

## THE HARRISON STEEL CASTINGS CO.

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### PRODUCTION AND TECHNICAL CAPABILITIES

#### Manufacturing Capacity

Steel Castings – 3,000 ton/month - maximum heat weight 20 tons

Gross Pour Weight: 22,000 lbs/ net casting weight range: 400 lbs. – 13,000 lbs.

#### Crane Sizes

Melt Shop	-35 ton max.
Molding & Pouring	-30 ton max.
Cleaning Room 1	-10 ton max.
Cleaning Room 2	-15 ton max.
Shakeout	-30 ton max.

#### Furnaces

Electric Arc 20 ton – Basic Lined  
Electric Arc 20 ton – Acid Lined  
Electric Arc 8 1/2 ton – Acid Lined

#### Melting Control

Spectrometer	
Gas Analysis	-oxygen and nitrogen
Argon Stirring	

#### Metallurgical Lab

Tensile Testing Equipment	- Tinius Olsen 60,000 lb. capacity
Hardness Testing Equipment	- Brinell & Rockwell
Impact Testing Equipment	- Tinius Olsen 300 ft. lb. capacity
Metallographs	- Olympus

#### Pattern Shop

Full Scale Commercial Pattern Shop Capabilities	- wood, metal, & epoxy patterns & core boxes
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# PRODUCTION AND TECHNICAL CAPABILITIES CONTINUED

## **Nondestructive Testing**

Radiographic Inspection	- Gamma Ray – Max. thickness, 8 inches
Cobalt 60	- 2 sources } Licensed for 100 Curies of each source
Iridium 192	- 1 source } Licensed for 100 Curies of each source
Ultrasonic Inspection	- 2 Machines (Kraut Kramer USN Models)
Magnetic Particle Testing	- Wet and dry

## **NDT Personnel Certification**

- MT per in-house program
- RT in accordance with SNT-TC-IA Level II Certification
- Level III in MT, PT, RT, on staff
- UT in accordance with ASNT requirements – Level II Certification

## **Process Engineering**

Solidification Modeling	- AFS Solid & Passage ® Powercast
Solid Modeling	- Pro-engineer
CAD	- ACAD and PRO-E

## **Coremaking**

Small Cores	- Oil Sand
	- Shell Sand
	- Sodium Silicate Binders
	- Phenolic Urethane Binders
	- Cold Box
	- Silica/Zircon Sand
	- Silica Sand
Large Cores	- Phenolic Urethane Binders
	- Silica Sand

## **Molding**

Automated Molding Line	- 10 molds per hour
	- No-Bake Fast Loop automated molding system
	- Phenolic Urethane
Max. Mold Dimensions	- 71" x 96" x 36"/36"
Min. Mold Dimensions	- 31.9" x 49.2" x 15.74"/15.74"
Floor Molding	
Continuous Mixer	- Phenolic Urethane
Silica/Zircon Sand	- 10' x 10' 52/52

# PRODUCTION AND TECHNICAL CAPABILITIES CONTINUED

## Quench Tanks

8 1/2' x 6' x 9 1/2' Water Tank with Pump agitation and cold water replenishment during quench

10' x 11' x 9' Water Tank with Pump agitation and cold water replenishment during quench

9' x 5' x 9' Water Tank with Pump agitation and cold water replenishment during quench

## Dimensional Testing

Bendix Portage Layout Machines (Standard Tables)

(2) 60A with 5 tables

(1) 84A with 6 tables

Serving crane capacity 5 tons

## Machining Capabilities — Rough and Finishing

6" G & L Horizontal Boring Mills - up to 72" x 20' & CNC

Vertical Turret Lathe CNC - 84" table diameter

Engine Lathes - up to 84" swing with tracers

## Machining Center

Mazak V-60, 2 Pallet — 5 Face

Pallet Envelope 59" x 128" x 32"

(2) Machining Systems

Horizontal Machining Centers - (2 Pallets — 39" x 39")

- (2 Pallets — 39" x 56")

*Note: For additional Machining information see the detailed list of machines.*

Sales Department

Kevin Cherry, Business Development

# PRODUCTION AND TECHNICAL CAPABILITIES CONTINUED

## Sand Preparation

Continuous Mixers: (1) 1500#/min. Phenolic Urethane  
(1) 300#/min. Phenolic Urethane  
(1) 450#/min. Phenolic Urethane  
(1) 300#/min. Phenolic Urethane

## Sand Reclamation

Phenolic Urethane: (1) 8 tons/hr. Vibratory Reclaimer  
(1) 30 ton/ite — mechanical reclamation system  
(1) 3 ton/hr — thermal reclamation system

## Sand Lab

Baked Strength Testing	Sieve Analysis
Moisture	Gram Fineness
Compactability	LOT Testing
% of Metalics	% of Moisture
PH testing	Tensile
Scratch Hardness	

## Heat Treat Facilities

4 Car Bottom Furnaces  
10' x 14'  
Maximum Temperature 1800° F  
Gas Heat Source  
Recording Charts

2 Pushers  
3 & 9 tons/hr.  
Maximum Temperature 1800° F  
Gas Heat Source  
Recording Charts

1 Car Bottom Furnace  
10' x 20'  
Maximum Temperature 1300° F  
Gas Heat Source  
Recording Charts

1 Car Bottom Furnace  
5.5' x 7.5'  
Maximum Temperature 1600° F  
Electric Heat Source  
Recording Charts