

TECHNICAL DEVELOPMENTS

Casting Armorplate Via EPC

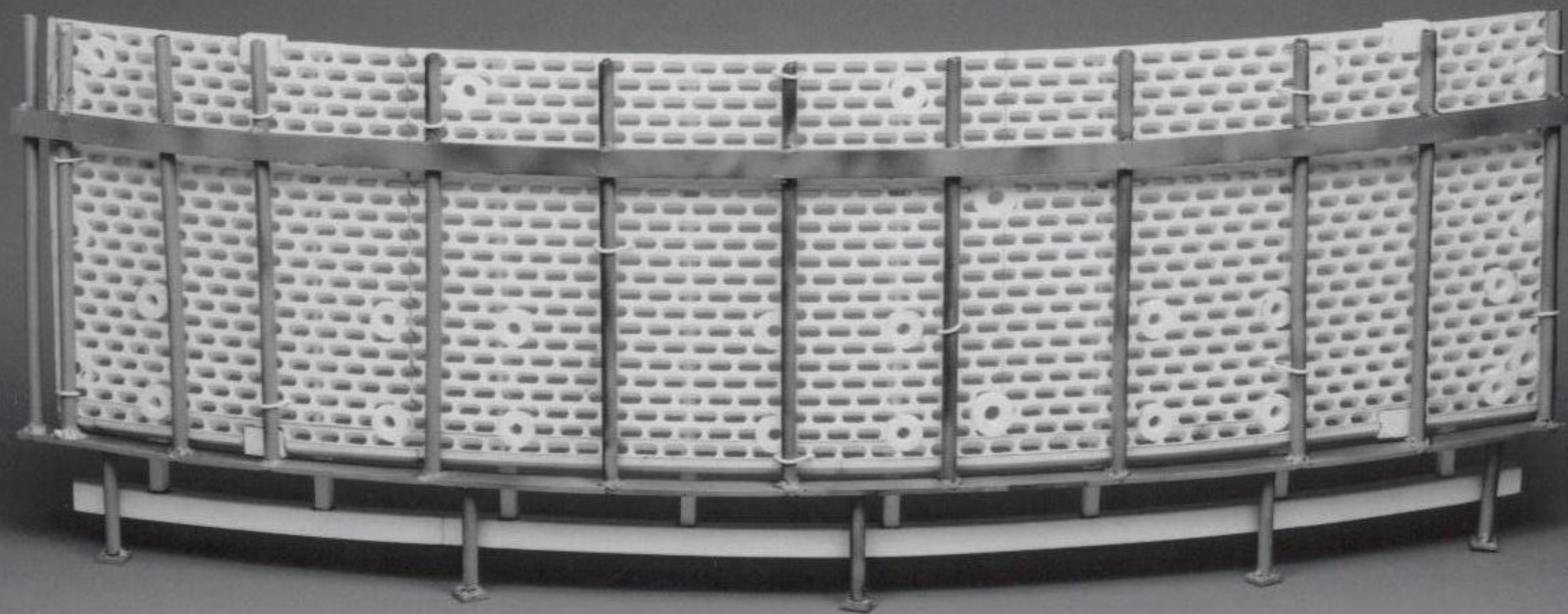
Constant research and development on armorplate for armored military vehicles is required to protect troops against innovative ballistic threats. According to scientists at the Bureau of Mines, "armor obsolescence occurs whenever new projectiles are invented to penetrate or destroy state-of-the-art armor."

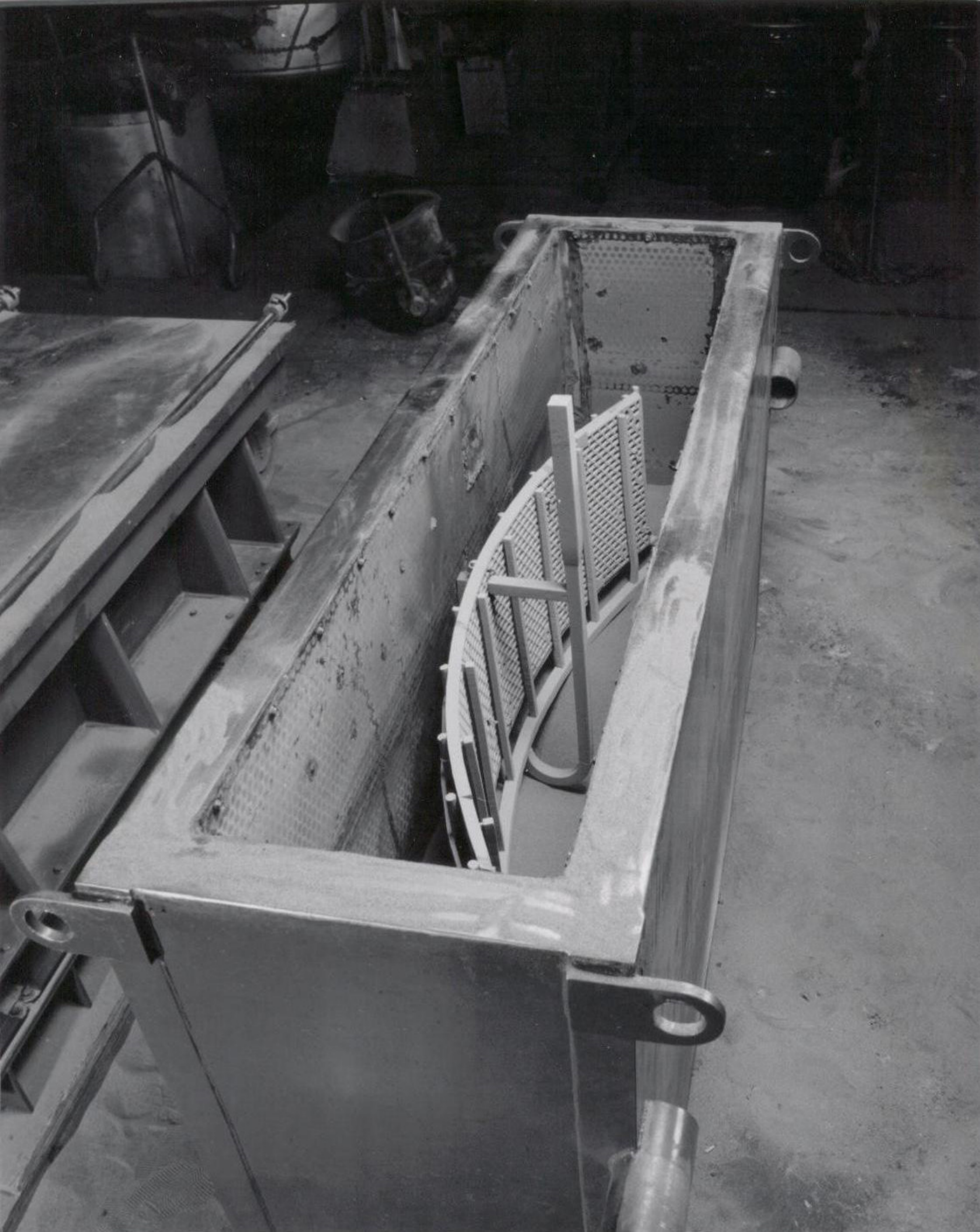
The expendable pattern casting (EPC) process was selected because its economies are well documented, particularly for aluminum castings. Techniques, however, are not entirely transferable to steel EPC, because liquid metal temperatures are so much higher. (With steel, the pattern begins to evaporate as soon as hot metal enters the mold.) Pattern handling also is more difficult, and unique casting defects may be encountered.

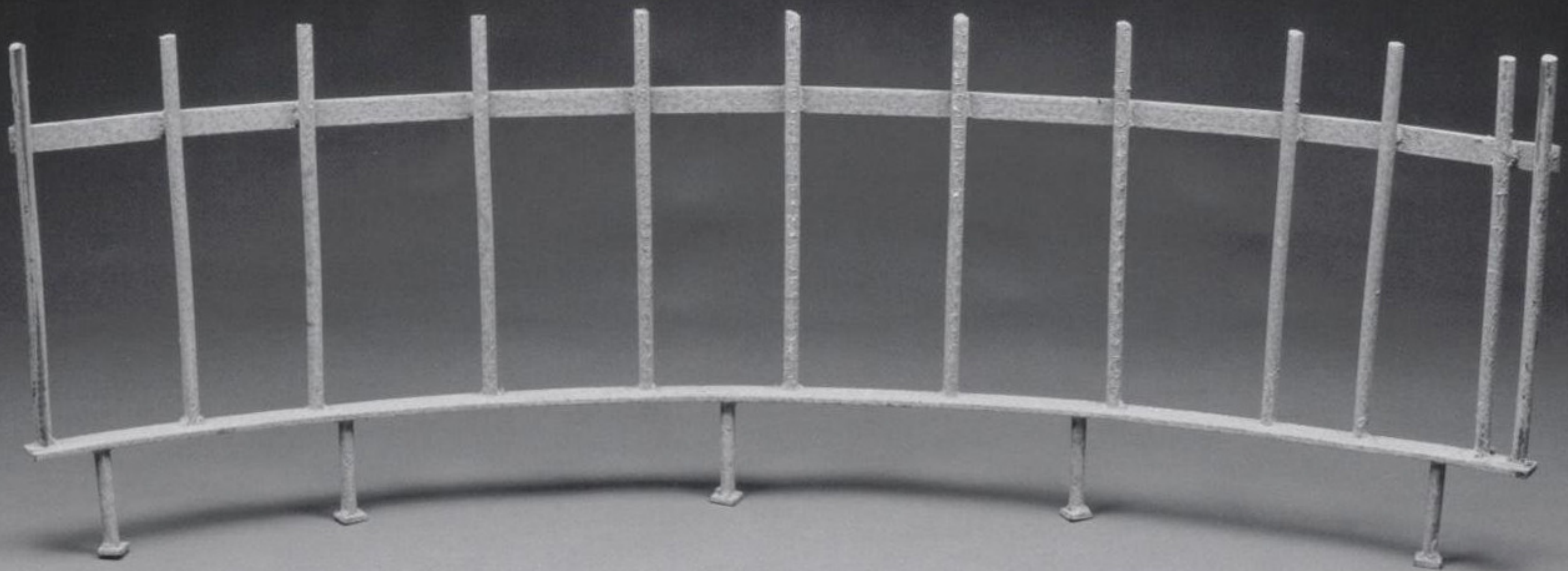
The conventional EPC process was altered by three modifications to make the successful adaptation for steel: 1. Double-walled sand flasks were developed for the application of vacuum; 2. Continuous feeding systems were used to permit producing thin-walled steel castings; and 3. Fixtures were designed to prevent pattern damage and to hold critical casting tolerances. The three measures proved successful.

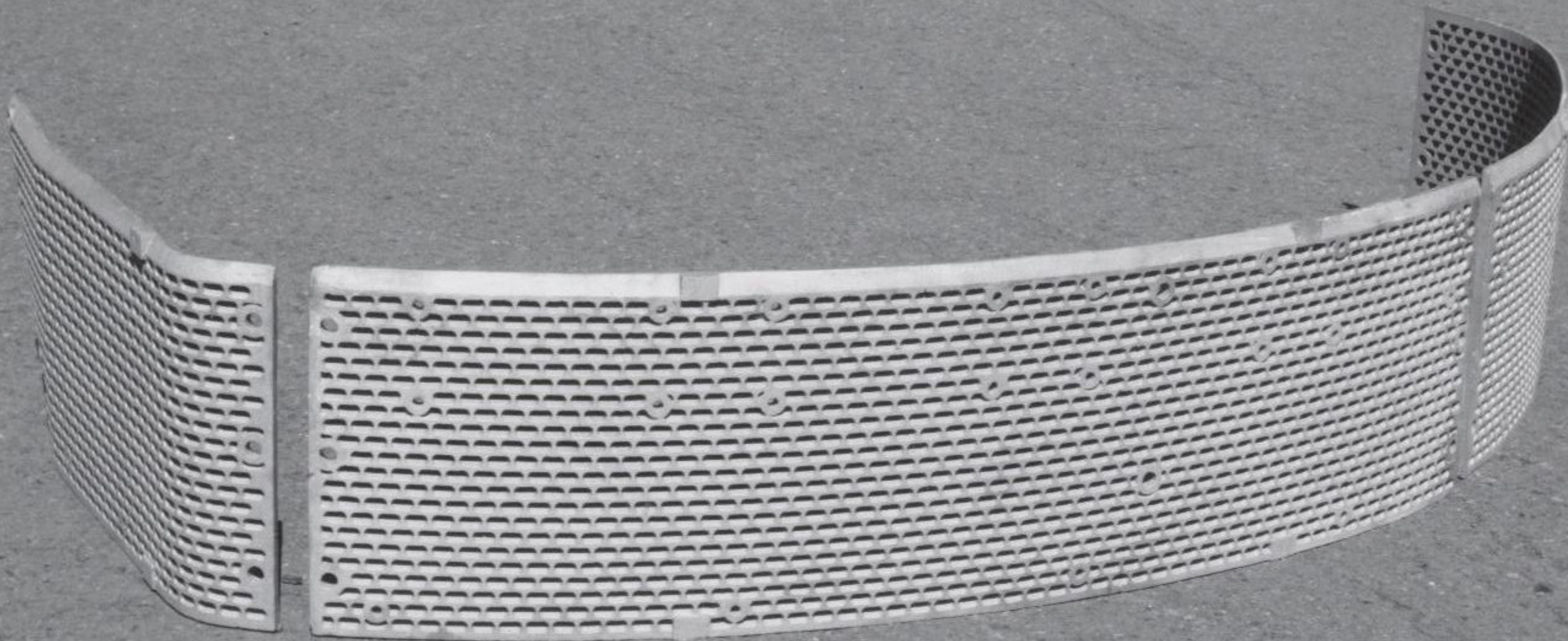
Applying vacuum to the mold ensures liquid metal flow and complete mold filling. Carbon pickup of the casting surface was found to be insignificant; moreover, ballistic properties are unaffected by carbon contents up to 0.40%. Hot tears were substantially eliminated by adding wall thickness at critical locations and then removing the extra material in finishing operations.

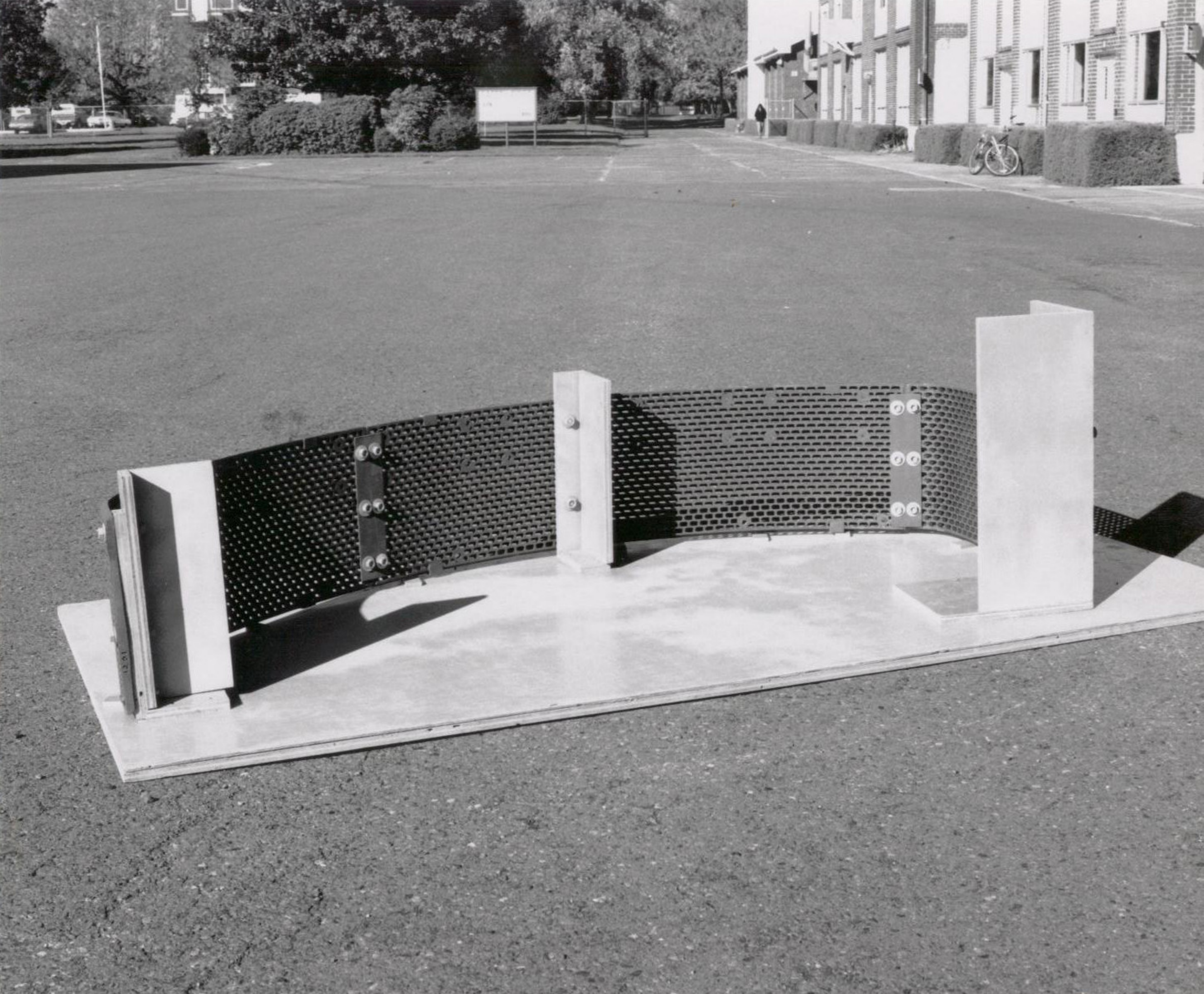
EPC may turn out to be the only economical current technology to make cast steel armor plate. Pouring temperature is critical in avoiding defective conditions. Additional information may be obtained by contacting either J.S. Hansen or P.C. Turner at Albany Research Center, U.S. Bureau of Mines, Albany, OR.

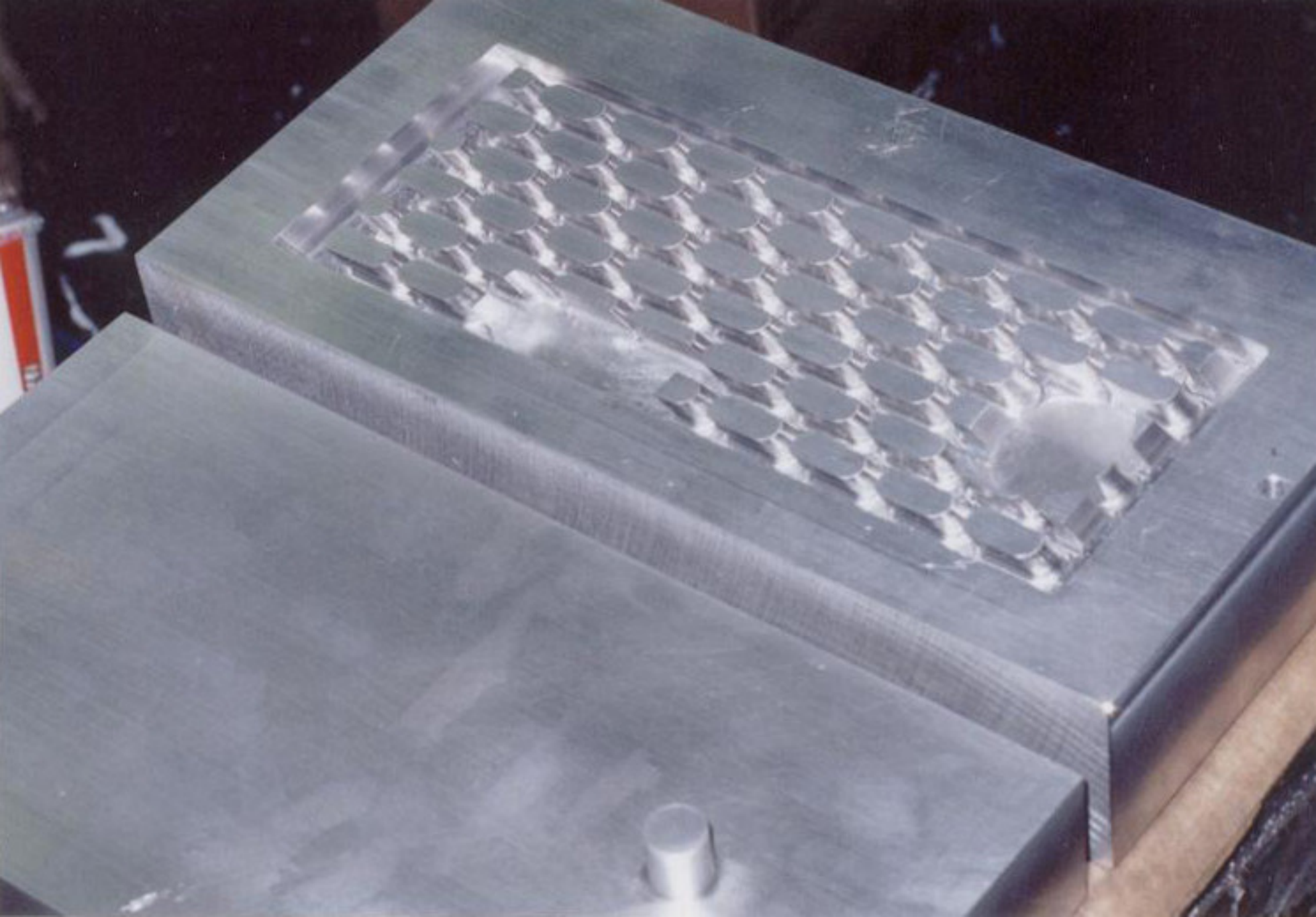












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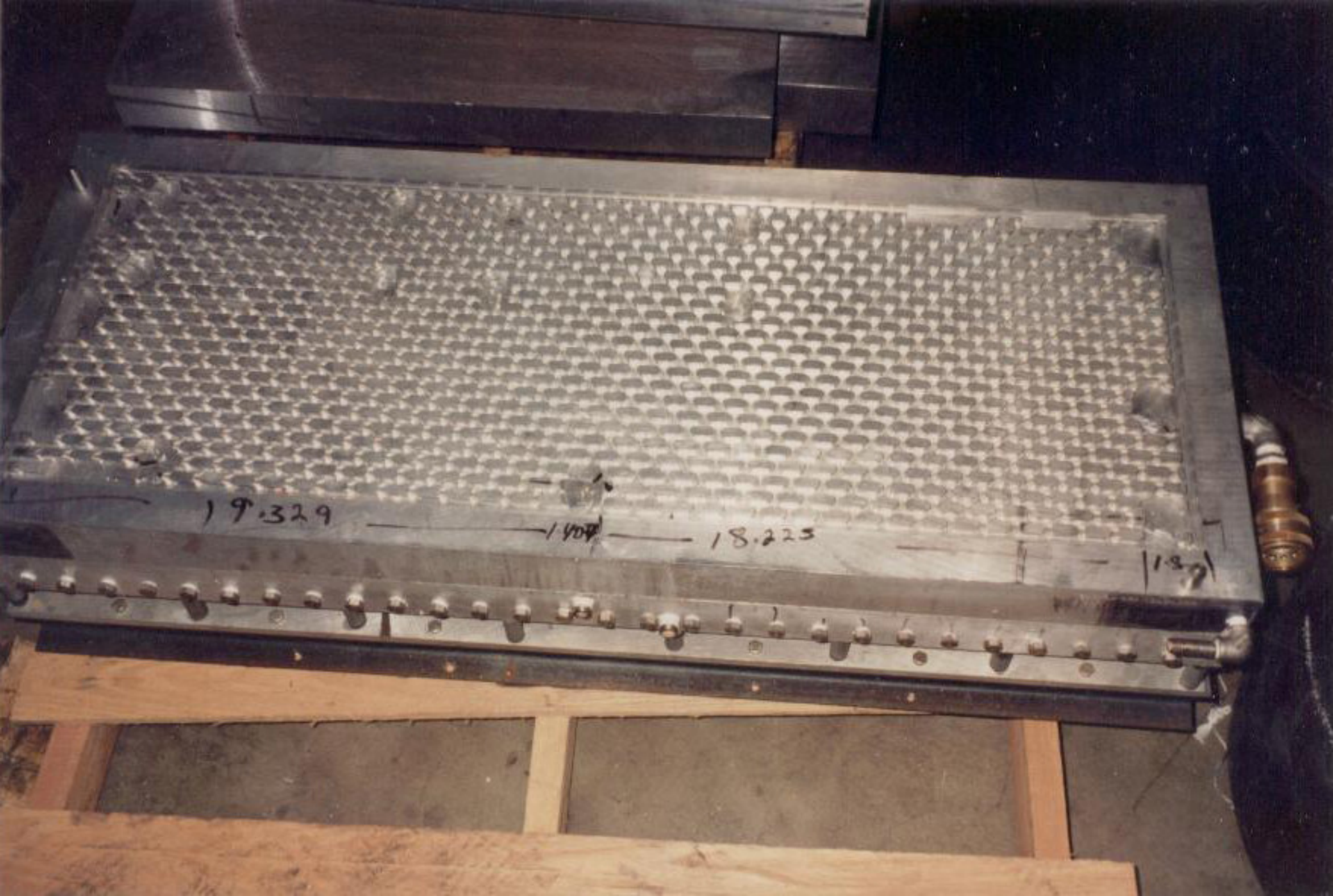


NO. 1000
D. 1. 18

ITEM NO.
QTY.
UNIT
PRICE
TOTAL

TRIP PLASTIC CO., INC.
1111 SOUTH BAY BLVD.
SUNNYVALE, CALIF.

DATE OF ORDER
DATE OF DELIVERY
NAME OF CUSTOMER
ADDRESS
CITY
STATE
ZIP



19.329

1407

18.223

18.2





