switching systems

Western Electric

principal office use:

No. 1 ESS (2 wire)	Metropolitan communities with numerous lines and high calling rates
No. 2 ESS	Small to medium size urban or suburban areas
No. 2A ESS	Small to medium size urban or suburban areas. Also areas where the shortened order interval offered by a pre-tested modular system is important
No. 2E ESS	Small to medium size urban or suburban areas
No. 3 ESS	Small to medium size urban, suburban or rural areas
No. 4 ESS	4-wire toll and tandem operation
No. 1 CROSSBAR	Metropolitan communities with numerous lines and high calling rates
No. 3 CROSSBAR	Community Dial Office whose maximum growth will not exceed 800 lines
No. 4A/ETS CROSSBAR	4-wire toll and tandem operation
No. 5 CROSSBAR	Small to medium size urban or suburban areas
No. 5A CROSSBAR	Community Dial Office whose maximum growth will not exceed 2000 lines
No. 1 or 150A SYS	Metropolitan communities with numerous lines and high calling rates
No. 355A SYS	Community Dial Office providing primarily plain-old-telephone service with few new features
Panel Dial	Large metropolitan areas with complicated trunking arrangements

No. 1ESS (2-wire)

PRINCIPAL OFFICE USE:
Metropolitan communities with numerous lines and high calling rates

NEW START RANGE:
4,000-10,000 Lines

GROWTH TO:
65,000-110,000 Lines

CALL CAPACITY:
A. BHC: 95,000 average (105,000 after 2Q73)
B. CCS: Variable

ENGINEERING CONTROL:
Indian Hill PECC

INITIAL MANUFACTURE:
1963

ORDER INTERVAL:
64 weeks for a new 235 frame office
(58 weeks after 3Q73)

OFFICE SIZE:
Approximately 150 frames are required for a typical 10,000 line office.

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
8 stage ferreed network
(Remreed replaced ferreed in 1973).

COMMON CONTROL:
The No. 1 processor
(The No. 1A processor will replace the current processor in 1976).

No. 2 ESS

PRINCIPAL OFFICE USE:
Small to medium size urban or suburban areas.

NEW START RANGE:
1,000-9,000 lines

GROWTH TO:
10,000-20,000 lines

CALL CAPACITY:
A. BHC: 19,000
B. CCS: 110,580

ENGINEERING CONTROL:
Indian Hill PECC

INITIAL MANUFACTURE:
1970

ORDER INTERVAL:
49 weeks in 1973

OFFICE SIZE:
2400 square feet for a minimum office (approximately 33 frames)

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
Folded 4-stage space division network

COMMON CONTROL:
The No. 2 processor (The No. 3A processor will replace the current processor in 1976)

No. 2A ESS

PRINCIPAL OFFICE USE:
Small to medium size urban or suburban areas. Also areas where the shortened order interval offered by a pre-tested modular system is important.

NEW START RANGE:
1,000-9,000 lines

GROWTH TO:
10,000-20,000 lines

CALL CAPACITY:
A. BHC: 19,000
B. CCS: 110,580

ENGINEERING CONTROL:
Indian Hill PECC

INITIAL MANUFACTURE:
1972

ORDER INTERVAL:
30 weeks objective in 1975

OFFICE SIZE:
1 power service module (12 x 24 ft),
1 equipment receiving module (12 x 12 ft),
1 administration module (12 x 48 ft) optional
2 to 8 equipment modules (12 x 48 ft each).

SHIPPING AND HOUSING:
System tested modules are shipped to the site where a facade is erected around them.

SWITCHING NETWORK:
Folded 4-stage space division network

COMMON CONTROL:
The No. 2 processor (The No. 3A processor will replace the current processor in 1976)

No. 2E ESS

PRINCIPAL OFFICE USE:
Small to medium size urban or suburban areas.

NEW START RANGE:
1000-9000 lines

GROWTH TO:
10,000-20,000 lines

CALL CAPACITY:
A. BHC: 40,000
B. CCS:

ENGINEERING CONTROL:
Indian Hill PECC

INITIAL MANUFACTURE:
Proposed for 1975

ORDER INTERVAL:
Will be the same as No. 2 ESS

OFFICE SIZE:
Same as No. 2 ESS except that the processor frame line ups are approximately ⅓ as long.

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
Folded 4-stage space division network.

COMMON CONTROL:
No. 3A Processor.

No. 3 ESS

PRINCIPAL OFFICE USE:
Small to medium size urban, suburban or rural areas.

NEW START RANGE:
300-1500 lines

GROWTH TO:
4,500 lines

CALL CAPACITY:
A. BHC: 8,000
B. CCS: 21,600

ENGINEERING CONTROL:
Columbus PECC

INITIAL MANUFACTURE:
Proposed 1975

ORDER INTERVAL:
Proposed 16 weeks

OFFICE SIZE:
A typical 1800 line office requires a 12 x 30 ft building and 9 or 10 frames.

SHIPPING AND HOUSING:
System tested modules are shipped to the site, or wired frames are installed in a conventional building.

SWITCHING NETWORK:
5-stage folded Remreed network

COMMON CONTROL:
No. 3A processor

No. 4 ESS

PRINCIPAL OFFICE USE:
4-wire toll and tandem operation

NEW START RANGE:
None Specified

GROWTH TO:
70,000 trunks

CALL CAPACITY:
A. BHC: 350,000 busy hour attempts
B. CCS: 1,350,000 (peak level)

ENGINEERING CONTROL:
Indian Hill PECC

INITIAL MANUFACTURE:
Proposed 1976

ORDER INTERVAL:
18-24 months initially (12 months by 1979)

OFFICE SIZE:
10,000 sq ft for 70,000 trunks (600 frames)

SHIPPING AND HOUSING:
Wired frames are system tested, shipped and installed in a conventional building.

SWITCHING NETWORK:
Solid state, time division digital switching network

COMMON CONTROL:
The No. 1A processor

No. 1 Crossbar

PRINCIPAL OFFICE USE:
Metropolitan communities with numerous lines and high calling rates

NEW START RANGE:
4,000-10,000 lines

GROWTH TO:
55,200 lines

CALL CAPACITY:
A. BHC: 27,000
(40,000 with marker speed-up)
B. CCS: Variable

ENGINEERING CONTROL:
Columbus PECC

INITIAL MANUFACTURE:
1936

ORDER INTERVAL:
28 weeks to engineer and furnish a 50 frame office.

OFFICE SIZE:
84 x 102 ft required for a medium traffic office (approximately 40,000 lines)

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
4-stage crossbar switch network

COMMON CONTROL:
Markers, senders, connectors

No. 3 Crossbar

PRINCIPAL OFFICE USE:
Community Dial Office whose maximum growth will not exceed 800 lines.

NEW START RANGE:
100-400 lines

GROWTH TO:
800 lines

CALL CAPACITY:
A. BHC: 5000 for a 400 line office
B. CCS: 3168 for a 400 line office

ENGINEERING CONTROL:
Columbus PECC

INITIAL MANUFACTURE:
Proposed 1973

ORDER INTERVAL:
6 months for a 400 line office

OFFICE SIZE:
A minimum building will need 16 x 45 ft of inside dimensions. 17 frames are needed for a 400 line office.

SHIPPING AND HOUSING:
Pretested equipment is transported on a steel platform and installed in a conventional building

SWITCHING NETWORK:
Three-stage crossbar switch network

COMMON CONTROL:
Marker

No. 4A/ETS Crossbar

PRINCIPAL OFFICE USE:
4-wire toll and tandem operation

NEW START RANGE:
2,000-10,000 trunks

GROWTH TO:
16,000-22,000 trunks

CALL CAPACITY:
A. BHC: 130,000 busy hour attempts
B. CCS: 250,000

ENGINEERING CONTROL:
Columbus PECC

INITIAL MANUFACTURE:
1942

ORDER INTERVAL:
38 weeks to engineer and furnish an 80 frame office with ETS.

OFFICE SIZE:
25,000 sq ft for a fully equipped office (excluding power and toll equipment), approximately 1600 frames are required.

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
Crossbar switch network

COMMON CONTROL:
Senders, convectors, markers, decoder channels, Electronic translator system (ETS)

No. 5 Crossbar

PRINCIPAL OFFICE USE:
Small to medium size urban or suburban areas.

NEW START RANGE:
3,000-5,000 lines

GROWTH TO:
unlimited

CALL CAPACITY:
A. BHC: 69,000 per 3,000 lines
B. CCS: 86,500 per 3,000 lines

ENGINEERING CONTROL:
Columbus PECC

INITIAL MANUFACTURE:
1947

ORDER INTERVAL:
7 months for a 3,000 line office

OFFICE SIZE:
40 x 57.5 ft for a 3,000 line office. Average of 68 frames for a 3,000 line office

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
4-stage crossbar switch network

COMMON CONTROL:
Markers

No. 5A Crossbar

PRINCIPAL OFFICE USE:
Community Dial Office whose maximum growth will not exceed 2000 lines

NEW START RANGE:
980 lines minimum

GROWTH TO:
1960 lines

CALL CAPACITY:
A. BHC: 12,000 for 1960 lines
B. CCS: 6,000 for 1960 lines

ENGINEERING CONTROL:
Columbus PECC

INITIAL MANUFACTURE:
1972

ORDER INTERVAL:
6 months for 980 line office

OFFICE SIZE:
First switching equipment module for 980 lines = 10x42 ft. Power module 10x20 ft. Second switching equipment module for additional 980 lines = 10 x 22 ft.

SHIPPING AND HOUSING:
Pre-tested modules are shipped and installed in a conventional building.

SWITCHING NETWORK:
4-stage small crossbar switch network

COMMON CONTROL:
Marker

No. 1 or 350A SXS

PRINCIPAL OFFICE USE:
Metropolitan communities with numerous lines and high calling rates.

NEW START RANGE:
2,000-10,000 lines

GROWTH TO:
60,000 to 70,000 lines (economic limit only)

CALL CAPACITY:
A. BHC: } Not applicable—equipment ordered
B. CCS: } per traffic requirements.

ENGINEERING CONTROL:
Hawthorne PECC

INITIAL MANUFACTURE:
Prior to 1925

ORDER INTERVAL:
26 weeks (engineer and furnish)

OFFICE SIZE:
Multiples of 10,000 lines

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
Step-by-step switch network

COMMON CONTROL:
Available in two forms:
(1) for TOUCH-TONE only,
(2) For controlled out pulsing, (a) with TOUCH-TONE, and (b) Without TOUCH-TONE.
TOUCH-TONE: Available in two forms:
(1) Noncommon control TOUCH-TONE, and
(2) Common Control TOUCH-TONE.

No. 355A SXS

PRINCIPAL OFFICE USE:
Community Dial Office providing primarily plain-old-telephone service with few new features.

NEW START RANGE:
100-400 lines

GROWTH TO:
1500-2000 lines (can go to 8000 lines with alarm changes).

CALL CAPACITY:
A. BHC: } Not applicable—equipment ordered
B. CCS: } per traffic requirements.

ENGINEERING CONTROL:
Hawthorne PECC

INITIAL MANUFACTURE:
1939

ORDER INTERVAL:
22 weeks for up to 20 shelves of equipment—26 weeks for over 20 shelves of equipment (engineer and furnish).

OFFICE SIZE:
Standardized layouts for 400, 900, and 1500 lines.

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
Step-by-step switch network

COMMON CONTROL:
Available in Two forms:
(1) For TOUCH-TONE only.
(2) For Controlled out pulsing. (a) With TOUCH-TONE, and (b) Without TOUCH-TONE.
TOUCH-TONE: Available in two forms:
(1) Noncommon control TOUCH-TONE,
(2) Common control TOUCH-TONE.

Panal Dial

PRINCIPAL OFFICE USE:
Large metropolitan areas with complicated trunking arrangements.

NEW START RANGE:
4,000-10,000 lines

GROWTH TO:
40,000 lines

CALL CAPACITY:
A. BHC: 1.60 per line
B. CCS: 2.56 per line

ENGINEERING CONTROL:
Hawthorne PECC

INITIAL MANUFACTURE:
1918

ORDER INTERVAL:
22 weeks (engineer and furnish)

OFFICE SIZE:
7,500 square feet for a typical 10,000 line office.

SHIPPING AND HOUSING:
Wired frames are shipped and installed in a conventional building.

SWITCHING NETWORK:
Panel-type selector network.

COMMON CONTROL:
Registers, senders, connectors.

notes

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