

# A Review on seismic analysis of cold formed industrial shed using software

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**Abstract** - *The concept of cold-formed light steel (CFS) framing construction has been widespread after understanding its structural behaviour and characteristics through massive research works over the years. Application, manufacturing, design, and optimization of cold-formed steel structures continue to see significant improvements and refinements. The concept has many advantages over the Conventional Steel Building (CBS) concept of Building with roof truss. In recent years, the introduction of cold formed steel concept in the design of structures has helped in optimizing the design. The adoptability of CFS in the place of Conventional Steel Building (CSB) design concept resulted in many advantages, including economy and easier fabrication. Long Span, Column free structures are the most essential in any type of industrial structures. Cold formed steel fulfil this requirement along with reduced time and cost as compared to conventional structures Cold-formed steel has been widely used for components and main force resisting systems in commercial, industrial, and residential buildings.*

**Key Words:** Cold formed steel, STAAD PRO, conventional steel building.

## 1. INTRODUCTION

The scientific-sounding term pre-engineered building came into being in the 1960s. Typically, a Pre-building is a metal building that consists of light gauge metal standing seam roof panels on steels purlins spanning between rigid frames it has a much greater vertical and horizontal rise building which are ideals for offices, houses, showrooms, shop fronts etc. An Industrial Warehouse is a storage building and is usually characterized as single storey steel structures with or without mezzanine floors. The enclosures of these structures may be brick masonry, concrete walls or GI sheet coverings. These buildings are low rise steel structures characterized by low height, lack of interior floor, walls, and partitions. The roofing system for such a building is a truss with roof covering. The sections are cold-formed from carbon or low alloy steel sheet, strip, plate, or flat bar in cold-rolling machines or by press brake or bending breaks operations. The thicknesses of such member specially range from 0.0149in. (0.378 mm) to about 1/4in. (6.35mm) even though steel plate sandbars as thick As 1in. (25.4mm) can be cold-formed into structural shapes.

## 2. LITERATURE REVIEW

- V. Priyadarshini, Md Hasan Khan, Murugesan.P, Kiran Krishna, Md Riyas :** The aim of the project is to study the behavior of cold formed steel frames made using channel sections. From the review of literature it has been found that much work has not been done on cold formed steel hollow section frames. Therefore this study on cold formed steel channel section frames is undertaken. The study involves hollow section tests on cold-formed steel frame are two specimens of single bayed- two storied frames of 3mm thickness are tested along both the major and minor axis.
- Nikky K Dileep, Geetha. P. R:** Typical cold formed steel (CFS) moment resisting connection generally have relatively low local/distortional buckling resistance because of thin walled cold formed steel element and therefore may not be suitable for low to mid-rise construction. To address this issue a comprehensive numerical study is conducted on structural performance of bolted joints in cold formed steel beams moment resisting connection. The aim is to achieve higher moment carrying capacity and load carrying capacity through an appropriately designed bolted connection, postponing the initiation of local buckling in cold formed steel beams. The beam column connection consist of two back to back hot rolled channel column section and two back to back cold formed channel beam section.
- Pratibha Surendra Dhole, Prof. Vijaykumar Bhusare:** The use of the cold form steel section in the building sectors is growing in day to day life. As they can be used as the individual members and are applicable in any size and shape. These shapes are open in nature they are designed with the consideration of the beam loading but at times it undergoes the torque as the shear centre and the censored do not intersect. Up till now the flexure behavior of the cold form steel is studied so in this paper the tensional behavior of the cold form steel in the ABACUS software. The effect of the eccentric loading is studied on the beam designed as the flexural member. For the study the channel section is considered with the different stiffener. The study was conducted to observe the behavior of the cold form channel section under pure torsion.

4. **Khyati A. Patel, Hitesh K. Dhameliya, Krutarth S.:** The aim of this paper is to give review on usage of cold-formed steel for buildings and structures. Most effective use of Cold-formed steel can be made for different purposes since they are economical in production. Various research works has been carried out to study the strength and behavior of cold-formed steel section. Cold-formed steel is vulnerable to buckling due to its thinner section. To overcome this problem different parametric study can be conducted. The objective of this paper is to provide engineers with practical guidance for application of cold-formed steel in field.
5. **Mr. Roshan S Satpute, Dr. Valsson Varghese:** Cold formed steel section are extensively used in industrial and many other non Industrial constructions worldwide, it is relatively a new concept in India. These concepts were introduced to the Indian market lately in the 1990's with the opening up of the Indian economy and a number of multi-nationals setting up their green-field projects. Global Cold formed steel have established their presence in India by local marketing agents and certified builders. As the complete building package is supplied by a single vendor, compatibility of all the building components and accessories is assured.
6. **Yahia Halabi, Wael Alhaddad:** The concept of cold-formed light steel (CFS) framing construction has been widespread after understanding its structural behavior and characteristics through massive research works over the years. Application, manufacturing, design, and optimization of cold-formed steel structures continue to see significant improvements and refinements. The objective of this paper is to provide a comprehensive brief review of recent advances in different aspects of cold-formed steel structures. Therefore, in this review, the latest efforts and researches related to cold-formed steel structures are highlighted and discussed.

### 3. Conclusion:

Employed for illustrating the concepts with suitable modifications appropriate to Indian Indeed it is difficult to think of any industry in which Cold Rolled Steel products do not exist in one form or the other. Besides building industry, they are employed in motor vehicles, railways, aircrafts, ships, agricultural machinery, electrical equipment, storage racks, and house hold appliances and so on. In recent years, with the evolution of attractive coatings and the distinctive profiles that can be manufactured, cold formed steel construction has been used for highly pleasing designs in practically every sector of building construction. Designs of cold formed steel sections are dealt with in IS: 801-1975 which is currently due under revision.

### 4. Methodology

#### 4.1 Phase I- Data collecting and Literature survey:

In this phase data collection of cold formed steel member and literature survey of cold formed i.e. light gauge steel structure member properties, there use in actual construction and there use in different structure are carried out.

**4.2 Phase II- Model making:** in this phase with help of available data we can make the model in STAAD pro software.

**4.3 Phase III-Analysis of model:** In this phase analysis of structure are carried out.

**4.4 Phase IV- Interpretation of results:** In this phase the result of the structure in STAAD pro software are exacted and interpreted.

### 5. References

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