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RETRACTABLE BOLLARD  
RB 120HS

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LAYING FOUNDATION TECHNICAL  
INSTRUCTIONS

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## Specifications of hydraulic bollard RB 120HS for ASTM F 2656 - 07/M50 Certification

These specifications concerning a HIGH SECURITY HYDRAULIC BOLLARD – Model RB 120HS, object of test of ASTM F 2656 – 07 / M50 certification.

- The bollard RB 120HS to be tested consists of:
  - 1 bollard at vertical lifting, with hydraulic pump integrated in it and equipped with E.F.O circuit
  - 1 metallic pit to be wall where to put the bollard .
  - 1 operating control unit with control panel for all operations.
- The technical reason leading us to the project of such a system with hydraulic pump inside the bollard is related to the possibility to install (on request of the Customer for architectural or security reasons) the control unit in a hidden or safe position within 250 feet (max. length of connecting cable between control unit and bollard); moreover the dimensions of the control unit allow an easy installation inside gatekeeper lodge, sentry boxes or similar.
- The esthetical finish of the bollard Model RB 120HS can be standard (smooth cylinder) or with ribs having a better esthetical impact (as the test sample); on request of the Customer the surface of the cylinder can be treated with powder colour paintings of the RAL range, with chromium treatment or covered with a stainless steel brushed film of 0.06 inch. (1,5 mm).

### 1.0 SYSTEM CONFIGURATION

#### 1.1 RB 120HS

The system consists of one bollard.

- 1.1.1 Multi Bollard System : The system has minimum one bollard (as the test sample) and has its own controls and operates independently from other eventual sets in the system. The control unit is composed of one electronic circuits; One or more bollards can be added to the system, synchronized, to be able to work together or alone, as in the control unit can be add for every additional bollard, one independent electronic circuit that can be synchronized or not to the others.
- 1.1.2 Construction : The bollard is an assembly composed of a high resistance metallic cylinder able of being lowered from a low position to allow vehicles transit and of being raised to an up-position of guard to stop vehicles transit. The guard position must present an obstacle to approaching vehicles. In case of impact, forces are first absorbed by the bollard system and then transmitted to the foundations.
- 1.1.3 Moving cylinder height : The height of the bollard is 47,25 inches (1200 mm) from the top of the foundation frame (walking level) to the top of the bollard.
- 1.1.4 Moving cylinder dimensions: the diameter is 10,70 inches (273mm).

- 1.1.5 Finish : The esthetical finish of bollards can be standard (smooth cylinder) or with ribs on surface having a better esthetical impact (as the test samples); on request of the Customer the surface of the cylinder can be treated with powder colour paintings of the RAL range with chromium treatment or covered with a stainless steel brushed film of 0.06 inch. (1,5 mm)

## 2.0 HYDRAULIC PUMP

- 2.1 Hydraulic circuit : The hydraulic circuit , inside in the bollard consists of an electro hydraulic unit giving high pressure to an hydraulic accumulator for the emergency fast operation (E.F.O). Some solenoid valves are installed so that oil will flow to a hydraulic cylinder and make the driven cylinder operate. The hydraulic circuit includes all control solenoid valves and hydraulic pressure switches needed as logics in standard lowering and raising, but also in E.F.O.
- 1.2.2 Main Power: the electro hydraulic unit is fed with V230/50/60 Hz; the motor is sufficiently sized to allow a huge number of operations.
- 1.2.3 Power failure operations : in case of power failure, the hydraulic accumulator can operate the complete lift of the bollard; it is possible to value the increase of the accumulator capacity to allow up to 3 full operations in case of power failure; the control unit can be equipped of 24V accumulators to allow the activation of the solenoid valve for full lowering of the bollard.

## 3.0 CONTROL UNIT

- 3.1 CONTROL UNIT : RB 120HS is equipped of logics and devices to control all operations and different functions of the bollard system. It is also can be equipped of power supply 24V D.C. and rechargeable accumulators for operation in case of power failure.
- 3.1.1 Voltage : the control unit input must be V230/50/60 Hz.
- 3.1.2 Wattage : approx. 1.200Watt for each hydraulic unit for bollards of the system.
- 3.1.3 Construction . The control unit is mounted in a wall-mounted metallic box of dimensions 20x16x8 inches (as test sample) in alternative, it can be mounted in a column with similar dimensions with brackets to fix on the ground.
- 3.1.4 Additional connection line between control unit and hydraulic pump. The system is equipped with a connection line from the control unit to the hydraulic pump. The connection line is composed of a multipolar cable with 15 wires (section is defined in proportion of the distance) and its max. length is 250 feet.

#### 4.0 REMOTE CONTROL PANEL RB 120HS

- 4.1 Remote control panel : the system is equipped of a remote control panel with a main activator switch (key or similar) having a LED signal and a control push-button for lowering/lifting. The E.F.O. is activated by a specific reset system push-button and is equipped of LED to signal the E.F.O system is ready to operate.
- 4.2 Voltage : The remote control panel is fed with 24V D.C.
- 4.3 Construction : the remote control panel is prepared following the Customer's esthetical and dimensional requests and can be configured in a standard panel of 19 inches in a table console or wall-mounted box.
- 4.4 The panel can be equipped with a timer (optional) linked to an acoustic signal, warning that the system remained in the lower position for a period longer than the standard one. The period is fixed by the Customer.

#### 5.0 ACCESSORY EQUIPMENT

- 5.1 Led traffic lights : one or more red/green traffic lights can be supplied to alert vehicle drivers of the bollard position. The green light indicates that bollards are completely lowered. All other positions will be indicated with the red light. The wattage for each lighting section is 30Watt.
- 5.2 Immersion pump for water ejection: an immersion pump with automatic float can be supplied to eject possible water in the pits. It can eject up to 25 gall./min. to a distance of 120 feet from the discharging point decided by the Customer.
- 5.3 Inductive loops detector : an inductive loops detector can be supplied and safety loops can be connected to avoid bollards lifting during vehicle transit. The detector will inhibit the lifting when a vehicle is on the safety loops (loops are inhibited in case of the emergency operation E.F.O).
- 5.4 UPS group : The system can be equipped with one UPS group of properly dimensions to allow the working of the system also in case of 220V failing.

#### 6.0 PERFORMANCE

- 6.1 Stopping capacity : Standard operation. The bollard provide an excellent security and traffic control in both directions, providing meantime an almost insurmountable obstacle to all non-armoured vehicles.
- 6.2 Strong impact attacks : Dynamic non-linear analysis has shown that the bollards are able to stop and immobilize non-armoured vehicles of approx. weight of 15,000 pounds (6.800 Kg) at a speed of 50 Mph (80 Kph). Bollard is designed to stop vehicles destroying the front suspension system, the steering linkage, engine crankcase and portions of the drive train.

## 7.0 OPERATING SPEED

- 7.1 Standard operation : The bollard lifts and lowers in no more than 4"; the lifting run of the bollards can be inverted at any time by the control unit.
- 7.2 Emergency fast operation (E.F.O.) : bollard in case of emergency can be lifted from low position in no more than 1"; bollard stays in the top position until the push-button is reset.
- 7.3 Frequency of operations : bollard has been designed to operate around 200 complete cycles per hour.

## 8.0 QUALITY DECLARATION

- 8.1 Test : at the end of the production each bollard is fully tested in laboratory checking all functions and operating speeds.
- 8.2 Identification : the name and mark of the manufacturer along with model, serial number and year built are located.
- 8.3 Workmanship: The bollard and subsystems have a workmanlike appearance.
- 8.4 Dimensions : concerning main dimensions refer to drawings

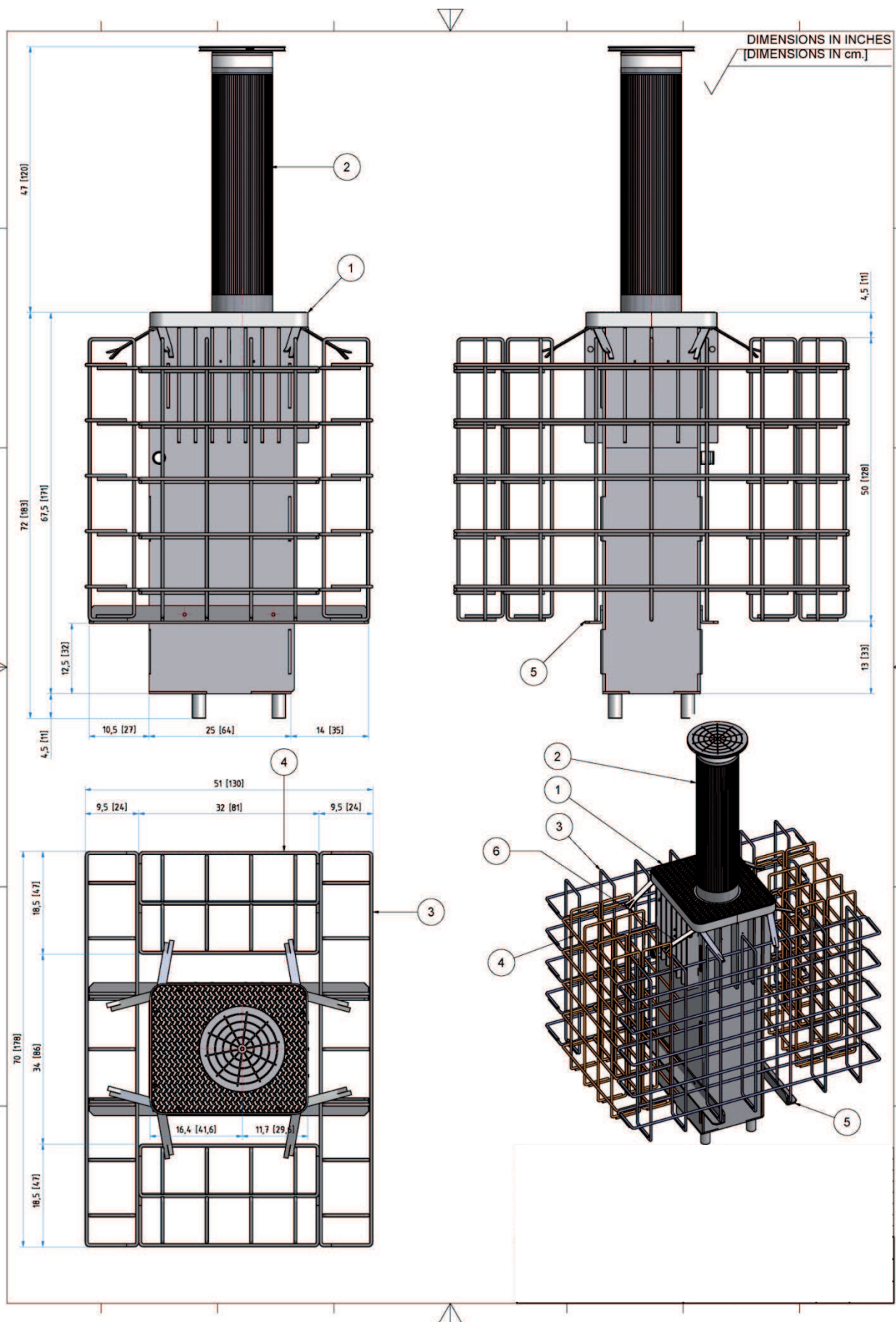
## 9.0 PACKAGE

Each bollards, control units, control console, and eventual accessory equipment are put on regular pallets to avoid damages during transport. The package assures the integrity of the product.

## BOLLARD – RB 120HS LAYING FOUNDATION SEQUENCE

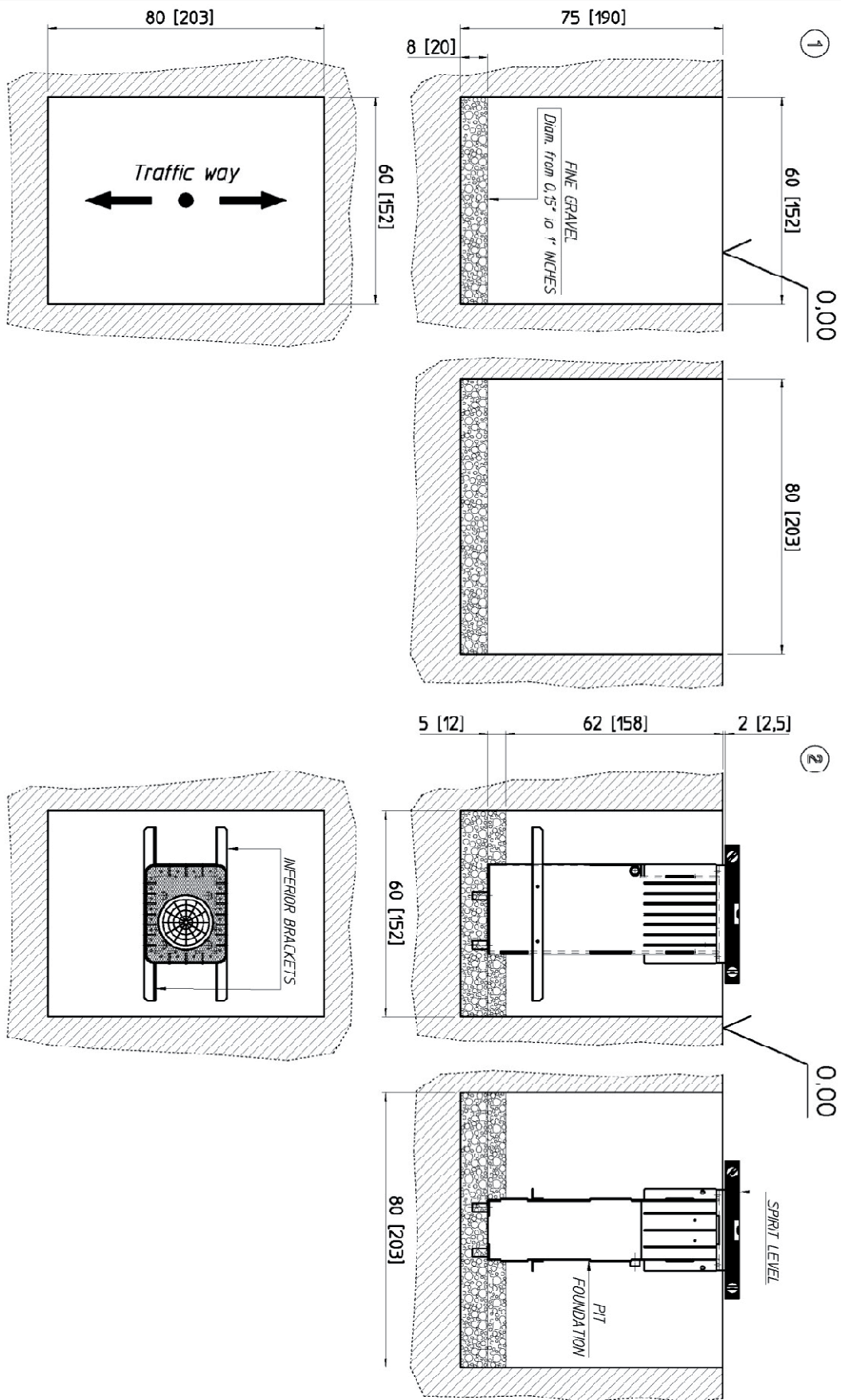
- 1) Dig a hole with the following dimensions 60x80 inch, depth 75 inch
- 2) Introduce gravel (grain 0,3 to 0,8 inch . in diameter approx.) until a thickness of 8 inch approx. ,using a proper instrument (your supplying) to compact the gravel.
- 3) Install on the pit the n. 2 inferior brackets
- 4) Install the bollard complete with pit inside the hole considering that the superior part of the bollard has to be 1 inch higher to the walking level and it has to be plumbed (to install the bollard will be used a metallic beam properly fixed to the bollard with accessories supplied by us, having a length not less that 100 inch – beam excluded from our supplying and).
- 5) Once the pit is installed, add other gravel (grain 0,3 to 0,8 inch. in diameter approx.) until a thickness of 5 inch approx., using a proper instrument to compact the gravel.
- 6) With the bollard is available the reinforcement cage for concrete; Assembling the cage with binding wire as explained in the drawing.
- 7) Once the cage is assembled, put it inside the hole caring that is well placed on the inferior brackets; also be careful to place properly the connection line to the control unit.
- 8) Install the n. 8 superior brackets on the pit.
- 9) Link the n. 8 superior brackets to the reinforcement cage using binding wire.
- 10) Cast concrete  $R_{ck} = 30\text{N/mm}^2$  (or superior),in the hole until the top, vibrating the casting with specific instrument.
- 7) End procedure

P.S. Realizing the hole, is important to pay attention that the draft gear of the truck has to be perpendicular to the middle of the bollard (consider that the bollard is not in the middle for approx. 2,5 inch).



# INSTALLATION PLAN

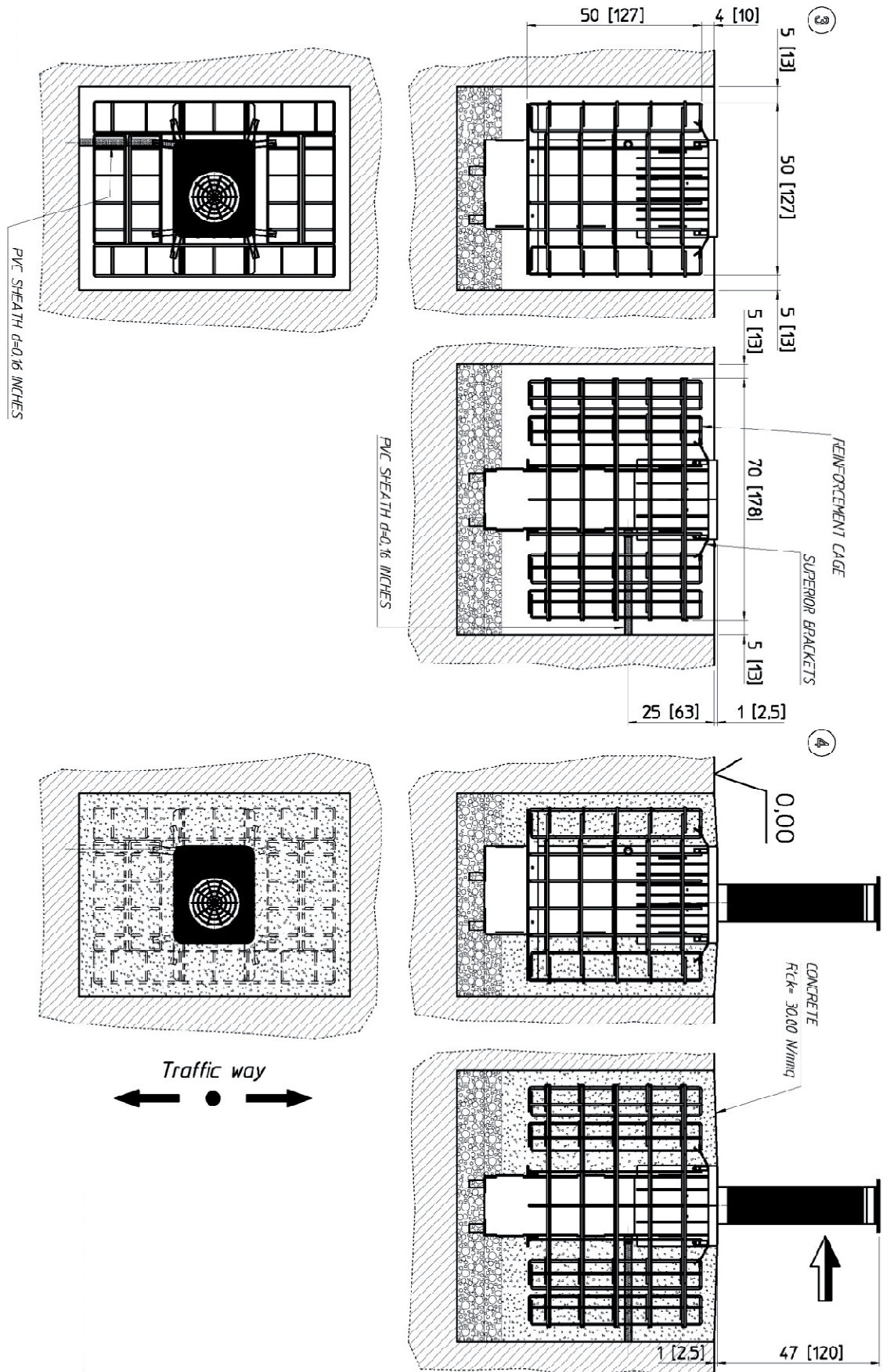
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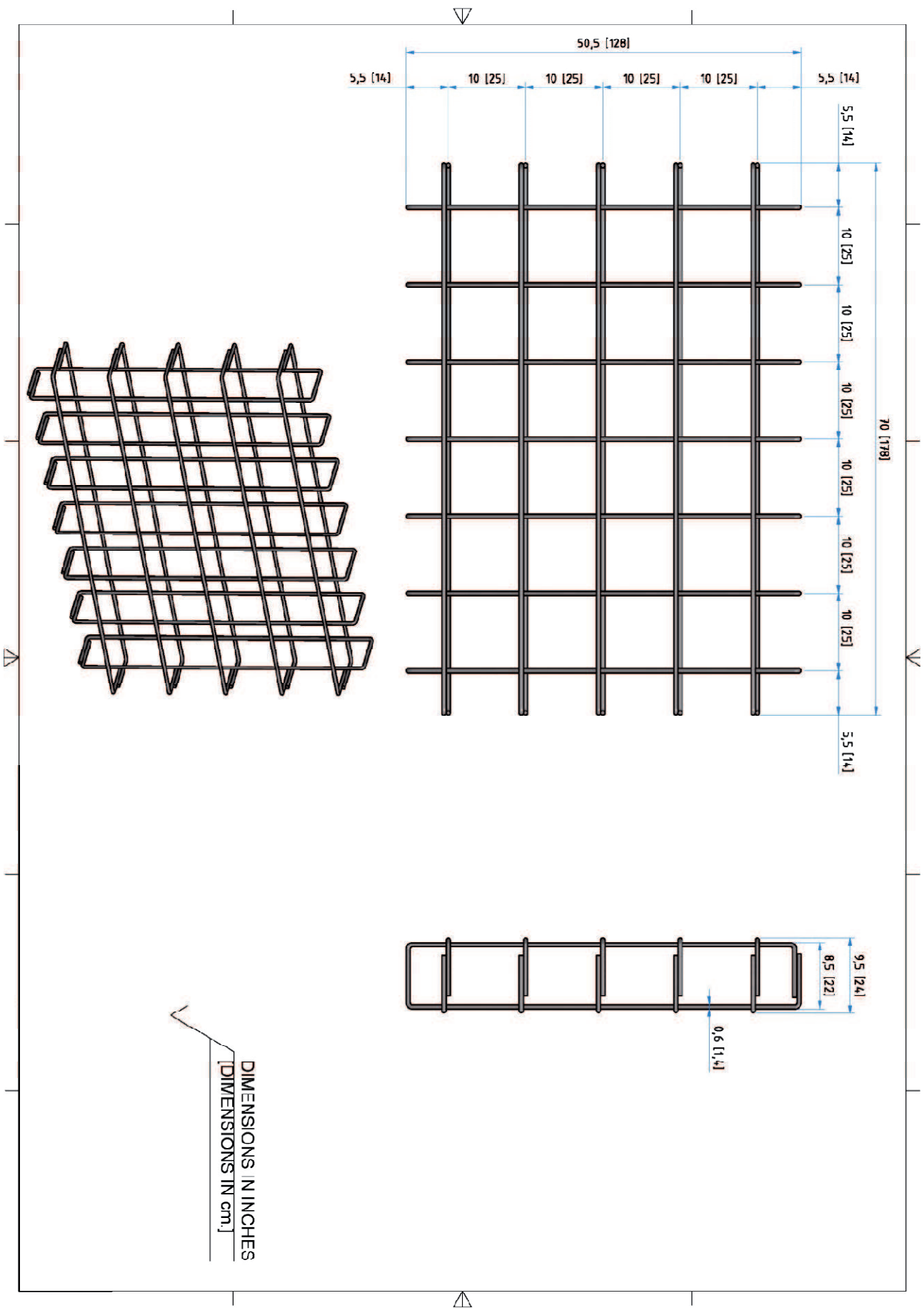




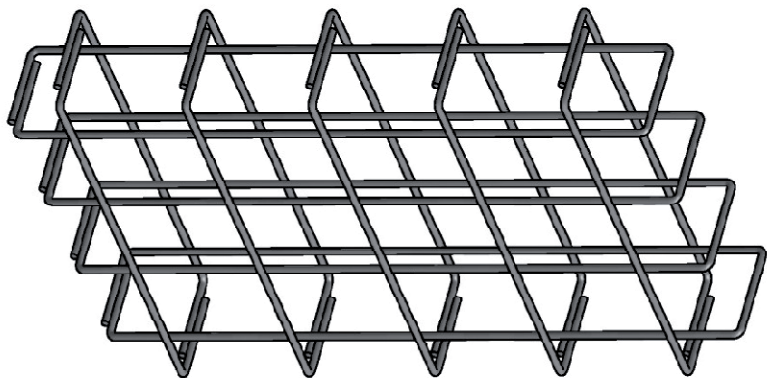
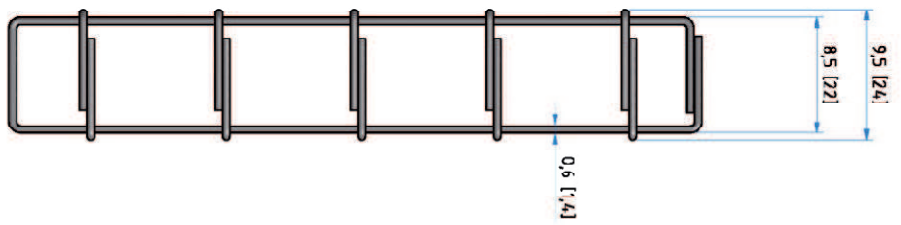
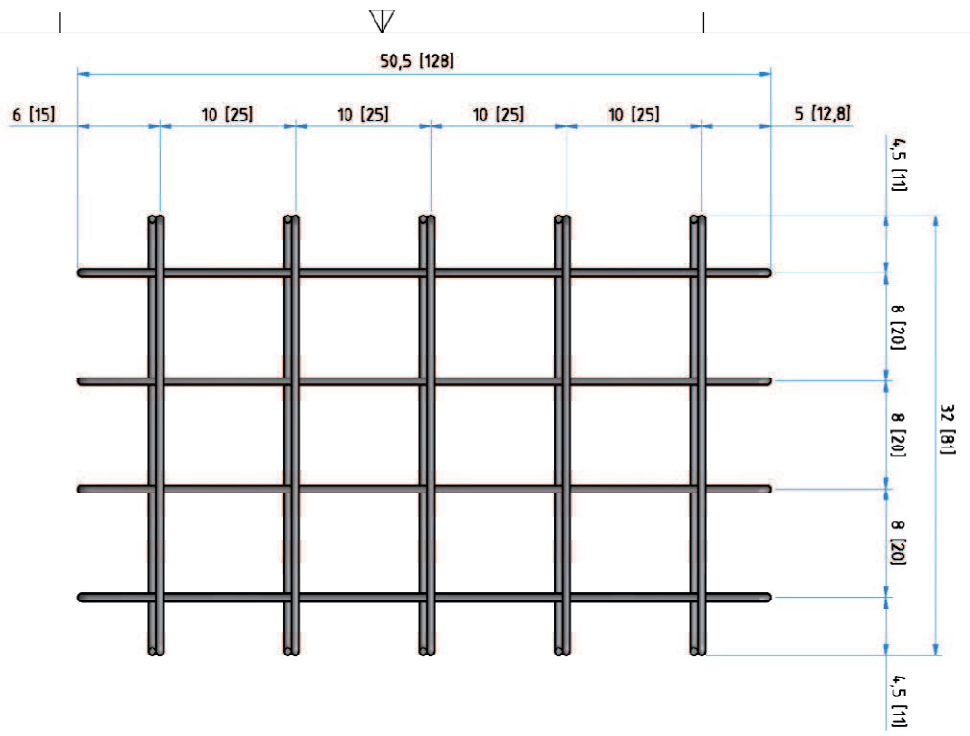
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