

CHICAGO NORTH SHORE AND MILWAUKEE RAILWAY

ANNUAL REPORT

FOR THE YEAR 1953

WAY, STRUCTURES AND POWER DEPARTMENT

Highwood, Illinois
April 30, 1954

F O R E W A R D

Mr. Thomas J. Woods, Electrical Engineer, resigned on December 1, 1953. As of that date the Way and Structures and Electrical Departments were consolidated and the work of the department set up under three divisions. Harold G. Mason was appointed Superintendent - Way, Structures and Power and placed in charge of the department; Mr. Samuel P. Shafer was appointed Engineer - Way and Structures; Mr. Caesar Antonione was appointed Engineer - Distribution and Power; and Mr. R. N. Pickens was appointed Engineer - Communication and Signals.

This report is an account of the work accomplished by the three divisions of the department and includes all A.F.E. and maintenance work performed, as well as statistics relating to the regular maintenance work which are of interest at this time and will be of value in the future for record and reference purposes.

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TRACK AND ROADWAY
ADDITIONS AND BETTERMENTS

RETIRE GAUNTLET TRACKS AT OAKTON STREET - A.F.E. 5264

The gauntlet tracks at Oakton Street, Skokie, were removed after Bridge and Building forces had out back the station platform and canopy to permit operation of freight trains on the main line rails. In connection with this work, the turnout to the interchange track was moved from its former location in the gauntlet to the southbound main line track.

MYSTIC ADHESIVE PRODUCTS SIDING - NORTHFIELD - A.F.E. 5244

This authority covers the Railway's portion of a sidetrack to serve the above-mentioned industry located east of the right-of-way on the south side of Winnetka Avenue. Track on Railway property is 457 feet long, extending south from a No. 6 turnout in the track leading to Wagner Bros. material yard to the north line of Winnetka Avenue. Ties and rail were installed late in 1952 and ballasting and surfacing completed in 1953. The industry built 91 feet of track across the street and 279 feet on its own property. Track is fully electrified.

RAIL RENEWAL - KENOSHA - A.F.E. 5237

4386 track feet of 100# rail was relaid with new 115# rail and fastenings on the northbound track at Kenosha from the beginning of curve south of 75th Street to the end of curve south of 64th Street. Track was fully tie-plated and equipped with 10 rail anchors per rail.

SIGNAL CIRCUITS ON CROSSOVER - A.F.E. 5231 and 5259

Trackmen assisted the signal forces in the installation of signal circuits on crossovers at Northfield, Briergate, West Park Avenue and Deerpath, Skokie Valley Line. Track work consisted of rearranging rails to give proper joint spacing and installing insulated joints.

TRACK AND ROADWAY

ADDITIONS AND BETTERMENTS - cont'd.

RENEWAL OF CROSSING - ST. MARY'S ROAD, LIBERTYVILLE -
A.F.E. 5268

The existing full plank crossing was retired and replaced with a 32-foot plank and asphalt crossing. All ties were renewed and stone ballast installed. Several 80# rails were renewed. This work was done by agreement with the State of Illinois, which has taken over the maintenance of St. Mary's Road. All material costs were borne by the State and the labor cost by the Railway.

TRACK AND ROADWAY

MAINTENANCE WORK

Installed 6563 - 100# double shoulder tie plates
as follows:

<u>Section</u>	<u>Tie Plates</u>
2 - Glenayre	783
3 - Briergate	850
4 - South Upton	1416
5 - Waukegan	285
6 - Zion	716
10 - Carrollville	980
11 - Grange Avenue	1313
12 - Milwaukee	146
13 - Libertyville	<u>74</u>
Total Tie Plates	6563

TIES RENEWED

Ties were renewed by company forces as follows:

<u>Section</u>	<u>Main Line</u>	<u>Sidetrack</u>	<u>Switch</u>
1 - Dempster Street	785	179	143
2 - Glenayre	388	--	--
3 - Briergate	790	16	--
4 - South Upton	821	70	63
5 - Waukegan	251	45	26
6 - Zion	394	--	--
7 - Kenosha	602	--	--
8 - South Racine	463	--	--
9 - North Racine	274	--	10
10 - Carrollville	503	--	--
11 - Grange Avenue	703	--	--
12 - Milwaukee	110	32	--
13 - Libertyville	649	100	203
14 - Winnetka	104	--	--
15 - Highwood	295	45	3
16 - Lake Forest	<u>188</u>	<u>--</u>	<u>20</u>
	7320	487	468

TRACK AND ROADWAY

MAINTENANCE WORK - cont'd.

In addition to the routine work of maintaining the track, cleaning ditches, greasing curves, filling switch lamps and fighting snow, the following work was done:

Renewed all rail joints on the Canal Bridge. A total of 101 new 100# joints was installed.

To save a heavy maintenance charge, the crossover at Dodge Avenue was removed on September 17, 1953.

Surfaced both tracks between Berkely Road and Deerpath Avenue on the Skokie Valley Line. This work was done with the pneumatic tampers, tamping every tie inside and out. 10 single track miles were surfaced in this manner.

Resurfaced crossings at Tobin Road and at Oakland Road, Kenosha County, with plank and asphalt.

Surfaced new 115# rail at Kenosha with pneumatic tools and used 2 cars of stone ballast for dressing track.

Renewed crossings on main line and both sidetracks at 64th Street, Kenosha, with plank and asphalt. The City paved the approaches and the area between the sidings with concrete.

The railroad crossings at Ryan Tower were repaired by the Teleweld Company.

Repaired broken rails in Milwaukee and made 19 thermit welds.

Repaired and renewed expansion rails on the 6th Street Viaduct. 36 thermit welds made.

Raised the track across Lincoln Avenue, Milwaukee, by placing wood shims on the existing wood ties. A concrete base was installed by company forces and a sheet asphalt pavement placed by the City at Railway expense.

Repaired broken rails on Greenleaf Avenue, Wilmette, and made 32 thermit welds.

TRACK AND ROADWAY

MAINTENANCE WORK - cont'd.

On June 4 the following crossovers and switches on the Winnetka Grade Separation were taken out of service and the switches spiked:

1. Main Line crossover north of Pine Street
2. Main Line crossover at Eldorado
3. Crossover from northbound main to passing track north of Pine Street
4. Trailing point switch from northbound main to passing track at Eldorado

Due to curtailment of tie and weed cutting programs, all sections spent a great deal of time surfacing track with Barco unit tie tampers.

BRIDGE AND BUILDING
ADDITIONS AND BETTERMENTS

HEATING PLANT CHANGES AT DEMPSTER STATION - A.F.E. 5283

When the old hand-fired steam boiler in the Dempster Station became damaged beyond repair, it was replaced with a Crane Company SO-30-10 boiler and 5A14C oil burner complete with automatic controls and 2 - 275 gallon oil tanks. All work was done by company forces.

SEWERAGE CHANGES AT GLENAYRE - A.F.E. 5269

Company forces constructed 6" vitrified sewer lines from the station and the section house to connections with the sewer system of the Village of Glenview. The existing septic tanks were retired but were not removed.

PLATFORM EXTENSION AT NORTHBROOK - A.F.E. 5280

The northbound platform was extended 80 feet north with standard fill construction in order to permit 6-car trains to clear the crossing at Dundee Road. A wood stairway was built from the parking lot to the platform.

PARKING LOT AT BRIERGATE - A.F.E. 5274

A new parking lot with a capacity of 30 automobiles was built on the right-of-way east of the tracks and north of the Public Service Company's substation. Coarse fill was purchased from a local contractor and 3 cars of cinders used for topping.

REPAIR GREEN BAY ROAD BRIDGE, LAKE BLUFF - A.F.E. 5252

The deck on the bridge carrying Green Bay Road over our tracks at Lake Bluff was removed and the steel floor system reinforced by inserting additional diaphragms between the stringers, installing additional stiffeners on the cross girders and welding the lateral and cross braces to the stringers. 2 stringers were renewed. The column bases were reinforced by welding plates on all four sides of each column. A new 4" treated timber deck was laid and covered with a 3" asphalt pavement. All work was done by the Herlihy Mid-Continent Company.

BRIDGE AND BUILDING

ADDITIONS AND BETTERMENTS - cont'd.

FLOOR RENEWAL, RACINE STATION - A.F.E. 5277

The existing wood floors in both toilet rooms at Racine Station were repaired and surfaced with "Marbelized Marbelette." This work was done by a contractor.

RETIRE SHELTERS - A.F.E. 5267 and A.F.E. 5286

The shelters at Oakwood Road and West Nicholson Road were retired from the Investment Accounts. Shelter at Oakwood was demolished by vandals and the one at West Nicholson was blown over and wrecked by high winds.

VENTILATING FAN, MILWAUKEE TERMINAL - A.F.E. 5281

An 18" ventilating fan was purchased and installed in the window above the grill in the Milwaukee Terminal concession. Dietz Electric Company extended the A.C. service to this location. This installation was required by the City Health Department.

SHELTERS AT LINDEN AVENUE, WILMETTE - A.F.E. 5273

The north ends of both existing open shelters at Linden Avenue were enclosed with glazed sash to comply with a request from the Village in connection with the abandonment of the agency station in a rented building.

BRIDGE AND BUILDING
MAINTENANCE WORK
BRIDGES, TRESTLES AND CULVERTS

The following repairs were made by company forces:-

CANAL BRIDGE

The center catwalk on this bridge, which had been damaged several times by fires, was fireproofed by the Libbey ZONE process which consists of embedding limestone chips in an asphalt compound material brushed on the surface to be protected. Since the application of this material, and in spite of a very dry summer and fall, no fires have occurred on this walk.

INDIAN CREEK

23 piles, 4 caps, 6 braces and 21 stringers were renewed in this trestle. 2 bents in the river were completely renewed.

HIGHMOOR BRIDGE

Renewed 2 caps and 9 stringers in the southbound trestle and 1 cap in the northbound.

LAMBS TRESTLE

Renewed 1 cap.

HAZEL AVENUE, GLENCOE

Renewed 12 ties and 6 guard rails.

MUTUAL COAL CO. TRESTLE

Renewed 1 pile, 6 braces, 5 caps, 35 stringers and 23 ties.

BRIDGE AND BUILDING

MAINTENANCE WORK - cont'd.

BUILDINGS AND PLATFORMS

In addition to routine minor repairs to buildings and platforms, the following major work was done:

At Wilson Avenue, Chicago, the floor in front of the ticket booth and the steps from the main floor to the mezzanine, including a part of the middle landing, were repaired with "Marbelized Marbelette" by a contractor.

Constructed a wire mesh enclosure at Wilson Avenue for the storage of baggage shipments.

Cut back station roof, canopy and high concrete platform at Oakton Street to permit operation of freight trains on main line tracks and removal of gauntlet tracks.

Removed a part of the high platform formerly used by C.T.A. trains at Dempster Street.

Renewed the southbound platform curb at Grand Avenue, Waukegan.

Covered exterior walls of Beach Road section house with green slate-coat roofing and repaired windows and doors.

Renewed foundation posts and sills at Quarry Substation.

Covered exterior walls of Grange Avenue section house with roll roofing.

Made extensive repairs to the concrete curb of the southbound platform at Harrison Street, Milwaukee.

All defective concrete in Pits 1 and 2 at Milwaukee Terminal was replaced by a contractor, Ed. Steigerwald and Sons, Inc. Total cost was \$10,146.86.

Repaired 48 feet of concrete curb on the northbound platform at Ravinia with plank retainer and blacktop surfacing.

Covered exterior walls of Highwood section house with green slate-coat roofing and repaired windows and doors.

BRIDGE AND BUILDING

MAINTENANCE WORK - cont'd.

BUILDINGS AND PLATFORMS

Completed covering exterior wall surfaces of Carpenter Shop in Highwood Yard with Johns-Manville asbestos shingle siding. Repaired windows, doors and cornice. This work was started in 1952.

Constructed storm vestibule in south doorway of Highwood Transportation Office.

Built concrete foundation for new compressor for Highwood Car Shops. Laid new concrete floor in area formerly occupied by old compressor.

Replaced timbers supporting rails on inspection pit No. 7 in Highwood Car Shops. Relaid 264 feet of high 65# rail with 100# relay rail.

Repaired the tile roof on Lake Forest station.

Replaced 1 rail chair, broken brace rods and wood deck on Rondout track scale after a derailment.

MACHINE SHOP

In addition to the routine work of maintaining tools and work equipment for all divisions of the Department, the following work was done:

Overhauled 11 section gang motor cars and 6 small inspection speeders.

Rebuilt 4 push-cars.

Overhauled 2 air compressors.

Rebuilt sump pump in Highwood Inspection Shop.

Repaired 15 frogs and 17 switch points.

Made 8 gear racks for Model 31 automatic gates.

BRIDGE AND BUILDING

MAINTENANCE WORK - cont'd.

SHEET METAL SHOP

About 50% of the time of this shop is devoted to making water coolers, flush tanks, water supply tanks, card holders, toilet chutes, destination sign box panels, car heater magazines, roof flanges, roof jacks and ventilators for the Mechanical Department.

In addition to the foregoing work for the Mechanical Department and miscellaneous spot maintenance to heating plants and sheet-metal work on buildings, the following was done:

Made platform railing braces, sign braces, sign blanks, sandbox corners, trash cans, tilt-top cans, roofs for switch cabinets and manual control boxes for automatic gates.

Renewed the hot air furnace at Deerpath, Skokie Valley Line.

Renewed gutters on North Chicago Junction and Zion stations and the east side of Electrical and Carpenter Shop buildings at Highwood. The gutters on Zion station were renewed with aluminum.

Repaired gutters at Edison Court, Kenosha and Lake Forest stations and on Highwood Car Shops.

Repaired or replaced smokestacks at 17 locations on the system. Rebuilt furnace at Racine Freight House.

Cleaned all furnaces on the system.

Repaired 27 switch lamps, 23 marker lamps and 12 headlights.

BRIDGE AND BUILDING

MAINTENANCE WORK - cont'd.

MISCELLANEOUS

Renewed all wing and guard fences at Green Bay Road Bridge, Lake Bluff.

Constructed 10 new station sandboxes and 3 - 2½ ton coal boxes.

Renewed steam and water service lines to the Mechanical Department Blacksmith Shop at Highwood.

Renewed old lead water service line with 2" copper across Washington Street, Highwood.

Repaired underground fire lines in Highwood Yard.

Renewed gas service line from Highwood Office Building to hot water heater in the Trainmen's Room.

Cleaned septic tanks at Highmoor station and Deerpath section house.

Renewed water service line from Car Barn to Substation at Harrison Street, Milwaukee.

Made annual fire inspection at all stations, towers and section houses.

Delivered storeroom supplies to all points on the Shore Line, Skokie Valley Line, Libertyville Line and in Chicago.

FENCING

Built new fence on east side from Bolivar Avenue 500 feet north.

Rebuilt fence on north side from 415 feet east of Brice Avenue, Mundelein, to 1100 feet west, a total of 1515 feet.

Rebuilt fence on south side from Brice Avenue, Mundelein, to a point 1100 feet west.

BRIDGE AND BUILDING

MAINTENANCE WORK - cont'd.

PAINTING

LOCATION

Howard Street	-	Painted interior of station
E. Prairie Road Section House	-	" "
Briergate Section House	-	" "
South Upton Section House	-	" "
Racine Tower	-	" "
Milwaukee Terminal	-	Washed interior except Traffic Office
Highwood Office & Shops	-	Washed restaurant, painted trim on carpenter shop
Libertyville Section House	-	Painted interior

Painted all crossing signs, whistle posts, speed restriction signs, yard limit signs and miscellaneous warning signs on the entire system.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

ADDITIONS AND BETTERMENTS

CROSSOVER PROTECTION CIRCUITS - A.F.E. 5231 and A.F.E. 5259

The August 8, 1951, Signal Inspection Report of the Interstate Commerce Commission, Bureau of Safety, gave 22 violations of Section 136.203 -- Hand-operated Crossover between Main Tracks, Protection. This includes all crossovers in signal territory not now provided with protection. A program has been started to provide the necessary protection on two of these crossovers each year. A.F.E. 5231 was approved in 1952 but, due to the automatic gate program, work was not started until December of that year. This A.F.E. covered the crossovers at Northfield and West Park Avenue and was completed in January, 1953. A.F.E. 5259 covered crossovers at Briergate and Deerpath, which were completed by June 30, 1953.

AUTOMATIC GATES AND FLASHERS AT CLAVEY ROAD, S.V.L. - A.F.E. 5249

Installed one Griswold automatic gate with flashing light signals and sidewalk arm on the west side of the tracks and installed one automatic sidewalk gate and one automatic gate with flashing light signals on the east side of the tracks replacing a center-of-street-type autoflag. Gate controls are interconnected with a similar installation on the C&NW Ry. Automatic Block Signal No 224 was moved to the south side of Clavey Road. The City of Highland Park paid 50% of the cost of this installation.

AUTOMATIC GATES AND FLASHERS AT 16th STREET, NORTH CHICAGO, WEST LINE - A.F.E. 5250

Installed two Griswold automatic gates with flasher signals and sidewalk arms and two automatic sidewalk gates to replace two automatic flasher signals and a crossing flagman who was on duty 9 hours a day, 7 days a week.

AUTOMATIC GATES AND FLASHERS AT BELVIDERE STREET, WAUKEGAN - A.F.E. 5261

Installed two Griswold automatic gates with flasher signals and sidewalk arms and two automatic sidewalk gates to replace existing old-style automatic gates. The State of Illinois, Department of Public Works, paid 50% of the cost of this project.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

ADDITIONS AND BETTERMENTS - cont'd.

AUTOMATIC GATES AND FLASHERS AT 23rd STREET, ZION - A.F.E. 5243

Installed two Griswold automatic gates with flasher signals. Renewed 3300 track feet of aerial signal cable between 26th Street and 21st Street. In connection with this installation, the Illinois Commerce Commission ordered, and the City of Zion agreed to, the closing of 32nd Street across the right-of-way. Pending settlement of an appeal made to the courts, this crossing was barricaded.

RETIREMENT OF GATE TOWER, 64th STREET, KENOSHA - A.F.E. 5248

The frame gate tower, which housed control apparatus for manual operation of automatic gates during switching operations at Kenosha Freight House, was retired and new manual control apparatus installed in a box mounted on the side of the relay case.

INSTALLATION OF REFLECTORIZED CROSSING SIGNS IN WISCONSIN - A.F.E. 5282

Pursuant to an order of the Wisconsin Public Service Commission dated October 16, 1953, reflectORIZED crossbuck signs and reflectORIZED "2 Track" signs were installed on both sides of the tracks at the following crossings:

Berryville Road
Kenosha Country Club (Pike Creek) Road
Piper's Road
Klinkert's Road

AUTOMATIC GATES AND FLASHER SIGNALS, DAVIDSON ROAD - A.F.E. 5256

Two Griswold automatic gates with flasher signals were installed, replacing a track-box-type autoflag. Power is taken locally and line wires were installed to the track circuit starts.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

ADDITIONS AND BETTERMENTS - cont'd.

AUTOMATIC GATES AND FLASHER SIGNALS, ST. MARY'S ROAD,
LIBERTYVILLE BRANCH - A.F.E. 5268

Two Griswold automatic gates with flasher signals were installed, replacing a track-box-type bell and light signal. This work was done at the request of the Department of Public Works, State of Illinois, which has taken over the maintenance of this road and paid 90% of the cost of the project.

AUTOMATIC GATES AND FLASHER SIGNALS, MILWAUKEE AVENUE,
LIBERTYVILLE - A.F.E. 5262

Installed two Griswold automatic gates with flasher signals and sidewalk arms and two automatic sidewalk gates and removed the existing old style automatic gates. The State of Illinois, Department of Public Works, paid 50% of the cost.

REVISION OF GATE CONTROL CIRCUITS, LAKE FOREST - A.F.E. 5272

In accordance with the terms of an agreement with the City of Lake Forest, which permitted us to eliminate the flagman at Deerpath Avenue, the automatic gate control circuits for Deerpath Avenue and Westminster Avenue were revised. The southbound start for Westminster was moved 200 feet farther north and a new cut section installed south of Scott Street platform for the southbound start for Deerpath Avenue.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

MAINTENANCE WORK

In addition to the routine work of maintaining interlocking plants, block signals and crossing protection devices, the following work was done and charged to maintenance accounts:

Renewed the underground power cable into the basement at Oakton Street station with 3-conductor No. 6 armored cable.

Renewed the storage battery at Simpson Street, Skokie Valley Line, with 5 cells of DME5A battery.

At South Upton, Racor type "M" insulated vertical head rods were installed on the southbound slip switch at Green Bay Junction and cable renewed to No. 51 switch machine. Renewed cable to Dwarf Signal L-38. Cable crossing under the track was installed in steel pipe.

Replaced time release switch indicator on new concrete foundation at south end of facing point crossover south of Downey's station, Skokie Valley Line.

Renewed air pipes and cables to manual gates at 22nd Street, West Line, and renewed castings on the two west gates.

Renewed batteries at Glen Rock Avenue. Installed 4-cell DME5A.

Renewed batteries at Cornelia Street, Waukegan. Installed 4-cell DMGO9 from Milwaukee Avenue, Libertyville.

Removed derail from siding at Brookside Avenue, Waukegan, on September 23, 1953.

Renewed horizontal shaft, pinions and gear racks on the northeast gate at Glen Flora Avenue, Waukegan.

At 27th Street, Zion, the automatic gate on the east side of the tracks was moved to the north side of the street, all gate cables were renewed and a third, steady-burning light added to both gate arms. Cable crossing under the tracks was installed in steel pipe. The battery was placed in a concrete battery box.

The battery at 21st Street, Zion, was renewed with a secondhand DME-13, 4-cell battery.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

MAINTENANCE WORK - cont'd.

The motor driven autoflag at Winthrop Harbor was replaced with one of the magnetic type.

At 75th Street, Kenosha, mercury controllers and Griswold gate lamps were installed on both gate arms, cables in gate pedestals were renewed and the battery renewed and installed in a concrete battery box. Two runs of 3-inch pipe were put through the street for future use.

Renewed underground cables to two west gates at 73rd Street, Kenosha.

The old-style, knob-type manual control switches for automatic gates at Roosevelt Road, Kenosha, were replaced with push-button type switches. Renewed bootlegs and track cables at northbound track cut.

At 64th Street, Kenosha, all gate cables were renewed. Three 3-inch steel pipes were installed across the tracks and one 3-inch and one 4-inch pipe across the street.

Renewed one post and crossbuck sign at 60th Street, Kenosha.

Installed two crossbuck signs at the first crossing north of Bose Road, which is now known as "Bose Road - North."

Renewed gate cables at Durand Road and installed 3-inch pipe across tracks and street. Installed mercury controllers and a third, steady-burning light on each gate arm.

Renewed crossbuck signs at River Road and at Oakwood Road.

Renewed underground cable to northbound Distant Signal for Ryan Interlocking Plant and renewed posts and crossbuck signs at Ryan Road.

Changed out the Mechanical Switchman at Austin Avenue on March 27, 1953.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

MAINTENANCE WORK - cont'd.

Installed interconnecting cable at Roger Williams Avenue, Ravinia, on December 4, 1953, to connect to C&NW Ry. release case for joint operation of automatic gates. The C&NW Ry. furnished the cable.

Renewed pipe and wires on manual gates at Lincoln Avenue, Highland Park.

Renewed all gate cables at North Gate, Fort Sheridan, and installed 3-inch pipe across tracks and under sidewalk on west side. A third, steady-burning light, with mercury controller, was added to each gate arm.

The northbound track cut at Westminster Avenue was moved to the north side of the street and new track cable installed. Also renewed the southbound track cable at the same crossing.

Installed four standard crossbuck signs at 14th Street, North Chicago, East Line.

Fusetron fuses were installed in all automatic gates on the System, except those on the Shore Line. This type of fuse prevents blowing of gate motor fuses on reversals and prevents burning of gate motors when they become stalled.

Arms on all crossing gates were lengthened to extend one foot beyond the center of the road.

Old and obsolete "turtle back" switch circuit controllers were replaced with Union Switch and Signal Company Style U-5 switch circuit controllers at the following locations:

Ravinia Park Siding	- 1
Vine Avenue Siding	- 1
Washington Ave., Highwood - Siding	- 1

Renewed switch point sockets on 21 switch circuit controller rods.

During the year 218 relays were repaired in the Highwood Relay Shop.

36 gate motors were repaired by commercial electric shops.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

MAINTENANCE WORK - cont'd.

Seven automatic gate pedestals were replaced and overhauled in the Highwood Signal Shop. Locations are as follows:

East Prairie Road	1 gate
Main Street	1 "
Willow Road	1 "
*Rockland Avenue, Lake Bluff	1 "
Glen Flora Avenue	1 "
*Fourth Street, Libertyville	1 "
Garfield Avenue	1 "

*Gate pedestal damaged by automobile.

CROSSING GATE OPERATION

Automatic Gate Locations

	<u>1953</u>	<u>1952</u>
Gates broken by automobiles	100	85
Other interruptions*	280	239

Manually Operated Crossing Gate Locations

Gates broken by automobiles	12	29
Other interruptions*	29	36

*Includes interruptions due to power failures, blown fuses, mechanical failures, frosted contacts, line trouble, track circuit trouble, etc., pedestrians breaking sidewalk arms, etc.

COMMUNICATION AND SIGNALS DIVISION

SIGNAL AND INTERLOCKING

MAINTENANCE WORK - cont'd.

CROSSING GATES AND SIGNALS MAINTAINED AS OF DEC. 31

	<u>1953</u>	<u>1952</u>
Automatic Gates	39	41
Automatic Gates and Flashers	39	31
Manual Gates	7	7
Flasher Signals	5	6
Autoflags - Track Circuit	15	16
Autoflags - Manual Control	3	3
Block Signals - S.T. Miles	112.6	112.6
Switch Protection Signals	8	8
Interlocking Plants	4	4
Smash Gates	3	3
Gate Indication Signals	14	14

COMMUNICATION AND SIGNALS DIVISION

TELEPHONE FACILITIES

	<u>1953</u>	<u>1952</u>
Aerial Cable - Miles	12.14	12.14
Underground Cable - Miles	26.68	26.68
2-Wire Open Line	143.64	143.64
Cable Terminals - All Classes	121	121
XYZ Cable Terminal Protections	21	21
Cable Houses	37	37
Telephone Booths	58	58
Telephone Boxes on Poles	7	7
Telephone Stations	204	203
Interlocking Plant Telephones	16	16
Dispatch Boards - 20 Line	1	1

EQUIPMENT

ADDITIONS AND BETTERMENTS

PURCHASE OF TIE TAMPING TOOLS - A.F.E. 5270

Purchased 4 Worthington WTT-17 pneumatic tie tampers complete with tamping bars.

RETIREMENT OF TRACK MOTOR CARS - A.F.E. 5285

This A.F.E. was issued to record the retirement of two track motor cars which had been damaged beyond repair and had been out of service for a considerable period of time.

WAY AND STRUCTURES SUMMARY

	<u>1953</u>	<u>1952</u>
<u>TRACK CONSTRUCTION - LINEAL FEET</u>		
Sidetrack Constructed on Railway R/W	--	3,606
" " " Private Property	370	610
" Retired	--	787
 <u>RAIL INSTALLED - SINGLE TRACK FEET</u>		
149#	--	366
128#	--	682
115#	4,386	2,223
100#	--	4,875
80#	--	3,125
TOTAL	4,386	11,271
 <u>RAIL RENEWED IN KIND - SINGLE TRACK FEET</u>		
100#	--	402
80#	--	--
TOTAL	--	402
 <u>RAIL REMOVED - SINGLE TRACK FEET</u>		
102#	--	1,048
100#	4,386	2,223
80#	--	3,980
65#	--	1,201
TOTAL	4,386	8,452
 <u>TIE PLATES INSTALLED</u>		
100#	6,707	7,692
115#	4,639	2,010
 <u>ANGLE BARS RENEWED - PAIRS</u>		
100#	101	894

WAY AND STRUCTURES SUMMARY - cont'd.

	<u>1953</u>	<u>1952</u>
<u>SPECIAL WORK</u>		
Crossovers Removed	1	--
Turnouts Installed	--	6
Turnouts Removed	--	1
Crossings Built Up	1	2
Frogs Repaired	15	8
Switch Points Repaired	17	11
Thermit Welds	91	114

TIES RENEWED

Main Line	7,320	13,815
Sidetrack	487	752
Switch	468	274
Bridge	<u>35</u>	<u>66</u>
TOTAL	8,310	14,907

TIES INSTALLED ON NEW WORK

Main Line - New	--	--
Sidetrack - "	--	942
Switch - "	--	102

BALLAST - CARS

Stone	1	52
-------	---	----

CROSSINGS

Concrete Slab Crossings Installed	--	1
Asphalt Crossings Rebuilt	4	6

BRIDGE REPAIRS

Bridges Repaired	7	7
------------------	---	---

WAY AND STRUCTURES SUMMARY - cont'd.

	<u>1953</u>	<u>1952</u>
<u>PAINING</u>		
Buildings - Painted and Decorated	7	22
<u>CROSSING PROTECTION</u>		
Automatic Gates and Flashers Installed - Locations	7	6
Automatic Gates Damaged by Automobiles	100	85
Manual Gates Damaged by Automobiles	12	29
<u>FENCING</u>		
Right-of-Way Fence Rebuilt - Lin. Feet	3,115	2,500
<u>WEED KILLER</u>		
One Application - Single Track Miles	--	200
Total Solution Used - Gallons	--	44,000
<u>CARLOAD MATERIAL</u>		
Sand and Stone	9	66
Coal	4	6
Ties	32	39
Cinders	23	47
Miscellaneous	<u>7</u>	<u>31</u>
TOTAL	75	189

DISTRIBUTION AND POWER DIVISION

ADDITIONS AND BETTERMENTS

DEMPSTER STREET HEATING PLANT - A.F.E. 5283

Installed all wiring and electrical controls for the new oil burner at Dempster Street station.

MYSTIC ADHESIVE PRODUCTS SIDING - NORTHFIELD - A.F.E. 5244 AND JOB ORDER 958

Electrified the full length of the new sidetrack serving the above industry at Winnetka Avenue, Skokie Valley Line. The 457 feet on the right-of-way was charged to the A.F.E. and the 370 feet across the street and on private property was charged to the industry on Job Order 958.

AUTOMATIC GATE PROGRAM - SYSTEM

The following work was done for the Communication and Signals Division in connection with the installation of automatic gates:

Clavey Road, S.V.L. - A.F.E. 5249 - Installed line drop.

16th Street, North Chicago - A.F.E. 5250 - Installed line drop.

14th Street, North Chicago - A.F.E. 5260 - Installed larger capacity power drop for existing gates and proposed future additions.

23rd Street, Zion - A.F.E. 5243 - Renewed 3300 feet of aerial signal cable between 26th Street and 21st Street. Installed necessary drops.

Davidson Road, Racine County - A.F.E. 5256 - Installed line wires and drops. Retired and scrapped the existing track-box controlled autoflag.

St. Mary's Road, Libertyville Branch - A.F.E. 5268 - Installed line wires and drops. Retired and scrapped the existing track-box controlled bell and light signal.

Lake Forest gate control circuit revisions - A.F.E. 5272 - Extended line wires and installed drops, installed cable for single rail track circuit for gates at Deerpath and Westminster.

DISTRIBUTION AND POWER DIVISION

ADDITIONS AND BETTERMENTS - cont'd.

RETIREMENT OF CROSSING SIGNAL, GOLF ROAD, WAUKEGAN - A.F.E. 5251

Removed and scrapped the two steel bridges over the street on either side of the tracks which formerly carried illuminated warning signs.

CONVERSION TO 60-CYCLE POWER IN WISCONSIN

The Railway and the Commonwealth Edison Company are cooperating in a plan to replace three existing 25-cycle substations (McKeon, Racine and College) with secondhand 60-cycle rotary converter equipment. When the three substations are changed over and are operating on 60-cycle energy from the Wisconsin Electric Power Company, the present alternating current contract with the Commonwealth Edison Company covering the purchase of 25-cycle energy at Beach Substation and transportation into Wisconsin on Railway transmission lines will be terminated and the Railway will cease to take 25-cycle energy from the Commonwealth Edison Company. The agreement between Commonwealth Edison Company and the Railway provides that the total cost of the project be apportioned as follows:

Commonwealth Edison Company	- 74.24%
Railway	- <u>25.76%</u>
	100.00%

Work done in 1953 is described below -

McKeon Road - A.F.E. 5271

A secondhand 60-cycle rotary converter installation, complete with six reclosing feeder breaker panels and four manual feeder breaker panels, was purchased from the Omaha and Council Bluffs Street Railway Company. This equipment was delivered on September 28, 1953. The 13.2 kv, 3-phase transformer which came with this equipment was exchanged for three single phase 26.4 kv transformers from the Commonwealth Edison Company. A 37 kv oil circuit breaker was also obtained from the Edison Company.

On September 2, 1953, the No. 1 rotary was relocated to facilitate installation of the new equipment. No. 2 rotary installation was taken out of service on September 15. The three machine transformers, a reactor and a spare machine transformer were scrapped on September 16. The rotary was scrapped on December 26.

At the end of the year this project was approximately 60% completed.

DISTRIBUTION AND POWER DIVISION

ADDITIONS AND BETTERMENTS - cont'd.

CONVERSION TO 60-CYCLE POWER IN WISCONSIN - cont'd.

Racine Substation - A.F.E. 5278

The No. 2 rotary installation was taken out of service on December 28 and the equipment, including a 500 KW 25-cycle rotary, three 185 KW 25-cycle transformers and a reactor, was scrapped. No. 1 rotary was equipped with a switch for shunt machine operation. Switching changes were made so that the tower can accommodate both 25-cycle and 60-cycle lines.

At the end of the year this project was approximately 2% completed.

College Avenue - A.F.E. 5279

No work was done at this location in 1953.

RAIL RENEWAL, KENOSHA - A.F.E. 5237

Installed rail bonds on 4386 track feet of new 115# rail relaid on the northbound track through the curves at Kenosha.

PURCHASE OF MAINTAINERS' TRUCK - A.F.E. 5242

Purchased a one-ton Chevrolet panel-body truck for the use of Wisconsin substation maintainers. Truck S-102 was placed in service on February 18, 1953.

WORK FOR MECHANICAL DEPARTMENT AT HIGHWOOD

A.F.E. 5266 - Installed transformer rack, controls and wiring for new air compressor installation in the Car Shops.

A.F.E. 5263 - Installed wiring for secondhand wheel press.

DISTRIBUTION AND POWER DIVISION

HARRISON STREET FREQUENCY CHANGER

Under an agreement dated November 28, 1952, the North Shore Railway permitted the Wisconsin Electric Power Company to install a 2500 k.v.a. frequency changer in our Harrison Street substation. This frequency changer delivers 25-cycle energy at 13,200 volts for the use of the Railway. The Power Company paid all the cost of the installation, including the relocation of the Railway's two rotary converters. The Power Company pays all expenses for operation and maintenance of its equipment, and the Railway Company substation employees operate and do the minor maintenance on the changer. The installation is in connection with the Power Company's obligation, under order of the Wisconsin Public Service Commission, to continue to supply the Railway with 25-cycle energy until January 1, 1955, and is to provide them a means of doing so and at the same time make it possible for them to use the space at their Commerce Street station, now occupied by 25-cycle generators, for other purposes. The frequency changer operation began, under instructions from the Power Company Load Dispatcher, on December 18, 1953.

DISTRIBUTION AND POWER DIVISION

MAINTENANCE

In addition to the routine work of this division, the following major items of maintenance work were done:

Renewed 130 wood poles, 167 - 45,000 volt transmission line insulators, 225 anchors, 407 back guys and 407 cross spans.

Renewed 14,425 feet of 4/0 trolley wire, including 4,155 feet used to repair 12 wire breaks.

Replaced rubber insulation on catenary bridges between 14th Street and Greenwood Avenue, Waukegan.

Renewed 1,760 - 400,000 C.M. rail bonds, including 221 used on rail renewal at Kenosha.

Cleaned, inspected and changed oil in No. 1 bank (3) of step-up transformers, 2 sets (6) machine transformers, spare machine transformer, 2 machine reactors, oil switches and current transformers at Harrison Street substation.

At Nechuta substation the feeder panel, which was damaged by lightning, was repaired by General Electric Company. The feeder breaker was rebuilt and mounted on a new panel complete with relays.

The bank of step-up transformers at North Chicago substation was scrapped and the 1000 KW machine transformers were painted and moved to Bose Road for storage.

Kenosha substation was changed over to Wisconsin Electric Power Company lines on February 3, 1953. One bank of transformers from Ravinia was changed to 26.4 kv and exchanged with those at Kenosha. The rotary frame and armature were cleaned and spray painted and the substation steel structure was painted.

Cut trolley wires and assisted in moving 6 houses across the tracks at various locations during the year.

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR 1953

POWER DISTRIBUTION

	1953	1952	% Inc. or Dec.
Wisconsin - exclusive of Milwaukee City			
Milwaukee City	7,674,372	8,461,349	9.3
Wisconsin - including Milwaukee City	21,284,403	41,131	48.3
Milwaukee D.C. furnished by W.E.P. Co.	7,695,656	8,502,480	9.5
Wisconsin D.C. furnished by Winthrop Harbor	1,657,375	1,955,997	15.3
Wisconsin Total	312,634	339,902	8.0
Illinois - Public Service Co. & C.T.A.	9,665,665	10,798,379	10.5
Total Purchased	21,284,403	22,871,988	6.9
Total Used by Freight Locomotives	30,950,068	33,670,367	8.1
Used by C.T.A. Skokie Shops	1,720,608	1,891,067	9.0
Total Interurban Use	910,870	702,560	29.7
	28,318,590	31,076,740	8.9
Milwaukee City			
Average Monthly Demand for Year as Billed	1,672,405	1,984,336	15.7
A.C.&D.C. K.W.H. Purchased on Demand	9,340	9,438	1.0
Charge Basis			
Load Factor for Year	29,095,147	31,663,025	8.1
	35.6%	38.2%	6.3
Car Miles Operated on North Shore Power, including C.T.A. on Skokie Division			
Car Miles Freight	5,953,782	6,470,042	8.0
Car Miles Other Interurban	899,798	975,311	7.7
Kilowatt Hours per Car Miles Less Freight and Skokie Shops	5,053,984	5,494,731	8.0
	5.60	5.67	1.2
Average Mean Temperature for Year	53.1°	51.6°	2.9
Normal Mean Temperature for Year	50.1°	49.6°	

DISTRIBUTION AND POWER DIVISION
COST OF ELECTRICAL ENERGY PER CAR MILE

K.W.H. - C.N.S.&M. RY.

	<u>Total K.W.H.</u>	<u>Car Miles on N.S. Power</u>
Jan.	3,006,573	534,078
Feb.	2,665,730	479,042
Mar.	2,754,375	513,793
Apr.	2,622,272	496,245
May	2,508,452	514,391
June	2,274,508	479,632
July	2,274,536	483,717
Aug.	2,422,500	493,439
Sept.	2,307,562	472,708
Oct.	2,630,723	493,400
Nov.	2,587,510	485,293
Dec.	<u>2,895,327</u>	<u>508,044</u>
Total	30,950,068	5,953,782

Purchased Power - Account 59	\$515,483.26
Operating Expense - Power Accounts	\$614,781.78
Operating Expense	\$ 99,298.52
Total Car Miles on North Shore Power	5,953,782

Unit Power Cost:	1.666 cents / K.W.H.
Unit Power Consumption:	5.198 K.W.H./ car mile
Unit Car Mile Power Cost:	8.658 cents / car mile
Unit Total Power Accounts Expense:	10.326 cents / car mile

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

LOCOMOTIVE METERED K.W.H.

<u>Engine No.</u>	<u>K.W.H. Used</u>	<u>Mileage</u>	<u>K.W.H. per Mile</u>
452.	133,712	15,610	8.57
453	130,520	13,110	9.96
454	131,500	13,931	9.44
455	311,230	19,370	16.07
456	341,140	17,245	19.78
457	176,340	13,026	13.54
458	46,060	4,520	10.19
459	250,650	21,894	11.45
	1,521,152	118,706	12.81

Total Metered at Locomotive - 1,521,152 K.W.H.

Power used by locomotives - 1,521,152 D.C. K.W.H.

Illinois Part 78.7% 1,197,244

Plus 10% Distribution Losses 119,725

D.C. K.W.H. used in Illinois at
point of delivery 1,316,969 K.W.H.

Wisconsin Part 21.3% 322,908

Plus 25% Transmission & Conversion
Losses 80,729

A.C. K.W.H. used in Wisconsin at
point of delivery 403,637 K.W.H.

Total Energy at Power Co. Metering
Points 1,720,606 K.W.H.

K.W.H. Illinois Part - 1,316,969 at \$1.858 \$24,463.82

K.W.H. Wisconsin Part - 403,637 at \$1.445 5,873.90

Total Cost for Electric Energy \$30,337.72

Total Freight Car Miles Operated 899,798

A.C. & D.C. at point of delivery per freight
car mile 1.912 K.W.H.

Purchased power cost per freight car mile 3.37¢

Total Net Freight Ton Miles 21,842,929

Total K.W.H. per Net Freight Ton Mile 0.0788

POWER PURCHASED - 1953

	1953			1952						
	Amount	Average Rate	Cost	Amount	Average Rate	Cost	Percent Inc. or Dec.		Cost	
							Amt.	Rate		
<u>Public Service D.C. Contract</u>										
Demand as Run	88,086	--	--	85,451	--	--	3.1	--	--	
Billing Demand	88,086	\$2.091	\$184,150.50	85,451	\$2.101	\$179,539.25	3.1	0.5	2.6	
Energy - K.W.H.	*21,399,491	0.996¢	213,079.10	23,160,545	0.971¢	224,928.07	7.6	2.6	5.3	
Total and Average	--	1.856¢	\$397,229.60	--	1.746¢	\$404,467.32	--	6.3	1.8	
<u>Public Service A.C. Contract</u>										
Demand as Run	5,917	--	--	9,743	--	--	39.3	--	--	
Billing Demand	**5,993	\$1.50	\$ 8,989.50	**9,803	\$1.50	\$ 14,704.50	38.9	--	38.9	
Energy - K.W.H.	*1,476,156	0.738¢	10,894.82	2,921,550	0.723¢	21,134.53	49.5	2.1	48.5	
Total and Average	--	1.347¢	\$ 19,884.32	--	1.227¢	\$ 35,839.03	--	9.8	44.5	
<u>Wisconsin Electric Power Co.</u>										
Demand as Run	15,988.3	--	--	14,346.8	--	--	11.4	--	--	
Billing Demand	***18,000	\$1.222	\$ 21,999.96	***18,000	\$1.222	\$ 21,999.96	--	--	--	
Energy - K.W.H.	6,219,500	1.098¢	68,313.95	5,580,930	1.088¢	60,702.05	11.4	0.9	12.5	
Total and Average	--	1.452¢	\$ 90,313.91	--	1.482¢	\$ 82,702.01	--	2.0	9.2	
<u>W.E.P. Co. Metered D.C.</u>	1,657,375	1.20¢	\$ 19,888.50	1,955,997	1.20¢	\$ 23,471.97	15.3	--	15.3	
<u>G.T.A. Calvary D.C. (A)</u>	197,546	1.568¢	\$ 3,097.86	51,345	1.325¢	\$ 680.31	284.7	18.3	355.4	
<u>GRAND TOTAL -</u>										
Demand - A.C. & D.C.	112,079	\$1.920	\$215,139.96	113,254	\$1.909	\$216,243.71	1.0	0.6	0.5	
Energy - A.C. & D.C.	30,950,068	1.019¢	315,274.23	33,670,367	0.983¢	330,916.93	8.1	3.6	4.7	
Cost	--	1.714¢	\$530,414.19	--	1.625¢	\$547,160.64	--	5.5	3.1	

STATISTICS

	<u>Public Service D.C.</u>		<u>Public Service A.C.</u>		<u>Wisconsin Electric Power Co. A.C.</u>	
	<u>1953</u>	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>	<u>1952</u>
Coal Cost per Ton - Mo. Avg.	--	--	--	--	\$7.73	\$7.63
Fuel Cost per Therm - Mo. Avg.	2.69¢	2.57¢	2.69¢	2.57¢	--	--
Adjustment per K.W.H.	0.1484¢	0.1230¢	0.1484¢	0.1230¢	0.398¢	0.388¢
Load Factor as Run	33.3%	37.0%	34.2%	41.0%	53.1%	53.1%
High Monthly Demand	Month KW	Month K.W.	Month K.W.	Month K.W.	Month K.W.	Month K.W.
Low Monthly Demand	Mar. 8,042	Dec. 7,953	Jan. 997	July 1,033	Mar. 1,466.6	Jan. 1,351.8
Average Monthly Demand	Aug. 6,280	Aug. 6,385	Sept. 313	May 653	June 1,106.2	June 1,086.0
	-- 7,341	-- 7,121	-- 493	-- 812	-- 1,332.4	-- 1,195.5

*30% Load Factor

**70% Demand

***Minimum Demand

(A) 359,695 K.W.H. Supplied by Calvary - 308,350 K.W.H. Used at Skokie Shops during 1952
 910,870 A.C. & D.C. K.W.H. used at Skokie Shops during 1953
 702,560 A.C. & D.C. K.W.H. used at Skokie Shops during 1952

DISTRIBUTION AND POWER DIVISION

POWER SUMMARY AS BILLED - YEAR 1953

1,709,224	No. 30 Skokie	D.C.
943,146	No. 31 Lake Avenue	D.C.
816,584	No. 32 Kotz Road	D.C.
125,070	No. 32 Signals	A.C.
1,195,988	No. 33 Deerfield Road	D.C.
739,880	No. 34 Old Mill Road	D.C.
140,480	No. 34 Signals	A.C.
393,606	No. 35 Laurel Avenue	D.C.
1,126,178	No. 36 Libertyville	D.C.
463,808	No. 37 Central Street	D.C.
1,758,669	No. 38 Winnetka	D.C.
1,785,281	No. 39 Ravinia	D.C.
1,389,480	No. 40 Fort Sheridan	D.C.
2,223,150	No. A24 North Chicago	D.C.
953,770	No. 43 Waukegan, Pine Street	D.C.
299,307	No. 44 Beach Road	D.C.
937,900	No. 45 Winthrop Harbor	D.C.
3,346,460	No. 80 Lake Bluff	D.C.
280,020	Highwood Shops	A.C.
475,170	Skokie Shops	A.C.
45,400	Glencoe Signals	A.C.
52,000	Kenilworth Signals	A.C.
91,170	Howard Street Station	A.C.
78,100	Waukegan Signals	A.C.
24,780	Zion Signals	A.C.
21,399,491	Public Service Co. D.C. Contract Billings	
197,546	C.T.A. Calvary Billings	D.C.
21,597,037	Total Purchased - Illinois	D.C.
312,634	Less Winthrop Harbor to Wisconsin	D.C.
21,284,403	Total - Illinois	D.C.
1,476,156	Public Service Co. Billings	A.C.
22,760,559	Total - Illinois	A.C. & D.C.
6,219,500	Wisconsin Electric Power Co.	A.C.
1,657,375	Wisconsin Electric Power Co.	D.C.
312,634	Winthrop Harbor to Wisconsin	D.C.
30,950,068	Total A.C. & D.C. Purchased	
=====		
432,700	McKeon Substation	D.C.
823,330	Kenosha Substation	D.C.
473,810	Bose Road Substation	D.C.
944,100	Racine Substation	D.C.
64,800	Quarry Substation	D.C.
344,440	Four Mile Road Substation	D.C.
507,900	Neshuta Substation	D.C.
499,800	Carrollville Substation	D.C.
522,700	College Avenue Substation	D.C.
721,000	Milwaukee Substation	D.C.
5,334,580	Total Converted in Wisconsin	D.C.
1,657,375	Wisconsin Electric Power Co.	D.C.
312,634	Winthrop Harbor to Wisconsin	D.C.
7,304,589	Total - Wisconsin	D.C.
7,695,656	K.W.H. Wisconsin	A.C.
21,284	Less Milwaukee City	A.C.
7,674,372	K.W.H. A.C. to Wisconsin exclusive of Milwaukee City	
312,634	K.W.H. D.C. to Wisconsin from Winthrop Harbor	
7,944,072	K.W.H. to Wisconsin exclusive of Milwaukee City	

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1952

ENERGY PURCHASED

Wisconsin Electric Power Co.

C.T.A.

Public Service Company

	D.C.	A.C.	D.C.	A.C.	D.C.	A.C.
Jan.	2,106,426	259,360	34,114	483,776	191,125	191,125
Feb.	1,879,179	107,200	20,001	529,102	170,250	170,250
Mar.	1,925,272	109,440	20,089	570,502	169,250	169,250
Apr.	1,819,921	119,200	2,145	534,796	150,500	150,500
May	1,693,830	101,440	37,331	548,976	126,875	126,875
June	1,554,221	151,840	36,869	430,328	101,250	101,250
July	1,544,481	101,280	29,482	496,418	102,875	102,875
Aug.	1,645,961	107,806	25,110	538,748	104,875	104,875
Sept.	1,580,688	83,920	29,966	513,488	99,500	99,500
Oct.	1,816,059	103,600	33,682	558,132	119,250	119,250
Nov.	1,802,892	118,800	34,730	486,838	144,250	144,250
Dec.	2,030,561	112,270	46,725	528,396	177,375	177,375
Total	21,399,491	1,476,156	197,546	6,219,500	1,657,375	1,657,375

30,950,068
29,095,147
9,339
35.6%

Grand Total - System K.W.H. A.C. & D.C.
Energy Purchased on Demand - A.C. & D.C. K.W.H.
Average System Demand for the Year - K.W.
System Load Factor

DISTRIBUTION AND POWER DIVISION
POWER STATISTICS FOR YEAR - 1953
MILWAUKEE CITY POWER STATISTICS

Kilowatt Hours - D.C.

	<u>N.S. Feeder</u>	<u>W.E.P. Co.</u>	<u>Total</u>
Jan.	3,040	191,125	194,165
Feb.	2,240	170,250	172,490
Mar.	1,410	169,250	170,660
Apr.	1,000	150,500	151,500
May	1,290	126,875	128,165
June	250	101,250	101,500
July	330	102,875	103,205
Aug.	390	104,875	105,265
Sept.	120	99,500	99,620
Oct.	310	119,250	119,560
Nov.	560	144,250	144,810
Dec.	4,090	177,375	181,465
Total	15,030	1,657,375	1,672,405

Kilowatt Hours - A.C.

Jan.	4,362
Feb.	3,265
Mar.	2,149
Apr.	1,466
May	1,897
June	359
July	458
Aug.	579
Sept.	169
Oct.	490
Nov.	778
Dec.	5,312
Total	21,284

Total D.C. K.W.H. to Milwaukee City	=	1,672,405
Total A.C. K.W.H. to Milwaukee City	=	21,284
Wisconsin Ratio of Conversion	=	69.3%

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

ILLINOIS SUBSTATIONS D.C. OUTPUT IN K.W.H.

	<u>Calvary Sub.</u>	<u>Skokie No. 30</u>	<u>Lake Ave. No. 31</u>	<u>Kotz Rd. No. 32</u>	<u>Deerfield Road No. 33</u>
Jan.	34,114	202,229	81,878	68,904	111,979
Feb.	20,001	148,938	78,888	66,368	98,649
Mar.	20,089	167,219	71,828	72,590	96,179
Apr.	2,145	150,949	68,618	71,390	114,699
May	37,331	116,429	81,628	66,090	112,619
June	36,829	94,179	78,708	71,990	98,729
July	29,482	112,139	70,648	59,990	97,149
Aug.	25,110	124,619	76,458	66,790	85,949
Sept.	29,966	116,556	76,688	66,090	86,729
Oct.	33,682	135,949	86,108	68,902	96,639
Nov.	34,730	149,979	82,768	64,190	98,839
Dec.	46,725	190,039	88,928	73,290	97,829
	197,546	1,709,224	943,146	816,584	1,195,988

	<u>Old Mill Rd. No. 34</u>	<u>Laurel Ave. No. 35</u>	<u>Lbtville No. 36</u>	<u>Central St. No. 37</u>	<u>Winnetka No. 38</u>
Jan.	75,090	42,998	130,039	42,250	150,918
Feb.	62,690	40,838	110,719	25,710	164,618
Mar.	58,990	40,688	114,989	36,620	152,718
Apr.	53,890	35,978	89,969	39,350	148,518
May	59,390	28,278	80,799	35,260	145,618
June	56,390	26,878	62,709	39,150	140,318
July	55,490	26,348	67,239	45,420	130,618
Aug.	64,490	26,118	73,439	45,040	133,318
Sept.	56,590	26,078	74,239	36,180	127,318
Oct.	66,490	32,228	90,169	43,060	151,618
Nov.	58,990	33,438	102,389	36,288	148,171
Dec.	71,390	33,738	129,479	39,480	164,918
	739,880	393,606	1,126,178	463,808	1,758,669

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

ILLINOIS SUBSTATIONS D.C. OUTPUT IN K.W.H. - cont'd.

	<u>Ravinia No. 39</u>	<u>Ft. Sheridan No. 40</u>	<u>No. Chicago A-24</u>	<u>Waukegan No. 43</u>
Jan.	155,490	160,890	230,610	91,060
Feb.	132,291	152,590	200,920	83,700
Mar.	160,890	131,290	199,930	89,900
Apr.	151,390	120,090	180,790	80,240
May	144,190	103,290	177,900	74,700
June	140,090	93,790	157,450	66,700
July	144,590	90,490	155,850	65,830
Aug.	150,690	90,990	162,670	76,410
Sept.	145,190	89,490	163,740	68,710
Oct.	159,090	109,190	187,630	83,070
Nov.	145,390	115,590	190,520	80,890
Dec.	155,990	131,790	215,140	92,560
	<u>1,785,281</u>	<u>1,389,480</u>	<u>2,223,150</u>	<u>953,770</u>

	<u>Beach Rd. No. 44</u>	<u>W. Harbor No. 45</u>	<u>Lake Bluff No. 80</u>
Jan.	34,021	86,800	308,330
Feb.	25,180	89,000	281,680
Mar.	20,971	93,000	303,540
Apr.	32,800	82,700	291,930
May	21,069	63,900	285,670
June	19,650	64,800	256,430
July	22,760	64,400	251,550
Aug.	29,360	69,000	276,310
Sept.	19,370	71,900	248,430
Oct.	21,386	79,900	290,980
Nov.	25,200	79,300	271,800
Dec.	27,540	93,200	279,810
	<u>299,307</u>	<u>937,900</u>	<u>3,346,460</u>

K.W.H. P.S.Co. D.C. - Less Auxiliary Load = 20,279,977
 September Power Penalty = 4,870

Total - P.S.Co. D.C. K.W.H. - Less Auxiliary Load = 20,284,847

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

AUXILIARY POWER FURNISHED UNDER
D.C. POWER CONTRACT IN K.W.H.

	<u>Kotz Road Signals No. 32</u>	<u>Old Mill Road Signals No. 34</u>	<u>Highwood Shops</u>	<u>Skokie Shops</u>
Jan.	12,280	12,620	27,710	53,020
Feb.	10,670	10,950	24,190	46,810
Mar.	11,070	11,410	23,960	42,090
Apr.	10,550	11,510	22,910	38,020
May	10,100	12,090	19,820	31,520
June	9,390	10,640	16,580	27,930
July	8,900	10,610	15,420	27,180
Aug.	9,240	11,260	21,370	27,570
Sept.	9,530	12,050	24,820	33,480
Oct.	10,750	13,040	26,730	37,600
Nov.	10,620	11,720	26,230	45,700
Dec.	<u>11,970</u>	<u>12,580</u>	<u>30,280</u>	<u>64,250</u>
	125,070	140,480	280,020	475,170

	<u>Glencoe Signals</u>	<u>Kenilworth Signals</u>	<u>Howard St. Station</u>	<u>Zion Signals</u>	<u>Waukegan Signals</u>
Jan.	4,600	5,200	8,210	2,100	7,200
Feb.	3,800	4,400	7,260	1,920	6,400
Mar.	4,200	4,500	7,740	2,160	6,800
Apr.	3,600	4,100	7,490	2,040	6,400
May	3,400	4,000	7,310	2,160	6,600
June	3,000	3,600	6,920	1,800	6,400
July	3,000	3,700	6,820	2,040	6,300
Aug.	4,000	4,200	7,910	2,160	6,600
Sept.	3,400	4,000	6,960	1,980	6,300
Oct.	4,000	4,900	7,870	2,160	6,600
Nov.	4,000	4,600	7,980	2,100	6,200
Dec.	<u>4,400</u>	<u>4,800</u>	<u>8,700</u>	<u>2,160</u>	<u>6,300</u>
	45,400	52,000	91,170	24,780	78,100

Total Auxiliary A.C. under D.C. Contract - 1,312,190 K.W.H.

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

WISCONSIN SUBSTATION D.C. OUTPUT IN K.W.H.

	<u>McKeon</u>	<u>Kenosha</u>	<u>Bose Rd.</u>	<u>Racine</u>	<u>Quarry</u>	<u>4-Mile Road</u>
Jan.	40,500	82,000	48,230	94,200	7,150	37,200
Feb.	39,500	48,930	32,630	93,700	10,450	30,070
Mar.	32,800	67,650	37,900	92,600	7,300	31,610
Apr.	32,600	69,490	47,140	77,600	6,200	30,460
May	31,200	71,720	38,080	81,000	6,100	31,050
June	42,100	26,070	67,060	69,300	2,500	26,730
July	35,800	70,270	37,700	72,300	2,600	26,500
Aug.	40,500	88,290	9,280	90,100	6,380	25,940
Sept.	36,400	72,150	25,590	77,000	5,720	23,940
Oct.	33,200	71,180	33,480	65,600	2,650	25,710
Nov.	36,500	69,390	48,120	66,200	3,650	22,030
Dec.	31,600	86,140	48,600	64,500	4,100	33,200
	432,700	823,330	473,810	944,100	64,800	344,440

	<u>Nechute</u>	<u>Carrollville</u>	<u>College</u>	<u>Milwaukee</u>	<u>D.C. W.E.P.Co.</u>	<u>Win. Harbor to Wis.</u>
Jan.	37,900	47,800	57,400	65,800	191,125	28,933
Feb.	34,100	39,100	47,600	60,700	170,250	29,667
Mar.	34,500	30,400	43,900	67,300	169,250	31,000
Apr.	37,200	41,100	40,300	64,200	150,500	27,567
May	40,000	39,300	41,800	62,100	126,875	21,300
June	43,000	38,100	42,100	48,600	101,250	21,600
July	52,900	38,900	46,600	47,200	102,875	21,467
Aug.	41,800	33,900	39,200	59,600	104,875	23,000
Sept.	40,800	53,300	35,500	54,900	99,500	23,967
Oct.	43,400	43,100	38,900	61,900	119,250	26,633
Nov.	47,400	43,600	43,500	55,800	144,250	26,433
Dec.	54,900	51,200	45,900	72,900	177,375	31,067
	507,900	499,800	522,700	721,000	1,657,375	312,634

Total Converted in Wisconsin - 5,334,580
 W.E.P. Co. D.C. " " - 1,657,375
 Win. Harbor D.C. " " - 312,634

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

A.C. POWER FURNISHED IN WISCONSIN IN K.W.H.

	<u>W. Harbor</u>	<u>Beach</u>	<u>Kenosha</u>	<u>Nechuta</u>	<u>Milwaukee</u>
Jan.	112,800	146,560	--	50,400	433,376
Feb.		107,200	78,720	45,600	404,782
Mar.		109,440	102,720	45,600	422,182
Apr.		119,200	96,960	46,800	391,036
May		101,440	104,640	50,400	393,936
June		151,840	35,520	54,000	340,808
July		101,280	99,840	63,600	332,978
Aug.		107,806*	119,040	52,800	366,908
Sept.		83,920	103,680	51,600	358,208
Oct.		103,600	112,320	56,400	389,412
Nov.		118,800	92,160	58,800	335,878
Dec.		112,270**	124,800	63,600	339,996
	112,800	1,363,356	1,070,400	639,600	4,509,500

Total A.C. to Wisconsin 7,695,656 K.W.H.
Total Converted in Wisconsin 5,334,580 K.W.H.
Efficiency - Wisconsin 69.3%

Total A.C. for Nechuta 639,600 K.W.H.
Total D.C. Converted - Nechuta 507,900 K.W.H.
Efficiency - Nechuta 79.4%

*Actually Used 68,880 K.W.H..
**Actually Used 109,520 K.W.H.

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

MONTHLY K.W. DEMAND - ILLINOIS STATIONS

	<u>Power #30</u>	<u>Power #31</u>	<u>Power #32</u>	<u>Signals #32</u>	<u>Power #33</u>	<u>Power #34</u>
Jan.	700.0	483.4	330.7	20	516.7	566.7
Feb.	656.7	413.4	470.0	19.4	476.4	463.4
Mar.	656.6	423.3	563.3	18.6	393.3	526.6
Apr.	630.0	393.3	450.0	14.3	440.0	426.7
May	590.0	370.0	463.4	15.0	416.7	420.0
June	533.4	493.4	453.4	13.7	470.0	420.0
July	456.7	360.0	420.0	12.7	426.7	410.0
Aug.	443.3	366.6	540.0	12.3	250.0	446.6
Sept.	523.3	406.7	523.3	13.0	456.7	470.0
Oct.	546.7	386.7	504.3	14.7	440.0	440.0
Nov.	620.0	410.0	473.3	15.7	450.0	443.3
Dec.	693.4	433.4	483.3	21.7	416.7	430.0
	7,050.1	4,940.2	5,675.0	191.1	5,153.2	5,463.3

	<u>Signals #34</u>	<u>Power #35</u>	<u>Lbtville #36</u>	<u>Central Street #37</u>	<u>Winnetka #38</u>	<u>Ravinia #39</u>
Jan.	19.7	190	490	183.3	636.7	653.4
Feb.	16.4	283.4	476.7	186.7	716.7	586.7
Mar.	16.3	280.0	470.0	183.3	710.0	680.0
Apr.	17.7	253.3	393.3	146.7	676.7	563.3
May	17.7	263.4	343.4	163.4	656.7	573.3
June	17.3	193.4	336.7	153.3	630.0	570.0
July	14.0	193.4	353.4	150.0	613.3	486.7
Aug.	15.3	173.3	340.0	143.3	590.0	480.0
Sept.	20.7	266.7	393.3	170.0	650.0	566.7
Oct.	18.0	276.7	416.7	160.0	666.7	576.7
Nov.	18.0	283.3	433.3	176.7	666.7	636.7
Dec.	20.0	256.7	536.7	186.7	720.0	570.0
	211.1	2,913.6	4,983.5	2,003.4	7,933.5	6,943.5

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

MONTHLY K.W. DEMAND - ILLINOIS STATIONS - cont'd.

	<u>Power #40</u>	<u>Power #A24</u>	<u>Power #43</u>	<u>Power #44</u>	<u>Power #45</u>	<u>Power #80</u>
Jan.	593.4	810.0	373.3	103.3	176.7	1,013.3
Feb.	563.4	826.7	346.7	90.0	150.0	943.3
Mar.	533.3	926.7	266.7	121.7	216.7	933.3
Apr.	460.0	793.0	343.3	126.7	183.3	876.7
May	436.7	720.0	403.3	96.7	250.0	930.0
June	416.7	723.4	343.3	76.7	113.3	893.3
July	390.0	696.7	316.7	113.3	176.7	860.0
Aug.	343.3	660.0	300.0	86.7	160.0	843.3
Sept.	456.7	773.3	346.7	136.7	143.3	896.3
Oct.	486.6	766.6	273.0	120.0	130.0	860.0
Nov.	516.6	776.6	336.7	86.7	130.0	906.7
Dec.	576.7	890.0	343.3	146.7	116.7	936.7
	5,773.4	9,363.0	3,993.0	1,305.2	1,946.7	10,892.9

	<u>High- wood Shops</u>	<u>Skokie Shops</u>	<u>Kenil- worth Signals</u>	<u>Glencoe Signals</u>	<u>Howard Station</u>	<u>Waukegan Signals</u>	<u>Zion Signals</u>
Jan.	35	92.7	3.7	4.0	15	10	3
Feb.	34.3	72.0	3.0	2.7	15	10	3
Mar.	31.0	57.3	3.0	3.0	15	10	3
Apr.	28.0	41.7	3.0	3.0	14	10	3
May	21.7	17.7	3.0	3.0	13	10	2
June	20.7	29.3	2.7	3.0	14	12	3
July	14.7	20.3	2.7	3.0	13	10	2
Aug.	31.7	22.3	2.7	3.3	14	10	2
Sept.	42.3	31.3	2.0	3.0	13	10	3
Oct.	43.3	31.3	2.0	2.0	14	10	2
Nov.	42.0	43.7	2.3	2.7	16	10	3
Dec.	53.0	93.7	5.3	4.3	17	10	3
	397.7	553.3	35.4	37.0	173	122	32

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

MONTHLY K.W. DEMAND AS RUN

	<u>Beach</u> <u>A.C.</u>	<u>Win.</u> <u>Harbor</u> <u>A.C.</u>	<u>P.S.</u> <u>A.C.</u> <u>Total</u>	<u>Milw.</u> <u>A.C.</u>	<u>Total</u> <u>A.C.</u>	<u>P.S.</u> <u>D.C.</u>	<u>System</u> <u>Total</u>
Jan.	796.7	200	997	1,243.6	2,240.6	8,024	10,264.6
Feb.	493.3	100	593.3	1,360.2	1,953.5	7,826	9,779.5
Mar.	467.0		467	1,466.6	1,933.6	8,042	9,975.6
Apr.	463.0		463	1,374.8	1,837.8	7,291	9,128.8
May	357.0		357	1,411.2	1,768.2	7,200	8,968.2
June	540.0		540	1,106.2	1,646.2	6,936	8,582.2
July	420.0		420	1,276.1	1,696.1	6,516	8,212.1
Aug.	483.0		483	1,385.0	1,868.0	6,280	8,148.0
Sept.	313.0		313	1,320.0	1,633.0	7,319	8,952.0
Oct.	367.0		367	1,434.8	1,801.8	7,188	8,989.8
Nov.	473.0		473	1,251.5	1,724.5	7,500	9,224.5
Dec.	503.0		503	1,358.3	1,861.3	7,965	9,826.3
	5,676.0	300	5,976.3	15,988.3	21,964.6	88,087.0	110,051.60

MONTHLY K.W. DEMAND AS BILLED

	<u>Beach</u> <u>A.C.</u>	<u>Win.</u> <u>Harbor</u> <u>A.C.</u>	<u>P.S.</u> <u>A.C.</u> <u>Total</u>	<u>Milw.</u> <u>A.C.</u>	<u>Total</u> <u>A.C.</u>	<u>P.S.</u> <u>D.C.</u>	<u>System</u> <u>Total</u>
Jan.	796.7	200.3	997	1,500	2,497	8,024	10,521
Feb.	493.3	40.7	534	1,500	2,034	7,826	9,860
Mar.	467.0		467	1,500	1,967	8,042	10,009
Apr.	463.0		463	1,500	1,963	7,291	9,254
May	357.0		357	1,500	1,857	7,200	9,057
June	540.0		540	1,500	2,040	6,936	8,976
July	420.0		420	1,500	1,920	6,516	8,436
Aug.	483.0		483	1,500	1,983	6,280	8,263
Sept.	378.0		378	1,500	1,878	7,319	9,197
Oct.	378.0		378	1,500	1,878	7,188	9,066
Nov.	473.0		473	1,500	1,973	7,500	9,473
Dec.	503.0		503	1,500	2,003	7,965	9,968
	5,752.0	241.0	5,993	18,000	23,993	88,087	112,080

Average Monthly Demand

Public Service Co.
Public Service Co.
Wis. Elect. Power Co.

D.C.
A.C.
A.C.

As Run

7,340.5
498.0
1,332.3
9,170.8

As Billed

7,340.5
499.4
1,500.0
9,339.9

DISTRIBUTION AND POWER DIVISION

POWER STATISTICS FOR YEAR - 1953

<u>Substation</u>	<u>Installed Capacity K.W.</u>	<u>Cycle</u>	<u>Number of Units</u>
No. 30 Skokie	2,000	60	1
No. 31 Lake Ave.	1,500	60	1
No. 32 Kotz Rd.	1,500	60	1
No. 33 Deerfield Rd.	1,000	60	1
No. 34 Old Mill Rd.	1,500	60	1
*No. 35 Laurel Ave.	1,000	60	2
No. 36 Libertyville	1,500	60	1
No. 37 Central St.	2,000	60	2
No. 38 Winnetka	1,500	60	1
No. 39 Ravinia	2,000	60	2
No. 40 Ft. Sheridan	1,500	60	1
No. A24 No. Chicago	1,500	60	1
*No. 43 Pine St.	1,900	60	1
No. 44 Beach	1,000	25	1
No. 45 Winthrop Harbor	1,200	60	1
*No. 80 Lake Bluff	1,900	60	1
	24,500		19
McKeon Rd.	1,000	25	2
Kenosha	1,000	60	1
Bose Rd.	1,000	25	1
Racine	1,000	25	2
Quarry	1,000	25	1
4-Mile Rd.	500	25	1
*Nechuta Rd.	1,500	60	2
Carrollville	1,000	25	2
College Ave.	500	25	1
Harrison St., Milwaukee	2,000	25	2
	10,500		15

*NOTE: All substations are rotary converters except
Nos. 35, 43, 80 and Nechuta, which are Mercury
Arc Rectifier Stations.

DISTRIBUTION AND POWER DIVISION

ANNUAL INSTALLATIONS

<u>Year</u>	<u>Miles Trolley Wire</u>	<u>Wood Poles</u>	<u>45,000 V. Insulators</u>	<u>Anchors</u>	<u>Back Guys</u>	<u>Rail Bonds</u>	<u>No. of Trolley Wire Breaks</u>
1946	8.16	156	258	137	425	6,489	*
1947	5.81	104	182	150	150	5,444	17
1948	2.00	10	114	82	577	2,300	4
1949	7.85	72	235	451	461	3,024	22
1950	7.00	130	117	273	397	2,708	11
1951	4.99	223	82	144	289	2,976	16
1952	3.5	153	217	135	221	3,211	10
1953	2.73	130	167	225	406	1,760	12

*Number of Wire Breaks not Available for 1946

DISTRIBUTION AND POWER DIVISION

FACILITIES MAINTAINED

Crossing Protection

	<u>1953</u>	<u>1952</u>
Autoflag - Locations	14	15
Bell and Light Signal	2	3
600 Volt Bell on Gate	6	6
Electric Lighted Crossings	63	63

Overhead Trolley

Catenary Construction - D.T. Miles	32.04	32.04
Wood and Steel Poles - Main Line - D.T. Miles	69.94	69.94
Steel Poles - Milwaukee - D.T. Miles	2.73	2.73
Wood Poles - Yards & Sidings - S.T. Miles	42.94	42.85

Lighting

Passenger Stations	35	36
Freight Stations	8	8
Shops and Car Houses	4	4
Substations	10	10
Office Buildings	2	2
Miscellaneous Buildings	31	31
Station Platforms and Shelters	222	222
Yards	8	8

Substations (Operated by CNS)

Manual	3	3
Automatic	7	7

Transmission Line - Miles

60-Cycle - 33,000 volt - 3 wire	34.9*	34.9
25-cycle - 33,000 volt - 3 wire	48.1	48.1
60-cycle - 2,300 volt - 2 wire	54.6	54.6
25-cycle - 13,200 volt - 3 wire	2.4*	2.4
*Not in service		

Feeder Cable - Single Wire Miles

Copper Feeder Cable	169.28	169.28
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