

# Metals/NDT Services



Structural inspection and testing, as enhanced by our non-destructive testing (NDT) capabilities, is one of the core quality control/assurance services offered by Froehling & Robertson, Inc. Our experience expands to nearly all types of modern construction projects – including highway bridge fabrication and erection, commercial and government buildings, power plants, refineries, paper mills, chemical plants, water and oil storage tanks, and other manufacturing/processing facilities, to name just a few. When steel structures are involved, inspection and testing of shop fabrication and field erection procedures is a necessity, and F&R is among the most qualified companies performing these types of analyses.

Shop fabrication and field erection procedures are evaluated in accordance with applicable codes and specifications. Full penetration welds are examined by radiographic or ultrasonic testing methods, while other welds are subject to visual testing or other non-destructive testing methods. Bolted connections are tested or inspected by a predetermined method relative to the type of installation. Generally, connections can be visually inspected for evidence of physical impacting, but critical connections may call for further testing using the calibrated wrench or turn-of-nut method. Load indicators are inspected visually and by the use of feeler gauges to assure proper tightening. From preliminary planning to final occupancy, we work closely with the owner, structural engineer, general contractor, and erector to help assure a quality end product. This close association with all involved parties is especially effective in meeting the special inspection requirements.

Our personnel are qualified and certified either in-house, such as through our Level I and II programs, and/or by third parties, as with our American Welding Society Certified Welding Inspectors. Quality operations are under the supervision and oversight of registered professional engineers, and our equipment – both laboratory and field – is subject to periodic calibration in accordance with our own QC program. Finally, given our level of demonstrated expertise, we regularly are called upon to test and qualify welding procedures and welders.



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Specifically, F&R staff is experienced in the following applications:

## Metals Testing

Welding is the primary method by which metals are joined regardless of the industry involved. As a result, the need for qualified technicians to be available to test the strength and safety of a project's welding procedures is critical. F&R is well versed in not only how best to perform the post construction inspections, but we can also provide some of the most in-depth training of welder qualifications in the industry. Specifically, F&R offers welder qualification testing to all major codes, weld procedure specification preparation, weld procedure qualification testing, weldability tests, and shop and NDT services for inspection of production welding.

## Structural Steel

In order to assure adherence to AISC and AWS requirements, F&R has structural inspectors and AWS certified welding inspectors available for the examination of structural steel. Some areas of inspection would include shop fabrication, field inspection, and engineering. With proper planning and implementation, a summary inspection report can be provided to satisfy local building code criteria.

## Nondestructive Testing

F&R's technicians are exceptionally well trained. We realize the importance of nondestructive testing as a means to control materials and fabrication to prevent failure, provide consumer safety, and to assure product reliability and quality levels, and we have dedicated significant resources to developing first-rate personnel and facility capabilities. As an independent testing agency, F&R provides clients with the type of services required for their particular application or situation. Our capabilities include radiography, ultrasonic inspection (both flaw detection and thickness measurement), magnetic particle examination (both yoke and prod) and dye penetrant inspection.

## Physical Testing

F&R's physical testing capabilities are extremely diverse. Whether a client's specific situation requires the utilization of mechanical testing (tensile strength, yield point or strength, ductility, soundness tests, hardness testing, or fracture toughness tests), load testing using our Baldwin Tate-Emery Load Indicator (with tensile or compression up to 300,000 lbs.), or metallographic tests of macro or micro specimens, F&R is prepared to provide the needed assistance.

