THE HUB OF SIBLEY COUNTY

GAYLORD

CITY OF GAYLORD
Planning and Zoning Commission Agenda
Wednesday, April 12, 2017
5:30 p.m., City Hall

1. Call Meeting to Order

2. Consider 4/12/2017 Agenda

3. Approval of Minutes –
    a. March 8th Regular Meeting

4. Public Hearing
    a. Innovative Power Systems – Conditional Use Permit

5. Discussion Items
    a. Concept Reviews –
        i. Hot House, LLC Proposal, John Suedbeck and James Halbur
        ii. HAM Radio Antenna Proposal, Don Burgess

6. Open Forum - Comments from citizens in attendance

7. Adjournment

Planning and Zoning Commission Meeting
Wednesday, March 8, 2017
5:30 pm, City Hall

MEMBERS PRESENT: Chairperson Orlin Grack; Commissioners: Marilyn Bratsch, Steve Boerner, Bill Schulte, Jerry Gasow
COUNCIL PRESENT: Kim Moore, Administrator; Tom Homme, Council; Jim Landaas, Council

1. Call Meeting to Order
   Pursuant to due call and notice, thereof, the Planning and Zoning Commission was called to order in the City Hall Chambers by Chairperson Grack at 5:30 pm.

2. Consider 3/8/17 Agenda
   Revised agenda presented at meeting adding Workshop with staff and correction to 5 (e) Workshop Housing Meeting is March 28, 2017 not April 12, 2017 as presented. Motion made by Commissioner Gasow, seconded by Commissioner Boerner to approve P&Z Agenda with noted corrections. Motion passed 7-0.

3. Approval of February 8, 2017 Regular P & Z Minutes
   Motion made by Commissioner Homme; seconded by Commissioner Schulte to approve February 8, 2017 Regular P&Z Minutes as presented. Motion passed 7-0.

4. Public Hearing - None

5. Discussion Items:
   a. Concept Review – Innovative Power Systems
      Andy Stahlman gave a brief presentation of a Solar Garden that upon City approval would be located at 47522 – 280th St Gaylord MN. A Public Hearing will be held April 12, 2017 for a Conditional Use Permit. Decision will be made by City Council April 19, 2017
   b. Avery Grochow – Process for Verifying Lot Lines: Setting/Relocating Pins
      The question was whether or not a property owner needed to have a survey if they know where the pins are located for the lot lines. City of Gaylord's building permit has a request for lots to be surveyed. It was determined MN Spect had it added to the permit. Kim Moore, City Administrator, will research if current building inspector would require a survey also and if there is a State statute regarding this.
   c. Sign Permit Application: Two sign permits were issued: Shawnie Kuphal at 221 Main Ave Gaylord MN and to Bill Voigt at 301 4th St Gaylord MN
   d. Downtown Handicap Spaces – The City Staff will research the appropriateness of handicap markings that are required.
   e. Scheduling a Workshop with Council and EDA for March 28, 2017 6:30 at the Library regarding Workforce Housing
      Scheduling a Workshop with staff March 13, 2017 at 6:00 in City chambers to decide if a joint position should be created for EDA and Planning and Zoning.
   f. Food Carts, Wagon and Trucks – City will research whether or not a Zoning Ordinance should be drafted.
   g. Consider Re-Zone East Side of Melro Street from R-2 to B-3

h. Discussion of Meadow Wood Addition: Future housing needs and possible re-platting of lots

i. Update of Junk Yard Sites SW of City: Prafke and Wagenius- discussed notifications of cleanup and who owns the property.

j.

6. Open Forum – Citizen comments – NONE

7. Other

a. Business Signs: discussion held regarding process of removing business signs. Kim Moore Administrator, will discuss 4th St on Main with Tim Goldsmith regarding his intent with the business. Follow-up: Mr. Goldsmith stated there is an interested party; he understood about removing signage.

8. Adjournment

Motion made by Commissioner Gasow; seconded by Council Landaas to adjourn at 7:10 pm. Motion passed 7-0.

CITY OF GAYLORD

MEMORANDUM

DATE: April 12, 2017

TO: Gaylord Planning and Zoning Commission

FROM: Kim Moore Sykes, City Administrator

RE: Request for a Conditional Use Permit (CUP) to allow for the construction of a Solar Garden

INTRODUCTION:

The applicant, Georgia A. Pinske, property owner, is requesting a Conditional Use Permit for the property located at 47522 – 280th Street. The property is legally described as PID 12.3211.010 See attached description.

The applicant is requesting a Conditional Use Permit in the currently zoned "A" Agricultural/Rural Residence District, with the intent to construct a Community Solar Garden.

BACKGROUND:

Existing Zoning: "A" Agricultural/Rural Residence District

Property Location: 47522 – 280th Street.
Lot Size: approx. 8 acres
Surrounding Land Use: A – South
B-2; I-2 – North

Zoning History: Building permit – new construction

Applicable Regulations: §153.047 – "A" Regulations
§153.216 – CUP Regulations

Analysis and Recommendation:

Evan Carlson, Innovative Power Systems, as applicant is requesting a Conditional Uses Permit for property located at 47522 – 280th Street, legally described as PID 12.3211.10, to construct a Community Solar Garden on eight (8) acres that is currently zoned as "A", Agricultural/Rural Residence District.

The relevant zoning ordinance language is as follows:

"A" AGRICULTURAL/RURAL RESIDENCE DISTRICT

§ 153.045 PURPOSE.

The purpose of the "A" Agricultural/Rural Residence District is intended to provide a district which will allow extensive areas within the Orderly Annexation Area or within the corporate limits to be retained in agricultural use; prevent scattered, non-farm growth; preserve woodlands and other areas of aesthetic and scenic value which, because of their physical features, are desirable as water retention areas, natural habitat for plant and animal life, green space, or other uses beneficial to the city.

§ 153.045 PERMITTED PRINCIPLE USES.

(A) Agricultural and incidental agricultural related uses subject to §153.051 General Regulations and agricultural buildings;

(B) One two-family dwelling or two single- family dwellings and their accessory buildings may be located on one farm; provided, the resident or residents of the dwelling or dwellings either owns, operates or is employed on the farm. Sale of the dwelling or dwellings as non-farm must meet the requirements for non-farm dwellings in this District;

(C) Home occupations, as defined in §153.005;

(D) Parks, recreational areas, wildlife areas, game refuges and forest preserves owned by governmental agencies;

(E) Flood control and watershed structures;

(F) Golf courses, except club houses.

(Ord. 209.5, passed 12-14-1994)

§ 153.047 CONDITIONAL USES.

(A) Single-family non-farm dwellings as regulated in § 153.050, DENSITY REGULATIONS FOR NON-FARM DWELLINGS

(B) Two-family dwellings;

(C) Recreational vehicle campgrounds;

(D) Riding academies and commercial stables;

(E) Churches, cemeteries and/or memorial gardens;

(F) Essential public services and service buildings, not including storage yards;

(G) Golf and country clubs, gun clubs, miniature golf courses, race tracks and golf driving ranges;

(H) Veterinary and animal clinics and facilities for the care and/or breeding of animals including kennels;

(I) Private/commercial landing fields and associated facilities;

(J) Manufactured homes as a second farm home and exempt from the restrictions of § 153.018(A); and

(K) Uses as determined by the Planning and Zoning Commission to be of the same general character as the conditional uses listed above.

(Ord. 209.5, passed 12-14-1994)

In reviewing the CUP, the Commission shall consider if the request meets the following criteria:

Staff has determined the following findings, but is subject to the Commission's formal approval before a Resolution can be prepared for final council approval.

Criteria #1	**That the Conditional Use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted nor substantially diminish and impair property values within the immediate vicinity.**
Finding #1	This has been found to be true. See *1. Design and Interconnection.*
Criteria #2	**That the establishment of the Conditional Use will not impede the normal and orderly development and improvement of surrounding vacant property for predominant uses in the area.**
Finding #2	This has been found to be true. See *1. Design and Interconnection.*
Criteria #3	**That adequate utilities, access roads, drainage and other necessary facilities have been or are being provided.**
Finding #3	This has been found to be true. See *2. Construction; 3. Storm Water Management Measures.*
Criteria #4	**That adequate measures have been or will be taken to provide sufficient off-street parking and loading space to serve the proposed use.**
Finding #4	There is available off street parking. See *2. Construction* and *5. Access, Parking, Road Use and Maintenance.*
Criteria #5	**That adequate measures have been or will be taken to prevent or control offensive odor, fumes, dust, noise and vibration, so that none of these will constitute a nuisance, and to control lighted signs and other lights in such a manner that no disturbance to neighboring properties will occur.**
Finding #5	This has been found to be true. See *3. Storm Water Management Measures; 4. Operations & Emergency Response* and *6. Landscaping*
Criteria #6	**That soil conditions are adequate to accommodate the proposed use.**
Finding #6	This has been found to be true. See *1. Design and Interconnection; 2. Construction;* and *5. Access, Parking, Road Use and Maintenance*

Criteria #7 **That proper facilities are provided which would eliminate any traffic congestion or traffic hazard which may result from the proposed use.**

Finding #7 This has been found to be true. See *5. Access, Parking, Road Use, and Maintenance* and *4. Operations and Emergency Response.*

Criteria #8 **That the density of any proposed residential development is not greater than the density of the surrounding neighborhood or not greater than the density indicated by the applicable Zoning District.**

Finding #8 N/A

Criteria #9 **That the intensity of any proposed commercial or industrial development is not greater than the intensity of the surrounding area or not greater than the intensity characteristic of the applicable Zoning District.**

Finding #9 This has been found to be true. See *6. Landscaping and 8. Visual Impact Analysis*

Criteria #10 **That the proposed use is compatible with the City Land Use Plan.**

Finding #10 This has been a demonstrated land use according to the City's comprehensive plan. See *6. Landscaping; 8. Visual Impact; 5. Access, Parking, Road Use, and Maintenance;* and *Operations and Emergency Response.*

Criteria #11 **That there is a demonstrated need for the proposed use.**

Finding #11 There is a growing demand and need for the generation of clean energy. See *1. Design and Interconnection*

Staff is recommending approval of the CUP with the following conditions:

- No more than 75% of the land shall be covered with impervious surface (building, gravel parking, etc.)
- A buffer strip of vegetation will be maintained on the south and east edges of the property.

Attached you will find the Conditional Use Permit application review and consideration by the Planning and Zoning Commission.

CITY OF GAYLORD

BOARD OF ADJUSTMENT AND APPEALS

PUBLIC NOTICE

CONDITIONAL USE PERMIT

Notice is hereby given that on Wednesday, the 12th day of April, 2017, at the hour of 5:30 P.M. in the Gaylord City Hall the Board of Adjustment will hold a public hearing on the application of Georgia Ann Pinske, for a Conditional Use Permit for the property located at 47522 280th St. The property is legally described as:

PID 12.3211.00 See attached description

The applicant is requesting a conditional use permit in the currently zoned (A) Agricultural District, with the intent to construct a Community Solar Garden

All persons wishing to be heard regarding this conditional use permit shall be allowed an opportunity at said public hearing at the time and place set forth. Written comments may be submitted to the City Administrator prior to and at the public hearing.

Kim Moore-Sykes
City Administrator

PUBLISHED: Mar 23rd, 2017
POSTED: Mar 10th, 2017

Application Fee $250.00

CITY OF GAYLORD

APPLICATION FOR CONDITIONAL USE PERMIT

Street Location of Property PID 12.3211.00

Legal Description of Property See attached O&E Report

Owner Georgia Ann Pinske 47522 280th St. Gaylord, MN 55334 (507) 479 0637
Name Address Telephone

Applicant Innovative Power Systems 2670 Patton Road, Roseville MN 55113
Name Address Telephone

Description of Request: CUP for Community Solar Garden

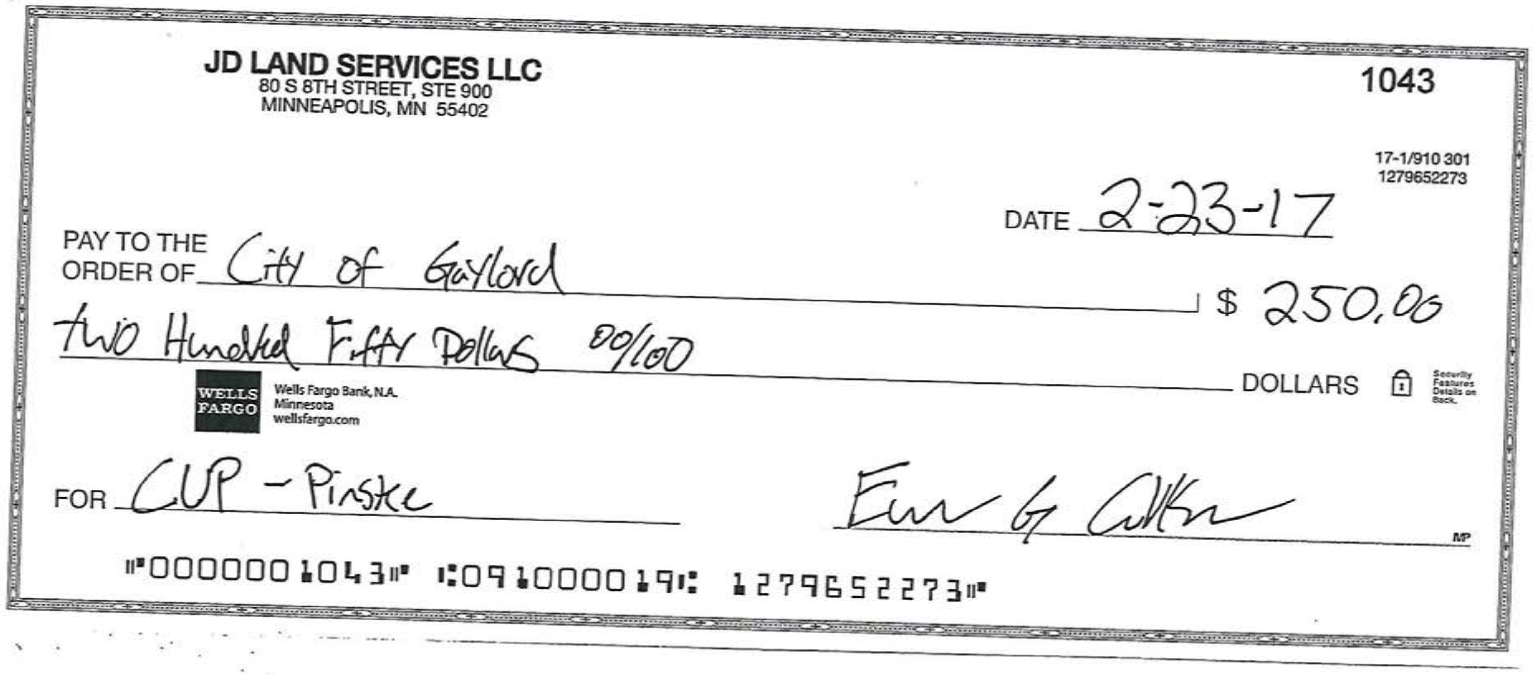
Reason for Request:

I further state that if this request is granted, I will proceed with the actual construction in accordance with the plans herewith submitted within six months from date of filing this appeal; will complete the work within _____ year(s) from said date; and that I am able from a financial, legal, and physical basis to do so.

NOTE: Site plan showing property lines and location of buildings attached.

Date: 2-23-17

Signature of Applicant



JD LAND SERVICES LLC
80 S 8TH STREET, STE 900
MINNEAPOLIS, MN 55402

1043

17-1/910 301
1279652273

DATE 2-23-17

PAY TO THE ORDER OF City of Gaylord $ 250.00

Two Hundred Fifty Dollars 00/100 DOLLARS

Security Features Details on Back.

WELLS FARGO Wells Fargo Bank, N.A. Minnesota wellsfargo.com

FOR CUP - Pinske

Eric G Olson

MP

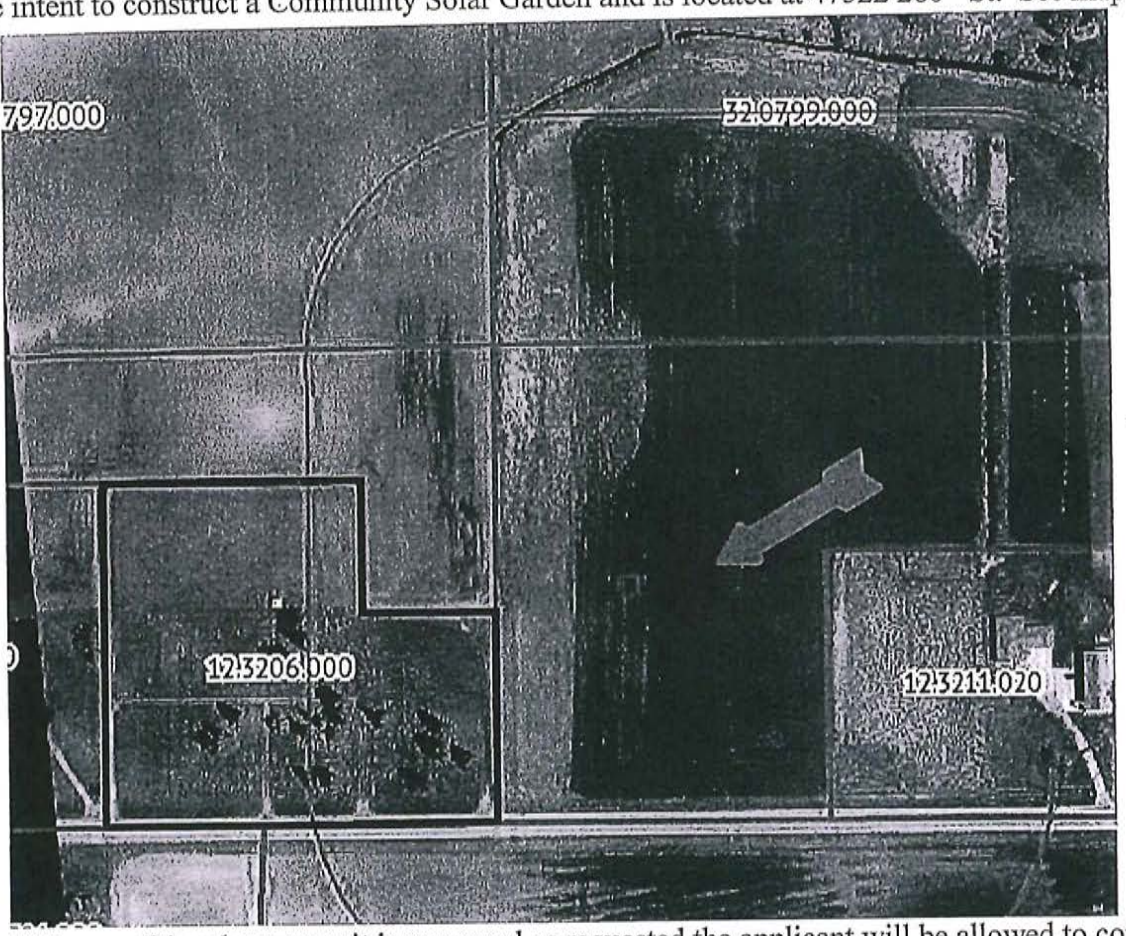
⑈000001043⑈ ⑆091000019⑆ 1279652273⑈

CITY OF GAYLORD

BOARD OF ADJUSTMENT AND APPEALS
NOTICE TO ADJOINING PROPERTY OWNERS

Dear Property Owner:

An application for a conditional use permit to the Zoning Ordinance has been filed with the Board of Adjustment by Georgia Ann Pinske. The property at issue is currently situated in a (A) Agricultural District, with the intent to construct a Community Solar Garden and is located at 47522 280th St. See map below.



If the conditional use permit is approved as requested the applicant will be allowed to construct a Community Solar Garden.

A public hearing will be held by the Board of Adjustment on Wednesday, April 12th, 2017 at 5:30 p.m. in the Gaylord City Hall, at which time you may submit your views on the matter in person, by writing or by representative.

If you know of any interested property owner who, for any reason, has not received a copy of this letter, it would be greatly appreciated if you would inform them of the time and place of the hearing. If you have any questions, please contact city hall at (507) 237-2338

Posted: Mar 23rd, 2017
Published: Mar 10th, 2017

Kim Moore-Sykes
City Administrator

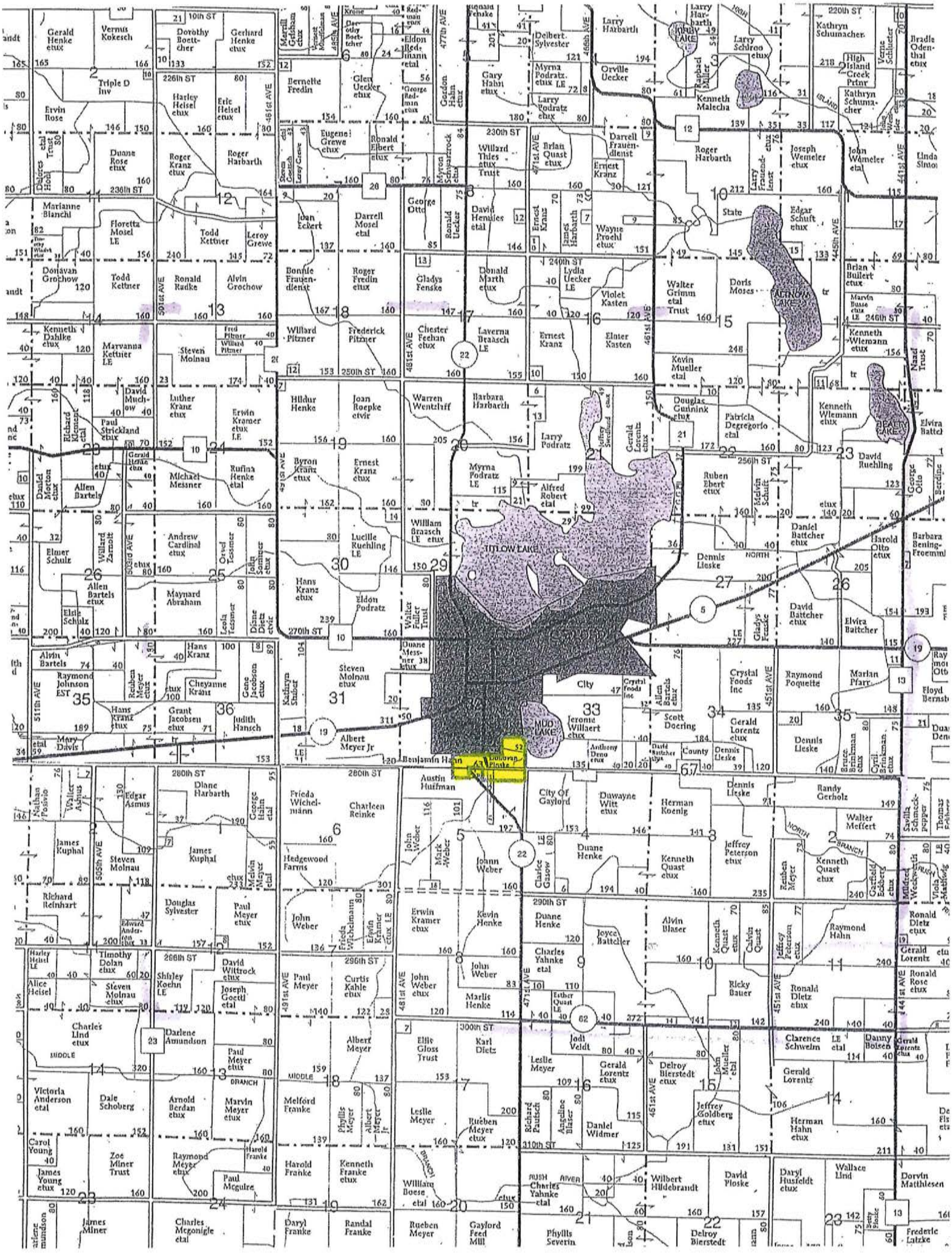
Innovative Power Systems

Applications For Conditional Use Permit

Thursday, February 23, 17
City of Gaylord
Attn: Kim Moore
332 Main Avenue
Gaylord, MN 55335

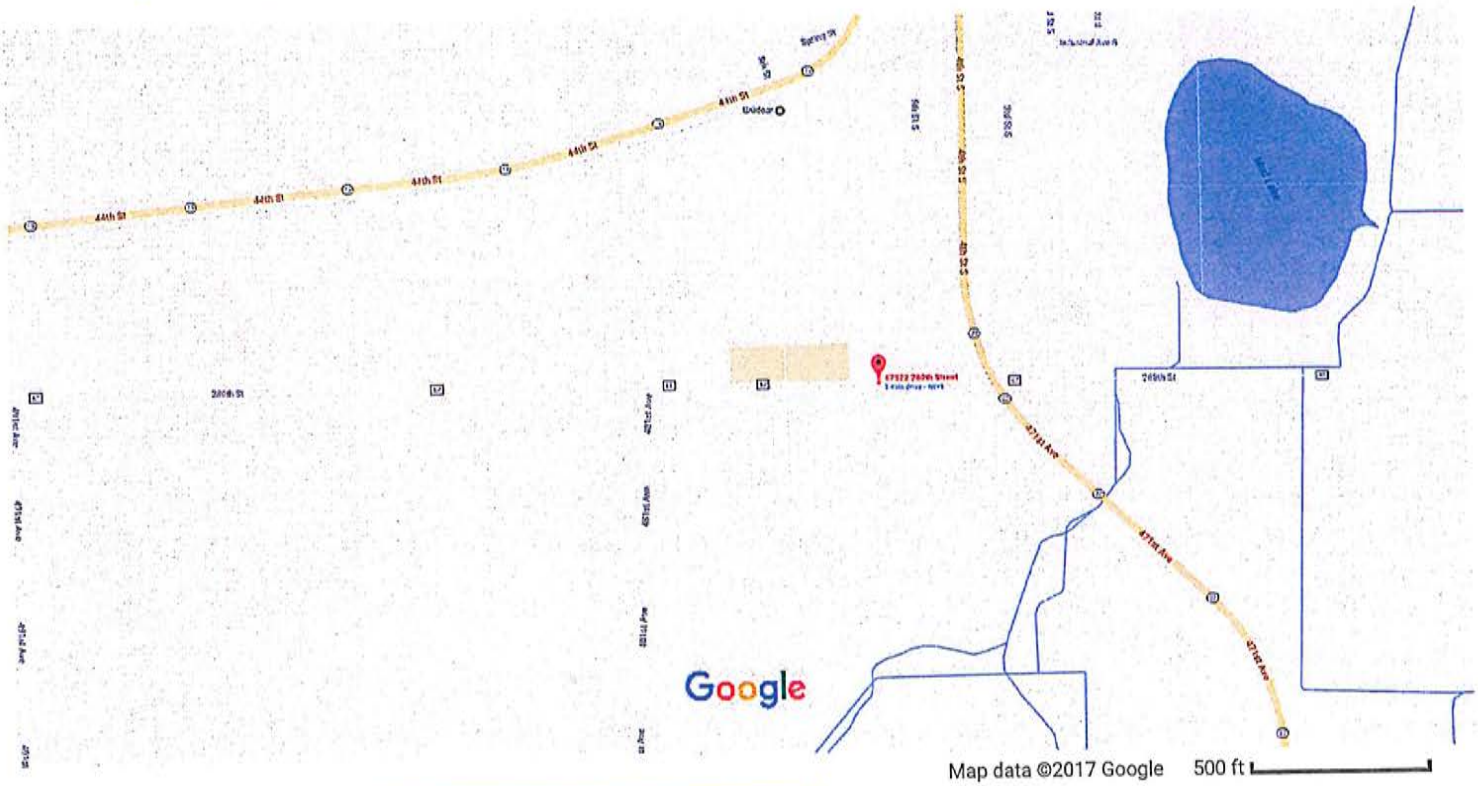
Innovative Power Systems (IPS) is requesting a Conditional Use Permit for a period of Thirty-Five years to a one megawatt AC photovoltaic community solar gardens approximately 8 acres of land owned by The estate of Donavan Pinske, PID 12.3211.010. Commercial Community Solar Gardens are permitted as a conditional use. An ownership and encumbrances report for the parcel is attached as **Exhibit C**.

IPS has partnered with New Energy Equity, a Maryland Limited Liability Company, to develop this project. The site was selected due to its physical characteristics, proximity to existing Xcel Energy electrical infrastructure and distribution lines, zoning and permitting requirements, and landowner participation.



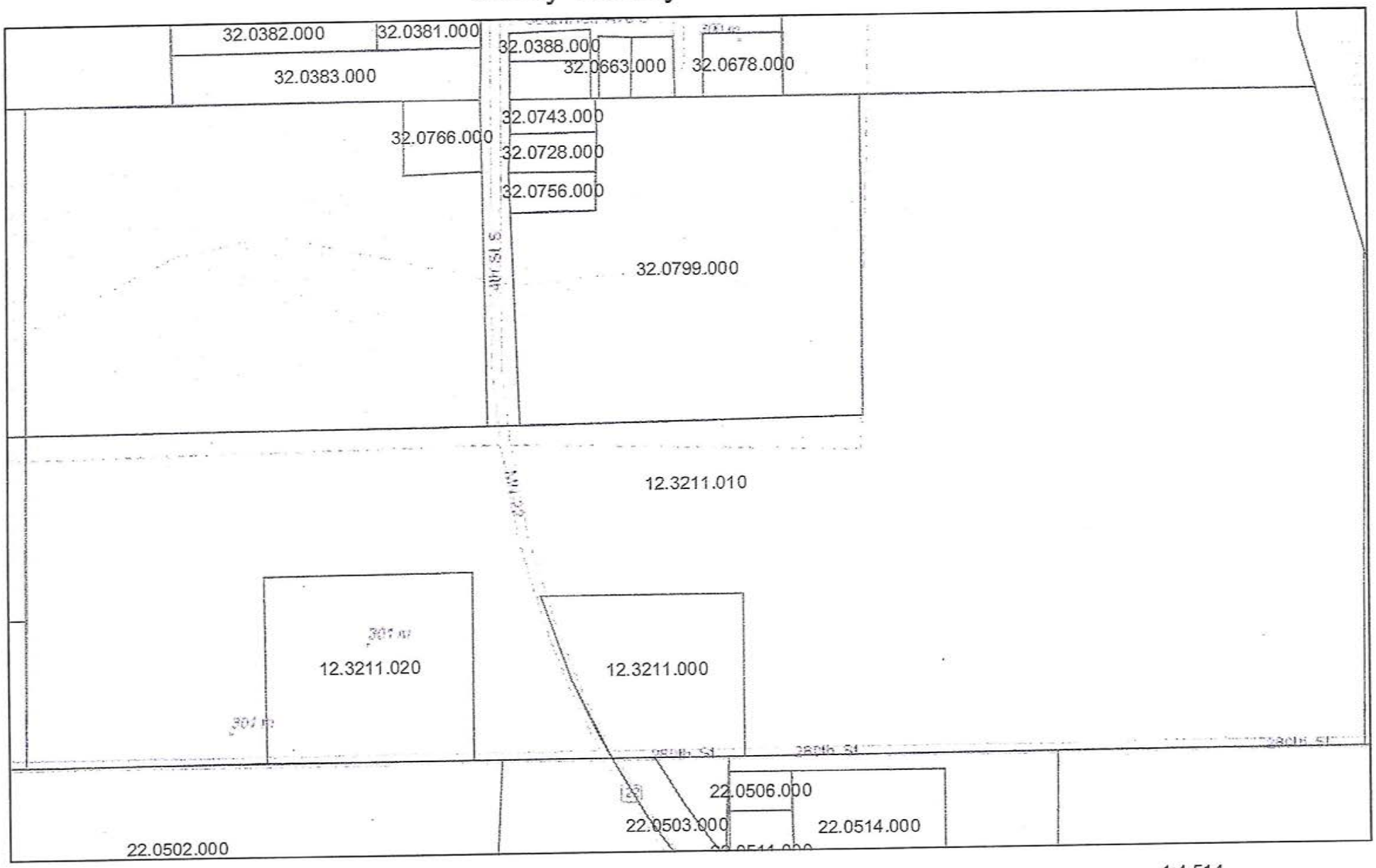
10th ST
226th ST
230th ST
236th ST
240th ST
246th ST
250th ST
256th ST
270th ST
280th ST
286th ST
290th ST
296th ST
300th ST
310th ST
220th ST
ISLAND
TITLOW LAKE
MUD LAKE
ALLNOW LAKE
BEATTY LAKE
KIRBY LAKE
NORTH BRANCH
MIDDLE BRANCH
RUSH RIVER
City
City Of Gaylord
County
State
Crystal Foods Inc
Gaylord Feed Mill
451st AVE
461st AVE
471st AVE
481st AVE
491st AVE
501st AVE
503rd AVE
505th AVE
511th AVE
441st AVE
445th AVE
Gerald Henke etux
Vernus Kokesch
Dorothy Boettcher
Gerhard Henke etux
Bernette Fredin
Larry Harbarth
Delbert Sylvester
Orville Uecker
Kathryn Schumacher
Triple D Inv
Harley Heisel etux
Eric Heisel etux
Ervin Rose
Gary Hahn etux
Myrna Podratz etux LE
Larry Podratz etux
Kenneth Malecha
Duane Rose etux
Roger Kranz etux
Roger Harbarth
Eugene Grewe etux
Ronald Elbert etux
Willard Thies etux Trust
Brian Quast etux
Darrell Frauendienst
Ernest Kranz
Joseph Wemeler etux
John Wemeler etal
Marianne Bianchi
Floretta Mosel LE
Todd Kettner
Leroy Grewe
Joan Eckert
Darrell Mosel etal
George Otto
David Henkies etal
Wayne Proehl etux
Edgar Schuft etux
Donavan Grochow
Ronald Radke
Alvin Grochow
Bonnie Frauendienst
Roger Fredin etux
Gladys Fenske
Donald Marth etux
Lydia Uecker LE
Violet Kasten
Walter Grimm etal Trust
Doris Moses
Brian Bullert etux
Kenneth Dahlke etux
Marvanna Kettner LE
Steven Molnau
Willard Pitzner
Frederick Pitzner
Chester Feehan etux
Laverna Braasch LE
Ernest Kranz
Elmer Kasten
Kevin Mueller etal
Kenneth Wiemann etux
Luther Kranz etux
Erwin Kramer etux LE
Hildur Henke
Joan Roepke etvir
Warren Wentzlaff
Barbara Harbarth
Larry Podratz
Douglas Gunnink etux
Patricia Degregorio etal
Kenneth Wiemann etux
Paul Strickland etux
Michael Messner
Rufina Henke etal
Byron Kranz etux
Ernest Kranz etux
Myrna Podratz LE
Alfred Robert etal
Ruben Ebert etux
David Ruehling
Allen Bartels
William Braasch LE etux
Lucille Ruehling LE
Daniel Battcher etux
Harold Otto etux
Barbara Bening-Froemming
Elmer Schulz
Andrew Cardinal etux
Allen Bartels etux
Maynard Abraham
Hans Kranz etux
Eldon Podratz
Dennis Lieske
David Battcher etux
Elvira Battcher
Elsie Schulz
Hans Kranz
Alvin Bartels
Raymond Johnson EST
Cheyanne Kranz
Steven Molnau etux
Grant Jacobsen etux
Judith Hansch
Mary Davis
Albert Meyer Jr
Benjamin Hahn
Donovan Ploske
Jerome Willaert etux
Scott Doering
Gerald Lorentz etux
Crystal Foods Inc
Raymond Poquette
Marlan Pfarr
Floyd Bernstein
Dennis Lieske
Diane Harbarth
Edgar Asmus
Frieda Wichelmann
Charleen Reinke
Austin Huffman
Duwayne Witt etux
Herman Koenig
Randy Gerholz
Walter Meffert
James Kuphal
Steven Molnau
Hedgewood Farms
Johnn Weber
Duane Henke
Kenneth Quast etux
Jeffrey Peterson etux
Kenneth Quast etux
Richard Reinhart
Douglas Sylvester
Paul Meyer etux
John Weber
Erwin Kramer etux
Kevin Henke
Duane Henke
Joyce Battcher
Alvin Blaser
Raymond Hahn
Ronald Dietz etux
Timothy Dolan etux
Shirley Koehn LE
David Wittrock etux
Paul Meyer
Curtis Kahle etux
John Weber etux
John Weber
Charles Yahnke etal
Ricky Bauer
Ronald Dietz etux
Gerald Lorentz
Ronald Rose etux
Alice Heisel
Steven Molnau etux
Joseph Goettl etal
Marlis Henke
Charles Lind etux
Darlene Amundson
Paul Meyer etux
Albert Meyer
Elsie Gloss Trust
Karl Dietz
Jodi Veldt
Leslie Meyer
Gerald Lorentz etux
Delroy Bierstedt etux
Clarence Schwelm
Danny Boisen
Gerald Lorentz
Victoria Anderson etal
Dale Schoberg
Arnold Berdan etux
Marvin Meyer etux
Melford Franke
Leslie Meyer
Rueben Meyer etux
Daniel Widmer
Jeffrey Goldberg etux
Herman Hahn etux
Carol Young
Zoe Miner Trust
Raymond Meyer etux
Paul Mcguire
Harold Franke
Kenneth Franke etux
William Boese etal
Charles Yahnke etal
Wilbert Hildebrandt
David Ploske
Daryl Husfeldt etux
Wallace Lind
Dorvin Matthiesen
James Young etux
James Miner
Charles Megonigle etal
Daryl Franke
Randal Franke
Rueben Meyer
Phyllis Severin
Delroy Bierstedt
Frederic Latzke

Google Maps 47522 280th St



47522 280th St
Gaylord, MN 55334

Sibley County Parcel Viewer



September 28, 2016

1:4,514

0 0.035 0.07 0.14 mi

0 0.0425 0.085 0.17 km

PINSKE COMMUNITY SOLAR GARDENS

46916 280TH ST, GAYLORD, MN 55334

1 ARRAY LOCATION

2 OVERHEAD MAP

Project Team:

Developer:
New Energy Equity, LLC
705 Melvin Ave.
Ste. 100
Annapolis, MD 21401

Contact:
Rocky Shoemaker
Project Manager
443-203-5806

General Contractor:
TBD

Engineer on Record:
TBD

Parcel Notes:

Acreage:
8 ACRES

Parcel Desc:
S/T/R: 32/113/025
S½ OF SW¼ OF SE¼ EX 2.24A & EX 3.53A & GOV LOT 3

PID:
12.3211.010

Zoning:
AG NHSTD

Sheet List:

REVISIONS			
#	DESC	BY	DATE
0	ORIGINAL DESIGN	RSS	9/29/2016
1	XCEL COMMENTS	DEE	11/29/2016
2	CUP APPLICATION	TMP	2/3/2017
3	UPDATED ARRAY LOCATION	RSS	2/6/2017
4	UPDATED ARRAY LOCATION	TMP	3/10/2017

BASIS OF DESIGN
TOTAL SYSTEM SIZE DC: 1.30MW DC
TOTAL SYSTEM SIZE AC: 1.0MW AC
TILT: 30°
AZIMUTH: 180°

FIRST YEAR PRODUCTION:
SPECIFIC PRODUCTION:

MODULE: [3,888] REC 335TP72 - 335W (STC)

INVERTER: [15] CPS SCA60KTL-DO/US 60kW & [2] CPS SCA50KTL-DO/US 50kW

RACKING: DRIVEN BEAM GROUND MOUNT

DESIGN CRITERIA
MIN/MAX TEMPERATURE: -27°C / 32°C
WIND SPEED (ASCE 7-10): 105 MPH
BUILDING CATEGORY: II
EXPOSURE CATEGORY: C
GROUND SNOW LOAD: 50 PSF
BUILDING HEIGHT: N/A

SITE ADDRESS:
46916 280TH ST
GAYLORD, MN 55334
LAT: 44°32'39.54"N
LONG: 94°13'0.65"W

XCEL APPLICATION #:
SRC049580

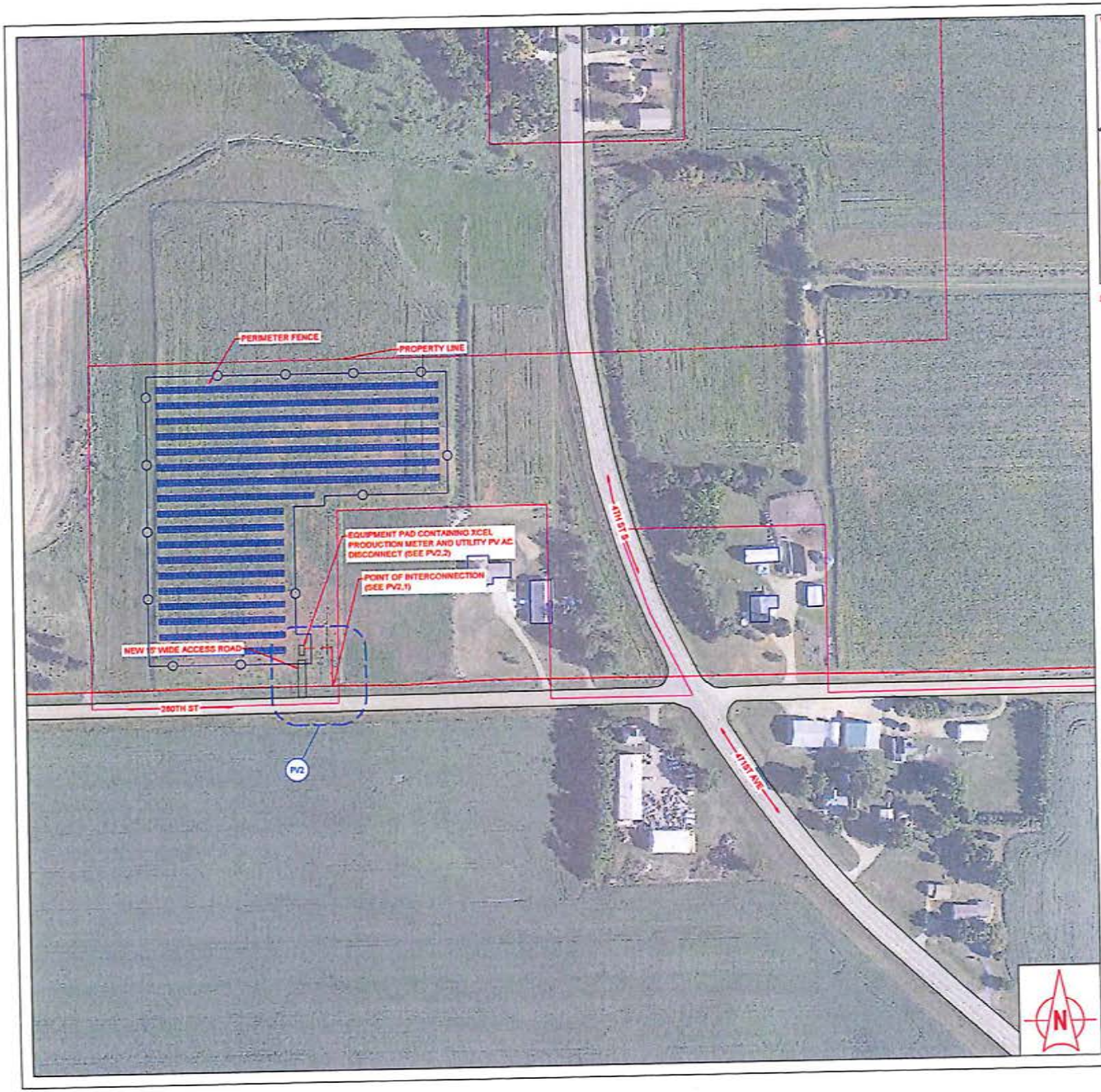
NEW ENERGY EQUITY
705 MELVIN AVENUE, STE 100
ANNAPOLIS, MD 21041

PROJECT NAME:
PINSKE CSG

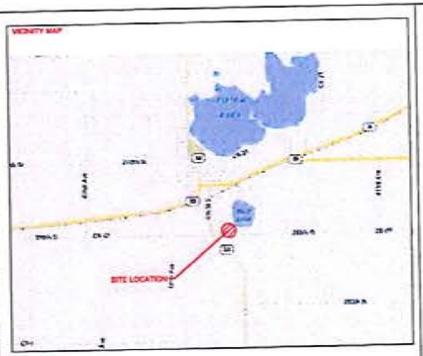
DRAWING TITLE:
TITLE SHEET

SCALE:
AS NOTED

SHEET:
T1



VICINITY MAP



SITE NOTES:

REVISIONS			
#	DESC	BY	DATE
0	ORIGINAL DESIGN	RSG	9/26/2016
1	XCEL COMMENTS	DEE	11/28/2016
2	CUP APPLICATION	TMP	2/3/2017
3	UPDATED ARRAY LOCATION	RSG	3/4/2017
4	UPDATED ARRAY LOCATION	TMP	3/10/2017

BASIS OF DESIGN
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AZIMUTH: 180°

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DESIGN CRITERIA
MIN/MAX TEMPERATURE: -27°C / 32°C
WIND SPEED (ASCE 7-10): 105 MPH
BUILDING CATEGORY: I
EXPOSURE CATEGORY: C
GROUND SNOW LOAD: 50 PSF
BUILDING HEIGHT: N/A

SITE ADDRESS:
46016 260TH ST
GAYLORD, MN 55334
LAT: 44°32'39.94"N
LONG: 94°13'0.65"W

XCEL APPLICATION #:
SRC049580

NEW ENERGY EQUITY
705 MELVIN AVENUE, STE 100
ANNAPOLIS, MD 21041

PROJECT NAME:
PINSKE CSG

DRAWING TITLE:
CONCEPTUAL LAYOUT

SCALE:
1" = 90'

SHEET:
PV1

1. Design and Interconnection:

Each garden will consist of approximately three thousand eight hundred and eighty eight (3,888) solar panels. The panels are mounted on a steel and aluminum racking structure positioned at a fixed 30° tilt, and generally averages approximately ten (10) feet above grade. The installation will not exceed a maximum height of twenty (20) feet above grade. The racking system is installed in the ground with pilings (I-beams) that are driven directly into the group at a depth usually between six (6) feet and eight (10) feet depending on soil conditions. The racking system manufacturer's engineer will provide certification that the design of the foundations and panels are within accepted professional standards, given local soil and climate controls. The equipment is designed to withstand wind up to ninety (90) MPH and fifty pounds per square foot (50 LBS/SF) of snow. Each of the gardens will have one (1) concrete equipment pad, typically less than 320 square feet, to support interconnection and metering equipment. The only proposed grading that will occur is for the roads and concrete equipment pads. Demonstrative equipment specifications are attached as **Exhibit E**.

The panels will be arranged into rows. Each row of solar panels will connect to an inverter. The inverters will be connected by directionally bored underground conduit that is housed inside of biodegradable PVC housing which will be installed two (2) feet below the surface. The conduit will lead to the concrete equipment pad for each garden. The inverters transform the direct current (DC) power generated by the photovoltaic system to alternating current (AC) power, which is then connected to the existing Xcel Energy three phase power distribution line at the point of common coupling (PCC).

The solar array will be contained within an area protected by a seven-foot chain link fence with barbed wire on top of it. It will not create any noise, dust, fumes, glare, or other pollutants or nuisance to surrounding neighbors. There will be signage along the fence, approximately 2' x 3', including utility hazard, company information, and contact information on the fence. The solar garden will comply with all applicable city, state, county, and federal regulations. No exterior lighting is proposed for the project. We do not request the city to provide any services or city personnel.

2. Construction:

IPS would like to begin construction as soon as April 2017 date and complete the project before September 2017. The construction process typically takes approximately three months. Operating hours during construction will be 8am-6pm. The site will have a portable toilet for workers. No water supply will be required. Any waste or debris will be gathered in a dumpster that will be removed during construction progress as necessary. Multiple truckloads of equipment will be delivered throughout the construction period. In addition, crews in passenger vehicles, pickup trucks, bobcats and skid steer loaders on tracks will be on site almost every day throughout the construction process. IPS will use appropriate temporary (construction-related) erosion and sediment control best management practices (BMP) through construction. IPS agrees to the Site Rules attached as **Exhibit F**.

3. Storm Water Management Measures

Storm water management measures will be determined by EVS, a licensed civil engineering firm. They are a Minnesota based company with an enormous amount of experience designing solar arrays. Measures will include an analysis of the existing topography since no substantial grading will be required, the use of erosion control logs and silt fences where necessary, and establishment a germinated pollinator friendly vegetative base underneath the project site before construction begins to prevent erosion.

4. Operations & Emergency Response:

The solar garden site will operate and be monitored 24 hours a day, 365 days a year after construction has been completed. It will be monitored remotely through a computer data acquisition system (DAS) so that appropriate personal can be dispatched to investigate potential problems. Additionally, twice a year qualified solar operations and maintenance crews will perform maintenance on the array and inspect the solar components, array and fence.

Construction, maintenance and decommissioning of the garden will be conducted in accordance with the Innovative Power Systems Safety Manuel, which is attached as **Exhibit G**. The proposed contacts for emergency response as well as ongoing maintenance and operations are local and easily accessible. No chemicals will be used, stored, or disposed of on the modules unless they are certified organic cleaning products.

Drainage, weeds, screening, general operations:
Jamie Borell
Innovative Power Systems, Inc.
jamieb@ips-solar.com
612-801-5999

Maintenance, stray voltage and electrical:
Bill Richmond
Knobelsdorff Electric
612-799-1315

5. Access, Parking, Road Use and Maintenance:

Construction and operation and maintenance crews will access to the site by a proposed fourteen (14) foot wide gravel road that has a twenty (20) foot entrance off 280th St. on the South part of the property. Road access will be controlled for erosion control during construction. Construction crew parking will be located entirely within the site. No additional permanent parking is required. Maintenance crews will park within the site access road and turnaround area.

6. Landscaping:

IPS has voluntarily participated in the Pollination Pledge, whereby it has agreed to seed with native pollinator friendly vegetation underneath the panels and in surrounding areas within the project site.

Seeding will be done as soon as is suitable for good germination. IPS will contract with a local company to maintain the grounds. Vegetation will be mowed and maintained on an as needed basis and in a manner as to maximize weed and erosion control. Ground cover within the fenced portion of the array will not exceed 24 inches in height.

IPS proposes a seed mix design specific to this site based on the parameters and methodology defined by the Minnesota Department of Transportation attached as **Exhibit H**.

The design goals for this solar garden seed mix will be:

- Withstand harsh climate conditions
- Minimize maintenance costs
- Minimize erosion
- Improve water quality
- Infiltrate storm water runoff

IPS will be responsible for maintaining the existing drain tile system underneath the array and replacing any damage to tile occurring during construction, or any time prior to or during decommissioning. Existing drain tile lines will be identified upon the completion of the ALTA survey prior to construction.

7. Fire Prevention:

This solar array will meet the requirements of the 2012 International Fire Code, specifically to sections 605.11 – 605.11.2 for clearance, markings and location of underground DC conductors. The solar garden will meet the international Building Code (IBC), National Electric Code (NEC), and local electric and fire code. NEC code is produced by the National Fire Protection Agency (NAPA) with safety of the public, contractors, and firefighters as the entire objective. Solar specific Code has been included in the NEC for over a decade. Safety is paramount in our solar PV facilities, as we need them to function optimally for their entire system life.

8. Visual Impact Analysis:

IPS conducted a site visit and visual analysis of the parcel and adjacent parcels to determine if any nearby properties would be have their line of site substantially obstructed or impeded by the proposed project. IPS proposed vegetative screening along the South and West boundaries of the array.

9. Decommissioning Plan:

IPS has contractual obligations to the landowner regarding decommissioning arising out of Section 4.4 of the lease. These obligations include removal of all equipment to a depth of 2-3 feet, timelines for removal, owner's rights to remove the solar facility upon failure by the Project Company, and establishment of a monetary security for removal in the form of a bond, escrow, or letter of credit. Section 4.4 of the lease is attached as **Exhibit I**.

The purpose of the security is to ensure there is sufficient money available to return the project site to an appropriate condition at the end of the project's useful life, or earlier. The landowner will be the

designated beneficiary of the fund and will be provided a copy of the document establishing the security before construction commences.

IPS or its successors agree to be responsible for all decommissioning costs, and agree that any future buyer or successor of the project will assume the same decommissioning responsibilities. Installation by IPS will be done with no significant or permanent alterations to the land. Upon removal, the project site shall be restored to pre-construction conditions as is reasonably practical, including removal of structures, foundation, and restoration of soil and vegetation. The system will be dismantled and removed using minimal impact construction equipment and materials will be safely recycled or disposed. Appropriate temporary construction-related erosion and sediment control best management practices (BMP) during the decommissioning of the project.

IPS expects that decommissioning will occur 25-35 years after the date that the system becomes operational. All equipment and structures will be removed within ninety (90) days from either of the following: A. The end of the system's serviceable life; or B. the system becomes discontinued. A system shall be considered a discontinued use after one (1) year without energy production, unless a plan is developed and submitted to the Zoning Administrator outlining the steps and schedule for returning the system to service.

The project site may be converted to other uses in accordance with applicable land use regulations at the time of decommissioning. There are no permanent changes to the site and it can be restored to its original condition. Any soil removed for construction purposes will be relocated on the site or used for landscaping after construction is complete.

Decommissioning requirements:

The decommissioning party shall:

a. Obtain any permits required for the decommissioning, removal, and legal disposal of the system components prior to the commencement of the decommissioning activities.
b. Remove and dispose of all equipment and components.
c. Remove all hazardous materials (if any) and transport them to be disposed of by licensed contractors at an appropriate facility in accordance with rules and regulations.
d. If appropriate, grading, and re-vegetation in accordance with permits and in compliance with all applicable rules and regulations.
e. Preserve and reclaim the soils on the project site to a level of pre-project quality
f. Reclaim soils in the access driveway and equipment pad areas by removing imported aggregate material and concrete foundations and replacing with soils as needed.
g. Remove non-biodegradable electrical conduits and backfill trenches with the native soils removed.

Equipment Removal Procedure:

The decommissioning of the project proceeds in reverse order of the installation:

a. The solar system shall be disconnected from the utility power grid.
b. PV modules shall be disconnected, unattached, collected, and removed.

c. Site aboveground and underground electrical interconnection and distribution materials shall be removed and recycled off site by an approved recycler, provided that IPS will not remove one biodegradable underground conduit housing.
d. PV module support racking shall be removed and recycled off site by an approved recycler.
e. PV modules support steel and support posts shall be removed and recycled off site by an approved recycler.
f. Electrical devices, including transformers and inverters, shall be removed and recycled off-suite by an approved recycler.
g. Concrete pads shall be removed and recycled by an approved recycler.
h. Fencing shall be removed and recycled by an approved recycler.

Nonfunctioning solar components consist of valuable recyclable materials including silver, semiconductor material, steel, aluminum, copper and plastics that have a significant salvage value. Due to changing market conditions and prices or raw materials, estimating scrap value 25 years in the future is impractical. Also, it is more likely that the System components would be used for continued electrical generation than for scrap.

Information is available regarding what used solar equipment sells for at auction. The American Solar Energy Society conducted a study to assess the resale value of used solar equipment. Data was conducted from the winning bids of surplus sales. The study is attached as **Exhibit J**. Winning bids for lots larger than .9MW sold for anywhere between $0.04 and $1.26 per watt, or $40,000 to $1,260,000 per megawatt. The variances in price reflect the conditions of the modules and their suitability for continued use or recyclability. These prices do not represent the additional value of the racking equipment that would be sold after decommissioning of this project. In all cases the prices appeared to exceed removal cost.

10. Insurance Information:

IPS's or its successor will provide a certificate of insurance meeting the Minnesota State requirements for liability insurance coverage. These requirements include:

- Insurance provider must be rated B+ or better by "Best."
- Limits of $2,000,000 for each occurrence.
- Coverage against claims for damages resulting from bodily injury, wrongful death, and property damage arising out of the Interconnection Customer's ownership and/or operating of the Generation System under the interconnection agreement.
- Include "Northern States Power Company, a Minnesota Company" as additional insured.
- Contain a severability of interest clause of cross-liability insurance
- Provides for thirty (30) calendar days written notice to NSP prior to cancellation, termination, alteration, or material change of such insurance.
- Coverage provided is primary, and not excess of, contributing to, or combined with, any insurance maintained by NSP.

We at IPS sincerely appreciate all of the help we have received from your staff with regard to our applications and we look forward to collaborating with you further to develop a great project that we can all be proud of.

Exhibit C

5

MAS METROPOLITAN ABSTRACT SERVICES

Order placed with Metropolitan Abstract Services.
Phone: 763.452.7150

RECEIVED
JUN - 1 2016
16SI06052

Order For: Carlson

Date Placed: 06/01/2016

Date Due:

Contact Name:
Customer File #:

TYPED O&E

Evan
1413 Hunting Valley Road
Saint Paul, MN 55108

Type:
Order:
Property Address:
County: Sibley
City:
Legal:
PIDs:
12.3211.010

Owners:
Mike Piske, POA of D. Pinske ,
Buyers:

Standard Hand Written Title Search:

Last Effective Date:

Typed Title Search:
O & E Report

Last Effective Date:

Non Title Search:

Last Effective Date:

Additional Search Order Information :

Returned on:_____

Via:Email___Fax___Upload___

CHARGES:

BASE:_____

COPIES:_____

MISC:_____

NAMES:_____

TOTAL:_____

THANK YOU!

Additional Information

METROPOLITAN ABSTRACT SERVICES, INC.
1378 Hamel Road
Medina, Minnesota 55340
(763) 452-7150

*** OWNERSHIP REPORT ***

Order No: 16SI06052

Date Ordered: June 1, 2016 Effective As Of: May 26, 2016 at 8:00 a.m.

Customer: Evan Carlson
IPS Solar
1413 Hunting Valley Road
St. Paul, MN 55108
Phone: 651-789-5305

RE: [Unassigned Address]
Gaylord, MN 55334
County: Sibley

*** CONVEYANCES ***

1. **WARRANTY DEED**
   Grantor: George Pinski and Grace Pinske, husband and wife.
   Grantee: Donavan G. Pinske.
   Instrument: Warranty Deed
   Dated: January 27, 1989 Recorded: January 27, 1989
   Document No: 143849 Life Estate: N/A
   Abstract Property.

2. **WARRANTY DEED**
   Grantor: Donavan G. Pinske and Georgia Ann Pinske, husband and wife.
   Grantee: Michael T. Pinske and Cynthia Pinske, as joint tenants.
   Instrument: Warranty Deed
   Dated: April 30, 1997 Recorded: April 30, 1997
   Document No: 167211 Life Estate: Access to outbuildings.
   *Outsale Deed - shown for reference purposes.

3. **WARRANTY DEED**

Grantor:	Donavan G. Pinske and Georgia Ann Pinske, husband and wife.	
Grantee:	Steven R. Bratsch and Marilyn Bratsch, husband and wife, as joint tenants.	
Instrument:	Warranty Deed	
Dated:	December 28, 2001	Recorded: August 20, 2003
Document No:	193502	Life Estate: N/A

*Outsale Deed - shown for reference purposes.

4. **WARRANTY DEED**

Grantor:	Donavan G. Pinske and Georgia Ann Pinske, husband and wife.	
Grantee:	Randy L. Kirsch and Jodi L. Kirsch, husband and wife, as joint tenants.	
Instrument:	Warranty Deed	
Dated:	March 23, 2006	Recorded: March 27, 2006
Document No:	205432	Life Estate: N/A

*Outsale Deed - shown for reference purposes.

*** **TAXES** ***

REAL ESTATE TAXES

Tax Legal: S 1/2 of SW 1/4 of SE 1/4 Ex 2.24A, Ex 3.53A & Govt Lot 3, Sec. 32, Twp. 113. Rng. 28

Property I.D. No:	12-3211-010	
Tax Year 2016:	Total Amount: $2,316.00	
2016 are Half Paid.	Current Amount Due: 1,158.00 - Due: 10-15-2016.	
Taxes for 2015 and prior years are paid in full.		
Market Value:	$272,100.00	Agricultural Homestead Property.
Base Tax:	$2,316.00	Special Assessments: None.

*** **MORTGAGES** ***

No open mortgages found of record.

*** MISCELLANEOUS ***

None of Record.

*** LIENS ***

None of Record.

*** JUDGMENTS ***

There are no judgments, state or federal tax liens, bankruptcies or any other liens filed against the following individuals within the last ten years.

Donovan G. Pinske
Georgia A. Pinske
Michael T. Pinske
Cynthia Pinske

*** LEGAL DESCRIPTION ***

Government Lot Number Three (3), and the Southwest Quarter of the Southeast Quarter (SW 1/4 of SE 1/4) of Section Thirty-two (32), Township One Hundred Thirteen (113), Range Twenty-eight (28), Excepting that parcel described as follows: Commencing at a point eight (8) feet south of the southwest corner of Block Number seven (7) of Maass and Spellman's Second Addition to the Village, now City, of Gaylord, Minnesota, thence running south 210 feet, thence running east 150 feet, thence running North 210 feet, thence running west 150 feet to the point of beginning. Also excepting the following tract of land, viz: Beginning at the southeast corner of Lot Six (6), in Block Six (6), of Maass and Spellman's Second Addition to the Village, now City of Gaylord, thence south 75 feet, thence west 300 feet, parallel with the south line of said Block 6, thence north 75 feet to the south line of said Block 6, thence east on the south line of said Block 6 for 300 feet to the place of beginning.

EXCEPTING THEREFROM the following:

That part of Gov't Lot Three (3) and the SW 1/4 of the SE 1/4 of Section 32, Township 113, Range 28, if any lying and being in the following described four (4) parcels:

Parcel #1: The East 74 feet (E 74') of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord;

Parcel #2: Lot 4 in Franke's Addition to the City of Gaylord;

Parcel #3: The West 73 feet of Lot 2, Block 2, of Hahn's Addition to the City of Gaylord;

Parcel #4: Lot 7, Block 7 of Maass and Spellman's Second Addition to the City of Gaylord.

Abstractor's Note: The legal descriptions contained in Documents #167211, #193502 and #205432 are also exceptions to the above legal description.

*** TERMS AND CONDITIONS ***

USE OF THIS REPORT: This Report contains information obtained from public land records and Metropolitan Abstract Services, Inc. ("MAS") makes no representation concerning the accuracy of said public record information or the information contained in this Report. THIS REPORT IS NOT AN ABSTRACT OR OPINION OF TITLE, TITLE COMMITMENT OR GUARANTEE, OR TITLE INSURANCE POLICY. This Report is provided to you as MAS's customer and is not intended for benefit of any third party.

...END OF REPORT.

METROPOLITAN ABSTRACT SERVICES, INC.

AUTHORIZED SIGNATURE

MARY FISHER
SIBLEY COUNTY TREASURER
P.O. BOX 51
GAYLORD, MN 55334
507-237-4084
www.co.sibley.mn.us

2016 Property Tax Statement

VALUES AND CLASSIFICATION

Step	Taxes Payable Year / Classification:	2015 AG NHSTD	2016 AG NHSTD
1	Estimated Market Value:	286,200	272,100
	Homestead Exclusion:		
	Taxable Market Value:	286,200	272,100
	New Improvements/ Expired Exclusions*:		

PROPERTY ID#R 12.3211.010

1389
DONAVAN G PINSKE
PO BOX 64
GAYLORD MN 55334-0064

Sent in March 2015

Step 2 — PROPOSED TAX

Proposed Tax: 2,290.00

Sent in November 2015

Step 3 — PROPERTY TAX STATEMENT

First-half Taxes:	1,158.00
Second-half Taxes:	1,158.00
Total Taxes due in 2016:	2,316.00

Sect-32 Twp-113 Range-028
Lot-003 48.58 AC
S 1/2 OF SW 1/4 OF SE 1/4 EX
2.24A & EX 3.53A & GOV LOT 3

$$$ REFUNDS?

You may be eligible for one or even two refunds to reduce your property tax. Read the back of this statement to find out how to apply.

	2015	2016
Taxes Payable Year:		
1. Use this amount on Form M1PR to see if you are eligible for a homestead credit refund. File by August 15. If this box is checked, you owe delinquent taxes and are not eligible. ☐		
2. Use this amount for the special property tax refund on schedule 1 of Form M1PR		
Property Tax and Credits		
3. Property taxes before credits	2,222.00	2,316.00
4. A. Agricultural market value credits to reduce your property tax		
B. Other credits to reduce your property tax		
5. Property taxes after credits	2,222.00	2,316.00
Property Tax by Jurisdiction		
6. County	1,206.02	1,263.95
7. City or Town TOWN OF DRYDEN	245.42	273.46
8. State General Tax		
9. School District 2310	575.06	566.95
A. Voter Approved Levies	178.42	193.68
B. Other Local Levies	4.12	4.63
10. Special Taxing Districts REGION 9 D MULTI COUN	12.96	13.33
11. Non-school voter approved referenda levies		
12. Total property tax before special assessments	2,222.00	2,316.00
Special Assessments on Your Property		
13. Special assessments		
14. YOUR TOTAL PROPERTY TAX AND SPECIAL ASSESSMENTS	2,222.00	2,316.00

PAYABLE 2016 2nd HALF PAYMENT STUB

PLEASE READ THE BACK OF THIS STATEMENT FOR IMPORTANT INFORMATION.

TO AVOID PENALTY PAY ON OR BEFORE: NOVEMBER 15

☐ If your address has changed please check this box and show the change on the back of this stub.

Property ID#:R 12.3211.010

Bill #: 11753

Classification AG NHSTD

Taxpayer: 1389
DONAVAN G PINSKE
PO BOX 64
GAYLORD MN 55334-0064

RE TAX ID# 1389

SECOND 1/2 TAX AMOUNT DUE: 1,158.00

PENALTY: TOTAL:

MAKE CHECKS PAYABLE TO:

Mary Fisher, Sibley County Treasurer
P.O. Box 51
Gaylord MN 55334

No Receipt sent. Your canceled check is proof of payment. Do not send postdated checks. $30 fee for returned payments

DETACH HERE AND RETURN THIS STUB WITH YOUR SECOND HALF PAYMENT.

PAYABLE 2016 1st HALF PAYMENT STUB

PLEASE READ THE BACK OF THIS STATEMENT FOR IMPORTANT INFORMATION.

TO AVOID PENALTY PAY ON OR BEFORE: MAY 16

☐ If your address has changed please check this box and show the change on the back of this stub.

Property ID#:R 12.3211.010

Bill #: 11753

Classification:AG NHSTD

Taxpayer: 1389
DONAVAN G PINSKE
PO BOX 64
GAYLORD MN 55334-0064

RE TAX ID# 1389

FULL TAX AMOUNT:	2,316.00
FIRST 1/2 TAX AMOUNT DUE:	1,158.00

PENALTY: TOTAL:

MAKE CHECKS PAYABLE TO:

Mary Fisher, Sibley County Treasurer
P.O. Box 51
Gaylord MN 55334

No Receipt sent. Your canceled check is proof of payment. Do not send postdated checks. $30 fee for returned payments.

DETACH HERE AND RETURN THIS STUB WITH YOUR FIRST HALF PAYMENT.

12-357.000 32-799.000

Form No. 1-M—WARRANTY DEED
Individual(s) to Individual(s)

Minnesota Uniform Conveyancing Blanks (1978) — OSWALD PUBLISHING CO., NEW ULM, MINN.

No delinquent taxes and transfer entered; Certificate of Real Estate Value (X) filed ( ) not required
Certificate of Real Estate Value No. 16786
January 27, 1989
Dane O. Schwanke
County Auditor
by Mary C Koenigsfeld
Deputy

143849
Filed for Record this 27 day of JAN 1989 at 5P. M
BK 115 of Deeds page 485-486
Eileen Ebert
County Recorder Sibley Co., Minn.

(reserved for recording data)

STATE DEED TAX DUE HEREON: $ 132.00

Date: January 27, 19 89

FOR VALUABLE CONSIDERATION, George Pinske and Grace Pinske, husband and wife (marital status), Grantor(s),

hereby convey (x) and warrant (x) to Donavan G. Pinske, Grantee(s),

real property in Sibley County, Minnesota, described as follows:

Government Lot Number Three (3), and the Southwest Quarter of the Southeast Quarter (SW¼ of SE¼) of Section Thirty-two (32), township One Hundred Thirteen (113), Range Twenty-eight (28), Excepting that parcel described as follows: Commencing at a point eight (8) feet south of the southwest corner of Block Number seven (7) of Maass and Spellman's Second Addition to the Village, now City, of Gaylord, Minnesota, thence running south 210 feet, thence running east 150 feet, thence running North 210 feet, thence running west 150 feet to the point of beginning. Also excepting the following tract of land, viz: Beginning at the southeast corner of Lot Six (6), in Block Six (6), of Maass and Spellman's Second Addition to the Village, now City of Gaylord, thence south 75 feet, thence west 300 feet, parallel with

(If more space is needed, continue on back) (Continued on back)

together with all hereditaments and appurtenances belonging thereto, subject to the following exceptions:

SIBLEY COUNTY 004025 SIBLEY COUNTY DEED STAMP JAN27'89 TAX 132.00 DEPT. OF TAXATION

George Pinske
George Pinske

Grace Pinske
Grace Pinske

STATE OF MINNESOTA
COUNTY OF Sibley } ss.

The foregoing instrument was acknowledged before me this 27th day of January, 19 89, by George Pinske and Grace Pinske, husband and wife, Grantor(s).

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)

DOUGLAS M. NESVIG
NOTARY PUBLIC — MINNESOTA
SIBLEY COUNTY
My Commission Expires Oct. 5, 1992

Douglas M. Nesvig
SIGNATURE OF PERSON TAKING ACKNOWLEDGMENT

Tax Statements for the real property described in this instrument should be sent to (include name and address of Grantee):

Donavan G. Pinske
Gaylord, MN. 55334

THIS INSTRUMENT WAS DRAFTED BY (NAME AND ADDRESS):

Douglas M. Nesvig
Attorney at Law
232 Fourth St.
P.O. Box 187
Gaylord, MN. 55334

BOOK 115 PAGE 485

(2)

Continuation of legal description:

the south line of said Block 6, thence north 75 feet to the south line of said Block 6, thence east on the south line of said Block 6 for 300 feet to the place of beginning.

EXCEPTING THEREFROM the following:

That part of Gov't Lot Three (3) and the SW¼ of the SE¼ of Section 32, Township 113, Range 28, if any, lying and being in the following described four (4) parcels:

Parcel #1: The East 74 feet (E74') of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord;

Parcel #2: Lot 4 in Franke's Addition to the City of Gaylord;

Parcel #3: The West 73 feet of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord;

Parcel #4: Lot 7, Block 7 of Maass and Spellman's Second Addition to the City of Gaylord.

12-3211-0 00

Form No. 5-M—WARRANTY DEED
Individual(s) to Joint Tenants

Minnesota Uniform Conveyancing Blanks (1978)

No delinquent taxes and transfer entered; Certificate of Real Estate Value ( ) filed (X) not required
Certificate of Real Estate Value No. ________
April 30, 1997

[signature]
County Auditor

by [signature]
Deputy

STATE DEED TAX DUE HEREON: $ 1.65

Date: April 30, 1997

OFFICE OF COUNTY RECORDER
Sibley County, Minnesota
I hereby certify that this document was filed in this office on the 30th day of April 1997 at 3 P.M. and was duly recorded as document number 167211.
[signature]
COUNTY RECORDER, by ______ Deputy

DOC # A-167211
MILLER-WHITMORE LAW OFFICE
332 SIBLEY STR
PO 447
GAYLORD, MN 55334

(reserved for recording data)

FOR VALUABLE CONSIDERATION, Donavan G. Pinske and Georgia Ann Pinske husband and wife, Grantor(s), (marital status)
hereby convey(s) and warrant(s) to Michael T. Pinske and Cynthia Pinske, Grantees as joint tenants, real property in Sibley County, Minnesota, described as follows:

A part of the SE¼ of Section 32, Township 113 North, Range 28 West, described as follows:

Commencing at the point of intersection of the South line of said Section 32 and the center line of State Highway No. 22, which said point is distant 1646.8 feet west of the Southeast corner of said Section 32, said point being the point of beginning of the tract to be described; and from said point proceeding thence east along the South line of said Section 32 a distance of 262 feet, and thence North at right angles a distance of 326 feet, and thence West at right angles a distance of 337 feet more or less to the center line of said State Highway No. 22 and thence south and southeasterly along the center line of said State Highway No. 22, 474 feet more or less to the point of beginning. ***continued on back
(if more space is needed, continue on back)

together with all hereditaments and appurtenances belonging thereto, subject to the following exceptions:

0167211

DEED TAX paid $ 1.65
Date 4/30/97 Receipt # 26564
Waldo Reckdahl, Sibley County Treasurer
By [signature] Deputy

[signature]
Donavan G. Pinske

[signature]
Georgia Ann Pinske

STATE OF MINNESOTA
COUNTY OF SIBLEY } ss.

The foregoing instrument was acknowledged before me this 30th day of April, 1997, by Donavan G. Pinske and Georgia Ann Pinske, husband and wife, Grantor(s).

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)

JEFFREY T. WHITMORE
NOTARY PUBLIC—MINNESOTA

[signature]
SIGNATURE OF PERSON TAKING ACKNOWLEDGMENT

Tax Statements for the real property described in this instrument should be sent to (Include name and address of Grantee):

Michael T. & Cynthia Pinske
RR
Gaylord, MN 55334

THIS INSTRUMENT WAS DRAFTED BY (NAME AND ADDRESS):

Raphael J. Miller
MILLER & WHITMORE, P.L.L.P.
332 Sibley Ave., Box 447
Gaylord, MN 55334
(507) 237-2954

CURRENT TAXES PAID M.S. 286 SEC.7
✓ PAID IN FULL
___ EXEMPT DATE 4/30, 1997
WALDO RECKDAHL, SIBLEY CO. TREAS.
BY [signature]

*** continued from front

Subject to highway right of way, drainage and utility easements of record.

Reserving, however, unto grantors the use, possession and access to all outbuildings located on said premises for and during the term of their natural lives.

The consideration herein is $500.00 or less.

0167211

32.0799.000 - Div
32.0756.000 - Rdd 6x150'

WARRANTY DEED

Individual to Joint Tenants

No delinquent taxes and transfer entered; Certificate of Real Estate Value ( ) filed (X) not required
Certificate of Real Estate Value No.
August 20, 2003
Lisa Flynn
County Auditor
By Mary Koenigs
Deputy

OFFICE OF COUNTY RECORDER
Sibley County, Minnesota
I hereby certify that this document was filed in this office on 8/20/2003 at 10:00:00 AM and was duly recorded as document number A-193502
ELDRENE EBERT – County Recorder, by RAE Deputy.

Well Certificate: ___ Received X Not Required
Abstr. – yes ___ no X
Fees:

ELECTRONIC FILING FEE	4.50
EQUIPMENT FUND	1.00
SURCHARGE	4.50
GENERAL ABSTRACT	14.00
Total	$20.00

A-193502

STATE DEED TAX DUE HEREON: $ 1.65
Date: DECEMBER 28, 20 01

FOR VALUABLE CONSIDERATION, Donavan G. Pinske and Georgia Ann Pinske, Husband and Wife (marital status), Grantor(s),

hereby convey(s) and warrant(s) to Steven R. Bratsch and Marilyn Bratsch, Husband and Wife, Grantees as joint tenants, real property in Sibley County, Minnesota, described as follows:

Beginning at a point Two-Hundred Ten (21) feet South of the Southwest Corner of Block 7 of Mann's and Spellman's Second Addition to the Village of Gaylord according to the plat thereof on file and of record in the office of the Sibley County Recorder in and for said Sibley County, thence running South Eight (8) feet, thence running East One-Hundred Fifty (150) feet, thence running North Eight (8) feet and thence running West One-Hundred Fifty (150) feet, to the place of beginning; all being in the Southwest Quarter of the Southeast Quarter of Section 32, Township 113 North of Range Twenty-Eight (28) West, lying and being in the County of Sibley, State of Minnesota.

Actual consideration is $500 or less.

(If more space is needed, continue on back)
together with all hereditaments and appurtenances belonging thereto, subject to the following exceptions:

Received from/return to:
STEVEN R BRATSCH
MARILYN BRATSCH
RR 2 BOX 241
GAYLORD, MN 55334

Check box if applicable:
X The Seller certifies that the Seller does not know of any wells on the described real property.
A well disclosure certificate accompanies this document.
I am familiar with the property described in this instrument and I certify that the status and number of wells on the described real property have not changed since the last previously filed well disclosure certificate.

DEED TAX PAID $ 1.65
This 20 day of Aug., 2003
Mary Fisher, Sibley County Treas.
By Sara Ernst Deputy

Donavan G. Pinske
Donavan G. Pinske

Georgia Ann Pinske
Georgia Ann Pinske

CURRENT TAXES PAID M.S. 272 SEC. 121
X Paid in Full
Exempt 8/20/03 Date
Mary Fisher, Sibley County Treasurer
By Sara Ernst Deputy

STATE OF MINNESOTA)
)
COUNTY OF SIBLEY)

This instrument was acknowledged before me on December 28, 2001 (date)
by Donavan G. Pinske and Georgia Ann Pinske

ALYSON E. NEMEC
NOTARY PUBLIC-MINNESOTA
My Commission Expires Jan. 31, 2005

Alyson E. Nemec
SIGNATURE OF NOTARY PUBLIC OR OTHER OFFICIAL

THIS INSTRUMENT WAS DRAFTED BY (NAME & ADDRESS)
WILLIAM H. COWELL
COWELL LAW OFFICE
210 N. FOURTH STREET
PO BOX 1075
GAYLORD, MN 55334-1075
(507) 237-5210

Check here if part or all of the land is Registered (Torrens) ____

Tax Statements for the real property described in this instrument, should be sent to: (Include name and address of Grantee)
Steven R. and Marilyn Bratsch
RR 2 Box 241
Gaylord, MN 55334

R12.3211.020

WARRANTY DEED — Form No. 5-M — Minnesota Uniform Conveyancing Blanks (6/17/97)

Individual(s) to Joint Tenants

No delinquent taxes and transfer entered; Certificate of Real Estate Value (✓) filed ( ) not required. Certificate of Real Estate Value No. 6709

March 27th, 2006 (Date)

Lisa Pfau

County Auditor

by: Deputy

OFFICE OF COUNTY RECORDER
Sibley County, Minnesota

I hereby certify that this document was filed in this office on 3/27/2006 at 10:00:00 AM and was duly recorded as document number A-205432
KATHY DIETZ - County Recorder, by ____ Deputy.

Well Certificate: ___ Received X Not Required
Abstr.: yes X no ___
Fees:

REC'G PROCESS COMPLIANCE	$11.00
RECORDER TECHNOLOGY FUND	10.00
STATE TREASURY GENERAL	10.50
GENERAL ABSTRACT	14.50
Total	$46.00

DEED TAX DUE: $ 115.50

Date: March 23, 2006

A-205432

FOR VALUABLE CONSIDERATION, Donavan G. Pinske, aka Donavan Pinske and Georgia A. Pinske, husband and wife, Grantor,

hereby conveys and warrants to Randy L. Kirsch and Jodi L. Kirsch, husband and wife, Grantees,

as joint tenants, real property in Sibley County, Minnesota, described as follows:

Part of the Southwest Quarter of the Southeast Quarter of Section 32, Township 113, Range 28, Sibley County, Minnesota, described as follows: Commencing at the southwest corner of said Southeast Quarter of Section 32; thence easterly along the South line of said Southeast Quarter 474.00 feet to the point of beginning of the tract to be described; thence continuing easterly along said South line 410.00 feet; thence northerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet; thence westerly deflecting left 90 degrees 00 minutes 00 seconds 410.00 feet; thence southerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet to the point of beginning. This tract contains 3.53 acres of land and is subject to any and all easements of record.

together with all hereditaments and appurtenances belonging thereto, subject to the following exceptions:

Check box if applicable:
☑ The Seller certifies that the Seller does not know of any wells on the described real property.
☐ A well disclosure certificate accompanies this document.
☐ I am familiar with the property described in this instrument and I certify that the status and number of wells on the described real property have not changed since the last previously filed well disclosure certificate.

DEED TAX PAID $ 115.50
This 27 day of Mar, 20 06
Mary Fisher, Sibley County Treas.
By Nora Ernst Deputy

Donavan G. Pinske
Georgia A. Pinske

STATE OF MINNESOTA
COUNTY OF Sibley } ss.

This instrument was acknowledged before me on March 23, 2006 (Date)

by Donavan G. Pinske and Georgia A. Pinske, husband and wife

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)

DOUGLAS M. NESVIG
NOTARY PUBLIC-MINNESOTA
My Commission Expires Jan. 31, 2010

SIGNATURE OF NOTARY PUBLIC OR OTHER OFFICIAL

Check here if part or all of the land is Registered (Torrens) ☐

THIS INSTRUMENT WAS DRAFTED BY (NAME & ADDRESS):

Douglas M. Nesvig
Attorney at Law
230 Fourth Street
P.O. Box 187
Gaylord, MN 55334

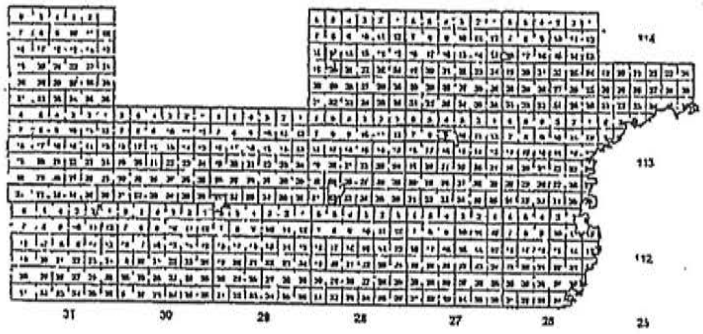
Tax Statements for the real property described in this instrument should be sent to (Include name and address of Grantee):

Randy L. Kirsch
Jodi L. Kirsch
619 Main Avenue
Gaylord, MN 55334

Received from Vendee for:
DOUGLAS NESVIG
230 4TH STR
PO 187
GAYLORD, MN 55334

24434

240292



ABSTRACT OF TITLE

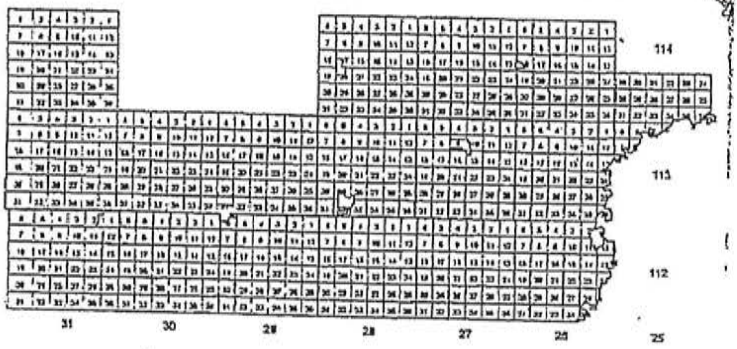
To the following described Real Estate, situated in Sibley County, Minnesota

Government Lot No.3, and the SW ¼ of SE ¼, Sec 32, Twp. 113, Rge. 28,
EXCEPTING that parcel described as follows:
Commencing at a point 8 feet South of the Southwest corner of Block No. 7 of Mann and Spellman's Second Addition to the City of Gaylord, Minnesota; thence running South 210 feet; thence running East 150 feet; thence running North 210 feet; thence running West 150 to the point of beginning.
Also EXCEPTING therefrom the following tract of land:
Beginning at the Southeast corner of Lot 6, in Block 6, of Mann and Spellman's Second Addition to the City of Gaylord; thence South 75 feet; thence West 175 feet, parallel with the South line of said Block 6; thence North 75 feet to the South line of said Block 6, thence East on the South line of said Block 6 for 175 feet to the place of beginning.
Also EXCEPTING therefrom the following tract of land:
Beginning at the Southeast corner of Lot 6, Block 6, Mann and Spellman's Second Addition to the City of Gaylord; thence South 75 feet to the point of beginning of the parcel to be described; thence West parallel with the South line of Block 6, 175 feet, thence South 50 feet; thence East parallel with the South line of Block 6, 175 feet; thence North 50 feet to the point of beginning of the described parcel.
Also EXCEPTING therefrom the following:
That part of Gov't Lot 3 and the SW ¼ of SE ¼, Sec 32, Twp. 113, Rge. 28, if any, lying and being in the following described 4 parcels.
Parcel #1. The East 74 feet of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord.
Parcel #2. Lot 4 in Franke's Addition to the City of Gaylord.
Parcel #3. The West 73 feet of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord.
Parcel #4. Lot 7, Block 7 of Mann and Spellman's Second Addition to the City of Gaylord.
Also EXCEPTING therefrom the following:
Beginning at a point Two-Hundred Ten (210) feet South of the Southwest Corner of Block 7 of Mann and Spellman's Second Addition to the Village of Gaylord according to the plat thereof on file and of record in the office of the Sibley County Recorder in and for said Sibley County, thence running South Eight (8) feet, thence running East One-Hundred Fifty (150) feet, thence running North Eight (8) feet and thence running West One-Hundred Fifty (150) feet, to the place of beginning; all being in the Southwest Quarter of the Southeast Quarter of Section 32, Township 113 North of Range Twenty-Eight (28) West, lying and being in the County of Sibley, State of Minnesota.
Also EXCEPTING therefrom the following:

Part of the Southwest Quarter of the Southeast Quarter of Section 32, Township 113, Range 28, Sibley County, Minnesota, described as follows: Commencing at the southwest corner of said Southeast Quarter of Section 32; thence easterly along the South line of said Southeast Quarter 474.00 feet to the point of beginning of the tract to be described; thence continuing easterly along said South line 410.00 feet; thence northerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet; thence westerly deflecting left 90 degrees 00 minutes 00 seconds 410.00 feet; thence southerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet to the point of beginning.

Continued from January 11, 1995 at 1:00PM

240187 24415



ABSTRACT OF TITLE

To the following described Real Estate, situated in Sibley County, Minnesota

Government Lot No.3, and the SW ¼ of SE ¼, Sec. 32, Twp. 113, Rge. 28,
EXCEPTING that parcel described as follows:
Commencing at a point 8 feet South of the Southwest corner of Block No. 7 of Mears and Spellman's Second Addition to the City of Gaylord, Minnesota; thence running South 210 feet; thence running East 150 feet; thence running North 210 feet; thence running West 150 to the point of beginning.
Also EXCEPTING therefrom the following tract of land:
Beginning at the Southeast corner of Lot 6, in Block 6, of Mears and Spellman's Second Addition to the City of Gaylord; thence South 75 feet; thence West 175 feet, parallel with the South line of said Block 6; thence North 75 feet to the South line of said Block 6; thence East on the South line of said Block 6 for 175 feet to the place of beginning.
Also EXCEPTING therefrom the following tract of land:
Beginning at the Southeast corner of Lot 6, Block 6, Mears and Spellman's Second Addition to the City of Gaylord; thence South 75 feet to the point of beginning of the parcel to be described; thence West parallel with the South line of Block 6, 175 feet; thence South 50 feet; thence East parallel with the South line of Block 6, 175 feet; thence North 50 feet to the point of beginning of the described parcel.
Also EXCEPTING therefrom the following:
That part of Gov't Lot 3 and the SW ¼ of SE ¼, Sec.32, Twp. 113, Rge. 28, if any, lying and being in the following described 4 parcels:
Parcel #1. The East 74 feet of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord.
Parcel #2. Lot 4 in Franke's Addition to the City of Gaylord.
Parcel #3. The West 73 feet of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord.
Parcel#4. Lot 7, Block 7 of Mears and Spellman's Second Addition to the City of Gaylord.
Also EXCEPTING therefrom the following:
Beginning at a point Two-Hundred Ten (210) feet South of the Southwest Corner of Block 7 of Mears and Spellman's Second Addition to the Village of Gaylord according to the plat thereof on file and of record in the office of the Sibley County Recorder in and for said Sibley County, thence running South Eight (8) feet, thence running East One-Hundred Fifty (150) feet, thence running North Eight (8)feet and thence running West One-Hundred Fifty (150) feet, to the place of beginning; all being in the Southwest Quarter of the Southeast Quarter of Section 32, Township 113 North of Range Twenty-Eight (28) West, lying and being in the County of Sibley, State of Minnesota.
Also EXCEPTING therefrom the following:

Part of the Southwest Quarter of the Southeast Quarter of Section 32, Township 113, Range 28, Sibley County, Minnesota, described as follows: Commencing at the southwest corner of said Southeast Quarter of Section 32; thence easterly along the South line of said Southeast Quarter 474.00 feet to the point of beginning of the tract to be described; thence continuing easterly along said South line 410.00 feet; thence northerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet; thence westerly deflecting left 90 degrees 00 minutes 00 seconds 410.00 feet; thence southerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet to the point of beginning.

Continued from January 11, 1995 at 1:00PM

LEGAL DESCRIPTION: Government Lot No. 3, and the SW 1/4 of SE 1/4, Sec. 32, Twp. 113, Rge. 28, EXCEPTING that parcel described as follows: Commencing at a point 8 feet South of the Southwest corner of Block No. 7 of Maass and Spellman's Second Addition to the City of Gaylord, Minnesota; thence running South 210 feet; thence running East 150 feet; thence running North 210 feet; thence running West 150 to the point of beginning. Also EXCEPTING therefrom the following tract of land: Beginning at the Southeast corner of Lot 6, in Block 6, of Maass and Spellman's Second Addition to the City of Gaylord; thence South 75 feet; thence West 175 feet, parallel with the South line of said Block 6; thence North 75 feet to the South line of said Block 6; thence East on the South line of said Block 6 for 175 feet to the place of beginning. Also EXCEPTING therefrom the following tract of land: Beginning at the Southeast corner of Lot 6, Block 6, Maass and Spellman's Second Addition to the City of Gaylord; thence South 75 feet to the point of beginning of the parcel to be described; thence West parallel with the South line of Block 6, 175 feet; thence South 50 feet; thence East parallel with the South line of Block 6, 175 feet; thence North 50 feet to the point of beginning of the described parcel. Also EXCEPTING therefrom the following: That part of Gov't Lot 3 and the SW 1/4 of SE 1/4, Sec. 32, Twp. 113, Rge. 28, if any, lying and being in the following described 4 parcels: Parcel #1. The East 74 feet of Lot 2, Block 2, of Hahn's Addition to the City of Gaylord. Parcel #2. Lot 4 in Franke's Addition to the City of Gaylord. Parcel #3. The West 73 feet of Lot 2, Block 2 of Hahn's Addition to the City of Gaylord. Parcel #4. Lot 7, Block 7 of Maass and Spellman's Second Addition to the City of Gaylord. Also EXCEPTING therefrom the following: Beginning at a point Two-Hundred Ten (210) feet South of the Southwest Corner of Block 7 of Maass and Spellman's Second Addition to the Village of Gaylord according to the plat thereof on file and of record in the office of the Sibley County Recorder in and for said Sibley County, thence running South Eight (8) feet, thence running East One-Hundred Fifty (150) feet, thence running North Eight (8) feet and thence running West OneHundred Fifty (150) feet, to the place of beginning; all being in the Southwest Quarter of the Southeast Quarter of Section 32, Township 113 North of Range Twenty-Eight (28) West, lying and being in the County of Sibley, State of Minnesota. Also EXCEPTING therefrom the following:

Part of the Southwest Quarter of the Southeast Quarter of Section 32, Township 113, Range 28, Sibley County, Minnesota, described as follows: Commencing at the southwest corner of said Southeast Quarter of Section 32; thence easterly along the South line of said Southeast Quarter 474.00 feet to the point of beginning of the tract to be described; thence continuing easterly along said South line 410.00 feet; thence northerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet; thence westerly deflecting left 90 degrees 00 minutes 00 seconds 410.00 feet; thence southerly deflecting left 90 degrees 00 minutes 00 seconds 375.00 feet to the point of beginning.

APPARENT RECORD OWNER: Georgia Pinske WARRANTY DEED: George Pinske and Grace Pinske, husband and wife, to Donavan G. Pinske; DOCUMENT NO.: 143849; DATED: January 27, 1989; FILED: January 27, 1989.

WARRANTY DEED: Donadvan G. Pinske and Georgia and Pinske, husband and wife, to Michael T. Pinske and Cynthia Pinske, as joint tenants; DOCUMENT NO.: 167211; DATED: April 30, 1997; FILED: April 30, 1997. (Deeds out part)

WARRANTY DEED: Donavan G. Pinske and Georgia Ann Pinske, husband and wife, to Steven R. Bratsch and Marilyn Bratsch, husband and wife, as joint tenants; DOCUMENT NO.: A193502; DATED: December 28, 2001; FILED: August 20, 2003. (Deeds out part)

WARRANTY DEED: Donavan G. Pinske, aka Donavan Pinske and Georgia A. Pinske, husband and wife, to Randy L. Kirsch and Jodi L. Kirsch, husband and wife, as joint tenants; DOCUMENT NO.: A-205432; DATED: March 23, 2006; FILED: March 27, 2006. (Deeds out part)

DECREE OF DISTRIBUTION: Estate of Donovan G. Pinske, decedent, to; DOCUMENT NO.: A240292; DATED: May 11, 2016; FILED: November 29, 2016.

Exhibit D

Datasheet

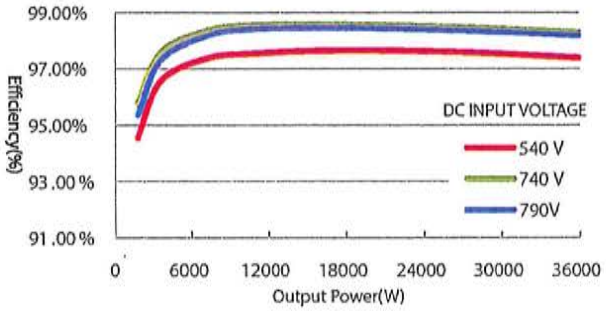
36kW, 1000 Vdc String Inverters for North America

The medium power series of grid-tied, transformerless inverters help to accelerate the use of 1000Vdc and three phase string architecture for commercial and small ground mount utility applications. A NRTL approved, cost effective alternative to central inverters enabling BoS cost savings, high harvest performance and modular design building blocks. These models provide up to 98.4% conversion efficiency and wide operating window of 240-950Vdc and dual MPPT's for maximum energy harvest.

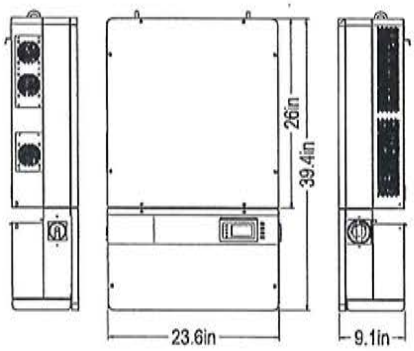
CPS SCA36KTL-DO/US-480

Efficiency Curve

CPS SCA36KTL-DO/US-480



Dimensions



High Efficiency

- Maximum efficiency of 98.4%, CEC efficiency of 98%
- 3-level technology and enhanced control mechanism to achieve high efficiency over wide load range
- 2 MPPTs to achieve higher system efficiency
- Transformerless design

High Reliability

- "Electrolyte-free design" for improved long-term reliability
- Standard warranty: 5 years, extension up to 20 years
- Advanced thermal design, with variable speed fans
- Ground-fault detection and interruption circuit
- AFCI Integrated per UL1699B

Broad Adaptability

- NEMA 4 (IP65), outdoor application
- Utility interactive controls : Active power derating, reactive power control
- Separate wiring box design
- Integrated DC, AC disconnects
- Wide MPPT range for flexible string sizing
- 1000V Max. DC input voltage for flexible configuration
- 15 - 90 degree installation angle
- Compatible with Copper and Aluminium wire on AC side

c SA us

FC This device complies with part 15 of the FCC Rules

Model Name	CPS SCA36KTL-DO/US-480
DC Input	
Max. PV Power	54kW (27kW/MPPT)
Nominal DC Input Power	37kW
Max. DC Input Voltage	1000Vdc
Operating DC Input Voltage Range	240-950Vdc
Start-up DC Input Voltage / Power	330V/300W
Number of MPP Trackers	2
MPPT Voltage Range	540-800Vdc
Max. Input Current (Imp)	70A (35A per MPPT)
Max Short Circuit Current (Isc)	107A
Number of DC Inputs	8 inputs, 4 per MPPT
DC Disconnection Type	Load rated DC switch
AC Output	
Rated AC Output Power	36kW
Max. AC Output Power	36kW
Rated Output Voltage	480Vac
Output Voltage Range*	422-528Vac
Grid Connection Type	3Φ/PE/N (Neutral Optional)
Maximum AC Output Current @480Vac	43.5A
Rated Output Frequency	60Hz
Output Frequency Range*	57-63Hz
Power Factor	>0.99 (±0.8 adjustable)
Current THD	<3%
AC Disconnection Type	Load rated AC switch
System	
Topology	Transformerless
Max. Efficiency	98.4%
CEC Efficiency	98.0%
Stand-by / Night Consumption	<20W/<2W
Environment	
Protection Degree	NEMA 4
Cooling	Variable speed cooling fans
Operating Temperature Range	-13°F to +140°F/- 25°C to +60°C (derating from +113°F/+45°C)
Storage Temperature Range	-49°F to +158°F/- 45°C to +70°C
Operating Humidity	0-95%, non-condensing
Operating Altitude	13123.4ft/4000m (derating from 6561.7ft/2000m)
Display and Communication	
Display	LCD+LED
Communication	Standard: RS485 (Modbus) Optional: TCP/IP Card
Mechanical	
Dimensions (WxHxD)	600×1000×230mm
Weight	Inverter: 121lbs/55kg ; Wirebox: 24lbs/11kg
Installation Angle	15 - 90 degrees from horizontal
Safety	
Safety and EMC Standard	UL1741:2010, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART16
Grid Standard	IEEE1547: 2003, IEEE1547.1: 2006

*The "Output Voltage Range" and "Output Frequency Range" may differ according to specific grid standard.

Output Short Circuit Test, UL 1741 Sec. 47.3, Cl. 6.6

Test performed under islanding condition by disable the anti-islanding protection, just generating the nominal voltage, afterwards we performed a short circuit between Lines to Lines and line to Ground.

Performed on model: CPS SCA36KTL-DO/US-480, 725 Vdc Input, 480Vac Output, 28 kW

Phases	#	Peak Current (A)	Duration (ms)	RMS Current over 1 cycle (A)	RMS Current over 3 cycles (A)	RMS Current over 5 cycles (A)	RMS A overall event(A)
L1 to L2	1	301	1.0640	33.2	31.4	31.0	68.3
	2	262	1.1332	18.7	13.4	12	57.7
	3	435	1.2568	38.6	23.2	18.8	81.1
	4	275	1.1236	99.5	89.1	87.2	129.3
L1 to L3	1	243	1.0976	73.2	83.1	81.9	73.5
	2	274	0.7708	29.8	81.9	30.4	32.8
	3	280	1.1304	33.4	30.4	31.4	33.5
	4	216	0.0148	73.4	31.8	82.9	60.4
L2 to L3	1	222	0.7828	29.7	30.5	30.6	66.4
	2	317	1.4468	35.4	32.4	31.5	50.4
	3	310	0.9556	36.6	32.9	31.8	73.7
	4	298	1.4692	33.8	31.7	31.2	45.9

After fault removed the unit continued to operate normally.
3 Amps fuse remained intact.
No hazards observed.

Tested By:		Witnessed by:	Kyle Song	Compliance:	
Equipment:				Date:	

Chapter 8 Technical Data

Model Name	CPS SCA36KTL-DO/US
DC Input	
Max. PV Power	54kw
Nominal DC Input Power	37kW
Max. DC Input Voltage[1]	1000Vdc
Operating DC Input Voltage Range	240-950Vdc
Start-up DC Input Voltage / Power	330V/300W
Number of MPP Trackers	2
MPPT Voltage Range[2]	540-800Vdc
Max. Input Current (Imp)	35A*2
Max. Short Circuit Current (Isc)	50A*2
Number of DC Inputs	8 inputs, 4 per MPPT
DC Disconnection Type	Load rated DC switch
AC Output	
Rated AC Output Power	36kW
Max. AC Output Power	36kW
Rated Output Voltage	480Vac
Output Voltage Range[3]	422-528Vac
Grid Connection Type	3Φ/ PE
Max AC Output Current	43.5A
Rated Output Frequency	60Hz
Output Frequency Range[4]	59.3-60.5Hz
Power Factor	>0.99 (±0.8 adjustable)

[1] Exceeding the Max. DC Input Voltage may cause permanent damage to the equipment.
[2] The MPPT Voltage Range is adjustable through LCD operations.
[3] The Output Voltage Range may differ according to specific grid standard.
[4] The Output Frequency Range may differ according to specific grid standard.

Current THD	<3%
AC Disconnection Type	Load rated AC switch
System	
Topology	Transformerless
Max. Efficiency	98.4%
CEC Efficiency	98.0%
Stand-by / Night Consumption	<30W / <3W
Environment	
Protection Degree	TYPE 4X
Cooling	Variable speed cooling fans
Operating Temperature Range	-13°F to +140°F / - 25°C to +60°C (derating from +113°F / +45°C)
Operating Humidity	0-95%, non-condensing
Operating Altitude	13123.4ft / 4000m (derating from 6561.7ft / 2000m)
Display and Communication	
Display	LCD + LED
Communication	Standard: RS485 (Modbus) Optional:Ethernet TCP/IP card
Mechanical Data	
Dimensions (WxHxD)	23.6×39.4×9.1in / 600×1000×230mm
Weight	145lbs / 66kg
Orientation	15 - 90 degrees from horizontal
Safety	
PV Arc-Fault Circuit Protection	Type 1
Safety and EMC Standard	UL1741:2010, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART15
Grid Standard	IEEE1547: 2003, IEEE1547.1: 2006

Note 1: When the DC input voltage is lower than 400V or higher than 800V, the inverter begins derating, as shown in Figure 8-1:

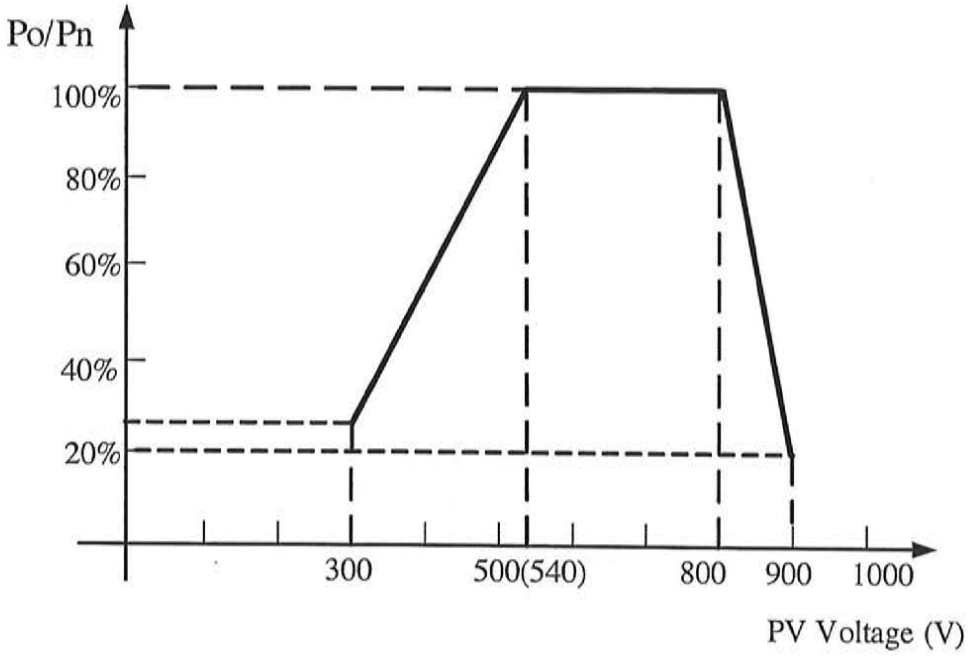


Figure 8-1 SCA36KTL derating curve of PV input voltage

Note 2: When the ambient temperature is higher than 113℉ (45℃), the output power begins derating, as shown in Figure 8-2:

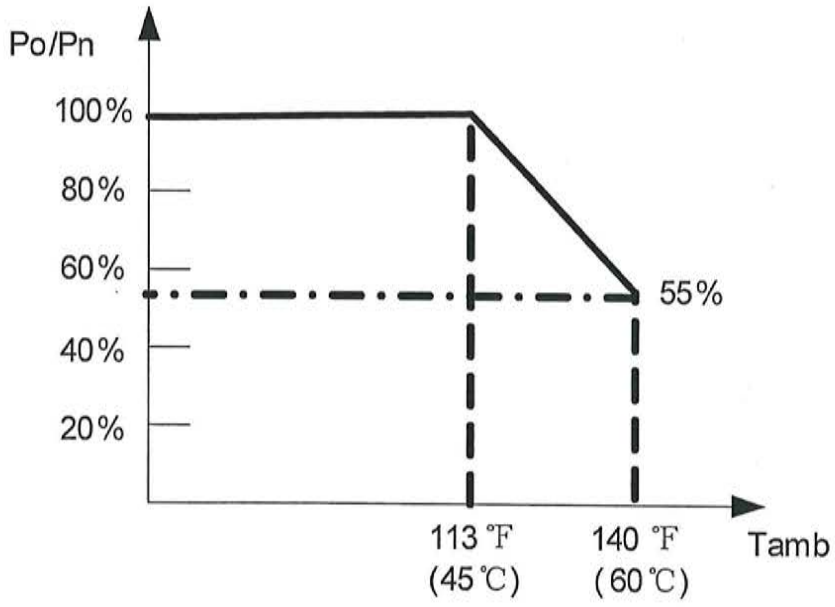


Figure 8-2 SCA36KTL derating curve with high temperature

Note 3: When the altitude is higher than 6562ft (2000m), the power of the inverter needs derating, as shown in Figure 8-3:

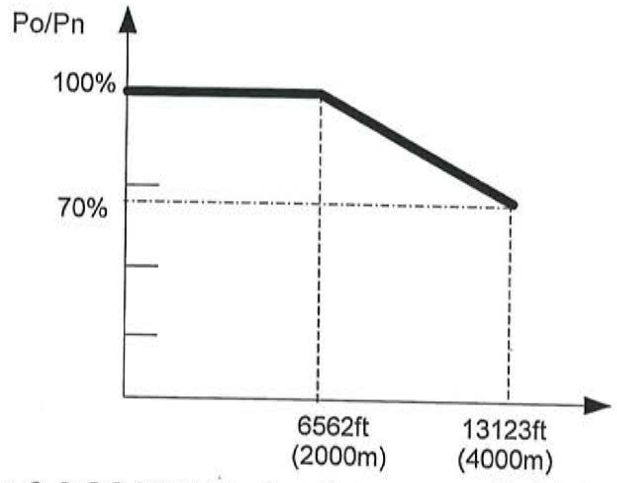


Figure 8-3 SCA36KTL derating curve with high altitude

Note 4: The inverter can output the AC power with full loads under 90%~110% of the rated grid voltage. When the grid voltage is lower than 90%, the output current will be limited within the allowable Max. current.

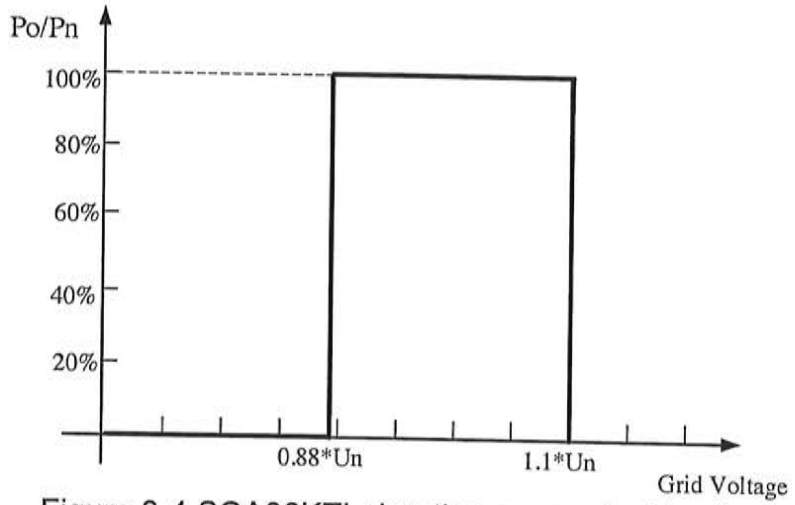


Figure 8-4 SCA36KTL derating curve of grid voltage

Mono **Multi** Solutions

THE Utility MODULE

72 CELL
MULTICRYSTALLINE MODULE

300-315W
POWER OUTPUT RANGE

16.2%
MAXIMUM EFFICIENCY

0~+3%
POSITIVE POWER TOLERANCE

As a leading global manufacturer of next generation photovoltaic products, we believe close cooperation with our partners is critical to success. With local presence around the globe, Trina is able to provide exceptional service to each customer in each market and supplement our innovative, reliable products with the backing of Trina as a strong, bankable partner. We are committed to building strategic, mutually beneficial collaboration with installers, developers, distributors and other partners as the backbone of our shared success in driving Smart Energy Together.

Trina Solar Limited
www.trinasolar.com

Trinasolar
Smart Energy Together

Ideal for large scale installations
- High powerful footprint reduces installation time and BOS costs
- 1000V UL/1000V IEC certified

One of the industry's most trusted modules
- Field proven performance

Highly reliable due to stringent quality control
- Over 30 in-house tests (UV, TC, HF, and many more)
- In-house testing goes well beyond certification requirements
- PID resistant

Certified to withstand challenging environmental conditions
- 2400 Pa wind load
- 5400 Pa snow load
- 25 mm hail stones at 82 km/h

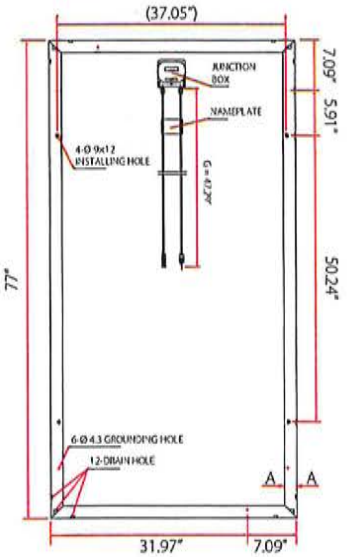
LINEAR PERFORMANCE WARRANTY
10 Year Product Warranty • 25 Year Linear Power Warranty

THE Utility MODULE

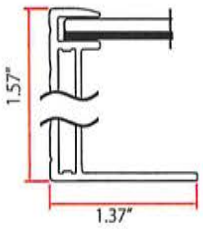
TSM-PD14

DIMENSIONS OF PV MODULE

unit:Inches

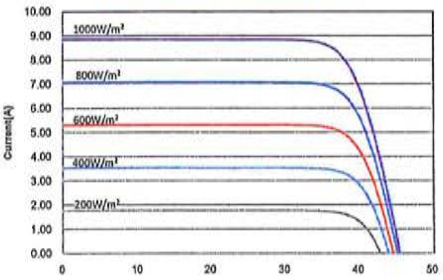


Back View



A-A

I-V CURVES OF PV MODULE(310W)



ELECTRICAL DATA (STC)

Peak Power Watts-P_{MAX} (Wp)	300	305	310	315
Power Output Tolerance-P_{MAX} (%)	0 ~ +3			
Maximum Power Voltage-V_{MPP} (V)	36.2	36.6	37.0	37.1
Maximum Power Current-I_{MPP} (A)	8.28	8.33	8.38	8.51
Open Circuit Voltage-V_{OC} (V)	45.4	45.5	45.5	45.6
Short Circuit Current-I_{SC} (A)	8.77	8.81	8.85	9.00
Module Efficiency η_m (%)	15.5	15.7	16.0	16.2

STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM1.5 according to EN 60904-3.
Typical efficiency reduction of 4.5% at 200 W/m² according to EN 60904-1.

ELECTRICAL DATA (NOCT)

Maximum Power-P_{MAX} (Wp)	223	227	231	235
Maximum Power Voltage-V_{MPP} (V)	33.5	33.8	34.1	34.1
Maximum Power Current-I_{MPP} (A)	6.66	6.72	6.77	6.88
Open Circuit Voltage-V_{OC} (V)	42.1	42.2	42.2	42.3
Short Circuit Current-I_{SC} (A)	7.08	7.11	7.15	7.27

NOCT: Irradiance at 800 W/m², Ambient Temperature 20°C, Wind Speed 1 m/s.

MECHANICAL DATA

Solar cells	Multicrystalline 156 × 156 mm (6 inches)
Cell orientation	72 cells (6 × 12)
Module dimensions	1956 × 992 × 40 mm(77× 39.06 × 1.57 inches)
Weight	22.5 kg (49.6lb)
Glass	3.2 mm,High Transmission, AR Coated Tempered Glass
Backsheet	White
Frame	Silver Anodized Aluminium Alloy
J-Box	IP 67 rated
Cables	Photovoltaic Technology cable 4.0mm² (0.006 inches²), 1200mm (47.25" inches)
Connector	(H4) Amphenol *
Fire Type	Type 8

*MC4 upon special request

TEMPERATURE RATINGS

Nominal Operating Cell Temperature (NOCT)	44°C (±2°C)
Temperature Coefficient of P_{MAX}	-0.41%/°C
Temperature Coefficient of V_{OC}	-0.32%/°C
Temperature Coefficient of I_{SC}	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000VDC (IEC) 1000VDC(UL)
Max Series Fuse Rating	15A

CERTIFICATION

WARRANTY

10 year Product Workmanship Warranty

25 year Linear Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 26 pieces

Modules per 40' container: 572 pieces

TSM_EN_May_2015_A

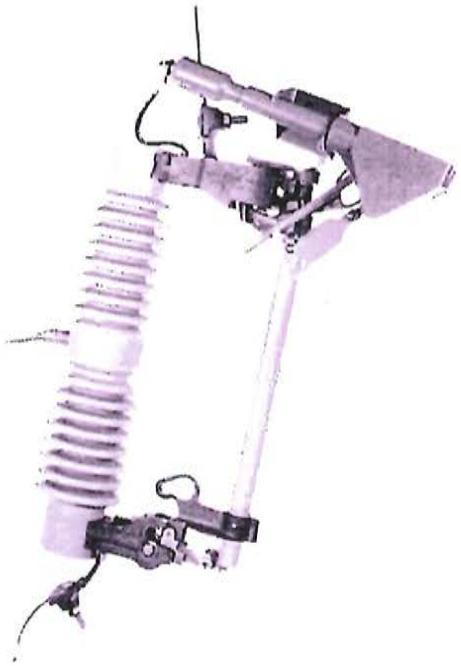
Trinasolar
Smart Energy Together

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

Technical Data **327-60**

Effective December 2013
Supersedes November 2012

HX-CB loadbreak fuse cutout



Description

Eaton's Cooper Power Systems HX-CB loadbreak fuse cutout provides superior performance with the combination of the field-proven HX cutout and a compact, low profile loadbreak interrupter.

The loadbreak interrupter is in the current path momentarily when interrupting the load current during the opening operation. There is no parallel path through the loadbreak interrupter when the cutout is being closed or when the cutout is in the closed position. As a result, if inadvertently closed in on a fault or the cutout operates due to a fault, the fault current does not flow through the interrupter.

Should the main contacts not engage during the cutout closing operation, the fuseholder will fall to the fully open position. The fuseholder will not "hang up" in the loadbreak interrupter and give a false visual indication that the main cutout contacts are engaged.

The arc is interrupted within the enclosed arcing chamber of the interrupter. The copper tungsten arcing contacts and UniKearn™ interrupting materials are completely enclosed and protected from contamination, wind blown debris, ice, nesting insects, or animals.

Superior interrupting medium

UniKearn, a highly efficient interrupting medium, evolves a deionizing gas when subjected to the arc that appears across the rapidly separating contacts within the interrupter. Additionally, the arcing residue is nontracking. Eaton's Cooper Power Systems has successfully employed UniKearn in various loadbreak switching devices for many years.

Cooper Power Systems
by EATON

Table 1. Ratings

Voltage	Load Current
7.8 7.8/13.8 8 15 15/27 27 kV	100, 200, 300 A

Table 2. Interrupting Capacity and Replacement Fuseholders, Caps, and Solid Blade Catalog Numbers

Catalog Number[1]	Maximum Design Voltage Rating kV-RMS	Continuous Current[2]	Interrupting Capacity kA-RMS Sym	Interrupting Capacity kA-RMS Asym	BIL kV-Crest	Creep Distance (in.)	Replacement Fuseholder	Expendable Caps
144164-003	7.8	100	7.1	10.0	110	9.5	184104-003S6	36361-3
148164-003		200	13.3	20.0			188104-003S6	129023
144564-003*	7.8/13.8	100	7.1	10.0	110	9.5	184504-003S6	129052
146564-003*		100	10.7	16.0			186504-003S6	129052
148564-003*		200	13.3	20.0			188504-003S6	129023
144264-003	15	100	7.1	10.0	125	15	184204-003S6	36361-3
146264-003		100	9.3	14.0			186204-003S6	129052
148264-003		200	10.7	16.0			188204-00S6	129023
146664-003*	15/27	100	9.3	14.0	150	17	186604-003S6	129052
148664-003*		200	10.7	16.0			188604-003S6	129023
144364-003	27	100	4.0	6.0	150	17	188304-003S6	36361-3
146364-003		100	7.1	10.0			186304-003S6	129052
148364-003		200	7.1	10.0			188304-003S6	129023
144164-004	7.8	300 A Solid Blade	12,000 A Momentary Current Rating		110	9.5	120083-3S6	N/A
144564-004*	7.8/13.8				110	9.5	120083-3S6	
144264-004	15				125	15	120082-3S6	
146664-004*	15/27				150	17	120087-3S6	
146364-004	27				150	17	120087-3S6	

1 Includes crossarm mounting hanger and T-bolt terminal connectors for #6 SOL-250 MCM copper or aluminum conductor.

2 Consult your Eaton's Cooper Power Systems representative for the loadbreak interrupter capabilities.

* Slant rated loadbreak cutouts are suitable for application on single-phase circuits having maximum line-to-ground voltage not exceeding the lower kV (voltage to the left of the diagonal) or on solidly grounded three-phase circuits where the line-to-line voltage does not exceed the higher kV (voltage to the right of the diagonal).

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Power Systems Business
2300 Badger Drive
Waukesha, WI 53188
United States
Cooperpower.com

EATON
Powering Business Worldwide

For Eaton's Cooper Power Systems HX-CB fuse cutout product information call 1-877-277-4636 or visit: www.cooperpower.com.

Product Data Sheet

H365NR

SWITCH FUSIBLE HD 600V 400A 3P NEUTRAL

SQUARE D
by Schneider Electric

List Price $5,765.00 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.**

Technical Characteristics

Enclosure Material	Galvannealed Steel
Approvals	UL Listed
Electrical Interlock	None
Action	Single Throw
Enclosure Rating	NEMA 3R
Ampere Rating	400A
Enclosure Type	Rainproof and Sleet/Ice proof (Indoor/Outdoor)
Factory Installed Neutral	Yes
Number of Poles	3-Pole
Wire Size	#1/0 to 750 AWG/kcmil(Al/Cu)
Disconnect Type	Fusible
Terminal Type	Lugs
Short Circuit Current Rating	10kA (Class H or K) - 200kA (Class R or J)
Type of Duty	Heavy Duty
Maximum Voltage Rating	600V
Mounting Type	Surface

Shipping and Ordering

Category	00054 - Safety Switch, Heavy Duty, NEMA3R, 400 - 1200 Amp, fused and unfused
Discount Schedule	DE1
GTIN	00785901026686
Package Quantity	1
Weight	186 lbs.
Availability Code	Stock Item: This item is normally stocked in our distribution facility.
Returnability	Y
Country of Origin	US

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

Generated: 12/28/2012 02 33 57

Schneider Electric

EXHIBIT E

SITE RULES

IPS will use commercially reasonable efforts to follow and to cause its personnel to follow the following rules while on the Premises. Lessor may bar further access to the Premises by any individual who commits repeated, material violations of these rules after such individual has received at least three written warnings of a particular material violation from Lessor describing, and including reasonable evidence documenting, such material violation. In addition, any individual violating rules (d)(i), (iv), or (vi) at least three times after receipt of a third written warning with documented evidence of such violation, will be immediately expelled from the Premises and will be banned from the Premises thereafter. The rules are as follows:

a. When not in active use by IPS, all access gates, as well as all interior gates, will remain closed at all times.

b. Smoking is prohibited except in designated construction areas and in vehicles. IPS will employ reasonable precautions to prevent fires and will be responsible for all damage caused by IPS.

c. IPS will keep the Premises clean and free of debris created by IPS, its contractors, or others brought on to the Premises by IPS. IPS will not use the Premises for storage of items that are not related to, used or to be used in connection with, or for the benefit of all or a portion of the Project.

d. At no time will any of employees of IPS bring any of the following onto the Premises:

i. weapons of any type, including but not limited to, guns, bows and arrows, or sling shots;

ii. animal calling devices;

iii. fishing equipment or nets;

iv. dogs, cats or any other animals;

v. alcoholic beverages;

vi. illegal drugs or related paraphernalia.

e. IPS, its employees, contractors, agents and any individual allowed onto the Premises by IPS will use reasonable efforts to confine their activities on the Premises to the designated access routes and to the areas upon which operations are then being conducted.

f. No wood, plants, animals (dead or alive), antlers, artifacts or any other item that was not originally brought onto the Premises by IPS personnel will be removed from the Premises by such personnel, except that IPS can burn, remove and clear wood, plants and brush on the Premises.

g. A speed limit of 25 miles per hour (15 miles per hour at night) will be strictly observed while using roads on the Premises.

h. This Agreement does not cover or include any right or privilege of hunting or fishing on the Premises, all such rights being expressly reserved to Lessor.

Exhibit 6

Native Seed Mix Design for Roadsides

Your Destination...Our Priority

Executive Summary

This manual sets forth a method to design site-specific native seed mixes that will meet the multi-pronged goals of roadside vegetation.

Roadside vegetation needs to be designed to be able to:

- maintain visibility and safety for roadside travelers
- withstand harsh conditions
- minimize maintenance costs
- minimize erosion
- improve water quality
- infiltrate stormwater runoff
- maintain good public relations.

Grasslands are favored by roadside vegetation managers to meet these goals. Research and experience have shown that native grasslands are especially well suited to accomplish these goals. Although roadsides are often seeded with non-native plants, some of which are on the Minnesota Department of Natural Resource's invasive species list, several studies, including one in Minnesota, showed that native species performed roadside vegetation functions more effectively than non-native species.

Although these native grasslands are a valuable part of Minnesota's rich natural heritage, often described in glowing terms by early settlers to the Midwest, less than one percent of the tallgrass prairie found by settlers in the 1860's remains today! Minnesota's roadsides, needing grasslands to meet the functional requirements of roadside vegetation, therefore provide a unique opportunity to restore some of our lost native grassland natural heritage on public lands where it can be experienced and treasured on daily basis by drivers passing by. The Southern two-thirds of Minnesota has 525,000 roadside acres that could be restored to native grassland (Nelson in DeVore 2009).

In addition to meeting the functional requirements of roadside right-of-ways as well as celebrating our regional heritage, roadsides with native vegetation also have significantly greater wildlife habitat value, especially for butterflies and pollinators, compared to roadsides with non-native species. Restoring roadsides to native grasslands benefits wildlife in two ways: by adding more habitat and by connecting fragmented existing landscape patches. Several studies have found significantly more total individuals as well as higher numbers of species of wildlife along roadsides with native vegetation vs. those with non-native vegetation.

While native grassland vegetation is well suited to provide the multiple functions needed along roadsides, seeding of native grassland vegetation along roadsides will fail if the right plants are not used in the right place. This manual was therefore developed to provide a reliable method to design site-specific native seed mixes that accomplish functional, heritage, and conservation goals.

The method was developed based on a literature review, stakeholder workshops, a Technical Advisory Panel (TAP), and a seed market survey. The field of native grassland establishment and

research has grown dramatically since the early 1900's. Our combined effort enabled us to capitalize on and synthesize a vast wealth of past and present expertise to create a scientifically sound, yet user-friendly method and manual for designing site-specific native seed mixes.

Primary goals of the site-specific native grassland seed mix design methodology presented in this manual are to:

1) Empower users of varied backgrounds, including transportation engineers and maintenance workers with limited or no knowledge about native plants, to design reliable site-specific native grassland seed mixes that are well suited to their project and create grasslands that are resilient over time
2) Allow for flexibility in species selection based on current seed availability and costs
3) Maximize seed market demand/supply balance
4) Result in the most diverse possible species use statewide to maximize resilience and biodiversity on a landscape ecological scale.

To meet the above goals, the methodology guides seed mix design based on project site characteristics, context, goals, seed availability, and cost. No prior knowledge of native plants is required.

Because conditions in many conservation projects are similar to those along roadsides, in that they often face harsh conditions, pressure from invasive species, and limited maintenance budgets, the methodology presented in this manual is also applicable to a wide range of native grassland seeding projects beyond the roadside right-of-way.

The need for grassland vegetation to meet roadside right-of-way (ROW) goals is of course not limited to Minnesota. While there is much variability in native grasslands throughout the US, some type of native grasslands exist to some extent in all states. Moreover, with more than 12 million acres of ROW in the US, choice of roadside vegetation significantly impacts maintenance costs, wildlife habitat value, and aesthetics on a national scale. This manual therefore also provides guidelines for other states to develop their own site-specific native grassland seed mix design methodology.

Exhibit H

LAND LEASE AND SOLAR EASEMENT

Between

Mike Pinske, POA and Personal Representitive for Donovan Pinske, deceased

And

Minnesota CSG, LLC

Dated as of

February 17, 2016

Table of Contents

Table of Contents
(continued)

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11. Exhibit List:

A. Application Form
B. Site Plan
C. O&E Report & Legal Description
D. Equipment Pack
E. Site Rules
F. IPS Safety Manuel
G. MnDot Seeding guideline
H. Lease
I. ASES Study

AGENDA ITEM:

THE HUB OF SIBLEY COUNTY
GAYLORD CITY OF GAYLORD

PLANNING & ZONING COMMISSION MEMORANDUM

DATE: April 12, 2017

TO: Gaylord Planning and Zoning Commission

FROM: Kim Moore Sykes, City Administrator

RE: **Concept Review Item # 1**: Request for Variance to Chapter 12 SUBDIVISION REGULATIONS, §152.069 Minimum Pavement Widths and Surfaces Types. *Public Hearing will be scheduled for* ***May 10, 2017****upon receipt by the City of a completed Board of Adjustments Appeal for a Variance to the Zoning Ordinance by the Petitioner.*

INTRODUCTION:

The petitioner, Jon Suedbeck is proposing to construct an industrial building at Nicollet Avenue East to house a Bio-Dri automated heat/dry system for livestock trailers to prevent the spread of various viruses. Mr. Suedbeck is currently in negotiations with the owner to purchase lots 13, 14,15, 16, and 17 Nicollet Avenue East. Sibley County will combine these lots into one parcel upon written request of the new owner once the purchase has been transacted and no outstanding tax liability exists. Nicollet Avenue East exists as a platted, unpaved gravel road, just south and adjacent to the lots Mr. Suedbeck is proposing to buy. Currently, Nicollet Avenue East has only occasional and cut-through traffic. Locating an industrial use on this road will increase the volume and weight of the vehicles that will need to use it.

BACKGROUND:

Existing Zoning:	B-3
Property Location:	Lots 13, 14, 15, 16, and 17
Lot Size:	To be combined into one parcel
Surrounding Land Use:	R-2 – North I-2 & I-3 – South
Zoning History:	Unimproved lots 13, 14, 15, 16, 17, Nicollet Avenue E
Applicable Regulations:	§153.115 – B-3 Regulations §153.120 – General Requirements §152. 069 (G) – Minimum Pavement Widths & Surface Types

Analysis and Recommendation:

Jon Suedbeck is planning to build an industrial building to house a Bio-Dri automated heat/dry system for cleaned livestock trailers to further sanitize them so as to prevent

the spread of various bird and swine viruses. The area is zoned B-3 with various industrial/manufacturing uses of the buildings in the area. Mr. Suedbeck is requesting a variance to the City's Ordinance that requires that streets shall be graded full width and fully constructed with a concrete or asphalt to the minimum required by the Ordinance specifications for the paving material used.

The Zoning Ordinance defines that the following requirements are applicable to all subdivisions within the jurisdiction of the Planning and Zoning Commission.

In order to grant a variance, the request must meet the following standards for granting a variance, including finding unique circumstances.

The applicant must meet the following standards for granting a variance:

Criteria #1. **Is variance in harmony with purposes and intent of ordinance?**
Finding #1. Currently, the existing street is dirt and gravel. The variance will allow the petitioner, whose business will be the primary user of this gravel road, to leave the road in its current state until such time as the City budgets for the completion of the road. The businesses to the east and west of him are on opposite ends of the dirt road and have ingress/egress on paved City streets adjacent to their properties for their customers.

Criteria #2. **Is variance consistent with the comprehensive plan?**
Finding #2. The variance is consistent with the comprehensive plan by keeping with the permitted principle uses and character of the area.

Criteria #3 **Does the request put property to use in a reasonable manner?**
Finding #3. The proposed business is appropriate to the site and its zoning. The proposed use also a reasonable use for the property.

Criteria #4 **Are there unique circumstances to the property not created by the landowner?**
Finding #4. No. There is an existing gravel road that is platted as a City street.

Criteria #5 **Will the variance, if granted, alter the essential character of the locality?**
Finding #5. No. The variance will not alter the essential character of the locality.

March 30, 2017

City of Gaylord
332 Main Ave; PO Box 987
Gaylord MN 55334

City of Gaylord Council,
Hot House LLC (Jon Suedbeck & James Halbur) is proposing to construct a Bio-Dry building on the East side of Gaylord on Nicollet Ave East, the road between Melro St and the gravel Township road. Below is more detailed information about the building and the location.

Why is the building needed?

The building is needed to reduce the spread of disease through transportation in livestock.

How does the building work?

The building will heat livestock trailer surface temperature to 160 degrees for 30 minutes to kill any remaining disease and bacteria after the truck and trailer have been washed at a different location. There should be no odors from the trailers being heated, as they are arriving clean and freshly washed.
By heating the trailers, this helps fill the void of where disease and bacteria can remain after the washing and sanitizing have taken place or spots it may have missed. This building would also create a more than part-time position and by indirectly keeping the disease potential down, it would keep the livestock jobs more secure in the area.

Why this location?

1. The proposed Bio-Dry building location is in close proximity to our local egg producing facilities.
2. City sewer and water are readily available.
3. Natural gas is near the proposed location.
4. It fits in well with the type of traffic already in this area.
5. The property is zoned correctly.
6. Easy access for trucks entering and existing.
7. This building would have a similar look to other surrounding structures.

Nicollet Ave East:

Nicollet Ave needs to be constructed to facilitate access to our building. We are not a developer as we are not sub-dividing or developing the land. The property has already been platted and this is the last property on this street to be purchased. Unfortunately, this also is the only property that will need access on this road. However, all of the properties can benefit by the road being constructed.

We understand this would take a great deal of time to complete, and since we would like to be moved in and have the business running this summer, we would be willing to assume the cost to build out the existing Nicollet Ave East road that will support the traffic we will be incurring. Our intent is to sub cut 12" and replace with gravel 24' wide. This would be the entire length of Nicollet Ave East. Parking and driveways would also be gravel. We have found the gravel to be acceptable since there have been buildings recently built with gravel parking and driveways. Because it would be a city street, the maintenance and snow removal will be assumed by the City of Gaylord.

Nicollet Ave East future improvements:

If the City of Gaylord deems it necessary to curb, gutter and pave this road in the future, it is requested that the gravel road build out cost incurred could be put towards our future road assessment, since the new gravel could be salvaged and re-used as sub-base material for the new road.

Attached is additional information for the Bio-Dry operation, along with a drawing of the proposed building and location. If you have questions, please contact Jon Suedbeck at 612 518 0640.

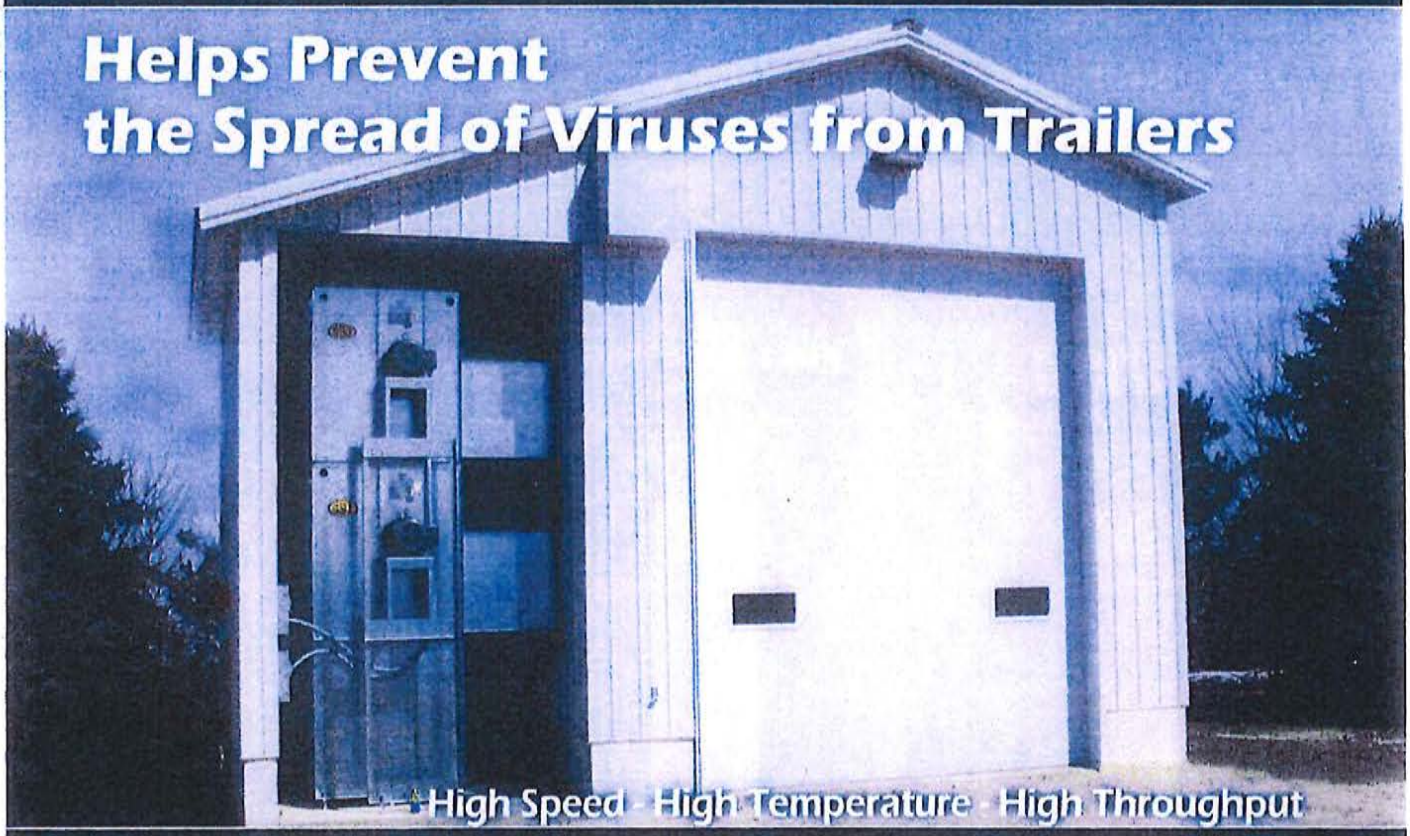
Thank you for your time and consideration.

Jon Suedbeck

BIO-DRI II

AUTOMATED PRODUCTION SYSTEMS

Helps Prevent the Spread of Viruses from Trailers



Control & Monitor

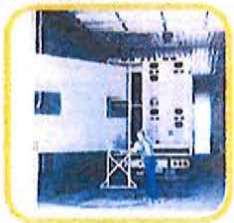
The user-friendly interface provides control and monitoring of the drying process. Receive a record of each drying cycle for process verification from the system's data logging capabilites.

Control system monitoring includes

- Time elapsed in cycle
- Current mode and time remaining
- Trailer surface temperature
- Chamber air temperature
- Upper and lower duct temperature
- Cause of system shut down

EASY OPERATION

The heavy-duty ductwork system is easily rolled into position for convenient drive-through operation.



EFFICIENT DRYING

High volume, high-velocity fans, combined with LP or natural gas heaters, provide quick, quiet and efficient drying.

TEMPERATURE

Infrared sensors aimed directly at the trailer sidewalls monitor surface temperatures.

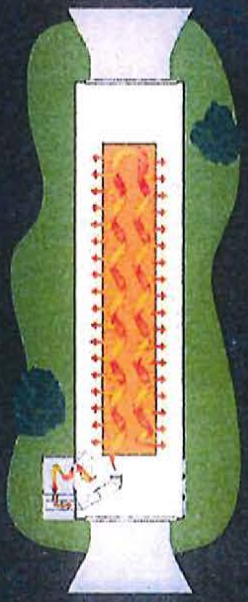
BIO-DRI II

AUTOMATED PRODUCTION SYSTEMS

Heat and dry trailers to custom defined temperatures and duration cycles

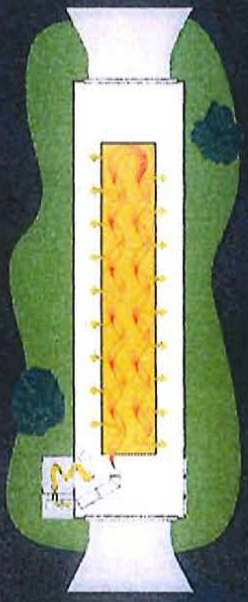
- Thorough heating and drying of trailers after wash down helps prevent the spread of devastating viruses, including PEDv and PRRS
- Custom defined protocol for each trailer type
- Ensure all cycles are completed with remote access and digital verification via email and text
- AP Exclusive

PRE-HEAT & BAKE MODE



The trailer is preheated to a user defined temperature and then continues to dry for a user programmed amount of time.

POST BAKE MODE (OPTIONAL)



The burner is turned off and the existing heat is recycled through the trailer for extended drying.

PURGE MODE

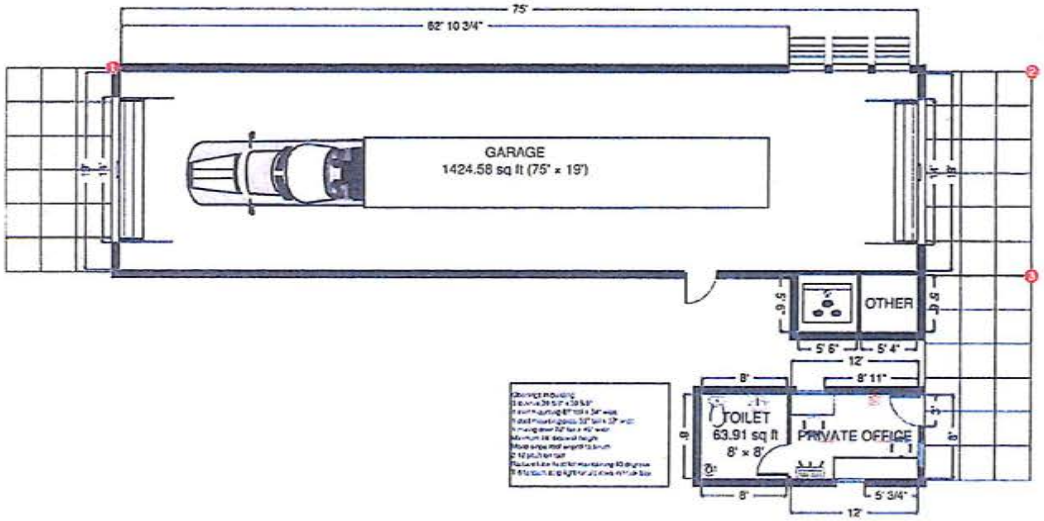
The inlet switches to purge mode and forces fresh air into the trailer bay to remove heat and combustion gases.

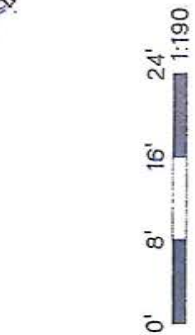
AUTOMATED PRODUCTION SYSTEMS
1004 E. Illinois St. Assumption, IL 62510 USA
Tel: 217-226-4449 Fax: 217-226-3540
Int'l Tel: 217-226-4401
Tech Support: 712-239-1011

For more information on AP's many products and services, contact your local AP representative or visit us online at:
www.automatedproduction.com

Plan 2

1st Floor





THIS FLOORPLAN IS PROVIDED WITHOUT WARRANTY OF ANY KIND. SENSOPIA DISCLAIMS ANY WARRANTY INCLUDING, WITHOUT LIMITATION, SATISFACTORY QUALITY OR ACCURACY OF DIMENSIONS

2017-01-08

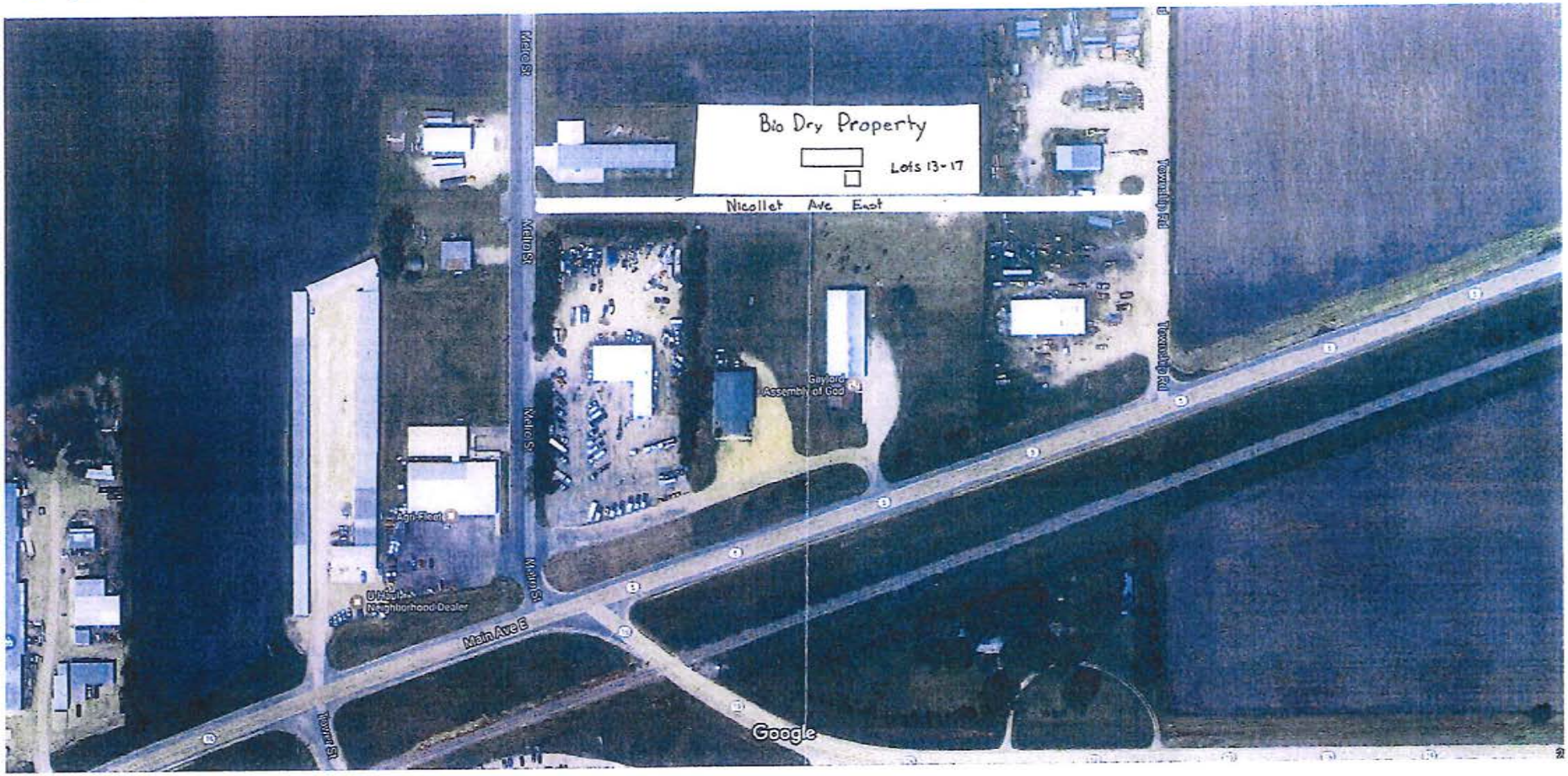
219 sq ft

1 Floor

1 Office

0 Conf. room

Google Maps Gaylord



Imagery ©2017 DigitalGlobe, Map data ©2017 Google 100 ft

THE HUB OF SIBLEY COUNTY
GAYLORD CITY OF GAYLORD

PLANNING & ZONING COMMISSION MEMORANDUM

DATE: April 12, 2017

TO: Gaylord Planning and Zoning Commission

FROM: Kim Moore Sykes, City Administrator

RE: **Concept Review Item # 2**: Request for a Conditional Use Permit (CUP) to allow for the installation of a HAM Radio Tower. *Public Hearing will be scheduled for* ***May 10, 2017****upon receipt by the City of a completed Board of Adjustments Appeal for a Variance to the Zoning Ordinance by the Petitioner.*

INTRODUCTION:

The petitioner, Don Burgess, contacted the City to find out about the City's Height Ordinances allowance for an HAM Radio Tower. He informed staff that he was looking to purchase a house and move to Gaylord but wanted to know more information about the City's regulations before he committed to moving here. Staff advised him that he would need to apply for a conditional use permit.

BACKGROUND:

Existing Zoning: R-1

Property Location:
Lot Size: Residential
Surrounding Land Use: R-1

Zoning History: NA

Applicable Regulations: §153.064 – Height, Yard and Lot Size, R-1 District
§153.200 – Additional Height Regulations & Modifications
§153.215 – Conditional Use Permits

Analysis and Recommendation: City Ordinance §153.064 Regulates the Height, Yard and Lot Size of the R-1 District. It states that no structure shall exceed 35 feet in height. In a Memorandum Opinion and Order, adopted 9-16-1985 (PRB-1) the Federal Communications Commission (FCC) offered information that requires local government to limit local land use regulations and allow a reasonable accommodation for amateur radio communication with regards to height, screening and placement of towers. Local governments may regulate so as to provide for the public's safety, health and welfare, with suggested acceptable regulation that is generally in the form of setback requirements and conditional use permits. Accordingly, the City's Ordinance, §153.200 (C).4, states that height regulations as set forth elsewhere in this

chapter may be increased with no limitation when applied to the following, television and radio broadcasting antennae, provided a conditional use permit is issued to increase height.

Staff has determined the following conditions need to be met, but will be subject to the Commission's formal approval before a Resolution can be prepared for final council approval.

Criteria #1	**That the Conditional Use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted nor substantially diminish and impair property values within the immediate vicinity.**
Finding #1	Please refer to the attachment provided by the Petitioner.
Criteria #2	**That the establishment of the Conditional Use will not impede the normal and orderly development and improvement of surrounding vacant property for predominant uses in the area.**
Finding #2	Please refer to City Ordinance 153.200, Additional Height Regulations and Modifications, C. (4).
Criteria #3	**That adequate measures have been or will be taken to provide sufficient off-street parking and loading space to serve the proposed use.**
Finding #3	Available for this particular use but not necessary other than for the initial installation of the HAM Radio Tower.
Criteria #4	**That adequate measures have been or will be taken to prevent or control offensive odor, fumes, dust, noise and vibration, so that none of these will constitute a nuisance, and to control lighted signs and other lights in such a manner that no disturbance to neighboring properties will occur.**
Finding #4	Agreed to by the Applicant as part of his attached proposal and specifications information packet.
Criteria #5	**That soil conditions are adequate to accommodate the proposed use.**
Finding #5	Agreed to by the Applicant as part of his attached proposal and specifications information packet.
Criteria #6	**That proper facilities are provided which would eliminate any traffic congestion or traffic hazard which may result from the proposed use.**
Finding #6	Agreed. The tower is proposed to be placed on the Applicant's property.

Criteria #7 **That the proposed use is compatible with the City Land Use Plan.**
Finding #7 See City Ordinance 153.200, Additional Height Regulations and Modifications, C. (4).

Criteria #8 **That there is a demonstrated need for the proposed use.**
Finding #8 City Ordinance 153.200, Additional Height Regulations and Modifications, C. (4).

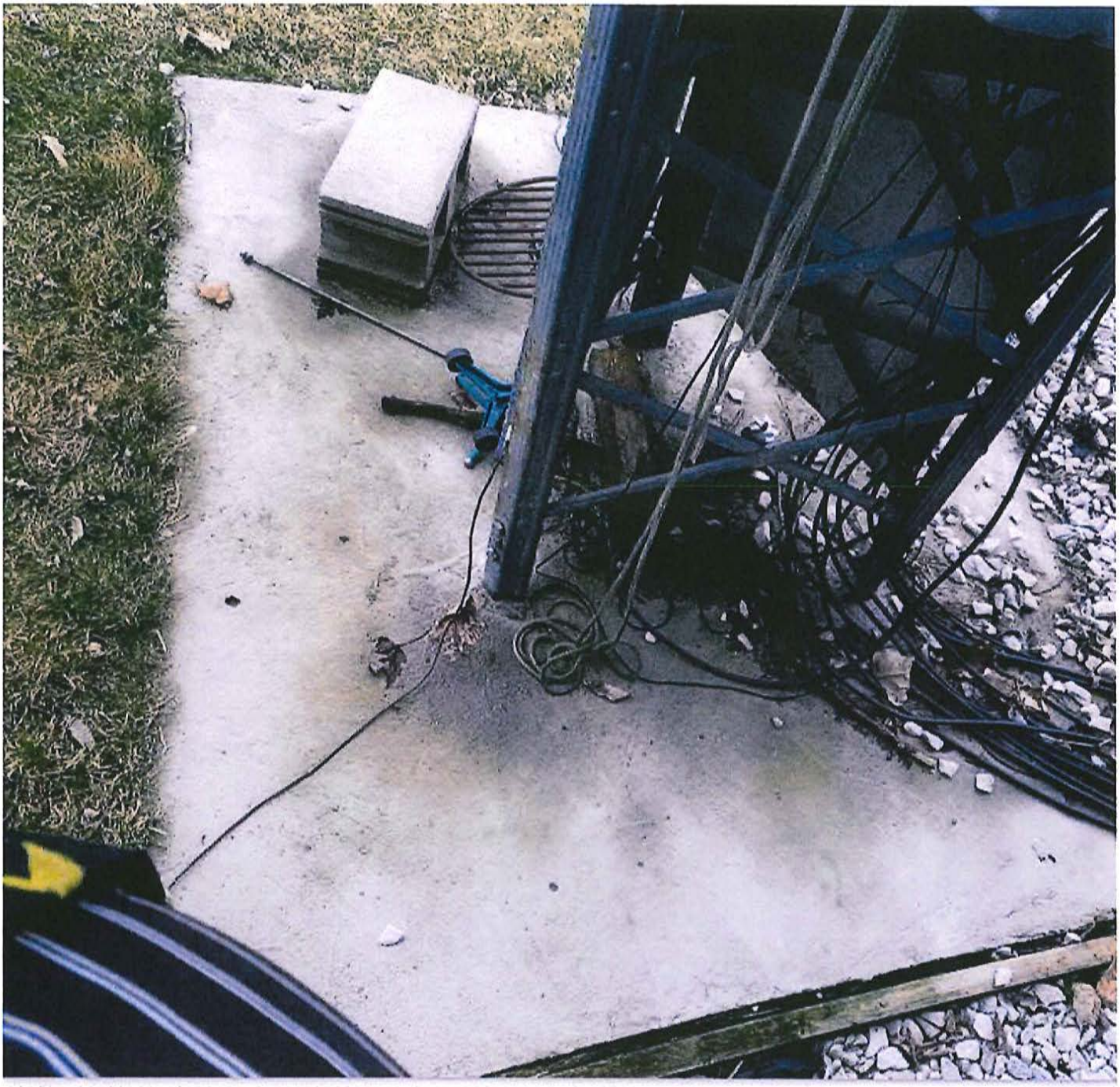
Kim Moore-Sykes

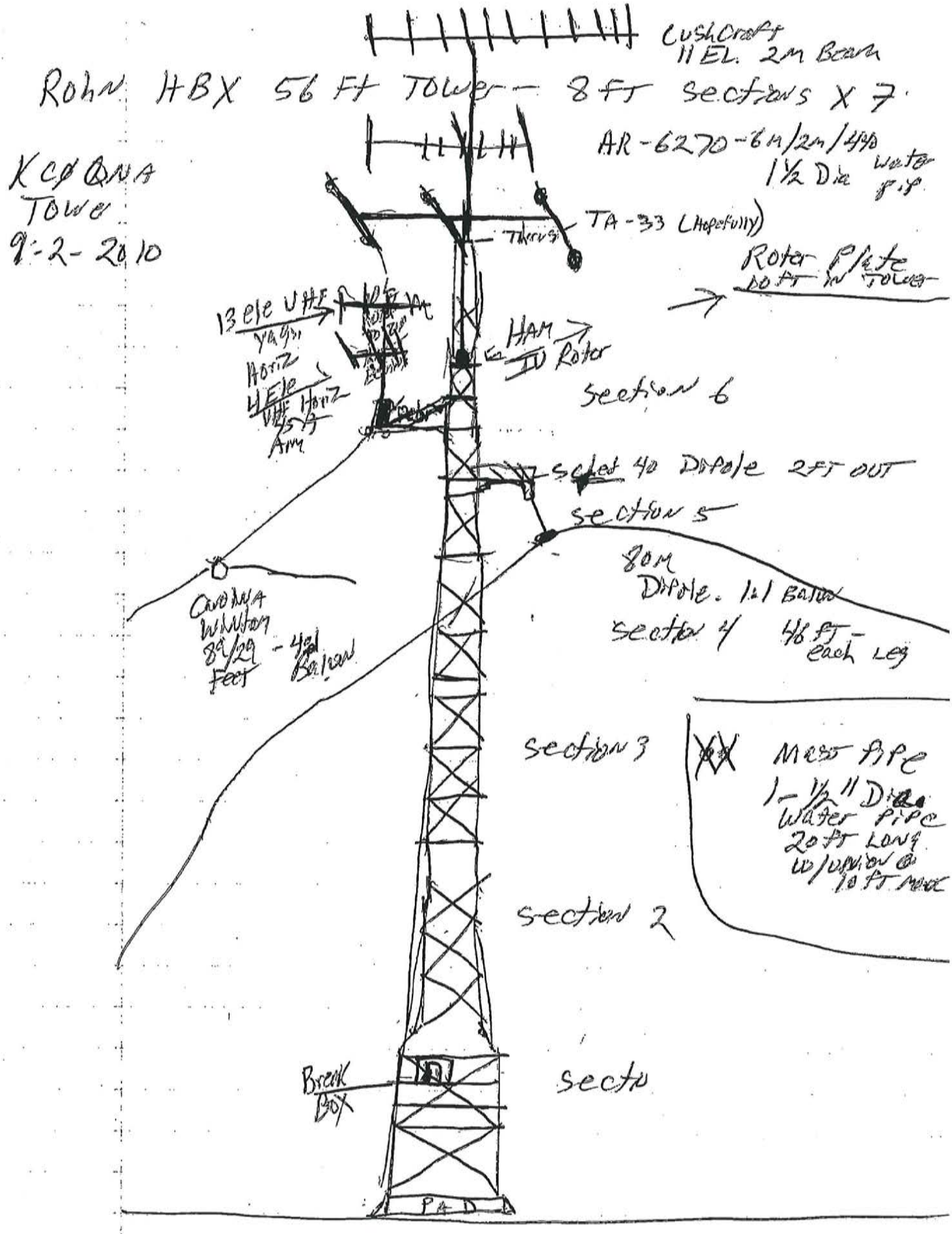
From: Don Burgess <dburgess@bailiwick.com>
Sent: Thursday, March 30, 2017 1:45 PM
To: kmoore@exploregaylord.org
Cc: Don Burgess
Subject: Don Burgess - Current Tower Installed Green Isle, MN

Hello Kim:

Here is pics of my tower for your review. Please NOTE – wires dangling are because I have been taking things off the tower, so note it would be more cleanly presented when installed at Gaylord...

Tower base at 6.5 yards of concrete with rebar in it....and would do similar again for Gaylord home.




Rohn HBX 56 Ft Tower — 8 Ft Sections X 7
KCØQNA
Tower
9-2-2010
CushCraft
11 EL. 2m Beam
AR-6270-6M/2M/440
1½ Dia Water P.P.
TA-33 (Hopefully)
Thrust
Rotor Plate
20 FT IN TOWER
13 ele UHF
yagi
Horiz
4 Ele
UHF Horiz
Stack
Arm
HAM
II Rotor
section 6
select 40 Dipole 2FT OUT
section 5
80M
Dipole. 1:1 Balun
section 4
46 FT
each Leg
Antenna
Wilson
88/29
Feet
4:1 Balun
section 3
Mast Pipe
1-½" Dia
Water Pipe
20 FT Long
W/union @
10 FT Mark
section 2
Break
Box
Sectn
PAD

MUNICIPAL
DEVELOPMENT GROUP, INC.

March 9, 2009

Ms. Paula Geisler
City Clerk/Treasurer
310 McGrann Street
P.O. Box 275
Green Isle, MN 55338

VIA EMAIL TO: greenisle@myclearwave.net

RE: City Council Background Information – Amateur Radio Towers

Dear Paula,

The purpose of this letter is to provide background information for the City Council regarding the placement of an amateur radio tower within the City. The memo is pursuant to an inquiry by Mr. Don Burgess, a potential property owner within the City who wishes to construct a 58-foot amateur radio tower.

A review of the Green Isle Zoning Ordinance reveals only a reference to *"television and radio broadcasting antennae"* in Section 11, Subdivision 1, (3)(d). The standard allows such structures to exceed ordinance standards relating to structure heights provided a conditional use permit is issued (Section 13). Presumably the clause was meant to regulate commercial towers and not amateur radio towers or personal antennae, however, the term is not defined and therefore subject to interpretation.

Often communities regulate towers under a free-standing ordinance rather than through the standards contained in a land use ordinance. I recommend reviewing all ordinances on file so as to determine whether or not a separate tower ordinance exists.

In a Memorandum Opinion and Order, adopted September 16, 1985 (PRB-1), the Federal Communications Commission established a policy of limited preemption of state and local regulations governing amateur station facilities, including antennas and support structures. While PBR-1 requires cities to limit local land use regulations relating to structural height, screening, and placement of towers so as to reasonably accommodate amateur radio communications, it does not prohibit a community from exercising some control over such structure. Under PBR-1, regulations regarding amateur radio communications must be the minimum required to provide for the public's safety, health, and welfare.

For example, the City may provide for a setback from property lines equal to the height of an unsecured amateur radio tower (i.e. that portion that is not affixed to a permanent structure). Such a setback protects the public health and safety in the unlikely event that a tower would collapse. The City can also limit the amount of amateur radio towers per parcel (i.e. one per parcel). Furthermore, the City can restrict the height of an amateur radio tower to the minimum height necessary to provide adequate service. Finally, placement of the tower structure on a lot is also possible (i.e. in rear yard as opposed to side or front yard). In addition to land use regulations amateur radio towers are subject to applicable building and electrical codes.

At this time it appears the City of Green Isle has two potential options to allow the amateur radio tower while protecting the public health, safety, and welfare. The two options are as follows:

1. The City could allow the amateur radio tower through a conditional use permit (CUP) under Section 11, Subdivision 1, (3)(d) and Section 13 of the Zoning Ordinance. Under the terms of the CUP the structure could be accommodated while providing adequate setbacks and appropriate placement of

25562 Willow Lane • New Prague, MN 56071• (952) 758-7399 • Fax: (952) 758-3711•
staff@municipaldevelopmentgroup.com • www.municipaldevelopmentgroup.com

the structure. It is important to note that a CUP must be granted if reasonable requirements of the Ordinance are met.

2. Alternately, the City could consider a new ordinance relating to all telecommunication towers, antennae, and support structures whether they are used for commercial or non-commercial purposes. Such an ordinance could define specific reasonable standards for amateur radio towers.

If the City wishes to proceed under option two above, sample language can be developed for consideration by elected officials. If the City wishes to proceed under option one above, the Mr. Burgess should file for a conditional use permit.

The City Council is not able to consider the likelihood of CUP approval until a completed application is filed and a public hearing is held. Therefore, at this time it is not possible to guarantee Mr. Burgess can erect an amateur radio tower anywhere on the subject parcel without restriction. However, it is noted that any CUP request would be required to provide reasonable accommodation for amateur radio towers under PBR-1.

If you would like additional information or have additional comments, please feel free to contact me at your convenience at 888-763-4462 or drop an email to cstrack@municipaldevelopmentgroup.com.

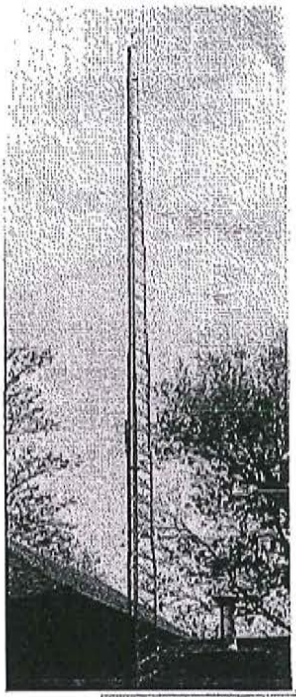
Sincerely,

Cynthia

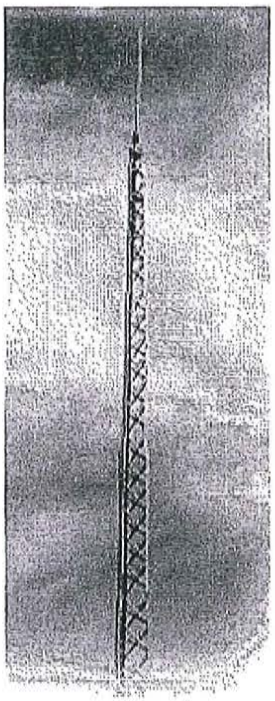
Cynthia Smith-Strack
Consulting Planner

C: Honorable Mayor Bruegger
Members of the City Council
City Attorney Ross Arneson
Mr. Don Burgess

Sandown Wireless



BX TOWER SERIES



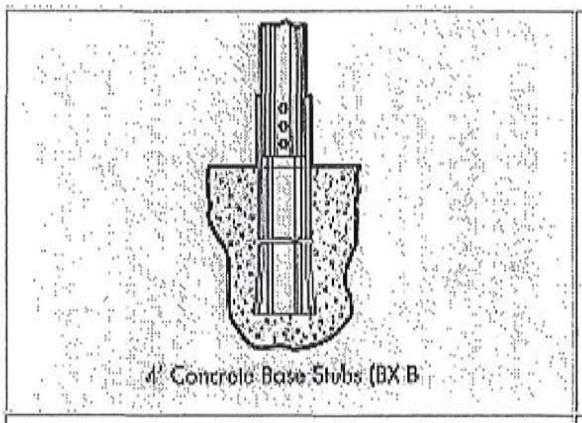
- X Brace design for strength. Braces riveted in center as well as ends.
- All Riveted Construction.
- Greater width and weight at bottom.
- Beaded channel leg for added strength
- All steel.
- Pregalvanized for added life.
- Rotators easily installed.
- Three steps included on one face of top section.

Sections nest inside each other for compact shipment.

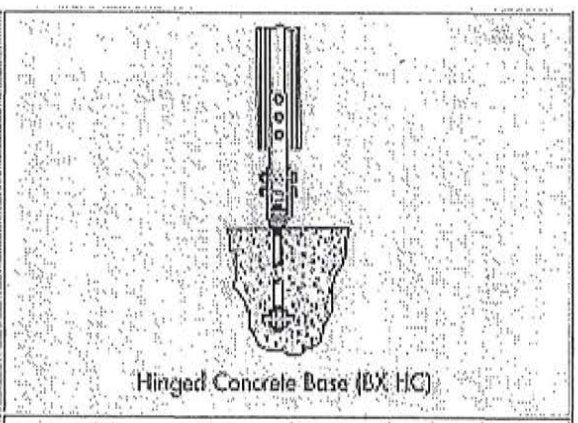
BX	HBX	HDBX
Standard Basic Tower Needs	**Heavy Duty For Heavier Capacity**	**Extra Heavy Duty Our Heaviest BX Tower**
Maximum height 64'	Maximum height 56'	Maximum height 48'
Can be used with Concrete Base Stubs	Can be used with Concrete Base Stubs	Can be used with Concrete Base Stubs
Available in heights of 24' to 64' in 8' increments	Available in heights of 24' to 56' in 8' increments	Available in heights of 24' to 48' in 8' increments
Up to 6 square feet antenna capacity	Up to 12 square feet antenna capacity	Up to 20 square feet antenna capacity
Top of tower is a 8-1/8" triangle	Top of tower is a 10-3/16" triangle	Top of tower is a 12-3/4" triangle
Includes 8' mast (M8)	Mast not included	Mast not included
Always has #1 as a top section	Always has #2 as a top section	Always has #3 as a top section

For more information contact: Sandown Wireless
P.O. Box 564
East Hampstead, NH 03826
Toll Free: 866-379-8437 Fax: 603-887-2117
sales@criticaltowers.com www.criticaltowers.com

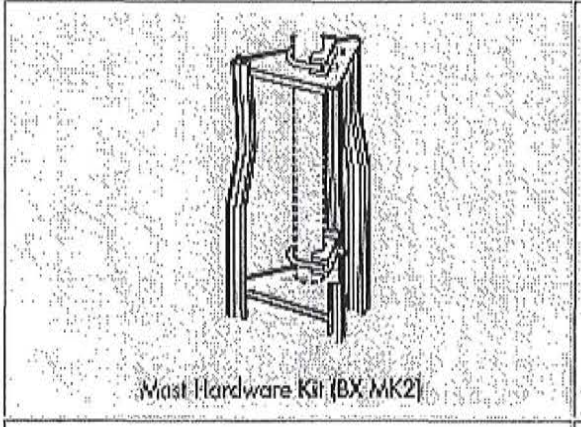
BX Tower Accessories



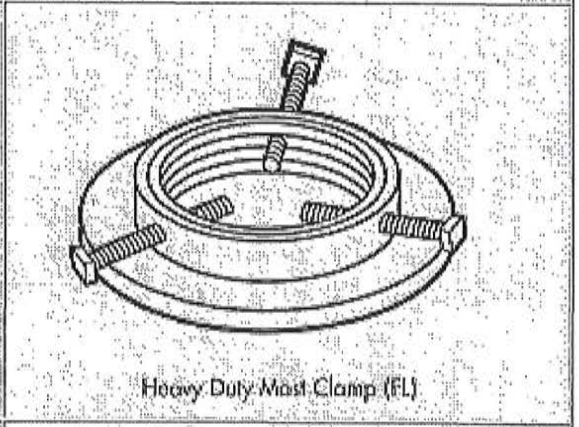
4' Concrete Base Stubs (BX B



Hinged Concrete Base (BX HC)

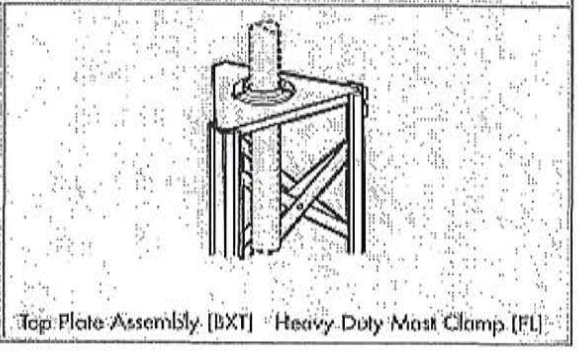


Mast Hardware Kit (BX MK2)



Heavy Duty Mast Clamp (FL)

Sandown Wireless
P.O. Box 564
East Hampstead, NH 03826
Toll Free: 866-379-8437
Fax: 603-887-2117
sales@criticaltowers.com
www.criticaltowers.com



Top Plate Assembly (BXT) Heavy Duty Mast Clamp (FL)

Tower packages - compact shipping and storage method. Includes all necessary parts and hardware. All towers are recommended to be bracketed for extra safety and to withstand gusty wind conditions.

Note: Local building and / or zoning laws frequently require a building permit. Available BX Engineering Data should be submitted for approval prior to purchasing a tower.

BX TOWER

Part #
8'BX Sections

BX1A	Offset top section w/BXT1, BXR1, BXMK2	26#
BX2	Standard offset section	24#
BX2A	Offset top section w/BXT2, BXR2, FL	31#
BX3	Standard offset section	29#
BX3A	Offset top section w/BXT3, BXR3, FL	39#
BX4	Standard offset section	42#
BX5	Standard offset section	60#
BX6	Standard offset section	65#
BX7	Standard offset section	75#
BX8	Standard offset section	83#

Nuts and bolts are included in section prices.

BX Accessories

BXMK2	Mast hardware kit w/rotor post for top and rotor plate	2#
FL	Heavy duty mast clamp	3#
TB3	Heavy duty thrust bearing, recommended for 2" OD tubing (for use w/section 3 with field drilled hole)	2 ½#
TB4	Heavy duty thrust bearing, recommended for 3" OD tubing (for use w/section 3 with field drilled hole)	3#
BXSM	Side mount (28"- 40") w/4', 1 ¼ " OD mast (fits sections 1 thru 4)	12#
BXSK1	Extra step kit for section 1 (3 steps on one face)	15#
BXSK2	Extra step kit for section 2 (3 steps on one face)	1#
BXSK3	Extra step kit for section 3 (3 steps on one face)	1#

Top and Rotor Plates

BXT1A	Top plate for section 1 w/hardware nuts, bolts, and ACWS	2#
BXT2A	Top plate for section 2 w/hardware nuts, bolts, and ACWS	2#
BXT3A	Top plate for section 3 w/hardware nuts, bolts, and ACWS	2 ½#
BXR1A	Rotor plate for section 1 w/hardware nuts, bolts, and ACWS	1 ½#
BXR2A	Rotor plate for section 2 w/hardware nuts, bolts, and ACWS	2#
BXR3A	Rotor plate for section 3 w/hardware nuts, bolts, and ACWS	2 ½#

Masts

M8	8' mast (1 ¼")	6 ½#

BX TOWER

Part Number
Self-Supporting Standard BX w/(M8) 8' Mast

BX24	24' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	96#
BX32	32' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	142#
BX40	40' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	205#
BX48	48' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	273#
BX56	56' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	351#
BX64	64' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	450#

Part Number
Self-Supporting Heavy Duty BX Tower w/(FL) Mast Clamp

HBX24	24' Heavy Duty Tower Assembly (Order stubs as a separate item)	143#
HBX32	32' Heavy Duty Tower Assembly (Order stubs as a separate item)	187#
HBX40	40' Heavy Duty Tower Assembly (Order stubs as a separate item)	254#
HBX48	48' Heavy Duty Tower Assembly (Order stubs as a separate item)	328#
HBX56	56' Heavy Duty Tower Assembly (Order stubs as a separate item)	419#

Part Number
Self-Supporting Extra Heavy Duty BX Tower w/(FL) Mast Clamp

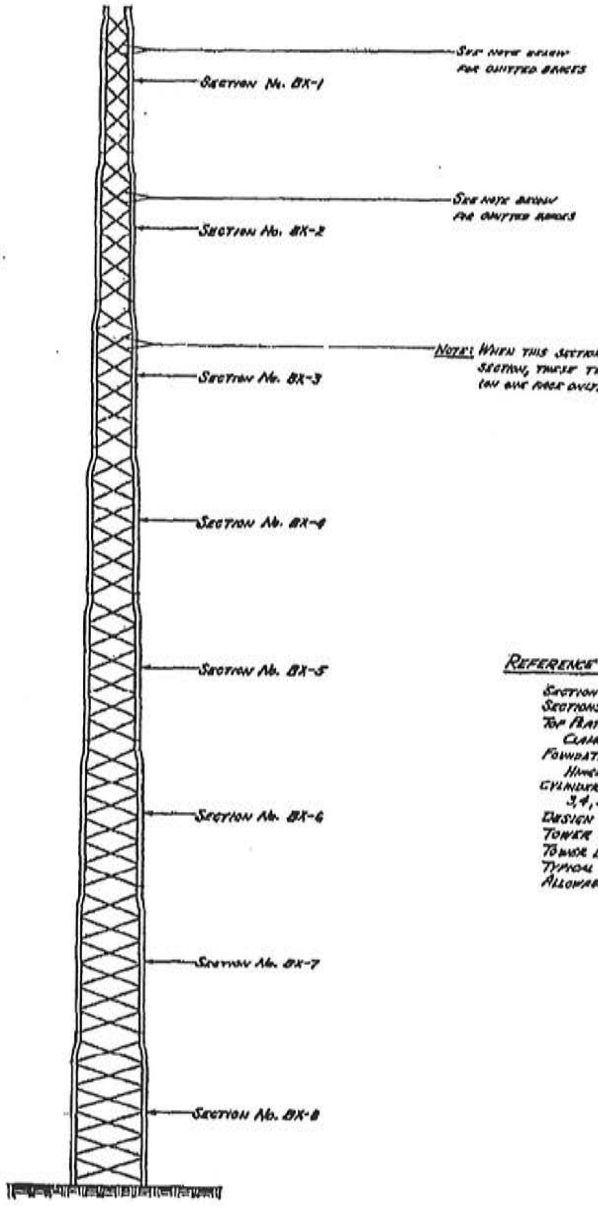
HDBX24	24' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	171#
HDBX32	32' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	231#
HDBX40	40' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	305#
HDBX48	48' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	397#

Part Number
4' Concrete Base Stubs (Set of 3)
(Tower height not to exceed 64 ft.)

BXB3	Stubs for section 3	13#
BXB4	Stubs for section 4	17#
BXB5	Stubs for section 5	18#
BXB6	Stubs for section 6	22#
BXB7/8	Stubs for section 7 & 8	25#

Part Number
Self-Supporting Hinged Concrete Base for all Sections
(Tower height not to exceed 64 ft.)

BXHC36	Fits sections 3 through 6	27#
BXHC78	Fits sections 7 and 8	56#



REFERENCE DRAWINGS:

SECTION No. 1: DWG. NO. C-750427.
SECTIONS 2 THRU 8: DWG. NO. C-750430.
TOP PLATE, ROOM PLATE, & MAST CLAMPS: DWG. NO. C-750429.
FOUNDATION & ANCHOR BOLT SETTING FOR HINGED CONCRETE BASE: DWG. NO. C-760099.
CYLINDER BASE INSTALLATION FOR SECTIONS 3, 4, 5 & 6: DWG. NO. C-750407-B2.
DESIGN ASSUMPTIONS: DWG. NO. A-750005.
TOWER SECTION PROPERTIES: DWG. NO. B-760024.
TOWER DESIGN DATA: DWG. NO. B-760025.
TYPICAL TOWER ANALYSIS: DWG. NO. A-760000.
ALLOWABLE ANTENNA LOADS: DWG. NO. A-760001.

NO.	DESCRIPTION	DATE	BY
	REVISIONS		

ROHN MANUFACTURING

TITLE: BX SERIES TOWER
TYPICAL 64' TOWER (SECTIONS 1 THRU 8)

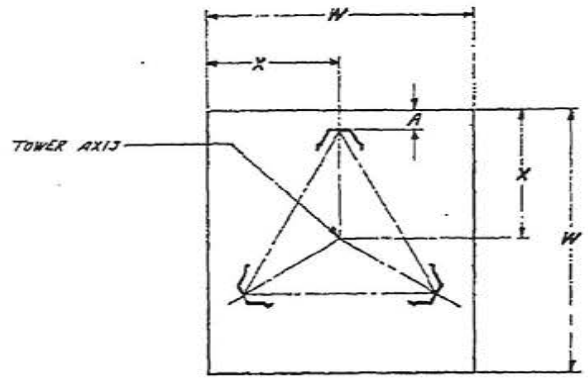
THIS DRAWING IS THE PROPERTY OF ROHN. IT IS NOT TO BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART WITHOUT OUR WRITTEN CONSENT.

TITLE NO.

DRAWN BY	DATE	SCALE	
CHK'D BY	DATE	SCALE	
APP'D	DATE	SCALE	

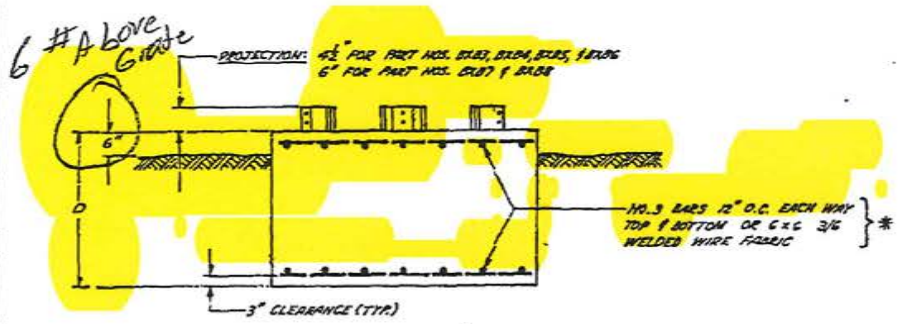
DRG. NO. C-750428

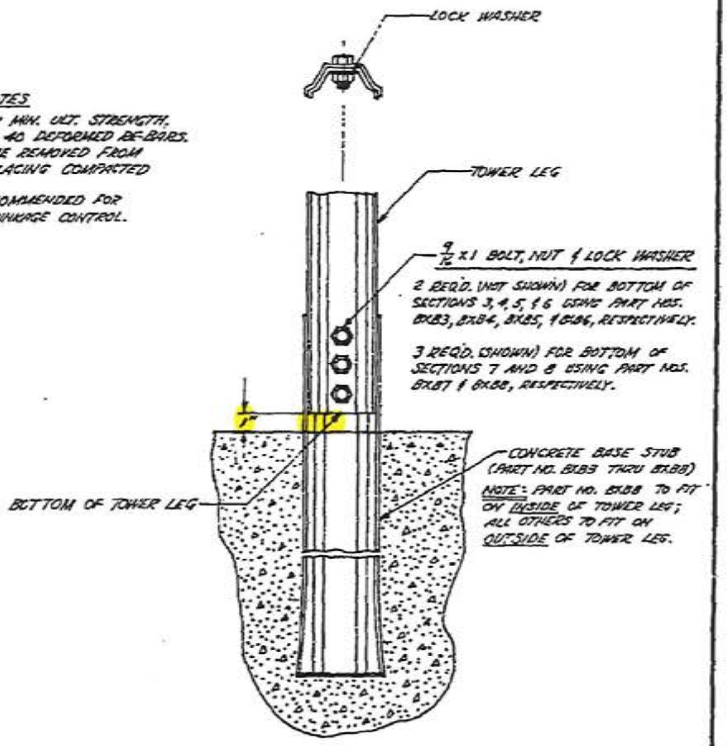
PRINTED IN U.S.A.



Foundation Notes

1. CONCRETE, 3000 PSI MIN. ULT. STRENGTH.
2. ASTM A-615 GRADE 40 DEFORMED RE-BARS.
3. ALL FORMS MUST BE REMOVED FROM CONCRETE BEFORE PLACING COMPACTED BACKFILL.
* 4. REINFORCING IS RECOMMENDED FOR TEMPERATURE & SHRINKAGE CONTROL.





FOUNDATION PAD					
SECT NO.	W	X	D	CU. YDS. CONC.	A
3	3'-0"	1'-9"	4'-0"	1.8	1'-0½"
4	4'-0"	2'-0"	4'-0"	2.4	1'-2"
5	4'-6"	2'-3"	4'-0"	3.0	1'-3½"
6	4'-9"	2'-4½"	4'-0"	3.4	1'-3½"
7	5'-3"	2'-7½"	4'-0"	4.1	1'-4½"
8	5'-9"	2'-10½"	4'-0"	4.9	1'-6"

No.	Revisor Description	Date	By

Unarco-Rohn
Division of Unarco Industries Inc

Title: FOUNDATION FOR CONCRETE BASE STUBS FOR BX TOWER

Scale: NONE	Unless otherwise specified dimensions are in inches. Tolerances		
Drawn by: AED Date: 4-5-78	Decimals	Fractions	Angles
Checked by: DAL Date: 5-26-78	Material	Finish	
Approved by Engineering: CWJ Date: 5-24-78	This drawing is the property of Unarco-Rohn Inc. It is not to be reproduced, copied or made public without our written consent.		
Approved by Production: Date			
Approved by Sales: Date: 5-24-78	Drawing Number: C780284		

MAST ASSEMBLY
BX–STANDARD/HBX–HEAVY DUTY/HDBX–EXTRA HEAVY DUTY TOWERS

1. Two U-bolt assemblies with "L" brackets are supplied for installing the mast. These "L" brackets are bolted through the slotted holes on the rotor and top plate with the short legs of the "L" bracket toward the outside of the tower. See Drawing C750429.

2. Run the U-bolt through the open side of the formed "V" clamp and into the "L" bracket placing the 5/16" nuts and washers on the U-bolt loosely.

3. To install the mast, place one end of it through the upper U-bolt assembly end plate and slide it down into the lower U-bolt assembly to hold the mast.

4. Adjustments to make the mast vertical may be made by moving the "L" brackets in the slotted holes.
The HDX – Heavy Duty and HDBX – Extra Heavy Duty Towers are furnished with a mast clamp installed on the top plate made from a pipe floor flange, which is provided with three bolts to be used as set screws to secure the mast. The box of hardware consists of one U-bolt assembly as described above and it can be installed on the lower plate as is instructed above, if required.

ASSEMBLY INSTRUCTIONS

BREAKING DOWN THE BUNDLE

1. If your tower includes the 8' mast and/or three 4' base stubs, remove them. Remove the package of nuts, bolts and washers.

2. Lay the bundle on its side and remove the tower sections. Start with the innermost section of the package (the smallest section) and remove by pulling out with quick, firm jerks. It is not necessary nor desirable to pry the tower sections out with tools as damage may result.

3. Inspect all tower sections on delivery to make sure there are no loose or broken rivets caused by transport mishandling. If a rivet is broken or loose, it should be replaced by a snug-fitting machine bolt and nut, securely tightened.

TOWER

After you have chosen the desired type of base for your tower (concrete base with BXB concrete base stubs, BXHC hinged concrete base, or BXCA cylinder base which hinges over and requires no concrete) and it is properly installed per base instructions, bolt the base section (the largest section) to the base. Proceed with the erection as follows:

1. The legs on each higher section slide inside the previous one and should be positioned on the rivet stop in the previous leg. (This rivet stop is to prevent the tower section being installed from slipping through the previous section and is not for the purpose of aligning the assembly holes.) (Special Note: the BX8 section does not have a rivet stop in it, so extreme caution should be used when installing the BX7 section into the BX8 section.) Proceed by bolting together each section with the proper size bolts.

2. To erect the tower, section by section vertically, you should use an EFBX erection fixture for raising and locating the section being installed into the previous section. (Note: do not use an erection fixture to lift more than the weight of one tower section at a time.) By using BXHC or BXCA base the tower can be assembled on the ground and hinged up using extreme caution. When hinging up, watch for power lines, trees, etc.

3. Loose, missing or faulty rivets should be replaced with a similar size nut and bolt which can be obtained at any local hardware.

Note: 3/8" bolts are used on BX1, BX2 and the top of the BX3 sections. 9/16" bolts are used on the bottom of the BX3 and all sections from BX4 through BX8 (BX8 is the largest section).

One set of cross braces on one face of the top section is purposely left off to allow easy access to the rotor plate for installing the mast and rotor. (Note: Only one person should be on the tower at one time.)

CAUTION...Be sure hinge bolts on hinged type accessories are loosened before attempting to hinge tower up or down. All hinged type bases are intended to be used to raise tower only without antenna. When raising and lowering tower on any hinged type base, the loads applied for raising the tower must be applied equally on both sides of the tower using a cradle or by using several attachment points in order to prevent overloading a tower member and to reduce the possibility of twist on the tower and hinges at the base. Special care must be taken to avoid the use of raising and lowering methods which cause damage to tower or base. Tower must be initially raised prior to applying tension to a hoisting line to avoid a large horizontal force pulling the tower into the base. Towers and bases must only be installed and dismantled by professional and experienced installers. Field welding is prohibited on tower, base and anchor bolts.

Be sure to check anchor bolt projections per drawing C760099R7. Make sure the anchor bolt is not interfering with the raising or lowering of the hinge pipe. Check this before attempting to hinge up or lower the tower.

NOTES ON ASSEMBLING ROTATORS

Most all makes of rotators can be installed on the rotor plate inside the top tower section of the BX standard, HBX, heavy duty, and HDBX extra heavy duty towers. There is a short piece of tubing furnished with each tower that can be used as a thrust bearing (for 1-1/4" mast) with the mast clamp installed on the top plate as is described under the heading Mast Assembly. Do not install rotators on the HDBX top plate.

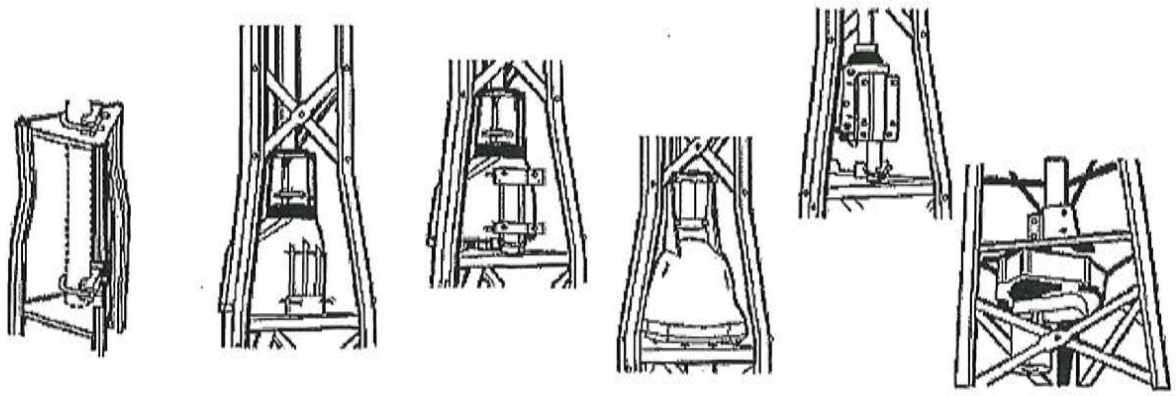
For the HBX – Heavy Duty and HDBX 0 Extra Heavy Duty Towers, when a rotator is used a 4" piece of tubing or pipe with an I.D. larger than the O.D. of the mast can be installed in the pipe flange clamp and used as a bearing for the mast to turn in.

FOR ASSEMBLING THE ROTATOR ITSELF, FOLLOW THE PROCEDURES OUTLINED BELOW:

Some inline model rotators mount directly to the rotor plate. (The lower housing of the rotator is not used when this is done.) The necessary holes for mounting most rotors are pre-punched in the plate itself and the bolts furnished to bolt the lower housing to the upper housing (4-1/4" x 1" bolts) are to be inserted from the bottom of the plate upward and into the rotor. It is desirable to place 3/8" nuts to act as spacers between the rotor plate and the rotator.

These nuts will prevent the terminals of the rotator and the rotor wire from shorting on the rotor plate. An 8" piece of tubing is furnished with each tower. It can be installed into the clamp ("V" clamp and "L" shaped brackets furnished for offset rotor installation only) for the offset type rotors. It is necessary to reverse the clamp assembly (to face outside of the tower), opposite that of installing a standard mast to the rotor plate. Some rotators can be mounted directly to the "L" shaped bracket as shown or to the 8' mast as previously described.

Also, some rotators mount beneath the rotor plate (as pictured). It will be necessary to increase the 1/4" holes in the rotor plate to 3/8" holes to use the 3/8" bolts furnished with these rotators. See pictorial views of typical rotor installations:



In all cases be careful during installation.

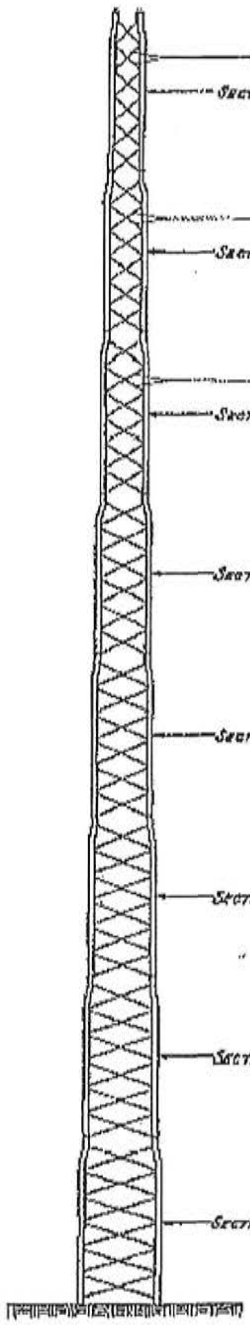
Notes:
Do not install towers near power lines. All towers should be installed out of falling distance of power lines since every electrical and telephone wire should be considered dangerous.

ROHN recommends anti-climb sections on all towers to prevent unauthorized persons from climbing towers. Only one person should be on the tower at a time.

All antenna installations must be grounded per local or national codes.

All towers should be installed and dismantled by experienced and trained personnel.

All types of antenna installations should be thoroughly inspected by qualified personnel at least twice a year and re-marked with hazard and warning labels to ensure safety and proper performance. A safety package (part number ACWS) is available which includes one anti-climb warning sign and two Danger – Watch for Wires labels along with other printed safety information.



-SEE NOTE BELOW FOR OMITTED BRACES

-SEE NOTE BELOW FOR OMITTED BRACES

-NOTE: WHEN THIS SECTION IS USED AS THE TOP SECTION, THESE TWO BRACES ARE OMITTED (ON ONE FACE ONLY) TO ACCOMODATE ROTOR.

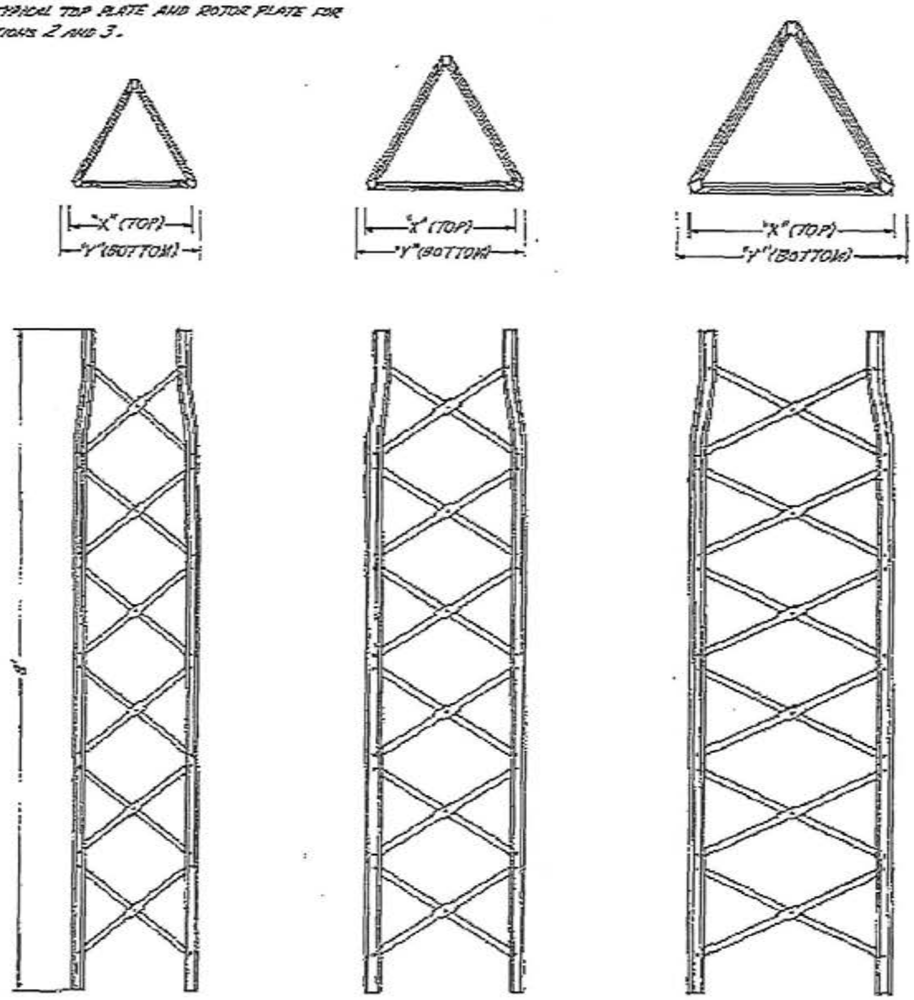
BX SERIES TOWER
TYPICAL 64' TOWER (SECTIONS 1 THRU 8)

C-750428

REFERENCE DRAWINGS:

SECTION No. 1: DWG. No. C-750429.
SECTIONS 2 THRU 8: DWG. No. C-750430.
TOP PLATE, ROTOR PLATE, & MAST CLAMPS: DWG. No. C-750439.
FOUNDATION & ANCHOR BOLT SETTING FOR HINGED CONCRETE BASE: DWG. No. C-760099.
CYLINDER BASE INSTALLATION FOR SECTIONS 3, 4, 5 & 6: DWG. No. C-750409-R2.
DESIGN ASSUMPTIONS: DWG. No. A-750005.
TOWER SECTION PROPERTIES: DWG. No. B-760026.
TOWER DESIGN DATA: DWG. No. B-760025.
TYPICAL TOWER ANALYSIS: DWG. No. A-760000.
ALLOWABLE ANTENNA LOADS: DWG. No. A-760001.

NOTE: SEE DWG. NO. C-750429 FOR DETAILS OF TYPICAL TOP PLATE AND ROTOR PLATE FOR SECTIONS 2 AND 3.

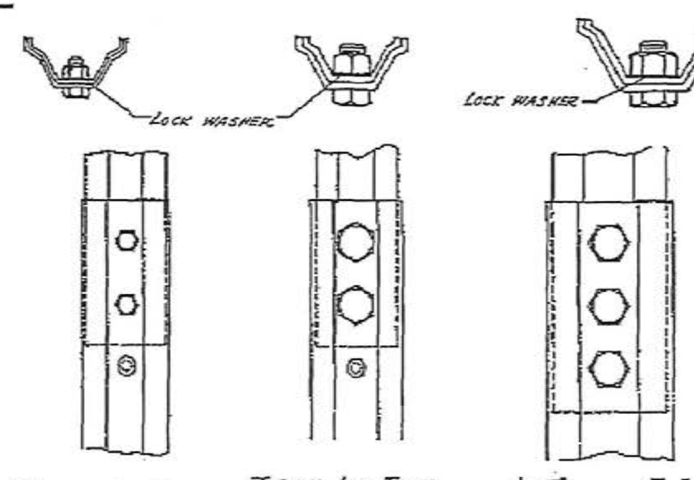


SECTIONS 2, 3, 4

SECTIONS 5, 6

SECTIONS 7, 8

ELEVATIONS OF TYPICAL SECTIONS



TYPICAL LEG JOINT BETWEEN SECTIONS 1-2 SECTIONS 2-3

TYPICAL LEG JOINT BETWEEN SECTIONS 3-4 SECTIONS 4-5 SECTIONS 5-6 SECTIONS 6-7

TYPICAL LEG JOINT BETWEEN SECTIONS 7-8

SECTION NO.	LEG JOINT BOLTS			"X" (TOP)	"Y" (BOTTOM)
	LOCATION	QTY.	SIZE		
BX-2	TOP	2	3/8 x 3/4	10 7/16	12 11/16
	BOTTOM	2	3/8 x 3/4		
BX-3	TOP	2	3/8 x 3/4	12 13/16	15 1/16
	BOTTOM	2	1/2 x 1		
BX-4	TOP	2	1/2 x 1	15 3/16	17 7/16
	BOTTOM	2	9/16 x 1		
BX-5	TOP	2	9/16 x 1	17 5/8	20 1/8
	BOTTOM	2	9/16 x 1		
BX-6	TOP	2	9/16 x 1	20 5/16	22 13/16
	BOTTOM	2	5/8 x 1		
BX-7	TOP	2	9/16 x 1	23	25 1/2
	BOTTOM	3	9/16 x 1		
BX-8	TOP	3	9/16 x 1	25 11/16	28 7/16
	BOTTOM	3	9/16 x 1		

NOTE: FOR STRAIGHT SECTIONS ELIMINATE "X" DIMENSION.

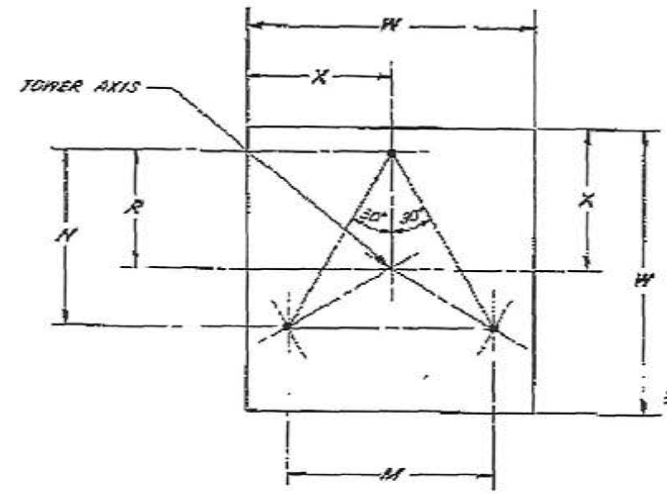
NO.	DESCRIPTION	DATE	BY
	REVISIONS		

TITLE
BX SERIES TOWER
(SECTIONS 2 THROUGH 8)

SCALE NONE | DRAWN BY FED | DATE 6-6-75 | UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES.

DWG. NO. C-750430

PRINTED IN U.S.A.

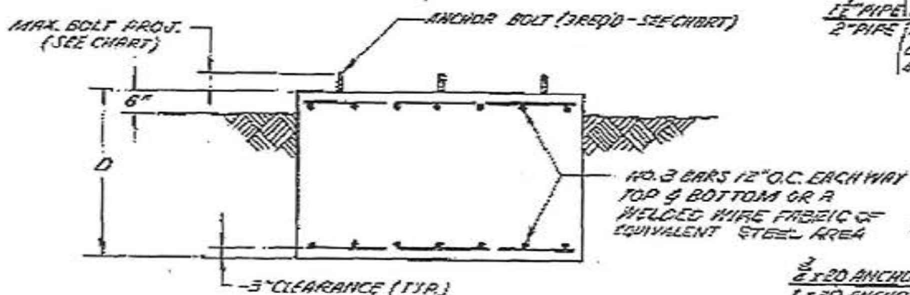


FOUNDATION NOTES

1. CONCRETE, 3000 P.S.I. MIN. ULT. STRENGTH
2. ASTM A-615 GRADE 40 DEFORMED RE-BARS
3. ALL FORMS MUST BE REMOVED FROM CONCRETE BEFORE PLACING COMPACTED BACKFILL.
4. FOUNDATIONS DESIGNED FOR 2000 PSF SOIL.
5. IT IS RECOMMENDED THAT A WOOD TEMPLATE BE CONSTRUCTED BY THE USER FOR HOLDING ANCHOR BOLTS AT THE PROPER DIM'S WHILE CONC. IS BEING POURED.

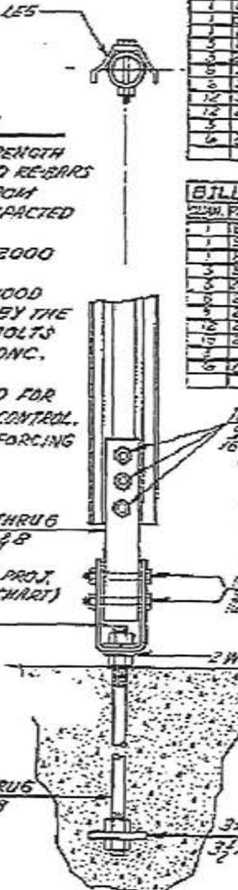
*6. REINFORCING IS RECOMMENDED FOR TEMPERATURE & SHRINKAGE CONTROL.

7. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.



BILL OF MATERIAL (P/N BXHC36)			
QUAN.	PART NO.	DESCRIPTION	DWG. NO.
1	BXSAC1	STUB PIPE 1 1/2" STD	C760020
1	BXSAL1	STUB PIPE 1 1/2" STD	C760020
1	BXSAR1	STUB PIPE 1 1/2" STD	C760020
3	BXSA41	YOKE	C760020
3	[illegible]	3/4 X 21" ANCHOR BOLT	N/A
6	[illegible]	3/4" SPLIT WASHER	N/A
6	[illegible]	9/16" X 3" BOLT	N/A
12	[illegible]	3/4 HVY HEX NUT	N/A
12	[illegible]	9/16" HEX. NUT	N/A
3	PP13	3/8 X 3X3" BEARING PLATE	N/A
6	220085	9/16 X 3-1/2" BOLT	N/A

BILL OF MATERIAL (P/N BXHC78)			
QUAN.	PART NO.	DESCRIPTION	DWG. NO.
1	BXLAC1	STUB PIPE 2" STD	[illegible]
1	BXLAL1	STUB PIPE 2" STD	[illegible]
1	[illegible]	STUB PIPE 2" STD	[illegible]
3	[illegible]	YOKE	[illegible]
3	[illegible]	1 X 30" ANCHOR BOLT	N/A
6	[illegible]	1" SPLIT WASHER	N/A
9	220280	9/16" X 3-1/2" BOLT	N/A
12	[illegible]	1" HVY HEX NUT	N/A
12	[illegible]	9/16" HEX. NUT	N/A
3	PP14	3/8X3-1/2X3-1/2" BEARING PL.	N/A
6	[illegible]	9/16" X 4" BOLT	N/A



3FT. THICK PAD FOUNDATION

SEC. NO.	M	N	R	MAX. PROJ.	ANCHOR BOLT	BEARING PL.	D	W	X	CU. YDS. CONC.
3	13 5/16"	11 1/2"	7 11/16"	2 5/8"	3-3/4 X 20"	PP13	3'-0"	3'-9	1'-10 1/2	1.6
4	15 11/16"	13 3/16"	9 1/16"	2 5/8"	3-3/4 X 20"	PP13	3'-0"	4'-3	2'-1 1/2	2.0
5	18 5/16"	15 7/8"	10 9/16"	2 5/8"	3-3/4 X 20"	PP13	3'-0"	4'-9	2'-4 1/2	2.5
6	21"	18 3/16"	12 1/8"	2 5/8"	3-3/4 X 20"	PP13	3'-0"	5'-3	2'-7 1/2	3.1
7	23 1/4"	20 1/8"	13 7/16"	3 1/4"	3-1 X 30"	PP14	3'-0"	6'-0	3'-0	4.0
8	26 3/16"	22 11/16"	15 1/8"	3 1/4"	3-1 X 30"	PP14	3'-0"	6'-6	3'-3	4.7

4FT. THICK PAD FOUNDATION

SEC. NO.	M	N	R	MAX. PROJ.	ANCHOR BOLT	BEARING PL.	D	W	X	CU. YDS. CONC.
3	13 5/16"	11 1/2"	7 11/16"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	3'-6	1'-9	1.8
4	15 11/16"	13 3/16"	9 1/16"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	4'-0	2'-0	2.4
5	18 5/16"	15 7/8"	10 9/16"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	4'-6	2'-3	3.0
6	21"	18 3/16"	12 1/8"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	4'-9	2'-4 1/2	3.4
7	23 1/4"	20 1/8"	13 7/16"	3 1/4"	3-1 X 30"	PP14	4'-0"	5'-3	2'-7 1/2	4.1
8	26 3/16"	22 11/16"	15 1/8"	3 1/4"	3-1 X 30"	PP14	4'-0"	5'-9	2'-10 1/2	4.9

No.	Revision Description	Date	By
R7	ADD NOTE 7	[illegible]	[illegible]
R6	3/4" BOLTS TO 9/16" BOLTS; [illegible]	9-3-92	[illegible]
R5	ADDED BILL OF MATERIAL	6-18-92	[illegible]
R4	[illegible]	[illegible]	[illegible]
R3	REVISED DIMS IN BEARING & COLUMN	[illegible]	GCS
R2	P/N'S PP13 & PP14 WERE PL-30 & PL-35	[illegible]	GCS
R1	ADDED YOKE MK. NO'S & REVISED PIPE MK. NO'S	4-8-76	DH

Title: FOUNDATION & ANCHOR BOLT DETAILS for MODEL BX TOWER

Scale: NONE

Drawn by: D.H. Date: 1-30-76

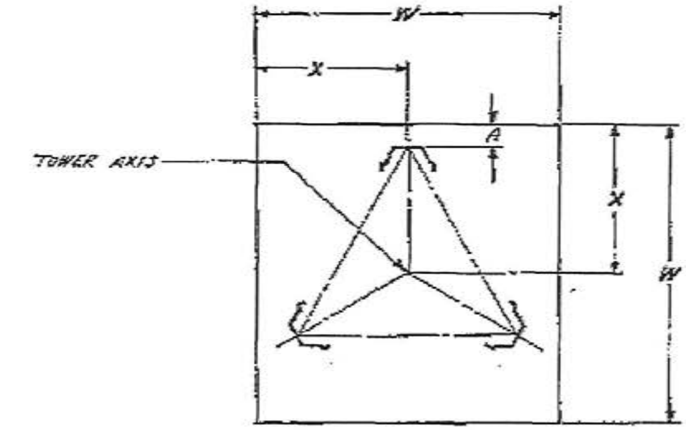
Checked by: ACD Date: 2-3-76

Approved by Engineering: [illegible] Date: 2-3-76

Approved by Production: Date:

Approved by Sales: [illegible] Date: 2-19-76

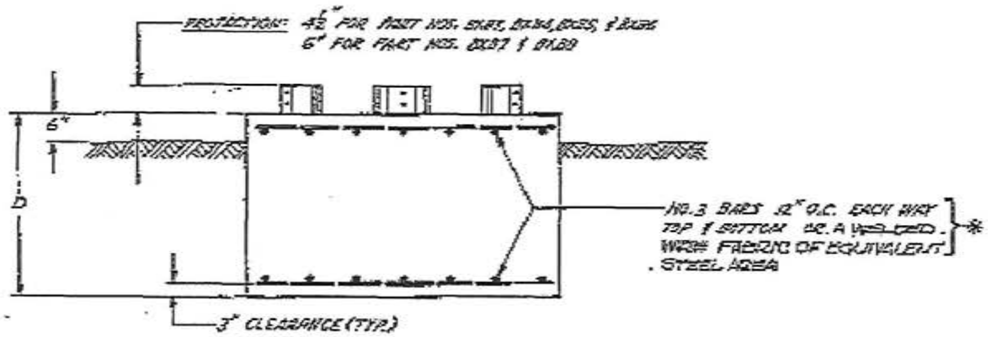
Drawing Number: C 760099 R7

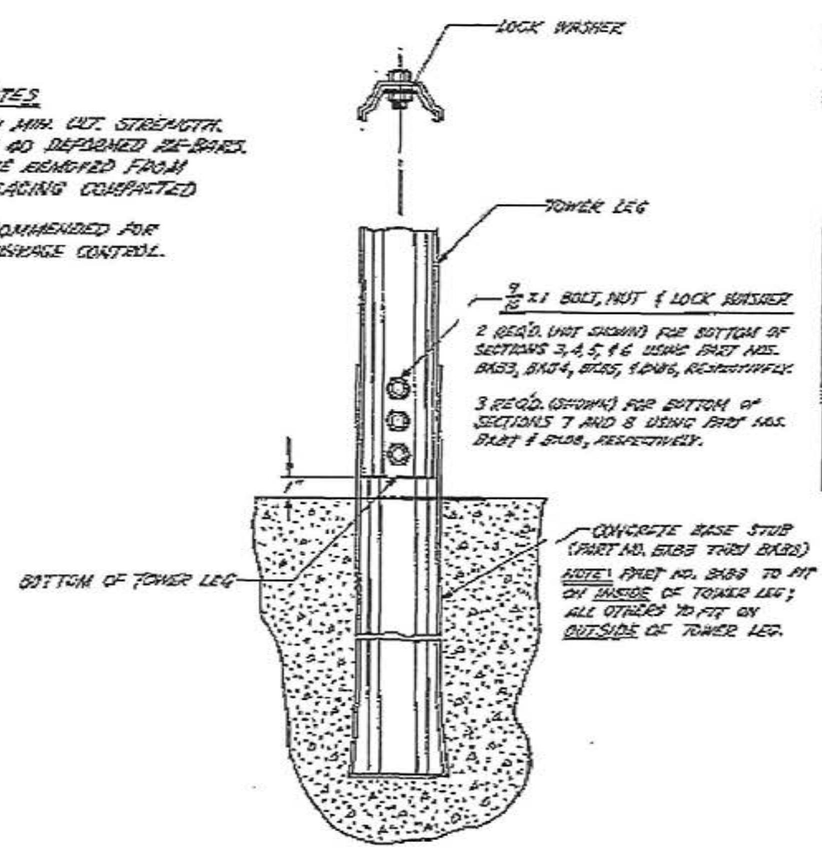


FOUNDATION NOTES

1. CONCRETE, 3000 PSI MIN. ULT. STRENGTH.
2. ASTM A-615 GRADE 40 DEFORMED RE-BARS.
3. ALL FORMS MUST BE REMOVED FROM CONCRETE BEFORE PLACING COMPACTED BACKFILL.

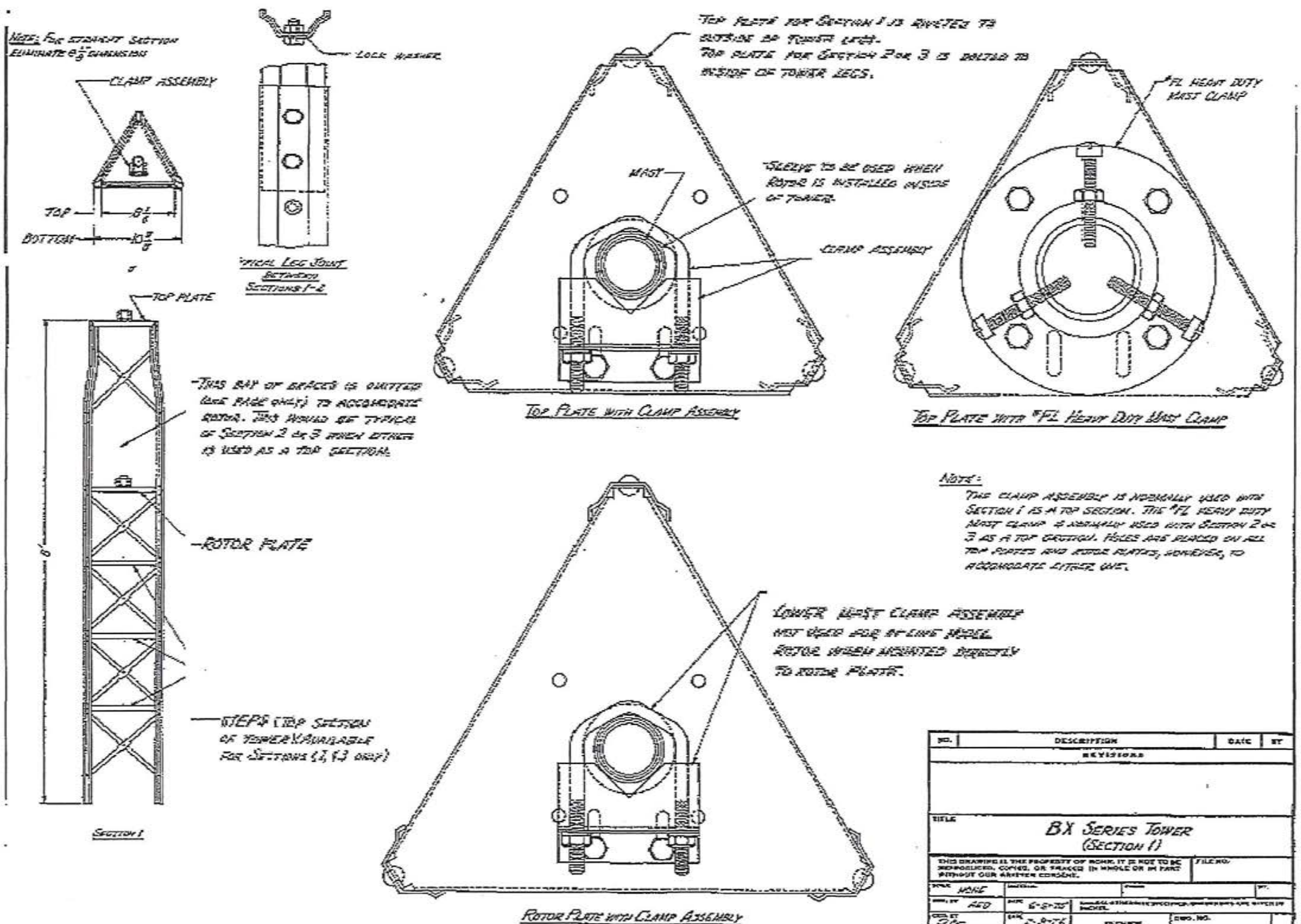
** 4. REINFORCING IS RECOMMENDED FOR TEMPERATURE & SHRINKAGE CONTROL.





FOUNDATION PAD					
SECT. NO.	W	X	D	CU. YDS. CONC.	A
3	3'-6"	1'-9"	4'-0"	1.8	1'-0¼"
4	4'-0"	2'-0"	4'-0"	2.4	1'-2"
5	4'-6"	2'-3"	4'-0"	3.0	1'-3½"
6	4'-9"	2'-4½"	4'-0"	3.4	1'-3½"
7	5'-3"	2'-7½"	4'-0"	4.1	1'-4¾"
8	5'-9"	2'-10½"	4'-0"	4.9	1'-6"

For	FOUNDATION FOR CONCRETE BASE STUBS FOR 8X TOWER
Scale: NONE	Unless otherwise specified, dimensions are given in inches. Tolerances: Decimals ± Fractions ± Angles ±
Drawn by: RED Date: 4-5-78	Material / Finish / Weight
Checked by: D.K. Date: 5-24-78	
Approved by Engineering: CW Date: 5-24-78	
Approved by Production: Date:	
Approved by Sales: Date: 5-24-78	Drawing Number: C7802842



NO.	DESCRIPTION	DATE	BY
	REVISIONS		

TITLE: BX SERIES TOWER (SECTION 1)

THIS DRAWING IS THE PROPERTY OF ROHN. IT IS NOT TO BE REPRODUCED, COPIED, OR TRACED IN WHOLE OR IN PART WITHOUT OUR WRITTEN CONSENT.

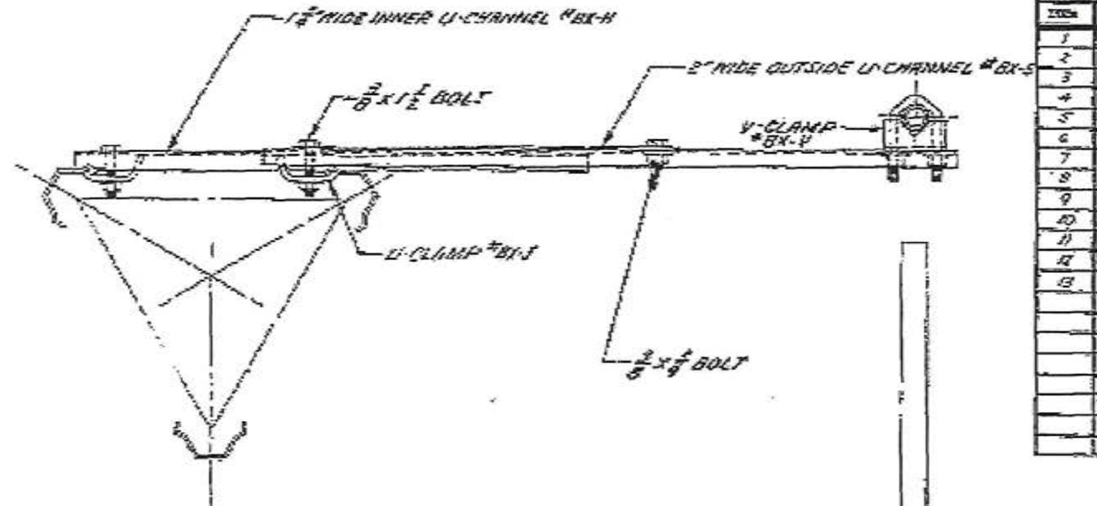
SCALE: NONE

DRAWN BY: AED — DATE: 6-8-55

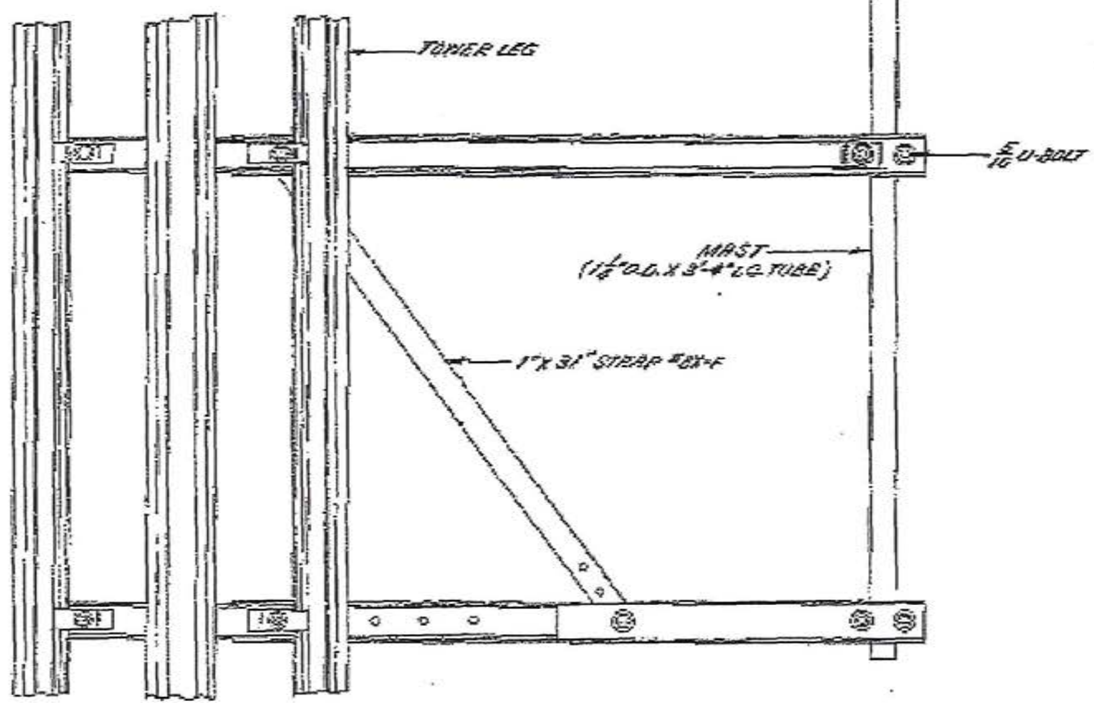
DATE: 2-9-76

DATE: 2-17-76

DWG. NO. C-750429



BILL OF MATERIAL				
ITEM	QTY.	PART NO.	DESCRIPTION	DWG. NO.
1	2	BX-S	2" WIDE OUTSIDE CHANNEL	C-76024-R1
2	2	BX-H	1 3/4" WIDE INNER CHANNEL	C-76020-R1
3	4	BX-J	U-CLAMP	C-76021-R1
4	1	BX-F	1" x 31" STRAP	C-76025
5	1	[illegible]	1 1/4" O.D. x 18 GA TUBE 3'-4" LONG	
6	4	220086	3/8" x 1 1/2" BOLT	
7	5	240031	3/8" NUT	
8	1	220069	3/8" x 3/4" BOLT	
9	5	250025	3/8" WASHER	
10	2	270034	5/16" U-BOLT	
11	4	240014	5/16" NUT	
12	8	250022	5/16" WASHER	
13	2	BX-V	V-CLAMP	



NOTE: WASHERS SUPPLIED FOR ALL BOLTS.

R2 ADDED BILL OF MAT'L.; DELETED BACK BRACE 3-25-77 ADJ
R1 ADDED PART NOS. 1-27-77 OH

Rev. No.	Revision Description	Date	By

Title
BX-SM MOUNT ASSEMBLY

Scale: —	
Drawn by: O.H. Date: 10-9-75	
Checked by: WDA Date: 10-10-75	
Approved by Engineering: CHJ Date: 10-10-75	
Approved by Production: Date:	
Approved by Sales: GLH Date: 3-30-77	Drawing Number: C-750946 R2

Typical Tower Analysis

Tower Design Data: Model BX-64

Wind Pressure ------ 20 PSF
Antenna Load --- 6 SQ.FT. at 3FT. above Tower top – ½in. line
Antenna WT. = 50 LBS.
Line WT. = 0.5 LBS. 1 FT.

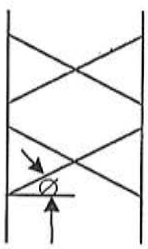
Note: Antennas developing a large twisting moment due to wind must not be used on This tower. Antennas should be limited to those having a maximum boom length of 10 FT.

Section No.	8	7	6	5	4	3	2	1
Distance From Top (FT.)	61.7	53.7	46.0	38.3	30.7	23.0	15.3	7.7
Wind on Section (LBS.)	179.7	161.7	150.0	139.5	115.5	107.7	101.1	96.0
Wind on Antenna & Line (LBS.)	5.5	5.3	5.3	5.3	5.3	5.3	5.3	127.4
Total Wind on Section (LBS.)	185.2	167.0	155.3	144.8	120.4	113.0	106.4	223.4
Shear (LBS.)	1215.9	1030.7	863.7	708.4	563.6	442.8	329.8	223.4
Moment (FT.-LBS.)	37,770	28,790	21,530	15,500	10,620	6770	3810	1690
Face Width (FT.)	2.284	2.047	1.824	1.602	1.381	1.184	.989	.794
.866 x Face Width (FT.)	1.978	1.773	1.580	1.388	1.196	1.025	.856	.688
Leg Load (LBS.) (1)	19,100	16,240	13,630	11,170	8880	6600	4450	2460
Section Weight (LBS.)	82	75	64	59	41	28	23	22
Total Weight (LBS.)	476	390	312	244	181	136	104	77
*Leg Load with Weight (LBS.)	19,260	16,370	13,730	11,250	8940	6650	4490	2480
Shear One Face (LBS.) (2)	815	691	579	475	378	297	221	150
COS Ø	.904	.883	.858	.827	.783	.733	.667	.580
* Load Each Brach (LBS.) (3)	451	391	337	287	241	203	166	129

(1) Leg Load = $\frac{\text{Moment}}{.866 \times \text{Face Width}}$

(2) Shear One Face = .67 x Shear

(3) Load Each Brace = $\frac{\text{Shear One Face}}{2 \times \text{COS } Ø}$



*Refer to DWG. No. B-760025 for allowable loads of members & connections.

Model BX Tower

Allowable Antenna Loads *

Wind Pressure = 20 PSF (70.7 MPH)

Nominal Height, FT.	Combination of Tower Sections	Catalog No.	Area, SQ.FT.	Thrust, LBS.
24	BX-1-2-3	BX-24	6	120
	BX-2-3-4	HBX-24	12	240
	BX-3-4-5	HDBX-24	20	400
32	BX-1-2-3-4	BX-32	6	120
	BX-2-3-4-5	HBX-32	12	240
	BX-3-4-5-6	HDBX-32	18	360
40	BX-1-2-3-4-5	BX-40	6	120
	BX-2-3-4-5-6	HBX-40	10	200
	BX-3-4-5-6-7	HDBX-40	18	360
48	BX-1-2-3-4-5-6	BX-48	6	120
	BX-2-3-4-5-6-7	HBX-48	10	200
	BX-3-4-5-6-7-8	HDBX-48	18	360
56	BX-1-2-3-4-5-6-7	BX-56	6	120
	BX-2-3-4-5-6-7-8	HBX-56	10	200
64	BX-1-2-3-4-5-6-7-8	BX-64	6	120

* This load can be applied at a point of 3ft. above the apex of the tower in addition to the given wind pressure acting on the tower.

Note: Antenna types should be limited to those having a maximum boom length of 10 feet. No engineering data relating to the use of boom lengths in excess of 10 feet is available and the use of such boom lengths is not recommended.

DEG. NO. A-760001 RI

BX Tower

Tower As Packaged for Shipping														Optional Accessories								
Tower Model		BX1A	BX2	BX2A	BX3	BX3A	BX4	BX5	BX6	BX7	BX8	M8	ACWS	BXB3	BXB4	BXB5	BXB6	BXB7	BXB8	BXHC36	BXHC78	BXSM
BX	24	X	X		X							X	X	X						X		X
	32	X	X		X		X					X	X		X					X		X
	40	X	X		X		X	X				X	X			X				X		X
	48	X	X		X		X	X	X			X	X				X			X		X
	56	X	X		X		X	X	X	X		X	X					X			X	X
	64	X	X		X		X	X	X	X	X	X	X						X		X	X
HBX	24			X	X		X						X		X					X		X
	32			X	X		X	X					X			X				X		X
	40			X	X		X	X	X				X				X			X		X
	48			X	X		X	X	X	X			X					X			X	X
	56			X	X		X	X	X	X	X		X						X		X	X
HDBX	24					X	X	X					X			X				X		X
	32					X	X	X	X				X				X			X		X
	40					X	X	X	X	X			X					X			X	X
	48					X	X	X	X	X	X		X						X		X	X

NOTE: Be sure you select type of base and ORDER SEPARATELY for BX, HBX, and HDBX towers.

CAUTION…..AX hardware is not interchangeable with BX hardware.

All types of antenna installations should be thoroughly inspected by qualified personnel at least twice a year and re-marked with hazard and warning labels to insure safety and proper performance.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Model BX Tower Design Assumptions

Tower Material Specifications:

Legs: ASTM A-446 Grade C Steel (Minimum Yield Point – 45,000 PSI)
(Galvanized according to ASTM A-525)

Braces: Cold Rolled C-1017 Steel (Minimum Yield Point – 36,000 PSI)
(Galvanized according to ASTM A-525)

Leg Splice Bolts: SAE Grade 5 Steel

Rivets: 2017-T4 Aluminum Alloy

Tower Member Allowable Design Stresses:

Note: Allowable stresses below have been increased by 33 1/3% for the wind load condition. (1)

Legs:

Compression - (Stress varies according to slenderness ration) (2)
Bearing -------- 126,000 PSI (3)
Shear ---------- 24,000 PSI (4)

Braces:

Compression - (Stress varies according to slenderness ration) (2)
Bearing -------- 100,800 PSI (3)
Shear ---------- 19,330 PSI (4)

Bolts:

Shear ---------- 29,300 PSI (Threads excluded from shear plane) (5)

Rivets:

Shear ---------- 18,120 PSI (6)
Bearing -------- 53,400 PSI (6)

(1) PAR.3.1.2.1 of A.I.S.I. "Specification for the Design of Cold-Formed Steel Structural Members", 1968 Edition.
(2) A.I.S.C. Manual of Steel Construction, 7th Edition, Pgs. 5.84 & 5.86.
(3) PAR.4.5.3 of A.I.S.I. Specifications, 1968 Edition.
(4) A.I.S.C. Manual of Steel Construction, 7th Edition, Pg. 5.64.
(5) PAR 4.5.5 of A.I.S.I. Specifications, 1968 Edition.
(6) Aluminum Construction Manual, "Specifications for Aluminum Structures", 1967 Edition.

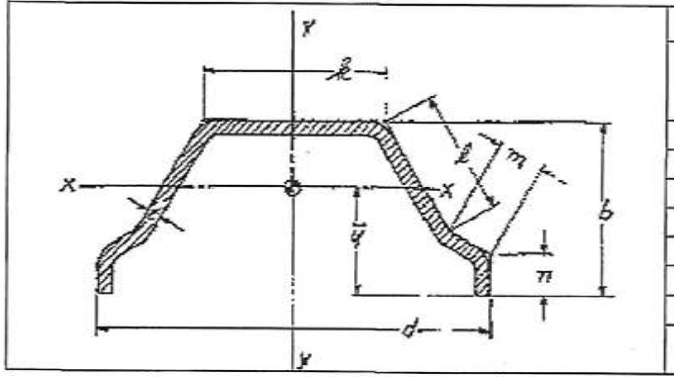
Tower Shape Factors:

Individual Members (Legs, Braces, Transmission Lines)
Shape Factor: 1.00 for Flat Elements
.67 for Cylindrical Elements

Tower Section:
Shape Factor: 1.50 Times the projected area of individual members in one face.

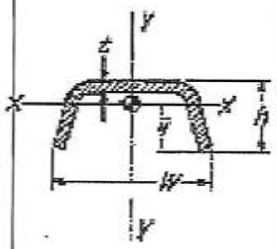
DWG. No. A-750005

Model BX Tower Section Properties



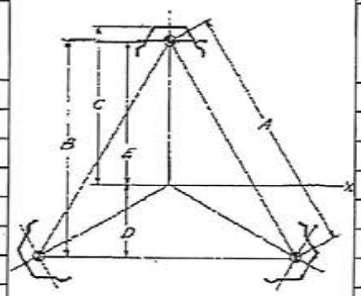
Section Properties of Vertical Elements

Sect.	t in.	b in.	d in.	k in.	l in.	m in.	n in.	Area$_1$ in.^{1}	$\bar{y}$ in.	Ix in.^{4}	Tx in.	Iy in.	Ty in.
BX-1	.048	1.1742	2.0984	.7500	1.0134	.1934	.1999	.1637	.6890	.0236	.380	.0746	.675
BX-2	.048	1.1887	2.2145	.8286	1.0198	.2114	.1999	.1698	.7052	.0256	.388	.0862	.712
BX-3	.060	1.2151	2.3544	.9210	1.0298	.2330	.2068	.2228	.7233	.0346	.394	.1260	.752
BX-4	.085	1.2596	2.5441	1.0422	1.0476	.2623	.2212	.3296	.7511	.0548	.408	.2156	.809
BX-5	.1008	1.3058	2.7661	1.1818	1.0704	.2967	.2305	.4151	.7863	.0742	.423	.3172	.874
BX-6	.1008	1.3428	2.9881	1.3216	1.0932	.3311	.2305	.4407	.8160	.0838	.436	.3926	.944
BX-7	.1158	1.3946	3.2399	1.4784	1.1206	.3700	.2391	.5384	.8522	.1106	.453	.5594	1.019
BX-8	.1158	1.5780	3.4916	1.6354	1.1480	.4089	.3794	.6043	.9769	.1540	.505	.7810	1.137



Section Properties of Diagonal Elements

Sect.	t in.	h in.	w in.	Area$_1$ in.^{2}	$\bar{y}$ in.	Ix in.^{4}	Tx in.	Iy in.^{4}	Ty in.
BX-1	.048	.35	.75	.054	.235	.000620	.107	.00330	.247
BX-2	.048	.35	.75	.054	.235	.000620	.107	.00330	.247
BX-3	.048	.35	.75	.054	.235	.000620	.107	.00330	.247
BX-4	.060	.35	.75	.0675	.228	.000732	.104	.00394	.242
BX-5	.075	.46	1.05	.1125	.307	.002164	.139	.01342	.345
BX-6	.075	.46	1.05	.1125	.307	.002164	.139	.01342	.345
BX-7	.075	.46	1.05	.1125	.307	.002164	.139	.01342	.345
BX-8	.075	.46	1.05	.1125	.307	.002164	.139	.01342	.345



Section Properties of Tower

Sect.	Area (3 legs) in.^{2}	A in.	B in.	C in.	D in.	E in.	Ix in.^{4}	Tx in.	Weight, LBS.
BX-1	.491	9.53	8.25	5.99	2.75	5.50	7.50	3.91	22
BX-2	.509	11.86	10.27	7.33	3.42	6.85	12.03	4.86	23
BX-3	.668	14.50	12.30	8.69	4.10	8.20	22.58	5.81	28
BX-4	.989	16.58	14.35	10.08	4.78	9.57	45.44	6.78	41
BX-5	1.245	19.23	16.65	11.62	5.55	11.10	76.94	7.86	59
BX-6	1.322	21.89	18.96	13.16	6.32	12.64	105.9	8.95	64
BX-7	1.615	24.56	21.27	14.72	7.09	14.18	162.7	10.04	75
BX-8	1.813	27.41	23.73	16.42	7.91	15.82	227.4	11.20	82

Model BX Tower Design Data

Sect	Projected Areas									Wind Load Per Sect., LBS.			Allowable loads for Vertical Leg Splices				Allowable Loads at Diagonal Connections					
	Vertical Legs				Diagonals			Totals		At Wind Pressure of			Splice Bolts		Thick. of Leg, in.	Allowable Tensile Leg Splice Capacity LBS.	Rivet Dia., in.	Thick. of Brace, in.	Area In.²		Allow.load, LBS.	
	Exposed Width (1Leg) in.	Length, in.	Exposed Area (1 Leg) FT.²	Exposed Area (1 Leg) FT.²	Width in.	Total Exposed Length (1 Face) in.	Exposed Area (1 Leg) FT.²	Total Exposed Length (1 Face) FT.²	Total Exposed Section Area Ft.²	10 PSF	15 PSF	20 PSF	No.	Dia.					BRG.	Shear	BRG.	Shear
BX1	1.73	96	1.15	2.30	.75	173.4	.90	3.20	4.800	48.0	72.0	96.0	2	3/8	.048	5630	5/32	.048	.0075	.0192	400	348
BX2	1.79	96	1.19	2.38	.75	190.5	.99	3.37	5.055	50.6	75.8	101.1	2	3/8	.048	5810	5/32	.048	.0075	.0192	400	348
BX3	1.87	96	1.25	2.50	.75	209.2	1.09	3.59	5.385	53.9	80.8	107.7	2	9/16	.060	7320	5/32	.048	.0075	.0192	400	348
BX4	1.99	96	1.33	2.66	.75	229.0	1.49	2.85	5.775	57.8	86.6	115.5	2	9/16	.085	10,910	3/16	.060	.0112	.0276	598	500
BX5	2.12	96	1.41	2.82	1.05	251.6	1.83	4.65	6.975	69.9	104.6	139.5	2	9/16	.1008	13,870	1/4	.075	.0187	.0491	1000	890
BX6	2.24	96	1.49	2.98	1.05	276.6	2.02	5.00	7.500	75.0	112.5	150.0	2	9/16	.1008	14,880	1/4	.075	.0187	.0491	1000	890
BX7	2.39	96	1.59	3.18	1.05	303.8	2.21	5.39	8.085	80.9	121.3	161.7	3	9/16	.1158	18,340	1/4	.075	.0187	.0491	1000	890
BX8	2.65	96	1.77	3.54	1.05	335.6	2.45	2.99	8.985	89.9	134.8	179.7	3	9/16	.1158	20,910	1/4	.075	.0187	.0491	1000	890

Allowable Compressive Loads

Sect	Vertical Legs							Diagonal Braces						
	Lv in.	Ty in.	Lv / Ty	F'a PSI	Fa PSI	Gross-Sect Area (1 Leg) in.²	Allowable Leg Load, LBS.	Lo in.	To in.	L'o / Ty *	F'a PSI	Fa PSI	Gross-Sect Area in.²	Allowable Brace Load, LBS.
BX1	12 ½	.380	32.9	24,300	32,400	.1637	5300	15.34	.107	71.7	16,250	21,660	.054	1170
BX2	12 ½	.388	32.2	24,380	32,500	.1698	5520	16.78	.107	78.4	15,540	20,720	.054	1120
BX3	12 ½	.394	31.7	24,430	32,570	.2228	7260	18.41	.107	86.0	14,670	19,560	.054	1060
BX4	12 ½	.408	30.6	24,540	32,710	.3296	10,780	20.16	.104	96.9	13,360	17,810	.0675	1200
BX5	12 ½	.423	29.6	24,650	32,870	.4151	13,640	22.22	.139	79.9	15,370	20,490	.1125	2310
BX6	12 ½	.436	28.7	24,740	32,990	.4407	14,540	24.41	.139	87.8	14,560	19,410	.1125	2180
BX7	12 ½	.453	27.6	24,850	33,130	.5384	17,840	26.66	.139	95.9	13,490	17,990	.1125	2020
BX8	12 ½	.505	24.8	25,130	33,510	.6043	20,250	29.19	.139	105.0	12,330	16,440	.1125	1850

*L'o=1/2Lo

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