Large structure elements - conversion to modular construction

Whilst working on a new Gas Heater Structure, the erection was reviewed by Peers project team. Programme was tight and the top section was 25m high above ground.
It was viewed that although the steelwork had not been designed as modular it would be beneficial to the project to construct the top section at ground level and lift it into position as one complete unit; including handrail and flooring. The total lift was 21m long, 17m wide, 10m high and 137 tonne.

Key Points

- Working at a lower height reduces the risk of accidents and makes the use of access equipment easier and much more cost effective.
- Cable trays were fitted prior to lifting reducing working at height.
- The structure was built on temporary steel bases adjacent to the main structure to reduce the lifting radius and giving optimum crane economy.
- The structure was re-analysed to ensure that all connections and members were acceptable during lifting. Simple plan bracing was added to keep the structure square and spreader beams kept transverse forces to a minimum.
- Building the top section at ground level meant that work could start before the main structure was completed. This saved 4 weeks in the overall programme.
- Even if it has not been a specific design requirement, modular lifting can still be achieved with the addition of few simple temporary bracings and completion of the necessary design checks.