

Fabrication of ASTM A1010 Bridge Girders

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Job Planning

VDOT special provisions

Welding consumables

Types of welds

Code requirements

Welder qualifications for A1010

Safety & Health issues

Hexavalent Chromium

- Hazardous to lungs
- Known carcinogen
- Only present when atomized into a fume
- Supplied Air half mask respirator



Initial trials

What we knew going in.

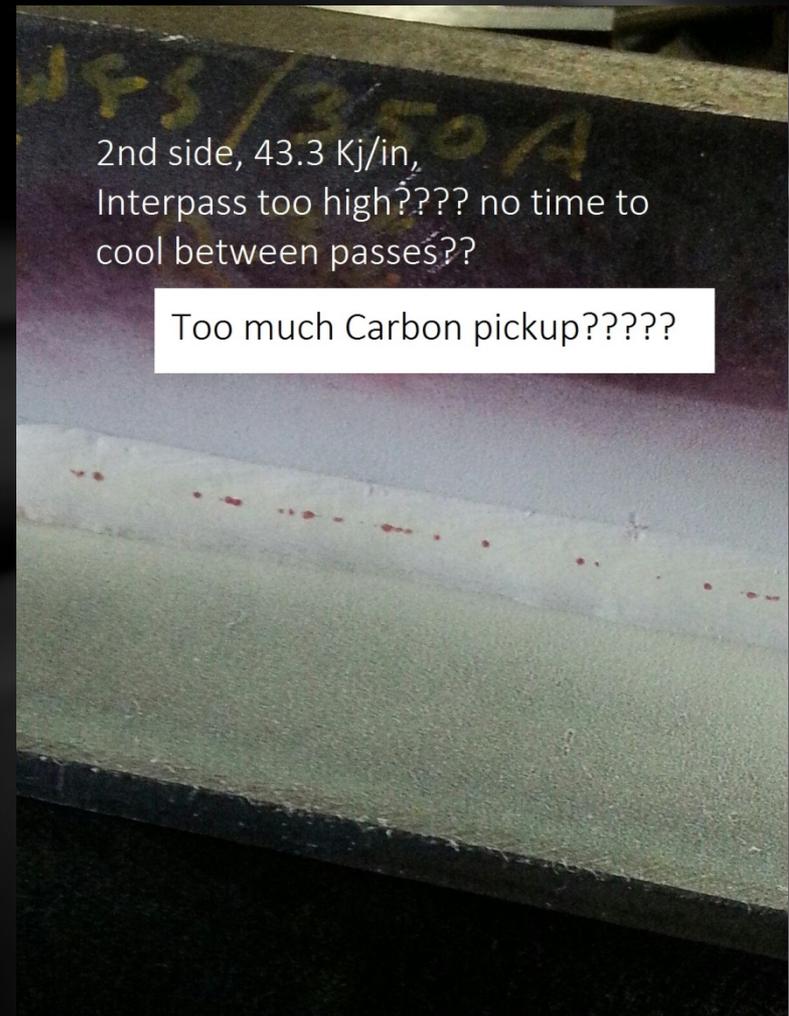
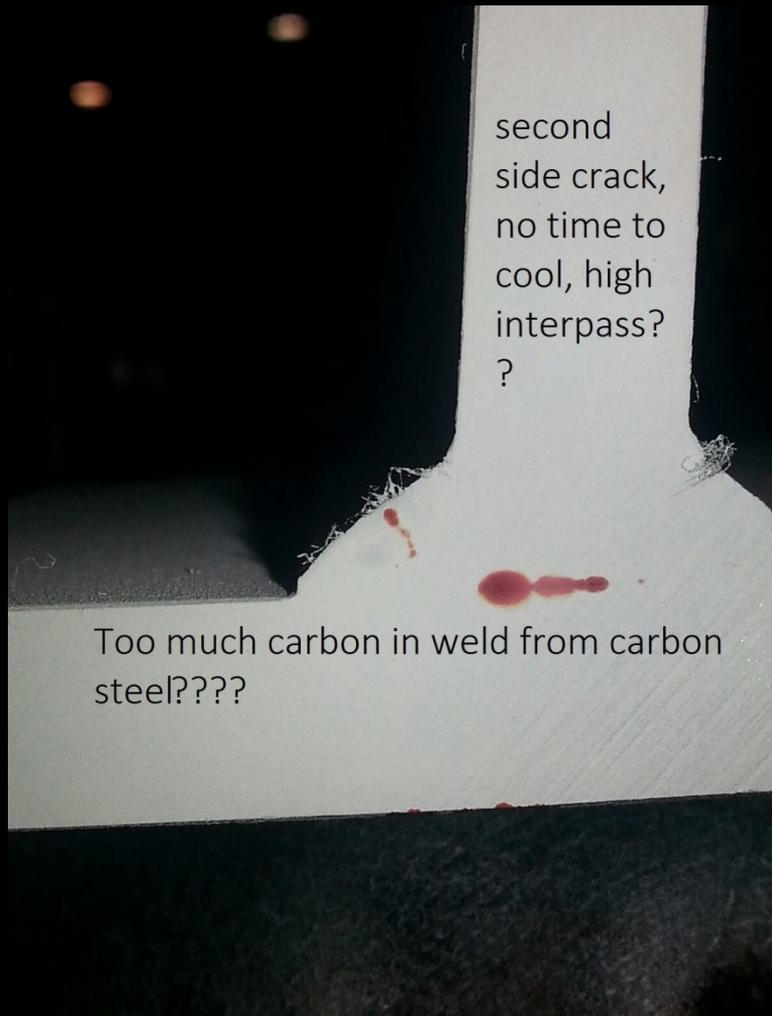
Weldability?

\$\$ cost of R&D

- A lot can be learned from a picture.

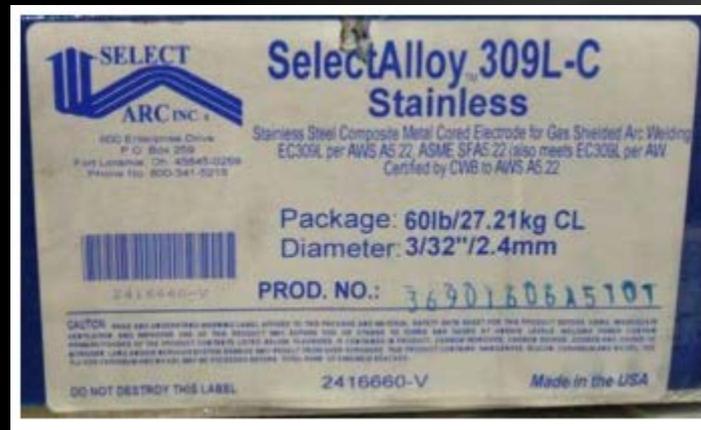
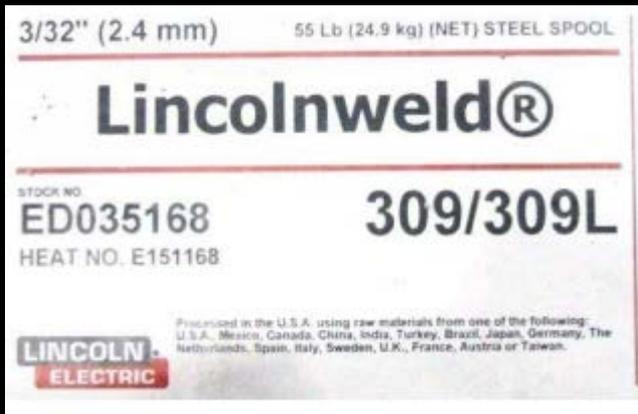


Scary moments

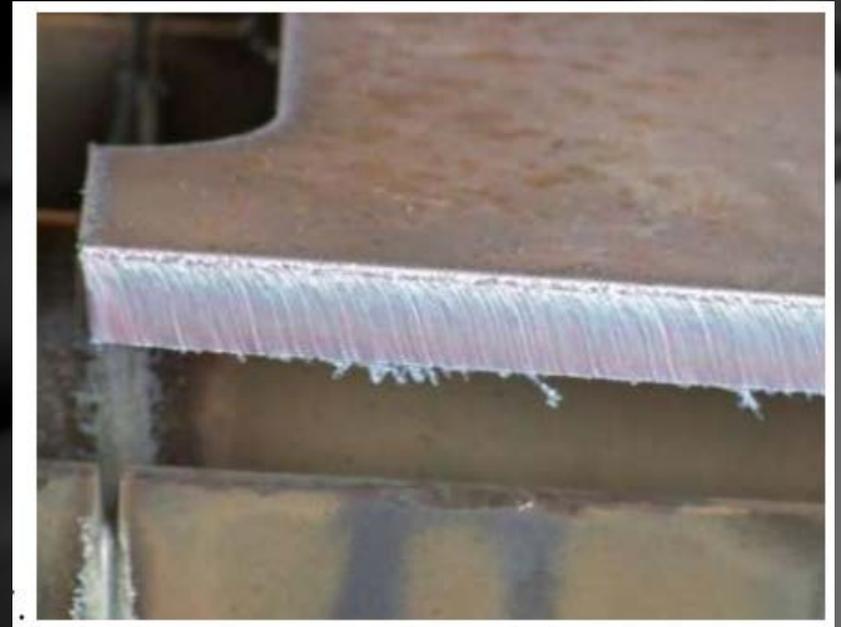


Another hurdle...

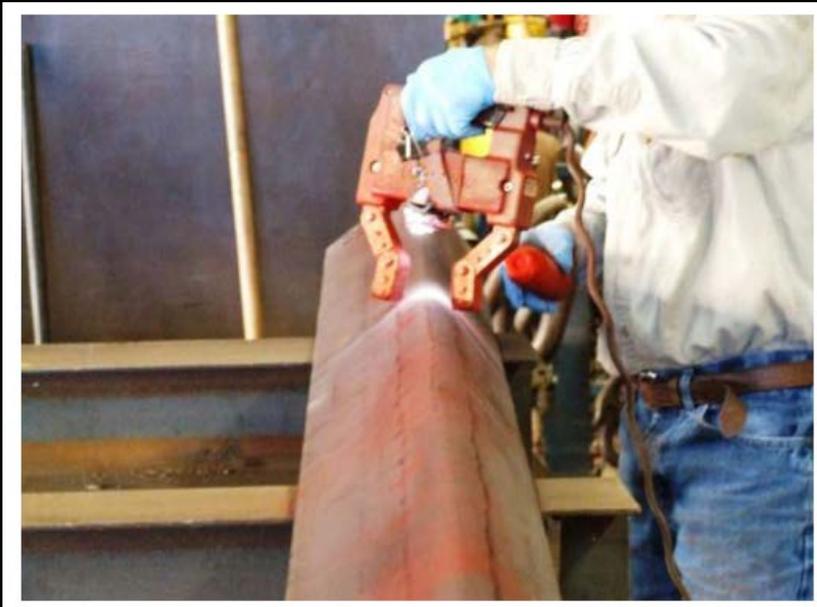
Buy American Act



Testing & Trials



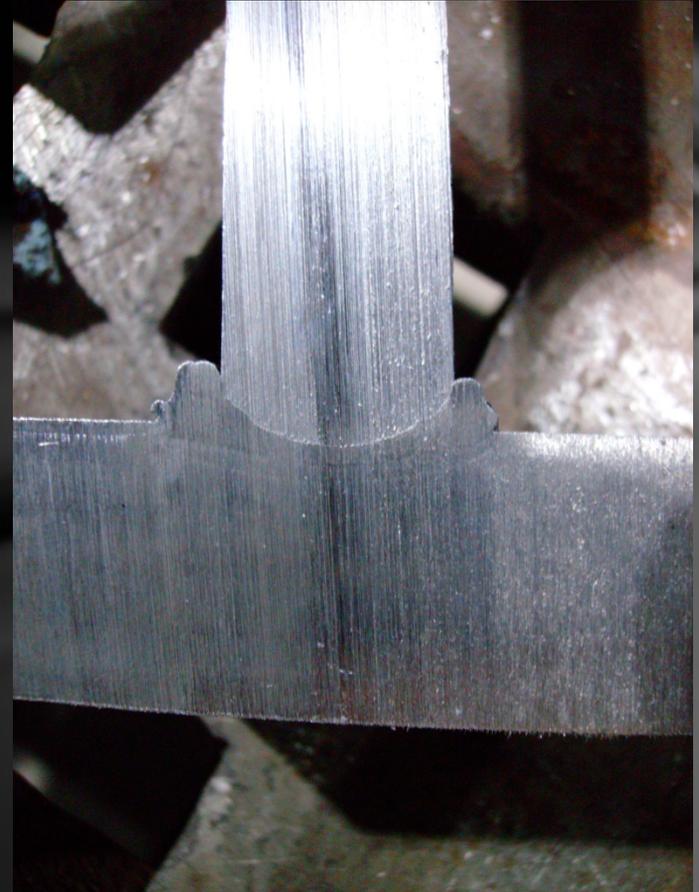
Testing & Trials



Testing & Trials



Testing & Trials



Testing/Qualification



Testing/Qualification



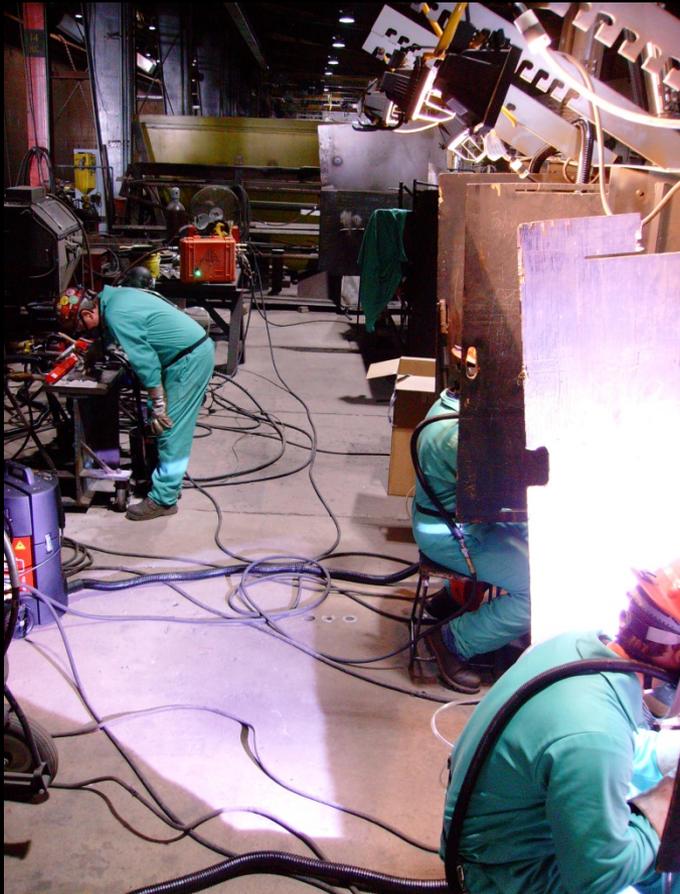
Fought & Company, Inc.



Testing/Qualification



Welder Qualifications



Welder Qualifications

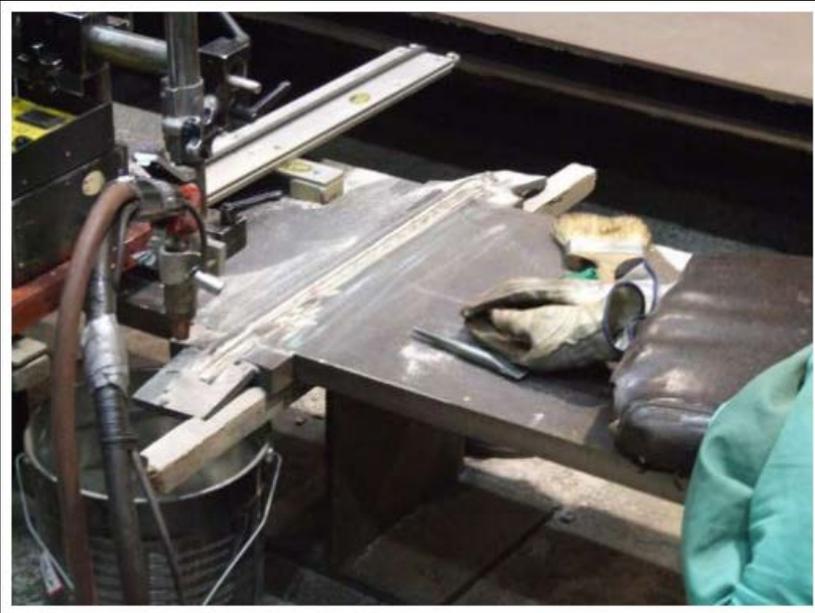


Lets get started!



Hold up a minute...

Semi-Auto issues with feeding a 3/32" stiff wire.



Switched to Automatic Feeder, issues went away.



Butt Splice issues.



No oxy-fuel beveling

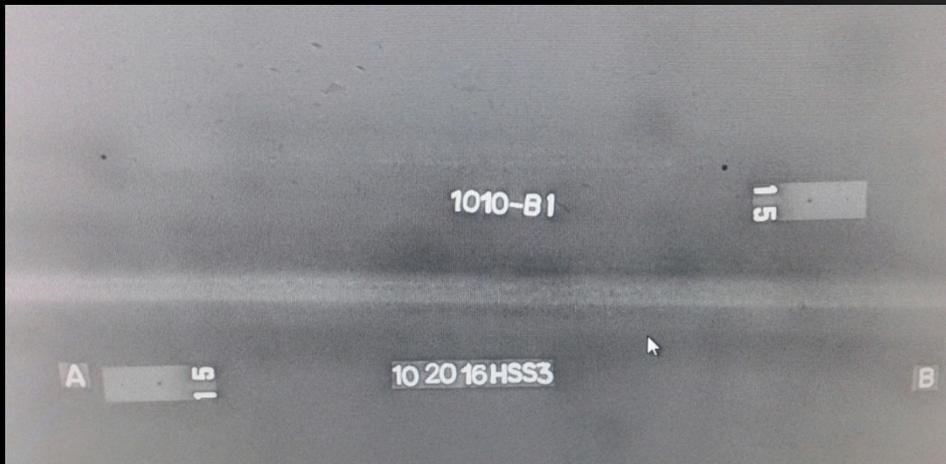
Wire feeders

Slag removal was difficult

Excessive distortion

Maximum interpass reached very quickly

Radiographic Testing....



Build issues

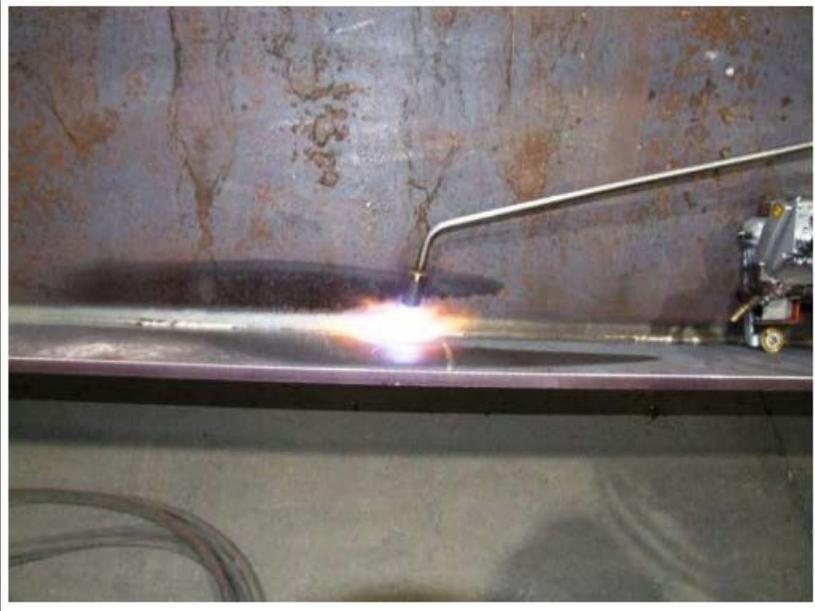


Butt splices had some distortion

Fume generation from FCAW process & capture

Web to Flange

Started 2F



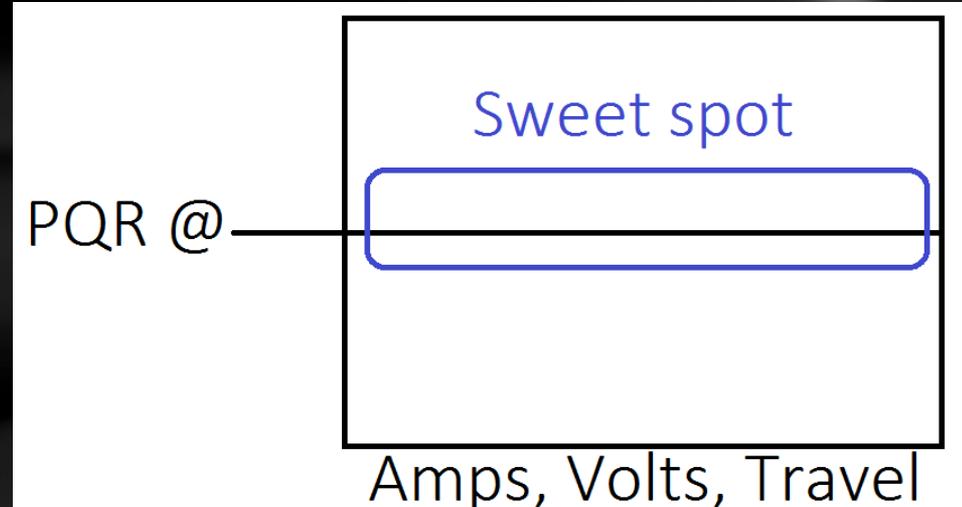
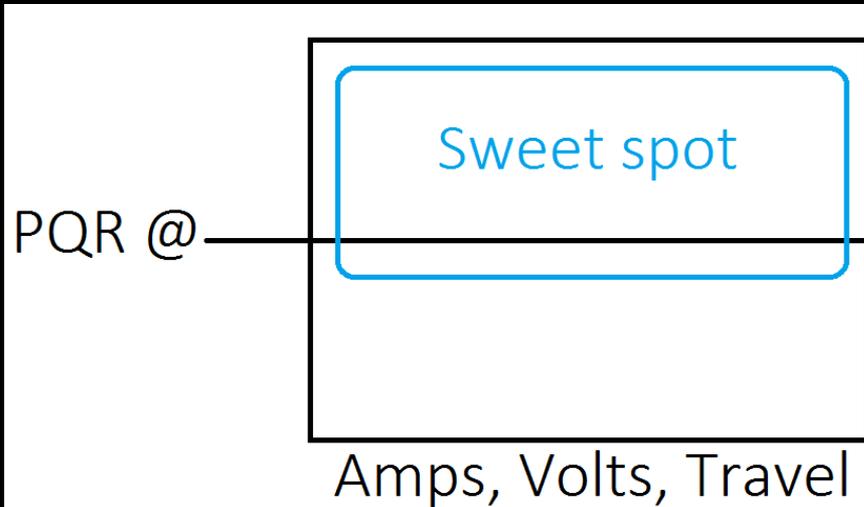
Ended 1F



Sweet spot for best weld quality

"Typical" grade 50

1010 grade 50



Stiffeners

Pretty typical fitting



Wire feed issues



Finish & Studding

*Handheld SAW for
Stiffener to Flange*



Typical Studding



NDT throughout process



Give credit where credit is due:

Bill Via – VDOT (approvals and guidance)

Steve Sharp – VDOT (pictures & guidance)

Select Arc Inc. – Tom Glennon & Jerry Mathison (consumables)

Lincoln Electric – Dave Watson (consumables)

Claude Satterfield – TRC (QA)

All of High Steel Co-workers who helped to adapt and overcome.

Fought & Company – Steve Fugate (PP online)