



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT/PRIVACY PROGRAM

February 27, 2018

In reply refer to: FOIA #BPA-2018-00421

Stephen K. Haddock, PLS, CFedS
Morrow County Surveyor
PO Box G
Pilot Rock, OR 97868
shaddock@co.morrow.or.us; witnessree@eoni.com

Dear Mr. Haddock:

This communication is the Bonneville Power Administration's (BPA) final response to your request for agency records made under the Freedom of Information Act, 5 U.S.C. § 552 (FOIA). Your records request was received on December 19, 2017 and acknowledged on January 5, 2018.

Request

"A copy of the current right of way map for the BPA Right of Way through Section 10, Township 4 North, Range 25 East, Willamette Meridian, Morrow County, Oregon showing enough corner ties to determine how the right of way should be located.

[and]

A copy of the legal descriptions for this right of way through Section 10, Township 4 North, Range 25 East, W.M., Morrow County, Oregon given in the case files cited in the Patent from the United States of America recorded in the Morrow County Deed Records in Instrument No. M-5213. (A copy of that document is attached herewith.) These case files are cited in that document as "Oregon 02451" and "Oregon 018714" for tracts Mc-Ma-36 and LM-JD-322. (Note: the patent document reserves this easement but only describes its width. The description for how to locate this easement is only in the patent by reference to the Oregon case files.)"

Response

In accord with FOIA requirements, BPA conducted electronic searches of records in the following agency offices:

Surveying and Mapping

Agency records responsive to your request were identified. BPA is herein releasing 34 pages of responsive records with 19 pages containing minimal redactions as described below.

Exemption 6

BPA has located 34 pages of records responsive to your request. We are releasing those agency records in full, with the exception of minimal redactions applied under 5 U.S.C. § 552 (b)(6) (Exemption 6) to protect personal privacy. Exemption 6 of the FOIA protects information about individuals in "personnel and medical files and similar files" when the disclosure of such information "would constitute a clearly unwarranted invasion of personal privacy." The application of Exemption 6 requires balancing the public's interest in acquiring the information against the individual's privacy interests. If a significant privacy interest is found to exist, and there is no overriding public interest served by disclosure, the information should be protected. Here, BPA asserts Exemption 6 to withhold a limited amount of information including individual property owners' names which are not related to the business of BPA or the Executive Branch. BPA can find no public interest in the forgoing information and has therefore redacted it under Exemption 6.

Certification

Your FOIA request BPA-2018-00421-F is closed with all available and responsive agency records provided. Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the release and determinations described above.

Fee

A waiver of FOIA fees was previously granted.

Appeal

This decision, as well as the adequacy of the search, may be appealed within 90 calendar days from your receipt of this letter pursuant to 10 C.F.R. § 1004.8. Appeals should be addressed to:

Director, Office of Hearings and Appeals,
HG-1, L'Enfant Plaza
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-1615

The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line. The appeal must contain all of the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either: 1) in the district where you reside; 2) where you have your principal place of business; 3) where DOE's records are situated; or 4) in the District of Columbia.

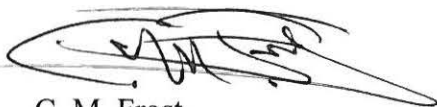
You may contact BPA's FOIA Public Liaison, Sarah Westenberg, at the address at the letter header for any further assistance and to discuss any aspect of your request. Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives

and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

Office of Government Information Services
National Archives and Records Administration
8601 Adelphi Road-OGIS
College Park, Maryland 20740-6001
E-mail: ogis@nara.gov
Phone: 202-741-5770; Toll-free: 1-877-684-6448; Fax: 202-741-5769

If you have questions about this communication you may contact James King, CorSource Technology Group LLC, at jjking@bpa.gov and 503-230-7621.

Sincerely,

A handwritten signature in black ink, appearing to be 'C. M. Frost', written over a horizontal line.

C. M. Frost
Freedom of Information/Privacy Act Officer

Responsive agency records accompany this communication

P.O.T. & B.M. List

Lower Monumental-John Day No 1 (Mile 80)

Drawing Number: 129680

Lower Monumental-John Day No 1 (Mile 81)

Drawing Number: 129681

Lower Monumental-John Day No 1 (Mile 82)

Drawing Number: 129682

Lower Monumental-John Day No 1 (Mile 83)

Drawing Number: 129683

LOWER MONUMENTAL--JOHN DAY

Station	Elevation	Description
986+65.00	339.89	Hub
994+67.80	328.40	Hub in Pwr. Line
997+75.00	324.65	Hub
1009+50.00	329.01	Hub
1015+10.85	349.08	Hub
1019+39.50	338.83	Hub
1023+64.26	333.49	5/8" Iron Pin
1026+64.71	324.96	Hub
1031+50.00	301.81	Hub
1043+25.05	300.61	5/8" Iron Pin in R/WFc.
1044+17.85	301.15	Hub in Pwr. Line
1044+25.00	301.48	Hub
1045+06.15	303.40	⊕ State Hwy (U.S. #30)
1048+72.60	302.22	Hub in Fc.
1049+62.48	303.01	Hub-Fc.
1049+83.48	303.88	⊕ Co. Rd.
1050+04.15	303.10	Hub-Fc.
1054+50.00	305.75	Hub
1059+77.15	324.40	Hub
1063+73.95	327.20	Hub-Fc.
1064+00.00	327.79	Hub
1068+71.80	335.40	5/8" Iron Pin
1074+86.3 Bk		
1074+53.6 Ah	326.21	5/8" Iron Pin AP 14°55'00" Rt.
1077+21.95	327.20	Hub in Fc.
1085+50.00	338.86	Hub
1086+90.50	342.05	Hub
1090+65.20	344.95	5/8" Iron Pin in Fc. Line
1094+50.00	344.57	Hub
1100+70.40	346.88	Hub
1102+75.00	342.27	Hub
1104+05.45	338.06	Hub in Fc. Line
1105+68.53	333.23	Hub
1113+50.00	302.46	Hub
1123+50.00	297.73	Hub
1130+01.25	301.04	5/8" Iron Pin in Fc. Line
1130+23.20	300.95	⊕ Asph. Rd.
1130+41.98	301.00	Hub
1132+76.16	301.41	Hub in Fc. Line
1136+25.00	304.85	Hub
1143+67.78	311.37	Hub
1146+56.73	300.37	5/8" Iron Pin in Fc. Line
1149+50.00	302.95	Hub
1153+57.60	319.26	Hub
1156+20.60	313.54	5/8" Iron Pin in Fc. Line
1160+25.95	307.29	Hub

P.O.T. & B.M. List

Lower Monumental-John Day No 1 (Mile 83)

Drawing Number: 129683

Lower Monumental-John Day No 1 (Mile 84)

Drawing Number: 129684

Lower Monumental-John Day No 1 (Mile 85)

Drawing Number: 129685

Lower Monumental-John Day No 1 (Mile 86)

Drawing Number: 129686

Lower Monumental-John Day No 1 (Mile 87)

Drawing Number: 129687

LOWER MONUMENTAL--JOHN DAY

Station	Elevation	Description
1166+39.12	312.63	5/8" Iron Pin
1169+61.79	311.51	⊕ Rd. Survey Line
1178+25.00	313.55	Hub
1184+34.08	310.64	Hub
1189+50.00	312.29	5/8" Iron Pin
1198+42.58	312.29	Hub
1201+75.00	307.09	Hub
1208+40.05	303.17	5/8" Iron Pin in Fc. Line
1208+60.80	301.28	⊕ Co. Rd.
1208+89.15	301.96	Hub in Fc. Line
1212+00.00	299.46	Hub
1215+55.55	297.54	Hub in Fc. Line
1215+64.18	297.24	⊕ Farm Lane
1215+75.46	297.03	Hub in Fc. Line
1221+70.43	293.55	Hub in Fc. Line
1221+90.32	292.73	⊕ Asph. Co. Rd.
1222+20.95	291.09	Hub in Tlp. Line
1222+50.00	289.71	Hub
1233+75.00	277.62	Hub
1235+08.20	276.98	5/8" Iron Pin in Fc. Line
1235+28.43	277.67	Spike in Co. Rd.
1235+50.88	277.35	Hub
1244+99.73	278.77	Hub
1248+57.82	279.07	5/8" Iron Pin in Fc. Line
1255+18.59	279.71	Hub in Fc. Line
1256+00.00	280.74	Hub
1261+75.93	278.78	5/8" Iron Pin
1267+50.00	276.42	Hub
1268+61.15	277.15	Hub
1275+58.26	278.57	5/8" Iron Pin in Fc. Line
1278+50.00	279.57	Hub
1289+50.00	285.57	Hub
1293+70.86	284.64	5/8" Iron Pin in Fc. Line
1293+92.38	285.54	⊕ Asph. Rd.
1294+15.58	284.27	Hub in Fc. Line
1295+96.47	285.67	Hub in Fc. Line
1299+71.35	285.40	Hub in Fc. Line
1301+00.00	285.39	5/8" Iron Pin
BM	284.07	Hub between legs 1 & 4 Twr. 24/3 McN-M Line
1306+15.47	287.41	Hub
1307+33.92	287.08	Hub
1308+34.06	288.59	Hub
1320+66.61	291.09	Hub
1321+75.00	290.02	Hub
1323+38.13	291.72	Hub in Fc. Line
1331+00.30	289.34	Hub
1332+75.00	290.25	Hub

EXHIBIT A

A perpetual easement and right to enter and erect, maintain, repair, rebuild, operate, and patrol one or more lines of electric power transmission structures and appurtenant signal lines, including the right to erect such poles, transmission structures, wires, cables, and appurtenances as are necessary thereto, in, over, upon, and across the parcels of land in the Counties of Benton and Klickitat, in the State of Washington, and in the Counties of Morrow and Umatilla, in the State of Oregon, identified as Tracts M-BE-23, M-BE-56, Mo-Ma-36, IM-JD-247, and IM-JD-322, described in the pages attached hereto and by this reference made a part hereof.

Together with the present and future right to clear said right-of-way and keep the same clear of brush, timber, structures, and fire hazards, provided that fire hazards shall not be interpreted to include any growing crops other than trees.

Also, reserving and excepting to the United States of America, and its assigns, a permanent easement and right-of-way for the construction, operation, use and maintenance of a road variable in width (with such additional widths as are necessary to provide for cuts, fills, and turn-outs and for curves at angle points) on, over, and across the land of the Grantee in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 10, Township 4 North, Range 25 East, Willamette Meridian, Morrow County, Oregon, except any portion thereof which lies within the right-of-way of the United States of America for its Bonneville Power Administration's transmission lines, for the following purposes, namely: the right to enter and to clear of timber, danger trees, and brush; to build, cut, fill, level, grade, drain, surface, use, maintain, repair, and rebuild the road and such culverts, bridges, turn-outs, retaining walls or other appurtenant structures as may be necessary, on, over, and across the land embraced within said right-of-way. Said access road is identified as BPA Tract No. IM-JD-AR-83-1, and is shown on drawing No. 129683, prepared by the United States of the Interior, Bonneville Power Administration, and on file with the Bonneville Power Administration.

The Grantee shall have the right of ingress and egress over and across the said road and the right to pass and repass along and on said road insofar as the same extends across the lands of the Grantee, said right to be exercised in a manner that will not interfere with the use of the road by the United States of America, its employees, contractors or assigns.

It is understood and agreed that if said road is damaged by the United States of America, its employees, contractors or assigns, the United States of America, subject to the availability of appropriations, or its assigns, will repair such damage. It is further understood and agreed that the Grantee may erect or maintain fences across such road, provided adequate gates of not less than 16 feet in width are installed, which may be kept locked, provided the United States of America is also permitted to install its own lock thereon.

It is agreed that any damage to Grantee's agricultural crops, fences, or irrigation or drainage systems on the right-of-way resulting from and in the course of construction or reconstruction or maintenance of the transmission line or lines shall be repaired, replaced or paid for by the United States of America or its contractor. Where payment is made, the amount of damages will be determined by an appraisal made by the United States of America.

Any use of the right-of-way by the Grantee, its successors and assigns, other than the right to use said right-of-way to grow, cultivate, and harvest agricultural crops, shrubs, decorative plants, or to utilize as grazing lands, shall be by express permission of the United States of America. However, the United States of America shall have the right to grade, cultivate, plant and maintain grass, shrubs, or other cover or ornamental plants upon the portion of the right-of-way not otherwise being utilized by Grantee.

For the purpose of preserving the natural appearance of the right-of-way, it is agreed by the Grantee and the United States of America that the right-of-way shall not be used for the accumulation or dumping of litter, trash, or other foreign material except for small limbs and slash as permitted under Bonneville Power Administration's standard clearing contracts. The United States of America agrees that any such accumulations resulting from its entry upon the right-of-way for construction or maintenance purposes will be removed or disposed of by the United States of America or its contractor.

POOR ORIGINAL

Mc-Ma-36

United States of America

LN-25E-10

That portion of the $S\frac{1}{2}S\frac{1}{2}$ of Section 10, Township 4 North, Range 25 East of the Willamette Meridian, Morrow County, Oregon, which lies within a strip of land 250 feet in width, the boundaries of said strip lying 62.5 feet distant southerly from and 187.5 feet distant northerly from, and parallel to the survey line of the McNary-Maupin transmission line as now located and staked on the ground over, across, upon, and/or adjacent to the above described property, said survey line being particularly described as follows:

Beginning at survey station 1077 + 16.9 a point on the east line of Section 10, Township 4 North, Range 25 East, Willamette Meridian, said point being N. 1° 59' 00" W. a distance of 409.1 feet from the southeast corner of said Section 10; thence S. 84° 49' 40" W. a distance of 5297.7 feet to survey station 1130 + 14.6 a point on the west line of Section 15, Township 4 North, Range 25 East, Willamette Meridian, said point being S. 0° 39' 10" E. a distance of 49.1 feet from the northwest corner of said Section 15.

Subject to the rights of the public in and to a Morrow County road.

IM-JD-322

A strip of land 145 feet in width over and across the $S\frac{1}{2}S\frac{1}{2}$ of Section 10, Township 4 North, Range 25 East, Willamette Meridian, Morrow County, Oregon, lying on the southerly side of, running parallel with, and adjoining the existing 250-foot right-of-way of the United States of America for its Bonneville Power Administration's transmission lines.

POOR ORIGINAL

Oregon
 Lower Monumental-John Day No. 1
 Unatilla, Morrow, Gilliam Counties, Oregon
 and Walla Walla County, Washington

BONNEVILLE POWER ADMINISTRATION - BUREAU OF LAND MANAGEMENT
 REQUEST FOR NOTATION OF LAND OFFICE RECORDS
 Supplement No. 7

to
 Contract No. 14-03-51952

Date JUL 22 1966

The Bonneville Power Administration in accordance with the Road and Power Transmission Line Procedures, Bonneville Power Administration and Bureau of Land Management, dated February 23, 1965, hereby agrees to and requests approval of the below special conditions for transmission line and access road rights of way across lands administered by the Bureau of Land Management, and requests notation of the Land Office records:

1. Location as shown on maps of scale not less than 1" = 1,000 feet serially numbered as shown on Exhibit A attached hereto.
2. Construction Specifications: Steel tower transmission lines and access roads 14 feet in width, with extra widths as necessary to provide for cuts, fills, ditches, turn-outs and for curves.
3. Slash Disposal Specifications: None.
4. Maintenance: Bonneville Power Administration to operate and maintain.
5. Other Conditions: ^{was} ~~None~~. As per attached memo dated July 22, 1966.
6. Contract or Permit Designation: Supplement No. 7 to Contract No. 14-03-51952.
7. Term of Appropriation: Perpetual.

Constructing Agency
 Bonneville Power Administration

Approving Agency
 Bureau of Land Management

By E. E. Grant
 Principal Title Officer
 Branch of Land
 Title

By Virgil A. Searin
 Acting Manager, Land Office
 Title

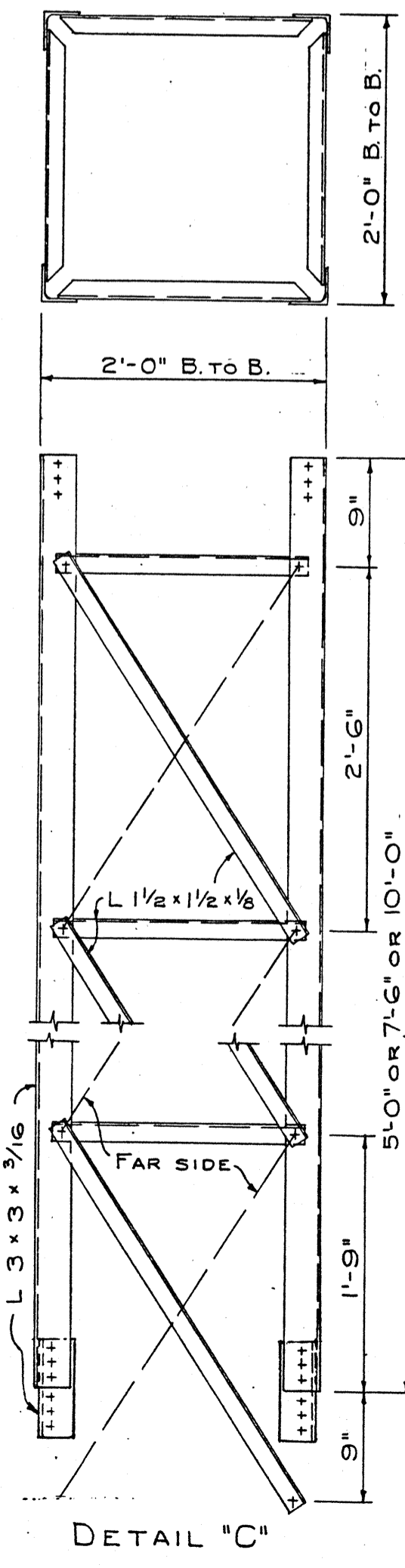
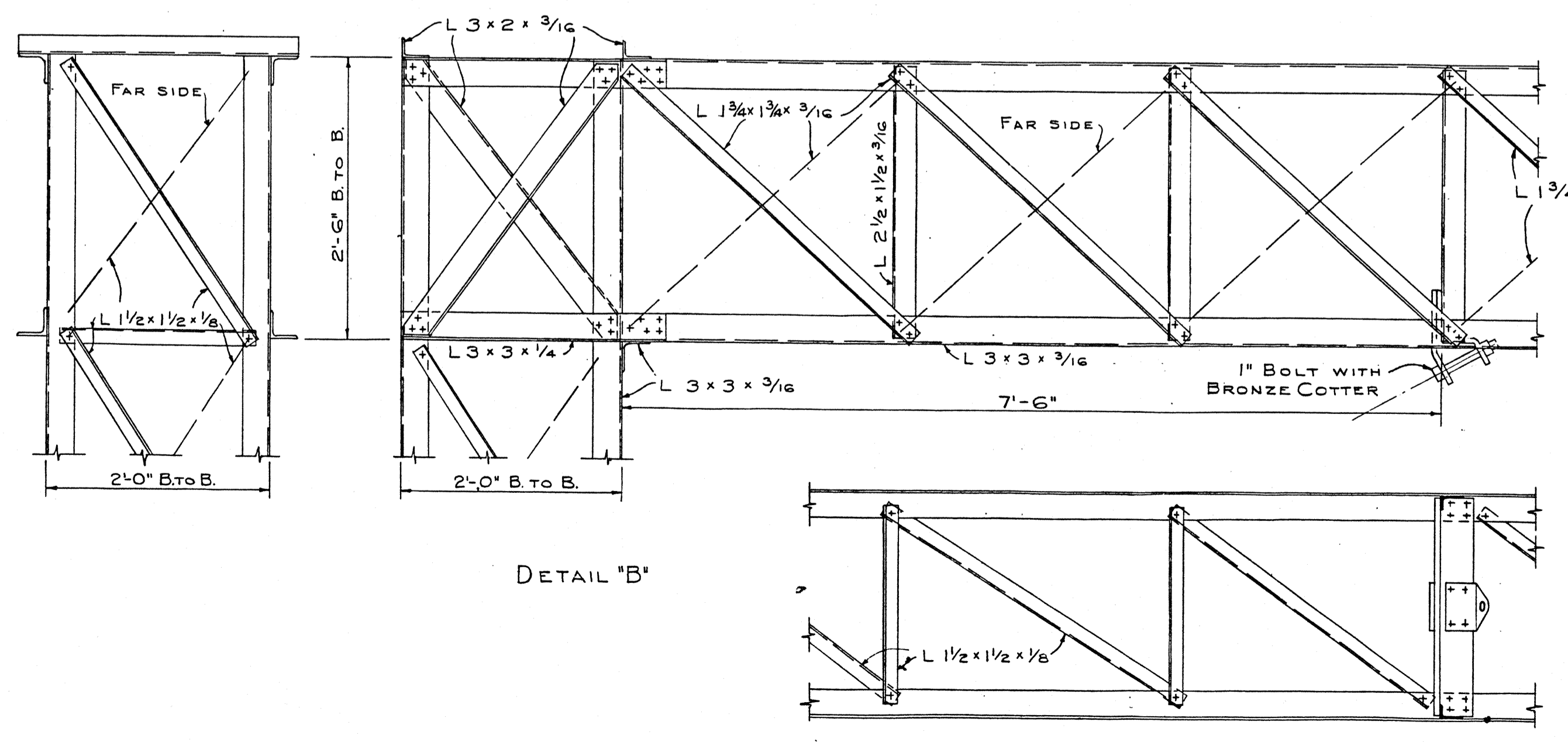
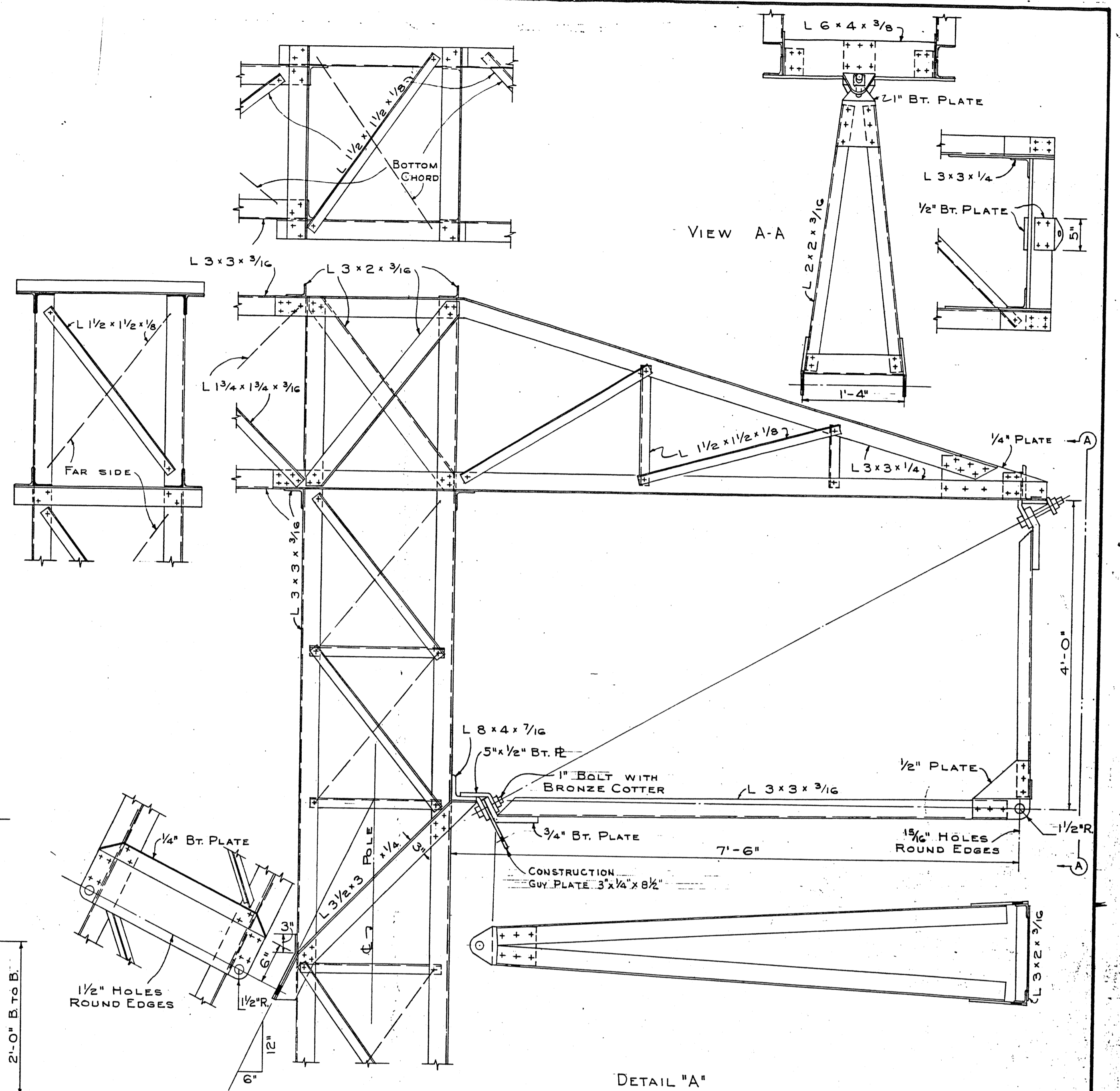
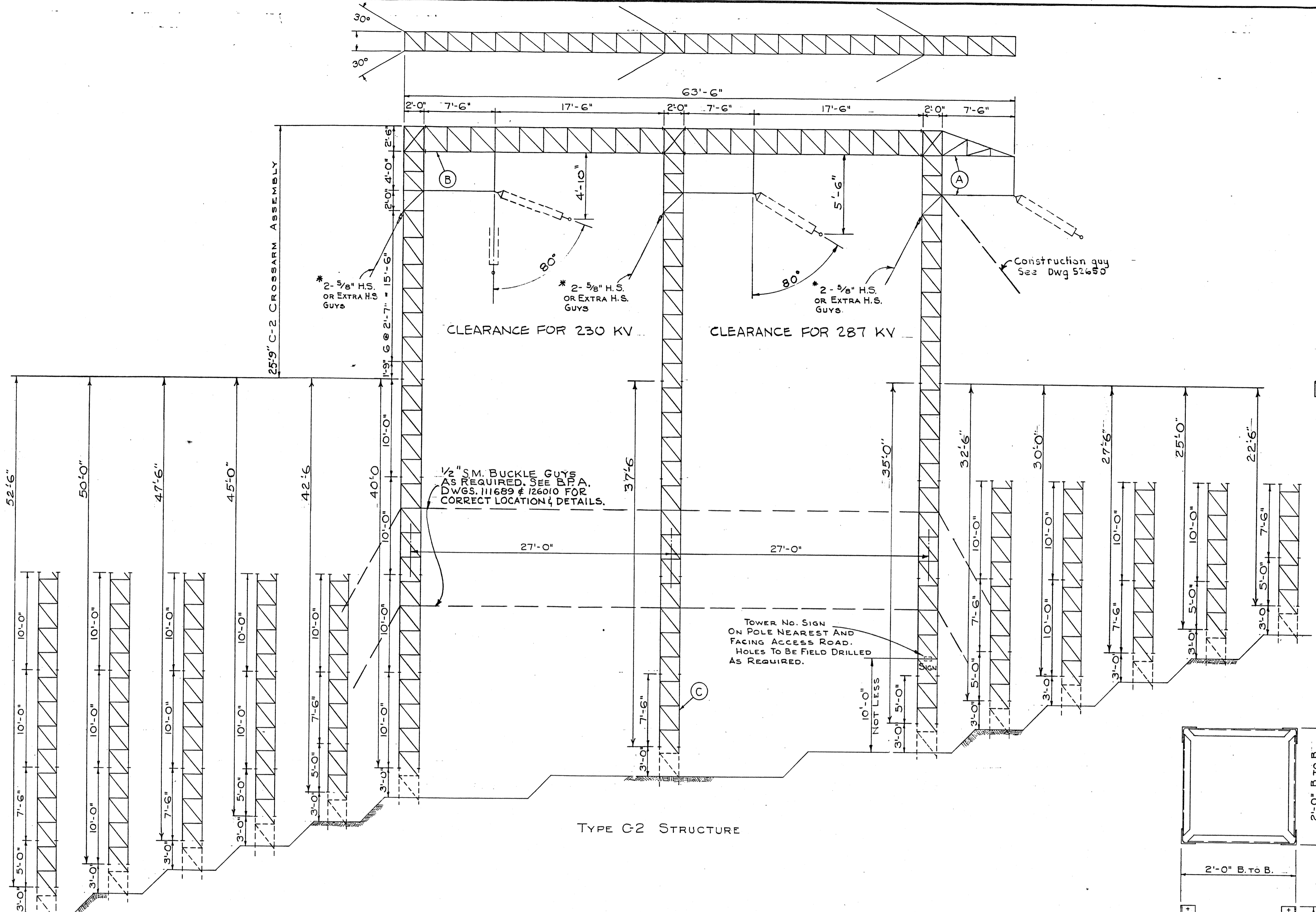
Haddock FOIA request tower offset info

(east end of tangent)

<u>operating</u>	<u>tower#</u>	<u>serial#</u>	<u>type</u>	<u>dwg#</u>	<u>record offset</u>
MORF-JCSB-1	3/2	AVD93	02LP-C2	37192	none listed
BOAD-ALKA-1	2/2	ALG93	04LP-C2	37192	none listed
CSGP-SLAT-1	3/2	CD397	28P	132403	0.7' right

(west end of tangent)

<u>operating</u>	<u>tower#</u>	<u>serial#</u>	<u>type</u>	<u>dwg#</u>	<u>record offset</u>
MORF-JCSB-1	9/3	AVD124	04D1	39664	none listed
BOAD-ALKA-1	8/3	ALG124	04D1	39664	none listed
CSGP-SLAT-1	9/3	CD428	08R4	130229	8.1' left



DETAILED WEIGHTS:

C-2 CROSSARM ASSEMBLY	5269 #
10' FT. POLE SECTION MK.C-4	286 #
7 1/2' FT. " MK.C-3	222 #
5' FT. " MK.C-2	157 #

* NOTE: Use 5/8" H.S. GUY FOR 12,000* M.W.T.
Use 5/8" EXTRA H.S. GUY FOR 16,700* M.W.T.

LOADING CONDITIONS:

MAXIMUM TRANSVERSE LOAD	6000* PER CONDUCTOR
" VERTICAL "	6000* "
" LINE ANGLE "	15°
" POSITIVE SWING "	AS SHOWN
MINIMUM SWING	0°

NOTE: All bolts 1/2" φ with sq. head, special recessed hex. nut and locknut unless otherwise noted.

THIS IS AN ORIGINAL

SERIAL NO.	DRAWING NO.	SHEET	TITLE
126039-DTC-B	STD 1 of 1		CONDUCTOR HARDWARE ASSEMBLY
126699	00-344-B191	1 of 1	10'-0" POLE SECTION FOR BUCKLE GUYS
126010	00-344-D1948	1 of 1	BUCKLE GUY LOCATION
111689	00-344-D1949	1 of 1	BUCKLE GUY INSTALLATION DETAILS
41379	00-344-D198	2 of 2	POLE FOOTINGS & ANCHOR
52650	00-344-F441	1 of 1	CONSTRUCTION GUY
106512	00-344-D931	1 of 1	GUY & GUY ANCHOR MATERIAL

NO.	REVISION	BY	DATE	APPROVED
12	RECLASSIFIED DWG NO. & WTS REVISE SWING ANGLES & CONDUCTOR HARDWARE	ED	2-2-64	
11	CONSTRUCTION GUY PLATE, REF. DWG. NO. & CODING	RHW	2-11-63	
10	BUCKLE GUYS & REF. DWG. ADDED	LBS	1-31-62	
9	REF. DWGS. # POLE MHS.	JS	6-62	
8	DET. WTS. & CHNG. NO. INSUL.	WC	11-61	
7	DETAIL 'A' 1/2" HOLE CHGD TO 1 1/2"	RHW	12-29-53	
6	DETAIL WEIGHTS ADDED	RG	6-1-53	
5	POLE HEIGHT INDICATIONS CHANGED & WTS.	RG	5-1-51	
4	CONSTR. GUY NOTE ADDED	WS	1-30-51	
3	SPLICE B.T. PUT ON INSIDE OF LEG	WS	9-19-50	
2	BOLT NOTE ADDED	MWB	2-24-49	
1	ADDED DATA FOR 16,700* M.W.T.	MXB	5-21-48	

UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
PAUL J. RAYER, ADMINISTRATOR

230 KV. SINGLE CIRCUIT TRANSMISSION TOWERS LATTICE POLE
M.W.T. - 12,000 LBS. OR 16,700 LBS.
TYPE C-2 TOWER STRUCTURAL DETAILS

Approved: *Walter R. Hanger*
Date: 12-1-47
SHEET 1 OF 1
DWG. NO. 37192
SERIAL NO. 00-344-D98

Maximum Working Uplift on Crossarm = 5.9 K Each Semi-Span.

TOWER WEIGHTS (LBS.)						
TOWER BODY	42' TWR.	62' TWR.	77' TWR.	102' TWR.	142' TWR.	172' TWR.
42 FT. TWR. BODY	24,184	24,184	24,184	24,184	24,184	24,184
20 FT. BDY. EXT. TO 42 FT. TWR. BDY.		6,026	6,026	6,026	6,026	6,026
15 FT. BDY. EXT. TO 62 FT. TWR. BDY.			7,555			
40 FT. BDY. EXT. TO 62 FT. TWR. BDY.				17,928		
80 FT. BDY. EXT. TO 62 FT. TWR. BDY.					35,131	
110 FT. BDY. EXT. TO 62 FT. TWR. BDY.						60,191
TOTAL	24,184	30,210	37,765	42,138	65,341	90,401
G.W. BRACKET (ONE)	1,113					

GENERAL NOTES

UNIT STRESSES:
 Ordinary Grade High Elastic Limit Grade
 Tension on net section 22000% 30000%
 Comp. on gross section 1 + L² 1 + L²
 15000r² 15000r²
 Comp. on gross section 17600% max. 24000% max.
 Shear on bolts 20000%
 Bearing on bolts 40000%
 MAXIMUM L/R OF MEMBERS:
 Legs = 120; Crossarms & Ground Wire Brackets = 150;
 Secondary Members carrying calc. stresses = 200;
 Redundant Members = 250; Tension Members = 450

MEMBER	MAX. STRESS	MEMBER SIZE	NO. BOLTS PER JOINT
1	+61.8	L 6 x 6 x 1/2	16
2	+86.9	do	20
3	+64.1	L 6 x 6 x 1/2	14
4	+58.4	do	14
5	+24.2	L 8 x 8 x 1/2	30
6	+135.7	do	30
7a	+135.7	do	30
8	+88.4	L 5 x 5 x 1/4	16
9	+53.2	L 5 x 5 x 1/4	12
10	+27.2	L 4 x 4 x 1/4	15
11	+26.9	L 3 1/2 x 3 1/2 x 1/4	5
12	Nom.	L 2 x 2 x 3/16	2
13	+46.1	L 6 x 6 x 1/2	11
14	+36.1	L 5 x 5 x 3/8	8
15	+39.9	L 5 x 5 x 1/4	7
16	+63.6	L 6 x 4 x 1/2	11
17	+20.2	2 L 5 x 4 x 3/8	10
18	+47.7	2 L 5 x 4 x 3/8	10
19	+13.0	L 3 1/2 x 3 1/2 x 1/4	3
20	+10.0	do	2
21	+5.0	do	2
22	+47.9	2 L 5 x 4 x 3/8	8
23	+14.5	L 2 1/2 x 2 x 1/4	3
24	+10.0	L 2 x 2 x 3/16	3
25	+51.6	L 6 x 6 x 3/8	9
26	+16.5	L 4 x 4 x 3/8	9
27			
28	+5.3	L 2 1/2 x 2 1/2 x 3/16	2
29	+1.0	do	2
30	+11.6	L 3 1/2 x 3 1/2 x 1/4	2
31	+32.2	L 5 x 5 x 3/8	7
32	+24.8	2 L 5 x 4 x 3/8	5
33	+67.9	L 5 x 5 x 3/8	11
34	+18.9	do	11
35	+32.4	L 6 x 4 x 3/8	6
36			
40	+25.0	L 4 x 4 x 1/4	5
41	+15.7	2 1/2 x 2 1/2 x 1/4	3
42	+16.7	3 x 2 1/2 x 1/4	3
43	+16.7	do	3

MATERIAL:
 Steel as per Federal Specifications QQ-S-741, Type I, Grade A, Class I for ordinary grade & QQ-S-741, Type I, Grade A, Class I as modified by the B.P.A. for High Elastic Limit Grade, or latest revisions.
 MINIMUM SIZE OF MATERIAL:
 Plates 1/4"; Angles L 2 x 2 x 3/16
 COATING:
 All materials galvanized to A. S. T. M. Std. Specs. A123-33, or latest revisions.
 CONNECTIONS:
 Bolted Galvanized bolts 5/8" with Am. Std. regular square head and special recessed Hex nut and locknut unless otherwise noted. Minimum two bolts per connection for members carrying calc. stresses. Single bolt connections may be used on small redundant members if necessary.

DESIGN CONDITIONS

CONDUCTOR:
 1272000 CM Pheasant, Ultimate strength 44800*
 Maximum Working Tension 16700*
 Conductor loading: 1/2" ice, 8 lbs. wind, 0° Fahr.
 GROUND WIRE:
 5/8" High Strength Galvanized Steel.
 Maximum Working Tension 9500*
 Ground Wire Loading: 1/2" ice, 8 lbs. wind, 0° Fahr.

LOADING:
 VERTICAL:
 1. 5900* AT G1 & G2
 2. 10800* AT C1, C2 & C3
 3. 2950* AT G1, G2
 4. 5400* AT C1, C2 & C3
 5. 2950* AT G1
 6. 5900* AT G2
 7. 5400* AT C1 OR C2
 8. 10800* AT C2, C3 OR C1 & C3
 9. 14780* AT G1 & G2
 10. 24400* AT C1, C2 & C3
 11. DEAD WEIGHT OF TOWER
 LONGITUDINAL:
 21. 9500* AT G1 & G2
 22. 16700* AT C1, C2 & C3
 23. 9500* AT G1
 24. 16700* AT C1 OR C2

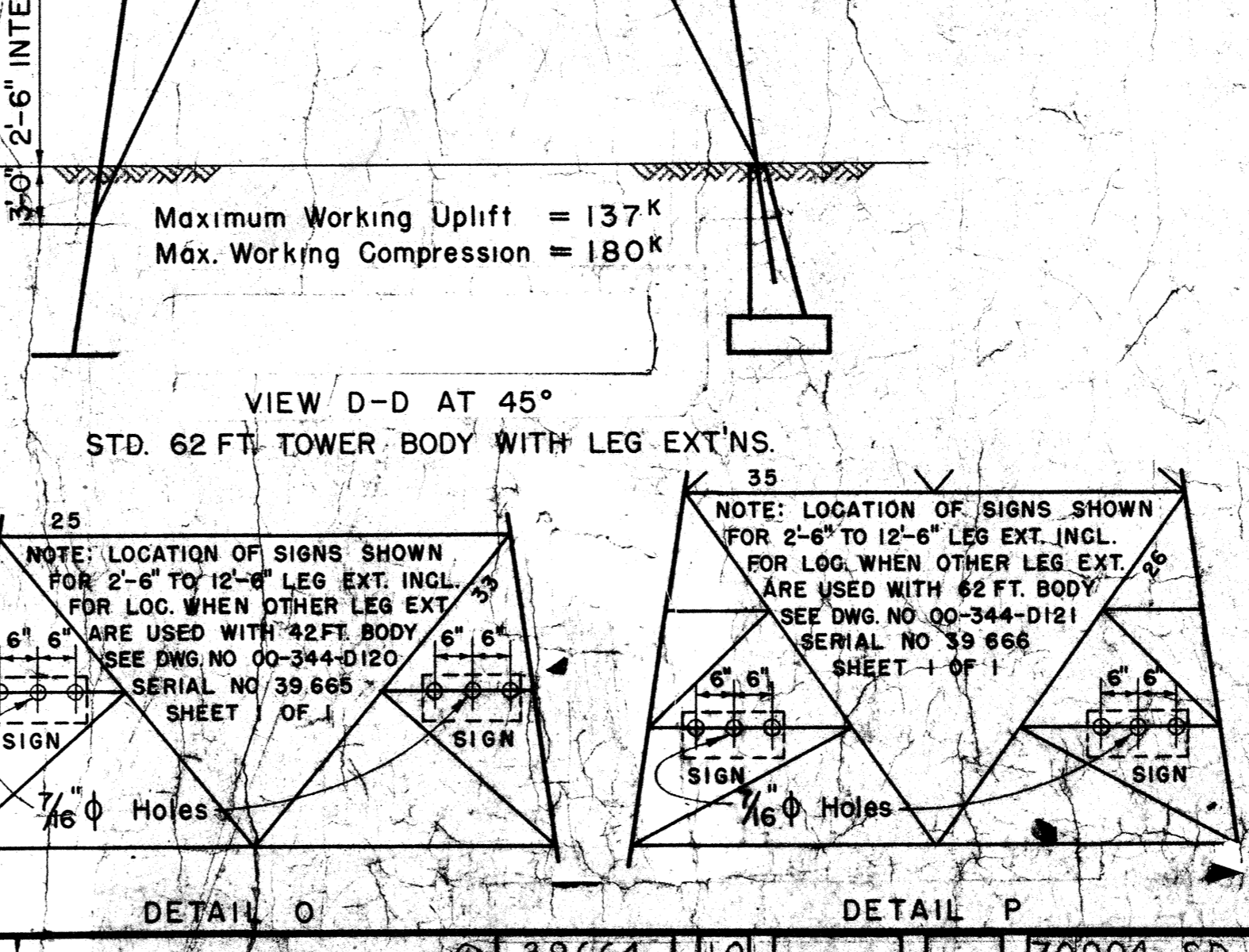
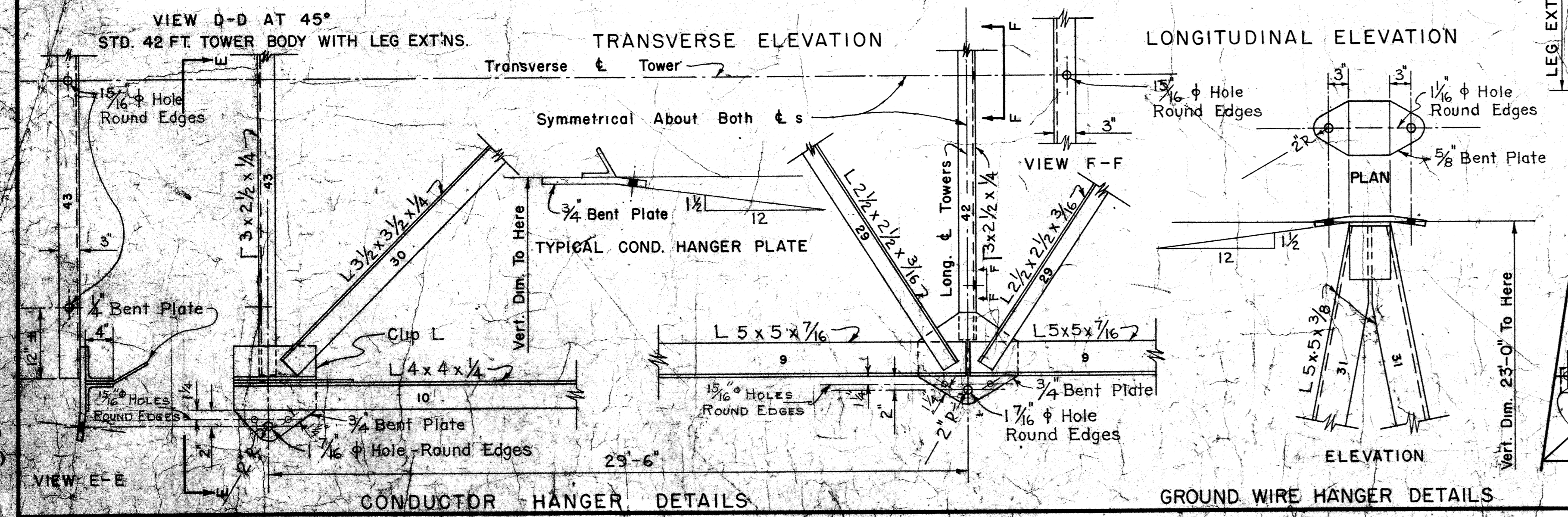
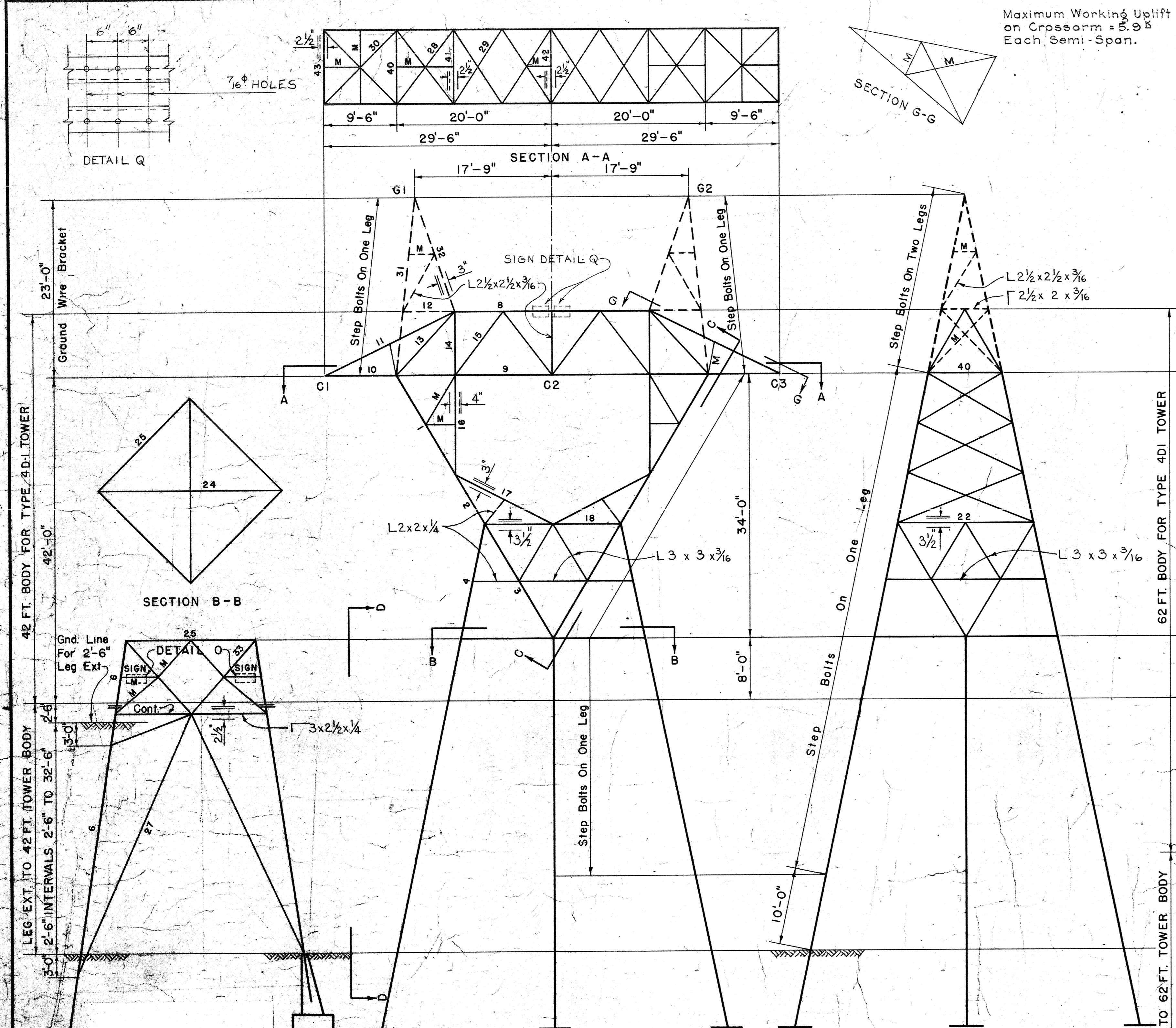
TRANSVERSE:
 12. 10650* AT G1 & G2
 13. 17700* AT C1, C2 & C3
 14. 5325* AT G1 & G2
 15. 8850* AT C1, C2 & C3
 16. 5325* AT G1
 17. 10650* AT G2
 18. 8850* AT C1 OR C2
 19. 17700* AT C2 & C3 OR C1 & C3
 20. WIND PRESSURE OF 137 SQ. FT. ON 1/2 TIMES THE PROJECTED AREA OF ONE FACE.

TOWER DESIGN:
 Towers are designed for the following loadings:
 CASE I 1-2-11-12-13-20 All Wires intact
 CASE II 3-4-11-14-15-20-21-22 All Wires Broken On One Side
 CASE III 5-6-7-8-11-16-17-18-19-20-23-24 One Gnd. Wire & One Outside Cond. Broken
 CASE IV 1-7-8-11-12-18-19-20-24 One Center Cond. Broken
 CASE V 9-10-11 Heavy Vertical
 All members are designed for ordinary grade structural steel except where noted. Members marked thus * are designed for high elastic limit grade.
 Tower 4D1 designed for max. line angle of 60°.

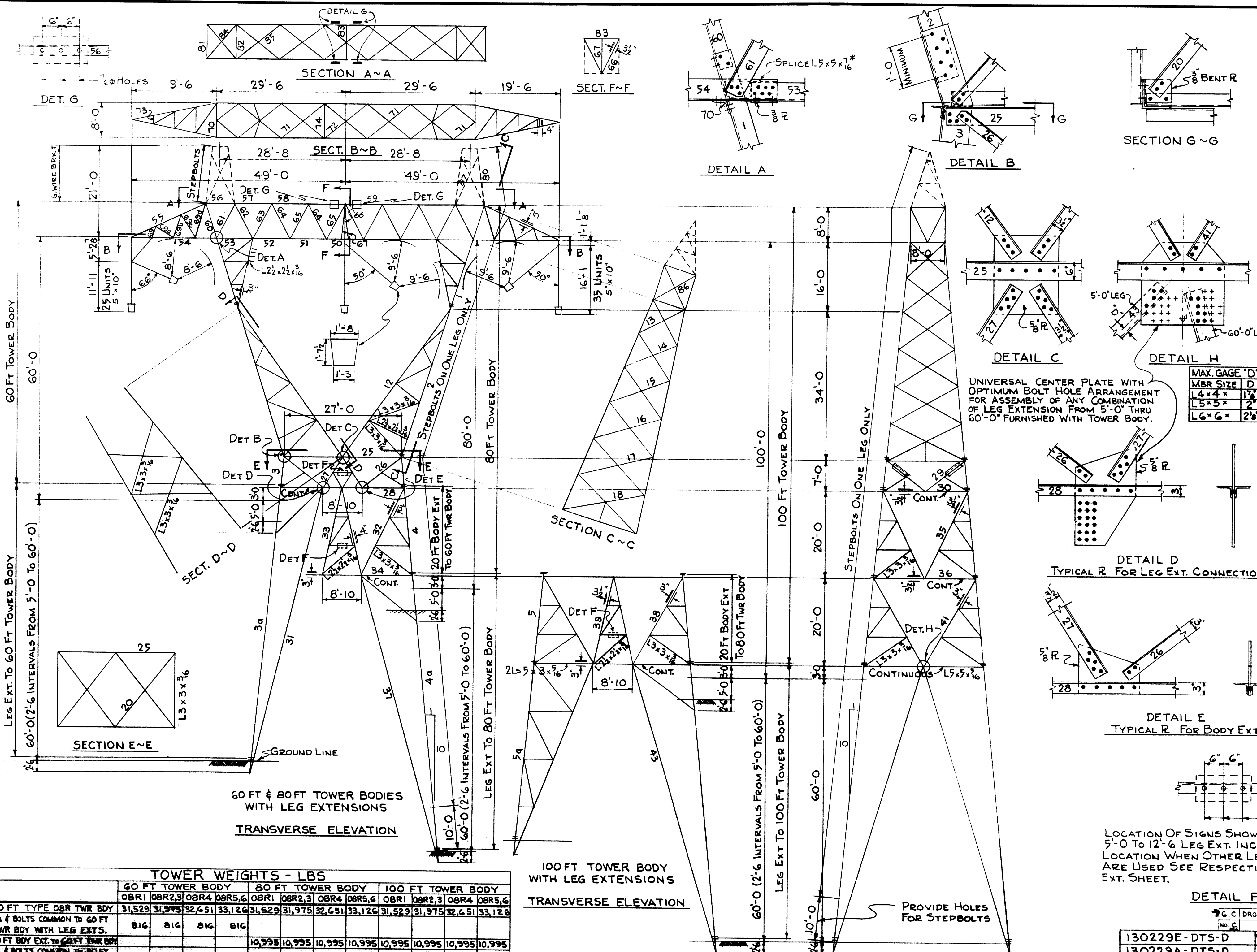
+ Denotes Tension
 - Denotes Compression
 Stresses Are In Kips
 S Denotes Splice
 M Denotes L 2 x 2 x 3/16

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UNITED STATES DEPARTMENT OF THE INTERIOR
 BONNEVILLE POWER ADMINISTRATION
 PAUL J. RAY, ADMINISTRATOR
 230 KV SINGLE CIRCUIT TRANSMISSION TOWERS
 M. WT. = 16700 LBS.
 TYPE 4D-1 TOWER STRUCTURAL DETAILS
 39664-10
 70004 SD
 230 DSC 167
 39664-DTS-D



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UNIT STRESSES (PSI):

TENSION ON NET SECTION =	ORDINARY GRADE	HIGH ELASTIC GRADE
COMP. ON GROSS SECTION =	22000	30000
FOR 1/2 TO 150	15000	24000-150(1/r-.61)
COMP. ON GROSS SECTION =	22000	16x30,000,000
FOR 1/2 TO 200	15000	2(1/r)
MAX. COMP. ON GROSS SEC.	= 17600	24000
SHEAR ON BOLTS	= 24000	
BEARING ON BOLTS	= 48000	

MAXIMUM 1/2 OF MEMBERS:
 LEGS = 120 ; CROSSARMS = 150
 SECONDARY MEMBERS CARRYING CALC. STRESSES = 200
 REDUNDANT MEMBERS = 250 ; TENSION MEMBERS = 450

MATERIAL:
 STEEL PER FEDERAL SPECIFICATIONS Q0-S-741B, GRADE A OR B, FOR ORDINARY GRADE AND PER FEDERAL SPECIFICATIONS Q0-S-741B, GRADE A OR B, AS MODIFIED BY BPA OR ASTM A440 FOR HIGH ELASTIC GRADE.

MINIMUM SIZE OF MATERIAL:
 PLATES 4 ; ANGLES 2 1/2 x 2 x 3/16

COATING:
 HOT-DIP GALVANIZED.

CONNECTIONS:
 BOLTED, GALVANIZED BOLTS 3/4" WITH AMERICAN STD. REGULAR SQUARE HEAD AND SPECIAL RECESSED HEX NUT AND LOCKWASHER UNLESS OTHERWISE NOTED. MINIMUM TWO BOLTS PER CONNECTION FOR MEMBERS CARRYING CALCULATED STRESSES. SINGLE BOLT CONNECTIONS ON MEMBERS MAY BE USED SUBJECT TO APPROVAL.

DESIGN CONDITIONS

CONDUCTOR:
 3,120,000 CM ACSR - EXP 22 - ULTIMATE STRENGTH = 98,000 LBS
 MAXIMUM WORKING TENSION = 34,000 LBS
 CONDUCTOR LOADING 1/2" ICE, 8 LBS. WIND, 0° FAHR

GROUND WIRE:
 7-NO. 8 ALUMOWELD, MAXIMUM WORKING TENSION = 6370 LBS.
 LOADING 1/2" ICE, 8 LBS WIND, 0° FAHR

TOWER DESIGN:
 TOWERS ARE DESIGNED FOR THE FOLLOWING LOADINGS:
 CASE I ALL WIRES INTACT
 CASE II ONE OUTSIDE CONDUCTOR BROKEN
 CASE III CENTER CONDUCTOR BROKEN
 CASE IV DOUBLE VERTICAL

TRANSVERSE WIND LOAD OF 33.7' CFT. ON 1/4 TIMES THE PROJECTED AREA OF ONE FACE OF THE TOWER. DEAD LOAD OF TOWER.

ALL MEMBERS ARE DESIGNED FOR ORDINARY GRADE STRUCTURAL STEEL EXCEPT WHERE NOTED. MEMBERS MARKED WITH * ARE DESIGNED FOR HIGH ELASTIC LIMIT GRADE.
 LINE ANGLE = 0° - 12°
 + DENOTES TENSION
 - DENOTES COMPRESSION
 * DENOTES SPLICE
 ALL REDUNDANTS ARE L2 1/2 x 2 x 3/16 EXCEPT AS NOTED.

MEMBER NUMBER	MEMBER SIZE	NO. OF BOLTS PER CONNECTION
1	L5x5x3/8	8
2	L6x6x1/2	14
3	L8x8x1/2	16
3a	L8x8x1/2	18
4	L8x8x1/2	18
4a	L8x8x1/2	18
5	L8x8x1/2	20
5a	L8x8x1/2	20
11	L5x3x3/8	3
12	2L5x3x3/8	3
13	L4x4x1/4	3
14	L3 1/2 x 3 1/2 x 4	2
15	L3 1/2 x 3 1/2 x 4	2
16	L3 1/2 x 3 1/2 x 4	2
17	L3 1/2 x 3 1/2 x 4	2
18	L3 1/2 x 3 1/2 x 4	2
20	L4x4x1/4	2
25	2L6x3x3/8	4
26	2L5x3x3/8	2
27	2L6x3x3/8	5
28	2L6x4x3/4	2
29	L4x4x1/4	3
30	L5x3x1/2	2
32	2L5x3x3/8	2
33	2L6x4x1/2	5
34	2L5x3x3/8	2
35	2L5x4x3/8	2
36	L5x3x1/2	2
38	2L5x3x3/8	2
39	2L6x3x3/8	4
41	2L5x4x3/4	2
50	L5x5x1/2	8
51	L5x5x1/2	8
52	L5x5x1/2	8
53	L5x5x1/2	8
54	L6x6x1/2	9
55	L5x3x3/8	7
56	L5x3x3/8	7
57	L5x5x1/2	7
58	L5x5x1/2	7
59	L5x5x1/2	7
60	L4x4x1/4	4
61	L6x6x1/2	3
62	L4x4x1/4	3
72	L3x3x3/8	2
73 FLEX	L6x4x3/8	2
74 FLEX	L8x8x1/2	2
80	L3 1/2 x 3 1/2 x 4	2
81	L3 1/2 x 3 1/2 x 4	2
82	L2 1/2 x 2 x 3/8	2
83	ST 61 15.9	2
84	L2 1/2 x 2 x 3/8	2
85	L2 1/2 x 2 x 3/8	2
86	L2 1/2 x 2 x 3/8	2
87	L2 1/2 x 2 x 3/8	2

TOWER WEIGHTS - LBS

	60 FT TOWER BODY				80 FT TOWER BODY				100 FT TOWER BODY			
	OBR1	OBR2,3	OBR4	OBR5,6	OBR1	OBR2,3	OBR4	OBR5,6	OBR1	OBR2,3	OBR4	OBR5,6
60 FT TYPE OBR TWR BDY	31,529	31,975	32,651	33,126	31,529	31,975	32,651	33,126	31,529	31,975	32,651	33,126
R6 & BOLTS COMMON TO 60 FT TWR BDY WITH LEG EXTS.	816	816	816	816								
20 FT BDY EXT. TO 60 FT TWR BDY					10,995	10,995	10,995	10,995	10,995	10,995	10,995	10,995
R6 & BOLTS COMMON TO 80 FT TWR BDY WITH LEG EXTS.					747	747	747	747				
20 FT BDY EXT. TO 80 FT TWR BDY									11,289	11,289	11,289	11,289
TOTAL WEIGHT	32,345	32,791	33,467	33,942	42,524	43,000	43,676	44,151	43,818	44,294	44,970	45,445
ONE STRAND WIRE WEIGHT												

MAX. UPLIFT = 149.3K
 MAX. COMPRESSION = 210.5K

LOCATION OF SIGNS SHOWN FOR 5'-0 TO 12'-6 LEG EXT. INCL. FOR LOCATION WHEN OTHER LEG EXT. ARE USED SEE RESPECTIVE LEG EXT. SHEET.

DETAIL F

7/8" C/D DROP FORGED HANGER DIM.

NO.	REVISION	BY	DATE	APPROVED
130229E-DTS-D	5or13	TYPE OBR-STRUCTURAL DESIGN		
130229A-DTS-D	1or13	TYPE OBR-STRESS ANALYSIS		
130229B-DTS-D	2or13	do		
130229C-DTS-D	3or13	do		

DRAWING NO. SHEET TITLE

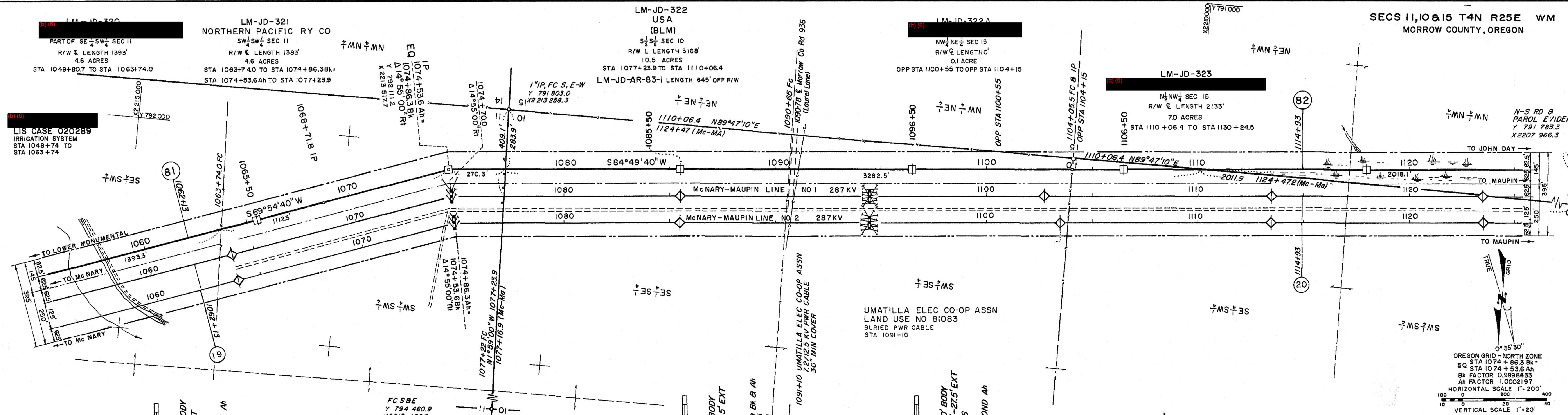
REFERENCE DRAWINGS

UNITED STATES DEPARTMENT OF THE INTERIOR
 BONNEVILLE POWER ADMINISTRATION
 HEADQUARTERS, PORTLAND, OREGON

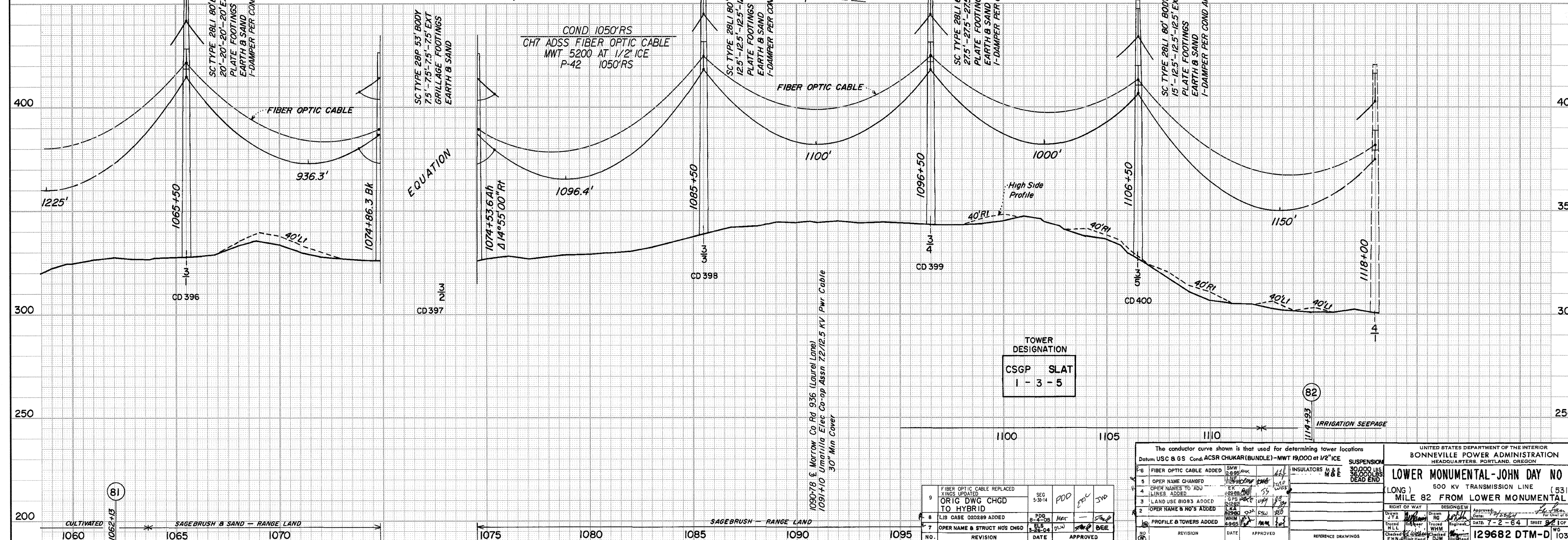
500KV SINGLE CIRCUIT TRANSMISSION TOWERS
 MW: 34,000 LBS
 TYPE OBR1,2,3,4,5,6-STRUCTURAL DESIGN

DESIGNED BY: [Signature]
 CHECKED BY: [Signature]
 DATE: 5-25-64

130229D-DTS-2 STD



OREGON GRID - NORTH ZONE
EQ STA 1074 + 86.3 Bk =
STA 1074 + 53.6 Ah
Bk FACTOR 0.9998433
Ah FACTOR 1.0002197
HORIZONTAL SCALE 1" = 200'
VERTICAL SCALE 1" = 20'



TOWER DESIGNATION
CSGP SLAT
1-3-5

NO.	REVISION	DATE	APPROVED
9	FIBER OPTIC CABLE REPLACED BY HYBRID	5-30-14	PDD EOL JVD
8	ORIG DWG CHGD TO HYBRID	8-11-09	ELC
7	OPER NAME & STRUCT NOS CHGD	5-28-04	ELC
6	OPER NAME & STRUCT NOS CHGD	5-28-04	ELC

The conductor curve shown is that used for determining tower locations
Datum: USC & GS Cond: ACSR CHUKAR(BUNDLE)-MWT 19,000 at 1/2" ICE

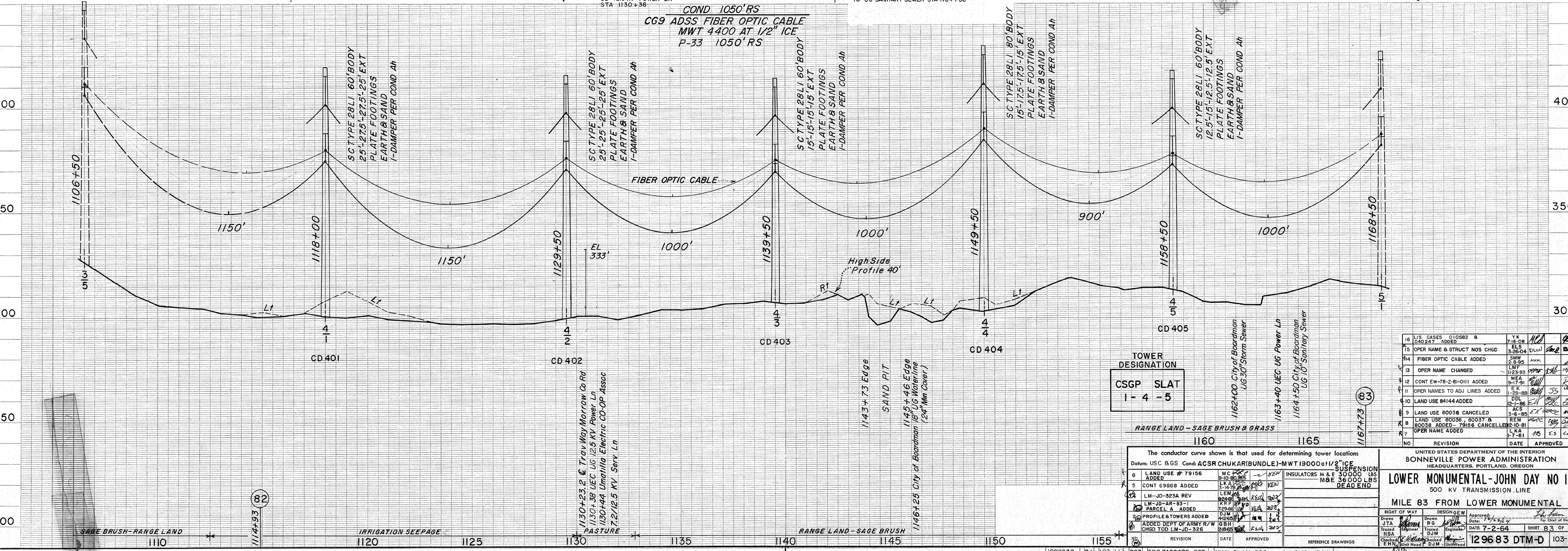
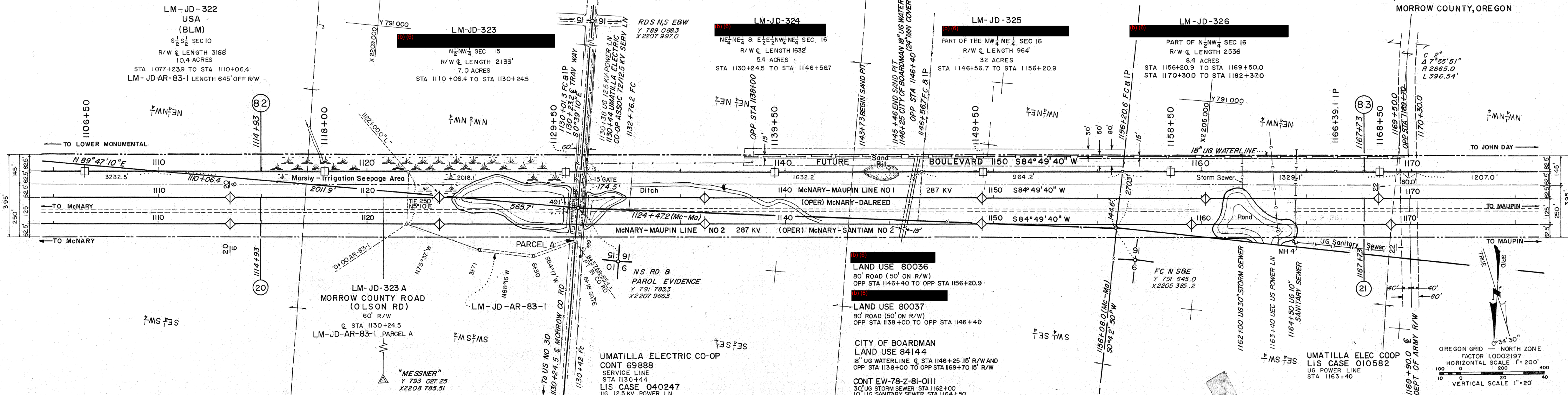
1	FIBER OPTIC CABLE ADDED	SMW	2-8-09	AKK
2	OPER NAME CHANGED	SMW	2-8-09	AKK
3	OPER NAME TO ADU	SMW	2-8-09	AKK
4	OPER NAME TO ADU	SMW	2-8-09	AKK
5	OPER NAME TO ADU	SMW	2-8-09	AKK
6	OPER NAME TO ADU	SMW	2-8-09	AKK
7	OPER NAME TO ADU	SMW	2-8-09	AKK
8	OPER NAME TO ADU	SMW	2-8-09	AKK
9	OPER NAME TO ADU	SMW	2-8-09	AKK

INSULATORS IN & E 30,000 LB 36,000 LB DEAD END

UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

LOWER MONUMENTAL-JOHN DAY NO 1
500 KV TRANSMISSION LINE (5313')
MILE 82 FROM LOWER MONUMENTAL

Drawn by: [Signature] Checked by: [Signature] Approved by: [Signature]
Date: 7-2-64 SHEET 1 OF 1
129682 DTM-D 103-11



NO	REVISION	DATE	APPROVED
16	LIS CASES 010582 & 040247 ADDED	7/10/08	[Signature]
15	OPER NAME & STRUCT NOS CHGD	3/26/04	[Signature]
14	FIBER OPTIC CABLE ADDED	3/26/04	[Signature]
13	OPER NAME CHANGED	11/23/93	[Signature]
12	CONT EW-78-Z-81-0111 ADDED	9/17/91	[Signature]
11	OPER NAMES TO ADJ LINES ADDED	1-29-88	[Signature]
10	LAND USE 84144 ADDED	12-1-86	[Signature]
9	LAND USE 80038 CANCELED	3-6-85	[Signature]
8	LAND USE 80036, 80037 & 80038 ADDED - 79156 CANCELED	10-81	[Signature]
7	OPER NAME ADDED	1-7-81	[Signature]
NO			

TOWER DESIGNATION
CSGP SLAT
1-4-5

REVISION	DATE	APPROVED
8	LAND USE # 79156 ADDED	[Signature]
5	CONT 69888 ADDED	[Signature]
LM-JD-325A REV		[Signature]
LM-JD-AR-83-1		[Signature]
PARCEL A ADDED		[Signature]
PROFILE & TOWERS ADDED		[Signature]
ADDED DEPT OF ARMY R/W CHGD TO LM-JD-326		[Signature]

UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

LOWER MONUMENTAL-JOHN DAY NO 1
500 KV TRANSMISSION LINE

MILE 83 FROM LOWER MONUMENTAL

DATE: 7-2-64
SHEET: 83 OF 83

129683 DTM-D 103-11

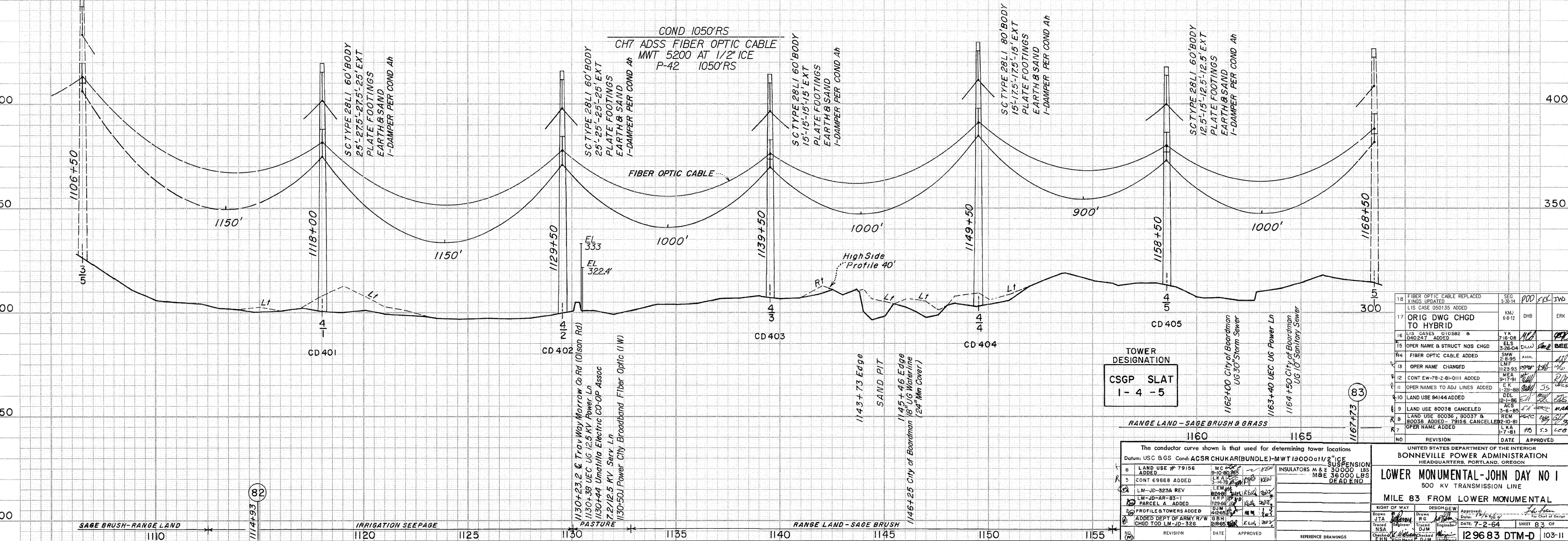
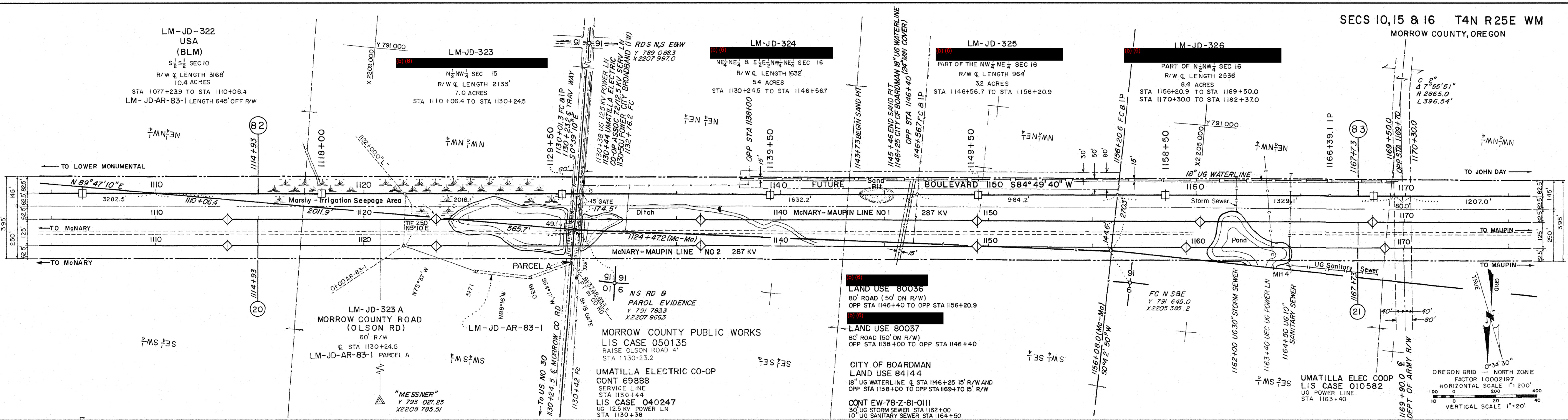
LM-JD-322
USA
(BLM)
S 1/2 SEC 10
R/W & LENGTH 316'
10.4 ACRES
STA 1077+23.9 TO STA 1110+06.4
LM-JD-AR-83-1 LENGTH 645' OFF R/W

LM-JD-323
N 1/2 NW 1/4 SEC 15
R/W & LENGTH 2133'
7.0 ACRES
STA 1110+06.4 TO STA 1130+24.5

LM-JD-324
NE 1/4 NE 1/4 & E 1/2 E 1/4 NW 1/4 SEC 16
R/W & LENGTH 1632'
54 ACRES
STA 1130+24.5 TO STA 1146+56.7

LM-JD-325
PART OF THE NW 1/4 NE 1/4 SEC 16
R/W & LENGTH 964'
32 ACRES
STA 1146+56.7 TO STA 1156+20.9

LM-JD-326
PART OF N 1/2 NW 1/4 SEC 16
R/W & LENGTH 2536'
8.4 ACRES
STA 1156+20.9 TO STA 1169+50.0
STA 1170+30.0 TO STA 1182+37.0



TOWER DESIGNATION
CSGP SLAT
1-4-5

The conductor curve shown is that used for determining tower locations
Datum: USC & G.S. Cond: ACSR CHUKAR (BUNDLE)-MWT 13000 @ 112.5' ICE SUSPENSION

6	LAND USE # 79156 ADDED	M.C. CHUKAR	INSULATORS M & E 30000 LBS
3	CONT # 9888 ADDED	L.K.A. CHUKAR	M&E 36000 LBS
2	LM-JD-323A REV	L.F.M. CHUKAR	DEAD END
1	LM-JD-AR-83-1 PARCEL A ADDED	B.G. CHUKAR	
30	PROFILE & TOWERS ADDED	D.W. CHUKAR	
2	ADDED DEPT OF ARMY R/W CHGD TO LM-JD-326	G.B.H. CHUKAR	

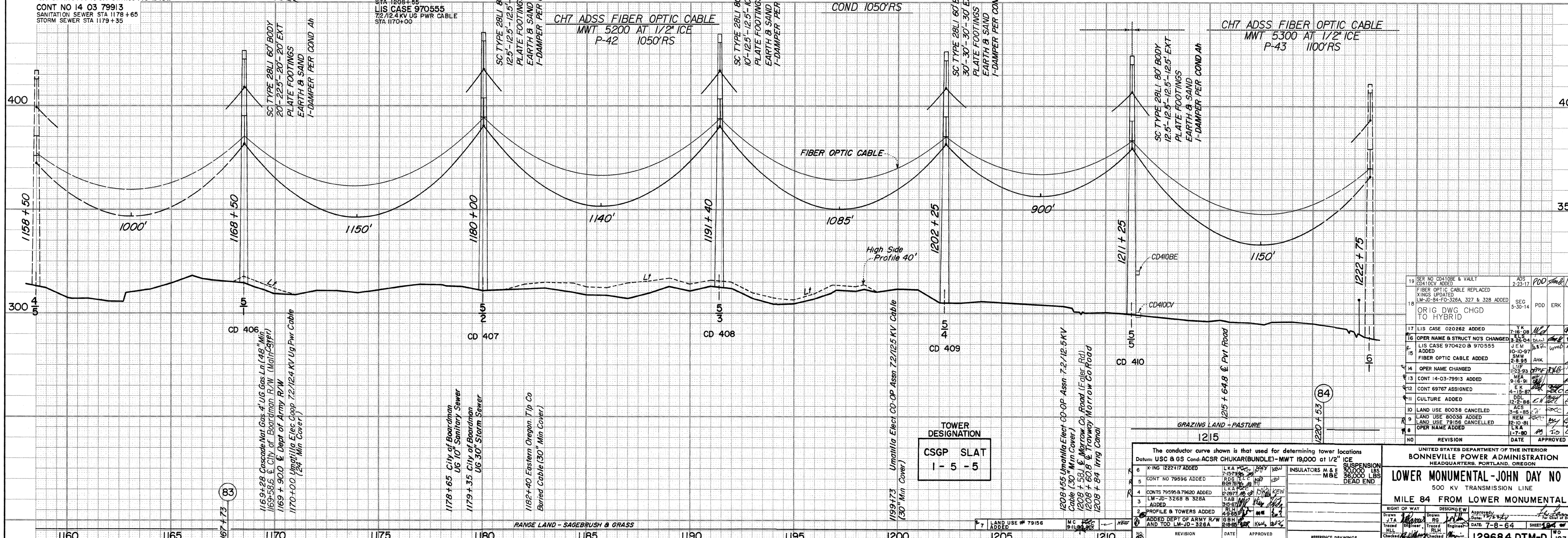
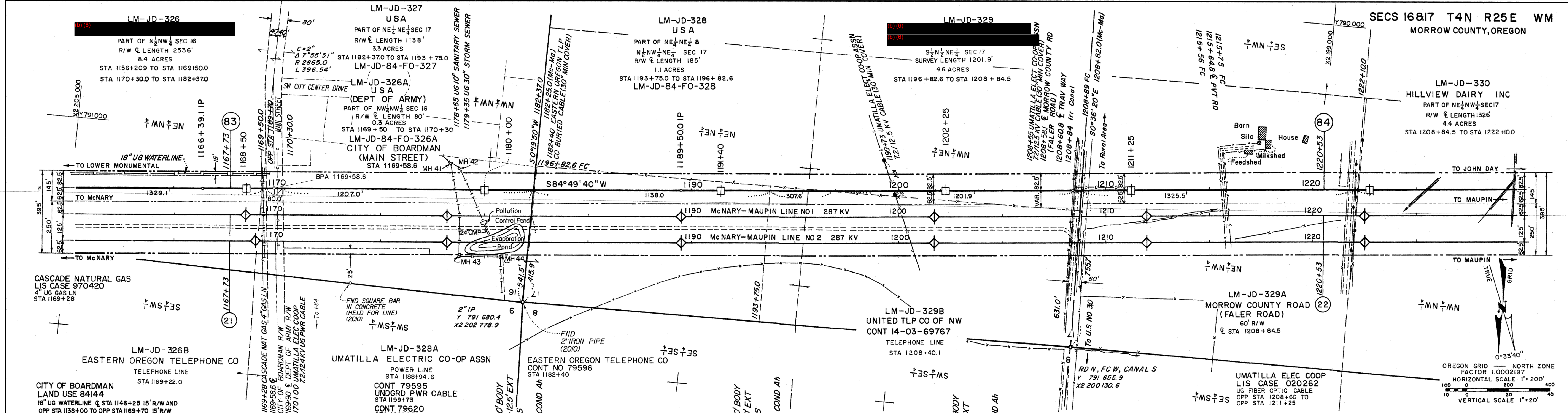
18	FIBER OPTIC CABLE REPLACED XINGS UPDATED	SEG 5-30-14	POD	JWD
17	LIS CASE 050135 ADDED	KMJ	DHB	ERK
16	ORIG DWG CHGD TO HYBRID			
15	LIS CASES 010582 & 040247 ADDED	7-18-08		
14	OPER NAME & STRUCT NOS CHGD	ELLS	D.W.	BEE
13	FIBER OPTIC CABLE ADDED	SWH	2-8-95	
12	OPER NAME CHANGED	L.M.F.	11-23-93	
11	OPER NAMES TO ADJ LINES ADDED	W.E.A.	9-17-91	
10	LAND USE 84144 ADDED	D.P.L.	1-25-89	
9	LAND USE 80038 CANCELED	ACS	3-6-85	
8	LAND USE 80036 & 80037 A	REV		
7	ROOFS ADDED - 7818 CANCELLED	L.K.A.	7-7-81	
6	OPER NAME ADDED	L.K.A.	7-7-81	
NO	REVISION	DATE	APPROVED	

UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON
LOWER MONUMENTAL-JOHN DAY NO 1
500 KV TRANSMISSION LINE
MILE 83 FROM LOWER MONUMENTAL

DATE: 7-2-64
DATE: 7-2-64
DATE: 7-2-64

OPER AS MILE 4 COYOTE SPRINGS-SLATT NO 1

SLAT-BOARD SEG ROSS-FRAN FIBER SYSTEM



NO	REVISION	DATE	APPROVED
19	SER NO CD410BE & VALL CD410CV ADDED	AOS 2-23-17	POD [Signature]
18	FIBER OPTIC CABLE REPLACED XINGS UPDATED LM-JD-84-FO-326A, 327 & 328 ADDED	SEG 5-30-14	POD ERK JWD
17	LIS CASE 020262 ADDED	YK 11-08-08	[Signature]
16	OPER NAME & STRUCT NO'S CHANGED	3-26-04	[Signature]
15	LIS CASE 970420 & 970555 ADDED	10-10-97	[Signature]
14	FIBER OPTIC CABLE ADDED	2-8-95	AHK
13	OPER NAME CHANGED	11-23-93	[Signature]
12	CONT 79595 & 79620 ADDED	ME 9-16-91	[Signature]
11	CULTURE ADDED	4-15-87	[Signature]
10	LAND USE 80036 CANCELLED	3-6-85	[Signature]
9	LAND USE 80036 ADDED	12-10-81	[Signature]
8	LAND USE 79156 CANCELLED	1-7-80	[Signature]
7	OPER NAME ADDED	1-7-80	[Signature]
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UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

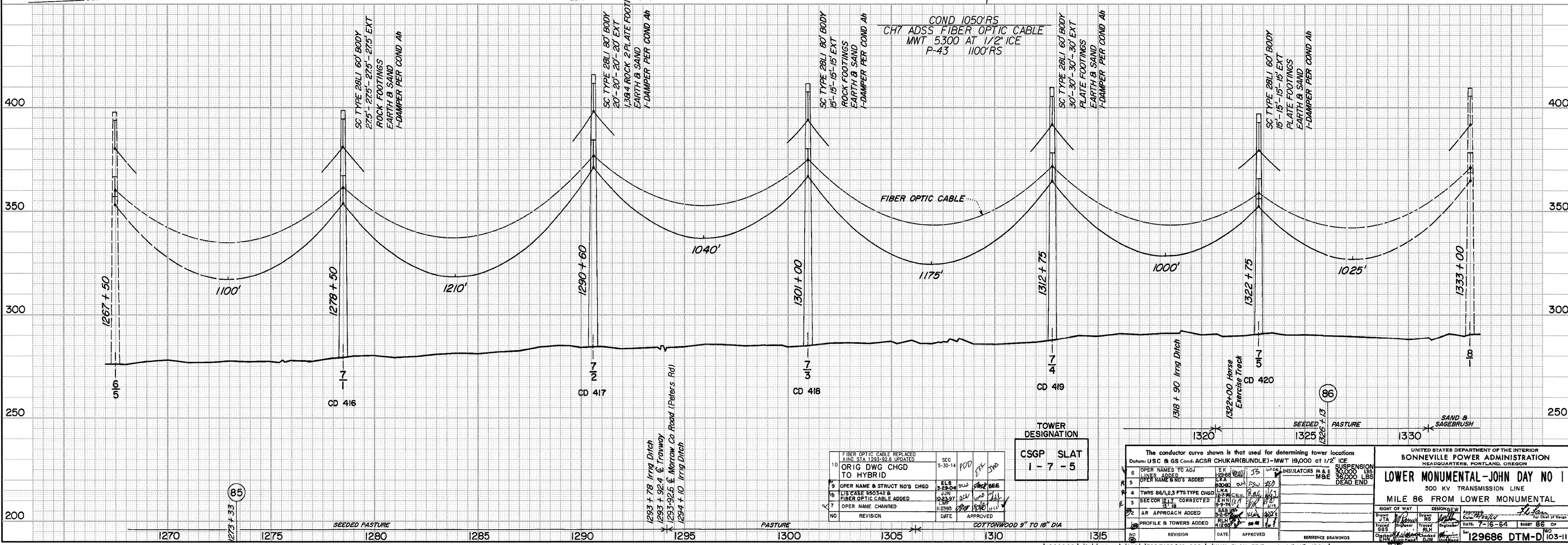
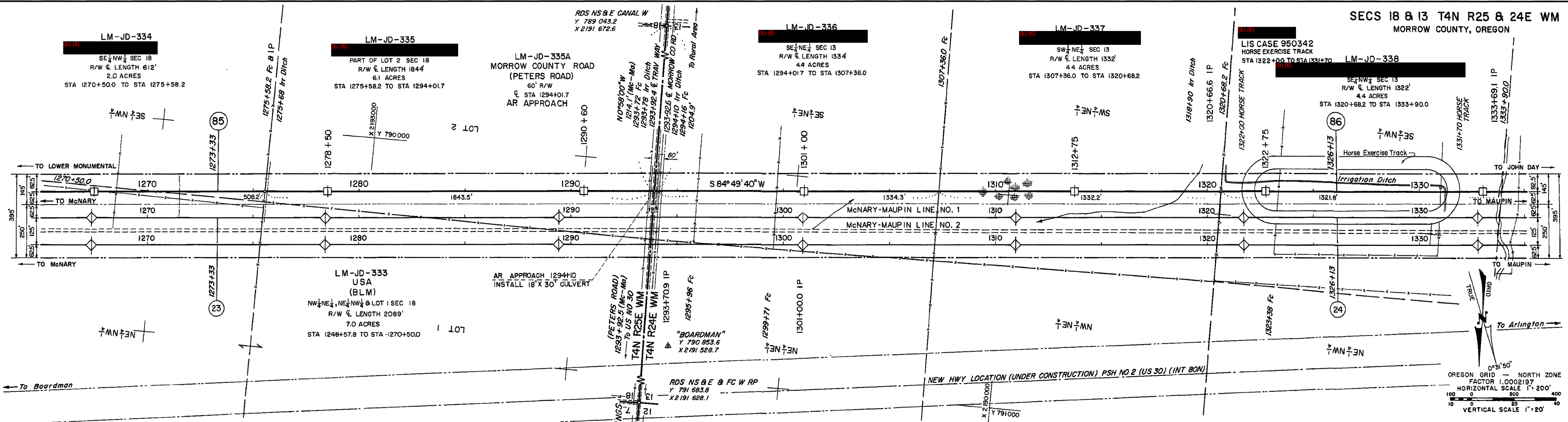
LOWER MONUMENTAL-JOHN DAY NO 1
500 KV TRANSMISSION LINE

MILE 84 FROM LOWER MONUMENTAL

DATE: 7-8-64
SHEET: 103-11

129684 DTM-D 103-11

SLAT - BOARD SEG ROSS-FRAN FIBER SYSTEM



NO	REVISION	DATE	APPROVED
10	FIBER OPTIC CABLE REPLACED KING STA 1293.92 & UPDATED	5-30-14	POD
9	ORIG DWG CHGD TO HYBRID		
8	OPER NAME & STRUCT NO'S CHGD	ELC 3-29-04	POD
7	LIS CASE #90342 & FIBER OPTIC CABLE ADDED	03-23-07	POD
6	OPER NAME CHANGED	11-29-05	POD
5	SEC CORR 17 CORRECTED		
4	TWRS 96/1,2,3 FTS TYPE CHGD		
3	AR APPROACH ADDED		
2	PROFILE & TOWERS ADDED		
1	NO		

TOWER DESIGNATION
CSGP SLAT
1-7-5

REVISION	DATE	APPROVED
10	5-30-14	POD
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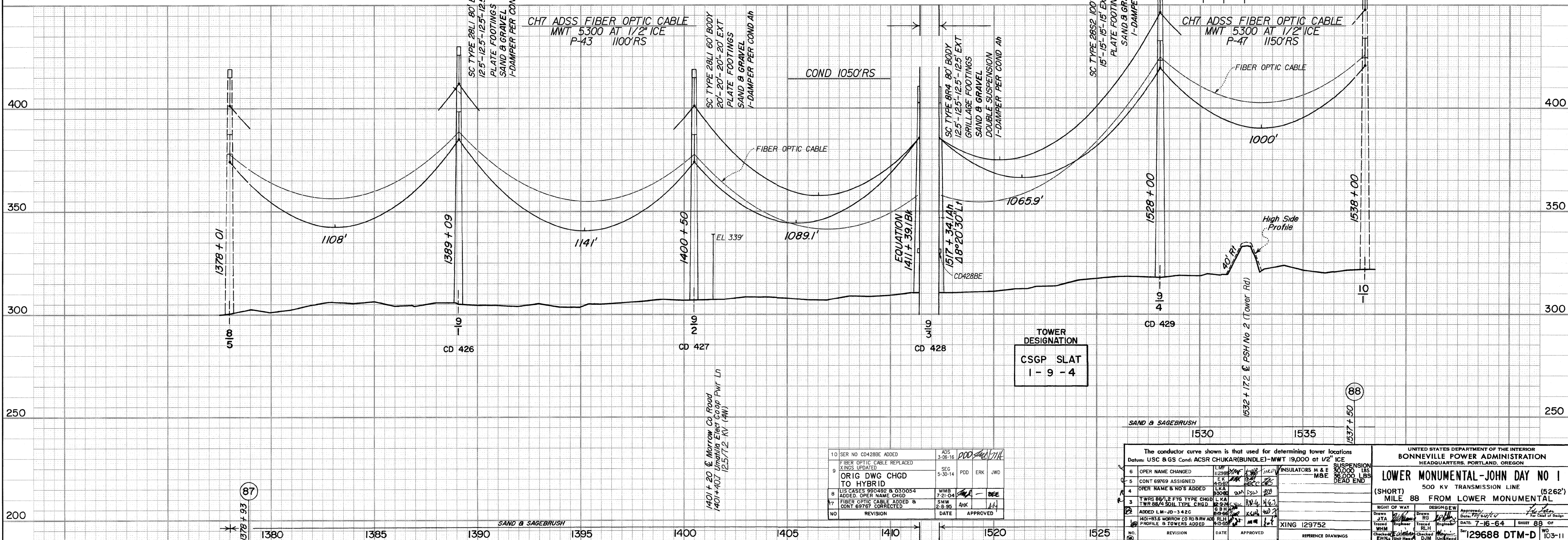
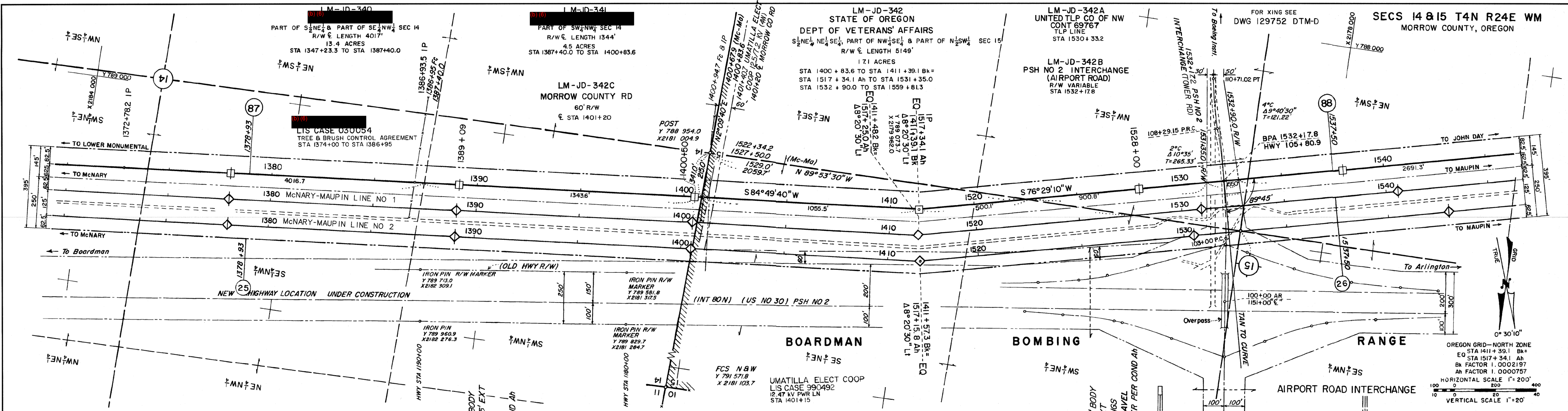
UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

LOWER MONUMENTAL-JOHN DAY NO 1
500 KV TRANSMISSION LINE
MILE 86 FROM LOWER MONUMENTAL

RIGHT OF WAY DESIGNER: [Signature]
DATE: 7-16-64
SHEET: 86 OF 86
PROJECT: 129686 DTM-D 103-11

SLAT-BOARD SEG ROSS-FRAN FIBER SYSTEM

129686-1-10000



10	SER NO CD428BE ADDED	ADS	3-26-16	PDD	ERK	JWD
9	FIBER OPTIC CABLE REPLACED XINGS UPDATED	SEG	5-30-14	PDD	ERK	JWD
8	ORIG DWG CHGD TO HYBRID	NMB	7-21-04			DEE
7	LIS CASE 030054 TREE & BRUSH CONTROL AGREEMENT STA 1374+00 TO STA 1386+95	SNW	2-8-95	4HK		LLJ
6	FIBER OPTIC CABLE ADDED & CONT 69767 CORRECTED	SNW	2-8-95	4HK		LLJ
5	ADDED L.M.-JD-342C	SNW	2-8-95	4HK		LLJ
4	1401+83.5 MORROW CO RD & R/W AD	SNW	2-8-95	4HK		LLJ
3	PROFILE & TOWERS ADDED	SNW	2-8-95	4HK		LLJ
2						
1						

6	OPER NAME CHANGED	LM	7-16-64			
5	CONT 69769 ASSIGNED	LM	7-16-64			
4	OPER NAME & NO'S ADDED	LM	7-16-64			
3	TWRS 88/4 & FTG TYPE CHGD L&K	LM	7-16-64			
2	TWR 88/4 SOIL TYPE CHGD	LM	7-16-64			
1						

UNITED STATES DEPARTMENT OF THE INTERIOR
 BONNEVILLE POWER ADMINISTRATION
 HEADQUARTERS, PORTLAND, OREGON

LOWER MONUMENTAL-JOHN DAY NO 1
 (SHORT) MILE 88 FROM LOWER MONUMENTAL (5262')

500 KV TRANSMISSION LINE

DATE: 7-16-64
 SHEET 88 OF 88

129688-1-10.DWG / 129688-1-10.DWG

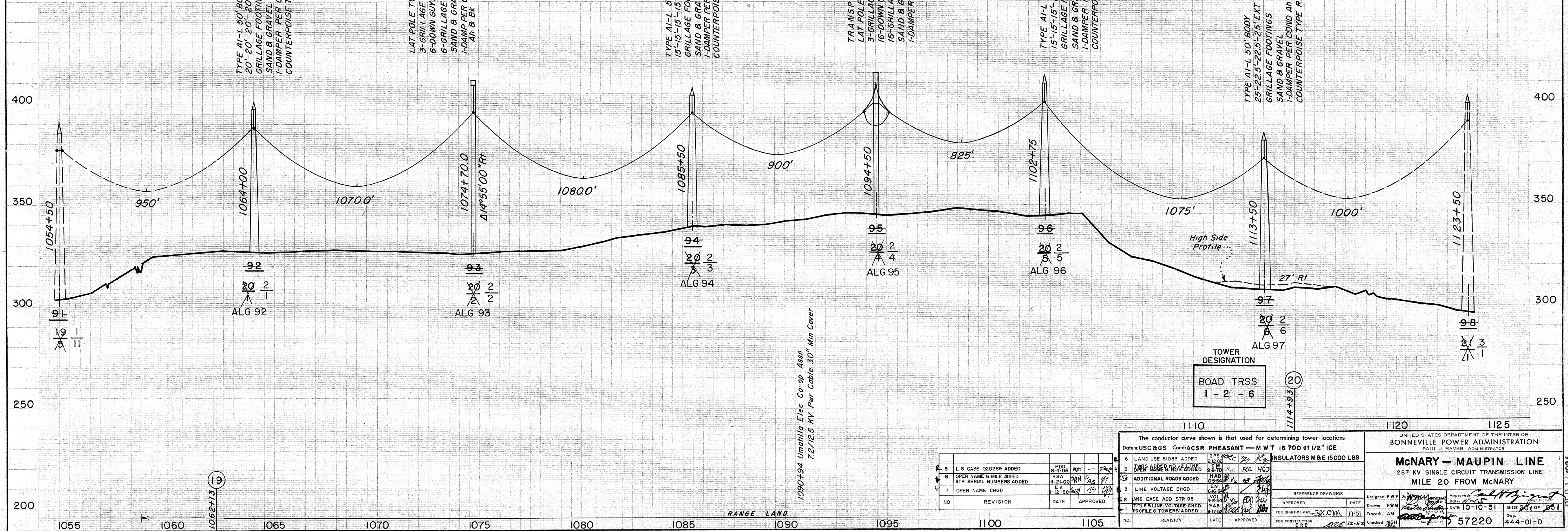
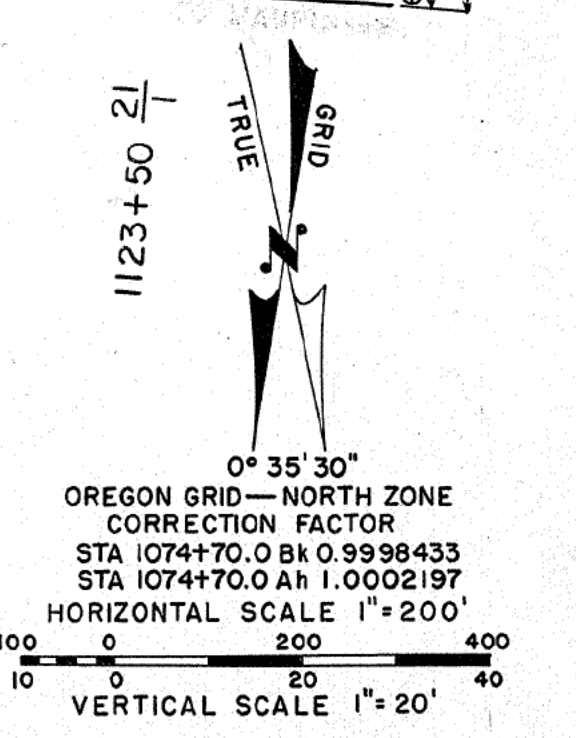
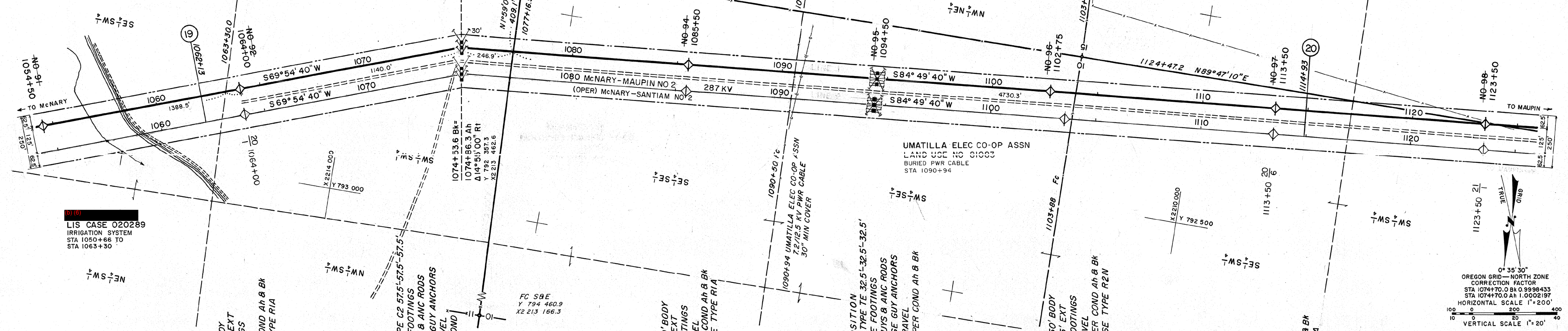
OPER AS MILE 9 COYOTE SPRINGS-SLATT NO 1

Mc-Ma-34
PART OF E₂SW₄ SEC II
R/W LENGTH 1389'
8.0 ACRES
STA 1049+41.5 TO STA 1063+30.0

Mc-Ma-35
NORTHERN PACIFIC RY CO
SW₄SW₄ SEC II
R/W LENGTH 1387'
80 ACRES
STA 1063+30.0 TO STA 1077+16.9

Mc-Ma-36
UNITED STATES OF AMERICA
S₂E₂ SEC 10
R/W LENGTH 5298'
28.8 ACRES
STA 1077+16.9 TO STA 1124+47.2

SECS II & IO T4N R25E WM
MORROW COUNTY, OREGON



1090+94 Umatilla Elec Co-op Assn
7.2/12.5 KV Pwr Cable 30' Min Cover

NO	REVISION	DATE	APPROVED
9	LIS CASE 020289 ADDED	8-2-05	[Signature]
8	OPER NAME & MILE ADDED	4-24-00	[Signature]
7	OPER NAME CHGD	1-12-88	[Signature]

NO	REVISION	DATE	APPROVED
6	LAND USE 81083 ADDED	8-2-05	[Signature]
5	OPER NAME & MILE ADDED	4-24-00	[Signature]
4	ADDITIONAL ROADS ADDED	1-12-88	[Signature]
3	LINE VOLTAGE CHGD		
2	ANC EASE ADD STR 93		
1	TITLE & LINE VOLTAGE CHGD		

The conductor curve shown is that used for determining tower locations
Datum: USCGS Condi: ACSR PHEASANT - M W T 16 700 at 1/2" ICE
INSULATORS M & E 15000 LBS

UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
PAUL J. RAYVER, ADMINISTRATOR

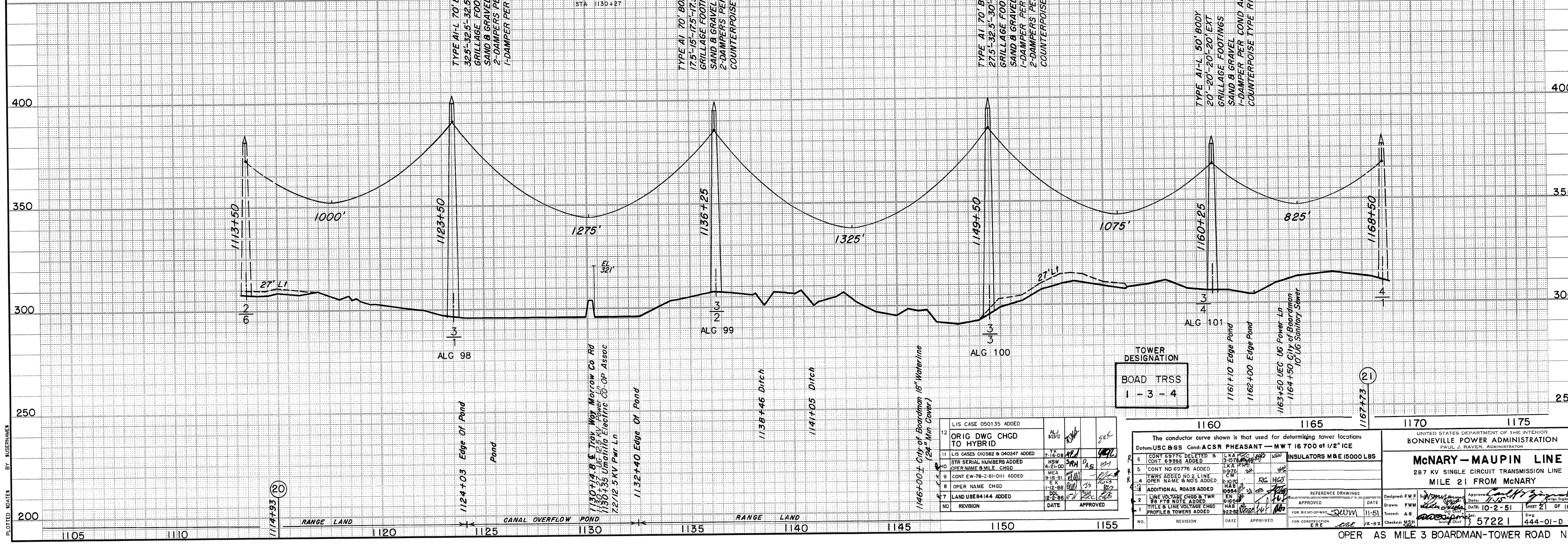
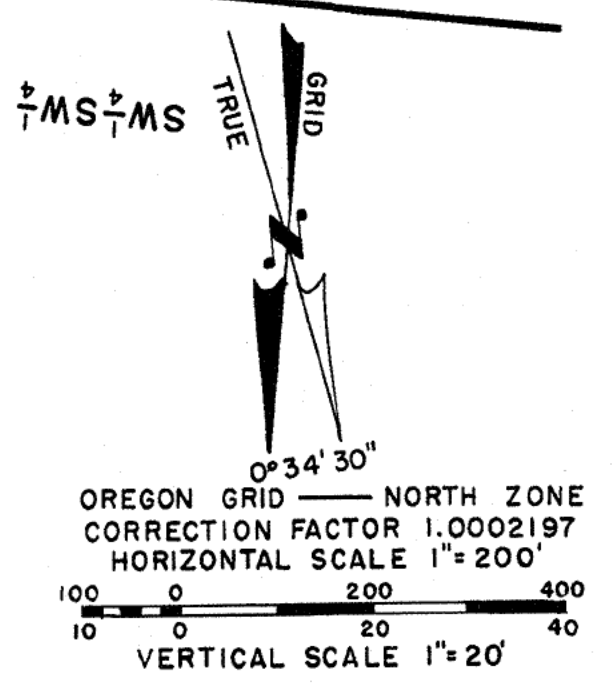
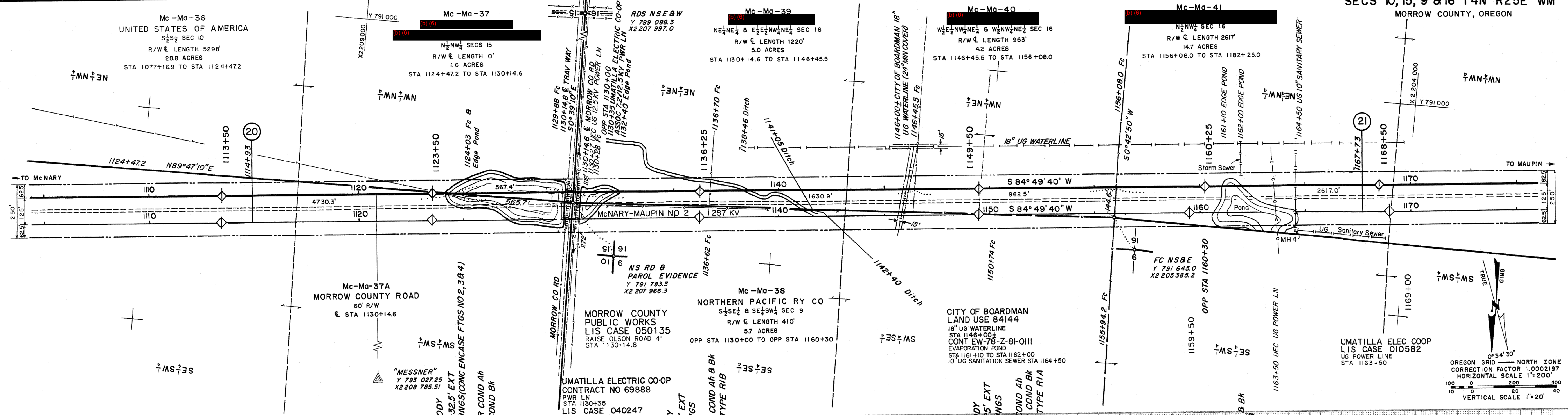
McNARY - MAUPIN LINE
287 KV SINGLE CIRCUIT TRANSMISSION LINE
MILE 20 FROM McNARY

Designed: F.W.F. [Signature]
Drawn: F.W.M. [Signature]
Traced: A.G. [Signature]
Checked: M.S.H. [Signature]

DATE: 10-10-51
DATE: 11-51
DATE: 5-7220

Sheet 20 of 1051
Dwg. 444-01-D

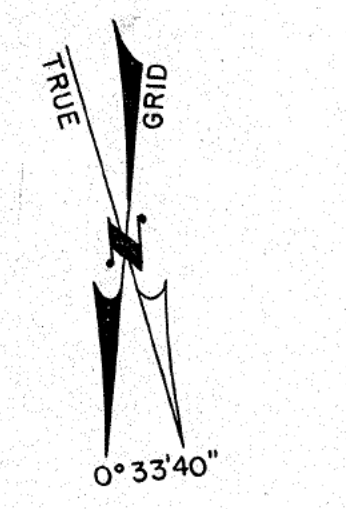
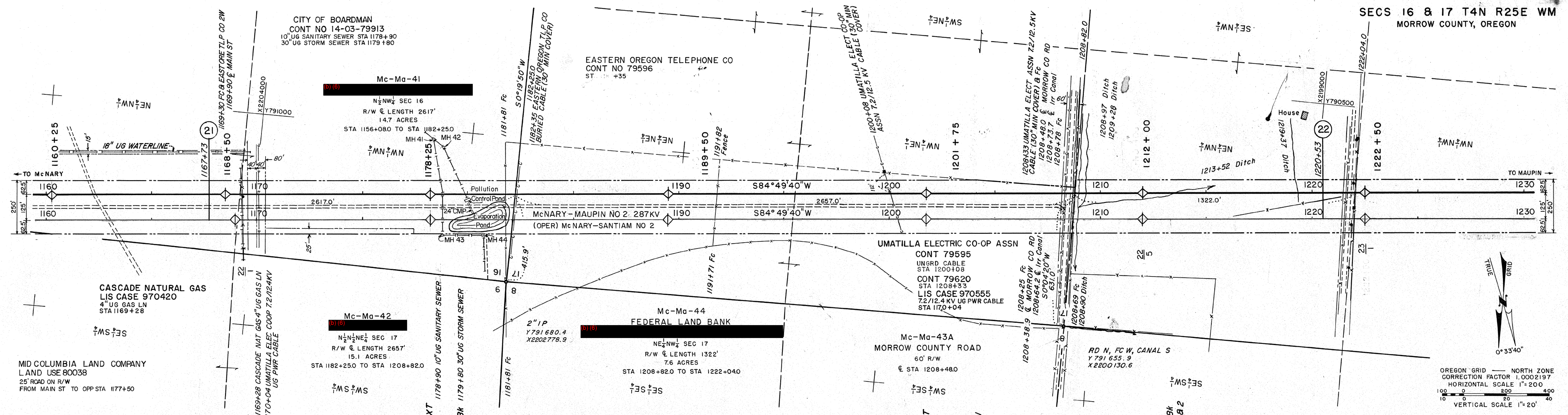
OPER AT 115 KV
OPER AS MILE 2 BOARDMAN-TOWER ROAD NO 1



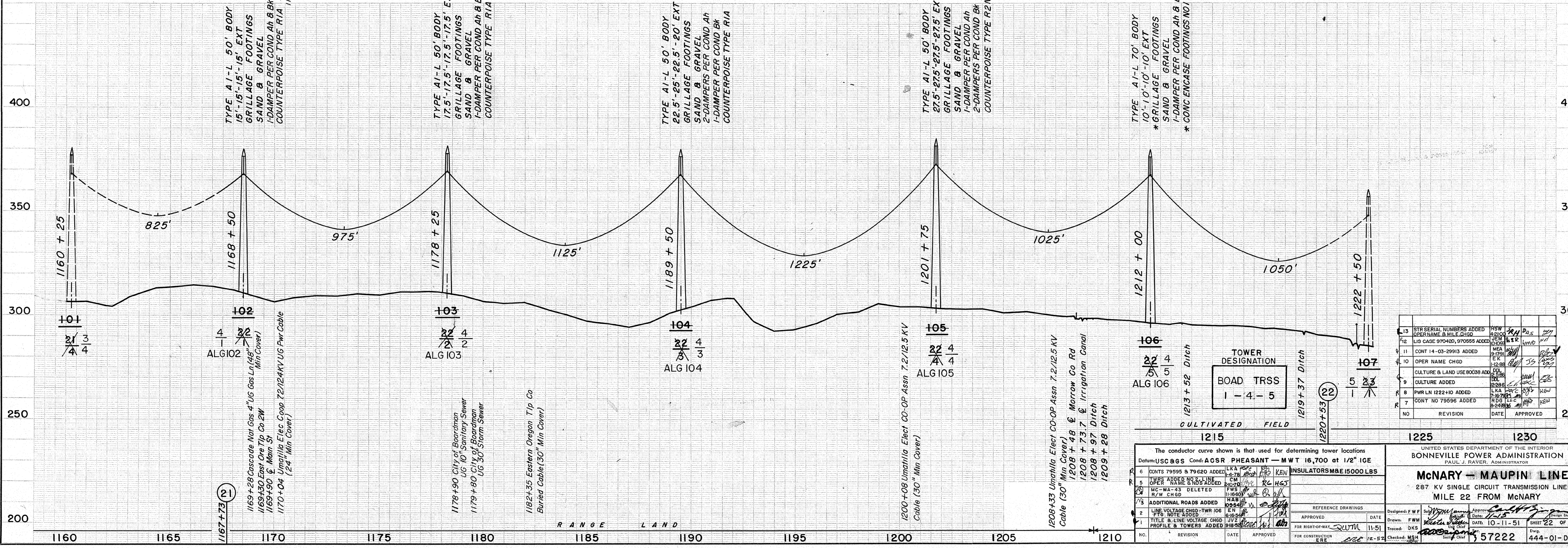
NO.	REVISION	DATE	APPROVED
12	LIS CASE 050135 ADDED		
11	ORIG DWG CHGD TO HYBRID		
10	LIS CASES 010582 & 040247 ADDED		
9	STR SERIAL NUMBERS ADDED		
8	OPER NAME CHGD		
7	LAND USE 84144 ADDED		
6	CONTR 69776 DELETED & CONTR 69883 ADDED		
5	CONTR NO 69776 ADDED		
4	TWRS ADDED NO 2 LINE		
3	OPER NAME & NOS ADDED		
2	LINE VOLTAGE CHGD & TWR 98 FT NOTE ADDED		
1	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED		

NO.	REVISION	DATE	APPROVED
6	CONTR 69776 DELETED & CONTR 69883 ADDED		
5	CONTR NO 69776 ADDED		
4	TWRS ADDED NO 2 LINE		
3	OPER NAME & NOS ADDED		
2	LINE VOLTAGE CHGD & TWR 98 FT NOTE ADDED		
1	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED		

UNITED STATES DEPARTMENT OF THE INTERIOR BONNEVILLE POWER ADMINISTRATION PAUL J. RAVER, ADMINISTRATOR	
McNARY-MAUPIN LINE 287 KV SINGLE CIRCUIT TRANSMISSION LINE MILE 21 FROM McNARY	
REFERENCE DRAWINGS APPROVED: [Signature] DATE: 10-2-51	DESIGNED: F.W.F. DRAWN: F.W.M. CHECKED: A.G. DATE: 10-2-51
SHEET 21 OF 105 57221	Dwg. No. 444-01-D



OREGON GRID NORTH ZONE
CORRECTION FACTOR 1.0002197
HORIZONTAL SCALE 1"=200'
VERTICAL SCALE 1"=20'



TYPE A1-L 50' BODY
15'-15'-15'-15' EXT
GRILLAGE FOOTINGS
SAND & GRAVEL
1-DAMPER PER COND AIR & BK
COUNTERPOISE TYPE R1A

TYPE A1-L 50' BODY
17.5'-17.5'-17.5'-17.5' EXT
GRILLAGE FOOTINGS
SAND & GRAVEL
1-DAMPER PER COND AIR & BK
COUNTERPOISE TYPE R1A

TYPE A1-L 50' BODY
22.5'-22.5'-22.5'-22.5' EXT
GRILLAGE FOOTINGS
SAND & GRAVEL
2-DAMPERS PER COND AIR
1-DAMPER PER COND BK
COUNTERPOISE TYPE R1A

TYPE A1-L 50' BODY
27.5'-27.5'-27.5'-27.5' EXT
GRILLAGE FOOTINGS
SAND & GRAVEL
1-DAMPER PER COND AIR
2-DAMPERS PER COND BK
COUNTERPOISE TYPE R2M

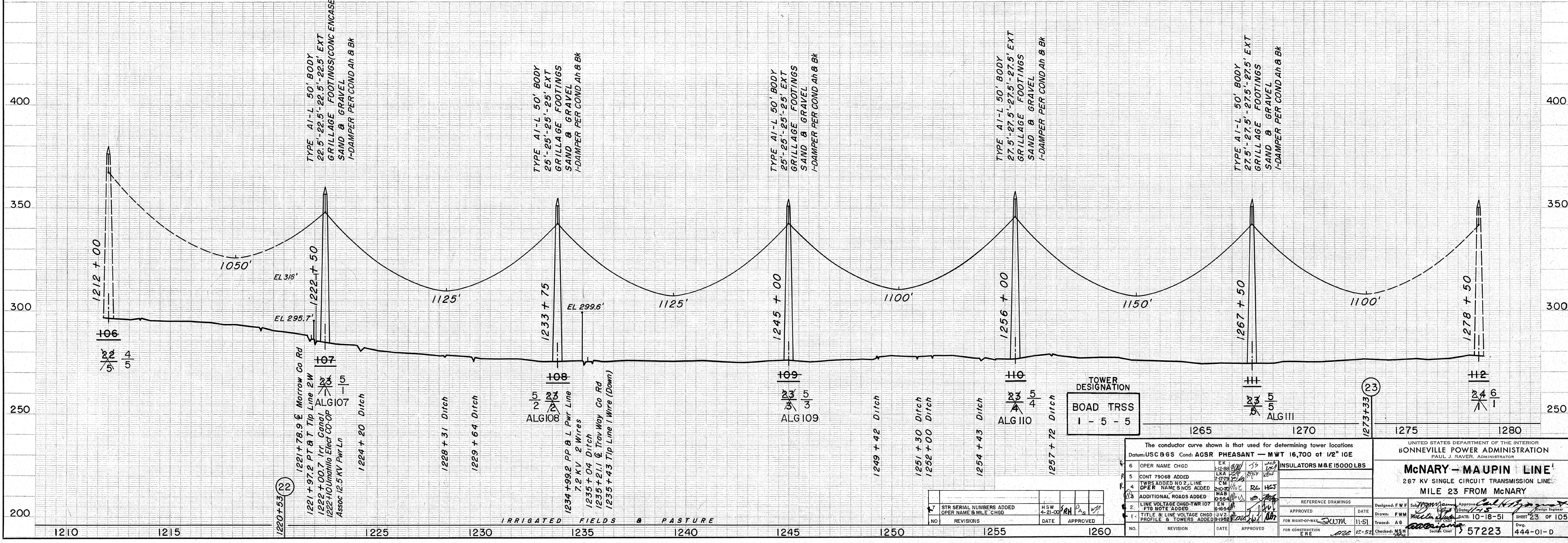
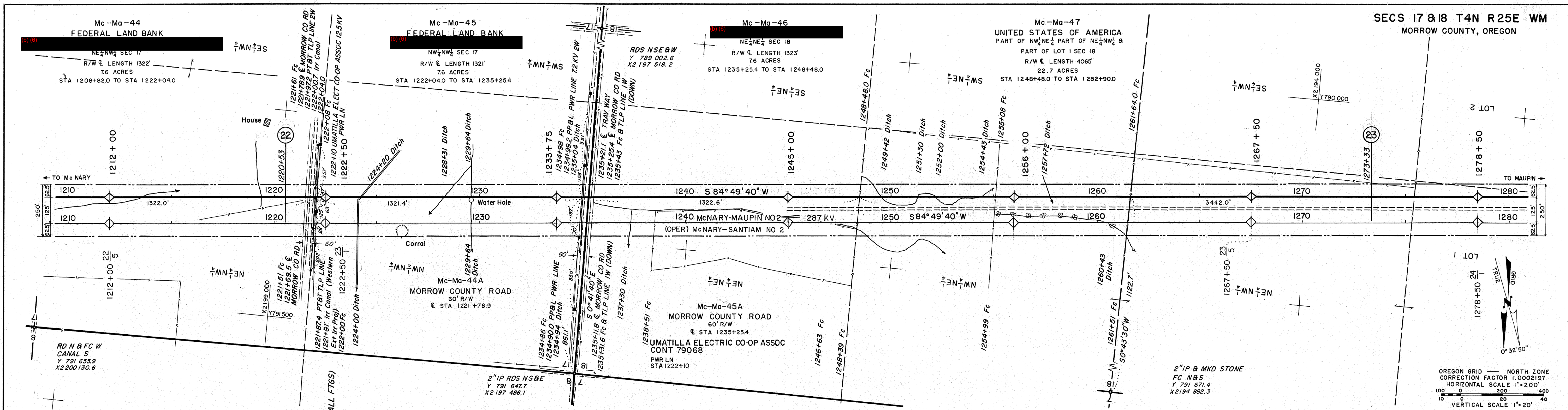
TYPE A1-L 70' BODY
10'-10'-10'-10' EXT
GRILLAGE FOOTINGS
SAND & GRAVEL
1-DAMPER PER COND AIR & BK
* CONC ENCASE FOOTINGS NO 1 & 2

TOWER DESIGNATION
BOAD TRSS
1-4-5

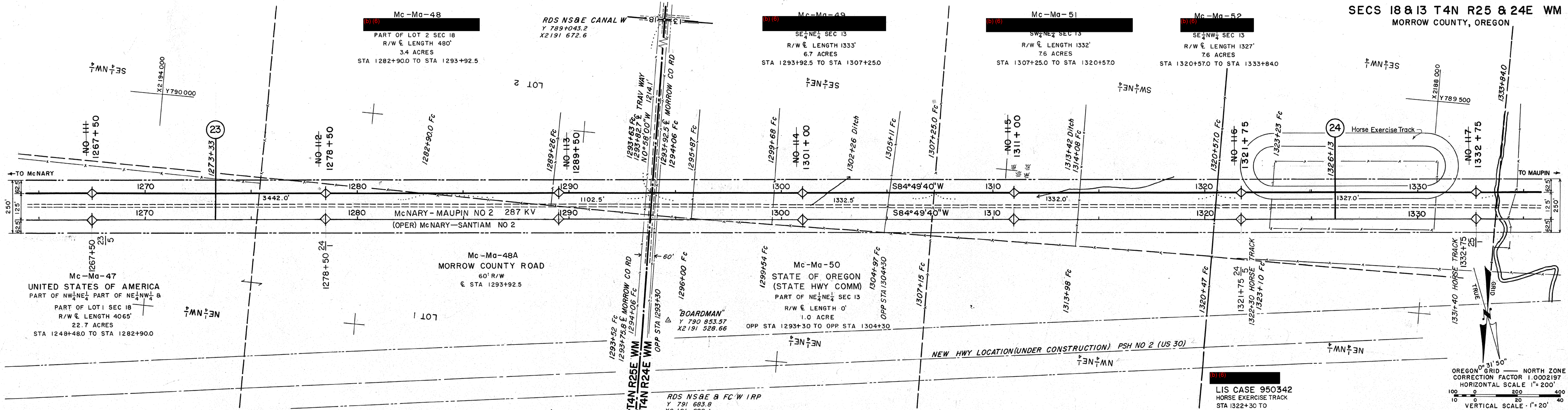
13	STR SERIAL NUMBERS ADDED	HSW	2/25	2/25
12	OPER NAME & MILE CHG	CH	2/25	2/25
11	LIG CASE 970420, 970555 ADDED	ME	2/25	2/25
10	CONT 14-03-29913 ADDED	ME	2/25	2/25
9	OPER NAME CHG	ME	2/25	2/25
8	CULTURE & LAND USE 80038 ADDED	ME	2/25	2/25
7	CULTURE ADDED	ME	2/25	2/25
6	PWR LN 1222+10 ADDED	ME	2/25	2/25
5	CONT NO 79595 ADDED	ME	2/25	2/25
4	REVISION	DATE	APPROVED	

The conductor curve shown is that used for determining tower locations	
Datum: USC 86S Cond: ACSR PHEASANT - MWT 16,700 at 1/2" ICE	
6	CONTS 79595 & 79620 ADDED
5	OPER NAME & MILE CHG ADDED
4	MC-MA-43 DELETED
3	ADDITIONAL ROADS ADDED
2	LINE VOLTAGE CHGD - TWR 106
1	TITLE & LINE VOLTAGE CHGD

UNITED STATES DEPARTMENT OF THE INTERIOR BONNEVILLE POWER ADMINISTRATION PAUL L. RAYVER, ADMINISTRATOR	
McnARY - MAUPIN LINE 287 KV SINGLE CIRCUIT TRANSMISSION LINE MILE 22 FROM McNARY	
Designed: F.W.M.	Drawn: F.W.M.
Traced: DKS	Checked: M.S.H.
DATE: 10-11-51	DATE: 11-51
Sheet: 22	OF 105
Project: 57222	Draw: 444-01-D

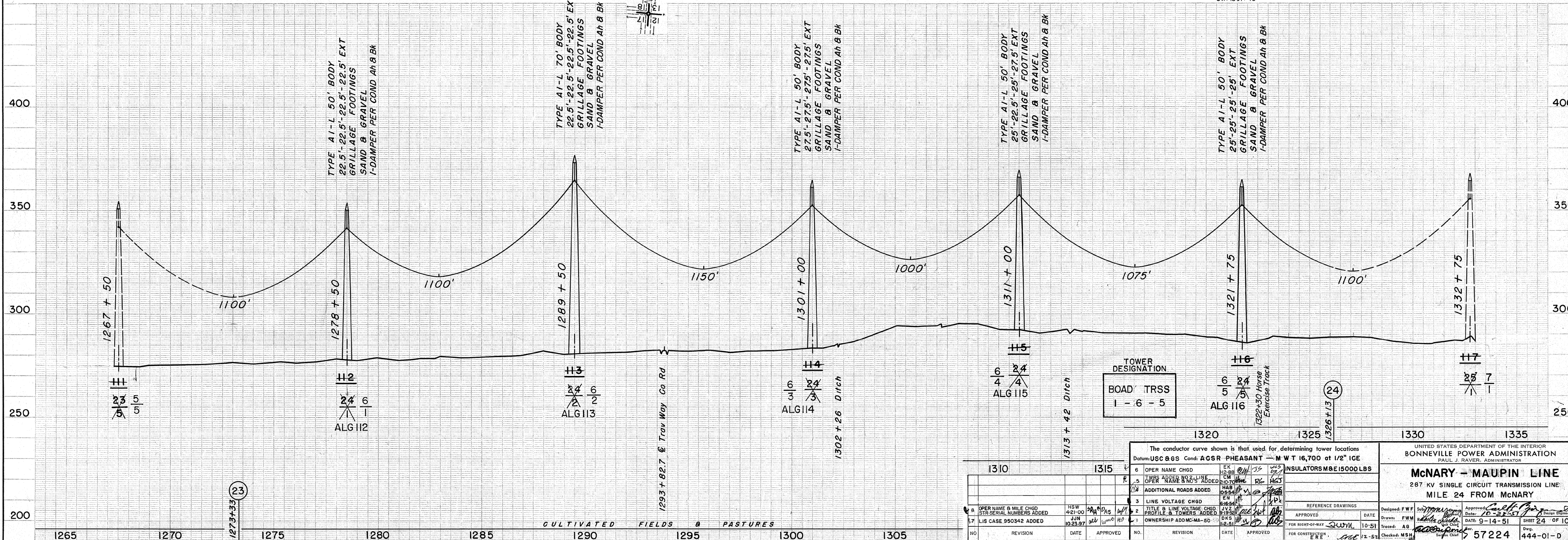


The conductor curve shown is that used for determining tower locations Datum: USC & GS Cond: ACSR PHEASANT — MWT 16,700 at 1/2" ICE		UNITED STATES DEPARTMENT OF THE INTERIOR BONNEVILLE POWER ADMINISTRATION PAUL J. RAYVER, ADMINISTRATOR McNARY - MAUPIN LINE 267 KV SINGLE CIRCUIT TRANSMISSION LINE MILE 23 FROM McNARY	
6 OPER NAME CHGD 5 CONT 79068 ADDED 4 TOWERS ADDED TO 2-1 LINE 3 OPER NAME & NOS ADDED 2 ADDITIONAL ROADS ADDED 1 LINE VOLTAGE CHGD-TWR TOT 1 TWR NOTE ADDED 1 TITLE & LINE VOLTAGE CHGD 1 PROFILE & TOWERS ADDED	ER LKA CM RAB PSE ESN GWS LWZ JVS	DATE 11-51 12-52	DESIGNED: F.W.F. DRAWN: F.W.M. CHECKED: A.G. DATE: 10-18-51 SHEET: 23 OF 105 No. 57223 444-01-D



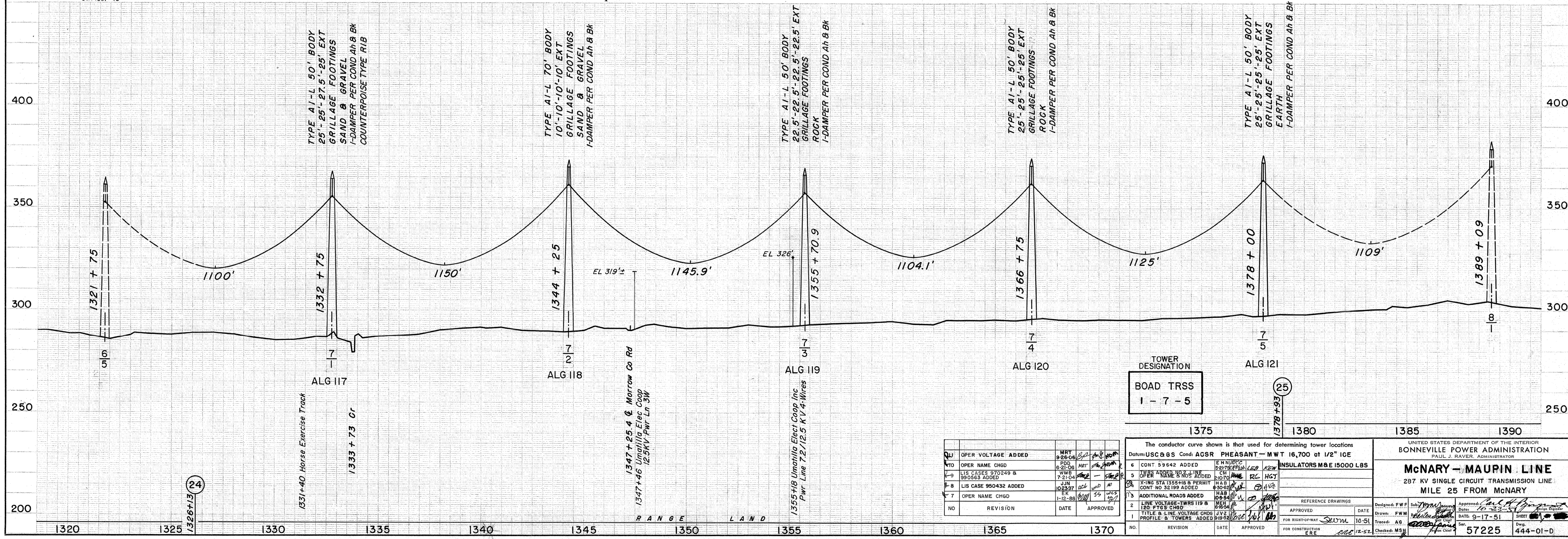
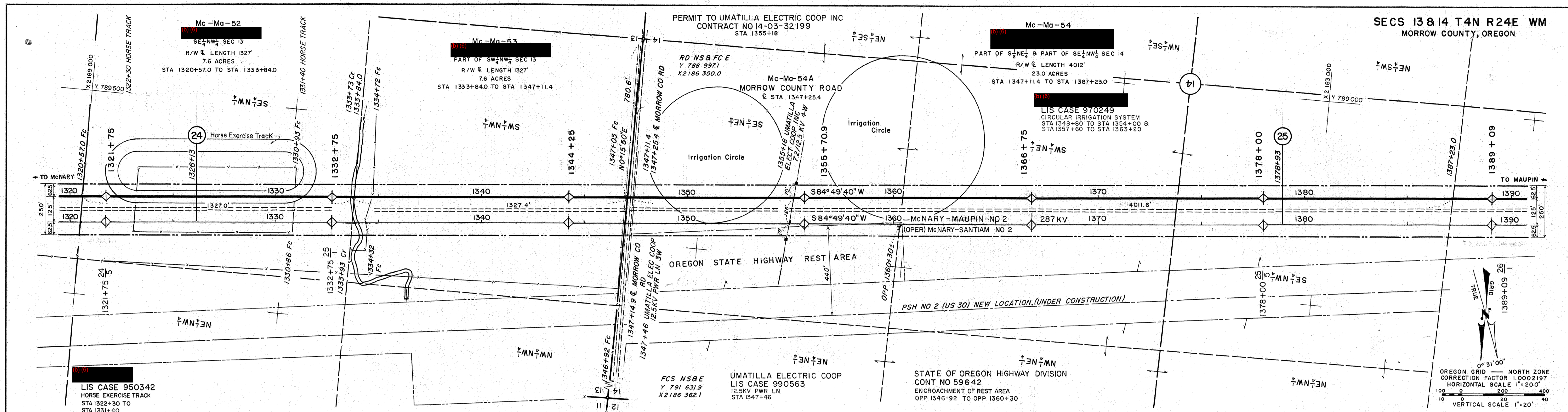
LIS CASE 950342
HORSE EXERCISE TRACK
STA 1322+30 TO
STA 1331+40

OREGON GRID NORTH ZONE
CORRECTION FACTOR 1.0002197
HORIZONTAL SCALE 1"=200'
VERTICAL SCALE 1"=20'



OPER AT 115 KV		OPER AS MILE 6. BOARDMAN-TOWER ROAD NO 1	
NO	REVISION	DATE	APPROVED
1	LIS CASE 950342 ADDED	JUN 10 23 97	[Signature]
2	OPER NAME & MILE CHGD STR SERIAL NUMBERS ADDED	4-21-00	[Signature]
3	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
4	LINE VOLTAGE CHGD	10-23-97	[Signature]
5	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
6	OPER NAME CHGD	10-23-97	[Signature]
7	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
8	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
9	LINE VOLTAGE CHGD	10-23-97	[Signature]
10	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
11	OPER NAME CHGD	10-23-97	[Signature]
12	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
13	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
14	LINE VOLTAGE CHGD	10-23-97	[Signature]
15	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
16	OPER NAME CHGD	10-23-97	[Signature]
17	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
18	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
19	LINE VOLTAGE CHGD	10-23-97	[Signature]
20	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
21	OPER NAME CHGD	10-23-97	[Signature]
22	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
23	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
24	LINE VOLTAGE CHGD	10-23-97	[Signature]
25	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
26	OPER NAME CHGD	10-23-97	[Signature]
27	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
28	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
29	LINE VOLTAGE CHGD	10-23-97	[Signature]
30	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
31	OPER NAME CHGD	10-23-97	[Signature]
32	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
33	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
34	LINE VOLTAGE CHGD	10-23-97	[Signature]
35	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
36	OPER NAME CHGD	10-23-97	[Signature]
37	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
38	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
39	LINE VOLTAGE CHGD	10-23-97	[Signature]
40	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
41	OPER NAME CHGD	10-23-97	[Signature]
42	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
43	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
44	LINE VOLTAGE CHGD	10-23-97	[Signature]
45	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]
46	OPER NAME CHGD	10-23-97	[Signature]
47	TOWERS ADDED NO. 2 LINE OPER NAME & NO. 3 ADDED	10-23-97	[Signature]
48	ADDITIONAL ROADS ADDED	10-23-97	[Signature]
49	LINE VOLTAGE CHGD	10-23-97	[Signature]
50	TITLE & LINE VOLTAGE CHGD PROFILE & TOWERS ADDED	10-23-97	[Signature]

DEC 14 1994



TYPE A1-L 50' BODY
 25'-25'-27.5'-25' EXT
 GRILLAGE FOOTINGS
 SAND & GRAVEL
 I-DAMPER PER COND A & B
 COUNTERPOISE TYPE RIB

TYPE A1-L 70' BODY
 10'-10'-10'-10' EXT
 GRILLAGE FOOTINGS
 SAND & GRAVEL
 I-DAMPER PER COND A & B

TYPE A1-L 50' BODY
 22.5'-22.5'-22.5'-22.5' EXT
 GRILLAGE FOOTINGS
 ROCK
 I-DAMPER PER COND A & B

TYPE A1-L 50' BODY
 25'-25'-25'-25' EXT
 GRILLAGE FOOTINGS
 ROCK
 I-DAMPER PER COND A & B

TYPE A1-L 50' BODY
 25'-25'-25'-25' EXT
 GRILLAGE FOOTINGS
 EARTH
 I-DAMPER PER COND A & B

TOWER DESIGNATION
BOARD TRSS
 1 - 7 - 5

NO	REVISION	DATE	APPROVED
1	OPER VOLTAGE ADDED	MAY 9 2006	[Signature]
2	OPER NAME CHGD	MAY 9 2006	[Signature]
3	LIS CASE 970249 & 990563 ADDED	MAY 9 2006	[Signature]
4	LIS CASE 950432 ADDED	MAY 9 2006	[Signature]
5	OPER NAME CHGD	MAY 9 2006	[Signature]

NO.	REVISION	DATE	APPROVED
1	OPER VOLTAGE ADDED	MAY 9 2006	[Signature]
2	OPER NAME CHGD	MAY 9 2006	[Signature]
3	LIS CASE 970249 & 990563 ADDED	MAY 9 2006	[Signature]
4	LIS CASE 950432 ADDED	MAY 9 2006	[Signature]
5	OPER NAME CHGD	MAY 9 2006	[Signature]

The conductor curve shown is that used for determining tower locations
 Datum: USCGS Cond: AGSR PHEASANT - MWT 16,700 at 1/2" ICE

INSULATORS M&E 15000 LBS

UNITED STATES DEPARTMENT OF THE INTERIOR
 BONNEVILLE POWER ADMINISTRATION
 PAUL J. RAVIER, ADMINISTRATOR

McNARY - MAUPIN LINE
 287 KV SINGLE CIRCUIT TRANSMISSION LINE
 MILE 25 FROM McNARY

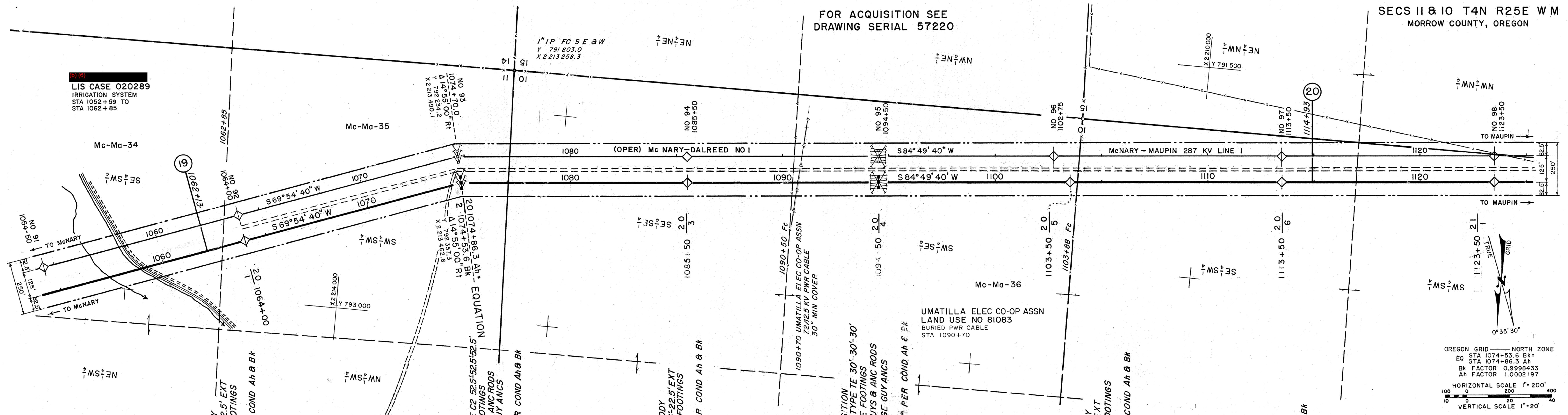
Designed: F.W.M. Date: 10-23-51
 Drawn: F.W.M. Date: 9-17-51
 Traced: A.G. Date: 12-5-52
 Checked: M.S.H. Date: 57225
 Dwg. No: 444-01-D

OPER AT 115 KV AS MILE 7 BOARDMAN - TOWER ROAD NO 1

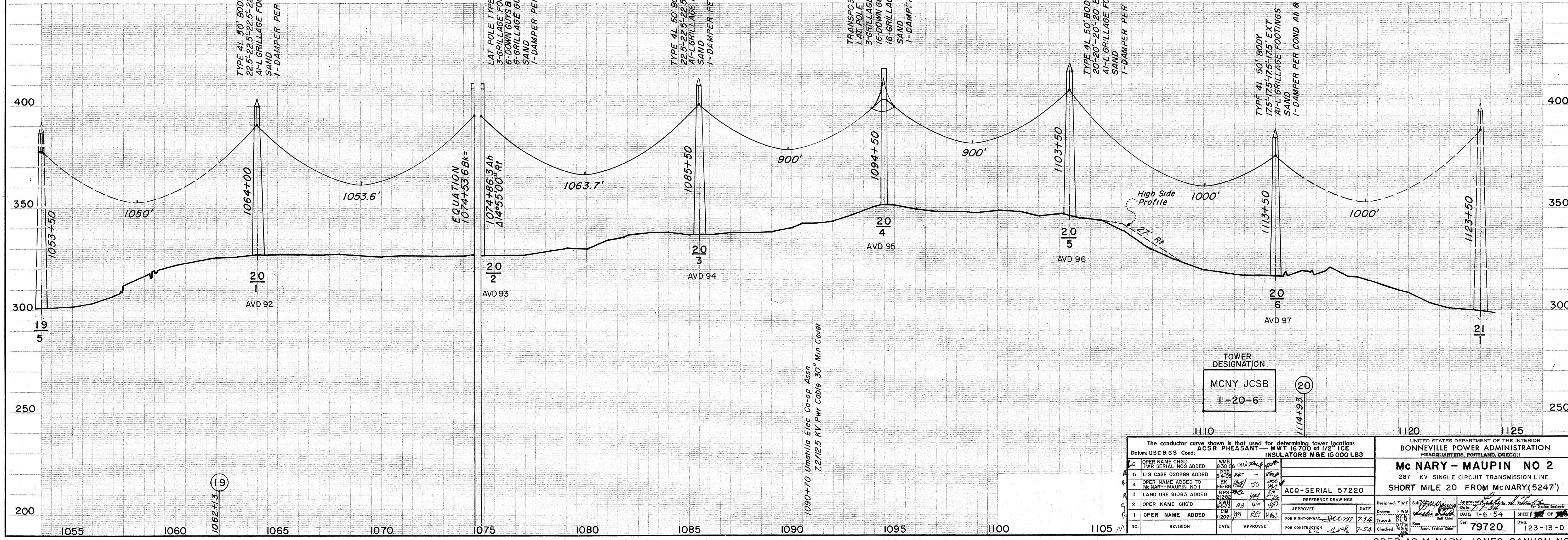
LIS CASE 020289
IRRIGATION SYSTEM
STA 1052+50 TO
STA 1062+85

FOR ACQUISITION SEE
DRAWING SERIAL 57220

SECS 11 & 10 T4N R25E WM
MORROW COUNTY, OREGON



OREGON GRID - NORTH ZONE
EQ STA 1074+86.3 Ah
EA STA 1074+86.3 Ah
Bk FACTOR 0.9998433
Ah FACTOR 1.0002197
HORIZONTAL SCALE 1" = 200'
VERTICAL SCALE 1" = 20'

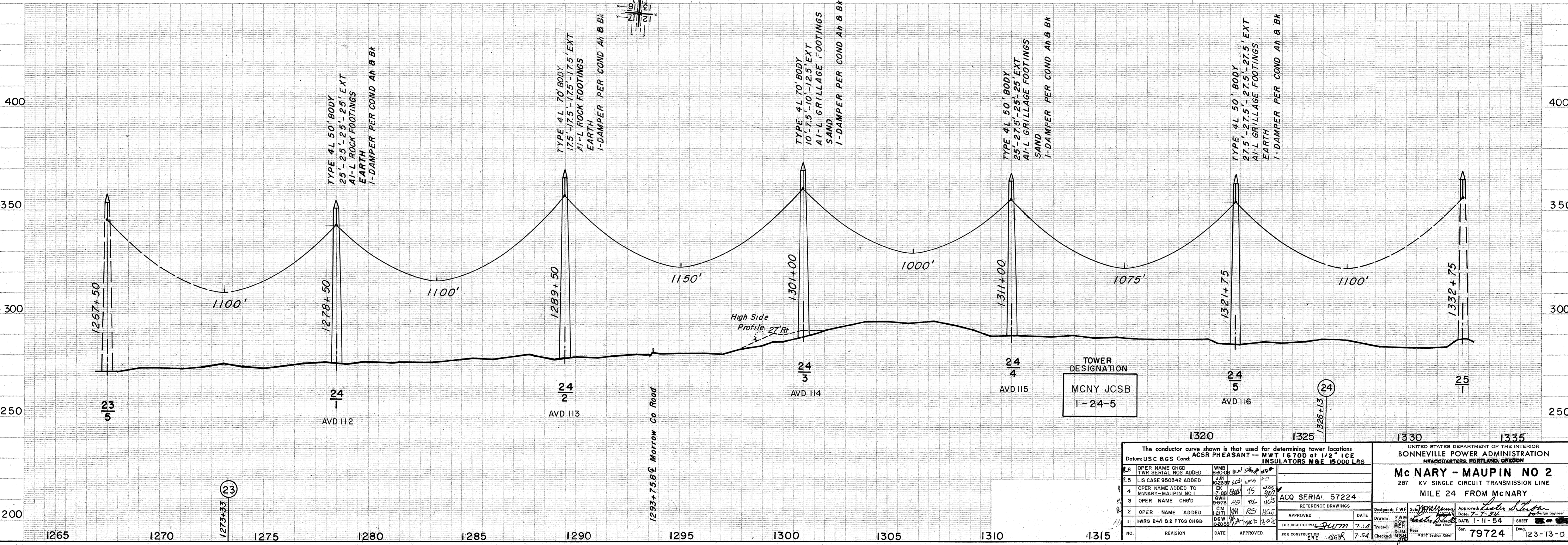
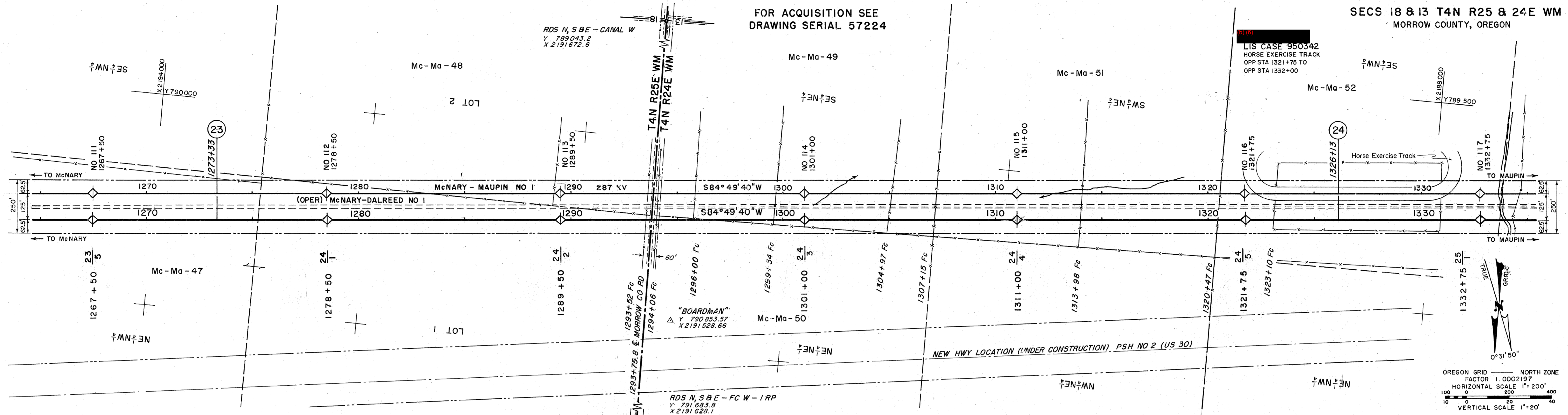


<p>The conductor curve shown is that used for determining tower locations Datum: USC & GS Conds ACSR PHEASANT - W/T 15 700 at 1/2" ICE INSULATORS MBE 15 000 LBS</p>		<p>UNITED STATES DEPARTMENT OF THE INTERIOR BONNEVILLE POWER ADMINISTRATION HEADQUARTERS, PORTLAND, OREGON</p>	
<p>OPER NAME CHGD WMB TWR SERIAL NOS ADDED 8-30-06 DWW</p>		<p>Mc NARY - MAUPIN NO 2 287 KV SINGLE CIRCUIT TRANSMISSION LINE SHORT MILE 20 FROM MC NARY (5247')</p>	
<p>5 LIS CASE 020289 ADDED 4 OPER NAME ADDED TO MC NARY-MAUPIN NO.1 3 LAND USE 81083 ADDED 2 OPER NAME CHGD</p>		<p>ACQ-SERIAL 57220 REFERENCE DRAWINGS APPROVED DATE FOR RIGHT-OF-WAY DATE FOR CONSTRUCTION DATE</p>	
<p>1 OPER NAME ADDED NO. REVISION DATE APPROVED</p>		<p>Designed: F.W.F. Drawn: F.W.M. Traced: D.L.W. Checked: M.S.P. DATE: 1-6-54 SHEET 1 OF 1 79720 123-13-0</p>	

OPER AS MC NARY - JONES CANYON NO 1

FOR ACQUISITION SEE
DRAWING SERIAL 57224

SECS 18 & 13 T4N R25 & 24E WM
MORROW COUNTY, OREGON



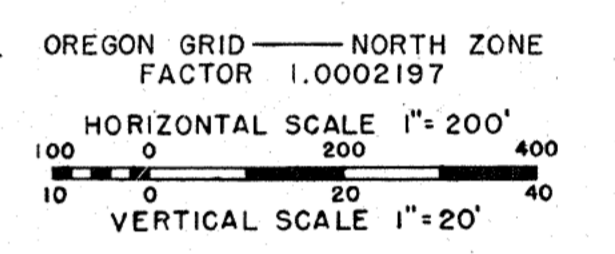
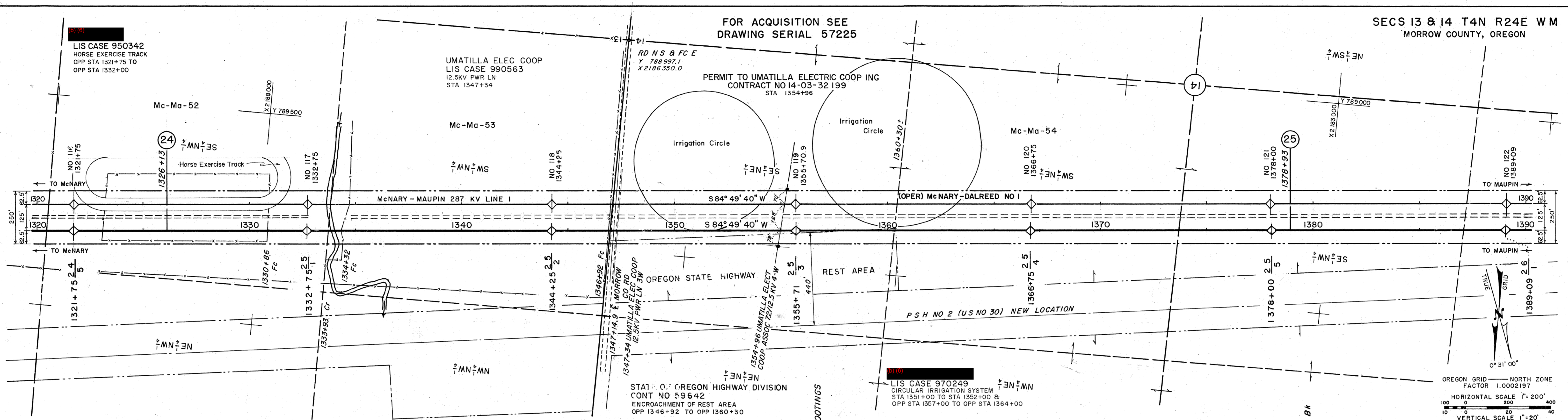
<p>The conductor curve shown is that used for determining tower locations Datum: USC & GCS Cond. ACSR PHEASANT - MWT 16700 at 1/2" ICE INSULATORS NAE 15000 LBS</p>		<p>UNITED STATES DEPARTMENT OF THE INTERIOR BONNEVILLE POWER ADMINISTRATION HEADQUARTERS, PORTLAND, OREGON</p>	
<p>McNARY - MAUPIN NO 2 287 KV SINGLE CIRCUIT TRANSMISSION LINE MILE 24 FROM McNARY</p>		<p>ACQ SERIAL 57224</p>	
<p>1 OPER NAME CHGD TWR SERIAL NOS ADDED</p>	<p>WMB 83006</p>	<p>DESIGNED: F.W.M. DATE: 7-1-54</p>	<p>APPROVED: [Signature] DATE: 7-7-54</p>
<p>2 OPER NAME ADDED TO McNARY - MAUPIN NO 1</p>	<p>JK 17-88</p>	<p>DRAWN: F.W.M. DATE: 7-1-54</p>	<p>CHECKED: [Signature] DATE: 7-7-54</p>
<p>3 OPER NAME CHGD</p>	<p>GM 9-573</p>	<p>TRACED: M.H. DATE: 7-54</p>	<p>REVISION: [Signature]</p>
<p>4 OPER NAME ADDED</p>	<p>CM 1-171</p>	<p>NO. REVISION DATE APPROVED</p>	<p>NO. REVISION DATE APPROVED</p>
<p>1 TWRS 24/1 @ 2 FTGS CHGD</p>	<p>DRW 10-28-54</p>	<p>NO. REVISION DATE APPROVED</p>	<p>NO. REVISION DATE APPROVED</p>

FOR ACQUISITION SEE
DRAWING SERIAL 57225

LIS CASE 950342
HORSE EXERCISE TRACK
OPP STA 1321+75 TO
OPP STA 1332+00

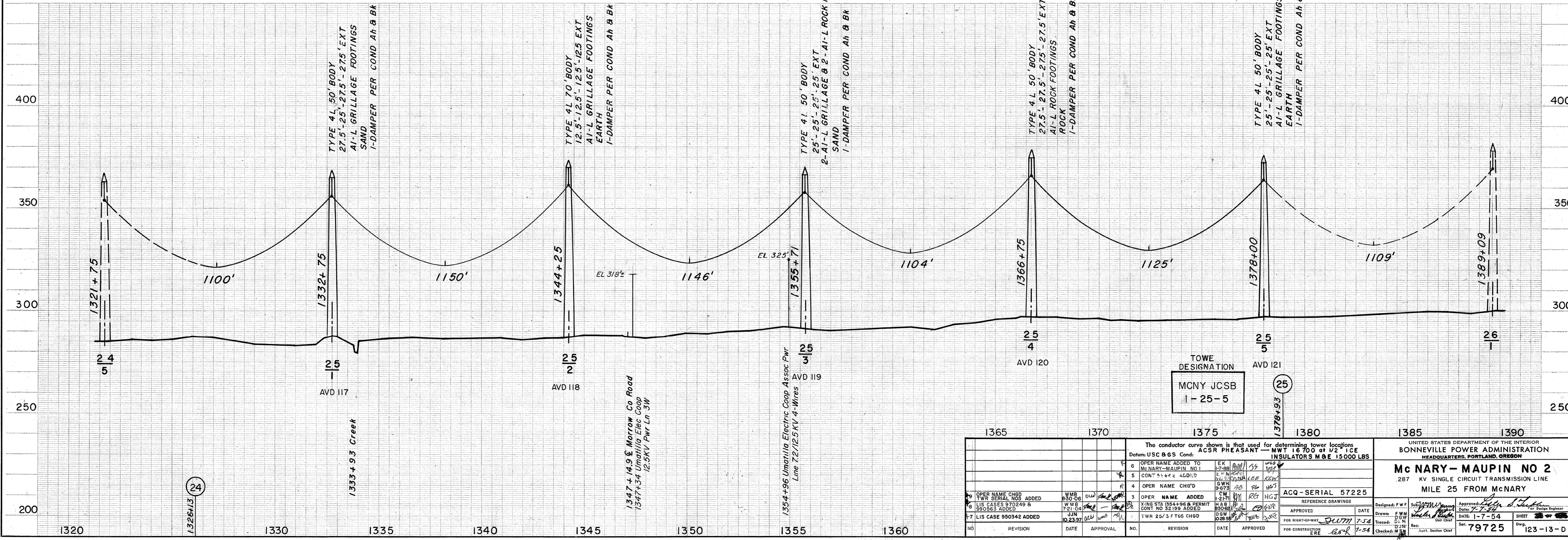
UMATILLA ELEC COOP
LIS CASE 990563
12.5KV PWR LN
STA 1347+34

PERMIT TO UMATILLA ELECTRIC COOP INC
CONTRACT NO 14-03-32 199
STA 1354+96



STAT 0 OREGON HIGHWAY DIVISION
CONT NO 59642
ENCROACHMENT OF REST AREA
OPP 1346+92 TO OPP 1360+30

LIS CASE 970249
CIRCULAR IRRIGATION SYSTEM
STA 1351+00 TO STA 1352+00 &
OPP STA 1357+00 TO OPP STA 1364+00

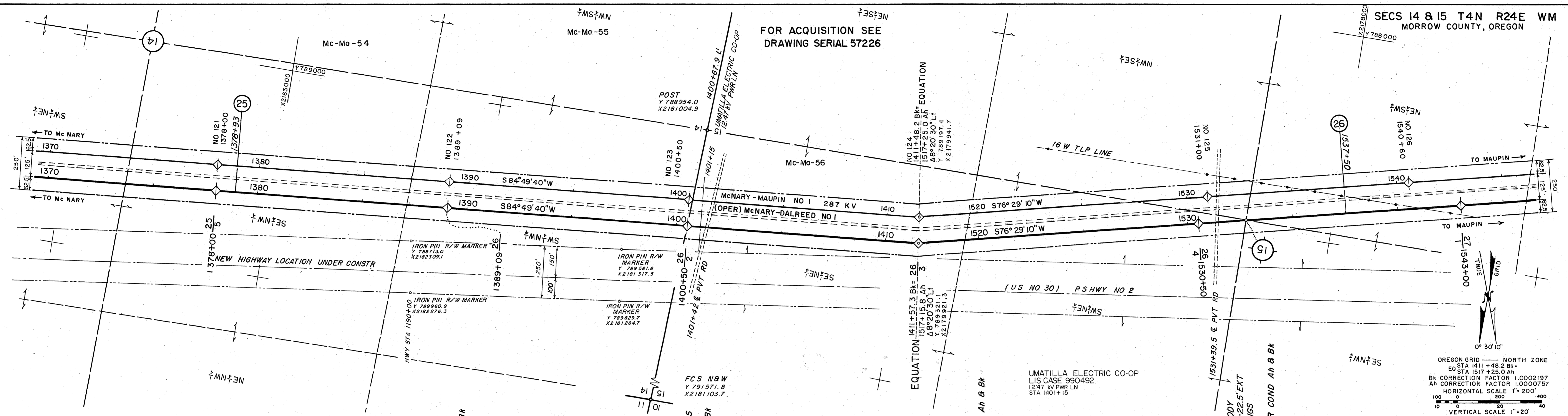


NO	REVISION	DATE	APPROVAL	NO	REVISION	DATE	APPROVAL
1	OPER NAME CHGD	10-23-97	[Signature]	1	OPER NAME CHGD	10-23-97	[Signature]
2	LIS CASES 970249 & 990563 ADDED	11-16-97	[Signature]	2	LIS CASES 970249 & 990563 ADDED	11-16-97	[Signature]
3	OPER NAME CHGD	12-17-97	[Signature]	3	OPER NAME CHGD	12-17-97	[Signature]
4	OPER NAME CHGD	12-17-97	[Signature]	4	OPER NAME CHGD	12-17-97	[Signature]
5	OPER NAME CHGD	12-17-97	[Signature]	5	OPER NAME CHGD	12-17-97	[Signature]
6	OPER NAME CHGD	12-17-97	[Signature]	6	OPER NAME CHGD	12-17-97	[Signature]
7	LIS CASE 950342 ADDED	12-23-97	[Signature]	7	LIS CASE 950342 ADDED	12-23-97	[Signature]

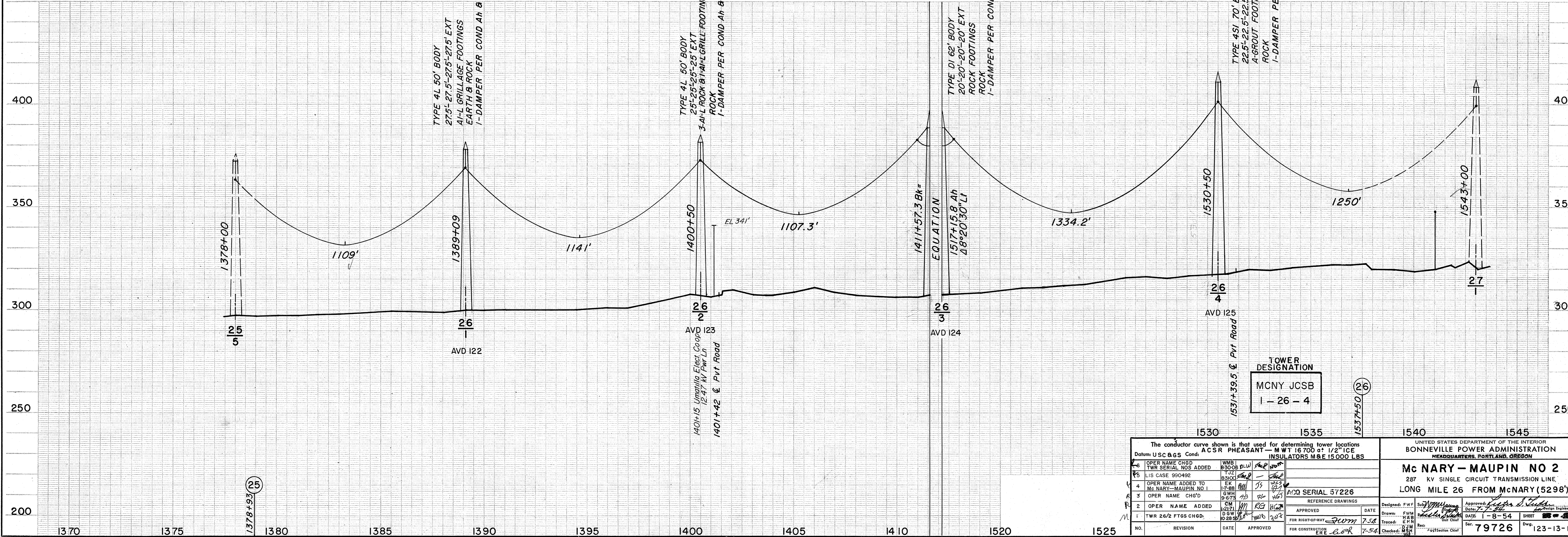
The conductor curve shown is that used for determining tower locations		ACSR PHEASANT - MWT 16700 at 1/2" ICE	
Datum: USC & GS Condi		INSULATORS M & E 15000 LBS	
6	OPER NAME ADDED TO McNary-Maupin No 1	EK	12-7-98
5	CONTRACT NO ADDED	LEB	12-7-98
4	OPER NAME CHGD	AB	12-7-98
3	OPER NAME ADDED	CM	12-17-97
2	XING STA 1354+96 & PERMIT CONT NO 32199 ADDED	AB	12-17-97
1	TWR 25/3 FTGS CHGD	AB	12-17-97

UNITED STATES DEPARTMENT OF THE INTERIOR BONNEVILLE POWER ADMINISTRATION HEADQUARTERS, PORTLAND, OREGON	
McNARY - MAUPIN NO 2 287 KV SINGLE CIRCUIT TRANSMISSION LINE MILE 25 FROM McNARY	
ACQ-SERIAL 57225	DATE: 1-7-54
DESIGNED: F.W.F.	DRAWN: D.W.M.
CHECKED: M.M.	DATE: 1-7-54
SHEET 25	79725
123-13-D	

FOR ACQUISITION SEE
DRAWING SERIAL 57226



OREGON GRID - NORTH ZONE
EQ STA 1411 + 48.2 Bk =
EQ STA 1517 + 25.0 Ah
Bk CORRECTION FACTOR 1.0002197
Ah CORRECTION FACTOR 1.0000757
HORIZONTAL SCALE 1" = 200'
VERTICAL SCALE 1" = 20'



The conductor curve shown is that used for determining tower locations Datum: USCGS Cond: ACSR PHEASANT - MWT 16700 @ 1/2" ICE INSULATORS M&E 15000 LBS		UNITED STATES DEPARTMENT OF THE INTERIOR BONNEVILLE POWER ADMINISTRATION HEADQUARTERS, PORTLAND, OREGON	
OPER NAME CHG'D TWR SERIAL NOS ADDED LIS CASE 990492 OPER NAME ADDED TO McNARY-MAUPIN NO 1 OPER NAME CHG'D OPER NAME ADDED TWR 26/2 FTGS CHG'D		McNARY - MAUPIN NO 2 287 KV SINGLE CIRCUIT TRANSMISSION LINE LONG MILE 26 FROM McNARY (5298')	
NO. REVISION DATE APPROVED		REFERENCE DRAWINGS APPROVED DATE FOR RIGHT-OF-WAY FOR CONSTRUCTION	
DESIGNED: F.W.M. DRAWN: F.W.M. CHECKED: J.M.M. DATE: 7-54		APPROVED: J.M.M. DATE: 7-54 SHEET: 1-8-54 SERIAL: 79726 DWT: 123-13-D	