

John B. Gallagher and Edward J. Quinn, Trustees for
CHICAGO NORTH SHORE AND MILWAUKEE RAILROAD COMPANY

A N N U A L R E P O R T

FOR THE YEAR 1945

SUPERINTENDENT, MAINTENANCE OF WAY, STRUCTURES
& ELECTRIC POWER SERVICE

Highwood, Illinois
March 5, 1946

John B. Gallagher and Edward J. Quinn, Trustees for
CHICAGO NORTH SHORE and MILWAUKEE RAILROAD COMPANY

MAINTENANCE OF WAY, STRUCTURES and
ELECTRIC POWER SERVICE DEPARTMENT

ANNUAL REPORT
FOR THE YEAR 1945

F O R E W O R D

This report is an account of the work accomplished by the consolidated department and includes all A.F.E. and extra ordinary maintenance work performed by contractors and regular Company forces as well as information and 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 DIVISION

ADDITIONS AND BETTERMENTS

TRACK RECONSTRUCTION - HIGHLAND PARK - A.F.E. 4492

The track and pavement between Laurel Avenue and Central Avenue, Highland Park, was completely rebuilt. 2484 lineal feet of 102# rail and 561 lineal feet of 100# R.E. rail were installed, replacing 95# and 80# A.S.C.E. rail. The old brick pavement, concrete ballast and steel ties were removed and replaced with stone ballast, wood ties and High Early Strength Concrete pavement. The stone ballast was grouted with High Early Strength Cement grout before paving in order to seal the voids. Standard tie rods were installed and all joints thermit welded. All ties were plated with secondhand 80x100# tie plates with a new hole burned in them. All track work was done by Company forces. The High Early Strength paving and grouting was done by the Contracting and Material Company. Single track was operated between temporary crossovers during the time this work was in progress.

RAIL RENEWAL ON HOWARD-DEMPSTER LINE - A.F.E. 4541

100# rail was renewed on both rails on both tracks of the Oakton Street curve south of the Oakton Street crossing. A total of 9939 lineal feet of new 100# rail was installed, replacing curve-worn 100# rail.

1452 lineal feet of the best 100# rail released from the Oakton Street curve was relaid on the high rail of the southbound curve at Chicago Avenue, replacing curve-worn 100# rail.

REHABILITATION OF TRACK AND PAVEMENT - WAUKEGAN CITY LINES - A.F.E. 4544

Complying with a request from the City of Waukegan, the Railroad's forces removed the rails in Washington Street, between Edison Court and Lewis Avenue, and replaced the brick. The City resurfaced the street with asphalt and billed the Railroad for the portion included in the track zone. 2,568 lineal feet of track was retired from investment accounts. Rail removed was 91# Lorain Section 375.

No other work has been charged to this A.F.E.

TRACK AND ROADWAY DIVISION
ADDITIONS AND BETTERMENTS - CONTINUED

RAIL RENEWAL - ILLINOIS SIDE TRACKS - A.F.E. 4521

753 track feet of 80# rail, including one #7 turnout, were relaid with secondhand 100# material at the north end of the Great Lakes Interchange track.

766 track feet of 65# rail relaid with secondhand 80# rail in the track serving the high platform at Great Lakes, Shore Line.

A new track, 554 feet long, was built to serve the Prairie Roads Company at Northbrook. This track is connected to the passing track with a Number 6 turnout located just south of the team track switch and extends southeasterly on Railroad property, east of the joint right-of-way. Construction is 80# relay rail on new Main Line ties and cinder ballast. All ties are tie plated.

A small stream, flowing through the property leased to the Prairie Roads Company, was diverted to a new channel and 52 feet of 27 inch concrete culvert pipe installed by N. M. Pierre, Contractor.

INSTALLATION OF TIE PLATES IN ILLINOIS - A.F.E. 4473

13,434 - 100# double shoulder tie plates were installed by Company forces on ties renewed in Main Line tracks in Illinois.

<u>Section</u>	<u>Tie Plates</u>
	<u>100#</u>
1 - Winnetka	90
3 - Highwood	483
4 - Lake Forest	1,414
5 - Libertyville	128
7 - Waukegan, West	1,280
8 - Zion	1,110
9 - Winthrop Harbor	-
16 - Howard-Dempster	-
17 - Glenayre	1,068
18 - Briergate	1,795
20 - Deerpath	635
21 - South Upton	<u>5,431</u>

Total - 13,434

TRACK AND ROADWAY DIVISION

ADDITIONS AND BETTERMENTS - CONTINUED

INSTALLATION OF 100# RAIL ANCHORS IN ILLINOIS - A.F.E. 4493

24,805 - 100# Improved Fair Rail Anchors were installed by Company forces on Main Line tracks in Illinois.

<u>Section</u>	<u>Rail Anchors</u>
7 - Waukegan, West	6,600
8 - Zion	7,350
9 - Winthrop Harbor	2,155
16 - Howard-Dempster	<u>8,700</u>
Total -	24,805

INSTALLATION OF 100# RAIL ANCHORS IN WISCONSIN - A.F.E. 4494

29,482 - 100# Improved Fair Rail Anchors were installed by Company forces on Main Line tracks in Wisconsin.

<u>Section</u>	<u>Rail Anchors</u>
9 - Winthrop Harbor	3,474
10 - Kenosha	6,958
11 - Racine	5,700
14 - Grange	12,100
15 - Milwaukee	<u>1,250</u>
Total -	29,482

BALLAST - ROOT RIVER TO OAK CREEK - A.F.E. 4421

The Herlihy Mid-Continent Company completed the work on this A.F.E. by raising the Railroad and Highway crossings at Ryan Tower. One car of stone ballast was used. The plank crossing at Ryan Road was renewed and 656 square feet of asphalt placed on the approaches.

TRACK AND ROADWAY DIVISION

ADDITIONS AND BETTERMENTS - CONTINUED

RAIL RENEWAL - ROOT RIVER TO OAK CREEK - A.F.E. 4471 and 4523

48,244 track feet of 80# A.S.C.E. rail was relaid with new 100# R.E. rail by the Herlihy Mid-Continent Company. Of this total, 22,477 track feet was relaid on the northbound track from Nechuta Road to the north end of the Oak Creek Bridge. The balance, 25,767 track feet, was relaid on the southbound track from a point 1,200 feet south of 6-Mile Road to a point 66 feet south of the south switch points of Oak Creek crossover.

Railroad forces relaid an additional 190 track feet on the southbound track through the Oak Creek crossover and also shortened the lead of the north turnout of this crossover to standard length.

Included in this work was the installation of 10,600 standard 100# tie plates to replace 80# x 100# plates.

RAIL AND BALLAST RENEWAL - MIDDLE ROAD TO ROOT RIVER - A.F.E. 4502

35,238 track feet of 80# A.S.C.E. rail was relaid with new 100# R.E. rail on both tracks from Middle Road to Root River Bridge, except for 600 track feet on the southbound track at Rapids Road which had been relaid in 1934.

Ballasting work, started in 1944, was completed. The track was raised on the old ballast, only 5,912 track feet being skeletonized to bottom of tie, and dressed with new stone. Shoulders were built up with Bank-Run gravel, ties renewed where necessary and plank crossings renewed at Campers, Davidson and 3-Mile Roads. Average raise was 4 inches. The plank and asphalt crossing at Middle Road was replaced with treated gumwood sectional crossing with blacktop approaches. All work was done under single track operation by the Herlihy Mid-Continent Company. The following material was used:

2,552 Cross Ties
206 Cars Stone Ballast
74 Cars Bank-Run Gravel
988 New 100# Tie Plates
5,104 Secondhand 80# x 100# Tie Plates

TRACK AND ROADWAY DIVISION

ADDITIONS AND BETTERMENTS - CONTINUED

RAIL AND BALLAST RENEWAL - RACINE - A.P.E. 4524 and 4565

15,352 track feet of 80# A.S.C.E. rail was relaid with new 100# R.E. rail between the C.M.St.P. & P. RR. crossing and Middle Road. In addition, 396 track feet of 100# R.E. rail, laid in 1928, through the Kinzie Avenue and Osborne Road crossings was relaid with new 100# R.E. rail. The north switch of the Racine crossover and the switch to the east siding at the Freight House have not yet been relaid due to lack of material.

The track was skeletonized to bottom of ties between the Milwaukee Road crossing and 12th Street and through all street crossings and raised to grade with stone ballast. North of 12th Street, the track was raised on the old ballast and dressed with new stone. Average lift was 5 inches south of 12th Street and 2 inches north of that point. High shoulders were cut down and low shoulders built up with cinders. Ties were renewed when necessary. Plank crossings at 14th, 12th, Kinzie and Osborne were renewed with treated gumwood sectional crossings and blacktop approaches. Plank crossings at 17th, 16th, 15th, 13th and Linderman were renewed with asphalt macadam. 3,045 square feet of wood crosswalks at crossings and passenger station were renewed. 1,504 square feet of concrete sidewalks replaced at 17th, 12th, Linderman, Kinzie and Osborne. 393 lineal feet of 6 inch inter-track drain installed between Freight House and 12th Street. All work was done under traffic by the Herlihy Mid-Continent Company. The following material was used:

2,613 Cross Ties
18 Switch Ties
71 Cars Stone Ballast
6,000 New 100# Tie Plates
6 Cars Cinders

TRACK AND ROADWAY DIVISION
ADDITIONS AND BETTERMENTS - CONTINUED

RETIREMENT OF CROSSOVERS - WISCONSIN - A.F.E. 4529

The main line crossover at Oakwood Road and the crossover from the northbound track to siding at Racine Quarry were retired.

INSTALLATION OF RECONDITIONED ANGLE BARS - A.F.E. 4551

1,980 pairs of 100# angle bars were renewed with reformed bars on both tracks through Kenosha.

5,189 pairs were renewed at other locations and charged to maintenance.

INSTALLATION OF TIE PLATES IN WISCONSIN - A.F.E. 4474 and 4511

8,744 - 100# double shoulder tie plates were installed by Company forces on ties renewed in main line tracks in Wisconsin.

<u>Section</u>	<u>Tie Plates</u>
9 - McKeon Road	797
10 - Kenosha	1,618
11 - Racine	2,646
14 - Grange Avenue	3,071
15 - Milwaukee	<u>612</u>
Total	8,744

TRACK AND ROADWAY DIVISION

MAINTENANCE WORK

In addition to the routine work of maintaining the track and right-of-way, the following work was done and charged to Maintenance Accounts:

Surfaced both tracks from Dempster Street to Lake Avenue and from K.O. Tower to Kelly's Siding on the Skokie Valley Line.

Surfaced both tracks on the Milwaukee Division from 29th Street, Zion, to the Zion Station and from Burlington Road to Racine Tower.

Surfaced both tracks from North Gate to Sacred Heart on the Shore Line and from Green Bay Junction to Rondout on the Libertyville Branch.

The Herlihy Mid-Continent Company resurfaced both tracks from 730 feet south of Root River to 34,600 feet north of Root River. The Railroad Company bore 50% of the cost.

Renewed the high rail on the southbound track in the curve at Lake Bluff, Skokie Valley Line, with new 100# rail. The crossings at Scranton Avenue and Mawman Avenue were renewed with blacktop. New ties and stone ballast were installed.

Renewed the high rail on the northbound track in the curves at 18th Street and 10th Street, East Line with 80# relayer rail.

Renewed the high rail on both tracks in the reverse curve north of Westminster Avenue, Lake Forest, Shore Line with 80# relayer rail.

Relaid 528 lineal feet of high 65# rail with 80# relayer rail in the siding at Racine Freight House.

Renewed 1,638 pairs of 100# angle bars with reformed bars on both tracks from Zion Station to the State Line.

Renewed 3,551 pairs of 100# angle bars with reformed bars on both tracks from Kenosha to the south end of Klinkert's curve.

TRACK AND ROADWAY DIVISION
MAINTENANCE WORK - CONTINUED

Installed 3,950 double shoulder 100# tie plates on the Howard-Dempster Line, including 1,650 on the Canal Bridge. These plates replaced Barrett, Thomas and single shoulder 100# tie plates.

Installed second-hand 80# x 100# tie plates on ties renewed in main line tracks at the following locations:

<u>Section</u>	<u>Tie Plates</u>
1 - Winnetka	265
3 - Highwood	2,352
4 - Lake Forest	1,826
5 - Libertyville	1,310
11 - Racine	1,000
13 - Carrollville	848
18 - Northbrook	265
21 - South Upton	<u>582</u>

Total 80# x 100# Second-Hand Tie Plates 8,448

The asphaltic crossings at Birch Road, Kenosha County and Taylor Avenue, Racine, were completely rebuilt. All ties were renewed, new stone ballast installed and rail joints thermit welded. Treated gumwood crossings were installed and blacktop placed in the devil strip and approaches.

Renewed approximately 12 expansion rails on the Milwaukee viaduct.

Renewed north half of special work at Milwaukee Terminal, completing work started in 1944.

Raised, lined and surfaced the southbound track on South Fifth Street, Milwaukee from Greenfield Avenue to the cut-off. The track zone was repaved with brick.

The track on the north side of Milwaukee Substation was extended east 28 feet to serve the new Storehouse.

TRACK AND ROADWAY DIVISION
MAINTENANCE WORK - CONTINUED

TIES RENEWED

Ties were renewed by Company forces as follows:

<u>SECTION</u>	<u>MAIN LINE</u>	<u>SIDE TRACK</u>	<u>SWITCH</u>
1 - Winnetka	185	-	-
3 - Highwood	879	86	30
4 - Lake Forest	1,273	148	1
5 - Libertyville	1,134	19	11
6 - Waukegan East Line	22	565	21
7 - Waukegan West Line	654	45	51
8 - Zion	559	-	-
9 - McKeown Road	467	-	2
10 - Kenosha	712	-	-
11 - Racine	1,505	-	-
12 - 4-Mile Road	-	-	-
13 - Carrollville	334	-	-
14 - Grange Avenue	1,741	200	-
15 - Milwaukee	254	217	100
16 - Howard-Dempster	336	-	1,334*
17 - Glenayre	656	-	2
18 - Briergate	1,129	-	-
20 - Deerpath	431	-	6
21 - South Upton	<u>3,822</u>	<u>84</u>	<u>225</u>
Total by Company Forces	16,093	1,364	1,783
*Includes 892 - 3rd rail chair ties			

By Herlihy Mid-Continent Company

11 - Racine	2,613	-	18
12 - 4-Mile Road	<u>2,552</u>	<u>-</u>	<u>-</u>
Total by Contractor	5,165	-	18
Grand Total - Ties Renewed -	21,258	1,364	1,801

BRIDGE AND BUILDING DIVISION

ADDITIONS AND BETTERMENTS

RETIREMENT OF FACILITIES IN CHICAGO - A.F.E. 4564-C

The car inspection pit at 61st Street was retired from Investment Accounts and covered with plank.

The 30 ton Toledo truck scale at Montrose Avenue was retired and stored at Highwood. The scale pit was filled in.

MISCELLANEOUS BUILDING WORK - HIGHWOOD YARD - A.F.E. 4546

Work was started on improving the Highwood heating plant. A Burk's super turbine, duplex condensation pump system consisting of two 5 H.P. pumps and motors, two magnetic starters and one 120 gallon receiver with float switch was installed in a new concrete pit north of the Boiler Room. All the return lines were connected to the new receiver and a new return line run from the North Shop. The general contractor was Thomas Killian who sub-let the concrete work to the Jenkins-Boller Company.

CONSTRUCTION OF VESTIBULES - INDIAN HILL AND HUBBARD WOODS - A.F.E. 4539

Small vestibules, 4'-8"x6'-8"x7'-4" high, were built in the Waiting Rooms at Indian Hill and Hubbard Woods Stations adjacent to the main entrance doors. Construction is of glazed sash with plywood ceilings and 2 - 3'-0"x7'-0" doors. These vestibules were made up in sectional form at the Highwood Carpenter Shop and erected by Company forces.

BRIDGE PAINTING IN ILLINOIS - A.F.E. 4549 and 4550

A contract was entered into with the Chicago Decorating Company for cleaning and painting steel bridges on the Howard-Dempster and Libertyville Lines. The Railroad Company furnishes all material and insurance.

At the end of the painting season the following bridges on the Libertyville Line had been cleaned, spot coated and painted two coats:

Green Bay Road
Skokie Creek
E. J. & E. Ry.
C.M.St.P. & P. RR.

BRIDGE AND BUILDING DIVISION

ADDITIONS AND BETTERMENTS - CONTINUED

(Continued)

BRIDGE PAINTING IN ILLINOIS - A.F.E. 4549 and 4550

On the Howard-Dempster Line, the bridges at Hartrey Avenue and Dodge Avenue were cleaned and spot coated.

INSTALLATION OF STOKERS - A.F.E. 4429

A 200# per hour Link-Belt stoker was installed in the Tenth Street, Waukegan, Garage. Both heating boilers at this location are now equipped with stokers.

CONSTRUCTION OF BRIDGES - HAWTHORNE DRIVE AND DREXEL BOULEVARD
A.F.E.'s 4436 and 4437

Backfilling at these bridges was completed during the year and the stringers and bridge ties on the approach spans removed.

NEW WELL AT CARROLLVILLE SECTION HOUSE - A.F.E. 4558

A new well, 68 feet deep, with a 6 inch steel casing, was drilled at the Carrollville Section House, north of Ryan Road. The Contractor also installed a new hand pump complete. Drilling was carried down to a water-bearing strata of gravel which gives a flow of approximately 20 gallons per minute. The work was done by LeRoy Radtke, Well Drilling Contractor.

Company forces removed the pump on the old well.

CONSTRUCTION OF AUTOMATIC SUBSTATION - 7-MILE ROAD - A.F.E. 4525

Property was acquired on Nechuta Road, south of 7-Mile Road and a contract entered into with Henry Danischefsky for the construction of an automatic substation building and yard. No work had been done on the building by the end of the year.

A contract was made with LeRoy Radtke to drill a well on the site. This well was drilled 133 feet into rock and has a 6 inch steel casing.

BRIDGE AND BUILDING DIVISION
ADDITIONS AND BETTERMENTS - CONTINUED

CONSTRUCTION OF GARAGE FOR COOK COAL CO. - MILWAUKEE - A.F.E. 4508

This job was completed in April by the installation of overhead doors on the garage. The Contractor was Henry Danischefsky.

ADDITION TO MILWAUKEE BARN - A.F.E. 4488

A one-story fireproof oil house, storehouse and garage was built on the north side of the Milwaukee Barn, east of and adjoining the substation. Henry Danischefsky was the General Contractor for the building construction.

Unit heaters, connected to the present steam mains, were installed by the Maag Company of Milwaukee.

Electric lighting was installed by the Trester Electric Company of Milwaukee.

Upon completion of the building, the old Storehouse inside of the barn was retired and the contents removed to the new Storehouse by Company forces.

A new concrete block storage bin for engine sand was built by the Contractor on the north wall of the barn west of the substation.

RENEW STEPS AT MILWAUKEE TERMINAL - A.F.E. 4501

The treads of the terrazzo steps leading to the Men's Washroom at Milwaukee Terminal were renewed by the American Marble Mosaic Company. Alundum aggregate was used to give a long life to these steps.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

BRIDGES and TRETTLES

The following repairs were made by Company Forces:

DODGE AVENUE, EVANSTON - Built plank walk in center of each track on open deck portions of bridge.

CANAL BRIDGE - Renewed 654 ties and 47 guard rails; repaired bridge walks and renewed blocking on top of temporary timber shoring bent at east abutment.

SOUTH UFTON TRETTLE - Renewed 1 cap, 5 stringers and 37 ties.

OAK CREEK - Renewed 1 cap only.

LAYTON AVENUE COAL TRETTLE - Renewed 4 caps and 1 tie and repaired the walks.

SCRANTON AVENUE, LAKE BLUFF - Renewed all 74 ties and 12 guard rails on this bridge.

DES PLAINES RIVER - Renewed 4 mud sills, 16 piles, 12 caps, 36 stringers, 128 ties and 23 guard rails in the southbound trestle. Installed new bulkheads at both ends of the bridge.

HOWARD-DEMPSTER LINE - Repaired concrete slab covers over utility ducts on bridges at Chicago Avenue, Custer Street, Ridge Avenue and Asbury Avenue.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

BUILDINGS and PLATFORMS

In addition to minor repairs to buildings and platforms on the system, the following major items were done: -

Installed wire grilles on doors and windows of Baggage Room on South State Street, Chicago.

Removed old loading platform and installed fence and wheel guard on loop track at Montrose Freight Station.

Remodeled shelving and counters and insulated part of floor in Wilson Avenue Commissary.

Installed non-slip metal treads on steps to Trainmen's Room at Howard Street, Chicago.

Made extensive repairs to platforms at Beach Street, Highland Park.

Installed new dishwashing machine in Highwood Restaurant and laid wood floor over the old concrete floor in the west half of the kitchen.

Rebuilt steps to Highwood Office Building and installed non-slip metal treads. Built new storm windows for south and east sides of original building.

Installed 1/2 ton electric hoist on second floor of old Public Service Building for Stores Department.

Removed wood stairway on south side of Downey's Road, Shore Line. Rebuilt roof on shelter at same location.

Repaired all crosswalks on East Line.

Rebuilt steps to southbound platform at 18th Street, East Line.

Remodeled Baggage Room for Waiting Room at Dempster Street Station.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

BUILDINGS and PLATFORMS - CONTINUED

The old sanitary sewer line at Dempster Station failed at the point where it crossed the northbound track on the north side of the street. A new 8 inch line, 187.5 feet long, was built by the Santucci Construction Company. This line lies 38 feet north of the building and runs from a new 3 foot diameter manhole on the original sewer located between tracks to a new 3 foot diameter manhole on a storm water line extending from the station to the City sanitary sewer in the south side of Dempster Street. Construction is of vitrified pipe with caulked joints laid in open cut through the platform, lawn and driveways. A 12 foot length of cast iron pipe was jacked under the northbound track to the first manhole.

At Downeys Station, Skokie Valley Line, a canopy was built over the high platform in front of the old Baggage Room. The Navy built a new Baggage Room on Government property west of and adjoining the high platform. Company forces insulated walls and floor in the office of this building.

A wire mesh enclosed storeroom, 7 feet by 12 feet, was built for the Commissary Department in the basement of Downeys Station, Skokie Valley Line.

At North Chicago Junction, the northbound Milwaukee Division platform was extended 100 feet north. Construction consists of cinders placed to top of tie level and a wood railing on the back side.

Extended northbound platform at Edison Court south 150 feet with cinders placed to top of ties. A wood railing was built on the back side of this extension.

Extended northbound platform at Zion 100 feet north with cinders to top of ties.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

BUILDINGS and PLATFORMS - CONTINUED

At Tobin Road a new cinder fill platform and "H" shelter were installed on the northbound track, south of the road. The old shelter and platform north of the road were retired. This work was required by the new block signal installation and was charged to the signal A.F.E.

Made extensive repairs to both platforms at McKeown Road.

In connection with the manual block installed between Kenosha Tower and Ryan Tower, 7 new telephone booths were built in the Shops and installed at various crossover and siding switches in that territory. Also built wood crosswalks at Kenosha and Racine Towers for use by Trainmen.

At Grange Avenue a new cinder fill platform was built on the northbound track, south of the road. The old platform, north of the road, was retired and the "H" shelter moved to the new platform. This work was required by the new block signal installation and was charged to the signal A.F.E.

Renewed and repaired windows at Milwaukee Barn.

Made extensive repairs to siding and foundation at Harrison Street M.D. Station.

At Milwaukee Terminal rebuilt concrete steps under south end of west platform; rearranged drainage of pits; renewed floor in Emergency Crew's Shanty and repaired platform of Passenger and Freight Stations.

Moved old Freight House at Rondout Scale House to south side of right-of-way for Car Repairmen's Shed.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

MACHINE SHOP

Repaired 15 frogs and 7 switch points.

Overhauled 5 Section Gang motor cars and 4 Maintainers' speeders. Made running repairs to all motor cars and push cars as required.

Built up crossing frogs at Ryan Tower, Mitchell Street, Greenfield Avenue, National Avenue and Wisconsin Avenue and all expansion joints on the Sixth Street Viaduct by the arc-welding method.

Maintained all Way Department tools and work equipment.

Made and repaired parts for Signal and Interlocking Division.

Cut bars and pins and welded parts for Mechanical Department.

TIN SHOP

Did all necessary work required in repairs to buildings and heating plants.

Installed new hot air furnaces in two Company Houses.

Made water coolers, flush tanks, water supply tanks, card holders, toilet chutes, destination box panels, car heater magazines, roof flanges, roof jacks and ventilators and did other sheet metal work as requested by the Mechanical Department.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

MISCELLANEOUS

Maintained Adams and Wabash, Wilson Avenue and Howard Street Passenger Stations, Montrose Freight Station and South State Street Baggage Room in Chicago.

Operated steam heating plants at Wilson Avenue Station, Highwood Office, North Chicago Barn, Waukegan Garage and Milwaukee Barn.

Repaired asphalt crossings on the system.

Operated the Weed Killer.

Repaired Company owned houses and buildings as requested by the Real Estate Department.

FENCING

Rebuilt and repaired right-of-way fence as follows: -

Highwood Avenue to Sacred Heart, East Side	-	9,500	Ft.
North of Sacred Heart Station, East Side	-	1,000	"
Rondout Freight Office to E.J. & E. Ry, South Side-	-	2,500	"
Lake Bluff, Skokie Valley Line, West Side	-	1,300	"
Glen Flora to Golf Road - Both Sides	-	8,900	"
Golf Road to Beach Road, West Side	-	9,900	"
Beach Road to 1,300 feet North, East Side	-	1,300	"
Wadsworth Road to 33rd Street, Both Sides	-	3,600	"
Winthrop Harbor North, East Side	-	1,000	"
State Line to South Kenosha, West Side	-	15,800	"
Tobin Road to McKeown Road, East Side	-	5,000	"
75th Street, Kenosha, South - West Side	-	8,000	"
Four Mile Road to Six Mile Road, West Side	-	<u>11,000</u>	"

Total fence rebuilt and repaired by
Company forces

78,800 Ft.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

FENCING - CONTINUED

On the Howard-Dempster Line, the Cyclone Fence Company rebuilt the existing fence between Chicago Avenue and Oakton Street on both sides of the right-of-way and from Oakton Street to Searle Parkway on the east side only. All defective steel posts were renewed and new fabric installed for the entire distance except that on the south line between Custer Street and Ridge Avenue the only work done was the installation of extension arms and two runs of barbed wire. A total of 35,570 feet of fence was rebuilt and 1,200 feet of fence equipped with barbed wire.

Company forces painted the Cyclone fence in the Scott Street cut-off at Milwaukee.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

BUILDINGS PAINTED

<u>Location</u>		<u>Description</u>
Wilson Avenue Station	-	Painted Waiting Room.
Howard Street Station	-	Painted Inside and Outside.
East Prairie Road Section House	-	Painted Outside.
Dempster Street	-	Painted Outside of Tower Station and Out Buildings.
Harmswoods Station	-	Painted Outside and Shelter.
Glenayre Section House	-	Painted Outside.
Glenayre Station	-	Painted Outside and Shelter.
Northfield Station	-	Painted Outside and Shelter.
Northbrook Station	-	Painted Outside and Shelter.
Woodridge Station	-	Painted Outside and Shelter.
Briergate Station	-	Painted Outside and Shelter.
Briergate Section House	-	Painted Inside and Outside.
Highmoor Station	-	Painted Outside and 2 Shelters.
Sheridan Elms Station	-	Painted Outside and Shelter.
Deerpath Section House	-	Painted Outside.
Deerpath Station	-	Painted Outside and Shelter.
South Upton - East Section House	-	Painted 3 rooms Inside.
South Upton	-	Painted Outside of 2 Section Houses and Sheds.
North Chicago Junction Station	-	Painted Inside.
Waukegan Garage	-	Painted Inside and Outside.
Edison Court Station	-	Washed Inside, Painted Toilet Rooms.
Church Street Station	-	Painted Inside and Outside and 2 Shelters and Railings.
Hubbard Woods Station	-	Painted Inside.
Highland Park Station	-	Painted Inside.
Highwood Office	-	Painted Inside.
Highwood Trainmen's Building	-	Washed Inside.
Highwood Office Annex	-	Painted Inside.
Highwood Yard	-	Painted Fence.
Fort Sheridan Station	-	Painted Outside, Washed Inside.

BRIDGE AND BUILDING DIVISION

MAINTENANCE WORK

COMPANY HOUSES DECORATED

<u>Location</u>	<u>Description</u>
1131-1141 Greenleaf Avenue, Wilmette	- Painted Inside of 3 Stores.
557 Green Bay Road, Glencoe	- Painted and Papered Inside.
563 Green Bay Road, Glencoe	- Papered Inside.
532 N. Genesee Street, Waukegan-	Painted Inside.
709 Linden Avenue, Waukegan	- Papered Inside.
1110 Porter Street, Waukegan	- Papered Inside.
1210 Washington Street, Waukegan-	Painted Inside East Apartment.
6513 28th Avenue, Kenosha	- Painted and Papered Inside.
6607 28th Avenue, Kenosha	- Painted Inside.
Yellow Cab Garage, Kenosha	- Painted Inside.
Brierly Station Apartment	- Washed Inside.

CONTRACT PAINTING

The North Chicago Substation was painted by the Industrial Painting Company of Chicago. Inside walls and ceiling were cleaned and painted two coats. The crane, crane rails and all interior trim were cleaned and painted or varnished one coat. All exterior windows, doors and sheet metal work were cleaned and painted two coats. All material was furnished by the Railroad Company and the total cost borne by the Public Service Company.

The Milwaukee Substation was painted by Peter P. Woboril, Inc. of Milwaukee. Inside walls and ceiling were cleaned and painted two coats. The crane, crane rails and interior trim were cleaned and painted one coat and the concrete floor painted one coat. The outside of all doors and windows was painted two coats. All paint was furnished by the Railroad Company.

SIGNAL AND INTERLOCKING DIVISION

ADDITIONS and BETTERMENTS

INSTALLATION OF AUTOMATIC GATES AND FLASHERS AT CHURCH STREET AND HARRISON STREET, SKOKIE VALLEY LINE - A.F.E. 4274 and 4275

Two Model "A" automatic gates were installed at each of the above crossings completing the crossing and crossing protection improvements started in 1941. This work was done in conjunction with the Cook County Highway Department.

INSTALLATION OF TRAP CIRCUITS AT SOUTH UPTON - A.F.E. 4498

Trap circuits, each consisting of one additional track circuit, were installed in both tracks of the Libertyville Branch at the crossing with the Chicago and North Western Railway at South Upton Tower. Additional apparatus required is housed in the existing relay cabinet located in the Tower.

INSTALLATION OF BLOCK SIGNAL SYSTEM - STATE LINE TO MILWAUKEE - A.F.E. 4506, 4507 and 4280

The existing automatic block signal system was extended from the State Line to Kenosha Tower and put in service on August 14th, 1945. Four new 3-position color light signals were installed on the southbound track between 64th Street and Tobin Road and three new signals on the northbound track between Tobin Road and 79th Street. Northbound Signal, No. 519, at 79th Street is a two-position signal and serves as the distant signal for Kenosha Tower. The old northbound distant signal was retired and the green indication of the northbound Home Signal changed to yellow. This signal affords protection to 52nd Street, Kenosha. The southbound Home Signal was changed to a three-position color light signal and incorporated in the block system. Old Signal 472, southbound at the State Line, was removed and Signal 461, northbound at Winthrop Harbor, was changed from two-position to three-position. All siding and crossover switches were equipped with switch indicators. Signal circuits are carried in new underground cable from State Line to 73rd Street and in existing overhead line wires from 73rd Street to Kenosha Tower. 2200 volt power is received from the Wisconsin Gas and Electric Company at 76th Street and carried in a 2-wire transmission line built in 1944. Local power supplies at South Kenosha and 75th Street were discontinued.

SIGNAL AND INTERLOCKING DIVISION
ADDITIONS AND BETTERMENTS - CONTINUED

(Continued)

INSTALLATION OF BLOCK SIGNAL SYSTEM - STATE LINE TO MILWAUKEE -
A.F.E. 4506, 4507 and 4280

The existing automatic block signal system from Harrison Street to Austin Avenue was revised and extended to Ryan Tower. The first step consisted of installing new three-position color light signals northbound at Bolivar and Austin Avenue and changing green indication of signal at Oklahoma Avenue to yellow. Three existing signals were retired. This portion was put in service on September 11th, 1945. The second section, put in service on September 18th, 1945, comprised the southbound track from St. Francis cut-off bridge to Layton Avenue. Work consisted of changing existing two-position signals at St. Francis Bridge and Oklahoma Avenue to 3-position signals. A new three-position signal was installed south of Austin Avenue. This signal was operated as a two-position signal until the balance of the signals were put in service.

Step 3 in the program involved placing Signal 758, located south of Drexel Boulevard, in service as the new southbound distant signal for Ryan Tower and removing the existing distant signal, located north of Oak Creek. Signal 758 acted as a two-position distant signal only and was not a block signal. The southbound annunciator control for Ryan Tower was changed from track instrument to track circuits, starting at Signal 776 located 2400 feet south of College Avenue. This change was made October 6th, 1945.

The final step consisted of putting the balance of the signals in service. Three 3-position color light signals were installed on the northbound track and three on the southbound. The northbound Home Signal at Ryan was made a three-position signal and incorporated in the block. The southbound distant signal, 758, was made a three-position block signal. The green indication on the southbound Home Signal was changed to yellow. All siding and crossover switches in the territory north of Ryan Tower were equipped with switch indicators. Underground cable was installed from Ryan southbound Home Signal to Signal 513, northbound at Austin. 2200 volt power is supplied to the signal main from the Wisconsin Gas and Electric Company at Rawson Avenue. This section was put in service December 17, 1945.

SIGNAL AND INTERLOCKING DIVISION
ADDITIONS AND BETTERMENTS - CONTINUED

(Continued)

INSTALLATION OF BLOCK SIGNAL SYSTEM - STATE LINE TO MILWAUKEE -
A.F.E. 4506, 4507 and 4280

All of the foregoing work was done by Knott and Mielly, Contractors.

At the same time that the last section of block signals was put in service, a manual block system, controlled by the Towermen, was installed between Ryan Tower and Kenosha Tower. Two-position color light signals with marker lights were installed at Ryan Tower, southbound, Racine Tower, both tracks and Kenosha Tower, northbound. A Bell telephone line was installed to connect the three towers and Company telephones installed in new booths at 7 switches not previously equipped. This work was done by Company forces.

INSTALLATION OF AUTOMATIC GATES AT GRANGE AVENUE - A.F.E. 4335

The signal contractor installed concrete bases and local underground cables for 2 automatic gates at Grange Avenue. No further work has been done on this project.

MAINTENANCE WORK

In addition to the routine work of maintaining interlocking plants, block signals and crossing protection devices, the following major items of work were done and charged to Operating Accounts: -

A third light was installed on the tip of all street arms of automatic gates at Grand Avenue, Ridgeland Avenue and Glen Flora Avenue, Waukegan. This light is controlled by a mercury switch and burns steadily while the gates are in the down position.

SIGNAL AND INTERLOCKING DIVISION

MAINTENANCE WORK

(Continued)

Automatic gate pedestals at Simpson Street, Glenview Road and Willow Road were renewed after being damaged by automobiles.

Automatic gate pedestals were replaced at the following locations and overhauled in the Shop: -

Wilmette Avenue, Wilmette	-	2 gates
14th Street, North Chicago	-	1 gate
27th Street, Zion	-	2 gates
75th Street, Kenosha	-	2 gates
67th Street, Kenosha	-	2 gates
Roosevelt Road, Kenosha	-	1 gate
60th Street, Kenosha	-	1 gate
Garfield Avenue, Libertyville	-	<u>2 gates</u>

Total gates overhauled - 13 gates

All wiring in the Kenosha and Racine Towers was renewed and retagged.

Insulation test made by Signal Inspector of all line wires from Howard Street to Harrison Street, Skokie Valley Line and from 22nd Street, North Chicago to State Line.

Oil burning lights on gates at 22nd Street, East Line, were replaced with electric lights controlled by mercury switches. Lights burn only when gates are down.

Manually controlled signals governing single track operation during rail and ballast work between Middle Road and Oak Creek were installed as needed. At the end of the job, these signals were removed.

Twenty-one gate motors and six autoflag motors were repaired by the Holt Electric Company at Milwaukee.

One hundred twenty-seven relays were overhauled in the C.R.T. Co. Relay Shop.

SIGNAL AND INTERLOCKING DIVISION

MAINTENANCE WORK

CROSSING GATE OPERATION

59 Automatic Gate Locations, including Middle Road

	<u>1945</u>	<u>1944</u>
Gates broken by automobiles	119	95
Other interruptions*	409	343

20 Manually Operated Crossing
Gate Locations

Gates broken by automobiles	34	20
Other interruptions*	110	50

*Includes interruptions due to
power failures, blown fuses,
mechanical failures, frosted
contacts, line trouble, track
circuit trouble, sleet, etc.

CROSSING GATES AND SIGNALS MAINTAINED

Automatic Gates	54	54
Automatic Gates & Flashers	5	3
Manual Gates	20	20
Flasher Signals	4	6
Autoflags - Track Circuit	16	16
Autoflags - Manual Control	3	3
Block Signals - S.T. Miles	111.7	84.1
Switch Protection Signals	7	7
Fire Crossing Signals	4	4
Interlocking Plants	5	5
Smash Gates	3	3

EQUIPMENT

PURCHASE OF EQUIPMENT - A.F.E. 4555

The following items of equipment purchased were charged to this A.F.E.: -

- 1 Gasoline-Powered Racine Portable Rail Saw
- 2 Fairmont Maintainer's Speeders
- 1 Atlas Drill Press for Speeder Shop
- 1 Model E Conveyall Coal Conveyor - Gasoline-Powered
- 8 Barco Tytampers

Work was started on the installation of Perfex Heat Regulators with Barometric Damper Controls at 17 locations. This equipment is being furnished and installed by the Crerar Clinch Coal Company. At the end of the year, 13 locations had been completed as follows: -

Dempster Station
Harnswoods Station
Glenayre Station
Northfield Station
Northbrook Station
Woodridge Station
Briergate Station

Highmoor Station
Sheridan Elms Station
South Upton Tower
Deerpath Station
North Chicago Junction Station
Winnetka Station

One Fairmont Maintainer's Speeder was purchased to replace a speeder demolished when struck by a train. This was charged to Operating Accounts.

WAY and STRUCTURES SUMMARY

1945 1944

Track Construction - Lineal Feet

Side Track Constructed	582	22
Side Track Retired	-	-

Rail Installed - Single Track Feet

102#	1,242	496
100#	100,058	66,478
80#	<u>1,612</u>	<u>7,174</u>
Total -	102,912	74,148

Rail Renewed in Kind - Single Track Feet

100#	6,702
80#	<u>1,485</u>
	8,187

Rail Removed - Single Track Feet

95#	-	496
91#	3,796	-
80#	100,072	66,478
65#	<u>1,030</u>	<u>7,152</u>
Total -	104,898	74,126

Tie Plates Installed

100#	43,716	19,092
80# x 100# - New	-	5,354
80# x 100# - Second Hand	<u>14,134</u>	<u>18,721</u>
Total -	57,850	43,167

Angle Bars Renewed - Pairs

100#	7,169	3,337
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SUMMARY - CONTINUED

	<u>1945</u>	<u>1944</u>
<u>Special Work</u>		
Crossovers Installed	-	-
Crossovers Removed	2	-
Turnouts Installed	1	-
Crossings Built Up	5	-
Frogs Repaired	15	13
Switch Points Repaired	7	5
Thermit Welds	178	282

	<u>Ties Renewed</u>	
Main Line	21,258	24,853
Side Track	1,364	923
Switch	909	775
Bridge	894	335
3rd Rail	892	-
Total -	25,317	26,886

	<u>Ties Installed on New Work</u>	
Main Line - New	576	-
Side Track - New	410	12
Switch - New	39	-

	<u>Ballast - Cars</u>	
Stone	387	646
Gravel	114	576

	<u>Broken Rails</u>	
100#	1	1
80#	5	22

SUMMARY - CONTINUED

	<u>1945</u>	<u>1944</u>
<u>Crossings</u>		
Concrete Slab Crossings Installed	-	2
Gumwood Crossings Installed	7	3
Asphalt Crossings Rebuilt	8	4
Plank Crossings Rebuilt	3	16

<u>Bridge Repairs</u>		
Bridges Repaired	11	12
Culverts Repaired	-	7
Bridges Painted	4	4

<u>Painting</u>		
Buildings - Painted and Decorated	43	43
Company Houses Painted and Decorated	13	5

<u>Crossing Protection</u>		
Automatic Gates Installed - Locations	2	-
Automatic Flashers Installed - Locations	-	1
Autoflags Retired - Locations	-	1
Automatic Gates Damaged by Automobiles	119	95
Manual Gates Damaged by Automobiles	34	20

<u>Fencing</u>		
Right-of-Way Fence Rebuilt -	114,370	5,250

<u>Weed Killer</u>		
Two Applications - Single Track Miles	200	-
One Application - Single Track Miles	-	200
Total Solution Used - Gallons	76,000	42,000

<u>Carload Material</u>		
Sand and Stone	522	1,278
Coal	32	38
Ties	69	84
Cinders	128	103
Miscellaneous	<u>81</u>	<u>80</u>
	832	1,583

ELECTRIC POWER SERVICE DIVISION

ADDITIONS AND BETTERMENTS

EXTENSION OF TROLLEY WIRE OVER SIDINGS - A.F.E. 4566

Trolley wire was extended over three sidings as follows:

Economy Coal Company	- Tenth Street, Waukegan	- 350 Feet
Acme Coal Company	- Belvidere Street, Waukegan-	260 Feet
Benton Lumber Company	- Zion Station	- 440 Feet

Construction consists of 4/0 trolley wire suspended from mast arms on 35 foot wood poles.

POWER WIRING FOR 3-PHASE MOTOR LOAD - HIGHWOOD SHOP - A.F.E. 4537

Conduit, wiring, safety switches, cut-outs and junction boxes were installed in the Highwood Car Repair Shops to furnish three-phase, 230 volt power for motor driven shop tools. This work was done by contract by the Kelso-Burnett Co. Company forces installed a new transformer bank on wood poles in the alley between the Shop and the Storehouse.

RENEWAL OF SPAN WIRES - WISCONSIN - A.F.E. 4535

A total of 405 span wires was renewed in Wisconsin from the State Line to Milwaukee Terminal. Eye bolts, insulators and galvanized messenger wire spans were renewed at each location.

INSTALLATION OF D.C. FEEDERS AND BREAKER PANEL - MILWAUKEE - A.F.E. 4517

A new breaker panel was installed in the Wisconsin Electric Power Company Substation at First Street and Maple Avenue, Milwaukee. Two 2,000,000 C.M. lead covered cables and duct line were run from the Substation to switches on a pole outside the Substation. One 1,000,000 C.M. and one 500,000 C.M. weather-proof cables were installed on new cross-arms on the Power Company's pole line on Maple Street from the Substation to a connection with the North Shore feeders on Fifth Street. All work was done by the Wisconsin Electric Power Company.

ELECTRIC POWER SERVICE DIVISION

MAINTENANCE WORK

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

Installed temporary taps mid-way between substations on the Skokie Valley Line tying together the catenary wire on both tracks in order to improve voltage.

Rearranged feeder taps at several locations in Wisconsin to improve voltage.

Renewed 191 wood poles, 45 cross-spans, 64 telephone cross-arms, 63 feeder cross-arms, 9 high tension cross-arms and 51 - 45,000 volt transmission line insulators.

Renewed 5.7 miles of 4/0 trolley wire.

Renewed 9,759 - 400,000 C.M. rail bonds, including those installed on rail renewals.

The power load carried in 1945 was 8.5% higher than ever before in North Shore history. The total load was 56,473,422 K.W.H.

POWER STATISTICS FOR YEAR 1945

POWER DISTRIBUTION

	1945	1944
Wisconsin, exclusive of Milwaukee City		
Milwaukee City	13,048,275	12,106,808
Wisconsin, including Milwaukee City	<u>1,483,628</u>	<u>1,362,467</u>
Milwaukee D.C. furnished by Wisc. Elect. Co.	14,531,903	13,469,275
Wisconsin D.C. furnished by Winthrop Harbor	<u>1,578,340</u>	<u>1,353,996</u>
Wisconsin Total	16,110,243	14,823,271
Illinois Total	<u>16,524,860</u>	<u>15,249,499</u>
Total Purchased	39,948,562	36,695,492
	<u>56,473,422</u>	<u>51,944,991</u>

Average monthly demand for year in K.W.
A.C. & D.C. K.W.H. purchased on demand charge basis
Load factor for year
Car miles operated on North Shore power

12,376	11,907
53,708,931	49,484,733
49.06%	47.3%
12,398,219	11,371,971

ELECTRIC POWER SERVICE DIVISION

COST OF ELECTRICAL ENERGY PER CAR MILE

K.W.H. - C.N.S. & M.R.R. CO. and C. & M.E. Ry. Co.

January	-	5,050,648
February	-	4,254,502
March	-	4,512,171
April	-	4,516,665
May	-	4,613,445
June	-	4,199,324
July	-	4,475,707
August	-	4,559,296
September	-	4,600,521
October	-	4,900,332
November	-	5,245,360
December	-	<u>5,542,451</u>

Total 56,473,422

CAR MILES OPERATED

January	-	967,891
February	-	886,666
March	-	1,018,294
April	-	989,315
May	-	1,008,242
June	-	998,109
July	-	1,028,066
August	-	1,035,867
September	-	1,049,889
October	-	1,152,614
November	-	1,120,896
December	-	<u>1,142,370</u>

Total - 12,398,219

Cost of power for year 1945 - Account 59 \$703,387.68
Total car miles operated on North Shore power. 12,398,219
\$703,387.68 ÷ 56,473,422 = 1.245 cents per K.W.H.
56,473,422 ÷ 12,398,219 = 4.555 K.W.H. per car mile
4.555 x 1.245 = 5.67 cents per car mile - Account 59
Cost of electric energy per car mile at Substation A.C. &
D.C. \$.0567
Cost of electric energy per car mile at Substation D.C.
bus \$.0633

NOTE: The above costs do not include interest on investment,
insurance, depreciation or taxes.

COST OF ELECTRICAL ENERGY FOR YEAR 1945

	<u>P.S. D.C.</u>	<u>P.S. A.C.</u>	<u>Wis.Elec. Co. A.C.</u>	<u>Wis.Elec. Co. D.C.</u>	<u>Wells St. D.C.</u>	<u>Calvary D.C.</u>
Jan.	\$ 44,614.54	\$ 6,061.80	\$ 8,086.33	\$ 1,875.00	\$ 46.68	\$ 858.80
Feb.	40,838.85	5,871.44	7,111.65	1,513.50	47.05	806.53
Mar.	42,123.91	6,130.80	7,481.87	1,348.50	46.91	1,007.42
Apr.	41,687.39	6,209.09	7,587.02	1,531.50	45.03	1,036.43
May	42,014.00	5,896.06	7,508.92	1,356.35	47.76	1,031.53
June	39,790.24	5,372.01	7,231.62	1,183.50	45.69	1,047.74
July	40,907.39	5,535.94	7,440.56	1,101.00	46.61	1,122.59
Aug.	41,152.06	5,541.99	7,428.79	1,116.00	46.41	1,135.62
Sept.	42,208.15	5,461.43	7,520.33	1,330.50	46.01	1,127.05
Oct.	44,438.66	5,789.16	8,234.41	1,357.50	46.07	1,030.35
Nov.	46,379.27	6,678.48	8,289.94	1,898.81	44.21	997.06
Dec.	47,723.57	6,442.55	8,727.95	2,664.00	48.84	1,014.80
	<u>\$513,878.03</u>	<u>\$70,990.75</u>	<u>\$92,649.39</u>	<u>\$18,276.16</u>	<u>\$553.27</u>	<u>\$12,215.92</u>

Cost per D.C. K.W.H. Public Service Company contract -
 $\$513,878.03 \div 39,177,028 = 1.32$ Cents per K.W.H.

Cost per A.C. K.W.H. Public Service Company contract -
 $\$70,990.75 \div 6,296,019 = 1.13$ Cents per K.W.H.

Cost per A.C. K.W.H. Wisconsin Electric Power Company contract -
 $\$96,649.39 \div 8,235,884 = 1.173$ Cents per K.W.H.

Cost per D.C. K.W.H. Wisconsin Electric Power Company contract -
 $\$18,829.43 \div 1,578,300 = 1.193$ Cents per K.W.H.

Cost per K.W.H. D.C. K.W.H. Chicago Rapid Transit Company contract -
 $\$12,215.92 \div 1,186,151 = 1.03$ Cents per K.W.H.

Average cost per K.W.H. system -
 $\$708,563.52 \div 56,473,422 = 1.255$ Cents per K.W.H.

POWER SUMMARY - YEAR 1945

3,066,508	No. 30 Skokie	D.C.
1,074,766	No. 31 Lake Ave.	D.C.
1,301,480	No. 32 Kotz Rd.	D.C.
966,578	No. 33 Deerfield Rd.	D.C.
1,401,586	No. 34 Old Mill Rd.	D.C.
771,916	No. 35 Laurel Ave.	D.C.
1,006,808	No. 36 Libertyville	D.C.
1,624,413	No. 37 Central St.	D.C.
3,737,086	No. 38 Winnetka	D.C.
4,145,950	No. 39 Ravinia	D.C.
3,800,823	No. 40 Ft. Sheridan	D.C.
1,461,600	No. 42 No. Chicago NS.	D.C.
3,516,030	A24 No. Chicago P.S. Co.	D.C.
2,830,377	No. 43 Waukegan	D.C.
589,877	No. 44 Beach	D.C.
1,244,160	No. 45 Winthrop Harbor	D.C.
5,939,150	No. 80 Lake Bluff	D.C.
199,300	Highwood Shops	D.C.
51,254	Waukegan Garage	
171,750	Skokie Shops, Oakton St.	
111,700	Glencoe & Kenilworth Signals	
74,916	Howard St. Station	
89,000	Zion & Waukegan Signals	
39,177,028	Public Service Company Billings	D.C.
1,186,151	C.R.T. Company Calvary	D.C.
40,363,179	Total Purchased, Illinois	D.C.
412,311	Winthrop Harbor to Wisconsin	D.C.
39,948,562	Total - Illinois	D.C.
6,296,019	Public Service Company	A.C.
46,244,581	Total - Illinois	D.C. & A.C.
8,235,884	Wisconsin Electric Power Company	A.C.
1,578,340	Wisconsin Electric Power Company	D.C.
414,617	Winthrop Harbor to Wisconsin	D.C.
56,473,422	Total A.C. and D.C. Purchased	

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1,052,600	McKeown Substation	D.C.
1,436,212	Kenosha Substation	D.C.
704,260	Bose Road Substation	D.C.
1,699,305	Racine Substation	D.C.
772,120	Quarry Substation	D.C.
797,440	Four Mile Road Substation	D.C.
1,069,100	Carrollville Substation	D.C.
823,800	College Avenue Substation	D.C.
2,905,600	Milwaukee Substation	D.C.
11,260,437	Total Converted in Wisconsin	D.C.
414,617	Winthrop Harbor to Wisconsin	D.C.
1,578,340	Wisconsin Electric Power Company	D.C.
13,253,394	Total to Wisconsin	D.C.
14,531,903	K.W.H. Wisconsin	A.C.
1,483,628	Milwaukee City	A.C.
13,048,275	K.W.H. A.C. to Wisconsin exclusive of Milwaukee City	
414,617	K.W.H. D.C. to Wisconsin from Winthrop Harbor	
13,462,892	K.W.H. to Wisconsin exclusive of Milwaukee City	

K.W.H. PURCHASED - YEAR 1945

	<u>P.S.D.D.C.</u>	<u>P.S. A.C.</u>	<u>D.C. C.R.T. Co.</u>
Jan.	3,510,274	554,600	95,042
Feb.	2,943,051	748,200	82,569
Mar.	3,131,294	503,400	98,631
Apr.	3,086,919	524,500	97,592
May	3,200,339	518,200	98,269
June	2,919,483	444,923	95,232
July	3,116,600	506,800	101,134
Aug.	3,175,923	522,186	104,492
Sept.	3,201,524	518,770	100,477
Oct.	3,415,769	537,100	99,859
Nov.	3,657,259	586,880	99,646
Dec.	<u>3,818,593</u>	<u>600,460</u>	<u>113,208</u>
	39,177,028	6,296,019	1,186,151

	<u>Wisc. Elect. Power Co. A.C.</u>	<u>Wisc. Elect. Power Co. D.C.</u>	<u>Wells St.D.C.</u>	<u>Total Wisc. Elect. D.C.</u>
Jan.	729,814	156,250	4,668	160,918
Feb.	620,252	126,125	4,305	130,430
Mar.	661,780	112,375	4,691	117,066
Apr.	675,526	127,625	4,503	132,128
May	678,832	113,029	4,776	117,805
June	636,492	98,625	4,569	103,194
July	654,762	91,750	4,661	96,411
Aug.	659,054	<u>93,000</u>	4,641	97,641
Sept.	664,274	110,875	4,601	115,476
Oct.	729,872	113,125	4,607	117,732
Nov.	738,920	158,234	4,421	162,655
Dec.	<u>786,306</u>	<u>222,000</u>	<u>4,884</u>	<u>226,884</u>
	8,235,884	1,523,013	55,327	1,578,340

Total K.W.H. Purchased - 56,473,422

MILWAUKEE CITY LINE

Kilowatt Hours - D.C.

	<u>N.S. Feeder</u>	<u>Wisc. Elect. Co.</u>	<u>Wells St.</u>	<u>Total</u>
Jan.	105,580	156,250	4,668	266,898
Feb.	90,680	126,125	4,305	221,110
Mar.	92,660	112,375	4,691	209,726
Apr.	91,890	127,625	4,503	224,018
May	83,390	113,029	4,776	201,195
June	99,870	98,625	4,569	203,064
July	92,020	91,750	4,661	188,431
Aug.	94,670	93,000	4,641	192,311
Sept.	95,080	110,875	4,601	210,556
Oct.	103,780	113,125	4,607	221,512
Nov.	97,160	158,234	4,421	259,815
Dec.	<u>100,200</u>	<u>222,000</u>	<u>4,884</u>	<u>327,084</u>
	1,147,380	1,523,013	55,327	2,725,720

Kilowatt Hours - A.C.

Jan.	138,356
Feb.	118,691
Mar.	118,691
Apr.	118,754
May	113,456
June	134,777
July	117,372
Aug.	119,082
Sept.	125,780
Oct.	131,534
Nov.	122,663
Dec.	<u>124,472</u>

1,483,628

Total D.C. K.W.H. to Milwaukee City - 1,147,380

Total A.C. K.W.H. to Milwaukee City - 1,483,628

Wisconsin ratio of conversion 77.34%

POWER STATISTICS FOR YEAR 1945

Illinois Substations D.C. Output in K.W.H.

	<u>Calvary</u>	<u>Niles No. 30</u>	<u>No. 31</u>	<u>No. 32</u>	<u>No. 33</u>
Jan.	95,042	264,965	90,515	136,587	28,765
Feb.	82,569	245,185	72,975	113,867	25,435
Mar.	98,631	254,225	83,075	127,227	27,475
Apr.	97,592	257,345	75,835	127,677	31,555
May	98,269	250,525	83,195	123,287	46,795
June	95,232	221,945	81,945	83,837	100,213
July	101,134	212,995	92,165	89,387	106,467
Aug.	104,492	223,225	88,105	93,387	107,615
Sept.	100,477	253,055	90,165	97,837	113,085
Oct.	99,859	268,935	102,605	96,177	123,755
Nov.	99,646	294,499	92,698	103,810	126,489
Dec.	113,208	318,609	121,488	108,400	128,929
	1,186,151	3,066,508	1,074,766	1,301,480	966,578

	<u>No. 34</u>	<u>No. 35</u>	<u>No. 36</u>	<u>No. 37</u>	<u>No. 38</u>
Jan.	144,037	62,875	93,985	142,597	300,565
Feb.	120,467	53,705	73,975	116,057	253,565
Mar.	138,627	57,935	72,595	128,537	290,765
Apr.	131,947	62,035	74,465	123,127	285,265
May	131,567	67,975	81,865	133,257	308,665
June	92,357	58,535	64,445	126,187	293,465
July	102,857	53,235	65,915	139,467	325,165
Aug.	95,597	61,225	74,985	137,640	329,965
Sept.	105,533	65,545	90,455	141,037	311,965
Oct.	106,217	70,485	95,465	147,587	338,765
Nov.	107,560	79,648	100,079	149,290	353,718
Dec.	124,820	78,718	118,579	139,630	345,218
	1,401,586	771,916	1,006,808	1,624,413	3,737,086

POWER STATISTICS FOR YEAR 1945

Illinois Substations D.C. Output in K.W.H.

	<u>No. 39</u>	<u>Ft. Sheridan</u>	<u>Lake Bluff</u>	<u>N.S. No. Chicago</u>
Jan.	350,837	364,637	529,000	155,500
Feb.	302,137	295,637	451,480	118,500
Mar.	328,937	304,337	480,280	125,800
Apr.	322,037	298,237	475,590	130,400
May	343,937	304,737	495,490	127,200
June	324,837	269,512	463,200	103,400
July	355,237	293,935	497,320	102,300
Aug.	354,237	301,437	482,990	111,800
Sept.	341,837	297,637	493,390	97,600
Oct.	374,937	335,437	485,580	120,900
Nov.	380,590	362,590	519,420	119,800
Dec.	<u>366,390</u>	<u>372,690</u>	<u>565,410</u>	<u>148,400</u>
	4,145,950	3,800,823	5,939,150	1,461,600

	<u>P.S. No. Chicago</u>	<u>Pine St. Waukegan</u>	<u>Beach</u>	<u>W. Harbor</u>
Jan.	337,840	281,430	39,277	109,400
Feb.	284,900	215,570	52,157	84,300
Mar.	288,820	211,720	56,157	96,200
Apr.	275,420	218,400	50,397	95,500
May	275,820	231,230	36,007	104,800
June	252,930	200,050	39,181	94,800
July	269,350	214,270	47,287	103,300
Aug.	273,630	232,157	45,690	113,860
Sept.	275,400	222,710	45,757	107,600
Oct.	290,990	236,360	60,627	102,100
Nov.	338,150	276,830	57,180	129,600
Dec.	<u>352,780</u>	<u>289,650</u>	<u>60,160</u>	<u>102,700</u>
	3,516,030	2,830,377	589,877	1,244,160

POWER STATISTICS FOR YEAR 1945

Auxiliary Power Furnished Under
D.C. Power Contract in K.W.H.

	Highwood Shops	Waukegan Garage	Skokie Shops	Winnetka Signals	Howard St. Station	Signals N. Chgo. - State Line
Jan.	20,500	5,824	25,100	11,900	6,278	7,860
Feb.	16,200	4,375	20,400	10,000	5,404	6,760
Mar.	15,900	4,132	15,400	9,900	5,910	7,340
Apr.	13,900	3,391	13,100	8,300	5,816	7,180
May	15,000	3,551	13,400	8,400	6,336	7,300
June	14,300	3,428	10,500	7,500	5,736	7,180
July	13,300	2,985	8,300	7,600	6,163	7,600
Aug.	14,500	3,651	7,950	8,200	6,437	7,640
Sept.	15,300	3,726	10,200	8,400	5,730	7,560
Oct.	18,100	4,696	12,100	10,300	6,511	7,140
Nov.	19,400	5,063	16,100	10,200	6,945	7,600
Dec.	22,900	6,432	19,200	11,000	7,650	7,840
	<u>199,300</u>	<u>51,254</u>	<u>171,750</u>	<u>111,700</u>	<u>74,916</u>	<u>89,000</u>

Waukegan to State Line Signals	-	89,000
Oakton Street Shops	-	171,750
Highwood Shops	-	199,300
Waukegan Garage	-	51,254
Howard Street Station	-	74,916
Winnetka Signals	-	<u>111,700</u>

Total Auxiliary 697,920

Public Service D.C. contract load factor - 50.4%

POWER STATISTICS FOR YEAR 1945

Wisconsin Substations D.C. Output in K.W.H.

	<u>McKeown</u>	<u>Kenosha</u>	<u>Bose Rd.</u>	<u>Racine</u>	<u>Quarry</u>
Jan.	72,300	120,870	84,890	125,400	67,710
Feb.	83,900	93,460	51,450	115,700	55,110
Mar.	88,400	108,666	50,640	133,100	63,900
Apr.	98,700	105,360	65,170	121,800	62,400
May	94,100	105,000	59,670	113,310	60,590
June	79,900	95,176	48,330	121,475	55,080
July	90,300	127,100	53,340	148,680	65,680
Aug.	93,300	136,710	29,210	168,940	56,830
Sept.	82,400	120,890	48,470	159,380	63,060
Oct.	91,000	129,050	67,340	160,420	66,950
Nov.	86,300	138,840	70,980	155,980	68,350
Dec.	92,000	154,590	74,770	175,120	66,460
	1,052,600	1,436,212	704,260	1,699,305-	772,120

	<u>4 Mile</u>	<u>Carrollville</u>	<u>College</u>	<u>Milwaukee</u>	<u>Wisconsin Elec.Co.</u>	<u>Win.Harbor To Wisconsin</u>
Jan.	59,600	93,000	60,600	298,700	160,918	36,466
Feb.	56,470	83,000	53,300	246,500	130,430	28,100
Mar.	64,870	81,300	59,300	243,500	117,066	32,067
Apr.	69,442	103,000	67,500	234,600	132,128	32,065
May	61,708	85,400	71,900	230,700	117,805	34,933
June	61,520	75,300	65,300	209,300	103,194	31,600
July	69,420	77,100	78,000	201,000	96,411	34,100
Aug.	70,670	79,600	83,500	210,100	97,641	37,953
Sept.	65,830	60,600	66,200	228,000	115,476	35,866
Oct.	71,460	88,800	71,000	254,900	117,732	34,033
Nov.	72,600	121,400	73,400	262,900	162,655	43,200
Dec.	73,850	120,600	74,200	285,400	226,884	34,234
	797,440	1,069,100	823,800	2,905,600	1,578,340	414,617

Total converted in Wisconsin - 11,260,437 K.W.H.

POWER STATISTICS FOR YEAR 1945

A.C. Power Furnished in Wisconsin in K.W.H.

	<u>W. Harbor</u>	<u>Beach</u>	<u>Milwaukee</u>
Jan.	148,200	406,400	729,814
Feb.	134,900	343,300	620,252
Mar.	145,100	358,300	661,780
Apr.	140,500	384,000	675,526
May	145,400	372,800	678,832
June	143,875	301,048	636,492
July	151,500	355,300	654,762
Aug.	177,286	344,900	659,054
Sept.	159,870	358,900	664,274
Oct.	158,200	378,900	729,872
Nov.	166,100	420,780	738,920
Dec.	<u>175,500</u>	<u>424,960</u>	<u>786,306</u>
	1,846,431	4,449,588	8,235,884

Wisconsin

Input A.C. K.W.H. - 14,531,903
 Output D.C. K.W.H. - 11,260,437
 Efficiency - 77.5%

Public Service Co. A.C. contract load factor - 36.7%
 Wisc. Electric Power Co. A.C. contract load factor - 60.0%
 System load factor A.C. - 48.4%
 System load factor A.C. & D.C. - 49.06%

POWER STATISTICS FOR YEAR 1945

Monthly K.W. Demand - Illinois Stations

	No. 30 <u>Skokie</u>	<u>#31</u>	Signals <u>#32</u>	Power <u>#32</u>	<u>#33</u>	Signals <u>#34</u>
Jan.	750.	333.3	22.4	516.6	137.	19.4
Feb.	840.	313.3	21.	473.3	133.3	16.3
Mar.	820.	303.3	18.3	460.	120.	14.8
Apr.	766.6	280.	13.7	466.6	156.6	13.1
May	770.	303.3	14.8	440.	130.	14.2
June	776.6	300.	13.5	360.	340.	10.7
July	720.	313.3	13.3	300.	394.4	11.9
Aug.	737.7	307.	12.7	303.3	376.6	12.1
Sept.	773.3	326.7	14.0	356.6	383.4	13.9
Oct.	773.3	384.	15.2	306.6	406.6	15.
Nov.	847.6	343.3	15.4	403.3	443.4	16.1
Dec.	853.3	373.4	19.2	370.	437.6	16.
	9,428.4	3,880.9	193.5	4,756.3	3,458.9	173.5

	Power <u>#34</u>	Power <u>#35</u>	Liberty Lake <u>#36</u>	Central Street <u>#37</u>	Winnetka <u>#38</u>	Ravinia <u>#39</u>
Jan.	553.3	270.	321.6	213.4	683.3	878.3
Feb.	560.	273.3	303.3	240.	710.	803.3
Mar.	500.	256.6	256.6	276.6	770.	840.
Apr.	483.3	313.3	200.	316.7	800.	746.7
May	460	183.3	230.	356.7	846.7	843.3
June	346.6	266.7	193.4	353.4	850.	833.3
July	420.	313.3	196.7	256.7	713.3	836.7
Aug.	390.	303.3	153.3	263.3	720.	850.
Sept.	423.3	276.6	266.7	323.3	760.	886.7
Oct.	406.6	280.	326.6	336.6	853.3	983.3
Nov.	480.	353.3	343.4	323.3	773.3	863.3
Dec.	473.4	299.1	380.	315.5	850.	930.
	5,496.5	3,388.8	3,171.6	3,575.5	9,329.9	10,294.9

POWER STATISTICS FOR YEAR 1945

Monthly K.W. Demand - Illinois Stations

	<u>Fort Sheridan #40</u>	<u>North Chicago #42</u>	<u>North Chicago A.24</u>	<u>Waukegan #43</u>	<u>Beach #44</u>	<u>W.Harbor #45</u>	<u>L.Bluff #80</u>
Jan.	903.3	866.6	586.6	540.	83.3	216.6	1,050.
Feb.	866.6	796.6	643.3	510.	70.	166.6	1,113.3
Mar.	803.3	737.	623.3	556.6	84.7	240.	1,077.
Apr.	646.7	643.4	600.	656.7	110.	390.2	1,153.4
May	743.3	646.4	566.7	600.	63.3	316.7	1,036.7
June	706.6	560.5	573.3	490.	94.5	296.7	1,066.7
July	664.4	640.	606.7	521.9	86.6	236.7	1,073.4
Aug.	730.	676.6	573.3	450.	76.7	176.7	1,106.6
Sept.	760.	456.6	650.	543.4	133.3	260.	1,110.
Oct.	890.	690.	610.	510.	93.3	219.5	1,060.8
Nov.	823.4	680.	650.	526.6	90.	200.	1,154.
Dec.	890.	803.3	603.4	523.3	93.3	163.7	1,130.
	9,427.6	8,197.0	7,286.6	6,428.5	1,079.0	2,883.4	13,131.9

	<u>Waukegan Signals</u>	<u>Highwood Office</u>	<u>Waukegan Garage</u>	<u>Oakton Street</u>	<u>Howard Street</u>	<u>Winnetka Signals</u>
Jan.	6.3	18.8	7.1	54.7	19.	21.4
Feb.	6.3	23.6	6.1	50.	19.	17.5
Mar.	6.3	19.7	5.1	34.	19.	8.
Apr.	11.8	15.3	2.8	5.3	10.	5.1
May	11.8	19.6	3.6	13.7	11.	5.6
June	14.5	12.2	2.9	7.3	9.5	4.8
July	12.2	11.5	2.	12.	10.5	4.4
Aug.	12.2	10.4	2.5	7.7	11.	4.8
Sept.	11.2	12.5	3.4	12.	11.	5.8
Oct.	11.8	17.8	3.9	19.	12.	6.5
Nov.	11.8	16.4	4.1	18.7	12.5	6.1
Dec.	12.8	23.3	5.9	27.9	13.	9.6
	129.0	201.1	49.4	262.3	157.5	99.6

POWER STATISTICS FOR YEAR 1945

Monthly K.W. Demand

	Beach A.C.	Winthrop Harbor A.C.	P.S. Total A.C.	Milw. A.C.	Total A.C.	P.S. D.C.	Total System
Jan.	1,533.3	430.	1,963.3	1,529	3,492.3	9,072.3	12,564.6
Feb.	1,625.	481.7	2,106.7	1,529	3,635.7	8,976.4	12,612.1
Mar.	1,670.8	486.7	2,157.5	1,566	3,723.5	8,850.1	12,573.6
Apr.	1,612.5	523.3	2,135.8	1,500	3,635.8	8,807.1	12,442.9
May	1,483.3	481.7	1,965	1,500	3,465	8,630.7	12,095.7
June	1,445.8	456.7	1,902.5	1,566	3,468.5	8,483.7	11,952.2
July	1,316.7	461.6	1,778.3	1,566	3,344.3	8,371.9	11,716.2
Aug.	1,254.2	466.6	1,720.8	1,566	3,286.8	8,267.8	11,554.6
Sept.	1,300.	380.	1,680.	1,566	3,246.	8,773.7	12,019.7
Oct.	1,395.8	433.4	1,829.2	1,624	3,453.2	9,231.7	12,684.9
Nov.	1,820.	410.	2,230.	1,624	3,854.	9,399.3	13,253.3
Dec.	1,553.3	480	2,033.3	1,624	3,657.3	9,617.1	13,274.4
	18,010.7	5,491.7	23,502.4	18,760	42,262.4	106,481.8	148,744.2

Billing Demand in K.W.H.

	P.S. Co. D.C.	P.S. Co. A.C.	Milw. A.C.	Total
Jan.	9,072.3	1,963.3	1,529	12,564.6
Feb.	8,976.4	2,106.7	1,529	12,612.1
Mar.	8,850.1	2,157.5	1,566	12,573.6
Apr.	8,807.1	2,135.8	1,500	12,442.9
May	8,630.7	1,965.	1,500	12,095.7
June	8,483.7	1,902.5	1,566	11,952.2
July	8,371.9	1,778.3	1,566	11,716.2
Aug.	8,267.8	1,720.8	1,566	11,554.6
Sept.	8,773.7	1,680.	1,566	12,019.7
Oct.	9,231.7	1,829.2	1,624	12,684.9
Nov.	9,399.3	2,230.	1,624	13,253.3
Dec.	9,617.1	2,033.3	1,624	13,274.4
	106,481.8	23,502.4	18,760	148,744.2

Average monthly K.W. demand for year 1945:

Public Service Co. D.C. - 8,874
 Public Service Co. A.C. - 1,958
 Wisc. Elec. Power Co. A.C. - 1,544
 System Max. A.C. & D.C. - 12,376

POWER STATISTICS FOR YEAR 1945

<u>Substation</u>	<u>Installed Capacity K.W.</u>	<u>Number of Units</u>
No. 30 Skokie	2,000	1
No. 31 Lake Ave.	1,500	1
No. 32 Kotz Rd.	1,500	1
No. 33 Deerfield Rd.	1,500	1
No. 34 Old Mill Rd.	1,500	1
No. 35 Laurel Ave.	1,000	2
No. 36 Libertyville	1,000	1
No. 38 Winnetka	1,500	1
No. 39 Ravinia	2,000	2
No. 40 Ft. Sheridan	1,500	1
No. 42 No. Chicago N.S.	1,800	3
A.24 No. Chicago P.S.	1,500	1
No. 43 Waukegan	1,900	1
No. 44 Beach	1,000	1
No. 45 Winthrop Harbor	1,200	1
No. 80 Lake Bluff	<u>1,900</u>	<u>1</u>
	24,300	20
McKeown	1,000	2
Kenosha	1,000	1
Bose Rd.	1,000	1
Racine	1,000	2
Quarry	1,000	1
4-Mile Rd.	500	1
Carrollville	1,000	2
College Ave.	500	1
Milwaukee	<u>2,000</u>	<u>2</u>
	9,000	13
Total	33,300	33

NOTE: All substations are rotary converter stations except No. 35, No. 80 and No. 43 which are mercury arc rectifier Stations.

One unit at McKeown is a hand operated unit.

ELECTRIC POWER SERVICE DIVISION

Summary

	<u>1945</u>	<u>1944</u>
<u>Crossing Protection</u>		
Autoflag With Bell - Locations	14	14
Autoflag - No Bell - Locations	4	4
Bell and Light Signal - Locations	4	4
600 Volt Bell on Gate - Locations	13	13
Electric Lighted Crossings	55	55

Overhead Trolley

Catenary Construction - D.T. Miles	32.04	32.04
Wood and Steel Poles - Main Line - D.T. Miles	59.31	59.31
Steel Poles - Milwaukee - D.T. Miles	3.35	3.35
Steel Poles - Waukegan City - S.T. Miles	4.08	4.08
Wood Poles - Yards & Sidings - S.T. Miles	43.23	43.64
Wire Renewed - Miles	5.7	6.42
Wire Breaks	13.	11.

Lighting

Passenger Stations	37	37
Freight Stations	9	9
Shelters	61	61
Shops and Car Houses	4	4
Substations	9	9
Office Buildings	2	2
Miscellaneous Buildings	31	31
Station Platforms	221	221
Yards	8	8

Substations

Manual	4	4
Automatic	6	6

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	45.5	33.9
25 cycle - 13,200 volt - 3 wire	2.4	2.4

Feeder Cable - Single Wire Miles

Copper Feeder Cable	177.32	177.21
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Bonding

Bonds Renewed	9759	5346
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