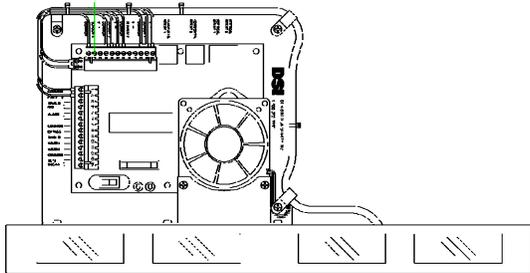# DS! DESIGNED SECURITY, INC.
A Detex Company

ES820 SERIES
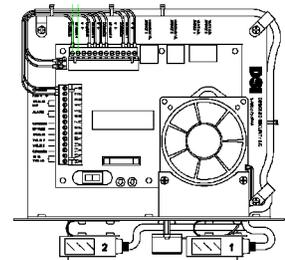### INCLUDES: ES 820/ 21/ 22/ 23/ 24/ 25
INSTALLATION / OPERATION

OPTICAL TURNSTILE COMPONENT PACKAGE

OR

ES820 &821

ES822—825

AND

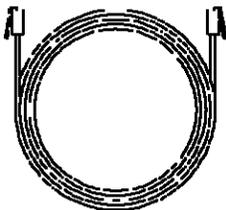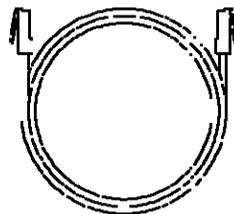**HORIZONTAL & VERTICAL GRAPHIC ARRAYS**
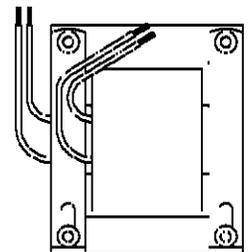
SENSOR/REFLECTOR PLEXIGLAS

REFLECTOR ASSEMBLY

HORIZONTAL GRAPHIC ARRAY CABLES

VERTICAL GRAPHIC ARRAY CABLES

120-12 VAC TRANSFORMER

There are six component packages available.
See the table below for specific features of each.

All ES820 Series share the same MPU Controller, Graphic Arrays and Specifications.

Features:

- **Free Exit** -   Ships with one set of Graphic Arrays for Entry Side only.

- **Card In Card Out** -   Ships with two sets of Graphic Arrays (Entry and Exit)

- **Standard** -   Hinge Mount, includes exposed sensors with cover below MPU.

- **Compact** -   Fixed Mount, smaller overall size, includes IR Plexiglas. Designed to be mounted internally.

- **Inverted -**   Designed for applications where the sensors are above the MPU Controller.

These instructions are applicable to all models.

NOTE:
- Card In / Card Out systems have 2 (two) Horizontal Graphic Arrays (HGA)
- Card In / Card Out systems have one short (3') and one long (15') HGA Cable

MODEL	FREE EXIT	CARD IN CARD OUT	STANDARD	COMPACT	INVERTED (SENSORS ON TOP)
820	*X*		*X*		
821		*X*	*X*		
822	*X*			*X*	
823		*X*		*X*	
824	*X*			*X*	*X*
825		*X*		*X*	*X*

MOUNTING AND ASSEMBLY

See illustrations in Appendix for dimensional information and examples.

Verify that the bollards are mounted parallel to one another and in a straight line (if not parallel, sensor alignment may be difficult). Bollard on the far right, as viewed from the entrance/un-secure side, will be the first "smart" Bollard (unit with electronics) Last bollard on the left side will have reflectors only.

Remove cover over sensors and reflectors.

Install Electronics package in Bollard. Allow for hinge motion and MPU access in the installation.

Run wires from Access Control System to the Electronics package. Provide enough service loop in cabling to allow shelf to swing down on hinge (approximately four (4) feet).

After the MPU Controller has been released from under side of bollard and allowed to swing down, all interface wiring can be accomplished.

WIRING

Refer to the enclosed drawing "Wiring Diagram" for Input, Output and Light array connection details.

Connect N/O dry contact from "Exit Valid Card" output of the access system to TB2-10 & 12 (Valid 1). Set hold time on this contact, for valid card input, to less than 0.5 second, or as near as possible.

Connect N/O dry contact from "Entry Valid Card" output of the access system to TB2-11 & 12 (Valid 2). Set hold time on this contact, for valid card input, to less than 0.5 second, or as near as possible.

Connect N/O dry contact from "Invalid card" output of the access system to TB2-7 & 9 (Invalid). Set the hold time on this Input for Invalid, to less than 0.5 second, or as near as possible. This input is optional.

Connect N/O passageway Bypass from remote monitoring equipment to TB2-7 & 8 (Bypass) for bypassing passageway operation or to reset the MPU.

Connect N/O Alarm output from MPU, on TB2-5 & 6 to alert remote monitoring equipment of an alarm condition.

Connect 12 VAC 6 amp power supply to TB2-13 & 14. Wire gauge should be 14 AWG for a wire run of 50 feet or less and 12 AWG for 50 - 100 feet. Greater distances will require appropriate gauge wire.

After connections have been made to the MPU Controller close the electronics shelf but do not replace the cover.

FREE EXIT MODE ENABLE

Enable Free Exit Mode by shorting the Sensor 4 and Common terminals TB1-11 & 12.

INFRARED SENSOR BEAMS (Will not pass through glass)

The Infrared beams from the sensors will not pass through glass. It is recommended that if necessary, any cover over the beams be made of IR-Passing Plexiglass. Please contact DSI for details regarding these requirements if the installation includes glass panels that would obstruct the beam path.

SENSOR ALIGNMENT

Once the parts are in place and the wiring is complete, the system may be powered up and checked for proper alignment of the IR optical sensors. IR optical sensor alignment may be verified by observing the two LED's on the end of each sensor. Red LED off and Green on indicates the sensor is aligned and has a "Lock" state.

- If IR optical sensor alignment is required, loosen the mounting screws holding the sensor to the controller plate and adjust as required. Observe the sensor LED for "Lock' indication (Red LED Off and Green LED On).
- One technique that can be used to increase accuracy would be to cover adjacent sensors and reflectors in order to prevent alignment with the wrong reflector. Another technique would be to use a card with a dime-sized hole to cover the reflector being used. This would focus the beam to a tighter tolerance.
- Once the IR sensors are aligned, and connections to the access control system verified, the passageway should operate normally, allowing passage on a valid input for that direction, as well as sounding an alarm for an invalid passage, and, remote control of the lane if these inputs are connected to remote switches.

ADJUSTMENTS

Adjustment P.1 (Alarm Reset) sets the delay on the Alarm Auto Reset (adjustable 1 - 20 seconds).

Adjustment P.2 (Valid Access Delay) sets the time allowed for a valid card user to walk through the passageway before the system resets for the next user (adjustable 1 - 20 seconds).

LIGHT ARRAYS

The ES820 Component Package supports vertical and horizontal Light Arrays to provide visual cues to the user. See illustrations in Appendix for dimensional information.

All Exit-side nomenclature is referenced as "1" (Valid 1, Horizontal 1, Vertical 1) All "Exit" side hardware (Light Arrays, Reader) are mounted on the right-hand side, when facing the lane from the "EXIT" or "Secure" side. This places these pieces of hardware in the bollard across the lane from the MPU/ Electronics Package.

All Entry-side nomenclature is referenced as "2" (Valid 2, Horizontal 2, Vertical 2) All "Entry" side hardware (Light Arrays, Reader) are mounted on the right-hand side, when facing the lane from the "ENTRY" or "Un-Secure" side. These pieces of hardware are used in the same bollard the MPU/Electronics Package is mounted in.

The Horizontal Light Array is best installed near the card reader or other access device. This Light Array is connected the appropriate Horizontal Array (1 or 2) connection on the MPU board that corresponds with the Valid 1 or Valid 2 Input.

The Vertical Light Array is best installed facing approaching users. This Light Array is connected to the appropriate Vertical Array (1 or 2) connection on the MPU board that corresponds with the Valid 1 or Valid 2 Input.

The Horizontal Array has three modes; Present Card (Card Arrow is lit); Alarm or In Use (Bar is lit); and Proceed (Arrows)

The Vertical Array has two modes; Open (lane available for use); Wait (Lane in use or Alarm)

Secure component plate to bollard when wiring is complete and replace Sensor cover.

DSI Power Wire-Run Gauge Calculator

Use this form to determine the wire gauge of the power trunk for equipment.

If used to calculate a:

- "**DAISY CHAIN**" application - one where all equipment is attached to the same trunk, you will need to calculate the total load and the total distance in wire run to the last load on the chain.

- "**HOME RUN**" application - where each piece of equipment is on a separate trunk returning to the central power supply, you use this form to determine the gauge for each run.

    1. Specify total Current load of all devices sharing this trunk, in Amps.

    2. Specify Distance of actual Wire Run (in feet) from power supply to most remote load.

    3. Multiply figures from line 1 and line 2

    4. Match final number to Table below to determine Wire Gauge needed to provide adequate Voltage.

TABLE

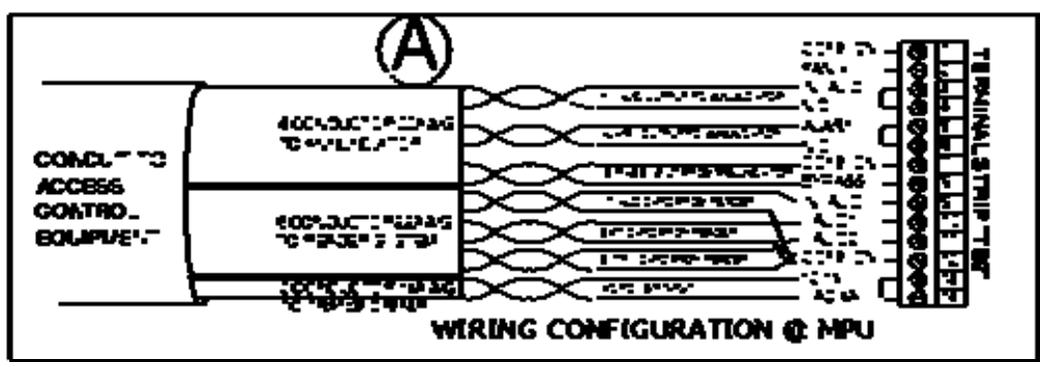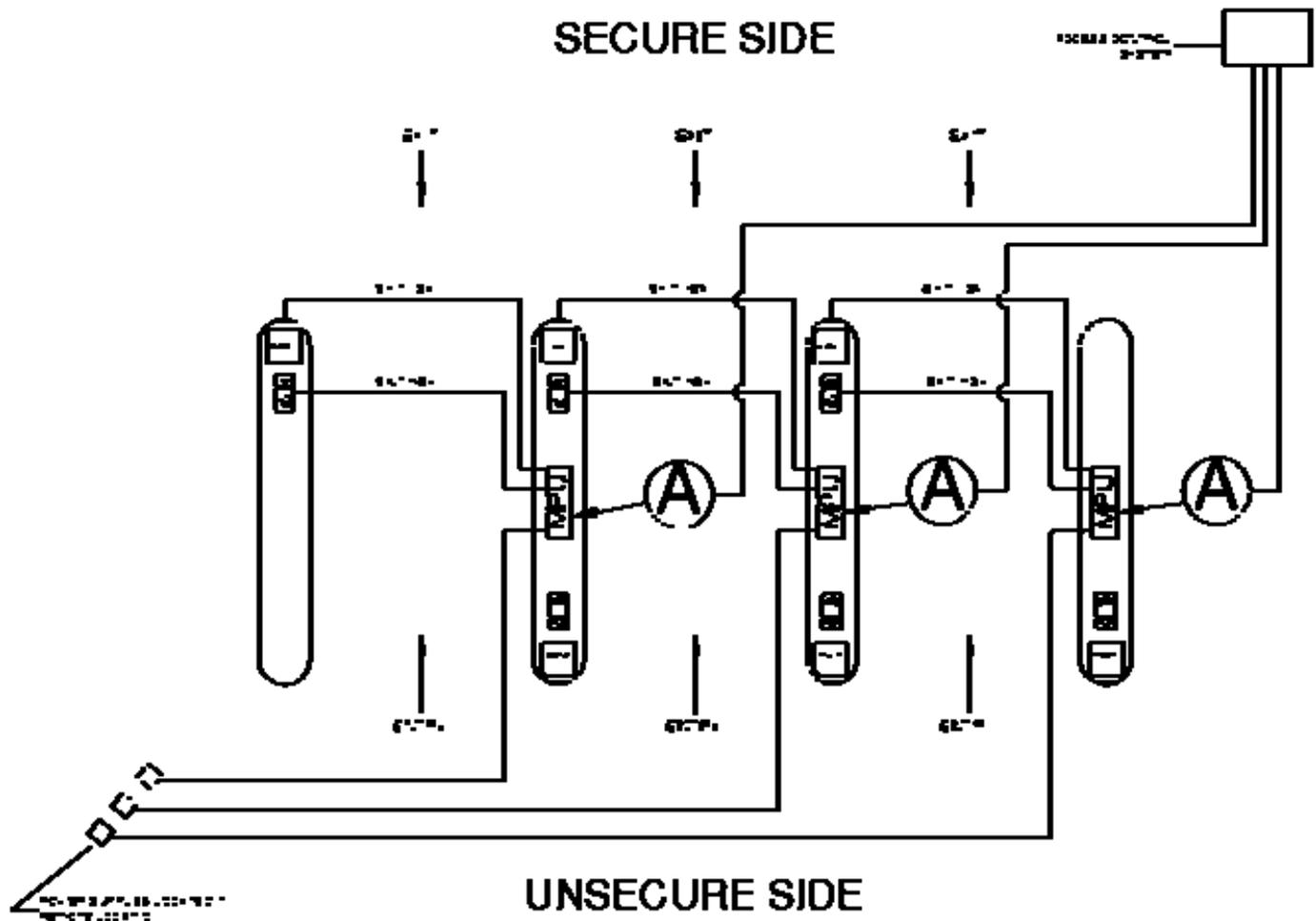|	
up to 45	22AWG
45 to 90	18AWG
90 to 170	16AWG
170 to 275	14AWG
275 to 415	12AWG
415 to 680	10AWG

If your result is greater than 680, make individual supply runs to each device, or sub-sets of devices, which are within the above parameters.

EXAMPLE: 3 devices @ .250, .500, .125 amps - total amps of .875

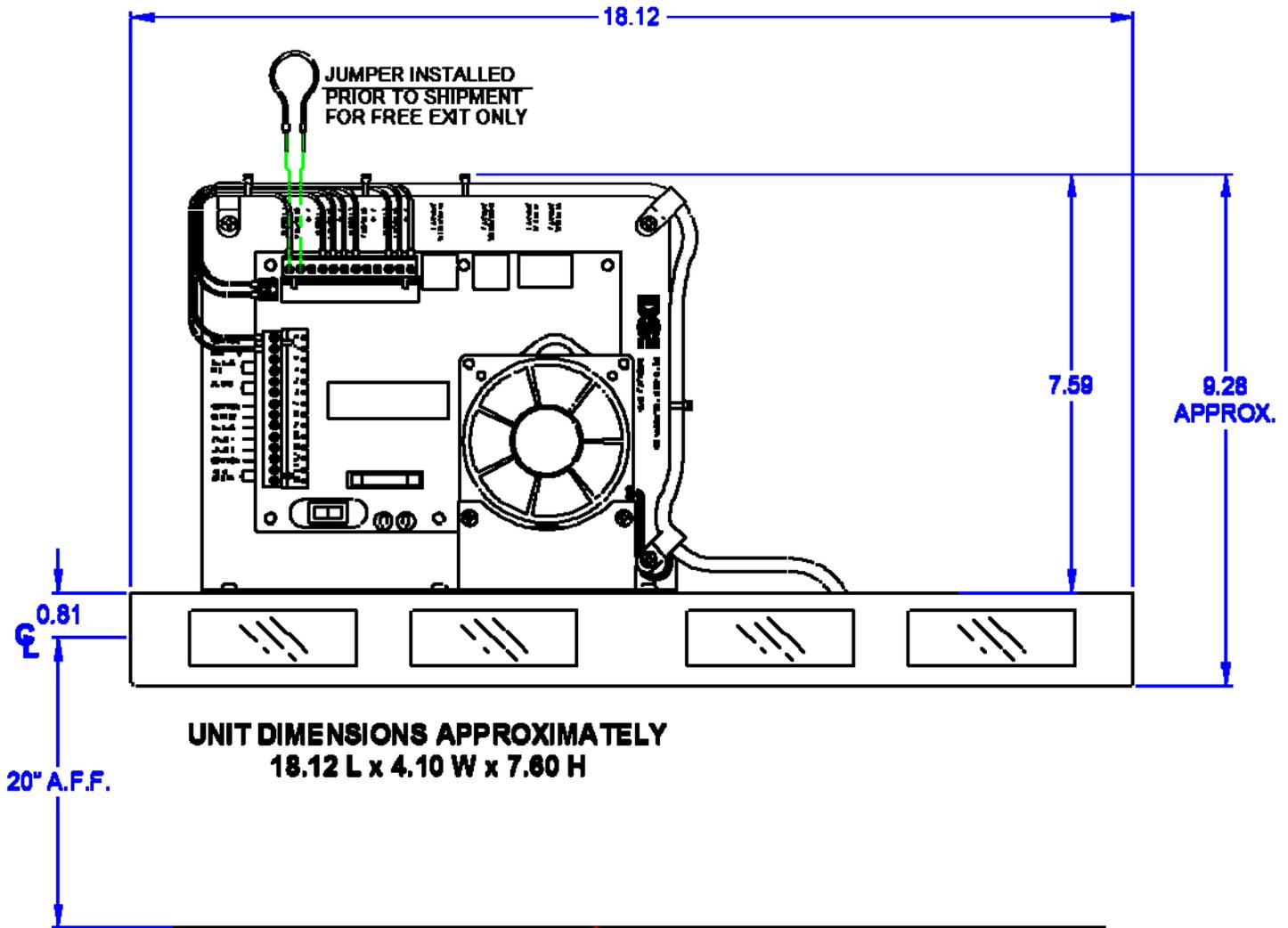   Distance of 150 ft.

                        150 times .875 = 131.25

131.25 falls into the category of 16 AWG wire.

WIRING DIAGRAM

SECURE SIDE

UNSECURE SIDE

TYPICAL BOLLARD CONFIGURATION

WIRING CONFIGURATION @ MPU

800 272 3555   Fax 512 321 9181

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INS820 507002

7 OF 22

APPENDIX

ES820/821 SPECIFIC

JUMPER INSTALLED
PRIOR TO SHIPMENT
FOR FREE EXIT ONLY

18.12

7.59

9.28 APPROX.

0.81

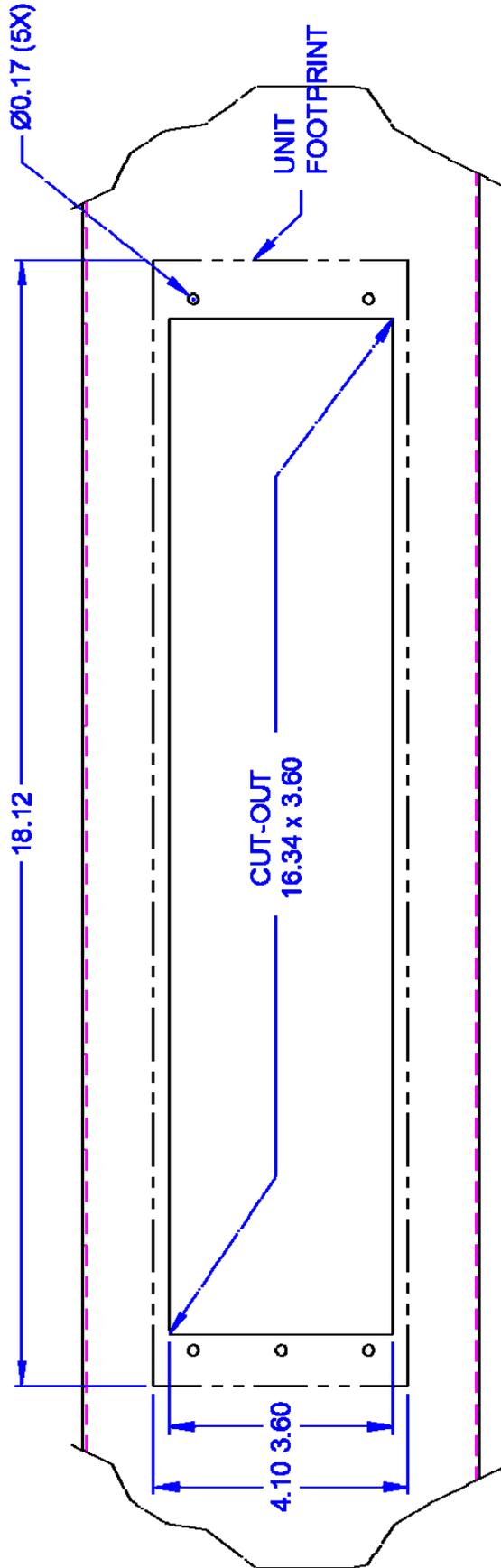20" A.F.F.

UNIT DIMENSIONS APPROXIMATELY
18.12 L x 4.10 W x 7.60 H

NOTES:
- This example illustrates component location dimensions.
- Center of Sensors should be 20" above the finished floor.
- Fan must have adequate clearance (1.5" minimum) for airflow.
- Venting at top and bottom of cabinet (bollard) is suggested to allow for convective flow of fresh air for cooling.
- Allow adequate clearance for Hinge Point.
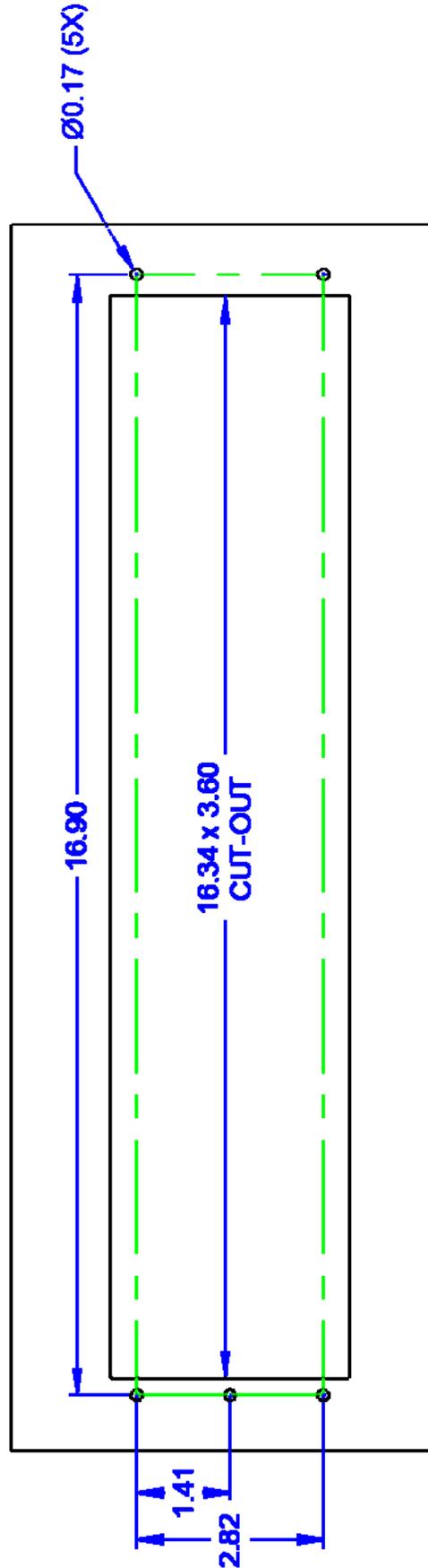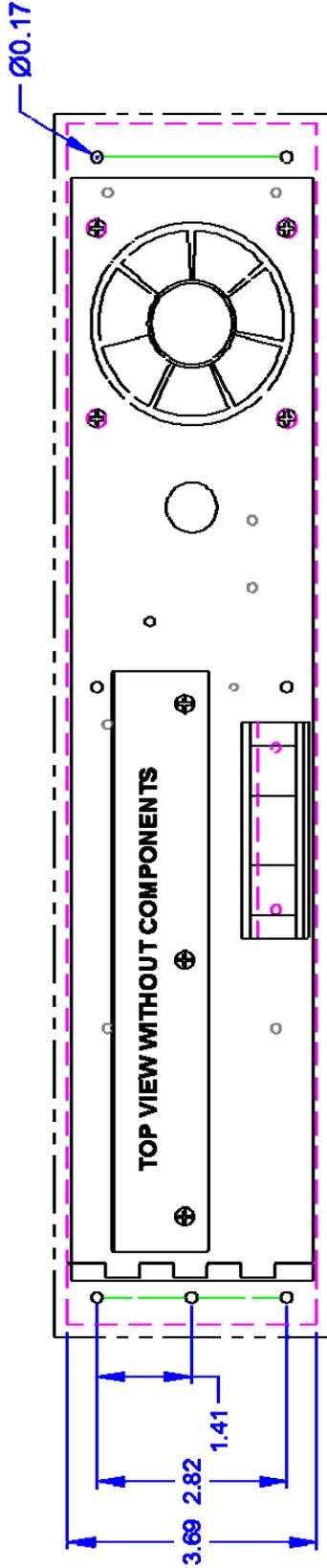- Sensor/Reflector Cover must be removed for Hinge operation.
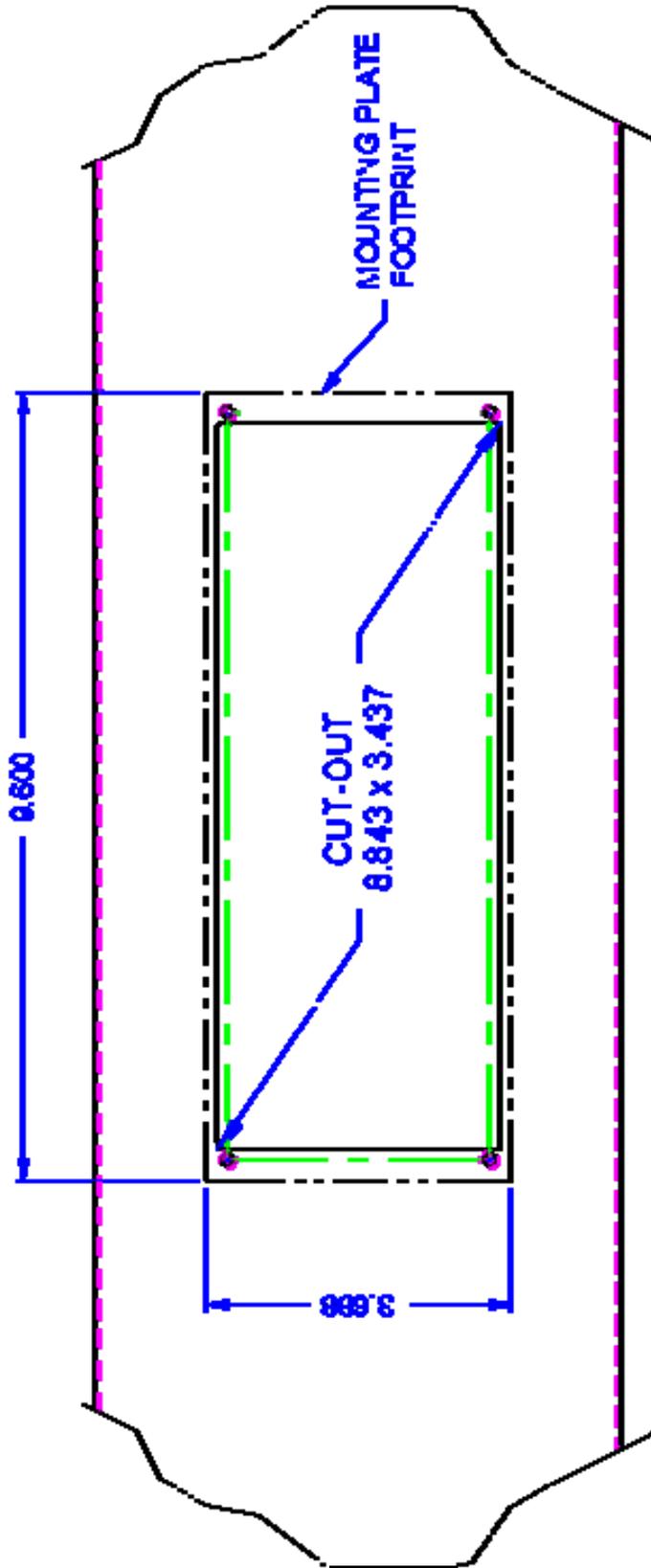
ES820/821 SPECIFIC

Ø0.17 (5X)

UNIT FOOTPRINT

18.12

CUT-OUT
16.34 x 3.60

4.10 3.60

MOUNTING CUTOUT DIMENSIONS

(Leave at least 1.5" on Fan side for airflow)

ES820/821 SPECIFIC

Ø0.17

Ø0.17 (5X)

TOP VIEW WITHOUT COMPONENTS

16.90

16.34 x 3.60
CUT-OUT

1.41

2.82

3.69

2.82

1.41

NOTES
1) DIMENSIONS ARE IN INCHES.
2) "CENTERLINE" OF SENSORS IS 26"
   ABOVE FINISHED FLOOR (AFF).
3) "FAN SIDE": LOCATE TEMPLATE
   1.75 INCHES AWAY FROM PROPOSED
   ENCLOSURE, FOR AIR FLOW.

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INS820 507002

ES822/823/824/825 SPECIFIC

MOUNTING PLATE FOOTPRINT

CUT-OUT
8.843 x 3.437

9.600

3.686

MOUNTING CUTOUT DIMENSIONS

(Leave at least 1.5" on Fan side for airflow)

FREE EXIT APPLICATIONS ONLY

UNIT DIMENSIONS APPROXIMATELY
9.50 L x 3.70 W x 7.653 H

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INS820 507002
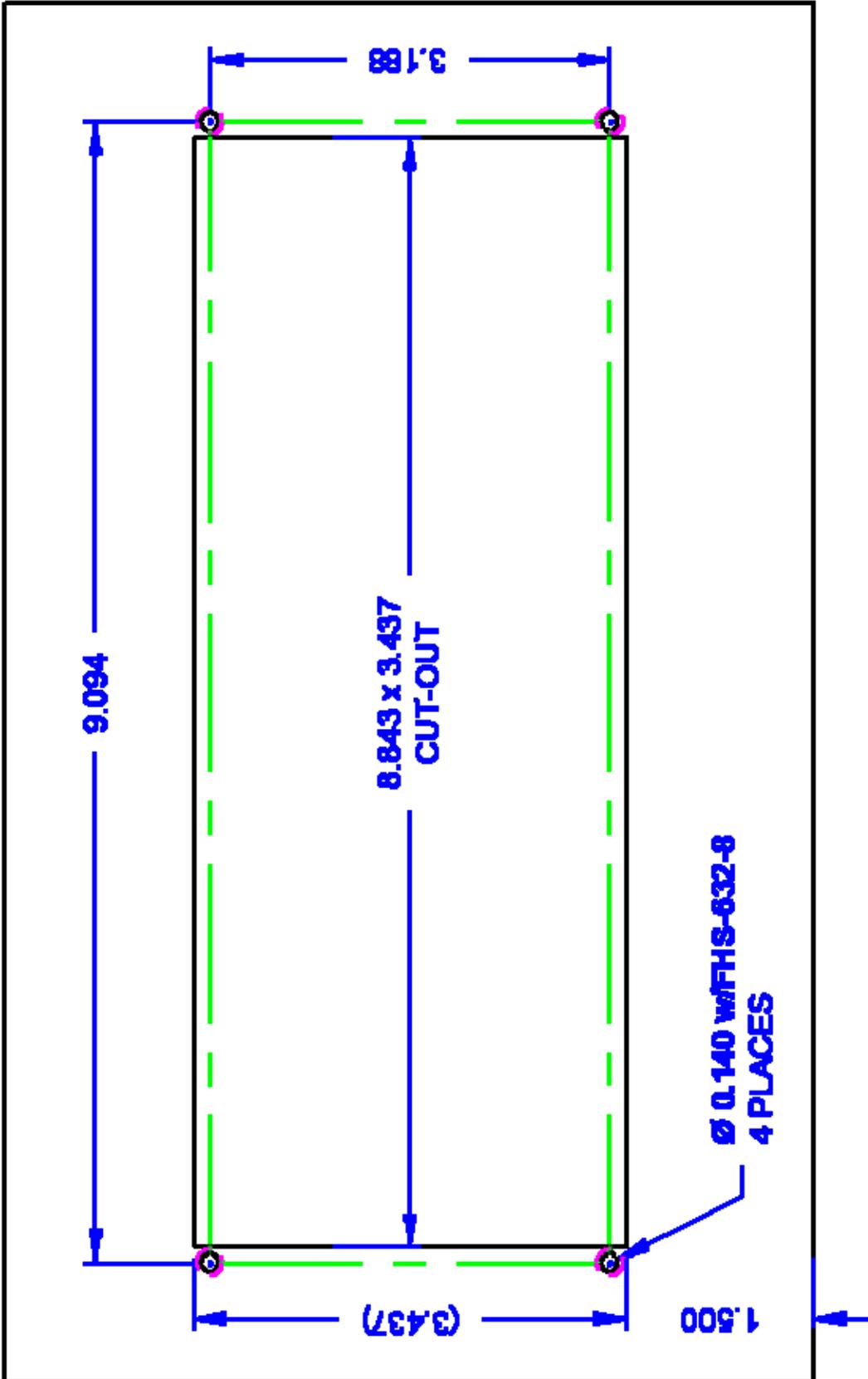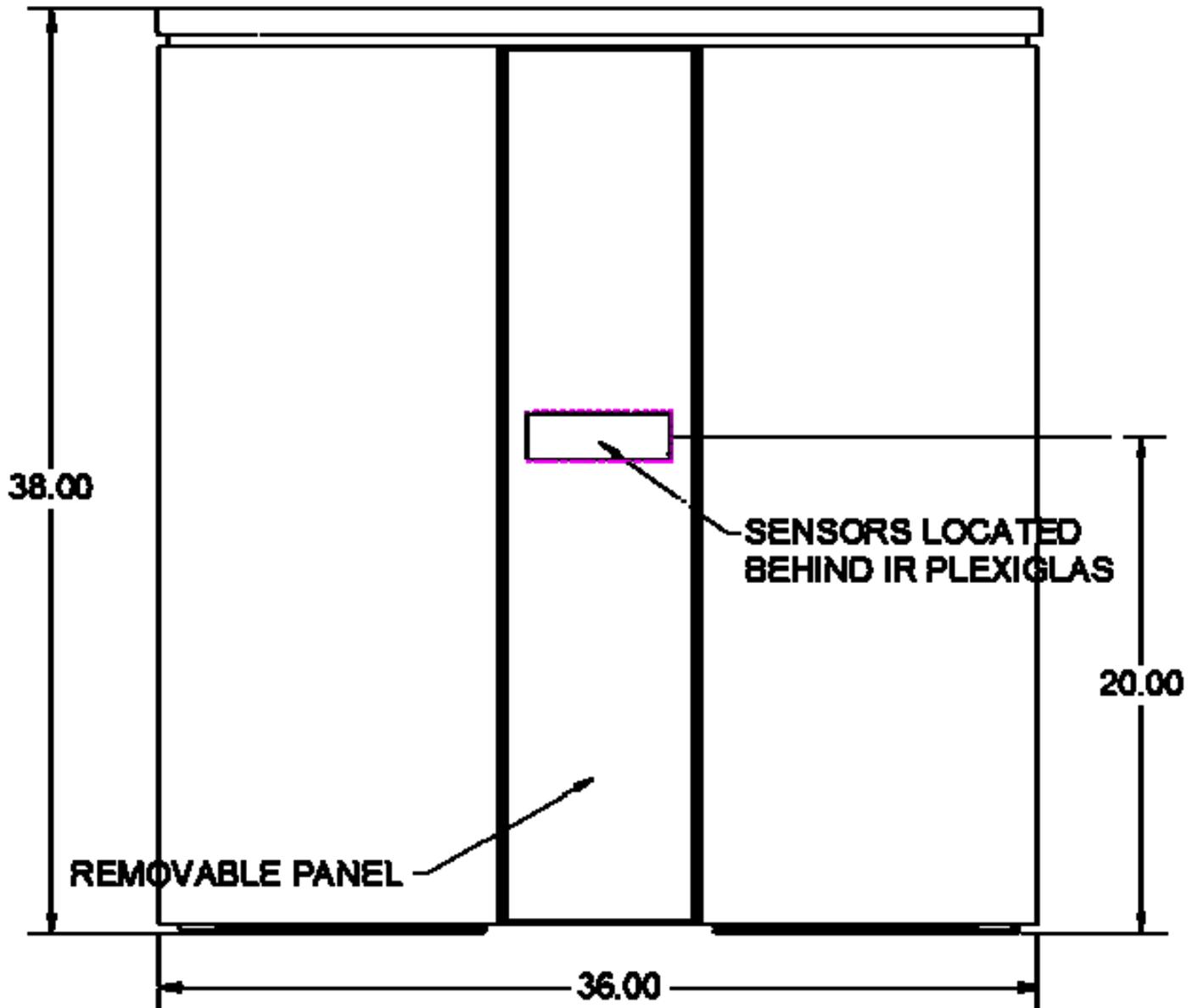
NOTES:

- This example illustrates component location dimensions.
- Center of Sensors should be 20" above the finished floor.
- Fan must have adequate clearance (1.5" minimum) for airflow.
- Venting at top and bottom of cabinet (bollard) is suggested to allow for convective flow of fresh air for cooling.

NOTES:

- This example illustrates Sensor & Reflector Plexiglas location.
- The Plexiglas is Infrared transparent to allow the beams to pass through the panels.
- Replacement IR Plexiglas may be purchased from DSI.

3.188

9.094

8.843 x 3.437
CUT-OUT

Ø 0.140 w/FHS-632-8
4 PLACES

(3.437)

1.500

NOTES:
1) Dimensions are in Inches.
2) Fan side must have 1.5" clearance for airflow.

38.00

20.00

SENSORS LOCATED
BEHIND IR PLEXIGLAS

REMOVABLE PANEL

36.00

EXAMPLE ENCLOSURE

NOTES:

- This example illustrates Sensor/Reflector and associated Plexiglas location.
- Center of Sensors and Reflectors should be 20" above finished floor for best performance.
- Locating the sensors significantly higher or lower will affect the timing settings and can result in false alarms.
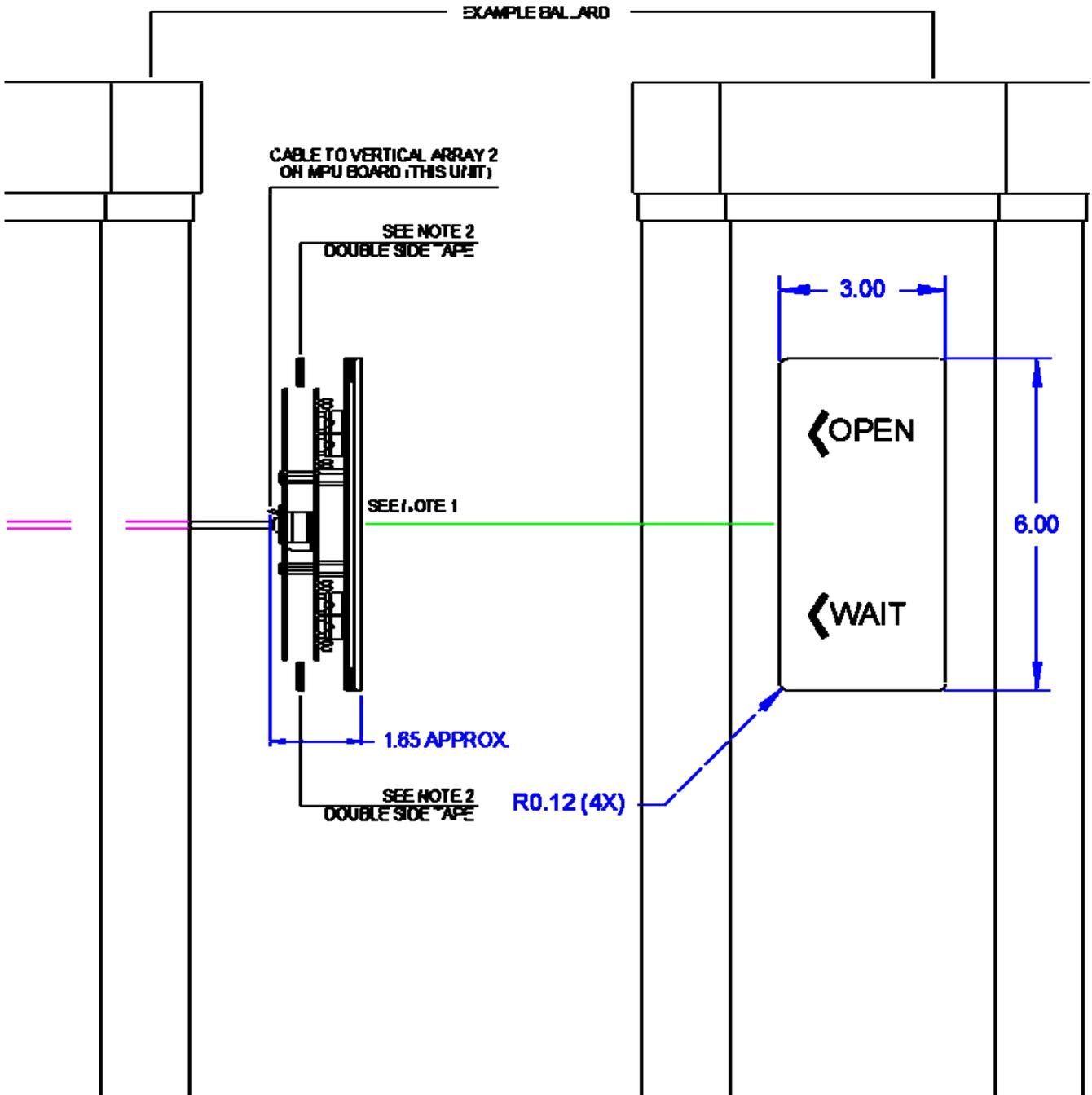
6.00

3.00

PROCEED

PRESENT CARD

R0.13
TYP (4X)

SEE NOTE 1
HORIZ LIGHT ARRAY ASSEMBLY

SEE NOTE 2
DOUBLE SIDE TAPE

SEE NOTE 2
DOUBLE SIDE TAPE

1.75
APPROX.

TO HORIZONTAL ARRAY 2
ON MPU BOARD (THIS UNIT)

CABLE FOR HORIZ LIGHT ARRAY
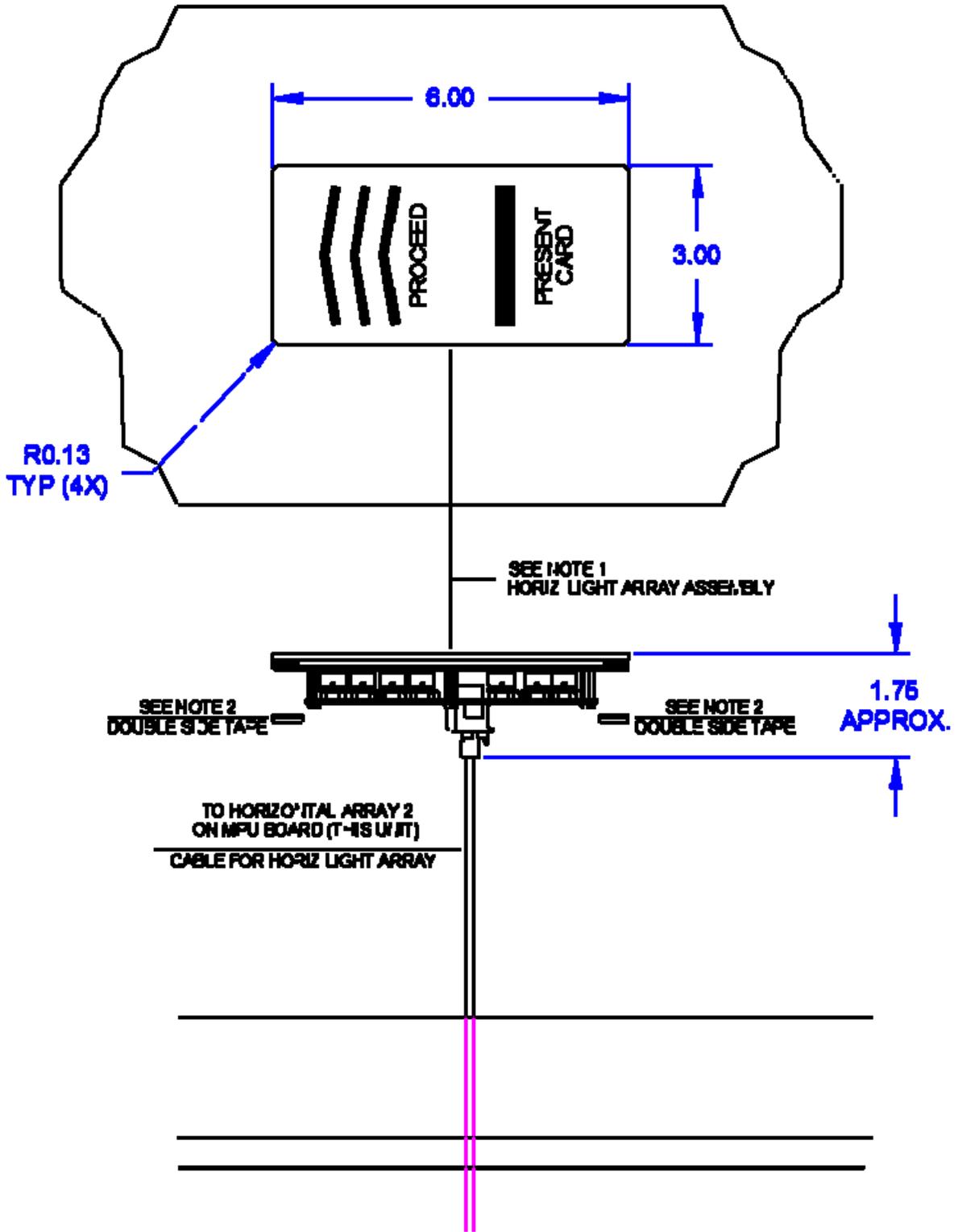
HORIZONTAL ARRAY

DETAIL 'A'

NOTES:
1) INSURE PROPER ORIENTATION OF LIGHT ARRAY.
WITH RED LED's (3 ROWS) ORIENTED TOWARD
APPROACHING USER
2) APPLY SUFFICIENT DOUBLE-SIDE TAPE SO AS TO
BRING PLEXI LENS _FLUSH_ WITH TOP

EXAMPLE BALLARD

CABLE TO VERTICAL ARRAY 2
ON MPU BOARD (THIS UNIT)

SEE NOTE 2
DOUBLE SIDE TAPE

3.00

〈OPEN

SEE NOTE 1

6.00

〈WAIT

1.65 APPROX.

SEE NOTE 2
DOUBLE SIDE TAPE

R0.12 (4X)

DETAIL 'B'

NOTES:
1) INSURE PROPER ORIENTATION OF LIGHT ARRAY,
   WITH GREEN LED's ORIENTED '*UP*'
2) APPLY SUFFICIENT DOUBLE-SIDE TAPE SO AS TO
   BRING PLEXI LENS *FLUSH* SIDE OF CABINET

VERTICAL ARRAY

DS!™

DESIGNED SECURITY, INC.