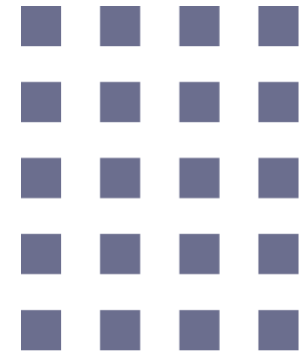




STEEL FABRICATION

- ❖ About
- ❖ Common Issues
- ❖ Resolutions



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FACILITIES

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Eau Claire, Wisconsin:

The Eau Claire, WI facility is located on a 60-acre site with more than 250,000 square feet of building facilities. It specializes in the fabrication of steel used in complex bridge structures and plate girder projects. The plant is completely rail and truck accessible, and includes separate buildings for steel fabrication, assembly and indoor steel storage. It also has an advanced paint facility, as well as leading-edge equipment for steel fabrication.



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Wausau, Wisconsin:

The Wausau, WI facility is 90 miles east of Eau Claire and is situated on 22 acres of land. It houses more than 150,000 square feet of fabrication space, including a painting facility. The Wausau plant is adjacent to a major roadway and rail lines. It specializes in steel plate girders and uses the latest equipment for their fabrication.



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Palatka, Florida:

The Palatka, FL plant is on a 117-acre site with more than 200,000 square feet of building facilities. Because it's located adjacent to the St. Johns River, the plant has direct water access to the inter-coastal waterway when receiving and shipping materials. It houses the necessary equipment for complex bridge and girder fabrication, and divides its fabrication efforts between complex bridge structures and plate girder projects.



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Common Issues



- Common Issues



- Mislocated holes
 - Program error, equipment error, human error
- Mislocated/misaligned stiffener and connection plates
 - Drawing errors and human error
- Miscut members
 - Program error, equipment error, human error
- Web or flange replacement or repair
 - Equipment error, human error
- Material defects, gouges
 - Mill defects, burn gouges, handling damage
- Heat straightening
 - Camber adjustments, sweep adjustments, flange tilt adjustments, plate straightening



Resolutions

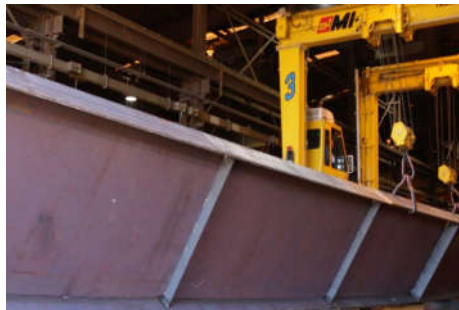
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- Resolutions



- Pre-planning and failure mode and effects analysis (FMEA) play crucial roles in identifying potential issues before they occur
- Root cause analysis (RCA) and corrective action reports (CAR) are used after issues are identified to prevent recurrence and drive continual improvement of our systems



- Resolutions



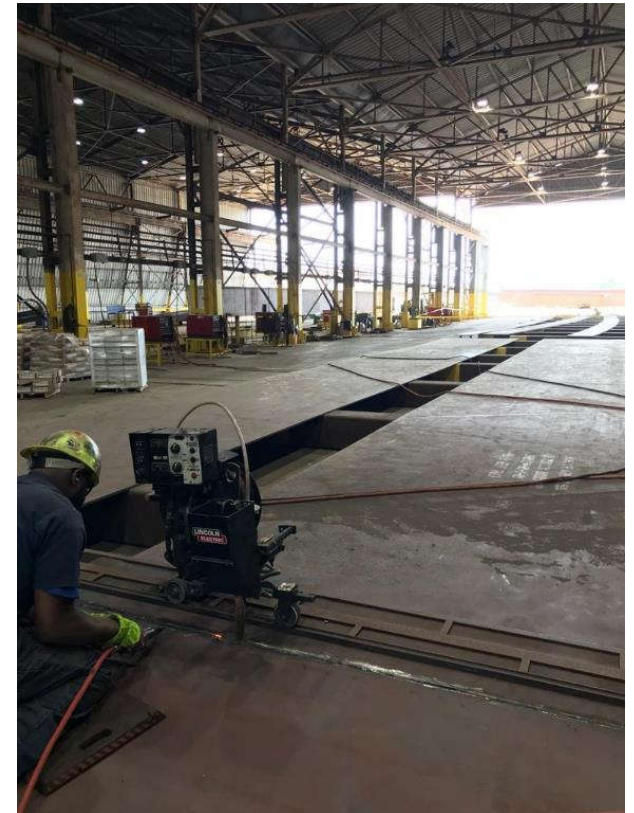
- Mislocated holes
 - Fill open holes with bolts when possible
 - Cosmetic repair with steel pins or molten zinc – useful when holes are partially covered
 - Welded restoration when no other solution will work
- Mislocated/misaligned stiffener and connection plates
 - Remove and correct when only tack welded
 - Leave in place and add correct stiffener when possible, fill open holes with bolts as needed
 - Use of fill plates to align connections plates on adjacent girders when offset by 1-2 inches
- Miscut members
 - Leave as is and compensate in assembly when possible – i.e. entire girder cut short; use adjacent girders to make up overall line length if they have sufficient length
 - Flange or web is short – use adjacent girders to compensate if possible, dependent upon dimensional impact add splice to web or flange to correct length
 - Corner clips or skew cuts leave as is and provide detailed cut if possible, otherwise welded restoration may be required by incorporating a splice



- Resolutions



- Miscut members
 - Compensate in assembly when possible – if girder cut short, use adjacent girders to make up overall line length if when possible
 - Flange or web short – use adjacent girders to compensate or add splice to web or flange to correct length
 - Corner clips/cuts - leave as is when possible or welded restoration by incorporating a splice
- Web or flange replacement or repair
 - Damage prior to flanging should be repaired as agreed
 - Damage caused or discovered after flanging must be evaluated and repaired as agreed – blending, welded restoration, removal and replacement



- Resolutions



- Material defects, gouges
 - AWS D1.5, ASTM A6 and project specification provide guidelines for addressing common mill defects and gouges caused during fabrication
 - Blend when possible to avoid localized heat input
 - Weld repair when blending is not sufficient or needed to meet design requirements
- Heat straightening
 - Controlled application of heat is commonly used to correct the following before, during and after fabrication:
 - Camber
 - Sweep
 - Flange tilt
 - Web buckle
 - Other dimensional issue
 - Heating should only be done in accordance to a procedure agreed upon by the fabricator and owner

