Detroit Edison

REAL ESTATE AND RIGHTS OF WAY

Project No.: BD3534
Property Name: Evergreen-Hines
120-kV Towerline

Date: October 30, 1985

To: Vicki Sullivan
Records Center

From: Sharon Selonke

Subject: Railroad Crossings Related to
Evergreen-Hines Towerline

Attached are papers related to the Evergreen-Hines 120-kv towerline agreement dated January 1, 1978.

The original drawings depicted the change from 120-kV to 230-kV. The new drawings attached show the line as it is today.

The property is located in various sections of Dearborn, Detroit, Redford Township, and Livonia, Michigan.

Please incorporate these papers into Records Center File No. 19077.

/ss

Attachment

Approved:

Barbara A. Mention-Fulton

Barbara A. Mention-Fulton
Supervisor-Real Estate Services

cc: C. Van Paris

RECORDED RIGHT OF WAY 19077 part 2

ENGINEERING DEPARTMENT

Chessie System Railroads
Operating Headquarters Building
P. O. Box 1800
Huntington, West Virginia 25718
304-522-5000

October 8, 1985
File: 131-2-Gen. LD
jww/bam-01/18

Ms. Barbara A. Mention
Supervisor, Real Estate Services
Detroit Edison
2000 Second Avenue
Detroit, Michigan 48226

Dear Ms. Mention:

This will acknowledge receipt of your November 15, 1984 letter and drawings covering the Evergreen-Hines 120-Kv tower line, agreement No. 19025 dated January 1, 1979.

Yours very truly,

Jon W Wachenjain

for Richard K. Pullem
Chief Engineer

RECORDED RIGHT OF WAY

BD3534

Detroit Edison
2000 Second Avenue
Detroit, Michigan 48226
(313) 237-8000

November 15, 1984

Chesapeake and Ohio Railway Company
Ronald W. Drucker, Chief Engineer
P.O. Box 1800
Huntington, W. Virginia 25718

Re: Evergreen-Hines 120-kV Towerline

Dear Mr. Drucker:

Enclosed are current drawings covering the above-mentioned line described in agreement dated January 1, 1978, for your files.

This will reflect our present facilities in the various locations.

If you have any questions, please contact Barbara Mention on (313) 237-8319.

Sincerely,

Barbara A. Mention

Barbara A. Mention
Supervisor, Real Estate Services
448 G.O.

BAM:ss

Enc.

RECORDED RIGHT OF WAY 19377 part 2

B&O FORM NEW 9-67 MADE IN USA
NON UTILITY CROSS . AND ALL OCCUPATIONS, PIPE OR WIRE
SUPERSEDES L. D. FORM NO. 3

THIS AGREEMENT, made as of the 1st day of January , ~~1976~~ 1978 , by and between ~~THE BALTIMORE AND OHIO RAILROAD COMPANY,~~
THE CHESAPEAKE AND OHIO RAILWAY COMPANY,
first party, hereinafter called "Licensor", and DETROIT EDISON COMPANY

second party, hereinafter called "Licensee";

WITNESSETH:

WHEREAS, Licensee has applied to Licensor for license and permission to construct, maintain and use a ~~[illegible]~~ up to 230,000 KV aerial transmission line occupying property of Licensor from its Station 442+50 opposite Licensee's Evergreen Station and extending westerly for a distance of approximately 8.46 miles to a point opposite Licensor's Station 907+00,

(all of which, including appurtenances and changes herein provided for, are hereinafter referred to as "facilities"), upon, over, under, across or along, as the case may be, the tracks, right-of-way and property owned, controlled or operated by Licensor at Detroit and Dearborn, Michigan, V.S. 1-C(1) and V.S. 2A(6,7,8,9,10,11 & 12),
as indicated by tower reference on Licensee's plan(s) numbered ED-~~1599~~8957A
and dated ~~[illegible]~~ 4/15/77 , ~~attached hereto~~ and made a part hereof by reference.

NOW, THEREFORE, in consideration of the premises, the promises and agreements herein contained and the sum of One Dollar ($1.00) paid by each to the other, the receipt whereof is respectively acknowledged, the parties hereto agree as follows:

FIRST: Licensor, in so far as it has the power and authority so to do and subject to compliance with the terms and conditions hereinafter contained to be kept and performed by Licensee, hereby permits Licensee to construct, maintain and use said facilities across the tracks, right-of-way and property of Licensor at said location.

Licensee, at its expense, will furnish all materials and, at a time satisfactory to Licensor, construct, maintain, use, change and remove said facilities or any part thereof in accordance with the design and specifications shown on said plan(s) and as in this agreement provided, all in a prudent and workmanlike manner in conformity with any applicable statutes, orders, rules, regulations and specifications of any public body having jurisdiction thereof, and so as not to interfere with or endanger, in the judgment of Licensor, any property, traffic, operations, maintenance, employes or patrons of Licensor, or of others occupying or using its property at said location. *

* Licensee, on its part, during the term hereof, shall also comply with all applicable statutes, orders, rules, regulations and specifications of any public body having jurisdiction thereof, so as not to interfere with or endanger any property, real or personal or lives of any persons occupying or using said property.

RECORDED RIGHT OF WAY 19677 Part 2

SECOND: Licensee will give Licensor at least 5 days written notice before doing any work of any character hereunder at said location except that in cases of emergency demanding immediate examination or repairs Licensee may give shorter notice. If, at any time, said facilities, or any part thereof, in the judgment of Licensor, cause any interference or danger referred to in Section FIRST hereof that is emergent, Licensee, upon notice from Licensor, will promptly take remedial action in accordance with such notice, and upon failure so to do Licensor, at Licensee's expense, may take such action. In any non-emergency case of such interference or danger Licensee, within 30 days after receipt of notice from Licensor, will take remedial action in accordance with such notice, and upon failure so to do Licensor, at Licensee's expense, may take such action.

If Licensor deems it advisable during the progress of any work of construction, maintenance, repair, renewal, alteration, or removal of said facilities of Licensee to place watchmen, flagmen, inspectors or supervisors for the protection of the operations of Licensor or property of Licensor or others on Licensor's right-

of-way and property, Licensor shall have the right so to do at the expense of Licensee, but Licensor shall not be liable for the failure so to do or the failure or neglect of such watchmen, flagmen, inspectors or supervisors.

THIRD: During any work of any character hereunder at said location, Licensee, at its expense, will support the tracks and roadbed of Licensor in such manner as shall be necessary in the judgment of Licensor to prevent any interference or danger referred to in Section FIRST hereof, and upon the completion of said work will restore said tracks, roadbed and other property to their original condition, provided that Licensor, at its option and at the expense of Licensee, may do all the work of supporting its tracks and roadbed and of restoring the same.

FOURTH: If Licensor determines that all or any of said facilities, or the location hereof, should be changed or altered, ~~* or that they should be entirely removed,~~ Licensee, at its expense and in a manner satisfactory to Licensor shall make such changes, alterations ~~or removal~~, as the case may be, and restore the premises affected to their original condition within 30 days after, and in accordance with the requirements of written notice from Licensor so to do. If Licensee fails to make ~~such changes, alterations, [or removal] and~~ restoration of premises as above provided, Licensor may do such work at the expense of Licensee.

If Licensee desires to revise, renew, relocate, or change in any manner whatsoever all or any of said facilities (including any change of voltage or operating pressure), or if Licensee is required to change or alter the same, plans therefor shall be submitted to and approved by Licensor before any such change is made, and the terms and conditions of this agreement shall apply thereto. In the event of termination of this license by Licensor, the rental shall be prorated to the date of said termination.

FIFTH: Upon cessation of the use as herein contemplated of said facilities, or any part thereof, Licensee will notify Licensor thereof and, unless the parties otherwise then agree, Licensee will remove the same and restore Licensor's affected premises in a manner satisfactory to Licensor. If Licensee fails so to remove and restore within 30 days after receipt of written notice from Licensor so to do, Licensor may do such work at the expense of Licensee.

SIXTH: Upon execution of this agreement Licensee will pay to Licensor ~~for the preparing of this agreement the sum of~~ and the annual sum of NINETY-~~NINE~~ THOUSAND DOLLARS ($ 90,000.00) and will pay a like annual sum on each anniversary of this agreement thereafter until terminated. Licensee will pay all taxes assessed upon said facilities, or on account of their existence, and shall indemnify Licensor against the payment thereof.

SEVENTH: If Licensee fails to make the payments provided for herein or shall fail to perform any of the other terms or conditions of this agreement, and shall fail to remedy any such breach in accordance with the requirements of written notice of Licensor so to do, then and in that event Licensor may at its option forthwith terminate the permission herein granted. Upon such termination Licensee, at its expense, will promptly remove such facilities and restore the premises to their original condition, and if Licensee fails so to do, Licensor may do such work at the expense of Licensee.

EIGHTH: Licensee hereby assumes, and releases and agrees to indemnify, protect and save Licensor harmless from and against, (i) all loss of and damage to any property whatsoever (including property of the parties hereto and of all other persons whomsoever and the loss of or interference with any use or service thereof), and (ii) all loss and damage on account of injury to or death of any person whomsoever (including employees and patrons of the parties hereto and all other persons whomsoever), and (iii) all claims and liability for such loss and damage and cost and expenses thereof, caused by or growing out of the operation of this agreement or the presence, construction, maintenance, use, repair, change or relocation and subsequent removal of said facilities, or any part thereof, ~~whether~~ caused by the fault, failure or negligence of ~~Licensor, or otherwise~~ Licensee.

NINTH: The term "Licensor" as used in Section EIGHTH hereof shall include any company whose tracks, right of way, or other property may be leased or operated by Licensor or any other company at the aforesaid location.

TENTH: Licensor's expense for any work performed by it at the expense of Licensee pursuant to the terms hereof will be paid by Licensee upon receipt of a bill therefor. Such expense shall include, but not be limited to cost of labor and materials, cost of supervision, traveling expenses, Federal Railroad Retirement and Unemployment Taxes, vacation allowances, and freight and handling charges on all material used.

* To accomodate rail construction

RECORDED RIGHT OF WAY 19477 part 2

ELEVENTH: All notices and communications concerning this agreement shall be addressed to Licensee at 2000 Second Avenue, Detroit, Michigan 48226 , and to Licensor's Division Superintendent at Saginaw, Michigan .
or at such other address as either party may designate in written notice to the other.

TWELFTH: Any approval given or supervision exercised by Licensor hereunder, or failure of Licensor to object to any work done, material used or method of construction or maintenance of said facilities, shall not be construed as an admission of responsibility by Licensor or as a waiver of any of the obligations of Licensee under this agreement.

THIRTEENTH: Any waiver by either party at any time of any of its rights as to anything herein contained shall not be deemed to be a waiver of any breach of covenant or other matter subsequently occurring.

FOURTEENTH: This agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, representatives, successors or assigns, but no assignment thereof or of any rights or obligations thereunder shall be valid for any purpose without the written consent of Licensor.

FIFTEENTH: Licensee understands and agrees that Licensor/shall have the upon written consent of Licensee right to adjust the rental to be paid by the Licensee hereunder during calendar year ~~1983~~ 1982 and anytime thereafter during the continuance of this agreement.

SIXTEENTH: Agreement between the parties dated August 20, 1957 covering wire line facilities at the same location is being cancelled as of the effective date hereof. *

SEVENTEENTH: Licensee will, at all times, at its own expense, adopt and maintain in its electrical system, of which the said facilities are a part, the general coordinative methods which are applicable to supply circuits and their equipment as specified in "Principles and Practices for Inductive Coordination of Electric Supply and Communications Systems" of the Association of American Railroads and Edison Electric Institute as now published and as from time to time hereafter amended. If such general coordinative methods are not sufficient in the judgment of Licensor to avoid inductive interference by Licensee, Licensor shall cooperate with Licensee to determine what specific coordinative methods providing the best engineering solutions are required. Such specific methods so determined shall be put into effect and Licensee shall bear the cost thereof, irrespective of whether they are to be applied to the supply, communication or signal circuits.

* Except that sidetrack agreements that are a part of August 20, 1957 agreement shall continue to be in effect and are included in the present agreement by reference herein. See attached exhibit (A)

IN WITNESS WHEREOF, the parties hereto have executed this agreement in duplicate as of the day and year first above written.

WITNESSES:

THE CHESAPEAKE AND OHIO RAILWAY COMPANY,
~~THE BALTIMORE AND OHIO RAILROAD COMPANY,~~

By_____
Assistant Vice President-General Manager

_____

ATTEST:

DETROIT EDISON COMPANY,
(Licensee)

~~Robert R. Towksbury~~
~~Project Administrator~~

By_____
(title)

RECORDED RIGHT OF WAY 190777 Part 2

3163A

~KC # 19077

Evergreen - Hines

Evergreen Hines 120kV Steel Tower Line

- Call R.R. to let them know we're sending accurate dwgs. ask whom we should send them to.
- Wait until all 20 dwgs. have been received before we send.

Make reference to agreement & original submittal.

Attention: R.W. Drucker
Chief Engineer

25 crossing

RECORDED RIGHT OF WAY 19077 part 2

DATA SHEET TO ACCOMPANY DRAWING RX-2895B

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing No. 1: Crossing of the Warren-Evergreen #1 120 KV transmission line over the Conrail Railroad.

Crossing No. 2: Crossing of the Warren-Evergreen #1 120 KV transmission line over the C. & O. Railroad.

All in the City of Dearborn, Wayne County, Michigan, T.2S-R.11E. Southwest 1/4 of Section 8.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

Steel towers as shown on drawing ED1-7218 (TH), and drawing T-2057 (B).

Conductors

Six-477 MCM ACSR 26/7 3 phase one circuit.

Insulators

120 KV suspension assembly. (8) Eight O.B. 32440 or equivalent. 120 KV deadend assembly. (9) Nine O.B. 47410 or equivalent.

Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawing ED1-8028

System Engineering Department
CVP/cb 10-19-84

THE CALCULATIONS FOR THIS TRIAL ARE FOR 10-25-34 CLARK VAN PAR
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000

STARTING INDEX	COMPUTED RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIA MAX T
1	808.0	3990.00	0.43560	25

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	40.08	-3990.	40.08	3990.	---
2	0.	37.95	1429.	38.36	1414.	
3	32.	40.29	3081.	40.64	3065.	
4	10.	38.26	1418.	38.68	1403.	
5	20.	38.58	1407.	39.01	1391.	
6	30.	38.89	1396.	39.33	1380.	
7	40.	39.19	1385.	39.65	1369.	
8	50.	39.50	1374.	39.97	1359.	
9	60.	39.81	1364.	40.28	1348.	
10	70.	40.11	1354.	40.73	1338.	
11	80.	40.54	1344.	41.05	1328.	
12	90.	40.85	1335.	41.36	1319.	
13	131.	42.07	1297.	42.46	1286.	
14	257.	44.68	1224.	44.68	1224.	
15	120.	41.74	1307.	42.26	1291.	

RECORDED RIGHT OF WAY

19077 part 2

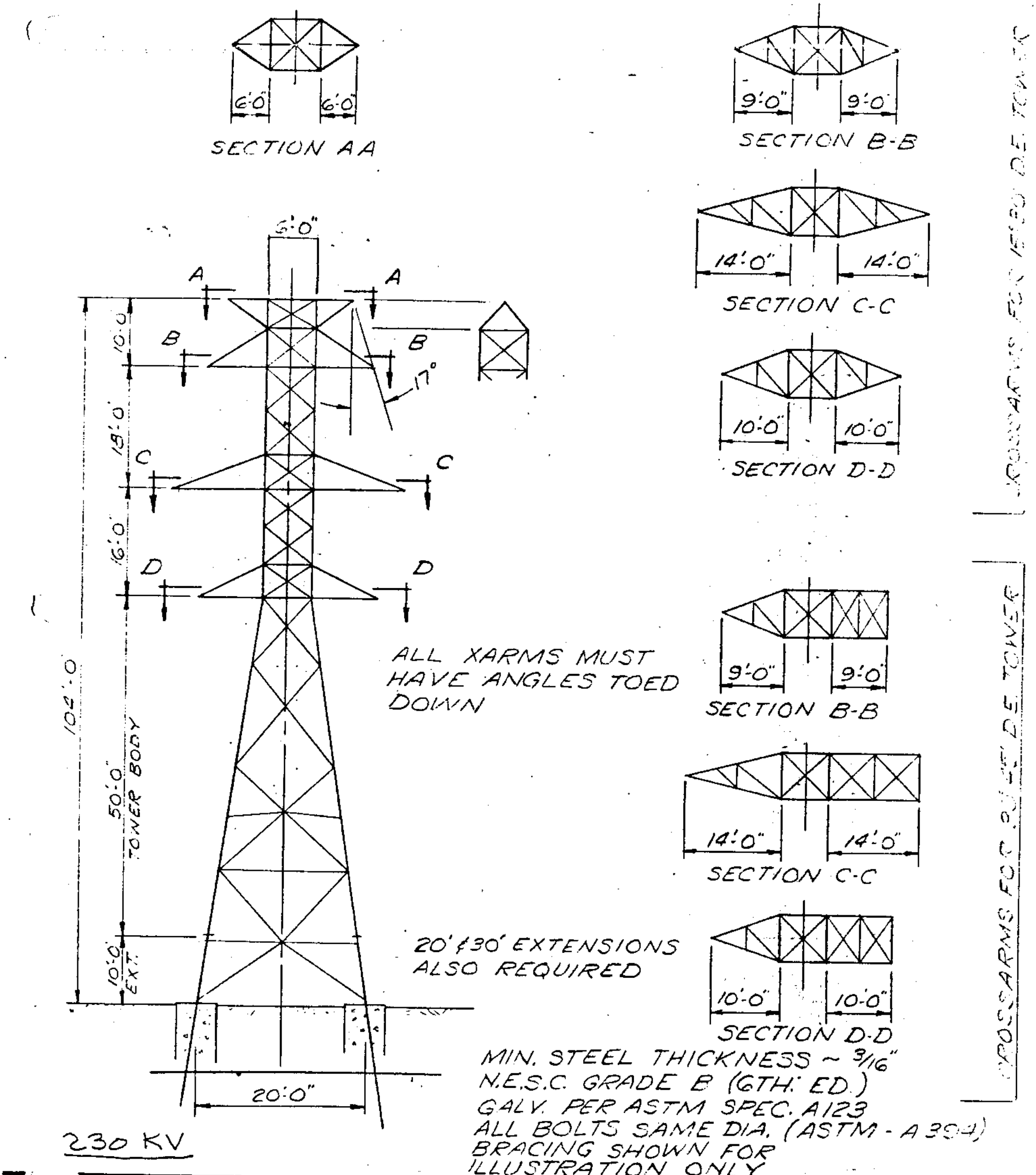
THE CALCULATIONS FOR THIS TRIAL ARE FOR SAG VALUES FOR SHORT SPAN-
STRESS-STRAIN CURVES USED REPRESENT ~~266,800 CM TO 636,000~~ 477,000

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL MAX TE
1	200.0	3000.00	0.43560	30

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION
1	0.	3.23	-3000.	3.23	3000.
2	0.	2.17	1519.	2.32	1418.
3	30.	2.81	1171.	3.01	1093.
4	60.	3.42	964.	3.63	907.
5	90.	3.97	830.	4.17	790.
6	120.	4.46	740.	4.46	740.

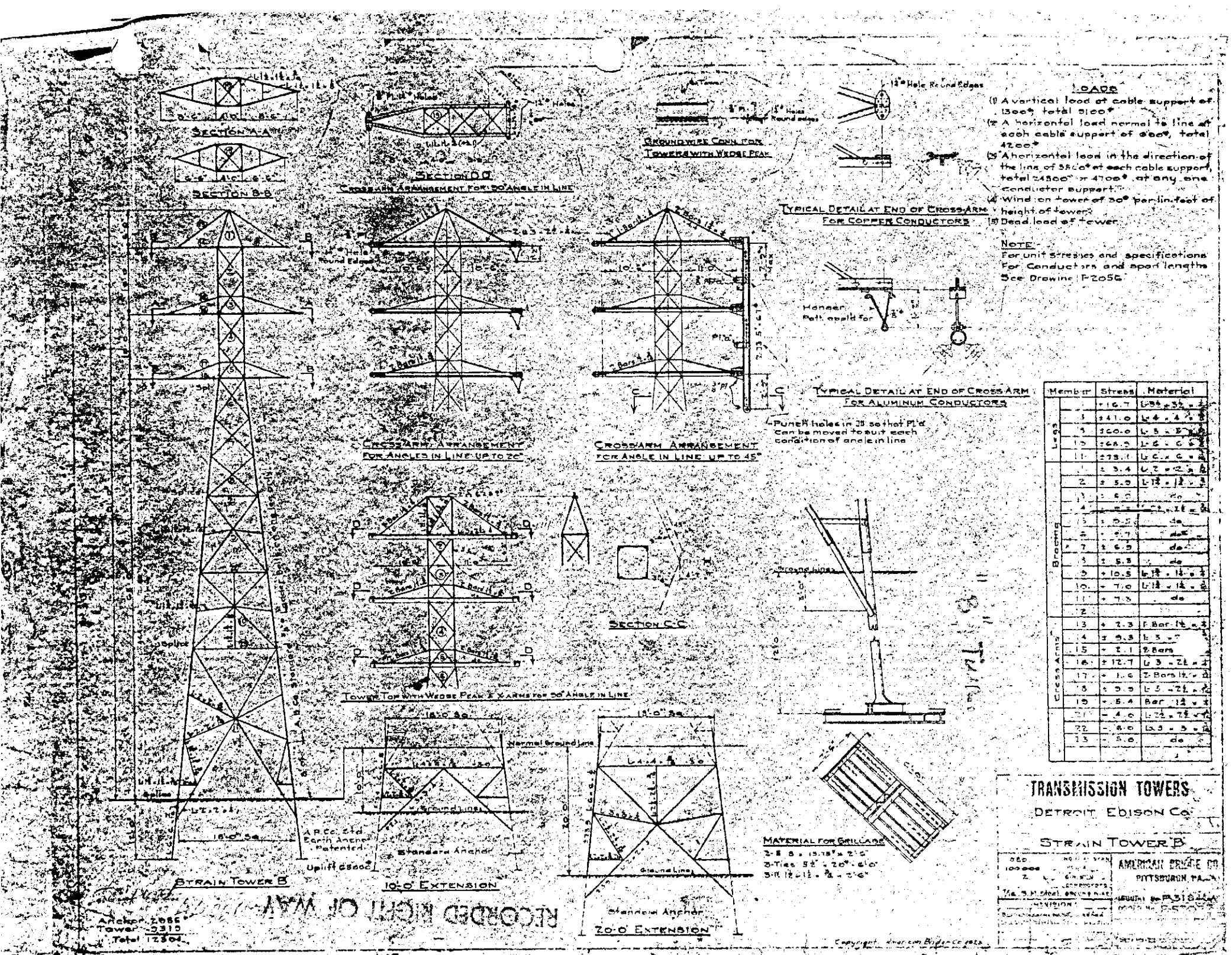
****

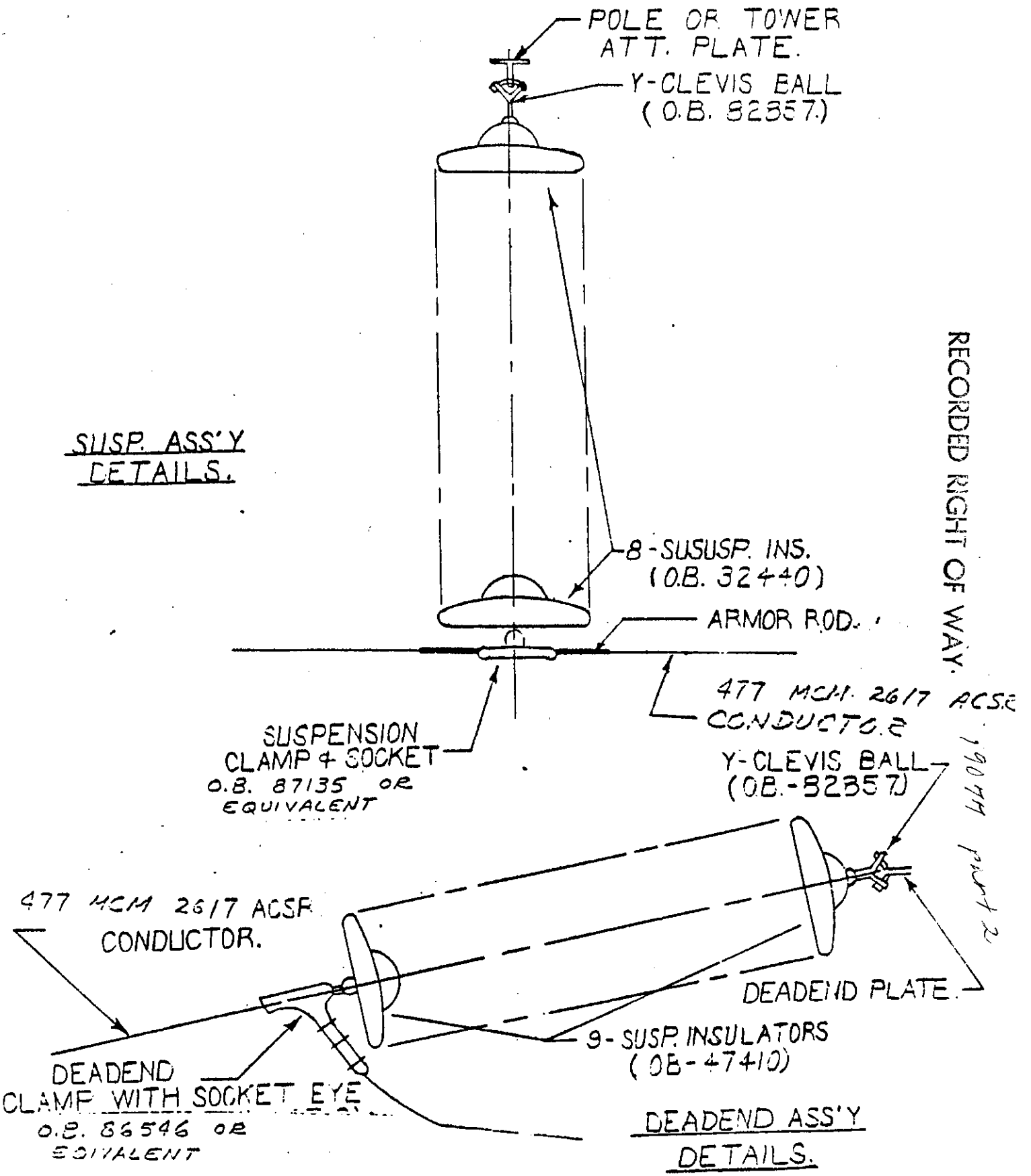
RECORDED RIGHT OF WAY 19077 Part 2


SECTION AA
6'0"
6'0"
SECTION B-B
9'0"
9'0"
SECTION C-C
14'0"
14'0"
SECTION D-D
10'0"
10'0"
8'0"
A
A
B
B
C
C
D
D
17°
10'0"
18'0"
16'0"
104'0"
50'0" TOWER BODY
10'0" EXT.
20'0"
ALL XARMS MUST
HAVE ANGLES TOED
DOWN
20' & 30' EXTENSIONS
ALSO REQUIRED
SECTION B-B
9'0"
9'0"
SECTION C-C
14'0"
14'0"
SECTION D-D
10'0"
10'0"
MIN. STEEL THICKNESS ~ 3/16"
N.E.S.C. GRADE B (6TH. ED.)
GALV. PER ASTM SPEC. A123
ALL BOLTS SAME DIA. (ASTM - A394)
BRACING SHOWN FOR
ILLUSTRATION ONLY
230 KV
RECORDED RIGHT OF WAY 19077 part 2

230 KV DEADEND TOWERS TYPE TM ~15°-30° ANGLE TYPE TH ~30°-45° ANGLE	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.O.S. — DRAWN BY R.O.S.
		DATE 6/19/70 — DRAWING NUMBER ED-1-7219
		SCALE ~

DE FORM ST 11 PTG 6-67


Section A-A
Section B-B
Section D-D
Cross-Arm Arrangement for 30° Angle in Line
Ground Wire Conn. for Towers with Wedge Peak
Typical Detail at End of Cross-Arm for Copper Conductors
Typical Detail at End of Cross-Arm for Aluminum Conductors
Cross-Arm Arrangement for Angles in Line up to 20°
Cross-Arm Arrangement for Angle in Line up to 45°
Section C-C
Tower Top with Wedge Peak & X Arms for 30° Angle in Line
Strain Tower B
10'-0" Extension
20'-0" Extension
Standard Anchor
A.P.Co. Std. Earth Anchor Patented
Material for Grillage
Loads
Note
For unit stresses and specifications for Conductors and span lengths See Drawing P-2056
Member
Stress
Material
Legs
Bracing
Cross Arms
TRANSMISSION TOWERS
DETROIT EDISON CO.
STRAIN TOWER B
AMERICAN BRIDGE CO.
PITTSBURGH, PA.



RECORDED RIGHT OF WAY. 190TH PART 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. DRAWN BY N.H.H.
		DATE 4-2-70. SCALE — ED1-8028

DATA SHEET TO ACCOMPANY DRAWING RX-2897D

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Warren-Evergreen #1 line over the C&O Railroad Crossing No. 1: Approximately 1,700 feet north of Plymouth Road and 1,550 feet east of Evergreen Road. Crossing No. 2: Approximately 2,120 feet north of Plymouth Road and 1,350 feet east of Evergreen Road. Crossing No. 3: Approximately 2,820 feet north of Plymouth Road and 930 feet east of Evergreen Road. City of Detroit, Wayne County, Michigan. 4,080 feet of north of Mile Post Det 12.

Circuits

One 120,000 volt, 60 cycle, 6-wire, 3-phase transmission circuit with one ground wire.

Towers and Crossarms

See attached drawings T-10677 (LH), T-8413 (AC), T-8414 (AD).

Conductors

Crossing No. 1 & 2 = 6-477 MCM 26/7 ACSR with 1-3/8" steel ground wire. Crossing No. 3-954 MCM 54/7 ACSR with 1-3/8" steel groundwire.

Insulators

Suspension assembly: 8-5-3/4" x 10" O.B.48008 or equivalent.
Deadend assembly: 9-5-3/4" x 10" O.B. 47410 or equivalent.

Guy and Guy Attachments

None

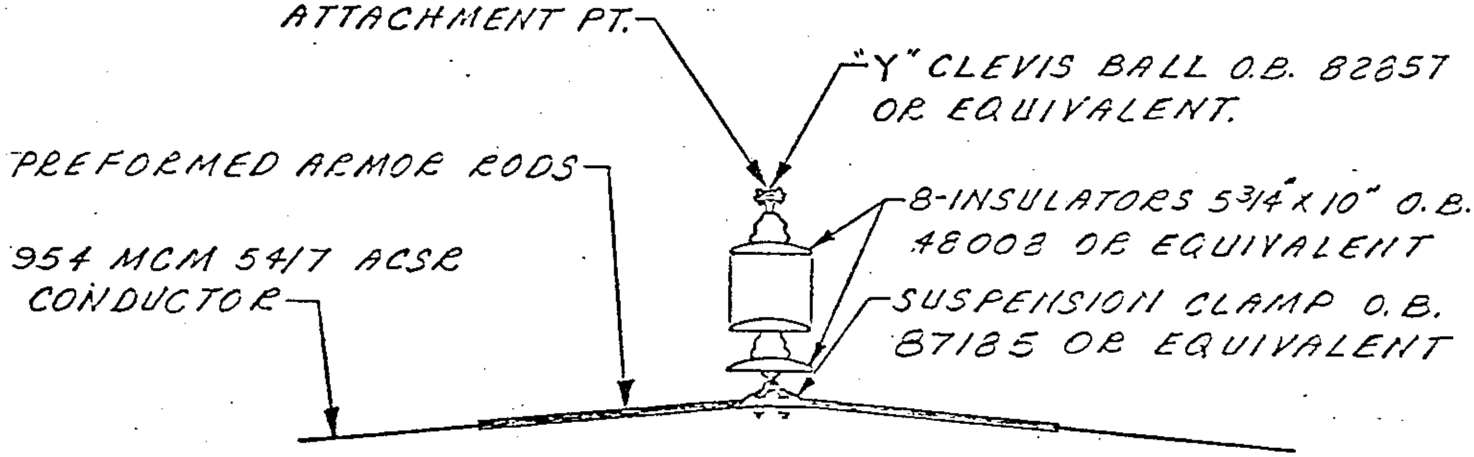
Suspension and Deadend Details

See drawing ED 1-7430 (954 MCM). See drawing ED1-8028 (477 MCM).

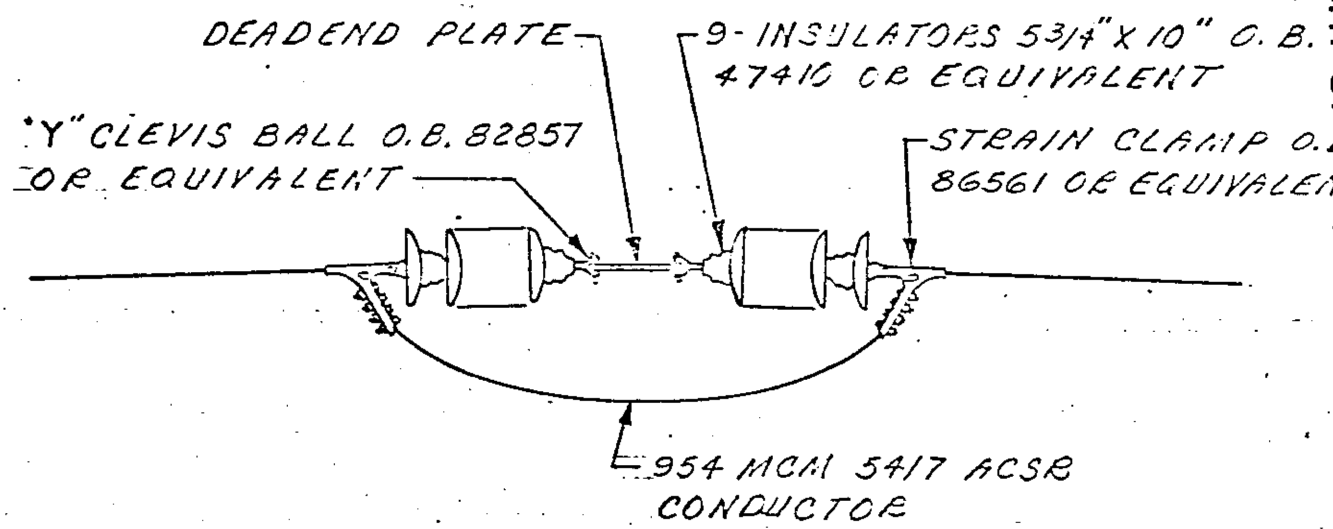
RECORDED RIGHT OF WAY 19077, part 2

System Engineering Department
CVP/js 10-9-84

SUSPENSION ASS'Y DETAILS



DEADEND ASS'Y DETAILS

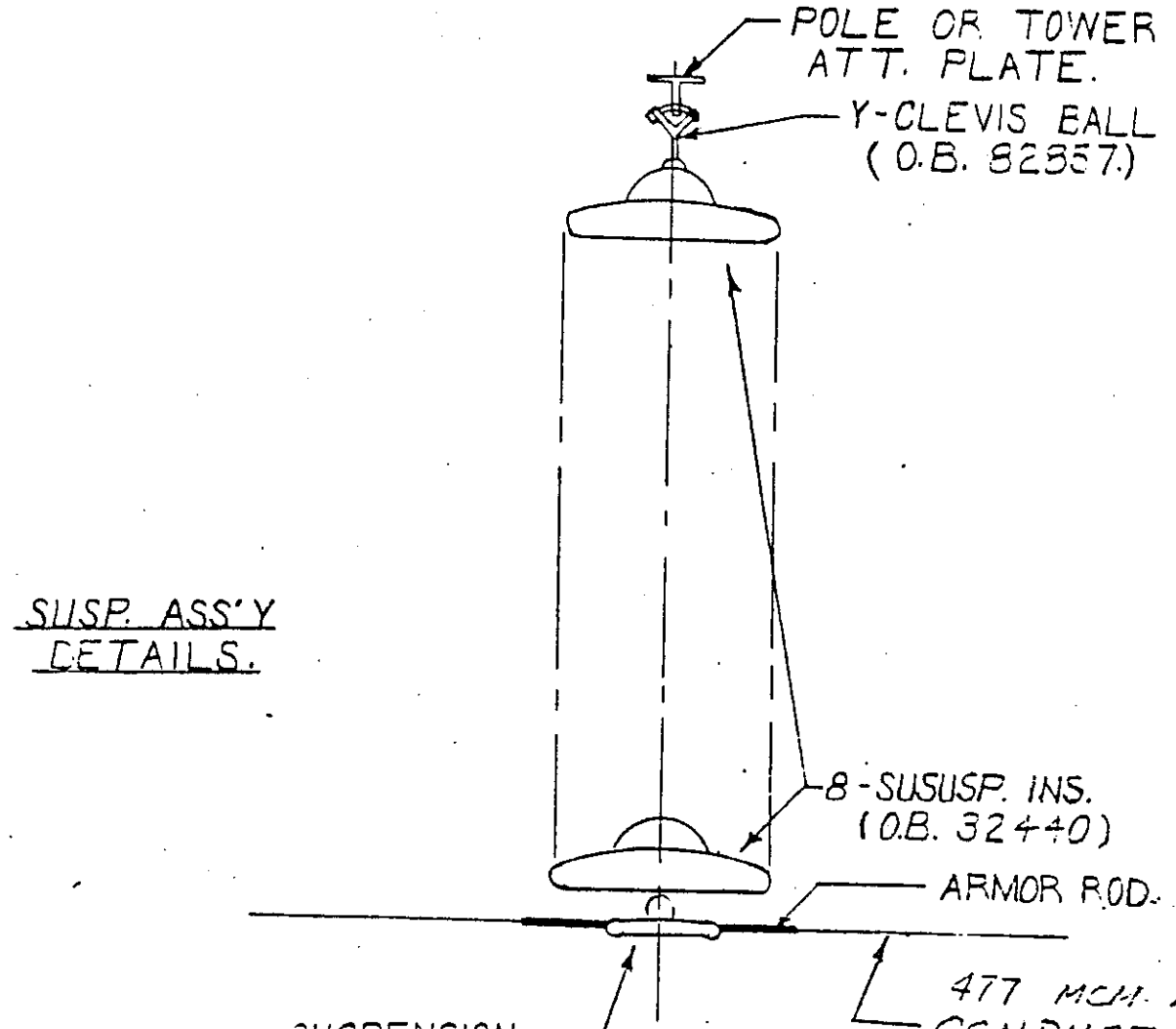


Part 2

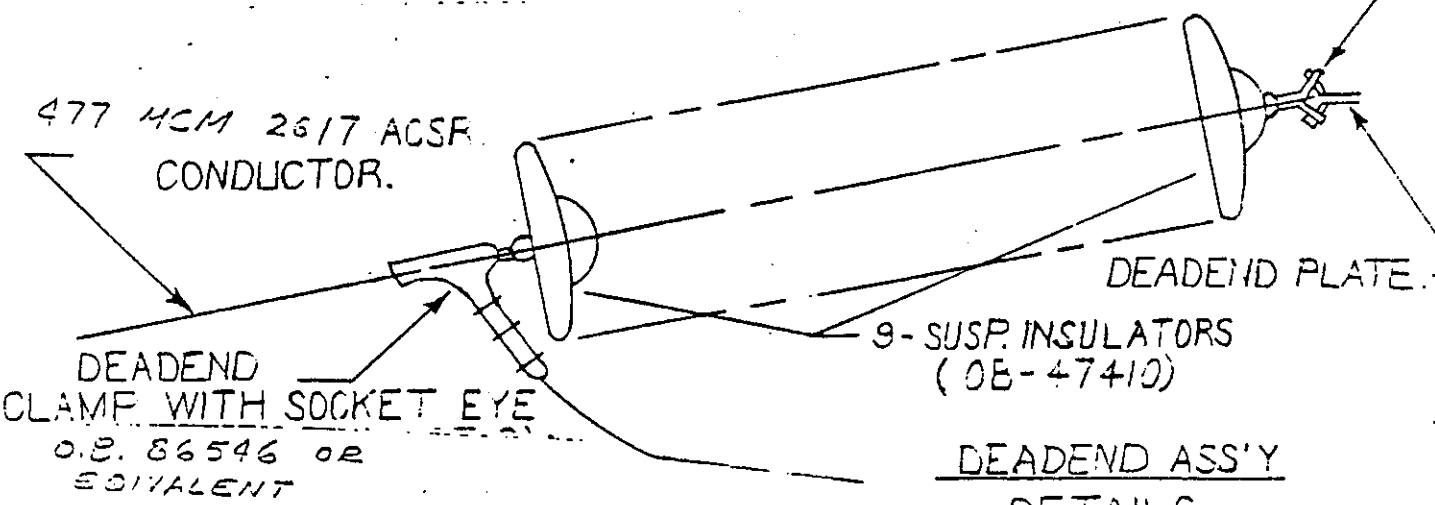
120 KV SUSPENSION & DEADEND ASS'Y DETAILS

APPROVED	JSN
THE DETROIT EDISON COMPANY	GENERAL ENGINEERING DEPARTMENT
LAYOUT BY J. WRIGHT	DRAWN BY JEW
DATE 1-25-71	DRAWING NUMBER EDI-7430
SCALE	

DE FORM SE 11 PTG. 4-69



SUSP. ASS'Y DETAILS.

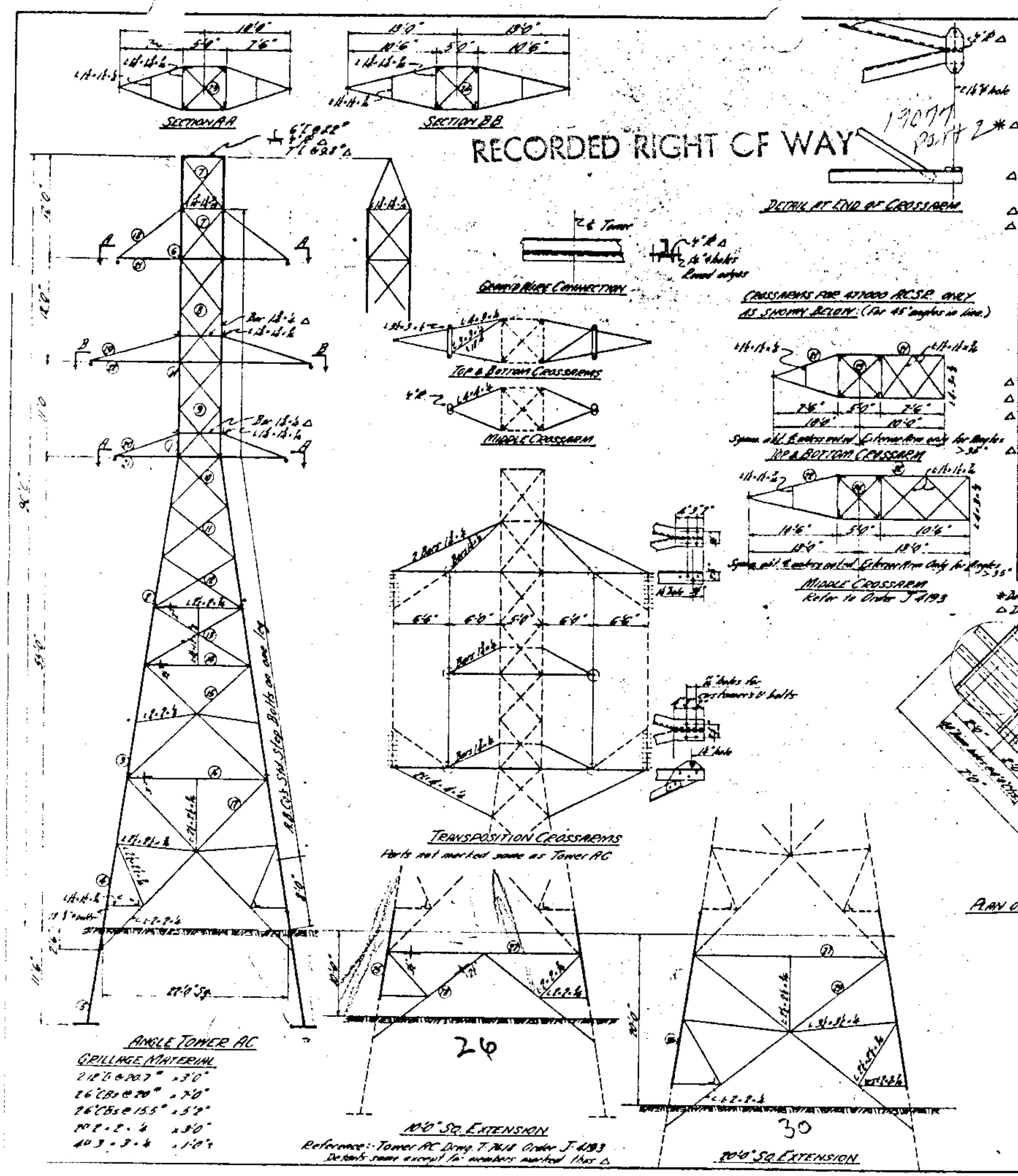


DEADEND ASS'Y DETAILS.

RECORDED RIGHT OF WAY

190 77 Part 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
	LAYOUT BY R.C.S.	DRAWN BY N.H.H.
	DATE 4-9-70.	EDI-8028
	SCALE	



Mark	Member	Ult. Stresses	Section
	1A	-86.9	L6 × 6 × 3/8
	1	-122.6	do
	2	-144.0	L6 × 6 × 1/2
* △	3	-151.0	L6 × 6 × 5/8
	4	-152.0	do
	5	+146.8 -144.5	do
△	6	-19.0	L3 × 3 × 1/4
	7	+4.6	L1½ × 1½ × 3/16
△	8	±18.4	L2½ × 2 × 1/4
△	9	±34.9	L3½ × 3 × 1/4
	10	±20.0	L2½ × 2½ × 1/4
	11	±13.6	L2½ × 2½ × 3/16
	12	±10.2	do
	13	±8.8	do
	14	-6.4	L3 × 2½ × 1/4
	15	+15.2	L1¾ × 1¾ × 1/4
	16	-9.7	L3½ × 3 × 1/4
	17	+11.7	L1¾ × 1¾ × 3/16
△	18	+4.2	Bar 1¾ × 1/4
△	19	+9.1	do
△	20	+7.4	do
	21	-32.3	L4 × 3 × 1/4
△	22	-39.0	L4 × 4 × 1/4
	23	±4.5	L1¾ × 1¾ × 3/16
	24	±7.0	do
	25	-148.4	L6 × 6 × 5/8
	26	-151.8	do
	27	-7.5	L5 × 3½ × 5/16
	28	±4.8	L3½ × 2½ × 1/4
	29	+8.3	L1¾ × 1¾ × 3/16

* Denotes setting template member
△ Denotes revision in section, other members same as on Drwg. T-7618 Order J-4193

ANGLE TOWER TYPE AC

The tower is designed to support 1-½" steel Ground Wire and 6-795000 (26/7) A.C.S.R. Conductors on a normal span of 900' with 25° Angle in line.

The cables are to be so strung that the maximum tensions under 4" wind on ½" ice coated cables will not exceed 9500# in the ground wire and 12480# in the conductor.

LOADS

(1) Vertical — 1 Grd. Wire @ 1030# = 1030#; 6 Conductors @ 2000# = 12000#; 13030#

(2a) Transverse - Wind on wires — 1 Grd. Wire @ 450# = 450#; 6 Conductors @ 635# = 3810#; 4260#

(2b) Transverse - 25° Angle in line — 1 Grd. Wire @ 4120# = 4120#; 6 Conductors @ 5400# = 32400#; 36520#

(3) Longitudinal - Grd. Wire broken at 9500# or any one conductor broken at 12480#

(4) Wind on tower at 6.5# per sq. ft. on 1½ times projected area of one face of tower.

(5) Dead Load of tower.

(6) Torsional - Any two conductors broken at 10000# (80% of 12480#) each; total = 20000#

Crossarms designed for 12480# and hangers for double vertical load.

Combine:-

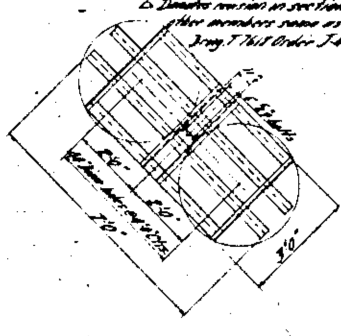
Intact: 1.27×1, 2.54×2a, 1.65×2b, 2.54×4, 1.27×5

1 Broken: 1.27×1, 2.54×⅚ of 2a, 1.65×⅚ of 2b, 1.10×3, 2.54×4, 1.27×5

2 Broken: 1.27×1, 2.54×⅔ of 2a, 1.65×⅔ of 2b, 2.54×4, 1.27×5, 1.10×6.

NOTE:- For Unit Stresses, Material, Coating, Connections and Specifications see Drwg. T-8412

This tower is also designed to support 1 ½" steel ground wire (max. tension 6000#) and 6-477000 cm A.C.S.R. conductors (maximum tension 7700#) on a normal span of 880' with 45° angle in line; also for total maximum cable loads (basis of 10% overload) on a 880' tangent span - Drwg. T-7618, Order J-4193



PLAN OF GRILLAGE

-AC-
TOWER
1951

1950

TRANSMISSION TOWERS

THE DETROIT EDISON CO.
DETROIT, MICH.
ANGLE TOWER TYPE AC

NORMAL SPAN / VOLTS / CIRCUITS / CONDUCTORS / GROUND WIRE

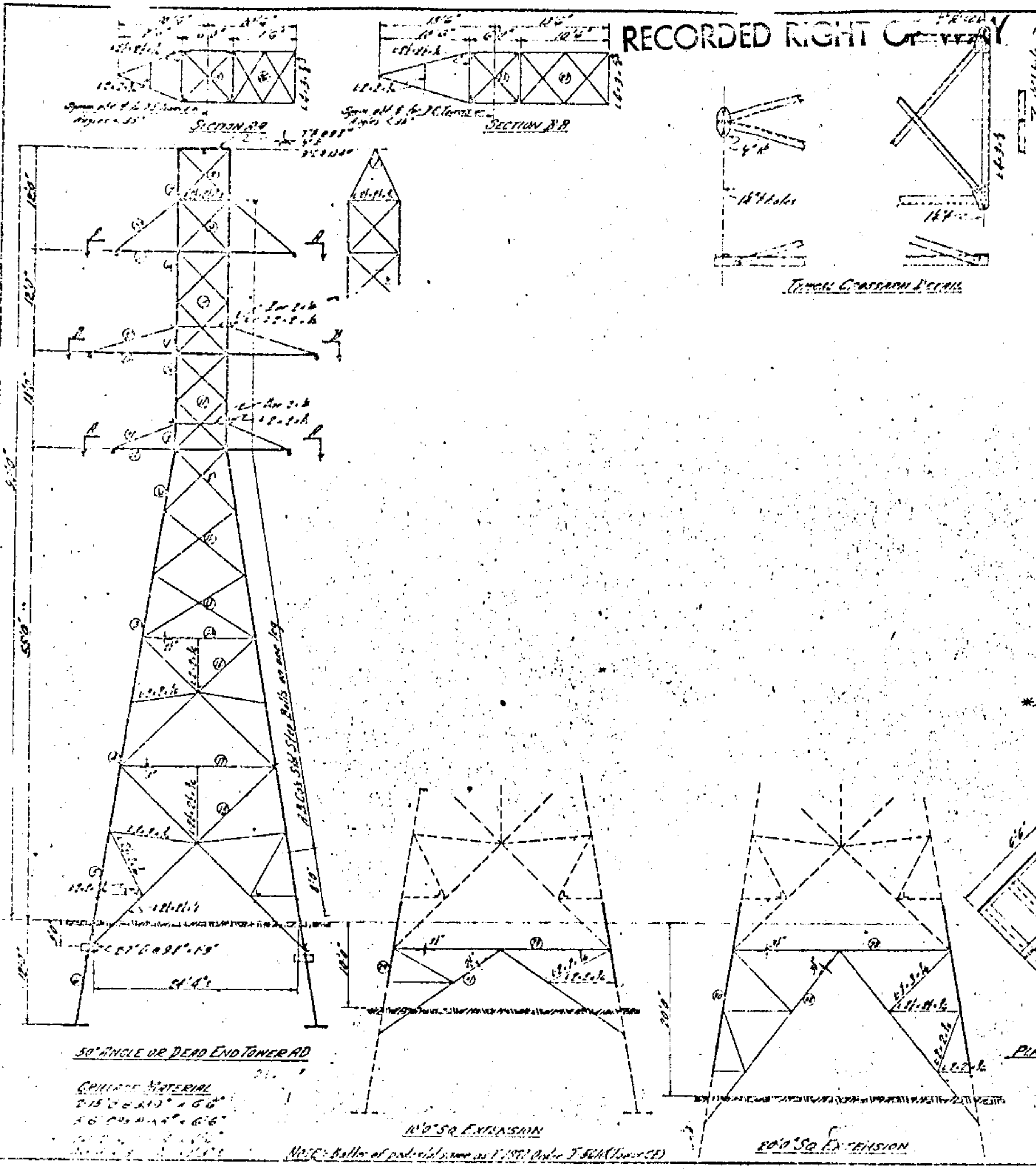
REVISIONS

Released

AMERICAN BRIDGE CO.
PITTSBURGH, PA.

INQUIRY No. T-5447
ORDER No. Q346-7
DRAWING T-8413

RECORDED RIGHT OF WAY 19077 part 2



Member	Ult. Stress	Section
1a	-40.1	L 6 x 5 x ½
1	-32.2	do
2a	-114.9	L 6 x 6 x ⅝
2	-143.0	do
3a	-193.7	L 8 x 8 x ¾
3	-205.5	do
* 4	-216.0	L 8 x 8 x ⅞
* 5	[illegible]	do
6	[illegible]	do
7	- 9.[illegible]	L 3 x 3 x ¼
8	± 5.1	L 2 x 2 x ¼
9	± 6.1	do
10	± 14.3	L 3 x 3 x ¼
11	± 4.[illegible]	L 4 x 4 x ¼
12	± 7.3	L 3 x 3 x ¼
13	± 17.0	do
14	± 12.3	L 3 x 3 x ¼
15	± 10.7	L 3 x 2½ x ¼
16	± 23.6	L 2½ x 2½ x ¼
17	± 13.8	L 4 x 3 x ¼
18	± 12.7	L 2 x 2 x ¼
19	± 4.1	Bar 2 x ¼
20	± 9.1	do
21	± 11.[illegible]	do
22	- 105.[illegible]	L 4 x 3 x ¼
23	- 37.0	L 4 x 4 x ⅜
24	± 4.5	L 2 x 2 x ¼
25	± 7.3	do
26	± 10.2	do
27	± 13.5	L 2½ x 2 x ¼
28	- 11.5	L 5 x 3½ x ¼
29	- 223.0	L 8 x 8 x ⅞
30	- 224.0	do
31	± 7.2	L 3½ x 2½ x ¼
32	± 9.3	L 5 x 3½ x ¼

*Denotes setting templet members

50° Angle or Tangent D.E. Tower AD

Tower is designed to support 1 5/8" ø Steel Gd. Wire and 6-795000 C.M. ACSR Conductors on a normal span of 900' with 50° angle in line or the total maximum cable loads applied to a tangent span of the same length.

The cables are to be so strung that the maximum tensions under 4" wind on 3/8" ice coated cables will not exceed 5500# in the ground wire and 12000# in the conductor.

LOADS

(1) Vertical 1 Gd. Wire @ 1030# = 1030#
6 Conductors @ 2000# = 12000#
Total = 13030#

(2a) Transverse - Wind on wires
1 Gd. Wire @ 450# = 450#
6 Conductors @ 635# = 3810#
Total = 4260#

(2b) Transverse - 50° Angle in line
1 Gd. Wire @ 5030# = 5030#
6 Conductors @ 10550# = 63300#
Total = 70330#

(3) Longitudinal 1 Gd. Wire @ 5500# = 5500#
6 Conductors @ 12000# = 72000#
Total = 77500#

(4) Wind on tower at 6.8# per sq. ft. on 1½ times projected area of one face.

(5) Dead Load of tower

(6) Torsional load at each of 3 Cond. supports on one side of tower at 10000# (3 Conductors) total = 30000#

Hangers designed for double vertical load

Condition:

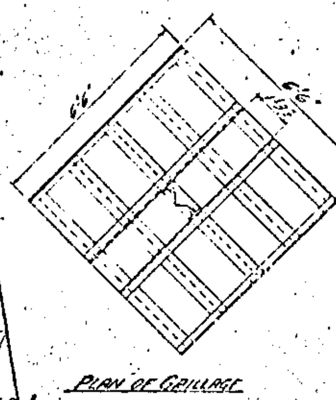
Tangent 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 & 5

Dead End [illegible]

Torsion 3 broken [illegible]

NOTE: For Unit Stresses, Material, Coating and Specifications see Drwg. T-8418

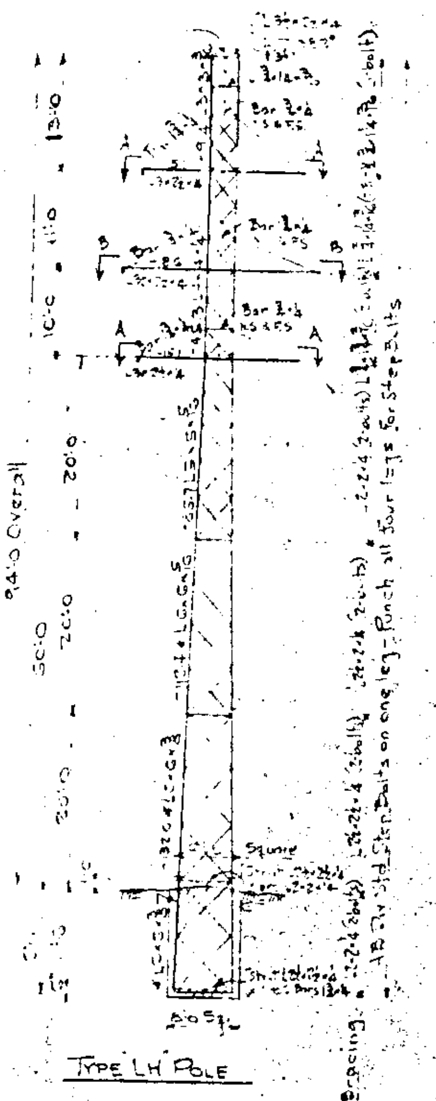
CONNECTIONS: - Bolted, ¾" ø bolts



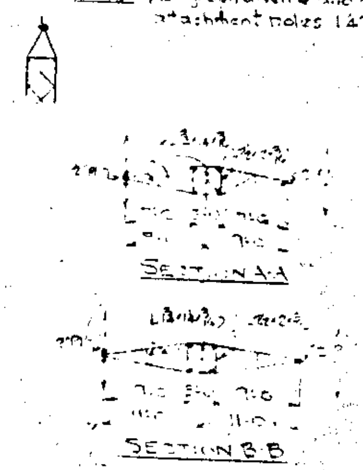
AD

TRANSMISSION TOWERS	
The Detroit Edison Co.	
Detroit, Mich.	
50° Angle or Tangent D.E. Tower AD	
NORMAL SPAN / VOLTS / CIRCUITS / CONDUCTORS / GROUND WIRE	AMERICAN BRIDGE CO. PITTSBURGH, PA.
REVISIONS	INQUIRY No. T-8417
	ORDER No. 0-344 7
	F8414

RECORDED RIGHT OF WAY *19077 part 2*



NOTE: - All ground wire and conductor attachment holes 14"



NOTE: - Material marked * USS Man-Ten (A440)

TYPE LH POLE STRUCTURE

Span 600' Angle in line 10°

LOADS

(1) Transverse wind on poles

(5) Weight of pole

ULTIMATE UNIT STRESSES

Shearing on bolts

Bearing on bolts

MATERIAL:

COATINGS:

CONNECTIONS:

DESIGN:

MAX. LOAD 6,500 H.L.T.
600 FT. SPAN
477 ACSR
10° TURN

"LH" TWR.

DEADEND TWR.

3-27-63

THE DETROIT EDISON COMPANY

TYPE LH POLE

AMERICAN BRIDGE

TOWER DEPARTMENT

DRAWING NO. T-10677

INQUIRY NO. T-C375

DATE

CONTRACT NO.

THE CALCULATIONS FOR THIS TRIAL ARE FOR 10-5-84 954 54/7 STUDY
STRESS-STRAIN CURVES USED REPRESENT 954,000CM ACSR 54/7

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL MAX TENS
1	200.0	3500.00	0.84540	17190

*****CREEP IS A

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION
1	0.	32.90	3500.	33.07	8356.
2	0.	29.03	4311.	30.54	4101.
3	32.	32.37	7087.	33.31	6894.
4	10.	29.51	4242.	31.03	4037.
5	20.	29.99	4126.	31.52	3925.
6	30.	30.45	4113.	31.99	3917.
7	40.	30.91	4053.	32.47	3860.
8	50.	31.37	3994.	32.93	3806.
9	60.	31.82	3938.	33.40	3754.
10	70.	32.27	3883.	33.85	3704.
11	80.	32.72	3831.	34.31	3656.
12	90.	33.16	3781.	34.76	3610.
13	122.	34.55	3631.	36.16	3472.
14	212.	38.25	3295.	39.37	3194.
15	120.	34.46	3640.	36.07	3430.

****

RECORDED RIGHT OF WAY 19077 part 2

THE CALCULATIO..S FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 (

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL MAX TE
1	500.0	6000.00	0.43560	98(

*****CREEP IS

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	10.10	-6000.	10.10	5998.	-----
2	0.	5.88	3498.	6.65	3092.	
3	32.	9.85	4775.	10.27	4582.	
4	10.	6.22	3303.	7.08	2903.	
5	20.	6.59	3120.	7.52	2733.	
6	30.	6.97	2951.	7.96	2583.	
7	40.	7.35	2797.	8.40	2448.	
8	50.	7.74	2657.	8.83	2329.	
9	60.	8.13	2528.	9.26	2222.	
10	70.	8.53	2412.	9.68	2126.	
11	80.	8.92	2306.	10.09	2040.	
12	90.	9.31	2209.	10.49	1962.	
13	100.	9.70	2122.	10.88	1892.	
14	110.	10.08	2041.	11.27	1827.	
15	120.	10.46	1968.	11.64	1768.	

****

RECORDED RIGHT OF WAY

190 ft Height

DATA SHEET TO ACCOMPANY DRAWING RX-2898C

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Evergreen and the Warren-Evergreen #1 120 KV transmission lines over the C. & O. Railroad approximately 1,900 feet south of Schoolcraft Road and approximately 400 feet east of Evergreen Road.

Crossing in the northwest 1/4 of Section 26, City of Detroit, Wayne County, Michigan.

Circuits

Two 120,000 volt, 60 cycle, 3 phase transmission lines with one ground wire.

Towers and Crossarms

As per attached drawings ED1-65 (EA), and T-8415 (D).

Conductors

Six 954 54/7 MCM ACSR and 1-3/8" 7 strand steel ground wire.

Insulators

120 KV: Suspension: 8 insulators O.B. 48008 or equivalent. Deadend: 9 insulators O.B. 47410 or equivalent.

Guy and Guy Attachments

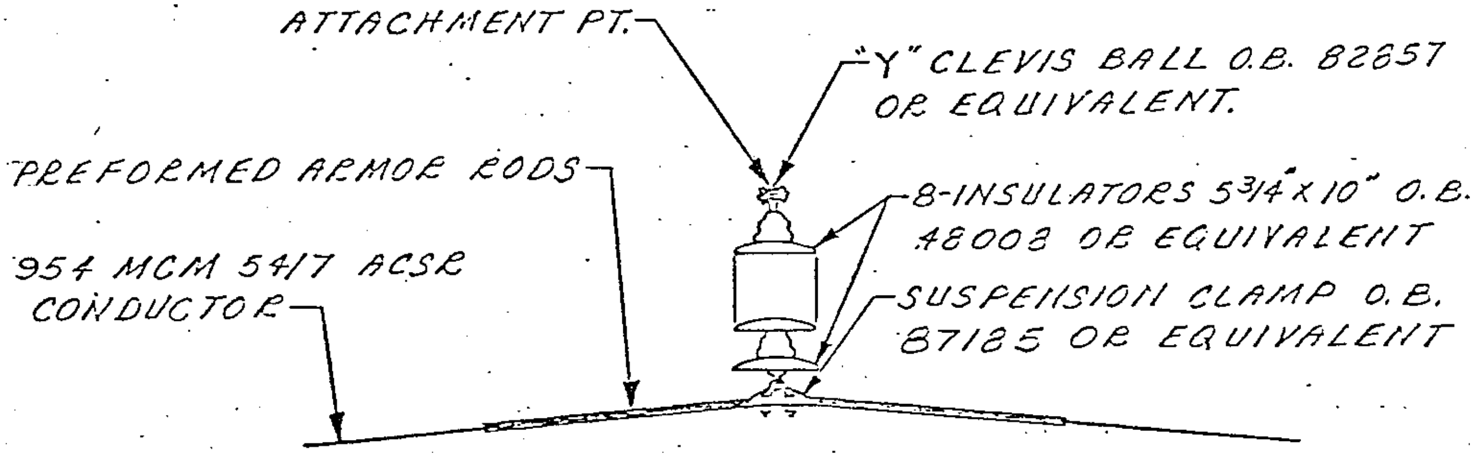
None

Suspension and Deadend Details

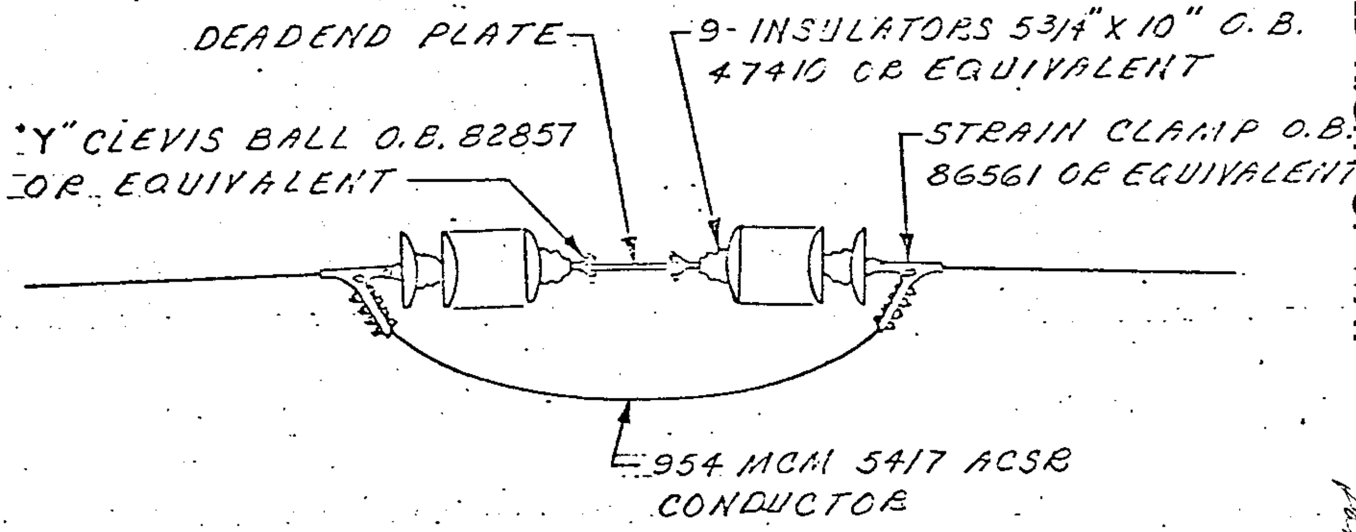
See attached drawing ED1-7430

System Engineering Department
CVP/cb 10-24-84

SUSPENSION ASS'Y DETAILS



DEADEND ASS'Y DETAILS



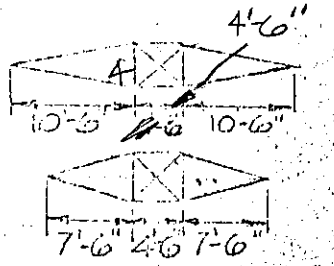
RECORDED RIGHT OF WAY 19077

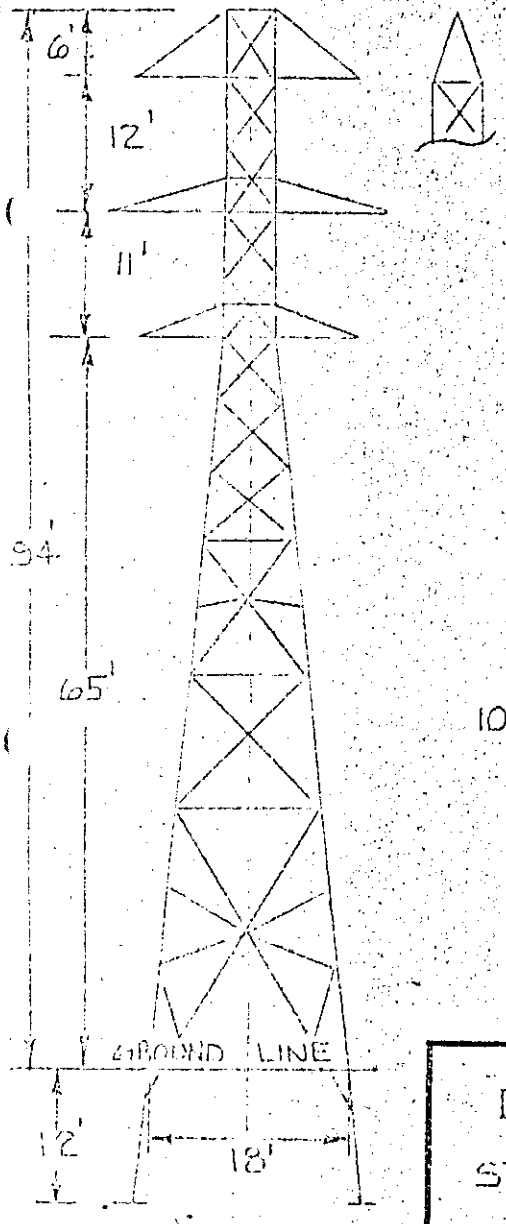
120 KV SUSPENSION & DEADEND ASS'Y DETAILS

APPROVED: JSW	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
LAYOUT BY: J. WRIGHT	DRAWN BY: JEN
DATE: 1-25-71	DRAWING NUMBER: EDI-7430
SCALE:	

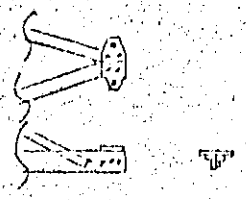
DE FORM SE 11 PTG. 4-59+

RECORDED RIGHT OF WAY 19077 part 2



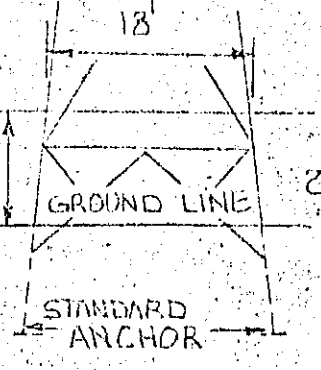


"EA" TYPE

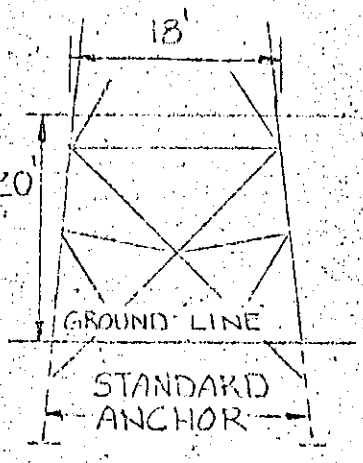


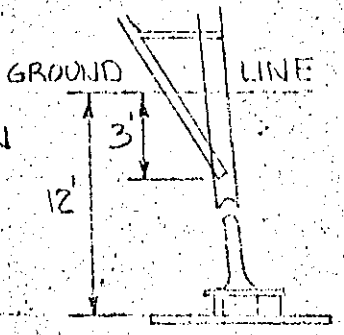
DETAIL AT END OF CROSS-ARM

10' EXTENSION

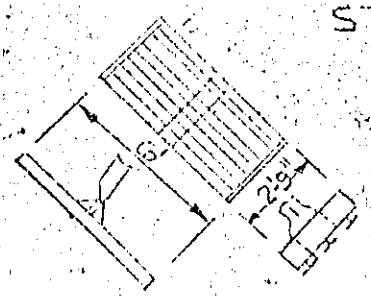


20' EXTENSION





STANDARD EARTH ANCHOR

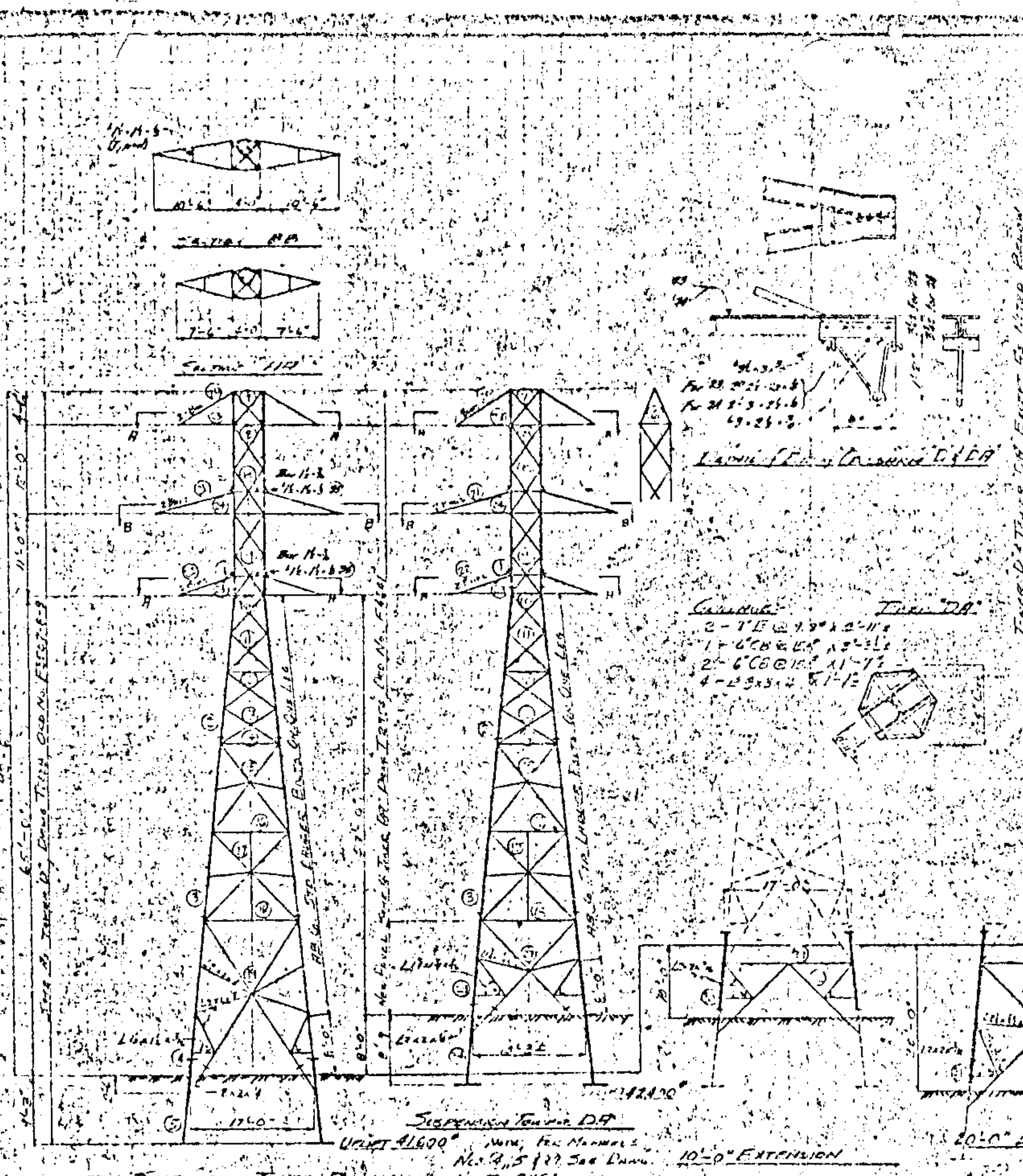


DETROIT EDISON CO.

STRAIN TOWER "EA"

APPROVED	
THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT	
LAYOUT BY	DRAWN BY C. VAN PARYS
DATE 5-3-71	DRAWING NUMBER ED 1- 765
SCALE ~	

DE FORM SE 5 PTG. 10-69



Mark	Stress	Section
1	-39.2	L 4x4x5/16
2	-48.8	L do
3	-54.5	L 4x4x3/8
4	-57.1	L 4x4x7/16
5	+41.6 -64.3	L do
6	-6.7	L 3½x3½x¼
7	±2.5	L 1¾x1¾x3/16
8	±9.9	L 2x2x3/16
9	±12.7	L do
10	±8.6	L 1¾x1¾x3/16
11	±6.7	L do
12	±4.8	L do
13	±4.1	L do
14	-3.6	L 2½x2x¼
15	±9.2	L [illegible]
16	-5.2	L 2½x2x¼
17	±6.7	L 1½x1½x3/16
18	-5.9	L 3x3x3/16
19	±7.6	L 1½x1½x3/16
20	±5.7	Bar 1½x3/16
21	-6.2	do
22	±3.9	do
23	-13.5	L 3x2½x¼
24	-25.3	L 3½x3½x¼
25	±8.2	Bar 1½x¼
*26	-6.9	[illegible]
27	-3.5	L 4x3x¼
30	-53.6	L 4x4x3/8
31	-56.0	L 4x4x3/8
34	±2.8	L 3x3x¼
43	±4.8	L 1¾x1¾x¼
Tower DA Only		
1	-39.2	L 4x4x¼
4	-57.1	L 4x4x3/8
5	+41.6 -64.3	L do
6	-6.7	L 3x3x¼
7	±2.5	L 1½x1½x3/16
8	±9.9	L 1¾x1¾x3/16
27	±5.0	L 2½x1½x3/16
28	-56.0	L 4x4x3/8
34	+56.1	L 4x4x3/8
71	-52.0	L 4x4x3/8

* Denotes revised member

Tower DA Take DA Except as noted Below

Lamina of Erection Crossarms "D" & "DA"

Crossarms
2 - 7" I @ 9.8# x 2'-11"
1 - 6" C 8 @ 8.2# x 3'-3"
2 - 6" C 8 @ 10.5 x 1'-7"
4 - L 3x3x¼ x 1'-1"

65'-0" Suspension "D" & "DA"

Tower Investigated For: [illegible] Steel Ground Wire with Maximum Tension of 4500# and Six - 795,000 (3/4) ACSR Conductors with Max. Tension of 7500# on 1030 Ft Tangent Span [illegible] Loading. At Maximum Tension, is 4# Wind and ½" Ice Coating Cables.

Loads

1 Vertical
- 1 - Ground Wire @ 820# ... 820
- 6 - Conductors @ 2300# ... 13800
- Total ... 14620#

2 Transverse - Wind on Cables
- 1 - Ground Wire @ 460# ... 460
- 6 - Conductors @ 705# ... 4230
- Total ... 4690#

3 Longitudinal -
- 1 - Ground Wire @ 4500#
- or any 1 - Conductor @ 6000# (80% of 7500)

4 Wind on Tower of 6.5# Per Sq Foot on 1½ Times The Projected Area of One Face of The Tower.

5 Dead Load of Tower.

Combine;
1.27 of 1, 2.54 of 2, 2.54 of 4, 1.27 of 5
or 1.27 of 1, 2.54 x ½ of 2, 1.10 of 3, 2.54 of 4, 1.27 of 5

Unit Stresses - (Ultimate - NESC 5th Edition)

Tension on Net Section ... 33,000# [illegible]
Compression on Gross Section ... 33,000 - 135 l/r [illegible]
Shear on Bolts ... 30,000# [illegible]
Bearing on Bolts ... 60,000# [illegible]

Material: O.H. Steel A.S.T.M. [illegible] Notes: [illegible]

Coating: All Materials Galvanized.

Connections: Bolted, 5/8" Bolts.

Specifications: A.B. Co. Std. Specs. For Transmission Towers.

65'-0" Suspension Towers "D" & "DA"
57'-0" Suspension Tower "DA"

The Detroit Edison Co.

Detroit Mich.

American Bridge Company

Tower Dept. office

Drawing No. T-8415
Inquiry No. T-5447
Contract No. Q-348-X1

Ref. Drwgs.: [illegible] Ord. No. F2507-8-9, Ord. No. F2611

No. T-2454

Recorded Right of Way

THE CALCULATIONS FOR THIS TRIAL ARE FOR STUDY
STRESS-STRAIN CURVES USED REPRESENT 954,000 CM ACSR 54/7 7

STARTING INDEX	RULING SPAN	ACTUAL SPANS BEGIN	FINAL	INCREMENT	STARTING SAG OR TENSIO
1	500.0	0.0	0.0	0.0	6500.00

*****CREEP IS A

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	13.08	-6500.	13.34	6372.	----MI
2	0.	11.16	3454.	11.90	3239.	
3	32.	13.53	5300.	13.99	5126.	
4	10.	11.51	3347.	12.27	3142.	
5	20.	11.86	3249.	12.63	3053.	
6	30.	12.21	3157.	12.99	2970.	
7	40.	12.55	3071.	13.33	2893.	
8	50.	12.89	2991.	13.67	2821.	
9	60.	13.22	2917.	14.01	2754.	
10	70.	13.55	2847.	14.34	2692.	
11	80.	13.87	2782.	14.66	2633.	
12	90.	14.19	2720.	14.98	2578.	
13	100.	14.50	2662.	15.29	2525.	
14	110.	14.81	2607.	15.60	2476.	
15	120.	15.11	2556.	15.90	2430.	

DATA SHEET TO ACCOMPANY DRAWING RX-2904C

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Warren-Evergreen #1 and the Diesel-Evergreen steel tower line over the C. & O. Railroad in Detroit, Michigan at the following locations:

Crossing No. 1: Located approximately 350' east of Evergreen and 1000 feet south of Schoolcraft.

Crossing No. 2: Located approximately 350' east of Evergreen and 1300 feet south of Schoolcraft.

Circuits

Two 120,000 volt, 60-cycle, 3-phase, 3-wire transmission circuits with one ground wire.

Towers and Crossarms

As per attached drawings ED1-65 (EA), and T-8415 (D).

Conductors

Six 954 54/7 ACSR and 1-3/8" 7 strand steel ground wire.

Insulators

120 KV: Suspension: 8 insulators O.B.-48008 or equivalent.
Deadend: 9 insulators O.B. 47410 or equivalent.

Guy and Guy Attachments

None

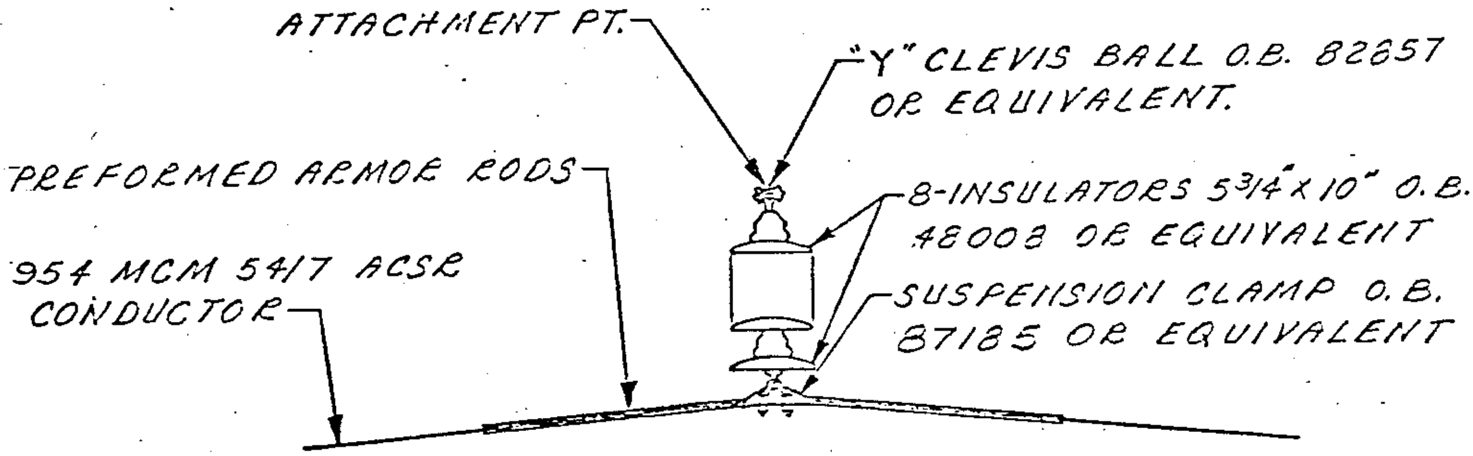
Suspension and Deadend Details

See attached drawing ED1-7430

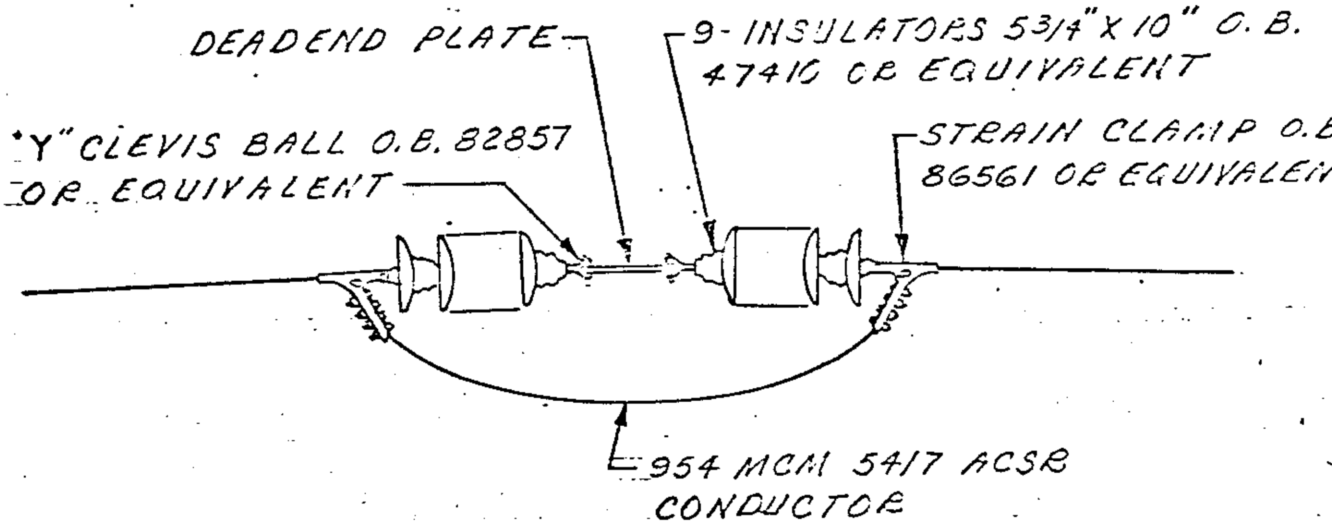
RECORDED RIGHT OF WAY 19077 Part 2

System Engineering Department
CVP/cb 10-23-84

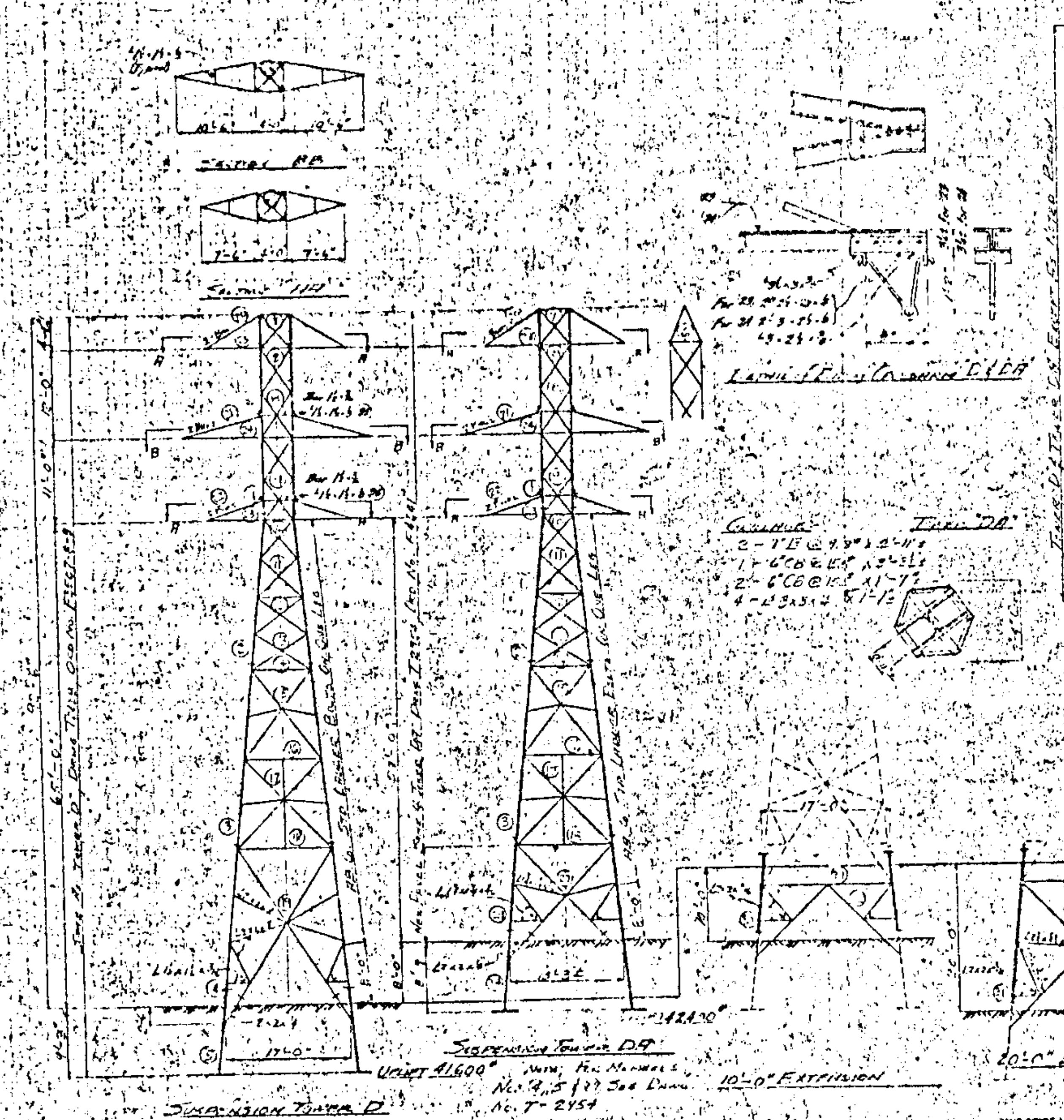
SUSPENSION ASS'Y DETAILS



DEADEND ASS'Y DETAILS



120 KV SUSPENSION & DEADEND ASS'Y DETAILS	APPROVED JSW	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT	
		LAYOUT BY J. WRIGHT	DRAWN BY JEH
		DATE 1-25-71	DRAWING NUMBER EDI-7430
		SCALE	



RECORDED RIGHT OF WAY

Ref. Drwgs.
T-2454, Ord. No. F-2501-A-9
T-2454, Ord. No. F-4641

Table D & DA Tower Except as Noted Below

No.	Stress (Kips)	Section
1	-39.2	L 4x4x 5/16
2	-48.8	L do
3	-54.6	L 4x4x 3/8
4	-57.1	L 4x4x 7/16
5	+41.6 / -54.3	L do
6	-6.7	L 3½x2½x ¼
7	±2.5	L 1¾x1¾x 3/16
8	±9.9	L 2x2x 3/16
9	±12.7	L do
10	±8.6	L 1¾x1¾x 3/16
11	±6.7	L do
12	±4.8	L do
13	±4.1	L do
14	-3.6	L 2½x2½x 3/16
15	±9.2	L 1½x1½x 3/16
16	-5.2	L 2½x2½x 3/16
17	+6.7	L 1½x1½x 3/16
18	-5.9	L 2x3x 3/16
19	+7.6	L 1½x1½x 3/16
20	+5.7	Bar 1½x 3/16
21	+6.2	do
22	+3.9	do
23	-13.6	L 3x2½x 3/16
24	-25.3	L [illegible] x ¼
25	+8.2	Bar 1¼x ¼
* 26	±6.8	[illegible] 3/16
27	-3.5	L 4x3x ¼
30	-53.6	L 4x4x 3/8
31	-56.0	L 4x4x ½
32	±2.8	L 3x3x ¼
33	+4.8	L 1¾x1¾x ¼

Tower DA Only

No.	Stress (Kips)	Section
1	-39.2	L 4x4x ¼
4	-57.1	L 4x4x 3/8
5	+41.6 / -54.3	L do
6	-6.7	L 3x3x ¼
7	±2.5	L 1½x1½x 3/16
8	±9.9	L 1¾x1¾x 3/16
27	+5.0	L 2½x1½x 3/16
28	-55.0	L 4x4x 3/8
34	[illegible]	L 4x4x 3/8
31	-52.0	L 4x4x 7/16

* Denotes revised member

65'-0" Suspension "D" & "DA" [illegible]

Tower Designed for [illegible] Steel Ground Wire with Maximum Tension of 4500# and Six - 715,000 (?) ACSR Conductors with Max. Tension of 7500# on 1000 Ft. [illegible] Loading Max. Tension is 4# Wind on ½" Ice Coated Cables.

Loads

1 Vertical
1 - Ground Wire @ 820# = 820
6 - Conductors @ 2300# = 13800
Total = 14620#

2 Transverse - Wind on Cables
1 - Ground Wire @ 460# = 460
6 - Conductors @ 705# = 4230
Total = 4690#

3 Longitudinal -
1 - Ground Wire @ 4500#
or any 1 - Conductor @ 6000# (80% of 7500#)

4 Wind on Tower of 6.5# per Sq. Foot on 1½ Times the Projected Area of One Face of The Tower.

5 Dead Load of Tower.
Combine;
1.27 of 1, 2.54 of 2, 2.54 of 4, 1.27 of 5
or 1.27 of 1, 2.54 x [illegible] of 2, 1.10 of 3, 2.54 of 4, 1.27 of 5

Unit Stresses - (Ultimate - NESC [illegible])

Tension on Net Section 33,000#/[illegible]
Compression on Gross Section 33,000 - 133 L/r [illegible]
Shear on Bolts 30,000#/[illegible]
Bearing on Bolts 60,000#/[illegible]

Material: O.H. Steel A.S.T.M. [illegible]
Note: [illegible]

Coating: All Materials Galvanized.

Connections: Bolted, ⅝" Bolts.

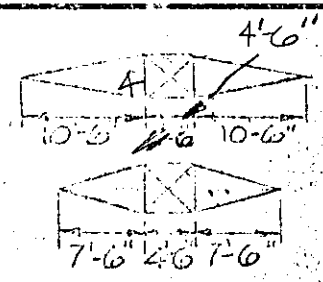
Specifications: A.B. Co. Std. Spec. for Transmission Towers.

65'-0" Suspension Towers "D" & "DA"
57'-0" Suspension Tower "DA"

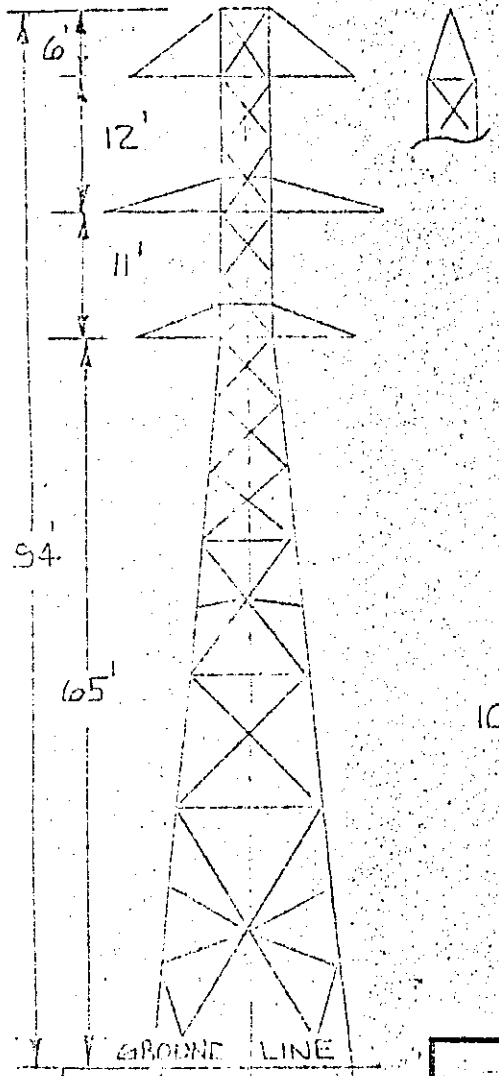
The Detroit Edison Co.

Detroit Mich.

AMERICAN BRIDGE COMPANY
Tower Dept. Office
Sheet No. ___
Drawing No. T-8415
Checked [illegible] 1950
Inquiry No. T-6227
Contract No. Q-345-X1

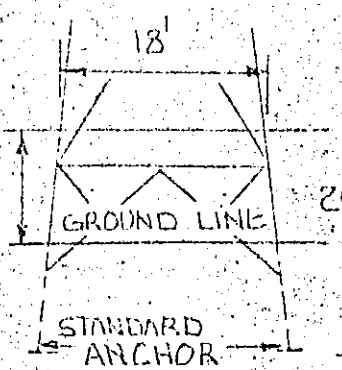


EA TOWER

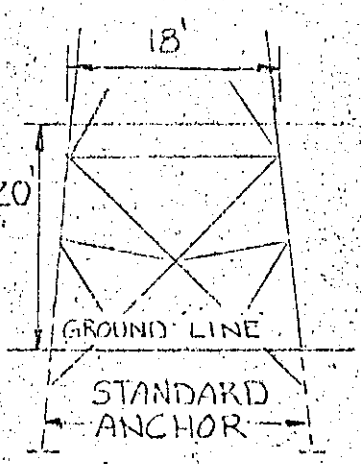


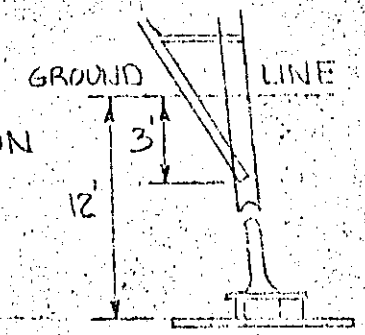
DETAIL AT END OF CROSS-ARM

10' EXTENSION

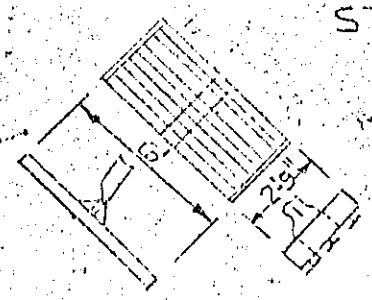


20' EXTENSION





STANDARD EARTH ANCHOR



RECORDED RIGHT OF WAY

DETROIT EDISON CO.

STRAIN TOWER "EA"

APPROVED

THE DETROIT EDISON COMPANY
GENERAL ENGINEERING DEPARTMENT

LAYOUT BY

DRAWN BY C. VAN PAMS

DATE 5-3-71

SCALE

DRAWING NUMBER ED 1- 1605

DE FORM SE 5 PTG. 10-69•

THE CALCULATIONS FOR THIS TRIAL ARE FOR SAG VALUES FOR SHORT S
STRESS-STRAIN CURVES USED REPRESENT 954,000CM ACSR 5

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INIT MAX
1	300.0	3500.00	0.84640	

*****CREEP

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION
1	0.	8.75	-3500.	8.79	3487.
2	0.	8.19	1696.	8.34	1666.
3	0.	8.60	3003.	8.66	2981.
4	30.	8.78	1583.	8.94	1555.
5	60.	9.34	1489.	9.51	1463.
6	90.	9.87	1410.	10.05	1385.
7	120.	10.38	1342.	10.50	1326.

****

RECORDED RIGHT OF WAY 19077 part 2

THE CALCULATIONS FOR THIS TRIAL ARE FOR STUDY
STRESS-STRAIN CURVES USED REPRESENT 954,000CM ACSR 54/7 7

STARTING INDEX	RULING SPAN	-----ACTUAL BEGIN	SPANS FINAL	--------- INCREMENT	STARTING SAG OR TENSIO
1	500.0	0.0	0.0	0.0	6500.00

*****CREEP IS A

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	13.08	-6500.	13.34	6372.	----MI
2	0.	11.16	3454.	11.90	3239.	
3	32.	13.53	5300.	13.99	5126.	
4	10.	11.51	3347.	12.27	3142.	
5	20.	11.86	3249.	12.63	3053.	
6	30.	12.21	3157.	12.99	2970.	
7	40.	12.55	3071.	13.33	2893.	
8	50.	12.89	2991.	13.67	2821.	
9	60.	13.22	2917.	14.01	2754.	
10	70.	13.55	2847.	14.34	2692.	
11	80.	13.87	2782.	14.66	2633.	
12	90.	14.19	2720.	14.98	2578.	
13	100.	14.50	2662.	15.29	2525.	
14	110.	14.81	2607.	15.60	2476.	
15	120.	15.11	2556.	15.90	2430.	

DATA SHEET TO ACCOMPANY DRAWING RX-3156B

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Evergreen 120 KV steel tower line over the Chesapeake and Ohio Railroad spur track located approximately 725' west of Burt Road and approximately 2,640 feet north of Plymouth Road, at railroad stationing 483+00 in the northwest 1/4 of section 27, City of Detroit, Wayne County, Michigan T.15. - R. 10E.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one ground wire.

Towers and Crossarms

See attached drawings T-7811 (P).

Conductors

6-477 MCM 26/7 ACSR conductors and one 3/8" Bethanized "C" steel ground wire.

Insulators

120 KV suspension assembly, twelve O.B. 32440 or equivalent.

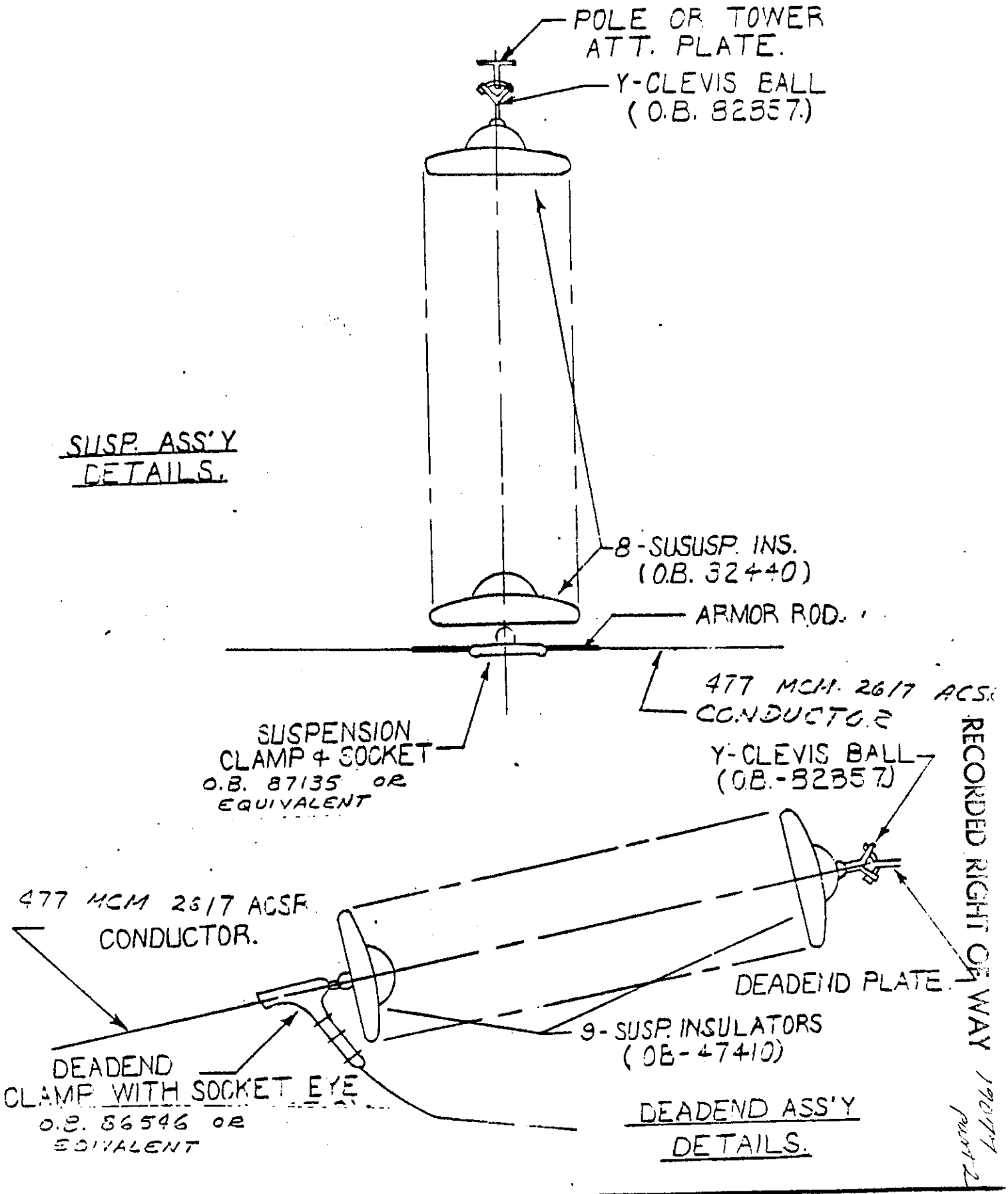
Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawing, ED1-8028

System Engineering Department
CVP/cb 10-3-84



120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. DRAWN BY N.H.H.
		DATE 4-2-70. ED1-8028
		SCALE

RECORDED RIGHT OF WAY 19677 part 2

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/7

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION	INITIAL BA LIMIT TENSI
1	600.0	7770.00	0.43560	9800.00	6500.00

*****CREEP IS A FACTOR*****

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION
1	0.	11.23	-7770.	11.30	7723.
2	0.	5.38	5495.	6.33	4676.
3	32.	10.47	6463.	11.18	6057.
4	10.	5.64	5244.	6.76	4380.
5	20.	5.92	4995.	7.21	4106.
6	30.	6.23	4751.	7.68	3855.
7	40.	6.56	4513.	8.16	3628.
8	50.	6.90	4287.	8.65	3422.
9	60.	7.27	4070.	9.14	3238.
10	70.	7.66	3864.	9.64	3071.
11	80.	8.06	3671.	10.14	2920.
12	90.	8.49	3488.	10.63	2785.
13	100.	8.91	3321.	11.12	2664.
14	110.	9.35	3165.	11.60	2553.
15	120.	9.80	3021.	12.08	2453.

SAG IS IN FEET AND T

----MINUS SIGN INDICATES CO

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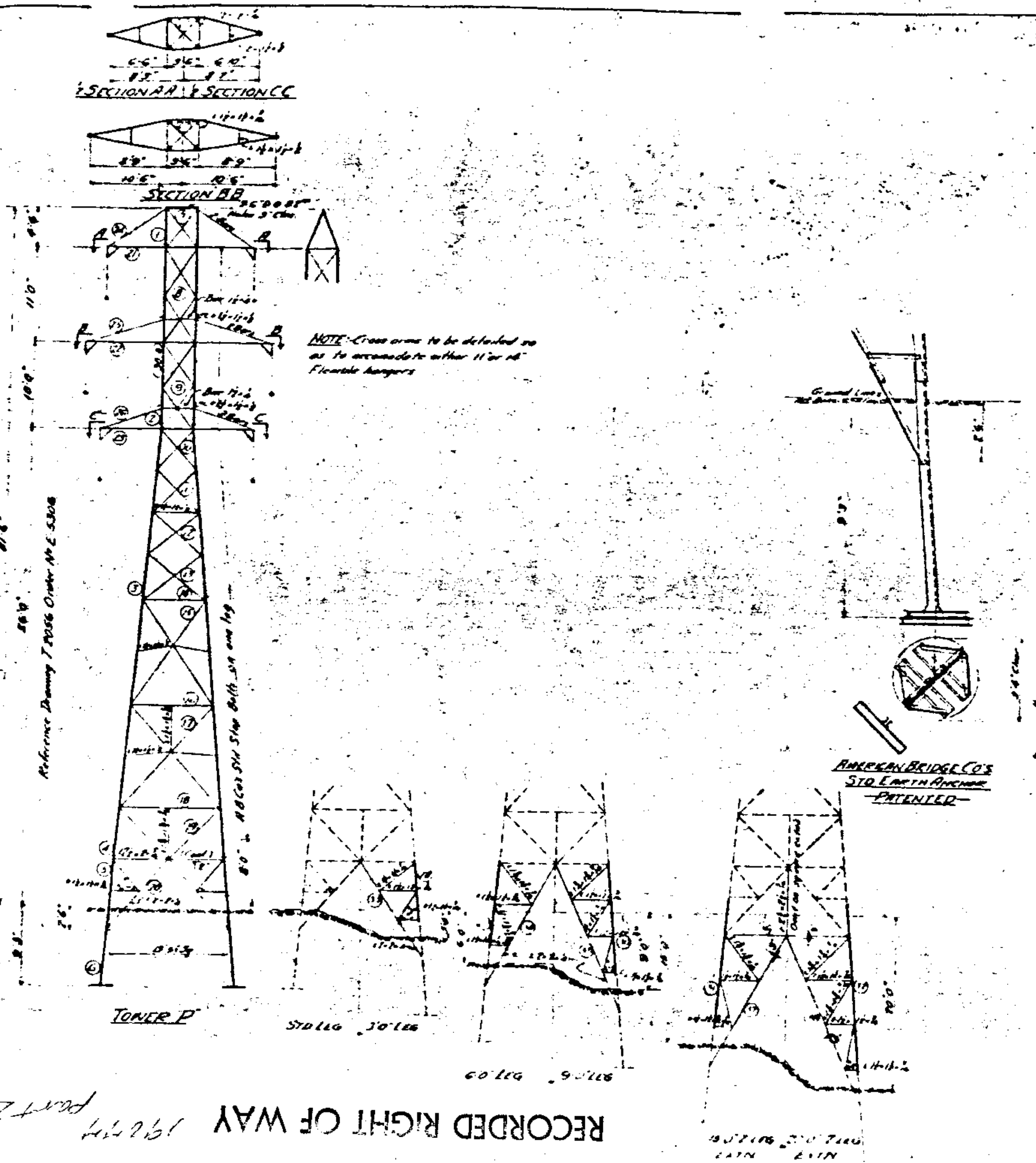

RECORDED RIGHT OF WAY 19077 part 2

SUSPENSION TOWER "P"

Member	Alt Stress	Section
1	- 6.7	L 2½ × 2½ × ¼
2	43.1	L 3½ × 3½ × ¼
3	- 60.8	L 4 × 4 × 5/16
4	- 64.4	L 4 × 4 × ½
5	64.5	do
6	64.0	do
7	± 4.7	L 1½ × 1½ × 3/16
8	± 18.7	L 2½ × 1½ × 3/16
9	± 15.3	L 2½ × 2 × 3/16
10	± 9.5	L 1¾ × 1¾ × 3/16
11	± 7.0	do
12	± 6.2	do
13	± 4.8	do
14	- 3.6	L 2½ × 2½ × 3/16
15	+ 11.1	L 1½ × 1½ × 3/16
16	- 5.6	L 2½ × 2½ × 3/16
17	+ 7.9	L 1½ × 1½ × 3/16
18	- 7.7	L 3 × 3 × 3/16
19	+ 9.9	L 1¾ × 1½ × 3/16
20	+ 7.1	
21	- 14.5	L 3 × 2½ × ¼
22	- 18.9	do
23	- 15.7	do
24	+ 11	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	L 1½ × 1½ × 3/16
28	- 65.8	L 4 × 4 × 5/16
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	L 1½ × 1½ × 3/16
34	+ 9.0	do
35	+ 11.4	L 1¾ × 1¾ × 3/16
36	- 4.0	L 3½ × 3 × ¼
37	± 4.3	do
38	± 4.8	L 4 × 3 × ¼

* Denotes setting template members

GRILLAGE MATERIAL
2 7" I @ 9.8# × 3'3"
2 6" CBS @ 15.5# × 3'0"
4 L 3 × 3 × ¼ × 1'9"

The tower is designed to support 1 ½" H.S. Crucible Steel Ground Wire and 6 477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical 1 Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1 Grd Wire @ 460# = ...
6 Conductors @ 675# = 4...
Total = 4460#

(3) Longitudinal 1 Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combined loads assume at middle arm)

(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face

(5) Dead load of tower

Combine (1)+(2a)+(3), (1)+(2b)+(3), (1)+(3)+(5) and (2)+(5)

UNIT STRESSES

Tension on net section 33000# per sq in

Comp on gross section 33000# - 130 l/r, l/r < 150
24000# - 70 l/r, l/r > 150

Shear on bolts .... 30000# per sq in.

Bearing on bolts .... 60000# per sq in.

MATERIAL: O.H. Steel ASTM A7 latest revision.

COATING: All material galvanized

CONNECTIONS: Bolted, 5/8" bolts

SPECIFICATIONS: A.B.Co's Standard specifications for Transmission Towers

"P" TWR

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT, MICH
SUSPENSION TOWER "P"
LINCOLN BLOOMFIELD ...

AMERICAN BRIDGE CO
PITTSBURGH PA

DRAWING T-7817

DATA SHEET TO ACCOMPANY DRAWING RX-3157B

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Yost 120 KV steel tower line over the Chesapeake and Ohio Railroad. Crossing No. 1: Approximately 2,640 feet north of Plymouth Road and approximately 2,380 feet west of Telegraph Road. Railroad stationing 577+50. Crossing No. 2: Approximately 2,640 feet north of Plymouth Road and approximately 2,920 feet west of Telegraph Road. Railroad stationing 585+80.

Redford Township, northwest 1/4 of Section 29, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one ground wire.

Towers and Crossarms

See attached drawing T-7811 (P)

Conductors

6-477 MCM 26/7 ACSR conductors and one 3/8"-7 strand steel ground wire.

Insulators

120 KV suspension assembly, (8) eight O.B. 32440 or equivalent.

Guy and Guy Attachments

None.

Suspension and Deadend Details

See attached drawing ED1-8028

RECORDED RIGHT OF WAY 18077 Part 2

System Engineering Department
CVP/cb 10-1-84

RECORDED RIGHT OF WAY 19077 part 2

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/7

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION	INITIAL BAR LIMIT TENSIO
1	600.0	7770.00	0.43560	9800.00	6500.00

*****CREEP IS A FACTOR*****

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	SAG IS IN FEET AND T
1	0.	11.23	-7770.	11.30	7723.	----MINUS SIGN INDICATES CO
2	0.	5.38	5495.	6.33	4676.	
3	32.	10.47	6463.	11.18	6057.	
4	10.	5.64	5244.	6.76	4380.	
5	20.	5.92	4995.	7.21	4106.	
6	30.	6.23	4751.	7.68	3855.	
7	40.	6.56	4513.	8.16	3628.	
8	50.	6.90	4287.	8.65	3422.	
9	60.	7.27	4070.	9.14	3238.	
10	70.	7.66	3864.	9.64	3071.	
11	80.	8.06	3671.	10.14	2920.	
12	90.	8.49	3488.	10.63	2785.	
13	100.	8.91	3321.	11.12	2664.	
14	110.	9.35	3165.	11.60	2553.	
15	120.	9.80	3021.	12.08	2453.	

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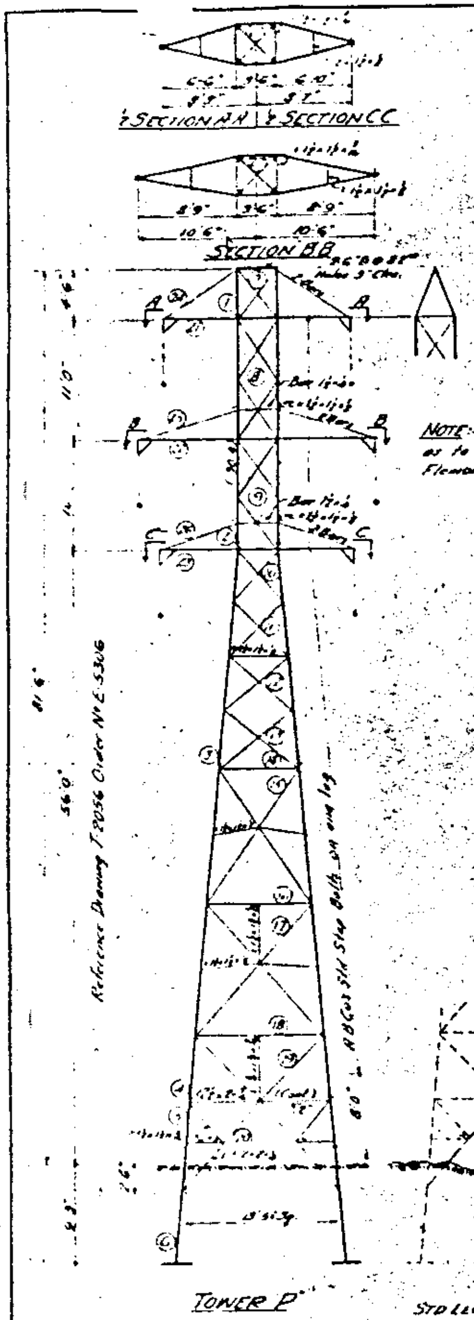
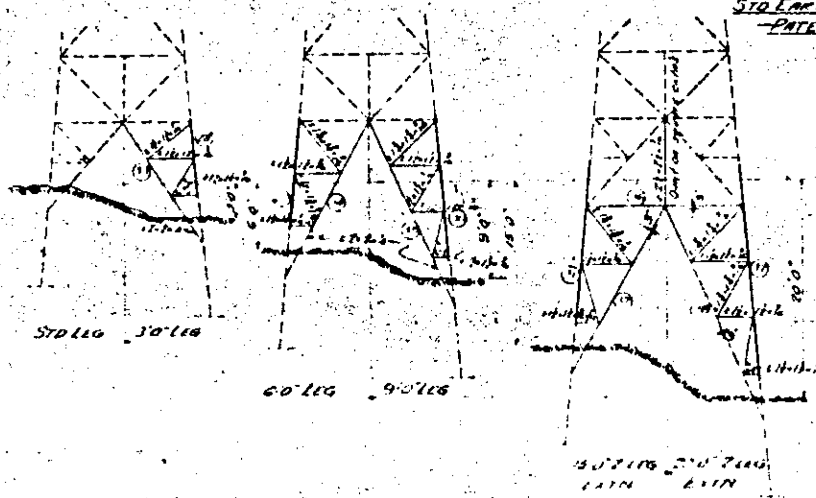
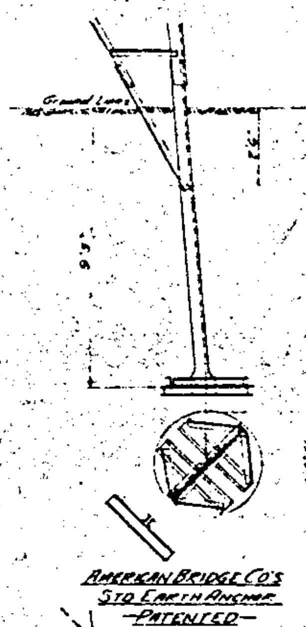
RECORDED RIGHT OF WAY 190MH

part 2



NOTE:- Cross arms to be detailed so as to accomodate either 11" or 14" Flexible hangers





AMERICAN BRIDGE CO'S STD EARTH ANCHOR —PATENTED—

Member	Ult Stress	SECTION
1	- 6.7	L 2½ x 2½ x ¼
2	43.1	L 3½ x 3½ x ¼
3	-50.8	L 4 x 4 x 5/16
4	-64.4	L 4 x 4 x 3/8
5	64.5	do
6	±61.2 / 44.0	do
7	± 1.7	L 1½ x 1½ x 3/16
8	± 10.7	L 2½ x 1½ x 3/16
9	± 13.3	L 2½ x 2 x 3/16
10	± 9.5	L 1¾ x 1¾ x 3/16
11	± 7.0	do
12	± 6.2	do
13	± 4.8	do
14	- 3.5	L 2½ x 2½ x 3/16
15	+ 11.1	L 1½ x 1½ x 3/16
* 16	- 5.6	L 2½ x 2½ x 3/16
17	+ 7.9	L 1½ x 1½ x 3/16
* 18	- 7.7	L 3 x 3 x 3/16
19	+ 9.9	L 1½ x 1½ x 3/16
20	+ 2.1	
21	- 14.5	L 3 x 2½ x ¼
22	- 18.9	do
23	- 15.7	do
24	+ 1.1	Bar 1½ x ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	L 1½ x 1½ x 3/16
28	- 65.8	L 4 x 4 x 3/8
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	L 1½ x 1½ x 3/16
34	+ 9.0	do
35	+ 11.4	L 1¾ x 1¾ x 3/16
* 36	- 4.0	L 3½ x 3 x ¼
37	± 4.3	do
38	± 4.8	L 4 x 3 x ¼

* Denotes setting templet members

GRILLAGE MATERIAL
2 7" ⊏ @ 9.8# x 3'3"
2 6" CBS @ 15.5# x 3'0"
4 L 3 x 3 x ¼ x 1'9"

SUSPENSION TOWER "P"

The tower is designed to support 1-½" H.S. Crucible Steel Ground Wire and 6-477000 cm A.C.S.R. Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical 1 Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1 Grd Wire @ 460# = 460#
6 Conductors @ 670# = 4020#
Total = 4480#

(3) Longitudinal 1 Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)
(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face
(5) Dead load of tower
Combine (1) + (2a), (2b), (4), (5), (1) + (3), (2b), (4) and (1) + (5)

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000# - 130 l/r (l/r < 150)
24000# - 70 l/r (l/r > 150)
Shear on bolts ______ 30000# per sq in
Bearing on bolts ______ 60000# per sq in

MATERIAL:- O.H. Steel ASTM A7 latest revision.

COATING:- All material galvanized

CONNECTIONS:- Bolted, ⅝" bolts

SPECIFICATIONS:- A B Co's Standard specifications for Transmission Towers

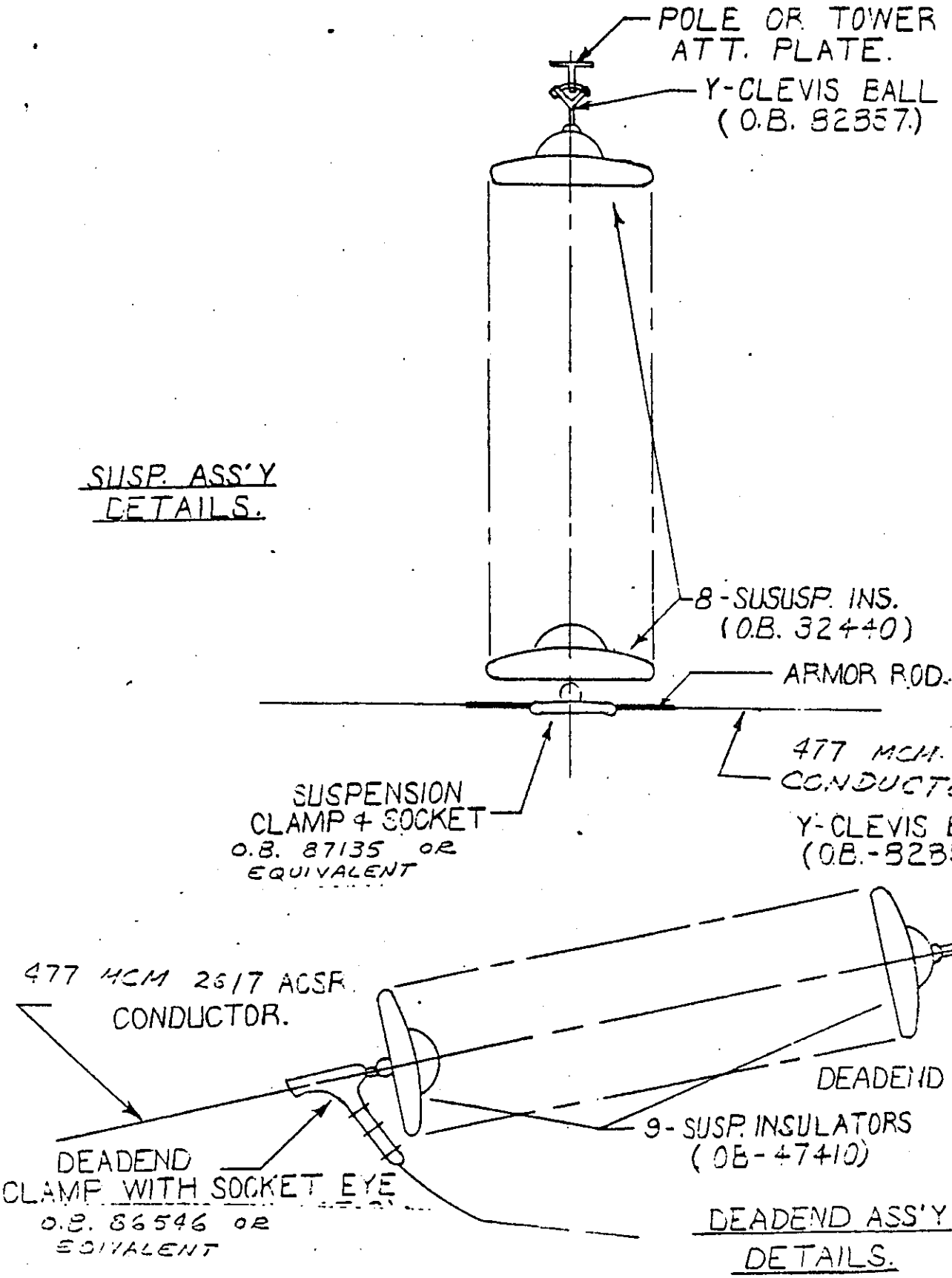
"P" TWR.

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT MICH
SUSPENSION TOWER "P"
LINCOLN BLOOMFIELD LINE

NORMAL SPAN
VOLTS
CIRCUITS
CONDUCTORS
GROUND WIRE
REVISIONS

AMERICAN BRIDGE CO
PITTSBURGH PA

INQUIRY No.
ORDER No.
DRAWING T-7811



RECORDED RIGHT OF WAY 190 FT Parcel 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. DRAWN BY N.H.H.
		DATE 4-9-70. ED1-8028
		SCALE

DE FORM SE 11 PTG. 5-67a

DATA SHEET TO ACCOMPANY DRAWING RX-3158B

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Yost 120 KV steel tower line over the Chesapeake and Ohio Railroad at approximately 1,350 feet east of Beech Daly and 2,640 feet north of Plymouth Road. At railroad stationing 595+00, in the northwest 1/4 of Section 29, Redford Township, Wayne County, Michigan. T.15. - R. 10E.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one ground wire.

Towers and Crossarms

See attached drawing T-7811, (P).

Conductors

Six-477 MCM ACSR 26/7 conductors per cirucit. One 3/8 steel 7 strand ground wire.

Insulators

120 KV suspension assemblies. (8) eight O.B. 32440 or equivalent.

Guy and Guy Attachments

None.

Suspension and Deadend Details

See attached drawing ED1-8028

RECORDED RIGHT OF WAY

System Engineering Department
CVP/cb 10-1-84

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/7

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION	INITIAL BAS LIMIT TENSIO
1	600.0	7770.00	0.43560	9800.00	6500.00

*****CREEP IS A FACTOR*****

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION
1	0.	11.23	-7770.	11.30	7723.
2	0.	5.38	5495.	6.33	4676.
3	32.	10.47	6463.	11.18	6057.
4	10.	5.64	5244.	6.76	4380.
5	20.	5.92	4995.	7.21	4106.
6	30.	6.23	4751.	7.68	3855.
7	40.	6.56	4513.	8.16	3628.
8	50.	6.90	4287.	8.65	3422.
9	60.	7.27	4070.	9.14	3238.
10	70.	7.66	3864.	9.64	3071.
11	80.	8.06	3671.	10.14	2920.
12	90.	8.49	3488.	10.63	2785.
13	100.	8.91	3321.	11.12	2664.
14	110.	9.35	3165.	11.60	2553.
15	120.	9.80	3021.	12.08	2453.

SAG IS IN FEET AND T

----MINUS SIGN INDICATES CO

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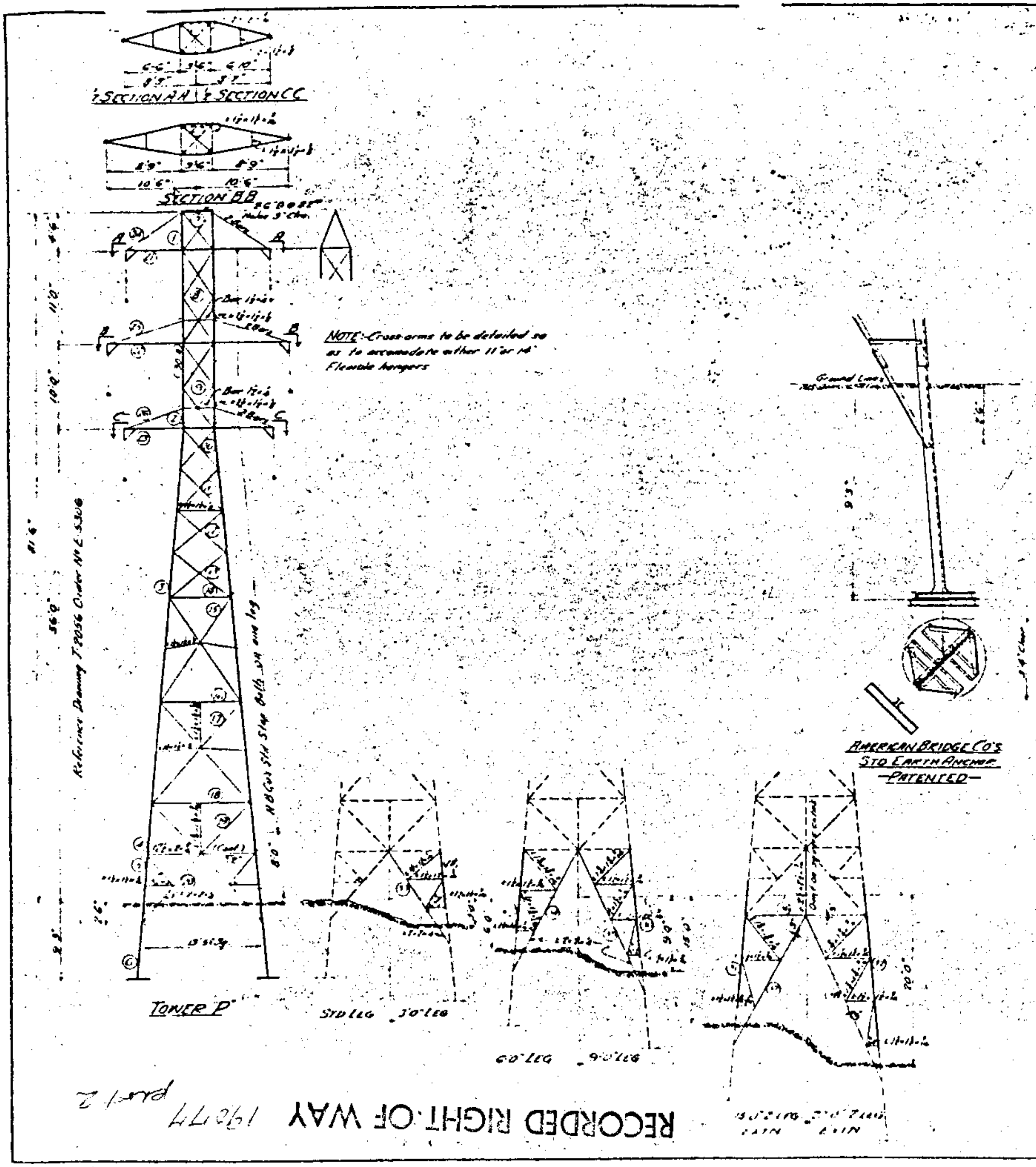


RECORDED RIGHT-OF WAY 19077 part 2

Member	Ult Stress	Section
1	- 67	∟2½ × 2½ × ¼
2	43.1	∟3½ × 3½ × ¼
3	-50.8	∟4 × 4 × 5/16
4	-64.4	∟4 × 4 × 3/8
5	-64.5	do
6	-64.0	do
7	± 12	∟1½ × 1½ × 3/16
8	± 10.7	∟2½ × 1½ × 3/16
9	± 13.3	∟2½ × 2 × 3/16
10	± 9.5	∟1¾ × 1¾ × 3/16
11	± 7.0	do
12	± 6.2	do
13	± 4.8	do
14	- 3.5	∟2½ × 2½ × 3/16
15	+ 11.1	∟1½ × 1½ × ¼
* 16	- 5.6	∟2½ × 2½ × 3/16
17	+ 7.9	∟1½ × 1½ × 3/16
* 18	- 7.7	∟3 × 3 × 3/16
19	+ 9.9	∟1½ × 1½ × 3/16
20	+ 7.1	
21	- 14.5	∟3 × 2½ × ¼
22	- 18.5	do
23	- 15.7	do
24	+ 1.1	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	∟1½ × 1½ × 3/16
28	- 65.8	∟4 × 4 × 3/8
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	∟1½ × 1½ × 3/16
34	+ 9.0	do
35	+ 11.4	∟1¾ × 1¾ × 3/16
* 36	- 4.0	∟3½ × 3 × ¼
37	± 4.3	do
38	± 4.8	∟4 × 3 × ¼

* Denotes setting template members

GRILLAGE MATERIAL
2 7" ℶ @ 9.8# × 3'3".
2 6" ℶ @ 15.5# × 3'0"
4 ∟ 3 × 3 × ¼ × 1'9"

SUSPENSION TOWER "P"

The tower is designed to support 1-½" H.S. Crucible Steel Ground Wire and 6-477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strong that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical 1-Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1-Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1-Grd Wire @ 460# = 460#
6 Conductors @ 670# = 4020#
Total = 4480#

(3) Longitudinal 1-Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)

(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face

(5) Dead load of tower

Combine (1)+(2a)+(2b)+(4)+(5)+(1)+(2)+(5)4+(4) and (1)+(3)+5

UNIT STRESSES

Tension on net section 33000# per sq in

Comp on gross section 33000#-130 l/r (l/r<150)
24000#-10 l/r (l/r>150)

Shear on bolts ...... 30000# per sq in.

Bearing on bolts ...... 60000# per sq in.

MATERIAL:- O.H. Steel ASTM A7 latest revision.

COATING:- All material galvanized

CONNECTIONS:- Bolted, ⅝" bolts

SPECIFICATIONS:- A.B.Co's Standard specifications for Transmission Towers

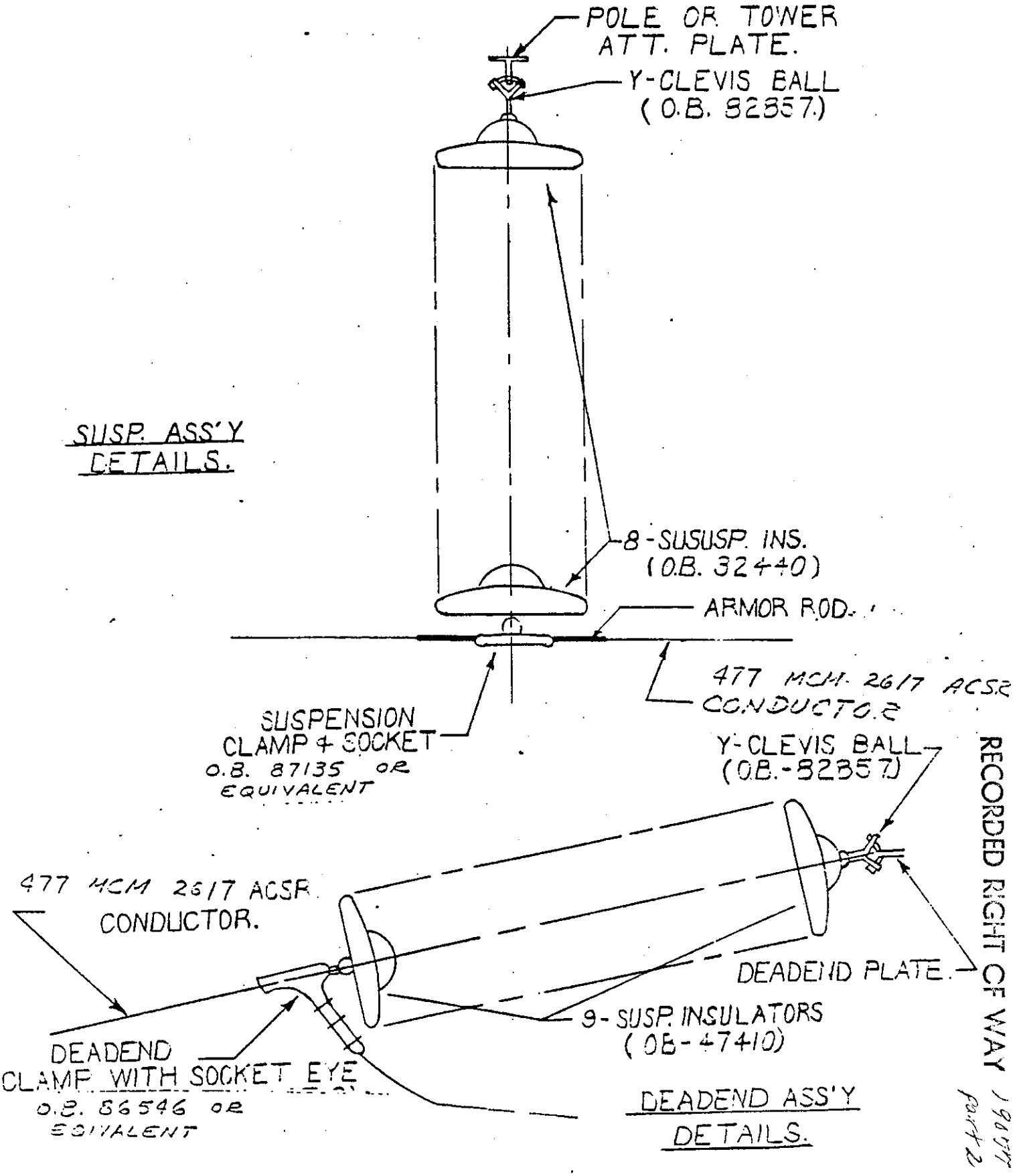
"P" TWR.

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT MICH
SUSPENSION TOWER "P"
LINCOLN BLOOMFIELD LINE

REVISIONS

AMERICAN BRIDGE CO.
PITTSBURGH PA

INQUIRY No
ORDER No.
DRAWING T-7811



120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT LAYOUT BY R.C.S. DRAWN BY N.H.H. DATE 4-8-70. EDI-8028 SCALE

DE FORM SE 11 PTS. 5-67a

DATA SHEET TO ACCOMPANY DRAWING RX-3160C

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel - Yost 120kV transmission line over the C. & O. Railroad at:

Crossing No. 1: Approximately 2,640 feet north of Plymouth Road and approximately 1,530 feet west of Inkster Road, Railroad Stationing 674+15.

Crossing No. 2: Approximately 2,640 feet north of Plymouth Road and approximately 2,145 feet west of Inkster Road, Railroad Stationing 680+75.

All in the City of Livonia, southeast 1/4 of Section 25, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one ground wire.

Towers and Crossarms

See attached drawing T-7811(P).

Conductors

Six-477 MCM 26/7 ACSR and 3/8" steel ground wire.

Insulators

Eight suspension insulators (O.B. 32440) or equivalent.

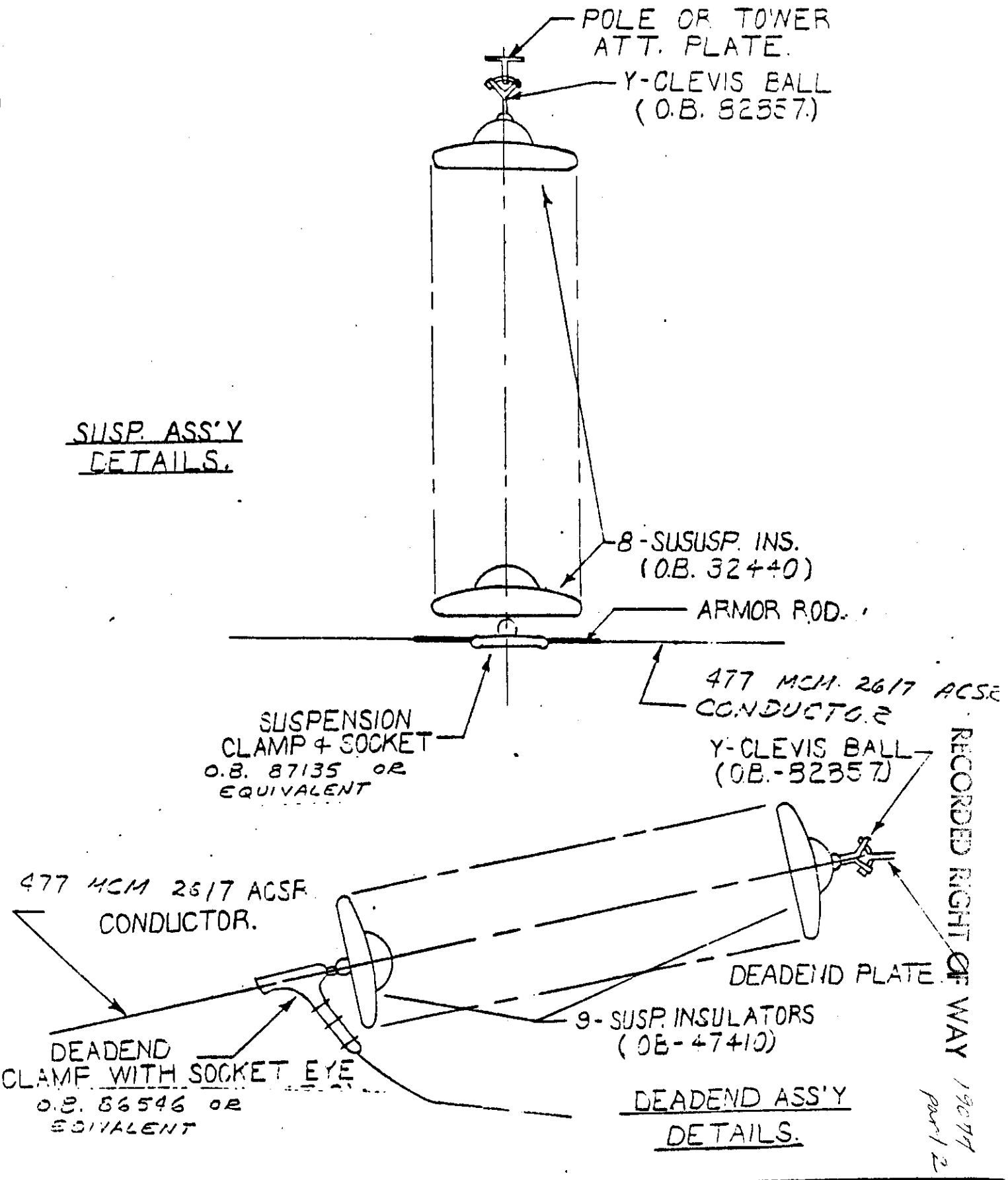
Guy and Guy Attachments

None

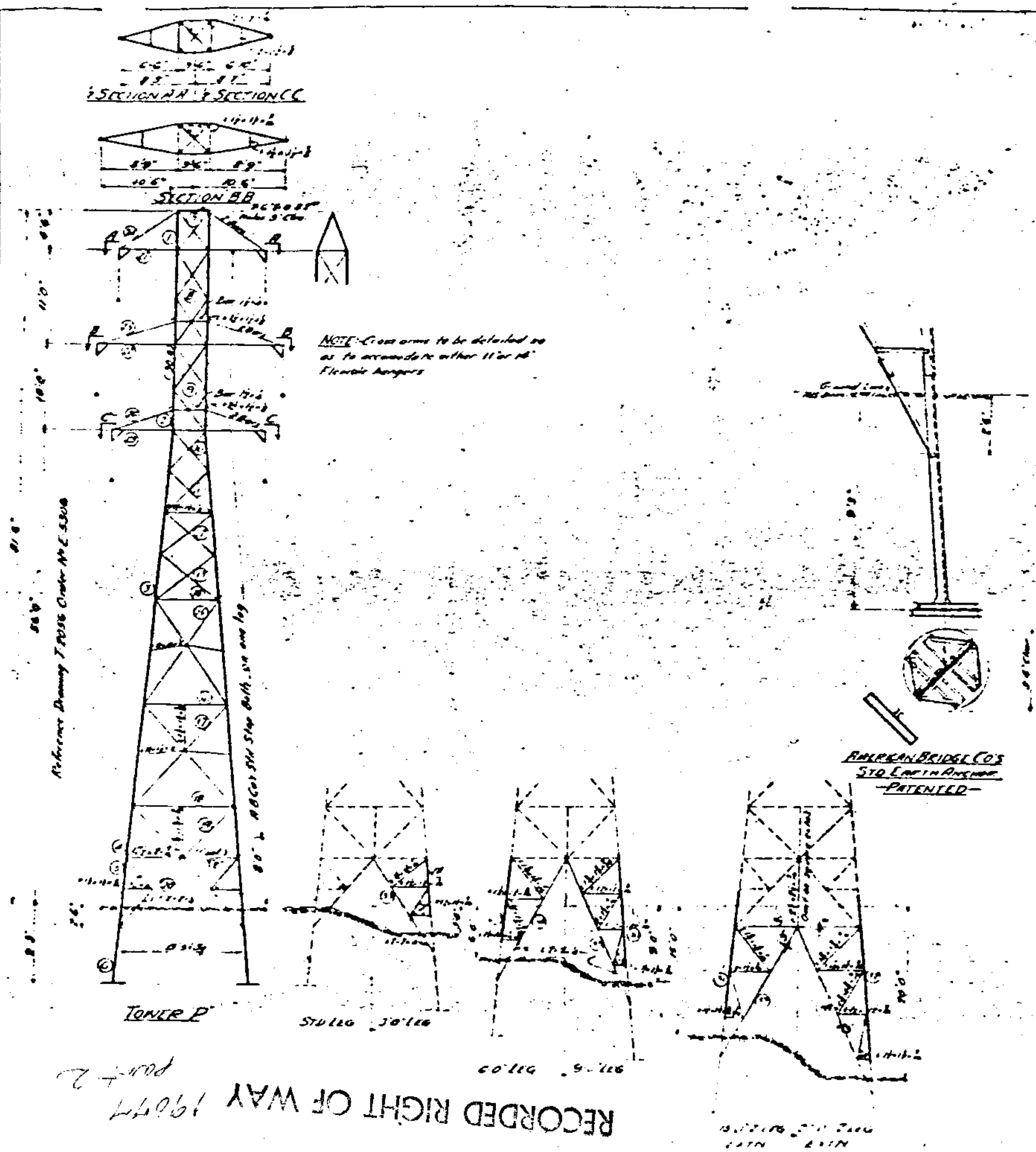
Suspension and Deadend Details

See attached drawing ED1-8028.

System Engineering Department
CVP/cb 9/18/84



120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY RCS. DRAWN BY N.H.H.
		DATE 4-2-70. SCALE — ED1-8028



Member	Str.	Section
1	67	2½ - 2½ - ¼
2	43.1	3½ - 3½ - ¼
3	50.8	4 - 4 - 5/16
4	64.4	4 - 4 - ¼
5	64.5	do
6	64.0	do
7	12	1¾ - 1¾ - 3/16
8	10.7	2½ - 1½ - 3/16
9	13.3	2½ - 2 - ¼
10	9.5	1¾ - 1¾ - 3/16
11	7.0	do
12	6.8	do
13	4.8	do
14	3.5	2½ - 2½ - 3/16
15	11.1	1¾ - 1¾ - 3/16
• 16	5.6	2½ - 2½ - 3/16
17	7.9	1¾ - 1¾ - 3/16
• 18	7.7	3 - 3 - 3/16
19	9.9	1¾ - 1¾ - 3/16
20	7.1	
21	14.5	3 - 2½ - ¼
22	18.9	do
23	15.7	do
24	1.1	Bar 1½ - ¼
25	2.2	do
26	2.0	do
27	5.1	1¾ - 1¾ - 3/16
28	65.8	4 - 4 - 5/16
29	66.3	do
30	67.4	do
31	63.1	do
32	63.7	do
33	2.8	1¾ - 1¾ - 3/16
34	9.0	do
35	11.4	1¾ - 1¾ - 3/16
• 36	4.0	3½ - 3 - ¼
37	4.3	do
38	4.8	4 - 3 - ¼

• Denotes setting template members

GRILLAGE MATERIAL
2 7" [@ 9.8" × 3'3"
2 6" [@ 15.5" × 3'0"
4 L 3 × 3 × ¼ × 1'9"

SUSPENSION TOWER "P"

The tower is designed to support 1 ⅜" H.S. Crucible Steel Ground Wire and 6 477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4" wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical — 1 Grd Wire @ 500# = 500#; 6 Conductors @ 1,000# = 6000#; Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#; 6 Conductors @ 375# = 2250#; Total = [illegible]

(2b) 5° Angle in Line 1 Grd Wire @ 460# = [illegible]; 6 Conductors @ 670# = 4020#; Total = 4480#

(3) Longitudinal 1 Grd Wire @ 5300# or 1 Conductor @ 6160# (80% of 7770#)
(For Combined loads assume at middle arm)
(4) Wind on tower of 65# per sq ft on 1½ times projected area of one face
(5) Dead load of tower
Combine (1)&(2a); (1)&(2b); (1)&(3); (1)&(4) and (1)&(5)

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000#-(90 L/R) L/R<150
24000#-(70 L/R) L/R>150
Shear on bolts ...... 30000# per sq in
Bearing on bolts ...... 60000# per sq in
MATERIAL: O.H. Steel ASTM A7 latest revision.
COATING: All material galvanized
CONNECTIONS: Bolted, ⅝" bolts
SPECIFICATIONS: A.B. Co's Standard specifications for Transmission Towers

"P" TWR.

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT, MICH
SUSPENSION TOWER "P"
LINCOLN-FLOCK [illegible]

AMERICAN BRIDGE CO
PITTSBURGH PA
DRAWING T-7377

RECORDED RIGHT OF WAY 1994
part 2

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/
477 MCM

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION
1	500.0	7770.00	0.43560	9800.00

***FINAL BARE CONDUCTOR TENSION LIMIT OF 5000.0 LBS. IS EXCEEDED BY 444.6 L

*****CREEP IS A FACTOR***

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	SAG IS I
1	0.	8.00	7574.	8.12	7456.	
2	0.	3.52	5838.	4.11	-4999.	----MINUS SIGN
3	32.	7.43	6326.	8.06	5832.	
4	10.	3.70	5560.	4.43	4640.	
5	20.	3.89	5288.	4.77	4308.	
6	30.	4.10	5016.	5.14	3997.	
7	40.	4.33	4745.	5.53	3715.	
8	50.	4.59	4482.	5.94	3458.	
9	60.	4.86	4230.	6.36	3230.	
10	70.	5.16	3985.	6.80	3024.	
11	80.	5.47	3754.	7.24	2840.	
12	90.	5.82	3534.	7.68	2678.	
13	100.	6.17	3330.	8.12	2533.	
14	110.	6.55	3139.	8.55	2405.	
15	120.	6.93	2966.	8.98	2290.	

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DATA SHEET TO ACCOMPANY DRAWING RX-3161B

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Yost 120 kV transmission circuit over the spur tracks of the C.&O. Railroad at approximately 2,640 feet north of Plymouth Road and approximately 384 FEET west of the centerline of Middlebelt Road. Railroad Stationing 719+00.

City of Livonia, Wayne County, southeast 1/4 Section 26, Michigan.

Circuits

One 120,000 volt, 6 wire, 60 cycle, 3 phase, transmission circuit with one ground wire.

Towers and Crossarms

See attached drawing T-7811 (P).

Conductors

Six-477 MCM 26/7 ACSR and one 3/8" steel ground wire.

Insulators

120 kV suspension assembly. Eight O.B. #32440 or equivalent.

Guy and Guy Attachments

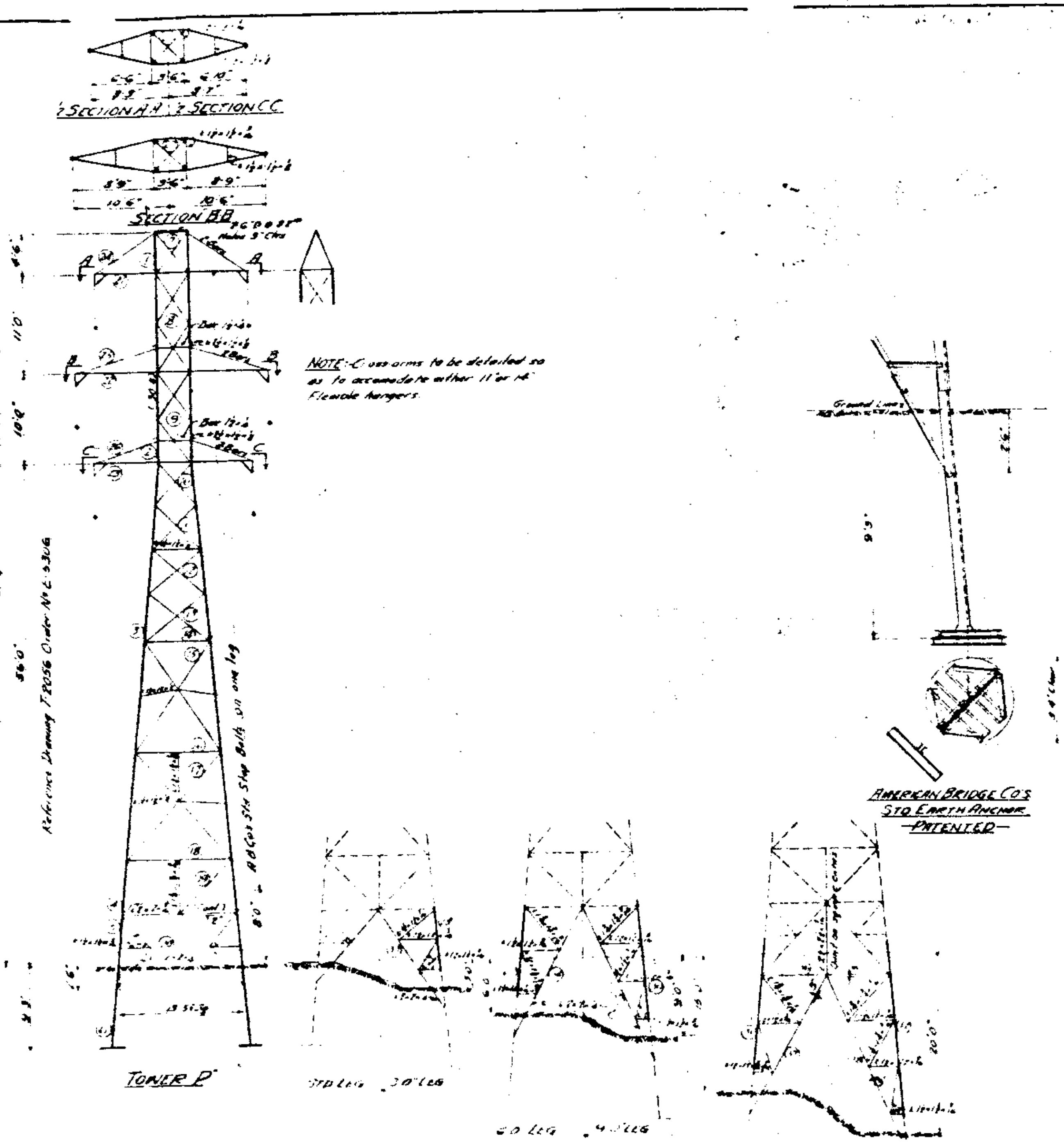
None

Suspension and Deadend Details

See attached drawing ED1-8028.

System Engineering Department
CVP/cb 9/18/84

RECORDED RIGHT OF WAY 19077 part 2



Member	Ult Stress	SECTION
1	- 6.7	L 2½ × 2½ × ¼
2	43.1	L 3½ × 3½ × ¼
3	-50.8	L 4 × 4 × 5/16
4	-64.4	L 4 × 4 × 3/8
5	64.5	do
6	+65.2 / -64.0	do
7	± 1.2	L 1¾ × 1¾ × 3/16
8	± 10.7	L 2½ × 1½ × 3/16
9	± 13.3	L 2½ × 2 × 3/16
10	± 9.5	L 1¾ × 1¾ × 3/16
11	± 7.0	do
12	± 6.2	do
13	± 4.8	do
14	- 3.5	L 2½ × 2½ × 3/16
15	+ 11.1	L 1½ × 1½ × 3/16
* 16	- 5.6	L 2½ × 2½ × 3/16
17	+ 7.9	L 1½ × 1½ × 3/16
* 18	- 7.7	L 3 × 3 × 3/16
19	+ 9.3	L 1½ × 1½ × 3/16
20	+ 7.1	
21	- 14.5	L 3 × 2½ × ¼
22	- 18.9	do
23	- 15.7	do
24	+ 1.1	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	L 1½ × 1½ × 3/16
28	- 65.8	L 4 × 4 × 3/8
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	L 1½ × 1½ × 3/16
34	+ 9.0	do
35	+ 11.4	L 1¾ × 1¾ × 3/16
* 36	- 4.0	L 3½ × 3 × ¼
37	± 4.3	do
38	± 4.8	L 4 × 3 × ¼

* Denotes setting templet member

GRILLAGE MATERIAL
2 7" I @ 9.8# × 3'-3"
2 6" CBS @ 15.5# × 3'-0"
4 L 3 × 3 × ¼ × 1'-9"

SUSPENSION TOWER "P"

The tower is designed to support 1 ⅜" H.S. Crucible Steel Ground Wire and 6 477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical 1 Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1 Grd Wire @ 460# = 460
6 Conductors @ 670# = 4020
Total = 4480#

(3) Longitudinal 1 Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)
(4) Wind on tower of 6.5# per sq ft on 1½ times projected area of one face
(5) Dead load of tower
Combine (1)+(2a)+(4), (1)+(2b), (1)+(3)+(4)+(5) and (1)+(5)

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000#-180 l/r (l/r<150)
24000#-70 l/r (l/r)>150

Shear on bolts .... 30000# per sq in
Bearing on bolts .... 60000# per sq in
MATERIAL: O.H. Steel ASTM A7 latest revision
COATING: All material galvanized
CONNECTIONS: Bolted, ⅝" bolts
SPECIFICATIONS: A.B.Co's Standard specifications for Transmission Towers

"P" TWR.

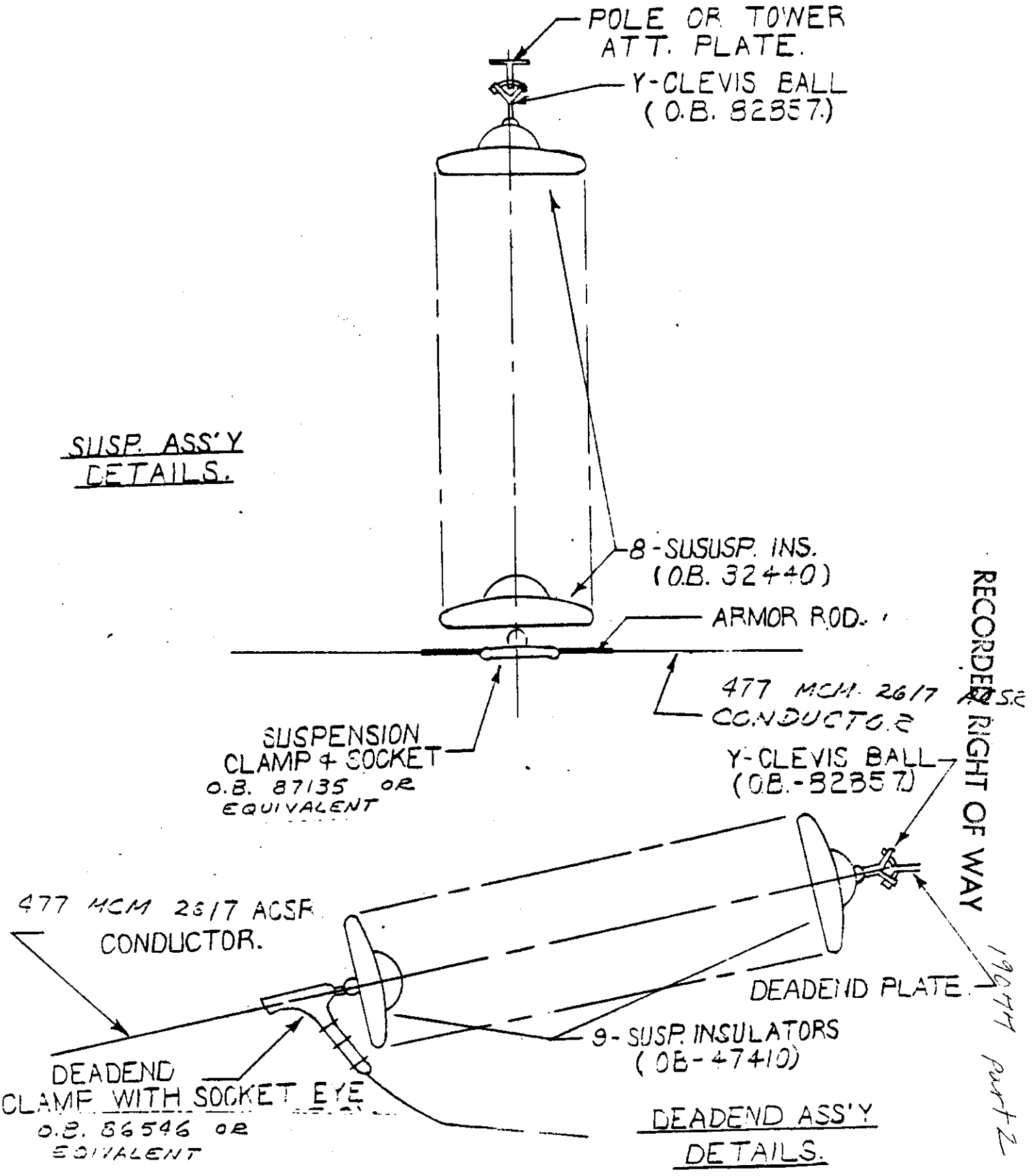
TRANSMISSION TOWERS
THE DETROIT EDISON CO.
DETROIT, MICH.
SUSPENSION TOWER "P"
LINCOLN BLOCK

AMERICAN BRIDGE CO
PITTSBURGH PA

REVISIONS

INQUIRY No
ORDER No
DRAWING T-

RECORDED RIGHT OF WAY 190117 part 2



SUSP. ASS'Y DETAILS.

DEADEND ASS'Y DETAILS.

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY RCS. DRAWN BY N.H.H.
		DATE 4-2-70. ED1-8028
		SCALE

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/
477 MCM

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION
1	500.0	7770.00	0.43560	9800.00

***FINAL BARE CONDUCTOR TENSION LIMIT OF 5000.0 LBS. IS EXCEEDED BY 444.6 L

*****CREEP IS A FACTOR***

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	SAG IS I
1	0.	8.00	7574.	8.12	7456.	
2	0.	3.52	5838.	4.11	-4999.	----MINUS SIGN
3	32.	7.43	6326.	8.06	5832.	
4	10.	3.70	5560.	4.43	4640.	
5	20.	3.89	5288.	4.77	4308.	
6	30.	4.10	5016.	5.14	3997.	
7	40.	4.33	4745.	5.53	3715.	
8	50.	4.59	4482.	5.94	3458.	
9	60.	4.86	4230.	6.36	3230.	
10	70.	5.16	3985.	6.80	3024.	
11	80.	5.47	3754.	7.24	2840.	
12	90.	5.82	3534.	7.68	2678.	
13	100.	6.17	3330.	8.12	2533.	
14	110.	6.55	3139.	8.55	2405.	
15	120.	6.93	2966.	8.98	2290.	

****

RECORDED RIGHT OF WAY 19077 part 1

DATA SHEET TO ACCOMPANY DRAWING RX-3162B

Revision of Crossing Rx-3162A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Hines-Yost 120kV steel tower line over the C. & O. R.R. AT.

Crossing No. 1: Approximately 1,650' east of Merriman Road and approximately 2,640 feet north of Plymouth Road, railroad stationing 748+00.

Crossing No. 2: Approximately 1,320' east of Merriman Road and approximately 2,640 feet north of Plymouth Road, railroad stationing 752+00. Both crossings are spur tracks in the City of Livonia, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 6-wire, 3-phase transmission circuit with one ground wire.

Towers and Crossarms

Steel towers and crossarms as per attached DWGS. T-8414 (AD), T-7815 (LX), T-7811 (P)

Conductors

Existing 6-477 MCM 26/7 ACSR conductors with one 3/8" steel ground wire.

Insulators

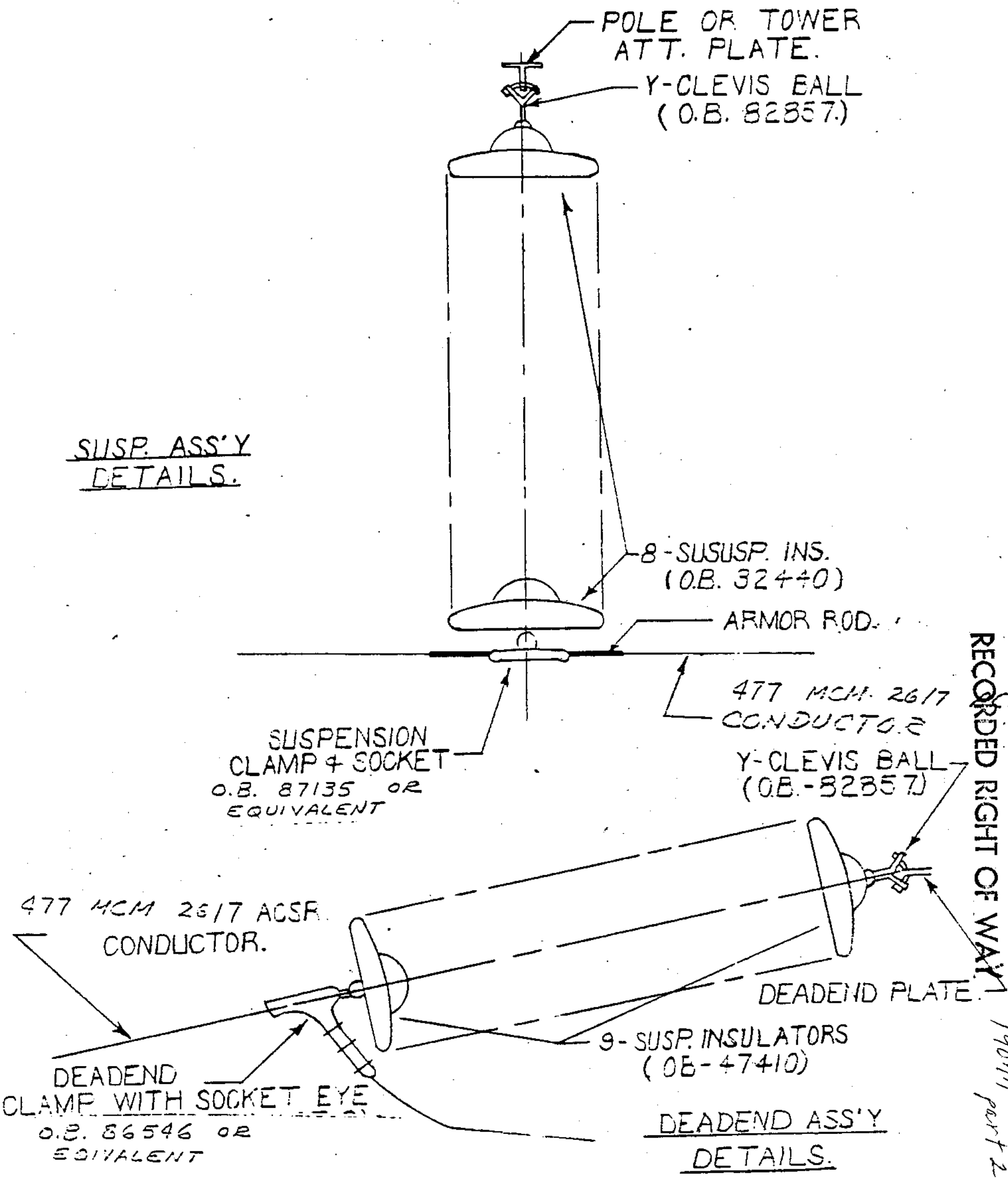
Suspension details as shown on Rx-3162B deadend detail on ED1-8028.

Guy and Guy Attachments

None

System Engineering Department

CVP/cb 9/10/84



RECORDED RIGHT OF WAY

19077 part 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. — DRAWN BY N.H.H.
		DATE 4-9-70. — EDI-8028
		SCALE

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/
477 MCM

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION
1	500.0	7770.00	0.43560	9800.00

***FINAL BARE CONDUCTOR TENSION LIMIT OF 5000.0 LBS. IS EXCEEDED BY 444.6 L

*****CREEP IS A FACTOR***

		INITIAL		FINAL		
INDEX	TEMP.	SAG	TENSION	SAG	TENSION	SAG IS I
1	0.	8.00	7574.	8.12	7456.	
2	0.	3.52	5838.	4.11	-4999.	----MINUS SIGN
3	32.	7.43	6326.	8.06	5832.	
4	10.	3.70	5560.	4.43	4640.	
5	20.	3.89	5288.	4.77	4308.	
6	30.	4.10	5016.	5.14	3997.	
7	40.	4.33	4745.	5.53	3715.	
8	50.	4.59	4482.	5.94	3458.	
9	60.	4.86	4230.	6.36	3230.	
10	70.	5.16	3985.	6.80	3024.	
11	80.	5.47	3754.	7.24	2840.	
12	90.	5.82	3534.	7.68	2678.	
13	100.	6.17	3330.	8.12	2533.	
14	110.	6.55	3139.	8.55	2405.	
15	120.	6.93	2966.	8.98	2290.	

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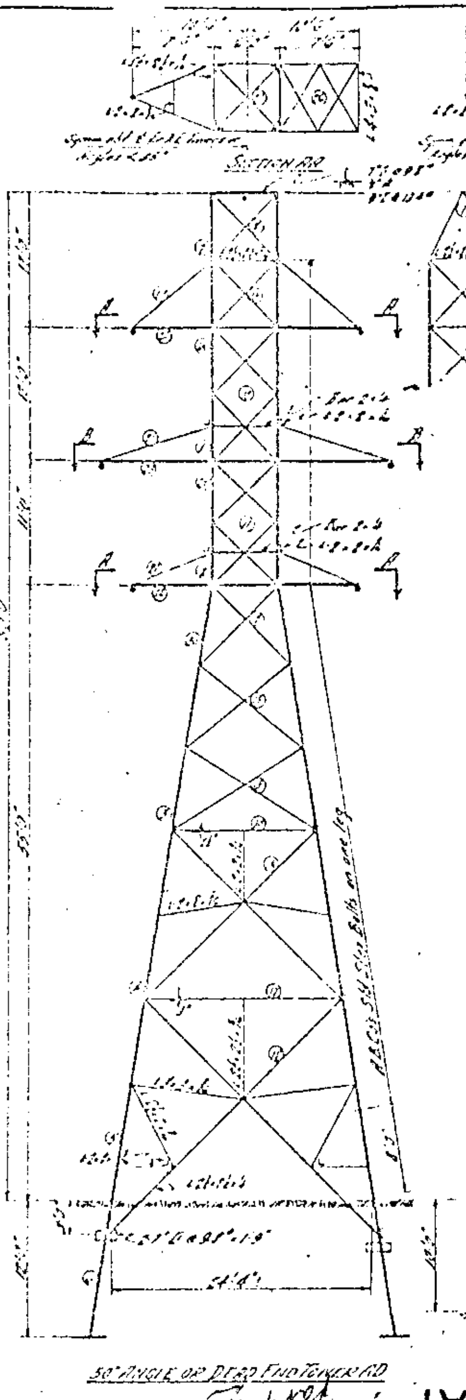
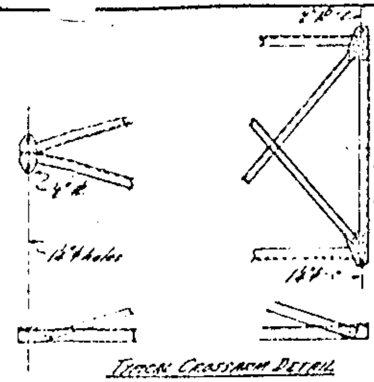
RECORDED RIGHT OF WAY 19077 page 2



50° Angle or Dead End Tower AD

Grillage Sketches:



Typical Crossarm Detail

Mark	Ult. Stress	Section
1a	-131	L 5 x 5 x 5/8
1	-[illegible]	do
2a	-114.3	L 6 x 6 x 3/8
2	-163.9	do
3a	-193.7	L 8 x 8 x 3/4
3	-[illegible]	do
4	-[illegible]	L 8 x 8 x 1/2
5	[illegible]	do
6	[illegible]	do
7	9.[illegible]	L 3 x 3 x 1/4
8	51	L 2 x 2 x 1/4
9	61	do
10	[illegible]	L 3 x 3 x 1/4
11	[illegible]	L 4 x 4 x 1/4
12	157	L 3 x 3 x 1/4
13	176	do
14	[illegible]	L 3 x 3 x 1/4
15	[illegible]	L 3 x 2 1/2 x 1/4
16	[illegible]	L 2 1/2 x 2 1/2 x 1/4
17	-145	L 4 x 3 x 1/4
18	127	L 2 x 2 x 1/4
19	41	Bar 2 x 1/4
20	91	do
21	2[illegible]	do
22	-205	L 4 x 3 x 1/4
23	-370	L 4 x 4 x 1/4
24	45	L 2 x 2 x 1/4
25	73	do
26	[illegible]	do
27	12.5	L 2 1/2 x 2 x 1/4
28	-13	L 5 x 3 1/2 x 1/4
29	-1230	L 8 x 8 x 1/2
30	-1230	do
31	7.[illegible]	L 2 1/2 x 2 1/2 x 1/4
32	9.3	L 5 x 3 1/2 x 1/4

* Denotes setting template members

50° Angle or Tangent Dead End Tower AD

Tower is designed to support 1 3/8" ø Steel Grd Wire and 6-795,000 (7/7) ACSR Conductors on a normal span of 900' with 50° angle in line or the total maximum cable loads applied to a tangent span of the same length.

The cables are to be so strung that the maximum tensions under 8" wind on 1/2" ice coated cables will not exceed 9500" in the groundwire and [illegible]" in the conductor.

LOADS

(1) Vertical 1 Grd Wire @ 1030" = 1030"
6 Conductors @ [illegible] = [illegible]
Total = 13030"

(2a) Transverse - Wind on wires
1 Grd Wire @ 450" = 450"
6 Conductors @ 635" = [illegible]
Total = 4[illegible]"

(2b) Transverse - 50° Angle in line
1 Grd Wire @ 5030" = 5030"
6 Conductors @ [illegible] = [illegible]
Total = 71510"

(3) Longitudinal 1 Grd Wire @ 9500" = 9500"
6 Conductors @ [illegible] = [illegible]
Total = 54350"

(4) Wind on tower at 6.5" per sq ft on 1 1/2 times projected area of one face.

(5) Dead Load of tower

(6) Torsional load at each of 3 Cond supports on one side of tower at [illegible] total = 50000"

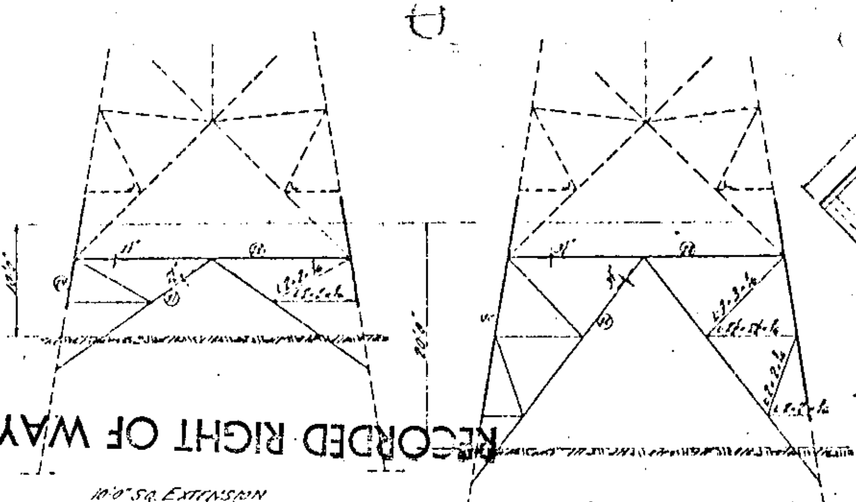
Hangers designed for double vertical load

Combine:-

Intact [illegible]
Dead End 166 ([illegible])
Torsion & broken [illegible]

NOTE:- For Unit Stresses, Material, Coating and Specifications see Drwg. T-5412

CONNECTIONS:- Bolted, 3/4" ø bolts



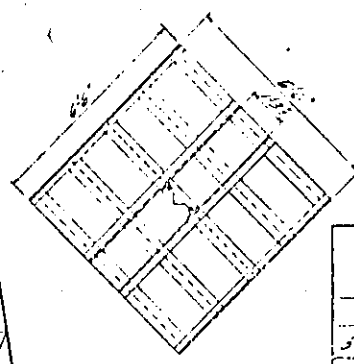
10'0" Sq. Extension

20'0" Sq. Extension

NOTE:- Extra of material [illegible] T-5412 (Tower CS)

RECORDED RIGHT OF WAY 19047 Part 2

"AD"

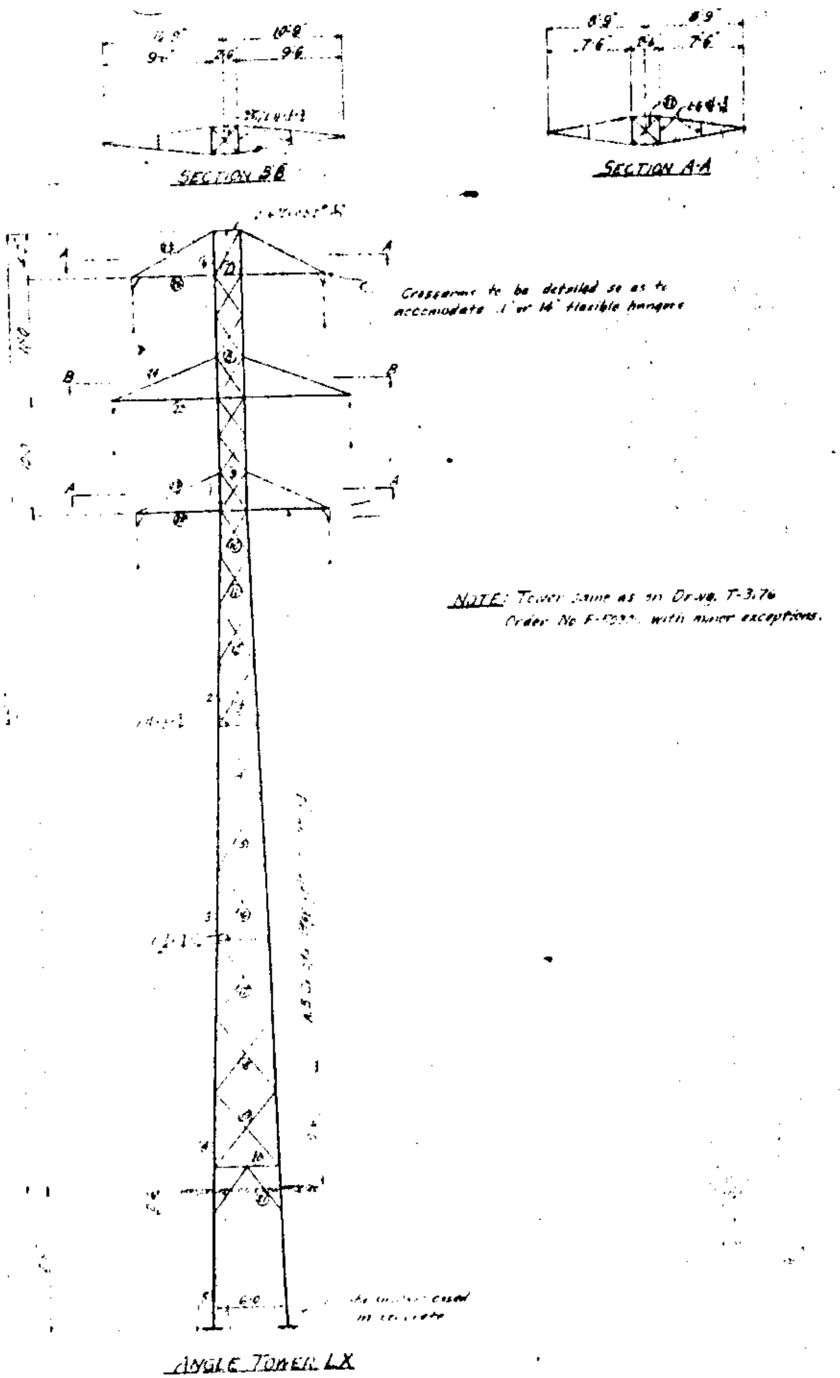


Plan of Grillage

TRANSMISSION TOWERS

The Detroit Edison Co.
Detroit, Mich.
50° Angle or Tangent D.E. Tower AD

Revisions	AMERICAN BRIDGE CO. Pittsburgh, PA.
	Inquiry No. T-5417
	Order No. O 2467
Traced	Drawing T-5418



RECORDED RIGHT OF WAY 19011 part 2

MEMBER	ULT. STRESS	SECTION
1	-47.3	L-4·4·¼
2	-83.3	L-5·5·⅜
3	-99.1	L-6·6·⅜
4	-114.4	L-6·6·7/16
5	-116.6	do
6	-8.0	L-2½·2½·3/16
7	±0.6	L-1¾·1¾·3/16
8	±7.5	L-1¾·1¾·3/16
9	±13.1	do
10	±14.0	L-1¾·1¾·¼
11	±13.6	do
12	±12.4	do
13	±11.6	do
14	±11.0	do
15	±9.1	do
16	±8.4	do
17	±8.5	do
18	±7.1	do
19	±6.2	L-2·2·3/16
20	±7.5	L-3·2½·¼
21	±6.6	L-2·2·¼
22	-17.8	L-3½·3·5/16
23	+1.1	Bar ½·¼
24	+1.4	do
25	±6.2	L-4·4·5/16
26	-9.3	L-3½·3½·5/16
27	±4.6	L-1½·1½·3/16

"LX" TWR.

ANGLE TOWER LX

The tower is designed to support 1 ½ H.S. Crucible Steel Ground Wire and 6-477000 cm A.C.S.R. Conductors on a maximum span of 340' with 5° angle in line.

The cables are to be so strung that the maximum tension under 4" wind on ½" ice covered cables will not exceed 4170# in the Ground Wire and 4800# in the Conductors.

LOADS:

1 Vertical 1 Grd Wire @ 350# = 350#
6 Conductors @ 750# = 4500# 4850#

2a. Transverse wind on cable
1 Grd Wire @ 160# = 160#
6 Conductors @ 210# = 1260# 1420#

2b. Transverse angle in line of 5°
1 Grd. Wire @ 375# = 375#
6 Conductors @ 525# = 3150# 3525#

3. Longitudinal Any one Conductor @ 4800#
(80% of 6000#)

4. Wind on tower of 6.5# per sq ft on 1½ times the projected area of one face.

5. Dead load of tower.

Combine 127=1, 254=2a, 165=2b, 1+3, 254+4, ...

UNIT STRESSES (Ultimate)

Tension on net section - 33000# per sq in.
Compression on gross section - 33000# - 130 l/r < 150
55000# - 70 l/r > 150

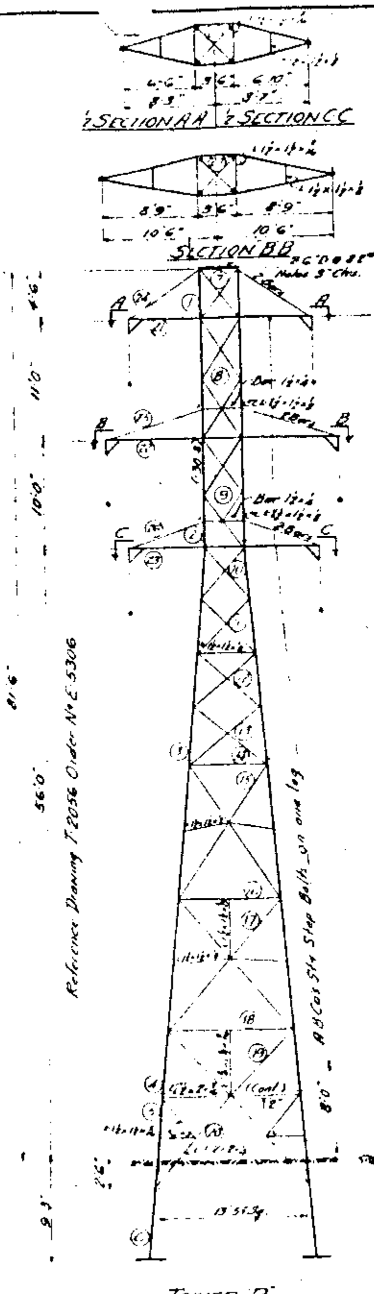
Shear on bolts - 36000# per sq in.
Bearing on bolts - 66000# per sq in.

MATERIAL: OH Steel A.S.T.M. spec. A ...
COATING: All material galvanized
CONNECTIONS: Bolted, ⅝" bolts
SPECIFICATIONS: A.B.Co's Standard Specifications for transmission towers

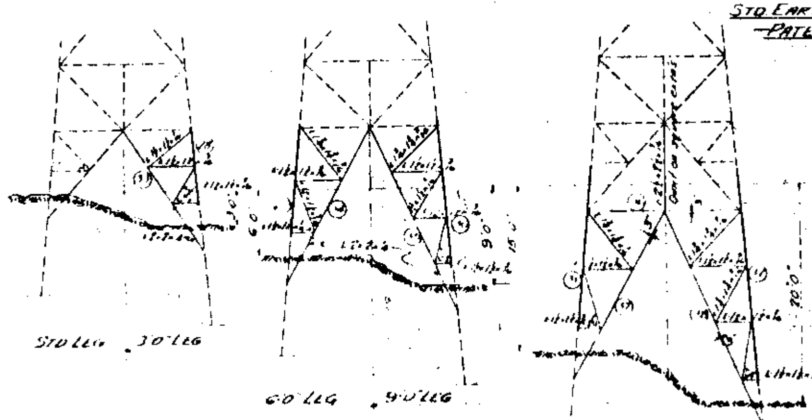
THE DETROIT EDISON COMPANY
DETROIT, MICHIGAN
ANGLE TOWER LX
LINCOLN - BLOOMFIELD LINE

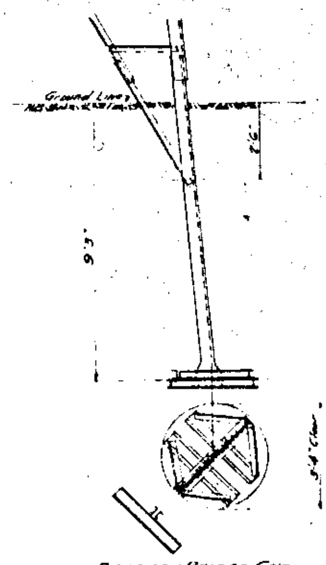
AMERICAN BRIDGE COMPANY
TOWER DEPT.
Sheet No. 1 Drawing No. T-7815
Dated May 17, 1918 Inquiry No. T-...
Contract No. ...

Revised May 27, 1918 Numbered for ... Tower designation is changed to LX



NOTE:-Cross arms to be detailed so as to accomodate either 11" or 14" Flexible hangers.





AMERICAN BRIDGE CO'S STD EARTH ANCHOR -PATENTED-

Member	Ult. Stress	SECTION
1	- 6.7	L 2½ × 2½ × ¼
2	43.1	L 3½ × 3½ × ¼
3	-50.8	L 4 × 4 × 5/16
4	64.4	L 4 × 4 × ⅜
5	64.5	do
6	64.0	do
7	+ 1.7	L 1½ × 1½ × 3/16
8	+ 10.7	L 2½ × 1½ × 3/16
9	+ 13.3	L 2½ × 2 × 3/16
10	+ 9.5	L 1¾ × 1¾ × 3/16
11	+ 7.0	do
12	+ 6.2	do
13	+ 4.8	do
14	- 3.5	L 2½ × 2½ × 3/16
15	+ 11.1	L 1½ × 1½ × 3/16
* 16	- 5.6	L 2½ × 2½ × 3/16
17	+ 7.9	L 1½ × 1½ × 3/16
* 18	- 7.7	L 3 × 3 × 3/16
19	+ 9.9	L 1½ × 1½ × 3/16
20	+ 7.1	
21	- 14.5	L 3 × 2½ × ¼
22	- 18.9	do
23	- 15.7	do
24	+ 1.1	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	+ 5.1	L 1½ × 1½ × 3/16
28	- 65.8	L 4 × 4 × ⅜
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	L 1½ × 1½ × 3/16
34	+ 9.0	do
35	+ 11.4	L 1¾ × 1¾ × 3/16
* 36	- 4.0	L 3½ × 3 × ¼
37	+ 4.3	do
38	+ 4.8	L 4 × 3 × ¼

* Denotes setting templet members

GRILLAGE MATERIAL
2 7" I @ 9.8# × 3'3"
2 6" CBS @ 15.5# × 3'0"
4 L 3 × 3 × ¼ × 1'9"

SUSPENSION TOWER "P"

The tower is designed to support 1-½" H.S. Crucible Steel Ground Wire and 6-477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical — 1-Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1-Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1-Grd Wire @ 460# = 460#
6 Conductors @ 670# = 4020
Total = 4480

(3) Longitudinal 1-Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)
(4) Wind on tower of 6.5# per sq ft on 1½ times projected area of one face
(5) Dead load of tower
Combine 1,2a,(2,5)4×2a,1,6,5×2b/10,3,2,5,4×4 and 1,2,7×5

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000#-90 l/r l/r<150
24000#-70 l/r l/r>150

Shear on bolts.......30000# per sq in.
Bearing on bolts.......60000# per sq in.

MATERIAL: O.H. Steel ASTM A7 latest revision.

COATING: All material galvanized

CONNECTIONS: Bolted, ⅝" bolts

SPECIFICATIONS: A.B.Co's Standard specifications for Transmission Towers

"P" TWR.

RECORDED RIGHT OF WAY 19077 part 2

EASM EASM

TRANSMISSION TOWERS

THE DETROIT EDISON CO
DETROIT MICH.
SUSPENSION TOWER "P"
LINCOLN BLOOMFIELD LINE

NORMAL SPAN	
VOLTS	
CIRCUITS	
CONDUCTORS	
GROUND WIRE	
REVISIONS	

AMERICAN BRIDGE CO.
PITTSBURGH, PA.

INQUIRY No.
ORDER No.
DRAWING T-7811

DATA SHEET TO ACCOMPANY DRAWING RX-3163B
Revision of Crossing RX-3163A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Hines-Yost 120 kV transmission line over the C.&.O. Railroad spurs at:

Crossing No. 1: Approximately 2,640 feet north of Plymouth Road and approximately 1,647 feet east of Farmington Road, railroad stationing 810+00.

Crossing No. 2: Approximately 2,640 feet north of Plymouth Road and approximately 2,420 feet east of Farmington Road, railroad stationing 794+40.

Located in the City of Livonia, southwest ¼ of section 27, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing T-7811 (P).

Conductors

6-conductors of 477 MCM ACSR 27/7 stranding.

Insulators

Eight (8) 5-3/4" x 10" O.B. #32440 or equivalent in suspension.

Guy and Guy Attachments

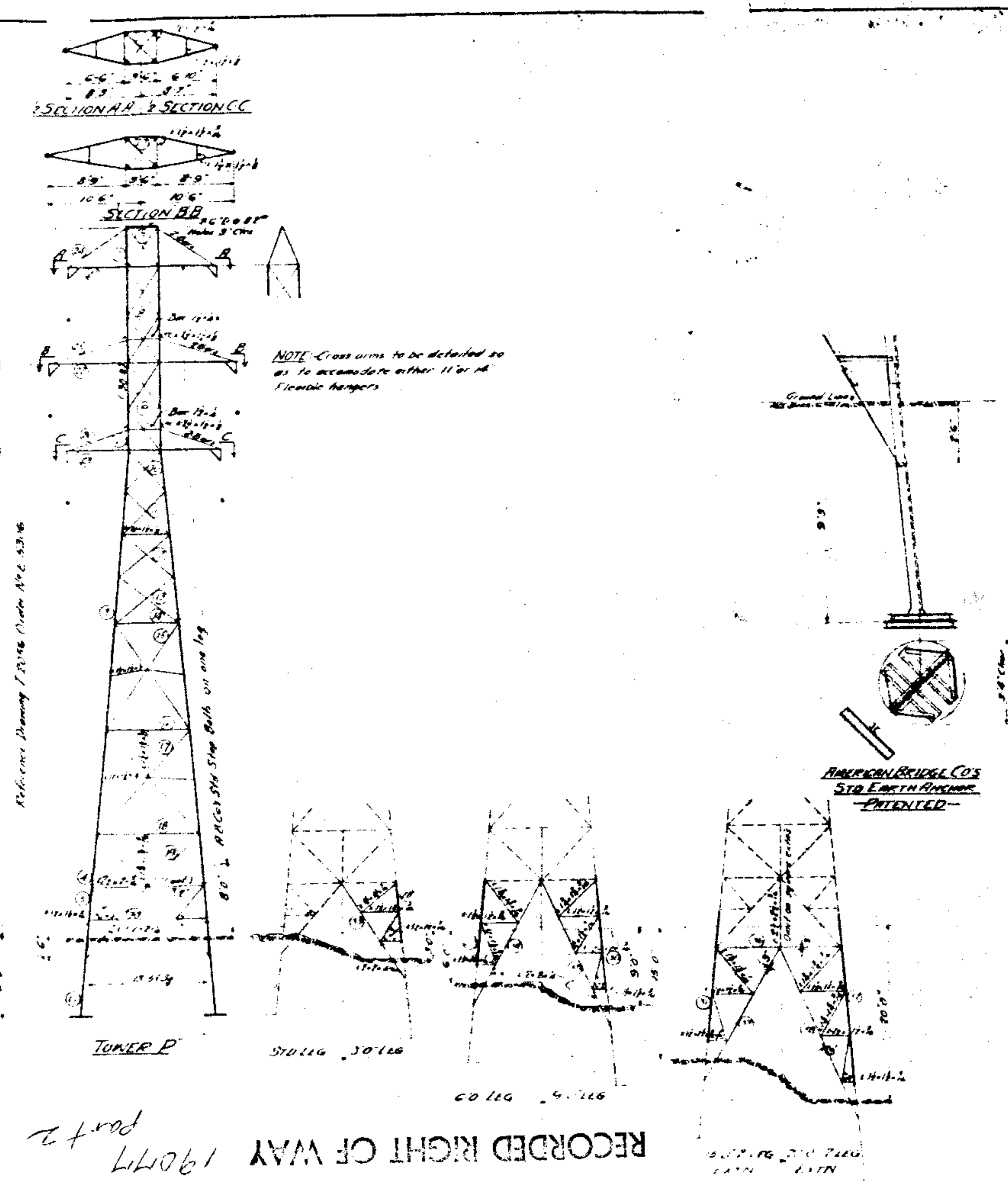
None.

Suspension and Deadend Details

See drawing RX-3163B

System Engineering Department
CVP/js 8-30-84

RECORDED RIGHT OF WAY 1/20/87 part 2



Member	Str. Stress	SECTION
1	- 6.7	L 2½ × 2½ × ¼
2	43.1	L 3½ × 3½ × ¼
3	60.8	L 4 × 4 × 5/16
4	64.4	L 4 × 4 × 5/16
5	64.5	do
6	+ 61.4 / 64.0	do
7	1.2	L 1¾ × 1¾ × 3/16
8	+ 10.7	L 2¼ × 1¾ × 3/16
9	+ 13.3	L 2½ × 2 × 3/16
10	+ 9.5	L 1¾ × 1¾ × 3/16
11	+ 7.0	do
12	+ 6.2	do
13	+ 4.8	do
14	- 3.5	L 2½ × 2½ × 3/16
15	+ 11.1	L 1¾ × 1¾ × 3/16
* 16	- 5.6	L 2½ × 2½ × 3/16
17	+ 7.9	L 1¾ × 1¾ × 3/16
* 18	- 7.7	L 3 × 3 × 3/16
19	+ 9.9	L 1¾ × 1¾ × 3/16
20	+ 7.1	
21	- 14.5	L 3 × 2½ × ¼
22	- 18.9	do
23	- 15.7	do
24	+ 1.1	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	L 1¾ × 1¾ × 3/16
28	- 65.8	L 4 × 4 × 3/8
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	L 1¾ × 1¾ × 3/16
34	+ 9.0	do
35	+ 11.4	L 1¾ × 1¾ × 3/16
* 36	- 4.0	L 3½ × 3 × ¼
37	+ 4.3	do
38	± 4.8	L 4 × 3 × ¼

* Denotes setting template member

GRILLAGE MATERIAL
2 7" I @ 9.8# × 3'-3"
2-6" CBS @ 15.5# × 3'-0"
4 L 3 × 3 × ¼ × 1'-9"

SUSPENSION TOWER "P"

The tower is designed to support 1 ½" H.S. Crucible Steel Ground Wire and 6 477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 6th Edition N.E.S.C.

LOADS

(1) Vertical — 1 Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1 Grd Wire @ 460# = 460
6 Conductors @ 670# = 4020
Total = 4480#

(3) Longitudinal 1 Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)

(4) Wind on tower of 6.5# per sq ft on 1½ times projected area of one face

(5) Dead load of tower

Combine (2a)(2b)(2b) 1&2a, 1&5 1&2b, 1&3 1&5 1&4 and (2)&5

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000# - 130 l/r (l/r < 150)
24000# - 70 l/r (l/r > 150)
Shear on bolts ...... 30000# per sq in
Bearing on bolts ...... 60000# per sq in

MATERIAL: O.H. Steel ASTM A7 latest revision.

COATING: All material galvanized

CONNECTIONS: Bolted, ⅝" bolts

SPECIFICATIONS: A.B. Co's Standard specifications for Transmission Towers

"P" TWR.

TRANSMISSION TOWERS

THE DETROIT EDISON CO.
DETROIT, MICH.
SUSPENSION TOWER "P"
LINCOLN BLOOM...

NORMAL SPAN	
VOLTS	
CIRCUITS	
CONDUCTORS	
GROUND WIRE	
REVISIONS	

AMERICAN BRIDGE CO
PITTSBURGH PA

INQUIRY No. [illegible]
ORDER No. [illegible]
DRAWING T-7[illegible]
DATE [illegible]

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/
477 MCM

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION
1	500.0	7770.00	0.43560	9800.00

***FINAL BARE CONDUCTOR TENSION LIMIT OF 5000.0 LBS. IS EXCEEDED BY 444.6 L

*****CREEP IS A FACTOR***

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	SAG IS I
1	0.	8.00	7574.	8.12	7456.	
2	0.	3.52	5838.	4.11	-4999.	----MINUS SIGN
3	32.	7.43	6326.	8.06	5832.	
4	10.	3.70	5560.	4.43	4640.	
5	20.	3.89	5288.	4.77	4308.	
6	30.	4.10	5016.	5.14	3997.	
7	40.	4.33	4745.	5.53	3715.	
8	50.	4.59	4482.	5.94	3458.	
9	60.	4.86	4230.	6.36	3230.	
10	70.	5.16	3985.	6.80	3024.	
11	80.	5.47	3754.	7.24	2840.	
12	90.	5.82	3534.	7.68	2678.	
13	100.	6.17	3330.	8.12	2533.	
14	110.	6.55	3139.	8.55	2405.	
15	120.	6.93	2966.	8.98	2290.	

****

DATA SHEET TO ACCOMPANY DRAWING RX-3164C

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Hines-Yost 120 kV steel tower line over main line tracks of the Chesapeake and Ohio Railroad at a point approximately 2,640 feet north of Plymouth Road and approximately 2,900 feet east of Levan Road at Railroad Stationing 867+60.

Crossing in the southwest ¼ of Section 28, City of Livonia, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing T-7617 (AB), T-9164 (Q).

Conductors

3-477 MCM ACSR 26/7, South side
3-954 MCM ACSR 54/7, North side

Insulators

1-3/8 steel ground wire, eight (8) 5-3/4"x10" O.B. #32440 or equivalent in suspension.

Guy and Guy Attachments

None

Suspension and Deadend Details

For 954 MCM ACSR see attached drawing ED1-7430.
For 477 MCM ACSR see attached drawing ED1-8028.

System Engineering Department
CVP/js 9-26-84

SAGS AND TENSIONS STUDY NO. 102
ACSR CONDUCTOR - 954 MCM, 54/7 11000 - H.L.T.

954 54/7 ACSR

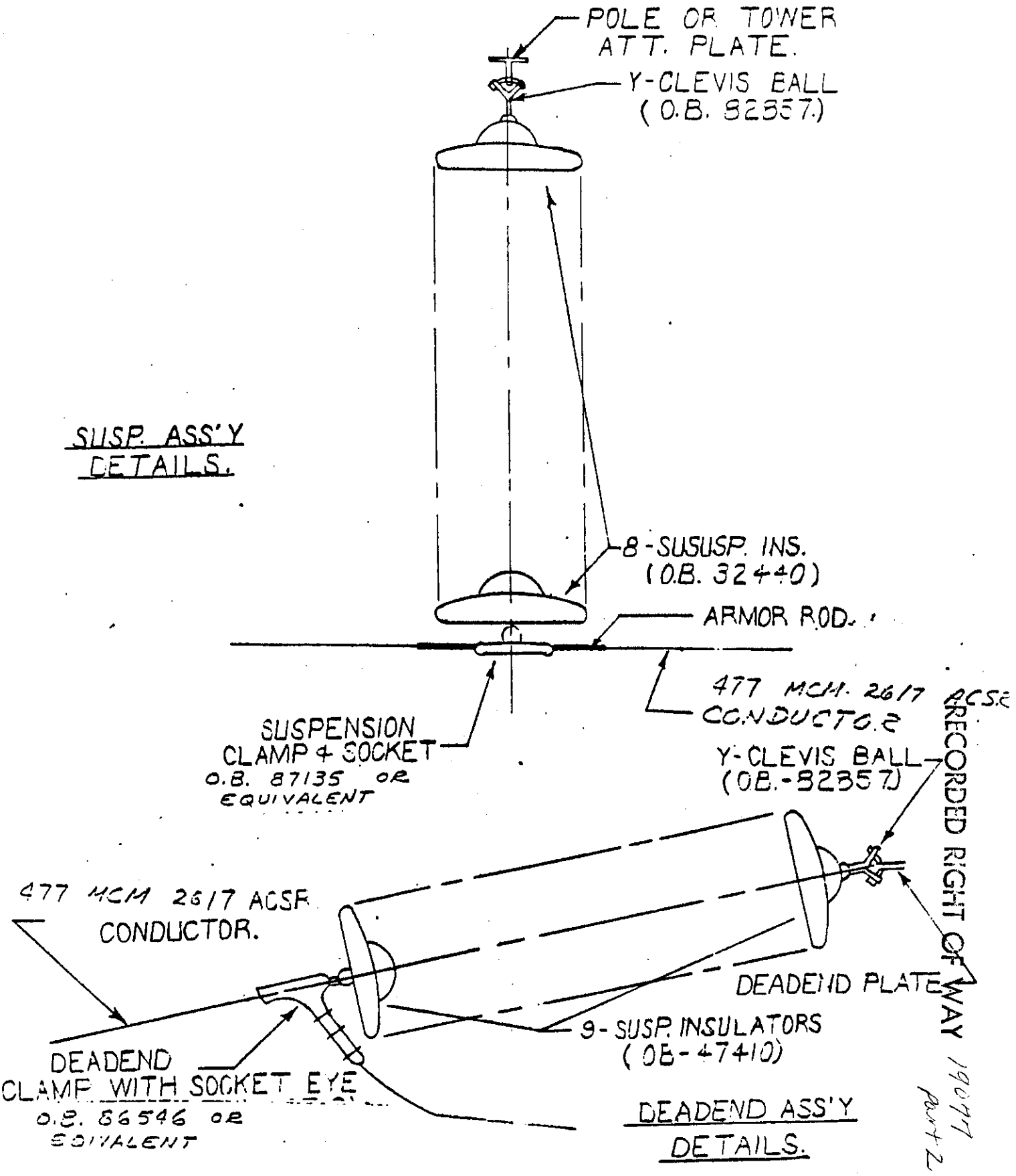
11,000 H.L.T.

		FINAL		INITIAL	
	TEMP.	SAG	TENSION	SAG	TENSION
SPAN LENGTH = 200. FEET					
CREEP IS A FACTOR					
1	0.	1.36	10017.	1.24	-11000.
2	0.	1.17	9767.	1.06	10855.
3	-20.	0.57	10932.	0.53	11613.
4	0.	0.67	9272.	0.59	10576.
5	32.	0.92	6722.	0.70	8848.
6	60.	1.30	4750.	0.85	7286.
7	90.	1.91	3220.	1.10	5607.
8	120.	2.52	2446.	1.51	4081.
SPAN LENGTH = 300. FEET					
CREEP IS A FACTOR					
1	0.	3.01	10141.	2.78	-11000.
2	0.	2.66	9668.	2.41	10699.
3	-20.	1.37	10150.	1.25	11089.
4	0.	1.61	8592.	1.38	10069.
5	32.	2.18	6347.	1.65	8401.
6	60.	2.89	4787.	2.00	6942.
7	90.	3.80	3647.	2.52	5490.
8	120.	4.72	2935.	3.23	4286.
SPAN LENGTH = 400. FEET					
CREEP IS A FACTOR					
1	0.	5.29	10263.	4.93	-11000.
2	0.	4.78	9572.	4.35	10517.
3	-20.	2.68	9188.	2.37	10381.
4	0.	3.14	7831.	2.62	9394.
5	32.	4.11	5996.	3.14	7844.
6	60.	5.11	4821.	3.75	6570.
7	90.	6.24	3949.	4.58	5381.
8	120.	7.33	3360.	5.54	4445.
SPAN LENGTH = 500. FEET					
CREEP IS A FACTOR					
1	0.	8.17	10378.	7.71	-11000.
2	0.	7.53	9501.	6.92	10339.
3	-20.	4.67	8229.	4.03	9551.
4	0.	5.40	7130.	4.45	8647.
5	32.	6.71	5735.	5.28	7287.
6	60.	7.93	4853.	6.18	6228.
7	90.	9.23	4173.	7.27	5293.
8	120.	10.47	3680.	8.43	4565.
SPAN LENGTH = 600. FEET					
CREEP IS A FACTOR					
1	0.	11.67	10471.	11.11	-11000.
2	0.	10.91	9444.	10.13	10166.
3	-20.	7.48	7404.	6.36	8704.
4	0.	8.42	6577.	7.00	7912.
5	32.	10.00	5543.	8.17	6784.
6	60.	11.37	4876.	9.31	5952.
7	90.	12.79	4337.	10.60	5227.
8	120.	14.15	3923.	11.92	4653.

SPAN LENGTH = 700. FEET
CREEP IS A FACTOR

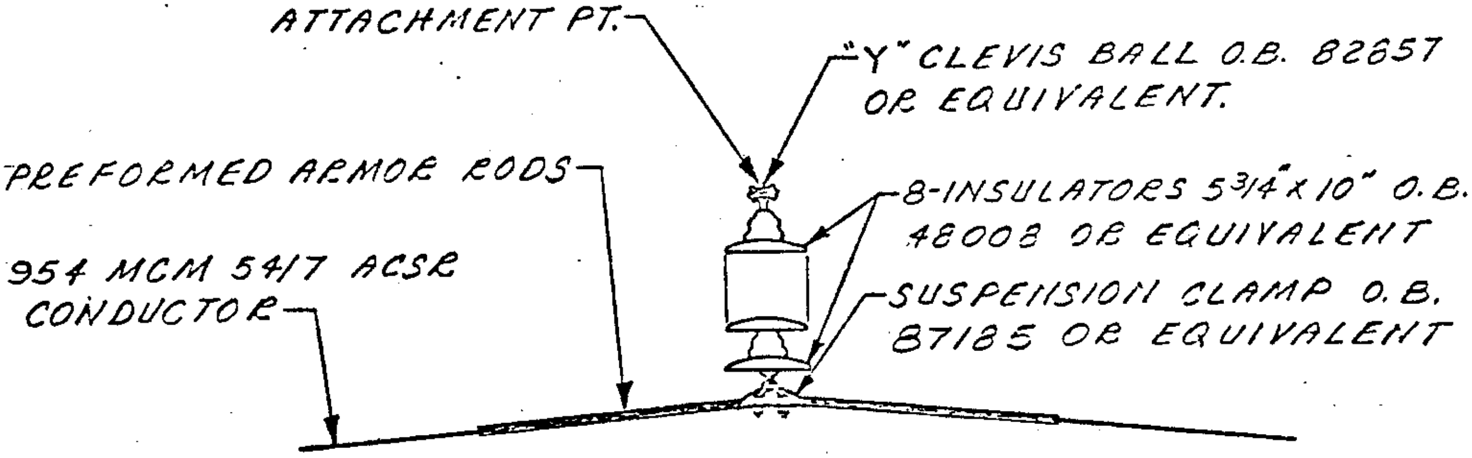
RECORDED RIGHT OF WAY. 1977 Part 2

J 2398

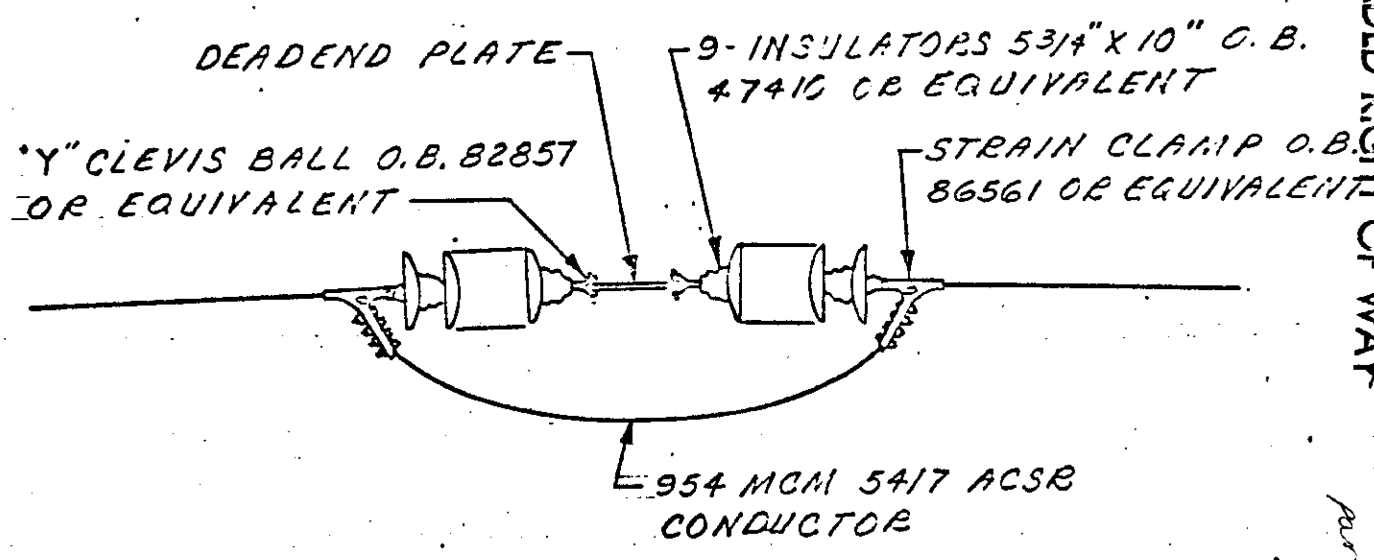


120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY RCS. DRAWN BY N.H.H.
		DATE 4-2-70. SCALE —
		ED1-8028

SUSPENSION ASS'Y DETAILS



DEADEND ASS'Y DETAILS

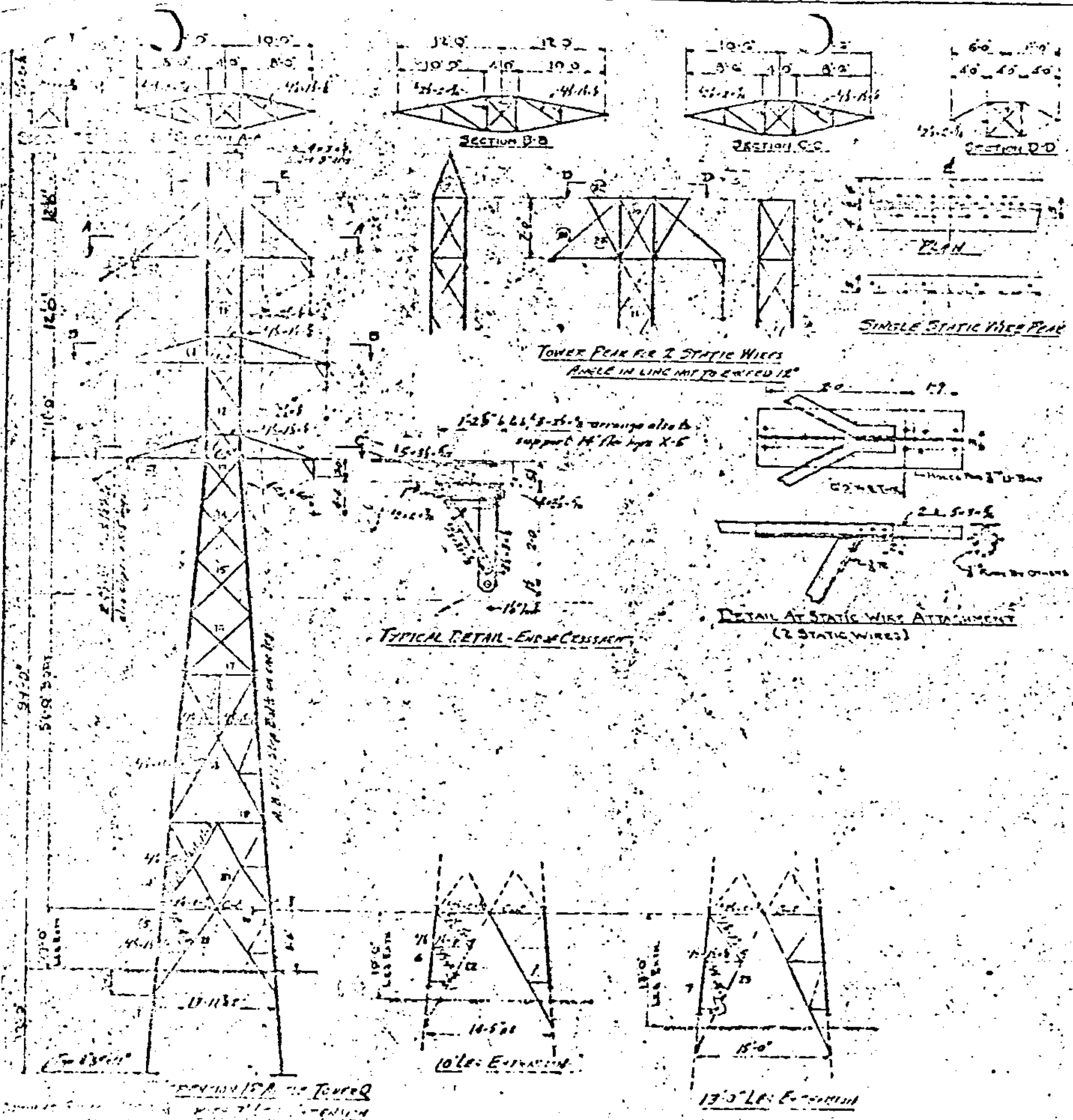


RECORDED RIGHT OF WAY

19047 part 2

120 KV SUSPENSION & DEADEND ASS'Y DETAILS	APPROVED JSW	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY J. WRIGHT / DRAWN BY JEW
		DATE 1-25-71 / SCALE — / DRAWING NUMBER EDI-7430

DE FORM SE 11 PTG. 4-69



RECORDED RIGHT OF WAY .19047 part 2

No.	ULT Stress	Section
1	-49.1	∠4 · 4 · ½
2	-710	∠5 · 3 · 7/16
3	-1104	∠6 · 6 · 7/16
4	-1275	do
5	-122[illegible]	do
6	-1767	do
7	-1763	do
8	-1317	do
9	-6.6	∠2½ · 2½ · ¼
10	-7.7	∠1½ · 1½ · ¼
11	-16.5	∠2 · 2 · ¼
12	-22.1	∠2½ · 2½ · ¼
13	-12.4	∠2 · 2 · 3/16
14	-19.6	do
15	-27.9	do
16	-26.4	do
17	-47	do
18	-15.5	∠1½ · 1½ · 3/16
19	-7.6	∠1½ · 2 · ¼
20	-15.1	∠1½ · 1½ · ¼
21	-12.3	∠1½ · 1½ · ¼
22	-12.6	do
23	-14.3	do
24	-4.0	∠ 2·¼
*25	-4.0	∠ 2½·¼
*26	-4.8	[illegible]
27	-12.5	∠5 · 3½ · ⅜
28	-15.1	do
29	-16.6	∠1½ · 1½ · 3/16
30	-15.6	do
31	-11.3	do
32	-10.5	∠2 · 2 · ¼
*33	-13	∠3 · 3 · 3/16
34	-11.5	∠1½ · 1½ · ¼

*make 2-bolt connection

Suspension 15° Angle Tower "Q"

The Tower ... 1-⅞" ... Galv. Steel Ground Wire and 6 - 795000 CM (?) A.C.S.R. Conductors on a Span of 650' with an Angle in Line of 15° Acc... Maximum Tension 5500# in the Groundwire and 7000# in the Conductors.

The Loading is 4# Wind on Ice Coated Wires.

Loads:

(1) Vertical
1 - Groundwire @ 650# = 650#
6 - Conductors @ 1500# = 9000# ... 9650#

(2a) Transverse - Due to Wind on Wires
1 - Groundwire @ 315# = 315#
6 - Conductors @ 447 = 2682# ... [illegible]#

(2b) Transverse - Due to 15° Angle in Line
1 - Groundwire @ 1100# = 1100#
6 - Conductors @ 2025# = [illegible] ... [illegible]#

(3) Longitudinal - Due to Groundwire Broken at 650# or Any Conductor Broken at 7200# (50% of 7000)

(4) Wind on Tower at 5.5# per Sq Ft on 1½ Times the Projected Area of One Face of Tower.

(5) Dead Load of Tower.

Combined:

Intact 1(1+1), 2(1+2a), 1(2+2a) 2, 2b+4, 1, 2+5
Broken 1(2+1), 2(1+2a)+1b, 1(2+3)(1+2a), [illegible] 2, 2b+4, 1, 2+5

Note: Crossarms Designed for Non-[illegible] and Hangers for Double Vertical L[illegible].

Ultimate Unit Stresses:

Tension on Net Section [illegible]
Comp on Gross Section [illegible]
[illegible]
Shear on Bolts 30000# per Sq In
Bearing on Bolts 60000# per Sq In

Material: OH Steel ASTM Spec at Latest Revision

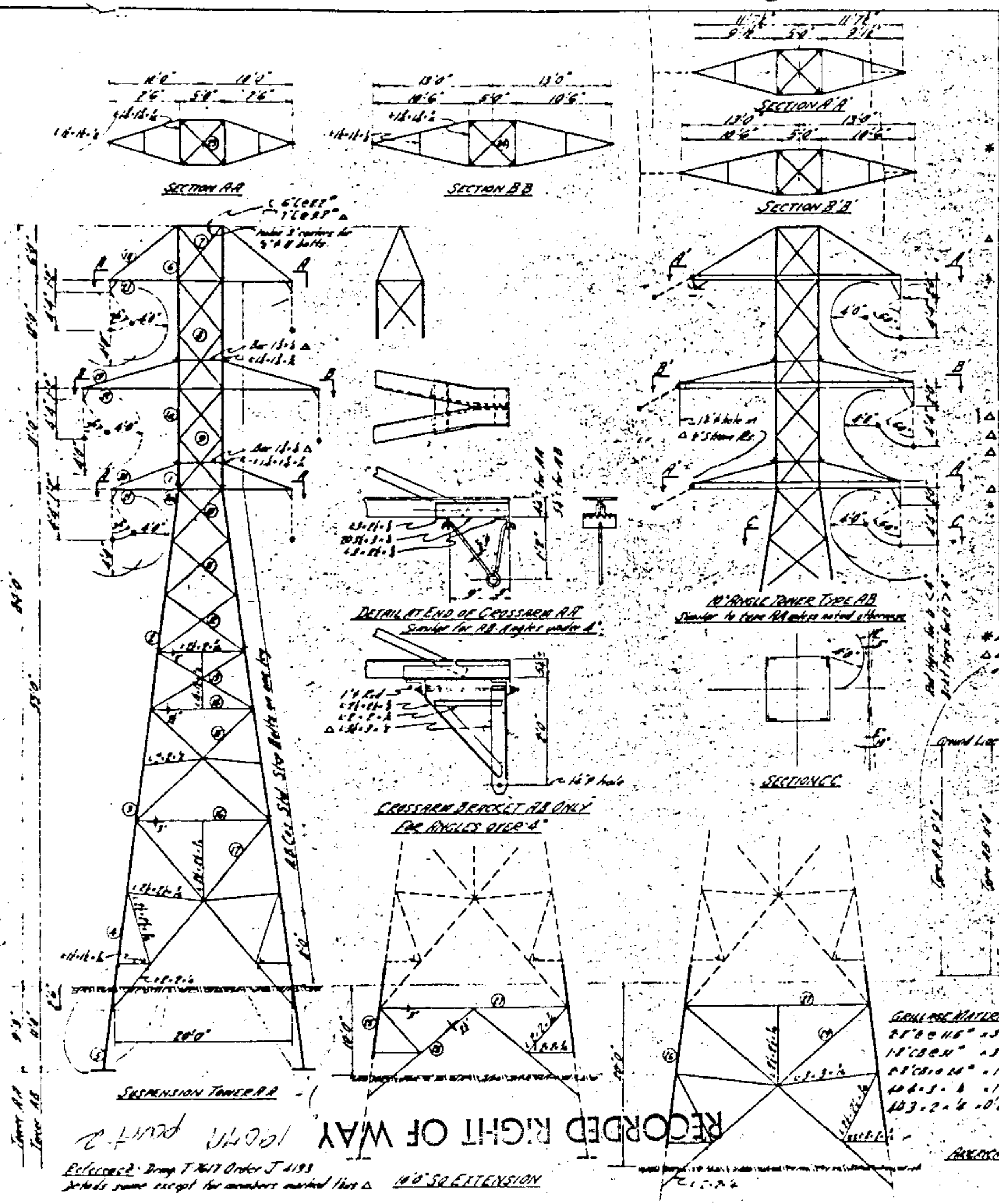
Coating: All Material Galvanized

Connections: Bolted, ⅝" Bolts

Specifications: A. [illegible] Std. Spec. for Transmission Towers

Q

The Detroit Edison Company
Detroit [illegible]
Suspension 15° Angle Tower "Q"
AMERICAN BRIDGE
Tower Details
Drawn ... Checked ... Date Mar ... 1954
Drawing ... T 3124 ... T 3220 ... Contract [illegible]



Member	Tower AA Ult Stress	Tower AA Section	Tower AB (10°) Ult Stress	Tower AB (10°) Section
1a	-33.4	L 4 × 4 × 1/4	-52.5	L 4 × 4 × 5/16
1	-44.8	do	-70.4	do
2a	-51.8	L 5 × 5 × 5/16	-82.7	L 5 × 5 × 3/8
2	-51.9	do	-87.3	do
* 3	-58.4	do	-97.3	L 6 × 6 × 3/8
4	-59.4	do	-98.8	do
5	-66.1	do	-96.8	do
6	-9.4	L 3 × 3 × 1/4	-12.2	L 3 × 3 × 1/4
7	±1.8	L 1¾ × 1¾ × 1/4	±3.0	L 1¾ × 1¾ × 1/4
Δ 8	±15.3	L 2 × 2 × 1/4	±17.1	L 2 × 2 × 1/4
9	±18.1	L 2½ × 2 × 1/4	±18.4	L 2½ × 2 × 1/4
10	±18.6	L 2½ × 2 × 1/4	±14.1	do
11	±9.4	L 2 × 2 × 1/4	±10.3	L 2 × 2 × 1/4
12	±7.2	do	±7.7	do
13	±5.7	L 2½ × 2 × 1/4	±6.3	L 2½ × 2 × 1/4
14	-4.3	L 3 × 2½ × 1/4	-4.7	L 3 × 2½ × 1/4
15	+14.8	L 1¾ × 1¾ × 1/4	+12.0	L 1¾ × 1¾ × 1/4
16	-6.8	L 3½ × 3 × 1/4	-7.6	L 3½ × 3 × 1/4
17	+9.1	L 1¾ × 1¾ × 1/4	+10.2	L 1¾ × 1¾ × 1/4
Δ 18	+8.1	2 Bars 1¾ × 1/4	+8.1	2 Bars 1¾ × 1/4
Δ 19	+9.1	Bar 1¾ × 1/4	+9.1	Bar 1¾ × 1/4
Δ 20	+7.4	do	+7.4	do
21	-35.9	L 4 × 3 × 1/4	-31.9	L 5 × 3½ × 5/16
Δ 22	-34.9	L 4 × 4 × 1/4	-36.6	do
23	±4.8	L 1¾ × 1¾ × 1/4	±6.4	L 1¾ × 1¾ × 1/4
24	±7.8	do	±7.8	do
25	-55.8	L 5 × 5 × 5/16	-85.4	L 6 × 6 × 3/8
26	-57.2	do	-99.4	do
27	-4.8	L 4 × 3 × 1/4	-5.4	L 4 × 3 × 1/4
28	±2.3	L 3½ × 2½ × 1/4	±3.6	L 3½ × 2½ × 1/4
29	+5.8	L 1¾ × 1¾ × 1/4	+6.6	L 1¾ × 1¾ × 1/4

* Denotes setting templet member
Δ Denotes revision in section and connection, other member same as Drwg T 7617

SUSPENSION TYPE AA & 10° ANGLE TYPE AB

The towers are designed to support 1 [illegible] of 3/8" EHS Steel and 6 Conductors of 195000 (3/4) ACSR on a span of 700' [illegible] for Tower AA and with 10° angle in line for AB.

The cables are to be so strung that the maximum tension under 4" wind on 1/2" ice coated cables will not exceed 9600# in the grd wire and 12450# in the conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical: 1 Grd Wire @ 1030# = 1030#; 6 Conductors @ 2000# = 12000# [illegible]

(2a) Transverse – Wind on wires: 1 Grd Wire @ 450# = 450#; 6 Conductors @ 635# = 3810# [illegible]

(2b) Transverse – 10° Angle for Tower AB: 1 Grd Wire @ 1660# = 1660#; 6 Conductors @ 2150# = [illegible]

(3) Longitudinal – One ground wire broken [illegible]# or any one conductor broken at 12450#

(4) Wind on tower at 6.5# per sq. ft. on 1½ times projected area of one face of tower.

(5) Dead load of tower

Combine:

Tower AA
Intact – 1,2,3,4, 2,3,4 [illegible], 127×5
1 Broken – [illegible], 127×5

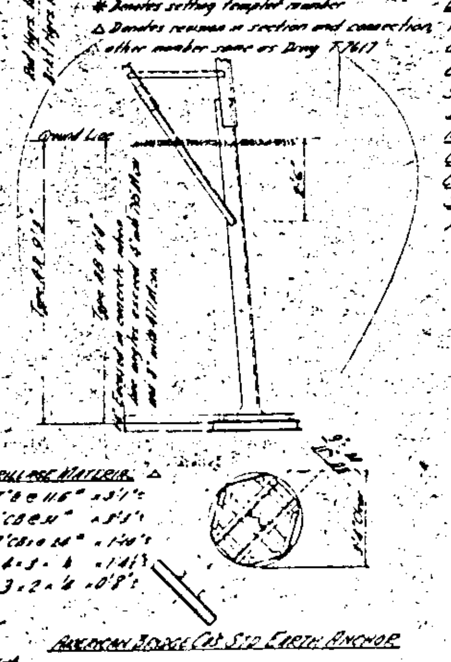
Tower AB
Intact – [illegible], 127×5
1 Broken – [illegible], 254×4, 127×5

NOTE: Crossarms designed for 12450# and hangers for double vertical load.

ULTIMATE UNIT STRESSES
Tension on net section 33000# per sq. in.
Comp. on gross section 33000# [illegible] l/r < 150
Comp. on gross section [illegible] l/r > 150
Shear on bolts .... 30000# per sq. in.
Bearing on bolts .... 60000# per sq. in.

MATERIAL: O.H. Steel A.S.T.M. A7 latest revision
COATING: All material galvanized
CONNECTIONS: Bolted, 5/8" bolts
SPECIFICATIONS: A.B. Co's Standard for Transmission Towers

3:1? 700' span



TRANSMISSION TOWERS

THE DETROIT EDISON Co.
DETROIT, MICH.
TYPE AA AND AB TOWERS

AMERICAN BRIDGE CO.
PITTSBURGH, PA.

Inquiry No. F-5447
Order No. Q 9467
Drawing T-9312

REVISIONS

DATA SHEET TO ACCOMPANY DRAWING RX-3165C
Revision of Crossing Rx-3165B

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Hines-Yost 120 kV Transmission lines over the C.&.O. Railroad approximately 2,640 feet north of Plymouth Road and approximately 400 feet east of Levan Road. Railroad Stationing 893+00.

Crossing in the northwest ¼ of Section 29, City of Livonia, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one ground wire.

Towers and Crossarms

See attached drawing T-2056(A).

Conductors - North side - 3-477 MCM ACSR 26/7 conductors
South side - 3-954 MCM ACSR 54/7 conductors
Ground Wire - 1-3/8" steel

Insulators

Eight (8) 5-3/4" x 10" O.B. #32440 or equivalent in suspension.

Guy and Guy Attachments

None

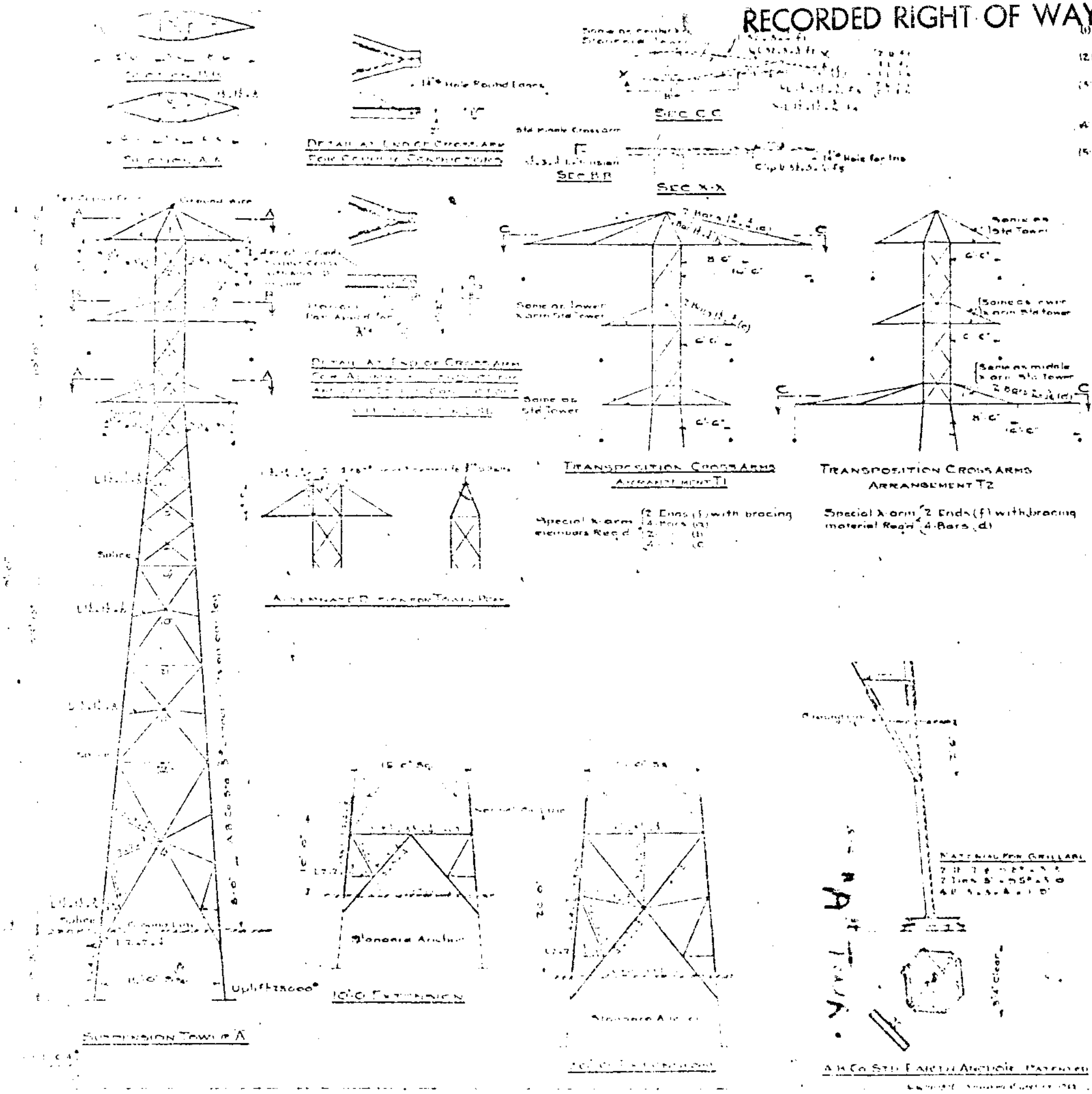
Suspension and Deadend Details

Shown on drawing RX-3165C

System Engineering Department
CVP/mak 8-27-84

RECORDED RIGHT OF WAY

19077 part 2



Loads

(1) A vertical load at each cable support of 1300# total ...
(2) A horizontal load transverse to line of load at each cable support total 7000#
(3) A horizontal load in the direction of the line of ...# at any one conductor support
(4) Wind on tower of 50# per lin foot of height of tower
(5) Dead load of tower

Unit Stresses

Tension on net section 20000# per □"
Compression on area ... 7000 ...
Shear on bolts 13500# per □"
Bearing on bolts 27000# "

Material O H Steel for Bdgs. A S T M Std Specification

Coating Material including bolts to be galvanized

Note The above loads are based on ... Hard drawn Copper Cable 550' Span 266,800 C M Aluminum Steel Co ... 680 Span ... " " " 1050' "

Member		Stress	Material
Legs	5	[illegible]	L 3½ × 3½ × [illegible]
	9	[illegible]	L 4 × 4 × [illegible]
	11	[illegible]	L 4 × 4 × [illegible]
	12	[illegible]	L do
Bracing	1	[illegible]	L 2 × 2 × [illegible]
	2	[illegible]	L 1½ × 1½ × [illegible]
	3	[illegible]	do
	4	[illegible]	L 1¾ × 1¾ × [illegible]
	5	[illegible]	do
	6	[illegible]	do
	7	[illegible]	do
	8	[illegible]	do
	9	[illegible]	do
	10	[illegible]	L 1½ × 1½ × [illegible]
	11	[illegible]	do
	12	[illegible]	do
Cross Arms	13	[illegible]	Bar 1½ × [illegible]
	14	[illegible]	L 3 × 2½ × [illegible]
	15	[illegible]	2 Bars 1½ × [illegible]
	16	[illegible]	L 3 × 2½ × [illegible]
	17	[illegible]	2 Bars 1½ × [illegible]
	18	[illegible]	L 3 × 2½ × [illegible]
	19	[illegible]	Bar 1½ × [illegible]
	20	[illegible]	[illegible]
	21	[illegible]	[illegible]
	22	[illegible]	L 3 × 3 × [illegible]

TRANSMISSION TOWERS

DETROIT EDISON CO.

SUSPENSION TOWER A

AMERICAN BRIDGE CO.

... BURG, PA

... P 5124 A

... E 5306

... 7-2056

SAGS AND TENSIONS STUDY NO. 102
ACSR CONDUCTOR - 954 MCM, 54/7 11000 - H.L.T.

954 54/7 ACSR

11,000 H.L.T.

	TEMP.	FINAL SAG	FINAL TENSION	INITIAL SAG	INITIAL TENSION
SPAN LENGTH = 200. FEET					
CREEP IS A FACTOR					
1	0.	1.36	10017.	1.24	-11000.
2	0.	1.17	9767.	1.06	10855.
3	-20.	0.57	10932.	0.53	11613.
4	0.	0.67	9272.	0.59	10576.
5	32.	0.92	6722.	0.70	8848.
6	60.	1.30	4750.	0.85	7286.
7	90.	1.91	3220.	1.10	5607.
8	120.	2.52	2446.	1.51	4081.
SPAN LENGTH = 300. FEET					
CREEP IS A FACTOR					
1	0.	3.01	10141.	2.78	-11000.
2	0.	2.66	9668.	2.41	10699.
3	-20.	1.37	10150.	1.25	11089.
4	0.	1.61	8592.	1.38	10069.
5	32.	2.18	6347.	1.65	8401.
6	60.	2.89	4787.	2.00	6942.
7	90.	3.80	3647.	2.52	5490.
8	120.	4.72	2935.	3.23	4286.
SPAN LENGTH = 400. FEET					
CREEP IS A FACTOR					
1	0.	5.29	10263.	4.93	-11000.
2	0.	4.78	9572.	4.35	10517.
3	-20.	2.68	9188.	2.37	10381.
4	0.	3.14	7831.	2.62	9394.
5	32.	4.11	5996.	3.14	7844.
6	60.	5.11	4821.	3.75	6570.
7	90.	6.24	3949.	4.58	5381.
8	120.	7.33	3360.	5.54	4445.
SPAN LENGTH = 500. FEET					
CREEP IS A FACTOR					
1	0.	8.17	10378.	7.71	-11000.
2	0.	7.53	9501.	6.92	10339.
3	-20.	4.67	8229.	4.03	9551.
4	0.	5.40	7130.	4.45	8647.
5	32.	6.71	5735.	5.28	7287.
6	60.	7.93	4853.	6.18	6228.
7	90.	9.23	4173.	7.27	5293.
8	120.	10.47	3680.	8.43	4565.
SPAN LENGTH = 600. FEET					
CREEP IS A FACTOR					
1	0.	11.67	10471.	11.11	-11000.
2	0.	10.91	9444.	10.13	10166.
3	-20.	7.48	7404.	6.36	8704.
4	0.	8.42	6577.	7.00	7912.
5	32.	10.00	5543.	8.17	6784.
6	60.	11.37	4876.	9.31	5952.
7	90.	12.79	4337.	10.60	5227.
8	120.	14.15	3923.	11.92	4653.
SPAN LENGTH = 700. FEET					

DATA SHEET TO ACCOMPANY DRAWING RX-4308A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Warren-Evergreen #1 120 KV transmission line over the C. & O. railroad at approximately 900 feet north of Warren Avenue, and approximately 500 feet east of Barrie Street in the city of Dearborn, 1000 feet north of mile post 9.6. Wayne County, Michigan T.2S.-R.11E.

Circuits

One 120,000 volt, 60 cycle, 6 wire, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing ED1-9067.

Conductors

Six-477 MCM 26/7 ACSR, with one 3/8" steel groundwire.

Insulators

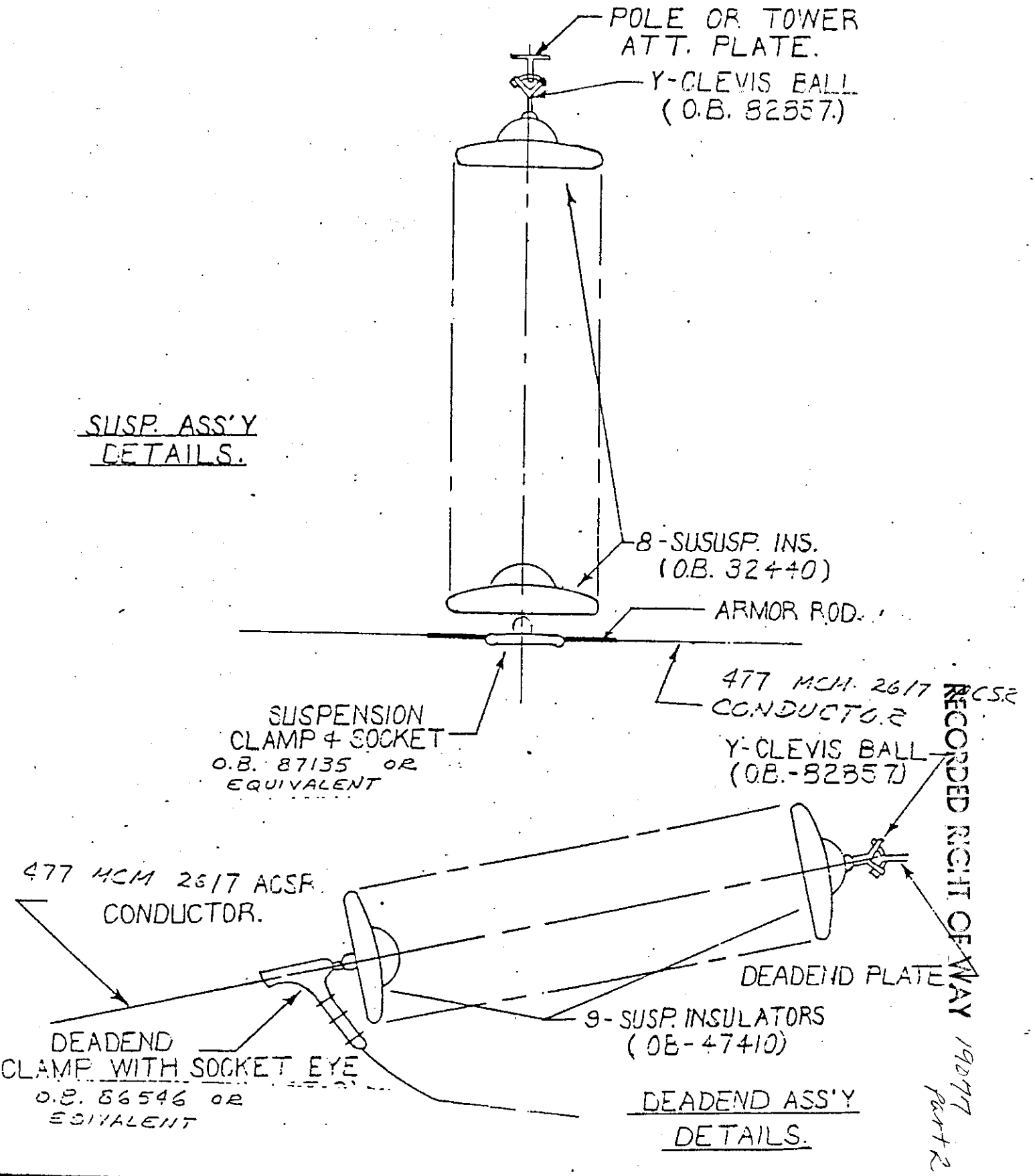
120 KV suspension assembly: Eight (O.B. #32440)

Guy and Guy Attachments

None

RECORDED RIGHT OF WAY 190771 Pg. 1 of 2

System Engineering Department
CVP/cb 10-17-84



120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS

APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT	
	LAYOUT BY R.G.S.	DRAWN BY N.H.H.
	DATE 4-9-70.	EDI-8028
	SCALE	

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 (

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL MAX TE
1	500.0	6000.00	0.43560	98(

*****CREEP IS /

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	10.10	-6000.	10.10	5998.	----M
2	0.	5.88	3498.	6.65	3092.	
3	32.	9.85	4775.	10.27	4582.	
4	10.	6.22	3303.	7.08	2903.	
5	20.	6.59	3120.	7.52	2733.	
6	30.	6.97	2951.	7.96	2583.	
7	40.	7.35	2797.	8.40	2448.	
8	50.	7.74	2657.	8.83	2329.	
9	60.	8.13	2528.	9.26	2222.	
10	70.	8.53	2412.	9.68	2126.	
11	80.	8.92	2306.	10.09	2040.	
12	90.	9.31	2209.	10.49	1962.	
13	100.	9.70	2122.	10.88	1892.	
14	110.	10.08	2041.	11.27	1827.	
15	120.	10.46	1968.	11.64	1768.	

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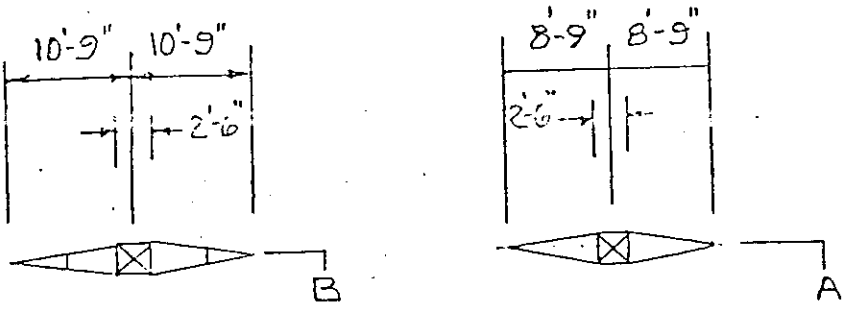
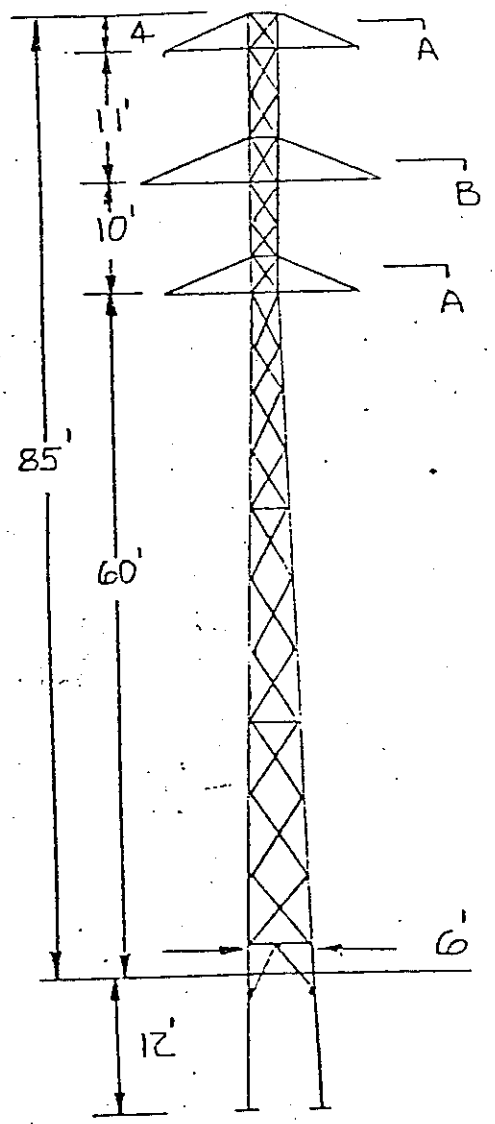
RECORDED RIGHT OF WAY / Book part 2





RECORDED RIGHT OF WAY 1901 Part 2

OLD DRAWING T-7815

ANGLE TOWER "LX"

APPROVED	THE DETROIT EDISON COMPANY SYSTEM ENGINEERING DEPARTMENT
LAYOUT BY C. VAN PARIS	DRAWN BY
DATE 1-13-78	DRAWING NUMBER ED 1-9067
SCALE NONE	

DE FORM SE 11 6-75

DATA SHEET TO ACCOMPANY DRAWING RX-4309A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Warren-Evergreen #1 120 KV transmission line over the C. & O. Railroad at approximately 10 feet south of ℄ of Diversey road and approximately 500 feet west of Sussex Road 960 feet south of mile post D-10. In the city of Dearborn, Wayne County, T2S-R11E, S.W. 1/4 of section 16.

Circuits

One 120,000 volt, 60 cycles, 6 wire, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing ED1-9067

Conductors

Six-477 MCM 26/7 ACSR, six per circuit with one 3/8" steel groundwire.

Insulators

120 KV suspension assembly: Eight (O.B. #32440) or equivalent.

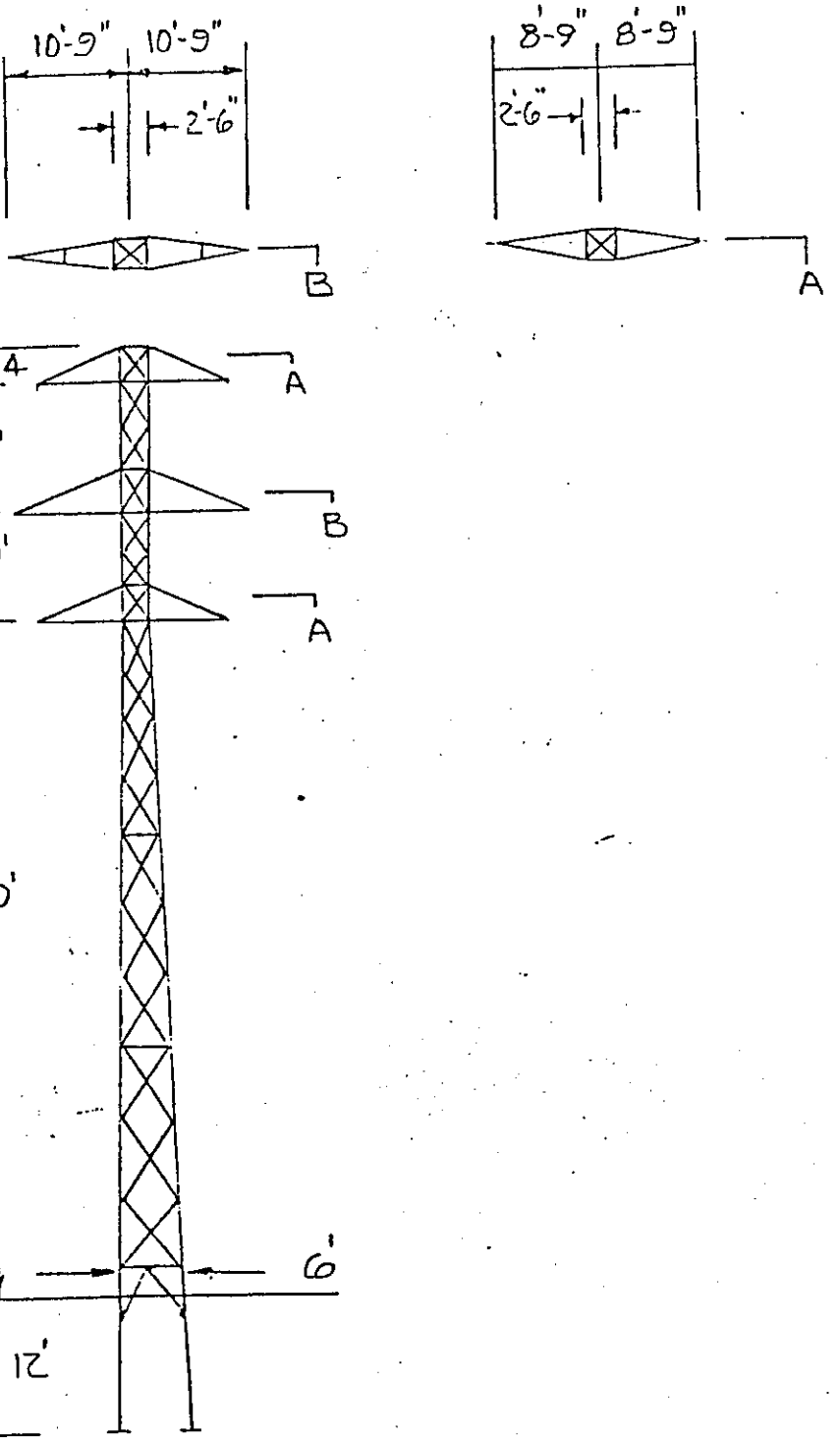
Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawing ED1-8028

System Engineering Department
CVP/cb 10-16-84



RECORDED RIGHT OF WAY

1907 Part 2

OLD DRAWING T-7815

ANGLE TOWER "LX"

APPROVED	THE DETROIT EDISON COMPANY SYSTEM ENGINEERING DEPARTMENT
LAYOUT BY C. VAN PARIS	DRAWN BY
DATE 1-19-73	DRAWING NUMBER ED 1-9067
SCALE NONE	

DE FORM SE 11 6-73

THE CALCULAT NS FOR THIS TRIAL ARE FOR 177 STUDY
STRESS-STRAI. CURVES USED REPRESENT 266,800 CM TO 636,000 (

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL MAX TE
1	500.0	6000.00	0.43560	98(

*****CREEP IS /

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	10.10	-6000.	10.10	5998.	----1
2	0.	5.88	3498.	6.65	3092.	
3	32.	9.85	4775.	10.27	4582.	
4	10.	6.22	3303.	7.08	2903.	
5	20.	6.59	3120.	7.52	2733.	
6	30.	6.97	2951.	7.96	2583.	
7	40.	7.35	2797.	8.40	2448.	
8	50.	7.74	2657.	8.83	2329.	
9	60.	8.13	2528.	9.26	2222.	
10	70.	8.53	2412.	9.68	2126.	
11	80.	8.92	2306.	10.09	2040.	
12	90.	9.31	2209.	10.49	1962.	
13	100.	9.70	2122.	10.88	1892.	
14	110.	10.08	2041.	11.27	1827.	
15	120.	10.46	1968.	11.64	1768.	

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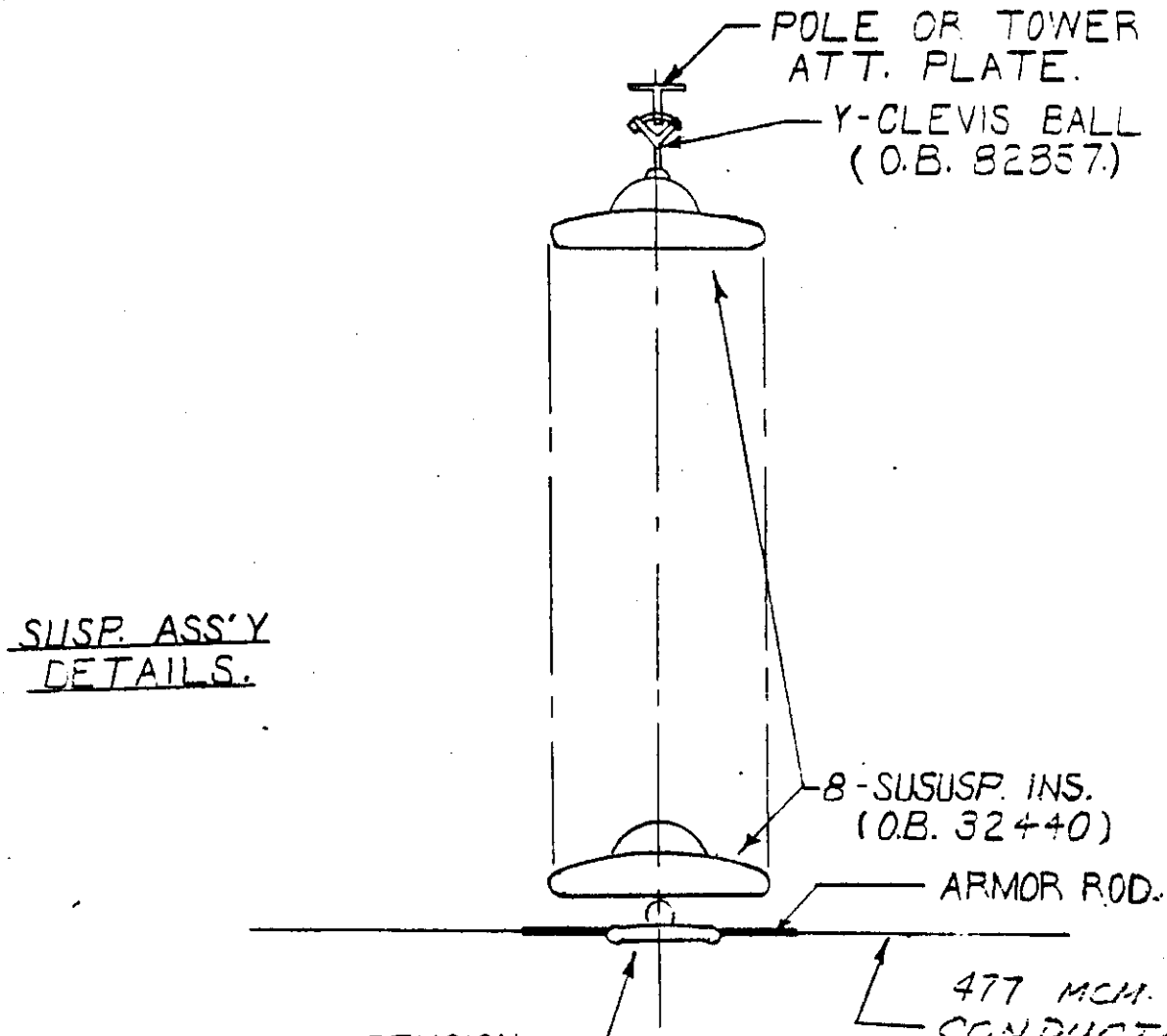
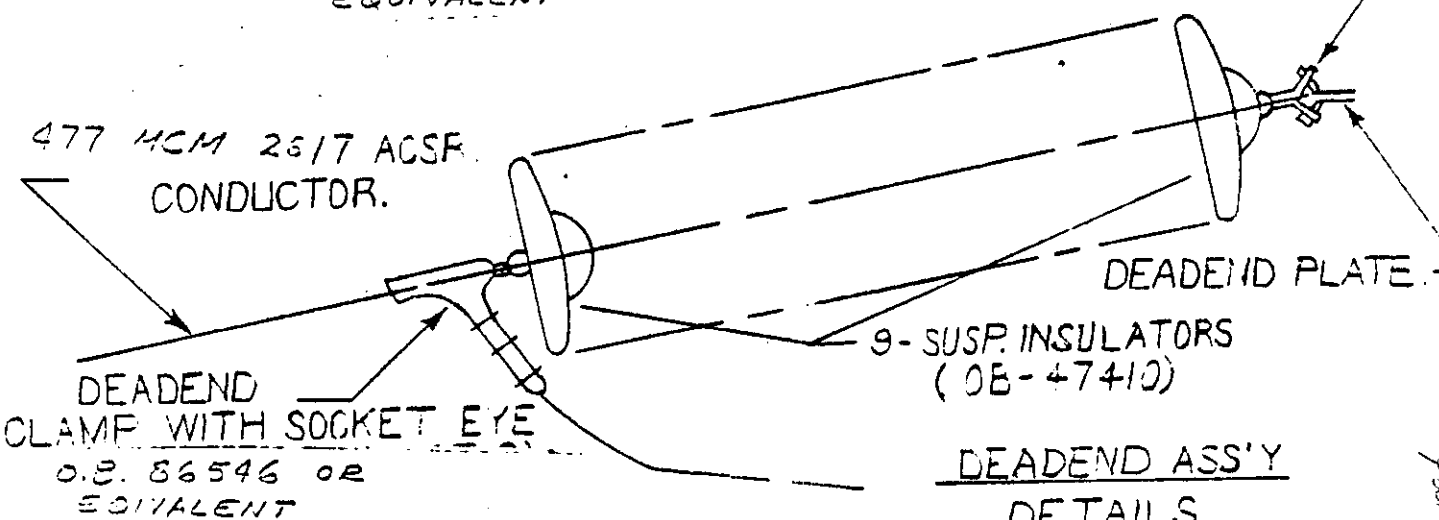
RECORDED RIGHT OF WAY 19077 part 2



SUSP. ASS'Y DETAILS.



DEADEND ASS'Y DETAILS.

RECORDED RIGHT OF WAY, 19077, Part 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT LAYOUT BY R.C.S. DRAWN BY N.H.H. DATE 4-9-70. SCALE ED1-3028

DATA SHEET TO ACCOMPANY DRAWING RX-4310 A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Warren-Evergreen #1 120KV transmission line over the C. & O. Railroad at approximately 730 feet east of Rutherford Road and approximately 890 feet north of Greenfield Road. In the City of Detroit, Wayne County, T-25-R10E, northeast 1/4 of Section 1.

Circuits

One 120,000 volt, 60 cycle, 6 wire, 3 phase transmission.

Towers and Crossarms

See attached drawing ED1-9067

Conductors

Six 477 MCM 26/7 ACSR, one circuit, one 3/8" steel groundwires.

Insulators

120KV suspension assembly: Eight insulators O.B. 32440 or equivalent.

Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawing ED1-8028

System Engineering Department
CVP/cb 10-12-84

THE CALCULATI S FOR THIS TRIAL ARE FOR ? STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 (

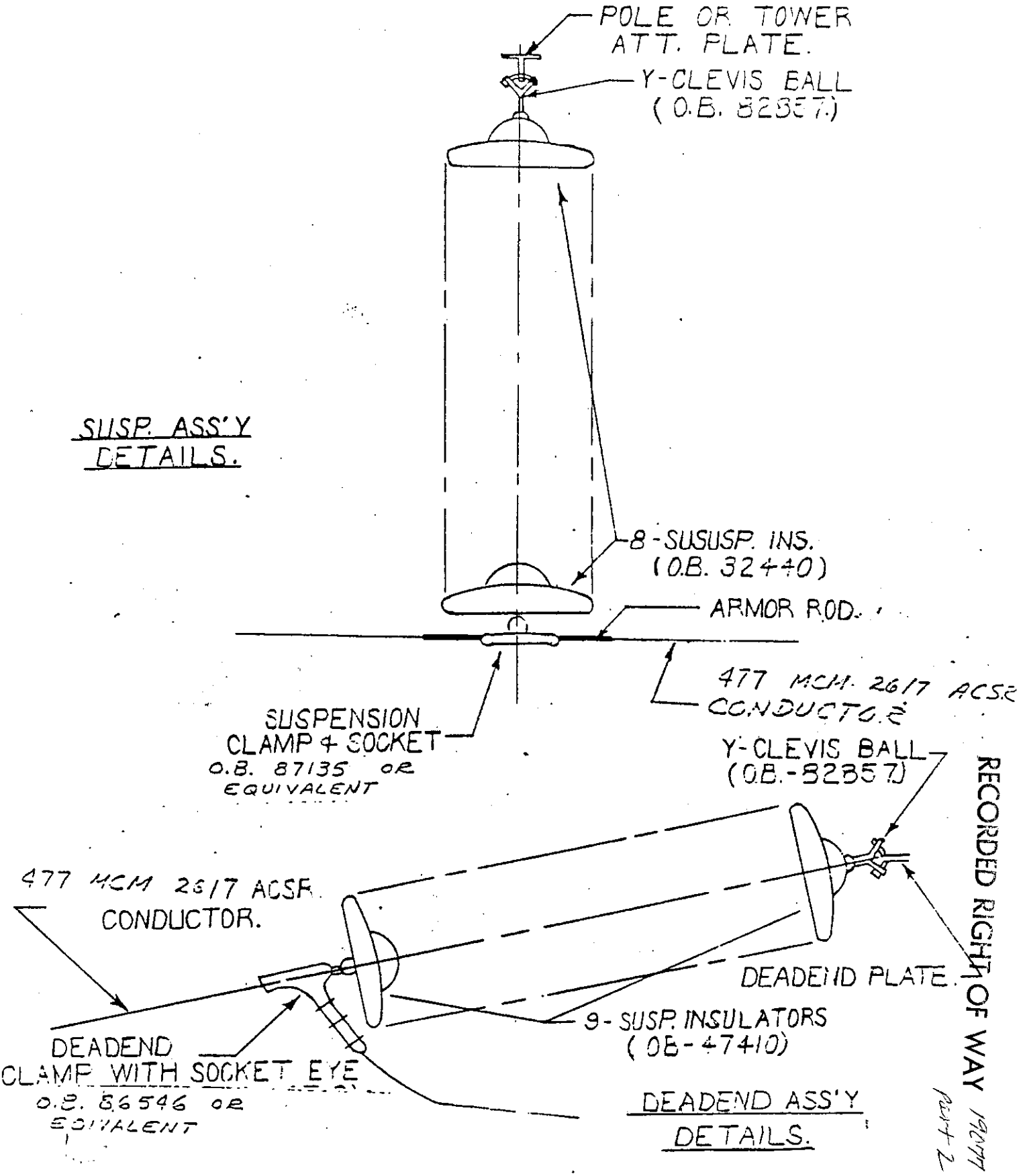
STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL MAX TE
1	500.0	6000.00	0.43560	98(

*****CREEP IS /

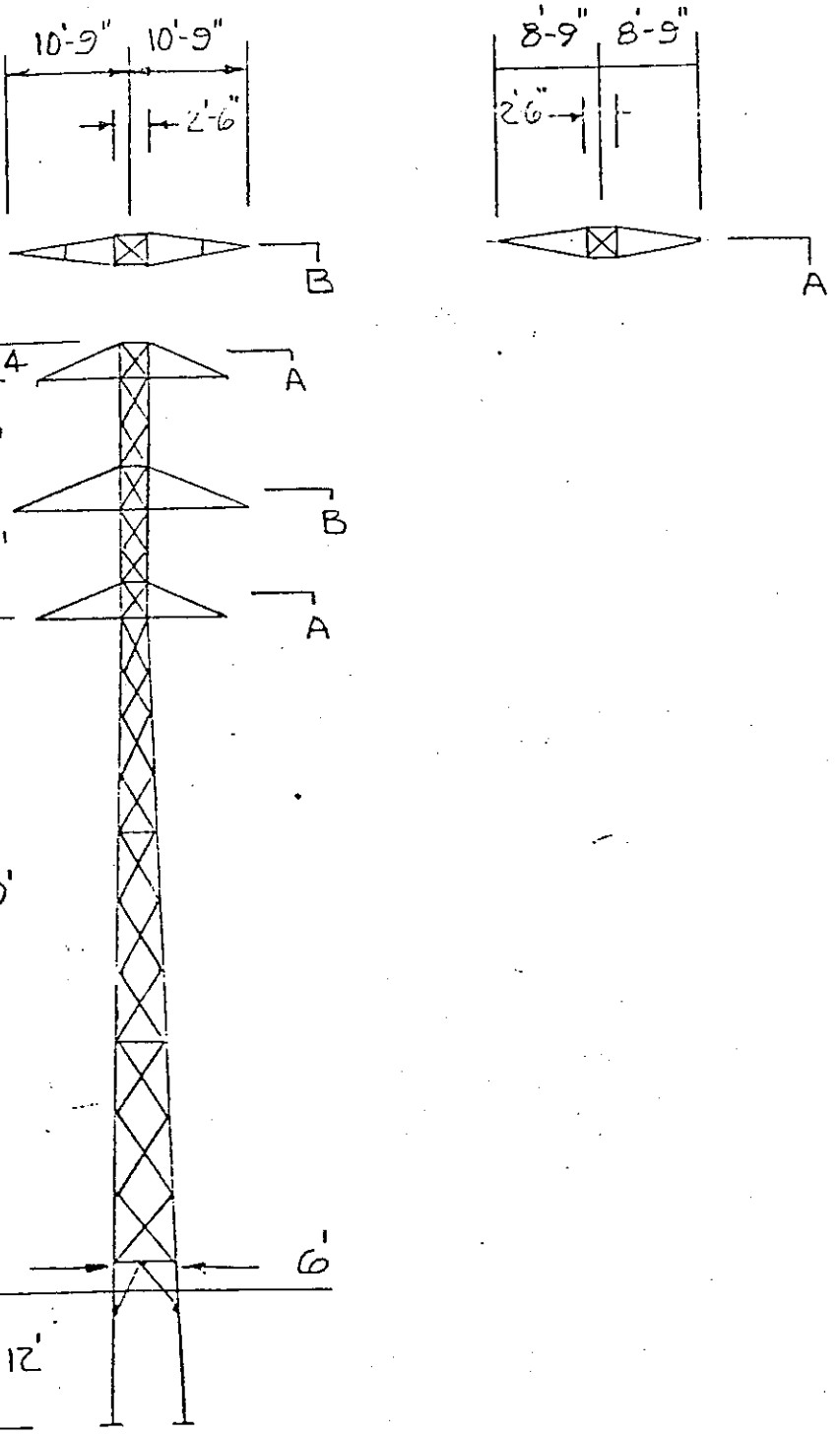
INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	10.10	-6000.	10.10	5998.	-----
2	0.	5.88	3498.	6.65	3092.	
3	32.	9.85	4775.	10.27	4582.	
4	10.	6.22	3303.	7.08	2903.	
5	20.	6.59	3120.	7.52	2733.	
6	30.	6.97	2951.	7.96	2583.	
7	40.	7.35	2797.	8.40	2448.	
8	50.	7.74	2657.	8.83	2329.	
9	60.	8.13	2528.	9.26	2222.	
10	70.	8.53	2412.	9.68	2126.	
11	80.	8.92	2306.	10.09	2040.	
12	90.	9.31	2209.	10.49	1962.	
13	100.	9.70	2122.	10.88	1892.	
14	110.	10.08	2041.	11.27	1827.	
15	120.	10.46	1968.	11.64	1768.	

****

1970??
part 2



120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. DRAWN BY N.H.H.
		DATE 4-8-70. SCALE — ED1-8028



RECORDED RIGHT OF WAY

OLD DRAWING T-7815

ANGLE TOWER "LX"

APPROVED	THE DETROIT EDISON COMPANY SYSTEM ENGINEERING DEPARTMENT
LAYOUT BY C. VAN PARIS	DRAWN BY
DATE 1-19-78	DRAWING NUMBER ED 1-9067
SCALE NONE	

DE FORM SE 11 6-75•

DATA SHEET TO ACCOMPANY DRAWING RX-4311A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Warren-Evergreen #1 120 KV transmission line over the C. & O. Railroad at approximately 300 feet west of Mettetal Road and approximately 350 feet south of Joy Road in the City of Detroit, Wayne County, Michigan, northeast 1/4 of Section 1, T. 25-R. 10E.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line.

Towers and Crossarms

See attached drawing ED1-9067

Conductors

Six 477 MCM 26/7 ACSR, one circuit, one 3/8" steel groundwires.

Insulators

120 KV suspension assembly: Eight insulators O.B. 32440 or equivalent.

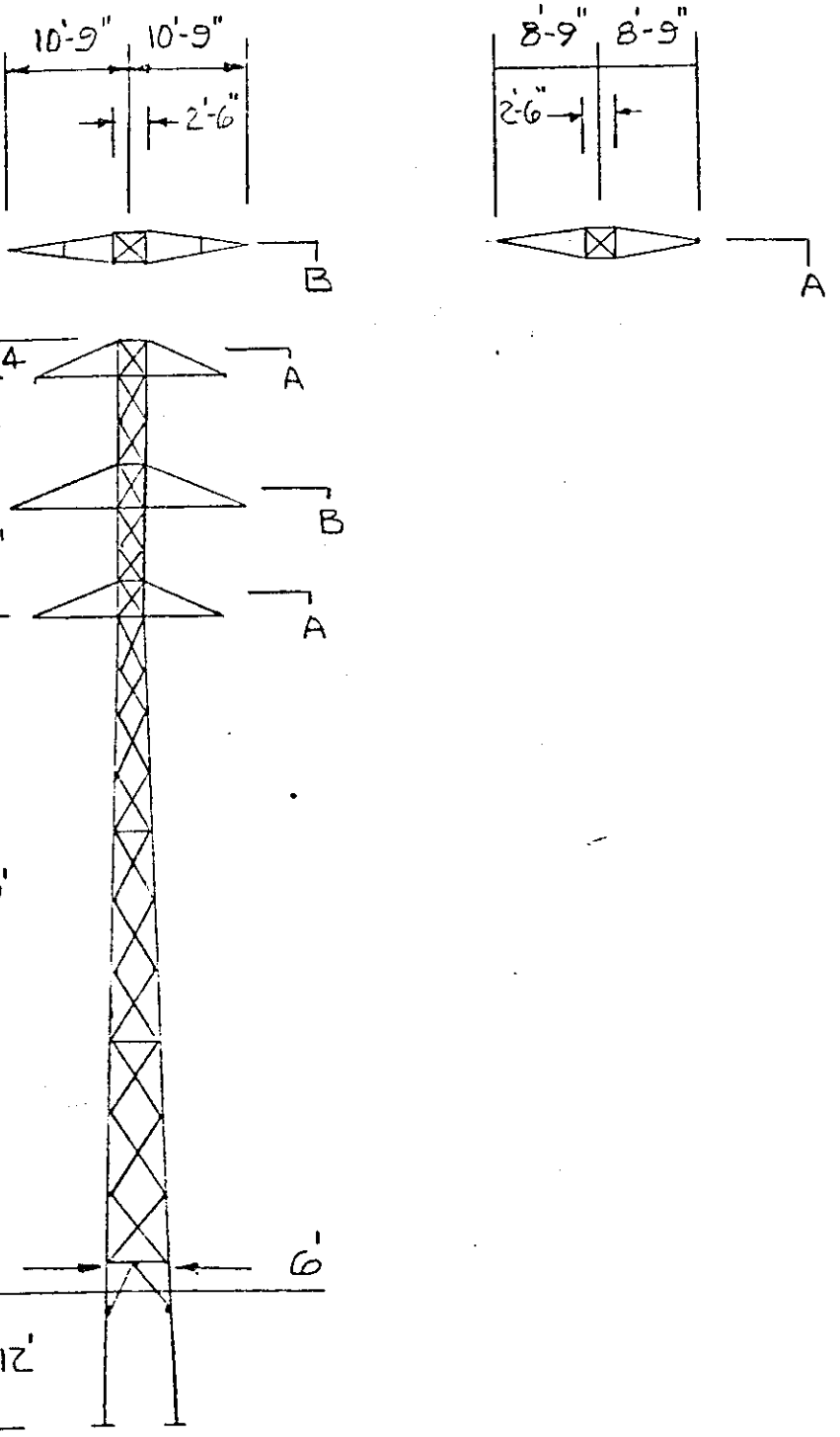
Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawing ED1-8028

System Engineering Department
CVP/cb 10-11-84



RECORDED RIGHT OF WAY 19077 part 2

OLD DRAWING T-7815

ANGLE TOWER "LX"

APPROVED	THE DETROIT EDISON COMPANY SYSTEM ENGINEERING DEPARTMENT
LAYOUT BY C. VAN PARIS	DRAWN BY
DATE 1-13-78	DRAWING NUMBER ED 1-9067
SCALE NONE	

DE FORM SE 11 6-75•

THE CALCULATI[illegible]S FOR THIS TRIAL ARE FOR 7 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266.800 CM TO 636.000 (

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL MAX TE
1	500.0	6000.00	0.43560	98(

*****CREEP IS

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	10.10	-6000.	10.10	5998.	----I
2	0.	5.88	3498.	6.65	3092.	
3	32.	9.85	4775.	10.27	4582.	
4	10.	6.22	3303.	7.08	2903.	
5	20.	6.59	3120.	7.52	2733.	
6	30.	6.97	2951.	7.96	2583.	
7	40.	7.35	2797.	8.40	2448.	
8	50.	7.74	2657.	8.83	2329.	
9	60.	8.13	2528.	9.26	2222.	
10	70.	8.53	2412.	9.68	2126.	
11	80.	8.92	2306.	10.09	2040.	
12	90.	9.31	2209.	10.49	1962.	
13	100.	9.70	2122.	10.88	1892.	
14	110.	10.08	2041.	11.27	1827.	
15	120.	10.46	1968.	11.64	1768.	

****

RECORDED RIGHT OF WAY 1907??
Part 2

DATA SHEET TO ACCOMPANY DRAWING RX-4317 A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Evergreen 120 KV transmission line over the C. & O. Railroad at approximately 210 feet east of Fielding Road and 2,640 feet north of Plymouth Road at railroad stationing 460+53. In the northeast 1/4 of Section 27, City of Detroit, Wayne County, Michigan T. 1S.-R.10E.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one ground wire.

Towers and Crossarms

See attached drawings T-7811 (P), T-9164 (Q).

Conductors

Six-477 MCM 26/7 ACSR, with one 3/8" steel ground wire.

Insulators

120 KV suspension assembly. Eight O.B. 32440 or equivalent.

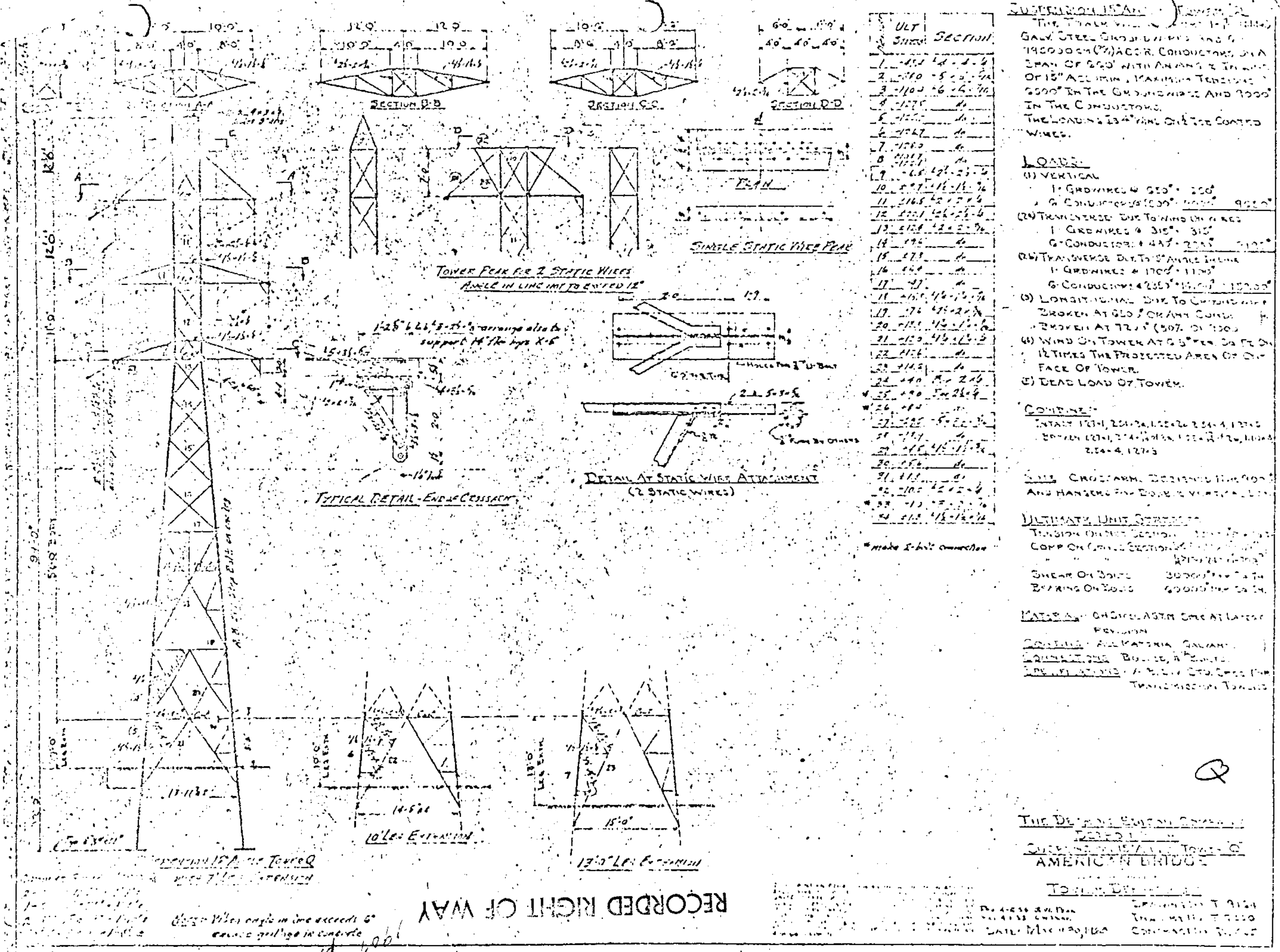
Guy and Guy Attachments

None

Suspension and Deadend Details

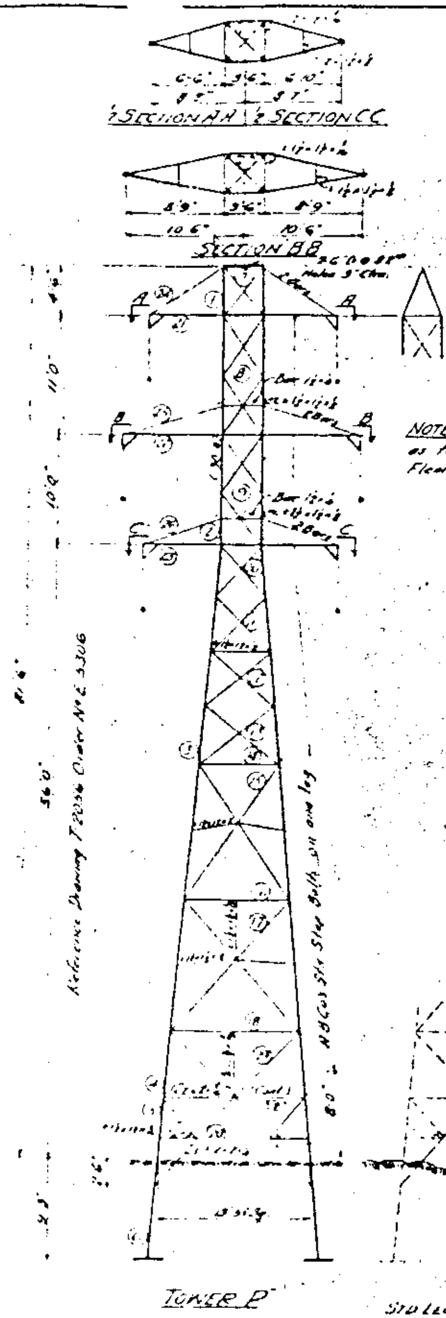
See attached drawing ED1-8028

System Engineering Department
CVP/cb 10-3-84

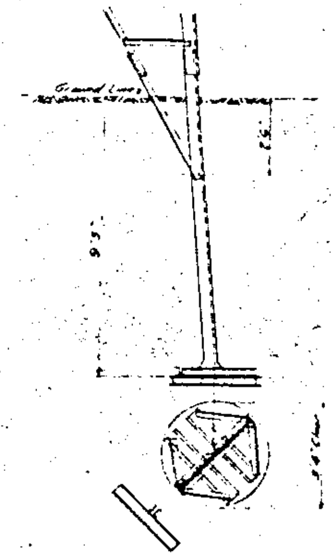


SECTION B-B
SECTION C-C
SECTION D-D
PLAN
SINGLE STATIC WIRE PEAK
TOWER PEAK FOR 2 STATIC WIRES
ANGLE IN LINE MAY TO EXCEED 12°
TYPICAL DETAIL - END OF CROSSARM
DETAIL AT STATIC WIRE ATTACHMENT
(2 STATIC WIRES)
ULT STRESS
SECTION
* make 2-bolt connection
LOADS:
(1) VERTICAL
(5) DEAD LOAD OF TOWER.
COMBINED:
ULTIMATE UNIT STRESSES
SHEAR ON BOLTS
BEARING ON BOLTS
10' LEG EXTENSION
13'-0" LEG EXTENSION
15'-0"
AMERICAN BRIDGE
RECORDED RIGHT OF WAY

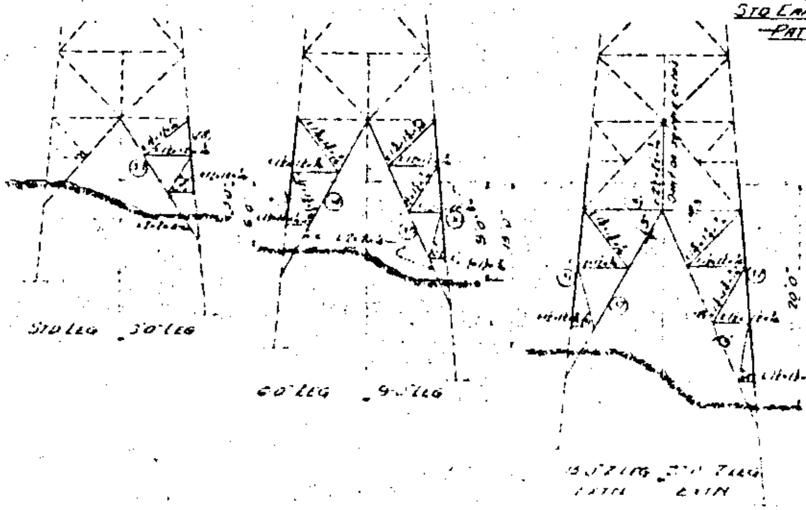
RECORDED RIGHT OF WAY



NOTE:- Cross arms to be detailed so as to accomodate either 11" or 14" Flexible hangers



AMERICAN BRIDGE CO'S STD EARTH ANCHOR -PATENTED-



Member	Unit Stress	SECTION
1	- 67	∠ 2½ × 2½ × ¼
2	43.1	∠ 3½ × 3½ × ¼
3	- 50.8	∠ 4 × 4 × 5/16
4	- 64.4	∠ 4 × 4 × ⅜
5	- 64.5	do
6	± 45.4 / 64.0	do
7	± 17	∠ 1½ × 1½ × 3/16
8	± 10.7	∠ 2½ × 1½ × 3/16
9	± 13.3	∠ 2½ × 2 × 3/16
10	± 9.5	∠ 1¾ × 1¾ × 3/16
11	± 7.0	do
12	± 6.2	do
13	± 4.8	do
14	- 3.5	∠ 2½ × 2½ × 3/16
15	+ 11.1	∠ 1½ × 1½ × ¼
* 16	- 5.6	∠ 2½ × 2½ × 3/16
17	+ 7.9	∠ 1½ × 1½ × 3/16
* 18	- 7.7	∠ 3 × 3 × 3/16
19	+ 9.9	∠ 1½ × 1½ × 3/16
20	+ 7.1	
21	- 14.5	∠ 3 × 2½ × ¼
22	- 18.9	do
23	- 15.7	do
24	+ 11	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	∠ 1½ × 1½ × 3/16
28	- 65.8	∠ 4 × 4 × ⅜
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	∠ 1½ × 1½ × 3/16
34	+ 9.0	do
35	+ 11.4	∠ 1¾ × 1¾ × 3/16
* 36	- 4.0	∠ 3½ × 3 × ¼
37	± 4.3	do
38	± 4.3	∠ 4 × 3 × ¼

* Denotes setting templet members

GRILLAGE MATERIAL
2-7" 30 @ 9.8# × 3'9"
2-6" CBS @ 15.5# × 3'0"
4-∠ 3 × 3 × ¼ × 1'9"

SUSPENSION TOWER "P"

The tower is designed to support 1-⅜" H.S. Crucible Steel Ground Wire and 6-477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical 1-Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1-Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1-Grd Wire @ 460# = 460#
6 Conductors @ 670# = 4020#
Total = 4480#

(3) Longitudinal 1-Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)

(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face

(5) Dead load of tower

Compare 127.5 (2.54 + 2a, 1.65 + 2b, 1.0 + 3, 2.54 + 4 and 1.27 + 5

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000# - 130 l/r (l/r < 150)
24000# - 70 l/r (l/r > 150)

Shear on bolts .... 30000# per sq in.
Bearing on bolts .... 66000# per sq in.

MATERIAL:- O.H. Steel ASTM A7 latest revision.

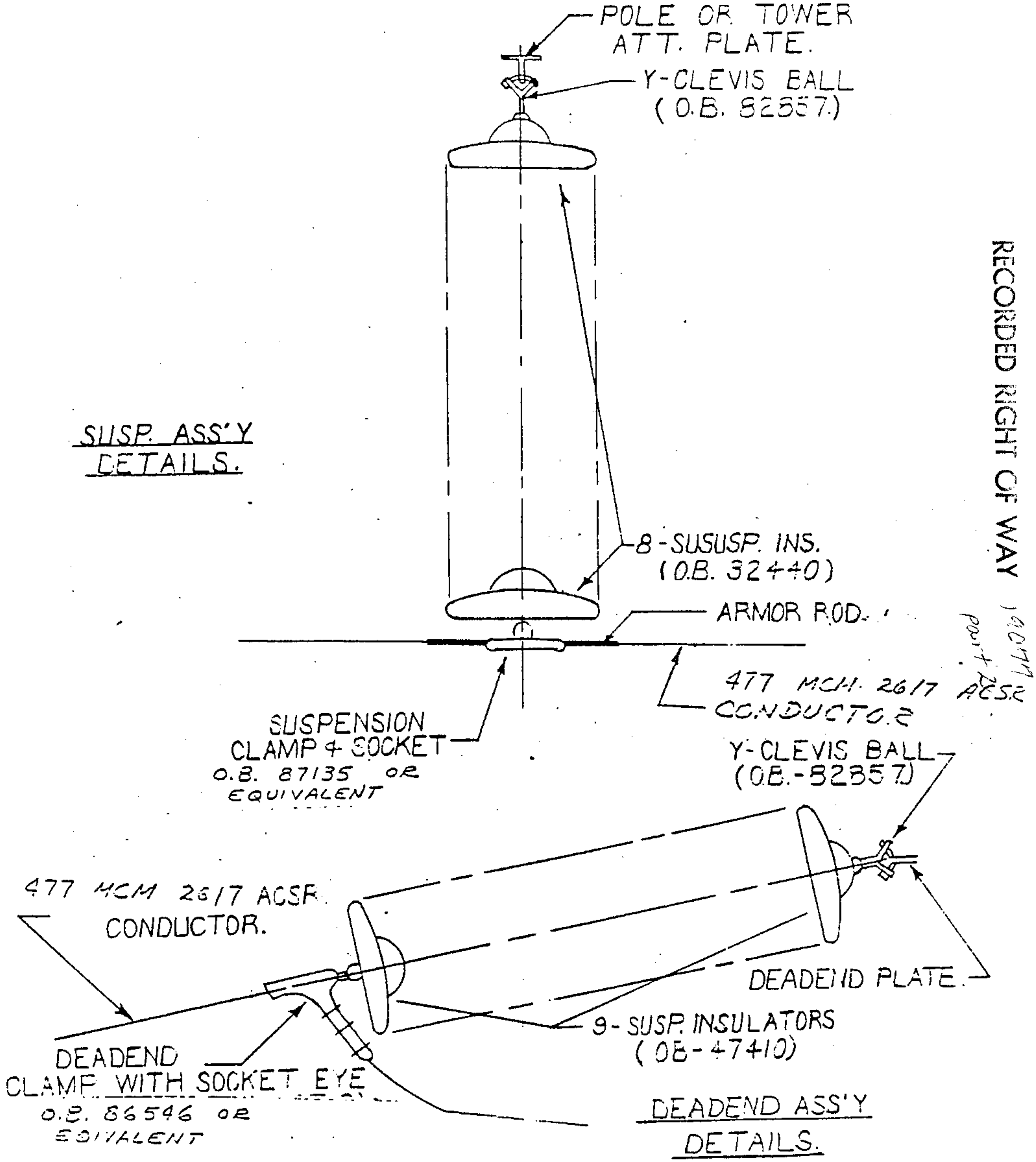
COATING:- All material galvanized

CONNECTIONS:- Bolted, ⅝" bolts

SPECIFICATIONS:- A.B. Co's Standard specifications for Transmission Towers

"P" TWR.

TRANSMISSION TOWERS	
THE DETROIT EDISON CO	
DETROIT, MICH	
SUSPENSION TOWER "P"	
LINCOLN HLOCK ...	
NORMAL SPAN / VOLTS / CIRCUITS / CONDUCTORS / GROUND WIRE	AMERICAN BRIDGE CO. PITTSBURGH PA
REVISIONS	INQUIRY No. ... ORDER No. ... DRAWING T-7371



120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. — DRAWN BY N.H.H.
		DATE 4-9-70. SCALE — ED1-8028

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/7

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION	INITIAL BA LIMIT TENSI
1	600.0	7770.00	0.43560	9800.00	6500.00

*****CREEP IS A FACTOR*****

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION
1	0.	11.23	-7770.	11.30	7723.
2	0.	5.38	5495.	6.33	4676.
3	32.	10.47	6463.	11.18	6057.
4	10.	5.64	5244.	6.76	4380.
5	20.	5.92	4995.	7.21	4106.
6	30.	6.23	4751.	7.68	3855.
7	40.	6.56	4513.	8.16	3628.
8	50.	6.90	4287.	8.65	3422.
9	60.	7.27	4070.	9.14	3238.
10	70.	7.66	3864.	9.64	3071.
11	80.	8.06	3671.	10.14	2920.
12	90.	8.49	3488.	10.63	2785.
13	100.	8.91	3321.	11.12	2664.
14	110.	9.35	3165.	11.60	2553.
15	120.	9.80	3021.	12.08	2453.

SAG IS IN FEET AND
----MINUS SIGN INDICATES C

****

DATA SHEET TO ACCOMPANY DRAWING RX-4318A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Yost 120 kV transmission line over the C.&.O. Railroad at approximately 2,640 feet north of Plymouth Road and the center line of Beech Daly at railroad stationing 608+30.

In the nofthwest ¼ of Section 29, Redford Township, Wayne County, Michigan T.1S. - R.10E.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawings. T-2955 (EA), T-9164 (Q).

Conductors

Six 477 MCM ACSR 26/7, Six per circuit, with one 3/8" steel ground wire.

Insulators

120 kV suspension assembly, (8) Eight O.B. 32440 or equivalent. 120 kV deadend assembly (9) nine O.B. 47410 or equivalent.

Guy and Guy Attachments

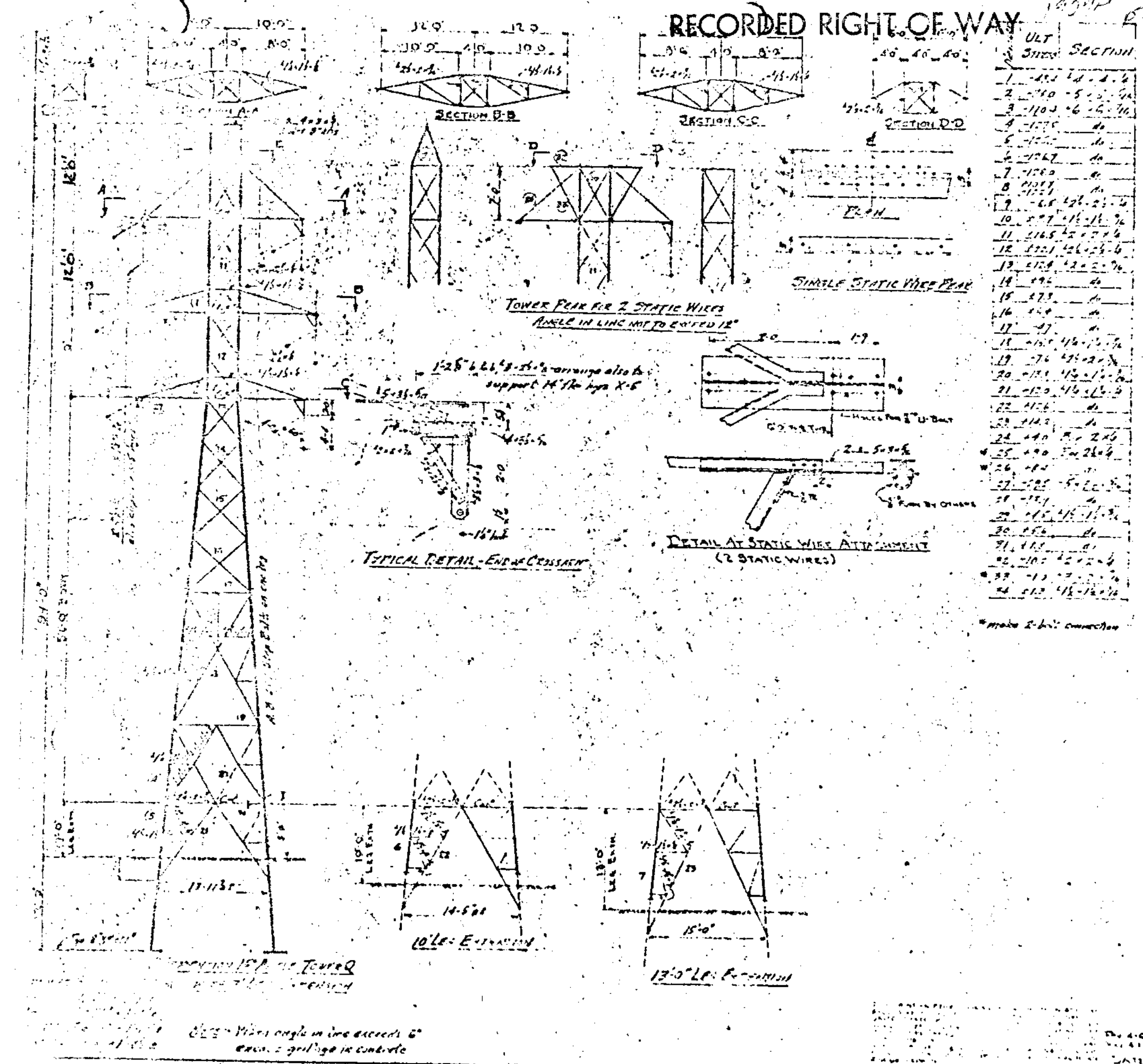
None.

Suspension and Deadend Details

See attached drawing ED 1-8028.

System Engineering Department
CVP/js 9-24-84

RECORDED RIGHT OF WAY



SUSPENSION 15° ANGLE TOWER "Q"

THE TOWER [illegible] GALV. STEEL GROUND WIRES AND 6 795000 CM (%) ACSR CONDUCTORS ON A SPAN OF 650' WITH AN ANGLE IN THE LINE OF 15° ACSR [illegible], MAXIMUM TENSION [illegible] 5000# IN THE GROUNDWIRES AND 9000# IN THE CONDUCTORS.
THE LOADING IS 4# WIND ON THE COATED WIRES.

LOADS:

(1) VERTICAL
1 - GRDWIRES @ 350# = 350#
6 - CONDUCTORS @ 1500# = [illegible] 9350#

(2a) TRANSVERSE DUE TO WIND ON WIRES
1 GRDWIRES @ 315# = 315#
6 - CONDUCTORS @ 447# = [illegible]

(2b) TRANSVERSE DUE TO 15° ANGLE [illegible]
1 - GRDWIRES @ 1300# = [illegible]
6 - CONDUCTORS @ 2350# = [illegible]

(3) LONGITUDINAL DUE TO GROUNDWIRE BROKEN AT 650# OR ANY CONDUCTOR BROKEN AT 7[illegible]# (50% OF 15000#)

(4) WIND ON TOWER AT 5.5# PER SQ FT ON 1½ TIMES THE PROJECTED AREA OF ONE FACE OF TOWER.

(5) DEAD LOAD OF TOWER.

COMBINED:
INTACT 1(1+), 2(1+2a), 1,2a+2b, 2,2a+4, 1,2+4+5
BROKEN [illegible]
2,2a+4, 1,2+4+5

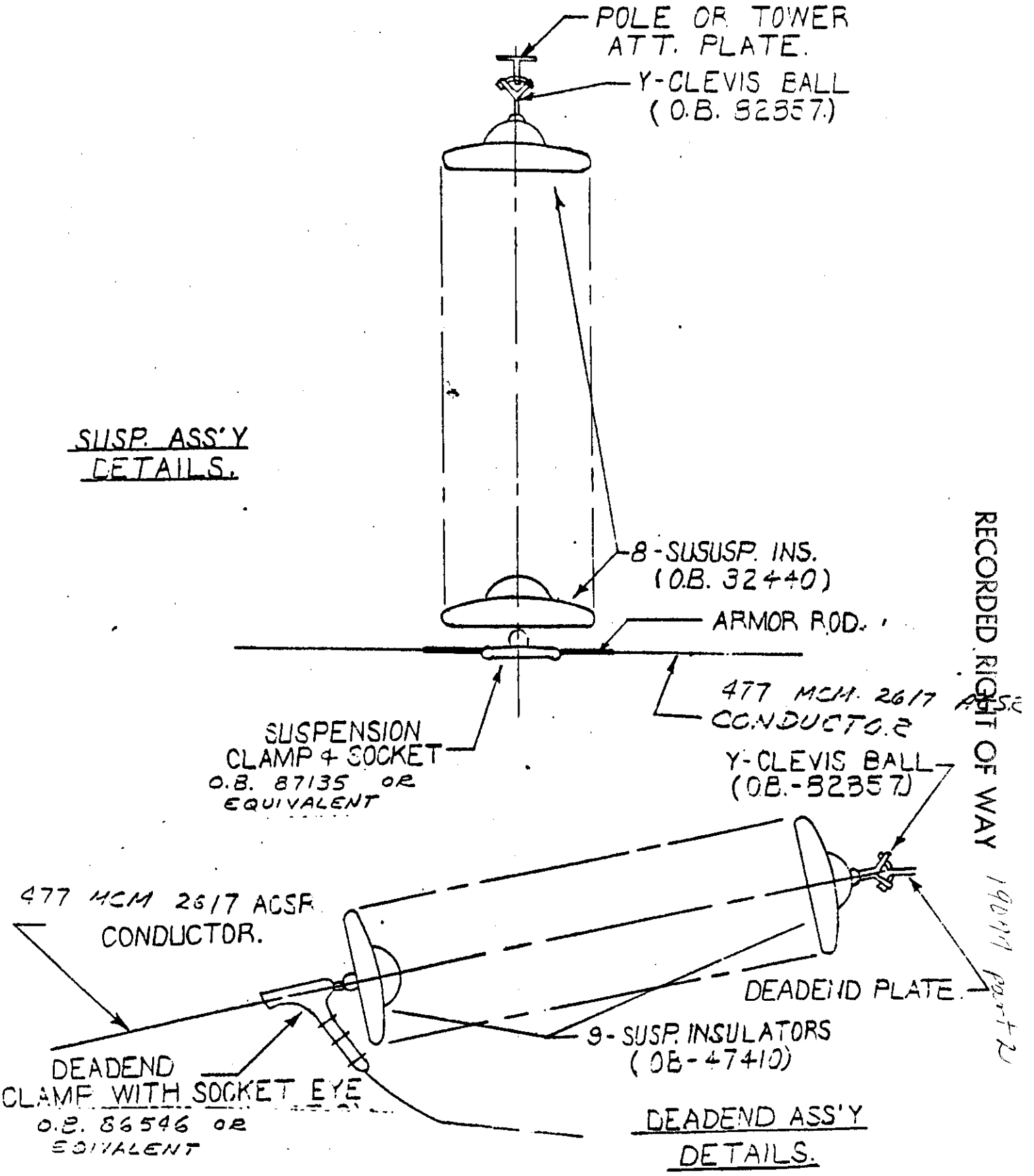
NOTE: CROSSARMS DESIGNED FOR [illegible] AND HANGERS FOR [illegible]

ULTIMATE UNIT STRESSES:
TENSION ON NET SECTION [illegible]
COMP ON GROSS SECTION [illegible]
[illegible]
SHEAR ON BOLTS 30000# PER SQ IN
BEARING ON BOLTS 60000# PER SQ IN

MATERIAL: OH STEEL ASTM SPEC AT LATEST REVISION
COATING: ALL MATERIAL GALVANIZED
CONNECTIONS: BOLTED, [illegible]
SPECIFICATIONS: A.I.S.C. STD. SPEC. FOR TRANSMISSION TOWERS

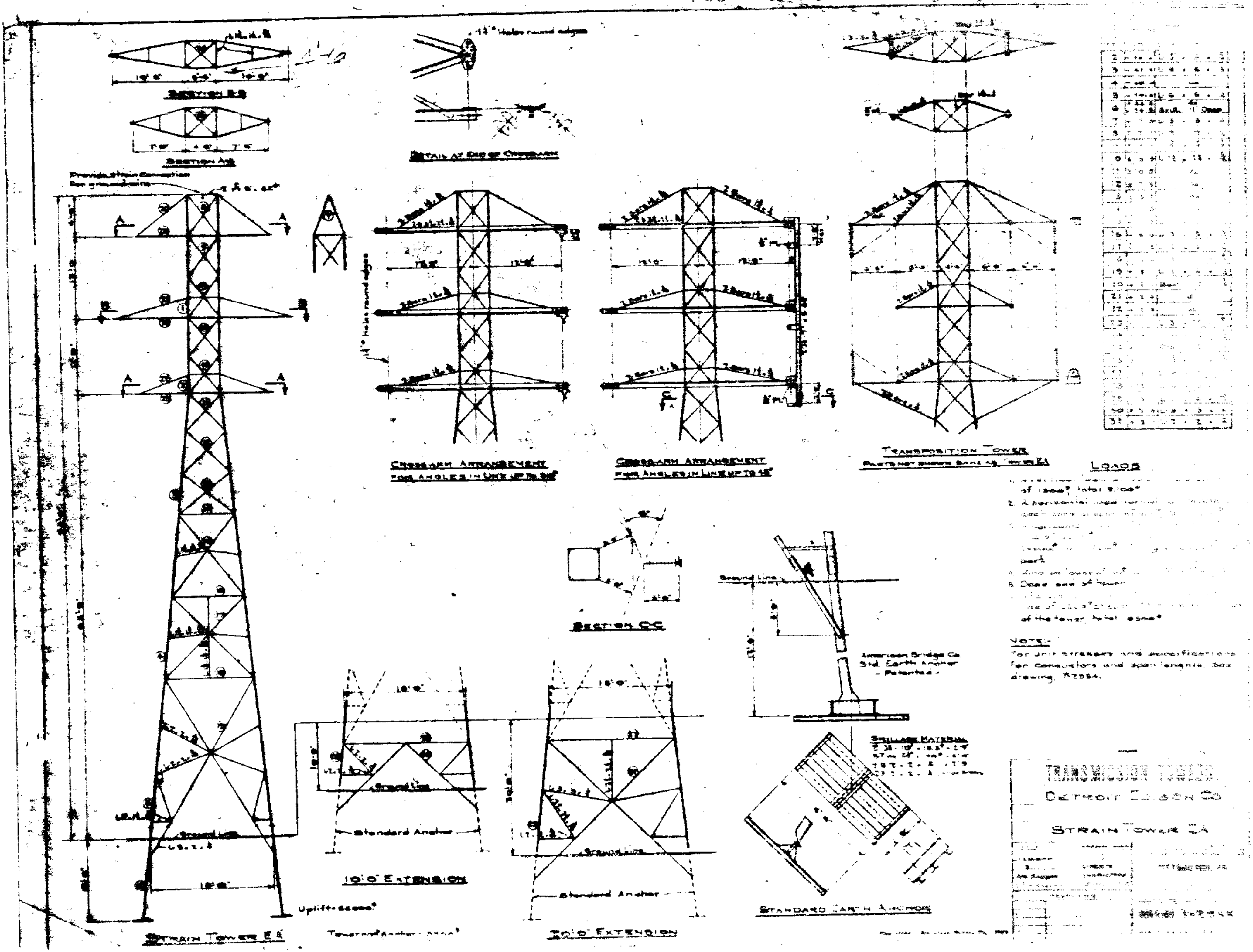
THE DETROIT EDISON COMPANY
[illegible]
SUSPENSION 15° ANGLE TOWER "Q"
AMERICAN BRIDGE
[illegible]
TOWER DETAILS

DATE: MAR. 20, 1[illegible]
[illegible] T-9154
[illegible] T-9150
[illegible]



RECORDED RIGHT OF WAY 19011 part 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. DRAWN BY N.H.H.
		DATE 4-2-70. SCALE — ED1-8028



Section B-B
Section A-A
Detail at End of Crossarm
Holes round edges
Provide Strain Connection for groundwire
Crossarm Arrangement for Angles in Line up to 45°
Transposition Tower
Loads
of the tower, total
Notes:-
For unit stresses and specifications for conductors and span lengths see drawing
Section C-C
Ground Line
American Bridge Co. Std. Earth Anchor - Patented -
Standard Earth Anchor
Standard Anchor
10'0" Extension
20'0" Extension
Strain Tower EA
Detroit Edison Co
Strain Tower EA

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/7

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION	INITIAL BA LIMIT TENS
1	600.0	7770.00	0.43560	9800.00	6[illegible]7.00

*****CREEP IS A FACTOR*****

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION
1	0.	11.23	-7770.	11.30	7723.
2	0.	5.38	5495.	6.33	4676.
3	32.	10.47	6463.	11.18	6057.
4	10.	5.64	5244.	6.76	4380.
5	20.	5.92	4995.	7.21	4106.
6	30.	6.23	4751.	7.68	3855.
7	40.	6.56	4513.	8.16	3628.
8	50.	6.90	4287.	8.65	3422.
9	60.	7.27	4070.	9.14	3238.
10	70.	7.66	3864.	9.64	3071.
11	80.	8.06	3671.	10.14	2920.
12	90.	8.49	3488.	10.63	2785.
13	100.	8.91	3321.	11.12	2664.
14	110.	9.35	3165.	11.60	2553.
15	120.	9.80	3021.	12.08	2453.

SAG IS IN FEET AND
----MINUS SIGN INDICATES C

****

DATA SHEET TO ACCOMPANY DRAWING RX-4319A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Yost 120 kV transmission line over the C. & O. Railroad at approximately 1,500 feet west of Beech Daly Road and approximately 2,640 feet north of Plymouth Road at railroad stationing 222+60. In the northeast 1/4 of Section 30, Redford Township, Wayne County, Michigan T.15-R10E.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing T-7811 (P), and T-9164 (Q).

Conductors

Six-477 MCM ACSR 26/7, with one 3/8" steel groundwire.

Insulators

120 kV suspension assembly. Eight (8) O.B. 32440 or equivalent.

Guy and Guy Attachments

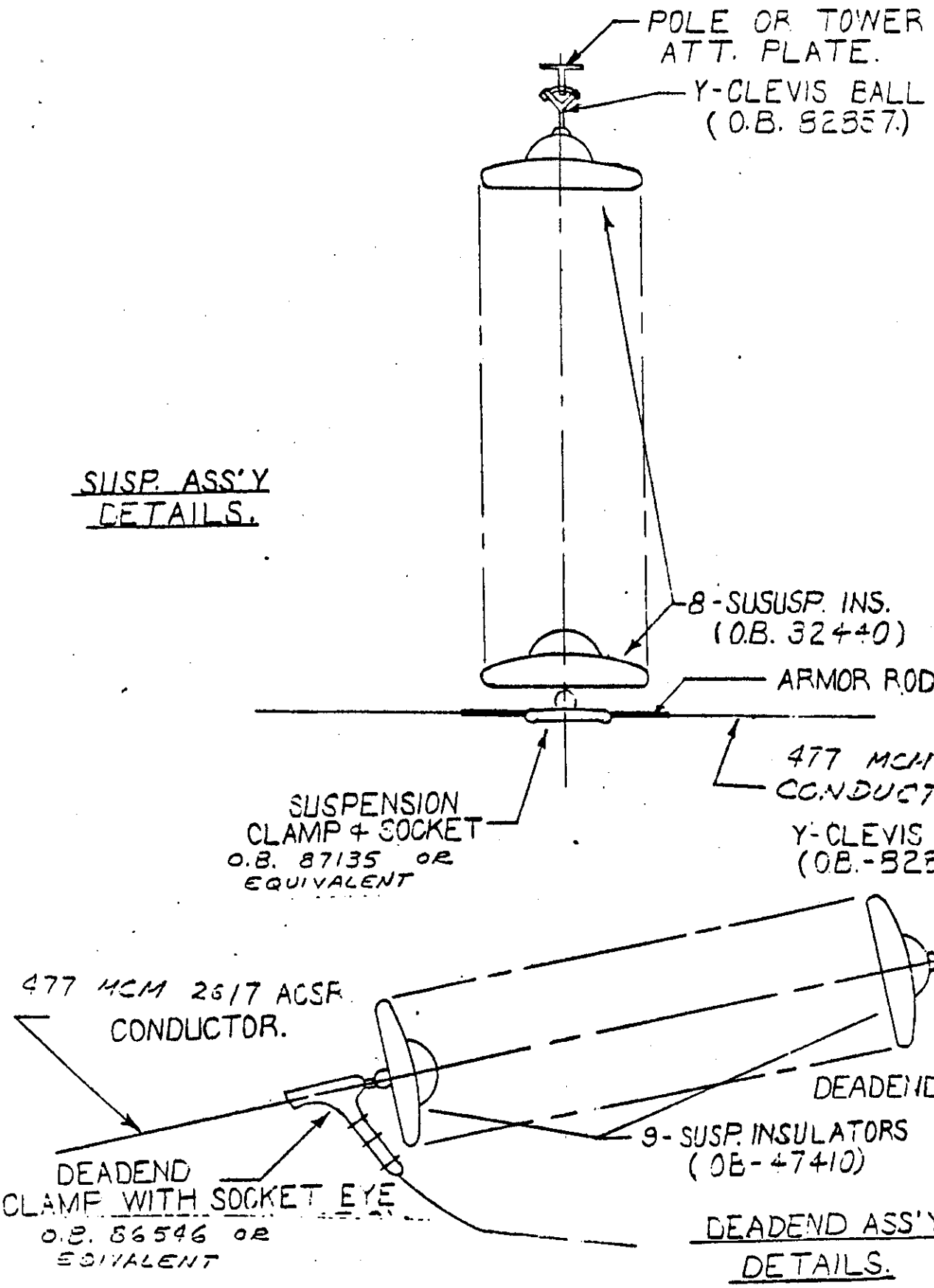
None

Suspension and Deadend Details

See attached drawing ED1-8028

RECORDED RIGHT OF WAY 19077 part 2

System Engineering Department
CVP/cb 9-21-84



RECORDED RIGHT OF WAY 19077 Part 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT LAYOUT BY RCS. DRAWN BY N.H.H. DATE 4-2-70. SCALE ED1-8028

RECORDED RIGHT OF WAY 19077 part 2

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/
477 MCM

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION
1	500.0	7770.00	0.43560	9800.00

***FINAL BARE CONDUCTOR TENSION LIMIT OF 5000.0 LBS. IS EXCEEDED BY 444.6 L

*****CREEP IS A FACTOR***

		INITIAL		FINAL		
INDEX	TEMP.	SAG	TENSION	SAG	TENSION	SAG IS I
1	0.	8.00	7574.	8.12	7456.	
2	0.	3.52	5838.	4.11	-4999.	----MINUS SIGN
3	32.	7.43	6326.	8.06	5832.	
4	10.	3.70	5560.	4.43	4640.	
5	20.	3.89	5288.	4.77	4308.	
6	30.	4.10	5016.	5.14	3997.	
7	40.	4.33	4745.	5.53	3715.	
8	50.	4.59	4482.	5.94	3458.	
9	60.	4.86	4230.	6.36	3230.	
10	70.	5.16	3985.	6.80	3024.	
11	80.	5.47	3754.	7.24	2840.	
12	90.	5.82	3534.	7.68	2678.	
13	100.	6.17	3330.	8.12	2533.	
14	110.	6.55	3139.	8.55	2405.	
15	120.	6.93	2966.	8.98	2290.	

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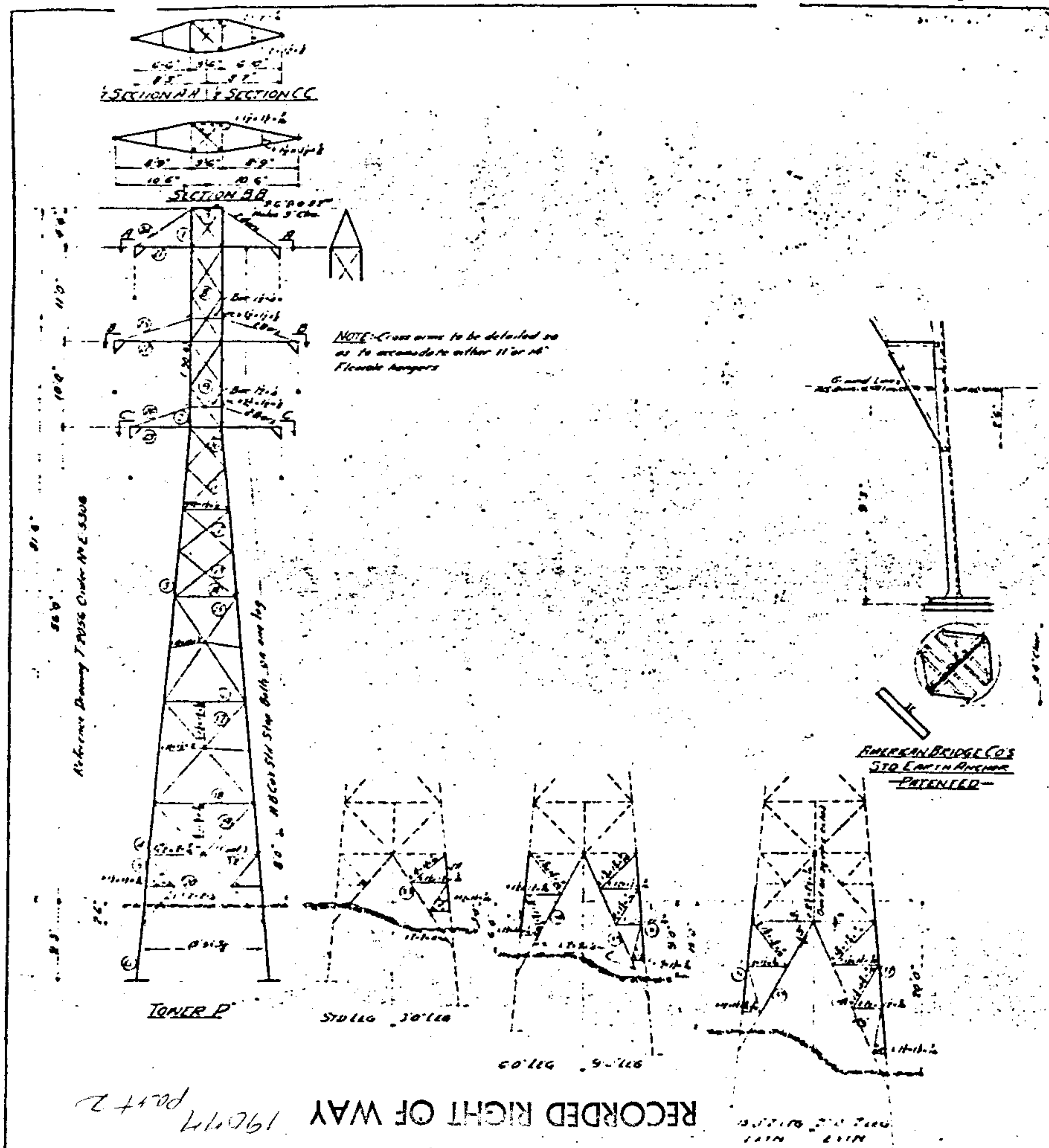


Member	Ult Stress	Section
1	- 67	∠ 2½ × 2½ × ¼
2	43.1	∠ 3½ × 3½ × ¼
3	50.8	∠ 4 × 4 × ⅜
4	64.4	∠ 4 × 4 × ⅜
5	64.5	do
6	64.0	do
7	- 12	∠ 1¾ × 1¾ × 3/16
8	- 10.7	∠ 2½ × 1¾ × ¼
9	- 13.3	∠ 2½ × 2 × ¼
10	- 9.5	∠ 1¾ × 1¾ × 3/16
11	- 7.0	do
12	- 6.2	do
13	- 4.8	do
14	- 3.6	∠ 2½ × 2½ × 3/16
15	+ 11.1	∠ 1¾ × 1¾ × 3/16
16	- 5.6	∠ 2½ × 2½ × 3/16
17	+ 7.9	∠ 1¾ × 1¾ × 3/16
18	- 7.7	∠ 3 × 3 × 3/16
19	+ 9.9	∠ 1¾ × 1¾ × 3/16
20	+ 7.1	
21	- 14.5	∠ 3 × 2½ × ¼
22	- 18.9	do
23	- 15.7	do
24	+ 11	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	∠ 1¾ × 1¾ × 3/16
28	- 65.8	∠ 4 × 4 × ⅜
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.7	do
33	+ 2.8	∠ 1¾ × 1¾ × 3/16
34	+ 9.0	do
35	+ 11.4	∠ 1¾ × 1¾ × ¼
36	. 4.0	∠ 3½ × 3 × ¼
37	+ 4.3	do
38	± 4.8	∠ 4 × 3 × ¼

● Denotes setting template members

GRILLAGE MATERIAL
2 7" ⊏ 9.8# × 3'3"
2 6" ⊏ 8.5# × 155" × 3'6"
4 ∠ 3 × 3 × ¼ × 1'9"

SUSPENSION TOWER "P"

The tower is designed to support 1-⅜" HS Crucible Steel Ground Wire and 6-477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4" wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical — 1 Grd Wire @ 500# = 500#; 6 Conductors @ 1000# = 6000#; Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#; 6 Conductors @ 375# = 2250#; Total = 25

(2b) 5° Angle in line 1 Grd Wire @ 460# = 460; 6 Conductors @ 670# = 4020#; Total = 4480#

(3) Longitudinal 1-Grd Wire @ 5300# or 1 Conductor @ 6160# (80% of 7700#) (For Combined loads assume at middle arm)

(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face

(5) Dead load of tower

Combined (1)(2)(4)+(5), (1)(2b)(4)+(5), (1)(3)(4)+(5) and (1)(2)(5)

UNIT STRESSES

Tension on net section 33000# per sq in

Comp on gross section 33000#-130 L/R (L/R<150); 24000#-70 L/R (L/R>150)

Shear on bolts ______ 30000# per sq in

Bearing on bolts ______ 60000# per sq in

MATERIAL: O.H. Steel ASTM A7 latest revision.

COATING: All material galvanized

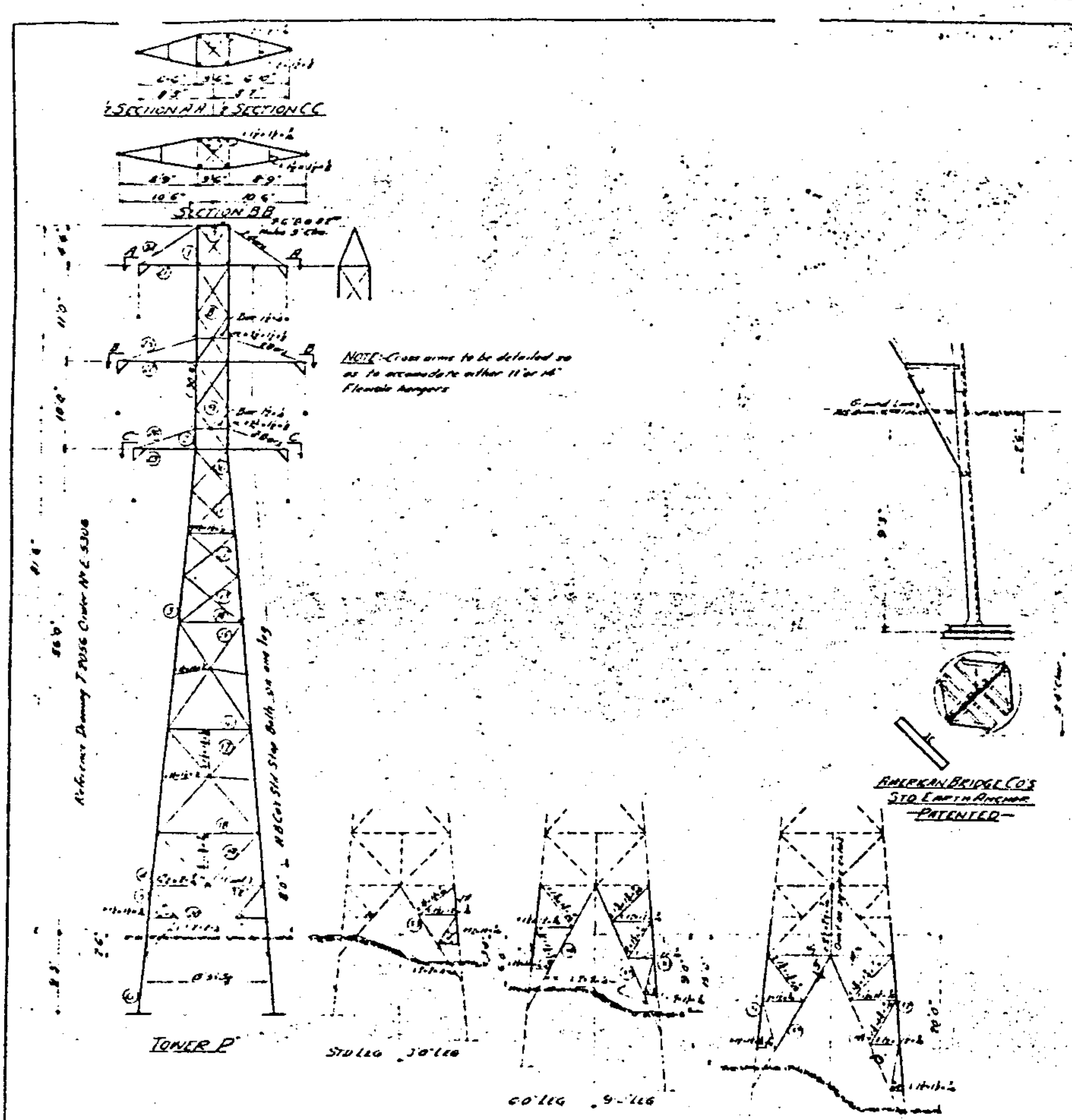
CONNECTIONS: Bolted, ⅝" bolts

SPECIFICATIONS: AB Co's Standard specifications for Transmission Towers

"P" TWR.

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT, MICH
SUSPENSION TOWER "P"
LINCOLN BLOCK

REVISIONS	AMERICAN BRIDGE CO PITTSBURGH PA
	ORDER No
	DRAWING T-7371



SUSPENSION TOWER "P"

Member	Unit Stress	SECTION
1	- 6.7	∟ 2½ × 2½ × ¼
2	43.1	∟ 3½ × 3½ × ¼
3	50.8	∟ 4 × 4 × 5/16
4	64.4	∟ 4 × 4 × ⅜
5	64.5	do
6	64.4 / 66.0	do
7	- 1.3	∟ 1¾ × 1¾ × 3/16
8	- 10.7	∟ 2½ × 1¾ × 3/16
9	- 13.3	∟ 2½ × 2 × ¼
10	- 9.5	∟ 1¾ × 1¾ × 3/16
11	- 7.0	do
12	- 6.2	do
13	- 4.8	do
14	- 3.5	∟ 2½ × 2½ × ¼
15	+ 11.1	∟ 1¾ × 1¾ × ¼
● 16	- 5.6	∟ 2½ × 2½ × ¼
17	+ 7.9	∟ 1¾ × 1¾ × 3/16
● 18	- 7.7	∟ 3 × 3 × 5/16
19	+ 9.9	∟ 1¾ × 1¾ × 3/16
20	+ 2.1	
21	- 14.5	∟ 3 × 2½ × ¼
22	- 18.5	do
23	- 15.7	do
24	+ 1.1	Bar 1¾ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	∟ 1¾ × 1¾ × 3/16
28	- 65.8	∟ 4 × 4 × ⅜
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 2.8	∟ 1¾ × 1¾ × 3/16
34	+ 9.0	do
35	+ 11.4	∟ 1¾ × 1¾ × ¼
● 36	- 4.0	∟ 3½ × 3 × ¼
37	+ 4.3	do
38	± 4.8	∟ 4 × 3 × ¼

● Denotes setting template members

GRILLAGE MATERIAL
2-7"-30 @ 9'8" - 3'3"
2-6" CB 5# 15'5" - 3'0"
4-L 3 × 3 × ¼ × 1'9"

The tower is designed to support 1-⅝" HS Crucible Steel Ground Wire and 6-477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical — 1 Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1 Grd wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 25

(2b) 5° Angle in line 1 Grd wire @ 460# = 460
6 Conductors @ 670# = 4020#
Total = 4480#

(3) Longitudinal 1-Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)
(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face
(5) Dead load of tower
Combine (1)&(2a) (1)&(2b) (1)&(3) (2a)&(4) and (1)&(5)

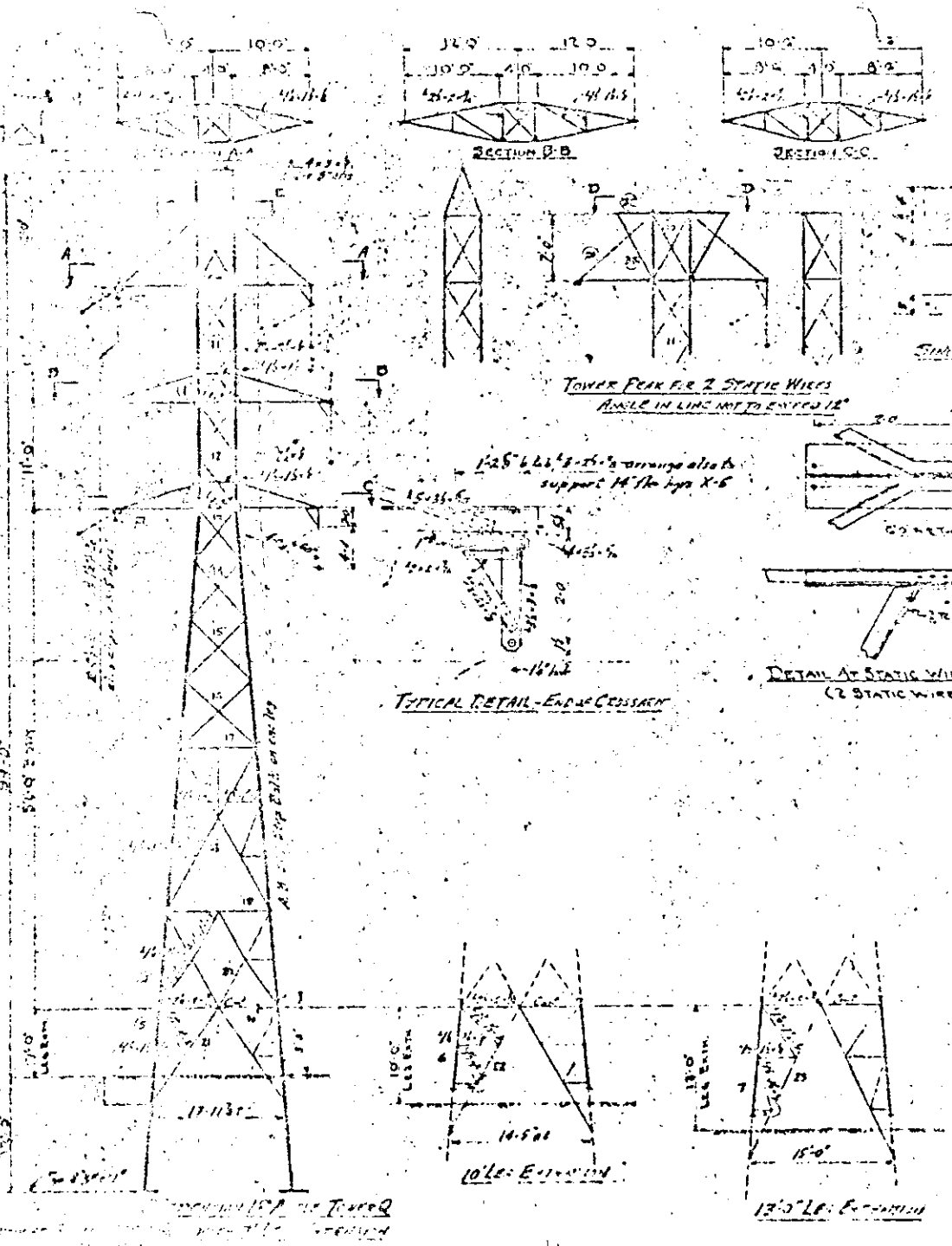
UNIT STRESSES
Tension on net section 33000# per sq in
Comp on gross section 33000#-130 l/r # l/r<150
24000#-70 l/r # l/r>150
Shear on bolts .... 30000# per sq in
Bearing on bolts .... 60000# per sq in
MATERIAL: O.H. Steel ASTM A7 latest revision.
COATING: All material galvanized
CONNECTIONS: Bolted, ⅝" bolts
SPECIFICATIONS: A B Co's Standard specifications for Transmission Towers

"P" TWR.

RECORDED RIGHT OF WAY 19044 part 2

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT, MICH
SUSPENSION TOWER "P"
LINCOLN BLOCK [illegible]

AMERICAN BRIDGE CO
PITTSBURGH PA
DRAWING T-7371



Section	Ult
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34	

*make 2 bolt connection

SUSPENSION TOWER

THIS TOWER WAS DESIGNED FOR ONE 7/16" DIAM GALV STEEL GROUND WIRE AND 6 1950 30 CM (¾") ACSR CONDUCTORS, ON A SPAN OF 900' WITH ANGLES OF THRUST OF 15° ADDITIONAL MAXIMUM TENSIONS OF 5000" IN THE GROUND WIRES AND 9000" IN THE CONDUCTORS.
THE LOADING IS 2" RADIAL ICE ON THE CONDUCTORS AND WIRES.

LOADS

(a) VERTICAL
1 - GROUND WIRE @ 250° = 250°
6 - CONDUCTORS @ 1200° = 7200°
(b) TRANSVERSE DUE TO WIND ON WIRES
1 GROUND WIRE @ 315° = 315°
6 CONDUCTORS @ 420° = 2520°
(c) TRANSVERSE DUE TO CHANGE IN DIRECTION OF LINE
1 GROUND WIRE @ 150° = 1500°
6 CONDUCTORS @ 200° = 1200°
(d) LONGITUDINAL DUE TO UNBALANCED BROKEN WIRE LOAD OF ONE GROUND WIRE @ 600° OR ONE CONDUCTOR @ 1200° AT 72½° (90% OF TENSION)
(e) WIND ON TOWER AT 25 LBS PER SQ FT ON 12 TIMES THE PROJECTED AREA OF ONE FACE OF TOWER.
(f) DEAD LOAD OF TOWER.

CONCRETE

STUB 1 (2), 2 (2), 3 (2), 4 (2), 5 (2), 6 (2), 7 (2), 8 (2), 9 (2), 10 (2), 11 (2), 12 (2), 13 (2), 14 (2), 15 (2), 16 (2), 17 (2), 18 (2), 19 (2), 20 (2), 21 (2), 22 (2), 23 (2), 24 (2), 25 (2), 26 (2), 27 (2), 28 (2), 29 (2), 30 (2), 31 (2), 32 (2), 33 (2), 34 (2)

NOTE: CROSSARMS, SUSPENSION INSULATORS AND HARDWARE FOR DOUBLE CIRCUIT TOWER

ULTIMATE UNIT STRESSES

TENSION ON NET SECTION
COMP ON GROSS SECTION
SHEAR ON BOLTS
BEARING ON BOLTS

MATERIAL: ALL STEEL ASTM SPECIFICATIONS AS REVISED
GALVANIZING: ALL MATERIAL GALVANIZED
HARDWARE: BOLTS, BOLTS, & NUTS
ALL BOLTS AND STUDS SHALL BE TIGHTENED TO TENSILE STRESS IN TURNS

THE DESIGN AND CONSTRUCTION OF THIS TOWER IS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN STANDARD

TOWER DESIGNED BY

DRAWN BY
CHECKED BY
DATE

RECORDED RIGHT OF WAY

Angle in line exceeds 12° — Provide concrete footing

DATA SHEET TO ACCOMPANY DRAWING RX-4320A

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Diesel-Yost 120kV transmission line over the C. & O. Railroad at approximately 1,980 feet east of Middlebelt Road and approximately 2,640 feet north of Plymouth Road. Railroad Stationing 692+00.

City of Livonia, Section 25, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing T-7811 (P).

Conductors

Six 477 MCM ACSR 26/7, Six per circuit, with one 3/8" steel ground wire.

Insulators

120kV suspension assembly. (8)Eight O.B. 32440 or equivalent.

Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawing ED1-8028.

System Engineering Department
CVP/cb 9/18/84

RECORDED RIGHT OF WAY 19097 part 2

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/
477 MCM

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION
1	500.0	7770.00	0.43560	9800.00

***FINAL BARE CONDUCTOR TENSION LIMIT OF 5000.0 LBS. IS EXCEEDED BY 444.6 L

*****CREEP IS A FACTOR***

		INITIAL		FINAL		
INDEX	TEMP.	SAG	TENSION	SAG	TENSION	SAG IS I
1	0.	8.00	7574.	8.12	7456.	
2	0.	3.52	5838.	4.11	-4999.	----MINUS SIGN
3	32.	7.43	6326.	8.06	5832.	
4	10.	3.70	5560.	4.43	4640.	
5	20.	3.89	5288.	4.77	4308.	
6	30.	4.10	5016.	5.14	3997.	
7	40.	4.33	4745.	5.53	3715.	
8	50.	4.59	4482.	5.94	3458.	
9	60.	4.86	4230.	6.36	3230.	
10	70.	5.16	3985.	6.80	3024.	
11	80.	5.47	3754.	7.24	2840.	
12	90.	5.82	3534.	7.68	2678.	
13	100.	6.17	3330.	8.12	2533.	
14	110.	6.55	3139.	8.55	2405.	
15	120.	6.93	2966.	8.98	2290.	

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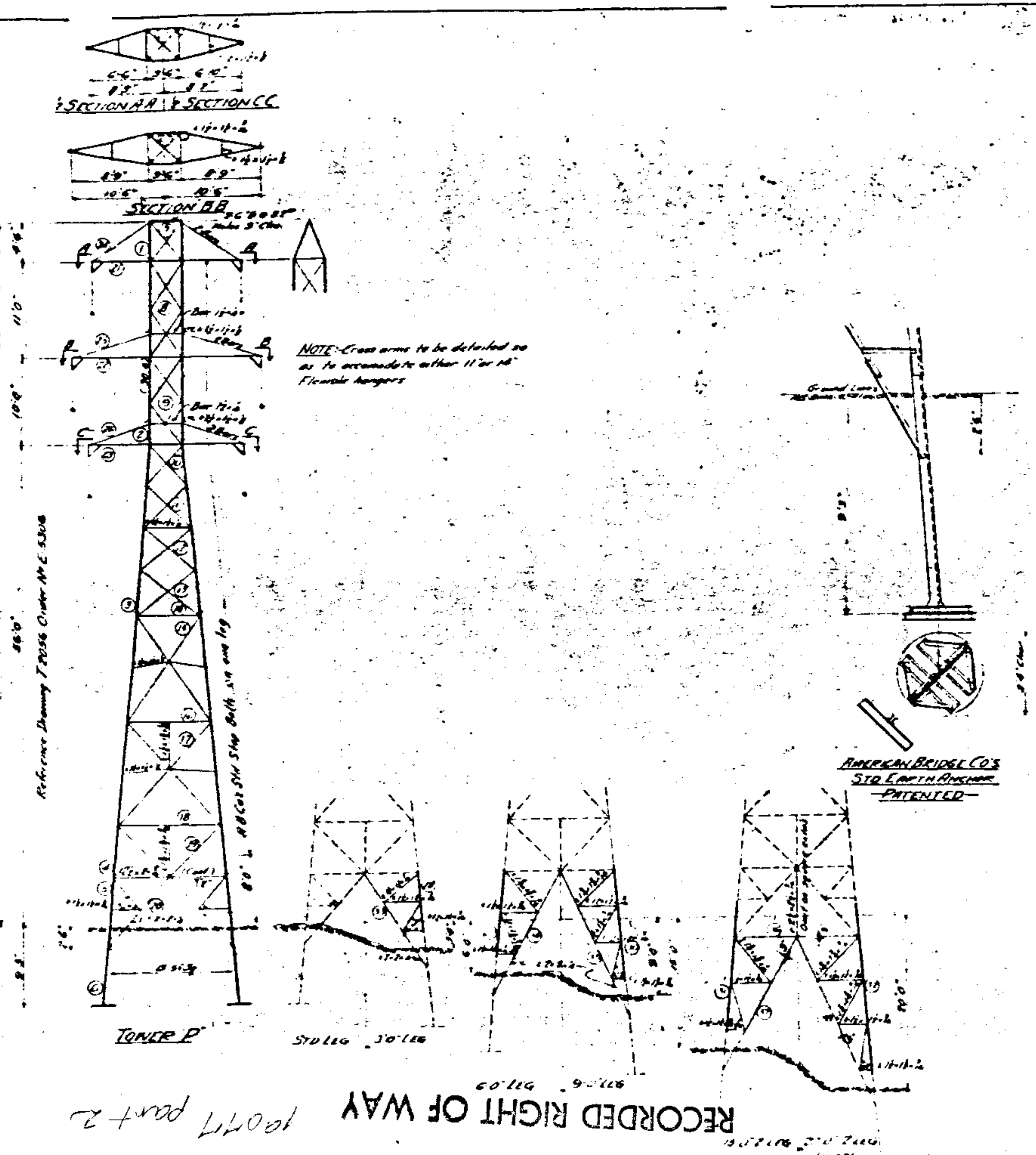


Member	Alt Stress	Section
1	- 67	L 2½ × 2½ × ¼
2	43.1	L 3½ × 3½ × ¼
3	50.8	L 4 × 4 × 5/16
4	64.4	L 4 × 4 × 3/8
5	64.5	do
6	63.4 / 64.9	do
7	± 12	L 1¾ × 1¾ × 3/16
8	± 18.7	L 2½ × 1½ × 3/16
9	± 13.3	L 2½ × 2 × 3/16
10	± 9.5	L 1⅝ × 1⅝ × 3/16
11	± 7.0	do
12	± 6.2	do
13	± 4.8	do
14	- 3.5	L 2½ × 2½ × 3/16
15	+ 11.1	L 1½ × 1½ × 3/16
16	- 5.6	L 2½ × 2½ × 3/16
17	+ 7.9	L 1¾ × 1¾ × 3/16
18	- 7.7	L 3 × 3 × 3/16
19	+ 9.9	L 1½ × 1½ × 3/16
20	+ 7.1	
21	- 14.5	L 3 × 2½ × ¼
22	- 12.9	do
23	- 15.7	do
24	+ 1.1	Bar 1½ × ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	L 1¾ × 1¾ × 3/16
28	- 65.8	L 4 × 4 × 3/8
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	L 1¾ × 1¾ × 3/16
34	+ 9.0	do
35	+ 11.4	L 1⅞ × 1⅞ × 3/16
36	- 4.0	L 3½ × 3 × ¼
37	± 4.3	do
38	± 4.8	L 4 × 3 × ¼

* Denotes setting templet members

GRILLAGE MATERIAL
2 7" Ɪ 30 @ 9.8" × 3'-3".
2 6" Ɛ 8.5 @ 15.5" × 3'-0"
4 ∠ 3 × 3 × ¼ × 1'-9"

SUSPENSION TOWER "P"

The tower is designed to support 1 ⅜" H.S. Crucible Steel Ground Wire and 6 477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4" wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical — 1 Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1 Grd Wire @ 460# =
6 Conductors @ 670# = 4
Total = 4480#

(3) Longitudinal 1 Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)
(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face
(5) Dead load of tower
Combine (1)+(2a) 2.54 + 2a, 4.5 + 2b/(1)+3, 2.54 + 4 and (1)+2+5

UNIT STRESSES
Tension on net section 33000# per sq in
Comp on gross section 33000# - 130 l/r (l/r < 150)
24000# - 70 l/r (l/r > 150)
Shear on bolts .... 30000# per sq in.
Bearing on bolts .... 60000# per sq in.
MATERIAL: - O.H. Steel ASTM A7 latest revision.
COATING: - All material galvanized
CONNECTIONS: - Bolted, ⅝" bolts
SPECIFICATIONS: - A.B.Co's Standard specifications for Transmission Towers

"P" TWR.

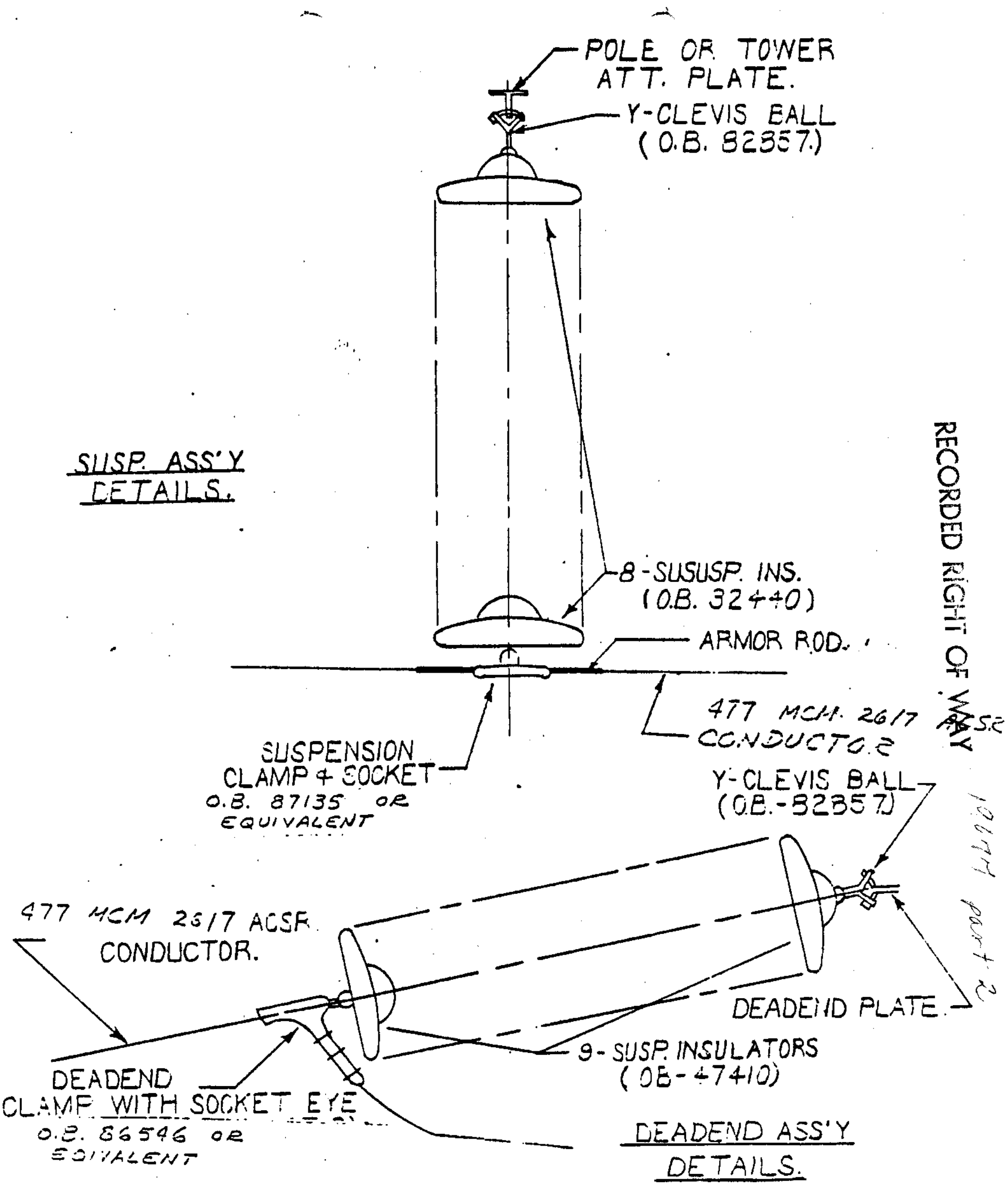
190??? part 2

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT, MICH.
SUSPENSION TOWER 'P'
LINCOLN BLOOMFIELD LINE

AMERICAN BRIDGE CO
PITTSBURGH PA

Normal Span	
Volts	
Circuits	
Conductors	
Ground Wire	
Revisions	

INQUIRY No
ORDER No
DRAWING T-7811



120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. — DRAWN BY N.H.H.
		DATE 4-9-70. — SCALE ——— — ED1-8028

DATA SHEET TO ACCOMPANY DRAWING RX-4321A
Revision of Crossing Rx-4321

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Hines-Yost 120KV transmission line over the C. & O. Railroad at approximately 2,640 feet north of Plymouth Road and 255 ft. west of Merriman Road. Railroad stationing 766+80. In the City of Livonia, southeast 1/4 of Section 27, Wayne County, Michigan.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing T-7811 (P).

Conductors

Six 477 MCM 26/7 ACSR, six per circuit.

Insulators

120 kV suspension assembly - 8 O.B. 32440.

Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawing ED1-8028

RECORDED RIGHT OF WAY

System Engineering Departm
CVP/cb 9/4/84

THE CALCULATIONS FOR THIS TRIAL ARE FOR 477 STUDY
STRESS-STRAIN CURVES USED REPRESENT 266,800 CM TO 636,000 CM ACSR 26/
477 MCM

STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL LIMIT MAX TENSION
1	500.0	7770.00	0.43560	9800.00

***FINAL BARE CONDUCTOR TENSION LIMIT OF 5000.0 LBS. IS EXCEEDED BY 444.6 L

*****CREEP IS A FACTOR***

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	SAG IS I
1	0.	8.00	7574.	8.12	7456.	
2	0.	3.52	5838.	4.11	-4999.	----MINUS SIGN
3	32.	7.43	6326.	8.06	5832.	
4	10.	3.70	5560.	4.43	4640.	
5	20.	3.89	5288.	4.77	4308.	
6	30.	4.10	5016.	5.14	3997.	
7	40.	4.33	4745.	5.53	3715.	
8	50.	4.59	4482.	5.94	3458.	
9	60.	4.86	4230.	6.36	3230.	
10	70.	5.16	3985.	6.80	3024.	
11	80.	5.47	3754.	7.24	2840.	
12	90.	5.82	3534.	7.68	2678.	
13	100.	6.17	3330.	8.12	2533.	
14	110.	6.55	3139.	8.55	2405.	
15	120.	6.93	2966.	8.98	2290.	

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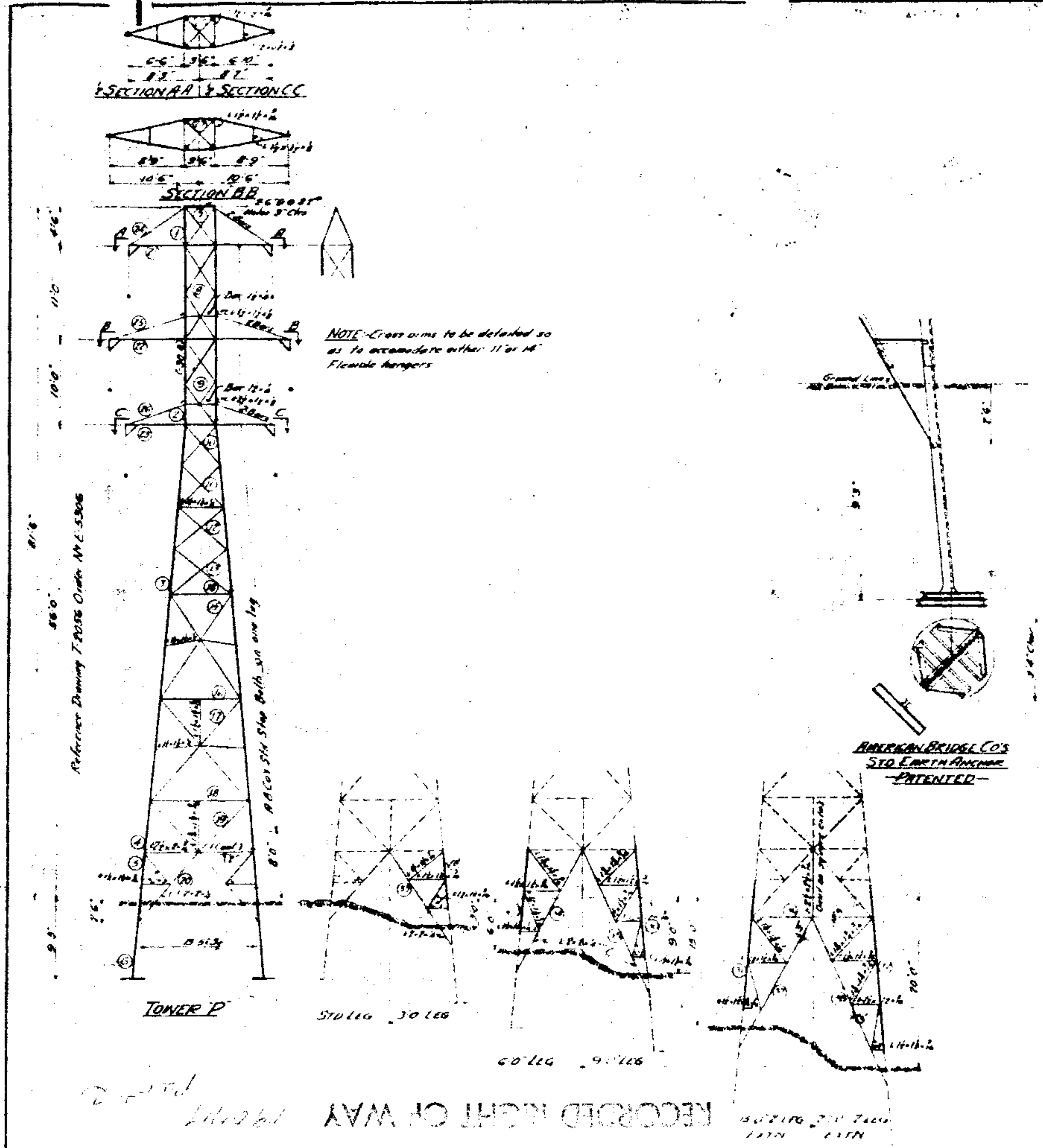
RECORDED RIGHT OF WAY 19077 page 2



SUSPENSION TOWER "P"

Member	Ult Stress	Section
1	- 67	∟2½ × 2½ × ¼
2	43.1	∟3½ × 3½ × ¼
3	50.8	∟4 × 4 × 5/16
4	64.4	∟4 × 4 × ⅜
5	64.5	do
6	64.0	do
7	12	∟1½ × 1½ × 3/16
8	10.7	∟2½ × 1½ × 3/16
9	13.3	∟2½ × 2 × 3/16
10	9.5	∟1¾ × 1¾ × 3/16
11	7.0	do
12	6.2	do
13	4.8	do
14	3.6	∟2½ × 2½ × 3/16
15	11.1	∟1½ × 1½ × 3/16
16*	5.6	∟2½ × 2½ × 3/16
17	7.9	∟1½ × 1½ × 3/16
18*	7.7	∟3 × 3 × 3/16
19	9.9	∟1½ × 1½ × 3/16
20	7.1	
21	14.5	∟3 × 2½ × ¼
22	18.9	do
23	15.7	do
24	11	Bar 1½ × ¼
25	22	do
26	20	do
27	5.1	∟1½ × 1½ × 3/16
28	65.8	∟4 × 4 × ⅜
29	66.3	do
30	67.4	do
31	63.1	do
32	63.2	do
33	8.8	∟1½ × 1½ × 3/16
34	9.0	do
35	11.4	∟1¾ × 1¾ × 3/16
36*	4.0	∟3½ × 3 × ¼
37	4.3	do
38	4.8	∟4 × 3 × ¼

* Denotes setting template member

GRILLAGE MATERIAL
2 7"I @ 9.8# × 3'3"
2 6"CBS @ 15.5# × 3'0"
4 ∟3 × 3 × ¼ × 1'9"

The tower is designed to support 1 ⅜" HS Crucible Steel Ground Wire and 6 477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½ ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition NESC

LOADS

(1) Vertical 1 Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1 Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1 Grd Wire @ 460# = 46#
6 Conductors @ 675# = 40.
Total = 442.

(3) Longitudinal 1 Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)
(4) Wind on tower of 25# per sq ft on 1½ times projected area of one face
(5) Dead load of tower
Compare (1)&(2a), (2b)&(4), (1)&(3)&(5) and (1)&(5)

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000# - 130 l/r (l/r < 150)
24000# - 70 l/r (l/r > 150)

Shear on bolts .... 30000# per sq in
Bearing on bolts .... 60000# per sq in

MATERIAL: O.H. Steel ASTM A7 latest revision.

COATING: All material galvanized

CONNECTIONS: Bolted, ⅝" bolts

SPECIFICATIONS: A.B. Co's Standard specifications for Transmission Towers

"P" TWR.

TRANSMISSION TOWERS	
THE DETROIT EDISON CO.	
DETROIT, MICH.	
SUSPENSION TOWER "P"	
LINCOLN BLOCK ...	
Normal span / Volts / Circuits / Conductors / Ground wire	**AMERICAN BRIDGE CO.** PITTSBURGH PA
Revisions	Inquiry No. ... / Order No. ... / Drawing T-7[illegible] / Date ...

DATA SHEET TO ACCOMPANY DRAWING RX-4322A
Revision of Crossing Rx-4322

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Hines-Yost 120kV transmission line over a spur track of the C. & O. Railroad at approximately 1,130 feet west of Farmington Road and approximately 2,640 feet north of Plymouth Road.

In the City of Livonia, southeast 1/4 of Section 28, Wayne County, Michigan. Railroad stationing 830+00.

Circuits

One 120,000 volt 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing T-7815 (LX), T-7811 (P).

Conductors

North circuit- 3-954 54/7 ACSR conductor. South circuit-3-477 27/7 ACSR conductor.

Insulators

Eight (8) 5-3/4" x 10" O.B. #32440 or equivalent in suspension.

Crossarms

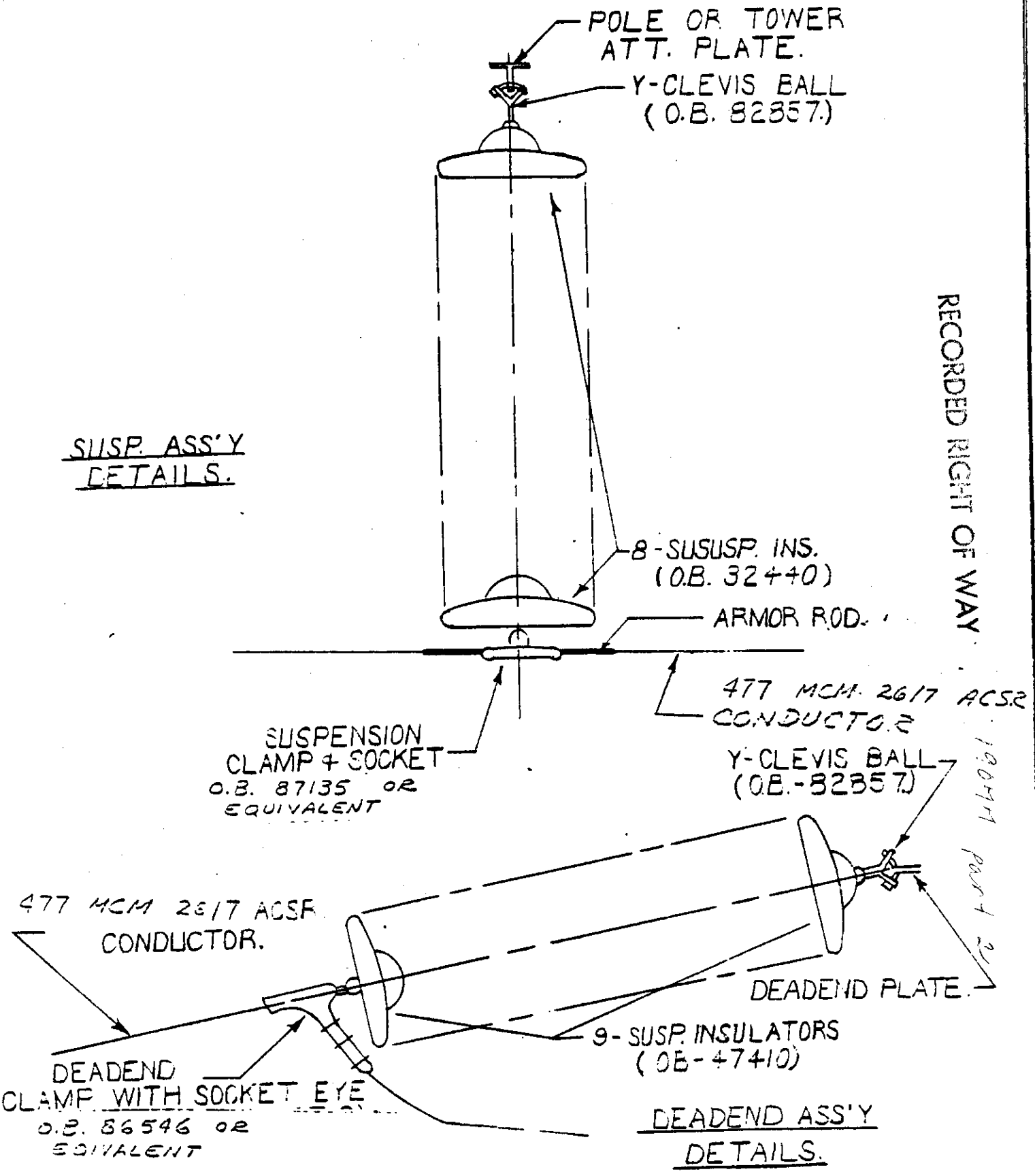
Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawings ED 1-8028 and ED1-7430.

System Engineering Department
CVP/cb 8/30/84

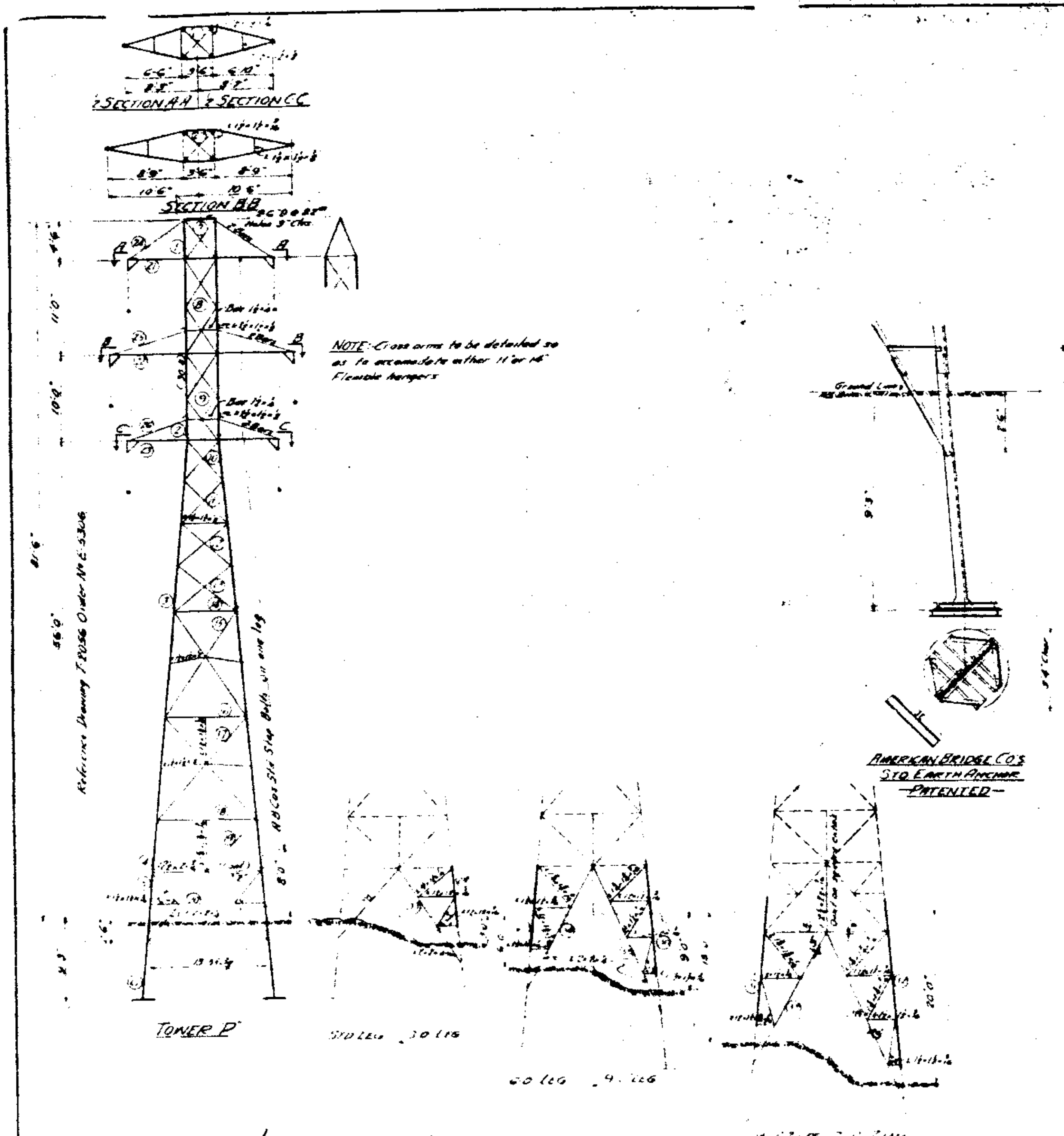


RECORDED RIGHT OF WAY

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS

APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT	
	LAYOUT BY R.C.S.	DRAWN BY N.H.H.
	DATE 4-2-70.	ED1-8028
	SCALE	

RECORDED RIGHT OF WAY 19074 part 2



SUSPENSION TOWER "P".

Member	Ult Stress	SECTION
1	- 6.7	L 2½ x 2½ x ¼
2	43.1	L 3½ x 3½ x ¼
3	-50.8	L 4 x 4 x 5/16
4	-64.4	L 4 x 4 x ⅜
5	-64.5	do
6	+63.4 -64.0	do
7	+ 1.2	L 1½ x 1½ x 3/16
8	+ 10.7	L 2½ x 1½ x 3/16
9	+ 13.3	L 2½ x 2 x 3/16
10	+ 9.5	L 1¾ x 1¾ x 3/16
11	+ 7.0	do
12	+ 6.2	do
13	+ 4.8	do
14	- 3.5	L 2½ x 2½ x 3/16
15	+ 11.1	L 1½ x 1½ x 3/16
* 16	- 5.6	L 2½ x 2½ x 3/16
17	+ 7.9	L 1½ x 1½ x 3/16
* 18	- 7.7	L 3 x 3 x 3/16
19	+ 9.9	L 1½ x 1½ x 3/16
20	+ 7.1	
21	- 14.5	L 3 x 2½ x ¼
22	- 18.9	do
23	- 15.7	do
24	+ 1.1	Bar 1½ x ¼
25	+ 2.2	do
26	+ 2.0	do
27	± 5.1	L 1½ x 1½ x 3/16
28	- 65.8	L 4 x 4 x ⅜
29	- 66.3	do
30	- 67.4	do
31	- 63.1	do
32	- 63.2	do
33	+ 8.8	L 1½ x 1½ x 3/16
34	+ 9.0	do
35	+ 11.4	L 1¾ x 1¾ x 3/16
* 36	- 4.0	L 3½ x 3 x ¼
37	+ 4.3	do
38	± 4.8	L 4 x 3 x ¼

* Denotes setting templet members

GRILLAGE MATERIAL
2 7" I @ 9.8# x 3'9"
2 6" CBS @ 15.5# x 3'0"
4 L 3 x 3 x ¼ x 1'9"

The tower is designed to support 1 ⅜" H.S. Crucible Steel Ground Wire and 6 477000 cm ACSR Conductors on a maximum span of 600' with 5° maximum angle in line.

The cables are to be so strung that the maximum tension under 4# wind on ½" ice coated cables will not exceed 5300# in the Ground Wire and 7770# in the Conductors in accordance with 5th Edition N.E.S.C.

LOADS

(1) Vertical 1-Grd Wire @ 500# = 500#
6 Conductors @ 1000# = 6000#
Total = 6500#

(2a) Wind on wires 1-Grd Wire @ 280# = 280#
6 Conductors @ 375# = 2250#
Total = 2530#

(2b) 5° Angle in line 1-Grd wire @ 460# = 460
6 Conductors @ 670# = 4020
Total = 4480#

(3) Longitudinal 1-Grd Wire @ 5300# or
1 Conductor @ 6160# (80% of 7770#)
(For Combine loads assume at middle arm)

(4) Wind on tower of 65# per sq ft on 1½ times projected area of one face

(5) Dead load of tower

Combine (1)+(2a), (1)+(2b), (1)+(3), (5)+(4) and (1)+(5)

UNIT STRESSES

Tension on net section 33000# per sq in
Comp on gross section 33000#-130 l/r (l/r < 150)
24000#-70 l/r (l/r > 150)
Shear on bolts ...... 30000# per sq in
Bearing on bolts ...... 60000# per sq in

MATERIAL: O.H. Steel A.S.T.M. A7 latest revision.

COATING: All material galvanized

CONNECTIONS: Bolted, ⅝" bolts

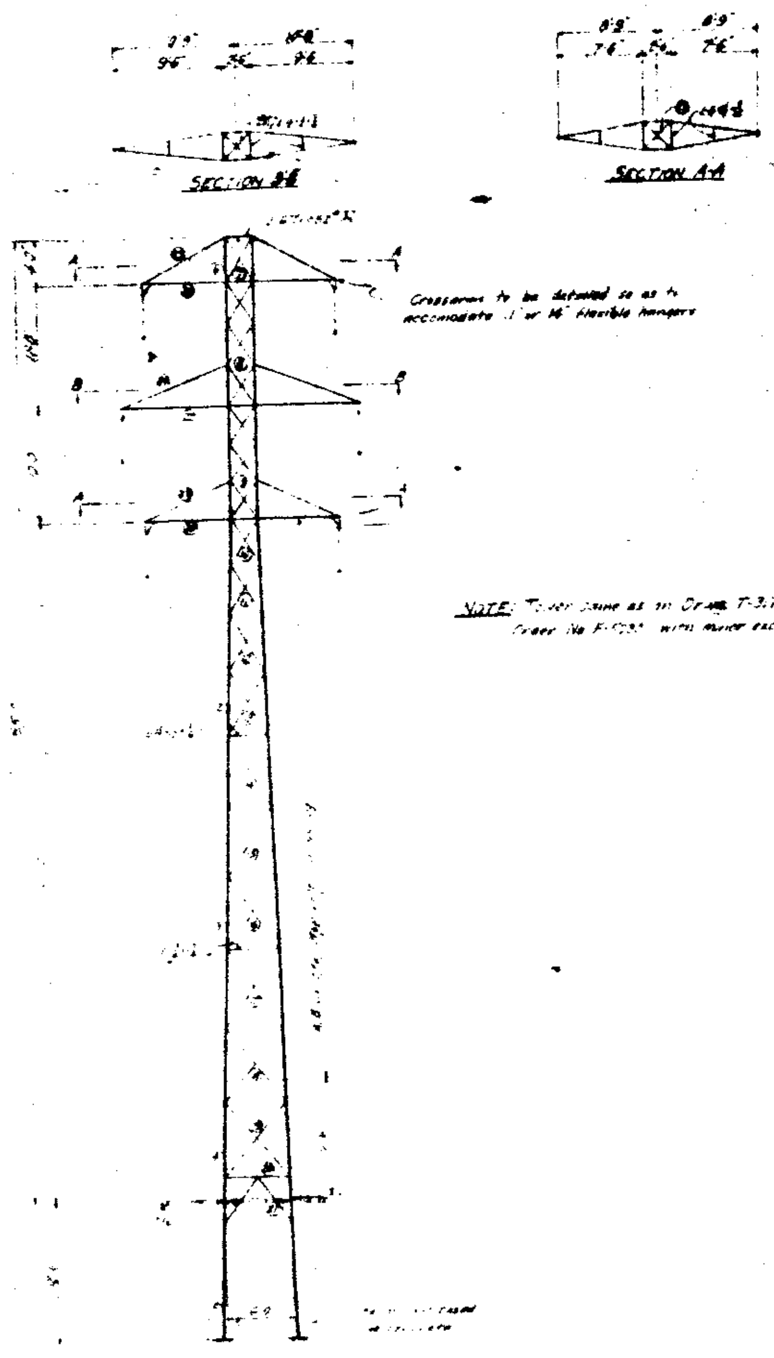
SPECIFICATIONS: A B Co's Standard specifications for Transmission Towers

"P" TWR.

TRANSMISSION TOWERS
THE DETROIT EDISON CO
DETROIT MICH.
SUSPENSION TOWER "P"
LINCOLN - BLOOM [illegible]

NORMAL SPAN
VOLTS
CIRCUITS
CONDUCTORS
GROUND WIRE
REVISIONS

AMERICAN BRIDGE CO
PITTSBURGH PA
INQUIRY No [illegible]
ORDER No. [illegible]
DRAWING T-7317



Crossarms to be detailed so as to accommodate [illegible] flexible hangers

NOTE: Tower same as in Drwg. T-3.76 [illegible] with minor exceptions.

ANGLE TOWER LX

"LX" TWR.

RECORDED RIGHT OF WAY 1907H part 2

ANGLE TO LX

MEMBER	ULT. STRESS	SECTION
1	-473	[illegible]
2	-833	[illegible]
3	-991	[illegible]
4	-1144	L 6·6·[illegible]
5	-1106	do
6	-68	[illegible]
7	±86	[illegible]
8	±7.5	[illegible]
9	±13.1	do
10	±14.2	[illegible]
11	±13.6	do
12	±12.4	do
13	±11.6	do
14	±11.0	do
15	±3.1	do
16	±8.4	do
[illegible]	±8.5	[illegible]
[illegible]	±7.1	do
19	±6.2	L 2·2·[illegible]
20	±7.5	L 3·2½·¼
21	±6.6	L 2·2·¼
22	-2.8	L 3½·[illegible]
23	+1.1	Bar [illegible]
24	+.14	do
25	±6.2	[illegible]
26	-9.3	L 3½·2½·[illegible]
27	±4.5	L [illegible]

The tower is design[ed to] support [illegible] Crucible Steel Ground Wire and 6 477,000 cm A.C. Conductors on a maximum span of 340' with 5° angle in line.

The cables are to be so strung that the max. tension under 4# wind on ½" ice covered cables will not exceed 4170# in the Ground [Wire] and 4800# in the Conductors.

LOADS.

1. Vertical 1 Grd. Wire @ 350# = 350#
6 Conductors @ 750# = 4500# 4850#

2a. Transverse wind on cable
1 Grd. Wire @ 160# = 160#
6 Conductors @ 210# = 1260# 1420#

2b. Transverse angle in line of 5°
1 Grd. Wire @ 375# = 375#
6 Conductors @ 525# = 3150# 3525#

3. Longitudinal Any one Conductor @ 4800# (80% of 6000#)

4. Wind on tower of 6.5# per sq. ft. on [illegible] times the projected area of one face.

5. Dead load of tower

Combine [illegible]

UNIT STRESSES (Ultimate)

Tension on net section - 33000# per sq. in.

Compression on gross section - [illegible] <150 [illegible] >150

Shear on bolts 30000# per sq. in.

Bearing on bolts 60000# per sq. in.

MATERIAL: [illegible] Steel A.S.T.M. [illegible]

COATING: All material galvanized

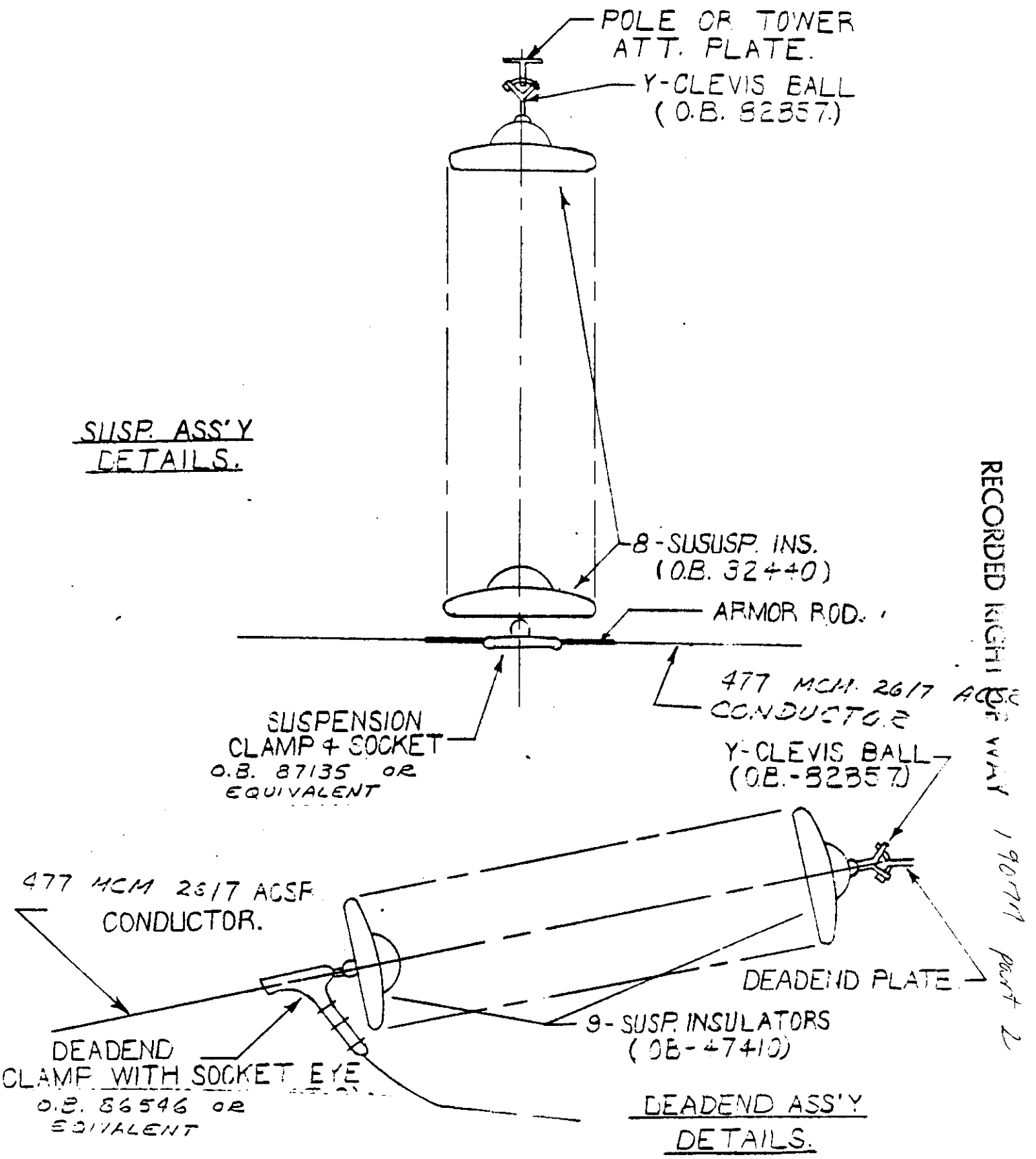
CONNECTIONS: Bolted, ⅝" bolts

SPECIFICATIONS: A.B. Co. Standard [illegible] for transmission towers

THE DETROIT EDISON COMPANY
DETROIT, MICHIGAN
ANGLE TOWER LX
LINCOLN - BLOOMFIELD LINE

AMERICAN BRIDGE COMPANY
TOWER DEPT. OFFICE

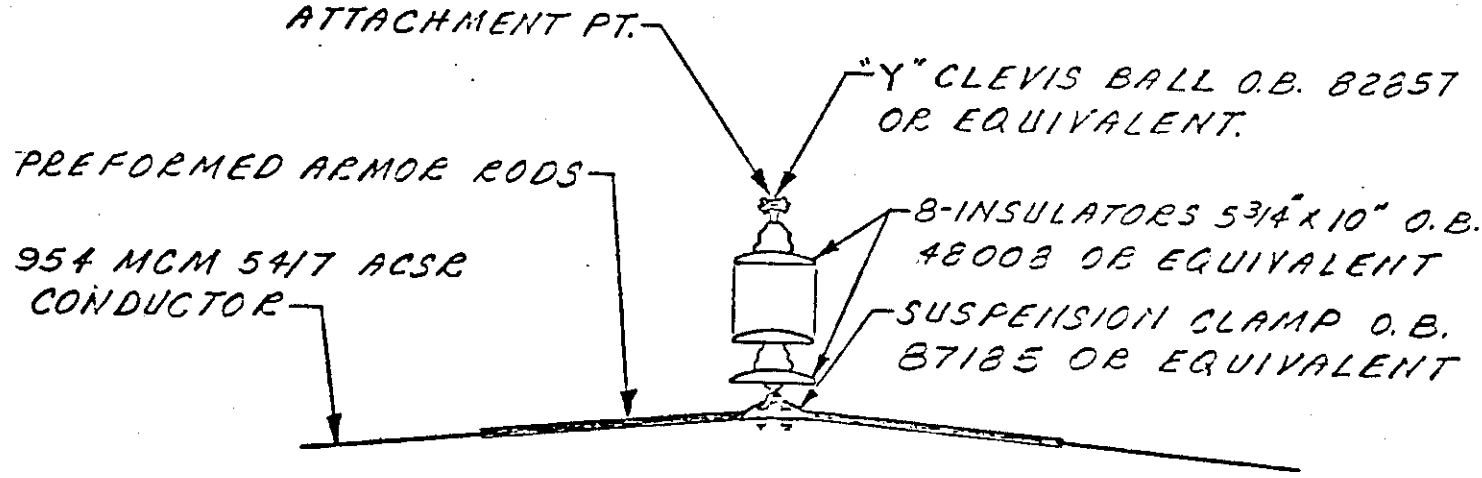
Sheet No. [illegible] Drawing No. T-7815
Date: May 17, 1948 Inquiry No. [illegible]
Contract No. [illegible]



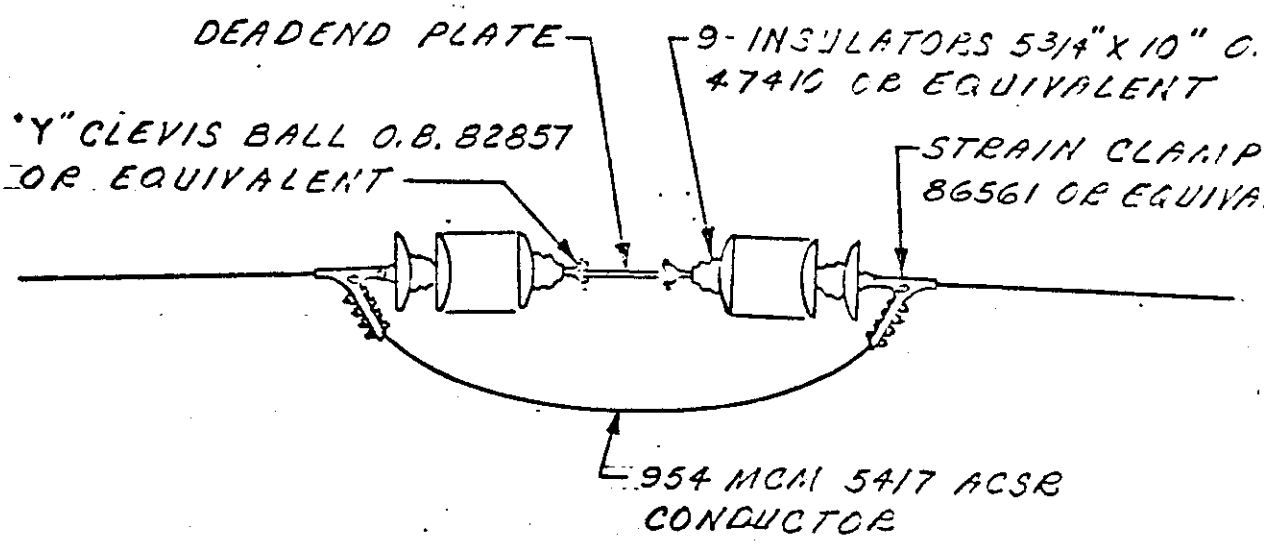
RECORDED RIGHT OF WAY 19077 part 2

120 KV SUSPENSION & DEADEND ASSEMBLY DETAILS	APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY R.C.S. DRAWN BY N.H.H.
		DATE 4-2-70. SCALE —
		ED1-8023

SUSPENSION ASS'Y DETAILS



DEADEND ASS'Y DETAILS



120 KV SUSPENSION & DEADEND ASS'Y DETAILS	APPROVED JSW	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY J. WRIGHT | DRAWN BY JEH
		DATE 1-25-71 | DRAWING NUMBER ED1-7430
		SCALE

DE FORM SE 11 PTG. 4-69.

SAGS AND TENSIONS STUDY NO. 102
ACSR CONDUCTOR - 954 MCM, 54/7 11000 - H.L.T.

954 54/7 ACSR

11,000 H.L.T.

	TEMP.	FINAL SAG	FINAL TENSION	INITIAL SAG	INITIAL TENSION
SPAN LENGTH = 200. FEET					
CREEP IS A FACTOR					
1	0.	1.36	10017.	1.24	-11000.
2	0.	1.17	9767.	1.06	10855.
3	-20.	0.57	10932.	0.53	11613.
4	0.	0.67	9272.	0.59	10576.
5	32.	0.92	6722.	0.70	8848.
6	60.	1.30	4750.	0.85	7286.
7	90.	1.91	3220.	1.10	5607.
8	120.	2.52	2446.	1.51	4081.
SPAN LENGTH = 300. FEET					
CREEP IS A FACTOR					
1	0.	3.01	10141.	2.78	-11000.
2	0.	2.66	9668.	2.41	10699.
3	-20.	1.37	10150.	1.25	11089.
4	0.	1.61	8592.	1.38	10069.
5	32.	2.18	6347.	1.65	8401.
6	60.	2.89	4787.	2.00	6942.
7	90.	3.80	3647.	2.52	5490.
8	120.	4.72	2935.	3.23	4286.
SPAN LENGTH = 400. FEET					
CREEP IS A FACTOR					
1	0.	5.29	10263.	4.93	-11000.
2	0.	4.78	9572.	4.35	10517.
3	-20.	2.68	9188.	2.37	10381.
4	0.	3.14	7831.	2.62	9394.
5	32.	4.11	5996.	3.14	7844.
6	60.	5.11	4821.	3.75	6570.
7	90.	6.24	3949.	4.58	5381.
8	120.	7.33	3360.	5.54	4445.
SPAN LENGTH = 500. FEET					
CREEP IS A FACTOR					
1	0.	8.17	10378.	7.71	-11000.
2	0.	7.53	9501.	6.92	10339.
3	-20.	4.67	8229.	4.03	9551.
4	0.	5.40	7130.	4.45	8647.
5	32.	6.71	5735.	5.28	7297.
6	60.	7.93	4853.	6.18	6228.
7	90.	9.23	4173.	7.27	5293.
8	120.	10.47	3680.	8.43	4565.
SPAN LENGTH = 600. FEET					
CREEP IS A FACTOR					
1	0.	11.67	10471.	11.11	-11000.
2	0.	10.91	9444.	10.13	10166.
3	-20.	7.48	7404.	6.36	9704.
4	0.	8.42	6577.	7.00	7912.
5	32.	10.00	5543.	8.17	6784.
6	60.	11.37	4876.	9.31	5952.
7	90.	12.79	4337.	10.60	5227.
8	120.	14.15	3923.	11.92	4653.
SPAN LENGTH = 700. FEET					

RECORDED RIGHT OF WAY 19077 part 2

DATA SHEET TO ACCOMPANY DRAWING RX-4323A
Revision of Crossing Rx-4323

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing of the Hines Yost 120kV transmission line over the C. & O. Railroad at approximately 1,700 feet east of centerline of Levan Road, and approximately 2,640 feet north of Plymouth Road.

In the City of Livonia, southeast 1/4 of Section 29, Wayne County, Michigan. Railroad stationing 880+00.

Circuits

One 120,000 volt, 60 cycle, 3 phase transmission line with one groundwire.

Towers and Crossarms

See attached drawing T-8412 (AA&AB).

Conductors

North circuit-3-954 54/7 ACSR conductors. South circuit-3-477 27/7 ACSR conductors.

Insulators

Eight (8) 5-3/4" x 10" O.B. #32440 or equivalent in suspension.

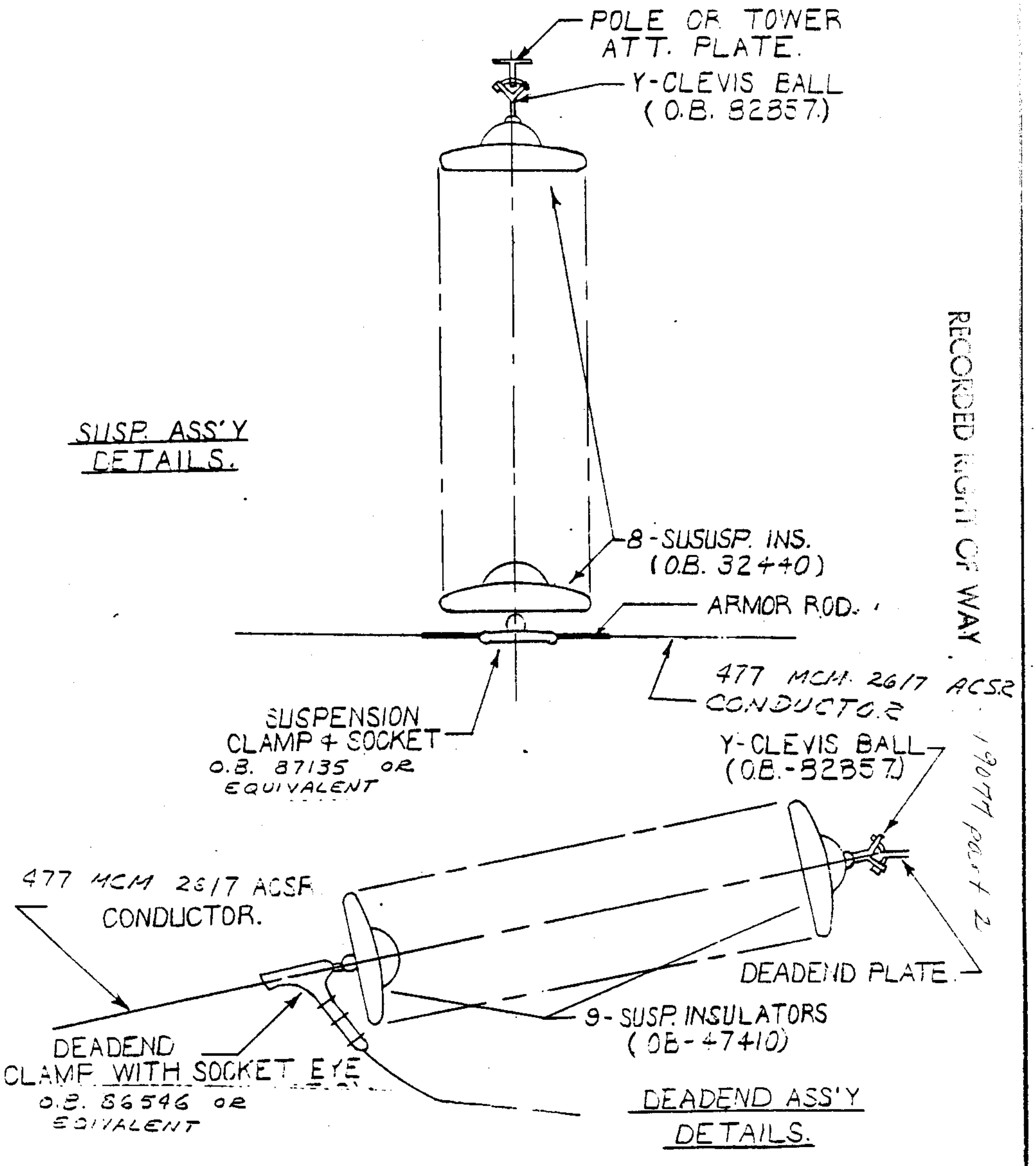
Guy and Guy Attachments

None

Suspension and Deadend Details

See attached drawings ED1-8028 and ED1-7430.

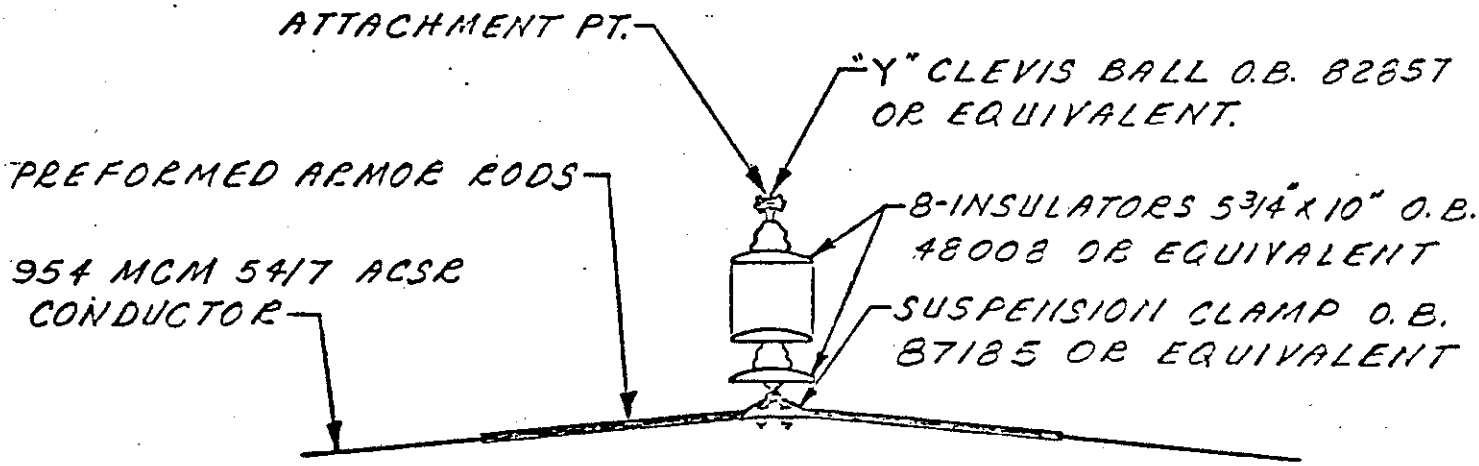
System Engineering Department
CVP/cb 8/30/84



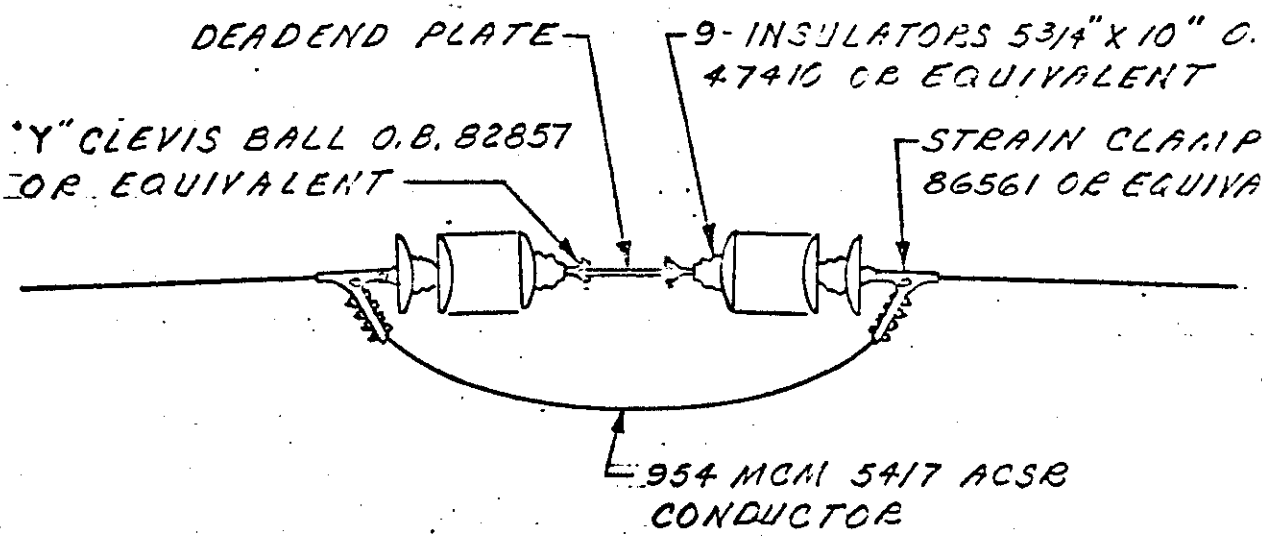
120 KV SUSPENSION + DEADEND ASSEMBLY DETAILS

APPROVED	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT	
	LAYOUT BY RCS.	DRAWN BY N.H.H.
	DATE 4-9-70. SCALE	ED1-8028

SUSPENSION ASS'Y DETAILS



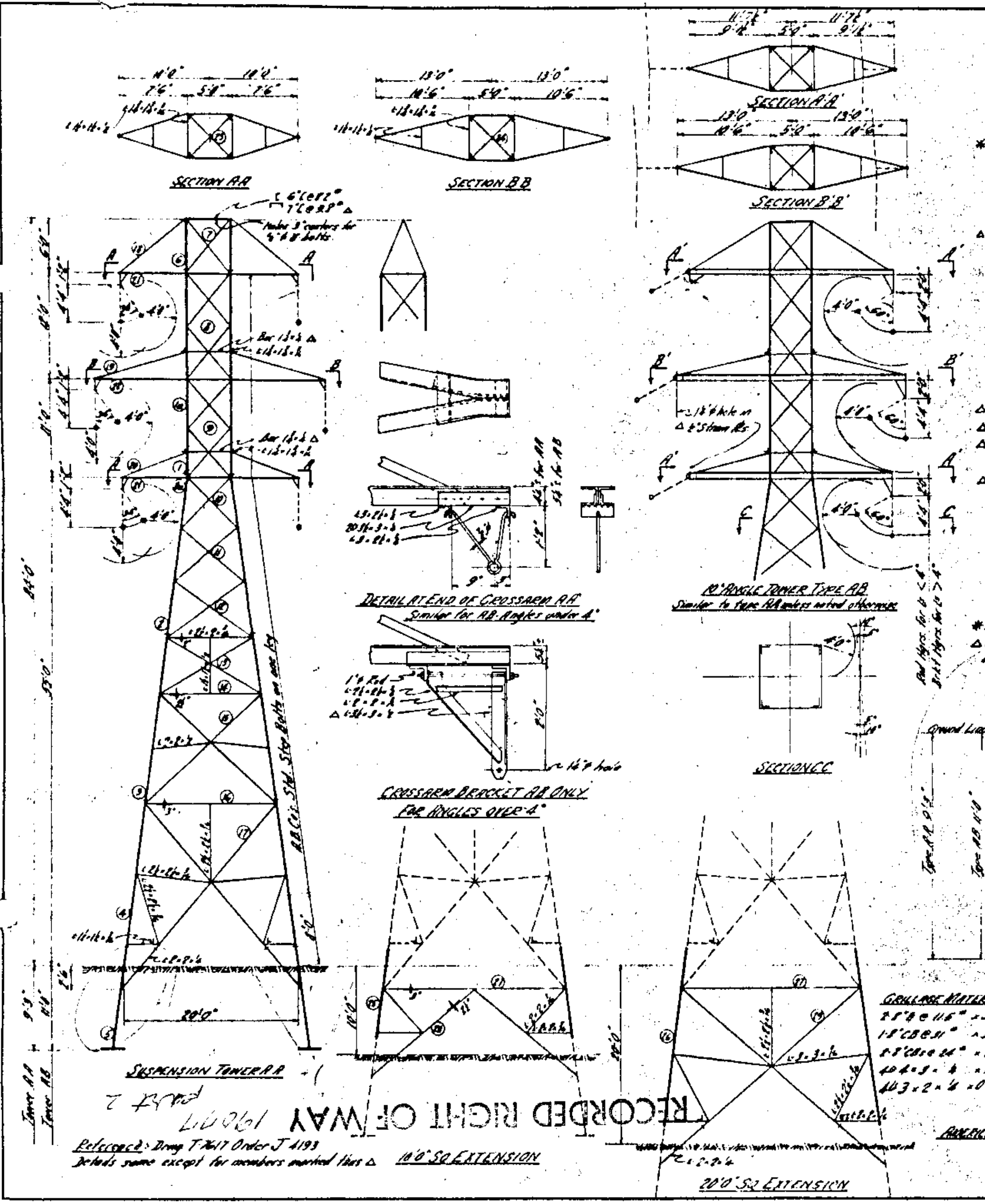
DEADEND ASS'Y DETAILS



RECORDED RIGHT OF WAY

120 KV SUSPENSION & DEADEND ASS'Y DETAILS	APPROVED JSW	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY J. WRIGHT | DRAWN BY JCH
		DATE 1-25-71 | DRAWING NUMBER EDI-7430
		SCALE

DE FORM SE 11 PTG. 4-69



Number	Tower AA Ult Stress	Tower AA Section	Tower AB (10°) Ult Stress	Tower AB (10°) Section
1a	-33.4	L4×4×1/4	-50.5	L4×4×3/8
1	-44.8	do	-70.4	do
2a	-51.8	L5×5×5/16	-82.7	L5×5×3/8
2	-51.9	do	-87.3	do
* 3	-58.4	do	-97.3	L6×6×3/8
4	-59.4	do	-99.8	do
5	+46.6 / -56.7	do	+11.6 / -94.8	do
6	-9.4	L3×3×1/4	-14.8	L3×3×1/4
7	±1.8	L1¾×1¾×3/16	±3.0	L1¾×1¾×3/16
△ 8	±16.3	L2×2×1/4	±17.1	L2×2×1/4
9	±18.1	L2½×2×1/4	±18.4	L2½×2×1/4
10	±12.6	L2½×2×1/4	±14.1	do
11	±9.4	L2×2×1/4	±10.3	L2×2×1/4
12	±7.2	do	±7.7	do
13	±5.7	L2½×2×1/4	±6.3	L2½×2×1/4
14	-4.3	L3×2½×1/4	-4.7	L3×2½×1/4
15	+10.8	L1¾×1¾×3/16	+12.0	L1¾×1¾×3/16
16	-6.8	L3½×3×1/4	-7.6	L3½×3×1/4
17	+9.1	L1¾×1¾×3/16	+10.2	L1¾×1¾×3/16
△ 18	+8.1	2 Bars 1¾×1/4	+8.1	2 Bars 1¾×1/4
△ 19	+9.1	Bar 1¾×1/4	+9.1	Bar 1¾×1/4
△ 20	+7.4	do	+7.4	do
21	-25.9	L4×3×1/4	-31.9	L5×3½×5/16
△ 22	-34.9	L4×4×1/4	-36.6	do
23	±4.8	L1¾×1¾×3/16	±6.4	L1¾×1¾×3/16
24	±7.5	do	±7.8	do
25	-55.2	L5×5×5/16	-95.4	L6×6×3/8
26	-57.2	do	-99.4	do
27	-4.8	L4×3×1/4	-5.4	L4×3×1/4
28	±2.9	L3½×2½×1/4	±3.6	L3½×2½×1/4
29	+5.8	L1¾×1¾×3/16	+6.6	L1¾×1¾×3/16

* Denotes setting templet member
△ Denotes revision in section and connection other member same as Drwg T-7617

SUSPENSION TYPE AA & 10° ANGLE TYPE AB

The towers are designed to support 1-Grd Wire of 3/8" EHS Steel and 6 Conductors of 795000 (26/7) ACSR on a span of 900' tangent for Tower AA and with 10° angle in line for AB.

The cables are to be so strung that the maximum tension under 4" wind on ½" ice coated cables will not exceed 9500# in the grd wire and 12450# in the conductors in accordance with 5th Edition N.E.S.C.

LOADS

(a) Vertical — 1-Grd Wire @ 1030# = 1030#; 6 Conductors @ 2000# = 12000# 13030#

(b-a) Transverse - Wind on wires — 1-Grd Wire @ 450# = 450#; 6 Conductors @ 635# = 3810# 4260#

(b-b) Transverse - 10° Angle for Tower AB — 1-Grd Wire @ 1660# = 1660#; 6 Conductors @ 2180# = 13080#

(c) Longitudinal - One ground wire broken at or any one conductor broken at 12450#

(d) Wind on tower at 6.5# per sq. ft. on 1½ times projected area of one face of tower.

(e) Dead load of tower

Combine:

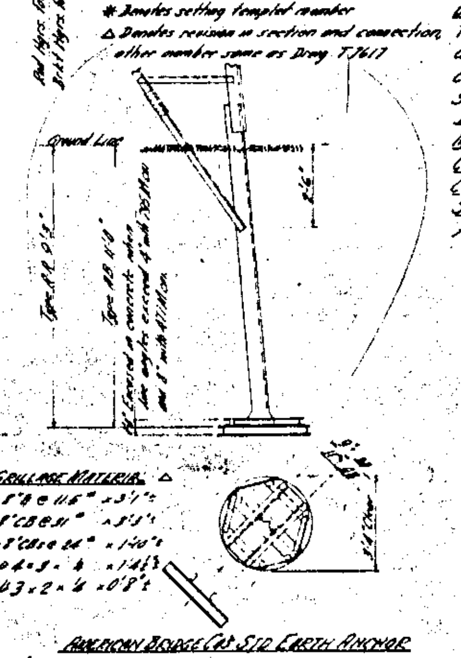
Tower AA
Intact - 1.27×1, 2.54×2a, 2.54×4, 1.27×5
1 Broken - 1.27×1, 2.54×⅔ of 2a, 1.10×3, 2.54×4, 1.27×5

Tower AB
Intact - 1.27×1, 2.54×2a, 1.65×2b, 2.54×4, 1.27×5
1 Broken - 1.27×1, 2.54×⅔ of 2a, 1.65×⅔ of 2b, 1.10×3, 2.54×4, 1.27×5

NOTE: Crossarms designed for 12450# and hangers for double vertical load.

ULTIMATE UNIT STRESSES
Tension on net section 33000# per sq in.
Comp on gross section 33000#-1.8 l/r # l/r < 150
Comp on gross section 24000#-70 l/r # l/r > 150
Shear on bolts .... 30000# per sq in
Bearing on bolts .... 60000# per sq in.
MATERIAL: O.H. Steel A.S.T.M. A7 latest revision
COATING: All material galvanized
CONNECTIONS: Bolted, ⅝" ø bolts
SPECIFICATIONS: AB Co's Standard Sp. for Transmission Towers

3:1 ? 700' span



TRANSMISSION TOWERS
THE DETROIT EDISON CO.
DETROIT, MICH.
TYPE AA AND AB TOWERS

AMERICAN BRIDGE CO.
PITTSBURGH, PA.
INQUIRY No. T-5447
ORDER No. Q346-7
DRAWING T-8412

SAGS AND TENSIONS STUDY NO. 102
ACSR CONDUCTOR - 954 MCM, 54/7 11000 - H.L.T.

954 54/7 ACSR

11,000 H.L.T.

	TEMP.	FINAL SAG	FINAL TENSION	INITIAL SAG	INITIAL TENSION
SPAN LENGTH = 200. FEET					
CREEP IS A FACTOR					
1	0.	1.36	10017.	1.24	-11000.
2	0.	1.17	9767.	1.06	10855.
3	-20.	0.57	10932.	0.53	11613.
4	0.	0.67	9272.	0.59	10576.
5	32.	0.92	6722.	0.70	8848.
6	60.	1.30	4750.	0.85	7286.
7	90.	1.91	3220.	1.10	5607.
8	120.	2.52	2446.	1.51	4081.
SPAN LENGTH = 300. FEET					
CREEP IS A FACTOR					
1	0.	3.01	10141.	2.78	-11000.
2	0.	2.66	9668.	2.41	10699.
3	-20.	1.37	10150.	1.25	11089.
4	0.	1.61	8592.	1.38	10069.
5	32.	2.18	6347.	1.65	8401.
6	60.	2.89	4787.	2.00	6942.
7	90.	3.80	3647.	2.52	5490.
8	120.	4.72	2935.	3.23	4286.
SPAN LENGTH = 400. FEET					
CREEP IS A FACTOR					
1	0.	5.29	10263.	4.93	-11000.
2	0.	4.78	9572.	4.35	10517.
3	-20.	2.68	9188.	2.37	10381.
4	0.	3.14	7831.	2.62	9394.
5	32.	4.11	5996.	3.14	7844.
6	60.	5.11	4821.	3.75	6570.
7	90.	6.24	3949.	4.58	5381.
8	120.	7.33	3360.	5.54	4445.
SPAN LENGTH = 500. FEET					
CREEP IS A FACTOR					
1	0.	8.17	10378.	7.71	-11000.
2	0.	7.53	9501.	6.92	10339.
3	-20.	4.67	8229.	4.03	9551.
4	0.	5.40	7130.	4.45	8647.
5	32.	6.71	5735.	5.28	7287.
6	60.	7.93	4853.	6.18	6228.
7	90.	9.23	4173.	7.27	5293.
8	120.	10.47	3680.	8.43	4565.
SPAN LENGTH = 600. FEET					
CREEP IS A FACTOR					
1	0.	11.67	10471.	11.11	-11000.
2	0.	10.91	9444.	10.13	10166.
3	-20.	7.48	7404.	6.36	8704.
4	0.	8.42	6577.	7.00	7912.
5	32.	10.00	5543.	8.17	6784.
6	60.	11.37	4876.	9.31	5952.
7	90.	12.79	4337.	10.60	5227.
8	120.	14.15	3923.	11.92	4653.
SPAN LENGTH = 700. FEET					

RECORDED RIGHT OF WAY

DATA SHEET TO ACCOMPANY DRAWING RX-4162B
Revision of Crossing Rx-4162 TEMP.
Covered Under Permit ME-680-RR-79 Dated 10-25-79

Name of Company

The Detroit Edison Company

Name and Location of Crossing

Crossing No. 1: Crossing of the Diesel-Yost 120kV tower line over the C. & O. Railroad, located approximatley 2,640 feet north of Plymouth Road and approximately 2,360 feet east of Merriman Road, railroad stationing 740+00

Crossing No. 2: Crossing of the Hines-Yost 120kV tower line over the C. & O. Railroad, located approximately 2,640 feet north of Plymouth Road and approximately 2,150 feet east of Merriman Road, railroad stationing 742+00. City of Livonia, Wayne County, Michigan.

Circuits

Two (2) 120 kV, 60 Hz, 3-phase, 3-wire transmission circuits and one ground wire per crossing.

Towers and Crossarms

See attached drawing T-8414 (AD).

Poles

See attached drawing H.P.O. structure.

Conductors

Crossing No. 1-3-954 54/7 MCM ACSR.
Crossing No. 2-3-477 26/7 MCM ACSR.
Both crossings one 3/8 steel ground wire.

Guy and Guy Attachments

See drawing Rx-4162B and H.P.O. structure.

Suspension and Deadend Details

See attached drawings ED1-8028, ED1-7430.

RECORDED RIGHT OF WAY 19077 Page 2

System Engineering Department
CVP/cb 9/10/84

THE CALCULATIONS FOR THIS TRIAL ARE FOR SAG VALUES FOR SHORT SPAN LC
STRESS-STRAIN CURVES USED REPRESENT 954,000CM ACSR 54/7 7

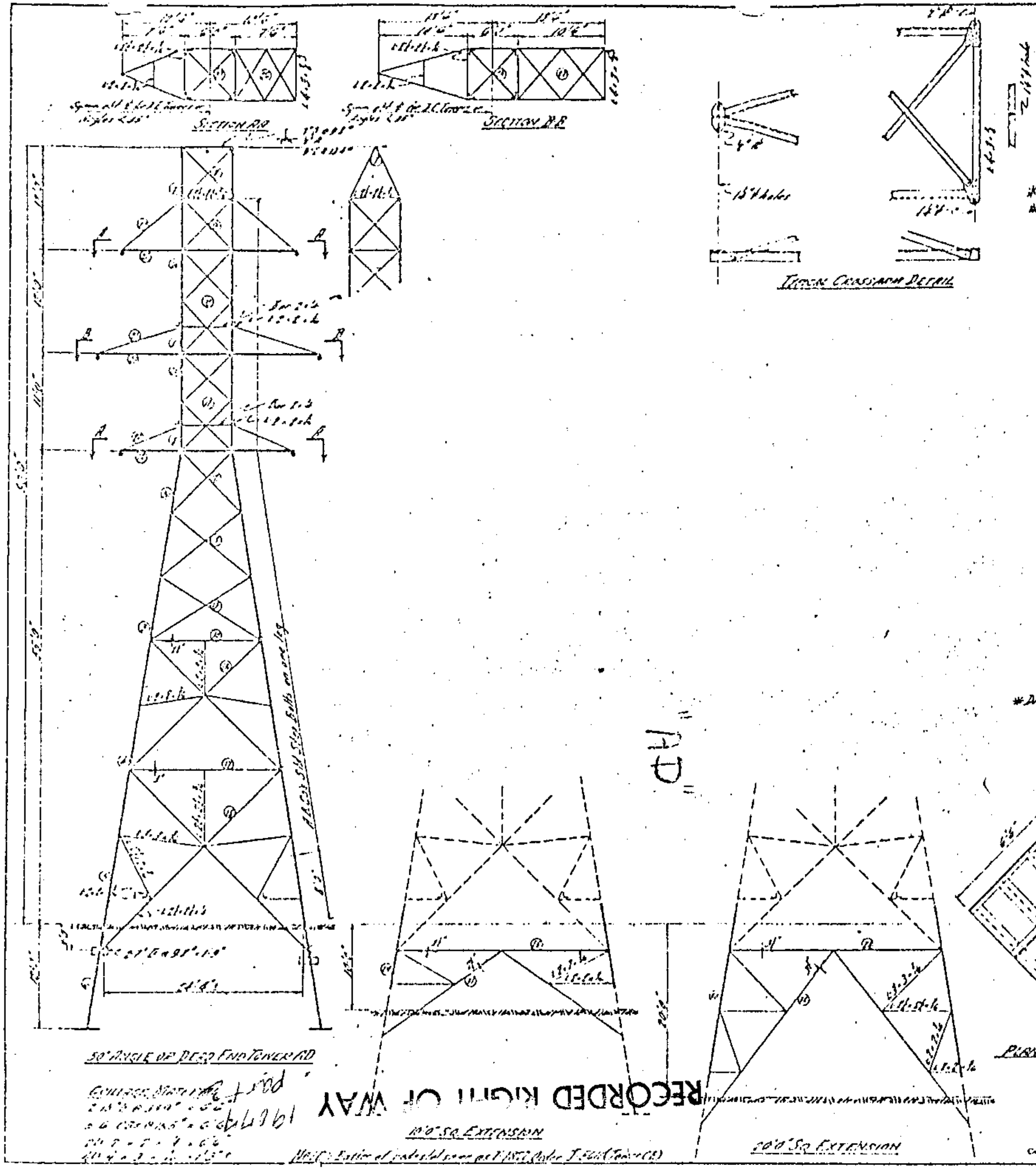
STARTING INDEX	RULING SPAN	STARTING SAG OR TENSION	AREA OF CONDUCTOR	INITIAL L MAX TENS
1	200.0	2500.00	0.84640	2500

INDEX	TEMP.	INITIAL SAG	INITIAL TENSION	FINAL SAG	FINAL TENSION	
1	0.	5.44	2500.	5.44	2500.	----MI
2	0.	5.13	1204.	5.21	1184.	
3	0.	5.37	2139.	5.38	2133.	
4	30.	5.58	1107.	5.64	1095.	
5	60.	5.98	1035.	6.05	1023.	
6	90.	6.35	974.	6.42	963.	
7	120.	6.67	928.	6.65	930.	

****

RECORDED RIGHT OF WAY

19011
part 2



Member	Unit Stress	Section
1a	[illegible]	[illegible]
1	[illegible]	do
2a	[illegible]	[illegible]
2	[illegible]	do
3a	[illegible]	[illegible]
3	[illegible]	do
4	[illegible]	[illegible]
5	[illegible]	do
6	[illegible]	do
7	[illegible]	[illegible]
8	[illegible]	[illegible]
9	[illegible]	do
10	[illegible]	[illegible]
11	[illegible]	[illegible]
12	[illegible]	[illegible]
13	[illegible]	do
14	[illegible]	[illegible]
15	[illegible]	[illegible]
16	[illegible]	[illegible]
17	[illegible]	[illegible]
18	[illegible]	[illegible]
19	[illegible]	[illegible]
20	[illegible]	do
21	[illegible]	do
22	[illegible]	[illegible]
23	[illegible]	[illegible]
24	[illegible]	[illegible]
25	[illegible]	do
26	[illegible]	do
27	[illegible]	[illegible]
28	[illegible]	[illegible]
29	[illegible]	[illegible]
30	[illegible]	do
31	[illegible]	[illegible]
32	[illegible]	[illegible]

* Denotes setting template members

50° Angle or Tangent D.E. Tower AD

Tower is designed to support 1 [illegible] Steel Gd Wire and 6 [illegible] ACSR Conductors at a normal span of [illegible] with 50° angle in line or the total maximum cable loads applied to a tangent span of the same length.

The cables are to be so strung that the maximum tensions under 8# wind on ½" ice coated cables will not exceed 9500# in the groundwire and [illegible]# in the conductor.

LOADS

(1) Vertical — 1 Gd Wire @ 1050# = 1050#; 6 Conductors @ [illegible]; Total = 13050#

(2a) Transverse - Wind on wires — 1 Gd Wire @ 450# = 450#; 6 Conductors @ 635# = [illegible]; Total = [illegible]

(2b) Transverse - 50° Angle in line — 1 Gd Wire @ [illegible]; 6 Conductors @ [illegible]; Total = [illegible]

(3) Longitudinal — 1 Gd Wire @ [illegible]; 6 Conductors @ [illegible]; Total = [illegible]

(4) Wind on tower at 65# per sq ft on 1½ times projected area of one face.

(5) Dead load of tower

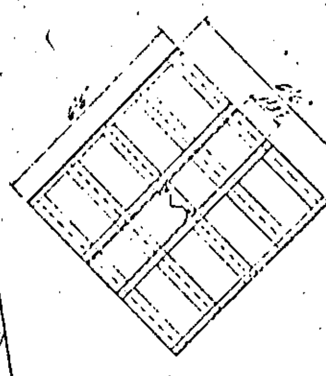
(6) Torsional load at each of 3 Gnd support on one side of tower at [illegible] total = 30000#

Hangers designed for double vertical load.

Castings:- [illegible]

NOTE:- For Unit Stresses, Material, Coating and Specifications see Dwg. T-5412

CONNECTIONS:- Bolted, ¾" ø bolts



NOTE:- [illegible]

TRANSMISSION TOWERS

The Detroit Edison Co.

Detroit, Mich.

50° Angle or Tangent D.E. Tower AD

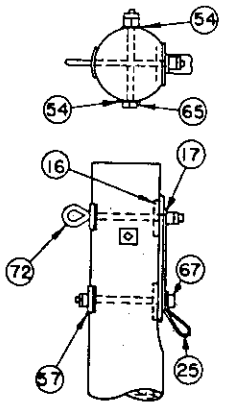
Revisions	
Traced	

AMERICAN BRIDGE CO.
Pittsburgh, PA.

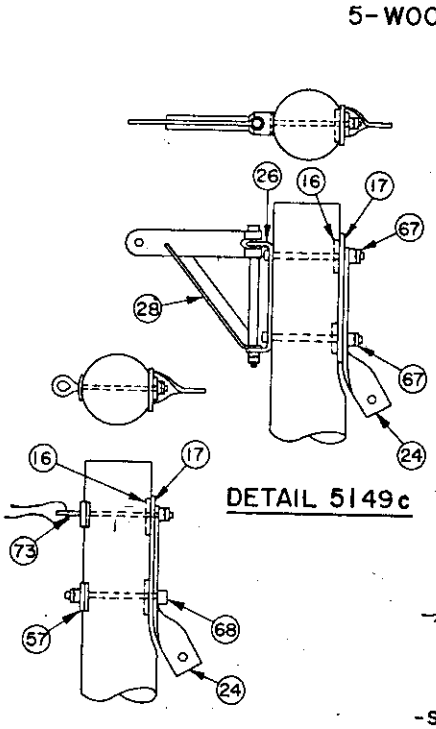
Inquiry No. T-5457

Order No. [illegible]

Drawing T-5418

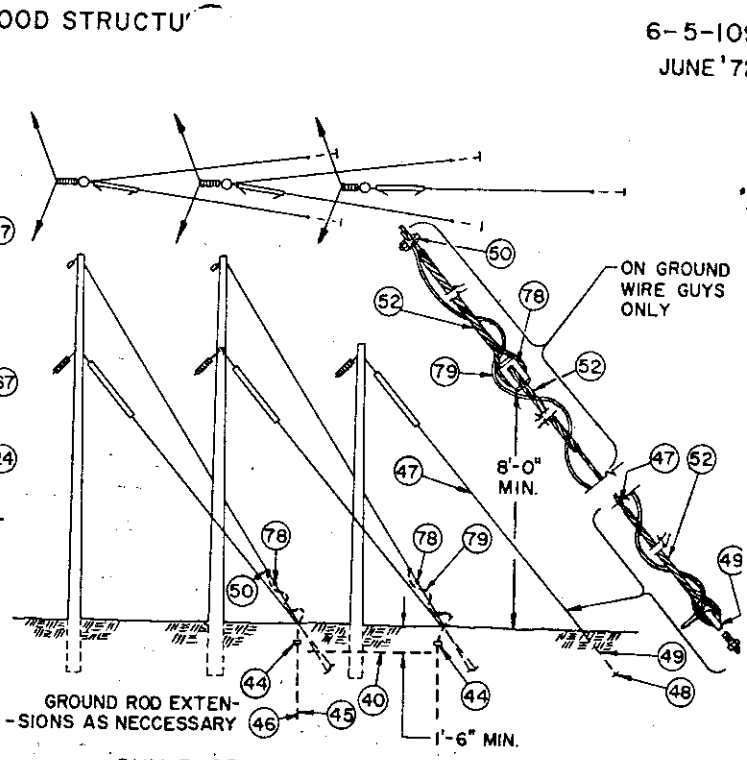


DETAIL 5149a



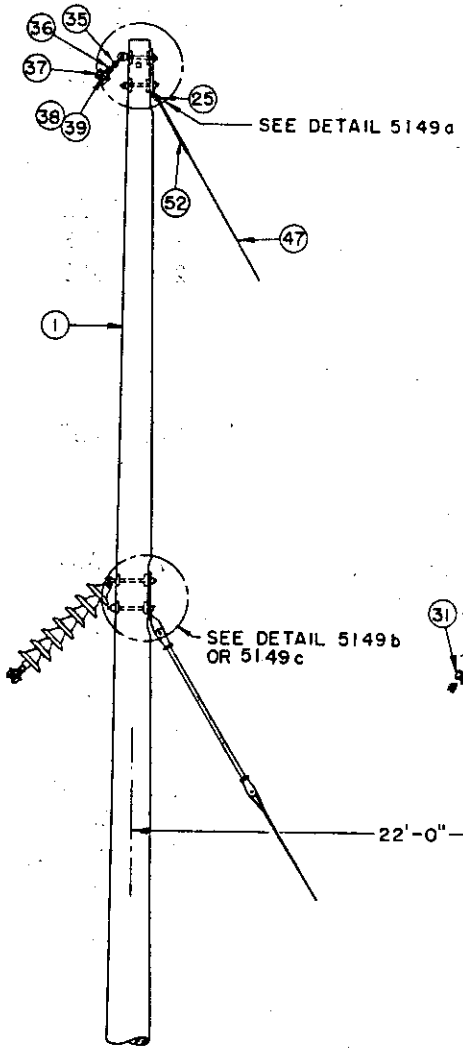
DETAIL 5149b

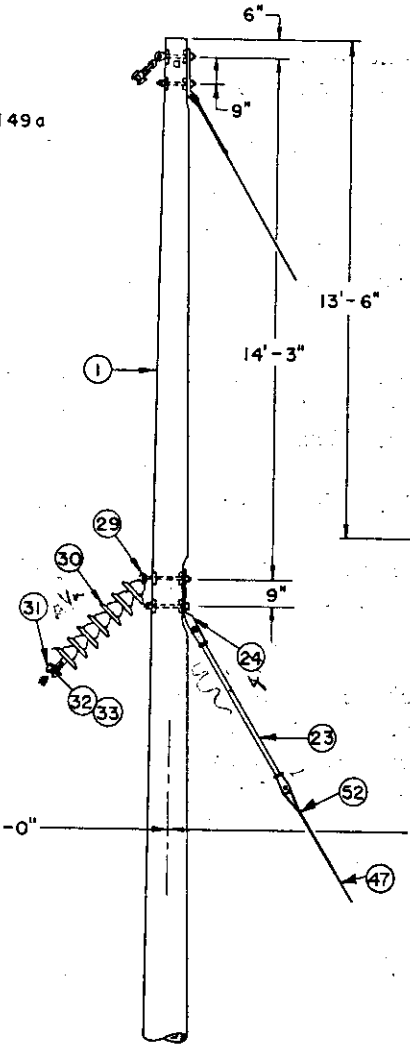
DETAIL 5149c



GUY & GROUNDING ARRANGEMENT
DETAIL 5149d

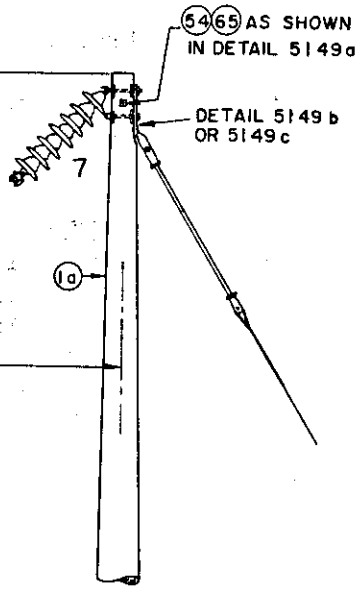
DETROIT EDISON LINE CONSTRUCTION STANDARDS





NOTES:-

1. GROUND RESISTANCE OF 2 RODS CONNECTED TOGETHER TO BE LESS THAN 15 OHMS. IF NECESSARY, ADD ADDITIONAL RODS WITH 30' LEADS 4" MINIMUM BETWEEN RODS.
2. SEE PAGE 6-5-3 THRU 6-5-5 FOR ANCHOR INSTALLATION GUIDE.
3. INSTALL PALNUTS ON ALL BOLTS EXCEPT CONDUCTOR HARDWARE & FACTORY ASSEMBLED BOLTS ON WOOD GUY INSULATORS.

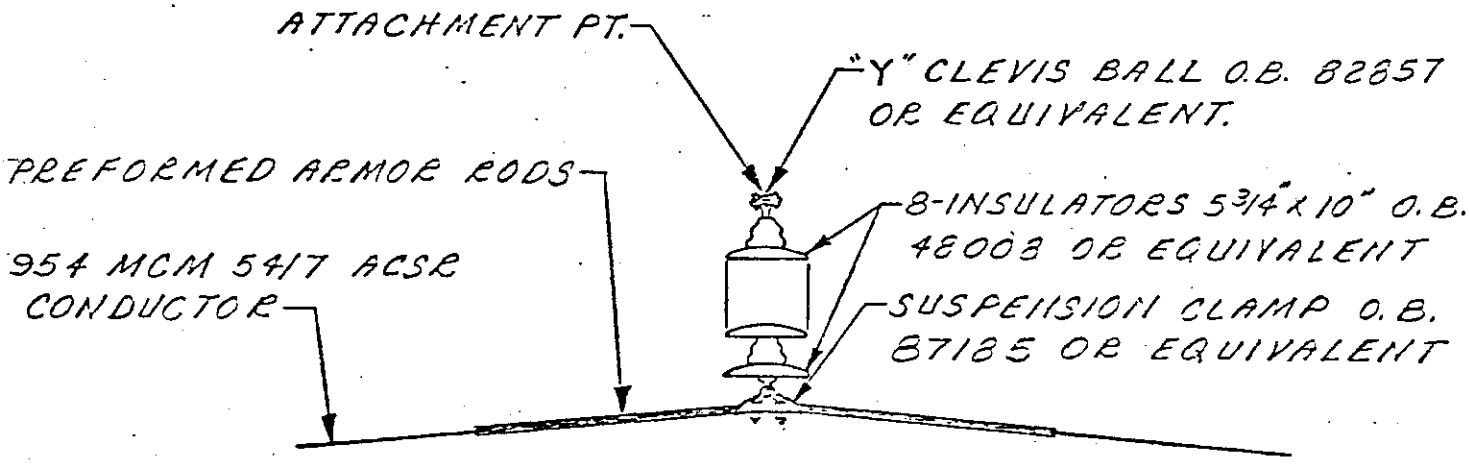


RECORDED RIGHT OF WAY 190277 Part 2

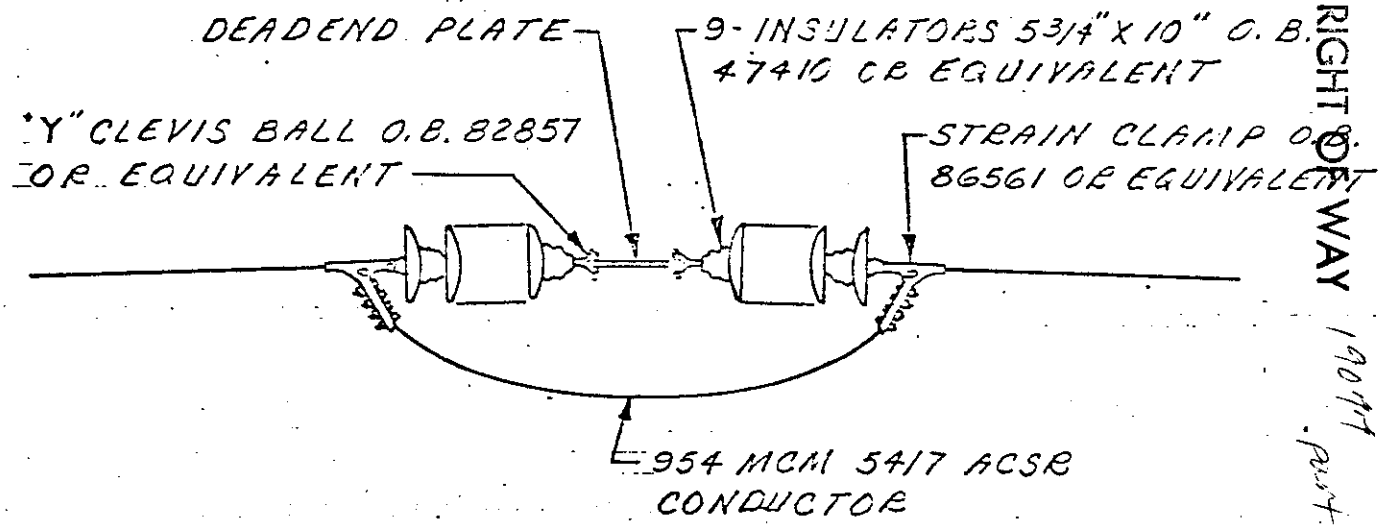
HORIZONTAL PULL-OFF STRUCTURE
DETAIL 5149

120 KV HPO STRUCTUR

SUSPENSION ASS'Y DETAILS

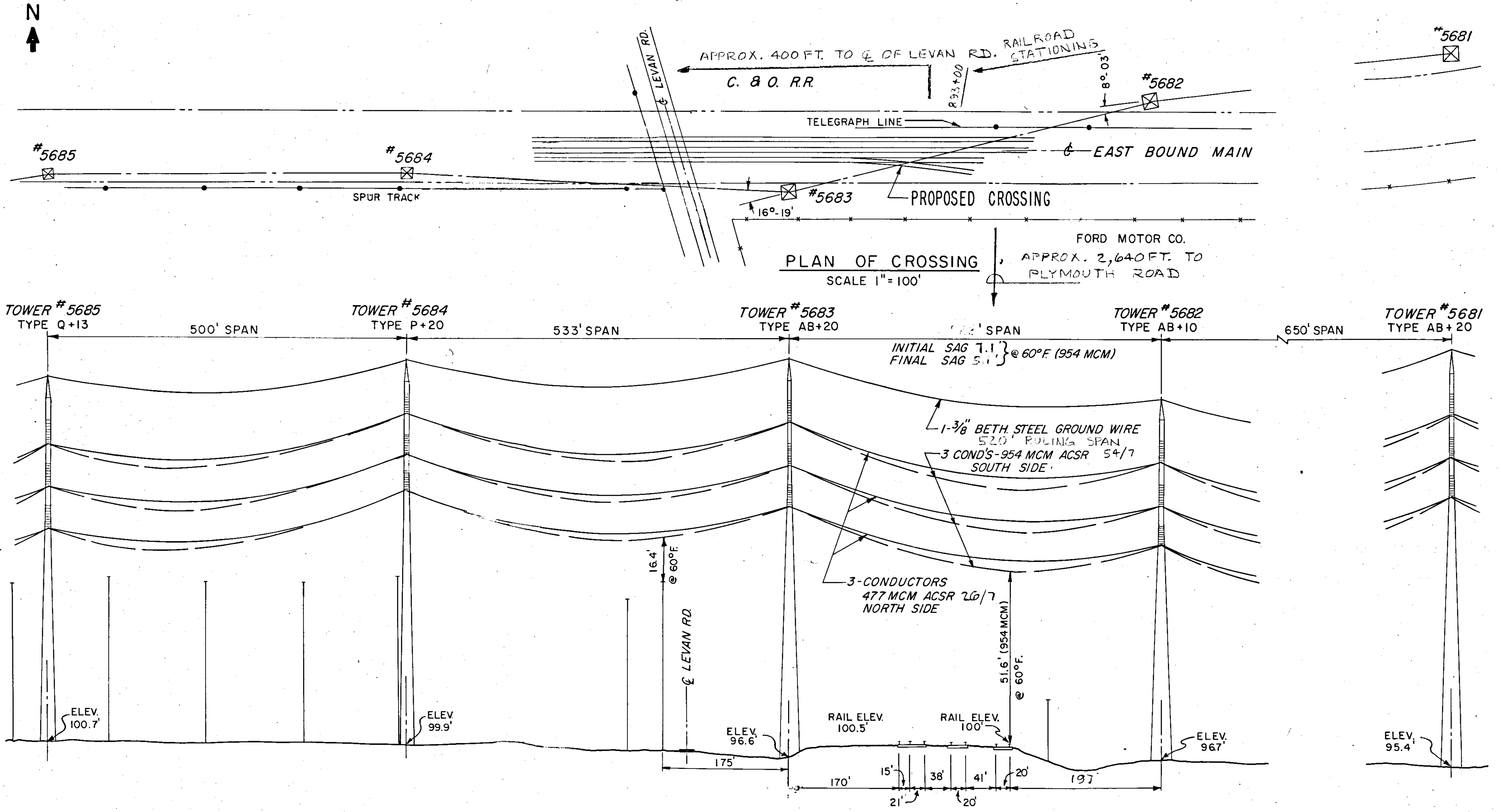


DEADEND ASS'Y DETAILS



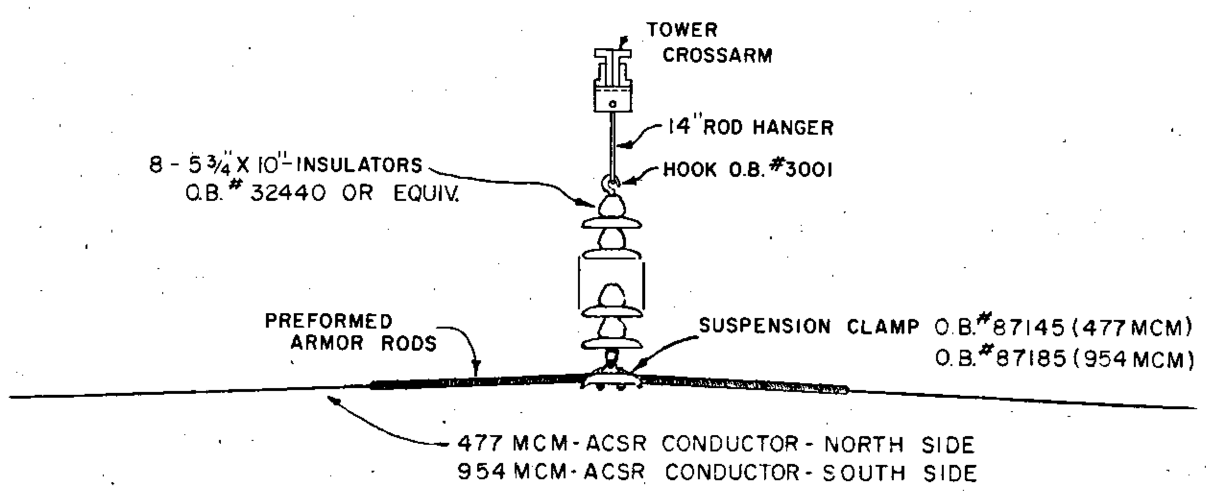
120 KV SUSPENSION & DEADEND ASS'Y DETAILS	APPROVED JSW	THE DETROIT EDISON COMPANY GENERAL ENGINEERING DEPARTMENT
		LAYOUT BY J. WRIGHT | DRAWN BY JEH
		DATE 1-25-71 | DRAWING NUMBER ED1-7430
		SCALE —

DE FORM SE 11 PTG. 4-69



ELEVATION OF CROSSING

SCALE HORIZONTAL 1" = 100'
VERTICAL 1" = 20'



SUSPENSION DETAILS

HINES-YOST 120KV STEEL TOWER LINE

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP
SECTION NO. N.W. 1/4 29

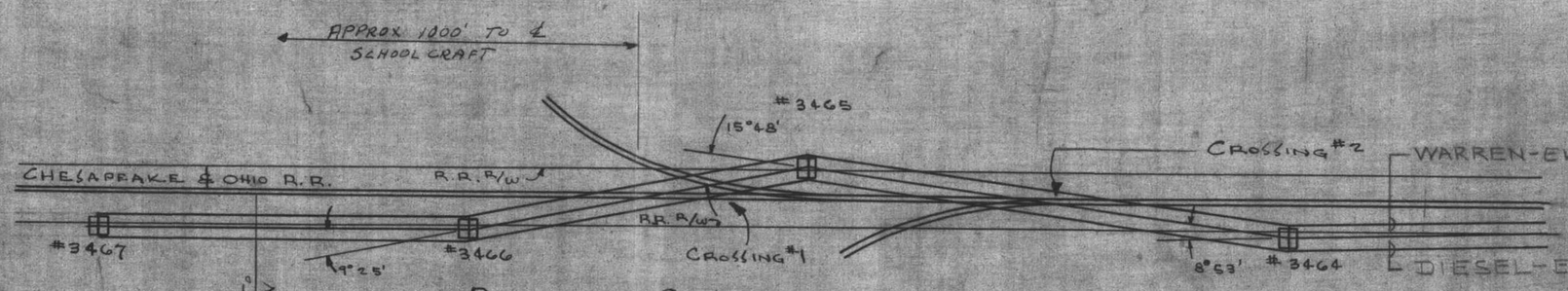
THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR 120,000 VOLT CROSSING
OVER THE CHESAPEAKE & OHIO R.R.

DRAWN BY VAN PARIS DATE 22-84
APPROVED BY [signature] DATE 8-22-84

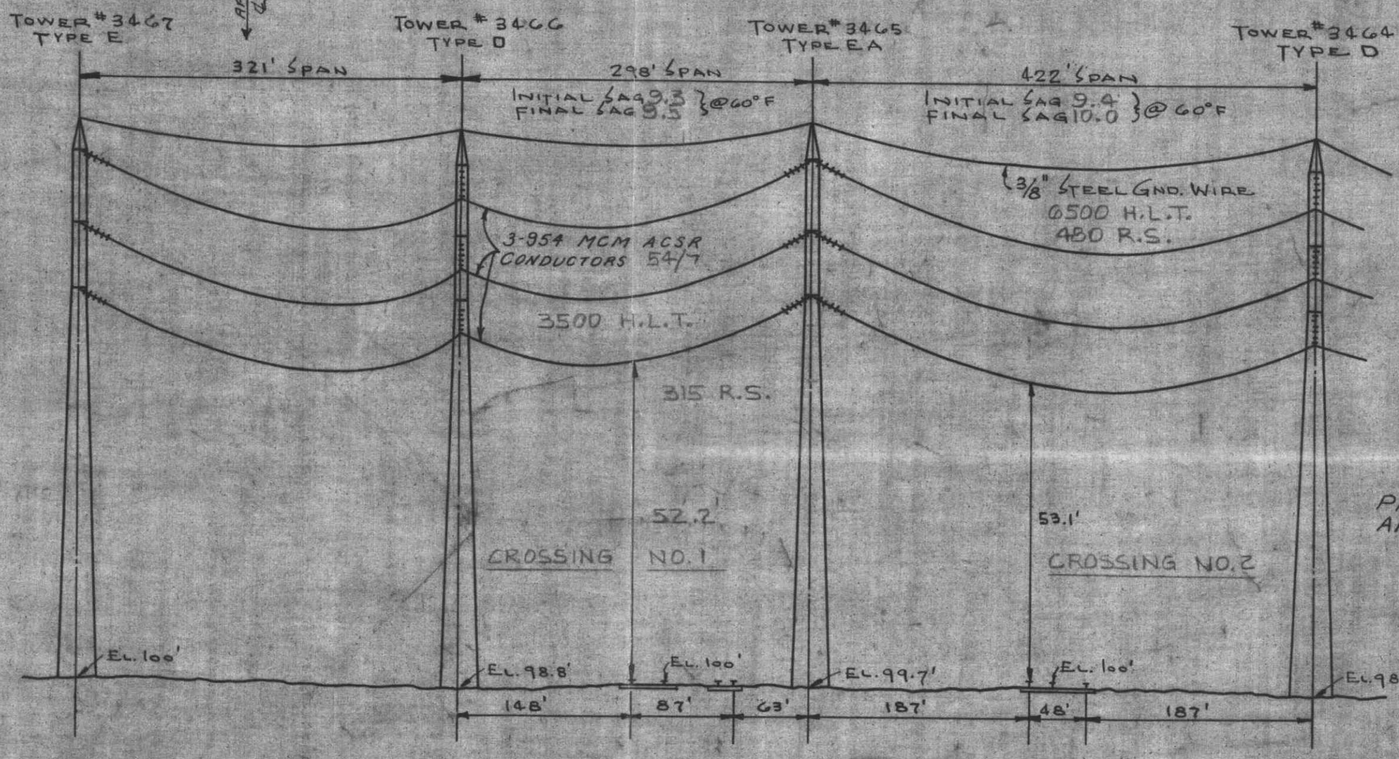
PERMIT NO. ED
DRAWING NO. RX-3165 C

RECORDED RIGHT OF WAY 19077 part 2

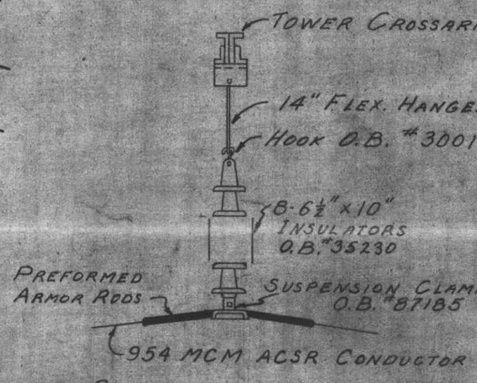


PLAN OF CROSSING
SCALE 1"=100'

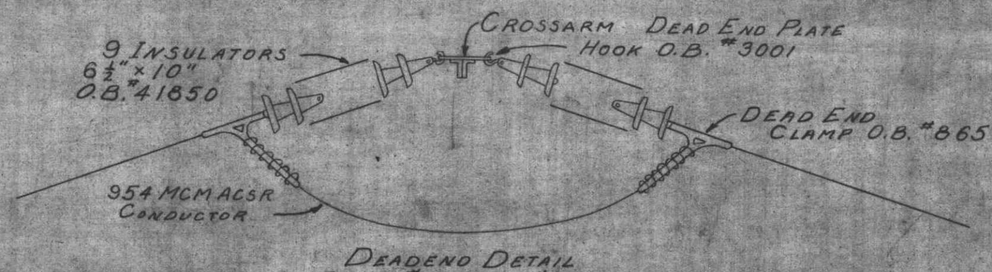
N



ELEVATION OF CROSSING
SCALE: HORIZ. 1"=100'
VERT. 1"=20'



SUSPENSION DETAIL
TOWERS #3464 AND #3466



DEADEND DETAIL
TOWERS #3465 AND #3467

CITY DETROIT
COUNTY WAYNE

RX-2904
PERMIT ED2-8-3122
DATED 11-20-52

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO MICHIGAN PUBLIC SERVICE COMMISSION
FOR 120,000 VOLT CROSSING OVER CHESAPEAKE & OHIO R.R.
DRAWN BY C. VAN PARIS DATE 10-22-84
CHECKED BY J. House DATE 10-22-84

PERMIT NO. RX-2904 C

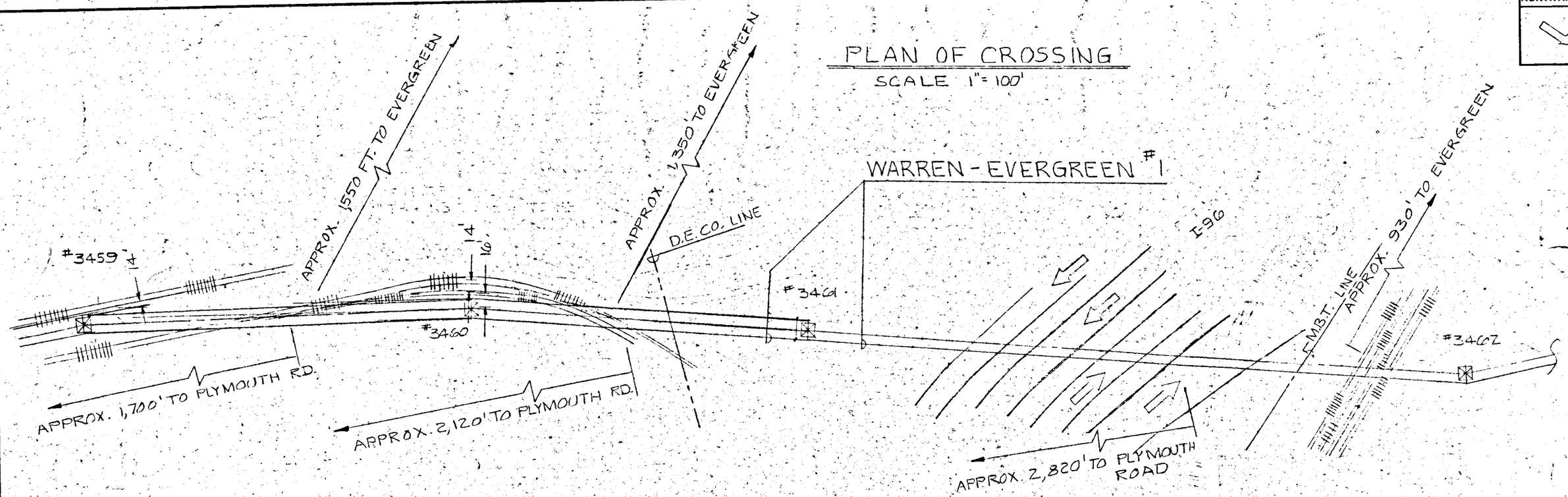
CROSSING NO.1 ED2-8-6775 DATED 8-29-71
CROSSING NO.2 ED2-8-6776 DATED 8-29-71

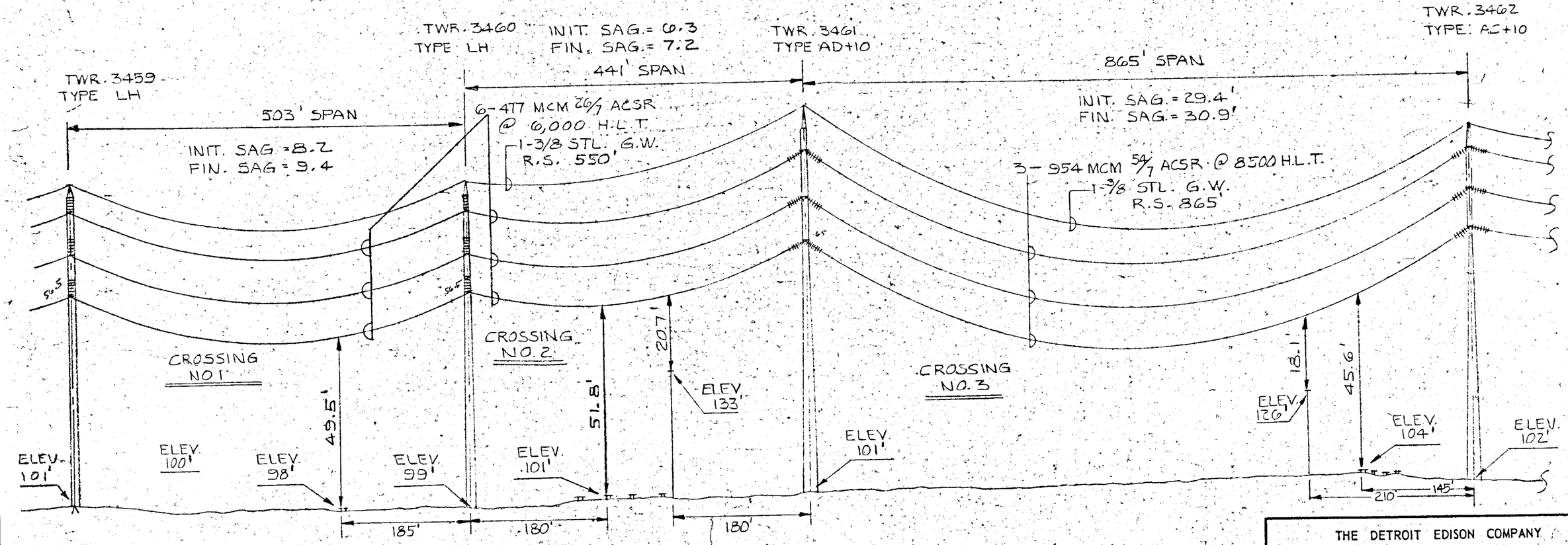
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1" = 100'





ELEVATION OF CROSSING

SCALE HOR. 1" = 100'
VER. 1" = 20'

ALL DIMENSIONS AT 60° FINAL

NOTE:

FOR 120 KV SUSPENSION AND DEADEND DETAILS SEE DWG ED1-7430 - 954 MCM
ED1-8028 - 477 MCM

CITY DETROIT
COUNTY WAYNE
TOWNSHIP
SECTION NO.

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

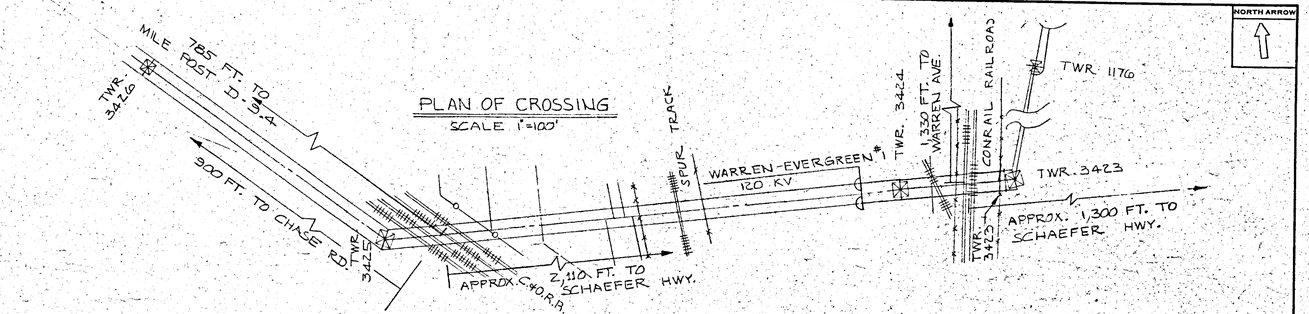
FOR 120,000 VOLT CROSSING
OVER THE C. & O. RAILROAD
DRAWN BY C. VAN PARIS DATE 10-8-84
APPROVED BY J. Howe DATE 10-8-84

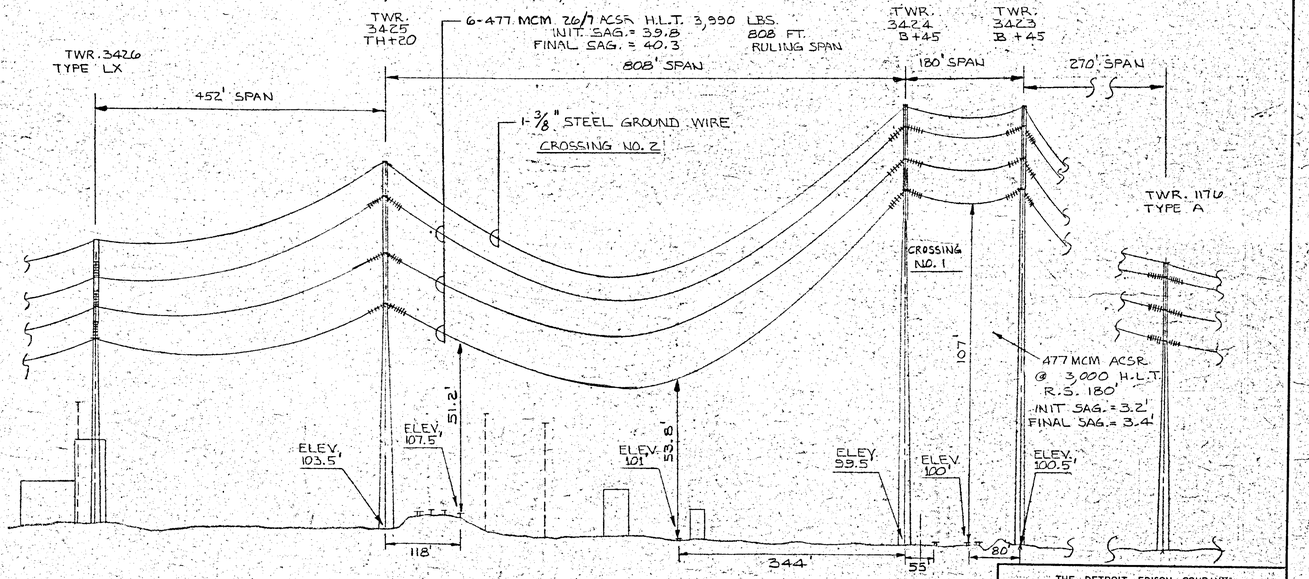
DRAWING NO.
RX-2897D

C.R. NO. 1 ED 2-8-7107
C.R. NO. 2 ED 2-8-7108
C.R. NO. 3 ED 2-8-7109 DATED 7-20-72

DE FORM SE 108 PTG. 12-70

RECORDED RIGHT OF WAY 19077 part 2





ELEVATION OF CROSSING

SCALE: HOR.: 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY DEARBORN
COUNTY WAYNE
TOWNSHIP T.2S.-R.11E.
SECTION NO. S.W. 1/4 OF SEC. 8

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR ONE-120,000 VOLT CROSSING
OVER CONRAIL RAILROAD
C.T.O. RAILROAD
DRAWN BY C. VAN PARIS DATE 10-19-84
APPROVED BY J. Howe DATE 10-19-84

PERMIT NO. ED
DRAWING NO. RX-2895B

PENN CENTRAL { PERMIT ME-755-RR-79 DATED 11-23-79

PENN CENTRAL C.&O.R.R. BLANKET PERMIT

DE FORM BE 156 PTG. 12-79

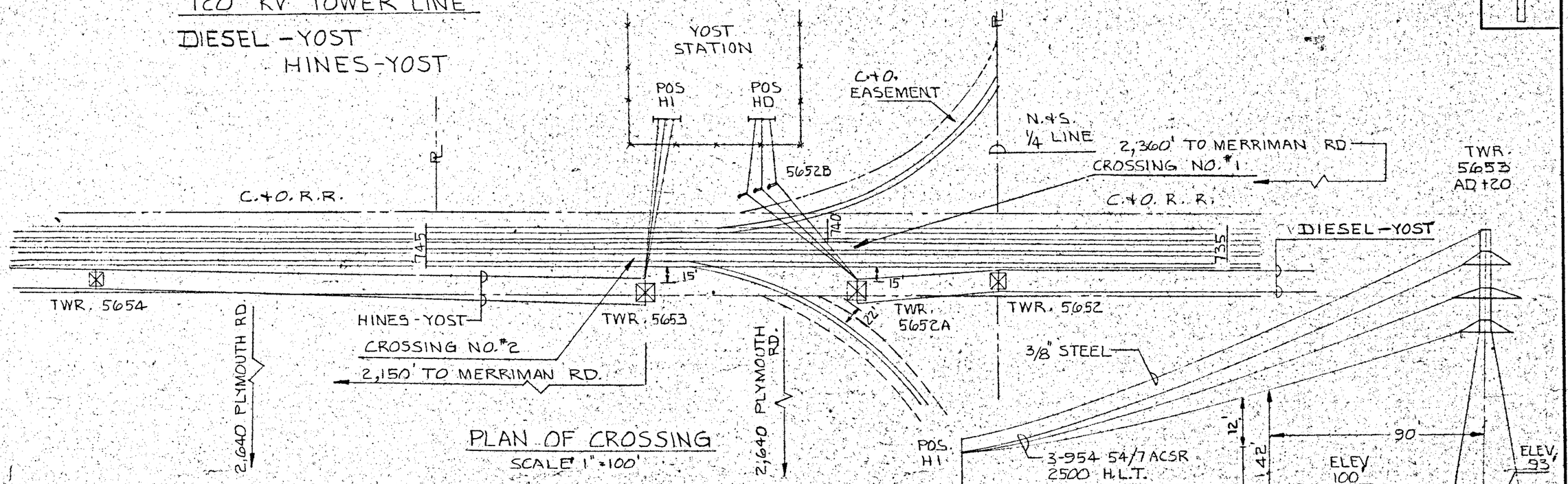
24

RECORDED RIGHT OF WAY 19077 part 2

120 KV TOWER LINE

DIESEL - YOST

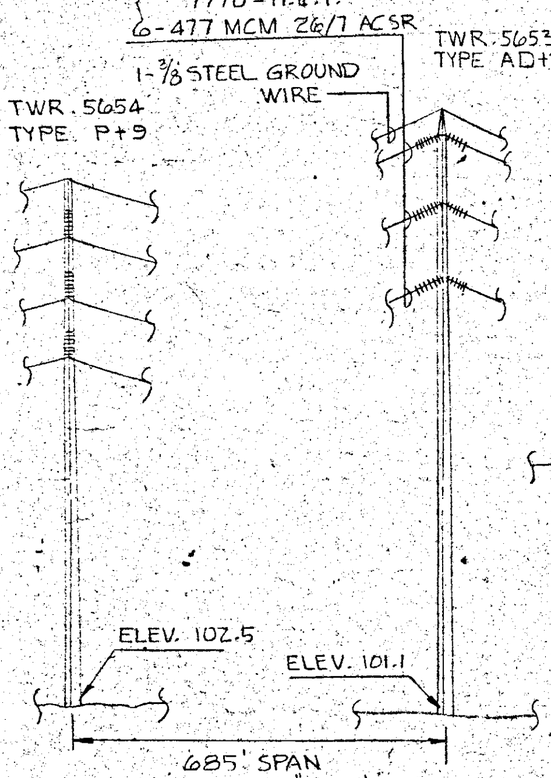
HINES - YOST

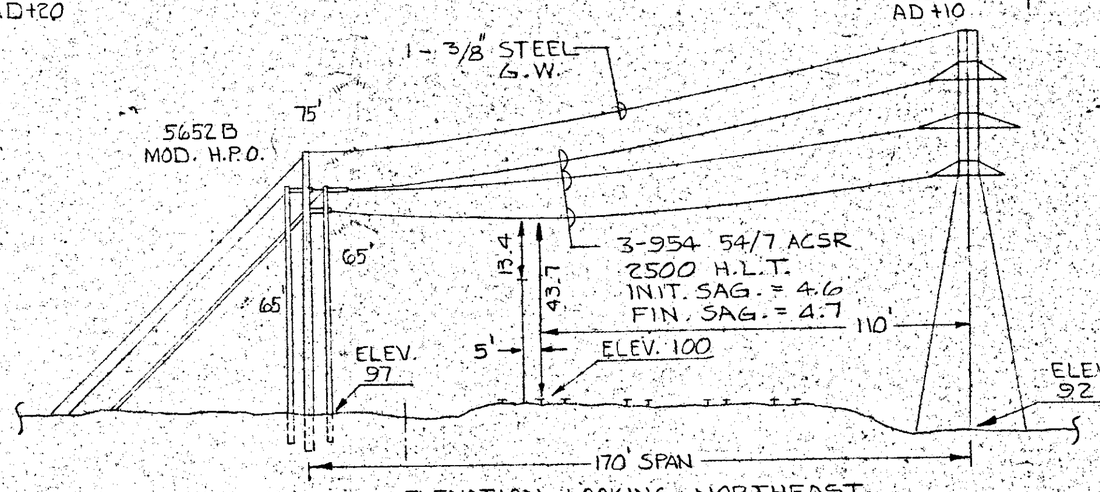


PLAN OF CROSSING

SCALE 1" = 100'

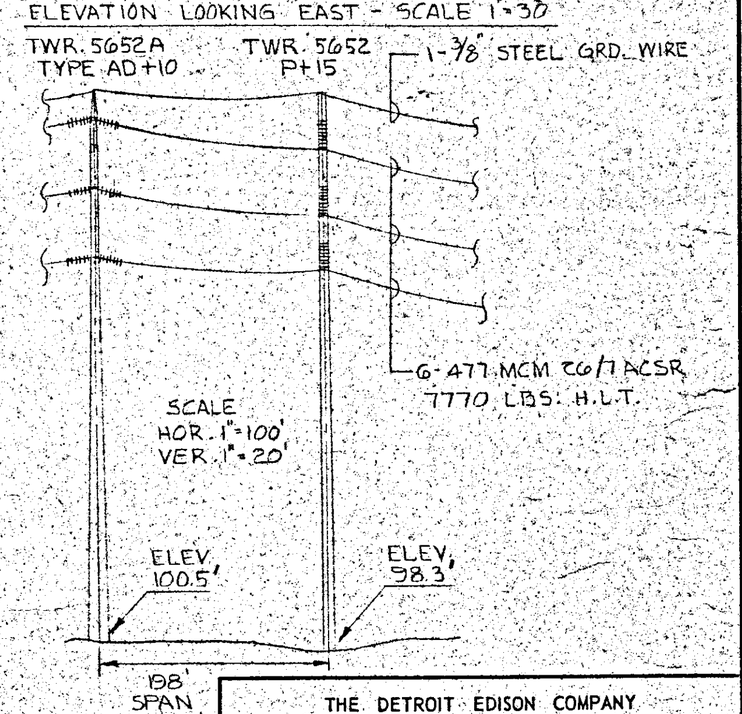
ELEVATION LOOKING EAST - SCALE 1" = 30'

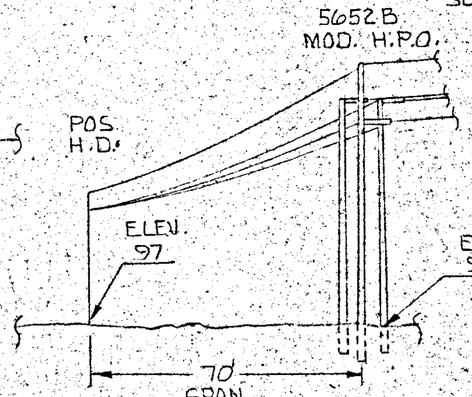




ELEVATION LOOKING NORTHEAST

SCALE 1" = 30'





ELEVATION OF CROSSING

ALL DIMENSIONS
AT 60° F FINAL

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP T. 1 S. - R 9 E
SECTION NO. 26

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR 120,000 VOLT CROSSING
OVER C + O R. R.
DRAWN BY C. VAN PARIS DATE 9-7-84
APPROVED BY J. Howe DATE 9-7-84

PERMIT NO.

DRAWING NO. RX-4162B

CR. NO. 1 EDZ-8-6860
CR. NO. 2 EDZ-8-6861

DATED 7-28-71

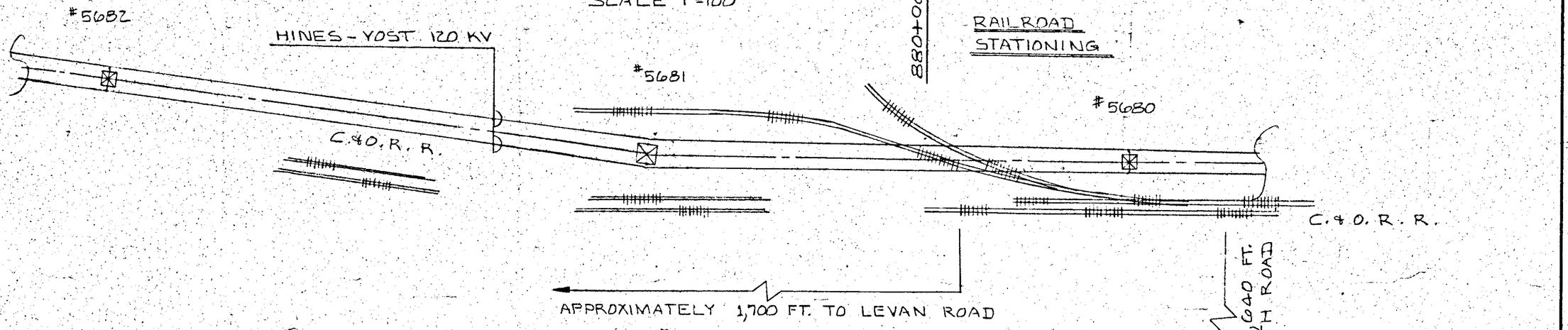
DE FORM SE 168 PTG. 12-70

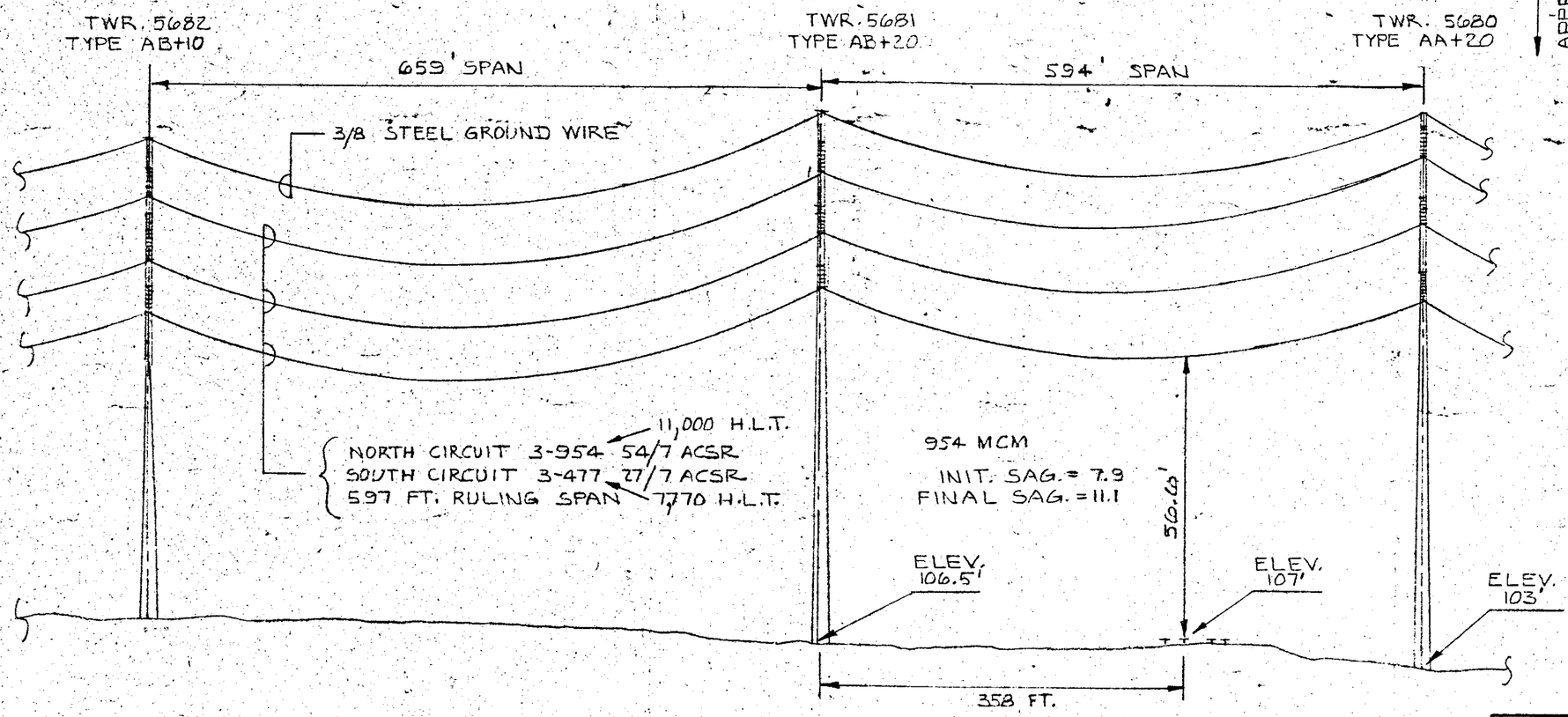
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP
SECTION NO. S.E. 1/4 29

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR 120 KV CROSSING
OVER C.&O.R.R.
DRAWN BY C. VAN PARIS DATE 8-23-84
APPROVED BY J. Howe DATE 8-27-84

PERMIT NO. ED

DRAWING NO. RX-4323A

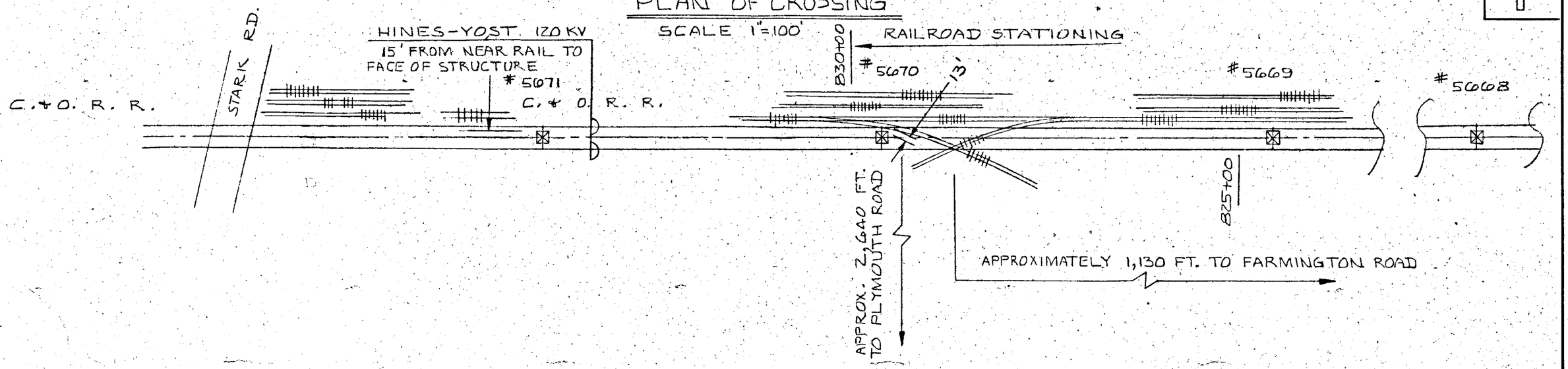
DE FORM SE 168 PTG. 12-70

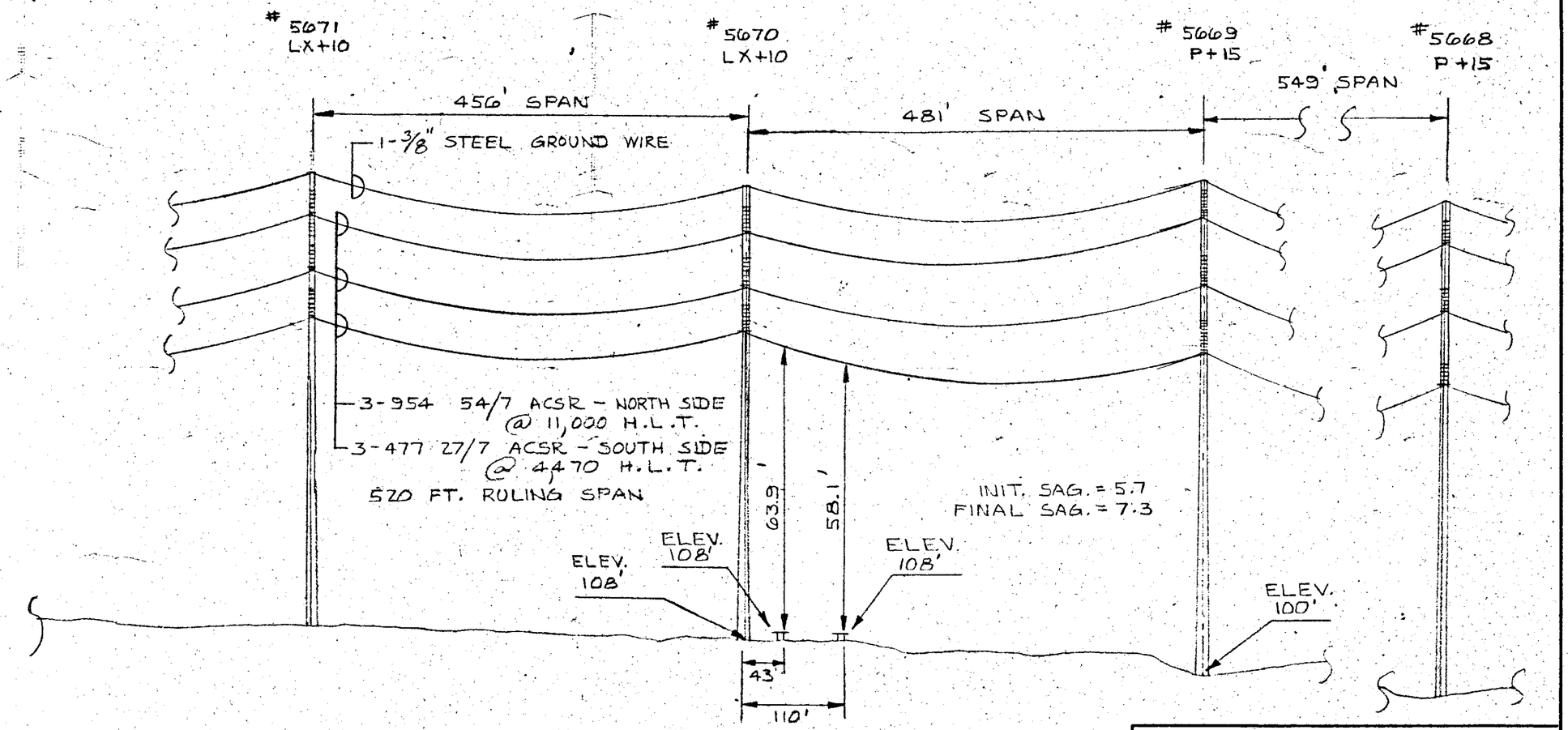
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP
SECTION NO. S.E. 1/4 28

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR ONE 120,000 VOLT CROSSING
OVER C. & O. R. R.
DRAWN BY C. VAN PARIS DATE 8-29-84
APPROVED BY J. House DATE 8-29-84

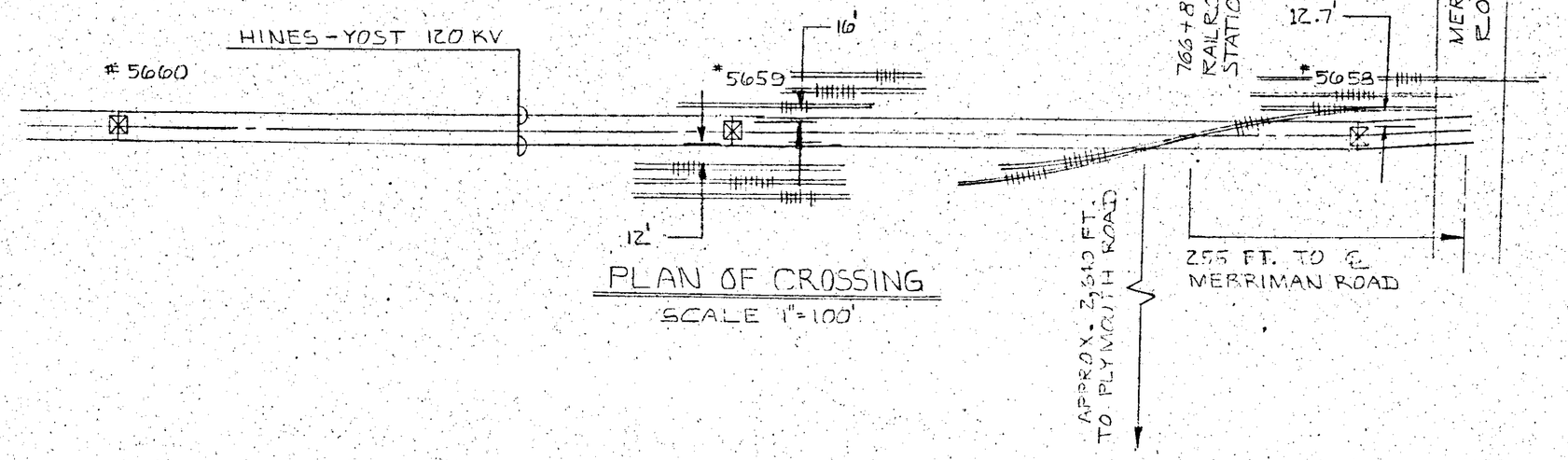
PERMIT NO. ED

DRAWING NO. RX-4322A

DE FORM SE 168 PTG. 12-70

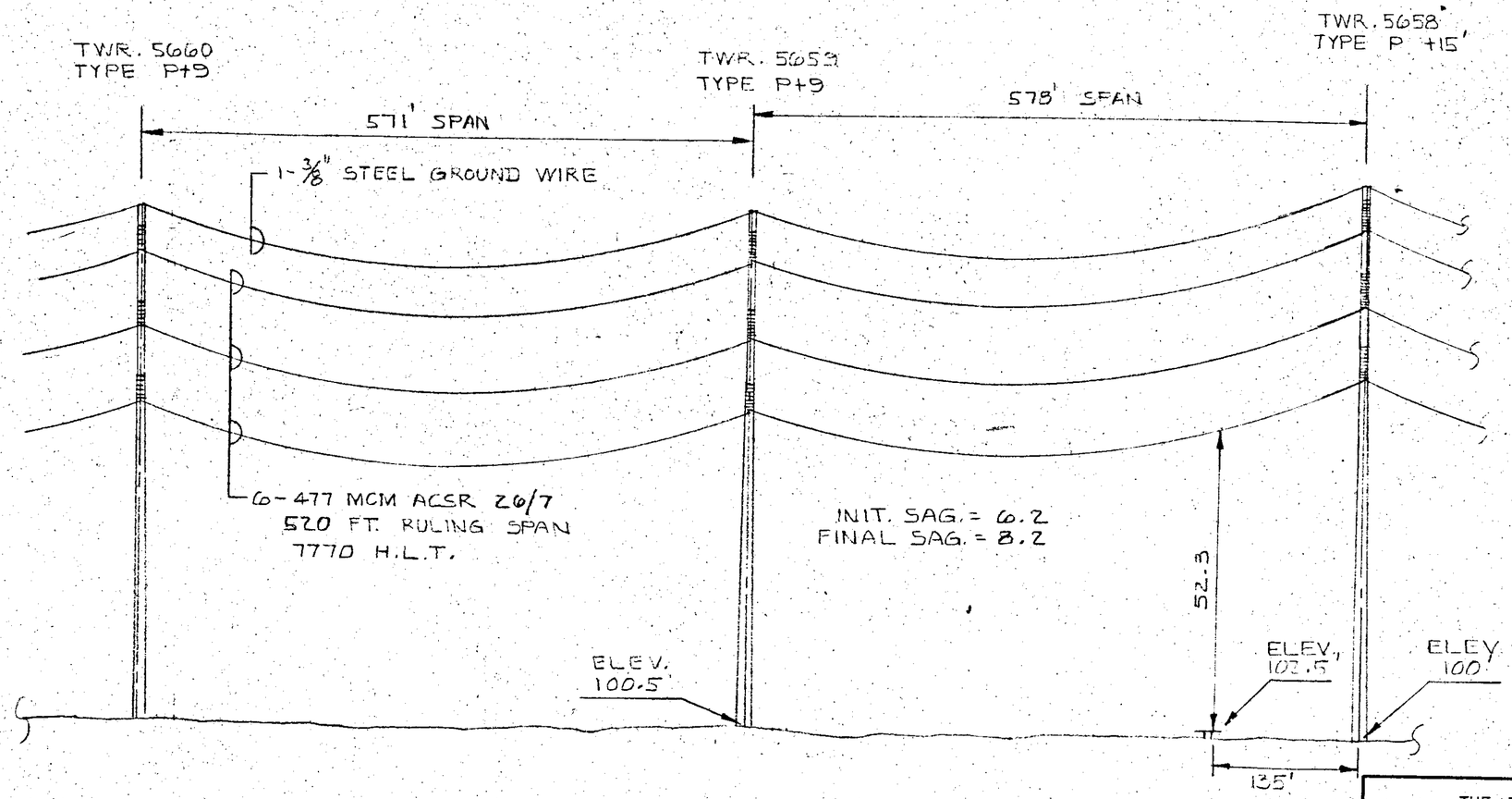
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW



PLAN OF CROSSING

SCALE 1"=100'



ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VER. 1"=20'

ALL DIMENSIONS AT 60° F FINAL

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP
SECTION NO. S.E. 1/4 27

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR ONE-120,000 VOLT CROSSING
FOR ONE-230,000 VOLT CROSSING
OVER C.& O. R.R.

DRAWN BY C. VAN PARIS DATE 8-31-84
APPROVED BY J. House DATE 8-31-84

PERMIT NO. ED

DRAWING NO. RX-4321 A

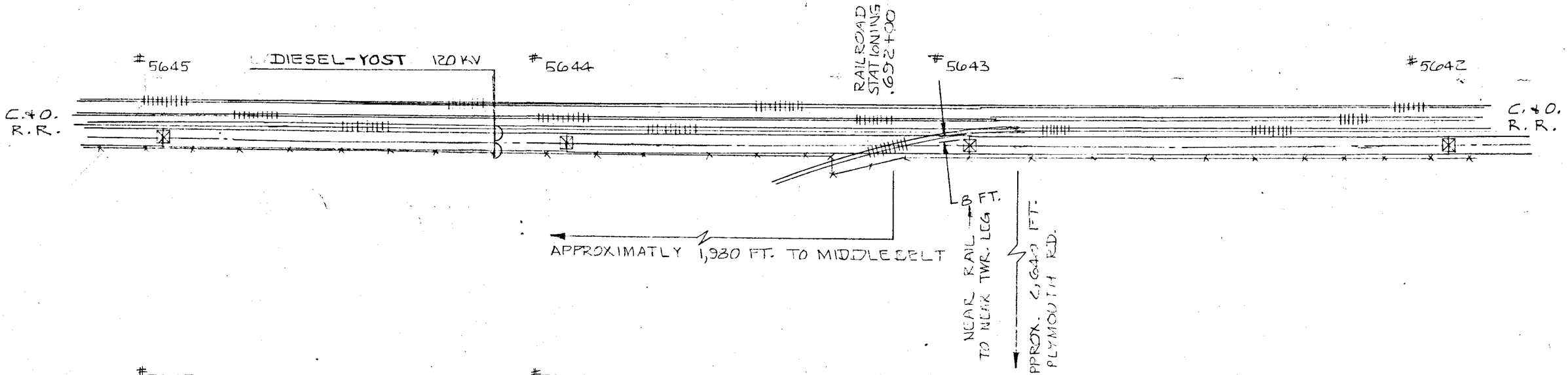
DE FORM SE 168 PTG. 12-70

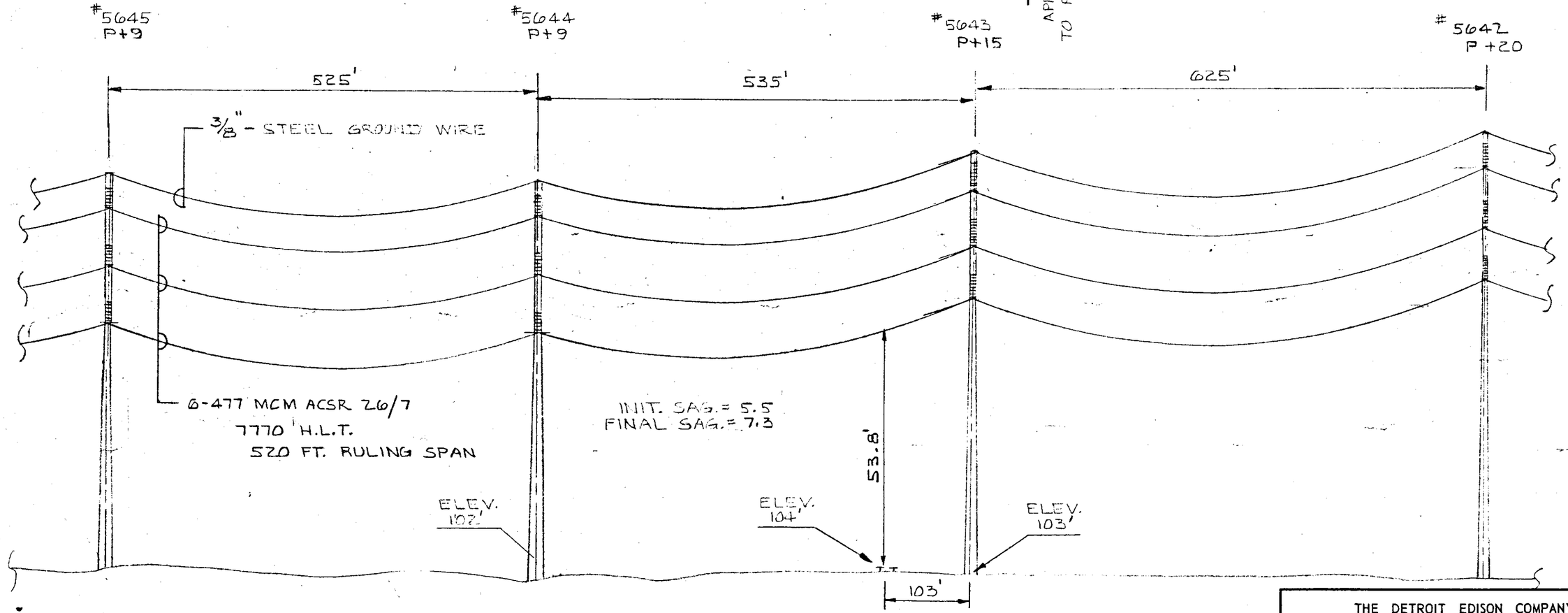
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP
SECTION NO. 25

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR 120,000 VOLT CROSSING
OVER C.&O. R.R.
DRAWN BY C. VAN PARIS DATE 9-14-84
APPROVED BY J. Howe DATE 9-14-84

PERMIT NO. ED

DRAWING NO. RX-4320A

DE FORM SE 168 PTG. 12-70

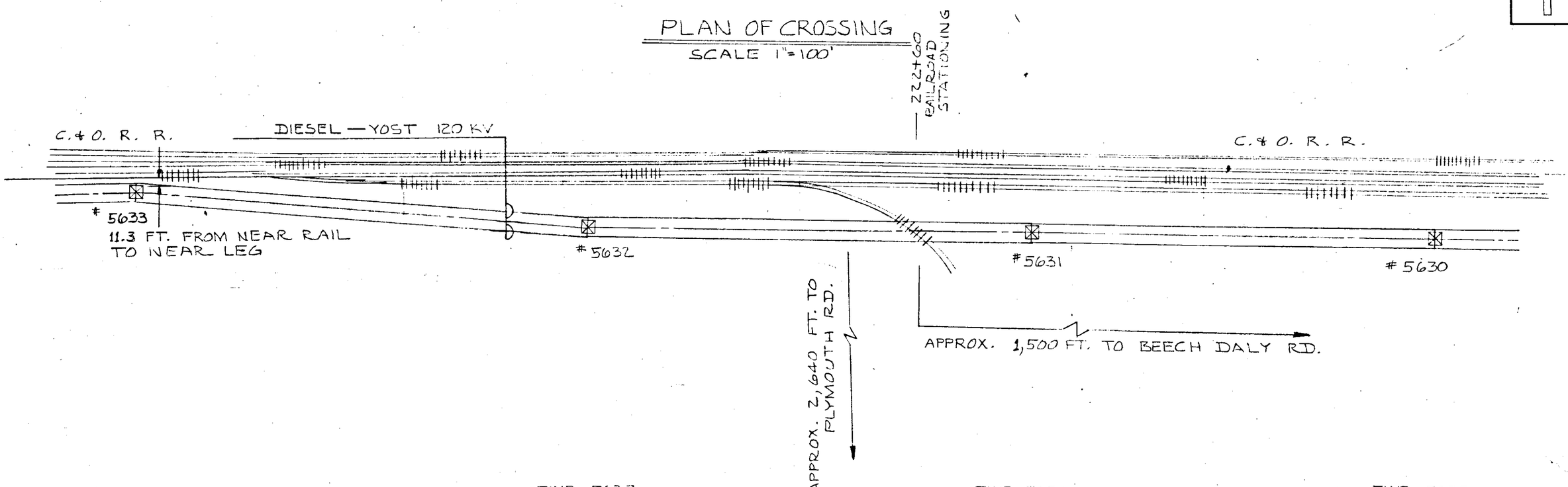
20

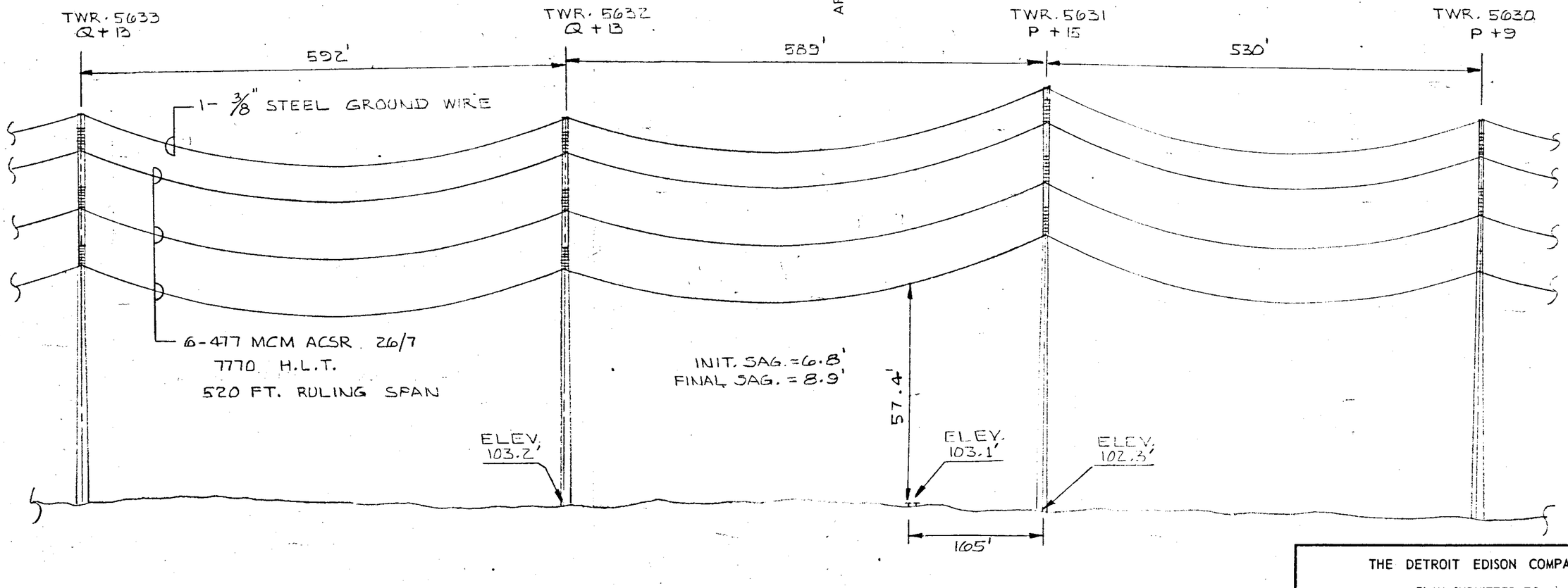
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY
COUNTY WAYNE
TOWNSHIP REDFORD
T. 1S. R. 10E.
SECTION NO. N.E. 1/4 30

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR 120,000 VOLT CROSSING
OVER C. & O. R. R.
DRAWN BY C. VAN PARIS DATE 9-20-84
APPROVED BY J. Howe DATE 9-20-84

PERMIT NO.	DRAWING NO.
ED	RX- 4319A

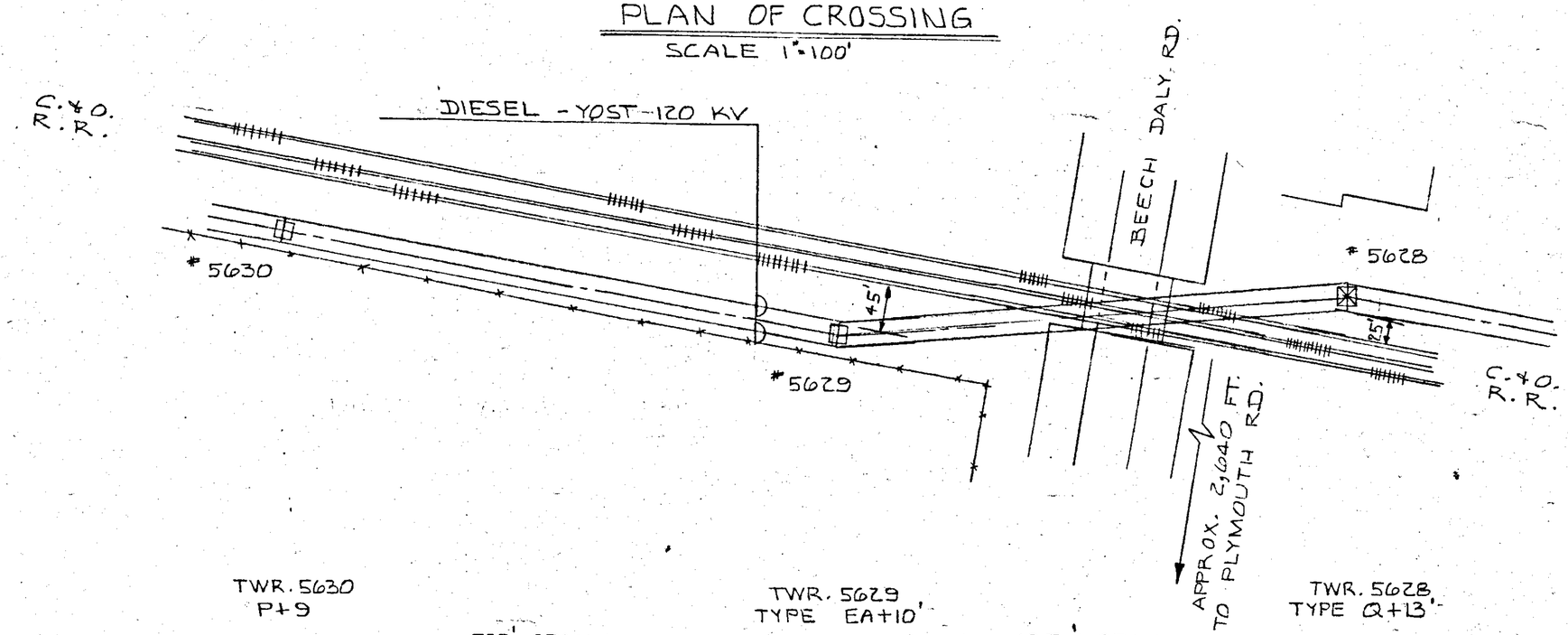
DE FORM SE 166 PTG. 12-70

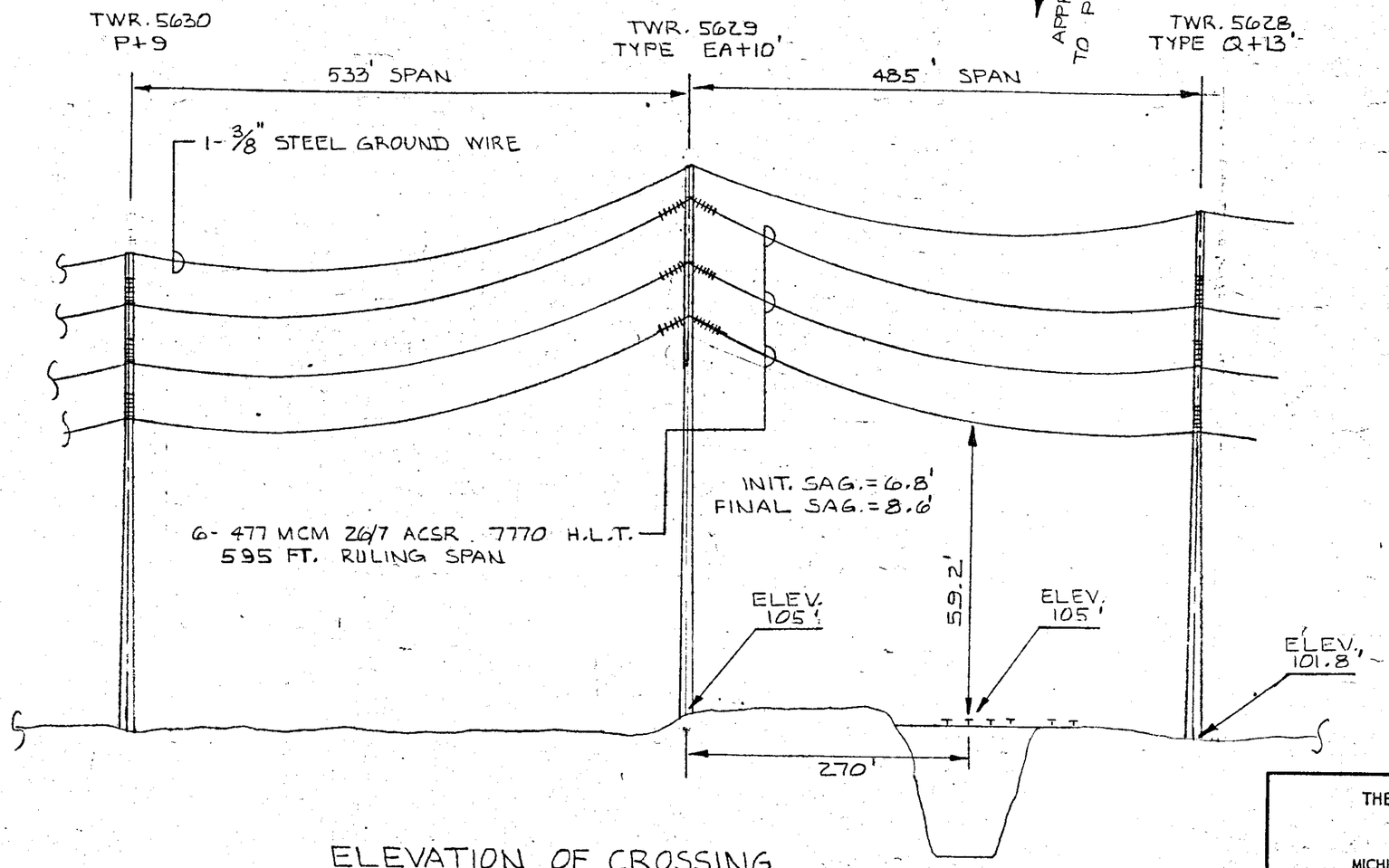
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY
COUNTY WAYNE
TOWNSHIP REDFORD
T.1S.-R.10E.
SECTION NO. N.W.¼ 29

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR 120,000 VOLT CROSSING
OVER C. & O. R. R.
DRAWN BY C. VAN PARIS DATE 9-21-84
APPROVED BY J. Howe DATE 9-24-84

PERMIT NO. ED

DRAWING NO. RX-4318A

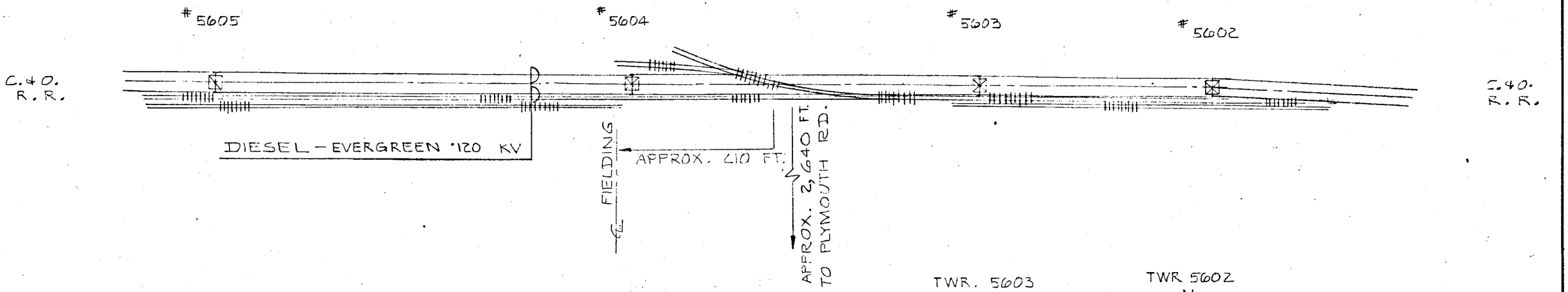
DE FORM SE 168 PTG. 12-70

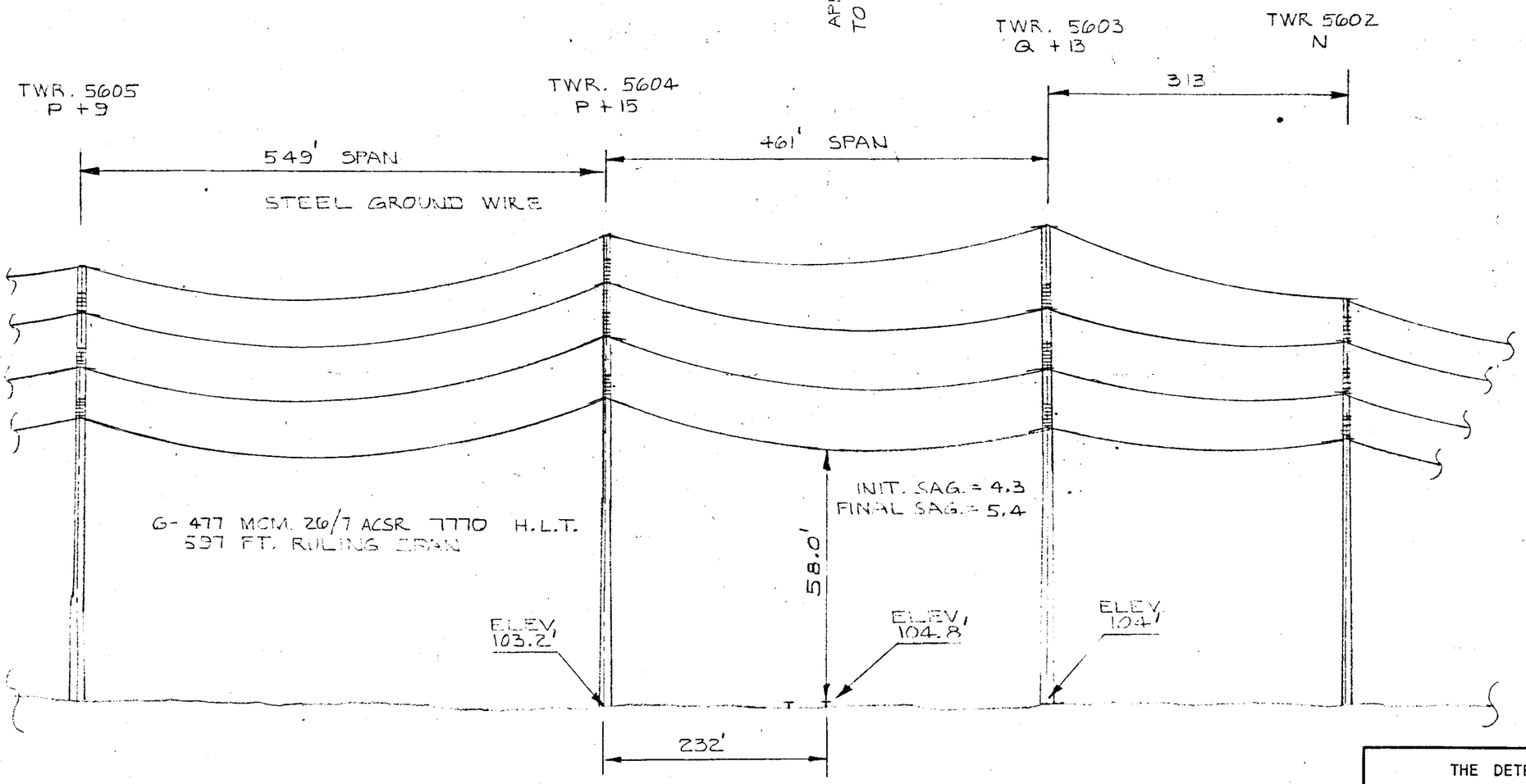
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY DETROIT
COUNTY WAYNE
TOWNSHIP ~
T. 1 S. - R. 10 E.
SECTION NO. N.E. 1/4, 27

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR 120,000 VOLT CROSSING
OVER C. & O. R. R.
DRAWN BY C. VAN PARIS DATE 10-2-84
APPROVED BY G. House DATE 10-3-84

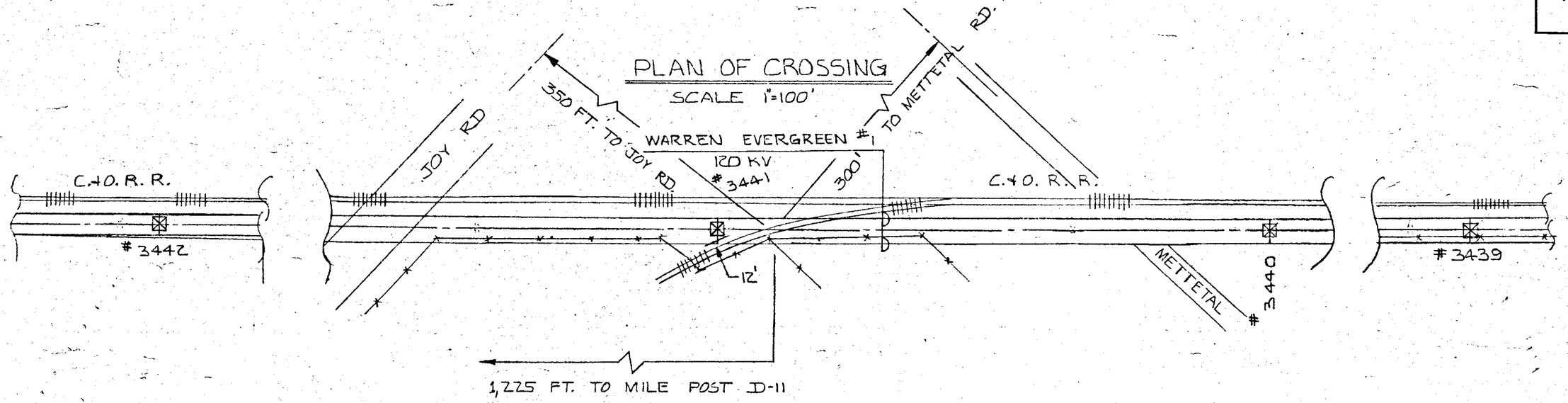
PERMIT NO. ED

DRAWING NO. RX-4317A

DE FORM SE 168 PTG. 12-70

RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

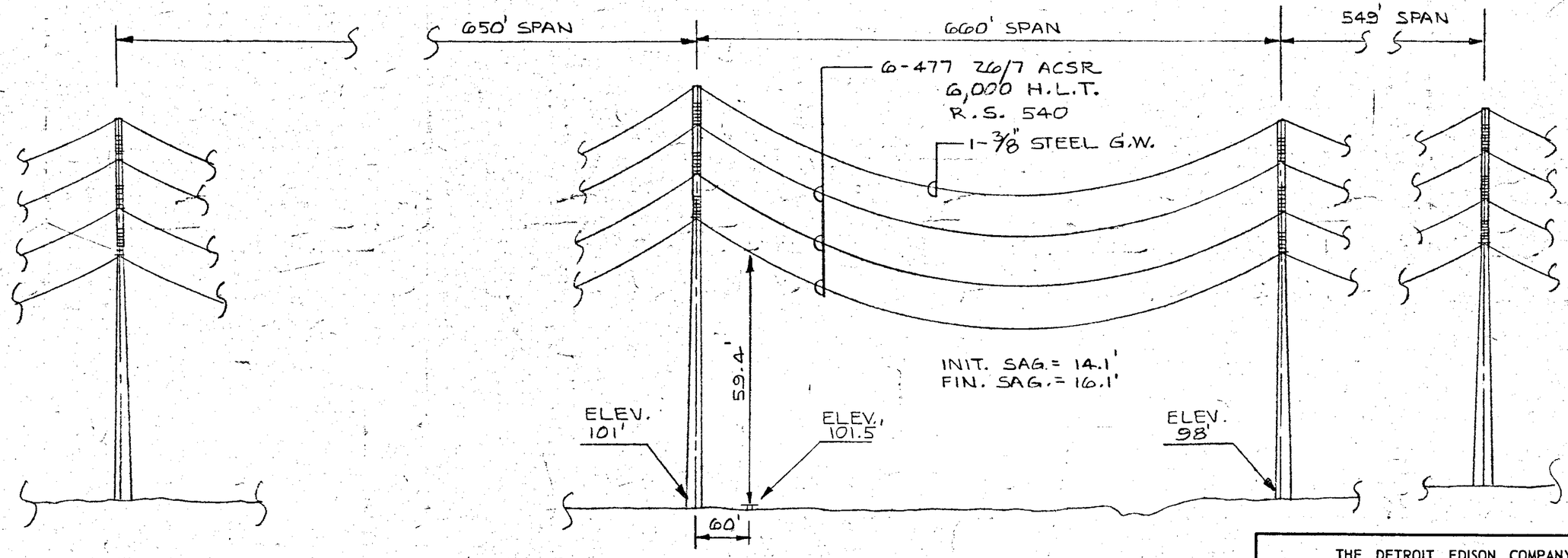


TWR. 3442
TYPE LX

TWR. 3441
TYPE LX

TWR. 3440
TYPE LX

TWR. 3439
TYPE LX



ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY DETROIT
COUNTY WAYNE
TOWNSHIP T.2S.-R.10E.
SECTION NO. N.E.¼ OF SEC. 1

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR 120,000 VOLT CROSSING
OVER C.+O. RAILROAD
DRAWN BY C. VAN PARIS DATE 10-10-84
APPROVED BY J. House DATE 10-11-84

PERMIT NO. ED

DRAWING NO. RX-4311A

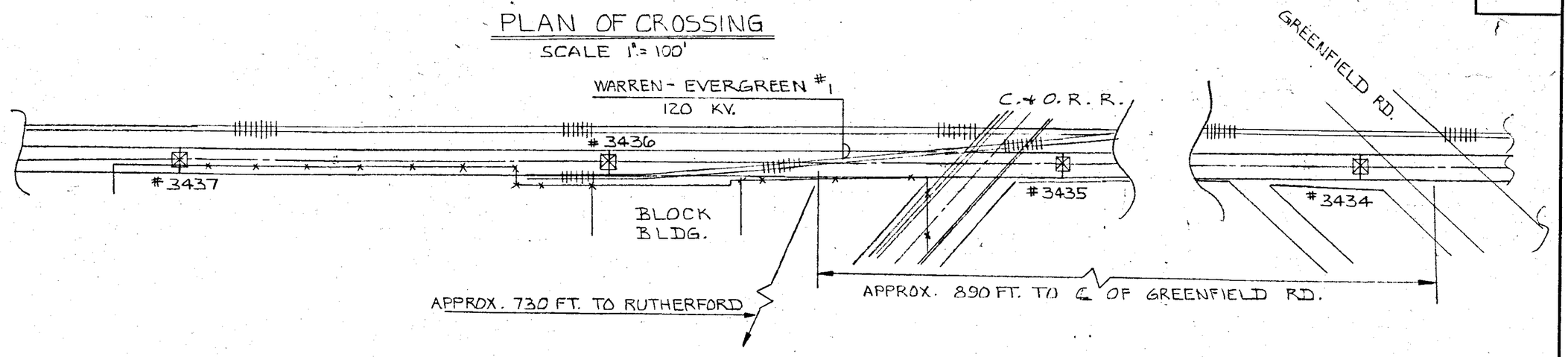
DE FORM SE 146 PTG. 12-70

RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1" = 100'

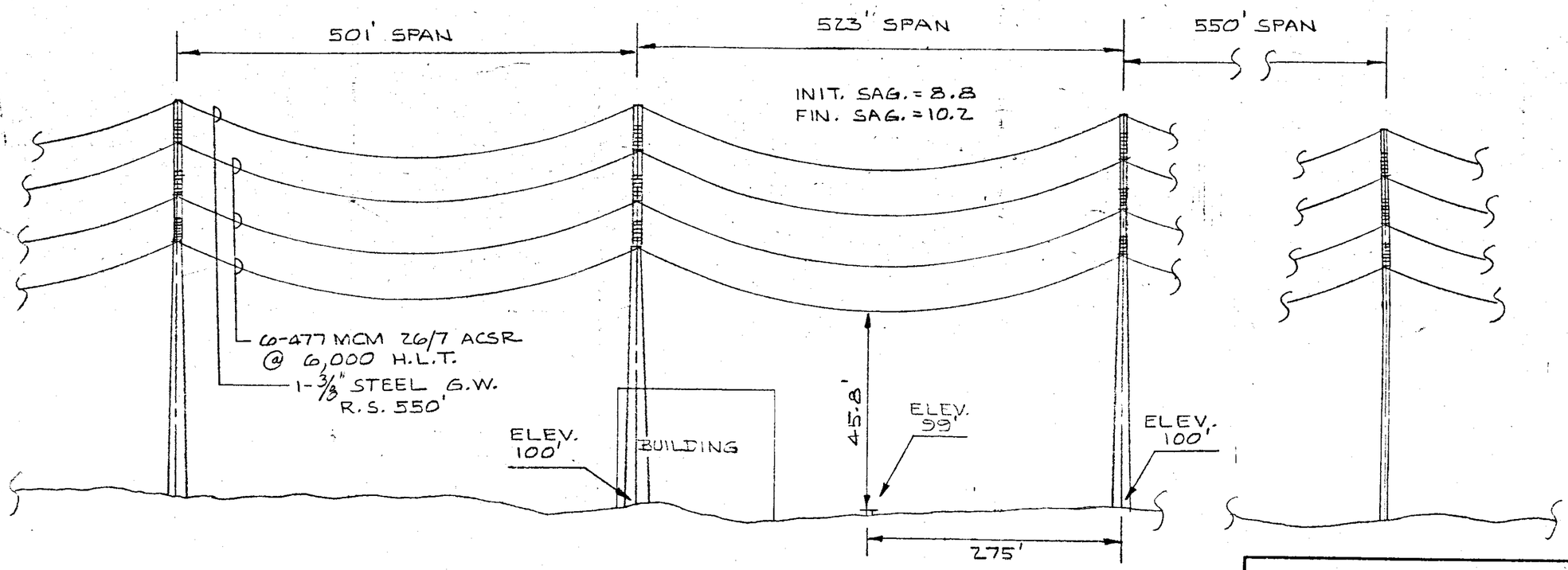


TWR. 3437
TYPE LX

TWR 3436
TYPE LX

TWR. 3435
TYPE LX

TWR. 3434
TYPE LX



ELEVATION OF CROSSING

SCALE: HOR. 1" = 100'
VERT. 1" = 20'

ALL DIMENSIONS AT 60° F FINAL

CITY DETROIT
COUNTY WAYNE
TOWNSHIP T. 2 S. - R. 10 E.
SECTION NO. N. E. 1/4 OF SEC. 1

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR ONE - 120,000 VOLT CROSSING

OVER C.&O. R.R.

DRAWN BY C. VAN PARIS DATE 10-12-84

APPROVED BY J. Howe DATE 10-12-84

PERMIT NO. ED

DRAWING NO. RX - 4310 A

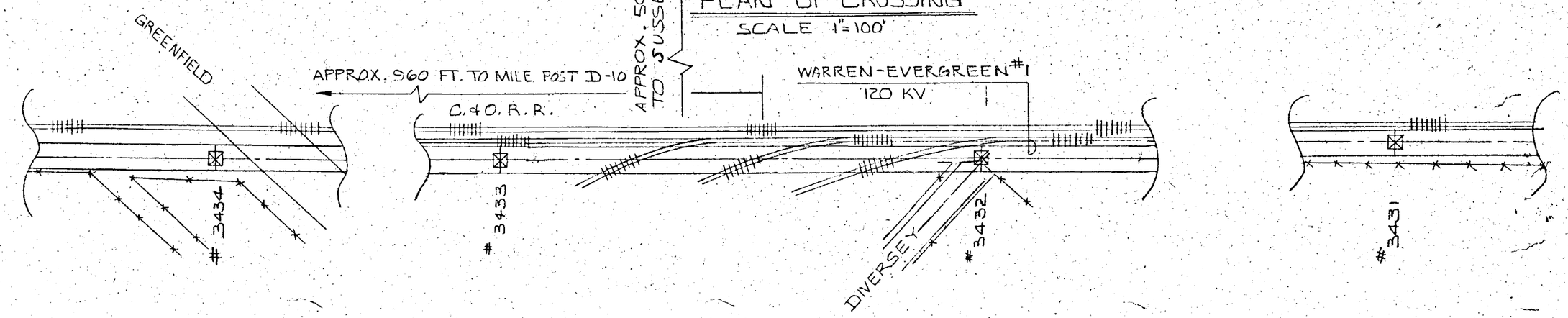
DE FORM SE 168 PTG. 12-70

RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'



TWR. 3432
TYPE
3JN 120

TWR. 3434
TYPE LX

TWR. 3433
TYPE LX

TWR. 3432
TYPE LX

TWR. 3431
TYPE LX

575' SPAN

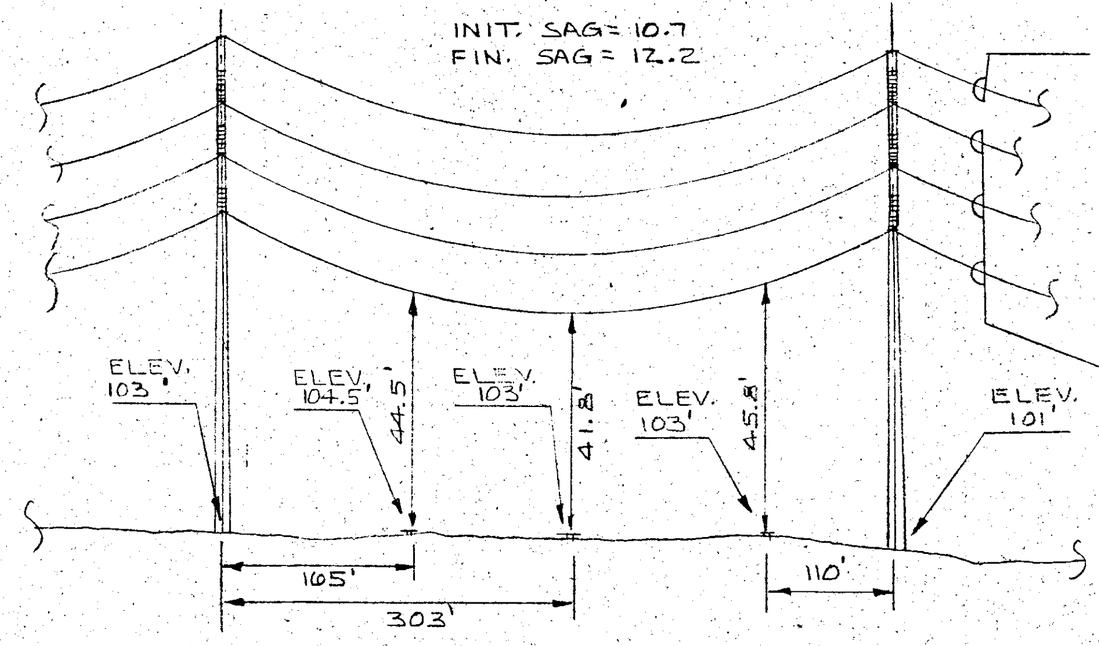
575' SPAN

565' SPAN

INIT. SAG = 10.7
FIN. SAG = 12.2

1-3/8" STEEL G.W.

6-477MCM 26/7 ACSR
6000 H.L.T.
R.S. 540



ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60° F FINAL

CITY DEARBORN
COUNTY WAYNE
TOWNSHIP T.2S.-R.11E.
SECTION NO. S.W. 1/4 OF SEC. 8

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR ONE-120,000 VOLT CROSSINGS
OVER C.&O.R.R.
DRAWN BY C. VAN PARIS DATE 10-15-84
APPROVED BY J. House DATE 10-15-84

PERMIT NO. ED

DRAWING NO. RX-4309A

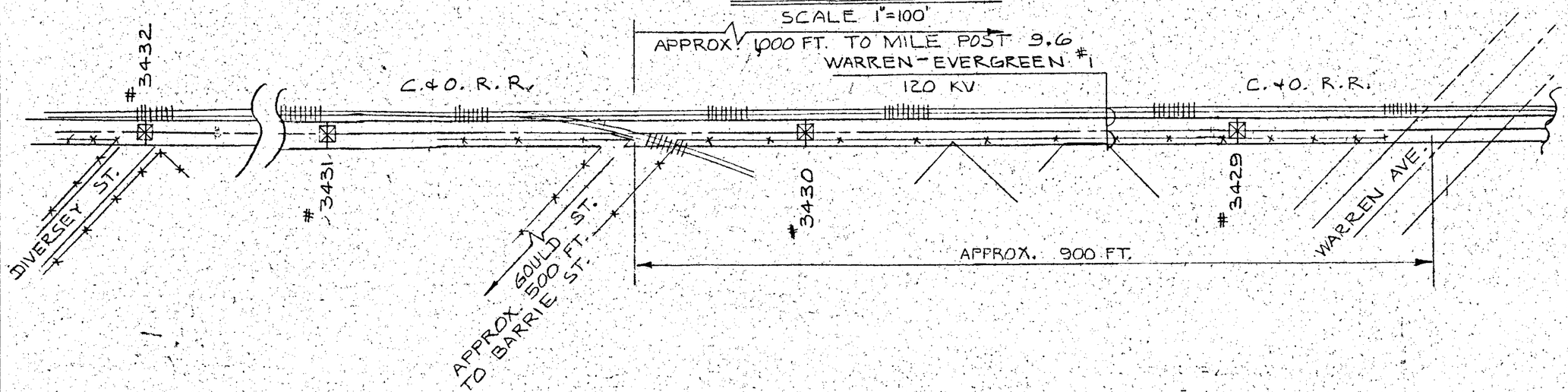
DE FORM SE 168 PTG. 12-70

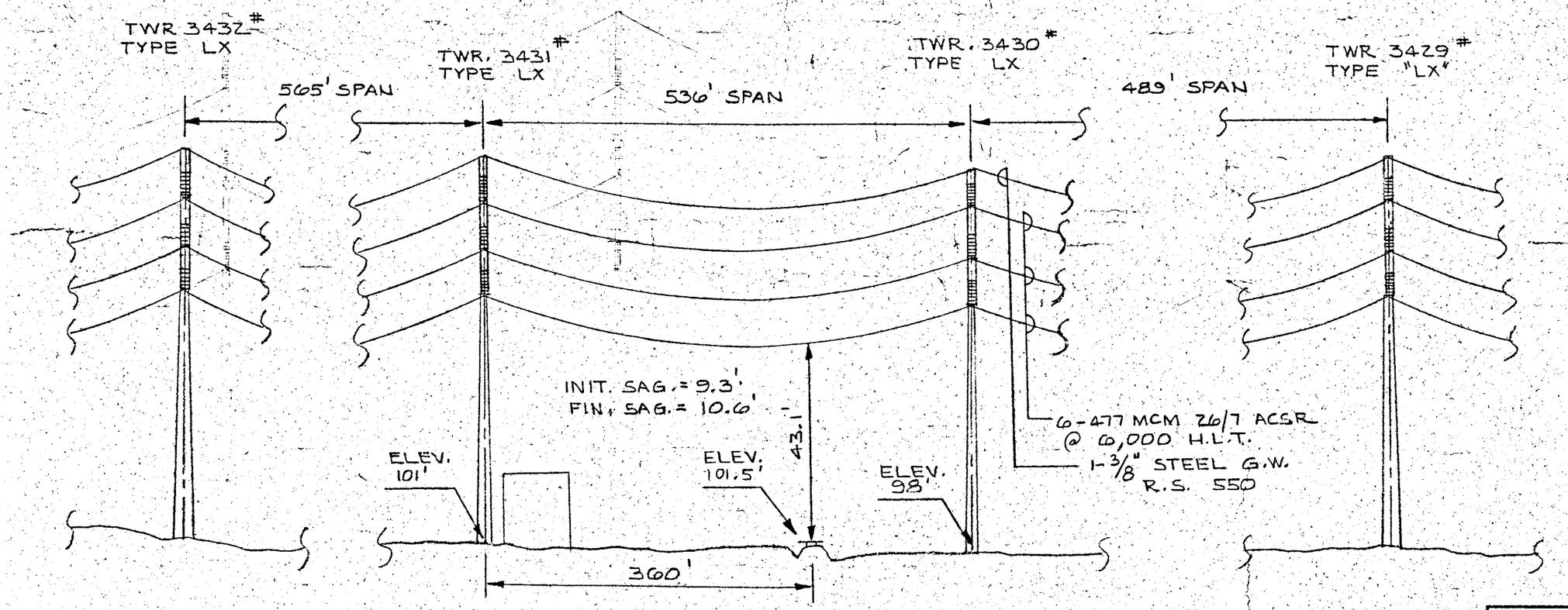
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F. FINAL

CITY DEARBORN
COUNTY WAYNE
TOWNSHIP T.2S.-R.11E
SECTION NO. S.W 1/4 OF SEC. 8

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR ONE-120,000 VOLT CROSSING
OVER C.&O. R.R.
DRAWN BY C. VAN PARIS DATE 10-16-84
APPROVED BY J. House DATE 10-17-84

PERMIT NO. ED

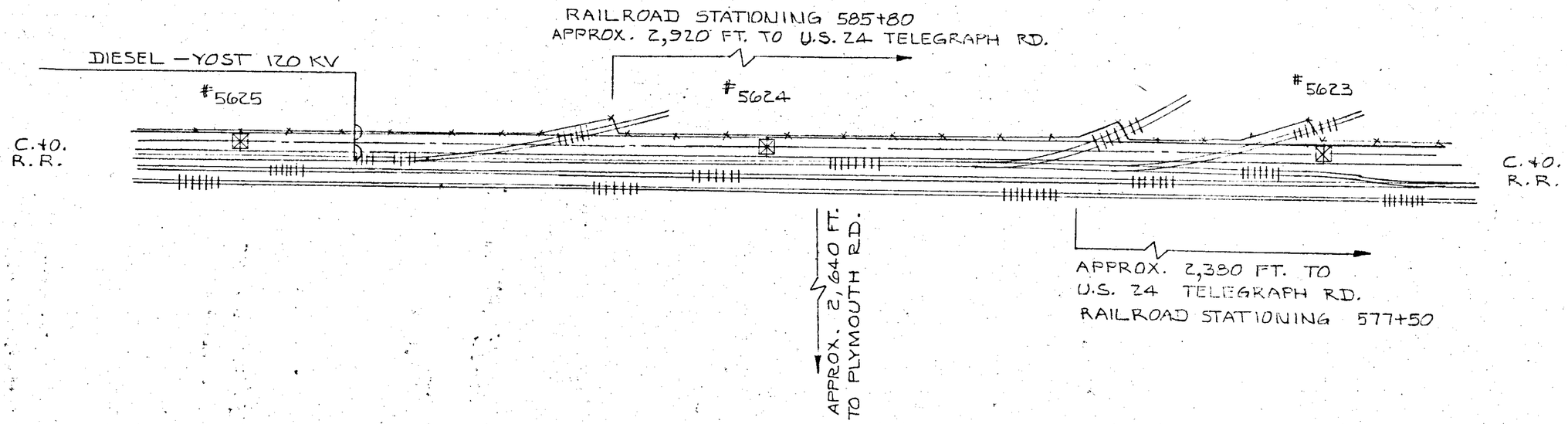
DRAWING NO. RX-4308A

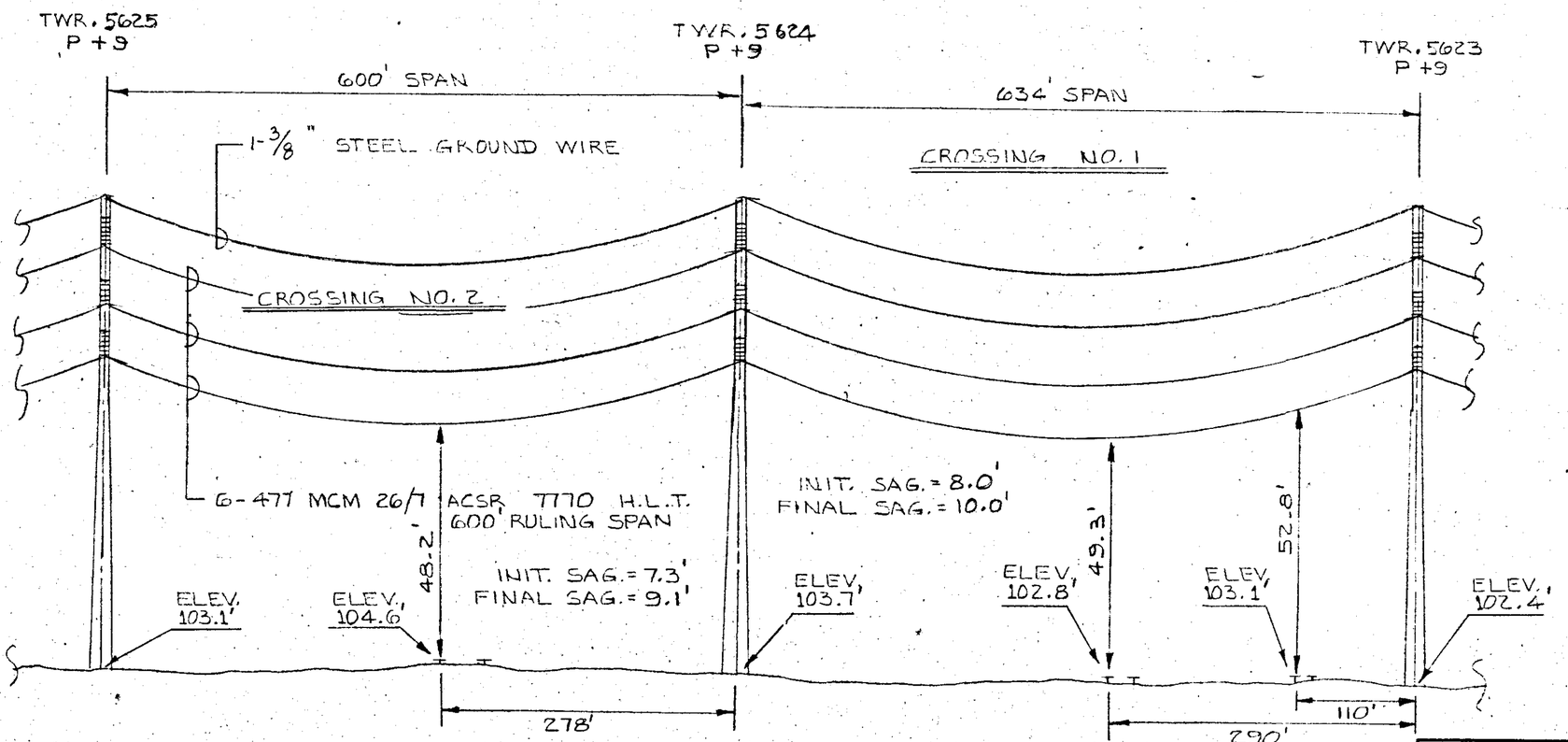
DE FORM SE 168 PTG. 12-70

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60° FINAL

CITY ~
COUNTY WAYNE
TOWNSHIP REDFORD
T. 1S. - R. 10E.
SECTION NO. N.W. 1/4 SEC. 29

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

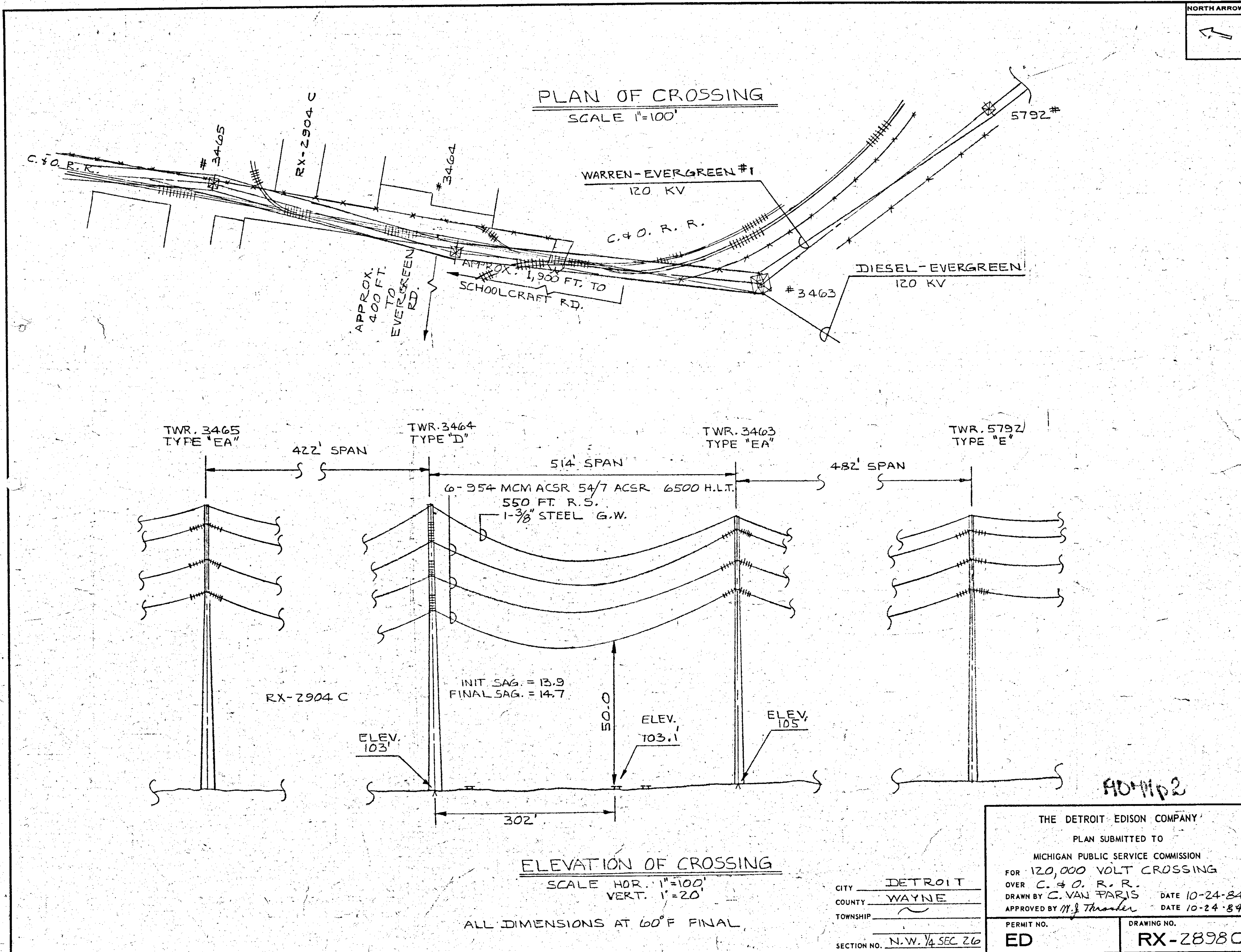
FOR ONE 120,000 VOLT CROSSING
OVER C. & O. R. R.
DRAWN BY C. VAN PARIS DATE 9-28-84
APPROVED BY J. Howe. DATE 9-28-84

PERMIT NO. ED

DRAWING NO. RX-3157B

DE FORM SE 168 PTG. 12-70

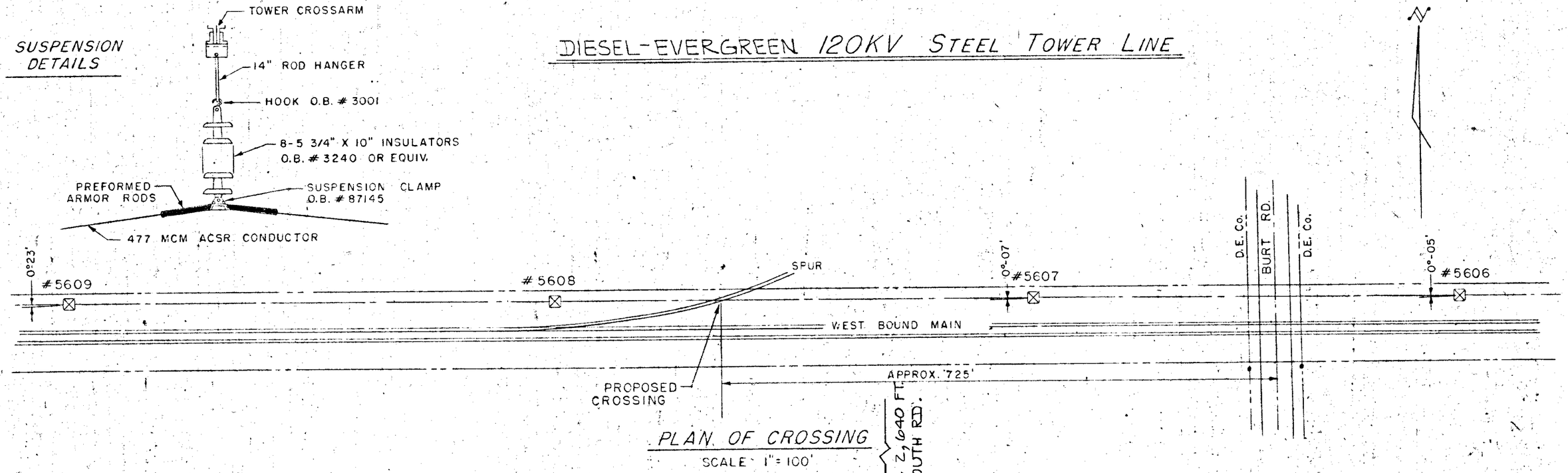
RECORDED RIGHT OF WAY 19077 part 2


NORTH ARROW
PLAN OF CROSSING
SCALE 1"=100'
C.&O. R.R.
#3465
RX-2904 C
#3464
WARREN-EVERGREEN #1
120 KV
C.&O. R.R.
5792#
DIESEL-EVERGREEN
120 KV
#3463
APPROX. 1,900 FT. TO SCHOOLCRAFT RD.
APPROX. 400 FT. TO EVERGREEN RD.
TWR. 3465
TYPE "EA"
422' SPAN
TWR. 3464
TYPE "D"
514' SPAN
TWR. 3463
TYPE "EA"
482' SPAN
TWR. 5792
TYPE "E"
6-954 MCM ACSR 54/7 ACSR 6500 H.L.T.
550 FT. R.S.
1-3/8" STEEL G.W.
RX-2904 C
INIT. SAG. = 13.9
FINAL SAG. = 14.7
50.0
ELEV. 103'
ELEV. 103.1'
ELEV. 105'
302'
ELEVATION OF CROSSING
SCALE HOR. 1"=100'
VERT. 1"=20'
ALL DIMENSIONS AT 60°F FINAL
AD-11 p2
CITY DETROIT
COUNTY WAYNE
TOWNSHIP
SECTION NO. N.W. 1/4 SEC 26
THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR 120,000 VOLT CROSSING
OVER C.&O. R.R.
DRAWN BY C. VAN PARIS DATE 10-24-84
APPROVED BY M.J. Thrasher DATE 10-24-84
PERMIT NO. ED
DRAWING NO. RX-2898C
DE FORM SE 166 PTG. 12-70

RECORDED RIGHT OF WAY 19077 part 2

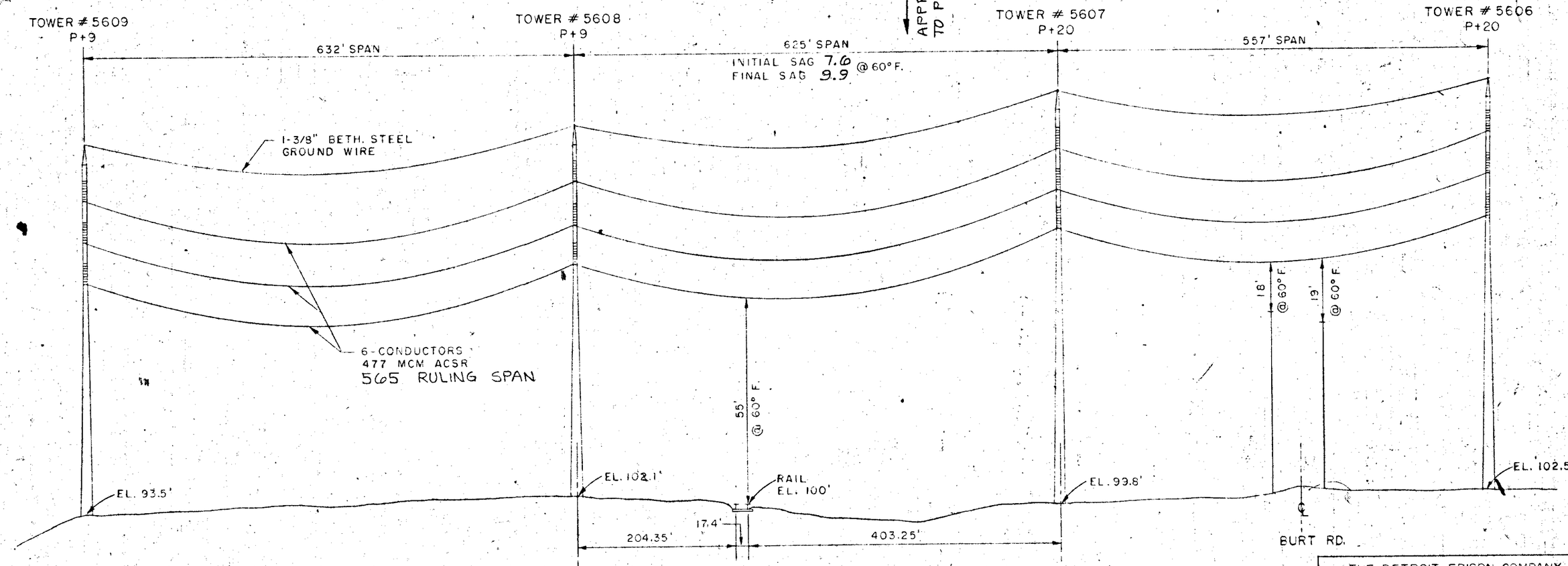
DIESEL-EVERGREEN 120KV STEEL TOWER LINE

SUSPENSION DETAILS



PLAN OF CROSSING

SCALE 1" = 100'



ELEVATION OF CROSSING

SCALE HORIZONTAL 1" = 100'
VERTICAL 1" = 20'

COUNTY WAYNE
CITY DETROIT

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO MICHIGAN PUBLIC UTILITIES COMMISSION
FOR 120,000 VOLT CROSSING
OVER THE CHESAPEAKE & OHIO R.R.
DRAWN BY C. VAN PARIS DATE 10-1-84
CHECKED BY J. House DATE 10-1-84
PERMIT NO. RX-3156B

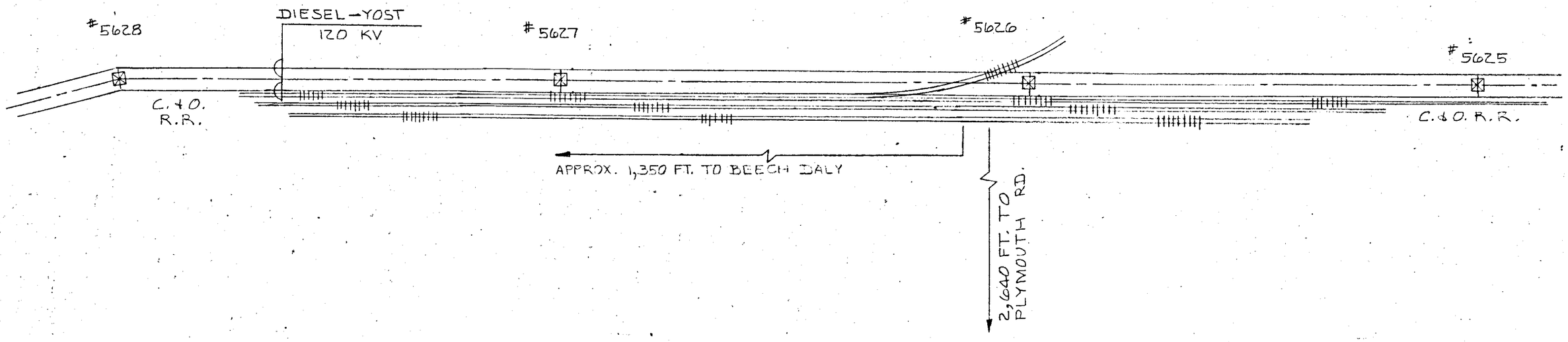
ED 2-8-3941
5-24-56

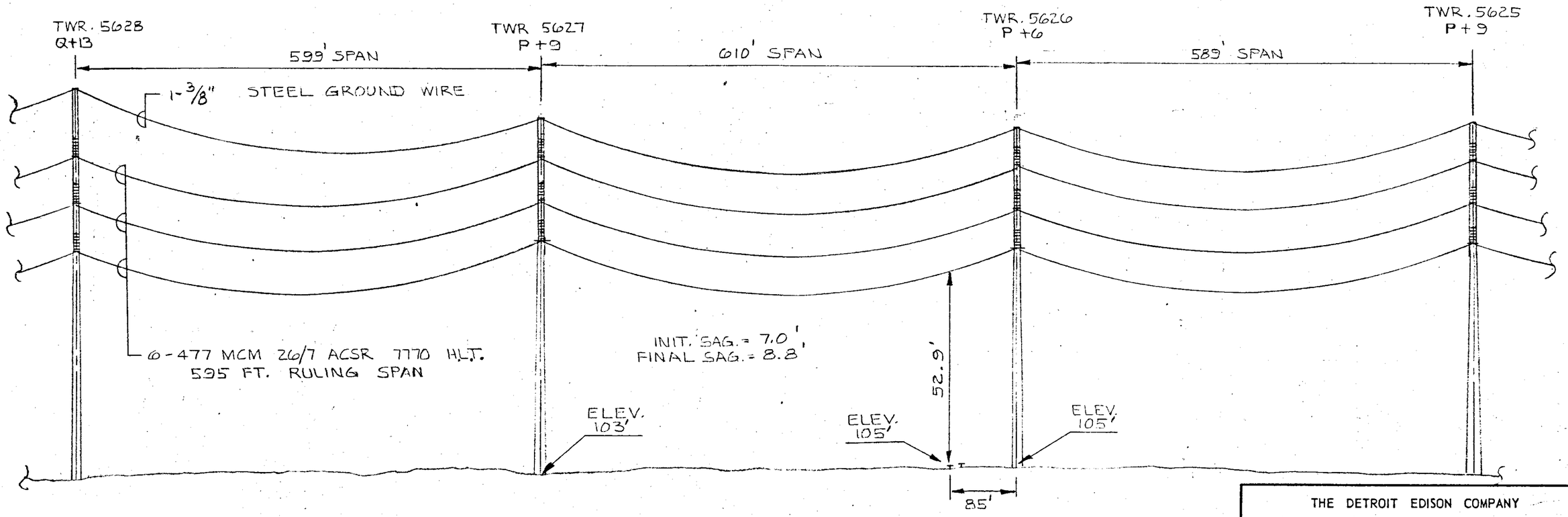
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY
COUNTY WAYNE
TOWNSHIP REDFORD
T. 1S. - R. 10E.
SECTION NO. N.W. 1/4 29

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

FOR 120,000 VOLT CROSSING

OVER C. & O. R. R.

DRAWN BY C. VAN PARIS DATE 9-27-84

APPROVED BY J. Howe DATE 9-27-84

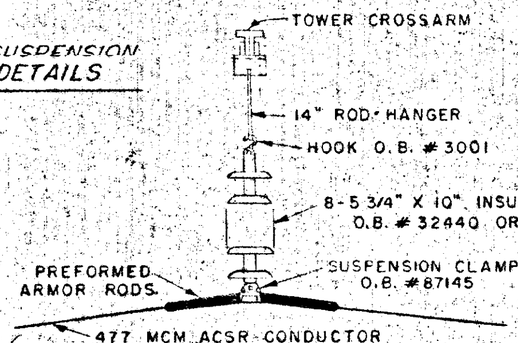
PERMIT NO.	DRAWING NO.
ED	RX-3158B

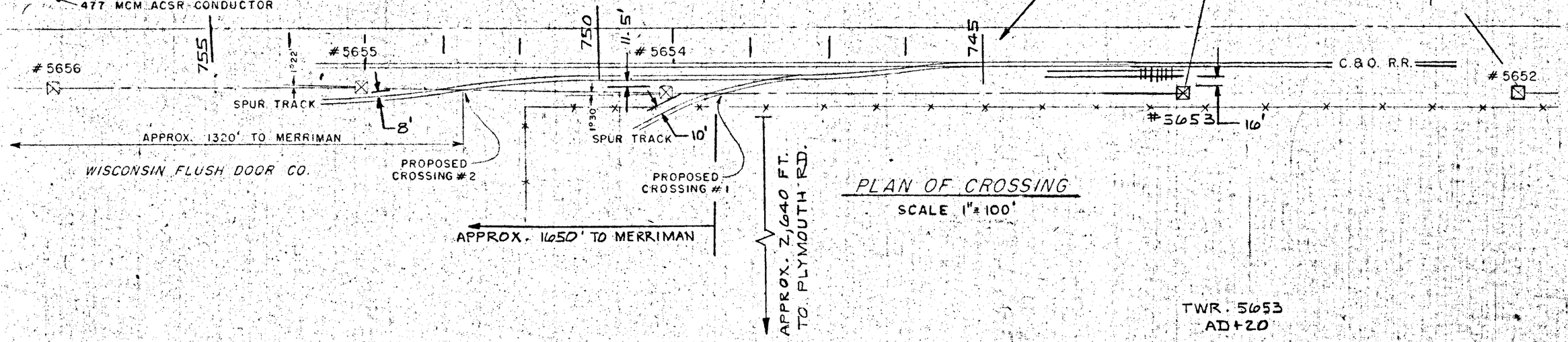
DE FORM SE 158 PTG. 12-70-

RECORDED RIGHT OF WAY 19077 part 2

HINES-YOST 120KV STEEL TOWER LINE

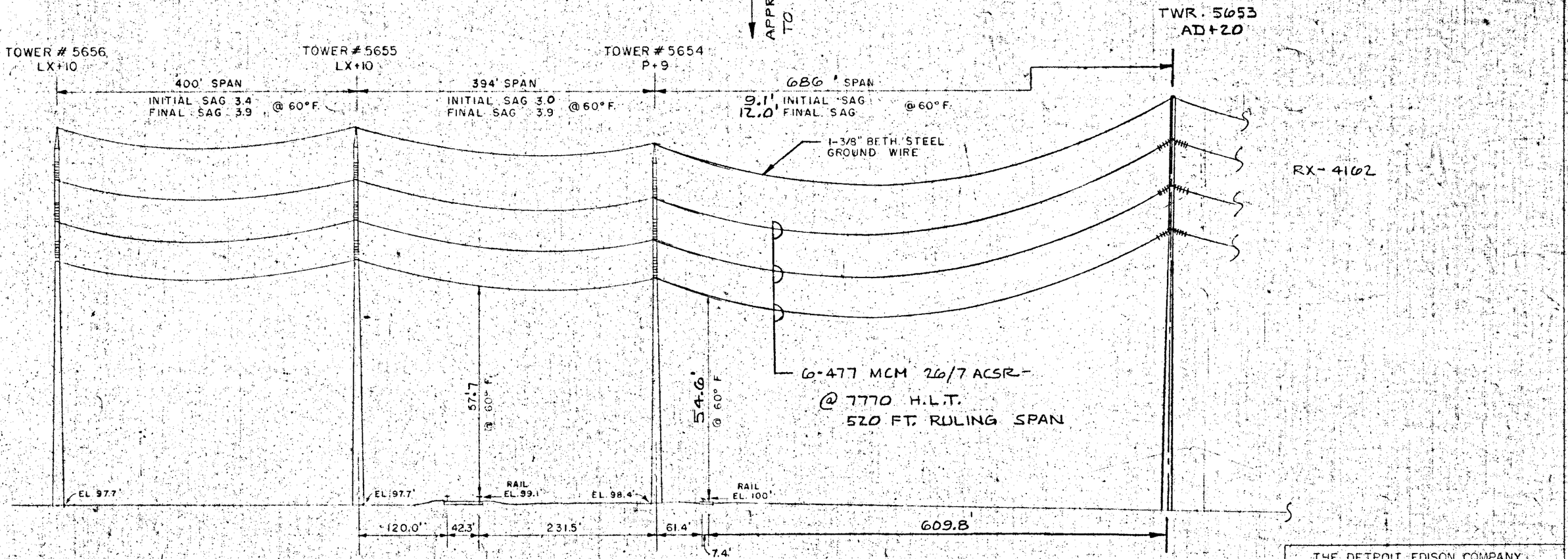
SUSPENSION DETAILS





PLAN OF CROSSING

SCALE 1" = 100'



ELEVATION OF CROSSING

SCALE HORIZONTAL 1" = 100'
VERTICAL 1" = 20'

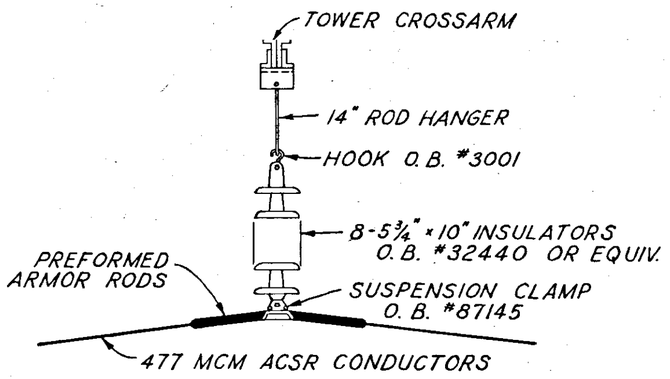
COUNTY WAYNE
CITY LIVONIA
S.W. 1/4 SEC. 26

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO MICHIGAN PUBLIC UTILITIES COMMISSION
FOR 120,000 VOLT CROSSING
OVER THE CHESAPEAKE & OHIO R.R.
DRAWN BY C. VAN PARIS DATE 9-7-84
CHECKED BY J. Howe DATE 9-7-84
PERMIT NO. RX-3162B

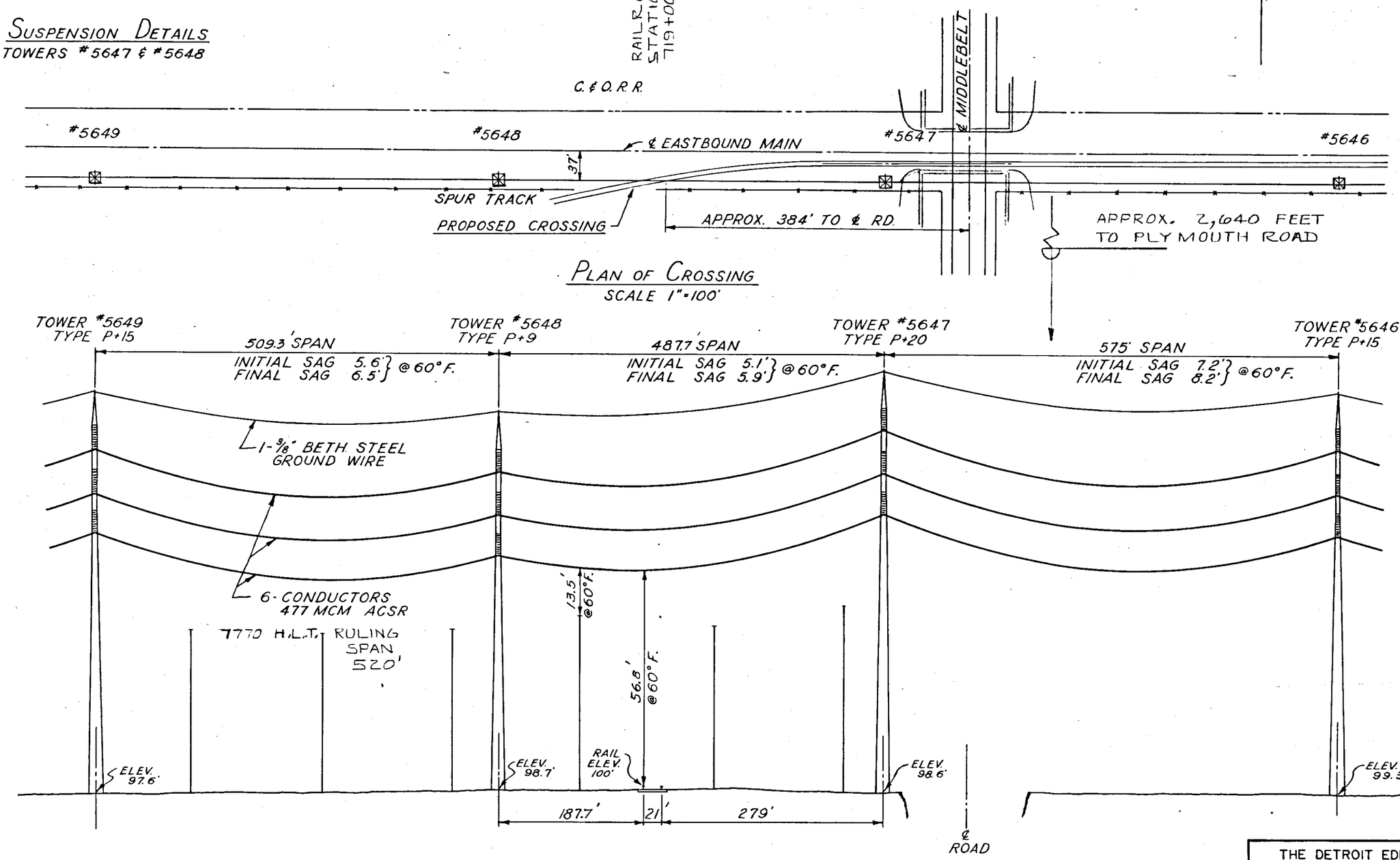
5-24-56 #1 ED2-8-3944
#2 ED2-8-3945

RECORDED RIGHT OF WAY 19077 part 2

DIESEL - YOST 120Kv STEEL TOWER LINE



SUSPENSION DETAILS
TOWERS #5647 & #5648



PLAN OF CROSSING
SCALE 1"=100'

ELEVATION OF CROSSING
SCALE HORIZONTAL 1"=100'
VERTICAL 1"=20'

COUNTY WAYNE
CITY LIVONIA
S.E. ¼ 26

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO MICHIGAN PUBLIC UTILITIES COMMISSION
FOR 120,000 VOLT CROSSING
OVER THE CHESAPEAKE & OHIO R.R.
DRAWN BY C. VAN PARIS DATE 9-11-84
CHECKED BY J. Crowe DATE 9-12-84
PERMIT NO. RX-3161 B

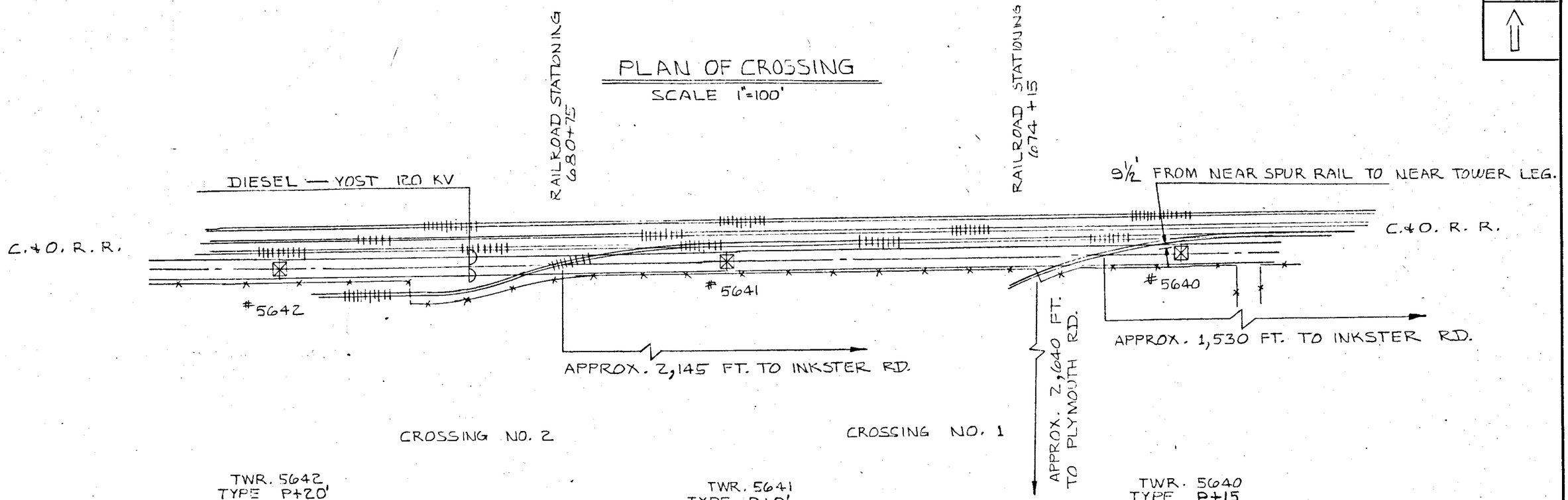
ED 7-8-3843 1-11-56

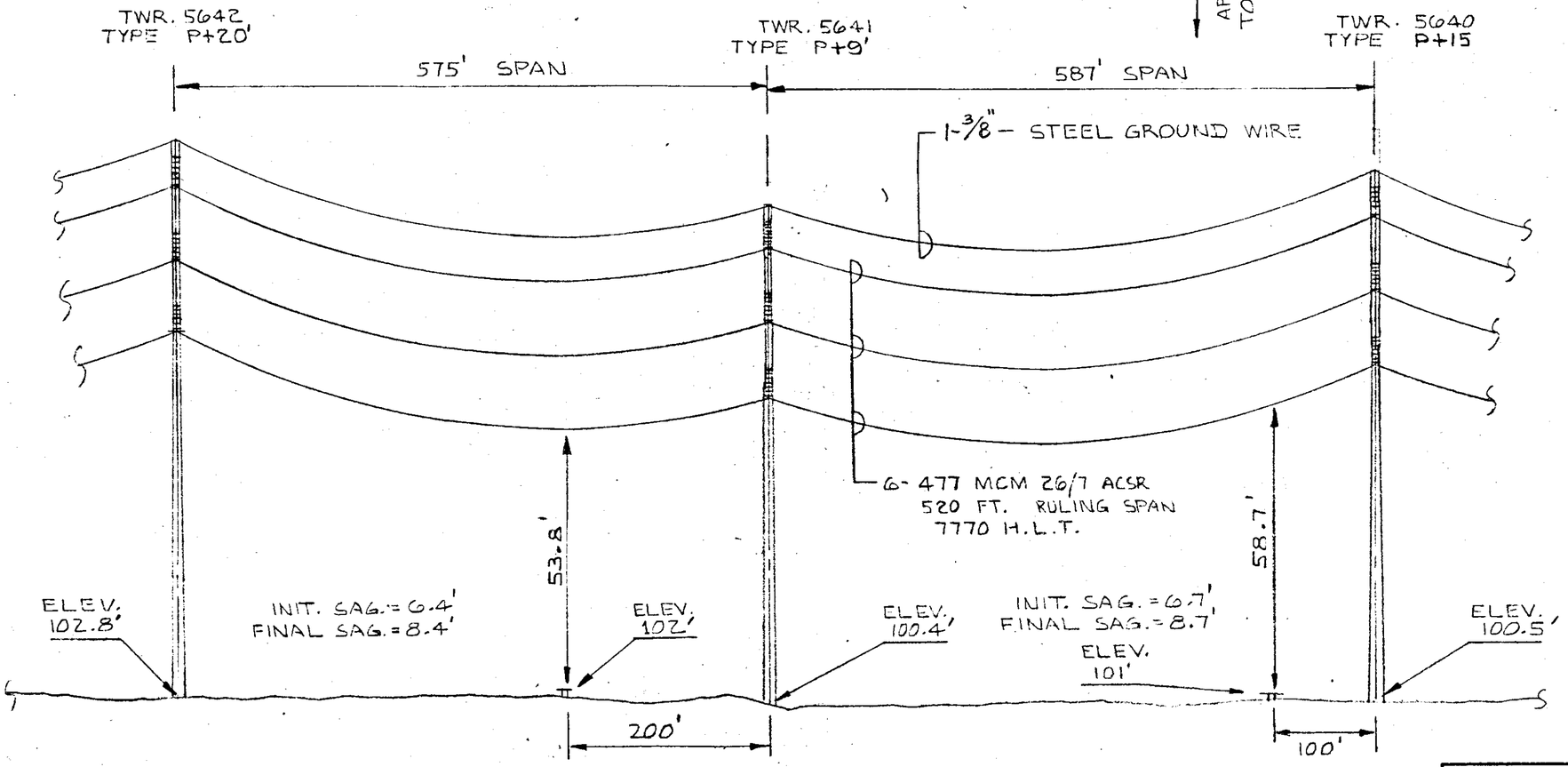
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP T.1S.- R.9E
SECTION NO. S.E.¼, 25

THE DETROIT EDISON COMPANY

PLAN SUBMITTED TO

MICHIGAN PUBLIC SERVICE COMMISSION

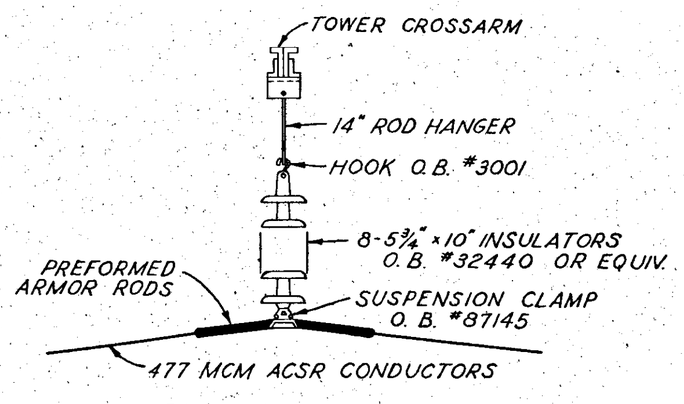
FOR 120,000 VOLT CROSSING
OVER C.&O. R. R.
DRAWN BY C. VAN PARIS DATE 9-17-84
APPROVED BY J. Howe DATE 9-17-84

PERMIT NO.	DRAWING NO.
ED	RX-3160C

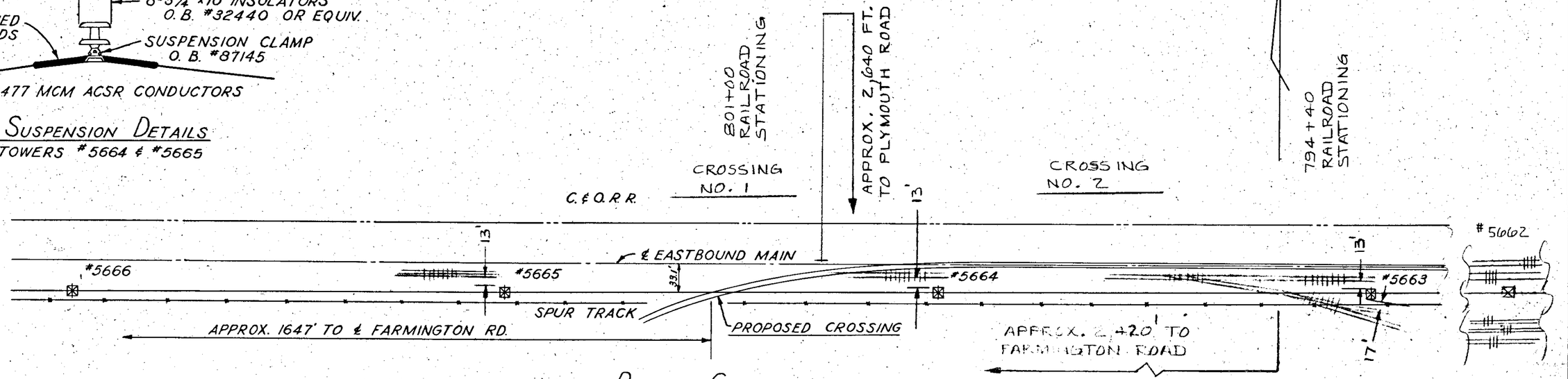
DE FORM SE 168 PTG. 12-70

RECORDED RIGHT OF WAY 19077 part 2

HINES-YOST 120Kv STEEL TOWER LINE

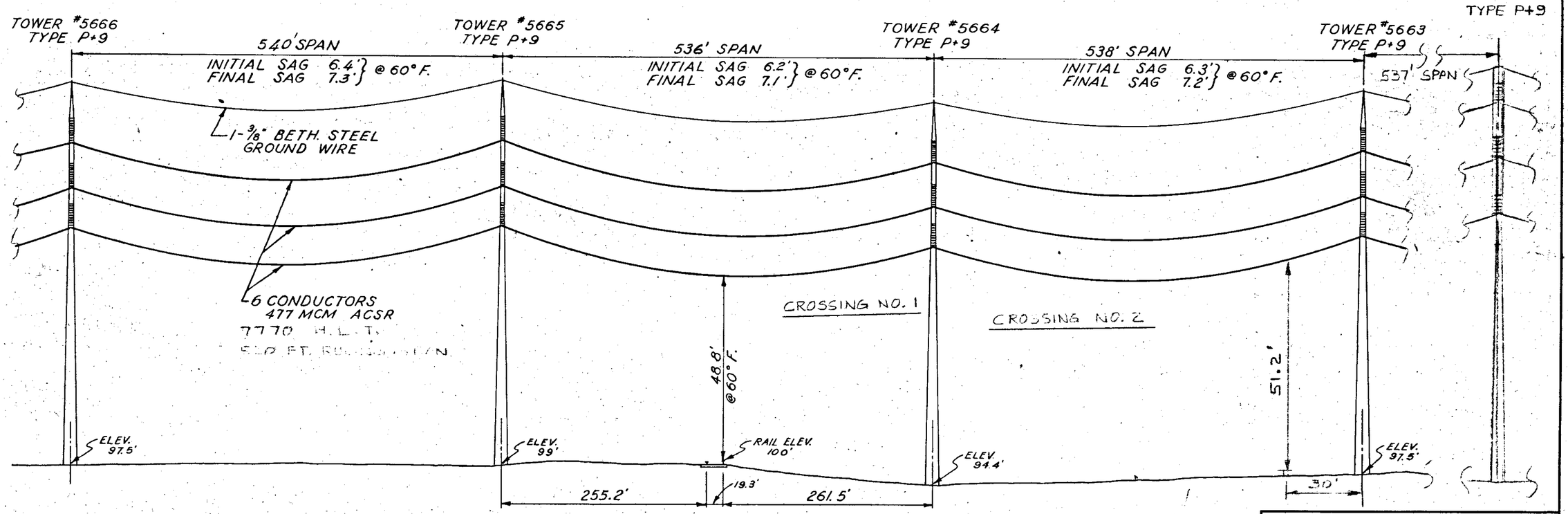


SUSPENSION DETAILS
TOWERS #5664 & #5665



PLAN OF CROSSING
SCALE 1"=100'

TWR. 5662
TYPE P+9



ELEVATION OF CROSSING
SCALE HORIZONTAL 1"=100'
VERTICAL 1"=20'

COUNTY WAYNE
CITY LIVONIA
S.W. ¼ SEC. 27

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO MICHIGAN PUBLIC UTILITIES COMMISSION
FOR 120,000 VOLT CROSSING
OVER THE CHESAPEAKE & OHIO R.R.
DRAWN BY C. VAN PARIS DATE 8-30-84
CHECKED BY J. Howe DATE 8-30-84
PERMIT NO. RX-3163 B

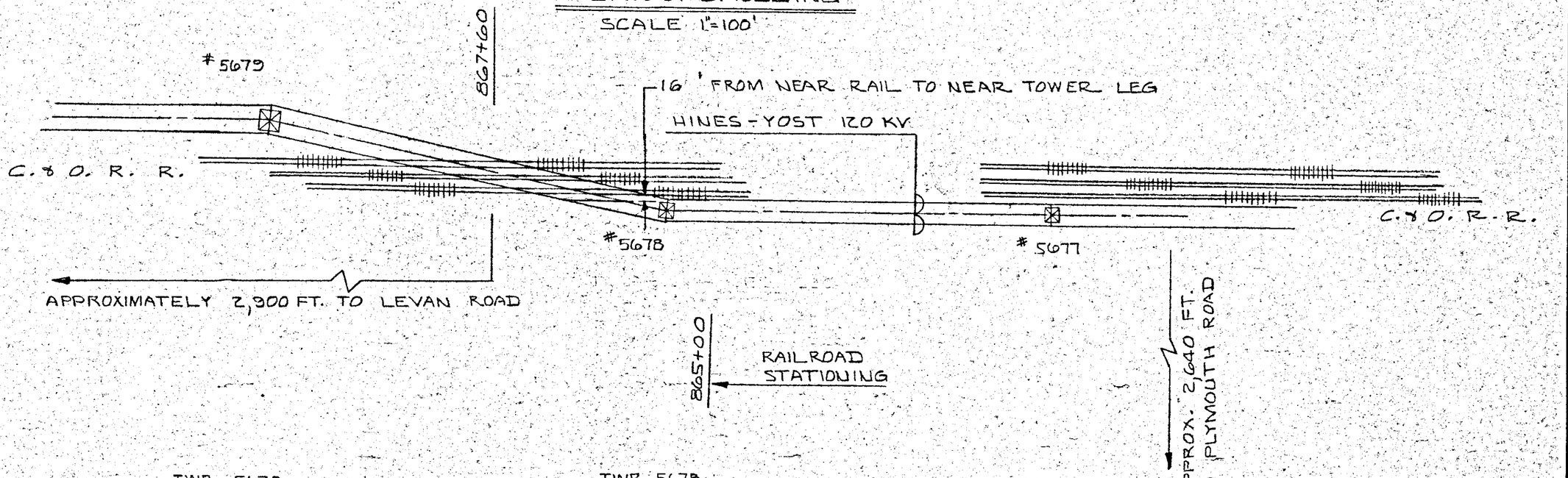
EDZ-8-3840 RX-3163
1-11-56

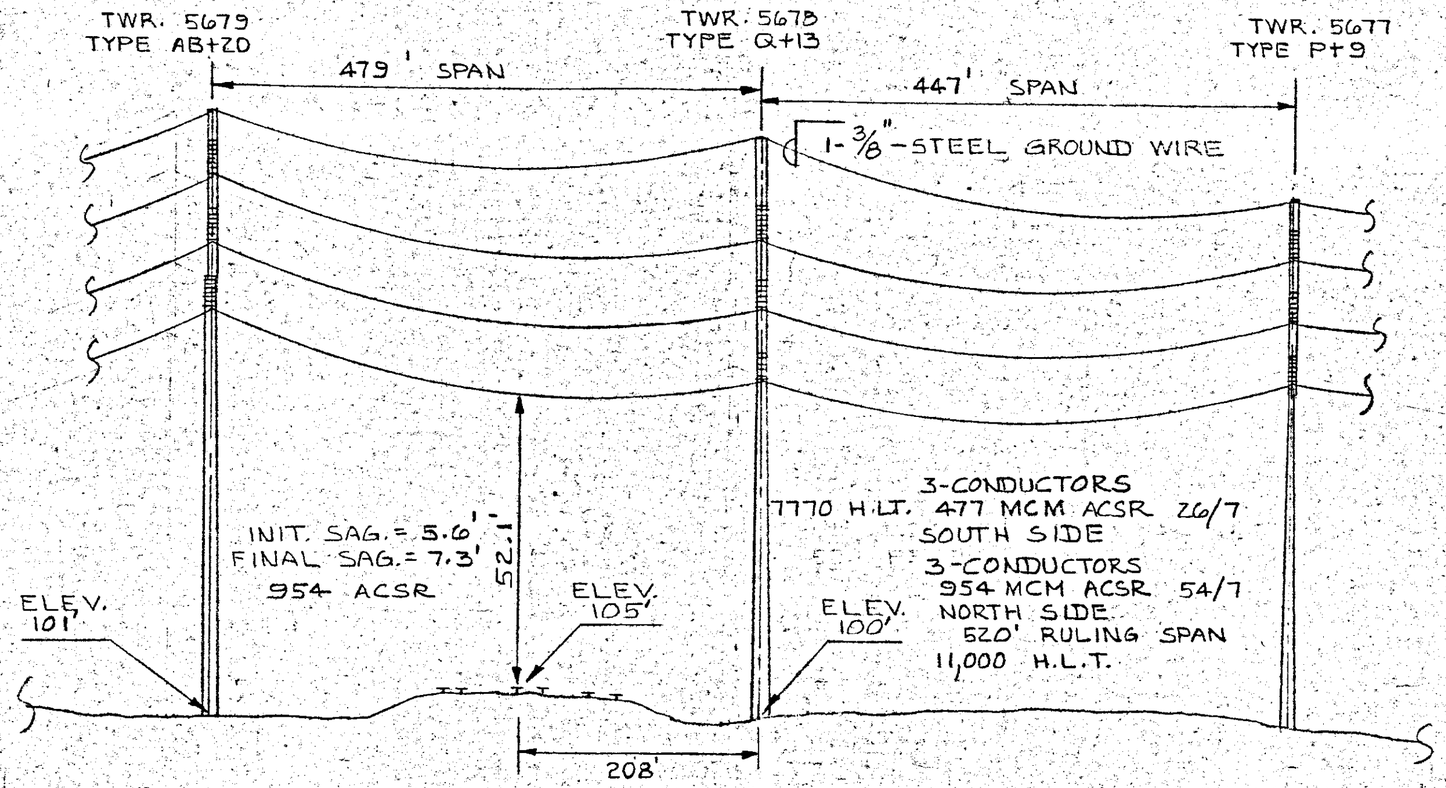
RECORDED RIGHT OF WAY 19077 part 2

NORTH ARROW

PLAN OF CROSSING

SCALE 1"=100'





ELEVATION OF CROSSING

SCALE: HOR. 1"=100'
VERT. 1"=20'

ALL DIMENSIONS AT 60°F FINAL

CITY LIVONIA
COUNTY WAYNE
TOWNSHIP
SECTION NO. S.W. 1/4 28

THE DETROIT EDISON COMPANY
PLAN SUBMITTED TO
MICHIGAN PUBLIC SERVICE COMMISSION
FOR 120 KV CROSSING
OVER C. & O. RAILROAD
DRAWN BY C. VAN PARIS DATE 9-26-84
APPROVED BY W. J. Thrasher DATE

PERMIT NO. ED

DRAWING NO. RX-3164C

DE FORM SE 168 PTG. 12-70

(19)

RECORDED RIGHT OF WAY 19077 part 2

Replace	PF	07/27/2018