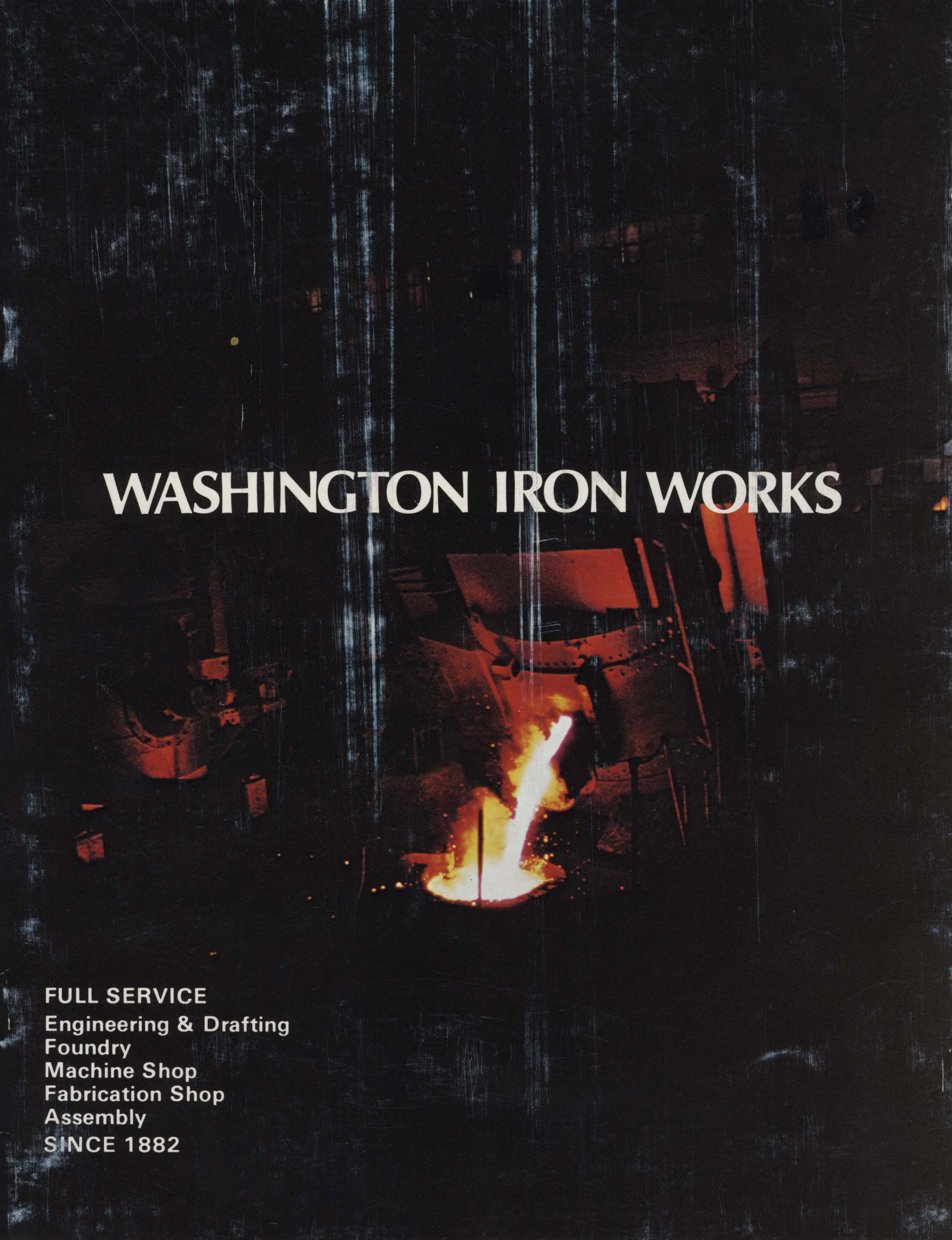

WASHINGTON IRON WORKS
FULL SERVICE
Engineering & Drafting
Foundry
Machine Shop
Fabrication Shop
Assembly
SINCE 1882

the company

Washington Iron Works was launched in 1882 by a school principal and an early day Seattle entrepreneur in an apple orchard at the corner of Occidental and Jackson Streets in what was then the village of Seattle. In the ensuing years the tiny two-man shop has grown from a supplier of parts to the local marine and sawmill trade to a world-wide manufacturer of heavy equipment. Products include heavy-duty cranes, cableways, logging equipment and fiberboard presses. Markets range throughout North America, Europe, South America and Southeast Asia.

A division of Formac International, Inc., Washington Iron occupies a 350,000 square foot plant in Seattle's industrial section and employs more than 600 people.

The first advertisements labeled the firm as a "founders and boilermakers", with a product line which included sheaves, blocks, rigging items and steam hoists for construction, mining and logging. Through the years Washington Iron developed its product lines, often leading the way in advancing the state of the art. Heavier equipment was soon developed for the logging industry as well as a wider range of rigging items for the shipbuilding trade and new equipment for construction, earthmoving, mining and dredging. Later, hydraulic presses were manufactured for the pulp industry. These early presses paved the way for the development of automatic press equipment for the manufacture of plywood, doors and particleboard.

During the thirties and forties, Washington Iron made one of the world's leading diesel engines, the Washington Diesel, which was installed in many commercial boats including tuna clippers, purse seiners, tugboats and ferries. Of the 650 engines manufactured before the assembly line closed in 1950, nearly 150 are still in use.

In recent years, Washington Iron Works has established itself as one of the world's three leading manufacturers of presses and equipment for making particleboard and fiberboard. Equipment built and installed each year by Washington Iron Works creates the capacity for more than one billion square feet of product equal to one million tons of board.

Engineering excellence and leadership have always been the hallmarks of Washington Iron's products. One example is a simultaneous closing device designed and patented by the company, enabling board mills to permit production of a uniform product with minimum wastage. Or, consider the Washington Iron logging yarder which, in this day of deep ecological concern over the effects of logging on the environment, is helping the forest industry minimize the impact of timber harvesting operations on the forests of the nation.

Perhaps one of the reasons Washington Iron Works is numbered among the very few firms remaining in continuous operation from the early days is that we still retain the capability to custom cast, machine and fabricate equipment for our customers. We have retained some of our heritage as "founders and boilermakers" and, through the use of versatile manufacturing techniques along with the facilities necessary to do the job, are able to meet the specialized needs of a variety of industries.

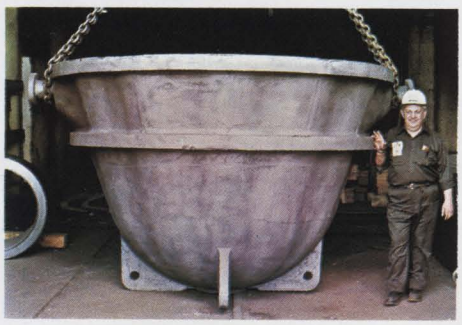
foundry

The foundry produces iron and steel castings to all popular specifications and in a single casting weight range of 100 to 20,000 lbs. Castings of a larger size are commonly being produced by joining cast segments together as a weldment.

Molding is handled by both the conventional "Green Sand" method, involving the slinging and ramming of sand into the mold, and by the relatively new "No-Bake" method which provides the opportunity to produce a "flaskless" mold if the required part is beyond flask size.

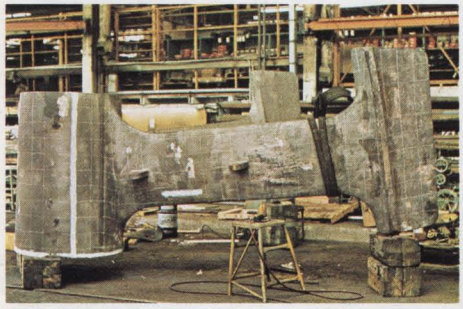
Irons produced include Grey, Nickel, and Ductile — and also most of the wear, corrosion, and heat resistant irons. Steel is produced in many of the alloys, including high wear resistant austenetic manganese.

Spectrograph analysis is used to confirm and control the chemistry of the molten metal — and a physical testing laboratory is provided for compliance with the required A.S.T.M. test specimen requirements.

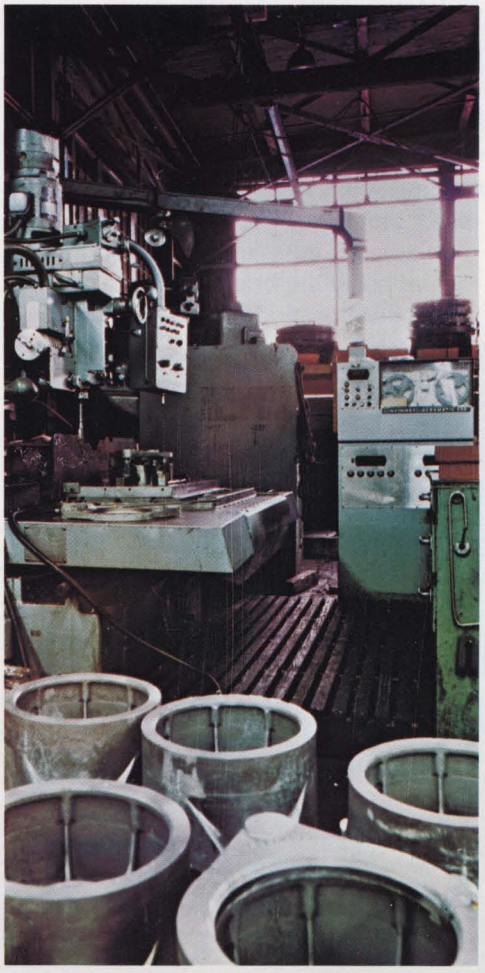


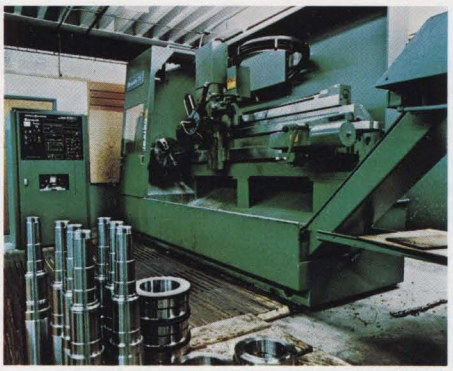
foundry continued

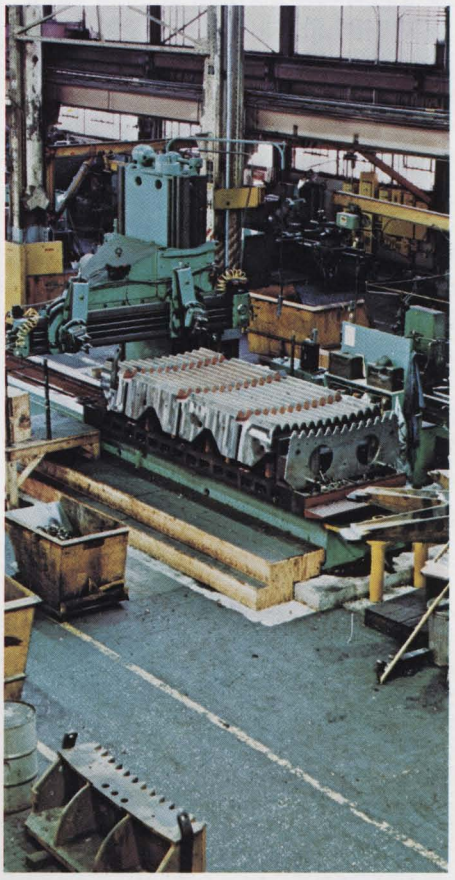
Four heat treat furnaces, and the necessary quench tanks, are used for achieving normalizing, quench, and tempering requirements. Surface and subsurface test equipment is available for the non-destructive testing of the soundness of the casting.

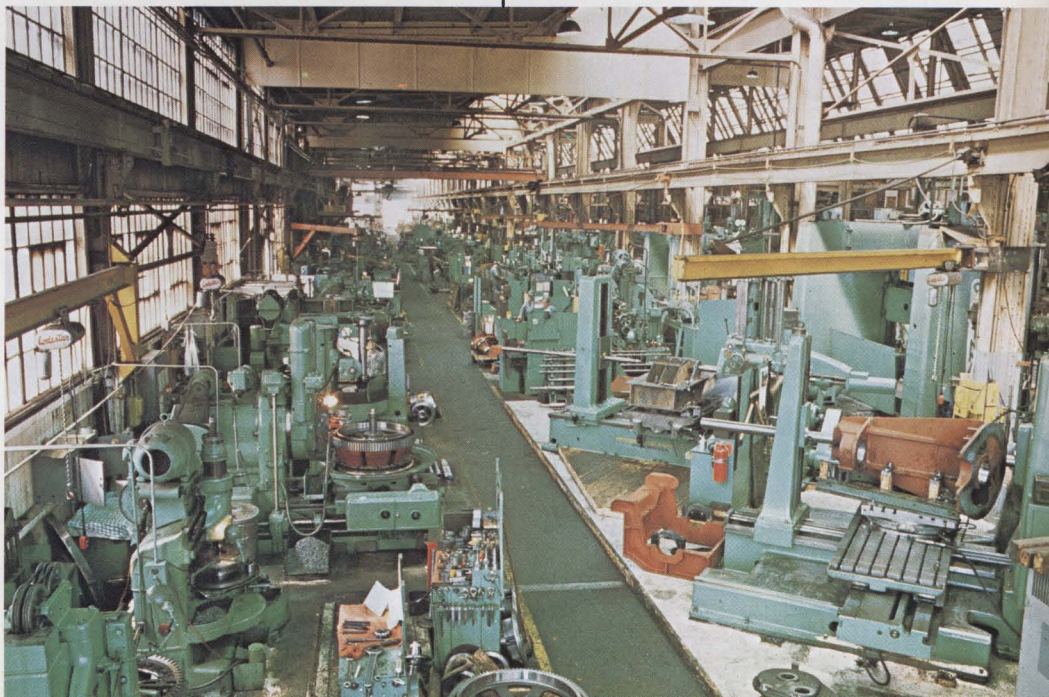


machine shop





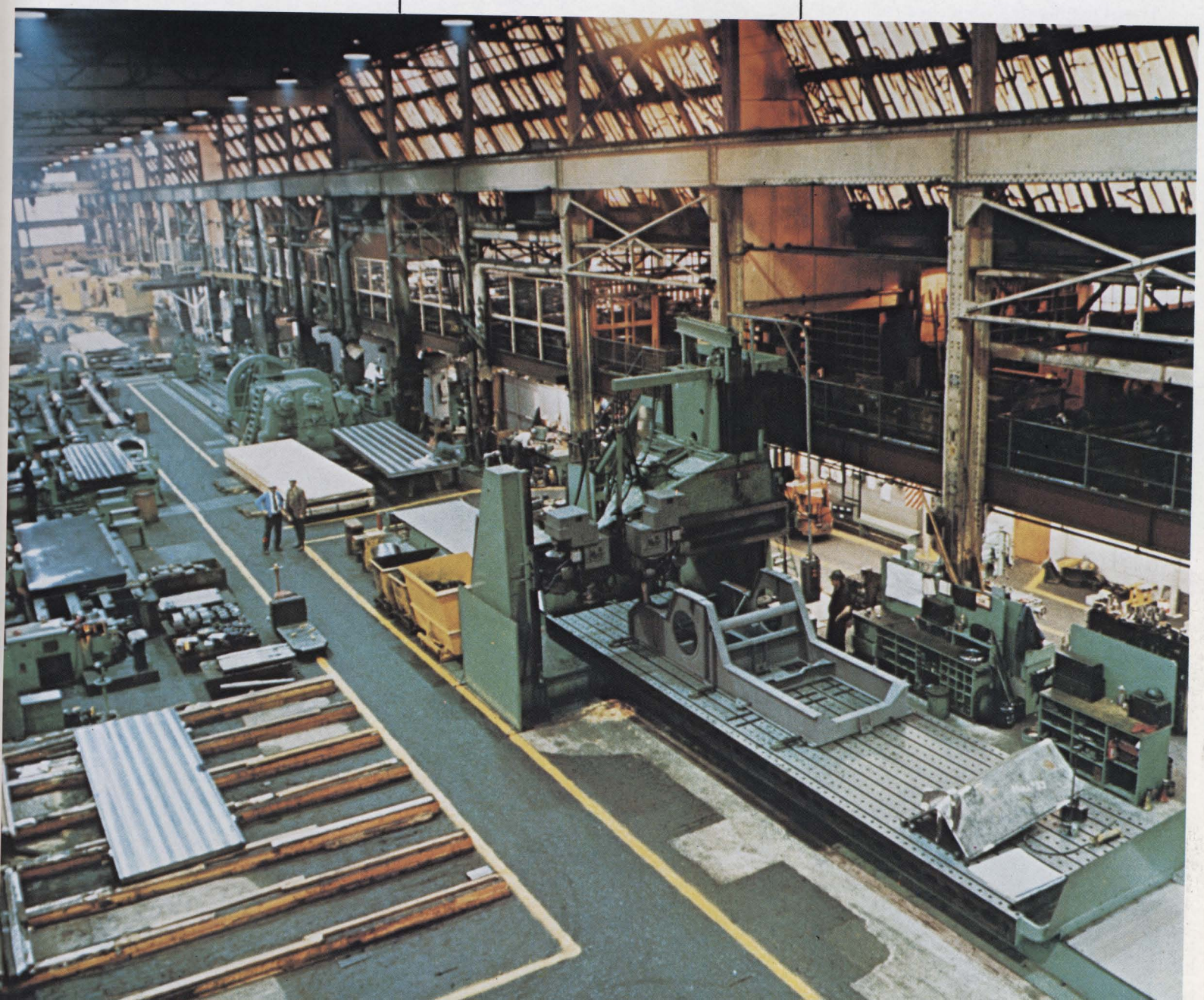




The company has had a long history of machine shop jobbing, for it has been with us since our origin. The jobs have covered a wide spectrum of work; everything from the simple to the complex, with most finding us able to machine to their requirements.

The machine shop has a large selection of machine tools covering most metal cutting needs. We have all the standard pieces of equipment any well-equipped shop would have, and in addition we have many special machines that are readily available to jobbing customers. Just some of these tools are: our large slab mills able to handle one hundred ton loads over forty feet in length, a horizontal boring mill with similar capacities, a vertical mill able to swing in excess of twelve feet, and a lathe able to swing 102 inches, with a bed length in excess of 49 feet.

With the large variety in size and type of machine tools, coupled with large lifting capacity through the working areas, we are a facility that can produce when a jobbing customer comes to us with his needs.



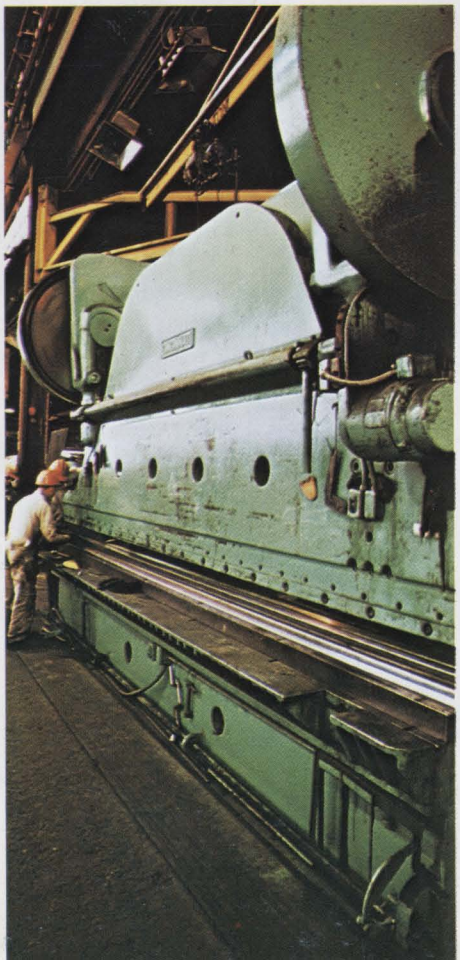
fabrication

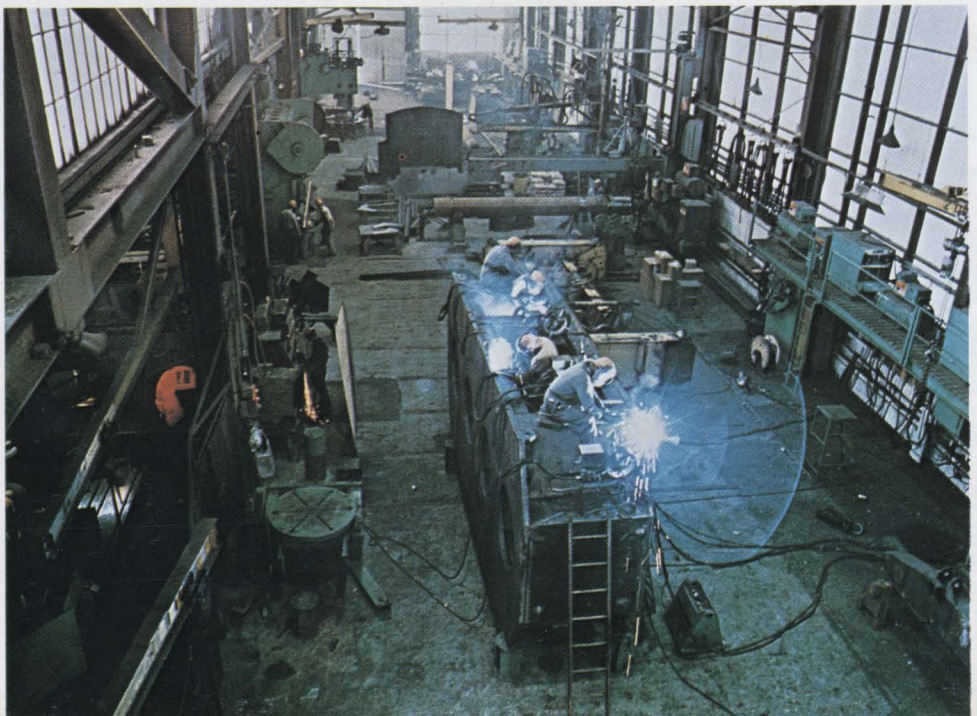
The fabrication facilities include over 75,000 square feet which house a complete range of forming and welding equipment suited to projects of virtually any scope.

Equipment includes flanging presses; bending rolls, photocell burning machines, automatic welding equipment able to weld 160 pounds an hour, press brakes; and a complete layout and lofting area. There is also a large stress relieving oven capable of handling pieces up to 30 feet in length.

Fabrication area includes new items, as well as rebuild on a regular basis and, when required, we can assist a customer in updating a design or correcting a faulty one.

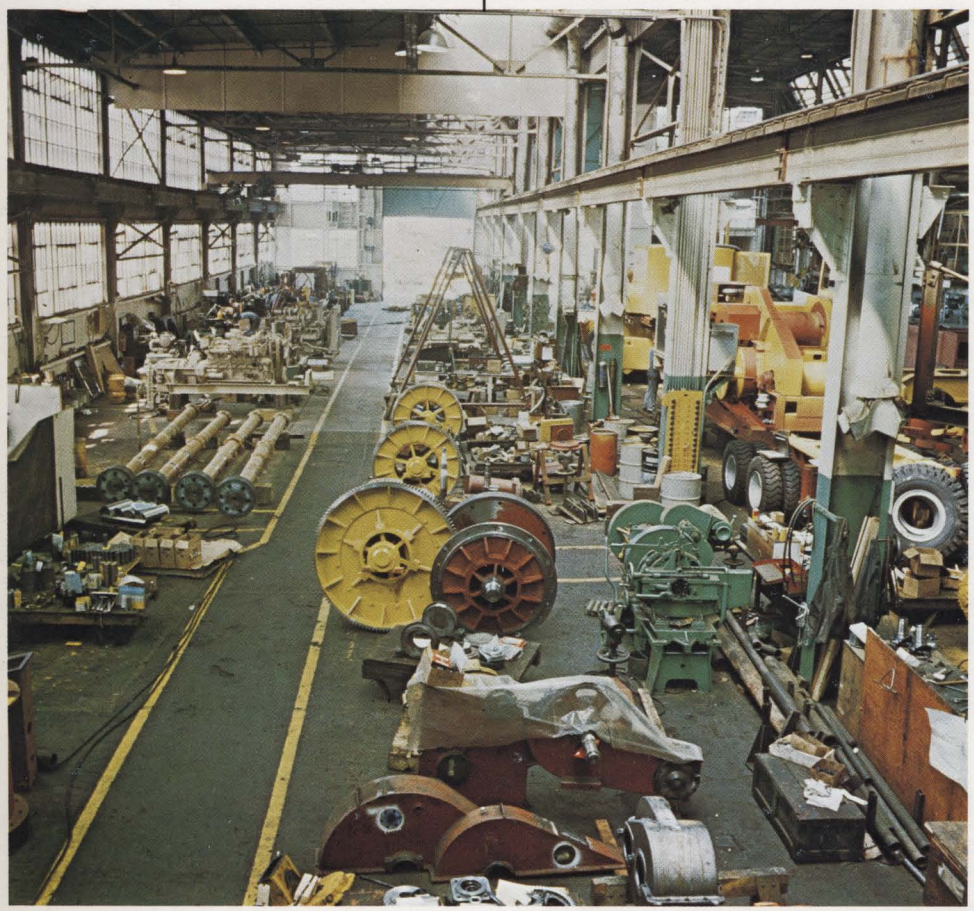
Washington Iron Work's experience and versatility in the fabrication field provides the capability to handle most customer's needs, including A.S.M.E. Certification to manufacture pressure vessels to your requirements.

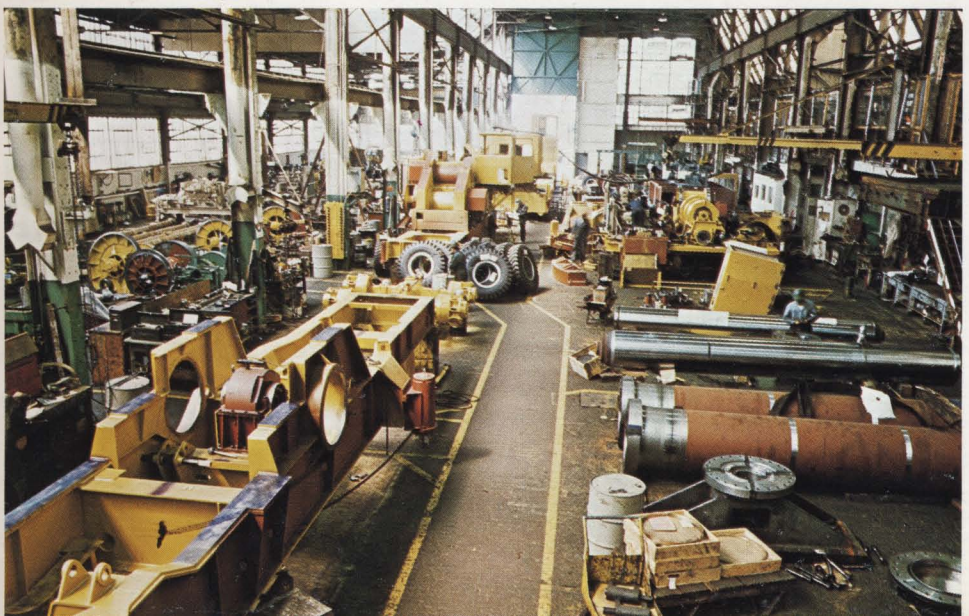




assembly

The assembly and testing area includes complete facilities for final manufacturing operations of component parts. A partial listing of special assembly equipment includes a 100 ton press and a complete test bench setup. Again, this operation is serviced with large overhead lifting capabilities to handle virtually any project. A pit area is also available to facilitate the testing and assembly of oversize projects.





personnel

Most important to the successful completion of the customer's project is the Washington Iron Works staff of experienced men and women capable of performing to the most exacting specifications.

In addition, Washington Iron Works maintains active Affirmative Action programs in the areas of minority, female, veteran and handicap employment which help ensure a strong work force and assure that the company can meet your requirements for full EEO certification.

quality control

Quality control capabilities cover all areas of manufacturing from simple one piece inspection to "turn key" projects. With this level of surveillance, a customer has little need for concern in meeting specifications.

Areas of particular interest for those utilizing the foundry quality control procedures would be the ability to completely control chemical and physical properties and to perform any type of non-destructive testing a customer might require. In the fabrication area, quality control standards are rigorously maintained including continuous updating of all welders certification requirements. The machine shop and assembly areas have a full facility provided for final inspection of the various projects before shipment, including test stand operations.

It should also be noted that the quality control section has had a long history in working with the American Bureau of Ships and government agencies such as the Army Corps of Engineers and D.C.A.S. If any projects include government contracts Washington Iron Works can be of special assistance in meeting special quality requirements.

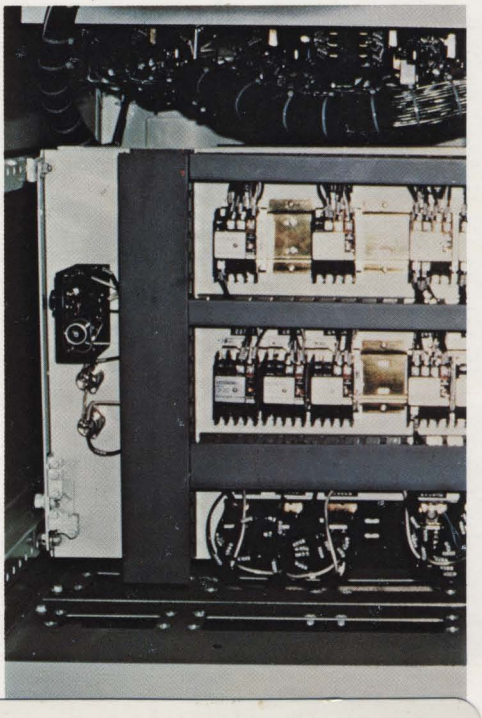
engineering

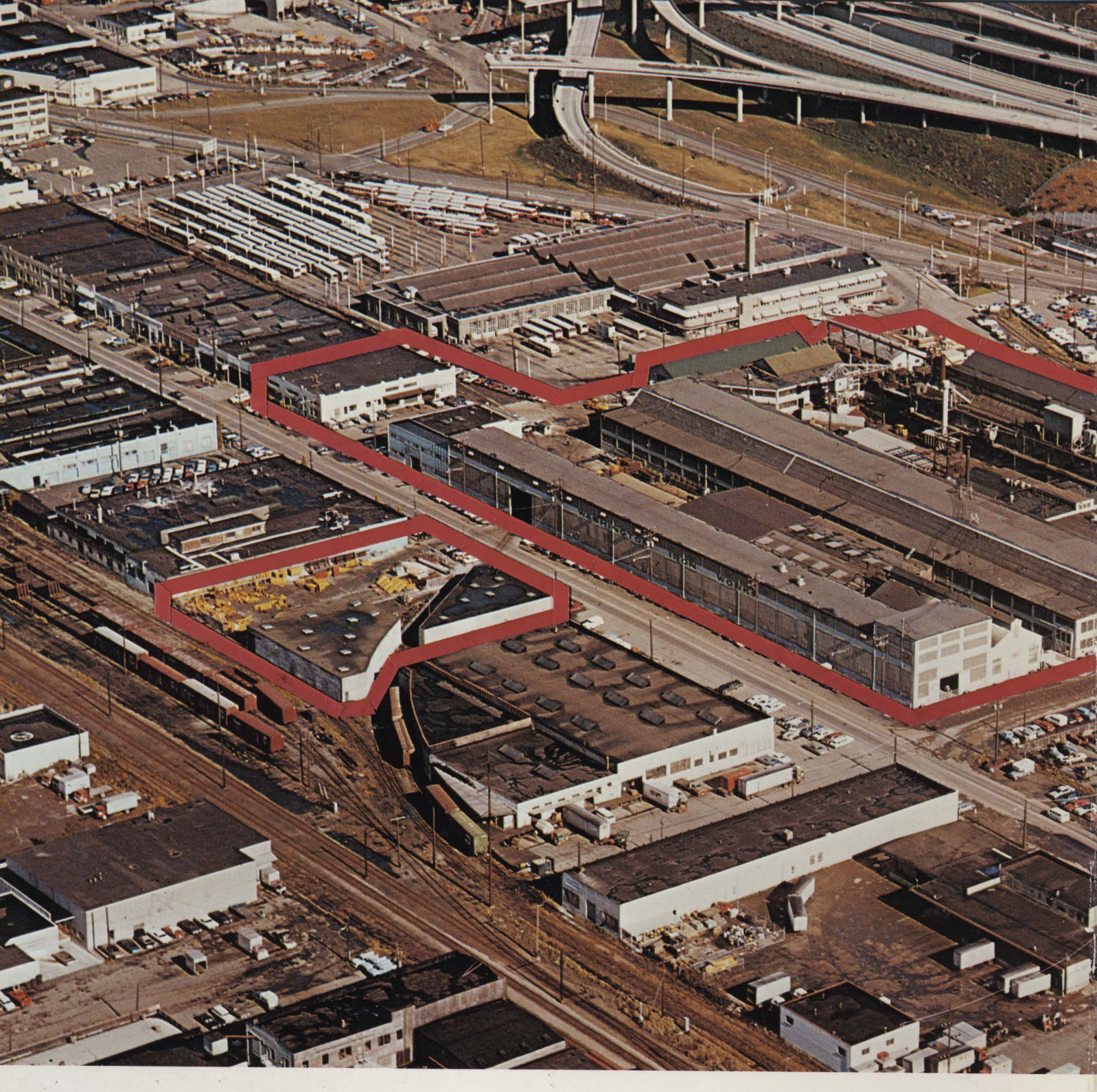
Washington Iron Works, as a medium-sized equipment and contract manufacturer, has supplied custom manufacturing services to many kinds of clients since 1882. Success in this field is a result of the satisfaction of these clients who return for help in meeting their requirements again and again. This success has enabled W.I.W. to build an engineering staff with all the capabilities necessary to provide a wide range of services. Mechanical, electrical, hydraulic and structural engineers, designers and technicians are fully qualified to solve specialized casting, fabrication, machining and assembly problems to customer specifications.

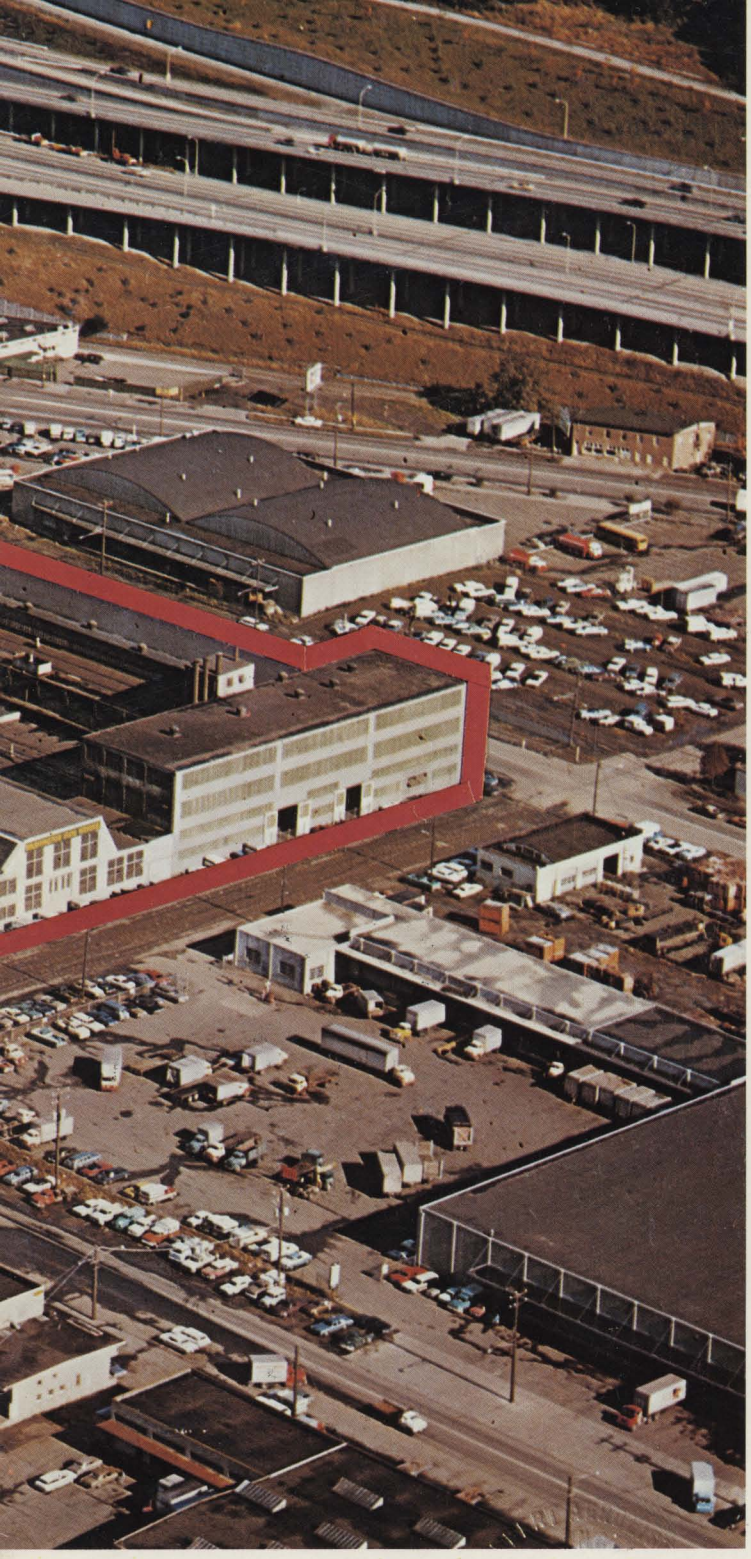
Extensive experience has built an engineering staff that is economy-oriented, both in cost awareness and time utilization.

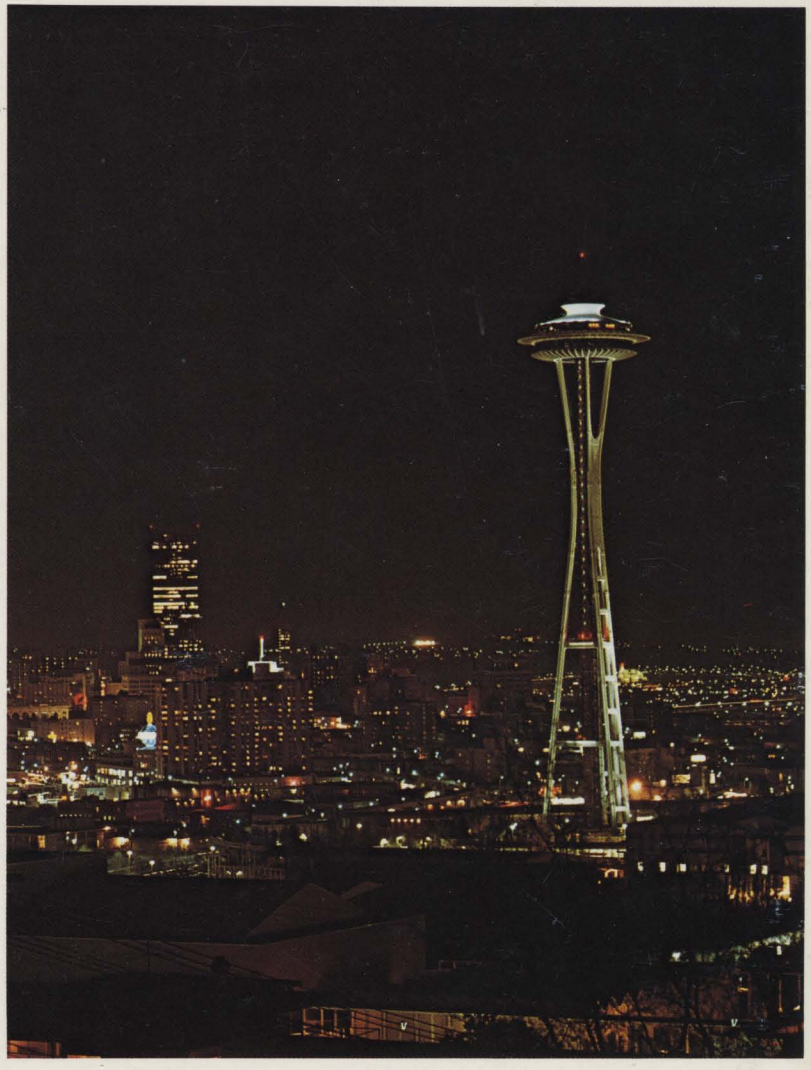
electrical/ electronic

Completing the total capabilities of Washington Iron Works are the complete electrical support facilities from engineering through manufacturing. Washington Iron has supplied a complete range of electrical control systems including the conventional relay logic shown, plus solid state hardware logics and programmable controllers, along with the cabinetry and panel work necessary to complete the control system. Washington Iron has an established expertise in applying solid state SCR drive systems in both high accuracy conveying lines and material handling situations. The close coordination between electrical and hydraulic control that is so essential to successful machinery operation is achieved on a daily basis at Washington Iron Works.




WATERTOWN IRON WORKS





WASHINGTON IRON WORKS

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