Verified RealEstate™

RE REGULATORY RECORD

RERA Document

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Published for reference. The authority's own register is the operative record.

Verified RealEstate™
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+91 9996 12 9996
verified.realestate

DIGITALLY VERIFIED RECORD

STRUCTRAL DESIGNS
Consulting Engineers

Er. M. Balaji M.E., (Structural)
+91 9894 44 49 49
saistructuraldesigns@gmail.com

22/09/2026

STABILITY CERTIFICATE

The detailed engineering and structure design of the proposed building comprising of **Type-1 Villas (Villa No.01 to 07) - Ground floor + First floor with 7 dwelling units, Type-2 Villas (Villa No.08 to 14) - Ground floor + First floor with 7 dwelling units, & Club House - Ground Floor + First Floor** at **S.F No : 251/2A2,252/2A1B, ERA MOHAN NAGAR, Kalapatti (WEST) Village, Coimbatore NORTH TALUK, COIMBATORE Corporation** has been done by **me** / us (**M.BALAJI)** based on the geotechnical investigation (soil test) done by **K.P vetriselvan** Report no. GEO-G-280-2024-2025 Dated 31.01.2025 and considering the functional requirement of the building.

2. It is certified that among other factors, the proposed building has been designed to resist earthquake. **I**/We have checked various parameters and found that the proposed building would be safe.

3. I/We further certify that:

(i) The minimum grade of concrete is **M20**

(ii)The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Codes No IS – 875 and design of earthquake resistant structure as per IS Code No IS – 1893 & IS – 13920.

4. The building will be **safe and sound** when used for the purpose for which it is designed.

Stamp and Signature

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

GOVT. OF TAMILNADU

DIRECTORATE OF TOWN & COUNTRY PLANNING

DISTRICT TOWN & COUNTRY PLANNING OFFICE,COIMBATORE

Ground & first floor ,Door no -50, FCI Road,

Gandhimaa nagar,Coimbatore-641004.

Phone : 0422-2380243 ,E- Mail : Kovaidisttcp@gmail.com

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that the Thiru.**M.BALAJI** has enrolled as **Structural Engineer Grade –I(SE)** with District Town and country Planning, Coimbatore who has the qualification of **M.E(Structural Engineering)** and experience in the relevant field for 13 years.

He has been given the Registration No. **Coimbatore LPA/SE/GR-I/076/2024 on 01.08.2024.** He shall be required to comply with the duties and responsibilities prescribed by the government of tamilnadu in part V, "Registration of Professionals " ,Tamil Nadu Combined Development and Building Rules ,2019 approved vide G.O (Ms) No .18 MAWS (MA1) Dept.Dated .04.02.2019

This Registration Certificate is valid upto **31.07.2029**



JOINT DIRECTOR (I/C)

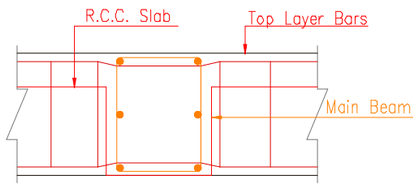
DISTRICT TOWN AND COUNTRY PLANNING,

COIMBATORE

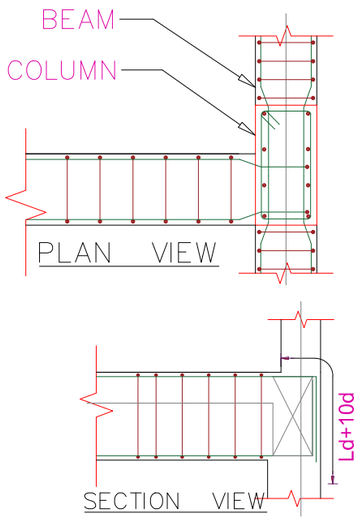
COLUMN AND FOOTING REINFORCEMENT SCHEDULE:-

SL.NO	COLUMN SCHEDULE				FOOTING SCHEDULE					
	TYPE	COLUMN SIZE	COLUMN REINFORCEMENT	COLUMN RINGS 8 mm Ø BARS	SIZE L x B	DEPTH (TOTAL) D	STEEL (a)	STEEL (b)	SECTION	GRID NO
1.	C1F1	9" X 15"	15" × 9" ● 8 # 16 Y	@ Support 4" C/c @ Midspan 7" C/c	5'0" X 5'0"	18"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	H - 5,D - 2, F - 3. Nos - 3
2.	C2F2	9" X 15"	15" × 9" ● 4 # 16Y ○ 6 # 12Y	@ Support 4" C/c @ Midspan 7" C/c	4'6" X 4'6"	15"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	A - 1, B - 1, H - 1. Nos -3
3.	C3F3	9" X 18"	18" × 9" ● 6 # 16Y ○ 4 # 12Y	@ Support 4" C/c @ Midspan 7" C/c	5'6" X 5'6"	18"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	E - 3, F - 1 Nos - 2
4.	C4F4	9" X 18"	18" × 9" ● 10 # 16Y	@ Support 4" C/c @ Midspan 7" C/c	7'0" X 7'0"	18"	12 # @ 5" C/c	12 # @ 5" C/c		H - 6, A - 2, H - 3. Nos - 3
5.	C5F5	9" X 30"	30" × 9" ● 6 # 20Y + ○ 4 # 16Y	@ Support 4" C/c @ Midspan 7" C/c	7'0" X 7'0"	24"	8 # @ 5" C/c TOP LAYERS 12 # @ 5" C/c BOTTOM LAYERS	8 # @ 5" C/c 12 # @ 5" C/c	A - A	A - 4, E - 6. Nos - 2
6.	C6F6	9" X 9"	9" × 9" ● 4 # 12 Y	@ Support 4" C/c @ Midspan 7" C/c	3'6" X 3'6"	12"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	C - 5. Nos - 1

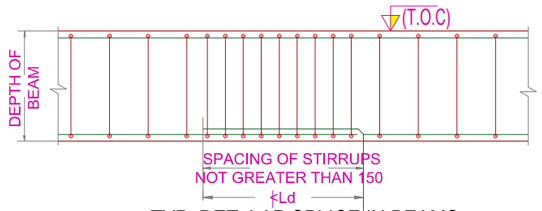
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Coimbatore - 04



Section Detail of Main Beam & Secondary Beam Junction



TYPICAL BEAM COLUMN JUNCTION DETAIL



TYP. DET. LAP SPLICE IN BEAMS

VILLA - 1 TO 7

REFERENCE: –

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 – 2000.

USE MIX M20 FOR ALL CONCRETE WORK(USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 320Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1: 1.5: 3.

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM: 30mm, SLAB: 20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS–1786–1985 BE USED. Fe – 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CU BOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

A MINIMUM OF 21 DAYS WATER CURING REQUIRED FOR ALL CONCRETE STRUCTURES & IT'S RESPONSIBILITY OF OWNER AND CONTRACTOR.

SOIL REPORT :- S.B.C. 267 kN/M^2 | LIVE LOAD :- 2 kN/M^2

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 11' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

FOUNDATION DESIGNED FOR – GROUND FLOOR + ONE FLOORS + HEAD ROOM + O.H.T.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

Drawn and Design: NEDUNCHEZHIAN.K | Chd : BALAJI.M | Date : 28-03-2026

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa- (1-7)/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

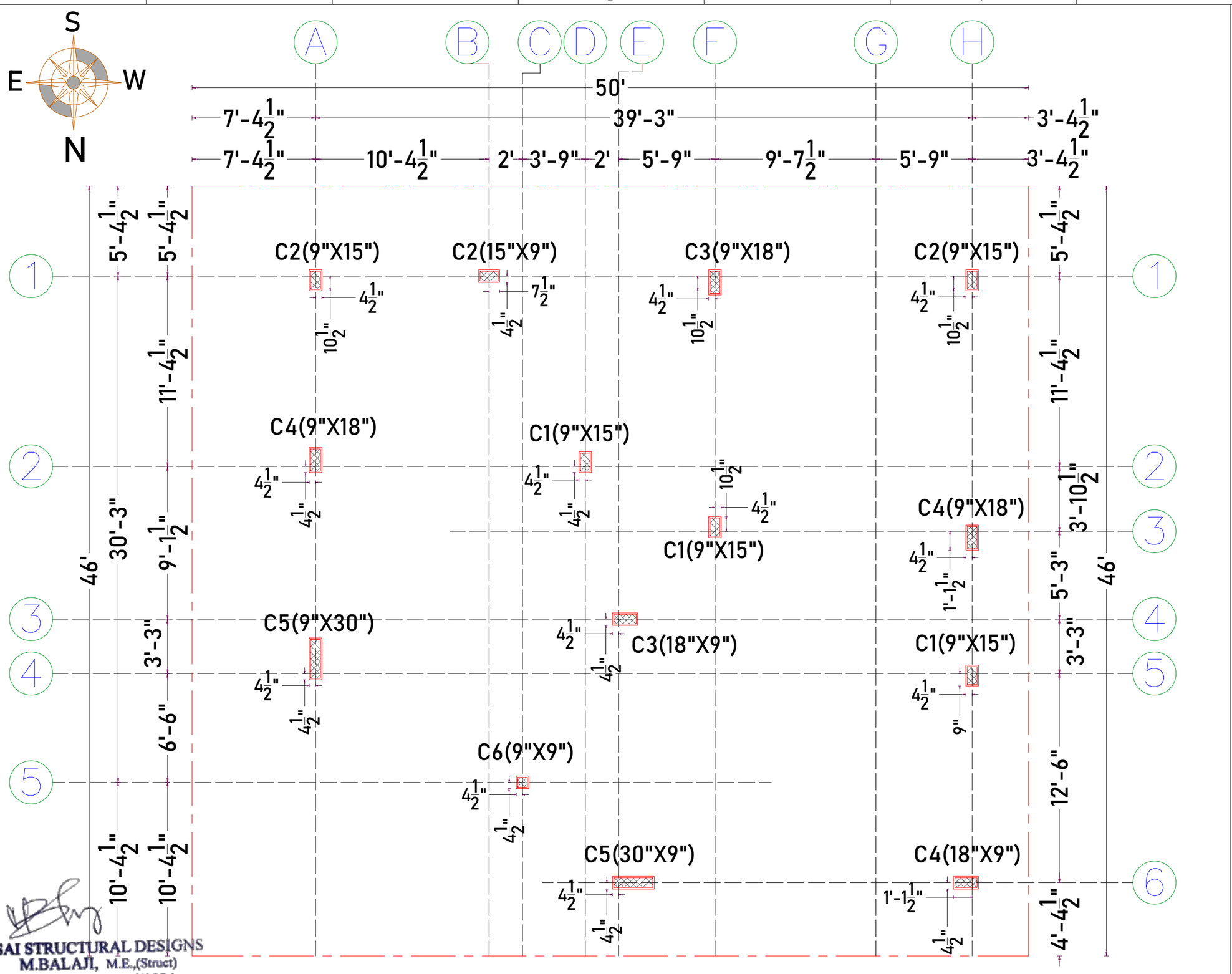
TITLE: COLUMN AND FOOTING REINFORCEMENT DETAILS.

PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

VILLA - 6

Structural consultant:-

Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE–04. PH:
98944 44949
saistructuraldesigns@gmail.com



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Coimbatore - 04

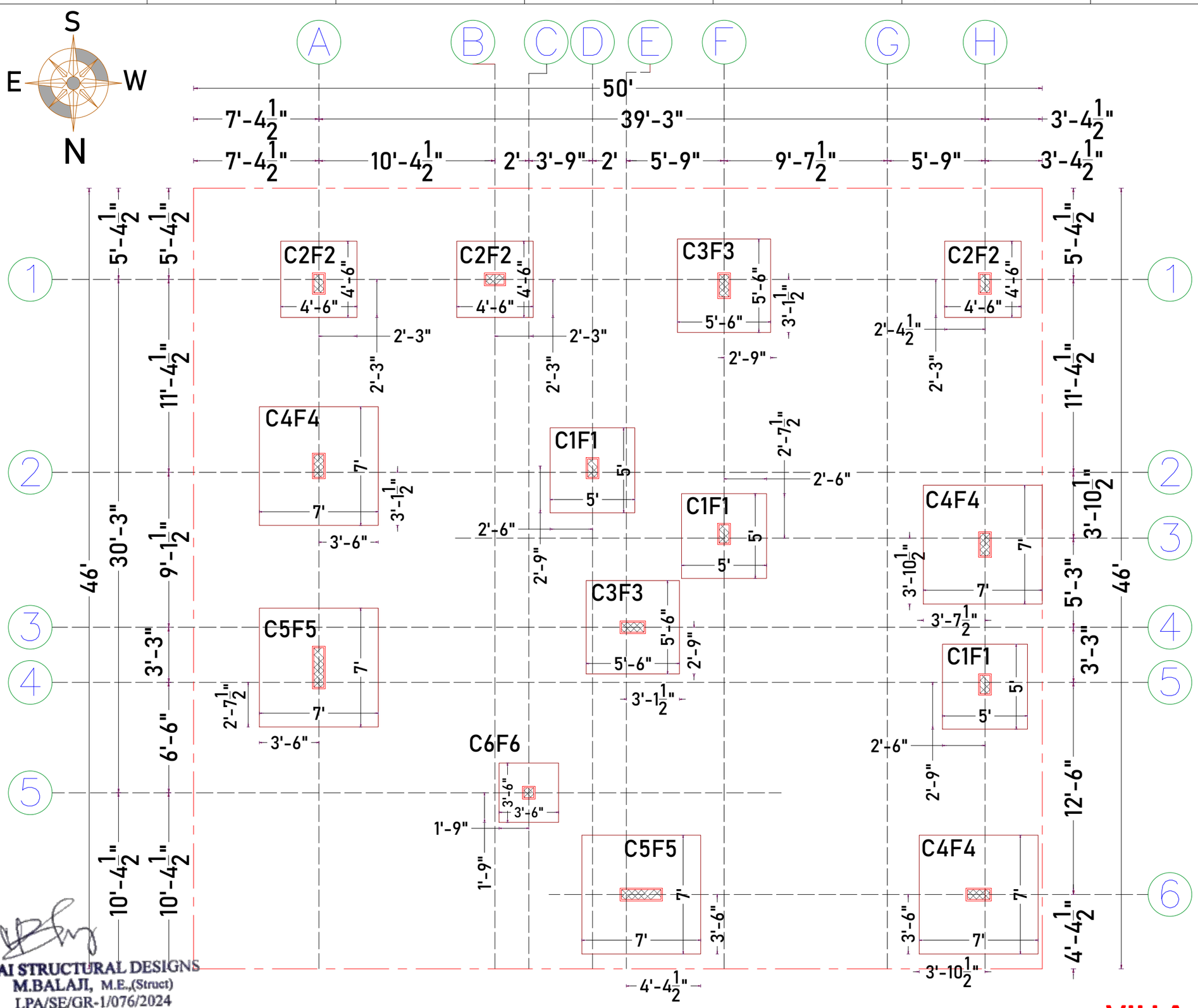
Drawn and Design: NEDUNCHEZHIAN.K
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PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

TITLE: COLUMN AXIS LAYOUT AND DETAILS.

STRUCTURAL CONSULTANT:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949 saistructuraldesigns@gmail.com

VILLA - 6



SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

VILLA - 6

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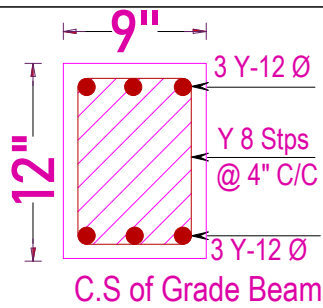
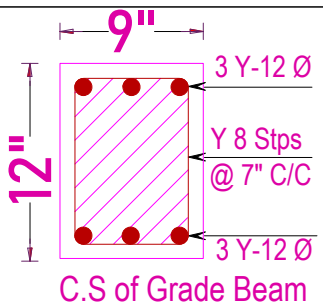
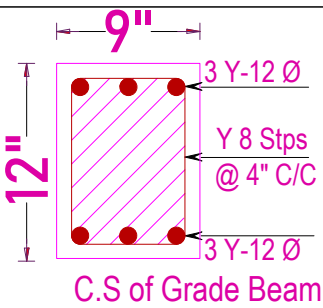
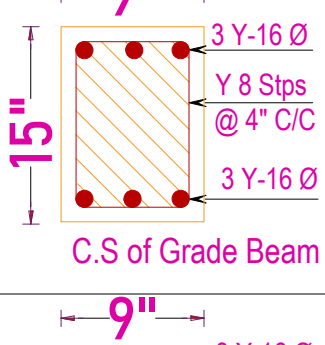
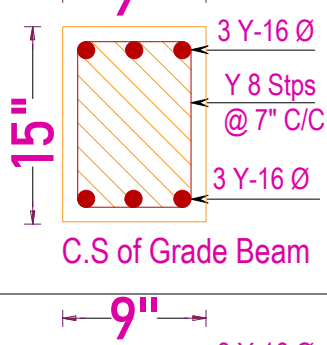
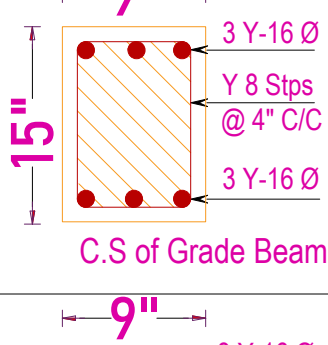
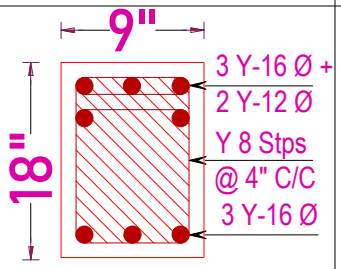
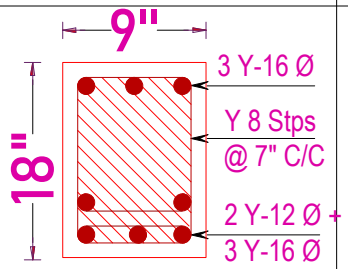
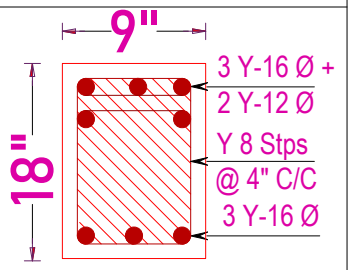
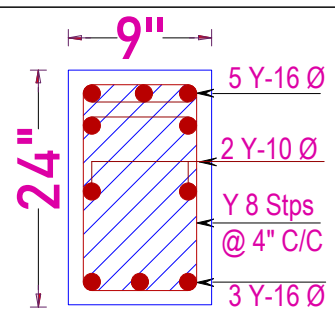
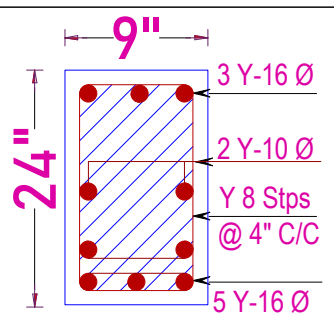
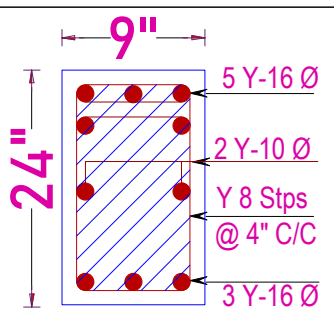
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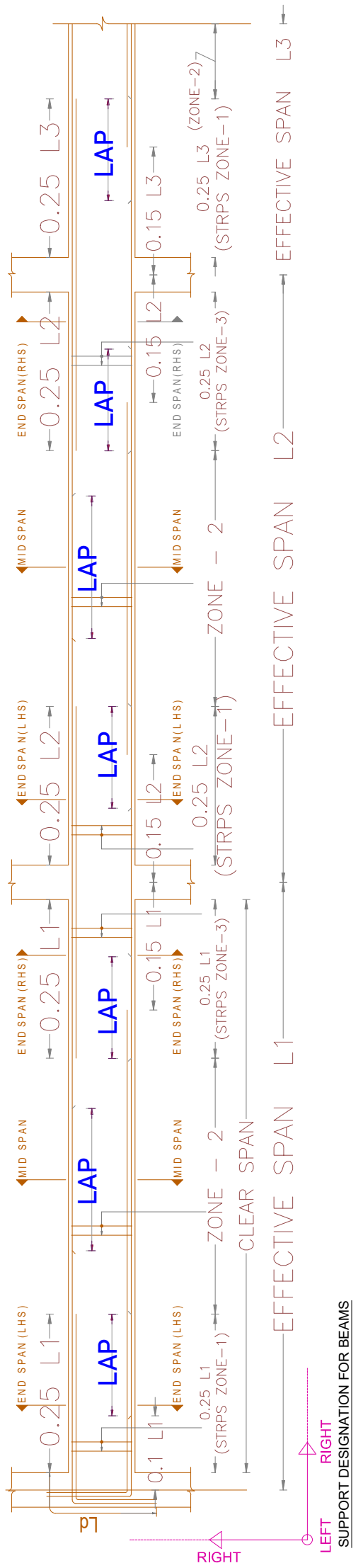
PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

TITLE: COLUMN AXIS LAYOUT AND DETAILS.

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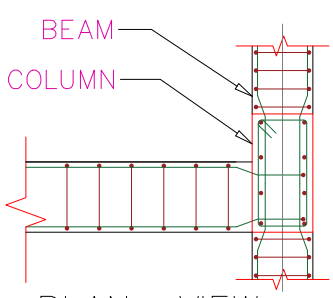
GRADE BEAM REINFORCEMENT DETAILS:-

SL.NO	SIZE	NAME	L.H.S	MID	R.H.S
1.	9" X 12"	G.B-1	 C.S of Grade Beam	 C.S of Grade Beam	 C.S of Grade Beam
2.	9" X 15"	G.B- 2	 C.S of Grade Beam	 C.S of Grade Beam	 C.S of Grade Beam
3.	9" X 18"	G.B- 3	 C.S of Grade Beam	 C.S of Grade Beam	 C.S of Grade Beam
4.	9" X 24"	R.B- 4	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam

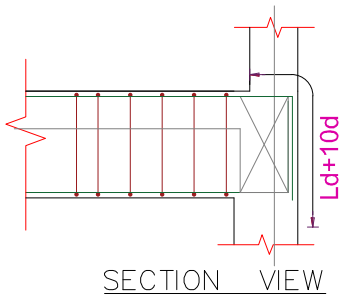


DUCTILE DETAILS;-

NOTE:-
IF BASEMENT HEIGHT IS MORE THAN 2'6", MUST PROVIDE THE TIE BEAM AT THE TOP OF BASEMENT.

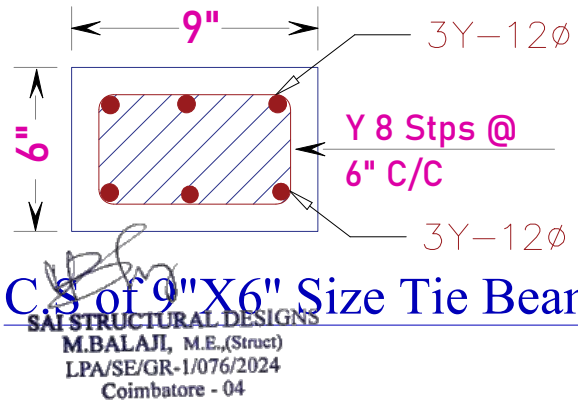


PLAN VIEW



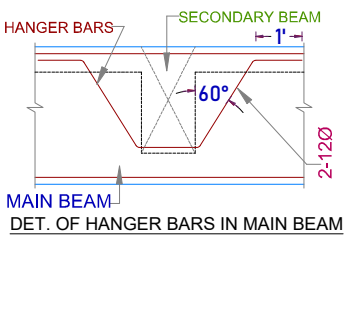
SECTION VIEW

TYPICAL BEAM COLUMN JUNCTION DETAIL

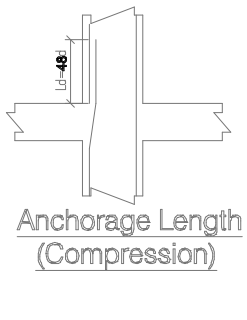


C.S of 9"X6" Size Tie Beam.

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Coimbatore - 04



DET. OF HANGER BARS IN MAIN BEAM



Anchorage Length (Compression)

REFERENCE:-

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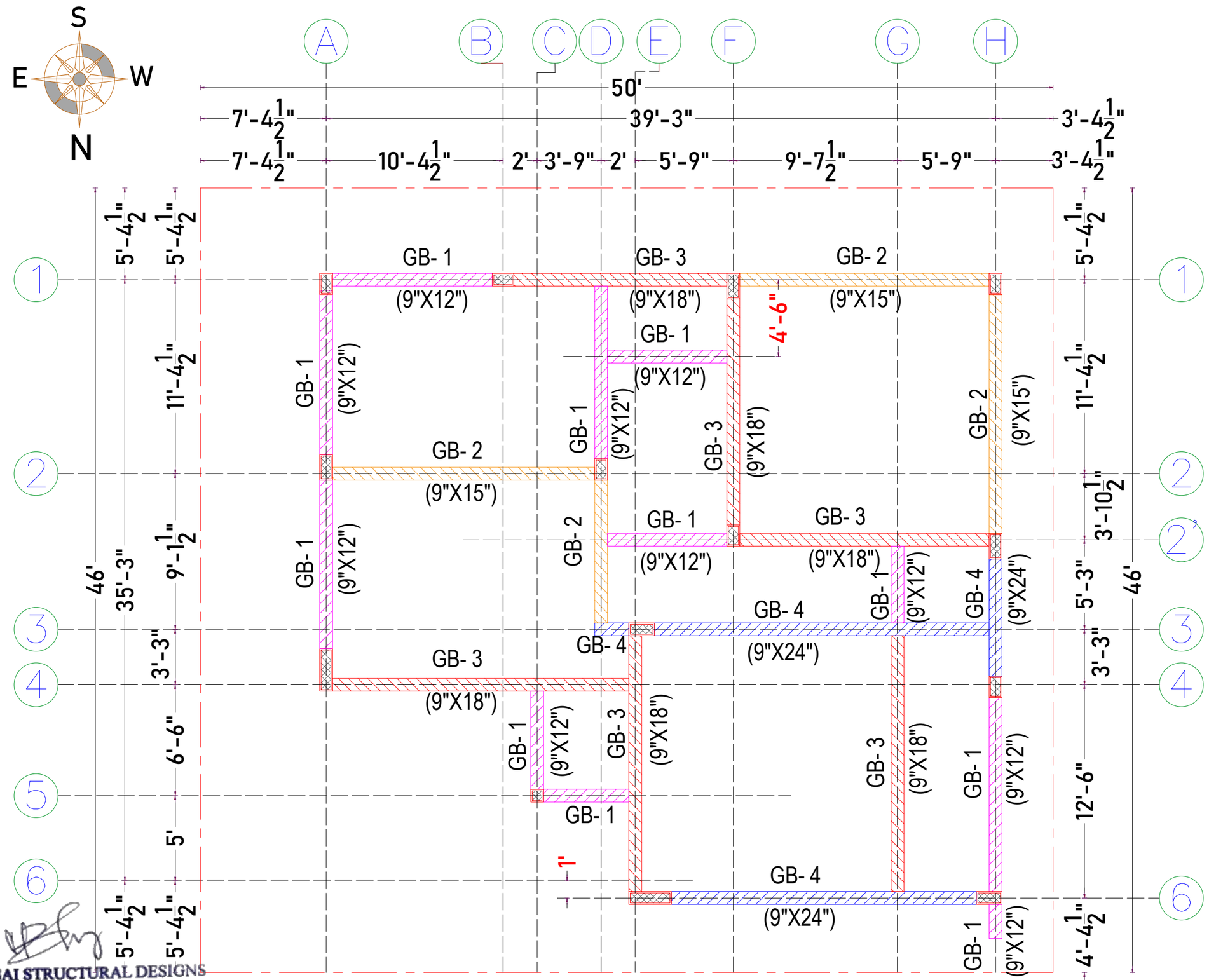
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PROJECT: PROPOSED RESIDENTIAL BUILDING - COIMBATORE.

TITLE:- GRADE BEAM REINFORCEMENT SCHEDULE. VILLA - 6

STRUCTURAL CONSULTANT:-

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55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
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REFERENCE: –

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Drawn and Design: NEDUNCHEZHIAN.K

Date :28-03-2026 | Chd : BALAJI.M

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa- (1-7)/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

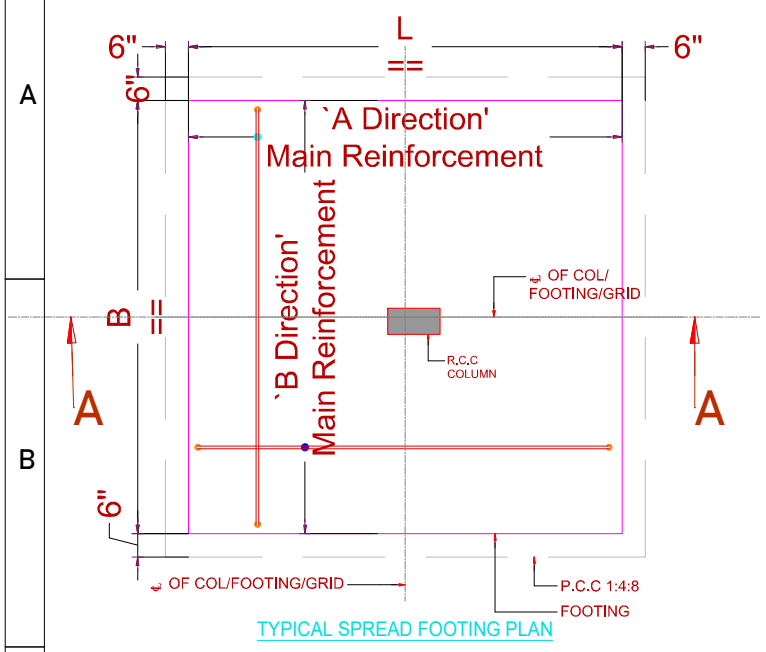
TITLE: GRADE BEAM LAYOUT AND DETAILS.

STRUCTURAL CONSULTANT:-

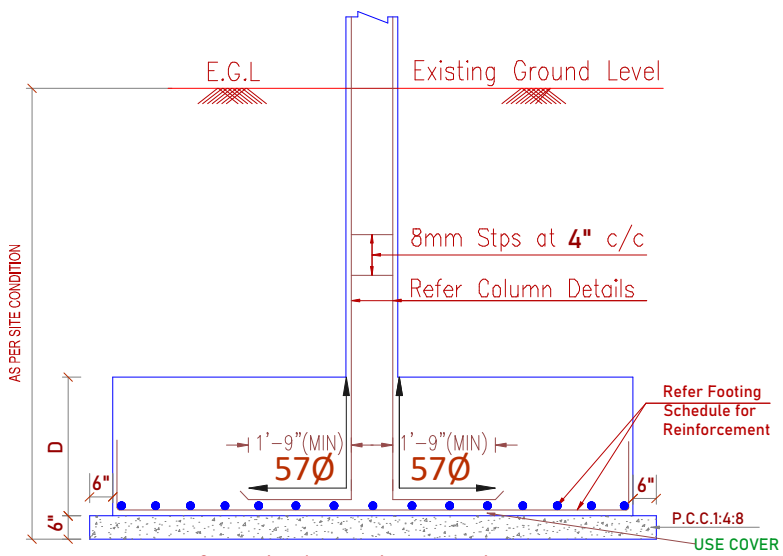
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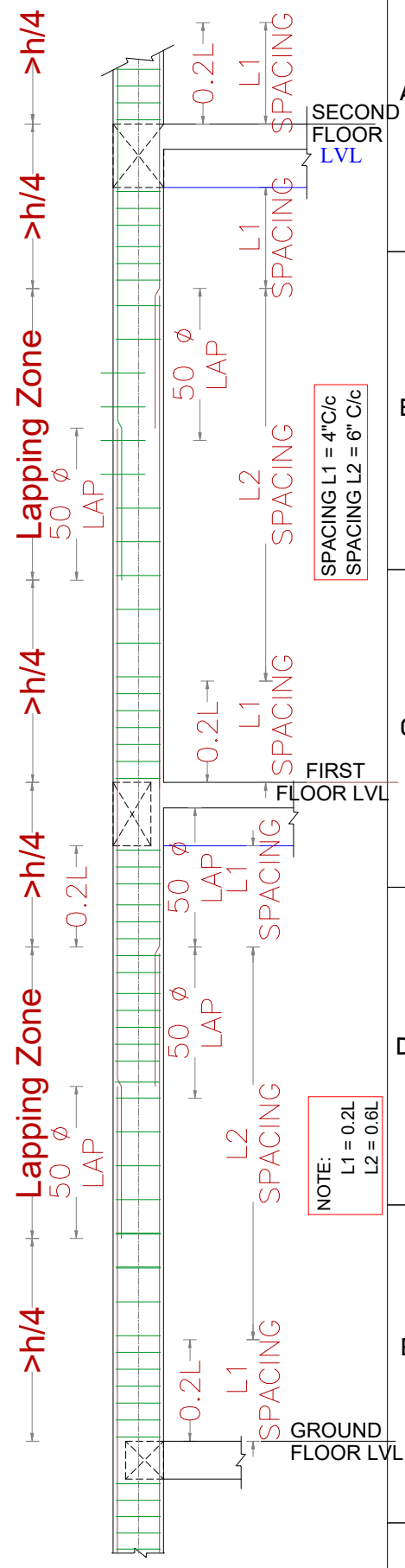
VILLA - 6



TYPICAL SPREAD FOOTING PLAN

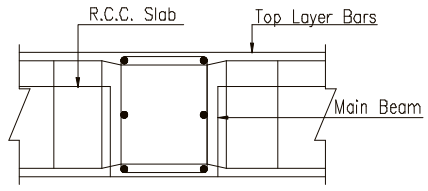


C.S of Typical Footing Section'A-A'

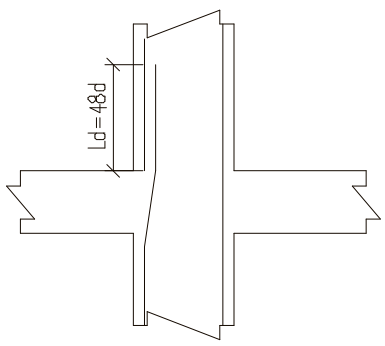


TYPICAL COLUMN SECTION DETAIL

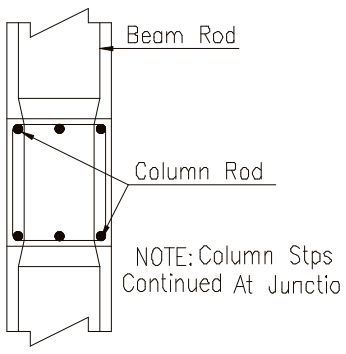
DUCTILE DETAILS;—



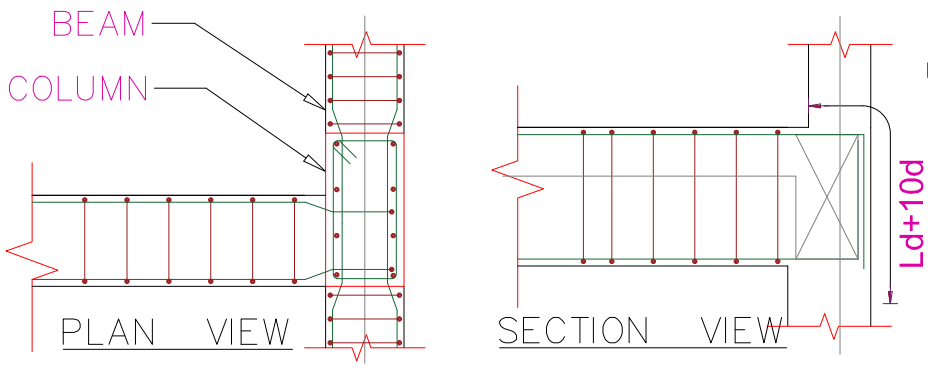
Section Detail of Main Beam & Secondary Beam Junction



Anchorage Length (Compression)

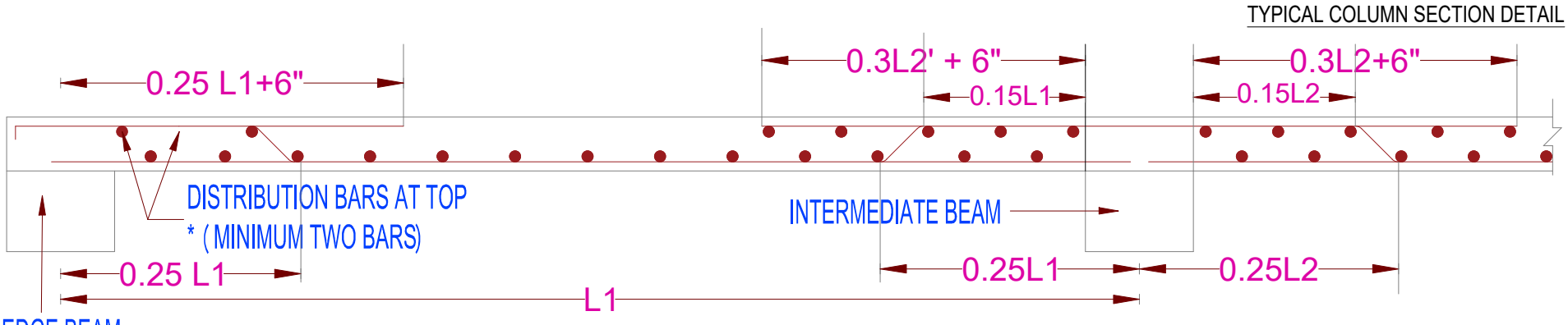


Plan of Column - - Beam Junction



DET. OF HANGER BARS IN MAIN BEAM

TYPICAL BEAM COLUMN JUNCTION DETAIL



TYPICAL CROSS SECTION DETAIL FOR SLAB

VILLA - 6

NOTE:-

ALL CRANKS ARE 0.25L FROM THE SUPPORTS.
ALL SLABS ARE 6" THICK.
MUST FOLLOW THE DUCTILE DETAILS.
ALL ROOF BEAMS DEPTH ARE INCLUDES THE SLAB DEPTH.

NOTE:

PROVIDE AN ADDITIONAL 6" INCH FROM THE FOOTING BREATH AND DEPTH DETAIL FOR PCC WORK
STRICTLY FOLLOW THE FOOTING TYPICAL SECTION DETAIL.

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SOIL REPORT :- S.B.C. 267.0 kN/M^2 | LIVE LOAD :- 2 kN/M^2

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Drawn and Design : NEDEUNCHEZHIAN
Chd : BALAJI.M Date : 28-03-2026

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa- (1-7)/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

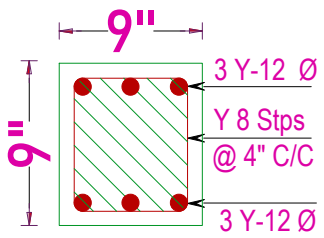
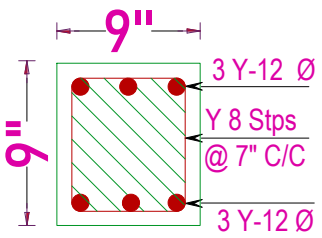
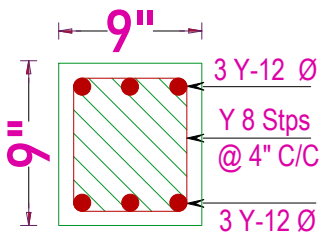
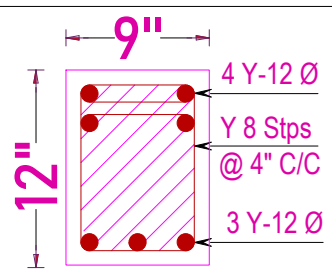
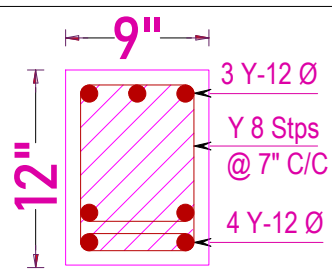
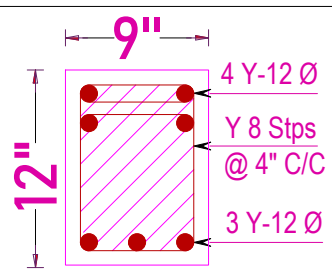
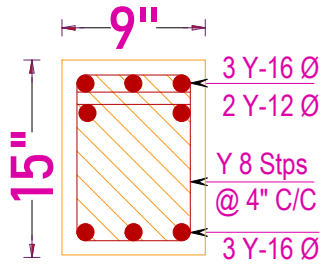
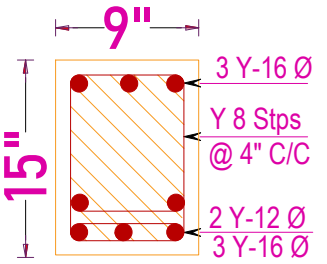
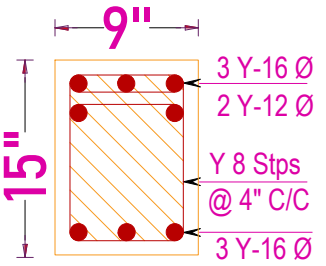
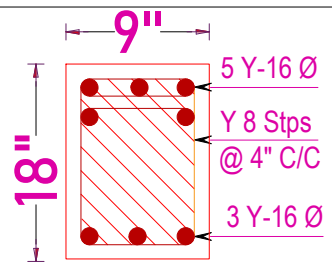
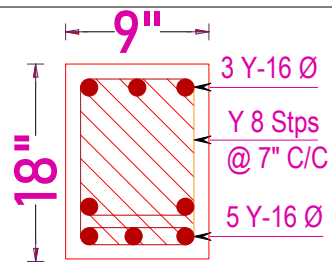
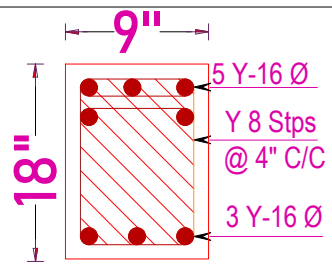
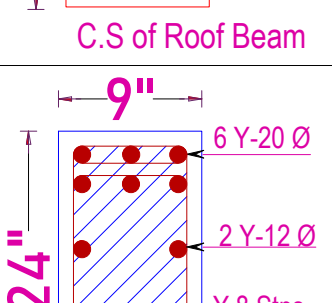
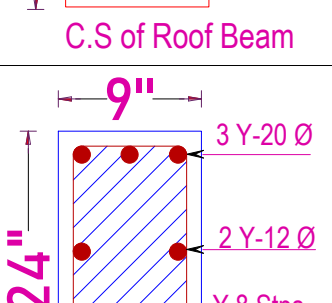
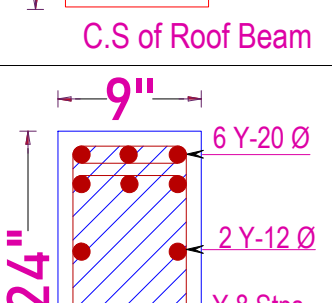
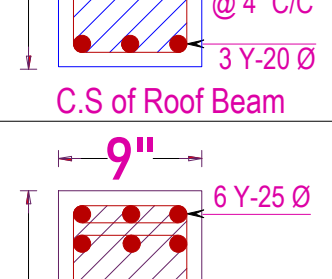
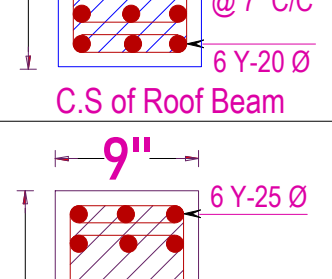
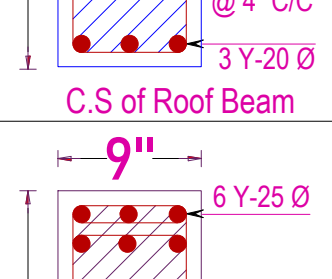
PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

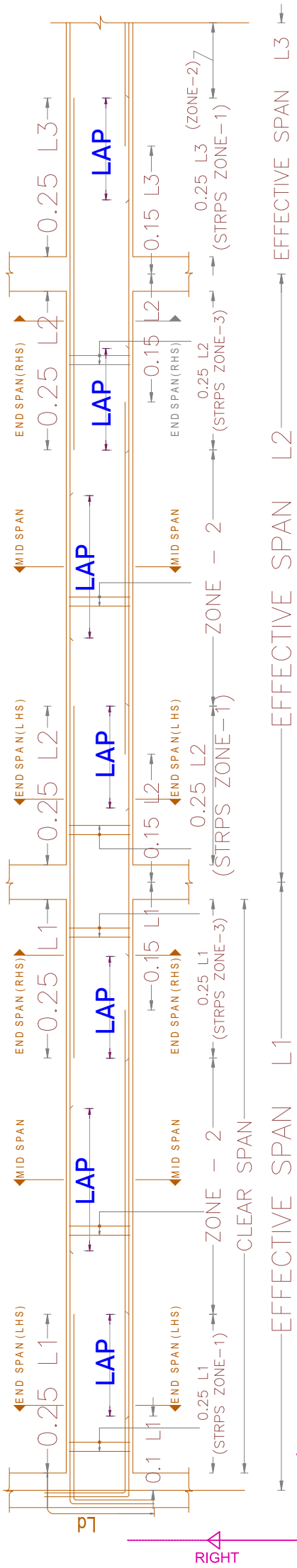
TITLE:- TYPICAL SECTION DETAILS.

Structural consultant:-
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GROUND FLOOR ROOF BEAM REINFORCEMENT DETAILS:-

SL.NO	SIZE	NAME	L.H.S	MID	R.H.S
1.	9" X 9"	R.B- 1	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
2.	9" X 12"	R.B- 2	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
3.	9" X 15"	R.B- 3	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
4.	9" X 18"	R.B- 4	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
5.	9" X 24"	R.B- 5	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
6.	9" X 30"	R.B- 6	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam



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PROJECT: PROPOSED RESIDENTIAL BUILDING - COIMBATORE.

TITLE:- GROUND FLOOR ROOF BEAM REINFORCEMENT SCHEDULE. VILLA - 1 TO 7

STRUCTURAL CONSULTANT:-

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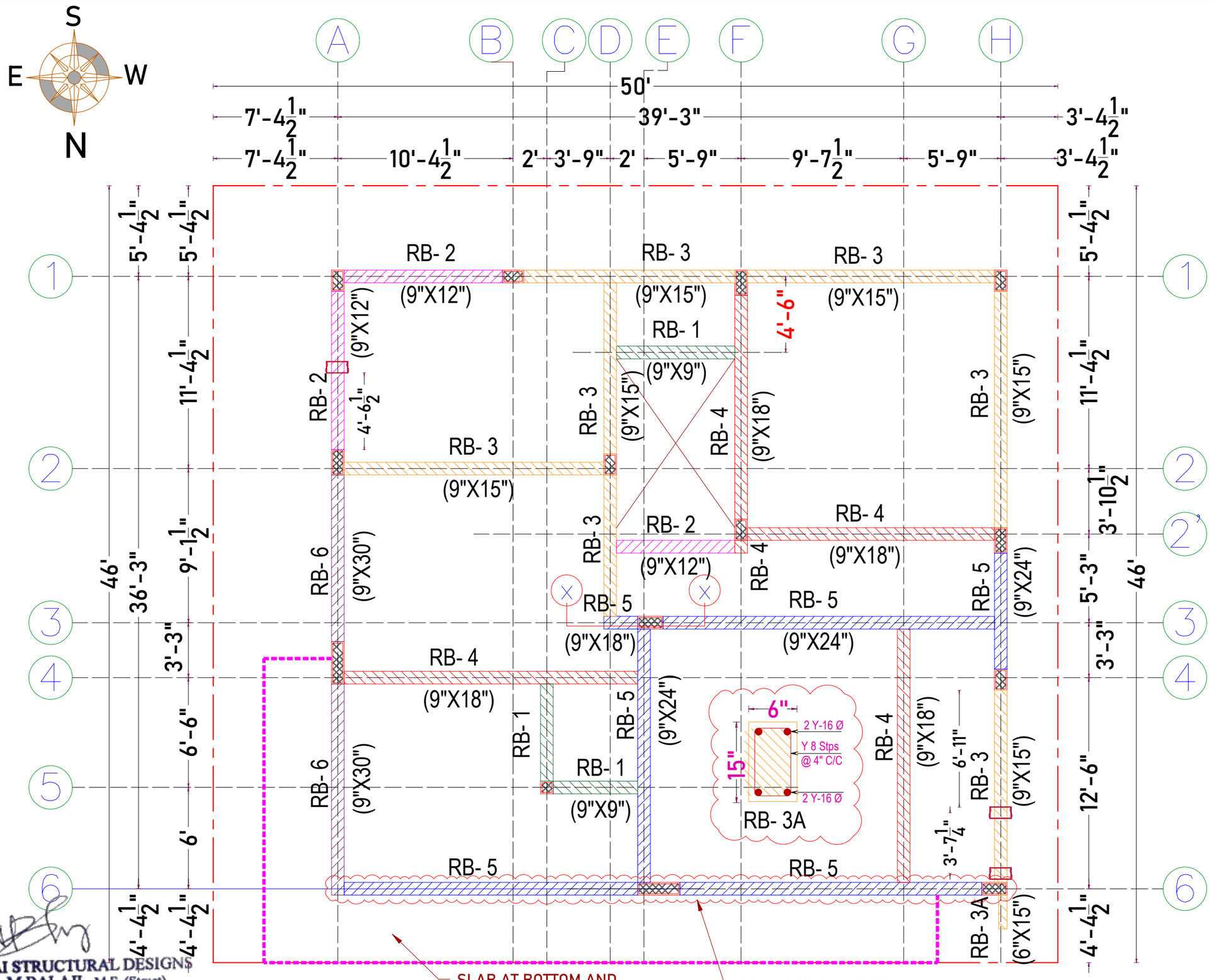
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SLAB AT BOTTOM AND BEAM BOTTOM LEVEL ARE SAME.

CONSIDER CLOUDED BEAM DEPTH IS 30"

VILLA - 1 TO 7

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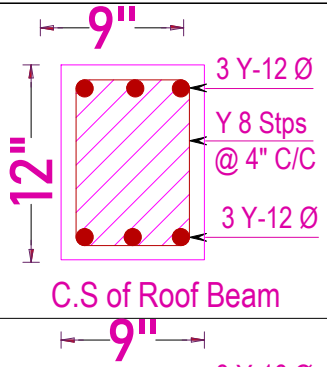
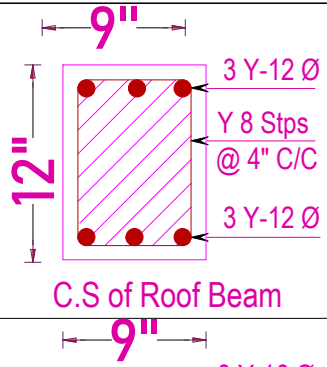
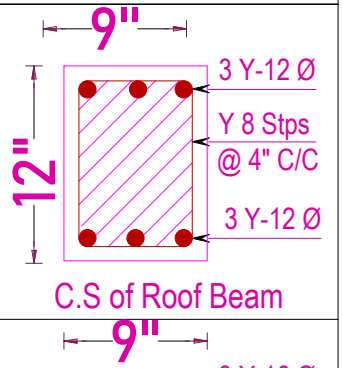
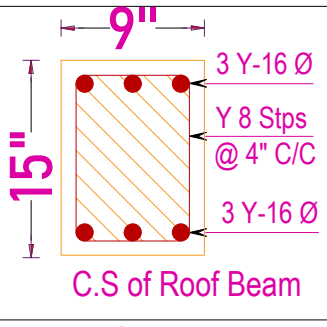
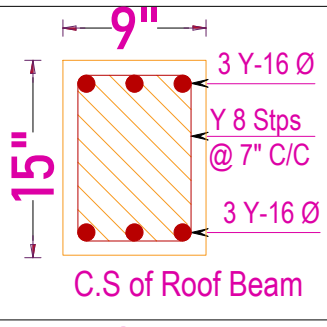
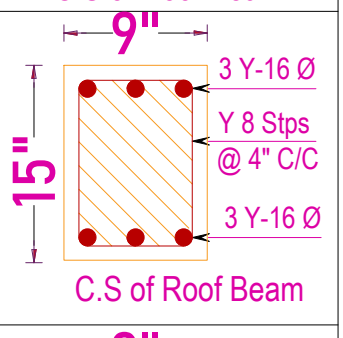
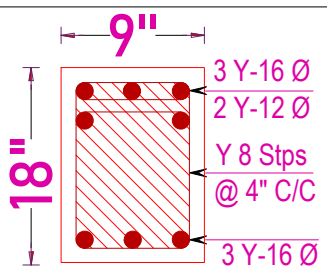
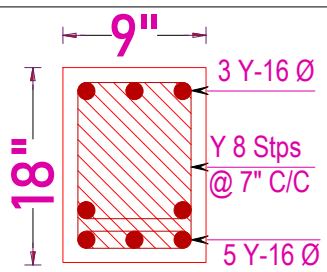
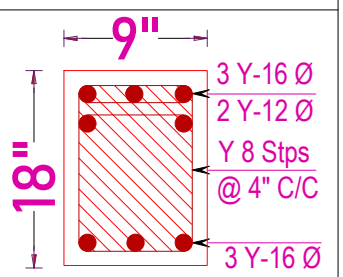
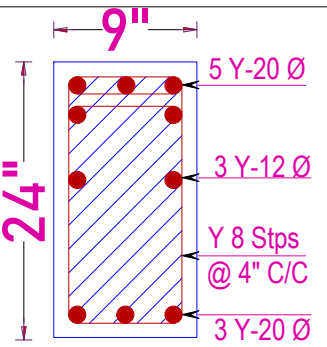
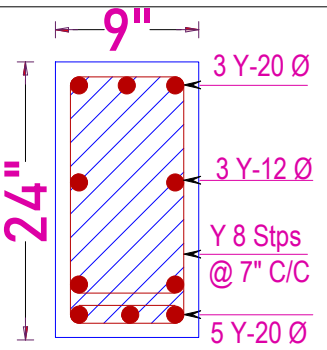
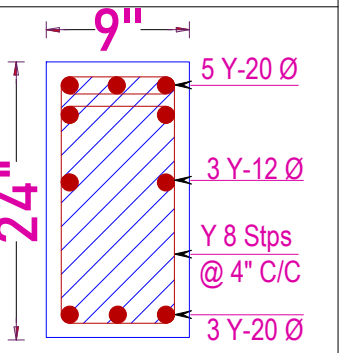
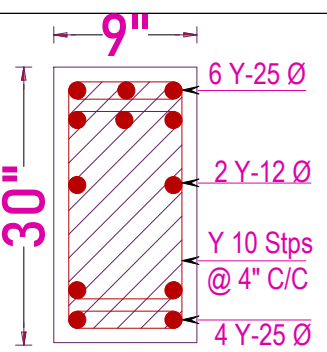
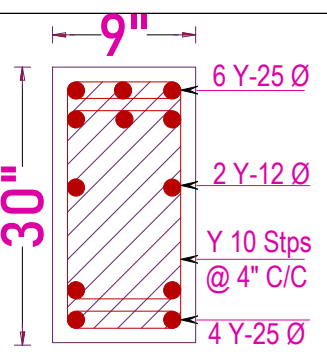
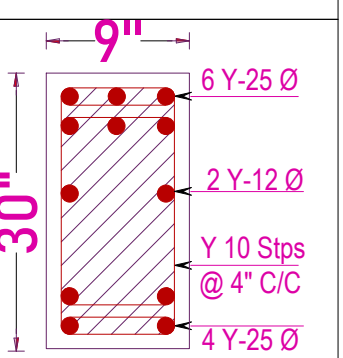
Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa- (1-7)/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

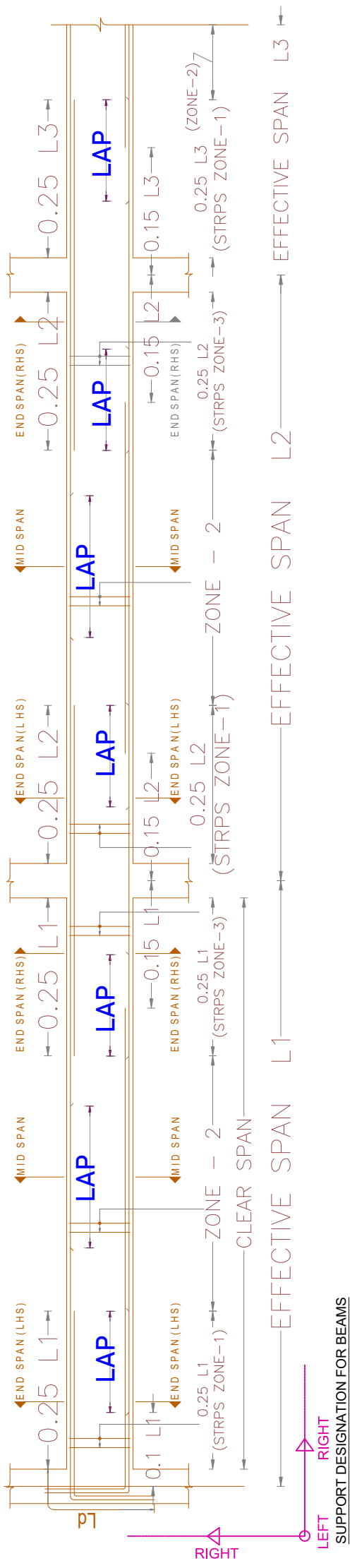
PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

TITLE: GROUND FLOOR ROOF BEAM LAYOUT AND DETAILS.

STRUCTURAL CONSULTANT:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949 saistructuraldesigns@gmail.com

GROUND FLOOR ROOF BEAM REINFORCEMENT DETAILS:-

SL.NO	SIZE	NAME	L.H.S	MID	R.H.S
1.	9" X 12"	R.B- 1	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
2.	9" X 15"	R.B- 2	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
3.	9" X 18"	R.B- 3	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
4.	9" X 24"	R.B- 4	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
5.	9" X 30"	R.B- 5	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam



SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

VILLA - 1 TO 7

REFERENCE:-

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 - 2000.

USE MIX M20 FOR ALL CONCRETE WORK(USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 320Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1: 1.5:3.

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

A MINIMUM OF 21 DAYS WATER CURING REQUIRED FOR ALL CONCRETE STRUCTURES & IT'S RESPONSIBILITY OF OWNER AND CONTRACTOR.

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 11' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

DIMENSION OF ELEVATION, PROJECTION, CU BOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

Drawn and Design :NEDUNCHEZHIAN.K
Date : 28-03-2026 Chd : BALAJI.M

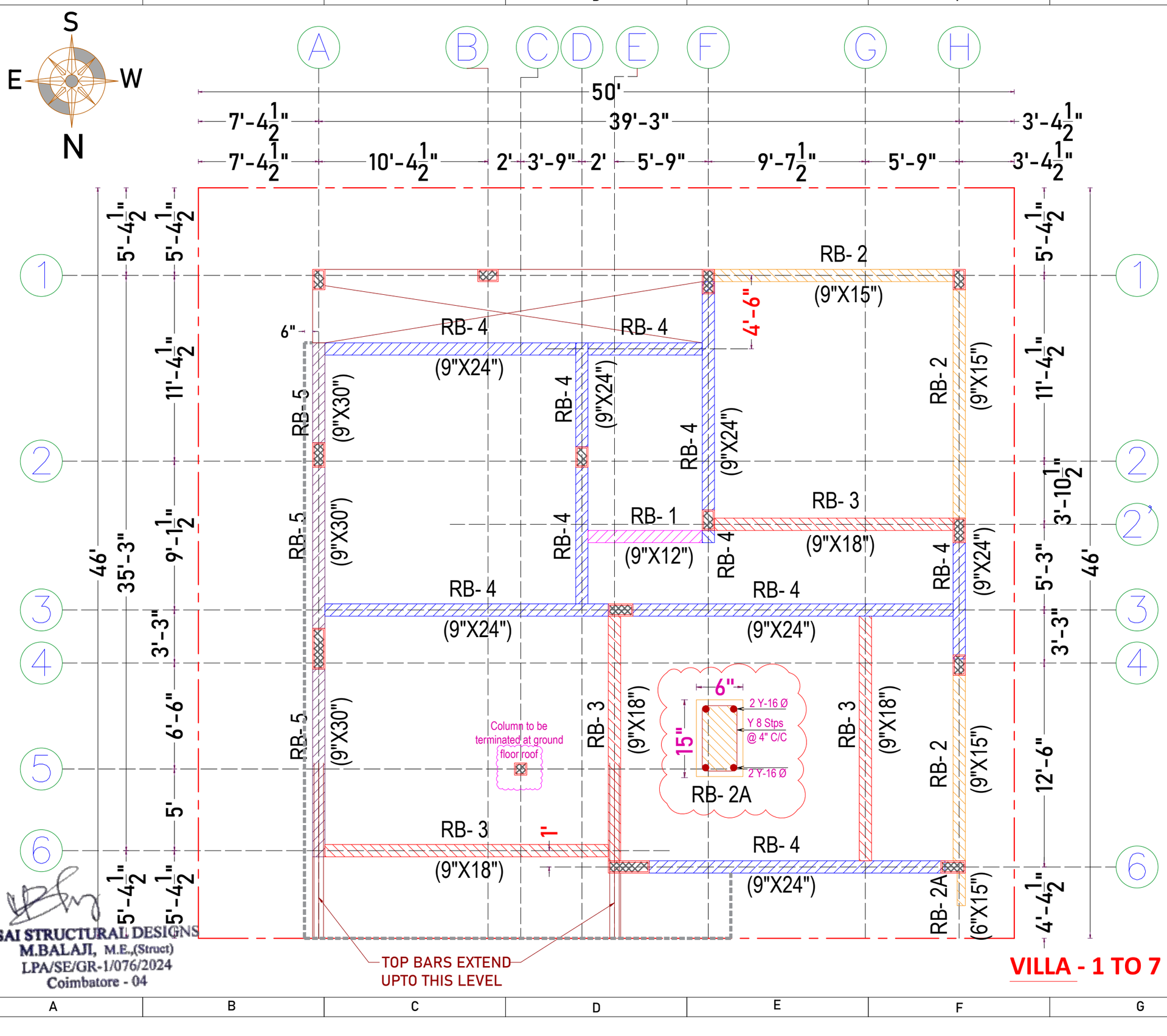
Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa- (1-7)/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

PROJECT: PROPOSED RESIDENTIAL BUILDING - COIMBATORE.

TITLE:- TERRACE FLOOR BEAM REINFORCEMENT SCHEDULE.

STRUCTURAL CONSULTANT:-

Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
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M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

VILLA - 1 TO 7

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HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

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ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

FOUNDATION DESIGNED FOR - GROUND FLOOR + ONE FLOORS + HEAD ROOM + O.H.T.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

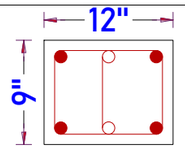
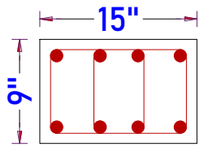
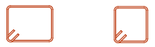
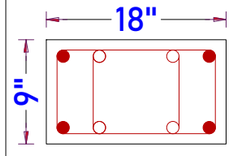
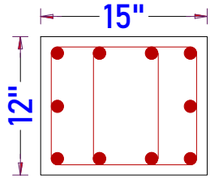
Drawn and Design: NEDUNCHEZHIAN.K
Date: 28-03-2026 | Chd: BALAJI.M
Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa- (1-7)/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

TITLE: TERRACE FLOOR BEAM LAYOUT AND DETAIL.

STRUCTURAL CONSULTANT:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949 saistructuraldesigns@gmail.com

COLUMN AND FOOTING REINFORCEMENT SCHEDULE:-

SL.NO	COLUMN SCHEDULE				FOOTING SCHEDULE					
	TYPE	COLUMN SIZE	COLUMN REINFORCEMENT	COLUMN RINGS 8 mm Ø BARS	SIZE L x B	DEPTH (TOTAL) D	STEEL STEEL (a)	STEEL (b)	SECTION	GRID NO
1.	C1F1	9" X 12"	 ● 4 # 16 Y ○ 2 # 12 Y	 @ Support 4" C/c @ Midspan 7" C/c	4'6" X 4'6"	12"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	A - 4, D - 1, B - 1. Nos - 3
2.	C2F2	9" X 15"	 ● 8 # 16 Y	 @ Support 4" C/c @ Midspan 7" C/c	5'0" X 5'0"	15"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	A - 1, A - 2, D -2, A - 3. Nos - 4
3.	C3F3	9" X 18"	 ● 4 # 20 Y ○ 4 # 16 Y	 @ Support 4" C/c @ Midspan 7" C/c	6'0" X 6'0"	18"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	C - 3, B - 2. Nos - 2
4	C4F4	12" X 15"	 ● 10 # 16 Y	 @ Support 4" C/c @ Midspan 7" C/c	6'6" X 6'6"	18"	10 # @ 5" C/c	10 # @ 5" C/c	A - A	D - 3, C - 4. Nos - 2

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

REFERENCE: –

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 – 2000.

USE MIX M20 FOR ALL ROOF BEAM SLABS. (USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 340Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1:1.5:3. AND WATER CEMENT RATIO NOT EXCEED 0.4

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM: 30mm, SLAB: 20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS–1786–1985 BE USED. Fe – 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CUPBOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

DE–SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SOIL REPORT :- S.B.C. 267 kN/m²

LIVE LOAD :- 2 kN/m²

.A MINIMUM OF 21 DAYS WATER CURING REQUIRED FOR ALL CONCRETE STRUCTURES & IT'S RESPONSIBILITY OF OWNER AND CONTRACTOR.

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 10' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

FOUNDATION DESIGNED FOR – GROUND FLOOR + ONE FLOORS + HEAD ROOM + O.H.T.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

REST OF FOUNDATION IS ON HARD STRATA. CONFIRM BEFORE PLACING THE P.C.C. FOR FOOTING.

Drawn and Design: NEDUNCHEZHIAN.K | Chd : BALAJI.M | Date : 28-03-2026

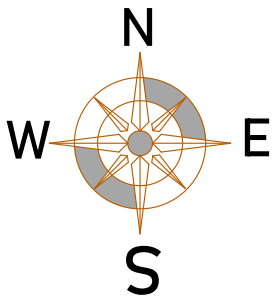
Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa-8-14/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

TITLE: COLUMN AND FOOTING REINFORCEMENT DETAILS.

PROJECT: PROPOSED RESIDENTIAL BUILDING AT COIMBATORE.

STRUCTURAL CONSULTANT:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949 saistructuraldesigns@gmail.com

N W E S



SOIL REPORT :- S.B.C. 267.00 kN/M^2 | LIVE LOAD :- 2 kN/M^2

Notes:

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 - 2000.

USE MIX M20 FOR ALL ROOF BEAM SLABS. (USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 340Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1:1.5:3. AND WATER CEMENT RATIO NOT EXCEED 0.4

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CUPBOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

.A MINIMUM OF 21 DAYS WATER CURING REQUIRED FOR ALL CONCRETE STRUCTURES & IT'S RESPONSIBILITY OF OWNER AND CONTRACTOR.

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BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

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REST OF FOUNDATION IS ON HARD STRATA. CONFIRM BEFORE PLACING THE P.C.C. FOR FOOTING.

VILLA - (8-14)

Drawn and Design : NEDUNCHEZHIAN.K

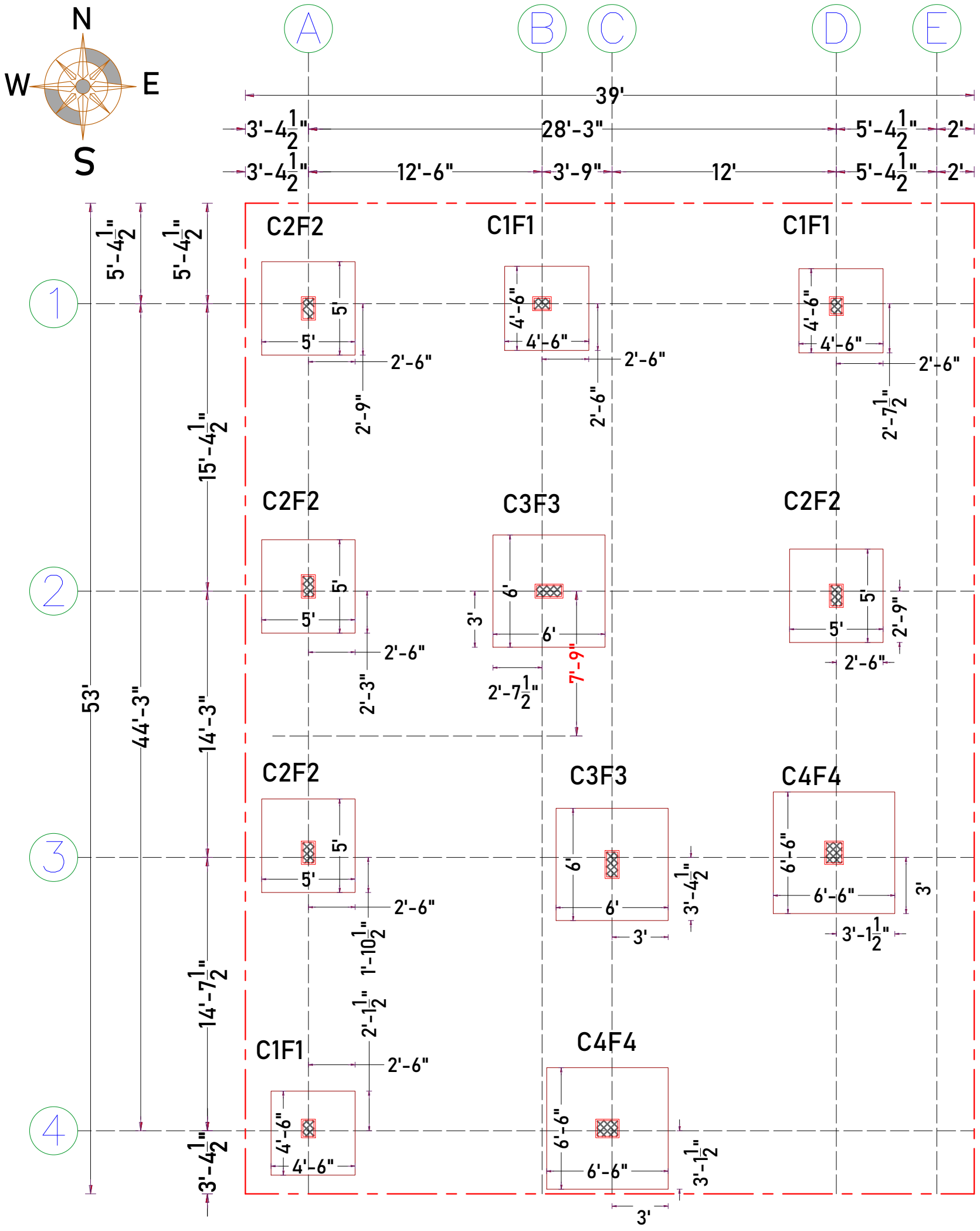
Chd : BALAJI.M | Date : 28-03-2026

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa-8-14/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

PROJECT: HOSTA (8-14)-KALAPATTI COIMBATORE.

TITLE: COLUMN AXIS LAYOUT AND DETAILS.

STRUCTURAL CONSULTANT:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949
saistructuraldesigns@gmail.com



SOIL REPORT :- S.B.C. 267.00 kN/M^2 | LIVE LOAD :- 2 kN/M^2

Notes:

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DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

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BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

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REST OF FOUNDATION IS ON HARD STRATA. CONFIRM BEFORE PLACING THE P.C.C. FOR FOOTING.

VILLA - (8-14)

Drawn and Design : NEDUNCHEZHIAN.K

Chd : BALAJI.M | Date : 28-03-2026

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa-8-14/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

PROJECT: HOSTA (8-14)-KALAPATTI COIMBATORE.

TITLE: FOOTING AXIS LAYOUT AND DETAILS.

STRUCTURAL CONSULTANT:-

Er.BALAJI.M.E.,(struct).,

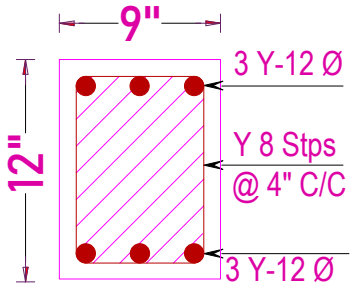
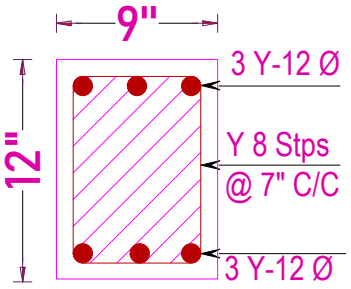
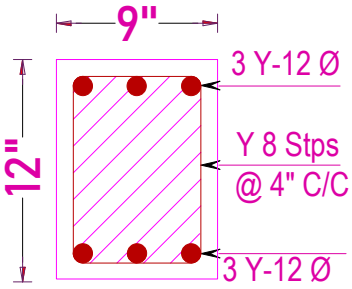
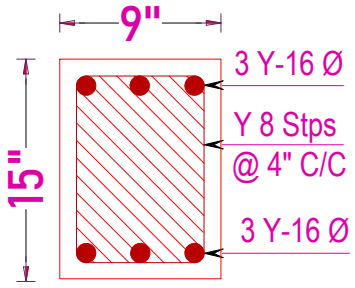
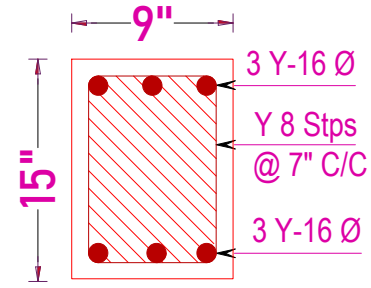
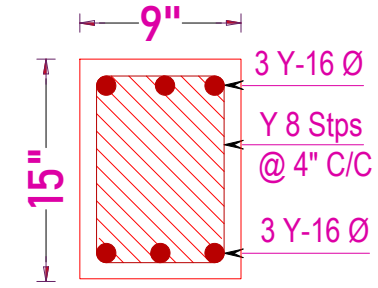
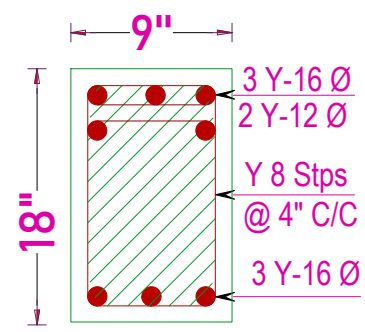
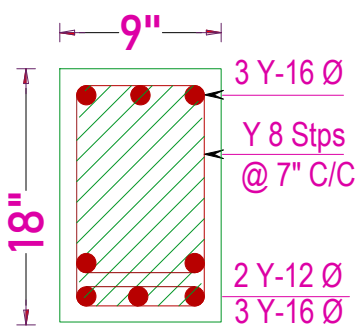
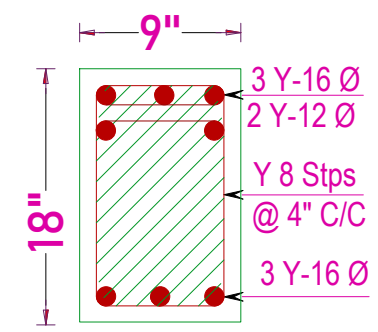
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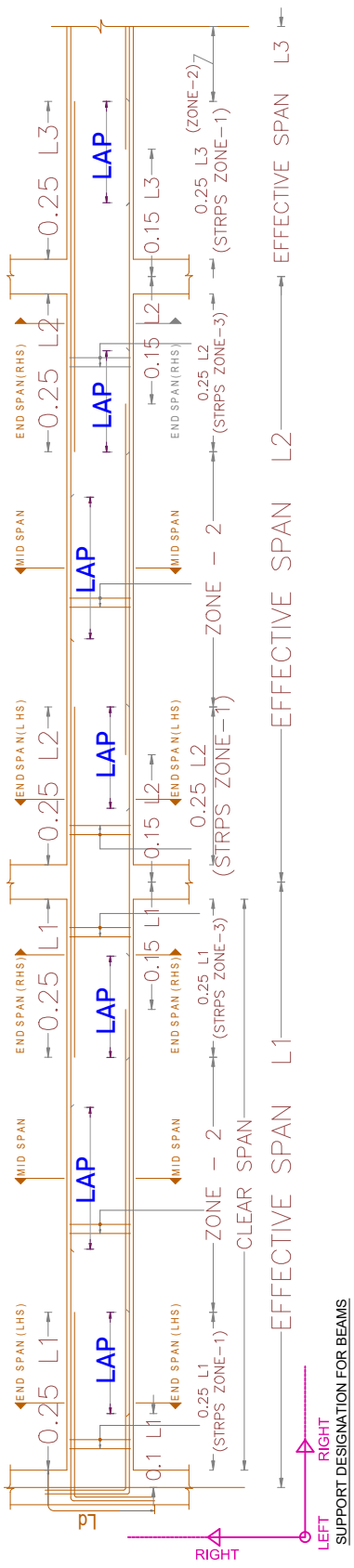
55,4th CROSS STREET,KALLURI NAGAR, PEELAMEDU, COIMBATORE-04.

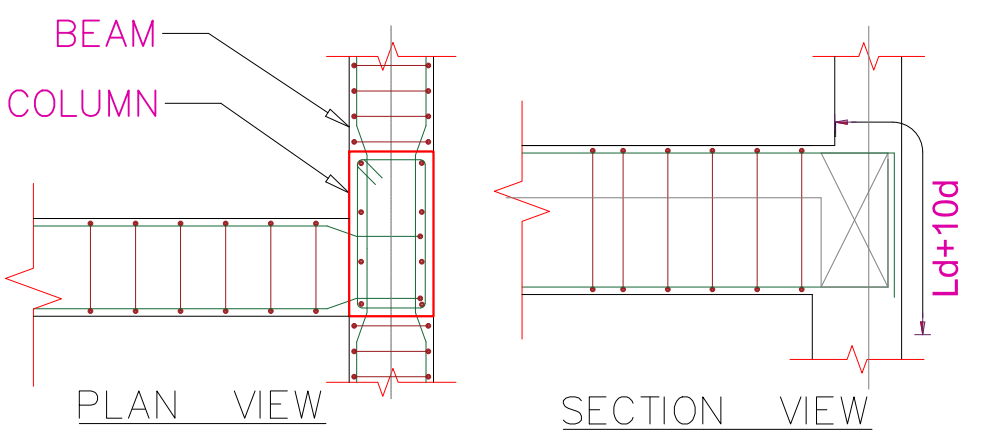
PH: 98944 44949

saistructuraldesigns@gmail.com

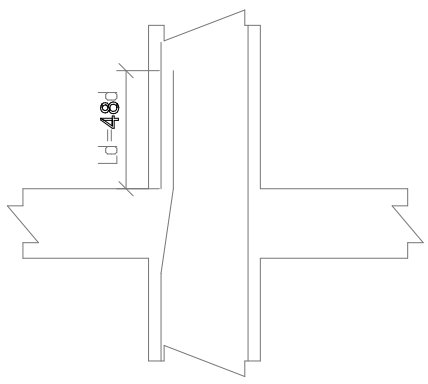
GRADE BEAM REINFORCEMENT DETAILS:-

SL.NO	SIZE	NAME	L.H.S	MID	R.H.S
1.	9" X 12"	G.B-1	 C.S of Grade Beam	 C.S of Grade Beam	 C.S of Grade Beam
2.	9" X 15"	G.B- 2	 C.S of Grade Beam	 C.S of Grade Beam	 C.S of Grade Beam
3.	9" X 18"	G.B- 3	 C.S of Grade Beam	 C.S of Grade Beam	 C.S of Grade Beam

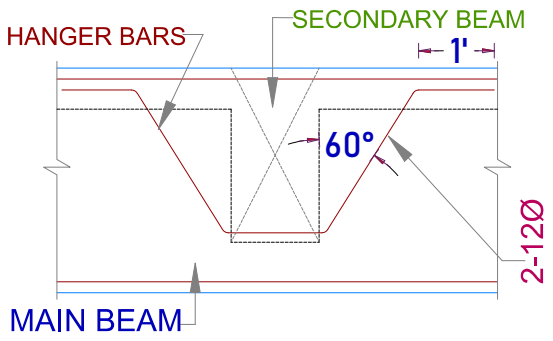




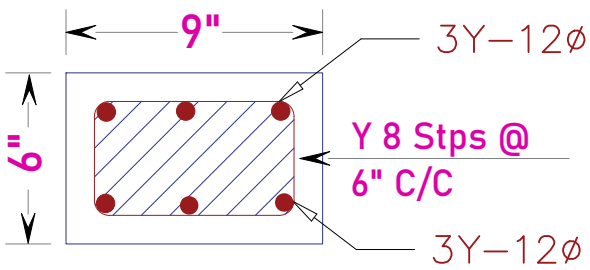
TYPICAL BEAM COLUMN JUNCTION DETAIL



Anchorage Length (Compression)



DET. OF HANGER BARS IN MAIN BEAM



C.S of 9"X6" Size Tie Beam.

DUCTILE DETAILS; –

NOTE:-
IF BASEMENT HEIGHT IS MORE THAN 3'0", MUST PROVIDE THE TIE BEAM AT THE TOP OF BASEMENT.

REFERENCE:-

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 - 2000.

USE MIX M20 FOR ALL ROOF BEAM SLABS. (USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 340Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1:1.5:3. AND WATER CEMENT RATIO NOT EXCEED 0.4

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CUPBOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

.A MINIMUM OF 21 DAYS WATER CURING REQUIRED FOR ALL CONCRETE STRUCTURES & IT'S RESPONSIBILITY OF OWNER AND CONTRACTOR.

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 10' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

FOUNDATION DESIGNED FOR - GROUND FLOOR + ONE FLOORS + HEAD ROOM + O.H.T.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

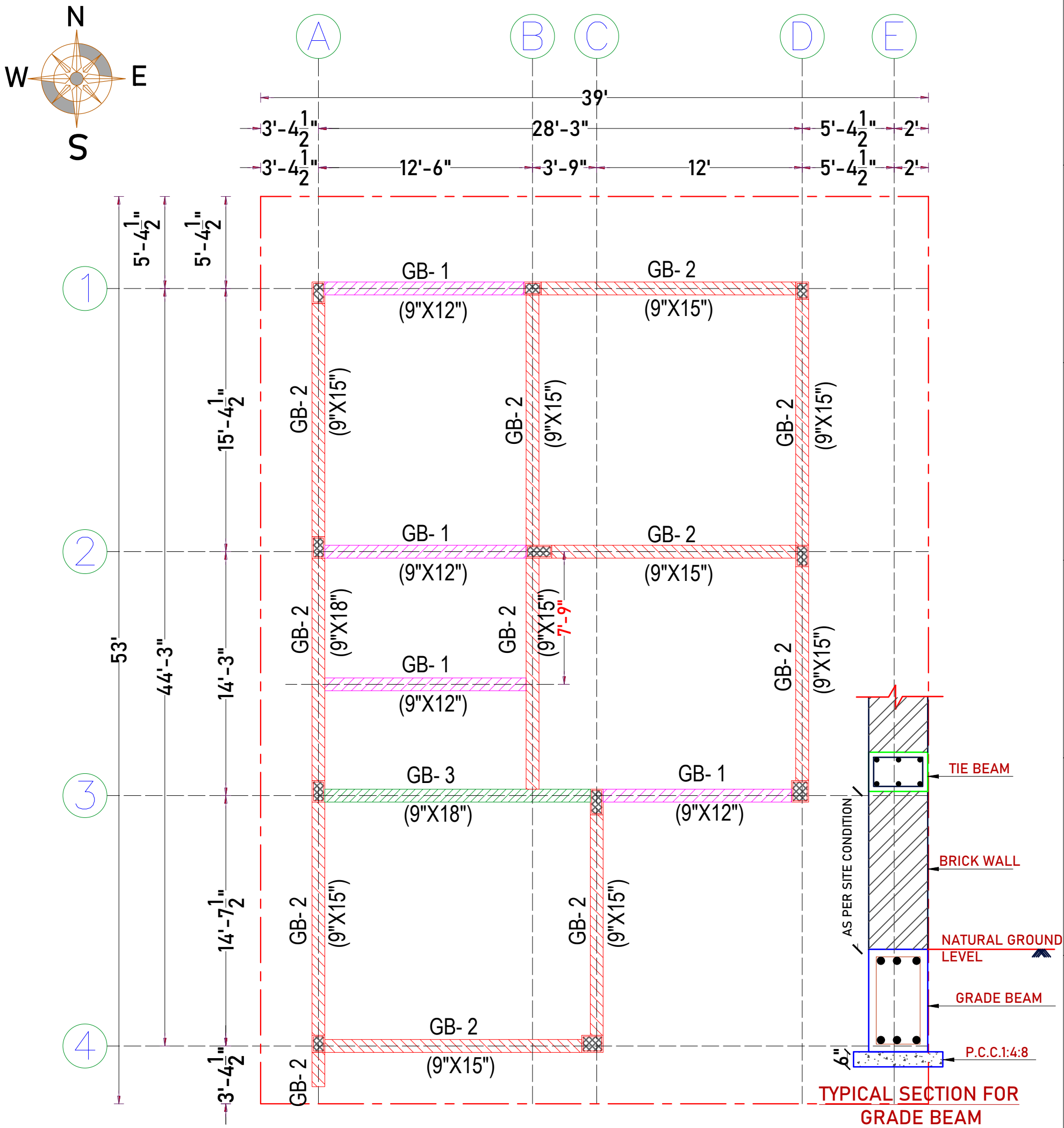
REST OF FOUNDATION IS ON HARD STRATA. CONFIRM BEFORE PLACING THE P.C.C. FOR FOOTING.

Drawn and Design:NEDUNCHEZHIAN.K
Date :28-03-2026 Chd : BALAJI.M
Drg No:D/Jobs/D.N.A./HOSTA (8-14)-Kalapatti /Villa-111/ All Structural Layout And Details.

PROJECT: PROPOSED RESIDENTIAL BUILDING - COIMBATORE.

TITLE:- GRADE BEAM REINFORCEMENT SCHEDULE.

STRUCTURAL CONSULTANT:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949
saistructuraldesigns@gmail.com



TYPICAL SECTION FOR GRADE BEAM

SOIL REPORT :- S.B.C. 267.00 kN/M^2 | LIVE LOAD :- 2 kN/M^2

Notes:

ALL DIMENSIONS ARE IN FEET.

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CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

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DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

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M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

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BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

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REST OF FOUNDATION IS ON HARD STRATA. CONFIRM BEFORE PLACING THE P.C.C. FOR FOOTING.

VILLA - (8-14)

Drawn and Design : NEDUNCHEZHIAN.K

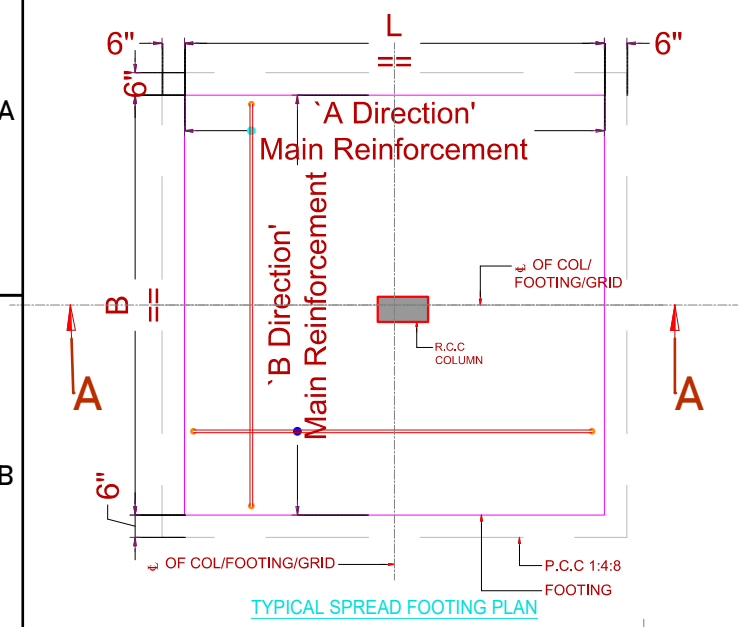
Chd : BALAJI.M | Date : 28-03-2026

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa-8-14/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

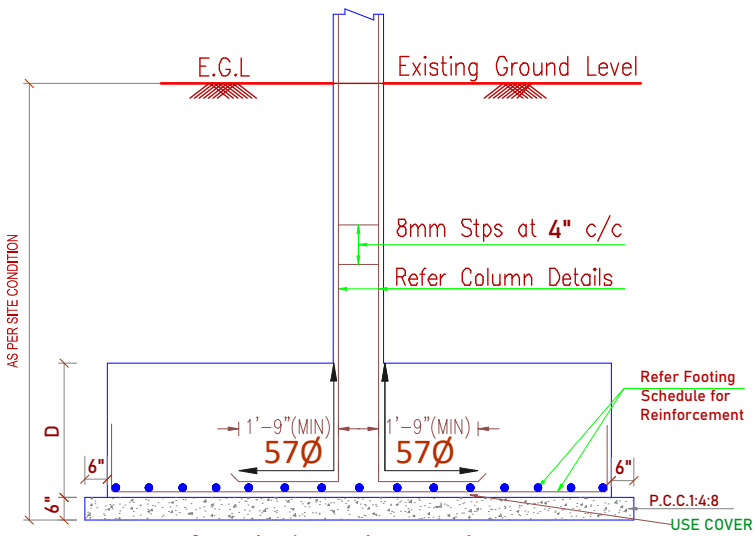
PROJECT: HOSTA (8-14)- KALAPATTI COIMBATORE.

TITLE: GRADE BEAM LAYOUT AND DETAILS.

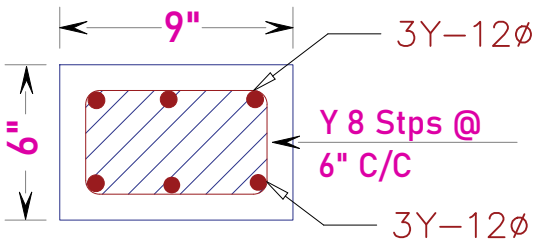
STRUCTURAL CONSULTANT:-
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PH: 98944 44949
saistructuraldesigns@gmail.com



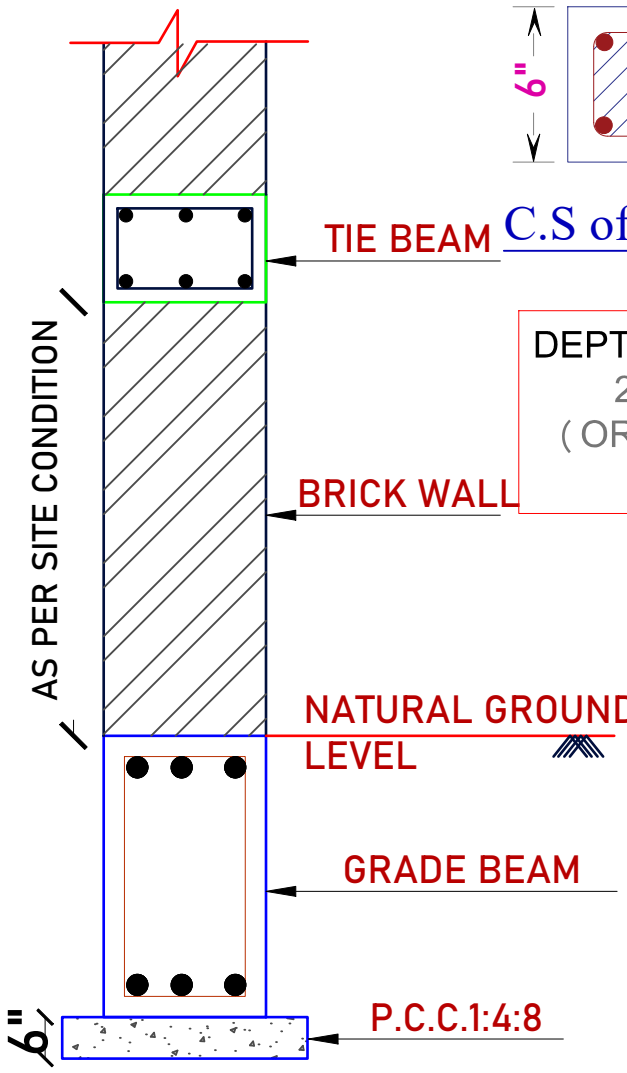
TYPICAL SPREAD FOOTING PLAN



C.S of Typical Footing Section'A-A'



C.S of 9"X6" Size Tie Beam.

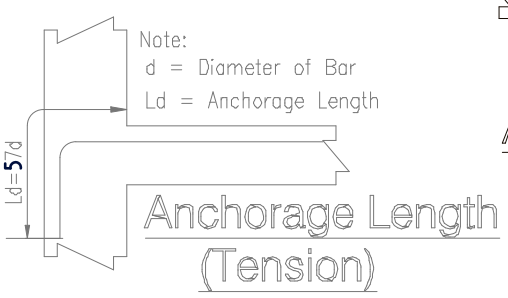


TYPICAL SECTION FOR GRADE BEAM

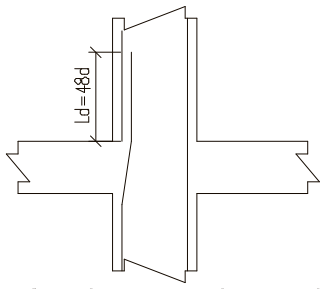
NOTE:-

IF BASEMENT HEIGHT IS MORE THAN 3'0", MUST PROVIDE THE TIE BEAM AT THE TOP OF BASEMENT.

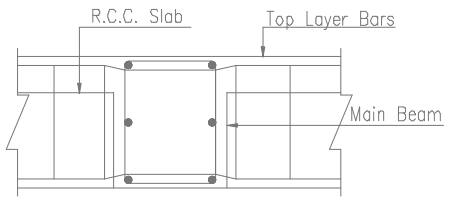
DEPTH OF FOUNDATION =
2.0m BELOW THE NGL.
(OR) REFER THE
SOIL TEST REPORT.



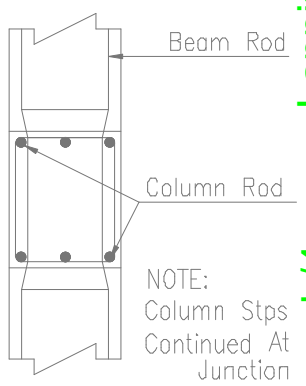
Anchorage Length (Tension)



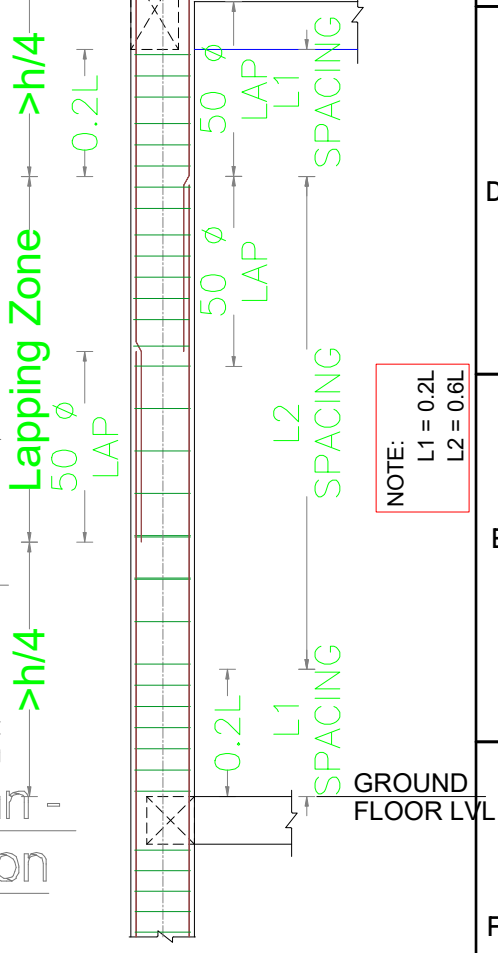
Anchorage Length (Compression)



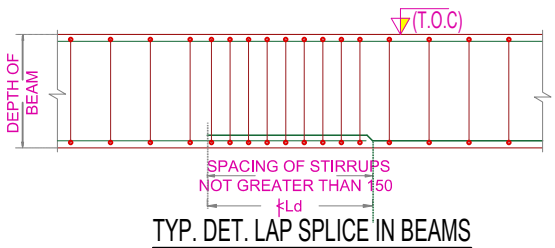
Section Detail of Main Beam & Secondary Beam Junction



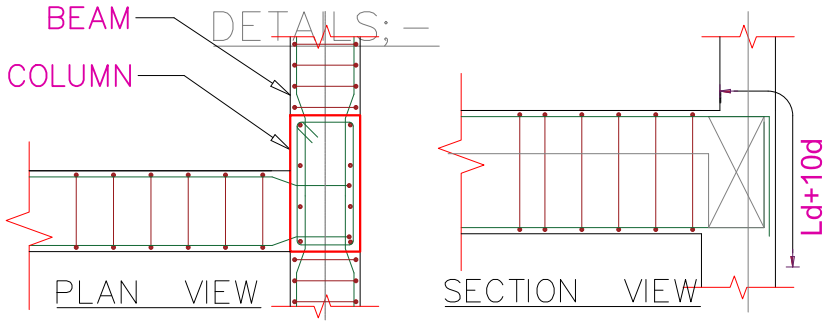
Plan of Column - - Beam Junction



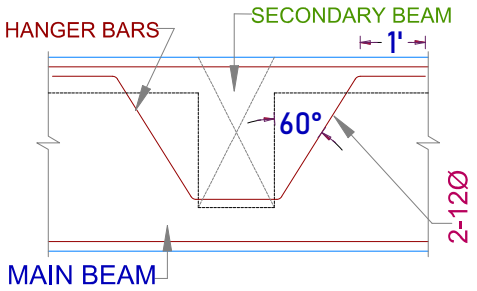
TYPICAL COLUMN SECTION DETAIL



TYP. DET. LAP SPLICE IN BEAMS



TYPICAL BEAM COLUMN JUNCTION DETAIL



DET. OF HANGER BARS IN MAIN BEAM

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SOIL REPORT :- S.B.C. 267.0 kN/M^2 | LIVE LOAD :- 2 kN/M^2

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Drawn and Design: NEDUNCHEZHIAN

Date :28-03-2026 | Chd : BALAJI.M

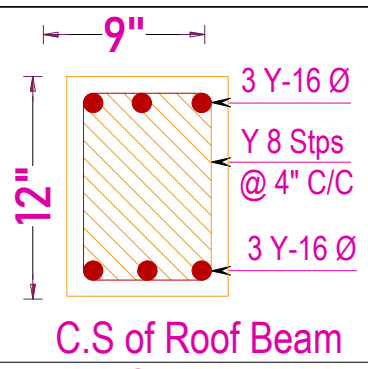
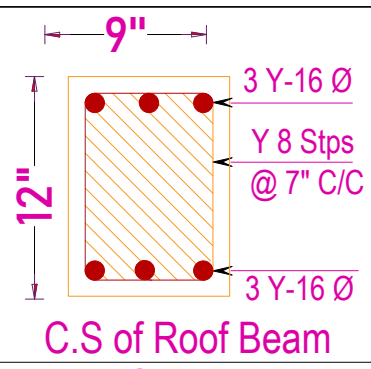
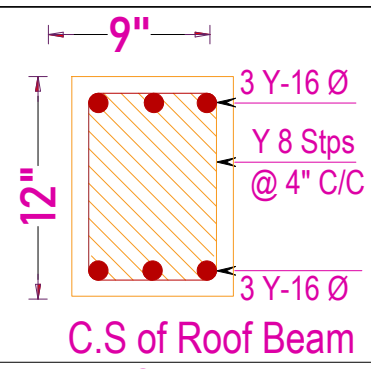
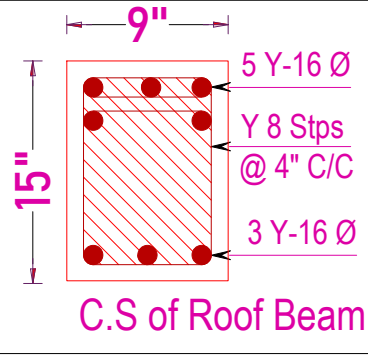
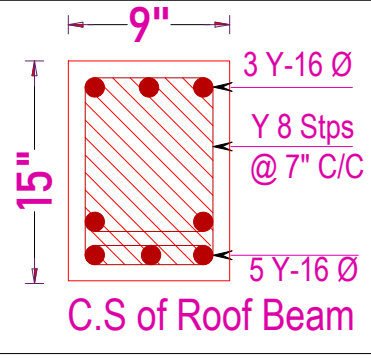
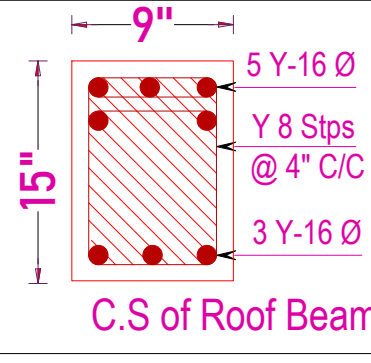
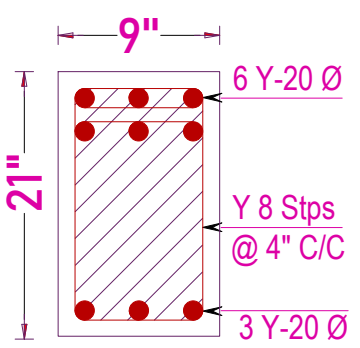
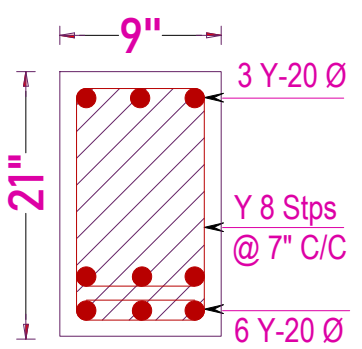
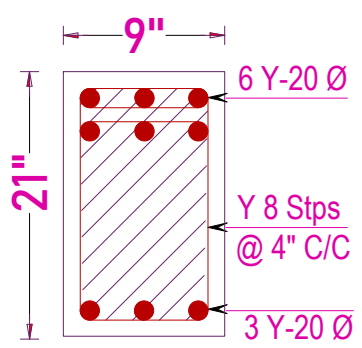
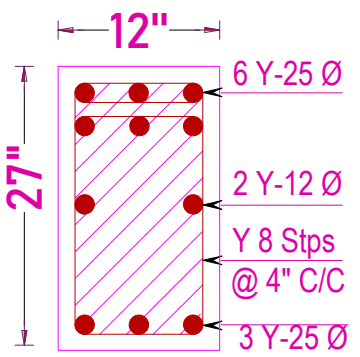
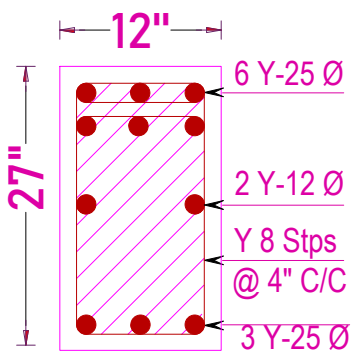
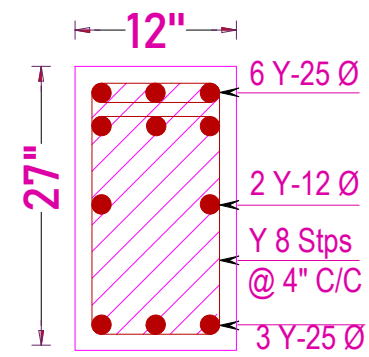
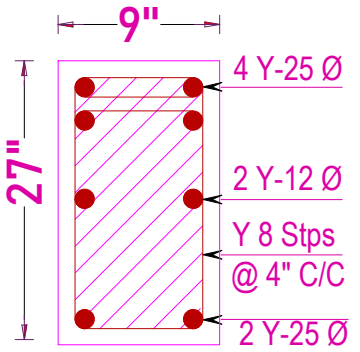
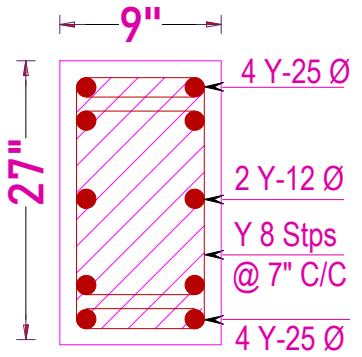
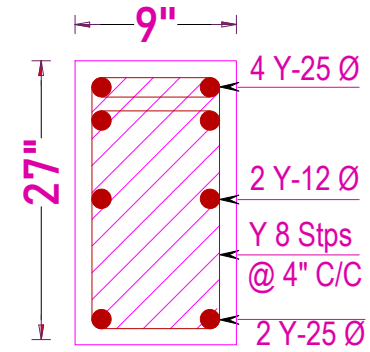
Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa- (1-7)/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

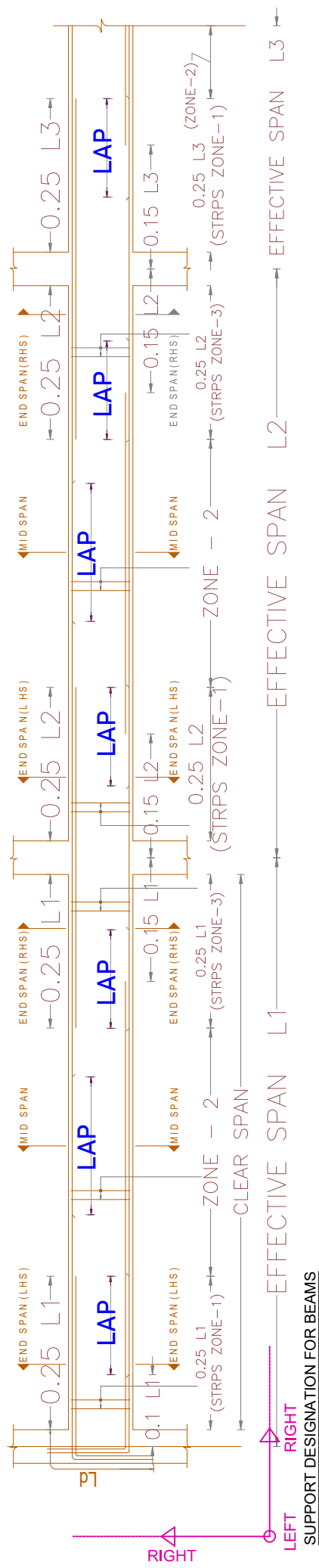
PROJECT: PROPOSED RESIDENTIAL BUILDING AT CBE.

TITLE: TYPICAL SECTION FOR FOOTING , COLUMN, BEAM ,& SLAB

Structural consultant:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949 saistructuraldesigns@gmail.com

GROUND FLOOR ROOF BEAM REINFORCEMENT DETAILS:-

SL.NO	SIZE	NAME	L.H.S	MID	R.H.S
1.	9" X 12"	R.B- 1	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
2.	9" X 15"	R.B- 2	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
3.	9" X 21"	R.B- 3	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
4.	12" X 27"	R.B- 4	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
5.	9" X 27"	R.B- 4A	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam



REFERENCE:-

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 - 2000.

USE MIX M20 FOR ALL ROOF BEAM SLABS. (USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 340Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1:1.5:3. AND WATER CEMENT RATIO NOT EXCEED 0.4

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CUPBOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 11' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

DIMENSION OF ELEVATION, PROJECTION, CU BOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

VILLA - (8-14)

Drawn and Design: NEDUNCHEZHIAN.K

Date : 28-03-2026 Chd : BALAJI.M

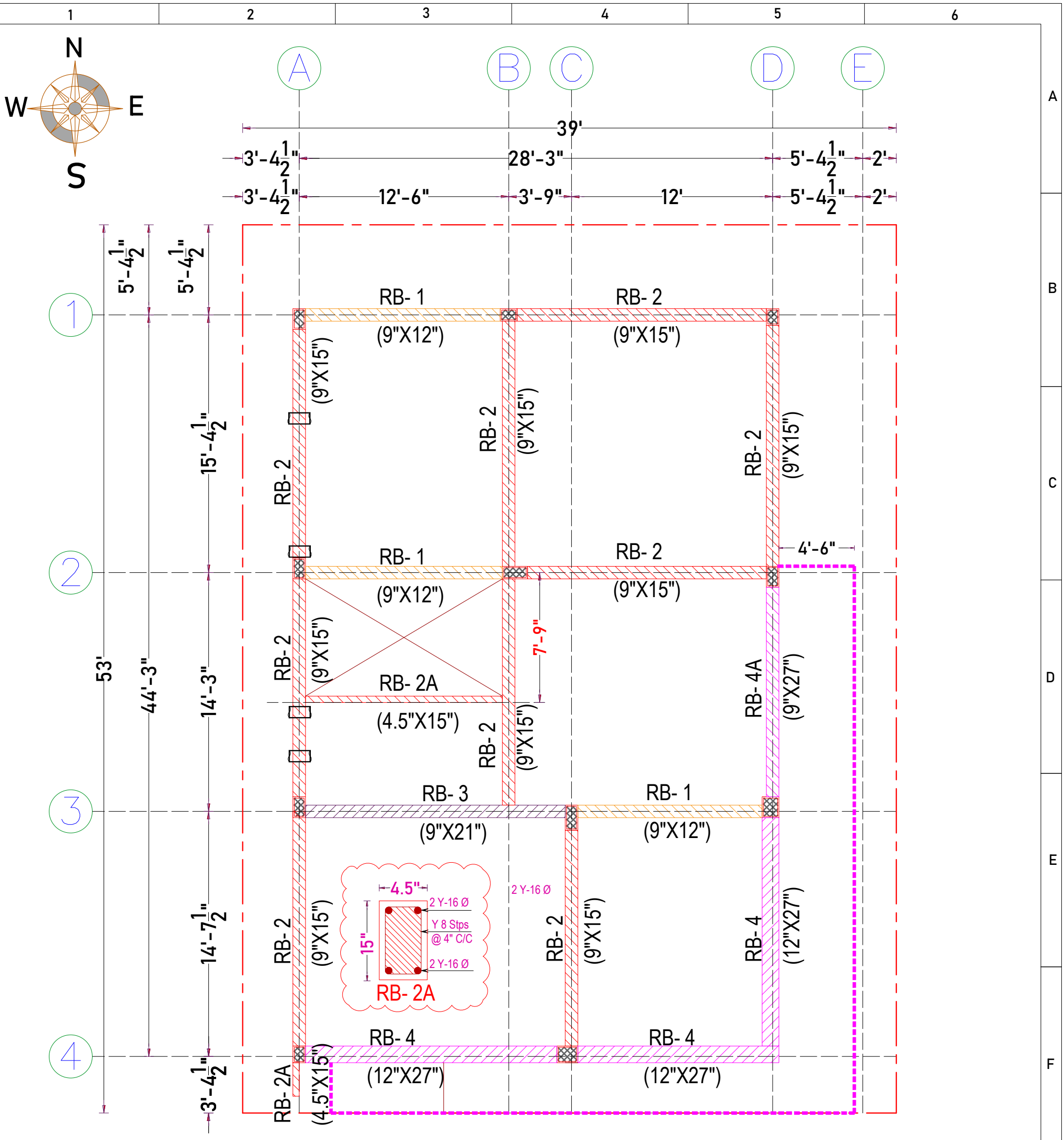
Drg No:D/Jobs/D.N.A./HOSTA (8-14)-Kalapatti / All Structural Layout And Details.

PROJECT: PROPOSED RESIDENTIAL BUILDING - COIMBATORE.

TITLE:- GROUND FLOOR ROOF BEAM REINFORCEMENT SCHEDULE.

STRUCTURAL CONSULTANT:-

Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949
saistructuraldesigns@gmail.com



SOIL REPORT :- S.B.C. 267.00 kN/M^2 | LIVE LOAD :- 2 kN/M^2

Notes:

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 - 2000.

USE MIX M20 FOR ALL ROOF BEAM SLABS. (USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 340Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1:1.5:3. AND WATER CEMENT RATIO NOT EXCEED 0.4

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CUPBOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 10' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

FOUNDATION DESIGNED FOR - GROUND FLOOR + ONE FLOOR ONLY + HEAD ROOM + OHT.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

REST OF FOUNDATION IS ON HARD STRATA. CONFIRM BEFORE PLACING THE P.C.C. FOR FOOTING.

VILLA - (8-14)

Drawn and Design : NEDUNCHEZHIAN.K

Chd : BALAJI.M | Date : 28-03-2026

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa-8-14/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

PROJECT: HOSTA (8-14) - KALAPATTI COIMBATORE.

TITLE: GROUND FLOOR ROOF BEAM LAYOUT AND DETAILS.

STRUCTURAL CONSULTANT:-

Er.BALAJI.M.E.,(struct).,

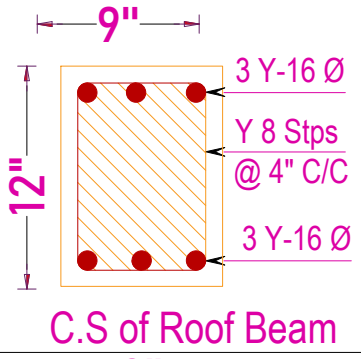
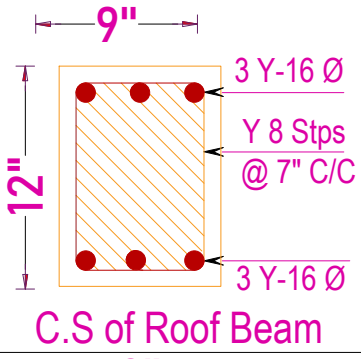
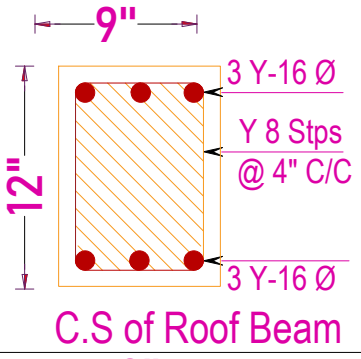
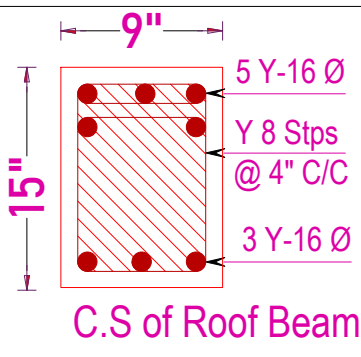
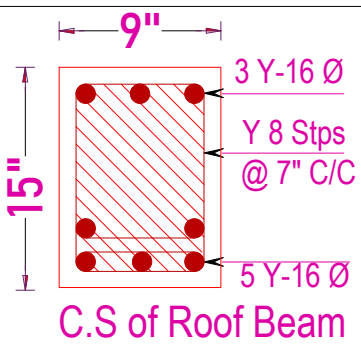
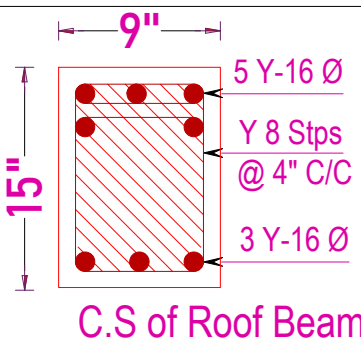
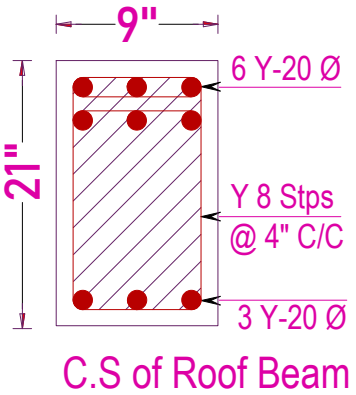
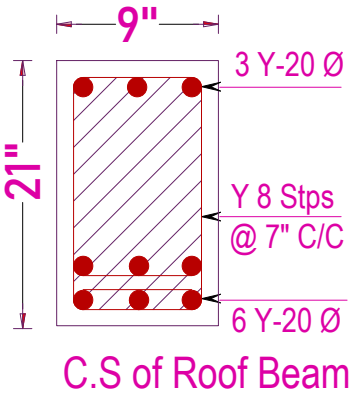
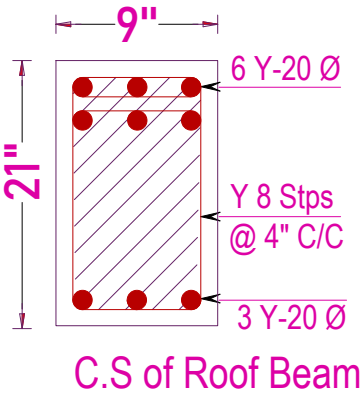
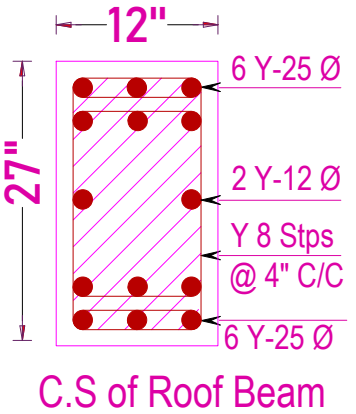
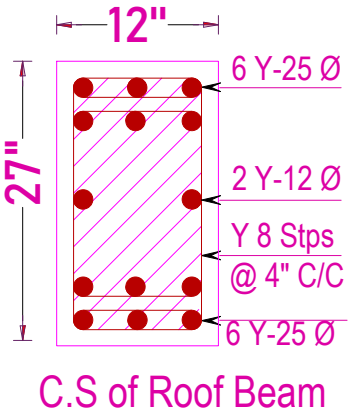
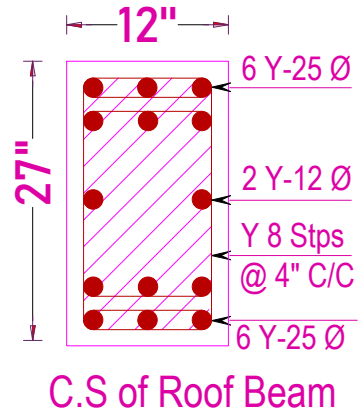
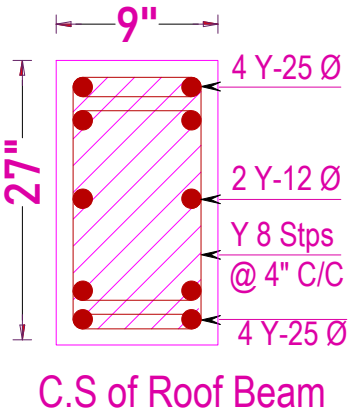
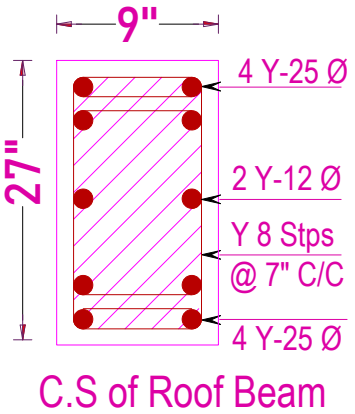
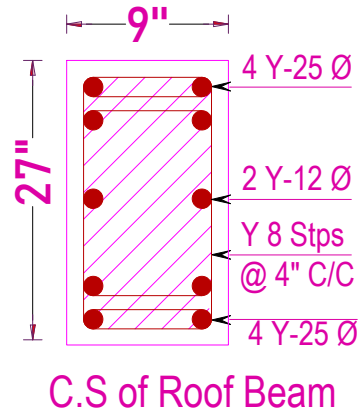
SAI STRUCTURAL DESIGNS

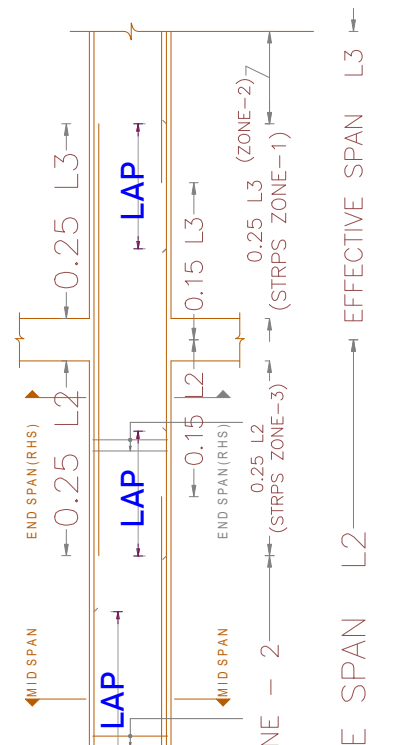
55,4th CROSS STREET,KALLURI NAGAR, PEELAMEDU, COIMBATORE-04.

PH: 98944 44949

saistructuraldesigns@gmail.com

FIRST FLOOR ROOF BEAM REINFORCEMENT DETAILS:-

SL.NO	SIZE	NAME	L.H.S	MID	R.H.S
1.	9" X 12"	R.B- 1	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
2.	9" X 15"	R.B- 2	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
3.	9" X 21"	R.B- 3	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
4.	12" X 27"	R.B- 4	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam
5.	9" X 27"	R.B- 4A	 C.S of Roof Beam	 C.S of Roof Beam	 C.S of Roof Beam



REFERENCE:-

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 - 2000.

USE MIX M20 FOR ALL ROOF BEAM SLABS. (USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 340Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1:1.5:3. AND WATER CEMENT RATIO NOT EXCEED 0.4

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CUPBOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 11' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

DIMENSION OF ELEVATION, PROJECTION, CU BOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

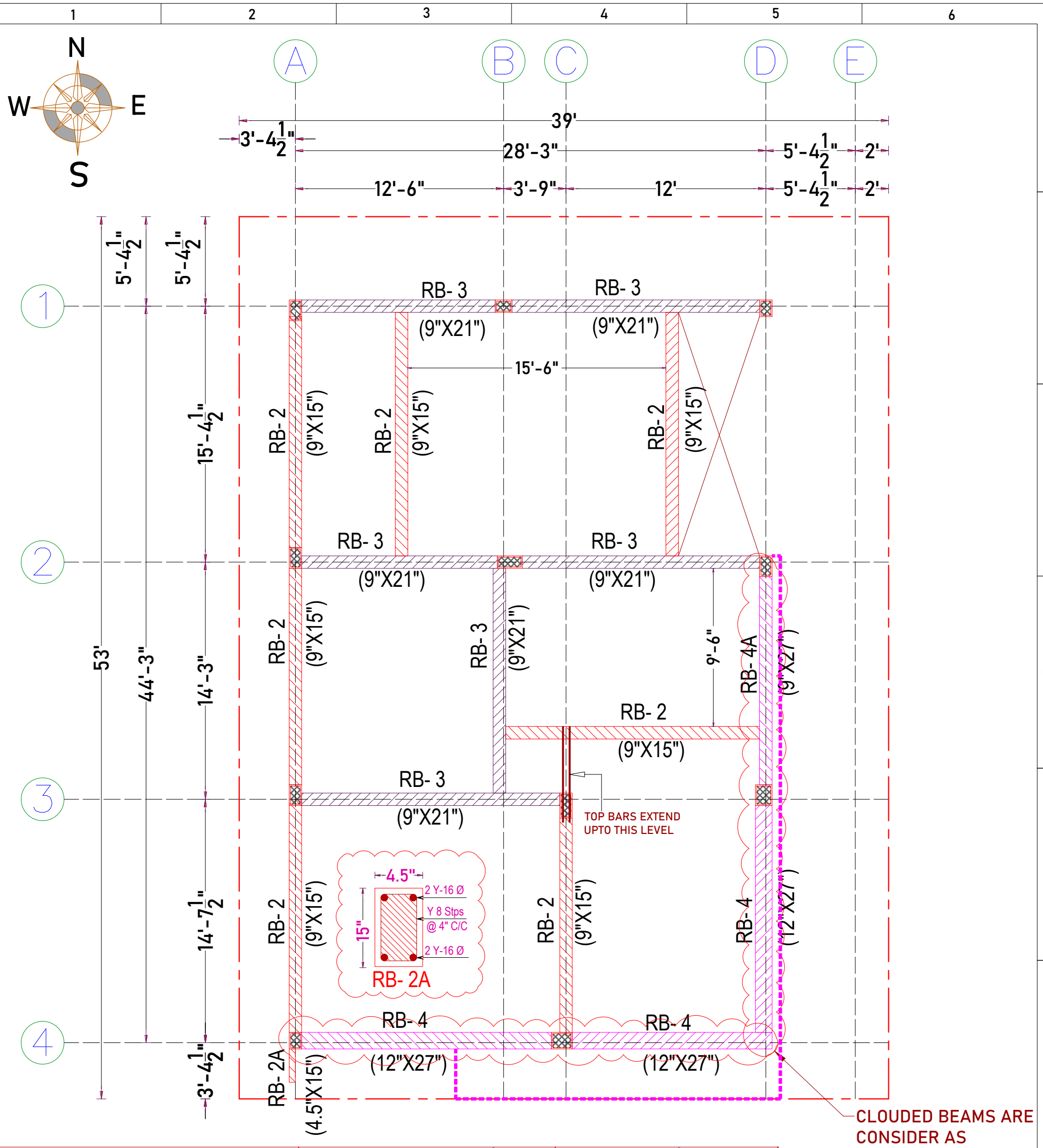
VILLA - (8-14)

Drawn and Design: NEDUNCHEZHIAN.K
Date : 28-03-2026 | Chd : BALAJI.M
Drg No:D/Jobs/D.N.A./HOSTA (8-14)-Kalapatti /Villa-111/ All Structural Layout And Details.

PROJECT: PROPOSED RESIDENTIAL BUILDING - COIMBATORE.

TITLE:- TERRACE FLOOR BEAM REINFORCEMENT SCHEDULE.

STRUCTURAL CONSULTANT:-
Er.BALAJI.M.E.,(struct).,
SAI STRUCTURAL DESIGNS
55,4th CROSS STREET,KALLURI NAGAR,
PEELAMEDU, COIMBATORE-04.
PH: 98944 44949
saistructuraldesigns@gmail.com



SOIL REPORT :- S.B.C. 267.00 kN/M^2 | LIVE LOAD :- 2 kN/M^2

Notes:

ALL DIMENSIONS ARE IN FEET.

ALL CONCRETE WORK SHALL BE CARRIED OUT AS PER IS 456 - 2000.

USE MIX M20 FOR ALL ROOF BEAM SLABS. (USE READY MIX OR VOLUME BATCH) SHALL NOT LESS THAN 340Kg/cum AND VOLUME BATCHING THE MIX SHALL BE 1:1.5:3. AND WATER CEMENT RATIO NOT EXCEED 0.4

CLEAR COVER TO THE REINFORCEMENT FOR FOOTING 50mm, COLUMN 40mm, BEAM:30mm, SLAB:20mm.

HIGH YIELD DEFORMED BARS CONFIRMING IS-1786-1985 BE USED. Fe - 500 GRADE.

DISTANCE BETWEEN THE STRUCTURAL MEMBERS MUST BE CHECKED WITH ARCHITECTS DRAWING.

DIMENSION OF ELEVATION, PROJECTION, CUPBOARD, BALCONY SIZE SHALL BE CHECKED WITH ARCHITECTURAL DRAWING.

DE-SHUTTERING OF FORM WORK SHALL BE CARRIED OUT AS FOLLOWS:
COLUMNS AND WALL SIDES: 24 HOURS,
BEAM & SLAB:

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

MUST TAKE CONCRETE(WHILE CONCRETING) SAMPLE AND MAKE MOULD AS CUBE FOR CONCRETE TEST AT REQUIRED TIME.

IF FLOOR TO FLOOR IS MORE THAN 10' FEET MUST INFORMED TO THE STRUCTURAL ENGINEER FOR FURTHER ASSISTANCE.

STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY.

ONUS OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER.

FOUNDATION DESIGNED FOR - GROUND FLOOR + ONE FLOOR ONLY + HEAD ROOM + OHT.

BUILDING DESIGN FOR CHAMBER BRICKS ONLY.

ANY DISCREPANCIES FOUND IN THE DRAWING SHOULD BROUGHT TO THE NOTICE OF ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY, BEFORE ANY FURTHER EXECUTION OF WORK ON SITE.

REST OF FOUNDATION IS ON HARD STRATA. CONFIRM BEFORE PLACING THE P.C.C. FOR FOOTING.

Drawn and Design : NEDUNCHEZHIAN.K

Chd : BALAJI.M | Date : 28-03-2026

Drg No:D/Jobs/D.N.A./HOSTA-Kalapatti /Villa-8-14/Column,Footing, Grade beam And Roof Beam, Roof Slab Structural Layout And Details.

PROJECT: HOSTA (8-14) - KALAPATTI COIMBATORE.

TITLE: TERRACE FLOOR BEAM LAYOUT AND DETAILS.

STRUCTURAL CONSULTANT:-

Er.BALAJI.M.E.,(struct).,

SAI STRUCTURAL DESIGNS

55,4th CROSS STREET,KALLURI NAGAR, PEELAMEDU, COIMBATORE-04.

PH: 98944 44949

saistructuraldesigns@gmail.com

Beam Design - GB - 1

HOSTA (CLUBHOUSE)

Given Data

GB-01

Span :		**20.75** ft	**6.3246** m
Size			
B:		**0.75** ft	**0.2286** m
D:		**1.25** ft	**0.381** m
Slab RHS		**0** ft	**0** m
Slab LHS		**0** ft	**0** m
Wall Thickness		**0.75** ft	**0.2286** m
Wall Hight		**10** ft	**3.048** m
Unit wt of r.block		**20**	**20** N/mm^3
Unit wt of Concrete	**25** N/mm^3		
Ru max	**2.68** N/mm^2	0.134	**20** 2.68
d	**355** mm		
fck	**20** N/mm^2	**Effect Depth Calculation**	
fy	**500** N/mm^2		
		d req	√(Mu/ Ru max x 1000)
Slab Load RHS	**0** kN/m^2		
Slab Load LHS	**0** kN/m^2		180.0480269 mm

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		2.177415 kN/m2
Total load		**16.177415** kN/m2
Factor Load	1.5* total load	**24.2661225** kN/m2
Bending Moment	WL²/12	**86.87834255** kN-m

Ast Calculation

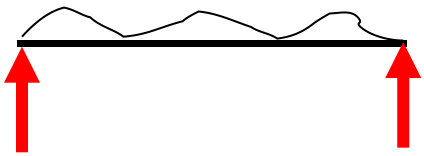
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	399640375.7
1000 x fck x d ²	B	2520500000
1-A/B	C	0.841444009
√c	D	0.917302572
1-D	E	0.082697428
E x 1000 x .5 x fck x d / fy	F	**587.1517379** mm2

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

12 mm	113 mm2	5.196033078 Nos	
16mm	201 mm2	2.921152925 Nos	PROVIDED - 3 NOS
20mm	314 mm2	1.869909993 Nos	
25mm	490.5 mm2	1.197047376 Nos	

Shear Reinforcement Design



V= WL/2 76.73675918 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 0.723512055 %

c_{ζ} From Code book **0.52** N/mm2

c_{ζ} V/bd 0.945581299 N/mm2

Vs= V- $_{\zeta}$bd 34537.19918

Sv 0.87 fy Asv d / Vs ***449.2727948*** mm

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - GB - 2

HOSTA (CLUBHOUSE)

Given Data

GB-02

Span :	**16.5** ft	**5.0292** m	
Size			
B:	**0.75** ft	**0.2286** m	
D:	**1.25** ft	**0.381** m	
Slab RHS	**0** ft	**0** m	
Slab LHS	**0** ft	**0** m	
Wall Thickness	**0.75** ft	**0.2286** m	
Wall Hight	**10** ft	**3.048** m	
Unit wt of r.block	**20**	**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3		
Ru max	**2.68** N/mm^2	0.134 **20**	2.68
d	**355** mm		
fck	**20** N/mm^2	**Effect Depth Calculation**	
fy	**500** N/mm^2		
		d req √(Mu/ Ru max x 1000)	
Slab Load RHS	**0** kN/m^2		
Slab Load LHS	**0** kN/m^2	144.46474 mm	

Load Caluction

Slab Load	RHS	
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		2.177415 kN/m2
Total load		**16.177415** kN/m2
Factor Load	1.5* total load	**24.2661225** kN/m2
Bending Moment	WL²/12	**55.9317636** kN-m

Ast Calculation

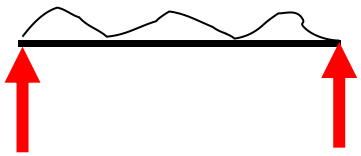
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	257286112.4	
1000 x fck x d ²	B	2520500000	
1-A/B	C	0.89792259	
√c	D	0.947587774	
1-D	E	0.052412226	
E x 1000 x .5 x fck x d / fy	F	**372.1268032** mm2	

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	12 mm	113 mm2	3.29315755 Nos	PROVIDED - 3NOS
	16mm	201 mm2	1.85137713 Nos	
	20mm	314 mm2	1.185117208 Nos	
	25mm	490.5 mm2	0.758668304 Nos	

Shear Reinforcement Design



	V= WL/2		61.01959164 kN	
Type of Rod				
	Dia	8 mm	2 legged	50.24 mm2
Pt	Ast/ bd *100		0.458549657 %	
c_ζ	From Code book		**0.48** N/mm2	
c_ζ	V/bd		0.751908021 N/mm2	
Vs=	V- $_\zeta$bd		22066.15164	
Sv	0.87 fy Asv d / Vs		***703.186684*** mm	

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Beam Design - GB - 3

HOSTA (CLUBHOUSE)

Given Data

GB-03

Span :		**5.75** ft		**1.7526** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**1** ft		**0.3048** m	
Slab RHS		**0** ft		**0** m	
Slab LHS		**0** ft		**0** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**275** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**0** kN/m^2				
Slab Load LHS	**0** kN/m^2		53.72194493 mm		

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		1.741932 kN/m2
Total load		**15.741932** kN/m2
Factor Load	1.5* total load	**23.612898** kN/m2
Bending Moment	WL²/12	**7.734606945** kN-m

Ast Calculation

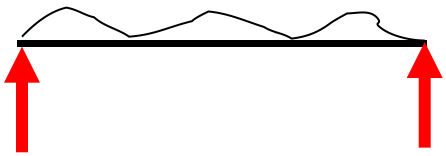
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	35579191.95
1000 x fck x d ²	B	1512500000
1-A/B	C	0.976476567
√c	D	0.988168289
1-D	E	0.011831711
E x 1000 x .5 x fck x d / fy	F	**65.07441072** mm2

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	12 mm	113 mm2	0.575879741 Nos	PROVIDED -3NOS
	16mm	201 mm2	0.323753287 Nos	
	20mm	314 mm2	0.207243346 Nos	
	25mm	490.5 mm2	0.132669543 Nos	

Shear Reinforcement Design



	V= WL/2	20.691983 kN		
Type of Rod				
	Dia	8 mm	2 legged	50.24 mm2
Pt	Ast/ bd *100	0.1035145 %		
$c_ح$	From Code book	**0.55** N/mm2		
$c_ح$	V/bd	0.3291495 N/mm2		
Vs=	V- $_ح$bd	-13883.77		
Sv	0.87 fy Asv d / Vs	***-865.7535*** mm		

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HOSTA (CLUB HOUSE) - COLUMN DESIGN

GRID A3 - C1 COLUMN

Input details		C1	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C1***	
Load, Pu	kN	*350*	
Muy	kNm	*33*	
Muz	kNm	*9*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*300*	
% Ast, p	%	*1.3*	
p/fck		0.065	
d'/D z		0.133	
d'/D y		0.174	
Pu/fckbD		0.254	
Factor y		*0.11*	
Factor z		*0.095*	
Muy1	kNm	45.5	
Muz1	kNm	30.2	
Puz	kN	957.38	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.37	
Alpha n		0	
		1.28	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.64	
		0.19	
		0.83	
		SAFE	
Ast	mm^2	897	

PROVIDE 04 NOS OF 16MM + 02 NOS 12 MM DIA BARS

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HOSTA (CLUBHOUSE) - COLUMN DESIGN

GRID B2 - C3 COLUMN

Input details		C3	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C3***	
Load, Pu	kN	*1350*	
Muy	kNm	*57*	
Muz	kNm	*20*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*600*	
% Ast, p	%	*1.5*	
p/fck		0.075	
d'/D z		0.067	
d'/D y		0.174	
Pu/fckbD		0.489	
Factor y		*0.08*	
Factor z		*0.07*	
Muy1	kNm	132.5	
Muz1	kNm	44.4	
Puz	kN	2018.25	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.67	
Alpha n		0	
		1.78	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.31	
		0.33	
		0.64	
		SAFE	
Ast	mm^2	2070	

PROVIDE 4 NOS OF 12MM + 8 NOS OF 16MM DIA BARS

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID A3 - C1F1 FOOTING

Input details			F1	
Load, Pu		kN	*234*	350
Muy		kNm	*33*	
Muz		kNm	*7*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.3*	
Area reqd		m^2	0.64	0.801683622
L (Hori)		m	1.2	3.937008
B (Ver)		m	1.2	3.937008
Area provided			1.44	
Direct Pressure		kN/m^2	162.50	
Pmax xy		kN/m^2	301.39	
Pmin xy		kN/m^2	23.61	
			SAFE	
Depth of footing				
Moment Mu		kNm	30.5	
	or	kNm	35.4	
d reqd		mm	105.15	
	or	mm	113.33	
D provided		mm	*300*	
Therefore Eff d		mm	250	**SAFE**
Projection for BM		m	0.45	
		m	0.485	
Proj-one way SF		m	0.2	
Proj-Two way SF		m	0.55	
		m	0.48	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	108750
	c		30515625	35447100.69
Ast	X & Y	mm^2	288.953	337.33
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	271.67	232.71
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.25**	**0.25**
One way shear				

		Vu kN	32.5		
Tou v		N/mm^2	0.130		
Tc		N/mm^2	0.36		
Two way shear			*SAFE*		
Vu		kN	191.10		
Tou v		N/mm^2	0.37		
Bc			1.30		
ks			1.80	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*		HENCE SAFE
Results					
Size of footing	in m		1.2		1.2
Depth of footing	in mm		300		
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
			4.92125		4.92125

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID A1 - C3F2 FOOTING

Input details			F3	
Load, Pu		kN	*466.6666667*	700
Muy		kNm	*88*	
Muz		kNm	*11*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.6*	
Area reqd		m^2	1.28	1.132135667
L (Hori)		m	1.5	4.92126
B (Ver)		m	1.5	4.92126
Area provided			2.25	
Direct Pressure		kN/m^2	207.41	
Pmax xy		kN/m^2	383.41	
Pmin xy		kN/m^2	31.41	
			SAFE	
Depth of footing				
Moment Mu		kNm	38.8	
	or	kNm	77.3	
d reqd		mm	118.60	
	or	mm	167.35	
D provided		mm	*380*	
Therefore Eff d		mm	330	SAFE
Projection for BM		m	0.45	
		m	0.635	
Proj-one way SF		m	0.12	
Proj-Two way SF		m	0.93	
		m	0.56	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	143550
	c		38820000	77299725.93
Ast	X & Y	mm^2	276.208	562.45
Dia of rod	X & Y	mm	12	12
Sp reqd	X & Y	mm	409.26	200.98
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	904.32	904.3
% Ast			**0.27**	**0.27**
One way shear				
	Vu	kN	24.9	

Tou v		N/mm^2	0.075		
Tc		N/mm^2	0.36		
Two way shear			*SAFE*		
Vu		kN	358.65		
Tou v		N/mm^2	0.36		
Bc			2.61		
ks			3.11	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.5		1.5
Depth of footing	in mm		380		
Ast		12 Tor 125 C/C			
		12 Tor 125 C/C			
			4.92125		4.92125

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID B4 - C4F4 FOOTING

Input details			F2	
Load, Pu		kN	*86.66666667*	130
Muy		kNm	*5*	
Muz		kNm	*6*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.23*	
Area reqd		m^2	0.24	0.487889115
L (Hori)		m	1.1	3.608924
B (Ver)		m	1.1	3.608924
Area provided			1.21	
Direct Pressure		kN/m^2	71.63	
Pmax xy		kN/m^2	121.21	
Pmin xy		kN/m^2	22.04	
			SAFE	
Depth of footing				
Moment Mu		kNm	11.5	
	or	kNm	11.5	
d reqd		mm	64.46	
	or	mm	64.46	
D provided		mm	*300*	
Therefore Eff d		mm	250	**SAFE**
Projection for BM		m	0.435	
		m	0.435	
Proj-one way SF		m	0.185	
Proj-Two way SF		m	0.48	
		m	0.48	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	108750
	c		11468181.82	11468181.82
Ast	X & Y	mm^2	106.591	106.59
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	736.46	736.46
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.25**	**0.25**
One way shear				

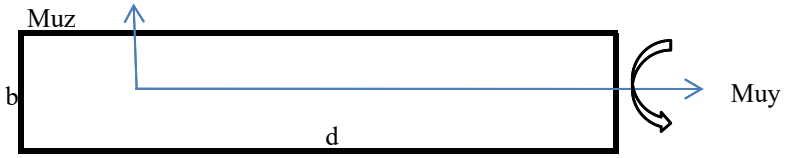
		Vu kN	13.3		
Tou v		N/mm^2	0.053		
Tc		N/mm^2	0.36		
Two way shear			*SAFE*		
Vu		kN	70.16		
Tou v		N/mm^2	0.15		
Bc			1.00		
ks			1.50	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.1		1.1
Depth of footing	in mm		300		
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
			4.92125		4.92125

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HOSTA (CLUB HOUSE) - COLUMN DESIGN

GRID C3 - C2 COLUMN

Input details		C2	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C2***	
Load, Pu	kN	*500*	
Muy	kNm	*46*	
Muz	kNm	*14*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*300*	
% Ast, p	%	*2*	
p/fck		0.100	
d'/D z		0.133	
d'/D y		0.174	
Pu/fckbD		0.362	
Factor y		*0.14*	
Factor z		*0.15*	
Muy1	kNm	58.0	
Muz1	kNm	47.6	
Puz	kN	1138.50	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.44	
Alpha n		0	
		1.40	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.73	
		0.18	
		0.91	
		SAFE	
Ast	mm^2	1380	

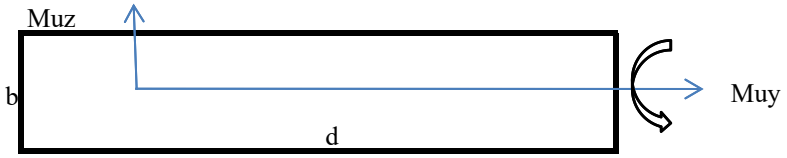
PROVIDE 06 NOS OF 16MM + 02 NOS OF 12MM DIA BARS

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HOSTA (CLUBHOUSE)- COLUMN DESIGN

GRID B5 - C4 COLUMN

Input details		C4	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C4***	
Load, Pu	kN	*130*	
Muy	kNm	*6*	
Muz	kNm	*5*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*230*	
% Ast, p	%	*0.8*	
p/fck		0.040	
d'/D z		0.174	
d'/D y		0.174	
Pu/fckbD		0.123	
Factor y		*0.06*	
Factor z		*0.06*	
Muy1	kNm	14.6	
Muz1	kNm	14.6	
Puz	kN	634.80	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.20	
Alpha n		0	
		1.01	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.29	
		0.23	
		0.52	
		SAFE	
Ast	mm^2	423.2	

PROVIDE 4 NOS OF 12MM DIA BARS

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID B3 - C2F2 FOOTING

Input details			F2	
Load, Pu		kN	*520*	780
Muy		kNm	*37*	
Muz		kNm	*8*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.3*	
Area reqd		m^2	1.43	1.195079383
L (Hori)		m	1.5	4.92126
B (Ver)		m	1.5	4.92126
Area provided			2.25	
Direct Pressure		kN/m^2	231.11	
Pmax xy		kN/m^2	311.11	
Pmin xy		kN/m^2	151.11	
			SAFE	
Depth of footing				
Moment Mu		kNm	56.0	
	or	kNm	62.7	
d reqd		mm	142.44	
	or	mm	150.75	
D provided		mm	*380*	
Therefore Eff d		mm	330	**SAFE**
Projection for BM		m	0.6	
		m	0.635	
Proj-one way SF		m	0.27	
Proj-Two way SF		m	0.63	
		m	0.56	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	143550
	c		56000000	62723888.89
Ast	X & Y	mm^2	402.373	452.46
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	195.09	173.50
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.19**	**0.19**
One way shear				

		Vu kN	62.4		
Tou v		N/mm^2	0.189		
Tc		N/mm^2	0.28		
Two way shear			*SAFE*		
Vu		kN	438.46		
Tou v		N/mm^2	0.56		
Bc			1.30		
ks			1.80	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.5		1.5
Depth of footing	in mm		380		
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
			4.92125		4.92125

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID B1 - C3F3 FOOTING

Input details			F6	
Load, Pu		kN	*1090*	
Muy		kNm	*82*	
Muz		kNm	*21*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.6*	
Area reqd		m^2	2.99	1.730247902
L (Hori)		m	1.9	6.233596
B (Ver)		m	1.9	6.233596
Area provided			3.61	
Direct Pressure		kN/m^2	301.94	
Pmax xy		kN/m^2	392.04	
Pmin xy		kN/m^2	211.84	
			SAFE	
Depth of footing				
Moment Mu		kNm	82.8	
	or	kNm	136.7	
d reqd		mm	173.22	
	or	mm	222.53	
D provided		mm	*380*	
Therefore Eff d		mm	330	**SAFE**
Projection for BM		m	0.65	
		m	0.835	
Proj-one way SF		m	0.32	
Proj-Two way SF		m	0.93	
		m	0.56	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	143550
	c		82818377.31	136669924.6
Ast	X & Y	mm^2	604.625	1032.90
Dia of rod	X & Y	mm	12	12
Sp reqd	X & Y	mm	186.96	109.44
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	904.32	904.3
% Ast			**0.27**	**0.27**
One way shear				
		Vu kN	96.6	

Tou v		N/mm^2	0.293		
Tc		N/mm^2	0.36		
Two way shear			*SAFE*		
Vu		kN	932.75		
Tou v		N/mm^2	0.95		
Bc			2.61		
ks			3.11	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.9		1.9
Depth of footing	in mm		380		
Ast		12 Tor 125 C/C			
		12 Tor 125 C/C			
			4.92125		4.92125

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - RB - 1

Given Data — HOSTA

RB-01

Span :	**10** ft			**3.048** m	
Size					
B:	**0.75** ft			**0.2286** m	
D:	**1** ft			**0.3048** m	
Slab RHS	**3.1** ft			**0.94488** m	
Slab LHS	**12.5** ft			**3.81** m	
Wall Thickness	**0.75** ft			**0.2286** m	
Wall Hight	**10** ft			**3.048** m	
Unit wt of r.block	**20**			**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68 Ref Table Value
d	**275** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**7.25** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		128.5616 mm		

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	3.42519 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	13.81125 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		1.741932 kN/m2
Total load		**32.97837** kN/m2
Factor Load	1.5* total load	**49.46756** kN/m2
Bending Moment	WL²/8	**44.29525** kN-m

Ast Calculation

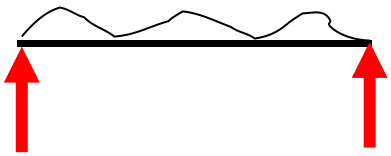
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x c

4.5 x Mu x 10^6	A	203758134.5
1000 x fck x d ²	B	1512500000
1-A/B	C	0.865283878
√c	D	0.930206363
1-D	E	0.069793637
E x 1000 x .5 x fck x d / fy	F	**383.8650027** mm2

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

12 mm	113 mm2	3.397035422 Nos	PROVIDED - 3NOS
16mm	201 mm2	1.909776133 Nos	
20mm	314 mm2	1.222500009 Nos	
25mm	490.5 mm2	0.782599394 Nos	

Shear Reinforcement Design



V= WL/2 75.38856 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 0.610618 %

c_{ζ} From Code book **0.63** N/mm2 IS 456 Table 19 -Page 73

c_{ζ} V/bd 1.199214 N/mm2

Vs= V- $_{\zeta}$bd 35783.61

Sv 0.87 fy Asv d / Vs ***335.9058*** mm

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - RB - 3

Given Data	HOSTA				
RB-04					
Span :	**20** ft			**6.096** m	
Size					
B:	**0.75** ft			**0.2286** m	
D:	**1.5** ft			**0.4572** m	
Slab RHS	**11** ft			**3.3528** m	
Slab LHS	**15.7** ft			**4.78536** m	
Wall Thickness	**0.75** ft			**0.2286** m	
Wall Hight	**10** ft			**3.048** m	
Unit wt of r.block	**20**			**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**425** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**7.25** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		270.1975 mm		

Load Caluction

Slab Load RHS		
Lx/2 * Slab Load RHS	12.1539	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	17.34693	kN/m2
secondary beam load	0	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	7	kN/m2
Self wt		
B*D* Unit wt of Concrete	2.612898	kN/m2
Total load	**39.11373**	kN/m2
Factor Load 1.5* total load	**58.67059**	kN/m2
Bending Moment WL²/12	**195.658**	kN-m

Ast Calculation

.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

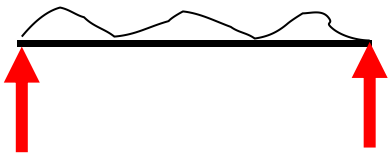
4.5 x Mu x 10^6	A	900026778.4
1000 x fck x d ²	B	3612500000
1-A/B	C	0.750857639
√c	D	0.866520421
1-D	E	0.133479579
E x 1000 x .5 x fck x d / fy	F	**1134.576426** mm2

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Coimbatore - 04

12 mm	113 mm2	10.04049934 Nos
16mm	201 mm2	5.644658833 Nos
20mm	314 mm2	3.613300718 Nos
25mm	490.5 mm2	2.313101785 Nos

PROVIDED - 5NOS

Shear Reinforcement Design



V= WL 357.6559 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 1.1678 %

c_{ζ} From Code book **0.54** N/mm2

c_{ζ} V/bd 3.681292 N/mm2

Vs= V- $_{\zeta}$bd 305192.2

Sv 0.87 fy Asv d / Vs ***60.86734*** mm

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - RB - 2

Given Da			HOSTA		
RB-02					
Span :		**14.7** ft		**4.48056** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**1.25** ft		**0.381** m	
Slab RHS		**16** ft		**4.8768** m	
Slab LHS		**12** ft		**3.6576** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**355** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**10.5** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		238.6696 mm		

Load Caluction

Slab Loa(RHS		
Lx/2 * Slab Load RHS	25.6032	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	13.2588	kN/m2
secondary beam load	0	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	14	kN/m2
Self wt		
B*D* Unit wt of Concrete	2.177415	kN/m2
Total load	**55.03942**	kN/m2
Factor Load 1.5* total load	**82.55912**	kN/m2
Bending Moment WL²/12	**152.6613**	kN-m

Ast Calculation

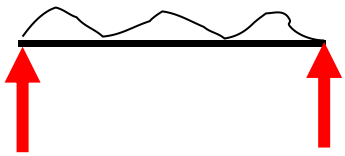
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	702241892.3
1000 x fck x d ²	B	2520500000
1-A/B	C	0.721387863
√c	D	0.84934555
1-D	E	0.15065445
E x 1000 x .5 x fck x d / fy	F	1069.646598 mm2

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

	12 mm	113 mm2	9.465899097 Nos	
	16mm	201 mm2	5.321624865 Nos	PROVIDED - 5 NOS
	20mm	314 mm2	3.406517828 Nos	
	25mm	490.5 mm2	2.180727009 Nos	

Shear Reinforcement Design



	V= WL/2	184.9556	kN

Type of Rod

	Dia	8 mm	2 legged	50.24 mm2

Pt	Ast/ bd *100	1.318062	%
c_ζ	From Code book	**0.68**	N/mm2
c_ζ	V/bd	2.279097	N/mm2
Vs=	V- $_\zeta$bd	129771.5	
Sv	0.87 fy Asv d / Vs	***119.5688***	mm

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LPA/SE/GR-1/076/2024
Coimbatore - 04

Design Of Two way Slab

HOSTA - CLUB HOUSE

Given Data :

Type of Building :

Span :

Lx			18.1	ft	5.51688 m
Ly			20.7	ft	6.30936 m
Thickness of Slab:			7	inch	177.8 mm
Unit Wt of Concrete:			25	N/mm2	
Fy of Steel			500	N/mm2	
Toilet Sunken			0	inch	0 mm
Unit Wt of Brick			19.5	N/mm2	
fck			20	N/mm2	
Effect					
Lx	18.85	ft	5.74548	m	
Ly	21.45	ft	6.53796	m	
d			157.8	mm	
Live Load	2000	N/mm2			

Ly/Lx 1.143646

If Less than 2 Consider it should be a TWO - Way Slab.But some times consider One - Way slab

αx	***0.056***	From Code Book	IS456 -P91
αy	***0.056***	From Code Book	IS456 -P91

Load Calculation:

Live Load:	2000	N/m2
Unknown Partition	3200	N/m2
Floor Finishing	1000	N/m2
Self wt of Slab	4445	N/m2
Toilet	0	N/m2
Total Load	**10.645**	N/m2
Factor Load	**15.9675**	N/m2

B.M.

Mx =	αx * w * Lx²	**29.51736504** kN m
My =	αy * w * Lx²	**29.51736504** kN m

Ast x

.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A		1.36E+08
1000 x fck x d ²	B		4.98E+08
1-A/B	C		0.727359
√c	D		0.852853
1-D	E		0.147147
E x 1000 x .5 x fck x d / fy		F	464.3948
		Ast	**464.3948**

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Ast Detail Lx Direction

8mm	50 mm2	107.667005 mm	**4.238858466** inch C/C
10mm	78 mm2	167.9605279 mm	**6.612619207** inch C/C
12mm	113 mm2	243.3274314 mm	**9.579820133** inch C/C

Ast y

.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A		1.36E+08
1000 x fck x d ²	B		4.98E+08
1-A/B	C		0.727359
√c	D		0.852853
1-D	E		0.147147
E x 1000 x .5 x fck x d / fy		F	464.3948
		Ast	**464.3948**

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

Ast Detail Ly Direction

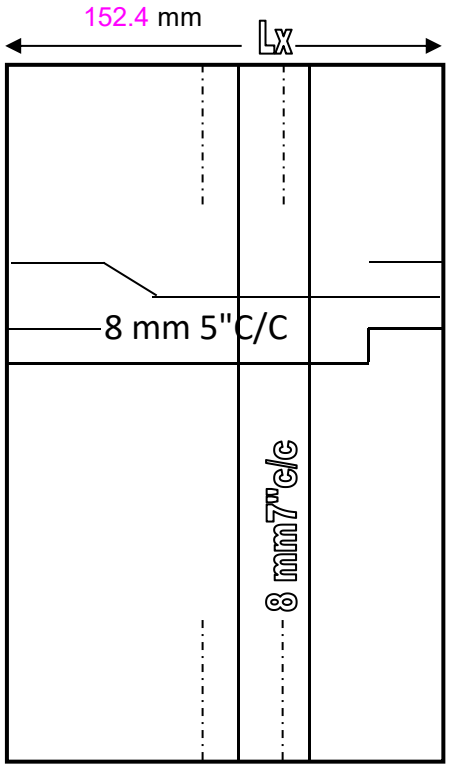
8mm	50 mm2	107.667005 mm	**4.238858466** inch C/C
10mm	78 mm2	167.9605279 mm	**6.612619207** inch C/C
12mm	113 mm2	243.3274314 mm	**9.579820133** inch C/C

HOSTA (CLUBHOUSE) - Design Of One way Slab

Lx	7.5 ft	2.286 m
Ly	16.5 ft	5.0292 m
Thickness of Slab:	6 inch	152.4 mm
Unit Wt of Concrete:	25 N/mm2	
Fy of Steel	500 N/mm2	
Toilet Sunken	6 inch	
Unit Wt of Brick	19.2 N/mm2	
fck	20 N/mm2	

Effect

Lx	8.25 ft	2.5146 m
Ly	17.25 ft	5.2578 m
d		132.4 mm
Live Load	2000 N/mm2	



Ly/Lx 2.2

If Less than 2 Consider it should be a TWO - Way Slab.

But some times consider One - Way slab

Load Calculation:

Live Load:	2000 N/m2
Unknown Partition	1000 N/m2
Floor Finishing	1000 N/m2
Self wt of Slab	3750 N/m2
Toilet	2926.08 N/m2
Total Load	**10.67608** N/m2
Factor Load	**16.01412** N/m2

B.M.

WLx²/10 **12.06316** N/m2

Ast

.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	55490549.85
1000 x fck x d ²	B	350595200
1-A/B	C	0.84172473
√c	D	0.917455574
1-D	E	0.082544426
E x 1000 x .5 x fck x d / fy	F	218.5776401
	Ast	**218.5776401**

Ast Detail

		spacing	
8mm	50 mm2	228.752 mm	**9.005971** inch C/C
10mm	78 mm2	356.853 mm	**14.04932** inch C/C
12mm	113 mm2	516.979 mm	**20.35349** inch C/C

Dist. Reinforcement

12% of gross area 158.88 mm2 Provided 8 mm 5 inch C/C

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - GB - 1

HOSTA

Given Data

GB-01

Span :		**11.2** ft	**3.41376** m	
Size				
B:		**0.75** ft	**0.2286** m	
D:		**1** ft	**0.3048** m	
Slab RHS		**0** ft	**0** m	
Slab LHS		**0** ft	**0** m	
Wall Thickness		**0.75** ft	**0.2286** m	
Wall Hight		**10** ft	**3.048** m	
Unit wt of r.block		**20**	**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3			
Ru max	**2.68** N/mm^2	0.134	**20**	2.68
d	**275** mm			
fck	**20** N/mm^2	**Effect Depth Calculation**		
fy	**500** N/mm^2			
		d req	√(Mu/ Ru max x 1000)	
Slab Load RHS	**0** kN/m^2			
Slab Load LHS	**0** kN/m^2		120.9238648 mm	

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		1.741932 kN/m2
Total load		**15.741932** kN/m2
Factor Load	1.5* total load	**23.612898** kN/m2
Bending Moment	WL²/8	**39.18851729** kN-m

Ast Calculation

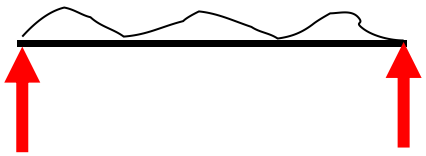
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	180267179.5	
1000 x fck x d ²	B	1512500000	
1-A/B	C	0.880815088	
√c	D	0.938517495	
1-D	E	0.061482505	
E x 1000 x .5 x fck x d / fy	F	**338.153779**	mm2

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

12 mm	113 mm2	2.992511318 Nos	PROVIDED - 3 NOS
16mm	201 mm2	1.682357109 Nos	
20mm	314 mm2	1.076922863 Nos	
25mm	490.5 mm2	0.689406277 Nos	

Shear Reinforcement Design



V= WL/2 — 40.30438334 kN

Type of Rod

Dia — 8 mm — 2 legged — 50.24 mm2

Pt — Ast/ bd *100 — 0.537904683 %

c_{ζ} — From Code book — **0.5** N/mm2

c_{ζ} — V/bd — 0.641125958 N/mm2

Vs= — V- $_{\zeta}$bd — 8871.883338

Sv — 0.87 fy Asv d / Vs — ***1354.832964*** mm

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - GB - 2

HOSTA

Given Data

GB-02

Span :		**15.2** ft	**4.63296** m	
Size				
B:		**0.75** ft	**0.2286** m	
D:		**1.25** ft	**0.381** m	
Slab RHS		**0** ft	**0** m	
Slab LHS		**0** ft	**0** m	
Wall Thickness		**0.75** ft	**0.2286** m	
Wall Hight		**10** ft	**3.048** m	
Unit wt of r.block		**20**	**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3			
Ru max	**2.68** N/mm^2		0.134 **20**	2.68
d	**355** mm			
fck	**20** N/mm^2	**Effect Depth Calculation**		
fy	**500** N/mm^2			
		d req	√(Mu/ Ru max x 1000)	
Slab Load RHS	**0** kN/m^2			
Slab Load LHS	**0** kN/m^2		133.58044 mm	

Load Caluction

Slab Load	RHS	
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		2.177415 kN/m2
Total load		**16.177415** kN/m2
Factor Load	1.5* total load	**24.2661225** kN/m2
Bending Moment	WL²/12	**47.8212071** kN-m

Ast Calculation

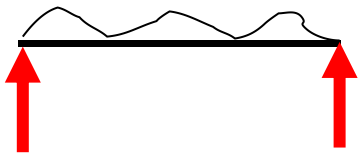
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	219977552.6
1000 x fck x d ²	B	2520500000
1-A/B	C	0.912724637
√c	D	0.955366232
1-D	E	0.044633768
E x 1000 x .5 x fck x d / fy	F	**316.899754** mm2

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

12 mm	113 mm2	2.804422601 Nos	PROVIDED - 3 NOS
16mm	201 mm2	1.576615691 Nos	
20mm	314 mm2	1.009234885 Nos	
25mm	490.5 mm2	0.646074932 Nos	

Shear Reinforcement Design



	V= WL/2	56.21198745 kN	
Type of Rod			
	Dia	8 mm	2 legged	50.24 mm2
Pt	Ast/ bd *100	0.390496659 %	
c_τ	From Code book	**0.38** N/mm2	
c_τ	V/bd	0.692666783 N/mm2	
Vs=	V- $_\tau$bd	25373.84745	
Sv	0.87 fy Asv d / Vs	***611.5203471*** mm	

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - GB - 3

HOSTA

Given Data

GB-03

Span :		**15.3** ft		**4.66344** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**1.5** ft		**0.4572** m	
Slab RHS		**0** ft		**0** m	
Slab LHS		**0** ft		**0** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**425** mm				
fck	**20** N/mm^2		**Effect Depth Calculation**		
fy	**500** N/mm^2				
			d req	√(Mu/ Ru max x 1000)	
Slab Load RHS	**0** kN/m^2				
Slab Load LHS	**0** kN/m^2			211.1512182 mm	

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		10 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		2.612898 kN/m2
Total load		**26.612898** kN/m2
Factor Load	1.5* total load	**39.919347** kN/m2
Bending Moment	WL²/8	**119.487363** kN-m

Ast Calculation

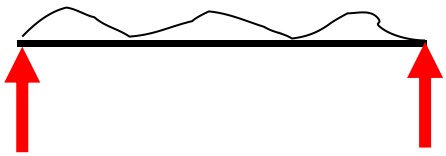
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	549641870
1000 x fck x d ²	B	3612500000
1-A/B	C	0.847850001
√c	D	0.920787707
1-D	E	0.079212293
E x 1000 x .5 x fck x d / fy	F	**673.3044904** mm2

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	12 mm	113 mm2	5.958446818 Nos	
	16mm	201 mm2	3.349773584 Nos	PROVIDED -3NOS
	20mm	314 mm2	2.144281817 Nos	
	25mm	490.5 mm2	1.372690093 Nos	

Shear Reinforcement Design



	V= WL/2	93.08074 kN		
Type of Rod				
	Dia	8 mm	2 legged	50.24 mm2
Pt	Ast/ bd *100	0.6930209 %		
$c_ζ$	From Code book	**0.55** N/mm2		
$c_ζ$	V/bd	0.9580643 N/mm2		
Vs=	V- $_ζ$bd	39645.49		
Sv	0.87 fy Asv d / Vs	***468.55872*** mm		

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Beam Design - GB - 4

HPSTA

Given Data

GB-04

Span :		**17.7** ft		**5.39496** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**2** ft		**0.6096** m	
Slab RHS		**0** ft		**0** m	
Slab LHS		**0** ft		**0** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**575** mm				
fck	**20** N/mm^2		**Effect Depth Calculation**		
fy	**500** N/mm^2				
			d req	√(Mu/ Ru max x 1000)	
Slab Load RHS	**0** kN/m^2				
Slab Load LHS	**0** kN/m^2			255.4729231 mm	

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		12 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		3.483864 kN/m2
Total load		**29.483864** kN/m2
Factor Load	1.5* total load	**44.225796** kN/m2
Bending Moment	WL²/8	**174.9139906** kN-m

Ast Calculation

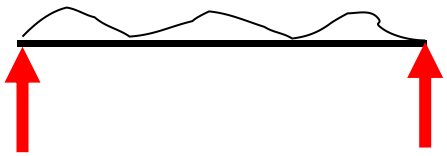
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	804604356.9
1000 x fck x d ²	B	6612500000
1-A/B	C	0.878320702
√c	D	0.937187656
1-D	E	0.062812344
E x 1000 x .5 x fck x d / fy	F	**722.3419584** mm2

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12 mm	113 mm2	6.392406711 Nos	
16mm	201 mm2	3.593741086 Nos	PROVIDED - 3 NOS
20mm	314 mm2	2.300452097 Nos	
25mm	490.5 mm2	1.472664543 Nos	

Shear Reinforcement Design



V= WL/2 119.2982 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 0.54953932 %

c_ζ From Code book **0.555** N/mm2

c_ζ V/bd 0.90759025 N/mm2

Vs= V- ζbd 46346.2252

Sv 0.87 fy Asv d / Vs ***542.278468*** mm

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HOSTA (8-14) - COLUMN DESIGN

GRID H1 - C1 COLUMN

Input details		C1	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C1***	
Load, Pu	kN	*420*	
Muy	kNm	*34*	
Muz	kNm	*2*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*300*	
% Ast, p	%	*0.9*	
p/fck		0.045	
d'/D z		0.133	
d'/D y		0.174	
Pu/fckbD		0.304	
Factor y		*0.09*	
Factor z		*0.1*	
Muy1	kNm	37.3	
Muz1	kNm	31.7	
Puz	kN	853.88	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.49	
Alpha n		0	
		1.49	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.88	
		0.02	
		0.90	
		SAFE	
Ast	mm^2	621	

PROVIDE 06 NOS OF 12MM DIA BARS

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HOSTA - COLUMN DESIGN

GRID E3 - C3 COLUMN

Input details		C3	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C3***	
Load, Pu	kN	*900*	
Muy	kNm	*2*	
Muz	kNm	*2*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*450*	
% Ast, p	%	*1.4*	
p/fck		0.070	
d'/D z		0.089	
d'/D y		0.174	
Pu/fckbD		0.435	
Factor y		*0.04*	
Factor z		*0.05*	
Muy1	kNm	37.3	
Muz1	kNm	23.8	
Puz	kN	1474.88	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.61	
Alpha n		0	
		1.68	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.02	
		0.03	
		0.05	
		SAFE	
Ast	mm^2	1449	

PROVIDE 6 NOS OF 16MM + 4 NOS OF 12MM DIA BARS

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HOSTA - COLUMN DESIGN

GRID A4 - C5 COLUMN

Input details		C5	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C5***	
Load, Pu	kN	*1200*	
Muy	kNm	*190*	
Muz	kNm	*15*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*750*	
% Ast, p	%	*1.3*	
p/fck		0.065	
d'/D z		0.053	
d'/D y		0.174	
Pu/fckbD		0.348	
Factor y		*0.096*	
Factor z		*0.1*	
Muy1	kNm	248.4	
Muz1	kNm	79.4	
Puz	kN	2393.44	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.50	
Alpha n		0	
		1.50	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.69	
		0.10	
		0.79	
		SAFE	
Ast	mm^2	2242.5	

PROVIDE 4 NOS OF 20MM + 6 NOS OF 16MM DIA BARS

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID H1 - C1F1 FOOTING

Input details			F1	
Load, Pu		kN	*280*	420
Muy		kNm	*34*	
Muz		kNm	*9*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.3*	
Area reqd		m^2	0.77	0.876948517
L (Hori)		m	1.2	3.937008
B (Ver)		m	1.2	3.937008
Area provided			1.44	
Direct Pressure		kN/m^2	194.44	
Pmax xy		kN/m^2	343.75	
Pmin xy		kN/m^2	45.14	
			SAFE	
Depth of footing				
Moment Mu		kNm	34.8	
	or	kNm	40.4	
d reqd		mm	112.30	
	or	mm	121.03	
D provided		mm	*300*	
Therefore Eff d		mm	250	SAFE
Projection for BM		m	0.45	
		m	0.485	
Proj-one way SF		m	0.2	
Proj-Two way SF		m	0.55	
		m	0.48	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	108750
	c		34804687.5	40429296.88
Ast	X & Y	mm^2	330.999	386.72
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	237.16	202.99
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.25**	**0.25**
One way shear				
	Vu	kN	38.9	
Tou v		N/mm^2	0.156	

Tc		N/mm^2	0.36		
Two way shear			*SAFE*		
Vu		kN	228.67		
Tou v		N/mm^2	0.44		
Bc			1.30		
ks			1.80	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.2		1.2
Depth of footing	in mm		300		
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
			4.92125		4.92125

SAI STRUCTURAL DESIGNS
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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID E4 - C3F3 FOOTING

Input details			F3	
Load, Pu		kN	*600*	900
Muy		kNm	*2*	
Muz		kNm	*8*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.45*	
Area reqd		m^2	1.65	1.283721183
L (Hori)		m	1.6	5.249344
B (Ver)		m	1.6	5.249344
Area provided			2.56	
Direct Pressure		kN/m^2	234.38	
Pmax xy		kN/m^2	249.02	
Pmin xy		kN/m^2	219.73	
			SAFE	
Depth of footing				
Moment Mu		kNm	41.2	
	or	kNm	58.4	
d reqd		mm	122.13	
	or	mm	145.49	
D provided		mm	*380*	
Therefore Eff d		mm	330	SAFE
Projection for BM		m	0.575	
		m	0.685	
Proj-one way SF		m	0.245	
Proj-Two way SF		m	0.78	
		m	0.56	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	143550
	c		41166687.01	58424011.23
Ast	X & Y	mm^2	293.293	420.38
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	267.65	186.73
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.19**	**0.19**

One way shear					
		Vu	kN	57.4	
Tou v			N/mm^2	0.174	
Tc			N/mm^2	0.3	
Two way shear				*SAFE*	
Vu			kN	497.63	
Tou v			N/mm^2	0.56	
Bc				1.96	
ks				2.46	1.0
Tou c= ks x 0.25 x sqrt(fck)				1.12	
	N/mm^2			*SAFE*	HENCE SAFE
Results					
Size of footing	in m			1.6	1.6
Depth of footing	in mm			380	
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
				4.92125	4.92125

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID E6 - C5F5 FOOTING

Input details			F5	
Load, Pu		kN	*800*	1200
Muy		kNm	*190*	
Muz		kNm	*15*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.75*	
Area reqd		m^2	2.20	1.482313541
L (Hori)		m	2.1	6.889764
B (Ver)		m	2.1	6.889764
Area provided			4.41	
Direct Pressure		kN/m^2	181.41	
Pmax xy		kN/m^2	314.22	
Pmin xy		kN/m^2	48.59	
			SAFE	
Depth of footing				
Moment Mu		kNm	71.6	
	or	kNm	137.3	
d reqd		mm	161.05	
	or	mm	223.08	
D provided		mm	*450*	
Therefore Eff d		mm	400	**SAFE**
Projection for BM		m	0.675	
		m	0.935	
Proj-one way SF		m	0.275	
Proj-Two way SF		m	1.15	
		m	0.63	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	174000
	c		71583454.81	137349894.7
Ast	X & Y	mm^2	422.559	832.70
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	185.77	94.27
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.16**	**0.16**
One way shear				

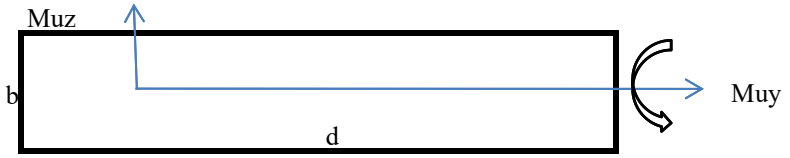
		Vu	kN	49.9	
Tou v			N/mm^2	0.125	
Tc			N/mm^2	0.28	
Two way shear				*SAFE*	
Vu			kN	668.57	
Tou v			N/mm^2	0.47	
Bc				3.26	
ks				3.76	1.0
Tou c= ks x 0.25 x sqrt(fck)				1.12	
	N/mm^2			*SAFE*	HENCE SAFE
Results					
Size of footing	in m			2.1	2.1
Depth of footing	in mm			450	
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
				4.92125	4.92125

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HOSTA - COLUMN DESIGN

GRID D2 - C2 COLUMN

Input details		C2	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C2***	
Load, Pu	kN	*890*	
Muy	kNm	*25*	
Muz	kNm	*4*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*300*	
% Ast, p	%	*2*	
p/fck		0.100	
d'/D z		0.133	
d'/D y		0.174	
Pu/fckbD		0.645	
Factor y		*0.07*	
Factor z		*0.08*	
Muy1	kNm	29.0	
Muz1	kNm	25.4	
Puz	kN	1138.50	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.78	
Alpha n		0	
		1.97	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.81	
		0.08	
		0.89	
		SAFE	
Ast	mm^2	1380	

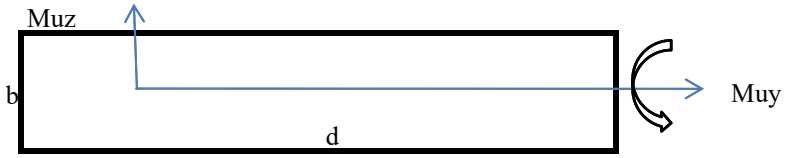
PROVIDE 06 NOS OF 16MM + 02 NOS OF 12MM DIA BARS

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HOSTA - COLUMN DESIGN

GRID H6 - C4 COLUMN

Input details		C4	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C4***	
Load, Pu	kN	*700*	
Muy	kNm	*132*	
Muz	kNm	*5*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*450*	
% Ast, p	%	*2.2*	
p/fck		0.110	
d'/D z		0.089	
d'/D y		0.174	
Pu/fckbD		0.338	
Factor y		*0.15*	
Factor z		*0.16*	
Muy1	kNm	139.7	
Muz1	kNm	76.2	
Puz	kN	1785.38	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.39	
Alpha n		0	
		1.32	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.92	
		0.02	
		0.95	
		SAFE	
Ast	mm^2	2277	

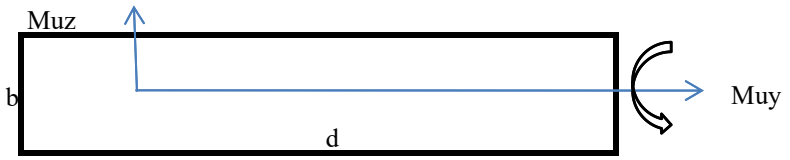
PROVIDE 10 NOS OF 16MM DIA BARS

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

HOSTA - COLUMN DESIGN

GRID C5 - C6 COLUMN

Input details		C6	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C6***	
Load, Pu	kN	*160*	
Muy	kNm	*6*	
Muz	kNm	*6*	
fck	N/mm^2	*25*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*230*	
% Ast, p	%	*0.8*	
p/fck		0.032	
d'/D z		0.174	
d'/D y		0.174	
Pu/fckbD		0.121	
Factor y		*0.065*	
Factor z		*0.56*	
Muy1	kNm	19.8	
Muz1	kNm	170.3	
Puz	kN	753.83	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.21	
Alpha n		0	
		1.02	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.19	
		0.01	
		0.20	
		SAFE	
Ast	mm^2	423.2	

PROVIDE 4 NOS OF 12MM DIA BARS

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID F3 - C2F2 FOOTING

Input details			F2	
Load, Pu		kN	*593.3333333*	890
Muy		kNm	*25*	
Muz		kNm	*6*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.3*	
Area reqd		m^2	1.63	1.276569477
L (Hori)		m	1.4	4.593176
B (Ver)		m	1.4	4.593176
Area provided			1.96	
Direct Pressure		kN/m^2	302.72	
Pmax xy		kN/m^2	370.51	
Pmin xy		kN/m^2	234.94	
			SAFE	
Depth of footing				
Moment Mu		kNm	56.0	
	or	kNm	63.4	
d reqd		mm	142.49	
	or	mm	151.56	
D provided		mm	*380*	
Therefore Eff d		mm	330	**SAFE**
Projection for BM		m	0.55	
		m	0.585	
Proj-one way SF		m	0.22	
Proj-Two way SF		m	0.63	
		m	0.56	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	143550
	c		56038933.43	63398095.85
Ast	X & Y	mm^2	402.662	457.50
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	194.95	171.58
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.19**	**0.19**
One way shear				
		Vu kN	66.6	
Tou v		N/mm^2	0.202	

Tc		N/mm^2	0.25		
Two way shear			*SAFE*		
Vu		kN	486.53		
Tou v		N/mm^2	0.62		
Bc			1.30		
ks			1.80	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.4		1.4
Depth of footing	in mm		380		
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
			4.92125		4.92125

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID H6 - C4F4FOOTING

Input details			F4	
Load, Pu		kN	*500*	750
Muy		kNm	*132*	
Muz		kNm	*33*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.45*	
Area reqd		m^2	1.37	1.171871749
L (Hori)		m	2.1	6.889764
B (Ver)		m	2.1	6.889764
Area provided			4.41	
Direct Pressure		kN/m^2	113.38	
Pmax xy		kN/m^2	220.28	
Pmin xy		kN/m^2	6.48	
			SAFE	
Depth of footing				
Moment Mu		kNm	75.0	
	or	kNm	96.3	
d reqd		mm	164.81	
	or	mm	186.78	
D provided		mm	*380*	
Therefore Eff d		mm	330	**SAFE**
Projection for BM		m	0.825	
		m	0.935	
Proj-one way SF		m	0.495	
Proj-Two way SF		m	0.78	
		m	0.56	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	143550
	c		74963556.85	96286524.13
Ast	X & Y	mm^2	544.688	708.81
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	144.12	110.75
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.19**	**0.19**

One way shear					
		Vu	kN	56.1	
Tou v			N/mm^2	0.170	
Tc			N/mm^2	0.28	
Two way shear				*SAFE*	
Vu			kN	450.48	
Tou v			N/mm^2	0.51	
Bc				1.96	
ks				2.46	1.0
Tou c= ks x 0.25 x sqrt(fck)				1.12	
	N/mm^2			*SAFE*	HENCE SAFE
Results					
Size of footing	in m			2.1	2.1
Depth of footing	in mm			380	
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
				4.92125	4.92125

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID C5 - C6F6 FOOTING

Input details			F6	
Load, Pu		kN	*130*	
Muy		kNm	*2*	
Muz		kNm	*2*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.23*	
Area reqd		m^2	0.36	0.597539691
L (Hori)		m	1.1	3.608924
B (Ver)		m	1.1	3.608924
Area provided			1.21	
Direct Pressure		kN/m^2	107.44	
Pmax xy		kN/m^2	125.47	
Pmin xy		kN/m^2	89.41	
			SAFE	
Depth of footing				
Moment Mu		kNm	11.9	
	or	kNm	11.9	
d reqd		mm	65.58	
	or	mm	65.58	
D provided		mm	*300*	
Therefore Eff d		mm	250	SAFE
Projection for BM		m	0.435	
		m	0.435	
Proj-one way SF		m	0.185	
Proj-Two way SF		m	0.48	
		m	0.48	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	108750
	c		11870989.86	11870989.86
Ast	X & Y	mm^2	110.377	110.38
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	711.20	711.20
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.25**	**0.25**
One way shear				

		Vu kN	19.9		
Tou v		N/mm^2	0.080		
Tc		N/mm^2	0.3		
Two way shear			*SAFE*		
Vu		kN	105.25		
Tou v		N/mm^2	0.22		
Bc			1.00		
ks			1.50	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.1		1.1
Depth of footing	in mm		300		
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
			4.92125		4.92125

SAI STRUCTURAL DESIGNS
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Beam Design - RB - 1

Given Data			HOSTA		
RB-01					
Span :	**6.2** ft		**1.88976** m		
Size					
B:	**0.75** ft		**0.2286** m		
D:	**0.75** ft		**0.2286** m		
Slab RHS	**12.6** ft		**3.84048** m		
Slab LHS	**6** ft		**1.8288** m		
Wall Thickness	**0.75** ft		**0.2286** m		
Wall Hight	**10** ft		**3.048** m		
Unit wt of r.block	**20**		**20** N/mm^3		
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68 Ref Table Value
d	**275** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**7.5** kN/m^2				
Slab Load LHS	**7.5** kN/m^2		108.6723 mm		

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	14.4018 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	6.858 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		15 kN/m2
Self wt		
B*D* Unit wt of Concrete		1.306449 kN/m2
Total load		**37.56625** kN/m2
Factor Load	1.5* total load	**56.34937** kN/m2
Bending Moment	WL²/8	**31.64991** kN-m

Ast Calculation

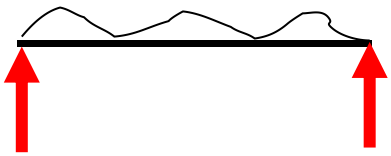
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x c

4.5 x Mu x 10^6	A	145589589.7
1000 x fck x d ²	B	1512500000
1-A/B	C	0.90374242
√c	D	0.95065368
1-D	E	0.04934632
E x 1000 x .5 x fck x d / fy	F	**271.4047578** mm2

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12 mm	113 mm2	2.401812016 Nos	PROVIDED - 3NOS
16mm	201 mm2	1.350272427 Nos	
20mm	314 mm2	0.864346362 Nos	
25mm	490.5 mm2	0.553322646 Nos	

Shear Reinforcement Design



V= WL/2 53.2434 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 0.431726 %

c_{ζ} From Code book **0.37** N/mm2 IS 456 Table 19 -Page 73

c_{ζ} V/bd 0.846948 N/mm2

Vs= V- ζbd 29983.35

Sv 0.87 fy Asv d / Vs ***400.8865*** mm

SAI STRUCTURAL DESIGNS
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Beam Design - RB - 3

Given Data	HOSTA					
RB-03						
Span :		**16.1** ft			**4.90728** m	
Size						
B:		**0.75** ft			**0.2286** m	
D:		**1.25** ft			**0.381** m	
Slab RHS		**11.3** ft			**3.44424** m	
Slab LHS		**12.3** ft			**3.74904** m	
Wall Thickness		**0.75** ft			**0.2286** m	
Wall Hight		**10** ft			**3.048** m	
Unit wt of r.block		**20**			**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3					
Ru max	**2.68** N/mm^2		0.134		**20**	2.68
d	**355** mm					
fck	**20** N/mm^2		**Effect Depth Calculation**			
fy	**500** N/mm^2					
			d req		√(Mu/ Ru max x 1000)	
Slab Load RHS	**7.25** kN/m^2					
Slab Load LHS	**7.25** kN/m^2				208.3144 mm	

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	12.48537 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	13.59027 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		7 kN/m2
Self wt		
B*D* Unit wt of Concrete		2.177415 kN/m2
Total load		**35.25306** kN/m2
Factor Load	1.5* total load	**52.87958** kN/m2
Bending Moment	WL²/12	**116.2983** kN-m

Ast Calculation

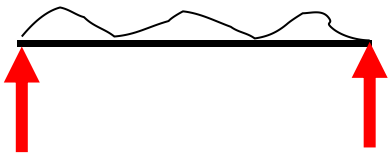
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	534972031
1000 x fck x d ²	B	2520500000
1-A/B	C	0.787751624
√c	D	0.88755373
1-D	E	0.11244627
E x 1000 x .5 x fck x d / fy	F	**798.3685144** mm2

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

12 mm	113 mm2	7.065208092 Nos	
16mm	201 mm2	3.971982659 Nos	PROVIDED - 4NOS
20mm	314 mm2	2.542574887 Nos	
25mm	490.5 mm2	1.627662619 Nos	

Shear Reinforcement Design



V= WL/2 129.7475 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 0.983782 %

c_{ζ} From Code book **0.6** N/mm2

c_{ζ} V/bd 1.598801 N/mm2

Vs= V- $_{\zeta}$bd 81055.66

Sv 0.87 fy Asv d / Vs ***191.4317*** mm

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - RB - 5

Given Data			HOSTA		
RB-05					
Span :	**15.75** ft		**4.8006** m		
Size					
B:	**0.75** ft		**0.2286** m		
D:	**2** ft		**0.6096** m		
Slab RHS	**5.75** ft		**1.7526** m		
Slab LHS	**16.75** ft		**5.1054** m		
Wall Thickness	**0.75** ft		**0.2286** m		
Wall Hight	**10** ft		**3.048** m		
Unit wt of r.block	**20**		**20** N/mm^3		
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**575** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**7.25** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		395.4958 mm		

Load Caluction

Slab Load RHS		
Lx/2 * Slab Load RHS	6.353175	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	18.50708	kN/m2
secondary beam load	53	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	7	kN/m2
Self wt		
B*D* Unit wt of Concrete	3.483864	kN/m2
Total load	**88.34411**	kN/m2
Factor Load 1.5* total load	**132.5162**	kN/m2
Bending Moment WL²/8	**419.1973**	kN-m

Ast Calculation

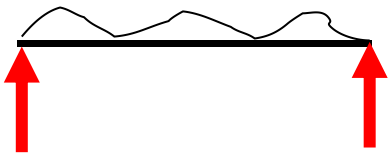
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	1928307526
1000 x fck x d ²	B	6612500000
1-A/B	C	0.708384495
√c	D	0.841655806
1-D	E	0.158344194
E x 1000 x .5 x fck x d / fy	F	**1820.958235** mm2

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

12 mm	113 mm2	16.11467465 Nos	
16mm	201 mm2	9.059493709 Nos	
20mm	314 mm2	5.799230049 Nos	PROVIDED - 6 NOS
25mm	490.5 mm2	3.712453079 Nos	

Shear Reinforcement Design



V= WL/2 318.0786 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 1.385339 %

c_{ζ} From Code book **0.7** N/mm2

c_{ζ} V/bd 2.419861 N/mm2

Vs= V- $_{\zeta}$bd 226067.1

Sv 0.87 fy Asv d / Vs ***111.173*** mm

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

Beam Design - RB - 2

Given Da			HOSTA		
RB-02					
Span :		**10.2** ft		**3.10896** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**1** ft		**0.3048** m	
Slab RHS		**11.3** ft		**3.44424** m	
Slab LHS		**0** ft		**0** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**275** mm				
fck	**20** N/mm^2		**Effect Depth Calculation**		
fy	**500** N/mm^2				
			d req	√(Mu/ Ru max x 1000)	
Slab Load RHS	**7.25** kN/m^2				
Slab Load LHS	**7.25** kN/m^2			148.3813 mm	

Load Caluction

Slab Loa(RHS		
Lx/2 * Slab Load RHS	12.48537	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	0	kN/m2
secondary beam load	0	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	14	kN/m2
Self wt		
B*D* Unit wt of Concrete	1.741932	kN/m2
Total load	**28.2273**	kN/m2
Factor Load 1.5* total load	**42.34095**	kN/m2
Bending Moment WL²/8	**59.00558**	kN-m

Ast Calculation

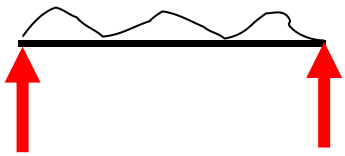
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	271425662.3	
1000 x fck x d ²	B	1512500000	
1-A/B	C	0.820545017	
√c	D	0.905839399	
1-D	E	0.094160601	
E x 1000 x .5 x fck x d / fy	F	**517.8833058**	mm2

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

12 mm	113 mm2	4.583038104 Nos	PROVIDED - 4 NOS
16mm	201 mm2	2.57653386 Nos	
20mm	314 mm2	1.649309891 Nos	
25mm	490.5 mm2	1.055827331 Nos	

Shear Reinforcement Design



V= WL/2 — 65.81816 kN

Type of Rod

Dia — 8 mm — 2 legged — 50.24 mm2

Pt — Ast/ bd *100 — 0.823802 %

c_ζ — From Code book — **0.52** N/mm2

c_ζ — V/bd — 1.046976 N/mm2

Vs= — V- ζbd — 33128.36

Sv — 0.87 fy Asv d / Vs — ***362.8287*** mm

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - RB - 4

Given Da			HOSTA		
RB-04					
Span :		**18.1** ft		**5.51688** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**1.5** ft		**0.4572** m	
Slab RHS		**12.4** ft		**3.77952** m	
Slab LHS		**11.3** ft		**3.44424** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**355** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**7.25** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		307.0367 mm		

Load Caluction

Slab Loa(RHS		
Lx/2 * Slab Load RHS	13.70076	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	12.48537	kN/m2
secondary beam load	5	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	7	kN/m2
Self wt		
B*D* Unit wt of Concrete	2.612898	kN/m2
Total load	**40.79903**	kN/m2
Factor Load 1.5* total load	**61.19854**	kN/m2
Bending Moment WL²/8	**252.6477**	kN-m

Ast Calculation

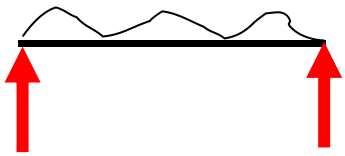
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	1162179412
1000 x fck x d ²	B	2520500000
1-A/B	C	0.53890918
√c	D	0.734104338
1-D	E	0.265895662
E x 1000 x .5 x fck x d / fy	F	1887.859197 mm2

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

12 mm	113 mm2	16.70671856 Nos	
16mm	201 mm2	9.392334313 Nos	
20mm	314 mm2	6.012290436 Nos	
25mm	490.5 mm2	3.848846477 Nos	PROVIDED - 6 NOS

Shear Reinforcement Design



V= WL/2 168.8125 kN

Type of Rod

Dia 10 mm 2 legged 78.5 mm2

Pt Ast/ bd *100 2.326296 %

$c_ζ$ From Code book **0.515** N/mm2

$c_ζ$ V/bd 2.080176 N/mm2

Vs= V- $ζ_c$bd 127018.7

Sv 0.87 fy Asv d / Vs ***190.8752*** mm

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - RB - 6

Given Data	HOSTA - APARTMENT				
RB-06					
Span :		**11.5** ft		**3.5052** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**2.25** ft		**0.6858** m	
Slab RHS		**18.5** ft		**5.6388** m	
Slab LHS		**0** ft		**0** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**655** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**25** kN/m^2				
Slab Load LHS	**0** kN/m^2		587.5082 mm		

Load Caluction

Slab Load RHS		
Lx/2 * Slab Load RHS	70.485	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	0	kN/m2
secondary beam load	0	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	14	kN/m2
Self wt		
B*D* Unit wt of Concrete	3.919347	kN/m2
Total load	**88.40435**	kN/m2
Factor Load 1.5* total load	**132.6065**	kN/m2
Bending Moment WL²/2	**925.0445**	kN-m

Ast Calculation

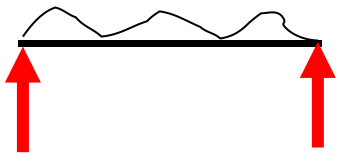
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	4255204509
1000 x fck x d ²	B	8580500000
1-A/B	C	0.504084318
√c	D	0.709988956
1-D	E	0.290011044
E x 1000 x .5 x fck x d / fy	F	3799.144672 mm2

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Coimbatore - 04

12 mm	113 mm2	33.62074931 Nos	
16mm	201 mm2	18.90121728 Nos	
20mm	314 mm2	12.09918686 Nos	PROVIDED - 2 NOS
25mm	490.5 mm2	7.745452951 Nos	PROVIDED - 6 NOS

Shear Reinforcement Design



V= WL/2 232.4062 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 2.537279 %

c_ζ From Code book **0.57** N/mm2

c_ζ V/bd 1.552137 N/mm2

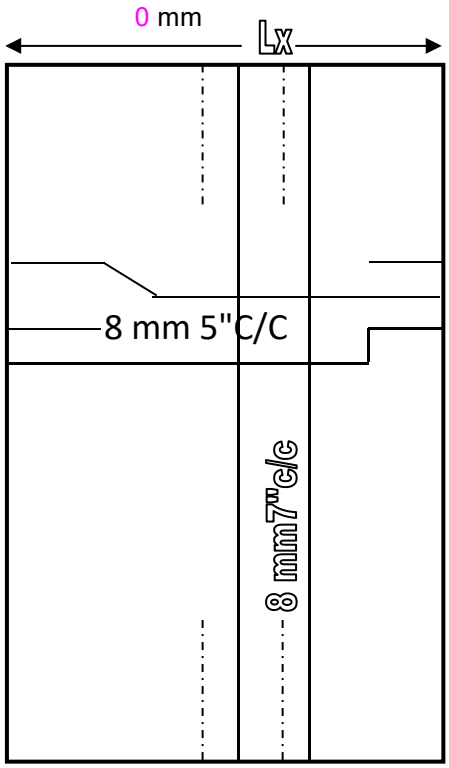
Vs= V- ζbd 147058.4

Sv 0.87 fy Asv d / Vs ***194.6796*** mm

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LPA/SE/GR-1/076/2024
Coimbatore - 04

HOSTA (1-7) - Design Of One way Slab

Lx		6 ft	1.8288 m
Ly		21 ft	6.4008 m
Thickness of Slab:		6 inch	152.4 mm
Unit Wt of Concrete:		25 N/mm2	
Fy of Steel		500 N/mm2	
Toilet Sunken	0 inch		
Unit Wt of Brick	19.2 N/mm2		
fck	20 N/mm2		
Effect			
Lx	6.75 ft	2.0574 m	
Ly	21.75 ft	6.6294 m	
d		132.4 mm	
Live Load	2000 N/mm2		



Ly/Lx 3.5

If Less than 2 Consider it should be a TWO - Way Slab.

But some times consider One - Way slab

Load Calculation:

Live Load:	2000 N/m2
Unknown Partition	1000 N/m2
Floor Finishing	1000 N/m2
Self wt of Slab	3750 N/m2
Toilet	0 N/m2
Total Load	**7.75** N/m2
Factor Load	**11.625** N/m2

B.M.

WLx²/10 **6.082431** N/m2

Ast

.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A		27979182.87
1000 x fck x d ²	B		350595200
1-A/B	C		0.920195191
√c	D		0.95926805
1-D	E		0.04073195
E x 1000 x .5 x fck x d / fy	F		107.8582042
	Ast		**107.8582042**

Ast Detail

		spacing	
8mm	50 mm2	463.572 mm	**18.25085** inch C/C
10mm	78 mm2	723.172 mm	**28.47133** inch C/C
12mm	113 mm2	1047.67 mm	**41.24692** inch C/C

Dist. Reinforcement

12% of gross area 158.88 mm2 Provided 8 mm 5 inch C/C

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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - GB - 1

HOSTA (8-14)

Given Data

GB-01

Span :		**12.5** ft	**3.81** m	
Size				
B:		**0.75** ft	**0.2286** m	
D:		**1** ft	**0.3048** m	
Slab RHS		**0** ft	**0** m	
Slab LHS		**0** ft	**0** m	
Wall Thickness		**0.75** ft	**0.2286** m	
Wall Hight		**10** ft	**3.048** m	
Unit wt of r.block		**20**	**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3			
Ru max	**2.68** N/mm^2	0.134	**20**	2.68
d	**275** mm			
fck	**20** N/mm^2	**Effect Depth Calculation**		
fy	**500** N/mm^2			
		d req	√(Mu/ Ru max x 1000)	
Slab Load RHS	**0** kN/m^2			
Slab Load LHS	**0** kN/m^2		109.4707241 mm	

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		1.741932 kN/m2
Total load		**15.741932** kN/m2
Factor Load	1.5* total load	**23.612898** kN/m2
Bending Moment	WL²/12	**32.11668967** kN-m

Ast Calculation

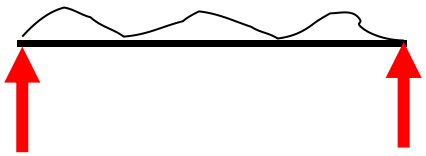
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	147736772.5	
1000 x fck x d ²	B	1512500000	
1-A/B	C	0.902322795	
√c	D	0.94990673	
1-D	E	0.05009327	
E x 1000 x .5 x fck x d / fy	F	**275.5129868**	mm2

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

12 mm	113 mm2	2.438168025 Nos	PROVIDED - 3 NOS
16mm	201 mm2	1.370711377 Nos	
20mm	314 mm2	0.877429894 Nos	
25mm	490.5 mm2	0.56169824 Nos	

Shear Reinforcement Design



V= WL/2 — 44.98257069 kN

Type of Rod

Dia — 8 mm — 2 legged — 50.24 mm2

Pt — Ast/ bd *100 — 0.438261333 %

c_{ζ} — From Code book — **0.52** N/mm2

c_{ζ} — V/bd — 0.715542364 N/mm2

Vs= — V- $_{\zeta}$bd — 12292.77069

Sv — 0.87 fy Asv d / Vs — ***977.8039714*** mm

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - GB - 2

HOSTA (8-14)

Given Data

GB-02

Span :	**14.2** ft	**4.32816** m	
Size			
B:	**0.75** ft	**0.2286** m	
D:	**1.25** ft	**0.381** m	
Slab RHS	**0** ft	**0** m	
Slab LHS	**0** ft	**0** m	
Wall Thickness	**0.75** ft	**0.2286** m	
Wall Hight	**10** ft	**3.048** m	
Unit wt of r.block	**20**	**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3		
Ru max	**2.68** N/mm^2	0.134	**20** 2.68
d	**355** mm		
fck	**20** N/mm^2	**Effect Depth Calculation**	
fy	**500** N/mm^2		
		d req	√(Mu/ Ru max x 1000)
Slab Load RHS	**0** kN/m^2		
Slab Load LHS	**0** kN/m^2		194.847601 mm

Load Caluction

Slab Load	RHS	
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		23 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		2.177415 kN/m2
Total load		**39.177415** kN/m2
Factor Load	1.5* total load	**58.7661225** kN/m2
Bending Moment	WL²/12	**101.747775** kN-m

Ast Calculation

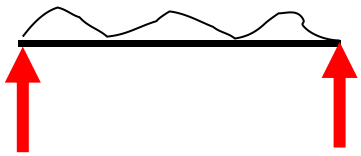
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	468039765.5
1000 x fck x d ²	B	2520500000
1-A/B	C	0.814306778
√c	D	0.902389483
1-D	E	0.097610517
E x 1000 x .5 x fck x d / fy	F	693.0346738 mm2

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

	12 mm	113 mm2	6.133050211 Nos	
	16mm	201 mm2	3.447933701 Nos	PROVIDED - 3NOS
	20mm	314 mm2	2.207116796 Nos	
	25mm	490.5 mm2	1.412914728 Nos	

Shear Reinforcement Design



	V= WL/2		127.1745904 kN	
Type of Rod				
	Dia	8 mm	2 legged	50.24 mm2
Pt	Ast/ bd *100		0.853985279 %	
c_c	From Code book		**0.51** N/mm2	
c_c	V/bd		1.5670966 N/mm2	
Vs=	V- $_c$bd		85786.56038	
Sv	0.87 fy Asv d / Vs		***180.8747656*** mm	

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

Beam Design - GB - 3

HOSTA (8-14)

Given Data

GB-03

Span :		**12.5** ft		**3.81** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**1.5** ft		**0.4572** m	
Slab RHS		**0** ft		**0** m	
Slab LHS		**0** ft		**0** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**275** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**0** kN/m^2				
Slab Load LHS	**0** kN/m^2		173.654996 mm		

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	0 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	0 kN/m2
secondary beam load		23 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		2.612898 kN/m2
Total load		**39.612898** kN/m2
Factor Load	1.5* total load	**59.419347** kN/m2
Bending Moment	WL²/12	**80.8182345** kN-m

Ast Calculation

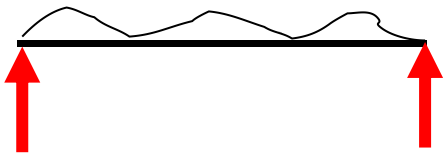
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	371763878.7	
1000 x fck x d ²	B	1512500000	
1-A/B	C	0.7542057	
√c	D	0.868450171	
1-D	E	0.131549829	
E x 1000 x .5 x fck x d / fy	F	**723.5240578** mm2	

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

	12 mm	113 mm2	6.402867768 Nos	
	16mm	201 mm2	3.599622178 Nos	PROVIDED -3NOS
	20mm	314 mm2	2.304216745 Nos	
	25mm	490.5 mm2	1.475074532 Nos	

Shear Reinforcement Design



	V= WL/2	113.19386 kN		
Type of Rod				
	Dia	8 mm	2 legged	50.24 mm2
Pt	Ast/ bd *100	1.1509171 %		
c_ζ	From Code book	**0.55** N/mm2		
c_ζ	V/bd	1.8005863 N/mm2		
Vs=	V- $_\zeta$bd	78618.106		
Sv	0.87 fy Asv d / Vs	***152.88997*** mm		

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

HOSTA (8-14) - COLUMN DESIGN

GRID A4 - C1 COLUMN

Input details		C1	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C1***	
Load, Pu	kN	*360*	
Muy	kNm	*37*	
Muz	kNm	*4*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*300*	
% Ast, p	%	*1.2*	
p/fck		0.060	
d'/D z		0.133	
d'/D y		0.174	
Pu/fckbD		0.261	
Factor y		*0.1*	
Factor z		*0.09*	
Muy1	kNm	41.4	
Muz1	kNm	28.6	
Puz	kN	931.50	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.39	
Alpha n		0	
		1.31	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.86	
		0.07	
		0.92	
		SAFE	
Ast	mm^2	828	

PROVIDE 04 NOS OF 16 MM + 02 NOS 12MM DIA BARS

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

HOSTA (8-14) - COLUMN DESIGN

GRID H3 - C3 COLUMN

Input details		C3	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C3***	
Load, Pu	kN	*1500*	
Muy	kNm	*26*	
Muz	kNm	*15*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*450*	
% Ast, p	%	*2.3*	
p/fck		0.115	
d'/D z		0.089	
d'/D y		0.174	
Pu/fckbD		0.725	
Factor y		*0.065*	
Factor z		*0.055*	
Muy1	kNm	60.5	
Muz1	kNm	26.2	
Puz	kN	1824.19	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.82	
Alpha n		0	
		2	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.31	
		0.46	
		0.77	
		SAFE	
Ast	mm^2	2380.5	

PROVIDE 4 NOS OF 20MM + 4 NOS OF 16MM DIA BARS

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
Coimbatore - 04

HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID B1 - C1F1 FOOTING

Input details			F1	
Load, Pu		kN	*434*	650
Muy		kNm	*5*	
Muz		kNm	*7*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.3*	
Area reqd		m^2	1.19	1.091792099
L (Hori)		m	1.2	3.937008
B (Ver)		m	1.2	3.937008
Area provided			1.44	
Direct Pressure		kN/m^2	301.39	
Pmax xy		kN/m^2	343.06	
Pmin xy		kN/m^2	259.72	
			SAFE	
Depth of footing				
Moment Mu		kNm	34.7	
	or	kNm	40.3	
d reqd		mm	112.18	
	or	mm	120.91	
D provided		mm	*300*	
Therefore Eff d		mm	250	SAFE
Projection for BM		m	0.45	
		m	0.485	
Proj-one way SF		m	0.2	
Proj-Two way SF		m	0.55	
		m	0.48	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	108750
	c		34734375	40347621.53
Ast	X & Y	mm^2	330.307	385.90
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	237.66	203.42
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.25**	**0.25**
One way shear				
	Vu	kN	60.3	
Tou v		N/mm^2	0.241	

Tc		N/mm^2		0.28	
Two way shear				*SAFE*	
Vu		kN		354.43	
Tou v		N/mm^2		0.69	
Bc				1.30	
ks				1.80	1.0
Tou c= ks x 0.25 x sqrt(fck)				1.12	
	N/mm^2			*SAFE*	HENCE SAFE
Results					
Size of footing	in m			1.2	1.2
Depth of footing	in mm			300	
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
				4.92125	4.92125

SAI STRUCTURAL DESIGNS
M.BALAJI, M.E.,(Struct)
LPA/SE/GR-1/076/2024
Coimbatore - 04

HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID C3 - C3F3 FOOTING

Input details			F3	
Load, Pu		kN	*1000*	1500
Muy		kNm	*25*	
Muz		kNm	*7*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.45*	
Area reqd		m^2	2.75	1.657276921
L (Hori)		m	1.8	5.905512
B (Ver)		m	1.8	5.905512
Area provided			3.24	
Direct Pressure		kN/m^2	308.64	
Pmax xy		kN/m^2	341.56	
Pmin xy		kN/m^2	275.72	
			SAFE	
Depth of footing				
Moment Mu		kNm	77.8	
	or	kNm	105.2	
d reqd		mm	167.91	
	or	mm	195.27	
D provided		mm	*450*	
Therefore Eff d		mm	400	**SAFE**
Projection for BM		m	0.675	
		m	0.785	
Proj-one way SF		m	0.275	
Proj-Two way SF		m	0.85	
		m	0.63	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	174000
	c		77812500	105240072
Ast	X & Y	mm^2	460.449	629.60
Dia of rod	X & Y	mm	12	12
Sp reqd	X & Y	mm	245.50	179.54
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	904.32	904.3
% Ast			**0.23**	**0.23**
One way shear				
	Vu	kN	84.9	

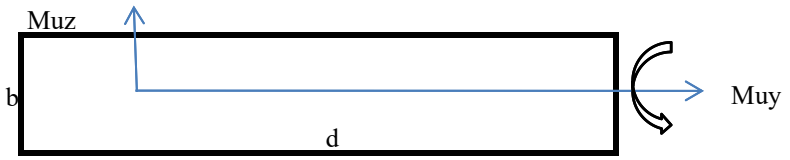
Tou v		N/mm^2	0.212		
Tc		N/mm^2	0.28		
Two way shear			*SAFE*		
Vu		kN	834.72		
Tou v		N/mm^2	0.71		
Bc			1.96		
ks			2.46	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*	HENCE SAFE	
Results					
Size of footing	in m		1.8		1.8
Depth of footing	in mm		450		
Ast		12 Tor 125 C/C			
		12 Tor 125 C/C			
			4.92125		4.92125

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

HOSTA (8-14) - COLUMN DESIGN

GRID A3 - C2 COLUMN

Input details		C2	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C2***	
Load, Pu	kN	*950*	
Muy	kNm	*38*	
Muz	kNm	*14*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*380*	
% Ast, p	%	*1.9*	
p/fck		0.095	
d'/D z		0.105	
d'/D y		0.174	
Pu/fckbD		0.543	
Factor y		*0.09*	
Factor z		*0.1*	
Muy1	kNm	59.8	
Muz1	kNm	40.2	
Puz	kN	1409.33	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.67	
Alpha n		0	
		1.79	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.53	
		0.23	
		0.76	
		SAFE	
Ast	mm^2	1660.6	

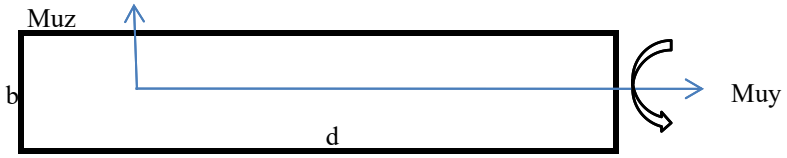
PROVIDE 8 NOS OF 16MM DIA BARS

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HOSTA (8-14)- COLUMN DESIGN

GRID C4 - C4 COLUMN

Input details		C4	



DESIGN OF R.C.C COLUMN (LIMIT STATE OF COLLAPSE)

TYPE		***C4***	
Load, Pu	kN	*1100*	
Muy	kNm	*49*	
Muz	kNm	*82*	
fck	N/mm^2	*20*	
fy	N/mm^2	*500*	
b	mm	*230*	
D	mm	*600*	
% Ast, p	%	*2.2*	
p/fck		0.110	
d'/D z		0.067	
d'/D y		0.174	
Pu/fckbD		0.399	
Factor y		*0.15*	
Factor z		*0.16*	
Muy1	kNm	248.4	
Muz1	kNm	101.6	
Puz	kN	2380.50	
= 0.45 fck Ac+ 0.75 fy Asc			
Pu/Puz		0.46	
Alpha n		0	
		1.44	1.39
Mux/Mux1 + Muy/Muy1 Should be < 1			
		0.10	
		0.74	
		0.85	
		SAFE	
Ast	mm^2	3036	

PROVIDE 10 NOS OF 20MM DIA BARS

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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID A3 - C2F2 FOOTING

Input details			F2	
Load, Pu		kN	*634*	950
Muy		kNm	*34*	
Muz		kNm	*9*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.38*	
Area reqd		m^2	1.74	1.319592113
L (Hori)		m	1.6	5.249344
B (Ver)		m	1.6	5.249344
Area provided			2.56	
Direct Pressure		kN/m^2	247.66	
Pmax xy		kN/m^2	310.64	
Pmin xy		kN/m^2	184.67	
			SAFE	
Depth of footing				
Moment Mu		kNm	57.8	
	or	kNm	72.9	
d reqd		mm	144.71	
	or	mm	162.50	
D provided		mm	*380*	
Therefore Eff d		mm	330	**SAFE**
Projection for BM		m	0.61	
		m	0.685	
Proj-one way SF		m	0.28	
Proj-Two way SF		m	0.71	
		m	0.56	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	143550
	c		57795415.04	72881090.09
Ast	X & Y	mm^2	415.707	528.90
Dia of rod	X & Y	mm	10	10
Sp reqd	X & Y	mm	188.83	148.42
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	628.00	628.0
% Ast			**0.19**	**0.19**
One way shear				
		Vu kN	69.3	
Tou v		N/mm^2	0.210	

Tc		N/mm^2	0.28		
Two way shear			*SAFE*		
Vu		kN	535.53		
Tou v		N/mm^2	0.64		
Bc			1.65		
ks			2.15	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*		HENCE SAFE
Results					
Size of footing	in m		1.6		1.6
Depth of footing	in mm		380		
Ast		10 Tor 125 C/C			
		10 Tor 125 C/C			
			4.92125		4.92125

SAI STRUCTURAL DESIGNS
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LPA/SE/GR-1/076/2024
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HOSTA - FOOTING DESIGN

FOOTING DESIGN

GRID C4 - C4F4 FOOTING

Input details			F6	
Load, Pu		kN	*734*	1100
Muy		kNm	*50*	
Muz		kNm	*20*	
fck		N/mm^2	*20*	
fy		N/mm^2	*500*	
SBC		kN/m^2	*267*	
Column size		Ver, b m	*0.23*	
		Hori, d m	*0.6*	
Area reqd		m^2	2.02	1.419852114
L (Hori)		m	2	6.56168
B (Ver)		m	2	6.56168
Area provided			4.00	
Direct Pressure		kN/m^2	183.50	
Pmax xy		kN/m^2	236.00	
Pmin xy		kN/m^2	131.00	
			SAFE	
Depth of footing				
Moment Mu		kNm	57.8	
	or	kNm	92.4	
d reqd		mm	144.74	
	or	mm	182.99	
D provided		mm	*450*	
Therefore Eff d		mm	400	**SAFE**
Projection for BM		m	0.7	
		m	0.885	
Proj-one way SF		m	0.3	
Proj-Two way SF		m	1	
		m	0.63	
Ast reqd				
Mu = 0.87 fy Ast d (1 - (fy Ast)/(fck b d))				
	a & b		10.8750	174000
	c		57820000	92420550
Ast	X & Y	mm^2	339.503	550.06
Dia of rod	X & Y	mm	12	12
Sp reqd	X & Y	mm	332.96	205.50
Sp prod	X & Y	mm	125	125
Ast prod	X & Y	mm^2	904.32	904.3
% Ast			**0.23**	**0.23**
One way shear				
		Vu kN	55.1	

Tou v		N/mm^2	0.138		
Tc		N/mm^2	0.36		
Two way shear			*SAFE*		
Vu		kN	618.40		
Tou v		N/mm^2	0.47		
Bc			2.61		
ks			3.11	1.0	
Tou c= ks x 0.25 x sqrt(fck)			1.12		
	N/mm^2		*SAFE*		HENCE SAFE
Results					
Size of footing	in m		2		2
Depth of footing	in mm		450		
Ast		12 Tor 125 C/C			
		12 Tor 125 C/C			
			4.92125		4.92125



SAI STRUCTURAL DESIGNS
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Coimbatore - 04

Beam Design - RB - 1

HOSTA VILLA (8-14)

Given Data

RB-01

Span :	**12** ft		**3.6576** m		
Size					
B:	**0.75** ft		**0.2286** m		
D:	**1** ft		**0.3048** m		
Slab RHS	**14.1** ft		**4.29768** m		
Slab LHS	**14.4** ft		**4.38912** m		
Wall Thickness	**0.75** ft		**0.2286** m		
Wall Hight	**10** ft		**3.048** m		
Unit wt of r.block	**20**		**20** N/mm^3		
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2	0.134	**20**	2.68	Ref Table Value
d	**275** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**7.25** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		182.4675 mm		

Load Caluction

Slab Load RHS		
	Lx/2 * Slab Load RHS	15.57909 kN/m2
Slab Load LHS		
	Lx/2 * Slab Load LHS	15.91056 kN/m2
secondary beam load		0 kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick		14 kN/m2
Self wt		
B*D* Unit wt of Concrete		1.741932 kN/m2
Total load		**47.23158** kN/m2
Factor Load	1.5* total load	**70.84737** kN/m2
Bending Moment	WL²/8	**89.22892** kN-m

Ast Calculation

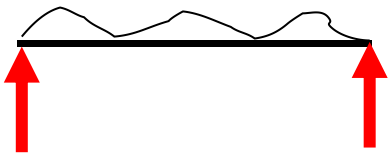
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	410453046.9	
1000 x fck x d ²	B	1512500000	
1-A/B	C	0.728626085	
√c	D	0.853595973	
1-D	E	0.146404027	
E x 1000 x .5 x fck x d / fy	F	**805.2221499** mm2	

SAI STRUCTURAL DESIGNS
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Coimbatore - 04

12 mm	113 mm2	7.125859734 Nos	
16mm	201 mm2	4.006080348 Nos	PROVIDED - 4NOS
20mm	314 mm2	2.564401751 Nos	
25mm	490.5 mm2	1.641635372 Nos	

Shear Reinforcement Design



V= WL/2 129.5657 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 1.280875 %

c_{ζ} From Code book **0.63** N/mm2 IS 456 Table 19 -Page 73

c_{ζ} V/bd 2.061014 N/mm2

Vs= V- $_{\zeta}$bd 89960.73

Sv 0.87 fy Asv d / Vs ***133.613*** mm

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Coimbatore - 04

Beam Design - RB - 4

HOSTA VILLA (8-14)

Given Data

RB-04

Span :	**12** ft		**3.6576** m		
Size					
B:	**0.75** ft		**0.2286** m		
D:	**2.25** ft		**0.6858** m		
Slab RHS	**14.75** ft		**4.4958** m		
Slab LHS	**0** ft		**0** m		
Wall Thickness	**0.75** ft		**0.2286** m		
Wall Hight	**10** ft		**3.048** m		
Unit wt of r.block	**20**		**20** N/mm^3		
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2	0.134	**20**	2.68	
d	**655** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**10** kN/m^2				
Slab Load LHS	**0** kN/m^2		375.8437 mm		

Load Caluction

Slab Load RHS		
Lx/2 * Slab Load RHS	22.479	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	0	kN/m2
secondary beam load	0	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	7	kN/m2
Self wt		
B*D* Unit wt of Concrete	3.919347	kN/m2
Total load	**33.39835**	kN/m2
Factor Load 1.5* total load	**50.09752**	kN/m2
Bending Moment WL²/2	**378.5728**	kN-m

Ast Calculation

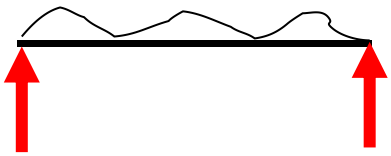
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	1741434783
1000 x fck x d ²	B	8580500000
1-A/B	C	0.7970474
√c	D	0.892775112
1-D	E	0.107224888
E x 1000 x .5 x fck x d / fy	F	**1404.646036** mm2

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LPA/SE/GR-1/076/2024
Coimbatore - 04

12 mm	113 mm2	12.43049589 Nos	
16mm	201 mm2	6.988288735 Nos	
20mm	314 mm2	4.473395018 Nos	PROVIDED - 5NOS
25mm	490.5 mm2	2.863702417 Nos	

Shear Reinforcement Design



	V= WL	183.2367 kN	
Type of Rod			
	Dia	8 mm	2 legged	50.24 mm2
Pt	Ast/ bd *100	0.938101 %	
c_c	From Code book	**0.54** N/mm2	
c_c	V/bd	1.223756 N/mm2	
Vs=	V- $c_c$bd	102380.9	
Sv	0.87 fy Asv d / Vs	***279.6349*** mm	

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Coimbatore - 04

Beam Design - RB - 2

HOSTA VILLA (8-14)

Given Data

RB-02

Span :		**14.7** ft		**4.48056** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**1.25** ft		**0.381** m	
Slab RHS		**16** ft		**4.8768** m	
Slab LHS		**12** ft		**3.6576** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**355** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**10.5** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		238.6696 mm		

Load Caluction

Slab Load RHS		
Lx/2 * Slab Load RHS	25.6032	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	13.2588	kN/m2
secondary beam load	0	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	14	kN/m2
Self wt		
B*D* Unit wt of Concrete	2.177415	kN/m2
Total load	**55.03942**	kN/m2
Factor Load 1.5* total load	**82.55912**	kN/m2
Bending Moment WL²/12	**152.6613**	kN-m

Ast Calculation

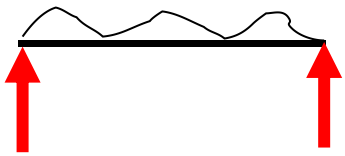
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	702241892.3
1000 x fck x d ²	B	2520500000
1-A/B	C	0.721387863
√c	D	0.84934555
1-D	E	0.15065445
E x 1000 x .5 x fck x d / fy	F	**1069.646598** mm2

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12 mm	113 mm2	9.465899097 Nos	
16mm	201 mm2	5.321624865 Nos	PROVIDED - 5 NOS
20mm	314 mm2	3.406517828 Nos	
25mm	490.5 mm2	2.180727009 Nos	

Shear Reinforcement Design



V= WL/2 184.9556 kN

Type of Rod

Dia 8 mm 2 legged 50.24 mm2

Pt Ast/ bd *100 1.318062 %

c_ζ From Code book **0.68** N/mm2

c_ζ V/bd 2.279097 N/mm2

Vs= V- $_\zeta$bd 129771.5

Sv 0.87 fy Asv d / Vs ***119.5688*** mm

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Beam Design - RB - 3

HOSTA VILLA (8-14)

Given Data

RB-03

Span :		**17.2** ft		**5.24256** m	
Size					
B:		**0.75** ft		**0.2286** m	
D:		**2** ft		**0.6096** m	
Slab RHS		**14.7** ft		**4.48056** m	
Slab LHS		**6.5** ft		**1.9812** m	
Wall Thickness		**0.75** ft		**0.2286** m	
Wall Hight		**10** ft		**3.048** m	
Unit wt of r.block		**20**		**20** N/mm^3	
Unit wt of Concrete	**25** N/mm^3				
Ru max	**2.68** N/mm^2		0.134	**20**	2.68
d	**575** mm				
fck	**20** N/mm^2	**Effect Depth Calculation**			
fy	**500** N/mm^2				
		d req	√(Mu/ Ru max x 1000)		
Slab Load RHS	**7.25** kN/m^2				
Slab Load LHS	**7.25** kN/m^2		386.4406 mm		

Load Caluction

Slab Load RHS		
Lx/2 * Slab Load RHS	16.24203	kN/m2
Slab Load LHS		
Lx/2 * Slab Load LHS	7.18185	kN/m2
secondary beam load	73	kN/m2
Wall Load		
W Tk * W Ht * Unit wt of Brick	7	kN/m2
Self wt		
B*D* Unit wt of Concrete	3.483864	kN/m2
Total load	**106.9077**	kN/m2
Factor Load 1.5* total load	**160.3616**	kN/m2
Bending Moment WL²/12	**400.2213**	kN-m

Ast Calculation

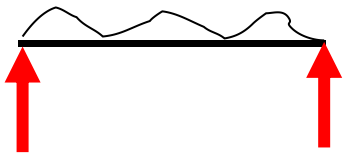
.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A	1841018163
1000 x fck x d ²	B	6612500000
1-A/B	C	0.721585155
√c	D	0.849461685
1-D	E	0.150538315
E x 1000 x .5 x fck x d / fy	F	**1731.190619** mm2

SAI STRUCTURAL DESIGNS
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12 mm	113 mm2	15.32027096 Nos	
16mm	201 mm2	8.61288865 Nos	
20mm	314 mm2	5.513345919 Nos	PROVIDED - 5 NOS
25mm	490.5 mm2	3.529440609 Nos	

Shear Reinforcement Design



V= WL/2 420.3527 kN

Type of Rod

Dia 10 mm 2 legged 78.5 mm2

Pt Ast/ bd *100 1.317046 %

c_ζ From Code book **0.7** N/mm2

c_ζ V/bd 3.197936 N/mm2

Vs= V- ζbd 328341.2

Sv 0.87 fy Asv d / Vs ***119.6001*** mm

SAI STRUCTURAL DESIGNS
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Design Of Two way Slab

HOSTA VILLA (8-14)

Given Data :
Type of Building :

Span :

Lx		15.3	ft	4.66344	m
Ly		15.75	ft	4.8006	m
Thickness of Slab:		8	inch	203.2	mm
Unit Wt of Concrete:		25	N/mm2		
Fy of Steel		500	N/mm2		
Toilet Sunken		0	inch	0	mm
Unit Wt of Brick		19.5	N/mm2		
fck		20	N/mm2		
Effect					
Lx	16.05 ft	4.89204	m		
Ly	16.5 ft	5.0292	m		
d		183.2	mm		
Live Load	2000 N/mm2				

Ly/Lx 1.029412
If Less than 2 Consider it should be a TWO - Way Slab.But some times consider One - Way slab

αx	***0.056***	From Code Book	IS456 -P91
αy	***0.056***	From Code Book	IS456 -P91

Load Calculation:

Live Load:	2000	N/m2
Unknown Partition	3200	N/m2
Floor Finishing	1000	N/m2
Self wt of Slab	5080	N/m2
Toilet	0	N/m2
Total Load	**11.28**	N/m2
Factor Load	**16.92**	N/m2

B.M.

Mx =	αx * w * Lx²	**22.6761011**	kN m
My =	αy * w * Lx²	**22.6761011**	kN m

Ast x

.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A		1.04E+08
1000 x fck x d ²	B		6.71E+08
1-A/B	C		0.844602
√c	D		0.919022
1-D	E		0.080978
E x 1000 x .5 x fck x d / fy		F	296.7022
		Ast	**296.7022**

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Ast Detail Lx Direction

8mm	50 mm2	168.5191604 mm	**6.634612615** inch	C/C
10mm	78 mm2	262.8898902 mm	**10.34999568** inch	C/C
12mm	113 mm2	380.8533025 mm	**14.99422451** inch	C/C

Ast y

.5 x fck /fy (1- (√1-(4.6 x Mu/1000 x fck x d ²))) x 1000 x d

4.5 x Mu x 10^6	A		1.04E+08
1000 x fck x d ²	B		6.71E+08
1-A/B	C		0.844602
√c	D		0.919022
1-D	E		0.080978
E x 1000 x .5 x fck x d / fy		F	296.7022
		Ast	**296.7022**

Ast Detail Ly Direction

8mm	50 mm2	168.5191604 mm	**6.634612615** inch C/C
10mm	78 mm2	262.8898902 mm	**10.34999568** inch C/C
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THE LANDLENS SUITE

Eight ways to know a piece of land before you pay for it.

This report covers one part of the picture. These cover the rest, drawn from the same government records, for any property in Tamil Nadu.

LandLens One
Ask anything about a property and get an answer grounded in live government records, with the sources shown.
/landlens/one

Verify My Land
Every record check run on one property and returned as a single report.
/landlens/verify-my-land

Legal Opinion
An advocate's written opinion on the title, built on the records we pull for it.
/landlens

One Map
Every layer on one map: the parcel, its boundary, zoning, water bodies and what sits around it.
/landlens/one/map

PriceMap
What land actually changed hands for around this plot, taken from the registered deeds.
/landlens/pricemap

Build Scope
What you are allowed to build here: floor space, height, coverage and setbacks.
/landlens/build-scope

Property Tracker
Watch a property and hear about it when something new is registered against it.
/landlens/property-tracker

Deal Room
Run the transaction in one place: documents, stamping, signatures and the parties.
/landlens/deal-room

FREE TOOLS · NO ACCOUNT NEEDED

Twenty-four checks you can run yourself, at no cost.

Records and verification

The registers themselves, read for you.

- Encumbrance Certificate
- Patta and Chitta
- Field Measurement Sketch
- EC Analyzer
- Bank charge check
- Court case search
- Seller background check
- Approval check by survey

Value and duty

What it is worth and what it costs to register.

- Guideline value by street
- Guideline value by survey
- Stamp duty and registration fees
- Capital gains
- Floor space index
- Area unit converter

Zoning and land use

What the plan says can happen on this land.

- Land use zone finder
- CMDA land use check
- Coastal regulation zone
- Master plan check
- Water bodies finder
- Airport height clearance

Registers and directories

Who holds it, and which office keeps the record.

- Find your registering office
- Temple property check
- Waqf property check
- RERA register

Every free tool
/tools

Services we run for you
/services

The LandLens suite
/landlens/one

Verified RealEstate™

Every claim in this document traces back to a government record.

- Legal opinions, due diligence and title verification
- Building plan, layout and sub-division approvals
- Completion and occupancy certificates, regularisation
- Escrow, negotiation and NRI property management
- Land survey, soil testing, architecture and construction

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Prepared from the registers named on the page each finding sits on. Where a register could not be read, this document says so in its place rather than leaving the gap to be read as a clean result.