Overview of Discipline
Fabricator

Structural steel fabricators manufacture, assemble, modify and repair steel structures of all types. They use the project information given to them to determine the amount of raw products and time necessary to produce the necessary elements to complete the project.

They procure any/all of the materials required from a distributor, manufacture the parts and assemble them into the finished products. This includes any painting or surface finish specified.

Most fabricators use specialised tools to fabricate and assemble these entities along with automated manufacturing systems, which use computer derived data. They are responsible for precision cutting, aligning, and making sure that pieces fit together prior to welding.

CNC based fabricators use the 3D model, which has generally been provided by the detailer, to embrace the design, detailing, procurement, production planning and creation of any computer numeric controlled (**CNC**) files that are required for the fabrication of selected parts.

By linking their Management Information Systems (**MIS**) software with the 3D model they are able to speed up estimating, reduce material costs, and cut the cycle time for many fabrication sequences by providing seamless interaction between departments, suppliers and clients. The use of this type of software ensures that all project managers, production managers and purchasing departments receive reliable project information during the fabrication process.

Integrating the MIS software with an Enterprise Resource Planning (**ERP**) software ensures a smooth transfer of data via reports or standardised formats. Some systems can export information back to the 3D model, maintaining up-to-date project status.

Many fabricators have invested in the latest numerically controlled (CNC) steel fabrication technologies, such as high speed drill lines, plasma cutting, beam lines and high capacity welding lines. The speed of these processes and the automated handling means that labour input is reduced, which has led to a reduction in the possibility of errors.

In modern CNC systems, component design is highly automated using detailer supplied computer generated programs. These programs are fed into the fabricators beam line, angle line or plasma and oxy cutting lines to produce cost effective accurate components often with full indentifcation stamped on each part.

These production planning and automation systems, reduce the amount of manual work and data re-entry, as well as:

- Increasing estimating accuracy and integrating purchasing, stock and fabrication functions.
- Improving and maximising productivity by optimising job routing and planning.
- Producing real-time progress reports at anytime.
- Minimising data input and reducing the risk of errors.
- Improving relationships with clients by adding value to their service.
- Reducing material wastage through improved stock management.
- Removing bottlenecks in the flow of data and drawings.
- Eliminating production delays due to process bottlenecks.
- Monitoring business performance to identify most profitable job types.
- Reducing the duplication of work between departments.
- Automating laborious tasks and implementing best practice workflow.
- Achieving 100% process traceability.

One of the latest CNC innovations, scribing or stamping during the manufacturing process, has been made possible by the use of specialised 3D software and machinery, is fast becoming an almost essential tool. Scribing is the process of collecting assembly information from the model, which is then automatically transferred to the member itself by writing lines and characters. This automatic process marks the location and the part mark of the connecting entity, which results in the reduction of the laborious fitting process and ultimately any human error.

By using the 3D model, the fabricator can also simplify the task of determining the project layout along with providing the optimum erection sequence, which can then be translated into an efficient transport sequence.
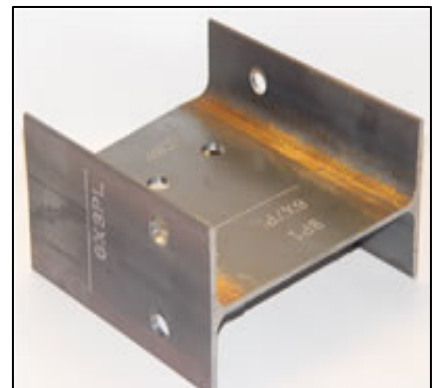

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