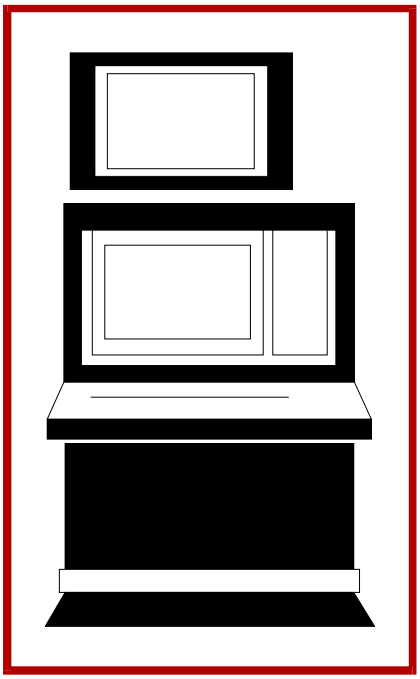
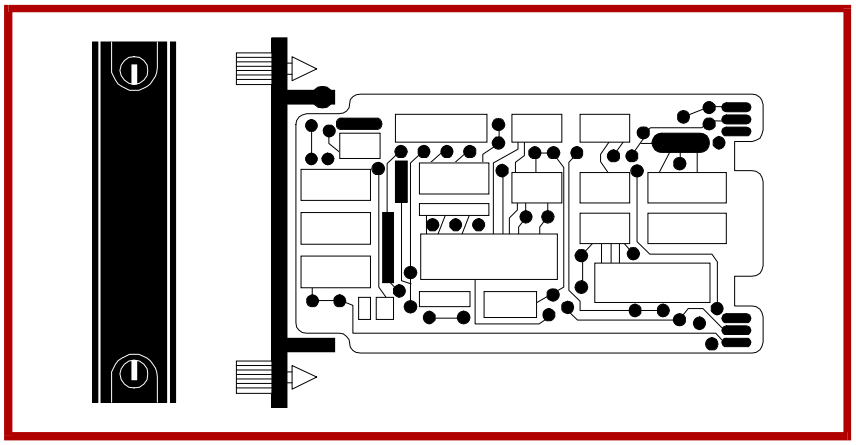
Bailey® infi 90®

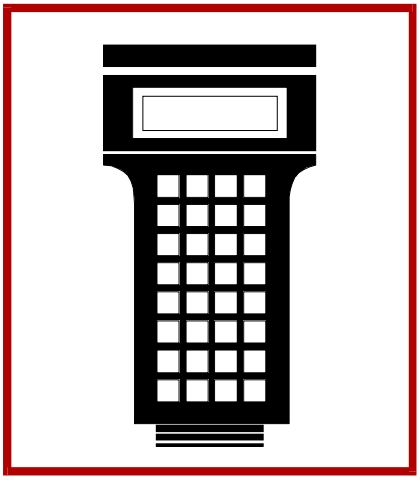
E96-197-10

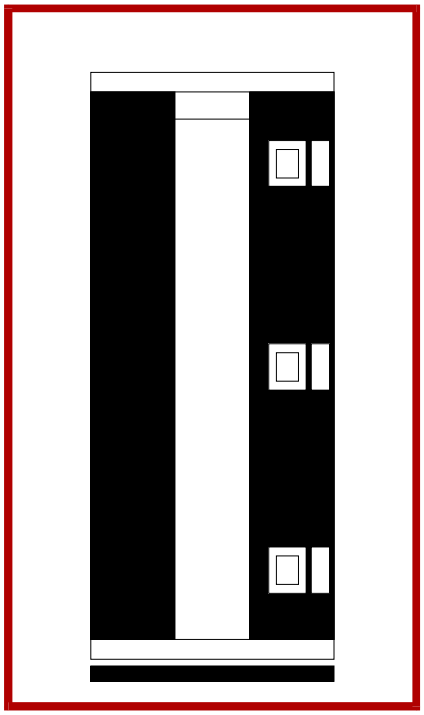
Instruction

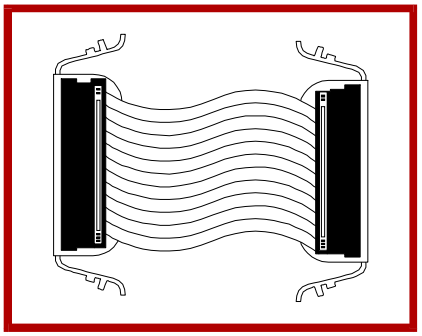
Signature Series Work Station Site Planning and Selection Guide

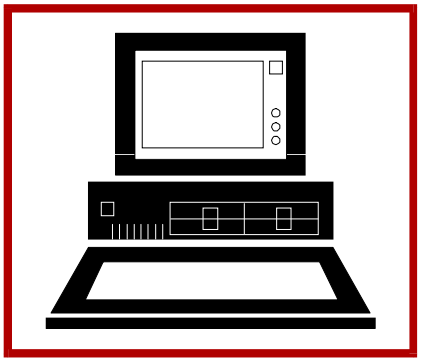












Bailey Process Control and Automation Solutions from Elsag Bailey Group

WARNING notices as used in this instruction apply to hazards or unsafe practices that could result in personal injury or death.

CAUTION notices apply to hazards or unsafe practices that could result in property damage.

NOTES highlight procedures and contain information that assists the operator in understanding the information contained in this instruction.

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POSSIBLE PROCESS UPSETS

MAINTENANCE MUST BE PERFORMED ONLY BY QUALIFIED PERSONNEL AND ONLY AFTER SECURING EQUIPMENT CONTROLLED BY THIS PRODUCT. ADJUSTING OR REMOVING THIS PRODUCT WHILE IT IS IN THE SYSTEM MAY UPSET THE PROCESS BEING CONTROLLED. SOME PROCESS UPSETS MAY CAUSE INJURY OR DAMAGE.

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PERTURBATIONS DU PROCÉDÉ

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Preface

This Site Planning and Selection Guide is designed to assist in determining the suitability of the Signature Series work station in conjunction with process control room design.

It provides a description of the work station, its nomenclature and technical specifications. There is information on the physical and environmental considerations for the work station as well as the process control room. A brief discussion of wiring considerations is also included. Finally, there are installation drawings and footprint cutouts intended to help in the process control room planning process.

This is not intended as an installation instruction or a tutorial. It is for use in the early stages of process control room design and contains information specific to the Signature Series work station. Detailed information regarding AC power distribution systems, system grounding and the verification of those systems can be found in the ***Site Planning and Preparation*** instruction. Detailed information on physical installation, troubleshooting, maintenance and repair of the Signature Series work station can be found in the ***Signature Series Work Station Hardware*** instruction.

List of Effective Pages

Total number of pages in this instruction is 43, consisting of the following:

Page No.	Change Date
Preface	Original
List of Effective Pages	Original
iii through iv	Original
1-1 through 1-17	Original
2-1 through 2-7	Original
3-1 through 3-4	Original
A-1 through A-3	Original
B-1 through B-5	Original
Index-1 through Index-3	Original

When an update is received, insert the latest changed pages and dispose of the superseded pages.

NOTE: On an update page, the changed text or table is indicated by a vertical bar in the outer margin of the page adjacent to the changed area. A changed figure is indicated by a vertical bar in the outer margin next to the figure caption. The date the update was prepared will appear beside the page number.

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SECTION 1 - INTRODUCTION

OVERVIEW

The Signature Series work station is an advanced technology operator console. It fulfills the most formidable ergonomic, process and information interface requirements typically encountered with strategic enterprise management systems. The Signature Series work station combines the versatile and capable functionality of the INFI 90® Open consoles with the latest internationally directed ergonomic guidelines. This produces a coherent, effective and attractive union of form and function. The Signature Series work station is exceptionally engineered. It addresses the needs of the industrial environment regarding durability, serviceability and operator safety. The work station is configurable from single stand-alone, to multi-bay work stations.

In addition to the interface facilities between the operator and the process normally associated with DCS work stations, the Signature Series work station provides a variety of multifunction furniture-like components. These accommodate document storage, meetings, ample writing space and other features commonly found in traditional office furniture. The common look and contemporary styling enables systems integrators and facility planners to design exceptionally effective and inspiring control centers.

This document contains guidelines on the site requirements and considerations necessary to support the Signature Series work station.

> **NOTE:** This is not intended as an installation instruction or a tutorial. It is for use in the early stages of process control room design and contains information specific to the Signature Series work station. For detailed procedures on installing, wiring or operating the work station, refer to ***REFERENCE DOCUMENTS***.

INTENDED USER

These guidelines are intended for use by management personnel, architects, structural engineers, contractors, electricians and process control engineers responsible for process control room design.

WORK STATION DESCRIPTION

The Signature Series work station consists of a series of fundamental building blocks connected in various ways to form customized arrays.

® INFI 90 is a registered trademark of Elsag Bailey Process Automation.

Array Configurations

The Signature Series work station consists of three basic functional module array configurations. These configurations are then connected to other building blocks to form customized multi-bay work stations. Refer to ***Building Blocks*** for a description of each individual component.

> **NOTE:** All flying beam configurations require a base pedestal bay on both the left and right side of the flying beam.

SIngle Monitor (IS12 and IS42 work stations)

This is a one-monitor-per-bay, single-keyboard configuration with a processor mounted in the base pedestal (Fig. 1-1). The processor can be either a main or an auxiliary. The design allows the monitor to be mounted at the center, or 150 millimeters (5.9 inches) to the left or right of center of the beam.

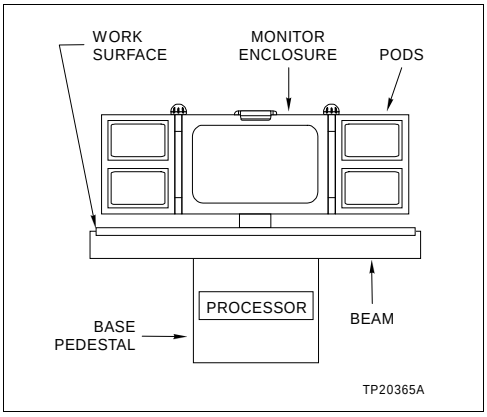

Figure 1-1. Single Monitor Configuration (IS12 and IS42 Work Stations)

Dual Monitor (IS42 work station)

A two-monitor, single-keyboard configuration with the processor mounted in the base pedestal (Fig. 1-2). Dual monitor configurations have one monitor mounted on a flying beam (or another base pedestal) to the left or right of the first base pedestal bay. When a flying beam supports the second monitor, the flying beam must be mounted between two base pedestal bays. The design allows the monitors to be mounted at the center, or 150 millimeters (5.9 inches) to the left or right of center of the beam or flying beam.

Dual Auxiliary Monitor (IS42 work station)

A two-monitor, single-keyboard configuration with an auxiliary processor mounted in the base pedestal (Fig. 1-3). The second monitor mounts on a flying beam (or another base pedestal) to the left or right of the first base pedestal bay. When a flying beam supports the second monitor in this configuration, the flying beam must be mounted between two base pedestal bays. The design allows the monitors to be mounted at the center, or 150 millimeters (5.9 inches) to the left or right of center of the beam or flying beam.

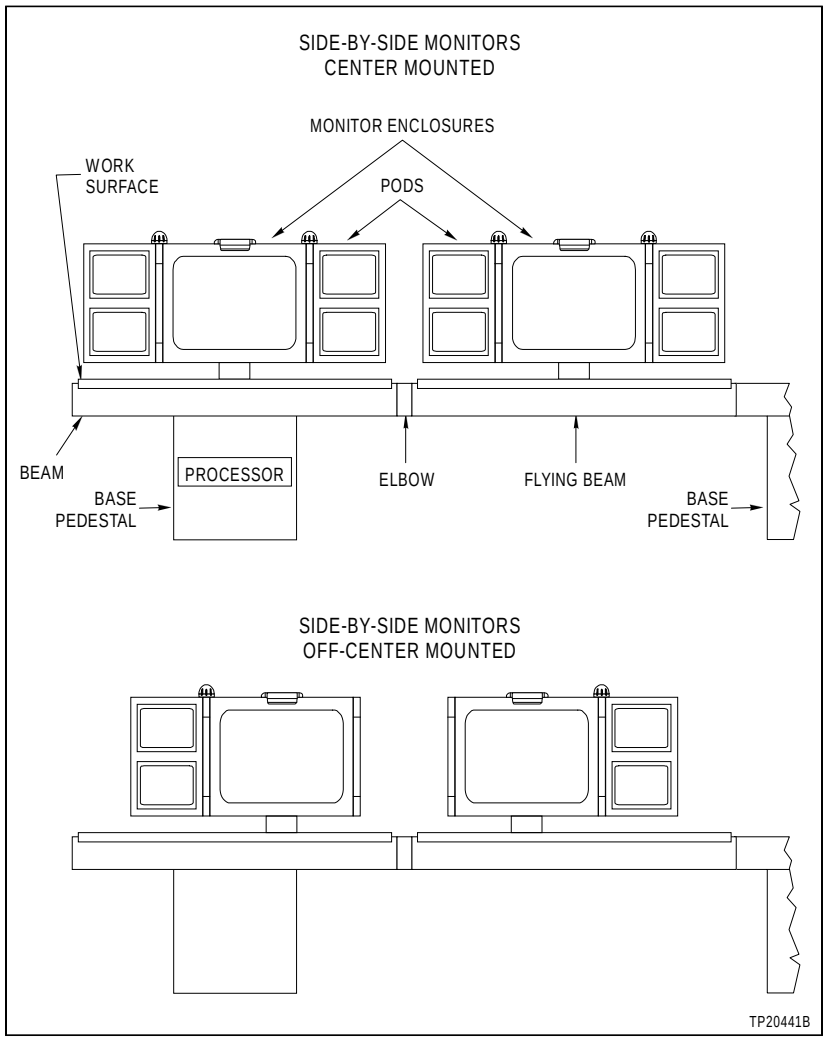

Figure 1-2. Dual Monitor Configuration (IS42 Work Station)

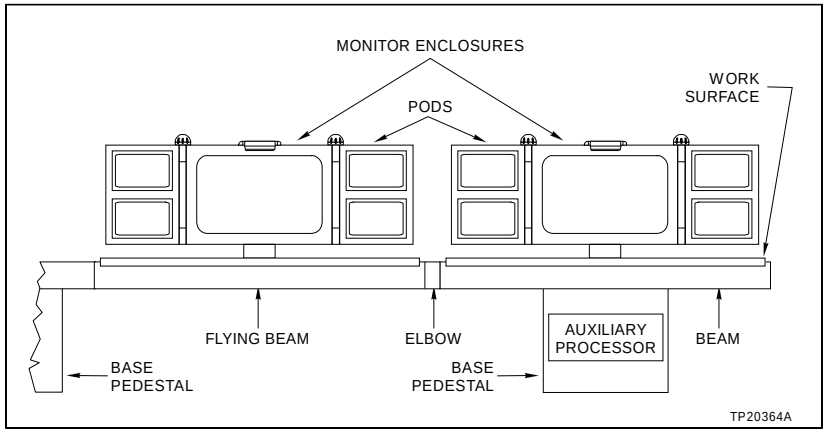

Figure 1-3. Dual Auxiliary Monitor Configuration (IS42 Work Station)

Building Blocks

The Signature Series work station consists of a series of fundamental building blocks connected in various configurations to form customized arrays.

Base Pedestal — Fundamental structure that supports the beam (Fig. 1-3). Encloses any terminal electronics (network interface unit (NIU), work station or PC processor, power entry panel (PEP), alarm contacts, etc.). Functions as a wireway for customer cabling between the floor and devices mounted in the auxiliary panel.

Beam — Triangular structure mounted on the base pedestal (Fig. 1-3). Supports either the auxiliary panel or monitor enclosure. Provides wireways for interbay wiring connections and support for fixed or adjustable work surfaces.

Flying Beam — Beam that is suspended between two adjacent base pedestals (Fig. 1-3). Compared to the base pedestal, the flying beam costs less, allows more leg room underneath and requires less floor space. Can only be used for IS42XC work stations and auxiliary panel bays.

Elbow — Triangular structure connecting two adjacent beams (Fig. 1-3). Connects work surface wedges and tables to the beam. Available in straight or 45 degree configurations.

Monitor Enclosure — Housing for the monitor and operator I/O controller (Fig. 1-3). Mounts on the swivel/tilt mechanism and supports the pods. Mounts either to the center, or 150 millimeters (5.9 inches) to the left or right of center of the beam or flying beam.

> **NOTE:** Pods cannot be installed between monitors where one monitor is mounted 150 millimeters (5.9 inches) toward the other.

Pods — Adjustable wing-like enclosures connected to either side of the monitor enclosure (Fig. 1-3). Each pod accommodates none, one or two ADP assemblies. The pod mechanism is an assembly of gears enabling positioning of the pod by turning a single knob. The adjustable pods optimize reach distances.

Work Station Work Surface S1 — Extra wide work surface used with the stand-alone work station (Fig. 1-4). Fixed or raised and lowered at the touch of a button using the optional lifting mechanism. Supports a keyboard and trackball. Besides providing a larger writing surface, the extra area is a convenient place for manual storage, etc.

Work Station Work Surfaces S2 Through S5 — Curved, single-bay-width and curved, in-line, single-bay-width array work surfaces used with multi-bay work stations (Fig. 1-4). Fixed or raised and lowered at the touch of a button using the optional lifting mechanism. Support keyboards and trackballs.

Auxiliary Panel Work Surfaces S1 Through S4

Straight, single-bay-width array work surfaces used in conjunction with the auxiliary panel (Fig. 1-4). Fixed or raised and lowered at the touch of a button using the optional lifting mechanism.

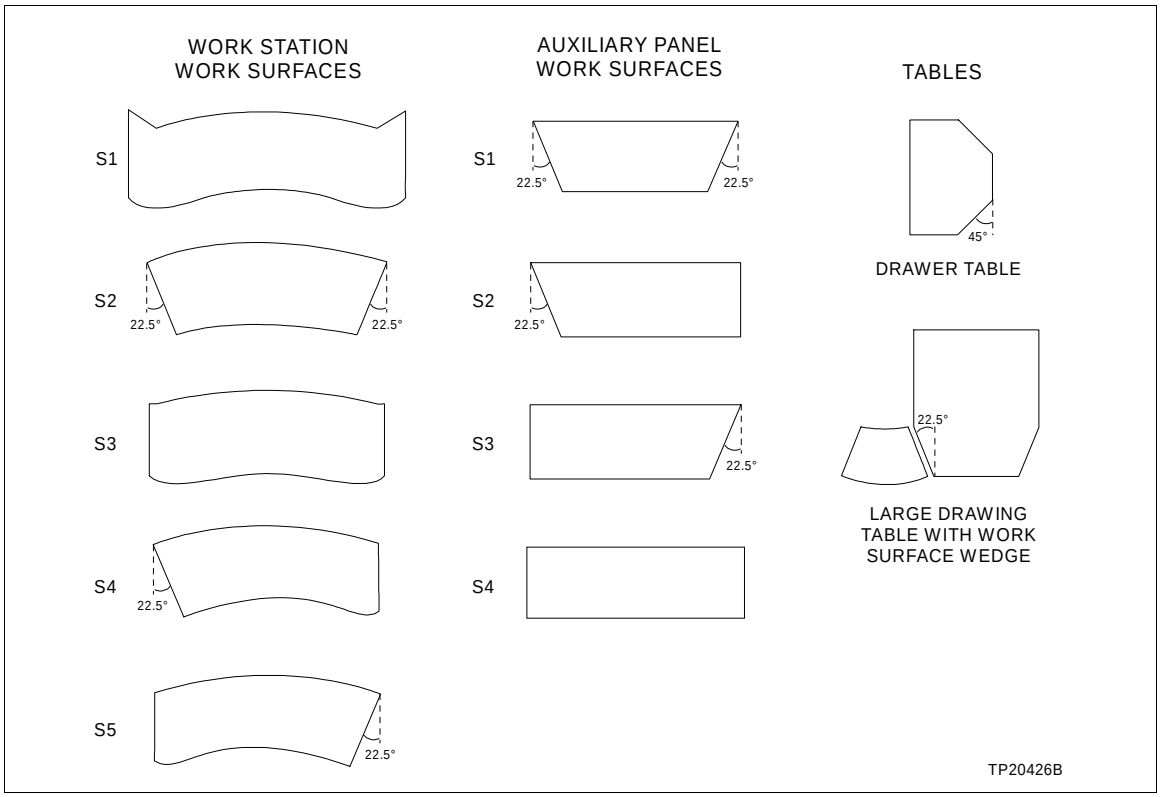

Figure 1-4. Worksurfaces, Tables and Wedges

Work Surface Wedge

Stationary work surface shape (Fig. 1-4). Fills in gaps between work surfaces in certain array configurations.

Large Drawing Table

Conference table for either end of an array (Fig. 1-4). Accommodates large process drawings as well as multi-personnel meetings. Provides one square meter (10.8 square feet) of flat, horizontal working surface.

Drawer Table

Table with a set of drawers with a convenient size work surface for paperwork activities (Fig. 1-4). Mounts on either end of an array. Provides two utility drawers beneath a table having approximately 0.5 square meters (5.4 square feet) of flat, horizontal working surface.

Stabilizers

Extensions attached to either side of the footrest of the base pedestal. Provide antitipping stability and ***must*** be used with base pedestal and auxiliary panel bays that are not securely fastened to the floor.

Auxiliary Panel Mounts to the beam, providing space for customer mounting of auxiliary equipment (telephones, pushbuttons, panel board instruments, two-way radios, etc.). Front panel is approximately 0.35 square meters (3.77 square feet) in area. Accommodates devices up to 450 millimeters (17.7 inches) in depth.

PHYSICAL CONFIGURATION RULES

The following are some guidelines for building Signature Series work station arrays.

- Stabilizers cannot be used between bays that are separated with 45 degree elbows.
- Auxiliary panel bays and monitor enclosures can be mounted on either base pedestal bays or flying beams. They must face the same side.
- Auxiliary panels on flying beams must have an auxiliary panel in an adjacent bay to accommodate customer wiring and anchoring devices.
- The monitor enclosure can be shifted 150 millimeters (5.9 inches) to the left or right of center of the beam or flying beam. Pods cannot be between shifted monitor enclosures.
- A flying beam can span only one bay. Base pedestals must be in adjacent bays.
- The auxiliary monitor (IS42XC) must be adjacent to the main terminal.
- The beam AC power bus can handle up to 40 amps at 120 VAC. This is sufficient to supply four pairs of main and auxiliary terminals.
- Tables can only be the end bay of an array.
- Adjacent beams are connected using a 0° or 45° elbow.

INSTRUCTION CONTENT

Introduction Provides a brief description of the Signature Series work station. Includes a glossary of terms and abbreviations, reference documents, nomenclature and technical specifications. Finally, there is a list of the design standards to which the work station was engineered.

Physical/Environmental Considerations Includes the load bearing to floors, required space for various components, and mechanical shock and vibration considerations from a work station, and a human standpoint. The environmental considerations include air quality, replacement rate

per occupant, velocity and pressure; temperature and humidity (including air conditioning); lighting and reflectivity; electrical/EMI/RFI noise; and electrostatic discharge issues. Finally, there are brief discussions on the transportation and storage environments, and fire protection.

Wiring Considerations

Includes information on AC power wiring, grounding, and INFI-NET and Ethernet wiring.

> **NOTE:** This section does not go into a detailed explanation of AC power distribution and grounding systems. For more information on these topics, refer to ***REFERENCE DOCUMENTS***.

Appendix A - Footprint Cutouts

Contains to-scale drawings of the various Signature Series work station components. They are done in both one-millimeter-equals-50-millimeters and ¼-inch-equals-one-foot scales. The intention is for control room planners to cut out these drawings and arrange them in various configurations to help in control room design.

Appendix B - Installation Drawings

Contains a dimensioned installation drawing for a stand-alone work station, an auxiliary panel and a typical work station array; a wiring access and bolt location drawing for a typical work station array; a typical anchoring example drawing and an auxiliary panel cutout area drawing.

HOW TO USE THIS INSTRUCTION

This instruction is a reference to determine if the proposed site meets the Signature Series console requirements. It is not a tutorial or an installation guide. Read it in its entirety in the planning stages of control room design.

GLOSSARY OF TERMS AND ABBREVIATIONS

Table 1-1 lists the terms and abbreviations as they apply to the Signature Series work station.

Table 1-1. Glossary of Terms and Abbreviations

Term	Definition
Annunciator display panel (ADP)	Assembly of 32 pushbuttons and LEDs. Used for alarm processing or calling assigned displays.
Array	Assembly of two or more bays.
Auxiliary panel	Steel panel structure that mounts to the beam, providing space for customer mounting of auxiliary equipment (telephones, pushbuttons, panel board instruments, two-way radios, etc.).
Auxiliary terminal	Functional equivalent to the OIC in the 10, 20, and 40 Series consoles. As a terminal, it has operator input capabilities via a keyboard, mouse, trackball, touch screen, etc. Referred to as an auxiliary terminal because it communicates with the INFI 90 Open Strategic Process Management System via its assigned main terminal.

Table 1-1. Glossary of Terms and Abbreviations (continued)

Term	Definition
Auxiliary monitor	Additional display device, such as a CRT, LCD, etc. Connected directly to a main terminal having dual graphic output capability. Placed to the immediate left or right of the main terminal to form a dual monitor configuration.
Base pedestal	Fundamental structure supporting the beam. Encloses any terminal electronics (NIU, work station or PC processor, PEP, network terminations, alarm contacts, etc.). Wireway for customer cabling between the floor and devices in the auxiliary panel.
Bay	Segment or section of a Signature Series work station. Assembly of building blocks (base pedestal, beam, monitor enclosure, etc.) that form a functional entity (main terminal, auxiliary terminal, a table connected to another bay, etc.).
Beam	Triangular structure mounted on the base pedestal. Supports either the auxiliary panel or monitor enclosure. Wireway for interbay connections. Supports fixed or adjustable work surfaces.
Beam (flying)	See flying beam.
Bellows	Flexible covers enclosing and protecting inter-connecting wiring between pods and the monitor enclosure.
Drawer table	Table having a set of drawers with a work surface of convenient size for paperwork activities. Mounts on either end of an array.
Dual monitors	Two-bay configuration consisting of one main terminal and one auxiliary monitor mounted to the left or the right of the main terminal. Main terminal employs a single processor with dual graphics capability.
Elbow	Triangular structure that connects two adjacent beams. Fastens work surface wedges and tables to the beam.
End cap	Decorative cover for the ends of beams not connected by elbows. Stand-alone work stations have an end cap on both ends of the beam.
Flying beam	Beam suspended between two adjacent base pedestals.
Footprint	Plan view of the surface area occupied by an array configuration.
Large drawing table	Conference table for either end of an array. Accommodates large process drawings as well as multi-personnel meetings.
Lifting mechanism	Raises or lowers a work surface to desired elevation. Uses an electric drive assembly.
Main terminal	Functional equivalent to the OIS in the 10, 20 and 40 Series consoles. As a terminal, it has operator input capabilities via a keyboard, mouse, trackball, touch screen, etc., and a monitor (CRT, LCD, etc.). Main terminals have a network interface unit (NIU) to the INFI 90 Open Strategic Process Management System.
Monitor	Any technology capable of displaying dynamic data to an operator, such as CRTs, LCDs, VFDs and plasma. The Signature Series work station uses the CRT as the display technology.
Monitor base plate	Foundation plate for the monitor enclosure. Supports the monitor assembly, operator I/O controller, cables and CRT enclosure components.
Monitor enclosure	Housing for the monitor and operator I/O controller. Mounts on the swivel/tilt mechanism. Supports optional left and right pods.
Network interface unit (NIU)	Fundamental link to the INFI-NET system. Mounted in the base pedestal of main terminals.

® Mylar is a registered trademark of E. I. DuPont de Nemours, Co., Inc.

Table 1-1. Glossary of Terms and Abbreviations (continued)

Term	Definition
Operator I/O controller	Electronics assembly providing the necessary interface to the operator keyboards, ADP assemblies and touch screen. Mounted beneath the monitor in the monitor enclosure.
Operator keyboard	Mylar® keyboard assembly for performing display acquisition, data input and control actions. Houses the floppy disk drive, and connections for the QWERTY keyboard, mouse and trackball.
Pedestal cover	Removable, box-like structure on the rear of the base pedestal. Enables access to internal components and subsystems mounted inside the base pedestal.
Pedestal	See base pedestal.
Pod mechanism	Assembly of gears enabling positioning of the pod by turning a single knob.
Pod	Adjustable wing-like enclosure connected to either side of the monitor enclosure. Each pod accommodates none, one or two ADP assemblies.
Power entry panel (PEP)	Located inside the footrest of the base pedestal. Provides termination and distribution of all AC power for the bay. Contains surge suppressors and circuit breaker.
Stabilizers	Extensions on either side of the footrest of the base pedestal and auxiliary panel. Provide antitipping stability and ***must*** be used with base pedestal and auxiliary panel bays that are not securely fastened to the floor.
Stand-alone	Single-bay configuration that includes an extra large work surface.
Swivel/tilt base plate	Foundation plate for the swivel/tilt mechanism. Provides the primary mechanical link between the beam and the assembly consisting of the swivel/tilt mechanism and the monitor enclosure.
Swivel/tilt mechanism	Allows the monitor to tilt 20° on the horizontal axis and swivel 30° on the vertical axis. Mounts between the monitor enclosure and the beam.
Wedge	Stationary work surface shape. Fills in the gaps in certain array configurations. Available in straight or 45 degree configurations.
Work envelope	Three-dimensional space typically occupied or used by a human being in performing a task.
Work surface	Horizontal surface mounted to the beam and used to support the keyboard, mouse, trackball, etc. A surface for writing, document storage, etc. Supported by fixed or moveable arms.
Work surface style	Style number identifying each unique work surface shape. Work surfaces are available in several different shapes to accommodate a variety of array configurations.

REFERENCE DOCUMENTS

Table 1-2 lists the documents referred to in this instruction.

Table 1-2. Reference Documents

Number	Title
C-E96-160	Signature Series Work Station Specification, IS12/IS42
C-E96-160-1	Signature Series Work Station Data Sheet, IS42
C-E96-160-2	Signature Series Work Station Data Sheet, IS12
I-E96-500	Site Planning and Preparation
D3055195	Signature Installation Drawing

NOMENCLATURE

Tables 1-3, 1-5, 1-6 and 1-7 list the nomenclature for the Signature Series work station. Table 1-4 lists the valid nomenclature combinations for the Signature bays listed in Table 1-3.

Table 1-3. Signature Bays

Position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	
Type I S □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	**INFI-NET Signature Bay**
Next Page	**Series Selection**
1 2 P	10 Series
4 2 X	40 Series
	Processor/Monitor Configuration
M	Main terminal (OIS)
X	Main terminal (OIS) with dual graphic output[1]
A	Auxiliary terminal (OIC)
T	Auxiliary terminal (OIC) with dual graphic output[1]
C	Auxiliary monitor (side-by-side)
S	Signature shell with monitor only
	Bay Type
0	Flying beam only
1	Base pedestal without factory-installed stabilizers
2	Base pedestal with factory-installed left and right stabilizers
3	Base pedestal with factory-installed left stabilizer
4	Base pedestal with factory-installed right stabilizer
	Left Side Pod
0	None
1	ADP in top position only
2	ADP in bottom position only
3	ADP in top and bottom positions
9	Blank inserts in both positions
	Right Side Pod
0	None
1	ADP in top position only
2	ADP in bottom position only
3	ADP in top and bottom positions
9	Blank inserts in both positions

Table 1-3. Signature Bays (continued)

Position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	
Type I S □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	**INFI-NET Signature Bay**
Previous Page	
	Touchscreen
0	None
T	Touchscreen on each monitor
	Not Used - Enter Zero
	Language[2]
0	English
5	Norwegian
6	Swedish
7	Danish
	Work Station Work Surface
0	No work surface
1	Large stand-alone (S1)
2	Curved (S2)
3	Straight array (S3)
4	Left end, 22.5° (S4)
5	Right end, 22.5° (S5)
	Work Surface Mounting
0	None
1	Fixed
2	Adjustable via lifting mechanism (120 VAC)
3	Adjustable via lifting mechanism (240 VAC)
0 0	**Not Used - Enter Zeros**

NOTES:

1. Requires IS42XC auxiliary monitor in adjacent bay.
2. Provides necessary hardware only. Software must be ordered separately.

Table 1-4. Valid Nomenclature Combinations for Signature Bays (Table 1-3)

Nomenclature Position and Valid Selections													
3	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
1	2	P	M	1,2,3,4	0,1,2,9[1]	0,1,2,9[1]	0	0	0	1,2,3,4,5	1,2,3	0	0
			A										
			S		0,9	0,9			N/A	0,1,2,3,4,5	0,1,2,3		
4	2	X	M	1,2,3,4	0,1,2,3,9	0,1,2,3,9	0,T	0	0,2,4,5,6,7	1,2,3,4,5	1,2,3	0	0
			X		0,1,2,3,9[2]	0,1,2,3,9[2]				2,3,4,5			
			A		0,1,2,3,9	0,1,2,3,9				1,2,3,4,5			
			T							2,3,4,5			
			C[3]	0,1,2,3,4	0,1,2,3,9[2]	0,1,2,3,9[2]			N/A				
			S	1,2,3,4	0,1,2,3,9	0,1,2,3,9	0			0,1,2,3,4,5	0,1,2,3		

NOTES:

1. There can be one ADP per IS12PM main terminal or IS12PA auxiliary terminal.
2. There can be a total of four ADP assemblies between IS42XX main terminal with dual graphic output and IS42XC auxiliary monitor.
3. IS42XC auxiliary monitor must be adjacent to IS42XX main terminal with dual graphic output.

Table 1-5. Auxiliary Panels

Position 1 2 3 4 5 6 7 8 9 10	
Type I S A U X □ □ □ □ □	**INFI-NET Signature Series Auxiliary Panel**
	Panel Style
1	Flat steel front panel
	Bay Type
0	Flying beam only[1]
1	Base pedestal without factory-installed stabilizers
2	Base pedestal with factory-installed left and right stabilizers
3	Base pedestal with factory-installed left stabilizer
4	Base pedestal with factory-installed right stabilizer
	Auxiliary Panel Work Surface
0	No work surface
1	Work surface with 22.5° both ends (S1)
2	Work surface with 22.5° left end and 90° right end (S2)
3	Work surface with 90° left end and 22.5° right end (S3)
4	Work surface with 90° both ends (S4)
	Work Surface Mounting
0	No work surface
1	Fixed
2	Adjustable via lifting mechanism (120 VAC)
3	Adjustable via lifting mechanism (240 VAC)
0	**Not Used - Enter Zero**

NOTE:
1. An auxiliary panel on a flying beam (ISAUX10) must be adjacent to an auxiliary panel on a base pedestal (ISAUX11/12/13/14).

Table 1-6. Tables

Position 1 2 3 4 5 6 7 8	
Type I S T A B □ □ □	**INFI-NET Signature Series Tables**
	Table Style
0	Drawer table
1	Large drawing table with wedge
	Table Position
0	Right end of array
1	Left end of array
0	**Not Used - Enter Zero**

Table 1-7. Elbows, End Caps, and Stabilizers

Position 1 2 3 4 5 6 7	
Type I S E L B □ □	**INFI-NET Signature Series Elbows**
	Elbow Style
0	0° straight elbow
1	45° elbow
2	Beam end cap
3	Pair of stabilizers
0	**Not Used - Enter Zero**

SPECIFICATIONS

Tables 1-8 through 1-13 list the specifications for the Signature Series work station.

NOTE: Specifications are subject to change without notice.

Table 1-8. AC Power Quality Requirements

Property	Characteristic/Value
Line voltage	
120 VAC (nominal)	90 to 132 VAC
240 VAC (nominal)	180 to 264 VAC
Line frequency	
50/60 Hz (nominal)	47 to 63 Hz
Total harmonic distortion	< 5%
Maximum interruption	
IS12	10 msecs, ½-cycle
IS42	20 msecs[1]

NOTE:

1. DEC Power Line Standard 122.

Table 1-9. Typical Operating Parameters[1]

Type	Nominal Input Voltage (VAC)	Input Current (A)		Nominal Power (W)	Crest Factor	Power Factor	Nominal Heat Dissipation (BTU/Hr)
		Nominal Operating[1]	Nominal Inrush				
IS12PM	120	2.1	72.0	204	3.7	0.81	697
	240	1.3	52.6	206	5.8	0.66	703
IS12PA	120	2.0	66.0	194	3.9	0.81	662
	240	1.3	54.0	212	5.9	0.68	724
IS12PS	120	1.0	15.4	118	2.0	0.98	403
	240	0.5	29.3	116	2.1	0.97	396
IS42XM	120	3.1	80.8	290	3.4	0.78	990
	240	1.9	53.8	305	4.9	0.67	1,041

Table 1-9. Typical Operating Parameters[1] (continued)

Type	Nominal Input Voltage (VAC)	Input Current (A)		Nominal Power (W)	Crest Factor	Power Factor	Nominal Heat Dissipation (BTU/Hr)
		Nominal Operating[1]	Nominal Inrush				
IS42XX	120	3.0	71.6	288	2.8	0.80	983
	240	1.5	65.8	288	2.5	0.80	983
IS42XA	120	2.0	56.3	202	3.7	0.84	689
	240	1.1	46.5	214	5.5	0.81	731
IS42XT	120	2.2	47.7	211	3.7	0.80	720
	240	1.4	70.4	225	5.7	0.67	768
IS42XC	120	1.0	15.4	118	2.0	0.98	403
	240	0.5	29.3	116	2.1	0.97	396
IS42XS	120	1.0	15.4	118	2.0	0.98	403
	240	0.5	29.3	116	2.1	0.97	396

NOTES:

1. To approximate maximum values for current, power and heat dissipation, multiply typical values by 1.33.
2. Add 1.1 A for each component with the optional lifting mechanism (only when the lifting mechanism is activated and in operation). All values calculated from the operating current are also affected.

Table 1-10. Dimensions

Type	Width		Depth		Max Height		Weight	
	mm	in.	mm	in.	mm	in.	kg	lbs
Stand-alone with S1 work surface	1,595	62.8	1,554	61.2	1,295	51.0	210	461
Single bay	1,000	39.4	1,502	59.1	1,295	51.0	207	456
Auxiliary panel with S1 work surface	1,000	39.4	1,534	60.4	1,135	44.7	286	630
Large drawing table	1,091	43.0	1,247	49.1	705	27.8	31	69
Drawer table	700	27.6	981	38.6	705	27.8	57	125
Typical export shipping crate	1,702	67.0	1,245	49.0	1,422	56.0	227	500

Table 1-11. Environmental Specifications

Environment	Altitude		Temperature		Relative Humidity %
	m	ft	°C	°F	
Operating	0 to 2,000	0 to 6,562	15 to 32	59 to 90	20 to 80 noncondensing
Nonoperating[1]	0 to 4,900	0 to 16,076	-40 to 66	-40 to 151	95[2]
Storage	0 to 2,000	0 to 6,562	5 to 50	41 to 122	10 to 95 noncondensing

NOTES:

1. Nonoperating environment is defined as a transportation or storage period of less than 60 days.
2. The value of 95% is at a reference temperature of 66°C (151°F) and the humidity may condense.

Table 1-12. Software and Hardware Specifications for IS12 Work Stations [1]

Property	Characteristic/Value
Display	
Displays or graphics	1,500
Dynamics per display	200
Operator configurable group displays	600
Tags/points	5,000
Logs	
Periodic	64
Trend	64
Trigger	64
Trip	20
Trends	
Total (2, 15, 60 and 600 secs)	2,000
Historical classes	500
Hardware	
Annunciator display panels (ADP)	1 per keyboard
Pushbuttons or LEDs per ADP	32
CRT resolution	1024 x 768 pixels at 72 Hz
Keyboards (6 output relays and 5 alarm tones)	1 Mylar per work station
RAM	32 Mbytes
Floppy disk	1.44 Mbytes/IDE
Hard disk	540 Mbytes/SCSI
Processor	Intel® (Pentium™) 90 MHz
External accessories	
Printers (graphics and text)	Multiple

NOTE:
1. Specifications are for main terminals only.

Table 1-13. Software and Hardware Specifications for IS42 Work Stations [1]

Property	Characteristic/Value
Display	
Displays or graphics	1,500
Dynamics per display	400
Operator configurable displays	25
Operating system	OpenVMS™ AXP
Tags/points	30,000
Generated windows	8

® Intel is a registered trademark of the Intel Corporation.
™ Pentium is a trademark of the Intel Corporation.
™ VMS is a trademark of Digital Equipment Corporation.

Table 1-13. Software and Hardware Specifications for IS42 Work Stations (continued)[1]

Property	Characteristic/Value
Logs	
Event logs	1,000
Sequence of events reports	160
Logs (total of trend, trip and snapshot)	300
Trends	
Total (work station collected)	
Operator assigned (2 sec)	20
Trends (collected)	
With DISPLAY ONLY usage type	10,000
With SAVE TO DISK or ARCHIVE usage type	2,000
Hardware	
Annunciator display panels (ADP)	Up to 4 per keyboard
Pushbuttons or LEDs per ADP	32
CRT resolution	1280 x 1024 pixels at 72 Hz
Keyboards[2]	Up to 8
RAM	64 Mbytes
Floppy disk	2.88 Mbytes
Hard disk	1.05 Gbytes and 535 Mbytes
Processor (IS42XM and IS42XX)	DEC 64 bit, Alpha AXP RISC, 175 MHz
External accessories	
CD ROM drive with 0.9 m (3.0 ft) SCSI cable	600 Mbyte, 150 to 300 kbyte/sec transfer rate
Optical disk	1.2 Gbytes (600 Mbytes per side) or 594 Mbytes (297 Mbytes per side)
DAT magnetic tape	2 Gbytes
Printers (graphics and text)	Up to 4 via server

NOTES:

1. Specifications are for main terminals only.
2. Six output relays per keyboard and 20 logical tones. Each tone can be configured to make one of 15 different pitches. Each tone can be sent to any or all keyboards.

DESIGN STANDARDS

The Signature Series work station was engineered to comply with several international standards. Refer to Table 1-14 for a list of these standards.

Table 1-14. Design Standards

Property	Standard	Description
Emitted radiation	BSI BS EN 55011 - 1991	Limits and Methods of Measurement of Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment
General requirements	CSA C22.2 No. 1010.1-92	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part 1: General Requirements
Certification	CSA	CSA certified for use in a controlled environment (pending).
Power factor/ harmonics	IEC 555-2	Disturbances in Supply Systems Caused by Household Appliances and Similar Electrical Equipment, Part 2: Harmonics First Edition
ESD surge protection	IEC 801-2 Level 4 (15 kV)	Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment, Part 2: Electrostatic Discharge Requirements
RFI	IEC 801-3 Level 3	Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment, Part 3: Radiated Electromagnetic Field Requirements
Transients	IEC 801-4 Level 3	Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment, Part 4: Electrical Fast Transient/ Burst Requirements
Surge withstand	IEC 801-5 Level 3	Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment, Part 5: Surge Immunity Requirements
Radiation (X-ray)	IEC 1010-1 Section 12.2	Safety Requirements for Electrical Equipment for Measurement Control and Laboratory Use, Part 1: General Requirements; Section 12.2: Equipment Producing Ionizing Radiation
Corrosive environments	ISA S71.04 Severity Level 1 (control room environment)	Environmental Conditions for Process Measurement and Control Systems - Airborne Contaminants
General requirements	ISA S82.01-1994	Safety Standard for Electrical and Electronic Test, Measuring, Controlling, and Related Equipment - General Requirements
Shock	MIL-STD 202	Test Methods for Electronic and Electrical Component Parts
Vibration	MIL-STD 810E	Environmental Test Methods and Engineering, Method 514.4 Category 1 - Basic Transportation
Enclosure classification	IP10 and NEMA 1	Suitable for Indoor Locations
Magnetic field emissions	Swedish SWEDAC Standard MPR8, VLF and ELF	Test Methods for Visual Display Units: Visual Ergonomics, Emission Characteristics (formerly MPR2)

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

SECTION 2 - PHYSICAL AND ENVIRONMENTAL CONSIDERATIONS

INTRODUCTION

This section covers the recommended physical and environmental conditions for the control room that houses the Signature Series work station. These considerations are important, because they not only affect the operation of the work station, but also the productivity and safety of personnel.

Elsag Bailey can specify the physical and environmental requirements of the work station, but can only make general recommendations for a suitable environment for personnel. To provide a safe and comfortable working environment, consult a human factors engineer or other source on process control system ergonomics.

The work station functions properly across a range of environmental conditions (Table 1-11) that fall beyond environmental extremes for people. Designing the site environment with respect to the comfort zone for human beings insures the environmental requirements of the work station will be met.

PHYSICAL REQUIREMENTS

Physical requirements cover the mechanical aspects of equipment installation. The physical requirements include the load bearing of floors, work space and envelopes, and mechanical shock and vibration damping.

Load Bearing of Floors

The floor of the installation site must be capable of bearing the weight of the equipment. Refer to Table 1-10 for the weights of various work station components when determining the floor load bearing requirements.

Space and Work Envelopes

Elsag Bailey recommends a work envelope of at least one meter (3.3 feet) around installed work stations so that maintenance personnel can conveniently work in a squatted position. Additional spacing may be required to allow for removal of components.

Control rooms should be large enough to hold system hardware and allow service and operating personnel to easily move through and work in the area. Additional room may be needed for routing, shielding and spacing signal wiring or AC power distribution. Section 3 contains information on AC power

wiring and system grounding. Refer to the information in that section if necessary when planning for the space requirements of a particular system. The layout should allow operators and personnel doing routine service to work simultaneously without being in each other's way.

Table 1-10 lists the nominal dimensions of the various Signature Series work station components. The dimensions in Table 1-10 do not include the work envelope surrounding the components.

A minimum 91.4-centimeter (36-inch) doorway is required for the work station components to pass into the control room. Work station component weights are listed in Table 1-10. Be sure to move these components with equipment rated for these weights. Keep in mind that the shipping crate and pallet adds to those weights. The dimensions of a typical export shipping crate and pallet are listed in Table 1-10.

The shipping pallet allows insertion of the forks of a lift truck. Once the component is in or near the control room, any fasteners securing the component to the shipping pallet must be removed. Once this is done, the component can be moved with a sling and crane.

Refer to ***Site Planning and Preparation*** for more detailed information on space requirements concerning energized components.

Mechanical Shock and Vibration

The work station has been designed to comply with MIL-STD 810E Method 514.4 Category 1 - Basic Transportation. This standard covers all equipment shipped as secured cargo by land, sea or air.

Do not subject the work station to mechanical shock during or after installation. The control room should be free from shock and vibration that could affect the performance of system operators.

When designing the control room, shield work station operators from excessive low frequency vibration. High amplitude horizontal or vertical vibration near the resonant frequency of the human body (approximately five hertz) hampers vision, hand coordination and reaction time.

It is not practical to project mechanical shock and vibration tolerances for all possible conditions at various installation sites. If expecting excessive levels of vibration, survey the site to decide if work areas or equipment need vibration damping.

There are two methods of securing the work station at the installation site. If supplied with stabilizers, no further securing methods are required. If there are no stabilizers, the work station must be securely fastened to the floor. If the control room has a raised false floor, the anchoring mechanism must not be fastened to the false floor.

In Appendix B, figures B-1, B-3 and B-5 show the bolt locations and Figure B-4 shows a typical anchoring example. This is an example only and may or may not reflect the actual installation.

ENVIRONMENTAL REQUIREMENTS

The environmental requirements of an installation site include air quality, replacement rate, velocity and pressure; temperature; humidity and lighting. This includes special environmental constraints when transporting and storing the work station.

The ambient environment affects both the equipment and the performance and comfort of work station operators. Personnel should not have to expend mental and physical energy coping with environmentally imposed stress that diminishes their capacity to work. Controlling environmental distractions helps increase productivity and provides a safer and more comfortable place to work.

Refer to ***American Society of Heating, Refrigerating and Air Conditioning Engineers (Ashrae) Fundamentals*** for more information on the effects of environment on human beings.

Air Quality

The work station enclosures are IP10 and NEMA 1 rated. Almost all industrial processes contain gaseous, solid (particulate) or liquid contaminants. Some contaminants can cause corrosive damage to the work station. Increased temperature or humidity can accelerate the corrosive effects of contaminants. Solid airborne contaminants accelerate wear to moving parts. Solid contaminants can accumulate on surfaces and result in heat buildup, electrical part shorting or improper operation of mechanical and electromechanical components. Components susceptible to solid contaminants include switches, relays, printers and disk drives.

Select an installation site that is free of corrosive and conductive contaminants to maintain the reliability and life span of the work station.

When installing a Signature Series work station in an area that is not completely free of gases, liquids and airborne solids (such as dust):

1. The particulate in the area must be nonconductive and cannot exceed severity level one as defined in Instrument Society of America (ISA) Standard S71.04, ***Environmental Conditions for Process Measurement and Control Systems Contamination Influences.***

2. Maintain a preventive maintenance program to curtail dust buildup.

In addition, the air replacement rate inside the control room should be at least 7080 cubic centimeters per second (15 cubic feet per minute) per occupant. The air velocity should be less than or equal to 22.9 centimeters per second (45 feet per minute). The atmospheric pressure inside the control room should be 25 Pascals (0.1 inch of water) greater than the outside atmospheric pressure.

Temperature and Humidity

Temperature and humidity levels must be maintained to provide a comfortable ambient environment for personnel and to control electrostatic charge buildup. Maintain air conditioned control room environments at a temperature of 21° to 23°C (70° to 74°F) with a minimum of 40 percent relative humidity. When sizing air conditioning equipment, consider the heat dissipation of the work station during normal operation. Refer to Table 1-9 to determine the heat that will be generated within a work station. Use this information to decide if the particular site needs additional temperature or humidity control.

Figure 2-1 shows the comfort zone for human beings as defined by Ashrae. Keep the environment within these limits. The graph shown is for persons dressed in typical winter and summer clothing who are performing light, mainly sedentary activity.

Lighting and Reflectivity

Based on various ergonomic studies, the recommended light intensity in the work station work areas is 350 to 400 lux (33 to 37 foot-candles) on horizontal work surfaces, keyboards and displays. Data preparation areas should be lighted from 970 to 1080 lux (90 to 100 foot-candles) on horizontal work surfaces.

Lighting should be controlled to reduce glare on monitor screens. Glare can cause reading errors and muscular fatigue. Lighting should be adjustable so that system operators can adjust the intensity level to meet their individual needs. Use adjustable task lighting if supplemental lighting for individual

work spaces is required. Louvered lighting also helps reduce glare.

The control room design should provide for ceiling reflectivities greater than 80 percent, wall reflectivities less than 60 percent and floor reflectivities less than 20 percent.

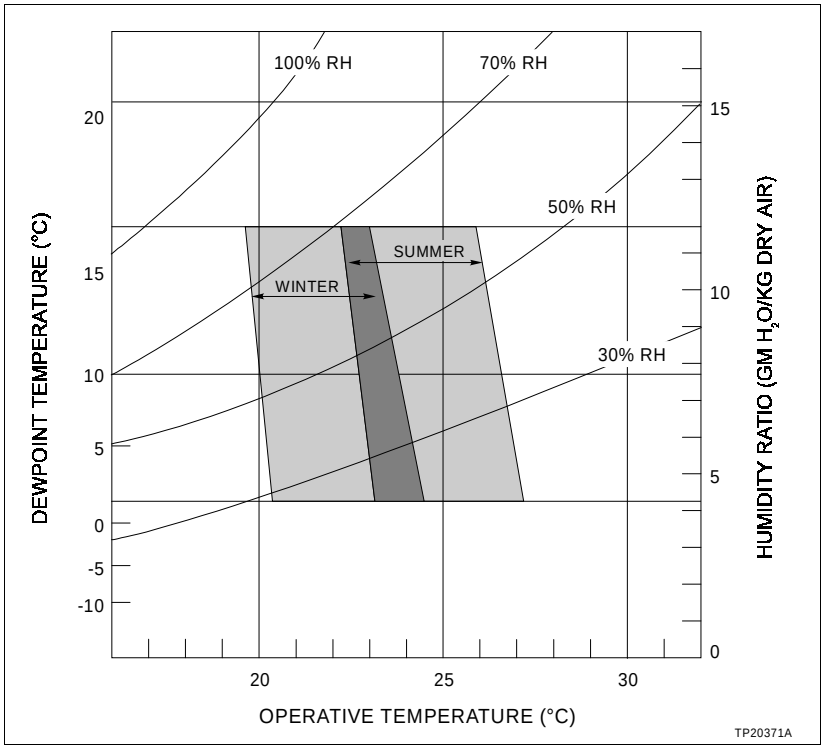

Figure 2-1. Temperature and Humidity Comfort Zone

Electrical Noise Immunity

Refer to ***Site Planning and Preparation*** for information on controlling electrical noise, the effects of lightning strikes and overvoltage transients.

Communications Equipment

Care should be taken when using transmitting type communication equipment near the work station. Keep all covers on the work station during normal operation. Only use transmitting type communication equipment at a distance of two meters (6.6 feet) or more from the work station. It is best to use communication equipment that does not generate RFI such as a wire telephone or intercom system.

Electrostatic Discharge

In addition to the electromagnetic, power, and radiated noise reducing techniques, there should be an effort to eliminate electrostatic discharge from the site. Electrostatic discharge causes static sensitive devices to fail prematurely. To prevent electrostatic discharge:

1. Use antistatic carpeting or other floor coverings in the control room.

2. Provide antistatic mats and wear a wrist strap connected to earth ground when working with internal components.

3. Always maintain a humidity level of 40 percent or greater.

TRANSPORTATION AND STORAGE ENVIRONMENT

The environmental requirements for the work station during transportation or storage differ from the operational requirements.

The Signature Series work station should remain in its original packaging for transportation and storage. Nonoperating environmental conditions apply during storage of less than 60 days and transportation. Storage environmental conditions apply during storage of more than 60 days. The nonoperating and storage environments are listed in Table 1-11.

Power supplies should be powered at least once a year for an hour or more. When operating equipment during the construction period, the operating environmental conditions apply. Protect the equipment from exposure to excessive dust during the construction period.

FIRE PROTECTION

Each installation site should have adequate fire protection. Fire protection must meet local fire and safety codes.

Usually, the Elsag Bailey system being installed at a site has been custom designed for the process control needs of that site. Therefore, additional fire protection may be desirable to protect the investment. Additionally, the loss of process data or other information (stored on electronic media) due to a fire can interrupt business and possibly cause a large economic loss.

If more information is needed about fire protection, refer to the American National Standards Institute/National Fire Protection Association Standard ANSI/NFPA No. 75, ***Protection of Electronic Computer/Data Processing Equipment*** or other applicable international fire codes.

The NFPA standard contains complete information on the design of fire protection systems for electronic equipment. Do not use dry chemical extinguishers. Dry chemical extinguishers will destroy printed circuit board traces.

SECTION 3 - WIRING CONSIDERATIONS

INTRODUCTION

This section explains access and connections for AC power wiring, communications wiring and grounding for the Signature Series work station. Detailed information on AC power distribution and system grounding can be found in:

- ***Site Planning and Preparation***
- ***Recommended Practice for Powering and Grounding Sensitive Electronic Equipment (IEEE Emerald Book)***, ANSI/IEEE 1100.
- ***Recommended Practice for Grounding of Industrial and Commercial Power Systems (IEEE Green Book)***, ANSI/IEEE 142.

Do not attempt to install any system or related equipment before consulting and understanding these documents.

AC POWER WIRING

The power wiring inside the Signature Series work station beam has an 8.4 square millimeter cross section (eight AWG) and is rated at 40 amps. To determine now many components can be connected to the same service, add the operating currents for each component. Table 1-9 lists these operating currents.

NOTES:

1. Include 1.1 amps for each optional lifting mechanism, even though it only applies when the drive motor is activated.

2. Table 1-9 lists the typical operating currents. To approximate the maximum values, multiply the typical values by 1.33.

Example: A proposed Signature Series work station array, powered by a 120 VAC service, consists of:

- Four IS42XX1000002200 main terminals with dual graphic outputs in base pedestal bays with optional lifting mechanisms for the work surfaces.

  $i_{max} = [(4 \times 3.00) + (4 \times 1.10)] \times 1.33 = 21.81$ amps

- Four IS42XC0000000000 auxiliary monitors on flying beams.

  $i_{max} = (4 \times 1.00) \times 1.33 = 5.32$ amps

- Four IS42XM1000002200 main terminals in base pedestal bays with optional lifting mechanisms for the work surfaces.

  $i_{max} = [(4 \times 3.10) + (4 \times 1.10)] \times 1.33 = 22.34$ amps

- One ISAUX11120 auxiliary panel bay with an optional lifting mechanism for the work surface.

  $i_{max} = (1 \times 1.10) \times 1.33 = 5.85$ amps

  NOTE: The operating current for the auxiliary panel used in this example does not include any customer-installed devices.

The total operating current for this array is:

$i_{max} = 21.81 + 5.32 + 22.34 + 5.85 = 55.32$ amps

This is over the 40 amp limit so two services are needed. It depends on the installation as to the most convenient and efficient combination of components supplied by each service. Each power entry panel (PEP) in the work station has a 12 amp circuit breaker and is a branch circuit off of the service. Figure 3-1 shows how the installation used in this example could be wired.

- Main monitor.
- Computer.
- Second lifting mechanism.
- Lower power supply.
- Second monitor.
- DAT drive.
- Customer-installed auxiliary panel instruments.

Access

Figures B-1, B-3 and B-5 in Appendix B, show physical footprints of the wiring access cutouts in the bottoms of the base pedestal and auxiliary panel.

Connections

The base pedestal of all main terminals contains a power entry panel (PEP) that routes AC power to the various components. It has a terminal block that accepts bare copper wire for 120/240 VAC power, an AC line filter/surge suppressor, a 12 amp circuit breaker for overcurrent protection and ten IEC 320 outlets for power distribution.

The ten outlets can be used for:

- Main lifting mechanism motor.
- Upper power supply (main monitor).

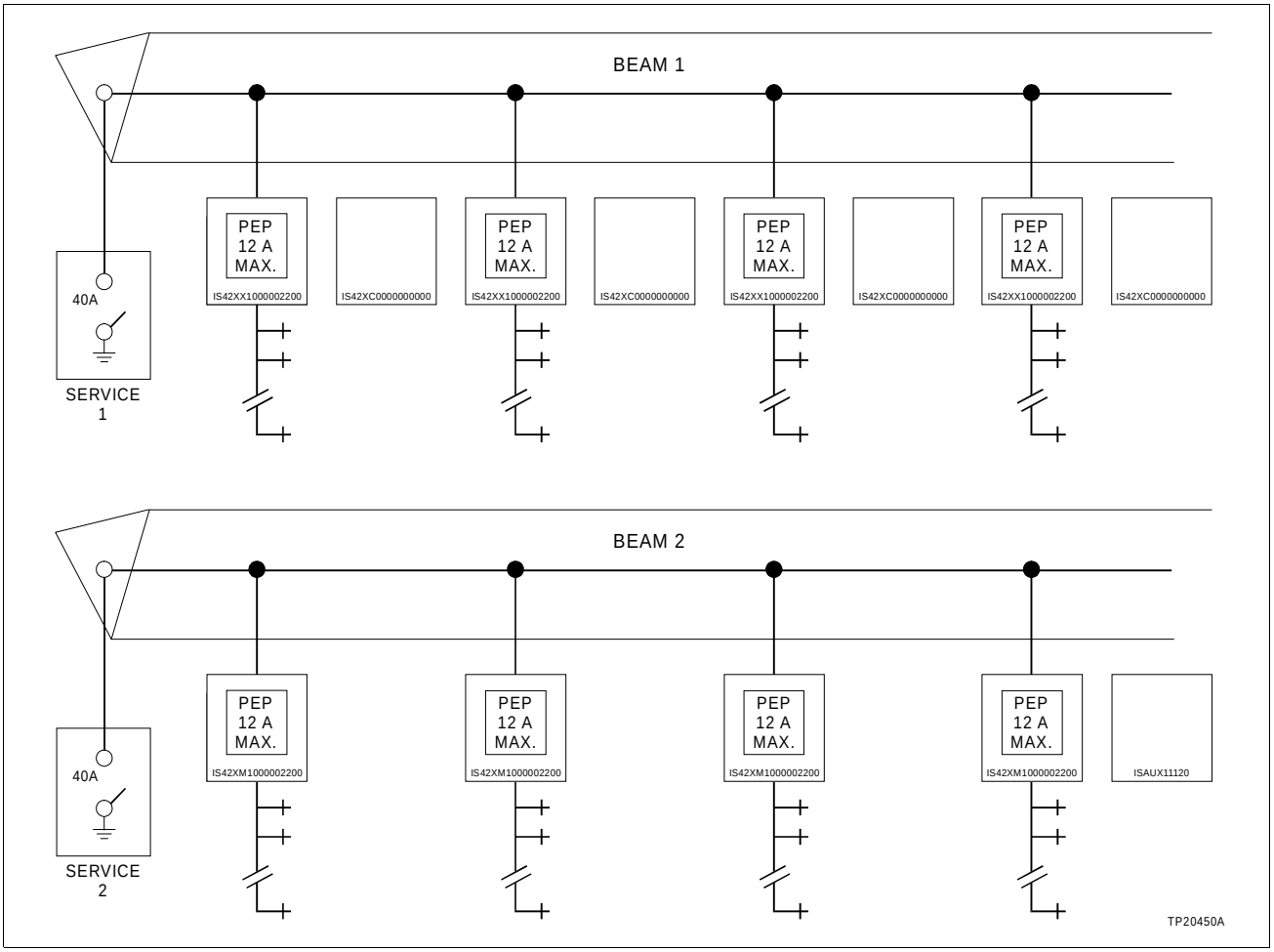

Figure 3-1. AC Power Wiring Example

COMMUNICATIONS WIRING

The Signature Series work station supports INFI-NET and Ethernet communications. The communications wiring is standard in all beams.

Access

Figures B-1, B-3 and B-5 in Appendix B, show physical footprints of the wiring access cutouts in the bottoms of the base pedestal and auxiliary panel.

Connections

The base pedestal of all main terminals contains a network interface unit (NIU). It is the fundamental link to the INFI-NET system.

GROUNDING

The power entry panel provides grounding of the AC input to the work station chassis.

This instruction does not discuss the details of grounding systems. Good grounding practices prevent problems and reduce system downtime. A complete and properly grounded electrical system is vital for personnel safety, equipment protection and normal process system operation. Digital process control systems require a single point grounding system that has two paths: one path for an alternating current ground (safety ground), and one path for a direct current ground (system common).

For detailed information on system grounding, refer to ***Site Planning and Preparation***.

APPENDIX A - FOOTPRINT CUTOUTS

INTRODUCTION

Figures A-1 and A-2 are footprint cutouts of various Signature Series work station components. Figure A-1 has a scale of one millimeter equals 50 millimeters, and Figure A-2 has a scale of ¼-inch equals one foot. These drawings are intended to help in control room layout and design.

To use the cutouts, make copies and cut out the various components and place them on grid paper of the proper scale. This will insure the most effective use of the available floor space.

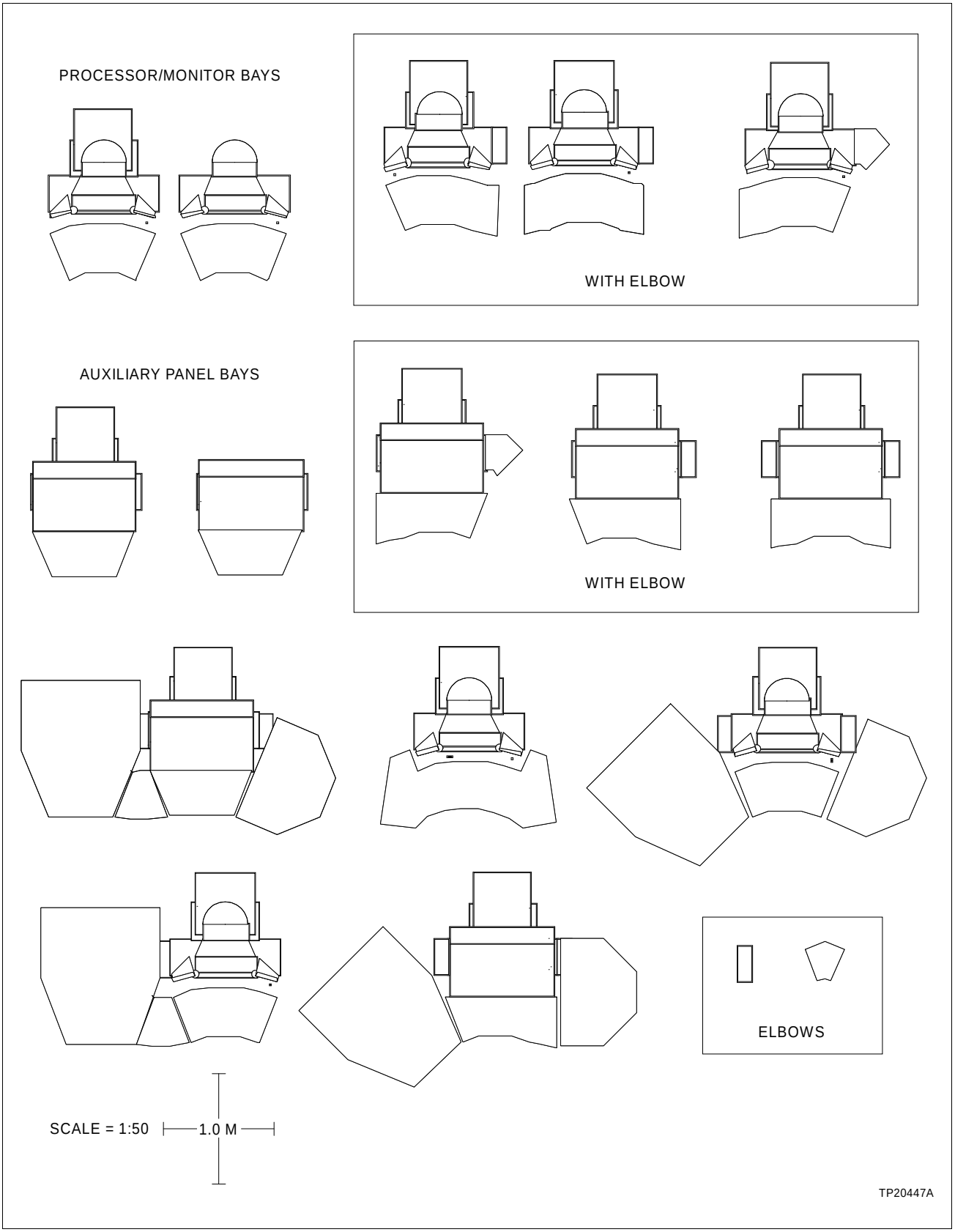

Figure A-1. Footprint Cutouts (1 mm = 50 mm)

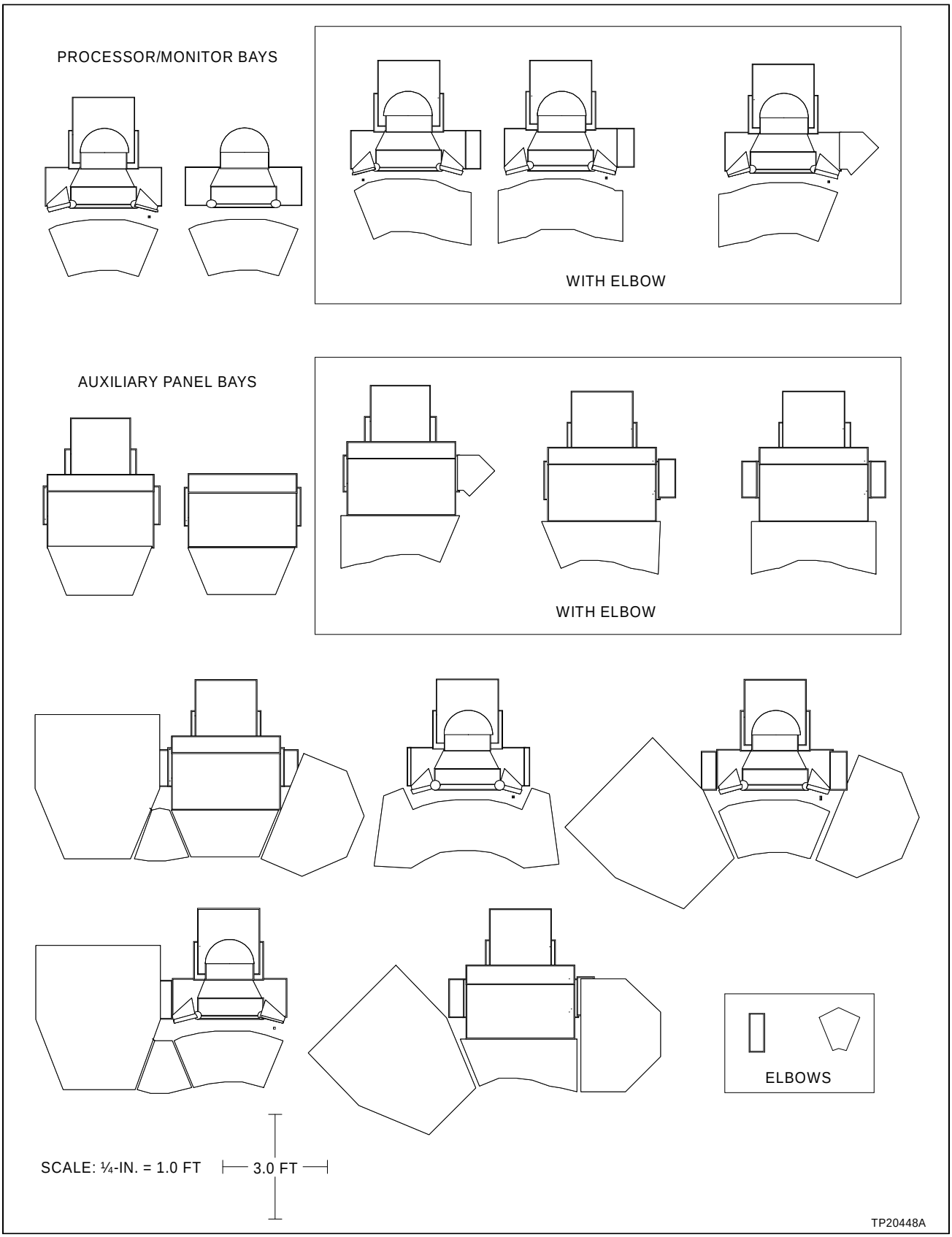

Figure A-2. Footprint Cutouts (¼-in. = 1 ft)

APPENDIX B - INSTALLATION DRAWINGS

INTRODUCTION

Figure B-1 is an installation drawing of a Signature Series stand-alone work station. Figure B-2 is an installation drawing of a typical work station array. Figure B-3 shows the size and location of the wiring access cutouts in the base of the work station for the typical array. Figure B-4 is an example of a typical anchoring scheme for a work station bolted to the floor beneath a raised false floor. Figure B-5 is an installation drawing for the auxiliary panel and includes the size and location of the wiring access cutouts in the base of the auxiliary panel. Figure B-6 shows the dimensions of the allowable cutout area in the auxiliary panel.

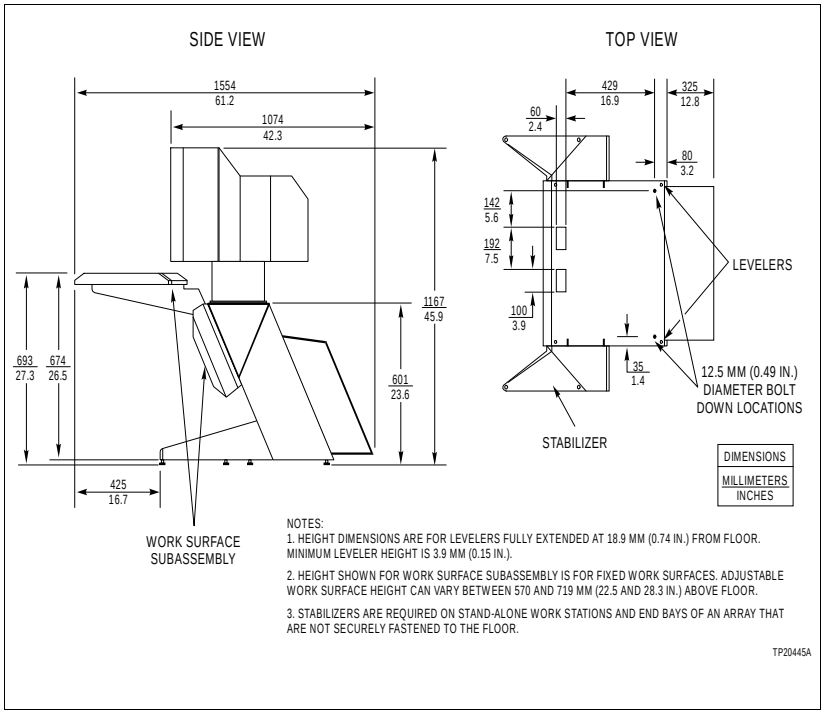

Figure B-1. Installation Drawing for Stand-Alone Work Station

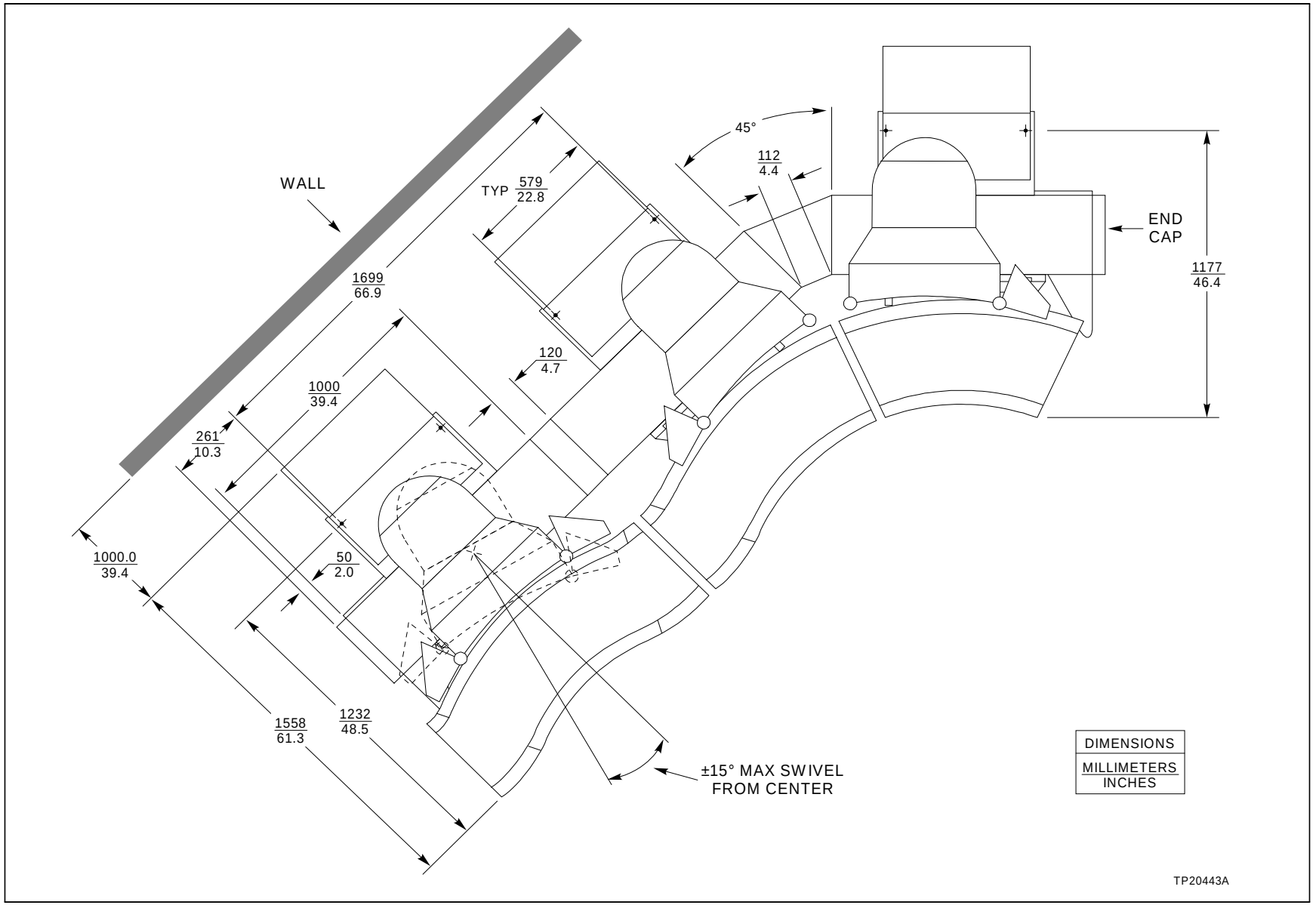

Figure B-2. Installation Drawing for Typical Work Station Array

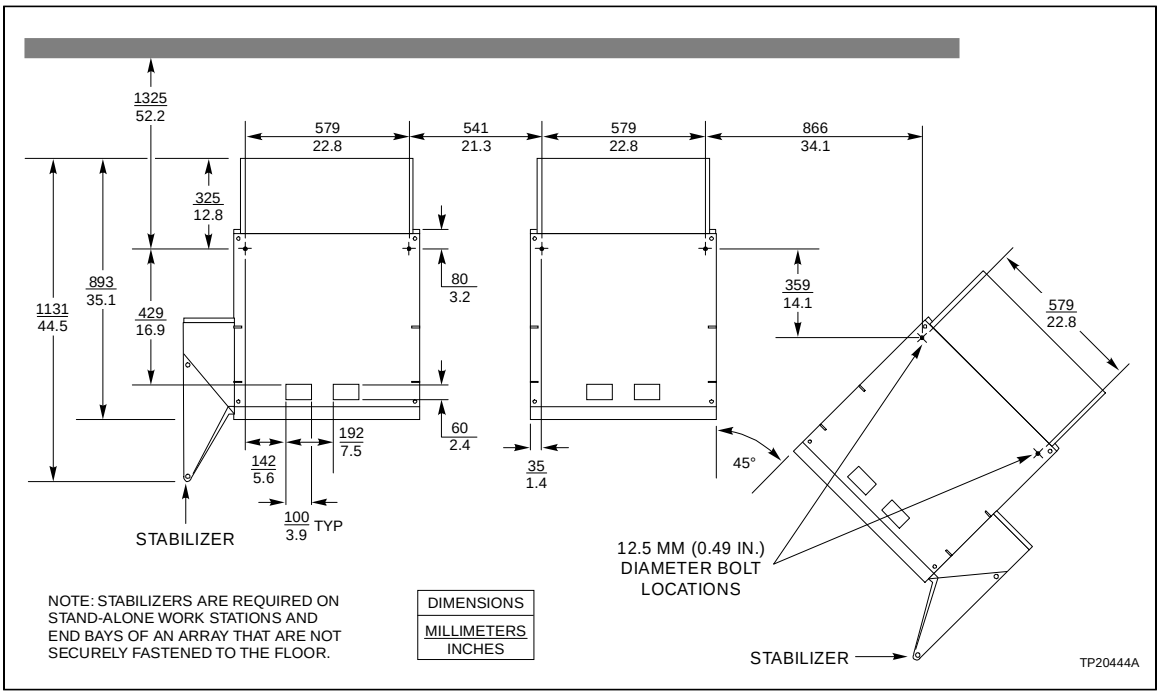

Figure B-3. Wiring Access and Bolt Locations

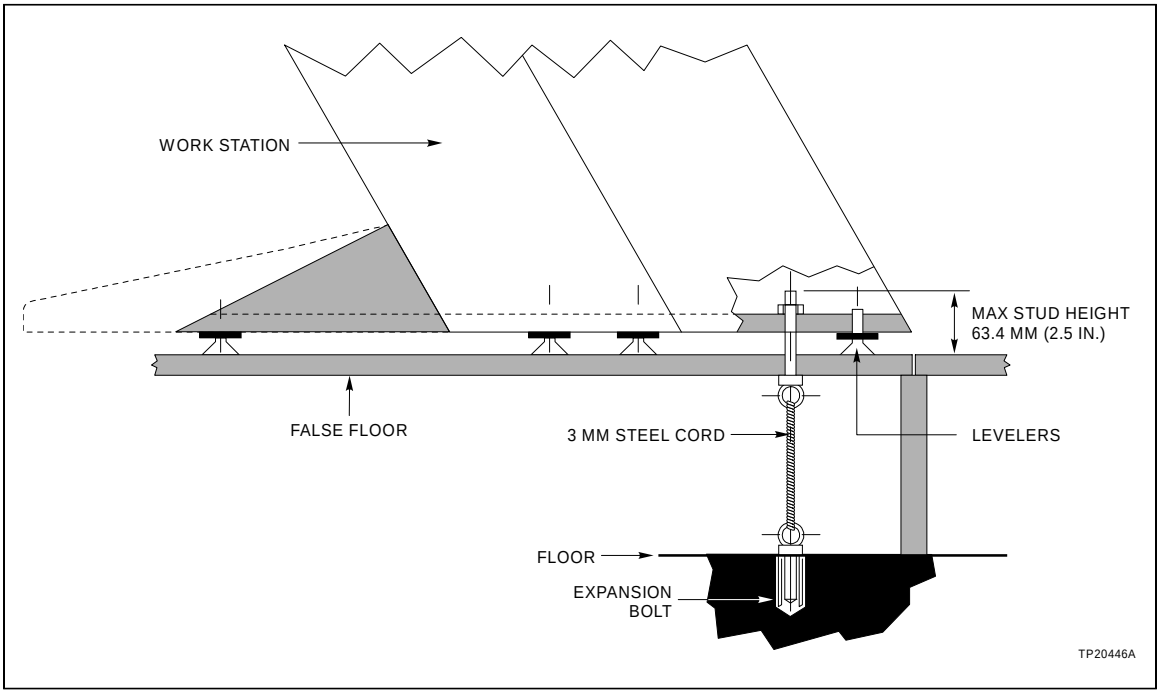

Figure B-4. Typical Anchoring Scheme

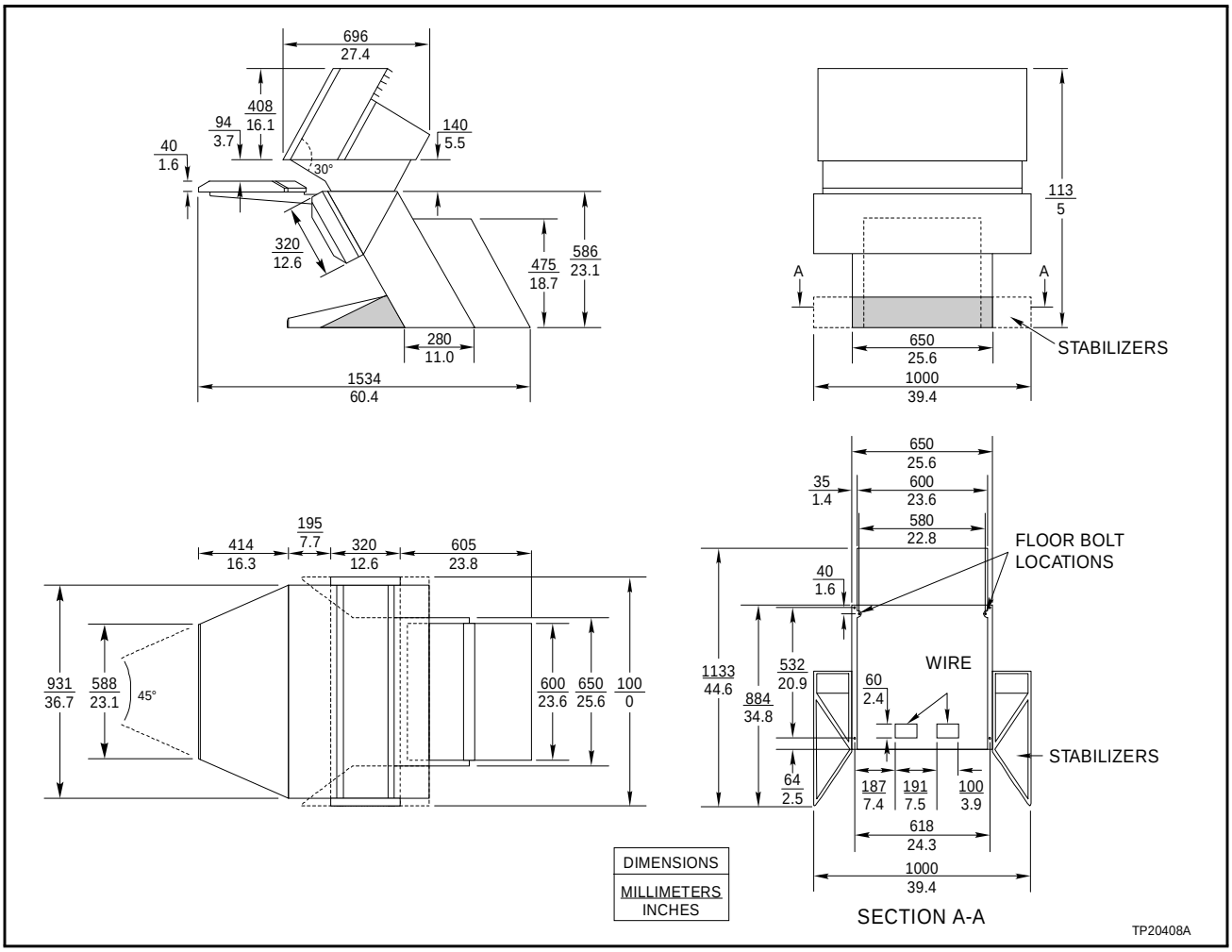

Figure B-5. Installation Drawing for Auxiliary Panel

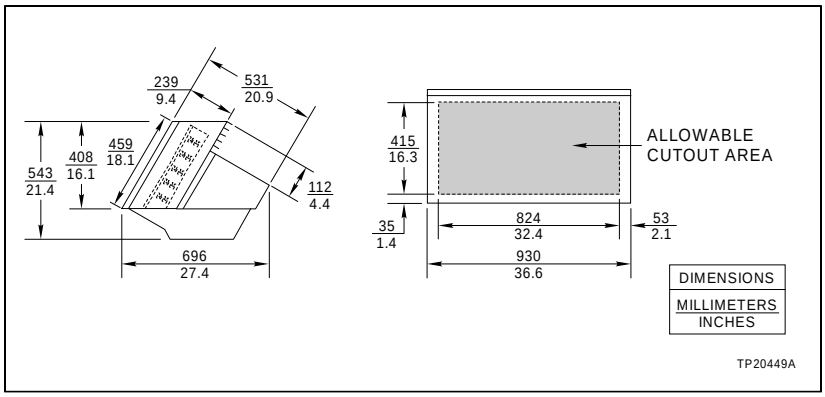

Figure B-6. Auxiliary Panel Cutout Area

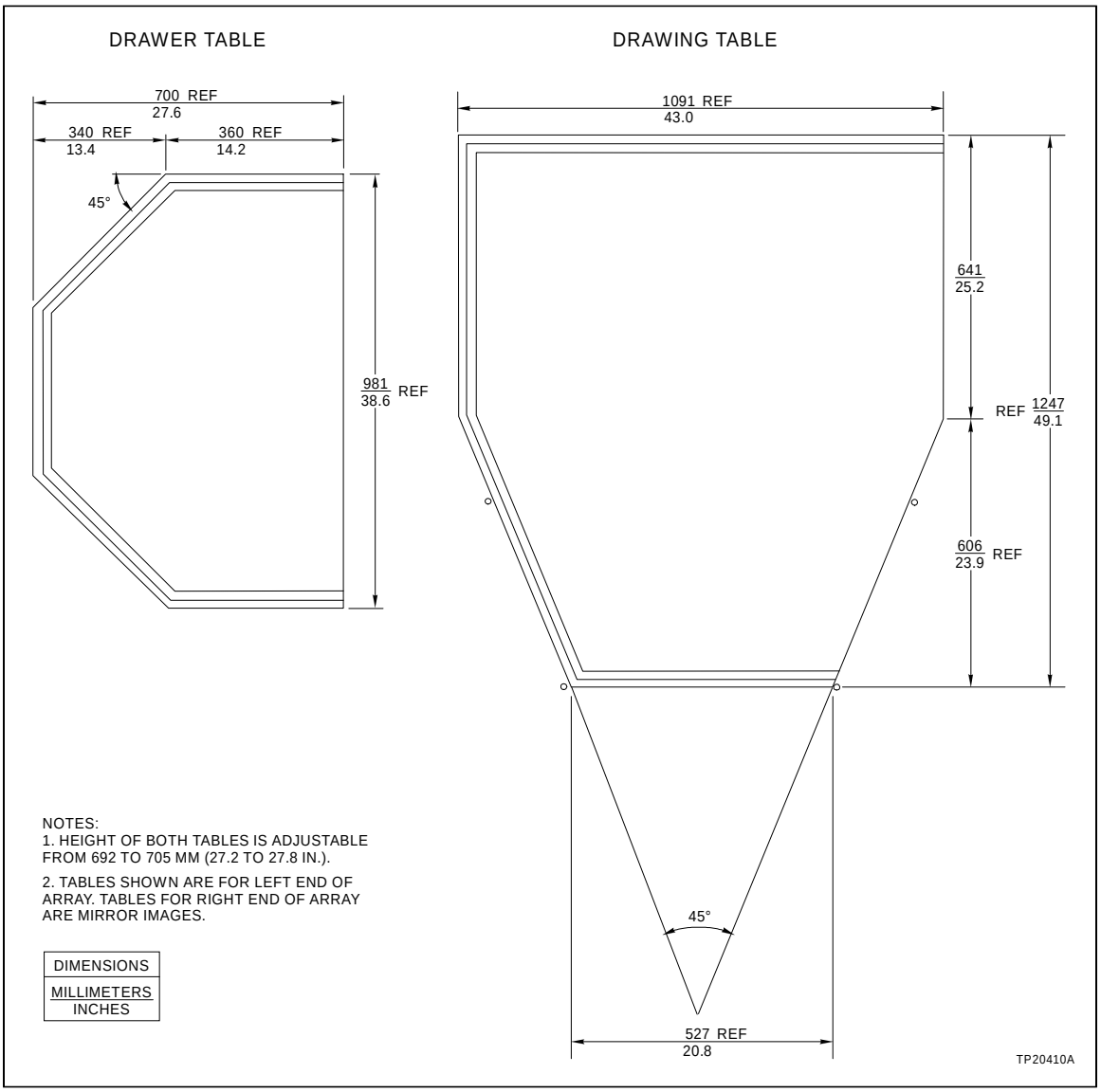

Figure B-7. Drawer and Drawing Table Dimensions

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