A COMPARATIVE STUDY ON SEISMIC ANALYSIS MULTI-STORIED RESIDENTIAL BUILDING FOR DHAKA ZONE USING ETABS & STAAD. Pro.

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A thesis submitted to the Department of Civil Engineering in partial fulfillment for the degree of Bachelor of Science in Civil Engineering.

Department of Civil Engineering

Sonargaon University

147/I, Green Road, Dhaka-1215, Bangladesh

Section: 18A

Semester Year- Spring-23

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BOARD OF EXAMINERS

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DECLARATION

It is hereby declared that this thesis/project or any part of it has not been submitted elsewhere for the award of any degree or diploma.

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Dedicated

to

“Our Beloved Parents”

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ABSTRACT

Reinforced concrete and steel framed structures with various floor systems are being used for multistory buildings. So there are alternative options for designers to decide structural system for a particular building. A comparative study on RC and steel framed buildings with various floor systems is necessary to evaluate better structural system regarding overall economy, structural performance, construction time etc. This study will be helpful in deciding structural system for multistory industrial buildings. Past studies on multistory industrial building structures of Bangladesh are not much enough. This limits our ability in making decision about structural system of industrial buildings in Bangladesh. To conduct the intended research work, architectural layout plan of a six story garments factory is prepared. Following the layout plan, RC structure with flat plate and beam-slab floor system is formed. According to same plan, steel structure with non-composite and composite floor system is also formed. Structural modeling and analysis have been performed by STAAD.Pro. Loads are assigned following BNBC 2020. From analytical results, RC structures are designed following ACI Building Code 318-19. Steel structures are designed following AISC LRFD 2016. Comparisons of structural behavior and cost analysis have been performed for the four types of structural system.

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CHAPTER-1

INTRODUCTION

1.1 General

It is well acknowledged that a basic understanding of particular design abilities and methods is insufficient for professional success. These techniques are prone to periodic modifications as new research becomes accessible and new design methodologies become available. To comprehend and stay current with these important changes, as well as to safely engage in innovative design, the engineer needs a detailed understanding of basic performance of converted and steel as constructions a cost-effective and safe method. As a result, knowledge with modern design techniques is important when using this basic idea as a basis.

1.2 Background of the Study

For the sake of simplicity, the majority of structures in the world are built of reinforced concrete members, also known as RC members. The structural engineer's main job is to design structures. Strength must be both safe from collapse and usable in usage. The structure must be adequate for all loads that may operate on it in order to be safe. High rise buildings structural systems must handle vertical gravity loads, but lateral stresses such as those caused by wind and earthquakes must also be considered. Maximum 100-year interval wind forces vary greatly depending on location; at ground level, they are typically around 100 kilograms per square meter (20 pounds per square foot) at ground level. The major environmental stress for buildings is wind loading, which competes with seismic loading. Over a lengthy period of time, they have caused about equal quantities of harm. Large destructive earthquakes, on the other hand, are less common than strong wind storms. Is taking place somewhere on the planet, despite the fact that many storms are tiny and confined. Tropical cyclones (including hurricanes and typhoons) are created in the tropical waters, where the most severe of all wind occurs. When these storms hit inhabited coasts, the consequences may be disastrous. Many constructions have been damaged as a result of earthquakes. Bangladesh has seen an increase in the development of multistory structures in recent years. Almost all of these buildings. being built in Dhaka. This research compares the effects of lateral force on a residential structure. Although nature offers an adequate environment on our planet, it is usually perfectly appropriate to their requirements, convenience, and wants, the

planning, design, and construction of structures is fundamentally as ancient as humans. Early people could possibly find natural caves made of hollow trees that would provide them with some protection from the weather, but they would have to be positioned correctly to fulfill their needs. As a result, the building of a structure was born. A concrete structure is often made up of a series of frames that are made up of vertical and horizontal components. It's for this reason that it's called a frame structure. According to BNBC's definition, a low-rise building is any construction with a height of less than 20 meters. A medium rise building is one whose uppermost level does not surpass 70 feet and does not exceed 75 feet, with a maximum height of 8 storeys. Any structure whose uppermost level exceeds 70 feet or 75 feet, which is often more than 8 storeys, is classified as a high-rise building. The structural design of a structure is generally done with earthquake and wind loads in mind.

1.3 Objective

- To study and compare the effects of lateral force, wind, earthquake on a residential structure by using ETABS & STAAD Pro software.
- To conduct structural analysis of the same building using steel framing with composite and non-composite floor systems
- To compare the structural behavior and cost analysis of the buildings.
- To perform structural analysis and design of a reinforced concrete framed six storied industrial building with various floor systems.

1.4 Scope of study

The overall goal of this research is to use ETABS & STAAD Pro software to construct a given structure and analyze variations in building capacity. The software ETABS & STTAD Pro was used for structural analysis and design. The following codes were utilized for design and analysis: ACI code 318, AISC 360-16 and BNBC 2020

1.5 Limitations

Due to a lack of time, a thorough overall examination of the structure was not possible. Stairs and footings were not included in the design. Because the BNBC 2020 code was utilized, the study may be obsolete, and outdated software was used to comply with the BNBC 2020 code's suggestion. Because this research was done for a hypothetical circumstance, the structure's dimensions were mainly impractical. This research was carried out for a residential construction. Other structures were not studied since it would result in a lot of variety and take a lot of time. And for the last part there was no cost estimation in this investigation.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The primary duty of a structural engineer is to design structures. The major aims of this thesis, from the structural engineer's perspective, are to distribute knowledge on the newest concepts, methodologies, and design data to structural engineers involved in the design of wind and seismic resistant structures. Recent advancements in seismic design, particularly those relating to structures in low and moderate seismic zones, are central to the argument. Wind and earthquake Resistant Buildings brings together the design features of steel, concrete, and composite structures in one book. The more a structure is higher, the more important it is to pick the right structural system.

The function of the building is a major factor that affects the structural system. Large open areas in modern office buildings are required, which may be split with lightweight partitioning to meet the demands of different tenants. As a result, the primary vertical components are typically placed around the perimeter of the design as much as possible, and internally ingroup around the elevator, stair, and service lifts. The floor spaces between the external and internal components are leveled, creating a wide column free area for office design. The services are arranged horizontally above the partitions in each floor and are generally hidden in the ceiling tiles. Because of the increased depth required by this area, an office building's usual story height is 3000 mm or more.

Shear walls for horizontal load resistance are a significant advancement in reinforced concrete height rise structural systems. This is the first in a series of important advancements in the structural system of concrete high-rise buildings, which will allow them to be free of the flat plate system. The broad availability of reinforcing bars and the constituents of concrete, stones, sand, and cement has allowed the height of concrete buildings to rise during construction due to the creation and refining of these new methods, as well as the development of greater strength concrete.

2.2 Dead Loads

The weight of all materials, suspended loads (such as sanitary and electrical fixtures, linings, and fittings), and permanent equipment included into the building or other

structure are all included. Its magnitude remains constant during the structure's lifetime. Permanent loads are a broader category that includes dead loads as well as force established by irreversible changes in structures over time, such as settlement, secondary effects of pesters, shrinkage, and creep incinerate. Walls, floors, ceilings, stairways, built-in partitions, finishes, cladding, and other similarly incorporated architectural and structural components, as well as the weight of cranes, are all examples of dead load. The term "dead load" refers to all permanent loads.

2.3 Live Loads

A live load is a phrase used in civil engineering to describe a load that can vary over time. When individuals walk about in a building, the weight of the load is changeable or varies positions. Because it may be moved anywhere, anything in a building that is not attached to the structure might result in a live load.

So, Live loads are the maximum loads predicted for occupancy by the intended use, although they must never be less than the loads specified by this section.

2.4 Floor Live Loads

These loads are to be considered as the minimum live loads in pounds per square foot of horizontal rejection to be used in building design for the occupancies mentioned, and loads at least equal to be presumed for applications not specified in this section but that produce or accommodate comparable loadings. The real live load shall be utilized in the design of such building or sections thereof when it can be ascertained in designing floors that the actual live load will be larger than the value. Machine and equipment load’s require special consideration.

2.5 Wind Loads

Every building or structure, and every component of it, must be built and constructed to withstand the wind effects determined in accordance with this division's criteria. The shielding effect of nearby structures will not result in any reduction in wind pressure. Buildings sensitive to dynamic effects, such as those with a height to width ratio greater than five, structures especially vulnerable to wind induced oscillations, such as vortex shedding or icing, and structures over 400 feet (121.9m) in height, must be designed in accordance with approved government standards, and all structures will have to be designed in accordance with approved national standards. Building and foundation systems in areas prone to erosion and water pressure due to wind and wave action are

free from the restrictions of this section. Buildings and foundations exposed to such loads must be designed in accordance with national standards that have been authorized.

DHAKA wind Speed 65.7 m/s

Building Classification Category

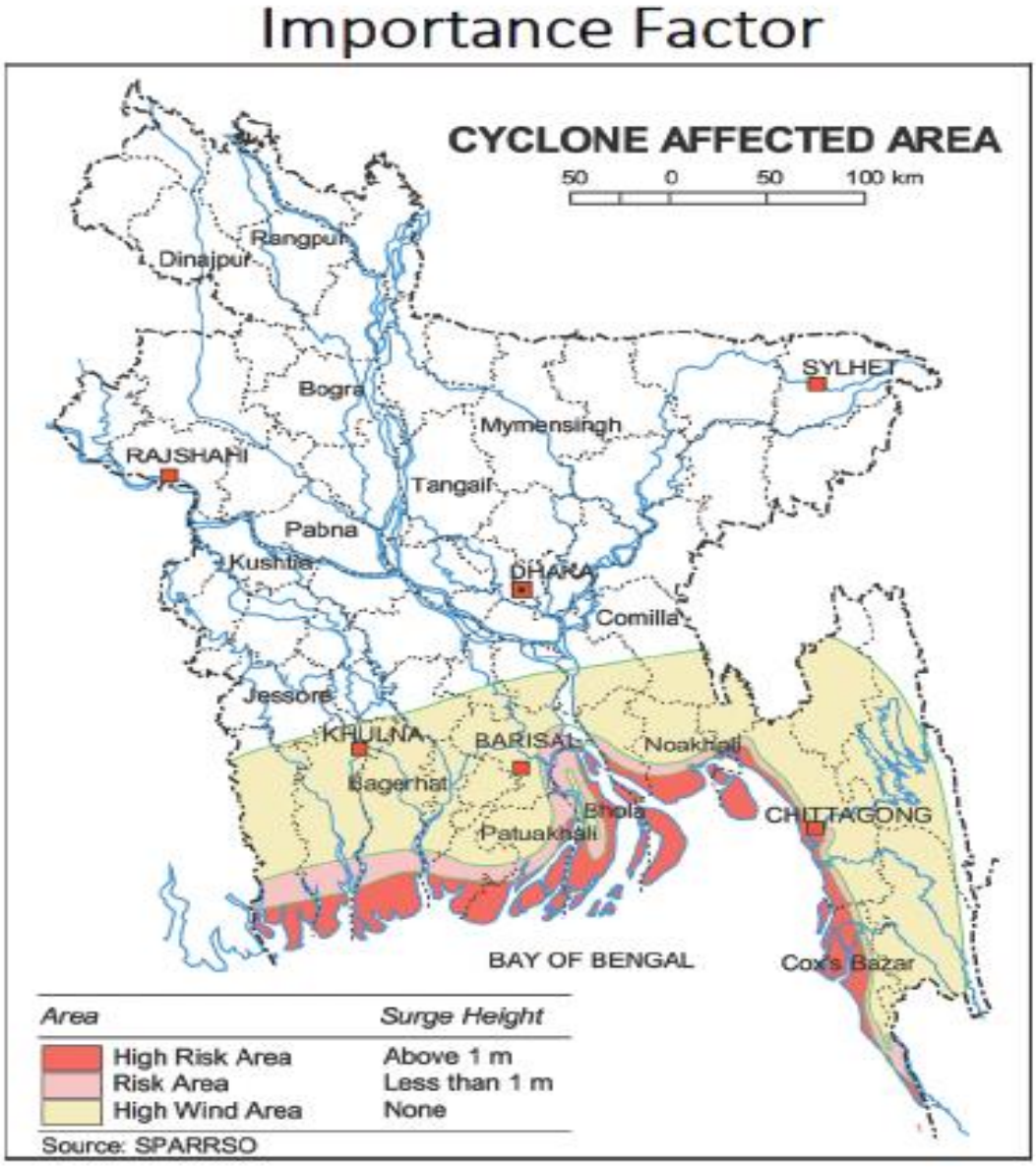
Table 6.1.1: Occupancy Category of Buildings and other Structures for Flood, Surge, Wind and Earthquake Loads.

Nature of Occupancy	Occupancy Category
Buildings and other structures that represent a low hazard to human life in the event of failure, including, but not limited to: • Agricultural facilities • Certain temporary facilities • Minor storage facilities	I
All buildings and other structures except those listed in Occupancy Categories I, III and IV	II
Buildings and other structures that represent a substantial hazard to human life in the event of failure, including, but not limited to: • Buildings and other structures where more than 300 people congregate in one area • Buildings and other structures with day care facilities with a capacity greater than 150 • Buildings and other structures with elementary school or secondary school facilities with a capacity greater than 250 • Buildings and other structures with a capacity greater than 500 for colleges or adult education facilities • Healthcare facilities with a capacity of 50 or more resident patients, but not having surgery or emergency Treatment facilities • Jails and detention facilities Buildings and other structures, not included in Occupancy Category IV, with potential to cause a substantial economic impact and/or mass disruption of day-to-day civilian life in the event of failure, including, but not limited to: • Power generating stations[a] • Water treatment facilities • Sewage treatment facilities • Telecommunication centers Buildings and other structures not included in Occupancy Category IV (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, hazardous waste, or explosives) containing sufficient quantities of toxic or explosive substances to be dangerous to the public if released.	III

See BNBC 2020 (Page: 3061)

(Bangladesh National Building Code (BNBC), 2020, p. 3061)

Figure 1: Building classification category

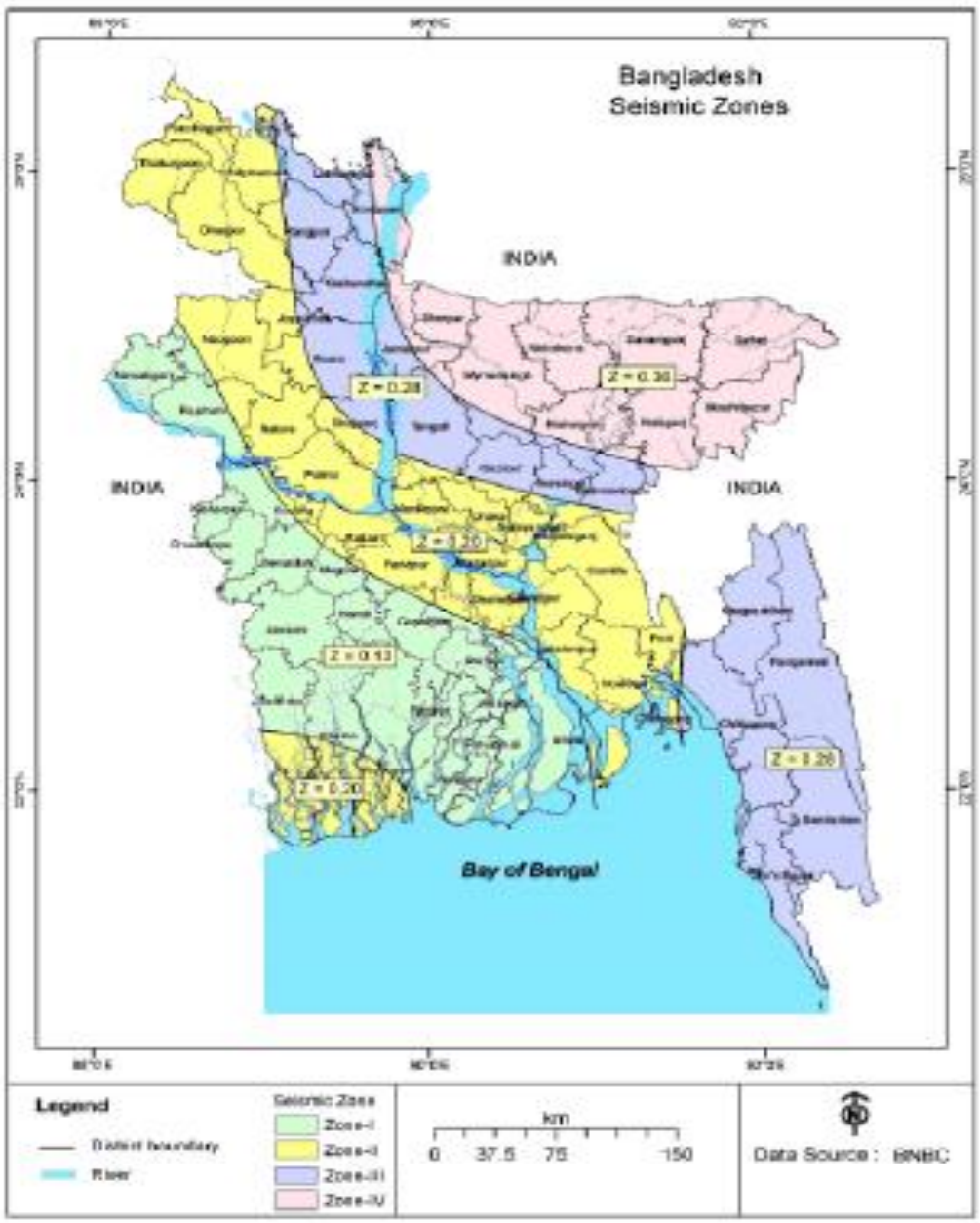


(Bangladesh National Building Code (BNBC), 2020, p. 3195)

Figure 2: Important Factor

2.6 **Earthquake Loads**

The earthquake provision is primarily intended to protect against severe structural collapses and loss of life, rather than to reduce damage or retain functionality. As a minimum, the structure and its components must be built and constructed to withstand the impacts of seismic ground movements as specified in this section.



Figu

(Bangladesh National Building Code (BNBC), 2020, p. 3198)

Figure 3: Seismic Zone map in Bangladesh

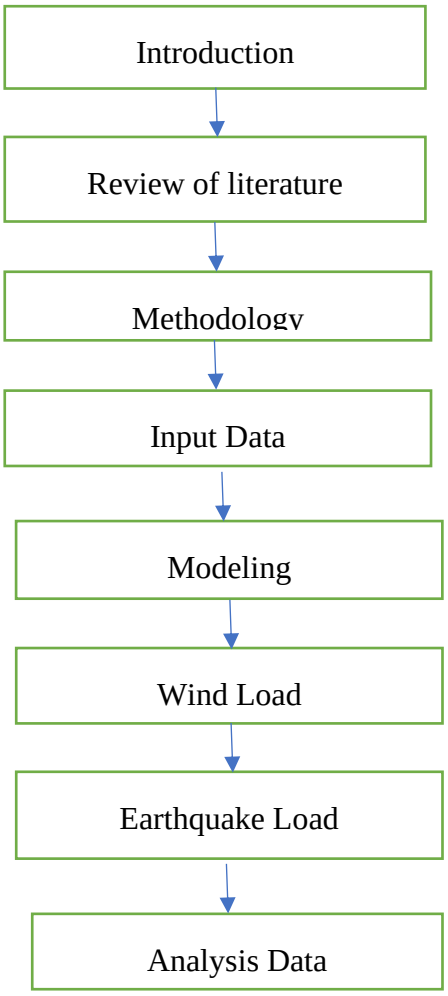
CHAPTER 3

METHODOLOGY

3.1 General

ETBAS & STAAD Pro has been used to create analysis and as a design tool. The calculations were made using the ACI, BNBC, and AISC codes, and the portal frame technique was utilized for analysis using the program ETABS & STAAD Pro. The building will be a six-story edge supported slab construction. Its elevation and plan have been drawn. Then, for the proposed structure in Dhaka, wind and earthquake loads were calculated on chosen beams and columns using BNBC, AISC 360-16 CODE (coefficient, wind speed, seismic zone). To verify for variations, necessary comparisons were made.

3.2 Flow chart



3.3 Methodology step

3.3.1 Step-1

This thesis mainly focuses on the Building Design Beam Column and slab calculation check. We will find this with the help of the software Etabs & STAAD Pro. We use Etabs & STAAD Pro software. We use load parameters is filling up by using BNBC 2020 load combination and design procedure. In this case, we need some design parameters which are given by BNBC.

3.3.1 Step-2

In this model, we have to need some load for checking the analysis. Live load, dead load.

3.4 Live load

Residential: All other areas except stairs and balconies: 2 KN/m2 or (2x20.89 = 41.78 psf ~ 42 psf). (Reference BNBC 2020 Page No: 3116)

Residential: stairs and Exit ways: 4.80 KN/m2 or (4.80x20.89 = 100 psf). (Reference BNBC 2020 Page No: 3117)

Roof live load: 1 KN/m2 or (1x20.89 = 20.89 psf ~ 21 psf). (Reference BNBC 2020 Page No: 3117)

3.5 Dead load

Floor finish:

Tiles 13mm = 0.268 KN/m2 (Reference BNBC 2020 Page No: 3111)

Plaster 10mm = 0.230 KN/m2in this case we have used 25mm thickness plaster (25 x0.230/10) = 0.575 KN/m2 (Reference BNBC 2020 Page No: 3111-3112)

Ceiling finish:

Cement Plaster 13mm = 0.287 KN/m2 (Reference BNBC 2020 Page No: 3112)

Total = 0.268+0.575+0.287

=1.13 KN/m2

= (1.13x20.89)

=23.6 psf ~ 25 psf

Partition wall load calculation:

Story height = 10 ft, wall thickness = 5 inches, Beam depth= 18-inch,

wall height = (10-18/12=8.5 ft.

Wall load = Brick unit weight x wall thickness x wall height

=(120 x 5 x 8.5)/12

=425 lb/ft

=0.425 kip (we use in this model is 0.5 kip)

(Units weight of Brick References BNBC 2020 Page No: 3110)

3.6 **Load Combination**

Basic combinations

1. 1.4(D + F)

2. 1.2(D + F + T) + 1.6(L + H) + 0.5(Lr or R)

3. 1.2D + 1.6(Lr or R) + (L or 0.8W)

4. 1.2D + 1.6W + L + 0.5(Lr or R)

5. 1.2D + 1.0E + 1.0L

6. 0.9D + 1.6W + 1.6H

7. 0.9D + 1.0E + 1.6H

(Units weight of Brick References BNBC 2020 Page No: 3266)

1) 1.4 DL
2) 1.2 DL+1.6 LL+0.5 RL
3) 1.2 DL+1.6RL+LL
4) 1.2 DL+1.6RL+0.8 WX+
5) 1.2 DL+1.6RL+0.8 WX-
6) 1.2 DL+1.6RL+0.8 WZ+
7) 1.2 DL+1.6RL+0.8 WZ-
8) 1.2 DL+LL+0.5RL+1.6 WX+
9) 1.2 DL+LL+0.5RL+1.6 WX-

10) 1.2 DL+LL+0.5RL+1.6 WZ+
11) 1.2 DL+LL+0.5RL+1.6 WZ-
12) 1.2 DL+LL+EX+
13) 1.2 DL+LL+EX-
14) 1.2 DL+LL+EZ+
15) 1.2 DL+LL+EX+
16) 0.9 DL+1.6WX+
17) 0.9 DL+1.6WX-
18) 0.9 DL+1.6WZ+
19) 0.9 DL+1.6WZ-
20) 0.9 DL+EX+
21) 0.9 DL+EX-
22) 0.9 DL+EZ+
23) 0.9 DL+EZ-
24) DL+LL+RL

Earthquake load and Wind Load must be considered for +X, -X, +Y and —Y directions. Thus, +EL and + WL above implies 24 cases, and in all, 26 cases as per Table 3.6 must be considered. All 26load combinations are analyzed using software.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 RCC

This chapter provides model geometry information, including items such as story levels, point coordinates, and element connectivity

4.1.1 Story Data

Table 1: Story Definitions

Story Data	Name	Height ft	Master Story	Similar To	Splice Story	Color
T1	MR Top slab	7.5	No	None	No	Yellow
T1	WT	8	No	None	No	Yellow
T1	Roof	10	No	None	No	Yellow
T1	S5	10	No	None	No	Yellow
T1	S4	10	No	None	No	Yellow
T1	S3	10	No	None	No	Yellow
T1	S2	10	No	None	No	Yellow
T1	S1	10	No	None	No	Yellow
T1	GF	6	No	None	No	Gray8Dark

4.1.2 Grid Data

Table 2: Grid Definitions – General

Tower	Name	Type	Ux ft	Uy ft	Rz deg	Story Range	Bubble Size in	Color
T1	G1	Cartesian	0	0	0	Default	60	Gray6

Table 3: Grid Definitions - Grid Lines

Name	Grid Line Type	ID	Ordinate ft	Bubble Location	Visible
G1	X (Cartesian)	A	0	End	Yes
G1	X (Cartesian)	B	16.6667	End	Yes
G1	X (Cartesian)	C	21.5	End	Yes
G1	X (Cartesian)	D	30.5833	End	Yes
G1	X (Cartesian)	E	46.6667	End	Yes
G1	Y (Cartesian)	1	0	Start	Yes
G1	Y (Cartesian)	2	17.0833	Start	Yes
G1	Y (Cartesian)	3	34.25	Start	Yes
G1	Y (Cartesian)	4	42.4167	Start	Yes
G1	Y (Cartesian)	5	50.8333	Start	Yes

Story	Diaphragm	Mass X lb-s2/ft	Mass Y lb-s2/ft	Mass Moment of Inertia kip-ft-s2	X Mass Center ft	Y Mass Center ft
MR Top slab	D1	979.58	979.58	70.0882	23.0938	43.8375
WT	D1	2700.06	2700.06	214.2623	23.6393	43.713
Roof	D1	14466.51	14466.51	6908.3232	23.3307	25.2279
S4	D1	20569.21	20569.21	9660.6798	23.4081	25.3726
S3	D1	20569.21	20569.21	9660.6798	23.4081	25.3726
S2	D1	20569.21	20569.21	9660.6798	23.4081	25.3726
S1	D1	20569.21	20569.21	9660.6798	23.4081	25.3726

4.1.3 Reinforcement Sizeable

Table 4: Reinforcement size and dia and area

Name	Diameter in	Area in2
#2	0.25	0.05
#3	0.375	0.11
#4	0.5	0.2
#5	0.625	0.31
#6	0.75	0.44
#7	0.875	0.6
#8	1	0.79
#9	1.128	1
#10	1.27	1.27
#11	1.41	1.56
#14	1.693	2.25
#18	2.257	4

4.1.4 Load Patterns

Table 5: Load Pattern Definition

Name	Is Auto Load	Type	Self Weight Multiplier	Auto Load
~LLRF	Yes	Other	0	
Dead	No	Dead	1	
EQ+X	No	Seismic	0	ASCE 7-05
EQ+Y	No	Seismic	0	ASCE 7-05
EQ-X	No	Seismic	0	ASCE 7-05
EQ-Y	No	Seismic	0	ASCE 7-05
FF	No	Super Dead	0	
Live	No	Live	0	
PW	No	Super Dead	0	
Wind load-X	No	Wind	0	ASCE 7-05
Wind load-X(1/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(10/12)	Yes	Wind	0	ASCE 7-05

Name	Is Auto Load	Type	Self Weight Multiplier	Auto Load
Wind load-X(11/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(12/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(2/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(3/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(4/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(5/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(6/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(7/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(8/12)	Yes	Wind	0	ASCE 7-05
Wind load-X(9/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y	No	Wind	0	ASCE 7-05
Wind load-Y(1/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(10/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(11/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(12/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(2/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(3/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(4/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(5/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(6/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(7/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(8/12)	Yes	Wind	0	ASCE 7-05
Wind load-Y(9/12)	Yes	Wind	0	ASCE 7-05
WL	No	Super Dead	0	
wp	No	Live	0	

4.2 ASCE 7-05 Auto Wind Load Calculation

This calculation presents the automatically generated lateral wind loads for load pattern Wind load-Y according to ASCE 7-05, as calculated by ETABS.

4.2.1 Exposure Parameters

Exposure From = Diaphragms

Exposure Category = B

Wind Direction = 0 degrees

Basic Wind Speed, V [ASCE 6.5.4]	$\mathbf{V = 147.5\ mph}$
Windward Coefficient, $C_{p,wind}$ [ASCE 6.5.11.2.1]	$\mathbf{C_{p,wind} = 0.8}$
Leeward Coefficient, $C_{p,lee}$ [ASCE 6.5.11.2.1]	$\mathbf{C_{p,lee} = 0.5}$

Wind Case = All Cases

Top Story = MR Top slab

Bottom Story = Base

Include Parapet = Yes, Parapet Height = 4.9213

4.2.2 Factors and Coefficients

Gradient Height, z_g [ASCE Table 6-2]		$z_g = 1200$
Emperical Exponent, α [ASCE Table 6-2]		$\alpha = 7$
Velocity Pressure Exposure Coefficient, $K_{z;}$ [ASCE Table 6-3]	$K_z = 2.01(\frac{z}{z_g}$	for$15ft \leq z \leq z_g$
	$K_z = 2.01(\frac{15}{z_g}$	for $z \leq 15ft$
Topographical Factor, K_{zt} [ASCE 6.5.7.2]		$K_{zt} = 1$
Directionality Factor, K_d [ASCE 6.5.4.4]		$K_d = 0.85$
Importance Factor, I [ASCE 6.5.5]		$I = 1$
Gust Effect Factor, G [ASCE 6.5.8]		$G = 0.85$

4.2.3 Lateral Loading

Velocity Pressure, q_z [ASCE 6.5.10 Eq. 6-15] $q_z = 0.00256K_zK_{zt}K_dV^2I$

Design Wind Pressure, p [ASCE 6.5.12.2.1 Eq. 6-17] $p = qGC_{p,wind} + q_h(GC_{p,lee})$

4.2.4 Applied Story Forces

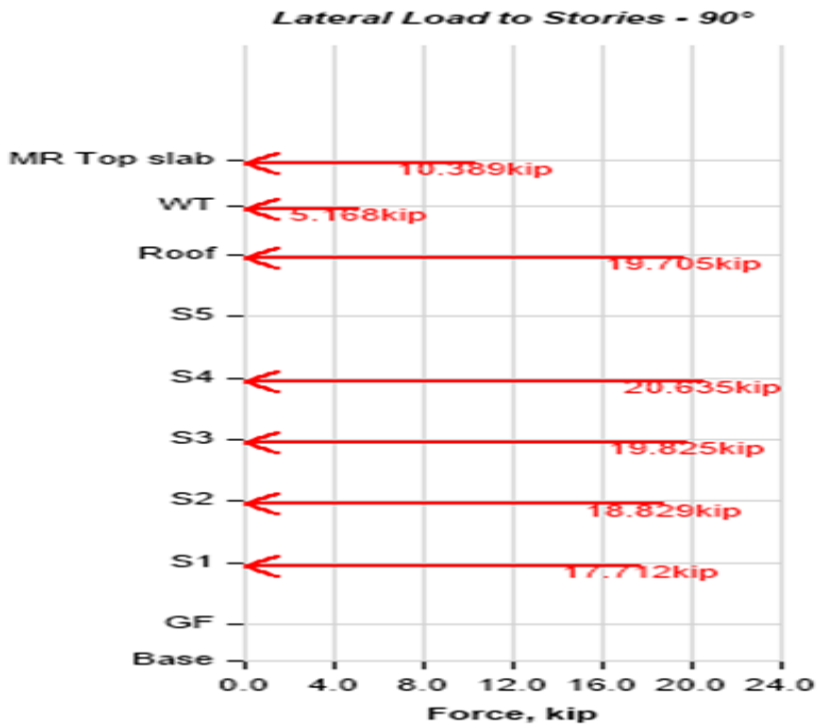


Figure 4: Lateral load to stories 90 Degrees

Table 6: Lateral load to stories

Story	Elevation	X-Dir	Y-Dir
	ft	kip	kip
MR Top slab	81.5	12.379	0
WT	74	6.159	0
Roof	66	21.464	0
S5	56	0	0
S4	46	22.477	0
S3	36	21.595	0
S2	26	20.511	0
S1	16	19.294	0
GF	6	0	0
Base	0	0	0

Table 7: Lateral load to stories

Story	Elevation(ft)	X-Dir(kip)	Y-Dir(kip)
MR Top slab	81.5	12.379	0
WT	74	6.159	0
Roof	66	21.464	0
S5	56	0	0
S4	46	22.477	0
S3	36	21.595	0
S2	26	20.511	0
S1	16	19.294	0
GF	6	0	0
Base	0	0	0

4.3 ASCE 7-05 Auto Seismic Load Calculation

This calculation presents the automatically generated lateral seismic loads for load pattern EQ+X according to ASCE 7-05, as calculated by ETABS

4.3.1 Direction and Eccentricity

Direction = X + Eccentricity Y

Eccentricity Ratio = 5.3% for all diaphragms

Structural Period

Period Calculation Method = User Specified

User Period T=0.75 sec

Long-Period Transition Period, TL [ASCE 11.4.5] T_L=2 sec

4.3.2 Factors and Coefficients

Response Modification Factor, R [ASCE Table 12.2-1] R=7

System Overstrength Factor, Ω0 [ASCE Table 12.2-1] Ω_0=2.5

Deflection Amplification Factor, Cd [ASCE Table 12.2-1] C_d=5.5

Importance Factor, I [ASCE Table 11.5-1] I=1

Ss and S1 Source = User Specified

Mapped MCE Spectral Response Acceleration, Ss [ASCE 11.4.1] S_s=0.5g

Mapped MCE Spectral Response Acceleration, S1 [ASCE 11.4.1] S_1=0.2g

Site Class [ASCE Table 20.3-1] = F - Requires Site Response Analysis

Site Coefficient, Fa [ASCE Table 11.4-1] F_a=1.15

4.3.3 Seismic Response

MCE Spectral Response Acceleration, SMS [ASCE 11.4.3, Eq. 11.4-1] S_MS=F_a S_S S_MS=0.575g

MCE Spectral Response Acceleration, SM1 [ASCE 11.4.3, Eq. 11.4-2] S_M1=F_v S_1 S_M1=0.345g

Design Spectral Response Acceleration, SDS [ASCE 11.4.4, Eq. 11.4-3] S_DS=2/3 S_MS S_DS=0.383333g

Design Spectral Response Acceleration, SD1 [ASCE 11.4.4, Eq. 11.4-4] S_D1=2/3 S_M1 S_D1=0.23g

4.3.4 Equivalent Lateral Forces

Seismic Response Coefficient, CS [ASCE 12.8.1.1, Eq. 12.8-2] C_S=S_DS/((R/I))

[ASCE 12.8.1.1, Eq. 12.8-3] C_(S,max)=S_D1/(T(R/I))

[ASCE 12.8.1.1, Eq. 12.8-5] C_(S,min)=0.01

[ASCE 12.8.1.1, Eq. 12.8-6] C_(S,min)=0.5 S_1/((R/I)) forS_1=0.6g

C_(S,min)⩽C_s⩽C_(S,max)

4.3.5 Calculated Base Shear

Table 8 : Calculation base shear.

Direction	Period Used (sec)	C_s	W (kip)	V (kip)
X + Ecc. Y	0.75	0.04381	4268.2496	186.99

4.3.6 Applied Story Forces

Table 9*: Applied story Forces*

Story	Elevation	X-Dir	Y-Dir
	ft	kip	kip
MR Top slab	81.5	3.327	0
WT	74	8.073	0
Roof	66	37.419	0
S5	56	44.34	0
S4	46	35.62	0
S3	36	27.035	0
S2	26	18.747	0

Story	Elevation	X-Dir	Y-Dir
	ft	kip	kip
S1	16	10.857	0
GF	6	1.572	0
Base	0	0	0

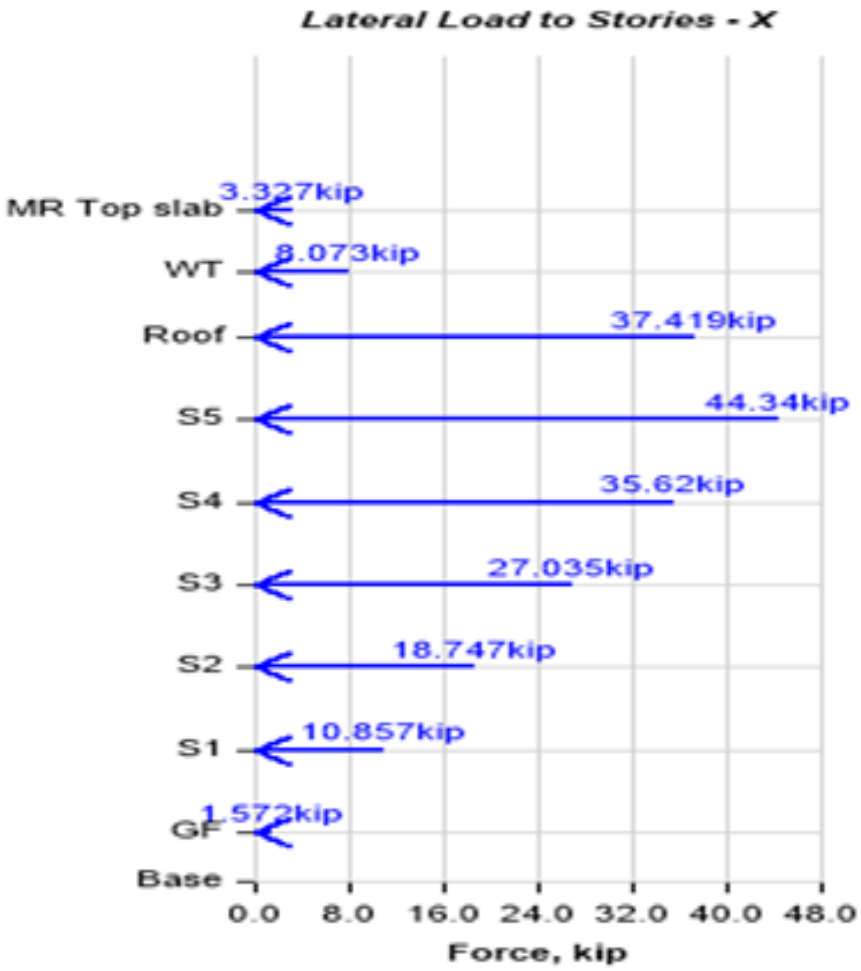


Figure 5: Lateral load to stories-X

4.5 Load Cases

Table 10: Load Case Definitions – Summary

Name	Type
Dead	Linear Static
Live	Linear Static
Modal	Modal - Eigen
WL	Linear Static
PW	Linear Static
FF	Linear Static
EX+X	Linear Static
EX-X	Linear Static
EQ+X	Linear Static
EQ-X	Linear Static
EQ+Y	Linear Static
EQ-Y	Linear Static
wp	Linear Static
Wind load-X	Linear Static
Wind load-Y	Linear Static

4.6 Load Combinations

Table 11: Load combination details

Name	Type	Is Auto	Load Name	SF	Notes
UDCon1	Linear Add	No	Dead	1.4	Dead [Strength]
UDCon1			WL	1.4	
UDCon1			PW	1.4	
UDCon1			FF	1.4	
UDCon2	Linear Add	No	Dead	1.2	Dead + Live [Strength]
UDCon2			Live	1.6	
UDCon2			WL	1.2	
UDCon2			PW	1.2	
UDCon2			FF	1.2	
UDCon2			wp	1.6	
UDCon3	Linear Add	No	Dead	1.2	Dead + Live + Wind + Snow [Strength]

Name	Type	Is Auto	Load Name	SF	Notes
UDCon3			Live	1	
UDCon3			WL	1.2	
UDCon3			PW	1.2	
UDCon3			FF	1.2	
UDCon3			wp	1	
UDCon3			Wind load-X	1.6	
UDCon4	Linear Add	No	Dead	1.2	Dead + Live - Wind + Snow [Strength]
UDCon4			Live	1	
UDCon4			WL	1.2	
UDCon4			PW	1.2	
UDCon4			FF	1.2	
UDCon4			wp	1	
UDCon4			Wind load-X	-1.6	
UDCon5	Linear Add	No	Dead	1.2	Dead + Live + Wind + Snow [Strength]
UDCon5			Live	1	
UDCon5			WL	1.2	
UDCon5			PW	1.2	
UDCon5			FF	1.2	
UDCon5			wp	1	
UDCon5			Wind load-Y	1.6	
UDCon6	Linear Add	No	Dead	1.2	Dead + Live - Wind + Snow [Strength]
UDCon6			Live	1	
UDCon6			WL	1.2	
UDCon6			PW	1.2	
UDCon6			FF	1.2	
UDCon6			wp	1	
UDCon6			Wind load-Y	-1.6	
UDCon7	Linear Add	No	Dead	1.2	Dead + Wind [Strength]
UDCon7			WL	1.2	
UDCon7			PW	1.2	
UDCon7			FF	1.2	
UDCon7			Wind load-X	0.8	
UDCon8	Linear Add	No	Dead	1.2	Dead - Wind [Strength]
UDCon8			WL	1.2	
UDCon8			PW	1.2	

Name	Type	Is Auto	Load Name	SF	Notes
UDCon8			FF	1.2	
UDCon8			Wind load-X	-0.8	
UDCon9	Linear Add	No	Dead	1.2	Dead + Wind [Strength]
UDCon9			WL	1.2	
UDCon9			PW	1.2	
UDCon9			FF	1.2	
UDCon9			Wind load-Y	0.8	
UDCon10	Linear Add	No	Dead	1.2	Dead - Wind [Strength]
UDCon10			WL	1.2	
UDCon10			PW	1.2	
UDCon10			FF	1.2	
UDCon10			Wind load-Y	-0.8	
UDCon11	Linear Add	No	Dead	0.9	Dead (min) + Wind [Strength]
UDCon11			WL	0.9	
UDCon11			PW	0.9	
UDCon11			FF	0.9	
UDCon11			Wind load-X	1.6	
UDCon12	Linear Add	No	Dead	0.9	Dead (min) - Wind [Strength]
UDCon12			WL	0.9	
UDCon12			PW	0.9	
UDCon12			FF	0.9	
UDCon12			Wind load-X	-1.6	
UDCon13	Linear Add	No	Dead	0.9	Dead (min) + Wind [Strength]
UDCon13			WL	0.9	
UDCon13			PW	0.9	
UDCon13			FF	0.9	
UDCon13			Wind load-Y	1.6	
UDCon14	Linear Add	No	Dead	0.9	Dead (min) - Wind [Strength]
UDCon14			WL	0.9	
UDCon14			PW	0.9	
UDCon14			FF	0.9	
UDCon14			Wind load-Y	-1.6	
UDCon15	Linear Add	No	Dead	1.3	Dead + Live + Static Earthquake [Strength]
UDCon15			Live	1	

Name	Type	Is Auto	Load Name	SF	Notes
UDCon15			WL	1.3	
UDCon15			PW	1.3	
UDCon15			FF	1.3	
UDCon15			wp	1	
UDCon15			EQ+X	1	
UDCon16	Linear Add	No	Dead	1.3	Dead + Live - Static Earthquake [Strength]
UDCon16			Live	1	
UDCon16			WL	1.3	
UDCon16			PW	1.3	
UDCon16			FF	1.3	
UDCon16			wp	1	
UDCon16			EQ+X	-1	
UDCon17	Linear Add	No	Dead	1.3	Dead + Live + Static Earthquake [Strength]
UDCon17			Live	1	
UDCon17			WL	1.3	
UDCon17			PW	1.3	
UDCon17			FF	1.3	
UDCon17			wp	1	
UDCon17			EQ-X	1	
UDCon18	Linear Add	No	Dead	1.3	Dead + Live - Static Earthquake [Strength]
UDCon18			Live	1	
UDCon18			WL	1.3	
UDCon18			PW	1.3	
UDCon18			FF	1.3	
UDCon18			wp	1	
UDCon18			EQ-X	-1	
UDCon19	Linear Add	No	Dead	1.3	Dead + Live + Static Earthquake [Strength]
UDCon19			Live	1	
UDCon19			WL	1.3	
UDCon19			PW	1.3	
UDCon19			FF	1.3	
UDCon19			wp	1	

Name	Type	Is Auto	Load Name	SF	Notes
UDCon19			EQ+Y	1	
UDCon20	Linear Add	No	Dead	1.3	Dead + Live - Static Earthquake [Strength]
UDCon20			Live	1	
UDCon20			WL	1.3	
UDCon20			PW	1.3	
UDCon20			FF	1.3	
UDCon20			wp	1	
UDCon20			EQ+Y	-1	
UDCon21	Linear Add	No	Dead	1.3	Dead + Live + Static Earthquake [Strength]
UDCon21			Live	1	
UDCon21			WL	1.3	
UDCon21			PW	1.3	
UDCon21			FF	1.3	
UDCon21			wp	1	
UDCon21			EQ-Y	1	
UDCon22	Linear Add	No	Dead	1.3	Dead + Live - Static Earthquake [Strength]
UDCon22			Live	1	
UDCon22			WL	1.3	
UDCon22			PW	1.3	
UDCon22			FF	1.3	
UDCon22			wp	1	
UDCon22			EQ-Y	-1	
UDCon23	Linear Add	No	Dead	1.3	Dead + Static Earthquake [Strength]
UDCon23			WL	1.3	
UDCon23			PW	1.3	
UDCon23			FF	1.3	
UDCon23			EQ+X	1	
UDCon24	Linear Add	No	Dead	1.3	Dead - Static Earthquake [Strength]
UDCon24			WL	1.3	
UDCon24			PW	1.3	
UDCon24			FF	1.3	
UDCon24			EQ+X	-1	
UDCon25	Linear Add	No	Dead	1.3	Dead + Static Earthquake [Strength]

Name	Type	Is Auto	Load Name	SF	Notes
UDCon25			WL	1.3	
UDCon25			PW	1.3	
UDCon25			FF	1.3	
UDCon25			EQ-X	1	
UDCon26	Linear Add	No	Dead	1.3	Dead - Static Earthquake [Strength]
UDCon26			WL	1.3	
UDCon26			PW	1.3	
UDCon26			FF	1.3	
UDCon26			EQ-X	-1	
UDCon27	Linear Add	No	Dead	1.3	Dead + Static Earthquake [Strength]
UDCon27			WL	1.3	
UDCon27			PW	1.3	
UDCon27			FF	1.3	
UDCon27			EQ+Y	1	
UDCon28	Linear Add	No	Dead	1.3	Dead - Static Earthquake [Strength]
UDCon28			WL	1.3	
UDCon28			PW	1.3	
UDCon28			FF	1.3	
UDCon28			EQ+Y	-1	
UDCon29	Linear Add	No	Dead	1.3	Dead + Static Earthquake [Strength]
UDCon29			WL	1.3	
UDCon29			PW	1.3	
UDCon29			FF	1.3	
UDCon29			EQ-Y	1	
UDCon30	Linear Add	No	Dead	1.3	Dead - Static Earthquake [Strength]
UDCon30			WL	1.3	
UDCon30			PW	1.3	
UDCon30			FF	1.3	
UDCon30			EQ-Y	-1	
UDCon31	Linear Add	No	Dead	0.8	Dead (min) + Static Earthquake [Strength]
UDCon31			WL	0.8	
UDCon31			PW	0.8	
UDCon31			FF	0.8	
UDCon31			EQ+X	1	
UDCon32	Linear Add	No	Dead	0.8	Dead (min) - Static Earthquake [Strength]

Name	Type	Is Auto	Load Name	SF	Notes
UDCon32			WL	0.8	
UDCon32			PW	0.8	
UDCon32			FF	0.8	
UDCon32			EQ+X	-1	
UDCon33	Linear Add	No	Dead	0.8	Dead (min) + Static Earthquake [Strength]
UDCon33			WL	0.8	
UDCon33			PW	0.8	
UDCon33			FF	0.8	
UDCon33			EQ-X	1	
UDCon34	Linear Add	No	Dead	0.8	Dead (min) - Static Earthquake [Strength]
UDCon34			WL	0.8	
UDCon34			PW	0.8	
UDCon34			FF	0.8	
UDCon34			EQ-X	-1	
UDCon35	Linear Add	No	Dead	0.8	Dead (min) + Static Earthquake [Strength]
UDCon35			WL	0.8	
UDCon35			PW	0.8	
UDCon35			FF	0.8	
UDCon35			EQ+Y	1	
UDCon36	Linear Add	No	Dead	0.8	Dead (min) - Static Earthquake [Strength]
UDCon36			WL	0.8	
UDCon36			PW	0.8	
UDCon36			FF	0.8	
UDCon36			EQ+Y	-1	
UDCon37	Linear Add	No	Dead	0.8	Dead (min) + Static Earthquake [Strength]
UDCon37			WL	0.8	
UDCon37			PW	0.8	
UDCon37			FF	0.8	
UDCon37			EQ-Y	1	
UDCon38	Linear Add	No	Dead	0.8	Dead (min) - Static Earthquake [Strength]
UDCon38			WL	0.8	

4.7 Grid System Data

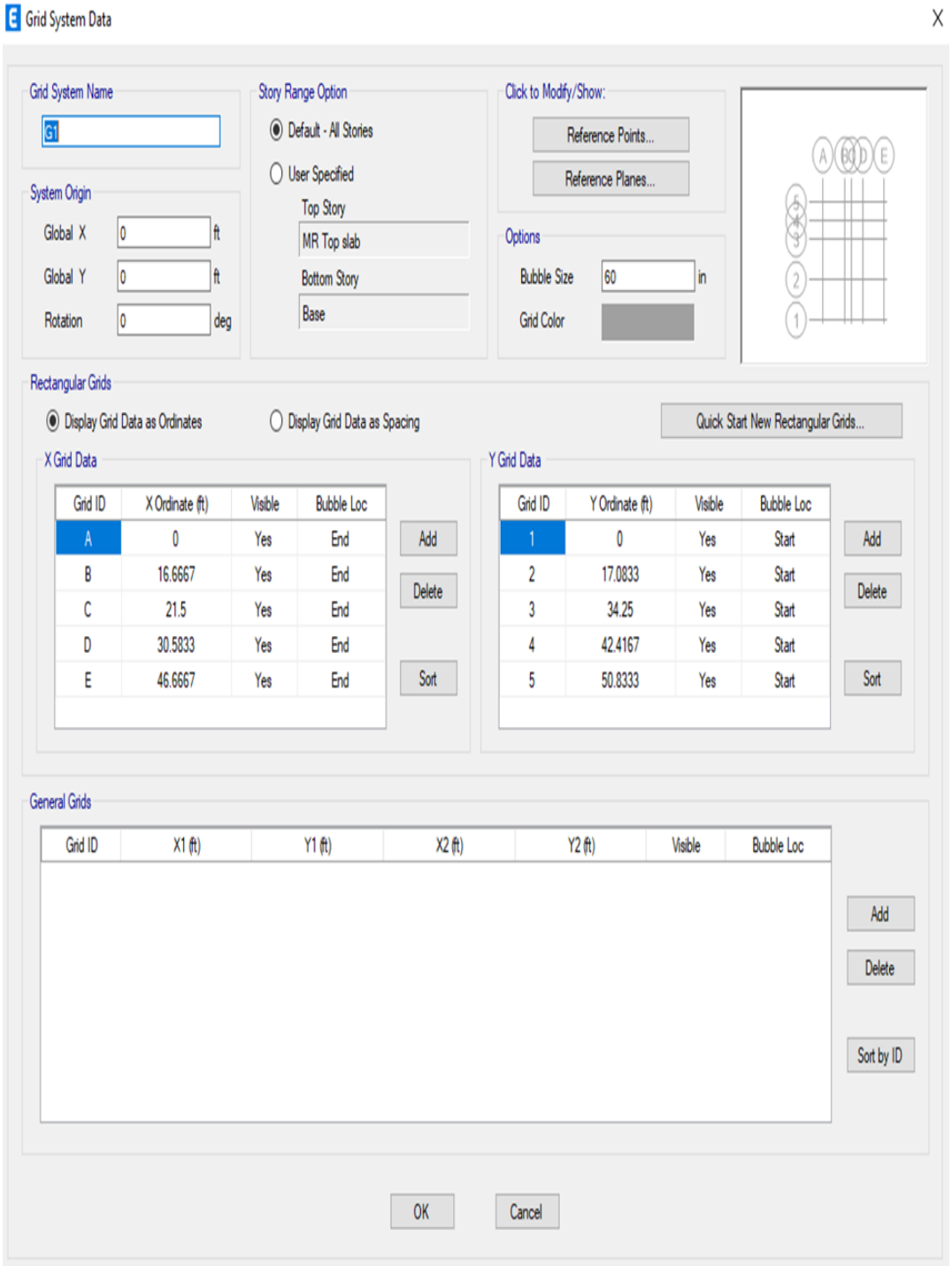
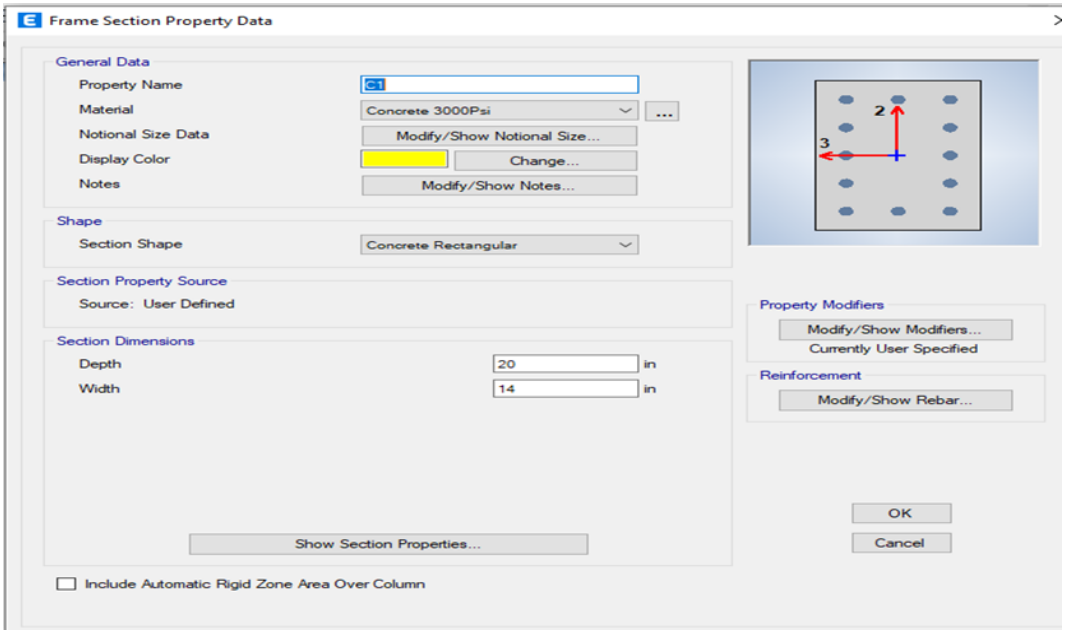


Figure 4.7. 1 : Grid data system

4.8 Material



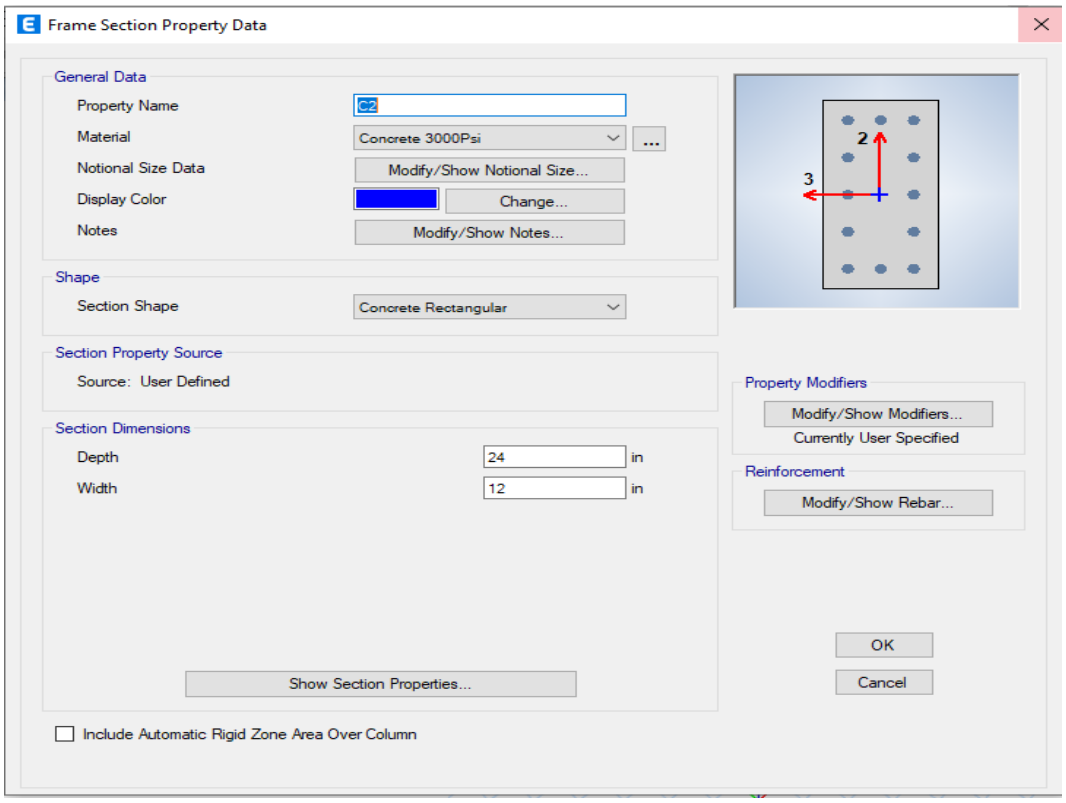


Figure 6: Frame section property data

4.9 Model

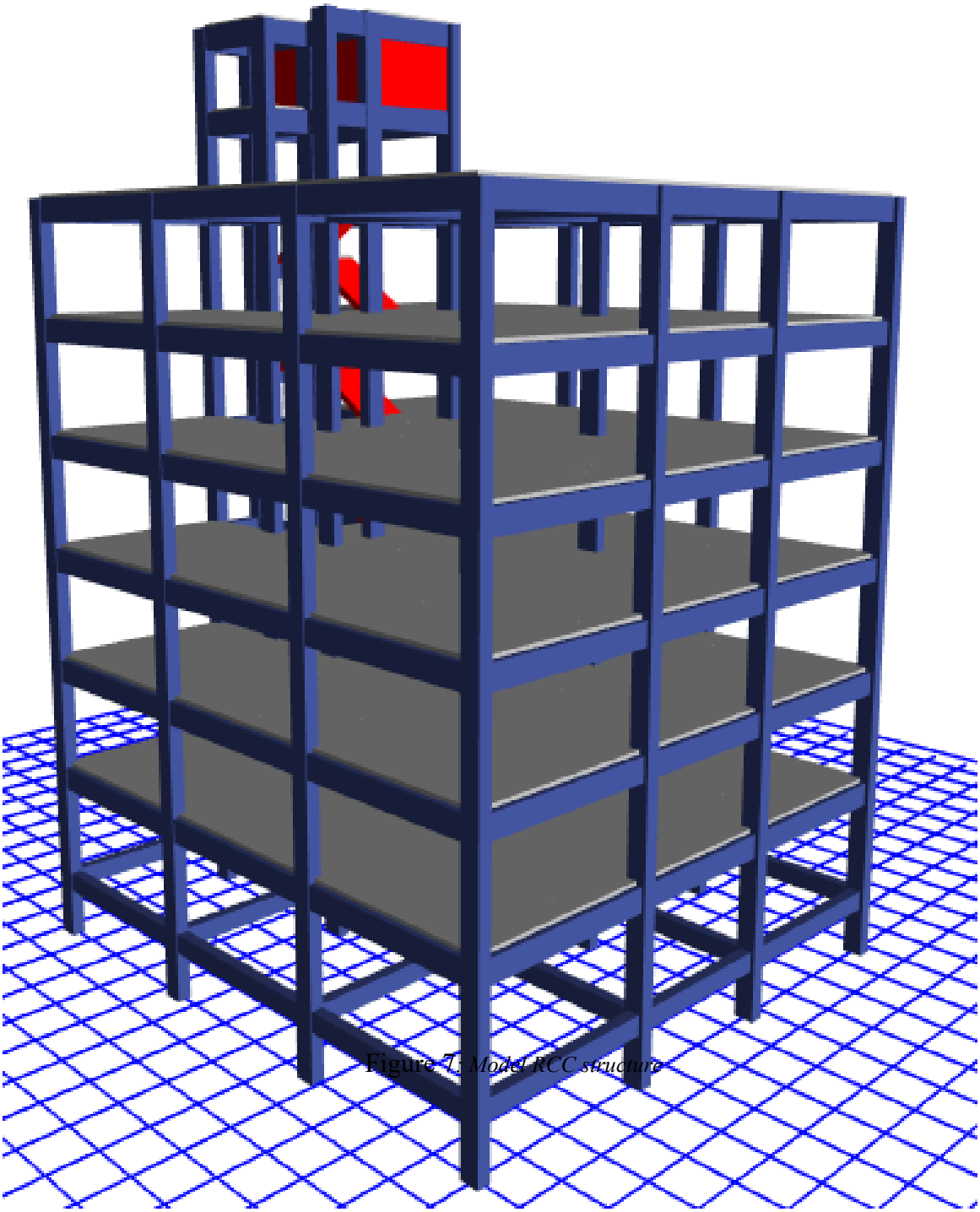


Figure 7: Model RCC structure

4.10 **Design**

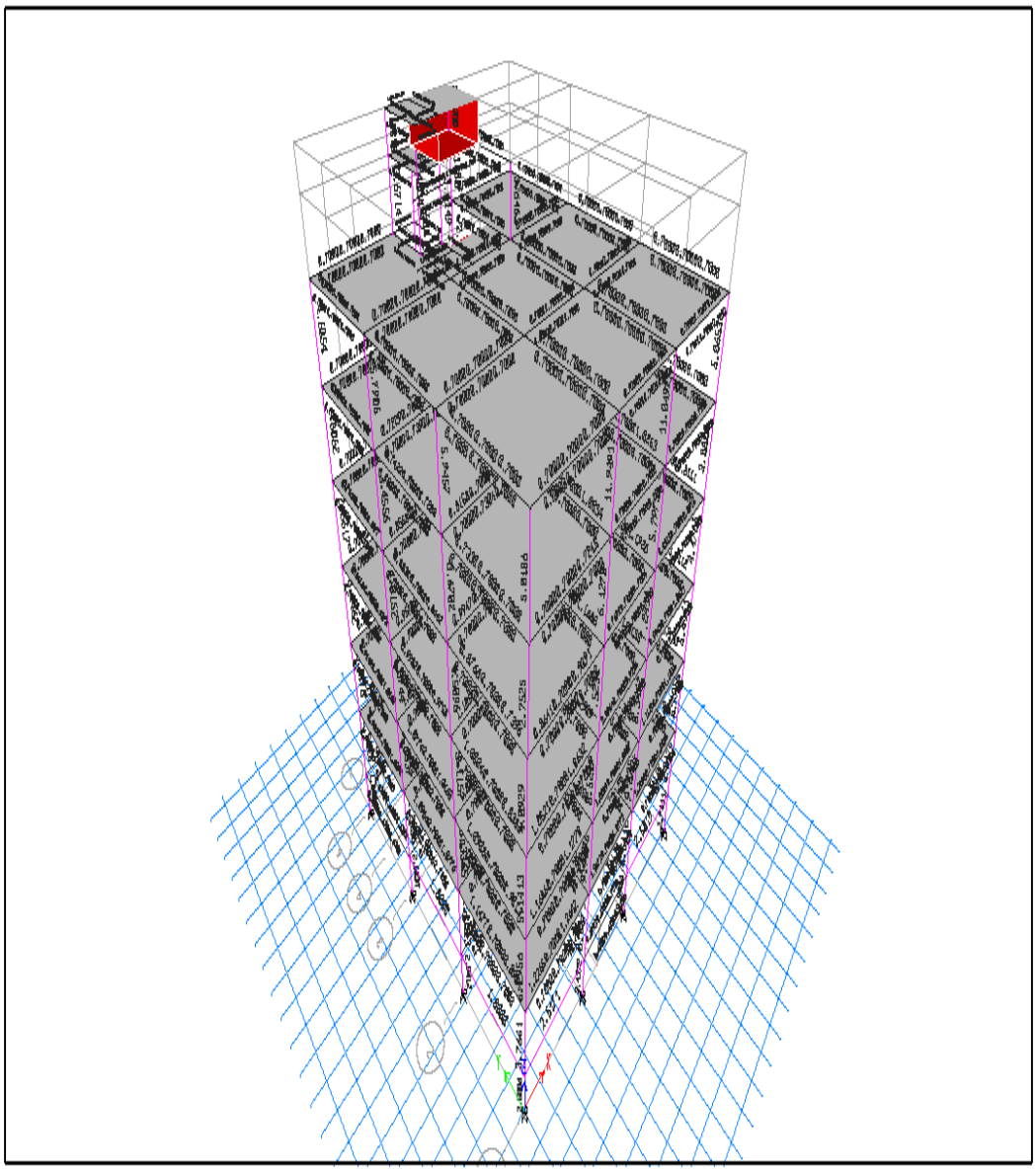


Figure 8: Final result of Design

4.11 **Story Drift Cheek**

Table 12: Story Drift Cheek EX+

Story Drift Check EX -						
					Allowable Drift Δf (mm)	
Deflection Amplification		5.5	**Importance Factor**	1	0.02	
Story Name	**Height (m)**	**Elastic Displacement δ (mm)**	**Amplified Displacement Δ (mm)**	Story Drift Δf (mm)	Allowable Drift Δf (mm)	Result
MR Top slab	2.286	31.291	172.1005	4.367	45.72	Safe
WT	2.4384	30.497	167.7335	-71.643	48.768	Safe
Roof	3.048	43.523	239.3765	41.327	60.96	Safe
S5	3.048	36.009	198.0495	36.5475	60.96	Safe
S4	3.048	29.364	161.502	44.4675	60.96	Safe
S3	3.048	21.279	117.0345	49.643	60.96	Safe
S2	3.048	12.253	67.3915	67.3915	60.96	Unsafe
S1	3.048		0	0	60.96	Safe
GF	1.8288		0	0	36.576	Safe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe

Table 13: Story Drift Cheek EX-

Story Drift Check Ex +						
					Allowable Drift Δf (mm)	
Deflection Amplification Factor (cd)		5.5	**Importance Factor**	1	0.02	
ory Na	**Height (m)**	**Elastic Displacement δ (mm)**	**Amplified Displacement Δ (mm)**	Story Drift Δf (mm)	Allowable Drift Δf (mm)	Result
MR Top slab	2.286	31.326	172.293	4.6255	45.72	Safe
WT	2.4384	30.485	167.6675	-41.448	48.768	Safe
Roof	3.048	38.021	209.1155	36.6795	60.96	Safe
S5	3.048	31.352	172.436	32.3125	60.96	Safe
S4	3.048	25.477	140.1235	38.753	60.96	Safe
S3	3.048	18.431	101.3705	42.867	60.96	Safe
S2	3.048	10.637	58.5035	58.5035	60.96	Safe
S1	3.048		0	0	60.96	Safe
GF	1.8288		0	0	36.576	Safe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe

Table 14: Story Drift Cheek EY+

Story Drift Check EY+						
					Allowable Drift Δf (mm)	
Deflection Amplification Factor (cd)		5.5	Importance Factor	1	0.02	
Story Name	Height (m)	Elastic Displacement δ (mm)	Amplified Displacement Δ (mm)	Story Drift Δf (mm)	Allowable Drift Δf (mm)	Result
MR Top slab	2.286	28.799	158.3945	2.992	45.72	Safe
WT	2.4384	28.255	155.4025	-2.9865	48.768	Safe
Roof	3.048	28.798	158.389	30.0795	60.96	Safe
S5	3.048	23.329	128.3095	24.7115	60.96	Safe
S4	3.048	18.836	103.598	29.491	60.96	Safe
S3	3.048	13.474	74.107	32.483	60.96	Safe
S2	3.048	7.568	41.624	41.624	60.96	Safe
S1	3.048		0	0	60.96	Safe
GF	1.8288		0	0	36.576	Safe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe

Table 15: Story Drift Cheek EY-

Story Drift Check EY-						
Allowable Drift Δf (mm)						
Deflection		5.5	portance Fact	1	0.02	
Story Name	Height (m)	Elastic Displacement δ (mm)	Amplified Displacement Δ (mm)	Story Drift Δf (mm)	Allowable Drift Δf (mm)	Result
MR Top slab	2.286	28.281	155.5455	2.9755	45.72	Safe
WT	2.4384	27.74	152.57	1.078	48.768	Safe
Roof	3.048	27.544	151.492	28.9905	60.96	Safe
S5	3.048	22.273	122.5015	23.7545	60.96	Safe
S4	3.048	17.954	98.747	28.303	60.96	Safe
S3	3.048	12.808	70.444	31.097	60.96	Safe
S2	3.048	7.154	39.347	39.347	60.96	Safe
S1	3.048		0	0	60.96	Safe
GF	1.8288		0	0	36.576	Safe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe
			0	0	0	Unsafe

4.12 **Irregularity**

Table 16: EQ+X Direction

EQ+X Direction								
Story		Stiffness X1	K_i / K_{i+1}	check	$K_{mi} = avg(K_{i-1,i-2,i-3})$	K_i / K_{mi}	check
MR Top slab		17565.342	-	-			
WT		35540.543	2.02	Regular			
Roof		90798.659	2.55	Regular			
S5		112654.498	1.24	Regular	47968.18		
S4		119706.413	1.06	Regular	79664.57	1.50	Regular
S3		123423.125	1.03	Regular	107719.86	1.15	Regular
S2		127358.685	1.03	Regular	118594.68	1.07	Regular
S1		123487.319	0.97	Regular	123496.07	1.00	Regular
GF		393204.876	3.18	Regular	124756.38	3.15	Regular

Table 17: EQ-X Direction

Story		Stiffness X2	K_i / K_{i+1}	check	$K_{mi} = avg(K_{i-1,i-2,i-}$	K_i / K_{mi}	check
MR Top slab		18618.493	-	-			
WT		37152.982	2.00	Regular			
Roof		92886.654	2.50	Regular			
S5		109151.652	1.18	Regular	49552.71		
S4		114777.431	1.05	Regular	79730.43	1.44	Regular
S3		117408.927	1.02	Regular	105605.25	1.11	Regular
S2		120823.784	1.03	Regular	113779.34	1.06	Regular
S1		117386.349	0.97	Regular	117670.05	1.00	Regular
GF		382275.337	3.26	Regular	118539.69	3.22	Regular

Table 18: EQ+Y Direction

EQ+Y Direction							
Story		Stiffness Y1	$\frac{K_i}{K_{i+1}}$	check	$K_{mi} = avg(K_{i-1,i-2,i-3})$	$\frac{K_i}{K_{mi}}$	check
MR Top slab		24338.663	-	-			
WT		52887.93	2.17				
Roof		98625.208	1.86	Regular			
S5		123764.669	1.25	Regular	58617.27		
S4		133876.067	1.08	Regular	91759.27	1.46	Regular
S3		140130.532	1.05	Regular	118755.31	1.18	Regular
S2		143342.772	1.02	Regular	132590.42	1.08	Regular
S1		152545.426	1.06	Regular	139116.46	1.10	Regular
GF		573250.778	3.76	Regular	145339.58	3.94	Regular

Table 19: EQ-Y Direction

EQ-Y Direction							
Story		Stiffness Y2	$\frac{K_i}{K_{i+1}}$	check	$K_{mi} = avg(K_{i-1,i-2,i-3})$	$\frac{K_i}{K_{mi}}$	check
MR Top slab		23864.747	-	-			
WT		53459.251	2.24				
Roof		98516.885	1.84	Regular			
S5		123506.781	1.25	Regular	58613.63		
S4		133463.701	1.08	Regular	91827.64	1.45	Regular
S3		139641.984	1.05	Regular	118495.79	1.18	Regular
S2		143814.786	1.03	Regular	132204.16	1.09	Regular
S1		153019.588	1.06	Regular	138973.49	1.10	Regular
GF		557277.036	3.64	Regular	145492.12	3.83	Regular

4.13 **Torsional Irregularity**

Table 20: EQ+X Direction

			EQ+X Direction						
Story	Dx		Drifts		Ratio	Check	Ax	Eccentricity	
			Max drift	Avg drift				%	ABS
MR Top slab	14.224		31.326	29.248	1.071	Regular			
WT	14.224		30.485	28.407	1.073	Regular			
Roof	14.224		38.021	31.424	1.21	Irregular	1.0167	0.051	0.723
S5	14.224		31.352	25.469	1.231	Irregular	1.0523	0.053	0.748
S4	14.224		25.477	20.683	1.232	Irregular	1.0540	0.053	0.750
S3	14.224		18.431	15.067	1.223	Irregular	1.0387	0.052	0.739
S2	14.224		10.637	8.93	1.191	Regular			
S1	14.224								
GF	14.224								

Table 21: EQ-X Direction

EQ-X Direction						
Drifts		Ratio	Check	Ax	Eccentricity	
Max drift	Avg drift				%	ABS
31.291	27.821	1.125	Regular			
30.497	27.028	1.128	Regular			
43.523	32.852	1.325	Irregular	1.2192	0.061	0.867
36.009	26.702	1.349	Irregular	1.2638	0.063	0.899
29.364	21.71	1.353	Irregular	1.2713	0.064	0.904
21.279	15.807	1.346	Irregular	1.2581	0.063	0.895
12.253	9.322	1.314	Irregular	1.1990	0.060	0.853

Table 22: EQ+Y Direction

Story	Dy	Drifts		Ratio	Check	Ax	Eccentricity	
		Max drift	Avg drift				%	ABS
MR Top slab	15.494	28.799	28.067	1.026	Regular			
WT	15.494	28.255	27.528	1.026	Regular			
Roof	15.494	28.798	26.501	1.087	Regular			
S5	15.494	23.329	21.395	1.09	Regular			
S4	15.494	18.836	17.22	1.094	Regular			
S3	15.494	13.474	12.274	1.098	Regular			
S2	15.494	7.568	6.857	1.104	Regular			
S1	15.494							
GF	15.494							

Table 23: EQ-Y Direction

Drifts		Ratio	Check	Ax	Eccentricity	
Max drift	Avg drift				%	ABS
28.281	27.948	1.012	Regular			
27.74	27.402	1.012	Regular			
27.544	26.421	1.043	Regular			
22.273	21.33	1.044	Regular			
17.954	17.167	1.046	Regular			
12.808	12.235	1.047	Regular			
7.154	6.836	1.047	Regular			

4.14 Reinforcement Design

4.14.1 Column section A

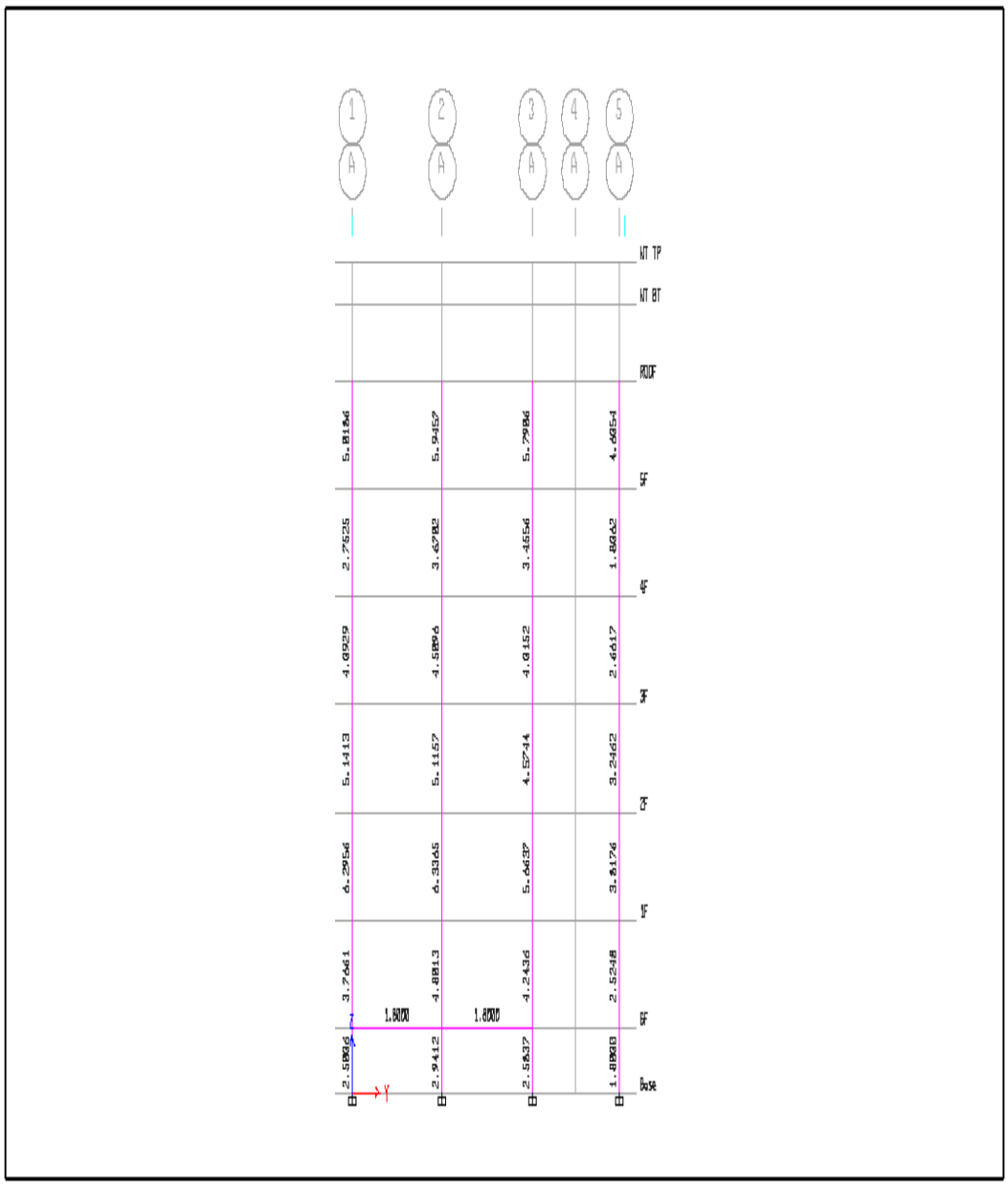


Figure 9: Reinforcement Result of Column- Section A

4.14.2 Column Section B

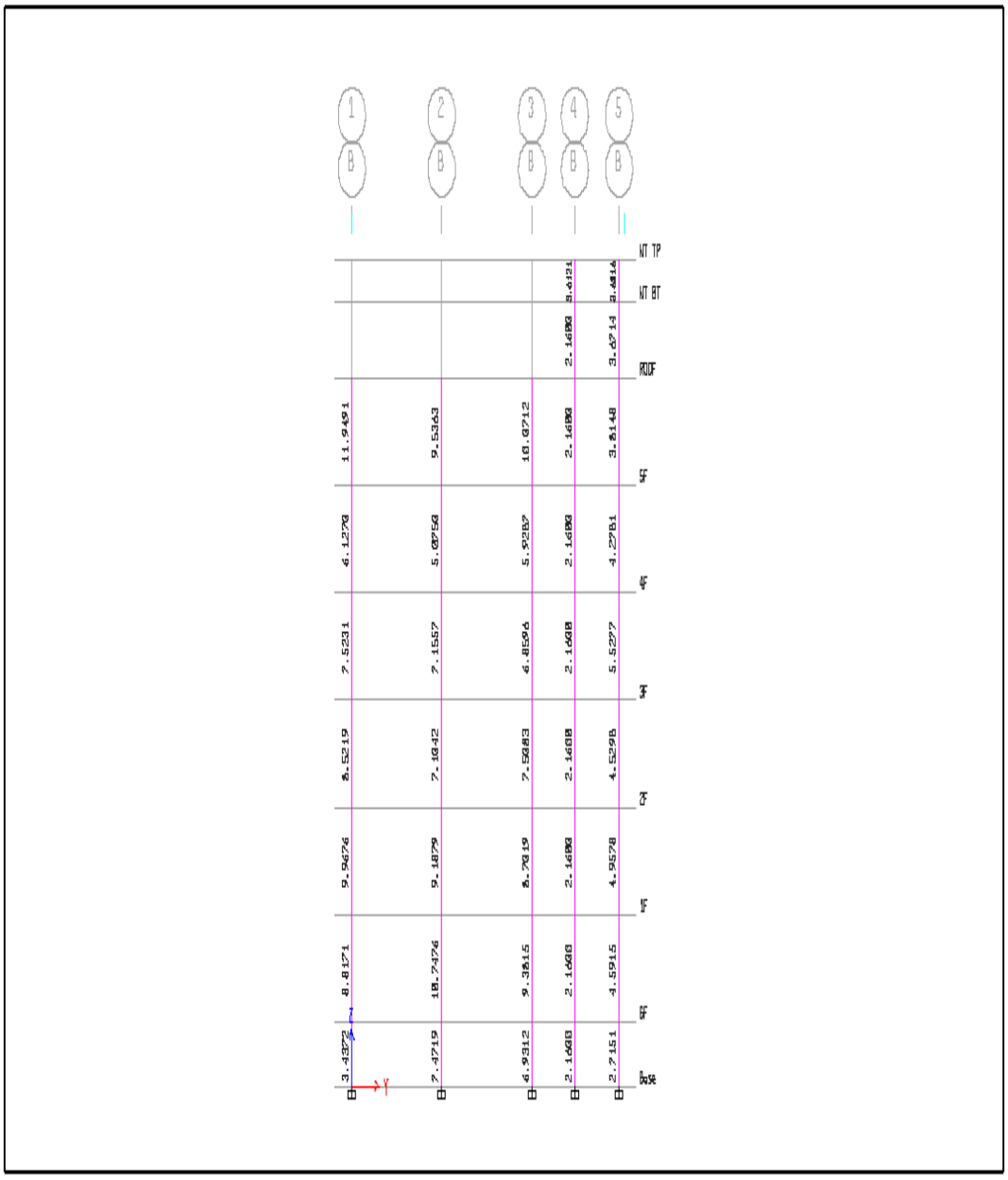


Figure 10: Reinforcement Result of Column- Section B

4.14.3 Column Section C

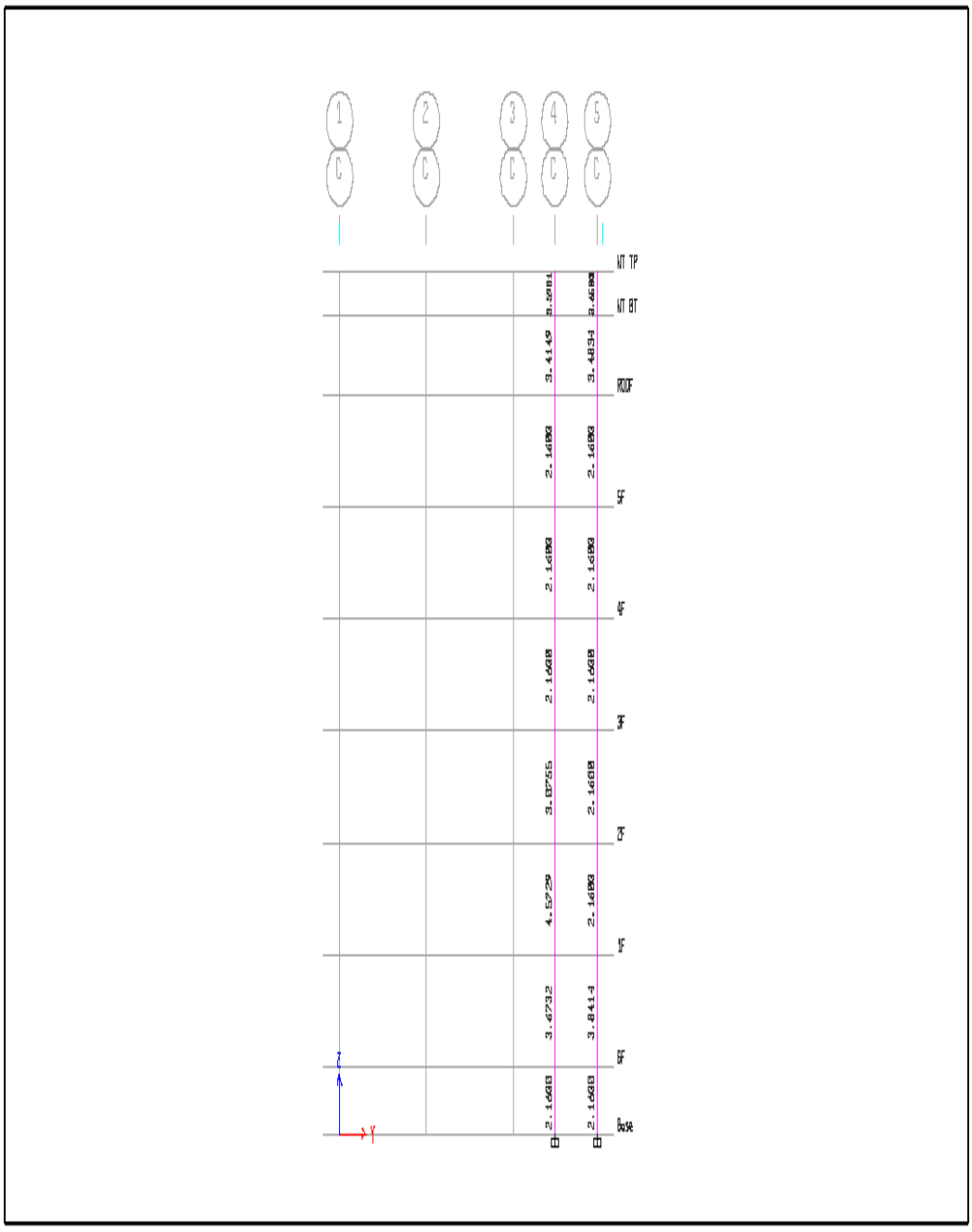


Figure 11: Reinforcement Result of Column- Section C

4.14.4 Column Section D

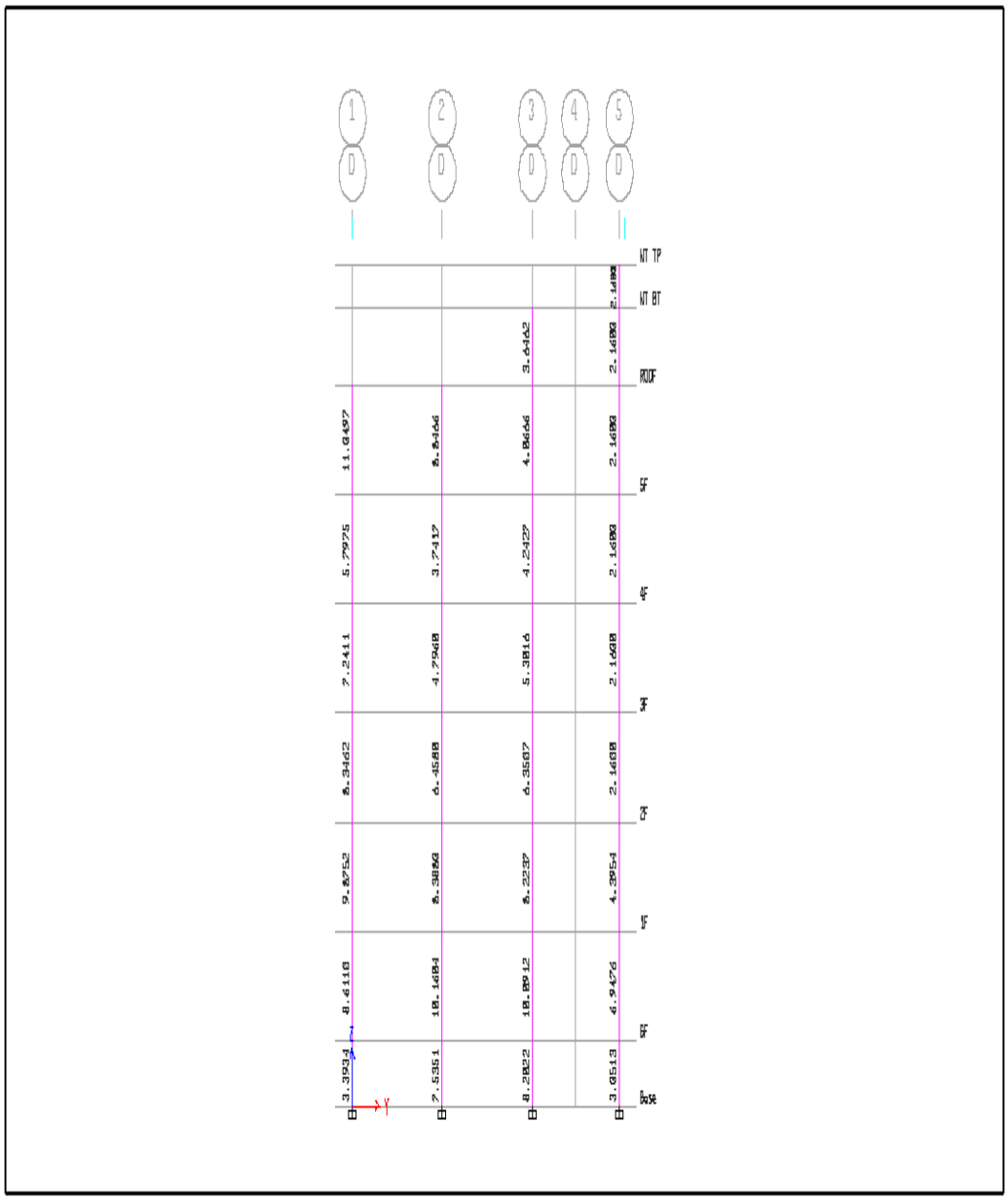


Figure 12: Reinforcement Result of Column- Section D

4.14.5 Column Secttion E

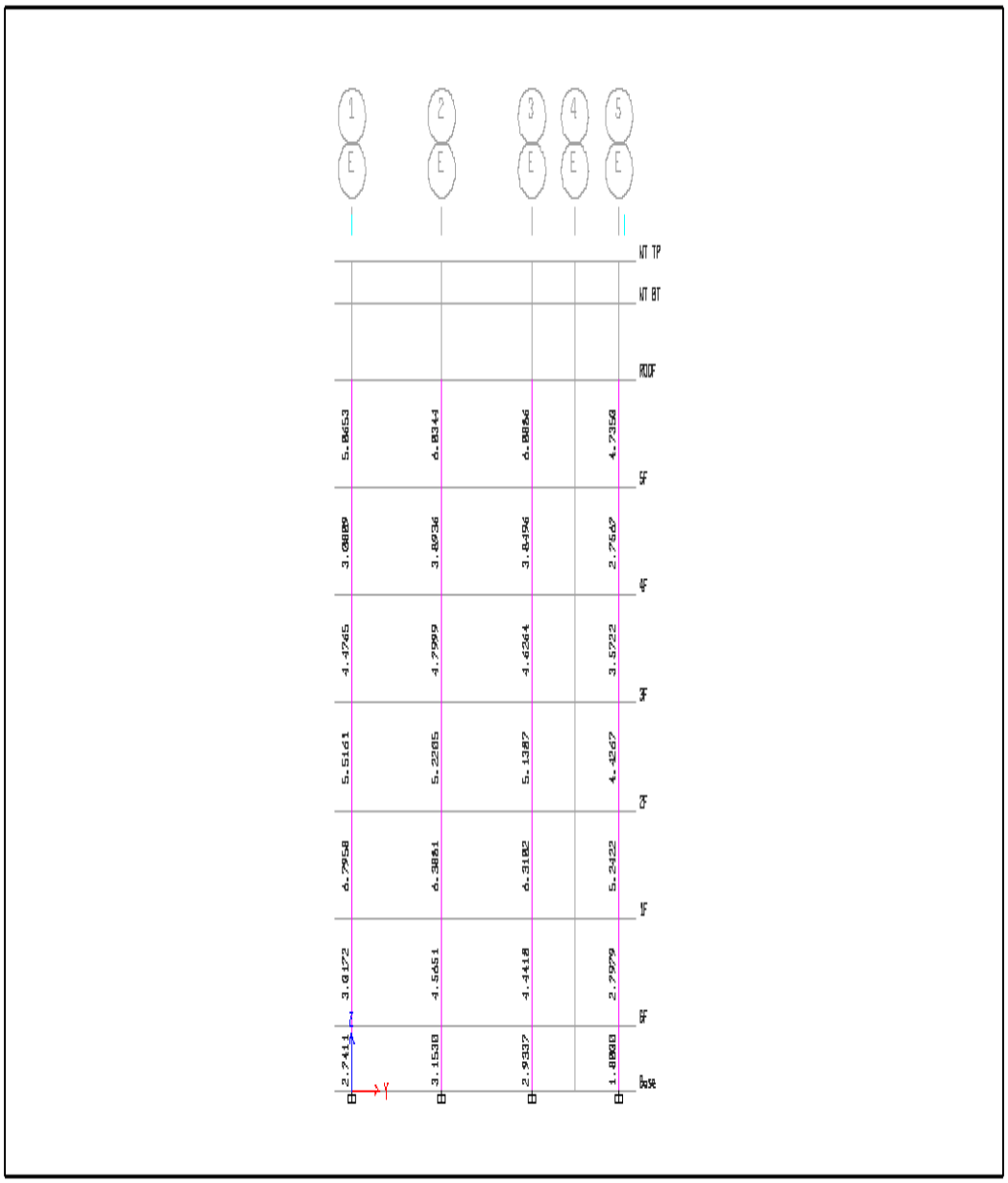


Figure 13 : Reinforcement Result of Column- Section E

4.14.6 Ground Floor

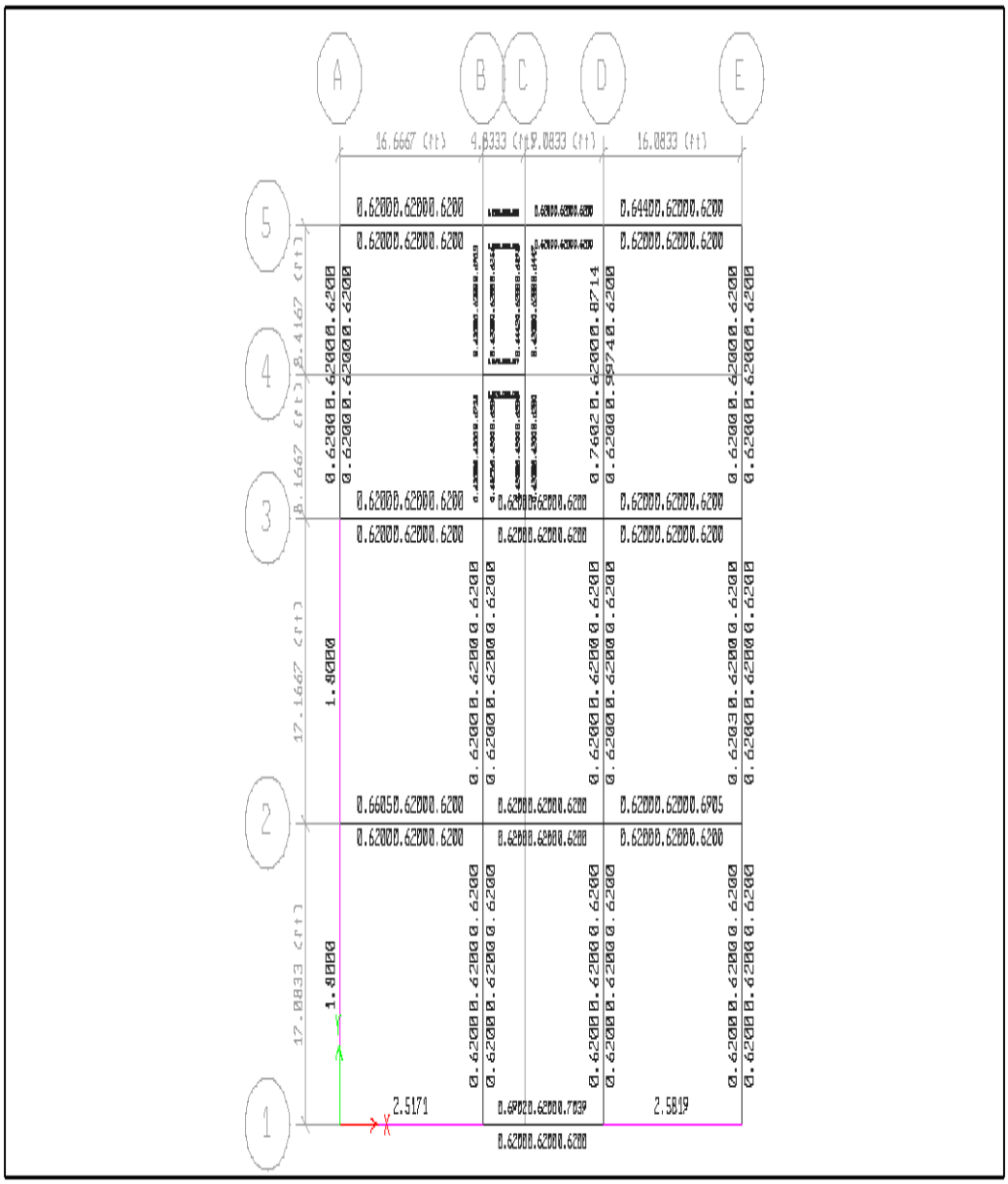


Figure 14: Reinforcement Result of Ground Floor.

4.14.7 1st Floor

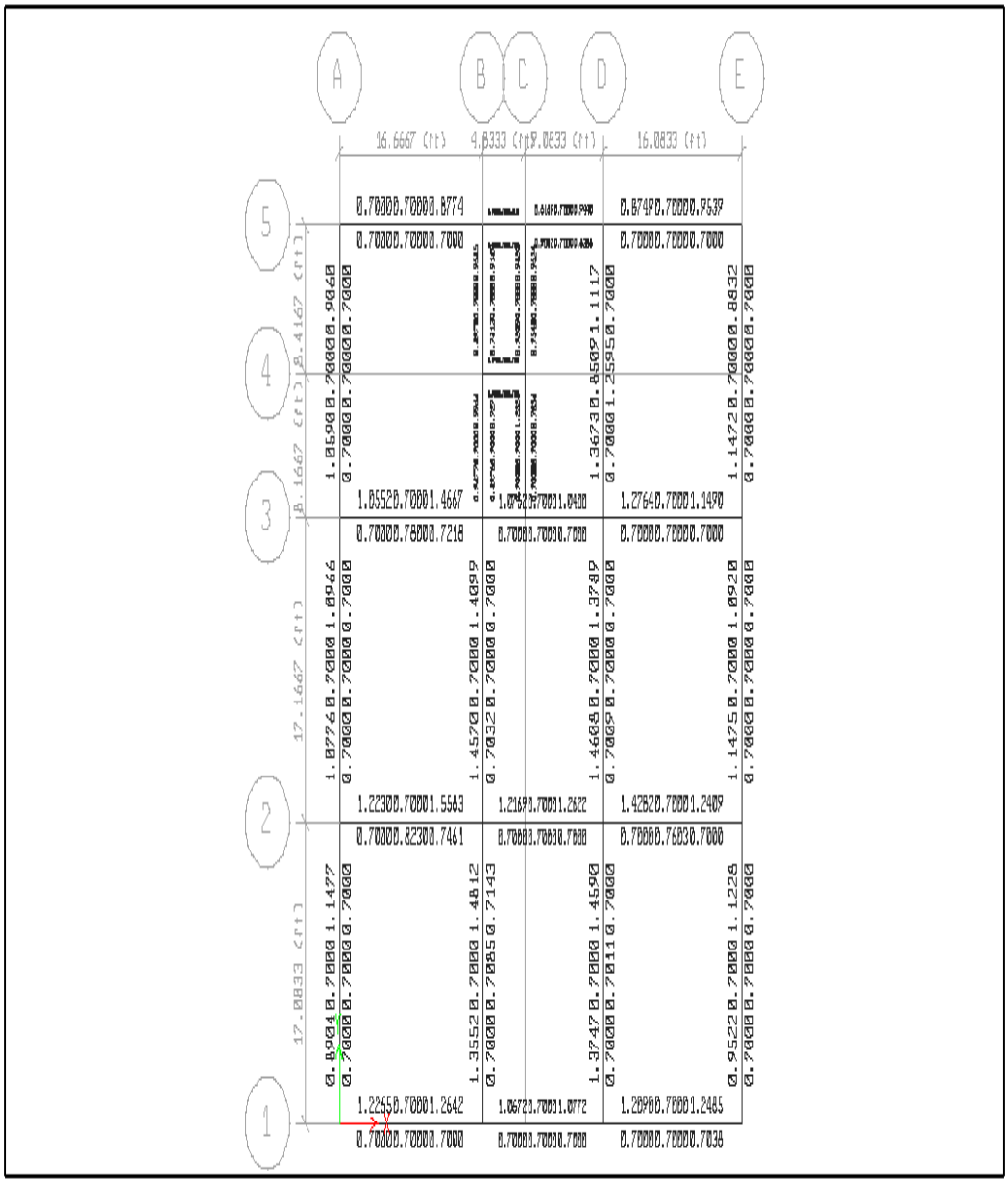


Figure 15: Reinforcement Result of 1st Floor.

4.14.1 2nd Floor

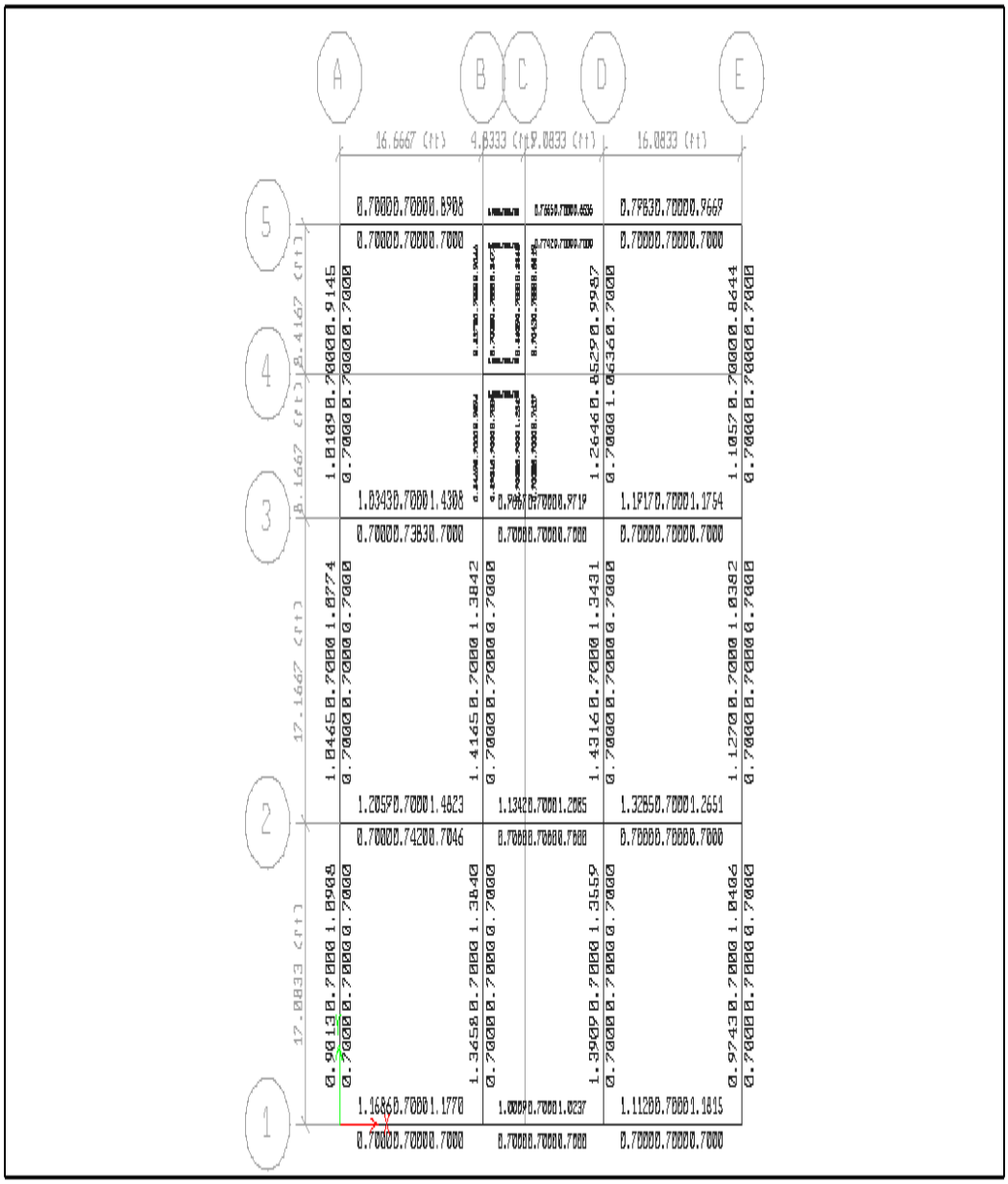


Figure 16: Reinforcement Result of 2nd Floor.

4.14.2 3rd Floor

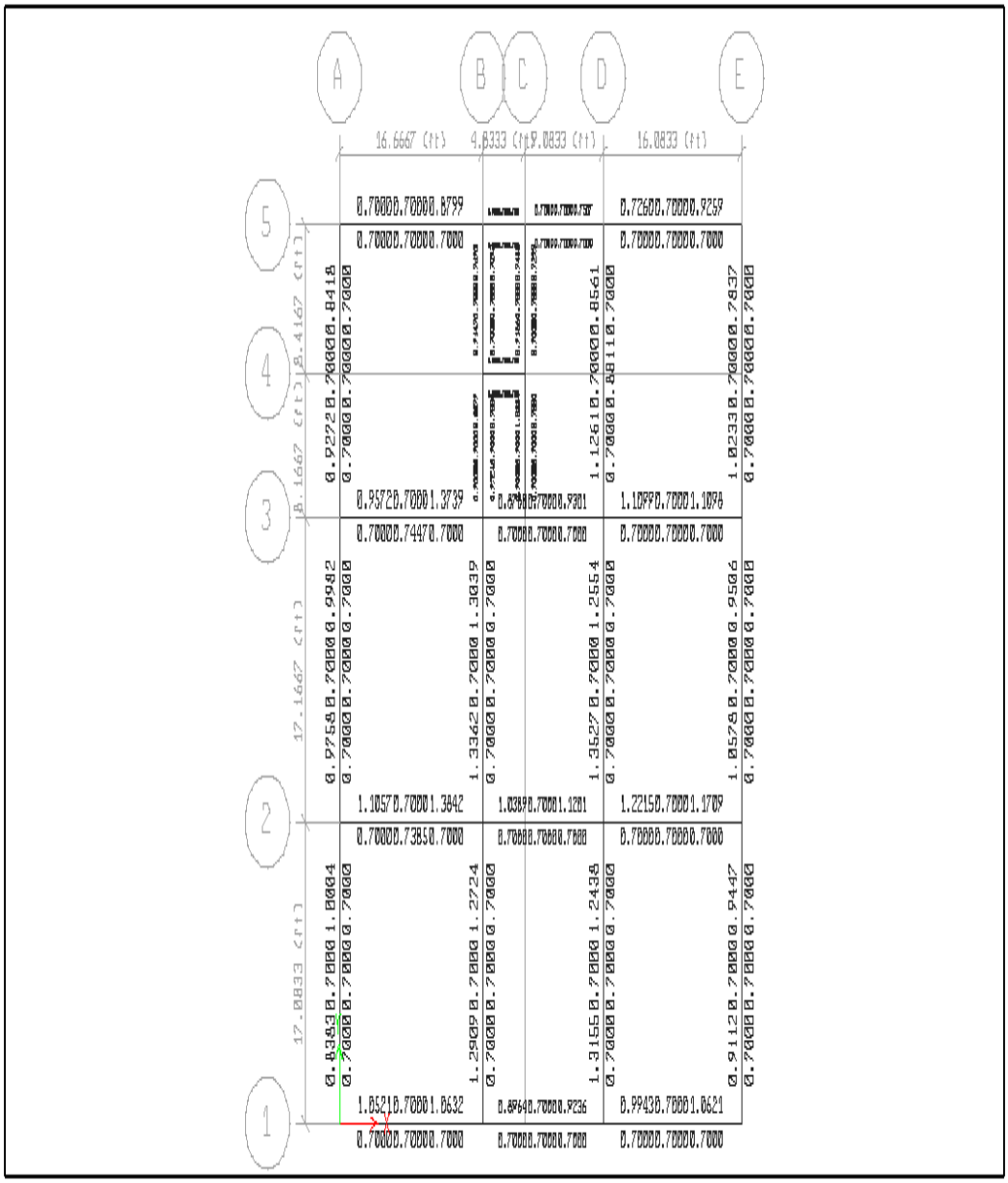


Figure 17: Reinforcement Result of 3rd Floor.

4.14.3 4th Floor

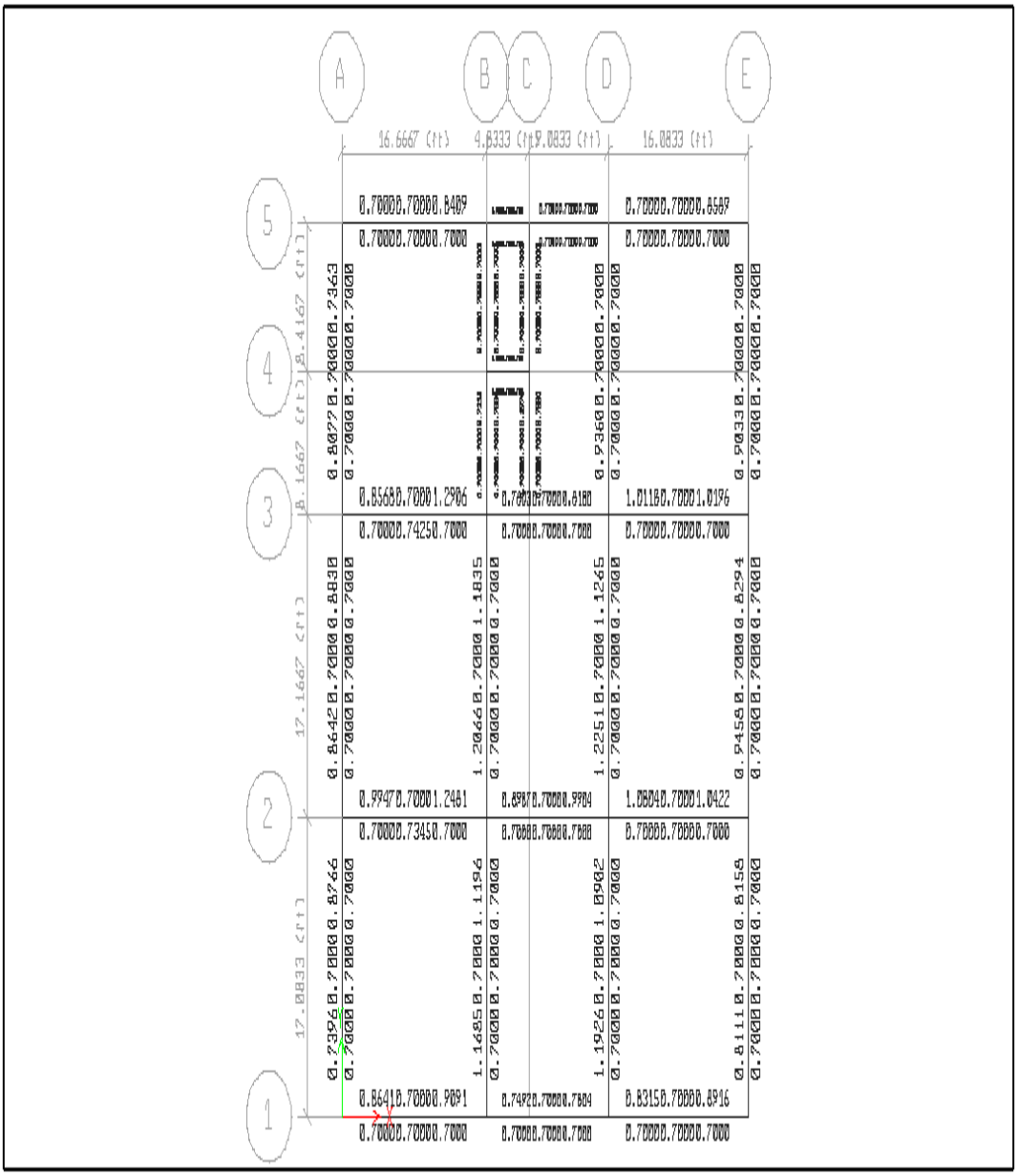


Figure 18: Reinforcement Result of 4th Floor.

4.14.4 5th Floor

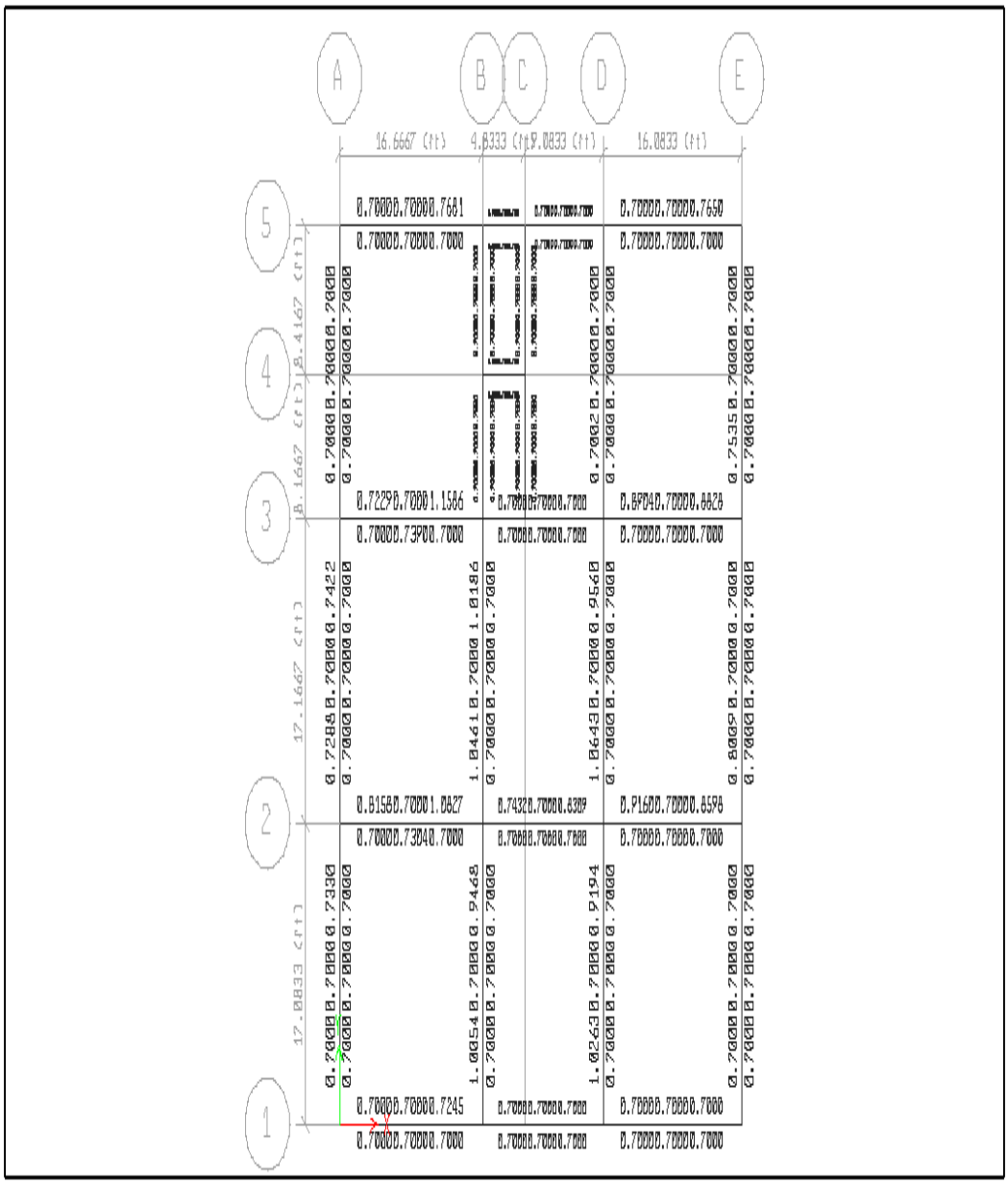


Figure 19: Reinforcement Result of 5th Floor.

4.14.5 Roof Top Floor

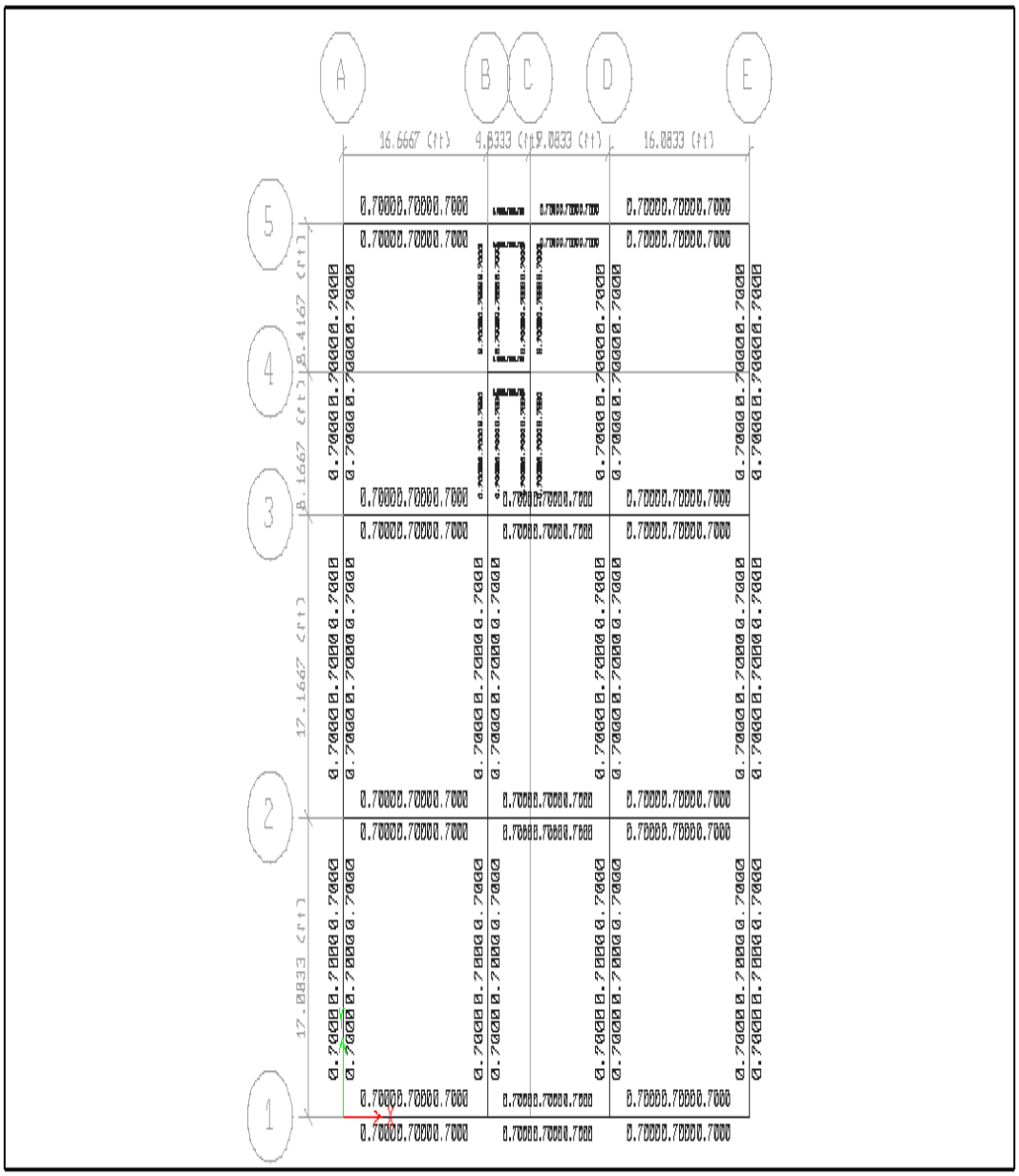


Figure 20: Reinforcement Result of Top Floor.

4.14.6 Lift Room

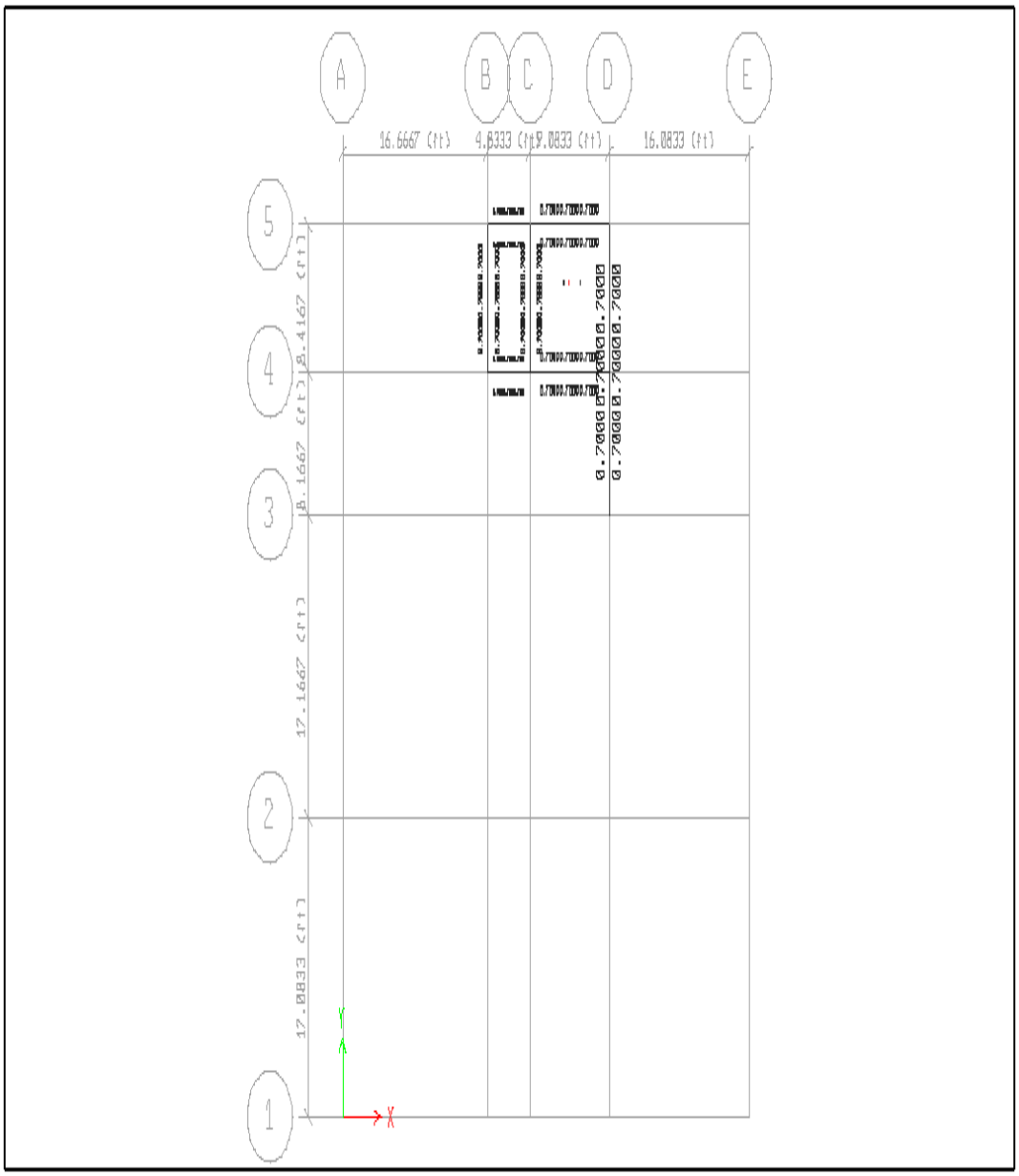


Figure 21: Reinforcement Result of Lift Room

4.14.7 Top Slab

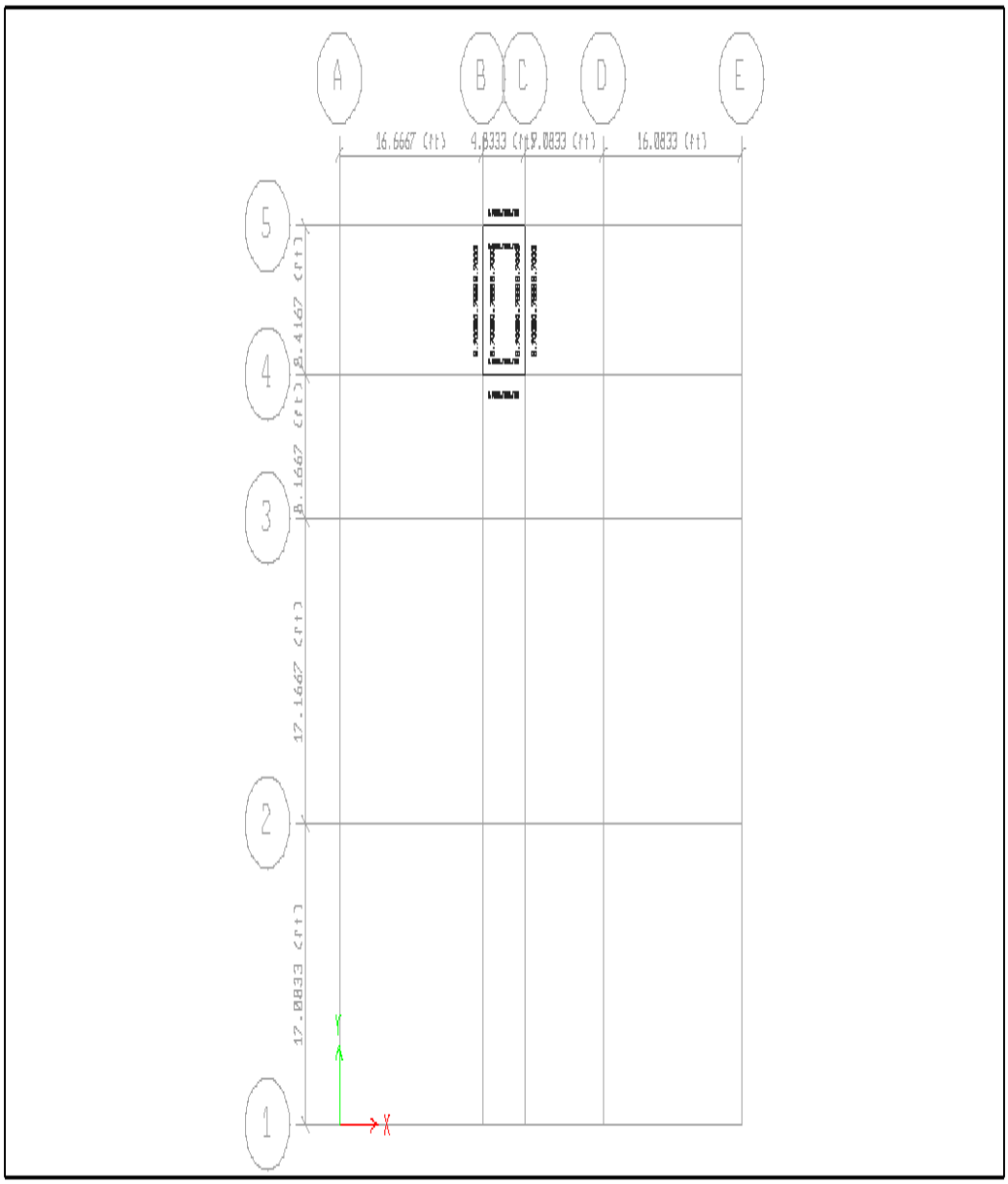


Figure 22: Top Slab

4.15 Steel Structure Design

4.15.1 Steel Structure

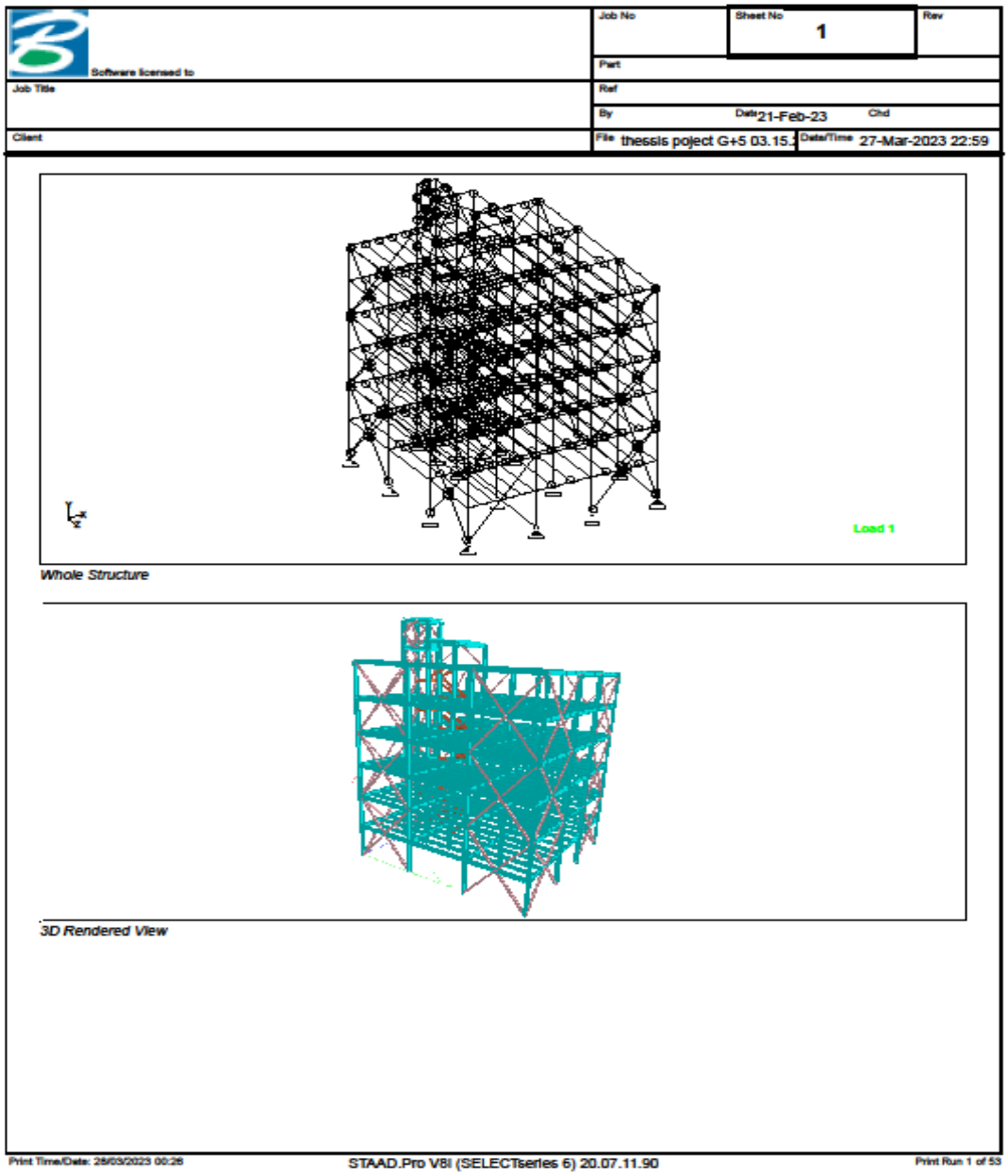


Figure 23: Model steel structure

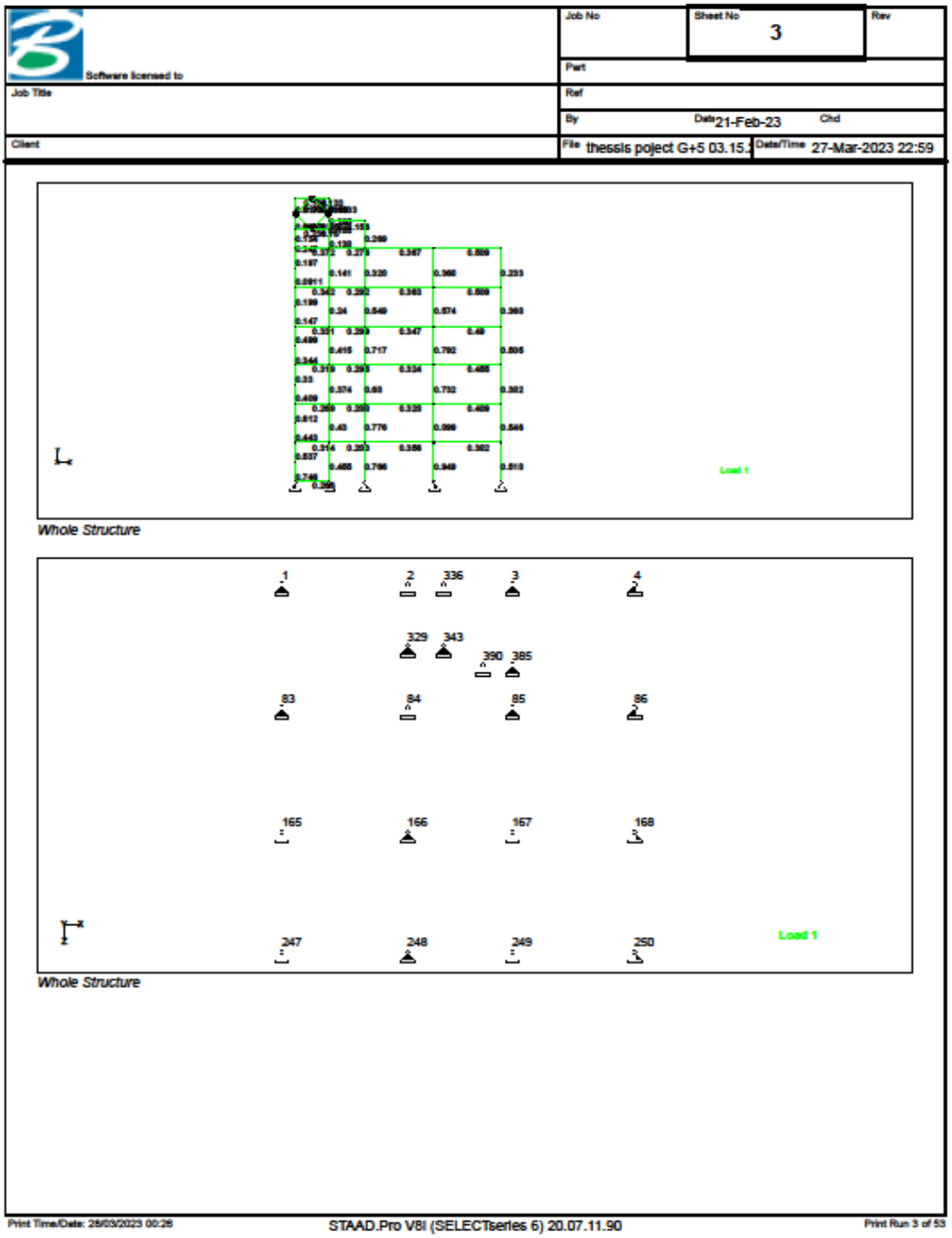
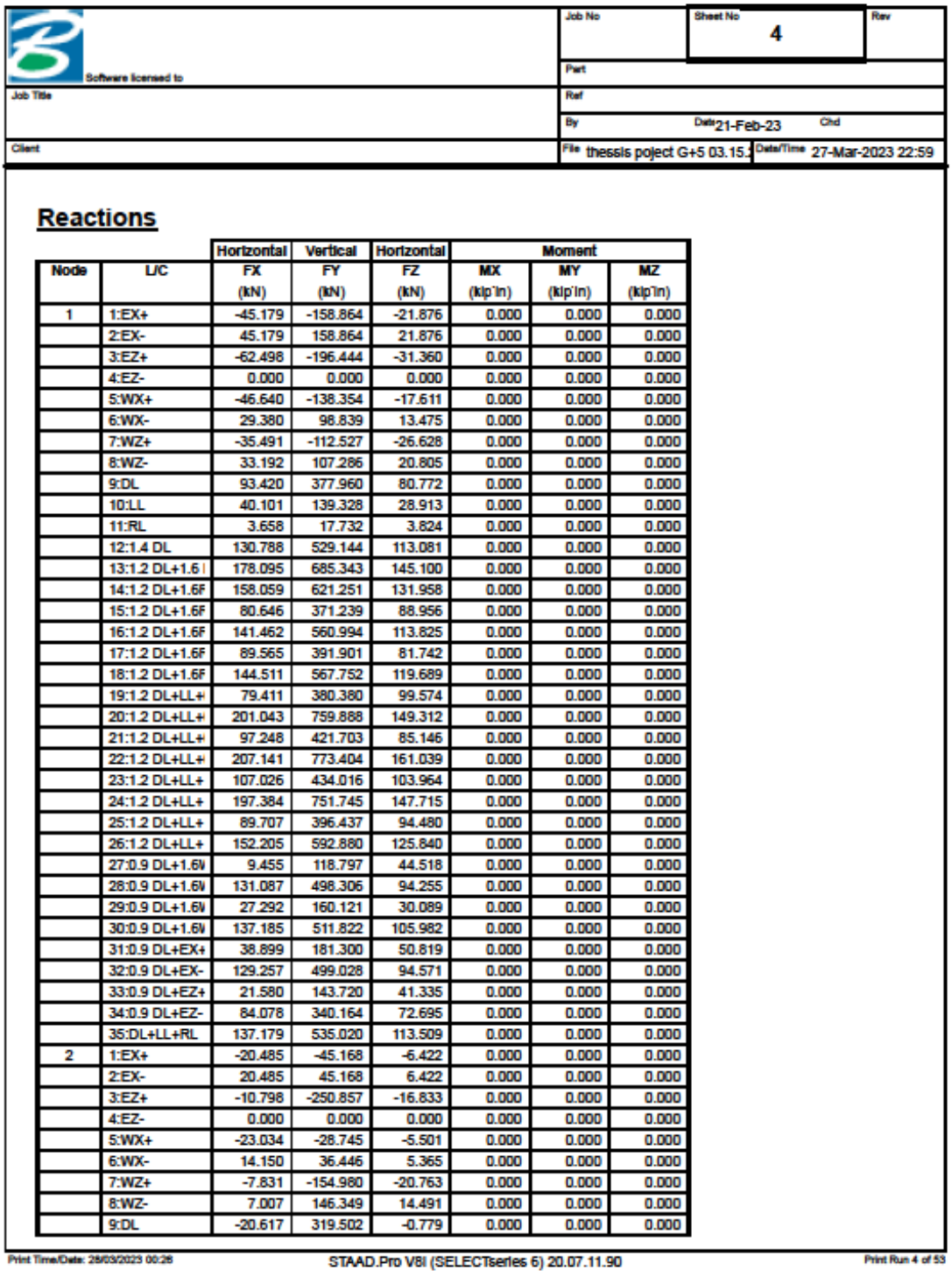


Figure 24: Support on Base



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Part

Job Title | Ref

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Client | File thessis poject G+5 03.15.1 | Date/Time 27-Mar-2023 22:59

Reactions

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
1	1:EX+	-45.179	-158.864	-21.876	0.000	0.000	0.000
	2:EX-	45.179	158.864	21.876	0.000	0.000	0.000
	3:EZ+	-62.498	-196.444	-31.360	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-46.640	-138.354	-17.611	0.000	0.000	0.000
	6:WX-	29.380	98.839	13.475	0.000	0.000	0.000
	7:WZ+	-35.491	-112.527	-26.628	0.000	0.000	0.000
	8:WZ-	33.192	107.286	20.805	0.000	0.000	0.000
	9:DL	93.420	377.960	80.772	0.000	0.000	0.000
	10:LL	40.101	139.328	28.913	0.000	0.000	0.000
	11:RL	3.658	17.732	3.824	0.000	0.000	0.000
	12:1.4 DL	130.788	529.144	113.081	0.000	0.000	0.000
	13:1.2 DL+1.6	178.095	685.343	145.100	0.000	0.000	0.000
	14:1.2 DL+1.6F	158.059	621.251	131.958	0.000	0.000	0.000
	15:1.2 DL+1.6F	80.646	371.239	88.956	0.000	0.000	0.000
	16:1.2 DL+1.6F	141.462	560.994	113.825	0.000	0.000	0.000
	17:1.2 DL+1.6F	89.565	391.901	81.742	0.000	0.000	0.000
	18:1.2 DL+1.6F	144.511	567.752	119.689	0.000	0.000	0.000
	19:1.2 DL+LL+	79.411	380.380	99.574	0.000	0.000	0.000
	20:1.2 DL+LL+	201.043	759.888	149.312	0.000	0.000	0.000
	21:1.2 DL+LL+	97.248	421.703	85.146	0.000	0.000	0.000
	22:1.2 DL+LL+	207.141	773.404	161.039	0.000	0.000	0.000
	23:1.2 DL+LL+	107.026	434.016	103.964	0.000	0.000	0.000
	24:1.2 DL+LL+	197.384	751.745	147.715	0.000	0.000	0.000
	25:1.2 DL+LL+	89.707	396.437	94.480	0.000	0.000	0.000
	26:1.2 DL+LL+	152.205	592.880	125.840	0.000	0.000	0.000
	27:0.9 DL+1.6W	9.455	118.797	44.518	0.000	0.000	0.000
	28:0.9 DL+1.6W	131.087	498.306	94.255	0.000	0.000	0.000
	29:0.9 DL+1.6W	27.292	160.121	30.089	0.000	0.000	0.000
	30:0.9 DL+1.6W	137.185	511.822	105.982	0.000	0.000	0.000
	31:0.9 DL+EX+	38.899	181.300	50.819	0.000	0.000	0.000
	32:0.9 DL+EX-	129.257	499.028	94.571	0.000	0.000	0.000
	33:0.9 DL+EZ+	21.580	143.720	41.335	0.000	0.000	0.000
	34:0.9 DL+EZ-	84.078	340.164	72.695	0.000	0.000	0.000
	35:DL+LL+RL	137.179	535.020	113.509	0.000	0.000	0.000
2	1:EX+	-20.485	-45.168	-6.422	0.000	0.000	0.000
	2:EX-	20.485	45.168	6.422	0.000	0.000	0.000
	3:EZ+	-10.798	-250.857	-16.833	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-23.034	-28.745	-5.501	0.000	0.000	0.000
	6:WX-	14.150	36.446	5.365	0.000	0.000	0.000
	7:WZ+	-7.831	-154.980	-20.763	0.000	0.000	0.000
	8:WZ-	7.007	146.349	14.491	0.000	0.000	0.000
	9:DL	-20.617	319.502	-0.779	0.000	0.000	0.000

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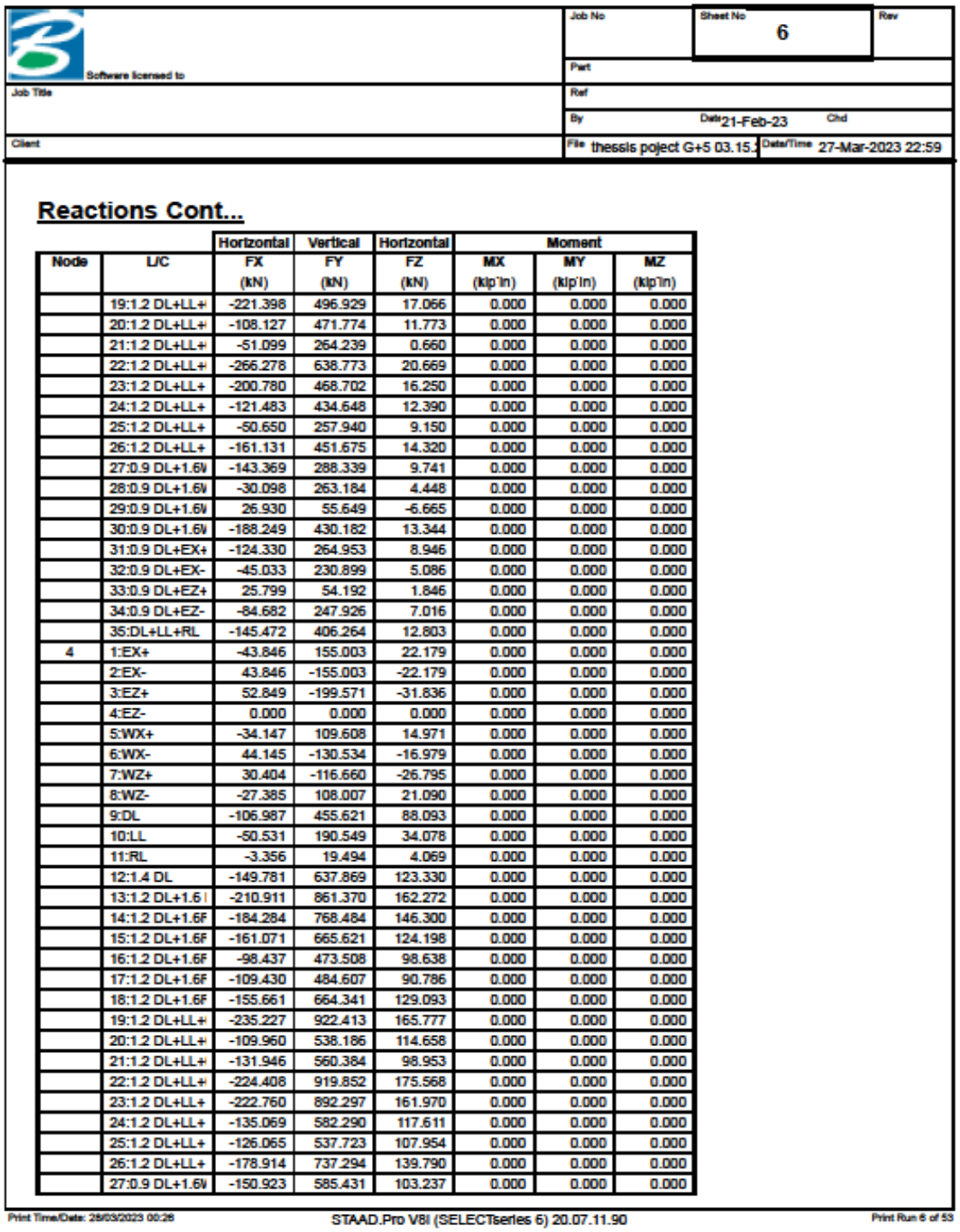
Figure 25: Load combination result



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Part

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By | Date 21-Feb-23 | Chd

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Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip-in)	MY (kip-in)	MZ (kip-in)
	19:1.2 DL+LL+	-221.398	496.929	17.066	0.000	0.000	0.000
	20:1.2 DL+LL+	-108.127	471.774	11.773	0.000	0.000	0.000
	21:1.2 DL+LL+	-51.099	264.239	0.660	0.000	0.000	0.000
	22:1.2 DL+LL+	-266.278	638.773	20.669	0.000	0.000	0.000
	23:1.2 DL+LL+	-200.780	468.702	16.250	0.000	0.000	0.000
	24:1.2 DL+LL+	-121.483	434.648	12.390	0.000	0.000	0.000
	25:1.2 DL+LL+	-50.650	257.940	9.150	0.000	0.000	0.000
	26:1.2 DL+LL+	-161.131	451.675	14.320	0.000	0.000	0.000
	27:0.9 DL+1.6W	-143.369	288.339	9.741	0.000	0.000	0.000
	28:0.9 DL+1.6W	-30.098	263.184	4.448	0.000	0.000	0.000
	29:0.9 DL+1.6W	26.930	55.649	-6.665	0.000	0.000	0.000
	30:0.9 DL+1.6W	-188.249	430.182	13.344	0.000	0.000	0.000
	31:0.9 DL+EX+	-124.330	264.953	8.946	0.000	0.000	0.000
	32:0.9 DL+EX-	-45.033	230.899	5.086	0.000	0.000	0.000
	33:0.9 DL+EZ+	25.799	54.192	1.846	0.000	0.000	0.000
	34:0.9 DL+EZ-	-84.682	247.926	7.016	0.000	0.000	0.000
	35:DL+LL+RL	-145.472	406.264	12.803	0.000	0.000	0.000
4	1:EX+	-43.846	155.003	22.179	0.000	0.000	0.000
	2:EX-	43.846	-155.003	-22.179	0.000	0.000	0.000
	3:EZ+	52.849	-199.571	-31.836	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-34.147	109.608	14.971	0.000	0.000	0.000
	6:WX-	44.145	-130.534	-16.979	0.000	0.000	0.000
	7:WZ+	30.404	-116.660	-26.795	0.000	0.000	0.000
	8:WZ-	-27.385	108.007	21.090	0.000	0.000	0.000
	9:DL	-106.987	455.621	88.093	0.000	0.000	0.000
	10:LL	-50.531	190.549	34.078	0.000	0.000	0.000
	11:RL	-3.356	19.494	4.069	0.000	0.000	0.000
	12:1.4 DL	-149.781	637.869	123.330	0.000	0.000	0.000
	13:1.2 DL+1.6	-210.911	861.370	162.272	0.000	0.000	0.000
	14:1.2 DL+1.6F	-184.284	768.484	146.300	0.000	0.000	0.000
	15:1.2 DL+1.6F	-161.071	665.621	124.198	0.000	0.000	0.000
	16:1.2 DL+1.6F	-98.437	473.508	98.638	0.000	0.000	0.000
	17:1.2 DL+1.6F	-109.430	484.607	90.786	0.000	0.000	0.000
	18:1.2 DL+1.6F	-155.661	664.341	129.093	0.000	0.000	0.000
	19:1.2 DL+LL+	-235.227	922.413	165.777	0.000	0.000	0.000
	20:1.2 DL+LL+	-109.960	538.186	114.658	0.000	0.000	0.000
	21:1.2 DL+LL+	-131.946	560.384	98.953	0.000	0.000	0.000
	22:1.2 DL+LL+	-224.408	919.852	175.568	0.000	0.000	0.000
	23:1.2 DL+LL+	-222.760	892.297	161.970	0.000	0.000	0.000
	24:1.2 DL+LL+	-135.069	582.290	117.611	0.000	0.000	0.000
	25:1.2 DL+LL+	-126.065	537.723	107.954	0.000	0.000	0.000
	26:1.2 DL+LL+	-178.914	737.294	139.790	0.000	0.000	0.000
	27:0.9 DL+1.6W	-150.923	585.431	103.237	0.000	0.000	0.000

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Figure 26: Load combination Reaction

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	28:0.9 DL+1.6W	-25.655	201.204	52.117	0.000	0.000	0.000
	29:0.9 DL+1.6W	-47.642	223.403	36.412	0.000	0.000	0.000
	30:0.9 DL+1.6W	-140.104	582.870	113.027	0.000	0.000	0.000
	31:0.9 DL+EX+	-140.134	565.062	101.463	0.000	0.000	0.000
	32:0.9 DL+EX-	-52.442	255.055	57.105	0.000	0.000	0.000
	33:0.9 DL+EZ+	-43.439	210.488	47.448	0.000	0.000	0.000
	34:0.9 DL+EZ-	-96.288	410.059	79.284	0.000	0.000	0.000
	35:DL+LL+RL	-160.873	665.663	126.240	0.000	0.000	0.000
83	1:EX+	-11.023	-76.126	15.320	0.000	0.000	0.000
	2:EX-	11.023	76.126	-15.320	0.000	0.000	0.000
	3:EZ+	0.293	126.562	-28.916	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-20.749	-54.352	11.298	0.000	0.000	0.000
	6:WX-	10.120	45.258	-8.482	0.000	0.000	0.000
	7:WZ+	0.236	73.138	-21.374	0.000	0.000	0.000
	8:WZ-	-0.425	-70.906	19.502	0.000	0.000	0.000
	9:DL	7.272	416.441	-53.636	0.000	0.000	0.000
	10:LL	3.313	152.871	-18.620	0.000	0.000	0.000
	11:RL	0.006	18.493	-2.669	0.000	0.000	0.000
	12:1.4 DL	10.181	583.018	-75.090	0.000	0.000	0.000
	13:1.2 DL+1.6	14.030	753.570	-95.490	0.000	0.000	0.000
	14:1.2 DL+1.6F	12.050	682.189	-87.254	0.000	0.000	0.000
	15:1.2 DL+1.6F	-7.862	485.836	-59.595	0.000	0.000	0.000
	16:1.2 DL+1.6F	16.833	565.524	-75.419	0.000	0.000	0.000
	17:1.2 DL+1.6F	8.926	587.828	-85.733	0.000	0.000	0.000
	18:1.2 DL+1.6F	8.397	472.593	-53.032	0.000	0.000	0.000
	19:1.2 DL+LL+	-21.156	574.883	-66.240	0.000	0.000	0.000
	20:1.2 DL+LL+	28.235	734.260	-97.889	0.000	0.000	0.000
	21:1.2 DL+LL+	12.421	778.869	-118.516	0.000	0.000	0.000
	22:1.2 DL+LL+	11.363	548.397	-53.114	0.000	0.000	0.000
	23:1.2 DL+LL+	1.017	576.474	-67.662	0.000	0.000	0.000
	24:1.2 DL+LL+	23.062	728.727	-98.303	0.000	0.000	0.000
	25:1.2 DL+LL+	12.332	779.163	-111.899	0.000	0.000	0.000
	26:1.2 DL+LL+	12.040	652.601	-82.983	0.000	0.000	0.000
	27:0.9 DL+1.6W	-26.654	287.833	-30.195	0.000	0.000	0.000
	28:0.9 DL+1.6W	22.737	447.210	-61.844	0.000	0.000	0.000
	29:0.9 DL+1.6W	6.923	491.819	-82.471	0.000	0.000	0.000
	30:0.9 DL+1.6W	5.866	261.347	-17.068	0.000	0.000	0.000
	31:0.9 DL+EX+	-4.478	298.671	-32.952	0.000	0.000	0.000
	32:0.9 DL+EX-	17.568	450.924	-63.592	0.000	0.000	0.000
	33:0.9 DL+EZ+	6.838	501.359	-77.188	0.000	0.000	0.000
	34:0.9 DL+EZ-	6.545	374.797	-48.272	0.000	0.000	0.000
	35:DL+LL+RL	10.591	587.805	-74.925	0.000	0.000	0.000
84	1:EX+	-25.476	-17.147	-1.571	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	2:EX-	25.476	17.147	1.571	0.000	0.000	0.000
	3:EZ+	2.877	130.055	-4.819	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-24.149	-12.576	-1.337	0.000	0.000	0.000
	6:WX-	23.274	10.350	1.317	0.000	0.000	0.000
	7:WZ+	2.147	75.774	-3.996	0.000	0.000	0.000
	8:WZ-	-2.546	-71.519	3.964	0.000	0.000	0.000
	9:DL	-5.020	798.862	1.078	0.000	0.000	0.000
	10:LL	-2.071	322.543	0.445	0.000	0.000	0.000
	11:RL	0.003	37.355	0.016	0.000	0.000	0.000
	12:1.4 DL	-7.028	1.12E+3	1.510	0.000	0.000	0.000
	13:1.2 DL+1.6 I	-9.336	1.49E+3	2.015	0.000	0.000	0.000
	14:1.2 DL+1.6F	-8.090	1.34E+3	1.765	0.000	0.000	0.000
	15:1.2 DL+1.6F	-25.339	1.01E+3	0.250	0.000	0.000	0.000
	16:1.2 DL+1.6F	12.600	1.03E+3	2.373	0.000	0.000	0.000
	17:1.2 DL+1.6F	-4.302	1.08E+3	-1.877	0.000	0.000	0.000
	18:1.2 DL+1.6F	-8.056	961.187	4.491	0.000	0.000	0.000
	19:1.2 DL+LL+	-46.732	1.28E+3	-0.391	0.000	0.000	0.000
	20:1.2 DL+LL+	29.145	1.32E+3	3.854	0.000	0.000	0.000
	21:1.2 DL+LL+	-4.658	1.42E+3	-4.646	0.000	0.000	0.000
	22:1.2 DL+LL+	-12.167	1.19E+3	8.090	0.000	0.000	0.000
	23:1.2 DL+LL+	-33.571	1.26E+3	0.169	0.000	0.000	0.000
	24:1.2 DL+LL+	17.381	1.3E+3	3.311	0.000	0.000	0.000
	25:1.2 DL+LL+	-5.218	1.41E+3	-3.079	0.000	0.000	0.000
	26:1.2 DL+LL+	-8.095	1.28E+3	1.740	0.000	0.000	0.000
	27:0.9 DL+1.6W	-43.157	698.853	-1.168	0.000	0.000	0.000
	28:0.9 DL+1.6W	32.720	735.536	3.077	0.000	0.000	0.000
	29:0.9 DL+1.6W	-1.083	840.214	-5.422	0.000	0.000	0.000
	30:0.9 DL+1.6W	-8.592	604.545	7.313	0.000	0.000	0.000
	31:0.9 DL+EX+	-29.994	701.828	-0.600	0.000	0.000	0.000
	32:0.9 DL+EX-	20.958	736.123	2.542	0.000	0.000	0.000
	33:0.9 DL+EZ+	-1.641	849.030	-3.848	0.000	0.000	0.000
	34:0.9 DL+EZ-	-4.518	718.976	0.971	0.000	0.000	0.000
	35:DL+LL+RL	-7.088	1.16E+3	1.540	0.000	0.000	0.000
85	1:EX+	-25.467	-3.974	2.803	0.000	0.000	0.000
	2:EX-	25.467	3.974	-2.803	0.000	0.000	0.000
	3:EZ+	-1.423	192.129	-8.639	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-23.999	-0.065	2.394	0.000	0.000	0.000
	6:WX-	23.393	3.369	-2.446	0.000	0.000	0.000
	7:WZ+	-1.030	114.264	-8.316	0.000	0.000	0.000
	8:WZ-	0.558	-102.571	6.738	0.000	0.000	0.000
	9:DL	3.791	942.554	-0.488	0.000	0.000	0.000
	10:LL	1.500	421.466	-0.482	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	3:EZ+	-0.621	-24.640	-6.734	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-30.802	20.205	1.973	0.000	0.000	0.000
	6:WX-	30.697	-20.384	-1.956	0.000	0.000	0.000
	7:WZ+	-0.479	-13.055	-5.406	0.000	0.000	0.000
	8:WZ-	0.353	12.174	5.539	0.000	0.000	0.000
	9:DL	2.883	930.447	0.228	0.000	0.000	0.000
	10:LL	1.321	350.596	0.182	0.000	0.000	0.000
	11:RL	-0.014	47.372	-0.002	0.000	0.000	0.000
	12:1.4 DL	4.036	1.3E+3	0.319	0.000	0.000	0.000
	13:1.2 DL+1.6	5.566	1.7E+3	0.563	0.000	0.000	0.000
	14:1.2 DL+1.6F	4.758	1.54E+3	0.452	0.000	0.000	0.000
	15:1.2 DL+1.6F	-21.204	1.21E+3	1.849	0.000	0.000	0.000
	16:1.2 DL+1.6F	27.995	1.18E+3	-1.294	0.000	0.000	0.000
	17:1.2 DL+1.6F	3.054	1.18E+3	-4.054	0.000	0.000	0.000
	18:1.2 DL+1.6F	3.720	1.2E+3	4.702	0.000	0.000	0.000
	19:1.2 DL+LL+	-44.510	1.52E+3	3.611	0.000	0.000	0.000
	20:1.2 DL+LL+	53.888	1.46E+3	-2.675	0.000	0.000	0.000
	21:1.2 DL+LL+	4.007	1.47E+3	-8.195	0.000	0.000	0.000
	22:1.2 DL+LL+	5.339	1.51E+3	9.316	0.000	0.000	0.000
	23:1.2 DL+LL+	-30.807	1.5E+3	2.672	0.000	0.000	0.000
	24:1.2 DL+LL+	40.368	1.43E+3	-1.763	0.000	0.000	0.000
	25:1.2 DL+LL+	4.159	1.44E+3	-6.279	0.000	0.000	0.000
	26:1.2 DL+LL+	4.781	1.47E+3	0.455	0.000	0.000	0.000
	27:0.9 DL+1.6W	-46.689	869.730	3.361	0.000	0.000	0.000
	28:0.9 DL+1.6W	51.710	804.787	-2.924	0.000	0.000	0.000
	29:0.9 DL+1.6W	1.828	816.514	-8.444	0.000	0.000	0.000
	30:0.9 DL+1.6W	3.160	856.880	9.067	0.000	0.000	0.000
	31:0.9 DL+EX+	-32.993	870.149	2.422	0.000	0.000	0.000
	32:0.9 DL+EX-	38.183	804.655	-2.013	0.000	0.000	0.000
	33:0.9 DL+EZ+	1.974	812.762	-6.529	0.000	0.000	0.000
	34:0.9 DL+EZ-	2.595	837.402	0.205	0.000	0.000	0.000
	35:DL+LL+RL	4.190	1.33E+3	0.408	0.000	0.000	0.000
168	1:EX+	-15.517	131.647	25.291	0.000	0.000	0.000
	2:EX-	15.517	-131.647	-25.291	0.000	0.000	0.000
	3:EZ+	-0.340	-143.263	-32.981	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-13.486	80.848	14.977	0.000	0.000	0.000
	6:WX-	23.534	-83.023	-14.384	0.000	0.000	0.000
	7:WZ+	-0.247	-81.031	-21.538	0.000	0.000	0.000
	8:WZ-	0.192	82.313	23.302	0.000	0.000	0.000
	9:DL	-6.668	416.985	60.511	0.000	0.000	0.000
	10:LL	-3.050	156.046	21.557	0.000	0.000	0.000
	11:RL	-0.012	18.939	3.132	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	12:1.4 DL	-9.335	583.779	84.716	0.000	0.000	0.000
	13:1.2 DL+1.6	-12.887	759.525	108.670	0.000	0.000	0.000
	14:1.2 DL+1.6F	-11.071	686.730	99.181	0.000	0.000	0.000
	15:1.2 DL+1.6F	-18.810	595.363	89.606	0.000	0.000	0.000
	16:1.2 DL+1.6F	10.806	464.266	66.117	0.000	0.000	0.000
	17:1.2 DL+1.6F	-8.219	465.859	60.394	0.000	0.000	0.000
	18:1.2 DL+1.6F	-7.868	596.535	96.266	0.000	0.000	0.000
	19:1.2 DL+LL+	-32.634	795.254	119.700	0.000	0.000	0.000
	20:1.2 DL+LL+	26.597	533.060	72.722	0.000	0.000	0.000
	21:1.2 DL+LL+	-11.453	536.248	61.275	0.000	0.000	0.000
	22:1.2 DL+LL+	-10.750	797.598	133.019	0.000	0.000	0.000
	23:1.2 DL+LL+	-26.568	788.075	119.461	0.000	0.000	0.000
	24:1.2 DL+LL+	4.466	524.781	68.879	0.000	0.000	0.000
	25:1.2 DL+LL+	-11.391	513.165	61.189	0.000	0.000	0.000
	26:1.2 DL+LL+	-11.051	656.428	94.170	0.000	0.000	0.000
	27:0.9 DL+1.6W	-27.578	504.644	78.424	0.000	0.000	0.000
	28:0.9 DL+1.6W	31.653	242.450	31.446	0.000	0.000	0.000
	29:0.9 DL+1.6W	-6.397	245.637	19.999	0.000	0.000	0.000
	30:0.9 DL+1.6W	-5.694	506.988	91.743	0.000	0.000	0.000
	31:0.9 DL+EX+	-21.518	506.934	79.751	0.000	0.000	0.000
	32:0.9 DL+EX-	9.516	243.640	29.169	0.000	0.000	0.000
	33:0.9 DL+EZ+	-6.341	232.023	21.479	0.000	0.000	0.000
	34:0.9 DL+EZ-	-6.001	375.287	54.460	0.000	0.000	0.000
	35:DL+LL+RL	-9.730	591.969	85.200	0.000	0.000	0.000
247	1:EX+	-29.708	-123.059	19.271	0.000	0.000	0.000
	2:EX-	29.708	123.059	-19.271	0.000	0.000	0.000
	3:EZ+	16.452	119.459	-26.990	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-27.520	-74.009	11.711	0.000	0.000	0.000
	6:WX-	21.192	72.672	-10.714	0.000	0.000	0.000
	7:WZ+	8.750	68.063	-18.941	0.000	0.000	0.000
	8:WZ-	-8.635	-68.977	24.534	0.000	0.000	0.000
	9:DL	95.563	455.376	-89.754	0.000	0.000	0.000
	10:LL	35.125	163.362	-32.488	0.000	0.000	0.000
	11:RL	4.486	23.403	-4.424	0.000	0.000	0.000
	12:1.4 DL	133.787	637.527	-125.656	0.000	0.000	0.000
	13:1.2 DL+1.6	173.117	819.532	-161.898	0.000	0.000	0.000
	14:1.2 DL+1.6F	156.977	747.259	-147.271	0.000	0.000	0.000
	15:1.2 DL+1.6F	99.836	524.689	-105.414	0.000	0.000	0.000
	16:1.2 DL+1.6F	138.805	642.034	-123.354	0.000	0.000	0.000
	17:1.2 DL+1.6F	128.852	638.347	-129.935	0.000	0.000	0.000
	18:1.2 DL+1.6F	114.944	528.715	-95.156	0.000	0.000	0.000
	19:1.2 DL+LL+	108.011	603.100	-123.667	0.000	0.000	0.000
	20:1.2 DL+LL+	185.949	837.790	-159.547	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	21:1.2 DL+LL+I	166.042	830.416	-172.710	0.000	0.000	0.000
	22:1.2 DL+LL+I	138.226	611.152	-103.150	0.000	0.000	0.000
	23:1.2 DL+LL+	120.092	586.755	-120.922	0.000	0.000	0.000
	24:1.2 DL+LL+	179.507	832.872	-159.463	0.000	0.000	0.000
	25:1.2 DL+LL+	166.252	829.272	-167.183	0.000	0.000	0.000
	26:1.2 DL+LL+	149.800	709.813	-140.193	0.000	0.000	0.000
	27:0.9 DL+1.6W	41.974	291.423	-62.041	0.000	0.000	0.000
	28:0.9 DL+1.6W	119.913	526.114	-97.921	0.000	0.000	0.000
	29:0.9 DL+1.6W	100.006	518.739	-111.084	0.000	0.000	0.000
	30:0.9 DL+1.6W	72.190	299.475	-41.524	0.000	0.000	0.000
	31:0.9 DL+EX+	56.299	286.780	-61.508	0.000	0.000	0.000
	32:0.9 DL+EX-	115.714	532.897	-100.049	0.000	0.000	0.000
	33:0.9 DL+EZ+	102.459	529.297	-107.768	0.000	0.000	0.000
	34:0.9 DL+EZ-	86.006	409.839	-80.779	0.000	0.000	0.000
	35:DL+LL+RL	135.173	642.142	-126.666	0.000	0.000	0.000
248	1:EX+	-36.382	140.976	-1.646	0.000	0.000	0.000
	2:EX-	36.382	-140.976	1.646	0.000	0.000	0.000
	3:EZ+	-19.826	80.574	-3.623	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-29.617	93.585	-1.486	0.000	0.000	0.000
	6:WX-	25.564	-87.333	1.459	0.000	0.000	0.000
	7:WZ+	-10.256	43.109	-3.997	0.000	0.000	0.000
	8:WZ-	10.245	-42.277	13.149	0.000	0.000	0.000
	9:DL	-75.809	430.078	-2.339	0.000	0.000	0.000
	10:LL	-27.289	157.230	-1.073	0.000	0.000	0.000
	11:RL	-3.746	20.513	-0.012	0.000	0.000	0.000
	12:1.4 DL	-106.133	602.109	-3.275	0.000	0.000	0.000
	13:1.2 DL+1.6 I	-136.506	777.919	-4.530	0.000	0.000	0.000
	14:1.2 DL+1.6F	-124.253	706.145	-3.899	0.000	0.000	0.000
	15:1.2 DL+1.6F	-120.658	623.784	-4.014	0.000	0.000	0.000
	16:1.2 DL+1.6F	-76.513	479.049	-1.658	0.000	0.000	0.000
	17:1.2 DL+1.6F	-105.169	583.403	-6.024	0.000	0.000	0.000
	18:1.2 DL+1.6F	-88.768	515.094	7.693	0.000	0.000	0.000
	19:1.2 DL+LL+I	-167.520	833.317	-6.263	0.000	0.000	0.000
	20:1.2 DL+LL+I	-79.230	543.847	-1.551	0.000	0.000	0.000
	21:1.2 DL+LL+I	-136.543	752.555	-10.282	0.000	0.000	0.000
	22:1.2 DL+LL+I	-103.741	615.938	17.152	0.000	0.000	0.000
	23:1.2 DL+LL+	-154.642	814.300	-5.526	0.000	0.000	0.000
	24:1.2 DL+LL+	-81.878	532.348	-2.235	0.000	0.000	0.000
	25:1.2 DL+LL+	-138.086	753.898	-7.503	0.000	0.000	0.000
	26:1.2 DL+LL+	-118.260	673.324	-3.880	0.000	0.000	0.000
	27:0.9 DL+1.6W	-115.616	536.807	-4.482	0.000	0.000	0.000
	28:0.9 DL+1.6W	-27.325	247.337	0.229	0.000	0.000	0.000
	29:0.9 DL+1.6W	-84.638	456.045	-8.501	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	30:0.9 DL+1.6W	-51.836	319.427	18.933	0.000	0.000	0.000
	31:0.9 DL+EX+	-104.610	528.046	-3.751	0.000	0.000	0.000
	32:0.9 DL+EX-	-31.846	246.094	-0.460	0.000	0.000	0.000
	33:0.9 DL+EZ+	-88.054	467.644	-5.728	0.000	0.000	0.000
	34:0.9 DL+EZ-	-68.228	387.070	-2.105	0.000	0.000	0.000
	35:DL+LL+RL	-106.844	607.822	-3.424	0.000	0.000	0.000
249	1:EX+	-34.698	-137.472	2.972	0.000	0.000	0.000
	2:EX-	34.698	137.472	-2.972	0.000	0.000	0.000
	3:EZ+	20.475	79.294	-8.151	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-24.631	-85.831	2.674	0.000	0.000	0.000
	6:WX-	28.247	91.187	-2.716	0.000	0.000	0.000
	7:WZ+	10.898	42.364	-7.107	0.000	0.000	0.000
	8:WZ-	-10.802	-41.840	16.210	0.000	0.000	0.000
	9:DL	71.263	417.815	-1.255	0.000	0.000	0.000
	10:LL	25.405	153.249	-0.404	0.000	0.000	0.000
	11:RL	3.570	19.804	0.000	0.000	0.000	0.000
	12:1.4 DL	99.769	584.941	-1.757	0.000	0.000	0.000
	13:1.2 DL+1.6 I	127.950	756.479	-2.152	0.000	0.000	0.000
	14:1.2 DL+1.6F	116.634	686.314	-1.909	0.000	0.000	0.000
	15:1.2 DL+1.6F	71.524	464.399	0.634	0.000	0.000	0.000
	16:1.2 DL+1.6F	113.826	606.014	-3.678	0.000	0.000	0.000
	17:1.2 DL+1.6F	99.947	566.955	-7.191	0.000	0.000	0.000
	18:1.2 DL+1.6F	82.588	499.592	11.463	0.000	0.000	0.000
	19:1.2 DL+LL+	73.296	527.199	2.368	0.000	0.000	0.000
	20:1.2 DL+LL+	157.901	810.428	-6.256	0.000	0.000	0.000
	21:1.2 DL+LL+	130.143	732.311	-13.281	0.000	0.000	0.000
	22:1.2 DL+LL+	95.424	597.585	24.026	0.000	0.000	0.000
	23:1.2 DL+LL+	76.224	517.155	1.052	0.000	0.000	0.000
	24:1.2 DL+LL+	145.619	792.099	-4.882	0.000	0.000	0.000
	25:1.2 DL+LL+	131.397	733.921	-10.051	0.000	0.000	0.000
	26:1.2 DL+LL+	110.921	654.627	-1.910	0.000	0.000	0.000
	27:0.9 DL+1.6W	24.727	238.704	3.148	0.000	0.000	0.000
	28:0.9 DL+1.6W	109.332	521.932	-5.476	0.000	0.000	0.000
	29:0.9 DL+1.6W	81.574	443.815	-12.500	0.000	0.000	0.000
	30:0.9 DL+1.6W	46.855	309.089	24.806	0.000	0.000	0.000
	31:0.9 DL+EX+	29.439	238.562	1.843	0.000	0.000	0.000
	32:0.9 DL+EX-	98.835	513.506	-4.102	0.000	0.000	0.000
	33:0.9 DL+EZ+	84.613	455.327	-9.280	0.000	0.000	0.000
	34:0.9 DL+EZ-	64.137	376.034	-1.129	0.000	0.000	0.000
	35:DL+LL+RL	100.239	590.868	-1.659	0.000	0.000	0.000
250	1:EX+	-28.737	120.858	-17.724	0.000	0.000	0.000
	2:EX-	28.737	-120.858	17.724	0.000	0.000	0.000
	3:EZ+	-16.006	121.015	-27.043	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-20.406	70.197	-9.341	0.000	0.000	0.000
	6:WX-	26.803	-72.379	10.071	0.000	0.000	0.000
	7:WZ+	-8.500	70.029	-18.726	0.000	0.000	0.000
	8:WZ-	8.290	-69.806	24.034	0.000	0.000	0.000
	9:DL	-91.195	429.852	-86.776	0.000	0.000	0.000
	10:LL	-33.378	152.069	-31.500	0.000	0.000	0.000
	11:RL	-4.315	22.320	-4.296	0.000	0.000	0.000
	12:1.4 DL	-127.673	601.793	-121.486	0.000	0.000	0.000
	13:1.2 DL+1.6	-164.997	770.293	-156.678	0.000	0.000	0.000
	14:1.2 DL+1.6F	-149.717	703.604	-142.504	0.000	0.000	0.000
	15:1.2 DL+1.6F	-132.663	607.692	-118.477	0.000	0.000	0.000
	16:1.2 DL+1.6F	-94.896	493.631	-102.948	0.000	0.000	0.000
	17:1.2 DL+1.6F	-123.138	607.557	-125.985	0.000	0.000	0.000
	18:1.2 DL+1.6F	-109.707	495.690	-91.777	0.000	0.000	0.000
	19:1.2 DL+LL+	-177.620	791.367	-152.724	0.000	0.000	0.000
	20:1.2 DL+LL+	-102.085	563.246	-121.666	0.000	0.000	0.000
	21:1.2 DL+LL+	-158.570	791.097	-167.741	0.000	0.000	0.000
	22:1.2 DL+LL+	-131.706	567.363	-99.324	0.000	0.000	0.000
	23:1.2 DL+LL+	-171.549	788.750	-153.354	0.000	0.000	0.000
	24:1.2 DL+LL+	-114.076	547.034	-117.907	0.000	0.000	0.000
	25:1.2 DL+LL+	-158.819	788.907	-162.674	0.000	0.000	0.000
	26:1.2 DL+LL+	-142.812	667.892	-135.631	0.000	0.000	0.000
	27:0.9 DL+1.6W	-114.725	499.182	-93.044	0.000	0.000	0.000
	28:0.9 DL+1.6W	-39.191	271.061	-61.985	0.000	0.000	0.000
	29:0.9 DL+1.6W	-95.676	498.913	-108.060	0.000	0.000	0.000
	30:0.9 DL+1.6W	-68.812	275.178	-39.644	0.000	0.000	0.000
	31:0.9 DL+EX+	-110.812	507.725	-95.822	0.000	0.000	0.000
	32:0.9 DL+EX-	-53.339	266.009	-60.375	0.000	0.000	0.000
	33:0.9 DL+EZ+	-98.082	507.882	-105.142	0.000	0.000	0.000
	34:0.9 DL+EZ-	-82.076	386.867	-78.098	0.000	0.000	0.000
	35:DL+LL+RL	-128.888	604.241	-122.571	0.000	0.000	0.000
329	1:EX+	-11.211	-102.094	-5.987	0.000	0.000	0.000
	2:EX-	11.211	102.094	5.987	0.000	0.000	0.000
	3:EZ+	-0.504	105.341	-17.499	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-9.943	-79.984	-5.051	0.000	0.000	0.000
	6:WX-	9.672	69.779	4.955	0.000	0.000	0.000
	7:WZ+	-0.808	67.330	-14.399	0.000	0.000	0.000
	8:WZ-	0.854	-64.085	14.173	0.000	0.000	0.000
	9:DL	1.113	300.998	-0.863	0.000	0.000	0.000
	10:LL	0.761	128.941	-0.455	0.000	0.000	0.000
	11:RL	0.010	16.092	-0.006	0.000	0.000	0.000
	12:1.4 DL	1.559	421.397	-1.208	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	13:1.2 DL+1.6	2.559	575.549	-1.767	0.000	0.000	0.000
	14:1.2 DL+1.6F	2.113	515.885	-1.501	0.000	0.000	0.000
	15:1.2 DL+1.6F	-6.602	322.957	-5.087	0.000	0.000	0.000
	16:1.2 DL+1.6F	9.089	442.767	2.918	0.000	0.000	0.000
	17:1.2 DL+1.6F	0.705	440.808	-12.565	0.000	0.000	0.000
	18:1.2 DL+1.6F	2.035	335.676	10.293	0.000	0.000	0.000
	19:1.2 DL+LL+	-13.806	370.211	-9.576	0.000	0.000	0.000
	20:1.2 DL+LL+	17.577	609.831	6.434	0.000	0.000	0.000
	21:1.2 DL+LL+	0.809	605.913	-24.533	0.000	0.000	0.000
	22:1.2 DL+LL+	3.468	395.648	21.184	0.000	0.000	0.000
	23:1.2 DL+LL+	-9.113	388.045	-7.478	0.000	0.000	0.000
	24:1.2 DL+LL+	13.308	592.233	4.497	0.000	0.000	0.000
	25:1.2 DL+LL+	1.594	595.460	-18.989	0.000	0.000	0.000
	26:1.2 DL+LL+	2.098	490.139	-1.491	0.000	0.000	0.000
	27:0.9 DL+1.6W	-14.906	142.924	-8.859	0.000	0.000	0.000
	28:0.9 DL+1.6W	16.477	382.544	7.151	0.000	0.000	0.000
	29:0.9 DL+1.6W	-0.291	378.627	-23.816	0.000	0.000	0.000
	30:0.9 DL+1.6W	2.368	168.361	21.901	0.000	0.000	0.000
	31:0.9 DL+EX+	-10.208	168.804	-6.764	0.000	0.000	0.000
	32:0.9 DL+EX-	12.213	372.992	5.211	0.000	0.000	0.000
	33:0.9 DL+EZ+	0.498	376.239	-18.276	0.000	0.000	0.000
	34:0.9 DL+EZ-	1.002	270.898	-0.777	0.000	0.000	0.000
	35:DL+LL+RL	1.885	446.031	-1.324	0.000	0.000	0.000
336	1:EX+	-8.501	11.686	-8.822	0.000	0.000	0.000
	2:EX-	8.501	-11.686	8.822	0.000	0.000	0.000
	3:EZ+	-90.281	-213.480	-69.528	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-3.785	20.681	-8.051	0.000	0.000	0.000
	6:WX-	12.581	4.282	7.817	0.000	0.000	0.000
	7:WZ+	-56.052	-140.831	-55.119	0.000	0.000	0.000
	8:WZ-	52.756	133.584	50.393	0.000	0.000	0.000
	9:DL	127.015	227.937	4.569	0.000	0.000	0.000
	10:LL	60.861	102.403	2.553	0.000	0.000	0.000
	11:RL	3.759	7.225	0.112	0.000	0.000	0.000
	12:1.4 DL	177.821	319.111	6.396	0.000	0.000	0.000
	13:1.2 DL+1.6	251.675	440.982	9.623	0.000	0.000	0.000
	14:1.2 DL+1.6F	219.293	387.487	8.214	0.000	0.000	0.000
	15:1.2 DL+1.6F	155.405	301.628	-0.779	0.000	0.000	0.000
	16:1.2 DL+1.6F	168.498	288.509	11.915	0.000	0.000	0.000
	17:1.2 DL+1.6F	113.591	172.419	-38.434	0.000	0.000	0.000
	18:1.2 DL+1.6F	200.637	391.951	45.976	0.000	0.000	0.000
	19:1.2 DL+LL+	209.103	412.628	-4.790	0.000	0.000	0.000
	20:1.2 DL+LL+	235.288	386.390	20.599	0.000	0.000	0.000
	21:1.2 DL+LL+	125.475	154.211	-80.099	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	22:1.2 DL+LL+	299.568	593.275	88.720	0.000	0.000	0.000
	23:1.2 DL+LL+	204.778	387.614	-0.786	0.000	0.000	0.000
	24:1.2 DL+LL+	221.780	364.241	16.857	0.000	0.000	0.000
	25:1.2 DL+LL+	122.998	162.447	-61.493	0.000	0.000	0.000
	26:1.2 DL+LL+	213.279	375.927	8.035	0.000	0.000	0.000
	27:0.9 DL+1.6W	108.258	238.232	-8.769	0.000	0.000	0.000
	28:0.9 DL+1.6W	134.443	211.994	16.620	0.000	0.000	0.000
	29:0.9 DL+1.6W	24.631	-20.186	-84.078	0.000	0.000	0.000
	30:0.9 DL+1.6W	198.723	418.878	84.741	0.000	0.000	0.000
	31:0.9 DL+EX+	105.812	216.829	-4.710	0.000	0.000	0.000
	32:0.9 DL+EX-	122.815	193.457	12.934	0.000	0.000	0.000
	33:0.9 DL+EZ+	24.032	-8.337	-65.416	0.000	0.000	0.000
	34:0.9 DL+EZ-	114.314	205.143	4.112	0.000	0.000	0.000
	35:DL+LL+RL	191.635	337.565	7.233	0.000	0.000	0.000
343	1:EX+	-11.296	153.159	-2.452	0.000	0.000	0.000
	2:EX-	11.296	-153.159	2.452	0.000	0.000	0.000
	3:EZ+	-0.799	262.192	-17.407	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-10.066	117.098	-2.192	0.000	0.000	0.000
	6:WX-	9.794	-104.604	2.131	0.000	0.000	0.000
	7:WZ+	-1.116	167.214	-13.279	0.000	0.000	0.000
	8:WZ-	1.093	-158.826	12.601	0.000	0.000	0.000
	9:DL	1.187	373.493	1.847	0.000	0.000	0.000
	10:LL	0.814	181.483	1.030	0.000	0.000	0.000
	11:RL	0.010	15.711	0.018	0.000	0.000	0.000
	12:1.4 DL	1.662	522.890	2.586	0.000	0.000	0.000
	13:1.2 DL+1.6	2.731	746.420	3.874	0.000	0.000	0.000
	14:1.2 DL+1.6F	2.254	654.812	3.276	0.000	0.000	0.000
	15:1.2 DL+1.6F	-6.613	567.006	0.493	0.000	0.000	0.000
	16:1.2 DL+1.6F	9.276	389.645	3.951	0.000	0.000	0.000
	17:1.2 DL+1.6F	0.548	607.099	-8.377	0.000	0.000	0.000
	18:1.2 DL+1.6F	2.314	346.268	12.327	0.000	0.000	0.000
	19:1.2 DL+LL+	-13.863	824.886	-0.250	0.000	0.000	0.000
	20:1.2 DL+LL+	17.914	470.164	6.666	0.000	0.000	0.000
	21:1.2 DL+LL+	0.458	905.072	-17.990	0.000	0.000	0.000
	22:1.2 DL+LL+	3.991	383.409	23.418	0.000	0.000	0.000
	23:1.2 DL+LL+	-9.058	782.834	0.795	0.000	0.000	0.000
	24:1.2 DL+LL+	13.534	476.516	5.699	0.000	0.000	0.000
	25:1.2 DL+LL+	1.439	891.866	-14.160	0.000	0.000	0.000
	26:1.2 DL+LL+	2.238	629.675	3.247	0.000	0.000	0.000
	27:0.9 DL+1.6W	-15.038	523.500	-1.844	0.000	0.000	0.000
	28:0.9 DL+1.6W	16.739	168.778	5.073	0.000	0.000	0.000
	29:0.9 DL+1.6W	-0.717	603.686	-19.583	0.000	0.000	0.000
	30:0.9 DL+1.6W	2.816	82.022	21.824	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	31:0.9 DL+EX+	-10.228	489.303	-0.790	0.000	0.000	0.000
	32:0.9 DL+EX-	12.364	182.984	4.115	0.000	0.000	0.000
	33:0.9 DL+EZ+	0.269	598.335	-15.744	0.000	0.000	0.000
	34:0.9 DL+EZ-	1.068	336.144	1.663	0.000	0.000	0.000
	35:DL+LL+RL	2.011	570.687	2.896	0.000	0.000	0.000
385	1:EX+	-0.048	-1.473	3.218	0.000	0.000	0.000
	2:EX-	0.048	1.473	-3.218	0.000	0.000	0.000
	3:EZ+	-0.089	-6.341	7.650	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000
	5:WX+	-0.042	-1.263	2.782	0.000	0.000	0.000
	6:WX-	0.039	1.190	-2.620	0.000	0.000	0.000
	7:WZ+	-0.069	-4.682	5.554	0.000	0.000	0.000
	8:WZ-	0.064	4.592	-5.444	0.000	0.000	0.000
	9:DL	-0.064	7.591	-1.023	0.000	0.000	0.000
	10:LL	-0.036	5.551	-1.050	0.000	0.000	0.000
	11:RL	-0.001	-0.014	0.042	0.000	0.000	0.000
	12:1.4 DL	-0.089	10.628	-1.432	0.000	0.000	0.000
	13:1.2 DL+1.6 I	-0.134	17.984	-2.887	0.000	0.000	0.000
	14:1.2 DL+1.6F	-0.114	14.638	-2.211	0.000	0.000	0.000
	15:1.2 DL+1.6F	-0.112	8.076	1.064	0.000	0.000	0.000
	16:1.2 DL+1.6F	-0.047	10.038	-3.257	0.000	0.000	0.000
	17:1.2 DL+1.6F	-0.133	5.341	3.283	0.000	0.000	0.000
	18:1.2 DL+1.6F	-0.026	12.760	-5.516	0.000	0.000	0.000
	19:1.2 DL+LL+I	-0.180	12.632	2.194	0.000	0.000	0.000
	20:1.2 DL+LL+I	-0.051	16.557	-6.450	0.000	0.000	0.000
	21:1.2 DL+LL+I	-0.224	7.162	6.630	0.000	0.000	0.000
	22:1.2 DL+LL+I	-0.010	22.000	-10.967	0.000	0.000	0.000
	23:1.2 DL+LL+	-0.161	13.187	0.940	0.000	0.000	0.000
	24:1.2 DL+LL+	-0.064	16.134	-5.496	0.000	0.000	0.000
	25:1.2 DL+LL+	-0.201	8.320	5.372	0.000	0.000	0.000
	26:1.2 DL+LL+	-0.112	14.660	-2.278	0.000	0.000	0.000
	27:0.9 DL+1.6W	-0.125	4.811	3.530	0.000	0.000	0.000
	28:0.9 DL+1.6W	0.005	8.736	-5.113	0.000	0.000	0.000
	29:0.9 DL+1.6W	-0.168	-0.659	7.966	0.000	0.000	0.000
	30:0.9 DL+1.6W	0.046	14.179	-9.631	0.000	0.000	0.000
	31:0.9 DL+EX+	-0.105	5.359	2.297	0.000	0.000	0.000
	32:0.9 DL+EX-	-0.009	8.305	-4.139	0.000	0.000	0.000
	33:0.9 DL+EZ+	-0.146	0.491	6.729	0.000	0.000	0.000
	34:0.9 DL+EZ-	-0.057	6.832	-0.921	0.000	0.000	0.000
	35:DL+LL+RL	-0.100	13.128	-2.031	0.000	0.000	0.000
390	1:EX+	-0.034	-4.819	9.677	0.000	0.000	0.000
	2:EX-	0.034	4.819	-9.677	0.000	0.000	0.000
	3:EZ+	-0.353	54.764	-99.098	0.000	0.000	0.000
	4:EZ-	0.000	0.000	0.000	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kN)	Vertical FY (kN)	Horizontal FZ (kN)	Moment MX (kip'in)	MY (kip'in)	MZ (kip'in)
	5:WX+	-0.030	-4.063	8.167	0.000	0.000	0.000
	6:WX-	0.026	4.362	-8.713	0.000	0.000	0.000
	7:WZ+	-0.273	42.843	-77.571	0.000	0.000	0.000
	8:WZ-	0.262	-41.003	74.560	0.000	0.000	0.000
	9:DL	-0.014	11.604	-4.942	0.000	0.000	0.000
	10:LL	-0.007	7.934	-3.190	0.000	0.000	0.000
	11:RL	-0.001	0.023	-0.027	0.000	0.000	0.000
	12:1.4 DL	-0.020	16.246	-6.919	0.000	0.000	0.000
	13:1.2 DL+1.6	-0.028	26.632	-11.048	0.000	0.000	0.000
	14:1.2 DL+1.6F	-0.025	21.896	-9.164	0.000	0.000	0.000
	15:1.2 DL+1.6F	-0.042	10.712	0.559	0.000	0.000	0.000
	16:1.2 DL+1.6F	0.003	17.452	-12.945	0.000	0.000	0.000
	17:1.2 DL+1.6F	-0.236	48.237	-68.031	0.000	0.000	0.000
	18:1.2 DL+1.6F	0.191	-18.840	53.673	0.000	0.000	0.000
	19:1.2 DL+LL+	-0.072	15.370	3.933	0.000	0.000	0.000
	20:1.2 DL+LL+	0.017	28.851	-23.075	0.000	0.000	0.000
	21:1.2 DL+LL+	-0.461	90.420	-133.248	0.000	0.000	0.000
	22:1.2 DL+LL+	0.394	-43.734	110.161	0.000	0.000	0.000
	23:1.2 DL+LL+	-0.058	17.040	0.557	0.000	0.000	0.000
	24:1.2 DL+LL+	0.010	26.679	-18.798	0.000	0.000	0.000
	25:1.2 DL+LL+	-0.376	76.624	-108.219	0.000	0.000	0.000
	26:1.2 DL+LL+	-0.024	21.860	-9.121	0.000	0.000	0.000
	27:0.9 DL+1.6W	-0.060	3.943	8.620	0.000	0.000	0.000
	28:0.9 DL+1.6W	0.029	17.424	-18.389	0.000	0.000	0.000
	29:0.9 DL+1.6W	-0.450	78.993	-128.562	0.000	0.000	0.000
	30:0.9 DL+1.6W	0.406	-55.161	114.848	0.000	0.000	0.000
	31:0.9 DL+EX+	-0.047	5.625	5.229	0.000	0.000	0.000
	32:0.9 DL+EX-	0.021	15.263	-14.126	0.000	0.000	0.000
	33:0.9 DL+EZ+	-0.366	65.208	-103.546	0.000	0.000	0.000
	34:0.9 DL+EZ-	-0.013	10.444	-4.448	0.000	0.000	0.000
	35:DL+LL+RL	-0.022	19.562	-8.160	0.000	0.000	0.000

Node Displacement Summary

	Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
Max X	1587	27:0.9 DL+1.6V	**1.937**	-0.086	0.067	1.940	0.000	-0.010	0.000
Min X	1589	20:1.2 DL+LL+I	**-1.976**	-0.160	0.041	1.983	-0.000	0.009	-0.000
Max Y	1486	3:EZ+	-0.011	**0.099**	0.892	0.897	0.001	0.001	-0.000
Min Y	1636	13:1.2 DL+1.6 I	0.009	**-0.778**	0.224	0.810	-0.007	-0.000	0.009
Max Z	1813	25:1.2 DL+LL+	0.185	-0.176	**1.768**	1.786	0.001	0.001	-0.001
Min Z	1776	30:0.9 DL+1.6V	0.018	-0.069	**-1.265**	1.267	-0.001	-0.001	-0.000
Max rX	1611	13:1.2 DL+1.6 I	0.017	-0.342	0.210	0.401	**0.017**	-0.001	-0.005
Min rX	411	13:1.2 DL+1.6 I	0.004	-0.165	0.006	0.165	**-0.017**	0.000	0.000
Max rY	1680	25:1.2 DL+LL+	-0.004	-0.339	0.710	0.787	0.000	**0.012**	0.003
Min rY	1672	25:1.2 DL+LL+	0.012	-0.319	0.662	0.735	0.000	**-0.011**	-0.003
Max rZ	405	13:1.2 DL+1.6 I	-0.001	-0.207	0.000	0.208	-0.002	0.000	**0.018**
Min rZ	1496	13:1.2 DL+1.6 I	0.018	-0.273	0.131	0.303	0.002	-0.000	**-0.024**
Max Rst	1589	20:1.2 DL+LL+I	-1.976	-0.160	0.041	**1.983**	-0.000	0.009	-0.000

Utilization Ratio

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
1	Taper	Taper	0.350	1.000	0.350	Eq. H1-2	20	7.161	186.849	25.634	0.192
2	Taper	Taper	0.746	1.000	0.746	Eq. H1-1a	22	8.758	313.785	32.042	0.353
3	Taper	Taper	0.271	1.000	0.271	Eq. H1-1b	22	8.758	313.785	32.042	0.353
4	Taper	Taper	0.445	1.000	0.445	Eq. H1-2	19	7.161	186.849	25.634	0.192
5	Taper	Taper	0.467	1.000	0.467	Eq. H1-1b	19	8.184	340.042	13.531	0.306
7	Taper	Taper	0.129	1.000	0.129	Eq. H1-1b	22	8.184	340.042	13.531	0.306
8	Taper	Taper	0.119	1.000	0.119	Eq. H1-1b	19	8.184	340.042	13.531	0.306
9	Taper	Taper	0.214	1.000	0.214	Eq. H1-1b	21	8.184	340.042	13.531	0.306
10	Taper	Taper	0.113	1.000	0.113	Eq. H1-1b	22	8.184	340.042	13.531	0.306
11	Taper	Taper	0.160	1.000	0.160	Eq. H1-1b	19	8.184	340.042	13.531	0.306
14	Taper	Taper	0.219	1.000	0.219	Eq. H1-1b	22	8.184	340.042	13.531	0.306
15	Taper	Taper	0.219	1.000	0.219	Eq. H1-1b	22	8.184	340.042	13.531	0.306
16	Taper	Taper	0.449	1.000	0.449	Eq. H1-1b	20	8.184	340.042	13.531	0.306
97	Taper	Taper	0.717	1.000	0.717	Eq. H1-1a	20	8.758	313.785	32.042	0.353
98	Taper	Taper	0.766	1.000	0.766	Eq. H1-1a	19	15.822	736.378	129.774	0.984
99	Taper	Taper	0.946	1.000	0.946	Eq. H1-1a	20	15.822	736.378	129.774	0.984
100	Taper	Taper	0.728	1.000	0.728	Eq. H1-1a	19	8.758	313.785	32.042	0.353
101	Taper	Taper	0.714	1.000	0.714	Eq. H1-1b	20	8.184	340.042	13.531	0.306
103	Taper	Taper	0.813	1.000	0.813	Eq. H1-1b	20	8.184	340.042	13.531	0.306
104	Taper	Taper	0.373	1.000	0.373	Eq. H1-1b	19	8.184	340.042	13.531	0.306
105	Taper	Taper	0.370	1.000	0.370	Eq. H1-1b	19	8.184	340.042	13.531	0.306
106	Taper	Taper	0.337	1.000	0.337	Eq. H1-1b	22	8.184	340.042	13.531	0.306
107	Taper	Taper	0.835	1.000	0.835	Eq. H1-1b	19	8.184	340.042	13.531	0.306
110	Taper	Taper	0.418	1.000	0.418	Eq. H1-1b	22	8.184	340.042	13.531	0.306
111	Taper	Taper	0.418	1.000	0.418	Eq. H1-1b	22	8.184	340.042	13.531	0.306
112	Taper	Taper	0.730	1.000	0.730	Eq. H1-1b	19	8.184	340.042	13.531	0.306

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
193	Taper	Taper	0.787	1.000	0.787	Eq. H1-1a	20	8.758	313.785	32.042	0.353
194	Taper	Taper	0.949	1.000	0.949	Eq. H1-1a	19	15.822	736.378	129.774	0.984
195	Taper	Taper	0.918	1.000	0.918	Eq. H1-1a	20	15.822	736.378	129.774	0.984
196	Taper	Taper	0.786	1.000	0.786	Eq. H1-1a	19	8.758	313.785	32.042	0.353
197	Taper	Taper	0.773	1.000	0.773	Eq. H1-1b	20	8.184	340.042	13.531	0.306
198	Taper	Taper	0.783	1.000	0.783	Eq. H1-1b	20	8.184	340.042	13.531	0.306
199	Taper	Taper	0.803	1.000	0.803	Eq. H1-1b	20	8.184	340.042	13.531	0.306
200	Taper	Taper	0.389	1.000	0.389	Eq. H1-1b	19	8.184	340.042	13.531	0.306
201	Taper	Taper	0.372	1.000	0.372	Eq. H1-1b	19	8.184	340.042	13.531	0.306
202	Taper	Taper	0.371	1.000	0.371	Eq. H1-1b	20	8.184	340.042	13.531	0.306
203	Taper	Taper	0.855	1.000	0.855	Eq. H1-1b	19	8.184	340.042	13.531	0.306
204	Taper	Taper	0.306	1.000	0.306	Eq. H1-1b	20	8.184	340.042	13.531	0.306
205	Taper	Taper	0.850	1.000	0.850	Eq. H1-1b	19	8.184	340.042	13.531	0.306
206	Taper	Taper	0.407	1.000	0.407	Eq. H1-1b	22	8.184	340.042	13.531	0.306
207	Taper	Taper	0.408	1.000	0.408	Eq. H1-1b	22	8.184	340.042	13.531	0.306
208	Taper	Taper	0.718	1.000	0.718	Eq. H1-1b	19	8.184	340.042	13.531	0.306
289	Taper	Taper	0.435	1.000	0.435	Eq. H1-2	25	7.161	186.849	25.634	0.192
290	Taper	Taper	0.518	1.000	0.518	Eq. H1-2	19	8.758	313.785	32.042	0.353
291	Taper	Taper	0.520	1.000	0.520	Eq. H1-1a	21	8.758	313.785	32.042	0.353
292	Taper	Taper	0.403	1.000	0.403	Eq. H1-2	25	7.161	186.849	25.634	0.192
293	Taper	N/A						8.184	340.042	13.531	0.306
294	Taper	Taper	0.205	1.000	0.205	Eq. H1-1b	20	8.184	340.042	13.531	0.306
295	Taper	Taper	0.173	1.000	0.173	Eq. H1-1b	25	8.184	340.042	13.531	0.306
296	Taper	N/A						8.184	340.042	13.531	0.306
297	Taper	N/A						8.184	340.042	13.531	0.306
298	Taper	N/A						8.184	340.042	13.531	0.306
299	Taper	N/A						8.184	340.042	13.531	0.306
300	Taper	Taper	0.171	1.000	0.171	Eq. H1-1b	22	8.184	340.042	13.531	0.306
301	Taper	Taper	0.254	1.000	0.254	Eq. H1-1b	19	8.184	340.042	13.531	0.306
302	Taper	Taper	0.161	1.000	0.161	Eq. H1-1b	22	8.184	340.042	13.531	0.306
303	Taper	Taper	0.153	1.000	0.153	Eq. H1-1b	22	8.184	340.042	13.531	0.306
304	Taper	Taper	0.422	1.000	0.422	Eq. H1-1b	20	8.184	340.042	13.531	0.306
385	Taper	Taper	0.565	1.000	0.565	Eq. H1-1b	19	6.309	205.934	10.820	0.156
386	Taper	Taper	0.216	1.000	0.216	Eq. H1-1b	21	6.309	205.934	10.820	0.156
387	Taper	Taper	0.536	1.000	0.536	Eq. H1-1b	19	6.309	205.934	10.820	0.156
389	Taper	Taper	0.356	1.000	0.356	Eq. H1-1b	21	6.309	205.934	10.820	0.156
390	Taper	Taper	0.382	1.000	0.382	Eq. H1-1b	22	6.309	205.934	10.820	0.156
392	Taper	Taper	0.372	1.000	0.372	Eq. H1-1b	22	6.309	205.934	10.820	0.156
393	Taper	Taper	0.416	1.000	0.416	Eq. H1-1b	22	6.309	205.934	10.820	0.156
394	Taper	Taper	0.572	1.000	0.572	Eq. H1-1b	20	6.309	205.934	10.820	0.156
395	Taper	Taper	0.244	1.000	0.244	Eq. H1-1b	21	6.309	205.934	10.820	0.156
396	Taper	Taper	0.544	1.000	0.544	Eq. H1-1b	20	6.309	205.934	10.820	0.156
397	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
398	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
399	Taper	N/A						5.022	117.374	8.116	0.081

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
400	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
401	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
402	Taper	N/A						5.022	117.374	8.116	0.081
403	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
404	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
405	Taper	N/A						5.022	117.374	8.116	0.081
406	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
407	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
408	Taper	N/A						5.022	117.374	8.116	0.081
411	Taper	Taper	0.558	1.000	0.558	Eq. H1-1b	13	5.022	117.374	8.116	0.081
414	Taper	Taper	0.558	1.000	0.558	Eq. H1-1b	13	5.022	117.374	8.116	0.081
415	Taper	Taper	0.519	1.000	0.519	Eq. H1-1b	13	5.022	117.374	8.116	0.081
416	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
417	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
418	Taper	Taper	0.518	1.000	0.518	Eq. H1-1b	13	5.022	117.374	8.116	0.081
419	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
420	Taper	Taper	0.489	1.000	0.489	Eq. H1-1b	13	5.022	117.374	8.116	0.081
421	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	13	5.022	117.374	8.116	0.081
422	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
423	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
619	Taper	Taper	0.455	1.000	0.455	Eq. H1-1a	21	15.822	736.378	129.774	0.984
625	Taper	Taper	0.414	1.000	0.414	Eq. H1-1b	22	8.758	313.785	32.042	0.353
631	Taper	Taper	0.512	1.000	0.512	Eq. H1-1a	21	15.822	736.378	129.774	0.984
640	Taper	Taper	0.314	1.000	0.314	Eq. H1-1b	21	6.309	205.934	10.820	0.156
641	Taper	Taper	0.283	1.000	0.283	Eq. H1-1b	22	6.309	205.934	10.820	0.156
642	Taper	Taper	0.334	1.000	0.334	Eq. H1-1b	21	6.309	205.934	10.820	0.156
658	Taper	Taper	0.602	1.000	0.602	Eq. H1-1b	20	8.184	340.042	13.531	0.306
659	Taper	Taper	0.234	1.000	0.234	Eq. H1-1b	19	8.184	340.042	13.531	0.306
660	Taper	Taper	0.266	1.000	0.266	Eq. H1-1b	20	8.184	340.042	13.531	0.306
676	Taper	Taper	0.595	1.000	0.595	Eq. H1-1b	13	5.022	117.374	8.116	0.081
677	Taper	Taper	0.594	1.000	0.594	Eq. H1-1b	13	5.022	117.374	8.116	0.081
688	Taper	Taper	0.564	1.000	0.564	Eq. H1-1b	19	6.309	205.934	10.820	0.156
689	Taper	Taper	0.538	1.000	0.538	Eq. H1-1b	19	6.309	205.934	10.820	0.156
690	Taper	Taper	0.572	1.000	0.572	Eq. H1-1b	20	6.309	205.934	10.820	0.156
691	Taper	Taper	0.544	1.000	0.544	Eq. H1-1b	20	6.309	205.934	10.820	0.156
700	TUBE	TUBE	0.276	1.000	0.276	Eq. H1-1a	21	7.043	36.805	36.805	55.033
701	TUBE	TUBE	0.218	1.000	0.218	Eq. H1-1a	22	7.043	36.805	36.805	55.033
712	TUBE	TUBE	0.185	1.000	0.185	Sec. E1	21	7.043	36.805	36.805	55.033
713	TUBE	TUBE	0.255	1.000	0.255	Eq. H1-1a	22	7.043	36.805	36.805	55.033
724	TUBE	TUBE	0.268	1.000	0.268	Eq. H1-1a	21	7.043	36.805	36.805	55.033
725	TUBE	TUBE	0.214	1.000	0.214	Eq. H1-1a	22	7.043	36.805	36.805	55.033
736	TUBE	TUBE	0.216	1.000	0.216	Eq. H1-1a	21	7.043	36.805	36.805	55.033
737	TUBE	TUBE	0.278	1.000	0.278	Eq. H1-1a	22	7.043	36.805	36.805	55.033
748	TUBE	TUBE	0.375	1.000	0.375	Eq. H1-1a	19	7.043	36.805	36.805	55.033
749	TUBE	TUBE	0.218	1.000	0.218	Eq. H1-1a	20	7.043	36.805	36.805	55.033

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
760	Taper	Taper	0.227	1.000	0.227	Eq. H1-1b	21	8.184	340.042	13.531	0.306
763	Taper	N/A						8.184	340.042	13.531	0.306
766	TUBE	TUBE	0.133	1.000	0.133	Sec. E1	19	7.043	36.805	36.805	55.033
767	TUBE	TUBE	0.327	1.000	0.327	Eq. H1-1a	22	7.043	36.805	36.805	55.033
778	TUBE	N/A						7.043	36.805	36.805	55.033
779	TUBE	N/A						7.043	36.805	36.805	55.033
790	TUBE	TUBE	0.255	1.000	0.255	Eq. H1-1a	20	7.043	36.805	36.805	55.033
791	TUBE	TUBE	0.285	1.000	0.285	Eq. H1-1a	19	7.043	36.805	36.805	55.033
802	Taper	Taper	0.463	1.000	0.463	Eq. H1-1b	21	6.309	205.934	10.820	0.156
803	Taper	Taper	0.194	1.000	0.194	Eq. H1-1b	19	8.184	340.042	13.531	0.306
804	ISMC250H	ISMC250H	0.348	1.000	0.348	Eq. H1-1b	22	6.743	98.022	5.838	0.545
805	Taper	Taper	0.001	1.000	0.001	Sec. E1	12	8.758	313.785	32.042	0.353
806	Taper	Taper	0.101	1.000	0.101	Eq. H1-1b	21	8.758	313.785	32.042	0.353
807	ISMC250H	ISMC250H	0.354	1.000	0.354	Eq. H1-1b	19	6.743	98.022	5.838	0.545
808	ISMC250H	ISMC250H	0.692	1.000	0.692	Eq. H1-1b	22	6.743	98.022	5.838	0.545
809	Taper	Taper	0.280	1.000	0.280	Eq. H1-1b	22	5.003	80.574	8.119	0.093
810	ISMC250H	ISMC250H	0.264	1.000	0.264	Eq. H1-1b	22	6.743	98.022	5.838	0.545
811	ISMC250H	ISMC250H	0.662	1.000	0.662	Eq. H1-1b	22	6.743	98.022	5.838	0.545
812	ISMC250H	ISMC250H	0.381	1.000	0.381	Eq. H1-1b	22	6.743	98.022	5.838	0.545
813	Taper	Taper	0.426	1.000	0.426	Eq. H1-1b	22	5.003	80.574	8.119	0.093
814	ISMC250H	ISMC250H	0.552	1.000	0.552	Eq. H1-1b	21	6.743	98.022	5.838	0.545
815	Taper	Taper	0.324	1.000	0.324	Eq. H1-1b	19	5.003	80.574	8.119	0.093
816	ISMC250H	ISMC250H	0.446	1.000	0.446	Eq. H1-1b	22	6.743	98.022	5.838	0.545
817	ISMC250H	ISMC250H	0.139	1.000	0.139	Eq. H1-1b	22	6.743	98.022	5.838	0.545
818	ISMC250H	ISMC250H	0.491	1.000	0.491	Eq. H1-1a	29	6.743	98.022	5.838	0.545
819	Taper	Taper	0.364	1.000	0.364	Eq. H1-1b	21	6.309	205.934	10.820	0.156
820	Taper	Taper	0.356	1.000	0.356	Eq. H1-1b	22	6.309	205.934	10.820	0.156
821	ISMC250H	ISMC250H	0.202	1.000	0.202	Eq. H1-1b	20	6.743	98.022	5.838	0.545
822	ISMC250H	ISMC250H	0.606	1.000	0.606	Eq. H1-1b	21	6.743	98.022	5.838	0.545
823	ISMC250H	ISMC250H	0.286	1.000	0.286	Eq. H1-1b	21	6.743	98.022	5.838	0.545
824	ISMC250H	ISMC250H	0.648	1.000	0.648	Eq. H1-1a	22	6.743	98.022	5.838	0.545
825	ISMC250H	ISMC250H	0.410	1.000	0.410	Eq. H1-1b	21	6.743	98.022	5.838	0.545
826	Taper	Taper	0.278	1.000	0.278	Eq. H1-1b	21	8.184	340.042	13.531	0.306
827	Taper	Taper	0.249	1.000	0.249	Eq. H1-1b	19	8.184	340.042	13.531	0.306
828	ISMC250H	ISMC250H	0.195	1.000	0.195	Eq. H1-1b	21	6.743	98.022	5.838	0.545
829	ISMC250H	ISMC250H	0.145	1.000	0.145	Eq. H1-1b	21	6.743	98.022	5.838	0.545
830	Taper	Taper	0.286	1.000	0.286	Sec. G1	21	6.309	205.934	10.820	0.156
831	Taper	Taper	0.581	1.000	0.581	Eq. H1-1b	21	6.309	205.934	10.820	0.156
832	Taper	Taper	0.137	1.000	0.137	Eq. H1-1b	21	6.309	205.934	10.820	0.156
833	Taper	Taper	0.133	1.000	0.133	Eq. H1-1b	30	6.309	205.934	10.820	0.156
834	ISMC250H	ISMC250H	0.305	1.000	0.305	Eq. H1-1b	21	6.743	98.022	5.838	0.545
835	ISMC250H	ISMC250H	0.535	1.000	0.535	Eq. H1-1b	21	6.743	98.022	5.838	0.545
836	ISMC250H	ISMC250H	0.318	1.000	0.318	Eq. H1-1b	21	6.743	98.022	5.838	0.545
837	ISMC250H	ISMC250H	0.202	1.000	0.202	Eq. H1-1b	22	6.743	98.022	5.838	0.545
838	ISMC250H	ISMC250H	0.310	1.000	0.310	Eq. H1-1b	21	6.743	98.022	5.838	0.545

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
839	ISMC250H	ISMC250H	0.453	1.000	0.453	Eq. H1-1b	21	6.743	98.022	5.838	0.545
840	ISMC250H	ISMC250H	0.215	1.000	0.215	Eq. H1-1b	21	6.743	98.022	5.838	0.545
841	ISMC250H	ISMC250H	0.388	1.000	0.388	Eq. H1-1b	22	6.743	98.022	5.838	0.545
842	ISA75X75XE	ISA75X75X8	0.716	1.000	0.716	Eq. H1-1b	13	1.767	0.584	2.308	0.058
844	ISA75X75XE	ISA75X75X8	0.814	1.000	0.814	Eq. H1-1b	22	1.767	0.584	2.308	0.058
845	ISA75X75XE	ISA75X75X8	0.729	1.000	0.729	Eq. H1-1b	13	1.767	0.584	2.308	0.058
847	ISA75X75XE	ISA75X75X8	0.770	1.000	0.770	Eq. H1-1b	22	1.767	0.584	2.308	0.058
848	Taper	Taper	0.661	1.000	0.661	Eq. H1-1b	19	8.184	340.042	13.531	0.306
849	ISA75X75XE	ISA75X75X8	0.626	1.000	0.626	Eq. H1-1b	22	1.767	0.584	2.308	0.058
850	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	19	8.184	340.042	13.531	0.306
851	ISA75X75XE	ISA75X75X8	0.617	1.000	0.617	Eq. H1-1b	22	1.767	0.584	2.308	0.058
852	Taper	Taper	0.237	1.000	0.237	Eq. H1-1b	20	8.184	340.042	13.531	0.306
853	ISA75X75XE	ISA75X75X8	0.447	1.000	0.447	Eq. H1-1b	20	1.767	0.584	2.308	0.058
854	Taper	Taper	0.200	1.000	0.200	Eq. H1-1b	21	8.184	340.042	13.531	0.306
855	ISA75X75XE	ISA75X75X8	0.472	1.000	0.472	Eq. H1-1b	20	1.767	0.584	2.308	0.058
856	ISMC250H	ISMC250H	0.192	1.000	0.192	Eq. H1-1b	19	6.743	98.022	5.838	0.545
857	ISMC250H	ISMC250H	0.277	1.000	0.277	Eq. H1-1b	22	6.743	98.022	5.838	0.545
858	Taper	Taper	0.338	1.000	0.338	Eq. H1-1b	22	5.003	80.574	8.119	0.093
859	ISMC250H	ISMC250H	0.597	1.000	0.597	Eq. H1-1b	22	6.743	98.022	5.838	0.545
860	ISMC250H	ISMC250H	0.232	1.000	0.232	Eq. H1-1b	22	6.743	98.022	5.838	0.545
861	ISMC250H	ISMC250H	0.211	1.000	0.211	Eq. H1-1b	21	6.743	98.022	5.838	0.545
862	Taper	Taper	0.216	1.000	0.216	Eq. H1-1b	19	5.003	80.574	8.119	0.093
863	ISMC250H	ISMC250H	0.198	1.000	0.198	Eq. H1-1b	22	6.743	98.022	5.838	0.545
864	ISA75X75XE	ISA75X75X8	0.849	1.000	0.849	Eq. H1-1b	19	1.767	0.584	2.308	0.058
865	ISA75X75XE	ISA75X75X8	0.754	1.000	0.754	Eq. H1-1b	22	1.767	0.584	2.308	0.058
866	ISA75X75XE	ISA75X75X8	0.590	1.000	0.590	Eq. H1-1b	19	1.767	0.584	2.308	0.058
867	ISA75X75XE	ISA75X75X8	0.770	1.000	0.770	Eq. H1-1b	19	1.767	0.584	2.308	0.058
868	Taper	Taper	0.544	1.000	0.544	Eq. H1-1a	21	15.822	736.378	129.774	0.984
869	ISMC250H	ISMC250H	0.310	1.000	0.310	Eq. H1-1b	22	6.743	98.022	5.838	0.545
870	ISA75X75XE	ISA75X75X8	0.684	1.000	0.684	Eq. H1-1b	13	1.767	0.584	2.308	0.058
871	ISA75X75XE	ISA75X75X8	0.732	1.000	0.732	Eq. H1-1b	13	1.767	0.584	2.308	0.058
872	ISA75X75XE	ISA75X75X8	0.587	1.000	0.587	Eq. H1-1b	22	1.767	0.584	2.308	0.058
873	ISA75X75XE	ISA75X75X8	0.590	1.000	0.590	Eq. H1-1b	22	1.767	0.584	2.308	0.058
874	ISA75X75XE	ISA75X75X8	0.682	1.000	0.682	Eq. H1-1b	13	1.767	0.584	2.308	0.058
875	ISA75X75XE	ISA75X75X8	0.738	1.000	0.738	Eq. H1-1b	13	1.767	0.584	2.308	0.058
876	ISA75X75XE	ISA75X75X8	0.590	1.000	0.590	Eq. H1-1b	13	1.767	0.584	2.308	0.058
877	ISA75X75XE	ISA75X75X8	0.593	1.000	0.593	Eq. H1-1b	13	1.767	0.584	2.308	0.058
878	ISA75X75XE	ISA75X75X8	0.542	1.000	0.542	Eq. H1-1b	22	1.767	0.584	2.308	0.058
879	ISA75X75XE	ISA75X75X8	0.490	1.000	0.490	Eq. H1-1b	22	1.767	0.584	2.308	0.058
880	ISA75X75XE	ISA75X75X8	0.643	1.000	0.643	Eq. H1-1b	22	1.767	0.584	2.308	0.058
881	ISA75X75XE	ISA75X75X8	0.563	1.000	0.563	Eq. H1-1b	22	1.767	0.584	2.308	0.058
882	ISA75X75XE	ISA75X75X8	0.361	1.000	0.361	Eq. H1-1b	13	1.767	0.584	2.308	0.058
883	ISA75X75XE	ISA75X75X8	0.508	1.000	0.508	Eq. H1-1b	13	1.767	0.584	2.308	0.058
884	ISA75X75XE	ISA75X75X8	0.370	1.000	0.370	Eq. H1-1b	13	1.767	0.584	2.308	0.058
885	ISA75X75XE	ISA75X75X8	0.515	1.000	0.515	Eq. H1-1b	13	1.767	0.584	2.308	0.058

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
886	ISA75X75X8	ISA75X75X8	0.860	1.000	0.860	Eq. H1-1b	22	1.767	0.584	2.308	0.058
887	ISA75X75X8	ISA75X75X8	0.552	1.000	0.552	Eq. H1-1b	19	1.767	0.584	2.308	0.058
888	ISA75X75X8	ISA75X75X8	0.721	1.000	0.721	Eq. H1-1b	19	1.767	0.584	2.308	0.058
889	ISA75X75X8	ISA75X75X8	0.740	1.000	0.740	Eq. H1-1b	19	1.767	0.584	2.308	0.058
891	Taper	Taper	0.886	1.000	0.886	Eq. H1-1a	20	15.822	736.378	129.774	0.984
893	Taper	Taper	0.454	1.000	0.454	Eq. H1-1a	19	15.822	736.378	129.774	0.984
2652	Taper	Taper	0.191	1.000	0.191	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2653	Taper	Taper	0.391	1.000	0.391	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2656	Taper	Taper	0.178	1.000	0.178	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2657	Taper	Taper	0.525	1.000	0.525	Eq. H1-1a	20	7.161	186.849	25.634	0.192
2658	Taper	Taper	0.443	1.000	0.443	Eq. H1-1a	22	8.758	313.785	32.042	0.353
2659	Taper	Taper	0.280	1.000	0.280	Eq. H1-1b	22	8.758	313.785	32.042	0.353
2660	Taper	Taper	0.664	1.000	0.664	Eq. H1-1a	19	7.161	186.849	25.634	0.192
2661	Taper	Taper	0.403	1.000	0.403	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2662	Taper	Taper	0.291	1.000	0.291	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2663	Taper	Taper	0.247	1.000	0.247	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2664	Taper	Taper	0.247	1.000	0.247	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2665	Taper	Taper	0.248	1.000	0.248	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2666	Taper	Taper	0.357	1.000	0.357	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2667	Taper	Taper	0.309	1.000	0.309	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2668	Taper	Taper	0.309	1.000	0.309	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2669	Taper	Taper	0.439	1.000	0.439	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2670	Taper	Taper	0.591	1.000	0.591	Eq. H1-1a	20	8.758	313.785	32.042	0.353
2671	Taper	Taper	0.776	1.000	0.776	Eq. H1-1a	22	12.797	606.554	75.095	0.757
2672	Taper	Taper	0.938	1.000	0.938	Eq. H1-1a	20	12.797	606.554	75.095	0.757
2673	Taper	Taper	0.596	1.000	0.596	Eq. H1-1a	19	8.758	313.785	32.042	0.353
2674	Taper	Taper	0.710	1.000	0.710	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2675	Taper	Taper	0.748	1.000	0.748	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2676	Taper	Taper	0.326	1.000	0.326	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2677	Taper	Taper	0.326	1.000	0.326	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2678	Taper	Taper	0.312	1.000	0.312	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2679	Taper	Taper	0.775	1.000	0.775	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2680	Taper	Taper	0.347	1.000	0.347	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2681	Taper	Taper	0.347	1.000	0.347	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2682	Taper	Taper	0.713	1.000	0.713	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2683	Taper	Taper	0.636	1.000	0.636	Eq. H1-1a	20	8.758	313.785	32.042	0.353
2684	Taper	Taper	0.899	1.000	0.899	Eq. H1-1a	19	12.797	606.554	75.095	0.757
2685	Taper	Taper	0.864	1.000	0.864	Eq. H1-1a	20	12.797	606.554	75.095	0.757
2686	Taper	Taper	0.632	1.000	0.632	Eq. H1-1a	19	8.758	313.785	32.042	0.353
2687	Taper	Taper	0.701	1.000	0.701	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2688	Taper	Taper	0.659	1.000	0.659	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2689	Taper	Taper	0.650	1.000	0.650	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2690	Taper	Taper	0.326	1.000	0.326	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2691	Taper	Taper	0.326	1.000	0.326	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2692	Taper	Taper	0.314	1.000	0.314	Eq. H1-1b	20	8.184	340.042	13.531	0.306

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
2693	Taper	Taper	0.678	1.000	0.678	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2694	Taper	Taper	0.252	1.000	0.252	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2695	Taper	Taper	0.713	1.000	0.713	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2696	Taper	Taper	0.336	1.000	0.336	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2697	Taper	Taper	0.336	1.000	0.336	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2698	Taper	Taper	0.655	1.000	0.655	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2699	Taper	Taper	0.611	1.000	0.611	Eq. H1-1a	13	7.161	186.849	25.634	0.192
2700	Taper	Taper	0.546	1.000	0.546	Eq. H1-1a	19	8.758	313.785	32.042	0.353
2701	Taper	Taper	0.547	1.000	0.547	Eq. H1-1a	20	8.758	313.785	32.042	0.353
2702	Taper	Taper	0.582	1.000	0.582	Eq. H1-1a	13	7.161	186.849	25.634	0.192
2703	Taper	Taper	0.373	1.000	0.373	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2704	Taper	Taper	0.337	1.000	0.337	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2705	Taper	Taper	0.305	1.000	0.305	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2706	Taper	Taper	0.241	1.000	0.241	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2707	Taper	Taper	0.241	1.000	0.241	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2708	Taper	Taper	0.243	1.000	0.243	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2709	Taper	Taper	0.302	1.000	0.302	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2710	Taper	Taper	0.080	1.000	0.080	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2711	Taper	Taper	0.380	1.000	0.380	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2712	Taper	Taper	0.253	1.000	0.253	Eq. H1-1b	25	8.184	340.042	13.531	0.306
2713	Taper	Taper	0.253	1.000	0.253	Eq. H1-1b	25	8.184	340.042	13.531	0.306
2714	Taper	Taper	0.380	1.000	0.380	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2715	Taper	Taper	0.327	1.000	0.327	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2716	Taper	Taper	0.267	1.000	0.267	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2717	Taper	Taper	0.272	1.000	0.272	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2718	Taper	Taper	0.328	1.000	0.328	Eq. H1-1b	25	6.309	205.934	10.820	0.156
2719	Taper	Taper	0.409	1.000	0.409	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2720	Taper	Taper	0.310	1.000	0.310	Eq. H1-1b	22	6.309	205.934	10.820	0.156
2721	Taper	Taper	0.448	1.000	0.448	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2722	Taper	Taper	0.342	1.000	0.342	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2723	Taper	Taper	0.366	1.000	0.366	Eq. H1-1a	22	6.309	205.934	10.820	0.156
2724	Taper	Taper	0.271	1.000	0.271	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2725	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2726	Taper	Taper	0.432	1.000	0.432	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2727	Taper	Taper	0.406	1.000	0.406	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2728	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2729	Taper	Taper	0.432	1.000	0.432	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2730	Taper	Taper	0.406	1.000	0.406	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2731	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2732	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2733	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2734	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2735	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2736	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2737	Taper	Taper	0.559	1.000	0.559	Eq. H1-1b	13	5.022	117.374	8.116	0.081

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
2738	Taper	Taper	0.558	1.000	0.558	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2739	Taper	Taper	0.519	1.000	0.519	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2740	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2741	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2742	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2743	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2744	Taper	Taper	0.491	1.000	0.491	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2745	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2746	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2747	Taper	Taper	0.491	1.000	0.491	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2748	Taper	Taper	0.430	1.000	0.430	Eq. H1-1a	21	12.797	606.554	75.095	0.757
2749	Taper	Taper	0.361	1.000	0.361	Eq. H1-1b	22	8.758	313.785	32.042	0.353
2750	Taper	Taper	0.468	1.000	0.468	Eq. H1-1a	21	12.797	606.554	75.095	0.757
2751	Taper	Taper	0.269	1.000	0.269	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2752	Taper	Taper	0.288	1.000	0.288	Eq. H1-1b	22	6.309	205.934	10.820	0.156
2753	Taper	Taper	0.325	1.000	0.325	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2754	Taper	Taper	0.478	1.000	0.478	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2755	Taper	Taper	0.209	1.000	0.209	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2756	Taper	Taper	0.195	1.000	0.195	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2757	Taper	Taper	0.596	1.000	0.596	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2758	Taper	Taper	0.594	1.000	0.594	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2759	Taper	Taper	0.244	1.000	0.244	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2760	Taper	Taper	0.347	1.000	0.347	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2761	Taper	Taper	0.283	1.000	0.283	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2762	Taper	Taper	0.306	1.000	0.306	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2773	Taper	Taper	0.248	1.000	0.248	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2774	Taper	Taper	0.243	1.000	0.243	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2781	Taper	Taper	0.272	1.000	0.272	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2782	Taper	Taper	0.163	1.000	0.163	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2783	ISMC250H	ISMC250H	0.359	1.000	0.359	Eq. H1-1b	19	6.743	98.022	5.838	0.545
2784	Taper	Taper	0.494	1.000	0.494	Eq. H1-1b	22	8.758	313.785	32.042	0.353
2785	Taper	Taper	0.339	1.000	0.339	Eq. H1-1b	22	8.758	313.785	32.042	0.353
2786	ISMC250H	ISMC250H	0.513	1.000	0.513	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2787	ISMC250H	ISMC250H	0.465	1.000	0.465	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2788	Taper	Taper	0.411	1.000	0.411	Eq. H1-1a	22	5.003	80.574	8.119	0.093
2789	ISMC250H	ISMC250H	0.197	1.000	0.197	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2790	ISMC250H	ISMC250H	0.448	1.000	0.448	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2791	ISMC250H	ISMC250H	0.426	1.000	0.426	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2792	Taper	Taper	0.622	1.000	0.622	Eq. H1-1a	22	5.003	80.574	8.119	0.093
2793	ISMC250H	ISMC250H	0.264	1.000	0.264	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2794	Taper	Taper	0.564	1.000	0.564	Eq. H1-1a	22	5.003	80.574	8.119	0.093
2795	ISMC250H	ISMC250H	0.271	1.000	0.271	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2796	ISMC250H	ISMC250H	0.210	1.000	0.210	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2797	ISMC250H	ISMC250H	0.357	1.000	0.357	Eq. H1-1b	29	6.743	98.022	5.838	0.545
2798	Taper	Taper	0.305	1.000	0.305	Eq. H1-1b	21	6.309	205.934	10.820	0.156

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
2799	Taper	Taper	0.260	1.000	0.260	Eq. H1-1b	22	6.309	205.934	10.820	0.156
2800	ISMC250H	ISMC250H	0.186	1.000	0.186	Eq. H1-1b	20	6.743	98.022	5.838	0.545
2801	ISMC250H	ISMC250H	0.406	1.000	0.406	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2802	ISMC250H	ISMC250H	0.325	1.000	0.325	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2803	ISMC250H	ISMC250H	0.371	1.000	0.371	Eq. H1-1a	22	6.743	98.022	5.838	0.545
2804	ISMC250H	ISMC250H	0.351	1.000	0.351	Eq. H1-1b	25	6.743	98.022	5.838	0.545
2805	Taper	Taper	0.181	1.000	0.181	Sec. G1	19	8.184	340.042	13.531	0.306
2806	Taper	Taper	0.201	1.000	0.201	Sec. G1	19	8.184	340.042	13.531	0.306
2807	ISMC250H	ISMC250H	0.116	1.000	0.116	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2808	ISMC250H	ISMC250H	0.106	1.000	0.106	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2809	Taper	Taper	0.247	1.000	0.247	Sec. G1	21	6.309	205.934	10.820	0.156
2810	Taper	Taper	0.475	1.000	0.475	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2811	Taper	Taper	0.123	1.000	0.123	Eq. H1-1b	30	6.309	205.934	10.820	0.156
2812	Taper	Taper	0.091	1.000	0.091	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2813	ISMC250H	ISMC250H	0.243	1.000	0.243	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2814	ISMC250H	ISMC250H	0.383	1.000	0.383	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2815	ISMC250H	ISMC250H	0.225	1.000	0.225	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2816	ISMC250H	ISMC250H	0.161	1.000	0.161	Eq. H1-1b	19	6.743	98.022	5.838	0.545
2817	ISMC250H	ISMC250H	0.161	1.000	0.161	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2818	ISMC250H	ISMC250H	0.208	1.000	0.208	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2819	ISMC250H	ISMC250H	0.138	1.000	0.138	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2820	ISMC250H	ISMC250H	0.243	1.000	0.243	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2821	ISA75X75XE	ISA75X75X8	0.717	1.000	0.717	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2822	ISA75X75XE	ISA75X75X8	0.562	1.000	0.562	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2823	ISA75X75XE	ISA75X75X8	0.730	1.000	0.730	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2824	ISA75X75XE	ISA75X75X8	0.563	1.000	0.563	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2825	Taper	Taper	0.482	1.000	0.482	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2826	ISA75X75XE	ISA75X75X8	0.509	1.000	0.509	Eq. H1-1b	19	1.767	0.584	2.308	0.058
2827	Taper	Taper	0.314	1.000	0.314	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2828	ISA75X75XE	ISA75X75X8	0.455	1.000	0.455	Eq. H1-1b	19	1.767	0.584	2.308	0.058
2829	Taper	Taper	0.180	1.000	0.180	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2830	ISA75X75XE	ISA75X75X8	0.355	1.000	0.355	Eq. H1-1b	20	1.767	0.584	2.308	0.058
2831	Taper	Taper	0.156	1.000	0.156	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2832	ISA75X75XE	ISA75X75X8	0.387	1.000	0.387	Eq. H1-1b	20	1.767	0.584	2.308	0.058
2833	ISMC250H	ISMC250H	0.160	1.000	0.160	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2834	ISMC250H	ISMC250H	0.248	1.000	0.248	Eq. H1-1b	21	6.743	98.022	5.838	0.545
2835	Taper	Taper	0.551	1.000	0.551	Eq. H1-1a	22	5.003	80.574	8.119	0.093
2836	ISMC250H	ISMC250H	0.385	1.000	0.385	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2837	ISMC250H	ISMC250H	0.169	1.000	0.169	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2838	ISMC250H	ISMC250H	0.131	1.000	0.131	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2839	Taper	Taper	0.443	1.000	0.443	Eq. H1-1a	22	5.003	80.574	8.119	0.093
2840	ISMC250H	ISMC250H	0.170	1.000	0.170	Eq. H1-1b	22	6.743	98.022	5.838	0.545
2841	ISA75X75XE	ISA75X75X8	0.504	1.000	0.504	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2842	ISA75X75XE	ISA75X75X8	0.224	1.000	0.224	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2843	ISA75X75XE	ISA75X75X8	0.239	1.000	0.239	Eq. H1-1b	21	1.767	0.584	2.308	0.058

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
2844	ISA75X75XE	ISA75X75X8	0.365	1.000	0.365	Eq. H1-1b	21	1.767	0.584	2.308	0.058
2845	Taper	Taper	0.568	1.000	0.568	Eq. H1-1a	21	12.797	606.554	75.095	0.757
2846	ISMC250H	ISMC250H	0.284	1.000	0.284	Eq. H1-1b	20	6.743	98.022	5.838	0.545
2847	ISA75X75XE	ISA75X75X8	0.688	1.000	0.688	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2848	ISA75X75XE	ISA75X75X8	0.734	1.000	0.734	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2849	ISA75X75XE	ISA75X75X8	0.581	1.000	0.581	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2850	ISA75X75XE	ISA75X75X8	0.588	1.000	0.588	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2851	ISA75X75XE	ISA75X75X8	0.683	1.000	0.683	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2852	ISA75X75XE	ISA75X75X8	0.740	1.000	0.740	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2853	ISA75X75XE	ISA75X75X8	0.590	1.000	0.590	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2854	ISA75X75XE	ISA75X75X8	0.593	1.000	0.593	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2855	ISA75X75XE	ISA75X75X8	0.280	1.000	0.280	Eq. H1-1b	19	1.767	0.584	2.308	0.058
2856	ISA75X75XE	ISA75X75X8	0.372	1.000	0.372	Eq. H1-1b	19	1.767	0.584	2.308	0.058
2857	ISA75X75XE	ISA75X75X8	0.243	1.000	0.243	Eq. H1-1b	19	1.767	0.584	2.308	0.058
2858	ISA75X75XE	ISA75X75X8	0.323	1.000	0.323	Eq. H1-1b	19	1.767	0.584	2.308	0.058
2859	ISA75X75XE	ISA75X75X8	0.357	1.000	0.357	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2860	ISA75X75XE	ISA75X75X8	0.503	1.000	0.503	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2861	ISA75X75XE	ISA75X75X8	0.367	1.000	0.367	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2862	ISA75X75XE	ISA75X75X8	0.510	1.000	0.510	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2863	ISA75X75XE	ISA75X75X8	0.504	1.000	0.504	Eq. H1-1b	13	1.767	0.584	2.308	0.058
2864	ISA75X75XE	ISA75X75X8	0.311	1.000	0.311	Eq. H1-1b	21	1.767	0.584	2.308	0.058
2865	ISA75X75XE	ISA75X75X8	0.380	1.000	0.380	Eq. H1-1b	22	1.767	0.584	2.308	0.058
2866	ISA75X75XE	ISA75X75X8	0.455	1.000	0.455	Eq. H1-1b	29	1.767	0.584	2.308	0.058
2867	Taper	Taper	0.562	1.000	0.562	Eq. H1-1b	22	8.758	313.785	32.042	0.353
2868	Taper	Taper	0.849	1.000	0.849	Eq. H1-1a	20	12.797	606.554	75.095	0.757
2869	Taper	Taper	0.266	1.000	0.266	Eq. H1-1b	22	8.758	313.785	32.042	0.353
2870	Taper	Taper	0.330	1.000	0.330	Eq. H1-1a	19	12.797	606.554	75.095	0.757
2871	Taper	Taper	0.235	1.000	0.235	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2872	Taper	Taper	0.340	1.000	0.340	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2875	Taper	Taper	0.217	1.000	0.217	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2876	TUBE	N/A						7.043	36.805	36.805	55.033
2877	TUBE	N/A						7.043	36.805	36.805	55.033
2878	TUBE	TUBE	0.174	1.000	0.174	Sec. E1	20	7.043	36.805	36.805	55.033
2879	TUBE	TUBE	0.260	1.000	0.260	Eq. H1-1a	19	7.043	36.805	36.805	55.033
2880	TUBE	TUBE	0.274	1.000	0.274	Eq. H1-1a	21	7.043	36.805	36.805	55.033
2881	TUBE	TUBE	0.164	1.000	0.164	Sec. E1	22	7.043	36.805	36.805	55.033
2882	TUBE	TUBE	0.163	1.000	0.163	Sec. E1	21	7.043	36.805	36.805	55.033
2883	TUBE	TUBE	0.281	1.000	0.281	Eq. H1-1a	22	7.043	36.805	36.805	55.033
2884	TUBE	TUBE	0.284	1.000	0.284	Eq. H1-1a	21	7.043	36.805	36.805	55.033
2885	TUBE	TUBE	0.165	1.000	0.165	Sec. E1	22	7.043	36.805	36.805	55.033
2886	TUBE	TUBE	0.136	1.000	0.136	Sec. E1	21	7.043	36.805	36.805	55.033
2887	TUBE	TUBE	0.264	1.000	0.264	Eq. H1-1a	22	7.043	36.805	36.805	55.033
2888	TUBE	TUBE	0.159	1.000	0.159	Sec. E1	20	7.043	36.805	36.805	55.033
2889	TUBE	TUBE	0.292	1.000	0.292	Eq. H1-1a	19	7.043	36.805	36.805	55.033
2890	TUBE	TUBE	0.179	1.000	0.179	Sec. E1	20	7.043	36.805	36.805	55.033

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
2891	TUBE	TUBE	0.157	1.000	0.157	Sec. E1	22	7.043	36.805	36.805	55.033
2892	Taper	Taper	0.374	1.000	0.374	Eq. H1-1a	20	7.161	186.849	25.634	0.192
2893	Taper	Taper	0.409	1.000	0.409	Eq. H1-1a	22	8.758	313.785	32.042	0.353
2894	Taper	Taper	0.247	1.000	0.247	Eq. H1-1b	25	8.758	313.785	32.042	0.353
2895	Taper	Taper	0.473	1.000	0.473	Eq. H1-1a	13	7.161	186.849	25.634	0.192
2896	Taper	Taper	0.594	1.000	0.594	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2897	Taper	Taper	0.159	1.000	0.159	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2898	Taper	Taper	0.128	1.000	0.128	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2899	Taper	Taper	0.261	1.000	0.261	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2900	Taper	Taper	0.144	1.000	0.144	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2901	Taper	Taper	0.246	1.000	0.246	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2902	Taper	Taper	0.212	1.000	0.212	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2903	Taper	Taper	0.209	1.000	0.209	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2904	Taper	Taper	0.587	1.000	0.587	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2905	Taper	Taper	0.555	1.000	0.555	Eq. H1-1a	20	8.758	313.785	32.042	0.353
2906	Taper	Taper	0.680	1.000	0.680	Eq. H1-1a	22	12.797	606.554	75.095	0.757
2907	Taper	Taper	0.819	1.000	0.819	Eq. H1-1a	25	12.797	606.554	75.095	0.757
2908	Taper	Taper	0.566	1.000	0.566	Eq. H1-1a	19	8.758	313.785	32.042	0.353
2909	Taper	Taper	0.701	1.000	0.701	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2910	Taper	Taper	0.709	1.000	0.709	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2911	Taper	Taper	0.367	1.000	0.367	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2912	Taper	Taper	0.392	1.000	0.392	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2913	Taper	Taper	0.391	1.000	0.391	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2914	Taper	Taper	0.741	1.000	0.741	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2915	Taper	Taper	0.423	1.000	0.423	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2916	Taper	Taper	0.424	1.000	0.424	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2917	Taper	Taper	0.710	1.000	0.710	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2918	Taper	Taper	0.589	1.000	0.589	Eq. H1-1a	20	8.758	313.785	32.042	0.353
2919	Taper	Taper	0.732	1.000	0.732	Eq. H1-1a	19	12.797	606.554	75.095	0.757
2920	Taper	Taper	0.683	1.000	0.683	Eq. H1-1a	20	12.797	606.554	75.095	0.757
2921	Taper	Taper	0.574	1.000	0.574	Eq. H1-1a	19	8.758	313.785	32.042	0.353
2922	Taper	Taper	0.650	1.000	0.650	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2923	Taper	Taper	0.626	1.000	0.626	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2924	Taper	Taper	0.584	1.000	0.584	Eq. H1-1b	24	8.184	340.042	13.531	0.306
2925	Taper	Taper	0.362	1.000	0.362	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2926	Taper	Taper	0.390	1.000	0.390	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2927	Taper	Taper	0.389	1.000	0.389	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2928	Taper	Taper	0.623	1.000	0.623	Eq. H1-1b	23	8.184	340.042	13.531	0.306
2929	Taper	Taper	0.210	1.000	0.210	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2930	Taper	Taper	0.717	1.000	0.717	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2931	Taper	Taper	0.413	1.000	0.413	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2932	Taper	Taper	0.414	1.000	0.414	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2933	Taper	Taper	0.616	1.000	0.616	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2934	Taper	Taper	0.354	1.000	0.354	Eq. H1-1a	13	7.161	186.849	25.634	0.192
2935	Taper	Taper	0.382	1.000	0.382	Eq. H1-1a	21	8.758	313.785	32.042	0.353

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
2936	Taper	Taper	0.396	1.000	0.396	Eq. H1-1a	25	8.758	313.785	32.042	0.353
2937	Taper	Taper	0.432	1.000	0.432	Eq. H1-1a	13	7.161	186.849	25.634	0.192
2938	Taper	Taper	0.557	1.000	0.557	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2939	Taper	Taper	0.302	1.000	0.302	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2940	Taper	Taper	0.160	1.000	0.160	Eq. H1-1b	25	8.184	340.042	13.531	0.306
2941	Taper	Taper	0.161	1.000	0.161	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2942	Taper	Taper	0.255	1.000	0.255	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2943	Taper	Taper	0.131	1.000	0.131	Eq. H1-1b	21	8.184	340.042	13.531	0.306
2944	Taper	Taper	0.182	1.000	0.182	Eq. H1-1b	24	8.184	340.042	13.531	0.306
2945	Taper	Taper	0.154	1.000	0.154	Eq. H1-1b	13	8.184	340.042	13.531	0.306
2946	Taper	Taper	0.361	1.000	0.361	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2947	Taper	Taper	0.167	1.000	0.167	Eq. H1-1b	22	8.184	340.042	13.531	0.306
2948	Taper	Taper	0.177	1.000	0.177	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2949	Taper	Taper	0.536	1.000	0.536	Eq. H1-1b	20	8.184	340.042	13.531	0.306
2950	Taper	Taper	0.712	1.000	0.712	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2951	Taper	Taper	0.273	1.000	0.273	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2952	Taper	Taper	0.615	1.000	0.615	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2953	Taper	Taper	0.324	1.000	0.324	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2954	Taper	Taper	0.455	1.000	0.455	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2955	Taper	Taper	0.317	1.000	0.317	Eq. H1-1b	22	6.309	205.934	10.820	0.156
2956	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2957	Taper	Taper	0.696	1.000	0.696	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2958	Taper	Taper	0.292	1.000	0.292	Eq. H1-1b	21	6.309	205.934	10.820	0.156
2959	Taper	Taper	0.623	1.000	0.623	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2960	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2961	Taper	Taper	0.432	1.000	0.432	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2962	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2963	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2964	Taper	Taper	0.432	1.000	0.432	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2965	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2966	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2967	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2968	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2969	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2970	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2971	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2972	Taper	Taper	0.559	1.000	0.559	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2973	Taper	Taper	0.559	1.000	0.559	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2974	Taper	Taper	0.519	1.000	0.519	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2975	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2976	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2977	Taper	Taper	0.519	1.000	0.519	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2978	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2979	Taper	Taper	0.489	1.000	0.489	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2980	Taper	Taper	0.519	1.000	0.519	Eq. H1-1b	13	5.022	117.374	8.116	0.081

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
2981	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2982	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2983	Taper	Taper	0.374	1.000	0.374	Eq. H1-1a	25	12.797	606.554	75.095	0.757
2984	Taper	Taper	0.304	1.000	0.304	Eq. H1-1b	21	8.758	313.785	32.042	0.353
2985	Taper	Taper	0.354	1.000	0.354	Eq. H1-1a	25	12.797	606.554	75.095	0.757
2986	Taper	Taper	0.319	1.000	0.319	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2987	Taper	Taper	0.295	1.000	0.295	Eq. H1-1b	22	6.309	205.934	10.820	0.156
2988	Taper	Taper	0.279	1.000	0.279	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2989	Taper	Taper	0.442	1.000	0.442	Eq. H1-1b	24	8.184	340.042	13.531	0.306
2990	Taper	Taper	0.210	1.000	0.210	Eq. H1-1b	19	8.184	340.042	13.531	0.306
2991	Taper	Taper	0.201	1.000	0.201	Eq. H1-1b	24	8.184	340.042	13.531	0.306
2992	Taper	Taper	0.596	1.000	0.596	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2993	Taper	Taper	0.597	1.000	0.597	Eq. H1-1b	13	5.022	117.374	8.116	0.081
2994	Taper	Taper	0.643	1.000	0.643	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2995	Taper	Taper	0.655	1.000	0.655	Eq. H1-1b	19	6.309	205.934	10.820	0.156
2996	Taper	Taper	0.653	1.000	0.653	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2997	Taper	Taper	0.636	1.000	0.636	Eq. H1-1b	20	6.309	205.934	10.820	0.156
2998	TUBE	TUBE	0.154	1.000	0.154	Sec. E1	25	7.043	36.805	36.805	55.033
2999	TUBE	TUBE	0.092	1.000	0.092	Sec. E1	22	7.043	36.805	36.805	55.033
3000	TUBE	TUBE	0.075	1.000	0.075	Sec. E1	25	7.043	36.805	36.805	55.033
3001	TUBE	TUBE	0.137	1.000	0.137	Sec. E1	22	7.043	36.805	36.805	55.033
3002	TUBE	TUBE	0.144	1.000	0.144	Sec. E1	25	7.043	36.805	36.805	55.033
3003	TUBE	TUBE	0.102	1.000	0.102	Sec. E1	22	7.043	36.805	36.805	55.033
3004	TUBE	TUBE	0.097	1.000	0.097	Sec. E1	25	7.043	36.805	36.805	55.033
3005	TUBE	TUBE	0.135	1.000	0.135	Sec. E1	22	7.043	36.805	36.805	55.033
3006	TUBE	TUBE	0.223	1.000	0.223	Eq. H1-1a	19	7.043	36.805	36.805	55.033
3007	TUBE	TUBE	0.127	1.000	0.127	Sec. E1	20	7.043	36.805	36.805	55.033
3008	Taper	Taper	0.274	1.000	0.274	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3009	Taper	Taper	0.259	1.000	0.259	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3010	TUBE	TUBE	0.134	1.000	0.134	Sec. E1	19	7.043	36.805	36.805	55.033
3011	TUBE	TUBE	0.137	1.000	0.137	Sec. E1	24	7.043	36.805	36.805	55.033
3012	TUBE	TUBE	0.161	1.000	0.161	Sec. E1	20	7.043	36.805	36.805	55.033
3013	TUBE	TUBE	0.147	1.000	0.147	Sec. E1	19	7.043	36.805	36.805	55.033
3014	TUBE	TUBE	0.141	1.000	0.141	Sec. E1	20	7.043	36.805	36.805	55.033
3015	TUBE	TUBE	0.157	1.000	0.157	Sec. E1	19	7.043	36.805	36.805	55.033
3016	Taper	Taper	0.327	1.000	0.327	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3017	Taper	Taper	0.140	1.000	0.140	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3018	ISMC250H	ISMC250H	0.345	1.000	0.345	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3019	Taper	Taper	0.001	1.000	0.001	Sec. E1	12	8.758	313.785	32.042	0.353
3020	Taper	Taper	0.094	1.000	0.094	Eq. H1-1b	21	8.758	313.785	32.042	0.353
3021	ISMC250H	ISMC250H	0.307	1.000	0.307	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3022	ISMC250H	ISMC250H	0.425	1.000	0.425	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3023	Taper	Taper	0.158	1.000	0.158	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3024	ISMC250H	ISMC250H	0.219	1.000	0.219	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3025	ISMC250H	ISMC250H	0.492	1.000	0.492	Eq. H1-1b	22	6.743	98.022	5.838	0.545

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3026	ISMC250H	ISMC250H	0.317	1.000	0.317	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3027	Taper	Taper	0.334	1.000	0.334	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3028	ISMC250H	ISMC250H	0.286	1.000	0.286	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3029	Taper	Taper	0.241	1.000	0.241	Eq. H1-1b	19	5.003	80.574	8.119	0.093
3030	ISMC250H	ISMC250H	0.365	1.000	0.365	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3031	ISMC250H	ISMC250H	0.207	1.000	0.207	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3032	ISMC250H	ISMC250H	0.326	1.000	0.326	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3033	Taper	Taper	0.331	1.000	0.331	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3034	Taper	Taper	0.319	1.000	0.319	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3035	ISMC250H	ISMC250H	0.184	1.000	0.184	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3036	ISMC250H	ISMC250H	0.372	1.000	0.372	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3037	ISMC250H	ISMC250H	0.219	1.000	0.219	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3038	ISMC250H	ISMC250H	0.479	1.000	0.479	Eq. H1-1a	22	6.743	98.022	5.838	0.545
3039	ISMC250H	ISMC250H	0.335	1.000	0.335	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3040	Taper	Taper	0.201	1.000	0.201	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3041	Taper	Taper	0.183	1.000	0.183	Sec. G1	25	8.184	340.042	13.531	0.306
3042	ISMC250H	ISMC250H	0.106	1.000	0.106	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3043	ISMC250H	ISMC250H	0.096	1.000	0.096	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3044	Taper	Taper	0.246	1.000	0.246	Sec. G1	25	6.309	205.934	10.820	0.156
3045	Taper	Taper	0.473	1.000	0.473	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3046	Taper	Taper	0.106	1.000	0.106	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3047	Taper	Taper	0.111	1.000	0.111	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3048	ISMC250H	ISMC250H	0.221	1.000	0.221	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3049	ISMC250H	ISMC250H	0.319	1.000	0.319	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3050	ISMC250H	ISMC250H	0.215	1.000	0.215	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3051	ISMC250H	ISMC250H	0.204	1.000	0.204	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3052	ISMC250H	ISMC250H	0.151	1.000	0.151	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3053	ISMC250H	ISMC250H	0.262	1.000	0.262	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3054	ISMC250H	ISMC250H	0.131	1.000	0.131	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3055	ISMC250H	ISMC250H	0.289	1.000	0.289	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3056	ISA75X75X8	ISA75X75X8	0.720	1.000	0.720	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3057	ISA75X75X8	ISA75X75X8	0.597	1.000	0.597	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3058	ISA75X75X8	ISA75X75X8	0.733	1.000	0.733	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3059	ISA75X75X8	ISA75X75X8	0.563	1.000	0.563	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3060	Taper	Taper	0.510	1.000	0.510	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3061	ISA75X75X8	ISA75X75X8	0.603	1.000	0.603	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3062	Taper	Taper	0.275	1.000	0.275	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3063	ISA75X75X8	ISA75X75X8	0.545	1.000	0.545	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3064	Taper	Taper	0.201	1.000	0.201	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3065	ISA75X75X8	ISA75X75X8	0.430	1.000	0.430	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3066	Taper	Taper	0.148	1.000	0.148	Eq. H1-1b	13	8.184	340.042	13.531	0.306
3067	ISA75X75X8	ISA75X75X8	0.438	1.000	0.438	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3068	ISMC250H	ISMC250H	0.128	1.000	0.128	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3069	ISMC250H	ISMC250H	0.214	1.000	0.214	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3070	Taper	Taper	0.245	1.000	0.245	Eq. H1-1b	22	5.003	80.574	8.119	0.093

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3071	ISMC250H	ISMC250H	0.472	1.000	0.472	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3072	ISMC250H	ISMC250H	0.175	1.000	0.175	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3073	ISMC250H	ISMC250H	0.154	1.000	0.154	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3074	Taper	Taper	0.174	1.000	0.174	Eq. H1-1b	19	5.003	80.574	8.119	0.093
3075	ISMC250H	ISMC250H	0.170	1.000	0.170	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3076	ISA75X75XE	ISA75X75X8	0.676	1.000	0.676	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3077	ISA75X75XE	ISA75X75X8	0.641	1.000	0.641	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3078	ISA75X75XE	ISA75X75X8	0.425	1.000	0.425	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3079	ISA75X75XE	ISA75X75X8	0.504	1.000	0.504	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3080	Taper	Taper	0.475	1.000	0.475	Eq. H1-1a	25	12.797	606.554	75.095	0.757
3081	ISMC250H	ISMC250H	0.308	1.000	0.308	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3082	ISA75X75XE	ISA75X75X8	0.689	1.000	0.689	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3083	ISA75X75XE	ISA75X75X8	0.736	1.000	0.736	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3084	ISA75X75XE	ISA75X75X8	0.599	1.000	0.599	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3085	ISA75X75XE	ISA75X75X8	0.589	1.000	0.589	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3086	ISA75X75XE	ISA75X75X8	0.687	1.000	0.687	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3087	ISA75X75XE	ISA75X75X8	0.742	1.000	0.742	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3088	ISA75X75XE	ISA75X75X8	0.607	1.000	0.607	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3089	ISA75X75XE	ISA75X75X8	0.593	1.000	0.593	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3090	ISA75X75XE	ISA75X75X8	0.385	1.000	0.385	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3091	ISA75X75XE	ISA75X75X8	0.464	1.000	0.464	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3092	ISA75X75XE	ISA75X75X8	0.461	1.000	0.461	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3093	ISA75X75XE	ISA75X75X8	0.432	1.000	0.432	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3094	ISA75X75XE	ISA75X75X8	0.356	1.000	0.356	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3095	ISA75X75XE	ISA75X75X8	0.502	1.000	0.502	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3096	ISA75X75XE	ISA75X75X8	0.367	1.000	0.367	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3097	ISA75X75XE	ISA75X75X8	0.510	1.000	0.510	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3098	ISA75X75XE	ISA75X75X8	0.806	1.000	0.806	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3099	ISA75X75XE	ISA75X75X8	0.383	1.000	0.383	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3100	ISA75X75XE	ISA75X75X8	0.468	1.000	0.468	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3101	ISA75X75XE	ISA75X75X8	0.534	1.000	0.534	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3103	Taper	Taper	0.745	1.000	0.745	Eq. H1-1a	25	12.797	606.554	75.095	0.757
3105	Taper	Taper	0.275	1.000	0.275	Eq. H1-1b	25	12.797	606.554	75.095	0.757
3106	Taper	Taper	0.116	1.000	0.116	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3107	Taper	Taper	0.321	1.000	0.321	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3110	Taper	Taper	0.110	1.000	0.110	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3111	Taper	Taper	0.460	1.000	0.460	Eq. H1-1a	20	5.921	145.870	10.818	0.151
3112	Taper	Taper	0.344	1.000	0.344	Eq. H1-1a	22	7.549	262.145	25.635	0.197
3113	Taper	Taper	0.463	1.000	0.463	Eq. H1-1b	19	7.549	262.145	25.635	0.197
3114	Taper	Taper	0.615	1.000	0.615	Eq. H1-1a	13	5.921	145.870	10.818	0.151
3115	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3116	Taper	Taper	0.281	1.000	0.281	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3117	Taper	Taper	0.244	1.000	0.244	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3118	Taper	Taper	0.256	1.000	0.256	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3119	Taper	Taper	0.268	1.000	0.268	Eq. H1-1b	25	8.184	340.042	13.531	0.306

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3120	Taper	Taper	0.414	1.000	0.414	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3121	Taper	Taper	0.309	1.000	0.309	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3122	Taper	Taper	0.310	1.000	0.310	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3123	Taper	Taper	0.452	1.000	0.452	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3124	Taper	Taper	0.570	1.000	0.570	Eq. H1-1a	24	7.549	262.145	25.635	0.197
3125	Taper	Taper	0.717	1.000	0.717	Eq. H1-1a	22	9.734	431.417	32.050	0.386
3126	Taper	Taper	0.842	1.000	0.842	Eq. H1-1a	25	9.734	431.417	32.050	0.386
3127	Taper	Taper	0.575	1.000	0.575	Eq. H1-1a	23	7.549	262.145	25.635	0.197
3128	Taper	Taper	0.693	1.000	0.693	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3129	Taper	Taper	0.717	1.000	0.717	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3130	Taper	Taper	0.334	1.000	0.334	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3131	Taper	Taper	0.363	1.000	0.363	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3132	Taper	Taper	0.362	1.000	0.362	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3133	Taper	Taper	0.710	1.000	0.710	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3134	Taper	Taper	0.376	1.000	0.376	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3135	Taper	Taper	0.378	1.000	0.378	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3136	Taper	Taper	0.688	1.000	0.688	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3137	Taper	Taper	0.670	1.000	0.670	Eq. H1-1a	24	7.549	262.145	25.635	0.197
3138	Taper	Taper	0.792	1.000	0.792	Eq. H1-1a	23	9.734	431.417	32.050	0.386
3139	Taper	Taper	0.775	1.000	0.775	Eq. H1-1a	24	9.734	431.417	32.050	0.386
3140	Taper	Taper	0.658	1.000	0.658	Eq. H1-1a	23	7.549	262.145	25.635	0.197
3141	Taper	Taper	0.667	1.000	0.667	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3142	Taper	Taper	0.609	1.000	0.609	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3143	Taper	Taper	0.555	1.000	0.555	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3144	Taper	Taper	0.320	1.000	0.320	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3145	Taper	Taper	0.373	1.000	0.373	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3146	Taper	Taper	0.371	1.000	0.371	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3147	Taper	Taper	0.569	1.000	0.569	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3148	Taper	Taper	0.223	1.000	0.223	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3149	Taper	Taper	0.637	1.000	0.637	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3150	Taper	Taper	0.367	1.000	0.367	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3151	Taper	Taper	0.369	1.000	0.369	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3152	Taper	Taper	0.634	1.000	0.634	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3153	Taper	Taper	0.612	1.000	0.612	Eq. H1-1a	13	5.921	145.870	10.818	0.151
3154	Taper	Taper	0.505	1.000	0.505	Eq. H1-1a	25	7.549	262.145	25.635	0.197
3155	Taper	Taper	0.511	1.000	0.511	Eq. H1-1a	24	7.549	262.145	25.635	0.197
3156	Taper	Taper	0.567	1.000	0.567	Eq. H1-1a	13	5.921	145.870	10.818	0.151
3157	Taper	Taper	0.409	1.000	0.409	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3158	Taper	Taper	0.401	1.000	0.401	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3159	Taper	Taper	0.317	1.000	0.317	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3160	Taper	Taper	0.248	1.000	0.248	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3161	Taper	Taper	0.260	1.000	0.260	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3162	Taper	Taper	0.273	1.000	0.273	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3163	Taper	Taper	0.316	1.000	0.316	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3164	Taper	Taper	0.075	1.000	0.075	Eq. H1-1b	20	8.184	340.042	13.531	0.306

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3165	Taper	Taper	0.423	1.000	0.423	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3166	Taper	Taper	0.273	1.000	0.273	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3167	Taper	Taper	0.274	1.000	0.274	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3168	Taper	Taper	0.374	1.000	0.374	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3169	Taper	Taper	0.362	1.000	0.362	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3170	Taper	Taper	0.279	1.000	0.279	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3171	Taper	Taper	0.283	1.000	0.283	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3172	Taper	Taper	0.347	1.000	0.347	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3173	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3174	Taper	Taper	0.276	1.000	0.276	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3175	Taper	Taper	0.559	1.000	0.559	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3176	Taper	Taper	0.372	1.000	0.372	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3177	Taper	Taper	0.294	1.000	0.294	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3178	Taper	Taper	0.296	1.000	0.296	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3179	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3180	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3181	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3182	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3183	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3184	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3185	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3186	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3187	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3188	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3189	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3190	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3191	Taper	Taper	0.558	1.000	0.558	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3192	Taper	Taper	0.558	1.000	0.558	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3193	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3194	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3195	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3196	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3197	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3198	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3199	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3200	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3201	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3202	Taper	Taper	0.415	1.000	0.415	Eq. H1-1a	25	9.734	431.417	32.050	0.386
3203	Taper	Taper	0.318	1.000	0.318	Eq. H1-1b	22	7.549	262.145	25.635	0.197
3204	Taper	Taper	0.389	1.000	0.389	Eq. H1-1a	25	9.734	431.417	32.050	0.386
3205	Taper	Taper	0.331	1.000	0.331	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3206	Taper	Taper	0.299	1.000	0.299	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3207	Taper	Taper	0.360	1.000	0.360	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3208	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3209	Taper	Taper	0.180	1.000	0.180	Eq. H1-1b	19	8.184	340.042	13.531	0.306

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3210	Taper	Taper	0.181	1.000	0.181	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3211	Taper	Taper	0.596	1.000	0.596	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3212	Taper	Taper	0.595	1.000	0.595	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3213	Taper	Taper	0.275	1.000	0.275	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3214	Taper	Taper	0.329	1.000	0.329	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3215	Taper	Taper	0.299	1.000	0.299	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3216	Taper	Taper	0.305	1.000	0.305	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3217	Taper	Taper	0.269	1.000	0.269	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3218	Taper	Taper	0.273	1.000	0.273	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3219	Taper	Taper	0.214	1.000	0.214	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3220	Taper	Taper	0.136	1.000	0.136	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3221	ISMC250H	ISMC250H	0.416	1.000	0.416	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3222	Taper	Taper	0.698	1.000	0.698	Eq. H1-1b	20	7.549	262.145	25.635	0.197
3223	Taper	Taper	0.304	1.000	0.304	Eq. H1-1b	22	7.549	262.145	25.635	0.197
3224	ISMC250H	ISMC250H	0.426	1.000	0.426	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3225	ISMC250H	ISMC250H	0.315	1.000	0.315	Eq. H1-1b	33	6.743	98.022	5.838	0.545
3226	Taper	Taper	0.224	1.000	0.224	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3227	ISMC250H	ISMC250H	0.185	1.000	0.185	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3228	ISMC250H	ISMC250H	0.383	1.000	0.383	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3229	ISMC250H	ISMC250H	0.354	1.000	0.354	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3230	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3231	ISMC250H	ISMC250H	0.184	1.000	0.184	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3232	Taper	Taper	0.387	1.000	0.387	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3233	ISMC250H	ISMC250H	0.210	1.000	0.210	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3234	ISMC250H	ISMC250H	0.214	1.000	0.214	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3235	ISMC250H	ISMC250H	0.238	1.000	0.238	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3236	Taper	Taper	0.319	1.000	0.319	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3237	Taper	Taper	0.226	1.000	0.226	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3238	ISMC250H	ISMC250H	0.156	1.000	0.156	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3239	ISMC250H	ISMC250H	0.316	1.000	0.316	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3240	ISMC250H	ISMC250H	0.258	1.000	0.258	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3241	ISMC250H	ISMC250H	0.241	1.000	0.241	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3242	ISMC250H	ISMC250H	0.299	1.000	0.299	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3243	Taper	Taper	0.157	1.000	0.157	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3244	Taper	Taper	0.174	1.000	0.174	Sec. G1	25	8.184	340.042	13.531	0.306
3245	ISMC250H	ISMC250H	0.093	1.000	0.093	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3246	ISMC250H	ISMC250H	0.085	1.000	0.085	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3247	Taper	Taper	0.219	1.000	0.219	Sec. G1	25	6.309	205.934	10.820	0.156
3248	Taper	Taper	0.478	1.000	0.478	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3249	Taper	Taper	0.100	1.000	0.100	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3250	Taper	Taper	0.077	1.000	0.077	Sec. G1	25	6.309	205.934	10.820	0.156
3251	ISMC250H	ISMC250H	0.202	1.000	0.202	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3252	ISMC250H	ISMC250H	0.314	1.000	0.314	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3253	ISMC250H	ISMC250H	0.190	1.000	0.190	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3254	ISMC250H	ISMC250H	0.212	1.000	0.212	Eq. H1-1b	19	6.743	98.022	5.838	0.545

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3255	ISMC250H	ISMC250H	0.127	1.000	0.127	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3256	ISMC250H	ISMC250H	0.146	1.000	0.146	Eq. H1-1b	33	6.743	98.022	5.838	0.545
3257	ISMC250H	ISMC250H	0.111	1.000	0.111	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3258	ISMC250H	ISMC250H	0.172	1.000	0.172	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3259	ISA75X75XE	ISA75X75X8	0.718	1.000	0.718	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3260	ISA75X75XE	ISA75X75X8	0.561	1.000	0.561	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3261	ISA75X75XE	ISA75X75X8	0.730	1.000	0.730	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3262	ISA75X75XE	ISA75X75X8	0.562	1.000	0.562	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3263	Taper	Taper	0.396	1.000	0.396	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3264	ISA75X75XE	ISA75X75X8	0.595	1.000	0.595	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3265	Taper	Taper	0.235	1.000	0.235	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3266	ISA75X75XE	ISA75X75X8	0.525	1.000	0.525	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3267	Taper	Taper	0.181	1.000	0.181	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3268	ISA75X75XE	ISA75X75X8	0.340	1.000	0.340	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3269	Taper	Taper	0.143	1.000	0.143	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3270	ISA75X75XE	ISA75X75X8	0.347	1.000	0.347	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3271	ISMC250H	ISMC250H	0.140	1.000	0.140	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3272	ISMC250H	ISMC250H	0.193	1.000	0.193	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3273	Taper	Taper	0.373	1.000	0.373	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3274	ISMC250H	ISMC250H	0.352	1.000	0.352	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3275	ISMC250H	ISMC250H	0.152	1.000	0.152	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3276	ISMC250H	ISMC250H	0.095	1.000	0.095	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3277	Taper	Taper	0.228	1.000	0.228	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3278	ISMC250H	ISMC250H	0.128	1.000	0.128	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3279	ISA75X75XE	ISA75X75X8	0.504	1.000	0.504	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3280	ISA75X75XE	ISA75X75X8	0.224	1.000	0.224	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3281	ISA75X75XE	ISA75X75X8	0.214	1.000	0.214	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3282	ISA75X75XE	ISA75X75X8	0.321	1.000	0.321	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3283	Taper	Taper	0.478	1.000	0.478	Eq. H1-1a	13	9.734	431.417	32.050	0.386
3284	ISMC250H	ISMC250H	0.268	1.000	0.268	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3285	ISA75X75XE	ISA75X75X8	0.689	1.000	0.689	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3286	ISA75X75XE	ISA75X75X8	0.735	1.000	0.735	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3287	ISA75X75XE	ISA75X75X8	0.579	1.000	0.579	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3288	ISA75X75XE	ISA75X75X8	0.587	1.000	0.587	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3289	ISA75X75XE	ISA75X75X8	0.684	1.000	0.684	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3290	ISA75X75XE	ISA75X75X8	0.740	1.000	0.740	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3291	ISA75X75XE	ISA75X75X8	0.591	1.000	0.591	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3292	ISA75X75XE	ISA75X75X8	0.593	1.000	0.593	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3293	ISA75X75XE	ISA75X75X8	0.283	1.000	0.283	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3294	ISA75X75XE	ISA75X75X8	0.404	1.000	0.404	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3295	ISA75X75XE	ISA75X75X8	0.231	1.000	0.231	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3296	ISA75X75XE	ISA75X75X8	0.341	1.000	0.341	Eq. H1-1b	19	1.767	0.584	2.308	0.058
3297	ISA75X75XE	ISA75X75X8	0.357	1.000	0.357	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3298	ISA75X75XE	ISA75X75X8	0.502	1.000	0.502	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3299	ISA75X75XE	ISA75X75X8	0.366	1.000	0.366	Eq. H1-1b	13	1.767	0.584	2.308	0.058

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3300	ISA75X75XE	ISA75X75X8	0.509	1.000	0.509	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3301	ISA75X75XE	ISA75X75X8	0.503	1.000	0.503	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3302	ISA75X75XE	ISA75X75X8	0.236	1.000	0.236	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3303	ISA75X75XE	ISA75X75X8	0.233	1.000	0.233	Eq. H1-1b	24	1.767	0.584	2.308	0.058
3304	ISA75X75XE	ISA75X75X8	0.321	1.000	0.321	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3305	Taper	Taper	0.709	1.000	0.709	Eq. H1-1b	20	7.549	262.145	25.635	0.197
3306	Taper	Taper	0.720	1.000	0.720	Eq. H1-1a	24	9.734	431.417	32.050	0.386
3307	Taper	Taper	0.203	1.000	0.203	Eq. H1-1b	25	7.549	262.145	25.635	0.197
3308	Taper	Taper	0.224	1.000	0.224	Eq. H1-1a	13	9.734	431.417	32.050	0.386
3309	Taper	Taper	0.258	1.000	0.258	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3310	Taper	Taper	0.286	1.000	0.286	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3313	Taper	Taper	0.162	1.000	0.162	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3314	TUBE	TUBE	0.411	1.000	0.411	Eq. H1-1a	24	3.497	8.014	8.014	11.973
3315	TUBE	TUBE	0.248	1.000	0.248	Eq. H1-1a	19	3.497	8.014	8.014	11.973
3316	TUBE	TUBE	0.230	1.000	0.230	Eq. H1-1a	20	3.497	8.014	8.014	11.973
3317	TUBE	TUBE	0.403	1.000	0.403	Eq. H1-1a	23	3.497	8.014	8.014	11.973
3318	TUBE	TUBE	0.453	1.000	0.453	Eq. H1-1a	25	3.497	8.014	8.014	11.973
3319	TUBE	TUBE	0.197	1.000	0.197	Sec. E1	22	3.497	8.014	8.014	11.973
3320	TUBE	TUBE	0.189	1.000	0.189	Sec. E1	25	3.497	8.014	8.014	11.973
3321	TUBE	TUBE	0.422	1.000	0.422	Eq. H1-1a	22	3.497	8.014	8.014	11.973
3322	TUBE	TUBE	0.486	1.000	0.486	Eq. H1-1a	25	3.497	8.014	8.014	11.973
3323	TUBE	TUBE	0.177	1.000	0.177	Sec. E1	22	3.497	8.014	8.014	11.973
3324	TUBE	TUBE	0.129	1.000	0.129	Sec. E1	25	3.497	8.014	8.014	11.973
3325	TUBE	TUBE	0.428	1.000	0.428	Eq. H1-1a	22	3.497	8.014	8.014	11.973
3326	TUBE	TUBE	0.218	1.000	0.218	Eq. H1-1a	20	3.497	8.014	8.014	11.973
3327	TUBE	TUBE	0.442	1.000	0.442	Eq. H1-1a	19	3.497	8.014	8.014	11.973
3328	TUBE	TUBE	0.140	1.000	0.140	Sec. E1	24	3.497	8.014	8.014	11.973
3329	TUBE	TUBE	0.347	1.000	0.347	Eq. H1-1a	19	3.497	8.014	8.014	11.973
3330	Taper	Taper	0.277	1.000	0.277	Eq. H1-1b	13	5.921	145.870	10.818	0.151
3331	Taper	Taper	0.147	1.000	0.147	Eq. H1-1b	25	7.549	262.145	25.635	0.197
3332	Taper	Taper	0.361	1.000	0.361	Eq. H1-1b	19	7.549	262.145	25.635	0.197
3333	Taper	Taper	0.325	1.000	0.325	Eq. H1-1b	13	5.921	145.870	10.818	0.151
3334	Taper	Taper	0.666	1.000	0.666	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3335	Taper	Taper	0.208	1.000	0.208	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3336	Taper	Taper	0.130	1.000	0.130	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3337	Taper	Taper	0.276	1.000	0.276	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3338	Taper	Taper	0.162	1.000	0.162	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3339	Taper	Taper	0.268	1.000	0.268	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3340	Taper	Taper	0.208	1.000	0.208	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3341	Taper	Taper	0.196	1.000	0.196	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3342	Taper	Taper	0.681	1.000	0.681	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3343	Taper	Taper	0.463	1.000	0.463	Eq. H1-1b	24	7.549	262.145	25.635	0.197
3344	Taper	Taper	0.549	1.000	0.549	Eq. H1-1a	22	9.734	431.417	32.050	0.386
3345	Taper	Taper	0.608	1.000	0.608	Eq. H1-1a	25	9.734	431.417	32.050	0.386
3346	Taper	Taper	0.584	1.000	0.584	Eq. H1-1a	23	7.549	262.145	25.635	0.197

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3347	Taper	Taper	0.689	1.000	0.689	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3348	Taper	Taper	0.676	1.000	0.676	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3349	Taper	Taper	0.375	1.000	0.375	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3350	Taper	Taper	0.419	1.000	0.419	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3351	Taper	Taper	0.418	1.000	0.418	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3352	Taper	Taper	0.676	1.000	0.676	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3353	Taper	Taper	0.439	1.000	0.439	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3354	Taper	Taper	0.441	1.000	0.441	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3355	Taper	Taper	0.711	1.000	0.711	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3356	Taper	Taper	0.613	1.000	0.613	Eq. H1-1a	24	7.549	262.145	25.635	0.197
3357	Taper	Taper	0.574	1.000	0.574	Eq. H1-1a	25	9.734	431.417	32.050	0.386
3358	Taper	Taper	0.538	1.000	0.538	Eq. H1-1a	25	9.734	431.417	32.050	0.386
3359	Taper	Taper	0.584	1.000	0.584	Eq. H1-1a	23	7.549	262.145	25.635	0.197
3360	Taper	Taper	0.763	1.000	0.763	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3361	Taper	Taper	0.600	1.000	0.600	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3362	Taper	Taper	0.505	1.000	0.505	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3363	Taper	Taper	0.370	1.000	0.370	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3364	Taper	Taper	0.419	1.000	0.419	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3365	Taper	Taper	0.417	1.000	0.417	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3366	Taper	Taper	0.518	1.000	0.518	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3367	Taper	Taper	0.200	1.000	0.200	Eq. H1-1b	13	8.184	340.042	13.531	0.306
3368	Taper	Taper	0.656	1.000	0.656	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3369	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3370	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3371	Taper	Taper	0.743	1.000	0.743	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3372	Taper	Taper	0.301	1.000	0.301	Eq. H1-1b	13	5.921	145.870	10.818	0.151
3373	Taper	Taper	0.368	1.000	0.368	Eq. H1-1a	25	7.549	262.145	25.635	0.197
3374	Taper	Taper	0.359	1.000	0.359	Eq. H1-1a	21	7.549	262.145	25.635	0.197
3375	Taper	Taper	0.288	1.000	0.288	Eq. H1-1b	13	5.921	145.870	10.818	0.151
3376	Taper	Taper	0.635	1.000	0.635	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3377	Taper	Taper	0.360	1.000	0.360	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3378	Taper	Taper	0.174	1.000	0.174	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3379	Taper	Taper	0.170	1.000	0.170	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3380	Taper	Taper	0.266	1.000	0.266	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3381	Taper	Taper	0.156	1.000	0.156	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3382	Taper	Taper	0.190	1.000	0.190	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3383	Taper	Taper	0.155	1.000	0.155	Eq. H1-1b	13	8.184	340.042	13.531	0.306
3384	Taper	Taper	0.397	1.000	0.397	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3385	Taper	Taper	0.164	1.000	0.164	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3386	Taper	Taper	0.198	1.000	0.198	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3387	Taper	Taper	0.604	1.000	0.604	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3388	Taper	Taper	0.801	1.000	0.801	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3389	Taper	Taper	0.315	1.000	0.315	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3390	Taper	Taper	0.687	1.000	0.687	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3391	Taper	Taper	0.363	1.000	0.363	Eq. H1-1b	13	6.309	205.934	10.820	0.156

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3392	Taper	Taper	0.509	1.000	0.509	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3393	Taper	Taper	0.309	1.000	0.309	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3394	Taper	Taper	0.569	1.000	0.569	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3395	Taper	Taper	0.795	1.000	0.795	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3396	Taper	Taper	0.338	1.000	0.338	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3397	Taper	Taper	0.696	1.000	0.696	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3398	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3399	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3400	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3401	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3402	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3403	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3404	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3405	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3406	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3407	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3408	Taper	Taper	0.431	1.000	0.431	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3409	Taper	Taper	0.405	1.000	0.405	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3410	Taper	Taper	0.559	1.000	0.559	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3411	Taper	Taper	0.559	1.000	0.559	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3412	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3413	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3414	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3415	Taper	Taper	0.519	1.000	0.519	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3416	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3417	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3418	Taper	Taper	0.519	1.000	0.519	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3419	Taper	Taper	0.522	1.000	0.522	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3420	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3421	Taper	Taper	0.240	1.000	0.240	Eq. H1-1b	25	9.734	431.417	32.050	0.386
3422	Taper	Taper	0.279	1.000	0.279	Eq. H1-1b	25	7.549	262.145	25.635	0.197
3423	Taper	Taper	0.298	1.000	0.298	Eq. H1-1a	13	9.734	431.417	32.050	0.386
3424	Taper	Taper	0.342	1.000	0.342	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3425	Taper	Taper	0.292	1.000	0.292	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3426	Taper	Taper	0.281	1.000	0.281	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3427	Taper	Taper	0.426	1.000	0.426	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3428	Taper	Taper	0.173	1.000	0.173	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3429	Taper	Taper	0.215	1.000	0.215	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3430	Taper	Taper	0.596	1.000	0.596	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3431	Taper	Taper	0.597	1.000	0.597	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3432	Taper	Taper	0.722	1.000	0.722	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3433	Taper	Taper	0.730	1.000	0.730	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3434	Taper	Taper	0.725	1.000	0.725	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3435	Taper	Taper	0.701	1.000	0.701	Eq. H1-1b	28	6.309	205.934	10.820	0.156
3436	TUBE	TUBE	0.307	1.000	0.307	Eq. H1-1a	25	3.497	8.014	8.014	11.973

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3437	TUBE	TUBE	0.059	1.000	0.059	Sec. E1	30	3.497	8.014	8.014	11.973
3438	TUBE	TUBE	0.067	1.000	0.067	Sec. E1	33	3.497	8.014	8.014	11.973
3439	TUBE	TUBE	0.277	1.000	0.277	Eq. H1-1a	22	3.497	8.014	8.014	11.973
3440	TUBE	TUBE	0.280	1.000	0.280	Eq. H1-1a	25	3.497	8.014	8.014	11.973
3441	TUBE	TUBE	0.076	1.000	0.076	Sec. E1	22	3.497	8.014	8.014	11.973
3442	TUBE	TUBE	0.083	1.000	0.083	Sec. E1	33	3.497	8.014	8.014	11.973
3443	TUBE	TUBE	0.243	1.000	0.243	Eq. H1-1a	22	3.497	8.014	8.014	11.973
3444	TUBE	TUBE	0.338	1.000	0.338	Eq. H1-1a	19	3.497	8.014	8.014	11.973
3445	TUBE	TUBE	0.231	1.000	0.231	Eq. H1-1a	20	3.497	8.014	8.014	11.973
3446	Taper	Taper	0.282	1.000	0.282	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3447	Taper	Taper	0.266	1.000	0.266	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3448	TUBE	TUBE	0.309	1.000	0.309	Eq. H1-1a	19	3.497	8.014	8.014	11.973
3449	TUBE	TUBE	0.159	1.000	0.159	Sec. E1	24	3.497	8.014	8.014	11.973
3450	TUBE	TUBE	0.288	1.000	0.288	Eq. H1-1a	24	3.497	8.014	8.014	11.973
3451	TUBE	TUBE	0.183	1.000	0.183	Sec. E1	23	3.497	8.014	8.014	11.973
3452	TUBE	TUBE	0.168	1.000	0.168	Sec. E1	24	3.497	8.014	8.014	11.973
3453	TUBE	TUBE	0.278	1.000	0.278	Eq. H1-1a	23	3.497	8.014	8.014	11.973
3454	Taper	Taper	0.241	1.000	0.241	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3455	Taper	Taper	0.146	1.000	0.146	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3456	ISMC250H	ISMC250H	0.387	1.000	0.387	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3457	Taper	Taper	0.001	1.000	0.001	Eq. H1-1b	23	7.549	262.145	25.635	0.197
3458	Taper	Taper	0.082	1.000	0.082	Eq. H1-1b	25	7.549	262.145	25.635	0.197
3459	ISMC250H	ISMC250H	0.292	1.000	0.292	Eq. H1-1b	23	6.743	98.022	5.838	0.545
3460	ISMC250H	ISMC250H	0.216	1.000	0.216	Eq. H1-1b	33	6.743	98.022	5.838	0.545
3461	Taper	Taper	0.116	1.000	0.116	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3462	ISMC250H	ISMC250H	0.189	1.000	0.189	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3463	ISMC250H	ISMC250H	0.392	1.000	0.392	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3464	ISMC250H	ISMC250H	0.302	1.000	0.302	Eq. H1-1b	23	6.743	98.022	5.838	0.545
3465	Taper	Taper	0.218	1.000	0.218	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3466	ISMC250H	ISMC250H	0.220	1.000	0.220	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3467	Taper	Taper	0.199	1.000	0.199	Eq. H1-1b	23	5.003	80.574	8.119	0.093
3468	ISMC250H	ISMC250H	0.283	1.000	0.283	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3469	ISMC250H	ISMC250H	0.187	1.000	0.187	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3470	ISMC250H	ISMC250H	0.282	1.000	0.282	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3471	Taper	Taper	0.269	1.000	0.269	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3472	Taper	Taper	0.277	1.000	0.277	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3473	ISMC250H	ISMC250H	0.135	1.000	0.135	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3474	ISMC250H	ISMC250H	0.331	1.000	0.331	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3475	ISMC250H	ISMC250H	0.211	1.000	0.211	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3476	ISMC250H	ISMC250H	0.292	1.000	0.292	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3477	ISMC250H	ISMC250H	0.261	1.000	0.261	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3478	Taper	Taper	0.209	1.000	0.209	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3479	Taper	Taper	0.180	1.000	0.180	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3480	ISMC250H	ISMC250H	0.078	1.000	0.078	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3481	ISMC250H	ISMC250H	0.069	1.000	0.069	Eq. H1-1b	25	6.743	98.022	5.838	0.545

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3482	Taper	Taper	0.180	1.000	0.180	Sec. G1	25	6.309	205.934	10.820	0.156
3483	Taper	Taper	0.489	1.000	0.489	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3484	Taper	Taper	0.089	1.000	0.089	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3485	Taper	Taper	0.119	1.000	0.119	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3486	ISMC250H	ISMC250H	0.189	1.000	0.189	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3487	ISMC250H	ISMC250H	0.268	1.000	0.268	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3488	ISMC250H	ISMC250H	0.191	1.000	0.191	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3489	ISMC250H	ISMC250H	0.226	1.000	0.226	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3490	ISMC250H	ISMC250H	0.101	1.000	0.101	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3491	ISMC250H	ISMC250H	0.168	1.000	0.168	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3492	ISMC250H	ISMC250H	0.107	1.000	0.107	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3493	ISMC250H	ISMC250H	0.174	1.000	0.174	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3494	ISA75X75X8	ISA75X75X8	0.722	1.000	0.722	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3495	ISA75X75X8	ISA75X75X8	0.684	1.000	0.684	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3496	ISA75X75X8	ISA75X75X8	0.734	1.000	0.734	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3497	ISA75X75X8	ISA75X75X8	0.563	1.000	0.563	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3498	Taper	Taper	0.433	1.000	0.433	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3499	ISA75X75X8	ISA75X75X8	0.727	1.000	0.727	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3500	Taper	Taper	0.210	1.000	0.210	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3501	ISA75X75X8	ISA75X75X8	0.633	1.000	0.633	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3502	Taper	Taper	0.214	1.000	0.214	Eq. H1-1b	24	8.184	340.042	13.531	0.306
3503	ISA75X75X8	ISA75X75X8	0.340	1.000	0.340	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3504	Taper	Taper	0.158	1.000	0.158	Eq. H1-1b	13	8.184	340.042	13.531	0.306
3505	ISA75X75X8	ISA75X75X8	0.350	1.000	0.350	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3506	ISMC250H	ISMC250H	0.109	1.000	0.109	Eq. H1-1b	23	6.743	98.022	5.838	0.545
3507	ISMC250H	ISMC250H	0.154	1.000	0.154	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3508	Taper	Taper	0.146	1.000	0.146	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3509	ISMC250H	ISMC250H	0.381	1.000	0.381	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3510	ISMC250H	ISMC250H	0.162	1.000	0.162	Eq. H1-1b	23	6.743	98.022	5.838	0.545
3511	ISMC250H	ISMC250H	0.121	1.000	0.121	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3512	Taper	Taper	0.194	1.000	0.194	Eq. H1-1b	19	5.003	80.574	8.119	0.093
3513	ISMC250H	ISMC250H	0.135	1.000	0.135	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3514	ISA75X75X8	ISA75X75X8	0.507	1.000	0.507	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3515	ISA75X75X8	ISA75X75X8	0.466	1.000	0.466	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3516	ISA75X75X8	ISA75X75X8	0.435	1.000	0.435	Eq. H1-1b	23	1.767	0.584	2.308	0.058
3517	ISA75X75X8	ISA75X75X8	0.497	1.000	0.497	Eq. H1-1b	23	1.767	0.584	2.308	0.058
3518	Taper	Taper	0.384	1.000	0.384	Eq. H1-1b	13	9.734	431.417	32.050	0.386
3519	ISMC250H	ISMC250H	0.295	1.000	0.295	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3520	ISA75X75X8	ISA75X75X8	0.692	1.000	0.692	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3521	ISA75X75X8	ISA75X75X8	0.738	1.000	0.738	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3522	ISA75X75X8	ISA75X75X8	0.785	1.000	0.785	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3523	ISA75X75X8	ISA75X75X8	0.587	1.000	0.587	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3524	ISA75X75X8	ISA75X75X8	0.689	1.000	0.689	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3525	ISA75X75X8	ISA75X75X8	0.744	1.000	0.744	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3526	ISA75X75X8	ISA75X75X8	0.803	1.000	0.803	Eq. H1-1b	20	1.767	0.584	2.308	0.058

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3527	ISA75X75X8	ISA75X75X8	0.593	1.000	0.593	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3528	ISA75X75X8	ISA75X75X8	0.425	1.000	0.425	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3529	ISA75X75X8	ISA75X75X8	0.591	1.000	0.591	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3530	ISA75X75X8	ISA75X75X8	0.452	1.000	0.452	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3531	ISA75X75X8	ISA75X75X8	0.517	1.000	0.517	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3532	ISA75X75X8	ISA75X75X8	0.356	1.000	0.356	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3533	ISA75X75X8	ISA75X75X8	0.500	1.000	0.500	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3534	ISA75X75X8	ISA75X75X8	0.365	1.000	0.365	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3535	ISA75X75X8	ISA75X75X8	0.509	1.000	0.509	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3536	ISA75X75X8	ISA75X75X8	0.589	1.000	0.589	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3537	ISA75X75X8	ISA75X75X8	0.278	1.000	0.278	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3538	ISA75X75X8	ISA75X75X8	0.457	1.000	0.457	Eq. H1-1b	23	1.767	0.584	2.308	0.058
3539	ISA75X75X8	ISA75X75X8	0.547	1.000	0.547	Eq. H1-1b	23	1.767	0.584	2.308	0.058
3541	Taper	Taper	0.516	1.000	0.516	Eq. H1-1a	25	9.734	431.417	32.050	0.386
3543	Taper	Taper	0.180	1.000	0.180	Eq. H1-1b	13	9.734	431.417	32.050	0.386
3544	Taper	Taper	0.100	1.000	0.100	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3545	Taper	Taper	0.239	1.000	0.239	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3548	Taper	Taper	0.101	1.000	0.101	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3549	Taper	Taper	0.296	1.000	0.296	Eq. H1-1b	16	5.921	145.870	10.818	0.151
3550	Taper	Taper	0.091	1.000	0.091	Sec. E1	14	6.309	205.934	10.820	0.156
3551	Taper	Taper	0.558	1.000	0.558	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3552	Taper	Taper	0.366	1.000	0.366	Eq. H1-1b	14	5.921	145.870	10.818	0.151
3553	Taper	Taper	0.290	1.000	0.290	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3554	Taper	Taper	0.288	1.000	0.288	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3555	Taper	Taper	0.239	1.000	0.239	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3556	Taper	Taper	0.250	1.000	0.250	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3557	Taper	Taper	0.261	1.000	0.261	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3558	Taper	Taper	0.434	1.000	0.434	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3559	Taper	Taper	0.314	1.000	0.314	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3560	Taper	Taper	0.315	1.000	0.315	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3561	Taper	Taper	0.339	1.000	0.339	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3562	Taper	Taper	0.491	1.000	0.491	Eq. H1-1b	14	6.309	205.934	10.820	0.156
3563	Taper	Taper	0.328	1.000	0.328	Eq. H1-1b	18	9.734	431.417	32.050	0.386
3564	Taper	Taper	0.347	1.000	0.347	Eq. H1-1a	14	9.734	431.417	32.050	0.386
3565	Taper	Taper	0.487	1.000	0.487	Eq. H1-1b	14	6.309	205.934	10.820	0.156
3566	Taper	Taper	0.547	1.000	0.547	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3567	Taper	Taper	0.664	1.000	0.664	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3568	Taper	Taper	0.370	1.000	0.370	Eq. H1-1b	15	8.184	340.042	13.531	0.306
3569	Taper	Taper	0.370	1.000	0.370	Eq. H1-1b	15	8.184	340.042	13.531	0.306
3570	Taper	Taper	0.366	1.000	0.366	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3571	Taper	Taper	0.608	1.000	0.608	Eq. H1-1b	15	8.184	340.042	13.531	0.306
3572	Taper	Taper	0.387	1.000	0.387	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3573	Taper	Taper	0.389	1.000	0.389	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3574	Taper	Taper	0.573	1.000	0.573	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3575	Taper	Taper	0.520	1.000	0.520	Eq. H1-1b	14	6.309	205.934	10.820	0.156

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3576	Taper	Taper	0.368	1.000	0.368	Eq. H1-1a	17	9.734	431.417	32.050	0.386
3577	Taper	Taper	0.360	1.000	0.360	Eq. H1-1a	17	9.734	431.417	32.050	0.386
3578	Taper	Taper	0.477	1.000	0.477	Eq. H1-1b	14	6.309	205.934	10.820	0.156
3579	Taper	Taper	0.599	1.000	0.599	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3580	Taper	Taper	0.543	1.000	0.543	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3581	Taper	Taper	0.523	1.000	0.523	Eq. H1-1b	17	8.184	340.042	13.531	0.306
3582	Taper	Taper	0.366	1.000	0.366	Eq. H1-1b	15	8.184	340.042	13.531	0.306
3583	Taper	Taper	0.387	1.000	0.387	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3584	Taper	Taper	0.386	1.000	0.386	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3585	Taper	Taper	0.540	1.000	0.540	Eq. H1-1b	18	8.184	340.042	13.531	0.306
3586	Taper	Taper	0.149	1.000	0.149	Eq. H1-1b	15	8.184	340.042	13.531	0.306
3587	Taper	Taper	0.549	1.000	0.549	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3588	Taper	Taper	0.375	1.000	0.375	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3589	Taper	Taper	0.377	1.000	0.377	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3590	Taper	Taper	0.585	1.000	0.585	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3591	Taper	Taper	0.329	1.000	0.329	Eq. H1-1b	14	5.921	145.870	10.818	0.151
3592	Taper	Taper	0.233	1.000	0.233	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3593	Taper	Taper	0.260	1.000	0.260	Eq. H1-1b	14	6.309	205.934	10.820	0.156
3594	Taper	Taper	0.313	1.000	0.313	Eq. H1-1b	14	5.921	145.870	10.818	0.151
3595	Taper	Taper	0.284	1.000	0.284	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3596	Taper	Taper	0.460	1.000	0.460	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3597	Taper	Taper	0.298	1.000	0.298	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3598	Taper	Taper	0.236	1.000	0.236	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3599	Taper	Taper	0.253	1.000	0.253	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3600	Taper	Taper	0.270	1.000	0.270	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3601	Taper	Taper	0.308	1.000	0.308	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3602	Taper	Taper	0.062	1.000	0.062	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3603	Taper	Taper	0.444	1.000	0.444	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3604	Taper	Taper	0.264	1.000	0.264	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3605	Taper	Taper	0.265	1.000	0.265	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3606	Taper	Taper	0.274	1.000	0.274	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3607	Taper	Taper	0.293	1.000	0.293	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3608	Taper	Taper	0.462	1.000	0.462	Eq. H1-1a	19	6.309	205.934	10.820	0.156
3609	Taper	Taper	0.317	1.000	0.317	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3610	Taper	Taper	0.367	1.000	0.367	Eq. H1-1b	21	6.309	205.934	10.820	0.156
3611	Taper	Taper	0.509	1.000	0.509	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3612	Taper	Taper	0.345	1.000	0.345	Eq. H1-1b	21	6.309	205.934	10.820	0.156
3613	Taper	Taper	0.543	1.000	0.543	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3614	Taper	Taper	0.305	1.000	0.305	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3615	Taper	Taper	0.433	1.000	0.433	Eq. H1-1a	20	6.309	205.934	10.820	0.156
3616	Taper	Taper	0.328	1.000	0.328	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3617	Taper	Taper	0.377	1.000	0.377	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3618	Taper	Taper	0.382	1.000	0.382	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3619	Taper	Taper	0.357	1.000	0.357	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3620	Taper	Taper	0.375	1.000	0.375	Eq. H1-1b	16	5.022	117.374	8.116	0.081

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3621	Taper	Taper	0.377	1.000	0.377	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3622	Taper	Taper	0.354	1.000	0.354	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3623	Taper	Taper	0.375	1.000	0.375	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3624	Taper	Taper	0.377	1.000	0.377	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3625	Taper	Taper	0.354	1.000	0.354	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3626	Taper	Taper	0.377	1.000	0.377	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3627	Taper	Taper	0.380	1.000	0.380	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3628	Taper	Taper	0.356	1.000	0.356	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3629	Taper	Taper	0.489	1.000	0.489	Eq. H1-1b	18	5.022	117.374	8.116	0.081
3630	Taper	Taper	0.490	1.000	0.490	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3631	Taper	Taper	0.454	1.000	0.454	Eq. H1-1b	18	5.022	117.374	8.116	0.081
3632	Taper	Taper	0.458	1.000	0.458	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3633	Taper	Taper	0.429	1.000	0.429	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3634	Taper	Taper	0.454	1.000	0.454	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3635	Taper	Taper	0.456	1.000	0.456	Eq. H1-1b	14	5.022	117.374	8.116	0.081
3636	Taper	Taper	0.428	1.000	0.428	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3637	Taper	Taper	0.455	1.000	0.455	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3638	Taper	Taper	0.459	1.000	0.459	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3639	Taper	Taper	0.430	1.000	0.430	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3640	Taper	Taper	0.141	1.000	0.141	Eq. H1-1b	24	9.734	431.417	32.050	0.386
3641	Taper	Taper	0.204	1.000	0.204	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3642	Taper	Taper	0.154	1.000	0.154	Eq. H1-1b	22	9.734	431.417	32.050	0.386
3643	Taper	Taper	0.372	1.000	0.372	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3644	Taper	Taper	0.276	1.000	0.276	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3645	Taper	Taper	0.348	1.000	0.348	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3646	Taper	Taper	0.383	1.000	0.383	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3647	Taper	Taper	0.133	1.000	0.133	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3648	Taper	Taper	0.180	1.000	0.180	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3649	Taper	Taper	0.524	1.000	0.524	Eq. H1-1b	16	5.022	117.374	8.116	0.081
3650	Taper	Taper	0.525	1.000	0.525	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3651	Taper	Taper	0.282	1.000	0.282	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3652	Taper	Taper	0.256	1.000	0.256	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3653	Taper	Taper	0.286	1.000	0.286	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3654	Taper	Taper	0.261	1.000	0.261	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3655	Taper	Taper	0.262	1.000	0.262	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3656	Taper	Taper	0.270	1.000	0.270	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3657	Taper	Taper	0.227	1.000	0.227	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3658	Taper	Taper	0.096	1.000	0.096	Eq. H1-1b	25	8.184	340.042	13.531	0.306
3659	ISMC250H	ISMC250H	0.323	1.000	0.323	Eq. H1-1b	24	6.743	98.022	5.838	0.545
3660	Taper	Taper	0.784	1.000	0.784	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3661	Taper	Taper	0.228	1.000	0.228	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3662	ISMC250H	ISMC250H	0.384	1.000	0.384	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3663	ISMC250H	ISMC250H	0.122	1.000	0.122	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3664	Taper	Taper	0.131	1.000	0.131	Eq. H1-1b	13	5.003	80.574	8.119	0.093
3665	ISMC250H	ISMC250H	0.146	1.000	0.146	Eq. H1-1b	13	6.743	98.022	5.838	0.545

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3666	ISMC250H	ISMC250H	0.271	1.000	0.271	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3667	ISMC250H	ISMC250H	0.278	1.000	0.278	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3668	Taper	Taper	0.287	1.000	0.287	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3669	ISMC250H	ISMC250H	0.096	1.000	0.096	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3670	Taper	Taper	0.287	1.000	0.287	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3671	ISMC250H	ISMC250H	0.088	1.000	0.088	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3672	ISMC250H	ISMC250H	0.155	1.000	0.155	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3673	ISMC250H	ISMC250H	0.135	1.000	0.135	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3674	Taper	Taper	0.211	1.000	0.211	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3675	Taper	Taper	0.216	1.000	0.216	Eq. H1-1b	24	6.309	205.934	10.820	0.156
3676	ISMC250H	ISMC250H	0.100	1.000	0.100	Eq. H1-1b	24	6.743	98.022	5.838	0.545
3677	ISMC250H	ISMC250H	0.299	1.000	0.299	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3678	ISMC250H	ISMC250H	0.237	1.000	0.237	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3679	ISMC250H	ISMC250H	0.150	1.000	0.150	Eq. H1-1b	24	6.743	98.022	5.838	0.545
3680	ISMC250H	ISMC250H	0.274	1.000	0.274	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3681	Taper	Taper	0.163	1.000	0.163	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3682	Taper	Taper	0.133	1.000	0.133	Sec. G1	17	8.184	340.042	13.531	0.306
3683	ISMC250H	ISMC250H	0.048	1.000	0.048	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3684	ISMC250H	ISMC250H	0.063	1.000	0.063	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3685	Taper	Taper	0.126	1.000	0.126	Sec. G1	14	6.309	205.934	10.820	0.156
3686	Taper	Taper	0.468	1.000	0.468	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3687	Taper	Taper	0.071	1.000	0.071	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3688	Taper	Taper	0.088	1.000	0.088	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3689	ISMC250H	ISMC250H	0.180	1.000	0.180	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3690	ISMC250H	ISMC250H	0.246	1.000	0.246	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3691	ISMC250H	ISMC250H	0.197	1.000	0.197	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3692	ISMC250H	ISMC250H	0.158	1.000	0.158	Eq. H1-1b	24	6.743	98.022	5.838	0.545
3693	ISMC250H	ISMC250H	0.057	1.000	0.057	Eq. H1-1b	25	6.743	98.022	5.838	0.545
3694	ISMC250H	ISMC250H	0.071	1.000	0.071	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3695	ISMC250H	ISMC250H	0.106	1.000	0.106	Eq. H1-1b	20	6.743	98.022	5.838	0.545
3696	ISMC250H	ISMC250H	0.070	1.000	0.070	Eq. H1-1b	24	6.743	98.022	5.838	0.545
3697	ISA75X75XE	ISA75X75X8	0.613	1.000	0.613	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3698	ISA75X75XE	ISA75X75X8	0.487	1.000	0.487	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3699	ISA75X75XE	ISA75X75X8	0.621	1.000	0.621	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3700	ISA75X75XE	ISA75X75X8	0.480	1.000	0.480	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3701	Taper	Taper	0.352	1.000	0.352	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3702	ISA75X75XE	ISA75X75X8	0.564	1.000	0.564	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3703	Taper	Taper	0.144	1.000	0.144	Eq. H1-1b	15	8.184	340.042	13.531	0.306
3704	ISA75X75XE	ISA75X75X8	0.466	1.000	0.466	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3705	Taper	Taper	0.181	1.000	0.181	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3706	ISA75X75XE	ISA75X75X8	0.285	1.000	0.285	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3707	Taper	Taper	0.115	1.000	0.115	Eq. H1-1b	14	8.184	340.042	13.531	0.306
3708	ISA75X75XE	ISA75X75X8	0.300	1.000	0.300	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3709	ISMC250H	ISMC250H	0.142	1.000	0.142	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3710	ISMC250H	ISMC250H	0.129	1.000	0.129	Eq. H1-1b	24	6.743	98.022	5.838	0.545

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3711	Taper	Taper	0.223	1.000	0.223	Eq. H1-1b	13	5.003	80.574	8.119	0.093
3712	ISMC250H	ISMC250H	0.246	1.000	0.246	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3713	ISMC250H	ISMC250H	0.141	1.000	0.141	Eq. H1-1b	13	6.743	98.022	5.838	0.545
3714	ISMC250H	ISMC250H	0.048	1.000	0.048	Eq. H1-1b	19	6.743	98.022	5.838	0.545
3715	Taper	Taper	0.158	1.000	0.158	Eq. H1-1b	13	5.003	80.574	8.119	0.093
3716	ISMC250H	ISMC250H	0.056	1.000	0.056	Eq. H1-1b	22	6.743	98.022	5.838	0.545
3717	ISA75X75X8	ISA75X75X8	0.502	1.000	0.502	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3718	ISA75X75X8	ISA75X75X8	0.222	1.000	0.222	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3719	ISA75X75X8	ISA75X75X8	0.275	1.000	0.275	Eq. H1-1b	24	1.767	0.584	2.308	0.058
3720	ISA75X75X8	ISA75X75X8	0.342	1.000	0.342	Eq. H1-1b	24	1.767	0.584	2.308	0.058
3721	Taper	Taper	0.309	1.000	0.309	Eq. H1-1b	13	9.734	431.417	32.050	0.386
3722	ISMC250H	ISMC250H	0.262	1.000	0.262	Eq. H1-1b	24	6.743	98.022	5.838	0.545
3723	ISA75X75X8	ISA75X75X8	0.587	1.000	0.587	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3724	ISA75X75X8	ISA75X75X8	0.633	1.000	0.633	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3725	ISA75X75X8	ISA75X75X8	0.693	1.000	0.693	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3726	ISA75X75X8	ISA75X75X8	0.502	1.000	0.502	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3727	ISA75X75X8	ISA75X75X8	0.583	1.000	0.583	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3728	ISA75X75X8	ISA75X75X8	0.636	1.000	0.636	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3729	ISA75X75X8	ISA75X75X8	0.744	1.000	0.744	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3730	ISA75X75X8	ISA75X75X8	0.510	1.000	0.510	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3731	ISA75X75X8	ISA75X75X8	0.292	1.000	0.292	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3732	ISA75X75X8	ISA75X75X8	0.505	1.000	0.505	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3733	ISA75X75X8	ISA75X75X8	0.241	1.000	0.241	Eq. H1-1b	22	1.767	0.584	2.308	0.058
3734	ISA75X75X8	ISA75X75X8	0.393	1.000	0.393	Eq. H1-1b	20	1.767	0.584	2.308	0.058
3735	ISA75X75X8	ISA75X75X8	0.304	1.000	0.304	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3736	ISA75X75X8	ISA75X75X8	0.423	1.000	0.423	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3737	ISA75X75X8	ISA75X75X8	0.311	1.000	0.311	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3738	ISA75X75X8	ISA75X75X8	0.433	1.000	0.433	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3739	ISA75X75X8	ISA75X75X8	0.502	1.000	0.502	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3740	ISA75X75X8	ISA75X75X8	0.232	1.000	0.232	Eq. H1-1b	13	1.767	0.584	2.308	0.058
3741	ISA75X75X8	ISA75X75X8	0.337	1.000	0.337	Eq. H1-1b	24	1.767	0.584	2.308	0.058
3742	ISA75X75X8	ISA75X75X8	0.424	1.000	0.424	Eq. H1-1b	24	1.767	0.584	2.308	0.058
3743	Taper	Taper	0.794	1.000	0.794	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3744	Taper	Taper	0.294	1.000	0.294	Eq. H1-1b	24	9.734	431.417	32.050	0.386
3745	Taper	Taper	0.147	1.000	0.147	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3746	Taper	Taper	0.074	1.000	0.074	Eq. H1-2	13	9.734	431.417	32.050	0.386
3747	Taper	Taper	0.289	1.000	0.289	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3748	Taper	Taper	0.204	1.000	0.204	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3751	Taper	Taper	0.134	1.000	0.134	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3752	TUBE	TUBE	0.152	1.000	0.152	Sec. E1	24	3.497	8.014	8.014	11.973
3753	TUBE	TUBE	0.033	1.000	0.033	Eq. Sec. D2	24	3.497	8.014	8.014	11.973
3754	TUBE	TUBE	0.033	1.000	0.033	Eq. Sec. D2	23	3.497	8.014	8.014	11.973
3755	TUBE	TUBE	0.153	1.000	0.153	Sec. E1	23	3.497	8.014	8.014	11.973
3756	TUBE	TUBE	0.231	1.000	0.231	Eq. H1-1a	25	3.497	8.014	8.014	11.973
3757	TUBE	TUBE	0.038	1.000	0.038	Eq. Sec. D2	25	3.497	8.014	8.014	11.973

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3758	TUBE	TUBE	0.022	1.000	0.022	Eq. H1-1b	20	3.497	8.014	8.014	11.973
3759	TUBE	TUBE	0.193	1.000	0.193	Sec. E1	14	3.497	8.014	8.014	11.973
3760	TUBE	TUBE	0.259	1.000	0.259	Eq. H1-1a	25	3.497	8.014	8.014	11.973
3761	TUBE	TUBE	0.044	1.000	0.044	Eq. Sec. D2	25	3.497	8.014	8.014	11.973
3762	TUBE	TUBE	0.041	1.000	0.041	Eq. Sec. D2	19	3.497	8.014	8.014	11.973
3763	TUBE	TUBE	0.227	1.000	0.227	Eq. H1-1a	14	3.497	8.014	8.014	11.973
3764	TUBE	TUBE	0.066	1.000	0.066	Sec. E1	16	3.497	8.014	8.014	11.973
3765	TUBE	TUBE	0.115	1.000	0.115	Sec. E1	19	3.497	8.014	8.014	11.973
3766	TUBE	TUBE	0.108	1.000	0.108	Eq. Sec. D2	19	3.497	8.014	8.014	11.973
3767	TUBE	TUBE	0.187	1.000	0.187	Sec. E1	19	3.497	8.014	8.014	11.973
3768	Taper	Taper	0.308	1.000	0.308	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3769	Taper	Taper	0.239	1.000	0.239	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3771	Taper	Taper	0.135	1.000	0.135	Eq. H1-1b	21	9.734	431.417	32.050	0.386
3772	Taper	Taper	0.264	1.000	0.264	Eq. H1-1b	13	9.734	431.417	32.050	0.386
3774	Taper	Taper	0.095	1.000	0.095	Eq. H1-1b	23	6.309	205.934	10.820	0.156
3775	Taper	Taper	0.120	1.000	0.120	Eq. H1-1b	23	6.309	205.934	10.820	0.156
3777	Taper	Taper	0.087	1.000	0.087	Eq. H1-1b	13	9.734	431.417	32.050	0.386
3778	Taper	Taper	0.285	1.000	0.285	Eq. H1-1b	22	9.734	431.417	32.050	0.386
3779	Taper	Taper	0.037	1.000	0.037	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3780	Taper	Taper	0.091	1.000	0.091	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3781	Taper	Taper	0.105	1.000	0.105	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3782	Taper	Taper	0.117	1.000	0.117	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3783	Taper	Taper	0.145	1.000	0.145	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3784	Taper	Taper	0.250	1.000	0.250	Eq. H1-1b	13	6.309	205.934	10.820	0.156
3785	Taper	Taper	0.125	1.000	0.125	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3786	Taper	Taper	0.085	1.000	0.085	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3787	Taper	Taper	0.290	1.000	0.290	Eq. H1-1b	23	6.309	205.934	10.820	0.156
3788	Taper	Taper	0.102	1.000	0.102	Eq. H1-1b	23	9.734	431.417	32.050	0.386
3789	Taper	Taper	0.051	1.000	0.051	Sec. E1	19	6.309	205.934	10.820	0.156
3790	Taper	Taper	0.055	1.000	0.055	Eq. H1-2	13	9.734	431.417	32.050	0.386
3791	Taper	Taper	0.123	1.000	0.123	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3792	Taper	Taper	0.120	1.000	0.120	Eq. H1-1b	23	8.184	340.042	13.531	0.306
3793	Taper	Taper	0.231	1.000	0.231	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3794	Taper	Taper	0.139	1.000	0.139	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3795	Taper	Taper	0.058	1.000	0.058	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3796	Taper	Taper	0.247	1.000	0.247	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3797	Taper	Taper	0.138	1.000	0.138	Eq. H1-1b	23	9.734	431.417	32.050	0.386
3798	Taper	Taper	0.126	1.000	0.126	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3799	Taper	Taper	0.118	1.000	0.118	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3800	Taper	Taper	0.164	1.000	0.164	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3801	Taper	Taper	0.144	1.000	0.144	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3802	Taper	Taper	0.040	1.000	0.040	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3804	Taper	Taper	0.158	1.000	0.158	Eq. H1-1b	14	6.309	205.934	10.820	0.156
3805	Taper	Taper	0.032	1.000	0.032	Eq. H1-1b	14	6.309	205.934	10.820	0.156
3807	Taper	Taper	0.056	1.000	0.056	Eq. H1-1b	22	9.734	431.417	32.050	0.386

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3808	Taper	Taper	0.027	1.000	0.027	Eq. H1-1b	32	9.734	431.417	32.050	0.386
3809	Taper	Taper	0.065	1.000	0.065	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3810	Taper	Taper	0.188	1.000	0.188	Eq. H1-1b	22	9.734	431.417	32.050	0.386
3811	Taper	Taper	0.269	1.000	0.269	Eq. H1-1b	18	9.734	431.417	32.050	0.386
3812	Taper	Taper	0.070	1.000	0.070	Eq. H1-1b	28	8.184	340.042	13.531	0.306
3813	Taper	Taper	0.265	1.000	0.265	Eq. H1-1b	22	9.734	431.417	32.050	0.386
3814	Taper	Taper	0.156	1.000	0.156	Eq. H1-1b	22	6.309	205.934	10.820	0.156
3815	Taper	Taper	0.366	1.000	0.366	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3816	TUBE	TUBE	0.309	1.000	0.309	Eq. H1-1a	22	7.043	36.805	36.805	55.033
3817	TUBE	TUBE	0.442	1.000	0.442	Eq. H1-1a	22	7.043	36.805	36.805	55.033
3818	TUBE	TUBE	0.343	1.000	0.343	Eq. H1-1a	22	7.043	36.805	36.805	55.033
3819	TUBE	TUBE	0.300	1.000	0.300	Eq. H1-1a	22	7.043	36.805	36.805	55.033
3820	Taper	Taper	0.311	1.000	0.311	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3821	TUBE	TUBE	0.288	1.000	0.288	Eq. H1-1a	13	7.043	36.805	36.805	55.033
3822	TUBE	TUBE	0.212	1.000	0.212	Eq. H1-1a	22	7.043	36.805	36.805	55.033
3823	Taper	Taper	0.395	1.000	0.395	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3824	Taper	Taper	0.202	1.000	0.202	Eq. H1-1b	22	5.003	80.574	8.119	0.093
3825	Taper	Taper	0.233	1.000	0.233	Eq. H1-1b	13	5.003	80.574	8.119	0.093
3826	Taper	Taper	0.051	1.000	0.051	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3827	Taper	Taper	0.102	1.000	0.102	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3828	TUBE	TUBE	0.160	1.000	0.160	Sec. E1	19	7.043	36.805	36.805	55.033
3829	TUBE	TUBE	0.304	1.000	0.304	Eq. H1-1a	13	7.043	36.805	36.805	55.033
3830	TUBE	TUBE	0.204	1.000	0.204	Eq. H1-1a	13	7.043	36.805	36.805	55.033
3831	TUBE	TUBE	0.106	1.000	0.106	Sec. E1	19	7.043	36.805	36.805	55.033
3832	TUBE	TUBE	0.063	1.000	0.063	Sec. E1	19	7.043	36.805	36.805	55.033
3833	TUBE	TUBE	0.193	1.000	0.193	Sec. E1	13	7.043	36.805	36.805	55.033
3834	TUBE	TUBE	0.044	1.000	0.044	Sec. E1	20	7.043	36.805	36.805	55.033
3835	TUBE	TUBE	0.025	1.000	0.025	Eq. Sec. D2	20	7.043	36.805	36.805	55.033
3836	Taper	Taper	0.537	1.000	0.537	Eq. H1-1a	22	8.758	313.785	32.042	0.353
3837	Taper	Taper	0.612	1.000	0.612	Eq. H1-1a	22	8.758	313.785	32.042	0.353
3838	Taper	Taper	0.330	1.000	0.330	Eq. H1-1a	22	8.758	313.785	32.042	0.353
3839	Taper	Taper	0.499	1.000	0.499	Eq. H1-1a	13	7.549	262.145	25.635	0.197
3840	Taper	Taper	0.199	1.000	0.199	Eq. H1-1b	25	7.549	262.145	25.635	0.197
3841	Taper	Taper	0.197	1.000	0.197	Eq. H1-1b	25	6.309	205.934	10.820	0.156
3842	Taper	Taper	0.063	1.000	0.063	Eq. H1-1b	23	6.309	205.934	10.820	0.156
3843	Taper	Taper	0.134	1.000	0.134	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3844	Taper	Taper	0.017	1.000	0.017	Eq. H1-1b	18	6.309	205.934	10.820	0.156
3845	Taper	Taper	0.070	1.000	0.070	Eq. H1-1b	23	6.309	205.934	10.820	0.156
3846	Taper	Taper	0.057	1.000	0.057	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3847	Taper	Taper	0.034	1.000	0.034	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3848	TUBE	TUBE	0.054	1.000	0.054	Sec. E1	22	7.043	36.805	36.805	55.033
3849	TUBE	TUBE	0.052	1.000	0.052	Eq. Sec. D2	22	7.043	36.805	36.805	55.033
3850	Taper	Taper	0.165	1.000	0.165	Eq. H1-1b	22	8.184	340.042	13.531	0.306
3851	Taper	Taper	0.114	1.000	0.114	Eq. H1-1b	21	8.184	340.042	13.531	0.306
3852	Taper	Taper	0.116	1.000	0.116	Eq. H1-1b	19	8.184	340.042	13.531	0.306

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3853	Taper	Taper	0.116	1.000	0.116	Eq. H1-1b	20	8.184	340.042	13.531	0.306
3854	Taper	Taper	0.101	1.000	0.101	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3855	Taper	Taper	0.107	1.000	0.107	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3856	Taper	Taper	0.154	1.000	0.154	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3857	Taper	Taper	0.139	1.000	0.139	Eq. H1-1b	19	8.184	340.042	13.531	0.306
3858	TUBE	TUBE	0.102	1.000	0.102	Sec. E1	22	7.043	36.805	36.805	55.033
3859	TUBE	TUBE	0.186	1.000	0.186	Sec. E1	22	7.043	36.805	36.805	55.033
3860	TUBE	TUBE	0.151	1.000	0.151	Sec. E1	22	7.043	36.805	36.805	55.033
3861	TUBE	TUBE	0.081	1.000	0.081	Sec. E1	19	7.043	36.805	36.805	55.033
3862	TUBE	TUBE	0.047	1.000	0.047	Eq. Sec. D2	19	7.043	36.805	36.805	55.033
3863	TUBE	TUBE	0.052	1.000	0.052	Eq. Sec. D2	22	7.043	36.805	36.805	55.033
3864	TUBE	TUBE	0.040	1.000	0.040	Eq. Sec. D2	22	7.043	36.805	36.805	55.033
3865	TUBE	TUBE	0.043	1.000	0.043	Eq. Sec. D2	21	7.043	36.805	36.805	55.033
3866	TUBE	TUBE	0.097	1.000	0.097	Sec. E1	19	7.043	36.805	36.805	55.033
3867	TUBE	TUBE	0.071	1.000	0.071	Sec. E1	22	7.043	36.805	36.805	55.033
3868	TUBE	TUBE	0.080	1.000	0.080	Sec. E1	22	7.043	36.805	36.805	55.033
3869	TUBE	TUBE	0.048	1.000	0.048	Sec. E1	19	7.043	36.805	36.805	55.033
3870	TUBE	TUBE	0.027	1.000	0.027	Eq. Sec. D2	25	7.043	36.805	36.805	55.033
3871	TUBE	TUBE	0.050	1.000	0.050	Eq. Sec. D2	24	7.043	36.805	36.805	55.033
3872	TUBE	TUBE	0.029	1.000	0.029	Eq. Sec. D2	25	7.043	36.805	36.805	55.033
3873	TUBE	TUBE	0.011	1.000	0.011	Eq. Sec. D2	24	7.043	36.805	36.805	55.033
3874	TUBE	TUBE	0.018	1.000	0.018	Sec. E1	24	7.043	36.805	36.805	55.033
3875	TUBE	TUBE	0.052	1.000	0.052	Sec. E1	19	7.043	36.805	36.805	55.033
3876	TUBE	TUBE	0.020	1.000	0.020	Sec. E1	20	7.043	36.805	36.805	55.033
3877	TUBE	TUBE	0.025	1.000	0.025	Sec. E1	16	7.043	36.805	36.805	55.033
3878	TUBE	TUBE	0.018	1.000	0.018	Eq. Sec. D2	16	7.043	36.805	36.805	55.033
3879	TUBE	TUBE	0.029	1.000	0.029	Eq. Sec. D2	13	7.043	36.805	36.805	55.033
3880	TUBE	TUBE	0.019	1.000	0.019	Eq. Sec. D2	19	7.043	36.805	36.805	55.033
3881	TUBE	TUBE	0.024	1.000	0.024	Sec. E1	19	7.043	36.805	36.805	55.033
3882	TUBE	TUBE	0.029	1.000	0.029	Eq. Sec. D2	19	7.043	36.805	36.805	55.033
3883	TUBE	TUBE	0.022	1.000	0.022	Sec. E1	19	7.043	36.805	36.805	55.033
3884	TUBE	TUBE	0.017	1.000	0.017	Eq. Sec. D2	19	7.043	36.805	36.805	55.033
3885	TUBE	TUBE	0.009	1.000	0.009	Sec. E1	19	7.043	36.805	36.805	55.033
3886	TUBE	TUBE	0.004	1.000	0.004	Sec. E1	28	7.043	36.805	36.805	55.033
3887	TUBE	TUBE	0.008	1.000	0.008	Sec. E1	27	7.043	36.805	36.805	55.033
3888	Taper	Taper	0.266	1.000	0.266	Eq. H1-1b	21	6.309	205.934	10.820	0.156
3889	Taper	Taper	0.329	1.000	0.329	Eq. H1-1b	29	6.309	205.934	10.820	0.156
3890	Taper	Taper	0.125	1.000	0.125	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3891	Taper	Taper	0.121	1.000	0.121	Eq. H1-1b	20	6.309	205.934	10.820	0.156
3892	TUBE	TUBE	0.058	1.000	0.058	Sec. E1	24	3.497	8.014	8.014	11.973
3893	TUBE	TUBE	0.120	1.000	0.120	Sec. E1	13	3.497	8.014	8.014	11.973
3894	Taper	Taper	0.150	1.000	0.150	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3895	Taper	Taper	0.133	1.000	0.133	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3896	Taper	Taper	0.107	1.000	0.107	Eq. H1-1b	19	6.309	205.934	10.820	0.156
3897	Taper	Taper	0.047	1.000	0.047	Eq. H1-1b	19	6.309	205.934	10.820	0.156

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
3898	Taper	Taper	0.033	1.000	0.033	Eq. H1-1b	19	9.734	431.417	32.050	0.386
3899	TUBE	TUBE	0.021	1.000	0.021	Sec. E1	19	3.497	8.014	8.014	11.973
3900	TUBE	TUBE	0.061	1.000	0.061	Eq. Sec. D2	19	3.497	8.014	8.014	11.973
3901	TUBE	TUBE	0.017	1.000	0.017	Sec. E1	19	3.497	8.014	8.014	11.973
3902	TUBE	TUBE	0.007	1.000	0.007	Sec. E1	32	3.497	8.014	8.014	11.973
3903	TUBE	TUBE	0.014	1.000	0.014	Sec. E1	24	3.497	8.014	8.014	11.973
3904	TUBE	TUBE	0.018	1.000	0.018	Sec. E1	19	3.497	8.014	8.014	11.973
3905	Taper	Taper	0.128	1.000	0.128	Eq. H1-1b	23	6.309	205.934	10.820	0.156
3906	Taper	Taper	0.074	1.000	0.074	Eq. H1-1b	13	5.022	117.374	8.116	0.081
3907	Taper	Taper	0.029	1.000	0.029	Eq. H1-1b	15	5.022	117.374	8.116	0.081
3908	TUBE	TUBE	0.051	1.000	0.051	Eq. H1-1b	19	3.497	8.014	8.014	11.973
3909	TUBE	TUBE	0.117	1.000	0.117	Sec. E1	23	3.497	8.014	8.014	11.973

CHAPTER 5

CONCLUSIONS AND FUTURE WORKS

5.1 Conclusions

From the stand point of serviceability, RC beam-slab structural system is the most suitable one. But other three structural systems are also within allowable limit for serviceability criteria.

Steel non-composite system is costlier but steel composite system is slightly (0.2-1.8%) costlier than RC structure. But if effect of construction time duration is considered then RC structure may become relatively costlier than steel composite system which is beyond the scope of this research.

Steel structure which is more ductile and attracts less seismic force (only 43-45% of RC structure) may be considered as better structural system in seismically active zones.

Finally, steel structure with composite floor system which optimizes economy, serviceability, construction time, fire proofing system and seismic performance may be considered as optimum structural system for multistory industrial buildings in Bangladesh.

5.2 Recommendations for future work Effect

i. Of construction time period, maintenance cost and composite steel column may be included for comparative study of steel and RC structures. These were beyond the scope of this research.

ii. Comparative study of steel and RC structure may be conducted for long free span with plate girder, hybrid girder, composite plate girder, composite hybrid girder, deep lattice girder etc. with three way beam system for single and multistory buildings.

iii. Comparative study about economy and serviceability of open-web joist and secondary Ibeam may be conducted.

iv. The weight of secondary I-beam is about 42-47% of total structural steel. So economically effective spacing and span length may be determined by comparative study.

v. Feasibility of pre-cast and pre-stressed RC slab supported on steel beam may be studied as composite and non-composite.

REFERENCES

[1] Table 6.1.1 (Basic Occupancy Category), BNBC 2020.

[2] Table 6.2.8 (Basic Wind Speeds for Selected Locations in Bangladesh), BNBC 2020

[3] 2.4.6.2 Sustained Wind Pressure formula (2.4.1), BNBC 2020

[4] Table 6.2.9 (Structu.re Importance Coefficients, C1 for Wind Loads), BNBC 2020

[5] Table 6.2.10 (Combined Height and Exposure Coefficient, Cz), BNBC 2020

[6] 2.4.6.3 Design Wind Pressure formula (2.4.2), BNBC 2020

[7] Table 6.2.11 (Gust Response Factors, Gh and Gz), BNBC 2020

[8] Fig. 6.2.10 Seismic Zoning Map of Bangladesh, BNBC 2020

[9] Table 6.2.22 (Seismic Zone Coefficients, Z), BNBC 2020

[10] Table 6.2.23 (Structure Importance Coefficients I, I'), BNBC 2020

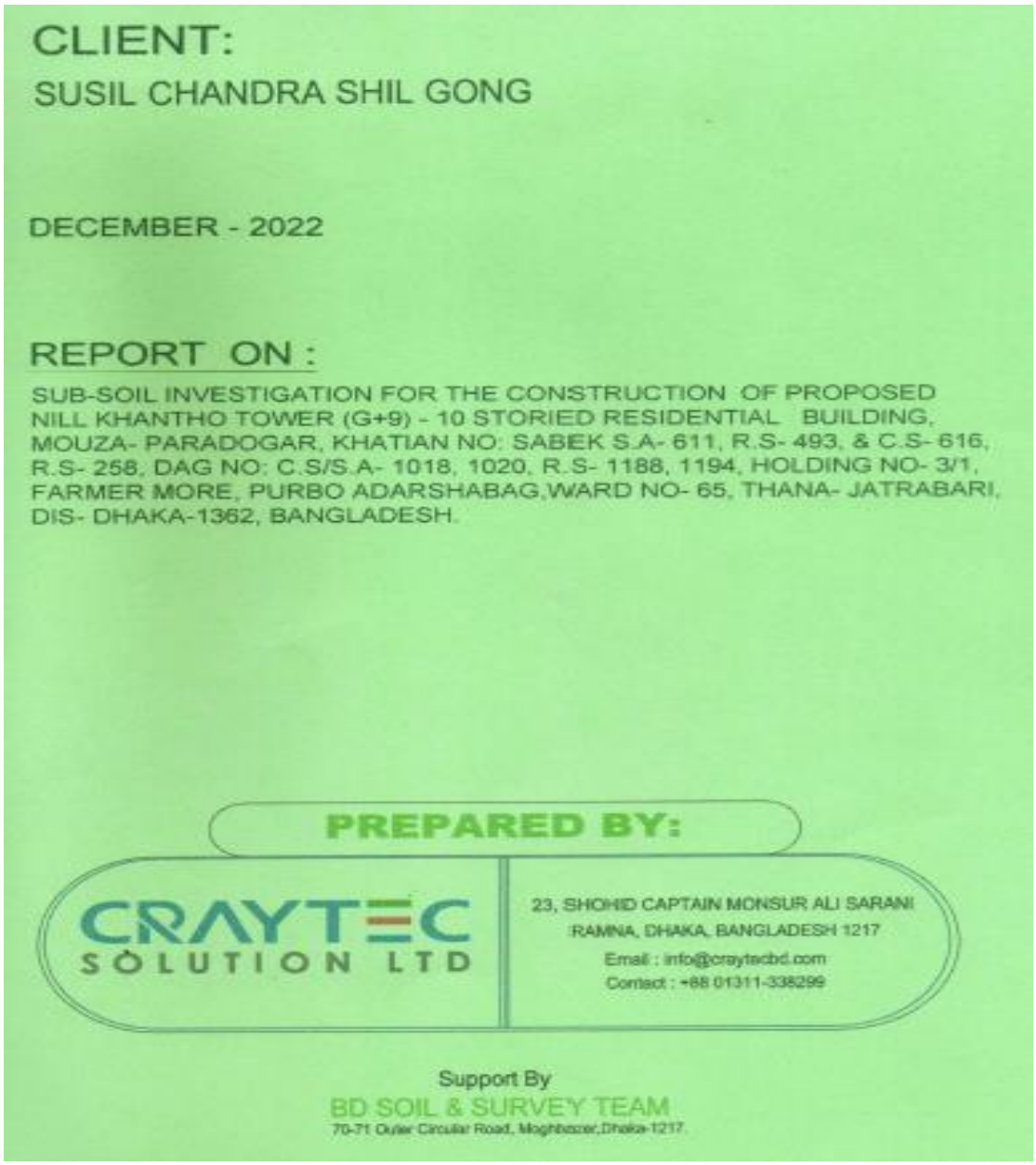
[11] Table 6.2.24 (Response Modification Coefficient for Structural Systems, R), BNBC 2020

[12] Table 6.2.25 (Site Coefficient, S for Seismic Lateral Forces), BNBC 2020

[13] International edition of Design of Concrete structures (13th edition) by Arthur H. Nilsson, David Darwin and Charles W. Dolan

APPENDIX

Appendix A



b. Extraction of Undisturbed Soil Samples:

Both the index and engineering properties of soil are greatly affected by the disturbance of the soil samples; so, soil samples of undisturbed state are preferred to perform certain laboratory tests. This eventually helps to evaluate the bearing capacity and other geo-technical properties of the soil. Undisturbed soil samples are collected only in possible and necessary cases.

c. Performing Standard Penetration Test (SPT):

Standard Penetration Tests were performed at each 5ft depth interval up to the depth investigation.

***SPT** values related to consistency of clay soil:*

Table-1 Relation between N and qu (Peek et al 1974)

Consistency	N-value	qu, kpa
Very soft	0-2	0-25
Soft	2-4	25-50
Medium	4-8	50-100
Stiff	8-15	100-200
Very Stiff	15-30	200-400
Hard	>30	>400

Where qu is the unconfined compressive strength and it is double value of cohesion.

SPT values related to density of cohesion soil:

N-value	Compactness	Relative density, D%	Θ°
0-4	Very loose	0-15	<28
4-10	Loose	15-35	28-30
10-30	Medium	35-65	30-36
30-50	Dense	65-85	36-41
>50	Very dense	>85	>41

5. 0 PROPERTIES OF SOIL (From laboratory test):

a) Physically properties-

i) The consistency of cohesive soil is very soft to medium but dense to very dense for Granular soil.

ii) Natural Moistural Content: 25%-28% Specific Gravity: 2.65 to 2.68, Unit Weight: 123.74 lb/ cft

b) Engineering Properties –

i) The value of internal friction: (28-32.8)°

6. 0 CORRECTION OF THE SPT VALUES

Field SPT values have been corrected for overburden pressure and dilatancy.

For coarse, cohesion-less soil according to Bazaraa (1967)-

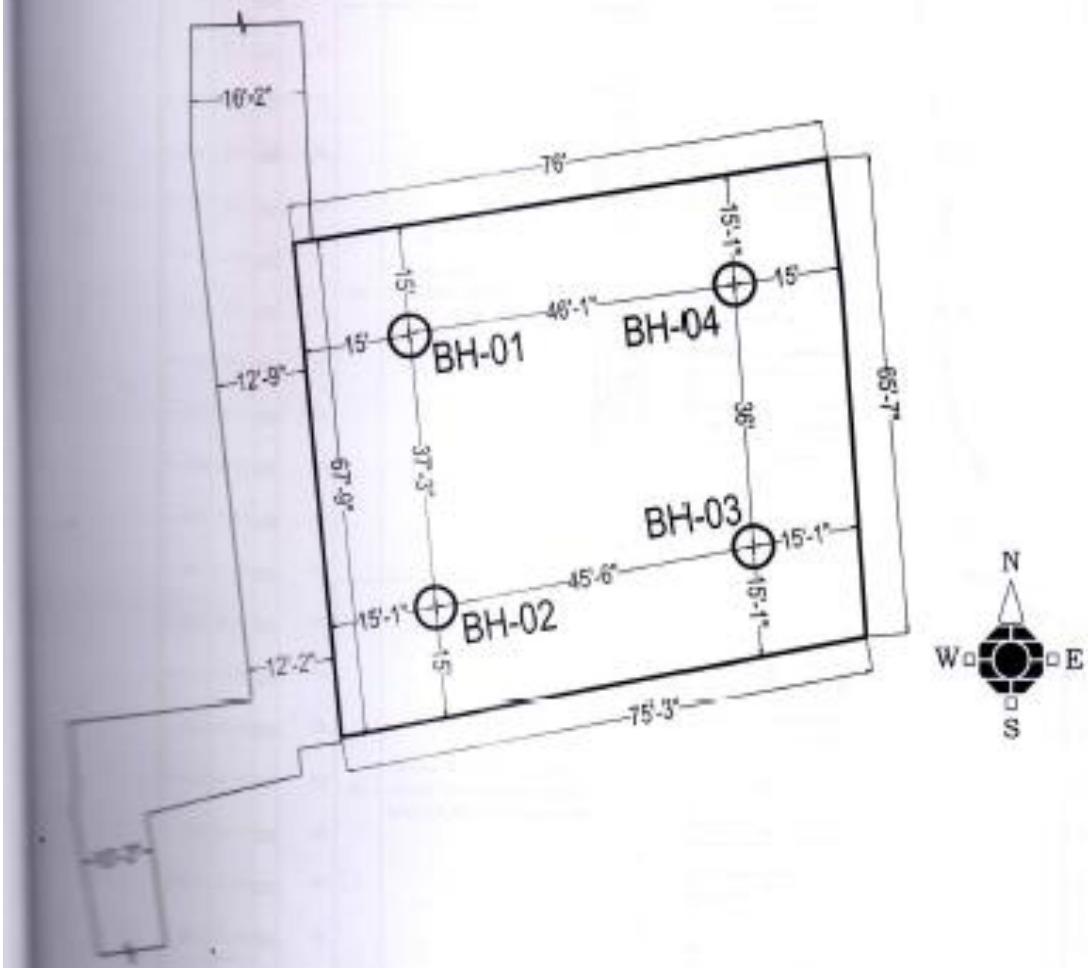
$N' = (4*N)/(1+2*P_o')$ when $P_o' < 1.5$ ksf

$N' = (4*N)/(3.25+0.5*P_o')$ when $P_o' > 1.5$ ksf

In very fine, or silty, saturated sand Terzaghi & Peck (First Edition, P-426) recommended that the penetration number be adjusted if N is greater than 15 as

$N''=15+0.5*(N'-15)$

& SURVEY TEAM	SITE PLAN (Note to Scale)	**Client: Susil Chandra Shil Gong** Project: Proposed Nil Khantho Tower (G+9) -10 Storied Residential Building



BD SOIL & SURVEY TEAM

Client: Susil Chandra Shil Gong

Project: Proposed Nil Khantho Tower (G+9) -10 Storied Residential Building

Bore Hole No: 1 GWT : 9 ft

Depth of Boring : 100 ft

Soil Classification: ASTM D-2487 & D-2488

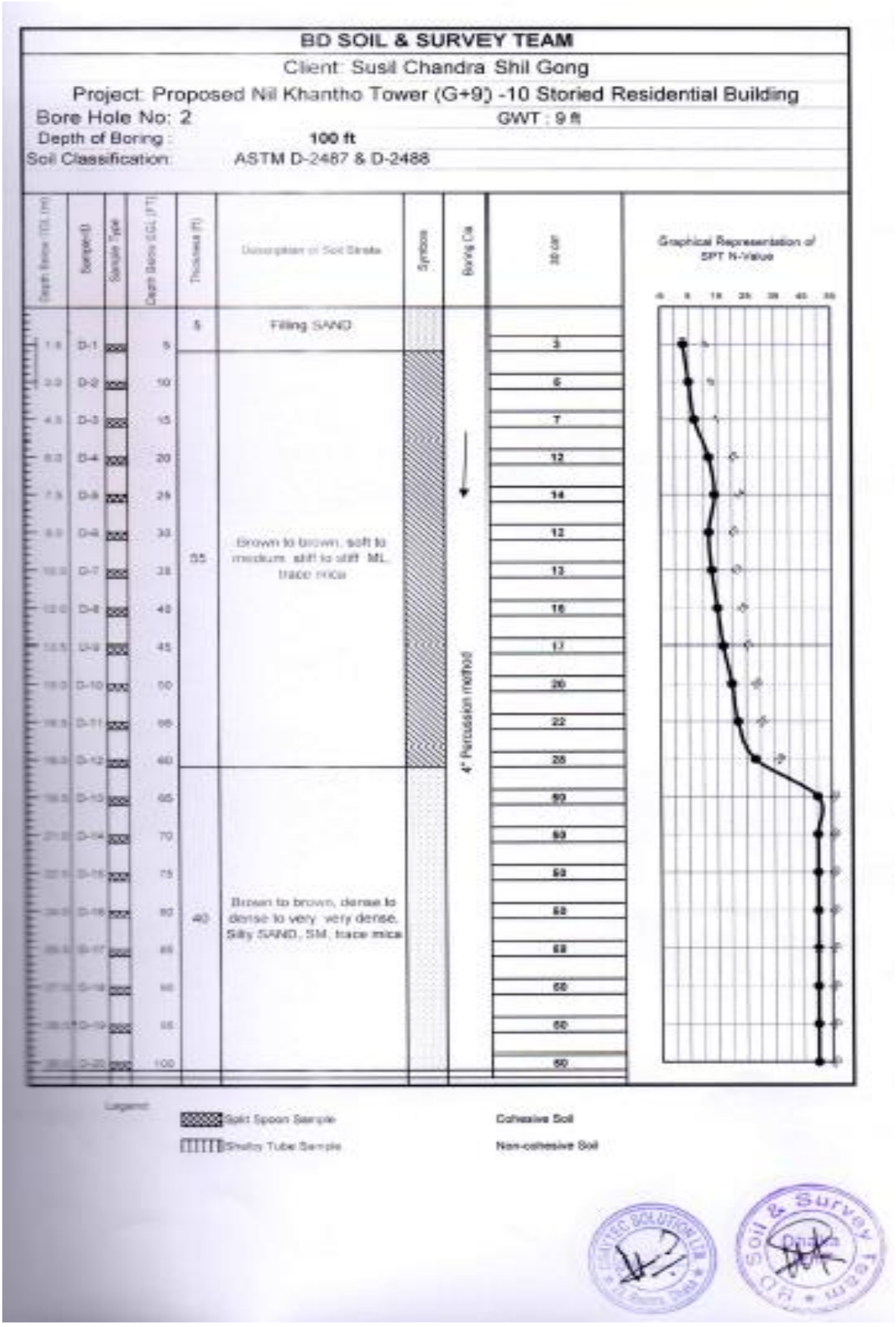
Depth Below EGL (m)	Sample ID	Sample Type	Depth Below EGL (FT)	Thickness (ft)	Description of Soil Strata	Symbols	Boring Dia	30 cm
1.5	D-1		5	5	Filling SAND		4" Percussion method	3
3.0	D-2		10	55	Brown to brown, loose to medium stiff to stiff ML, trace mica			6
4.5	D-3		15					8
6.0	D-4		20					12
7.5	D-5		25					13
9.0	D-6		30					18
10.5	D-7		35					12
12.0	D-8		40					13
13.5	D-9		45					15
15.0	D-10		50					23
16.5	D-11		55					20
18.0	D-12		60					21
19.5	D-13		65	40	Brown to brown, dense to dense to very very dense, Silty SAND, SM trace mica			50
21.0	D-14		70					50
22.5	D-15		75					50
24.0	D-16		80					50
25.5	D-17		85					50
27.0	D-18		90					50
28.5	D-19		95					50
30.0	D-20		100					50

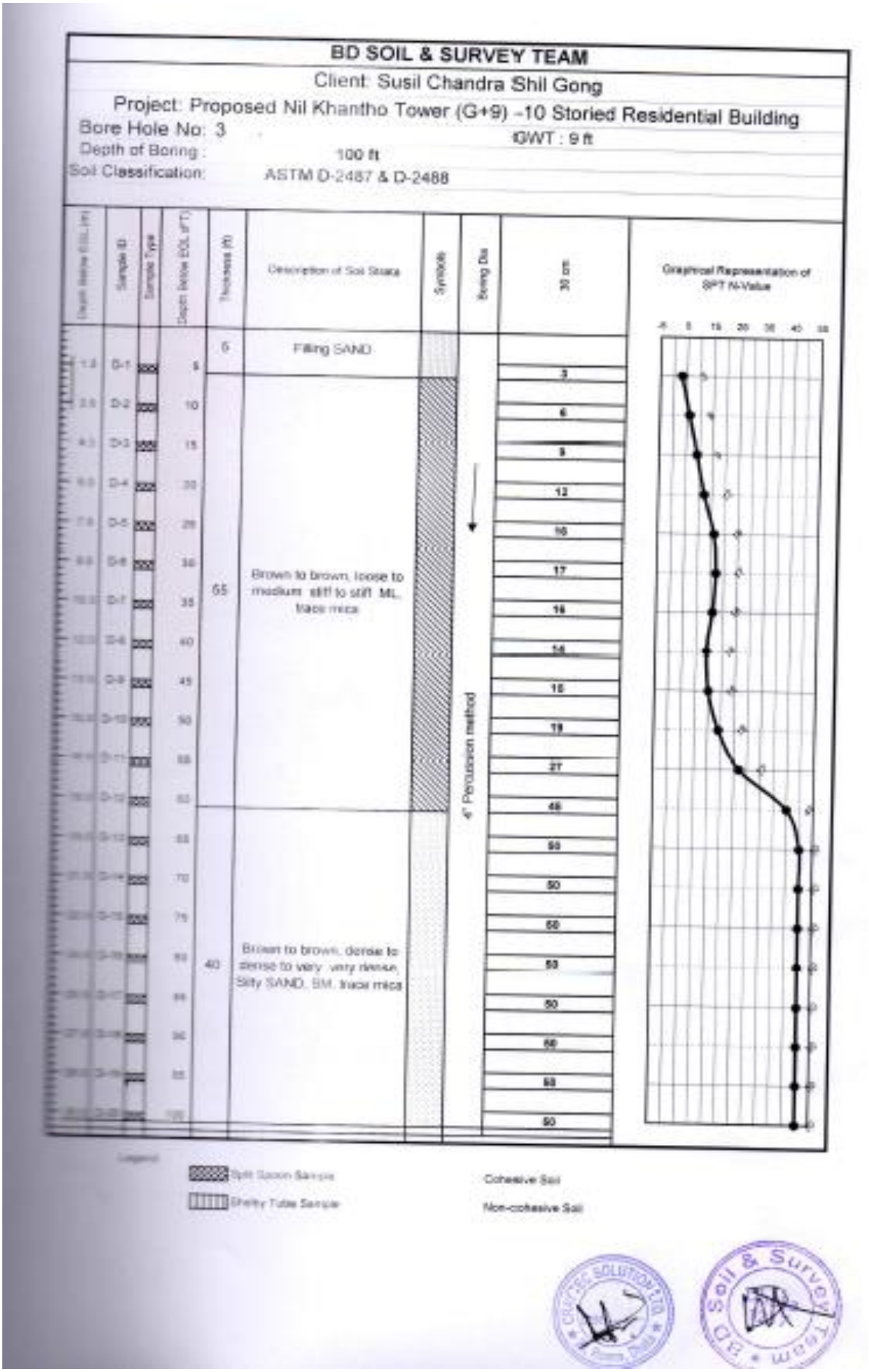
Graphical Representation of SPT N-Value

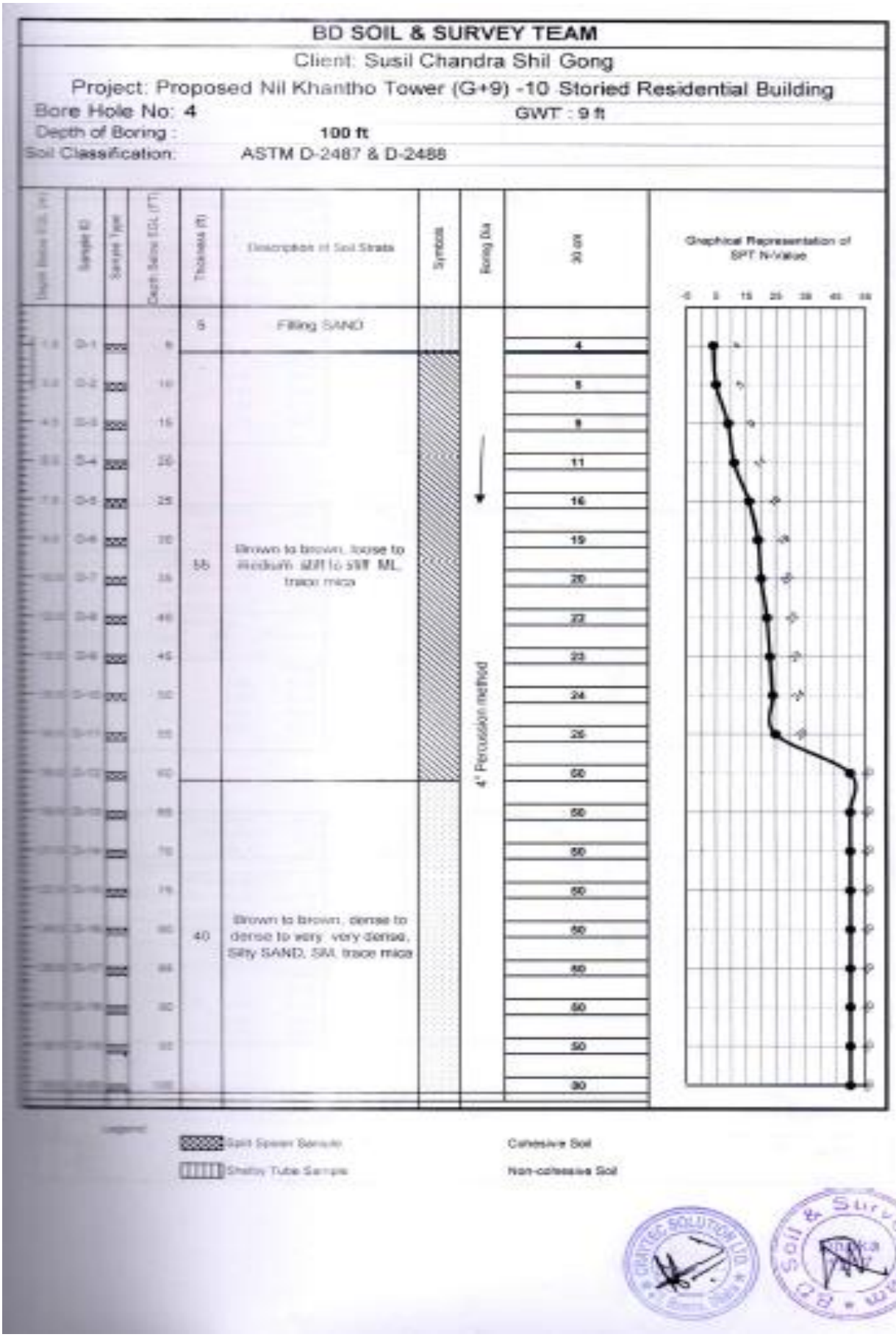
-5 0 15 25 35 45 55

Split Spoon Sample — Cohesive Soil

Shelby Tube Sample — Non-cohesive Soil


BD SOIL & SURVEY TEAM
Client: Susil Chandra Shil Gong
Project: Proposed Nil Khantho Tower (G+9) -10 Storied Residential Building
Bore Hole No: 2
GWT : 9 ft
Depth of Boring : 100 ft
Soil Classification: ASTM D-2487 & D-2488
Graphical Representation of SPT N-Value
Filling SAND
Brown to brown, soft to medium stiff to stiff, ML, trace mica
Brown to brown, dense to dense to very very dense, Silty SAND, SM, trace mica
4" Percussion method
Legend:
Split Spoon Sample
Shelby Tube Sample
Cohesive Soil
Non-cohesive Soil


BD SOIL & SURVEY TEAM
Client: Susil Chandra Shil Gong
Project: Proposed Nil Khantho Tower (G+9) -10 Storied Residential Building
Bore Hole No: 3
GWT : 9 ft
Depth of Boring : 100 ft
Soil Classification: ASTM D-2487 & D-2488
Description of Soil Strata
Thickness (ft)
Symbols
Boring Dia
30 cm
Graphical Representation of SPT N-Value
Filling SAND
Brown to brown, loose to medium stiff to stiff ML, trace mica
Brown to brown, dense to dense to very very dense, Silty SAND, SM, trace mica
4" Percussion method
Split Spoon Sample
Shelby Tube Sample
Cohesive Soil
Non-cohesive Soil


BD SOIL & SURVEY TEAM
Client: Susil Chandra Shil Gong
Project: Proposed Nil Khantho Tower (G+9) -10 Storied Residential Building
Bore Hole No: 4
GWT : 9 ft
Depth of Boring : 100 ft
Soil Classification: ASTM D-2487 & D-2488
Description of Soil Strata
Symbols
Boring Dia
30 cm
Graphical Representation of SPT N-Value
Filling SAND
Brown to brown, loose to medium stiff to stiff ML, trace mica
Brown to brown, dense to dense to very very dense, Silty SAND, SM, trace mica
4" Percussion method
Split Spoon Sample
Shelby Tube Sample
Cohesive Soil
Non-cohesive Soil

Appendix B

5.3 Schedule of Item Rates

Schedule of item rates is prepared by analyzing rates with the help of standard procedure and present practice, using the present market rate of materials and labors.

5.4 Schedule of Rates for Structural Steel Works

Schedule of item rates for structural steel works is prepared by rate analysis, following PWD item rate analysis procedure and present practice of different structural steel fabrication companies. In this case, the present market rates of materials and labors are used.

Table: C. 1: Schedule of rates for structural steel

Item No.	Description of Item	Quantity	Unit	Unit Rate	Amount (BDT)
1	**Mobilization, Demobilization & Site Cleaning Works**	11,250.00	sft	10.00	112,500.00
	Mobilization and cleaning site before commencing actual physical work and during contract period and **demobilization** after completion of the Works under contract accepted by Engineer. This work shall also cover all types of soil and debris cleaning and clearing, cutting or filling, dressing the project area on and in the ground to an extent that all the events of works of the project can be executed smoothly in a working environment with a particular attention on safety and security in all respects, and to stockpile the end outcome to a place for disposal agreed by the Engineer, where, payments are to be based on ground area determined by the Engineer and be proportionate to the percentage progress of work under contract as a whole in all respects and approved by the Engineer. **Rate includes bailing out trapped**				-

	water caused by inundation due to seepage or rain from working platform/foundation trenches.				
1.2	**Site Safety Measures**	11,250.00	sft	50.00	562,500.00
1.3	Providing Safety Canopy of at least 3 meter width in one layer with proper framing and profile sheet (0.5 mm thick) etc. all complete as per drawings and design prepared by the Contractor and approved by the Consultant.				-
1.4	**Safety Net**	11,250.00	sqm	20.00	225,000.00
	Providing water proof safety net on the vacant surface of the building with proper framing as per drawings and design prepared by the Contractor and approved by the Consultant.				-
1.5	**Layout/Setting Out**	2,250.00	sqm	15.00	33,750.00
	Layout and marking for earthwork in excavation in foundation accepted by the Engineer-in-charge. [Plinth area of the structure shall be considered for measurement]				-
1.6	**Temporary Site Office (10m X 5m)**	1.00	job		-
	Construction of a semi-pucca site office of approx. 50 sqm for use of client, consultant and contractor with providing security fencing, false ceiling, electrical fittings, toilets (2-Nos), tea corner etc. The toilets shall be finished with local tiles and fittings i.e. commode, Pan lowdown, Basin, Bibcock, Pillercock etc. shall be of standard local materials. The contractor shall ensure the supply of necessary water and electricity to the site office and cleaning, maintenance etc is to be done by contractor up to the completion of work. as per drawings and design supplied by the Consultant.	300.00	sft	500.00	150,000.00

	The work under item no. 3.5 also includes the office shall be furnished by 5 KVA stand by generator, Computer, uninterruptible power supply (UPS), Laser jet Printer(minimum 25 ppm) with internet facility, one no. 1.5 ton AC and supply of furniture, hard standings, stationeries etc. as appropriate to site and all approved and accepted by the Engineer. **Office building would be of Employer's property.**	1.00	job	100,000.00	100,000.00
1.7	**Sign Board (2m X 3m)**	20.00	sft	500.00	10,000.00
	Providing and maintenance of project profile signboard of standard size (usually 2 mx 3m) accepted by the consultant.				-
2.1	**Reinforced Cement Concrete, M.S Reinforcement Works etc.**				
2.1.1	**Reinforced cement concrete works with minimum cement content relates to mix design** f'c = 3500 psi at 28 days on standard cylinders as per standard practice of Code ACI/BNBC/ASTM, Cement conforming to BDS EN-197-1-CEM-I, 52.5N (52.5 MPa) / ASTM-C 150 Type – I, best quality Sylhet sand or coarse sand of equivalent F.M. 2.2 and 20 mm down well graded **stone chips** conforming to ASTM C-33, making and placing shutter in position and maintaining true to plumb, making shutter water-tight properly, placing reinforcement in position; mixing with standard mixer machine with hopper, fed by standard measuring boxes or mixing in batching plant, casting in forms, compacting by vibrator machine and curing at least for 28 days, removing centering-shuttering after specified time approved; including cost of water, electricity, testing charges of materials and cylinders as required, other charges etc. all complete, approved and accepted by the	1,300.00	cft	380.00	494,000.00

	Engineer-in-charge. (Rate is excluding the cost of reinforcement and its fabrication, placing, binding etc. and the cost of shuttering & centering) **Note: Using water proofing admixture (Brand-BASF/Fosroc) rates where concrete is in contact with soil and water unless otherwise stated.**				
2.3	**M.S. Fabrication Work[M.S. Reinforcement Works]**				-
	Grade 72 (RB 500 /RB 500W: complying BDS ISO 6935-2:2006) ribbed or deformed bar produced and marked according to Bangladesh standard, with minimum yield strength, fy (ReH)= 500 MPa but fy not exceeding 450 MPa and whatever is the yield strength within allowable limit as per BNBC/ ACI 318, the ratio of ultimate tensile strength fu to yield strength fy, shall be at least 1.25 and minimum elongation after fracture and minimum total elongation at maximum force is 16% and 8% respectively :	52,515.00	kg	120.00	6,301,800.00
	Sub-Total for RCC Super structure) [Section-1]	**53,815.00**			**7,989,550.00**

Table: C. 2: Schedule of rates for structural steel

	Description of Item	Quantity	Unit	Unit Rate in figures & words (BDT)	Amount (BDT)
	SUPER STRUCTURE : MAIN FRAME				
	Supply fitting & fixing Rafter, Column, MB, SB & CB With Pre Engineered I- section	45000.0	kg	155.00	69,75,000.0
	Supply fitting & fixing Pipe and Bracing Pipe	3000	kg	170.0	5,10,000.0
	Sub-Total for Stell Frame Works) [Section-2]	**61,320.00**			**74,85000.00**