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## Large span single ridge steel PEB warehouse fabricated with wide flange rolled sections

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Pre-engineered steel building is the modern trend to build very large span warehouse type portal frame with properly designed for wind and earthquake forces using computerized analysis. This design can be optimized providing proper shape in member section following bending moment and shear force diagrams. If we design this portal frames for 100 m and 150 m spans with one and two intermediate supports respectively, then we can observe the typical bending moment (in red color) and shear force (in blue color). Steel section is required more at the hogging support moment location only. So, we can use a basic member of wide flange rolled section for whole frame with extra knee connection detail at the supports. This will reduce huge amount of welding/bolting for preparation of built-up plate girder. In the said examples wind speed is considered 47 m/sec with negligible seismic force. Frame spacing in longitudinal direction is considered 6 m. WPB 900x300x251.6 kg/m wide flange rolled section is used as the basic member. At the regions where bending moment and shear forces are larger, section size is varyingly increased there up to 2.5 m in depth with flange width 300 mm, flange thickness 45 mm and web thickness 20 mm. From the figures it is clearly observed that the distance for knee is approximately 12.50 m. The internal columns are given made of WPB 900x300x251.6 kg/m. As our basic member is rolled section huge amount of welding or bolting connection is avoided resulting hazard free faster construction technology. Wide flange sections are stronger against lateral buckling also. This is the most advanced way to construct PEBs. Splices shall be provided at suitable locations (nearly 1/4<sup>th</sup> of 50 m distance). Moreover, very large span single sloped, single ridge point PEB frames are free from damages due to rain water accumulation resulting low maintenance.

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