STRUCTURAL ANALYSIS AND DESIGN REPORT

PROPOSED 2-STOREY DUPLEX HOMESTAY

Purok 2, Sta. Fe, Gen. Luna, Surigao del Norte

Owner:

MR. & MRS REYWIL RAVELO

Calculations Report by:

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Civil Engineer, PRC: 8726512
TIN: 276-202-839
Report date: _____
Rev: 00

I. Structural Design Criteria

1.0 Codes and Standards

3.1 Governing Codes

1.1.1	National Structural Code of the Philippines – NSCP 2015
1.1.2	American Concrete Institute – ACI 318-14
1.1.3	American Institute of Steel Construction – AISC 9th Edition

3.2 Governing Standard

ASTM A36	Specification for Structural Steel
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot-dipped, Zinc-Coated, Welded, and Seamless
ASTM A611	Specification for Steel, Sheet, Carbon, Cold Rolled, Structural Quality
ASTM A616	Specification for Deformed and Plain Billet-steel Bars for Concrete Reinforcement
PNS 49	Steel Bars for Concrete Reinforcement Specification
ASTM C33/ PNS 49	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimen
ASTM C94/ PNS 46	Standard Specification for Ready-Mix Concrete
ASTM C150/ PNS 07	Specification for Portland Cement
PNS 16	Philippine National Standard for Concreter Hollow Blocks
SG 671	Specification for the Design of Cold-formed Steel, Structural Members by AISC

2.0 Material Specifications

2.1 Normal weight concrete 28th day compressive strength
(Unless indicated otherwise on the drawings)

2.1.1	Suspended slab	21 MPa (3,000 psi)
2.1.2	Beams and Girders	21 MPa (3,000 psi)
2.1.3	Slab on grade,	21 MPa (3,000 psi)
2.1.4	Columns, Stairs,	21 MPa (3,000 psi)
2.1.3	Footings	21 MPa (3,000 psi)

2.2 Reinforcing steel yield, fy

2.2.1	For bars 16 mm diameter and smaller	276 MPa (40,000 psi)
2.2.2	For bars 20 mm diameter and larger	414 MPa (60,000 psi)

2.3 Structural steel yield, Fy

2.3.1	For rolled shapes	250 MPa (36,000 psi)

2.4 Masonry Concrete Compressive Strength, fm	7.8 MPa (700 psi)
2.5 Masonry Grout Compressive Strength, fc’	13.8 MPa (2,000 psi)
2.6 Lean Concrete 28th day compressive strength, fc’	10.4 MPa (1,500 psi)

3.0 Loading Criteria

3.1 Dead Load, DL

Concrete	24.00 kN/m^3
Steel	77.00 kN/m^3
SDL (tiles, ceiling)	1.20 kPa

3.2 Live Load, LL

Residential Area	1.90 kPa
Stairs	2.40 kPa
Exterior Balconies	2.40 kPa

3.3 Wind Load, WL

$q_z = 47.3x10^{-6}K_zK_{zt}K_dV^2I_w$ (kPa) [Eq. 207-15]

where

q_z=velocity pressure at mean roof height, h
K_{zt}=topographic factor
K_d=wind directionality factor
V=basic wind speed
I_w=importance factor

3.4 Seismic Load, EL

Total design base shear

$$V = C_vIW / RT$$

The total design base shear need not exceed the following:

$$V = 2.5C_aIW / R$$
$$V = 0.8ZN_vIW / R$$

The total design base shear shall be less than:

$$V = 0.11C_aIW$$

where:

V = total design shear at the base of the structure
C_v = seismic coefficient as set forth in Table 208-8
I = Importance factor given in Table 208-1
W = Total dead load defined in Section 208.5.1.1
R = ductility coefficient set forth in Table 208-11 or 208-13
T = fundamental period of vibration
Z = seismic zone factor as given in Table 208-3
N_v = near source factor as set forth in Table 208-5 and 208-6

II. Construction Notes

1.0 General

1.1 The structural drawings shall be used in conjunction with the specifications, the architectural, mechanical, electrical and civil drawings.

1.2 The contractor shall verify all dimensions and conditions at the site, which shall include the location and dimensions of openings, grooves, reglets, pipe sleeves, conduits, embedded or attached to concrete, etc.

1.3 All dimensions are in millimeters unless otherwise noted.

1.4 All bar diameters and spacing are in millimeters unless otherwise noted.

1.5 All dimensions are in millimeters unless otherwise noted.

1.6 All bar diameters and spacing are in millimeters unless otherwise noted.

2.0 Concrete and Reinforcing Steel

2.1 Minimum cover to all reinforcing bars shall be as follows:

2.1.1	Concrete cast against and permanently exposed to earth	75 mm
2.1.2	Formed surfaces exposed to earth or weather	
	Diameter 16 mm bars or smaller	40 mm
	Other bars	50 mm
2.1.3	Formed surfaces not exposed directly to weather or earth	
	Slabs and walls	20 mm
	Beams	40 mm
	Columns	50 mm

2.2 Reinforcing bars shall be free of rust, grease of other materials likely to impair bond.

2.3 All reinforcing bars shall be accurately and securely placed before pouring concrete or applying mortar or grout.

2.4 Bar splices shall be securely wired together. Splices in reinforced concrete beams, columns and walls, shall be as shown in the details. For Non-structural walls, masonry walls and slabs, splices shall lap a minimum of 40 bar diameters and shall be staggered whenever possible.

2.5 Splices required in the reinforcement of beams/girders framing into columns shall not be located within the column or within a distance of twice the beam/girder depth from the face of the column.

2.6 Lap splices shall be provided within the center half of column height, and the splice length shall not be less than 1.3 times the required development length.

2.7 Contractor shall not be allowed to start placement/installation of reinforcing bars for footings, beams walls, columns, slabs, and other reinforced-concrete structural elements without submittal and approval of placing drawings. Only the structural engineer on record and/or the owner's engineer are authorized to approve placing drawings which should be submitted and received by the office of the structural engineer on record at least two (2) days prior to start of structural concrete works. Placing drawings must follow the same drawing standards as used in the working drawings of this project and only certified by the contractor's registered civil or structural engineer.

2.8 Definition of placing drawings: Placing drawings are working drawings for fabrication and placing of reinforcing steel. These drawing must comprise the following: bar lists, schedules, bending details, placing details, placing plans and elevations, grade, size, spacing, length of each bar, splices and their locations and any necessary additional information that must be supplied by the contractor concerning field conditions, field measurements, construction joints, and sequence of placing concrete.

3.0 Structural Steel

3.1 All materials and workmanship shall conform to the ninth edition of the American Institute of Steel Construction (AISC) Manual unless otherwise shown or noted.

3.2 Contractor shall furnish all plates, clip angles, connectors, etc. required for completion of the structure even if every such item is not shown on the contract drawings.

3.3 Welding shall be in accordance with the American Welding Society Code AWS D1.1 unless indicated otherwise. Welding electrodes shall be E70XX.

3.4 All bolts and threaded fasteners shall be ASTM A307 unless indicated otherwise.

4.0 Masonry

4.1 All concrete hollow blocks masonry walls shall be laid back in running bond. (interlocking course) with full mortar bedding. Stack bond shall be used only when specified.

4.2 All cells shall be solidly filled with concrete grout.

5.0 Foundation

5.1 All foundations are spread footings with tie beams.

5.2 Footings for CHB walls and other minor structures shall be embedded at least 600 mm from the finish grade line unless indicated otherwise.

5.3 All foundations should have compacted gravel course 100 mm thick or 50 mm thick lean concrete unless indicated otherwise.

6.0 Load Combinations

6.1 Steel (Design)

U = 1.4DL	(DSTL1)
U = 1.2DL + 1.6LL	(DSTL2)
U = 1.2DL + 0.5LL + 1.3WX	(DSTL3)
U = 1.2DL + 0.5LL + 1.3WY	(DSTL5)
U = 0.9DL + 1.3WX	(DSTL7)
U = 0.9DL + 1.3WY	(DSTL9)
U = 1.2DL + 0.5LL + EX	(DSTL11)
U = 1.2DL + 0.5LL + -EX	(DSTL12)
U = 1.2DL + 0.5LL + EY	(DSTL13)
U = 1.2DL + 0.5LL + -EY	(DSTL14)
U = 0.9DL + EX	(DSTL15)
U = 0.9DL + -EX	(DSTL16)
U = 0.9DL + EY	(DSTL17)
U = 0.9DL + -EY	(DSTL18)

6.2 Concrete (Design)

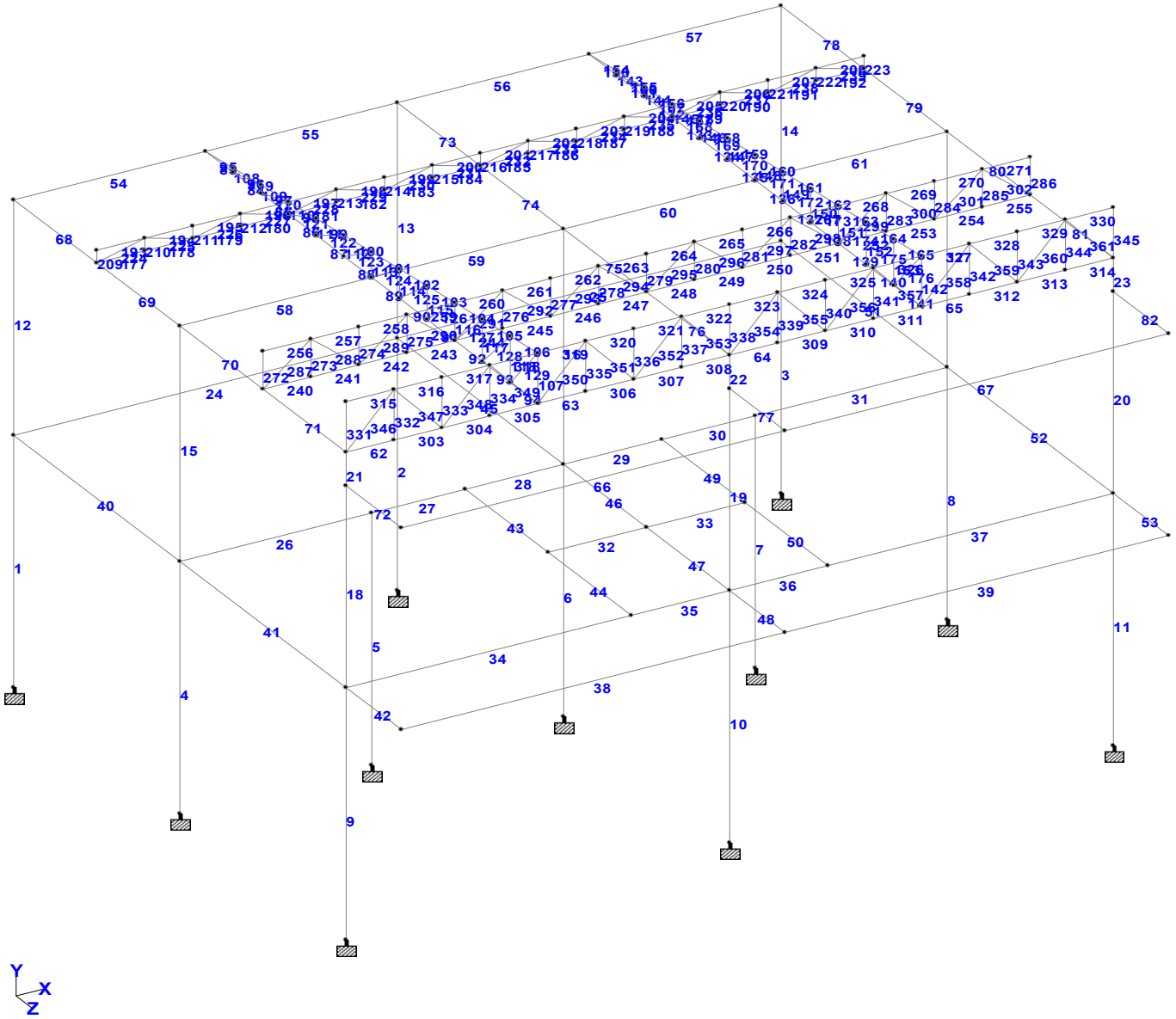
U = 1.4DL
U = 1.2DL + 1.6LL
U = 1.2DL + 1.0LL + 1.6WX
U = 1.2DL + 1.0LL + -1.6WX
U = 1.2DL + 1.0LL + 1.6WY
U = 1.2DL + 1.0LL+ -1.6WY
U = 1.2DL + 0.8WX
U = 1.2DL + -0.8WX
U = 1.2DL + 0.8WY
U = 1.2DL + -0.8WY
U = 0.9DL + 1.6WX
U = 0.9DL - 1.6WX
U = 0.9DL + 1.6WY
U = 0.9DL - 1.6WY
U = 1.2DL + 1.0LL + 1.0EX
U = 1.2DL + 1.0LL + -1.0EX
U = 1.2DL + 1.0LL + 1.0EY
U = 1.2DL + 1.0LL + -1.0EY
U = 0.9DL + 1.0EX
U = 0.9DL + -1.0EX
U = 0.9DL + 1.0EY
U = 0.9DL + -1.0EY

6.3 Steel (Serviceability)

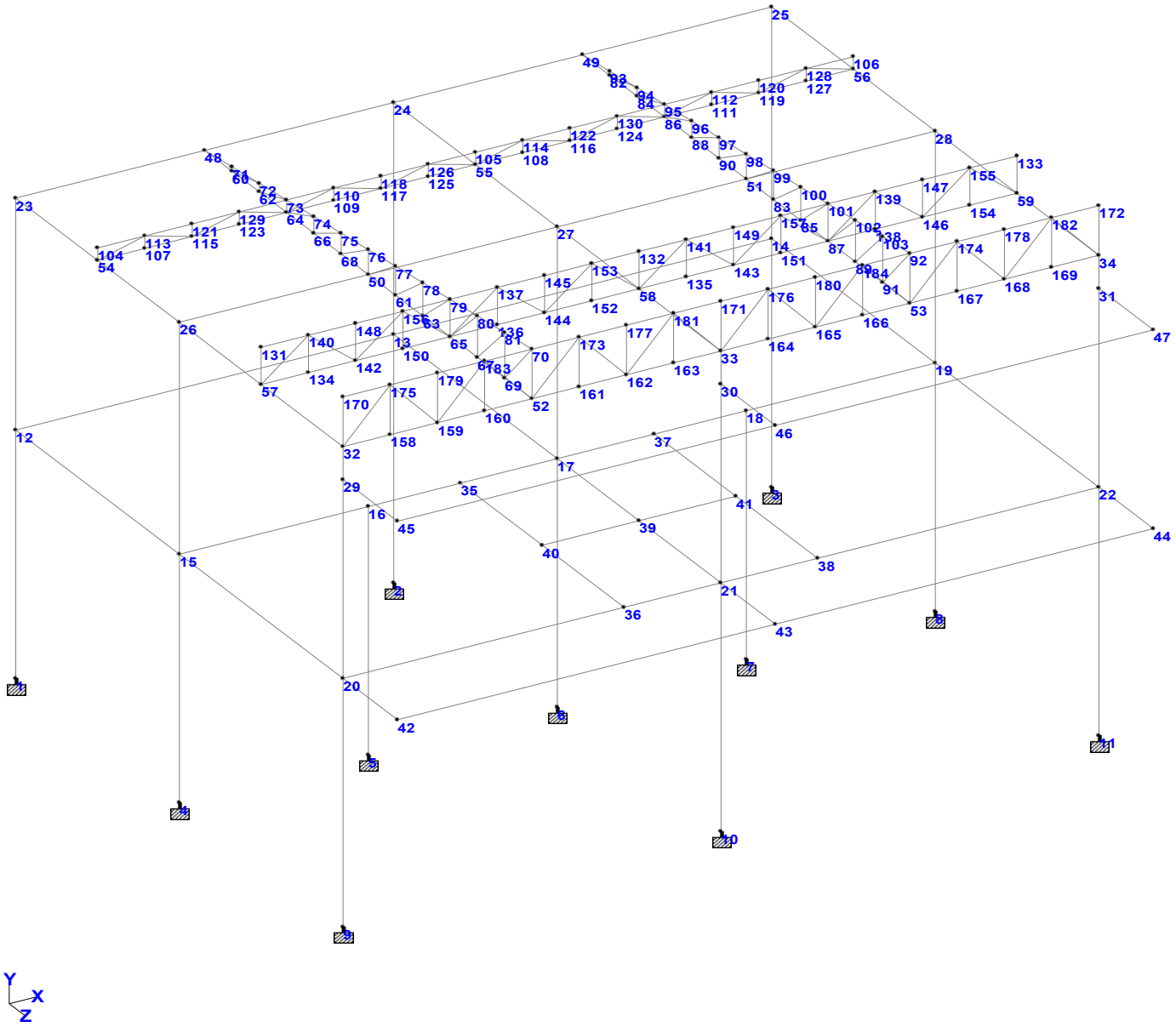
U = 1.0DL
U = 1.0DL + 1.0LL
U = 1.0DL + 0.6WX
U = 1.0DL + -0.6WX
U = 1.0DL + 0.6WY
U = 1.0DL + -0.6WY
U = 1.0DL + 0.75LL + 0.45WX
U = 1.0DL + 0.75LL + -0.45WX
U = 1.0DL + 0.75LL + 0.45WY
U = 1.0DL + 0.75LL + -0.45WY
U = 0.6DL + 0.6WX
U = 0.6DL + -0.6WX
U = 0.6DL + 0.6WY
U = 0.6DL + -0.6WY
U = 1.0DL + 0.75LL + 0.53EX
U = 1.0DL + 0.75LL + -0.53EX
U = 1.0DL + 0.75LL + 0.53EY
U = 1.0DL + 0.75LL + -0.53EY
U = 0.6DL + 0.7EX
U = 0.6DL + -0.7EX
U = 0.6DL + 0.7EY
U = 0.6DL + -0.7EY

III.1 ANALYSIS MODEL : PROPOSED 2-STOREY DUPLEX HOMESTAY

BEAM NUMBER



NODE NUMBER



III.2 DESIGN OF STEEL MEMBERS: PROPOSED 2-STOREY DUPLEX HOMESTAY

III.2.1 MEMBER STRENGTH CHECK

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
83 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.118	103
		2.21 T	0.08	-0.10	0.00
84 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.104	105
		2.60 T	0.03	0.07	0.00
85 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.049	101
		1.84 T	-0.00	0.04	0.00
86 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.057	103
		1.98 T	0.07	-0.02	0.00
87 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.052	103
		1.44 T	-0.05	0.02	0.50
88 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.120	105
		1.24 C	-0.08	-0.10	0.50
89 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.148	103
		0.67 C	0.14	0.06	0.00
90 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.063	103
		2.60 C	0.06	-0.01	0.00
91 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.112	103
		4.57 C	-0.10	-0.03	0.50
92 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.085	103
		2.30 C	0.08	-0.03	0.00
93 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.063	105
		1.19 C	-0.04	0.03	0.50
94 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.138	105
		0.66 C	-0.08	-0.13	0.50
95 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.200	106
		2.45 C	0.03	0.15	0.00

96	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.089	105
			3.59 C	-0.03	-0.06	0.17
97	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.087	103
			3.16 C	0.03	0.04	0.50
98	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.068	101
			2.21 C	0.00	0.04	0.00
99	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.049	105
			2.45 C	0.00	0.02	0.50
100	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.051	101
			1.45 C	0.00	0.04	0.50
101	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.041	104
			0.53 T	-0.00	0.03	0.00
102	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.030	101
			0.48 T	-0.00	0.03	0.50
103	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.070	103
			2.56 T	0.01	0.05	0.50
104	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.089	103
			4.44 T	-0.03	0.05	0.00
105	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.047	103
			2.23 T	0.01	0.03	0.50
106	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.041	103
			0.74 T	0.01	0.03	0.00
107	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.017	107
			0.34 C	-0.00	-0.00	0.00
108	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.012	101
			0.26 C	-0.00	-0.00	0.00
109	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.027	101
			0.57 C	-0.00	-0.00	0.00
110	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.050	101
			1.05 C	-0.00	-0.00	0.00
111	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.026	104
			0.54 C	-0.00	-0.00	0.00

112 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.052	101
		1.10 C	-0.00	-0.00	0.00
113 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.072	101
		1.50 C	-0.00	-0.00	0.00
114 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.065	103
		1.35 C	-0.00	-0.00	0.00
115 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.092	103
		1.89 C	-0.00	-0.00	0.00
116 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.103	103
		2.10 C	-0.00	-0.00	0.00
117 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.023	103
		1.50 T	-0.00	-0.00	0.00
118 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.011	103
		0.75 T	-0.00	-0.00	0.00
119 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.051	106
		1.03 C	-0.00	-0.00	0.00
120 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.029	101
		1.86 T	-0.00	-0.00	0.00
121 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.035	103
		0.71 C	-0.00	-0.00	0.00
122 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.017	104
		1.13 T	-0.00	-0.00	0.00
123 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.027	101
		1.76 T	-0.00	-0.00	0.00
124 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.023	103
		1.51 T	-0.00	-0.00	0.00
125 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.038	103
		2.48 T	-0.00	-0.00	0.00
126 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.041	103
		2.64 T	-0.00	-0.00	0.00
127 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.167	103
		3.21 C	-0.00	-0.00	0.00

128 ST	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.111	103
	2.11 C	-0.00		-0.00	0.00
129 ST	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.063	103
	1.18 C	-0.00		-0.00	0.00
130 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.109	106
	1.67 T	0.03		-0.13	0.00
131 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.104	105
	2.60 T	-0.03		0.07	0.00
132 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.049	101
	1.84 T	0.00		0.04	0.00
133 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.037	105
	0.96 T	-0.05		-0.01	0.00
134 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.047	105
	0.03 C	0.03		0.03	0.50
135 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.120	105
	1.24 C	0.08		-0.10	0.50
136 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.145	105
	0.87 C	-0.07		0.09	0.00
137 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.050	105
	2.29 C	-0.03		-0.02	0.00
138 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.075	105
	3.87 C	0.05		-0.03	0.50
139 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.062	105
	2.11 C	-0.05		-0.03	0.00
140 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.063	105
	1.19 C	0.04		0.03	0.50
141 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.138	105
	0.66 C	0.08		-0.13	0.50
142 ST	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.007	104
	0.48 T	-0.00		-0.00	0.00
143 ST	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.012	101
	0.26 C	-0.00		-0.00	0.00

144 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.027	101
		0.57 C	-0.00	-0.00	0.00
145 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.050	101
		1.05 C	-0.00	-0.00	0.00
146 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.026	103
		0.55 C	-0.00	-0.00	0.00
147 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.052	101
		1.10 C	-0.00	-0.00	0.00
148 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.072	101
		1.50 C	-0.00	-0.00	0.00
149 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.057	104
		1.18 C	-0.00	-0.00	0.00
150 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.085	104
		1.74 C	-0.00	-0.00	0.00
151 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.097	104
		1.97 C	-0.00	-0.00	0.00
152 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.019	104
		1.24 T	-0.00	-0.00	0.00
153 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.008	104
		0.49 T	-0.00	-0.00	0.00
154 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.198	106
		2.44 C	-0.02	0.15	0.00
155 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.089	105
		3.59 C	0.03	-0.06	0.17
156 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.084	101
		3.92 C	-0.00	0.04	0.50
157 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.068	101
		2.21 C	-0.00	0.04	0.00
158 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.049	105
		2.45 C	-0.00	0.02	0.50
159 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.051	101
		1.45 C	-0.00	0.04	0.50

160	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.041	103
			0.67 T	-0.00	0.03	0.00
161	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.030	101
			0.48 T	0.00	0.03	0.50
162	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.065	101
			1.87 T	0.00	0.05	0.50
163	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.072	104
			3.68 T	-0.01	0.05	0.00
164	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.043	101
			1.54 T	0.00	0.03	0.50
165	LD	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H1-1b	0.039	101
			0.39 T	0.00	0.03	0.00
166	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.052	106
			1.04 C	-0.00	-0.00	0.00
167	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.029	101
			1.86 T	-0.00	-0.00	0.00
168	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.036	104
			0.73 C	-0.00	-0.00	0.00
169	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.018	103
			1.16 T	-0.00	-0.00	0.00
170	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.027	101
			1.76 T	-0.00	-0.00	0.00
171	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.018	104
			1.18 T	-0.00	-0.00	0.00
172	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.034	104
			2.18 T	-0.00	-0.00	0.00
173	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.037	104
			2.43 T	-0.00	-0.00	0.00
174	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.146	101
			2.80 C	-0.00	-0.00	0.00
175	ST	L2X2X3/16		(STANDARD SECTIONS)		
			PASS	Eq. H2-1	0.092	104
			1.73 C	-0.00	-0.00	0.00

176 ST	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H2-1		0.047	104
		0.88 C	-0.00		-0.00	0.00
177 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.138	107
		0.44 T	-0.07		0.09	0.00
178 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.034	103
		0.58 T	-0.04		-0.02	0.00
179 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.040	105
		3.75 T	0.03		0.01	0.50
180 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.107	103
		4.02 T	0.06		0.05	0.50
181 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.102	103
		2.71 T	-0.06		0.05	0.00
182 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.030	103
		2.71 T	-0.03		0.00	0.00
183 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H2-1		0.054	103
		3.49 C	0.04		0.00	0.50
184 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H2-1		0.143	103
		3.49 C	0.08		-0.11	0.50
185 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H2-1		0.109	104
		3.50 C	0.03		-0.10	0.00
186 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H2-1		0.052	103
		2.75 C	-0.03		-0.02	0.00
187 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.024	105
		2.64 T	-0.02		0.01	0.50
188 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.079	104
		2.64 T	-0.02		0.05	0.50
189 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.091	105
		3.75 T	0.06		0.04	0.00
190 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H1-1b		0.040	105
		3.75 T	0.03		0.01	0.00
191 LD	L2X2X3/16		(STANDARD SECTIONS)			
		PASS	Eq. H2-1		0.038	107
		0.67 C	0.02		0.02	0.50

192 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.110	103
	0.53 C	0.04		-0.12	0.50
193 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.009	104
	0.00	0.00		0.01	0.50
194 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.043	103
	3.93 C	0.00		-0.01	0.50
195 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.043	103
	3.93 C	0.00		-0.01	0.00
196 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.096	103
	7.06 C	0.00		-0.05	0.50
197 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.116	103
	6.99 C	0.03		-0.06	0.00
198 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.027	103
	1.31 C	0.03		-0.00	0.00
199 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.031	103
	1.31 C	0.01		0.01	0.50
200 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.075	101
	5.01 T	0.00		0.05	0.50
201 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.075	101
	5.01 T	0.00		0.05	0.00
202 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.027	104
	1.30 C	0.00		0.01	0.00
203 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.019	104
	1.30 C	0.00		-0.01	0.00
204 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.101	104
	6.95 C	0.01		-0.05	0.50
205 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.097	104
	6.99 C	0.00		-0.05	0.00
206 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.043	104
	3.84 C	0.00		-0.01	0.50
207 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.043	104
	3.84 C	0.00		-0.01	0.00

208 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.011	103
	0.00		0.00	0.01	0.00
209 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.000	107
	0.01 C		-0.00	-0.00	0.00
210 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.013	104
	0.27 C		-0.00	-0.00	0.00
211 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	104
	0.06 T		-0.00	-0.00	0.00
212 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.002	103
	0.11 T		-0.00	-0.00	0.00
213 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
	0.10 T		-0.00	-0.00	0.00
214 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
	0.06 T		-0.00	-0.00	0.00
215 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.010	103
	0.21 C		-0.00	-0.00	0.00
216 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.008	101
	0.17 C		-0.00	-0.00	0.00
217 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.009	104
	0.18 C		-0.00	-0.00	0.00
218 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	104
	0.05 T		-0.00	-0.00	0.00
219 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.002	104
	0.10 T		-0.00	-0.00	0.00
220 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.002	104
	0.11 T		-0.00	-0.00	0.00
221 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
	0.06 T		-0.00	-0.00	0.00
222 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.015	103
	0.32 C		-0.00	-0.00	0.00
223 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.000	103
	0.02 T		-0.00	-0.00	0.00

224 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.125	103
		2.52 C	-0.00	-0.00	0.00
225 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.028	101
		1.80 T	-0.00	-0.00	0.00
226 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.100	103
		2.01 C	-0.00	-0.00	0.00
227 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.021	101
		1.34 T	-0.00	-0.00	0.00
228 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.042	101
		2.69 T	-0.00	-0.00	0.00
229 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.166	103
		3.34 C	-0.00	-0.00	0.00
230 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.049	101
		3.18 T	-0.00	-0.00	0.00
231 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.135	101
		2.72 C	-0.00	-0.00	0.00
232 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.135	101
		2.72 C	-0.00	-0.00	0.00
233 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.049	101
		3.18 T	-0.00	-0.00	0.00
234 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.165	104
		3.32 C	-0.00	-0.00	0.00
235 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.042	101
		2.69 T	-0.00	-0.00	0.00
236 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.021	101
		1.34 T	-0.00	-0.00	0.00
237 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.101	104
		2.03 C	-0.00	-0.00	0.00
238 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.028	101
		1.80 T	-0.00	-0.00	0.00
239 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.119	104
		2.40 C	-0.00	-0.00	0.00

240 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.237	103
		0.65 T	-0.10	0.16	0.00
241 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.057	103
		0.65 T	-0.06	-0.04	0.00
242 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.040	103
		4.80 T	0.04	-0.00	0.50
243 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.101	103
		4.80 T	0.09	0.03	0.50
244 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.100	103
		3.79 T	-0.09	0.03	0.00
245 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.036	103
		3.79 T	-0.04	-0.00	0.00
246 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.070	103
		2.53 C	0.06	0.02	0.50
247 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.143	103
		2.53 C	0.11	-0.09	0.50
248 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.116	107
		2.11 C	-0.09	0.05	0.00
249 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.056	103
		2.56 C	-0.05	-0.01	0.00
250 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. Sec. D2	0.027	101
		3.50 T	0.00	0.00	0.00
251 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.066	103
		1.65 T	0.07	0.02	0.50
252 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.076	105
		4.15 T	0.06	0.03	0.00
253 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. Sec. D2	0.036	101
		4.70 T	0.01	0.00	0.00
254 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.047	107
		0.39 C	0.04	0.02	0.50
255 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H1-1b	0.147	104
		0.45 T	0.02	0.12	0.50

256 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.002	108
	0.00	0.00		0.00	0.50
257 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.044	103
	4.52 C	0.00		-0.01	0.50
258 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.044	103
	4.52 C	0.00		0.01	0.50
259 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.102	103
	8.61 C	0.00		-0.04	0.50
260 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.124	103
	8.65 C	0.04		-0.04	0.00
261 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.044	103
	2.53 C	0.03		0.01	0.00
262 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.036	103
	2.53 C	0.02		-0.01	0.00
263 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.051	101
	4.54 T	0.00		0.03	0.50
264 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H1-1b		0.051	101
	4.54 T	0.00		0.03	0.00
265 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.024	104
	2.06 C	-0.01		-0.00	0.50
266 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.029	104
	2.06 C	-0.01		0.01	0.50
267 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.097	104
	7.65 C	-0.01		-0.04	0.50
268 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.092	104
	7.66 C	0.00		-0.04	0.00
269 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.040	104
	4.00 C	0.00		0.01	0.00
270 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.039	104
	4.00 C	0.00		-0.01	0.00
271 LD	L2X2X3/16	(STANDARD SECTIONS)			
	PASS	Eq. H2-1		0.003	107
	0.00	0.00		0.00	0.00

272 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.000	103
		0.00 C	-0.00	-0.00	0.00
273 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.008	103
		0.51 T	-0.00	-0.00	0.00
274 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
		0.04 T	-0.00	-0.00	0.00
275 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.002	103
		0.11 T	-0.00	-0.00	0.00
276 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
		0.07 T	-0.00	-0.00	0.00
277 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
		0.04 T	-0.00	-0.00	0.00
278 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.012	103
		0.24 C	-0.00	-0.00	0.00
279 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.006	101
		0.13 C	-0.00	-0.00	0.00
280 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.009	104
		0.18 C	-0.00	-0.00	0.00
281 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	104
		0.03 T	-0.00	-0.00	0.00
282 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	104
		0.07 T	-0.00	-0.00	0.00
283 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	104
		0.09 T	-0.00	-0.00	0.00
284 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
		0.04 T	-0.00	-0.00	0.00
285 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.013	107
		0.26 C	-0.00	-0.00	0.00
286 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.000	106
		0.00 C	-0.00	-0.00	0.00
287 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.177	103
		3.43 C	-0.00	-0.00	0.00

288 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.041	103
		2.66 T	-0.00	-0.00	0.00
289 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.151	103
		2.92 C	-0.00	-0.00	0.00
290 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.040	103
		2.59 T	-0.00	-0.00	0.00
291 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.061	103
		3.96 T	-0.00	-0.00	0.00
292 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.220	103
		4.27 C	-0.00	-0.00	0.00
293 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.065	103
		4.24 T	-0.00	-0.00	0.00
294 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.198	103
		3.83 C	-0.00	-0.00	0.00
295 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.196	101
		3.79 C	-0.00	-0.00	0.00
296 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.061	101
		3.98 T	-0.00	-0.00	0.00
297 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.207	101
		4.02 C	-0.00	-0.00	0.00
298 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.058	101
		3.77 T	-0.00	-0.00	0.00
299 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.035	104
		2.30 T	-0.00	-0.00	0.00
300 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.135	104
		2.61 C	-0.00	-0.00	0.00
301 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.037	104
		2.39 T	-0.00	-0.00	0.00
302 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.154	104
		2.99 C	-0.00	-0.00	0.00
315 LD	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.587	103
		2.69 C	0.00	-0.82	0.00

316 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.500	103
	14.74 C	0.00		0.34	0.50
317 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.694	103
	17.43 C	0.00		0.49	0.50
318 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.381	103
	18.35 C	0.00		-0.32	0.00
319 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.224	103
	18.30 C	0.03		0.05	0.00
320 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.089	103
	7.49 C	0.03		-0.02	0.00
321 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.077	103
	7.49 C	0.01		0.01	0.50
322 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H1-1b		0.047	101
	1.99 T	0.00		0.03	0.50
323 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H1-1b		0.047	101
	1.99 T	0.00		0.03	0.00
324 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.080	103
	7.21 C	-0.01		-0.02	0.50
325 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.080	103
	7.21 C	-0.01		-0.02	0.00
326 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.121	104
	11.66 C	-0.01		-0.02	0.50
327 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.116	104
	11.64 C	0.00		-0.02	0.00
328 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.139	104
	10.96 C	0.00		-0.07	0.50
329 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.304	104
	10.96 C	0.00		0.19	0.50
330 LD	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.587	104
	2.69 C	0.00		-0.82	0.50
331 ST	L2X2X3/16		(STANDARD SECTIONS)		
	PASS	Eq. H2-1		0.041	103
	2.64 T	-0.00		-0.00	0.00

332 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.090	104
		1.78 C	-0.00	-0.00	0.00
333 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.010	103
		0.64 T	-0.00	-0.00	0.00
334 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.041	103
		2.68 T	-0.00	-0.00	0.00
335 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.036	103
		2.32 T	-0.00	-0.00	0.00
336 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	107
		0.03 C	-0.00	-0.00	0.00
337 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.133	103
		2.64 C	-0.00	-0.00	0.00
338 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.007	101
		0.14 C	-0.00	-0.00	0.00
339 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.087	104
		1.71 C	-0.00	-0.00	0.00
340 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.001	103
		0.05 T	-0.00	-0.00	0.00
341 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.031	103
		2.01 T	-0.00	-0.00	0.00
342 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.034	104
		2.19 T	-0.00	-0.00	0.00
343 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.010	104
		0.66 T	-0.00	-0.00	0.00
344 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.160	103
		3.16 C	-0.00	-0.00	0.00
345 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.031	104
		2.02 T	-0.00	-0.00	0.00
346 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.517	103
		9.66 C	-0.00	-0.00	0.00
347 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.089	101
		5.79 T	-0.00	-0.00	0.00

348 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.252	104
		4.72 C	-0.00	-0.00	0.00
349 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.228	107
		4.27 C	-0.00	-0.00	0.00
350 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.109	103
		7.04 T	-0.00	-0.00	0.00
351 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.528	103
		9.86 C	-0.00	-0.00	0.00
352 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.120	103
		7.80 T	-0.00	-0.00	0.00
353 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.314	104
		5.87 C	-0.00	-0.00	0.00
354 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.353	103
		6.59 C	-0.00	-0.00	0.00
355 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.101	101
		6.56 T	-0.00	-0.00	0.00
356 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.338	104
		6.31 C	-0.00	-0.00	0.00
357 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.061	104
		3.96 T	-0.00	-0.00	0.00
358 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.074	108
		1.38 C	-0.00	-0.00	0.00
359 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.305	103
		5.69 C	-0.00	-0.00	0.00
360 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.089	101
		5.79 T	-0.00	-0.00	0.00
361 ST	L2X2X3/16		(STANDARD SECTIONS)		
		PASS	Eq. H2-1	0.451	104
		8.43 C	-0.00	-0.00	0.00

III.2.2 DEFLECTION CHECK

ALL UNITS ARE - KN METER (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
95	LD L2X2X3/16	(STANDARD SECTIONS)			
		PASS	DEFLECTION	0.010	2005 0.13

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 2.91E+04	Deflection	:	0.002
L/C	: 2005	LOC	:	0.126
Ratio	: 0.010	(PASS)		

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
96	LD L2X2X3/16	(STANDARD SECTIONS)			
		PASS	DEFLECTION	0.019	2004 0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.56E+04	Deflection	:	0.003
L/C	: 2004	LOC	:	0.209
Ratio	: 0.019	(PASS)		

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
97	LD L2X2X3/16	(STANDARD SECTIONS)			
		PASS	DEFLECTION	0.007	2007 0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 4.59E+04	Deflection	:	0.001
L/C	: 2007	LOC	:	0.209
Ratio	: 0.007	(PASS)		

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
98	LD L2X2X3/16	(STANDARD SECTIONS)			
		PASS	DEFLECTION	0.003	2003 0.29

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 9.18E+04	Deflection	:	0.001
L/C	: 2003	LOC	:	0.293
Ratio	: 0.003	(PASS)		

99 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2001
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.37E+04	Deflection	:	0.001
L/C	:	2001	LOC	:	0.251
Ratio	:	0.006	(PASS)		

100 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.08E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.209
Ratio	:	0.003	(PASS)		

101 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.27E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.293
Ratio	:	0.002	(PASS)		

102 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.004 2003
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	8.03E+04	Deflection	:	0.001
L/C	:	2003	LOC	:	0.293
Ratio	:	0.004	(PASS)		

103 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.38

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.28E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.377
Ratio	:	0.002	(PASS)		

104 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.13

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.03E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.126
Ratio	:	0.003	(PASS)		

105 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2014
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.27E+05	Deflection	:	0.000
L/C	:	2014	LOC	:	0.251
Ratio	:	0.002	(PASS)		

106 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.007 2006
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	4.43E+04	Deflection	:	0.001
L/C	:	2006	LOC	:	0.293
Ratio	:	0.007	(PASS)		

154 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.011 2005
0.13

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.80E+04	Deflection	:	0.002
L/C	:	2005	LOC	:	0.126
Ratio	:	0.011	(PASS)		

155 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.019 2004
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.56E+04	Deflection	:	0.003
L/C	:	2004	LOC	:	0.209
Ratio	:	0.019	(PASS)		

156 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2002
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 4.90E+04	Deflection	:	0.001
L/C	: 2002	LOC	:	0.209
Ratio	: 0.006	(PASS)		

157 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.29

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 9.60E+04	Deflection	:	0.001
L/C	: 2002	LOC	:	0.293
Ratio	: 0.003	(PASS)		

158 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 5.27E+04	Deflection	:	0.001
L/C	: 2002	LOC	:	0.251
Ratio	: 0.006	(PASS)		

159 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2003
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.23E+05	Deflection	:	0.000
L/C	: 2003	LOC	:	0.251
Ratio	: 0.002	(PASS)		

160 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2003
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.06E+05	Deflection	:	0.000
L/C	: 2003	LOC	:	0.251
Ratio	: 0.003	(PASS)		

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     161 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.004      2008
                                                                  0.21
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  8.07E+04  Deflection :     0.001       |
| L/C                         :  2008      LOC        :     0.209       |
| Ratio                       :     0.004  (PASS)                       |
|-------------------------------------------------------------------------|

     162 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.002      2008
                                                                  0.33
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  1.53E+05  Deflection :     0.000       |
| L/C                         :  2008      LOC        :     0.335       |
| Ratio                       :     0.002  (PASS)                       |
|-------------------------------------------------------------------------|

     163 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.002      2003
                                                                  0.13
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  1.56E+05  Deflection :     0.000       |
| L/C                         :  2003      LOC        :     0.126       |
| Ratio                       :     0.002  (PASS)                       |
|-------------------------------------------------------------------------|

     164 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.002      2015
                                                                  0.25
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  1.25E+05  Deflection :     0.000       |
| L/C                         :  2015      LOC        :     0.251       |
| Ratio                       :     0.002  (PASS)                       |
|-------------------------------------------------------------------------|

     165 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.007      2005
                                                                  0.25
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  4.60E+04  Deflection :     0.001       |
| L/C                         :  2005      LOC        :     0.251       |
| Ratio                       :     0.007  (PASS)                       |
|-------------------------------------------------------------------------|
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83 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.012 2005
0.17

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.56E+04	Deflection	:	0.002
L/C	:	2005	LOC	:	0.167
Ratio	:	0.012	(PASS)		

84 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.017 2004
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.78E+04	Deflection	:	0.003
L/C	:	2004	LOC	:	0.208
Ratio	:	0.017	(PASS)		

85 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	6.18E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.250
Ratio	:	0.005	(PASS)		

86 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.97E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.208
Ratio	:	0.005	(PASS)		

87 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.03E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.250
Ratio	:	0.006	(PASS)		

88 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.013 2004
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.31E+04	Deflection	:	0.002
L/C	:	2004	LOC	:	0.292
Ratio	:	0.013	(PASS)		

89 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.014 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.18E+04	Deflection	:	0.002
L/C	:	2002	LOC	:	0.208
Ratio	:	0.014	(PASS)		

90 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.06E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.208
Ratio	:	0.003	(PASS)		

91 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.008 2002
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	3.89E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.292
Ratio	:	0.008	(PASS)		

92 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.007 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	4.18E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.208
Ratio	:	0.007	(PASS)		

93 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2004
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	6.03E+04	Deflection	:	0.001
L/C	:	2004	LOC	:	0.250
Ratio	:	0.005	(PASS)		

94 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.016 2004
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.88E+04	Deflection	:	0.003
L/C	:	2004	LOC	:	0.292
Ratio	:	0.016	(PASS)		

130 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.012 2005
0.17

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.47E+04	Deflection	:	0.002
L/C	:	2005	LOC	:	0.167
Ratio	:	0.012	(PASS)		

131 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.017 2004
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.78E+04	Deflection	:	0.003
L/C	:	2004	LOC	:	0.208
Ratio	:	0.017	(PASS)		

132 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2007
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	6.41E+04	Deflection	:	0.001
L/C	:	2007	LOC	:	0.208
Ratio	:	0.005	(PASS)		

133 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2004
0.17

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	9.12E+04	Deflection	:	0.001
L/C	:	2004	LOC	:	0.167
Ratio	:	0.003	(PASS)		

134 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2004
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.16E+04	Deflection	:	0.001
L/C	:	2004	LOC	:	0.250
Ratio	:	0.006	(PASS)		

135 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.013 2004
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.32E+04	Deflection	:	0.002
L/C	:	2004	LOC	:	0.292
Ratio	:	0.013	(PASS)		

136 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.012 2004
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.50E+04	Deflection	:	0.002
L/C	:	2004	LOC	:	0.208
Ratio	:	0.012	(PASS)		

137 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2004
0.13

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.40E+05	Deflection	:	0.000
L/C	:	2004	LOC	:	0.125
Ratio	:	0.002	(PASS)		

138 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.74E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.250
Ratio	:	0.005	(PASS)		

139 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2004
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.36E+04	Deflection	:	0.001
L/C	:	2004	LOC	:	0.208
Ratio	:	0.006	(PASS)		

140 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2004
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.98E+04	Deflection	:	0.001
L/C	:	2004	LOC	:	0.250
Ratio	:	0.005	(PASS)		

141 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.016 2004
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.86E+04	Deflection	:	0.003
L/C	:	2004	LOC	:	0.292
Ratio	:	0.016	(PASS)		

193 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2003
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.15E+05	Deflection	:	0.000
L/C	:	2003	LOC	:	0.250
Ratio	:	0.001	(PASS)		

194 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.08E+05	Deflection	:	0.000
L/C	: 2002	LOC	:	0.250
Ratio	: 0.003	(PASS)		

195 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.004 2002
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 8.06E+04	Deflection	:	0.001
L/C	: 2002	LOC	:	0.208
Ratio	: 0.004	(PASS)		

196 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.010 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 3.07E+04	Deflection	:	0.002
L/C	: 2002	LOC	:	0.250
Ratio	: 0.010	(PASS)		

197 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.010 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 3.05E+04	Deflection	:	0.002
L/C	: 2002	LOC	:	0.250
Ratio	: 0.010	(PASS)		

198 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.09E+05	Deflection	:	0.000
L/C	: 2002	LOC	:	0.250
Ratio	: 0.003	(PASS)		

199 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.96E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.208
Ratio	:	0.002	(PASS)		

200 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.009 2002
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	3.22E+04	Deflection	:	0.002
L/C	:	2002	LOC	:	0.292
Ratio	:	0.009	(PASS)		

201 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.009 2003
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	3.39E+04	Deflection	:	0.001
L/C	:	2003	LOC	:	0.208
Ratio	:	0.009	(PASS)		

202 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.08E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.208
Ratio	:	0.001	(PASS)		

203 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.24E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.208
Ratio	:	0.002	(PASS)		

204 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.009 2003
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 3.21E+04	Deflection	:	0.002
L/C	: 2003	LOC	:	0.250
Ratio	: 0.009	(PASS)		

205 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.010 2003
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 3.07E+04	Deflection	:	0.002
L/C	: 2003	LOC	:	0.208
Ratio	: 0.010	(PASS)		

206 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.004 2003
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 8.00E+04	Deflection	:	0.001
L/C	: 2003	LOC	:	0.250
Ratio	: 0.004	(PASS)		

207 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2003
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.27E+05	Deflection	:	0.000
L/C	: 2003	LOC	:	0.208
Ratio	: 0.002	(PASS)		

208 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2010
0.12

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 2.04E+05	Deflection	:	0.000
L/C	: 2010	LOC	:	0.125
Ratio	: 0.001	(PASS)		

256 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2006
0.33

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 5.77E+05	Deflection	:	0.000
L/C	: 2006	LOC	:	0.333
Ratio	: 0.001	(PASS)		

257 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2002
0.29

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 2.12E+05	Deflection	:	0.000
L/C	: 2002	LOC	:	0.292
Ratio	: 0.001	(PASS)		

258 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2002
0.29

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 3.23E+05	Deflection	:	0.000
L/C	: 2002	LOC	:	0.292
Ratio	: 0.001	(PASS)		

259 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 5.38E+04	Deflection	:	0.001
L/C	: 2002	LOC	:	0.250
Ratio	: 0.006	(PASS)		

260 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.007 2002
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 4.37E+04	Deflection	:	0.001
L/C	: 2002	LOC	:	0.208
Ratio	: 0.007	(PASS)		

261 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.26E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.208
Ratio	:	0.002	(PASS)		

262 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.33

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.77E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.333
Ratio	:	0.002	(PASS)		

263 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	5.83E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.250
Ratio	:	0.005	(PASS)		

264 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.005 2003
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	6.45E+04	Deflection	:	0.001
L/C	:	2003	LOC	:	0.208
Ratio	:	0.005	(PASS)		

265 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2010
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.79E+05	Deflection	:	0.000
L/C	:	2010	LOC	:	0.250
Ratio	:	0.002	(PASS)		

266 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2010
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.10E+05	Deflection	:	0.000
L/C	: 2010	LOC	:	0.250
Ratio	: 0.003	(PASS)		

267 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2003
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 5.30E+04	Deflection	:	0.001
L/C	: 2003	LOC	:	0.250
Ratio	: 0.006	(PASS)		

268 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2003
0.17

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 4.95E+04	Deflection	:	0.001
L/C	: 2003	LOC	:	0.167
Ratio	: 0.006	(PASS)		

269 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2020
0.37

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 2.88E+05	Deflection	:	0.000
L/C	: 2020	LOC	:	0.375
Ratio	: 0.001	(PASS)		

270 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2008
0.33

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 2.04E+05	Deflection	:	0.000
L/C	: 2008	LOC	:	0.333
Ratio	: 0.001	(PASS)		

271 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2016
0.37

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 4.30E+05	Deflection	:	0.000
L/C	: 2016	LOC	:	0.375
Ratio	: 0.001	(PASS)		

315 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.039 2002
0.17

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 7.68E+03	Deflection	:	0.007
L/C	: 2002	LOC	:	0.167
Ratio	: 0.039	(PASS)		

316 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.009 2010
0.37

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 3.23E+04	Deflection	:	0.002
L/C	: 2010	LOC	:	0.375
Ratio	: 0.009	(PASS)		

317 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.013 2010
0.38

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 2.39E+04	Deflection	:	0.002
L/C	: 2010	LOC	:	0.375
Ratio	: 0.013	(PASS)		

318 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.029 2002
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	:	0.167
Span/Deflection	: 1.02E+04	Deflection	:	0.005
L/C	: 2002	LOC	:	0.208
Ratio	: 0.029	(PASS)		

319 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.004 2003
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	: 0.167	
Span/Deflection	: 6.91E+04	Deflection	: 0.001	
L/C	: 2003	LOC	: 0.250	
Ratio	: 0.004	(PASS)		

320 LD L2X2X3/16 (STANDARD SECTIONS)

PASS DEFLECTION 0.003 2002 0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	: 0.167	
Span/Deflection	: 9.12E+04	Deflection	: 0.001	
L/C	: 2002	LOC	: 0.208	
Ratio	: 0.003	(PASS)		

321 LD L2X2X3/16 (STANDARD SECTIONS)

PASS DEFLECTION 0.003 2003 0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	: 0.167	
Span/Deflection	: 1.04E+05	Deflection	: 0.000	
L/C	: 2003	LOC	: 0.250	
Ratio	: 0.003	(PASS)		

322 LD L2X2X3/16 (STANDARD SECTIONS)

PASS DEFLECTION 0.006 2002 0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	: 0.167	
Span/Deflection	: 4.90E+04	Deflection	: 0.001	
L/C	: 2002	LOC	: 0.250	
Ratio	: 0.006	(PASS)		

323 LD L2X2X3/16 (STANDARD SECTIONS)

PASS DEFLECTION 0.006 2003 0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	: 300.000	Limit	: 0.167	
Span/Deflection	: 5.38E+04	Deflection	: 0.001	
L/C	: 2003	LOC	: 0.208	
Ratio	: 0.006	(PASS)		

```
     324 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.003      2002
                                                                  0.29
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  8.86E+04  Deflection :     0.001       |
| L/C                         :  2002      LOC        :     0.292       |
| Ratio                       :     0.003  (PASS)                       |
|-------------------------------------------------------------------------|

     325 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.003      2002
                                                                  0.25
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  1.01E+05  Deflection :     0.000       |
| L/C                         :  2002      LOC        :     0.250       |
| Ratio                       :     0.003  (PASS)                       |
|-------------------------------------------------------------------------|

     326 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.004      2003
                                                                  0.29
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  6.99E+04  Deflection :     0.001       |
| L/C                         :  2003      LOC        :     0.292       |
| Ratio                       :     0.004  (PASS)                       |
|-------------------------------------------------------------------------|

     327 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.004      2001
                                                                  0.17
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  8.06E+04  Deflection :     0.001       |
| L/C                         :  2001      LOC        :     0.167       |
| Ratio                       :     0.004  (PASS)                       |
|-------------------------------------------------------------------------|

     328 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.007      2003
                                                                  0.25
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  4.61E+04  Deflection :     0.001       |
| L/C                         :  2003      LOC        :     0.250       |
| Ratio                       :     0.007  (PASS)                       |
|-------------------------------------------------------------------------|
```

329 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.013 2011
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.30E+04	Deflection	:	0.002
L/C	:	2011	LOC	:	0.292
Ratio	:	0.013	(PASS)		

330 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.063 2003
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	4.74E+03	Deflection	:	0.011
L/C	:	2003	LOC	:	0.292
Ratio	:	0.063	(PASS)		

177 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.011 2003
0.17

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.79E+04	Deflection	:	0.002
L/C	:	2003	LOC	:	0.167
Ratio	:	0.011	(PASS)		

178 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.004 2008
0.17

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	7.69E+04	Deflection	:	0.001
L/C	:	2008	LOC	:	0.167
Ratio	:	0.004	(PASS)		

179 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.004 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	7.59E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.250
Ratio	:	0.004	(PASS)		

180 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.011 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	2.68E+04	Deflection	:	0.002
L/C	2002	LOC	:	0.250
Ratio	0.011	(PASS)		

181 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.011 2002
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	2.82E+04	Deflection	:	0.002
L/C	2002	LOC	:	0.208
Ratio	0.011	(PASS)		

182 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.17

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	1.55E+05	Deflection	:	0.000
L/C	2002	LOC	:	0.167
Ratio	0.002	(PASS)		

183 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	1.08E+05	Deflection	:	0.000
L/C	2002	LOC	:	0.250
Ratio	0.003	(PASS)		

184 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.015 2002
0.29

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	1.95E+04	Deflection	:	0.003
L/C	2002	LOC	:	0.292
Ratio	0.015	(PASS)		

185 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.013 2003
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.26E+04	Deflection	:	0.002
L/C	:	2003	LOC	:	0.208
Ratio	:	0.013	(PASS)		

186 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.08E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.208
Ratio	:	0.003	(PASS)		

187 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2004
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.49E+05	Deflection	:	0.000
L/C	:	2004	LOC	:	0.292
Ratio	:	0.002	(PASS)		

188 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.009 2003
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	3.16E+04	Deflection	:	0.002
L/C	:	2003	LOC	:	0.292
Ratio	:	0.009	(PASS)		

189 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.010 2004
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.91E+04	Deflection	:	0.002
L/C	:	2004	LOC	:	0.208
Ratio	:	0.010	(PASS)		

```
     190 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.004      2003
                                                                  0.25
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  7.89E+04  Deflection :     0.001       |
| L/C                         :  2003      LOC        :     0.250       |
| Ratio                       :     0.004  (PASS)                       |
|-------------------------------------------------------------------------|

     191 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.004      2004
                                                                  0.29
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  7.71E+04  Deflection :     0.001       |
| L/C                         :  2004      LOC        :     0.292       |
| Ratio                       :     0.004  (PASS)                       |
|-------------------------------------------------------------------------|

     192 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.012      2002
                                                                  0.29
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  2.44E+04  Deflection :     0.002       |
| L/C                         :  2002      LOC        :     0.292       |
| Ratio                       :     0.012  (PASS)                       |
|-------------------------------------------------------------------------|

     240 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.017      2002
                                                                  0.21
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  1.75E+04  Deflection :     0.003       |
| L/C                         :  2002      LOC        :     0.208       |
| Ratio                       :     0.017  (PASS)                       |
|-------------------------------------------------------------------------|

     241 LD   L2X2X3/16                (STANDARD SECTIONS)
                           PASS   DEFLECTION           0.005      2002
                                                                  0.25
|-------------------------------------------------------------------------|
| DEFLECTION CHECK:   (UNIT: CM  )                                        |
|                                                                         |
| Limit Span/Deflection (DFF) :  300.000   Limit      :     0.167       |
| Span/Deflection             :  6.45E+04  Deflection :     0.001       |
| L/C                         :  2002      LOC        :     0.250       |
| Ratio                       :     0.005  (PASS)                       |
|-------------------------------------------------------------------------|
```

242 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.29E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.208
Ratio	:	0.002	(PASS)		

243 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.009 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	3.47E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.250
Ratio	:	0.009	(PASS)		

244 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.009 2002
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	3.32E+04	Deflection	:	0.002
L/C	:	2002	LOC	:	0.208
Ratio	:	0.009	(PASS)		

245 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2002
0.17

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	1.61E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.167
Ratio	:	0.002	(PASS)		

246 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.004 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	6.87E+04	Deflection	:	0.001
L/C	:	2002	LOC	:	0.250
Ratio	:	0.004	(PASS)		

247 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.013 2002
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.22E+04	Deflection	:	0.002
L/C	:	2002	LOC	:	0.292
Ratio	:	0.013	(PASS)		

248 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.008 2003
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	3.77E+04	Deflection	:	0.001
L/C	:	2003	LOC	:	0.208
Ratio	:	0.008	(PASS)		

249 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2010
0.21

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	9.48E+04	Deflection	:	0.001
L/C	:	2010	LOC	:	0.208
Ratio	:	0.003	(PASS)		

250 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.001 2002
0.25

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	2.28E+05	Deflection	:	0.000
L/C	:	2002	LOC	:	0.250
Ratio	:	0.001	(PASS)		

251 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.006 2004
0.29

DEFLECTION CHECK: (UNIT: CM)					
Limit Span/Deflection (DFF)	:	300.000	Limit	:	0.167
Span/Deflection	:	4.95E+04	Deflection	:	0.001
L/C	:	2004	LOC	:	0.292
Ratio	:	0.006	(PASS)		

252 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.007 2004
0.21

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	4.23E+04	Deflection	:	0.001
L/C	2004	LOC	:	0.208
Ratio	0.007	(PASS)		

253 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.002 2004
0.17

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	1.79E+05	Deflection	:	0.000
L/C	2004	LOC	:	0.167
Ratio	0.002	(PASS)		

254 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.003 2010
0.25

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	8.95E+04	Deflection	:	0.001
L/C	2010	LOC	:	0.250
Ratio	0.003	(PASS)		

255 LD L2X2X3/16 (STANDARD SECTIONS)
PASS DEFLECTION 0.012 2003
0.29

DEFLECTION CHECK: (UNIT: CM)				
Limit Span/Deflection (DFF)	300.000	Limit	:	0.167
Span/Deflection	2.58E+04	Deflection	:	0.002
L/C	2003	LOC	:	0.292
Ratio	0.012	(PASS)		

PROJECT	PROPOSED 2-STOREY DUPLEX HOMESTAY
OWNER/CLIENT	MR. & MRS. REYWIL RAVELO
ADDRESS	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

SLABS

Material Specification:		
Concrete Strength, fc' =	21	MPa
Concrete Weight =	Normal	
Unit Weight =	23.6	kN/m^3

NSCP	2015	
Steel Reinforcement	db, mm	fy, MPa
Smaller than or equal to	12	276
Larger than or equal to	16	414

Slab Specification:		
Slab Designation:	S-1(1)	
Occupancy Type	Residential	
Concrete strength, fc'	21	MPa
Rebars, fy	276	MPa
Short span, La	3	m
Long span, Lb	4	m
Dead load, sdl	1.2	kPa
Live load, sll	1.9	kPa
use slab thickness, t	100	mm
Main bar diameter, db	10	mm
Temp bar diameter, db	10	mm
Concrete cover	20	mm

Case:	TWO-WAY		
	-		
min t =	77.778	mm	OK!
reqd d =	100	mm	OK!
φVc	48.690	kN	OK!
	Mu	reqd s	use s
	kNm	mm	mm
M1, dis =	5.001	213.168	200
M2, mid =	3.076	350.584	300
M3, cont =	1.025	1064.182	300
Temp =	1.579392	595.090	300
Temp =	1.666816	563.501	300
Temp =	0.555605333	1704.752	300

Mark	Slab t (mm)	Short direction steel, mm			Long direction steel, mm			Type
		Main bars			Temp bars			
		"a"	"b"	"c"	"a"	"b"	"c"	
S-1(1)	100	10 mm Ø @ 200	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	TWO-WAY

Slab Specification:		
Slab Designation:	S-1(2)	
Occupancy Type	Residential	
Concrete strength, fc'	21	MPa
Rebars, fy	276	MPa
Short span, La	2.975	m
Long span, Lb	k	m
Dead load, sdl	1.2	kPa
Live load, sll	1.9	kPa
use slab thickness, t	100	mm
Main bar diameter, db	10	mm
Temp bar diameter, db	10	mm
Concrete cover	20	mm

Case:	TWO-WAY		
	-		
min t =	66.389	mm	OK!
reqd d =	100	mm	OK!
φVc	48.690	kN	OK!
	Mu	reqd s	use s
	kNm	mm	mm
M1, dis =	2.459	440.085	300
M2, mid =	1.666	652.613	300
M3, cont =	0.555	1970.134	300
Temp =	3.62408312	255.229	250
Temp =	1.546128	608.047	300
Temp =	0.515376	1838.373	300

Mark	Slab t (mm)	Short direction steel, mm			Long direction steel, mm			Type
		Main bars			Temp bars			
		"a"	"b"	"c"	"a"	"b"	"c"	
S-1(2)	100	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 250	10 mm Ø @ 300	10 mm Ø @ 300	TWO-WAY

Slab Specification:		
Slab Designation:	S-1(3)	
Occupancy Type	Residential	
Concrete strength, fc'	21	MPa
Rebars, fy	276	MPa
Short span, La	0.825	m
Long span, Lb	k	m
Dead load, sdl	1.2	kPa
Live load, sll	1.9	kPa
use slab thickness, t	100	mm
Main bar diameter, db	10	mm
Temp bar diameter, db	10	mm
Concrete cover	20	mm

Case:	TWO-WAY		
	-		
min t =	23.611	mm	OK!
reqd d =	100	mm	OK!
φVc	48.690	kN	OK!
	Mu	reqd s	use s
	kNm	mm	mm
M1, dis =	0.423	2588.099	300
M2, mid =	0.227	4833.567	300
M3, cont =	0.076	14512.866	300
Temp =	0.02986038	31843.823	300
Temp =	0.06484192	14660.630	300
Temp =	0.021613973	43995.911	300

Mark	Slab t (mm)	Short direction steel, mm			Long direction steel, mm			Type
		Main bars			Temp bars			
		"a"	"b"	"c"	"a"	"b"	"c"	
S-1(3)	100	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	TWO-WAY

PROJECT	PROPOSED 2-STOREY DUPLEX HOMESTAY
OWNER/CLIENT	MR. & MRS. REYWIL RAVELO
ADDRESS	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

Slab Specification:		
Slab Designation:	S-1(4)	
Occupancy Type	Residential	
Concrete strength, fc'	21	MPa
Rebars, fy	276	MPa
Short span, La	0.65	m
Long span, Lb	k	m
Dead load, sdl	1.2	kPa
Live load, sll	1.9	kPa
use slab thickness, t	100	mm
Main bar diameter, db	10	mm
Temp bar diameter, db	10	mm
Concrete cover	20	mm

Case:	ONE-WAY		
	One end continuous		
min t =	21.512	mm	OK!
reqd d =	100	mm	OK!
φVc	48.690	kN	OK!
	Mu	reqd s	use s
	kNm	mm	mm
M1, dis =	1.423	765.150	300
M2, mid =	0.129	8505.972	300
M3, cont =	0.113	9721.979	300
Temp =	0	392.699	300
Temp =	0	392.699	300
Temp =	0	392.699	300

Mark	**Slab t (mm)**	**Short direction steel, mm**			**Long direction steel, mm**			**Type**
		Main bars			**Temp bars**			
		"a"	**"b"**	**"c"**	**"a"**	**"b"**	**"c"**	
S-1(4)	100	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	ONE-WAY

Slab Specification:		
Slab Designation:	S-2	
Occupancy Type	Residential	
Concrete strength, fc'	21	MPa
Rebars, fy	276	MPa
Short span, La	0.65	m
Long span, Lb	k	m
Dead load, sdl	1.2	kPa
Live load, sll	1.9	kPa
use slab thickness, t	140	mm
Main bar diameter, db	10	mm
Temp bar diameter, db	10	mm
Concrete cover	20	mm

Case:	ONE-WAY		
	One end continuous		
min t =	21.512	mm	OK!
reqd d =	140	mm	OK!
φVc	74.658	kN	OK!
	Mu	reqd s	use s
	kNm	mm	mm
M1, dis =	2.813	594.267	400
M2, mid =	0.255	6598.600	400
M3, cont =	0.223	7541.824	400
Temp =	0	280.499	300
Temp =	0	280.499	300
Temp =	0	280.499	300

Mark	**Slab t (mm)**	**Short direction steel, mm**			**Long direction steel, mm**			**Type**
		Main bars			**Temp bars**			
		"a"	**"b"**	**"c"**	**"a"**	**"b"**	**"c"**	
S-2	140	10 mm Ø @ 400	10 mm Ø @ 400	10 mm Ø @ 400	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	ONE-WAY

SLAB SCHEDULE

Concrete, fc' =	21	MPa	Steel fy =	276	MPa for 10d and smaller
			Steel fy =	414	MPa for 12d and larger

Mark	**Slab t (mm)**	**Short direction steel, mm**			**Long direction steel, mm**			**Type**
		Main bars			**Temp bars**			
		"a"	**"b"**	**"c"**	**"a"**	**"b"**	**"c"**	
S-1(1)	100	10 mm Ø @ 200	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	TWO-WAY
S-1(2)	100	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 250	10 mm Ø @ 300	10 mm Ø @ 300	TWO-WAY
S-1(3)	100	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	TWO-WAY
S-1(4)	100	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	ONE-WAY
S-2	140	10 mm Ø @ 400	10 mm Ø @ 400	10 mm Ø @ 400	10 mm Ø @ 300	10 mm Ø @ 300	10 mm Ø @ 300	ONE-WAY

PROJECT	PROPOSED 2-STOREY DUPLEX HOMESTAY
OWNER/CLIENT	MR. & MRS REYWIL RAVELO
ADDRESS	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

BEAMS

Material Specification:						NSCP	2015	
Concrete Strength, fc' =	21	MPa	Coarse aggregate =	20	mm	Steel Reinforcement	db, mm	fy, MPa
Concrete Weight =	Normal					Smaller than or equal to	12	276
Unit Weight =	24	kN/m^3				Larger than or equal to	16	414

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	B-1(1)			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	3.830	kN/m
fy, main =	276	MPa	Slab left, ll =	3.078	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	3.8	m	Slab right, ll =	0.000	kN/m
Width, b =	225	mm	Beam ll =	0	kPa
Depth, h =	350	mm			
Concrete cover =	40	mm			
Main bar, dbf =	16	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	45.577	60.194	50.515
use n top	4	2	4
use n bot	2	5	2
x (m)	reqd s	adopt s	
0.292	664.771	1 @50	
0.380	764.374	4 @125	
0.760	2165.346	4 @125	
1.140	N/A	4 @125	
1.520	N/A	4 @ 125	
1.900	N/A	Rest @ 125	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
B-1(1)	225	350	TOP	4-16 mm Ø	2-16 mm Ø	4-16 mm Ø	10Ø (2 legs) 1 @50mm, 4 @125mm, 4 @125mm, 4 @125mm,4 @ 125mm O.C to CL
			BOTTOM	2-16 mm Ø	5-16 mm Ø	2-16 mm Ø	

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	B-1(2)			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	3.510	kN/m
fy, main =	276	MPa	Slab left, ll =	3.078	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	2.7	m	Slab right, ll =	0.000	kN/m
Width, b =	225	mm	Beam ll =	0	kPa
Depth, h =	350	mm			
Concrete cover =	40	mm			
Main bar, dbf =	16	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	39.874	50.875	43.994
use n top	3	2	4
use n bot	2	4	2
x (m)	reqd s	adopt s	
0.292	1376.940	1 @50	
0.270	1291.385	3 @125	
0.540	5438.789	3 @125	
0.810	N/A	3 @125	
1.080	N/A	3 @ 125	
1.350	N/A	Rest @ 125	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
B-1(2)	150	300	TOP	3-16 mm Ø	2-16 mm Ø	4-16 mm Ø	10Ø (2 legs) 1 @50mm, 4 @100mm, 1 @100mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	4-16 mm Ø	2-16 mm Ø	

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	B-1(3)			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	3.510	kN/m
fy, main =	276	MPa	Slab left, ll =	2.826	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	2.7	m	Slab right, ll =	0.000	kN/m
Width, b =	225	mm	Beam ll =	0	kPa
Depth, h =	350	mm			
Concrete cover =	40	mm			
Main bar, dbf =	16	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	8.490	16.126	6.052
use n top	2	2	2
use n bot	2	2	2
x (m)	reqd s	adopt s	
0.292	N/A	1 @50	
0.270	N/A	1 @200	
0.540	N/A	1 @200	
0.810	N/A	1 @200	
1.080	N/A	1 @ 200	
1.350	N/A	Rest @ 200	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
B-1(3)	225	350	TOP	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 1 @200mm, 1 @200mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	B-2(1)			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	1.535	kN/m
fy, main =	276	MPa	Slab left, ll =	1.235	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	0.825	m	Slab right, ll =	0.000	kN/m
Width, b =	200	mm	Beam ll =	0	kPa
Depth, h =	350	mm			
Concrete cover =	40	mm			
Main bar, dbf =	16	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	13.768	19.481	13.768
use n top	2	2	2
use n bot	2	2	2
x (m)	reqd s	adopt s	
0.292	N/A	1 @50	
0.083	N/A	1 @200	
0.165	N/A	1 @200	
0.248	N/A	1 @200	
0.330	N/A	1 @ 200	
0.413	N/A	Rest @ 200	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
B-2(1)	200	350	TOP	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 1 @200mm, 1 @200mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	

PROJECT	PROPOSED 2-STOREY DUPLEX HOMESTAY
OWNER/CLIENT	MR. & MRS REYWIL RAVELO
ADDRESS	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	B-2(2)			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	0.756	kN/m
fy, main =	276	MPa	Slab left, ll =	0.608	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	3.8	m	Slab right, ll =	0.000	kN/m
Width, b =	200	mm	Beam ll =	0	kPa
Depth, h =	350	mm			
Concrete cover =	40	mm			
Main bar, dbf =	16	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	11.069	16.099	16.099
use n top	2	2	2
use n bot	2	2	2
x (m)	reqd s	adopt s	
0.292	N/A	1 @50	
0.380	N/A	1 @200	
0.760	N/A	1 @200	
1.140	N/A	1 @200	
1.520	N/A	1 @ 200	
1.900	N/A	Rest @ 200	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
B-2(2)	200	350	TOP	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 1 @200mm, 1 @200mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	CB-1			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	4.484	kN/m
fy, main =	276	MPa	Slab left, ll =	3.610	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	3.8	m	Slab right, ll =	0.000	kN/m
Width, b =	200	mm	Beam ll =	0	kPa
Depth, h =	350	mm			
Concrete cover =	40	mm			
Main bar, dbf =	16	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	36.024	22.449	22.449
use n top	3	2	2
use n bot	2	2	2
x (m)	reqd s	adopt s	
0.292	5913.895	1 @50	
0.380	N/A	4 @125	
0.760	N/A	4 @125	
1.140	N/A	1 @125	
1.520	N/A	1 @ 200	
1.900	N/A	Rest @ 200	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
CB-1	200	350	TOP	3-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 4 @125mm, 4 @125mm, 1 @125mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	RB-1(1)			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	2.274	kN/m
fy, main =	276	MPa	Slab left, ll =	0.000	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	3.8	m	Slab right, ll =	0.000	kN/m
Width, b =	200	mm	Beam ll =	0	kPa
Depth, h =	300	mm			
Concrete cover =	40	mm			
Main bar, dbf =	12	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	14.091	16.275	15.390
use n top	3	2	3
use n bot	2	3	2
x (m)	reqd s	adopt s	
0.244	N/A	1 @50	
0.380	N/A	4 @100	
0.760	N/A	4 @100	
1.140	N/A	1 @100	
1.520	N/A	1 @ 200	
1.900	N/A	Rest @ 200	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
RB-1(1)	200	300	TOP	3-12 mm Ø	2-12 mm Ø	3-12 mm Ø	10Ø (2 legs) 1 @50mm, 4 @100mm, 4 @100mm, 1 @100mm,1 @ 200mm O.C to CL
			BOTTOM	2-12 mm Ø	3-12 mm Ø	2-12 mm Ø	

Beam Specification:			CASE:	SINGLY REINFORCED BEAM	
Beam Designation:	RB-1(2)			Both ends continuous	
Concrete, fc' =	21	MPa	Slab left, dl =	2.274	kN/m
fy, main =	276	MPa	Slab left, ll =	0.000	kN/m
fy, shear =	276	MPa	Slab right, dl =	0.000	kN/m
Span, L =	2.7	m	Slab right, ll =	0.000	kN/m
Width, b =	200	mm	Beam ll =	0	kPa
Depth, h =	300	mm			
Concrete cover =	40	mm			
Main bar, dbf =	12	mm			
Stirrup, dbv =	10	mm			
Stirrup legs =	2				

Moment	Left	Mid	Right
Mu (kNm)	6.852	15.420	13.414
use n top	2	2	3
use n bot	2	3	2
x (m)	reqd s	adopt s	
0.244	N/A	1 @50	
0.270	N/A	3 @100	
0.540	N/A	1 @100	
0.810	N/A	1 @200	
1.080	N/A	1 @ 200	
1.350	N/A	Rest @ 200	

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
RB-1(2)	200	300	TOP	2-12 mm Ø	2-12 mm Ø	3-12 mm Ø	10Ø (2 legs) 1 @50mm, 3 @100mm, 1 @100mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-12 mm Ø	3-12 mm Ø	2-12 mm Ø	

PROJECT	PROPOSED 2-STOREY DUPLEX HOMESTAY
OWNER/CLIENT	MR. & MRS REYWIL RAVELO
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SLAB SCHEDULE

Concrete, fc' =	21	MPa		Steel fy =	276	MPa for 12d and smaller
				Steel fy =	414	MPa for 16d and larger

MARK	SECTION		LOC	MAIN BARS			STIRRUPS
	b (mm)	h (mm)		LEFT	MID	RIGHT	
B-1(1)	225	350	TOP	4-16 mm Ø	2-16 mm Ø	4-16 mm Ø	10Ø (2 legs) 1 @50mm, 4 @125mm, 4 @125mm, 4 @125mm,4 @ 125mm O.C to CL
			BOTTOM	2-16 mm Ø	5-16 mm Ø	2-16 mm Ø	
B-1(2)	225	350	TOP	3-16 mm Ø	2-16 mm Ø	4-16 mm Ø	10Ø (2 legs) 1 @50mm, 3 @125mm, 3 @125mm, 3 @125mm,3 @ 125mm O.C to CL
			BOTTOM	2-16 mm Ø	4-16 mm Ø	2-16 mm Ø	
B-1(3)	225	350	TOP	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 1 @200mm, 1 @200mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	
B-2(1)	200	350	TOP	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 1 @200mm, 1 @200mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	
B-2(2)	200	350	TOP	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 1 @200mm, 1 @200mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	
CB-1	200	350	TOP	3-16 mm Ø	2-16 mm Ø	2-16 mm Ø	10Ø (2 legs) 1 @50mm, 4 @125mm, 4 @125mm, 1 @125mm,1 @ 200mm O.C to CL
			BOTTOM	2-16 mm Ø	2-16 mm Ø	2-16 mm Ø	
RB-1(1)	200	300	TOP	3-12 mm Ø	2-12 mm Ø	3-12 mm Ø	10Ø (2 legs) 1 @50mm, 4 @100mm, 4 @100mm, 1 @100mm,1 @ 200mm O.C to CL
			BOTTOM	2-12 mm Ø	3-12 mm Ø	2-12 mm Ø	
RB-1(2)	200	300	TOP	2-12 mm Ø	2-12 mm Ø	3-12 mm Ø	10Ø (2 legs) 1 @50mm, 3 @100mm, 1 @100mm, 1 @200mm,1 @ 200mm O.C to CL
			BOTTOM	2-12 mm Ø	3-12 mm Ø	2-12 mm Ø	

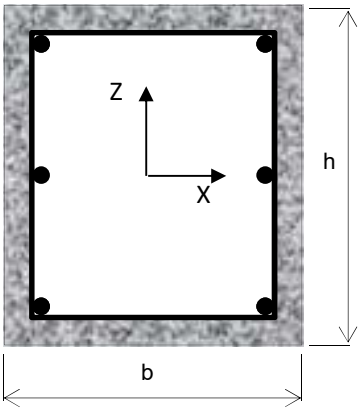
DESIGN OF RECTANGULAR CONCRETE COLUMN

Project :	PROPOSED 2-STOREY DUPLEX HOMESTAY
Owner/Client :	MR. & MRS. REYWIL RAVELO
Address :	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

Member: C1-1

A. Required Loads

Load Case	Member No.	Axial	Shear		Bending	
		P_u	V_{ux}	V_{uz}	M_{ux}	M_{uz}
		(kN)	(kN)	(kN)	(kN-m)	(kN-m)
Max Comp.	21	**67.795**	0	3.414	-1.707	0
Max Fx	31	23.928	**13.118**	1.768	-6.756	-6.427
Max Fz	17	47.757	0	**9.067**	11.642	0
Max Mx	33	38.174	0	-2.034	**14.085**	0
Max Mz	22	39.573	12.72	1.77	-0.842	**17.196**
Max Tens.	-	0	0	0	0	0



B. Design Parameters

Material Properties :

Concrete Weight :	w_c =	24.00	kN/m^3		Design Criteria
Compressive Strength :	f'_c =	21	MPa		Design Criteria
Main Steel Bar Strength:	f_y =	276	MPa		Design Criteria
Sec. Steel Bar Strength:	f_{yt} =	276	MPa		Design Criteria
Column Dimension :					
Width :	b =	200	mm	≥ 200 mm	
Depth :	h =	300	mm	≥ 200 mm	
Height :	L =	1800	mm		
Concrete Cover :	C_v =	50	mm		Design Criteria
Gross Concrete Area :	A =	60000	mm^2	b * h	
Steel Rebar :					
Main Vertical Bar Diameter :	d_b =	16	mm	≥ Ø12mm	
Tie Bar Diameter :	t_b =	10	mm	≥ Ø10mm	Sect. 7.10.5.1
Bar Arrangement					
Top Side Bars :	tpb =	2	nos.		
Bottom Side Bars :	btb =	2	nos.		
Left Side Bars :	lsb =	3	nos.		
Right Side Bars :	rsb =	3	nos.		
No. of Vert. Bars :	b_n =	6	nos.	≥ 4 nos.	Sect. 10.9.2
Steel Area :	A_{st} =	1206	mm^2		
Clear Spacing X-direction :	S_{cx} =	48	mm	≥ max(40mm, 1.5db, (4/3)dagg)	Sect. 7.6.3
Clear Spacing Y-direction :	S_{cz} =	66	mm	≥ max(40mm, 1.5db, (4/3)dagg)	Sect. 7.6.3
Steel Ratio :	ρ =	2.0%		1% ≤ ρ ≤ 8%	Sect. 10.9.1

C. Check for Slenderness

Bracing Condition :		Nonsway	
Unsupported length along X :	L_{ux} =	3000.0	mm
Unsupported length along Z :	L_{uz} =	3000.0	mm
Effective Length Factor X-dir :	kx =	1.0	
Effective Length Factor Z-dir :	kz =	1.0	

Project :	PROPOSED 2-STOREY DUPLEX HOMESTAY
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Radius of Gyration at X :	rx :	86.60	h / √12	
Radius of Gyration at Z :	rz :	57.74	b / √12	
Slenderness Ratio at X :	SLRx :	34.64	SLRx ≤ 40 ---> OK	Sect. 10.10.1
Slenderness Ratio at Z :	SLRz :	51.96	Slender --> Adjust size	Sect. 10.10.1

D. Check for Biaxial Capacity

Biaxial Design Equations : Sect. 10.3.6

$$\phi P_o = \phi\left[0.85(f'_c)(A_g - A_{st}) + f_y(A_{st})\right]$$

$$\phi P_{n,max} = \phi * 0.80 * \left[0.85(f'_c)(A_g - A_{st}) + f_y(A_{st})\right]$$

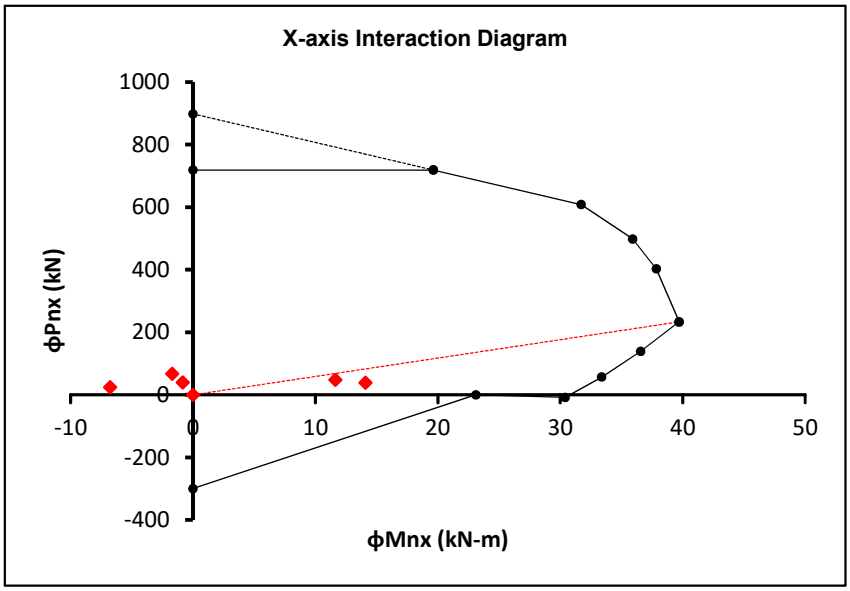
$$\phi P_n = \phi(0.85 f'_c ab) + \sum_{i=1}^{n} \phi F_{si}$$

$$\phi M_n = \phi(0.85 f'_c ab)\left(\frac{h}{2} - \frac{a}{2}\right) + \sum_{i=1}^{n} \phi F_{si}\left(\frac{h}{2} - d_i\right)$$

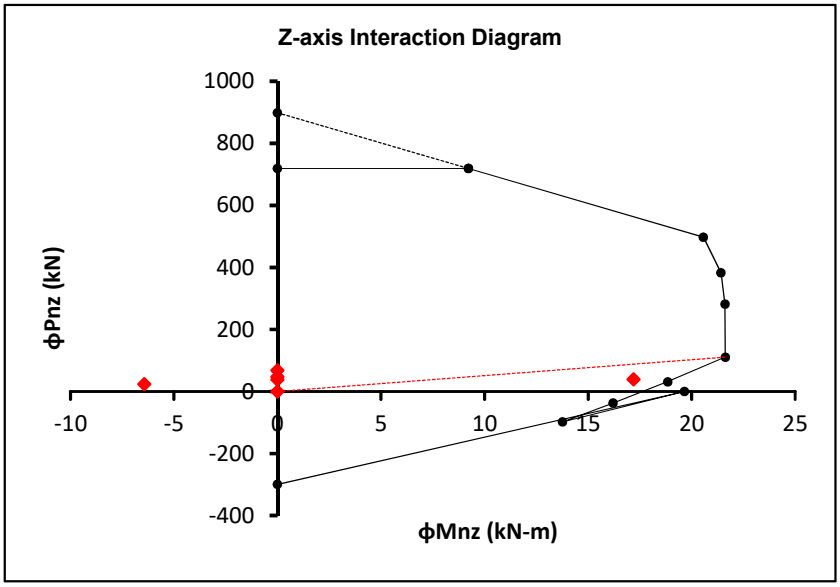
$$\phi P_{nt} = \sum_{i=1}^{n} -\phi f_y A_{si}$$

ϕ : As per Sect. 9.3.2

Uniaxial Capacity about X-axis			
POINT	ϕP_{nx} (kN)	ϕM_{nx} (kN-m)	e_z (mm)
ϕP_o	898.58	0.00	0.00
0.8ϕPo	718.86	0.00	0.00
0.8ϕPo	718.86	19.63	27.31
0.00*εs	608.25	31.71	52.14
-0.25*εs	498.49	35.91	72.03
-0.50*εs	403.43	37.84	93.79
-1.00*εs	233.39	39.71	170.14
-1.50*εs	138.51	36.55	263.89
-2.00*εs	56.70	33.39	588.77
-2.50*εs	-7.92	30.39	-3838.06
ϕM_u	0.00	23.09	∞
$\phi P_{nt,max}$	-299.66	0.00	0.00



Uniaxial Capacity about Z-axis			
POINT	ϕP_{nz} (kN)	ϕM_{nz} (kN-m)	e_x (mm)
ϕP_o	898.58	0.00	0.00
0.8ϕPo	718.86	0.00	0.00
0.8ϕPo	718.86	9.22	12.83
0.00*εs	497.60	20.57	41.34
-0.25*εs	382.40	21.41	55.99
-0.50*εs	281.15	21.61	76.86
-1.00*εs	110.76	21.63	195.27
-1.50*εs	31.31	18.84	601.67
-2.00*εs	-36.98	16.21	-438.40
-2.50*εs	-98.29	13.77	-140.08
ϕM_u	0.00	19.66	∞
$\phi P_{nt,max}$	-299.66	0.00	0.00



Project :	PROPOSED 2-STOREY DUPLEX HOMESTAY
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Address :	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

Biaxial Capacity at Design Eccentricty

If $P_u \geq 0.1*P_o$

Load Case	e_{uz} (mm)	ϕP_{nx} (kN)	e_{ux} (mm)	ϕP_{nz} (kN)	ϕP_o (kN)	P_u (kN)	$P_u \geq 0.1*P_o$	ϕP_n (kN)	Ratio ($P_u/\phi P_n$)	Remarks
Max Axial	-25.18	0.00	0.00	718.86	898.58	70.39	N/A	N/A	N/A	N/A
Max Mx	368.97	0.00	0.00	718.86	898.58	40.77	N/A	N/A	N/A	N/A
Max Mz	-21.28	0.00	434.54	-11.39	898.58	42.17	N/A	N/A	N/A	N/A

If $P_u \leq 0.1*P_o$

Load Case	e_{uz} (mm)	ϕM_{nx} (kN)	e_{ux} (mm)	ϕM_{nz} (kN)	M_{ux} (kN-m)	M_{uz} (kN-m)	$(M_{ux}/\phi M_{nx}) + (M_{uz}/\phi M_{nz}) \leq 1$	Remarks
Max Axial	-25.18	33.81	0.00	20.12	-1.71	0.00	-0.05	Pass
Max Mx	368.97	32.53	0.00	19.08	14.09	0.00	0.43	Pass
Max Mz	-21.28	32.59	434.54	19.13	-0.84	17.20	0.87	Pass

Equations:

$P_o = (0.85f'_c)(A_g-A_{st})+f_y(A_{st})$

$1/\phi P_n = 1/\phi P_{nx} + 1/\phi P_{nz} - 1/\phi P_o$

E. Check for Shear

Load Case	N_u (kN)	V_{ux} (kN)	V_{uz} (kN)	V_u (kN)
Max Comp.	67.80	0.00	3.41	3.41
Max Mz	38.17	0.00	-2.03	2.03
Max My	39.57	12.72	1.77	12.84
Max Tens.	0.00	0.00	0.00	0.00

$$V_u = \sqrt{{V_{ux}}^2 + {V_{uz}}^2}$$

Strength Reduction Factor :	ϕ =	0.75			Sect. 9.3.2
Modificaction Factor :	λ =	1.0		Normal weight concrete	Sect. 8.6.1
Axial Force :	N_u =	39.57	kN		
Required Shear Force :	V_u =	12.84	kN		
Concrete Shear Force :	ϕV_c =	28.39	kN	$\phi 0.17(1+N_u/14A_g)\lambda\sqrt{f'_c}b_w d$	Sect. 11.2.1.2
Provided Shear Reinf. :	$A_{v,prov}$ =	157	mm^2	Ø10mm 2-leg ties	
Minimum Shear Reinf. :	$s_{req'd}$ =	N/A	mm^2	Vu < 0.5ϕVc	Sect. 11.4.6.1
Minimum Tie Spacing :	s_{min} =	37	mm	$(4/3)d_{agg}$	
Maximum Tie Spacing :	s_{max} =	200	mm	$\min(16_{db}, 48_{tb}, \min(b,h))$	Sect. 7.10.5.2
	Use s =	150	mm	smin ≤ s ≤ smax ---> OK	

F. Check for Axial Tension Capacity

Strength Reduction Factor :	ϕ =	0.9		
Pure Axial Tension Capacity :	ϕP_{nt} =	-299.66	kN	-ϕ*fy * Ast
Required Axial Tension :	P_{ut} =	0.00	kN	ϕPnt ≥ Pu ----> OK

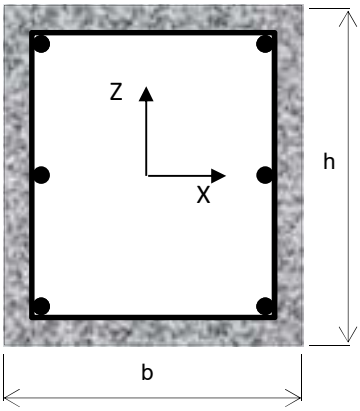
DESIGN OF RECTANGULAR CONCRETE COLUMN

Project :	PROPOSED 2-STOREY DUPLEX HOMESTAY
Owner/Client :	MR. & MRS. REYWIL RAVELO
Address :	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

Member: C1-2

A. Required Loads

Load Case	Member No.	Axial	Shear		Bending	
		P_u	V_{ux}	V_{uz}	M_{ux}	M_{uz}
		(kN)	(kN)	(kN)	(kN-m)	(kN-m)
Max Comp.	10	**263.082**	0	-12.985	22.227	0
Max Fx	11	135.195	**12.498**	1.054	-1.322	18.766
Max Fz	7	43.809	0.788	**19.919**	30.788	1.006
Max Mx	5	80.859	-0.344	-19.855	**30.801**	-1.166
Max Mz	11	135.195	12.498	1.054	-1.322	**18.766**
Max Tens.	-	0	0	0	0	0



B. Design Parameters

Material Properties :

Concrete Weight :	w_c =	24.00	kN/m^3		Design Criteria
Compressive Strength :	f'_c =	21	MPa		Design Criteria
Main Steel Bar Strength:	f_y =	276	MPa		Design Criteria
Sec. Steel Bar Strength:	f_{yt} =	276	MPa		Design Criteria

Column Dimension :

Width :	b =	200	mm	≥ 200 mm	
Depth :	h =	300	mm	≥ 200 mm	
Height :	L =	1800	mm		
Concrete Cover :	C_v =	50	mm		Design Criteria
Gross Concrete Area :	A =	60000	mm^2	b * h	

Steel Rebar :

Main Vertical Bar Diameter :	d_b =	16	mm	≥ Ø12mm	
Tie Bar Diameter :	t_b =	10	mm	≥ Ø10mm	Sect. 7.10.5.1

Bar Arrangement

Top Side Bars :	tpb =	2	nos.		
Bottom Side Bars :	btb =	2	nos.		
Left Side Bars :	lsb =	3	nos.		
Right Side Bars :	rsb =	3	nos.		
No. of Vert. Bars :	b_n =	6	nos.	≥ 4 nos.	Sect. 10.9.2
Steel Area :	A_{st} =	1206	mm^2		
Clear Spacing X-direction :	S_{cx} =	48	mm	≥ max(40mm, 1.5db, (4/3)dagg)	Sect. 7.6.3
Clear Spacing Y-direction :	S_{cz} =	66	mm	≥ max(40mm, 1.5db, (4/3)dagg)	Sect. 7.6.3
Steel Ratio :	ρ =	2.0%		1% ≤ ρ ≤ 8%	Sect. 10.9.1

C. Check for Slenderness

Bracing Condition :		Nonsway	
Unsupported length along X :	L_{ux} =	3000.0	mm
Unsupported length along Z :	L_{uz} =	3000.0	mm
Effective Length Factor X-dir :	kx =	1.0	
Effective Length Factor Z-dir :	kz =	1.0	

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Radius of Gyration at X :	rx :	86.60	$h / \sqrt{12}$	
Radius of Gyration at Z :	rz :	57.74	$b / \sqrt{12}$	
Slenderness Ratio at X :	SLRx :	34.64	SLRx ≤ 40 ---> OK	Sect. 10.10.1
Slenderness Ratio at Z :	SLRz :	51.96	Slender --> Adjust size	Sect. 10.10.1

D. Check for Biaxial Capacity

Biaxial Design Equations : Sect. 10.3.6

$$\phi P_o = \phi\left[0.85(f'_c)(A_g - A_{st}) + f_y(A_{st})\right]$$

$$\phi P_{n,max} = \phi * 0.80 * \left[0.85(f'_c)(A_g - A_{st}) + f_y(A_{st})\right]$$

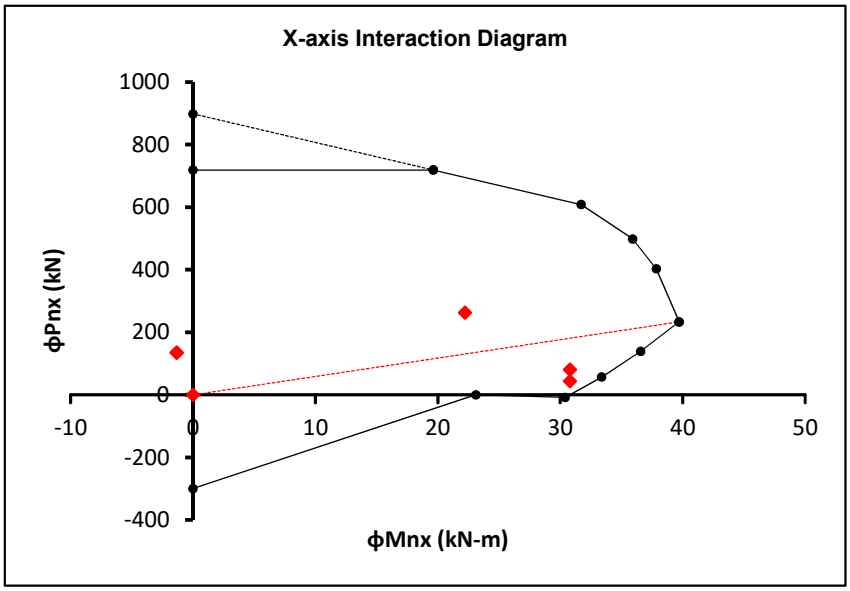
$$\phi P_n = \phi(0.85 f'_c ab) + \sum_{i=1}^{n} \phi F_{si}$$

$$\phi M_n = \phi(0.85 f'_c ab)\left(\frac{h}{2} - \frac{a}{2}\right) + \sum_{i=1}^{n} \phi F_{si}\left(\frac{h}{2} - d_i\right)$$

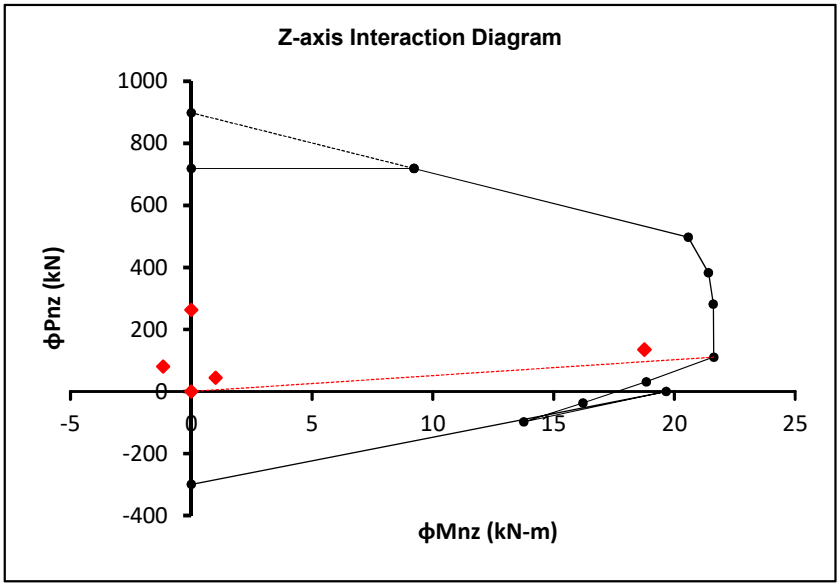
$$\phi P_{nt} = \sum_{i=1}^{n} -\phi f_y A_{si}$$

ϕ : As per Sect. 9.3.2

Uniaxial Capacity about X-axis			
POINT	ϕP_{nx} (kN)	ϕM_{nx} (kN-m)	e_z (mm)
ϕP_o	898.58	0.00	0.00
0.8ϕPo	718.86	0.00	0.00
0.8ϕPo	718.86	19.63	27.31
0.00*εs	608.25	31.71	52.14
-0.25*εs	498.49	35.91	72.03
-0.50*εs	403.43	37.84	93.79
-1.00*εs	233.39	39.71	170.14
-1.50*εs	138.51	36.55	263.89
-2.00*εs	56.70	33.39	588.77
-2.50*εs	-7.92	30.39	-3838.06
ϕM_u	0.00	23.09	∞
$\phi P_{nt,max}$	-299.66	0.00	0.00



Uniaxial Capacity about Z-axis			
POINT	ϕP_{nz} (kN)	ϕM_{nz} (kN-m)	e_x (mm)
ϕP_o	898.58	0.00	0.00
0.8ϕPo	718.86	0.00	0.00
0.8ϕPo	718.86	9.22	12.83
0.00*εs	497.60	20.57	41.34
-0.25*εs	382.40	21.41	55.99
-0.50*εs	281.15	21.61	76.86
-1.00*εs	110.76	21.63	195.27
-1.50*εs	31.31	18.84	601.67
-2.00*εs	-36.98	16.21	-438.40
-2.50*εs	-98.29	13.77	-140.08
ϕM_u	0.00	19.66	∞
$\phi P_{nt,max}$	-299.66	0.00	0.00



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Biaxial Capacity at Design Eccentricty

If $P_u \geq 0.1*P_o$

Load Case	e_{uz} (mm)	ϕP_{nx} (kN)	e_{ux} (mm)	ϕP_{nz} (kN)	ϕP_o (kN)	P_u (kN)	$P_u \geq 0.1*P_o$	ϕP_n (kN)	Ratio ($P_u/\phi P_n$)	Remarks
Max Axial	84.49	695.09	0.00	718.86	898.58	265.67	OK	582.45	0.46	Pass
Max Mx	380.92	0.87	-14.42	0.00	898.58	83.45	N/A	N/A	N/A	N/A
Max Mz	-9.78	0.00	138.81	532.77	898.58	137.79	OK	1308.74	0.11	Pass

If $P_u \leq 0.1*P_o$

Load Case	e_{uz} (mm)	ϕM_{nx} (kN)	e_{ux} (mm)	ϕM_{nz} (kN)	M_{ux} (kN-m)	M_{uz} (kN-m)	$(M_{ux}/\phi M_{nx}) + (M_{uz}/\phi M_{nz}) \leq 1$	Remarks
Max Axial	N/A	0.00	N/A	0.00	N/A	N/A	N/A	N/A
Max Mx	380.92	34.32	-14.42	20.58	30.80	-1.17	0.84	Pass
Max Mz	N/A	36.42	N/A	0.00	N/A	N/A	N/A	N/A

Equations:

$P_o = (0.85f'_c)(A_g - A_{st}) + f_y(A_{st})$

$1/\phi P_n = 1/\phi P_{nx} + 1/\phi P_{nz} - 1/\phi P_o$

E. Check for Shear

Load Case	N_u (kN)	V_{ux} (kN)	V_{uz} (kN)	V_u (kN)
Max Comp.	263.08	0.00	-12.99	12.99
Max Mz	80.86	-0.34	-19.86	19.86
Max My	135.20	12.50	1.05	12.54
Max Tens.	0.00	0.00	0.00	0.00

$$V_u = \sqrt{{V_{ux}}^2 + {V_{uz}}^2}$$

Strength Reduction Factor :	ϕ =	0.75			Sect. 9.3.2
Modificaction Factor :	λ =	1.0		Normal weight concrete	Sect. 8.6.1
Axial Force :	N_u =	80.86	kN		
Required Shear Force :	V_u =	19.86	kN		
Concrete Shear Force :	ϕV_c =	29.72	kN	$\phi 0.17(1+N_u/14A_g)\lambda\sqrt{f'_c}b_w d$	Sect. 11.2.1.2
Provided Shear Reinf. :	$A_{v,prov}$ =	157	mm^2	Ø10mm 2-leg ties	
Minimum Shear Reinf. :	$s_{req'd}$ =	619	mm^2	Vu > 0.5ϕVc	Sect. 11.4.6.1
Minimum Tie Spacing :	s_{min} =	37	mm	$(4/3)d_{agg}$	
Maximum Tie Spacing :	s_{max} =	200	mm	$\min(16_{db}, 48_{tb}, \min(b,h))$	Sect. 7.10.5.2
	Use s =	150	mm	smin ≤ s ≤ smax ---> OK	

F. Check for Axial Tension Capacity

Strength Reduction Factor :	ϕ =	0.9		
Pure Axial Tension Capacity :	ϕP_{nt} =	-299.66	kN	-ϕ*fy * Ast
Required Axial Tension :	P_{ut} =	0.00	kN	ϕPnt ≥ Pu ----> OK

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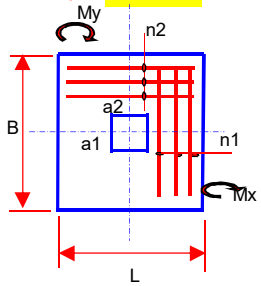
Mark: F1



Ultimate Soil Pressure :

$q_{u,max}$ =	210.17	kPa
$q_{u,min}$ =	79.17	kPa
use q_u =	144.67	kPa
dx =	1.20	m
dy =	1.20	m

Enter Bar Diameter:

bar ϕ =	16	mm
A_b =	201.06	mm^2

Design Specifications:

fc' =	20.7	Mpa
fy =	276	MPa
qa =	192	kPa

Column Dimension:

a1 =	0.3	m
a2 =	0.2	m

Depth from bottom to NGL:

H =	0.9	m

Trial Footing Thickness:

try t =	0.3	m
d =	0.225	m

Check for Beam Shear:

Vu =	47.74	kN
ϕVc =	174.03	kN

safe for beam shear!

Check for Punching Shear:

Vu =	189.68	kN
ϕVc =	210.28	kN

safe for punching shear!

Load Data:

Pu =	208.33	kN
Mu_y =	7.25	kN.m
Mu_x =	11.62	kN.m
P =	138.88	kN
$W_{footing}$ =	13.89	kN
e_{ux} =	0.035	m
e_{uy} =	0.056	m
qa,adj =	192.00	kPa

Design of steel in x-dir:

Mu =	60.53	kN.m
Ru =	1.11	MPa
m =	15.686275	
req'd p =	0.00415	
min p =	0.00507	
use p =	0.00507	
As =	1369.57	mm^2
req'd n2 =	6.81	pcs
use n2 =	6	pcs
s (mm) =	180.80	OK!

Preliminary A(m^2) = 0.80

assume L (m) =	1.2	
required B (m) =	0.66	

Trial Footing Dimension :

try L (m) =	1.2	
try B(m) =	1.2	

Check Footing Dimension:

q_{max} =	149.76	kPa

Footing Dimension is OK!

Design of steel in y-dir:

Mu =	60.53	kN.m
Ru =	1.11	MPa
m =	15.686275	
req'd p =	0.00415	
min p =	0.00507	
use p =	0.00507	
As =	1369.57	mm^2
req'd n2 =	6.81	pcs
use n2 =	6	pcs
s (mm) =	180.80	OK!

kPa	
kN.m	
MPa	
mm^2	
pcs	
pcs	