

"550 N/mm² Class" for Building Frames

JFE Steel developed a new line of high-strength steel products with a lower limit tensile strength of 550 N/mm² for building frames using its advanced Super-OLAC (on line accelerated cooling) accelerated cooling technology. This product series currently consists of a steel plate, "HBL385," circular steel tube, "P-385," and square steel tube, "P Column G385." These products realize high strength and excellent earthquake resistance while maintaining the weldability of the conventional steel. The results of a test of members using the square tube confirmed that the cumulative ductility factor of 30, which is required in columns, can be sufficiently secured. A rolled H-shape steel, "HBL-H385," is also under development. A design trial was carried out to introduce

2. Features of Products

Tab e 1 *.....* **Tab e 2**

2.1 Steel Plate “HBL385”

Figs. 1 and 2

Tab e 3



1000

1 Staff Department Manager
 Co-ordinator Engineering Services
 Co-ordinator Engineering Services Department
 Co-ordinator Materials Services Certificate
 JFE Steel

3 Staff Dept t Ge e a Ma age
Co st ct o E g ee g Sec.
Co st ct o E g ee g Se ces Dept.
Co st ct o Mate a s Se ces Ce te
JEE Stee

Super
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2.2 Chemical Steel Type “P-385”

Chemical steel is a type of steel that contains a large amount of alloy elements. It is a type of steel that is used for various purposes, such as for the production of machinery, construction materials, and so on. The chemical steel type “P-385” is a type of steel that is used for the production of machinery, construction materials, and so on. It is a type of steel that is used for various purposes, such as for the production of machinery, construction materials, and so on.

2.3 Special Steel Type “P Co G385”

Special steel is a type of steel that contains a large amount of alloy elements. It is a type of steel that is used for various purposes, such as for the production of machinery, construction materials, and so on. The special steel type “P Co G385” is a type of steel that is used for the production of machinery, construction materials, and so on. It is a type of steel that is used for various purposes, such as for the production of machinery, construction materials, and so on.

Table 6 Maximum member section

	Column	Beam
Column	□	□
Beam		▲
Shear wall		▲
Core	○	○
Core		▲

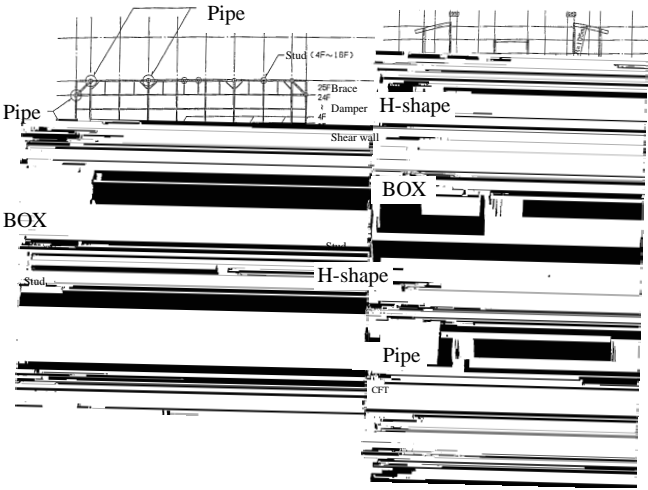


Fig.6 Building for trying to design

3.2 Results of Design Trial

Table 7

Column	%	%	%	%	%
Beam	%	%	%	%	%
Shear wall	%	%	%	%	%
Core	%	%	%	%	%
Core	%	%	%	%	%

Table 7 Quantity of steel as a result of trying to design

	Column	Beam	Shear wall	Core	Core
Column	%	%	%	%	%
Beam	%	%	%	%	%
Shear wall	%	%	%	%	%
Core	%	%	%	%	%
Core	%	%	%	%	%

Table 8

Column	%	%	%	%	%
Beam	%	%	%	%	%
Shear wall	%	%	%	%	%
Core	%	%	%	%	%
Core	%	%	%	%	%

Table 8 Primary natural period as a result of trying to design

	Column	Beam
X direction		
Y direction		

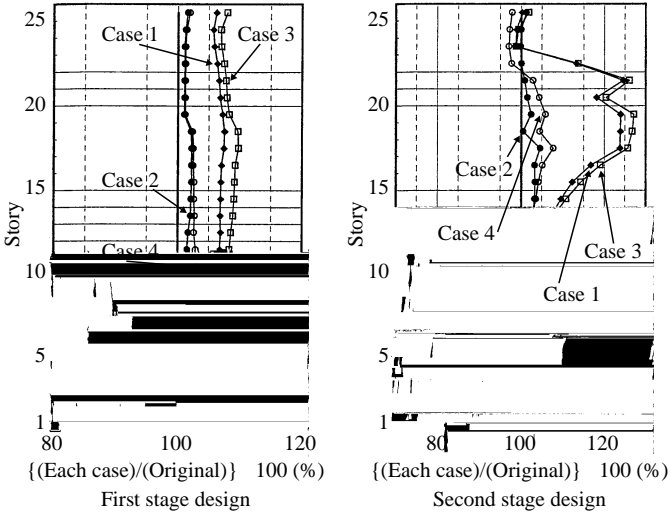


Fig.7 Story drift

Fig. 8

Figure 8 shows the results of the simulation. The figure is divided into two parts: (a) and (b). Part (a) shows the results of the simulation for the case where the initial condition is $\theta = 0$. Part (b) shows the results of the simulation for the case where the initial condition is $\theta = \pi$. The figure shows the time evolution of the system for different values of the parameter α . The results show that the system converges to a steady state for all values of α . The steady state value of θ is 0 for $\alpha < 1$ and π for $\alpha > 1$. The figure also shows the time evolution of the system for different values of the parameter β . The results show that the system converges to a steady state for all values of β . The steady state value of θ is 0 for $\beta < 1$ and π for $\beta > 1$.

The figure shows the time evolution of the system for different values of the parameter α . The results show that the system converges to a steady state for all values of α . The steady state value of θ is 0 for $\alpha < 1$ and π for $\alpha > 1$. The figure also shows the time evolution of the system for different values of the parameter β . The results show that the system converges to a steady state for all values of β . The steady state value of θ is 0 for $\beta < 1$ and π for $\beta > 1$.

4. Conclusion

The results of the simulation show that the system converges to a steady state for all values of the parameters α and β . The steady state value of θ is 0 for $\alpha < 1$ and π for $\alpha > 1$. The figure also shows the time evolution of the system for different values of the parameter β . The results show that the system converges to a steady state for all values of β . The steady state value of θ is 0 for $\beta < 1$ and π for $\beta > 1$.