

Installation Engineering Handbook 269
Western Electric
Northern Illinois Works

Section

900

8-7-81

3 ESS GUIDEBOOK
(ED-3H-200-10)

PREPARED BY
NO. 3 ESS PRODUCT
ENGINEERING CONTROL CENTER

SECTION A BT04
WESTERN ELECTRIC
PRINTED IN U.S.A.

AT&T RATING INFORMATION
Provisional
WE RATING INFORMATION
Provisional

NOTICE - NOT FOR USE OR DISCLOSURE OUTSIDE THE
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ISSUE NOTES

ISSUE DATE				
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* This document has been changed from ED-3H200-10, Issue 3,
to Handbook 269, Section 900.

FORWARD

The No. 3 Electronic Switching System (ESS) provides modern telephone services for small communities. The system will economically serve from a few hundred lines to a maximum of around 4,500 lines depending upon traffic. As a stored program controlled machine, the No. 3 ESS is capable of offering modern service and maintenance features.

The No. 3 ESS design lends itself to a short order to service interval while also simplifying telephone company engineering and growth procedures. The extensive use of new devices and technology resulted in a system more compact than any of its predecessors. This reduction in size permits the entire switching machine to be assembled, interconnected, and system tested with the generic program and office translations at a Western Electric factory. The attachment of unitizing hardware to the assembled No. 3 ESS lineups permits the entire machine to be shipped and handled as a single unit. Otherwise, it would be necessary to disconnect all interframe wiring, remove cable racking, and otherwise disassemble the machine to permit conventional shipment as individual frames.

This guidebook describes in detail some of the methods which may be used in the installation of a unitized No. 3 ESS system including Hot Slides. It is hoped that a thorough description of these methods will serve as a guide to the considerations that must be taken when any method of unitized No. 3 ESS installation is used.

This guidebook is to be used only as an aid and in no way constitutes work to be done. The best method of unitized No. 3 ESS installation is only dependent upon the job site conditions.

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1. GENERAL

The No. 3 ESS is a stored program controlled machine designed to provide modern electronic switching services for the small community dial offices. The machine is very compact in design through the incorporation of the latest technology. In fact, three equipment lineups comprise the ultimate sized machine. The machine is growable in increments of approximately 300 customer lines to a maximum capacity of around 4,500 customer lines.

The lineup framework for No. 3 ESS is similar to other ESS machines. The frames are single sided, 7 feet high and in width

which are multiples of 2-foot 2-inch bays. The frames in the control complex lineup are 18 inches in depth with all other frames being 12 inches. Lines and trunks are terminated on a low profile combined distributing frame.

The No. 3 ESS equipment frames are arranged in a fixed floor plan configuration as shown in Figure 1. A typical initial office serves around 1,500 customer lines and consists of five network frames in two lineups. This office may consist of network frames 1 to 5 or network frames 1 to 3, 8 and 9 with network frames 4 to 7 omitted. The ten frame designs common to every No. 3 ESS machine are as follows:

<u>FRAME</u>	<u>MNEMONIC</u>	<u>QUANTITY</u>	<u>J-CODE</u>
Processor	PROC	1	J1C058B-1
Maintenance	MTCE	1	J1C060A-1
Network	NET	1-15	J3H001B-1
Control	CONT	1-2	J3H001C-1
Test	TEST	1	J3H001D-1
Miscellaneous	M	1-7	J3H001E-1
Miscellaneous Power	MP	1	J86824A-1
Power	PWR	1	J86872A-1
Supplementary Power	SUPL PWR	1	J86872A-1
Combined Distributing	CDF	1-2*	ED-97797-70

* Maximum of 1 shipped with a unitized system. The second CDF is loose shipped.

The reduction of frame options inherent in the design together with the fixed floor plan permits extensive standardization of cabling and wiring.

As shown in Figure 1, a No. 3 ESS office may have two toll transmission equipment lineups. This equipment will normally be mounted on unequal flange duct type framework, 7 feet high with 2-foot 2-inch bays.

Each No. 3 ESS machine is fully assembled and wired at a Western Electric factory per the engineered office configuration. The machine is then tested including an operational verification with the generic program and office translations. This factory assembled equipment does not include the toll transmission equipment, the reserve battery plant, or the second CDF module.

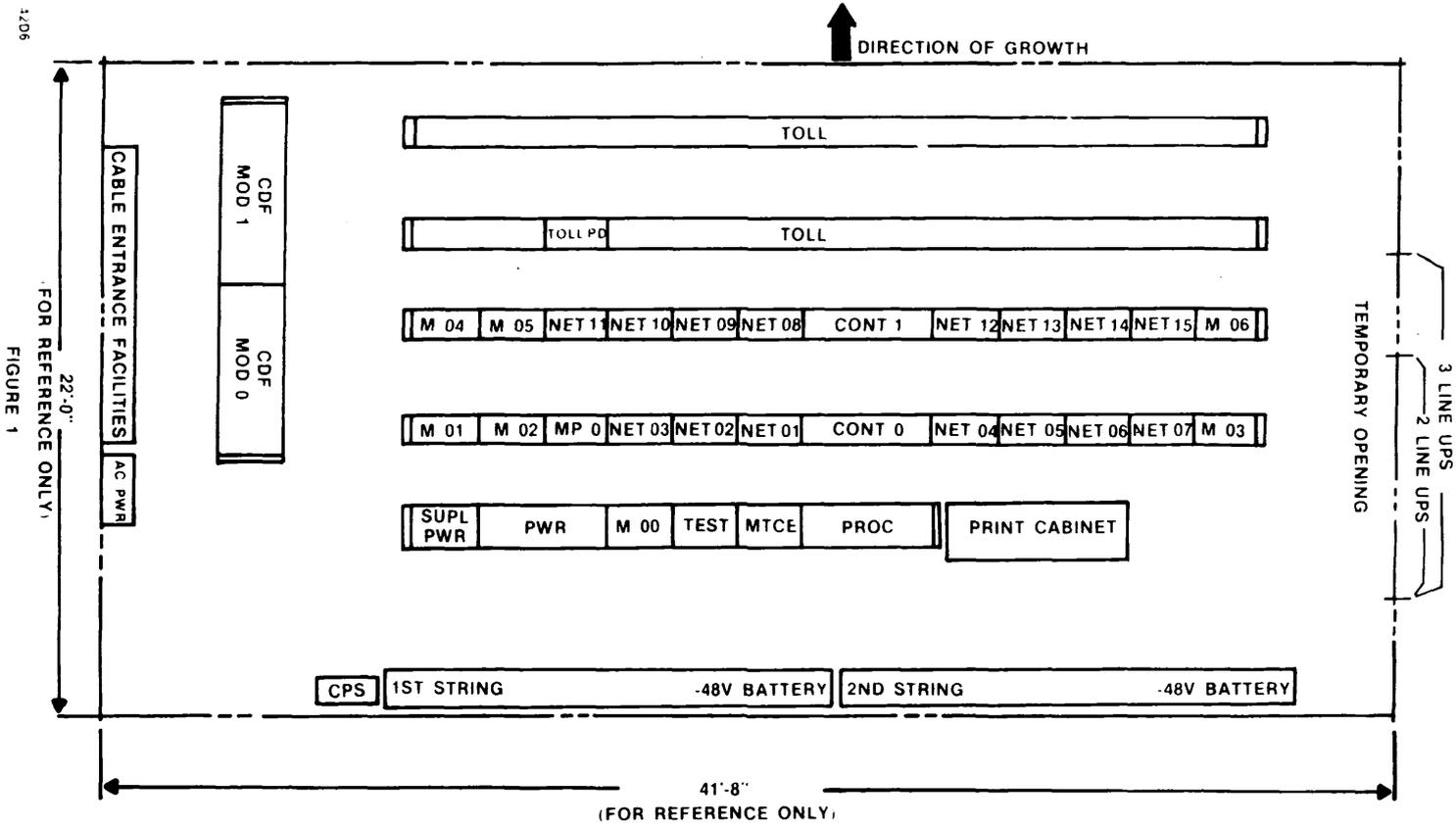
Shipment and installation of the factory assembled No. 3 ESS as a single unit eliminates the need to reassemble and wire the machine in the field. Unitization, the addition of bracing to the assembled equipment, allows the machine to be handled as a single unit. Special transportation,

handling and building details are required to facilitate the unitized equipment package. Alternatively, the factory tested equipment would be disassembled and shipped as individual frames for installation in the conventional manner.

The unitization of a No. 3 ESS machine is facilitated by the addition of temporary shipping hardware to the lineup framework. This hardware provides the added support required to allow the No. 3 ESS machine to be shipped and handled as a single entity. After the unitized equipment is received at the office site and positioned in the building, the unitizing hardware is removed and returned to the factory for reuse in subsequent unitized No. 3 ESS shipments.

The factory assembled and unitized equipment is shipped directly to the office site as an exclusive use load. A crane may be used to off load the unitized equipment from the flat bed transporter at the office building. Alternatively arrangements may be made by transportation for the use of a special enclosed truck which eliminates the need for a crane on certain 2 line-up No. 3 ESSs. Following entry through a temporary

No. 3 ESS Floor Plan



1206

FOR REFERENCE ONLY
FIGURE 1

41'-8"
(FOR REFERENCE ONLY)

building opening and final equipment positioning, the unitizing hardware is removed and the frames anchored to the floor. The installed equipment is now identical to a conventional installation of individual frames.

FACTORY TRANSPORTATION

Arrange for transportation of the unitized equipment to the office site.

TELCo BUILDING ENGINEERING

Provide adequate access for unitized system and its installation and arrange for removal and replacement of temporary building opening.

REGIONAL TRANSPORTATION

If specially requested or local practice, the regional transportation organization will, in a billable basis, coordinate local transportation requirements and assist in establishing a contract with the rigger (preferably through competitive bidding) to unload equipment.

INSTALLATION

Prepare office to receive unitized equipment (floor layout, etc.), oversee off-loading and positioning operation, and remove unitization hardware.

The installation organization is also responsible in general for coordinating the overall activities of the various organizations and contractors during the unloading exercise.

II. UNITIZATION HARDWARE

The No. 3 ESS unitization hardware consists basically of the following five components. Where applicable, the hardware is sectionalized to accommodate the varying sizes of No. 3 ESS as well as for ease of handling.

FRAME BASE SUPPORT MEMBERS

The base of each equipment lineup is sandwiched between steel channels which are attached with threaded rods and angle brackets as shown in Figure 2.

CROSS AISLE SUPPORT MEMBERS

The equipment lineups are interconnected both at the top and bottom with cross aisle supports as shown in Figure 3.

LONGITUDINAL SUPPORT MEMBERS

Longitudinal support members add support to the top of the equipment lineups parallel to the lineup.

FILLER FRAMES

Empty frames may be used as fillers to support the cover and unitization hardware.

WEBBING STRAPS

Nylon webbing straps are added as cross bracing supports after the unitization steel is applied giving rigidity to the assembled equipment.

SHIPPING COVER

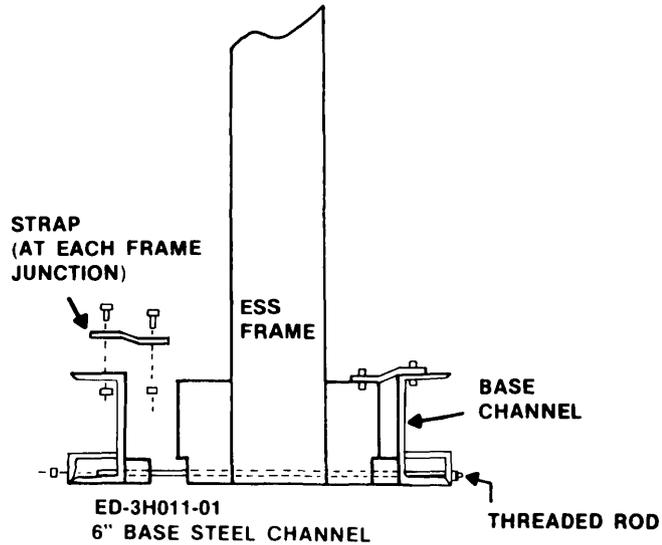
A sectionalized cover is placed over the unitized equipment to provide environmental and vandal protection during shipment and handling. A wood framework attached to the top of the No. 3 ESS provides support for the cover. (This cover may be omitted if No. 3 ESS is shipped in an enclosed truck.)

A No. 3 ESS office with over 10 network frames requires two distributing frame modules for the network appearances. The unitization design facilitates shipment and thus factory assembly, wiring and test of the first distributing frame module. The second module, if required for either additional network appearances or toll terminations, is shipped directly to site as an individual frame. Figure 4 shows how the first distributing frame module is attached to the equipment lineups through extensions to the base steel support members for shipment to site. The telephone company may optionally elect not to order the standard distributing frame, ED-97797-70, resulting in a unitized machine which includes only the equipment lineups.

III. PRESHIP PREPARATION

The on-site installation interval for unitized No. 3 ESS has been greatly reduced through the factory wiring and testing effort. In order to insure an orderly installation and prevent costly delays during the unloading exercise, it is essential that adequate building site access be provided and certain installation preship items be completed. In addition, there are several installation items which could be completed prior to arrival of the unitized equipment that will help induce an orderly installation.

Unitization Steel Base Support Members



THE BASE STEEL CHANNEL MEMBERS ARE SECTIONALIZED TO ACCOMMODATE THE VARYING LENGTHS OF FRAMEWORK LINEUPS, SECTION SIZES - 7'7", 6'6" AND 3'3"

FIGURE 2

Unitization Steel Cross Aisle Support Members

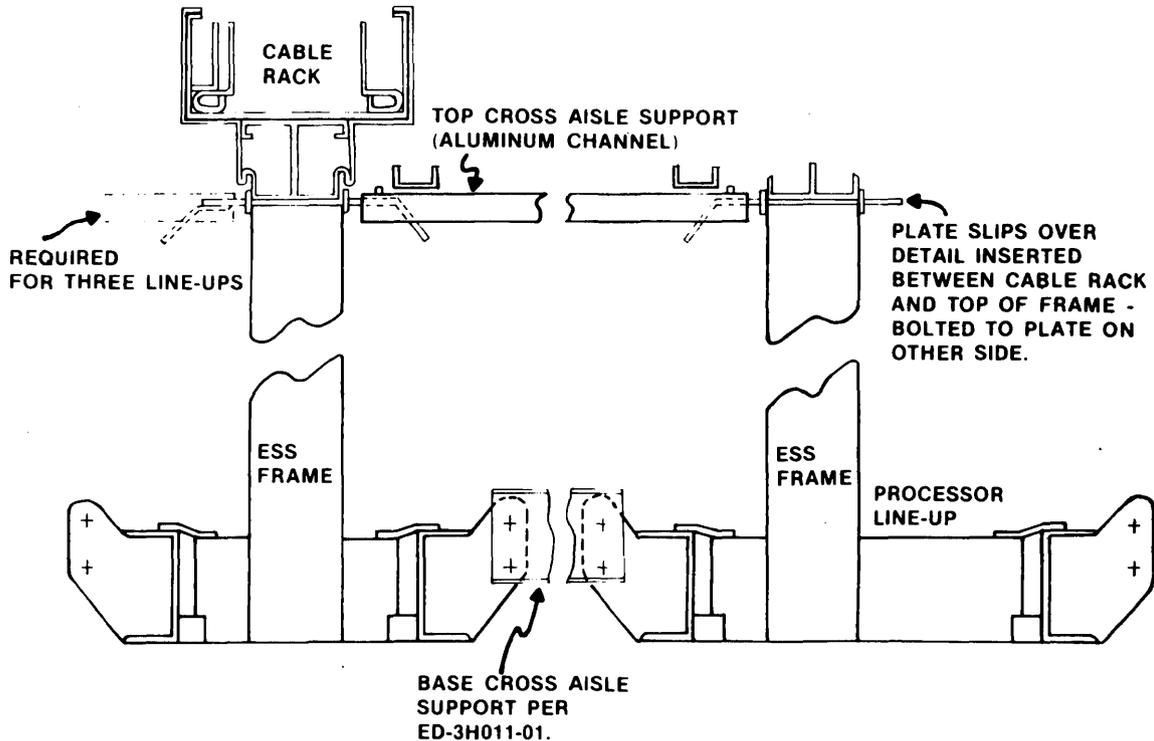


FIGURE 3

A. INSTALLATION PRESHIP PREPARATION

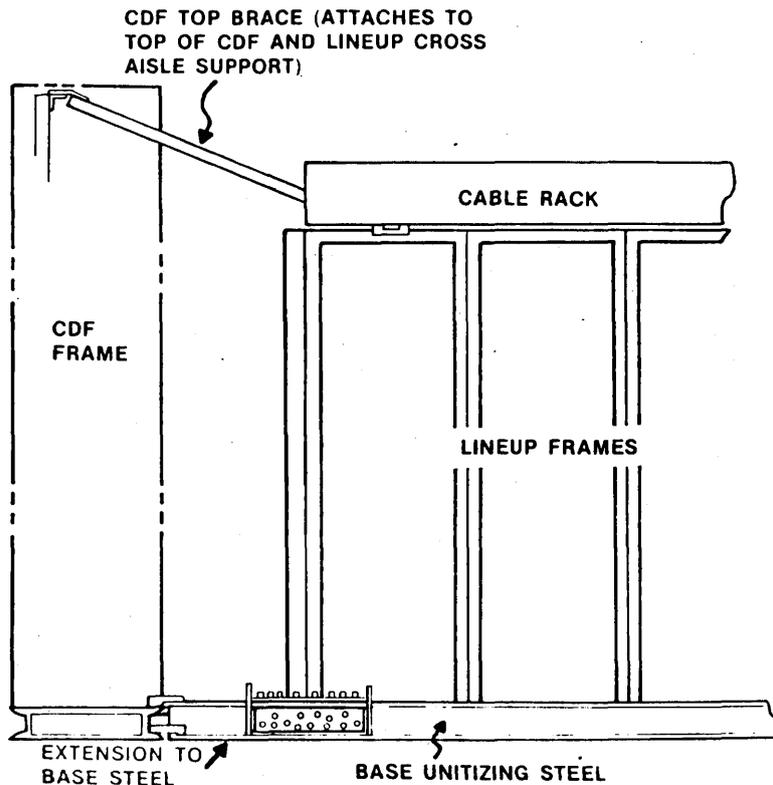
The Western Electric Installation Supervisor is responsible for the following:

1. Rigging - Several options are available in the rigging of a unitized No. 3 ESS. If the telephone company elects to make its own rigging arrangements, the installation supervisor is responsible for the coordination of the overall installation effort. Normally Western Electric is requested to arrange for rigging; in that case the installation supervisor must determine whether a rigging contractor is required and what work operations the contractor will perform. If a rigging contractor is required, the regional transportation organization must be requested to obtain a rigging contract on a billable basis two months in advance of the scheduled ship date. This contractor should be advised of the approximate value of the No. 3 ESS so that adequate insurance can be purchased. A rigging crew of four persons plus a crane operator if needed should be able to perform all rigging operations in under 4 hours. (Refer to Section IV,B for rigging requirements.)
2. Site Preparation - Insure that the site has been adequately prepared to receive the unitized No. 3 ESS. The site should have adequate driveways and parking area to allow for the access

of the crane if used, and the truck carrying the No. 3 ESS. All preparation work items associated with either the building structure or the site must be acquired through the telephone company. Additional preparation must be completed if the installation is a hot slide. Refer to Section VIII

3. Installation Equipment - Inventory all installation tools and test equipment required to install the unitized No. 3 ESS. Special attention should be given to the TS-529 Unitized Framework Tool Set, TS-527 Electric Impact Wrench Tool Set, the R-4758 Lifting Sling Assembly, and the TS-808 ESS dolly trucks which are ordered from Installation Tool Control. The rigger is expected to supply jacks, rollers, and miscellaneous other tools. This should also be checked. Air pallets may be used instead of rollers. If air pallets are used, additional equipment may be required. Contact the P.E.C.C. for additional information concerning air pallets. Additional tools will be required if the installation is a hot slide. Refer to Section VII.
4. Floor Layout - The floor must be marked for the positioning of the unitized equipment and the distributing frame module. Additional floor preparation must be completed if the installation is a hot slide. Refer to Section XII.

CDF Attachment FIGURE 4



5. Frame Anchors - The floor anchors for the unitized equipment must be drilled and installed per ED-1A210-20 and the office floor plan. The distributing frame anchors may optionally be installed after the equipment has been received.
6. Leveling Blocks - The frame leveling blocks must be measured, assembled, and marked for position. These blocks will be inserted under the frames after the equipment has been positioned. Temporary leveling blocks are also required under the CDF before the bolts are removed which disconnect the CDF.
7. Clear Floor Area - The floor area from the point where the unitized equipment enters the building to its final position on the floor must be cleared. The area should be sufficient for maneuverability of the system and the personnel. Also, the floor area must be cleared to accommodate the distributing frame which ships in a relocated position attached to the equipment lineups (see Figure 5). Should a building interference exist, the distributing frame could be detached prior to final equipment positioning.

NOTE: Detaching the CDF requires that leveling blocks be placed. See above.

8. Return Unitizing Hardware - Arrangements must be made to return all the unitization hardware. Regional transportation should be contacted to arrange for expedited shipment to insure that the unitization hardware arrives at the factory within 2 weeks.
9. Drawings - Assemble all job, standard drawings and program documents required for the office. All standard drawings and program documents should be shipped directly to the job site.

B. POWER AND TOLL

The unitized No. 3 ESS machine consists only of the switching equipment lineups and the first module of distributing frame. Once the machine is received on site and is in place, connection of power lies in the critical path to install the office. Following is a list of installation items basically associated with power which could be completed prior to receipt of the unitized machine. Completion of these items will insure an orderly installation and permit an earlier start of the testing effort.

BATTERY STAND - Erect the battery stand for the -48 volt reserve power plant.

BATTERIES - Install the office batteries and intercell connectors. Pre-charge the batteries with a temporary power supply.

CDF Shipping Location

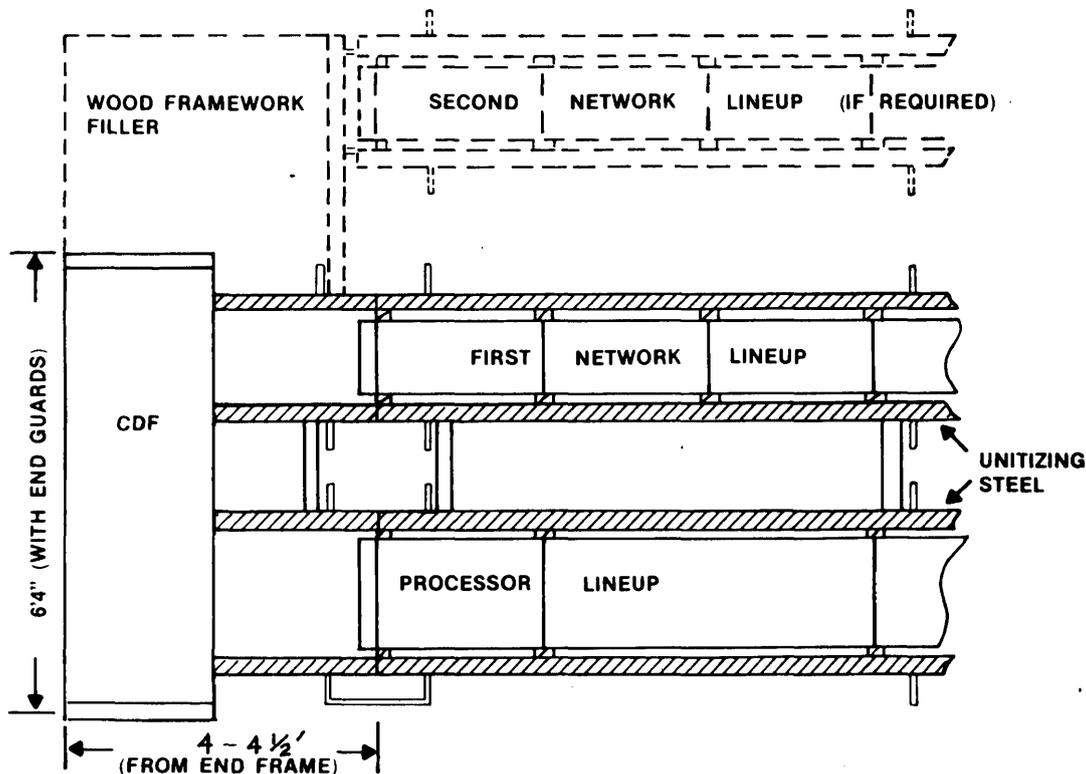


FIGURE 5

Advance installation of the battery stand and batteries also eliminates congestion which would be encountered during uncrating and installation of this equipment with the switching equipment received and in place.

A.C. POWER - Install conduit and wiring from house service panel to pull boxes above switching equipment. The conduit will be completed and the wiring terminated after the unitized equipment has been received and positioned.

BATTERY CABLES - Inventory cable rack and power cables for battery charge and discharge feeders. This material is required immediately following the installation start.

A toll equipment order may also be associated with the No. 3 ESS order. This toll

equipment is shipped directly to site as individual frames. In order to have a timely installation, it may be necessary for the toll equipment installation to start in advance of the No. 3 ESS installation start. A second distributing frame module will also be typically associated with the toll order.

C. BUILDING AND SITE ACCESS

The unitized No. 3 ESS machine is delivered directly to the office site on a flat bed or enclosed trailer. If installation is to be a hot slide, the system may be in a KS-type module. Normally the equipment enters the building through a temporary opening left in the wall, typically opposite the outside plant cables entrance side of the building.

The operating company is responsible for providing adequate site access to maneuver the transporter and other equipment into

Recommended Locations For Crane and Transporter

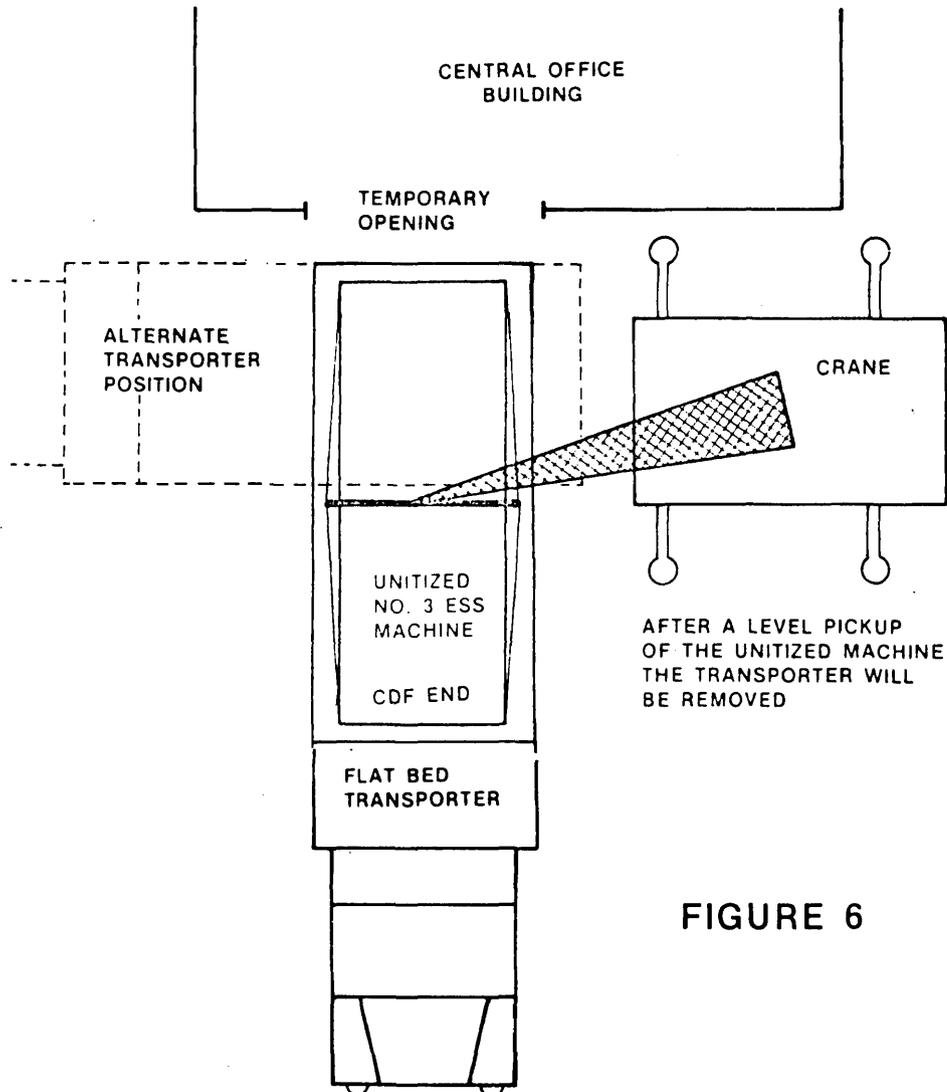


FIGURE 6

position for the unloading exercise. The transportation organization should be contacted if there is any question concerning transported size and maneuverability. It may be necessary to widen the driveway or site entrance to accommodate the transporter. The access driveways must also be adequate to support a total transporter load of 80,000 pounds. Where the surface is questionable, appropriate fill and compaction is recommended. Figure 6 shows typical approximate dimensions and requirements for building access.

A two-lineup unitized equipment arrangement is nominally 9 feet high and 6 feet 6 inches wide with the unitizing hardware attached. With the distributing frame attached, length will vary from nominally 23 feet to a maximum of 34 feet. A minimum 8-foot wide by 10-foot high opening must be provided in the office building to allow for entry and give access and maneuverability for final positioning of the unitized machine.

The three-lineup unitized equipment arrangement is wider than the two-lineup arrangement (nominally 10 feet) and will typically include a full 13-bay second lineup resulting in a nominal overall length of 34 feet. A minimum 12-foot wide by 10-foot high temporary opening in the building is required to receive the three-lineup arrangement.

The temporary covering for the building opening should be readily removable to prevent delays in off-loading the equipment and resealing the building. Also, a 10-foot ceiling clearance from the bottom of the building opening must be maintained in the area from where the unitized equipment enters the building to its position on the floor. The operating company, through the building contractor, is responsible to assure that these conditions are met.

IV. SHIPMENT RECEIVAL AND OFF-LOADING

The unitized No. 3 ESS machine is delivered to the site as an exclusive use load on a flatbed or enclosed trailer. Chain binders are used to secure the equipment to the trailer bed. If a flatbed trailer is used, two covers, a formed and sectionalized cover and a one-piece tarp are used for weather protection.

A. EQUIPMENT TRANSPORTATION

Typically, the unitized equipment will be transported to site and placed in the

building structure within 1 week. In order to avoid demurrage transportation charges or nonproductive rigging charges, the site unloading arrangements must be closely coordinated with the shipment. The following organizations should be contacted for the shipping progress and expected delivery time.

OKLAHOMA CITY WORKS

Resident Transportation Supervisor - OC
Department 961
CORNET 8-359-3121
(405) 781-3121

The job supervisor is responsible to follow the progress of the shipment and keep involved organizations informed.

OFF-LOADING AND POSITIONING REQUIREMENTS

The rigging contractor if used should be made responsible for all handling of the equipment as a unitized package during the unloading exercise. This includes off-loading from the transporter, moving into the office building and final positioning on the floor. In general, the following may be required for the rigging operation.

UNLOADING EXERCISE

- | | |
|---------------|---|
| Crane | 1 Capacity is dependent on weight of unitized equipment and positioning for the unloading exercise. Refer to Table A for estimated equipment weight. Actual equipment weight and estimated center of gravity will be marked on unitized system cover. |
| Cribbing | - To support the system before it is placed on rollers or air pallets may be required. Use double 2.4.30-inch for a hot slide. |
| Lifting Sling | - Cables and spreader bar to provide a single attachment point for the crane operation. This sling should be ordered as an R-4758 tool and provided by Western Electric through Regional Tool Control. |

TABLE A
TWO-LINEUP CONFIGURATION

<u>No. of Bays (First Switching Network Lineup)</u>	<u>Length of Unitized Equipment</u>	<u>Estimated Weight of Unitized Equipment</u>
8 or less	21'6"	13,000 lbs.
9	23'8"	14,000 lbs.
10	25'10"	15,000 lbs.
11	28'0"	16,000 lbs.
12	30'2"	17,000 lbs.
13	32'4"	18,000 lbs.

THREE-LINEUP CONFIGURATION

<u>No. of Bays (First Switching Network Lineup)</u>	<u>Length of Unitized Equipment</u>	<u>Estimated Weight of Unitized Equipment</u>
4-8	32'4"	22 - 28,000 lbs.

EQUIPMENT POSITIONING

- Positioning Devicer - Selected positioning device for equipment positioning, typically either wood or metal rollers, machinery rollers or air pallets. Air pallets must be used for a hot slide.
- Cable/Winch - May be required to pull equipment into position. Do not use electric winch for a hot slide.
- Pulley(s) - May be required if winch is not positioned to pull equipment directly into the building.
- Machinery Jacks - Minimum of four 10-ton required to raise and lower equipment for insertion of rolling devices, etc. Single cylinder offset toe hydraulic should not be used. Do not use machinery jacks with a hot slide.
- Hydraulic Jacks - Minimum of two 10-ton toe jacks required to raise and lower the system.

Blocking

- To support system while frame leveling blocks are being inserted. (Double 2x4x30-inch)
- Prior to delivery of the unitized equipment, the installation job supervisor should visit the office site. A PECC or regional installation engineer can provide assistance if the installation job supervisor is not familiar with rigging procedures. Procedures and precautions associated with lifting should be fully reviewed.

C. EQUIPMENT RECEIVAL

The Western Electric Installation Organization is responsible for receipt of the equipment. Prior to off-loading, the equipment should be inspected for any apparent damage which may have been incurred in transit. Special consideration should be given to any tears or rips in the protective coverings which would expose the equipment to rain and dust. The outer covering, if used, should be removed and returned to the WE factory. The inner sectionalized protective covering will be left on until the equipment has been placed inside the building.

D. HANDLING PRECAUTIONS

The unitized No. 3 ESS machine consists of delicate electronic apparatus. The wiring side of the lineup equipment is extremely vulnerable to damage. On two-lineup configurations, the wiring sides of the equipment are between the two lineups. For three-lineup configuration, the wiring side of the third lineup is to the outside.

The following list summarizes the precautions associated with the handling and hoisting of a unitized No. 3 ESS machine.

- Leave the inner sectionalized protective cover if used on the equipment until located safely within the building.
- Do not lean any tools, ladders or other equipment against the unitized equipment.
- All forces required to hoist or move the unitized equipment should only be applied to the base unitizing members (zinc chromated steelwork). DO NOT PUSH ON THE COVER.

- Positioning devices should be placed under the unitizing base steel members. The equipment lineup framework is not designed to handle the weight of an entire system at a few load bearing points. If wood rollers are used, at least six rollers must support at all times. If air pallets are used, four are required for a two lineup and six for a three lineup. Wooden rollers cannot be used during a hot slide.

Failure to observe these precautions could result in considerable damage to the electronic equipment.

E. EQUIPMENT OFF-LOADING AND POSITIONING

The rigging contractor and the Western Electric Installation Organization are most directly involved with the unloading and positioning of the equipment. The following sequence of events highlight these activities.

<u>NO.</u>	<u>RESPONSIBILITY</u>	<u>EVENT</u>
1	Rigger/Installer	Detach the shipping covers from the bed of the transporter. Remove the outer tarp covering but leave the inner sectionalized cover on the equipment for protection. (Not required if enclosed trailer is used.)
2	Installer	Inspect unitizing hardware for loose bolts and cross bracing straps. Roll up and tie off the sectionalized cover if used.
3	Rigger/Installer	Detach equipment from trailer bed.
4	Rigger/Installer	Attach lifting sling assembly to equipment. (Not required if enclosed trailer is used.)
5	TELCo	Temporary covering for building opening should be removed by this time.
6	Rigger/Installer	Unload and position equipment on the office floor.
7	Installer	Verify positioning of equipment (equipment is spotted by four corners but each lineup should be verified.)
8	Rigger/Installer	Block equipment at least 2 inches off floor.

<u>NO.</u>	<u>RESPONSIBILITY</u>	<u>EVENT</u>
9	Installer	Insert preassembled frame leveling blocks. Leveling blocks should also be placed under the CDF to facilitate unitizing steel removal.
10	Rigger/Installer	Lower equipment onto leveling blocks.
11	Installer	Verify final positioning of equipment (following verification, riggers can be released).
12	Installer	Verify that system resets correctly on leveling blocks. It may be necessary to readjust some of the leveling block assemblies.
13	TELCo	Close off building opening as soon as possible. Maintain free building access so unitizing steel may be removed.

NOTE: Refer to Section VII for responsibilities during a hot slide.

The remainder of this section describes in greater detail the work required to complete the steps highlighted above. For a standard installation, refer to Sections VI through XIV for hot slide work information.

1A. CRANE OPERATION (OPTIONAL)

The unitized No. 3 ESS equipment is normally delivered to site with the distributing frame loaded on the front of the transporter. Normally, the distributing frame end of the equipment will enter the building first. The crane and transporter must be positioned for proper orientation of the equipment for the unloading exercise.

The outer tarp covering must first be removed, giving access to the equipment for the crane operation. The inner formed and sectionalized cover remains on the equipment to provide weather protection. This inner cover will be returned to the factory and reused on subsequent shipments; consequently, care should be observed while detaching this cover from the trailer bed and in subsequent handling. The base of this cover consists of a flexible section which must be rolled up and tied off to provide access to equipment base. The cover also contains sewn in hardboard sections, and as such, should only be folded between these sections.

A lifting sling assembly is provided by Western Electric to facilitate the hoisting exercise. This sling, ordered as an R-4758 tool, consists of a single adjustable spreader bar with two adjustable cable slings for attachment to the equipment and a single adjustable cable sling attached to the spreader bar to provide a single crane pickup point. The spreader bar and sling are adjustable to allow for handling

of either two or three lineup configurations. Assembly and attachment of the sling is shown in Figure 7.

Adjust the lifting sling such that the crane hook is placed over the system center of gravity. This should result in a level pickup. A level pickup is necessary to prevent excessive strain on the unitizing steel. The lifting sling assembly should not put any pressure on the ESS equipment.

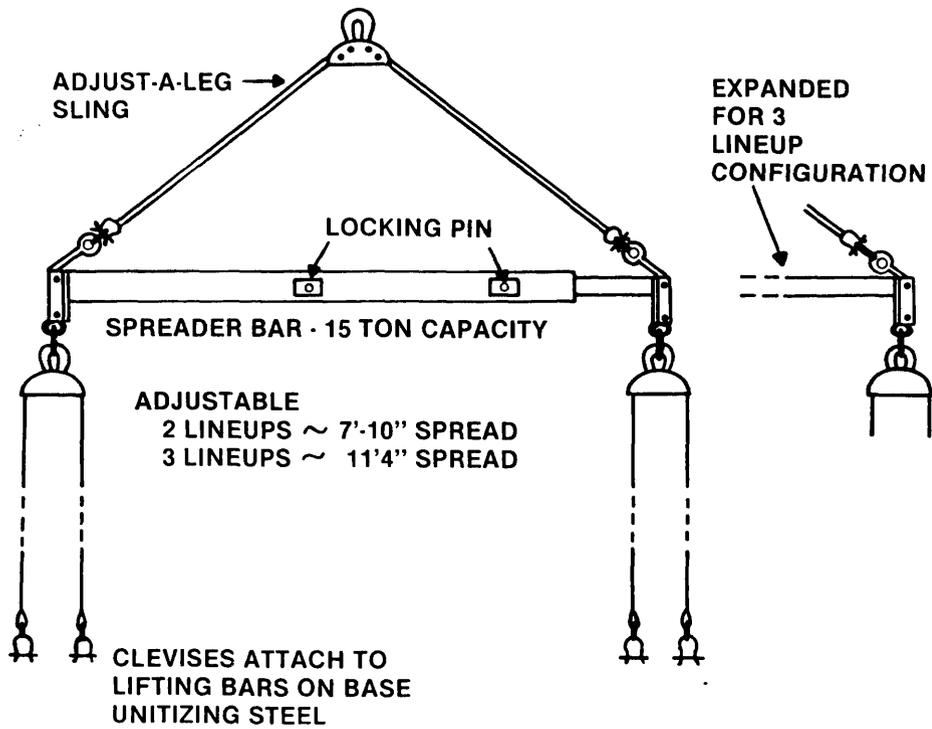
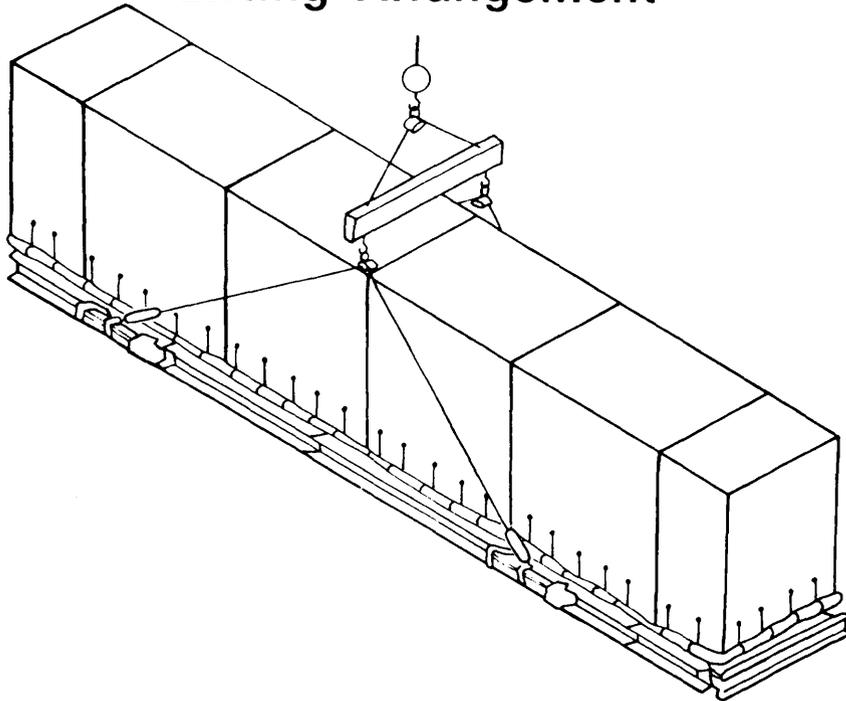
The equipment will typically be unloaded from the transporter and placed on a relocation device for entry in to the building. Cribbing is only required to temporarily support to allow for reconnection of the lifting sling to the unitizing base members. By coordinating the actions of the crane with rollers on the office floor, the need for exterior runner may be eliminated. Any material required for these operations should be provided by the rigging contractor.

1B. ENCLOSED TRAILER OPERATION (OPTIONAL)

Two lineup No. 3 ESS offices may be shipped in a specially designed enclosed trailer. This trailer has the capability of raising or lowering to match the height of the office floor.

When this trailer is used, the unitized No. 3 ESS is relocated from the trailer to its final position on the office floor using rollers or air pallets without any need for lifting the unitized No. 3 ESS. If possible, this trailer should be positioned to allow the unitized No. 3 ESS directly into the building without need for making any turns. If this is not possible, cribbing should be built to provide a flat surface so that the unitized No. 3 ESS can be orientated for insertion into the building opening.

Lifting Arrangement



Lifting Sling Assembly

FIGURE 7

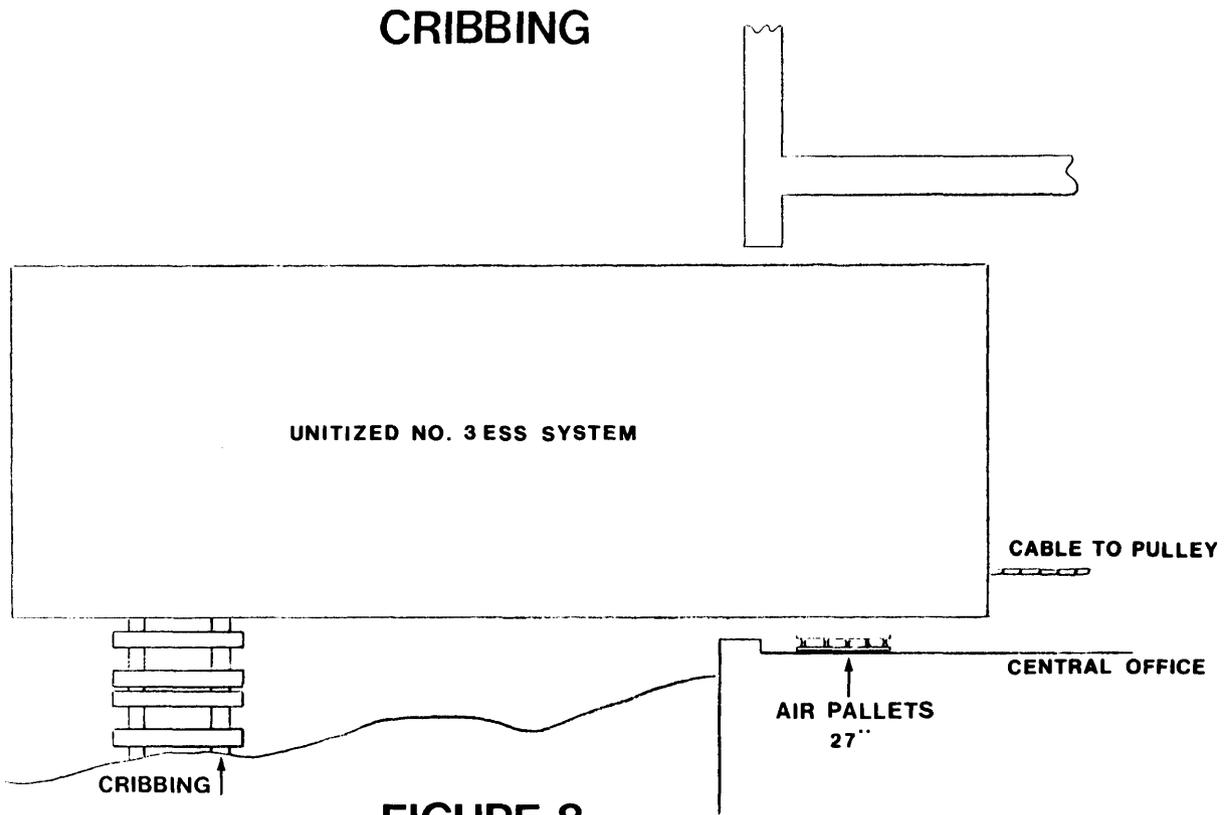
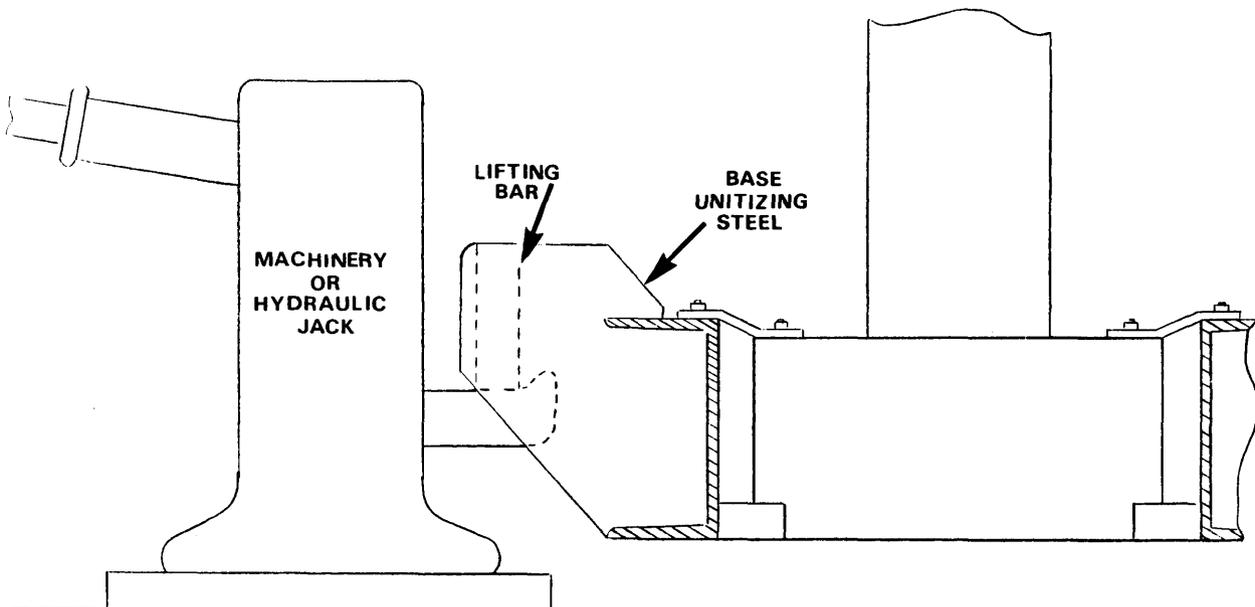


FIGURE 8

JACKING OPERATION



- SYSTEM MUST BE SUPPORTED AT A MINIMUM OF 4 POINTS
- JACKS MUST BE OPERATED IN UNISON

FIGURE 9

Since a major cost of No. 3 ESS installation is the crane, an effort should be made to use this enclosed trailer on all two lineup No. 3 ESS systems. The availability of this enclosed trailer is subject to schedules and at the option of the trucking contractor.

2. FINAL EQUIPMENT POSITIONING -

The equipment is pulled into the building and into position on a relocating device following the unloading exercise. Care should be used to avoid damage to the flooring. Should machinery rollers be used, it may be necessary to use hardboard to protect the floor. If air pallets are used, provision must be made for air compressor, hoses, and nozzles of correct size. Mechanical jacks are used to raise the equipment for insertion and removal of the selected rolling device. Figure 9 shows a typical jacking operation.

A cable pulling device can be used to move the equipment into position. This pulling device could be anchored to the floor through either one of the frame base anchors or an additionally installed anchor if no other attachment points are available within the building. The cable should only be attached to the unitized equipment through either the base unitizing members or the base of the distributing frame. The office floor has been pre-marked for the equipment positioning and anchors installed for the frame hold downs. The unitized equipment should be aligned per the floor markings to within $\pm 1/8$ inch (four corners of the equipment lineups). The distributing frame is moved into position later by the Western Electric Installation Organization.

The temporary covering can be reinstalled on the building opening after the unitized equipment has been moved inside the building. Also, with the equipment safely within the building, the formed shipping cover, if used, can be removed giving better visibility to the floor markings for final positioning.

Machinery jacks, operated in unison for an even load distribution, lower the equipment onto blocks. With the equipment safely blocked, premeasured and assembled frame leveling blocks are placed under the corners of each frame including the CDF. After the equipment is lowered by machinery jacks onto the leveling blocks, the frames should be verified for accuracy of lineup with the frame base anchors. It may be necessary to realign the equipment as a unitized package to obtain correct floor positioning.

Special precautions should be followed when a unitized system is being handled on an above-grade floor designed for 150 lbs/ft² floor load. The load at each support point should be spread over a larger area.

V. EQUIPMENT INSTALLATION

As detailed in Section II, the Western Electric installation effort begins before the unitized No. 3 ESS equipment is shipped from the factory. Section III describes the Western Electric installation responsibilities associated with receiving, off-loading and positioning this equipment. This section describes the effort required to install a unitized No. 3 ESS after the equipment has been positioned on the office floor. Particular emphasis is given to those installation items which are unique to unitization.

A. SHIPPING COVER REMOVAL (OPTIONAL)

With the equipment lineups in position, the Western Electric Installer can remove the protective shipping cover from the equipment. This cover comes apart in 2-foot 2-inch sections which can easily be handled by two persons. This cover could be removed any time after the equipment is safely within the building. Each section should be folded and safely stored for return to the Western Electric factory for reuse on subsequent No. 3 ESS unitized shipments. The shipping cover is supported by a wood framework which is fastened to the superstructure above the equipment lineups. This framework is dismantled in sections for removal from the switching equipment, and returned to the Western Electric factory.

B. FINAL POSITIONING OF DISTRIBUTING FRAME

Following removal of the cover, the distributing frame can be detached from the unitized lineups and rolled into position. Following is a step-by-step procedure for relocating the distributing frame into its final position. (Repositioning of the distributing frame could be completed after all unitizing hardware is removed.)

- Insert temporary leveling blocks under the distributing frame.
- Remove the distributing frame shipping brace at the top of the frame.
- Remove the unitizing steel members connecting the distributing frame to the equipment lineups.
- Attach four R-4634 dolly adapters to the base of the distributing frame.

- Attach four R-4634 dolly adapters to the base of the distributing frame.
- Raise the frame with the dollies and move into position.

CAUTION: Cabling between the distributing frame and ESS equipment was factory-installed and temporarily secured for shipment. Any temporary securing of this cabling for shipment must be removed and caution exercised while moving this frame to prevent placing undue stress on this cabling.

C. REMOVAL OF UNITIZATION HARDWARE

The remaining unitization hardware which must be removed consists basically of the following components which are more fully described in Section 1.

- Frame base support members
- Base cross aisle support members
- Frame top longitudinal support members
- Frame top cross-aisle support members
- Nylon webbing straps

The following tools are required to remove the unitizing hardware:

TS-529 - No. 3 ESS Unitization Tool Set

ITEMS INCLUDED IN TOOL SET

No.	Code	Description
4	R-4634	Dolly Truck Adapters
1	R-4635	Impact Wrench, 1-1/8" Socket and Universal Adapter (3/4" drive)
1	R-4636	1-1/8" Combination Wrench
1	R-2819	Det. 5, 5/8" Socket
1	R-2819	Det. 3, 9/16" Socket
1	R-2819	Det. 2, 1/2" Socket
1	R-2806	Ratchet Wrench Handle
1	R-4403	Ratchet Allen Wrench
	TS-527	Electric Impact Wrench Set (1/2" drive)
	TS-808	ESS Dolly Trucks
	R-3643, Grp 8	8' Step Ladder (minimum 2 required)
	R-3295	Extension Cord

NOTE: Impact wrenches cannot be used to remove the unitizing steel when doing a hot slide. Refer to Section VII for additional tools.

These tools should be scheduled by the Western Electric Installation Organization for availability prior to receipt of the unitized shipment. Following removal of the unitizing hardware, these tools can be returned to installation stockkeeping.

1. Nylon Webbing Straps - These straps must be removed prior to the unitizing steel members. Tension on the straps is provided by a ratchet mechanism which can be released by a screw-driver. Clip fasteners attach the straps to the unitizing steel members.
2. Cross Aisle Braces - A 1-1/8-inch and a 5/8-inch impact wrench is required to remove the base cross aisle channels. The center section of each top cross aisle brace is unbolted first, followed by the two end sections which are clamped between the top of the equipment frame and the cable rack. extreme caution should be exercised while working between the two lineups to prevent damage to the wiring side of the switching equipment.
3. Lineup Base Unitizing Members - The base unitizing members are bolted to angle brackets which are located at each frame junction in addition to threaded rods crossing through the base of the framework. The base members are sectionalized for handling by two persons with no member being longer than 7 feet 7 inches. Splice plates between sections are removed first using the impact wrench with a 1-1/8-inch socket. Four or eight of the bolts at each splice joint cannot be removed with the electric impact wrench, thus requiring use of hand wrench. Removal of the base members is completed by unbolting the threaded rods and bolts to the angle brackets with the impact wrench and a 5/8-inch socket. The threaded rods should be unbolted on the wiring side of the equipment and pulled out on the equipment side. The angle brackets are removed with a 9/16-inch wrench.

Shipping containers are delivered to the site with the unitized equipment for return of the unitizing hardware. The outer tarp covering, all hardware, lumber, and filler frames are to be returned to the Western Electric factory for reuse. Handbook 261, Section 111 provides additional packaging and shipping details for return of the unitizing hardware.

D. FRAME SECURING

Following removal of the unitizing hardware, the lineup framework should be secured to the floor. The frames are bolted to the previously installed floor anchor assemblies to be installed with the unitizing hardware in place. After securing the frames to the floor, and removing the unitizing shipping hardware, the framework should be tested for frame ground isolation.

E. INSTALLATION ASSEMBLY AND TEST

The unitized No. 3 ESS office is factory-assembled, wired and tested as an operational office. This testing includes an integrated volume test to verify that the system meets all performance specifications. Also, the office will ship with initial office translations and all trunk and service circuit cross connections.

The on-site installation effort for a unitized No. 3 ESS consists of an abbreviated set of tests leading to the final operational verification. The following list briefly describes the steps required to install a unitized No. 3 ESS office.

1. Install battery cable rack and battery charge and discharge feeders.
2. Install ground window connection.
3. Extend frame aisle lights to proper position.
4. Connect commercial a.c. to power plant.
5. Test and verify 151A power plant.
6. Install cable rack and power feeders to toll power distribution equipment.
7. Remove frame packaging details.
8. Install cable rack and power feeders to toll power distribution equipment.
9. Install system ship loose items (TTY, base covers, etc.).
10. Install CDF cable rack.
11. Install CDF aisle lighting.
12. Run applicable installation handbook test sections per Handbook 269.

Handbook 269, Section 1 should be referred to for test planning and sequencing of tests. Handbook 250, Section 2.26 lists the installation test equipment required to install a No. 3 ESS office. Due to the short site installation interval for unitized No. 3 ESS, the telephone company should begin terminating the protector connector stub cables to the outside plant cables at the earliest possible convenience. Figure 10 shows a typical job test plan for a unitized No. 3 ESS office.

VI. INTRODUCTION TO HOT SLIDES

The No. 3 Electronic Switching System (ESS) Hot Slide-In is a procedure to move a No. 3 from a temporary location into a permanent location while the system is processing calls. The No. 3 is cut into service while located in a temporary housing placed adjacent to the existing building. With the No. 3 processing all office calls, the permanent building can be cleared of existing switching equipment and prepared to receive the No. 3 ESS. The new switching system can be slid into its final position within the permanent structure without loss of service. Since the switching systems are not required to occupy the building simultaneously, the need to expand the building or construct a new building has been avoided, resulting in a potentially large savings to the Telephone Company.

This section of the guidebook pertains basically to the Hot Slide-In concept. Delivery of the system to the site is covered in Sections I thru V of this guidebook. Sections I thru V cover normal installation of a unitized No. 3 ESS.

The following sections describe in some detail the methods which may be used in the Hot Slide-In/Installation of a unitized No. 3 ESS system. It is hoped that a thorough description of these methods will serve as a guide to the considerations that must be taken when any method of unitized No. 3 ESS installation is used.

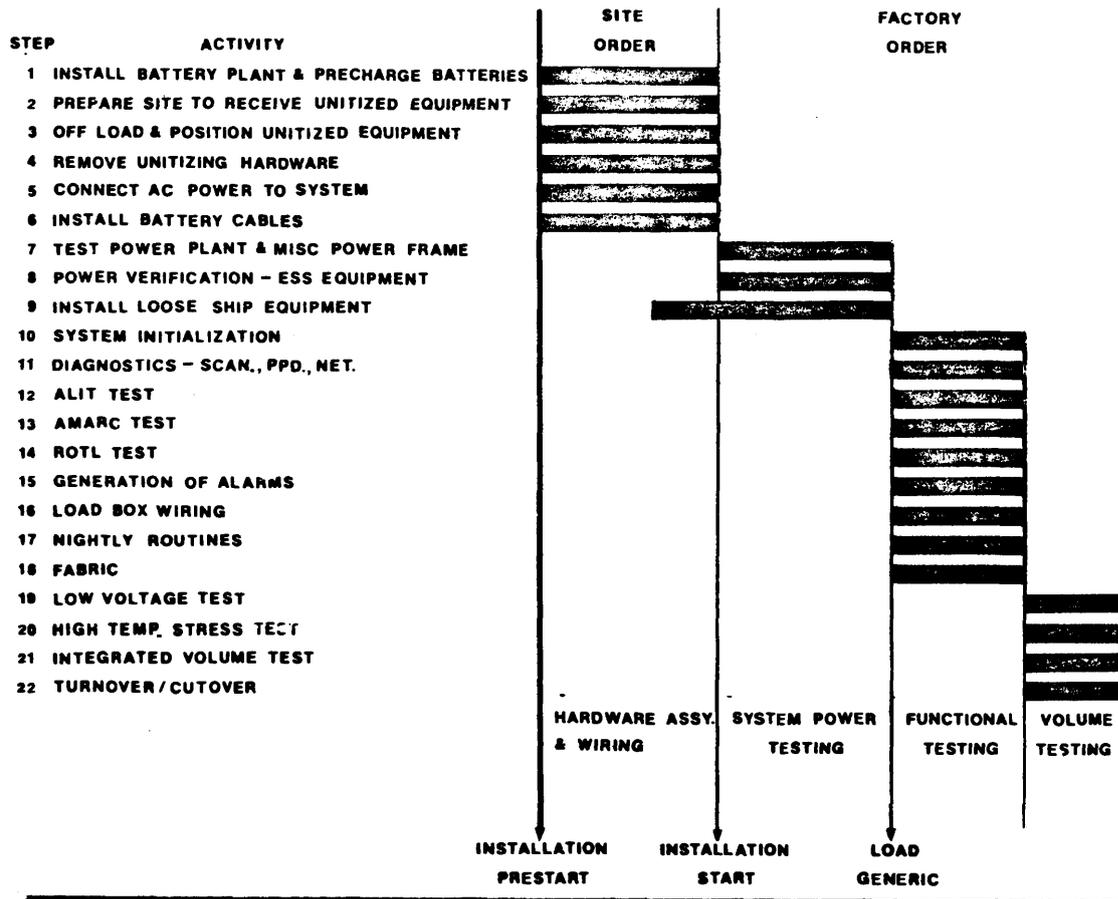
The following sections are to be used only as an aid and in no way constitutes work to be done. The best method of unitized No. 3 ESS Hot Slide-In/Installation is dependent upon the job site conditions.

VII. TOOLS AND ORGANIZATION RESPONSIBILITIES

A. TOOLS

In addition to the normal tools required on an ESS job, and the tools listed in Handbook 261, Section 111, the following tools will be required.

Job Installation and Test Plan



EF&I INTERVALS FOR NEW START (3E3 GENERIC PROGRAM)



*Preplanning Meeting 6 weeks before

TABLE 1

NO. OF NETWORKS	WEEKS
1-3	7
4-5	8
6-7	9
8-9	10
10-11	11
12-15	12

TABLE 2

INDIVIDUAL FRAMES		UNITIZED	
NO. OF FRAMES	WEEKS	LINEUP	WEEKS
0-13	11	2	4
14-17	12	3	6
18-24	13		
25 & Up	14		

Tools required for assembly of floor-mounted cable support frame:

- R-2698 9/16" Combination Wrench
- 9/16" Socket 3/8" Drive
- 3/8" Drive Ratchet
- 3/8" Drive 3" Extension
- 12" Bench Level
- R-1652 72" Folding Ruler

Tools required to move the No. 3 ESS system:

- 27" Air Pallet
- 4 required for a two-lineup system
- 6 required for three-lineup system
- 6 Position Air Control Box
- 3/4" Ball Valve/OPW Fitting
- 4 required for two-lineup system
- 6 required for three-lineup system
- 3/4" Air Hose (as required)
- 1" or 1-1/2" Air Hose (as required)
- Compressor 125 CFM 90-100 PSI
- 2 Shiv Block and Tackle
- R-2849 Trunk Strap (2 required)
- 2" D Ring (2 required)
- 3/8" Hoist Ring
- 10-ton Hydraulic Toe Jack (two required) E/W Short Handles

Tools required for supporting cables:

- R-4266 Tie Wrap Gun
- R6433 Side Cutters
- 4-Wheel Trolley Assembly (every 3 feet)
- Short Webbing Assembly (every 3 feet)
- Long Webbing Assembly (every 3 feet)
- Cable Tie Wraps
- Load Locking Bars (2 required)

Additional tools required for deunitizing the system:

- 3/4" Drive Breaker Bar
- 3/4" Drive 3" Extension
- R-2698 9/16" Combination Wrench
- R-2698 1/2" Combination Wrench
- 1-1/8" Offset Striker Wrench
- R-1709 8" x 5/8" Drift Pin
- R-4041 2 lb. Rubber Mallet
- R-2384 30" Pinch Bar
- 2-Wheel Dolly Truck (two required)

These tools should be scheduled by the Western Electric Installation Organization for availability prior to receipt of the unitized shipment. Some items in this tool list are not Tool Control items and must be obtained through other means.

B. ORGANIZATION RESPONSIBILITIES

In addition to the organizational responsibilities outlined in Sections I thru V, the following are required for a Hot Slide:

- Installations Install cable support system.
- Reposition the system in the module if necessary.
- Coordinate and Hot Slide the system to its final position.
- Perform the Bounce Test.
- TELCo Contract out for the removal of the old switching equipment in the office.
- Recondition the office floor as deemed necessary.
- TELCo may provide its own temporary housing or elect to have Western Installations provide a KS-type module.
- Provide a weatherproof corridor between the office and the temporary housing.
- Responsible for the system's call processing ability during the Hot Slide

VIII. SITE AND BUILDING PREPARATION

The No. 3 may arrive on site housed in a Western Electric owned KS-type module (48x12x11 feet). The module, specifically designed for Hot Slide-In is equipped with a heater/air conditioning unit, cable rack facilities, and other necessary items. As an alternative to the module, the No. 3 could be placed in a similarly equipped temporary building (typically 40x20x16 feet) which could then be reused by the telephone company at other Hot Slide-In sites. Sufficient area must exist for the module/temporary building to reside adjacent to the existing building along with a tractor/trailer (approximately 65 feet long) which delivers the system and a crane if needed. If a crane is needed and the system is delivered in a module, one 90-125 ton crane is required to lift the module and position it adjacent to the building. A 35-ton crane will probably suffice if the temporary building option is selected. An important factor in determining crane size is the placement of the tractor/trailer with respect to the system's temporary location. If a long reach is required to lift the system,

a larger crane may be required. The module should, whenever possible, be positioned such that the No. 3 system can be slid straight from the module through a temporary opening in the building to its final position. If the module cannot be positioned for a straight slide, the use of air pallets allow the system to be easily rotated inside the building, providing there is sufficient room. Under certain conditions, to facilitate the system move, the KS module could be repositioned just prior to the HOT SLIDE-IN via air pallets. This would require a concrete runway for the air pallets. See Figure

In preparation for the delivery of the No. 3, several factors concerning the undermining of the area must be accessed. The position of the crane cannot be deter-

mined until the site plot has been examined and all sewer lines, septic systems, manholes, cable facilities, etc., have been located. Also related to the crane placement, soil composition around the designated area should be checked for stability and drainage. Contingency plans should be developed in the event adverse weather delays the unloading of the No. 3 system.

A. SITE INSPECTION (OUTSIDE)

Once the determination has been made that a site may become a candidate for a No. 3 ESS HOT SLIDE-IN, on-site inspection is a necessity. Investigate the site to make sure there are no obstacles that would prevent a Hot Slide. The following is a generalization of potential obstructions that could hinder this type of installation.

AERIAL	TERRAIN	SUBTERRAIN
Power Lines	Creeks	Septic Systems
Telephone Lines	Drainage Ditches	Drain Fields
Trees	Culverts	Sewer Lines
Roof Overhangs	Grade	Utility Facilities
Adjacent Buildings	Trees	Manholes
	Hedges	Outside Plant Conduits
	Fences	Soil Composition
	Utility Poles	
	Building Structures	

Access to the site is a very important factor to keep in mind. The tractor/trailer transporting the No. 3 (in a module) weighs approximately 80,000 pounds and has an overall length that may exceed 65 feet, depending on the tractor used. Thus, access to the property and ample turning radius for the transporter must be calculated. If access to the adjoining property becomes a necessity, then prior permission must be obtained.

B. SITE INSPECTION (INSIDE)

Before the initial floor plan can be drafted, inspection of the building's interior should be conducted. Obstructions that could be affecting are such things as columns, ceiling height, cable racks, and equipment. The type of flooring should also be considered. Air pallets require a smooth and level surface to function efficiently. Elevation differences between the floor and the outside terrain should be calculated. The means of cable support must be considered. If the office ceiling cannot support cables, then a floor support system (Cable Support Frame) must be

used. Floor space must be available for this type of support. Refer to Section ? of this guidebook.

With the above information, it will be necessary to decide which wall the system will enter. Normally a 10x10 foot (two lineup) or a 12x10 foot (three lineup) hole will need to be furnished. Obstacles on the desired entry wall will have to be relocated as deemed necessary.

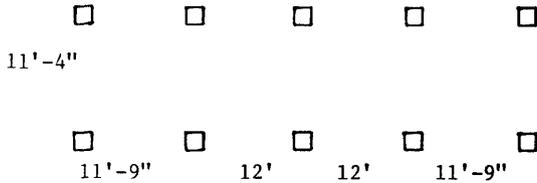
If a straight in Hot Slide is not possible, additional floor space must be available to maneuver the No. 3 system into its final position.

C. MODULE FOUNDATION

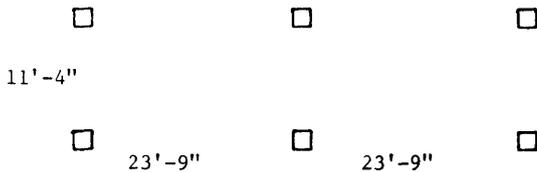
Once the position of the module has been determined, a six- or ten-point foundation is prepared. The supports, depending on the soil bearing, could be anything from timbers to concrete pads and should be determined by the engineer and architect. Leveling shims must be available at the time of placement to make the module as level as possible. Additional supports

may be required to support the module so the module floor height is relatively equivalent to, or slightly higher than, the floor height at the temporary opening in the permanent building.

(10-Point Module Supports and Leveling Shim Locations)



(6-Point Module Support and Leveling Shim Locations)



D. TEMPORARY BUILDING FLOOR

When the temporary building option is used, the flooring should have a floor load rating of 150 pounds per square foot. TELCO engineering will make the determination as to the flooring deemed necessary.

E. CORRIDOR

When the module/temporary building is used, a weatherproof seal must be constructed between the temporary housing and the telephone office. If the temporary housing is located in line with the 10x10 or 12x10 foot opening in the office, access between the office and temporary housing should be considered. This will allow TELCO and Western personnel to do their preparation work with more ease.

At times it will not be possible to locate the temporary housing directly adjacent to the office opening. In the case of the module, the end of the module (next to office) must be sealed (usually plywood) and weatherproofed. An opening must be designed into the seal to allow for cables. A temporary weatherproof cable duct must be constructed for the switchboard and power cables that link the two switching systems. This cable duct will be removed the day of the Hot Slide.

F. GROUNDING

The temporary housing must be grounded. TELCO engineering will dictate the type of

grounding required. The module is designed for a ring ground and has convenient access for connecting the desired grounding. If a temporary building is used, a four-point grid type is recommended. Whichever type is used, it should connect to the telephone office ground circuit.

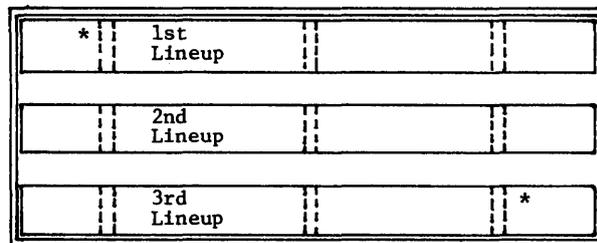
IX. REPOSITIONING NO. 3 IN MODULE

The No. 3 may be positioned in an awkward location within the module when it arrives on site. This is due to the necessity of equalizing the load during transporting. If this is the case, the No. 3 system should be moved to near center and toward the removable end of the module. This will give more room for testing the system and shorten the cable lengths to the batteries, AC cabinet and the CDF. This should be done with the aid of air pallets.

CAUTION: There are yellow feature strips on the floor along the sides of the module. These feature strips are located over the floor support beams. Any use of jacks should be positioned over the support beams.

After repositioning the system, place double 2x4x30-inch cribbing under the system. DO NOT USE 4x4s. (Refer to cribbing positioning.)

6 required for two lineup system
9 required for three lineup system



* Cribbing will be located near the System's lifting points.

CRIBBING POSITIONING

If the air pallets are going to be used elsewhere before the Hot Slide takes place, remove them. Otherwise they can stay under the system or be stored.

X. CABLING

After the No. 3 system has been temporarily repositioned and all weatherproofing has been completed, cabling is the next step.

All cabling connections will be the same as any other new installation of a No. 3 system. The manner in which the cables are run and supported will be different. THIS IS TEMPORARY.

In most cases the switchboard cables will be temporarily supported by trunk straps suspended from either ceiling supports or the type of support that is deemed necessary for the job.

The switchboard cables between the No. 3 system and the CDF must not be allowed to intertwine with any cables that do not run between these two locations. Any cables that follow only a partial run must be bundled separately. All switchboard cable slack will be pulled to the CDF and stored on top of the CDF. Other arrangements can be made if room does not allow for temporary storage over the CDF. With the slack out of the switchboard cables, band them every three feet with plastic ties or webbing.

Power cables (-48 V) will be run as a group and banded and supported separately. A loop of at least three feet should be secured to the No. 3 system light supports. This will eliminate undue strain on the power cable terminations at the No. 3 151 Power Plant. These cables should drop off the side of the lineup nearest the batteries.

The AC power cables will be run and bundled separately. A three-foot loop should be secured in the same manner as the 48 V power cables. Do not secure the AC cables with the 48 V power cables. These cables should drop off the No. 3 system nearest the AC Distribution Cabinet.

Where the power cables drop off the system is not always a hard fast rule. Jobs will differ due to the office layout.

CAUTION: There must be enough slack in all the cables to allow movement of the No. 3 system during the Hot Slide. Do not allow threaded rods, columns, or any other obstacles to interfere with the movement of these cables during the Hot Slide.

CAUTION: Do not secure any cables to structures or equipment that is to be removed prior to the Hot Slide. If no means of cable support is available, call Western Electric PECC and request assistance or the use of the CABLE SUPPORT FRAME (CSF). Refer to Figure 12 for Cable Support Framing.

A. CABLE SUPPORT

Proper supporting of the cables is one of the most important jobs of a Hot Slide. If properly supported, the cables will move and transfer with ease, thus creating a smooth and trouble-free move.

The cable support (ceiling, Figure 11, floor mount, Figure 12) will serve to keep the switchboard (SWBD) cables at a uniform height above the floor and relieve any undue strain on the cables. The supports will produce an easier means of bringing the cables into the building as the system approaches its final position.

The stationary Unistrut, equipped with eyelets and the use of straps, will initially be used to elevate the switchboard cables. As the system moves into the building, the switchboard cables will be transferred via straps to 4-wheel trolleys on the second Unistrut (Figure 13). This will allow the switchboard cables to glide freely as the system moves forward.

The 48 V and AC cables will be handled at floor level by the installers.

B. CABLE SUPPORT FRAMING

The design intent of the Cable Support Frame (CSF) was to obtain a means of supporting the switchboard cables between the temporarily positioned No. 3 ESS and the Combined Distributing Frame (CDF). Also in the design intent, was to find a means of handling the switchboard cables while moving an in-service No. 3 ESS ("Hot Slide"). The design gives a means of support for the switchboard cables independent of any office supports.

The CSF is a floor-mounted self-standing structure, made from telescoping Telspar, it can be expanded in height and width to handle the flexibility of most office configurations. The CSF will allow auxiliary cable support in offices where ceiling support is unfeasible. Also, it gives a means of moving an in-service office prior to the installation of the permanent cable rack for the switchboard cables. With the use of the CSF, the problems of repositioning and handling the switchboard cables have been drastically reduced. During the move the cables glide along a trolley system attached to the CSF.

If the CSF concept is used, adequate floor and ceiling space must be available in the office. Determination of the overall distance to be travelled by the No. 3 must be calculated. The following chart shows the minimum and maximum floor space needed for one cable support frame.

CSF min. width	3 feet 4 inches
CSF max. width	5 feet 10 inches
CSF min. height	8 feet 4 inches
CSF max. height	14 feet 2 inches

One set of CSF is required for approximately each 5 feet of system travel.

C. FRONT END ASSEMBLY

The purpose of the Front End Assembly (FEA) is to eliminate undue stress on the switchboard cables during a Hot Slide. The major area of stress on the switchboard cables is at the end of the No. 3 ESS lineup. The No. 3 system cable rack is 7 feet above the floor. The office cable rack is approximately 10 feet or higher. The difference in height and the length of the cables create an enormous sag in the cables. This causes stress on the switchboard cables passing over the end of the system. Refer to Figures 14A & B.

The FEA is designed to connect to either a two or three lineup No. 3 system. Slight variations of connecting the FEA to the unitizing steel may be necessary.

The Front End Assembly is a standard assembly. The only variations will be the manner desired for supporting the FEA to the unitizing steel. There is always the possibility of a nonstandard configuration that may require some alteration to the FEA. At no time should the Telspar parts be altered from their original lengths. If a major problem occurs that affects the lengths of the Telspar, contact Western Electric PECC before continuing.

XI. BOUNCE TEST

The purpose of this test is to determine if there are any loose circuit packs, taut wires, cut throughs, snivels, etc. Pre-planned raising and lowering the system, via air pallets, at different points will allow the necessary stress on the system. The final phase is a 5- to 6-minute bouncing of the system. These tests are all performed performed with the load box/s connected to the system, and simulating call processing. The Bounce Test should be performed within 2 weeks of Cutover.

The load box/s should be connected to the system and processing simulated calls when the test starts. If any calls are lost or any alarms occur, stop the bounce test and investigate the trouble area. Continue the bounce test after the trouble has been cleared. It is not necessary to start over after each trouble.

If the air pallets are to be used elsewhere prior to the Hot Slide, remove them, otherwise the air pallets can remain under the system.

XII. REFURBISH OFFICE

After the bounce test has been completed, the system should be at or near Cutover stage.

Once cutover procedures are completed, the old switcher can be retired and removed from the office. The time interval for removing the old switcher and refurbishing the office is not instrumental to the Hot Slide project. The need to use the module, tools, and manpower may be a determining factor to the interval.

Refurbishment of the floor is a must. In most cases the floor will have to be re-tiled. The floor should be as level as possible prior to the installation of new floor tile.

After the new flooring has been laid, an inspection to locate loose tiles should be conducted. There should not be any loose tiles in the area of the No. 3 system's travel during the Hot Slide. Freshly laid tile should have at least a week to seal properly before a Hot Slide move.

CAUTION: When using air pallets, air can get under a poorly sealed tile and uplift it from the floor. This could possibly hinder the Hot Slide move.

The floor should be marked and frame anchors secured in the floor. Any anchor heads above floor level could puncture the air pallet's diaphragm.

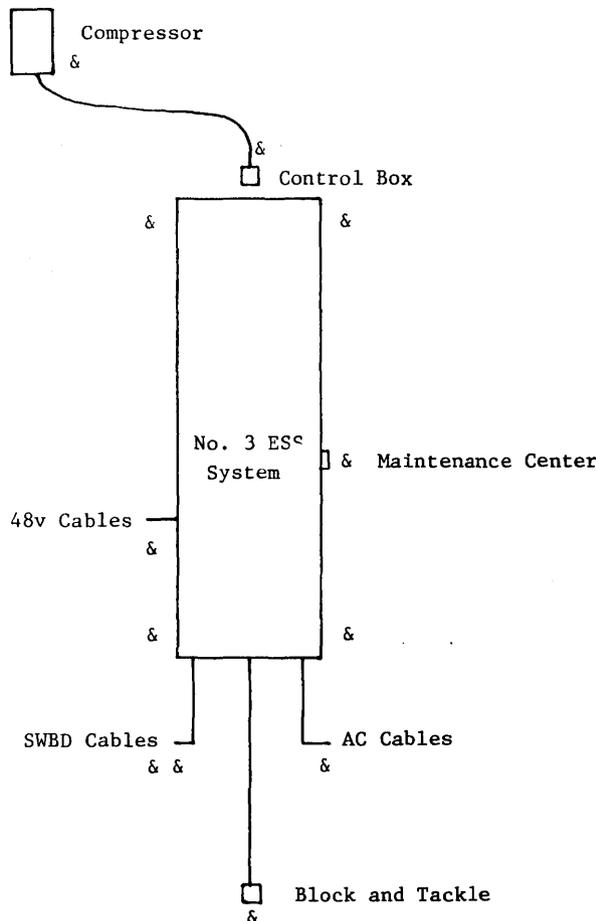
All anchor holes should be covered with tape and the actual hole locations marked. Marking the holes will allow easy location of the holes when the system is finally located over them.

The floor should be cleaned and waxed prior to the Hot Slide.

Erect cable rack as deemed necessary. If necessary, erect cable rack to accommodate the slack in the switchboard cables during the Hot Slide. If the Cable Support Frame arrangement is used, it is possible to erect the cable rack after the Hot Slide or temporarily support the cable rack to the Cable Support Frame.

XIII. HOT SLIDE MOVE OF THE NO. 3 ESS

On the day of the move a short meeting should be conducted on site. Each member of the working crew should know exactly where his station is and what work he is expected to perform. Each member of the crew that is assigned a job for which tools are necessary should be well versed in the use of those tools. Figure is an example of the stations needed to be manned.



Hot Slide Coordinator

& - Indicates a member of the working crew.

NOTE: During the hot slide move, when the word "STOP" is given by any of the Hot Slide working crew, immediately stop all forward or side movement of the system.

If a system problem occurs during the Hot Slide, movement of the system should be stopped. After investigating any problems, TELCo has the option of

continuing the Hot Slide or fixing the problem prior to continuing the move. The actual Hot Slide of the system will basically be the same as moving any No. 3, with air pallets, into its final position. The moving of the system is covered in Handbook 269, Section xxx with reference to Handbook 261, Section 111.

The system should remain as level as possible at all times. Bouncing and jarring the system must be avoided.

The SWBD, AC, and 48 V cables must be handled with extreme care.

During the move the SWBD, and all power cables will be drawn into the main building. The SWBD cables will transfer from eyelets of the stationary rail to the 4-wheel trolleys of the second Unistrut rail and move forward. The power cables will be drawn slowly on the floor into the main building.

Move the system forward, stopping as many times as necessary to move cables into proper position. Continue moving the system to its final position.

If the system is only two lineups, the next step is to anchor it to the floor per ED-1A210-20.

If the system is a three lineup and the aisle between lineups two and three had been compressed at the factory, lineup three must be detached from lineup two. Lineups one and two will be moved 6 inches away from lineup three. This will give the proper aisle spacing. Then the system may be anchored to the floor per ED-1A210-20.

XIV. REMOVING UNITIZING STEEL

When removing unitizing steel from an IN-SERVICE system, USE HAND TOOLS ONLY. If further disassembly of unitizing steel is necessary, power tools may be used once the steel has cleared the switching system area. DO NOT use the AC receptacles at the base of the system frames. Extreme caution should be exercised while working around and between lineups to prevent damage to the wiring side of the switching equipment.

The following sequence of work operations should be followed for ease of deunitizing the system.

1. Remove both bumpers and bumper extenders.
2. Remove steel cross aisle channels between lineups.
3. Remove connecting rods between unitizing channels of each

lineup. The connecting rods should be unbolted on the wiring side of the equipment and pulled out on the equipment side.

4. Loosen and remove 1/2-inch bolts securing frame brackets to unitizing steel and lower to floor.
5. If hand dollies are available, remove complete sections of unitizing steel channels from each side of frame lineups. Further disassembly of the channels can be completed later.
6. If hand dollies are not available, the channels

must be disassembled and removed in shorter sections. This requires the removal of the three splice plates (at each splice) connecting the channel sections.

7. Remove all brackets from the base.
8. Remove aluminum longitudinal channels at top of frames.
9. Remove aluminum cross aisle channels.
10. Remove cross aisle brackets at top of frame.
11. Remove all filler frames.

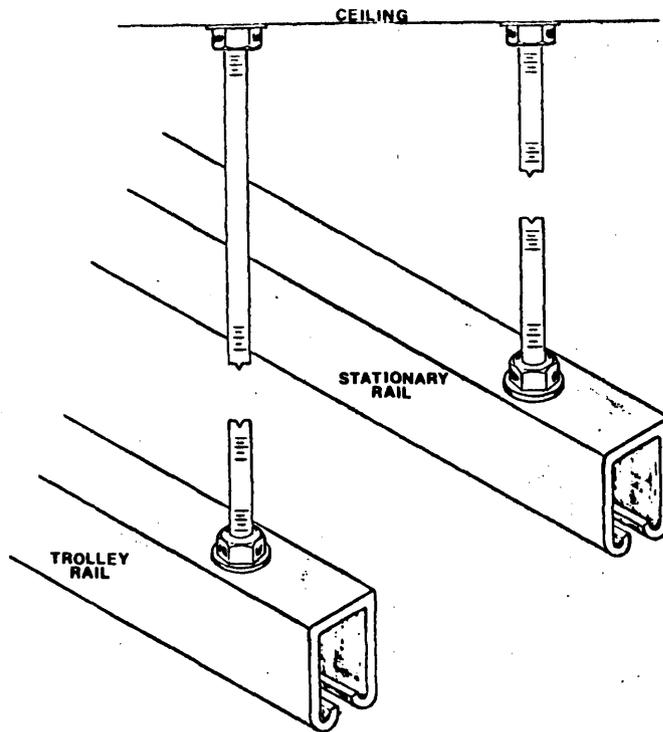
* This document has been changed from ED-3H200-10, Issue 3, to Handbook 269, Section 900.

No arrows shown due to extensive change.

Manager, Development Engineering -
2/2B, 3, 4 and 5 ESS

Reason for Reissue:

Add Sections VI through XIV for
Hot Slide information.



**CEILING
CABLE SUPPORT
FIGURE 11**

**CABLE SUPPORT
FRAME (CSF)**

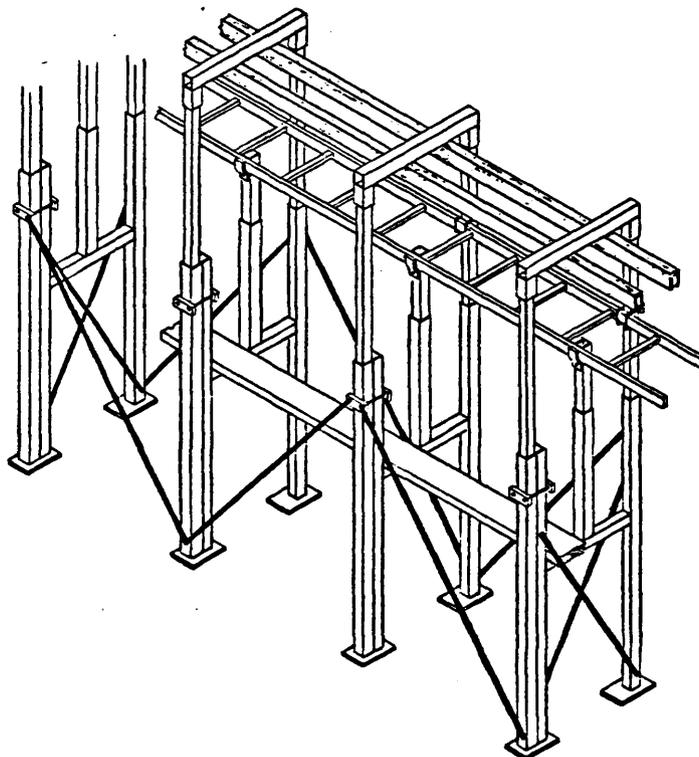


FIGURE 12

METHOD OF SWBD CABLE TRANSFER

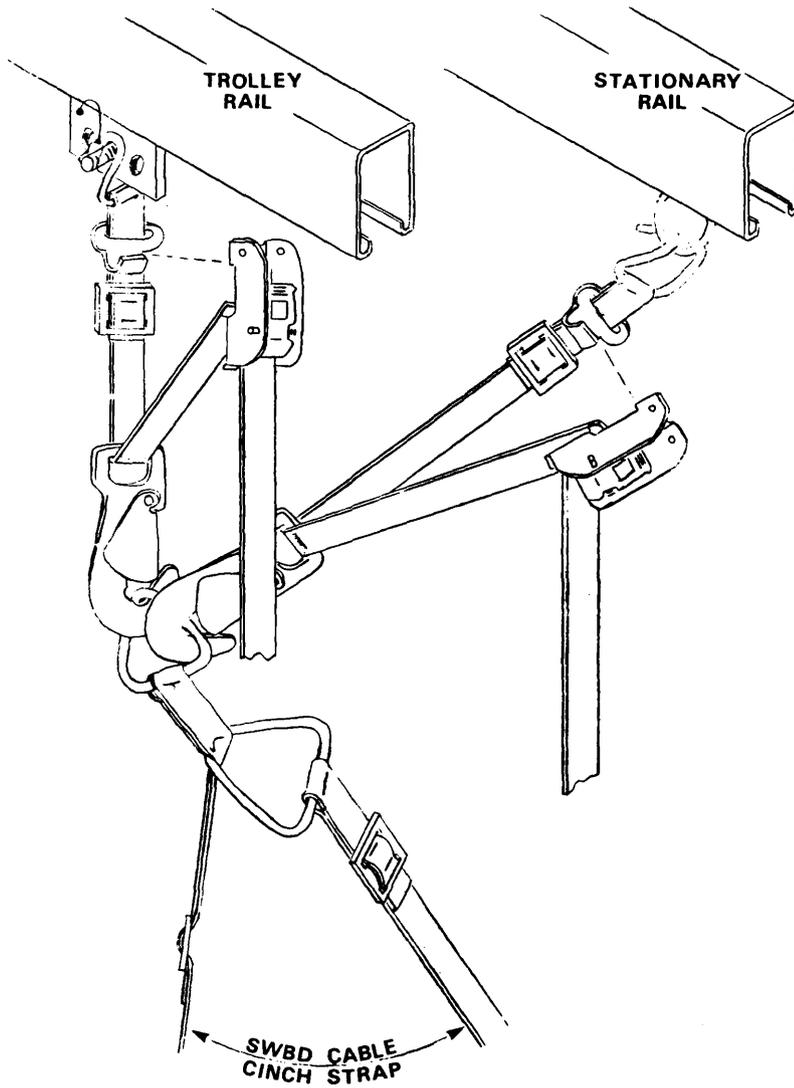
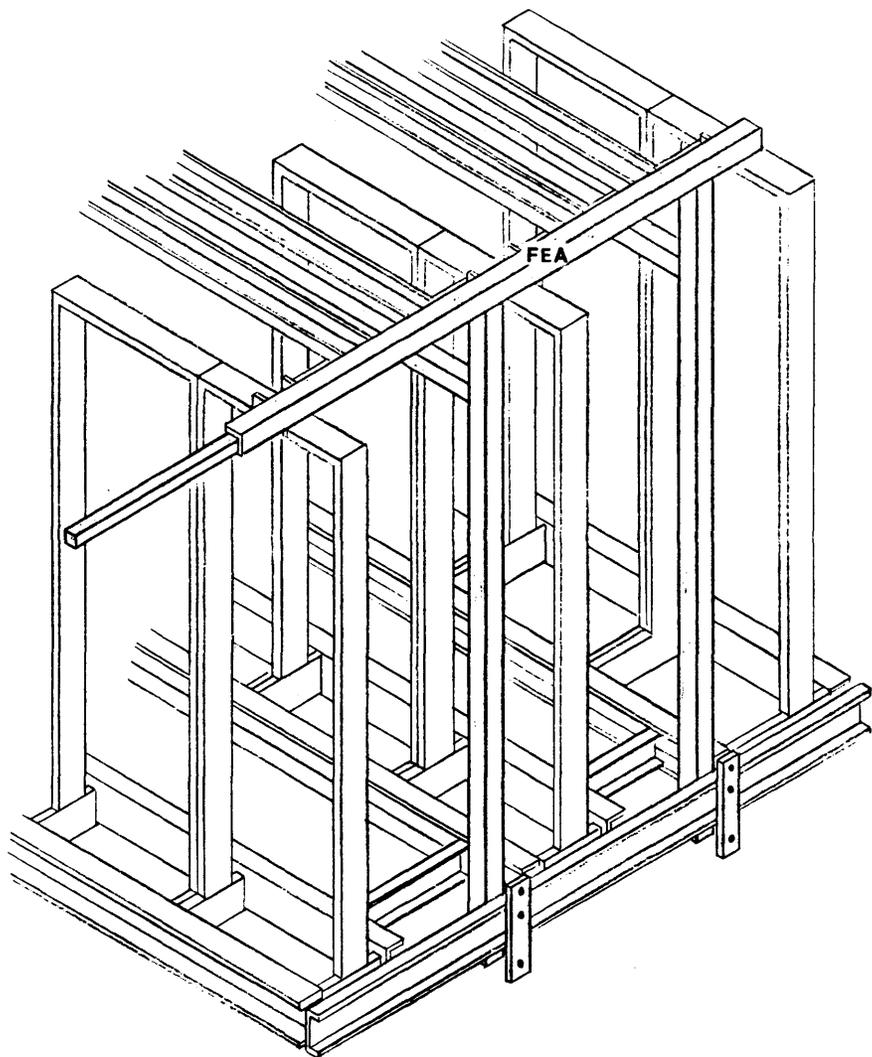


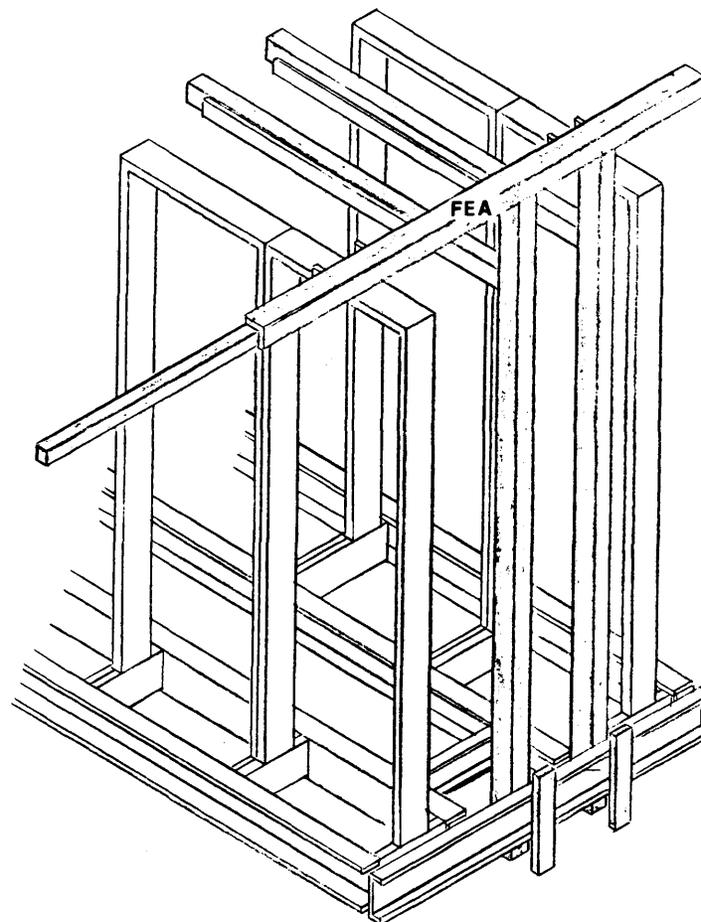
FIGURE 13

FRONT END ASSEMBLY (FEA)

HB 269



3 LINEUP
FIGURE 14A



2 LINEUP
FIGURE 14B

31

900