1
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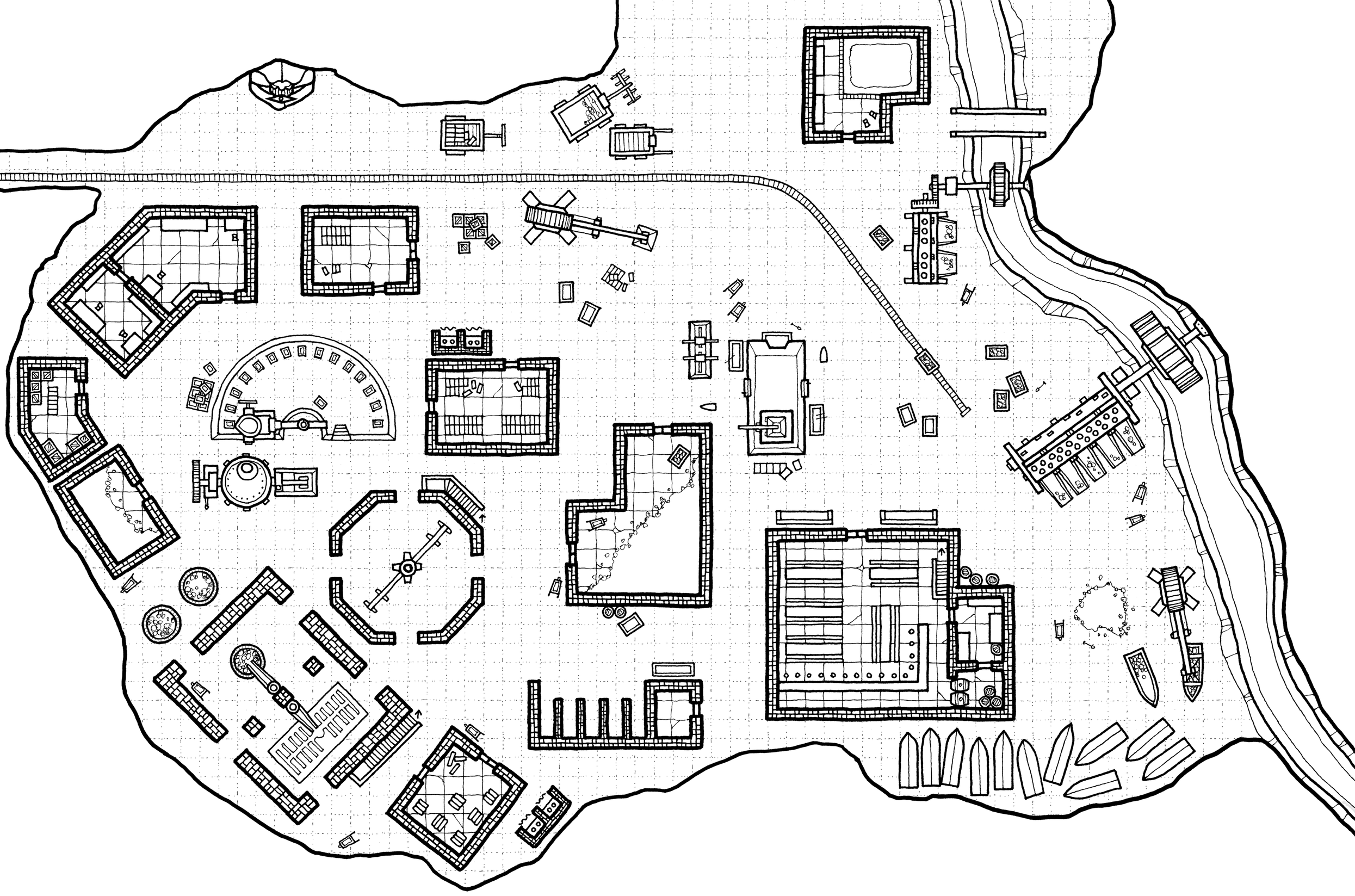
2 - BATHHOUSE
3 - STAMP MILLS
4 - WASTE ROCK DISPOSAL
5 - MONUMENT TO DUMATHOIN
6 - TO THE IRON MINES
7 - METALLURGISTS' OFFICE
8 - WAREHOUSE (STEEL)
9 - WAREHOUSE (MISC)
10 - FUEL STOREHOUSE
11 - CASTING PIT
12 - CONVERTER CRUCIBLE
13 - FUEL AND ORE BINS
14 - HORSE MILL
15 - BLAST FURNACE
16 - WAREHOUSE (PIG IRON)
17 - STABLES
18 - DUPLEX HAMMER
19 - PUDDLING FURNACE
20 - MINERS' GUILDHALL
THE OREWORKS



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THE OREWORKS

The Oreworks

About

•The Oreworks is a major industrial district of Brazenthrone. Located just outside the iron mines, it is the area where the gathered ore is processed and made into steel.
•Since most people aren't familiar with the process of pre-modern steelmaking or the equipment involved, I am including an explanation. Keep in mind that I am not an expert on this subject and, while I did do some research on it for this map, I may get a few things wrong.

The Equipment

•3)***Stamp Mills*** - These machines crush mined ore into smaller pieces. Waterwheels raise and drop the pistons repeatedly on the ore, breaking it up into smaller chunks. When small enough, these chunks fall through a grate into the trays below for collection.
•4)***Waste Rock Disposal*** - The dwarves bring a lot of stuff out of the mines and they don't want most of it. Most of this is waste rock and slag. Waste rock is rock with no ore, which is usually mined in order to reach rock with ore. Slag is a byproduct of the smelting process.

Hauling this stuff through the city and out the gates would be a huge nuisance and an enormous pain, so the miners came up with another plan: boats. Small boats are loaded with rock, then lowered by crane into the river. The uncrewed boats float downriver, eventually exiting the mountain. Shortly after, they are collected by someone stationed on the shore. The rock is dumped down the hillside and the boats are collected and returned to the city by wagon.

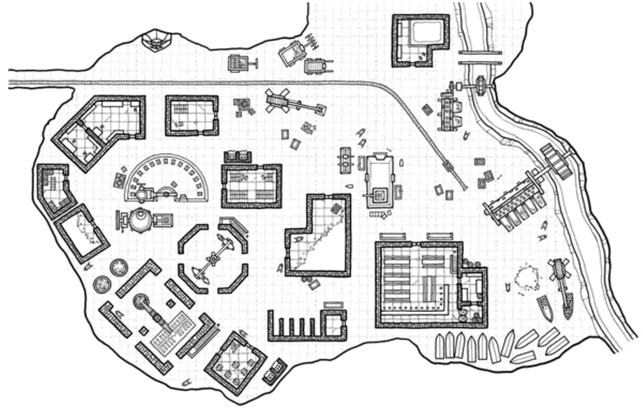
•10)***Fuel Storehouses*** - The fuel used in the furnaces is the same one they use in the forges of the Anvil Quarter: coke, a purified form of coal.
•11)***Casting Pit*** - This is where molten steel is poured into molds to make ingots. The bucket of molten steel can be swiveled into position over the molds, then tilted down to pour.
•12)***Converter Crucible*** - The proper name for this is a "Bessemer Converter." Invented in the mid-1800s, it's advanced technology for a medieval setting, but dwarves are advanced steelmakers, so I think it fits.

The converter is a giant metal tank suspended above the ground by two axles attached to the sides. The entire thing can be tilted backward to load raw materials through the spout on top or forward to pour out finished molten steel.
•14)***Horse Mill*** - This is like a watermill for people who don't have water but do have horses. The horses walk around in circles, turning a wheel that powers a bellows on the roof.
•15)***Blast Furnace*** - This is where iron ore is smelted to remove impurities. Coke and iron ore are loaded into the furnace through a hole in the roof. In the second floor-- the furnace chamber itself-- these are burned, melting the ore. The ore separates into molten iron and slag. The iron is poured into molds, creating ingots of pig iron. The slag is poured out into a collection bin for disposal.
•18)***Duplex Hammer*** - This device consists of two steel blocks on sliding tracks. A lump of hot iron from the puddling furnace is placed between the blocks, which are then slammed into each other to hammer it from both sides. This is used for making wrought iron.

•19)***Puddling Furnace*** - Not all of Brazenthrone's iron is used to make steel. This furnace is used to make wrought iron. Fuel is loaded into the hearth in the front, then ore is loaded in through the doors in the sides. Metal rods are used to stir the iron as it melts. When the iron has been smelted, it is pounded into flat ingots with the duplex hammer.

The Process

•This is a brief overview of the steelmaking process in Brazenthrone's Oreworks. Once again, don't quote any of this on your History of Metallurgy thesis.
•First, carts of iron ore are brought in from the mines and taken to the stamp mills (3). The ore is crushed into fine pieces. These pieces are then collected and loaded into a bin (13) near the blast furnace (15).
•The crane on the roof of the blast furnace hauls the ore onto the roof. From here, iron ore and coke are loaded into the furnace.
•The furnace melts the ore, separating it into molten iron and slag. The slag is poured off into a bin for disposal and the iron is poured into molds, forming ingots of pig iron.
•The pig iron is stored in a warehouse (16) until needed. When ready, it is brought to the converter crucible (12). Iron ingots, manganese and coke are loaded into the crucible and ignited. The iron and manganese are alloyed and impurities in the metals are separated, creating molten steel.
•When the steel is finished, the crucible is tilted forward and the molten metal is poured into a large bucket known as a "casting ladle" (11). This ladle is used to pour the steel into molds, creating steel ingots.
•These ingots are then either crafted into goods in the nearby Anvil Quarter or exported.

Notes

•The operations of the Oreworks are overseen by the Metallurgists' Office. They closely guard the details of the process by which Brazenthrone's steel is made.
•The bathhouse is owned by the Miners' Guild and is a place for miners to clean up after work. The water is usually filthy and would probably only make a person cleaner if they spent the day working the mines.
•The miners' guild and the steelmakers' guild merged several decades ago in order to pool their resources. The name remains the "miners' guild," however, as it is by far the larger of the two.
•Many of the boats used to dispose of waste rock have names carved into the sides. Usually grandiose, overblown and befitting of warships, the names include: "Invincible," "Sea Lord," and "Her Majesty's Pleasure Barge." The drunken miners who do this think it's hilarious.