

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 Concrete 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, f_y	
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, F_y	
2.3.1	For rolled shapes	250 MPa (36,000 psi)
2.4	Masonry Concrete Compressive Strength, f_m	7.8 MPa (700 psi)
2.5	Masonry Grout Compressive Strength, f_c'	13.8 MPa (2,000 psi)
2.6	Lean Concrete 28 th day compressive strength, f_c'	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

$$q_z = 47.3 \times 10^{-6} K_z K_{zt} K_d V^2 I_w \text{ (kPa)} \quad [\text{Eq. 207-15}]$$

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

$$V = C_v I W / R T$$

The total design base shear need not exceed the following:

$$V = 2.5 C_a I W / R$$

$$V = 0.8 Z N_v I W / R$$

The total design base shear shall be less than:

$$V = 0.11 C_a I W$$

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 or 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)

$$U = 1.0DL$$

$$U = 1.0DL + 1.0LL$$

$$U = 1.0DL + 0.6WX$$

$$U = 1.0DL + -0.6WX$$

$$U = 1.0DL + 0.6WY$$

$$U = 1.0DL + -0.6WY$$

$$U = 1.0DL + 0.75LL + 0.45WX$$

$$U = 1.0DL + 0.75LL + -0.45WX$$

$$U = 1.0DL + 0.75LL + 0.45WY$$

$$U = 1.0DL + 0.75LL + -0.45WY$$

$$U = 0.6DL + 0.6WX$$

$$U = 0.6DL + -0.6WX$$

$$U = 0.6DL + 0.6WY$$

$$U = 0.6DL + -0.6WY$$

$$U = 1.0DL + 0.75LL + 0.53EX$$

$$U = 1.0DL + 0.75LL + -0.53EX$$

$$U = 1.0DL + 0.75LL + 0.53EY$$

$$U = 1.0DL + 0.75LL + -0.53EY$$

$$U = 0.6DL + 0.7EX$$

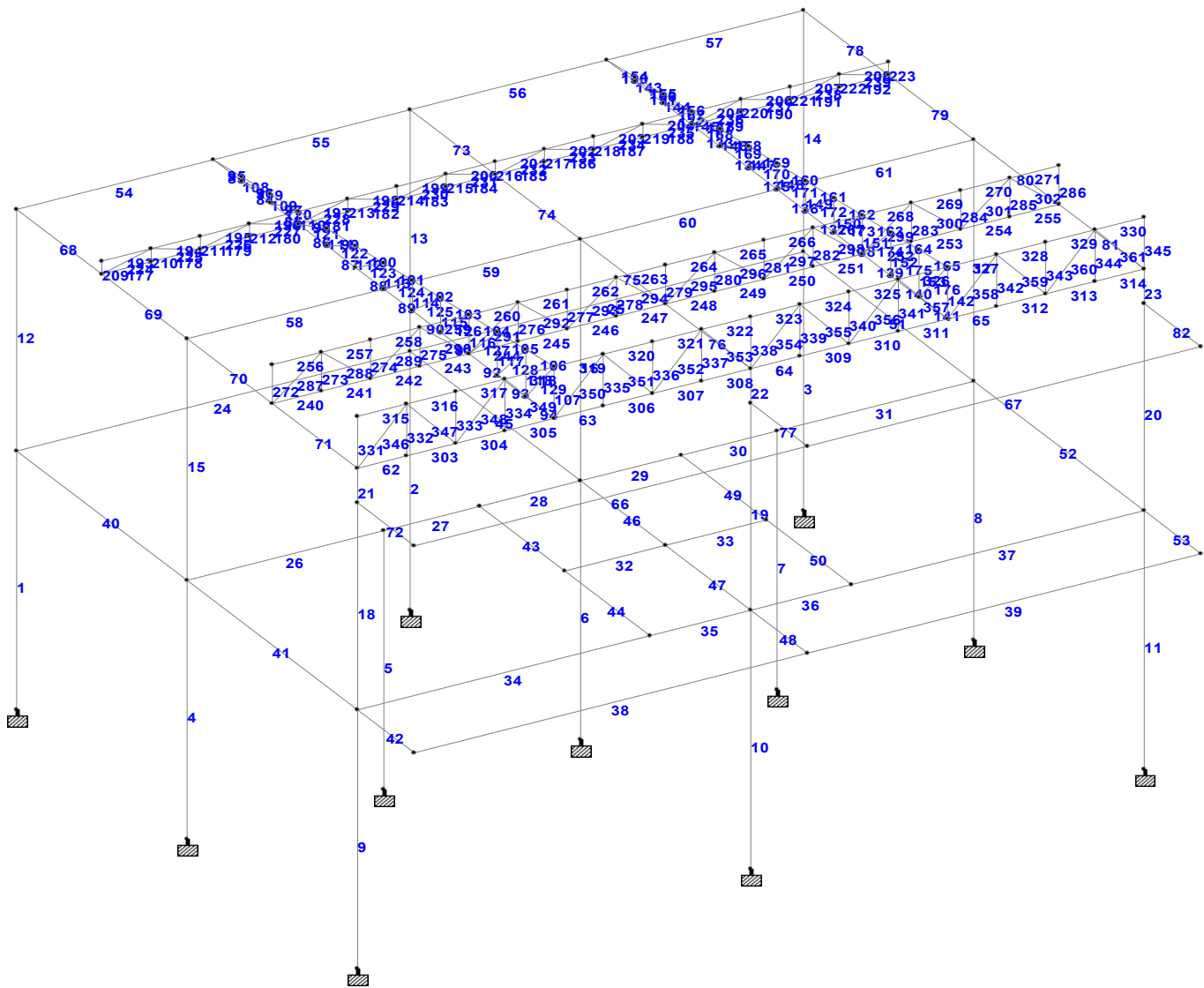
$$U = 0.6DL + -0.7EX$$

$$U = 0.6DL + 0.7EY$$

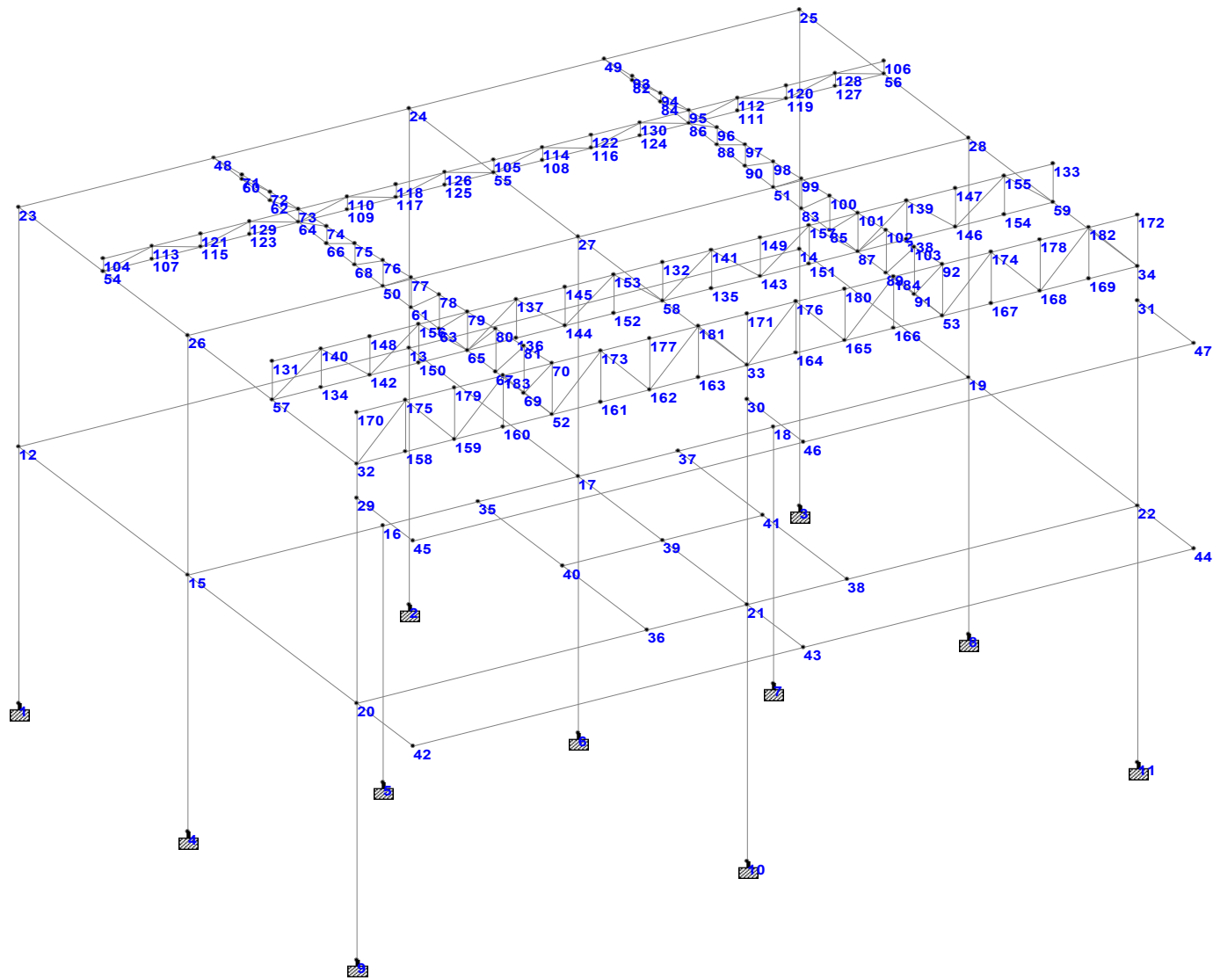
$$U = 0.6DL + -0.7EY$$

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)					

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)					

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)					

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)		

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)		

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	

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, f_c'	21	MPa
Rebars, f_y	276	MPa
Short span, L_a	0.65	m
Long span, L_b	k	m
Dead load, s_{dl}	1.2	kPa
Live load, s_{ll}	1.9	kPa
use slab thickness, t	100	mm
Main bar diameter, ϕ_b	10	mm
Temp bar diameter, ϕ_t	10	mm
Concrete cover	20	mm

Case:	ONE-WAY		
	One end continuous		
min t =	21.512	mm	OK!
reqd d =	100	mm	OK!
ϕV_c	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, f_c'	21	MPa
Rebars, f_y	276	MPa
Short span, L_a	0.65	m
Long span, L_b	k	m
Dead load, s_{dl}	1.2	kPa
Live load, s_{ll}	1.9	kPa
use slab thickness, t	140	mm
Main bar diameter, ϕ_b	10	mm
Temp bar diameter, ϕ_t	10	mm
Concrete cover	20	mm

Case:	ONE-WAY		
	One end continuous		
min t =	21.512	mm	OK!
reqd d =	140	mm	OK!
ϕV_c	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, f_c' =		21 MPa			Steel f_y =		276 MPa for 10d and smaller	
					Steel f_y =		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 \emptyset @ 200	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	TWO-WAY
S-1(2)	100	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 250	10 mm \emptyset @ 300	10 mm \emptyset @ 300	TWO-WAY
S-1(3)	100	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	TWO-WAY
S-1(4)	100	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 300	ONE-WAY
S-2	140	10 mm \emptyset @ 400	10 mm \emptyset @ 400	10 mm \emptyset @ 400	10 mm \emptyset @ 300	10 mm \emptyset @ 300	10 mm \emptyset @ 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, f_c' =	21	MPa	Coarse aggregate =	20	mm
Concrete Weight =	Normal		Steel Reinforcement	db, mm	f_y , MPa
Unit Weight =	24	kN/m ³	Smaller than or equal to	12	276
			Larger than or equal to	16	414

Beam Specification:			CASE:	SINGLY REINFORCED BEAM			
Beam Designation:	B-1(1)			Both ends continuous			
Concrete, f_c' =	21	MPa	Slab left, d_l =	3.830	kN/m	Moment	Left
f_y , main =	276	MPa	Slab left, l_l =	3.078	kN/m	Mu (kNm)	45.577
f_y , shear =	276	MPa	Slab right, d_l =	0.000	kN/m	use n top	4
Span, L =	3.8	m	Slab right, l_l =	0.000	kN/m	use n bot	2
Width, b =	225	mm	Beam l_l =	0	kPa	x (m)	reqd s
Depth, h =	350	mm				0.292	664.771
Concrete cover =	40	mm				0.380	764.374
Main bar, dbf =	16	mm				0.760	2165.346
Stirrup, dbv =	10	mm				1.140	N/A
Stirrup legs =	2					1.520	N/A
						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, f_c' =	21	MPa	Slab left, d_l =	3.510	kN/m	Moment	Left
f_y , main =	276	MPa	Slab left, l_l =	3.078	kN/m	Mu (kNm)	39.874
f_y , shear =	276	MPa	Slab right, d_l =	0.000	kN/m	use n top	3
Span, L =	2.7	m	Slab right, l_l =	0.000	kN/m	use n bot	2
Width, b =	225	mm	Beam l_l =	0	kPa	x (m)	reqd s
Depth, h =	350	mm				0.292	1376.940
Concrete cover =	40	mm				0.270	1291.385
Main bar, dbf =	16	mm				0.540	5438.789
Stirrup, dbv =	10	mm				0.810	N/A
Stirrup legs =	2					1.080	N/A
						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, f_c' =	21	MPa	Slab left, d_l =	3.510	kN/m	Moment	Left
f_y , main =	276	MPa	Slab left, l_l =	2.826	kN/m	Mu (kNm)	8.490
f_y , shear =	276	MPa	Slab right, d_l =	0.000	kN/m	use n top	2
Span, L =	2.7	m	Slab right, l_l =	0.000	kN/m	use n bot	2
Width, b =	225	mm	Beam l_l =	0	kPa	x (m)	reqd s
Depth, h =	350	mm				0.292	N/A
Concrete cover =	40	mm				0.270	N/A
Main bar, dbf =	16	mm				0.540	N/A
Stirrup, dbv =	10	mm				0.810	N/A
Stirrup legs =	2					1.080	N/A
						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, f_c' =	21	MPa	Slab left, d_l =	1.535	kN/m	Moment	Left
f_y , main =	276	MPa	Slab left, l_l =	1.235	kN/m	Mu (kNm)	13.768
f_y , shear =	276	MPa	Slab right, d_l =	0.000	kN/m	use n top	2
Span, L =	0.825	m	Slab right, l_l =	0.000	kN/m	use n bot	2
Width, b =	200	mm	Beam l_l =	0	kPa	x (m)	reqd s
Depth, h =	350	mm				0.292	N/A
Concrete cover =	40	mm				0.083	N/A
Main bar, dbf =	16	mm				0.165	N/A
Stirrup, dbv =	10	mm				0.248	N/A
Stirrup legs =	2					0.330	N/A
						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, f_c' =	21 MPa	Slab left, d_l =	0.756 kN/m
f_y , main =	276 MPa	Slab left, l_l =	0.608 kN/m
f_y , shear =	276 MPa	Slab right, d_l =	0.000 kN/m
Span, L =	3.8 m	Slab right, l_l =	0.000 kN/m
Width, b =	200 mm	Beam l_l =	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, f_c' =	21 MPa	Slab left, d_l =	4.484 kN/m
f_y , main =	276 MPa	Slab left, l_l =	3.610 kN/m
f_y , shear =	276 MPa	Slab right, d_l =	0.000 kN/m
Span, L =	3.8 m	Slab right, l_l =	0.000 kN/m
Width, b =	200 mm	Beam l_l =	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, f_c' =	21 MPa	Slab left, d_l =	2.274 kN/m
f_y , main =	276 MPa	Slab left, l_l =	0.000 kN/m
f_y , shear =	276 MPa	Slab right, d_l =	0.000 kN/m
Span, L =	3.8 m	Slab right, l_l =	0.000 kN/m
Width, b =	200 mm	Beam l_l =	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, f_c' =	21 MPa	Slab left, d_l =	2.274 kN/m
f_y , main =	276 MPa	Slab left, l_l =	0.000 kN/m
f_y , shear =	276 MPa	Slab right, d_l =	0.000 kN/m
Span, L =	2.7 m	Slab right, l_l =	0.000 kN/m
Width, b =	200 mm	Beam l_l =	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		
ADDRESS	PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE		

SLAB SCHEDULE							
Concrete, f_c' =		21 MPa		Steel f_y =		276 MPa for 12d and smaller	
				Steel f_y =		414 MPa for 16d and larger	
MARK	SECTION	h (mm)	LOC	MAIN BARS			STIRRUPS
	b (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	

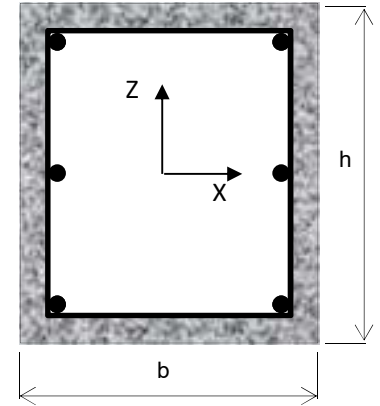
DESIGN OF RECTANGULAR CONCRETE COLUMN

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	$\geq \varnothing 12$ mm	
Tie Bar Diameter :	$t_b =$	10	mm	$\geq \varnothing 10$ mm	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	$\geq \max(40\text{mm}, 1.5d_b, (4/3)d_{agg})$	Sect. 7.6.3
Clear Spacing Y-direction :	$S_{cy} =$	66	mm	$\geq \max(40\text{mm}, 1.5d_b, (4/3)d_{agg})$	Sect. 7.6.3
Steel Ratio :	$\rho =$	2.0%		$1\% \leq \rho \leq 8\%$	Sect. 10.9.1

C. Check for Slenderness

Bracing Condition :

Unsupported length along X :	$L_{ux} =$	3000.0	mm	Nonsway
Unsupported length along Z :	$L_{uz} =$	3000.0	mm	
Effective Length Factor X-dir :	$k_x =$	1.0		
Effective Length Factor Z-dir :	$k_z =$	1.0		

Project : PROPOSED 2-STOREY DUPLEX HOMESTAY
 Owner/Client : MR. & MRS. REYWIL RAVELO
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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 \leq 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

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

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

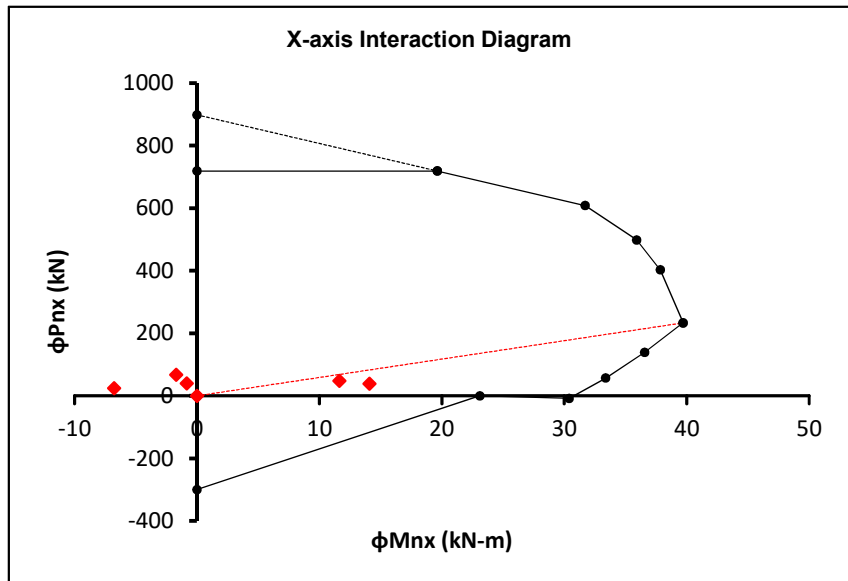
$$\phi P_n = \phi(0.85f'_c ab) + \sum_{i=1}^n \phi F_{si}$$

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

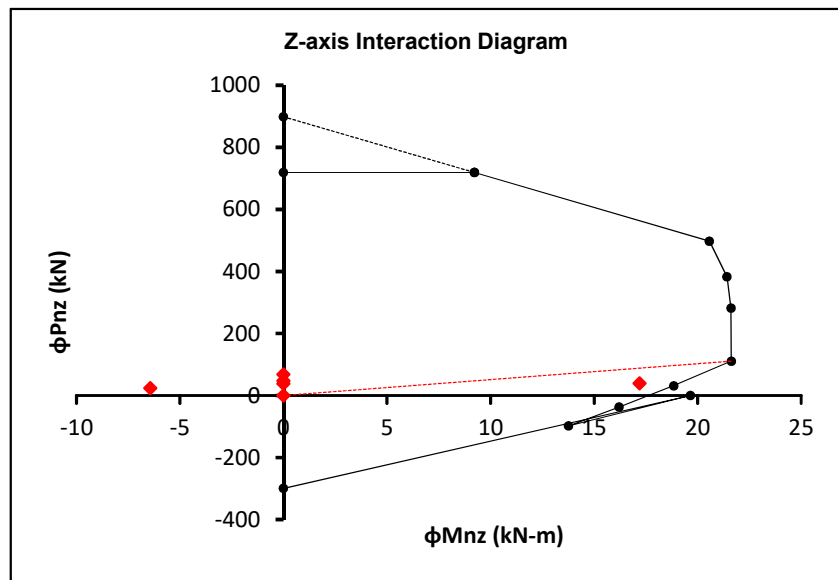
$$\phi P_{nt} = \sum_{i=1}^n -\phi f_y A_{si}$$

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
$0.8\phi P_o$	718.86	0.00	0.00
$0.8\phi P_o$	718.86	19.63	27.31
$0.00*\epsilon_s$	608.25	31.71	52.14
$-0.25*\epsilon_s$	498.49	35.91	72.03
$-0.50*\epsilon_s$	403.43	37.84	93.79
$-1.00*\epsilon_s$	233.39	39.71	170.14
$-1.50*\epsilon_s$	138.51	36.55	263.89
$-2.00*\epsilon_s$	56.70	33.39	588.77
$-2.50*\epsilon_s$	-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
$0.8\phi P_o$	718.86	0.00	0.00
$0.8\phi P_o$	718.86	9.22	12.83
$0.00*\epsilon_s$	497.60	20.57	41.34
$-0.25*\epsilon_s$	382.40	21.41	55.99
$-0.50*\epsilon_s$	281.15	21.61	76.86
$-1.00*\epsilon_s$	110.76	21.63	195.27
$-1.50*\epsilon_s$	31.31	18.84	601.67
$-2.00*\epsilon_s$	-36.98	16.21	-438.40
$-2.50*\epsilon_s$	-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
 Owner/Client : MR. & MRS. REYWIL RAVELO
 Address : PUROK 2, STA. FE, GEN. LUNA, SURIGAO DEL NORTE

Biaxial Capacity at Design Eccentricity										
If $P_u \geq 0.1 \cdot P_o$										
Load Case	e_{uz} (mm)	ϕP_{nx} (kN)	e_{ux} (mm)	ϕP_{nz} (kN)	ϕP_o (kN)	P_u (kN)	$\frac{P_u}{\geq 0.1 \cdot P_o}$	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 $P_u \leq 0.1 \cdot P_o$										
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 :	$\phi =$	0.75	Sect. 9.3.2
Modification Factor :	$\lambda =$	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 :	$\phi V_c =$	28.39 kN	$\phi 0.17(1 + N_u/14A_g)\lambda\sqrt{f'_c}b_wd$ 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	$V_u < 0.5\phi V_c$ Sect. 11.4.6.1
Minimum Tie Spacing :	$s_{min} =$	37 mm	(4/3) d_{agg}
Maximum Tie Spacing :	$s_{max} =$	200 mm	$\min(16d_b, 48t_b, \min(b,h))$ Sect. 7.10.5.2
	Use $s =$	150 mm	$s_{min} \leq s \leq s_{max} \rightarrow$ OK

F. Check for Axial Tension Capacity

Strength Reduction Factor :	$\phi =$	0.9	
Pure Axial Tension Capacity :	$\phi P_{nt} =$	-299.66 kN	$-\phi f_y \cdot A_{st}$
Required Axial Tension :	$P_{ut} =$	0.00 kN	$\phi P_{nt} \geq P_u \rightarrow$ OK

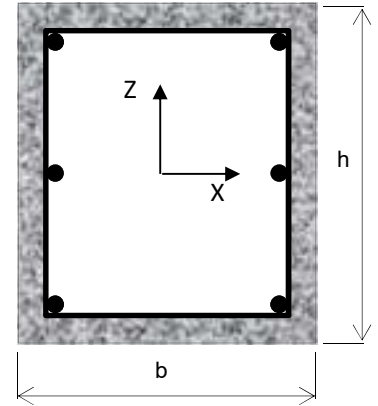
DESIGN OF RECTANGULAR CONCRETE COLUMN

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	$\geq \varnothing 12$ mm	
Tie Bar Diameter :	$t_b =$	10	mm	$\geq \varnothing 10$ mm	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	$\geq \max(40\text{mm}, 1.5d_b, (4/3)d_{agg})$	Sect. 7.6.3
Clear Spacing Y-direction :	$S_{cy} =$	66	mm	$\geq \max(40\text{mm}, 1.5d_b, (4/3)d_{agg})$	Sect. 7.6.3
Steel Ratio :	$\rho =$	2.0%		$1\% \leq \rho \leq 8\%$	Sect. 10.9.1

C. Check for Slenderness

Bracing Condition :

Unsupported length along X :	$L_{ux} =$	3000.0	mm	Nonsway
Unsupported length along Z :	$L_{uz} =$	3000.0	mm	
Effective Length Factor X-dir :	$k_x =$	1.0		
Effective Length Factor Z-dir :	$k_z =$	1.0		

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

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 \leq 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

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

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

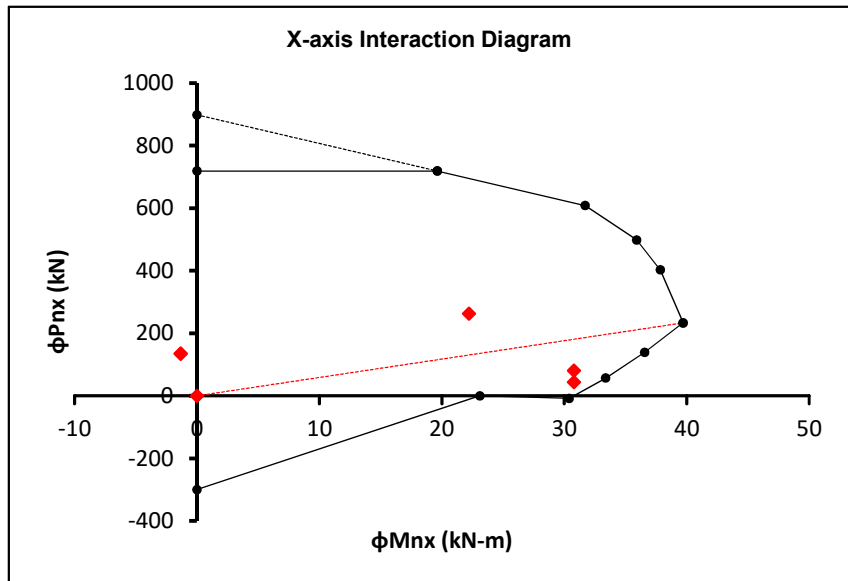
$$\phi P_n = \phi(0.85f'_c ab) + \sum_{i=1}^n \phi F_{si}$$

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

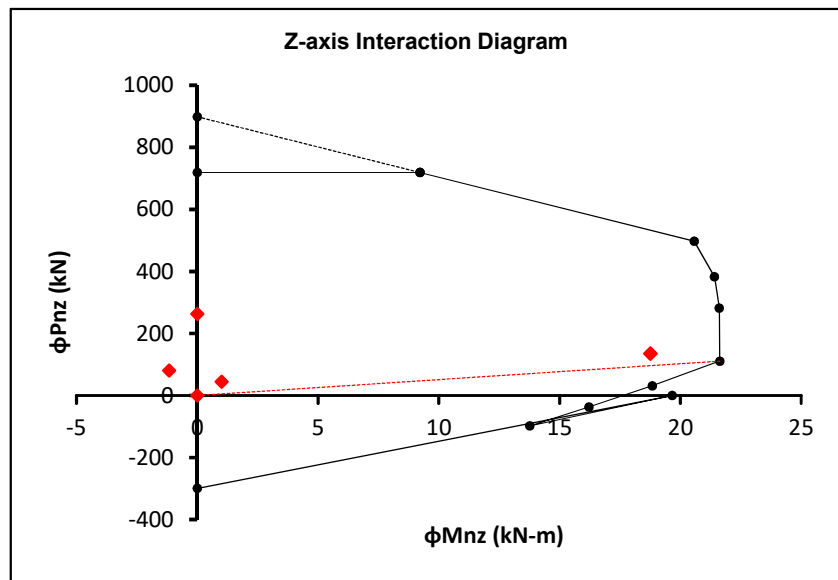
$$\phi P_{nt} = \sum_{i=1}^n -\phi f_y A_{si}$$

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
$0.8\phi P_o$	718.86	0.00	0.00
$0.8\phi P_o$	718.86	19.63	27.31
$0.00*\epsilon_s$	608.25	31.71	52.14
$-0.25*\epsilon_s$	498.49	35.91	72.03
$-0.50*\epsilon_s$	403.43	37.84	93.79
$-1.00*\epsilon_s$	233.39	39.71	170.14
$-1.50*\epsilon_s$	138.51	36.55	263.89
$-2.00*\epsilon_s$	56.70	33.39	588.77
$-2.50*\epsilon_s$	-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
$0.8\phi P_o$	718.86	0.00	0.00
$0.8\phi P_o$	718.86	9.22	12.83
$0.00*\epsilon_s$	497.60	20.57	41.34
$-0.25*\epsilon_s$	382.40	21.41	55.99
$-0.50*\epsilon_s$	281.15	21.61	76.86
$-1.00*\epsilon_s$	110.76	21.63	195.27
$-1.50*\epsilon_s$	31.31	18.84	601.67
$-2.00*\epsilon_s$	-36.98	16.21	-438.40
$-2.50*\epsilon_s$	-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 Eccentricity										
If $P_u \geq 0.1 \cdot P_o$										
Load Case	e_{uz} (mm)	ϕP_{nx} (kN)	e_{ux} (mm)	ϕP_{nz} (kN)	ϕP_o (kN)	P_u (kN)	$\frac{P_u}{\geq 0.1 \cdot P_o}$	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 $P_u \leq 0.1 \cdot P_o$										
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

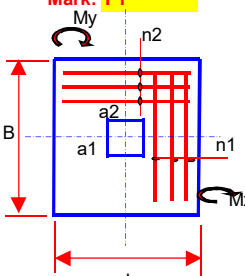
$$V_u = \sqrt{V_{ux}^2 + V_{uz}^2}$$

Strength Reduction Factor :	$\phi =$	0.75	Sect. 9.3.2
Modification Factor :	$\lambda =$	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 :	$\phi V_c =$	29.72 kN	$\phi 0.17(1 + N_u/14A_g)\lambda\sqrt{f'_c}b_wd$ 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	$V_u > 0.5\phi V_c$ Sect. 11.4.6.1
Minimum Tie Spacing :	$s_{min} =$	37 mm	$(4/3)d_{agg}$
Maximum Tie Spacing :	$s_{max} =$	200 mm	$\min(16d_b, 48d_{tb}, \min(b, h))$ Sect. 7.10.5.2
	Use $s =$	150 mm	$s_{min} \leq s \leq s_{max} \rightarrow OK$

F. Check for Axial Tension Capacity

Strength Reduction Factor :	$\phi =$	0.9	
Pure Axial Tension Capacity :	$\phi P_{nt} =$	-299.66 kN	$-\phi f_y \cdot A_{st}$
Required Axial Tension :	$P_{ut} =$	0.00 kN	$\phi P_{nt} \geq P_u \rightarrow OK$

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 <p>Ultimate Soil Pressure :</p> <p>$q_{u,max} = 210.17$ kPa $q_{u,min} = 79.17$ kPa use $q_u = 144.67$ kPa $dx = 1.20$ m $dy = 1.20$ m</p> <p>Enter Bar Diameter:</p> <p>bar $\phi = 16$ mm $A_b = 201.06$ mm²</p>	<p>Design Specifications:</p> <p>$f_c' = 20.7$ Mpa $f_y = 276$ MPa $q_a = 192$ kPa</p> <p>Column Dimension:</p> <p>$a_1 = 0.3$ m $a_2 = 0.2$ m</p> <p>Depth from bottom to NGL:</p> <p>$H = 0.9$ m</p> <p>Trial Footing Thickness:</p> <p>try $t = 0.3$ m $d = 0.225$ m</p> <p>Check for Beam Shear:</p> <p>$V_u = 47.74$ kN $\phi V_c = 174.03$ kN safe for beam shear!</p> <p>Check for Punching Shear:</p> <p>$V_u = 189.68$ kN $\phi V_c = 210.28$ kN safe for punching shear!</p>	<p>Load Data:</p> <p>$P_u = 208.33$ kN $M_{u,y} = 7.25$ kN.m $M_{u,x} = 11.62$ kN.m $P = 138.88$ kN $W_{footing} = 13.89$ kN $e_{ux} = 0.035$ m $e_{uy} = 0.056$ m $q_{a,adj} = 192.00$ kPa</p> <p>Design of steel in x-dir:</p> <p>$M_u = 60.53$ kN.m $R_u = 1.11$ MPa $m = 15.686275$ $req'd p = 0.00415$ $min p = 0.00507$ use $p = 0.00507$ $A_s = 1369.57$ mm² $req'd n2 = 6.81$ pcs use $n2 = 8$ pcs $s (mm) = 124.57$ OK!</p>	<p>Preliminary $A(m^2) = 0.80$ assume $L (m) = 1.2$ required $B (m) = 0.66$</p> <p>Trial Footing Dimension :</p> <p>try $L (m) = 1.2$ try $B(m) = 1.2$</p> <p>Check Footing Dimension:</p> <p>$q_{max} = 149.76$ kPa</p> <p>Footing Dimension is OK!</p> <p>Design of steel in y-dir:</p> <p>$M_u = 60.53$ kN.m $R_u = 1.11$ MPa $m = 15.686275$ $req'd p = 0.00415$ $min p = 0.00507$ use $p = 0.00507$ $A_s = 1369.57$ mm² $req'd n2 = 6.81$ pcs use $n2 = 8$ pcs $s (mm) = 124.57$ OK!</p>
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