Consumers Energy

A CMS Energy Company

COPY

February 12, 2007

Michigan Electric Transmission Company, LLC
C/O NSI Consulting & Development, Inc.
26657 Woodward Ave., Suite 100
Huntington Woods, MI 48070

Attention: Executive Vice President and Chief Operating Officer

SUBJECT: Proposed Single Phase, 4800 Volt Distribution line

Reference No: 06646956/Chippewa/Isabella/Klender

REFERENCE: Amended and Restated Easement Agreement (the "Agreement") dated April 29, 2002, between Consumers Energy Company ("Consumers") and Michigan Electric Transmission Company, now Michigan Electric Transmission Company, LLC ("METC")

Pursuant to Section 7.1 of the Agreement, Consumers hereby notifies METC that Consumers intends to construct a distribution line across certain land in which METC has an interest under the Agreement. The location of the land on which said line will be constructed, and a further description of the intended use, are set forth on "Annex A", attached to this letter.

Under said Section 7.1 of the Agreement, METC must within 30 days of this notice notify Consumers, as "Initiating User," of whether or not METC approves the proposed use as a Compatible Use. If you do not notify us either way within 30 days of this notice, then, as provided in said Section 7.1, METC will be deemed to have approved the proposed use as being a Compatible Use. We would appreciate, however, receiving METC's express approval of the proposed use as being a Compatible Use as soon as possible so that we can start work without delay.

This letter is being sent to you in duplicate. If METC agrees that the proposed use is a Compatible Use, please indicate that by signing and returning a copy of this letter to us as soon as possible, so that we can immediately proceed with construction. The other copy is for your records.

Very truly yours,

Stacie Lahr

Stacie Lahr
Consumers Energy
One Energy Plaza
Jackson, MI 49201

APPROVED:

MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

By: _____

Date: APPROVED MAR 2 0 2007

ANNEX A

Reference No: 06646956/Chippewa/Isabella/Klender

LAND TO BE IMPACTED:

Land located in the Township of Chippewa, County of Isabella, State of Michigan, described as follows:

The Northeast 1/4 of Section 27, Township 14 North Range 3 West.

PROPOSED USE:

Building a new distribution line that crosses under a 138kV transmission line to service a new home. The distribution line will be crossing 25 feet East of pole #276 and will be 33 feet above ground. See attached 391 form, sketch, and plan and profile drawings.

Prepared by:
Stacie M Lahr 02/12/07
Consumers Energy Company
EP7-436
One Energy Plaza
Jackson, MI 49201

Consumers Energy

A CMS Energy Company

September 11, 2007

Michigan Electric Transmission Company
Attention: Fernando Guevara
39500 Orchard Hill Place, Suite 200
Novi, MI 48375

SUBJECT: Proposed Installation or Modifications of Additional Antennas to Existing Telecom Lease Site
Alltel Communications / Tower 970 / Section 7, City of Portage, Kalamazoo County

REFERENCE: Preliminary Review and Approval / Amended and Restated Easement Agreement (the "Agreement") dated April 29, 2002, between Consumers Energy Company ("Consumers") and Michigan Electric Transmission Company, now Michigan Electric Transmission Company, LLC ("METC")

Please find enclosed a copy of a completed "Application To Modify Existing Co-Location Site" from Alltel Communications. Alltel Communications currently has 3 antennas on this tower and are requesting to remove three and install six.

Enclosed you will find a copy of the previous structural analysis and loading information utilized in the analysis for the original installation.

We are asking that you review the attached information and respond as to the following:

☐ Consumers may rely on existing drawings as the tower structure has not been modified.

OR

☐ Enclosed are revised tower drawings.

☐ We have reviewed the loading criteria provided, examined our planned future uses and have no objections to the proposed use, subject to the completion of a favorable structural analysis.

This request is being forwarded to you in duplicate. If METC has no objections, please sign, date and return this letter to us as soon as possible. The second copy may be retained by METC for its records.

Consumers Energy Company
One Energy Plaza
Jackson, MI 49201
Attention: Paula Bamm

Very truly yours,

Paula K Bamm

Paula K. Bamm
Telecom & Facility Lease Manager
Business Services Real Estate

APPROVED:

MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

By: _____

Date: _____

Date: September 24, 2007

To: Fernando Guevara/ Barbara Mention
Real Estate and Rights of Way
ITC

From: David Doubley
Engineering
ITC

Subject: **ITC Project # USG071323/CU-290**
Modification Alltell Communications Cell Site. Remove 3 antennas and add 6 antennas.
Tower 008AB970, Drake Road-Milham
Section 7, City of Portage, Kalamazoo County.

Note, Tower number not correct in your request letter, change from 907 to 970 and change project number from USG2071322 to USG2071323.

After reviewing the information, this request is approved. The tower design has not been modified. Analysis of tower required to allow this work.

Approved

by: David Doubley
David Doubley
Engineer

Real Estate and Claims Division

Project No: USG071322 23
CU-290

Date: September 17, 2007

To: David Doubley
Engineering

From: Fernando Guevara
Real Estate

Subject: Proposed Installation or Modification of additional Antennas to Existing Telecom Lease Site 970
Alltel Communications/Tower 907/Section 7, City of Portage, Kalamazoo County, Michigan.

The attached request was received from Consumers Energy. Alltel Communications intends to install and modify an existing telecom lease site. Alltel Communications currently has three antennas on this tower and are requesting ***to remove three and install six***. Furthermore, pursuant to the Amended and Restated Easement Agreement, METC/ITC needs to submit a response letter to CE by ***October 15, 2007.***

Please review and return to my attention with your recommendations/comments.

Attachments

Form 391 12-2006

CONSUMERS ENERGY

NOTIFICATION OF PROPOSED LINE CONSTRUCTION REQUIRING COORDINATION WITH HVD AND/OR TRANSMISSION LINES

Send two (2) copies to:

Transmission Lines Design and Standards

Att: Justin Lancaster

Jackson, Michigan

TO BE FILLED IN BY SYSTEM OWNER / ENGINEER / CES

Headquarters Alma

Work Order No. 06646956

Date 1/31/07

PROPOSED DISTRIBUTION CONSTRUCTION

Sketch Attached ☒ Yes ☐ No

Primary:

Voltage 4800 Phase 1

No. of Wires 2 Crossarms Per Pole n/a

Wire Size 4 acsr Length of Crossarms n/a

Distance Below Transmission n/a

Skip-Span ☐ Yes ☒ No

Secondary:

No. of Wires n/a Wire Size n/a

Other Details: See included comments on print

PROPOSED COMMUNICATION CONSTRUCTION TO BE FILLED IN BY FIELD TECHNICIAN

Cable Dia. _____

Weight/ft. _____

Strand Size _____

Tension _____

Pole Attachment Height _____

Map # _____ Pole # _____

EXISTING DISTRIBUTION FACILITIES

Description: See included print

LOCATION

Township Chippewa

County Isabella

Town 14 Range 03 Section 27

Transmission Line Involved Summerton Line

Transmission Pole No. not marked

TO BE FILLED IN BY TRANSMISSION LINES DESIGN AND STANDARDS OR METC

Clearance/Attachment Approved ☐

Clearance/Attachment NOT Approved ☐

Clearance requires further verification with Power System Analysis ☐ Yes ☐ No

Structural Integrity - Engineering Required ☐ Yes ☐ No

Calculated assuming STE rating of _____ °F Cond Temp

Checked By _____ Date _____

GWO No. _____

☐ **METC Line**

REMARKS:

Prepared By Rich Klender Date _____

System Planning and Performance / Electric Service

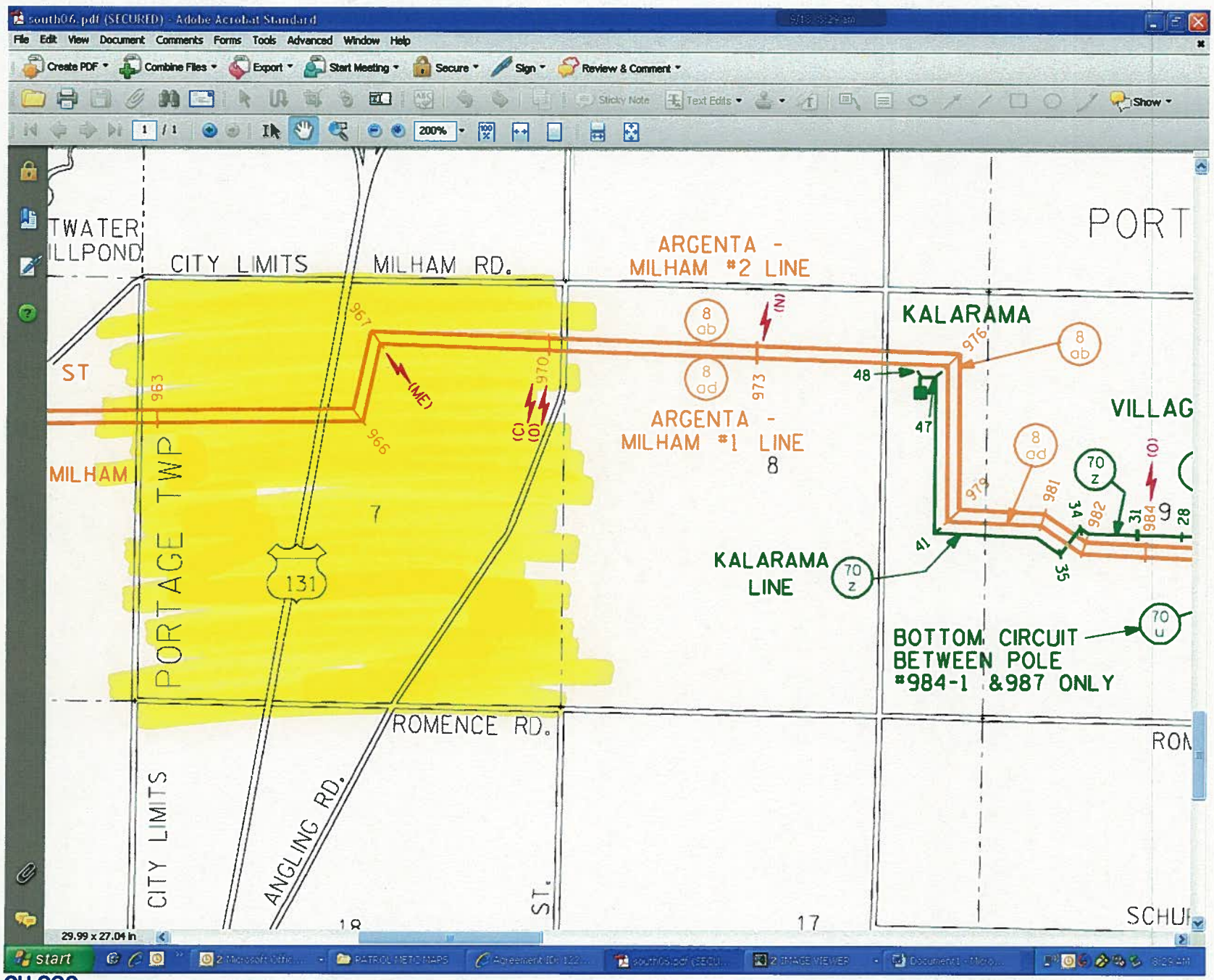
Reviewed By _____ Date _____

Transmission Lines Design and Standards

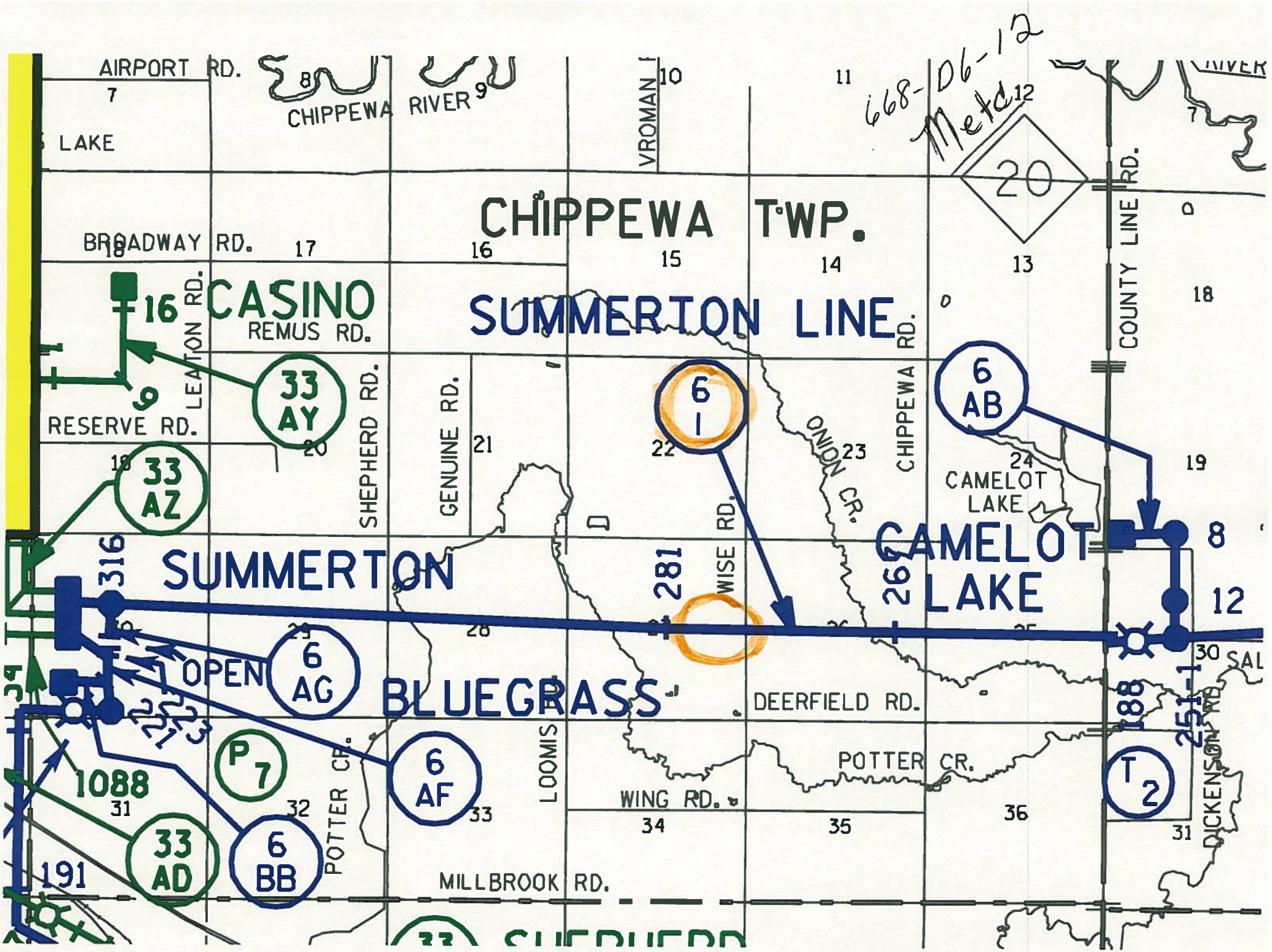
Reviewed By _____ Date _____

METC

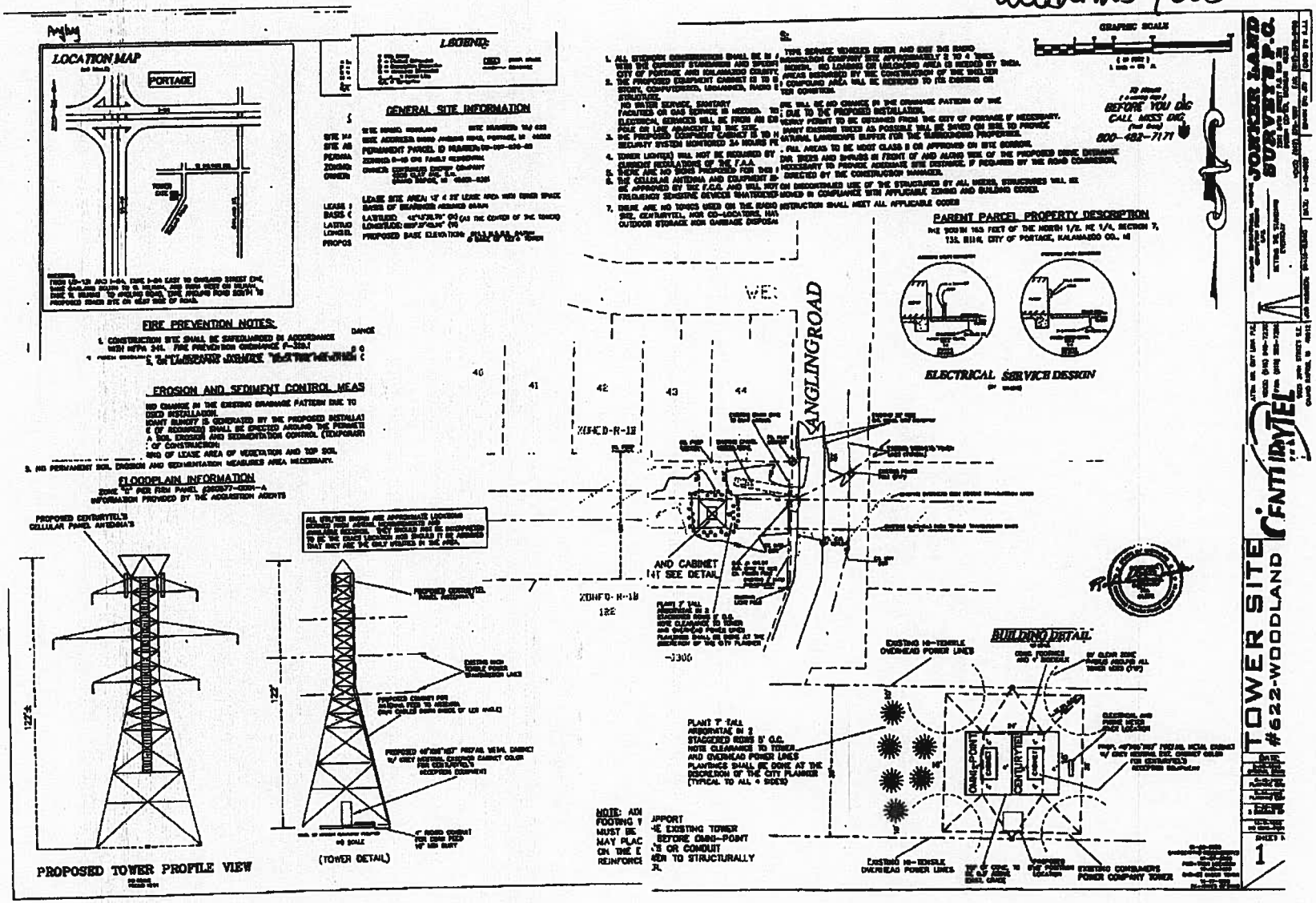
METC lines are subject to the easement rights of METC. Your request has been forwarded to Real Estate for processing and will require a 30-day period prior to approval.


south06.pdf (SECURED) - Adobe Acrobat Standard
File Edit View Document Comments Forms Tools Advanced Window Help
Create PDF
Combine Files
Export
Start Meeting
Secure
Sign
Review & Comment
TWATER
ILLPOND
CITY LIMITS
MILHAM RD.
ARGENTA -
MILHAM #2 LINE
PORT
KALARAMA
ST
MILHAM
PORTAGE TWP
963
967
966
970
973
976
(ME)
(C)
(O)
(N)
48
47
ARGENTA -
MILHAM #1 LINE
8
7
VILLAG
979
981
982
984
34
31
28
41
35
KALARAMA
LINE
BOTTOM CIRCUIT
BETWEEN POLE
#984-1 &987 ONLY
131
ROMENCE RD.
CITY LIMITS
ANGLING RD.
ST.
17
SCHU
29.99 x 27.04 in
start

CU-290


668-D6-12
Metc
AIRPORT RD.
CHIPPEWA RIVER
VROMAN
LAKE
CHIPPEWA TWP.
BROADWAY RD.
CASINO
REMUS RD.
SUMMERTON LINE
LEATON RD.
SHEPHERD RD.
GENUINE RD.
ONION CR.
CHIPPEWA RD.
COUNTY LINE RD.
RESERVE RD.
CAMELOT LAKE
SUMMERTON
WISE RD.
CAMELOT LAKE
OPEN
BLUEGRASS
DEERFIELD RD.
POTTER CR.
LOOMIS RD.
WING RD.
MILLBROOK RD.
DICKENSON RD.
16
9
33 AY
33 AZ
6 I
6 AB
316
281
269
8
12
6 AG
6 AF
P 7
1088
33 AD
6 BB
191
T 2
188
251-1

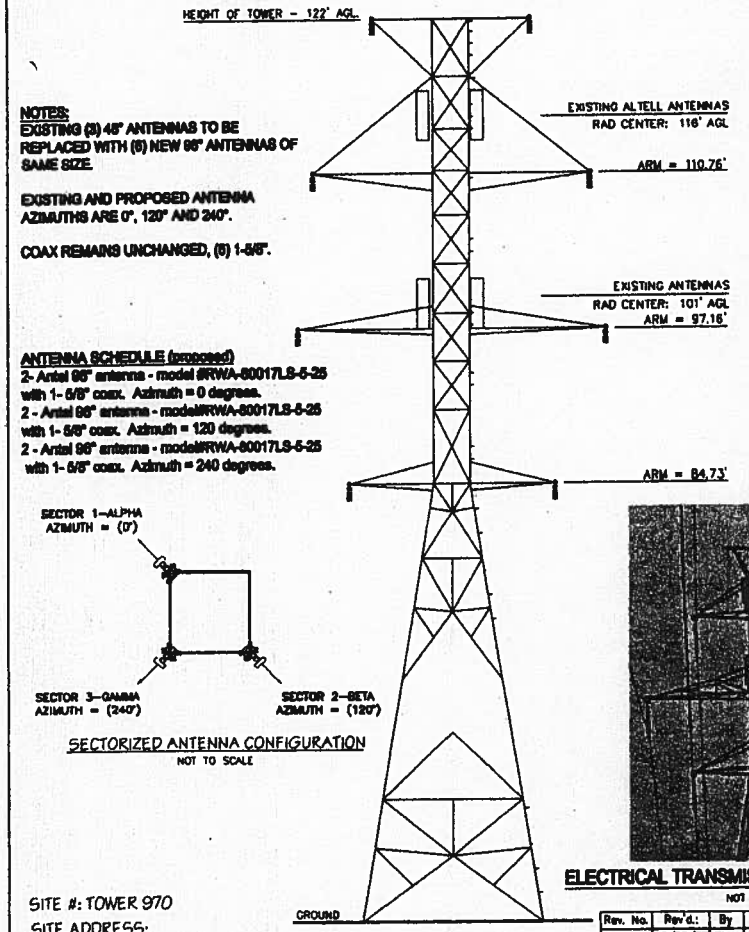
WOODLAND / OLD



WOODLAND / NEW

TOWER ELEVATION SKETCH

WOODLAND #622 / CONSUMERS ENERGY TOWER #970



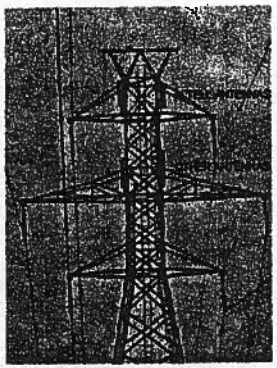
NOTES:
EXISTING (3) 48" ANTENNAS TO BE REPLACED WITH (6) NEW 96" ANTENNAS OF SAME SIZE.

EXISTING AND PROPOSED ANTENNA AZIMUTHS ARE 0°, 120° AND 240°.

COAX REMAINS UNCHANGED, (6) 1-5/8".

ANTENNA SCHEDULE (proposed)
2- Antel 96" antenna - model #RWA-80017LS-5-25 with 1- 5/8" coax. Azimuth = 0 degrees.
2 - Antel 96" antenna - model#RWA-80017LS-5-25 with 1- 5/8" coax. Azimuth = 120 degrees.
2 - Antel 96" antenna - model#RWA-80017LS-5-25 with 1- 5/8" coax. Azimuth = 240 degrees.

SECTORIZED ANTENNA CONFIGURATION
NOT TO SCALE



ELECTRICAL TRANSMISSION TOWER ELEVATION
NOT TO SCALE

SITE #: TOWER 970
SITE ADDRESS:
6150 ANGLING ROAD
CITY OF PORTAGE, MI

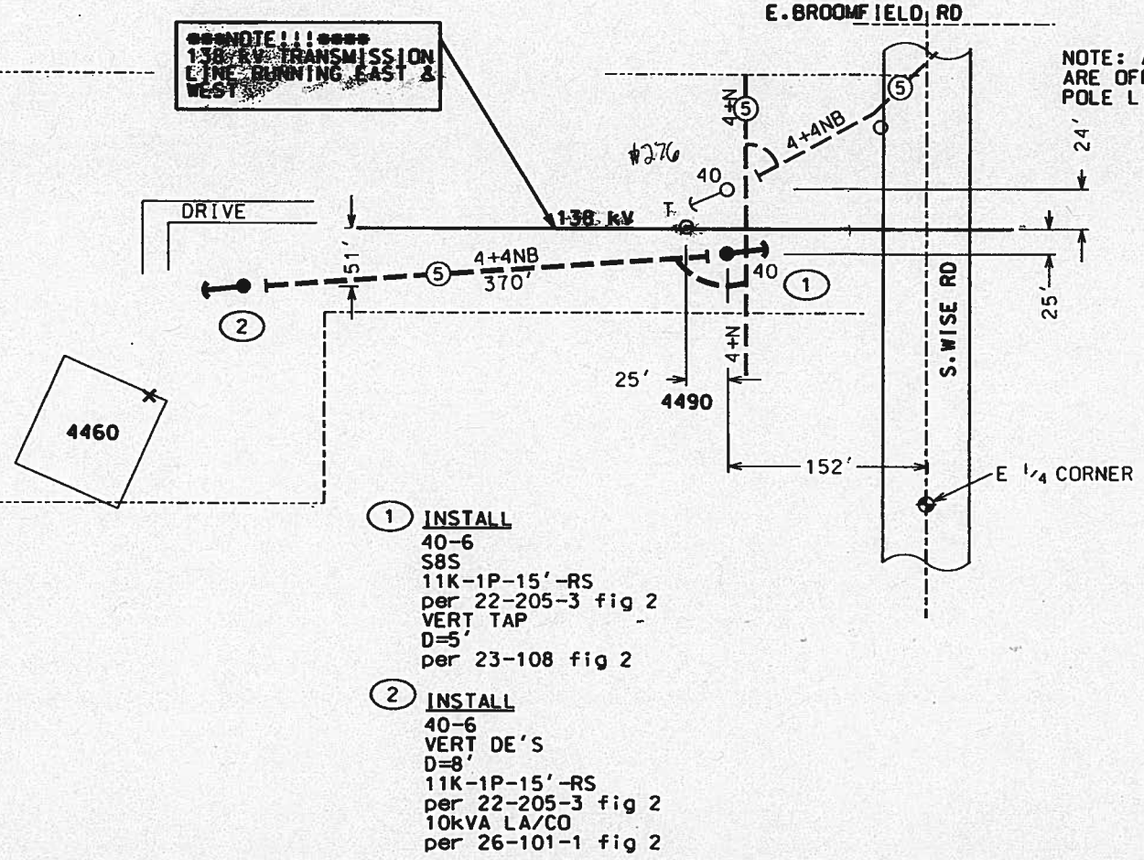
Rev. No.	Rev'd.:	By	Revision
0	03/28/07	PL	PRELIMINARY DRAWING

Client:
elltel
27725 STANSBURY BOULEVARD
FARMINGTON HILLS, MI 48334
(248) 865-0000

Sheet 1 of 1

Job:	0732205
Date:	03/28/07
Scale:	NONE
Drawn:	PL
Chk'd.:	M.T.M.

LANDTECH
PROFESSIONAL SURVEYING & ENGINEERING
MI-OH-IN-IL-WI-TN-NE-PA-WI-MN-MO-SD-KS-OK
231-843-8030 ph 231-843-8051 fax 877-526-LAND toll free
www.landtechps.com www.towersurveyors.com



NOTE: ALL DIMENSIONS GIVEN ARE OFF CENTER OF TRANSMISSION POLE LINE

ISABELLA CO
CHIPPEWA TWP
T14 R03 SEC.27

DESCRIPTION OF WORK:
TAPPING OFF DISTRIBUTION LINE TO SERVE NEW HOUSE. PROPOSED POLE LOCATIONS FROM NEAREST TRANSMISSION POLE.
NOTE: NO POLE NUMBERS ON POLES. CHECKED 1 POLE EACH WAY. NO #'S

PLEASE CALL RICH KLENDER 989-466-4279 IF ANY QUESTIONS

(1) INSTALL
40-6
S8S
11K-1P-15'-RS
per 22-205-3 fig 2
VERT TAP
D=5'
per 23-108 fig 2

(2) INSTALL
40-6
VERT DE'S
D=8'
11K-1P-15'-RS
per 22-205-3 fig 2
10kVA LA/CO
per 26-101-1 fig 2

-CONSTRUCTION CERTIFICATION-
Work was constructed as Engineered or Changed as Indicated.
All Salvageable Material Was Returned to Stores.

Signed _____ in Direct Charge of Work

Dates: Started _____ Completed _____

MISS DIG NUMBER: _____ DATE: _____

STAKED	[X] YES	[ ] NO
TREES	[X] YES	[ ] NO

TLM NUMBER	# OF RODS	OHMS
1403274102		

Consumers Energy
A CMS Energy Company ELECTRIC

DESIGNED BY	DATE
R.Klender	01/31/07
APPROVED BY	DATE
SHEET 1 OF 1	SCALE 1=100

4460 WISE

For: JEREMY HUDECZ
4460 S WISE RD
CHIPPEWA

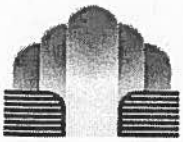
SUBSTATION	WD NO.	
SHEPHERD	0006	
CIRCUIT	CKT NO.	LCP NO.
FOREST HIL	02	0534

TAX CODE		REQUEST NO.	
370429		03041017	
UTIL.TYPE	CATEGORY	TYPE	WORK ORDER
EO	NBUS	OHLN	06646956

CAD FILE: 06646956.001

ELECTRIC CAD TITLE BLOCK (11x17) 6-11-2001
SHEET B
01/31/2007 02:38:47 PM d:\of\backup\wrod\ustn\dgn\06646956.001

T R S 140327



Richard W
Klender/Al/Consumers/CMS
02/12/2007 09:35 AM

To Stacie M Lahr/Pr/Consumers/CMS@CMS
cc
bcc
Subject Crossing Height at 4460 Wise Rd, Mt. Pleasant

Stacie: The height of the distribution at the point it crosses the transmission line is 33 feet ground to top wire.

If you have any other questions, please call or email.

Thanks!
Rich

LINE NAME: 6I -- #316 TO #47 (BULLOCK-SUMMERTON)
STRUCTURE #: 272 ORDER: 46

LINE NO/LTR:	6I
STRUCT #:	272
OP VOLTAGE:	138
STN/EQ:	228.10
BACK SPAN:	530.00
DEFLECTION:	
TYPE:	WOOD POLE
POLE HT:	65
POLE CLASS:	3
CONST TYPE:	SA

STRUCTURE

DWG	SHT	LTR	FIG	REV	COMMENTS
SDM025134	1	B			

REMARKS:

GUYING:

CONDUCTORS

LINE 6I

TYPE: 336.4 KCMIL ACSR
DES VOLTAGE: 138

DRAWINGS:	NUM	SHT	LTR	FIG	REV
SAG:	SDM025531				

SPACER RMKS:

REMARKS

6I: SAG 336.4 KCMIL ACSR FROM SUMMERTON SUB PER SDM025531 SH 4.

GROUND WIRE

LINE 6I

TYPE:

DRAWINGS:	NUM	SHT	LTR	FIG	REV
SAG:	SDM025537				

REMARKS

6I: SAG 5/16" STEEL FROM SUMMERTON SUB PER SDM025537 SH 2.

ELEVATIONS

GROUNDLINE:
SETTING:
CENTERLINE:

FRAMING

DWG	SHT	LTR	FIG	REV
MZ0000909			22	

CON LIST

DWG	SHT	LTR	FIG	REV
T13800610	7			

GENERAL REMARKS

LOCATION

PROP OWNER: B.GILMORE
PARCEL NO: 98
REMARKS:

RIGHT-OF-WAY:
COUNTY: ISABELLA
TOWNSHIP: CHIPPEWA
TOWN/RANGE: T14N,R03W
SECTION: 26

REVISION

LETTER: A
GWO:
RS NO:
NOTES: CHG'D LINE LETTER FOR RECORD (JEO,HJE)

REV DESIGNER:
REV ENGINEER:
REVISION DATE: 7/13/1972
DESIGNER: RGH
ENGINEER: ACF,WAC,FFY
ENGINEER DATE: 7/30/1969

DIVISION HEAD: PAMULHEARN
DEPT HEAD:

LINE NO/LTR:	6I
STR ORDER:	46
STRUCT #:	272

LINE NAME: 6I – #316 TO #47 (BULLOCK-SUMMERTON)
STRUCTURE #: 273 *ORDER:* 45

LINE NO/LTR:	6I
STRUCT #:	273
OP VOLTAGE:	138
STN/EQ:	222.80
BACK SPAN:	540.00
DEFLECTION:	
TYPE:	WOOD POLE
POLE HT:	65
POLE CLASS:	3
CONST TYPE:	SA

STRUCTURE

DWG	*SHT*	*LTR*	*FIG*	*REV*	*COMMENTS*
SDM025134	1	B			

REMARKS:

GUYING:

CONDUCTORS

LINE 6I

TYPE: 336.4 KCMIL ACSR
DES VOLTAGE: 138
DRAWINGS: *NUM* *SHT* *LTR* *FIG* *REV*
SAG: SDM025531
SPACER RMKS:

REMARKS

6I: SAG 336.4 KCMIL ACSR FROM SUMMERTON SUB PER SDM025531 SH 4.

ELEVATIONS

GROUNDLINE:
SETTING:
CENTERLINE:

FRAMING

DWG	*SHT*	*LTR*	*FIG*	*REV*
MZ0000909			22	

CON LIST

DWG	*SHT*	*LTR*	*FIG*	*REV*
T13800610	7			

GROUND WIRE

LINE 6I

TYPE:
DRAWINGS: *NUM* *SHT* *LTR* *FIG* *REV*
SAG: SDM025537

REMARKS

6I: SAG 5/16" STEEL FROM SUMMERTON SUB PER SDM025537 SH 2.

GENERAL REMARKS

LOCATION

PROP OWNER: B.GILMORE
PARCEL NO: 98
REMARKS:

RIGHT-OF-WAY:
COUNTY: ISABELLA
TOWNSHIP: CHIPPEWA
TOWN/RANGE: T14N,R03W
SECTION: 26

REVISION

LETTER: A
GWO:
RS NO:
NOTES: CHG'D LINE LETTER FOR RECORD (JEO,HJE)

REV DESIGNER:
REV ENGINEER:
REVISION DATE: 7/13/1972
DESIGNER: RGH
ENGINEER: ACF,WAC,FFY
ENGINEER DATE: 7/30/1969

DIVISION HEAD: PAMULHEARN
DEPT HEAD:

LINE NO/LTR:	6I
STR ORDER:	45
STRUCT #:	273

LINE NAME: 6I -- #316 TO #47 (BULLOCK-SUMMERTON)
STRUCTURE #: 274 ORDER: 44

LINE NO/LTR:	6I
STRUCT #:	274
OP VOLTAGE:	138
STN/EQ:	217.40
BACK SPAN:	450.00
DEFLECTION:	
TYPE:	WOOD POLE
POLE HT:	65
POLE CLASS:	3
CONST TYPE:	SA

STRUCTURE

DWG	SHT	LTR	FIG	REV	COMMENTS
SDM025134	1	B			

REMARKS:

GUYING:

CONDUCTORS

LINE 6I

TYPE: 336.4 KCMIL ACSR
DES VOLTAGE: 138
DRAWINGS: NUM SHT LTR FIG REV
SAG: SDM025531
SPACER RMKS:

REMARKS

6I: SAG 336.4 KCMIL ACSR FROM SUMMERTON SUB PER SDM025531 SH 4.

ELEVATIONS

GROUNDLINE:
SETTING:
CENTERLINE:

FRAMING

DWG	SHT	LTR	FIG	REV
MZ0000909			22	

CON LIST

DWG	SHT	LTR	FIG	REV
T13800610	7			

GROUND WIRE

LINE 6I

TYPE:
DRAWINGS: NUM SHT LTR FIG REV
SAG: SDM025537

REMARKS

6I: SAG 5/16" STEEL FROM SUMMERTON SUB PER SDM025537 SH 2.

GENERAL REMARKS

LOCATION

PROP OWNER: B.GILMORE
PARCEL NO: 98
REMARKS:

RIGHT-OF-WAY:
COUNTY: ISABELLA
TOWNSHIP: CHIPPEWA
TOWN/RANGE: T14N,R03W
SECTION: 26

REVISION

LETTER: A
GWO:
RS NO:
NOTES: CHG'D LINE LETTER FOR RECORD (JEO,HJE)

REV DESIGNER:
REV ENGINEER:
REVISION DATE: 7/13/1972
DESIGNER: RGH
ENGINEER: ACF,WAC,FFY
ENGINEER DATE: 7/30/1969

DIVISION HEAD: PAMULHEARN
DEPT HEAD:

LINE NO/LTR:	6I
STR ORDER:	44
STRUCT #:	274

LINE NAME: 6I – #316 TO #47 (BULLOCK-SUMMERTON)
STRUCTURE #: 275 *ORDER:* 43

LINE NO/LTR:	6I
STRUCT #:	275
OP VOLTAGE:	138
STN/EQ:	212.90
BACK SPAN:	430.00
DEFLECTION:	
TYPE:	WOOD POLE
POLE HT:	65
POLE CLASS:	2
CONST TYPE:	SA

STRUCTURE

DWG	*SHT*	*LTR*	*FIG*	*REV*	*COMMENTS*
SDM025134	1	B			

REMARKS:

GUYING:

CONDUCTORS

LINE 6I

TYPE: 336.4 KCMIL ACSR
DES VOLTAGE: 138
DRAWINGS: *NUM* *SHT* *LTR* *FIG* *REV*
SAG: SDM025531
SPACER RMKS:

REMARKS

6I: SAG 336.4 KCMIL ACSR FROM SUMMERTON SUB PER SDM025531 SH 4.

GROUND WIRE

LINE 6I

TYPE:
DRAWINGS: *NUM* *SHT* *LTR* *FIG* *REV*
SAG: SDM025537

REMARKS

6I: SAG 5/16" STEEL FROM SUMMERTON SUB PER SDM025537 SH 2.

ELEVATIONS

GROUNDLINE:
SETTING:
CENTERLINE:

FRAMING

DWG	*SHT*	*LTR*	*FIG*	*REV*
MZ0000909			22	

CON LIST

DWG	*SHT*	*LTR*	*FIG*	*REV*
T13800610	7			

GENERAL REMARKS

208.74 - 2/W DIST, 2/W TELE UB, 210.45 - CL WISE ROAD, SECTION LINE, PROPERTY LINE, WARNING - BURIED TEL CABLE, 210.70 - FENCE

LOCATION

PROP OWNER: B.GILMORE
PARCEL NO: 98
REMARKS:

RIGHT-OF-WAY:
COUNTY: ISABELLA
TOWNSHIP: CHIPPEWA
TOWN/RANGE: T14N,R03W
SECTION: 26

REVISION

LETTER: A
GWO:
RS NO:
NOTES: CHG'D LINE LETTER FOR RECORD (JEO,HJE)

REV DESIGNER:
REV ENGINEER:
REVISION DATE: 7/13/1972
DESIGNER: RGH
ENGINEER: ACF,WAC,FFY
ENGINEER DATE: 7/30/1969

DIVISION HEAD: PAMULHEARN
DEPT HEAD:

LINE NO/LTR:	6I
STR ORDER:	43
STRUCT #:	275

LINE NAME: 6I -- #316 TO #47 (BULLOCK-SUMMERTON)
STRUCTURE #: 276 ORDER: 42

LINE NO/LTR:	6I
STRUCT #:	276
OP VOLTAGE:	138
STN/EQ:	208.60
BACK SPAN:	380.00
DEFLECTION:	
TYPE:	WOOD POLE
POLE HT:	70
POLE CLASS:	2
CONST TYPE:	SA

STRUCTURE

DWG	SHT	LTR	FIG	REV	COMMENTS
SDM025134	1	B			

REMARKS:

GUYING:

CONDUCTORS

LINE 6I

TYPE: 336.4 KCMIL ACSR
DES VOLTAGE: 138
DRAWINGS: NUM SHT LTR FIG REV
SAG: SDM025531
SPACER RMKS:

REMARKS

6I: SAG 336.4 KCMIL ACSR FROM SUMMERTON SUB PER SDM025531 SH 4.

GROUND WIRE

LINE 6I

TYPE:
DRAWINGS: NUM SHT LTR FIG REV
SAG: SDM025537

REMARKS

6I: SAG 5/16" STEEL FROM SUMMERTON SUB PER SDM025537 SH 2.

ELEVATIONS

GROUNDLINE:
SETTING:
CENTERLINE:

FRAMING

DWG	SHT	LTR	FIG	REV
MZ0000909			22	

CON LIST

DWG	SHT	LTR	FIG	REV
T13800610	6			

GENERAL REMARKS

LOCATION

PROP OWNER: E.SEELEY
PARCEL NO: 100
REMARKS:

RIGHT-OF-WAY:
COUNTY: ISABELLA
TOWNSHIP: CHIPPEWA
TOWN/RANGE: T14N,R03W
SECTION: 27

REVISION

LETTER: B
GWO:
RS NO:
NOTES: CHG'D LINE LETTER FOR RECORD (JEO,HJE)

REV DESIGNER:
REV ENGINEER:
REVISION DATE: 7/13/1972
DESIGNER: RGH
ENGINEER: ACF,WAC,FFY
ENGINEER DATE: 7/30/1969

DIVISION HEAD: PAMULHEARN
DEPT HEAD:

LINE NO/LTR:	6I
STR ORDER:	42
STRUCT #:	276

LINE NAME: 6I – #316 TO #47 (BULLOCK-SUMMERTON)
STRUCTURE #: 277 ORDER: 41

LINE NO/LTR:	6I
STRUCT #:	277
OP VOLTAGE:	138
STN/EQ:	204.80
BACK SPAN:	530.00
DEFLECTION:	
TYPE:	WOOD POLE
POLE HT:	65
POLE CLASS:	3
CONST TYPE:	SA

STRUCTURE

DWG	SHT	LTR	FIG	REV	COMMENTS
SDM025134	1	B			

REMARKS:

GUYING:

CONDUCTORS

LINE 6I

TYPE: 336.4 KCMIL ACSR
DES VOLTAGE: 138
DRAWINGS: NUM SHT LTR FIG REV
SAG: SDM025531
SPACER RMKS:

REMARKS

6I: SAG 336.4 KCMIL ACSR FROM SUMMERTON SUB PER SDM025531 SH 4.

ELEVATIONS

GROUNDLINE:
SETTING:
CENTERLINE:

FRAMING

DWG	SHT	LTR	FIG	REV
MZ0000909			22	

CON LIST

DWG	SHT	LTR	FIG	REV
T13800610	6			

GROUND WIRE

LINE 6I

TYPE:
DRAWINGS: NUM SHT LTR FIG REV
SAG: SDM025537

REMARKS

6I: SAG 5/16" STEEL FROM SUMMERTON SUB PER SDM025537 SH 2.

GENERAL REMARKS

LOCATION

PROP OWNER: E.SEELEY
PARCEL NO: 100
REMARKS:

RIGHT-OF-WAY:
COUNTY: ISABELLA
TOWNSHIP: CHIPPEWA
TOWN/RANGE: T14N,R03W
SECTION: 27

REVISION

LETTER: B
GWO:
RS NO:
NOTES: CHG'D LINE LETTER FOR RECORD (JEO,HJE)

REV DESIGNER:
REV ENGINEER:
REVISION DATE: 7/13/1972
DESIGNER: RGH
ENGINEER: ACF,WAC,FFY
ENGINEER DATE: 7/30/1969

DIVISION HEAD: PAMULHEARN
DEPT HEAD:

LINE NO/LTR:	6I
STR ORDER:	41
STRUCT #:	277

WOODLAND
ITC

Consumers Energy
Application To Modify Existing Co-location Site

CLIENT INFORMATION	
Company Name:	ALLTEL COMMUNICATIONS
Contact Person:	STEVE EARLS
Contact Address:	S.E.A. WIRELESS, INC. 6312 W. MAIN ST. KALAMAZOO, MI 49009
Contact Telephone #'s:	269-372-7100 616-291-0711
Contact Fax #:	269-372-7112
Construction Coordinator Name:	TBD
Construction Coordinator Phone #:	TBD.

SITE INFORMATION	
Consumers Energy Site Identification (Name/#):	* TOWER 970
Client Site Identification (Name/#):	WOODLAND
Site Address:	6150 ANGLING RD. KALAMAZOO, MI
Section, Town, Range:	
Township:	PORTAGE CITY
County:	KALAMAZOO
Latitude/Longitude:	42° 13' 36.8" -85° 37' 45.2

STRUCTURAL ANALYSIS/EQUIPMENT DATA	
Type of infrastructure: (Transmission tower, communications tower, distribution tower/pole, raw land, etc.)	TRANSMISSION TOWER #970
EXISTING EQUIPMENT:	
Antenna Type/Part Number(s):	RR70-12-00-A2
Antenna Mount Height:	116'
Antenna Quantity:	THREE
Microwave Dish Type/Part Number:	N/A
Microwave Dish Quantity:	N/A
Co-axial Cable Size & Quantity:	6 COAX LINES 1 5/8"
Transmit and Receive Frequencies:	
Shelter or Cabinet:	SHELTER

EQUIPMENT TO REMOVE:	
Antenna Type/Part Number(s):	RR70-12-00-A2
Antenna Mount Height:	116'
Antenna Quantity:	THREE
Microwave Dish Type/Part Number:	N/A
Microwave Dish Quantity:	N/A
Co-axial Cable Size & Quantity:	N/A
Transmit and Receive Frequencies:	T 836.52-881.52 / R. 880-890
Shelter or Cabinet:	

EQUIPMENT TO ADD:	
Antenna Type/Part Number(s):	RWA-800176S-5-25
Antenna Mount Height:	116'
Antenna Quantity:	6
Microwave Dish Type/Part Number:	N/A
Microwave Dish Quantity:	N/A
Co-axial Cable Size & Quantity:	N/A
Transmit and Receive Frequencies:	
Shelter or Cabinet:	

WOODLAND

THE ANTENNA SPECIFICATION/CUT SHEETS INDICATING THE ANTENNA'S MECHANCIAL AND ELECTRICAL SPECIFICATIONS MUST BE ATTACHED TO THIS APPLICATION.

WORK DESCRIPTION	
Brief description of deliverable: (Please be certain to provide enough detail to clearly describe what equipment will be installed on both the tower and the ground AFTER the modification has been completed).	REMOVING 3 EXISTING ANTENNAS AND ADDING 6 ANTENNAS USING SAME COAX.

* Provided by Consumers Energy

DATE SUBMITTED: 3/30/07	PROPOSED BUILD MONTH: ASAP

APPLICATION/ADMINISTRATIVE FEE:
An application and/or administrative fee is required to process this application, depending on the terms of the applicant's general lease agreement with Consumers Energy. The Application Fee is $500.00, and the Administrative Fee (if required) is $500.00.

INSTRUCTIONS:

1. Read entire application and sign the application.
2. Return the following items to the address below: - Please do not send VIA Email
   - One (1) signed copy of this application,
   - Antenna specification/cut sheets,
   - Proposed site map (if exact address is unavailable), and
   - $500 Administrative and/or $500 Application Fee (make check(s) payable to Consumers Energy Company).
   - Send to:
     Paula K Bamm
     Consumers Energy Company
     Telecom Leasing Project
     One Energy Plaza
     Jackson, MI 49201-2276

GENERAL INFORMATION:
An engineering and operating review of your request MUST be made. Questions regarding progress may be directed to the Telecom Leasing Project (Paula Bamm 517-788-1752).

- If proposed site is a transmission tower co-location, seven copies of the site plans and construction drawings will need to be submitted when available.
- If proposed site is a communications tower co-location, three copies of the site plans and construction drawings will need to be submitted when available.
- All other proposed co-location or raw land installations require seven copies of the site plans and construction drawings be submitted when available.

Applicant understands that it is not obtaining an option, right of first refusal, or any other interest in the property in question by virtue of this application or the enclosed payment. Applicant also understands that Consumers Energy Company may (1) Not be able to lease the property; (2) Refuse to lease the property; and/or (3) Lease the property subject to any conditions, restriction or reservations it deems necessary or desirable.

Applicant acknowledges reading this application and understands that the $500.00 Administrative Fee is non-refundable. The $500 Application Fee will be refunded ONLY if Consumers Energy Company is unable to rent the requested space due to factors within Consumers Energy Company's control.

Stephen M Earls — Applicant's Signature

3/30/07 — Date Signed

This application for Schedule A to Lease Site has been APPROVED/APPROVED SUBJECT TO: /DENIED (circle one).

Consumers Energy Company Representative

Date Signed

TOWER SITE DETAIL Schedule A
(Please do not invoice from this document)

Date: February 7, 2000

Regarding a Lease made the 13th day of February 1998 between CONSUMERS ENERGY COMPANY, a Michigan corporation, 212 West Michigan Avenue, Jackson, Michigan 49201, "Landlord," and CENTURYTEL PERSONAL ACCESS NETWORK, INC., a Louisiana corporation, P.O. Box 4065, Monroe, Louisiana 71211-4065, "Tenant."

Site Name: **Woodland #622 (Consumers Energy Tower #970)**
Site Coordinates: Lat: N 42°13'38" Long: 85°37'45"
Site Address: **6150 Angling Road, City of Portage, Kalamazoo County, Michigan**

Landlord Contract Manager: Jack M Decker Landlord Contract Manager Telephone: (517) 788-0055
Landlord Implementation Manager: Wendy C Allen Landlord Implementation Manager Telephone: (517) 788-1089
Landlord Site Manager: Richard G. Cottrell Landlord Site Manager Telephone: (517) 788-0817

Tenant Name: CenturyTel
Tenant Contact: Guy Link
Contact Address: 5025 28th Street SE, Grand Rapids, Michigan 49512
Tenant Telephone: (616) 285-7230
Tenant Fax: (616) 285-7396

First Year-Initial Term:	January 20, 2000 - January 19, 2001	First Year-Initial Term Rent:	$15,000/year
Second Year-Initial Term:	January 20, 2001 - January 19, 2002	Second Year-Initial Term Rent:	$15,600/year
Third Year-Initial Term:	January 20, 2002 - January 19, 2003	Third Year-Initial Term Rent:	$16,224/year
Fourth Year-Initial Term:	January 20, 2003 - January 19, 2004	Fourth Year-Initial Term Rent:	$16,873/year
Fifth Year-Initial Term:	January 20, 2004 - January 19, 2005	Fifth Year-Initial Term Rent:	$17,548/year

Intended Site Use: Install antennas on tower and install equipment shelter or cabinets near tower.

Electric Energy charge of $100.00 per month if metering is not obtained by tenant.

Tenant is authorized to install and maintain the following antenna and systems equipment:

Antenna	Brand/Model	Mount Height	Azimuth	Mounting Leg	Transmission Line	Operating Frequencies Transmit/Receive
3	RR90-17-00DP	114 feet	0-120-240		1/5/8"	Tx 1945-1950 MHZ Rx 1865-1870 MHZ

The above-mentioned antennas may be replaced with the below mentioned antennas at a future date, provided that a new structural analysis is performed and the results are favorable.

Installed Equipment Description:

Rack	Qty.	Manufacturer	Description	Model

See Site Plan for approved tower and ground details.

EMS Wireless

RR70-12-XXXA2

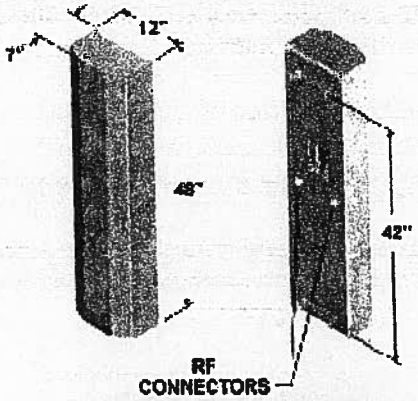
DualPol® Polarization

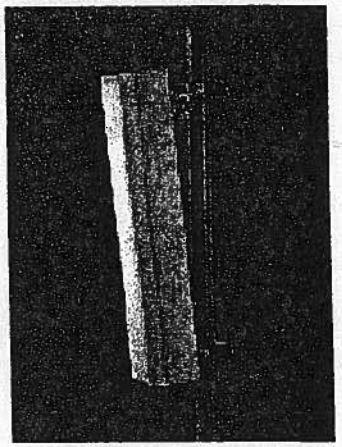
806 MHz - 896 MHz

OptiRange™

Electrical Specifications

Azimuth Beamwidth	70°
Elevation Beamwidth	15°
Gain	11.2 dBd (13.1 dBi)
Polarization	Dual Linear, Slant (± 45°)
Port-to-Port Isolation	≥ 20 dB
Front-to-Back Ratio	≥ 26 dB
Electrical Downtilt Options	0°, 5°
VSWR	1.35:1 Max
Connectors	2; Type N or 7-16 DIN (female)
Power Handling	500 Watts CW
Passive Intermodulation	≤ -150 dBc [2 x 20W (+ 43 dBm)]
Lightning Protection	Chassis Ground





Mechanical Specifications

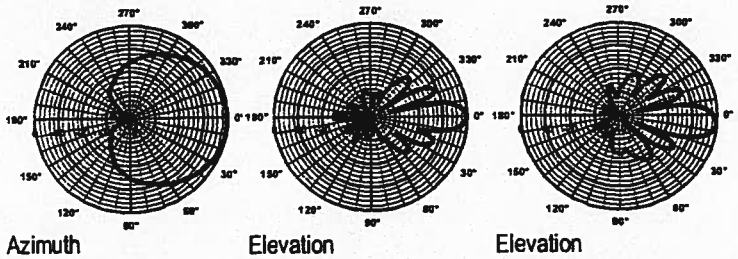
Dimensions (L x W x D)	48 in x 12 in x 7 in (121.9 cm x 30.5 cm x 17.8 cm)
Rated Wind Velocity	130 mph (209 kph)
Equivalent Flat Plate Area	4 ft² (.37 m²)
Front Wind Load @ 100 mph (161 kph)	118 lbs (525 N)
Side Wind Load @ 100 mph (161 kph)	69 lbs (308 N)
Weight (Without Mounting Kit)	18 lbs (8 kg)

Mounting Options

MTG-P00-10, MTG-S02-10, MTG-DXX-20*, MTG-CXX-10*, MTG-C02-10, MTG-TXX-10*

*Note: *Model number shown represents a series of products. See Mounting Options section for specific model number.*

Patterns



Azimuth | Elevation 0° Downtilt | Elevation 5° Downtilt

Revised 04/20/04

+1 770.582.0555 ext. 5310 • Fax +1 770.729.0036
www.emswireless.com

Vertically Polarized, Panel 62° / 16 dBd

RWA-80017LS ___ 5° 25%

When ordering, replace "___" with connector type.

Mechanical specifications

Length	2450 mm	96.5 in
Width	285 mm	11.2 in
Depth	160 mm	6.3 in
[4] Weight	14 kg	31.0 lbs
Wind Area	0.698 m^2	7.51 ft^2
Wind load at 50 m/s	1140 N	256 lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting & Downtilting:

Mounting brackets attach to a pipe diameter of Ø50-160 mm (2.0-6.3 in).

Mounting bracket kit #36210002

Downtilt bracket kit #36114003

Electrical specifications

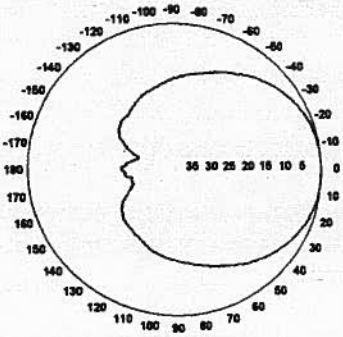
Frequency Range	806-941 MHz*
Impedance	50Ω
[3] Connector	NE, E-DIN
[1] VSWR	≤1.4:1
Polarization	Vertical
[1] Gain	16 dBd
[2] Power Rating	500 W
[1] Half Power Angle	
H-Plane	62°
E-Plane	7°
[1] Electrical Downtilt	5°
[1] Null Fill	25%
Lightning Protection	Direct Ground

*Also available up to 960 MHz. Consult your sales director for more information.

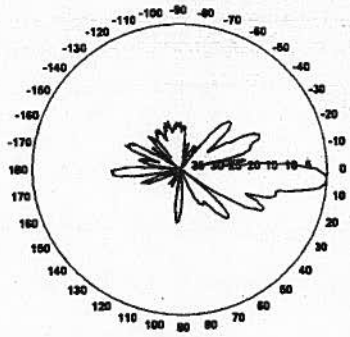
[1] Typical Values
[2] Power Rating limited by connector only.
[3] NE indicates an elongated N Connector.
E-DIN indicates an elongated DIN Connector.
[4] The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation-pattern[1]



Horizontal

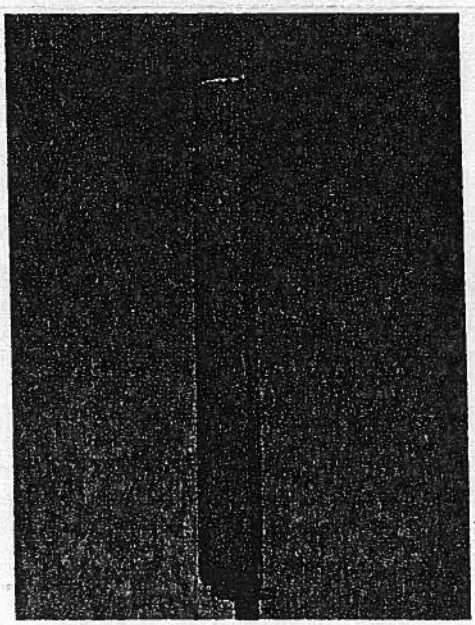


Vertical

Specially designed for enhanced upper side lobe suppression.

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back Ratio.



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- A 1¼" four-channel extrusion running the entire length of the antenna for unmatched strength and rigidity.
- Durable brass feedline design that eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad band width and superior performance.
- Air as insulation for virtually no internal signal loss.

Every Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with bottom-fed connector only.

806-941 MHz

Amphenol Antel, Inc.
The Antenna Technology Company

1300 Capital Drive Rockford, IL 61109 Toll-Free (888) 417-9562 Tel. (815) 399-0001
Fax. (815) 399-0156 Email: antel@antelinc.com www.antelinc.com

Revision Date: 6/3/04

Tower Loading Calculations

TOWER #970 TOWER LOADS

Variable Assignment:

800	=	Wind Span (feet)	
1040	=	Weight Span (feet)	
0.273	=	Shield Wire Weight (pound/foot)	**Shield Wire:** 3/8" HS Steel (7 Str)
0.808	=	Shield Wire Weight (+ 1/2" radial ice) (pound/foot)	
1.613	=	Conductor Weight (pound/foot)	**Conductor:** 1431 Kcmil 45/7 Str. ACSR (Bobolink)
2.182	=	Conductor Weight (+ 1/2" radial ice) (pound/foot)	
0.36	=	Shield Wire Diameter (inches)	
1.36	=	Shield Wire Diameter (+ 1/2" radial ice) (inches)	
1.427	=	Conductor Diameter (inches)	
2.427	=	Conductor Diameter (+ 1/2" radial ice) (inches)	
0.83	=	Line Angle (degrees)	
4500	=	Shield Wire Tension (Nesc Heavy) (pounds)	
12830	=	Conductor Tension (Nesc Heavy) (pounds)	
3299	=	Shield Wire Tension (Nesc Extreme Wind) (pounds)	
10725	=	Conductor Tension (Nesc Extreme Wind) (pounds)	

Load Case #1 NESC Heavy (1997 OLF)

SW

V = 1.5 * Weight Span * Shield Wire Weight
= **1260**

T = 2.5 * Wind Span * Shield Wire Diameter * 1 FT/ 12 IN * 4 PSF
+ 1.65 * 2 * SIN (Line Angle/2) * Shield Wire Tension
= **1015**

COND

V = 1.5 * Weight Span * Conductor Weight
= **3404**

T = 2.5 * Wind Span * Conductor Diameter * 1 FT/ 12 IN * 4 PSF
+ 1.65 * 2 * SIN (Line Angle/2) * Conductor Tension
= **1926**

TOWER

WIND 4 * (2.5 * 2 Faces * 1.6)/2
= **16** PSF/FACE DRAG FACTOR = 1.0

DEAD LOAD = **DL * 1.5**

CABLE BELOW JOINT 4

V = 3.00 #/ft

T = 4.38 #/ft

CABLE BELOW JOINT 10

V = 6.00 #/ft

T = 8.76 #/ft

JOINT LOAD DUE TO WIND ON CABLES ON LEGS

Joint	Cable Lengths	Vertical	Transverse
4S	5.20	16	23
5S	4.50	14	20
6S	4.50	14	20
7S	4.30	13	19
8S	4.00	12	18
9S	4.30	13	19
10P	5.40	32	47
11S	6.50	39	57
12S	6.90	41	60
13S	7.10	43	62
14S	17.00	102	149
15S	29.00	174	254

JOINT LOAD DUE TO ANTENNA

Joint	Vertical	Transverse
3P	69	43
31	69	43
32	41	26
33	41	26
4S	69	43
41	69	43
42	41	26
43	41	26
6S	45	25
61	45	25
62	45	25
7S	45	25
71	45	25
72	45	25

TOTAL JOINT LOADS

Joint	Vertical	Transverse
3P	69	43
31	69	43
32	41	26
33	41	26
4S	85	66
41	69	43
42	41	26
43	41	26
5S	14	20
6S	58	45
61	45	25
62	45	25
7S	57	44
71	45	25
72	45	25
8S	12	18
9S	13	19
10P	32	47
11S	39	57
12S	41	60
13S	43	62
14S	102	149
15S	174	254

Load Case #2 NESC Extreme Wind

SW

V = Weight Span * Shield Wire Weight
= **284**

T = Wind Span * Shield Wire Diameter * 1 FT/ 12 IN * 24 PSF
+ 2 * SIN (Line Angle/2) * Shield Wire Tension
= **624**

COND

V = Weight Span * Conductor Weight
= **1678**

T = Wind Span * Conductor Diameter * 1 FT/ 12 IN * 24 PSF
+ 2 * SIN (Line Angle/2) * Conductor Tension
= **2439**

TOWER

WIND 36.0 * 1.00
= **36.00** PSF/FACE
DRAG FACTOR = 1.0

DEAD LOAD = **DL * 1.0**

CABLE BELOW JOINT 4

V = 2.00 #/ft

T = 9.84 #/ft

CABLE BELOW JOINT 10

V = 4.00 #/ft

T = 19.68 #/ft

JOINT LOAD DUE TO WIND ON CABLES ON LEGS

Joint	Cable Lengths	Vertical	Transverse
4S	5.20	10	51
5S	4.50	9	44
6S	4.50	9	44
7S	4.30	9	42
8S	4.00	8	39
9S	4.30	9	42
10P	5.40	22	106
11S	6.50	26	128
12S	6.90	28	136
13S	7.10	28	140
14S	17.00	68	335
15S	29.00	116	571

JOINT LOAD DUE TO ANTENNA

Joint	Vertical	Transverse
3P	69	43
31	69	43
32	41	26
33	41	26
4S	69	43
41	69	43
42	41	26
43	41	26
6S	45	25
61	45	25
62	45	25
7S	45	25
71	45	25
72	45	25

TOTAL JOINT LOADS

Joint	Vertical	Transverse
3P	69	43
31	69	43
32	41	26
33	41	26
4S	79	94
41	69	43
42	41	26
43	41	26
5S	9	44
6S	54	69
61	45	25
62	45	25
7S	53	67
71	45	25
72	45	25
8S	8	39
9S	9	42
10P	22	106
11S	26	128
12S	28	136
13S	28	140
14S	68	335
15S	116	571

Load Case #3 NESC Extreme Wind (45 Degrees)

(24 PSF x $\cos^2 45^\circ$ x 1.2 = 14.4PSF)

SW

V = Weight Span * Shield Wire Weight
= **284**

T = Wind Span * Shield Wire Diameter * 1 FT/ 12 IN * 14.4 PSF
+ 2 * SIN (Line Angle/2) * Shield Wire Tension
= **394**

COND

V = Weight Span * Conductor Weight
= **1678**

T = Wind Span * Conductor Diameter * 1 FT/ 12 IN * 14.4 PSF
+ 2 * SIN (Line Angle/2) * Conductor Tension
= **1526**

TOWER

WIND 43.2 * 1.00 = **43.20** PSF/FACE x cos 45° = **30.5**
DRAG FACTOR = 1.0

DEAD LOAD = **DL * 1.0**

CABLE BELOW JOINT 4
V = 2.00 #/ft
T = 9.84 #/ft

CABLE BELOW JOINT 10
V = 4.00 #/ft
T = 19.68 #/ft

JOINT LOAD DUE TO WIND ON CABLES ON LEGS

Joint	Cable Lengths	Vertical	Transverse
4S	5.20	10	51
5S	4.50	9	44
6S	4.50	9	44
7S	4.30	9	42
8S	4.00	8	39
9S	4.30	9	42
10P	5.40	22	106
11S	6.50	26	128
12S	6.90	28	136
13S	7.10	28	140
14S	17.00	68	335
15S	29.00	116	571

JOINT LOAD DUE TO ANTENNA

Joint	Vertical	Transverse
3P	69	43
31	69	43
32	41	26
33	41	26
4S	69	43
41	69	43
42	41	26
43	41	26
6S	45	25
61	45	25
62	45	25
7S	45	25
71	45	25
72	45	25

TOTAL JOINT LOADS

Joint	Vertical	Transverse	x cos 45°
3P	69	43	30
31	69	43	30
32	41	26	18
33	41	26	18
4S	79	94	67
41	69	43	30
42	41	26	18
43	41	26	18
5S	9	44	31
6S	54	69	49
61	45	25	18
62	45	25	18
7S	53	67	48
71	45	25	18
72	45	25	18
8S	8	39	28
9S	9	42	30
10P	22	106	75
11S	26	128	90
12S	28	136	96
13S	28	140	99
14S	68	335	237
15S	116	571	404

Load Case #5 Extreme Wind Tower Only (45 degrees)

TOWER WIND 73.2 * 1.00 = **73.20** PSF/FACE x cos 45° = **51.8**

DRAG FACTOR = 1.0

DEAD LOAD = **DL * 1.0**

CABLE BELOW JOINT 4

V = 2.00 #/ft

T = 16.70 #/ft

CABLE BELOW JOINT 10

V = 4.00 #/ft

T = 33.40 #/ft

JOINT LOAD DUE TO WIND ON CABLES ON LEGS

Joint	Cable Lengths	Vertical	Transverse
4S	5.20	10	87
5S	4.50	9	75
6S	4.50	9	75
7S	4.30	9	72
8S	4.00	8	67
9S	4.30	9	72
10P	5.40	22	180
11S	6.50	26	217
12S	6.90	28	230
13S	7.10	28	237
14S	17.00	68	568
15S	29.00	116	969

JOINT LOAD DUE TO ANTENNA

Joint	Vertical	Transverse
3P	69	43
31	69	43
32	41	26
33	41	26
4S	69	43
41	69	43
42	41	26
43	41	26
6S	45	25
61	45	25
62	45	25
7S	45	25
71	45	25
72	45	25

TOTAL JOINT LOADS

Joint	Vertical	Transverse	x cos 45°
3P	69	43	30
31	69	43	30
32	41	26	18
33	41	26	18
4S	79	130	92
41	69	43	30
42	41	26	18
43	41	26	18
5S	9	75	53
6S	54	100	71
61	45	25	18
62	45	25	18
7S	53	97	68
71	45	25	18
72	45	25	18
8S	8	67	47
9S	9	72	51
10P	22	180	128
11S	26	217	154
12S	28	230	163
13S	28	237	168
14S	68	568	401
15S	116	969	685

Load Case #4&6 Extreme Wind Tower Only (Transverse/Longitudinal wind)

TOWER WIND 61.0 * 1.00
= **61.00** PSF/FACE
DRAG FACTOR = 1.0

DEAD LOAD = **DL * 1.0**

CABLE BELOW JOINT 4
V = 2.00 #/ft

T = 16.70 #/ft

CABLE BELOW JOINT 10
V = 4.00 #/ft

T = 33.40 #/ft

JOINT LOAD DUE TO WIND ON CABLES ON LEGS

Joint	Cable Lengths	Vertical	Transverse
4S	5.20	10	87
5S	4.50	9	75
6S	4.50	9	75
7S	4.30	9	72
8S	4.00	8	67
9S	4.30	9	72
10P	5.40	22	180
11S	6.50	26	217
12S	6.90	28	230
13S	7.10	28	237
14S	17.00	68	568
15S	29.00	116	969

JOINT LOAD DUE TO ANTENNA

Joint	Vertical	Transverse
3P	69	43
31	69	43
32	41	26
33	41	26
4S	69	43
41	69	43
42	41	26
43	41	26
6S	45	25
61	45	25
62	45	25
7S	45	25
71	45	25
72	45	25

TOTAL JOINT LOADS

Joint	Vertical	Transverse/Longitudinal
3P	69	43
31	69	43
32	41	26
33	41	26
4S	79	130
41	69	43
42	41	26
43	41	26
5S	9	75
6S	54	100
61	45	25
62	45	25
7S	53	97
71	45	25
72	45	25
8S	8	67
9S	9	72
10P	22	180
11S	26	217
12S	28	230
13S	28	237
14S	68	568
15S	116	969

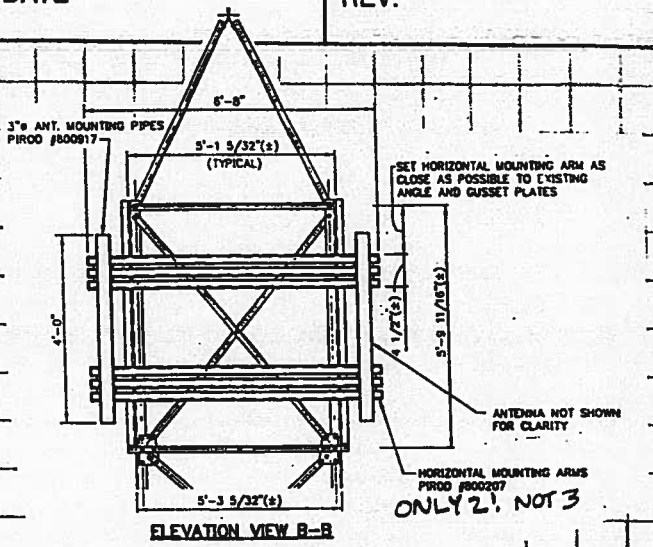
CAI COMMONWEALTH ASSOCIATES INC.

CALCULATION SHEET

CLIENT CENTURYTEL		SHEET 1 OF
SUBJECT CE TOWER NO. 970		JOB NUMBER 210002
CALC. BY/DATE WAS 9/20/99	CHECKED BY/DATE	REV.

CENTURYTEL ANTENNA

ANT. AREA = 3.11 □'
ANT. WT = 18 #
(assumed) PIPE WT = 10.25 #/'
(assumed L 2×2×5/16) ANGLE ARMS AREA = 2 □'/'
WT = 2.44 #/'



ELEVATION VIEW B-B

*SIDE WITH 2 ANTENNAS

LOAD CASE - NESC HEAVY

V = 1.5 × (2×18# + 2×4'×10.25 #/' + 4×6.67'×2.44 #/') = 275 #
T = 4 #/□ (3.11 □ × 2 × 1.6 + 4 × 6.67' × 2" (1/12") × 1.6) × 2.5 = 171 #

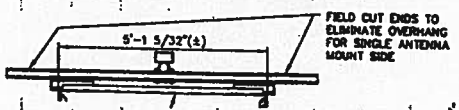
LOAD - EXT. WIND

V = 275 #/1.5 = 183 #
T = 36 #/□ (2×3.11 □ + 4×6.67'×2" × 1/12") = 384 #

LOAD - EXT WIND - TOWER ONLY

V = 183 #
T = 61 #/□ (2×3.11 □ + 4×6.67'×2" × 1/12") = 651 #

*SIDE WITH 1 ANTENNA



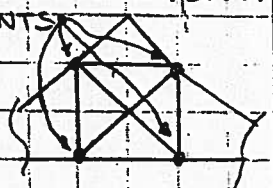
LOAD CASE - NESC HEAVY

V = 1.5 (18# + 4'×10.25 #/' + 4×5.1'×2.44 #/') = 163 #
T = 4 #/□ (3.11 □ + 4×5.1'×2" × 1/12") × 1.6 × 2.5 = 104
(6.5 □)

LOAD CASE - EXT WIND / EXT WIND TOWER ONLY

V = 163/1.5 = 109 #
T = 36 #/□ × 6.5 □ = 234 #/61 #/□ × 6.5 □ = 397 #

DIVIDE LOADS BY FOUR AND APPLY AT JOINTS



CAI COMMONWEALTH ASSOCIATES INC.

CALCULATION SHEET

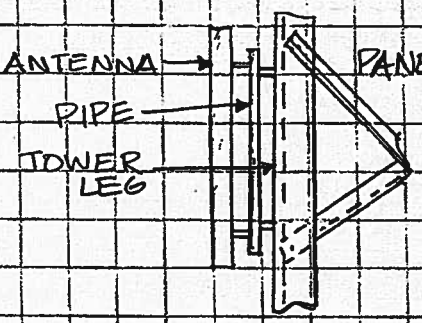
CLIENT OMNIPOINT	SHEET | OF |
SUBJECT CE TOWER NO. 970	JOB NUMBER
CALC. BY/DATE WAS 9/20/99	CHECKED BY/DATE
	REV.

OMNIPOINT ANTENNA

ANT. AREA = 3.11 □'

ANT. WT = 18#

(assumed) PIPE WT = 10.25 #/'



LOAD CASE NESC HEAVY

V = 1.5 × (18# + 4' × 10.25 #/') = 89#

T = 4 #/□' × (3.11 □' × 1.6) × 2.5 = 50#

LOAD CASE EXTREME WIND

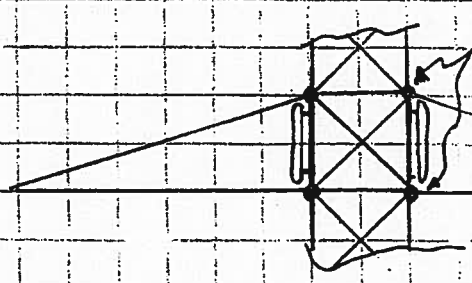
V = (18# + 4' × 10.25 #/') = 59#

T = 36 #/□' × (3.11 □') = 112#

LOAD CASE EXT. WIND, TOWER ONLY

V = (18# + 4' × 10.25 #/') = 59#

T = 61 #/□' × 3.11 □' = 190#



CAI COMMONWEALTH ASSOCIATES INC.

CALCULATION SHEET

CLIENT		SHEET / OF
SUBJECT CABLE LOADS		JOB NUMBER
CALC. BY/DATE WAS 9/20/99	CHECKED BY/DATE	REV.

CENTURYTEL 6 @ 7/8" COAX $\phi = 1.09"$ $w = .33^{\#/'}$

NESC HEAVY

$V = 1.5 \times .33^{\#/'} \times 6 = 3.0^{\#/'}$

$T = 4^{\#/\square'} \times 7/8" \times 1\frac{1}{2}" \times 2.5 \times 6 = 4.38^{\#/'}$

EXTREME WIND

$V = 6 \times .33^{\#/'} = 2.0^{\#/'}$

$T = 72^{\#/\square'} / 2 / 1.6 \times 7/8" \times 1\frac{1}{2}" \times 6 = 9.84^{\#/'}$

EXTREME WIND (TOWER ONLY)

$V = 6 \times .33^{\#/'} = 2.0^{\#/'}$

$T = 122^{\#/\square'} / 2 / 1.6 \times 7/8" \times 1\frac{1}{2}" \times 6 = 16.7^{\#/'}$

OMNIPOINT 6 @ 7/8" COAX $\phi = 1.09"$ $w = .33^{\#/'}$

BELOW THIS LEVEL ON THE TOWER (OMNI ANTENNA ATTACH.) DOUBLE THE ABOVE CABLE LOADS.

ALUMINUM COMPANY OF AMERICA SAG AND TENSION DATA

COND FOR 970 TOWER

Conductor BOBOLINK 1431.0 Kcmil 45/ 7 Stranding ACSR
M:\PLS\TOWER\CLIENTS\CONSUMER\970_CON.PRF Time:09:01AM Date:09/20/1999
Area= 1.2010 Sq. In Dia= 1.427 In Wt= 1.613 Lb/F RTS= 38300 Lb
Data from Chart No. 1-957
English Units

Span= 800.0 Feet NESC Heavy Load Zone
Creep IS a Factor

Design Points					Final		Initial	
Temp F	Ice In	Wind Psf	K Lb/F	Weight Lb/F	Sag Ft	Tension Lb	Sag Ft	Tension Lb
0.	.50	4.00	.30	3.226	21.54	12024.	20.18	12830.*
0.	.50	2.80	.00	2.868	21.01	10961.	19.40	11864.
32.	.50	.00	.00	2.812	22.59	10001.	20.76	10873.
60.	.00	24.00	.00	3.278	24.58	10725.	22.91	11496.
60.	.00	14.40	.00	2.352	23.39	8082.	21.17	8925.
60.	.00	10.20	.00	2.018	22.93	7073.	20.47	7917.
-20.	.00	.00	.00	1.613	17.56	7366.	14.96	8641.
0.	.00	.00	.00	1.613	18.81	6880.	16.11	8026.
30.	.00	.00	.00	1.613	20.61	6283.	17.84	7250.
60.	.00	.00	.00	1.613	22.32	5804.	19.55	6622.
90.	.00	.00	.00	1.613	23.95	5413.	21.20	6109.
120.	.00	.00	.00	1.613	25.51	5086.	22.80	5685.
167.	.00	.00	.00	1.613	27.81	4671.	25.17	5153.
212.	.00	.00	.00	1.613	29.87	4352.	27.32	4753.

* Design Condition

ALUMINUM COMPANY OF AMERICA SAG AND TENSION DATA

SHIELD WIRE FOR CONSUMERS TOWER NO. 970

Conductor Nominal Diameter 3/ 8 7 Strand Steel HS
M:\PLS\TOWER\CLIENTS\CONSUMER\970_SW.PRF Time:09:02AM Date:09/20/1999
Area= .0792 Sq. In Dia= .360 In Wt= .273 Lb/F RTS= 10800 Lb
Data from Chart No. 1-1245
English Units

Span= 800.0 Feet NESC Heavy Load Zone
Creep is NOT a Factor

Design Points					Final		Initial	
Temp F	Ice In	Wind Psf	K Lb/F	Weight Lb/F	Sag Ft	Tension Lb	Sag Ft	Tension Lb
0.	.50	4.00	.30	1.226	21.89	4500.	21.89	4500.*
0.	.50	2.80	.00	.868	19.32	3605.	19.11	3645.
32.	.50	.00	.00	.808	19.66	3299.	19.38	3346.
60.	.00	24.00	.00	.770	20.08	3078.	19.76	3128.
60.	.00	14.40	.00	.511	17.70	2316.	17.17	2387.
60.	.00	10.20	.00	.410	16.56	1985.	15.91	2066.
-20.	.00	.00	.00	.273	11.71	1867.	10.98	1992.
0.	.00	.00	.00	.273	12.45	1757.	11.66	1875.
30.	.00	.00	.00	.273	13.57	1612.	12.72	1720.
60.	.00	.00	.00	.273	14.69	1490.	13.79	1586.
90.	.00	.00	.00	.273	15.80	1385.	14.87	1472.
120.	.00	.00	.00	.273	16.89	1296.	15.94	1373.
167.	.00	.00	.00	.273	18.54	1181.	17.58	1246.
212.	.00	.00	.00	.273	20.07	1092.	19.10	1147.

* Design Condition

• CENTURYTEL SITE #622 (WOODLAND) •
• OMNIPOINT SITE #KZ 06311 •

CE TOWER #970
138KV LINES 8 V/N
TOWER TYPE 2IA+30

0°50'

TABLE I

NEW
2I SERIES TOWER
DESIGN LOAD BASIS

Design Conditions	Initial Tensions (Lbs) Subconductor Intact	Subconductor Broken	Ground Wire Intact	Ground Wire Broken	Design Span (Ft) Wind	Design Span (Ft) Wt	Wire Loading (Initial) Temp	Wire Loading (Initial) Wind	Wire Loading (Initial) Ice	Wind on Tower (PSF)	Wire Safety Factors Vert	Wire Safety Factors Trans	Wire Safety Factors Long
2A +30 (2°), TOWER TYPE	1431 (45/7) ACSR		3/8" ST (7 STR)							(WINDWARD FACE)			
I. NESC Gr B, Intact	12,830	-	4,500	-	800 ~~725~~	1040 ~~940~~	0°	4psf	1/2"	32	1.5	2.5/1.65	1.65
II. Broken GW	12,830	-	4,500	4,500	725	940	0°	8psf	1/2"	26	1.0	1.0	1.0
III. Broken Cond	12,830	7,550	4,500	-	725	940	0°	8psf	1/2"	26	1.0	1.0	1.0
IVA. NESC Extreme Wind	11,273	-	3,269	-	725	940	60°	24psf	-	72 (ANY DIRECTION)	1.0	1.0	1.0
IVB. NESC Extreme Wind, Light Wt Span	11,273	-	3,269	-	725	680	60°	24psf	-	72	1.0	1.0	1.0
V. NESC Extreme Wind, Tower Only	-	-	-	-	-	-	-	-	-	122 (Any Direction)	1.0	1.0	1.0
VI. Heavy Ice	17,506	-	7,026	-	725	940	30°	-	1-1/4"	-	1.0	1.0	1.0
VII. Constr Vert, GW						3,040 Lbs (See Note 1)							
VIII. Constr Vert, Conductor						7,600 Lbs (See Note 1)							

III = NOT REQUIRED

JLarkey
1/12/79

SL
8/26/99