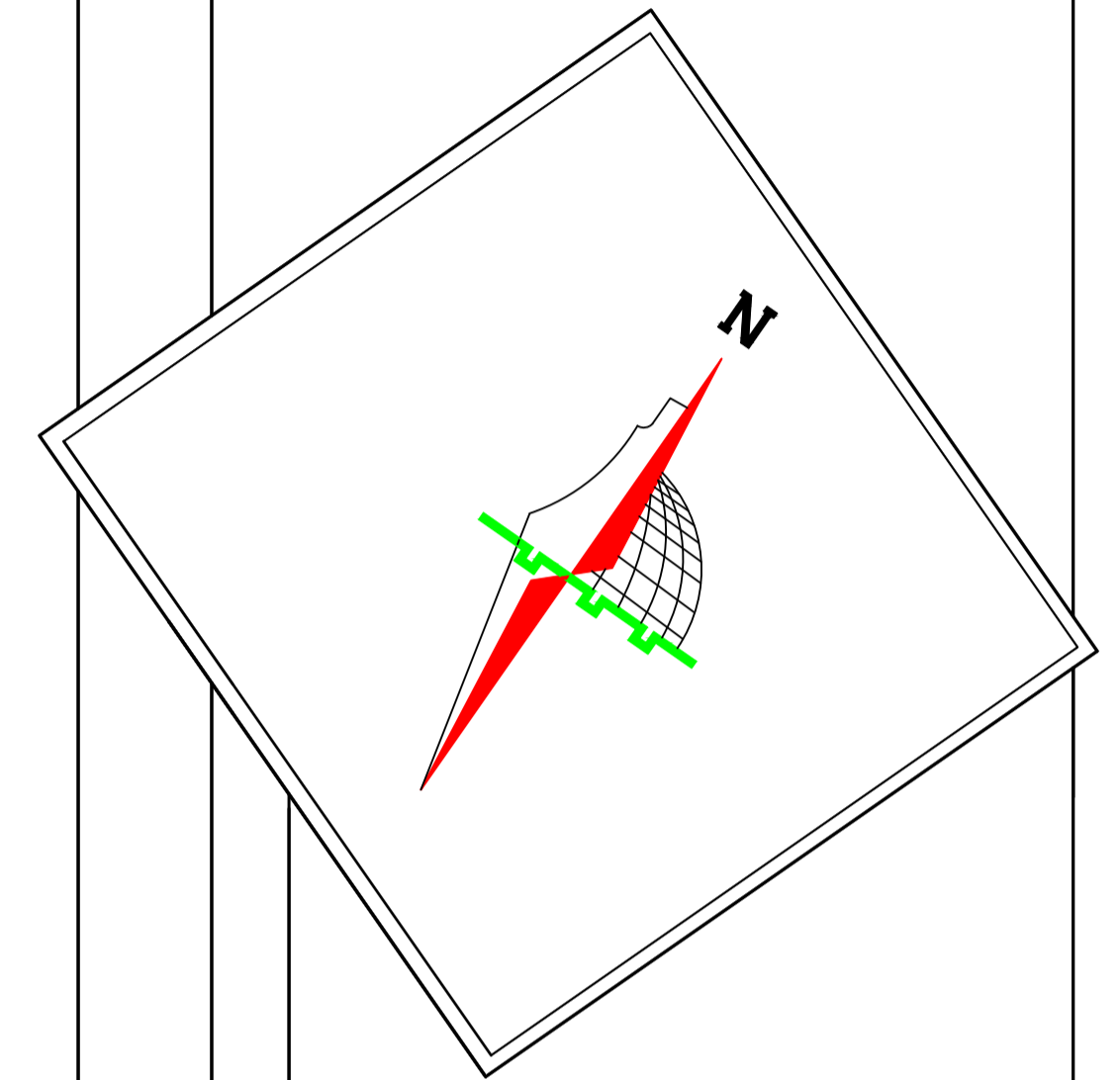
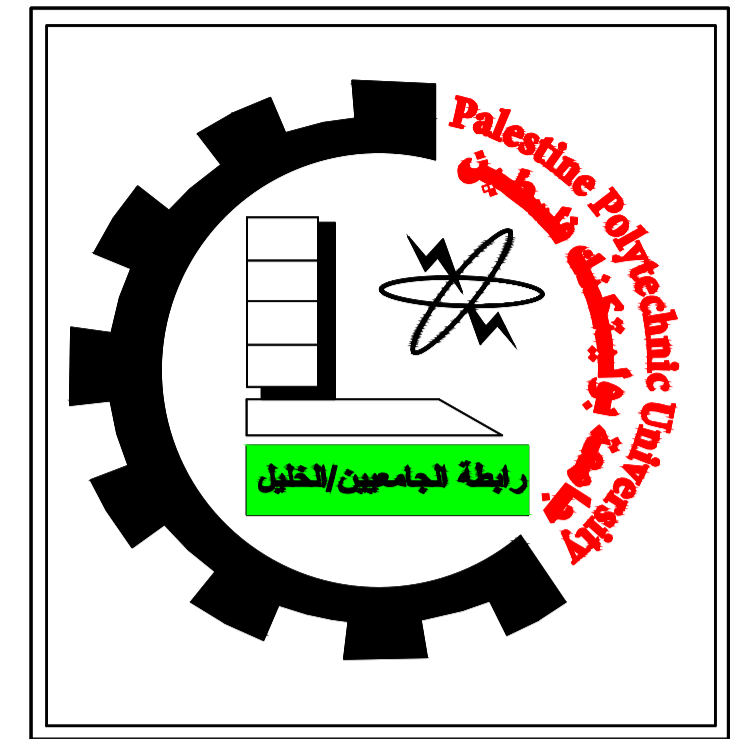
Drawing Title:
Reinforcement Of Slab Of Second Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/100
Drawing #	S26





Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

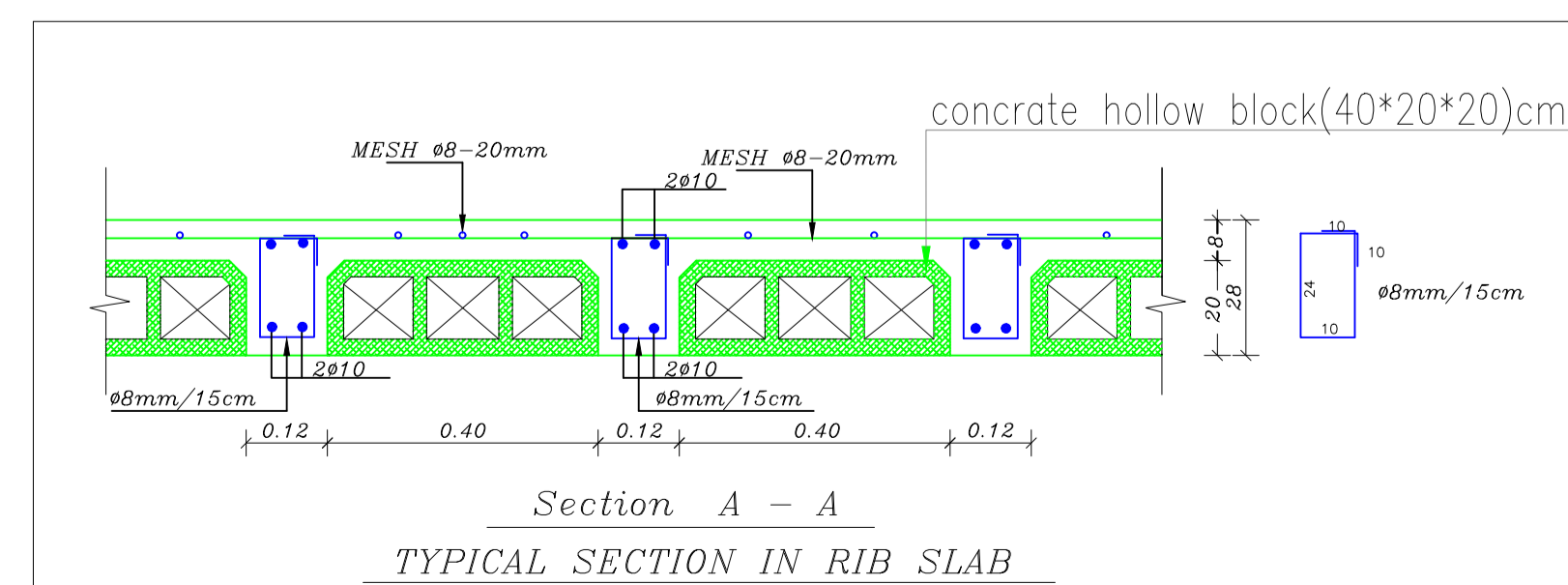
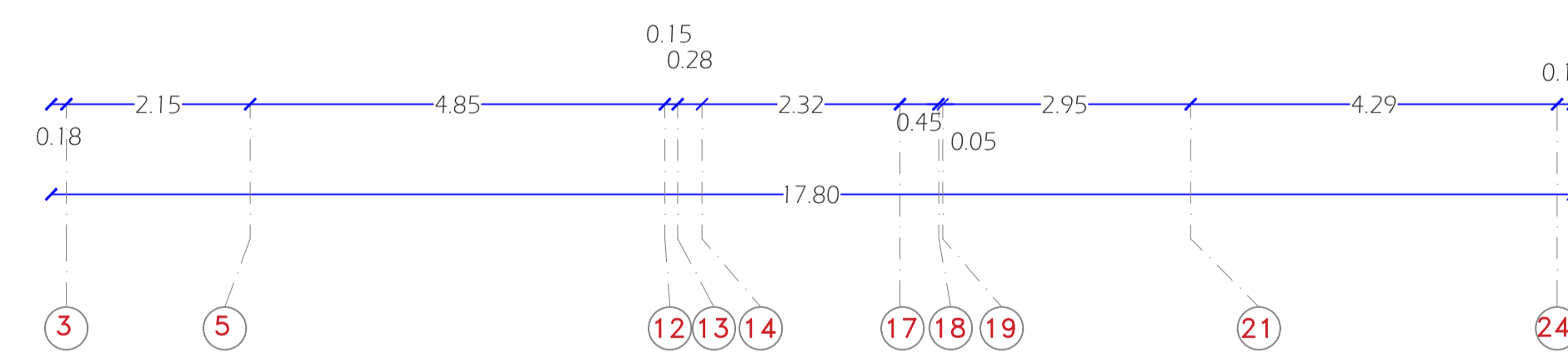
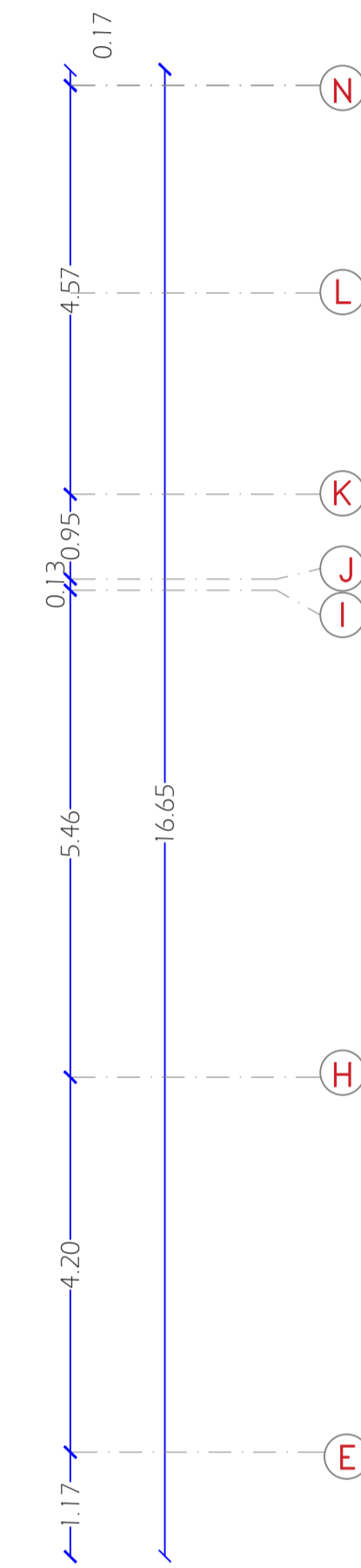
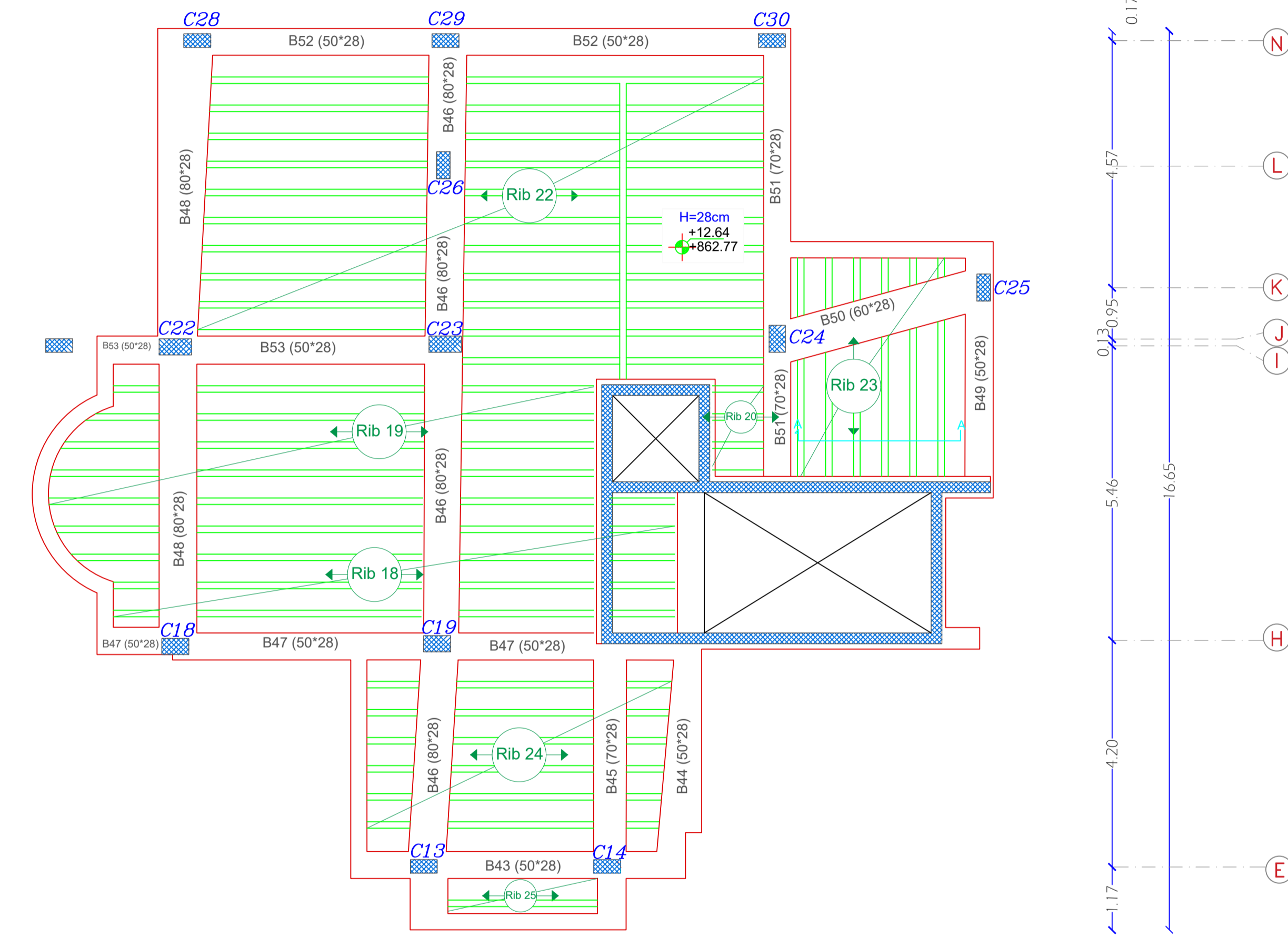
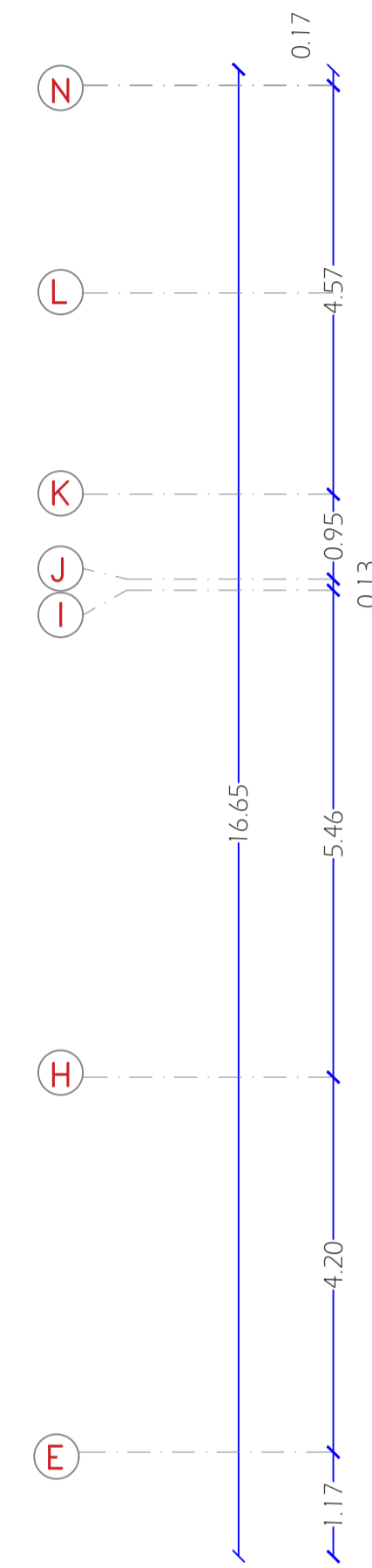
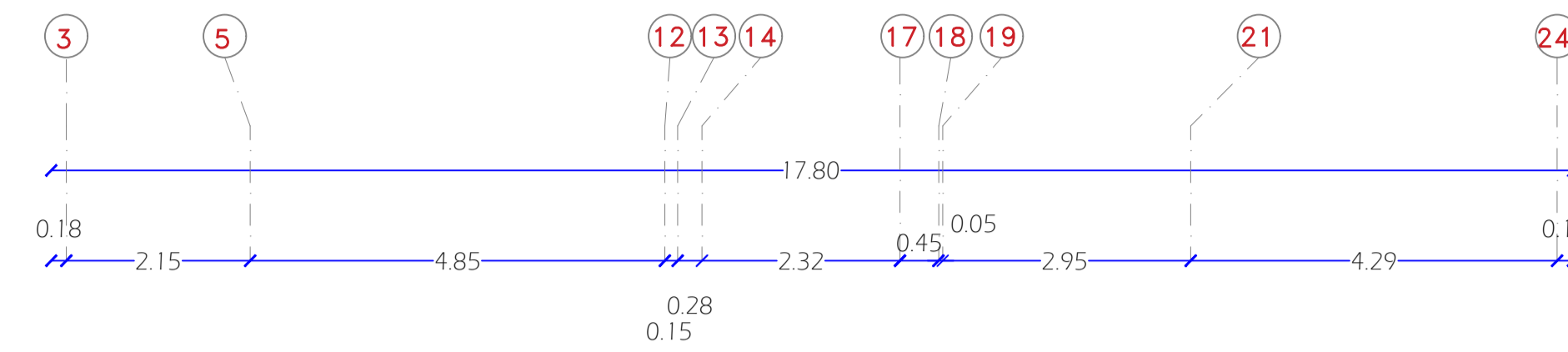
Project Name: Structural Design Of Residential Villa

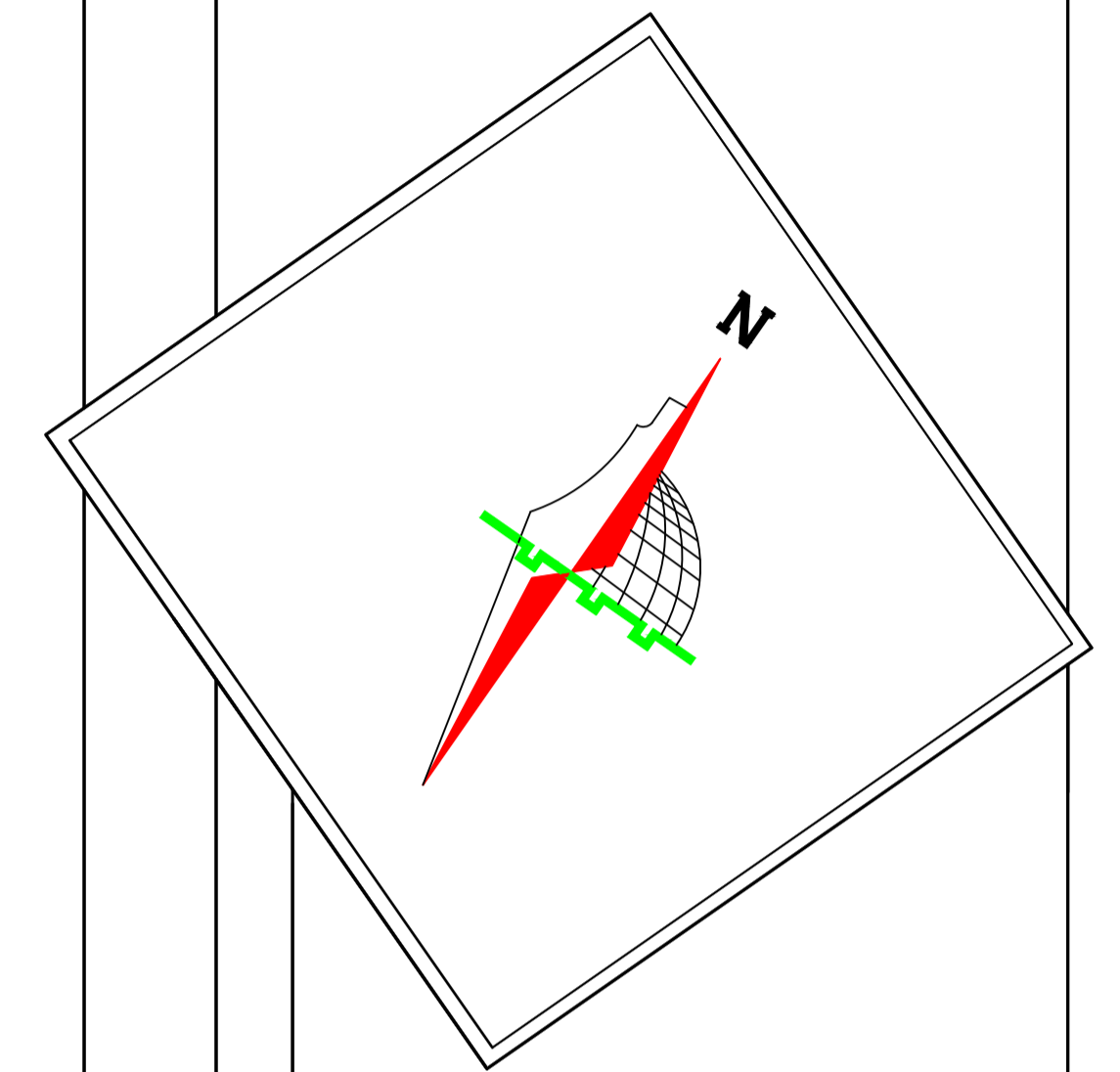
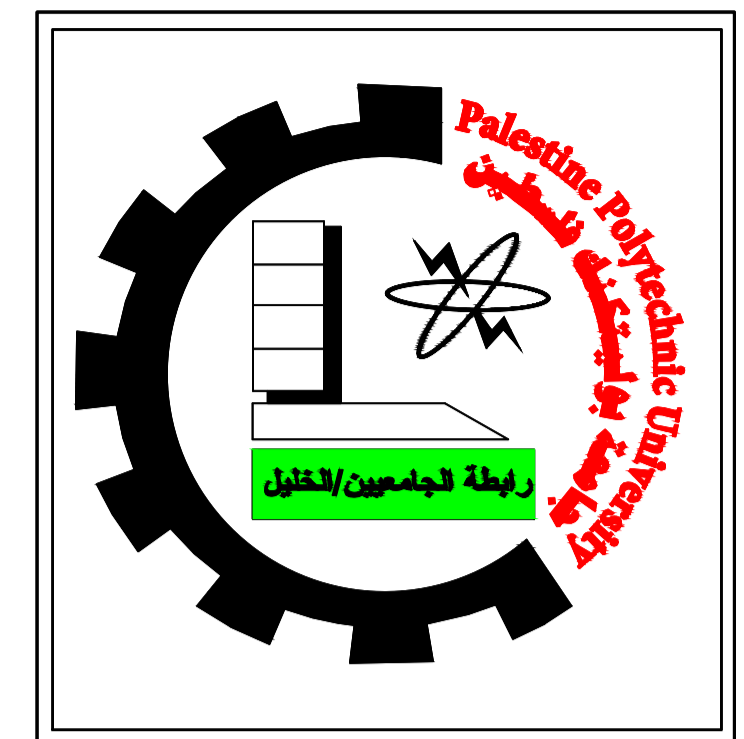
Drawing Title:
Ribs Of Slab Of Third Floor

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/100
Drawing #	S27





Palestine Polytechnic University
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 Civil and Architectural Engineering Department
 Counstruction Engineering

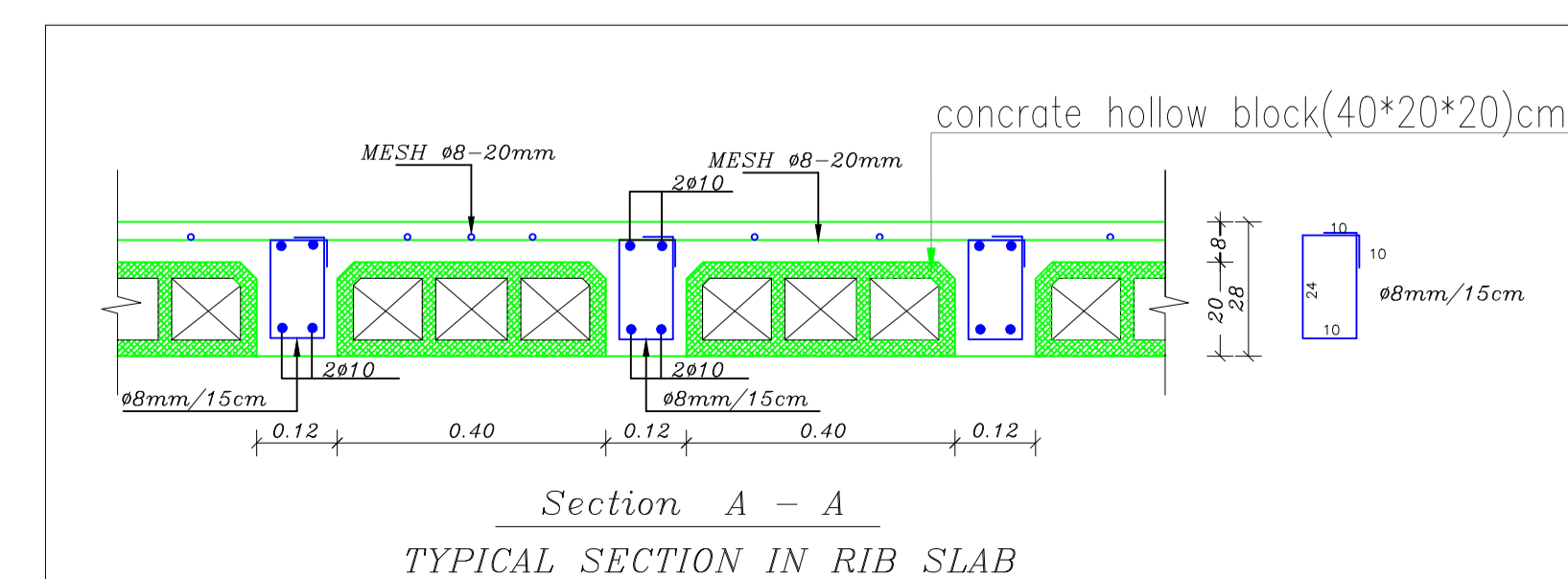
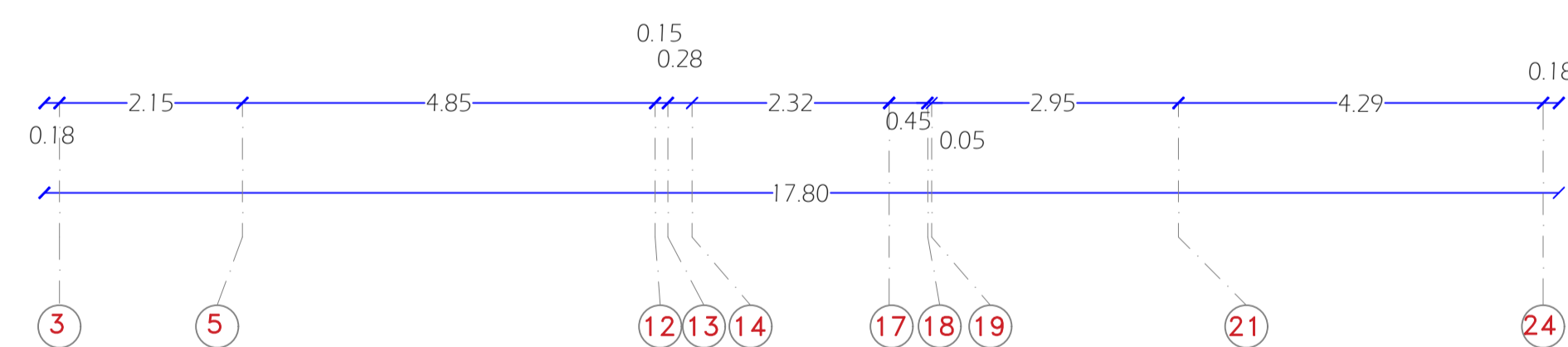
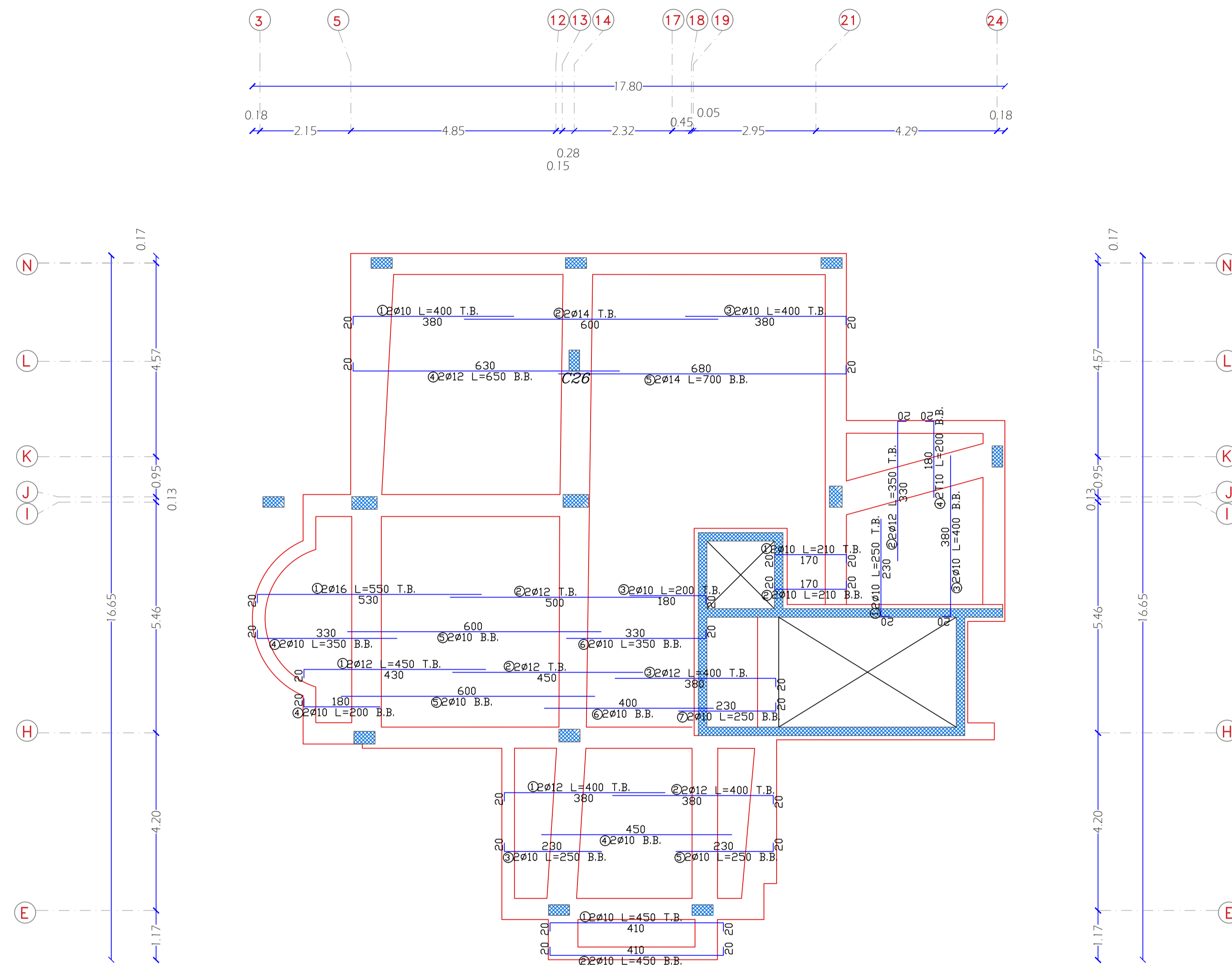
Project Name: Structural Design Of Residential Villa

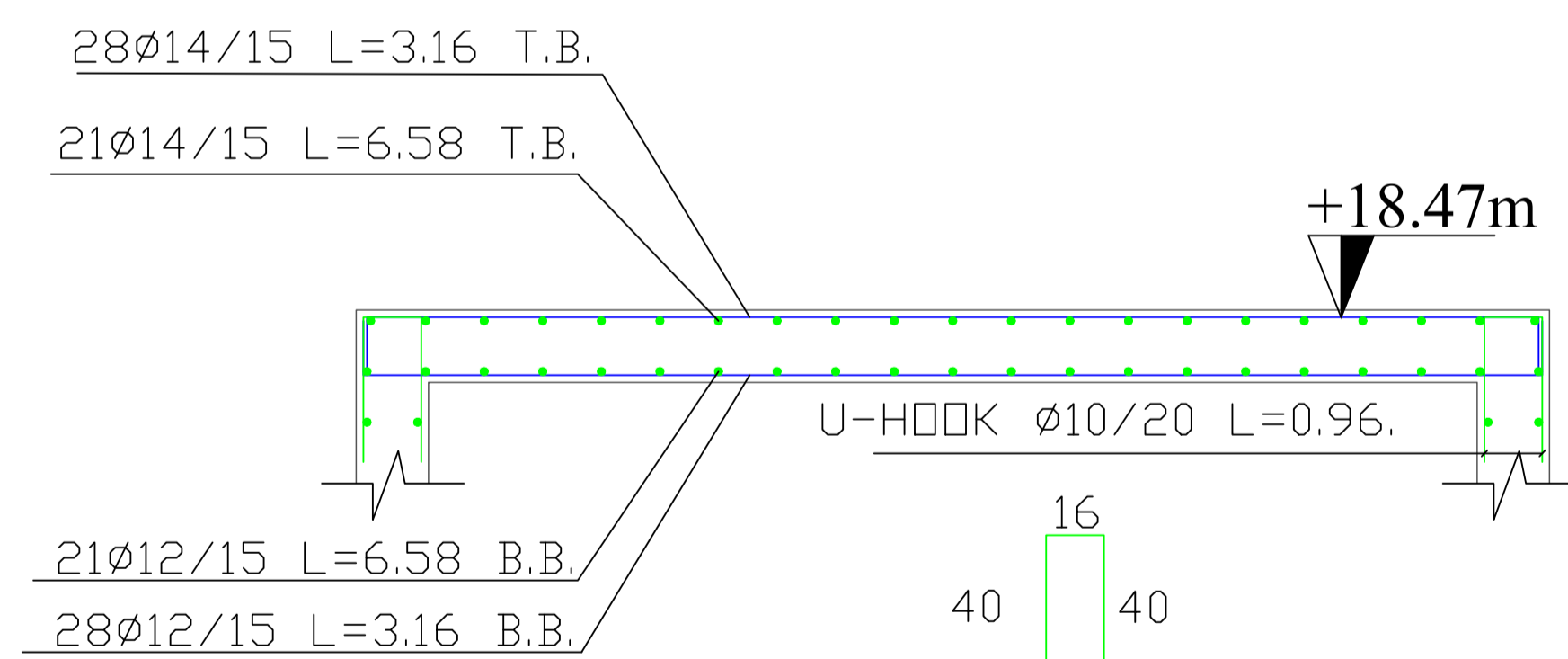
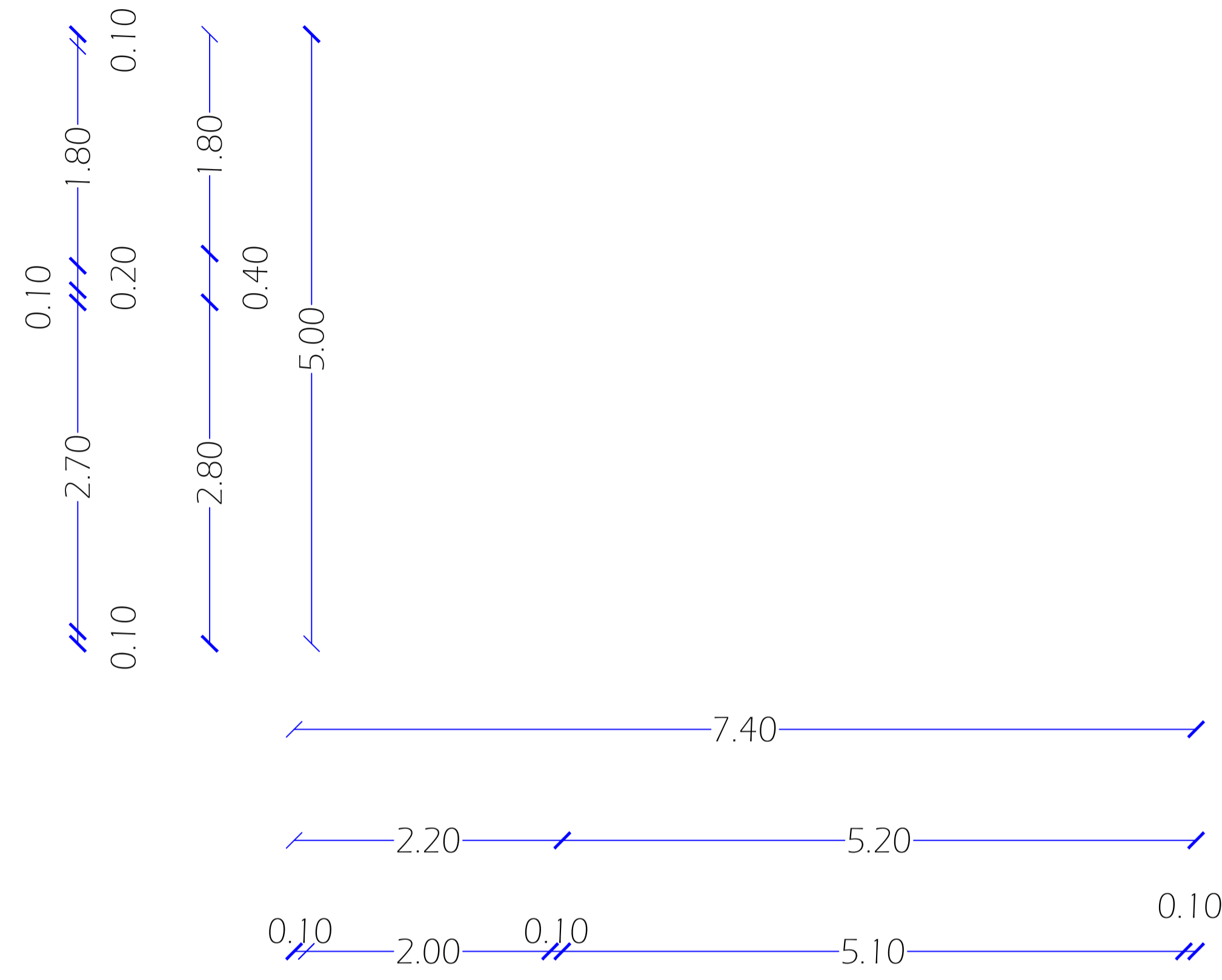
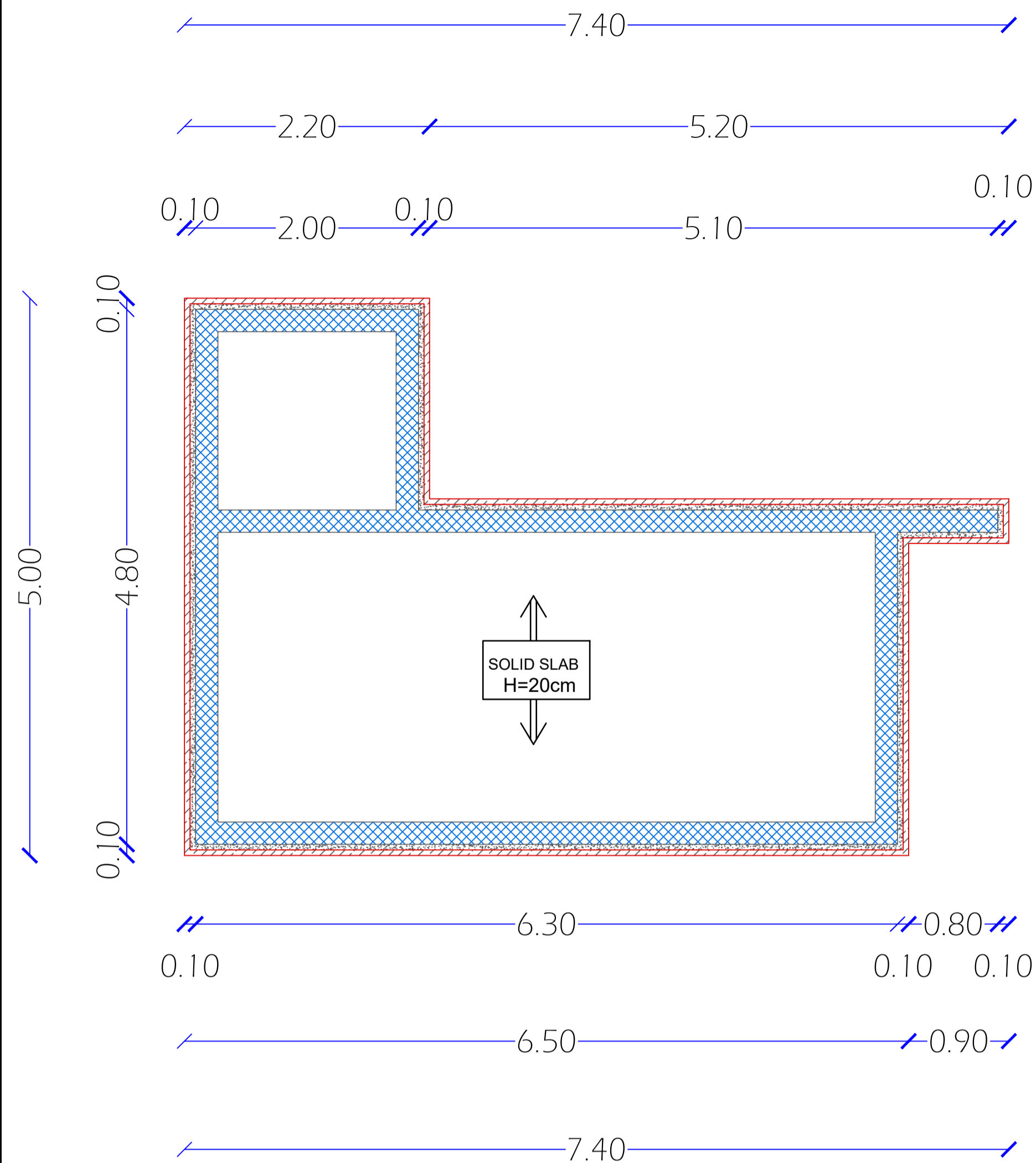
Drawing Title:
Reinforcement Of Slab Of Third Floor

Supervised by :
HAMDI IDAIS

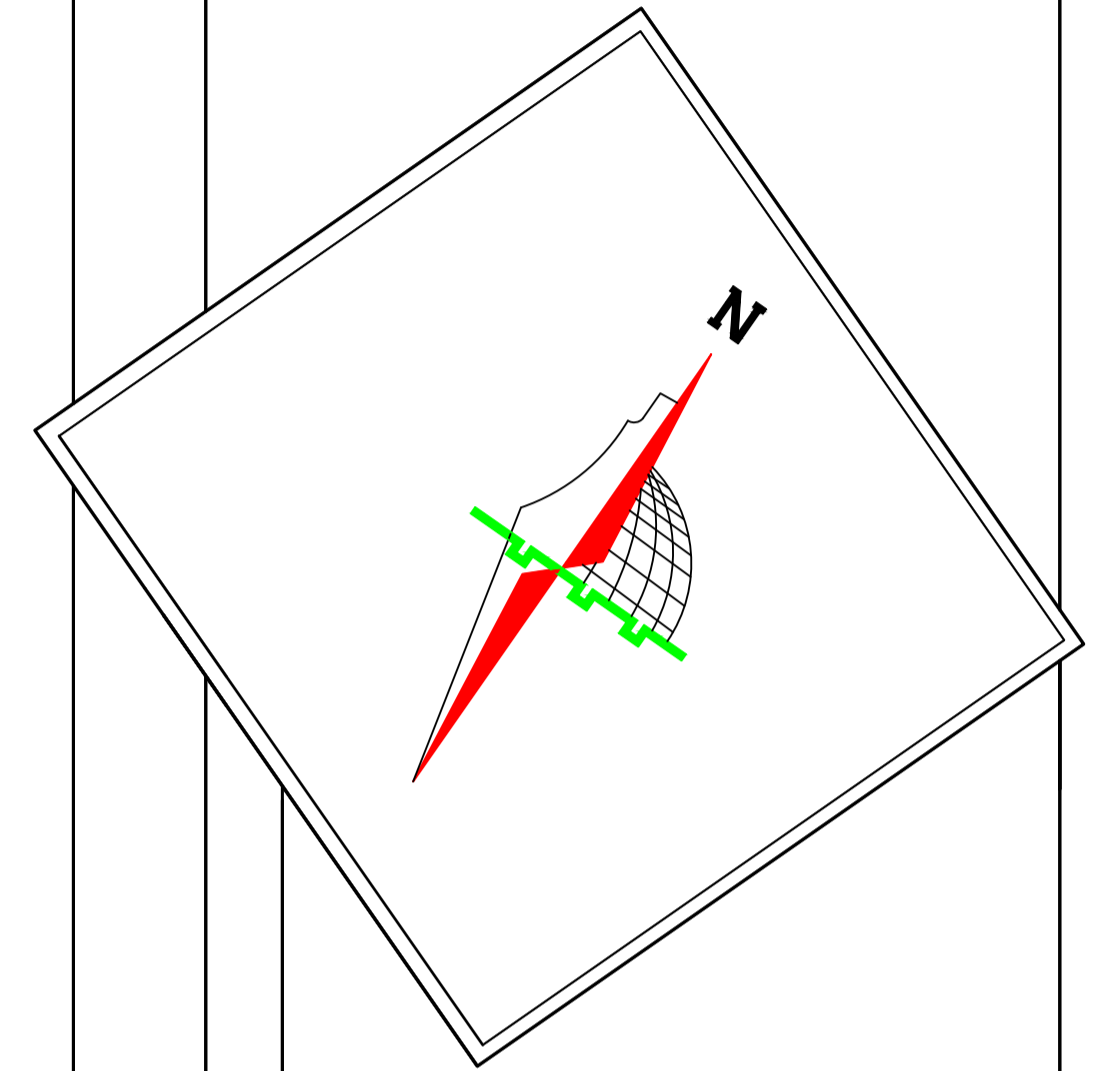
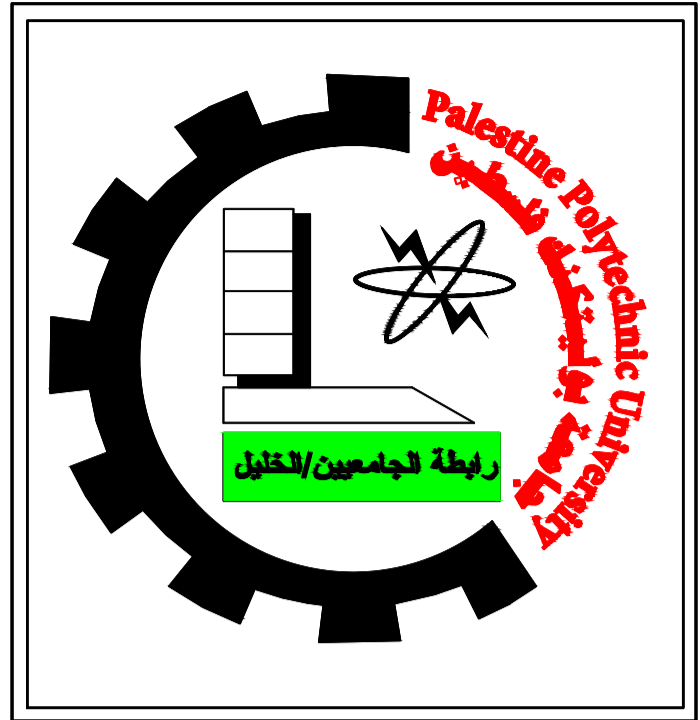
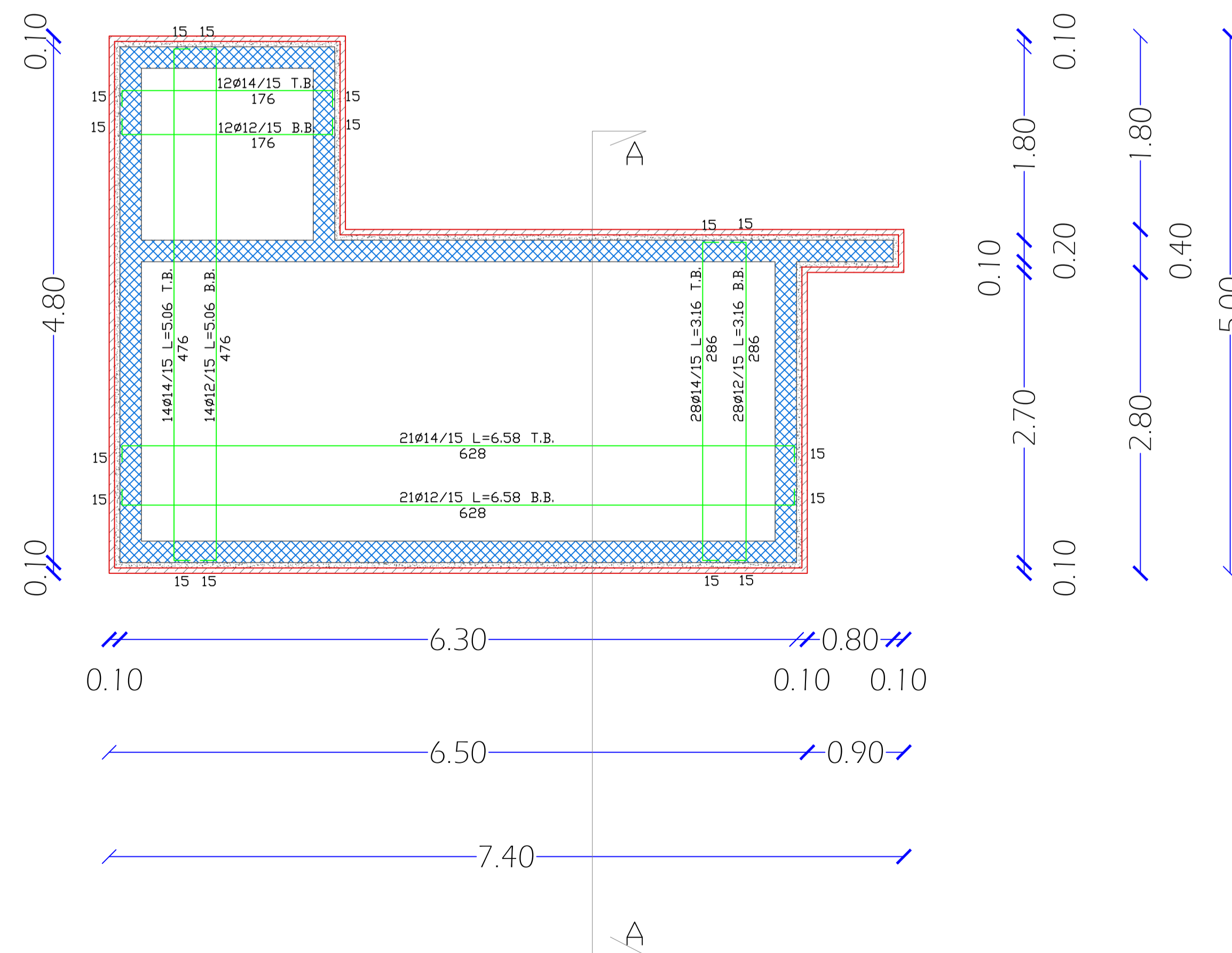
Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/100
Drawing #	S28





SECTION A-A
SCALE 1:25



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

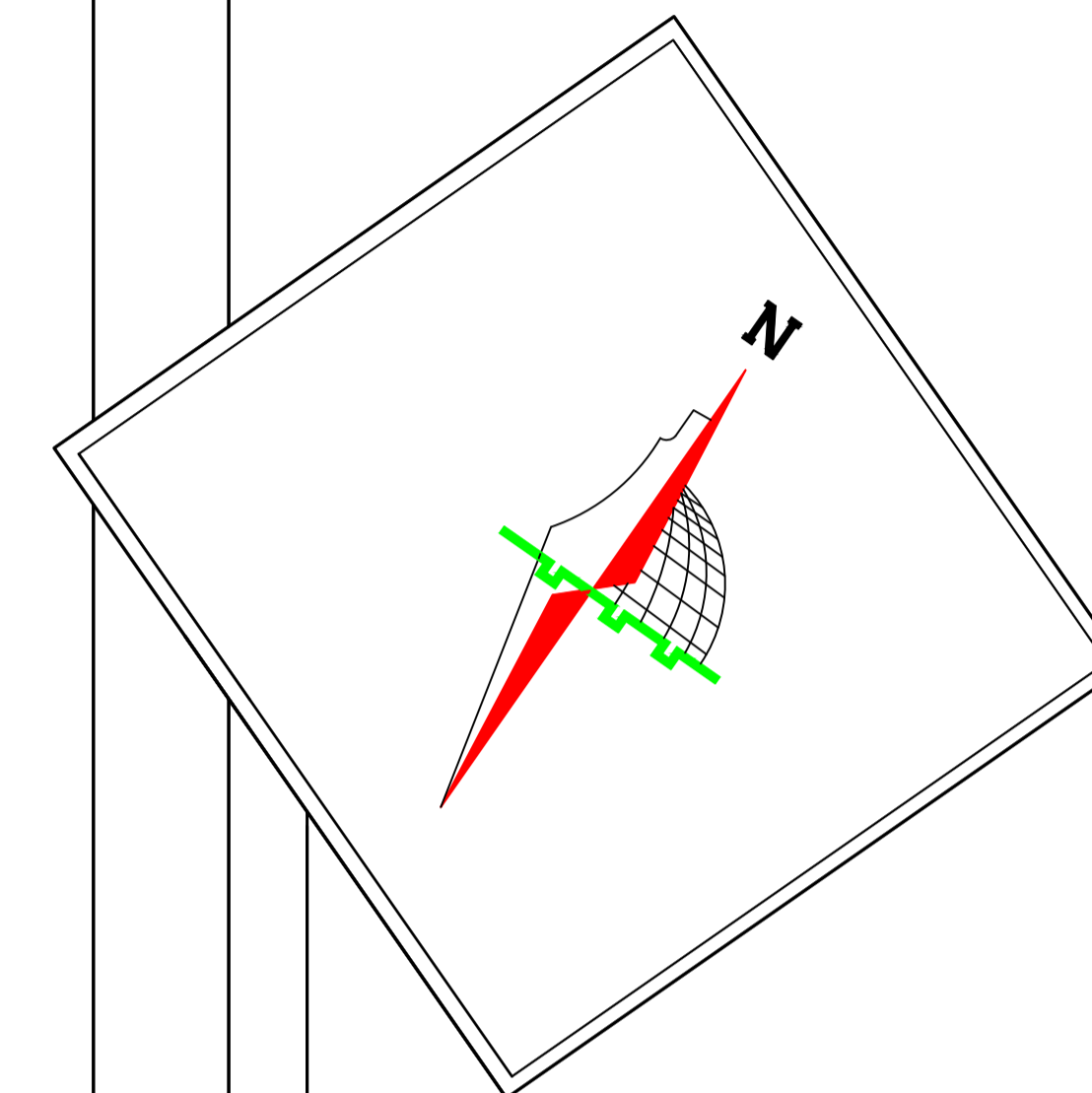
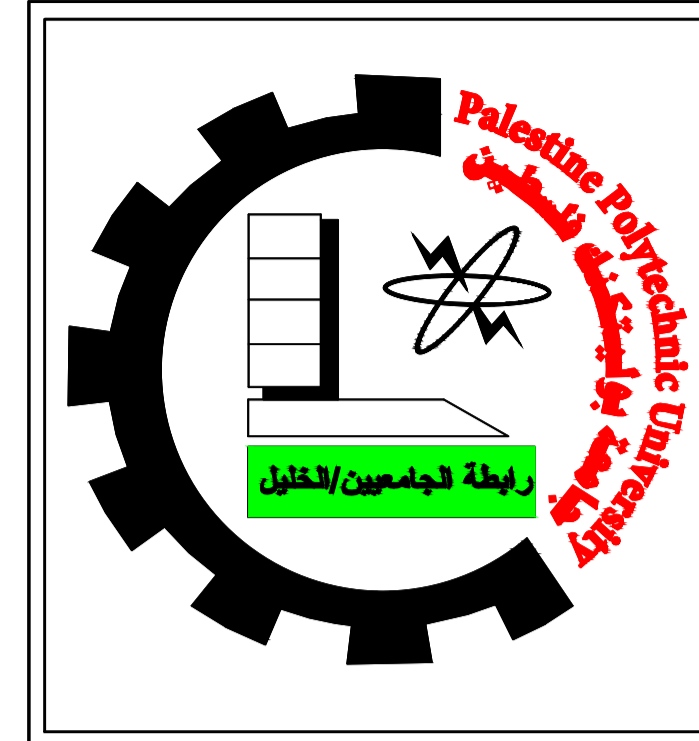
Drawing Title:
Reinforcement Of Staircase floor SLAB

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/100

Drawing # **S29**



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

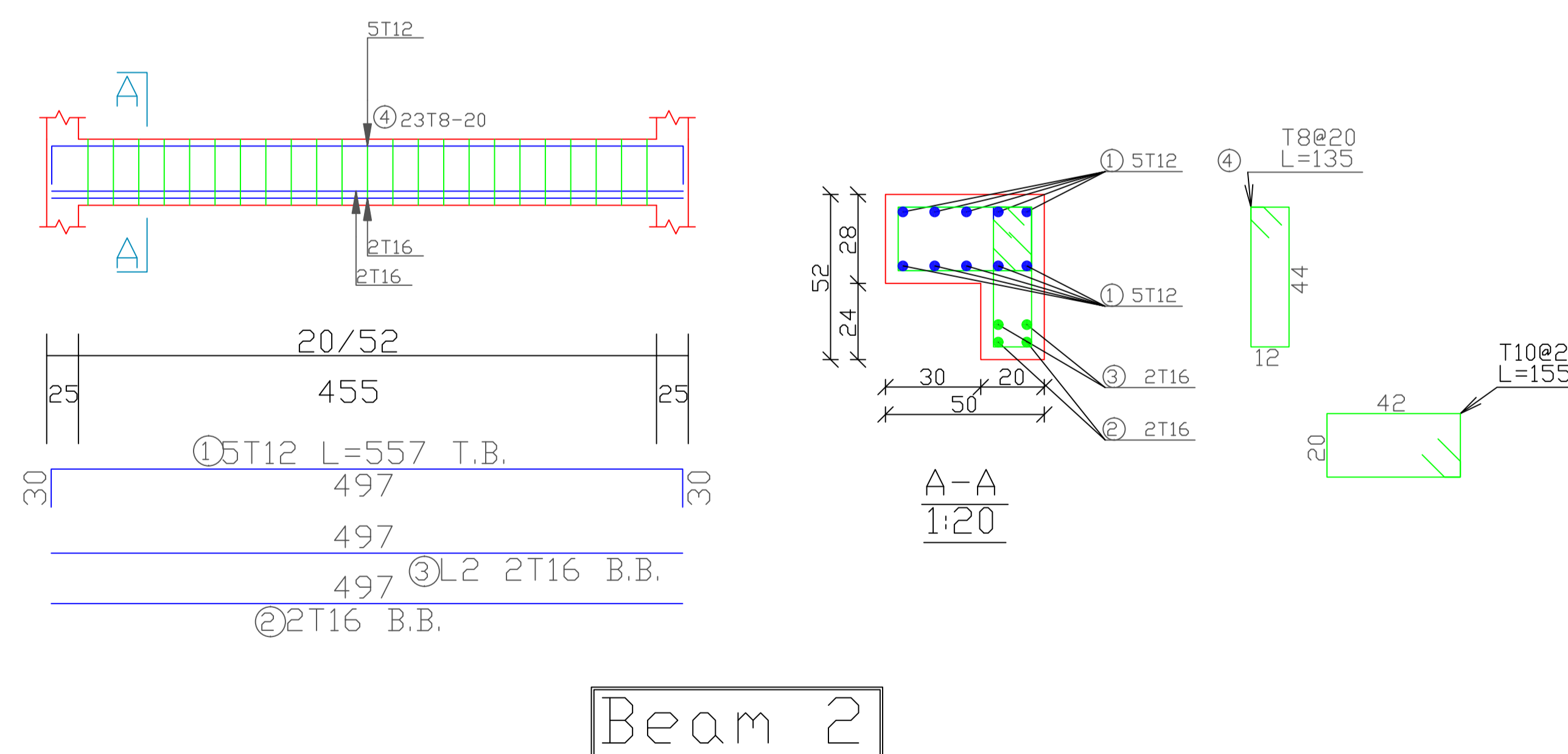
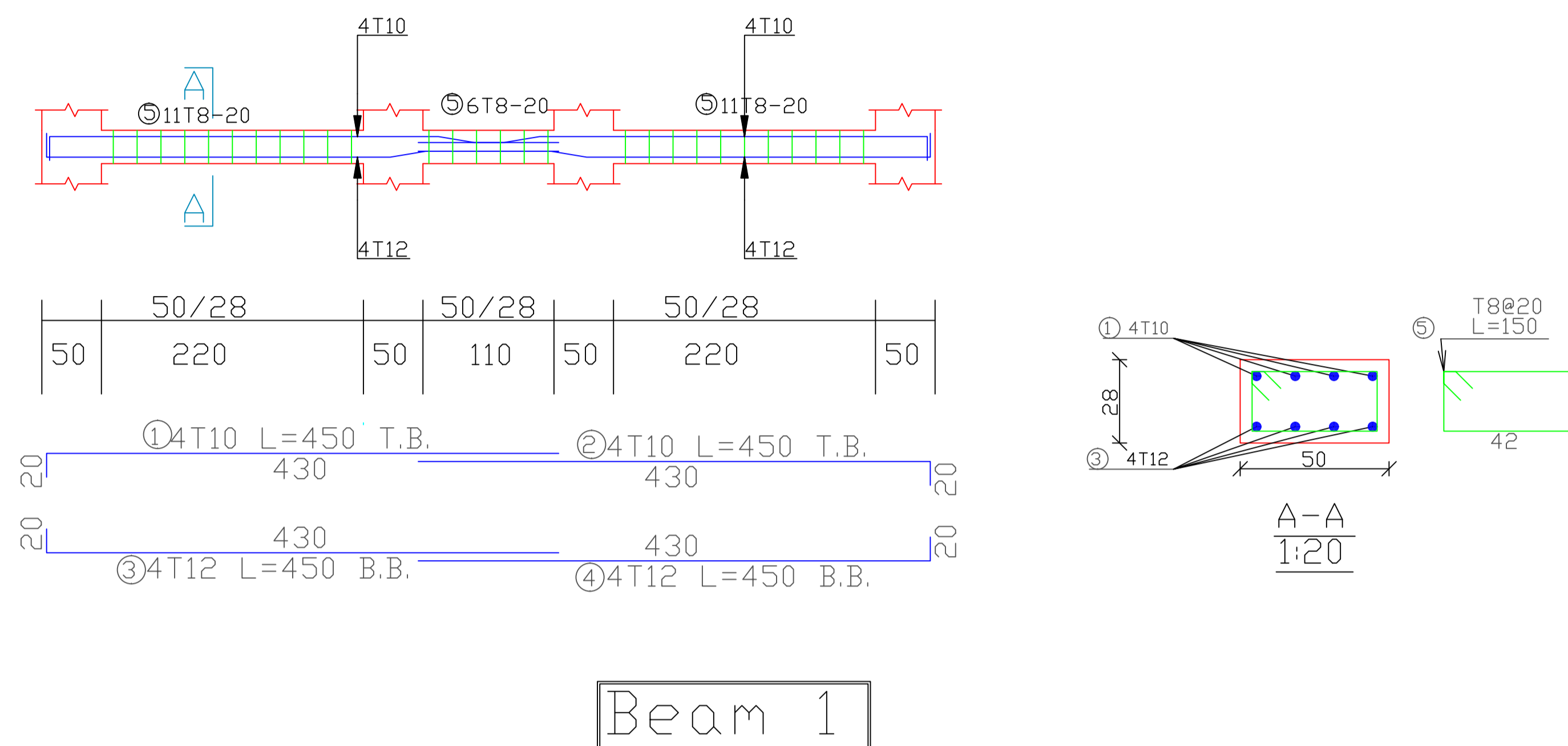
Drawing Title:
Beam:1 & Beam:2

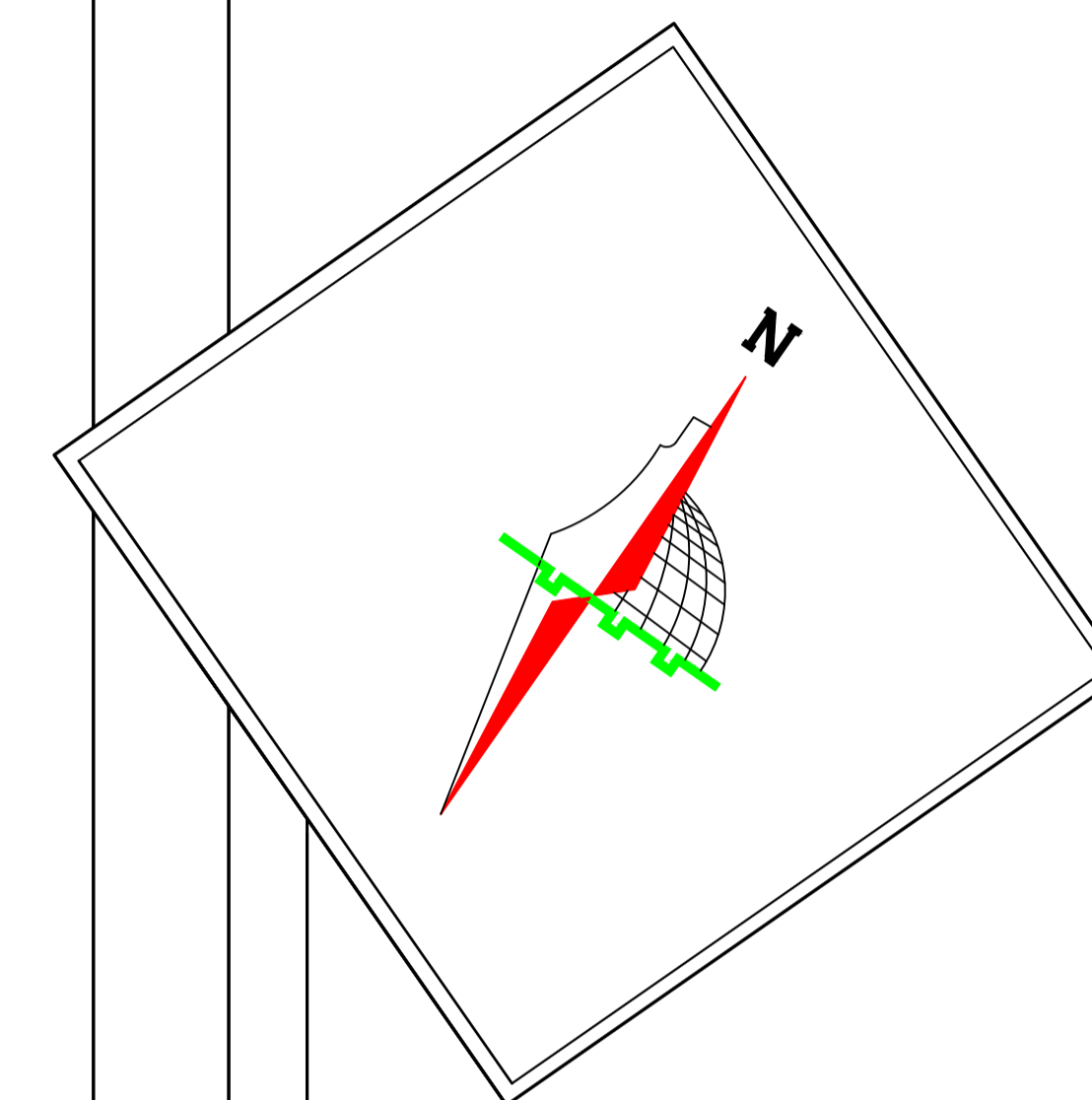
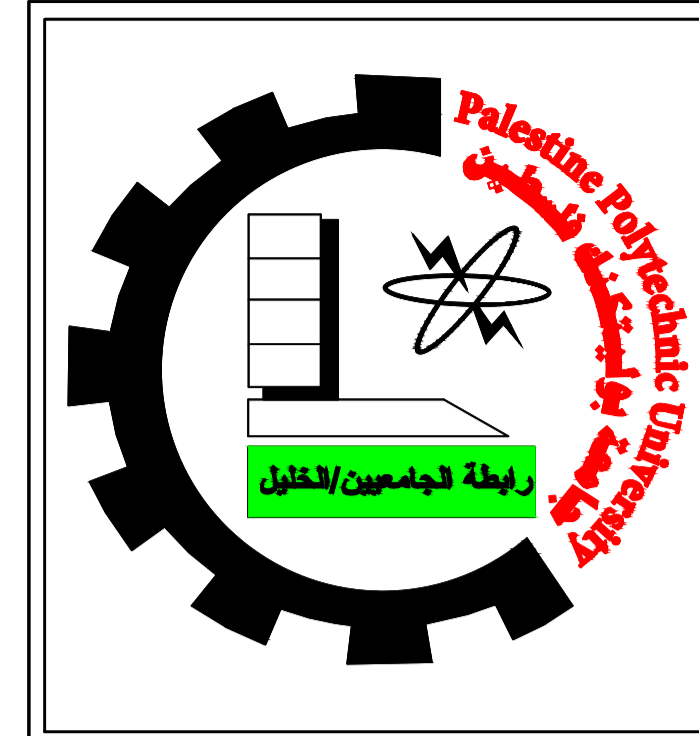
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/50

Drawing # **S30**





Palestine Polytechnic University
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Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

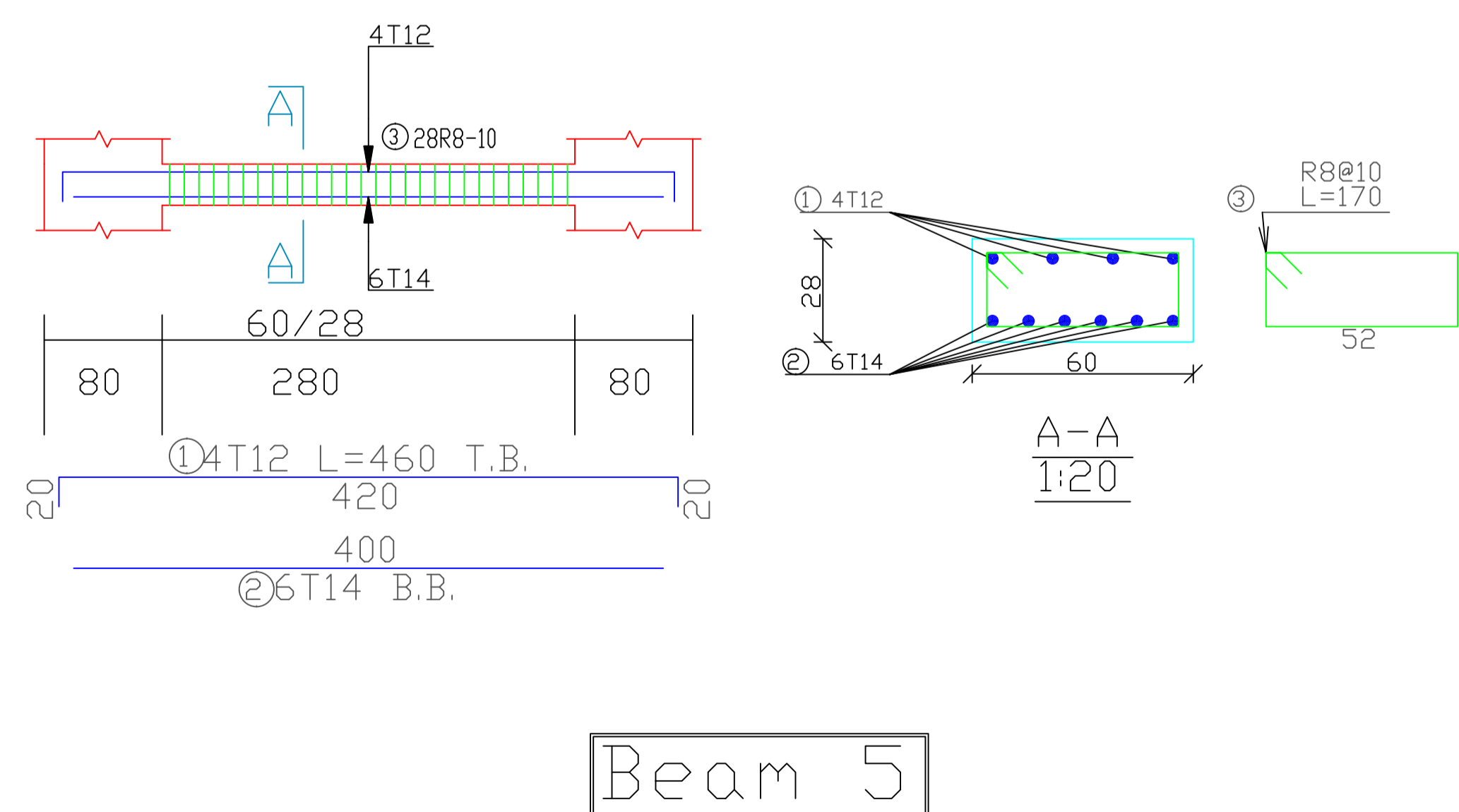
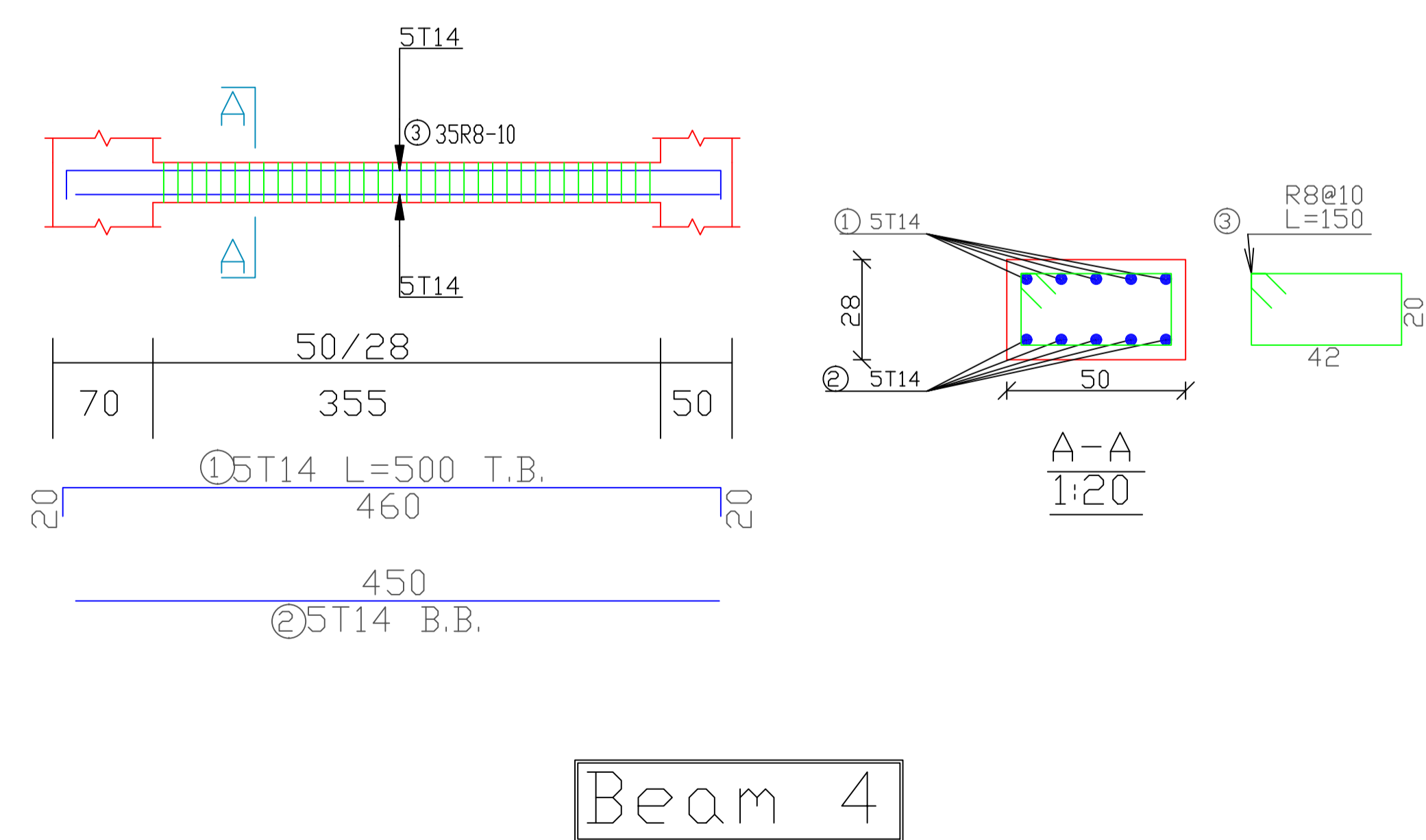
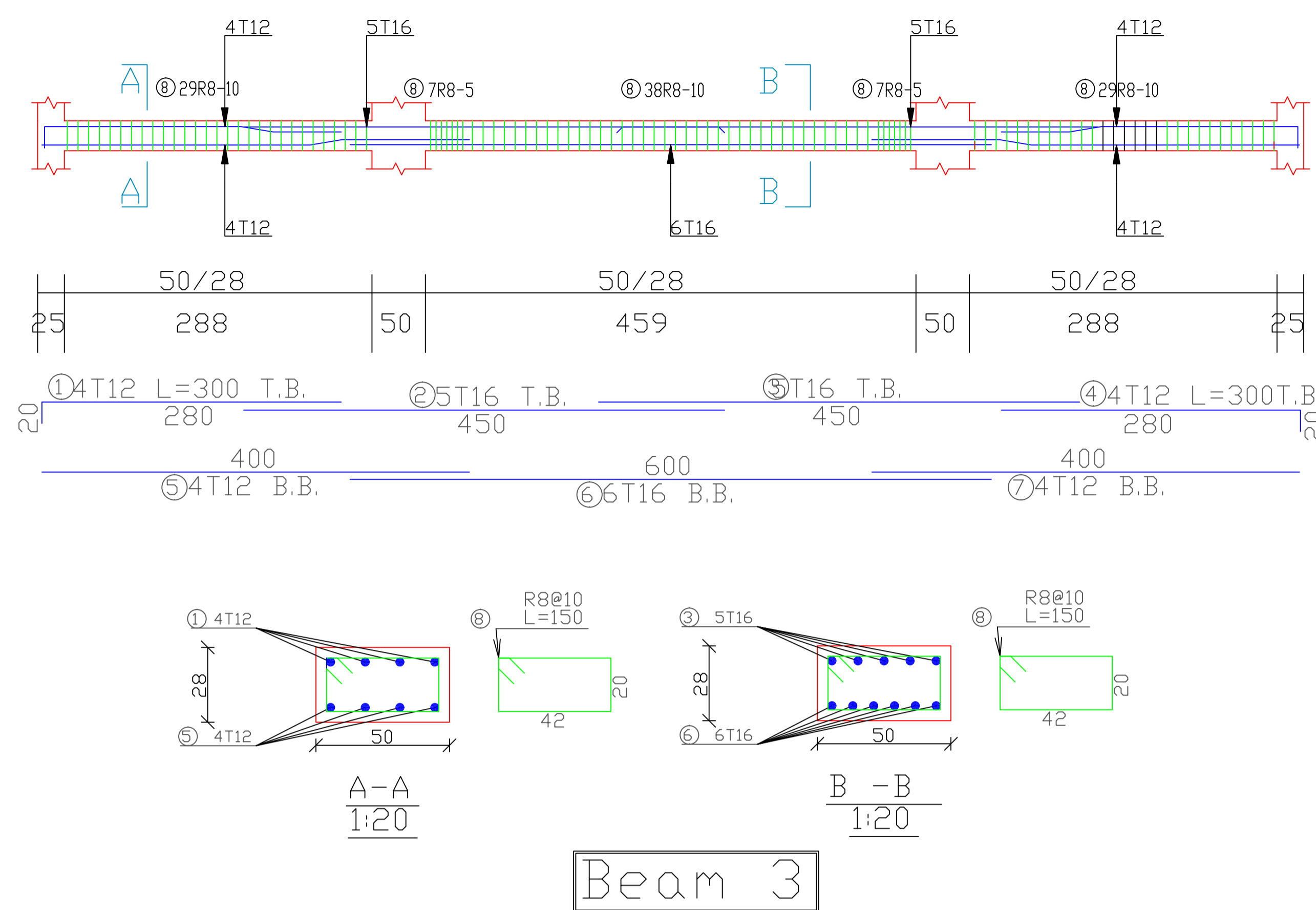
Drawing Title:
Beam:3 & 4 & 5

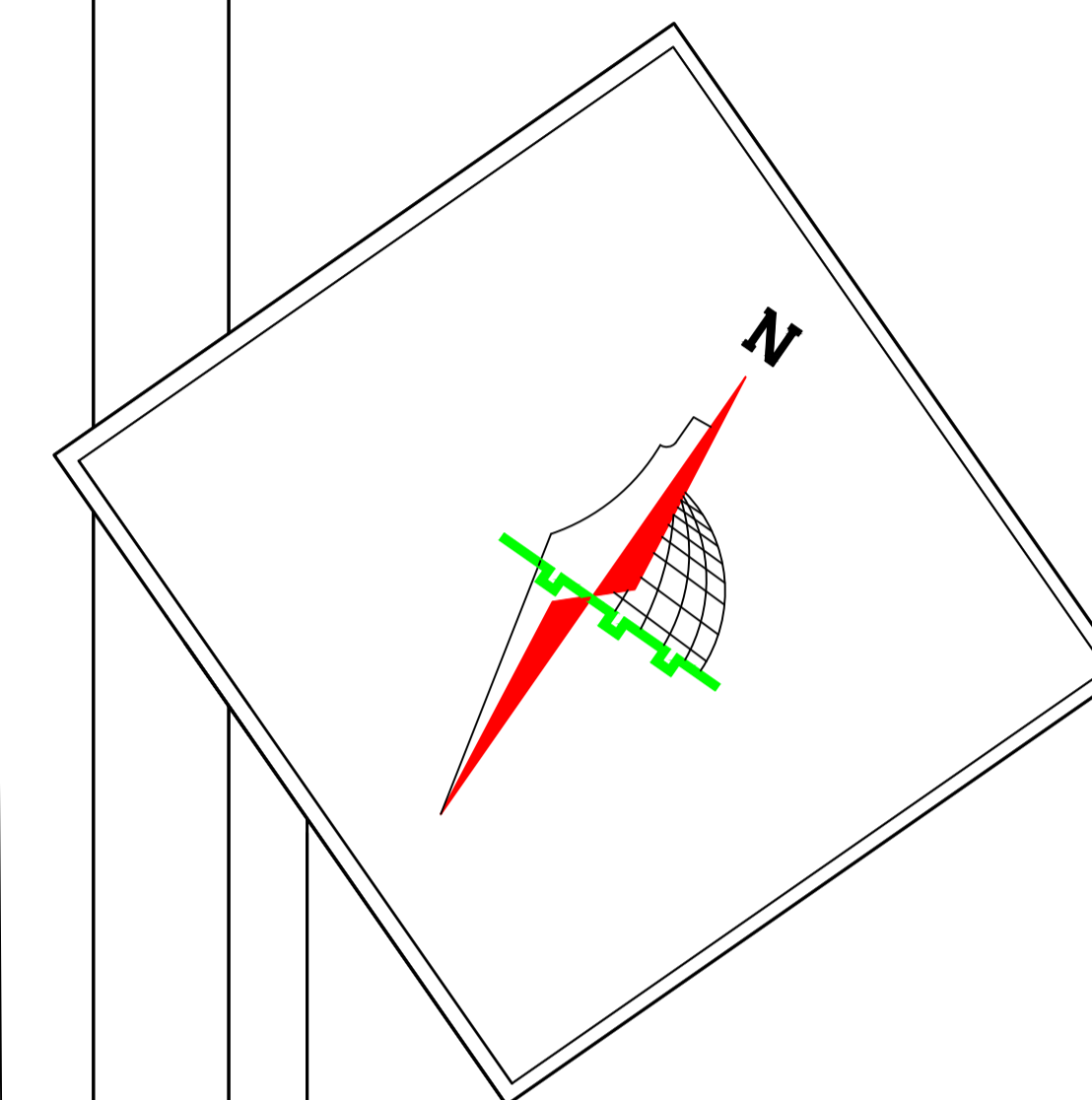
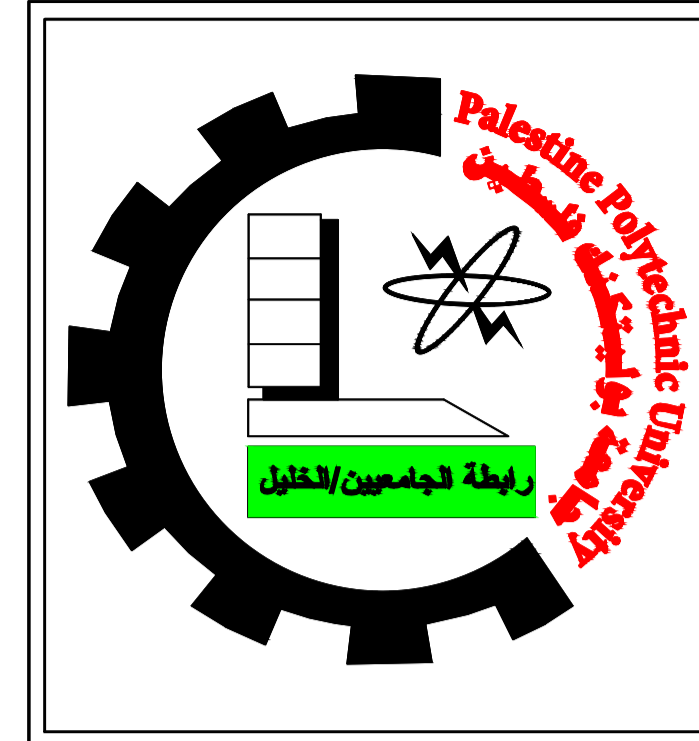
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # **S31**





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

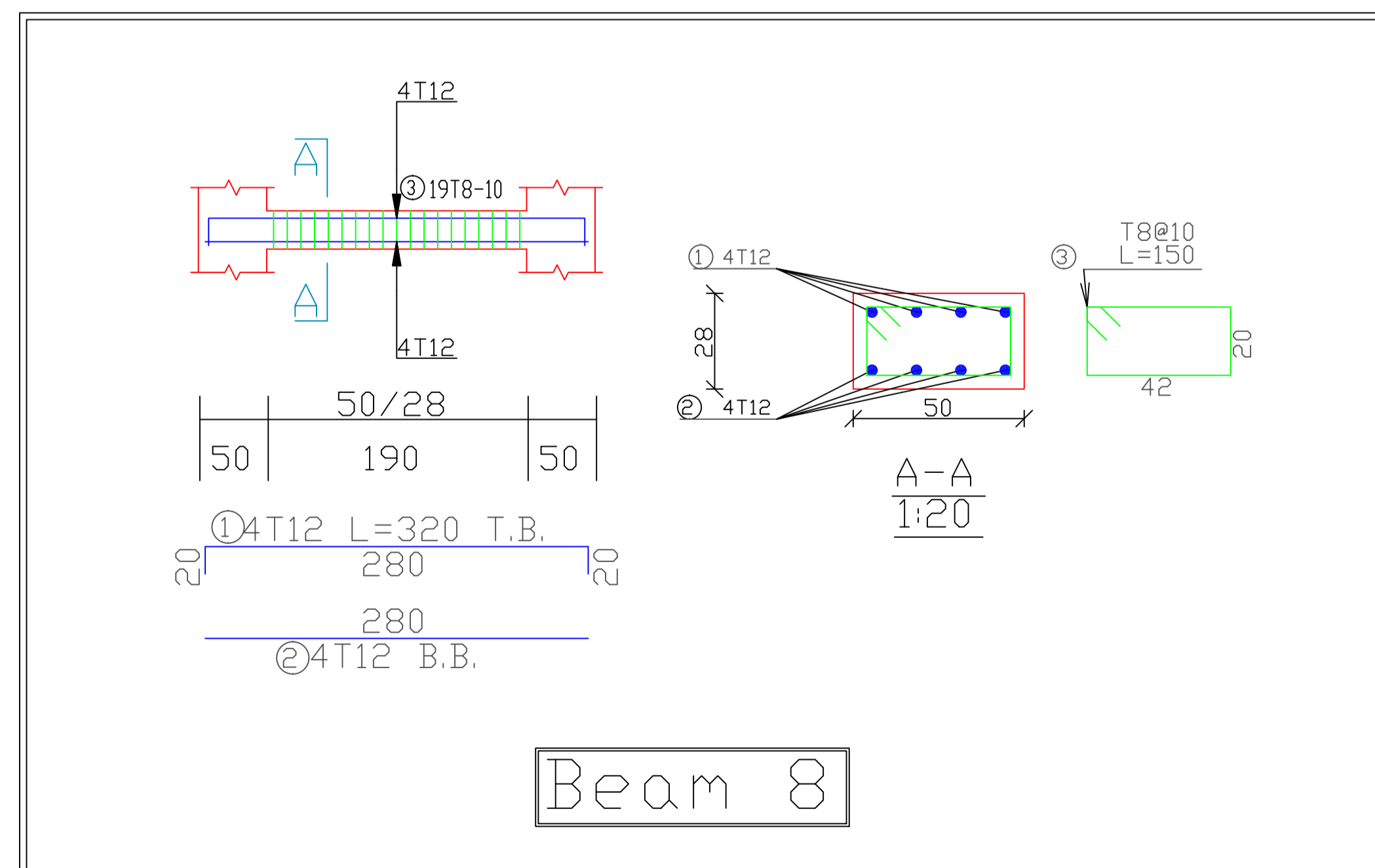
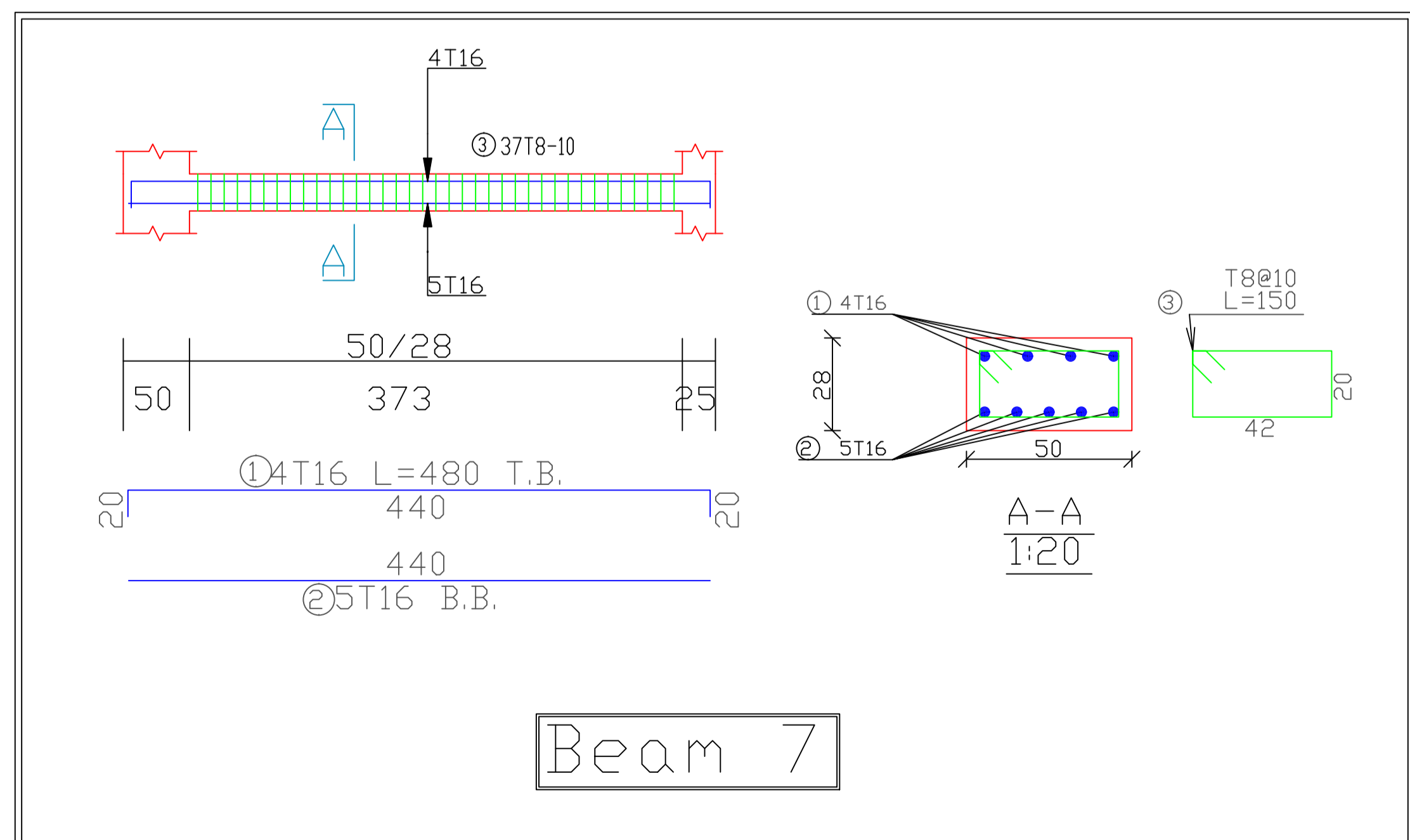
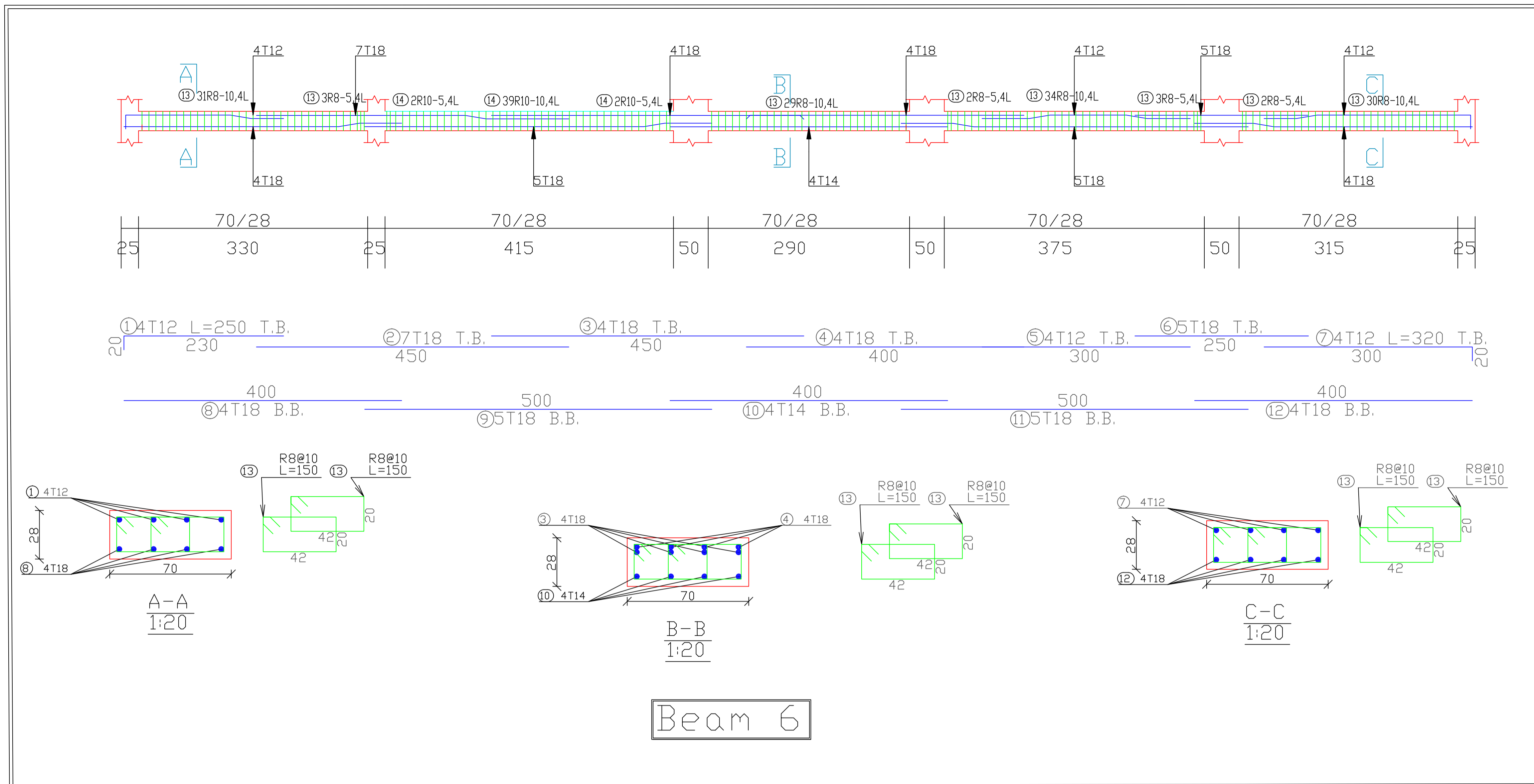
Drawing Title:
Beam:6 & 7 & 8

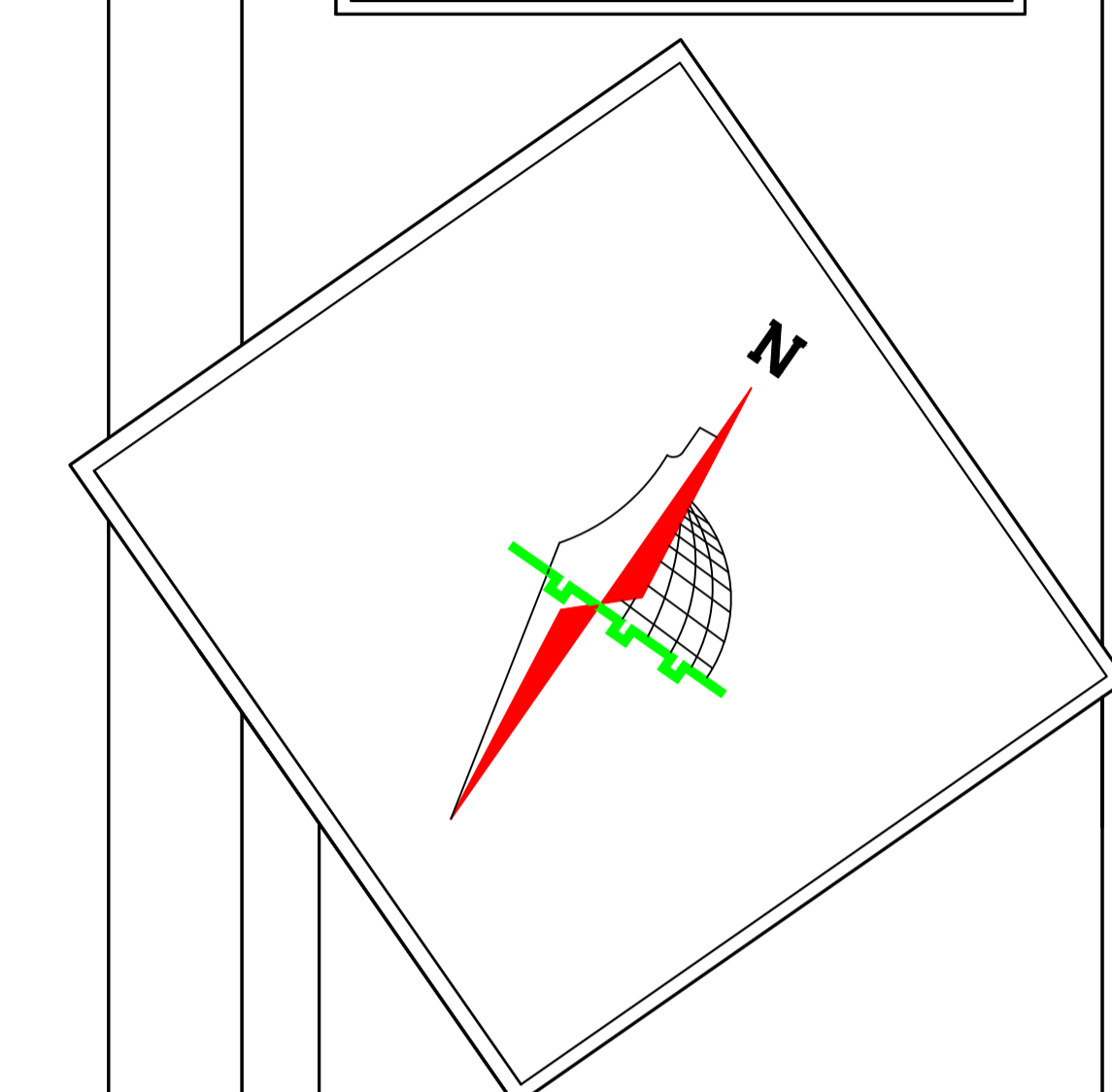
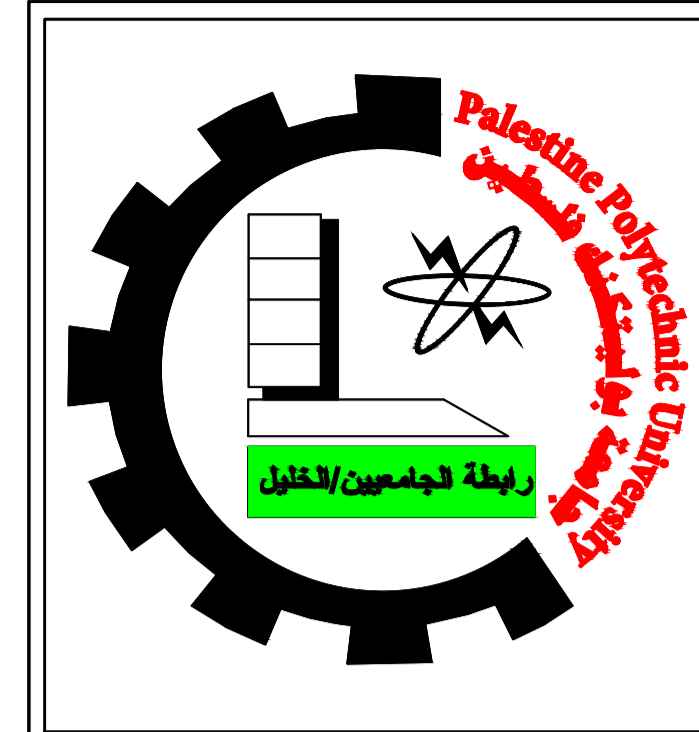
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # **S32**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

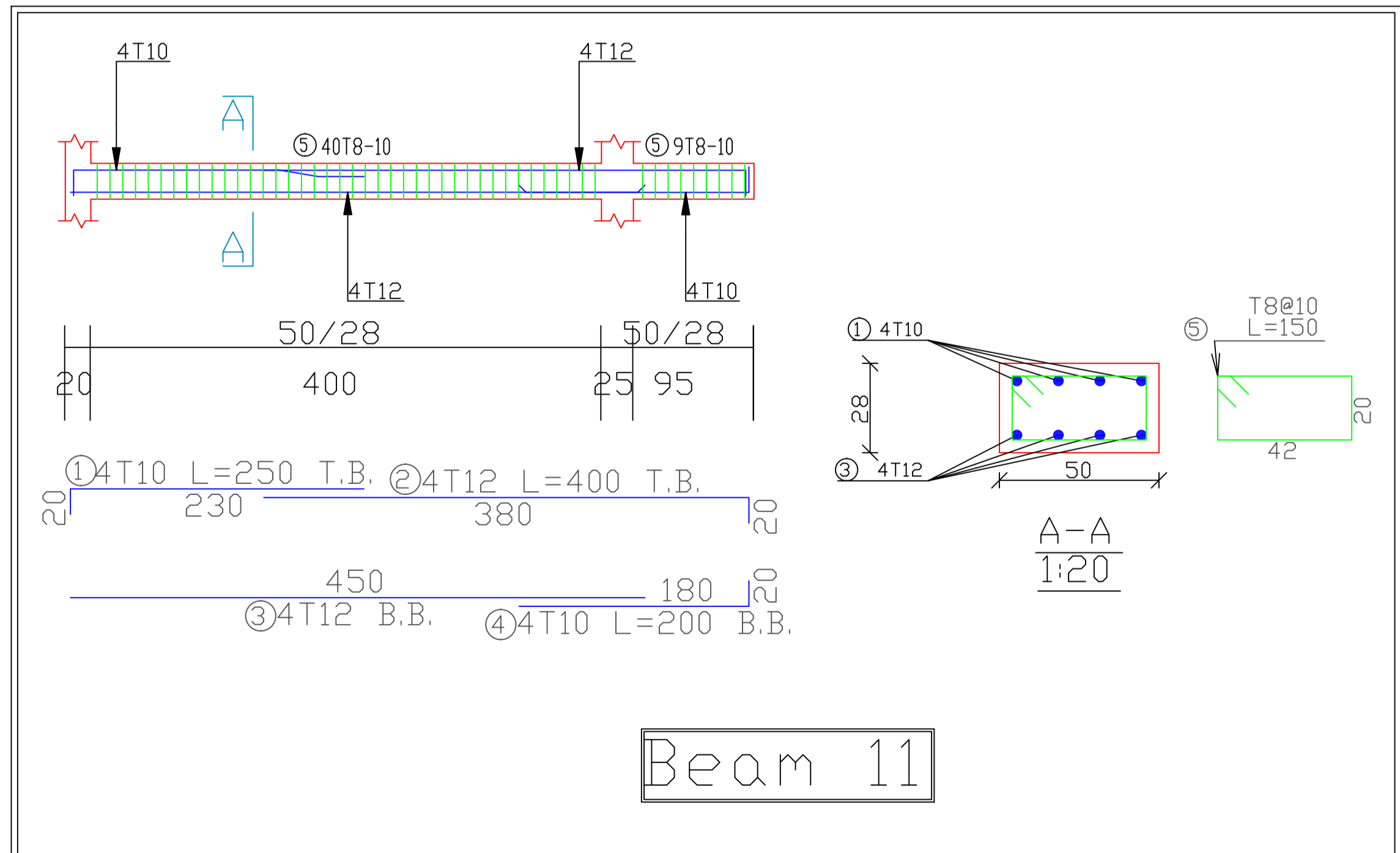
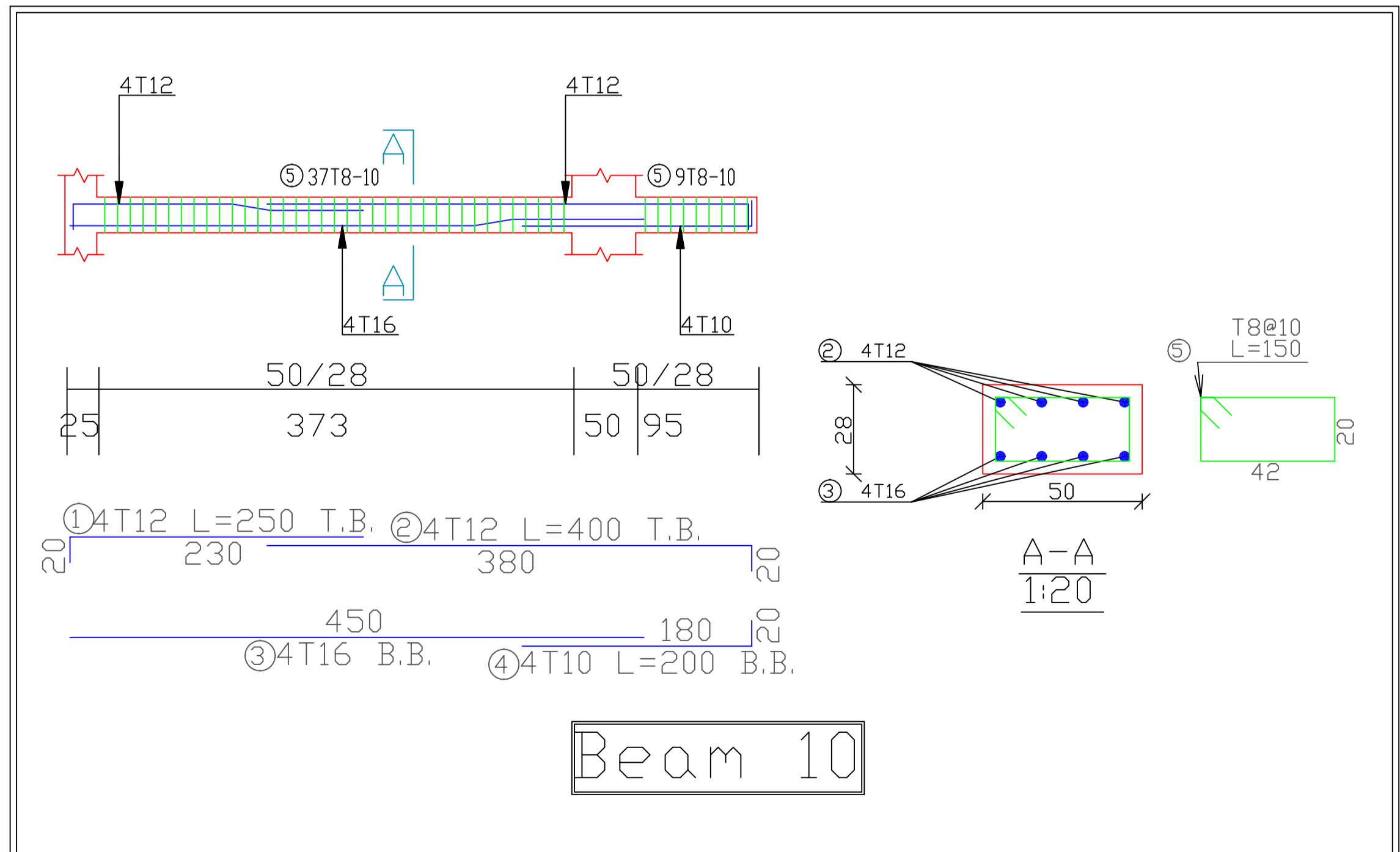
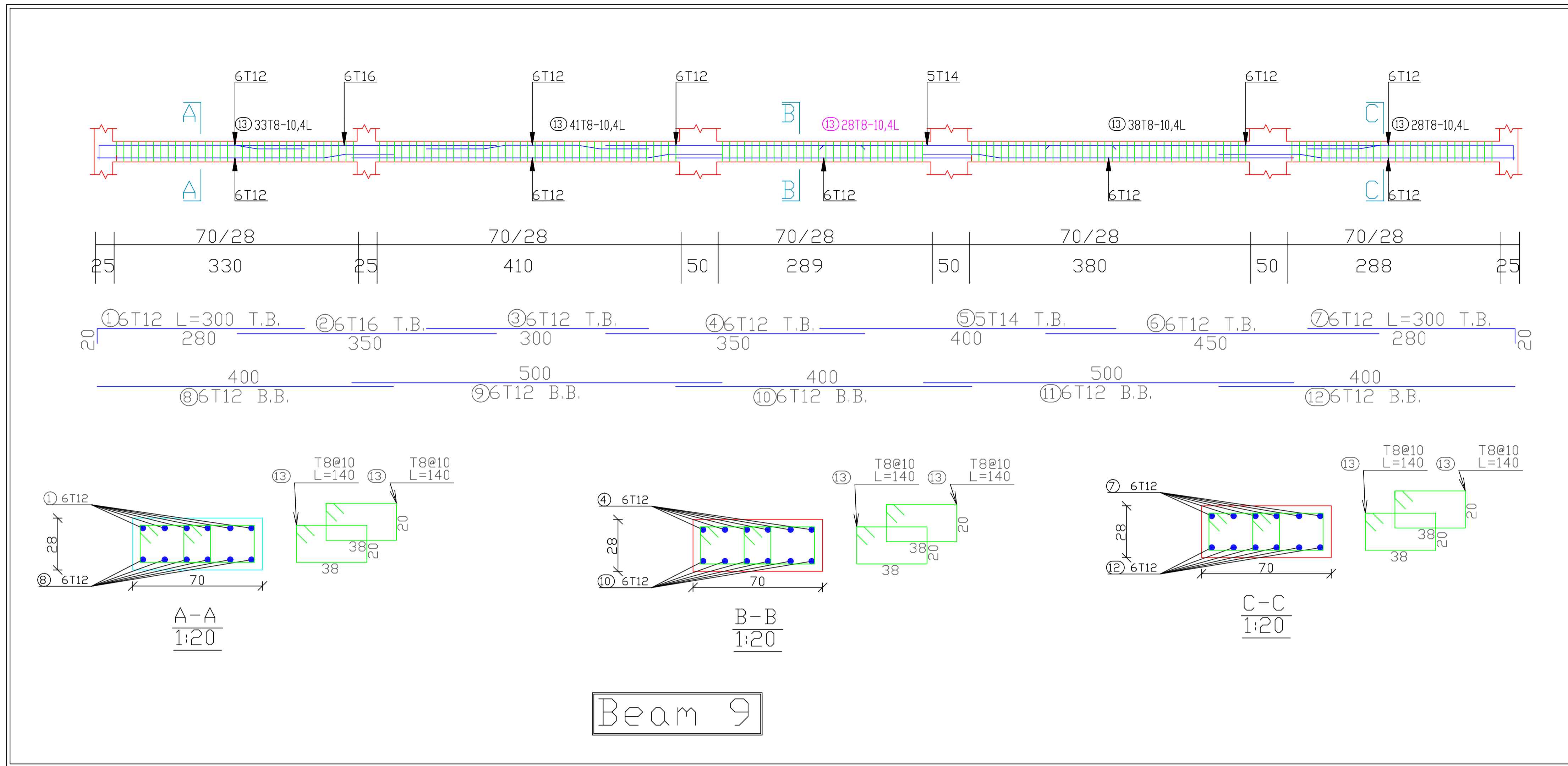
Project Name: Structural Design Of Residential Villa

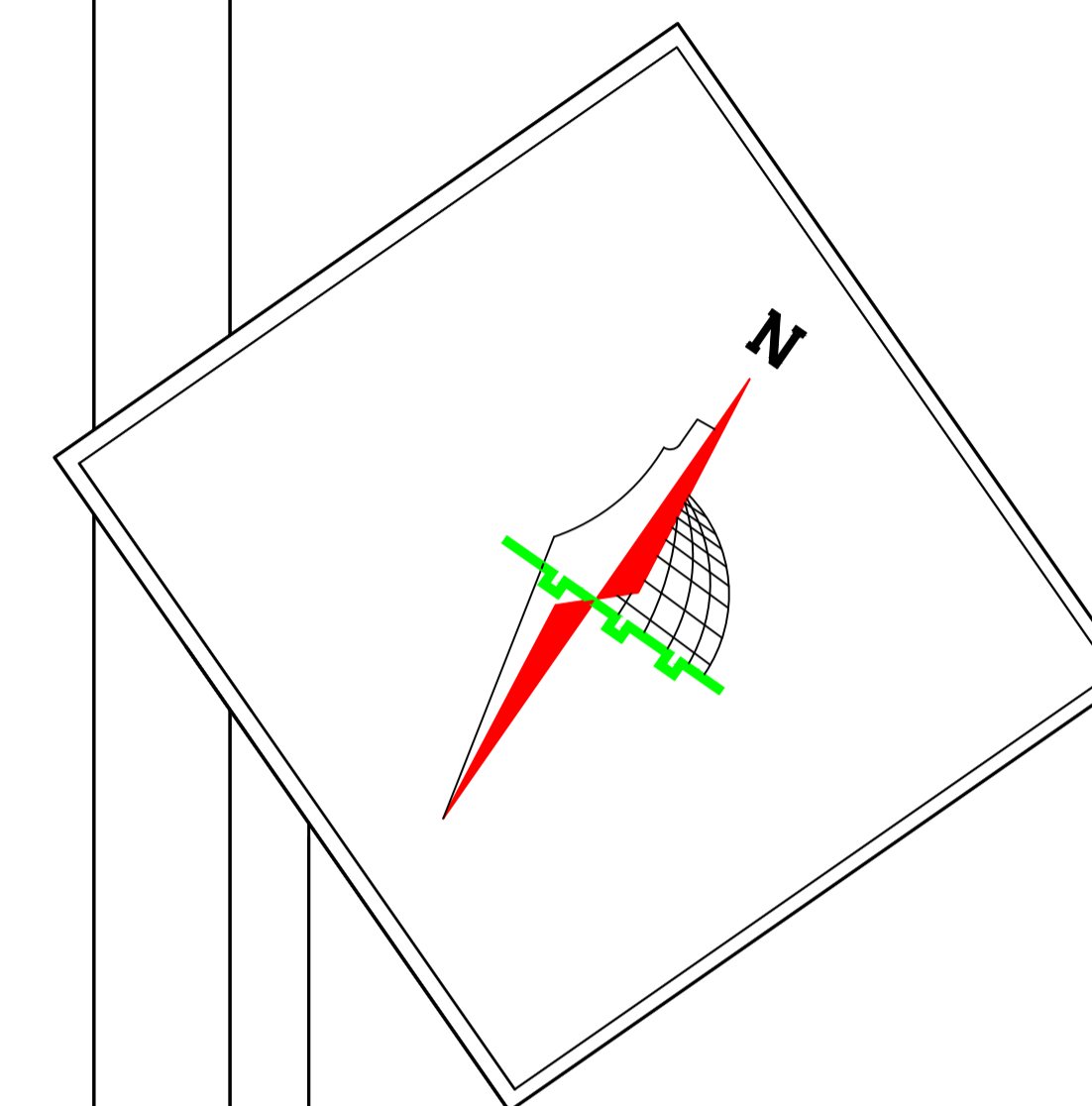
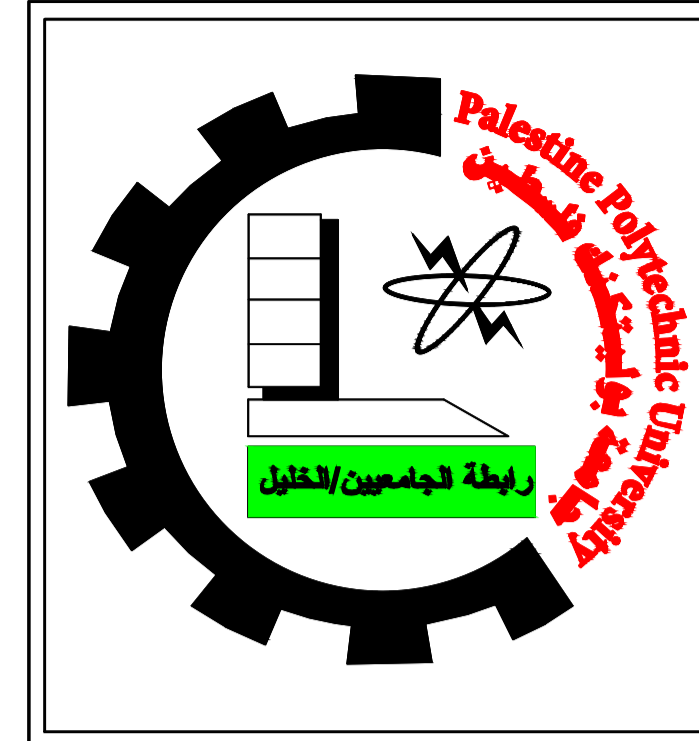
Drawing Title:
Beam:9 & 10 & 11

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/50
Drawing #	S33





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

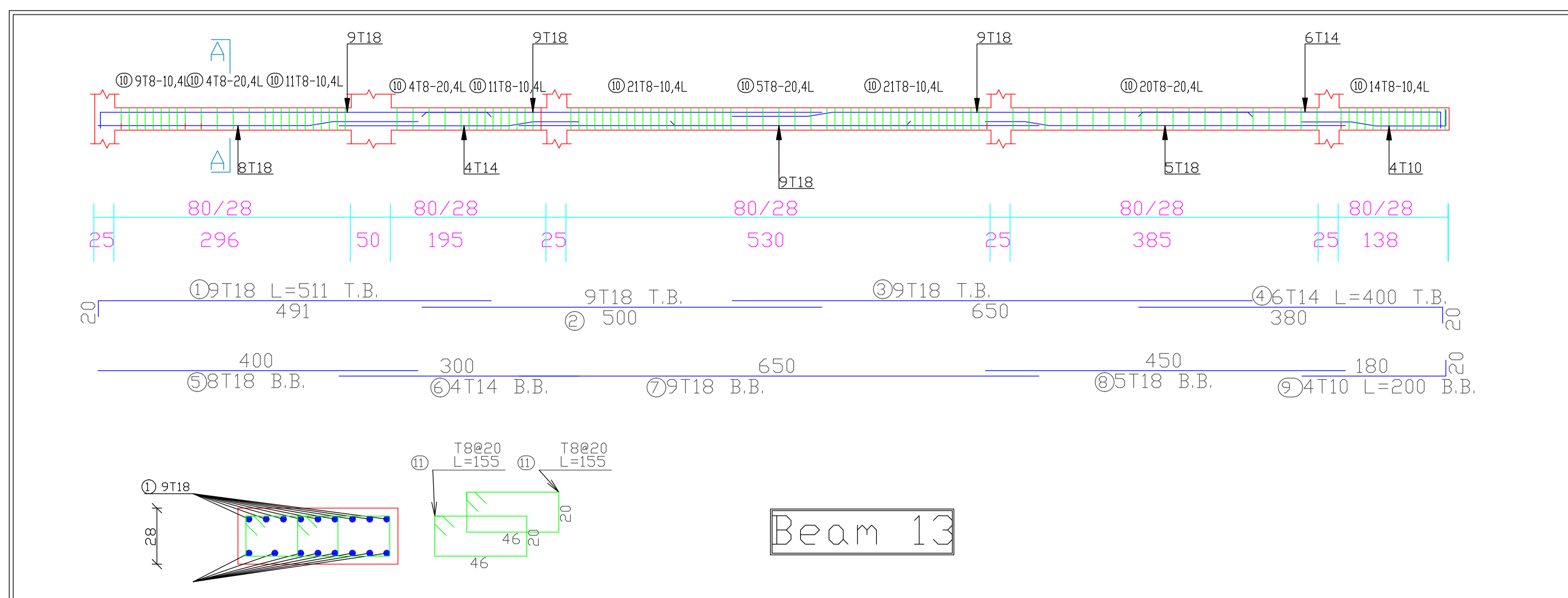
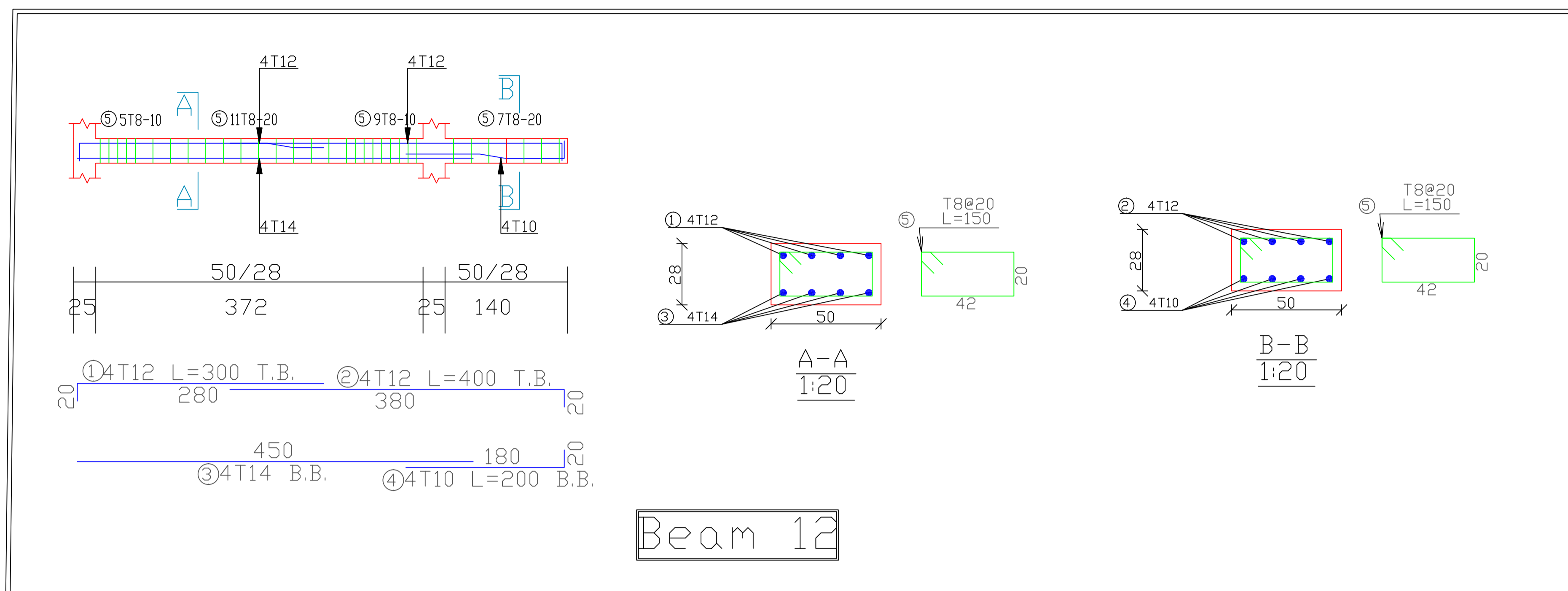
Drawing Title:
Beam:12 & 13

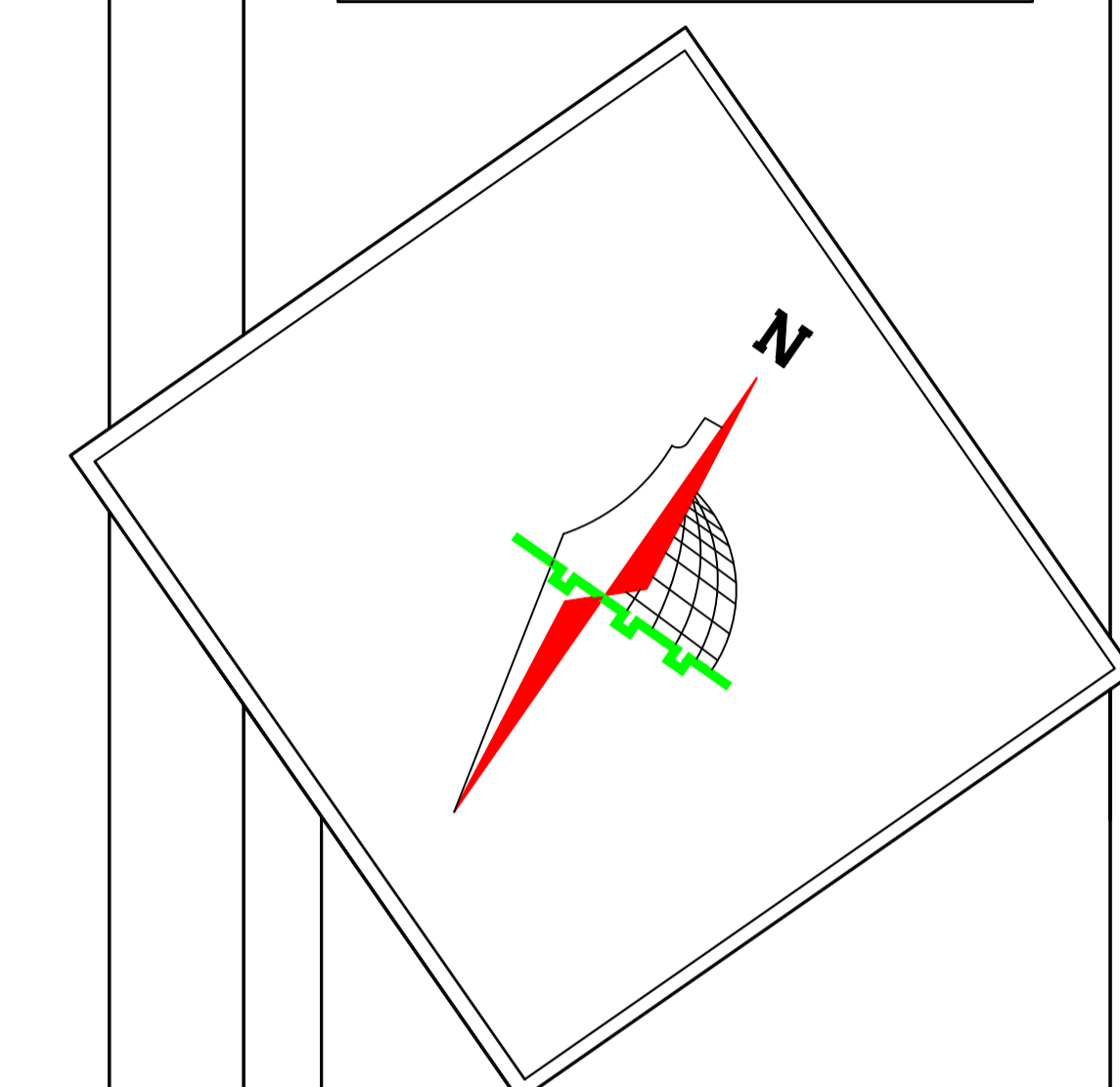
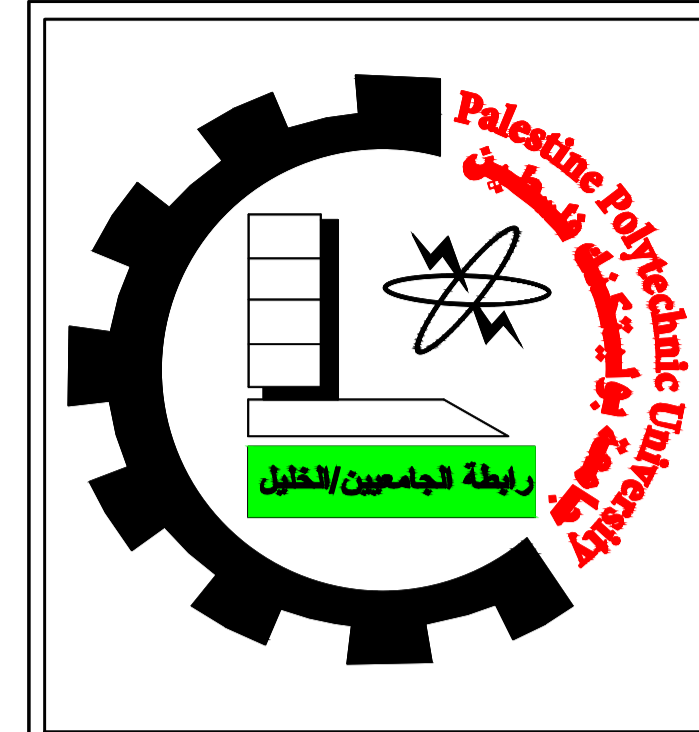
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # **S34**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

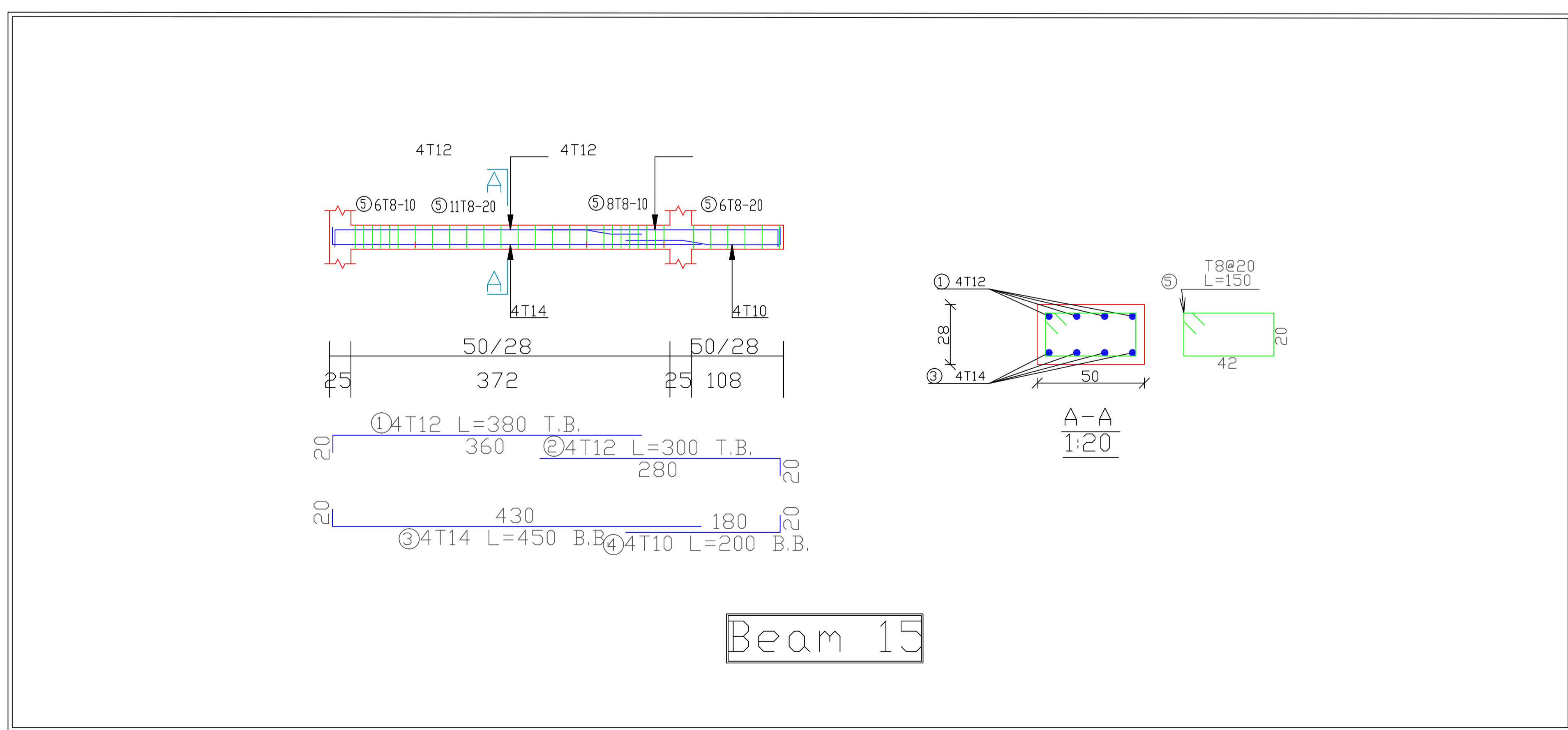
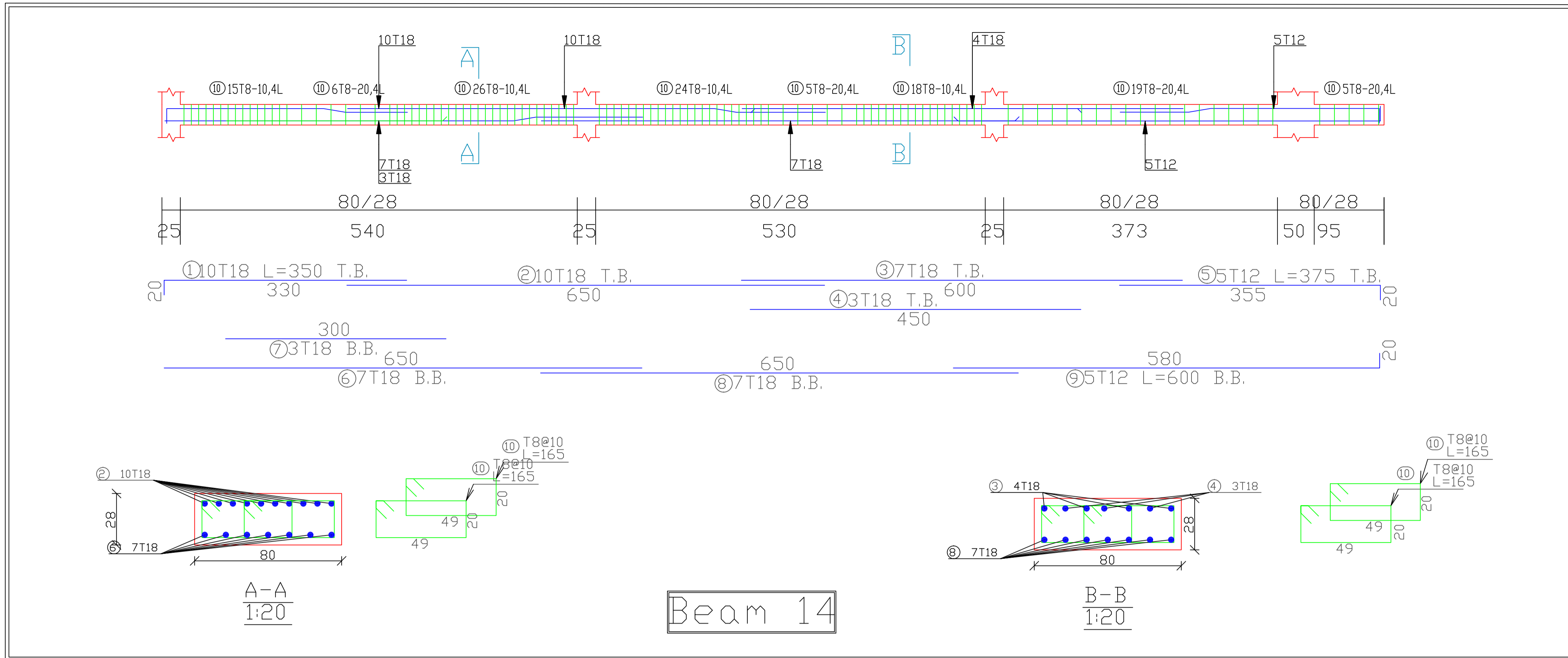
Project Name: Structural Design Of Residential Villa

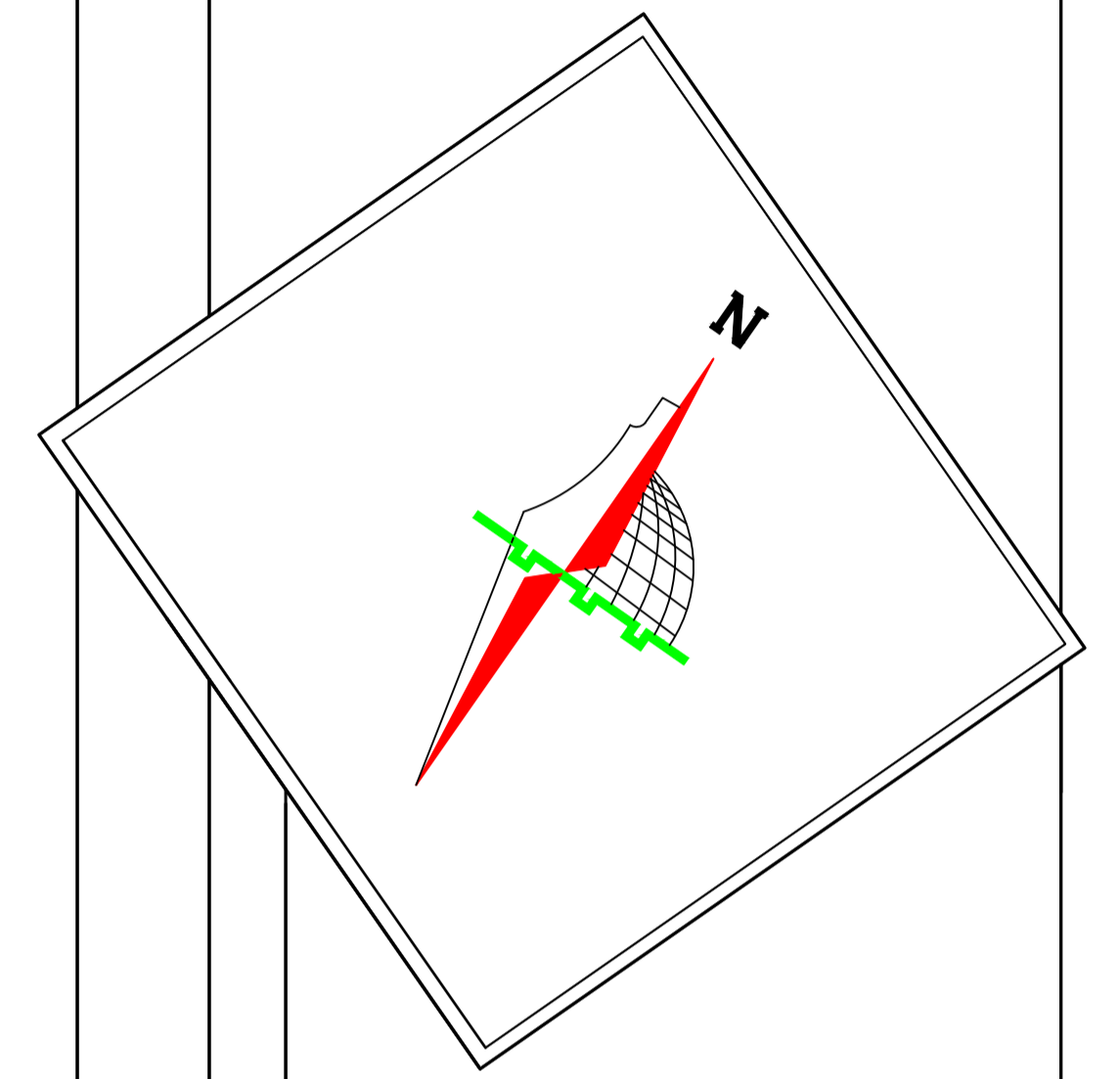
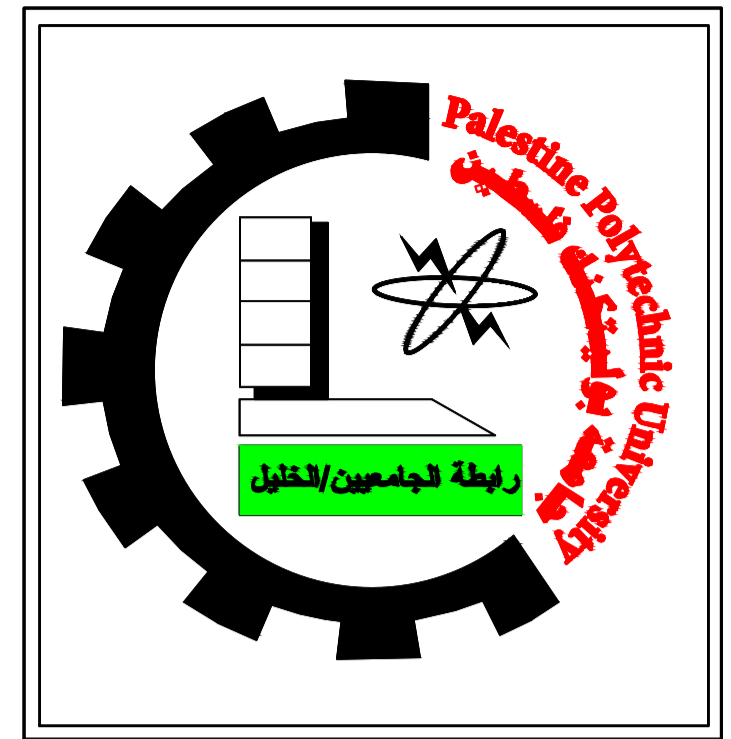
Drawing Title:
Beam: 14 & 15

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/50
Drawing #	S35





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

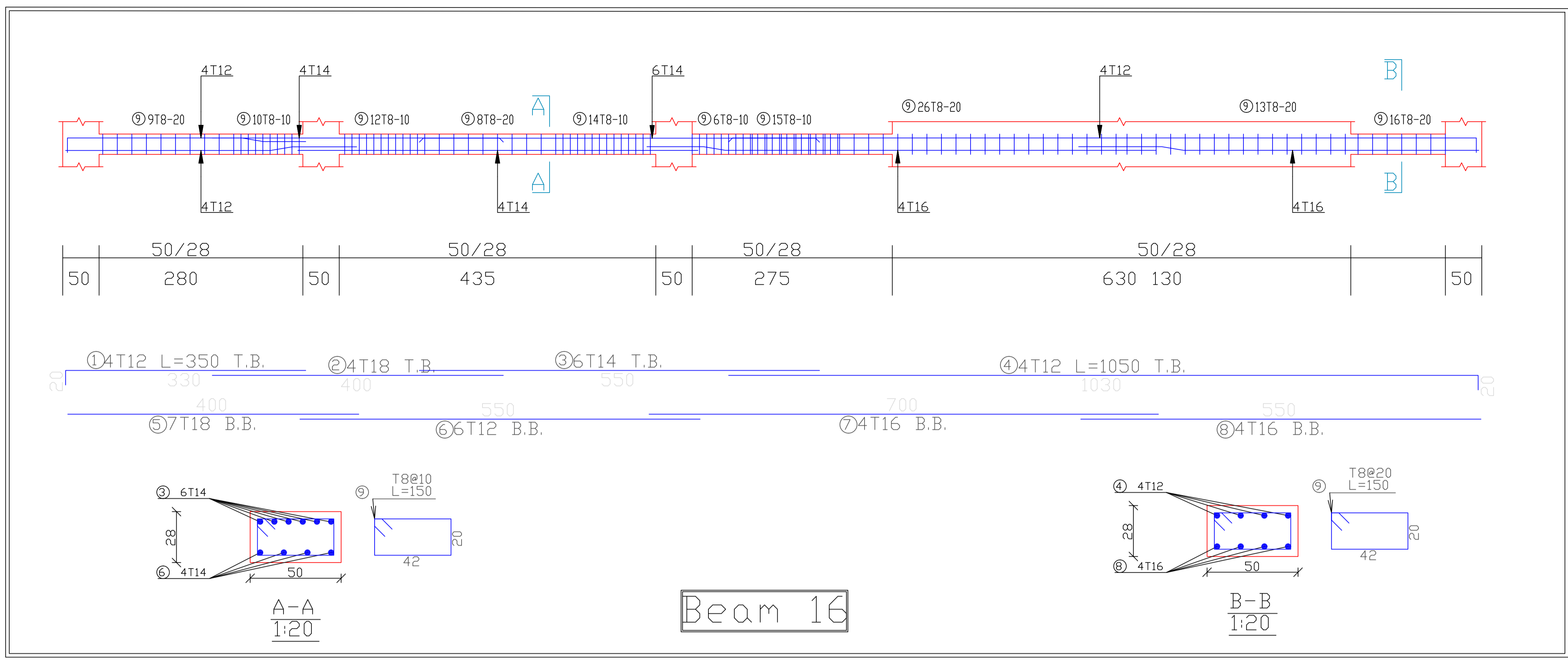
Project Name: Structural Design Of Residential Villa

Drawing Title:
Beam:16 & 17

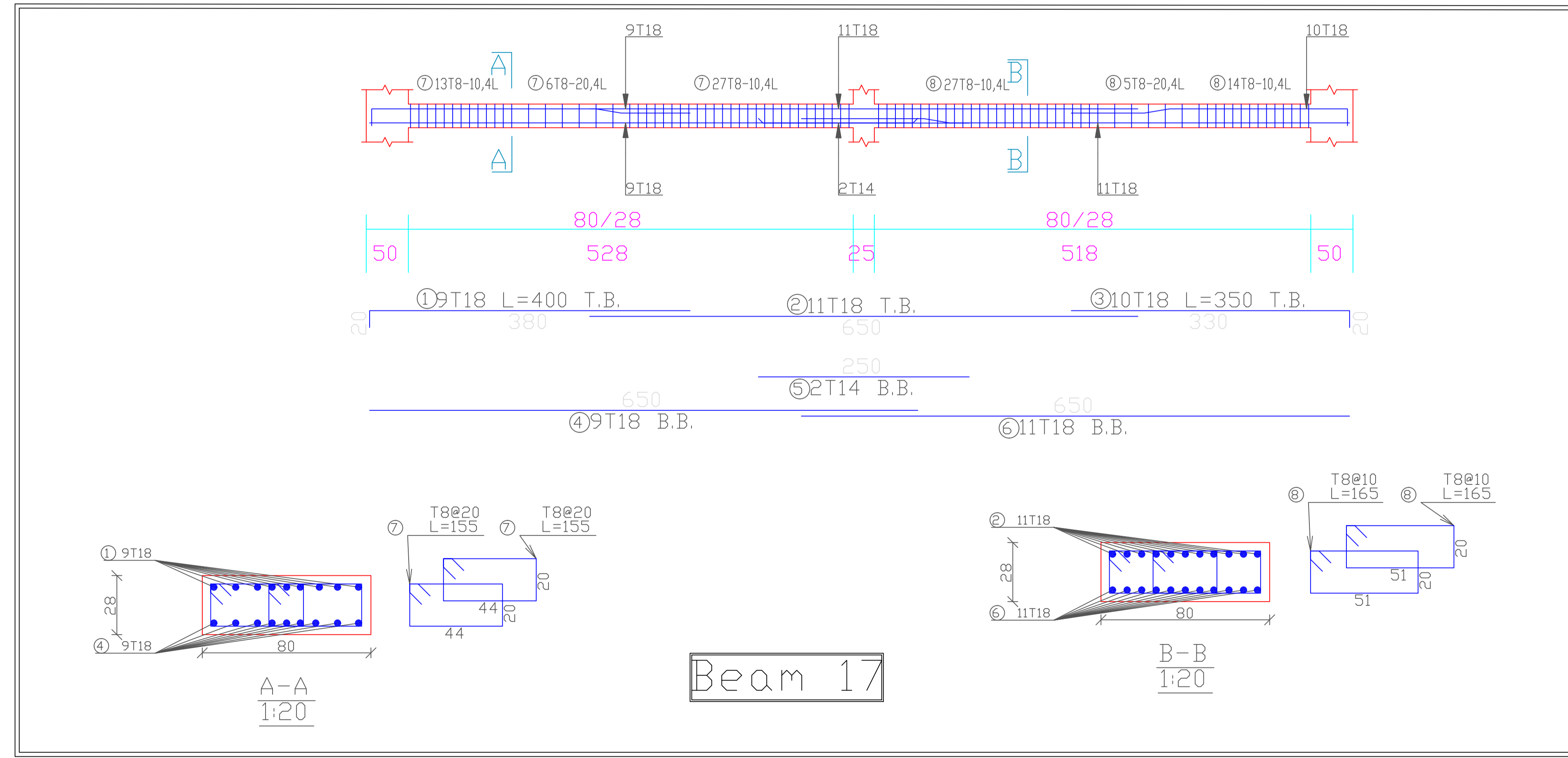
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

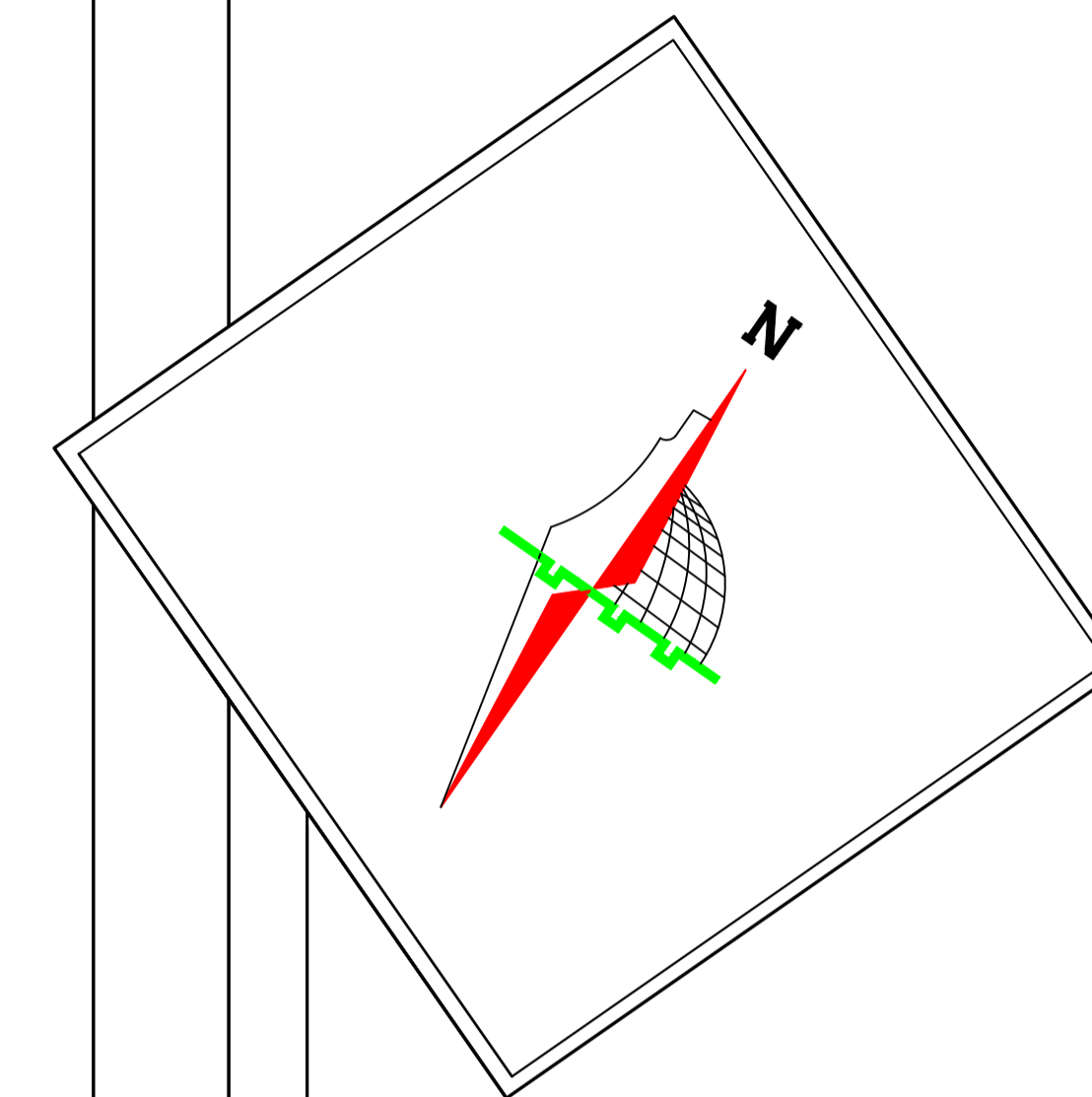
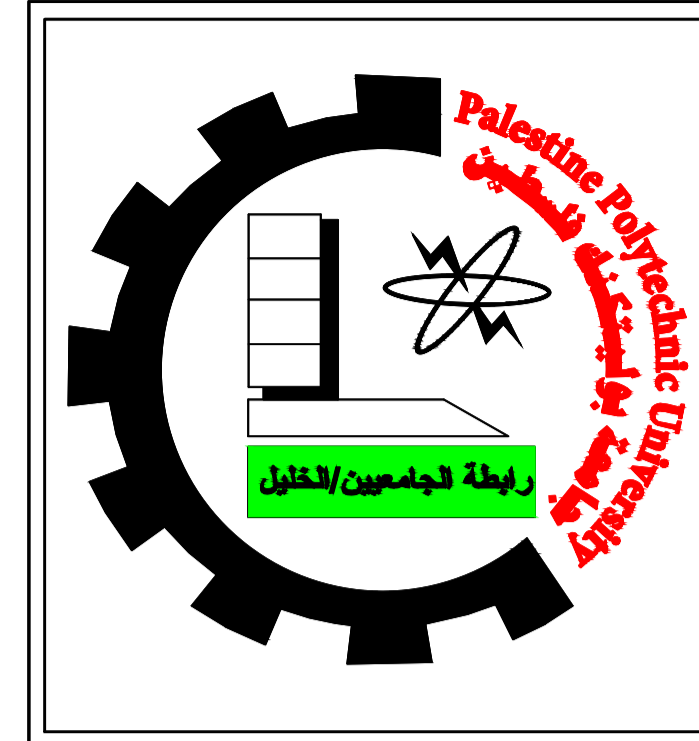
Scale	1/50
Drawing #	S36



Beam 16



Beam 17



Palestine Polytechnic University
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Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

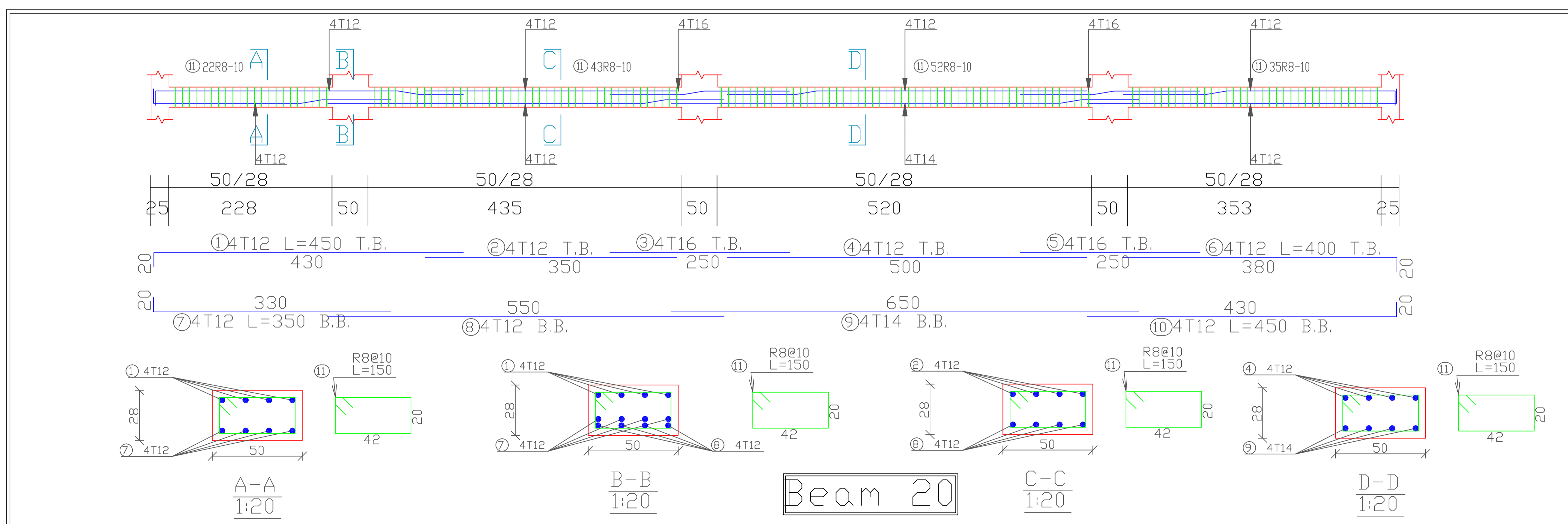
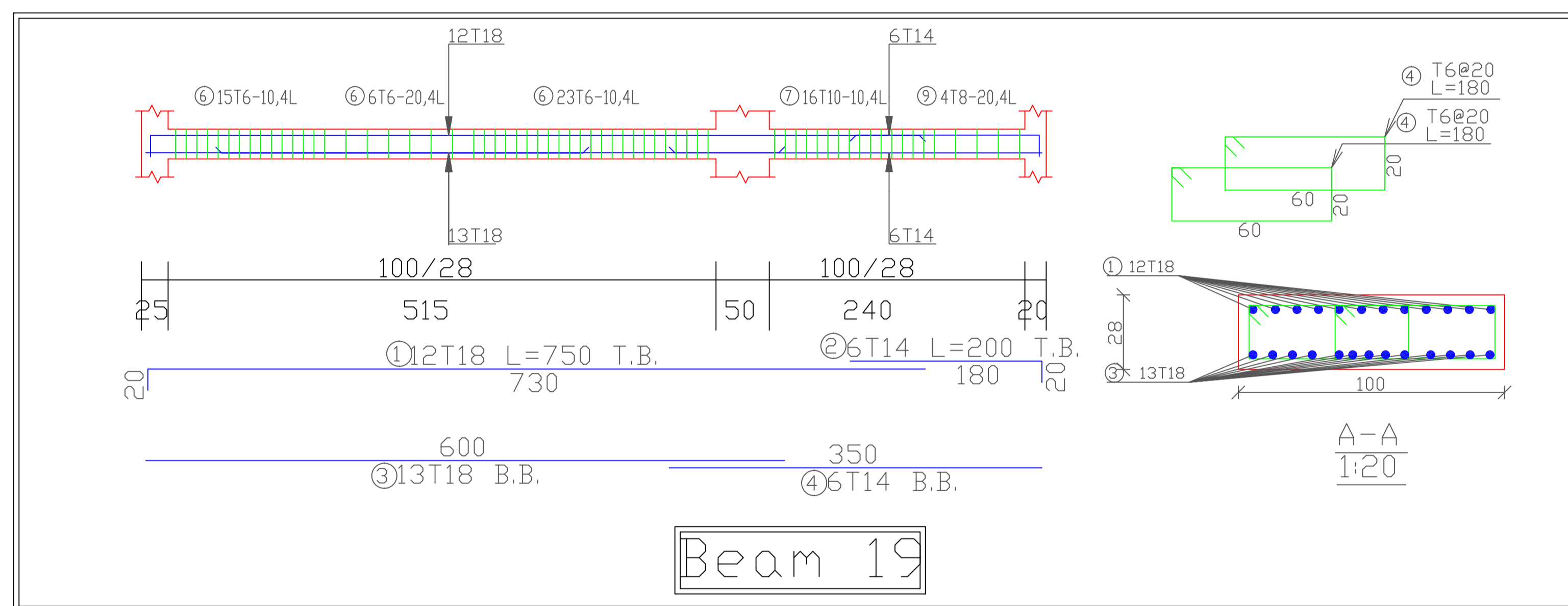
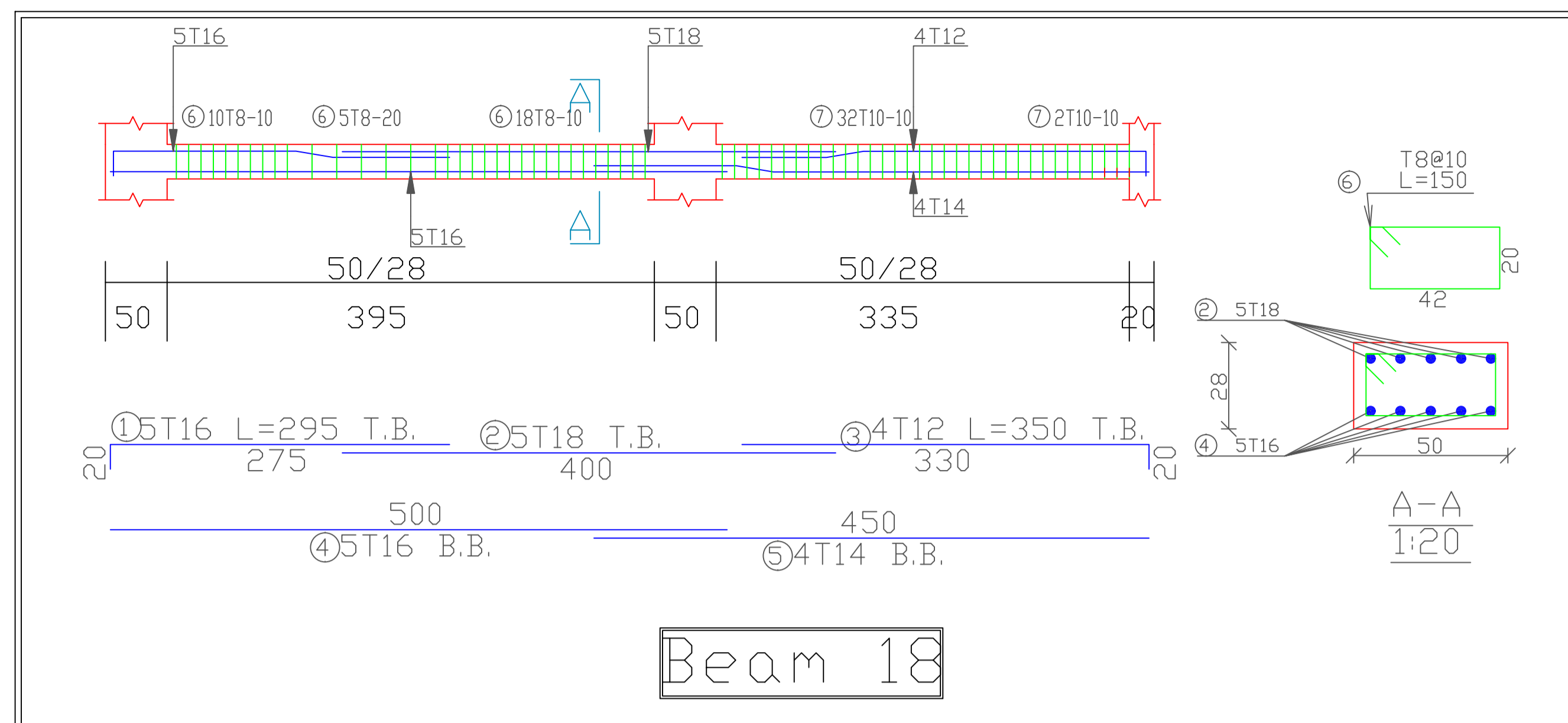
Drawing Title:
Beam:18 & 19 & 20

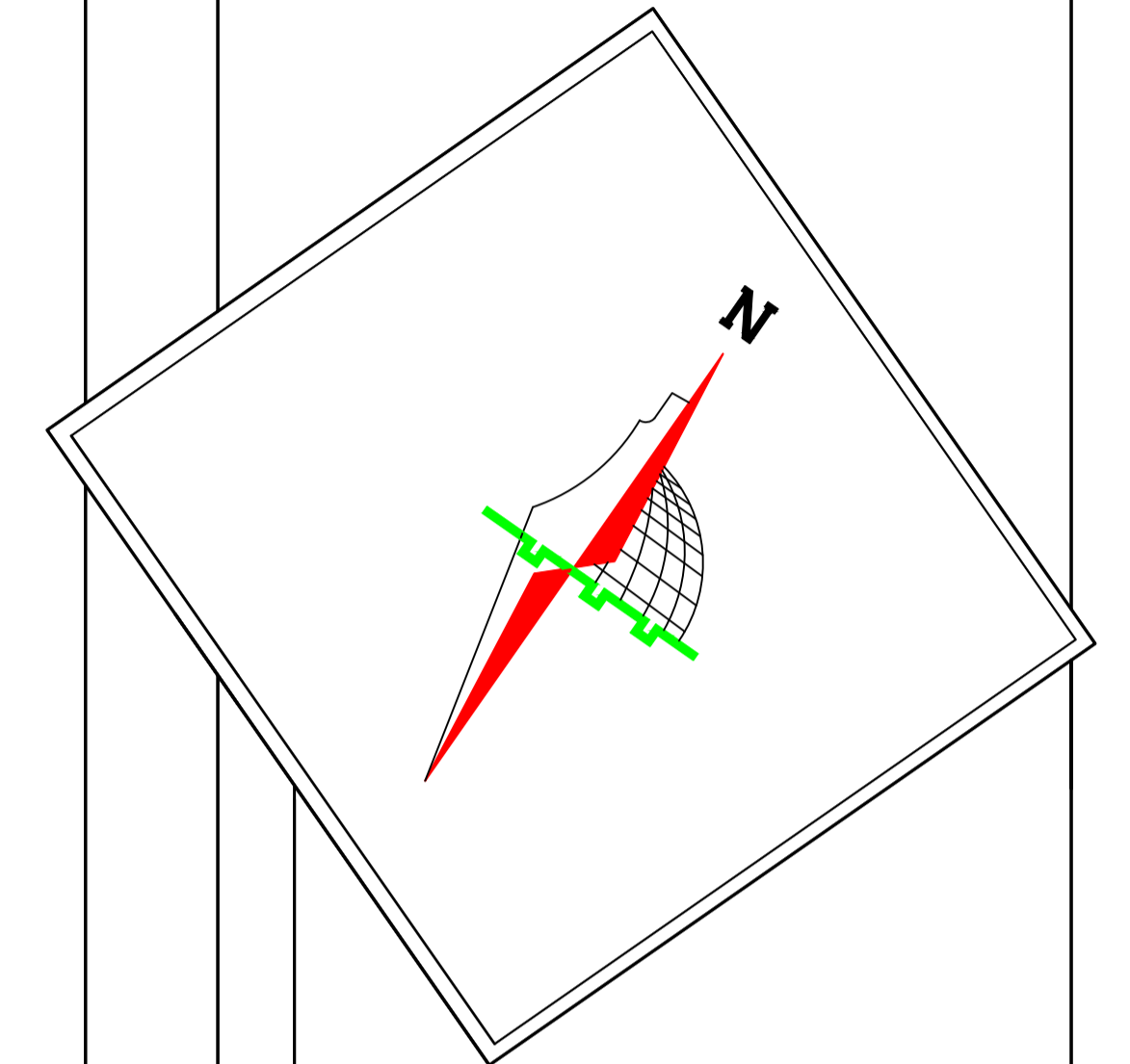
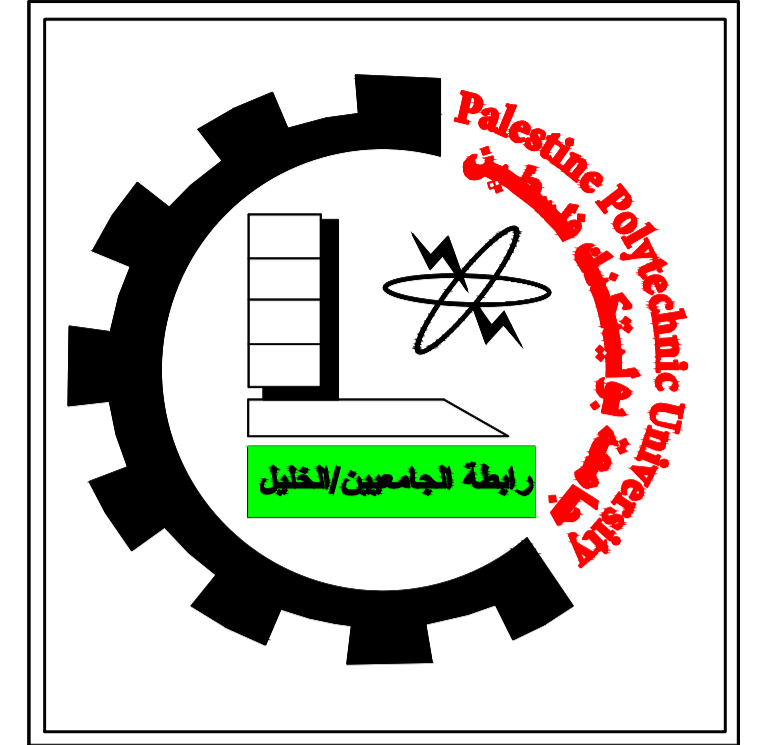
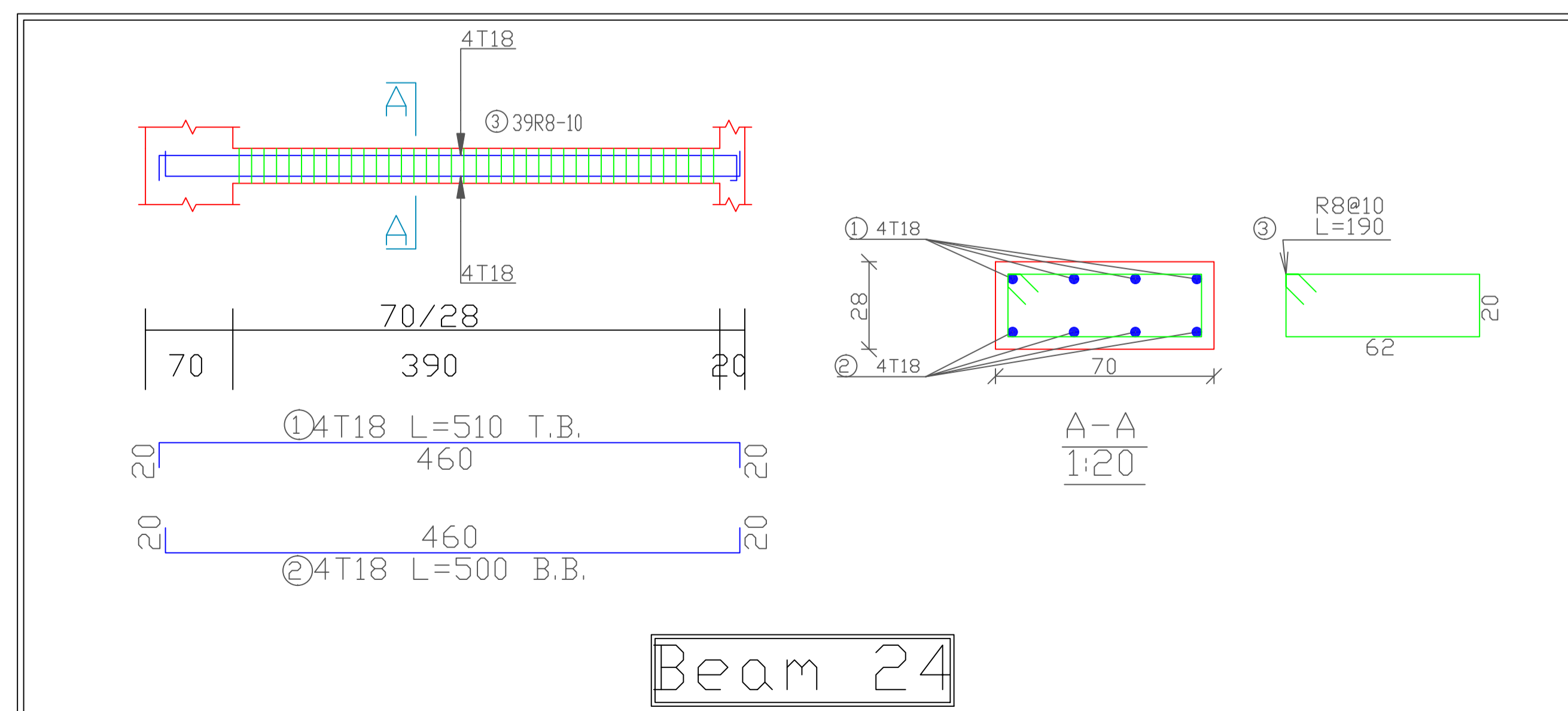
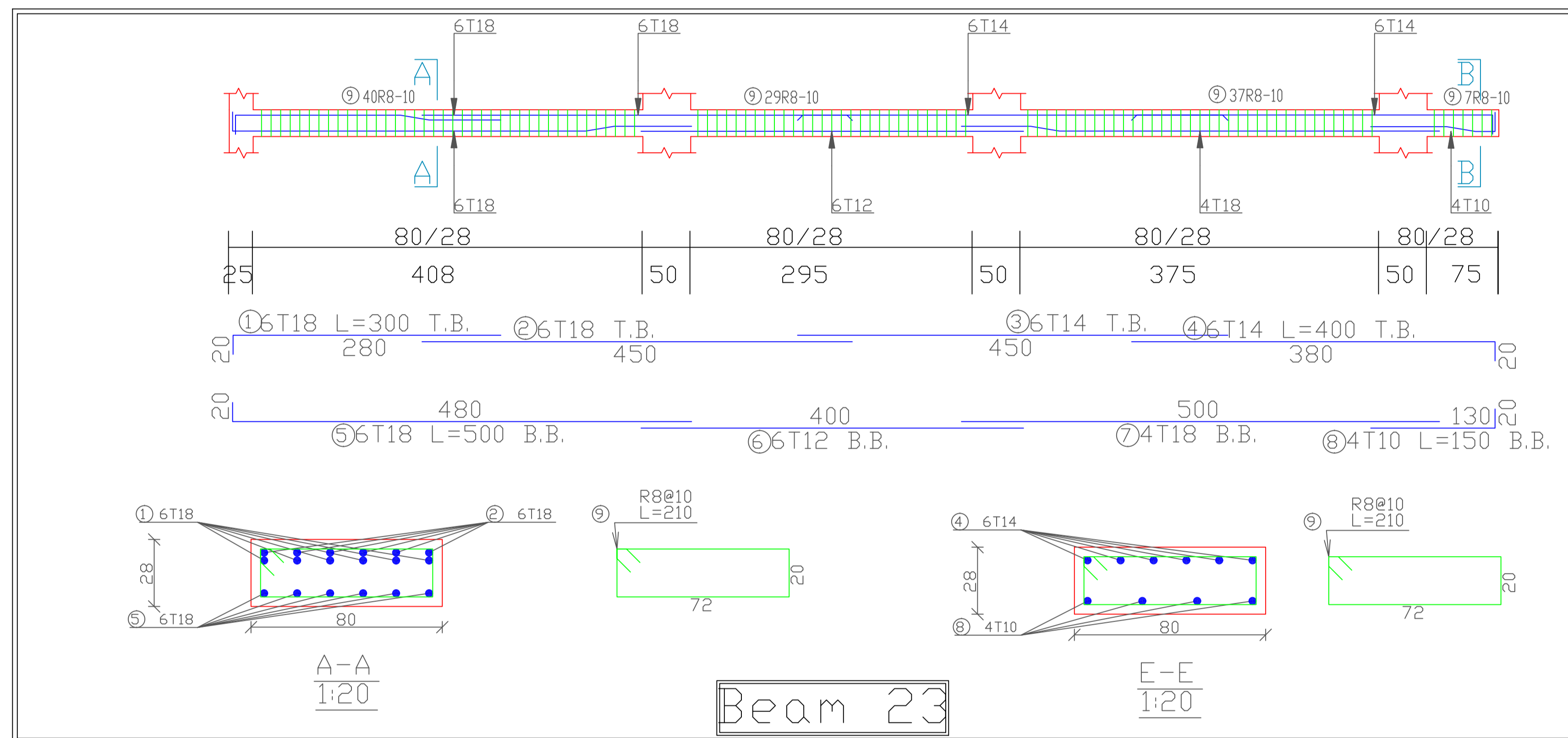
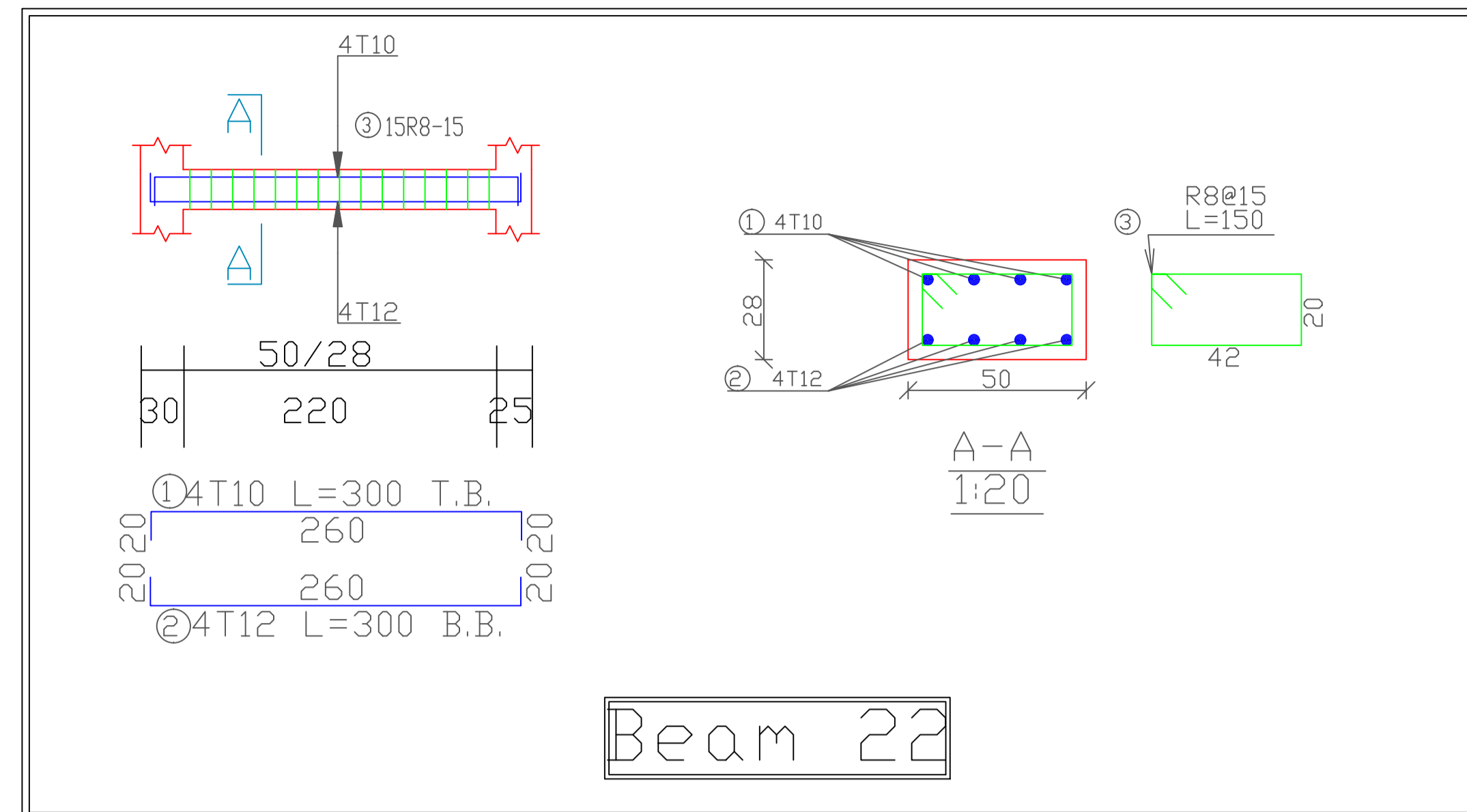
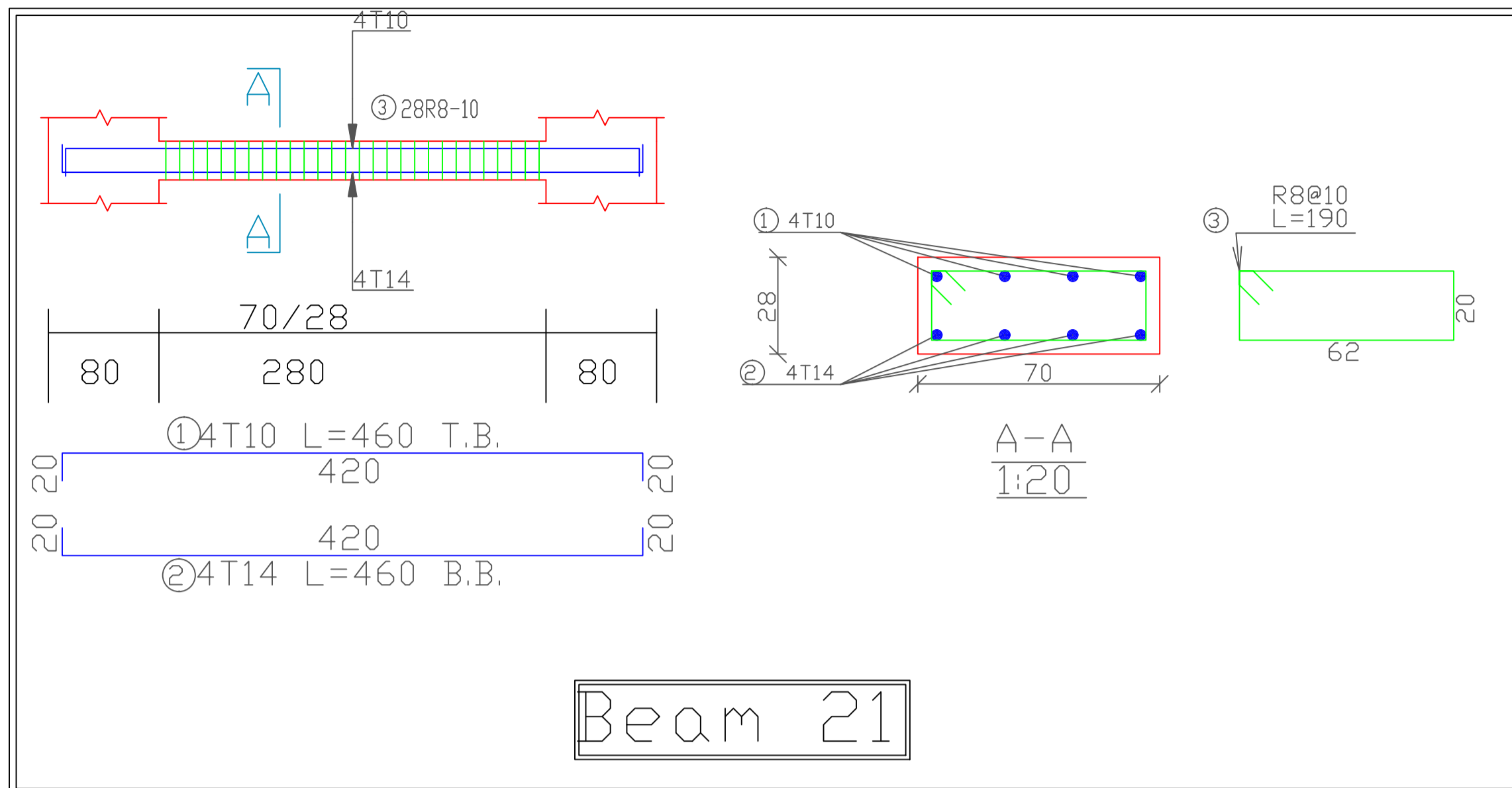
Supervised by :
HAMD I DAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # **S37**





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

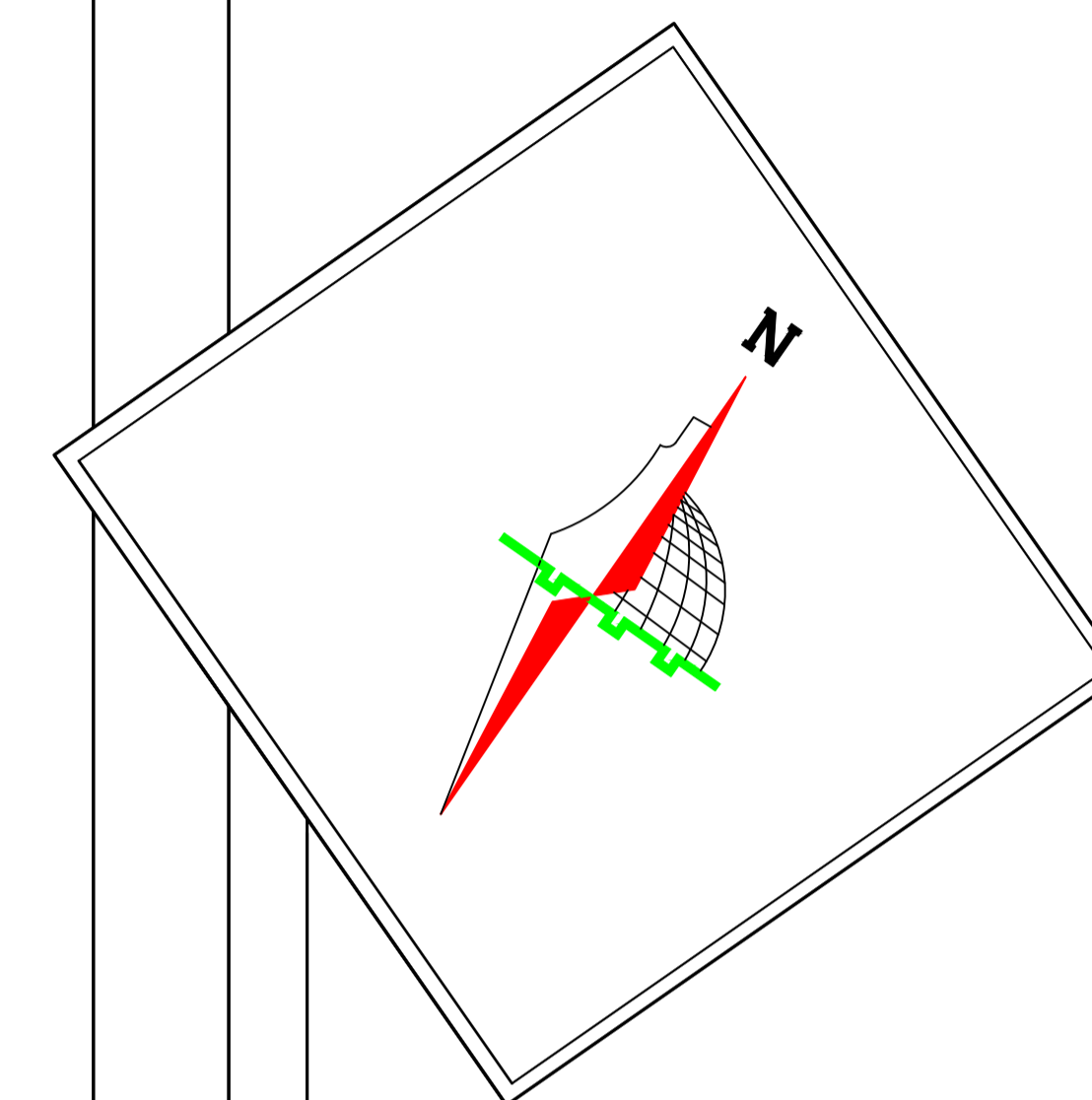
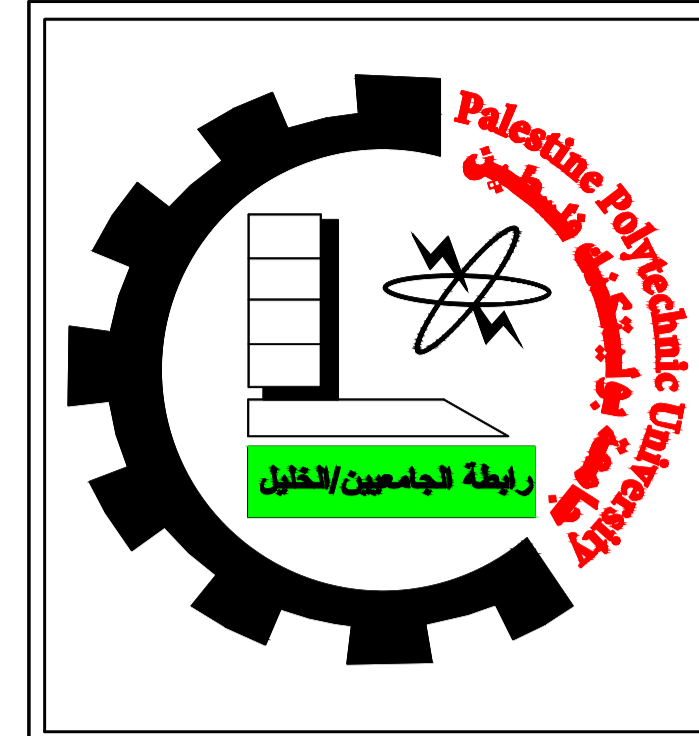
Project Name: Structural Design Of Residential Villa

Drawing Title:
Beam:21 & 22 & 23 & 24

Supervised by :
HAMD IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/50
Drawing #	S38



Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

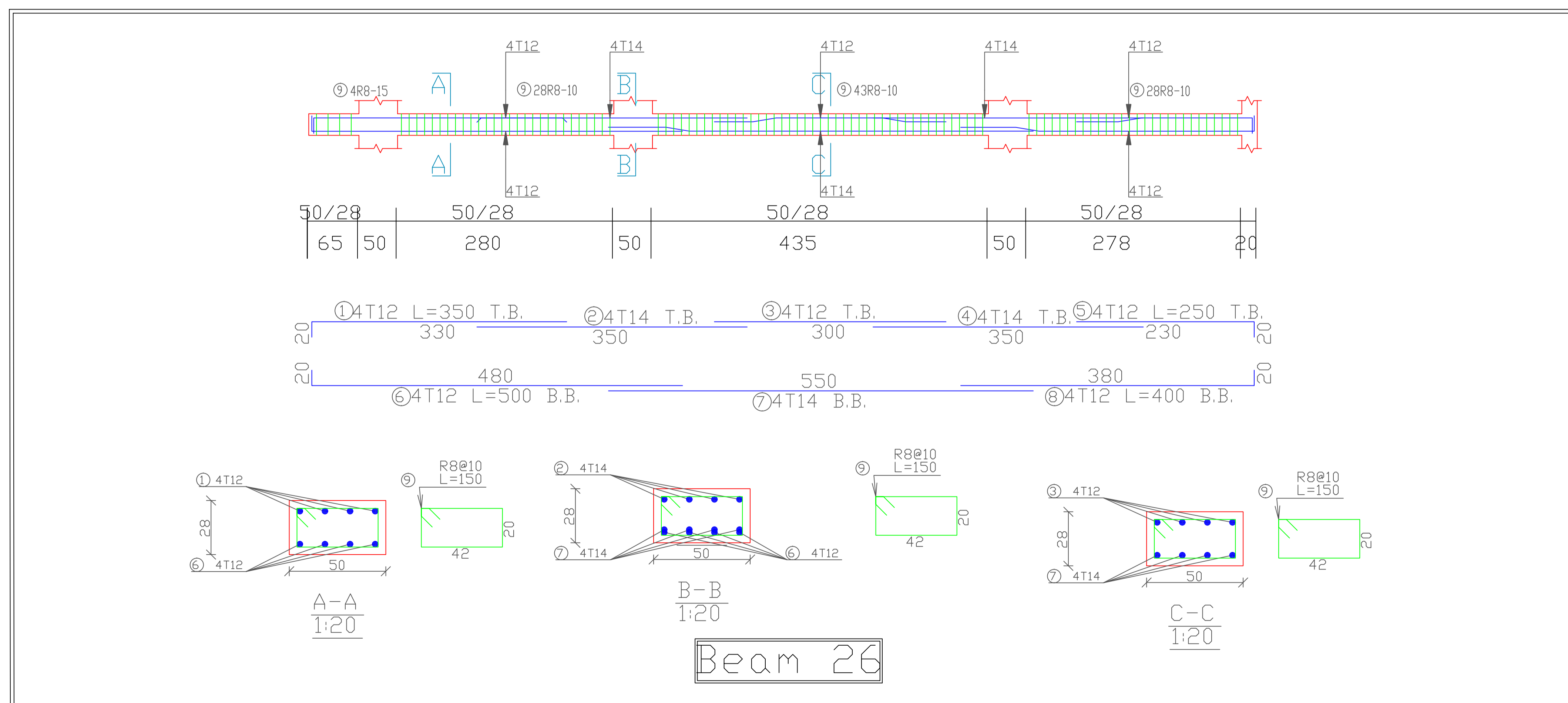
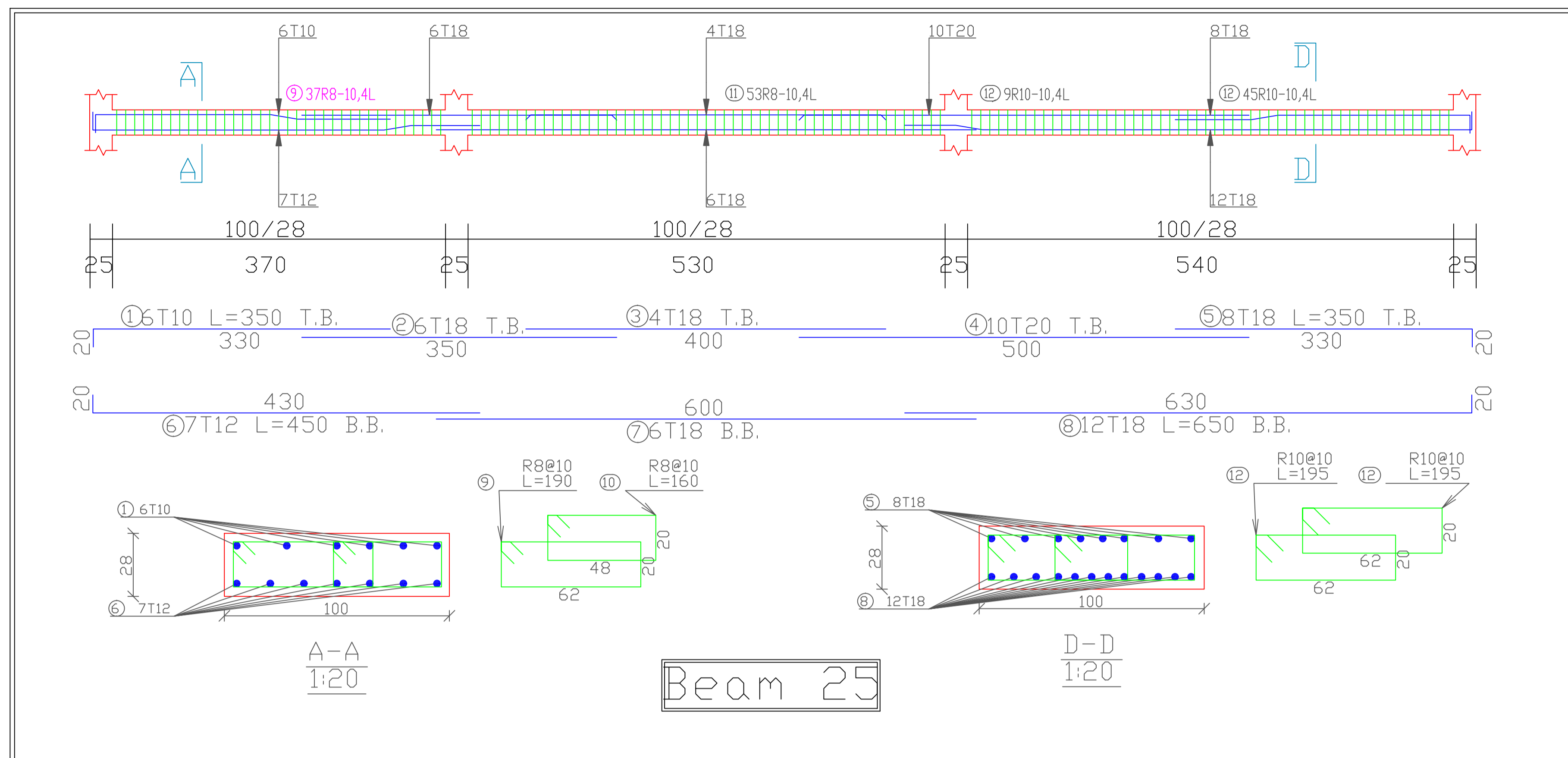
Drawing Title:
Beam:25 & 26

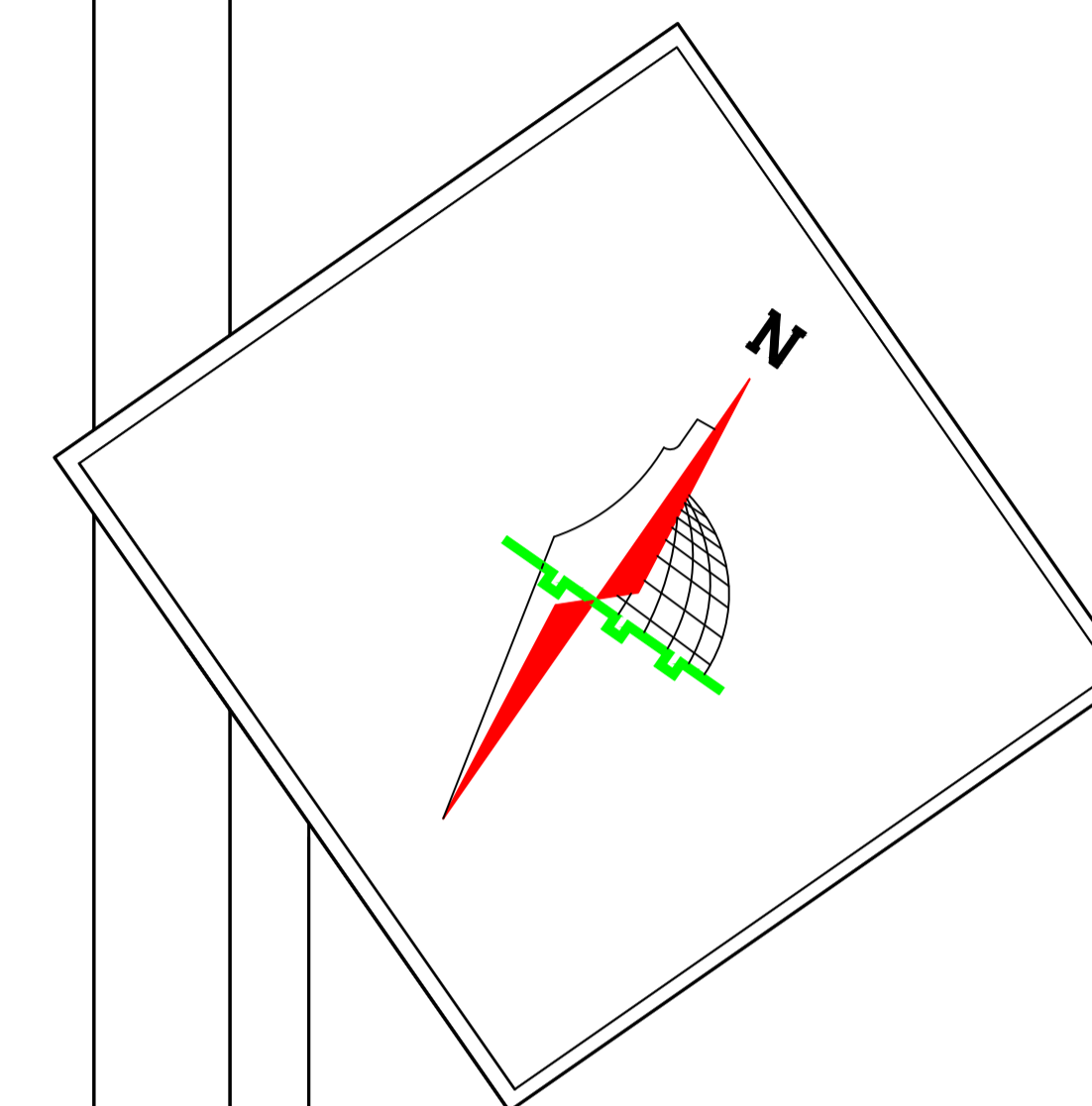
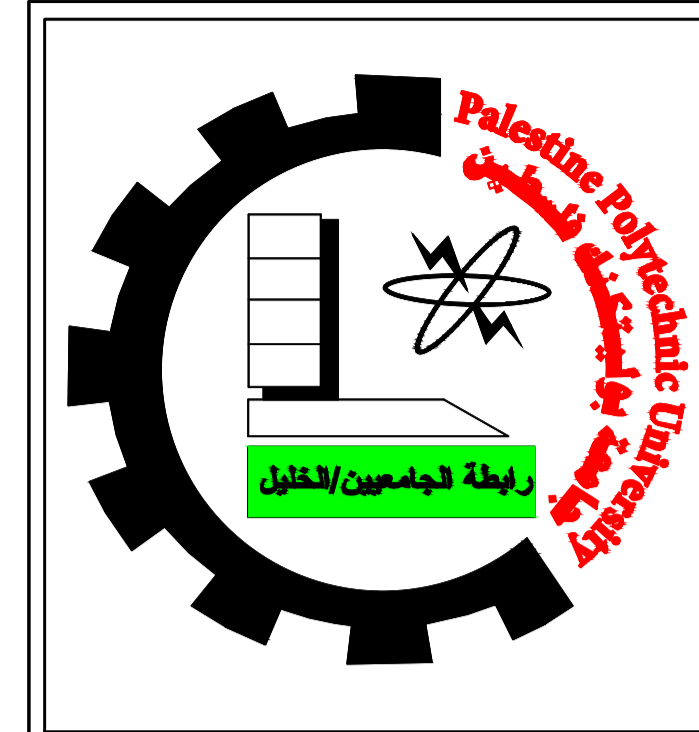
Supervised by :
HAMD I DAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # **S39**





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

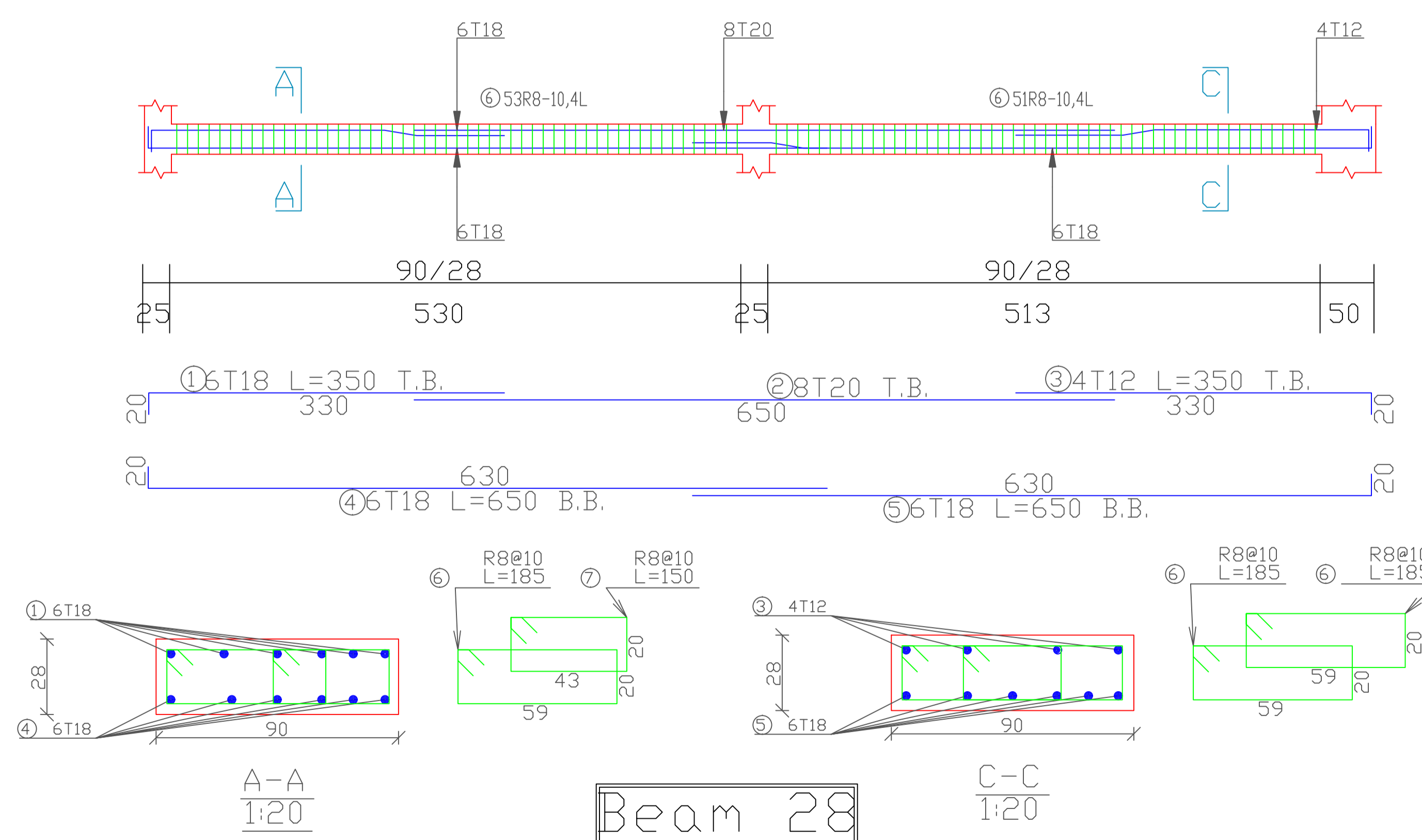
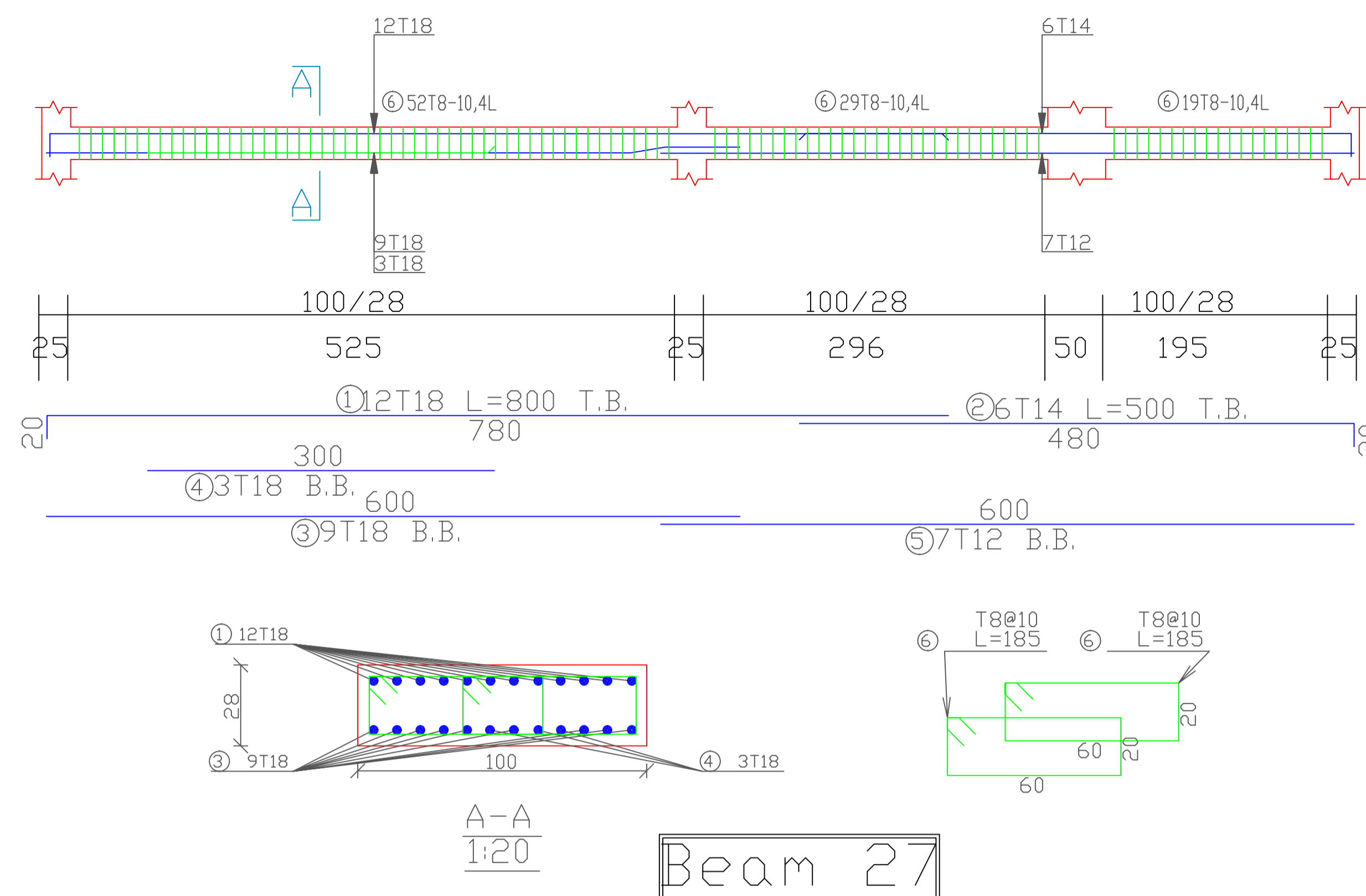
Drawing Title:
Beam:27 & 28

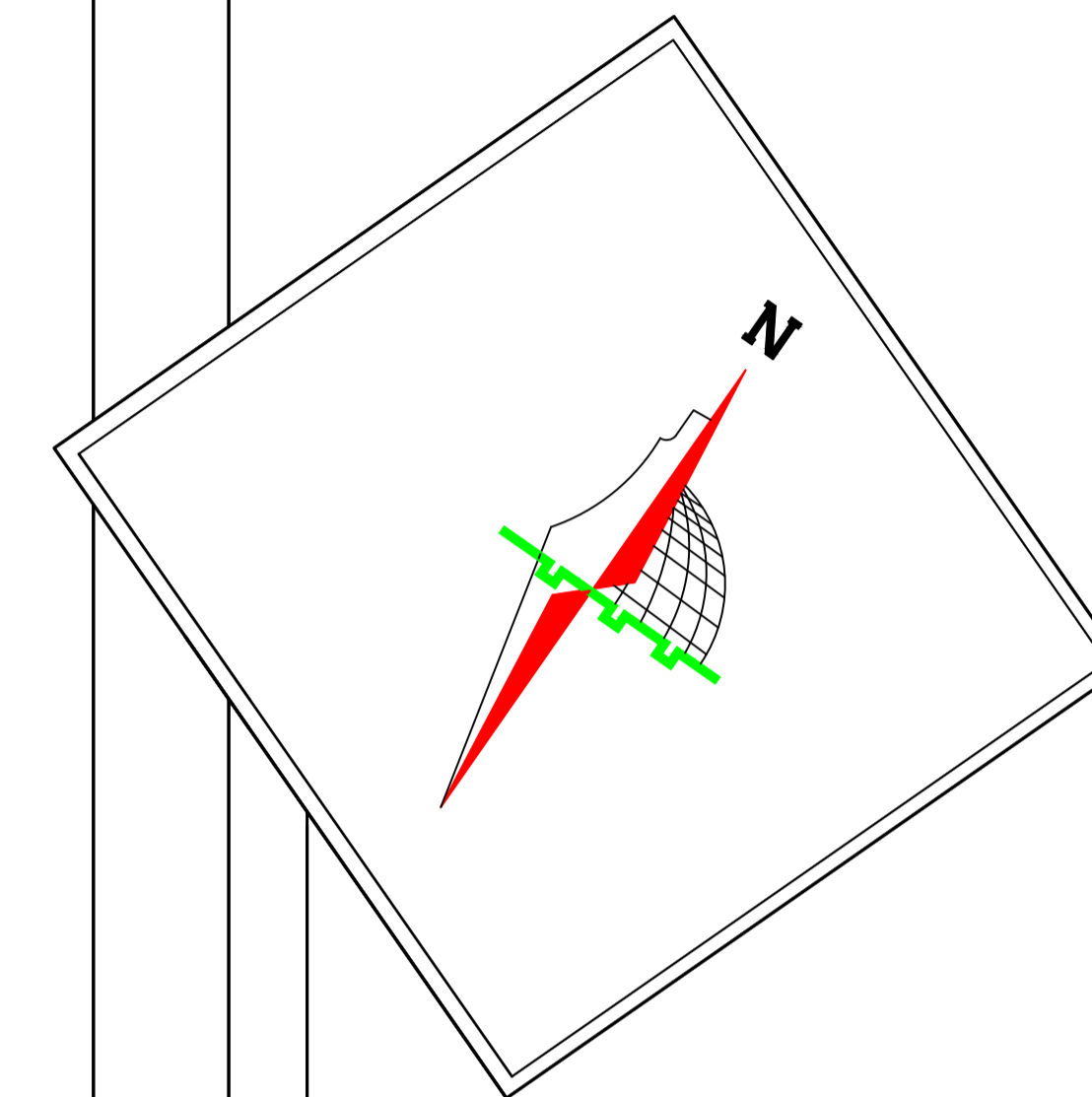
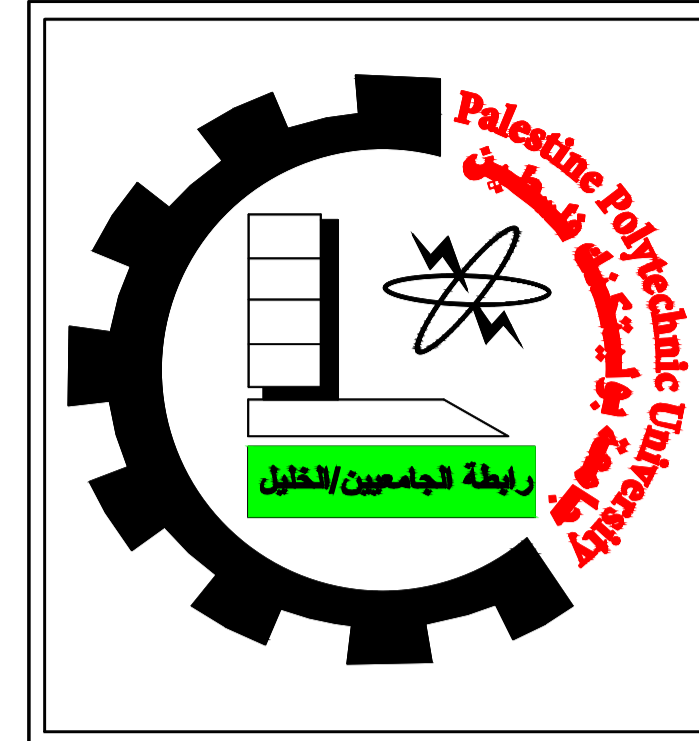
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # **S40**





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

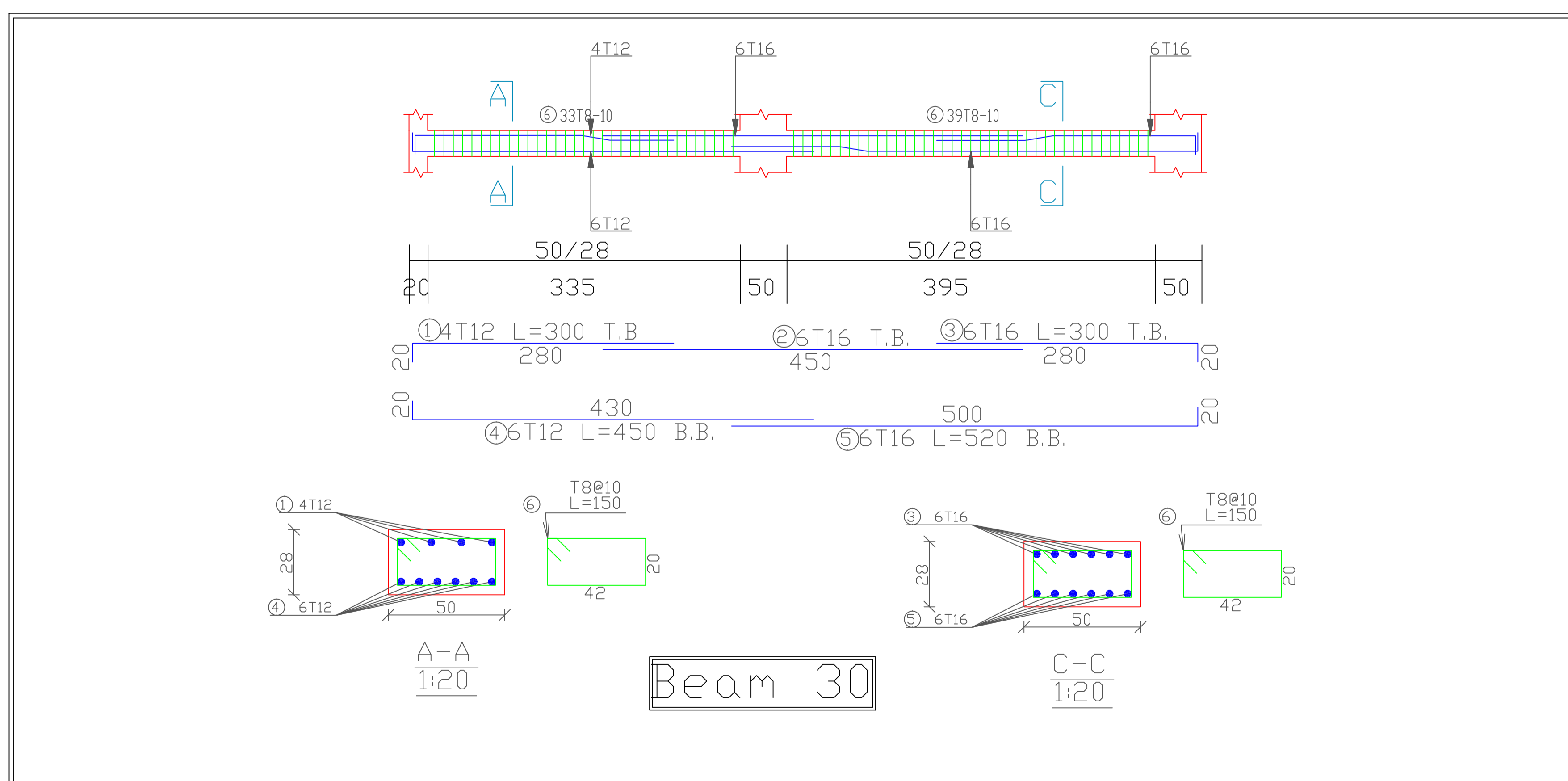
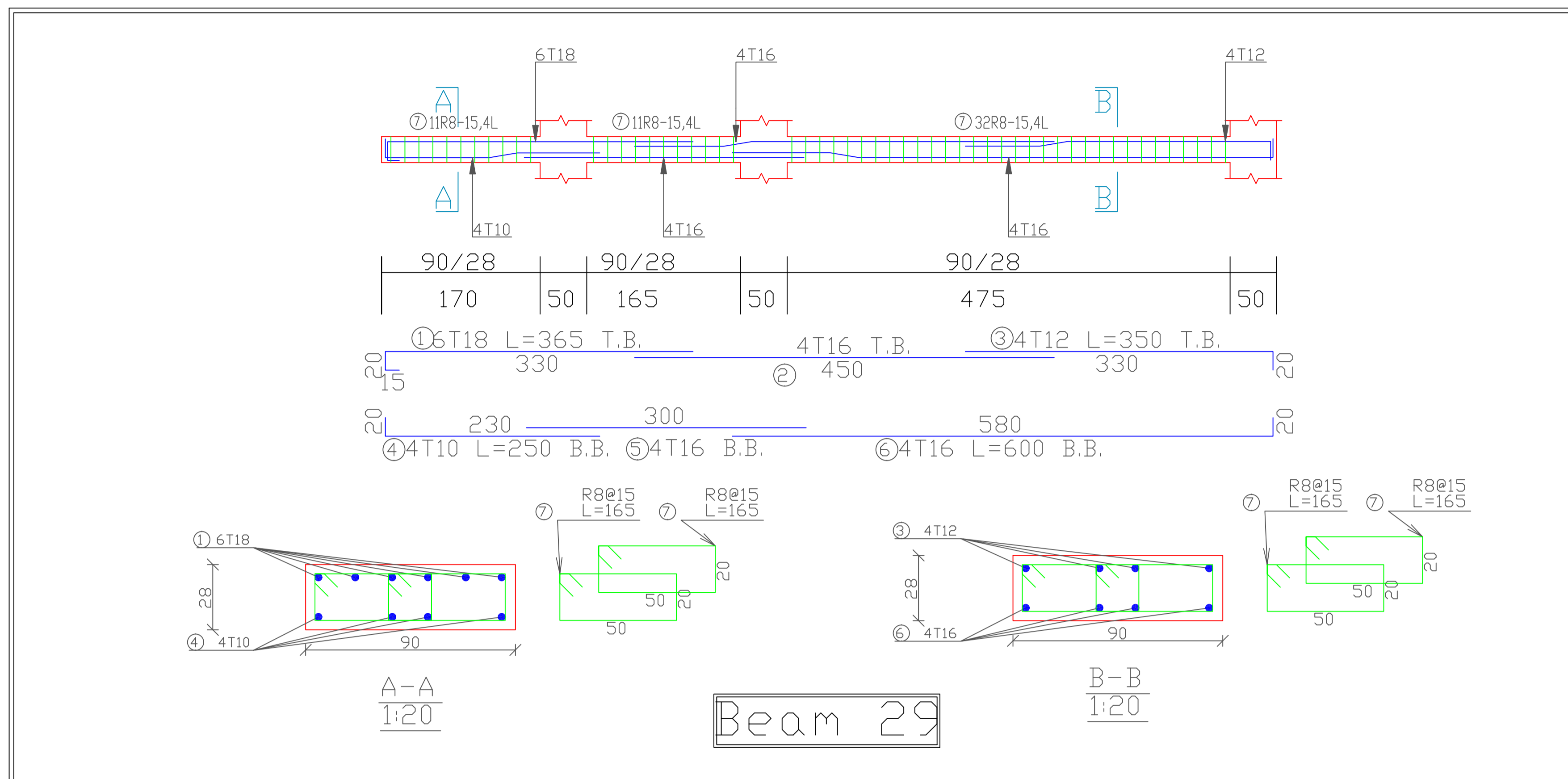
Drawing Title:
Beam:29 & 30

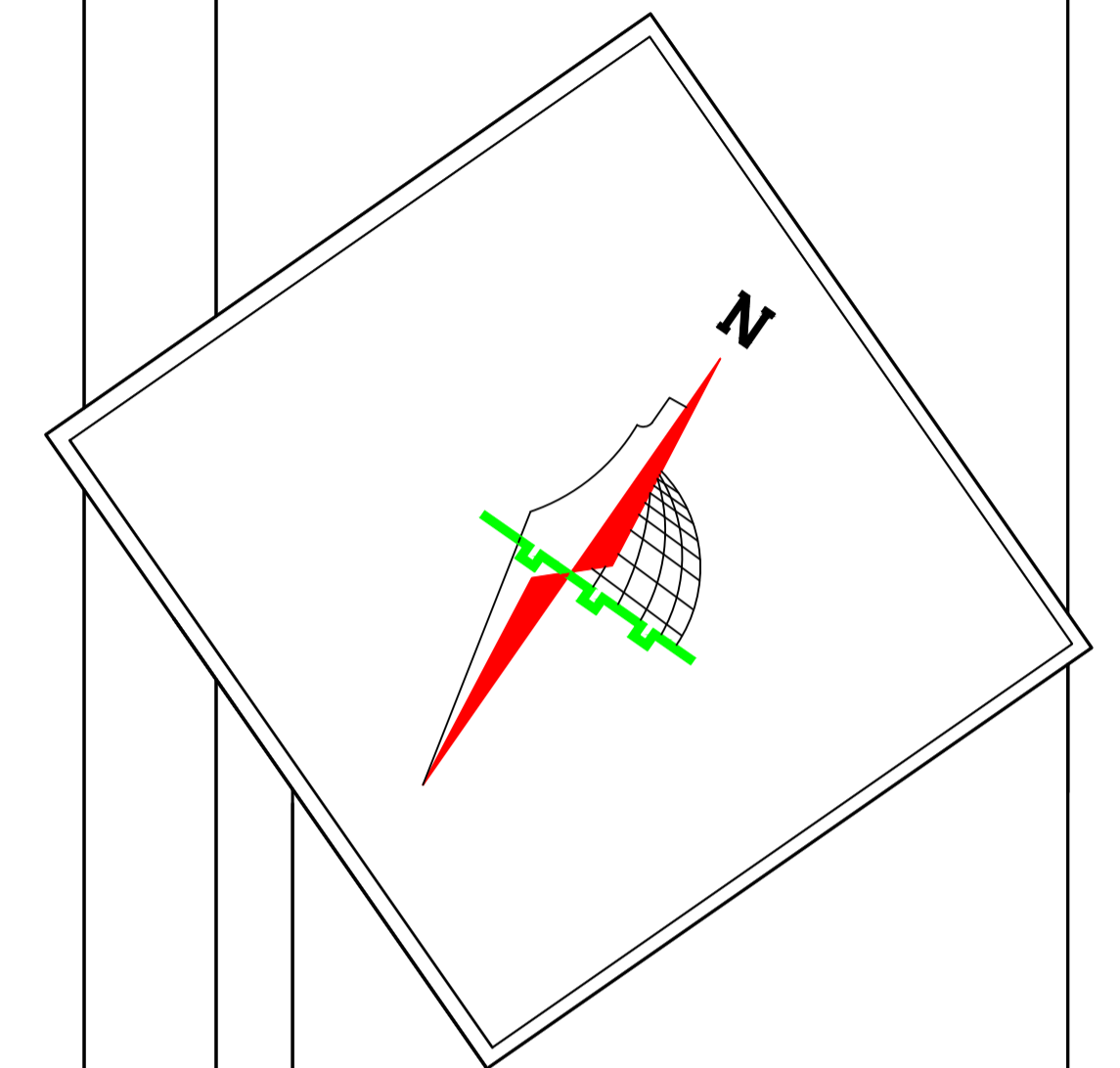
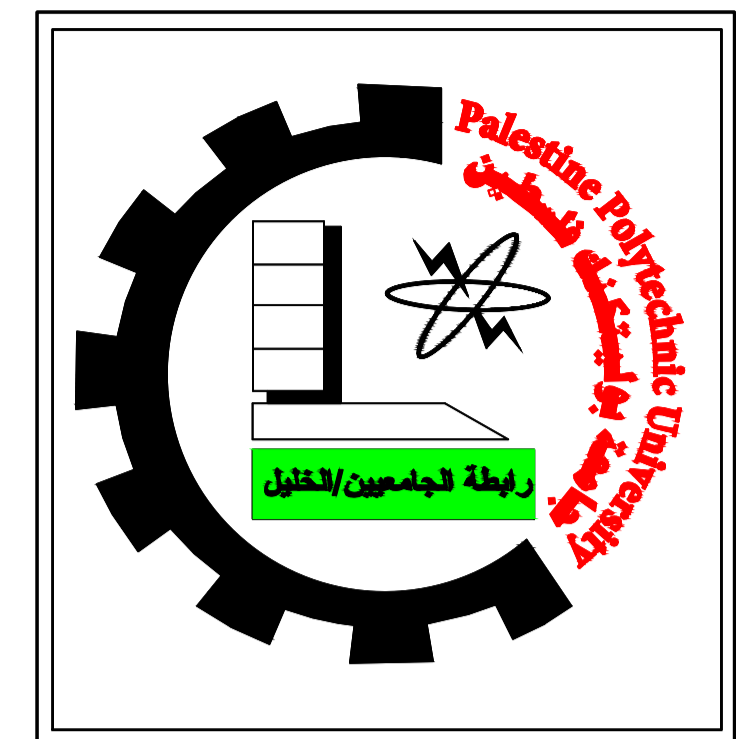
Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale 1/50

Drawing # **S41**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:

Beam:31& 32

Supervised by :

HAMDI IDAIS

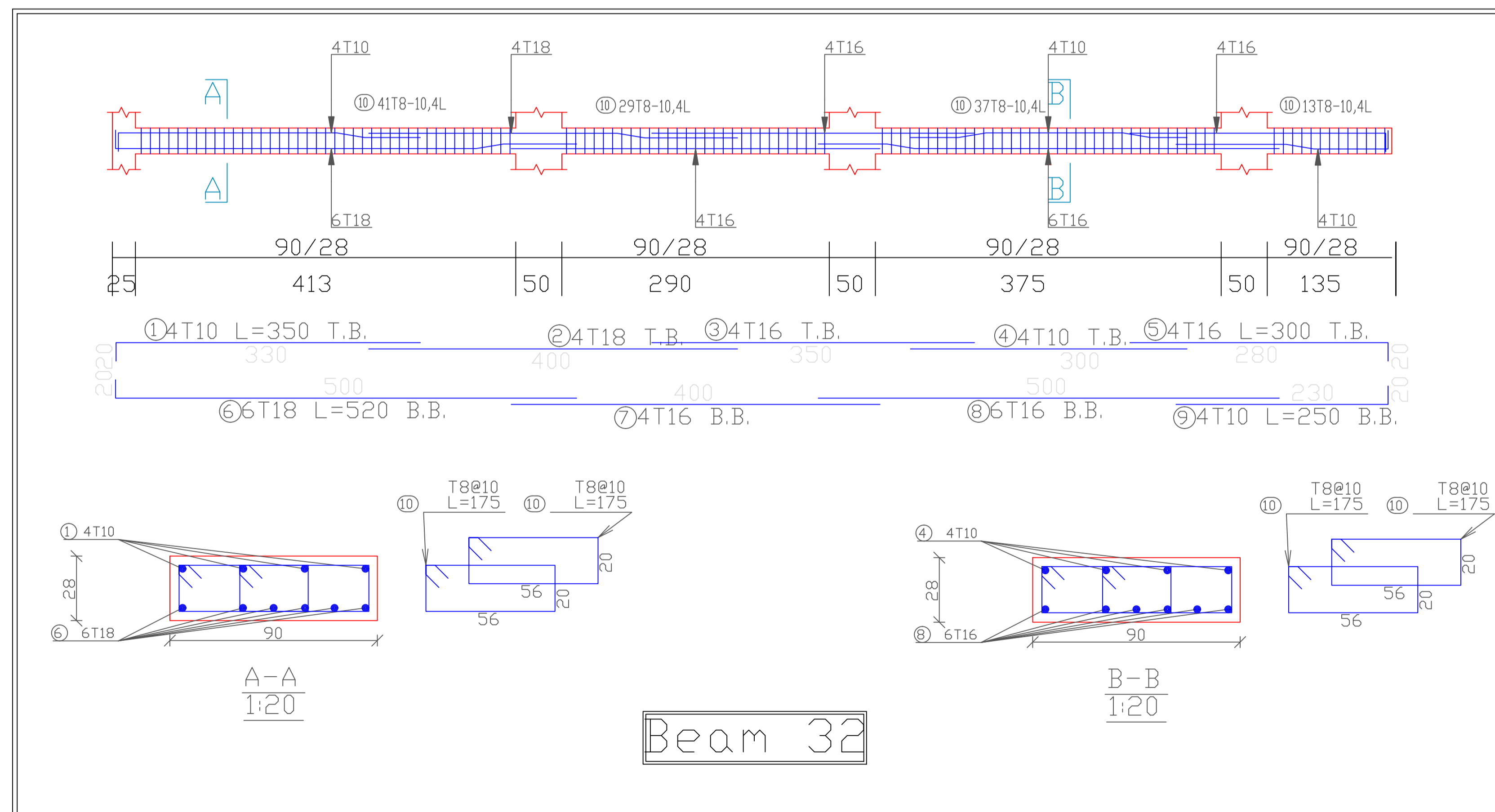
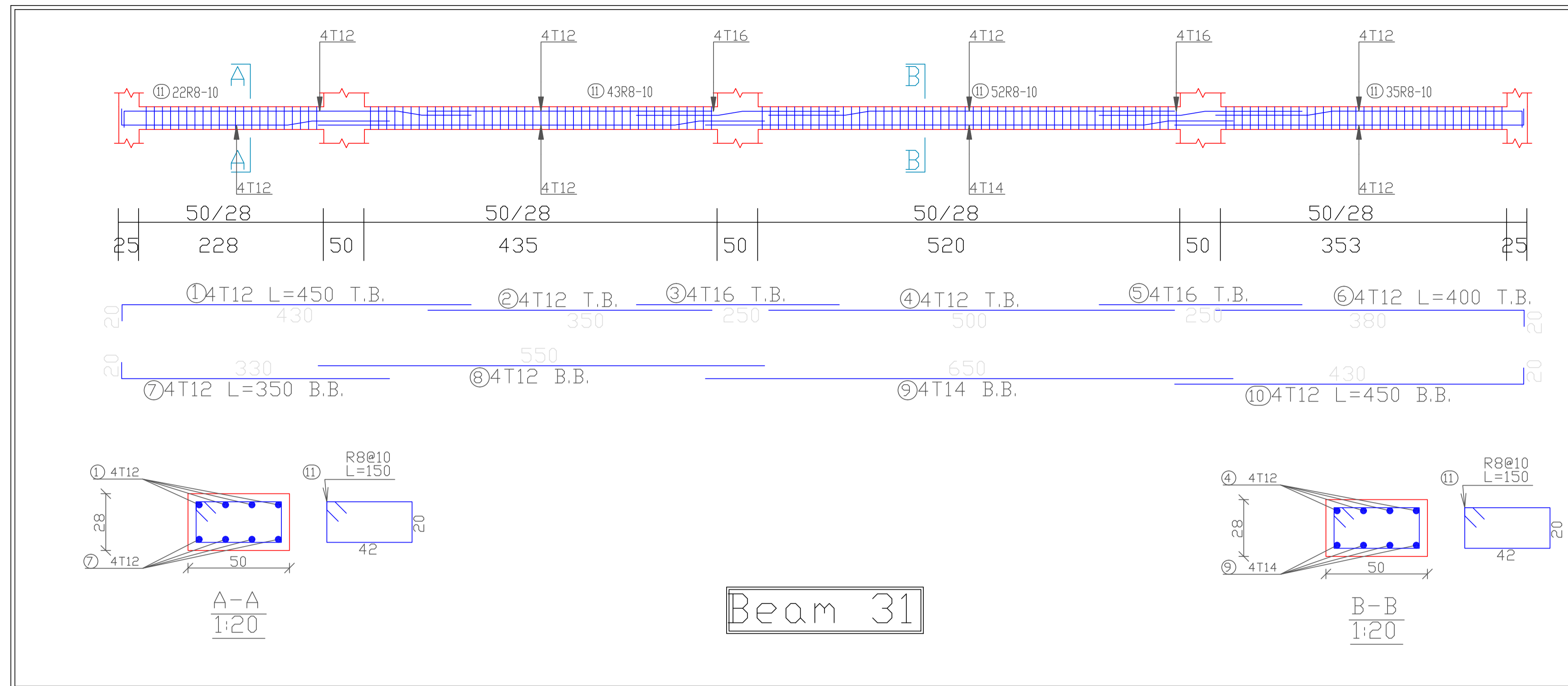
Done by :

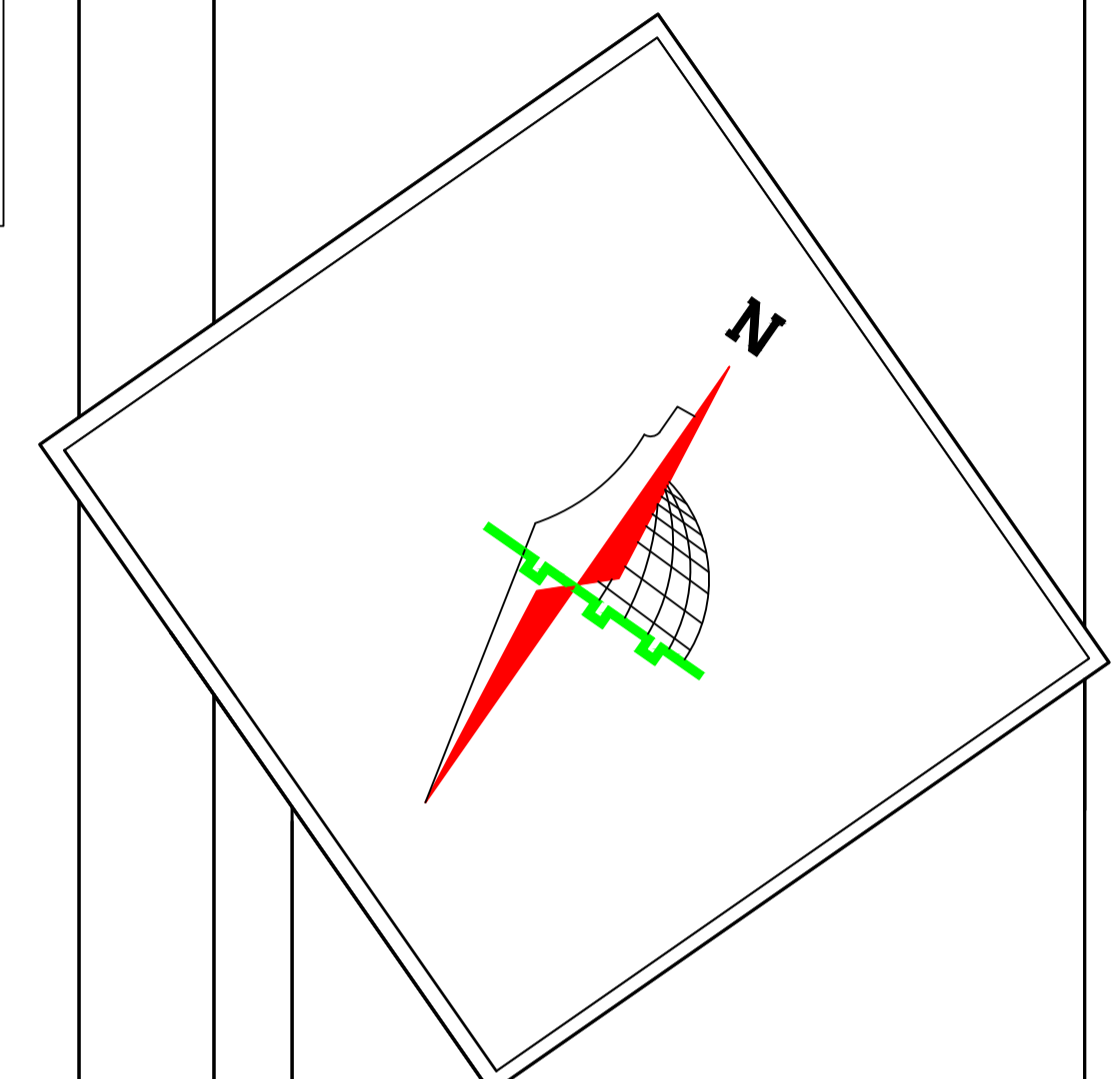
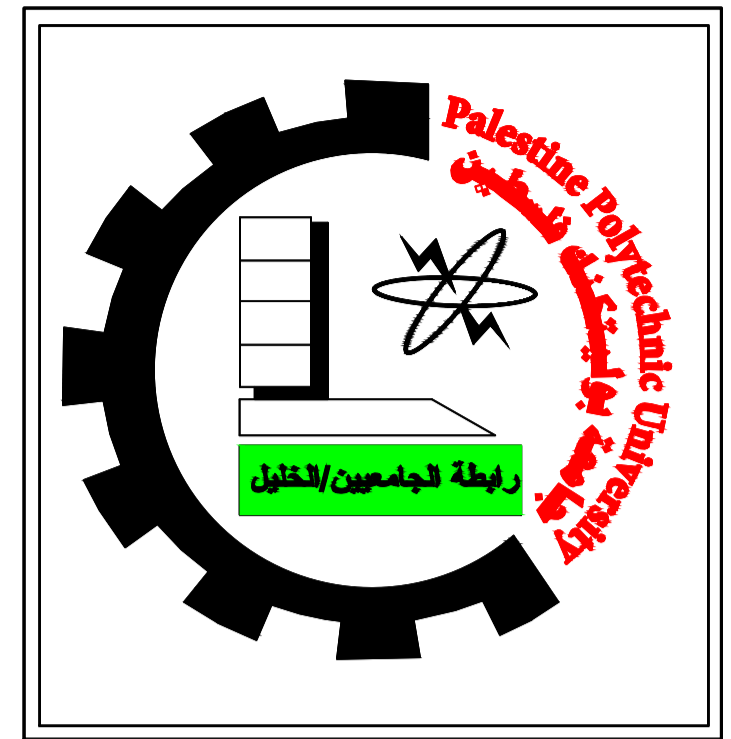
Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/50

Drawing # **S42**





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

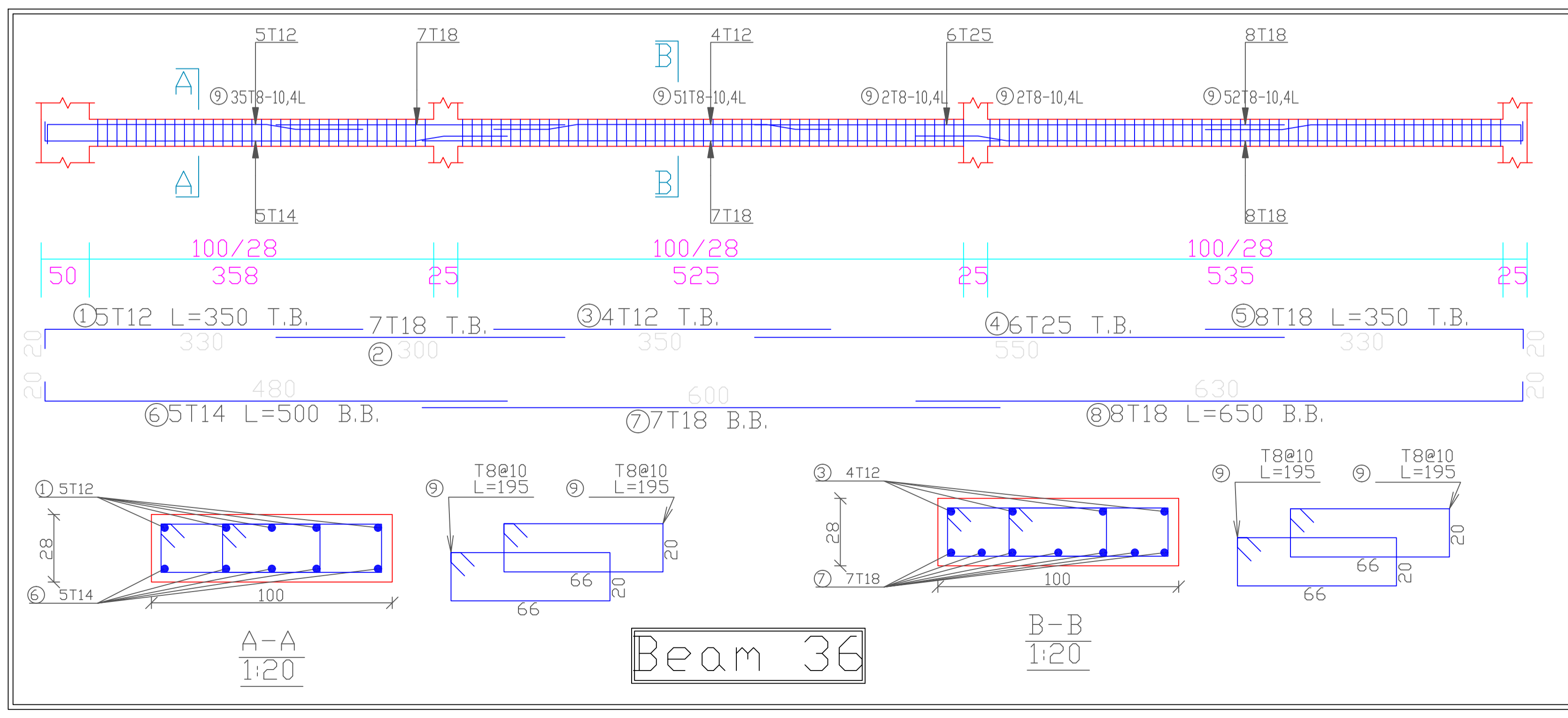
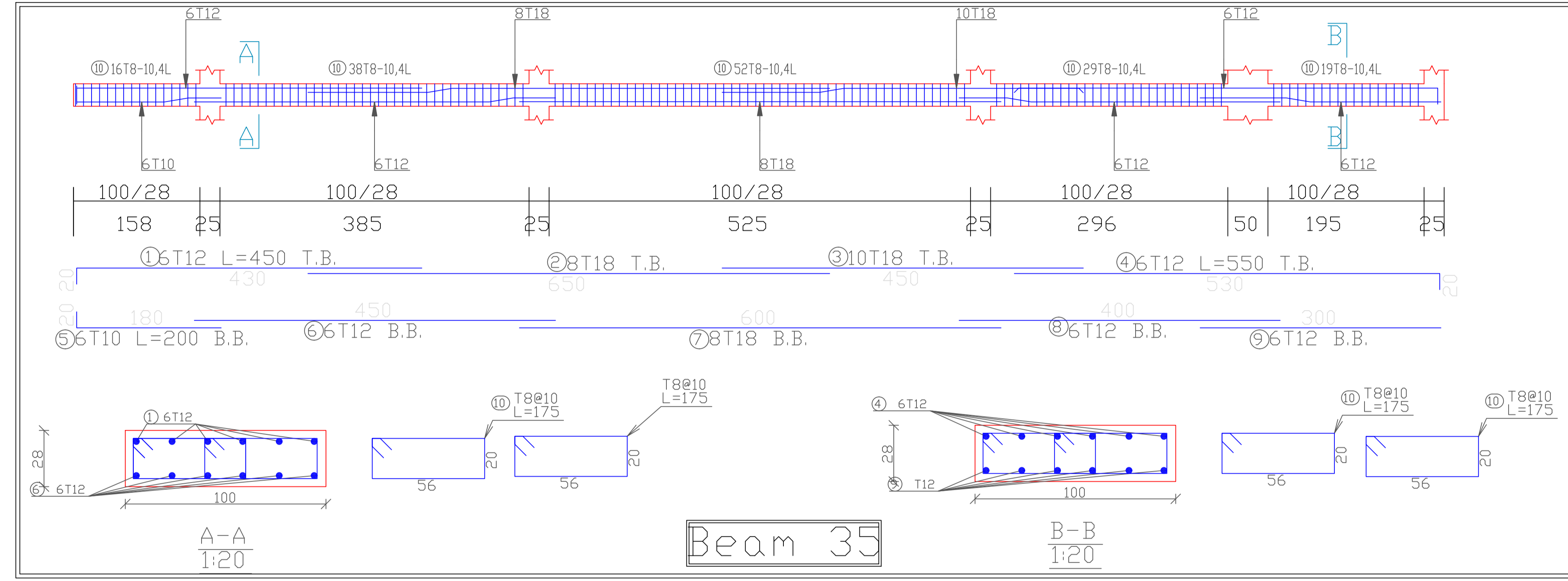
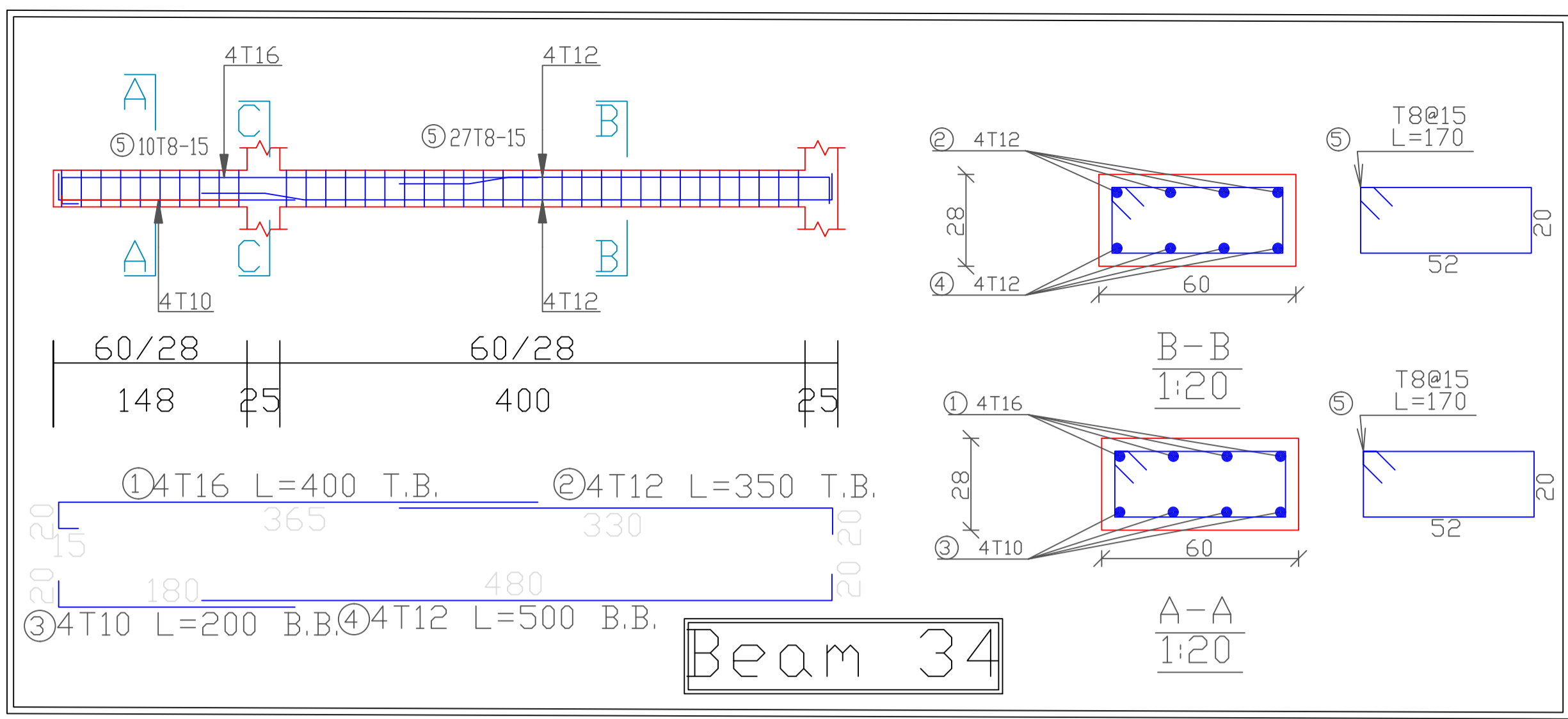
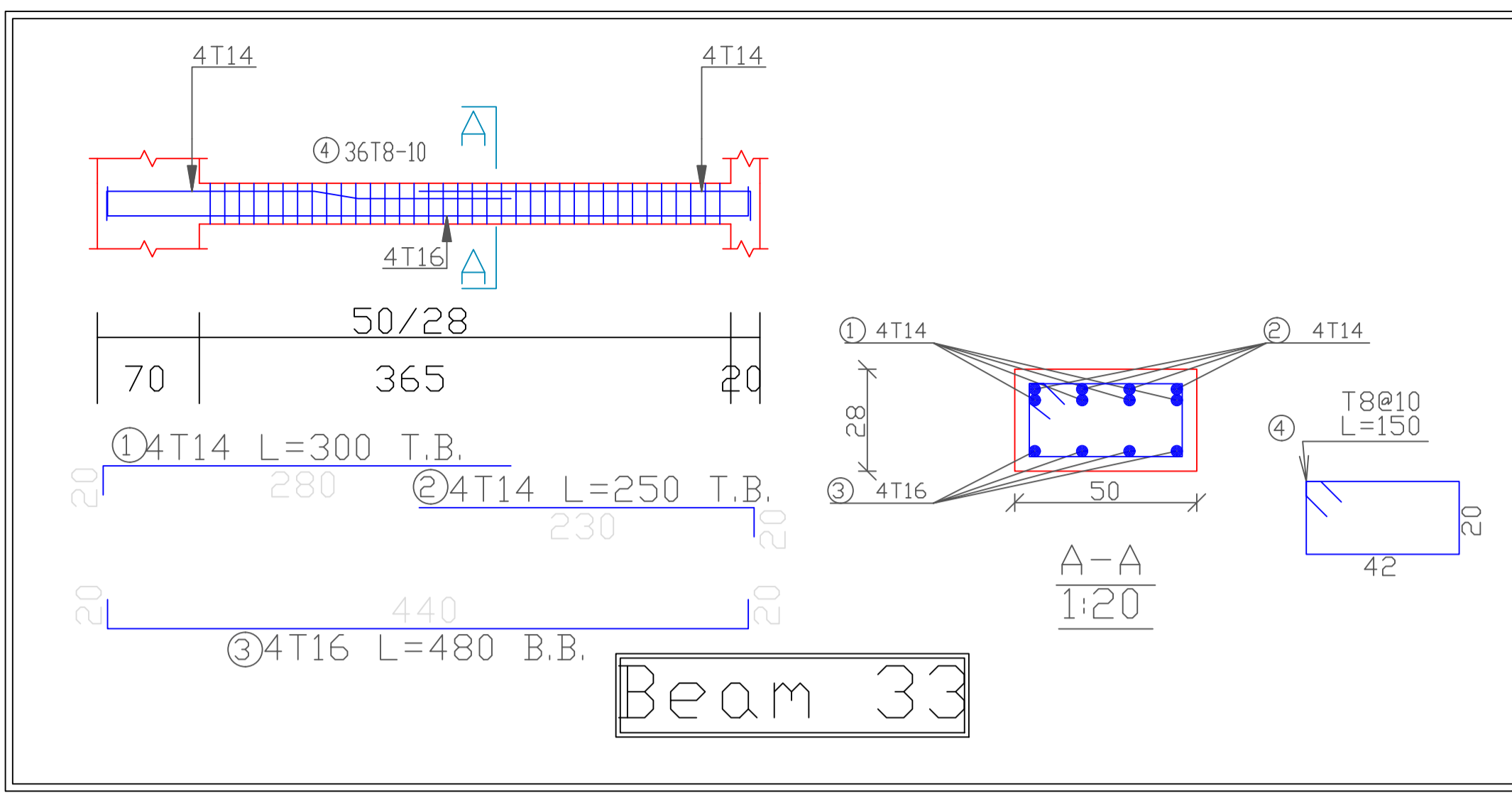
Project Name: Structural Design Of Residential Villa

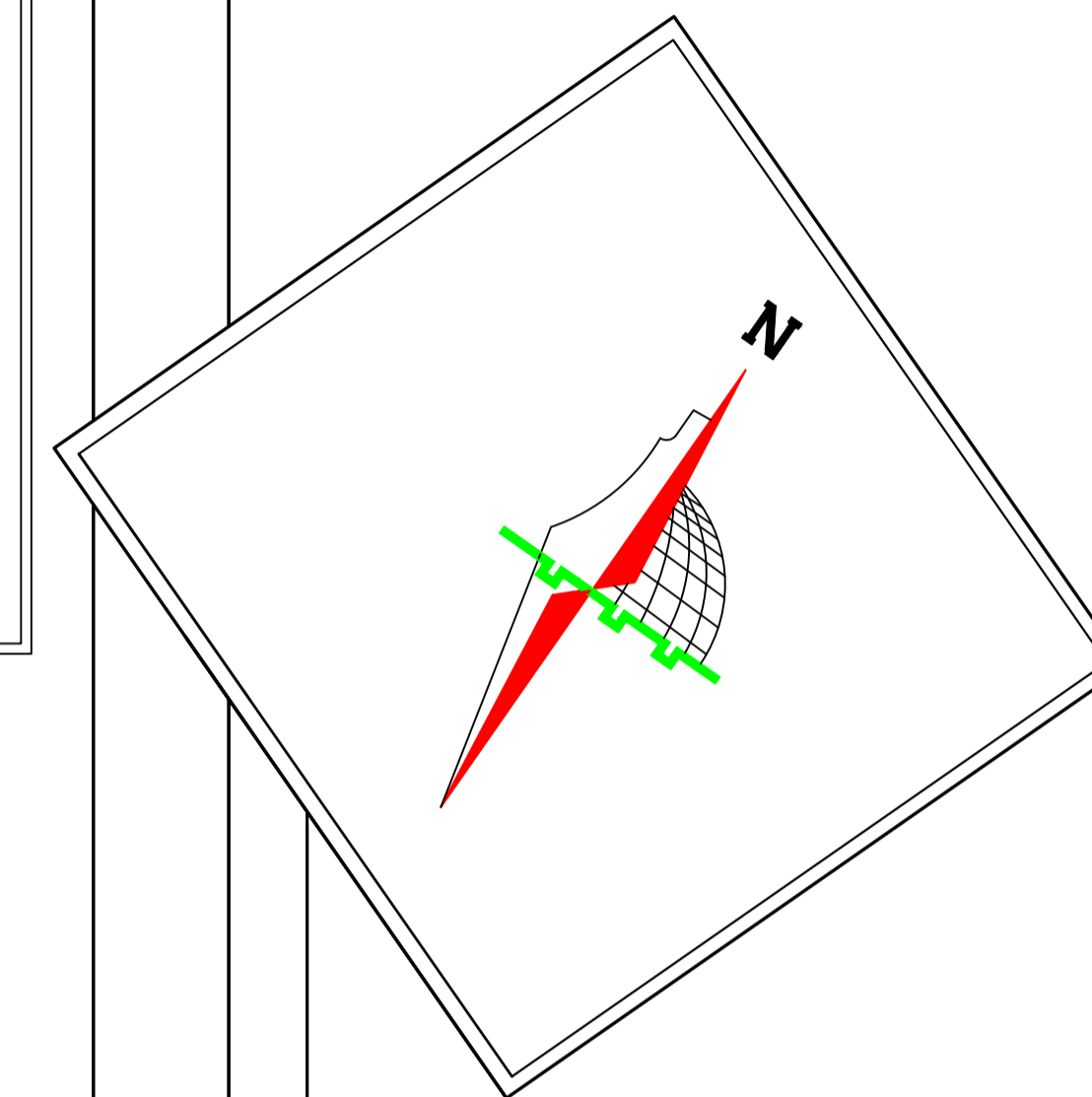
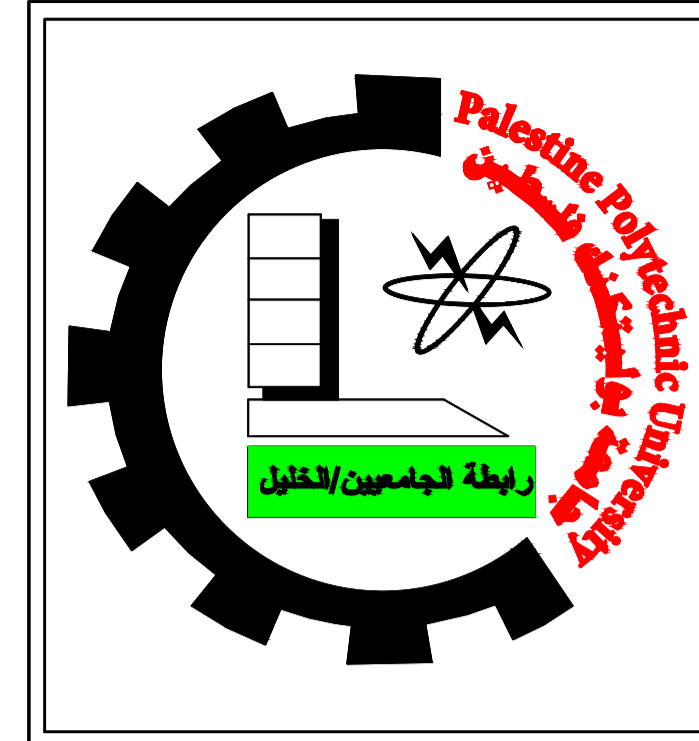
Drawing Title:
Beam:33 & 34 & 35 & 36

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/50
Drawing #	S43





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
Beam:37 & 38 & 39 & 40

Supervised by :

HAMDI IDAIS

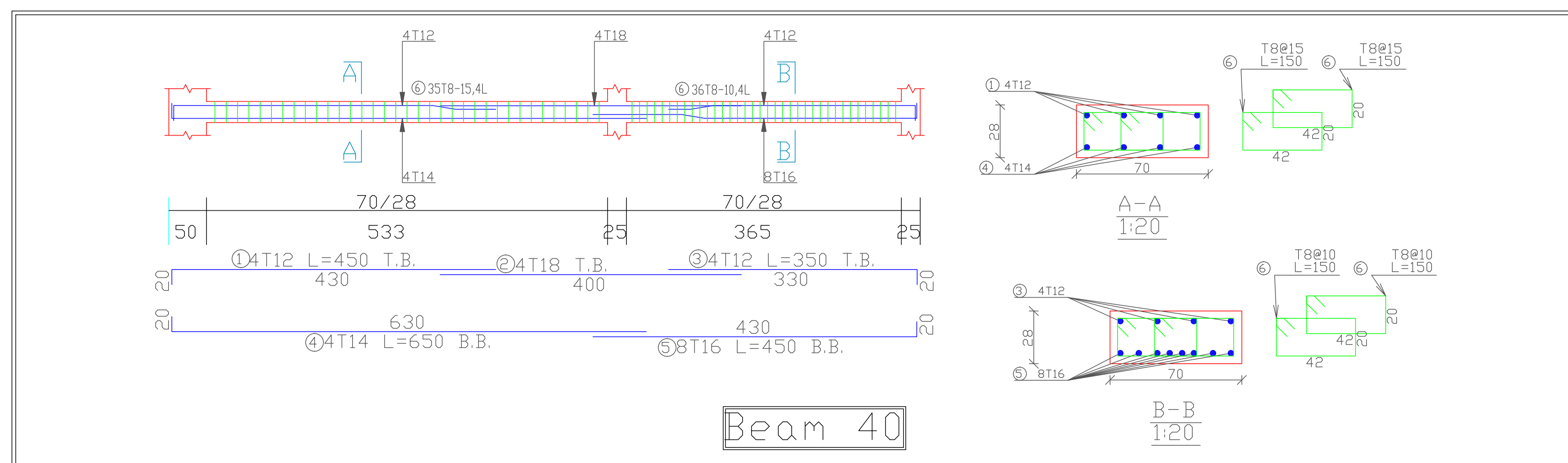
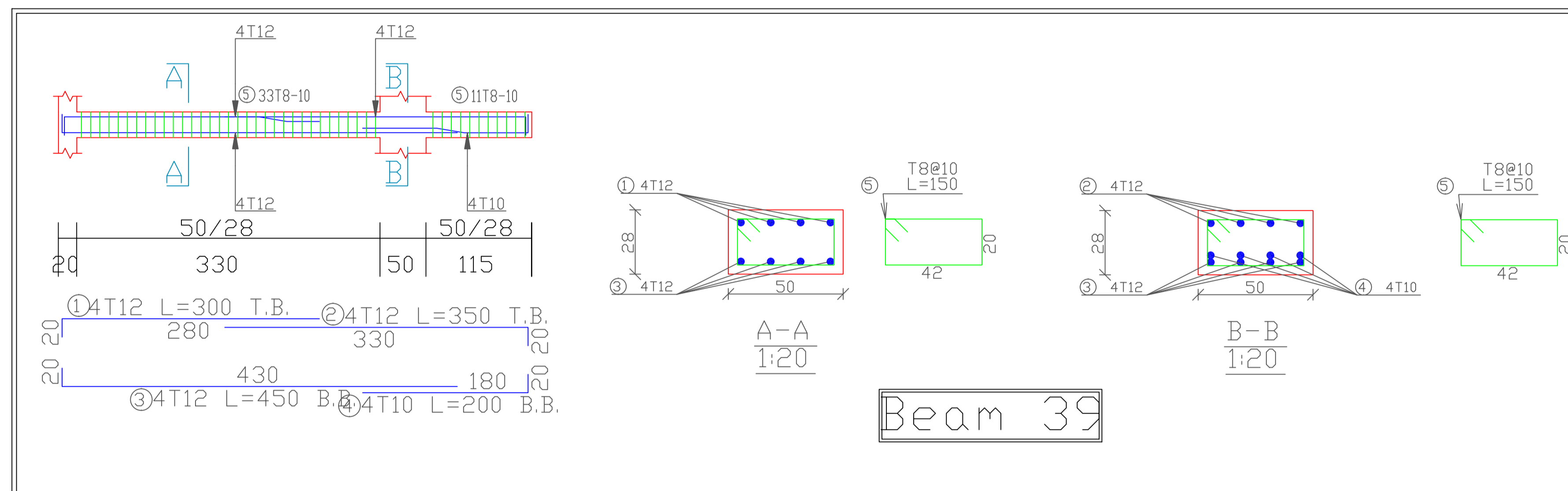
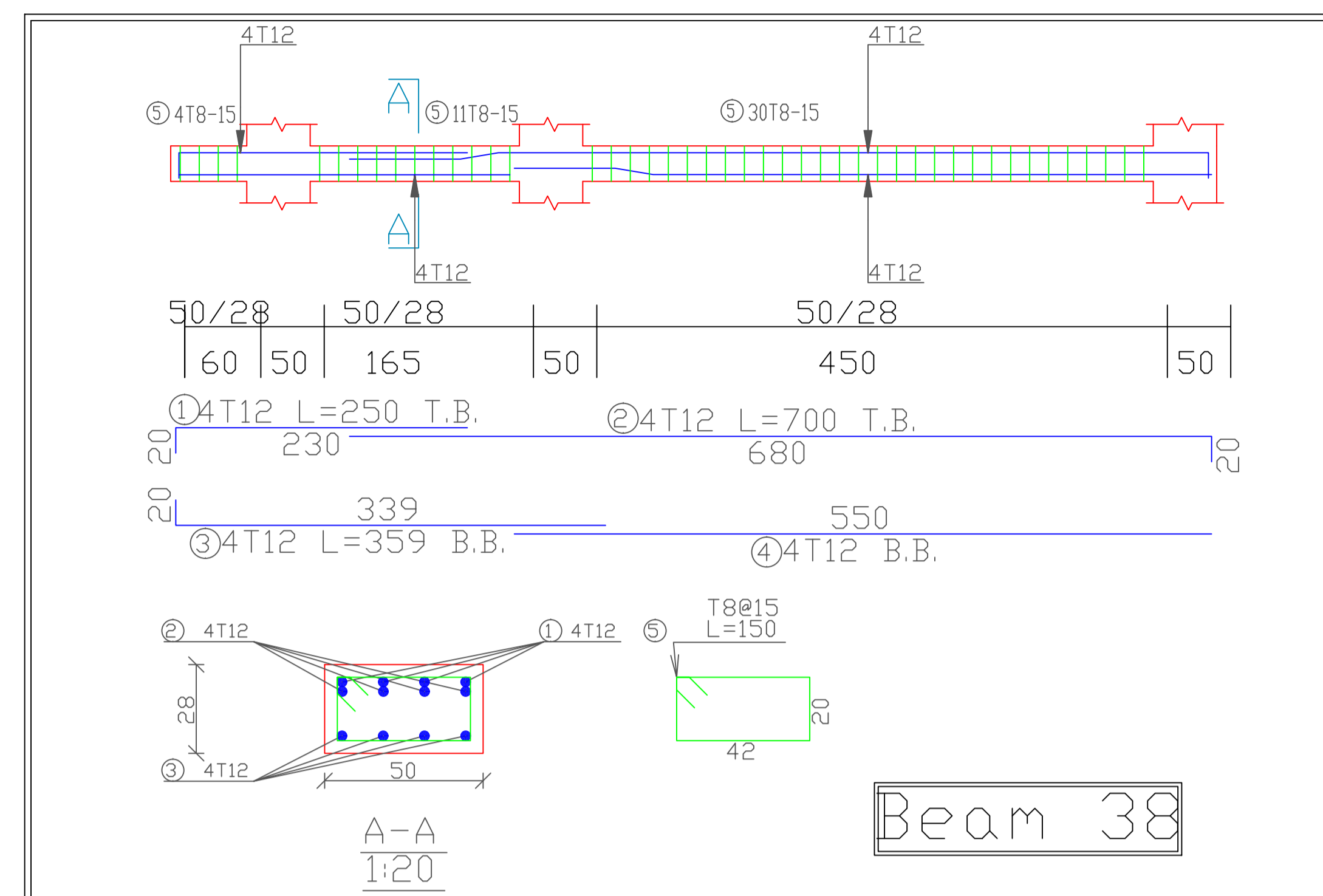
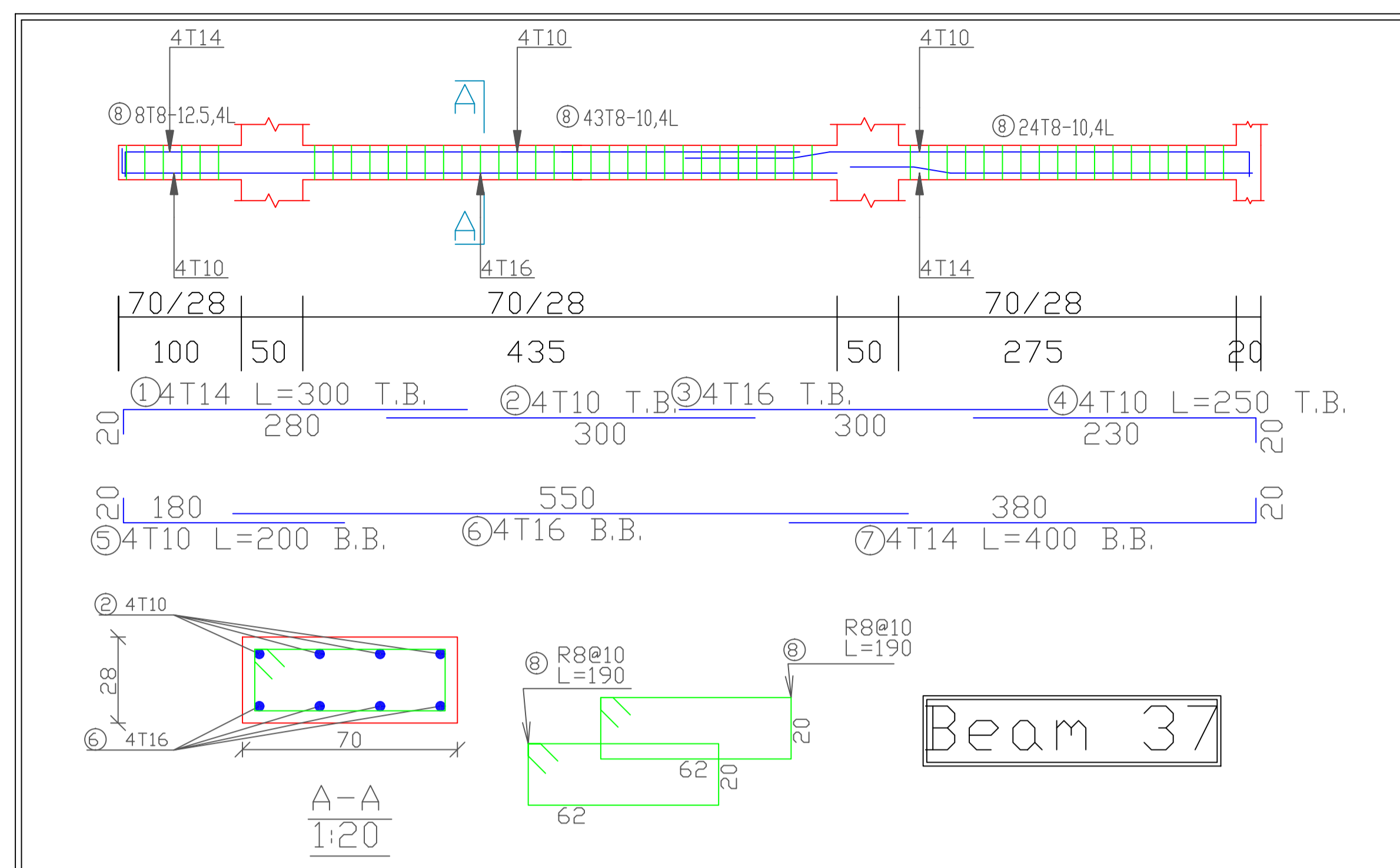
Done by :

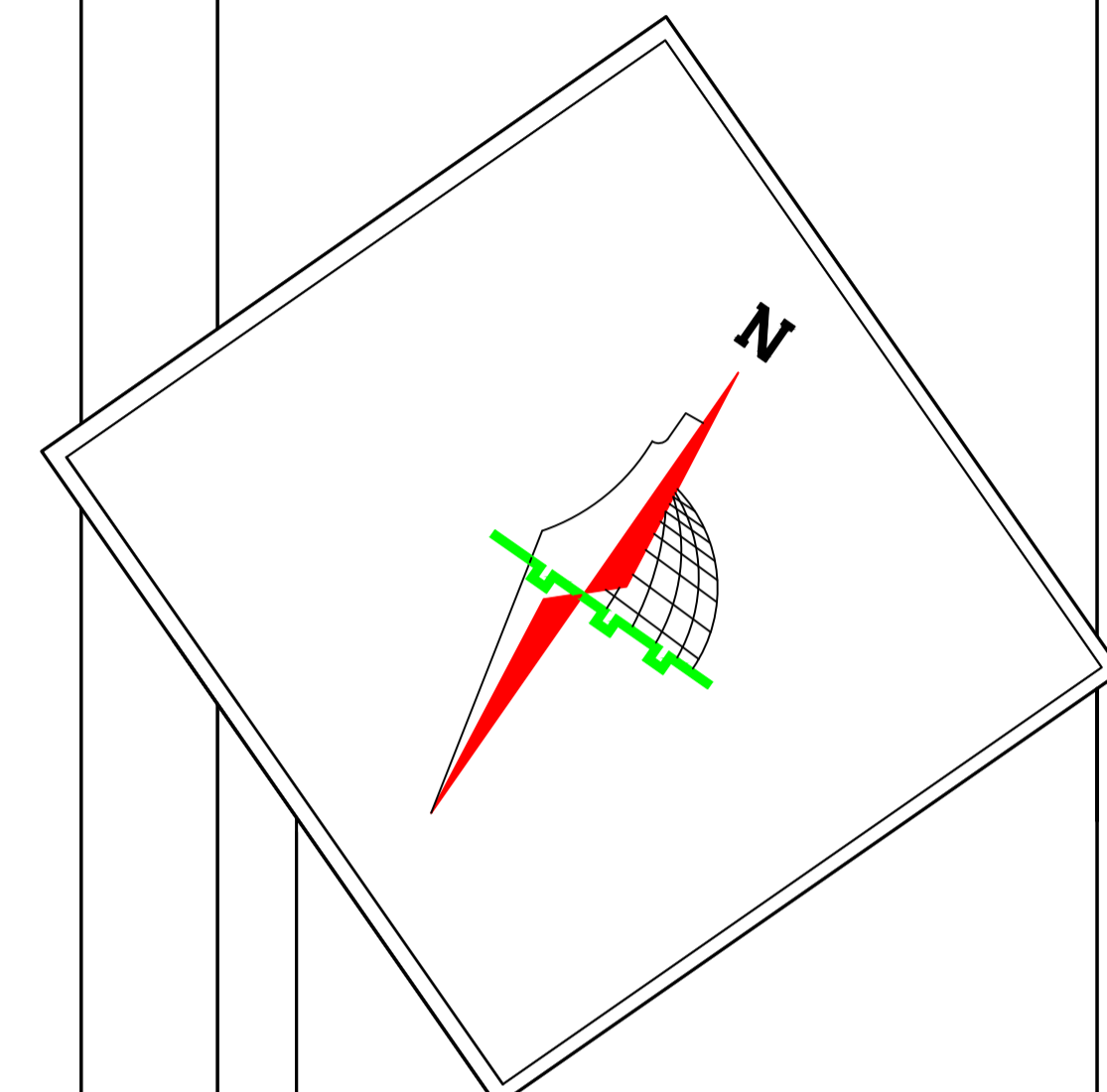
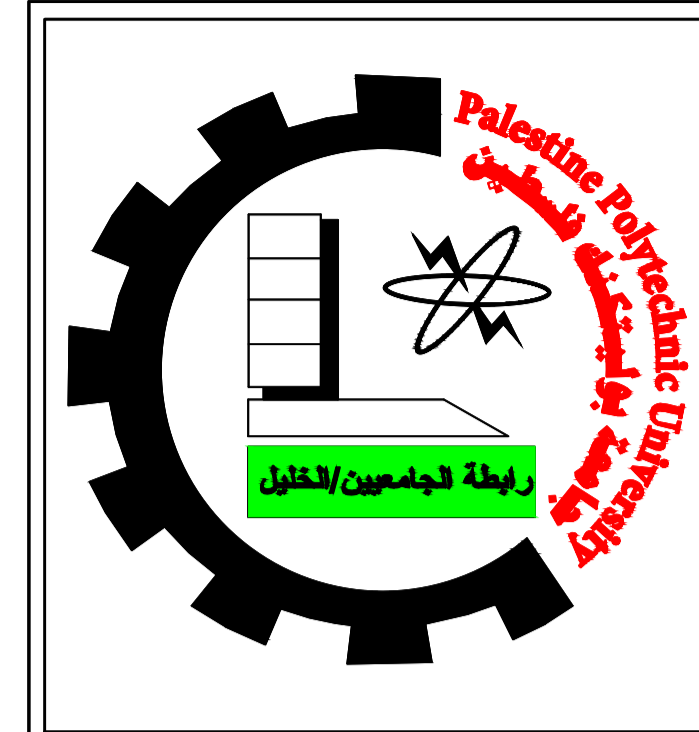
Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/50

Drawing # **S44**





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

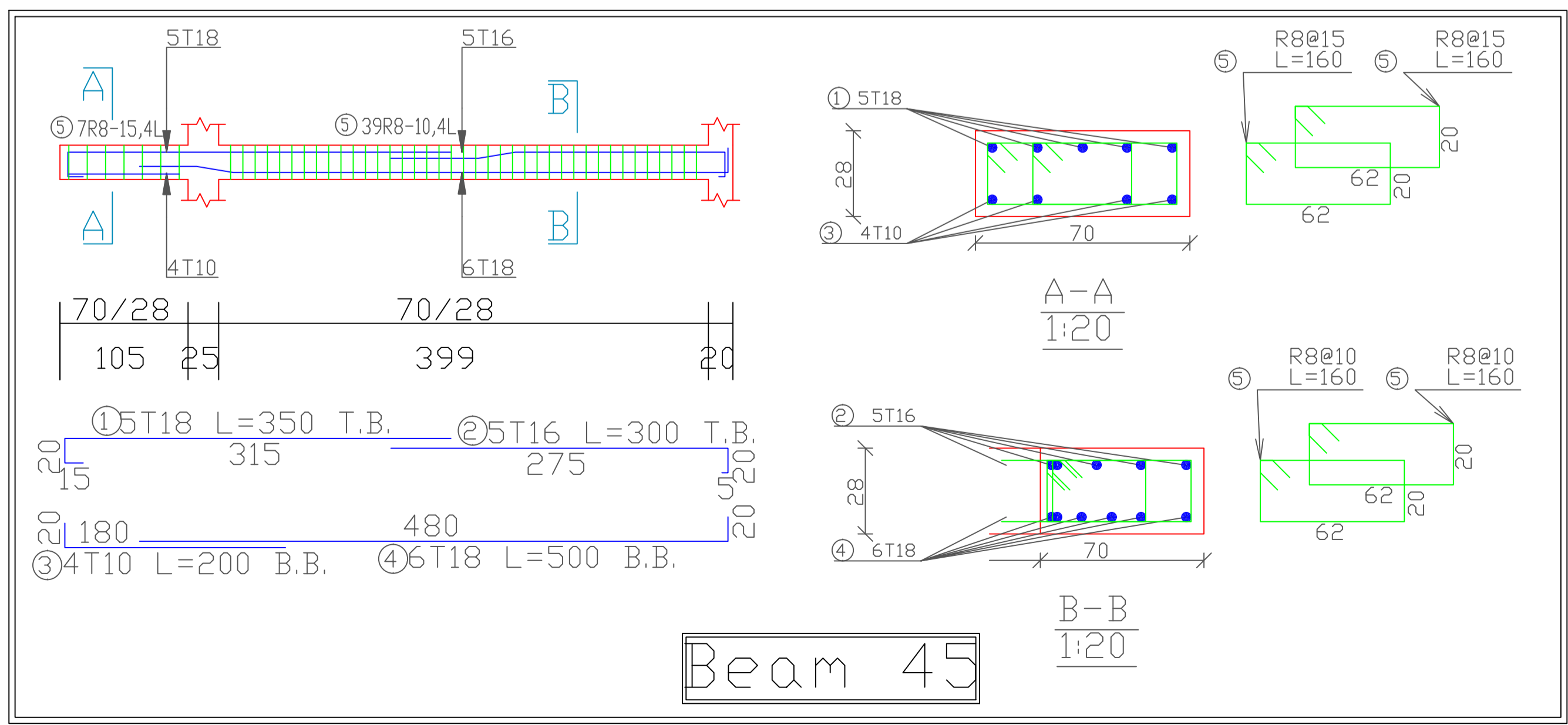
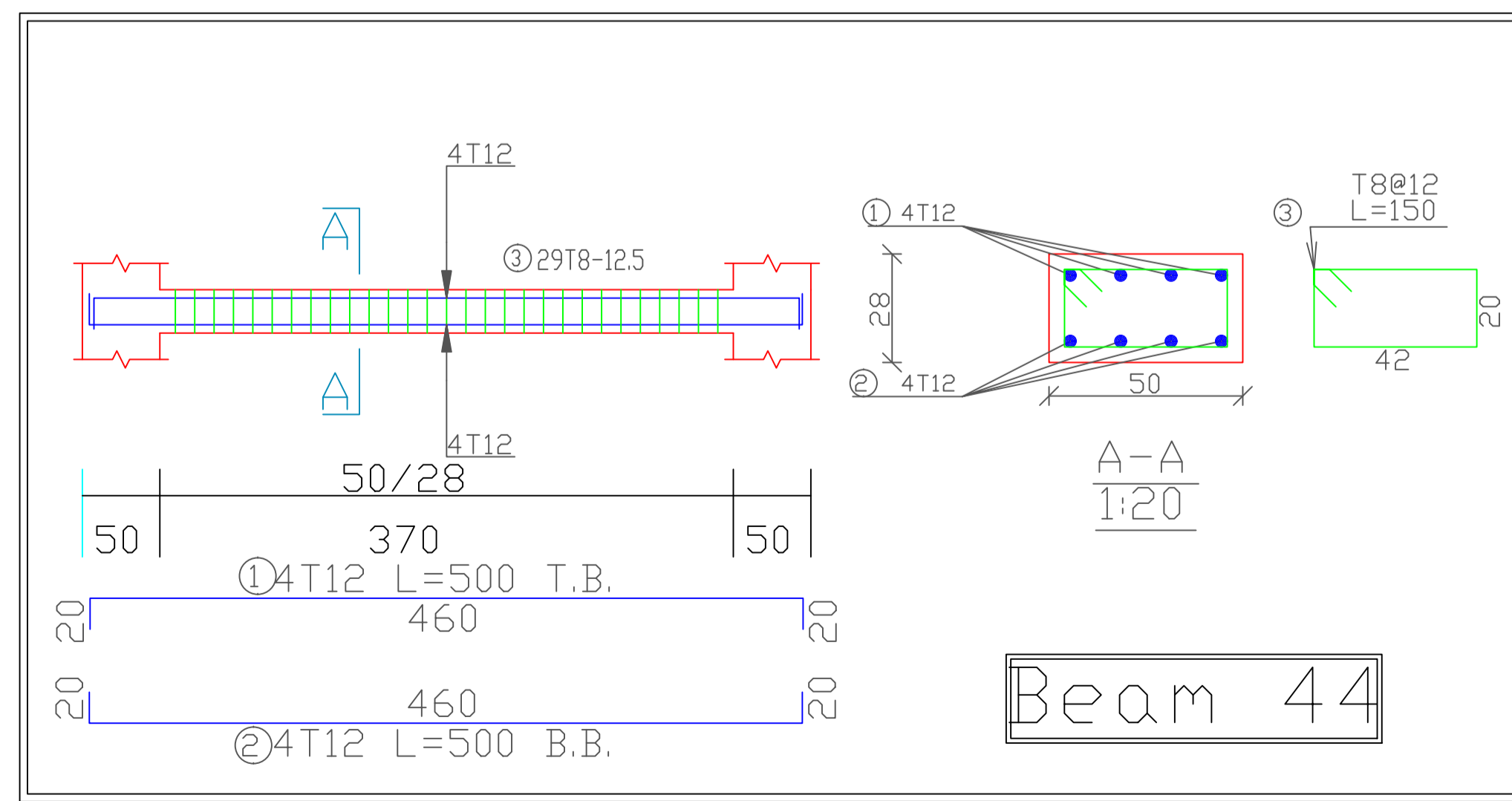
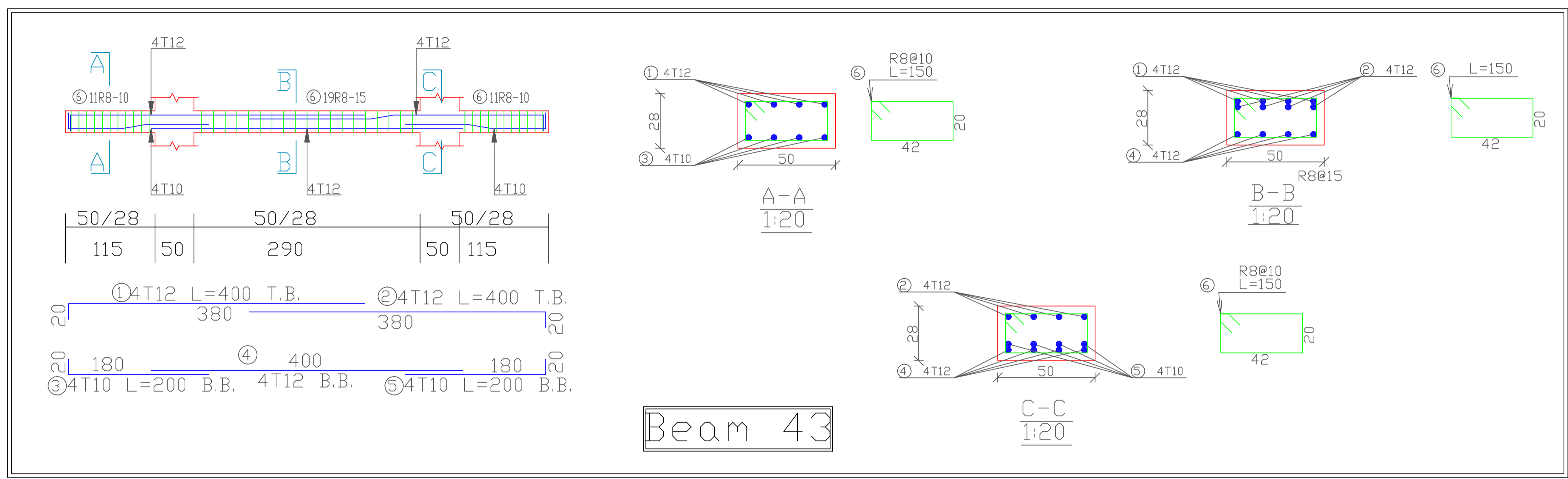
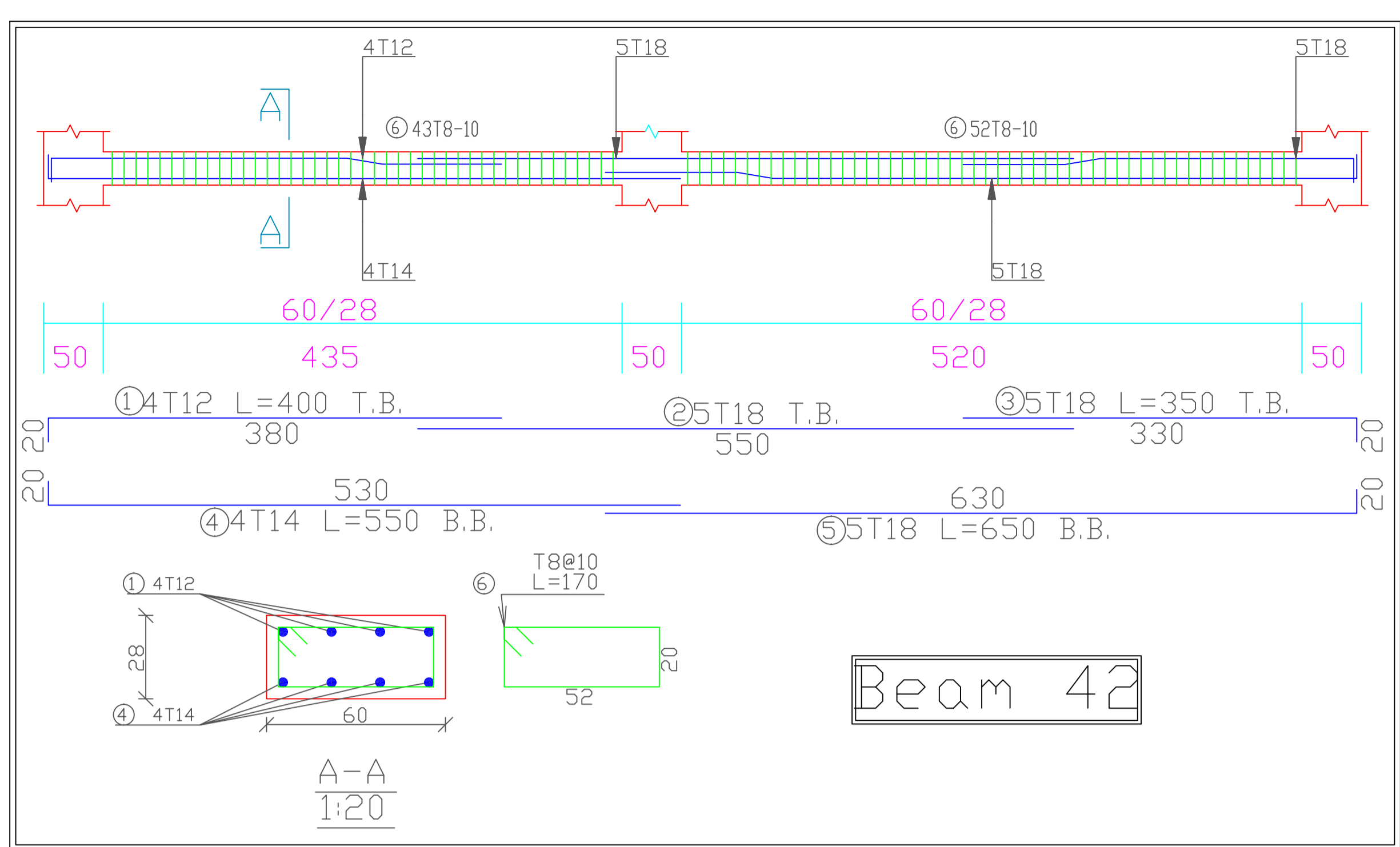
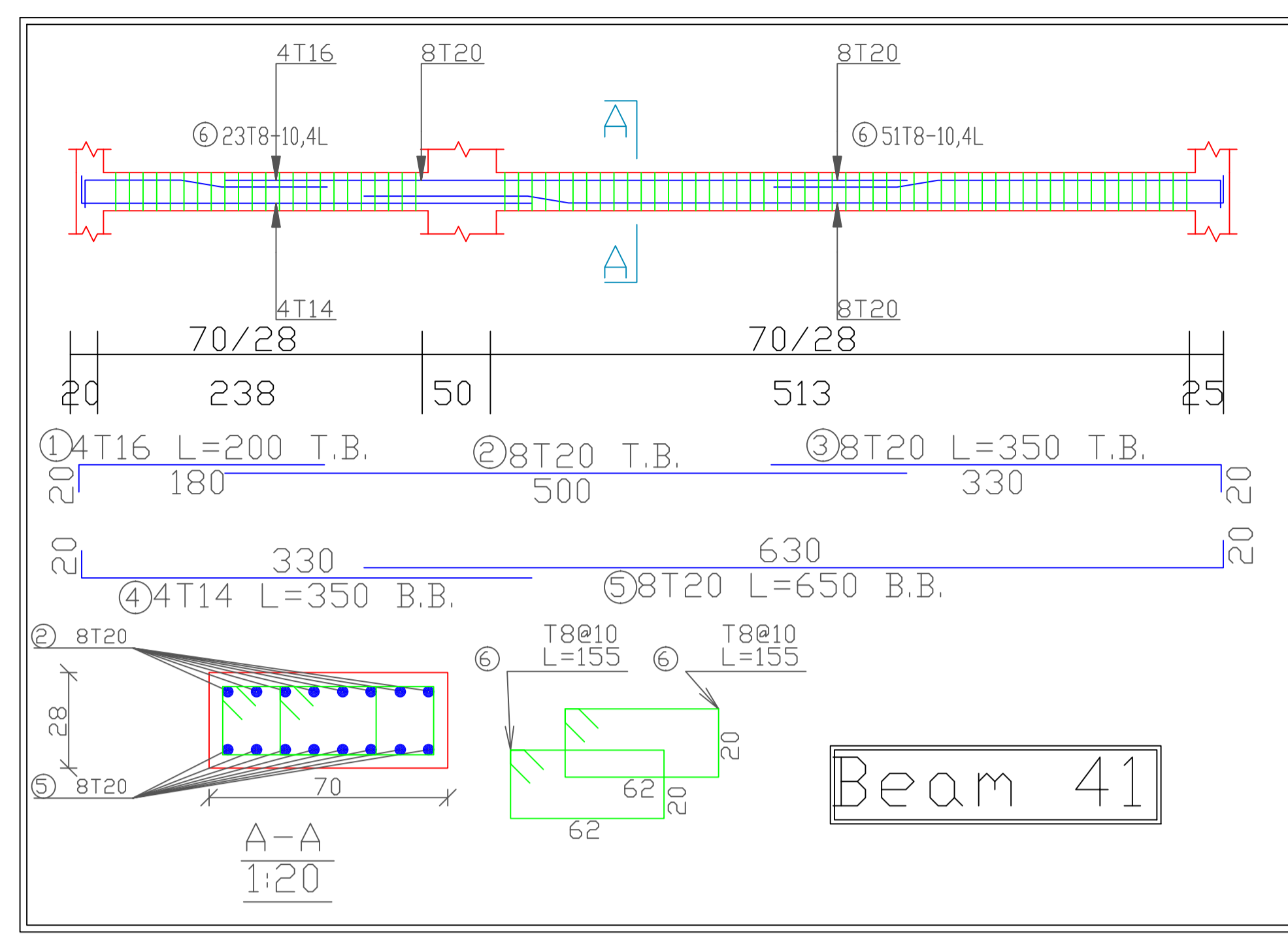
Project Name: Structural Design Of Residential Villa

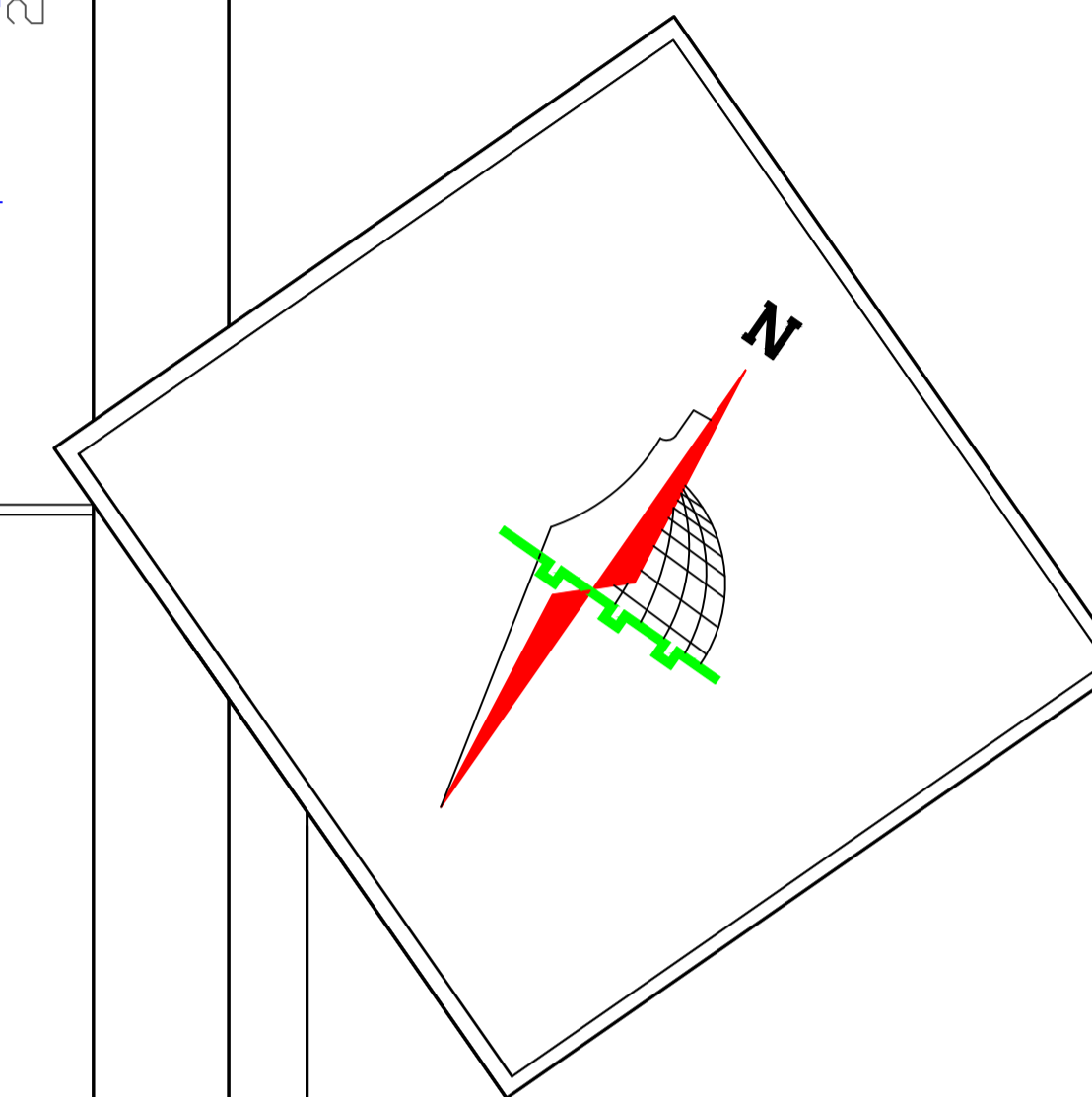
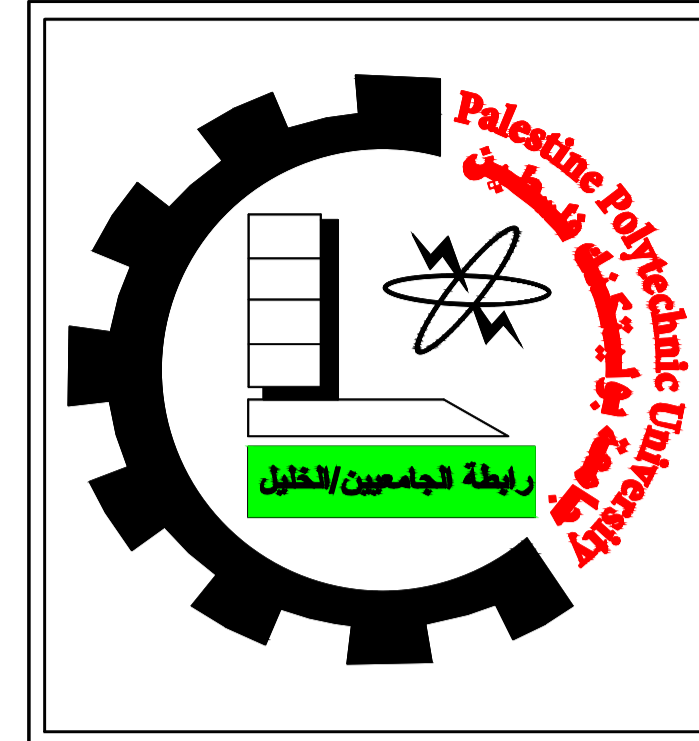
Drawing Title:
Beam:41&42&43&44&45

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

Scale	1/50
Drawing #	S45





Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

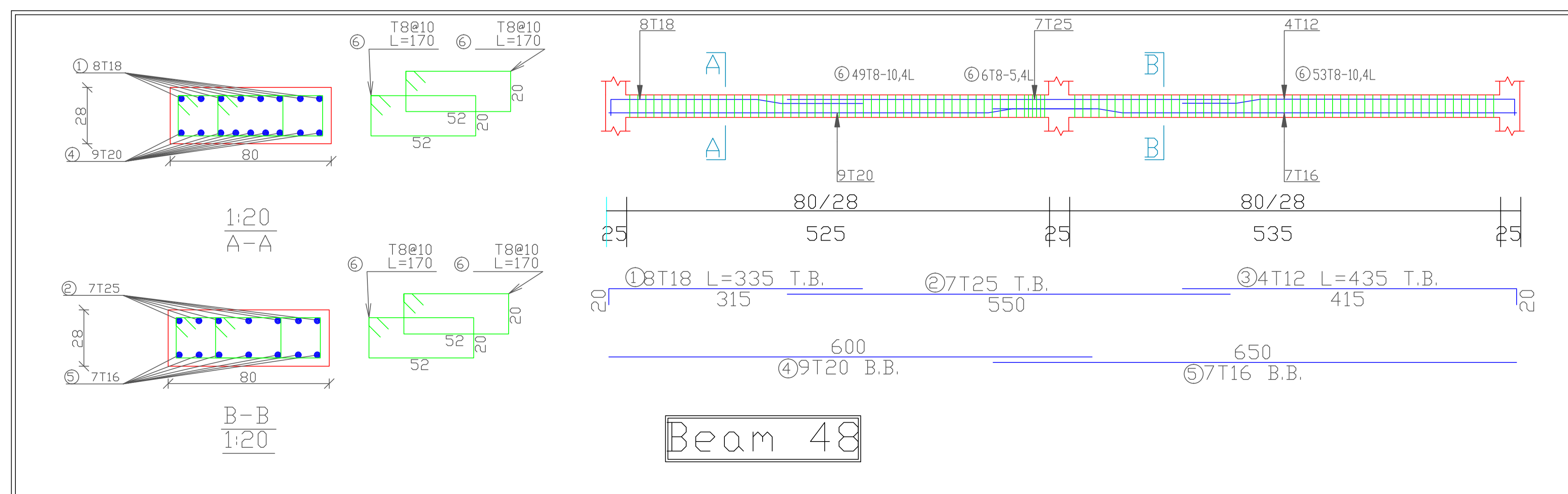
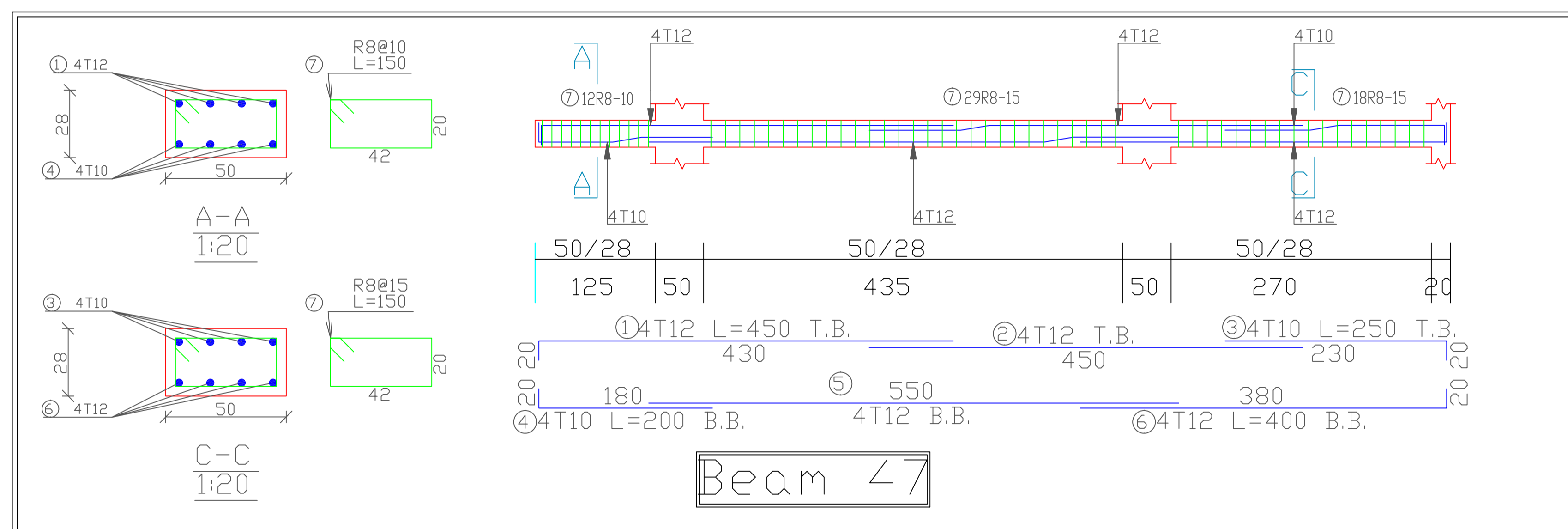
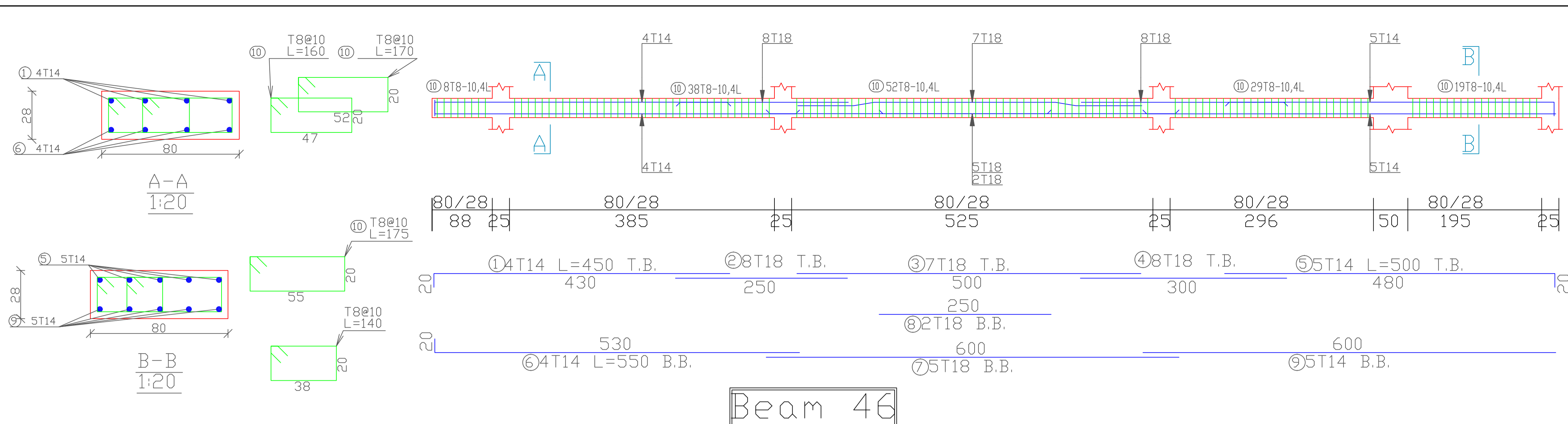
Drawing Title:
Beam:46 & 47 & 48

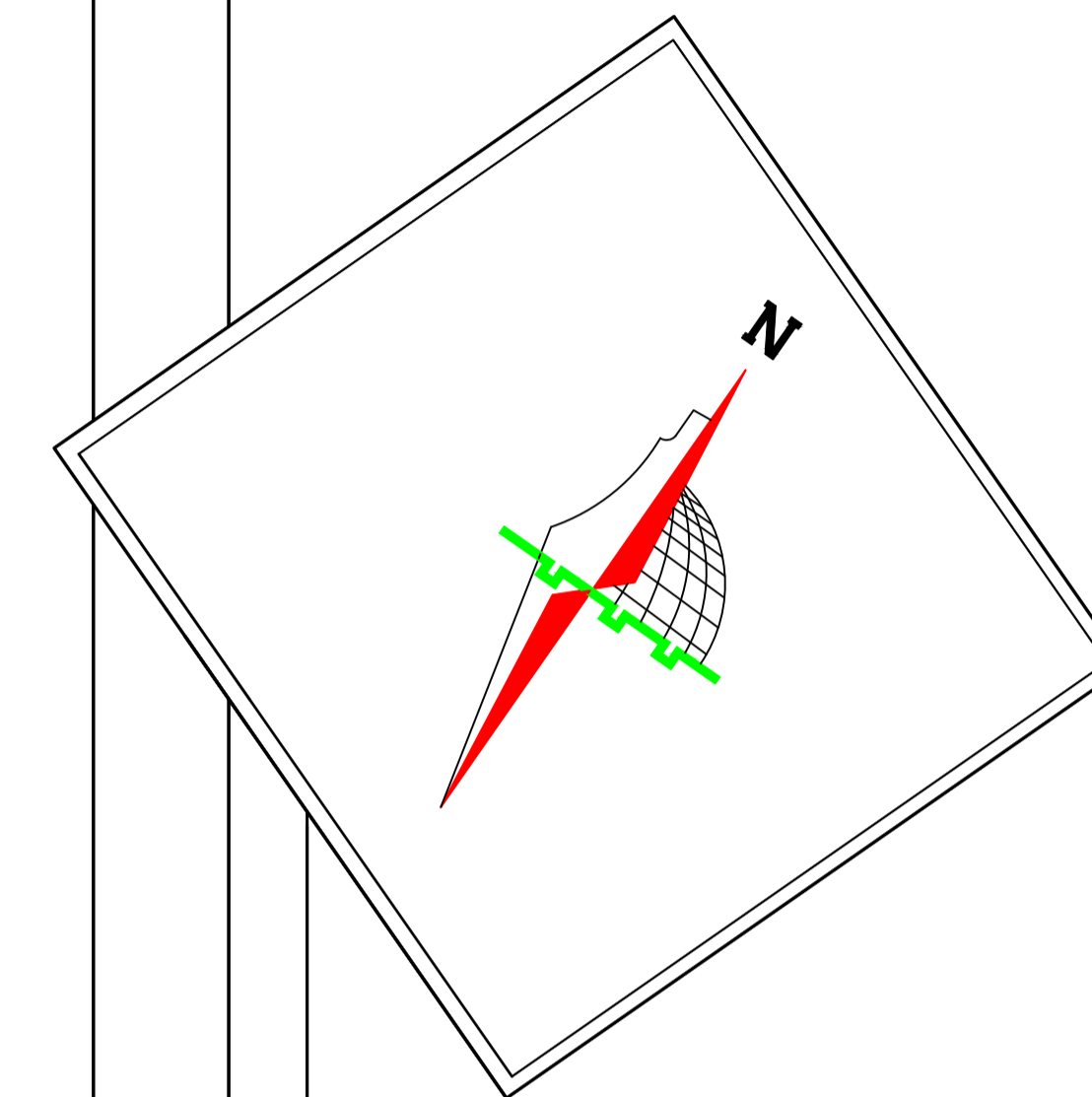
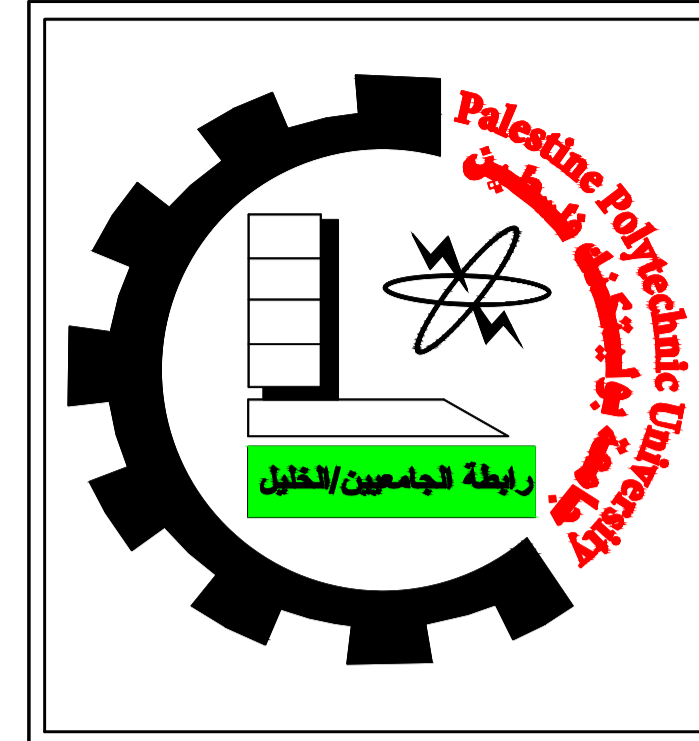
Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale 1/50

Drawing # **S46**





Palestine Polytechnic University
College of Engineering
Civil and Architectural Engineering Department
Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
Beam:49&50&51&52&53

Supervised by :

HAMD I DAIS

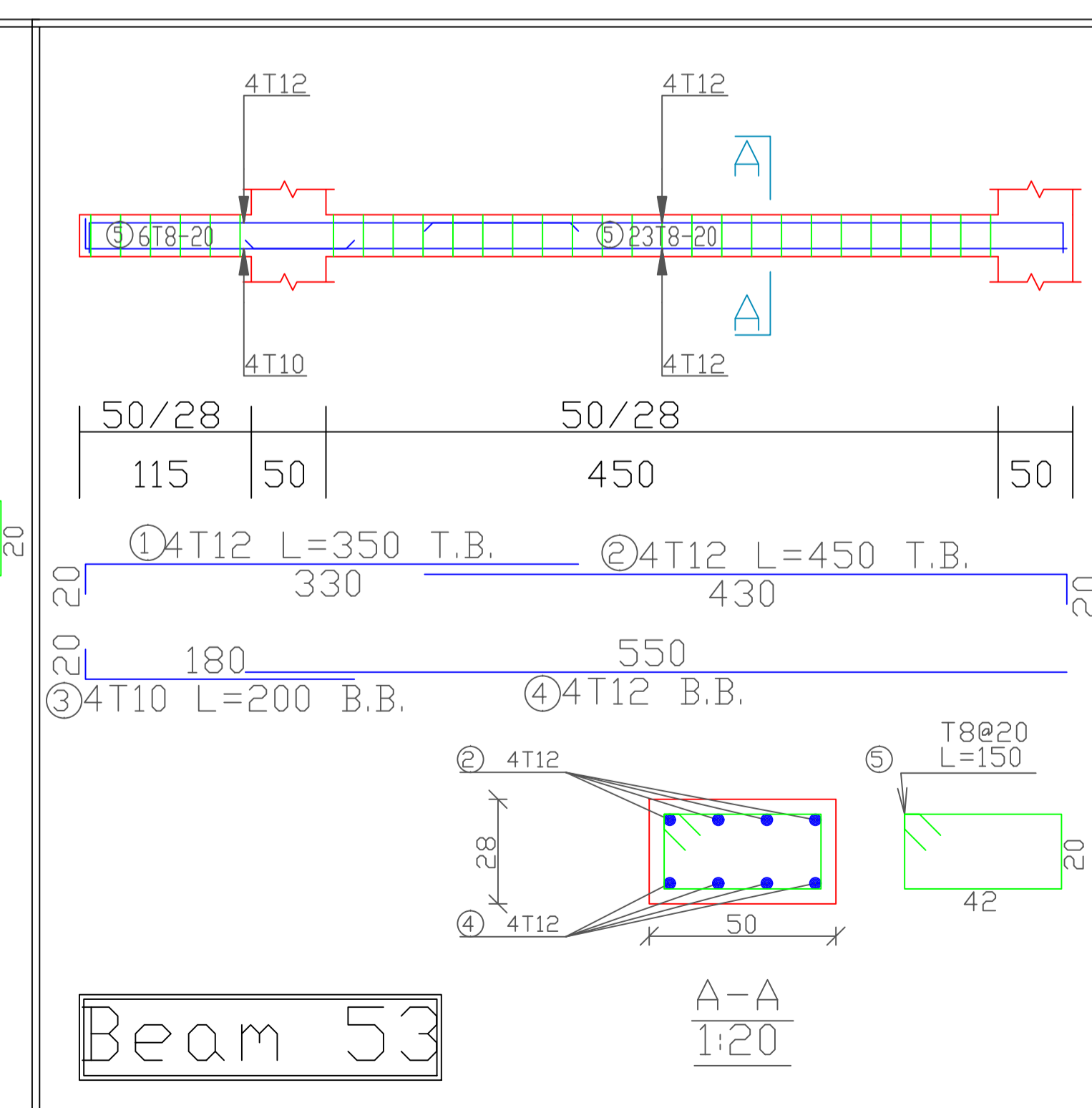
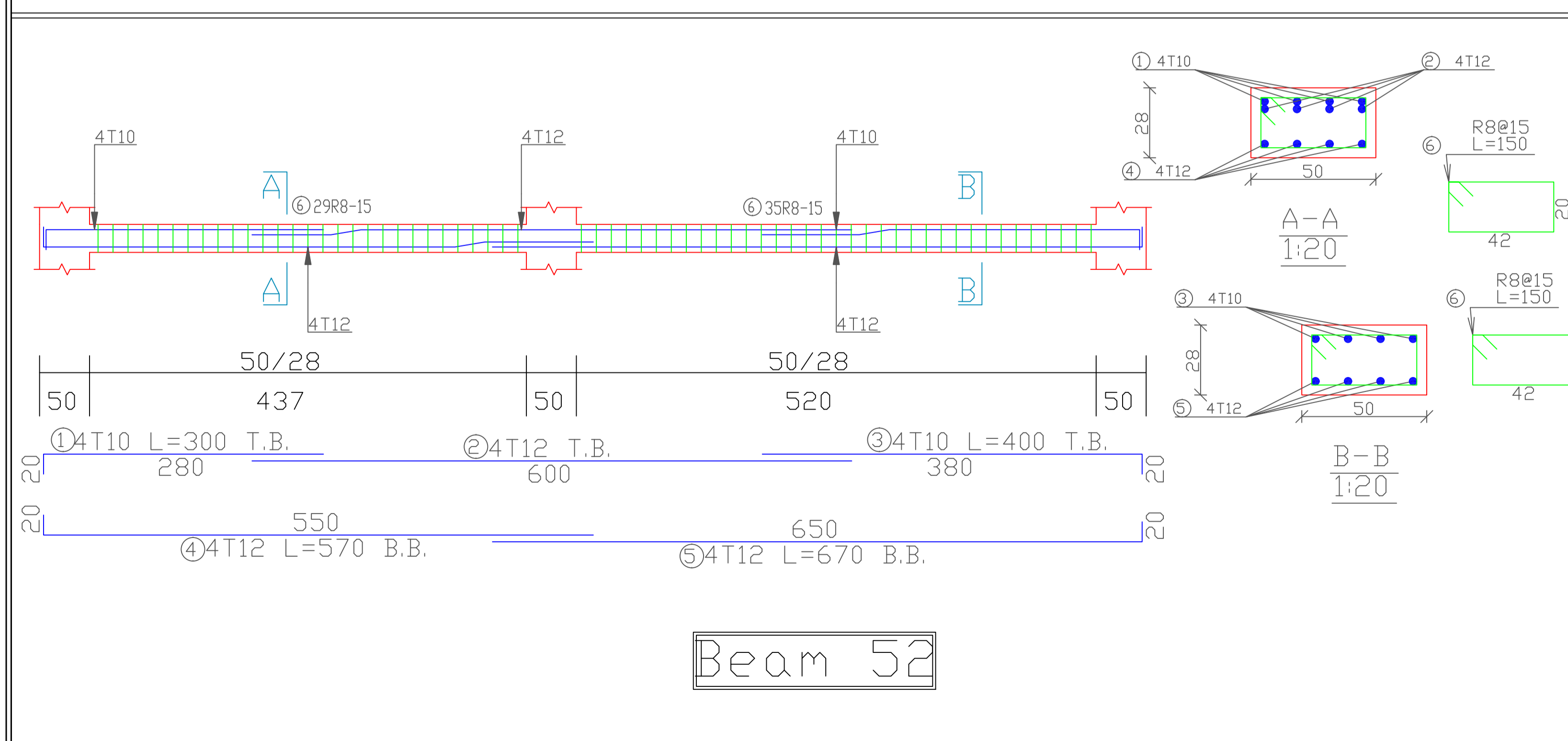
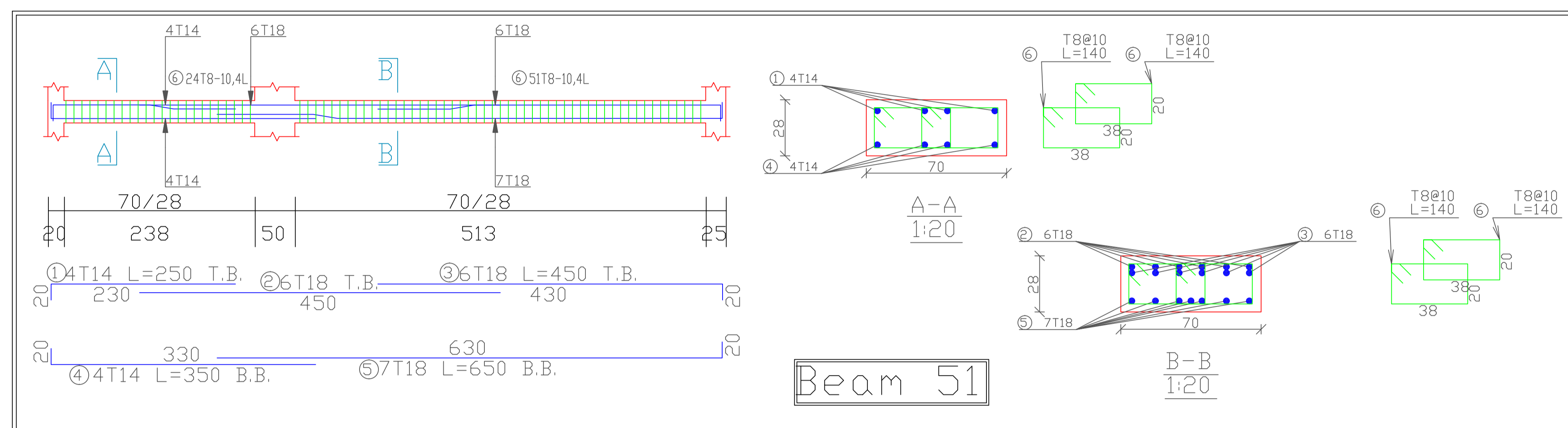
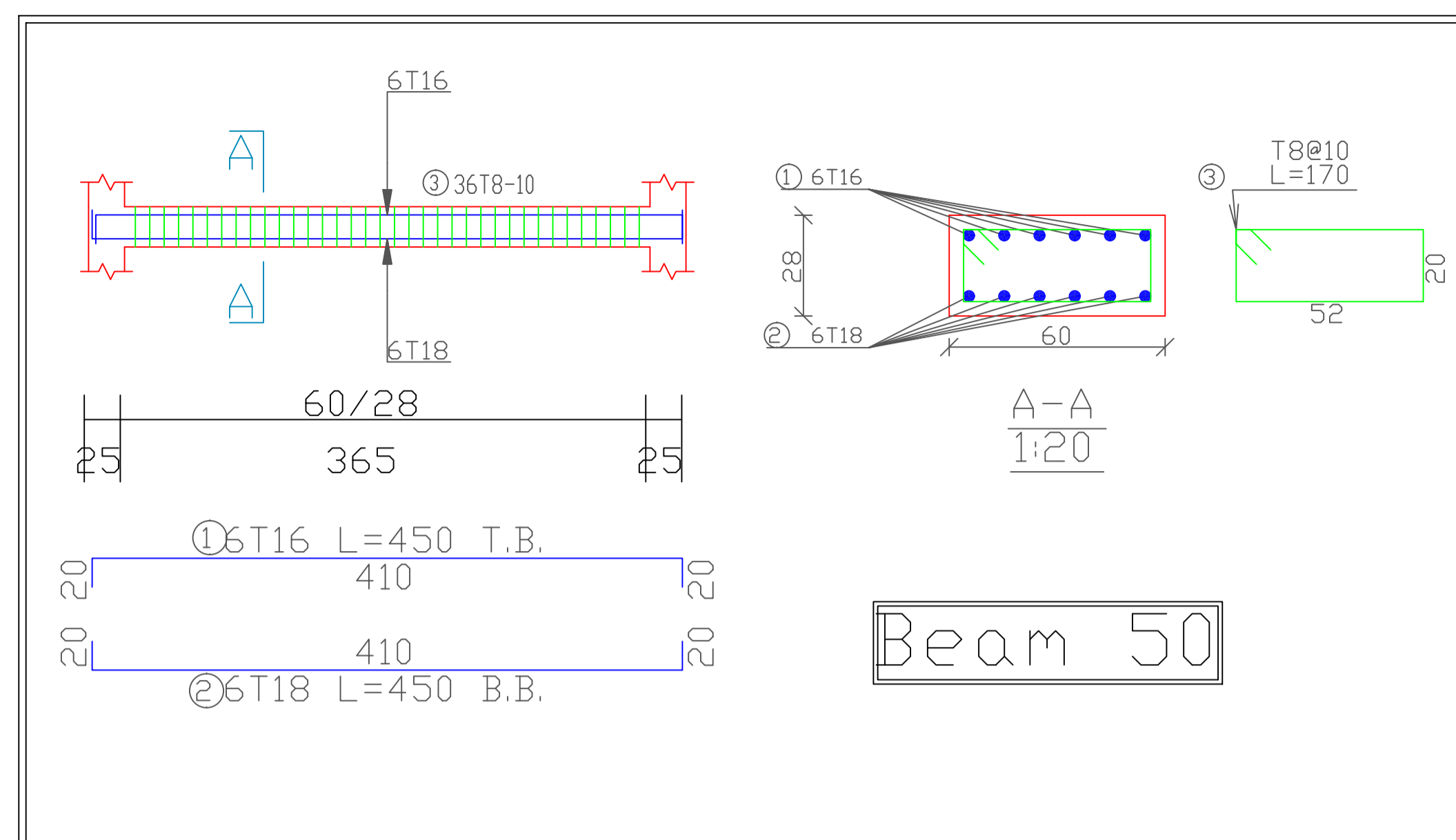
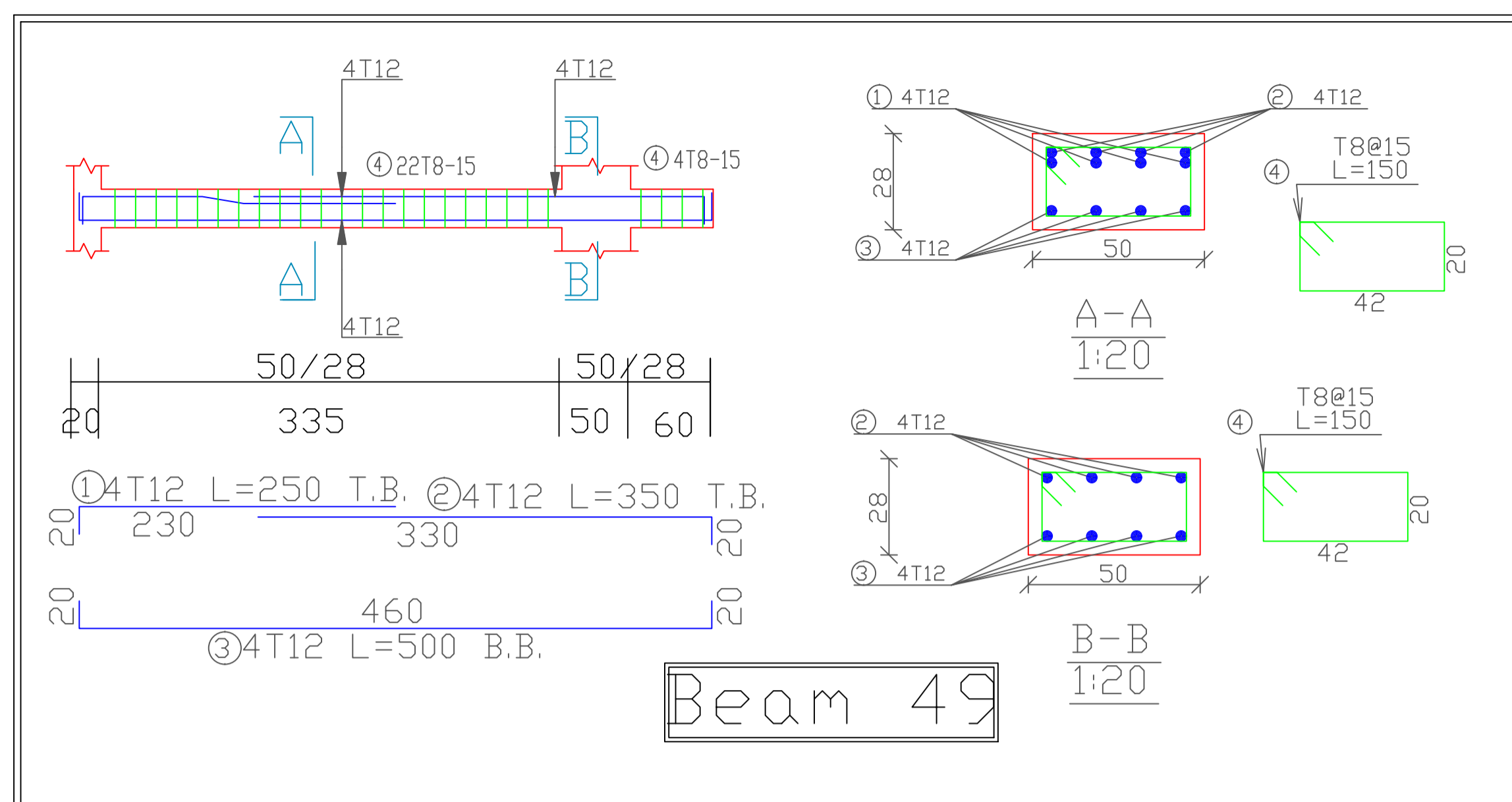
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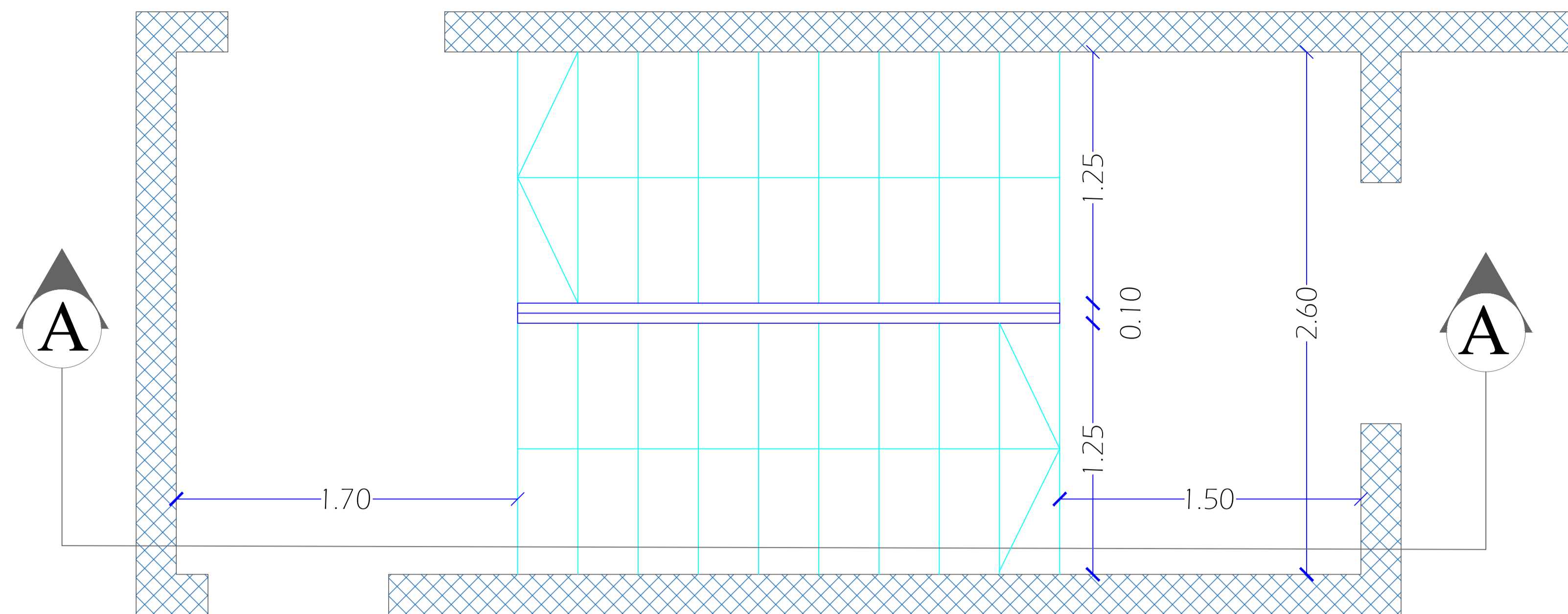
Mahdi Y. Rajabi

Ribhi AL-haddad

Scale 1/50

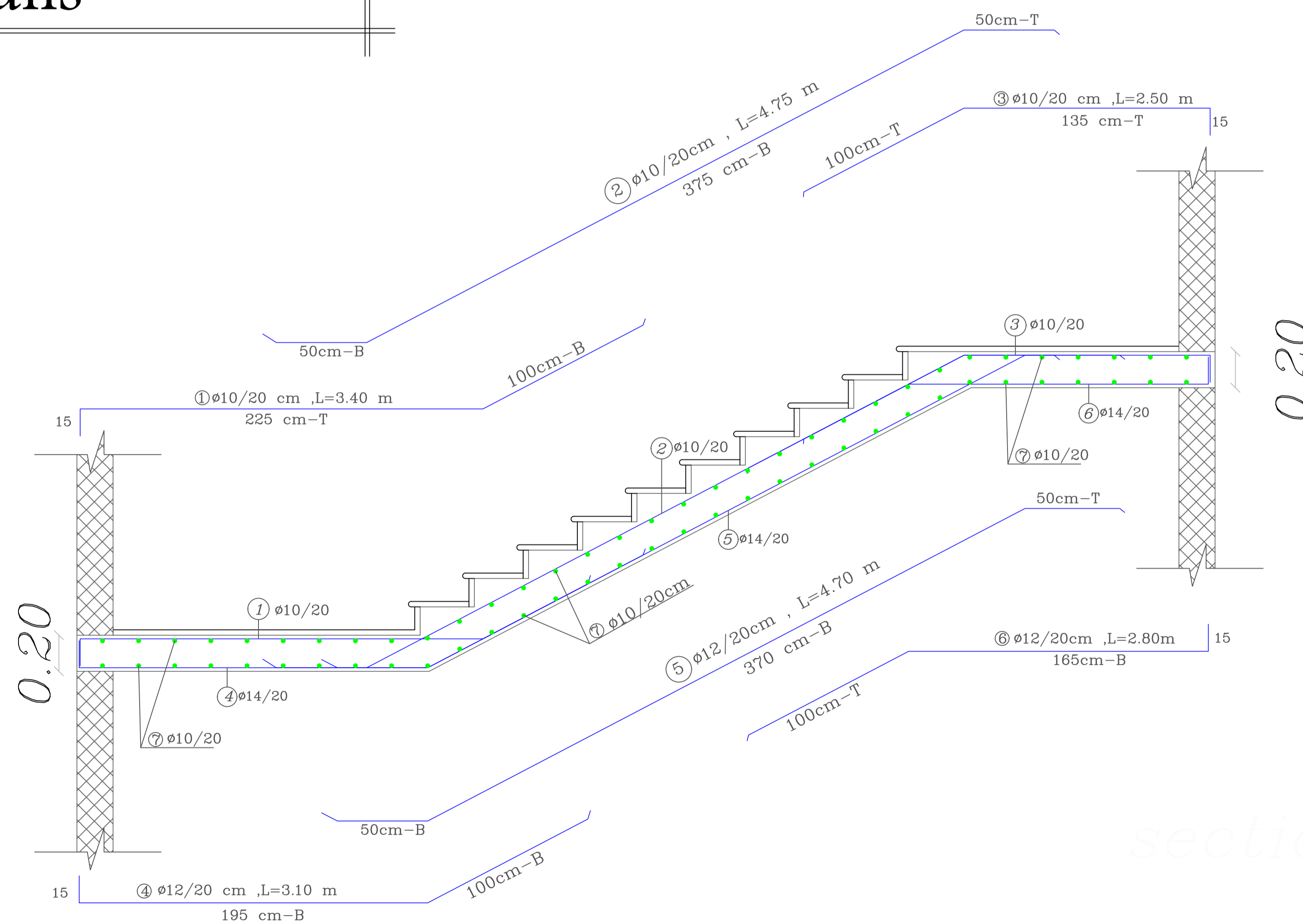
Drawing # **S47**



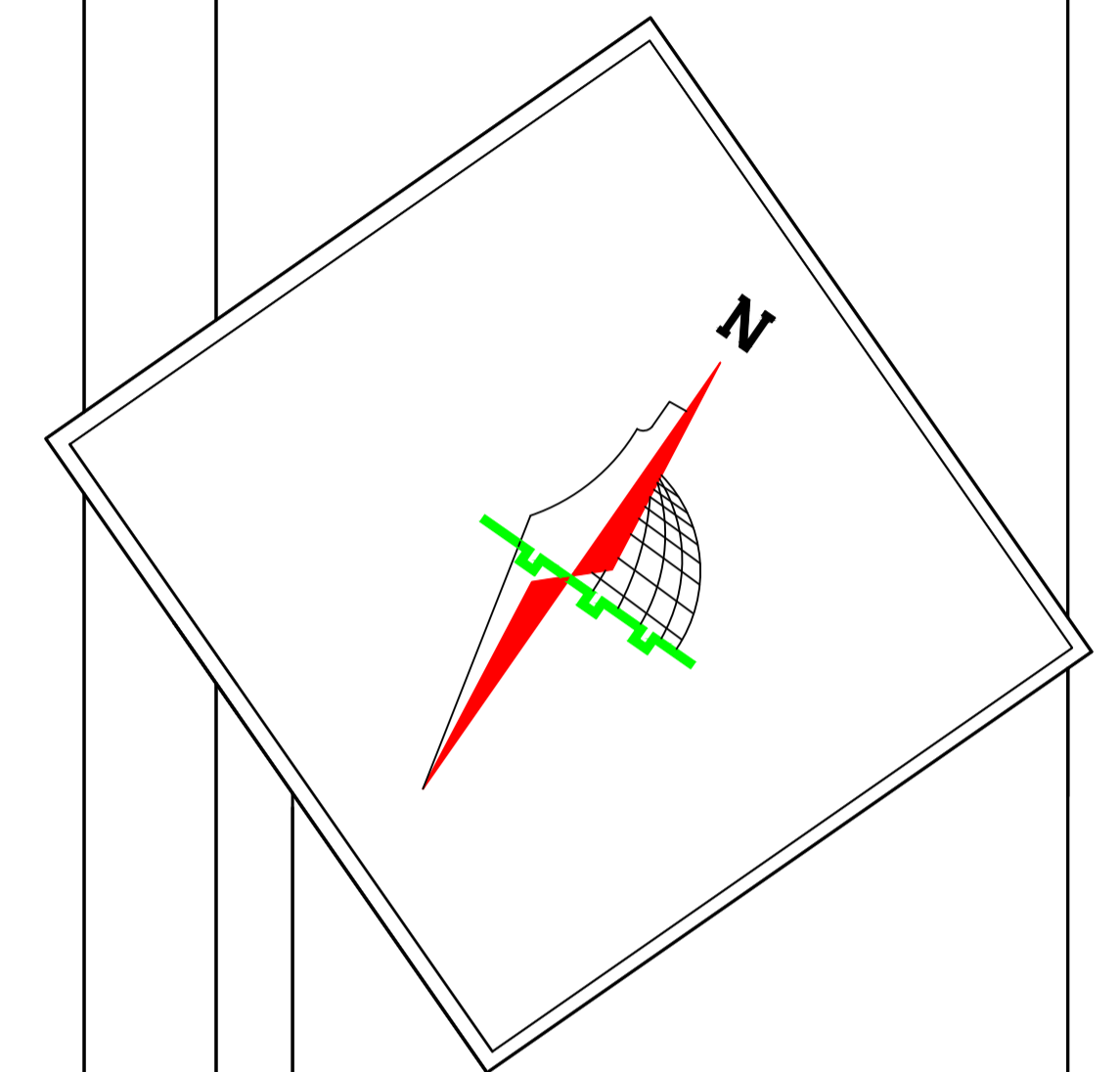
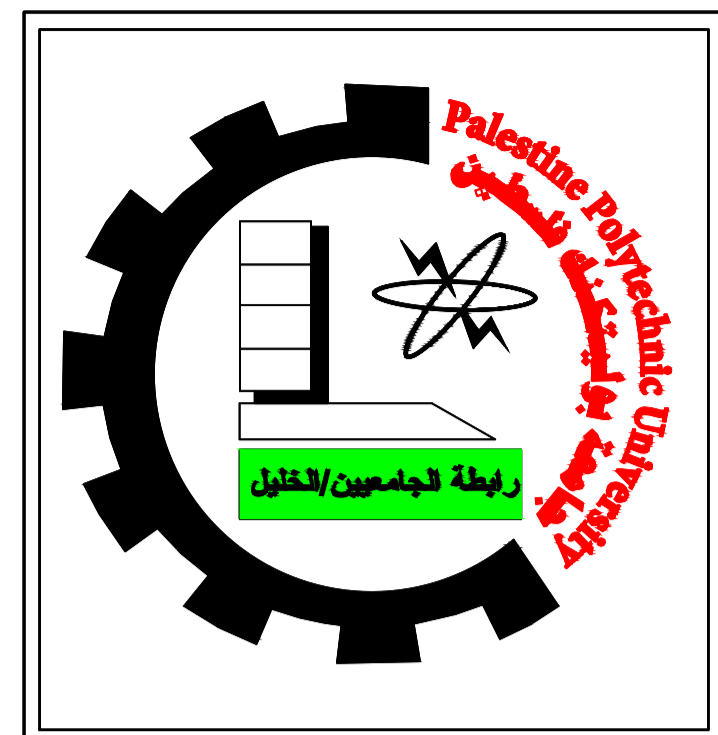


stair details

SCALE 1:25



section A-A



Palestine Polytechnic University
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Civil and Architectural Engineering Department
Counstruction Engineering

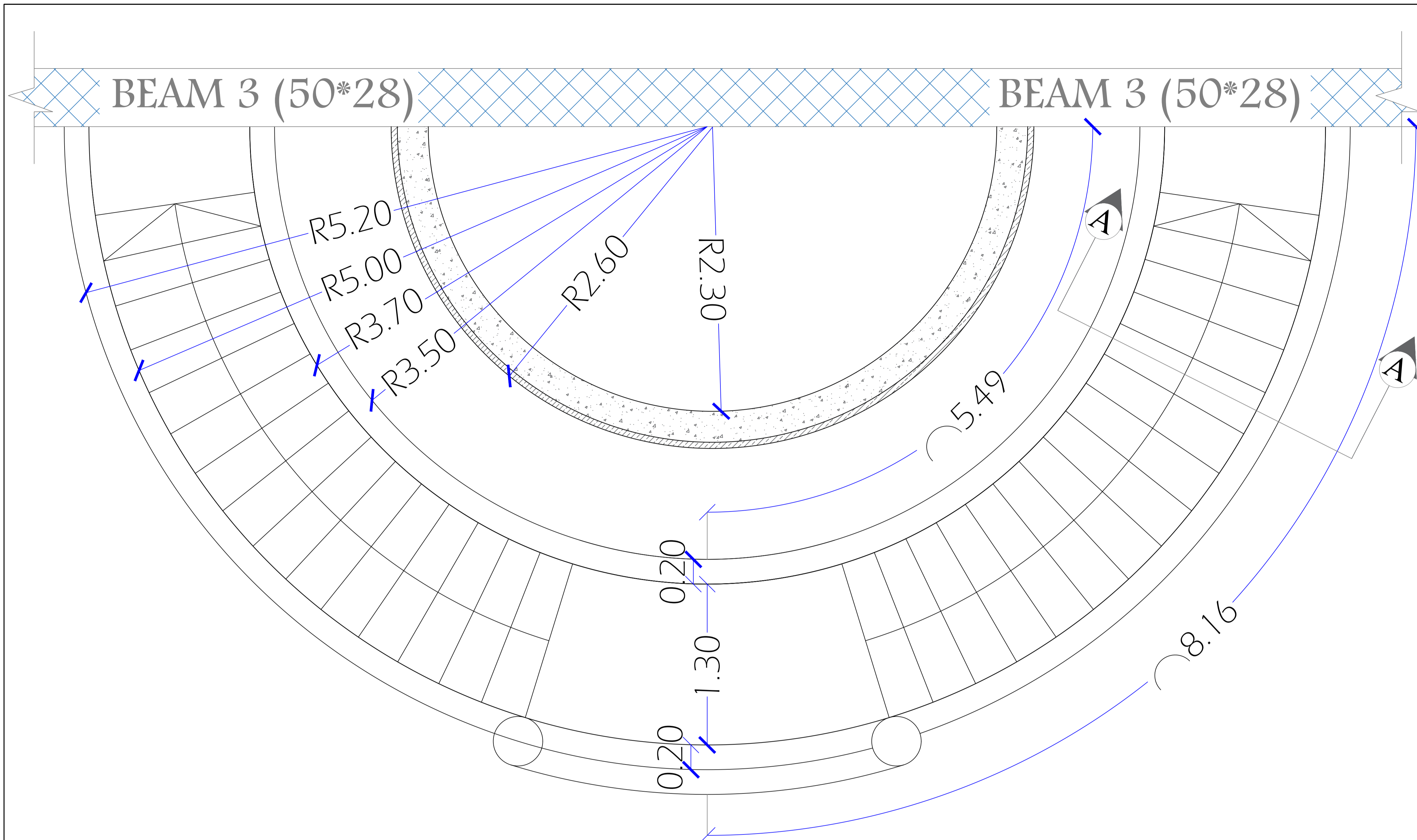
Project Name: Structural Design Of Residential Villa

Drawing Title:
DETAILING OF STAIRCASE

Supervised by :
HAMDI IDAIS

Done by :
Mahdi Y. Rajabi
Ribhi AL-haddad

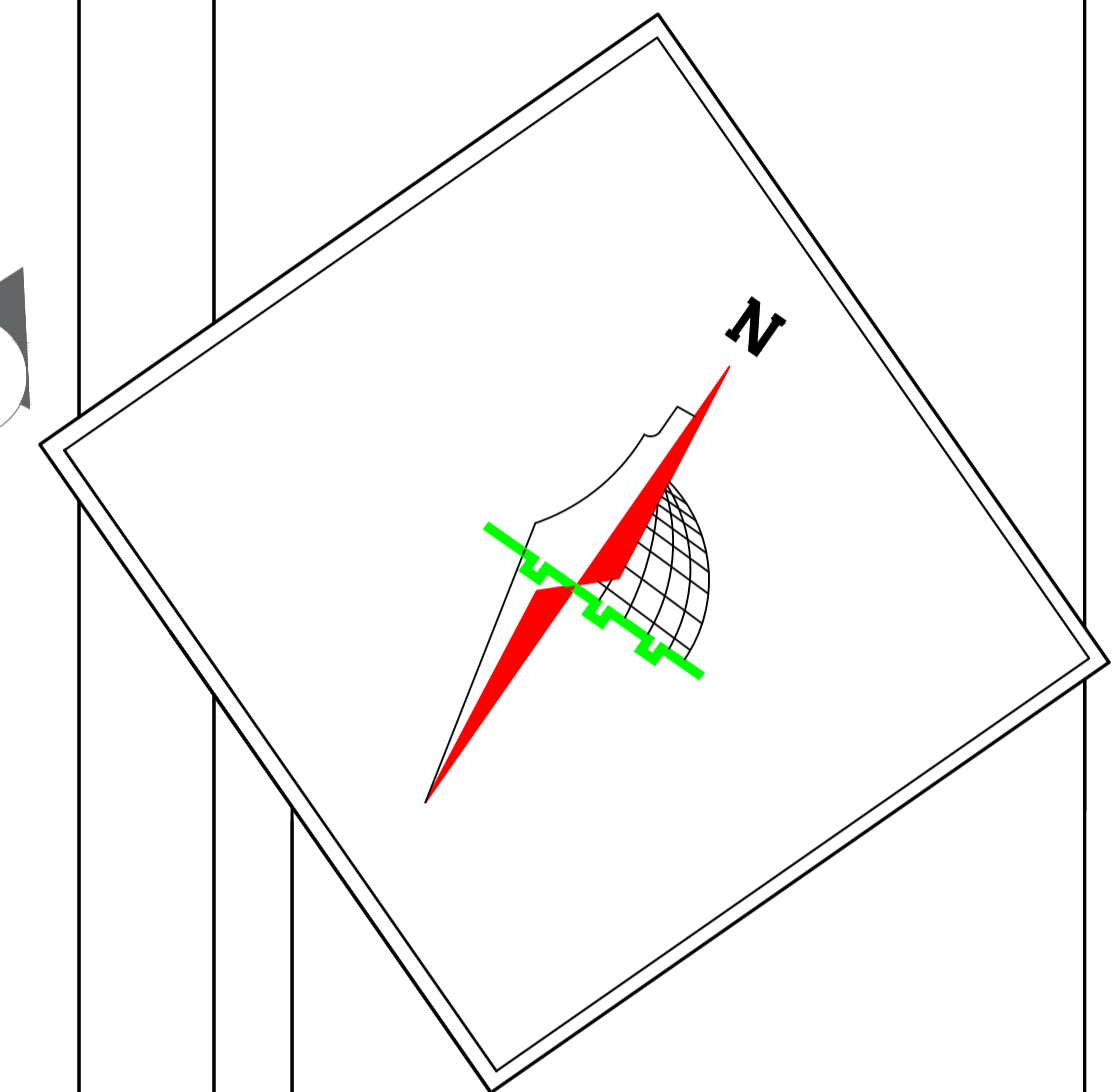
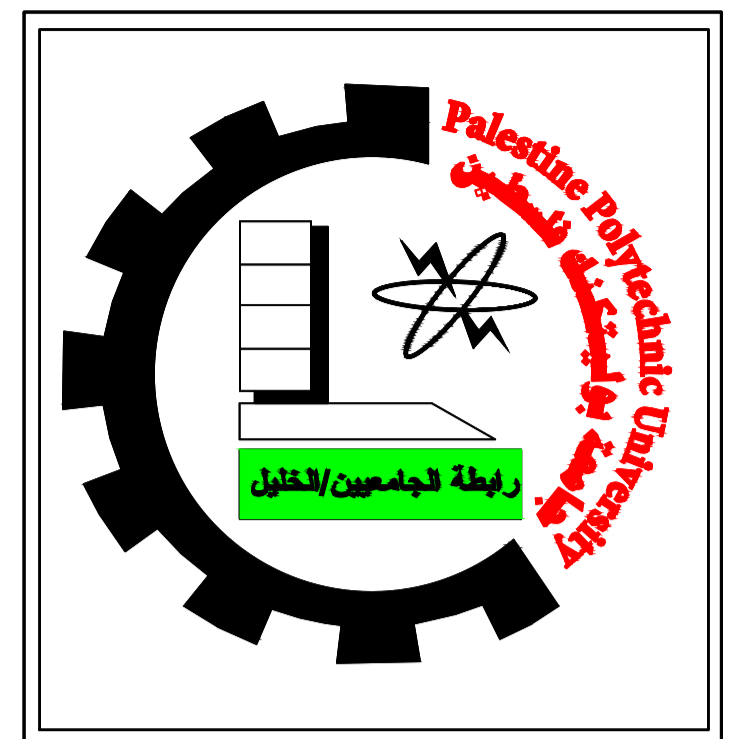
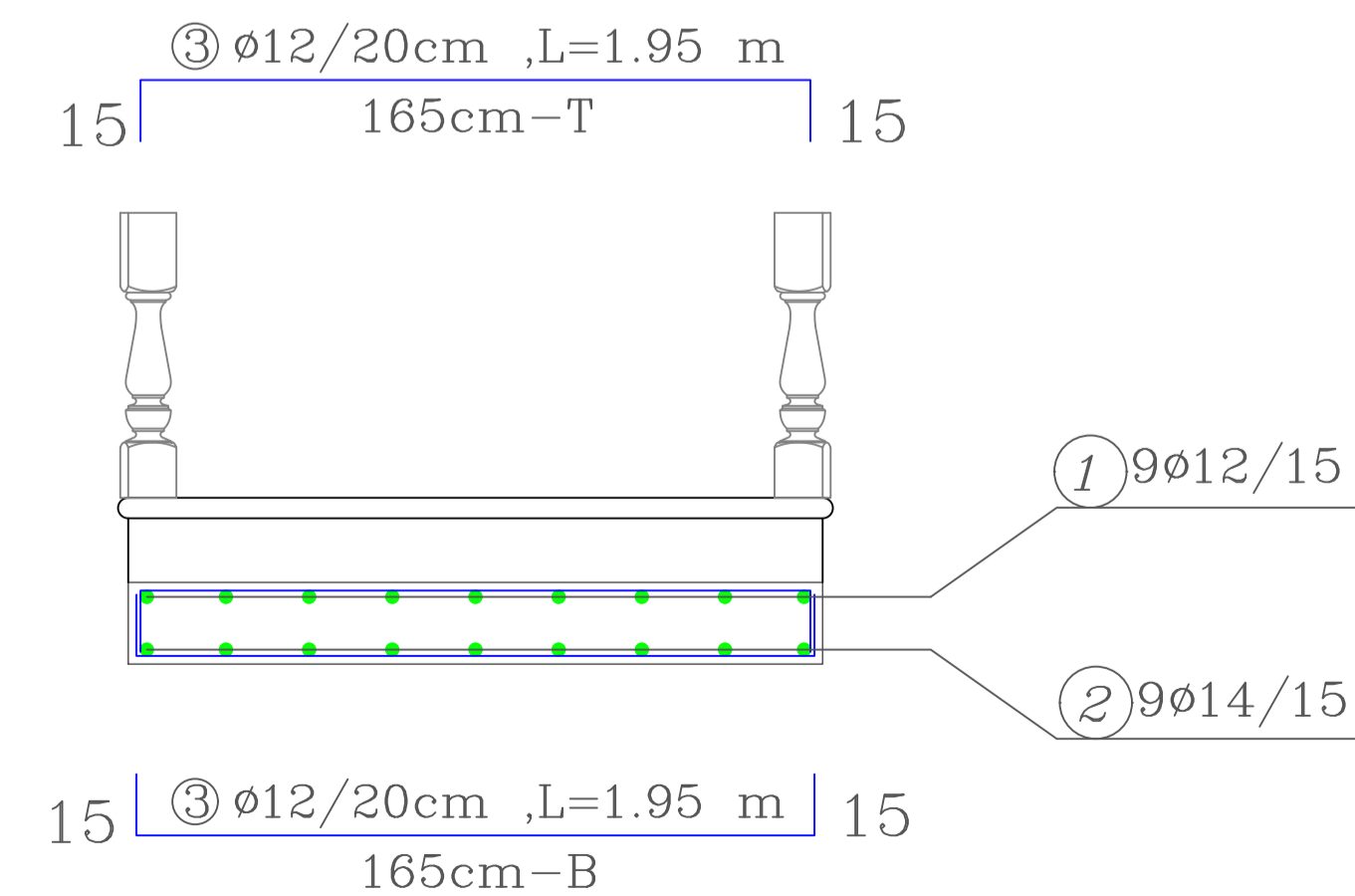
Scale	1/25
Drawing #	S48



HALF-CIRCLE stairs details

SCALE 1:25

section A-A



Palestine Polytechnic University
 College of Engineering
 Civil and Architectural Engineering Department
 Counstruction Engineering

Project Name: Structural Design Of Residential Villa

Drawing Title:
SEMI-CIRCULAR STAIR DETAILING

Supervised by :
HAMDI IDAIS

Done by :
 Mahdi Y. Rajabi
 Ribhi AL-haddad

Scale	1/25
Drawing #	S49