STRUCTURAL DESIGN REPORT

for

PROPOSED 3B+G+16+R
KURDONIA TOWER
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DESIGN CRETERIA

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1 DESIGN PHILOSOPHY

The probabilistic approach for both structural properties and loading conditions i.e. limit states design philosophy has been used here. For checking the uplift, Allowable stress design method has been used.

For the design of concrete members BS 8110 has been used.

2 LOADING

Imposed floor and ceiling loads are as per BS6399:1996
The following loads assumed in the design:

LIVE LOADS:

Live Loads: (Typical Floors)	3.0 KN/m2
Parking for Cars & Driveways:	5.0 KN/m2
On Fill:	Height of fill x Soil Unit Wt. (KN/m2)

SUPER IMPOSED DEADLOADS:

Floor Finishes:	2.0 KN/m2
Partition Walls:	4.0 KN/m2

3 STRENGTH & DURABILITY REQUIREMENTS

Characteristic strength of Reinforcement	fy=414 N/mm²
Strength of concrete for substructure & super structure	fcu=35 N/mm²

Durability requirements

Water permeability to be 10mm, maximum as per DIN 1048 standard test.
Rapid chloride penetration (RCP) to be 1000 c maximum as per ASTM C 1202 test.
Water absorption of the concrete to be less than 1%.

4 MODULUS OF ELASTICITY OF CONCRETE

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The mean values for normal-weight concrete are derived from the following equation:

$E_{c,28} = K_0 + 0.2\ f_{cu,28}$

$E_{c,28}$ is the modules of elasticity at 28 days.

$F_{cu,28}$ is the characteristic cube strength at 28 days (in N/mm²)

K_0 is a constant closely related to the modules of elasticity of the aggregate (taken as 20 kN/mm² for normal weight concrete)

5. MASS SOURCE FOR DYNAMIC ANALYSIS

Each structural element has a material properly associated with it: one of the items specified in the material properties is a mass per unit volume. ETABS determines the building mass associated with the element mass by multiply the volume of each structural element times its specified mass per unit volume. Mass source is from self and specified mass and assumed as lumped at the story levels.

6 WIND LOADING

Analysis is carried out using ASCE-07-02. The wind speed is assumed as 100 mph. Ground roughness coefficient is adopted assuming as an open country with scattered wind breaks.

7 DRIFT LIMITATIONS

Top story drift of the building for wind load is restricted to H/500 for the preliminary analysis. The actual drift of the building is found to be much lesser than this limit.

8 EARTHQUAKE LOADING

To estimate the seismic loading two general approaches are used here.

1. Equivalent static lateral force procedure.
2. Elastic Dynamic analysis using the peak dynamic response. (Response spectrum analysis).

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9 STATIC FORCE PROCEDURE

The total design base shear in a given direction is calculated as per the formulas given in UBC 1997.

Horizontal loading equivalent to this shear is distributed in the same prescribed manner throughout the height of the building to allow a static analysis of the structure.

V = Cv I /RT x W (V= Base shear; W= weight (of Building))

Cv, Ca, Ct are the numerical coefficients given in UBC 1997. R= numerical coefficient representative of the inherent over strength and global ductility capacity of lateral force resisting system.

Basic Structural System is dual system comprising of concrete shear walls (Core walls) with concrete intermediate moment resisting frames. For this dual system R-value assumed in static analysis as 6.5 (table 16-N, UBC 1997).

Seismic Zone:

Zone II is considered for the seismic analysis of the structure, Z value adopted is 0.075.

Ct = 0.035
Ca = 0.09
Cv = 0.13

The above values of Ca and Cv are based on the assumption that the soil profile type is "Rock" with shear wave velocity Vs greater than 760 m/s (i.e. SB as per UBC 1997 soil profile type).

10 DYNAMIC ANALYSIS

The design response spectra provided by UBC 1997 has been used to represent the dynamic effects of the design basis ground motion.

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This design spectrum is defined in the ETABS input along with the damping ratio assumed as 5%. Six modes of vibration are considered. So as to achieve at least 90% of the participating mass of the structure is included in the calculation of response.

Drift Limitations:

The drift corresponding to the design seismic forces corresponding to equivalent lateral force procedure Δs is given by 3D ETABS model analysis.

To determine (the maximum inelastic response displacement) the drift is amplified as per UBC 1997 as follow:

$\Delta_m = 0.7 \times R.\Delta s$

The story drift calculated will be checked so as to exceed 0.025 times story height.

11 COMBINATION OF LOADING

COMBINING FACTORED LOADS USING STRENGTH DESIGN (UBC 1997)

. 1.4D
1.2D + 1.6L +1.6H
1.2D + 1.0L
1.2D ± 0.8W
1.2D ± 1.6W + 1.0L
1.2D ± 1.0E + 1.0L
0.9D ± (1.6W) +1.6H
0.9D ± (1.0E) +1.6H

COMBINING FACTORED LOADS USING ALLOWABLE STRESS DESIGN (UBC 1997)

1.0D + 1.0H
1.0D + 1.0L + 1.0H
1.0D ± 1.0W + 1.0H
1.0D ± 0.75W + 0.75L + 1.0H
1.0D + 0.75L ± 0.75L + 1.0H
1.0D + 0.714E + 1.0H
0.9D + 0.714E + 1.0H

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12 FLOOR SYSTEM

Two Way Flat Plate System

The thickness of solid two ways reinforced slab supported directly by columns or individual walls is proposed. The transverse bending stiffness of the slab is also modeled as a part of the lateral load resisting system. As per ACI the total thickness of two ways slab is given by L/33. And the moment of Inertia I_g is modified to 0.25 I_g in the 3D ETABS Model as required by UBC 1997.

13 ANALYSIS & DESIGN OF FLOOR SLABS

Floor Slabs are analyzed and designed using finite element program SAFE-8 developed by University of Berkeley – California.

SAFE-8 is capable of performing cracked section analysis Combining the results of gravity load analysis with the results of lateral load analysis will be done in final analysis.

Edges of the opening in the flat slabs are stiffened by inverted R.C.C. up-stands to reduce the concentration of stress.

Long term deflections due to creep is also considered in the SAFE-8 Analysis for slabs.

14 LATERAL SYSTEM

Dual system is adopted as the lateral load resisting system. Dual system is consisting of the Central R.C.C Core around the lift and staircases and the moment resisting frames along the periphery of the building and as well as interior.

As mentioned earlier, the transfer bending stiffness of the slab is also considered to reduce the lateral sway of the building.

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In finding the lateral sway, the moment of inertia of the members is reduced as mentioned in UBC 1997 for the present cracked regions, as follows:

Moment of Inertia of Beams	-	0.35 Ig
Moment of Inertia of Columns	-	0.70 Ig
Walls cracked	-	0.35 Ig
Walls Un-cracked	-	0.70 Ig
Flat plates & Flat slabs	-	0.25 Ig

15 ETABS 3-D MODELLING

Material Properties: -

The material properties in ETABS are always linear elastic.
In ETABS material can be specified as isotropic or orthotropic.

For isotropic materials, we need to define one value for the modulus of elasticity, Poisson ratio and coefficient of thermal expansion.

Frame sections

ETABS section designer utility is used to graphically define unusual sections. ETABS then calculates the section properties for that section.

Defining a frame section makes the section available for assignment to select the frame elements.

Frame property modifier assignments

Modification factors are defined as part of the frame section properties and assigned directly to line objects. The definition of modification factors as part of frame section properties allows application of modification factors on the basis of section type. The line objects assignments allow application modification factors on a line object – by line object basis.

The modification factors affect only the analysis properties. They don't affect the design properties.

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Wall / Slabs section

Two thicknesses are specified: membrane and bending. Typically these thicknesses are same but they can be different. For instance they may be different if it is to model full shell behavior for a corrugated metal deck. The membrane thickness is used for calculating the following.

The membrane stiffness for full shell and pure membrane sections.

The element volume for element self-masses and self-weights calculations.
The bending thickness has been used for calculating the plate bending and transverse-shearing stiffness for full shell and pure plate sections.

A wall or slab section can have shell, membrane or plate type behavior.

- Shell type behavior means that both in-plane membrane stiffness and out of plane bending stiffness is provided for the sections.
- Membrane type behavior means that only in-plane membrane stiffness is provided for the section.
- Plate type behavior means that only out of plane plate bending stiffness is provided for the section.

For our analysis we have specified shell type of behavior for the analysis.

We have an option of including or not including thick plate behavior when a section has plate type or shell-type. Thick plate behavior is included for Rafts where out of plane shearing deformations are considered in analysis. For other typical slab where thick plate behavior is not included, their shearing deformations are not considered in the analysis.

Response spectrum functions

Response spectrum function is a list of period versus spectral acceleration values. In ETABS the acceleration values in the

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function are assumed to be normalized; that is, the functions themselves are not assumed to have a scale factor that multiplies the function.

The 1997 UBC response spectrum function is constructed as shown in chapter 16.

The parameters we need to enter are seismic coefficients Ca and Cv from tables 16-Q and 16-R in 1997 UBC.

Structural and function Damping

This specifies model damping that is present for all models in the response spectrum analysis. Also, ETABS assumes that the response spectrum functions specified for the response spectrum case are all specified for this particular damping ratio.

We have specified 5% damping for the model.

Dynamic Analysis

The following items describe data required to be input in the ETABS:

1. Number of modes.
2. Type of analysis: - Eigen Vector or Ritz-Vector.

It is strongly recommended to us Ritz-vector for response spectrum analysis.

Research has indicated that the natural free-vibration mode shapes area not the best basis for a mode-superposition analysis of structures subjected dynamic loads.

It has been demonstrated that dynamic analysis based on load-dependent. Ritz vectors yield excellent result because taking into account the special distribution of the dynamic loading generates them, whereas the direct use of the natural mode shapes neglects this very important information.

P – Delta Analysis

ETABS considers the P-delta effect of a single loaded state upon the structure. The load is computed from a specified combination of static load cases. This method considers the P-delta effect on

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an element by element basis. It captures local bucking effects better than non-iterative method.

Maximum Iterations specified are 3.

15 FOUNDATION:

The foundation for structure is raft or mat foundation. The raft is modeled in SAFE-8 imported from ETABS model based on the soil report by Khak Engineering Consulting Bureau dated September,2012 as per the table below.

TYPE & DEPTH OF FOUNDATION	Allowable Bearing Capacity			Modulus of Sub-grade Reaction
	KN/m2	ton/m2	ksf	KN/m3
Using Rigid Mat Foundation at an Elevation of -12.0 or lower	340	34	7.1	40800

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ETABS INPUT & OUTPUT DATA

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ETABS v9.5.0 File:ETABS MODEL Units:KN-m June 3, 2015 16:40 PAGE 1

S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
LEVEL 67.70	None	7.900	80.700
TORD	None	3.800	72.800
RD	None	3.800	69.000
13F	None	3.800	65.200
12F	None	3.800	61.400
11F	None	3.800	57.600
10F	None	3.800	53.800
9F	None	3.800	50.000
8F	None	3.800	46.200
7F	None	3.800	42.400
6F	None	3.800	38.600
5F	None	3.800	34.800
4F	None	3.800	31.000
3F	None	4.500	27.200
2F	None	6.300	22.700
1F	None	6.400	16.400
GF	None	3.750	10.000
1B	None	3.250	6.250
2B	None	3.000	3.000
BASE	None		0.000

ETABS v9.5.0 File:ETABS MODEL Units:KN-m June 3, 2015 16:40 PAGE 2

M A T E R I A L P R O P E R T Y D A T A

MATERIAL NAME	MATERIAL TYPE	DESIGN TYPE	MATERIAL DIR/PLANE	MODULUS OF ELASTICITY	POISSON'S RATIO	THERMAL COEFF	SHEAR MODULUS
STEEL	Iso	Steel	All	199948000.00	0.3000	1.1700E-05	76903076.92
CONC	Iso	Concrete	All	24821130.000	0.2000	9.9000E-06	10342137.500
OTHER	Iso	None	All	199948000.00	0.3000	1.1700E-05	76903076.92

M A T E R I A L P R O P E R T Y M A S S A N D W E I G H T

MATERIAL NAME	MASS PER UNIT VOL	WEIGHT PER UNIT VOL
STEEL	7.8271E+00	7.6820E+01
CONC	2.4007E+00	2.3562E+01
OTHER	7.8271E+00	7.6820E+01

M A T E R I A L D E S I G N D A T A F O R S T E E L M A T E R I A L S

MATERIAL NAME	STEEL FY	STEEL FU	STEEL COST ($)
STEEL	344737.900	448159.300	271447.20

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M A T E R I A L D E S I G N D A T A F O R C O N C R E T E M A T E R I A L S

MATERIAL NAME	LIGHTWEIGHT CONCRETE	CONCRETE FC	REBAR FY	REBAR FYS	LIGHTWT REDUC FACT
CONC	No	35000.000	414000.000	414000.000	N/A

ETABS v9.5.0 File:ETABS MODEL Units:KN-m June 3, 2015 16:40 PAGE 3

F R A M E S E C T I O N P R O P E R T Y D A T A

FRAME SECTION NAME	MATERIAL NAME	SECTION SHAPE NAME OR NAME IN SECTION DATABASE FILE	CONC COL	CONC BEAM
C60X60	CONC	Rectangular	Yes	
C70X70	CONC	Rectangular	Yes	
D100	CONC	Circle	Yes	
B25X50	CONC	Rectangular		Yes
BL30X80	CONC	Rectangular		Yes
B35X60	CONC	Rectangular		Yes
B40X50	CONC	Rectangular		Yes
B30X70	CONC	Rectangular		Yes
B100X50	STEEL	Rectangular		
PIPE	STEEL	Pipe		
C95X70	CONC	Rectangular	Yes	
C100X70	CONC	Rectangular	Yes	
C80X80	CONC	Rectangular	Yes	
C90X90	CONC	Rectangular	Yes	
C100X100	CONC	Rectangular	Yes	
D120	CONC	Circle	Yes	
C150X150	CONC	Circle	Yes	
D180	CONC	Circle	Yes	
C40X120	CONC	Rectangular	Yes	
D130	CONC	Circle	Yes	
D140	CONC	Circle	Yes	
D150	CONC	Circle	Yes	
D160	CONC	Circle	Yes	

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D170	CONC	Circle	Yes
C120X70	CONC	Rectangular	Yes
C120X95	CONC	Rectangular	Yes

F R A M E S E C T I O N P R O P E R T Y D A T A

FRAME SECTION NAME	SECTION DEPTH	FLANGE WIDTH TOP	FLANGE THICK TOP	WEB THICK	FLANGE WIDTH BOT	FLANGE THICK BOT
C60X60	0.6000	0.6000	0.0000	0.0000	0.6000	0.0000
C70X70	0.7000	0.7000	0.0000	0.0000	0.7000	0.0000
D100	1.0000	1.0000	0.0000	0.0000	1.0000	0.0000
B25X50	0.5000	0.2500	0.0000	0.0000	0.2500	0.0000
BL30X80	0.8000	0.3000	0.0000	0.0000	0.3000	0.0000
B35X60	0.6000	0.3500	0.0000	0.0000	0.3500	0.0000
B40X50	0.5000	0.4000	0.0000	0.0000	0.4000	0.0000
B30X70	0.7000	0.3000	0.0000	0.0000	0.3000	0.0000
B100X50	0.5000	1.0000	0.0000	0.0000	1.0000	0.0000
PIPE	0.6000	0.6000	0.0120	0.0120	0.6000	0.0000
C95X70	0.9500	0.7000	0.0000	0.0000	0.7000	0.0000
C100X70	1.0000	0.7000	0.0000	0.0000	0.7000	0.0000
C80X80	0.8000	0.8000	0.0000	0.0000	0.8000	0.0000
C90X90	0.9000	0.9000	0.0000	0.0000	0.9000	0.0000
C100X100	1.0000	1.0000	0.0000	0.0000	1.0000	0.0000
D120	1.2000	1.2000	0.0000	0.0000	1.2000	0.0000
C150X150	1.5000	1.5000	0.0000	0.0000	1.5000	0.0000
D180	1.8000	1.8000	0.0000	0.0000	1.8000	0.0000
C40X120	1.2000	0.4000	0.0000	0.0000	0.4000	0.0000
D130	1.3000	1.3000	0.0000	0.0000	1.3000	0.0000
D140	1.4000	1.4000	0.0000	0.0000	1.4000	0.0000
D150	1.5000	1.5000	0.0000	0.0000	1.5000	0.0000
D160	1.6000	1.6000	0.0000	0.0000	1.6000	0.0000
D170	1.7000	1.7000	0.0000	0.0000	1.7000	0.0000

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C120X70                                  1.2000      0.7000      0.0000      0.0000
  0.7000      0.0000
C120X95                                  1.2000      0.9500      0.0000      0.0000
  0.9500      0.0000


F R A M E   S E C T I O N   P R O P E R T Y   D A T A

                                        SECTION   TORSIONAL      MOMENTS OF INERTIA
         SHEAR AREAS
FRAME SECTION NAME                        AREA    CONSTANT          I33         I22
      A2          A3

C60X60                                   0.3600      0.0183      0.0108      0.0108
  0.3000      0.3000
C70X70                                   0.4900      0.0338      0.0200      0.0200
  0.4083      0.4083
D100                                     0.7854      0.0982      0.0491      0.0491
  0.7069      0.7069
B25X50                                   0.1250      0.0018      0.0026      0.0007
  0.1042      0.1042
BL30X80                                  0.2400      0.0055      0.0128      0.0018
  0.2000      0.2000
B35X60                                   0.2100      0.0055      0.0063      0.0021
  0.1750      0.1750
B40X50                                   0.2000      0.0055      0.0042      0.0027
  0.1667      0.1667
B30X70                                   0.2100      0.0046      0.0086      0.0016
  0.1750      0.1750
B100X50                                  0.5000      0.0286      0.0104      0.0417
  0.4167      0.4167
PIPE                                     0.0222      0.0019      0.0010      0.0010
  0.0114      0.0114
C95X70                                   0.6650      0.0594      0.0500      0.0272
  0.5542      0.5542
C100X70                                  0.7000      0.0649      0.0583      0.0286
  0.5833      0.5833
C80X80                                   0.6400      0.0577      0.0341      0.0341
  0.5333      0.5333
C90X90                                   0.8100      0.0924      0.0547      0.0547
  0.6750      0.6750
C100X100                                 1.0000      0.1408      0.0833      0.0833
  0.8333      0.8333
D120                                     1.1310      0.2036      0.1018      0.1018
  1.0179      1.0179
C150X150                                 1.7671      0.4970      0.2485      0.2485
  1.5904      1.5904
D180                                     2.5447      1.0306      0.5153      0.5153
  2.2902      2.2902
C40X120                                  0.4800      0.0202      0.0576      0.0064
  0.4000      0.4000
D130                                     1.3273      0.2804      0.1402      0.1402
  1.1946      1.1946
D140                                     1.5394      0.3771      0.1886      0.1886
  1.3854      1.3854
D150                                     1.7671      0.4970      0.2485      0.2485
  1.5904      1.5904
D160                                     2.0106      0.6434      0.3217      0.3217
  1.8096      1.8096
D170                                     2.2698      0.8200      0.4100      0.4100
  2.0428      2.0428
C120X70                                  0.8400      0.0873      0.1008      0.0343
  0.7000      0.7000
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C120X95                                 1.1400      0.1775      0.1368      0.0857
  0.9500      0.9500


F R A M E   S E C T I O N   P R O P E R T Y   D A T A

                                                SECTION MODULI          PLASTIC MODULI
  RADIUS OF GYRATION
FRAME SECTION NAME                            S33         S22         Z33         Z22
     R33         R22

C60X60                                  0.0360      0.0360      0.0540      0.0540
  0.1732      0.1732
C70X70                                  0.0572      0.0572      0.0858      0.0858
  0.2021      0.2021
D100                                    0.0982      0.0982      0.1667      0.1667
  0.2500      0.2500
B25X50                                  0.0104      0.0052      0.0156      0.0078
  0.1443      0.0722
BL30X80                                 0.0320      0.0120      0.0480      0.0180
  0.2309      0.0866
B35X60                                  0.0210      0.0123      0.0315      0.0184
  0.1732      0.1010
B40X50                                  0.0167      0.0133      0.0250      0.0200
  0.1443      0.1155
B30X70                                  0.0245      0.0105      0.0368      0.0158
  0.2021      0.0866
B100X50                                 0.0417      0.0833      0.0625      0.1250
  0.1443      0.2887
PIPE                                    0.0032      0.0032      0.0041      0.0041
  0.2079      0.2079
C95X70                                  0.1053      0.0776      0.1579      0.1164
  0.2742      0.2021
C100X70                                 0.1167      0.0817      0.1750      0.1225
  0.2887      0.2021
C80X80                                  0.0853      0.0853      0.1280      0.1280
  0.2309      0.2309
C90X90                                  0.1215      0.1215      0.1823      0.1823
  0.2598      0.2598
C100X100                                0.1667      0.1667      0.2500      0.2500
  0.2887      0.2887
D120                                    0.1696      0.1696      0.2880      0.2880
  0.3000      0.3000
C150X150                                0.3313      0.3313      0.5625      0.5625
  0.3750      0.3750
D180                                    0.5726      0.5726      0.9720      0.9720
  0.4500      0.4500
C40X120                                 0.0960      0.0320      0.1440      0.0480
  0.3464      0.1155
D130                                    0.2157      0.2157      0.3662      0.3662
  0.3250      0.3250
D140                                    0.2694      0.2694      0.4573      0.4573
  0.3500      0.3500
D150                                    0.3313      0.3313      0.5625      0.5625
  0.3750      0.3750
D160                                    0.4021      0.4021      0.6827      0.6827
  0.4000      0.4000
D170                                    0.4823      0.4823      0.8188      0.8188
  0.4250      0.4250
C120X70                                 0.1680      0.0980      0.2520      0.1470
  0.3464      0.2021
C120X95                                 0.2280      0.1805      0.3420      0.2708
  0.3464      0.2742
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F R A M E S E C T I O N W E I G H T S A N D M A S S E S

FRAME SECTION NAME	TOTAL WEIGHT	TOTAL MASS
C60X60	4073.1409	415.0138
C70X70	2946.3310	300.2027
D100	3273.5765	333.5459
B25X50	325.9004	33.2061
BL30X80	284.0480	28.9418
B35X60	1002.7076	102.1662
B40X50	6109.9655	622.5466
B30X70	1284.3011	130.8579
B100X50	1096.4859	111.7203
PIPE	139.4646	14.2100
C95X70	0.0000	0.0000
C100X70	6003.4957	611.6984
C80X80	0.0000	0.0000
C90X90	0.0000	0.0000
C100X100	0.0000	0.0000
D120	1906.6316	194.2674
C150X150	0.0000	0.0000
D180	0.0000	0.0000
C40X120	1311.9099	133.6710
D130	602.0216	61.3402
D140	0.0000	0.0000
D150	1890.3100	192.6044
D160	0.0000	0.0000
D170	0.0000	0.0000
C120X70	1288.4425	131.2799
C120X95	2438.9083	248.5013

C O N C R E T E C O L U M N D A T A

FRAME SECTION NAME	REINF CONFIGURATION LONGIT	LATERAL	REINF SIZE/TYPE	NUM BARS 3DIR/2DIR	NUM BARS CIRCULAR	BAR COVER
C60X60	Rectangular	Ties	20d/Check	6/6	N/A	0.0457
C70X70	Rectangular	Ties	20d/Check	6/6	N/A	0.0457
D100	Circular	Ties	20d/Check	N/A	25	0.0305
C95X70	Rectangular	Ties	20d/Check	6/8	N/A	0.0457
C100X70	Rectangular	Ties	25d/Check	7/9	N/A	0.0457
C80X80	Rectangular	Ties	20d/Check	7/7	N/A	0.0457
C90X90	Rectangular	Ties	20d/Check	10/10	N/A	0.0457
C100X100	Rectangular	Ties	20d/Check	12/12	N/A	0.0457
D120	Circular	Ties	20d/Check	N/A	34	0.0305
C150X150	Circular	Ties	20d/Check	N/A	40	0.0305

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D180	Circular	Ties	20d/Check	N/A	44	0.0305
C40X120	Rectangular	Ties	20d/Check	4/10	N/A	0.0457
D130	Circular	Ties	20d/Check	N/A	46	0.0400
D140	Circular	Ties	20d/Check	N/A	50	0.0305
D150	Circular	Ties	20d/Check	N/A	58	0.0400
D160	Circular	Ties	20d/Check	N/A	60	0.0400
D170	Circular	Ties	20d/Check	N/A	74	0.0400
C120X70	Rectangular	Ties	25d/Check	7/12	N/A	0.0400
C120X95	Rectangular	Ties	25d/Check	10/12	N/A	0.0457

C O N C R E T E B E A M D A T A

FRAME SECTION NAME	TOP COVER	BOT COVER	TOP LEFT AREA	TOP RIGHT AREA	BOT LEFT AREA	BOT RIGHT AREA
B25X50	0.0600	0.0600	0.000	0.000	0.000	0.000
BL30X80	0.0800	0.0800	0.000	0.000	0.000	0.000
B35X60	0.0600	0.0600	0.000	0.000	0.000	0.000
B40X50	0.0500	0.0500	0.000	0.000	0.000	0.000
B30X70	0.0700	0.0700	0.000	0.000	0.000	0.000

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	AUTO LAT LOAD	SELF WT MULTIPLIER	NOTIONAL FACTOR	NOTIONAL DIRECTION
DEAD	DEAD	N/A	1.0000		
LIVE	LIVE	N/A	0.0000		
SDL	SUPER DEAD	N/A	0.0000		
WX	WIND	ASCE7-05	0.0000		
WY	WIND	ASCE7-05	0.0000		
EQX	QUAKE	UBC97	0.0000		
EQY	QUAKE	UBC97	0.0000		

L O A D I N G C O M B I N A T I O N S

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
SERVICE	ADD	DEAD	Static	1.0000
		LIVE	Static	1.0000

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		SDL	Static	1.0000
SC1	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
SC2ULT	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	1.6000
SC3XP	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		WX	Static	0.8000
SC3YP	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		WY	Static	0.8000
SC3XN	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		WX	Static	-0.8000
SC3YN	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		WY	Static	-0.8000
SC4XP	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		WX	Static	1.6000
SC4YP	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		WY	Static	1.6000
SC4XN	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		WX	Static	-1.6000
SC4YN	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		WY	Static	-1.6000
SC5XP	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		EQX	Static	1.0000
SC5YP	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		EQY	Static	1.0000
SC5XN	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		EQX	Static	-1.0000
SC5YN	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	0.5000
		EQY	Static	-1.0000
SC6XP	ADD	DEAD	Static	0.9000
		SDL	Static	0.9000
		WX	Static	1.6000
SC6YP	ADD	DEAD	Static	0.9000
		SDL	Static	0.9000
		WY	Static	1.6000
SC6XN	ADD	DEAD	Static	0.9000
		SDL	Static	0.9000
		WX	Static	-1.6000
SC6YN	ADD	DEAD	Static	0.9000
		SDL	Static	0.9000
		WY	Static	-1.6000
SC7XP	ADD	DEAD	Static	0.9000

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```
                        SDL         Static            0.9000
                        EQX         Static            1.0000
SC7YP       ADD         DEAD        Static            0.9000
                        SDL         Static            0.9000
                        EQY         Static            1.0000
SC7XN       ADD         DEAD        Static            0.9000
                        EQX         Static           -1.0000
SC7YN       ADD         DEAD        Static            0.9000
                        EQY         Static           -1.0000
```

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A U T O S E I S M I C U B C 9 7
Case: EQX

AUTO SEISMIC INPUT DATA

Direction: X + EccY
Typical Eccentricity = 5%
Eccentricity Overrides: No

Period Calculation: Program Calculated
Ct = 0.035 (in feet units)

Top Story: TORD
Bottom Story: BASE

R = 5.5
I = 1
hn = 72.800 (Building Height)

Soil Profile Type = SC
Z = 0.075
Ca = 0.0900
Cv = 0.1300

AUTO SEISMIC CALCULATION FORMULAS

Ta = Ct (hn^(3/4))

If Z >= 0.35 (Zone 4) then: If Tetabs <= 1.30 Ta then T = Tetabs, else T = 1.30 Ta
If Z < 0.35 (Zone 1, 2 or 3) then: If Tetabs <= 1.40 Ta then T = Tetabs, else T = 1.40 Ta

V = (Cv I W) / (R T) (Eqn. 1)
V <= 2.5 Ca I W / R (Eqn. 2)
V >= 0.11 Ca I W (Eqn. 3)

If T <= 0.7 sec, then Ft = 0
If T > 0.7 sec, then Ft = 0.07 T V <= 0.25 V

AUTO SEISMIC CALCULATION RESULTS

Ta = 2.1265 sec
T Used = 2.9770 sec
W Used = 353880.28

V (Eqn 1) = 0.0079W

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```
   V (Eqn 2) = 0.0409W
   V (Eqn 3) = 0.0099W
   V (Eqn 4) = 0.0175W

   V Used = 0.0099W = 3503.41

   Ft Used = 730.08


 AUTO SEISMIC STORY FORCES

   STORY                 FX          FY          FZ          MX          MY
MZ

   LEVEL 67.70 (Forces reported at X = 0.0000, Y = 0.0000, Z = 80.7000)
                       0.00        0.00        0.00       0.000       0.000
0.000

   TORD        (Forces reported at X = 0.0000, Y = 0.0000, Z = 72.8000)
                     932.84        0.00        0.00       0.000       0.000
-13847.386

   RD          (Forces reported at X = 0.0000, Y = 0.0000, Z = 69.0000)
                     231.88        0.00        0.00       0.000       0.000
-2970.523

   13F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 65.2000)
                     213.86        0.00        0.00       0.000       0.000
-2694.529

   12F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 61.4000)
                     214.65        0.00        0.00       0.000       0.000
-2585.925

   11F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 57.6000)
                     201.36        0.00        0.00       0.000       0.000
-2425.884

   10F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 53.8000)
                     188.08        0.00        0.00       0.000       0.000
-2265.843

   9F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 50.0000)
                     174.79        0.00        0.00       0.000       0.000
-2105.802

   8F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 46.2000)
                     161.51        0.00        0.00       0.000       0.000
-1945.761

   7F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 42.4000)
                     148.36        0.00        0.00       0.000       0.000
-1788.116

   6F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 38.6000)
                     135.26        0.00        0.00       0.000       0.000
-1631.447

   5F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 34.8000)
                     121.94        0.00        0.00       0.000       0.000
-1470.838

   4F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 31.0000)
```


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```
                    108.59        0.00        0.00       0.000       0.000
-1310.195

   3F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 27.2000)
                    150.64        0.00        0.00       0.000       0.000
-2118.060

   2F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 22.7000)
                    185.56        0.00        0.00       0.000       0.000
-2791.636

   1F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 16.4000)
                    138.29        0.00        0.00       0.000       0.000
-1966.423

   GF          (Forces reported at X = 0.0000, Y = 0.0000, Z = 10.0000)
                     99.68        0.00        0.00       0.000       0.000
-1463.225

   1B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 6.2500)
                     65.86        0.00        0.00       0.000       0.000
-943.685

   2B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 3.0000)
                     30.28        0.00        0.00       0.000       0.000
-431.077


 AUTO SEISMIC DIAPHRAGM FORCES

   STORY       DIAPHRAGM             FX          FY          FZ          MX
MY          MZ

   LEVEL 67.70 D1          (Forces reported at X = 58.7062, Y = 8.4228, Z = 80.7000)
                                 0.00        0.00        0.00       0.000
0.000       0.000

   TORD        D1          (Forces reported at X = 59.9668, Y = 14.0024, Z =
72.8000)
                               896.38        0.00        0.00       0.000
0.000   -1046.716

   RD          D1          (Forces reported at X = 60.8297, Y = 11.4684, Z =
69.0000)
                               229.18        0.00        0.00       0.000
0.000    -306.910

   13F         D1          (Forces reported at X = 60.9213, Y = 11.1908, Z =
65.2000)
                               211.31        0.00        0.00       0.000
0.000    -296.408

   12F         D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
61.4000)
                               212.24        0.00        0.00       0.000
0.000    -299.900

   11F         D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
57.6000)
                               199.11        0.00        0.00       0.000
0.000    -281.340
```


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```
   10F          D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
53.8000)
                                 185.97        0.00        0.00       0.000
0.000    -262.779

   9F           D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
50.0000)
                                 172.84        0.00        0.00       0.000
0.000    -244.218

   8F           D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
46.2000)
                                 159.70        0.00        0.00       0.000
0.000    -225.658

   7F           D1          (Forces reported at X = 60.8734, Y = 10.6283, Z =
42.4000)
                                 146.70        0.00        0.00       0.000
0.000    -207.283

   6F           D1          (Forces reported at X = 60.9155, Y = 10.6371, Z =
38.6000)
                                 133.75        0.00        0.00       0.000
0.000    -188.989

   5F           D1          (Forces reported at X = 60.9155, Y = 10.6371, Z =
34.8000)
                                 120.58        0.00        0.00       0.000
0.000    -170.384

   4F           D1          (Forces reported at X = 60.9054, Y = 10.6411, Z =
31.0000)
                                 107.38        0.00        0.00       0.000
0.000    -151.724

   3F           D1          (Forces reported at X = 46.0688, Y = 12.3306, Z =
27.2000)
                                 149.13        0.00        0.00       0.000
0.000    -253.823

   2F           D1          (Forces reported at X = 45.4053, Y = 13.2236, Z =
22.7000)
                                 184.29        0.00        0.00       0.000
0.000    -338.088

   1F           D1          (Forces reported at X = 46.9913, Y = 12.3353, Z =
16.4000)
                                 136.68        0.00        0.00       0.000
0.000    -250.747

   GF           D1          (Forces reported at X = 49.3450, Y = 12.8151, Z =
10.0000)
                                  97.98        0.00        0.00       0.000
0.000    -176.798

   1B           D1          (Forces reported at X = 48.8066, Y = 12.4111, Z = 6.2500)
                                  65.07        0.00        0.00       0.000
0.000    -121.287

   2B           D1          (Forces reported at X = 48.8102, Y = 12.3361, Z = 3.0000)
                                  30.02        0.00        0.00       0.000
0.000     -55.965
```


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AUTO SEISMIC POINT FORCES

```
   STORY       POINT                  FX          FY          FZ          MX
MY          MZ

   TORD        934         (Point and forces located at X = 31.9000, Y = 0.1325, Z =
72.8000)
                                   0.88        0.00        0.00       0.000
0.000       0.000

   TORD        940         (Point and forces located at X = 39.8250, Y = 0.1325, Z =
72.8000)
                                   0.88        0.00        0.00       0.000
0.000       0.000

   TORD        950         (Point and forces located at X = 48.0000, Y = 0.1325, Z =
72.8000)
                                   0.88        0.00        0.00       0.000
0.000       0.000

   TORD        1039        (Point and forces located at X = 56.3850, Y = 0.4600, Z =
72.8000)
                                   0.88        0.00        0.00       0.000
0.000       0.000

   TORD        1047        (Point and forces located at X = 64.7000, Y = 0.5220, Z =
72.8000)
                                   0.88        0.00        0.00       0.000
0.000       0.000

   TORD        1004        (Point and forces located at X = 72.7000, Y = 0.2360, Z =
72.8000)
                                   0.88        0.00        0.00       0.000
0.000       0.000

   TORD        1005        (Point and forces located at X = 80.6957, Y = 0.2363, Z =
72.8000)
                                   0.88        0.00        0.00       0.000
0.000       0.000

   TORD        2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 72.8000)
                                   2.61        0.00        0.00       0.000
0.000       0.000

   TORD        2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 72.8000)
                                   4.50        0.00        0.00       0.000
0.000       0.000

   TORD        2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 72.8000)
                                   4.94        0.00        0.00       0.000
0.000       0.000

   TORD        2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 72.8000)
                                   2.26        0.00        0.00       0.000
0.000       0.000

   TORD        2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
```


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```
72.8000)
                                3.60        0.00        0.00       0.000
0.000       0.000

   TORD        1210        (Point and forces located at X = 89.0000, Y = 1.5219, Z =
72.8000)
                                3.14        0.00        0.00       0.000
0.000       0.000

   TORD        1012        (Point and forces located at X = 89.0000, Y = 0.2360, Z =
72.8000)
                                3.75        0.00        0.00       0.000
0.000       0.000

   TORD        917         (Point and forces located at X = 89.0000, Y = -0.0152, Z
= 72.8000)
                                3.05        0.00        0.00       0.000
0.000       0.000

   TORD        719         (Point and forces located at X = 89.0000, Y = -1.0140, Z
= 72.8000)
                                2.44        0.00        0.00       0.000
0.000       0.000

   RD          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 69.0000)
                                0.35        0.00        0.00       0.000
0.000       0.000

   RD          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 69.0000)
                                0.60        0.00        0.00       0.000
0.000       0.000

   RD          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 69.0000)
                                0.66        0.00        0.00       0.000
0.000       0.000

   RD          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 69.0000)
                                0.30        0.00        0.00       0.000
0.000       0.000

   RD          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
69.0000)
                                0.48        0.00        0.00       0.000
0.000       0.000

   RD          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
69.0000)
                                0.31        0.00        0.00       0.000
0.000       0.000

   13F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 65.2000)
                                0.33        0.00        0.00       0.000
0.000       0.000

   13F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 65.2000)
                                0.57        0.00        0.00       0.000
0.000       0.000
```


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```
   13F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 65.2000)
                                 0.63        0.00        0.00       0.000
0.000       0.000

   13F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 65.2000)
                                 0.29        0.00        0.00       0.000
0.000       0.000

   13F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
65.2000)
                                 0.45        0.00        0.00       0.000
0.000       0.000

   13F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
65.2000)
                                 0.29        0.00        0.00       0.000
0.000       0.000

   12F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 61.4000)
                                 0.31        0.00        0.00       0.000
0.000       0.000

   12F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 61.4000)
                                 0.54        0.00        0.00       0.000
0.000       0.000

   12F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 61.4000)
                                 0.59        0.00        0.00       0.000
0.000       0.000

   12F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 61.4000)
                                 0.27        0.00        0.00       0.000
0.000       0.000

   12F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
61.4000)
                                 0.43        0.00        0.00       0.000
0.000       0.000

   12F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
61.4000)
                                 0.27        0.00        0.00       0.000
0.000       0.000

   11F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 57.6000)
                                 0.29        0.00        0.00       0.000
0.000       0.000

   11F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 57.6000)
                                 0.50        0.00        0.00       0.000
0.000       0.000

   11F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 57.6000)
```


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```
                                0.55        0.00        0.00       0.000
0.000       0.000

   11F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 57.6000)
                                0.25        0.00        0.00       0.000
0.000       0.000

   11F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
57.6000)
                                0.40        0.00        0.00       0.000
0.000       0.000

   11F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
57.6000)
                                0.26        0.00        0.00       0.000
0.000       0.000

   10F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 53.8000)
                                0.27        0.00        0.00       0.000
0.000       0.000

   10F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 53.8000)
                                0.47        0.00        0.00       0.000
0.000       0.000

   10F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 53.8000)
                                0.52        0.00        0.00       0.000
0.000       0.000

   10F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 53.8000)
                                0.24        0.00        0.00       0.000
0.000       0.000

   10F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
53.8000)
                                0.38        0.00        0.00       0.000
0.000       0.000

   10F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
53.8000)
                                0.24        0.00        0.00       0.000
0.000       0.000

   9F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 50.0000)
                                0.25        0.00        0.00       0.000
0.000       0.000

   9F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 50.0000)
                                0.44        0.00        0.00       0.000
0.000       0.000

   9F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 50.0000)
                                0.48        0.00        0.00       0.000
0.000       0.000
```


@Seismicisolation

```
   9F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 50.0000)
                                0.22        0.00        0.00       0.000
0.000       0.000

   9F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
50.0000)
                                0.35        0.00        0.00       0.000
0.000       0.000

   9F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
50.0000)
                                0.22        0.00        0.00       0.000
0.000       0.000

   8F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 46.2000)
                                0.23        0.00        0.00       0.000
0.000       0.000

   8F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 46.2000)
                                0.40        0.00        0.00       0.000
0.000       0.000

   8F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 46.2000)
                                0.44        0.00        0.00       0.000
0.000       0.000

   8F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 46.2000)
                                0.20        0.00        0.00       0.000
0.000       0.000

   8F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
46.2000)
                                0.32        0.00        0.00       0.000
0.000       0.000

   8F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
46.2000)
                                0.20        0.00        0.00       0.000
0.000       0.000

   7F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 42.4000)
                                0.21        0.00        0.00       0.000
0.000       0.000

   7F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 42.4000)
                                0.37        0.00        0.00       0.000
0.000       0.000

   7F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 42.4000)
                                0.41        0.00        0.00       0.000
0.000       0.000

   7F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 42.4000)
                                0.19        0.00        0.00       0.000
```


@Seismicisolation

```
0.000       0.000

   7F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
42.4000)
                                   0.30        0.00        0.00       0.000
0.000       0.000

   7F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
42.4000)
                                   0.19        0.00        0.00       0.000
0.000       0.000

   6F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 38.6000)
                                   0.20        0.00        0.00       0.000
0.000       0.000

   6F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 38.6000)
                                   0.34        0.00        0.00       0.000
0.000       0.000

   6F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 38.6000)
                                   0.37        0.00        0.00       0.000
0.000       0.000

   6F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 38.6000)
                                   0.17        0.00        0.00       0.000
0.000       0.000

   6F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
38.6000)
                                   0.27        0.00        0.00       0.000
0.000       0.000

   6F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
38.6000)
                                   0.17        0.00        0.00       0.000
0.000       0.000

   5F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 34.8000)
                                   0.18        0.00        0.00       0.000
0.000       0.000

   5F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 34.8000)
                                   0.30        0.00        0.00       0.000
0.000       0.000

   5F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 34.8000)
                                   0.33        0.00        0.00       0.000
0.000       0.000

   5F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 34.8000)
                                   0.15        0.00        0.00       0.000
0.000       0.000

   5F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
```


@Seismicisolation

```
34.8000)
                                    0.24        0.00        0.00       0.000
0.000       0.000

   5F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
34.8000)
                                    0.15        0.00        0.00       0.000
0.000       0.000

   4F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 31.0000)
                                    0.16        0.00        0.00       0.000
0.000       0.000

   4F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 31.0000)
                                    0.27        0.00        0.00       0.000
0.000       0.000

   4F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 31.0000)
                                    0.30        0.00        0.00       0.000
0.000       0.000

   4F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 31.0000)
                                    0.14        0.00        0.00       0.000
0.000       0.000

   4F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
31.0000)
                                    0.22        0.00        0.00       0.000
0.000       0.000

   4F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
31.0000)
                                    0.14        0.00        0.00       0.000
0.000       0.000

   3F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 27.2000)
                                    0.15        0.00        0.00       0.000
0.000       0.000

   3F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 27.2000)
                                    0.26        0.00        0.00       0.000
0.000       0.000

   3F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 27.2000)
                                    0.28        0.00        0.00       0.000
0.000       0.000

   3F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 27.2000)
                                    0.13        0.00        0.00       0.000
0.000       0.000

   3F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
27.2000)
                                    0.21        0.00        0.00       0.000
0.000       0.000
```


@Seismicisolation

```
   3F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
27.2000)
                                   0.13        0.00        0.00       0.000
0.000       0.000

   3F          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
27.2000)
                                   0.11        0.00        0.00       0.000
0.000       0.000

   3F          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
27.2000)
                                   0.09        0.00        0.00       0.000
0.000       0.000

   3F          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
27.2000)
                                   0.08        0.00        0.00       0.000
0.000       0.000

   3F          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
27.2000)
                                   0.07        0.00        0.00       0.000
0.000       0.000

   2F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 22.7000)
                                   0.16        0.00        0.00       0.000
0.000       0.000

   2F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 22.7000)
                                   0.28        0.00        0.00       0.000
0.000       0.000

   2F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 22.7000)
                                   0.31        0.00        0.00       0.000
0.000       0.000

   2F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 22.7000)
                                   0.14        0.00        0.00       0.000
0.000       0.000

   2F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
22.7000)
                                   0.22        0.00        0.00       0.000
0.000       0.000

   2F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
22.7000)
                                   0.14        0.00        0.00       0.000
0.000       0.000

   1F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 16.4000)
                                   0.14        0.00        0.00       0.000
0.000       0.000

   1F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 16.4000)
```


@Seismicisolation

```
                                0.24        0.00        0.00       0.000
0.000       0.000

   1F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 16.4000)
                                0.26        0.00        0.00       0.000
0.000       0.000

   1F          2430        (Point and forces located at X = 70.3073, Y = 10.9727, Z
= 16.4000)
                                0.07        0.00        0.00       0.000
0.000       0.000

   1F          2332        (Point and forces located at X = 70.3073, Y = 9.7978, Z =
16.4000)
                                0.12        0.00        0.00       0.000
0.000       0.000

   1F          2173        (Point and forces located at X = 70.3073, Y = 8.6228, Z =
16.4000)
                                0.08        0.00        0.00       0.000
0.000       0.000

   1F          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
16.4000)
                                0.14        0.00        0.00       0.000
0.000       0.000

   1F          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
16.4000)
                                0.11        0.00        0.00       0.000
0.000       0.000

   1F          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
16.4000)
                                0.10        0.00        0.00       0.000
0.000       0.000

   1F          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
16.4000)
                                0.09        0.00        0.00       0.000
0.000       0.000

   1F          3068        (Point and forces located at X = 45.9500, Y = 16.1000, Z
= 16.4000)
                                0.04        0.00        0.00       0.000
0.000       0.000

   1F          3133        (Point and forces located at X = 43.9992, Y = 16.7000, Z
= 16.4000)
                                0.12        0.00        0.00       0.000
0.000       0.000

   1F          3063        (Point and forces located at X = 43.9992, Y = 16.0988, Z
= 16.4000)
                                0.06        0.00        0.00       0.000
0.000       0.000

   1F          3061        (Point and forces located at X = 42.0500, Y = 16.0988, Z
= 16.4000)
                                0.04        0.00        0.00       0.000
0.000       0.000
```


@Seismicisolation

```
   GF          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 10.0000)
                                   0.07        0.00        0.00       0.000
0.000       0.000

   GF          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 10.0000)
                                   0.12        0.00        0.00       0.000
0.000       0.000

   GF          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 10.0000)
                                   0.13        0.00        0.00       0.000
0.000       0.000

   GF          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 10.0000)
                                   0.06        0.00        0.00       0.000
0.000       0.000

   GF          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
10.0000)
                                   0.09        0.00        0.00       0.000
0.000       0.000

   GF          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
10.0000)
                                   0.06        0.00        0.00       0.000
0.000       0.000

   GF          2430        (Point and forces located at X = 70.3073, Y = 10.9727, Z
= 10.0000)
                                   0.07        0.00        0.00       0.000
0.000       0.000

   GF          2332        (Point and forces located at X = 70.3073, Y = 9.7978, Z =
10.0000)
                                   0.11        0.00        0.00       0.000
0.000       0.000

   GF          2173        (Point and forces located at X = 70.3073, Y = 8.6228, Z =
10.0000)
                                   0.07        0.00        0.00       0.000
0.000       0.000

   GF          639         (Point and forces located at X = 50.5500, Y = -1.4868, Z
= 10.0000)
                                   0.11        0.00        0.00       0.000
0.000       0.000

   GF          450         (Point and forces located at X = 50.5500, Y = -2.6479, Z
= 10.0000)
                                   0.07        0.00        0.00       0.000
0.000       0.000

   GF          5149        (Point and forces located at X = 24.8365, Y = 30.9424, Z
= 10.0000)
                                   0.13        0.00        0.00       0.000
0.000       0.000

   GF          5148        (Point and forces located at X = 23.1364, Y = 30.9424, Z
= 10.0000)
                                   0.09        0.00        0.00       0.000
```


@Seismicisolation

```
0.000       0.000

   GF          4715        (Point and forces located at X = 23.1975, Y = 26.5997, Z
= 10.0000)
                                   0.04        0.00        0.00       0.000
0.000       0.000

   GF          4717        (Point and forces located at X = 24.8856, Y = 26.5997, Z
= 10.0000)
                                   0.05        0.00        0.00       0.000
0.000       0.000

   GF          4920        (Point and forces located at X = 23.1568, Y = 28.6997, Z
= 10.0000)
                                   0.10        0.00        0.00       0.000
0.000       0.000

   GF          4921        (Point and forces located at X = 24.8528, Y = 28.6997, Z
= 10.0000)
                                   0.13        0.00        0.00       0.000
0.000       0.000

   GF          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
10.0000)
                                   0.07        0.00        0.00       0.000
0.000       0.000

   GF          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
10.0000)
                                   0.05        0.00        0.00       0.000
0.000       0.000

   GF          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
10.0000)
                                   0.05        0.00        0.00       0.000
0.000       0.000

   GF          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
10.0000)
                                   0.05        0.00        0.00       0.000
0.000       0.000

   1B          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 6.2500)
                                   0.03        0.00        0.00       0.000
0.000       0.000

   1B          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 6.2500)
                                   0.05        0.00        0.00       0.000
0.000       0.000

   1B          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 6.2500)
                                   0.06        0.00        0.00       0.000
0.000       0.000

   1B          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 6.2500)
                                   0.03        0.00        0.00       0.000
0.000       0.000

   1B          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
```


@Seismicisolation

```
6.2500)
                                    0.04        0.00        0.00       0.000
0.000       0.000

   1B          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
6.2500)
                                    0.03        0.00        0.00       0.000
0.000       0.000

   1B          2430        (Point and forces located at X = 70.3073, Y = 10.9727, Z
= 6.2500)
                                    0.03        0.00        0.00       0.000
0.000       0.000

   1B          2332        (Point and forces located at X = 70.3073, Y = 9.7978, Z =
6.2500)
                                    0.05        0.00        0.00       0.000
0.000       0.000

   1B          2173        (Point and forces located at X = 70.3073, Y = 8.6228, Z =
6.2500)
                                    0.03        0.00        0.00       0.000
0.000       0.000

   1B          639         (Point and forces located at X = 50.5500, Y = -1.4868, Z
= 6.2500)
                                    0.05        0.00        0.00       0.000
0.000       0.000

   1B          450         (Point and forces located at X = 50.5500, Y = -2.6479, Z
= 6.2500)
                                    0.03        0.00        0.00       0.000
0.000       0.000

   1B          5149        (Point and forces located at X = 24.8365, Y = 30.9424, Z
= 6.2500)
                                    0.06        0.00        0.00       0.000
0.000       0.000

   1B          5148        (Point and forces located at X = 23.1364, Y = 30.9424, Z
= 6.2500)
                                    0.04        0.00        0.00       0.000
0.000       0.000

   1B          4715        (Point and forces located at X = 23.1975, Y = 26.5997, Z
= 6.2500)
                                    0.04        0.00        0.00       0.000
0.000       0.000

   1B          4717        (Point and forces located at X = 24.8856, Y = 26.5997, Z
= 6.2500)
                                    0.05        0.00        0.00       0.000
0.000       0.000

   1B          4920        (Point and forces located at X = 23.1568, Y = 28.6997, Z
= 6.2500)
                                    0.04        0.00        0.00       0.000
0.000       0.000

   1B          4921        (Point and forces located at X = 24.8528, Y = 28.6997, Z
= 6.2500)
                                    0.05        0.00        0.00       0.000
0.000       0.000
```


@Seismicisolation

```
   1B          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
6.2500)
                                   0.03        0.00        0.00       0.000
0.000       0.000

   1B          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
6.2500)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   1B          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
6.2500)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   1B          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
6.2500)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 3.0000)
                                   0.01        0.00        0.00       0.000
0.000       0.000

   2B          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 3.0000)
                                   0.01        0.00        0.00       0.000
0.000       0.000

   2B          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
3.0000)
                                   0.01        0.00        0.00       0.000
0.000       0.000

   2B          639         (Point and forces located at X = 50.5500, Y = -1.4868, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          450         (Point and forces located at X = 50.5500, Y = -2.6479, Z
= 3.0000)
                                   0.01        0.00        0.00       0.000
0.000       0.000

   2B          5149        (Point and forces located at X = 24.8365, Y = 30.9424, Z
= 3.0000)
```


@Seismicisolation

```
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          5148        (Point and forces located at X = 23.1364, Y = 30.9424, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          4715        (Point and forces located at X = 23.1975, Y = 26.5997, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          4717        (Point and forces located at X = 24.8856, Y = 26.5997, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          4920        (Point and forces located at X = 23.1568, Y = 28.6997, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000

   2B          4921        (Point and forces located at X = 24.8528, Y = 28.6997, Z
= 3.0000)
                                   0.02        0.00        0.00       0.000
0.000       0.000


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 A U T O   S E I S M I C   U B C 9 7
 Case: EQY


 AUTO SEISMIC INPUT DATA

   Direction: Y + EccX
   Typical Eccentricity = 5%
   Eccentricity Overrides: No

   Period Calculation: Program Calculated
   Ct = 0.035 (in feet units)

   Top Story: TORD
   Bottom Story: BASE

   R = 5.5
   I = 1
   hn = 72.800 (Building Height)

   Soil Profile Type = SC
   Z = 0.075
   Ca = 0.0900
   Cv = 0.1300


 AUTO SEISMIC CALCULATION FORMULAS

   Ta = Ct (hn^(3/4))

   If Z >= 0.35 (Zone 4) then:        If Tetabs <= 1.30 Ta then T = Tetabs, else T =
1.30 Ta
```


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```
   If Z < 0.35 (Zone 1, 2 or 3) then: If Tetabs <= 1.40 Ta then T = Tetabs, else T =
1.40 Ta

   V = (Cv I W) / (R T)                                          (Eqn. 1)
   V <= 2.5 Ca I W / R                                           (Eqn. 2)
   V >= 0.11 Ca I W                                              (Eqn. 3)

   If T <= 0.7 sec, then Ft = 0
   If T > 0.7 sec, then Ft = 0.07 T V <= 0.25 V


 AUTO SEISMIC CALCULATION RESULTS

   Ta = 2.1265 sec
   T Used = 2.9770 sec
   W Used = 353880.28

   V (Eqn 1) = 0.0079W
   V (Eqn 2) = 0.0409W
   V (Eqn 3) = 0.0099W
   V (Eqn 4) = 0.0175W

   V Used = 0.0099W = 3503.41

   Ft Used = 730.08


 AUTO SEISMIC STORY FORCES

   STORY                 FX          FY          FZ          MX          MY
MZ

   LEVEL 67.70 (Forces reported at X = 0.0000, Y = 0.0000, Z = 80.7000)
                       0.00        0.00        0.00       0.000       0.000
0.000

   TORD        (Forces reported at X = 0.0000, Y = 0.0000, Z = 72.8000)
                       0.00      932.84        0.00       0.000       0.000
59160.659

   RD          (Forces reported at X = 0.0000, Y = 0.0000, Z = 69.0000)
                       0.00      231.88        0.00       0.000       0.000
14807.774

   13F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 65.2000)
                       0.00      213.86        0.00       0.000       0.000
13677.402

   12F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 61.4000)
                       0.00      214.65        0.00       0.000       0.000
13745.014

   11F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 57.6000)
                       0.00      201.36        0.00       0.000       0.000
12894.345

   10F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 53.8000)
                       0.00      188.08        0.00       0.000       0.000
12043.677

   9F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 50.0000)
                       0.00      174.79        0.00       0.000       0.000
11193.008
```


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```
   8F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 46.2000)
                       0.00      161.51        0.00       0.000       0.000
10342.340

   7F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 42.4000)
                       0.00      148.36        0.00       0.000       0.000
9503.765

   6F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 38.6000)
                       0.00      135.26        0.00       0.000       0.000
8670.443

   5F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 34.8000)
                       0.00      121.94        0.00       0.000       0.000
7816.876

   4F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 31.0000)
                       0.00      108.59        0.00       0.000       0.000
6959.757

   3F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 27.2000)
                       0.00      150.64        0.00       0.000       0.000
7653.170

   2F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 22.7000)
                       0.00      185.56        0.00       0.000       0.000
9372.495

   1F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 16.4000)
                       0.00      138.29        0.00       0.000       0.000
7177.186

   GF          (Forces reported at X = 0.0000, Y = 0.0000, Z = 10.0000)
                       0.00       99.68        0.00       0.000       0.000
5406.124

   1B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 6.2500)
                       0.00       65.86        0.00       0.000       0.000
3537.773

   2B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 3.0000)
                       0.00       30.28        0.00       0.000       0.000
1627.939


 AUTO SEISMIC DIAPHRAGM FORCES

   STORY       DIAPHRAGM             FX          FY          FZ          MX
MY          MZ

   LEVEL 67.70 D1          (Forces reported at X = 58.7062, Y = 8.4228, Z = 80.7000)
                                 0.00        0.00        0.00       0.000
0.000       0.000

   TORD        D1          (Forces reported at X = 59.9668, Y = 14.0024, Z =
72.8000)
                                 0.00      896.38        0.00       0.000
0.000    2599.609

   RD          D1          (Forces reported at X = 60.8297, Y = 11.4684, Z =
69.0000)
```


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```
                                    0.00      229.18        0.00       0.000
0.000     662.349

   13F         D1          (Forces reported at X = 60.9213, Y = 11.1908, Z =
65.2000)
                                    0.00      211.31        0.00       0.000
0.000     610.713

   12F         D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
61.4000)
                                    0.00      212.24        0.00       0.000
0.000     648.394

   11F         D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
57.6000)
                                    0.00      199.11        0.00       0.000
0.000     608.265

   10F         D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
53.8000)
                                    0.00      185.97        0.00       0.000
0.000     568.136

   9F          D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
50.0000)
                                    0.00      172.84        0.00       0.000
0.000     528.008

   8F          D1          (Forces reported at X = 60.8482, Y = 10.6228, Z =
46.2000)
                                    0.00      159.70        0.00       0.000
0.000     487.879

   7F          D1          (Forces reported at X = 60.8734, Y = 10.6283, Z =
42.4000)
                                    0.00      146.70        0.00       0.000
0.000     448.152

   6F          D1          (Forces reported at X = 60.9155, Y = 10.6371, Z =
38.6000)
                                    0.00      133.75        0.00       0.000
0.000     408.599

   5F          D1          (Forces reported at X = 60.9155, Y = 10.6371, Z =
34.8000)
                                    0.00      120.58        0.00       0.000
0.000     368.375

   4F          D1          (Forces reported at X = 60.9054, Y = 10.6411, Z =
31.0000)
                                    0.00      107.38        0.00       0.000
0.000     328.032

   3F          D1          (Forces reported at X = 46.0688, Y = 12.3306, Z =
27.2000)
                                    0.00      149.13        0.00       0.000
0.000     693.777

   2F          D1          (Forces reported at X = 45.4053, Y = 13.2236, Z =
22.7000)
                                    0.00      184.29        0.00       0.000
0.000     908.879
```


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```
   1F          D1          (Forces reported at X = 46.9913, Y = 12.3353, Z =
16.4000)
                                   0.00      136.68        0.00       0.000
0.000     674.081

   GF          D1          (Forces reported at X = 49.3450, Y = 12.8151, Z =
10.0000)
                                   0.00       97.98        0.00       0.000
0.000     491.453

   1B          D1          (Forces reported at X = 48.8066, Y = 12.4111, Z = 6.2500)
                                   0.00       65.07        0.00       0.000
0.000     326.348

   2B          D1          (Forces reported at X = 48.8102, Y = 12.3361, Z = 3.0000)
                                   0.00       30.02        0.00       0.000
0.000     150.585


 AUTO SEISMIC POINT FORCES

   STORY       POINT                 FX          FY          FZ          MX
MY          MZ

   TORD        934         (Point and forces located at X = 31.9000, Y = 0.1325, Z =
72.8000)
                                   0.00        0.88        0.00       0.000
0.000       0.000

   TORD        940         (Point and forces located at X = 39.8250, Y = 0.1325, Z =
72.8000)
                                   0.00        0.88        0.00       0.000
0.000       0.000

   TORD        950         (Point and forces located at X = 48.0000, Y = 0.1325, Z =
72.8000)
                                   0.00        0.88        0.00       0.000
0.000       0.000

   TORD        1039        (Point and forces located at X = 56.3850, Y = 0.4600, Z =
72.8000)
                                   0.00        0.88        0.00       0.000
0.000       0.000

   TORD        1047        (Point and forces located at X = 64.7000, Y = 0.5220, Z =
72.8000)
                                   0.00        0.88        0.00       0.000
0.000       0.000

   TORD        1004        (Point and forces located at X = 72.7000, Y = 0.2360, Z =
72.8000)
                                   0.00        0.88        0.00       0.000
0.000       0.000

   TORD        1005        (Point and forces located at X = 80.6957, Y = 0.2363, Z =
72.8000)
                                   0.00        0.88        0.00       0.000
0.000       0.000

   TORD        2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 72.8000)
                                   0.00        2.61        0.00       0.000
```


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```
0.000       0.000

   TORD        2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 72.8000)
                                 0.00        4.50        0.00       0.000
0.000       0.000

   TORD        2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 72.8000)
                                 0.00        4.94        0.00       0.000
0.000       0.000

   TORD        2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 72.8000)
                                 0.00        2.26        0.00       0.000
0.000       0.000

   TORD        2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
72.8000)
                                 0.00        3.60        0.00       0.000
0.000       0.000

   TORD        1210        (Point and forces located at X = 89.0000, Y = 1.5219, Z =
72.8000)
                                 0.00        3.14        0.00       0.000
0.000       0.000

   TORD        1012        (Point and forces located at X = 89.0000, Y = 0.2360, Z =
72.8000)
                                 0.00        3.75        0.00       0.000
0.000       0.000

   TORD        917         (Point and forces located at X = 89.0000, Y = -0.0152, Z
= 72.8000)
                                 0.00        3.05        0.00       0.000
0.000       0.000

   TORD        719         (Point and forces located at X = 89.0000, Y = -1.0140, Z
= 72.8000)
                                 0.00        2.44        0.00       0.000
0.000       0.000

   RD          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 69.0000)
                                 0.00        0.35        0.00       0.000
0.000       0.000

   RD          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 69.0000)
                                 0.00        0.60        0.00       0.000
0.000       0.000

   RD          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 69.0000)
                                 0.00        0.66        0.00       0.000
0.000       0.000

   RD          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 69.0000)
                                 0.00        0.30        0.00       0.000
0.000       0.000

   RD          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
```


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```
69.0000)
                                    0.00        0.48        0.00       0.000
0.000       0.000

   RD          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
69.0000)
                                    0.00        0.31        0.00       0.000
0.000       0.000

   13F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 65.2000)
                                    0.00        0.33        0.00       0.000
0.000       0.000

   13F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 65.2000)
                                    0.00        0.57        0.00       0.000
0.000       0.000

   13F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 65.2000)
                                    0.00        0.63        0.00       0.000
0.000       0.000

   13F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 65.2000)
                                    0.00        0.29        0.00       0.000
0.000       0.000

   13F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
65.2000)
                                    0.00        0.45        0.00       0.000
0.000       0.000

   13F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
65.2000)
                                    0.00        0.29        0.00       0.000
0.000       0.000

   12F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 61.4000)
                                    0.00        0.31        0.00       0.000
0.000       0.000

   12F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 61.4000)
                                    0.00        0.54        0.00       0.000
0.000       0.000

   12F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 61.4000)
                                    0.00        0.59        0.00       0.000
0.000       0.000

   12F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 61.4000)
                                    0.00        0.27        0.00       0.000
0.000       0.000

   12F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
61.4000)
                                    0.00        0.43        0.00       0.000
0.000       0.000
```


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```
   12F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
61.4000)
                                   0.00        0.27        0.00       0.000
0.000       0.000

   11F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 57.6000)
                                   0.00        0.29        0.00       0.000
0.000       0.000

   11F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 57.6000)
                                   0.00        0.50        0.00       0.000
0.000       0.000

   11F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 57.6000)
                                   0.00        0.55        0.00       0.000
0.000       0.000

   11F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 57.6000)
                                   0.00        0.25        0.00       0.000
0.000       0.000

   11F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
57.6000)
                                   0.00        0.40        0.00       0.000
0.000       0.000

   11F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
57.6000)
                                   0.00        0.26        0.00       0.000
0.000       0.000

   10F         2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 53.8000)
                                   0.00        0.27        0.00       0.000
0.000       0.000

   10F         2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 53.8000)
                                   0.00        0.47        0.00       0.000
0.000       0.000

   10F         2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 53.8000)
                                   0.00        0.52        0.00       0.000
0.000       0.000

   10F         2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 53.8000)
                                   0.00        0.24        0.00       0.000
0.000       0.000

   10F         2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
53.8000)
                                   0.00        0.38        0.00       0.000
0.000       0.000

   10F         2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
53.8000)
```


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```
                                0.00        0.24        0.00       0.000
0.000       0.000

   9F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 50.0000)
                                0.00        0.25        0.00       0.000
0.000       0.000

   9F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 50.0000)
                                0.00        0.44        0.00       0.000
0.000       0.000

   9F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 50.0000)
                                0.00        0.48        0.00       0.000
0.000       0.000

   9F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 50.0000)
                                0.00        0.22        0.00       0.000
0.000       0.000

   9F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
50.0000)
                                0.00        0.35        0.00       0.000
0.000       0.000

   9F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
50.0000)
                                0.00        0.22        0.00       0.000
0.000       0.000

   8F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 46.2000)
                                0.00        0.23        0.00       0.000
0.000       0.000

   8F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 46.2000)
                                0.00        0.40        0.00       0.000
0.000       0.000

   8F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 46.2000)
                                0.00        0.44        0.00       0.000
0.000       0.000

   8F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 46.2000)
                                0.00        0.20        0.00       0.000
0.000       0.000

   8F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
46.2000)
                                0.00        0.32        0.00       0.000
0.000       0.000

   8F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
46.2000)
                                0.00        0.20        0.00       0.000
0.000       0.000
```


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```
   7F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 42.4000)
                                 0.00        0.21        0.00       0.000
0.000       0.000

   7F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 42.4000)
                                 0.00        0.37        0.00       0.000
0.000       0.000

   7F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 42.4000)
                                 0.00        0.41        0.00       0.000
0.000       0.000

   7F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 42.4000)
                                 0.00        0.19        0.00       0.000
0.000       0.000

   7F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
42.4000)
                                 0.00        0.30        0.00       0.000
0.000       0.000

   7F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
42.4000)
                                 0.00        0.19        0.00       0.000
0.000       0.000

   6F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 38.6000)
                                 0.00        0.20        0.00       0.000
0.000       0.000

   6F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 38.6000)
                                 0.00        0.34        0.00       0.000
0.000       0.000

   6F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 38.6000)
                                 0.00        0.37        0.00       0.000
0.000       0.000

   6F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 38.6000)
                                 0.00        0.17        0.00       0.000
0.000       0.000

   6F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
38.6000)
                                 0.00        0.27        0.00       0.000
0.000       0.000

   6F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
38.6000)
                                 0.00        0.17        0.00       0.000
0.000       0.000

   5F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 34.8000)
                                 0.00        0.18        0.00       0.000
```


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```
0.000       0.000

   5F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 34.8000)
                                   0.00        0.30        0.00       0.000
0.000       0.000

   5F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 34.8000)
                                   0.00        0.33        0.00       0.000
0.000       0.000

   5F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 34.8000)
                                   0.00        0.15        0.00       0.000
0.000       0.000

   5F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
34.8000)
                                   0.00        0.24        0.00       0.000
0.000       0.000

   5F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
34.8000)
                                   0.00        0.15        0.00       0.000
0.000       0.000

   4F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 31.0000)
                                   0.00        0.16        0.00       0.000
0.000       0.000

   4F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 31.0000)
                                   0.00        0.27        0.00       0.000
0.000       0.000

   4F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 31.0000)
                                   0.00        0.30        0.00       0.000
0.000       0.000

   4F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 31.0000)
                                   0.00        0.14        0.00       0.000
0.000       0.000

   4F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
31.0000)
                                   0.00        0.22        0.00       0.000
0.000       0.000

   4F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
31.0000)
                                   0.00        0.14        0.00       0.000
0.000       0.000

   3F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 27.2000)
                                   0.00        0.15        0.00       0.000
0.000       0.000

   3F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
```


@Seismicisolation

```
= 27.2000)
                                    0.00        0.26        0.00       0.000
0.000       0.000

   3F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 27.2000)
                                    0.00        0.28        0.00       0.000
0.000       0.000

   3F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 27.2000)
                                    0.00        0.13        0.00       0.000
0.000       0.000

   3F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
27.2000)
                                    0.00        0.21        0.00       0.000
0.000       0.000

   3F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
27.2000)
                                    0.00        0.13        0.00       0.000
0.000       0.000

   3F          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
27.2000)
                                    0.00        0.11        0.00       0.000
0.000       0.000

   3F          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
27.2000)
                                    0.00        0.09        0.00       0.000
0.000       0.000

   3F          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
27.2000)
                                    0.00        0.08        0.00       0.000
0.000       0.000

   3F          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
27.2000)
                                    0.00        0.07        0.00       0.000
0.000       0.000

   2F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 22.7000)
                                    0.00        0.16        0.00       0.000
0.000       0.000

   2F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 22.7000)
                                    0.00        0.28        0.00       0.000
0.000       0.000

   2F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 22.7000)
                                    0.00        0.31        0.00       0.000
0.000       0.000

   2F          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 22.7000)
                                    0.00        0.14        0.00       0.000
0.000       0.000
```


@Seismicisolation

```
   2F          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
22.7000)
                                   0.00        0.22        0.00       0.000
0.000       0.000

   2F          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
22.7000)
                                   0.00        0.14        0.00       0.000
0.000       0.000

   1F          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 16.4000)
                                   0.00        0.14        0.00       0.000
0.000       0.000

   1F          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 16.4000)
                                   0.00        0.24        0.00       0.000
0.000       0.000

   1F          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 16.4000)
                                   0.00        0.26        0.00       0.000
0.000       0.000

   1F          2430        (Point and forces located at X = 70.3073, Y = 10.9727, Z
= 16.4000)
                                   0.00        0.07        0.00       0.000
0.000       0.000

   1F          2332        (Point and forces located at X = 70.3073, Y = 9.7978, Z =
16.4000)
                                   0.00        0.12        0.00       0.000
0.000       0.000

   1F          2173        (Point and forces located at X = 70.3073, Y = 8.6228, Z =
16.4000)
                                   0.00        0.08        0.00       0.000
0.000       0.000

   1F          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
16.4000)
                                   0.00        0.14        0.00       0.000
0.000       0.000

   1F          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
16.4000)
                                   0.00        0.11        0.00       0.000
0.000       0.000

   1F          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
16.4000)
                                   0.00        0.10        0.00       0.000
0.000       0.000

   1F          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
16.4000)
                                   0.00        0.09        0.00       0.000
0.000       0.000

   1F          3068        (Point and forces located at X = 45.9500, Y = 16.1000, Z
= 16.4000)
```


@Seismicisolation

```
                                    0.00        0.04        0.00       0.000
0.000       0.000

   1F          3133        (Point and forces located at X = 43.9992, Y = 16.7000, Z
= 16.4000)
                                    0.00        0.12        0.00       0.000
0.000       0.000

   1F          3063        (Point and forces located at X = 43.9992, Y = 16.0988, Z
= 16.4000)
                                    0.00        0.06        0.00       0.000
0.000       0.000

   1F          3061        (Point and forces located at X = 42.0500, Y = 16.0988, Z
= 16.4000)
                                    0.00        0.04        0.00       0.000
0.000       0.000

   GF          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 10.0000)
                                    0.00        0.07        0.00       0.000
0.000       0.000

   GF          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 10.0000)
                                    0.00        0.12        0.00       0.000
0.000       0.000

   GF          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 10.0000)
                                    0.00        0.13        0.00       0.000
0.000       0.000

   GF          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 10.0000)
                                    0.00        0.06        0.00       0.000
0.000       0.000

   GF          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
10.0000)
                                    0.00        0.09        0.00       0.000
0.000       0.000

   GF          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
10.0000)
                                    0.00        0.06        0.00       0.000
0.000       0.000

   GF          2430        (Point and forces located at X = 70.3073, Y = 10.9727, Z
= 10.0000)
                                    0.00        0.07        0.00       0.000
0.000       0.000

   GF          2332        (Point and forces located at X = 70.3073, Y = 9.7978, Z =
10.0000)
                                    0.00        0.11        0.00       0.000
0.000       0.000

   GF          2173        (Point and forces located at X = 70.3073, Y = 8.6228, Z =
10.0000)
                                    0.00        0.07        0.00       0.000
0.000       0.000
```


@Seismicisolation

```
   GF          639         (Point and forces located at X = 50.5500, Y = -1.4868, Z
= 10.0000)
                                 0.00        0.11        0.00       0.000
0.000       0.000

   GF          450         (Point and forces located at X = 50.5500, Y = -2.6479, Z
= 10.0000)
                                 0.00        0.07        0.00       0.000
0.000       0.000

   GF          5149        (Point and forces located at X = 24.8365, Y = 30.9424, Z
= 10.0000)
                                 0.00        0.13        0.00       0.000
0.000       0.000

   GF          5148        (Point and forces located at X = 23.1364, Y = 30.9424, Z
= 10.0000)
                                 0.00        0.09        0.00       0.000
0.000       0.000

   GF          4715        (Point and forces located at X = 23.1975, Y = 26.5997, Z
= 10.0000)
                                 0.00        0.04        0.00       0.000
0.000       0.000

   GF          4717        (Point and forces located at X = 24.8856, Y = 26.5997, Z
= 10.0000)
                                 0.00        0.05        0.00       0.000
0.000       0.000

   GF          4920        (Point and forces located at X = 23.1568, Y = 28.6997, Z
= 10.0000)
                                 0.00        0.10        0.00       0.000
0.000       0.000

   GF          4921        (Point and forces located at X = 24.8528, Y = 28.6997, Z
= 10.0000)
                                 0.00        0.13        0.00       0.000
0.000       0.000

   GF          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
10.0000)
                                 0.00        0.07        0.00       0.000
0.000       0.000

   GF          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
10.0000)
                                 0.00        0.05        0.00       0.000
0.000       0.000

   GF          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
10.0000)
                                 0.00        0.05        0.00       0.000
0.000       0.000

   GF          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
10.0000)
                                 0.00        0.05        0.00       0.000
0.000       0.000

   1B          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 6.2500)
                                 0.00        0.03        0.00       0.000
```


@Seismicisolation

```
0.000       0.000

   1B          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 6.2500)
                                   0.00        0.05        0.00       0.000
0.000       0.000

   1B          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 6.2500)
                                   0.00        0.06        0.00       0.000
0.000       0.000

   1B          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 6.2500)
                                   0.00        0.03        0.00       0.000
0.000       0.000

   1B          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
6.2500)
                                   0.00        0.04        0.00       0.000
0.000       0.000

   1B          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
6.2500)
                                   0.00        0.03        0.00       0.000
0.000       0.000

   1B          2430        (Point and forces located at X = 70.3073, Y = 10.9727, Z
= 6.2500)
                                   0.00        0.03        0.00       0.000
0.000       0.000

   1B          2332        (Point and forces located at X = 70.3073, Y = 9.7978, Z =
6.2500)
                                   0.00        0.05        0.00       0.000
0.000       0.000

   1B          2173        (Point and forces located at X = 70.3073, Y = 8.6228, Z =
6.2500)
                                   0.00        0.03        0.00       0.000
0.000       0.000

   1B          639         (Point and forces located at X = 50.5500, Y = -1.4868, Z
= 6.2500)
                                   0.00        0.05        0.00       0.000
0.000       0.000

   1B          450         (Point and forces located at X = 50.5500, Y = -2.6479, Z
= 6.2500)
                                   0.00        0.03        0.00       0.000
0.000       0.000

   1B          5149        (Point and forces located at X = 24.8365, Y = 30.9424, Z
= 6.2500)
                                   0.00        0.06        0.00       0.000
0.000       0.000

   1B          5148        (Point and forces located at X = 23.1364, Y = 30.9424, Z
= 6.2500)
                                   0.00        0.04        0.00       0.000
0.000       0.000

   1B          4715        (Point and forces located at X = 23.1975, Y = 26.5997, Z
```


@Seismicisolation

```
= 6.2500)
                                        0.00        0.04        0.00       0.000
0.000       0.000

   1B          4717        (Point and forces located at X = 24.8856, Y = 26.5997, Z
= 6.2500)
                                        0.00        0.05        0.00       0.000
0.000       0.000

   1B          4920        (Point and forces located at X = 23.1568, Y = 28.6997, Z
= 6.2500)
                                        0.00        0.04        0.00       0.000
0.000       0.000

   1B          4921        (Point and forces located at X = 24.8528, Y = 28.6997, Z
= 6.2500)
                                        0.00        0.05        0.00       0.000
0.000       0.000

   1B          4966        (Point and forces located at X = 2.8555, Y = 28.8432, Z =
6.2500)
                                        0.00        0.03        0.00       0.000
0.000       0.000

   1B          4979        (Point and forces located at X = 2.8555, Y = 29.3900, Z =
6.2500)
                                        0.00        0.02        0.00       0.000
0.000       0.000

   1B          5074        (Point and forces located at X = 2.8555, Y = 29.9720, Z =
6.2500)
                                        0.00        0.02        0.00       0.000
0.000       0.000

   1B          5102        (Point and forces located at X = 2.8555, Y = 30.3924, Z =
6.2500)
                                        0.00        0.02        0.00       0.000
0.000       0.000

   2B          2872        (Point and forces located at X = 77.2375, Y = 14.4026, Z
= 3.0000)
                                        0.00        0.01        0.00       0.000
0.000       0.000

   2B          2981        (Point and forces located at X = 77.2375, Y = 15.5823, Z
= 3.0000)
                                        0.00        0.02        0.00       0.000
0.000       0.000

   2B          2986        (Point and forces located at X = 74.9375, Y = 15.6122, Z
= 3.0000)
                                        0.00        0.02        0.00       0.000
0.000       0.000

   2B          2424        (Point and forces located at X = 74.9375, Y = 10.8995, Z
= 3.0000)
                                        0.00        0.01        0.00       0.000
0.000       0.000

   2B          2313        (Point and forces located at X = 74.9375, Y = 9.7214, Z =
3.0000)
                                        0.00        0.02        0.00       0.000
0.000       0.000
```


@Seismicisolation

```
   2B          2141        (Point and forces located at X = 74.9375, Y = 8.5432, Z =
3.0000)
                                   0.00        0.01        0.00       0.000
0.000       0.000

   2B          639         (Point and forces located at X = 50.5500, Y = -1.4868, Z
= 3.0000)
                                   0.00        0.02        0.00       0.000
0.000       0.000

   2B          450         (Point and forces located at X = 50.5500, Y = -2.6479, Z
= 3.0000)
                                   0.00        0.01        0.00       0.000
0.000       0.000

   2B          5149        (Point and forces located at X = 24.8365, Y = 30.9424, Z
= 3.0000)
                                   0.00        0.02        0.00       0.000
0.000       0.000

   2B          5148        (Point and forces located at X = 23.1364, Y = 30.9424, Z
= 3.0000)
                                   0.00        0.02        0.00       0.000
0.000       0.000

   2B          4715        (Point and forces located at X = 23.1975, Y = 26.5997, Z
= 3.0000)
                                   0.00        0.02        0.00       0.000
0.000       0.000

   2B          4717        (Point and forces located at X = 24.8856, Y = 26.5997, Z
= 3.0000)
                                   0.00        0.02        0.00       0.000
0.000       0.000

   2B          4920        (Point and forces located at X = 23.1568, Y = 28.6997, Z
= 3.0000)
                                   0.00        0.02        0.00       0.000
0.000       0.000

   2B          4921        (Point and forces located at X = 24.8528, Y = 28.6997, Z
= 3.0000)
                                   0.00        0.02        0.00       0.000
0.000       0.000


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 A U T O   W I N D   A S C E 7 - 0 5
 Case: WX


 AUTO WIND INPUT DATA

   Exposure From:   Rigid diaphragm extents
   Direction Angle = 0 degrees
   Windward Cp = 0.8
   Leeward Cp = 0.5
   Case (ASCE 7-05 Fig 6.9) = 1
   E1 (ASCE 7-05 Fig 6.9) = 0.
   E2 (ASCE 7-05 Fig 6.9) = 0.
```


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Top Story: TORD
Bottom Story: BASE

No parapet is included

Basic Wind Speed, V = 100 mph
Exposure Category = B
Importance Factor, Iw = 1
Kzt = 1
Kd = 0.85
Gust Factor, G = 0.85

AUTO WIND EXPOSURE WIDTH INFORMATION (Exposure widths are from diaphragm extents)

STORY	DIAPHRAGM	WIDTH	X	Y
LEVEL 67.70	D1	25.798	58.925	10.001
TORD	D1	23.354	59.999	13.680
RD	D1	26.784	60.099	11.965
13F	D1	28.054	60.099	11.330
12F	D1	28.260	60.047	11.227
11F	D1	28.260	60.047	11.227
10F	D1	28.260	60.047	11.227
9F	D1	28.260	60.047	11.227
8F	D1	28.260	60.047	11.227
7F	D1	28.260	60.047	11.227
6F	D1	28.260	60.047	11.227
5F	D1	28.260	60.047	11.227
4F	D1	28.260	60.047	11.227
3F	D1	34.040	44.076	14.083
2F	D1	36.690	46.828	13.898
1F	D1	36.690	46.828	13.898
GF	D1	36.087	47.712	13.059
1B	D1	37.282	47.712	12.462
2B	D1	37.282	47.712	12.462

AUTO WIND CALCULATION FORMULAS

P = wind pressure = WindwardCp qz G + qh G LeewardCp

qz, the velocity pressure, = 0.00256 Kz Kzt Kd Iw V^2 psf

Kz is the velocity pressure exposure coefficient
Kz = 2.01 (z / zg)^(2/alpha) for 15 feet <= z <= zg
Kz = 2.01 (15 / zg)^(2/alpha) for z < 15 feet
z is the distance from the specified bottom story to the point considered
zg and alpha are specified in ASCE7-05 Table 6-2

qh is the velocity pressure at the specified top story level

AUTO WIND CALCULATION RESULTS

zg = 1200
alpha = 7.0
qh = 27.5772

AUTO WIND STORY FORCES

@Seismicisolation

```
   STORY                 FX          FY          FZ          MX          MY
MZ

   LEVEL 67.70 (Forces reported at X = 0.0000, Y = 0.0000, Z = 80.7000)
                      0.00        0.00        0.00       0.000       0.000
0.000

   TORD        (Forces reported at X = 0.0000, Y = 0.0000, Z = 72.8000)
                     64.54        0.00        0.00       0.000       0.000
-882.870

   RD          (Forces reported at X = 0.0000, Y = 0.0000, Z = 69.0000)
                    147.10        0.00        0.00       0.000       0.000
-1712.905

   13F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 65.2000)
                    152.57        0.00        0.00       0.000       0.000
-1759.720

   12F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 61.4000)
                    152.10        0.00        0.00       0.000       0.000
-1727.146

   11F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 57.6000)
                    150.44        0.00        0.00       0.000       0.000
-1708.274

   10F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 53.8000)
                    148.70        0.00        0.00       0.000       0.000
-1688.489

   9F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 50.0000)
                    146.86        0.00        0.00       0.000       0.000
-1667.679

   8F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 46.2000)
                    144.93        0.00        0.00       0.000       0.000
-1645.703

   7F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 42.4000)
                    142.88        0.00        0.00       0.000       0.000
-1622.393

   6F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 38.6000)
                    140.69        0.00        0.00       0.000       0.000
-1597.536

   5F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 34.8000)
                    138.34        0.00        0.00       0.000       0.000
-1570.858

   4F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 31.0000)
                    135.80        0.00        0.00       0.000       0.000
-1542.002

   3F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 27.2000)
                    174.74        0.00        0.00       0.000       0.000
-2558.900

   2F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 22.7000)
                    237.59        0.00        0.00       0.000       0.000
-3542.660
```


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```
   1F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 16.4000)
                     266.95        0.00        0.00       0.000       0.000
-3980.444

   GF          (Forces reported at X = 0.0000, Y = 0.0000, Z = 10.0000)
                     197.95        0.00        0.00       0.000       0.000
-2782.657

   1B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 6.2500)
                     131.65        0.00        0.00       0.000       0.000
-1775.858

   2B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 3.0000)
                     113.03        0.00        0.00       0.000       0.000
-1524.718


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 A U T O   W I N D   A S C E 7 - 0 5
 Case: WY


 AUTO WIND INPUT DATA

   Exposure From:   Rigid diaphragm extents
   Direction Angle = 0 degrees
   Windward Cp = 0.8
   Leeward Cp = 0.5
   Case (ASCE 7-05 Fig 6.9) = 1
   E1 (ASCE 7-05 Fig 6.9) = 0.
   E2 (ASCE 7-05 Fig 6.9) = 0.

   Top Story: TORD
   Bottom Story: BASE

   No parapet is included

   Basic Wind Speed, V = 100 mph
   Exposure Category = B
   Importance Factor, Iw = 1
   Kzt = 1
   Kd = 0.85
   Gust Factor, G = 0.85


 AUTO WIND EXPOSURE WIDTH INFORMATION (Exposure widths are from diaphragm extents)

          STORY   DIAPHRAGM       WIDTH           X           Y

    LEVEL 67.70          D1      25.798      58.925      10.001
           TORD          D1      23.354      59.999      13.680
             RD          D1      26.784      60.099      11.965
            13F          D1      28.054      60.099      11.330
            12F          D1      28.260      60.047      11.227
            11F          D1      28.260      60.047      11.227
            10F          D1      28.260      60.047      11.227
             9F          D1      28.260      60.047      11.227
             8F          D1      28.260      60.047      11.227
             7F          D1      28.260      60.047      11.227
             6F          D1      28.260      60.047      11.227
             5F          D1      28.260      60.047      11.227
             4F          D1      28.260      60.047      11.227
```


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3F	D1	34.040	44.076	14.083
2F	D1	36.690	46.828	13.898
1F	D1	36.690	46.828	13.898
GF	D1	36.087	47.712	13.059
1B	D1	37.282	47.712	12.462
2B	D1	37.282	47.712	12.462

AUTO WIND CALCULATION FORMULAS

P = wind pressure = WindwardCp qz G + qh G LeewardCp

qz, the velocity pressure, = 0.00256 Kz Kzt Kd Iw V^2 psf

Kz is the velocity pressure exposure coefficient
Kz = 2.01 (z / zg)^(2/alpha) for 15 feet <= z <= zg
Kz = 2.01 (15 / zg)^(2/alpha) for z < 15 feet
z is the distance from the specified bottom story to the point considered
zg and alpha are specified in ASCE7-05 Table 6-2

qh is the velocity pressure at the specified top story level

AUTO WIND CALCULATION RESULTS

zg = 1200
alpha = 7.0
qh = 27.5772

AUTO WIND STORY FORCES

```
   STORY                 FX          FY          FZ          MX          MY
MZ

   LEVEL 67.70 (Forces reported at X = 0.0000, Y = 0.0000, Z = 80.7000)
                      0.00        0.00        0.00       0.000       0.000
0.000

   TORD        (Forces reported at X = 0.0000, Y = 0.0000, Z = 72.8000)
                     64.54        0.00        0.00       0.000       0.000
-882.870

   RD          (Forces reported at X = 0.0000, Y = 0.0000, Z = 69.0000)
                    147.10        0.00        0.00       0.000       0.000
-1712.905

   13F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 65.2000)
                    152.57        0.00        0.00       0.000       0.000
-1759.720

   12F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 61.4000)
                    152.10        0.00        0.00       0.000       0.000
-1727.146

   11F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 57.6000)
                    150.44        0.00        0.00       0.000       0.000
-1708.274

   10F         (Forces reported at X = 0.0000, Y = 0.0000, Z = 53.8000)
                    148.70        0.00        0.00       0.000       0.000
-1688.489
```


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```
   9F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 50.0000)
                     146.86        0.00        0.00       0.000       0.000
-1667.679

   8F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 46.2000)
                     144.93        0.00        0.00       0.000       0.000
-1645.703

   7F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 42.4000)
                     142.88        0.00        0.00       0.000       0.000
-1622.393

   6F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 38.6000)
                     140.69        0.00        0.00       0.000       0.000
-1597.536

   5F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 34.8000)
                     138.34        0.00        0.00       0.000       0.000
-1570.858

   4F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 31.0000)
                     135.80        0.00        0.00       0.000       0.000
-1542.002

   3F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 27.2000)
                     174.74        0.00        0.00       0.000       0.000
-2558.900

   2F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 22.7000)
                     237.59        0.00        0.00       0.000       0.000
-3542.660

   1F          (Forces reported at X = 0.0000, Y = 0.0000, Z = 16.4000)
                     266.95        0.00        0.00       0.000       0.000
-3980.444

   GF          (Forces reported at X = 0.0000, Y = 0.0000, Z = 10.0000)
                     197.95        0.00        0.00       0.000       0.000
-2782.657

   1B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 6.2500)
                     131.65        0.00        0.00       0.000       0.000
-1775.858

   2B          (Forces reported at X = 0.0000, Y = 0.0000, Z = 3.0000)
                     113.03        0.00        0.00       0.000       0.000
-1524.718


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 R E S P O N S E   S P E C T R U M   F U N C T I O N   -   U B C 9 7

 FUNCTION NAME: FX

             Ca          Cv

         0.2400      0.3200


         PERIOD       ACCEL
```


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0.0000	0.2400
0.1067	0.6000
0.5333	0.6000
0.8000	0.4000
1.0000	0.3200
1.2000	0.2667
1.4000	0.2286
1.6000	0.2000
1.8000	0.1778
2.0000	0.1600
2.5000	0.1280
3.0000	0.1067
3.5000	0.0914
4.0000	0.0800
4.5000	0.0711
5.0000	0.0640
5.5000	0.0582
6.0000	0.0533
6.5000	0.0492
7.0000	0.0457
7.5000	0.0427
8.0000	0.0400
8.5000	0.0376
9.0000	0.0356
9.5000	0.0337
10.0000	0.0320

FUNCTION NAME: FY

Ca	Cv
0.2400	0.3200

PERIOD	ACCEL
0.0000	0.2400
0.1067	0.6000
0.5333	0.6000
0.8000	0.4000
1.0000	0.3200
1.2000	0.2667
1.4000	0.2286
1.6000	0.2000
1.8000	0.1778
2.0000	0.1600
2.5000	0.1280
3.0000	0.1067
3.5000	0.0914
4.0000	0.0800
4.5000	0.0711
5.0000	0.0640
5.5000	0.0582
6.0000	0.0533
6.5000	0.0492
7.0000	0.0457
7.5000	0.0427
8.0000	0.0400
8.5000	0.0376
9.0000	0.0356
9.5000	0.0337
10.0000	0.0320

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L O A D I N G C O M B I N A T I O N S

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
SERVICE	ADD	DEAD	Static	1.0000
		LIVE	Static	1.0000
		SDL	Static	1.0000
SC2ULT	ADD	DEAD	Static	1.2000
		SDL	Static	1.2000
		LIVE	Static	1.6000

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S U P P O R T R E A C T I O N S

STORY	POINT	LOAD	FX	FY	FZ	MX	MY	MZ
BASE	1	SERVICE	1.77	0.39	48.30	1.570	3.090	0.104
BASE	1	SC2ULT	3.06	-0.64	53.35	2.072	3.964	0.133
BASE	2	SERVICE	17.41	3.43	139.47	-3.493	7.585	-0.222
BASE	2	SC2ULT	21.94	4.63	169.73	-4.707	9.670	-0.282
BASE	3	SERVICE	39.14	12.75	198.78	-12.406	11.812	-0.360
BASE	3	SC2ULT	49.98	17.12	246.96	-16.631	15.157	-0.457
BASE	4	SERVICE	61.19	10.53	226.55	-10.926	16.235	-0.463
BASE	4	SC2ULT	78.88	14.21	282.78	-14.680	20.932	-0.589
BASE	5	SERVICE	38.13	3.97	135.36	-2.141	9.750	-0.539
BASE	5	SC2ULT	49.19	5.20	169.27	-2.914	12.529	-0.684
BASE	6	SERVICE	31.62	-1.44	122.80	-2.541	9.483	-0.551
BASE	6	SC2ULT	40.33	-1.64	153.52	-3.444	12.162	-0.701
BASE	7	SERVICE	67.23	14.19	259.06	-15.063	19.058	-0.560
BASE	7	SC2ULT	85.78	19.13	324.83	-20.191	24.375	-0.709
BASE	8	SERVICE	90.46	22.11	289.45	-22.859	23.973	-0.651
BASE	8	SC2ULT	115.97	29.69	363.56	-30.581	30.745	-0.828
BASE	9	SERVICE	91.41	9.23	253.31			

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```
-10.864      23.852      -0.786
 BASE        9           SC2ULT                117.42       12.50      317.90
-14.576      30.604      -1.002

 BASE        10          SERVICE                53.42        0.99      148.81
-1.514      14.237      -0.982
 BASE        10          SC2ULT                 68.47        1.37      186.60
-2.069      18.218      -1.248

 BASE        11          SERVICE                25.85       -0.60       77.43
-0.425       7.415      -0.848
 BASE        11          SC2ULT                 32.99       -0.74       97.06
-0.592       9.472      -1.078

 BASE        12          SERVICE                25.92        0.53       79.54
-1.258       7.561      -0.853
 BASE        12          SC2ULT                 33.00        0.77       99.77
-1.703       9.650      -1.082

 BASE        13          SERVICE                38.68        2.60      116.35
-4.036      11.262      -0.920
 BASE        13          SC2ULT                 49.23        3.62      146.09
-5.417      14.370      -1.168

 BASE        14          SERVICE                41.27        6.65      123.98
-6.547      11.975      -0.940
 BASE        14          SC2ULT                 52.57        8.93      155.85
-8.763      15.289      -1.193

 BASE        15          SERVICE                32.24        5.66       92.62
-6.082       9.188      -0.871
 BASE        15          SC2ULT                 41.15        7.62      116.53
-8.132      11.742      -1.108

 BASE        16          SERVICE                29.34        5.45       81.35
-5.567       8.219      -0.836
 BASE        16          SC2ULT                 37.50        7.32      102.38
-7.443      10.513      -1.063

 BASE        17          SERVICE                26.54        4.42       70.92
-4.729       7.328      -0.778
 BASE        17          SC2ULT                 33.97        5.95       89.26
-6.323       9.379      -0.990

 BASE        18          SERVICE                17.56        3.55       46.51
-2.879       4.806      -0.540
 BASE        18          SC2ULT                 22.49        4.71       58.54
-3.852       6.154      -0.688

 BASE        19          SERVICE                22.44        1.69       55.81
-3.148       6.071      -0.613
 BASE        19          SC2ULT                 28.77        2.36       70.19
-4.212       7.775      -0.781

 BASE        20          SERVICE                36.28        3.65       89.82
-4.023       9.733      -0.867
 BASE        20          SC2ULT                 46.53        4.94      112.94
-5.392      12.468      -1.105

 BASE        21          SERVICE                44.51        1.44      106.66
-2.898      11.856      -0.900
 BASE        21          SC2ULT                 57.08        2.05      134.01
-3.901      15.184      -1.148
```


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BASE	22	SERVICE	33.76	1.65	83.15	-1.019
8.948	-0.722					
BASE	22	SC2ULT	43.28	2.19	104.49	-1.389
11.453	-0.921					
BASE	23	SERVICE	23.34	-1.22	58.25	-0.152
6.358	-0.580					
BASE	23	SC2ULT	29.86	-1.53	73.13	-0.225
8.130	-0.739					
BASE	24	SERVICE	55.46	-2.15	142.63	-0.589
15.603	-0.830					
BASE	24	SC2ULT	70.76	-2.67	179.09	-0.845
19.930	-1.058					
BASE	25	SERVICE	65.64	2.40	181.27	-3.365
18.694	-0.640					
BASE	25	SC2ULT	83.60	3.34	227.79	-4.570
23.841	-0.813					
BASE	26	SERVICE	59.56	6.72	168.45	-7.483
17.204	-0.657					
BASE	26	SC2ULT	75.82	9.14	211.88	-10.063
21.942	-0.835					
BASE	27	SERVICE	62.41	10.36	176.63	-10.461
17.773	-0.645					
BASE	27	SC2ULT	79.62	13.96	222.37	-14.045
22.700	-0.823					
BASE	28	SERVICE	63.04	9.46	174.65	-9.787
17.371	-0.711					
BASE	28	SC2ULT	80.67	12.78	219.88	-13.159
22.219	-0.908					
BASE	29	SERVICE	96.44	6.56	262.27	-7.923
25.734	-0.597					
BASE	29	SC2ULT	123.62	9.04	329.72	-10.754
32.945	-0.764					
BASE	30	SERVICE	107.70	1.17	342.48	-2.957
28.571	-0.511					
BASE	30	SC2ULT	137.63	1.89	430.31	-4.202
36.512	-0.654					
BASE	31	SERVICE	83.69	12.99	348.37	-13.021
23.304	-0.574					
BASE	31	SC2ULT	106.50	17.63	438.12	-17.607
29.722	-0.732					
BASE	32	SERVICE	73.94	23.41	355.56	-22.607
19.185	-0.851					
BASE	32	SC2ULT	94.56	31.41	447.72	-30.312
24.564	-1.087					
BASE	33	SERVICE	53.48	13.75	314.74	-13.702
12.492	-0.992					
BASE	33	SC2ULT	68.82	18.44	396.09	-18.348
16.070	-1.268					
BASE	34	SERVICE	19.92	5.29	155.04	-2.841
4.398	-1.026					

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BASE	34	SC2ULT	25.70	6.94	194.97	-3.810	5.659	-1.312
BASE	35	SERVICE	2.16	0.11	39.09	-0.225	0.765	-0.463
BASE	35	SC2ULT	2.80	0.16	49.11	-0.304	0.986	-0.591
BASE	36	SERVICE	3.33	-2.00	203.15	-0.753	3.184	-0.715
BASE	36	SC2ULT	4.37	-2.50	255.27	-1.031	4.110	-0.916
BASE	37	SERVICE	0.47	2.14	276.47	-0.914	0.388	-1.277
BASE	37	SC2ULT	0.76	2.84	347.56	-1.263	0.555	-1.622
BASE	38	SERVICE	-2.49	0.92	140.05	-0.378	-0.665	-0.564
BASE	38	SC2ULT	-3.08	1.22	176.14	-0.527	-0.812	-0.718
BASE	39	SERVICE	-3.43	-0.08	102.05	-0.281	-1.081	-0.944
BASE	39	SC2ULT	-4.28	-0.07	128.36	-0.383	-1.351	-1.200
BASE	40	SERVICE	-1.55	1.02	88.61	-0.254	-1.101	-0.825
BASE	40	SC2ULT	-1.90	1.31	111.46	-0.341	-1.381	-1.047
BASE	41	SERVICE	-0.99	-0.14	82.99	-0.329	-1.278	-0.777
BASE	41	SC2ULT	-1.18	-0.15	104.35	-0.431	-1.610	-0.988
BASE	42	SERVICE	0.27	-4.66	55.85	3.083	0.757	0.484
BASE	42	SC2ULT	0.38	-6.44	66.29	4.062	1.001	0.619
BASE	43	SERVICE	-0.48	0.65	95.18	-0.559	-1.528	-0.858
BASE	43	SC2ULT	-0.53	0.85	119.65	-0.724	-1.927	-1.092
BASE	44	SERVICE	0.89	0.29	105.85	-0.908	-1.722	-0.903
BASE	44	SC2ULT	1.22	0.39	133.00	-1.167	-2.176	-1.150
BASE	45	SERVICE	0.72	0.78	83.02	-0.953	-1.328	-0.723
BASE	45	SC2ULT	0.98	1.00	104.29	-1.223	-1.681	-0.922
BASE	46	SERVICE	-1.12	0.44	68.76	-1.041	-0.981	-0.287
BASE	46	SC2ULT	-1.41	0.58	86.35	-1.340	-1.246	-0.366

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BASE	48	SERVICE	-2.21	0.15	80.54	-1.549
-1.088	-0.349					
BASE	48	SC2ULT	-2.79	0.21	101.14	-2.002
-1.385	-0.444					
BASE	49	SERVICE	-5.11	2.33	108.34	-3.079
-1.176	0.208					
BASE	49	SC2ULT	-6.58	3.06	136.08	-4.017
-1.506	0.265					
BASE	50	SERVICE	-11.50	4.17	128.82	-5.318
-1.321	0.652					
BASE	50	SC2ULT	-14.75	5.53	161.88	-6.989
-1.699	0.830					
BASE	52	SERVICE	-7.82	5.28	93.44	-5.200
-0.828	0.432					
BASE	52	SC2ULT	-10.07	6.98	117.48	-6.869
-1.068	0.553					
BASE	53	SERVICE	-6.52	9.25	123.85	-8.746
-1.090	0.279					
BASE	53	SC2ULT	-8.45	12.26	155.85	-11.588
-1.401	0.359					
BASE	54	SERVICE	-5.95	13.21	160.06	-13.563
-1.333	0.175					
BASE	54	SC2ULT	-7.72	17.59	201.49	-18.000
-1.699	0.225					
BASE	56	SERVICE	-0.61	15.90	177.21	-16.591
-1.324	-0.226					
BASE	56	SC2ULT	-0.74	21.18	223.06	-22.023
-1.666	-0.288					
BASE	57	SERVICE	2.85	13.18	153.17	-14.032
-0.947	-0.416					
BASE	57	SC2ULT	3.78	17.54	192.70	-18.593
-1.166	-0.534					
BASE	60	SERVICE	3.53	7.02	84.00	-7.137
-0.446	-0.390					
BASE	60	SC2ULT	4.63	9.29	105.57	-9.417
-0.543	-0.501					
BASE	61	SERVICE	9.62	7.72	114.76	-8.966
-0.042	-0.448					
BASE	61	SC2ULT	12.46	10.15	144.03	-11.735
-0.021	-0.576					
BASE	62	SERVICE	6.05	6.32	130.56	-9.183
0.094	-0.939					
BASE	62	SC2ULT	7.90	8.24	163.75	-11.890
0.143	-1.202					
BASE	64	SERVICE	-8.78	7.26	171.21	-9.574
1.669	0.814					
BASE	64	SC2ULT	-11.13	9.29	214.72	-12.258
2.132	1.029					
BASE	65	SERVICE	-14.61	8.80	254.86	-10.526
3.709	1.514					
BASE	65	SC2ULT	-18.71	11.25	320.04	

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				-13.434	4.702	1.925	
BASE	67	SERVICE	-6.45	3.99	211.68	-6.585	3.547	1.660
BASE	67	SC2ULT	-8.38	5.13	266.31	-8.437	4.492	2.113
BASE	69	SERVICE	-6.30	8.55	314.87	-9.007	3.517	1.539
BASE	69	SC2ULT	-8.34	11.13	396.94	-11.678	4.442	1.963
BASE	72	SERVICE	-1.51	16.22	449.10	-16.746	-0.962	0.921
BASE	72	SC2ULT	-2.27	21.14	566.65	-21.750	-1.246	1.174
BASE	75	SERVICE	-5.04	-13.37	227.00	-6.319	-3.693	4.706
BASE	75	SC2ULT	-6.53	-16.73	286.56	-8.206	-4.722	5.982
BASE	77	SERVICE	-3.04	-11.04	25.57	-3.501	-0.436	0.085
BASE	77	SC2ULT	-3.85	-14.03	32.30	-4.480	-0.559	0.109
BASE	78	SERVICE	-6.11	14.82	31.26	-4.651	-0.633	0.086
BASE	78	SC2ULT	-7.80	18.84	39.48	-5.958	-0.813	0.110
BASE	79	SERVICE	-16.45	26.02	161.81	-1.625	-5.161	3.285
BASE	79	SC2ULT	-21.15	33.16	204.36	-2.183	-6.619	4.166
BASE	84	SERVICE	-36.89	0.52	284.35	-3.390	-12.030	1.090
BASE	84	SC2ULT	-47.36	1.06	359.02	-4.676	-15.416	1.382
BASE	89	SERVICE	-52.94	5.07	295.24	-3.922	-16.655	0.183
BASE	89	SC2ULT	-67.76	7.00	372.80	-5.514	-21.302	0.231
BASE	94	SERVICE	-43.29	2.42	197.75	-3.125	-12.909	0.918
BASE	94	SC2ULT	-55.33	3.48	249.70	-4.367	-16.496	1.167
BASE	96	SERVICE	-21.69	1.95	95.08	-1.571	-6.439	0.514
BASE	96	SC2ULT	-27.73	2.69	120.07	-2.199	-8.227	0.655
BASE	97	SERVICE	-20.58	1.77	85.29	-1.666	-5.950	0.608
BASE	97	SC2ULT	-26.32	2.44	107.70	-2.314	-7.601	0.775
BASE	99	SERVICE	-49.02	6.75	187.20			

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```
-4.804      -13.255        0.781
 BASE         99           SC2ULT                -62.70         9.10       236.50
-6.613      -16.930        0.997

 BASE        102           SERVICE               -57.82         8.17       217.07
-7.509      -15.639        0.669
 BASE        102           SC2ULT                -73.93        11.13       274.24
-10.266      -19.967        0.853

 BASE        105           SERVICE               -35.22         6.05       138.18
-5.621       -9.658        0.725
 BASE        105           SC2ULT                -44.97         8.22       174.61
-7.659      -12.321        0.925

 BASE        108           SERVICE               -47.83         9.57       198.10
-7.641      -13.396        0.654
 BASE        108           SC2ULT                -60.96        12.91       250.31
-10.429      -17.078        0.834

 BASE        111           SERVICE               -60.65         9.08       256.56
-8.064      -16.742        0.558
 BASE        111           SC2ULT                -77.23        12.38       324.05
-11.077      -21.328        0.710

 BASE        112           SERVICE               -31.06         1.78       132.57
-3.450       -8.620        0.415
 BASE        112           SC2ULT                -39.56         2.64       167.38
-4.775      -10.984        0.529

 BASE        113           SERVICE               -33.32         6.66       152.47
-4.070       -8.993        0.455
 BASE        113           SC2ULT                -42.53         8.92       192.56
-5.624      -11.456        0.579

 BASE        116           SERVICE               -58.25        11.07       268.34
-10.090      -15.306        0.488
 BASE        116           SC2ULT                -74.41        15.06       338.97
-13.811      -19.508        0.621

 BASE        119           SERVICE               -50.93        16.11       267.93
-14.725      -13.321        0.419
 BASE        119           SC2ULT                -65.03        21.79       338.65
-19.995      -16.962        0.532

 BASE        120           SERVICE                -4.57        14.18       839.96
-11.872       -3.561        0.064
 BASE        120           SC2ULT                 -6.10        18.65      1068.50
-15.653       -4.789        0.084

 BASE        122           SERVICE                 0.67       -13.70        91.57
5.413        0.114        0.425
 BASE        122           SC2ULT                  0.89       -17.98       111.15
7.023        0.167        0.544

 BASE        126           SERVICE               -40.35        17.23       264.21
-15.898      -10.925        0.344
 BASE        126           SC2ULT                -51.35        23.29       334.03
-21.563      -13.880        0.436

 BASE        131           SERVICE               -30.57        12.84       255.97
-11.993       -8.716        0.261
 BASE        131           SC2ULT                -38.74        17.45       323.50
-16.357      -11.050        0.328
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 BASE        133         SERVICE                -2.71       22.04     1554.66
-20.220      -1.358       0.195
 BASE        133         SC2ULT                 -3.65       28.62     1979.42
-26.228      -1.898       0.250

 BASE        137         SERVICE               -23.98        6.95      245.00
-6.516      -6.947        0.219
 BASE        137         SC2ULT                -30.35        9.58      309.39
-9.041      -8.801        0.276

 BASE        146         SERVICE               -19.13        3.81      234.15
-3.411      -5.387        0.182
 BASE        146         SC2ULT                -24.24        5.37      295.50
-4.874      -6.818        0.230

 BASE        151         SERVICE               -14.71        3.84      225.42
-3.335      -3.912        0.143
 BASE        151         SC2ULT                -18.59        5.37      284.39
-4.736      -4.925        0.181

 BASE        157         SERVICE               -12.06        5.53      220.03
-4.993      -2.836        0.090
 BASE        157         SC2ULT                -15.12        7.58      277.55
-6.903      -3.532        0.115

 BASE        163         SERVICE               -12.43        7.88      219.19
-7.156      -2.507        0.046
 BASE        163         SC2ULT                -15.48       10.65      276.41
-9.734      -3.088        0.060

 BASE        166         SERVICE                 0.22       23.50     1674.99
-22.353       1.918       0.346
 BASE        166         SC2ULT                  0.31       30.34     2131.86
-28.776       2.487       0.441

 BASE        171         SERVICE               -13.67        8.65      223.54
-7.871      -2.840       -0.018
 BASE        171         SC2ULT                -16.89       11.63      281.63
-10.634      -3.483      -0.022

 BASE        181         SERVICE                -8.44        6.19      230.98
-5.290      -3.209       -0.130
 BASE        181         SC2ULT                -10.14        8.27      290.62
-7.133      -3.941       -0.164

 BASE        187         SERVICE                25.11       41.29      222.55
-3.535      -0.987        0.028
 BASE        187         SC2ULT                 31.92       52.51      280.74
-4.661      -1.135        0.035

 BASE        210         SERVICE                -0.30       21.85     1744.14
-19.943       1.767       0.496
 BASE        210         SC2ULT                 -0.30       28.16     2219.27
-25.609       2.343       0.633

 BASE        248         SERVICE                -1.76       23.42     1764.57
-18.373      -0.068       0.521
 BASE        248         SC2ULT                 -2.23       30.31     2243.99
-23.766      -0.070       0.665

 BASE        287         SERVICE                 4.29       17.79     1918.34
-15.257       4.026       0.065
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BASE	287	SC2ULT	5.83	22.68	2432.21	-19.392
						5.486
						0.084
BASE	294	SERVICE	448.61	293.22	1597.03	-10.574
						32.342
						1.570
BASE	294	SC2ULT	570.47	373.67	2031.79	-13.523
						41.023
						1.995
BASE	295	SERVICE	331.88	10.08	2080.44	-6.315
						72.710
						0.561
BASE	295	SC2ULT	422.24	12.80	2646.08	-8.014
						92.482
						0.715
BASE	297	SERVICE	-196.38	599.23	2062.81	-38.783
						41.730
						-0.096
BASE	297	SC2ULT	-249.62	763.18	2624.91	-49.433
						53.276
						-0.121
BASE	313	SERVICE	-59.20	5.74	452.04	-0.800
						-11.715
						-0.779
BASE	313	SC2ULT	-74.99	7.23	571.21	-1.001
						-14.846
						-0.988
BASE	315	SERVICE	-44.23	17.26	459.03	-1.958
						-9.910
						-0.235
BASE	315	SC2ULT	-56.50	21.93	581.11	-2.482
						-12.645
						-0.303
BASE	316	SERVICE	209.21	319.83	717.19	-13.515
						-8.435
						-0.263
BASE	316	SC2ULT	264.65	405.64	908.00	-17.146
						-10.877
						-0.339
BASE	317	SERVICE	-55.16	0.88	502.39	-1.534
						-12.445
						-0.792
BASE	317	SC2ULT	-70.30	1.10	635.72	-1.919
						-15.854
						-1.011
BASE	318	SERVICE	-65.91	-1.57	599.11	-1.753
						-14.629
						-0.667
BASE	318	SC2ULT	-83.93	-2.07	757.85	-2.212
						-18.623
						-0.852
BASE	319	SERVICE	-54.59	178.38	759.30	-5.574
						-12.027
						-0.389
BASE	319	SC2ULT	-69.38	225.61	960.66	-7.027
						-15.290
						-0.496
BASE	320	SERVICE	-45.01	-0.42	406.22	-0.911
						-10.111
						-0.429
BASE	320	SC2ULT	-57.12	-0.59	513.55	-1.146
						-12.840
						-0.545
BASE	321	SERVICE	-49.36	0.36	405.17	-0.973
						-10.550
						-0.479
BASE	321	SC2ULT	-62.56	0.44	512.15	-1.199
						-13.379
						-0.608
BASE	322	SERVICE	-193.91	154.37	473.81	-2.566
						-4.122
						-0.971
BASE	322	SC2ULT	-245.31	195.30	599.71	-3.242
						-5.173
						-1.230

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 BASE        436         SERVICE                -5.66       66.67      581.70
-8.296      -0.687       0.227
 BASE        436         SC2ULT                 -7.13       85.37      736.42
-10.594      -0.872       0.287

 BASE        450         SERVICE                 0.27       98.42      699.06
-15.616      -0.862      -0.016
 BASE        450         SC2ULT                  0.35      125.32      884.87
-19.816      -1.096      -0.020

 BASE        457         SERVICE                 8.89      185.93      969.16
-45.839      -6.958      -0.356
 BASE        457         SC2ULT                 11.11      236.19     1228.09
-58.212      -8.914      -0.453

 BASE        458         SERVICE                -2.33      -26.21      130.15
9.251      -1.662       0.458
 BASE        458         SC2ULT                 -3.04      -33.94      159.64
11.912      -2.172       0.583

 BASE        465         SERVICE                 1.62       23.39      212.27
-3.554       2.508       0.171
 BASE        465         SC2ULT                  2.20       30.28      267.47
-4.654       3.364       0.214

 BASE        484         SERVICE                 0.81      433.53     1823.26
-91.680       5.188      -1.028
 BASE        484         SC2ULT                  1.31      553.53     2321.56
-116.942       6.834      -1.309

 BASE        491         SERVICE                 4.50      127.61     1091.12
-22.495      -0.435       1.048
 BASE        491         SC2ULT                  5.59      163.85     1389.58
-28.842      -0.665       1.330

 BASE        634         SERVICE                -0.41       96.91     1089.09
-12.296       0.620      -0.371
 BASE        634         SC2ULT                 -0.48      124.78     1382.41
-15.859       0.840      -0.466

 BASE        639         SERVICE                -0.73      124.29     1218.84
-18.938      -0.872       0.027
 BASE        639         SC2ULT                 -0.93      158.66     1545.47
-24.112      -1.106       0.034

 BASE        644         SERVICE                -18.19      189.87     1523.56
-52.034     -10.359       2.132
 BASE        644         SC2ULT                 -23.36      241.26     1931.91
-66.116     -13.356       2.736

 BASE        645         SERVICE                 4.30       19.33      252.70
-1.493       5.477      -0.017
 BASE        645         SC2ULT                  5.75       25.20      319.06
-2.063       7.275      -0.028

 BASE        646         SERVICE                -10.21      607.54     1356.19
-20.134      -9.687       0.586
 BASE        646         SC2ULT                 -13.25      777.74     1733.76
-25.887     -12.584       0.749

 BASE        648         SERVICE                 -2.34      -33.55      132.93
10.051      -1.951       0.509
 BASE        648         SC2ULT                  -3.06      -43.11      163.74
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12.897      -2.546       0.648

 BASE        662         SERVICE                12.53      487.34     2935.76
-110.397      12.629      -0.471
 BASE        662         SC2ULT                 16.58      624.04     3743.00
-141.086      16.719      -0.601

 BASE        675         SERVICE                -4.40      161.91     1543.50
-32.802      -3.587      -0.151
 BASE        675         SC2ULT                 -5.86      208.77     1969.48
-42.162      -4.832      -0.194

 BASE        685         SERVICE                -4.25      183.17      381.71
-5.620      -3.006       0.122
 BASE        685         SC2ULT                 -5.68      231.85      482.95
-7.196      -3.995       0.164

 BASE        688         SERVICE                 2.60     1356.70     3514.37
-27.552       4.055       1.831
 BASE        688         SC2ULT                  3.66     1719.08     4451.32
-35.058       5.439       2.315

 BASE        710         SERVICE                 4.32     1313.45     1820.42
-12.664       2.328       2.439
 BASE        710         SC2ULT                  5.88     1671.19     2316.29
-16.226       3.150       3.100

 BASE        857         SERVICE                19.52      221.32     4931.96
-29.274      21.014      -0.470
 BASE        857         SC2ULT                 25.69      284.53     6273.79
-37.712      27.815      -0.595

 BASE        863         SERVICE               -14.01      175.76     1857.66
-34.053     -13.306       0.058
 BASE        863         SC2ULT                -18.22      226.47     2375.51
-43.911     -17.362       0.065

 BASE        864         SERVICE               349.03     -212.96     1167.41
-23.194      -4.234       0.385
 BASE        864         SC2ULT                442.76     -269.86     1479.92
-29.605      -5.502       0.493

 BASE        865         SERVICE               -328.33        3.77      431.27
0.221       3.458      -0.171
 BASE        865         SC2ULT               -416.81        4.87      547.90
0.312       4.347      -0.220

 BASE        867         SERVICE               288.80       -2.23      270.97
1.396      -6.767      -0.802
 BASE        867         SC2ULT                367.12       -2.68      344.42
1.847      -8.567      -1.020

 BASE        868         SERVICE                -84.50     -199.80     1322.76
-24.441     -14.174      -0.250
 BASE        868         SC2ULT               -107.09     -253.10     1678.35
-32.020     -17.949      -0.317

 BASE        869         SERVICE               -304.38        1.28      476.17
2.529      -6.736       0.709
 BASE        869         SC2ULT               -386.76        1.92      604.28
3.354      -8.531       0.904

 BASE        871         SERVICE                224.60        2.27      267.96
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2.678       -3.552       -0.763
 BASE        871          SC2ULT                286.18        3.18       341.75
3.541       -4.453       -0.973

 BASE        872          SERVICE              -245.84     -194.77       926.26
-17.630      -2.613        0.083
 BASE        872          SC2ULT               -312.70     -246.72      1174.69
-23.216      -3.242        0.111

 BASE        878          SERVICE                 3.59        7.70       148.51
0.062        3.416       -0.048
 BASE        878          SC2ULT                  4.75       10.13       187.71
-0.016       4.536       -0.065

 BASE        880          SERVICE                 4.16        0.45       153.71
1.177        4.845       -0.056
 BASE        880          SC2ULT                  5.46        0.93       194.50
1.392        6.368       -0.074

 BASE        901          SERVICE                -3.41      604.62       777.17
-5.730       -1.042       -0.035
 BASE        901          SC2ULT                 -4.54      776.62       997.51
-7.412       -1.388       -0.039

 BASE        905          SERVICE                -5.30       53.16       465.06
-9.307       -7.453       -0.204
 BASE        905          SC2ULT                 -7.00       68.24       587.95
-11.928      -9.873       -0.255

 BASE        907          SERVICE                -0.48      -30.12       119.45
8.612        0.095        0.503
 BASE        907          SC2ULT                 -0.57      -38.56       147.75
11.013       0.174        0.640

 BASE        925          SERVICE                -4.68       47.88       540.86
-7.902       -5.017       0.044
 BASE        925          SC2ULT                 -6.24       62.12       685.41
-10.242      -6.666        0.058

 BASE        934          SERVICE                12.00      184.25      6391.09
-39.686      12.634       -0.978
 BASE        934          SC2ULT                 15.83      236.24      8096.24
-50.755      16.838       -1.245

 BASE        938          SERVICE                -5.14      152.19      1610.56
-35.709      -5.603       -0.237
 BASE        938          SC2ULT                 -6.91      197.73      2060.31
-46.232      -7.501       -0.303

 BASE        940          SERVICE                15.75      342.35      3063.61
-77.986      16.573        0.342
 BASE        940          SC2ULT                 20.88      441.11      3912.45
-100.349      21.922        0.434

 BASE        950          SERVICE               -10.34      104.22      1670.71
-25.307      -10.964       0.692
 BASE        950          SC2ULT                -13.57      136.19      2139.06
-32.964      -14.313       0.877

 BASE        991          SERVICE               -18.31       78.61     17399.78
-66.310      -19.146       3.123
 BASE        991          SC2ULT                -23.14      101.82     22129.54
-85.511      -24.097       3.985
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 BASE        997         SERVICE                -9.80       88.35     2077.10
-14.291     -15.431       0.116
 BASE        997         SC2ULT                -12.98      114.55     2665.24
-18.644     -20.427       0.154

 BASE        1003        SERVICE               -23.34       77.29    15555.02
-37.074     -22.964       3.053
 BASE        1003        SC2ULT                -29.74      101.26    19787.44
-49.153     -29.216       3.901

 BASE        1004        SERVICE               -20.29       75.97    16709.98
-60.547     -20.604       3.865
 BASE        1004        SC2ULT                -25.45       97.74    21254.85
-77.401     -25.804       4.934

 BASE        1012        SERVICE               -31.41       52.80    14903.39
-42.141     -30.474       1.893
 BASE        1012        SC2ULT                -41.17       69.09    18914.65
-55.135     -39.815       2.418

 BASE        1050        SERVICE               -18.62       13.67     2412.01
-8.070     -18.477        0.715
 BASE        1050        SC2ULT                -24.48       18.06     3084.52
-10.833     -24.233       0.917

 BASE        1052        SERVICE                 0.68      -17.26       75.00
5.134      -0.530       0.417
 BASE        1052        SC2ULT                  0.96      -21.94       92.83
6.545      -0.659       0.533

 BASE        1064        SERVICE                18.88       94.92     5939.23
-19.214      16.469      -1.108
 BASE        1064        SC2ULT                 24.99      126.01     7561.38
-25.506      21.911      -1.386

 BASE        1072        SERVICE                 6.81        0.84      171.53
1.584       3.192      -0.036
 BASE        1072        SC2ULT                  8.92        1.46      217.10
1.903       4.231      -0.048

 BASE        1081        SERVICE                -4.79     -529.14      835.44
-16.176      -5.693      -0.154
 BASE        1081        SC2ULT                 -6.33     -676.32     1064.51
-21.123      -7.477      -0.200

 BASE        1085        SERVICE                22.80       -5.88      472.12
2.592      26.363      -0.235
 BASE        1085        SC2ULT                 30.03       -6.92      597.81
3.051      34.726      -0.313

 BASE        1089        SERVICE                -8.81       26.82     3392.69
-24.987      -8.629      -0.035
 BASE        1089        SC2ULT                -11.85       35.23     4352.71
-32.869     -11.579      -0.047

 BASE        1093        SERVICE                 7.05       32.03     3885.39
-30.219       6.519      -0.038
 BASE        1093        SC2ULT                  9.59       42.14     4991.92
-39.797       8.906      -0.051

 BASE        1099        SERVICE                -8.49       31.57     4967.75
-30.109      -8.913      -0.112
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BASE	1099	SC2ULT	-11.32	41.59	6388.07	-39.683	-11.845	-0.144
BASE	1110	SERVICE	-10.39	52.48	667.58	-9.876	-16.928	0.341
BASE	1110	SC2ULT	-13.71	68.49	847.82	-12.881	-22.414	0.435
BASE	1114	SERVICE	-0.40	-24.10	108.67	7.049	-0.712	0.373
BASE	1114	SC2ULT	-0.49	-30.54	135.08	8.959	-0.890	0.474
BASE	1121	SERVICE	8.59	-548.41	1121.98	-29.151	7.551	0.232
BASE	1121	SC2ULT	11.34	-699.30	1428.93	-37.721	9.991	0.296
BASE	1126	SERVICE	-3.92	-291.58	605.73	-17.722	-2.905	-0.470
BASE	1126	SC2ULT	-5.19	-372.11	772.33	-23.055	-3.881	-0.598
BASE	1134	SERVICE	13.76	22.17	3881.70	-12.899	26.723	1.297
BASE	1134	SC2ULT	18.15	30.30	4919.93	-16.803	35.499	1.650
BASE	1136	SERVICE	-10.54	-572.79	1395.73	-11.279	-8.098	-0.454
BASE	1136	SC2ULT	-13.97	-734.35	1787.92	-14.783	-10.733	-0.585
BASE	1172	SERVICE	-6.47	-198.74	213.66	-4.106	-0.196	0.182
BASE	1172	SC2ULT	-8.64	-252.20	268.73	-5.381	-0.266	0.229
BASE	1175	SERVICE	1.43	-1261.74	718.23	-0.176	-11.892	-2.248
BASE	1175	SC2ULT	2.12	-1599.23	906.66	-0.323	-15.797	-2.851
BASE	1213	SERVICE	5.63	-1366.34	2540.16	-6.365	7.383	-0.437
BASE	1213	SC2ULT	7.58	-1738.08	3228.01	-8.715	9.813	-0.547
BASE	1274	SERVICE	13.68	-15.56	334.43	5.264	12.510	0.006
BASE	1274	SC2ULT	17.92	-18.88	423.89	6.441	16.472	0.004
BASE	1332	SERVICE	-7.19	-34.95	169.02	10.043	-7.518	0.511
BASE	1332	SC2ULT	-9.45	-44.16	210.70	12.721	-9.874	0.651
BASE	1477	SERVICE	18.41	-22.30	376.15	6.720	17.310	0.004
BASE	1477	SC2ULT	24.15	-27.40	477.10	8.258	22.809	0.002

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 BASE        1498        SERVICE                -14.71      -39.15      177.19
11.051     -14.198       0.382
 BASE        1498        SC2ULT                 -19.40      -49.61      221.45
14.030     -18.722       0.486

 BASE        1582        SERVICE                 21.84      -28.12      392.87
7.910      20.269      -0.041
 BASE        1582        SC2ULT                  28.67      -34.90      498.54
9.780      26.725      -0.055

 BASE        1616        SERVICE                -17.45      -48.74      182.74
13.242     -17.138       0.426
 BASE        1616        SC2ULT                 -23.03      -62.24      228.74
16.910     -22.610       0.537

 BASE        1697        SERVICE                 23.83      -34.68      407.22
9.234      21.878      -0.065
 BASE        1697        SC2ULT                  31.30      -43.39      516.81
11.494      28.861      -0.085

 BASE        1728        SERVICE                -14.67      -58.16      182.31
15.448     -14.212       0.266
 BASE        1728        SC2ULT                 -19.35      -74.62      228.07
19.808     -18.726       0.336

 BASE        1808        SERVICE                 23.12      -40.11      420.67
10.523      20.391      -0.070
 BASE        1808        SC2ULT                  30.36      -50.37      533.93
13.157      26.887      -0.090

 BASE        1842        SERVICE                  -7.13      -62.01      179.76
16.459      -7.772       0.366
 BASE        1842        SC2ULT                   -9.35      -79.59      224.63
21.112     -10.180       0.458

 BASE        1916        SERVICE                 16.36      -47.46      357.55
11.334      16.755      -0.191
 BASE        1916        SC2ULT                  21.40      -59.96      453.18
14.246      21.955      -0.244

 BASE        1946        SERVICE                -17.64      689.94     2491.00
3.214     -17.712       0.413
 BASE        1946        SC2ULT                 -23.42      887.79     3202.27
4.249     -23.525       0.536

 BASE        1951        SERVICE                  1.19     2776.05     2369.08
-5.511      -2.001       1.555
 BASE        1951        SC2ULT                   1.51     3545.03     3020.51
-6.870      -2.627       1.984

 BASE        1953        SERVICE                  1.00     2630.44     2340.92
-5.703       1.005       1.237
 BASE        1953        SC2ULT                   1.35     3359.73     2985.09
-7.119       1.334       1.574

 BASE        1997        SERVICE                  9.74     1936.23     1580.04
-4.833     -13.209       2.363
 BASE        1997        SC2ULT                  13.13     2460.30     2006.12
-6.098     -17.524       2.990

 BASE        2006        SERVICE                -16.46      295.22     1025.18
3.431     -15.971      -0.895
 BASE        2006        SC2ULT                 -21.83      376.19     1304.98
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4.483      -21.185       -1.141

 BASE        2007        SERVICE                -1.59       -40.93       124.60
10.940      -0.894        0.140
 BASE        2007        SC2ULT                 -1.99       -52.43       155.64
13.993      -1.098        0.177

 BASE        2012        SERVICE               497.28       353.11       869.53
5.262      -2.359        0.778
 BASE        2012        SC2ULT                627.34       444.43      1091.26
7.222      -3.058        0.990

 BASE        2013        SERVICE               -11.00        -1.82       734.28
-1.487      -2.494        0.865
 BASE        2013        SC2ULT                -14.37        -2.72       925.68
-1.920      -3.254        1.092

 BASE        2014        SERVICE               -10.50        -6.40       558.13
7.757      -2.168        0.439
 BASE        2014        SC2ULT                -13.50        -8.43       703.53
10.275      -2.791        0.555

 BASE        2015        SERVICE               -15.59        -9.12       814.45
7.879      -3.042        0.574
 BASE        2015        SC2ULT                -19.94       -12.03      1026.56
10.477      -3.900        0.725

 BASE        2016        SERVICE               -19.55       -10.42       977.05
9.790      -3.699        0.568
 BASE        2016        SC2ULT                -24.83       -13.79      1231.49
13.001      -4.708        0.719

 BASE        2017        SERVICE               -25.08       -12.21      1163.63
11.894      -4.627        0.451
 BASE        2017        SC2ULT                -31.61       -16.19      1466.78
15.791      -5.837        0.572

 BASE        2018        SERVICE               -36.69       -16.07      1518.14
15.642      -6.954        0.377
 BASE        2018        SC2ULT                -45.70       -21.29      1914.24
20.761      -8.668        0.481

 BASE        2019        SERVICE               -36.08       -15.51      1449.97
14.621      -6.143        0.078
 BASE        2019        SC2ULT                -44.39       -20.53      1829.41
19.412      -7.493        0.107

 BASE        2020        SERVICE               -28.04       -11.36      1102.14
12.458      -4.999        0.169
 BASE        2020        SC2ULT                -33.75       -15.07      1391.86
16.538      -5.954        0.223

 BASE        2021        SERVICE               -26.18         1.22       954.10
0.569      -4.015       -0.338
 BASE        2021        SC2ULT                -31.10         0.97      1206.08
0.785      -4.632       -0.417

 BASE        2022        SERVICE              -424.92       433.81       646.73
9.436       9.701        1.655
 BASE        2022        SC2ULT               -536.32       548.02       806.73
12.652      13.187        2.103

 BASE        2042        SERVICE                20.22       891.01       470.79
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6.649       -0.433       -4.304
 BASE        2042        SC2ULT                 25.60     1128.03      591.87
8.579       -0.560       -5.451

 BASE        2053        SERVICE               -23.63        4.03    13765.66
0.000       0.000       0.000
 BASE        2053        SC2ULT                -31.01        5.07    17543.72
0.000       0.000       0.000

 BASE        2061        SERVICE                25.12      -53.08      442.71
13.486      18.998      -0.070
 BASE        2061        SC2ULT                 32.49      -66.39      562.84
16.849      24.856      -0.087

 BASE        2062        SERVICE                38.82        2.95     1232.77
-1.244      38.125      -0.069
 BASE        2062        SC2ULT                 51.13        4.00     1580.95
-1.850      50.227      -0.090

 BASE        2068        SERVICE               -46.37       12.77     4492.08
-10.571     -44.584      -0.047
 BASE        2068        SC2ULT                -61.36       17.07     5777.95
-14.249     -58.996      -0.061

 BASE        2081        SERVICE                -4.69       -9.24     1336.54
3.082       0.863       -1.872
 BASE        2081        SC2ULT                 -5.18      -14.41     1690.19
4.609       1.213       -2.368

 BASE        2093        SERVICE                29.87       51.67     5022.68
-5.430      53.629      -1.887
 BASE        2093        SC2ULT                 39.40       65.57     6382.39
-6.831      71.143      -2.401

 BASE        2099        SERVICE                -0.26       67.45     6316.09
-7.427       1.675      -2.841
 BASE        2099        SC2ULT                 -0.44       84.88     8066.33
-9.145       2.062      -3.626

 BASE        2108        SERVICE                -0.91      109.65     5422.04
-9.259      -0.391      -1.904
 BASE        2108        SC2ULT                 -1.02      138.76     6925.47
-11.503      -0.329      -2.432

 BASE        2121        SERVICE               -12.42       32.10    18050.70
0.000       0.000       0.000
 BASE        2121        SC2ULT                -15.78       41.36    23018.05
0.000       0.000       0.000

 BASE        2129        SERVICE               -46.63       11.56    16149.38
0.000       0.000       0.000
 BASE        2129        SC2ULT                -60.66       13.81    20559.94
0.000       0.000       0.000

 BASE        2141        SERVICE                 0.50       40.80     1355.23
-3.583      -0.106      -0.020
 BASE        2141        SC2ULT                  0.63       50.02     1708.76
-4.075      -0.145      -0.026

 BASE        2149        SERVICE               -32.27      -33.86     2951.80
24.780     -12.805      -2.141
 BASE        2149        SC2ULT                -40.89      -44.98     3738.90
31.974     -16.252      -2.709
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 BASE        2153        SERVICE                44.17        0.29     5040.01
7.430      42.838      -0.097
 BASE        2153        SC2ULT                 58.45        0.73     6461.46
9.088      56.678      -0.131

 BASE        2156        SERVICE               -13.44        1.40     6664.63
5.061     -11.857       0.966
 BASE        2156        SC2ULT                -18.17        2.07     8565.88
6.206     -16.114       1.230

 BASE        2167        SERVICE               -28.63       -3.78     2784.98
10.244    -32.456       0.796
 BASE        2167        SC2ULT                -37.38       -4.87     3565.91
13.125    -42.201       1.017

 BASE        2169        SERVICE                 1.23      -27.53       86.43
7.647      -1.297       0.256
 BASE        2169        SC2ULT                  1.66      -35.08      107.68
9.751      -1.644       0.322

 BASE        2199        SERVICE                 1.41      -30.79     6914.89
4.216       2.805       0.718
 BASE        2199        SC2ULT                  2.07      -39.88     8832.15
5.544       4.034       0.916

 BASE        2208        SERVICE                 1.67      -10.41     7035.28
-0.488      1.514       1.617
 BASE        2208        SC2ULT                  1.93      -13.74     8984.59
-0.498      1.753       2.063

 BASE        2214        SERVICE                34.88       -0.98     5052.59
-4.067     60.237       1.477
 BASE        2214        SC2ULT                 45.85       -0.98     6420.71
-5.219     79.945       1.883

 BASE        2219        SERVICE                -2.13      -43.24      147.14
12.015     -2.360       0.286
 BASE        2219        SC2ULT                 -2.72      -54.85      183.88
15.271     -3.020       0.359

 BASE        2246        SERVICE               -17.71     -708.63     2538.59
2.937     -17.714      -0.461
 BASE        2246        SC2ULT                -23.53     -912.04     3263.87
3.722     -23.531      -0.597

 BASE        2252        SERVICE               -15.39     -302.95     1061.90
0.177     -15.777       0.778
 BASE        2252        SC2ULT                -20.41     -386.13     1352.33
0.167     -20.930       0.994

 BASE        2255        SERVICE                 8.34    -1940.62     1533.37
2.220     -17.213      -3.250
 BASE        2255        SC2ULT                 11.52    -2466.11     1947.23
2.782     -22.854      -4.106

 BASE        2261        SERVICE                -3.17    -2791.61     3024.96
2.548      -1.875      -2.560
 BASE        2261        SC2ULT                 -4.14    -3565.43     3861.78
3.236      -2.460      -3.260

 BASE        2270        SERVICE                 2.20    -2676.39     3781.65
2.454       0.227       0.229
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BASE	2270	SC2ULT	3.08	-3418.95	4829.01	3.141	0.362	0.295
BASE	2297	SERVICE	22.57	12.47	2274.62	2.248	21.548	0.499
BASE	2297	SC2ULT	30.03	13.05	2873.51	3.445	28.680	0.626
BASE	2313	SERVICE	-0.17	28.23	2197.32	0.102	-0.638	0.026
BASE	2313	SC2ULT	-0.22	34.23	2769.98	0.518	-0.820	0.033
BASE	2322	SERVICE	-11.71	103.65	4798.86	-14.775	-15.804	0.141
BASE	2322	SC2ULT	-14.89	129.10	6077.20	-18.158	-20.074	0.178
BASE	2330	SERVICE	26.15	-58.97	479.26	16.418	25.647	0.105
BASE	2330	SC2ULT	34.23	-73.26	608.45	20.397	33.686	0.132
BASE	2360	SERVICE	-6.36	-39.06	142.86	10.933	-6.946	0.191
BASE	2360	SC2ULT	-8.34	-49.41	178.64	13.849	-9.103	0.244
BASE	2404	SERVICE	-4.60	7.44	1524.26	1.412	5.642	0.029
BASE	2404	SC2ULT	-4.86	8.88	1925.01	1.867	7.564	0.036
BASE	2424	SERVICE	-1.28	-6.44	1422.57	4.668	-1.451	-0.003
BASE	2424	SC2ULT	-1.63	-8.54	1793.54	6.010	-1.874	-0.003
BASE	2425	SERVICE	31.61	-62.73	438.13	15.895	27.988	0.015
BASE	2425	SC2ULT	41.44	-78.49	557.16	19.819	36.895	0.020
BASE	2429	SERVICE	-38.61	165.59	3083.36	-41.514	-14.022	2.681
BASE	2429	SC2ULT	-48.90	208.90	3904.46	-52.364	-17.803	3.393
BASE	2439	SERVICE	489.39	-1.65	485.36	-0.126	-0.689	-0.803
BASE	2439	SC2ULT	617.19	-2.06	610.84	-0.172	-0.896	-1.017
BASE	2440	SERVICE	-2.67	0.66	1072.39	-0.563	-1.945	-0.887
BASE	2440	SC2ULT	-3.62	0.88	1351.07	-0.770	-2.505	-1.122
BASE	2441	SERVICE	-17.25	1.21	1288.73	-0.547	-4.651	-0.656
BASE	2441	SC2ULT	-21.86	1.58	1623.72	-0.730	-5.885	-0.831

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BASE	2442	SERVICE	-38.47	1.76	1662.76	-0.521
-9.143	-0.989					
BASE	2442	SC2ULT	-48.19	2.26	2095.39	-0.692
-11.462	-1.250					
BASE	2443	SERVICE	-45.36	1.33	1567.83	-0.253
-9.496	-0.057					
BASE	2443	SC2ULT	-56.37	1.69	1976.60	-0.339
-11.772	-0.079					
BASE	2444	SERVICE	-40.44	0.89	1200.19	-1.234
-8.915	-0.749					
BASE	2444	SC2ULT	-49.69	1.16	1514.13	-1.647
-10.948	-0.949					
BASE	2445	SERVICE	-39.32	-15.22	1022.03	1.145
-7.977	-0.298					
BASE	2445	SC2ULT	-48.05	-19.12	1290.26	1.507
-9.703	-0.383					
BASE	2446	SERVICE	-455.74	-463.77	901.22	-0.658
5.375	0.626					
BASE	2446	SC2ULT	-574.63	-585.73	1133.50	-0.946
7.536	0.786					
BASE	2465	SERVICE	-6.99	-25.73	94.54	7.281
-6.588	0.161					
BASE	2465	SC2ULT	-9.21	-32.56	118.37	9.226
-8.670	0.203					
BASE	2475	SERVICE	0.15	-416.58	370.57	1.906
0.244	0.522					
BASE	2475	SC2ULT	0.19	-525.27	467.79	2.421
0.329	0.658					
BASE	2481	SERVICE	26.00	-985.68	400.15	-9.587
0.260	5.398					
BASE	2481	SC2ULT	32.91	-1248.48	507.71	-12.105
0.338	6.830					
BASE	2536	SERVICE	-11.95	-42.78	139.21	11.595
-12.178	0.152					
BASE	2536	SC2ULT	-15.77	-54.36	174.45	14.730
-16.045	0.192					
BASE	2579	SERVICE	35.07	-64.76	436.79	16.148
31.646	0.031					
BASE	2579	SC2ULT	46.02	-81.38	555.68	20.194
41.717	0.041					
BASE	2658	SERVICE	-16.83	-65.57	193.74	17.677
-16.678	0.079					
BASE	2658	SC2ULT	-22.19	-83.63	242.86	22.541
-21.973	0.096					
BASE	2694	SERVICE	36.13	-69.04	435.02	16.834
32.590	0.017					
BASE	2694	SC2ULT	47.43	-87.27	553.31	21.161
42.961	0.022					
BASE	2788	SERVICE	-12.33	-72.30	191.65	19.312
-12.506	0.055					
BASE	2788	SC2ULT	-16.23	-92.49	240.04	

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24.688     -16.440       0.064

 BASE        2794        SERVICE              -407.39      417.32      890.18
0.164       4.912       1.152
 BASE        2794        SC2ULT               -510.79      523.65     1113.14
0.318       6.822       1.456

 BASE        2808        SERVICE               364.18      429.00      747.97
2.532     -13.314      -1.138
 BASE        2808        SC2ULT                456.69      539.18      935.00
3.315     -17.244      -1.439

 BASE        2809        SERVICE              -429.42        5.76      667.68
-0.223      -6.706      -0.455
 BASE        2809        SC2ULT               -540.40        7.23      841.61
-0.288      -8.648      -0.574

 BASE        2811        SERVICE               396.87       12.71      479.94
-0.107      -5.531       2.421
 BASE        2811        SC2ULT                497.53       16.02      599.50
-0.139      -7.062       3.055

 BASE        2812        SERVICE               -48.43      390.46     2447.97
6.964     -12.689       1.312
 BASE        2812        SC2ULT                -61.77      489.82     3068.40
9.141     -16.176       1.663

 BASE        2813        SERVICE              -434.42        7.04      654.50
-0.190      -6.120      -0.993
 BASE        2813        SC2ULT               -545.36        8.82      822.02
-0.244      -7.790      -1.248

 BASE        2817        SERVICE               413.48        8.09      490.63
-0.329      -5.207       1.609
 BASE        2817        SC2ULT                518.37       10.16      613.34
-0.420      -6.616       2.028

 BASE        2818        SERVICE               -52.72      379.38     1486.96
1.351     -13.054       0.958
 BASE        2818        SC2ULT                -66.79      475.74     1862.63
1.904     -16.550       1.213

 BASE        2819        SERVICE              -452.30        3.79      778.10
-0.068      -7.260      -0.735
 BASE        2819        SC2ULT               -567.66        4.73      976.16
-0.070      -9.197      -0.919

 BASE        2820        SERVICE               391.38        0.28      535.69
-0.270      -4.292       0.357
 BASE        2820        SC2ULT                491.56        0.34      673.19
-0.331      -5.283       0.449

 BASE        2844        SERVICE                35.80      -75.11      430.47
17.905      32.073       0.016
 BASE        2844        SC2ULT                 47.01      -95.49      546.91
22.634      42.280       0.020

 BASE        2869        SERVICE                -1.23       16.19     1352.27
0.698      -2.716       0.323
 BASE        2869        SC2ULT                 -1.16       19.41     1696.86
1.152      -3.553       0.404

 BASE        2872        SERVICE                -1.68       22.63     1321.59
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-1.419      -1.117       0.013
 BASE        2872        SC2ULT                -2.14       28.27     1657.04
-1.676      -1.417       0.016

 BASE        2873        SERVICE               -2.88        9.78     1447.55
3.610      -6.783       0.502
 BASE        2873        SC2ULT                -4.11       12.84     1819.67
4.594      -8.949       0.636

 BASE        2949        SERVICE               -5.19      -71.64      191.07
19.357      -6.126      -0.054
 BASE        2949        SC2ULT                -6.76      -91.56      239.18
24.721      -7.969      -0.072

 BASE        2960        SERVICE               33.05      -81.49      424.21
19.399      27.483       0.024
 BASE        2960        SC2ULT                43.35     -103.97      538.02
24.638      36.174       0.031

 BASE        2978        SERVICE                1.02       -0.20     2525.37
7.873       5.216       0.098
 BASE        2978        SC2ULT                 1.73       -0.74     3171.22
10.131       7.001       0.124

 BASE        2981        SERVICE               -2.24       -5.96     2400.58
7.357      -1.601      -0.030
 BASE        2981        SC2ULT                -2.82       -7.09     3013.12
9.277      -2.028      -0.039

 BASE        2986        SERVICE               -1.25      -26.67     2643.63
14.219      -1.157      -0.063
 BASE        2986        SC2ULT                -1.59      -33.19     3319.73
17.919      -1.483      -0.080

 BASE        2990        SERVICE              -11.15       18.37     2542.39
10.146     -15.839      -0.474
 BASE        2990        SC2ULT               -15.23       25.42     3201.56
12.526     -20.921      -0.614

 BASE        3020        SERVICE              -10.09      714.64     1428.58
2.894      -7.570       0.108
 BASE        3020        SC2ULT               -13.42      919.02     1834.90
3.824     -10.085       0.147

 BASE        3027        SERVICE                -7.82      288.60      504.11
1.590      -3.830      -0.430
 BASE        3027        SC2ULT               -10.41      367.63      641.03
2.095      -5.099      -0.547

 BASE        3030        SERVICE                25.60     2005.93     3564.93
-2.477      13.376       1.244
 BASE        3030        SC2ULT                 34.21     2550.55     4530.96
-3.014      17.761       1.582

 BASE        3100        SERVICE                -1.31      -60.55      168.28
16.480      -2.758      -0.002
 BASE        3100        SC2ULT                 -1.61      -77.11      210.33
20.981      -3.506      -0.007

 BASE        3101        SERVICE                20.40      -57.67      348.41
14.215      19.303       0.002
 BASE        3101        SC2ULT                 26.55      -73.47      442.26
18.020      25.207       0.002
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 BASE        3103        SERVICE                -35.61        -1.90      2835.60
10.597     -41.578       0.450
 BASE        3103        SC2ULT                 -46.55        -2.37      3627.95
13.455     -54.070       0.578

 BASE        3109        SERVICE                -23.69         2.67     14811.99
0.000       0.000       0.000
 BASE        3109        SC2ULT                 -31.17         3.52     18860.60
0.000       0.000       0.000

 BASE        3113        SERVICE                -52.51        36.31     13481.29
-10.984     -68.644      -0.203
 BASE        3113        SC2ULT                 -67.46        47.03     17133.90
-14.381     -88.002      -0.252

 BASE        3124        SERVICE                 41.25        12.01      6817.88
0.400      68.482       0.002
 BASE        3124        SC2ULT                  54.59        14.61      8670.19
0.613      91.148       0.013

 BASE        3129        SERVICE                 35.25        40.12     22560.09
23.192      49.849       6.173
 BASE        3129        SC2ULT                  43.36        50.54     28683.10
30.885      62.163       7.857

 BASE        3138        SERVICE                -43.86        45.80     22964.73
20.023     -48.069       3.125
 BASE        3138        SC2ULT                 -53.31        57.72     29160.42
26.954     -58.953       4.017

 BASE        3154        SERVICE                -13.61        27.93     16034.58
0.000       0.000       0.000
 BASE        3154        SC2ULT                 -17.59        35.50     20393.12
0.000       0.000       0.000

 BASE        3159        SERVICE                -13.13         9.37      1043.44
1.664     -22.151      -0.238
 BASE        3159        SC2ULT                 -17.35        11.79      1329.89
2.149     -29.386      -0.308

 BASE        3160        SERVICE                 31.06        21.53      5534.74
-13.877      23.803      -0.310
 BASE        3160        SC2ULT                  41.42        28.60      7034.93
-18.800      32.187      -0.386

 BASE        3166        SERVICE                -13.03        -0.80      2508.31
2.975     -17.603      -0.068
 BASE        3166        SC2ULT                 -17.34        -1.26      3225.47
3.829     -23.417      -0.086

 BASE        3184        SERVICE                 -1.03        12.17      2614.32
-9.326      -2.511       0.817
 BASE        3184        SC2ULT                  -6.01        16.59      3294.56
-12.554      -4.189       1.046

 BASE        3186        SERVICE                 -5.84      -453.50      3821.60
-3.232      -1.980       1.240
 BASE        3186        SC2ULT                 -10.10      -569.00      4805.60
-5.248      -3.001       1.528

 BASE        3187        SERVICE                -41.53         7.31      2494.23
-8.003      -7.660      -0.904
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BASE	3187	SC2ULT	-53.69	10.39	3135.90	-10.797	-9.938	-1.118
BASE	3189	SERVICE	-52.56	-427.67	3769.83	-5.587	-11.888	1.210
BASE	3189	SC2ULT	-67.14	-536.18	4736.04	-8.190	-15.133	1.490
BASE	3190	SERVICE	-126.46	8.11	2496.24	-8.255	-22.032	-1.514
BASE	3190	SC2ULT	-159.44	11.42	3136.73	-11.105	-27.804	-1.890
BASE	3192	SERVICE	-572.75	-465.95	3296.07	-0.872	-17.948	1.717
BASE	3192	SC2ULT	-720.05	-584.63	4140.44	-1.754	-22.477	2.145
BASE	3196	SERVICE	550.09	-512.32	2492.99	-1.992	-9.615	0.053
BASE	3196	SC2ULT	691.28	-644.25	3133.44	-3.435	-13.193	0.061
BASE	3215	SERVICE	99.29	-24.52	5215.81	35.937	98.134	0.112
BASE	3215	SC2ULT	130.83	-31.54	6679.55	45.970	129.051	0.129
BASE	3221	SERVICE	-57.81	-17.54	6731.70	26.787	-49.075	0.168
BASE	3221	SC2ULT	-76.95	-22.80	8648.22	34.583	-65.588	0.201
BASE	3247	SERVICE	8.77	-39.79	169.35	10.508	7.287	0.071
BASE	3247	SC2ULT	11.38	-50.46	213.38	13.291	9.549	0.090
BASE	3248	SERVICE	28.72	0.59	1416.39	1.683	29.342	-0.136
BASE	3248	SC2ULT	37.71	0.91	1823.74	1.973	38.504	-0.172
BASE	3253	SERVICE	-45.95	-40.30	4528.80	42.378	-43.084	-0.017
BASE	3253	SC2ULT	-60.91	-52.90	5826.69	55.476	-57.192	-0.018
BASE	3296	SERVICE	-6.84	-739.74	1145.53	1.443	-4.498	-0.117
BASE	3296	SC2ULT	-9.09	-951.22	1471.05	1.779	-6.000	-0.158
BASE	3306	SERVICE	-9.06	-308.12	546.33	0.001	-3.858	0.557
BASE	3306	SC2ULT	-12.08	-392.52	695.53	-0.043	-5.137	0.703
BASE	3309	SERVICE	26.89	-2016.08	3619.69	2.567	13.524	-0.822
BASE	3309	SC2ULT	35.94	-2563.50	4602.02	3.223	17.961	-1.032

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 BASE        3376        SERVICE                -1.41      -32.27       97.96
8.834      -0.820       0.049
 BASE        3376        SC2ULT                 -1.78      -40.99      122.62
11.222      -1.012       0.058

 BASE        3394        SERVICE                19.92      -65.14      323.07
16.831      17.926       0.054
 BASE        3394        SC2ULT                 25.76      -82.30      409.69
21.231      23.340       0.072

 BASE        3395        SERVICE                -3.62      -36.01      118.40
10.279      -5.462      -0.073
 BASE        3395        SC2ULT                 -4.74      -45.51      148.34
13.016      -7.139      -0.095

 BASE        3509        SERVICE                29.59      -85.85      408.24
22.391      23.956       0.103
 BASE        3509        SC2ULT                 38.64     -108.31      516.07
28.179      31.443       0.133

 BASE        3510        SERVICE               -12.55      -60.47      202.52
16.951     -12.598      -0.032
 BASE        3510        SC2ULT                -16.52      -76.47      253.92
21.456     -16.552      -0.045

 BASE        3624        SERVICE                31.09      -71.55      440.74
20.316      25.931       0.123
 BASE        3624        SC2ULT                 40.62      -90.04      558.85
25.518      34.109       0.160

 BASE        3625        SERVICE               -17.39      -65.74      210.19
18.186     -17.511      -0.095
 BASE        3625        SC2ULT                -22.93      -83.46      263.90
23.091     -23.062      -0.127

 BASE        3775        SERVICE                22.45      -77.14      395.15
21.138      23.885       0.187
 BASE        3775        SC2ULT                 29.60      -97.82      498.38
26.720      31.376       0.240

 BASE        3776        SERVICE               -16.92      -73.08      214.60
19.887     -16.922      -0.140
 BASE        3776        SC2ULT                -22.30      -93.21      269.48
25.350     -22.276      -0.185

 BASE        3892        SERVICE                25.84      -93.71      436.71
23.488      20.758       0.160
 BASE        3892        SC2ULT                 33.71     -120.00      551.89
29.955      27.181       0.205

 BASE        3894        SERVICE               -11.35      -77.16      216.38
20.902     -11.820      -0.161
 BASE        3894        SC2ULT                -14.92      -98.64      271.46
26.699     -15.504      -0.217

 BASE        4031        SERVICE                20.81      -75.55      445.31
20.638      15.601       0.051
 BASE        4031        SC2ULT                 27.01      -97.09      561.22
26.375      20.310       0.065

 BASE        4057        SERVICE                -4.02      -65.07      191.64
17.740      -4.777      -0.193
 BASE        4057        SC2ULT                 -5.20      -83.13      240.27
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22.638      -6.173      -0.254

 BASE        4227        SERVICE                 7.34      -36.83      266.28
10.478       8.993       0.083
 BASE        4227        SC2ULT                  9.52      -47.47      334.86
13.412      11.607       0.105

 BASE        4228        SERVICE                -3.85      146.80       15.54
0.829      13.334      -0.233
 BASE        4228        SC2ULT                 -5.13      187.30       17.04
1.108      17.721      -0.297

 BASE        4231        SERVICE                 6.06     1035.32      408.21
-0.236     -33.631       3.130
 BASE        4231        SC2ULT                  8.27     1315.07      514.39
-0.225     -44.764       3.974

 BASE        4232        SERVICE                 8.08      143.32      326.82
7.574       6.382       0.312
 BASE        4232        SC2ULT                 10.64      182.02      413.72
10.051       8.391       0.392

 BASE        4238        SERVICE                54.49       31.30       11.08
13.541      -2.895      -0.692
 BASE        4238        SC2ULT                 69.65       39.67        9.33
17.765      -3.898      -0.875

 BASE        4239        SERVICE                 5.72      -12.42      292.22
10.148       0.986      -0.146
 BASE        4239        SC2ULT                  4.96      -16.51      372.30
13.416       0.813      -0.186

 BASE        4240        SERVICE                10.37      -17.83      374.46
15.938       1.430       0.005
 BASE        4240        SC2ULT                 10.41      -23.65      473.44
21.102       1.345       0.005

 BASE        4241        SERVICE               -56.90       43.67      219.19
11.485       2.215      -0.014
 BASE        4241        SC2ULT                -72.39       53.21      273.09
15.153       2.696      -0.018

 BASE        4243        SERVICE                 6.49      -24.10      237.56
8.297       4.086       0.146
 BASE        4243        SC2ULT                  8.33      -31.23      298.23
10.639       5.247       0.184

 BASE        4244        SERVICE                27.78       -2.80      578.17
5.178      30.189      -0.552
 BASE        4244        SC2ULT                 35.98       -3.67      733.02
6.671      38.999      -0.693

 BASE        4250        SERVICE                25.20      -33.29     3579.69
37.794      28.403      -0.197
 BASE        4250        SC2ULT                 32.71      -44.13     4590.33
49.772      36.731      -0.249

 BASE        4258        SERVICE                 2.58      -13.13     5191.51
17.229       5.568       0.098
 BASE        4258        SC2ULT                  3.34      -17.14     6676.16
22.334       7.115       0.121

 BASE        4264        SERVICE               -24.53      -15.42     4636.82
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17.544     -22.637       0.101
 BASE        4264        SC2ULT                -32.59      -20.31     5966.67
23.005     -30.146       0.128

 BASE        4272        SERVICE               -10.20        6.59      400.00
5.656     -24.034       0.476
 BASE        4272        SC2ULT                -13.49        7.72      511.50
7.487     -31.902       0.614

 BASE        4275        SERVICE                24.79       36.69     2343.60
5.678      57.669      -2.563
 BASE        4275        SC2ULT                 32.72       45.79     2979.24
7.620      76.685      -3.277

 BASE        4280        SERVICE                -4.83      -19.60    10704.84
39.769      -4.960      -0.466
 BASE        4280        SC2ULT                 -6.45      -27.08    13637.45
52.886      -6.559      -0.595

 BASE        4289        SERVICE                -1.42      -11.41    10249.27
28.921      -2.116      -0.649
 BASE        4289        SC2ULT                 -1.49      -16.34    13052.84
38.816      -2.366      -0.829

 BASE        4302        SERVICE                -0.39      -14.05     3103.69
16.843      -1.125      -0.091
 BASE        4302        SC2ULT                 -0.51      -19.00     4020.32
22.582      -1.439      -0.117

 BASE        4309        SERVICE                -3.55      -46.45     3911.22
48.828      -4.337      -0.132
 BASE        4309        SC2ULT                 -4.66      -61.50     5042.66
64.515      -5.659      -0.166

 BASE        4316        SERVICE                -2.80      -40.13    11323.52
61.671      -5.880       0.146
 BASE        4316        SC2ULT                 -3.60      -52.85    14391.89
80.254      -7.521       0.194

 BASE        4328        SERVICE                -4.02      -44.39    11416.50
61.942      -8.942       0.550
 BASE        4328        SC2ULT                 -5.12      -58.43    14507.09
80.683     -11.370       0.703

 BASE        4334        SERVICE                -7.06      -46.79    10196.84
58.353     -12.347       0.545
 BASE        4334        SC2ULT                 -8.99      -61.66    12950.71
76.270     -15.702       0.696

 BASE        4341        SERVICE               -15.98      -15.59     1916.81
17.308     -17.557       0.091
 BASE        4341        SC2ULT                -20.87      -20.50     2465.46
22.669     -22.860       0.116

 BASE        4343        SERVICE                -0.04      -35.49      110.14
9.829      -2.356      -0.143
 BASE        4343        SC2ULT                  0.01      -45.30      137.81
12.529      -3.033      -0.190

 BASE        4344        SERVICE                -1.44      -37.49      127.96
10.711      -0.504      -0.123
 BASE        4344        SC2ULT                 -1.82      -47.69      160.27
13.630      -0.562      -0.169
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 BASE        4439        SERVICE                -2.41      -90.30      196.57
7.581       0.877      -0.427
 BASE        4439        SC2ULT                 -3.10     -116.42      254.15
9.864       1.135      -0.541

 BASE        4483        SERVICE                22.82      -10.35     3364.51
9.560      34.957       0.255
 BASE        4483        SC2ULT                 30.19      -14.12     4276.82
12.596      46.511       0.324

 BASE        4502        SERVICE                -9.62        9.03      597.16
6.368     -16.001       0.350
 BASE        4502        SC2ULT                -12.74       10.71      763.36
8.425     -21.205       0.444

 BASE        4508        SERVICE                 9.13      -19.97      623.01
10.254      13.570       0.326
 BASE        4508        SC2ULT                 12.01      -27.44      795.69
13.592      17.857       0.413

 BASE        4509        SERVICE                 2.07      -24.48      219.23
9.393       1.814       0.495
 BASE        4509        SC2ULT                  2.71      -32.75      274.69
12.329       2.354       0.633

 BASE        4533        SERVICE                 6.87      -26.50      300.93
8.845       7.583       0.167
 BASE        4533        SC2ULT                  8.84      -34.41      377.51
11.365       9.697       0.211

 BASE        4534        SERVICE                 6.32      -15.30      268.71
6.230       5.799       0.245
 BASE        4534        SC2ULT                  8.12      -20.18      336.71
8.041       7.398       0.309

 BASE        4558        SERVICE                 2.26      -24.60      197.86
9.107       1.871       0.674
 BASE        4558        SC2ULT                  2.97      -32.50      247.60
11.884       2.433       0.862

 BASE        4563        SERVICE                -4.00     -216.17      298.45
2.382      -1.491       0.056
 BASE        4563        SC2ULT                 -5.34     -276.96      382.83
3.141      -1.972       0.075

 BASE        4566        SERVICE                 8.42    -1132.62     1549.27
5.644       3.409      -0.650
 BASE        4566        SC2ULT                 11.31    -1440.86     1971.44
7.325       4.500      -0.823

 BASE        4623        SERVICE                -1.05      -32.59      119.22
9.041      -1.965      -0.084
 BASE        4623        SC2ULT                 -1.31      -41.43      149.32
11.491      -2.519      -0.114

 BASE        4624        SERVICE                 4.81     -201.58      299.42
3.744       1.675       0.265
 BASE        4624        SC2ULT                  6.28     -258.33      384.41
4.936       2.196       0.337

 BASE        4627        SERVICE                -3.12       39.73       27.75
1.555       0.950       0.126
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BASE	4627	SC2ULT	-4.01	49.98	33.32	2.043	1.232	0.163
BASE	4628	SERVICE	-2.49	-33.29	139.29	9.887	-2.417	-0.126
BASE	4628	SC2ULT	-3.25	-42.23	174.52	12.549	-3.121	-0.168
BASE	4713	SERVICE	36.30	-7.06	184.34	3.241	-6.166	-0.253
BASE	4713	SC2ULT	45.54	-9.67	231.27	4.252	-8.216	-0.328
BASE	4715	SERVICE	40.23	-0.23	233.64	0.720	6.747	0.005
BASE	4715	SC2ULT	50.23	-0.30	293.01	0.933	8.428	0.006
BASE	4717	SERVICE	51.39	-0.66	358.81	1.190	8.257	-0.009
BASE	4717	SC2ULT	64.45	-0.85	449.25	1.540	10.433	-0.012
BASE	4718	SERVICE	-45.44	-42.56	428.34	14.244	6.214	0.235
BASE	4718	SC2ULT	-56.57	-55.77	535.18	18.536	8.038	0.301
BASE	4724	SERVICE	6.56	-12.57	320.18	5.785	7.577	0.338
BASE	4724	SC2ULT	8.42	-16.88	400.96	7.511	9.642	0.427
BASE	4725	SERVICE	5.61	-5.68	311.23	4.039	6.306	0.403
BASE	4725	SC2ULT	7.19	-8.13	389.50	5.298	8.016	0.507
BASE	4749	SERVICE	-4.11	-55.27	86.76	1.568	1.342	-0.211
BASE	4749	SC2ULT	-5.31	-70.00	110.46	2.056	1.758	-0.265
BASE	4755	SERVICE	-4.65	-55.17	270.42	16.303	-5.085	-0.044
BASE	4755	SC2ULT	-6.08	-70.02	339.14	20.696	-6.611	-0.068
BASE	4821	SERVICE	2.43	-58.55	374.14	16.557	2.024	0.067
BASE	4821	SC2ULT	3.34	-76.35	467.62	21.514	2.701	0.086
BASE	4848	SERVICE	-0.75	-4.95	227.76	2.692	6.984	0.408
BASE	4848	SC2ULT	-0.81	-7.00	284.60	3.562	8.824	0.514
BASE	4849	SERVICE	13.19	6.58	397.02	1.624	5.403	0.496
BASE	4849	SC2ULT	16.66	7.19	496.79	2.278	6.861	0.624

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BASE	4873	SERVICE	-3.46	50.66	46.74	1.340	1.375	0.060
BASE	4873	SC2ULT	-4.52	63.26	57.13	1.754	1.806	0.074
BASE	4879	SERVICE	-3.85	-48.81	313.45	14.807	-4.363	0.019
BASE	4879	SC2ULT	-5.00	-61.95	393.83	18.804	-5.661	0.012
BASE	4919	SERVICE	42.65	-3.45	227.27	3.187	-7.431	-0.246
BASE	4919	SC2ULT	53.30	-4.76	284.07	4.158	-9.892	-0.310
BASE	4920	SERVICE	29.58	-0.06	278.21	0.671	3.920	0.003
BASE	4920	SC2ULT	36.84	-0.08	348.06	0.868	4.846	0.004
BASE	4921	SERVICE	34.93	-0.43	418.74	1.192	4.280	-0.012
BASE	4921	SC2ULT	43.86	-0.56	523.28	1.538	5.471	-0.016
BASE	4922	SERVICE	-62.26	-70.62	599.67	18.940	2.007	0.511
BASE	4922	SC2ULT	-77.54	-91.43	748.53	24.531	2.727	0.641
BASE	4971	SERVICE	2.88	17.12	489.14	-0.746	8.784	0.790
BASE	4971	SC2ULT	3.76	20.20	611.36	-0.638	11.098	0.993
BASE	4973	SERVICE	3.57	16.24	447.21	-1.554	6.182	0.728
BASE	4973	SC2ULT	4.59	19.38	558.89	-1.712	7.809	0.915
BASE	4996	SERVICE	-3.02	-69.21	120.28	1.692	0.006	-0.085
BASE	4996	SC2ULT	-3.94	-87.24	151.88	2.208	-0.002	-0.106
BASE	5005	SERVICE	-131.13	-90.94	612.58	11.134	-20.442	-0.071
BASE	5005	SC2ULT	-166.51	-114.97	772.76	14.273	-26.099	-0.093
BASE	5006	SERVICE	-139.63	-13.24	565.83	15.313	-37.374	0.067
BASE	5006	SC2ULT	-178.35	-17.45	713.09	20.094	-47.679	0.092
BASE	5007	SERVICE	-148.03	-21.27	509.20	23.517	-39.679	0.116
BASE	5007	SC2ULT	-188.65	-28.07	642.90	30.922	-50.511	0.151
BASE	5008	SERVICE	-148.11	-21.74	491.88	24.305	-38.816	0.105
BASE	5008	SC2ULT	-188.32	-28.63	621.79

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31.903     -49.319       0.136

 BASE        5009        SERVICE              -85.07      -11.68      276.20
13.127     -22.907       0.120
 BASE        5009        SC2ULT              -108.10      -15.33      349.29
17.194     -29.109       0.154

 BASE        5010        SERVICE              -74.07       -9.90      245.89
11.850     -19.780       0.116
 BASE        5010        SC2ULT               -94.24      -13.01      311.14
15.520     -25.147       0.150

 BASE        5011        SERVICE             -136.99      -23.04      443.80
25.824     -36.262       0.119
 BASE        5011        SC2ULT              -174.27      -30.32      561.85
33.884     -46.122       0.153

 BASE        5012        SERVICE             -142.22      -28.95      483.87
31.799     -37.238       0.109
 BASE        5012        SC2ULT              -180.71      -38.14      612.85
41.769     -47.312       0.140

 BASE        5013        SERVICE             -120.18      -22.55      430.06
25.557     -31.864       0.110
 BASE        5013        SC2ULT              -152.56      -29.66      544.67
33.509     -40.449       0.140

 BASE        5014        SERVICE              -65.71      -10.90      237.90
12.631     -18.080       0.119
 BASE        5014        SC2ULT               -83.45      -14.29      301.23
16.525     -22.974       0.152

 BASE        5015        SERVICE              -33.38       -5.25      125.28
6.384      -9.251       0.113
 BASE        5015        SC2ULT               -42.45       -6.89      158.62
8.346     -11.767       0.144

 BASE        5016        SERVICE              -37.38       -6.32      138.06
7.438     -10.344       0.115
 BASE        5016        SC2ULT               -47.58       -8.29      174.80
9.731     -13.164       0.147

 BASE        5017        SERVICE              -44.38       -8.27      165.58
9.654     -12.218       0.114
 BASE        5017        SC2ULT               -56.53      -10.88      209.67
12.644     -15.559       0.146

 BASE        5018        SERVICE              -48.02      -10.31      181.78
11.651     -13.212       0.105
 BASE        5018        SC2ULT               -61.16      -13.57      230.20
15.278     -16.826       0.135

 BASE        5019        SERVICE              -37.03       -9.02      146.77
10.035     -10.260       0.092
 BASE        5019        SC2ULT               -47.16      -11.88      185.89
13.168     -13.065       0.118

 BASE        5020        SERVICE              -36.25       -9.47      152.48
10.606     -10.107       0.085
 BASE        5020        SC2ULT               -46.12      -12.48      193.11
13.920     -12.863       0.109

 BASE        5021        SERVICE              -40.98      -10.93      179.67
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12.274     -11.437       0.067
 BASE        5021        SC2ULT                -52.12      -14.39      227.53
16.102     -14.549       0.086

 BASE        5022        SERVICE               -33.56       -8.79      153.66
9.973      -9.403       0.057
 BASE        5022        SC2ULT                -42.66      -11.56      194.55
13.073     -11.959       0.074

 BASE        5023        SERVICE               -28.79       -7.14      138.84
8.364      -8.089       0.046
 BASE        5023        SC2ULT                -36.61       -9.38      175.76
10.952     -10.291       0.061

 BASE        5024        SERVICE               -23.17       -5.55      112.67
6.493      -6.526       0.041
 BASE        5024        SC2ULT                -29.48       -7.29      142.61
8.496      -8.306       0.054

 BASE        5025        SERVICE               -20.04       -4.61      101.35
5.622      -5.607       0.033
 BASE        5025        SC2ULT                -25.53       -6.05      128.26
7.352      -7.145       0.043

 BASE        5026        SERVICE               -36.70       -8.73      187.39
10.531     -10.150       0.015
 BASE        5026        SC2ULT                -46.84      -11.46      237.16
13.778     -12.949       0.021

 BASE        5027        SERVICE               -44.29      -12.09      231.25
14.168     -12.107      -0.030
 BASE        5027        SC2ULT                -56.59      -15.90      292.68
18.569     -15.472      -0.035

 BASE        5028        SERVICE               -38.70      -13.46      220.03
15.228     -10.600      -0.035
 BASE        5028        SC2ULT                -49.50      -17.74      278.53
20.005     -13.560      -0.040

 BASE        5029        SERVICE               -34.95      -15.00      221.24
16.614      -9.580      -0.058
 BASE        5029        SC2ULT                -44.68      -19.80      280.10
21.864     -12.250      -0.070

 BASE        5030        SERVICE               -29.64      -14.50      214.21
16.061      -8.178      -0.055
 BASE        5030        SC2ULT                -37.83      -19.16      271.17
21.156     -10.444      -0.067

 BASE        5031        SERVICE               -38.48      -18.31      314.10
20.774     -10.629      -0.081
 BASE        5031        SC2ULT                -49.05      -24.20      397.48
27.371     -13.560      -0.100

 BASE        5032        SERVICE               -49.80      -20.32      414.51
23.902     -12.647      -0.070
 BASE        5032        SC2ULT                -63.63      -26.88      524.40
31.508     -16.171      -0.087

 BASE        5033        SERVICE               -48.37      -23.19      416.07
26.212     -12.176      -0.060
 BASE        5033        SC2ULT                -61.95      -30.72      526.45
34.623     -15.609      -0.075
```


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```
 BASE        5034        SERVICE                -42.77       -26.22       423.40
28.644     -10.570      -0.033
 BASE        5034        SC2ULT                 -54.59       -34.77       535.83
37.885     -13.501      -0.041

 BASE        5035        SERVICE                -34.77       -18.94       389.55
21.387      -8.549      -0.016
 BASE        5035        SC2ULT                 -44.20       -25.13       492.92
28.289     -10.870      -0.021

 BASE        5036        SERVICE                 -3.84        -1.38        43.37
1.695      -0.988      -0.024
 BASE        5036        SC2ULT                  -4.90        -1.83        54.87
2.241      -1.261      -0.031

 BASE        5037        SERVICE                -17.19        -7.07       195.01
8.561      -4.504      -0.019
 BASE        5037        SC2ULT                 -21.87        -9.39       246.73
11.321      -5.743      -0.025

 BASE        5038        SERVICE                -25.38        -9.38       253.88
10.963      -5.645      -0.002
 BASE        5038        SC2ULT                 -32.51       -12.46       321.42
14.511      -7.212      -0.003

 BASE        5039        SERVICE                -34.51       -15.99       351.54
17.960      -8.128      -0.001
 BASE        5039        SC2ULT                 -44.19       -21.24       445.27
23.794     -10.408      -0.003

 BASE        5040        SERVICE                -16.10        -9.90       181.77
10.703      -3.928       0.022
 BASE        5040        SC2ULT                 -20.58       -13.15       230.38
14.187      -5.020       0.026

 BASE        5041        SERVICE                 -9.97        -7.11       124.59
7.633      -2.474      -0.007
 BASE        5041        SC2ULT                 -12.69        -9.45       157.96
10.118      -3.151      -0.010

 BASE        5042        SERVICE                 -8.48        -6.44       113.34
6.908      -2.113       0.008
 BASE        5042        SC2ULT                 -10.77        -8.55       143.70
9.158      -2.684       0.009

 BASE        5043        SERVICE                 -7.87        -6.22       113.31
6.685      -1.975       0.003
 BASE        5043        SC2ULT                  -9.95        -8.26       143.66
8.860      -2.499       0.002

 BASE        5044        SERVICE                 -8.32        -6.49       126.52
7.062      -2.095       0.013
 BASE        5044        SC2ULT                 -10.50        -8.62       160.41
9.357      -2.644       0.015

 BASE        5045        SERVICE                 -8.90        -6.54       140.66
7.213      -2.244       0.009
 BASE        5045        SC2ULT                 -11.20        -8.68       178.32
9.554      -2.824       0.009

 BASE        5046        SERVICE                 -7.27        -4.85       116.29
5.480      -1.830       0.007
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BASE	5046	SC2ULT	-9.13	-6.44	147.41	7.254	-2.302	0.007
BASE	5047	SERVICE	-10.28	-5.80	156.60	6.676	-2.552	0.009
BASE	5047	SC2ULT	-12.93	-7.70	198.47	8.832	-3.209	0.009
BASE	5048	SERVICE	-15.38	-7.46	220.84	8.762	-3.810	-0.002
BASE	5048	SC2ULT	-19.38	-9.89	279.87	11.585	-4.803	-0.005
BASE	5049	SERVICE	-14.47	-6.37	190.89	7.470	-3.572	-0.004
BASE	5049	SC2ULT	-18.27	-8.44	241.89	9.873	-4.513	-0.007
BASE	5050	SERVICE	-11.34	-5.02	141.66	5.819	-2.799	-0.021
BASE	5050	SC2ULT	-14.34	-6.65	179.51	7.691	-3.541	-0.028
BASE	5051	SERVICE	-15.34	-7.10	179.85	7.979	-3.796	0.000
BASE	5051	SC2ULT	-19.40	-9.41	227.92	10.548	-4.801	-0.002
BASE	5052	SERVICE	-20.85	-10.46	239.69	11.540	-5.200	-0.010
BASE	5052	SC2ULT	-26.33	-13.86	303.75	15.258	-6.568	-0.016
BASE	5053	SERVICE	-24.31	-12.58	275.28	13.804	-6.196	0.047
BASE	5053	SC2ULT	-30.56	-16.68	348.83	18.252	-7.799	0.057
BASE	5054	SERVICE	-21.82	-10.87	244.95	11.989	-5.656	0.027
BASE	5054	SC2ULT	-27.35	-14.40	310.36	15.847	-7.094	0.032
BASE	5055	SERVICE	-12.72	-5.75	141.38	6.483	-3.388	0.076
BASE	5055	SC2ULT	-15.90	-7.62	179.09	8.566	-4.242	0.094
BASE	5056	SERVICE	-19.19	-7.28	196.36	8.353	-5.094	-0.013
BASE	5056	SC2ULT	-23.97	-9.65	248.68	11.031	-6.375	-0.019
BASE	5057	SERVICE	-48.00	-14.52	426.77	17.353	-11.780	0.125
BASE	5057	SC2ULT	-60.07	-19.25	540.28	22.909	-14.753	0.156
BASE	5058	SERVICE	-58.21	-18.14	477.62	21.162	-15.317	-0.052
BASE	5058	SC2ULT	-72.84	-24.06	604.38	27.950	-19.192	-0.067

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BASE	5059	SERVICE	-35.10	-13.04	291.88	15.075	-9.703	0.124
BASE	5059	SC2ULT	-43.79	-17.31	369.14	19.914	-12.123	0.156
BASE	5060	SERVICE	-39.08	-18.44	391.25	20.790	-12.998	-0.025
BASE	5060	SC2ULT	-48.05	-24.45	494.12	27.447	-16.177	-0.031
BASE	5061	SERVICE	-48.52	-23.72	531.52	26.551	-15.475	0.264
BASE	5061	SC2ULT	-58.95	-31.21	669.81	34.834	-19.026	0.336
BASE	5062	SERVICE	-1.10	-7.87	20.73	2.151	-0.600	0.060
BASE	5062	SC2ULT	-1.21	-10.01	25.70	2.913	-0.725	0.076
BASE	5063	SERVICE	-22.91	-9.70	267.19	9.593	-7.019	1.730
BASE	5063	SC2ULT	-27.59	-12.57	336.04	12.492	-8.564	2.192
BASE	5064	SERVICE	-16.22	-9.18	194.81	4.591	-4.164	1.259
BASE	5064	SC2ULT	-19.82	-11.90	244.42	5.999	-5.061	1.595
BASE	5065	SERVICE	-0.57	6.98	43.64	6.462	-0.810	0.082
BASE	5065	SC2ULT	-0.61	8.83	55.24	8.181	-0.982	0.103
BASE	5066	SERVICE	-19.31	-8.68	336.25	12.221	-5.721	-0.077
BASE	5066	SC2ULT	-23.06	-11.48	421.40	16.011	-6.867	-0.097
BASE	5067	SERVICE	1.40	-7.72	311.11	10.710	-3.106	-0.031
BASE	5067	SC2ULT	3.51	-10.29	388.78	14.064	-3.483	-0.041
BASE	5068	SERVICE	2.92	15.00	433.21	-2.278	5.591	0.552
BASE	5068	SC2ULT	3.74	17.98	541.33	-2.651	7.048	0.696
BASE	5092	SERVICE	-2.28	-52.37	340.27	12.685	-1.886	-0.268
BASE	5092	SC2ULT	-2.83	-67.58	425.31	16.403	-2.345	-0.333
BASE	5094	SERVICE	38.39	30.23	132.06	5.141	-2.830	0.153
BASE	5094	SC2ULT	48.95	37.56	164.04	6.723	-3.314	0.180
BASE	5096	SERVICE	8.36	9.43	452.04	-1.966	7.275	0.456
BASE	5096	SC2ULT	10.49	11.12	564.81			

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-2.279       9.139       0.576

 BASE        5119        SERVICE                -2.59       55.50       45.40
2.718       0.745       0.084
 BASE        5119        SC2ULT                 -3.33       68.97       54.72
3.516       0.974       0.103

 BASE        5120        SERVICE                -3.35      -28.89      202.23
7.527      -0.137      -0.025
 BASE        5120        SC2ULT                 -4.21      -37.14      252.77
9.697      -0.153      -0.031

 BASE        5122        SERVICE                 2.31      -10.08       85.81
3.708      -0.370      -0.034
 BASE        5122        SC2ULT                  2.94      -13.06      107.39
4.816      -0.449      -0.043

 BASE        5124        SERVICE               499.14        4.69     1511.77
-0.163      62.553      -0.299
 BASE        5124        SC2ULT                624.17        5.37     1889.89
-0.050      78.290      -0.378

 BASE        5125        SERVICE               600.31       -3.91     1096.77
2.747     126.657      -0.599
 BASE        5125        SC2ULT                750.67       -4.91     1369.63
3.491     158.461      -0.756

 BASE        5126        SERVICE               440.07       -3.00      950.13
3.057      94.979      -0.707
 BASE        5126        SC2ULT                550.26       -3.80     1186.27
3.867     118.820      -0.889

 BASE        5127        SERVICE               635.48      -10.36     1488.78
8.963     127.878      -0.937
 BASE        5127        SC2ULT                794.61      -13.00     1858.65
11.270     159.975      -1.177

 BASE        5128        SERVICE              -252.11       -2.89      211.24
6.647     106.415      -3.853
 BASE        5128        SC2ULT               -314.15       -3.64      261.08
8.360     133.113      -4.816

 BASE        5137        SERVICE               430.85      -17.26     1178.20
15.802      16.030      -0.267
 BASE        5137        SC2ULT                548.69      -22.61     1497.64
20.710      20.445      -0.336

 BASE        5138        SERVICE               117.52      -25.69     1584.60
40.120      26.837      -0.324
 BASE        5138        SC2ULT                149.91      -33.76     2014.95
52.832      34.337      -0.404

 BASE        5139        SERVICE              -357.48      -13.90      450.50
3.810       8.932      -0.191
 BASE        5139        SC2ULT               -454.43      -18.49      570.66
4.985      11.486      -0.236

 BASE        5144        SERVICE                -28.71      -39.21     2253.47
40.332     -27.344       0.145
 BASE        5144        SC2ULT                 -37.78      -51.84     2873.07
53.240     -36.004       0.184

 BASE        5147        SERVICE                 49.88      -74.94      194.58
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2.517       -2.241       -0.072
 BASE         5147         SC2ULT                 62.46       -94.14       245.01
3.263       -2.972       -0.097

 BASE         5148         SERVICE                16.25        -0.04       338.23
1.032        0.803        0.011
 BASE         5148         SC2ULT                 20.44        -0.06       422.69
1.325        1.019        0.013

 BASE         5149         SERVICE                13.39        -1.43       510.24
1.723       -1.928       -0.029
 BASE         5149         SC2ULT                 17.22        -1.81       637.78
2.203       -2.265       -0.037

 BASE         5150         SERVICE                -79.87      -101.70       418.20
4.854       -2.830        0.015
 BASE         5150         SC2ULT                 -99.71      -127.89       524.63
6.249       -3.462        0.026

 BASE         5152         SERVICE                  0.17        -8.95        69.82
2.649       -1.896        0.072
 BASE         5152         SC2ULT                   0.23       -11.53        87.62
3.438       -2.366        0.090

 BASE         5158         SERVICE                 -2.63       -45.51        51.86
0.578       -0.116       -0.427
 BASE         5158         SC2ULT                  -3.30       -57.54        66.50
0.748       -0.144       -0.533

 BASE         5179         SERVICE                 22.47      -210.52        84.69
-0.213        3.139        1.678
 BASE         5179         SC2ULT                  28.09      -263.32       107.37
-0.239        3.929        2.102


 Summation    0, 0, Base   SERVICE                  0.00         0.01    671057.33
7820157.962 -35774765.2        5.937
 Summation    0, 0, Base   SC2ULT                   0.00         0.01    852869.79
9935247.240 -45420545.5        7.477
```


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DRIFT & SWAY CHECK

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SWAY CHECK FOR BUILDING (FOR WIND FORCE)

HEIGHT OF BUILDING	72.8	M

CHECK IN X-DIRECTION

MAXIMUM DISPLACEMENT AT TOP	0.001798	M
(FROM E-TABS RESULTS)	1.798	MM
LOAD CASE AT WHICH THE VALUE IS MAX	WX	
ALLOWABLE SWAY = (H/500)	145.6	MM

BUILDING SAFE IN SWAY

CHECK IN Y-DIRECTION

MAXIMUM DISPLACEMENT AT TOP	0.002951	M
(FROM E-TABS RESULTS)	2.951	MM
LOAD CASE AT WHICH THE VALUE IS MAX	WY	
ALLOWABLE SWAY = (H/500)	145.6	MM

BUILDING SAFE IN SWAY

DRIFT CHECK FOR BUILDING (FOR SEISMIC FORCE)

HEIGHT OF BUILDING (H)	72.8	M
STORY HEIGHT	3.8	M

CHECK IN X-DIRECTION

MAXIMUM DRIFT (ΔS)	0.001355	M
(FROM E-TABS RESULTS)	1.355	MM
LOAD CASE AT WHICH THE VALUE IS MAX	EQX	
OVERSTRENGHTH FACTOR-(R)	5.5	
VALUE OF (ΔM) = 0.7*R*ΔS	5.21675	MM
TIME PERIOD (T)	1.196299	SEC
MAXIMUM DRIFT SHOULD NOT EXCEED 0.025 STORY HEIGHT	87.5	MM

BUILDING SAFE IN DRIFT

CHECK IN Y-DIRECTION

MAXIMUM DRIFT (ΔS)	0.00147	M
(FROM E-TABS RESULTS)	1.47	MM
LOAD CASE AT WHICH THE VALUE IS MAX	EQY	
OVERSTRENGHTH FACTOR-(R)	5.5	
VALUE OF (ΔM) = 0.7*R*ΔS	5.6595	MM
TIME PERIOD (T)	1.196299	SEC
MAXIMUM DRIFT SHOULD NOT EXCEED 0.025 STORY HEIGHT	87.5	MM

BUILDING SAFE IN DRIFT

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RESPONSE SPECTRUM SCALE FACTOR

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RESPONSE SPECTRUM SCALE FACTOR CALCULATIONS

SCALE FACTOR= $\frac{\text{STATIC FACTOR (EQX)}}{\text{DYNAMIC FACTOR (SPEC)}}$ X 9.81 *

SPECX = $\frac{\text{EQX}}{\text{SPECX}}$ X 9.81

SPECY = $\frac{\text{EQY}}{\text{SPECY}}$ X 9.81

INPUT:

EQX =	-3,503.15
EQY =	-3,503.10
SPECX =	91,622.31
SPECY =	84,157.59

DIRECTION U1 SCALE FACTOR = **-0.375**

DIRECTION U2 SCALE FACTOR= **-0.408**

* preliminary scale factor used during modelling

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RAFT FOUNDATION SOIL PRESSURE DIAGRAM

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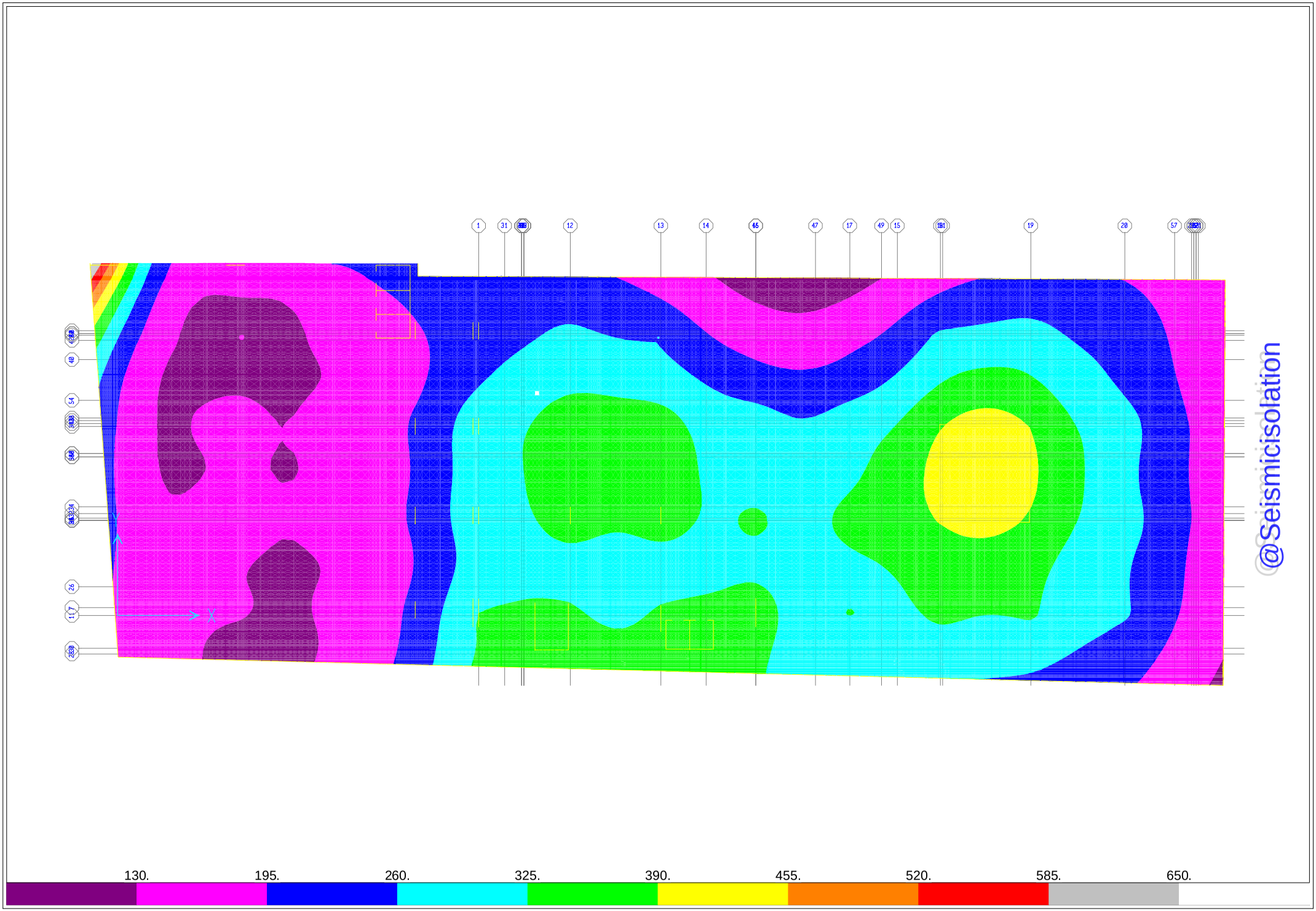

SAFE v8.0.8 - File: RAFT200wDiffThick - June 6,2015 10:10 - Scale: Fit to Page
Soil Pressure Diagram - (SERVICE) - KN-m Units

FLAT SLABS' Cracked Deformed Shapes

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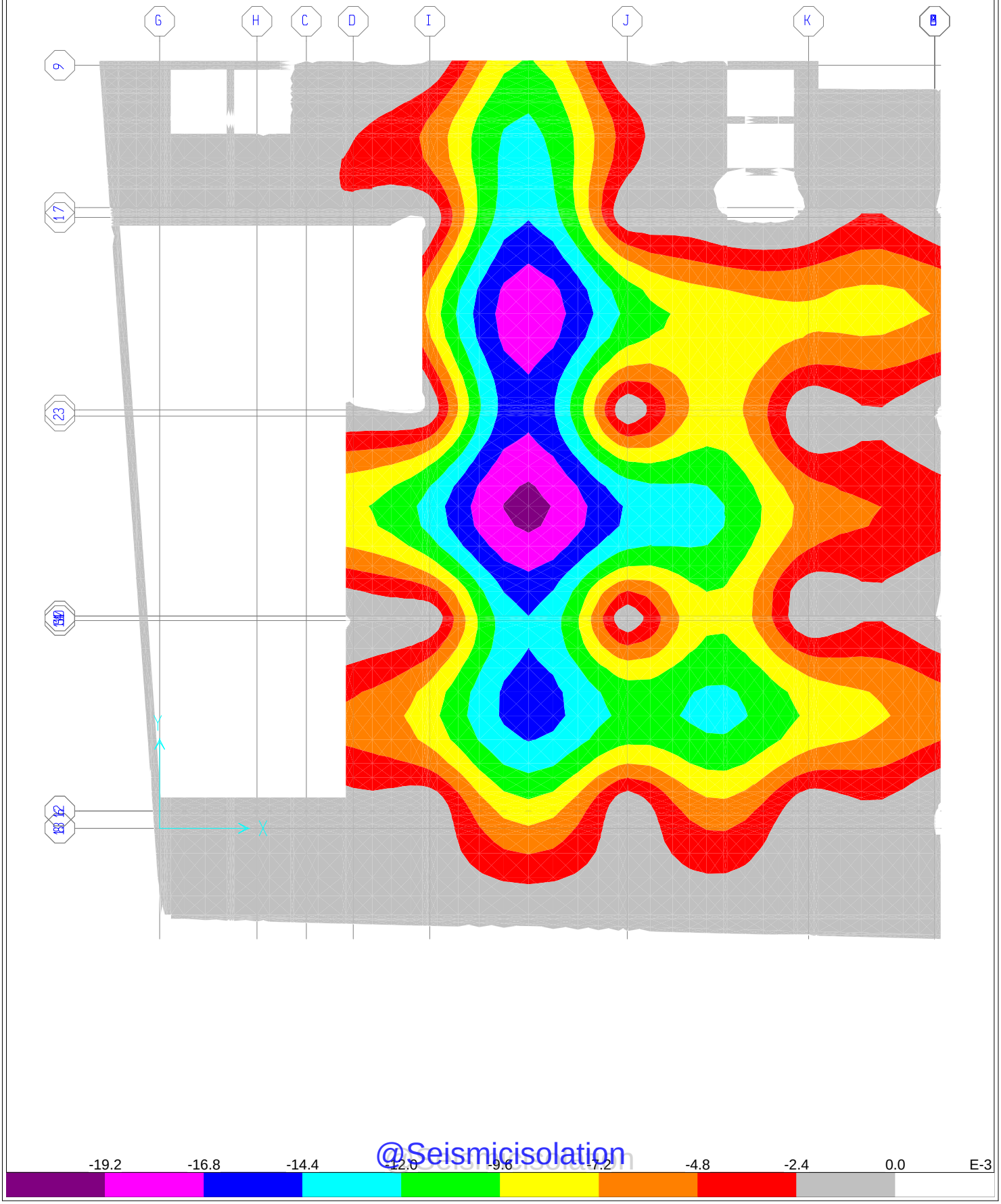
SAFE



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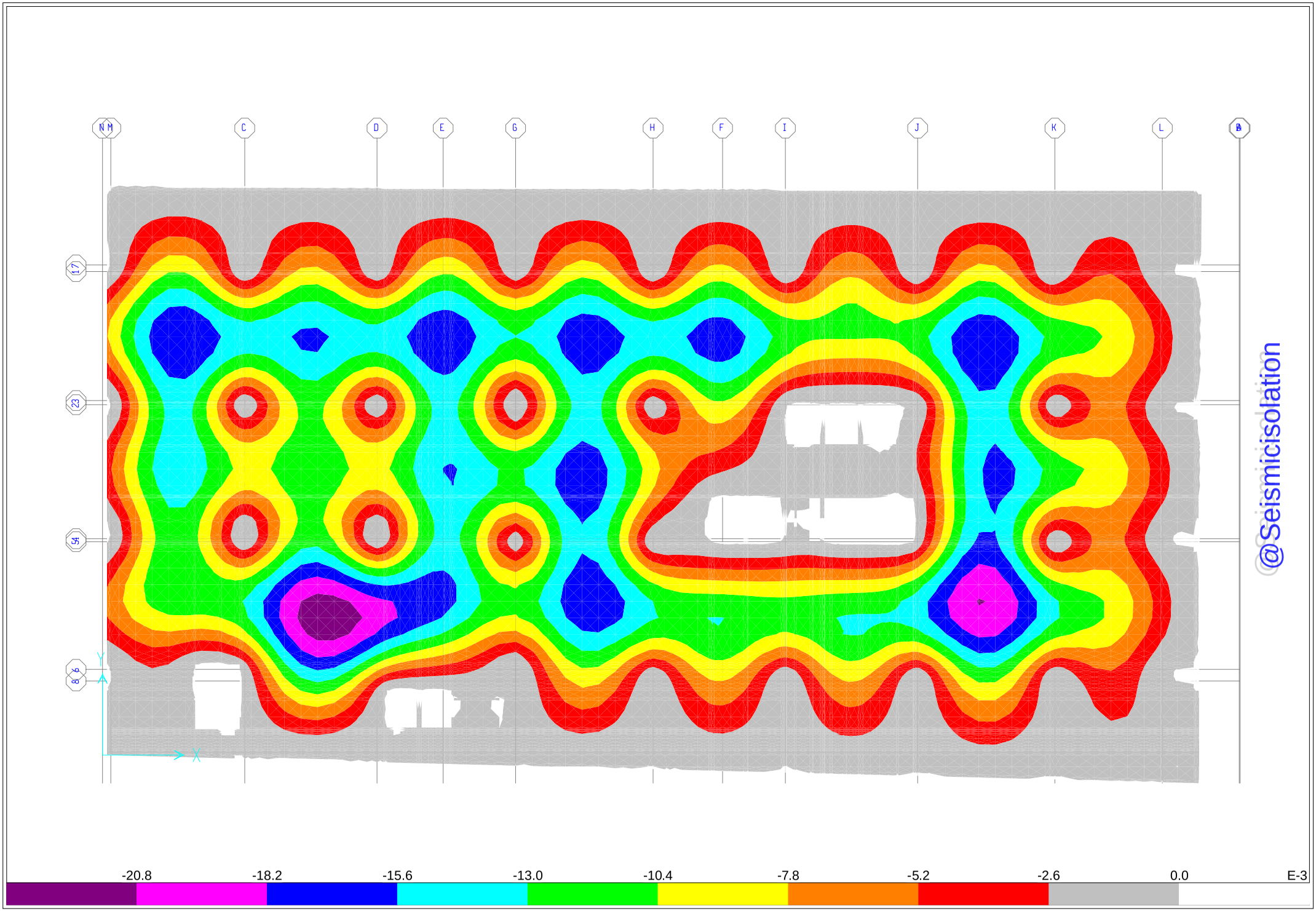
SAFE v8.0.8 - File: B2 axis1-13 - June 3,2015 11:56 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE



@Seismicisolation

SAFE v8.0.8 - File: B2 axis14-24 - June 3,2015 12:05 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

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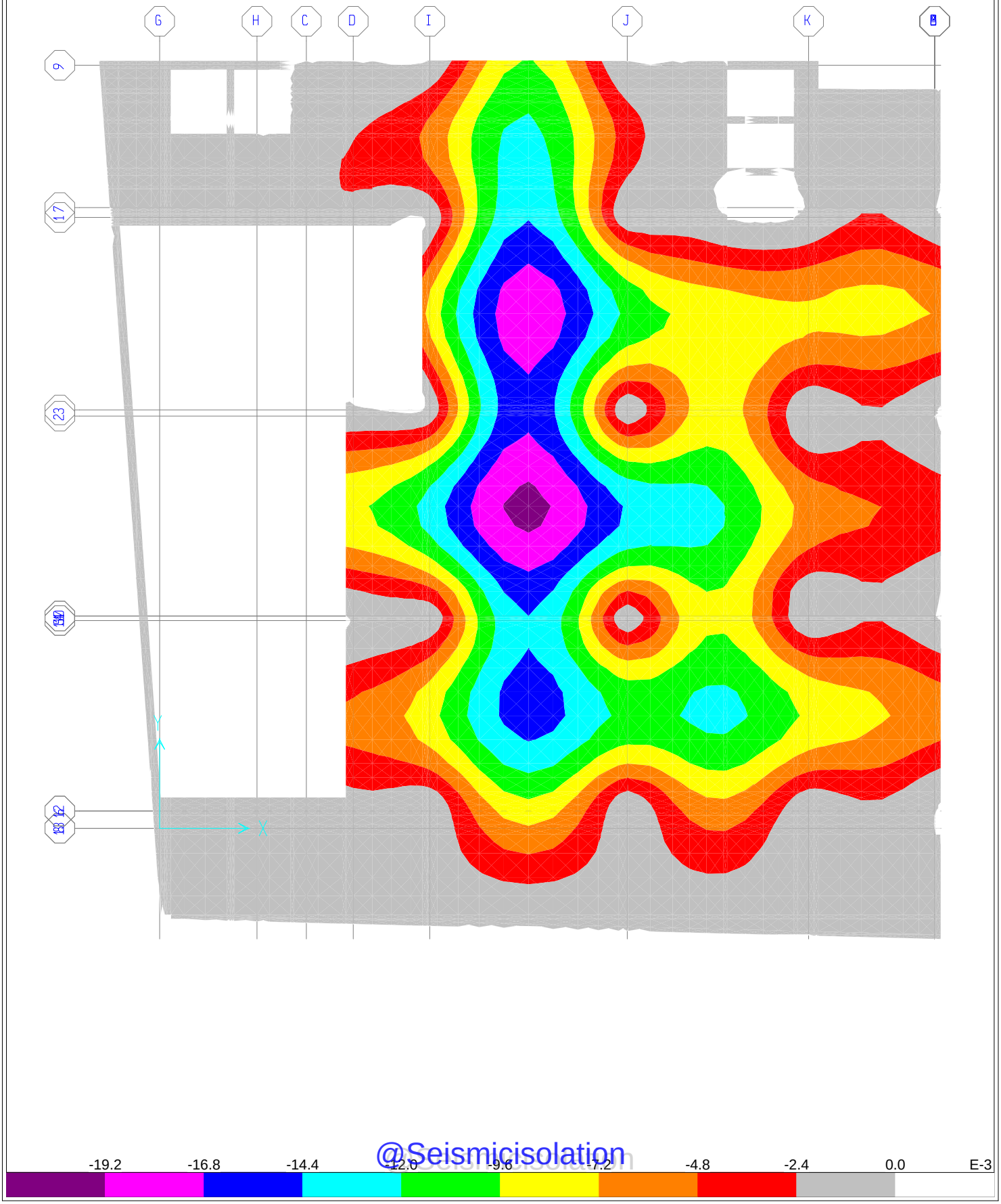

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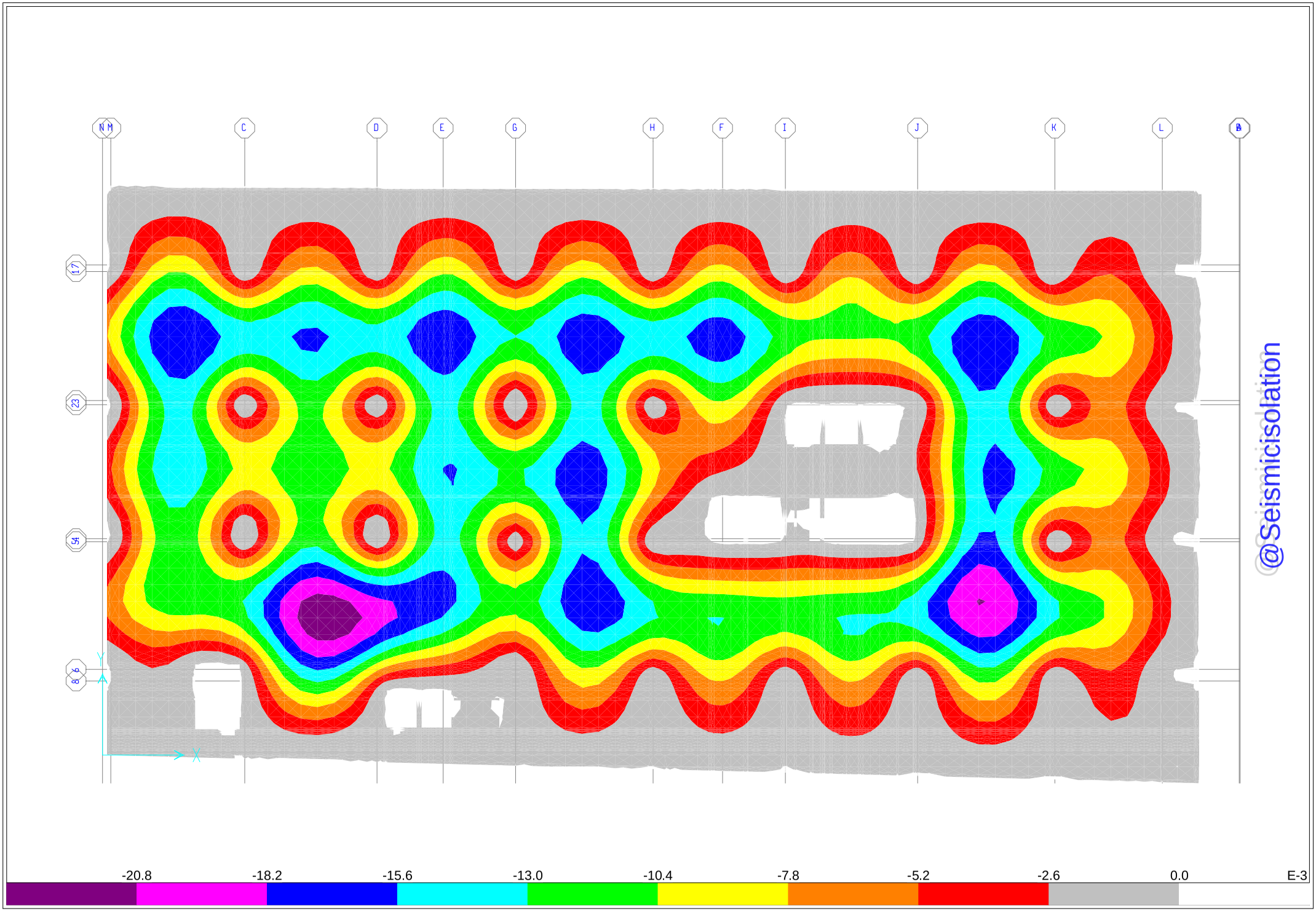
SAFE v8.0.8 - File: B2 axis1-13 - June 3,2015 11:56 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE



@Seismicisolation

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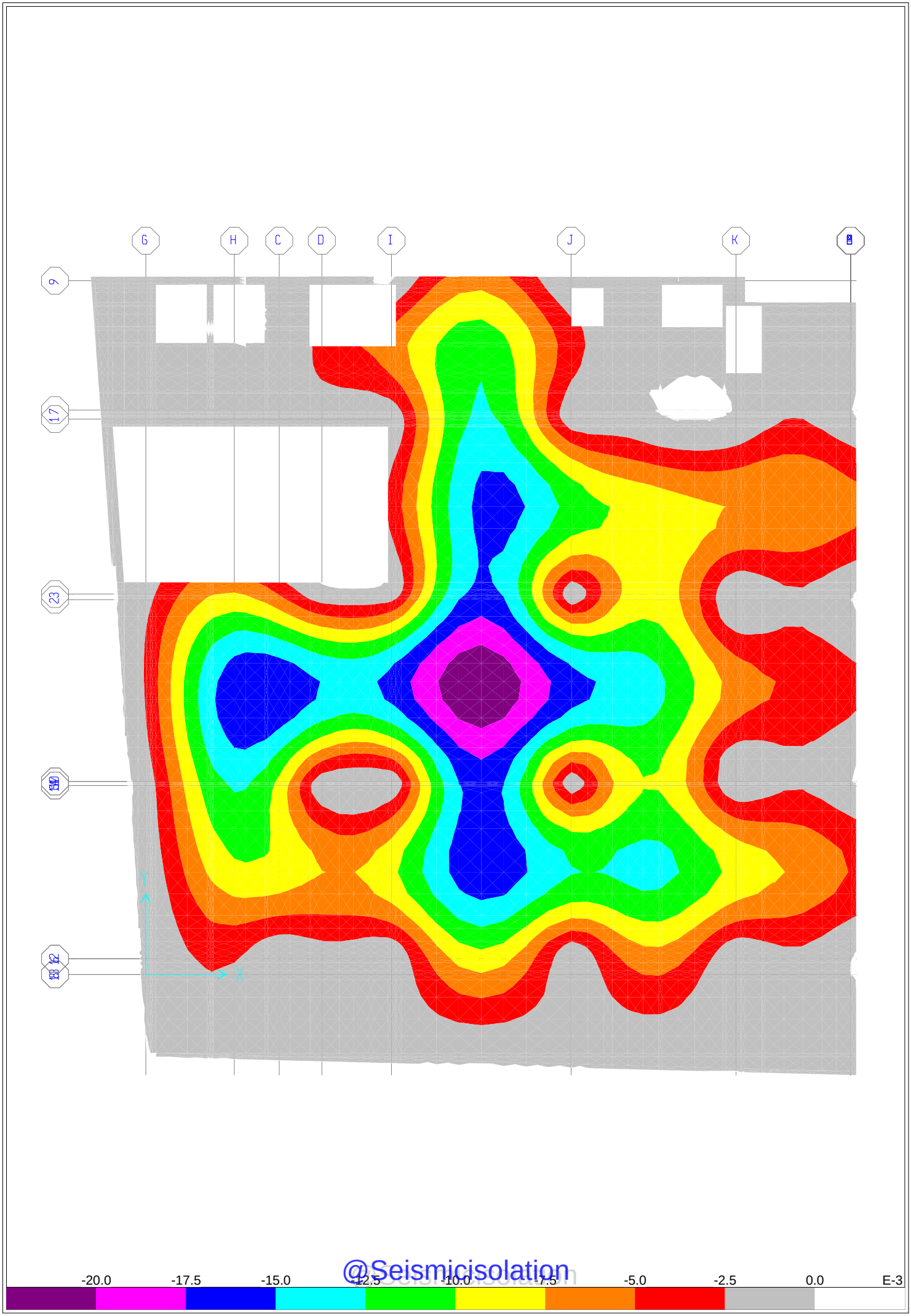
Cracked Deformed Shape (SERV) - KN-m Units

SAFE



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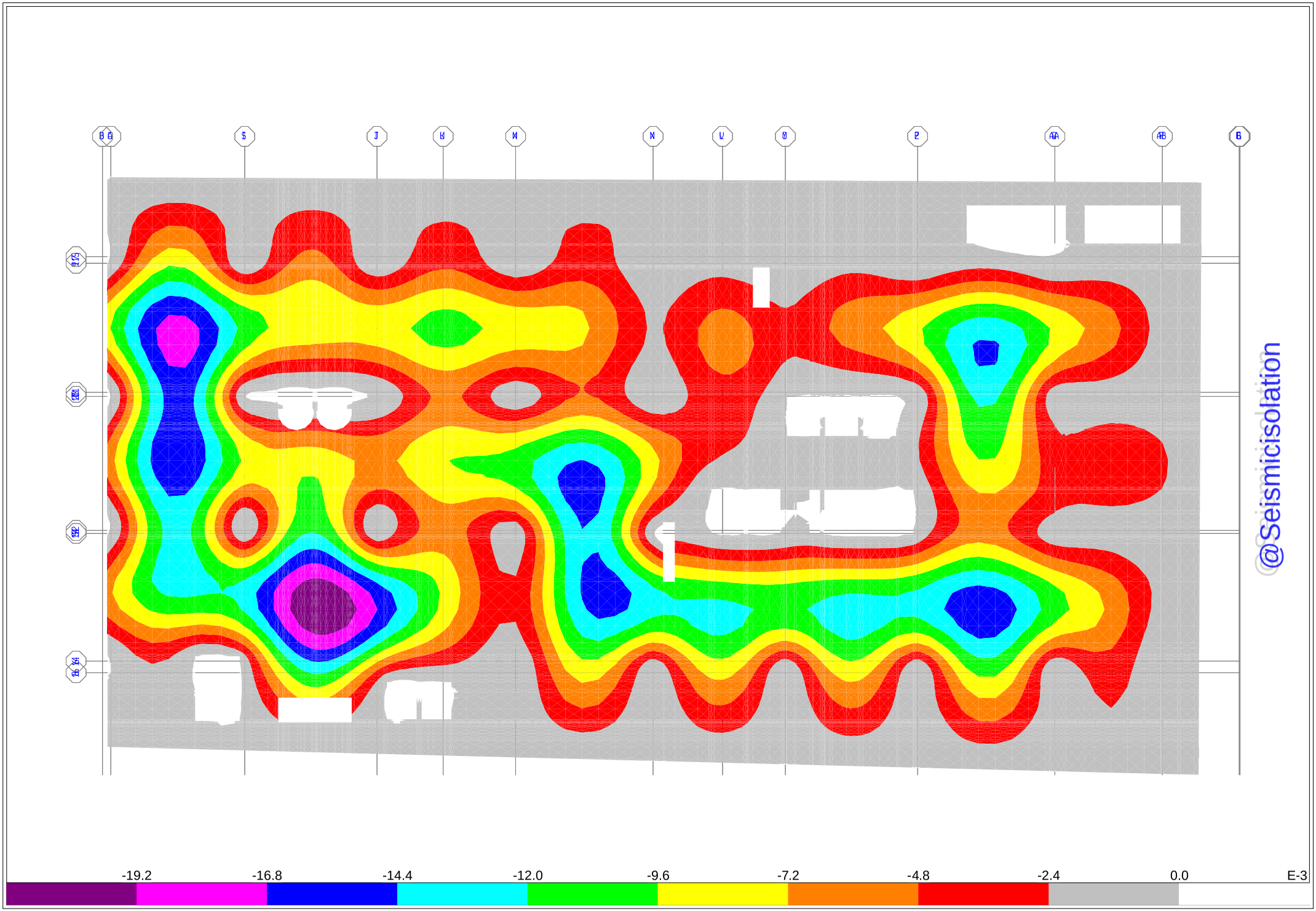
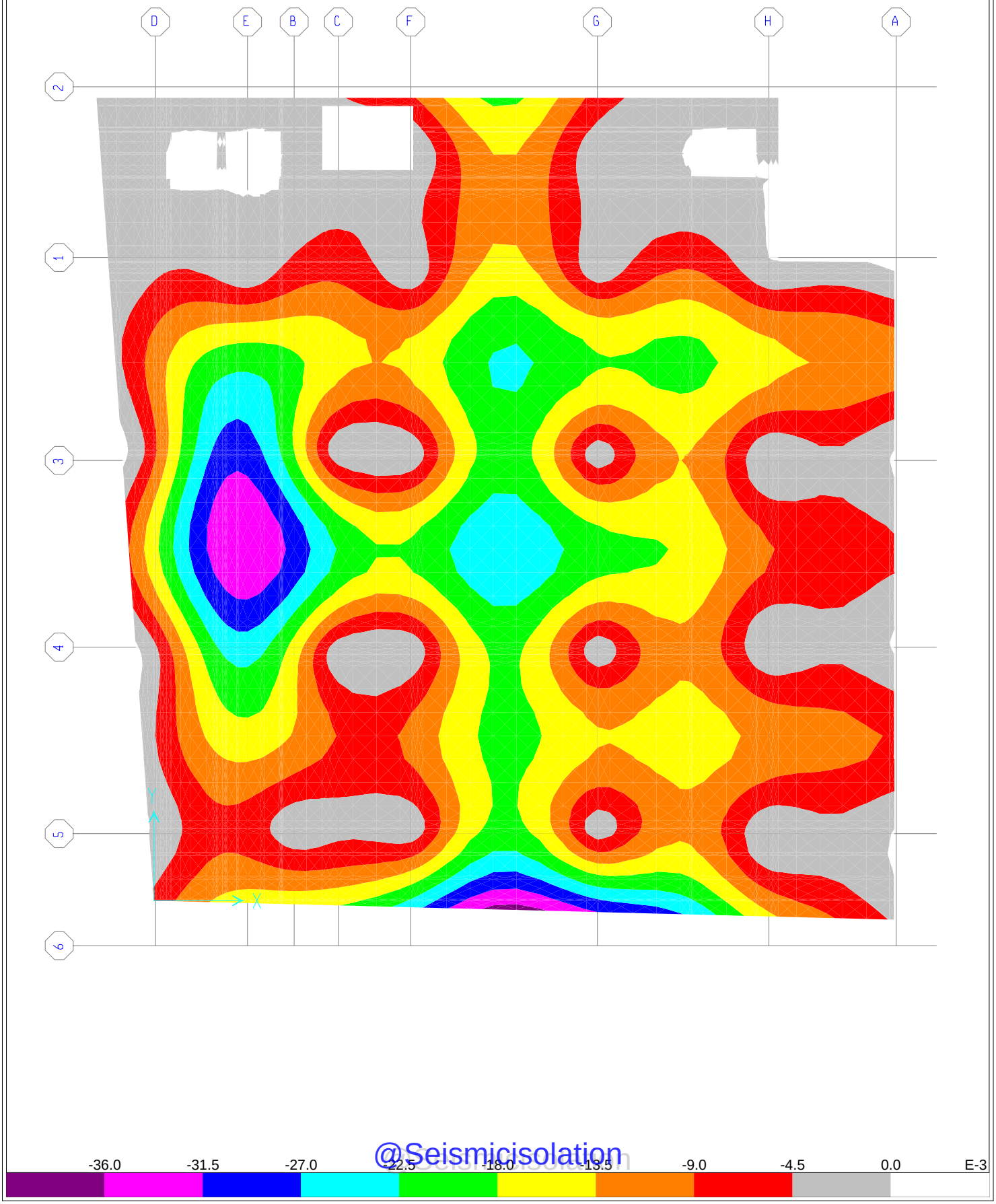
SAFE v8.0.8 - File: GF axis1-13 - June 3,2015 12:54 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE



SAFE v8.0.8 - File: GF axis14-24 - June 3,2015 16:09 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE



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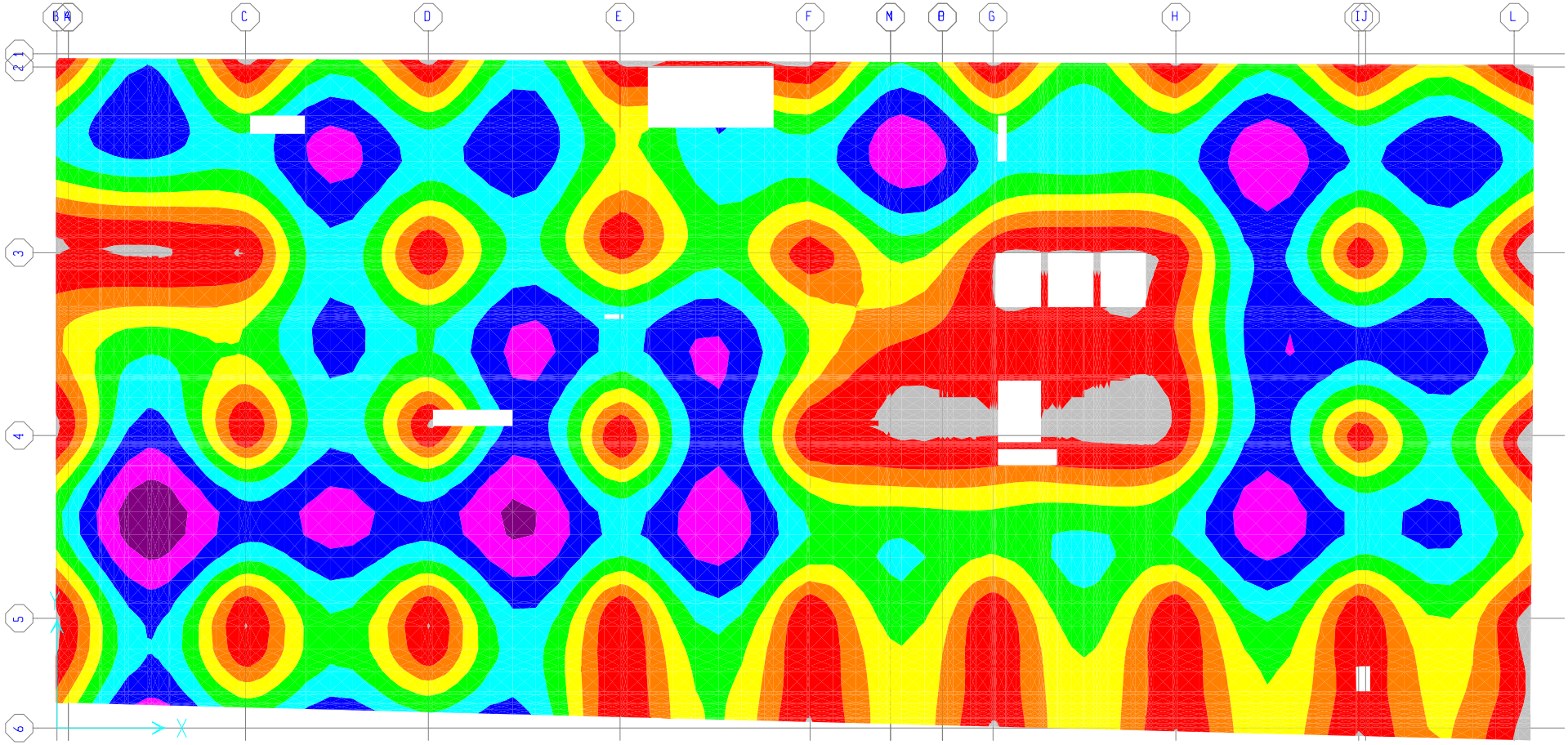
SAFE v8.0.8 - File: 2F PODIUM - June 4,2015 15:05 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE



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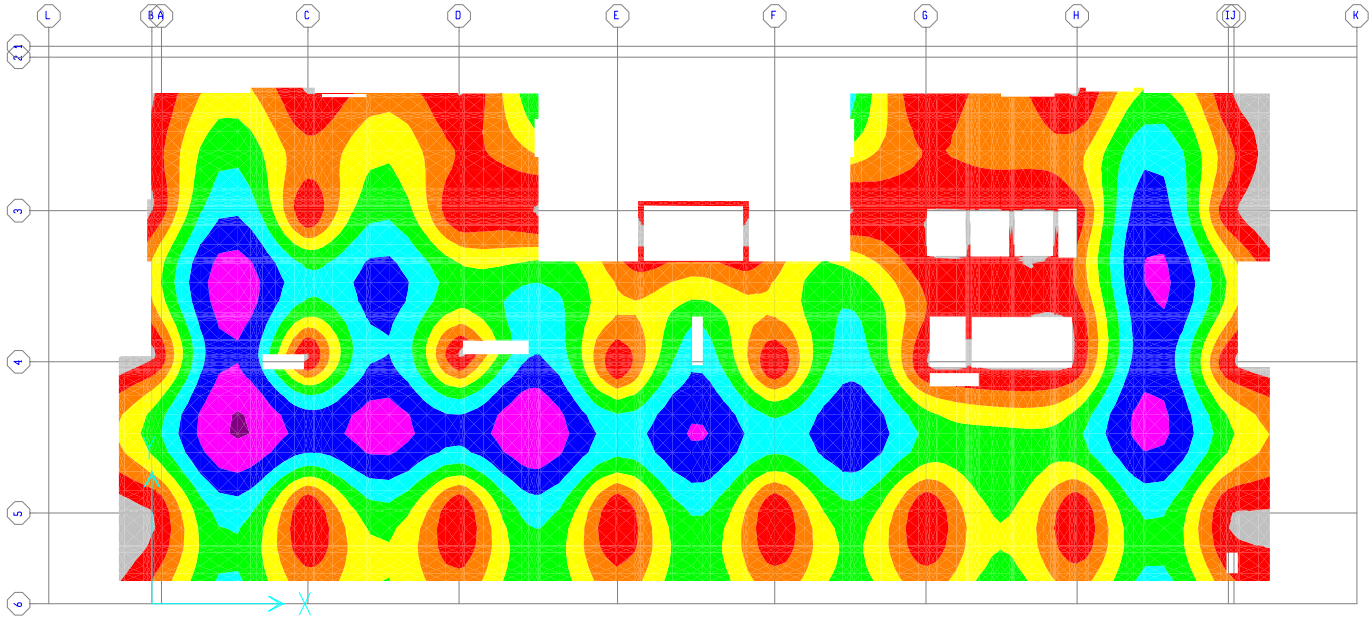
-24.5 -21.0 -17.5 -14.0 -10.5 -7.0 -3.5 0.0 3.5 E-3

SAFE v8.0.8 - File: 2F - June 4,2015 15:08 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE



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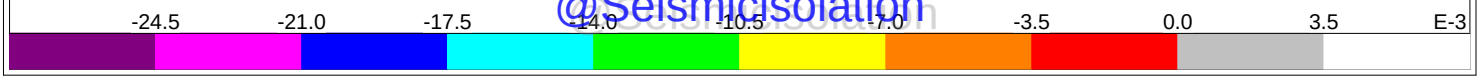
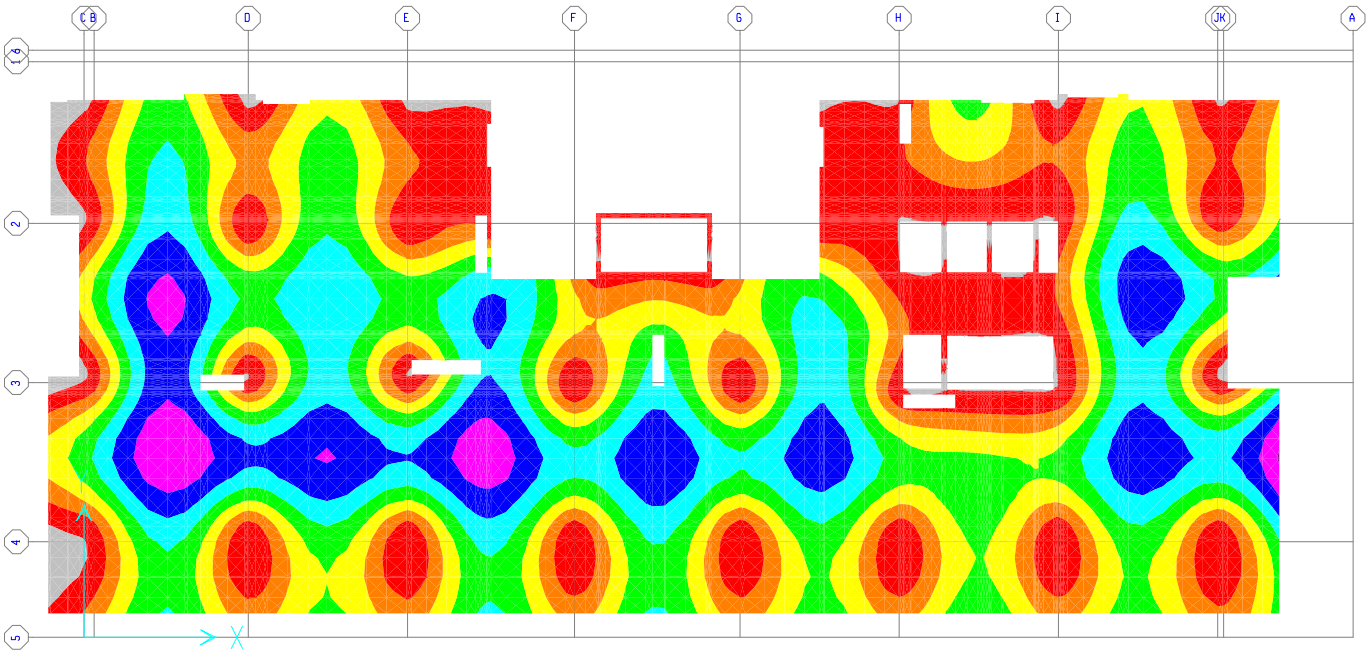
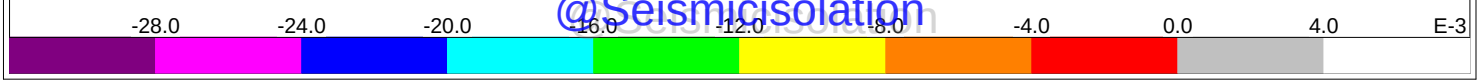


SAFE v8.0.8 - File: 3F - June 4,2015 15:15 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE





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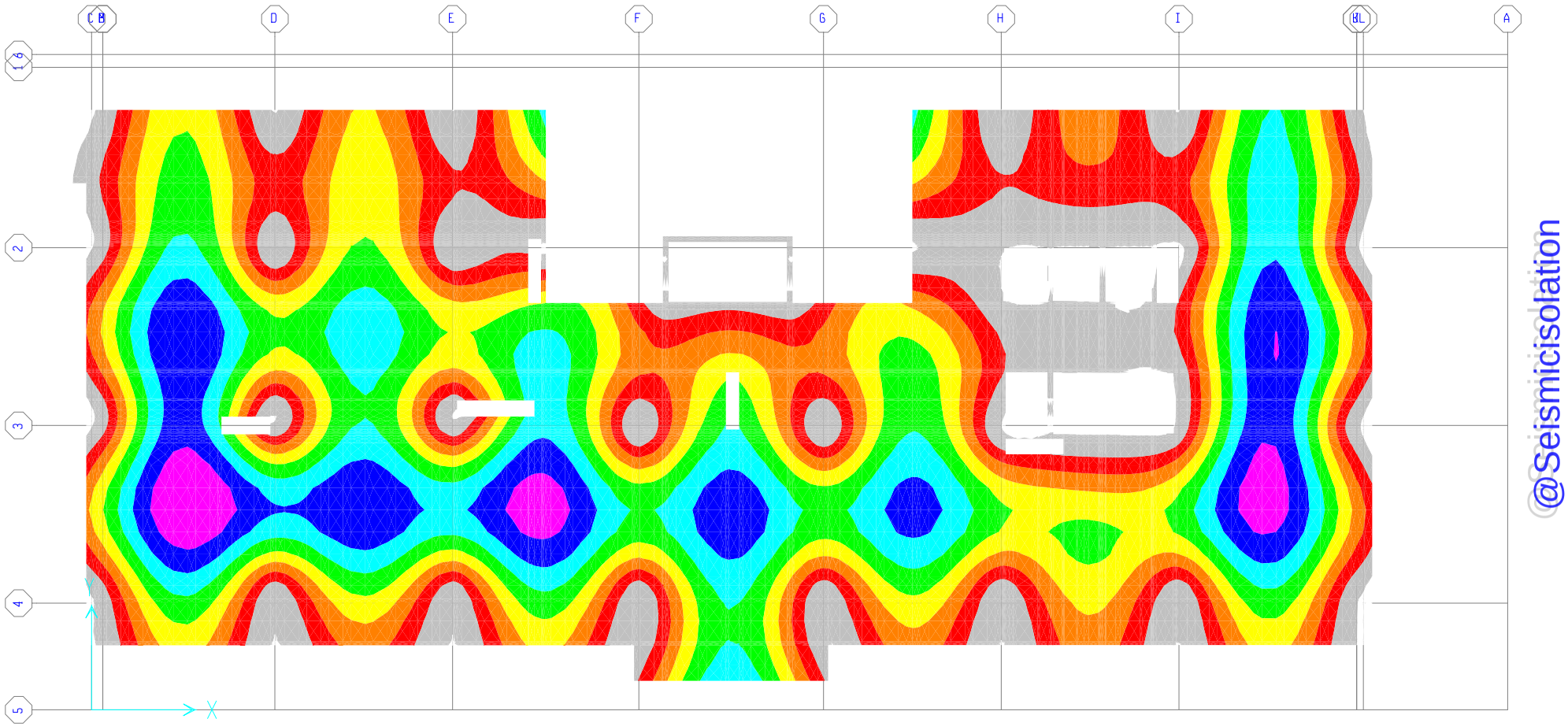
SAFE v8.0.8 - File: 4-12 - June 4,2015 15:17 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

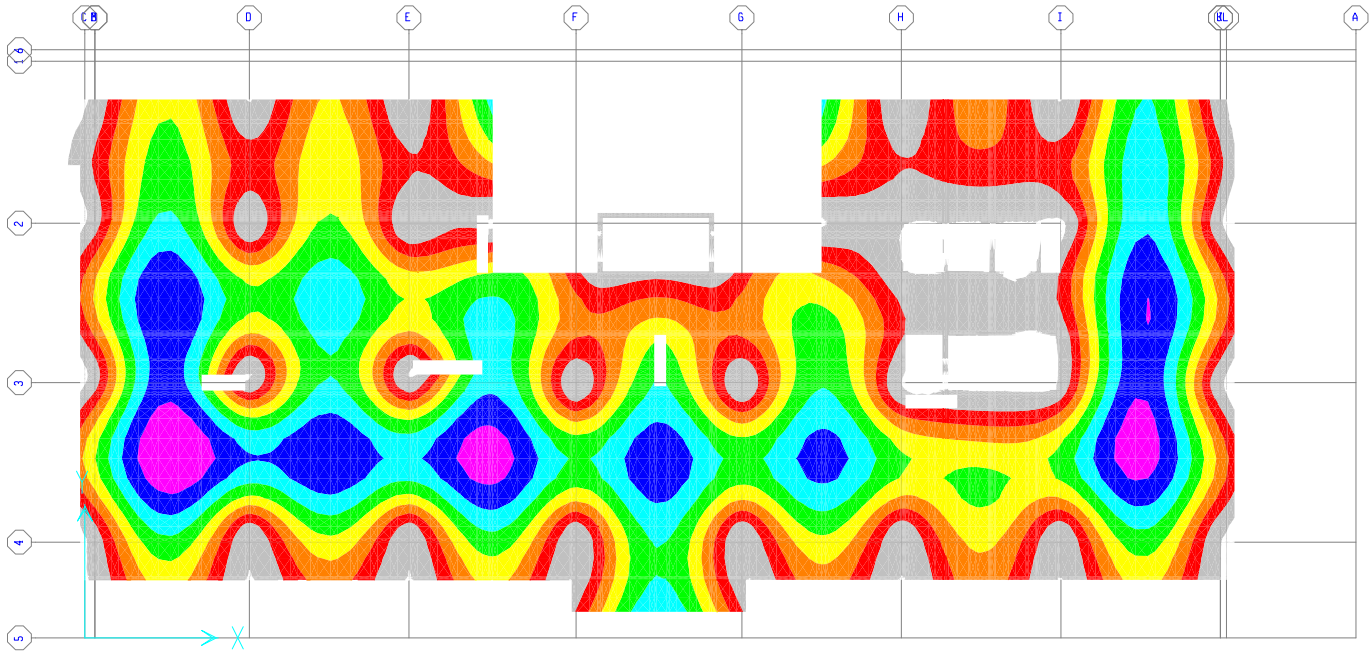
SAFE

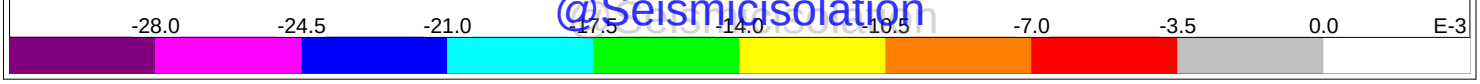


-28.0 -24.5 -21.0 -17.5 -14.0 -10.5 -7.0 -3.5 0.0 E-3

SAFE v8.0.8 - File: 13 - June 4,2015 15:20 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

SAFE





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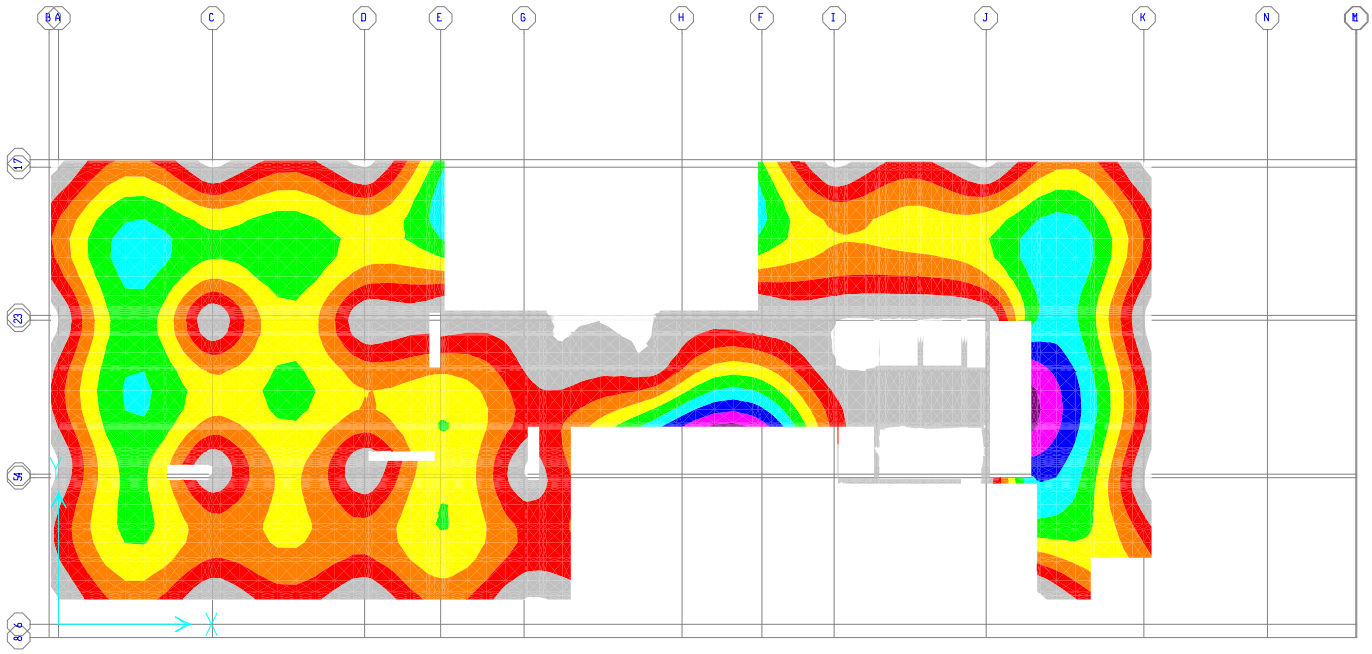
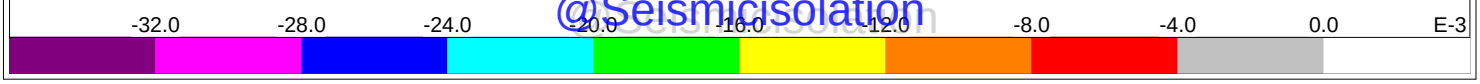
Cracked Deformed Shape (SERV) - KN-m Units

SAFE





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SAFE v8.0.8 - File: TORD - June 4,2015 16:20 - Scale: Fit to Page
Cracked Deformed Shape (SERV) - KN-m Units

DESIGN OF BEAMS

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	Job Title		
	Client		
	Calcs by	Checked by	Date

Continuous Beam: B1&B2 (Code of Practice : BS8110 - 1997)

11/6/2014 10:15:48 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	350	700							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	4.9	1	
2	8.45	1	
3	3.9	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description
D	1	44.26								
L	1	16								
D	2	44.26								
L	2	16								
D	3	44.26								
L	3	16								

Span	M left (kNm)	M right (kNm)

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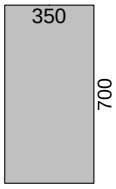
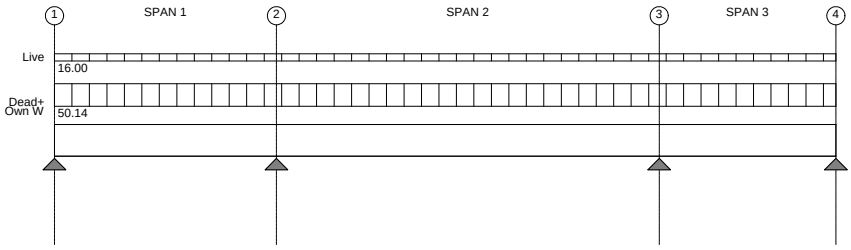
Sections



Beam Elevation



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	Client		
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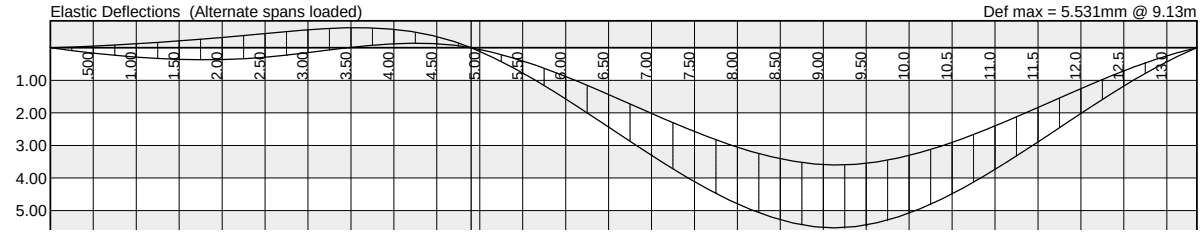
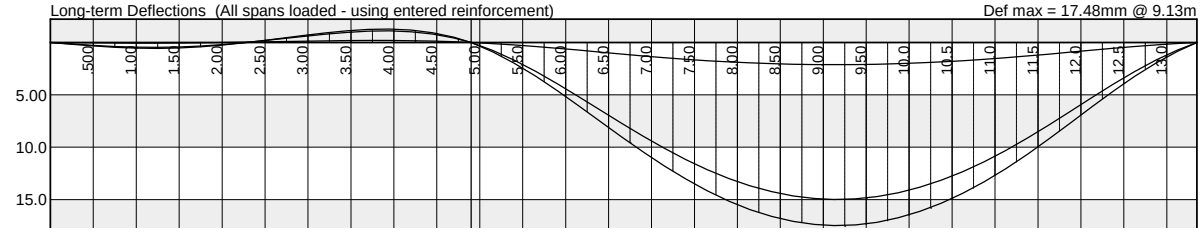
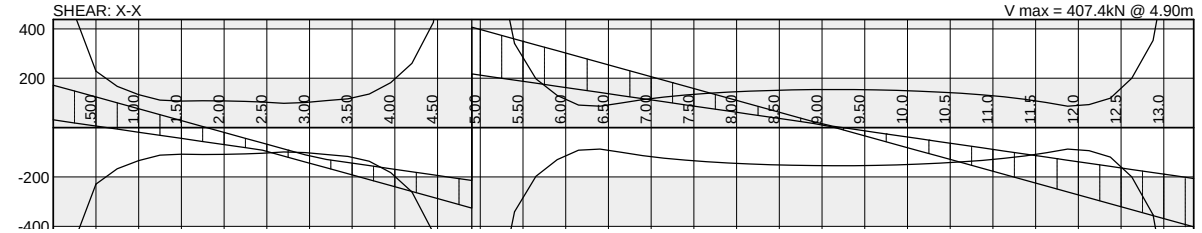
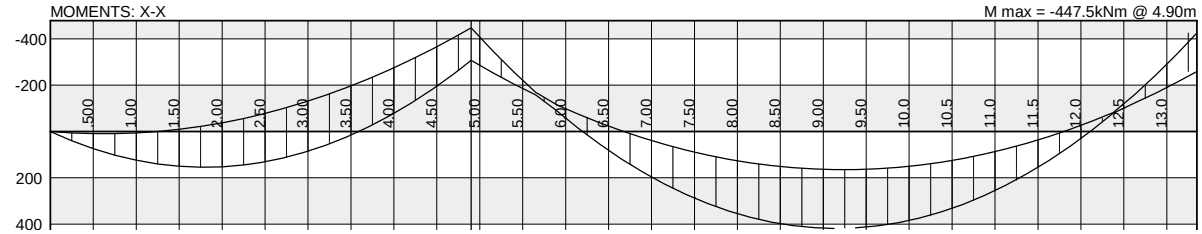
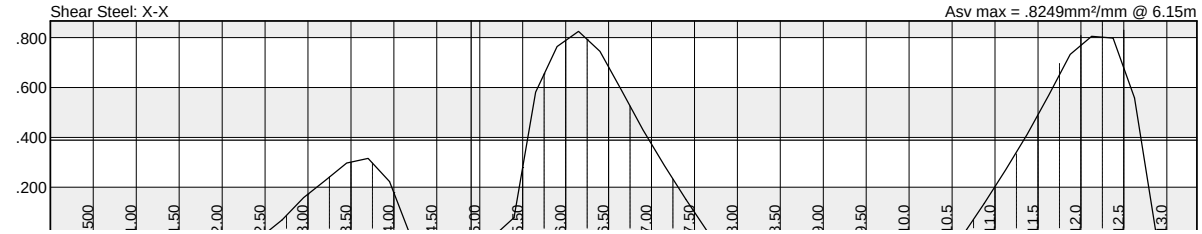
Deflection, Shear, Moment and Steel diagrams. Spans 1,2











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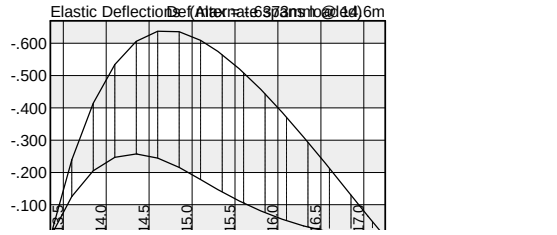
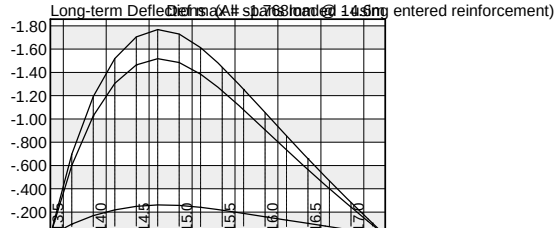
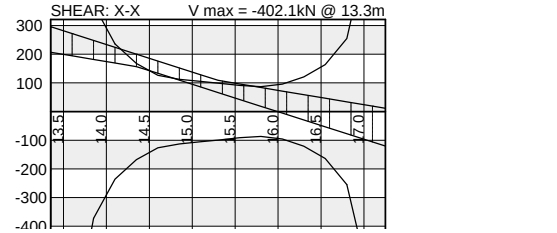
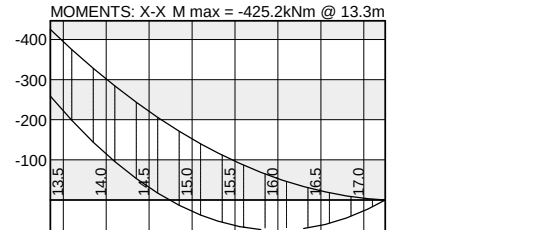
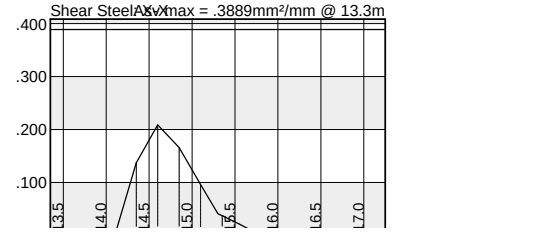
Deflection, Shear, Moment and Steel diagrams. Span 3

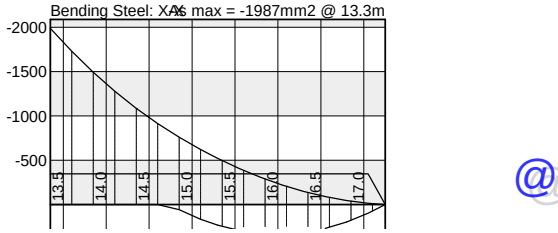












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	8
Maximum diameter	(mm)	8
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
4Y16	A	34	1	0.025	3.535	L	T
4Y16	B	34	1	0.025	5.075	L	B
4Y20	C	20	2	-2.200	3.600	L	T
3Y20	D	20	2	-1.200	2.300	L	T
4Y16	E	20	2	-0.200	8.850	L	B
4Y16	F	20	2	0.390	10.110	L	T
3Y20	G	20	2	1.700	4.800	L	B
1Y16	H	20	2	3.100	2.300	L	B
4Y20	I	20	3	-1.100	2.650	L	T
4Y16	J	34	3	-0.200	4.075	R	B
4Y16	K	34	3	1.140	2.735	R	T

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y8	SA1	60			
		Y8	SA2	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	450	1	0.20	4.50
1	200	2	0.20	1.60
1	450	2	2.12	4.50
1	200	2	6.95	1.30
1	450	3	0.20	3.50

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Section positions		
Label	Span	Offset(m)
A	1	2.7
B	2	0.3
C	2	4.4
D	3	0.3
E	3	2.1

File name	CB.PAD
First span	1
Last span	3
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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	Client		
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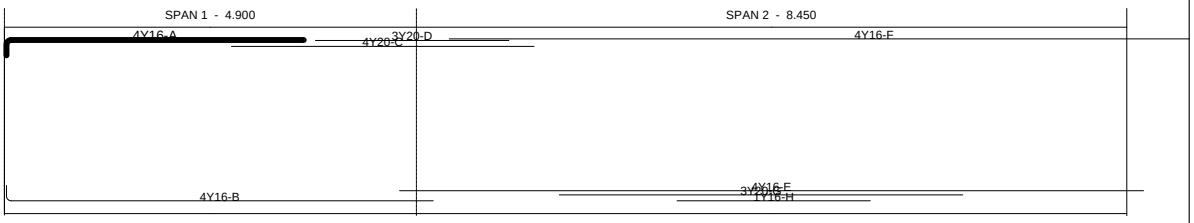
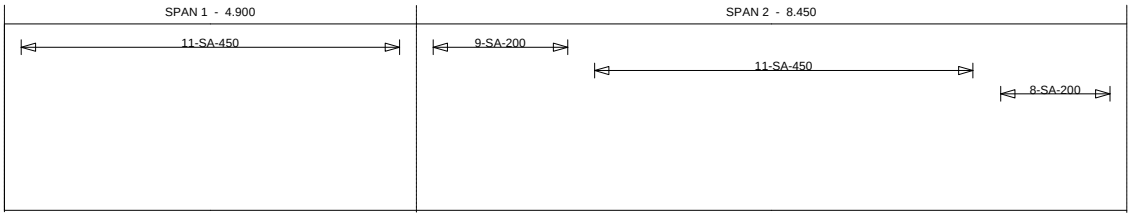
Main and Shear Reinforcing diagrams. Spans 1,2





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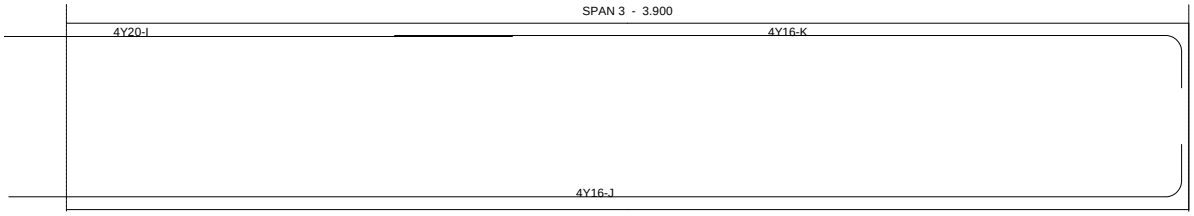
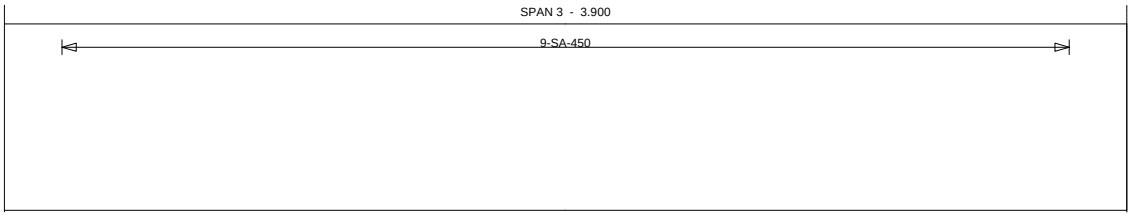
Main and Shear Reinforcing diagrams. Span 3





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	Job Title		
	Client		
	Calcs by	Checked by	Date

Continuous Beam: B3&B4 (Code of Practice : BS8110 - 1997)

11/6/2014 10:17:55 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	400	600							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	4.7	1	
2	8.96	1	
3	7.15	1	
4	8.6	1	
5	3.8	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	55.3									
	2	55.3									
	3	55.3									
	4	55.3									
	5	55.3									
L	1	19.75									
	2	19.75									
	3	19.75									
	4	19.75									
	5	19.75									

Span	M left (kNm)	M right (kNm)

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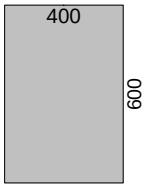
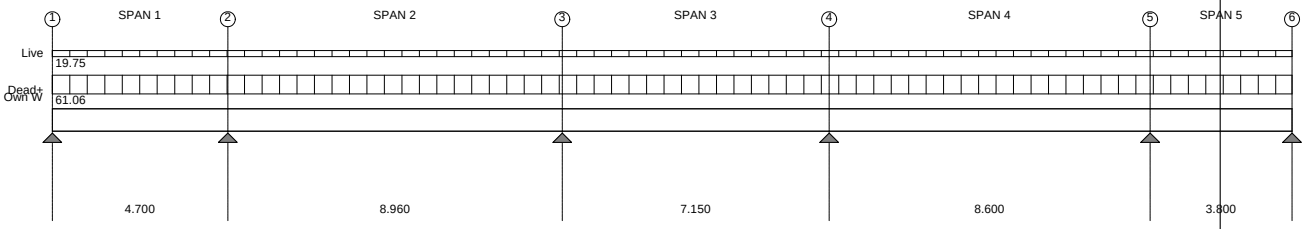
Sections



Beam Elevation



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	Job Title		
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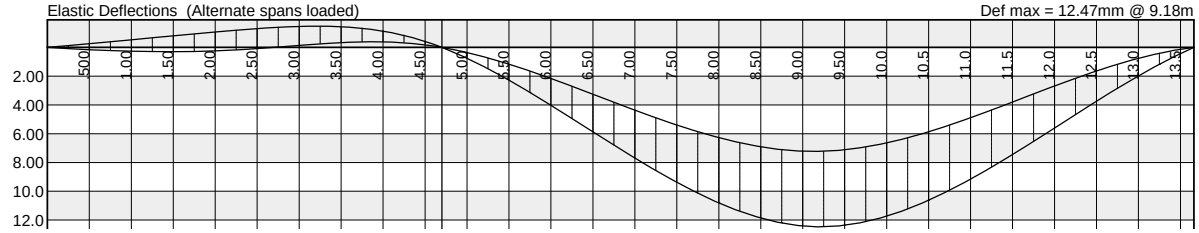
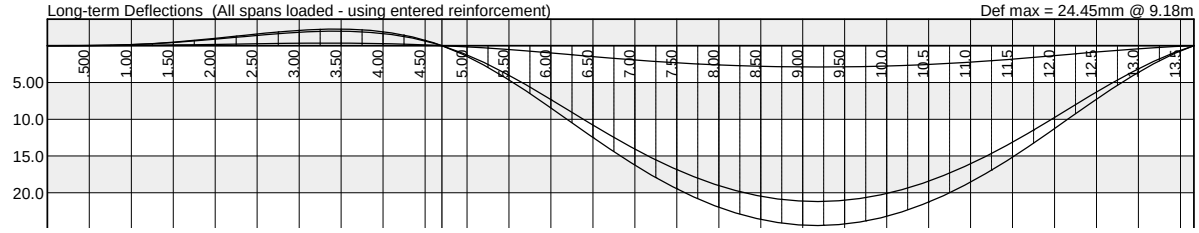
	Calcs by	Checked by	Date

Deflection, Shear, Moment and Steel diagrams. Spans 1,2

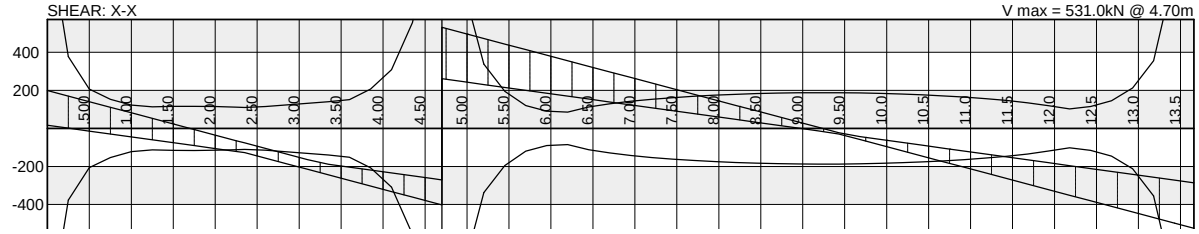
Elastic Deflections (Alternate spans loaded) — Def max = 12.47mm @ 9.18m



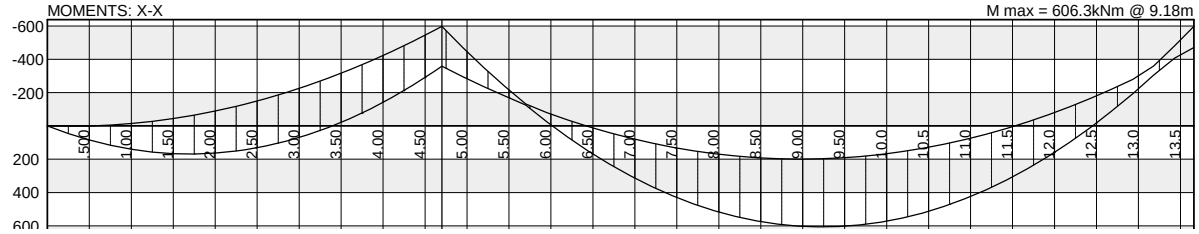
Long-term Deflections (All spans loaded - using entered reinforcement) — Def max = 24.45mm @ 9.18m



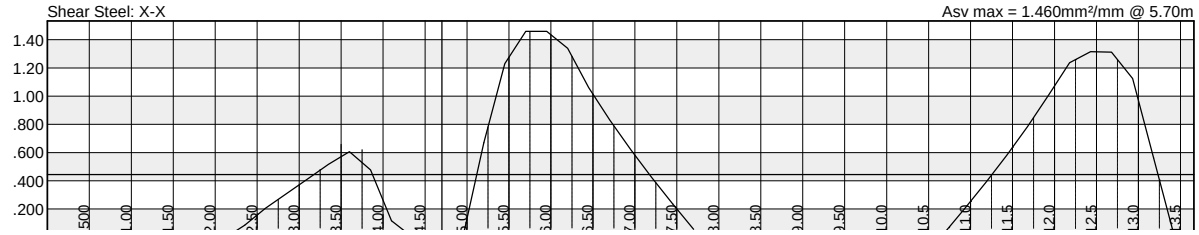
SHEAR: X-X — V max = 531.0kN @ 4.70m



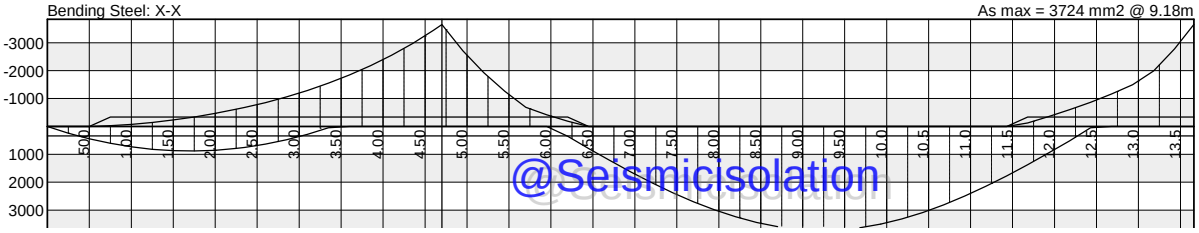
MOMENTS: X-X — M max = 606.3kNm @ 9.18m



Shear Steel: X-X — Asv max = 1.460mm²/mm @ 5.70m



Bending Steel: X-X — As max = 3724 mm2 @ 9.18m



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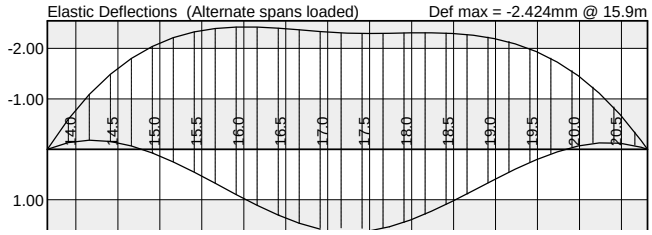
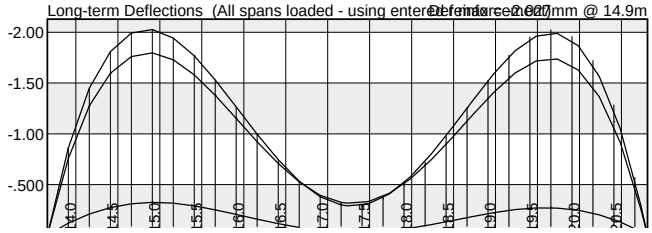
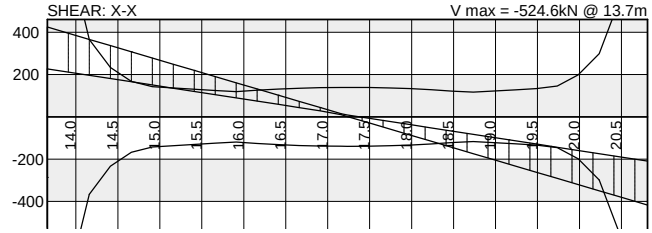
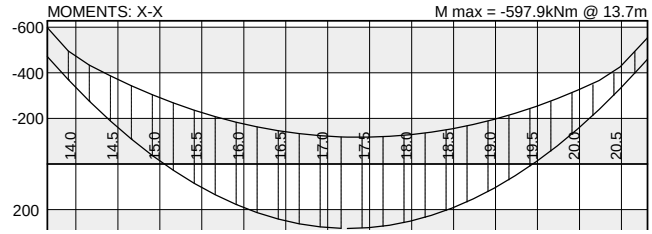
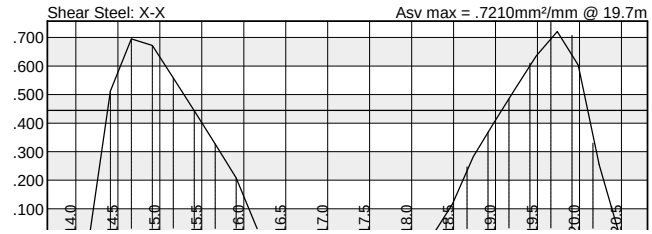
Deflection, Shear, Moment and Steel diagrams. Span 3

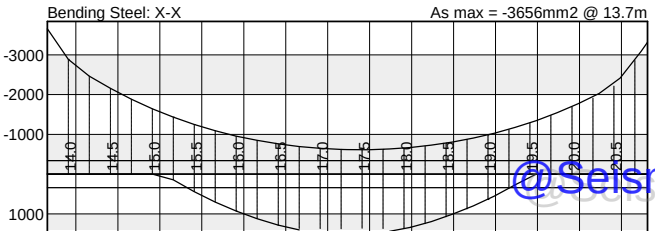












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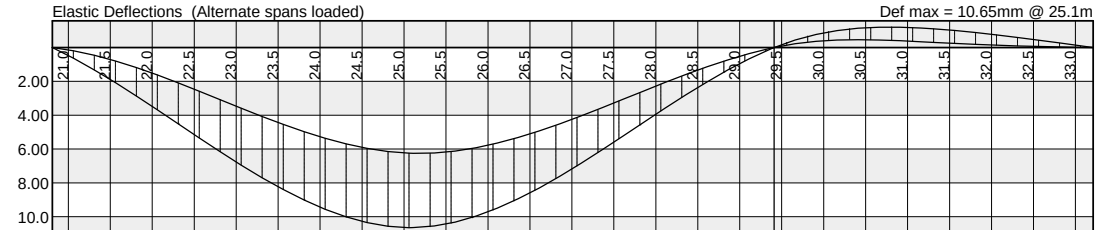
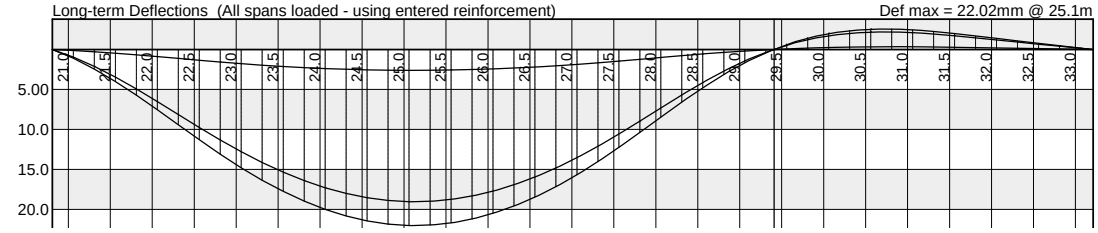
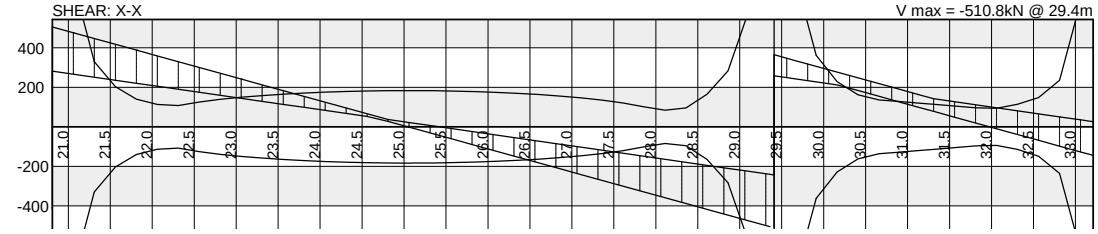
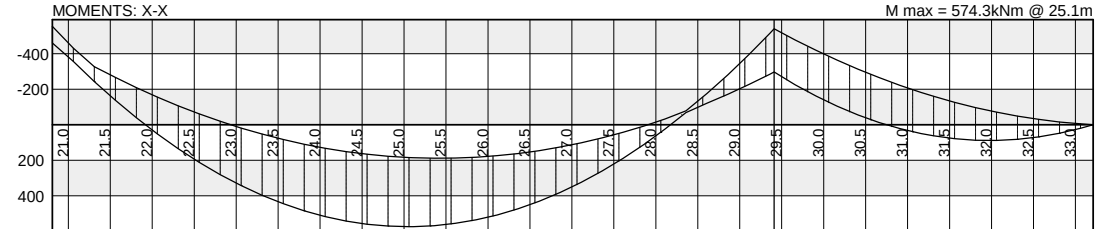
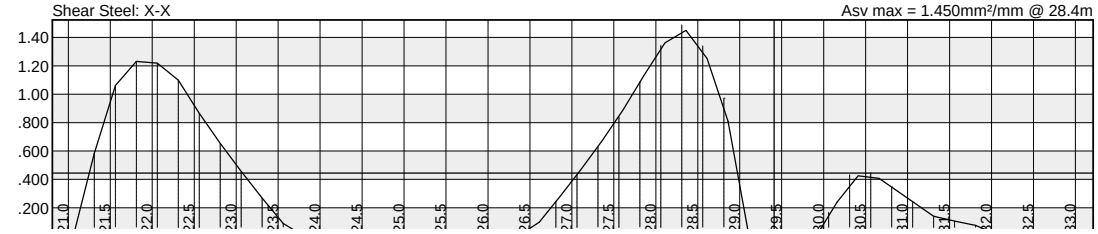
Deflection, Shear, Moment and Steel diagrams. Spans 4,5

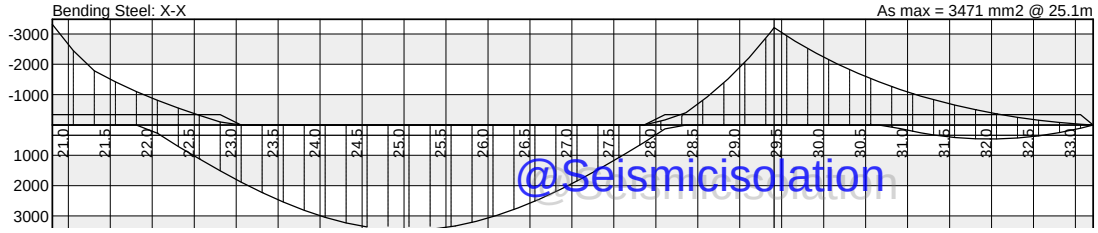












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
4Y20	A	34	1	0.025	4.925	L	B
4Y20	B	34	1	0.025	6.275	L	T
5Y25	C	20	2	-2.000	3.350	L	T
4Y20	D	20	2	-0.250	9.460	L	B
4Y20	E	20	2	0.300	8.130	L	T
4Y25	F	20	2	1.700	5.600	L	B
2Y20	G	20	2	3.200	2.700	L	B
4Y20	H	20	3	-1.660	7.685	L	T
5Y25	I	20	3	-1.350	3.490	L	T
4Y20	J	20	3	-0.250	7.650	L	B
1Y20	K	20	3	2.440	2.235	L	B
4Y25	L	20	4	-2.210	3.800	L	T
3Y25	M	20	4	-1.350	2.700	L	T
4Y20	N	20	4	-0.250	9.100	L	B
4Y20	O	20	4	0.550	10.240	L	T
4Y20	P	20	4	1.590	5.300	L	B
2Y25	Q	20	4	2.390	3.700	L	B
4Y25	R	20	5	-1.350	2.940	L	T
4Y20	S	34	5	-0.250	4.025	R	B
4Y20	T	34	5	1.050	2.725	R	T

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA1	60			
		Y10	SA2	60			

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Stirrup Number	Spacing	Span	Offset	Length (m)
1	400	1	0.20	4.30
1	200	2	0.20	1.80
1	400	2	2.30	4.80
1	200	2	7.40	1.36
1	400	3	0.20	6.75
1	200	4	0.20	1.60
1	400	4	2.10	4.40
1	200	4	6.80	1.60
1	400	5	0.20	3.20

Section positions		
Label	Span	Offset(m)
A	1	2.6
B	2	0.3
C	2	4.7
D	3	0.3
E	3	3.8
F	4	0.3
G	4	4.5
H	5	0.3
I	5	2.1

File name	CB.PAD
First span	1
Last span	5
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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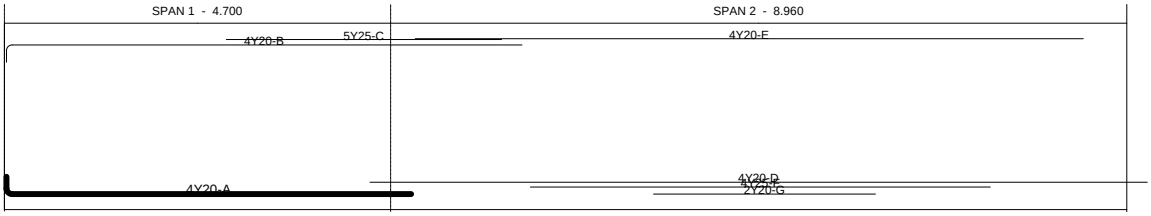
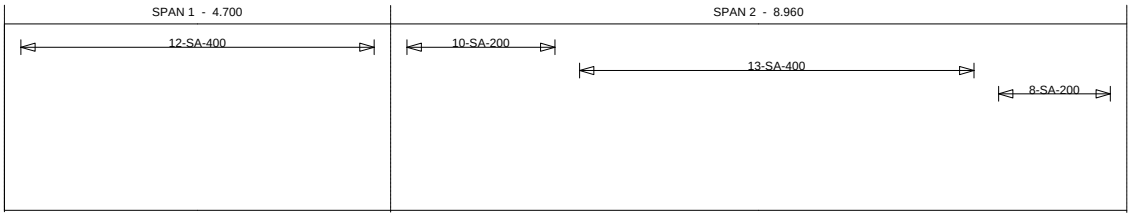
Main and Shear Reinforcing diagrams. Spans 1,2





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	Job Title		
	Client		
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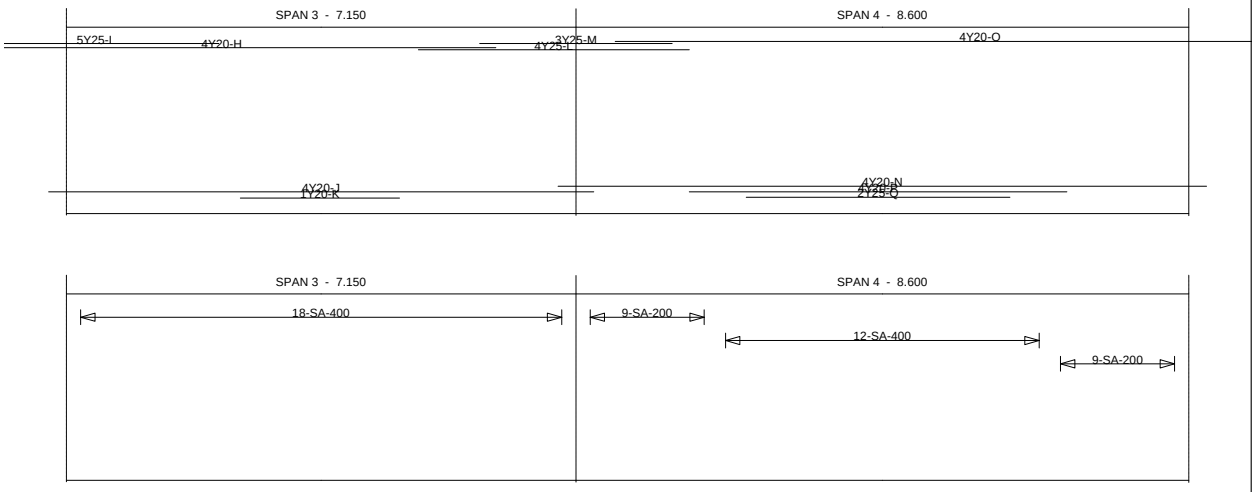
Main and Shear Reinforcing diagrams. Spans 3,4



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	Job Title		
	Client		
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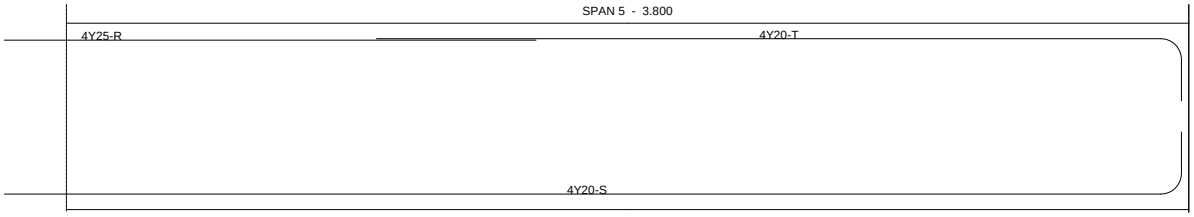
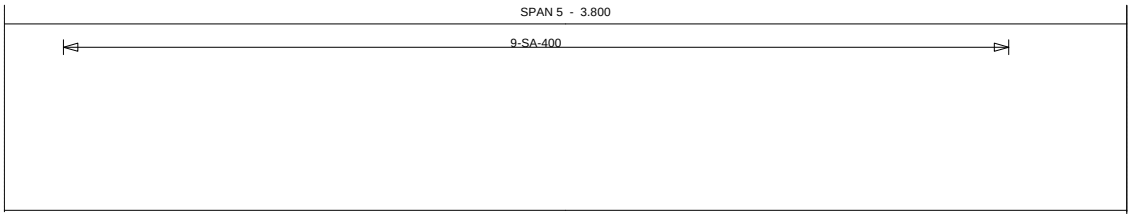
Main and Shear Reinforcing diagrams. Span 5





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	Job Title		
	Client		
	Calcs by	Checked by	Date

Continuous Beam: BEAM, B5 (Code of Practice : BS8110 - 1997)

11/6/2014 10:19:39 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	600	600							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	7.55	1	
2	6.45	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	120.75									
	2	120.75									
L	1	37.5									
	2	37.5									

Span	M left (kNm)	M right (kNm)

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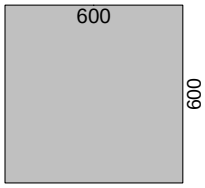
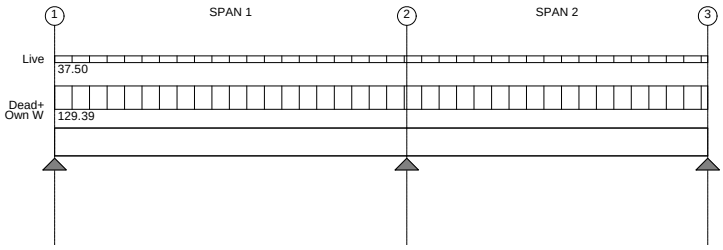
	Job Title		
	Client		
	Calcs by	Checked by	Date

Sections



Beam Elevation



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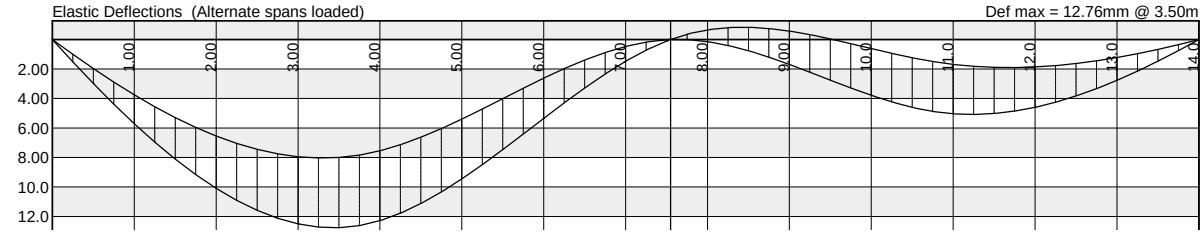
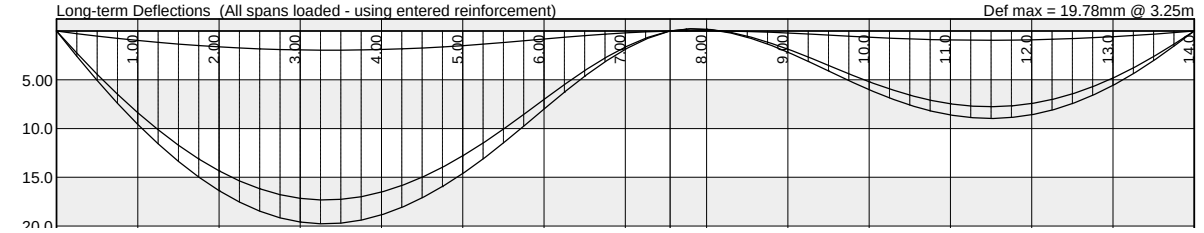
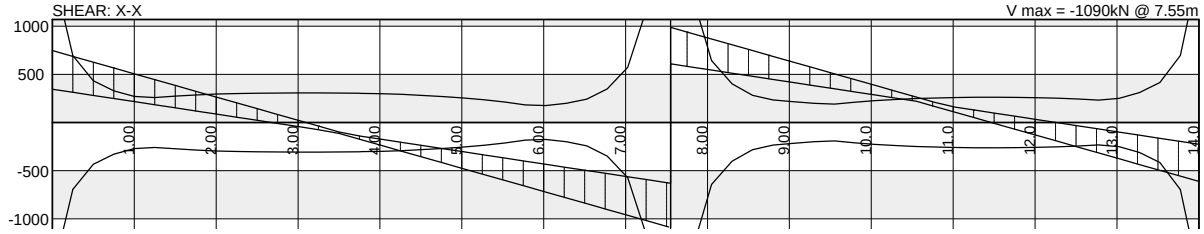
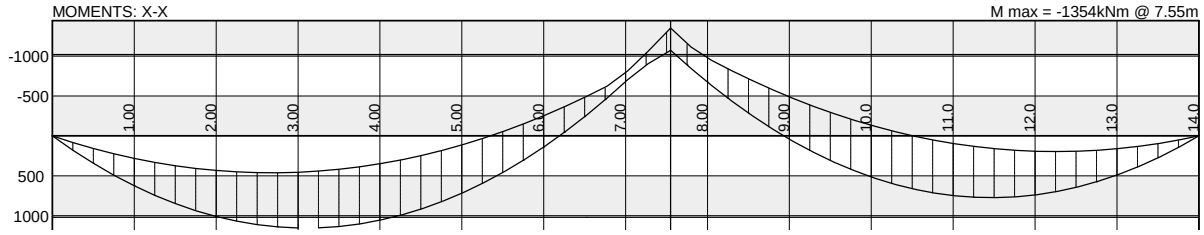
	Job Title		
	Client		
	Calcs by	Checked by	Date

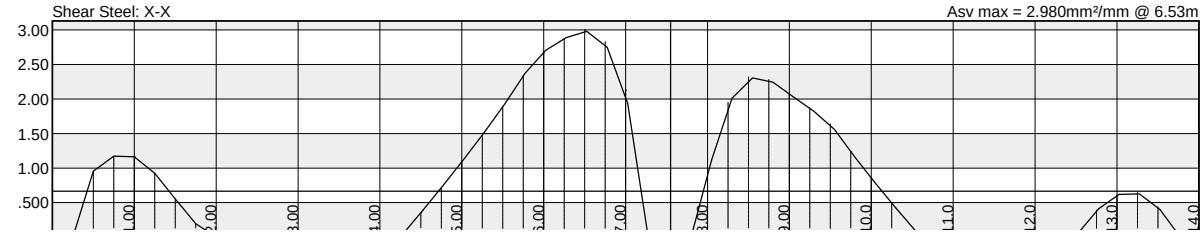
Deflection, Shear, Moment and Steel diagrams. Spans 1,2

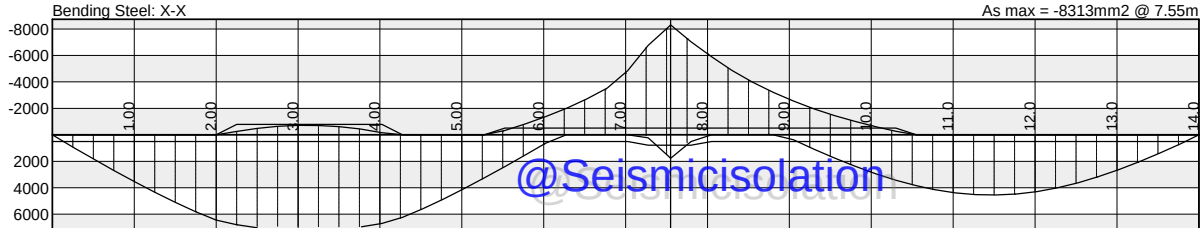












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	25
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	25
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
6Y25	A	34	1	0.025	7.825	L	B
6Y25	B	34	1	0.025	9.875	L	T
9Y25	C	20	1	0.400	5.200	L	B
11Y25	D	20	2	-1.350	2.900	L	T
6Y25	E	34	2	-0.300	6.725	R	B
6Y25	F	34	2	0.938	5.487	R	T
4Y25	G	20	2	2.150	3.400	L	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA1	60			
		Y10	SA2	60			
		Y10	SA3	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	400	1	0.20	4.80
1	150	1	5.28	2.07
1	200	2	0.20	1.80
1	400	2	2.30	3.95

Section positions		
Label	Span	Offset(m)
A	1	4.0
B	2	0.3
C	2	3.4

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File name	B3B4.PAD
First span	1
Last span	2
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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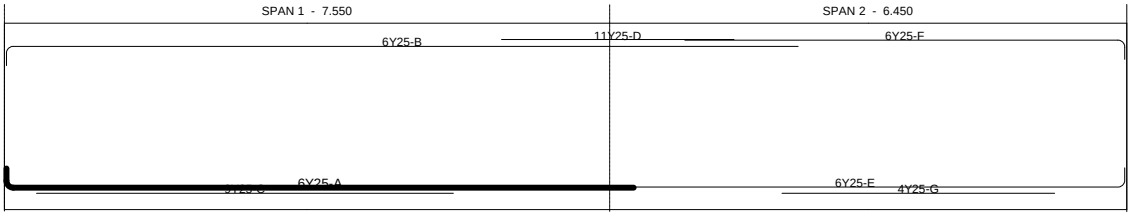
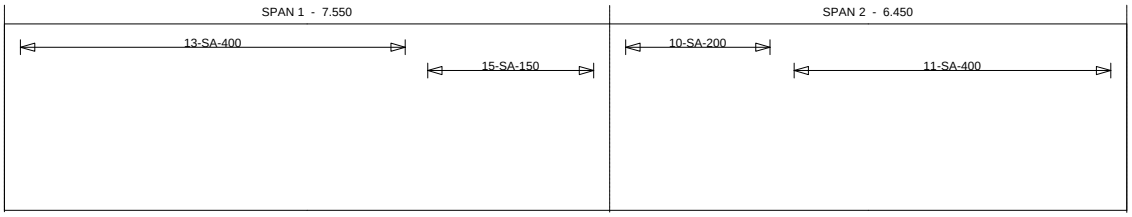
Main and Shear Reinforcing diagrams. Spans 1,2





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Continuous Beam: B7 (Code of Practice : BS8110 - 1997)

11/6/2014 10:20:21 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	800	800							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	131									
L	1	72.7									

Span	M left (kNm)	M right (kNm)

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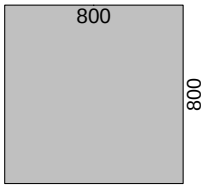
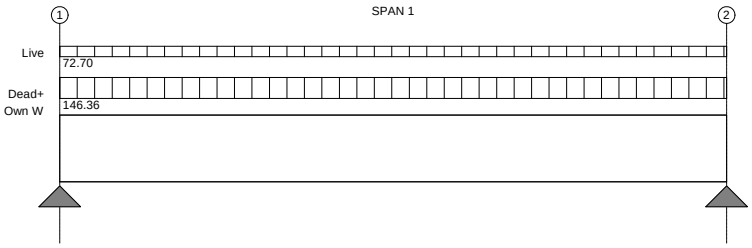
Sections



Beam Elevation



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	Job Title		
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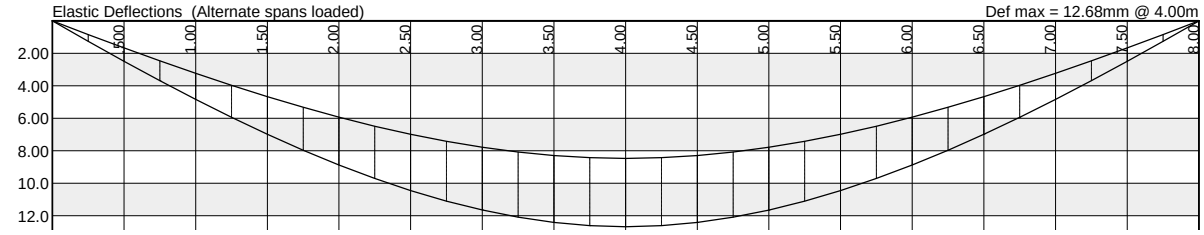
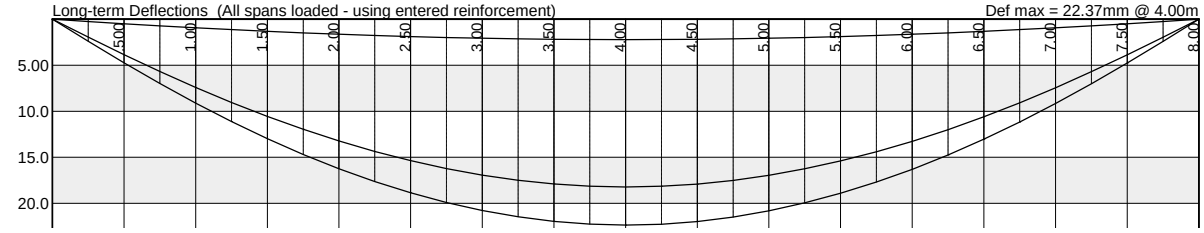
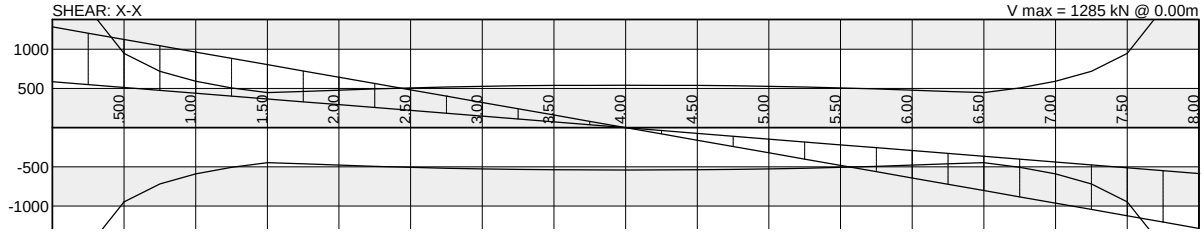
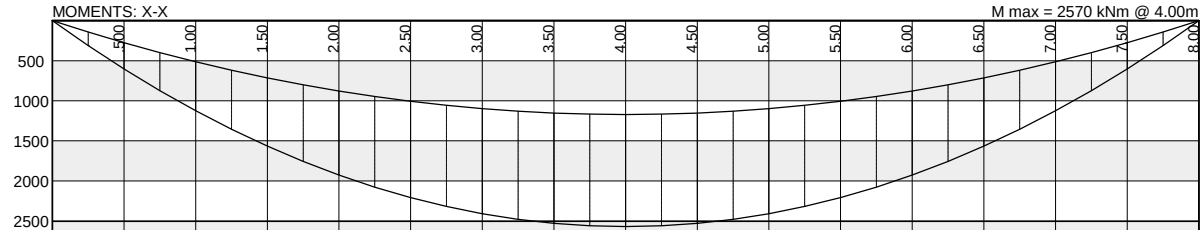
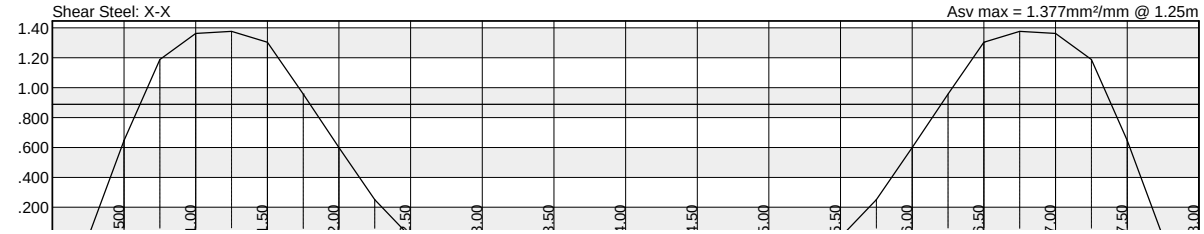
Deflection, Shear, Moment and Steel diagrams. Span 1

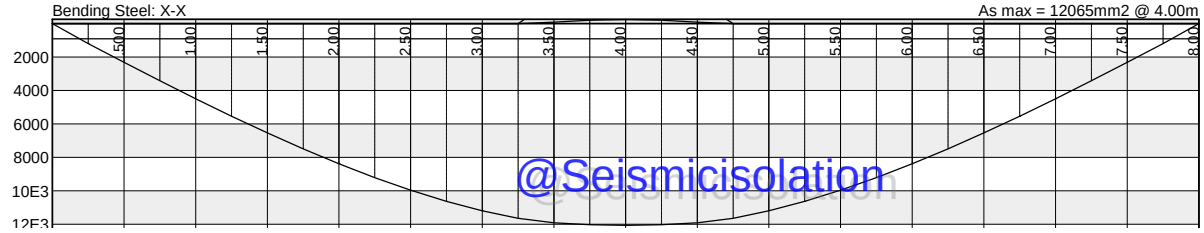












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	25
Maximum bar diameter	(mm)	32
BOTTOM: Minimum bar diameter	(mm)	25
Maximum bar diameter	(mm)	32
STIRRUP: Minimum diameter	(mm)	12
Maximum diameter	(mm)	12
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
8Y25	A	35	1	0.025	7.950	R	T
2Y20	B	35	1	0.025	7.950	R	M1
2Y20	C	35	1	0.025	7.950	R	M2
8Y32	D	35	1	0.025	7.950	R	B
7Y32	E	20	1	1.000	5.900	L	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y12	SA1	60			
		Y12	SA2	60			
		Y12	SA3	60			
		Y12	SA4	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	550	1	0.20	7.60

Section positions		
Label	Span	Offset(m)
A	1	4.2

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File name	B3B4.PAD
First span	1
Last span	1
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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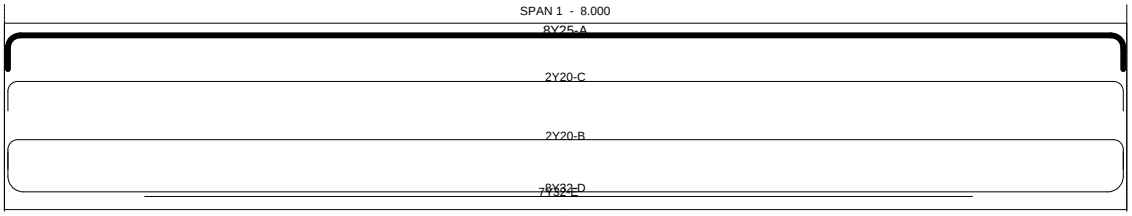
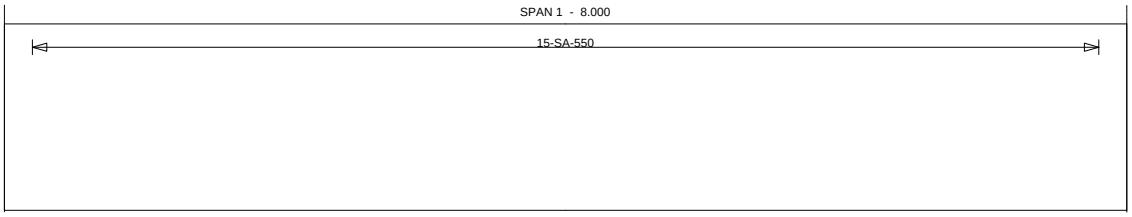
	Client		
	Calcs by	Checked by	Date

Main and Shear Reinforcing diagrams. Span 1





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Continuous Beam: B8 (Code of Practice : BS8110 - 1997)

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C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	600	800							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	127									
L	1	39.4									

Span	M left (kNm)	M right (kNm)

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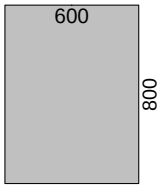
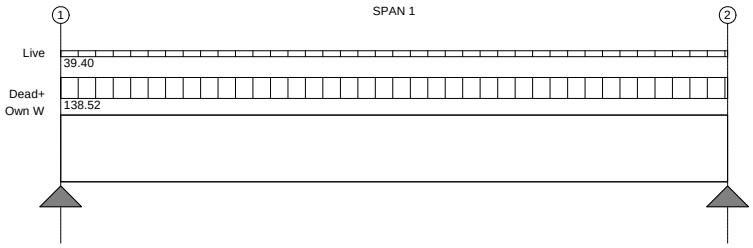
Sections



Beam Elevation



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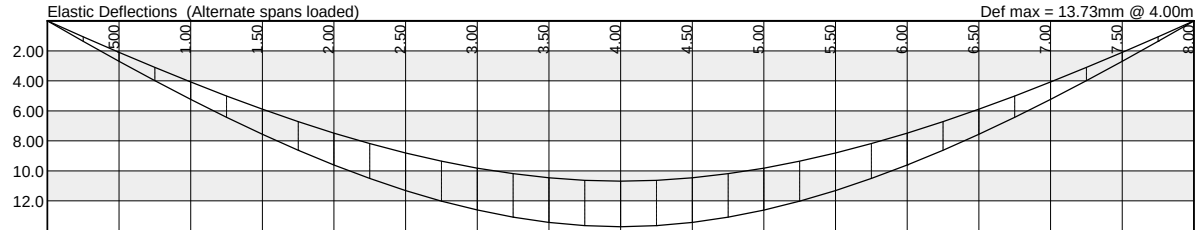
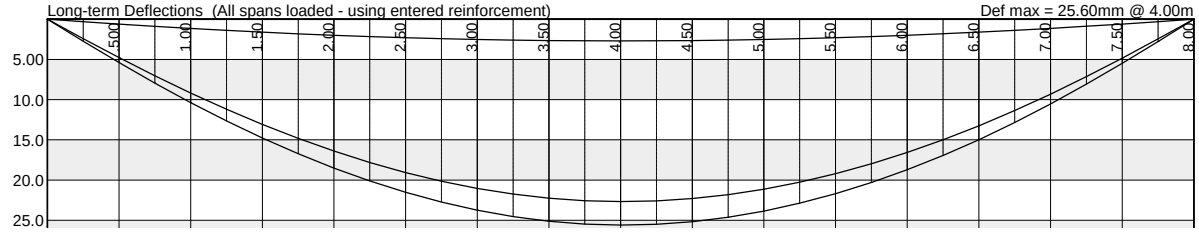
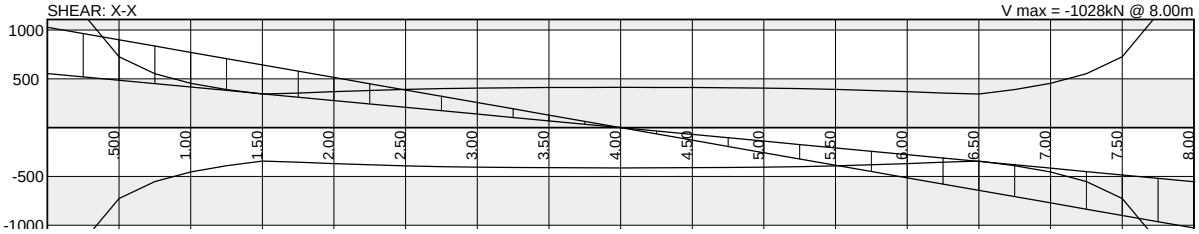
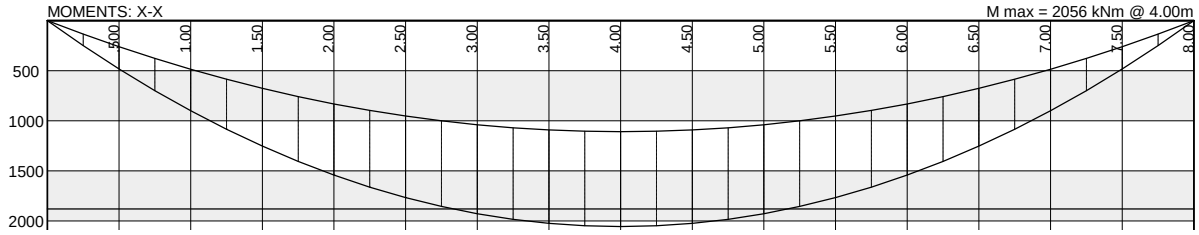
	Calcs by	Checked by	Date

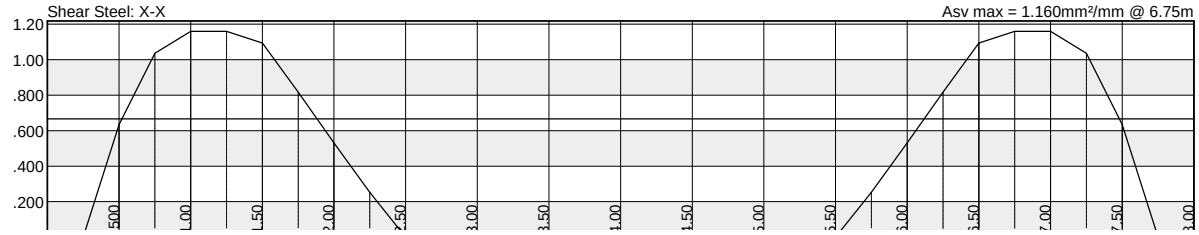
Deflection, Shear, Moment and Steel diagrams. Span 1

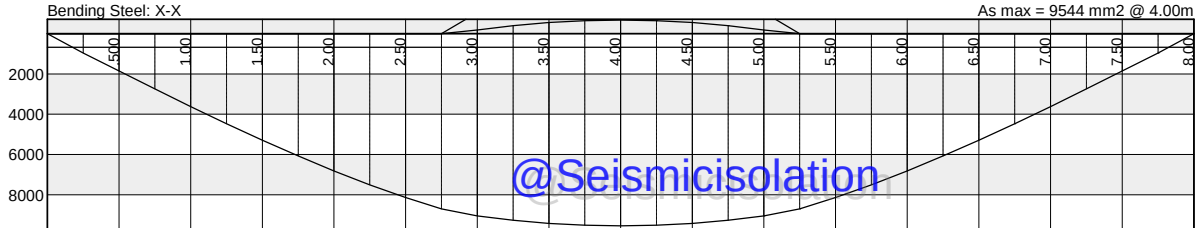












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
6Y20	A	35	1	0.025	7.950	R	T
2Y20	B	35	1	0.025	7.950	R	M1
2Y20	C	35	1	0.025	7.950	R	M2
6Y32	D	35	1	0.025	7.950	R	B
6Y32	E	20	1	0.800	6.100	L	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA1	60			
		Y10	SA2	60			
		Y10	SA3	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	400	1	0.20	1.60
1	550	1	2.28	4.40
1	400	1	7.15	0.65

Section positions		
Label	Span	Offset(m)
A	1	4.2

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File name	B8.PAD
First span	1
Last span	1
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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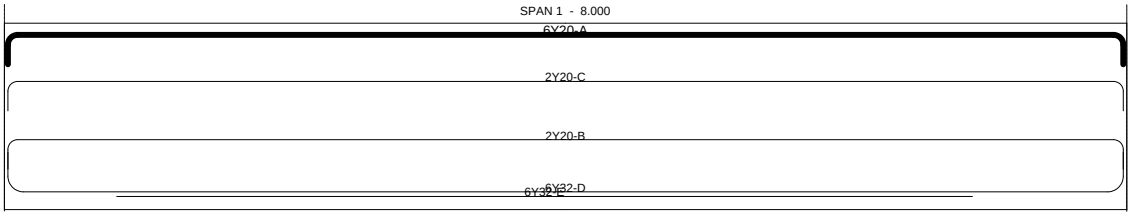
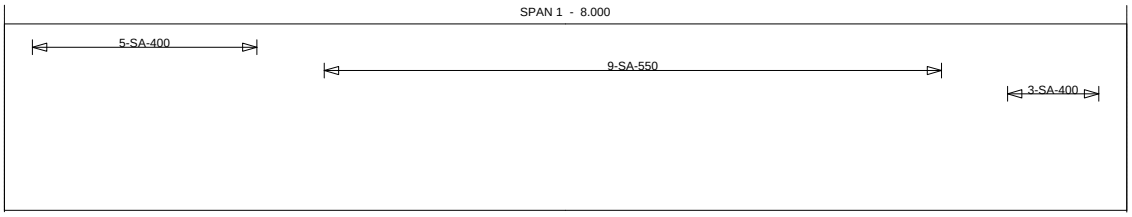
Main and Shear Reinforcing diagrams. Span 1





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Continuous Beam: B9 (Code of Practice : BS8110 - 1997)

11/6/2014 10:23:33 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	400	600							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	2.9	1	
2	9	1	
3	7.15	1	
4	3.1	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	
5	C								

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	58.45									
	2	58.45									
	3	58.45									
	4	58.45									
L	1	12.5									
	2	12.5									
	3	12.5									
	4	12.5									

Span	M left (kNm)	M right (kNm)

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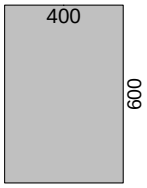
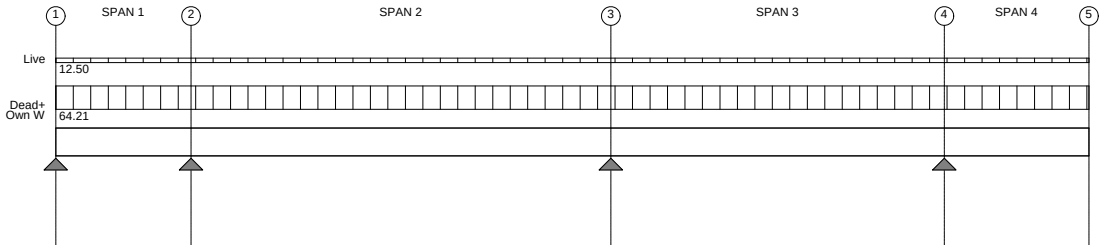
Sections



Beam Elevation



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	Job Title		
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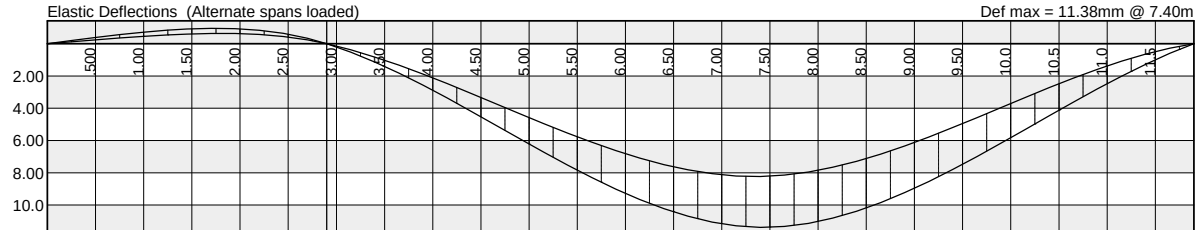
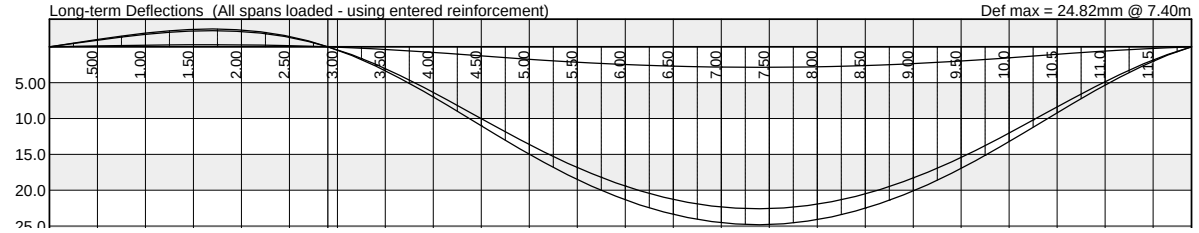
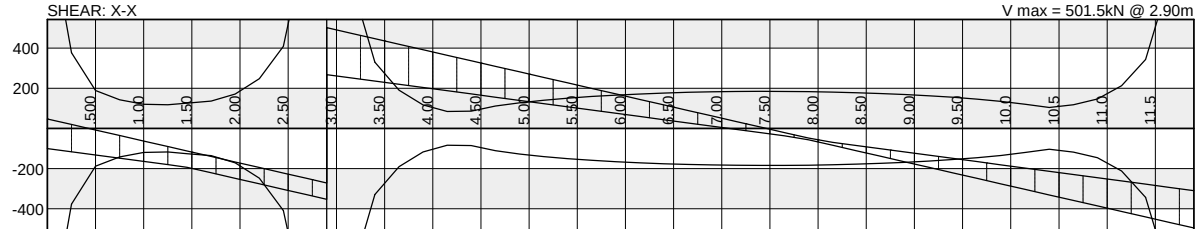
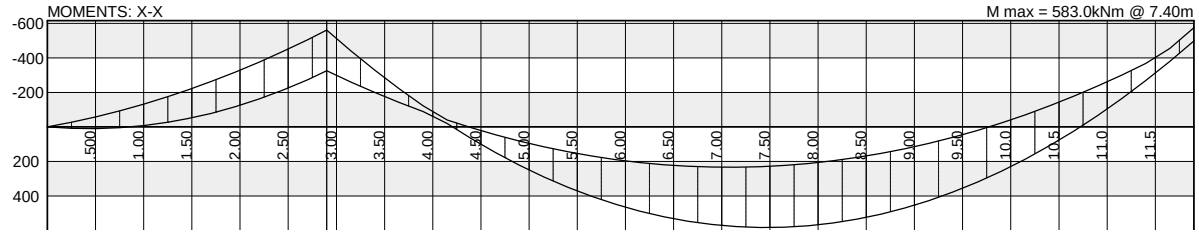
	Calcs by	Checked by	Date

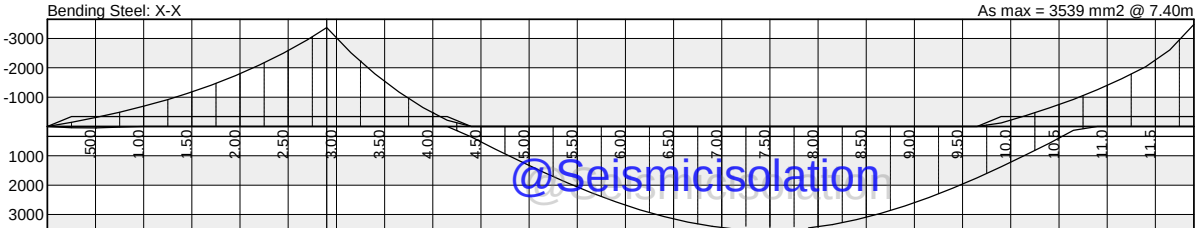
Deflection, Shear, Moment and Steel diagrams. Spans 1,2











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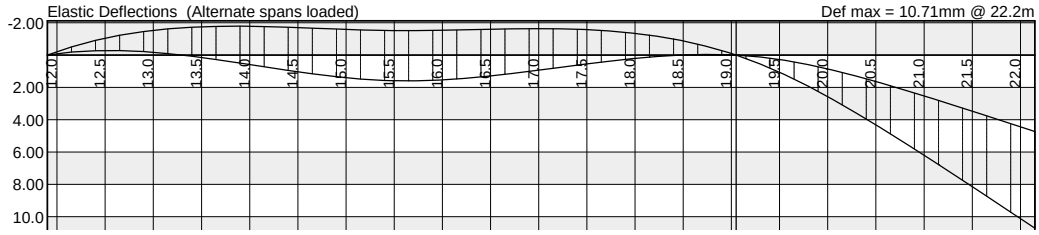
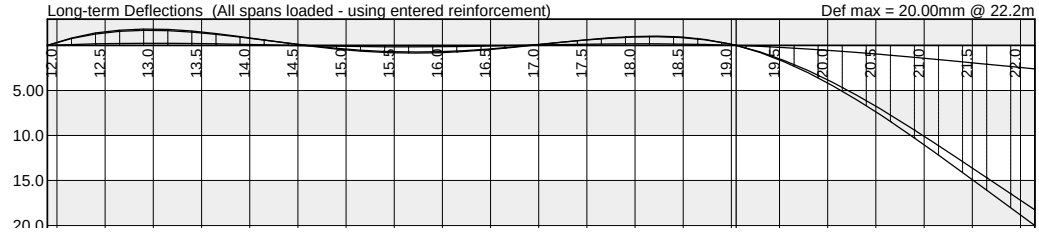
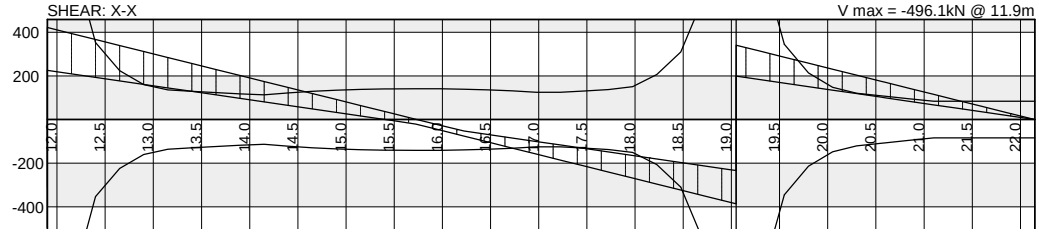
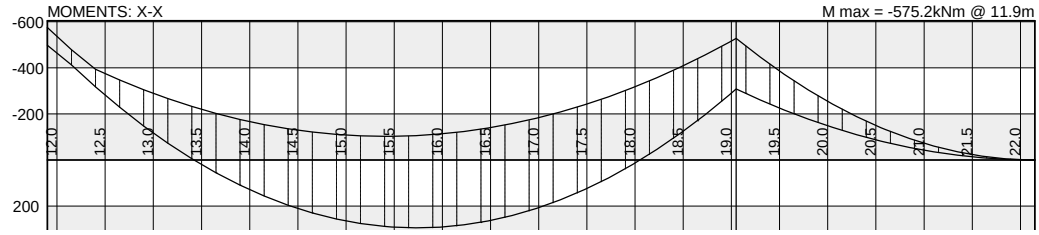
	Job Title		
	Client		
	Calcs by	Checked by	Date

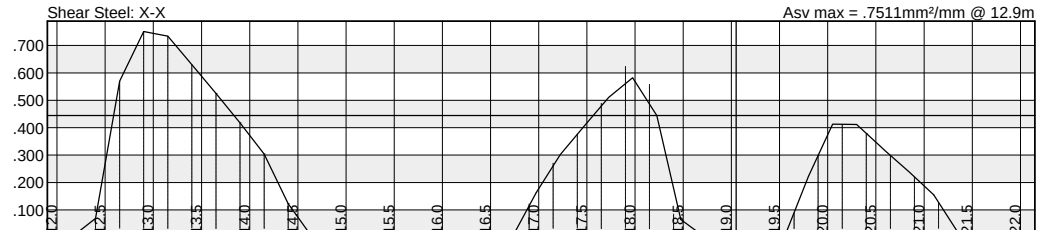
Deflection, Shear, Moment and Steel diagrams. Spans 3,4











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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
4Y20	A	34	1	0.025	1.875	L	T
4Y20	B	34	1	0.025	3.125	L	B
4Y25	C	20	1	0.900	3.600	L	T
3Y25	D	20	2	-1.350	2.700	L	T
4Y20	E	20	2	-0.250	9.500	L	B
4Y20	F	20	2	0.300	8.150	L	T
3Y25	G	20	2	1.700	5.700	L	B
1Y32	H	20	2	2.700	3.700	L	B
2Y32	I	20	3	-1.700	3.400	L	T
4Y25	J	20	3	-1.700	3.900	L	T
4Y20	K	34	3	-0.250	10.475	R	B
4Y20	L	20	3	1.050	4.725	L	T
1Y25	M	20	3	2.475	2.725	L	B
4Y32	N	20	4	-2.450	4.300	L	T
4Y20	O	34	4	0.800	2.275	R	T

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA1	60			
		Y10	SA2	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	400	1	0.20	2.40
1	200	2	0.20	1.60
1	400	2	2.10	5.20
1	200	2	7.60	1.20

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Stirrup Number	Spacing	Span	Offset	Length (m)
1	400	3	0.20	6.75
1	400	4	0.20	2.70

Section positions		
Label	Span	Offset(m)
A	1	1.6
B	2	0.3
C	2	4.7
D	3	0.3
E	3	3.8
F	4	0.3
G	4	1.8

File name	B8.PAD
First span	1
Last span	4
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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	Job Title		
	Client		
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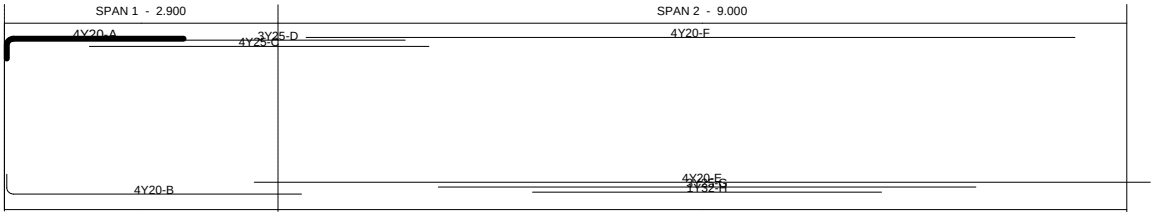
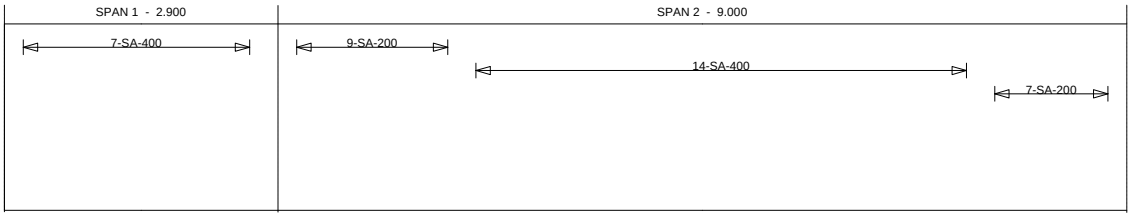
Main and Shear Reinforcing diagrams. Spans 1,2





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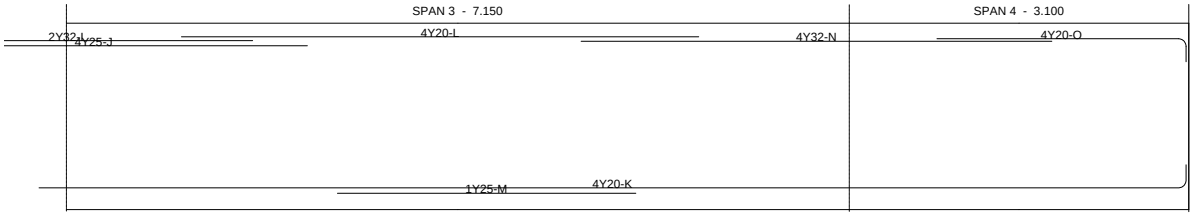
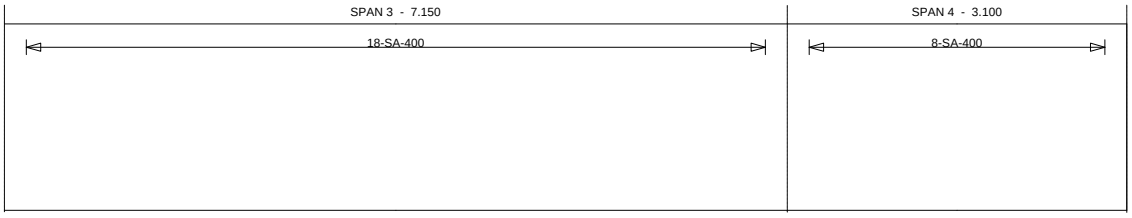
Main and Shear Reinforcing diagrams. Spans 3,4





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C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	300	700							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8.1	1	
2	8	1	
3	8.4	1	
4	8.3	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	33									
	2	33									
	3	33									
	4	33									
L	1	7.05									
	2	7.05									
	3	7.05									
	4	7.05									

Span	M left (kNm)	M right (kNm)

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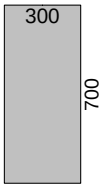
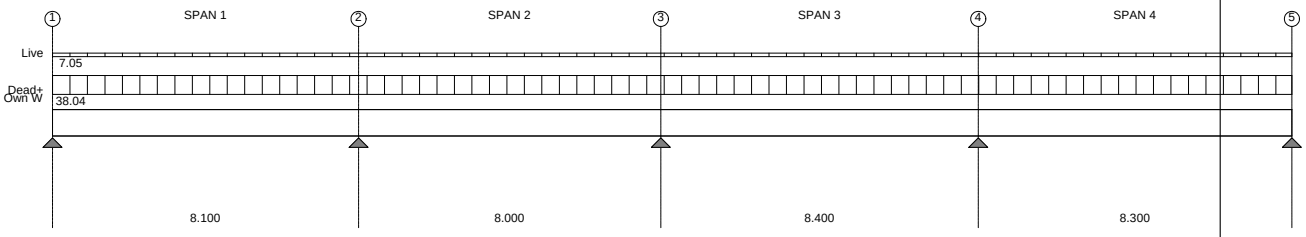
Sections



Beam Elevation



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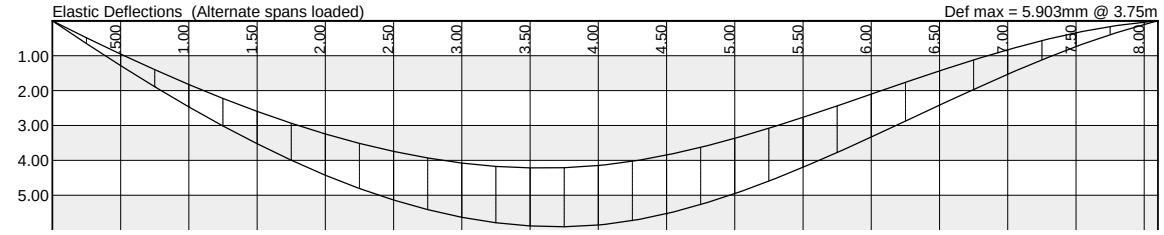
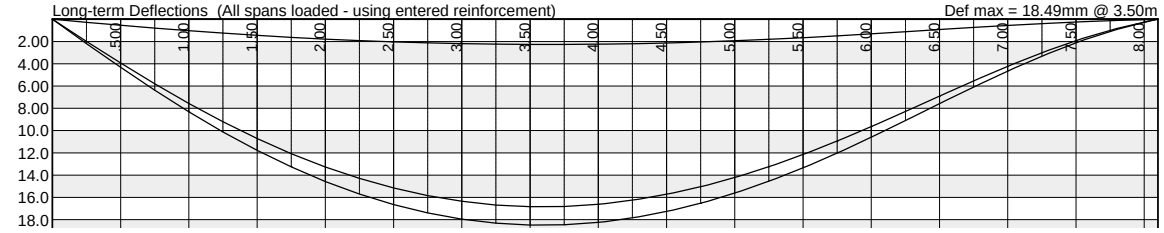
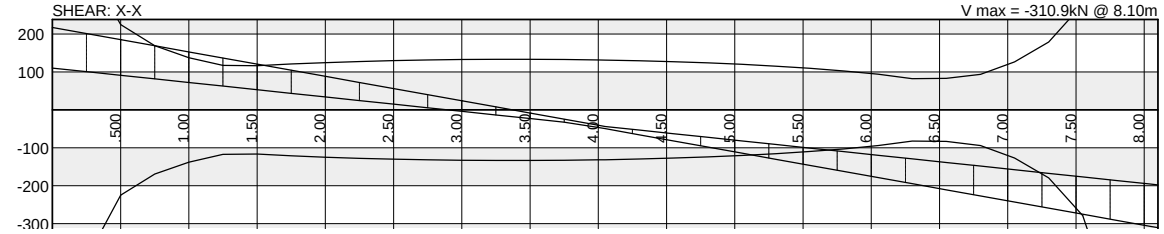
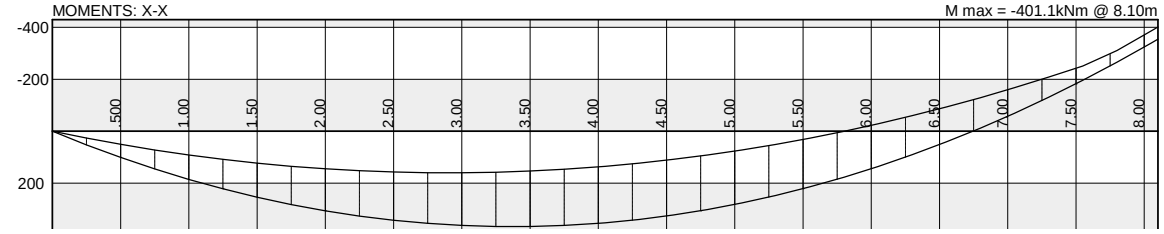
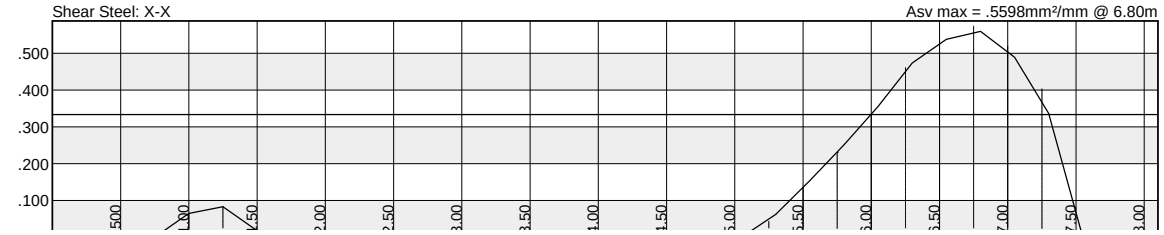
Deflection, Shear, Moment and Steel diagrams. Span 1

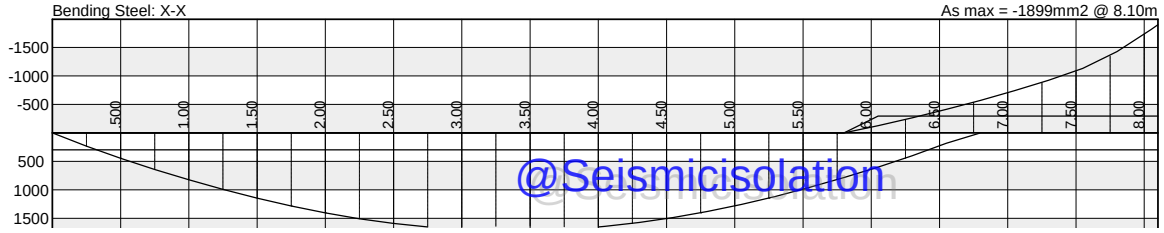












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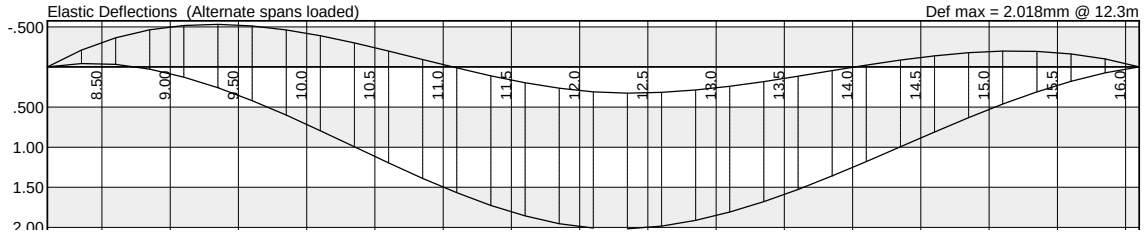
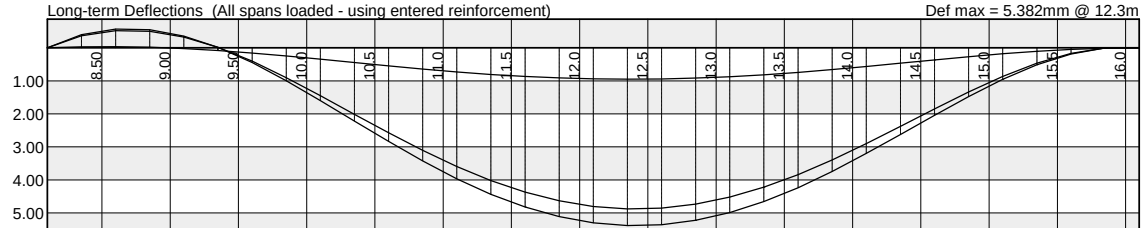
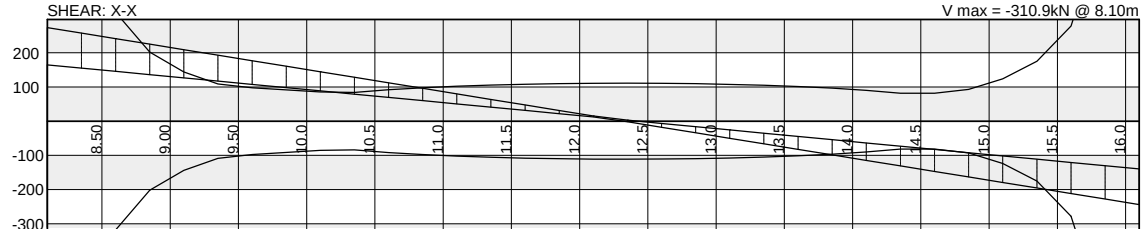
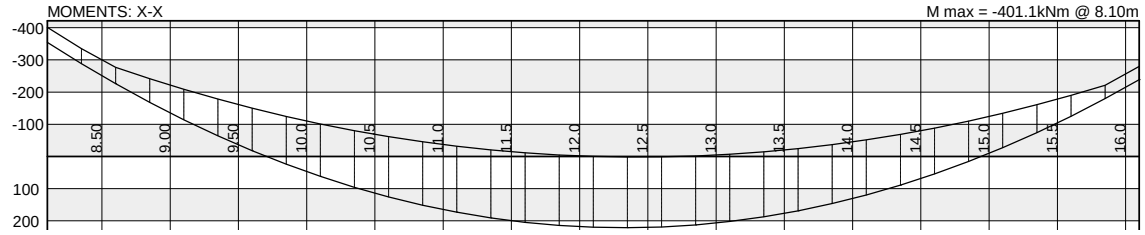
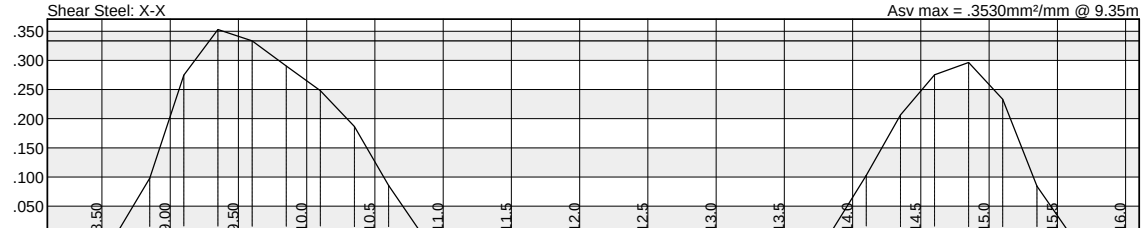
Deflection, Shear, Moment and Steel diagrams. Span 2

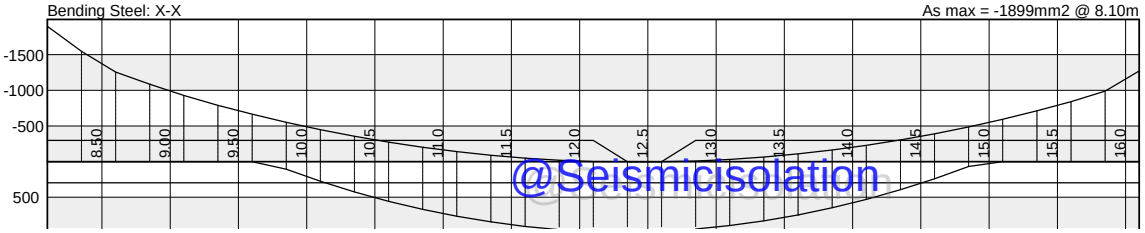












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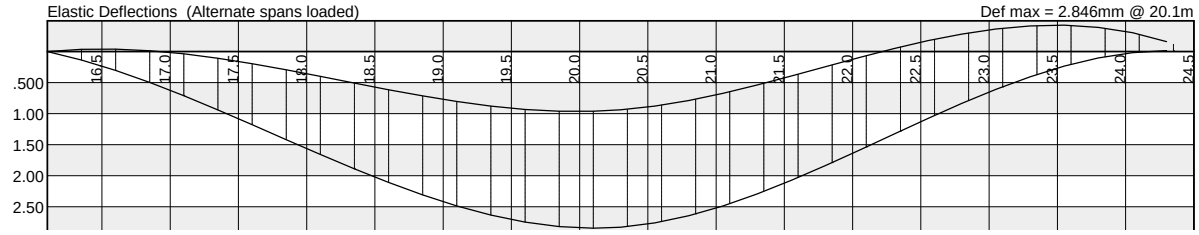
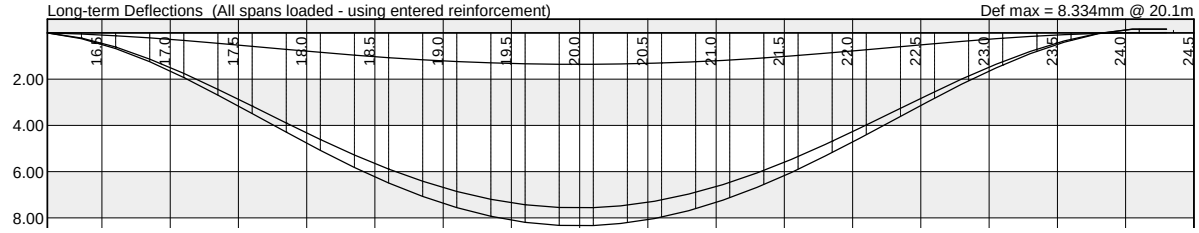
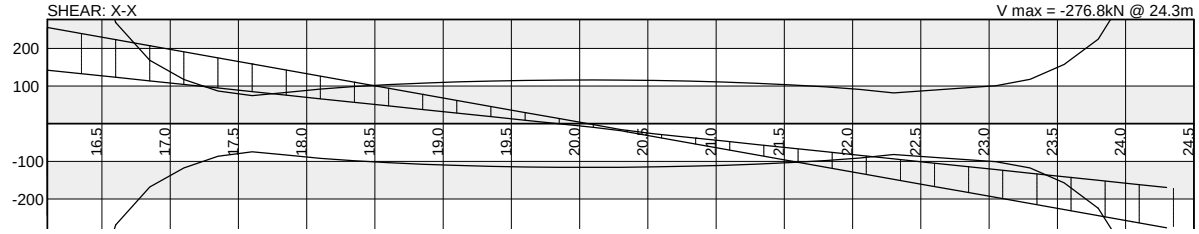
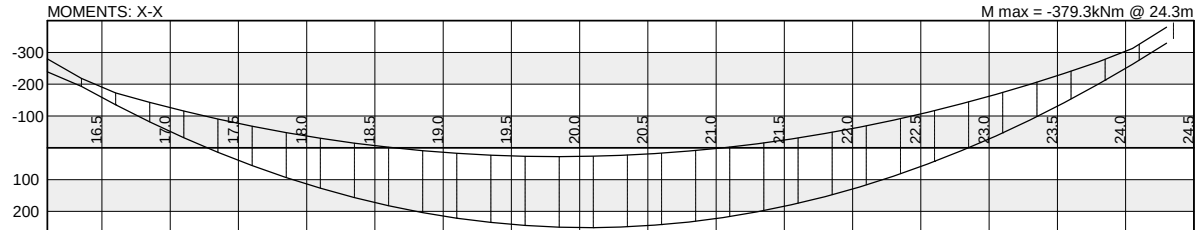
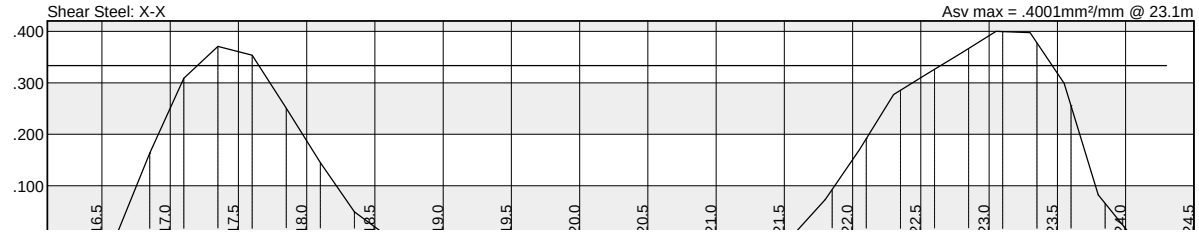
Deflection, Shear, Moment and Steel diagrams. Span 3

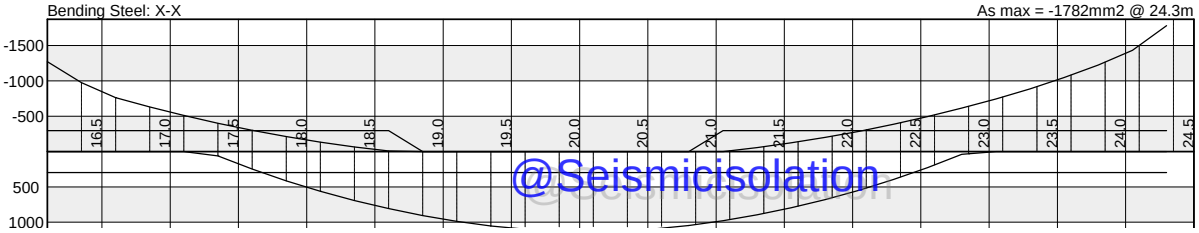












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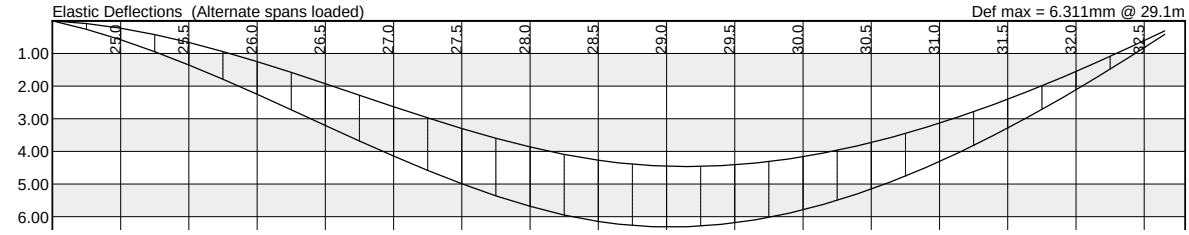
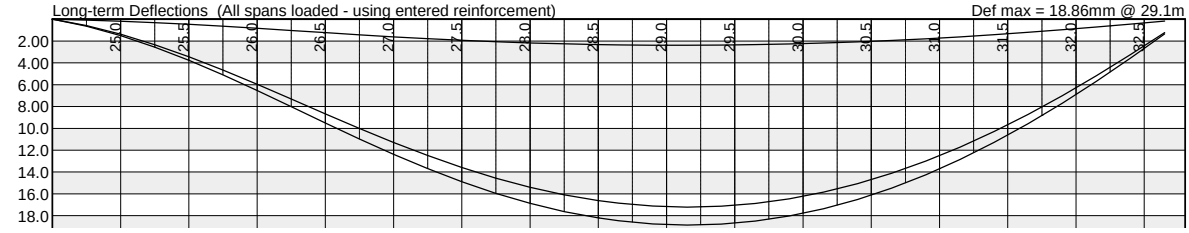
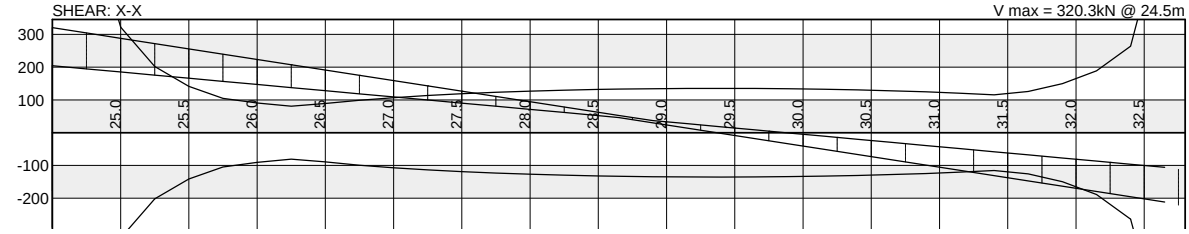
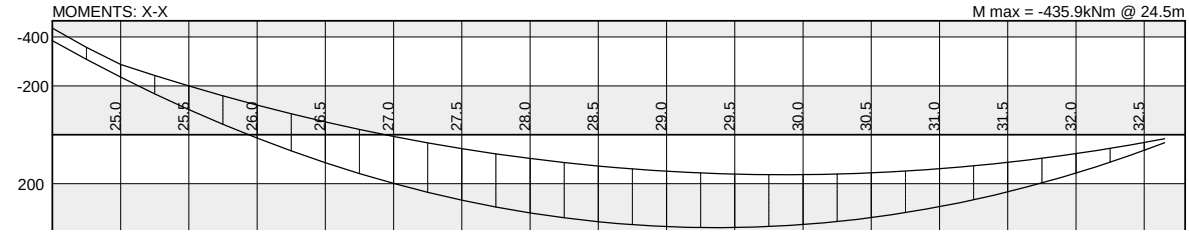
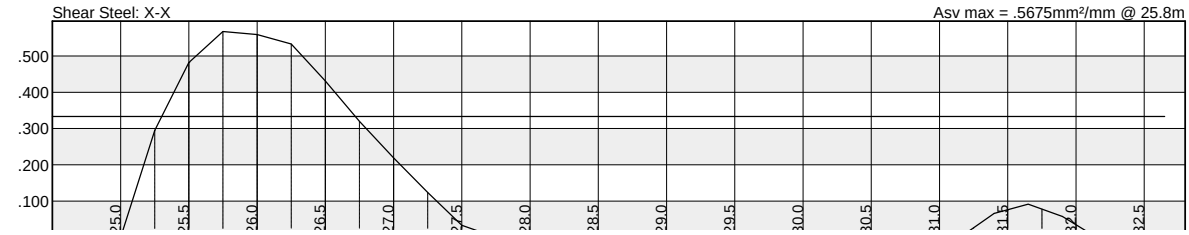
Deflection, Shear, Moment and Steel diagrams. Span 4

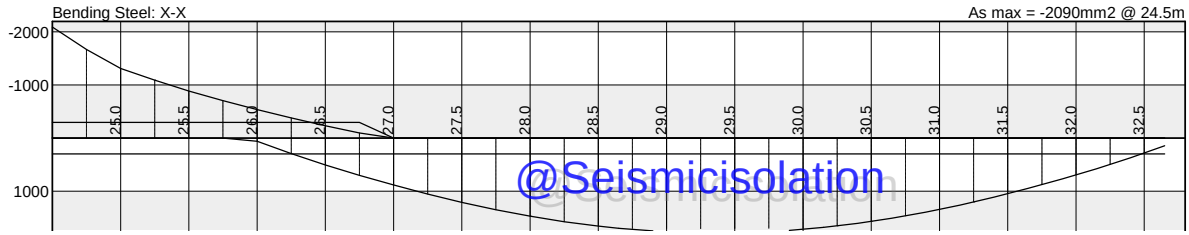












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	8
Maximum diameter	(mm)	8
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
2Y20	A	34	1	0.025	7.225	L	T
2Y20	B	34	1	0.025	8.325	L	B
2Y20	C	20	1	0.200	5.900	L	B
1Y25	D	20	1	1.400	4.000	L	B
2Y25	E	20	2	-1.900	4.200	L	T
2Y25	F	20	2	-1.350	2.700	L	T
2Y20	G	20	2	-0.250	8.500	L	B
2Y20	H	20	2	1.300	6.150	L	T
1Y25	I	20	2	2.300	3.800	L	B
2Y25	J	20	3	-1.600	3.100	L	T
1Y25	K	20	3	-1.350	2.700	L	T
2Y20	L	20	3	-0.250	8.900	L	B
2Y20	M	20	3	0.550	10.050	L	T
2Y20	N	20	3	1.800	4.200	L	B
3Y25	O	20	4	-2.000	3.600	L	T
2Y20	P	34	4	-0.250	8.525	R	B
2Y20	Q	34	4	1.050	7.225	R	T
2Y25	R	20	4	1.800	6.000	L	B
1Y20	S	20	4	3.600	2.600	L	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y8	SA	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	300	1	0.20	5.70

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Stirrup Number	Spacing	Span	Offset	Length (m)
1	150	1	6.12	1.65
1	250	2	0.20	1.25
1	300	2	1.72	6.00
1	250	3	0.20	1.50
1	300	3	1.97	4.50
1	250	3	6.75	1.25
1	150	4	0.20	1.80
1	300	4	2.22	5.70

Section positions		
Label	Span	Offset(m)
A	1	4.2
B	2	0.3
C	2	4.2
D	3	0.3
E	3	4.4
F	4	0.3
G	4	4.4

File name	B8.PAD
First span	1
Last span	4
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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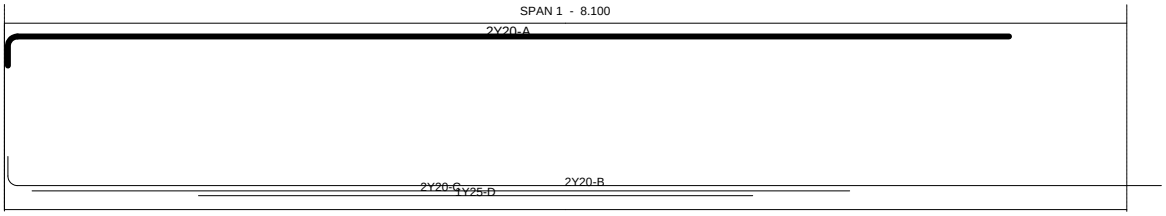
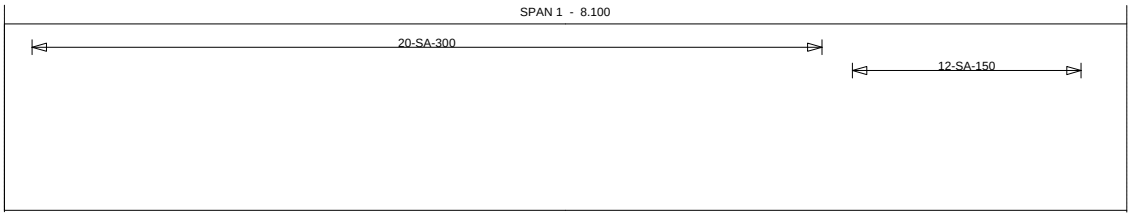
Main and Shear Reinforcing diagrams. Span 1





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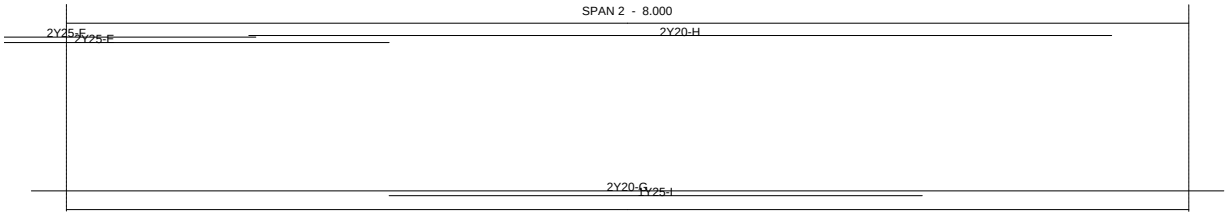
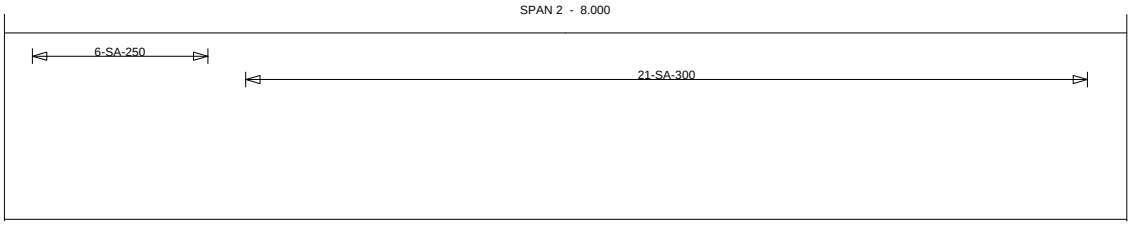
Main and Shear Reinforcing diagrams. Span 2





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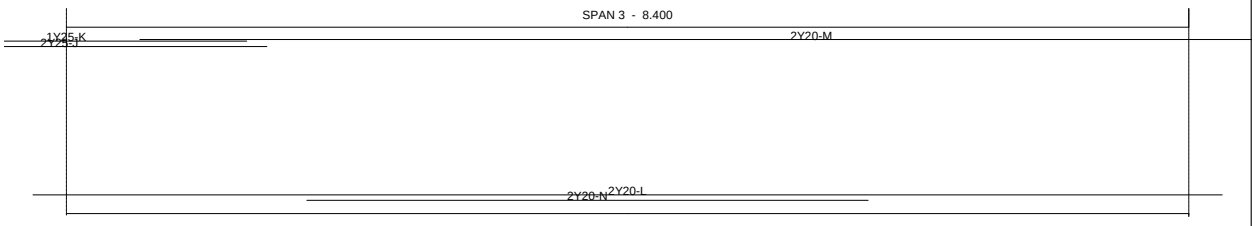
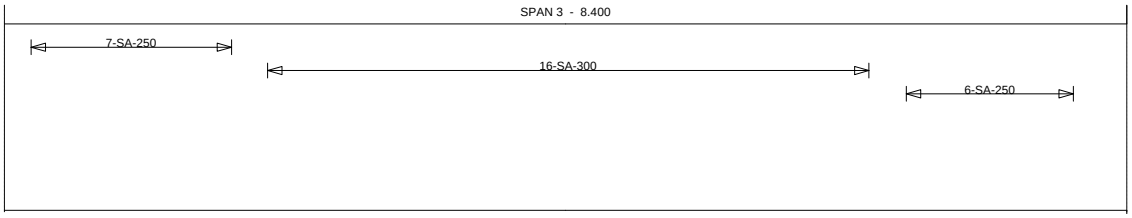
Main and Shear Reinforcing diagrams. Span 3





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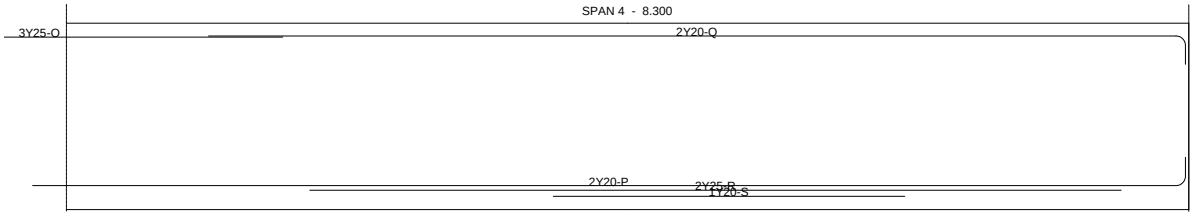
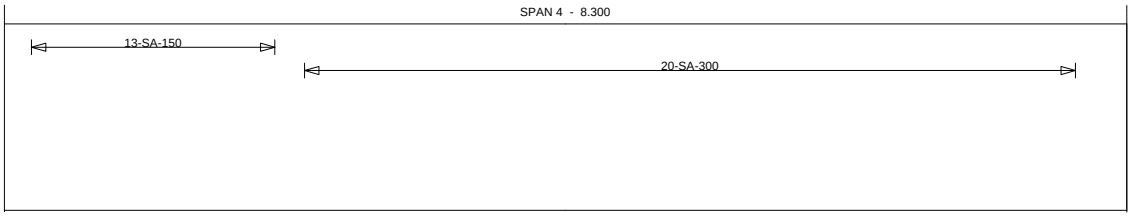
Main and Shear Reinforcing diagrams. Span 4





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C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	300	1500							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8.2	1	
2	6.8	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	115									
	2	115									
L	1	25									
	2	25									

Span	M left (kNm)	M right (kNm)

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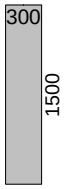
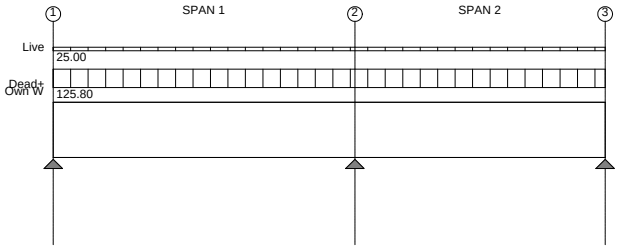
Sections



Beam Elevation



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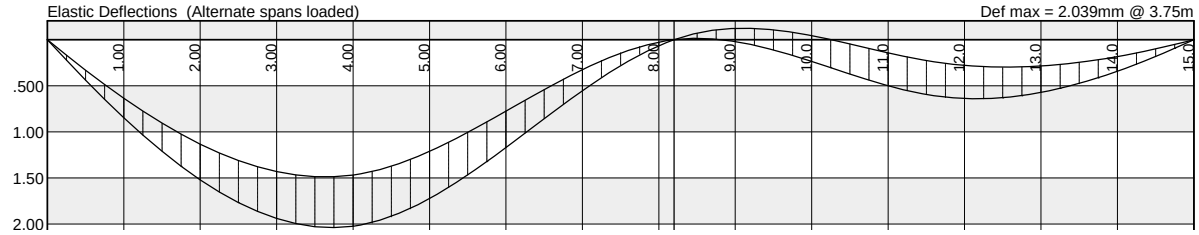
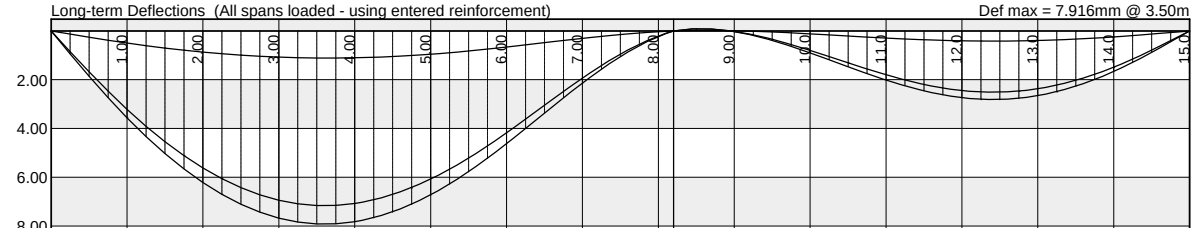
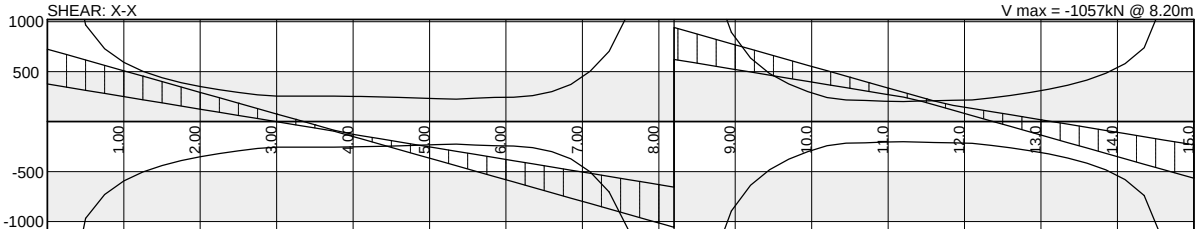
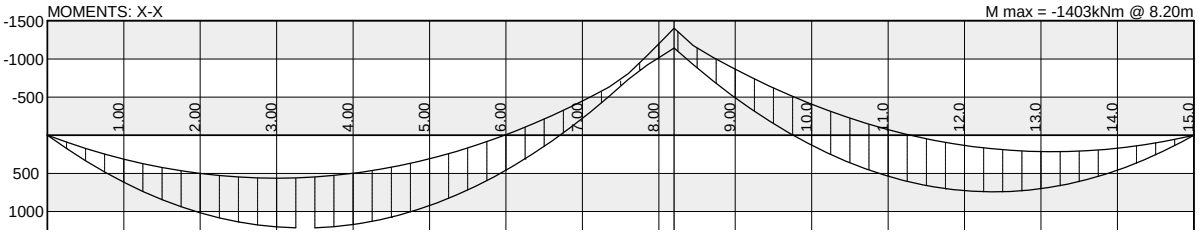
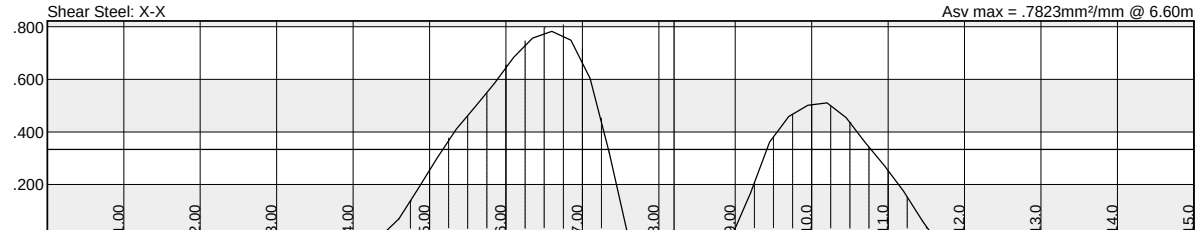
Deflection, Shear, Moment and Steel diagrams. Spans 1,2

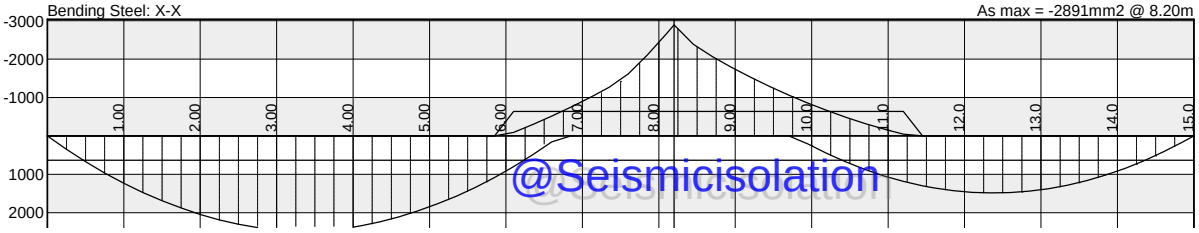












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
2Y20	A	34	1	0.025	6.275	L	T
2Y16	B	34	1	0.025	8.175	L	M1
2Y16	C	34	1	0.025	8.175	L	M2
2Y16	D	34	1	0.025	8.175	L	M3
2Y16	E	34	1	0.025	8.175	L	M4
2Y16	F	34	1	0.025	8.175	L	M5
2Y25	G	34	1	0.025	8.475	L	B
2Y20	H	20	1	0.400	5.900	L	B
2Y25	I	20	1	1.000	4.700	L	B
2Y25	J	20	2	-3.100	7.100	L	T
4Y25	K	20	2	-1.500	3.500	L	T
2Y25	L	34	2	-0.300	7.075	R	B
2Y16	M	34	2	0.000	6.775	R	M1
2Y16	N	34	2	0.000	6.775	R	M2
2Y16	O	34	2	0.000	6.775	R	M3
2Y16	P	34	2	0.000	6.775	R	M4
2Y16	Q	34	2	0.000	6.775	R	M5
2Y20	R	20	2	2.400	3.500	L	B
2Y20	S	34	2	2.800	3.975	R	T

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	450	1	0.20	4.95

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Stirrup Number	Spacing	Span	Offset	Length (m)
1	200	1	5.48	2.40
1	300	2	0.20	2.40
1	450	2	2.97	3.60

Section positions		
Label	Span	Offset(m)
A	1	4.3
B	2	0.3
C	2	3.6

File name	B11.PAD
First span	1
Last span	2
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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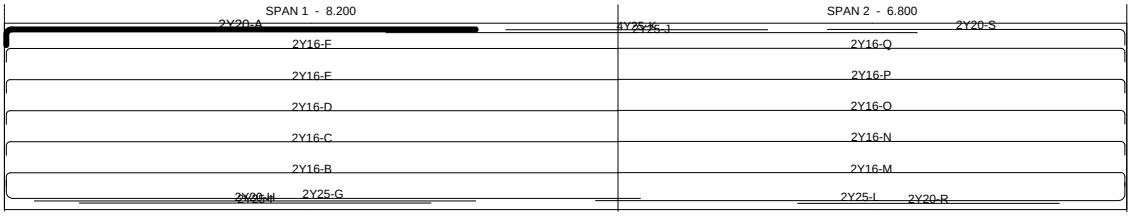
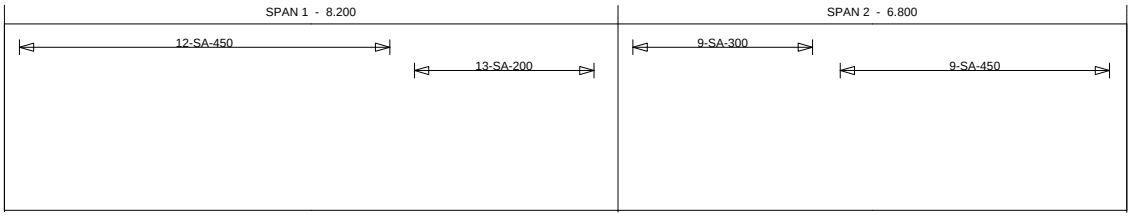
Main and Shear Reinforcing diagrams. Spans 1,2





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Continuous Beam: B13 (Code of Practice : BS8110 - 1997)

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C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	400	1500							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	7	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	111									
L	1	24									

Span	M left (kNm)	M right (kNm)

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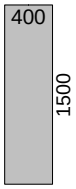
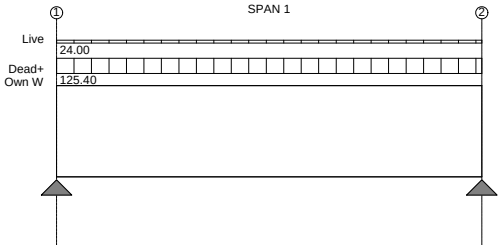
Sections



Beam Elevation



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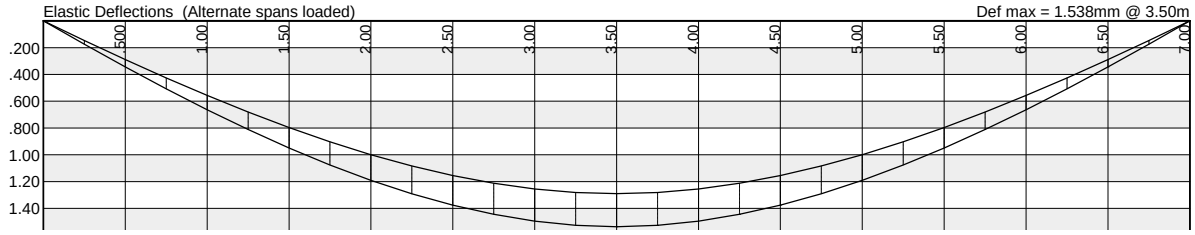
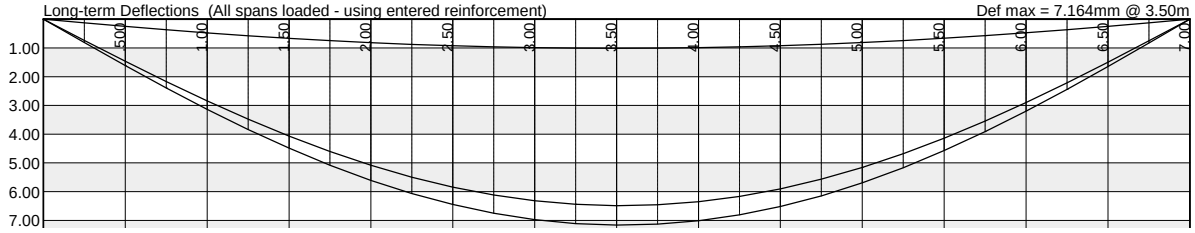
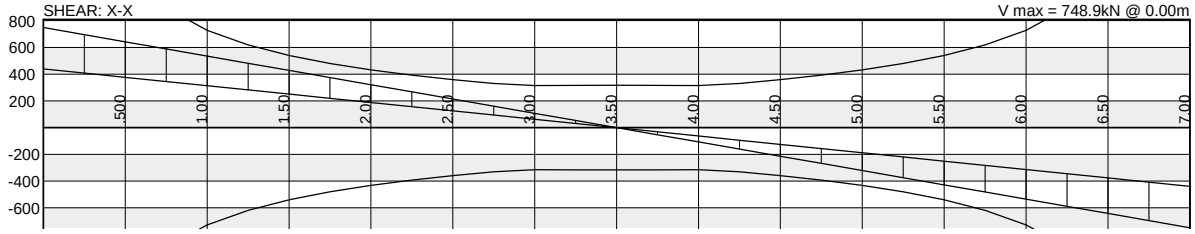
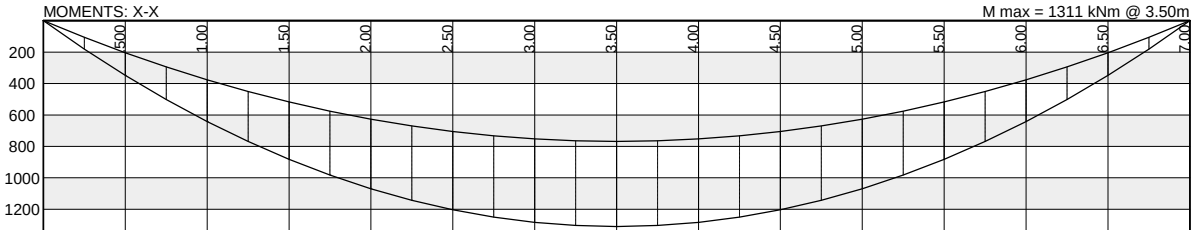
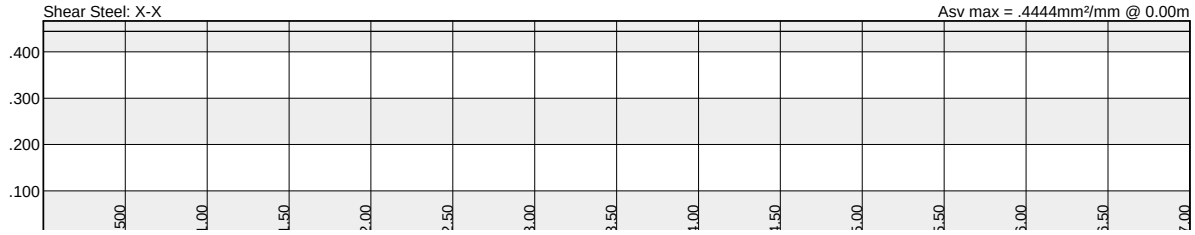
Deflection, Shear, Moment and Steel diagrams. Span 1

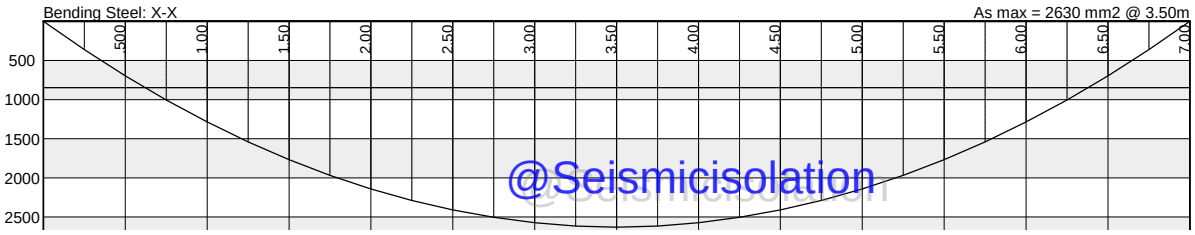












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
1Y20	A	34	1	0.025	4.675	L	B
2Y20	B	35	1	0.025	6.950	R	T
2Y16	C	35	1	0.025	6.950	R	M1
2Y16	D	35	1	0.025	6.950	R	M2
2Y16	E	35	1	0.025	6.950	R	M3
2Y16	F	35	1	0.025	6.950	R	M4
2Y16	G	35	1	0.025	6.950	R	M5
5Y25	H	35	1	0.025	6.950	R	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	350	1	0.20	6.60

Section positions		
Label	Span	Offset(m)
A	1	3.7

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File name	B12.PAD
First span	1
Last span	1
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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	Job Title		
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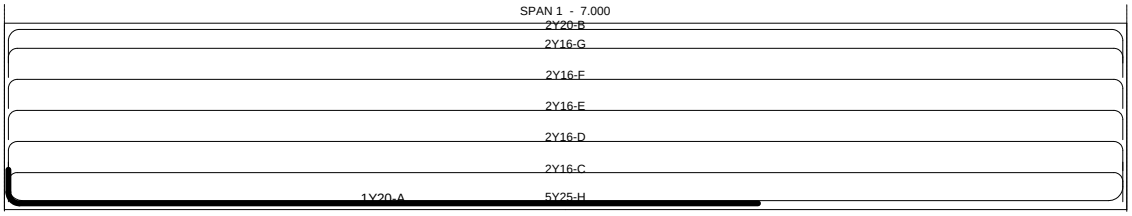
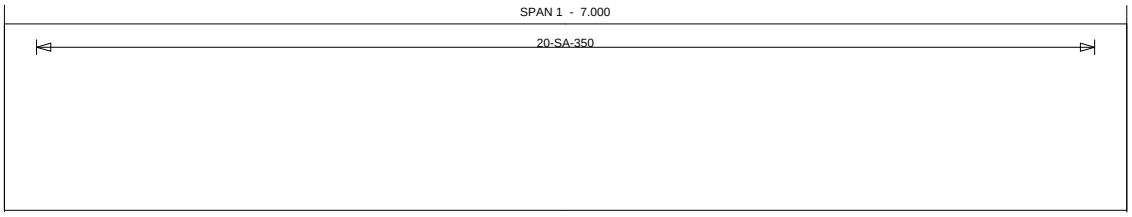
Main and Shear Reinforcing diagrams. Span 1





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Continuous Beam: B13 (Code of Practice : BS8110 - 1997)

11/6/2014 10:29:14 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	400	700							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8.35	1	
2	3.4	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	
3	C								

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	87									
L	1	19									
D	2	87									
L	2	19									

Span	M left (kNm)	M right (kNm)

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	Job Title		
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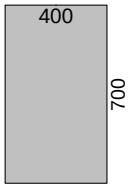
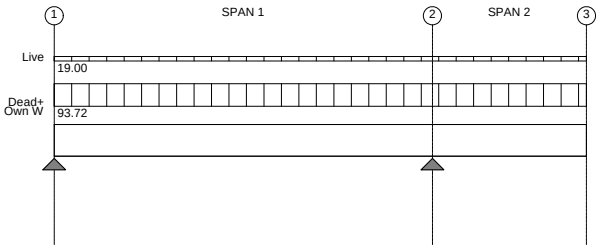
	Calcs by	Checked by	Date

Sections



Beam Elevation



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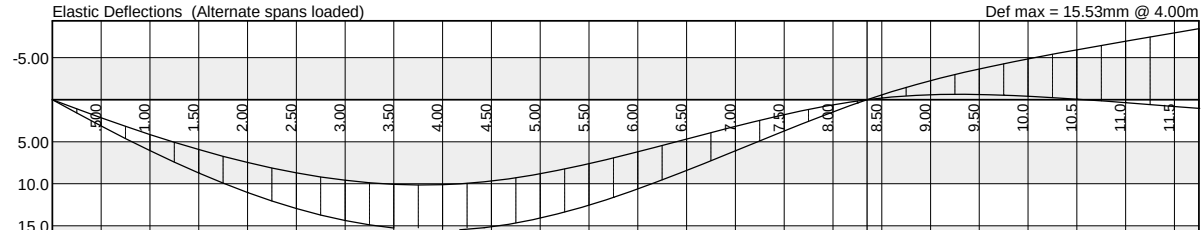
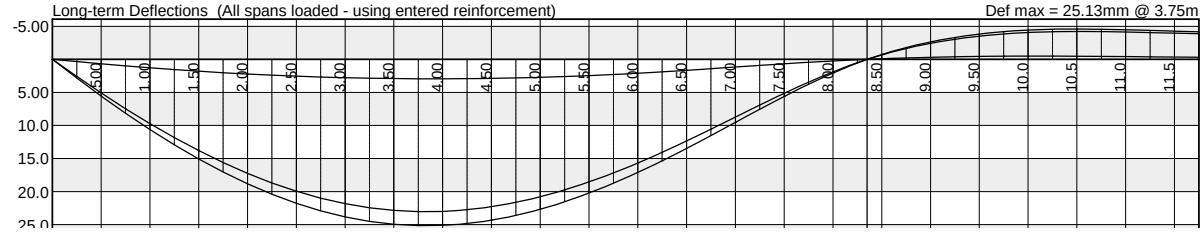
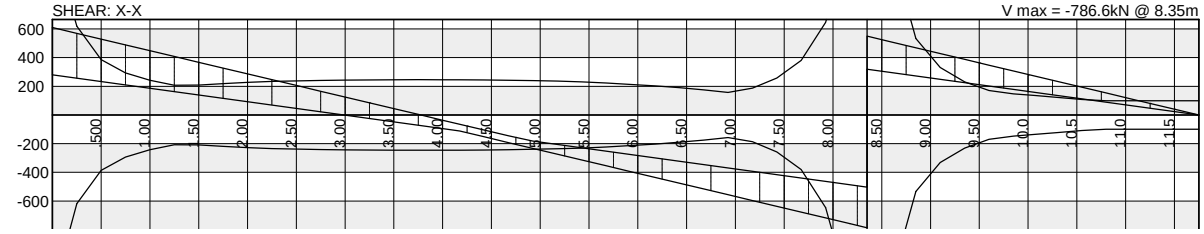
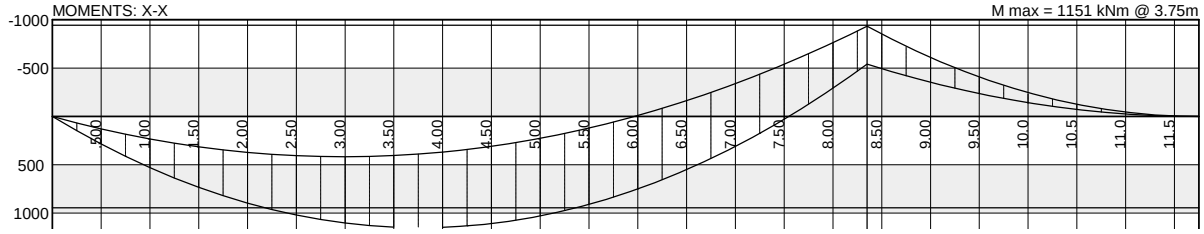
	Job Title		
	Client		
	Calcs by	Checked by	Date

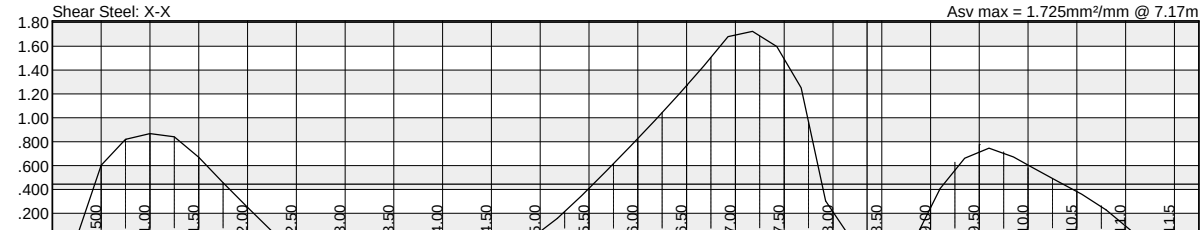
Deflection, Shear, Moment and Steel diagrams. Spans 1,2

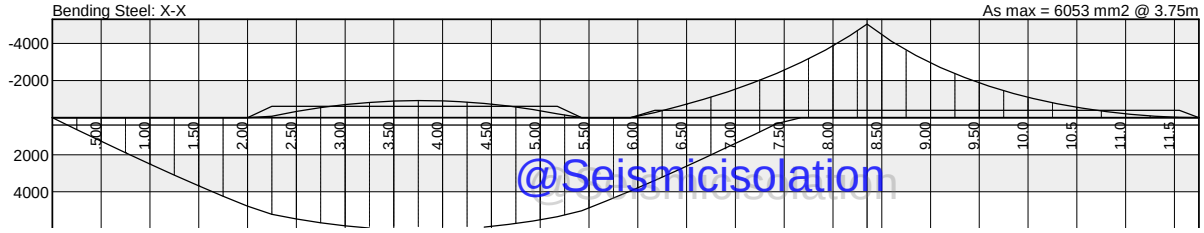












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
4Y25	A	34	1	0.025	8.625	L	B
4Y20	B	34	1	0.025	10.675	L	T
8Y25	C	20	1	0.400	6.600	L	B
1Y20	D	20	1	2.650	2.200	L	B
8Y25	E	20	2	-1.850	3.600	L	T
4Y20	F	34	2	-0.250	3.625	R	B
4Y20	G	34	2	1.250	2.125	R	T

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA1	60			
		Y10	SA2	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	150	1	0.20	1.05
1	450	1	1.55	4.05
1	150	1	5.90	2.10
1	400	2	0.20	1.20
1	450	2	1.82	1.35

Section positions		
Label	Span	Offset(m)
A	1	4.4
B	2	0.3
C	2	1.9

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File name	B12.PAD
First span	1
Last span	2
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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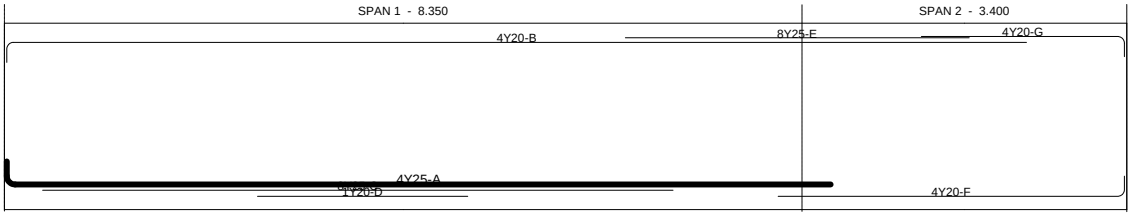
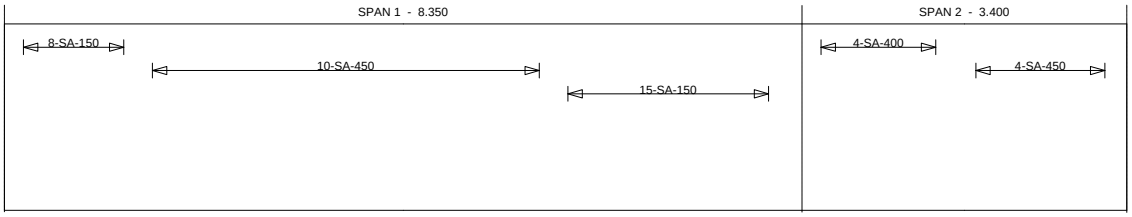
Main and Shear Reinforcing diagrams. Spans 1,2





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Continuous Beam: B13 (Code of Practice : BS8110 - 1997)

11/6/2014 10:29:14 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	400	700							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8.35	1	
2	3.4	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	
3	C								

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	87									
L	1	19									
D	2	87									
L	2	19									

Span	M left (kNm)	M right (kNm)

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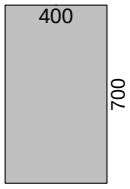
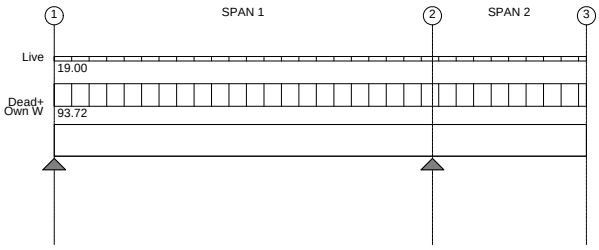
Sections



Beam Elevation



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	Job Title		
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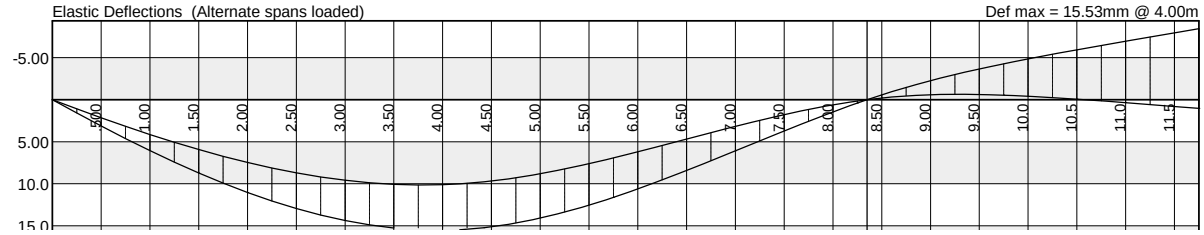
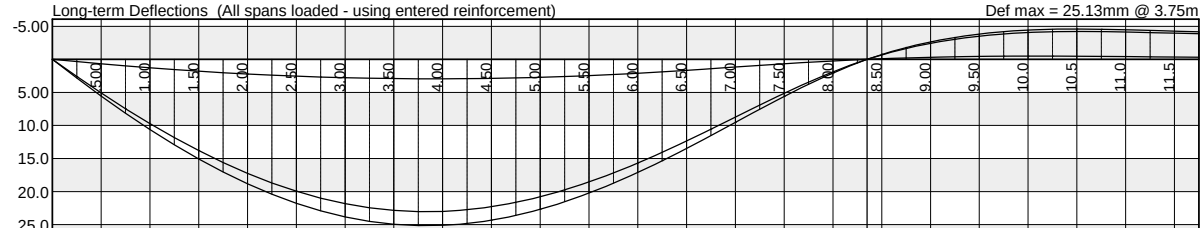
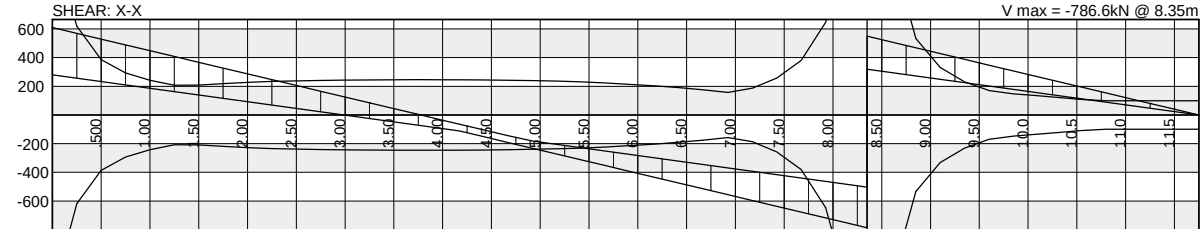
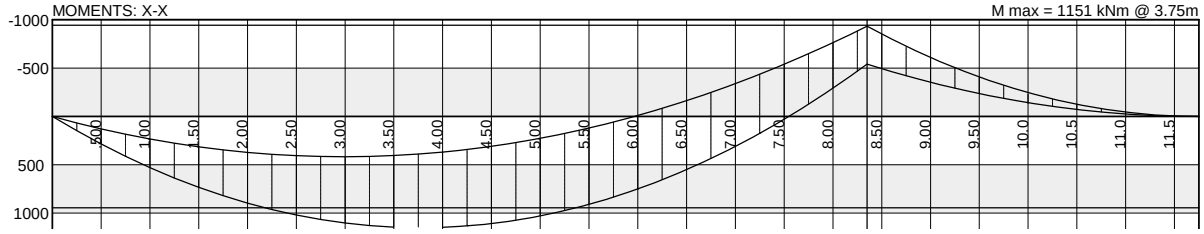
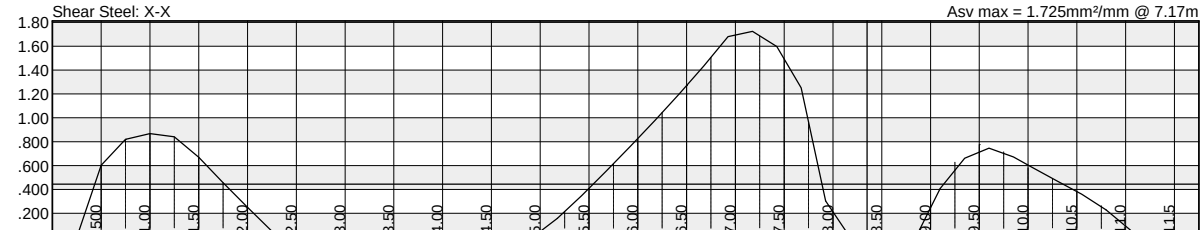
Deflection, Shear, Moment and Steel diagrams. Spans 1,2

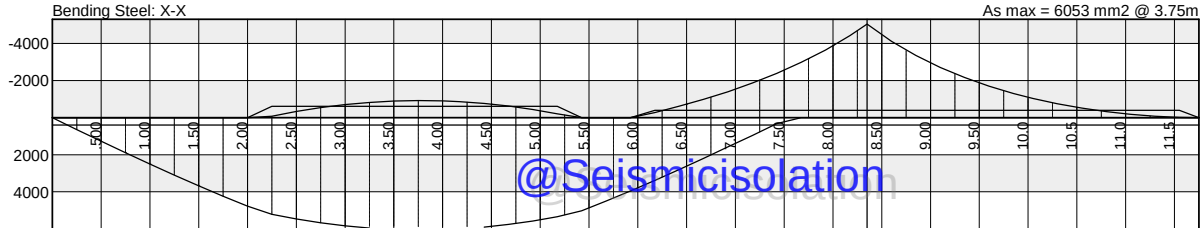












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	10
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
4Y25	A	34	1	0.025	8.625	L	B
4Y20	B	34	1	0.025	10.675	L	T
8Y25	C	20	1	0.400	6.600	L	B
1Y20	D	20	1	2.650	2.200	L	B
8Y25	E	20	2	-1.850	3.600	L	T
4Y20	F	34	2	-0.250	3.625	R	B
4Y20	G	34	2	1.250	2.125	R	T

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA1	60			
		Y10	SA2	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	150	1	0.20	1.05
1	450	1	1.55	4.05
1	150	1	5.90	2.10
1	400	2	0.20	1.20
1	450	2	1.82	1.35

Section positions		
Label	Span	Offset(m)
A	1	4.4
B	2	0.3
C	2	1.9

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File name	B12.PAD
First span	1
Last span	2
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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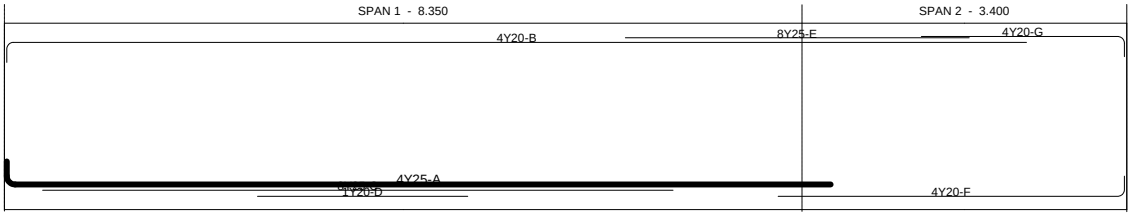
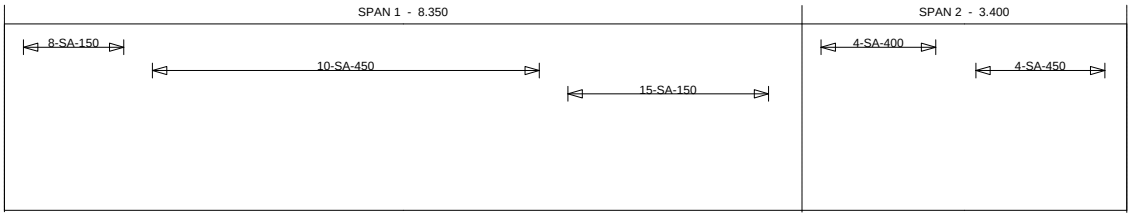
Main and Shear Reinforcing diagrams. Spans 1,2





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	Job Title		
	Client		
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Continuous Beam: B15 (Code of Practice : BS8110 - 1997)

11/6/2014 10:30:17 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	250	600							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	5.6	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description
D	1	39.2								
L	1	8.4								

Span	M left (kNm)	M right (kNm)

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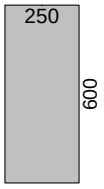
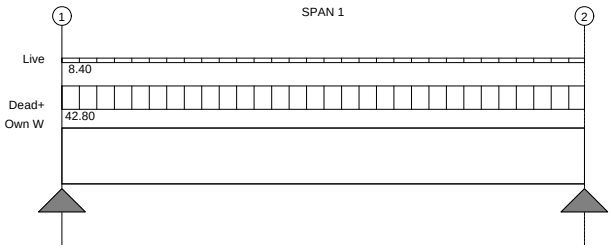
	Job Title		
	Client		
	Calcs by	Checked by	Date

Sections



Beam Elevation



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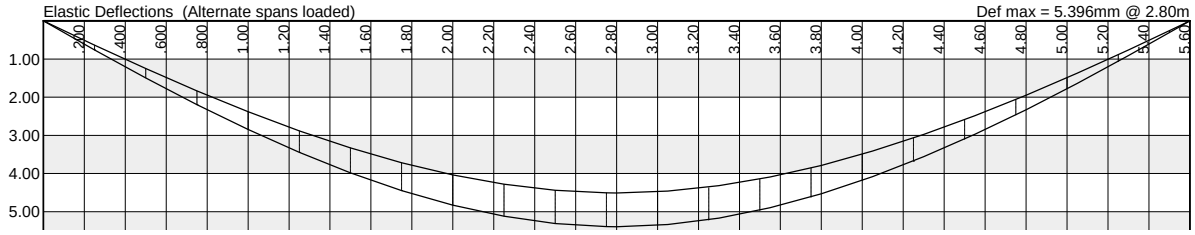
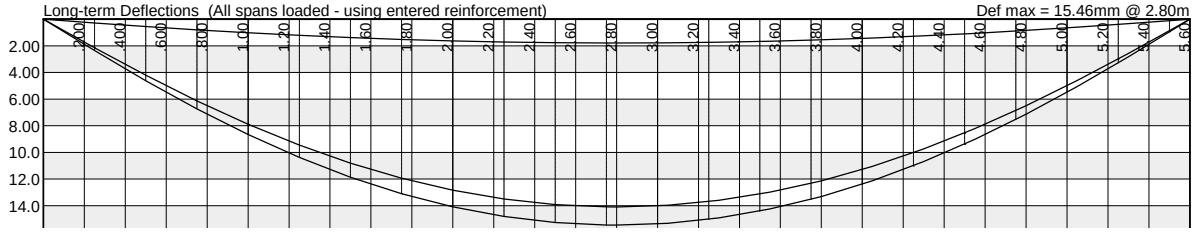
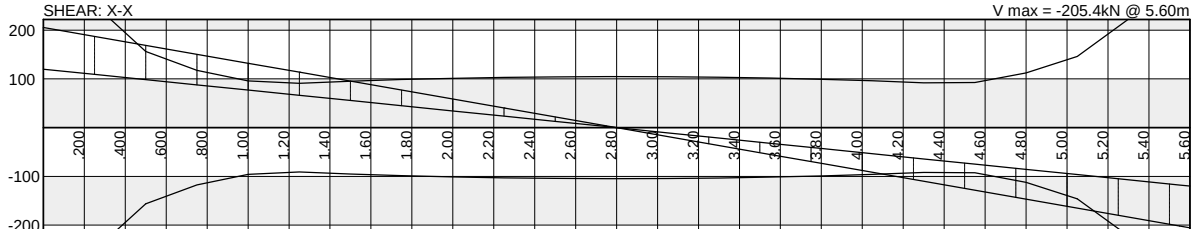
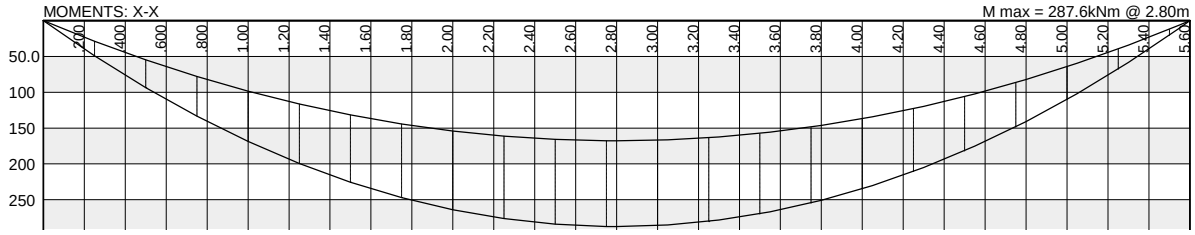
	Job Title		
	Client		
	Calcs by	Checked by	Date

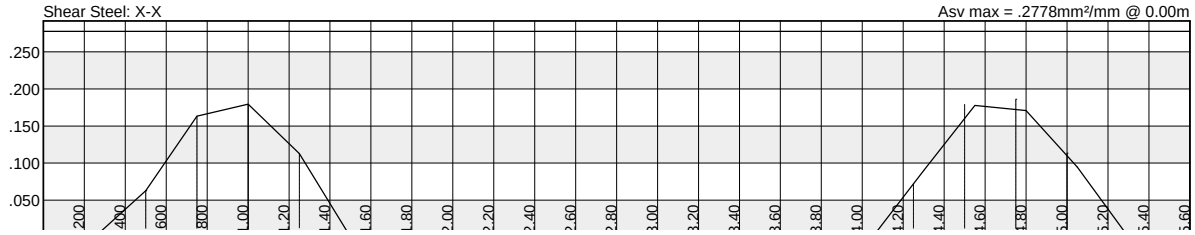
Deflection, Shear, Moment and Steel diagrams. Span 1

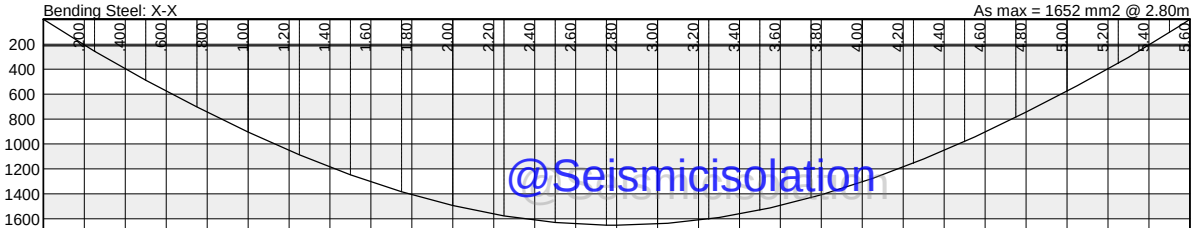












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	8
Maximum diameter	(mm)	8
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
2Y16	A	35	1	0.025	5.550	R	T
2Y25	B	35	1	0.025	5.550	R	B
1Y20	C	20	1	0.600	4.400	L	B
1Y25	D	20	1	1.200	3.200	L	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y8	SA	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	350	1	0.20	5.20

Section positions		
Label	Span	Offset(m)
A	1	3.0

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File name	B12.PAD
First span	1
Last span	1
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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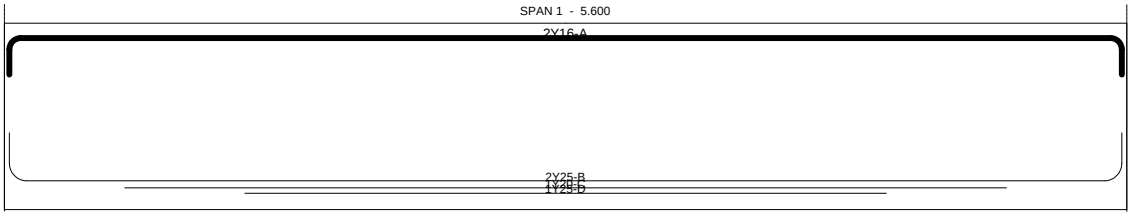
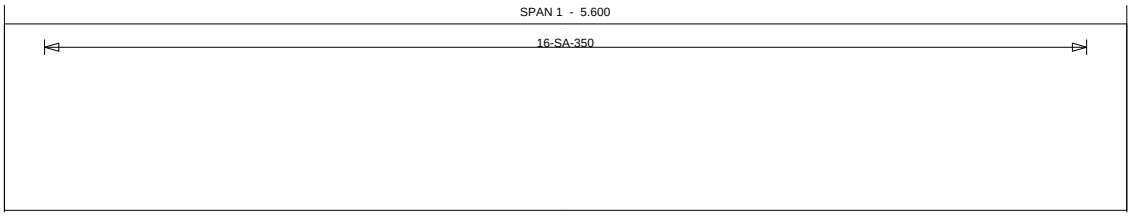
Main and Shear Reinforcing diagrams. Span 1





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Continuous Beam: B16 (Code of Practice : BS8110 - 1997)

11/6/2014 10:30:57 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	400	900							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8.6	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	60.2									
L	1	21.5									

Span	M left (kNm)	M right (kNm)

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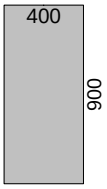
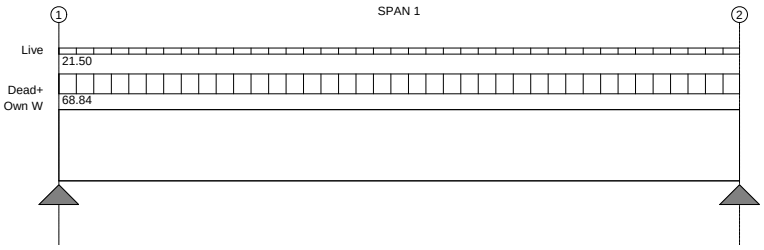
Sections



Beam Elevation



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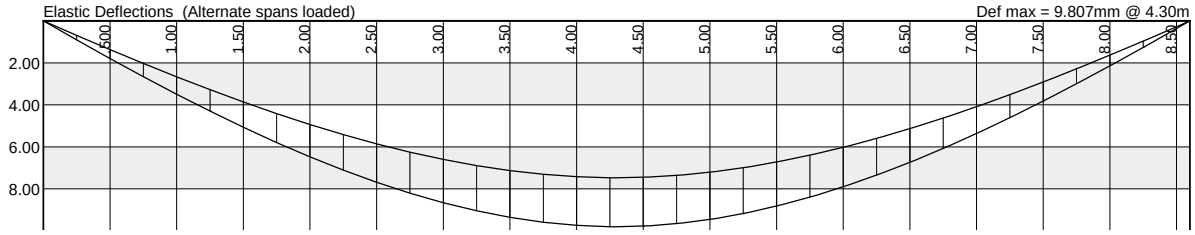
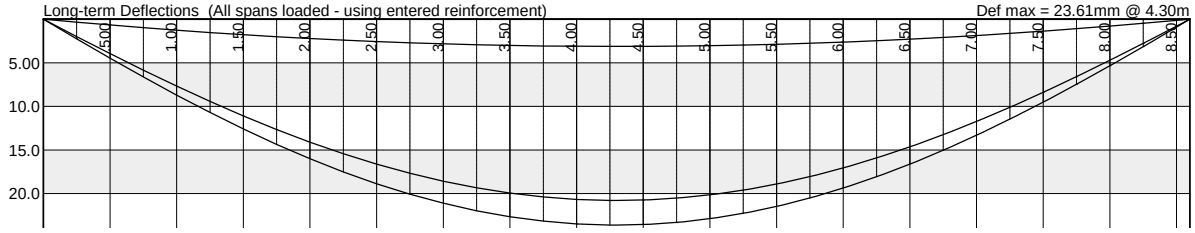
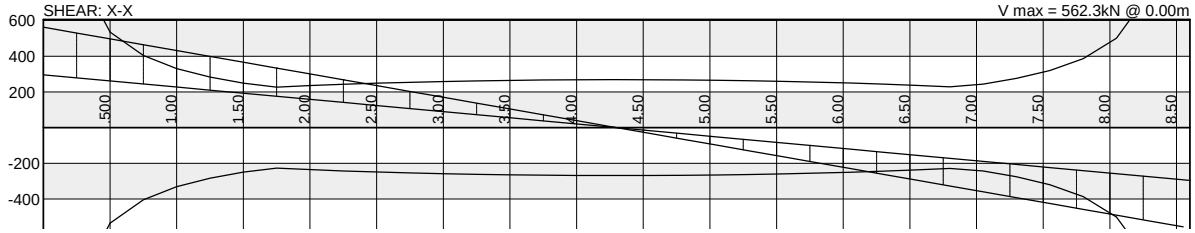
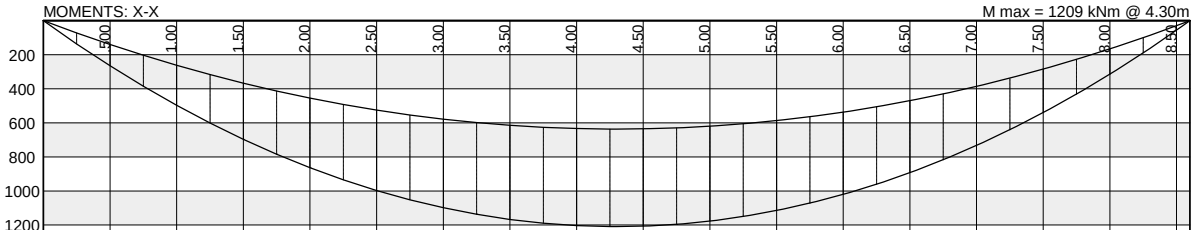
	Job Title		
	Client		
	Calcs by	Checked by	Date

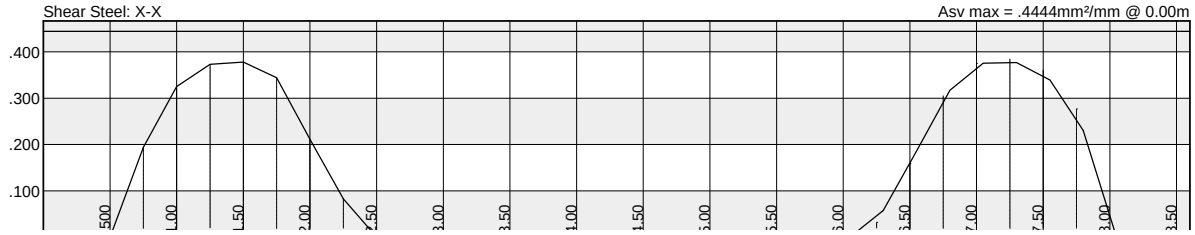
Deflection, Shear, Moment and Steel diagrams. Span 1

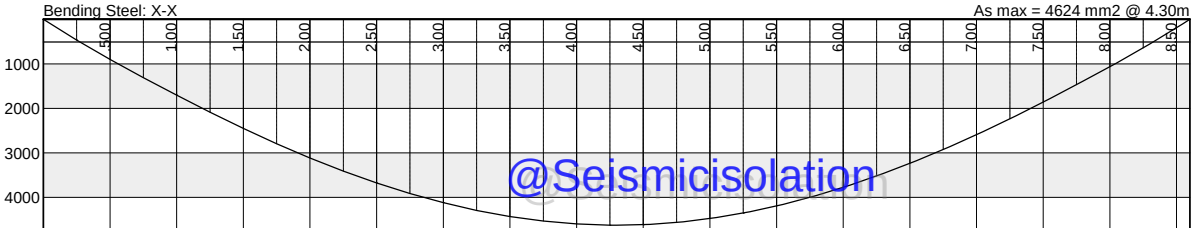












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Software Consultants (Pty) Ltd	Job Title		
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E-Mail : mail@prokon.com	Calcs by	Checked by	Date

Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	20
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
2Y20	A	35	1	0.025	8.550	R	T
2Y16	B	35	1	0.025	8.550	R	M1
2Y16	C	35	1	0.025	8.550	R	M2
6Y32	D	35	1	0.025	8.550	R	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	350	1	0.20	8.05

Section positions		
Label	Span	Offset(m)
A	1	4.5

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File name	HB2.PAD
First span	1
Last span	1
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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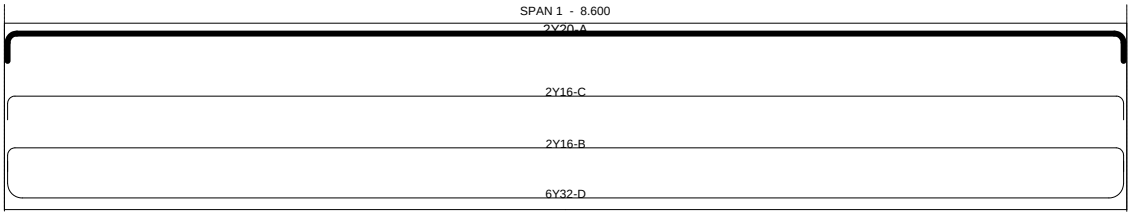
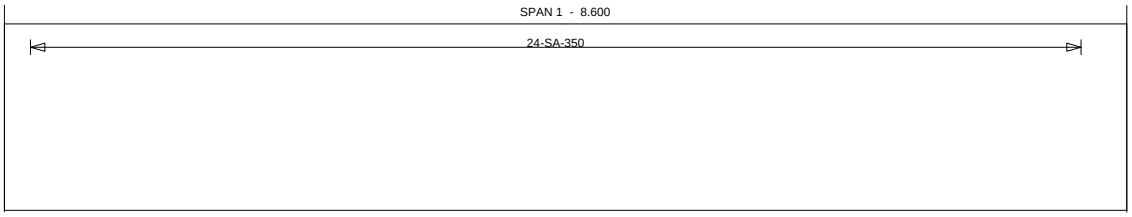
	Job Title		
	Client		
	Calcs by	Checked by	Date

Main and Shear Reinforcing diagrams. Span 1





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	Job Title		
	Client		
	Calcs by	Checked by	Date

Continuous Beam: B17 (Code of Practice : BS8110 - 1997)

11/6/2014 10:31:29 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	500	700							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	7	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	113				328	2.5				
L	1	24.15				54	2.5				

Span	M left (kNm)	M right (kNm)

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	Client		
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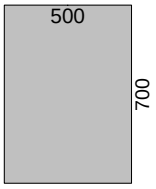
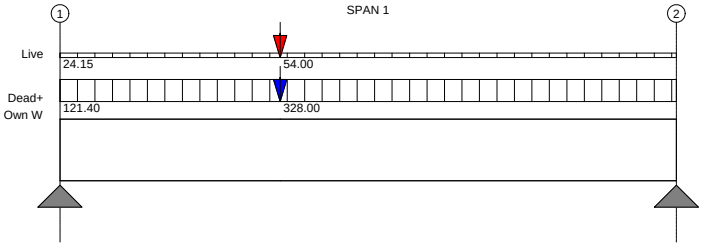
Sections



Beam Elevation



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	Job Title		
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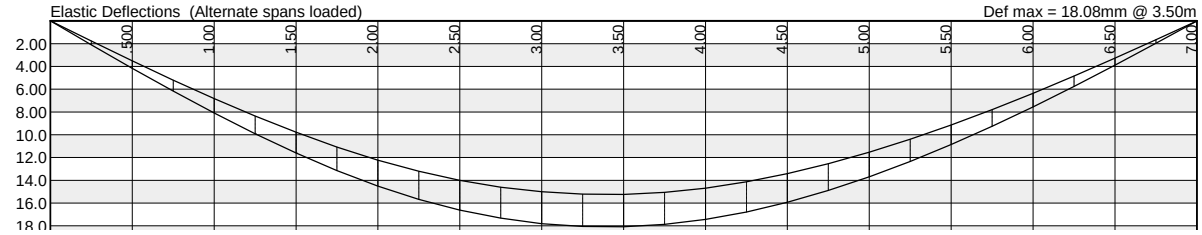
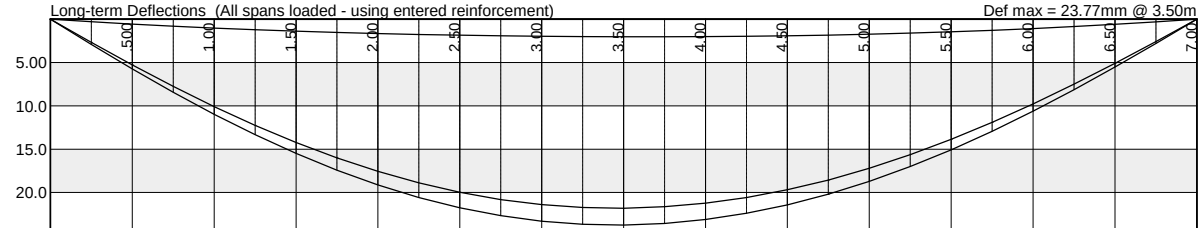
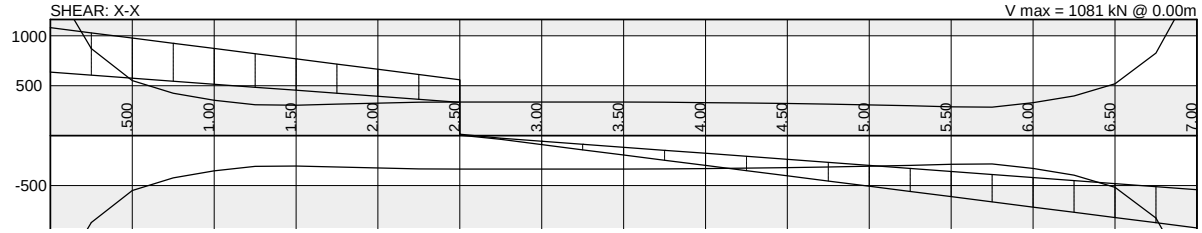
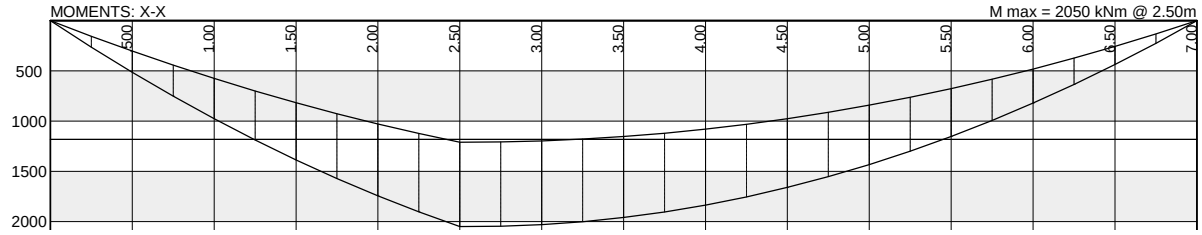
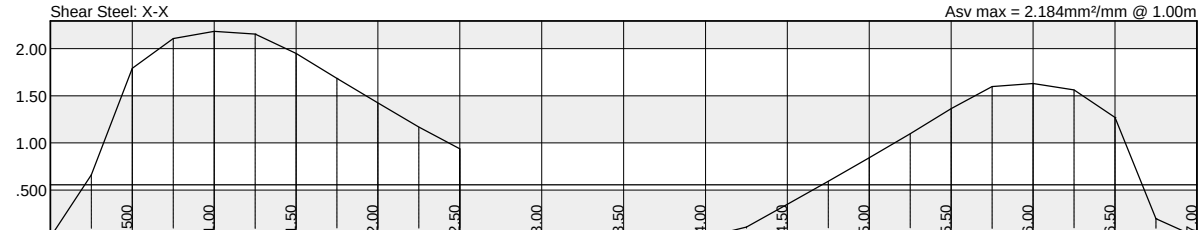
Deflection, Shear, Moment and Steel diagrams. Span 1

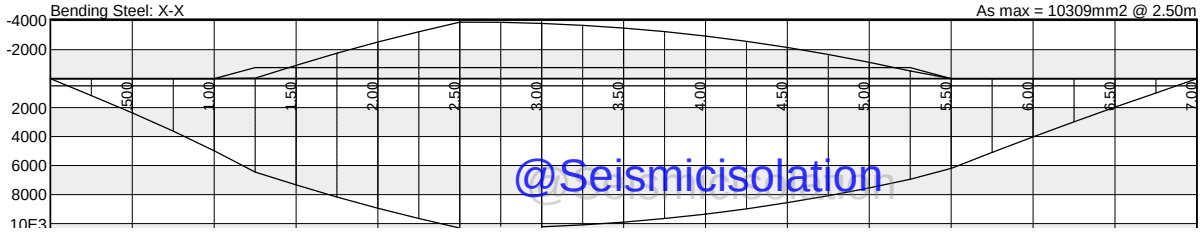












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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	32
BOTTOM: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	32
STIRRUP: Minimum diameter	(mm)	16
Maximum diameter	(mm)	16
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
6Y16	A	34	1	0.025	1.835	L	T
11Y32	B	35	1	0.025	6.950	R	B
3Y25	C	35	1	0.025	6.950	R	B
6Y25	D	20	1	1.000	4.500	L	T
2Y25	E	20	1	1.150	3.150	L	T
6Y16	F	34	1	4.640	2.335	R	T

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y16	SA1	60			
		Y16	SA2	60			
		Y16	SA3	60			
2	1	Y16	SB	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	450	1	0.20	2.25
2	450	1	2.90	2.25
1	450	1	5.60	1.20

Section positions		
Label	Span	Offset(m)
A	1	3.7

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File name	B12.PAD
First span	1
Last span	1
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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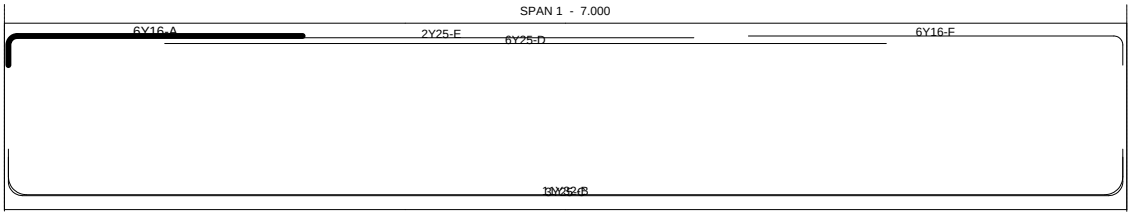
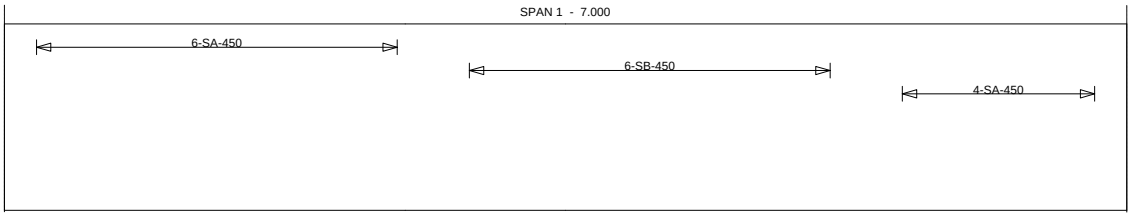
Main and Shear Reinforcing diagrams. Span 1





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	Job Title		
	Client		
	Calcs by	Checked by	Date

Continuous Beam: B18 (Code of Practice : BS8110 - 1997)

11/6/2014 10:31:59 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	600	900							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	7.61	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	119				296.01	4.8				
L	1	42.5				92.45	4.8				

Span	M left (kNm)	M right (kNm)

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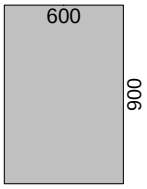
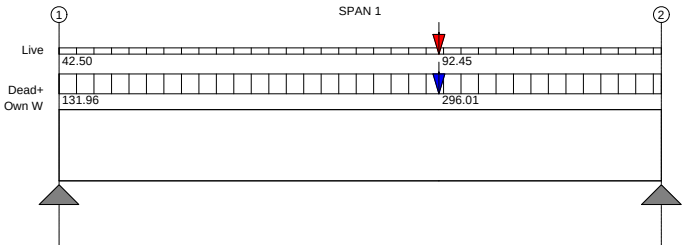
	Job Title		
	Client		
	Calcs by	Checked by	Date

Sections



Beam Elevation



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	Job Title		
	Client		
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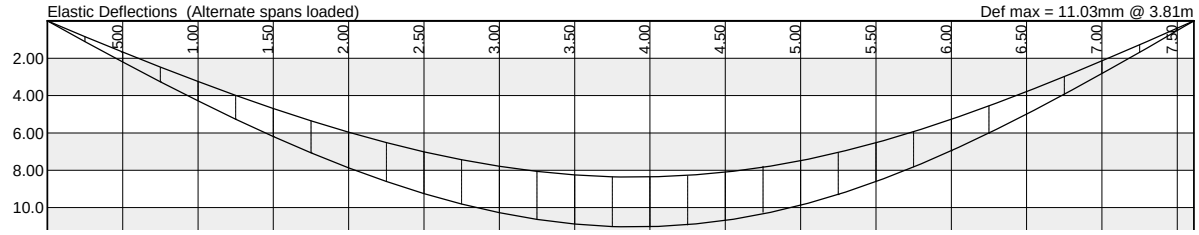
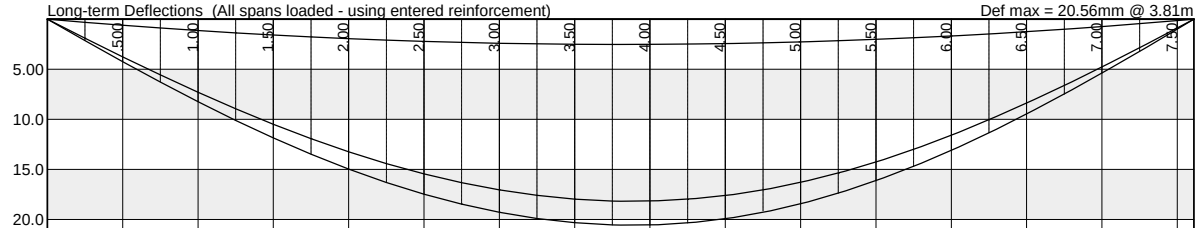
Deflection, Shear, Moment and Steel diagrams. Span 1

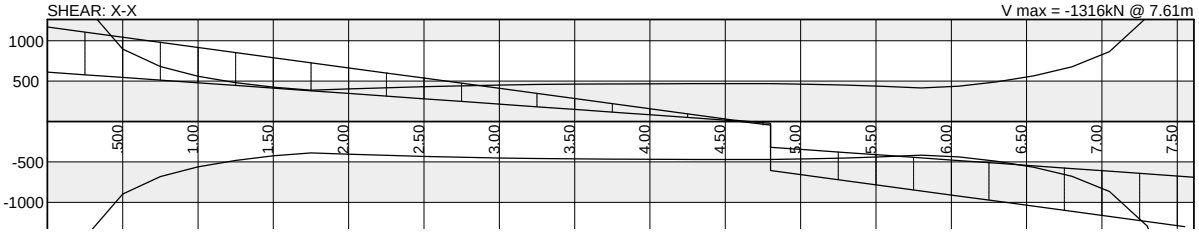
Elastic Deflections (Alternate spans loaded) Def max = 11.03mm @ 3.81m



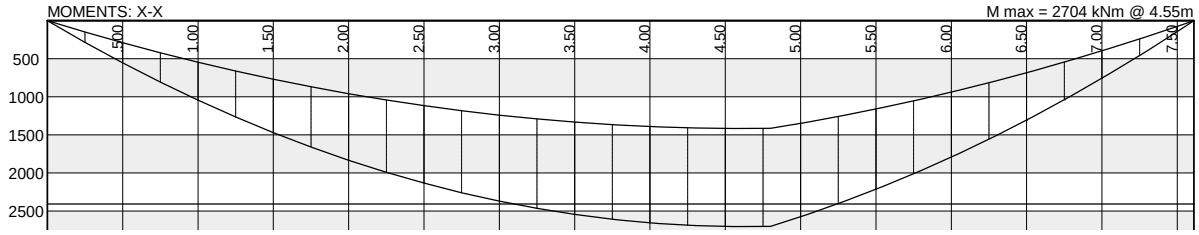
Long-term Deflections (All spans loaded - using entered reinforcement) Def max = 20.56mm @ 3.81m



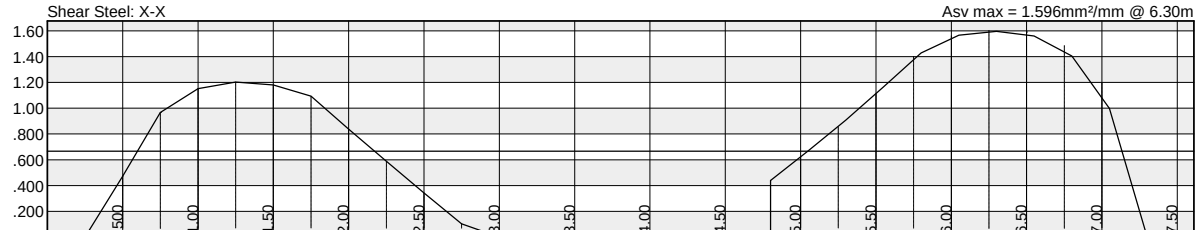
SHEAR: X-X V max = -1316kN @ 7.61m



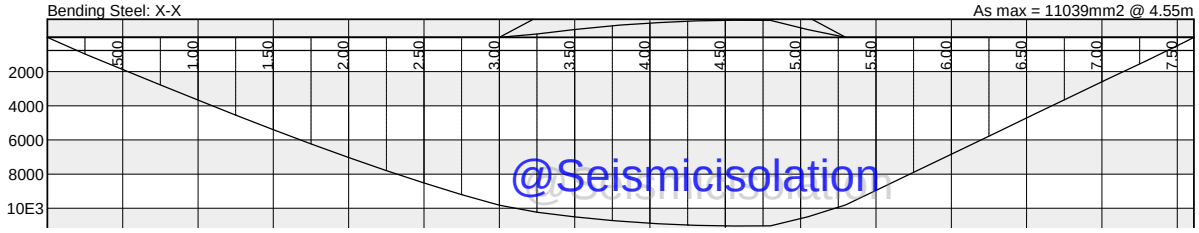
MOMENTS: X-X M max = 2704 kNm @ 4.55m



Shear Steel: X-X Asv max = 1.596mm²/mm @ 6.30m



Bending Steel: X-X As max = 11039mm2 @ 4.55m



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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	25
BOTTOM: Minimum bar diameter	(mm)	16
Maximum bar diameter	(mm)	25
STIRRUP: Minimum diameter	(mm)	12
Maximum diameter	(mm)	20
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
6Y16	A	35	1	0.025	7.560	R	T
2Y20	B	35	1	0.025	7.560	R	M1
2Y20	C	35	1	0.025	7.560	R	M2
18Y25	D	35	1	0.025	7.560	R	B
7Y20	E	35	1	0.025	7.560	R	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y12	SA1	60			
		Y12	SA2	60			
		Y12	SA3	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	400	1	0.20	1.60
1	600	1	2.30	3.00
1	400	1	5.80	1.60

Section positions		
Label	Span	Offset(m)
A	1	4.0

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File name	B12.PAD
First span	1
Last span	1
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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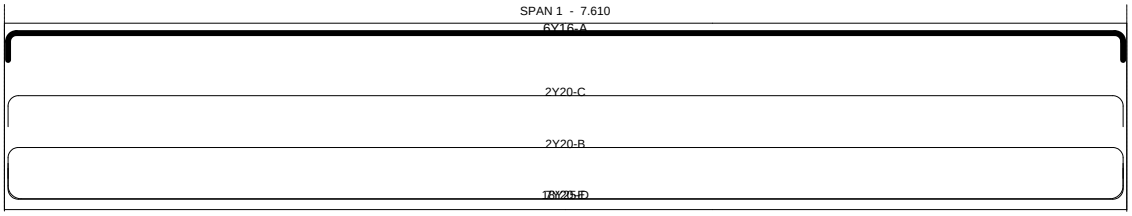
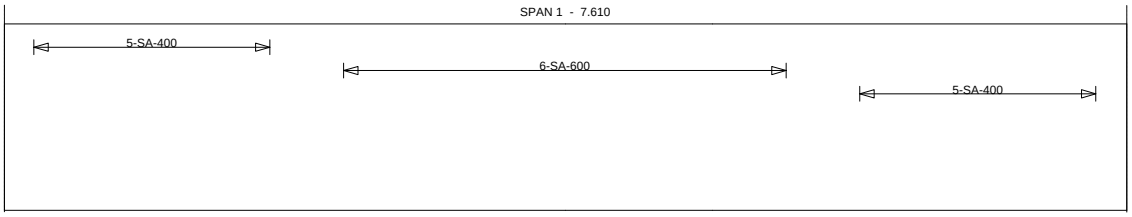
	Job Title		
	Client		
	Calcs by	Checked by	Date

Main and Shear Reinforcing diagrams. Span 1





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	Job Title		
	Client		
	Calcs by	Checked by	Date

Continuous Beam: B19 (Code of Practice : BS8110 - 1997)

11/6/2014 10:32:31 AM

C01

Input Tables

fcu (MPa)	35
fy (MPa)	414
fyv (MPa)	414
% Redistribution	10
Downward/Optimized redistr.	D
Cover to centre top steel(mm)	40
Cover to centre bot.steel(mm)	40
Dead Load Factor	1.4
Live Load Factor	1.6
Density of concrete (kN/m3)	24
% Live load permanent	25
Ø (Creep coefficient)	2
Ecs (Free shrinkage strain)	300E-6

Sec No.	Bw (mm)	D (mm)	Bf-top (mm)	Hf-top (mm)	Bf-bot (mm)	Hf-bot (mm)	Y-offset (mm)	Web offset	Flange offset
1	400	1000							

Span No	Section Length(m)	Sec No Left	Sec No Right
1	8.65	1	
2	8.2	1	

Sup No.	Code C,F	Column Below			Code F,P	Column above			Code F,P
		D(mm)	B(mm)	H(m)		D(mm)	B(mm)	H(m)	

Case D,L	Span	Wleft (kN/m)	Wright (kN/m)	a (m)	b (m)	P (kN)	a (m)	M (kNm)	a (m)	Load Description	
D	1	110									
L	1	24									
D	2	110									
L	2	24									

Span	M left (kNm)	M right (kNm)

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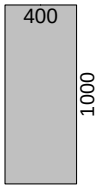
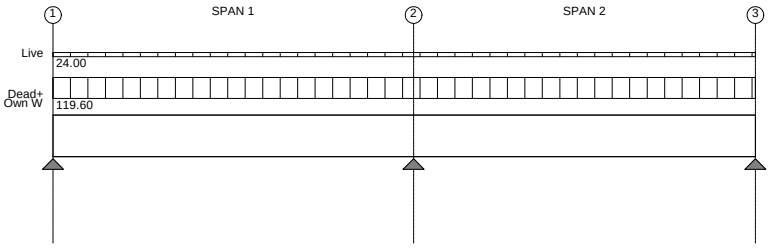
	Job Title		
	Client		
	Calcs by	Checked by	Date

Sections



Beam Elevation



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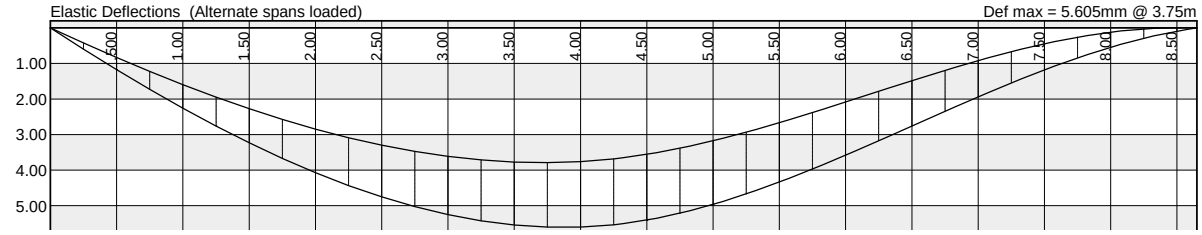
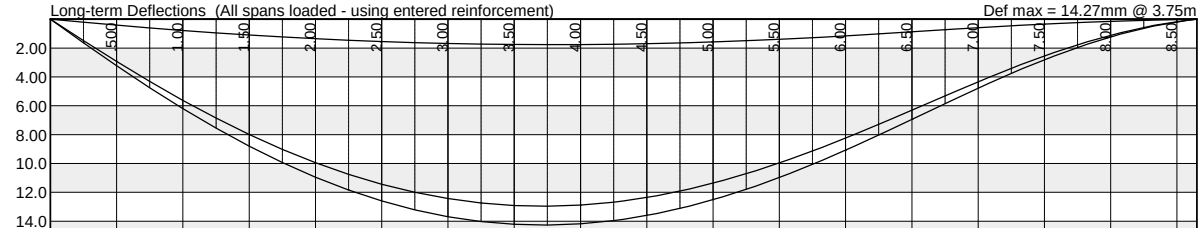
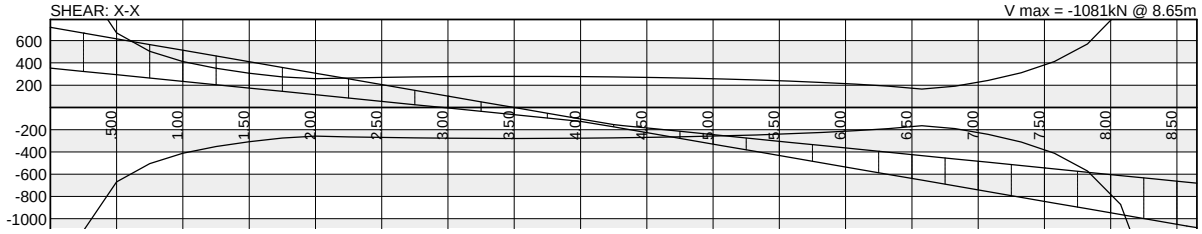
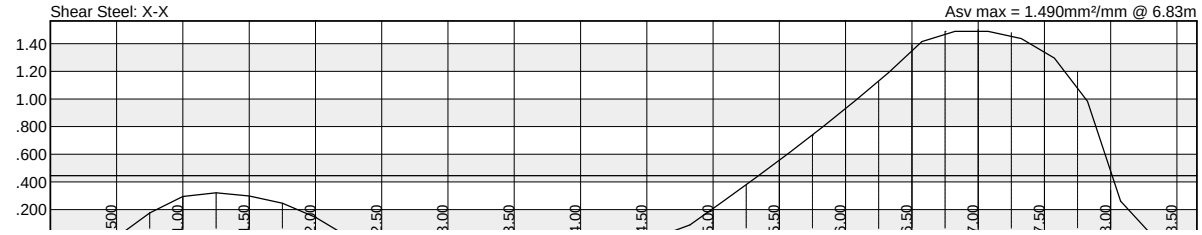
	Job Title		
	Client		
	Calcs by	Checked by	Date

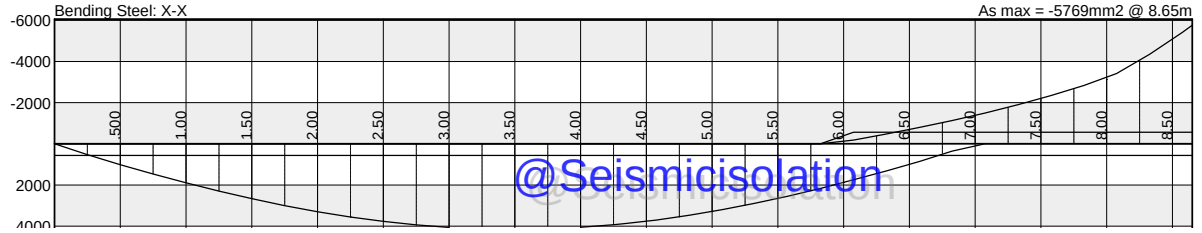
Deflection, Shear, Moment and Steel diagrams. Span 1











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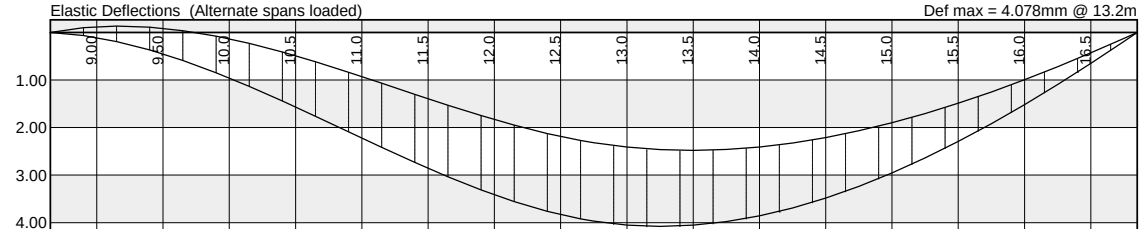
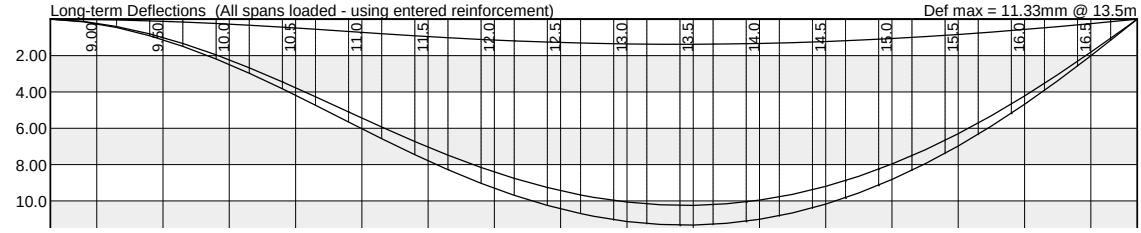
Deflection, Shear, Moment and Steel diagrams. Span 2

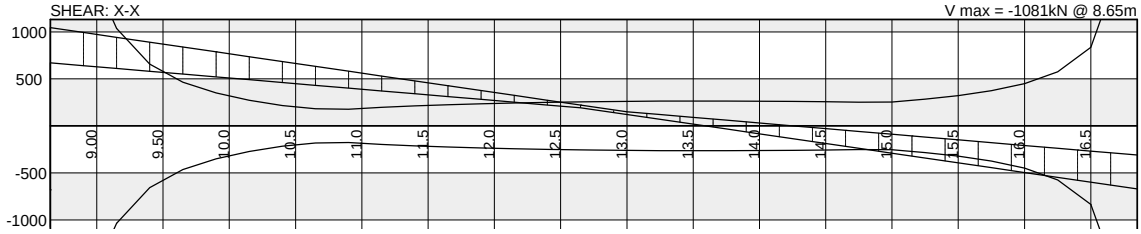
Elastic Deflections (Alternate spans loaded) Def max = 4.078mm @ 13.2m



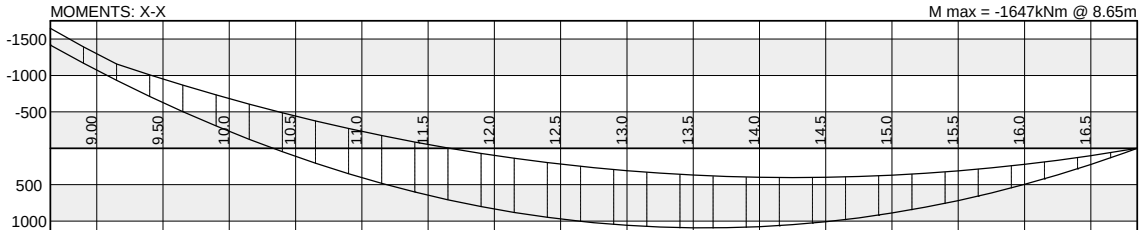
Long-term Deflections (All spans loaded - using entered reinforcement) Def max = 11.33mm @ 13.5m



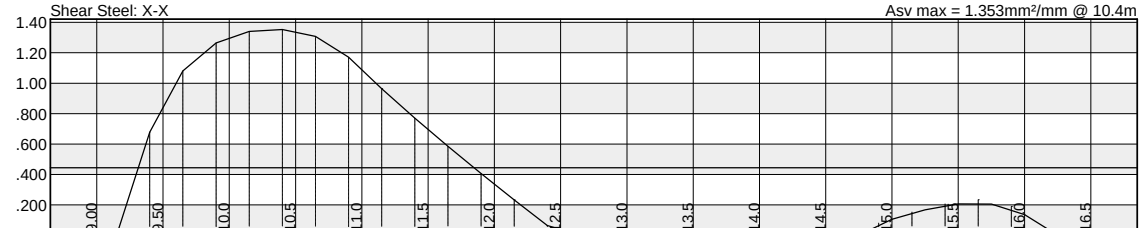
SHEAR: X-X V max = -1081kN @ 8.65m



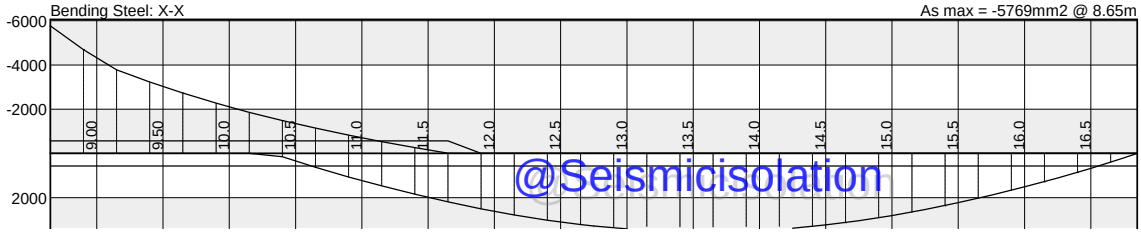
MOMENTS: X-X M max = -1647kNm @ 8.65m



Shear Steel: X-X Asv max = 1.353mm²/mm @ 10.4m



Bending Steel: X-X As max = -5769mm2 @ 8.65m



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Reinforcing Tables

Beam type	(1-5)	1
Maximum bar length	(m)	12
TOP: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
BOTTOM: Minimum bar diameter	(mm)	20
Maximum bar diameter	(mm)	32
STIRRUP: Minimum diameter	(mm)	10
Maximum diameter	(mm)	16
Stirrup shape code		60
First bar mark - top		A
First bar mark - mid.[optional]		
First bar mark - bot.[optional]		
Cover to stirrups - top	(mm)	30
Cover to stirrups - bot	(mm)	30
Cover to stirrups - sides	(mm)	25
Minimum stirrups as % of nominal		100
Loose method of detailing	(Y/N)	N
Exploded elevation	(Y/N)	Y
Bending schedule scale	1:	Auto
Number bars from left to right	(Y/N)	Y
Middle bar diameter	(mm)	Auto
Target		Padds

Bars	Mark	SC	Span	Offset	Length	Hook	Layer
4Y20	A	34	1	0.025	7.250	L	T
2Y16	B	34	1	0.025	8.625	L	M1
2Y16	C	34	1	0.025	8.625	L	M2
2Y16	D	34	1	0.025	8.625	L	M3
4Y20	E	34	1	0.025	8.875	L	B
3Y32	F	20	1	0.100	6.700	L	B
1Y25	G	20	1	2.000	3.000	L	B
4Y25	H	20	2	-2.550	5.300	L	T
5Y32	I	20	2	-1.750	3.600	L	T
4Y20	J	34	2	-0.250	8.425	R	B
2Y16	K	34	2	0.000	8.175	R	M1
2Y16	L	34	2	0.000	8.175	R	M2
2Y16	M	34	2	0.000	8.175	R	M3
4Y20	N	34	2	1.550	6.625	R	T
3Y25	O	20	2	2.050	5.700	L	B
1Y32	P	20	2	3.050	3.800	L	B

Stirrup Number	Section Number	Bar Type + Diameter	Mark	Shape Code	Top Offset	Top Flange	Bottom Flange
1	1	Y10	SA1	60			
		Y10	SA2	60			

Stirrup Number	Spacing	Span	Offset	Length (m)
1	700	1	0.20	5.60
1	200	1	6.25	2.20
1	200	2	0.20	2.80

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Stirrup Number	Spacing	Span	Offset	Length (m)
1	700	2	3.45	4.55

Section positions		
Label	Span	Offset(m)
A	1	4.5
B	2	0.3
C	2	4.3

File name	B12.PAD
First span	1
Last span	2
Draw grid lines?(Y/N)	Y
Draw columns?(Y/N)	Y
Number/Letter of first grid	A
Number (U)p or (D)own	U
Drawing size?(A4 or A5)	A5
Height (normal text) mm	2
Height (title text) mm	2.5
Height (sec. bar mark) mm	1.8

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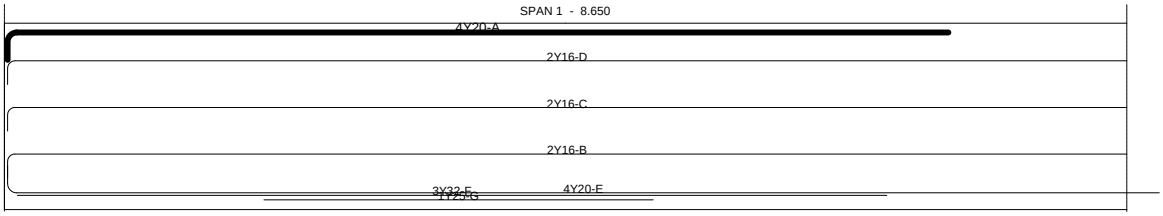
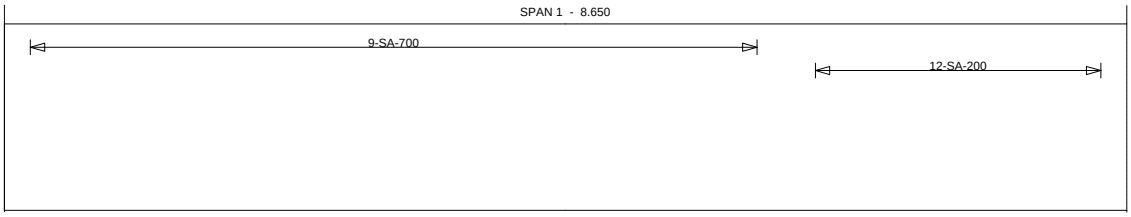
Main and Shear Reinforcing diagrams. Span 1





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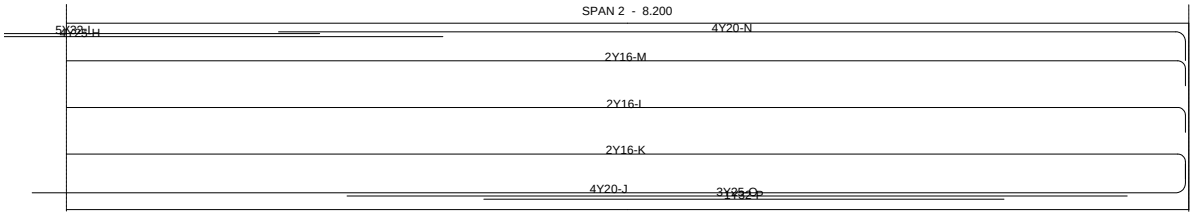
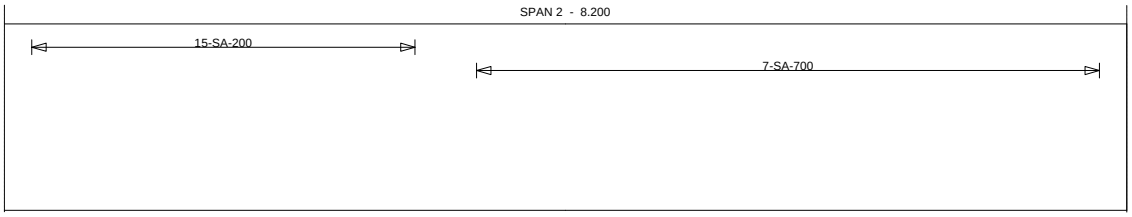
Main and Shear Reinforcing diagrams. Span 2





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DESIGN OF SHORING

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INTRODUCTION:

Contiguous Shoring Piles is use in the design of shoring with pile diameter of 800mm along existing structure and neighbor of one side of the plot. Two different top levels is considered on the design, one is -7.1m level and -3.75 level for the existing structure and neighbor side respectively.

SOIL PROFILE AND PARAMETERS:

Soil profile and parameters used in the design is based on Soil Investigation Report for Additional Building for Kurdonia Hotel by KHAK Engineering Consulting Bureau, dated September, 2012.

SURCHARGE LOADS:

Design surcharge load is taken as 30KN/m2 plus surcharge due to existing structure.

EXCAVATION DEPTH AND DEWATERING:

Excavation depth of -13 meters is considered on the design with no hydrostatic force consideration as this does not encounter during the soil investigation.

CALCULATION METHOD & PROGRAM ANALSIS:

Shoring Design has been analyzed using REWARD Program based on basic input data and soil parameters, earth pressure, embedment depth and maximum bending moment is calculated.

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REWARD Program Analysis
(Along Neighbor Side)

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Construction Stages

Name	Term	Objects present in this stage
Stage 1	Long	Wall 1 On retained side: Ground 1, Borehole 1, Surcharge 1, On excavated side: Excavation 1, Borehole 1, Water Table 1,

Ground Profiles

Name	Type	Other Properties
Ground 1	Horizontal	

Excavations

Name	Type	Depth (m)	Plan length (m)	Plan breadth (m)	Other Properties
Excavation 1	Horizontal	9.25	-	-	

Soils

Name	Type	Class	State	Other Properties
Soil 1 Silty Clay	Clay	Gravelly	Unspecified	Soil is not fissured
Soil 2 Greenish Marlstone	Rock	Marl	Unspecified	

Soil properties

Name	Wet weight kN/m^3	Dry weight kN/m^3	Failure state	Friction °	Cohesion kPa	Poisson's ratio
Soil 1 Silty Clay	20.1	20.1	Peak	33.0	5.0	0.30
Soil 2 Greenish Marlstone	22.1	22.1	Peak	40.0	5.0	0.30

Soil properties (undrained)

Name	Strength kPa	Strength increase kN/m^3	From depth m
Soil 1 Silty Clay	20.0	0.0	0.00

Layers

Name	Type	Thickness (m)	Soil	Dip (°)	OCR	Tension crack	
Layer 1 Clay	Drained	6.00	Soil 1 Silty Clay	0.0	1.0	Wet	Not rigid
Layer 2 Greenish Marlstone	Drained	35.00	Soil 2 Greenish Marlstone	0.0	1.0	Wet	Not rigid

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Boreholes

Name	Depth (m)	Contains layers:
Borehole 1	41	Layer 1 Clay; Layer 2 Greenish Marlstone;
Borehole 4	41	Layer 1 Clay; Layer 2 Greenish Marlstone;
Borehole 6	41	Layer 1 Clay; Layer 2 Greenish Marlstone;
Borehole 8	41	Layer 1 Clay; Layer 2 Greenish Marlstone;

Water Tables

Name	Type	Depth (m)	Gradient (kN/m^3)	Other Properties
Water Table 1	Hydrostatic	9.25	9.81	Hydraulically connected to overlying water

Retaining Walls

Name	Type	Depth of toe m	Upstand m	Material	Density kg/m^3	E GPa
Wall 1	Contiguous Pile	20.00	0.00	Concrete	2400	20.0

Retaining Wall sections

Name	Section	Sectional area cm^2/m	Moment of inertia cm^4/m	Section modulus cm^3/m
Wall 1	Diameter = 0.8 m Spacing = 0.85 m	5914	2365434	59136

Surcharges

Name	Type	Depth (m)	Magnitude			Other Properties
Surcharge 1	Uniform	0.00	85.0kPa	V	U	Load type = Custom Loading

Design Standard

Type = British Standard 8002
Earth pressure coefficients
  Type = Kerisel & Absi
Tension crack limited to the retained height
Cantilever toe-in = 20%

Equilibrium calculated at the minimum safe embedment (with designated safety factors)

Unfavourable
  Permanent (G) = 1.00
  Variable (Q) = 1.00
  Accidental (A) = 1.00
Favourable
  Permanent (G) = 1.00
  Variable (Q) = 1.00
  Accidental (A) = 1.00
Minimum surcharge = 10 kPa

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Design Standard [Continued]

On shearing resistance = 1.20
On effective cohesion = 1.20
On undrained strength = 1.50

On effective earth pressures = 1.00
On total earth pressures = 1.00
Safety factor on resistance applied via: Gross passive pressures
Minimum active pressure = 0.00 kN/m^3

Unplanned excavation = 10% of clear height, but minimum of 0.5m
Softened formation = 0 m

On bending moments = 1.00
On shear forces = 1.00
On prop forces
  Short-term = 1.00/1.00
  Long-term = 1/1

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Engineer		Date	5/2/2015	Checked	
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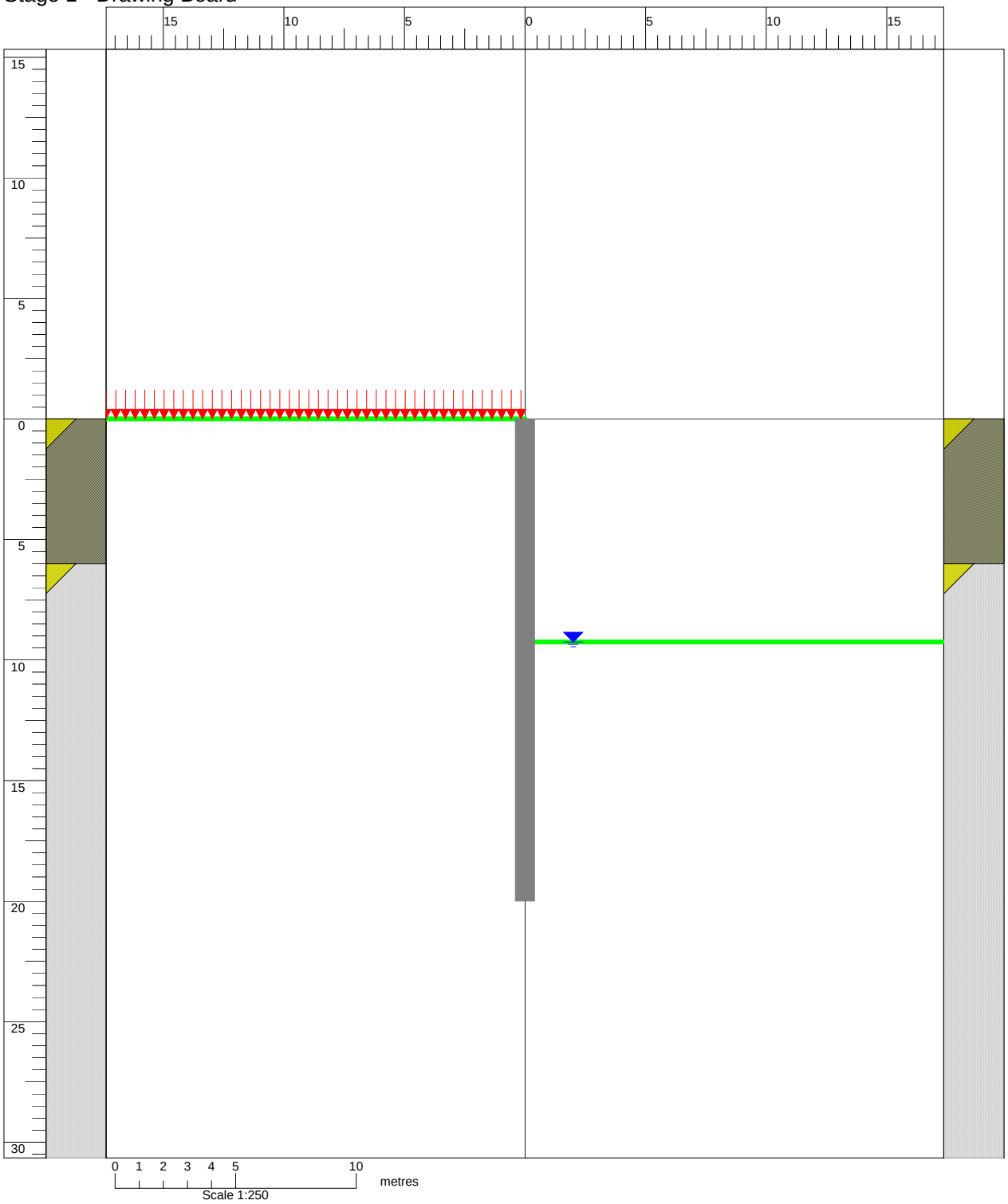
Stage 1 - Drawing Board



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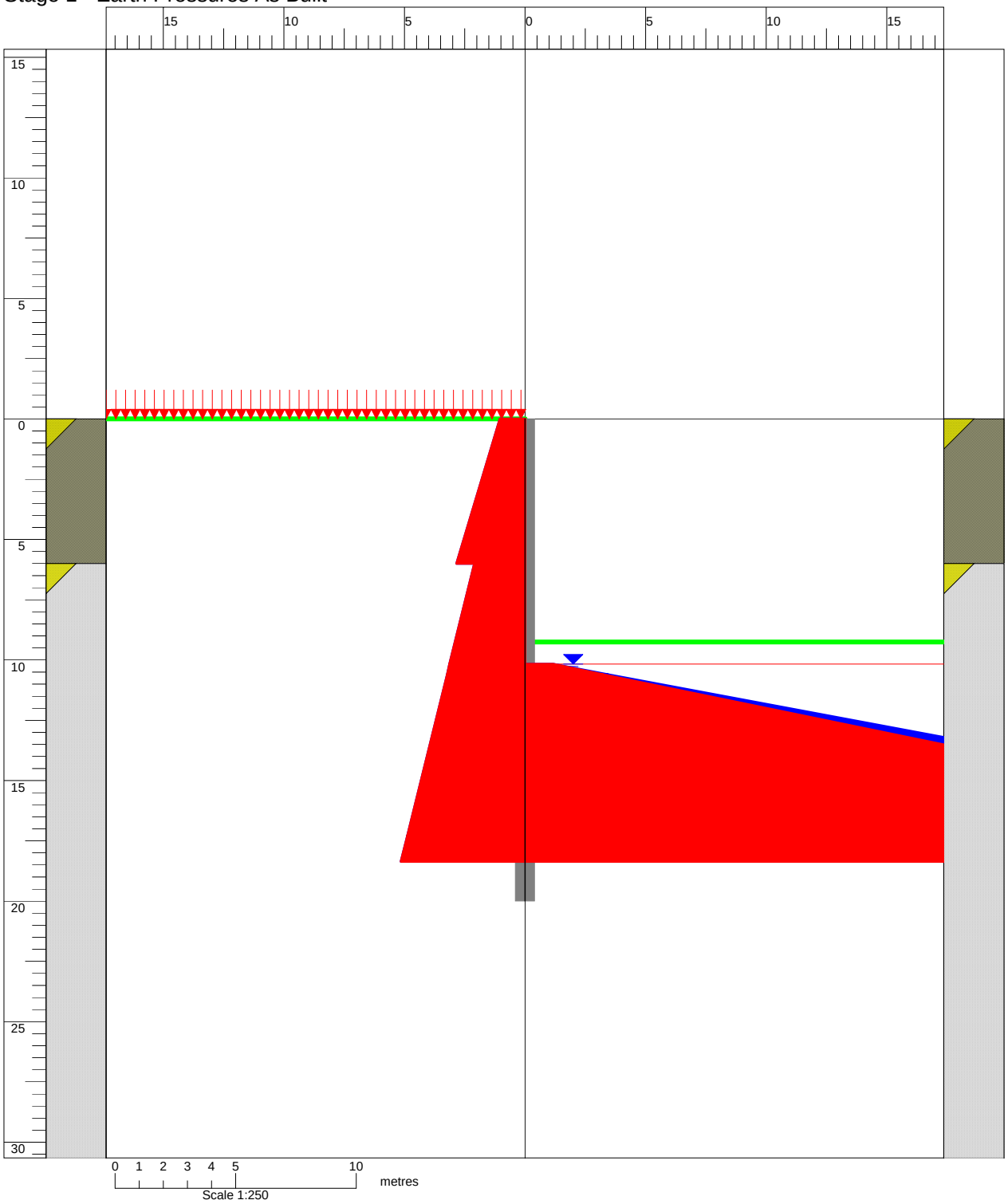
Stage 1 - Earth Pressures As Built



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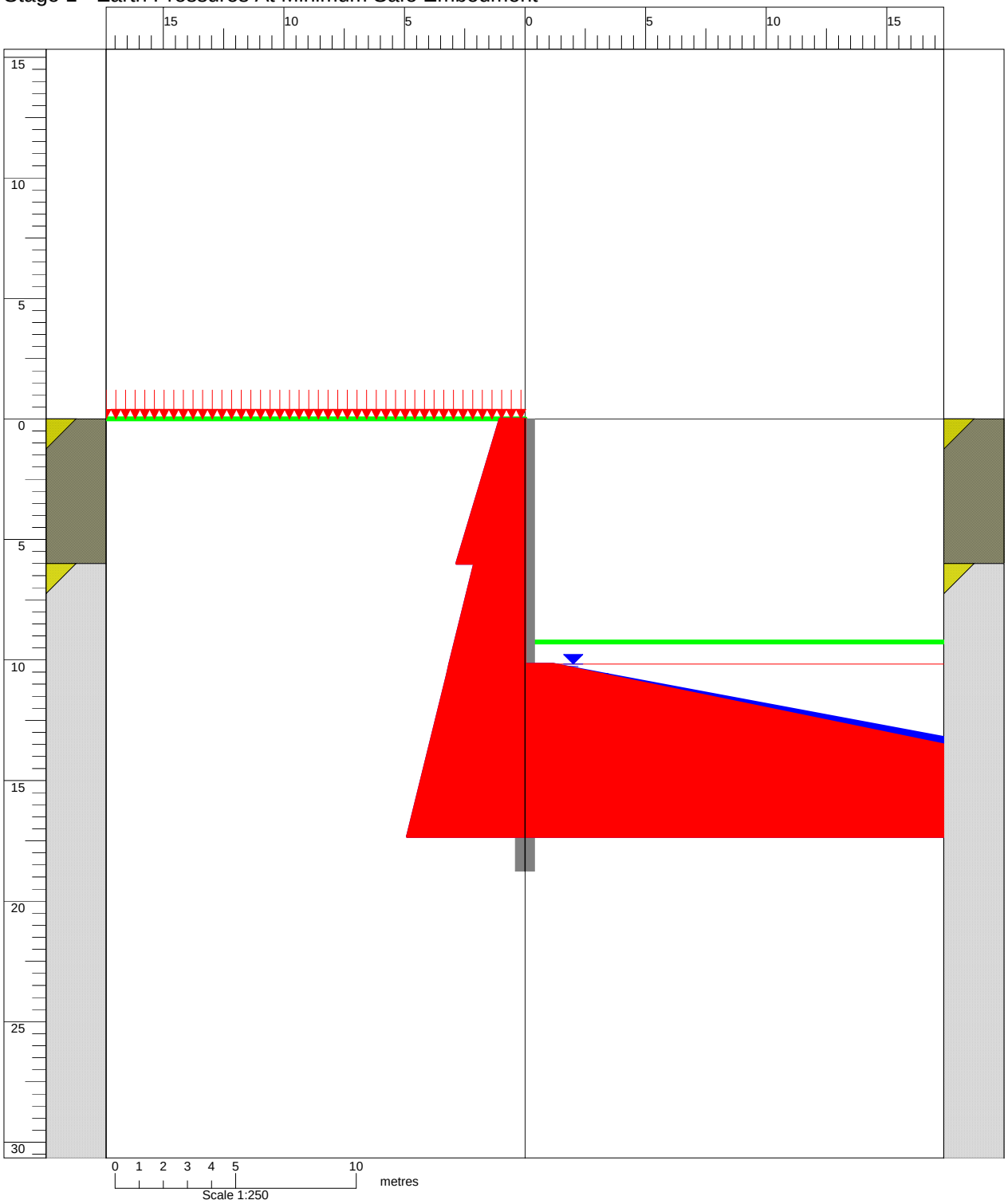
Stage 1 - Earth Pressures At Minimum Safe Embedment



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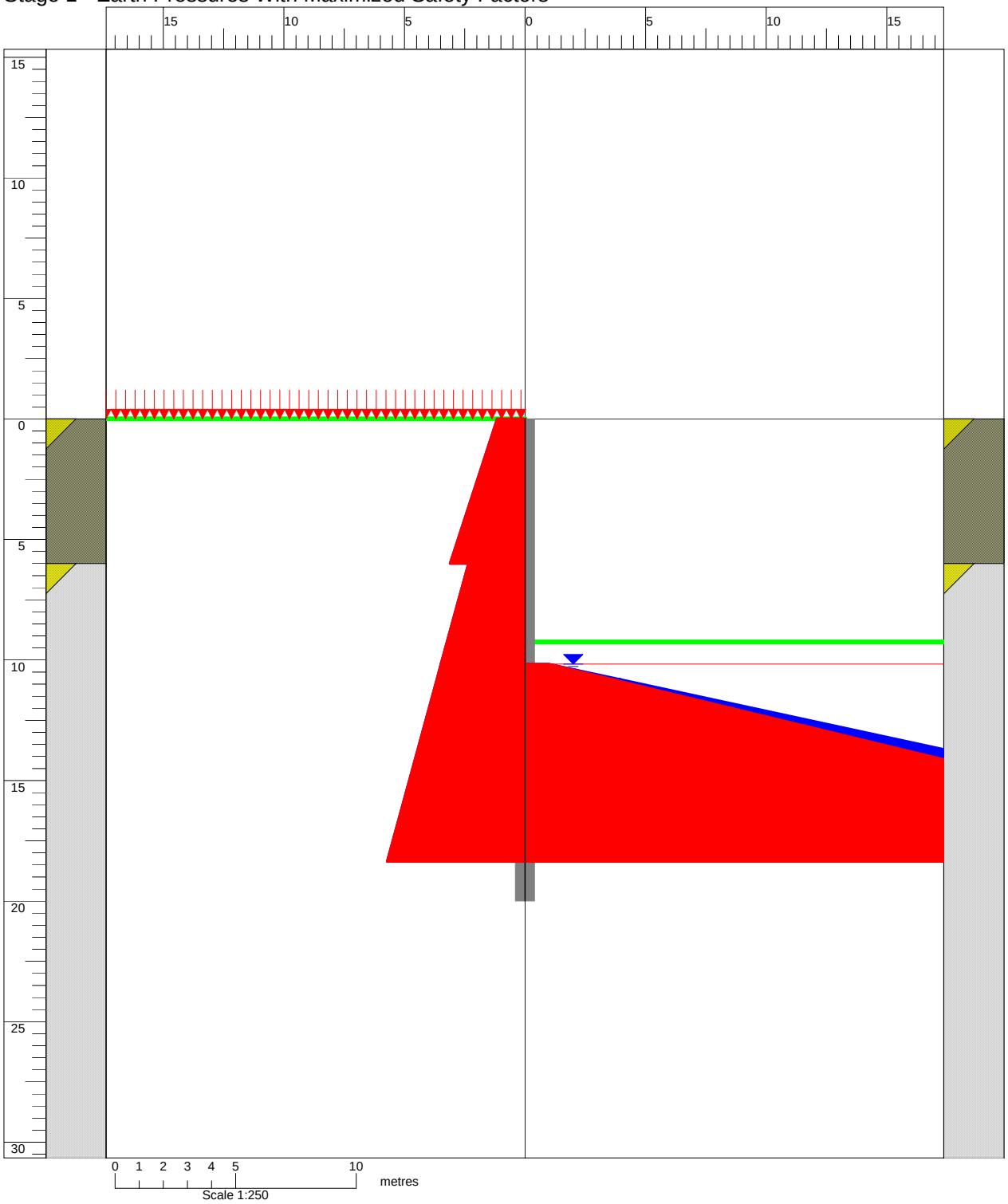
Stage 1 - Earth Pressures With Maximized Safety Factors



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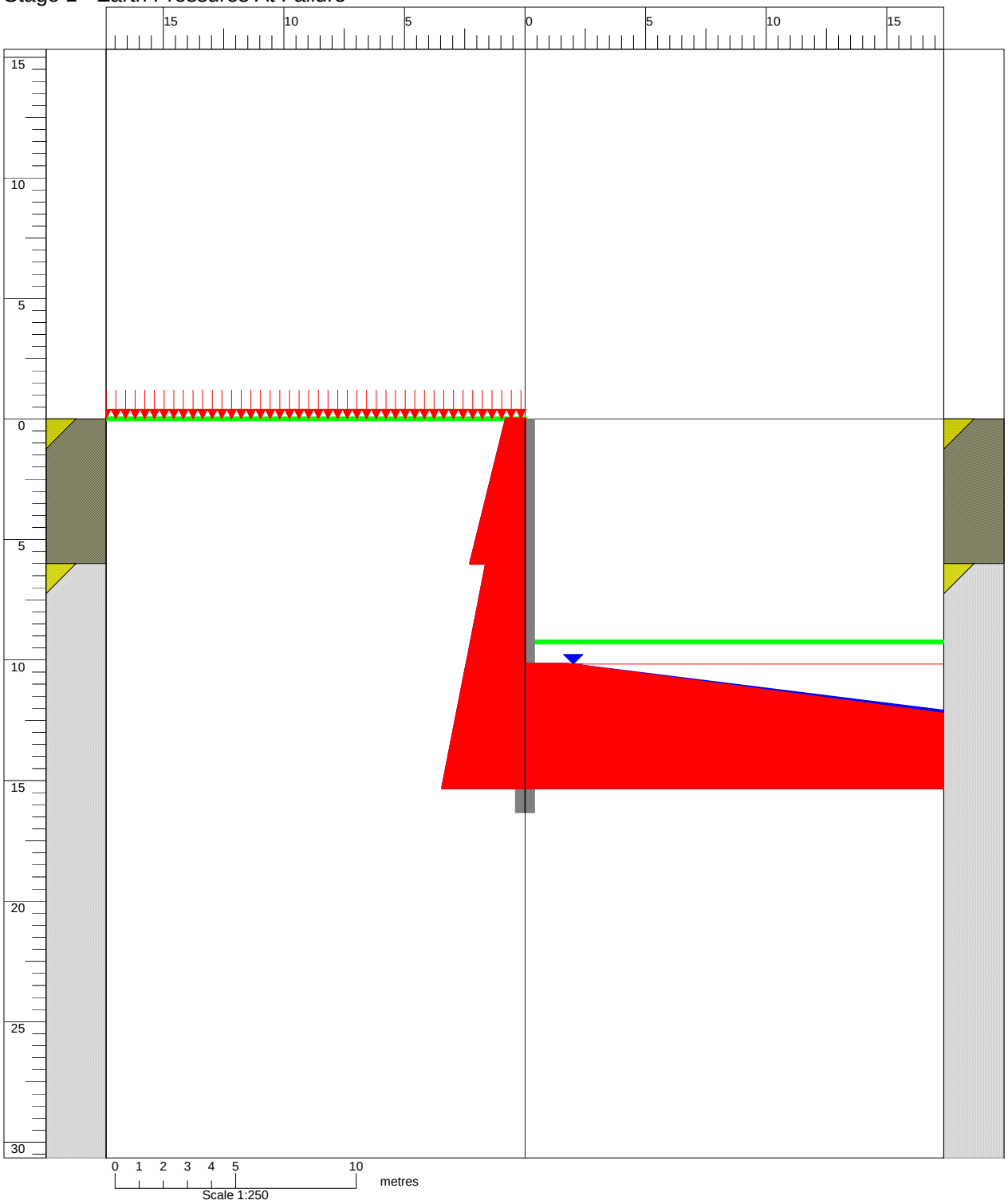
Stage 1 - Earth Pressures At Failure



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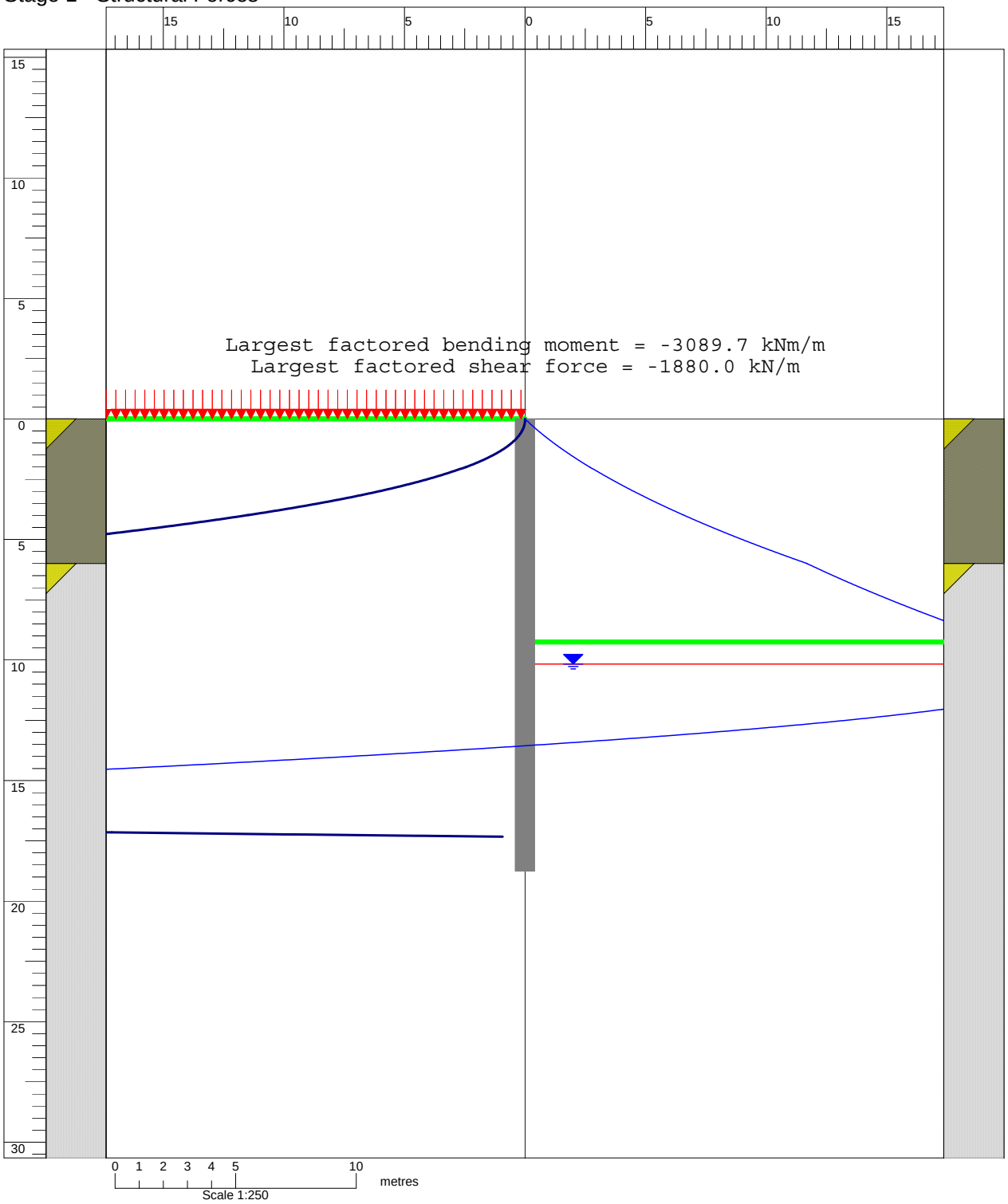
Stage 1 - Structural Forces



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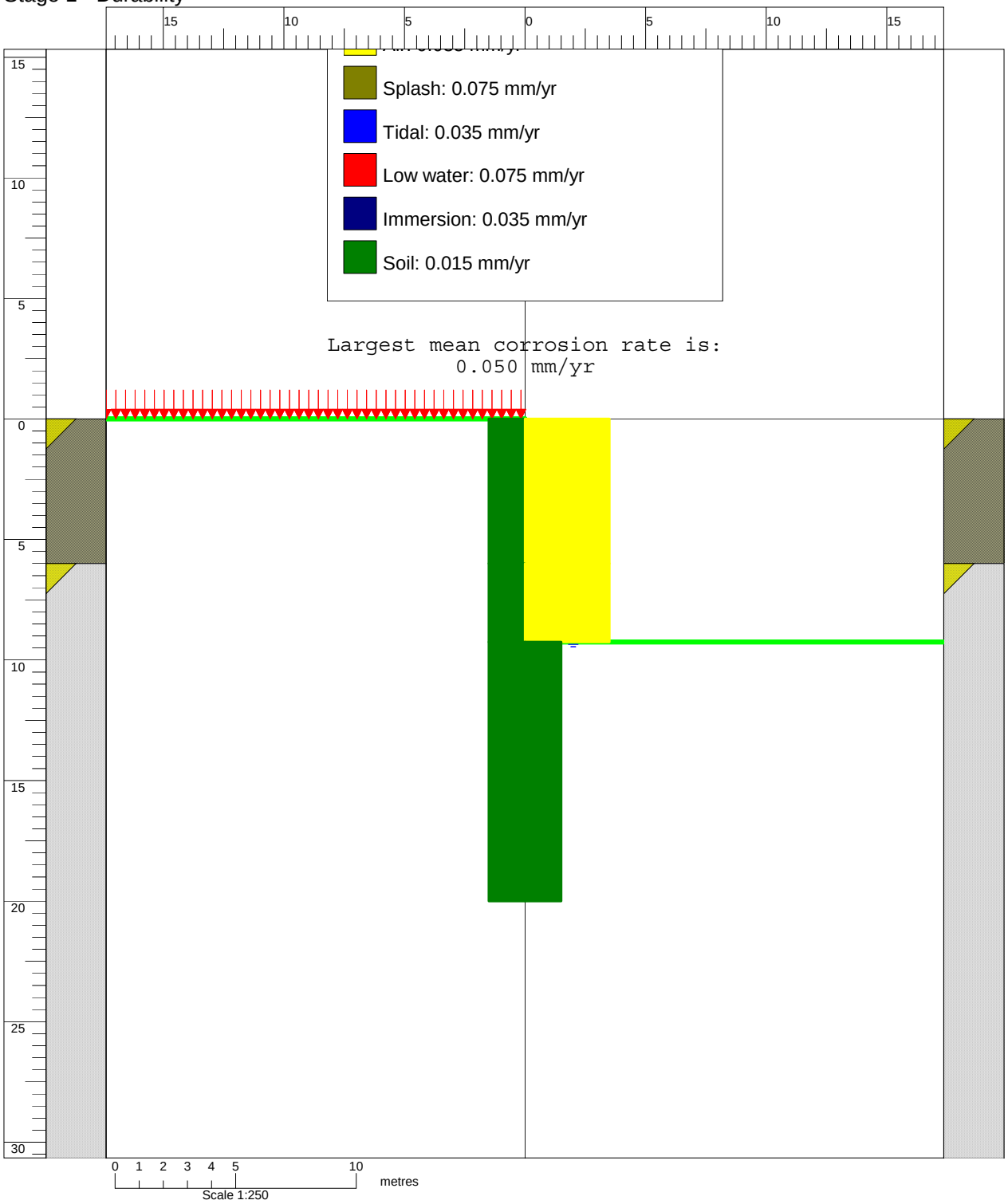
Stage 1 - Durability



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Stage 1 - Earth Pressures As Built

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa Retained	kPa Retained	kPa Retained	kPa Excavated	kPa Excavated	kPa Excavated
0.00	20.88	0.00	20.88	0.00	0.00	0.00
6.00	56.99	0.00	56.99	0.00	0.00	0.00
6.00	42.03	0.00	42.03	0.00	0.00	0.00
10.18	62.62	0.00	62.62	0.00	0.00	0.00
10.18	62.62	0.00	62.62	23.45	0.00	23.45
10.60	64.72	0.00	64.72	64.72	4.17	68.89
10.60	64.72	0.00	64.72	64.72	4.17	68.89
17.30	97.75	0.00	97.75	714.87	69.85	784.72
17.30	97.75	0.00	97.75	714.87	69.85	784.72
18.36	103.01	0.00	103.01	818.26	80.29	898.55

Stage 1 - Earth Pressures At Minimum Safe Embedment

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa Retained	kPa Retained	kPa Retained	kPa Excavated	kPa Excavated	kPa Excavated
0.00	20.88	0.00	20.88	0.00	0.00	0.00
6.00	56.99	0.00	56.99	0.00	0.00	0.00
6.00	42.03	0.00	42.03	0.00	0.00	0.00
10.18	62.62	0.00	62.62	0.00	0.00	0.00
10.18	62.62	0.00	62.62	23.45	0.00	23.45
10.60	64.72	0.00	64.72	64.72	4.17	68.89
10.60	64.72	0.00	64.72	64.72	4.17	68.89
17.30	97.75	0.00	97.75	714.87	69.85	784.72
17.30	97.75	0.00	97.75	714.87	69.85	784.72
17.33	97.93	0.00	97.93	718.41	70.20	788.61

Stage 1 - Earth Pressures With Maximized Safety Factors

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa Retained	kPa Retained	kPa Retained	kPa Excavated	kPa Excavated	kPa Excavated
0.00	23.20	0.00	23.20	0.00	0.00	0.00
6.00	62.35	0.00	62.35	0.00	0.00	0.00
6.00	47.04	0.00	47.04	0.00	0.00	0.00
10.18	69.82	0.00	69.82	0.00	0.00	0.00
10.18	69.82	0.00	69.82	19.98	0.00	19.98
10.82	73.34	0.00	73.34	73.34	6.32	79.66
10.82	73.34	0.00	73.34	73.34	6.32	79.66
17.30	108.70	0.00	108.70	609.60	69.85	679.45
17.30	108.70	0.00	108.70	609.60	69.85	679.45
18.36	114.51	0.00	114.51	697.76	80.29	778.05

Stage 1 - Earth Pressures At Failure

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa Retained	kPa Retained	kPa Retained	kPa Excavated	kPa Excavated	kPa Excavated
0.00	15.91	0.00	15.91	0.00	0.00	0.00

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Stage 1 - Earth Pressures At Failure [Continued]

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa	kPa	kPa	kPa	kPa	kPa
	Retained	Retained	Retained	Excavated	Excavated	Excavated
6.00	45.51	0.00	45.51	0.00	0.00	0.00
6.00	32.20	0.00	32.20	0.00	0.00	0.00
10.18	48.52	0.00	48.52	0.00	0.00	0.00
10.18	48.52	0.00	48.52	35.09	0.00	35.09
10.27	48.87	0.00	48.87	48.87	0.90	49.77
10.27	48.87	0.00	48.87	48.87	0.90	49.77
15.32	68.60	0.00	68.60	811.20	50.41	861.62

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Stage 1 - Required Embedment As Built
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 10.18 m
Depth of toe = 20.00 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.20
    On effective cohesion = 1.20
    On undrained strength = 1.50
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = 10% of clear height, but minimum of 0.5m
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
Moments
  Overturning = 8245 kNm/m
  Restoring = 10563 kNm/m
  Out-of-balance = -2318 kNm/m
  Restoring/Overturning = 128 %
Reaction at wall toe = -2644.3 kN/m

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Stage 1 - Required Embedment At Minimum Safe Embedment
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 10.18 m
Depth of toe = 18.77 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.20
    On effective cohesion = 1.20
    On undrained strength = 1.50
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = 10% of clear height, but minimum of 0.5m
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
Moments
  Overturning = 7137 kNm/m
  Restoring = 7137 kNm/m
  Out-of-balance = 0 kNm/m
  Restoring/Overturning = 100 %
  The wall is in equilibrium
Reaction at wall toe = -1880.0 kN/m

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Stage 1 - Required Embedment With Maximized Safety Factors
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 10.18 m
Depth of toe = 20.00 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.30
    On effective cohesion = 1.30
    On undrained strength = 1.75
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = 10% of clear height, but minimum of 0.5m
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
  Safety reserve = 1.50
Moments
  Overturning = 9138 kNm/m
  Restoring = 9139 kNm/m
  Out-of-balance = -1 kNm/m
  Restoring/Overturning = 100 %
  The wall is in equilibrium
Reaction at wall toe = -2011.7 kN/m

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Stage 1 - Required Embedment At Failure
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 10.18 m
Depth of toe = 16.34 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.00
    On effective cohesion = 1.00
    On undrained strength = 1.00
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = None
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
Moments
  Overturning = 4104 kNm/m
  Restoring = 4104 kNm/m
  Out-of-balance = 0 kNm/m
  Restoring/Overturning = 100 %
  The wall is in equilibrium
Reaction at wall toe = -1651.1 kN/m

Stage 1: Structural Forces

Depth (m)	Bending Moment (kNm/m)	Shear Force (kN/m)	Prop Force (kN/m)	Notes
13.57	-3089.7	-4.0	See above	Maximum bending moment
17.33	-18.8	-1880.0	See above	Maximum shear force

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Stage 1: Messages
Validating the construction stage

Calculating earth pressures as built (for the specified wall length and safety factors)
Calculating earth pressures at the minimum safe embedment (with the specified safety factors)
Calculating earth pressures with maximized safety factors (for the specified wall length)
Calculating earth pressures at failure (with safety factors set to 1)
Calculating structural forces
Calculating durability

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REWARD Program Analysis
(Along Existing Side)

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Construction Stages

Name	Term	Objects present in this stage
Stage 1	Long	Wall 1 On retained side: Ground 1, Borehole 1, Surcharge 1, On excavated side: Excavation 1, Borehole 1, Water Table 1,

Ground Profiles

Name	Type	Other Properties
Ground 1	Horizontal	

Excavations

Name	Type	Depth (m)	Plan length (m)	Plan breadth (m)	Other Properties
Excavation 1	Horizontal	5.90	-	-	

Soils

Name	Type	Class	State	Other Properties
Soil 1 Silty Clay	Clay	Gravelly	Unspecified	Soil is not fissured
Soil 2 Greenish Marlstone	Rock	Marl	Unspecified	

Soil properties

Name	Wet weight kN/m^3	Dry weight kN/m^3	Failure state	Friction °	Cohesion kPa	Poisson's ratio
Soil 1 Silty Clay	20.1	20.1	Peak	33.0	5.0	0.30
Soil 2 Greenish Marlstone	22.1	22.1	Peak	40.0	5.0	0.30

Soil properties (undrained)

Name	Strength kPa	Strength increase kN/m^3	From depth m
Soil 1 Silty Clay	20.0	0.0	0.00

Layers

Name	Type	Thickness (m)	Soil	Dip (°)	OCR	Tension crack	
Layer 1 Clay	Drained	6.00	Soil 1 Silty Clay	0.0	1.0	Wet	Not rigid
Layer 2 Greenish Marlstone	Drained	35.00	Soil 2 Greenish Marlstone	0.0	1.0	Wet	Not rigid

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Boreholes

Name	Depth (m)	Contains layers:
Borehole 1	41	Layer 1 Clay; Layer 2 Greenish Marlstone;
Borehole 4	41	Layer 1 Clay; Layer 2 Greenish Marlstone;
Borehole 6	41	Layer 1 Clay; Layer 2 Greenish Marlstone;
Borehole 8	41	Layer 1 Clay; Layer 2 Greenish Marlstone;

Water Tables

Name	Type	Depth (m)	Gradient (kN/m^3)	Other Properties
Water Table 1	Hydrostatic	5.90	9.81	Hydraulically connected to overlying water

Retaining Walls

Name	Type	Depth of toe m	Upstand m	Material	Density kg/m^3	E GPa
Wall 1	Contiguous Pile	15.00	0.00	Concrete	2400	20.0

Retaining Wall sections

Name	Section	Sectional area cm^2/m	Moment of inertia cm^4/m	Section modulus cm^3/m
Wall 1	Diameter = 0.8 m Spacing = 0.85 m	5914	2365434	59136

Surcharges

Name	Type	Depth (m)	Magnitude			Other Properties
Surcharge 1	Uniform	0.00	85.0kPa	V	U	Load type = Custom Loading

Design Standard

Type = British Standard 8002
Earth pressure coefficients
  Type = Kerisel & Absi
Tension crack limited to the retained height
Cantilever toe-in = 20%

Equilibrium calculated at the minimum safe embedment (with designated safety factors)

Unfavourable
  Permanent (G) = 1.00
  Variable (Q) = 1.00
  Accidental (A) = 1.00
Favourable
  Permanent (G) = 1.00
  Variable (Q) = 1.00
  Accidental (A) = 1.00
Minimum surcharge = 10 kPa

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Design Standard [Continued]

On shearing resistance = 1.20
On effective cohesion = 1.20
On undrained strength = 1.50

On effective earth pressures = 1.00
On total earth pressures = 1.00
Safety factor on resistance applied via: Gross passive pressures
Minimum active pressure = 0.00 kN/m^3

Unplanned excavation = 10% of clear height, but minimum of 0.5m
Softened formation = 0 m

On bending moments = 1.00
On shear forces = 1.00
On prop forces
  Short-term = 1.00/1.00
  Long-term = 1/1

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Job No		Revision		Page No	4
Engineer		Date	5/2/2015	Checked	
Document: D:\NiC MJU PROJ\241 KUDONIA TOWER\CONTIGOUS PILE\ALONG EXISTING.RWD				ReWaRD 2.5 Service Release 9	
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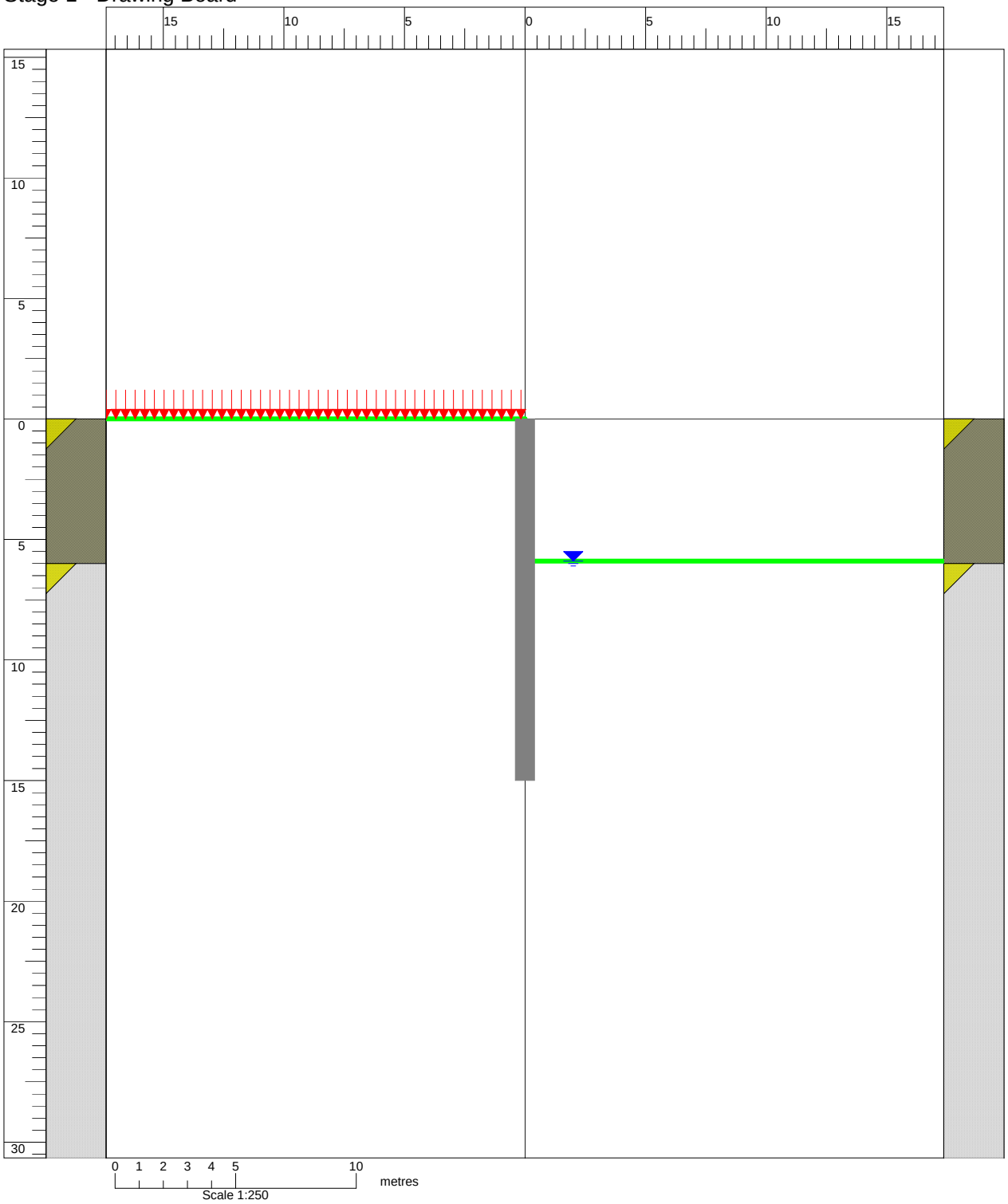
Stage 1 - Drawing Board



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Job No		Revision		Page No	5
Engineer		Date	5/2/2015	Checked	
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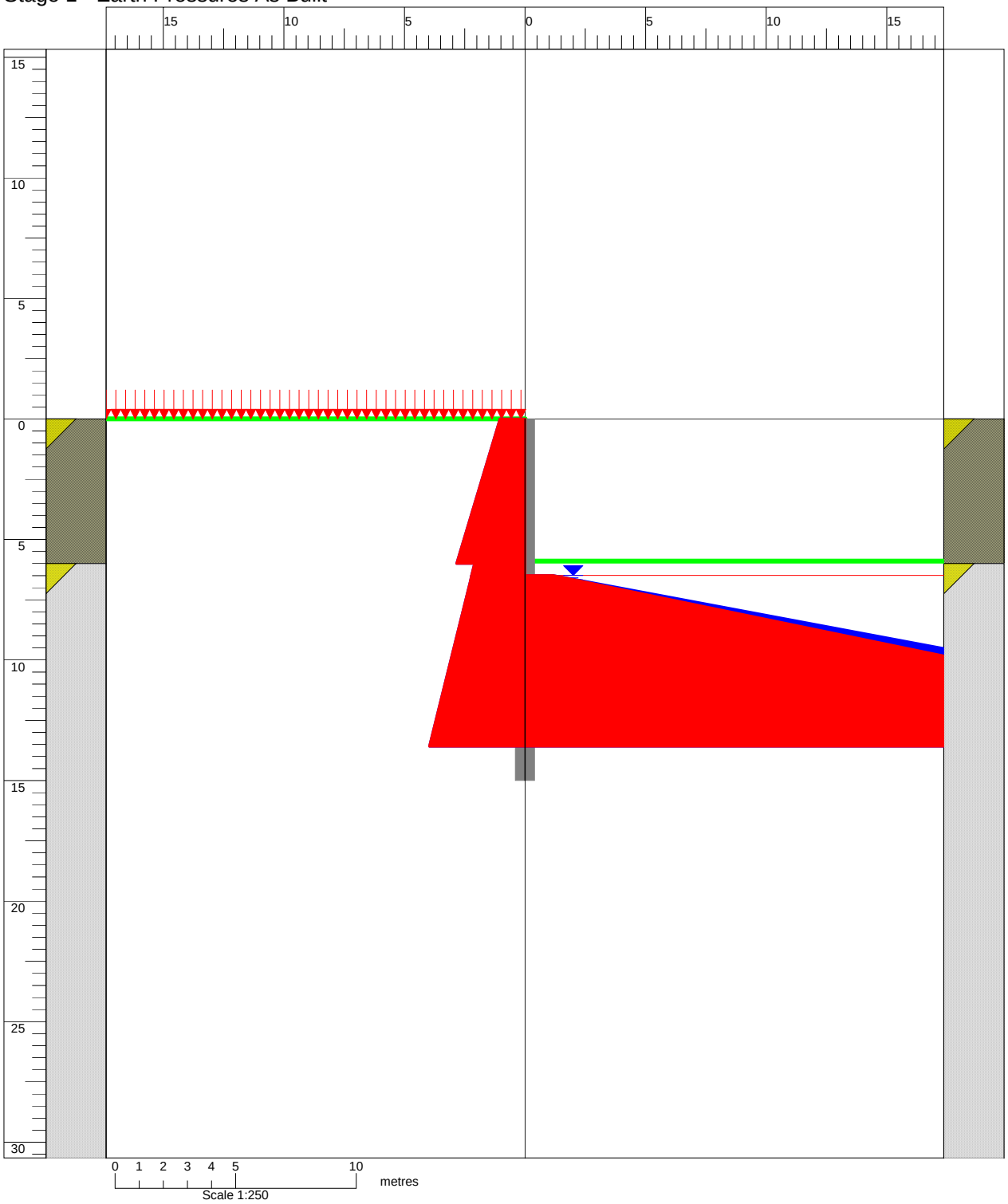
Stage 1 - Earth Pressures As Built



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Job No		Revision		Page No	6
Engineer		Date	5/2/2015	Checked	
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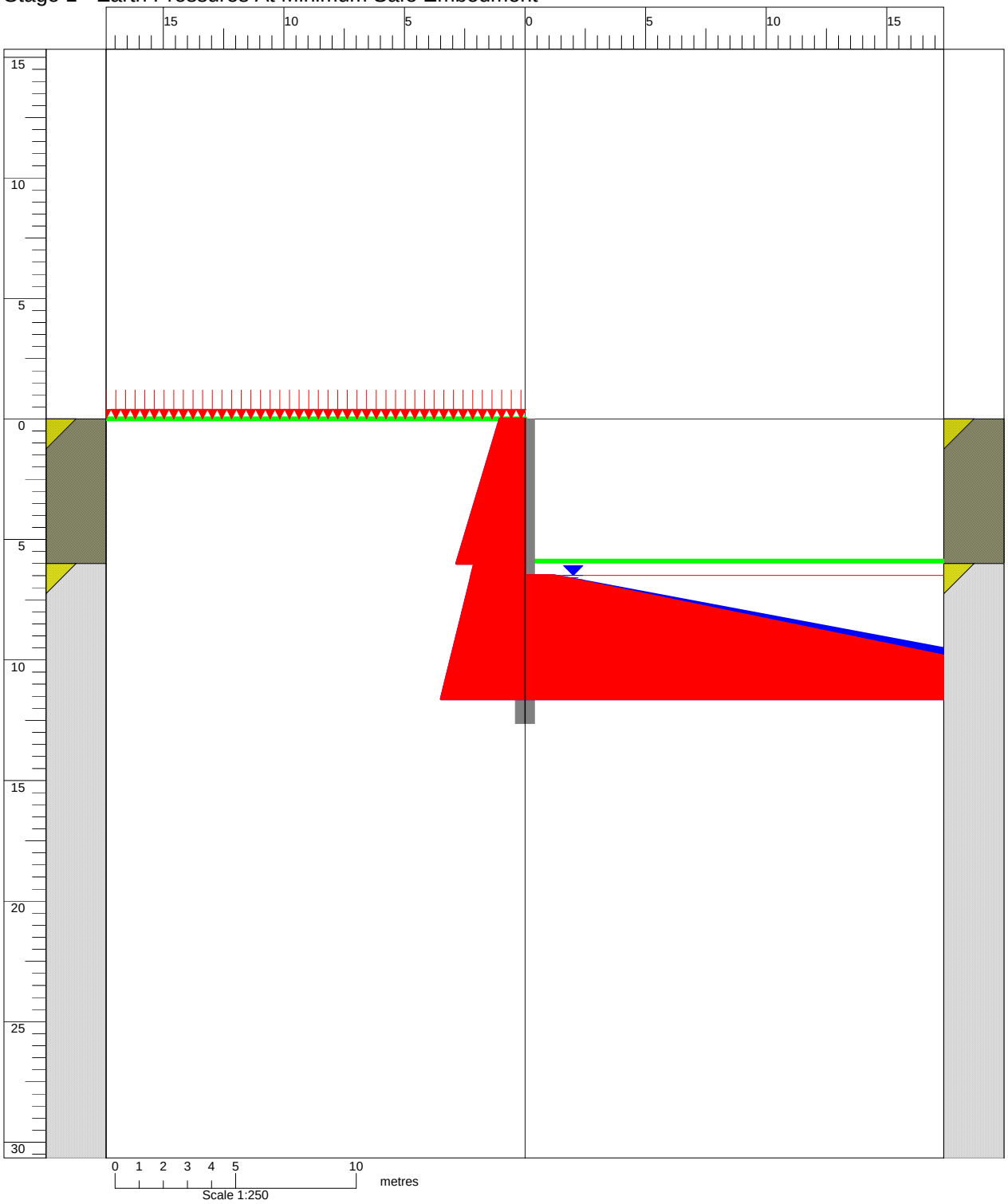
Stage 1 - Earth Pressures At Minimum Safe Embedment



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Job No		Revision		Page No	7
Engineer		Date	5/2/2015	Checked	
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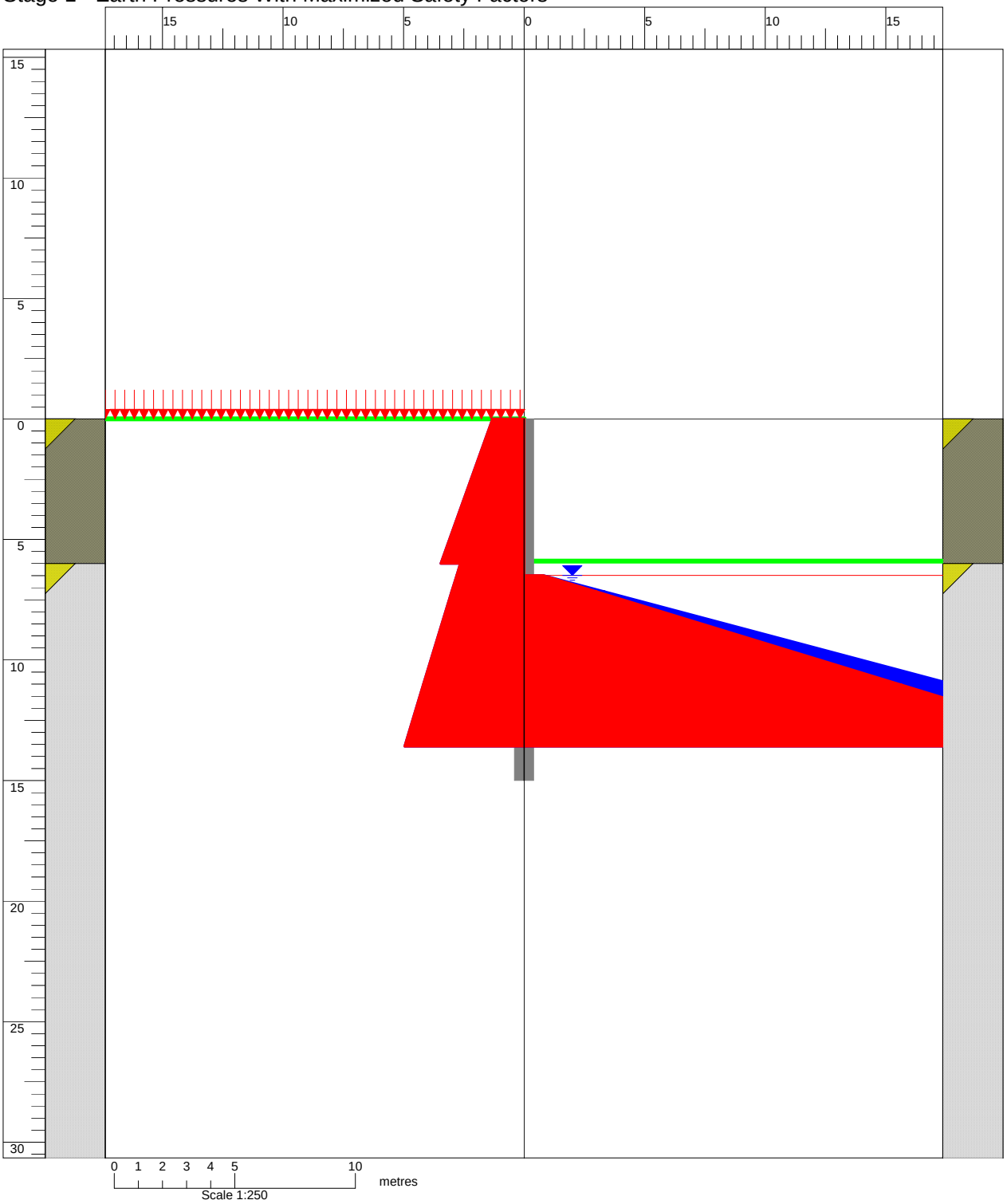
Stage 1 - Earth Pressures With Maximized Safety Factors



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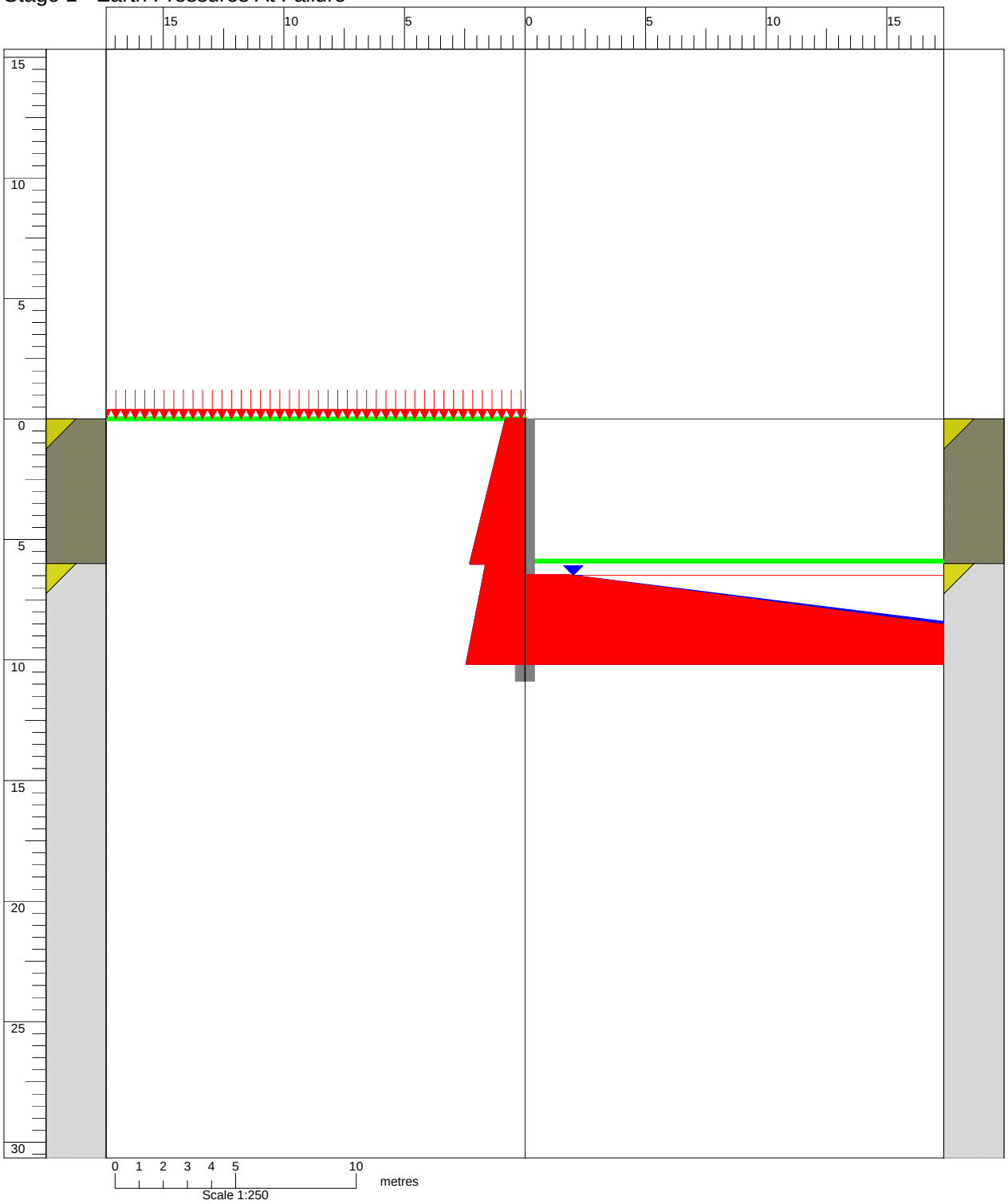
Stage 1 - Earth Pressures At Failure



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Job No		Revision		Page No	9
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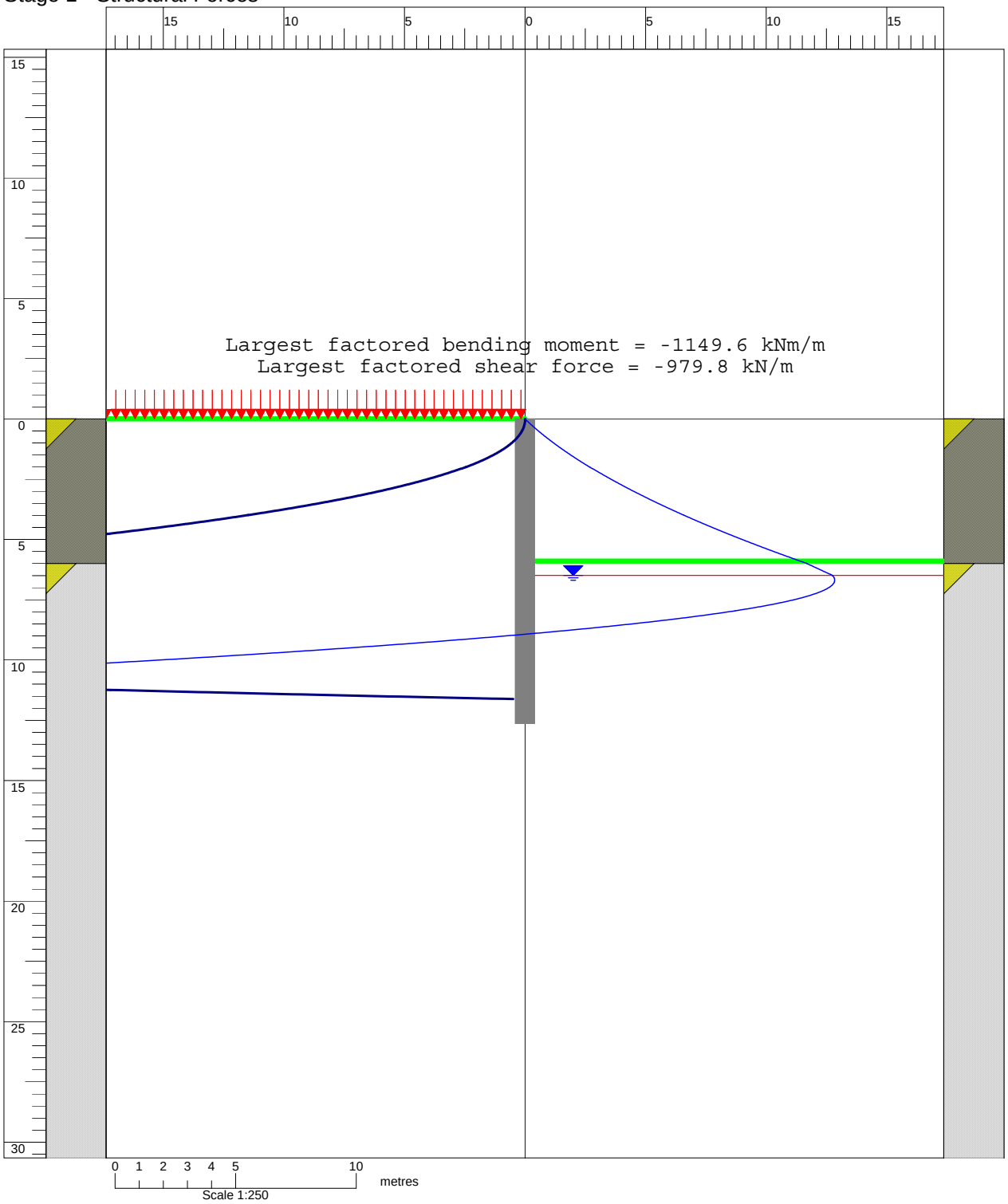
Stage 1 - Structural Forces



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Job No		Revision		Page No	10
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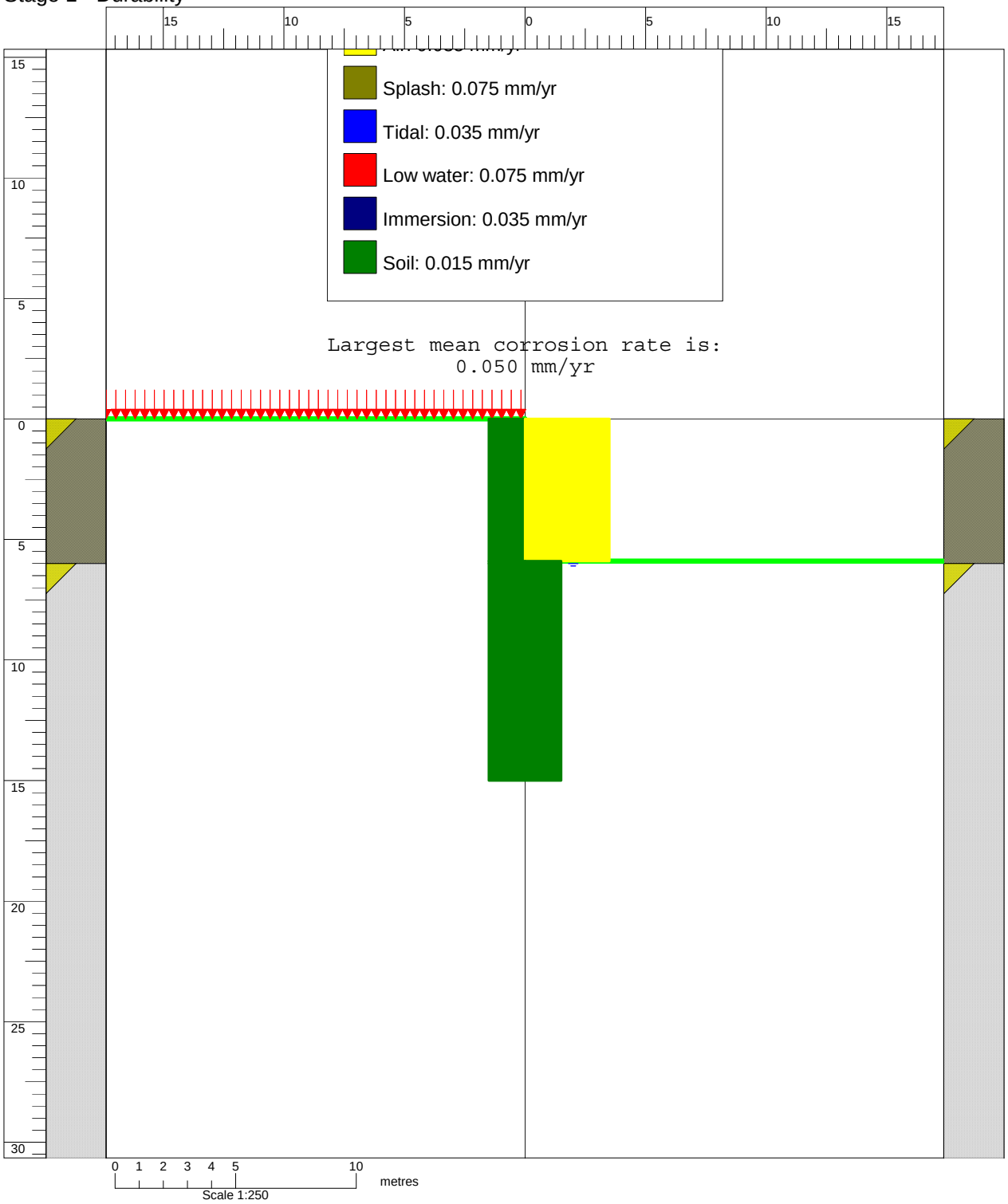
Stage 1 - Durability



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Stage 1 - Earth Pressures As Built

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa	kPa	kPa	kPa	kPa	kPa
	Retained	Retained	Retained	Excavated	Excavated	Excavated
0.00	20.88	0.00	20.88	0.00	0.00	0.00
6.00	56.99	0.00	56.99	0.00	0.00	0.00
6.00	42.03	0.00	42.03	0.00	0.00	0.00
6.49	44.44	0.00	44.44	0.00	0.00	0.00
6.49	44.44	0.00	44.44	23.45	0.00	23.45
6.72	45.57	0.00	45.57	45.57	2.23	47.80
6.72	45.57	0.00	45.57	45.57	2.23	47.80
11.03	66.85	0.00	66.85	464.47	44.55	509.02
11.03	66.85	0.00	66.85	464.47	44.55	509.02
13.58	79.42	0.00	79.42	711.88	69.55	781.43

Stage 1 - Earth Pressures At Minimum Safe Embedment

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa	kPa	kPa	kPa	kPa	kPa
	Retained	Retained	Retained	Excavated	Excavated	Excavated
0.00	20.88	0.00	20.88	0.00	0.00	0.00
6.00	56.99	0.00	56.99	0.00	0.00	0.00
6.00	42.03	0.00	42.03	0.00	0.00	0.00
6.49	44.44	0.00	44.44	0.00	0.00	0.00
6.49	44.44	0.00	44.44	23.45	0.00	23.45
6.72	45.57	0.00	45.57	45.57	2.23	47.80
6.72	45.57	0.00	45.57	45.57	2.23	47.80
11.03	66.85	0.00	66.85	464.47	44.55	509.02
11.03	66.85	0.00	66.85	464.47	44.55	509.02
11.62	69.76	0.00	69.76	521.60	50.32	571.93

Stage 1 - Earth Pressures With Maximized Safety Factors

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa	kPa	kPa	kPa	kPa	kPa
	Retained	Retained	Retained	Excavated	Excavated	Excavated
0.00	26.25	0.00	26.25	0.00	0.00	0.00
6.00	69.37	0.00	69.37	0.00	0.00	0.00
6.00	53.14	0.00	53.14	0.00	0.00	0.00
6.49	56.13	0.00	56.13	0.00	0.00	0.00
6.49	56.13	0.00	56.13	16.00	0.00	16.00
7.17	60.25	0.00	60.25	60.25	6.63	66.88
7.17	60.25	0.00	60.25	60.25	6.63	66.88
11.03	83.81	0.00	83.81	313.35	44.55	357.90
11.03	83.81	0.00	83.81	313.35	44.55	357.90
13.58	99.34	0.00	99.34	480.17	69.55	549.71

Stage 1 - Earth Pressures At Failure

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa	kPa	kPa	kPa	kPa	kPa
	Retained	Retained	Retained	Excavated	Excavated	Excavated
0.00	15.91	0.00	15.91	0.00	0.00	0.00

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Stage 1 - Earth Pressures At Failure [Continued]

Depth	EarthPr	WaterPr	TotalPr	EarthPr	WaterPr	TotalPr
m	kPa	kPa	kPa	kPa	kPa	kPa
	Retained	Retained	Retained	Excavated	Excavated	Excavated
6.00	45.51	0.00	45.51	0.00	0.00	0.00
6.00	32.20	0.00	32.20	0.00	0.00	0.00
6.49	34.12	0.00	34.12	0.00	0.00	0.00
6.49	34.12	0.00	34.12	35.09	0.00	35.09
10.15	48.44	0.00	48.44	588.29	35.93	624.22

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Stage 1 - Required Embedment As Built
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 6.49 m
Depth of toe = 15.00 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.20
    On effective cohesion = 1.20
    On undrained strength = 1.50
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = 10% of clear height, but minimum of 0.5m
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
Moments
  Overturning = 3930 kNm/m
  Restoring = 6943 kNm/m
  Out-of-balance = -3013 kNm/m
  Restoring/Overturning = 177 %
Reaction at wall toe = -2159.9 kN/m

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Stage 1 - Required Embedment At Minimum Safe Embedment
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 6.49 m
Depth of toe = 12.65 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.20
    On effective cohesion = 1.20
    On undrained strength = 1.50
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = 10% of clear height, but minimum of 0.5m
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
Moments
  Overturning = 2716 kNm/m
  Restoring = 2716 kNm/m
  Out-of-balance = 0 kNm/m
  Restoring/Overturning = 100 %
  The wall is in equilibrium
Reaction at wall toe = -979.8 kN/m

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Stage 1 - Required Embedment With Maximized Safety Factors
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 6.49 m
Depth of toe = 15.00 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.44
    On effective cohesion = 1.44
    On undrained strength = 2.11
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = 10% of clear height, but minimum of 0.5m
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
  Safety reserve = 2.22
Moments
  Overturning = 4876 kNm/m
  Restoring = 4876 kNm/m
  Out-of-balance = 0 kNm/m
  Restoring/Overturning = 100 %
  The wall is in equilibrium
Reaction at wall toe = -1141.0 kN/m

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Stage 1 - Required Embedment At Failure
Results of earth pressure calculation

Retaining Wall
  Name = Prototype: Wall 1
  Retained height = 6.49 m
Depth of toe = 10.89 m
Partial factors
  Factors on actions
    Unfavourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Favourable
      Permanent (G) = 1.00
      Variable (Q) = 1.00
      Accidental (A) = 1.00
    Minimum surcharge = 10 kPa
  Factors on material properties
    On shearing resistance = 1.00
    On effective cohesion = 1.00
    On undrained strength = 1.00
  Factors on resistance
    On effective earth pressures = 1.00
    On total earth pressures = 1.00
    Safety factor on resistance applied via: Gross passive pressures
    Minimum active pressure = 0.00 kN/m^3
  Safety margins on geometry
    Unplanned excavation = None
    Softened formation = 0 m
  Factors on structural forces
    On bending moments = 1.00
    On shear forces = 1.00
    On prop forces
      Short-term = 1.00/1.00
      Long-term = 1/1
Moments
  Overturning = 1554 kNm/m
  Restoring = 1554 kNm/m
  Out-of-balance = 0 kNm/m
  Restoring/Overturning = 100 %
  The wall is in equilibrium
Reaction at wall toe = -856.2 kN/m

Stage 1: Structural Forces

Depth (m)	Bending Moment (kNm/m)	Shear Force (kN/m)	Prop Force (kN/m)	Notes
8.95	-1149.6	-2.0	See above	Maximum bending moment
11.62	-9.8	-979.8	See above	Maximum shear force

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Stage 1: Messages
Validating the construction stage

Calculating earth pressures as built (for the specified wall length and safety factors)
Calculating earth pressures at the minimum safe embedment (with the specified safety factors)
Calculating earth pressures with maximized safety factors (for the specified wall length)
Calculating earth pressures at failure (with safety factors set to 1)
Calculating structural forces
Calculating durability

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DESIGN OF PILE SECTION
(along Neighbor Side)

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Project Information:

Project = Project1

Title = Job1

Client = Client1

Organization = ACECOMS

Engineer = Engineer1

Design Criteria

Design Code = ACI-318-95, Design Method = USD

Concrete Stress Block = ACI-Whitney Rectangular

Design Procedure

The program performs the calculations in accordance with the ACI-318-95 Code for Structural Concrete

Procedure for Cross-section Design

1. Compute the resultant applied moment as Muxy = Sqr(Mux^2 + Muy^2).

2. Select a trial reinforcement ratio, starting with minimum ratio of 1%, and distributing rebars along the perimeter.

3. Compute the maximum axial capacity in compression, Pno and tension Pnt, and check against applied loads.

4. Locate the neutral axis angle and its depth to satisfy applied load Pu and the resultant moment Muxy. This is done by trial and error procedure. The internal stress resultants for each angle and depth of neutral axis angle are computed (see procedure below) and then compared with applied loads. This

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process is repeated until close agreement is found.

5. If capacity in step 3 or 4 is found to be not enough, then reinforcement is increased until maximum allowable ratio (8%) is reached.

6. Cross-section is declared as inadequate if it requires more than maximum allowable steel ratio

Procedure for Computing Stress-Resultants

1. The stress resultants are computed by using the first principles approach.

2. Strain in concrete and steel is determined depending upon the direction and depth of neutral axis.

3. Concrete force is computed by integrating the stress field (rectangular or parabolic stress curve) over the cross-section using the Green's Theorem.

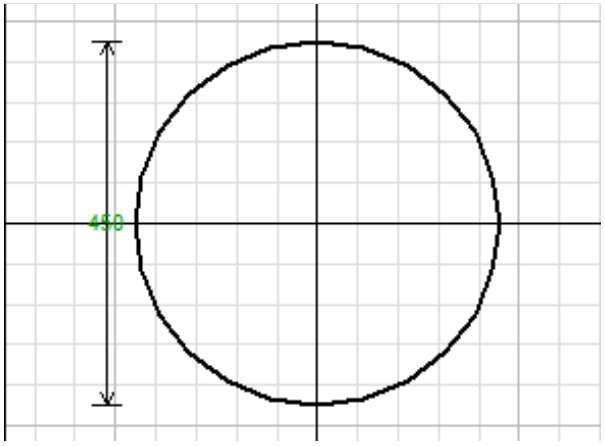
4. Steel stress is computed by summation of force in each bar, corresponding to stress at that location.

5. The computed stress resultants are reduced by appropriate capaity reduction factors for the Ultimate Strength Design (or Worksing Strength Design) method.

RC Column Section

Column C-1 : Sect0001 : Total

Column C-1 : Sect0001 : Load1



Column Cross-section

Material

Rebar Fy = 414.0 N/mm^2

Concrete fc' = 20.7 N/mm^2

Clear Cover = 38 mm

Calculations

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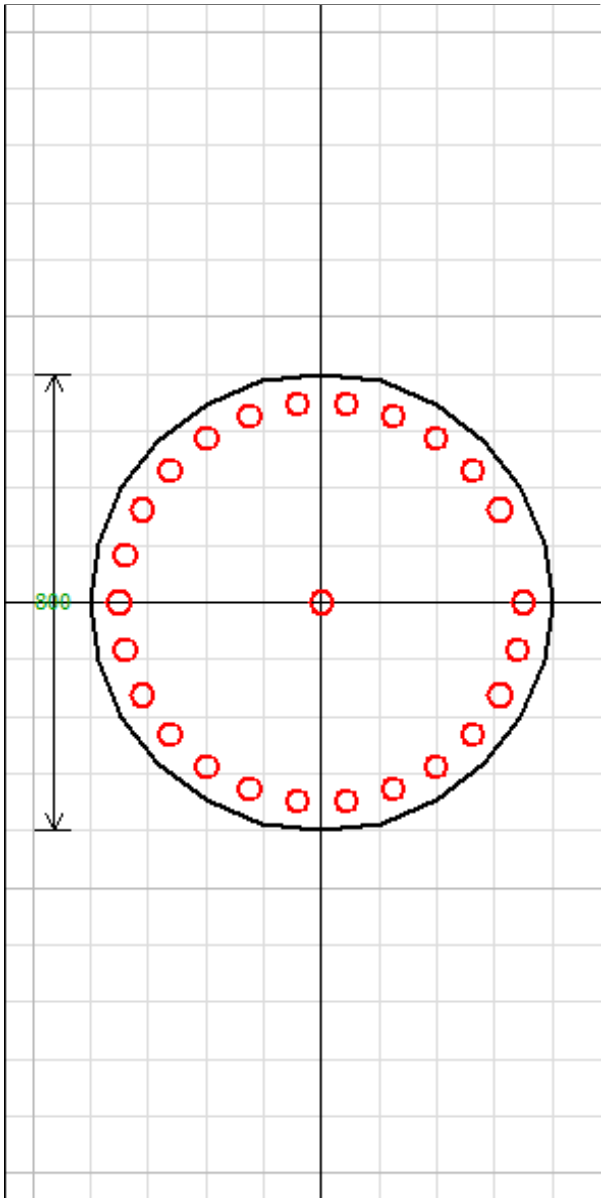
RC Column Section

Column C-1 : Sect0001 : Total

Column C-1 : Sect0001 : Load1



Column Cross-section

Material

Rebar Fy = 414.0 N/mm^2

Concrete fc' = 35.0 N/mm^2

Clear Cover = 50 mm

Calculations

Designing Column Section:

Applied Load, Pu = 0.0 kN

Applied Moment, Mux = 3,090.0 kN

Applied Moment, Muy = 0.0 kN

Applied Resultant Moment, Muxy = 3,090.0 kN-m

Applied Moment Angle = 0.00

Solution found

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Rebars = 26-d 40 (Ast = 33,046 mm^2 , ratio = 6.57%)

Axial Compresion Capacity, ØPno = 15,485.1 kN

Axial Tension Capacity, ØPnt = -9,576.7 kN

Resultant Moment Capacity, ØMnxy = 3,143.4 kN-m

Concrete volume = 0.50 m^3

Main Steel weight = 256.36 Kg/m

Steel weight/ volume = 510.01 Kgm^3

Transverse Bars: Ties, d 6 @ 288 mm

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DESIGN OF PILE SECTION
(along Existing side)

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Project	Proposed 3B+G+16+R KURDONIA TOWER	Made by	Date	Page
Client	KURDONIA TOWER			
Location	IRAQ	Checked	Revision	Job No

The Concrete Centre

COLUMN CHART FOR CIRCULAR COLUMNS TO BS 8110:2005

Originated from 'RCC54.xls' v3.1 on CD © 2006 TCC

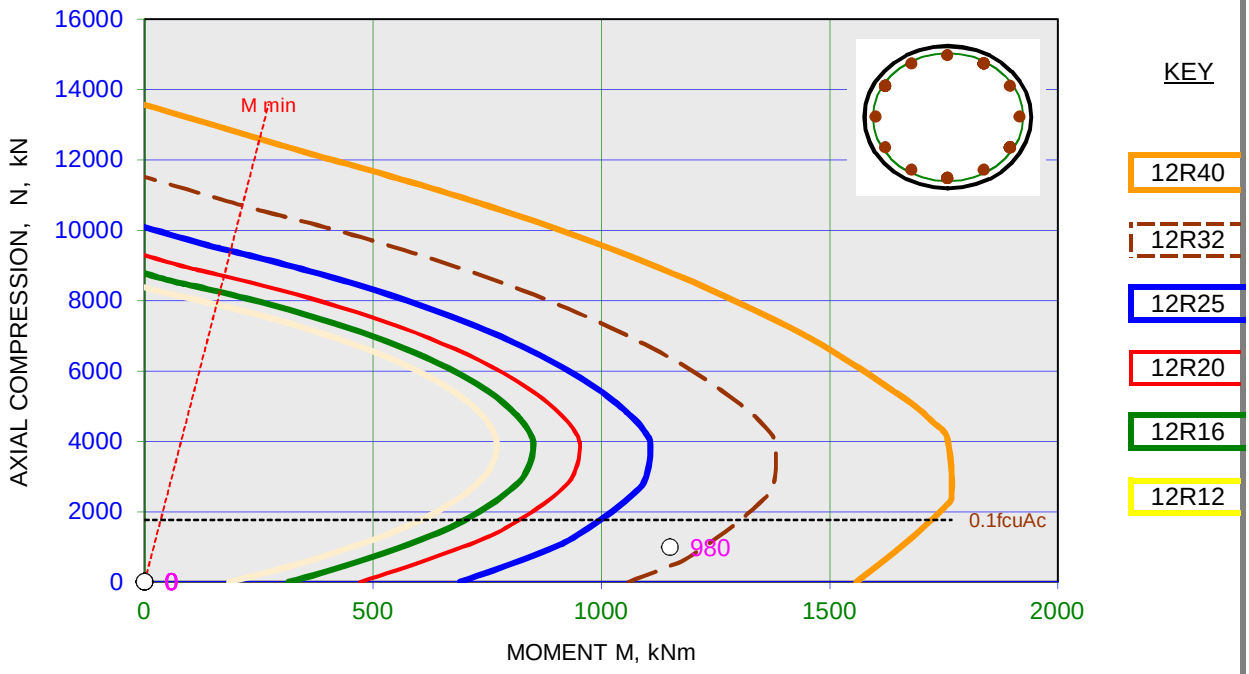
MATERIALS

fcu	35	N/mm²	γm	1.05	steel	Cover	40	mm
fy	414	N/mm²	γm	1.5	concrete	h agg	20	mm
steel class								
SECTION	800	mm	with	12	bars			

BAR ARRANGEMENTS

Type	Bar Ø	Asc %	Link Ø	Bar c/c	Nbal (kN)	Nuz (kN)	Checks
R	40	3.00	10	172.8	2718	13568	ok
R	32	1.92	8	175.9	3404	11513	ok
R	25	1.17	8	177.8	3741	10089	ok
R	20	0.75	6	180.1	3815	9286	ok
R	16	0.48	6	181.2	3887	8772	ok
R	12	0.00	6	182.2			ok

N:M INTERACTION CHART for 800 diameter column, grade C35, 40 mm cover and 12 bars



LOADCASES

Load case	N (kN)	M (kNm)		Load case	N (kN)	M (kNm)	
section 1	980	1150	12 R32				No Fit
			No Fit				No Fit
			No Fit				No Fit

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STRUCTURAL DRAWINGS

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GENERAL STRUCTURAL NORES:

A. GENERAL

A1. THE STRUCTURAL DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL, ELECTRICAL, MECHANICAL AND OTHER STRUCTURAL DRAWING IN PARTICULAR, CUTOUTS IN SLAB AND WALLS FOR BUILDING SERVICES SHALL BE READ IN CONJUNCTION WITH THE ELECTRICAL AND MECHANICAL DRAWINGS.

A2. FOR MAIN SETTING LINES AND LEVELS, REFER TO THE ARCHITECTURAL DRAWINGS. ALL DIMENSIONS MUST BE VERIFIED ON SITE AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE PORTION OF WORK INVOLVED.

A3. ABBREVIATIONS:-

EF	=	EACH FACE
B (B1 & B2)	=	OUTER & INNER BOTTOM BARS
T (T1 & T2)	=	OUTER & INNER TOP BARS
BW (EW)	=	BOTH WAYS (EACH WAY)
	=	COLUMN CONTINUED
	=	COLUMN UNDER
	=	COLUMN TRANSFERRED OR PLANTED AT THIS LEVEL. (NO COLUMN UNDER)
	=	OPENING IN SLAB OR WALL
EJ	=	EXPANSION JOINT
C/C	=	CENTRE TO CENTRE.

A4. DRAWINGS:-

THE CONTRACTOR SHALL SUBMIT WORKSHOP DRAWINGS SHOWING ALL REQUIREMENTS FOR SERVICES, PENETRATIONS ETC. FOR THE ENGINEERS APPROVAL. MODIFICATION NECESSITATED BY DETAILED PLANT INFORMATION SHALL BE SUBJECT TO THE ENGINEERS APPROVAL.

B. EARTHWORKS AND FOUNDATIONS

B1. GRANULAR FILL UNDER FOUNDATIONS AND SLAB CAST-ON-GROUND SHALL BE SELECTED GRANULAR MATERIAL LAID IN 200 mm LAYERS AND MECHANICALLY COMPACTED TO AT LEAST 95% OF ITS MAXIMUM DRY DENSITY.

B2. THE BACK FILLING MATERIAL SHALL BE SELECTED GRANULAR MATERIAL COMPACTED AT LEAST 95% OF ITS MAXIMUM DRY DENSITY AND IN ACCORDANCE WITH THE SPECIFICATIONS.

B3. TESTS.

C. REINFORCED CONCRETE

C1. CONCRETE (BASEMENT TO TYPICAL FLOOR)

ALL CONCRETE WORK SHALL CONFIRM TO THE BRITISH STANDARD BS 8110 :1997.
EXCEPT WHERE OTHERWISE NOTED, CONCRETE SHALL BE OF GRADE M35: e.IT SHALL HAVE A CHARACTERISTIC STRENGTH, DETERMINED FROM TEST CUBES AT 28 DAYS, OF 35N/mm2 AND HAVE NOMINAL MAXIMUM AGGREGATE SIZE OF 20mm TO BS 882. CONCRETE MIX DESIGN SHALL COMPLY WITH BS 5328.
FOR TESTING, CERTIFICATION, PLACING, COMPACTING, CURING AND PROTECTION OF CONCRETE REFERENCE SHALL BE MADE TO THE GENERAL PROJECT SPECIFICATION.
CONTRACTOR SHALL SUBMIT THE DESIGN MIX WITH ALL ADDITIVES & PLASTICIZERS REQUIRED FOR IMPROVING THE WORKABILITY OF CONCRETE FOR THE APPROVAL OF THE ENGINEER.

C2. CONCRETE (SUB STRUCTURE)

CONCRETE FOR PILES, RAFT, R.C.C.WALL SHALL HAVE A CHARACTERISTIC STRENGTH, DETERMINED FROM CUBES AT 28 DAYS, OF 35 N/mm2. APPROVED DURABLE CONCRETE TO BE USED FOR THE PILES AND PILECAPS.
TEMPRATURE MONITORING IS REQUIRED AT 5 LOCATIONS IN THE RAFT FOR ATLEAST 7 DAYS.
THE PEAK TEMPRATURE TO BE 68°C. MAXIMUM DIFFRENTIAL TEMPRATURE TO BE 20° C

DESIGN LOADS

1) PARKING FLOOR SLAB (BASEMENTS)

DEAD LOAD: SELF WEIGHT
FF = 1 KN/m²
LIVE LOAD: 5 KN/m²

2) GROUND FLOOR SLAB

DEAD LOAD: SELFWEIGHT
FF = 2 KN/m²
FW = 4 KN/m²
LIVE LOAD: 3 KN/m²

3) TYP. FLOOR(1st-13th FLR.)

DEAD LOAD: SELFWEIGHT
FF = 2 KN/m²
FW = 4.0 KN/m²
LIVE LOAD: 3 KN/m²

4) ROOFDECK

DEAD LOAD: SELFWEIGHT
FF = 4.0 KN/m²
LIVE LOAD: 3 KN/m²

SEISMIC ZONE - ZONE 2B as/UBC 97
SOIL PROFILE TYPE SB.
WIND LOAD: as per ASCE

C4. CONCRETE (GRADES)
(PROPOSED)

THE CHARACTERISTIC CUBE STRENGTH ARE FOR CONCRETE WHICH HAVE BEEN CURED AT TEMPERATURE OF 20± 1 C AND ARE THE VALUMES BELOW WHICH NO MORE THAN 5% OF THE TEST RESULTS MAY FALL.
THE 7 DAY STRENGTHS SHALL BE USE ONLY AS A GUIDE TABLE OF MIXES

conc. class	max. size agg mm	min. cty. of cement	GGBS/ micro silica	w/c ratio max.	7 days N/mm2	28 days N/mm2
35	20	400	——	0.4	34	35

SUPPLIER SHOULD REDESIGN THE MIX AND SUBMIT FOR APPROVAL

TABLE
GENERAL REQUIREMENTS OF CONCRETE

NO	TESTS	TEST METHOD	SPECIFICATION LIMIT
1.	temperature (at placement)	ASTM 1064	26 °C max.
2.	slump mm (at placement)	BS 1881; pat 102	for all grades: 150 ± 25 mm OR AS ADVISED BY THE SUPPLIER
3.	water permeability	DIN 1048	12mm max.
4.	rapid chloride penetration (RCP)	ASTM C1202	1500 coul. max.
5.	water absorption	BS 1881; part 122	1.5%
6.	chlorides by weight of cementations material	BS 1881; part 124	.15% max.
7.	sulphates (503) by weight of cementations material	BS 1881; part 124	4.0% max.

NOTE - 1) TEMPERATURE MONITORING TO BE DONE IN THE RAFT.
2) TEMPERATURE TO BE CONTROLLED FOR A MAXIMUM DIFFERENTIAL OF 15° C. AND A PEAK TEMPERATURE OF 68° C. FOR RAFT
3) TEMPERATURE MAINTAINING IS REQUIRED ON A TEST PRISM ALSO BEFORE CASTING RAFT

C5. USE OF CONCRETE ADDITIVES

CONCRETE ADDITIVES APPROVED BY THE ENGINEER SHALL BE USED TO IMPROVE CONSISTENCY, WORKABILITY, QUALITY AND STRENGTH OF CONCRETE

HIGH RANGE WATER REDUCING ADMIXTURE SHALL BE NAPHTHA LENE SULPHONATE POLYMER BASED MATERIAL LIKE CONPLAST SP 2000, OR CONPLAST SP 432 OR EQUAL APPROVED BY THE ENGINEER SHALL BE USED
WATER REDUCING AND RETARDING ADMIXTURE SHALL CONFIRM TO BS EN-934-2 OR ASTM AT 494 TYPE FOR G

C6. CONCRETE FORM WORK

MINIMUM PERIODS IN DAYS FOR STRIKING OTHER FORM WORK SHOULD BE IN ACCORDANCE WITH THE FOLLOWING TABLE

SLAB (PROPS LEFT UNDER)	7
BEAM SOFFITS (PROPS LEFT UNDER)	10
PROPS TO SLABS	16
PROPS TO BEAMS	21
VERTICAL SURFACES FOR WALLS & COLUMNS	1

C7. CURING

a. HORIZONTAL SURFACES

1) POLYETHENE SHEET MUST BE PLACED IMMEDIATELY AFTER FINISHING

2) AFTER FINAL SET HAS TAKEN PLACE, POLYETHENE SHEET SHALL BE REPLACED BY WET HESSION

3) AFTER 7 DAY HESSAIN & POLYETHENETO BE REMOVED AND ON APPROVED ALUMINIZED OR WHITE RESIGN -BASED TROPICAL CURING COMPOUND APPLIED, THE HESSAIN & POLYETHENE SHALL REMAIN FOR FURTHER 7 DAYS (ALTERNATIVELY)

b. VERTICAL SURFACES

1) POLYTHENE OR WET HESSAIN SHALL BE SECURED TO THE SURFACES IMMEDIATELY AFTER REMOVAL OF THE FORM WORK

2) AFTER 7 DAYS THE HESSAIN & POLYETHENE SHALL BE REMOVED AND ON APPROVED ALUMINIZED OR WHITE RESIN BASED TROPICAL CURING COMPOUND APPLIED

C8. REINFORCEMENT

REINFORCEMENT SHALL BE DEFORMED TYPE 2 AND MARKED TO INDICATE HIGH YIELD STRENGTH OF 414 N/mm2 TO BS 4449 .

THE CONTRACTOR SHALL PROVIDE DETAILED AND BAR BENDING SCHEDULES FOR THE ENGINEER'S APPROVAL.
CHAIRS, SPACERS ETC. SHALL PROVIDE AS NECESSARY, TO THE APPROVAL OF THE ENGINEER ON SITE.

LAPS TO BE MINIMUM 50 X BAR DIAMETER UNLESS NOTED OTHERWISE.

REINFORCEMENT DETAILS SHOWN ARE INDICATIVE FOR THE PREPARATION OF THE CONTRACTORS SHOP DRAWING.

ALL CONDUITS SHALL RUN ABOVE BOTTOM REINFORCEMENT AND BELOW TOP REINFORCEMENT OF SLAB,
INSIDE BEAM AND COLUMN LINK AND BETWEEN WALL EXTERNAL REINFORCEMENT LAYERS.
MECHANICAL COUPLERS TO BE USED FOR 32 mm AND 25 mm DIA BARS.(PARALLEL THREADED, WITH BAR BREAK GUARANTEE)

SPECIFICATION FOR MECHANICAL COUPLER :-

1) ALL MECHANICAL SPLICES SHALL DEVELOP THE FULL TENSILE STRENGTH OF THE REINFORCEMENT.

2) TENSILE FAILURE MUST OCCUR IN THE BAR AWAY FROM THE JOINT.

3) NO REDUCTION OF THE NOMINAL CROSS SECTION AREA OF THE PARENT BAR.

4) COUPLERS MUST BE MARKED TO ALLOW FULL TRACE ABILITY OF THE MATERIAL.

5) COUPLER SYSTEM BASED ON THE PARALLEL METRIC THREAD IS PREFERRED TO SIMPLIFY INSTALLATION ON SITE AVOIDING THE USAGE OF SPECIAL TORQUE EQUIPMENT.

C9. COVER TO REINFORCEMENT.

COVER TO REINFORCEMENT SHALL BE FOLLOWS UNLESS SHOWN OTHERWISE ON THE DRAWING :-

FOUNDATION	=75mm	
GROUND BEAMS	=40mm INTERNAL	75mm EARTH FACES.
GROUND SLAB	=30mm INTERNAL	75mm EXTERNAL
SUSPENDED SLAB	=20mm INTERNAL	40mm EXTERNAL.
BEAMS, LINTELS & CAPPING BEAMS	=30mm INTERNAL	40mm EXTERNAL
COLUMNS	=35mm INTERNAL	40mm EXTERNAL /60mm EARTH FACES
R.C. WALLS	=30mm INTERNAL	40mm EXTERNAL /60mm EARTH FACES
WATER TANK	=50mm INTERNAL	50mm EXTERNAL

EXTERNAL RELATES TO CONCRETE FACES EXPOSED TO THE EXTERNAL ENVIRONMENT.

C10. JOINT FILLER/SEALANT

JOINTS FILLER SHALL BE FLEXL BY FOSROC OR EQUIVALENT APPROVED. JOINT SEALANT SHALL BE THIOFLEX 600 BY FOSROC OR EQUIVALENT APPROVED. ALL APPLICATIONS ARE TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTION.

D. STRUCTURAL STEEL / SPACE FRAME

D1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE PARAPETS & ARCHITECTURAL FEATURES., AND ANY STRUCTURAL STEEL WORK BY THE SPECIALIZED SUB CONTRACTOR. AND IN ACCORDANCE WITH THE DESIGN LOADS.

THE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

D2. THE SHOP DRAWINGS SPECIFICATION AND METHOD OF STATEMENTS FOR THE STEEL WORKS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

D3. ALL BOLTS SHALL BE GRADE 8.8 TO BS 3692.

D4. THE PROTECTIVE POINT SYSTEM FOR THE STEEL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.

D5 ALL STRUCTURAL STEEL WORK SHALL BE GRADE S275 TO BS EN10025.

D6 UNLESS SHOWN OTHERWISE ON THE DRAWING, ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE FOLLOWING MINIMUM REQUIREMENTS :

I) ALL WELDS SHALL BE AT LEAST 6mm CONTINUOUS FILLET WELDS ALL ROUND.

II) ALL BOLTS SHALL BE AT LEAST M20. WITH A MINIMUM OF 2 BOLTS OER CONNECTION. PURLIN BOLTS TO BE IN ACCORDANCE WITH THE SUPPLIERS RECOMMENDATIONS.

III) ALL GUSSET PLATES SHALL BE AT LEAST 10mm THICK.

IV) ALL CAP PLATES SHALL BE AT LEAST 12 MM THICK

V) ALL BASE PLATES SHALL BE AT LEAST 12mm THICK.

D7 THE STEEL FABRICATOR SHALL BE RESPONSIBLE FOR DESIGN OF CONNECTION IN ACCORDANCE WITH THE FACTORED DESIGN LOADS GIVE ON THE DRAWING. THE CONNECTION DESIGN CALCULATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF FABRICATION.

D8 THE PURLIN SUPPORTING THE CLAD AREAS OF THE ROOF STEEL STRUCTURE SHALL BE COLD FORMED Z TYPE PURLINS SELECTED FROM APPROVED SUPPLIER, AND SHALL BE CAPABLE OF RESISTING THE FOLLOWING UNFACTORED WIND LOADS.
- DOWNWARD PRESSURE =2.0 KN/m2
- UPWNWARD PRESSURE =2.0 KN/m

D9 THE FABRICATION AND ERECTION OF THE STRUCTURAL STEEL WORK SHALL BE SUPERVISED BY QUALIFIED PERSONNEL TO ENSURE THAT ALL DESIGN REQUIREMENTS ARE MET. DETAILS OF ERECTION SEQUENCE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF ERECTION.

E : BLOCKWORK.

E1: BLOCKS SHALL HAVE A MINIMUM CHARACTERISTIC COMPRESSIVE STRENGTH OF 12.5 N/mm2 AT 28 DAYS FOR LOAD BEARING WALLS AND 10 N/mm2 FOR NON-LOAD BEARING PARTITIONS TO BS5628 : PARTS 1, 2 & 3 : 1992. ALL BLOCKS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPALITY REGULATIONS.

E2: BLOCK WALLS BELOW GROUND FLOOR LEVEL SHALL BE CONSTRUCTED WITH SULPHATE RESISTING BLOCK.

E3: THE STRUCTURAL FLOOR PLANS SHOW THE LAYOUT OF LOAD BEARING WALLS ONLY. ALL OTHER BLOCKWORK WALLS ARE TO BE CONSIDERED AS NON-LOAD BEARING PARTITIONS AND SHALL BE CONSTRUCTED AFTER COMPLETION OF THE STRUCTURE. FOR SETTING OUT OF BLOCK WALL REFER TO ARCHITECTURAL DRAWINGS.

E4: LOAD BEARING BLOCK WALLS SHALL BE REINFORCED HORIZONTALLY WITH GALVANIZED EXPANDING METAL LATHS PLACED AT EVERY 5th . COURSE VERTICALLY.

E5: BRACING OF BLOCK WALLS TO BE PROVIDED FOR WALLS EXCEEDING 14m2 AREA

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NOTES:

1. THIS DRAWING IS A COPYRIGHT.
2. DO NOT SCALE THE DRAWING.
3. READ THIS DRAWING IN CONJUCTION WITH RELEVANT ARCHITECTURAL, STRUCTURAL AND SERVICES DRAWINGS SPECIFICATIONS AND CONTRACT DOCUMENTS.

ORIENTATION :

LEGEND :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al-Hindiya Street, Al Jamaia Dist. Baghdad, Iraq
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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

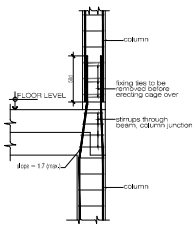
LANDSCAPE CONSULTANT:

SHEET TITLE : GENERAL STRUCTURAL NOTES

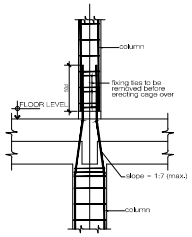
Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

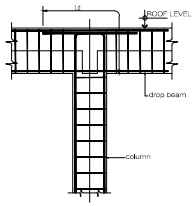
Discipline:	Sheet No.:	Revision:
S	100	



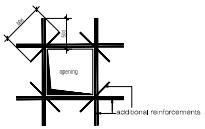
DETAIL OF ECCENTRIC REDUCTION OF COLUMN



DETAIL OF CONCENTRIC REDUCTION OF COLUMN

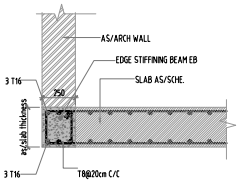


TERMINATION OF COLUMN BARS

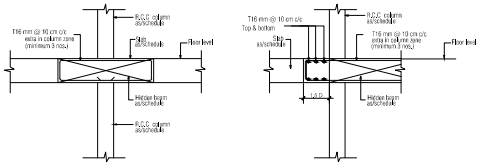


ADDITIONAL REINFORCEMENT AROUND RECTANGULAR OPENING IN SLAB

ADDITIONAL REINFORCEMENT AROUND CIRCULAR OPENING IN SLAB

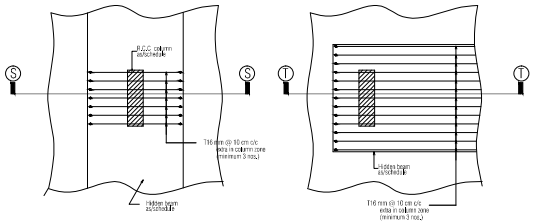


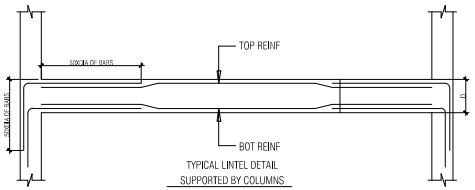
DETAIL OF EDGE STIFFNING BEAM, EB



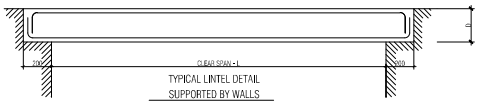
SECTION S - S

SECTION T - T





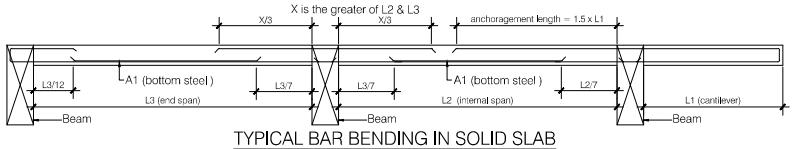
TYPICAL LINTEL DETAIL SUPPORTED BY COLUMNS



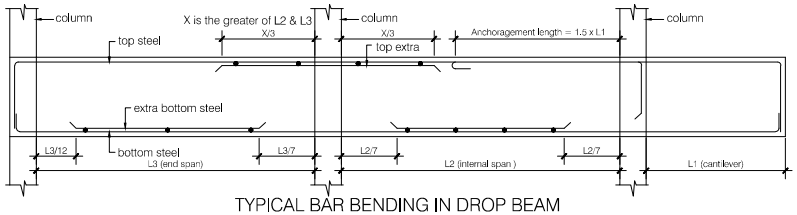
TYPICAL LINTEL DETAIL SUPPORTED BY WALLS

SCHEDULE OF LINTELS

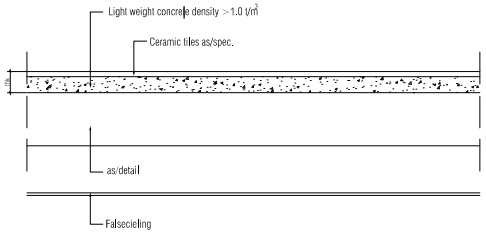
CLEAR SPAN-L IN MM.	DEPTH D IN MM.	W=100		W=150		W=150		LINKS
		REINFORCEMENT						
		TOP	BOT.	TOP	BOT.	TOP		
1000-2000	200	1 T10	1 T10	2 T10	2 T10	2 T10	2 T10	T8@2000
2010-3000	200	1 T10	1 T10	2 T10	2 T10	2 T10	2 T12	T8@2000
3010-4000	300	—	—	2 T10	2 T12	2 T10	2 T12	T8@2000
4010-5000	400	—	—	—	—	2 T12	2 T16	T8@2000
5010-6000	600	—	—	—	—	2 T16	2 T16	T8@2000



TYPICAL BAR BENDING IN SOLID SLAB



TYPICAL BAR BENDING IN DROP BEAM



FLOOR FINISH DETAIL

(total floor finishes should not be more than 100 kg/m²)

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ORIENTATION :

LEGEND :

Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

KORDONIA TOWERS

IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :

MJU Consulting Engineers
Ansaar Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

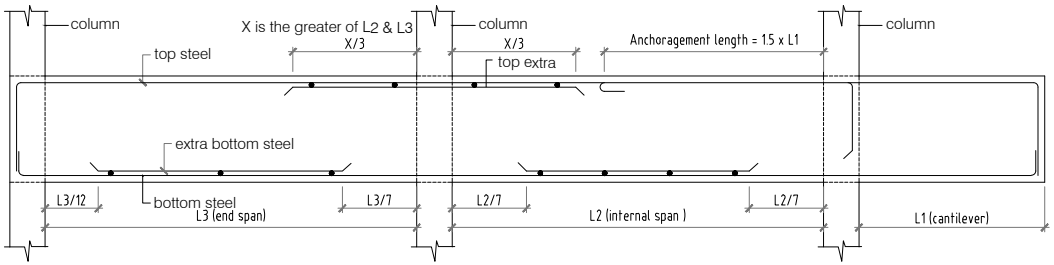
MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

TYPICAL STRUCTURAL DETAILS

AS SHOWN	Drawn: FS	Checked:	Approved:
JUNE, 2015	Project No.: 241		Sheet Size: A1
S	Sheet No.: 101		Revision:



TYPICAL BAR BENDING IN BEAMS

SCHEDULE OF BEAMS

TYPE	SIZE(b x d)	BOTTOM STEEL REINF.		TOP STEEL REINF.			SKIN REINF. EACH FACE	STIRRUPS	REMARKS
		STRAIGHT	@MID-SPAN	STRAIGHT	@cont. SUPP.	@END SUPP.			
B1	35X70	4 T16	——	4 T16	5 T25	——	——	T10@20cm C/C	——
B2	35X70	4 T16	4 T20	4 T16	5 T25	——	——	T10@20cm C/C	——
B3	40X60	4 T20	1 T20	4 T20	5 T25	——	——	2LT10@20cm C/C	——
B4/CB4	40X60	4 T20	6 T25	4 T20	5 T25	——	——	2LT10@20cm C/C	——
B5	60X60	6 T25	9 T25	6 T25	11 T25	——	——	6LT10@15cm C/C	——
B6/CB6	25X50	3 T16	——	3 T16	——	——	——	T8@20cm C/C	——
B7	80X80	8 T32	7 T32	8 T25	——	——	2 T20 E.F.	8LT12@15cm C/C	——
B8	60X80	6 T32	6 T32	6 T20	——	——	2 T20 E.F.	6LT10@20cm C/C	——
B9/CB9	40X60	4 T20	——	4 T20	7 T25	——	——	4LT10@20cm C/C	——
B10	40X60	4 T20	4 T25	4 T20	7 T25	——	——	4LT10@20cm C/C	——
B11	30X70	2 T20	2 T25	2 T20	4 T25	——	——	T8@15cm C/C	——
B12	30X150	2 T20	4 T25	2 T20	4 T25	——	5 T16 E.F.	T10@20cm C/C	——
B13	40X150	6 T25	——	2 T20	——	——	5 T16 E.F.	T10@20cm C/C	——
B14	40X70	4 T25	8 T25	4 T20	8 T25	——	——	4L T10@15cm C/C	——
B15	25X60	2 T25	2 T25	4 T16	——	——	——	T8@20cm C/C	——
B16	40X90	6 T32	3 T32	2 T20	——	——	2 T16 E.F.	4L T10@20cm C/C	——
B17	40X90	4 T20	6 T20	4 T20	6 T25	——	2 T16 E.F.	4L T10@20cm C/C	——
B18	60X90	18 T25	8 T20	8 T20	——	——	2 T20 E.F.	4L T12@20cm C/C	——
B19	40X100	4 T25	5 T32	4 T25	5 T32	——	3 T16 E.F.	4L T10@20cm C/C	——
MLB	20X60	3 T16	——	2 T16	——	——	——	T8@20cm C/C	——
EB	25XSLAB THICK	3 T16	——	3 T16	——	——	——	T8@20cm C/C	TO BE PROVIDED ON ALL SLAB EDGES

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :

MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

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MEP CONSULTANT :

LANDSCAPE CONSULTANT:

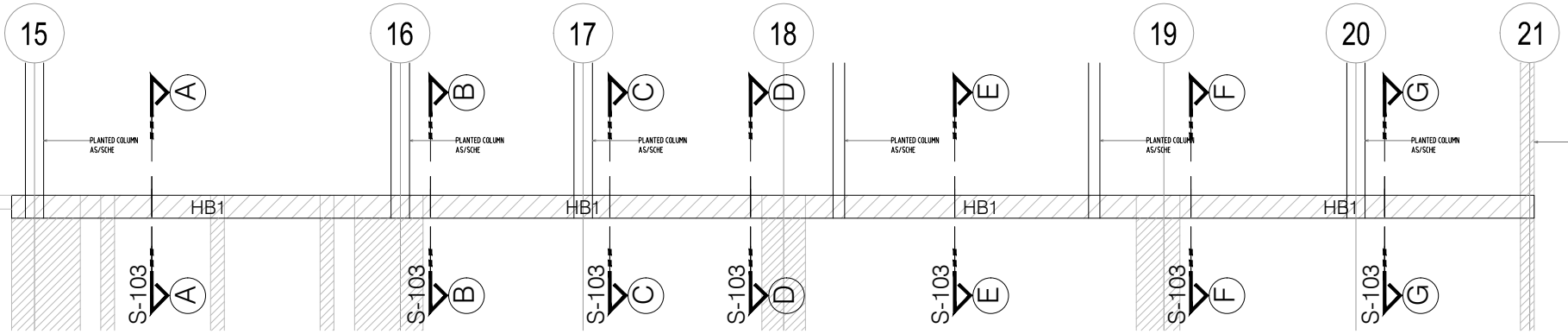
SHEET TITLE :

SCHEDULE OF BEAMS

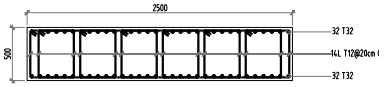
Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

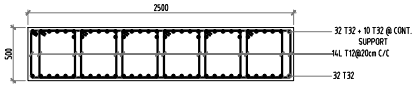
Discipline:	Sheet No.:	Revision:
S	102	



DETAILS OF HIDDEN BEAM, HB1 ALONG AXIS-K



SECTION A-A
HB1



SECTION B-B
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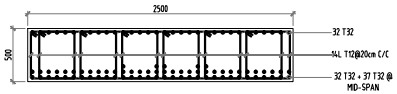
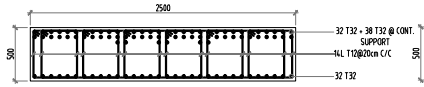
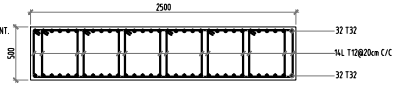


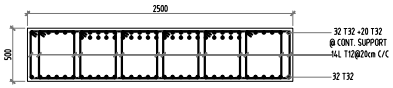
SECTION C-C
HB1



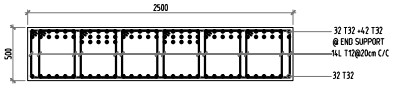
SECTION D-D
HB1



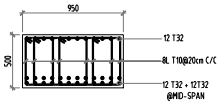
SECTION E-E
HB1



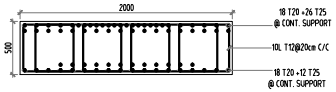
SECTION F-F
HB1



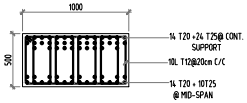
SECTION G-G
HB1



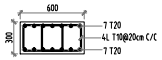
HB2 DETAILS



HB5 DETAILS



HB3 DETAILS



HB4 DETAILS

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PROJECT : KORDONIA TOWERS

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Jawad Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
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mjubaghdad@mjugroup.com
Registration No:827

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

SCHEDULE OF HIDDEN BEAMS

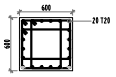
Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	103	

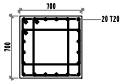
SCHEDULE OF COLUMNS:

C1
LOCATION: REFER TO PLAN



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C2
LOCATION: REFER TO PLAN



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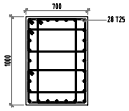
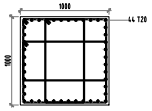
INTERNAL LINKS	T8@20cm C/C

C3
LOCATION: REFER TO PLAN



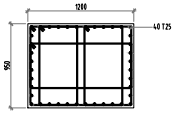
EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C4
LOCATION: REFER TO PLAN



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C5
3RD BASE LVL-2ND FLR LVL | 2ND FLR LVL-TOP OF ROOF DECK



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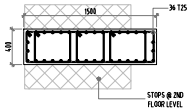
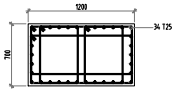
INTERNAL LINKS	T8@20cm C/C

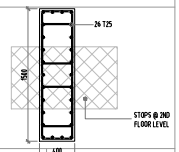


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C6
3RD BASE LVL-2ND FLR LVL | 2ND FLR LVL-TOP OF ROOF DECK



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C



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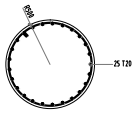
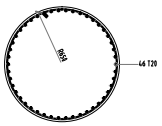
INTERNAL LINKS	T8@20cm C/C

C7
3RD BASE LVL-2ND FLR LVL

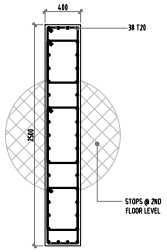


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	

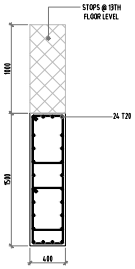
C8
3RD BASE LVL-2ND FLR LVL | 2ND FLR LVL-13TH FLOOR | 13TH FLOOR-ROOF DECK



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	

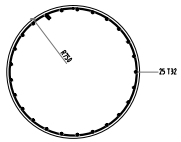


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

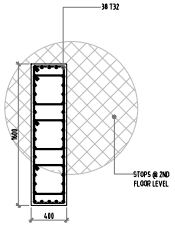


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C9
3RD BASE LVL-2ND FLR LVL | 2ND FLR LVL-TOP OF ROOF DECK

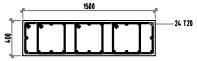


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	



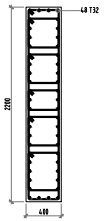
EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C10
LOCATION: REFER TO PLAN



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T10@20cm C/C

C11
3RD BASEMENT - 4TH FLR LVL. | 4TH FLR LVL.-TOP OF ROOF DECK



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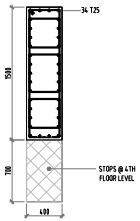
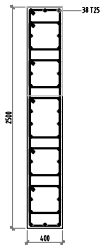
INTERNAL LINKS	T8@20cm C/C

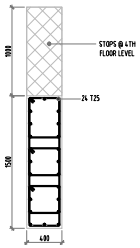


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C12
3RD BASEMENT-13TH FLR LVL. | 3RD BASEMENT-13TH FLR LVL.

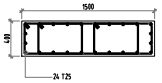


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

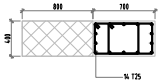


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C13
3RD BASEMENT-GR. FLR LVL. | GR. FLR LVL-ROOF DECK



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

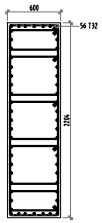


EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

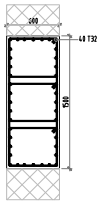
C14
LOCATION: REFER TO PLAN

EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

C15
3RD BASEMENT - GR. FLR LVL. | GR. FLR LVL. TO ROOF DECK



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C



EXTERNAL LINKS	T10@20cm C/C
INTERNAL LINKS	T8@20cm C/C

SCHEDULE OF FLOATING COLUMNS:

FC1
LOCATION: 1B - 2ND FLR LVL.

EXTERNAL LINKS	T8@20cm C/C
INTERNAL LINKS	T8@20cm C/C

EXTERNAL LINKS	
INTERNAL LINKS	

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ORIENTATION :

KEYPLAN :

Fy= 414 MPa
Fcu= 35 MPa

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Jawad Al-Hindiya Street, Al Jamaia Dist. Baghdad, Iraq
Tel: 00964 780 0017776
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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE : SCHEDULE OF COLUMNS

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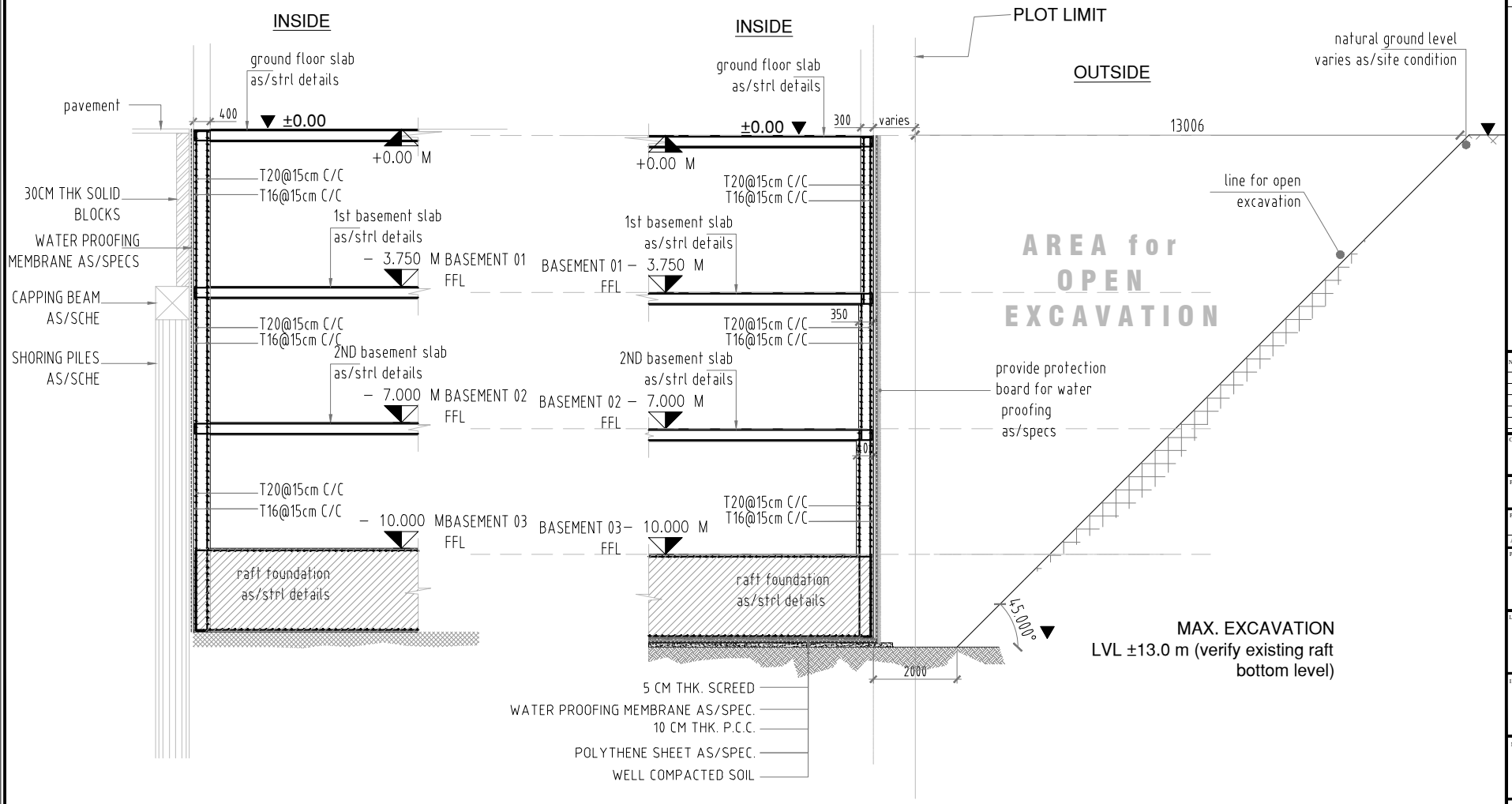
1:40	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	104	



SECTIO R1-R1 (1 / S-105)

SCALE 1:40 MTS

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KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE : RETAINING WALL DETAILS-01

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AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	105	

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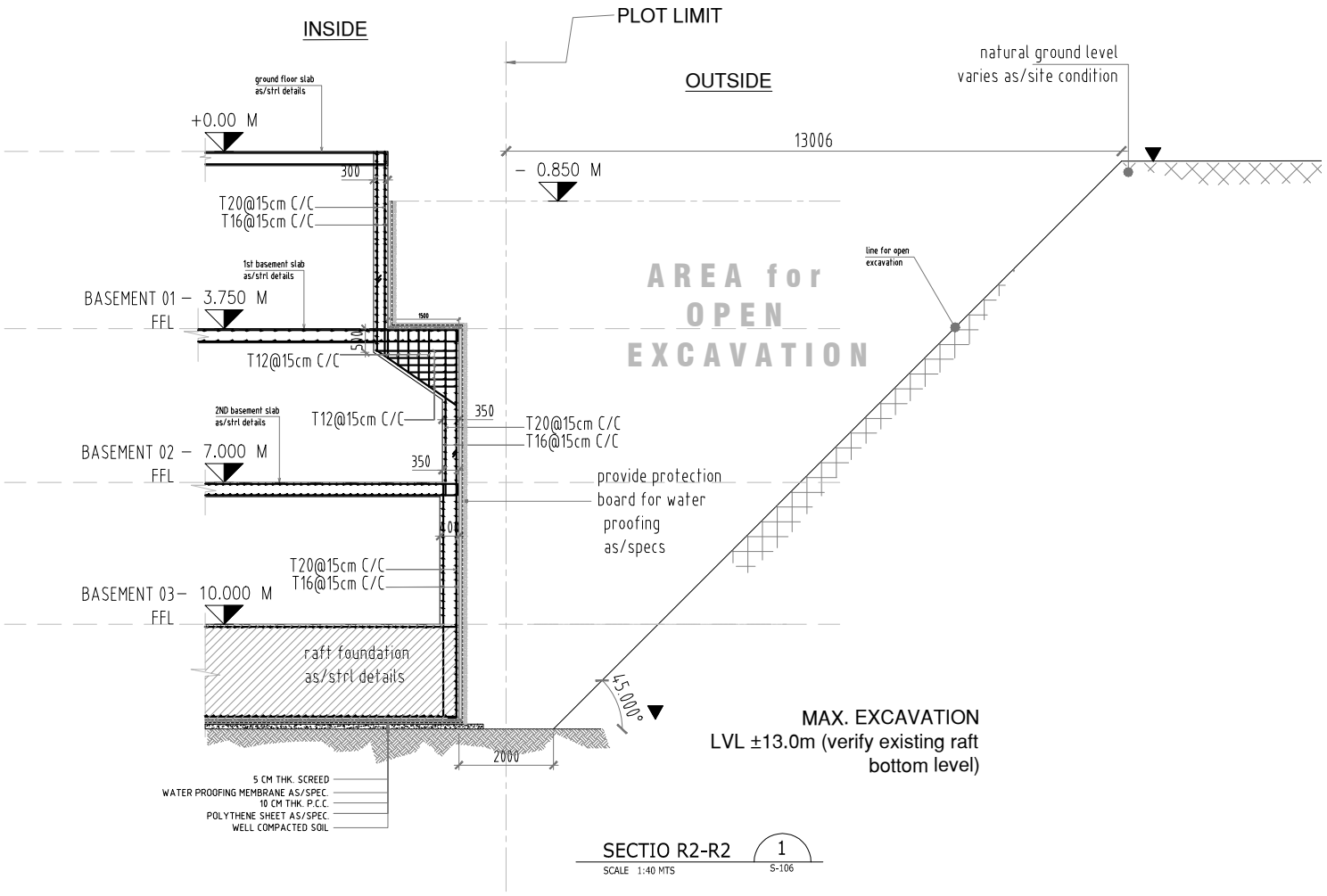

SECTIO R2-R2 (1 / S-106)

SCALE 1:40 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Jawad Al-Hindiya Street, Al Jamiaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:827

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

RETAINING WALL
DETAILS-02

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Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	106	

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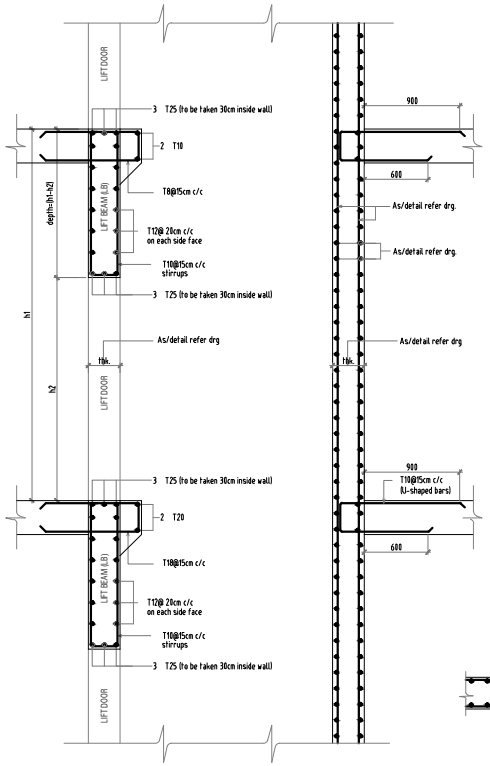
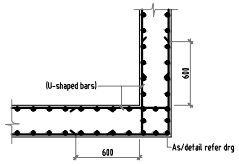
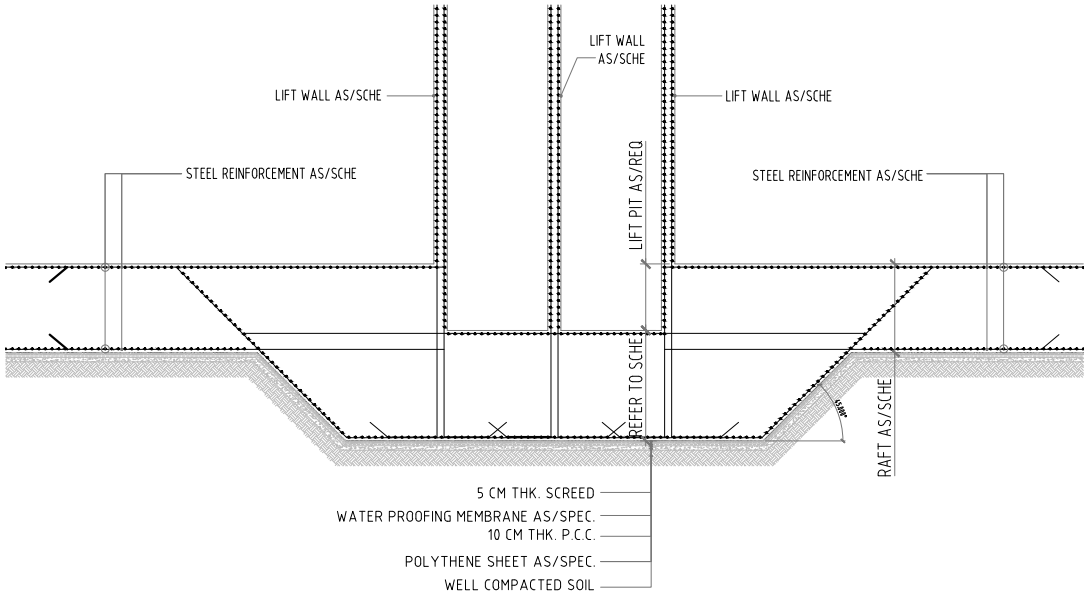


REINFORCEMENT IN LIFT WALL
SHOWN IN SECTION



REINFORCEMENT AT CORNER
SHOWN IN PLAN



TYP. SHEAR WALL SECTION & DETAILS 1
S-107

SCALE 1:30 MTS

TYP. LIFT PIT DETAILS 2
S-107

SCALE 1:30 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT: MJU Consulting Engineers
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mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

TYPICAL SHEAR WALL SECTION & DETAILS

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Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
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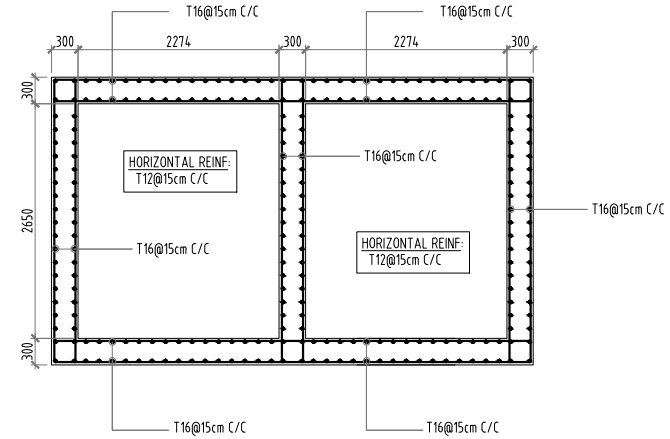
SW-01 DETAILS

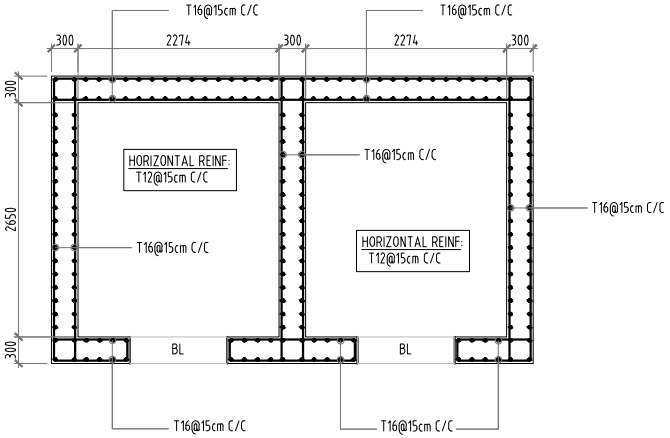
2ND BASEMENT TO 1ST BASEMENT LEVEL

SCALE 1:30 MTS



1ST BASEMENT LEVEL - 3RD FLOOR LEVEL

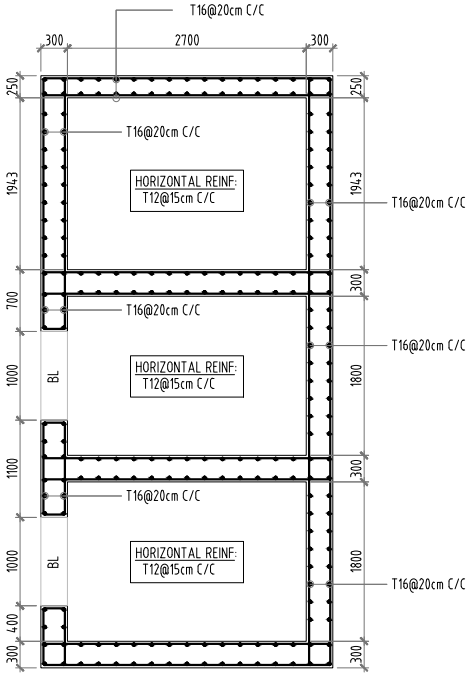
SCALE 1:30 MTS



SW-02 DETAILS

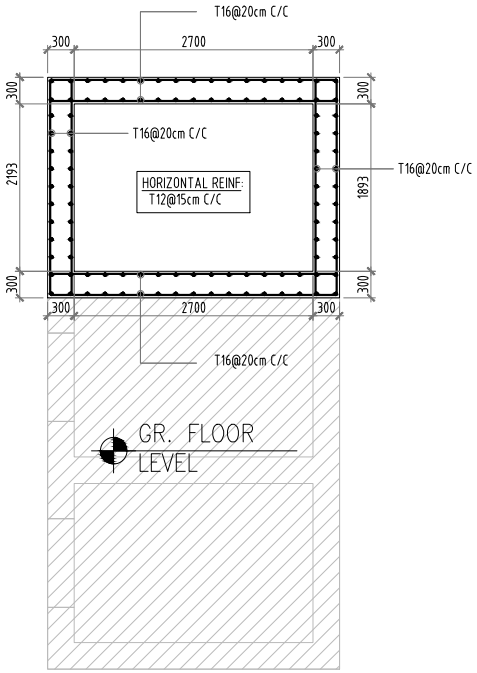
3RD BASEMENT TO GR. FLOOR LEVEL

SCALE 1:30 MTS



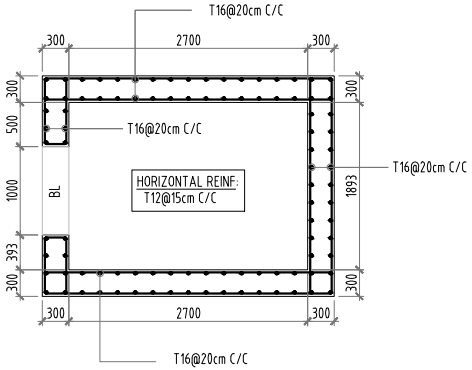
GR. FLOOR LEVEL TO 2ND FLOOR LEVEL

SCALE 1:30 MTS



2ND FLOOR LEVEL - 3RD FLOOR LEVEL

SCALE 1:30 MTS



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No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

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Mohammed Jawad Al-Ubaidi
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INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

SHEAR WALL-01 DETAILS
SHEAR WALL-02 DETAILS

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Date:	Project No.:	Sheet Size:
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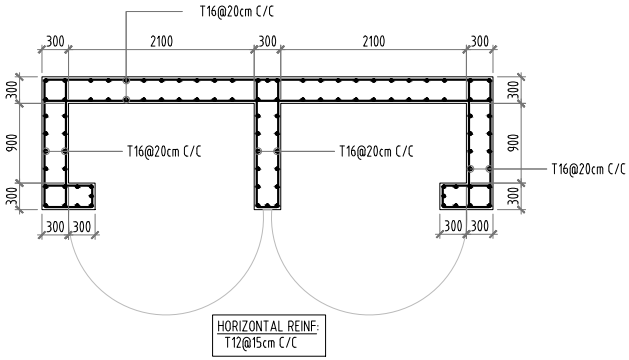
Discipline:	Sheet No.:	Revision:
S	108	

SW-03 DETAILS

2ND BASEMENT TO 2ND FL00R LEVEL

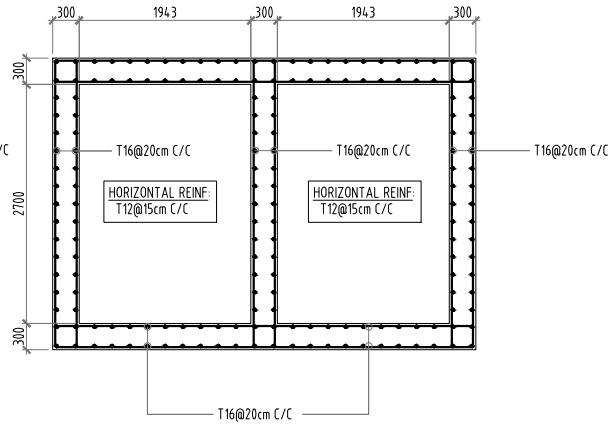
SCALE 1:30 MTS



SW-05 DETAILS

2ND BASEMENT TO 1ST BASEMENT

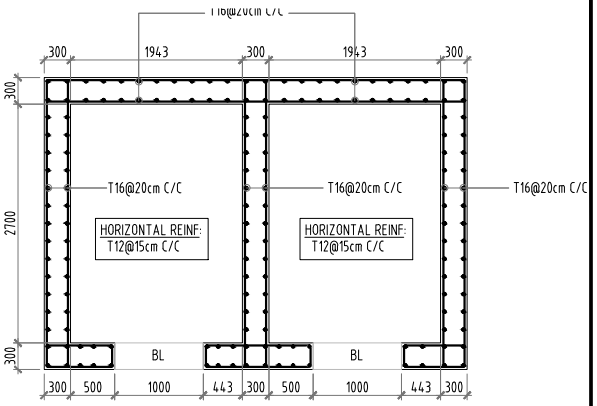
SCALE 1:30 MTS



SW-05 DETAILS

1ST BASEMENT TO 2ND FLOOR LEVEL

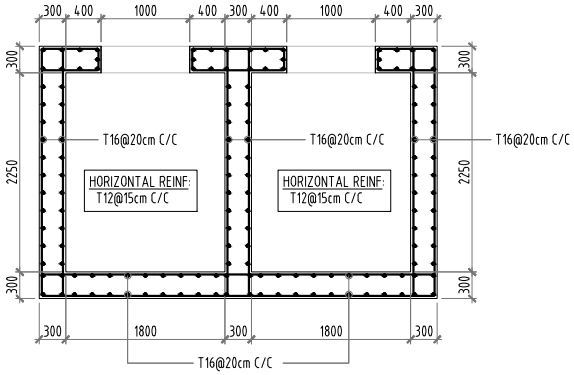
SCALE 1:30 MTS



SW-04 DETAILS

3RD BASEMENT TO 1ST FLOOR LEVEL

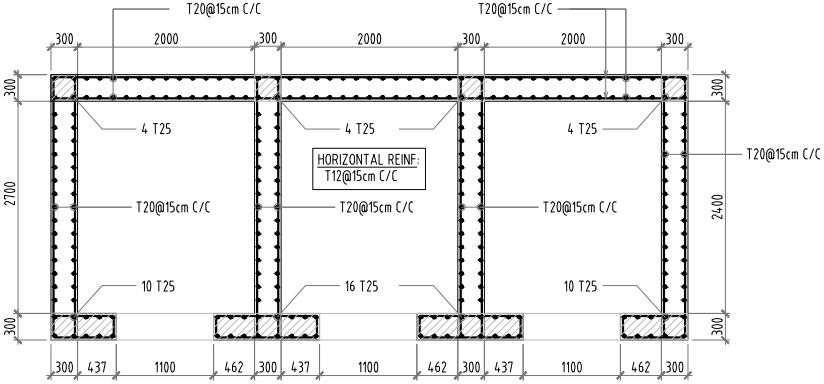
SCALE 1:30 MTS



SW-06 DETAILS

3RD BASEMENT TO TOP OF ROOF DECK

SCALE 1:30 MTS



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KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
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INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

SHEAR WALL-03 DETAILS
SHEAR WALL-04 DETAILS
SHEAR WALL-05 DETAILS
SHEAR WALL-06 DETAILS

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Date:	Project No.:	Sheet Size:
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Discipline:	Sheet No.:	Revision:
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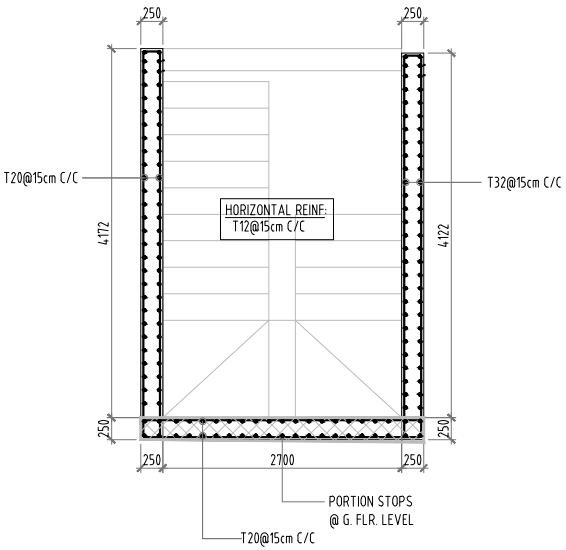
RC WALL-01 DETAILS

3RD BASEMENT - 1ST FLOOR LEVEL

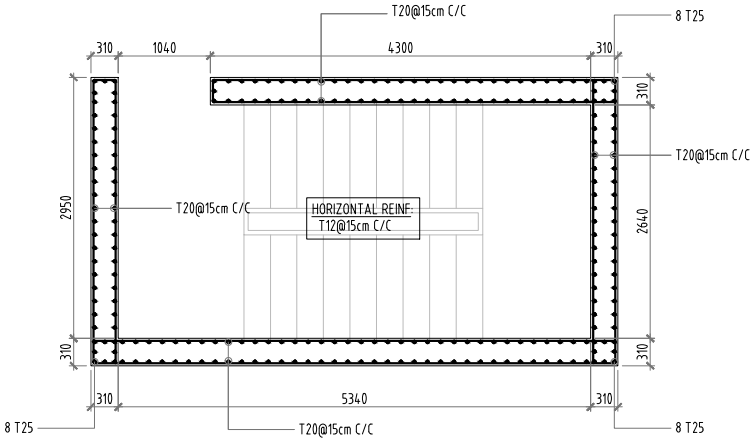
SCALE 1:30 MTS



RC WALL -02 DETAILS

3RD BASEMENT - TOP OF ROOF DECK LEVEL

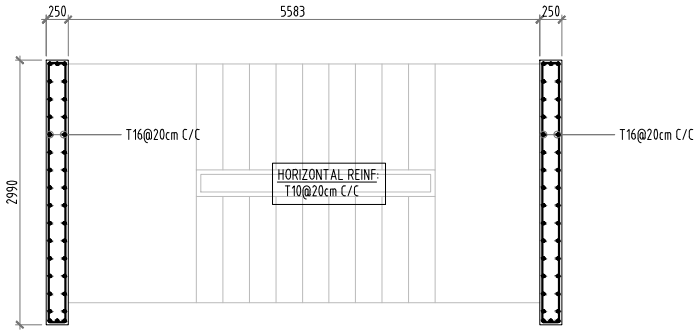
SCALE 1:30 MTS



RC WALL -03 DETAILS

2ND FLOOR LEVEL - TOP OF ROOF DECK LEVEL

SCALE 1:30 MTS



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CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

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mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

RC WALL-01 DETAILS
RC WALL-02 DETAILS
RC WALL-03 DETAILS

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JUNE, 2015	241	A1

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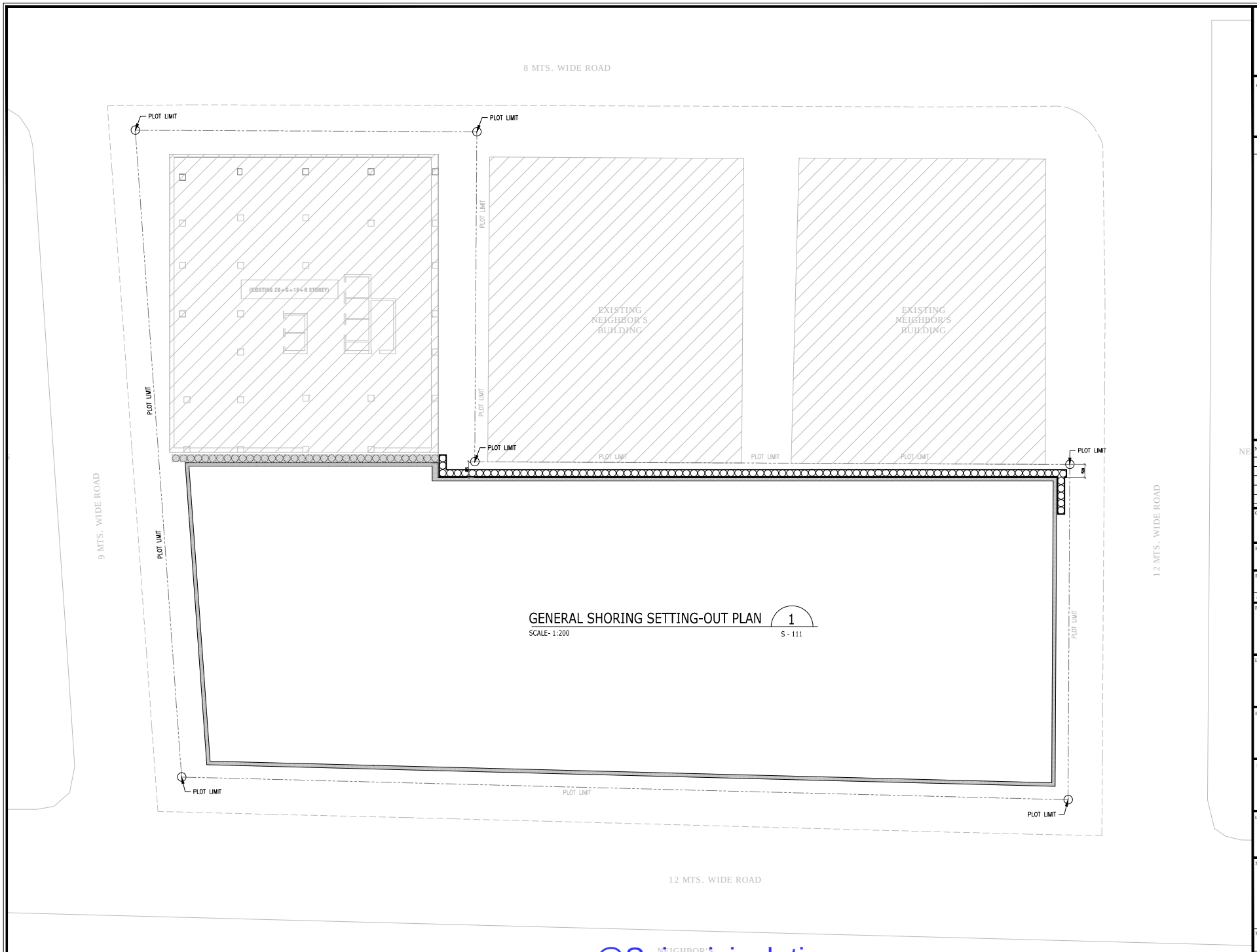

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KEY PLAN:

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :

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mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

GENERAL SHORING SETTING OUT PLAN

Scale:	Drawn:	Checked:	Approved:
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JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	111	

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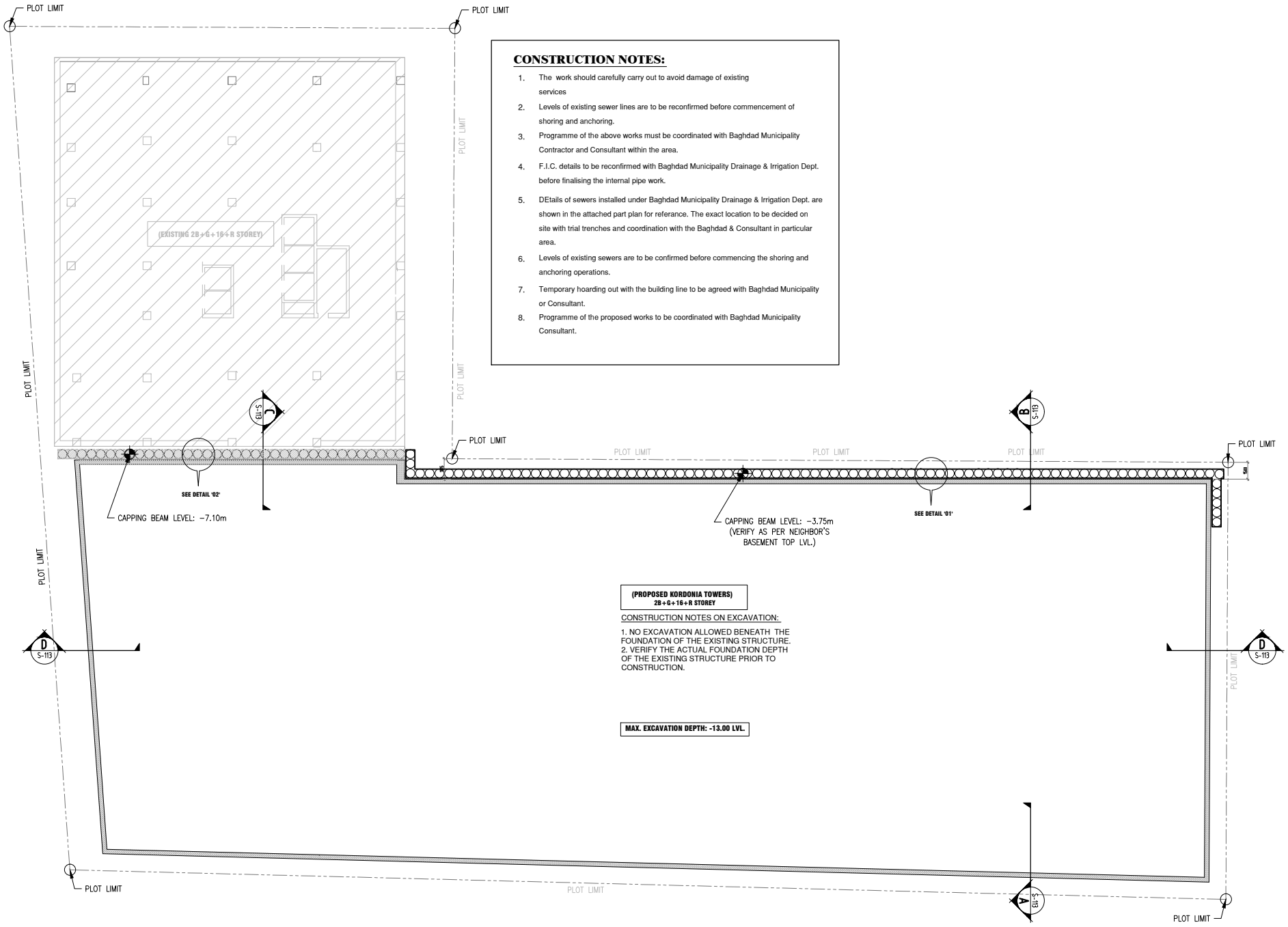

CONSTRUCTION NOTES:

1. The work should carefully carry out to avoid damage of existing services
2. Levels of existing sewer lines are to be reconfirmed before commencement of shoring and anchoring.
3. Programme of the above works must be coordinated with Baghdad Municipality Contractor and Consultant within the area.
4. F.I.C. details to be reconfirmed with Baghdad Municipality Drainage & Irrigation Dept. before finalising the internal pipe work.
5. DEtails of sewers installed under Baghdad Municipality Drainage & Irrigation Dept. are shown in the attached part plan for referance. The exact location to be decided on site with trial trenches and coordination with the Baghdad & Consultant in particular area.
6. Levels of existing sewers are to be confirmed before commencing the shoring and anchoring operations.
7. Temporary hoarding out with the building line to be agreed with Baghdad Municipality or Consultant.
8. Programme of the proposed works to be coordinated with Baghdad Municipality Consultant.

SHORING LAYOUT 1
SCALE: 1:100

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KEY PLAN:

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

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PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

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INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

SHORING LAYOUT

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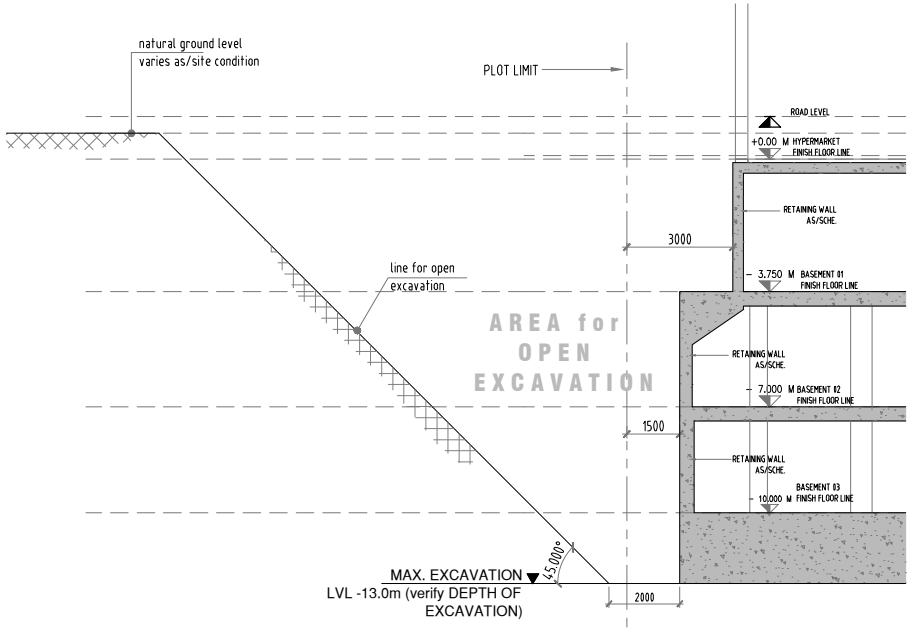
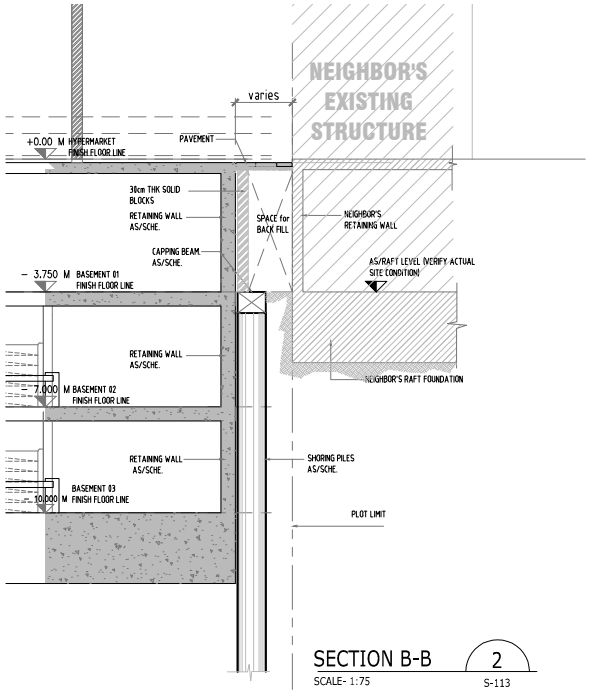
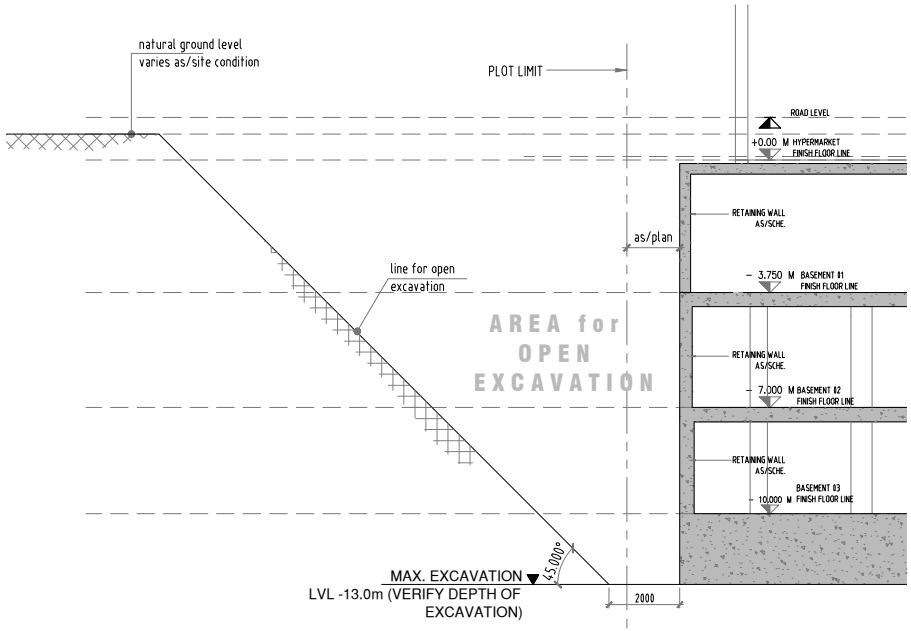


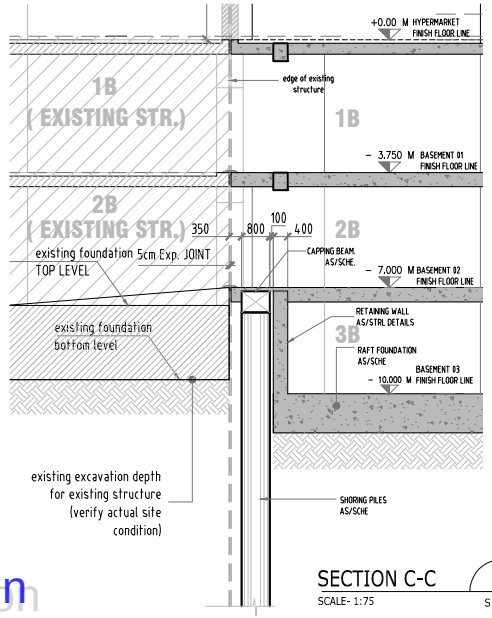
SECTION A-A 1
SCALE- 1:75 S-113



SECTION B-B 2
SCALE- 1:75 S-113



SECTION D-D 3
SCALE- 1:75 S-113



SECTION C-C 4
SCALE- 1:75 S - 113

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ORIENTATION :

KEY PLAN:

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

SHORING GENERAL SECTION DETAILS

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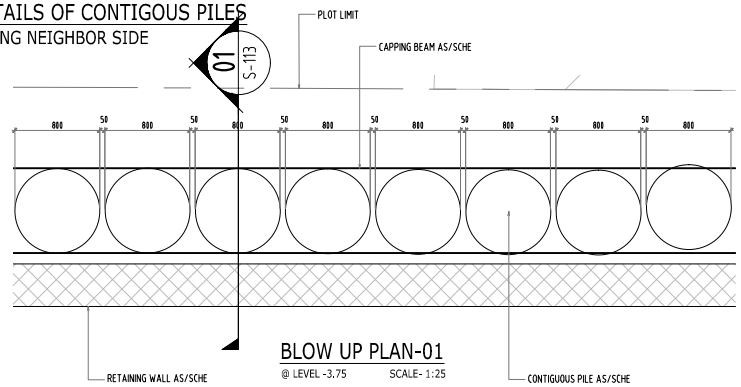
Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

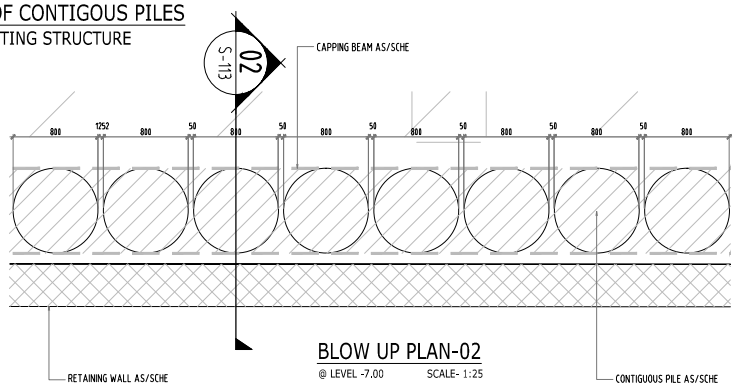
Discipline:	Sheet No.:	Revision:
S	113	

DETAILS OF CONTIGOUS PILES
ALONG NEIGHBOR SIDE

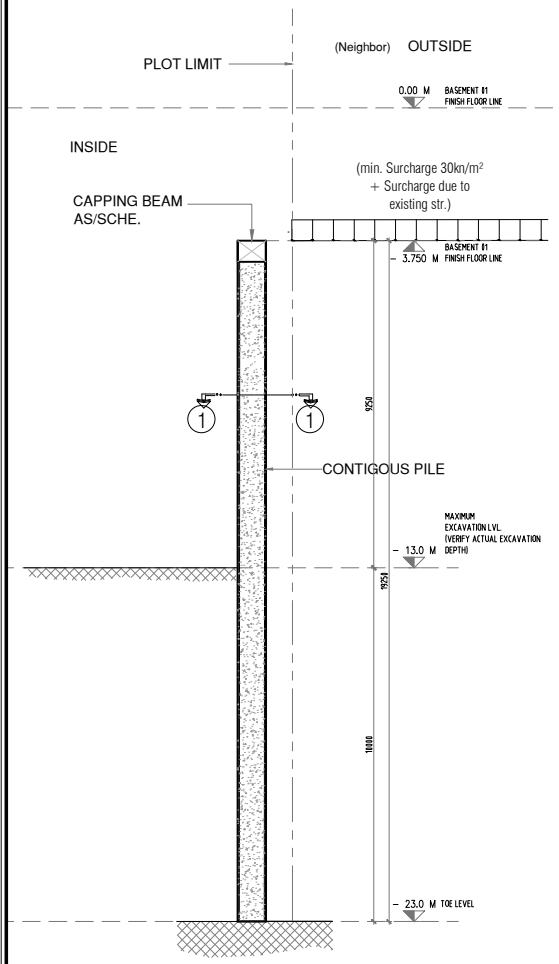


BLOW UP PLAN-01
@ LEVEL -3.75 SCALE- 1:25

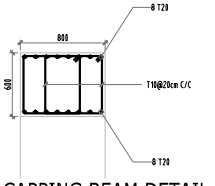
DETAILS OF CONTIGOUS PILES
ALONG EXISTING STRUCTURE



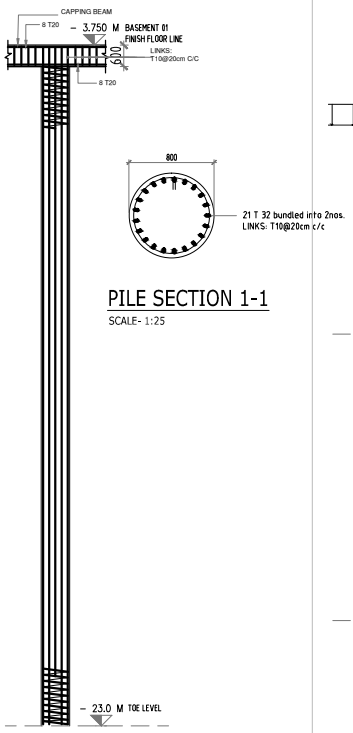
BLOW UP PLAN-02
@ LEVEL -7.00 SCALE- 1:25



SECTION 01 1
SCALE- 1:75 S - 114

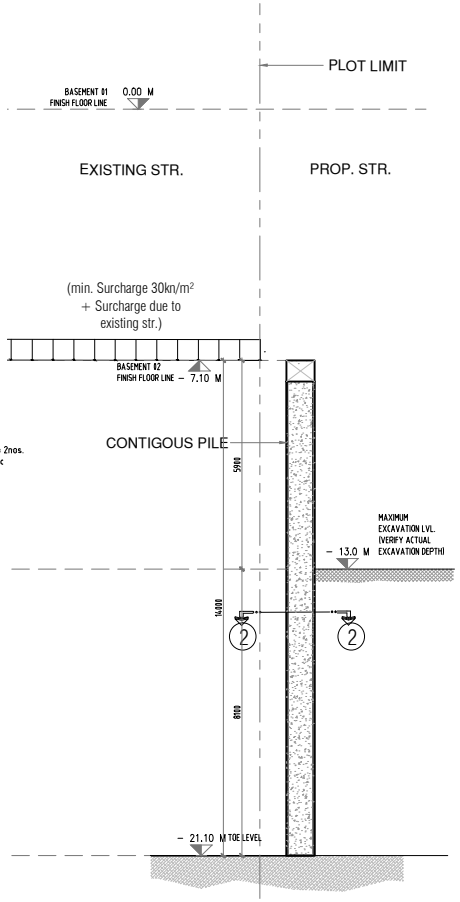


CAPPING BEAM DETAIL
SCALE- 1:25

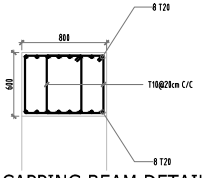


PILE SECTION 1-1
SCALE- 1:25

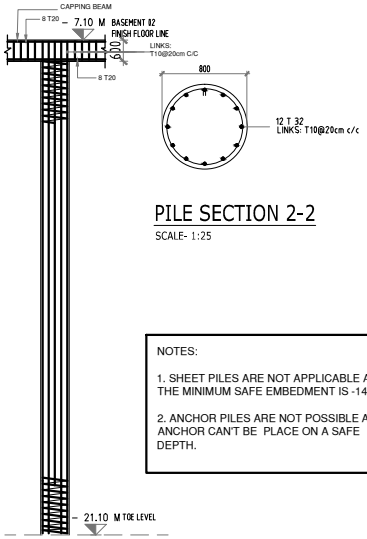
REINFORCEMENT DETAILS
SCALE- 1:75



SECTION 02 2
SCALE- 1:75 S - 114



CAPPING BEAM DETAIL
SCALE- 1:25



PILE SECTION 2-2
SCALE- 1:25

NOTES:

1. SHEET PILES ARE NOT APPLICABLE AS THE MINIMUM SAFE EMBEDMENT IS -14m.

2. ANCHOR PILES ARE NOT POSSIBLE AS ANCHOR CAN'T BE PLACE ON A SAFE DEPTH.

REINFORCEMENT DETAILS
SCALE- 1:75

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ORIENTATION :

KEY PLAN:

CONC. PILE MATERIALS:

CONCRETE GRADE for REINF. PILE: C35
CEMENT TYPE: SRPC
STEEL BAR GRADE: Fy 414
STEEL TYPE: UNCOATED DEFORMED REINFORCEMENT BAR

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

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PROJECT : KORDONIA TOWERS

PLOT NO. : -----

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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

SHORING SECTION DETAILS&SCHEDULE

Scale:	Drawn:	Checked:	Approved:
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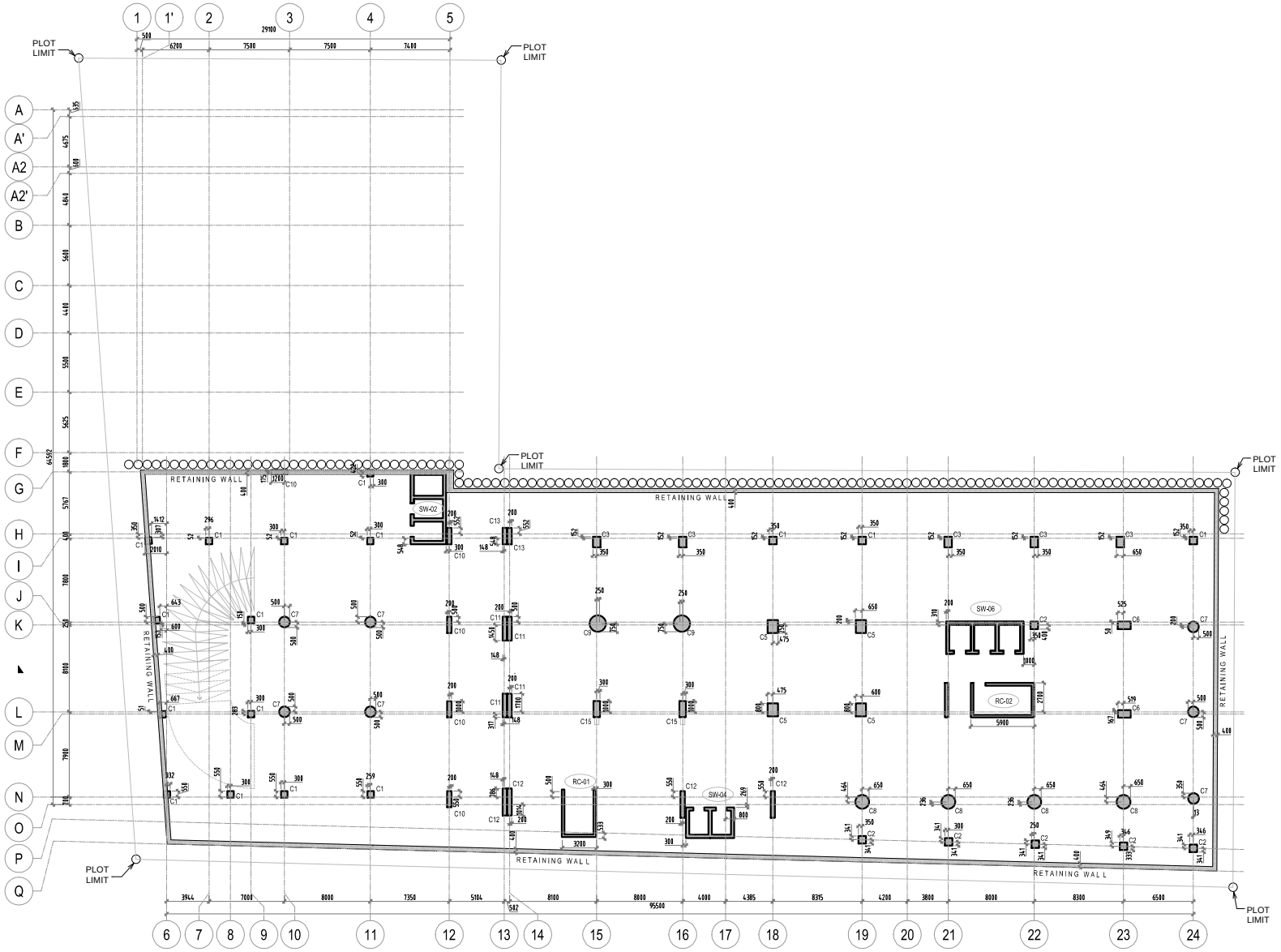

(PODIUM)
BASEMENT 3 COLUMN LAYOUT

1
S-115

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

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LANDSCAPE CONSULTANT:

SHEET TITLE :

(PODIUM)
BASEMENT 3 COLUMN LAYOUT

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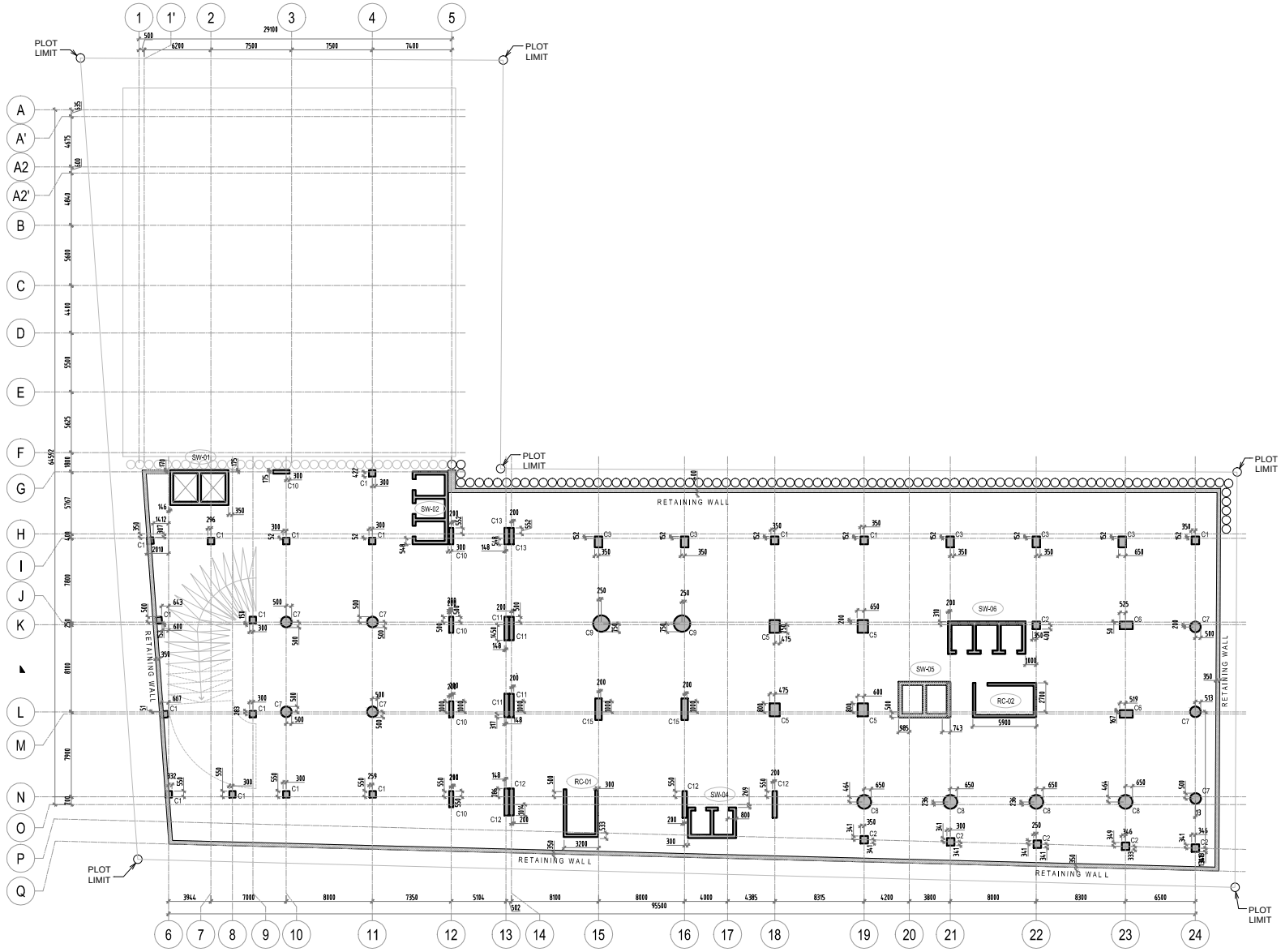

(PODIUM)
BASEMENT 2 COLUMN LAYOUT 1
S-116

SCALE 1:200 MTS

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KEYPLAN :

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

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(PODIUM)
BASEMENT 2 COLUMN LAYOUT

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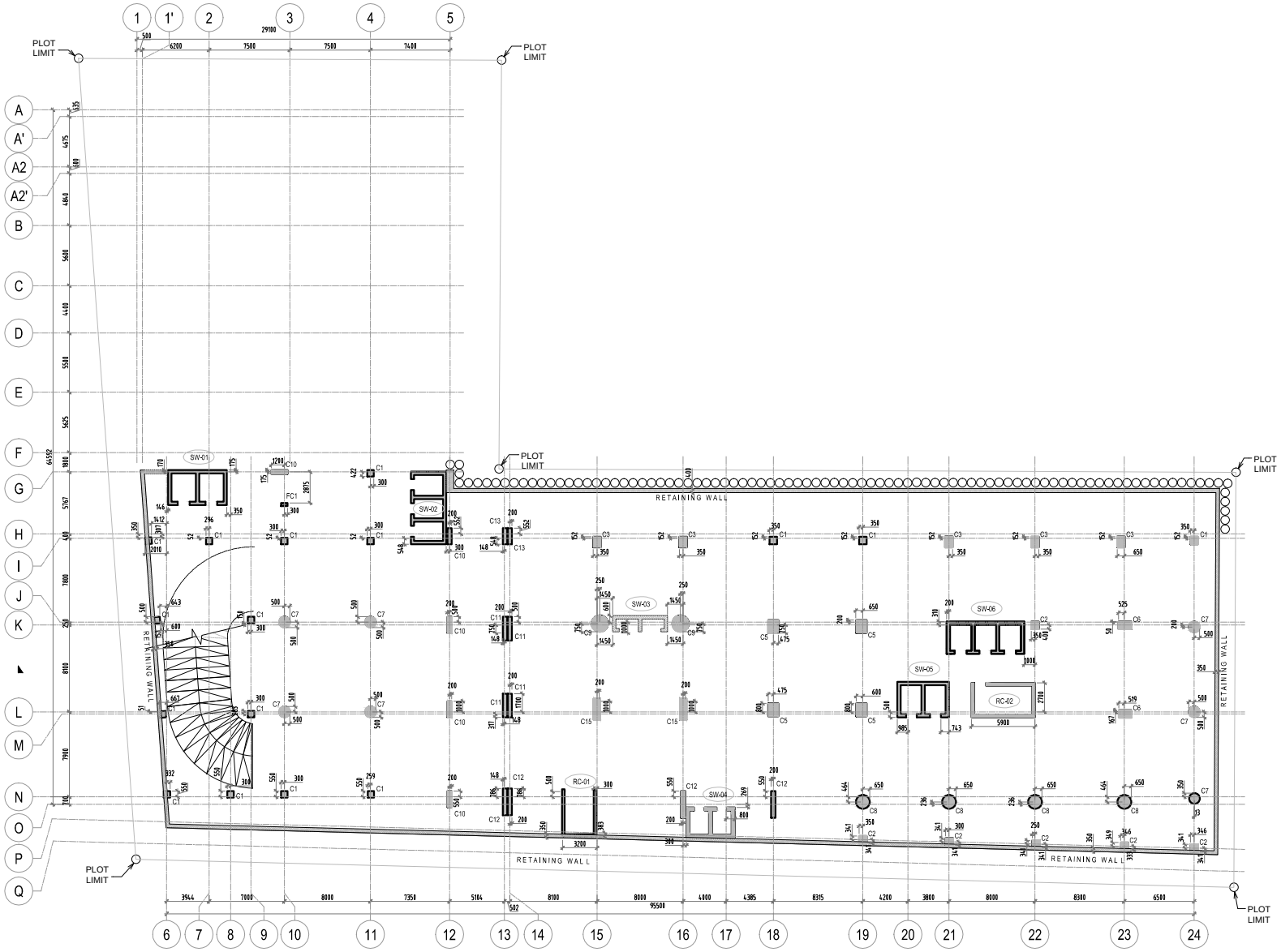

(PODIUM)
BASEMENT 1 COLUMN LAYOUT 1
S-117
SCALE 1:200 MTS

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ORIENTATION :

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COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

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PROJECT : KORDONIA TOWERS

PLOT NO. : -----

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LANDSCAPE CONSULTANT:

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(PODIUM)
BASEMENT 1 COLUMN LAYOUT

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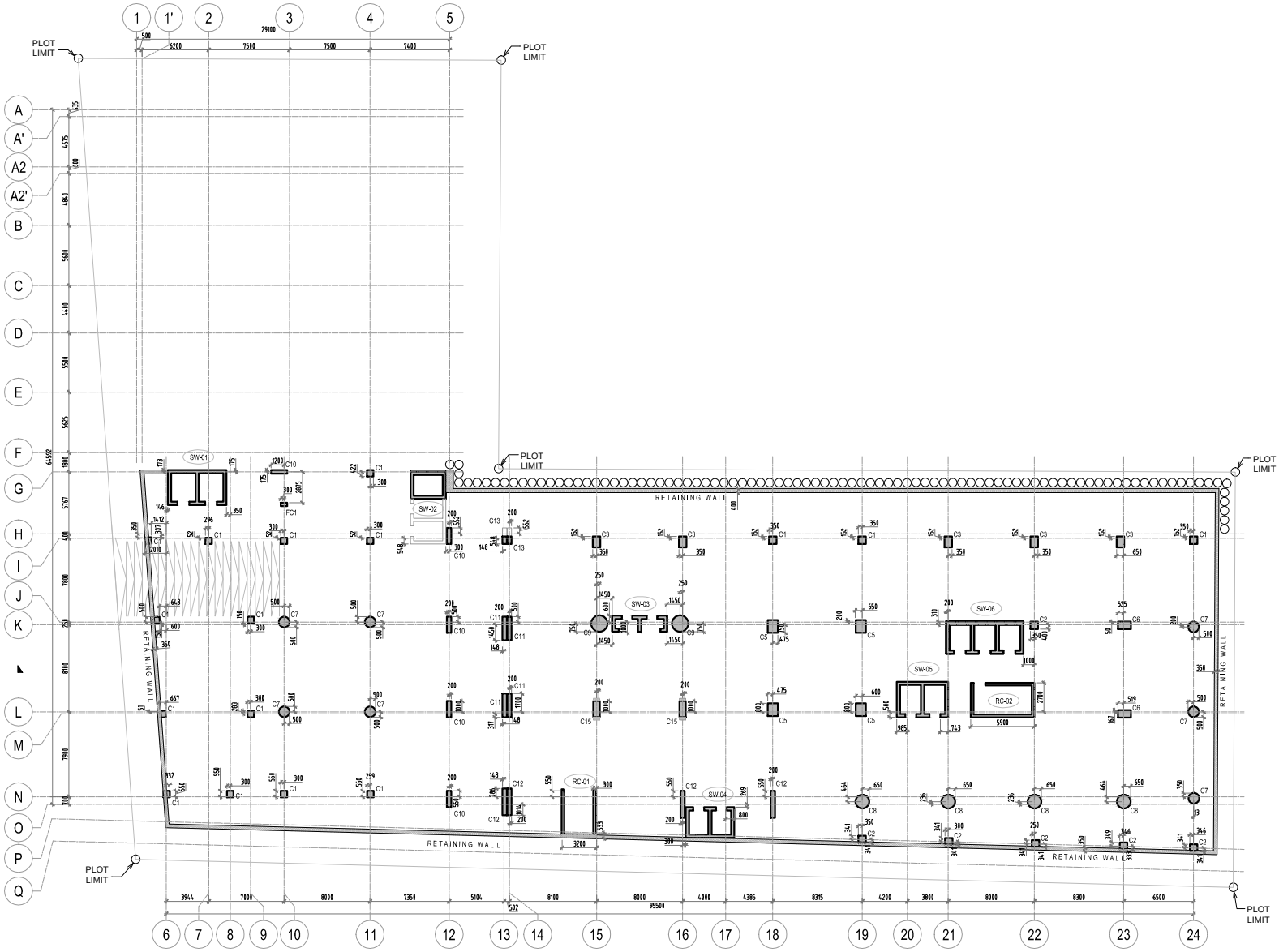

(PODIUM)
GROUND FLOOR COLUMN LAYOUT 1
S-118

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

(PODIUM)
GROUND FLOOR
COLUMN LAYOUT

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JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
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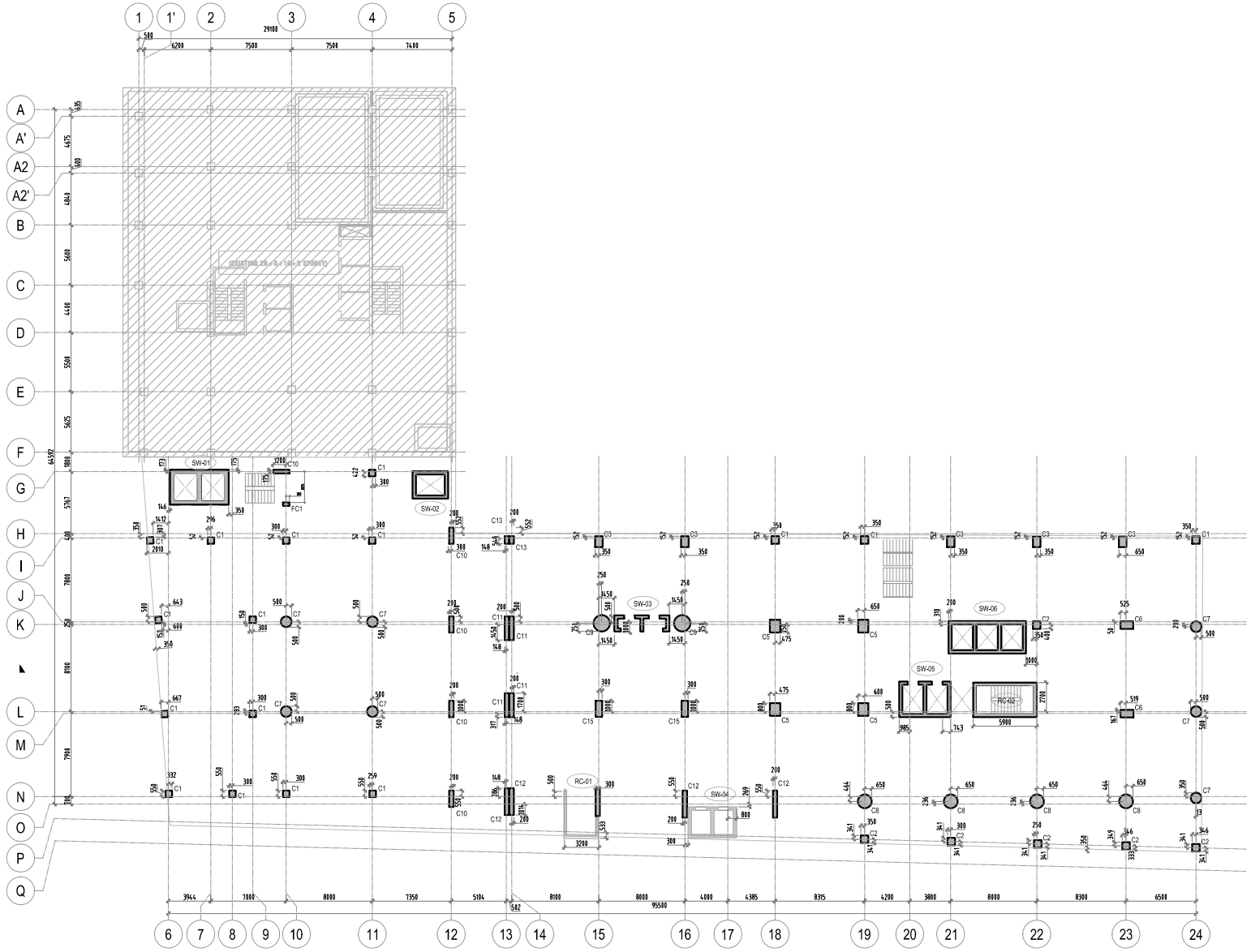

(PODIUM)
1ST FLOOR COLUMN LAYOUT 1
S-119

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

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Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

(PODIUM)
1ST FLOOR COLUMN
LAYOUT

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Date:	Project No.:	Sheet Size:
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Discipline:	Sheet No.:	Revision:
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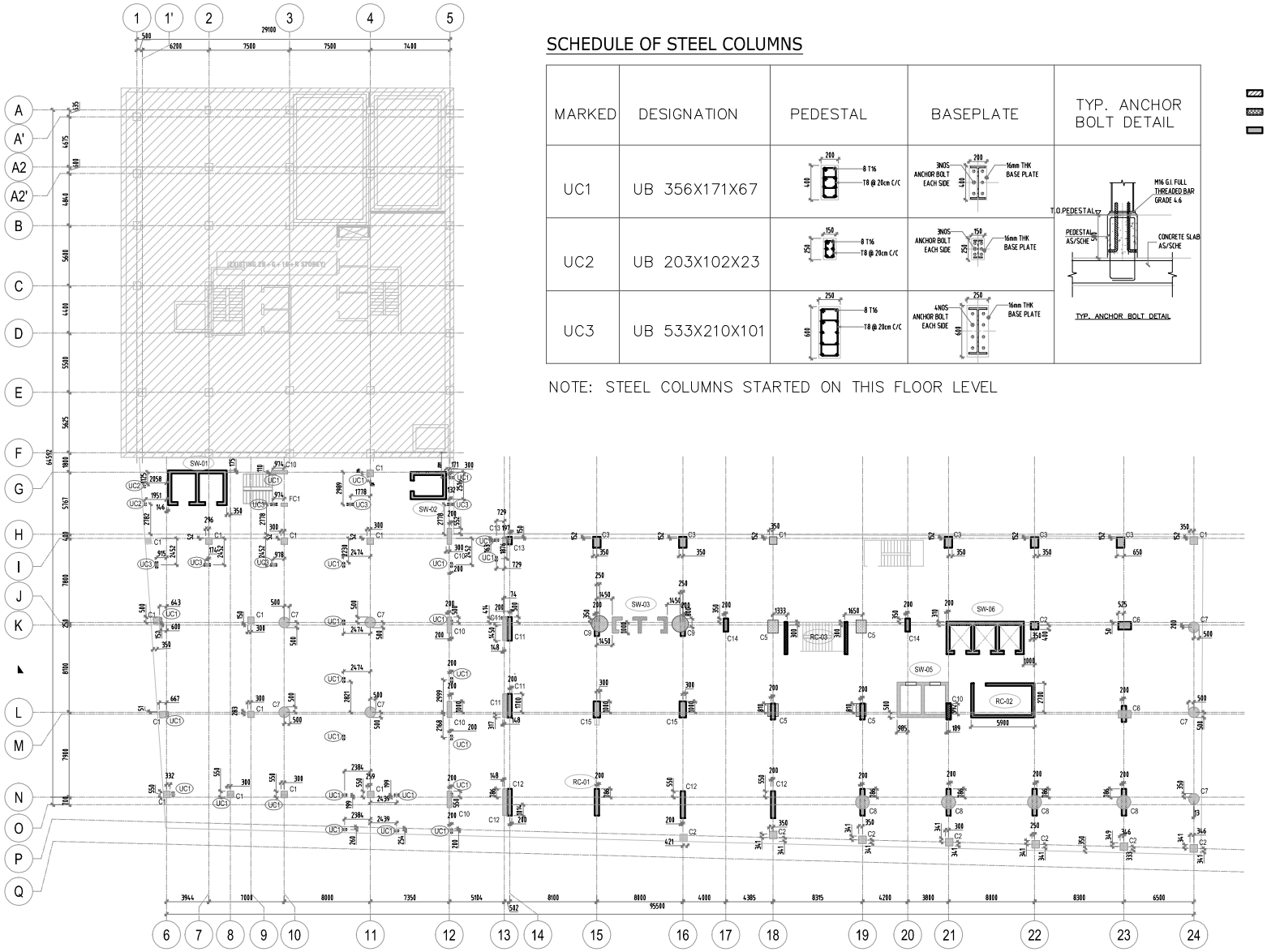

SCHEDULE OF STEEL COLUMNS

MARKED	DESIGNATION	PEDESTAL	BASEPLATE	TYP. ANCHOR BOLT DETAIL
UC1	UB 356X171X67	8 T16 T8 @ 20cm C/C	3NOS ANCHOR BOLT EACH SIDE 16mm THK BASE PLATE	M16 G.I. FULL THREADED BAR GRADE 4.6 T.O.PEDESTAL PEDESTAL AS/SCHE CONCRETE SLAB AS/SCHE TYP. ANCHOR BOLT DETAIL
UC2	UB 203X102X23	8 T16 T8 @ 20cm C/C	3NOS ANCHOR BOLT EACH SIDE 16mm THK BASE PLATE	
UC3	UB 533X210X101	8 T16 T8 @ 20cm C/C	4NOS ANCHOR BOLT EACH SIDE 16mm THK BASE PLATE	

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

NOTE: STEEL COLUMNS STARTED ON THIS FLOOR LEVEL

(PODIUM)
2ND FLOOR COLUMN LAYOUT 1
S-120
SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

NOTES ON STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL BE MANUFACTURED IN ACCORDANCE TO BS 5950 AND SHALL BE OF GRADE 43 EXCEPT BRACING RODS SHALL BE HIGH TENSILE STEEL WITH MINIMUM Fy OF 34.5 N.mm2. ALL WELDING IS ACCORDING TO BS 5135 WITH MIN. THICKNESS OF 4mm, U.N.O.

2. DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE TO BS 5950.

3. ALL STRUCTURAL STEEL WORKS SHALL BE PROTECTED AGAINST CORROSION BY TWO COATS OF PRIMER (75 MICRONS EACH) AND ONE COAT OF CHLORINATED RUBBER PAINT (60 MICRONS) WITH APPROVED COLOR.

4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH CONNECTION DESIGN AND CALCULATION FOR CONSULTANT APPROVAL PRIOR TO CONSTRUCTION.

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

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LEAD CONSULTANT : MJU Consulting Engineers
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Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

(PODIUM)
2ND FLOOR COLUMN LAYOUT

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JUNE, 2015	241	A1

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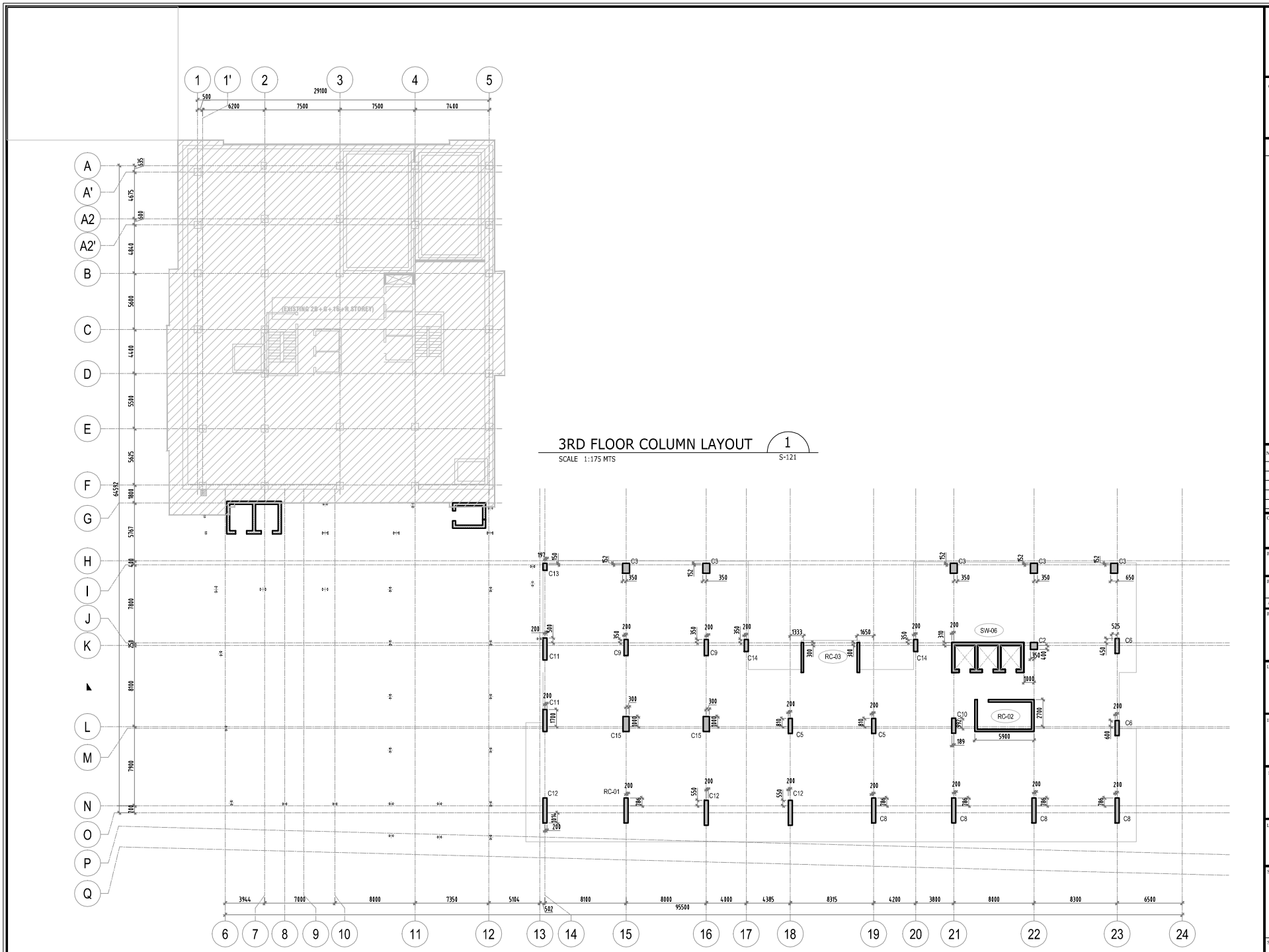
S	120	



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ORIENTATION :

KEYPLAN :

COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

3RD FLOOR COLUMN LAYOUT

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JUNE, 2015	241	A1

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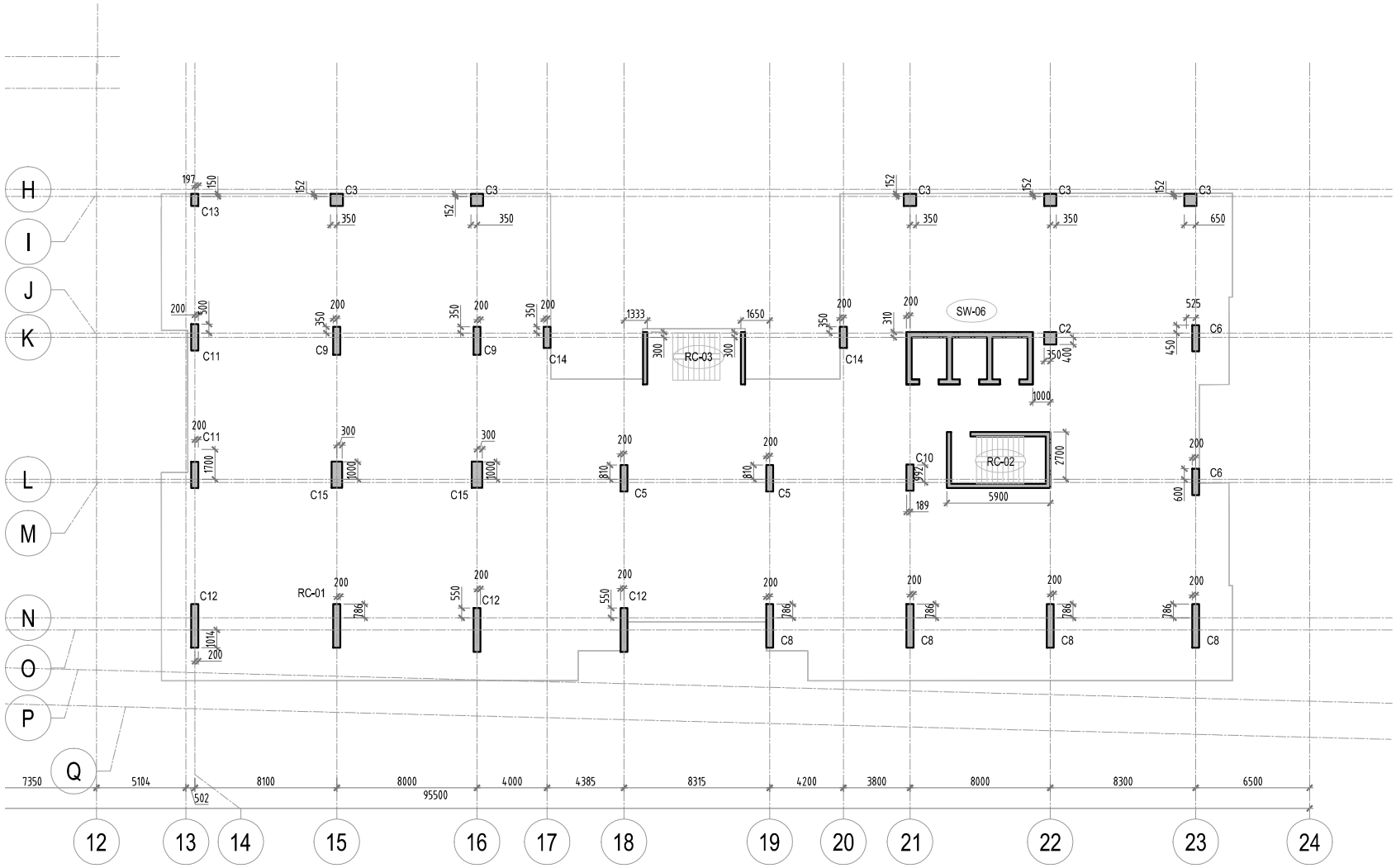

(RESIDENTIAL TOWER)
4TH-12TH FLOOR COLUMN LAYOUT 1 S-122
SCALE 1:125 MTS

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ORIENTATION :

KEYPLAN :

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

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mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

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(RESIDENTIAL TOWER)
4TH-12 FLOOR COLUMN LAYOUT

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JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
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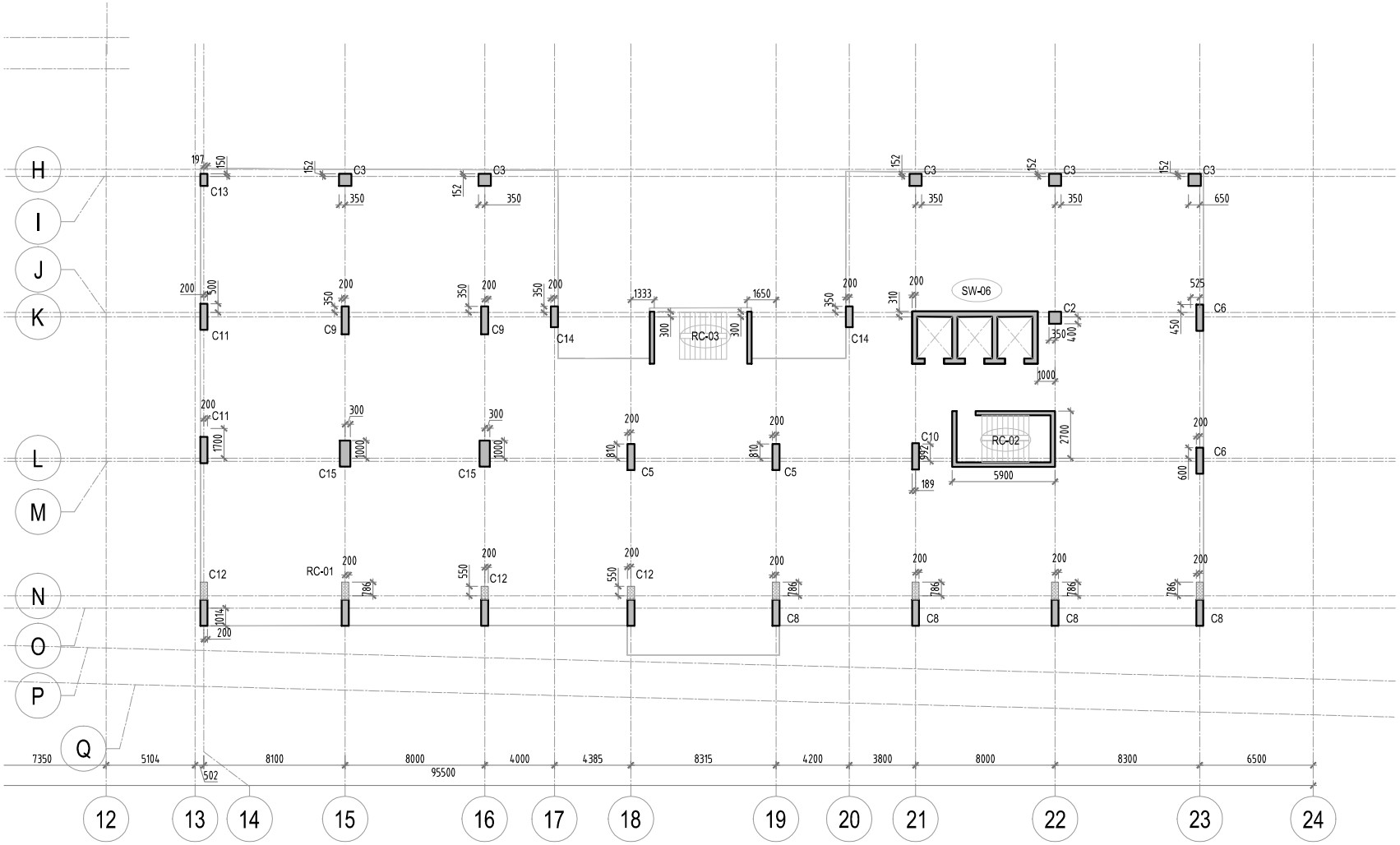

(RESIDENTIAL TOWER)
13TH FLOOR COLUMN LAYOUT

1
S-123

SCALE 1:125 MTS

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ORIENTATION :

KEYPLAN :

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INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

13TH FLOOR COLUMN LAYOUT
(RESIDENTIAL TOWER)

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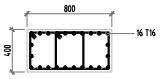
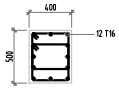
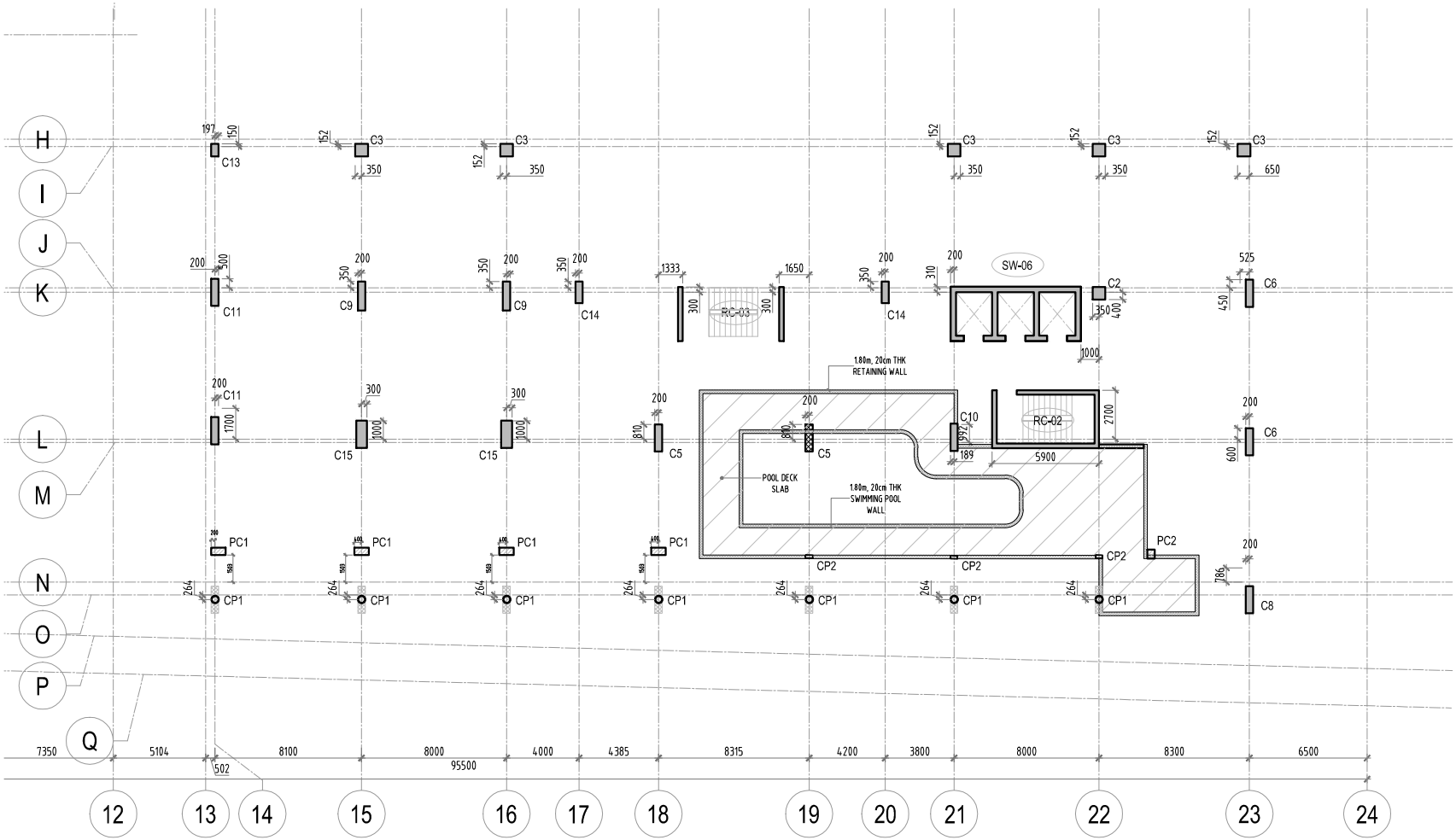
Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	123	

SCHEDULE OF ROOF DECK PLANTED COLUMNS:

PC1	PC2	CP1	CP2
LOCATION: ROOFDECK	LOCATION: ROOFDECK	LOCATION: ROOFDECK	LOCATION: ROOFDECK
			
EXTERNAL LINKS: T8@20cm C/C	EXTERNAL LINKS: T8@20cm C/C	PIPE 406X10	TUBE 40X20X16
INTERNAL LINKS: T8@20cm C/C	INTERNAL LINKS: T8@20cm C/C	STEEL PIPE COLUMN: TO BE DESIGNED BY SPECIALTY CONTRACTOR	STEEL PIPE COLUMN: TO BE DESIGNED BY SPECIALTY CONTRACTOR

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES



(RESIDENTIAL TOWER)
ROOF DECK FLOOR COLUMN LAYOUT
SCALE 1:125 MTS

1
S-124

@Seismicisolation

NOTES:

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3. READ THIS DRAWING IN CONJUCTION WITH RELEVANT ARCHITECTURAL, STRUCTURAL AND SERVICES DRAWINGS SPECIFICATIONS AND CONTRACT DOCUMENTS.

ORIENTATION :

KEYPLAN :

NOTES ON STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL BE MANUFACTURED IN ACCORDANCE TO BS 5950 AND SHALL BE OF GRADE 43 EXCEPT BRACING RODS SHALL BE HIGH TENSILE STEEL WITH MINIMUM Fy OF 34.5 N.mm2. ALL WELDING IS ACCORDING TO BS 5135 WITH MIN. THICKNESS OF 4mm, U.N.O.

2. DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE TO BS 5950.

3. ALL STRUCTURAL STEEL WORKS SHALL BE PROTECTED AGAINST CORROSION BY TWO COATS OF PRIMER (75 MICRONS EACH) AND ONE COAT OF CHLORINATED RUBBER PAINT (60 MICRONS) WITH APPROVED COLOR.

4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH CONNECTION DESIGN AND CALCULATION FOR CONSULTANT APPROVAL PRIOR TO CONSTRUCTION.

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Jawad Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

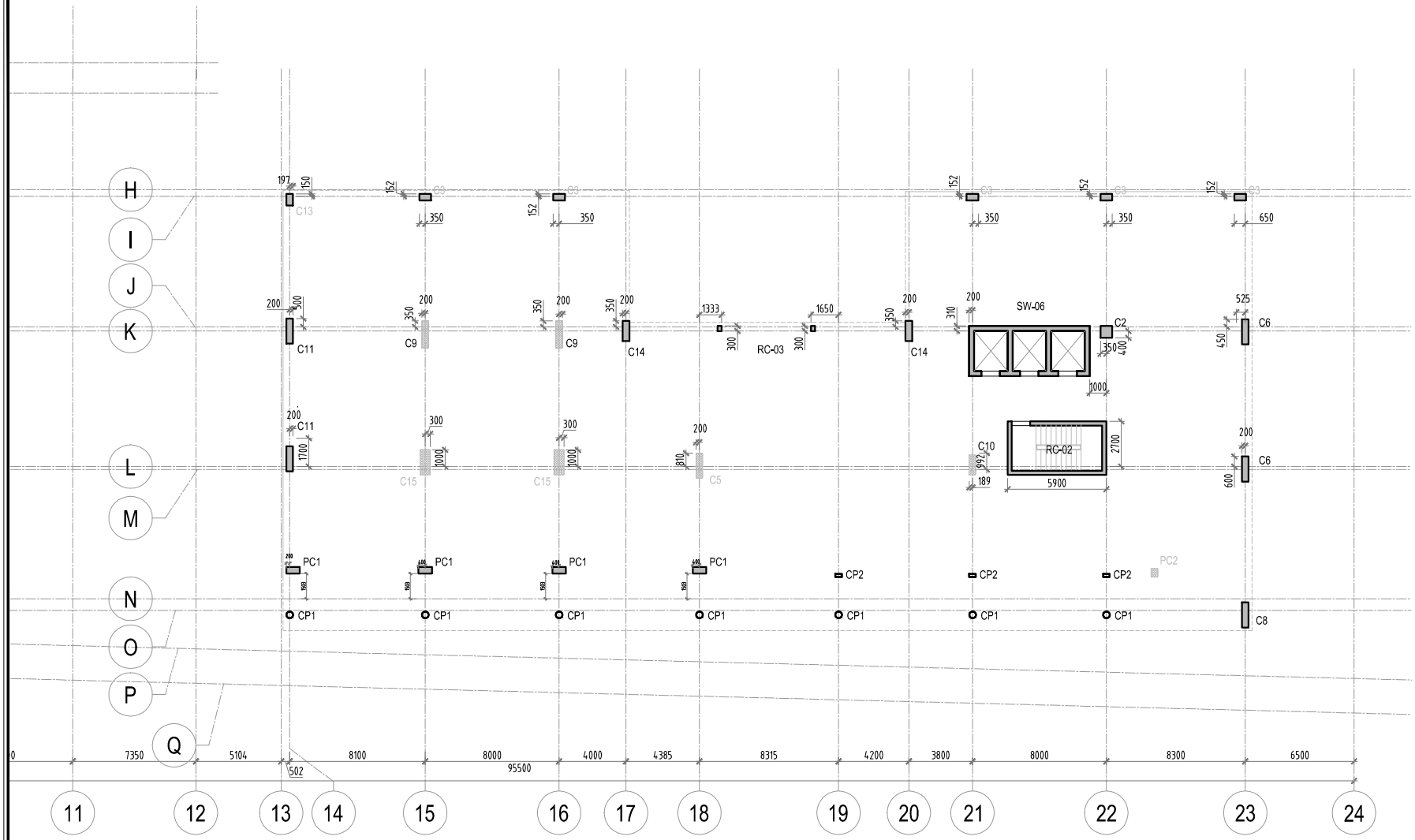
LANDSCAPE CONSULTANT:

SHEET TITLE :
(RESIDENTIAL TOWER)
ROOF DECK COLUMN LAYOUT

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	124	



(RESIDENTIAL TOWER)
MACHINE ROOM COLUMN LAYOUT

SCALE 1:125 MTS

1
S-125

@Seismicisolation

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ORIENTATION :

KEYPLAN :

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :

MJU Consulting Engineers
Jawad Al-Hindiya Street, Al Jamiaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

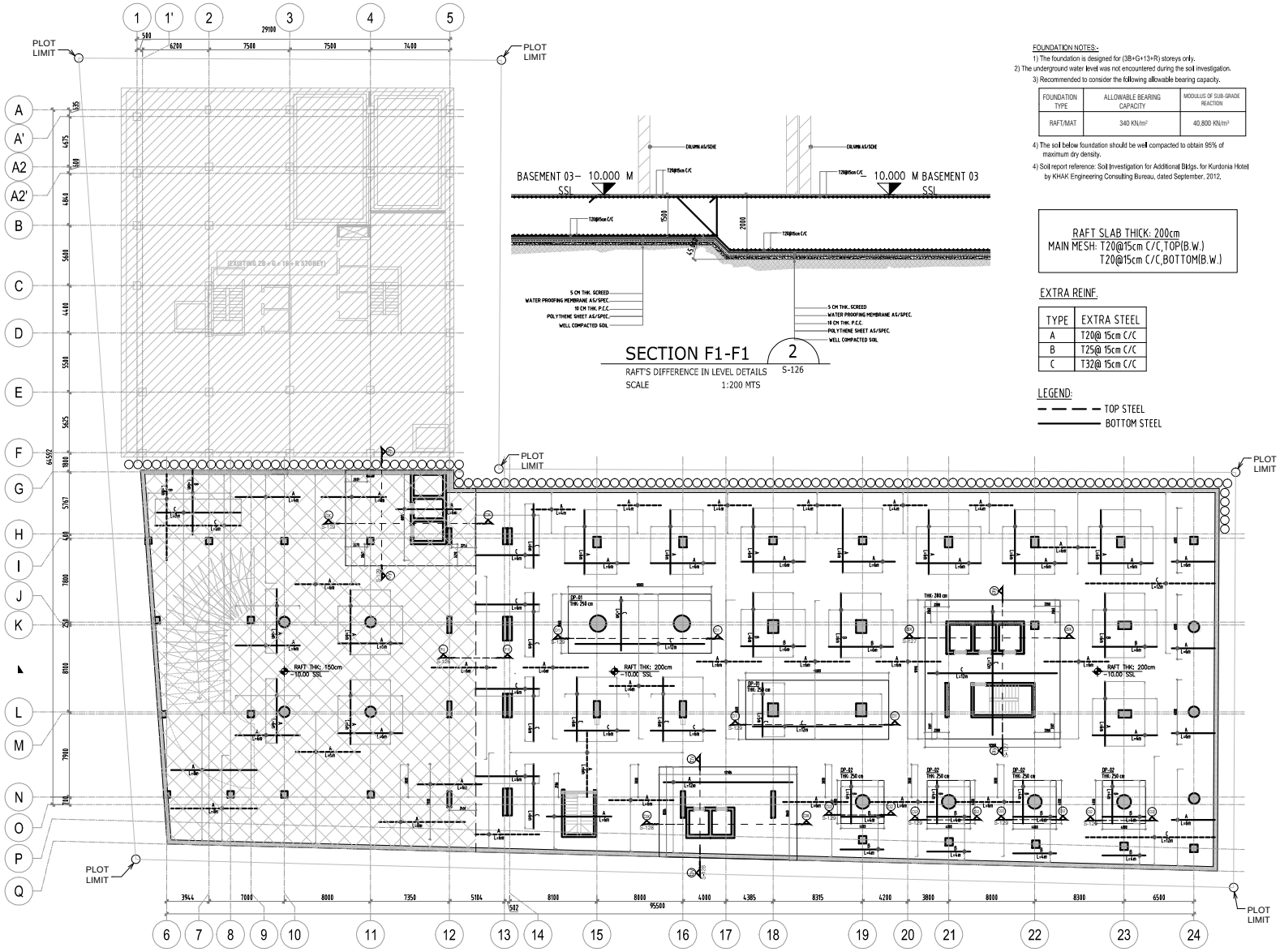
SHEET TITLE :

(RESIDENTIAL TOWER)
MACHINE ROOM
COLUMN LAYOUT

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	125	



SECTION F1-F1

2
S-126

RAFT'S DIFFERENCE IN LEVEL DETAILS
SCALE 1:200 MTS

FOUNDATION NOTES:-

1) The foundation is designed for (3B+G+13+R) storeys only.
2) The underground water level was not encountered during the soil investigation.
3) Recommended to consider the following allowable bearing capacity.

FOUNDATION TYPE	ALLOWABLE BEARING CAPACITY	MODULUS OF SUB-GRADE REACTION
RAFT/MAT	340 KN/m²	40,800 KN/m³

4) The soil below foundation should be well compacted to obtain 95% of maximum dry density.
4) Soil report reference: Soil Investigation for Additional Bldgs. for Kurdonia Hotel by KHAK Engineering Consulting Bureau, dated September, 2012.

RAFT SLAB THICK: 200cm
MAIN MESH: T20@15cm C/C,TOP(B.W.)
T20@15cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T20@ 15cm C/C
B	T25@ 15cm C/C
C	T32@ 15cm C/C

LEGEND:
TOP STEEL
BOTTOM STEEL

(PODIUM) BASEMENT 3 FOUNDATION PLAN

1
S-126

SCALE 1:200 MTS

@Seismicisolation

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

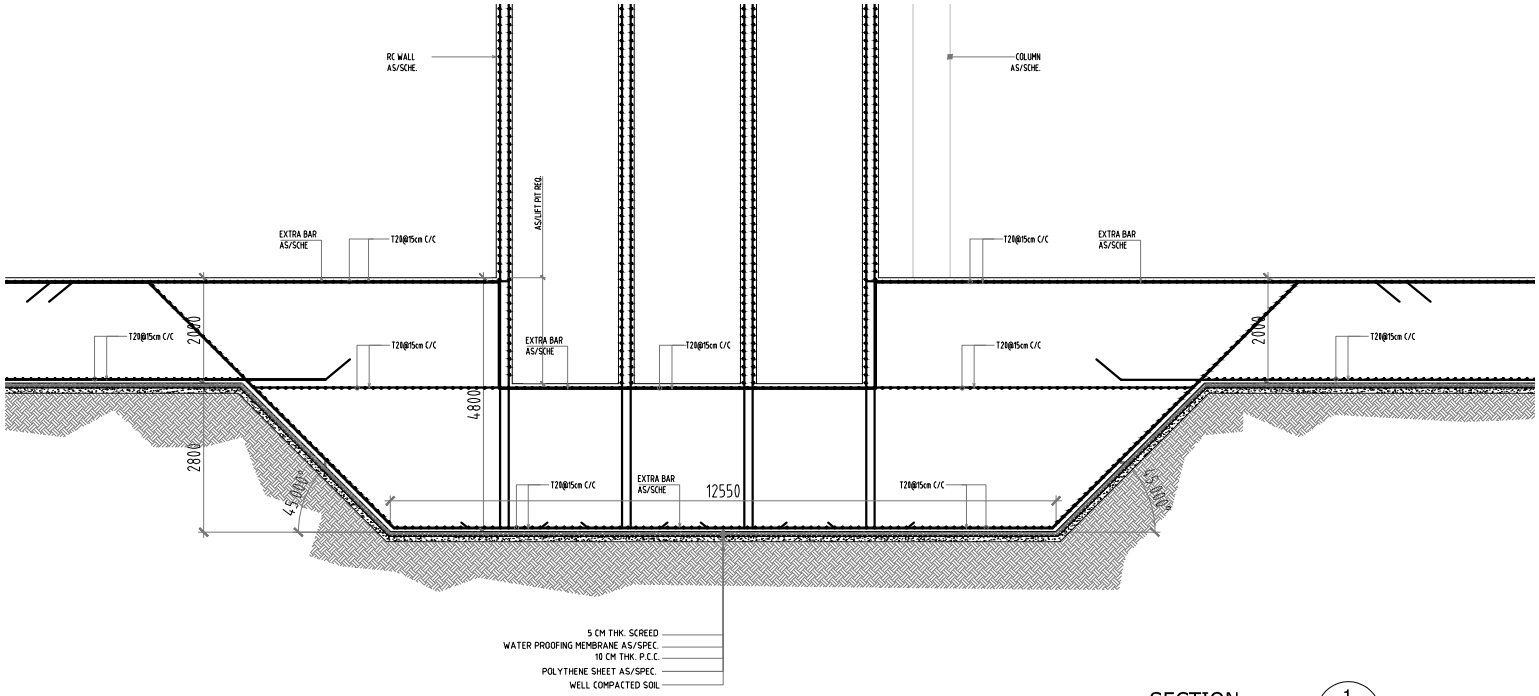
LANDSCAPE CONSULTANT:

SHEET TITLE : (PODIUM) BASEMENT 3 FOUNDATION PLAN

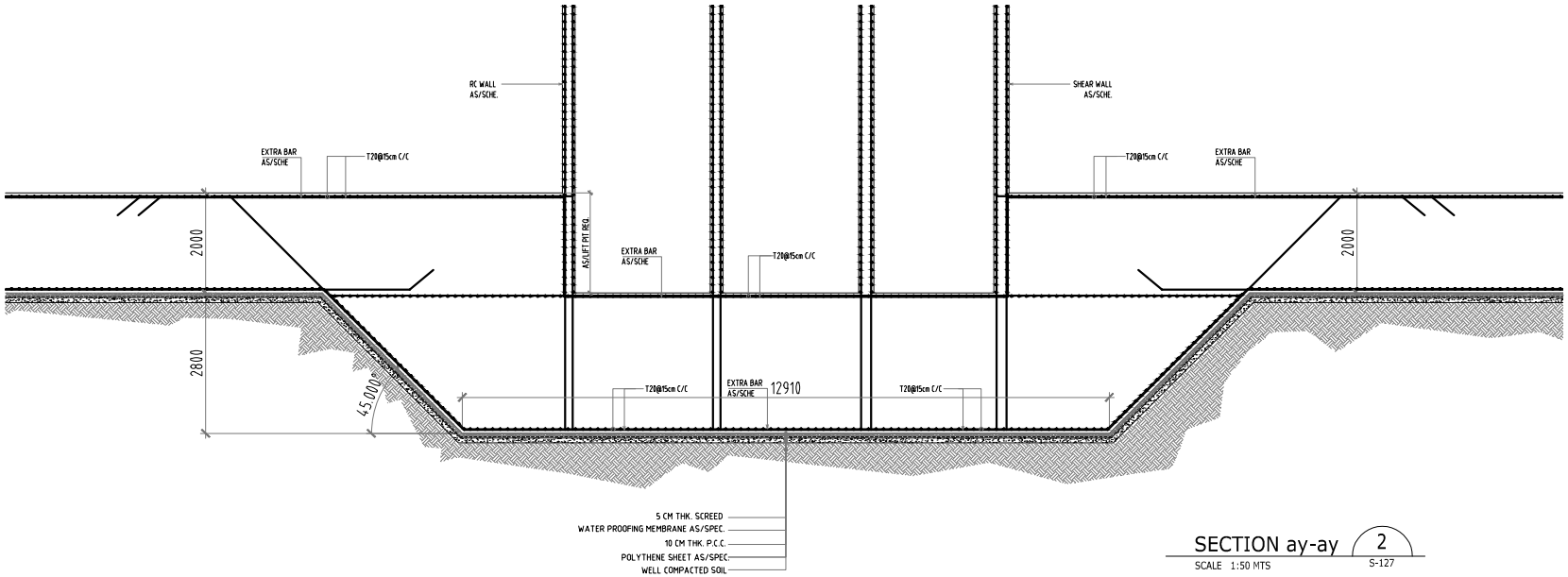
Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	126	



SECTION ax-ax 1
SCALE 1:50 MTS S-127



SECTION ay-ay 2
SCALE 1:50 MTS S-127

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Development & Investment

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Jawad Al-Hindiya Street, Al-Jamiaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:827

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

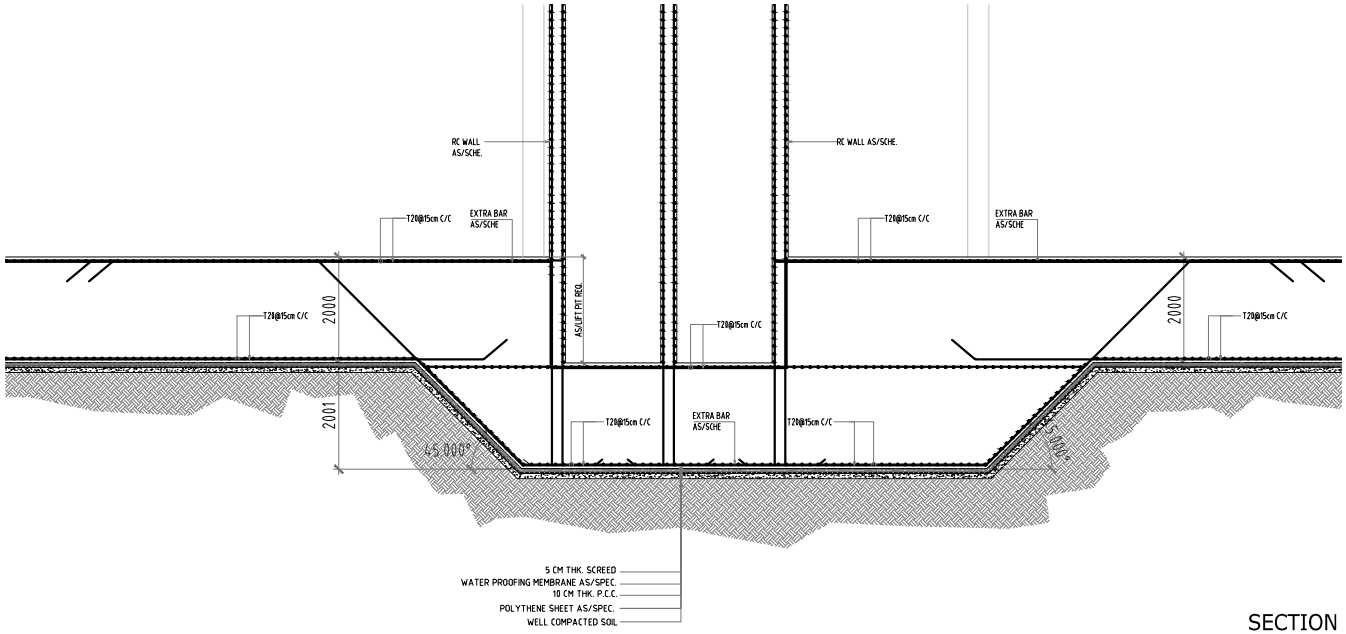
SHEET TITLE :

FOUNDATION SECTION DETAILS-01

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

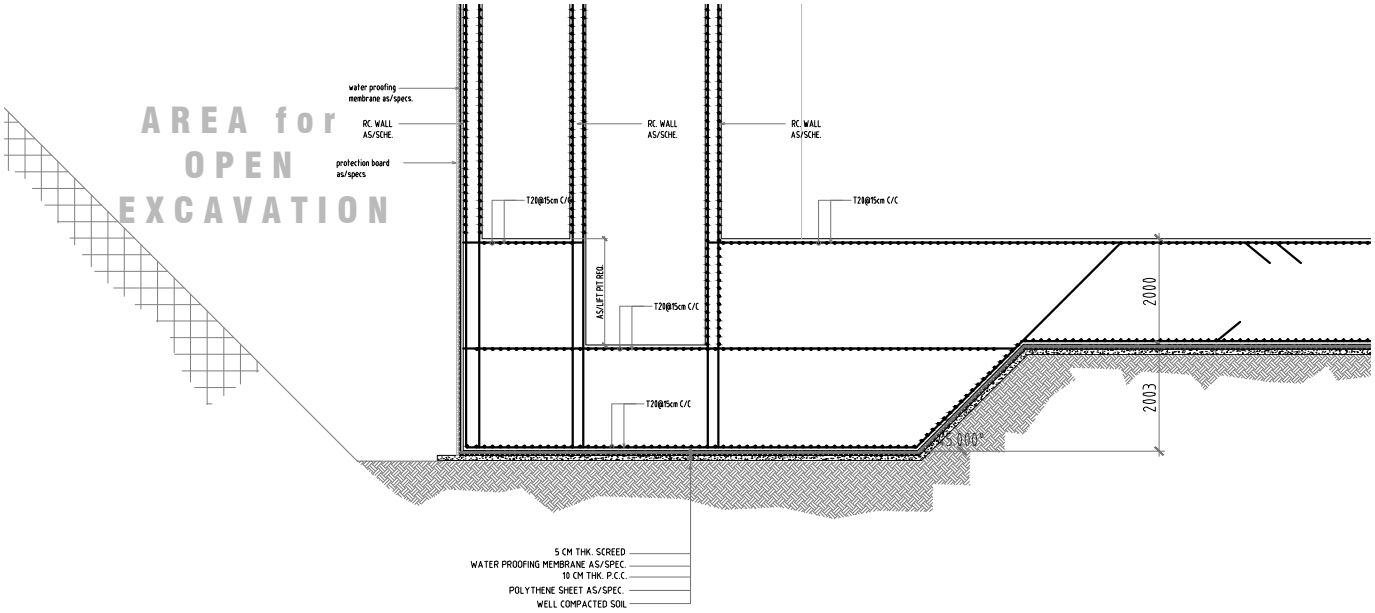
Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	127	



SECTION bx-bx 1 S-128

SCALE 1:80 MTS



SECTION by-by 1 S-128

SCALE 1:80 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

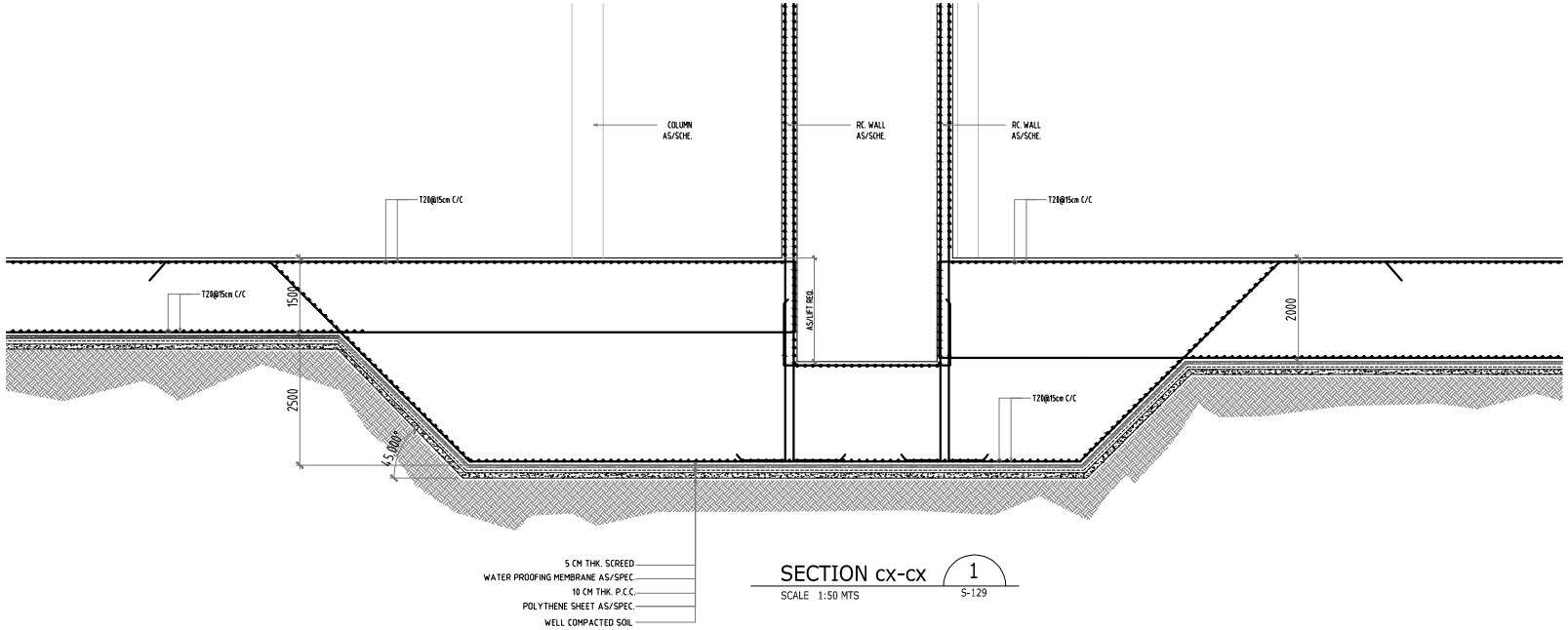
LANDSCAPE CONSULTANT:

SHEET TITLE : FOUNDATION SECTION DETAILS-02

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

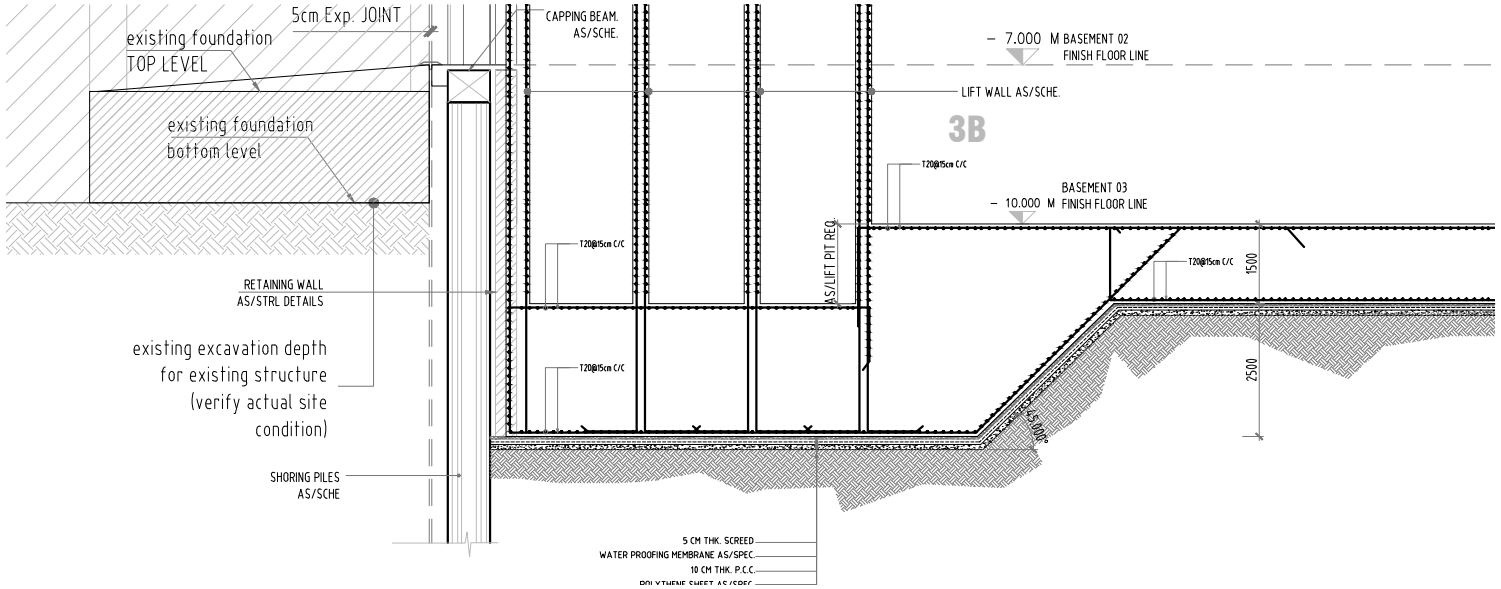
Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	128	



SECTION cx-cx 1 S-129

SCALE 1:50 MTS



SECTION cy-cy 1 S-129

SCALE 1:50 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

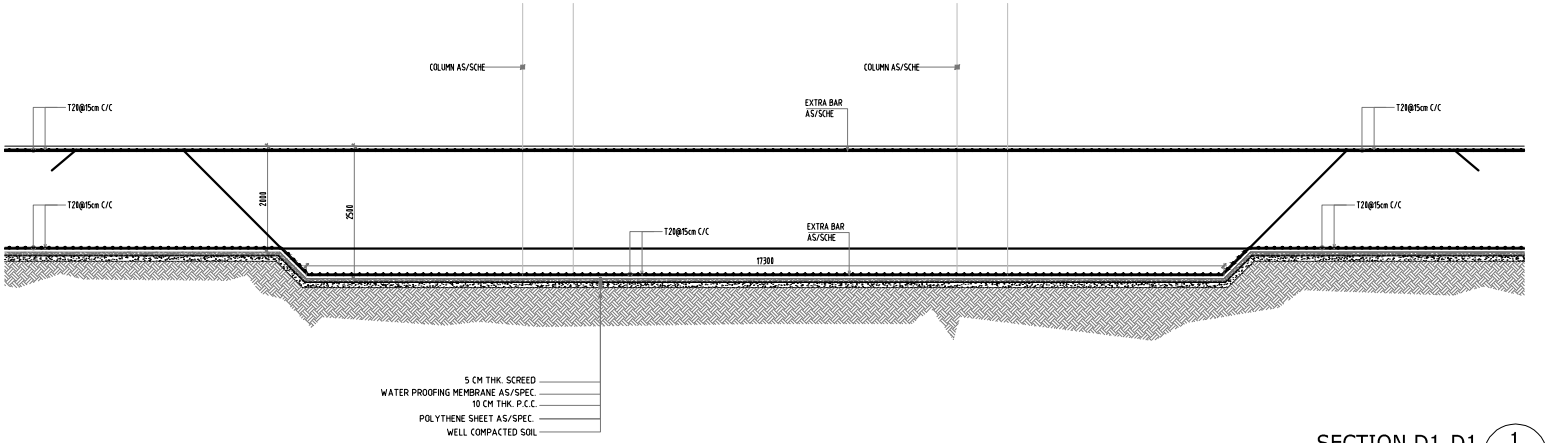
SHEET TITLE :

FOUNDATION SECTION DETAILS-03

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

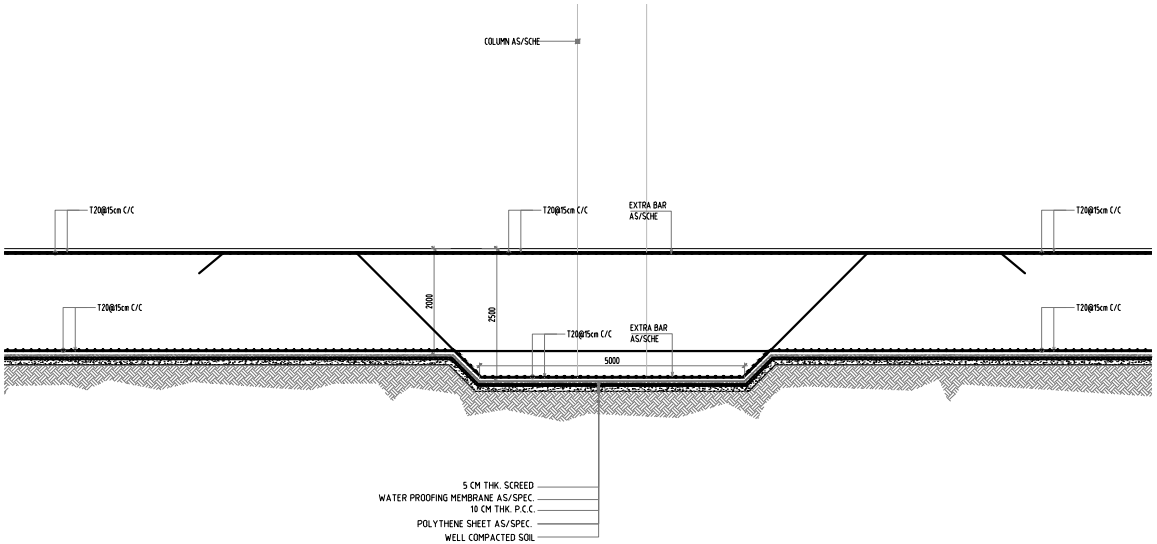
Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	129	



SECTION D1-D1 1 S-129

SCALE 1:80 MTS



SECTION D2-D2 1 S-129

SCALE 1:80 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Mohammed Jawad Al-Ubaidi
Awaat Al-Hindiya Street, Al-Jamiaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:827

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

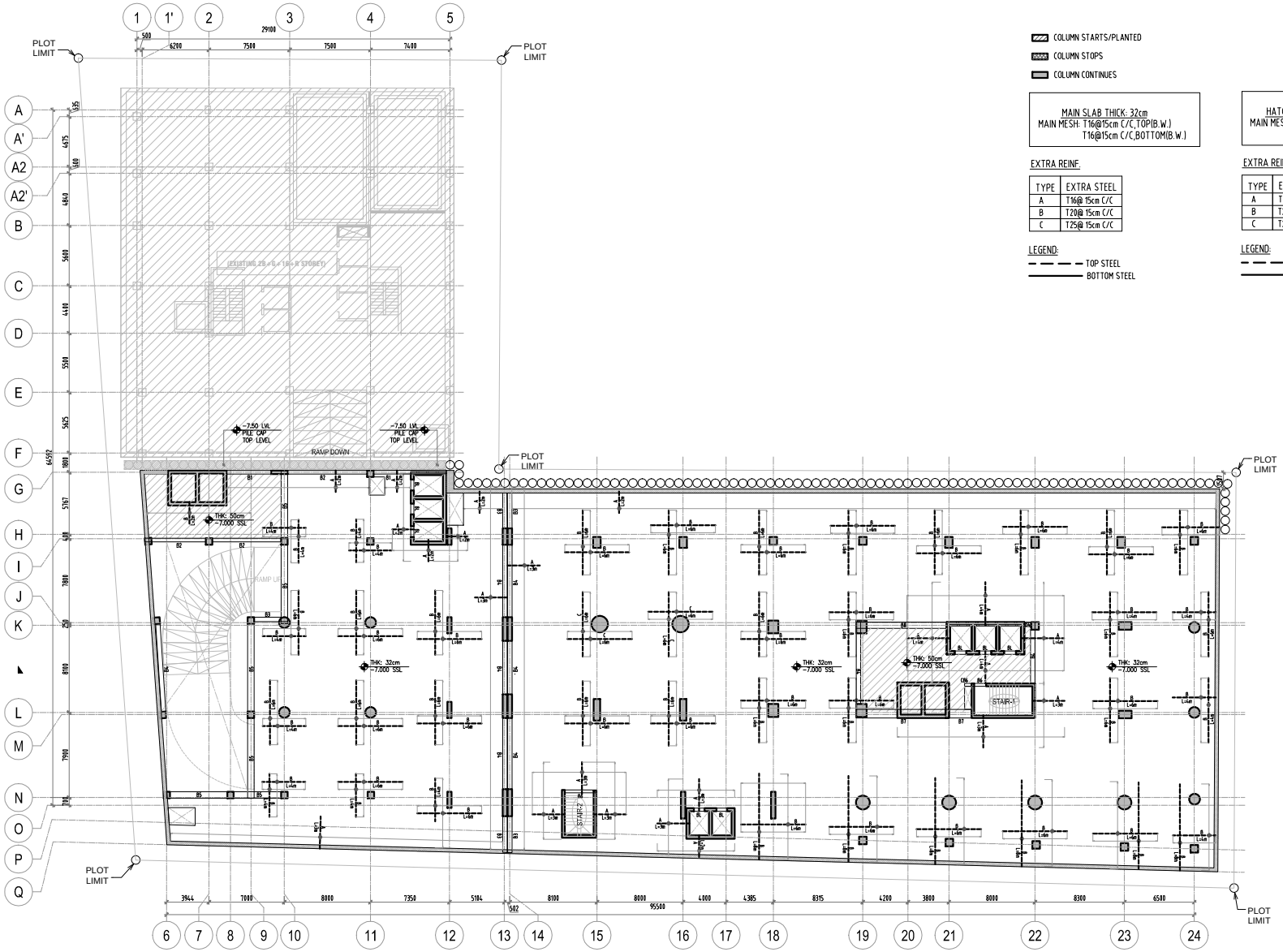
SHEET TITLE :

FOUNDATION SECTION
DROP PANEL DETAILS-01

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	130	



COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 32cm
MAIN MESH: T16@15cm C/C,TOP(B.W.)
T16@15cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T16@ 15cm C/C
B	T20@ 15cm C/C
C	T25@ 15cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL

HATCHED SLAB THICK: 50cm
MAIN MESH: T20@15cm C/C,TOP(B.W.)
T20@15cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T16@ 15cm C/C
B	T20@ 15cm C/C
C	T25@ 15cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL

(PODIUM)
BASEMENT 2 FRAMING PLAN

1
S-131

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

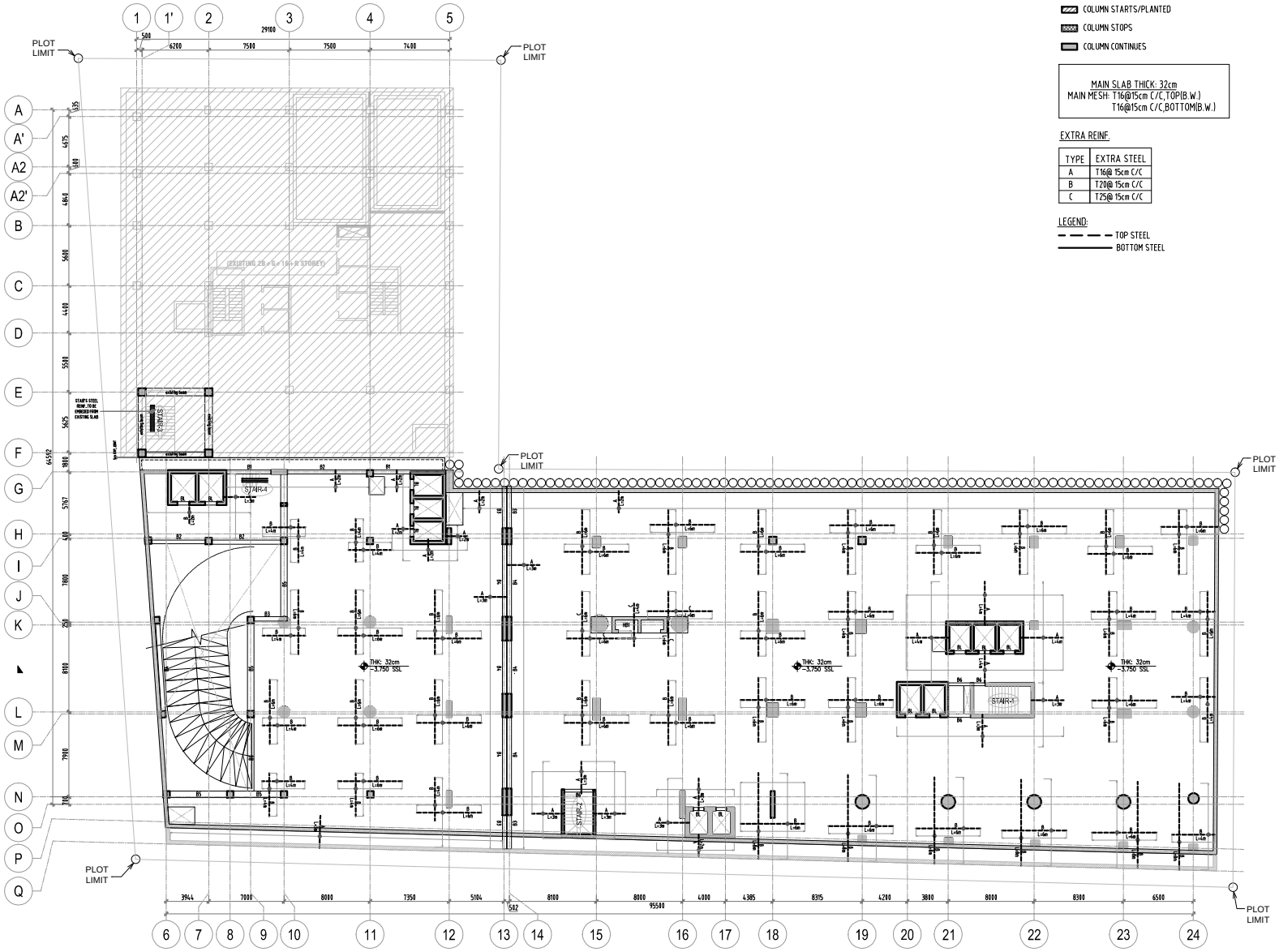
SHEET TITLE :

(PODIUM)
BASEMENT 2 FRAMING PLAN

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	131	



COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 32cm
MAIN MESH: T16@15cm C/C,TOP(B.W.)
T16@15cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T16@ 15cm C/C
B	T20@ 15cm C/C
C	T25@ 15cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL

(PODIUM)
BASEMENT 1 FRAMING PLAN 1 S-132

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :

MJU Consulting Engineers
Awaat Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

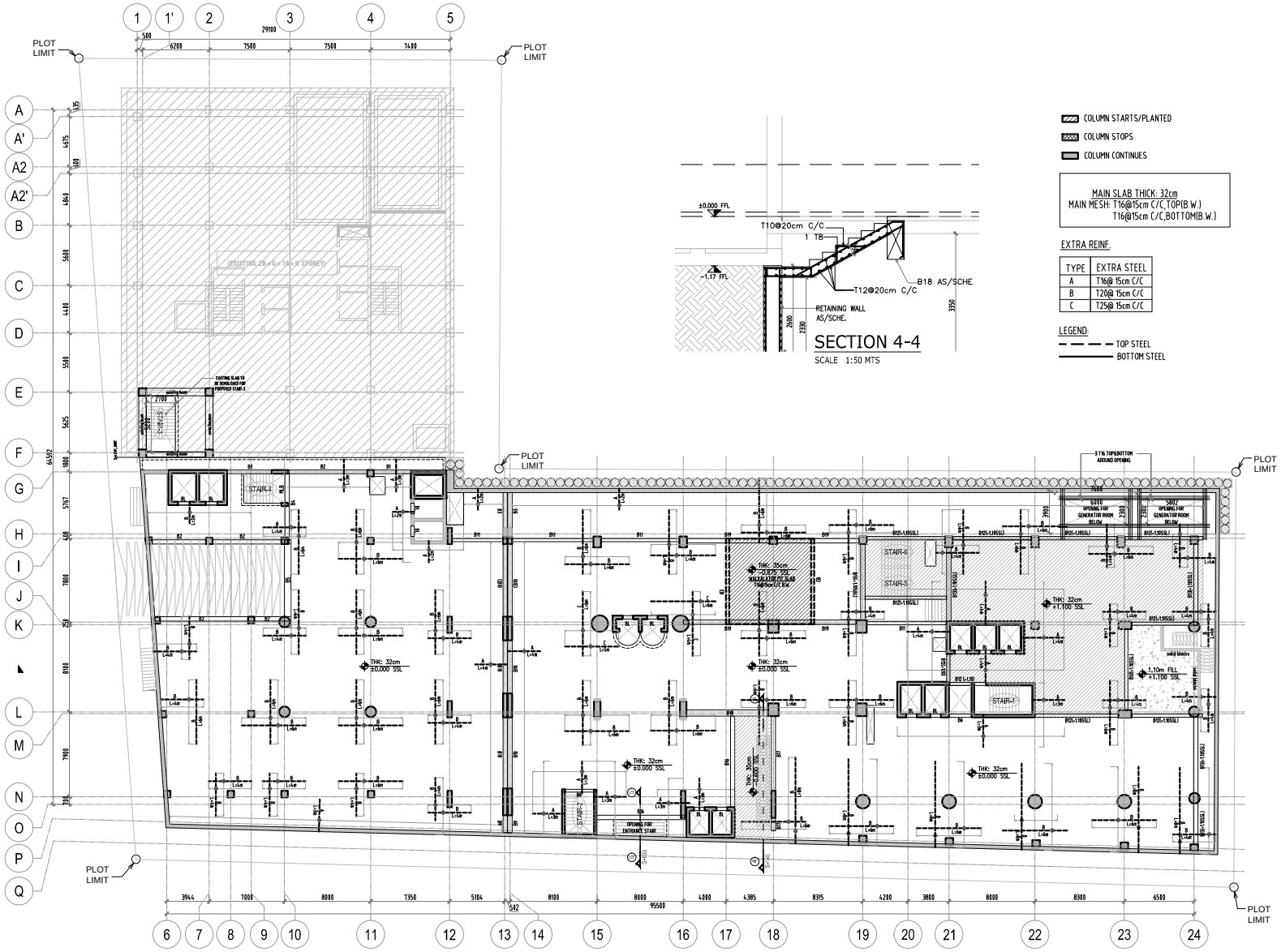
SHEET TITLE :

(PODIUM)
BASEMENT 1 FRAMING PLAN

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	132	



SECTION 4-4

SCALE 1:50 MTS

COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 32cm
MAIN MESH: T16@15cm C/C,TOP(B.W.)
T16@15cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T16@ 15cm C/C
B	T20@ 15cm C/C
C	T25@ 15cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL

(PODIUM) GROUND FLOOR PLAN

1 S-133

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Assaad Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

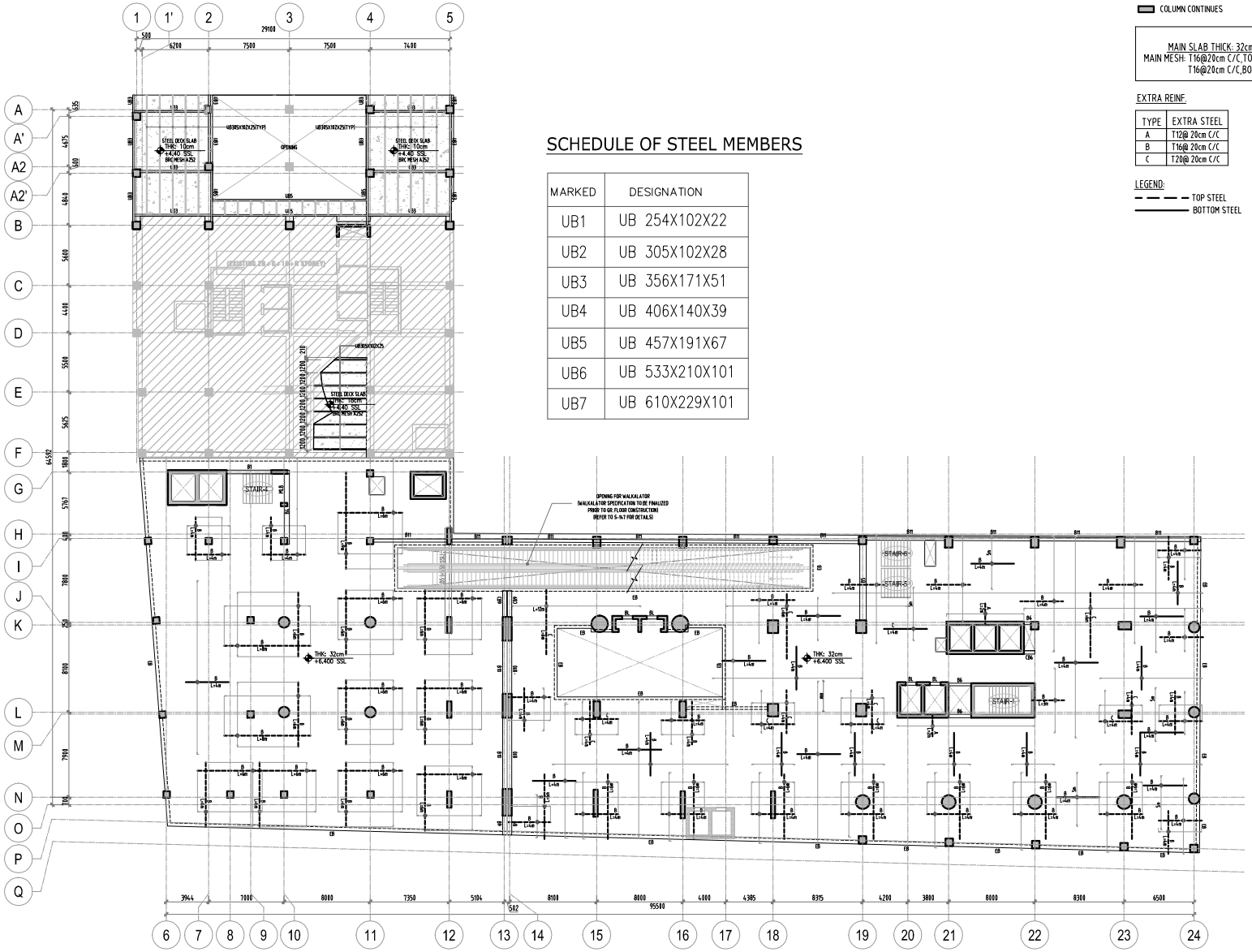
LANDSCAPE CONSULTANT:

SHEET TITLE : (PODIUM) GROUND FLOOR FRAMING PLAN

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	133	



COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 32cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL

SCHEDULE OF STEEL MEMBERS

MARKED	DESIGNATION
UB1	UB 254X102X22
UB2	UB 305X102X28
UB3	UB 356X171X51
UB4	UB 406X140X39
UB5	UB 457X191X67
UB6	UB 533X210X101
UB7	UB 610X229X101

(PODIUM)
1ST FLOOR FRAMING PLAN (1) S-134

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

NOTES ON STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL BE MANUFACTURED IN ACCORDANCE TO BS 5950 AND SHALL BE OF GRADE 43 EXCEPT BRACING RODS SHALL BE HIGH TENSILE STEEL WITH MINIMUM Fy OF 34.5 N.mm2. ALL WELDING IS ACCORDING TO BS 5135 WITH MIN. THICKNESS OF 4mm, U.N.O.

2. DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE TO BS 5950.

3. ALL STRUCTURAL STEEL WORKS SHALL BE PROTECTED AGAINST CORROSION BY TWO COATS OF PRIMER (75 MICRONS EACH) AND ONE COAT OF CHLORINATED RUBBER PAINT (60 MICRONS) WITH APPROVED COLOR.

4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH CONNECTION DESIGN AND CALCULATION FOR CONSULTANT APPROVAL PRIOR TO CONSTRUCTION.

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT: MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

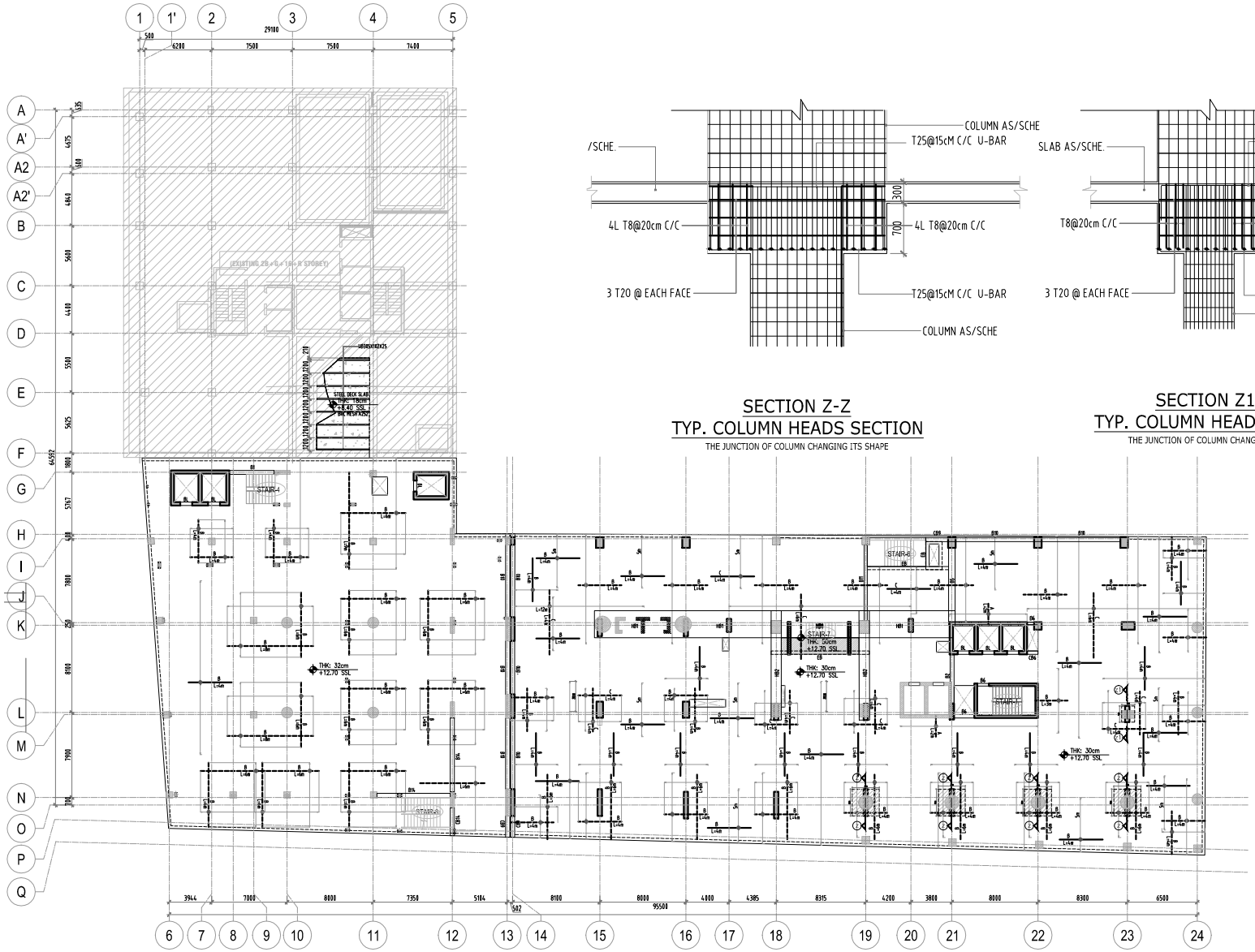
LANDSCAPE CONSULTANT:

SHEET TITLE : (PODIUM) 1ST FLOOR FRAMING PLAN

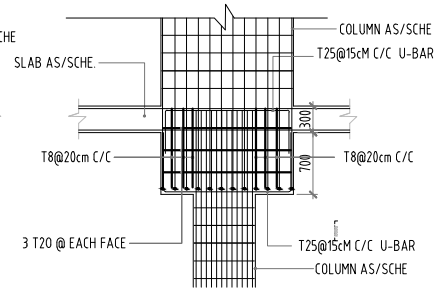
Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	134	



SECTION Z-Z
TYP. COLUMN HEADS SECTION
THE JUNCTION OF COLUMN CHANGING ITS SHAPE



SECTION Z1-Z1
TYP. COLUMN HEADS SECTION
THE JUNCTION OF COLUMN CHANGING ITS SHAPE

(PODIUM)
2ND FLOOR FRAMING PLAN

1 / S-135

SCALE 1:200 MTS

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ORIENTATION :

KEYPLAN :

COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

MAIN SLAB THICK: 32cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:

TOP STEEL
BOTTOM STEEL

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Ansaar Al Hindiya Street, Al Jamiaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

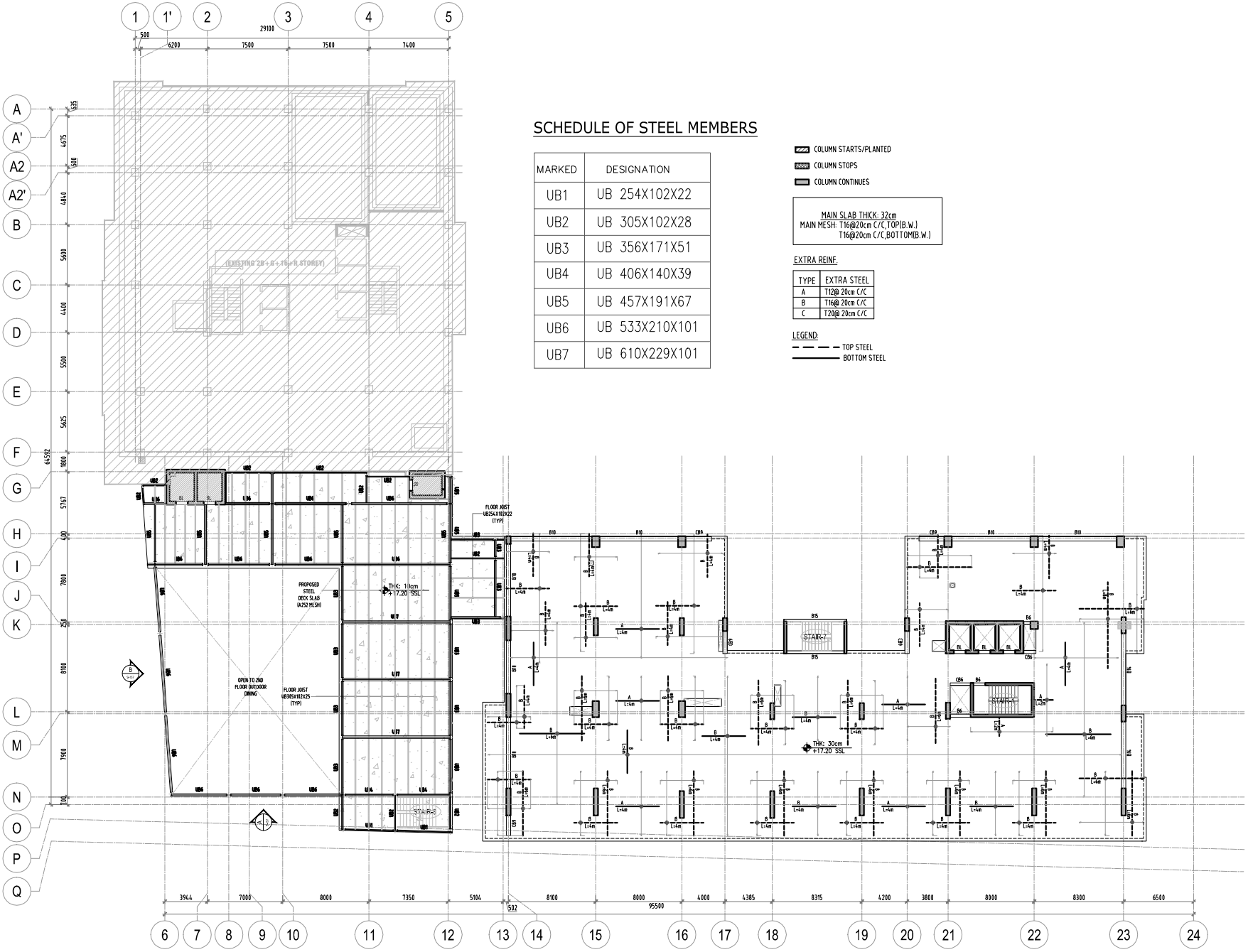
LANDSCAPE CONSULTANT:

SHEET TITLE : (PODIUM) 2ND FLOOR FRAMING PLAN

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
S	135	



SCHEDULE OF STEEL MEMBERS

MARKED	DESIGNATION
UB1	UB 254X102X22
UB2	UB 305X102X28
UB3	UB 356X171X51
UB4	UB 406X140X39
UB5	UB 457X191X67
UB6	UB 533X210X101
UB7	UB 610X229X101

COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 32cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL

3RD FLOOR FRAMING PLAN

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ORIENTATION :

KEYPLAN :

NOTES ON STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL BE MANUFACTURED IN ACCORDANCE TO BS 5950 AND SHALL BE OF GRADE 43 EXCEPT BRACING RODS SHALL BE HIGH TENSILE STEEL WITH MINIMUM Fy OF 34.5 N.mm2. ALL WELDING IS ACCORDING TO BS 5135 WITH MIN. THICKNESS OF 4mm, U.N.O.

2. DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE TO BS 5950.

3. ALL STRUCTURAL STEEL WORKS SHALL BE PROTECTED AGAINST CORROSION BY TWO COATS OF PRIMER (75 MICRONS EACH) AND ONE COAT OF CHLORINATED RUBBER PAINT (60 MICRONS) WITH APPROVED COLOR.

4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH CONNECTION DESIGN AND CALCULATION FOR CONSULTANT APPROVAL PRIOR TO CONSTRUCTION.

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT: MJU Consulting Engineers
Ansaar Al Hindiya Street, Al Jamiaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

3RD FLOOR FRAMING PLAN

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Date:	Project No.:	Sheet Size:
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COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 30cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

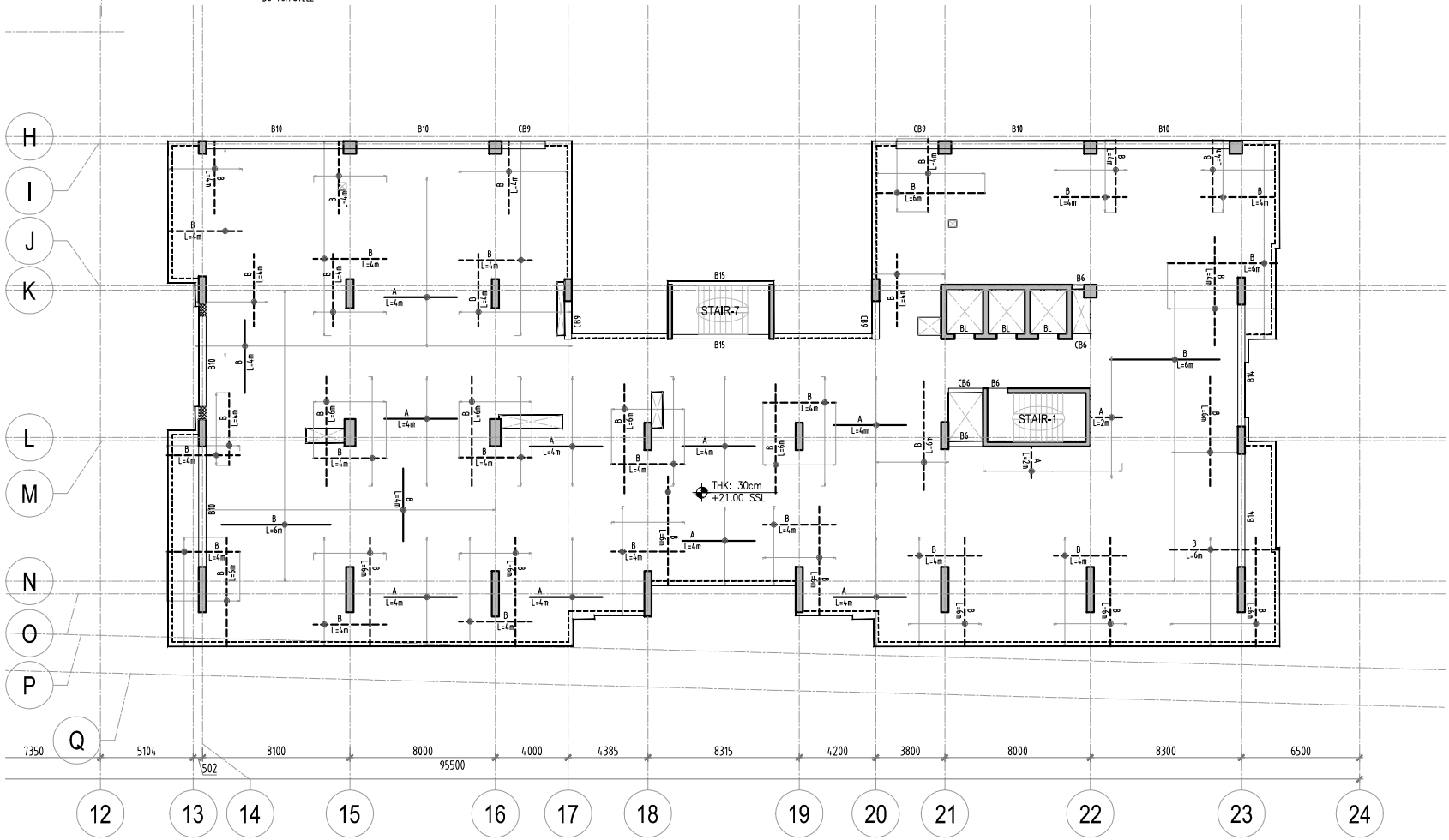
EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL



(RESIDENTIAL TOWER)
4TH-12TH FLOOR FRAMING PLAN

1
S-137

SCALE 1:125 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

4TH-12FLR. FRAMING PLAN
(RESIDENTIAL TOWER)

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Date:	Project No.:	Sheet Size:
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Discipline:	Sheet No.:	Revision:
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COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 30cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

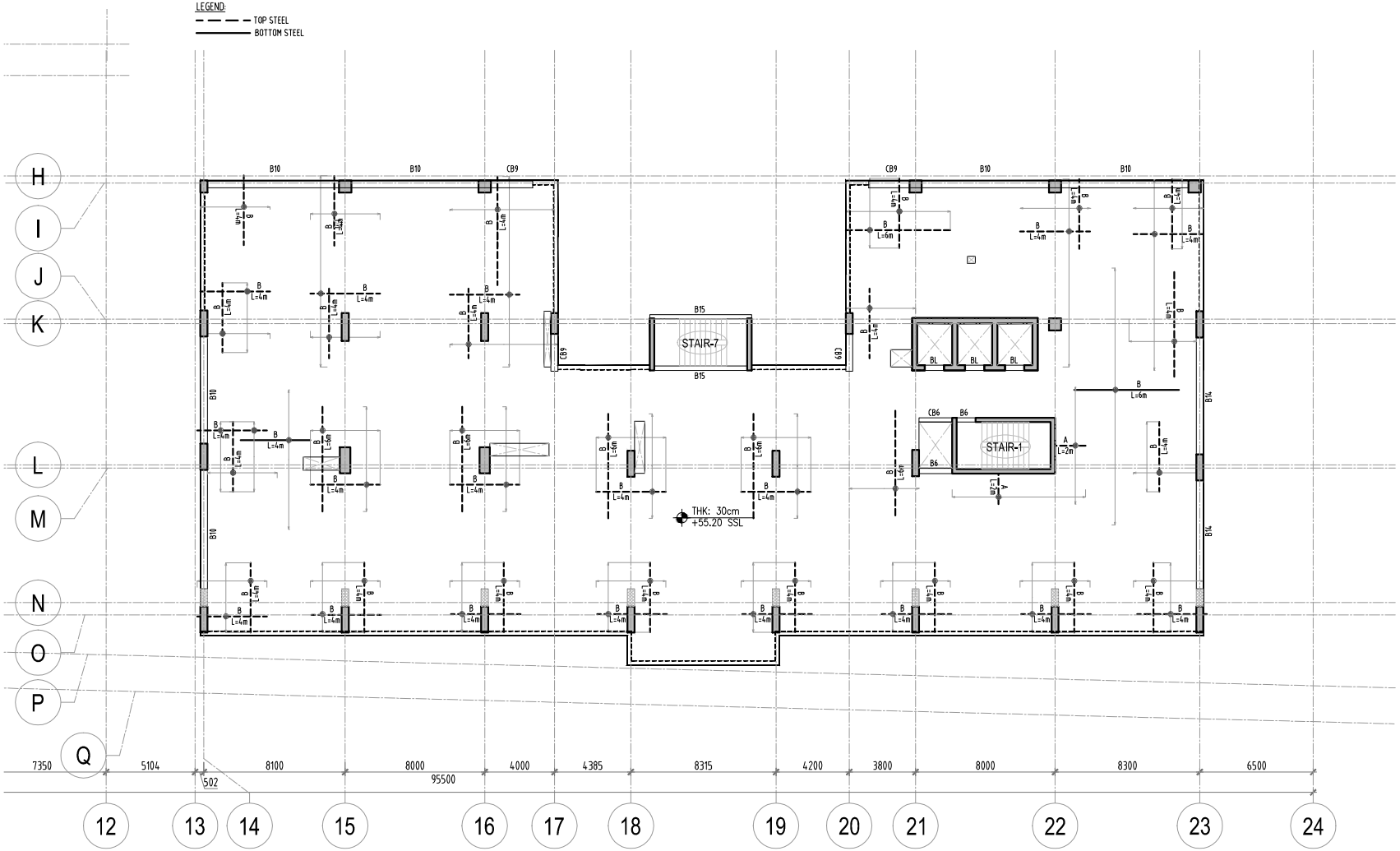
EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL



(RESIDENTIAL TOWER)
13TH FLOOR FRAMING PLAN
1
S-138
SCALE 1:125 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Awaad Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

13TH & RD FLR. FRAMING PLAN
(RESIDENTIAL TOWER)

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Date:	Project No.:	Sheet Size:
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Discipline:	Sheet No.:	Revision:
S	138	

COLUMN STARTS/PLANTED

COLUMN STOPS

COLUMN CONTINUES

MAIN SLAB THICK: 30cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

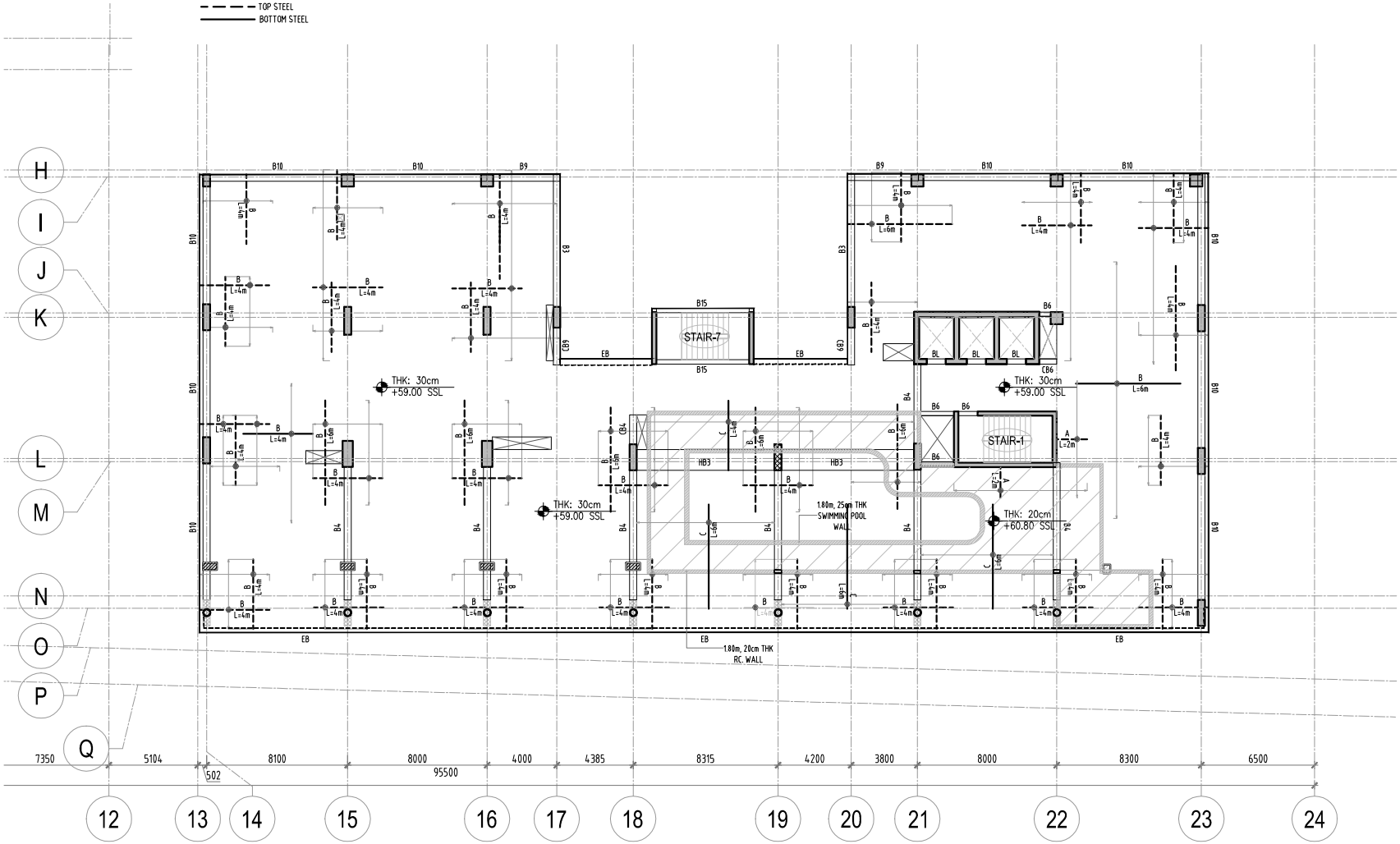
EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:

TOP STEEL

BOTTOM STEEL



(RESIDENTIAL TOWER)
ROOF DECK FLOOR FRAMING PLAN

1
S-139

SCALE 1:125 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT: MJU Consulting Engineers
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mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

ROOF DECK FLR. FRAMING PLAN
(RESIDENTIAL TOWER)

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Date:	Project No.:	Sheet Size:
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Discipline:	Sheet No.:	Revision:
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COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

UNHATCHED SLAB THICK: 30cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:
TOP STEEL
BOTTOM STEEL

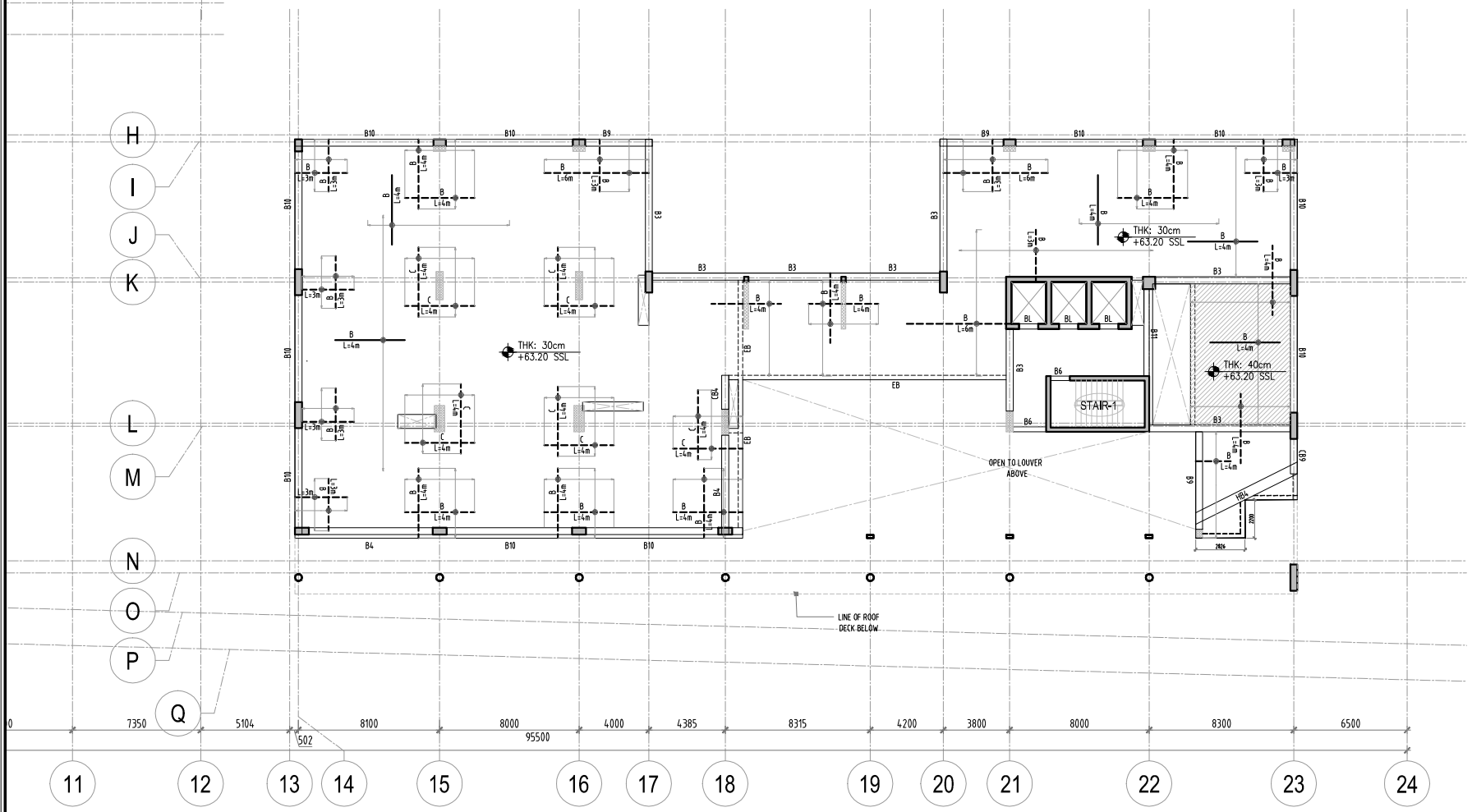
COLUMN STARTS/PLANTED
COLUMN STOPS
COLUMN CONTINUES

HATCHED SLAB THICK: 38cm
MAIN MESH: T16@20cm C/C,TOP(B.W.)
T16@20cm C/C,BOTTOM(B.W.)

EXTRA REINF.

TYPE	EXTRA STEEL
A	T12@ 20cm C/C
B	T16@ 20cm C/C
C	T20@ 20cm C/C

LEGEND:
TOP STEEL
BOTTOM STEEL



(RESIDENTIAL TOWER)
MACHINE ROOM FRAMING PLAN
1
S-140
SCALE 1:125 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :
MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :
MACHINE ROOM
(RESIDENTIAL TOWER)

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Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
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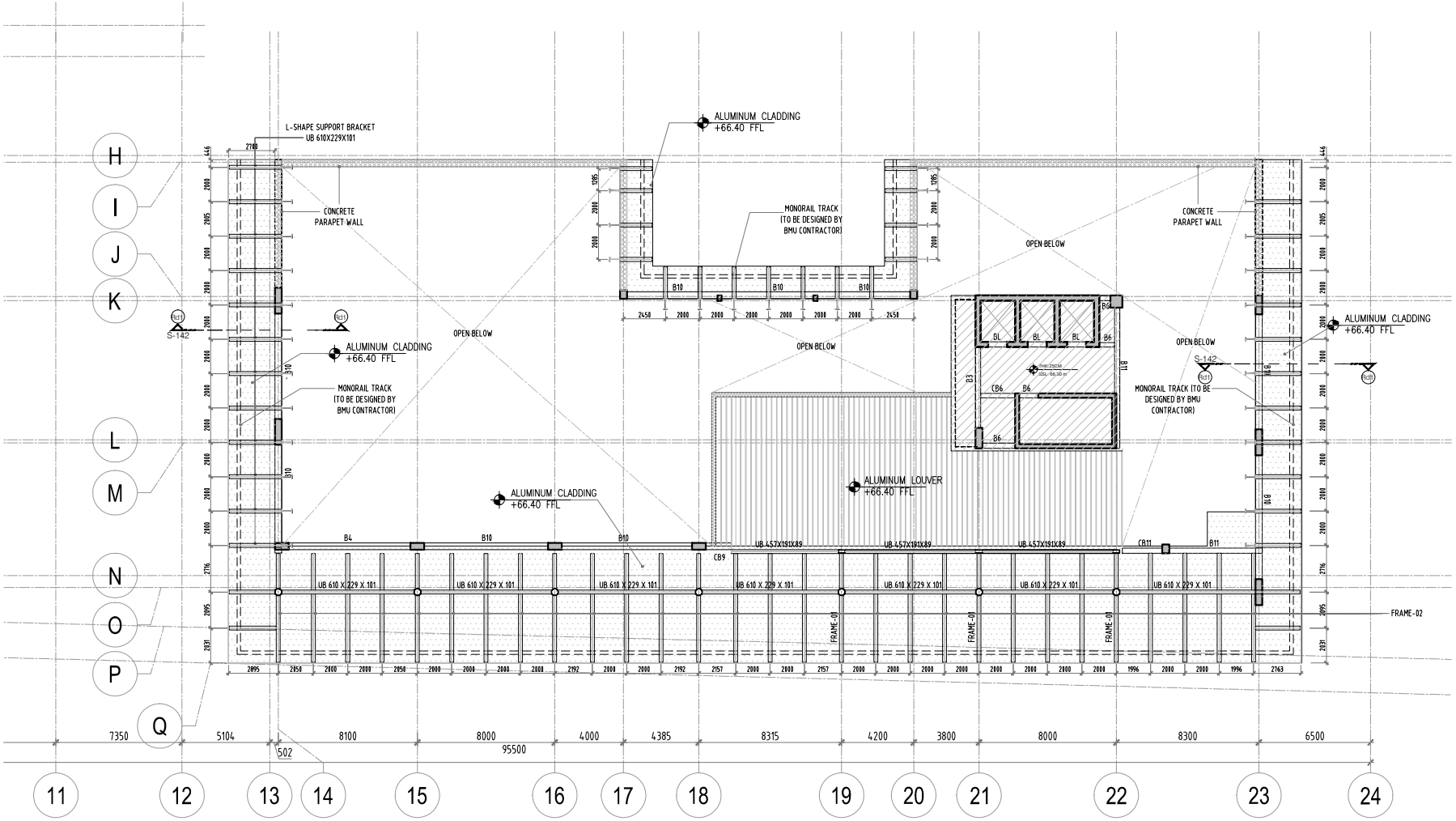

(RESIDENTIAL TOWER)
TOP OF ROOF DECK

1
S-141

SCALE 1:125 MTS

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ORIENTATION :

KEYPLAN :

NOTES ON STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL BE MANUFACTURED IN ACCORDANCE TO BS 5950 AND SHALL BE OF GRADE 43 EXCEPT BRACING RODS SHALL BE HIGH TENSILE STEEL WITH MINIMUM Fy OF 34.5 N.mm2. ALL WELDING IS ACCORDING TO BS 5135 WITH MIN. THICKNESS OF 4mm, U.N.O.

2. DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE TO BS 5950.

3. ALL STRUCTURAL STEEL WORKS SHALL BE PROTECTED AGAINST CORROSION BY TWO COATS OF PRIMER (75 MICRONS EACH) AND ONE COAT OF CHLORINATED RUBBER PAINT (60 MICRONS) WITH APPROVED COLOR.

4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH CONNECTION DESIGN AND CALCULATION FOR CONSULTANT APPROVAL PRIOR TO CONSTRUCTION.

NOTES ON BMU CONSTRUCTION:

-BMU CONTRACTOR SHOULD SUBMIT SHOP DRAWING DETAILS AND DESIGN PRIOR TO CONSTRUCTION, TO BE CHECKED BY THE CONSULTANT.

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT: MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

TOP OF ROOF DECK
(RESIDENTIAL TOWER)

Scale:	Drawn:	Checked:	Approved:
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JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
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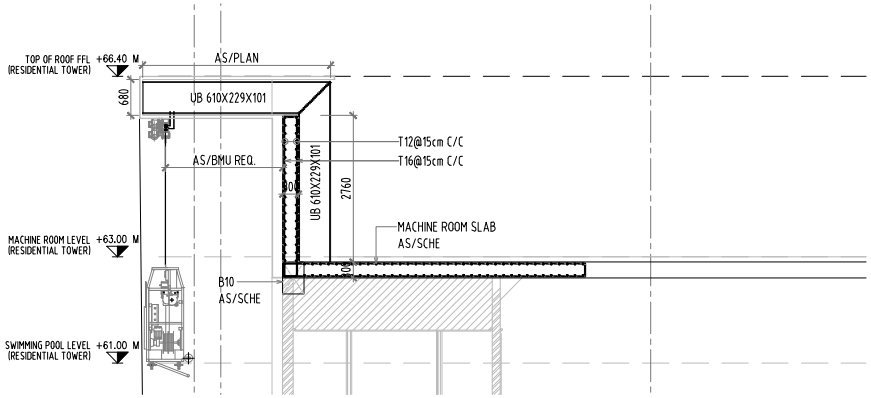
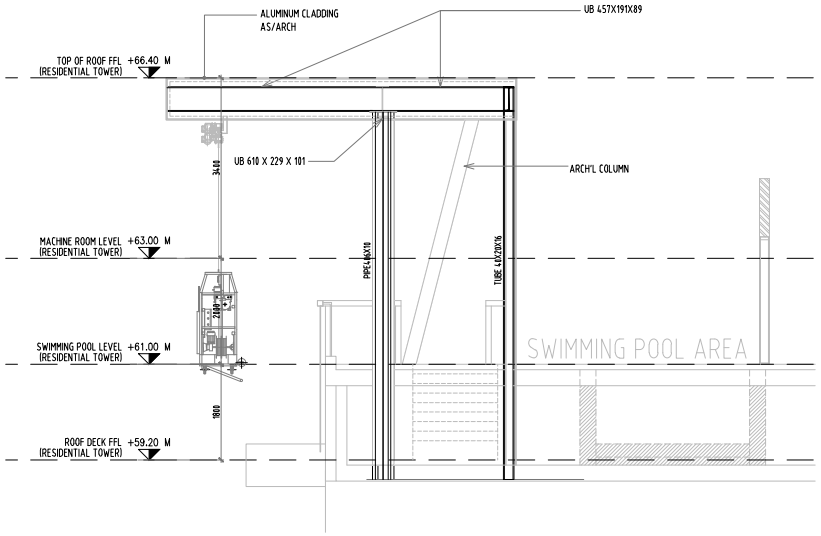


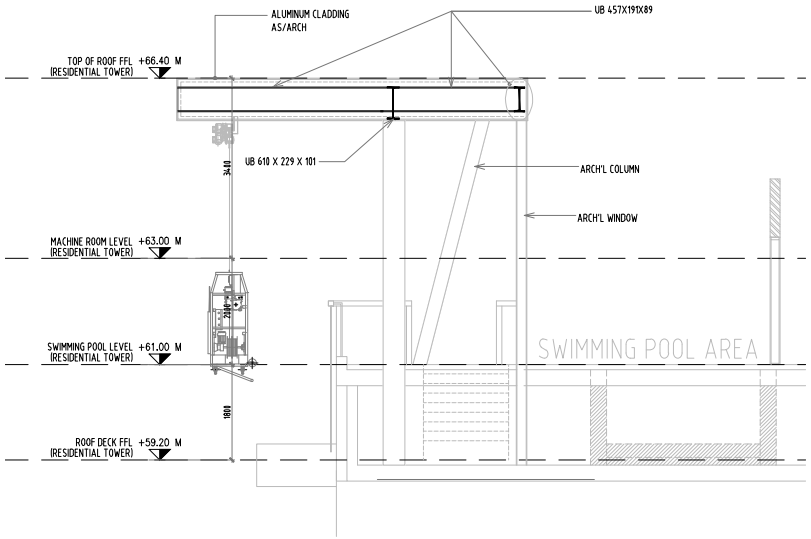
SECTION RD1 — 1 / S-142

SCALE 1:50



FRAME-01 — 2 / S-142

SCALE 1:50



FRAME-02 — 2 / S-142

SCALE 1:50

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ORIENTATION :

KEYPLAN :

NOTES ON STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL BE MANUFACTURED IN ACCORDANCE TO BS 5950 AND SHALL BE OF GRADE 43 EXCEPT BRACING RODS SHALL BE HIGH TENSILE STEEL WITH MINIMUM Fy OF 34.5 N.mm2. ALL WELDING IS ACCORDING TO BS 5135 WITH MIN. THICKNESS OF 4mm, U.N.O.

2. DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE TO BS 5950.

3. ALL STRUCTURAL STEEL WORKS SHALL BE PROTECTED AGAINST CORROSION BY TWO COATS OF PRIMER (75 MICRONS EACH) AND ONE COAT OF CHLORINATED RUBBER PAINT (60 MICRONS) WITH APPROVED COLOR.

4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH CONNECTION DESIGN AND CALCULATION FOR CONSULTANT APPROVAL PRIOR TO CONSTRUCTION.

NOTES ON BMU CONSTRUCTION:

-BMU CONTRACTOR SHOULD SUBMIT SHOP DRAWING DETAILS AND DESIGN PRIOR TO CONSTRUCTION, TO BE CHECKED BY THE CONSULTANT.

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT:

MJU Consulting Engineers
Awsaat Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

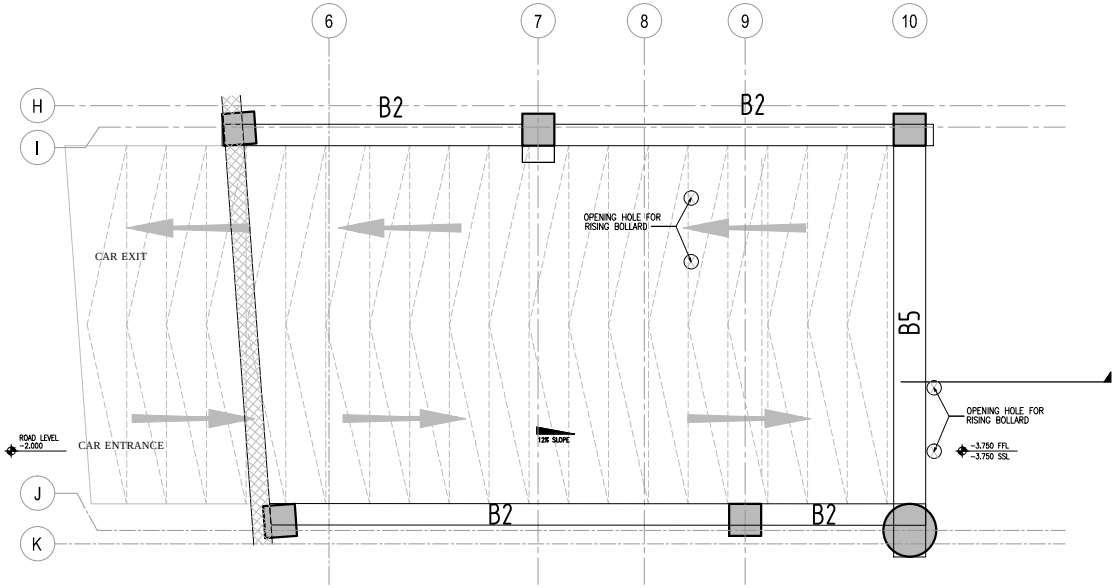
SHEET TITLE :

TOP OF ROOF DECK
SECTION DETAILS

Scale:	Drawn:	Checked:	Approved:
AS SHOWN	FS		

Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

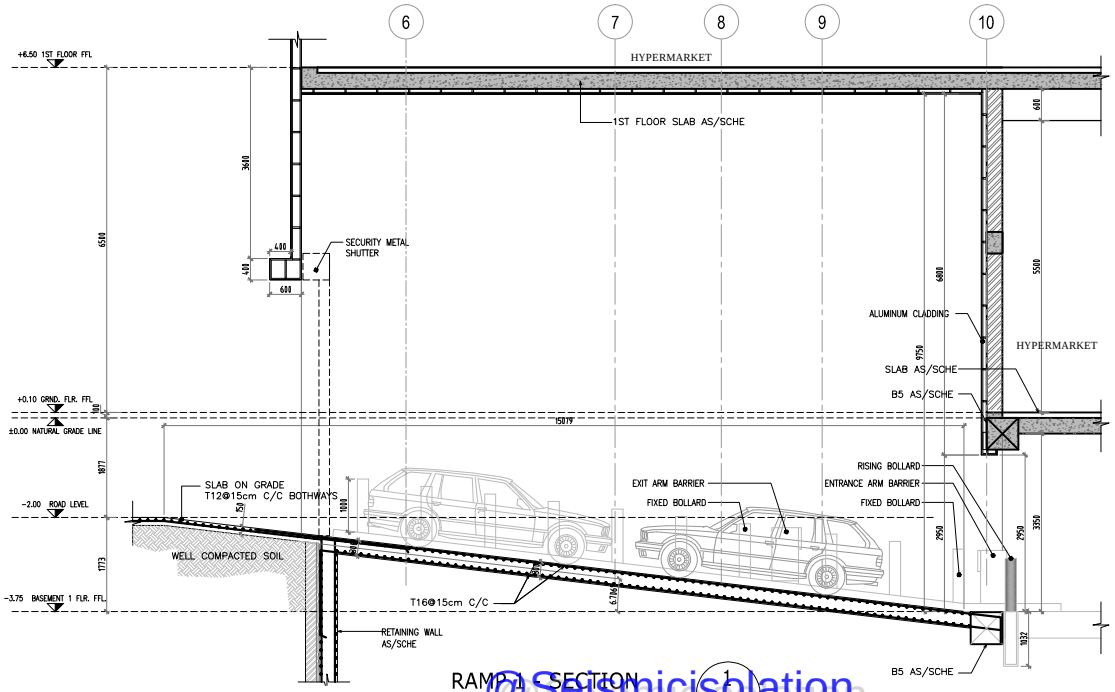
Discipline:	Sheet No.:	Revision:
S	142	



RAMP 1 - ENLARGED PLAN
GROUND TO 1ST BASEMENT

1
S-143

SCALE 1:50 MTS



RAMP 1 - SECTION

1
S-143

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

RAMP 1 - DETAILS

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Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

Discipline:	Sheet No.:	Revision:
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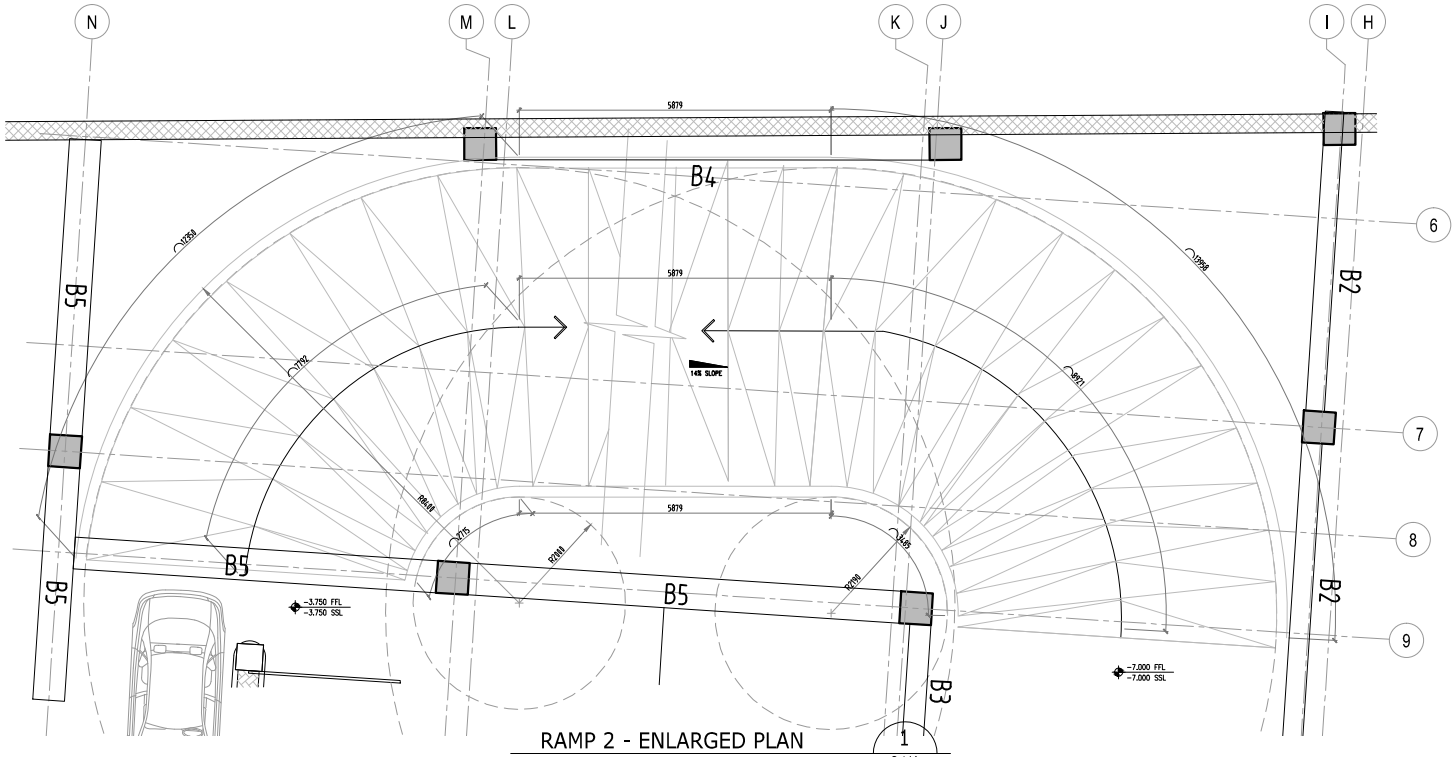
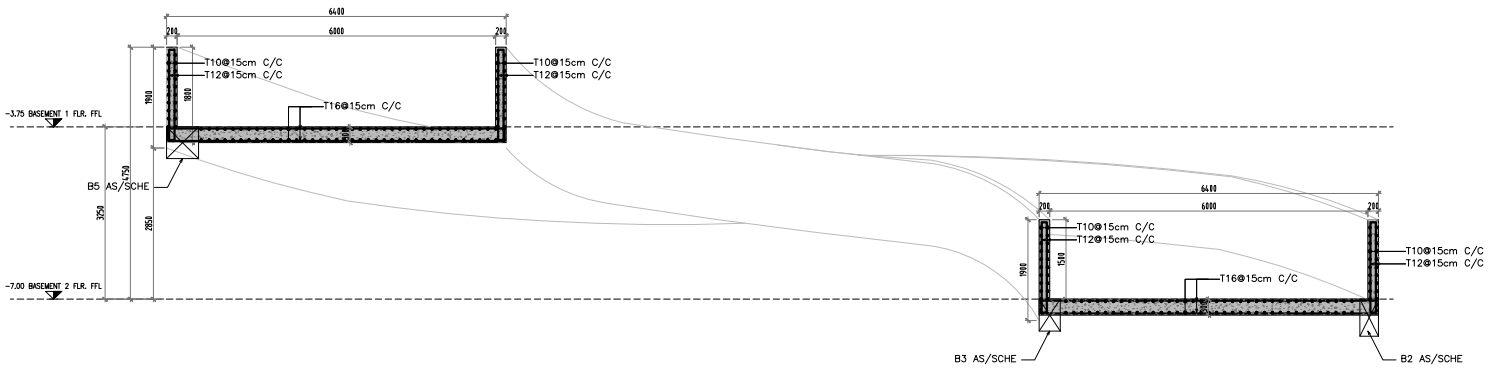


RAMP 2 - ENLARGED PLAN
BASEMENT 1 TO BASEMENT 2

1
S-144

SCALE 1:50 MTS



RAMP 2 - SECTION

1
S-144

SCALE 1:50 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :

MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

RAMP 2 - DETAILS

Scale:	Drawn:	Checked:	Approved:
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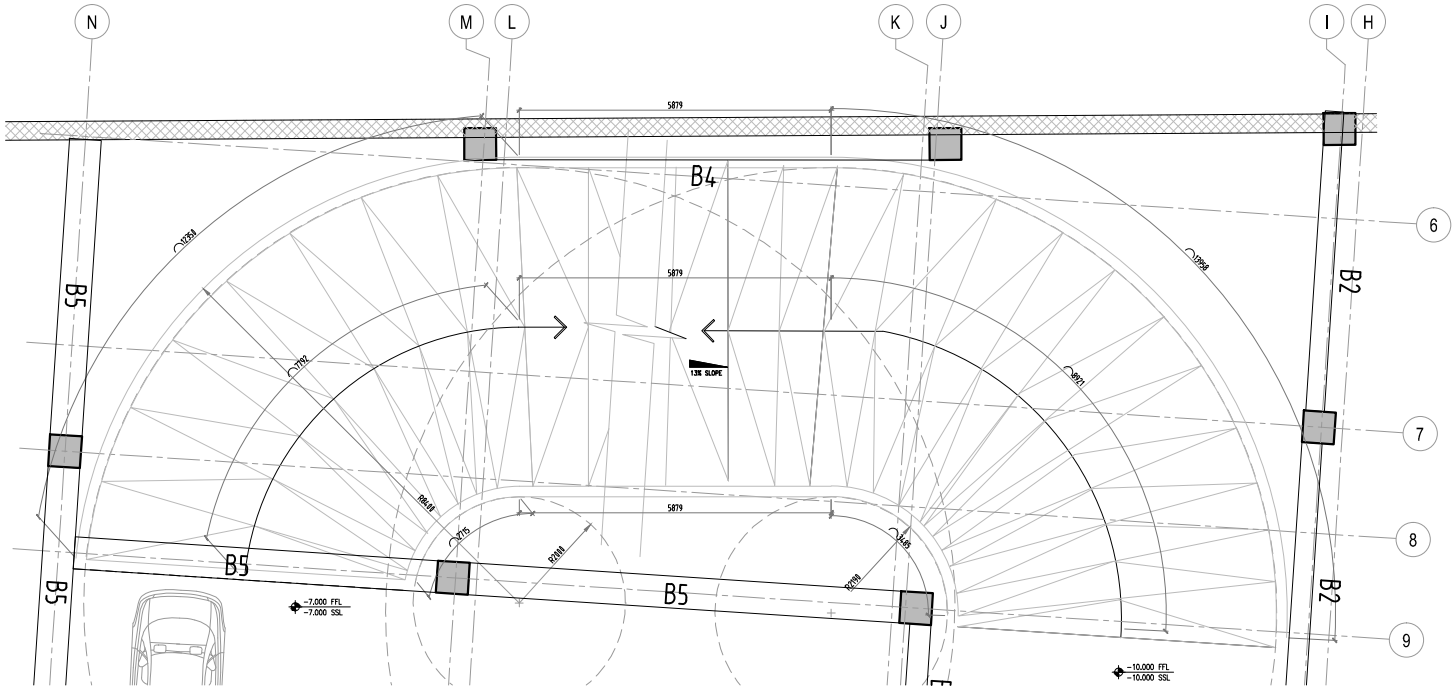
Date:	Project No.:	Sheet Size:
JUNE, 2015	241	A1

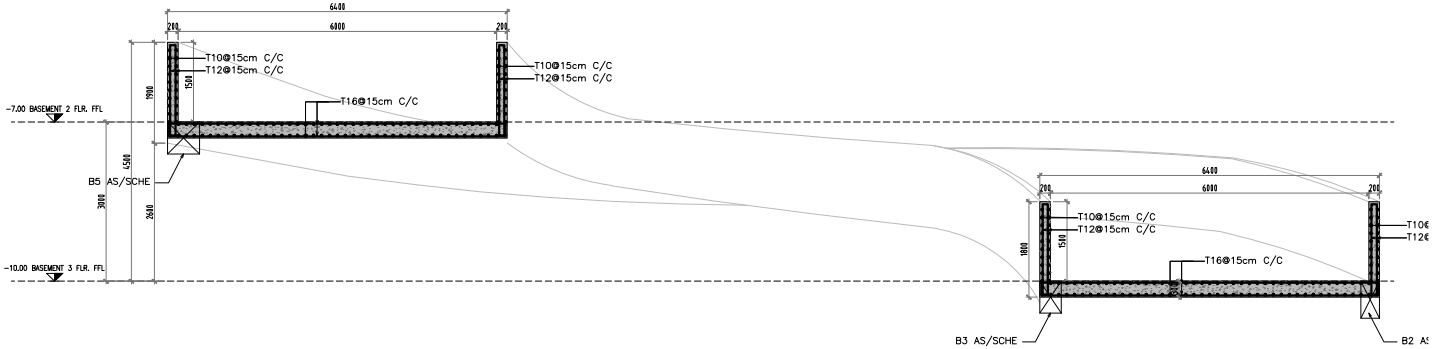
Discipline:	Sheet No.:	Revision:
S	144	



RAMP 3 - ENLARGED PLAN
BASEMENT 2 TO BASEMENT 3

1
S-145

SCALE 1:50 MTS



RAMP 3 - SECTION

1
S-145

SCALE 1:50 MTS

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ORIENTATION :

KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
mjubaghdad@mjugroup.com
Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

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Discipline:	Sheet No.:	Revision:
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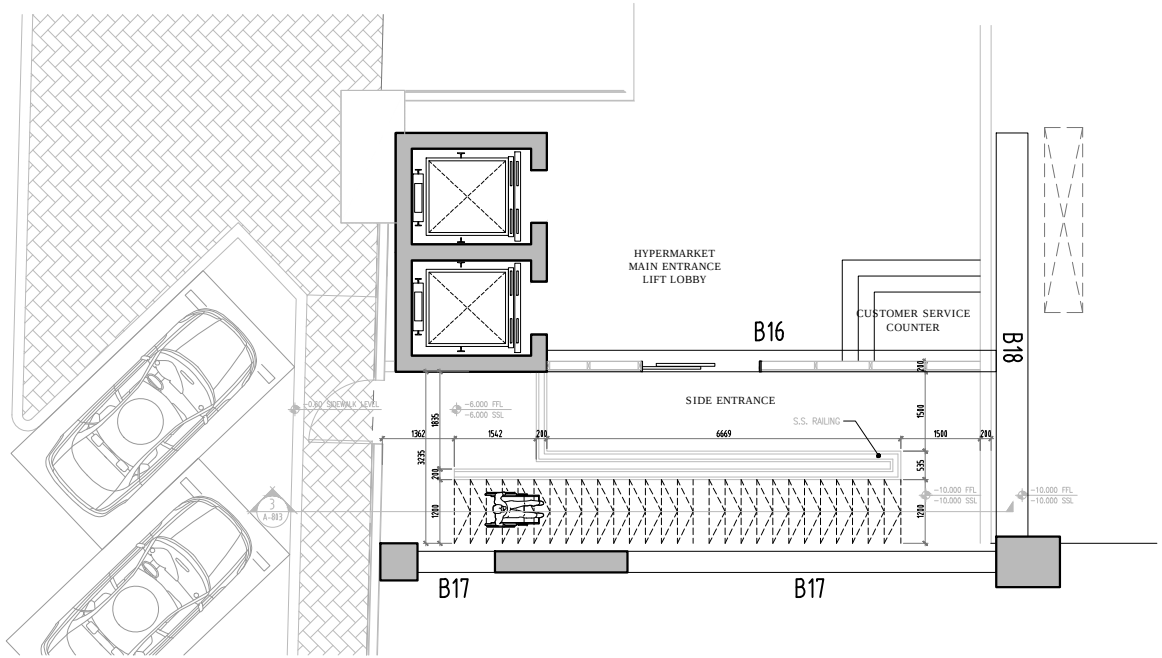
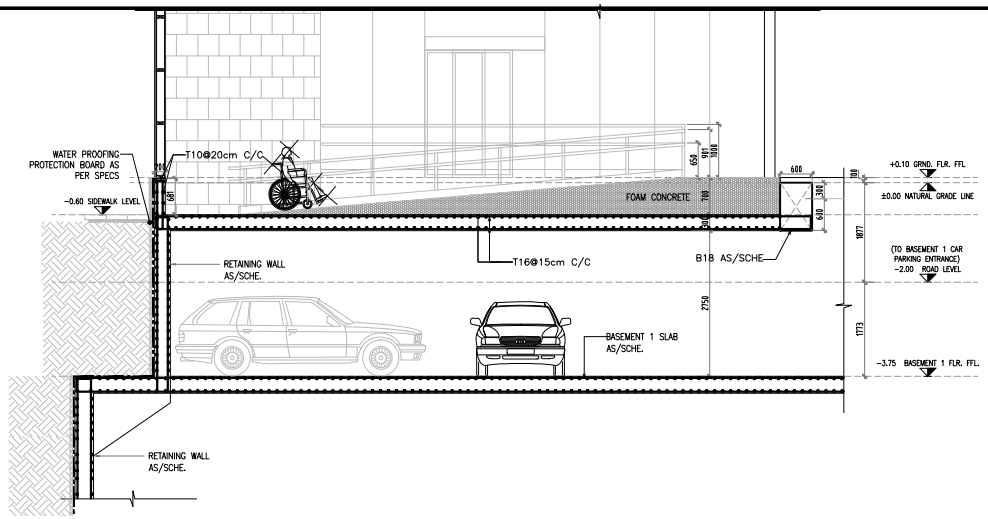


RAMP 4 - ENLARGED PLAN (1 / S-146)

MAIN ENTRANCE-GROUND FLOOR

SCALE 1:50 MTS



RAMP 4 - SECTION (1 / S-146)

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PROJECT : KORDONIA TOWERS

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LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamiaa Dist. Baghdad, Iraq
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INTERIOR DESIGN CONSULTANT:

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RAMP 4 - DETAILS

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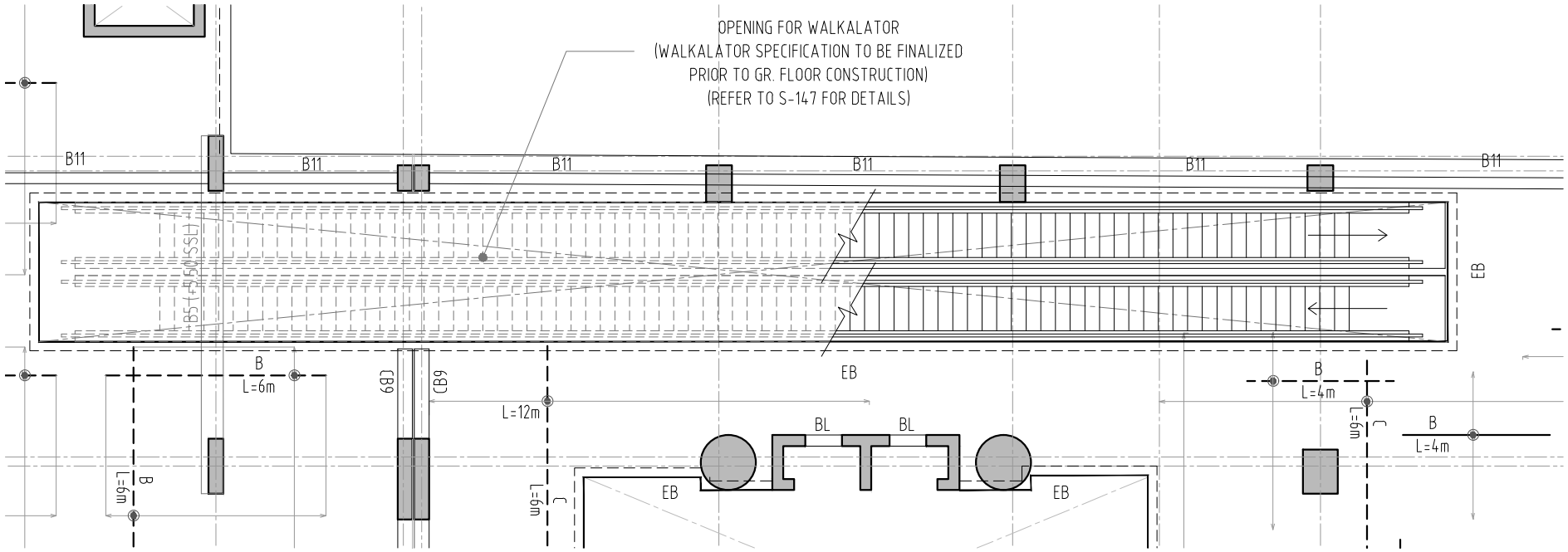
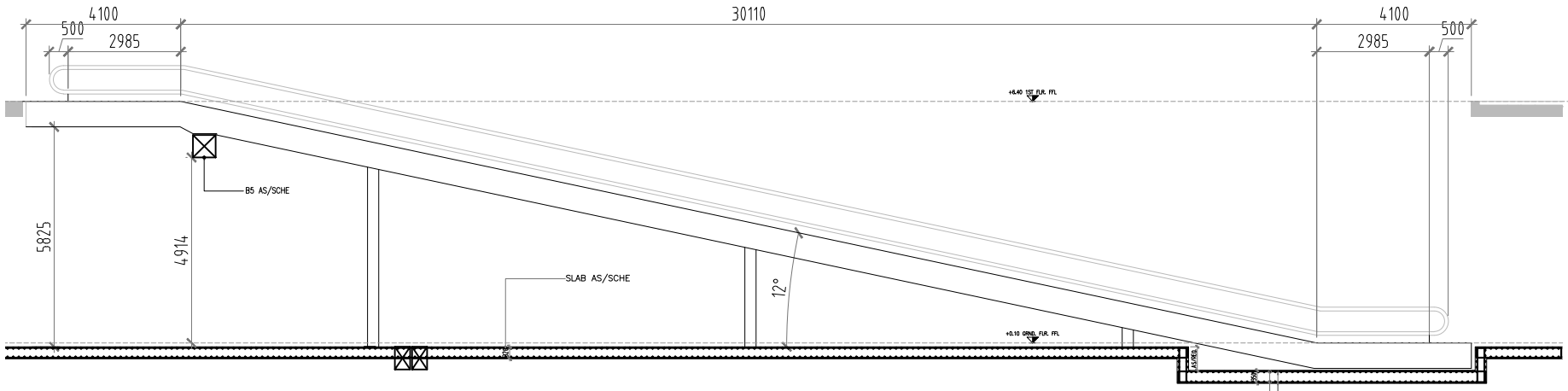
Discipline:	Sheet No.:	Revision:
S	146	



MOVING WALK - BLOW-UP PLAN (1 / S-147)
MAIN ENTRANCE-GROUND FLOOR
SCALE 1:50 MTS



MOVING WALK - SECTION (2 / S-147)
SCALE 1:60 MTS

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KEYPLAN :

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CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

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LEAD CONSULTANT : MJU Consulting Engineers
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INTERIOR DESIGN CONSULTANT:

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LANDSCAPE CONSULTANT:

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MOVING WALK SECTION DETAILS

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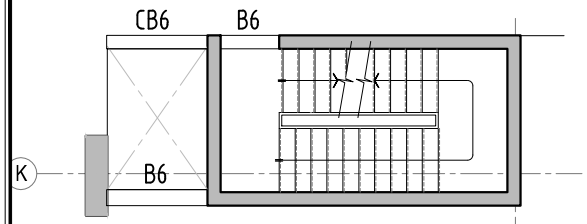
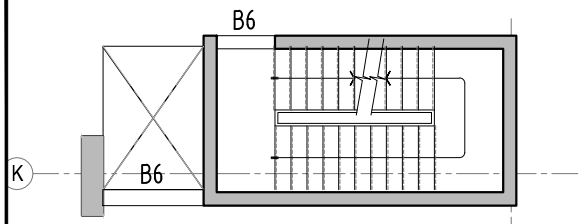
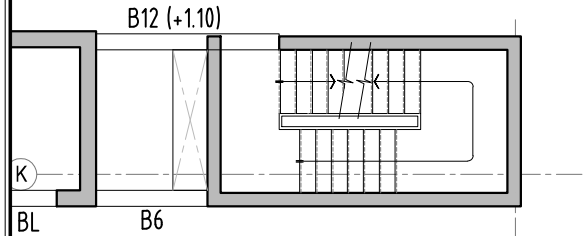


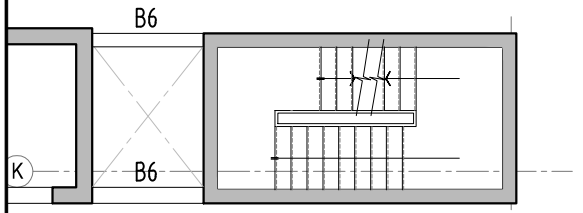
3RD - 13TH FLOOR



ROOF DECK - TOP ROOF



GROUND FLOOR



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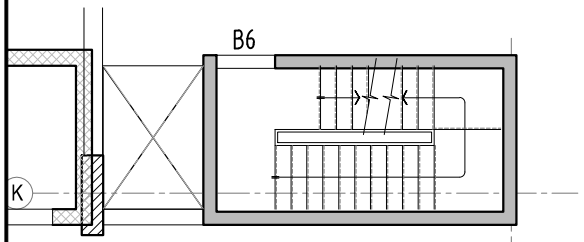

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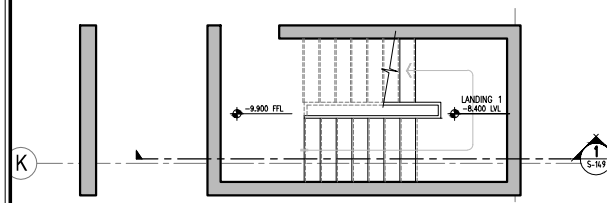
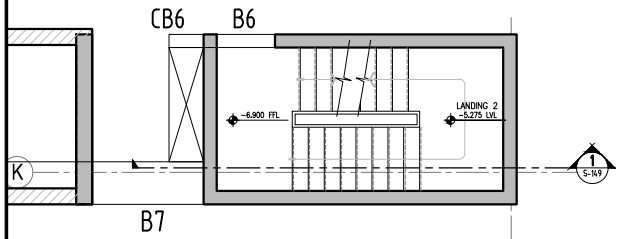


BASEMENT 3 FLOOR



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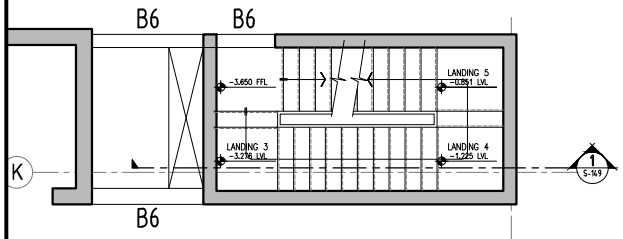

BASEMENT 1 FLOOR

STAIR 1 - FRAMING PLANS

SCALE 1:60

1
S-148

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CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT :

MJU Consulting Engineers
Arasat Al Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
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Registration No:807

INTERIOR DESIGN CONSULTANT:

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STAIR 1 FRAMING PLANS

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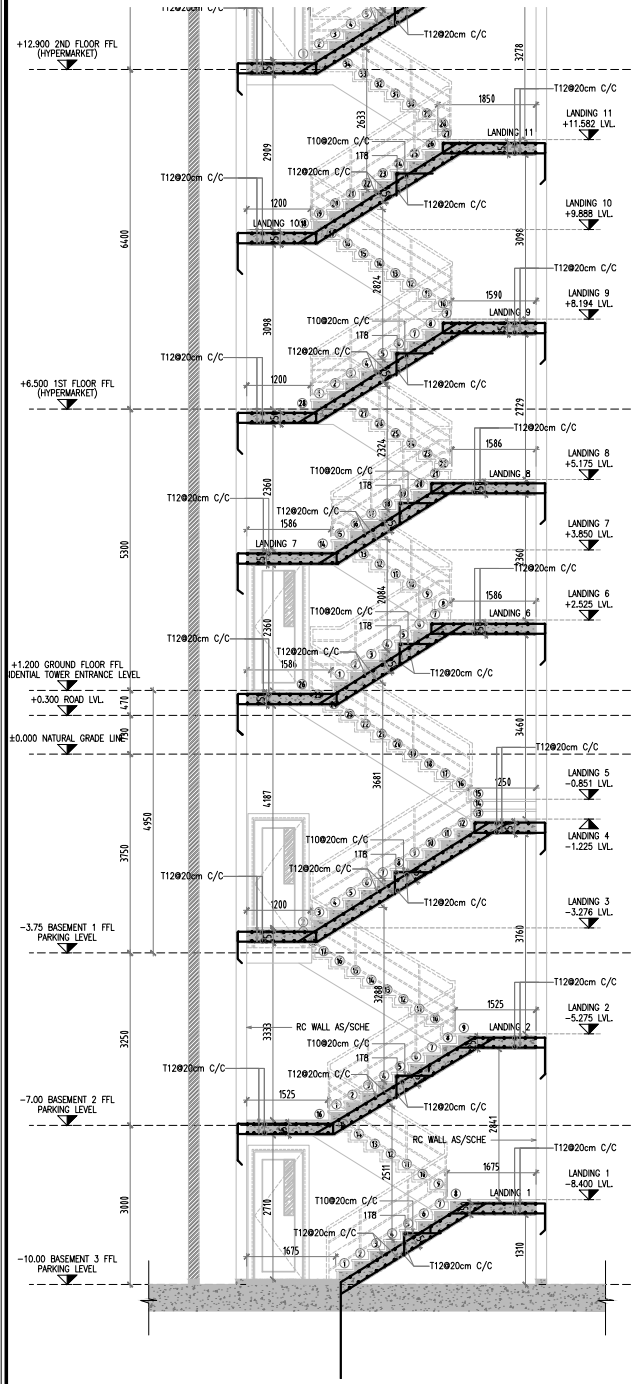
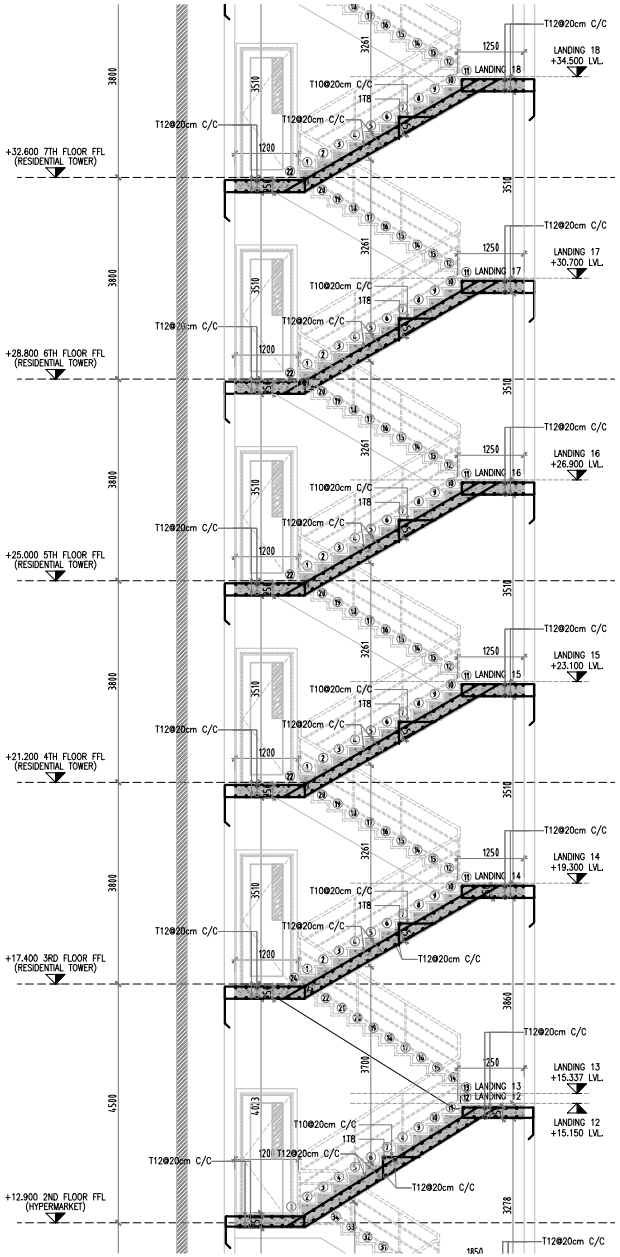
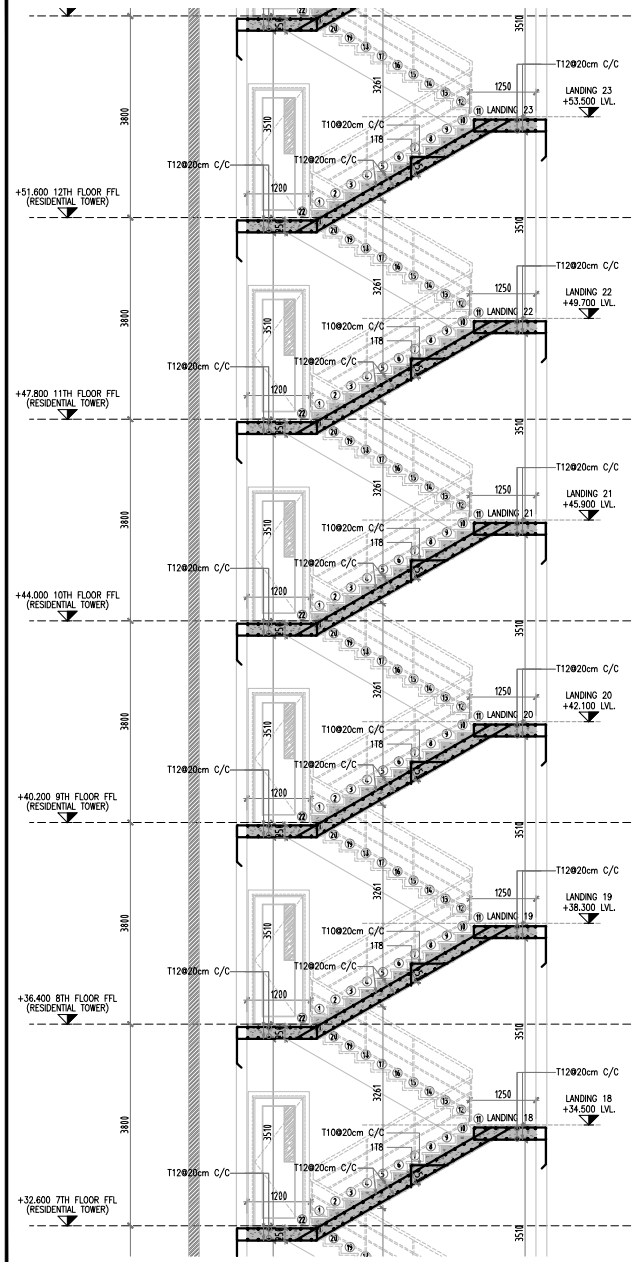


STAIR 1 - SECTION 1
SCALE 1:60
S-149



STAIR 1 - SECTION 2
SCALE 1:60
S-149



STAIR 1 - SECTION 3
SCALE 1:60
S-149

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CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
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STAIR 1
SECTIONS-01

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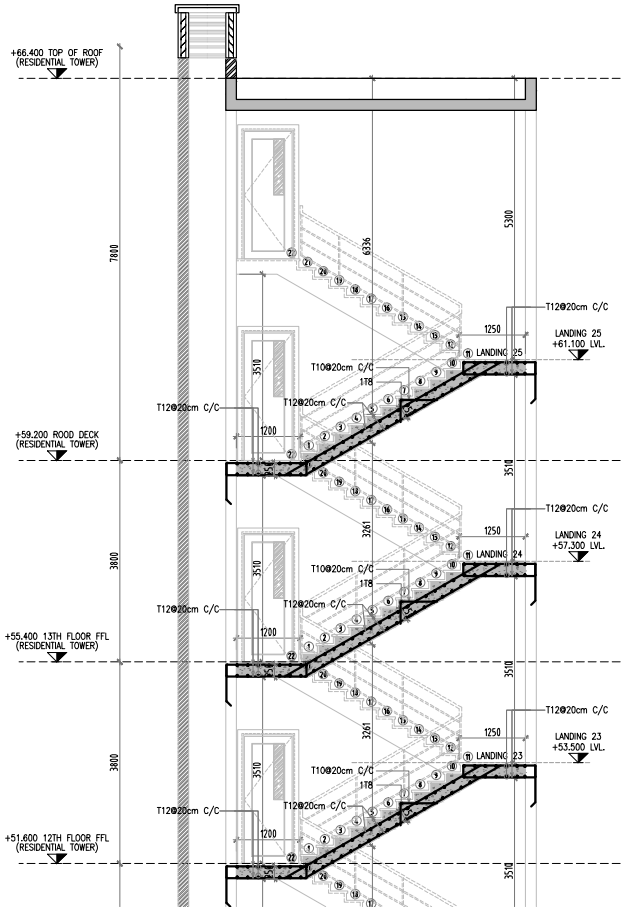

STAIR 1 - SECTION 1
S-150
SCALE 1:60

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No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
mjubaghdad@mjugroup.com
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SHEET TITLE :

STAIR 1
SECTIONS-02

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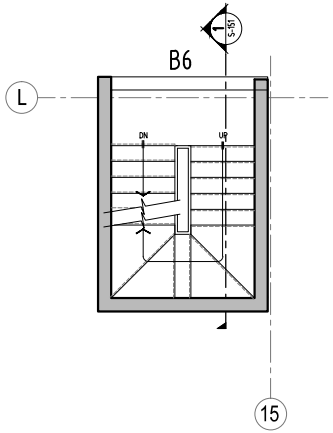
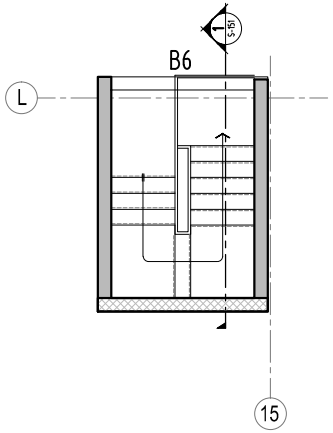
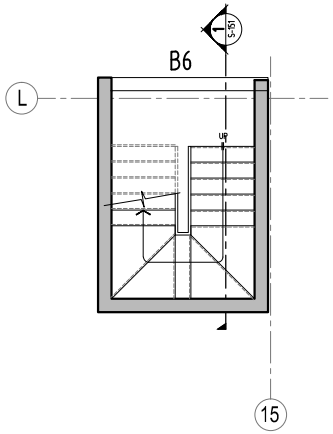


BASEMENT 1 FLOOR



GROUND FLOOR



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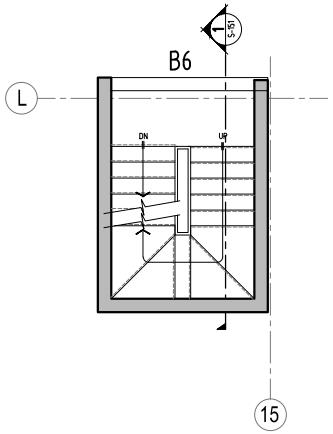

BASEMENT 2 FLOOR

STAIR 2 - FRAMING PLANS 1 S-151

SCALE 1:60

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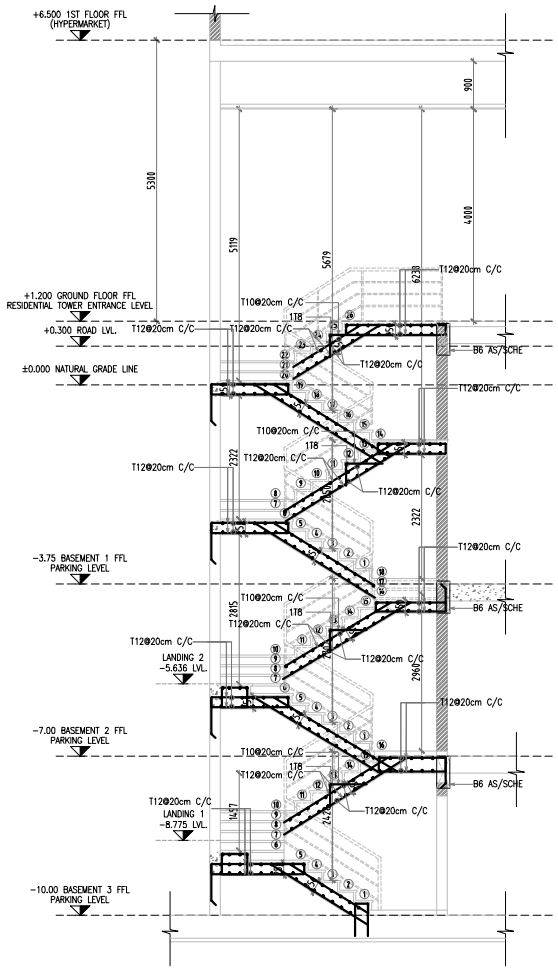

STAIR 2 - SECTION 2 S-151

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LEGEND :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

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PROJECT : KORDONIA TOWERS

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LEAD CONSULTANT : MJU Consulting Engineers
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LANDSCAPE CONSULTANT:

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STAIR 2
FRAMING PLANS &
SECTIONS

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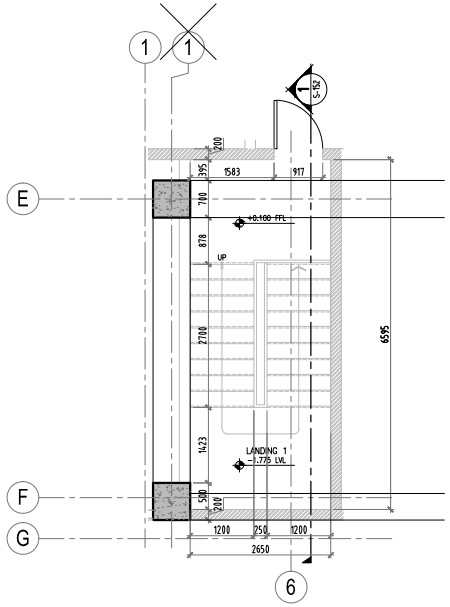

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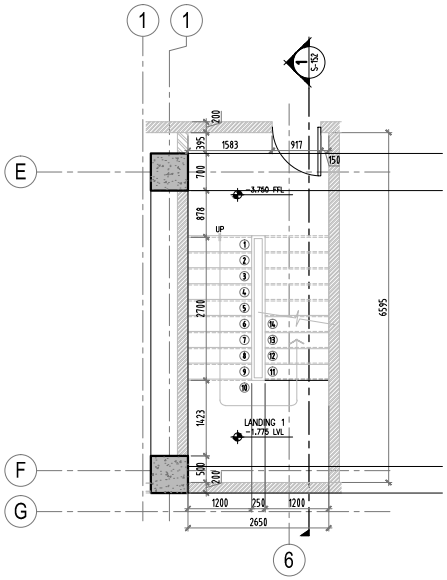

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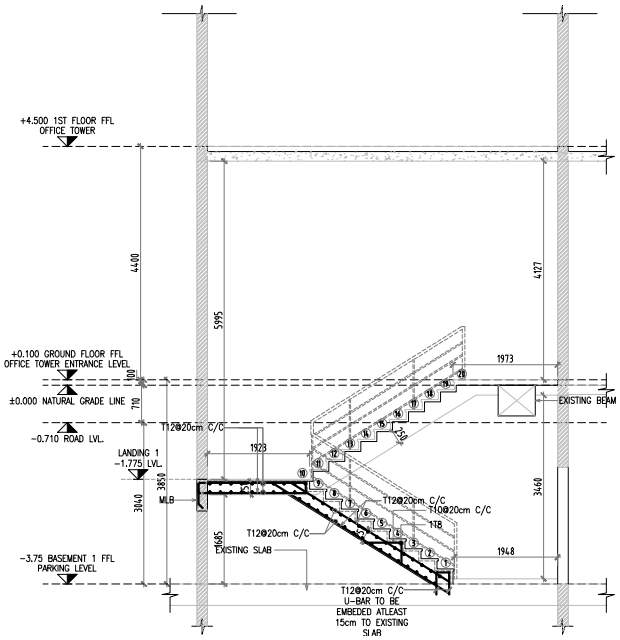

STAIR 3 - FRAMING PLANS 1 S-152

SCALE 1:60

STAIR 3 - SECTION 1 S-152

SCALE 1:60

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LEGEND :

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LANDSCAPE CONSULTANT:

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STAIR 3
FRAMING PLANS &
SECTIONS

Scale:	Drawn:	Checked:	Approved:
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Discipline:	Sheet No.:	Revision:
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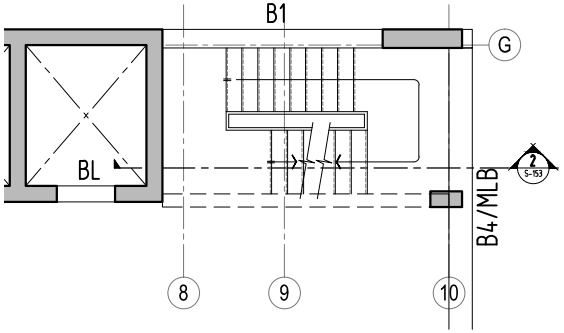

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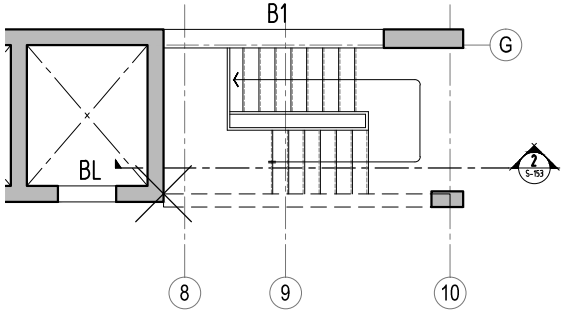

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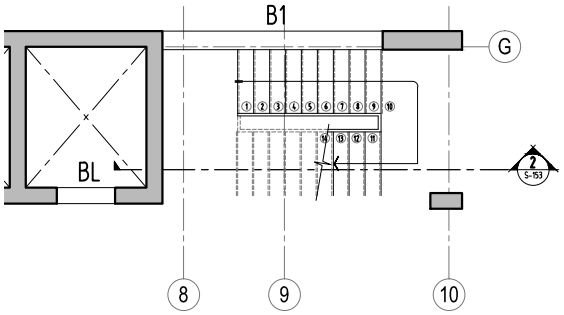

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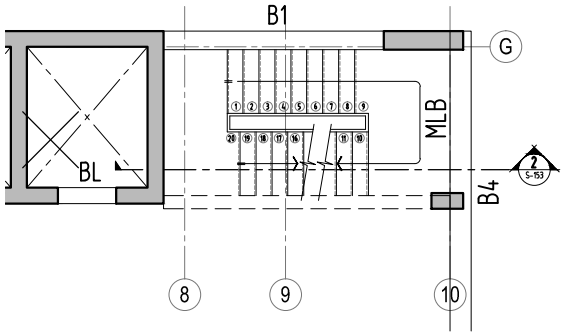

GROUND FLOOR

STAIR 4 - FRAMING PLANS 1 S-153

SCALE 1:60

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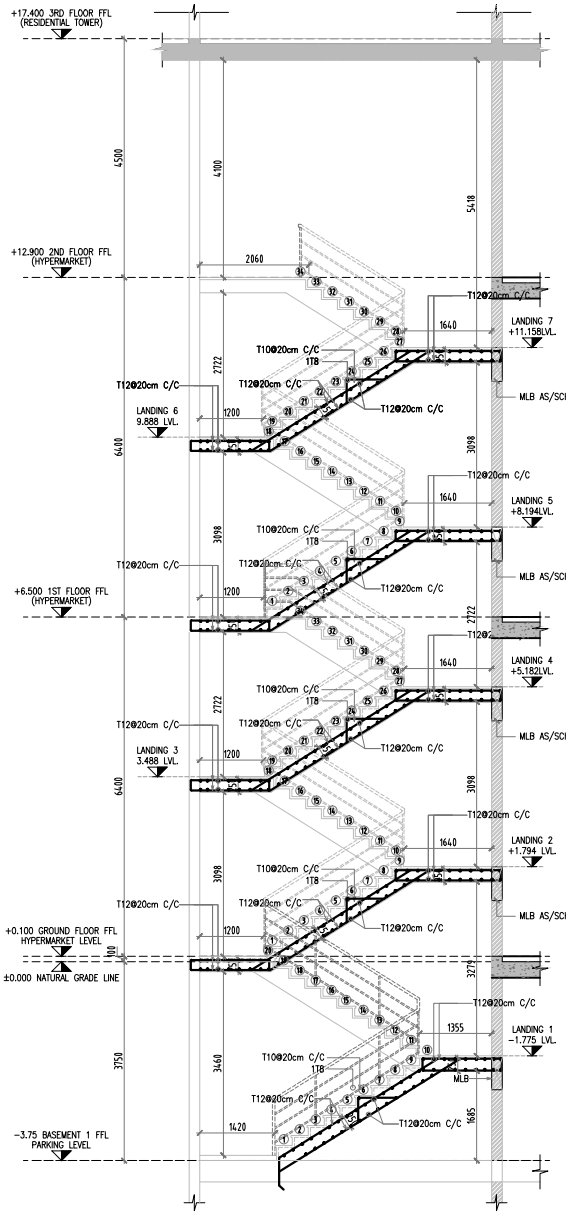

STAIR 4 - SECTION 1 S-153

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LANDSCAPE CONSULTANT:

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STAIR 4
FRAMING PLANS
& SECTIONS

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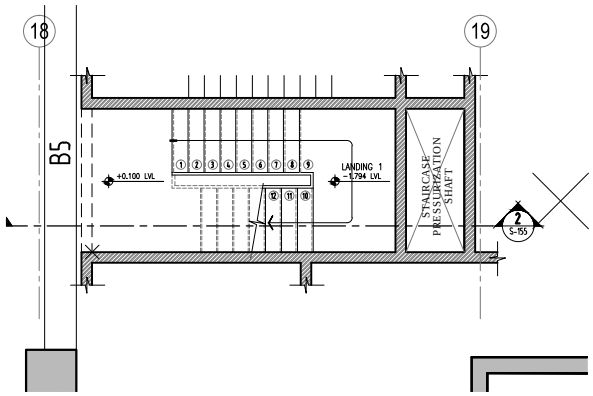
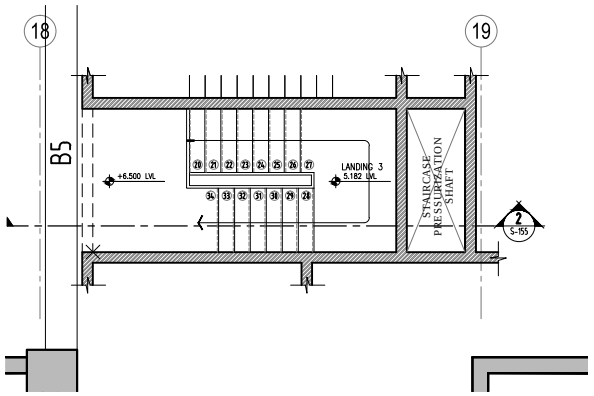


GROUND FLOOR



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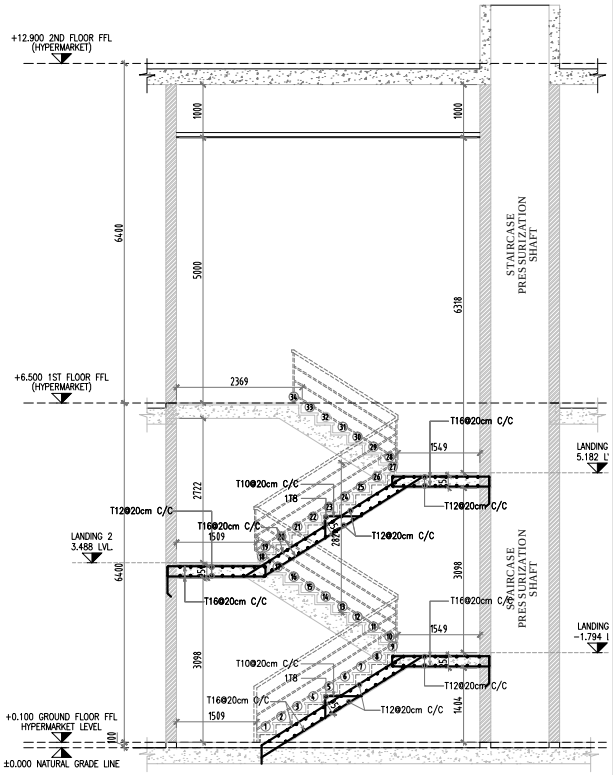

STAIR 5 - FRAMING PLANS 1 S-154

SCALE 1:60

STAIR 5 - SECTION 1 S-154

SCALE 1:60

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ORIENTATION :

LEGEND :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Arasat Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0617776
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Registration No.807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

STAIR 5
FRAMING PLANS &
SECTIONS

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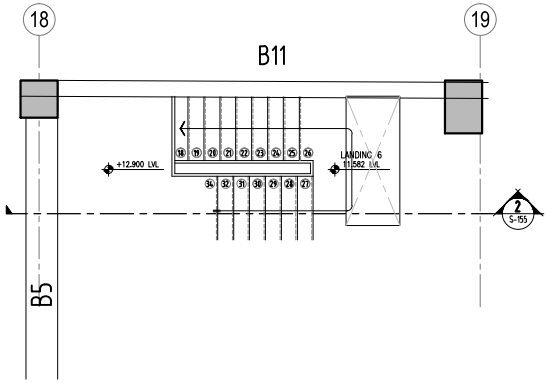

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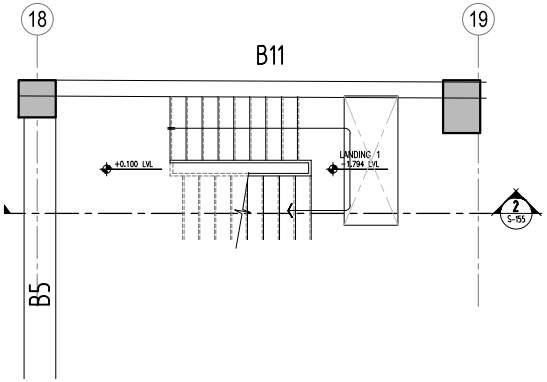

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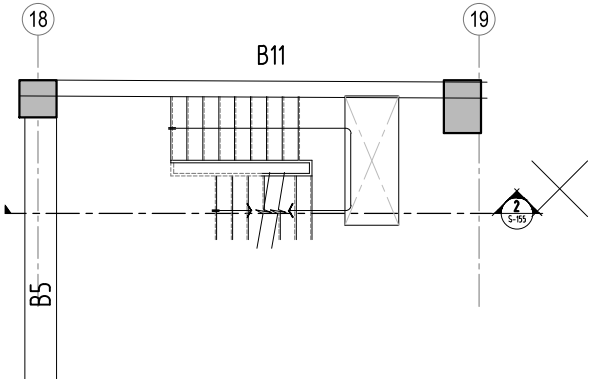

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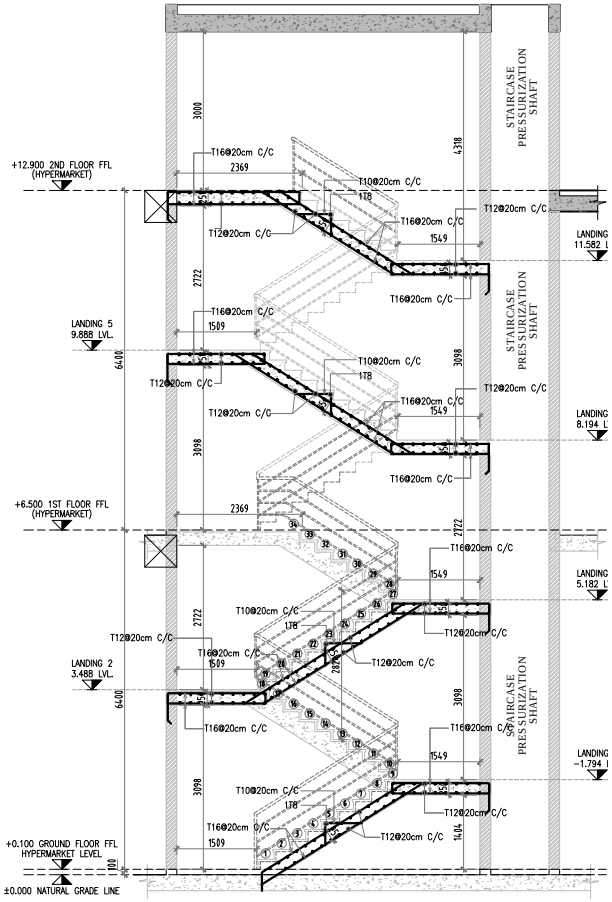

STAIR 6 - FRAMING PLANS 1 S-155

SCALE 1:60

STAIR 6 - SECTION 2 S-155

SCALE 1:60

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No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
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STAIR 6
FRAMING PLANS &
SECTIONS

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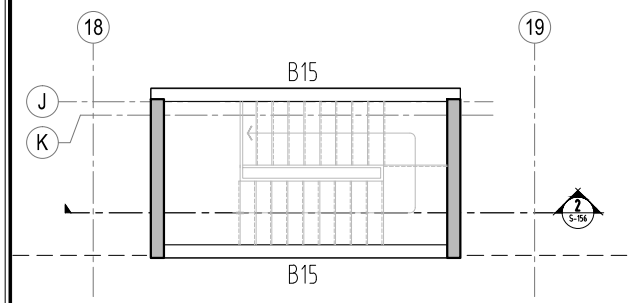
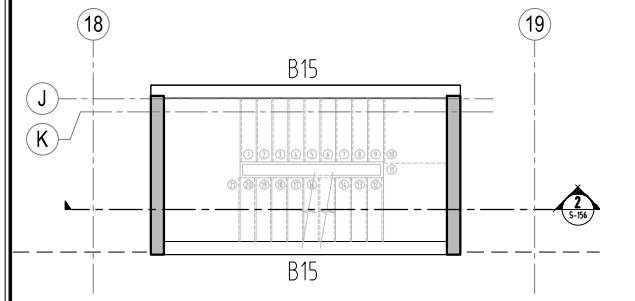


ROOF DECK



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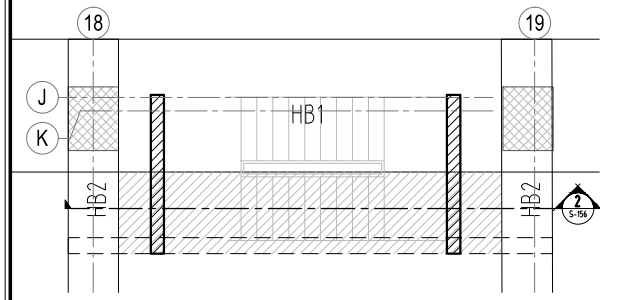
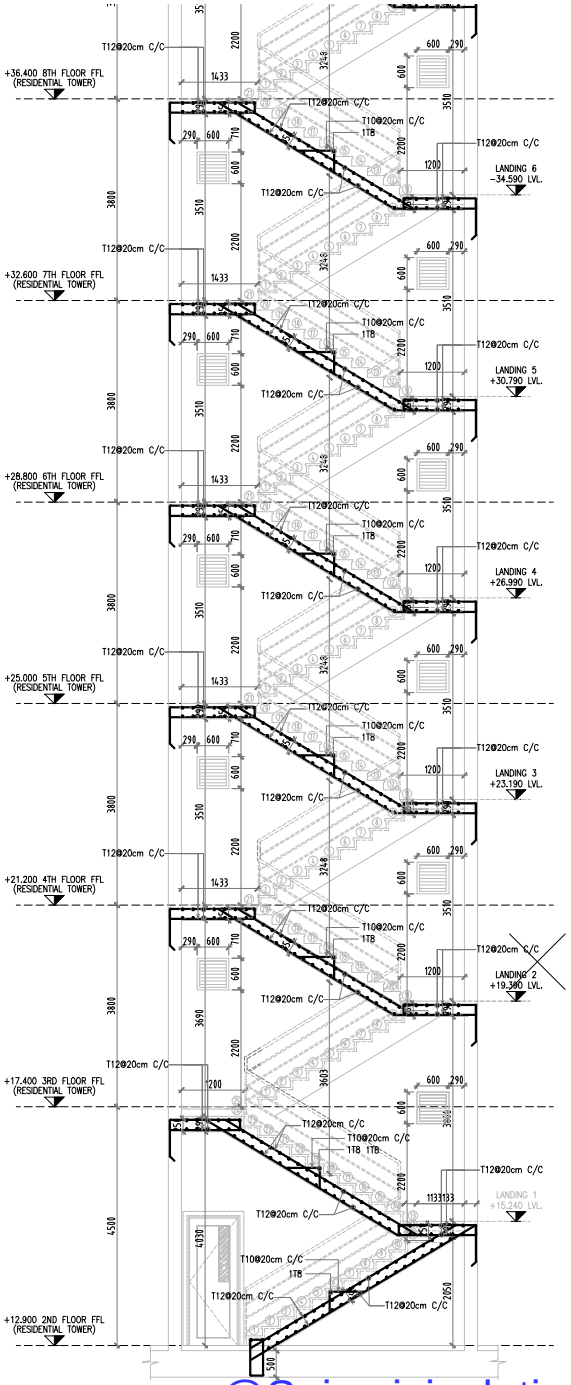
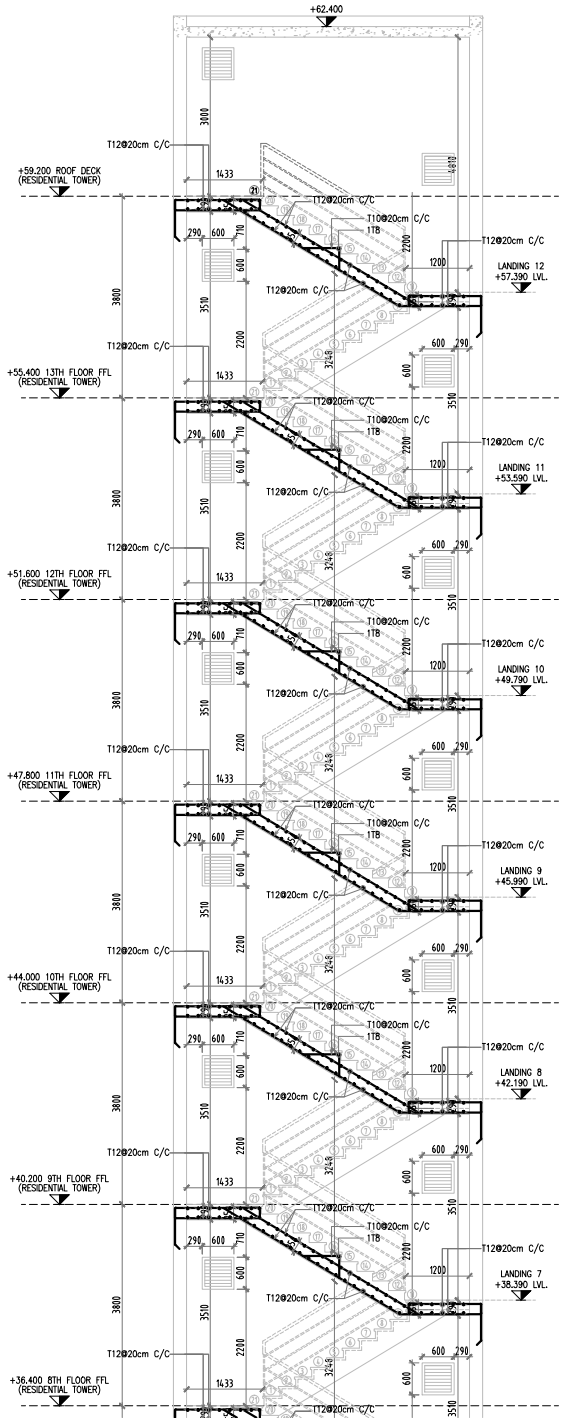


2ND FLOOR FRAMING PLAN

STAIR 7 - FRAMING PLANS 1 S-156

SCALE 1:60





STAIR 7 - SECTION 2 S-156

SCALE 1:60

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No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
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LANDSCAPE CONSULTANT:

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STAIR 7 FRAMING PLANS & SECTIONS

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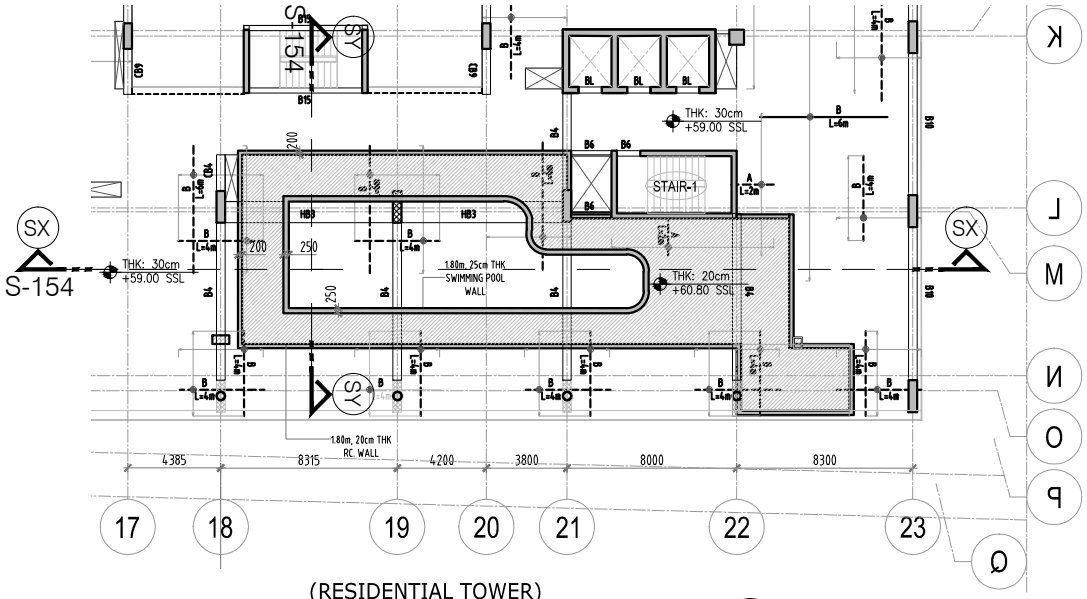
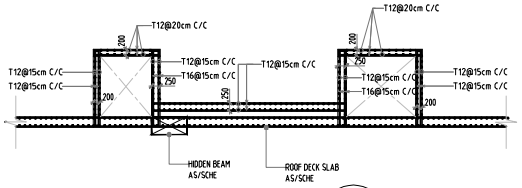
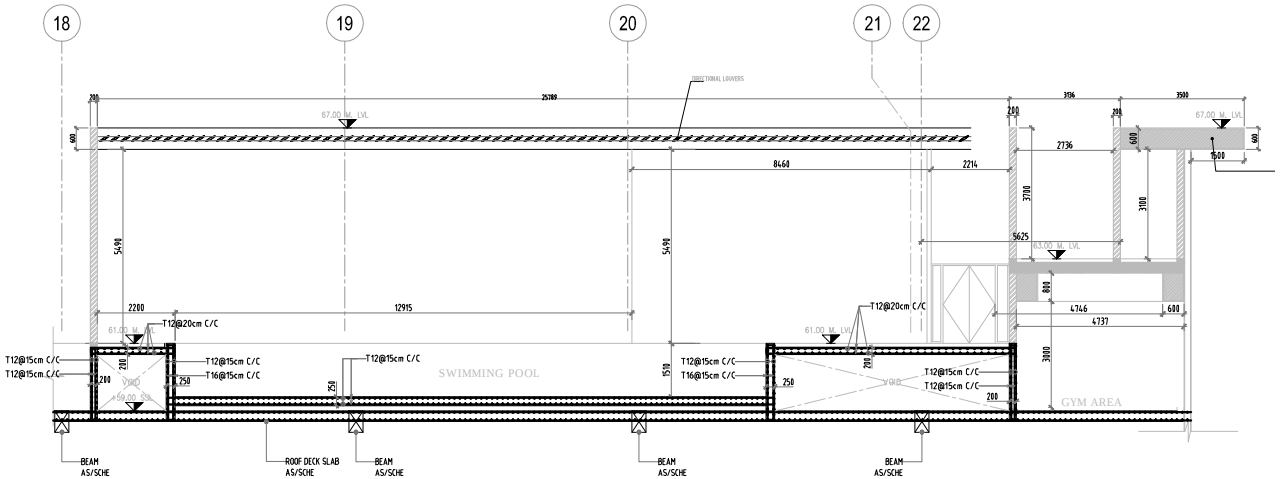


(RESIDENTIAL TOWER)
ROOF DECK SWIMMING POOL FRAMING 1 S-156
SCALE 1:125 MTS



SECTION SY-SY 3 S-156
SCALE 1:75MTS



SECTION SX-SX 2 S-156
SCALE 1:75MTS

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KEYPLAN :

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT: MJU Consulting Engineers
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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

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SHEET TITLE :

ROOF DECK SWIMMING POOL DETAILS

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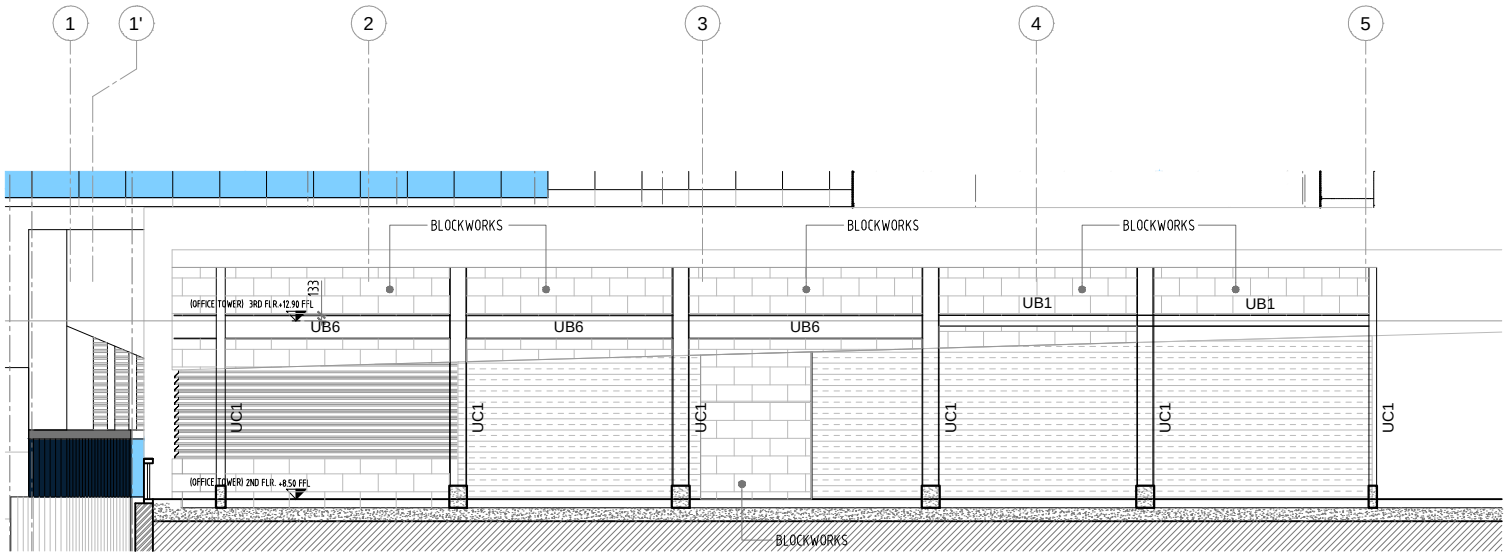
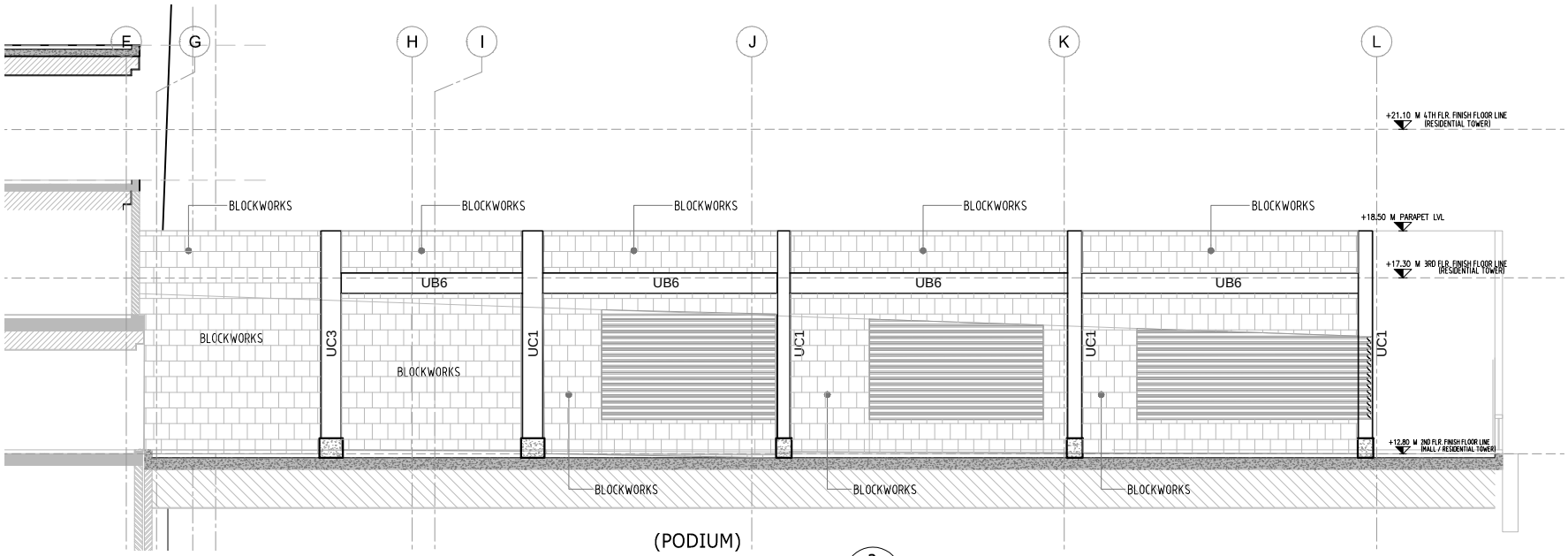


(PODIUM)
FRAME ELEVATION A 1
S-157
SCALE 1:100 MTS



(PODIUM)
FRAME ELEVATION B 2
S-157
SCALE 1:100 MTS

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ORIENTATION :

N

NOTES ON STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL BE MANUFACTURED IN ACCORDANCE TO BS 5950 AND SHALL BE OF GRADE 43 EXCEPT BRACING RODS SHALL BE HIGH TENSILE STEEL WITH MINIMUM Fy OF 34.5 N.mm2. ALL WELDING IS ACCORDING TO BS 5135 WITH MIN. THICKNESS OF 4mm, U.N.O.

2. DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE TO BS 5950.

3. ALL STRUCTURAL STEEL WORKS SHALL BE PROTECTED AGAINST CORROSION BY TWO COATS OF PRIMER (75 MICRONS EACH) AND ONE COAT OF CHLORINATED RUBBER PAINT (60 MICRONS) WITH APPROVED COLOR.

4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH CONNECTION DESIGN AND CALCULATION FOR CONSULTANT APPROVAL PRIOR TO CONSTRUCTION.

No.	Description Of Revision	Rev.	Date	Drawn	Chckd.

CLIENT NAME: Hiwa Rauf Investment & Development

PROJECT : KORDONIA TOWERS

PLOT NO. : -----

Address: IRAQ

PROJECT MANAGER :

LEAD CONSULTANT : MJU Consulting Engineers
Assad Al-Hindiya Street, Al Jamaa Dist. Baghdad, Iraq
Tel: 00964 780 0017776
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Registration No:807

INTERIOR DESIGN CONSULTANT:

MEP CONSULTANT :

LANDSCAPE CONSULTANT:

SHEET TITLE :

(PODIUM)
OUTDOOR DINING WALL
FRAME ELEVATIONS

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Date:	Project No.:	Sheet Size:
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Discipline:	Sheet No.:	Revision:
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ETABS EDB. File

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RAFT FOUNDATION SAFE File

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FLAT SLABS SAFE File

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