10-12-034-008-10

BENZIE-LEELANAU DISTRICT HEALTH DEPARTMENT

Visit our Website at www.bldhd.org

BENZIE OFFICE
6051 Frankfort Hwy. Suite 100
Benzonia, MI 49616
231-882-4409

LEELANAU OFFICE
7401 E. Duck Lake Rd, Ste 100
Lake Leelanau, MI 49653
231-256-0201

DATE: 09/30/15
PERMIT FOR: BOTH SEWAGE & WELL
PERMIT NO.: B15-140
COMPUTER ID#: 201731

OWNER'S NAME: PRODUCTION INDUSTRIES, INC
OWNER'S ADDRESS: 1048 MAIN STREET
CITY,STATE,ZIP: FRANKFORT MI 49635
PHONE # [redacted]
COUNTY: BENZIE
TOWNSHIP/CITY: WELDON
SECTION: 34

SUBDIVISION:
LOT #:

PROPERTY TAX ID#: 10-12-034-008-10
PROPERTY ADDRESS: 1048 MAIN ST
PROPERTY SIZE:

MAIL TO: PETRA KUEHNIS, MANSFIELD
830 COTTAGEVIEW DRIVE SUITE 2
TRAVERSE CITY MI 49684

COMMERCIAL TYPE: INDUSTRIAL
MAX # OF PEOPLE PER DAY: 45
WSSN#: 201731

NEW BUILDING: X
EXISTING BUILDING:

SEPTIC INSTALLER: ALPERS EXCAVATING
WELL INSTALLER: CLUFF WELL DRILLING

Minimum Septic Tank Capacity: 2@1600-D + 1000 GALLON PC

Absorption Area: 2100 SQ FT

Soil Type To a Depth of: F-M SAND TOPSOIL TO12";
SLIGHTLY COMPACT R F-M SAND
TO 26";REDDISH TAN M S W/SOME
GRVL TO 42";TAN M SAND TO 52"
MOIST M-COARSE S TO 58";SATUR
ATED REDDISH BR M-C S TO 69"

Depth to Seasonal High Water Table: 52" STANDING WATER @62"

Well Depth: MINIMUM OF 25' Well Type: PITLESS ADAPTER

If Old Well Exists, it must be properly abandoned.

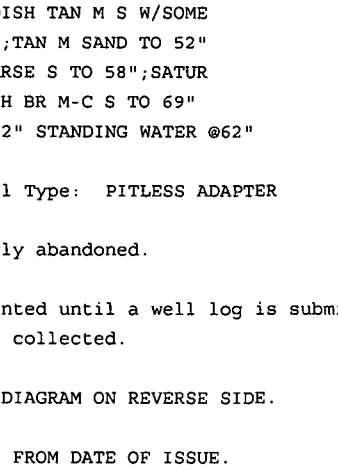
NOTE: Final well approval is not granted until a well log is submitted and satisfactory water samples collected.

SEE PERMIT REQUIREMENTS AND DIAGRAM ON REVERSE SIDE.

PERMIT VALID FOR 2 YEARS FROM DATE OF ISSUE.

TYPICAL TRENCH/DRAINBED CROSS SECTION

Dimension of Bed: 28' X 75'
Number of Tile Lines: 9
Distance between lines: 3'



FINAL INSPECTION REQUIRED BEFORE BACK FILLING SYSTEM.
ALLOW 1" SLOPE PER 50 FOOT OF TILE.
USE 1/2" - 1 1/2" DIAMETER CLEAN OR WASHED STONE.

CONSTRUCTION OPTIONS:

The specifications as stated on this permit meet with minimum requirements of the environmental health regulations. The owner should be advised that additional options may be available which could extend the life expectancy of the sewage system. Consult with the health department regarding these options.

ISOLATION DISTANCES FOR PRIVATE HOMES:

Sewage disposal system shall be located at least 50 feet feet from any potable water supply, well, spring, or unprotected water suction line. Buried or unexposed sewers or pipes through which sewage may back up, may not be located closer than ten (10) feet from any potable water well or suction pipe. Such sewers or pipes shall be constructed of schedule 40 or other material approved by the health department.

Approval of a plan and the installation cannot be considered by the owner as a guarantee that successful operation is assured. There are many ways systems can be abused, causing failure.

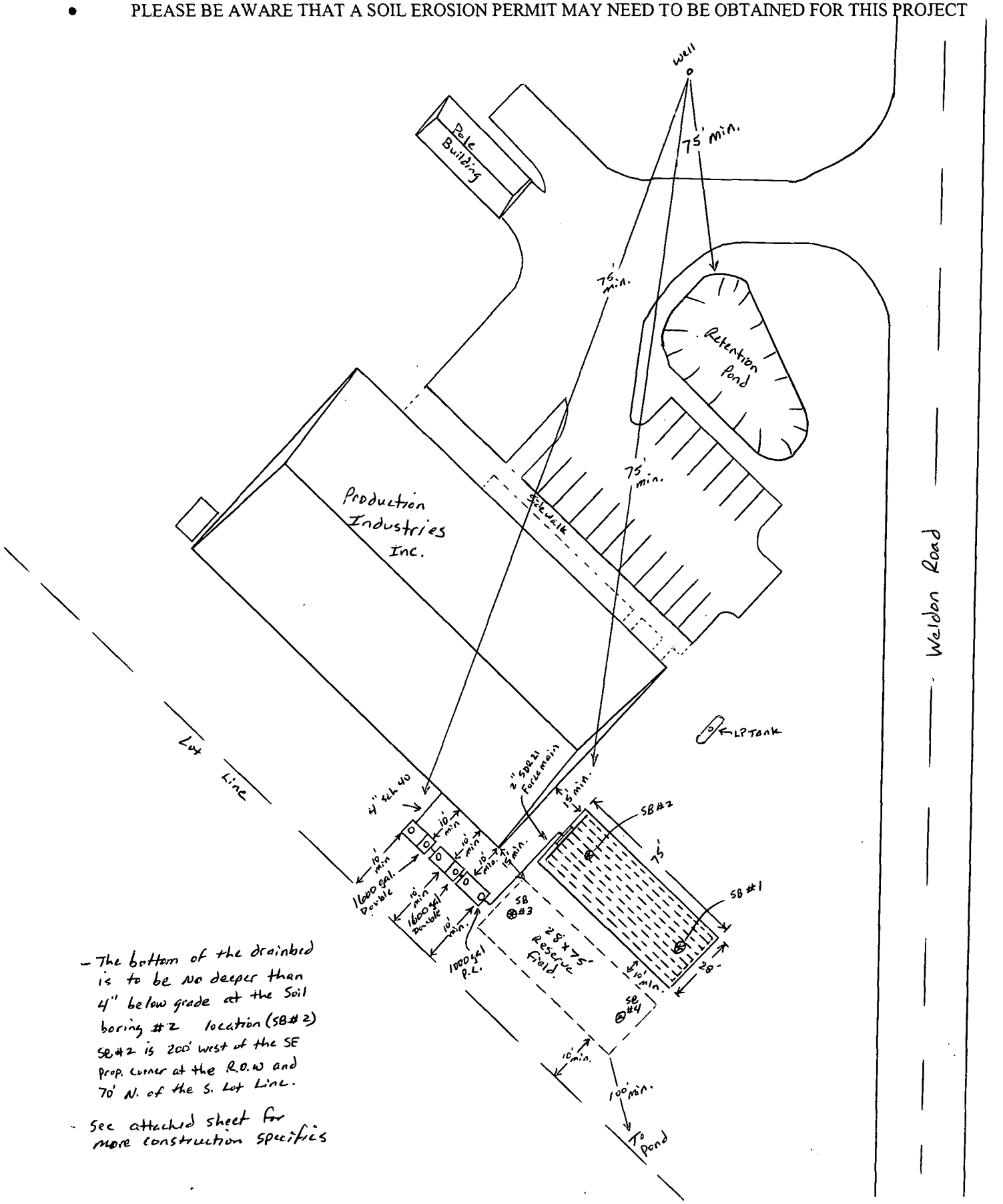
This office recommends the installation of an effluent filter to be placed in the output baffle of the septic tank.

Sanitarian: J. Eric Johnston Date Issued: 09/30/15

J. ERIC JOHNSTON, R.S.

BLEH,01 5/97

- KEEP SEPTIC TANKS, PUMP CHAMBER, & DRAINBED 75 FEET MIN. FROM ALL WELLS
- KEEP SEPTIC TANKS, PUMP CHAMBER, & DRAINBEDS 100 FEET MIN. FROM SURFACE WATER
- KEEP SEPTIC SYSTEM 10 FEET MINIMUM FROM ALL PROPERTY LINES
- CALL FOR A FINAL INSPECTION PRIOR TO BACKFILLING DRAINBED, SEPTIC TANKS, & PUMP CHAMBER
- KEEP WELLS 75 FEET MIN. FROM ALL SEPTIC SYSTEMS & SEWER LINES
- THE WELL MUST BE SAMPLED TWICE FOR COLIFORM BACTERIA (SEPERATED BY 24 HOURS) AND ONCE FOR NITRATE & NITRITE
- SUBMIT THE WELL LOG AFTER WELL COMPLETION
- CALL FOR A WELL FINAL INSPECTION WHEN THE INSIDE EQUIPMENT IS HOOKED UP
- PLEASE BE AWARE THAT A SOIL EROSION PERMIT MAY NEED TO BE OBTAINED FOR THIS PROJECT



- The bottom of the drainbed is to be no deeper than 4" below grade at the Soil boring #2 location (SB#2) SB#2 is 200' west of the SE prop. corner at the R.O.W and 70' N. of the S. Lot Line.
- See attached sheet for more construction specifics

Permit Conditions

Permit #: B15-140
Production Industries, Inc. Property
Northwest Corner of Weldon Road and Cadillac Hwy. (M-115)
Weldon Township, Michigan
Property #: 10-12-034-008-10

1. The tanks shall be two (2) 1600 gallon double compartment septic tanks and a 1000 gallon pump chamber. Manhole risers shall be installed on all of the clean out ports of the septic tanks and the clean out port of the pump chamber where the pump is set. The manhole risers shall be a minimum of twenty-four (24) inches in diameter and shall be covered with secured lids to prevent easy entry to the tanks.

2. The effluent pump shall be set to provide a 440 gallon dose each pumping event. This dose will require that the pump on/off float be set for approximately seventeen (17) inches of travel between on and off (assuming the pump chamber is 5' X 10' top dimension).

3. The pump shall be set to discharge no less than 22 gallons per minute.

4. The bottom of the drainbed is to be NO DEEPER than four (4) inches below existing grade at the location of soil boring #2 (SB #2) indicated on the permit drawing.

5. Remove the topsoil and replace with clean medium to coarse textured sand. Also, break up any cemented soils prior to constructing the drainbed. The topsoil is approximately twelve (12) inches in depth.

6. The drainbed shall be a dosed gravity system. The drainbed will have a four inch (4") diameter double solid header, nine (9) four inch (4") diameter perforated laterals, and a four inch (4") diameter perforated footer. The laterals shall be installed three feet (3') on center. The slope of the laterals shall be laid as level as possible with no more than one inch (1") of fall in fifty (50) feet permitted. Six (6) inches of ½" to 1½" clean stone shall be placed beneath the drain tiles and a minimum of 2" of stone shall be covering the laterals (a minimum depth of 12" of stone shall be placed across the entire drainbed area). Cover the drainbed with straw or other approved material prior to backfilling.

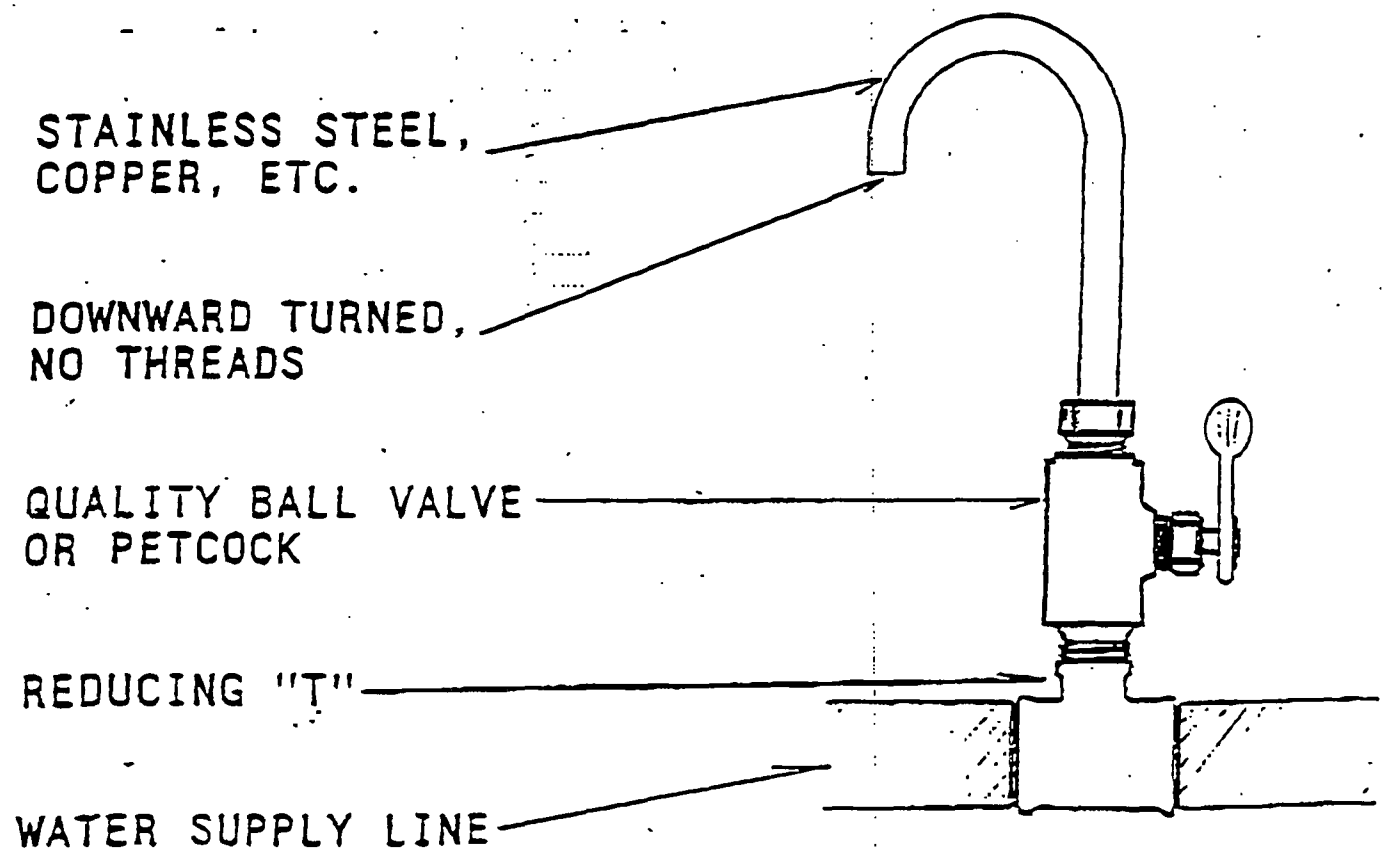
7. Any cover soil around the drainbed shall be sloped at a 4:1 ratio. A minimum of 12" of cover shall be placed over the drainbed (8" medium textured sand plus 4" of topsoil). The cover soil shall be planted with grass seed upon final grading, to help prevent erosion of the cover soil. No cover soil may cross the lot lines.

If you have any questions about the permit conditions or the permit itself, please contact Eric Johnston, R.S. at the Benzie-Leelanau District Health Department (231) 882-2109 or ejohnston@bldhd.org.

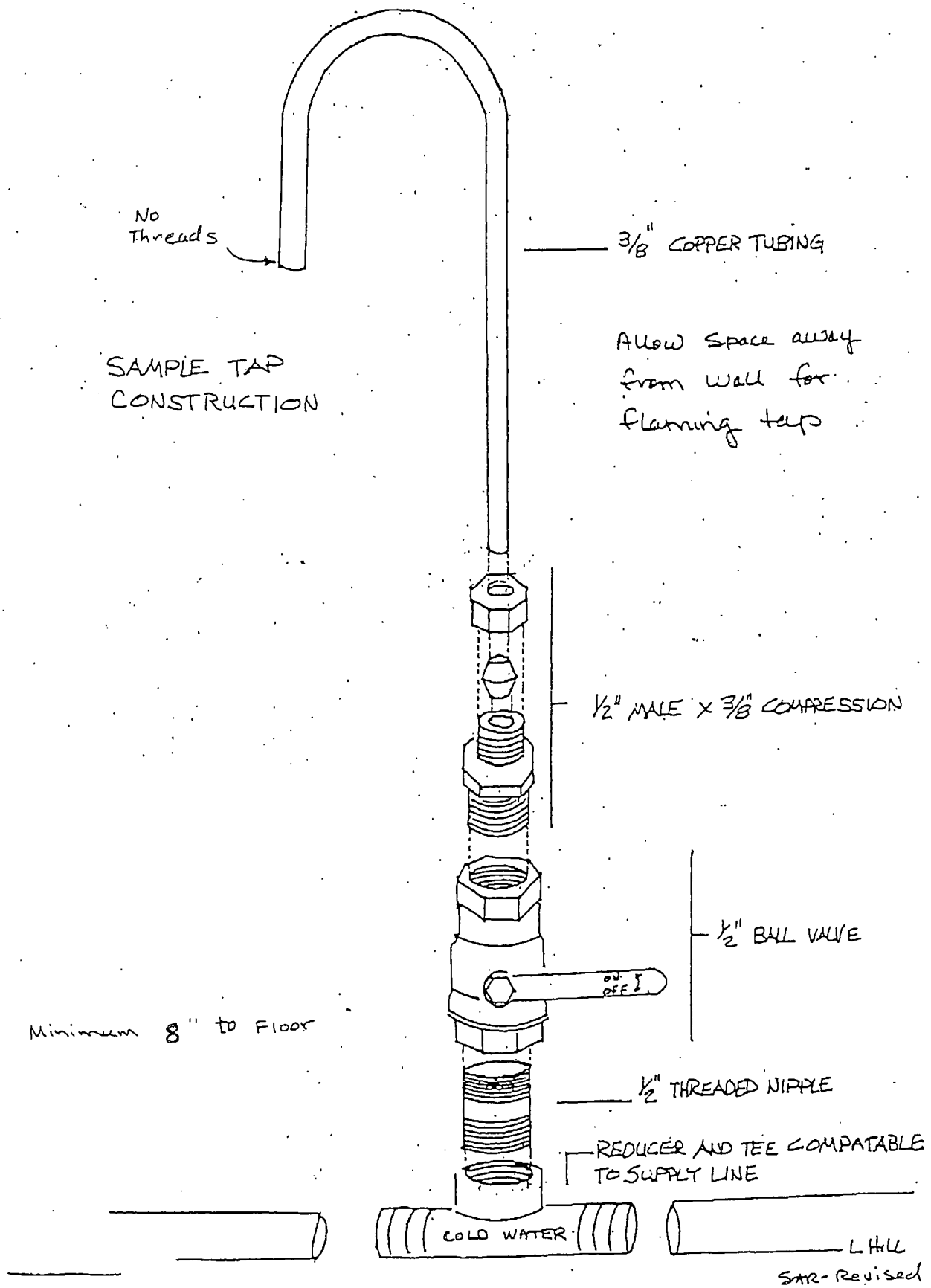
PROPER SAMPLE TAP DESIGN

A GOOD SAMPLE TAP HAS AN UNTHREADED, DOWNWARD TURNED, SMALL DIAMETER OUTLET IN AN ACCESSIBLE LOCATION AT LEAST 8 INCHES ABOVE THE FLOOR.

LOCATE THE "RAW WATER" SAMPLE TAP BETWEEN THE WELL HEAD AND THE PRESSURE TANK. PROVIDE A FLOOR DRAIN IN THE VICINITY SO YOU CAN LET THE WATER RUN BEFORE SAMPLING.



Sample Tap - example



SAR- Revised 7/99

Benzie-Leelanau District Health Department

BENZIE OFFICE
6051 Frankfort Highway
Suite 100
Benzonia, Michigan 49616
Phone (231) 882-4409
Fax (231) 882-2204

LEELANAU OFFICE
7401 E. Duck Lake Road
Suite 100
Lake Leelanau, Michigan 49653
Phone (231) 256-0200
Fax (231) 256-0225

Website: www.bldhd.org

September 30, 2015

Productions Industries, Inc.
1048 Main Street
Frankfort, MI 49635

Attn.: Mr. Jay DeYoung

RE: Issuance of a Permit to Install A Water Well at the Proposed New Production Industries Building, Weldon Road, Thompsonville, Michigan (Property Number: 10-12-034-008-10)
WSSN #: 2017310

Dear Mr. DeYoung:

Enclosed is the approved well permit for a new water well at the proposed Production Industries Building on the west side of Weldon Road (just north of Cadillac Highway (M-115)), Thompsonville, Michigan. Please note the conditions of this permit are as follows:

-ISOLATION

The well is to be located a minimum of 75 feet from all potential sources of contamination such as: septic fields, septic tanks, dry wells, buried sewer lines, surface water (lakes, streams, etc.), storm sewer lines, catch basins or animal pastures.

The well is to be located a minimum of 800 feet from major sources of contamination such as: landfills, large scale sewage disposal facilities, chemical storage tanks, buried fuel tanks, waste water lagoons or buried waste holding tanks.

-LOCATION

The well is approved for the location noted on the permit drawing.

-GROUTING

The well must be grouted from a point not more than 10 feet above the top of the well screen up to the ground surface, using materials and methods approved by the State of Michigan.

-CAPACITY

The well must have a minimum capacity of 17 gallons per minute. The well pump must be capable of producing this minimum. The hydropneumatic tank must have a usable (drawdown) capacity of at least 34 gallons or equal to the pump capacity (GPM), and in accordance with the pump manufacturer's recommendations.

-WELL RECORDS

The well drilling contractor is to complete a well record (well log) upon completion of the well and submit a copy directly to the Benzie-Leelanau District Health Department for use at the final inspection.

-DISINFECTION AND SAMPLING

We have found that the most effective way to initially disinfect new wells is to use the displacement method. Place heavily chlorinated water into the well to displace at least two times the casing volume; pump it into the distribution system; allow 24 hours contact time; and then pump to waste.

A usable sample tap must be located near the pressure tank or as close to the well as possible. The sample tap should have a 1/4 inch, downward turned, unthreaded outlet and be operated by a ball valve or a good quality gate valve. See attached diagram.

After disinfection and pumping to waste, the Health Department must be contacted for final inspection. The owner or their authorized representative must conduct the collection of samples. **A MINIMUM OF 2 CONSECUTIVE ACCEPTABLE BACTERIOLOGICAL SAMPLES** (collected at least 24 hours apart, with no chlorine residual) and **one acceptable Nitrate and Nitrite sample** MUST BE OBTAINED FROM the WELL PRIOR TO USE OF THE WELL.

Please provide the well driller with a copy of the permit AND this letter so that they are aware of the permit requirements.

A Water Supply Serial Number (WSSN), a computer number used for identification purposes, has been assigned to each public water supply in the state. Your water supply serial number is **WSSN: 2017310**, and must be recorded on each water sample form. Without this number on the sample form, you may not be credited for collecting a required sample.

Act 399 specifies that it is the owner/operator's responsibility to collect and submit the required water samples for analysis and to send a copy of the test results to the health department. It is also the owner/operator's responsibility to maintain and operate the water system in a sanitary condition.

If there are any questions regarding what is required, or if changes to the permit or procedures are proposed please contact me for prior approval. Thank you.

Sincerely,

J. Eric Johnston, R.S.
Noncommunity Water Supply Program Coordinator
Benzie/Leelanau District Health Department
ejohnston@bldhd.org
(231) 882-2109

Enclosures

~~014946~~ 201731 6M

COMPUTER ID#: ~~014946~~

PERMIT NO.: B15-140
DATE: 08/18/15

BENZIE-LEELANAU DISTRICT HEALTH DEPARTMENT

APPLICATION FOR: BOTH SEWAGE & WELL

OWNER'S NAME: PRODUCTIONS INDUSTRIES, INC
OWNER'S ADDRESS: 1048 MAIN STREET
CITY: FRANKFORT STATE: MI ZIP CODE: 49635 DAYTIME PHONE NUMBER: [redacted]

TAX ID#: 10-12-034-008-10
PROPERTY ADDRESS: WEST OF WELDON RD,N M-115
PROPERTY CITY: THOMPSONVILLE
PROPERTY ZIP: 49683
PROPERTY SIZE:

COUNTY: BENZIE
TOWNSHIP: WELDON
SECTION: 34
SUBDIVISION:
LOT #:

FACILITY TYPE: COMMERCIAL
NEW BUILDING: X
EXISTING BUILDING:

COMMERCIAL TYPE: INDUSTRIAL
MAX # OF PEOPLE PER DAY: 45

SEPTIC INSTALLER: ALPERS EXCAVATING
WELL INSTALLER: CLUFF WELL DRILLING

WELL TYPE: PITLESS ADAPTER

PREVIOUS EVALUATION: YES
YEAR: 2013
NAME: CRYSTAL MTN

WATERFRONT PROPERTY: NO
BODY OF WATER:

....

SANITARIAN'S FIELD NOTES:

TYPE OF SYSTEM:

FIELD... # of Trenches:....... Length of Trenches:....... Distance between lines:......... Width of trenches:.....

BED. ✓ Dimension of bed: 28'x75' # of tile lines: 9 Distance between lines: 3'

CURRENT SYSTEM FAILED? N/A WSSN#. 2017310

Depth to Seasonal High Water Table 52" ft./in. Minimum Septic Tank Capacity 2 @ 1600-D + 1000 gal P.L. gal.

Soil Type To A Depth Of: Fine to med Sand Topsoil to 12" Absorption Area 2100 sq.ft.

Slightly compacted red fine to med Sand to 26"

Reddish Tan med. sand w/ some gravel to 42"

Tan med Sand to 52"

Moist med. to Coarse Sand to 58"

Saturated reddish brown med. to Coarse Sand to 69"

Standing water at 62"

Sanitarian: [signature] Date: 9/30/2015

BLEH02;5/97

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION

DETERMINING PEAK DEMANDS
FIXTURE COUNT METHOD

FACILITY NAME Production Industries WSSN 2017310 DATE 9/30/2015

1) Total Fixtures - Toilets 3

Urinals	2
Lavatories	2
Kit Sinks	
Service sinks	5
Garbage Disposal	
Hose Bibs	
Drinking Fountains	2
Food Equipment	
Bathtub/Showers	
Other	
TOTAL	14

2) GPM per fixture (see table below) 1.25

PEAK DEMAND IN GALLONS PER MINUTE (GPM) PER FIXTURE

Type of Building	25 or less	26-50	51-75	76-100	101-200	201-400
Hospitals	1.00	1.00	.80	.70	.60	.50
Churches, Halls, Theaters	1.50	1.25	1.00	.80	.75	.70
Mercantile Buildings	1.30	1.00	.80	.75	.70	.60
Office Buildings	1.20	.90	.75	.70	.65	.50
Factories, Warehouses	(1.25)	1.00	.80	.75	.70	.60
Schools	1.20	.85	.70	.65	.60	.55
Motels, Hotels	.80	.65	.55	.50	.45	.40
Apartment Buildings	.60	.55	.50	.40	.35	.30

3) Total fixtures (#1 above) 14 X GPM per fixture (#2 above) 1.25 = Peak rate 17.5 GPM

D-236 11/02
Authority: 1976 PA 399

DETERMINING PEAK DEMANDS

FIXTURE METHOD

FACILITY NAME Production Industries WSSN 2017310 DATE 9/30/2015

1)Determine Total Fixture Value

FIXTURE TYPE	FIXTURE VALUE (GPM FLOW)		NUMBER OF FIXTURES		TOTAL
Water closet, with tank	5	X	3	=	15
Water closet, with flush valve	27	X		=	
Urinal, with tank,	4	X		=	
Urinal, with flush valve	15	X	2	=	30
Lavatory	3	X	~~7~~	=	21
Bathtub, or tub/shower combination	10	X		=	
Shower	6	X		=	
Drinking fountain	2	X	2	=	4
Hose bibb or yard hydrant, 1/2" connection	3	X		=	
5/8" connection	5	X		=	
3/4" connection	10	X		=	
Washing machine, 1/2" connection	3	X		=	
5/8" connection	5	X		=	
3/4" connection	10	X		=	
Laundry tray	8	X		=	
Lawn sprinkler, per sprinkler head	5	X		=	
Auto washing, hand spray type	5	X		=	
Tractor and equipment washing	5	X		=	
Water Softener regeneration	7	X		=	
Dental unit	1	X		=	
Dental lavatory	2	X		=	
Garbage disposal, domestic	3	X		=	
commercial	5	X		=	
Kitchen sink, small	6	X		=	
large	8	X		=	
Spray rinse, hand operated	4	X		=	
Ice machine	2	X		=	
Ice cream machine	2	X		=	
Ice cream dipperwell	2	X		=	
Glass filling unit	2	X		=	
Hot chocolate unit	0.5	X		=	
Coffee urn	0.5	X		=	
Other		X		=	
		X		=	
		X		=	

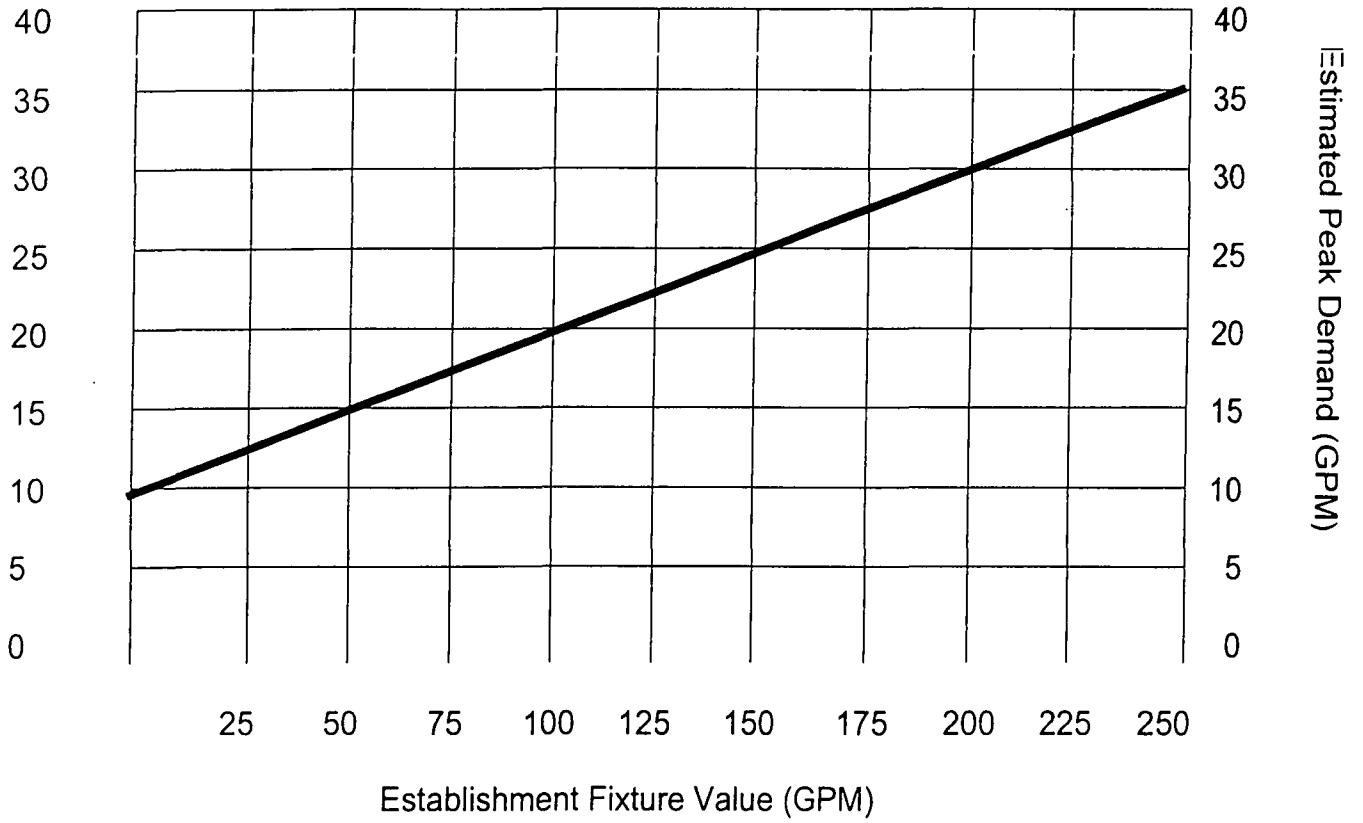
Total Fixture Value = 70

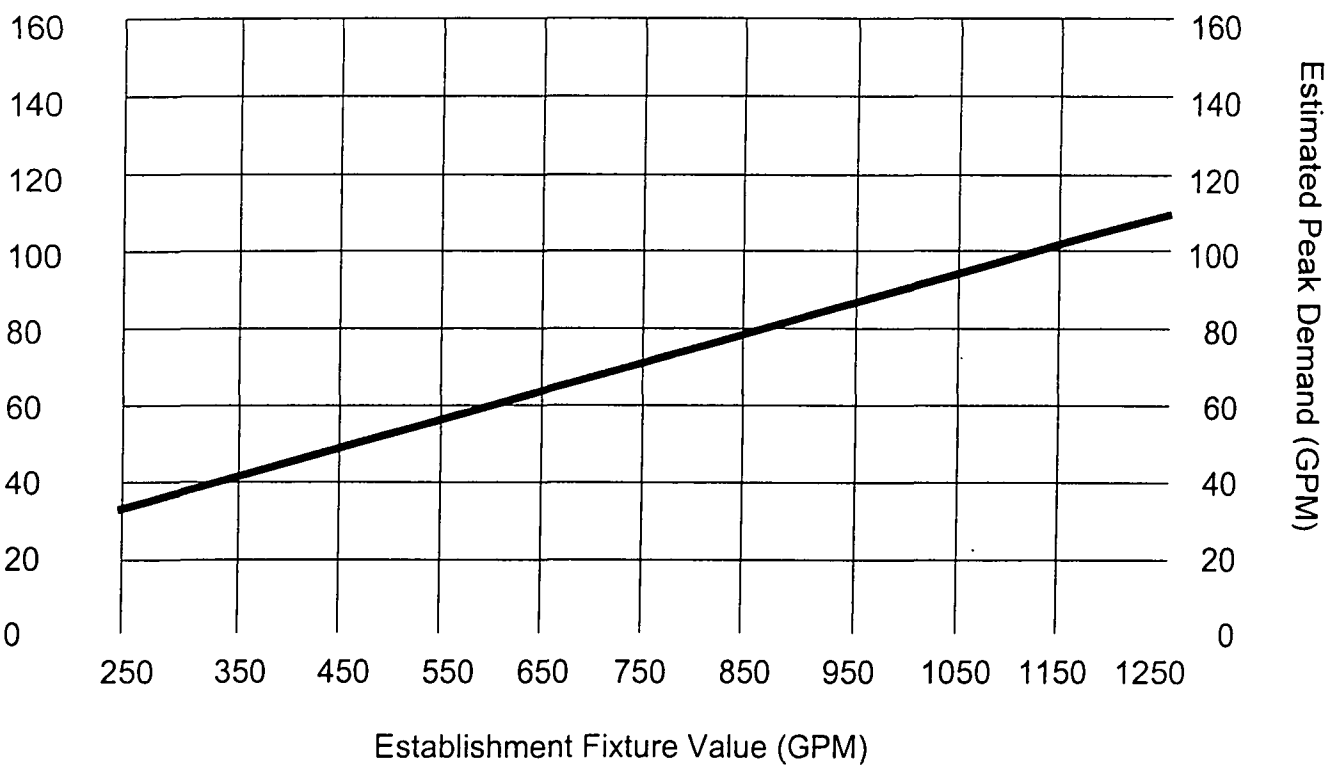
2) Determine GPM from graph on reverse side of sheet using Total Fixture Value above.
GPM from graph = 17

3) Irrigation, process water, and automatic dishwasher needs must be added to the GPM listed in item #2.
Irrigation - Number of sprinkler heads 0 X GPM/sprinkler head ___ = 0 GPM
Process Water - Cooling, wash down, rinse, tank filling, etc. = 0 GPM
Automatic dishwasher - Use gpm flow as indicated in NSF Food Service Equipment listing. 0 GPM
TOTAL 0 GPM

4) GPM from #2 17 + GPM from #3 0 = Total Demand 17 GPM

GRAPH


40
35
30
25
20
15
10
5
0
25
50
75
100
125
150
175
200
225
250
Establishment Fixture Value (GPM)
Estimated Peak Demand (GPM)


160
140
120
100
80
60
40
20
0
250
350
450
550
650
750
850
950
1050
1150
1250
Establishment Fixture Value (GPM)
Estimated Peak Demand (GPM)

Factory 17,500 ft² of floor space, 45 Max. Emp./day

Employee method

45 Emp * 35 gal (mich crit) = 1575 gal/day

1575 gal/day x 48 hr retention = 2 @ 1600 gal Tanks

1575 gal/day ÷ .75 = 2100 ft²

28' x 75' = 2100 ft²

Sq ft method

17,500 ft² / 1.0 gal = 1750 gal/day

3200 gal / 1750 gal/day = 1.82 days retention (43.68 hrs)

3500 gal for 48 hr retention = 3 @ 1200 gal.

1750 gal ÷ .75 = 2333.33 ft²

31 x 75 = 2325 ft²

Dosed

9 laterals x 75' = 675 lineal ft

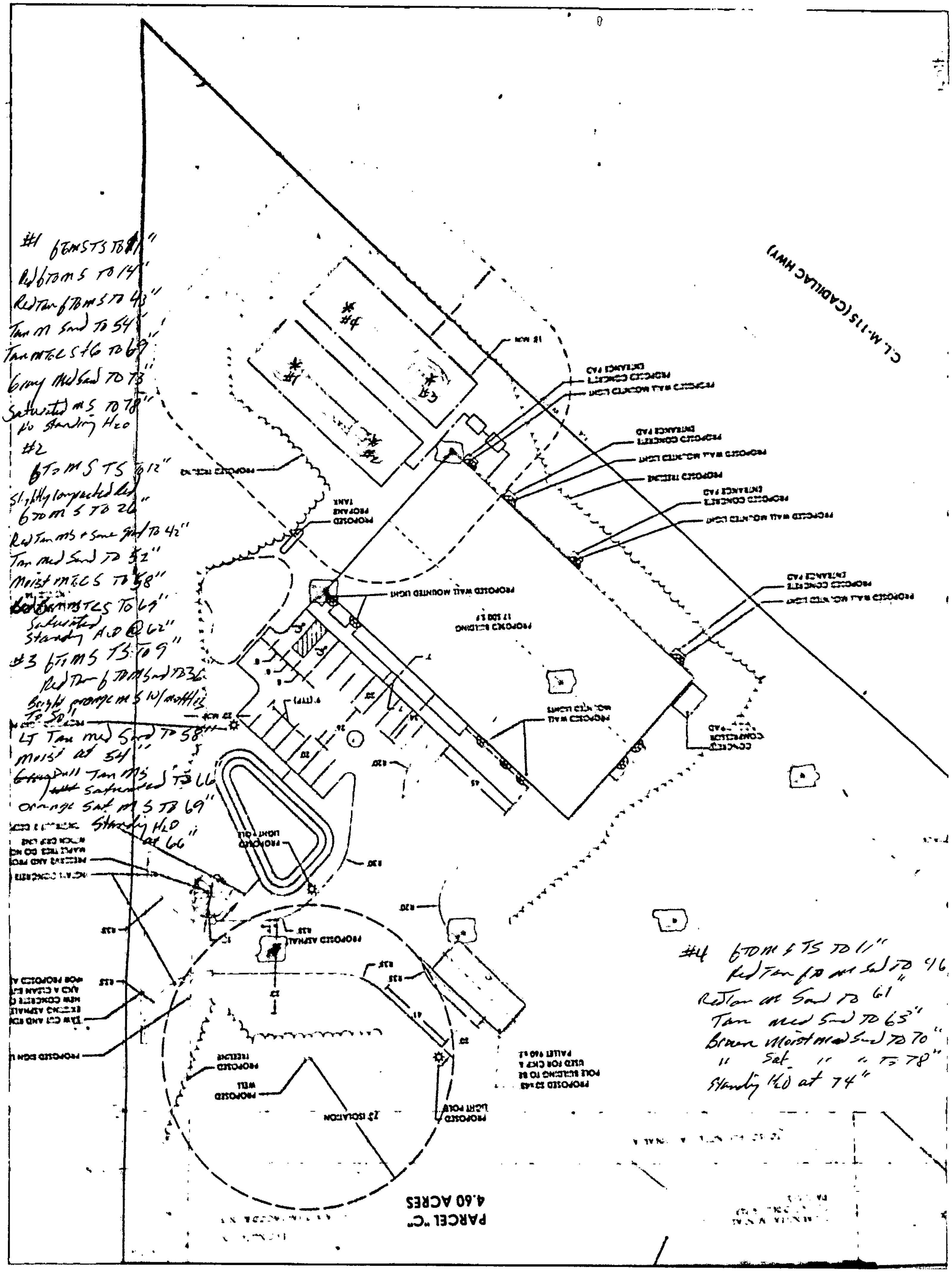
675 lineal ft * .652 gal/ft (sch 30 capacity) = 440 gal

dose = 440 gal per event

Dosing Tank = 1200 gal.

440 gal / 20 min (mich crit dose rate) = 22 gal/min pump

1575 gal/day ÷ 440 gal/dose = 3.58 dose events/day



#1 6TOMSTS TO 11"
Red 6TOMS TO 14"
Red Tan 6TOMS TO 43"
Tan M Sand TO 54"
Tan MTCL S+G TO 69"
Gray Med Sand TO 73"
Saturated M S TO 78"
No Standing H2O
#2
6TOMS TS TO 12"
Slightly compacted Red 6TOMS TO 26"
Red Tan MS + Some Grvl TO 42"
Tan Med Sand TO 52"
Moist MTCS TO 58"
MTCS TO 69"
Saturated Standing H2O @ 62"
#3 6TOMS TS TO 9"
Red Tan 6TOM Sand TO 36"
Bright orange M S W/ mottles TO 50"
LT Tan Med Sand TO 58"
Moist at 54"
Dull Tan MS Saturated TO 66"
Orange Sat M S TO 69"
Standing H2O at 66"
#4 6TOMS TS TO 11"
Red Tan 6TOM Sand TO 46"
Red Tan M Sand TO 61"
Tan Med Sand TO 65"
Brown Moist Med Sand TO 70"
" Sat " " TO 78"
Standing H2O at 74"
C.L. M-115 (CADILLAC HWY)
PROPOSED WALL MOUNTED LIGHT
PROPOSED CONCRETE ENTRANCE PAD
PROPOSED TREELINE
PROPOSED BUILDING
PROPOSED PROPANE TANK
PROPOSED LIGHT POLE
PROPOSED WELL
PROPOSED ASPHALT
25' ISOLATION
PARCEL "C"
4.60 ACRES

Commercial Application Supplement

(MUST be completed for commercial establishments)

Please be as descriptive as possible when indicating the following.
Attach additional pages if necessary.
You may be asked to submit architectural or engineered drawings.

Property Tax ID#:	10-12-034-008-10	Property Address:	Weldon Road, just north of M-115

Type of building: (office, food service, etc)	Industrial Manufacturing
If existing, current use of building.	N/A
Proposed or future use of building:	Industrial Manufacturing

Estimated number of employees per day:	30 (45 max)	Number of shifts per day.	2	Estimated number of public/ patrons per day.	0
☒ Private Water Well ☐ Municipal Water		Estimated number of hours per day of operation.	10 - 18	Estimated number of days per week of operation.	5

(Check with the Benzie County Building Department regarding fixture requirements.)

List all Fixtures: (number of sinks, lavatories, showers, etc.)	7 sinks total including work sink 3 water closets 2 urinals 2 drinking fountains

Will any 'water-using ' fixtures be available to the public ?

☒ NO

☐ YES - If yes, list what fixtures and how many

List fixtures available to public (number of sinks, lavatories, showers, etc.)	

Lot / property / size dimensions (survey is helpful if not known) and if the property 'is to be' or 'has been' split - if applicable, indicate size and date of split.	See attached sheet, property is to be split from original to 4.1acre parcel.

Mansfield
Land Use Consultants

August 24, 2015

Benzie-Leelanau District Health Department
Eric Johnston
6051 Frankfort Hwy –Suite 100
Benzonia, MI 49616

Re: Production Industries, a Frost Inc. company
-application for well and septic permitting

Dear Eric,

Enclosed are documents relating to the application for well and septic permitting for the proposed production industries facility. Documents enclosed include:

- A completed application form
- A copy of your preliminary review from 2013
- A copy of the geotechnical report dated July 2015
- And a full sized plan set

There was a little confusion with regards to the required permit fee. You should have already received $381 of the total $952 permit fee from Frost Inc. You should expect to receive the remaining $571 from Frost Inc. shortly. I request that you please send a copy of the receipt to me, or if possible distribute a PDF of the receipt to the following email addresses.

petrak@maaeps.com
4xpm340@gmail.com
paulamiller@frostlinks.com

done 8/27/2015 8:45 am KM

Please call me to coordinate staking the location of the fields, if needed, and having a project representative join you during your field investigation.

Thanks so much,

Petra Kuehnis, RLA

830 Cottageview Drive -Suite 201
P.O. Box 4015 Traverse City, MI 49685

p 231.946.9310
f 231.946.8926

*Directions to site: (Include name of nearest crossroads)	Triangle shaped parcel in the Northwest corner of Weldon Road and M115. South of the airport right of way - see the attached sheet.

Include on Sketch:

1. **Property lines / dimensions**
2. **Location of any buildings**
3. **Well locations (old and/or new) and distance to septic/drainfield**
4. **Neighboring well/septic system distance from your well/ septic system**
5. **Septic tank & drainfield location (s)-new and/or existing**
6. **Location(s) of streets/ roads**
7. **Location(s) of body(s) of water****
8. **Location(s) of underground fuel storage tanks**
9. **Driveway location**
10. **Any buried utilities (cable, gas, electric, etc.)**
11. **Critical Dunes on property**

****If your construction project is within 400 feet of the Betsie River, Little Betsie River, or Dair Creek, the Michigan Department of Natural Resources needs to be contacted to obtain a Scenic Rivers Act permit. Call (989) 732-3541 ext. 5088**

N
W E
S

*Detailed drawing included? Yes

I hereby agree to comply with requirements of the Environmental Health Regulations for the Counties of Benzie - Leelanau District Health Departments, and the applicable law of the State of Michigan, in the installation of a septic tank disposal system and well, on the above described property, and to construct the same according to the plans and specifications as described and approved on Health Department Permit.

This request will be processed when the completed application and the correct fee are received.

*Signed (Owner or Agent) Petra Fuehnis (agent) Mansfield Land Use Consultants

Today's Date 8/11/15

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
RESOURCE MANAGEMENT DIVISION

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

TAX NUMBER: 10-12-034-008-10

PERMIT NUMBER: B15-140 / Comp #: 201731

LATITUDE:

LONGITUDE:

COUNTY: Benzie

TOWNSHIP: Weldon

DISTANCE & DIRECTION FROM ROAD INTERSECTION: The well is located approx. 750' North of Cadillac Hwy (M-115) and 94' west of Weldon Road.

WELL STREET ADDRESS, CITY/ZIP: Weldon Road, Thompsonville, MI 49683

WSSN	SOURCE ID/ WELL NO.	SECTION	TOWN NO.	RANGE NO.
2017310	001	34	25N	14W

WELL OWNER: Production Industries, Inc.
ADDRESS: 1048 Main Street
CITY/ZIP: Frankfort, MI 49635
Owner Address Same As Well Address? ☐ Yes ☒ No

DRILLING METHOD: ☐ Rotary ☐ Cable Tool ☐ Hollow Rod ☐ Jetted ☐ Auger/Bored ☐ Other ☐ Rotary w/Casing Hammer ☐ Cable Tool w/Casing Hammer

PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer
Pump Type ☐ Submersible ☐ Jet ☐ Other
Model Number HP Volts
Pump Capacity G.P.M. ☐ Drawdown Seal Installed
Length of Drop Pipe ft. Diameter of Drop Pipe in.

WELL DEPTH: ft.

WELL USE: ☐ Household ☐ Type I Public ☐ Heat Pump-Supply ☐ Irrigation ☒ Type II Public ☐ Heat Pump-Return ☐ Industrial ☐ Type III Public ☐ Other ☐ Test Well

DATE COMPLETED:

WELL TYPE: ☒ New ☐ Replacement ☐ Dry Hole ☐ Boring (Uncased) ☐ Deepening

PRESSURE TANK: ☐ Not Installed ☐ Buried
Type ☐ Diaphragm/Bladder ☐ Galvanized
Manufacturer Model
Total Tank Capacity gal. ☐ Pressure Relief Valve Installed

CASING: Type ☐ Plastic ☐ Steel-Black ☐ Steel-Galvanized ☐ Other
Joint ☐ Glued ☐ Spline ☐ Welded ☐ Threaded
Diameter in. to ft. depth SDR
in. to ft. depth SDR
Height Above Grade ft. Fittings ☐ Drive Shoe ☐ Shale Packer

BOREHOLE: Diameter in. to ft. depth
in. to ft. depth

Formation Description	Thickness of Stratum	Depth to Bottom of Stratum
USE 2ND SHEET IF NECESSARY		

STATIC WATER LEVEL: ft. Below Grade ☐ Flowing Flow Rate Before Control G.P.M.

WELL YIELD TEST
Pumping Level ft. After hrs. Pumping at G.P.M.
☐ Air ☐ Bailer ☐ Plunger ☐ Test Pump

SCREEN: ☐ Not Installed ☐ Filter-Packed Diameter in.
Material ☐ Stainless Steel ☐ Plastic ☐ Other
Slot Length ft. From ft. To ft.
Slot Length ft. From ft. To ft.
INSTALLATION ☐ Telescoped ☐ Attached
FITTINGS ☐ Neoprene Packer ☐ Bremer Check
BLANK ☐ above ft. Other

WELL GROUTED From ft. To ft.
☐ Bentonite Slurry ☐ Bentonite Dry Granular ☐ Neat Cement
☐ Neat Cement with Bentonite ☐ Concrete No. of Bags
Additives ☐ Lost Circulation Material ☐ Accelerator ☐ Retarder
METHOD ☐ Grout pipe outside casing ☐ Driven dry grout ☐ Grout pipe inside casing ☐ Displacement plug

WELLHEAD COMPLETION ☐ Pitless Adapter ☐ 12 in. Above Grade ☐ Basement Offset ☐ Well House

NEAREST SOURCE OF POSSIBLE CONTAMINATION
Type Distance ft. Direction
Type Distance ft. Direction

ABANDONED WELL PLUGGED ☐ Yes ☐ No
Latitude Longitude
Casing Diameter in. Depth ft.
PLUGGING MATERIAL ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
Number of Bags Casing Removed? ☐ Yes ☐ No

REMARKS

DRILLING MACHINE OPERATOR ☐ Employee ☐ Subcontractor
Name
PUMP INSTALLER (If different from drilling machine operator.)
Name

WATER WELL CONTRACTOR'S CERTIFICATION
This well/pump was constructed under my supervision and I hereby certify that the work complies with Part 127 Act 368 PA 1978 and the well code.

Registered Business Name Registration No.
Address
City/State/ZIP
Signature of Registered Contractor Date

ATTENTION WELL OWNER: FILE WITH DEED

EQP-2017 (05/11)

WELL OWNER COPY

Eric Johnston

From: Eric Johnston
Sent: Friday, March 18, 2016 10:13 AM
To: 'Petra Kuehins'
Subject: RE: Production Industries water well permit Capacity Develpment Plan form (Tax ID# 10-12-034-008-10)
Attachments: Capacity Development Plan.pdf

Hello Petra,

It has recently come to my attention that a Capacity Development Plan (CDP) form (attached) was not sent with the non-community well permit that was issued to Production Industries, Inc. on September 30, 2015, by this department (Permit #: B15-140). The Michigan Safe Drinking Water Act requires that all new nontransient noncommunity water supplies submit the completed form to the local health department prior to building construction. Please review, complete, and submit the CDP form back to this office prior to construction. I apologize for any inconvenience that the delay in getting this form to you may cause.

Thank you and please feel free to contact me with any questions or concerns that you may have.

J. Eric Johnston, R.S.
Noncommunity Water Supply Program Coordinator
Benzie/Leelanau District Health Department
(231) 882-2109 (p)
(231) 882-2204 (f)
ejohnston@bldhd.org

From: Petra Kuehins [mailto:petrak@maaeps.com]
Sent: Wednesday, September 02, 2015 2:37 PM
To: Eric Johnston
Cc: Jim White
Subject: RE: Production Industries, application for sewage and water permit (Tax ID#10-12-034-008-10)

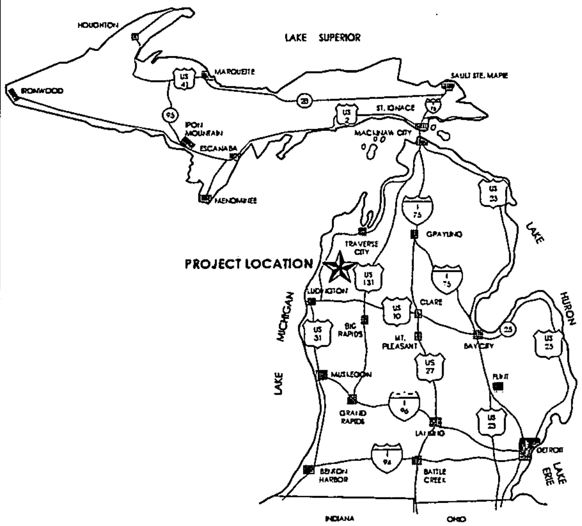
Eric,

The site has been staked. I've attached a photo of the stakes indicated on a plan.
The yellow circles are the stakes provided to you for your work.
The green squares are just the locations of soil borings done previously as part of the geotechnical report.

Feel free to call me with any questions or comments.

Petra H Kuehnis, RLA
Mansfield Land Use Consultants
830 CottageView Drive
Traverse City, MI 49684
[redacted]

From: Eric Johnston [mailto:EJohnston@bldhd.org]
Sent: Thursday, August 27, 2015 9:02 AM



MICHIGAN LOCATION MAP

PROJECT DATA:

Owner/Developer:	Production Industries, Inc
Address:	1048 Main St., Frankfort, MI 49635
Contact:	Jay Deyoung
Phone:	1-800-791-1409
FAX:	231-352-9520
Email:	jdeyoung@prodind.com

SITE DATA:

Location:	Weldon and M-115
Tax ID:	12-034-003-00 (part of)
Zoning District:	PUD

SETBACKS:

50' = M-115
20' = SIDE
40' = WELDON ROAD
50' = REAR

STANDARD PLAN LEGEND

DESCRIPTION	EXISTING	PROPOSED
GROUND CONTOUR	605	613
SPOT ELEVATION	613.2	613.60
CONTOUR FROM USGS TOPOGRAPHIC MAP		
TOP OF CURB ELEVATION / PAVEMENT (OR GUTTER FLOW LINE) ELEVATION	613.5 / 613.0	613.50 / 613.00
DIRECTION OF SURFACE FLOW		
DRAINAGE HIGH POINT		H.P.
DRAINAGE LOW POINT		L.P.
WATER MAIN		
SANITARY FORCE MAIN		
SANITARY SEWER		
STORM SEWER		
GAS MAIN		
OVERHEAD ELECTRIC		
PROPERTY LINE		
TREE LINE		
PINE LINE		
EDGE OF WETLAND		
EDGE OF WATER		
C/L OR DRAINAGE DITCH OR WATER LINE		
SILT FENCE		
DETENTION BASIN BERM		
MANHOLE (MH)		
CATCH BASIN (CB)		
CLEAN OUT (CO)	CO	CO
RISER		
GATE VALVE		
FIRE HYDRANT ASSEMBLY		
CURB STOP & BOX		
POLE, POWER OR ELECTRIC		
LIGHT POLE		
SIGN		
BENCH MARK (BM)		
U/G UTILITY SIGN		
GUY ANCHOR		
DIRECTION OF SURFACE FLOW		
DRAINAGE HIGH POINT		H.P.
DRAINAGE LOW POINT		L.P.
SOIL EROSION CONTROL MEASURE (MICHIGAN UNIFIED KEYING SYSTEM) P=PERMANENT T=TEMPORARY		
IRON FOUND / IRON SET		
CONCRETE MONUMENT		
GOVERNMENT CORNER		
NAIL FOUND / NAIL SET		
RECORD / MEASURED	(R)	(M)
FENCE		
WOOD STAKE		

PUBLIC AGENCIES AND UTILITIES

BENZIE-LEELANAU DISTRICT HEALTH DEPARTMENT
Manager: Eric Johnston (Weldon Township)
Address: 6051 Frankfort Hwy., Ste. 100, Benzonia, MI 49616
Telephone: 231-882-4409

BENZIE COUNTY ROAD COMMISSION
Manager: Heather Jamison
Address: 1138 Main St. (US-31), P.O. Box 68, Honor, MI 49640
Telephone: 231-325-3051 ext. 207

BENZIE COUNTY DRAIN COMMISSION
Drain Commissioner: Christy Anderson
Address: 448 Court Place, Beulah, MI 49617
Telephone: 231-882-9671

BENZIE COUNTY BUILDING SAFETY AND CODE ENFORCEMENT DEPARTMENT
Building Official: Bert Gale
Building, Plan Review: Steve Houghton
Electrical, Plan Review: Ted Klumpp
Mechanical, Plumbing, Plan Review: Aldo Davis
Address: 448 Court Place, Beulah, MI 49617
Telephone: 231-882-9673

CONSUMERS ENERGY (ELEC.)
Engineer: Myron Burzynski
Address: 2700 Benzie Hwy., Benzonia, MI 49616
Telephone: 231-882-6002

CHERRYLAND ELECTRIC COOPERATIVE
Engineer: Frank Seipker
Address: 5930 US-31 S., Traverse City, MI 49684
Telephone: 231-486-9220

DTE ENERGY (GAS)
Manager: Linda Young
Address: 1011 Hastings St., Traverse City, MI 49686
Telephone: 231-932-2823

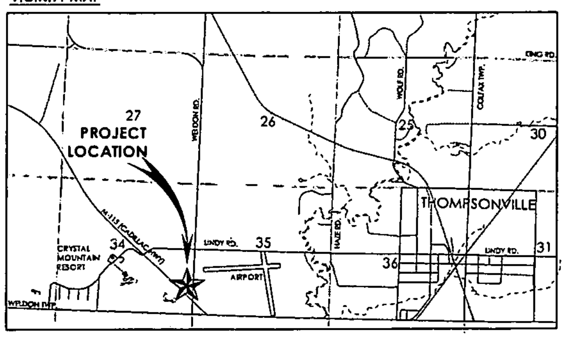
MICHIGAN DEPARTMENT OF TRANSPORTATION (M.D.O.T.)
Engineer: Gary Niemi, P.E.
Address: 2084 US-31 S., Traverse City, MI 49684
Telephone: 231-941-1986

POLICE AGENCIES
EMERGENCIES: 911
Michigan State Police: 231-325-2885
Benzie County Sheriff: 231-882-4484

FIRE DEPARTMENTS
EMERGENCIES: 911
Benzonia Township: 231-882-4411

(3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

VICINITY MAP



PLAN INDEX

1. COVER
2. NOTES & DETAILS
3. EXISTING CONDITIONS & DEMOLITION PLAN
4. SITE & DIMENSION PLAN
5. GRADING & STORM PLAN
6. LANDSCAPE PLAN

Production Industries, Inc

Weldon Township, Benzie County, Michigan

Mansfield & Land Use Consultants
830 Cottageview Dr., Ste. 201
P.O. Box 4015

Production Industries, Inc.
Proposed Manufacturing Facility
Cover Sheet
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

PRELIMINARY

13122

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GENERAL NOTES

All elevations are based on N.A.V.D., 1988, unless otherwise specified.

Special care shall be taken in excavating in the proximity of all underground utilities. The contractor shall secure assistance from the appropriate utility company in locating its lines. The contractor shall also: Provide support for any utility within the excavation, provide proper compaction under any undermined utility structure and, if necessary, install temporary sheeting or use a trench box to minimize the excavation. The contractor shall protect and save harmless from damage all utilities, whether privately or publicly owned, above or below ground surface, which may be encountered during construction, at no additional cost to the owner.

Existing public utilities and underground structures such as pipe lines, electric conduits, sewers and water lines, are shown on the plans. The information shown is believed to be reasonably correct and complete. However, neither the correctness nor the completeness of such information is guaranteed. Prior to the start of any operations in the vicinity of any utilities, the contractor shall notify the utility companies and "MISS DIG" and request that they stake out the locations of the utilities in question. Cost of repair for any damaged utility lines that is properly staked shall be the responsibility of the contractor.

The contractor shall comply with all applicable laws and regulations governing the furnishing and use of safeguards, safety devices and protection equipment. The contractor shall take any necessary precautions to protect the life and health of employees and the public in the performance of the work.

All disturbed areas shall be top soiled, seeded, fertilized and mulched. Mulch blanket shall be installed in areas as designated and shall be incidental to other items.

For protection of underground utilities and in conformance with Public Act 53, 1974, the contractor shall dial 1-800-482-7171 a minimum of three full working days, excluding Saturdays, Sundays, and holidays prior to beginning each excavation in areas where public utilities have not been previously located. Members will thus be routinely notified. This does not relieve the contractor of the responsibility of notifying utility owners who may not be part of the "MISS DIG" alert system.

The contractor shall provide temporary soil erosion control measures per P.A. 451 as amended. The contractor shall meet with the Soil Erosion Control Officer before starting construction to review the temporary soil erosion control measures and requirements. With the use of silt fence and other temporary measures the contractor shall protect the adjacent area from accelerated erosion and sedimentation flows resulting from construction. The contractor shall install additional temporary and permanent soil erosion control measures, if directed by the engineer or soil erosion control officer, at no additional cost to the project.

All excess topsoil will remain within the property owner's area. If additional topsoil is available after top soiling the construction area, it will be stockpiled within 1000 feet of the construction area in a designated area as directed by the field engineer.

The soil erosion measures shown are the minimum controls to be used on this project. The contractor shall be responsible for temporary and permanent soil erosion control measures to protect the disturbed areas and adjacent properties from accelerated erosion and sedimentation resulting from project construction, at no additional cost to the owner.

The contractor shall repair all washouts and erosion during the guarantee period of one (1) year at no additional cost to the owner.

Existing property corners are identified on the plans. If a property corner is disturbed during construction it shall be replaced at the contractor's expense by a professional land surveyor.

Local traffic shall be maintained at all times.

Existing storm drainage ditches shall be rebuilt if filled in or removed during construction. The contractor is responsible to repair or replace, as required, all drainage culverts damaged during construction and shall be considered incidental to the project.

Contractor shall restore all lawns, landscape plantings, sidewalks, commercial signs, etc., as required at no additional cost to the owner.

Contractor shall provide adequate support for utility poles as necessary.

PLANTING NOTES:

Clean up and remove from the planting areas weeds and grasses, including roots, and any minor accumulated debris and rubbish before commencing work.

Remove and dispose of all soil in planting areas that contains any deleterious substance such as oil, plaster, concrete, gasoline, paint, solvents, etc., removing the soil to a minimum depth of six (6) inches or to the level of dryness in the affected areas. The affected soil shall be replaced with native or imported soil as required.

Finish grading all planting areas to a smooth and even condition, making certain that no water pockets or irregularities remain. Remove and dispose of all foreign materials, clods and rocks over 1 inch in diameter within 3 inches of surface.

All Plant Materials shall be healthy, well developed representatives of their species or varieties, free from disfigurement with well-developed branch and root systems, and shall be free from all plant diseases and insect infestation.

All plant substitutions will be subject to the Owner's approval.

Each plant shall be planted with its proportionate amount of soil amendment and fertilizer. Hand smooth planting area after planting to provide an even, smooth, final finish grade. To avoid drying out, plantings shall be immediately watered after planting until the entire area is soaked to the full depth of each hole unless otherwise noted on the drawing.

Mulch all planting beds with 3 inches of shredded bark mulch.

Remove all tags, labels, nursery stakes and ties from all plant material only after the approval of the Owner.

All plants shall be guaranteed for a period of one year. The guarantee period commences from the time of final acceptance by the Owner. Replace as soon as weather permits all dead plants not in vigorous condition as noted during the maintenance period. Said plants shall be maintained for a period of 90 calendar days from the replacement date. Plants used for replacements shall be same kind and size as originally planted. They shall be furnished, planted and fertilized as specified and guaranteed.

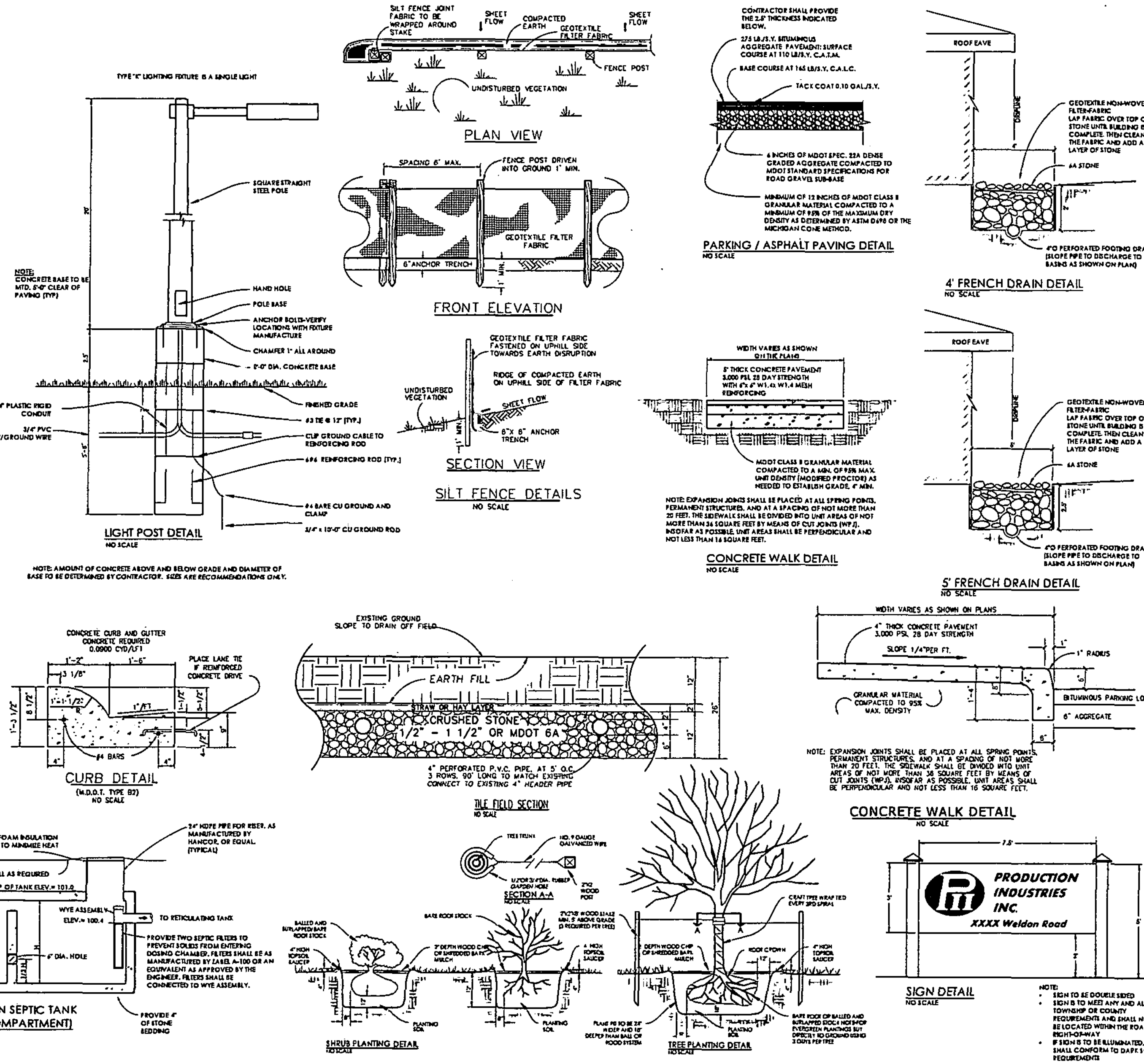
All disturbed areas shall be top soiled to a depth of 4", seeded, fertilized and molded mulch blankets shall be used as needed in areas of potential erosion prior to establishment of lawn areas.

IRRIGATION NOTE:

Landscaping to be irrigated. Installation to be performed by a reputable irrigation contractor.

LANDSCAPING PREPARED BY:

Petra H. Kuehnle, RLA
Landscape Architect
No. 3901001386



Mansfield
Land Use Consultants
830 Cottageview Dr., Ste. 201
P.O. Box 4015
Traverse City, MI 49685
Phone: 231-946-9310
www.mlsceps.com
info@mlsceps.com

REV	DATE	DES	DR	CH	DESC
0	07.17.13	dm	mmm	dm	Original design
01	07.20.15	dm	mmm	dm	Preserve Maple, Move drive, stock pile location
02	07.29.15	phk	mmm	phk	Revised building size/location
03	08.06.15	phk	mmm	phk	Revised building size/location - for submittal

Production Industries, Inc.
Proposed Manufacturing Facility
Notes and Details
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

PRELIMINARY

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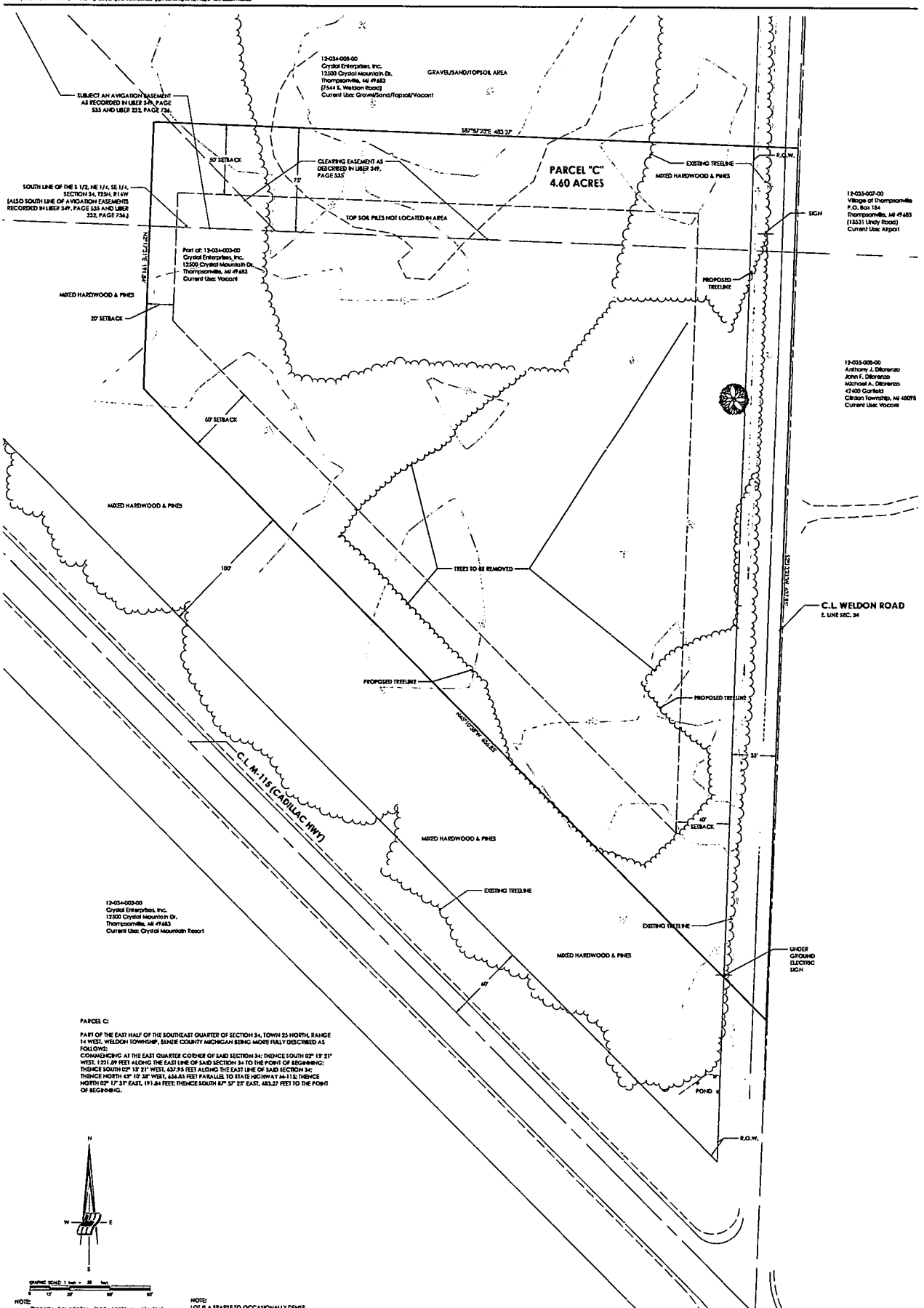

sht #	DATE	DES	CHK	DESC
0	07.17.13	cbm	mmm	Original design
01	07.20.13	cbm	mmm	cbm, Preserve Maple, Move drive, stock pile location
02	07.29.13	pmk	mmm	pmk Revised building size/location
03	08.06.13	pmk	mmm	pmk Revised building size/location - for submittal

Production Industries, Inc.

Proposed Manufacturing Facility

Existing Conditions and Demolition Plan

Section 34, Town 25 North, Range 14 West

Weldon Township, Benzie County, Michigan

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PRELIMINARY

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Land Use Consultants
830 Cottageview Dr., Ste. 201
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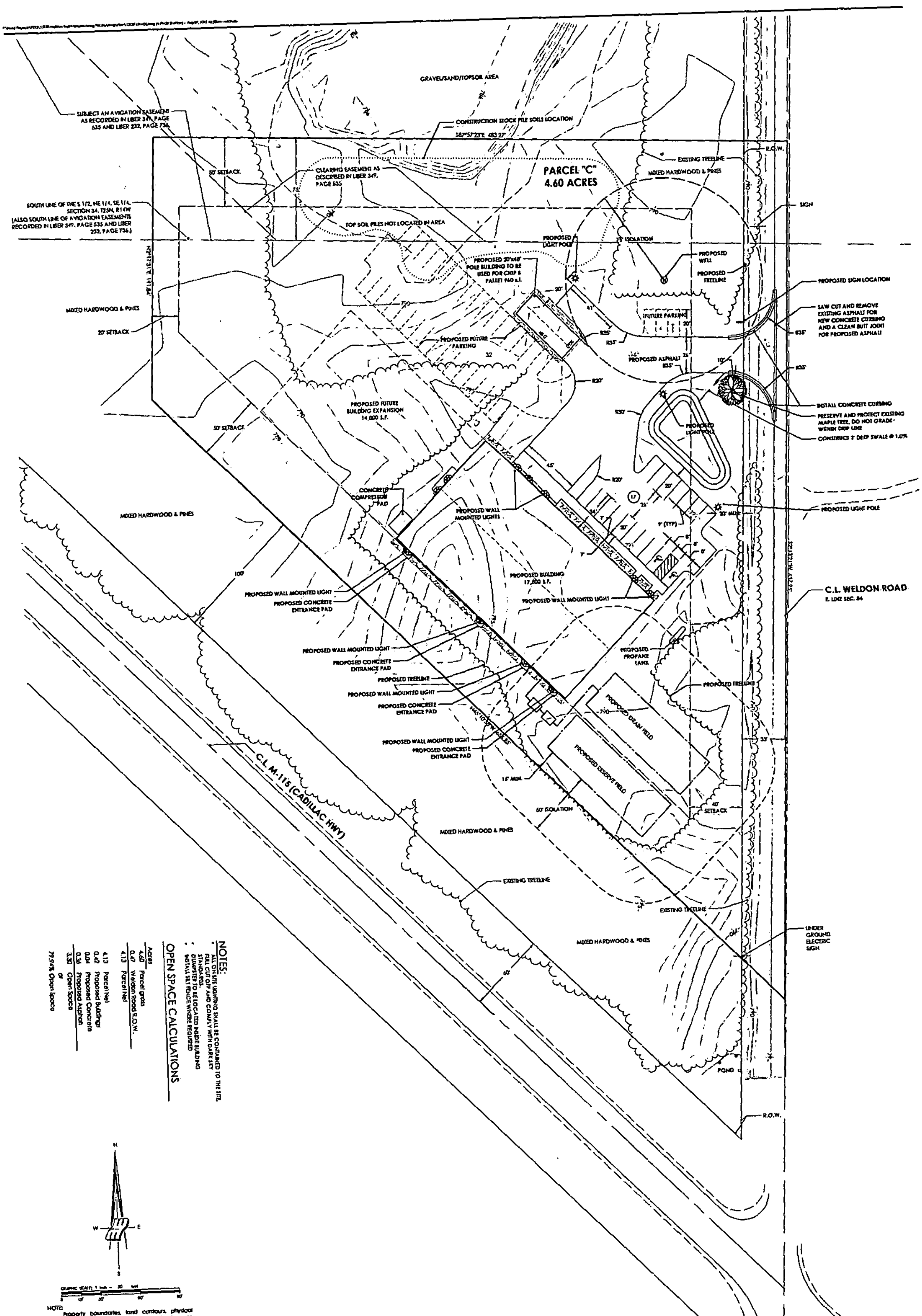

NOTES:
- ALL ON SITE LIGHTING SHALL BE CONTAINED TO THE SITE, FULL CUT OFF AND COMPLY WITH DARK SKY STANDARDS.
- DUMPSTER TO BE LOCATED INSIDE BUILDING
- INSTALL SILT FENCE WHERE REQUIRED

OPEN SPACE CALCULATIONS

Acres	
4.60	Parcel gross
0.47	Weldon Road R.O.W.
4.13	Parcel Net
4.13	Parcel Net
0.42	Proposed Buildings
0.04	Proposed Concrete
0.36	Proposed Asphalt
3.30	Open Space
or	
79.9%	Open Space

GRAPHIC SCALE: 1 inch = 30 feet

NOTE:
Property boundaries, land contours, physical features and the like, illustrated on this plan are exhibited for planning purposes only. Mansfield Land Use Consultants makes no guarantee to the correctness nor the completeness of this information.

PRELIMINARY

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Production Industries, Inc.
Proposed Manufacturing Facility
Site and Dimension Plan
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

REV	DATE	DRN	CHK	DESC
0	07.17.13	dlm	mmm	Original design
01	07.30.13	dlm	mmm	Preserve Maple, Move drive, stock pile location
02	07.29.15	phk	mmm	Revised building size/location
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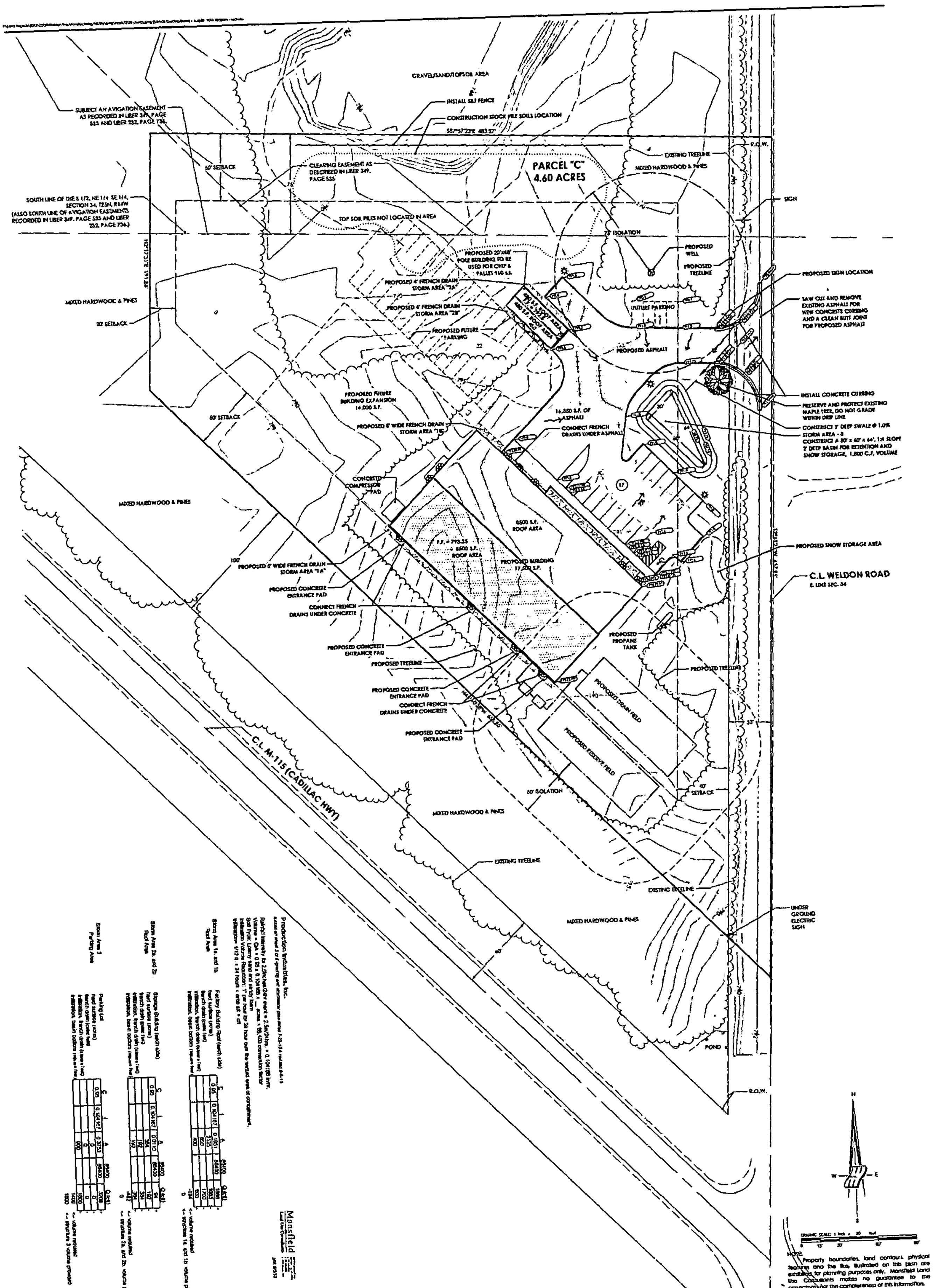

Production Industries, Inc.

Rainfall Intensity for 2.5inches/24hr event = 2.5in/24hrs. = 0.104166 in/hr.
Volume = QA = 0.85 x 0.104166 x ___ acres x 86,400 conversion factor
Soil Type: Loamy sand and sandy loam
Infiltration Volume Reduction: 1" per hour for 24 hour over the wetted area of containment.
Infiltration 1/12 ft. x 24 hours x area sf = cft

Storm Area 1a. and 1b.
Roof Area

Factory Building Roof (each side)	C	I	A	86400	Q(cf)
hard surface (acres)	0.90	0.104167	0.1951	86400	1586
french drain (cubic feet)			2125		1063
infiltration, french drain (square feet)			850		1700
infiltration, basin bottom (square feet)			400		800

-194 <- volume required
0 <- structure 1a. and 1b. volume provided

Storm Area 2a. and 2b.
Roof Area

Storage Building (each side)	C	I	A	86400	Q(cf)
hard surface (acres)	0.90	0.104167	0.0110	86400	94
french drain (cubic feet)			384		192
infiltration, french drain (square feet)			192		384
infiltration, basin bottom (square feet)			192		384

-482 <- volume required
0 <- structure 2a. and 2b. volume provided

Storm Area 3
Parking Area

Parking Lot	C	I	A	86400	Q(cf)
hard surface (acres)	0.85	0.104167	0.3733	86400	3208
french drain (cubic feet)			0		0
infiltration, french drain (square feet)					0
infiltration, basin bottom (square feet)			900		1800

1408 <- volume required
1800 <- structure 3 volume provided

Production Industries, Inc.
Proposed Manufacturing Facility
Grading and Storm Plan
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

REV	DATE	DES	DRF	CK	DESC
00	07.17.13	drm	mmm	drm	Original design
01	07.30.13	drm	mmm	drm	Preserve Maple, Move drive, stock pile location
02	07.29.15	pfk	mmm	pfk	Revised building size/location
03	08.06.15	pfk	mmm	pfk	Revised building size/location - for submittal

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PRELIMINARY
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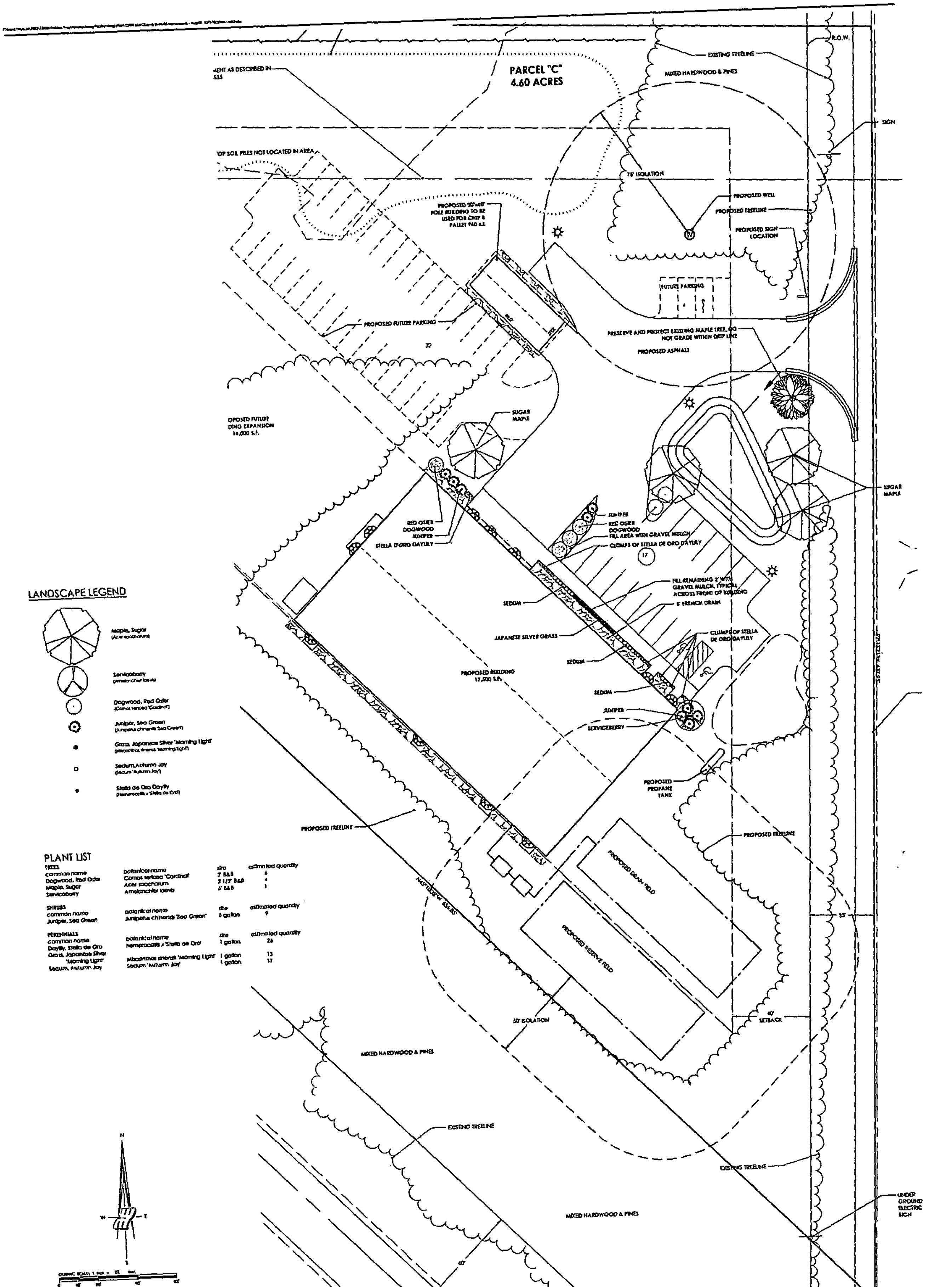

LANDSCAPE LEGEND

- Maple, Sugar (Acer saccharum)
- Serviceberry (Amelanchier laevis)
- Dogwood, Red Osier (Cornus sericea 'Cardinal')
- Juniper, Sea Green (Juniperus chinensis 'Sea Green')
- Grass, Japanese Silver 'Morning Light' (Miscanthus sinensis 'Morning Light')
- Sedum, Autumn Joy (Sedum 'Autumn Joy')
- Stella de Oro Daylily (Hemerocallis x 'Stella de Oro')

PLANT LIST

TREES

common name	botanical name	size	estimated quantity
Dogwood, Red Osier	Cornus sericea 'Cardinal'	3' B&B	6
Maple, Sugar	Acer saccharum	2 1/2" B&B	4
Serviceberry	Amelanchier laevis	6' B&B	1

SHRUBS

common name	botanical name	size	estimated quantity
Juniper, Sea Green	Juniperus chinensis 'Sea Green'	5 gallon	9

PERENNIALS

common name	botanical name	size	estimated quantity
Daylily, Stella de Oro	Hemerocallis x 'Stella de Oro'	1 gallon	26
Grass, Japanese Silver 'Morning Light'	Miscanthus sinensis 'Morning Light'	1 gallon	13
Sedum, Autumn Joy	Sedum 'Autumn Joy'	1 gallon	17

NOTE:
Property boundaries, land contours, physical features and the like, illustrated on this plan are exhibited for planning purposes only. Mansfield Land Use Consultants makes no guarantee to the correctness nor the completeness of this information.

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Production Industries, Inc.
Proposed Manufacturing Facility
Landscape Plan
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

rev	date	drawn	checked	desc
0	07.17.13	dm	mmm	Original design
01	07.30.13	dm	mmm	Preserve Maple, Move drive, stock pile location
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Phone: 231-946-9310
www.maucps.com
info@maucps.com

GEOTECHNICAL INVESTIGATION REPORT

Production Industries
Weldon Township, Michigan

July 2015

Prepared For:

Production Industries
2020 Bristol Avenue NW
Grand Rapids, Michigan 49504

Prepared By:

Otwell Mawby Geotechnical, P.C.
Consulting Engineers
309 East Front St.
Traverse City, Michigan 49684

PN: G15-132

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3.0 FIELD INVESTIGATION 2
4.0 SITE AND SUBSURFACE CONDITIONS 2
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5.4 Groundwater 5
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7.0 CLOSURE 6

APPENDICES

Appendix A Site Location Map
Appendix B Boring Logs

Geotechnical Investigation Report
Production Industries
Weldon Township, Michigan

July 2015

1.0 INTRODUCTION

A geotechnical investigation has been completed for the proposed Production Industries building in Weldon Township, Michigan. The investigation included site reconnaissance, subsurface exploration consisting of test drilling, evaluation of the encountered conditions, and preparation of this report. The investigation was performed for Production Industries in accordance with our proposal dated June 6, 2015.

2.0 TYPE OF CONSTRUCTION

The proposed structure will be an industrial building, 25,000 sf in plan. The building will be of slab-on-grade construction with steel framing. We have been provided a Foundation Plan, prepared by Howard L. Overbeek Architect and dated July 8, 2015 indicating a finish floor elevation of 793.25 ft. The building will be supported by a spread foundation system with foundation plan dimensions ranging from 3 ft by 3 ft to 7.5 ft by 7.5 ft. Foundations have been designed with a minimum interior/exterior foundation bearing pressure of 2500 and 2000 psf, respectively. Exterior wall loads will be supported by grade beams spanning between individual spread footings. Interior wall loads will be supported by a 2 ft wide shallow strip footing.

We have been provided a preliminary site plan prepared by Mansfield Land Use Consultants, dated July 17, 2013, indicating existing grades within the building area ranging from 790 to 798 ft, indicating that approximately 3 to 5 ft of grade change will be required to achieve the proposed finish floor elevations.

We have considered that the building will have a maximum column load less than 150 kip and a maximum interior wall load of less than 2 kips/ft.

We should be informed of any changes from these design considerations as they may affect our recommendations.

3.0 FIELD INVESTIGATION

The field investigation was completed on July 1, 2015 and included a series of seven soil borings. Borings were performed at locations indicated on Figure No. 1, Site Location Map, attached in Appendix A. The boring locations were staked in the field and ground surface elevations were approximated based on elevations on the referenced plan. The Land Surveyor should locate the borings if more accurate boring elevation information is desired.

The conventional borings were advanced to depths of 10 to 25 ft using a Geoprobe 7822 DT ATV-mounted drill rig equipped with 4¼ inch inside diameter, continuous flight, hollow stem augers. Samples were obtained by means of the Standard Penetration Test, ASTM D 1586, and continuous logs of the borings were recorded. Observations were made in the field regarding drilling difficulty, groundwater conditions, etc. as the drilling progressed. Soil samples were classified in accordance with the Unified Soil Classification System (Visual-manual procedure, ASTM D 2488) and boring logs were prepared which graphically depict the subsurface soils encountered. The details of the soils encountered in the investigation can be found on the boring logs attached in Appendix B.

Soil borings were performed solely for the purpose of a geotechnical investigation. Environmental services are not included in the geotechnical scope of service.

4.0 SITE AND SUBSURFACE CONDITIONS

The site was an undeveloped parcel bordered by M-115 and Weldon Road. The site was vegetated with mature, mixed hardwoods and pines with scattered brush. The ground surface topography was rolling, ranging from approximate elevation 788 to 798 ft. The site did not appear to have been previously developed; however, a sand/gravel pit was present to the north of the proposed building area. A wetland/pond was present at the northwest corner of Weldon Road and M-115.

The topsoil thickness at the boring locations typically ranged from 4 to 6 inches and was underlain by *poorly graded sand* (SP). The *poorly graded sand* was typically very loose to loose in consistency based on recorded SPT N-values. The sand extended to the explored depth of 10 ft in Borings B-1 and B-2 and 25 ft in Boring B-7. Fine grained soil including *silt* (ML) and *lean*

clay (CL) was present beneath the sand in Borings B-2 through B-6 below depths of 9.5 to 16.5 ft. The consistency of the clay was very stiff to hard based on estimates of the unconfined compressive strength, obtained with a calibrated penetrometer, from 3 to greater than 4.5 tsf.

Groundwater was present within the explored depths of Borings B-3 to B-7 at depths ranging from 6 to 13.5 ft, corresponding to approximate elevations ranging from 779.5 to 786 ft. Groundwater was frequently present above relatively impermeable clay or silt layers. Due to the variability in the depth to groundwater and the lower soil strata, perched groundwater may be present in addition to a regional aquifer. The groundwater level should be expected to vary due to precipitation, snowmelt, nearby lake and river levels, and other factors and may be different at the time of construction.

This section has included a general description of the subsurface and groundwater conditions. The boring logs attached in Appendix B should be reviewed for additional detail. The described conditions are based on a limited number of test borings and samples. Variations from these locations should be expected.

5.0 ENGINEERING ANALYSIS

5.1 Shallow Foundation System

A conventional spread shallow foundation system is recommended for support of the proposed building. Due to the very loose sand, it is important that the construction be completed in accordance with the recommendations presented herein. The following design parameters are recommended for foundation design:

Table 5.1.1 – Foundation Design Parameters

Minimum Width of Square or Rectangular Foundations, inches	24
Minimum Width of Continuous Foundations, inches	18
Maximum Net Allowable Foundation Bearing Capacity, interior foundations, psf	2500
Maximum Net Allowable Foundation Bearing Capacity, exterior foundations, psf	2000
Minimum Embedment Depth for Frost Protection, inches	42

We have considered that the foundations will bear in the encountered natural sand or in approved engineered fill. The recommended maximum net allowable bearing capacity is based on a factor of safety greater than 3.0 and anticipated settlement of less than 1 inch.

5.2 Site and Subgrade Preparation

Site preparation should include the removal of all vegetation, topsoil, etc. within the construction area. Prior to placement of any structures or engineered fill, the entire subgrade should be compacted within the upper 12 inches by the contractor using suitable equipment to a minimum of 95 percent of the material's Michigan Cone maximum density.

The foundation subgrade at each bearing element should be verified to be consistent with the described conditions and acceptable for the recommended net allowable bearing capacity. This evaluation should include hand auger borings and the use of a dynamic cone penetrometer (ASTM STP 399) in granular soil. A proof-roll should be performed on the prepared building pad and pavement area to identify any areas of weak subgrade that would be unacceptable for support of floor slabs or pavement. A proof-roll is defined as the passing of relatively heavy, rubber-tired equipment over the subgrade under the observation of our staff. Rutting, shoving, or deflection under the vehicle's tires are an indication that subgrade improvement will be required.

Due to the very loose sand and variations that may occur between boring locations, subgrade improvement is expected to be required. Subgrade improvement is expected to include overexcavation beneath foundations and replacement with engineered fill. The subgrade improvement program should be evaluated during construction based on results of hand auger

borings and dynamic cone penetrometer testing; however, at a minimum the overexcavation should extend a minimum of 2 ft beneath exterior foundations and 4 ft beneath interior foundations. The overexcavation should extend down and away from the foundations on a 0.5H:1V plane. The overexcavation should be replaced with engineered fill.

Engineered fill is controlled material placed in lifts under the observation of the geotechnical engineer. On-site soil classified as *poorly graded sand* (SP) is generally expected to be suitable for use as engineered fill. Imported fill material should meet the requirements for MDOT Class II material. Engineered fill should be used for overexcavation backfill, to achieve grades beneath the structure, and as foundation backfill. Engineered fill should be compacted in lifts of 12 inches or less and a program of inspection, testing, and documentation of the engineered fill should be implemented. The fill should be compacted to a minimum of 95 percent of its MDOT Michigan Cone maximum dry density. Construction with frozen soil should not occur.

5.3 Floor Slabs

Subgrade preparation for floor slabs should be completed as described in the Site and Subgrade Preparation section of this report. A minimum of 6 inches of MDOT Class II sand or approved equivalent should be placed beneath the floor slab. The soil classified as *poorly graded sand* is expected to be suitable. A modulus of subgrade reaction, k_{30}, of 100 pci is recommended for design of floor slabs. If the floor slab will have a moisture sensitive covering or be within a moisture controlled area, a vapor barrier should be provided as recommended in ACI 302.1R *Guide for Concrete Floor and Slab Construction*.

A perimeter foundation drain should be provided where the interior slab is at or below the corresponding exterior grade. Substantial below grade walls are not anticipated for the project.

5.4 Groundwater

Groundwater was present within the explored depths of Borings B-3 to B-7 at depths ranging from 6 to 13.5 ft, corresponding to approximate elevations ranging from 779.5 to 786 ft. Groundwater may be present during excavation activities for site preparation. The contractor should have experience on similar sites and be prepared to control groundwater. Groundwater control should include suitable sediment traps and filters.

6.0 LIMITATIONS

The evaluations and recommendations presented in this report have been developed on the basis of available data relating to the locations, type, and finished elevations for the proposed development. Any changes in this data, deviations from encountered conditions, or the final design plans should be brought to our attention for review and evaluation with respect to our geotechnical recommendations. Variations in the soil conditions between existing borings are possible and such variations may not become evident until construction occurs and we recommend that we be retained during construction to provide subgrade verification. If changes occur to the location, configurations or structural plans or if construction reveals differences in the soil conditions from those observed in our investigation and utilized in our analyses, we request the opportunity to review and if necessary, revise our recommendations.

7.0 CLOSURE

We appreciate the opportunity to have provided geotechnical services for the Production Industries development and express our interest in providing subgrade verification and materials testing services during construction. We should be contacted if any questions arise regarding the recommendations provided herein.

Very truly yours,

OTWELL MAWBY GEOTECHNICAL, P.C.

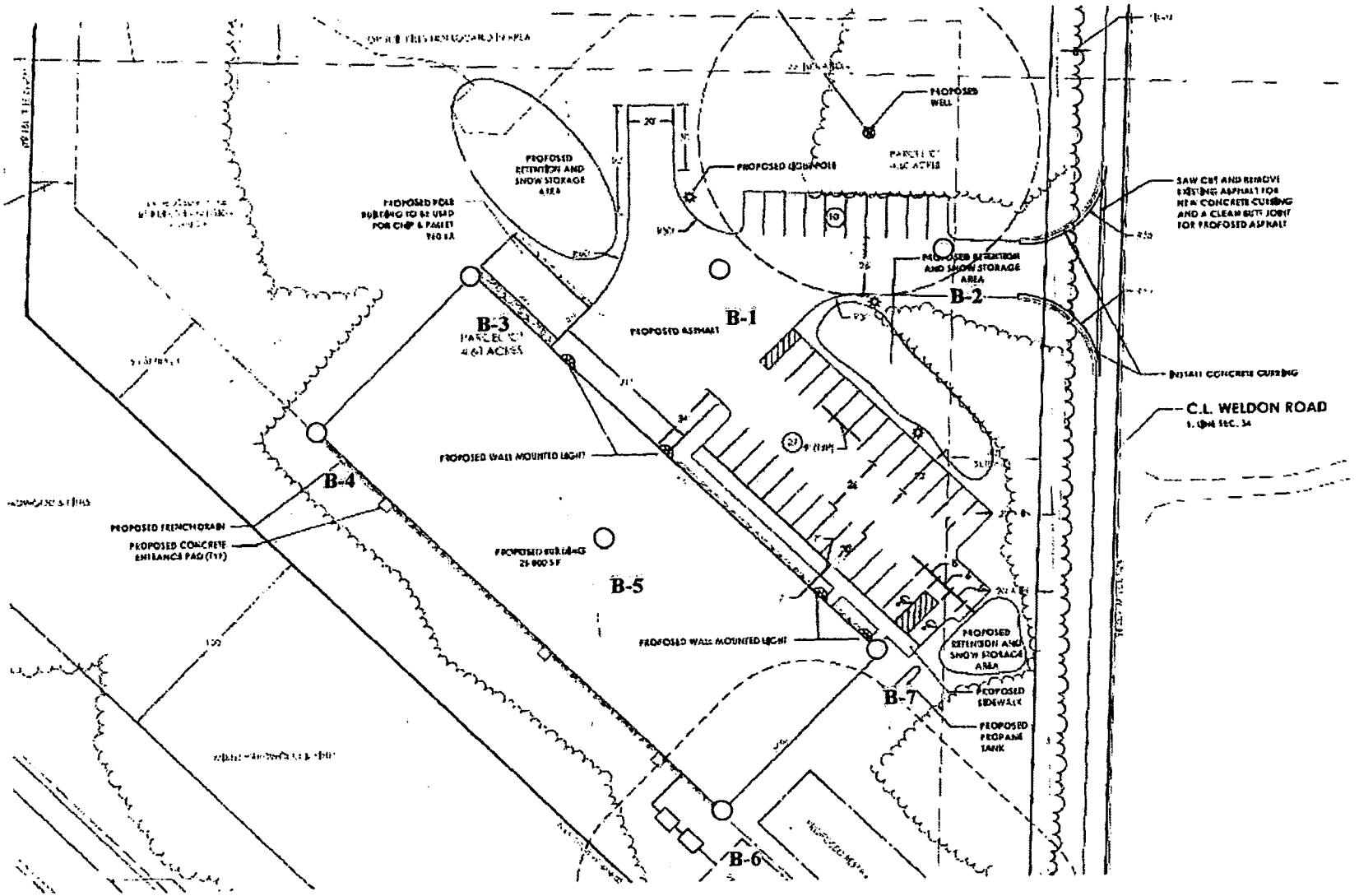
Melzar L. Coulter, P.E.
Sr. Geotechnical Engineer

Roger L. Mawby, P.E.
President

MLC/RLM/mc

APPENDIX A

SITE LOCATION MAP



B-1 ○ - Approximate Soil Boring Locations

Production Industries **Weldon Township, Michigan**	**Figure 1: Site Location Map**		
Otwell Mawby Geotechnical, PC **Traverse City, Michigan**	**Project No:** **G15-132**	**Date:** **7/24/15**	**Source:** **Mansfield Land Use Consultants**

APPENDIX B

BORING LOGS

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-1
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method (Sample Type/Interval)	Depth (feet)	Soil Type	Soil Description	Comments
					Surface Conditions: Grass	
					TOPSOIL; light brown; sandy (5")	Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
2,3,5,5	16"	SS			Poorly graded SAND; mostly medium to fine sand, trace silty fines; reddish tan; moist (SP)	
1,4,4,5	12"	SS	5		- grades light brown	
2,3,3,4	18"	SS			- grades slightly coarser and tan	Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
1,2,2,2	14"	SS	10		E.O.B. 10.0' bgl	
			15			
			20			
			25			
			30			

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 794 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: None
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-2
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Comments
						Surface Conditions: Grass	
						TOPSOIL; brown; sandy (4")	
1,1,1,1	12"	SS				Poorly graded SAND; mostly medium to fine sand, trace silty fines; brownish-red; moist (SP)	Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
2,2,2,2	18"	SS		5		- grades light brown and moist with trace gravel	
2,2,2,2	12"	SS					Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
1,1/12,1	18"	SS				- grades slightly coarser	
				10		E.O.B. 10.0' bgl	
				15			
				20			
				25			
				30			

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 791 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: None
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-3
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)	Comments
						Surface Conditions: Grass		
						TOPSOIL; brown; sandy (4")		
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; tan; moist		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
1,1,1,2	20"	SS						
1,1/12,1	12"	SS		5				Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
1,2,2,3	24"	SS				- grades with mostly coarse to fine sand; stone		
1,2,2,4	18"	SS		10				
						- grades wet with mostly medium to fine grained sand		
3,6,6,7	20"	SS		15				
						SILT; mostly silty fines, little fine sand; gray; wet (ML)	1.75	
2,3,6,6	22"	SS		20		E.O.B. 20.0' bgl		
				25				
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 794 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 13.5'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-4
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)
						Surface Conditions: Grass	
						TOPSOIL; brown; sandy (4")	
						Poorly graded SAND; mostly medium to fine grained; tan; moist (SP)	
1,1,2,2	14"	SS					
1,1,1,2	20"	SS		5		- grades with trace fine gravel -grades wet	
1/24	17"	SS					
1,2,2,5	16"	SS				- grades without fine gravel	
				10		Lean CLAY; gray-brown; moist (CL)	
						-sand lens/layer from 13.5'	
5,13,9,15	20"	SS		15			4.5+
						- grades with silt lenses	3.0
4,8,10,16	24"	SS		20		E.O.B. 20.0' bgl	
				25			
				30			

Comments

Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers

Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 790 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 6'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-5
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)	Comments
						Surface Conditions: Grass		
						TOPSOIL; sandy; brown (6")		
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; reddish-brown; moist		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
2,2,3,4	10"	SS						
2,2,2,3	12"	SS		5		-grades tan		
1,2,1,2	8"	SS						
1,1,3,5	12"	SS		10		- grades wet		Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
						LEAN CLAY; gray-brown; moist; with silt seams (CL)		
2,5,8,10	20"	SS		15			3.5	
						-grades with wet silt/fine sand lenses	1.75	
5,8,9,9	24"	SS		20				
						E.O.B. 20.0' bgl		
				25				
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 794 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 8'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-6
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)	Comments
						Surface Conditions: Grass		
						TOPSOIL; sandy; brown (5")		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
3,3,4,4	18"	SS				Poorly graded SAND; mostly medium to fine sand, trace silty fines; tan; moist (SP)		
3,4,3,5	15"	SS		5		-grades brown and wet		
1,1,3,4	16"	SS				-gravel lens		Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
1,2,2,3	17"	SS		10		SILT; trace fine sand; gray; wet with clay lenses (ML/CL)		
							1.0	
2,5,6,6	20"	SS		15				
							0.5	
6,6,7,6	8"	SS		20		E.O.B. 20.0' bgl		
				25				
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 791 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 5.5'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-7
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)	Comments
						Surface Conditions: Grass		
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; tan; moist (SP)		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
2,3,2,3	18"	SS						
2,3,4,3	15"	SS		5				Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
1,1,2,3	12"	SS						
2,2,2,3	15"	SS				-grades slightly coarser; trace gravel		
				10				
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; brown; wet (SP)		
1,1/12,1	18"	SS						
				15		-2" clay lens @ 13' (qp = 1.5 TSF)		
Weight of hammer	0"	SS						
				20				
						Poorly graded SAND; mostly medium to fine sand; tan; wet (SP)		
2,2,5,8	10"	SS						
				25		E.O.B. 25.0' bgl		
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 791 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 11.5'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Computer ID #_____ Permit # _____

BENZIE - LEELANAU DISTRICT HEALTH DEPARTMENT

Benzie County Office
6051 Frankfort Hwy Suite100
Benzonia, MI 49616
Phone: (231) 882-2103 Fax: (231) 882-2204 www.bldhd.org

Application for Sewage / Well Permit

Check here if you ☐ would like to be present at inspection.

"*" indicates required fields. To see all required fields click on the Highlight Fields button above.

*Type of Permit: Both Well and Septic

*Property Tax ID#: 10-12-034-008-10

Owner Information

*Name: Production Industries, Inc. Ph: [redacted]

*Mailing Address: 1048 Main Street Fa:

*City: Frankfort *State: MI Zip Code: 49635 e-ma:

Location of Property

*Address: west side of Weldon Road, just north of M-115 City: Thompsonville MI Zip Code: 49683

*County and Township: Benzie -Weldon Section: 34

Subdivision: N/A Lot Number: N/A Dimension / Acreage: 4.1

Facility Type: Choose either Residential or Commercial. (If commercial complete page #3)

☐ 1-2 Family Residential ☒ Commercial

*Number of Bedrooms: N/A *Building: New Business Type: Industrial

*Number of Bathrooms: 3 *Garbage Disposal: No Maximum # of people per day: 45

Miscellaneous Information

Well Contractor: Cluff Well Drilling Well Type: 3 - Pitless Adapter Septic Contractor: Alpers Excavating

Has this department performed an evaluation or site survey on this: Yes If yes, for whom was the work done?: Current Owner What year was the evaluation done?: 2013

*Lake Front Property: No Yes - What body of water: N/A Critical Dunes /Wetlands: No

as part of 10-12-034-003-00

*Permit Mailing information

Mail to owner at above address and e-mail/ fax to: Name of person: Petra Kuehnis, Mansfield Land Use Consultants

*Mailing Address: 830 Cottageview Drive -Suite 201 Phone Num: [redacted]

*City: Traverse City *State: MI *Zip Code: 49684 Fax Numbe:

This request will be processed when the completed application and correct fee are received.
Please make check payable to: BLDHD

FOR HEALTH DEPARTMENT USE ONLY:

_ Combined Permit Fee: $523
_ Combined, after Site Survey: ~~$378~~ $380
_ Sewage Permit Only: $329
_ Sewage, after Eval or Survey: $164
_ Well Permit Only: $254
_ Septic Tank Only: $140
_ Other: _____
_ Commercial - call for fee

Date Fee Paid: _____
_ Cash _ Check # _____
Paid By: _____
Receipt #: _____ 04/01/2013

*Directions to site: (Include name of nearest crossroads)	Triangle shaped parcel in the Northwest corner of Weldon Road and M115. South of the airport right of way - see the attached sheet.

Include on Sketch:

1. Property lines / dimensions

2. Location of any buildings

3. Well locations (old and/or new) and distance to septic/drainfield

4. Neighboring well/septic system distance from your well/ septic system

5. Septic tank & drainfield location (s)-new and/or existing

6. Location(s) of streets/ roads

7. Location(s) of body(s) of water**

8. Location(s) of underground fuel storage tanks

9. Driveway location

10. Any buried utilities (cable, gas, electric, etc.)

11. Critical Dunes on property

****If your construction project is within 400 feet of the Betsie River, Little Betsie River, or Dair Creek, the Michigan Department of Natural Resources needs to be contacted to obtain a Scenic Rivers Act permit. Call (989) 732-3541 ext. 5088**

N
W E
S

*Detailed drawing included? Yes

I hereby agree to comply with requirements of the Environmental Health Regulations for the Counties of Benzie - Leelanau District Health Departments, and the applicable law of the State of Michigan, in the installation of a septic tank disposal system and well, on the above described property, and to construct the same according to the plans and specifications as described and approved on Health Department Permit.

This request will be processed when the completed application and the correct fee are received.

*Signed (Owner or Agent) Petra Fuehnis (agent) Mansfield Land Use Consultants

Today's Date 8/11/15

Commercial Application Supplement

(MUST be completed for commercial establishments)

Please be as descriptive as possible when indicating the following.
Attach additional pages if necessary.
You may be asked to submit architectural or engineered drawings.

Property Tax ID#:	10-12-034-008-10	Property Address:	Weldon Road, just north of M-115

Type of building: (office, food service, etc)	Industrial Manufacturing
If existing, current use of building.	N/A
Proposed or future use of building:	Industrial Manufacturing

Estimated number of employees per day:	30 (45 max)	Number of shifts per day.	2	Estimated number of public/ patrons per day.	0
☒ Private Water Well ☐ Municipal Water		Estimated number of hours per day of operation.	10 - 18	Estimated number of days per week of operation.	5

(Check with the Benzie County Building Department regarding fixture requirements.)

List all Fixtures: (number of sinks, lavatories, showers, etc.)	7 sinks total including work sink 3 water closets 2 urinals 2 drinking fountains

Will any 'water-using ' fixtures be available to the public ?	☒ NO ☐ YES - If yes, list what fixtures and how many
List fixtures available to public (number of sinks, lavatories, showers, etc.)	

Lot / property / size dimensions (survey is helpful if not known) and if the property 'is to be' or 'has been' split - if applicable, indicate size and date of split.	See attached sheet, property is to be split from original to 4.1acre parcel.

Benzie-Leelanau District Health Department

BENZIE OFFICE
6051 Frankfort Highway
Suite 100
Benzonia, Michigan 49616
Phone (231) 882-4409
Fax (231) 882-2204

LEELANAU OFFICE
7401 E. Duck Lake Road
Suite 100
Lake Leelanau, Michigan 49653
Phone (231) 256-0200
Fax (231) 256-0225

Website: www.bldhd.org

July 24, 2013

Mansfield Land Use Consultants
830 Cottageview Drive
Suite 201
Traverse City, MI 49635

Attn: Ms. Petra Kuehnis, RLA

RE: Production Industries, Inc. Proposed Production Facility Conceptual Approval, Weldon Township, Benzie County
(Property #: Part of 10-12-034-003-00)

Dear Ms. Kuehnis:

This Department has received and reviewed the proposal for a new production facility for Production Industries, Inc. on the Northwest corner of the intersection of Cadillac Highway and Weldon Road. On July 22 and 23, 2013, our Department preformed soil analysis in the location of the proposed sewage disposal system, per the July 17, 2013 Site and Dimension Plan you provided. The soil conditions encountered are suitable for the proposed facility.

A sewage disposal and well permit must be acquired from this Department prior to construction.

If you have any questions regarding this matter, please feel free to write or call me at ejohnston@bldhd.org or (231) 882-2109.

Sincerely,

J. Eric Johnston, R.S.
Environmental Health Sanitarian
Benzie/Leelanau District Health Department

Enclosures

SOIL BORING RESULTS

(Production Industries, Inc. Proposed Production Facility Site,
Northwest Corner of Cadillac Hwy. and Weldon Road, Weldon Township)
(Property Number: Part of 10-12-034-003-00 (SE corner of Property)

SB #1

Fine to Medium Sand Topsoil 0" to 9"
Red Fine to Medium Sand 9" to 27"
Reddish Tan Fine to Medium Sand 27" to 32"
Reddish Tan Medium Sand 32" to 47"
Tan Fine to Medium Sand 47" to 78"
(SUITABLE)

SB #2

Fine to Medium Sand Topsoil 0" to 8"
Reddish Tan Fine to Medium Sand 8" to 42"
Reddish Tan Fine to Medium Sand with Gravel 42" to 44"
Tan Medium Sand 44" to 59"
Light Brown Medium Sand 59" to 66"
Tan Medium Sand 66" to 78"
(SUITABLE)

SB #3

Fine to Medium Sand Topsoil 0" to 9"
Reddish Tan Fine to Medium Sand 9" to 30"
Reddish Tan Fine to Medium Sand and Gravel 30" to 36"
Reddish Tan Fine to Medium Sand 36" to 46"
Tan Medium Sand 46" to 78"
(SUITABLE)

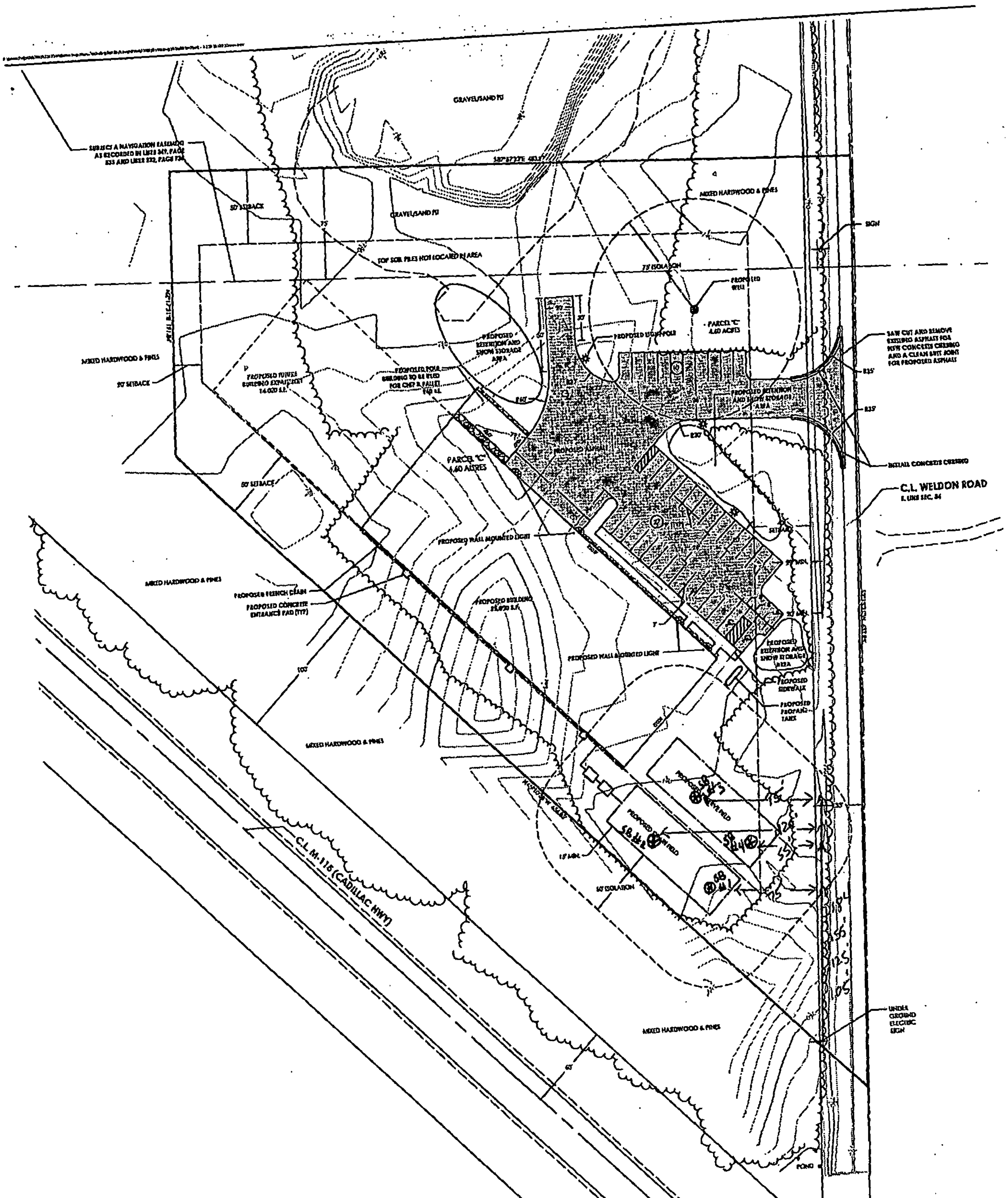
SB #4

Fine to Medium Sand Topsoil 0" to 19
Reddish Brown Fine to Medium Sand 19" to 33"
Reddish Tan Fine to Medium Sand 33" to 62"
Tan Fine to Medium Sand 62" to 78"
(SUITABLE)

NOTES:

The soil boring locations are as follows (All measurements are taken from the Surveyor's pin located in the Southeast corner of the property, next to an Underground Electric Sign):

SB#1 is 105' North and 75' West
SB#2 is 155' North and 120' West
SB#3 is 184' North and 95' West
SB#4 is 125' North and 55' West



OPEN SPACE CALCULATIONS

4.60 Acres gross
0.47 Acres Weldon Road R.O.W.
4.13 Acres net
0.6 Acres proposed buildings
0.50 Acres proposed asphalt
0.02 Acres proposed concrete
3.01 Acres open space or 73% open space

NOTES:

- ALL ON SITE LIGHTING SHALL BE CONTAINED TO THE SITE. FULL CUT OFF AND COMPLY WITH DARK SKY STANDARDS.
- DUMPSTER TO BE LOCATED INSIDE BUILDING
- INSTALL SILT FENCE WHERE REQUIRED

NOTE: Property boundaries, land contours, physical features and the like, illustrated on this plan are exhibited for planning purposes only. Mansfield Land Use Consultants makes no guarantee to the correctness nor the completeness of this information.

SHT 5 OF 1 | 13122 | PRELIMINARY

Production Industries, Inc.
Proposed Production Facility
Site & Dimension Plan
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

rev	date				desc
0	7.17.13				Original design

Mansfield Land Use Consultants
830 Cottageview Dr., Ste. 201
P.O. Box 4015
Traverse City, MI 49685
Phone: 231-946-9310
info@mlucs.com

BENZIE-LEELANAU DISTRICT HEALTH DEPARTMENT
Visit our Website at www.bldhd.org

BENZIE OFFICE
6051 Frankfort Hwy. Suite 100
Benzonia, MI 49616
231-882-4409

LEELANAU OFFICE
7401 E Duck Lake Rd,Suite 100
Lake Leelanau, MI 49653
231-256-0201

COMPUTER ID#: 014946
DATE: 07/24/13
VACANT LAND #: B13-010

==========

SITE SURVEY

MAIL TO NAME: MANSFIELD LAND USE CONSULT
ADDRESS: ATTN: PETRA 830 COTTAGEVIEW D
CITY,STATE,ZIP: SUITE 201 TRAVERSE MI 49684

COUNTY: BENZIE
TOWNSHIP/CITY: WELDON
SECTION: 34

PROPERTY TAX ID#: 10-12-034-003-00 (PART)
PROPERTY ADDRESS: WELDON RD
TYPICAL LOT SIZE: 4.6 A
NUMBER OF LOTS: 1

SUBDIVISION:
LOT #:

==========

SOIL CONDITIONS:

SOIL BORINGS INDICATED FINE TO MEDIUM SAND TOPSOIL TO 9"; REDDISH TAN FINE TO MEDIUM SAND TO 30"; REDDISH TAN FINE TO MEDIUM SAND AND GRAVEL TO 36"; REDDISH TAN FINE TO MEDIUM SAND TO 46" AND TAN MEDIUM SAND TO 78". NO ELEVATED GROUNDWATER TABLE WAS ENCOUNTERED.

ON-SITE SEWAGE DISPOSAL: SUITABLE - SEE BELOW

REASONS/SPECIAL CONDITIONS:

THE BOTTOM OF ANY FINAL DISPOSAL SYSTEM MUST BE NO DEEPER THAN 24" BELOW GRADE AT SOIL BOING #1 (SEE MAP) THIS IS DUE TO ELEVATED GROUNDWATER TABLE ON PROPERTIES DUE SOUTH OF THE PROPOSED LAND SPLIT. OBTAIN A SEWAGE DISPOSAL AND WELL PERMIT PRIOR TO CONSTRUCTION. THE EXACT WELL AND SEPTIC SYSTEM SIZE, DESIGN AND LOCATION WILL BE DETERMINED WHEN THE PERMIT IS SECURED.

Sanitarian: _____ Date of Inspection: 07/23/13
J. ERIC JOHNSTON, R.S.

GEOTECHNICAL INVESTIGATION REPORT

Production Industries
Weldon Township, Michigan

July 2015

Prepared For:

Production Industries
2020 Bristol Avenue NW
Grand Rapids, Michigan 49504

Prepared By:

Otwell Mawby Geotechnical, P.C.
Consulting Engineers
309 East Front St.
Traverse City, Michigan 49684

PN: G15-132

Geotechnical Investigation Report
Production Industries
Weldon Township, Michigan

July 2015

1.0 INTRODUCTION

A geotechnical investigation has been completed for the proposed Production Industries building in Weldon Township, Michigan. The investigation included site reconnaissance, subsurface exploration consisting of test drilling, evaluation of the encountered conditions, and preparation of this report. The investigation was performed for Production Industries in accordance with our proposal dated June 6, 2015.

2.0 TYPE OF CONSTRUCTION

The proposed structure will be an industrial building, 25,000 sf in plan. The building will be of slab-on-grade construction with steel framing. We have been provided a Foundation Plan, prepared by Howard L. Overbeek Architect and dated July 8, 2015 indicating a finish floor elevation of 793.25 ft. The building will be supported by a spread foundation system with foundation plan dimensions ranging from 3 ft by 3 ft to 7.5 ft by 7.5 ft. Foundations have been designed with a minimum interior/exterior foundation bearing pressure of 2500 and 2000 psf, respectively. Exterior wall loads will be supported by grade beams spanning between individual spread footings. Interior wall loads will be supported by a 2 ft wide shallow strip footing.

We have been provided a preliminary site plan prepared by Mansfield Land Use Consultants, dated July 17, 2013, indicating existing grades within the building area ranging from 790 to 798 ft, indicating that approximately 3 to 5 ft of grade change will be required to achieve the proposed finish floor elevations.

We have considered that the building will have a maximum column load less than 150 kip and a maximum interior wall load of less than 2 kips/ft.

We should be informed of any changes from these design considerations as they may affect our recommendations.

3.0 FIELD INVESTIGATION

The field investigation was completed on July 1, 2015 and included a series of seven soil borings. Borings were performed at locations indicated on Figure No. 1, Site Location Map, attached in Appendix A. The boring locations were staked in the field and ground surface elevations were approximated based on elevations on the referenced plan. The Land Surveyor should locate the borings if more accurate boring elevation information is desired.

The conventional borings were advanced to depths of 10 to 25 ft using a Geoprobe 7822 DT ATV-mounted drill rig equipped with 4¼ inch inside diameter, continuous flight, hollow stem augers. Samples were obtained by means of the Standard Penetration Test, ASTM D 1586, and continuous logs of the borings were recorded. Observations were made in the field regarding drilling difficulty, groundwater conditions, etc. as the drilling progressed. Soil samples were classified in accordance with the Unified Soil Classification System (Visual-manual procedure, ASTM D 2488) and boring logs were prepared which graphically depict the subsurface soils encountered. The details of the soils encountered in the investigation can be found on the boring logs attached in Appendix B.

Soil borings were performed solely for the purpose of a geotechnical investigation. Environmental services are not included in the geotechnical scope of service.

4.0 SITE AND SUBSURFACE CONDITIONS

The site was an undeveloped parcel bordered by M-115 and Weldon Road. The site was vegetated with mature, mixed hardwoods and pines with scattered brush. The ground surface topography was rolling, ranging from approximate elevation 788 to 798 ft. The site did not appear to have been previously developed; however, a sand/gravel pit was present to the north of the proposed building area. A wetland/pond was present at the northwest corner of Weldon Road and M-115.

The topsoil thickness at the boring locations typically ranged from 4 to 6 inches and was underlain by *poorly graded sand* (SP). The *poorly graded sand* was typically very loose to loose in consistency based on recorded SPT N-values. The sand extended to the explored depth of 10 ft in Borings B-1 and B-2 and 25 ft in Boring B-7. Fine grained soil including *silt* (ML) and *lean*

clay (CL) was present beneath the sand in Borings B-2 through B-6 below depths of 9.5 to 16.5 ft. The consistency of the clay was very stiff to hard based on estimates of the unconfined compressive strength, obtained with a calibrated penetrometer, from 3 to greater than 4.5 tsf.

Groundwater was present within the explored depths of Borings B-3 to B-7 at depths ranging from 6 to 13.5 ft, corresponding to approximate elevations ranging from 779.5 to 786 ft. Groundwater was frequently present above relatively impermeable clay or silt layers. Due to the variability in the depth to groundwater and the lower soil strata, perched groundwater may be present in addition to a regional aquifer. The groundwater level should be expected to vary due to precipitation, snowmelt, nearby lake and river levels, and other factors and may be different at the time of construction.

This section has included a general description of the subsurface and groundwater conditions. The boring logs attached in Appendix B should be reviewed for additional detail. The described conditions are based on a limited number of test borings and samples. Variations from these locations should be expected.

5.0 ENGINEERING ANALYSIS

5.1 Shallow Foundation System

A conventional spread shallow foundation system is recommended for support of the proposed building. Due to the very loose sand, it is important that the construction be completed in accordance with the recommendations presented herein. The following design parameters are recommended for foundation design:

Table 5.1.1 – Foundation Design Parameters

Minimum Width of Square or Rectangular Foundations, inches	24
Minimum Width of Continuous Foundations, inches	18
Maximum Net Allowable Foundation Bearing Capacity, interior foundations, psf	2500
Maximum Net Allowable Foundation Bearing Capacity, exterior foundations, psf	2000
Minimum Embedment Depth for Frost Protection, inches	42

We have considered that the foundations will bear in the encountered natural sand or in approved engineered fill. The recommended maximum net allowable bearing capacity is based on a factor of safety greater than 3.0 and anticipated settlement of less than 1 inch.

5.2 Site and Subgrade Preparation

Site preparation should include the removal of all vegetation, topsoil, etc. within the construction area. Prior to placement of any structures or engineered fill, the entire subgrade should be compacted within the upper 12 inches by the contractor using suitable equipment to a minimum of 95 percent of the material's Michigan Cone maximum density.

The foundation subgrade at each bearing element should be verified to be consistent with the described conditions and acceptable for the recommended net allowable bearing capacity. This evaluation should include hand auger borings and the use of a dynamic cone penetrometer (ASTM STP 399) in granular soil. A proof-roll should be performed on the prepared building pad and pavement area to identify any areas of weak subgrade that would be unacceptable for support of floor slabs or pavement. A proof-roll is defined as the passing of relatively heavy, rubber-tired equipment over the subgrade under the observation of our staff. Rutting, shoving, or deflection under the vehicle's tires are an indication that subgrade improvement will be required.

Due to the very loose sand and variations that may occur between boring locations, subgrade improvement is expected to be required. Subgrade improvement is expected to include overexcavation beneath foundations and replacement with engineered fill. The subgrade improvement program should be evaluated during construction based on results of hand auger

borings and dynamic cone penetrometer testing; however, at a minimum the overexcavation should extend a minimum of 2 ft beneath exterior foundations and 4 ft beneath interior foundations. The overexcavation should extend down and away from the foundations on a 0.5H:1V plane. The overexcavation should be replaced with engineered fill.

Engineered fill is controlled material placed in lifts under the observation of the geotechnical engineer. On-site soil classified as *poorly graded sand* (SP) is generally expected to be suitable for use as engineered fill. Imported fill material should meet the requirements for MDOT Class II material. Engineered fill should be used for overexcavation backfill, to achieve grades beneath the structure, and as foundation backfill. Engineered fill should be compacted in lifts of 12 inches or less and a program of inspection, testing, and documentation of the engineered fill should be implemented. The fill should be compacted to a minimum of 95 percent of its MDOT Michigan Cone maximum dry density. Construction with frozen soil should not occur.

5.3 Floor Slabs

Subgrade preparation for floor slabs should be completed as described in the Site and Subgrade Preparation section of this report. A minimum of 6 inches of MDOT Class II sand or approved equivalent should be placed beneath the floor slab. The soil classified as *poorly graded sand* is expected to be suitable. A modulus of subgrade reaction, k_{30}, of 100 pci is recommended for design of floor slabs. If the floor slab will have a moisture sensitive covering or be within a moisture controlled area, a vapor barrier should be provided as recommended in ACI 302.1R *Guide for Concrete Floor and Slab Construction*.

A perimeter foundation drain should be provided where the interior slab is at or below the corresponding exterior grade. Substantial below grade walls are not anticipated for the project.

5.4 Groundwater

Groundwater was present within the explored depths of Borings B-3 to B-7 at depths ranging from 6 to 13.5 ft, corresponding to approximate elevations ranging from 779.5 to 786 ft. Groundwater may be present during excavation activities for site preparation. The contractor should have experience on similar sites and be prepared to control groundwater. Groundwater control should include suitable sediment traps and filters.

6.0 LIMITATIONS

The evaluations and recommendations presented in this report have been developed on the basis of available data relating to the locations, type, and finished elevations for the proposed development. Any changes in this data, deviations from encountered conditions, or the final design plans should be brought to our attention for review and evaluation with respect to our geotechnical recommendations. Variations in the soil conditions between existing borings are possible and such variations may not become evident until construction occurs and we recommend that we be retained during construction to provide subgrade verification. If changes occur to the location, configurations or structural plans or if construction reveals differences in the soil conditions from those observed in our investigation and utilized in our analyses, we request the opportunity to review and if necessary, revise our recommendations.

7.0 CLOSURE

We appreciate the opportunity to have provided geotechnical services for the Production Industries development and express our interest in providing subgrade verification and materials testing services during construction. We should be contacted if any questions arise regarding the recommendations provided herein.

Very truly yours,

OTWELL MAWBY GEOTECHNICAL, P.C.

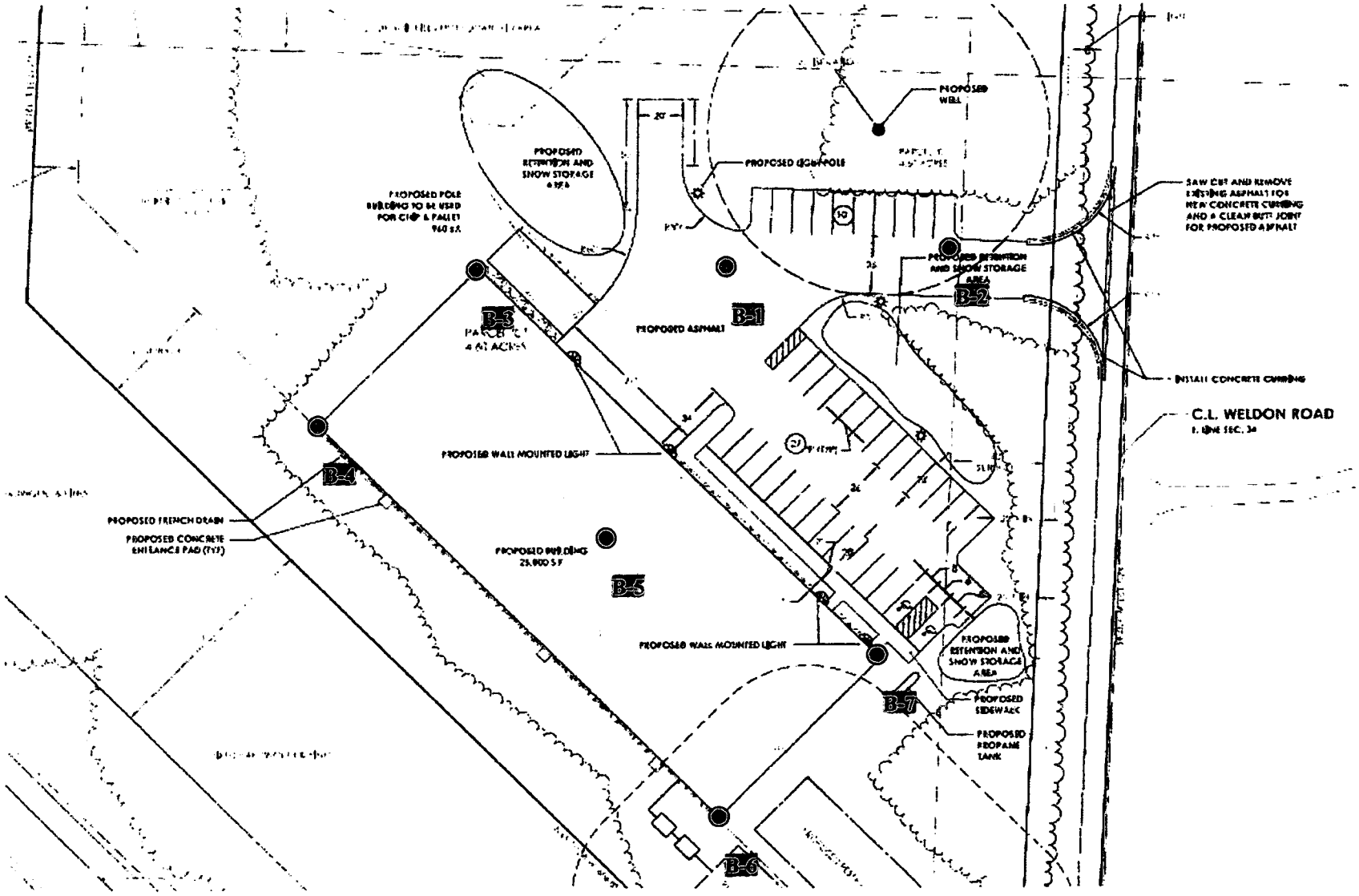
Melzar L. Coulter, P.E.
Sr. Geotechnical Engineer

Roger L. Mawby, P.E.
President

MLC/RLM/mc

APPENDIX A

SITE LOCATION MAP



B-1 ● = Approximate Soil Boring Locations

Production Industries **Weldon Township, Michigan**	**Figure 1: Site Location Map**		
Otwell Mawby Geotechnical, PC **Traverse City, Michigan**	**Project No:** **G15-132**	**Date:** **7/24/15**	**Source:** **Mansfield Land Use Consultants**

APPENDIX B

BORING LOGS

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-1
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Comments
						Surface Conditions: Grass	
						TOPSOIL; light brown; sandy (5")	Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
2,3,5,5	16"	SS				Poorly graded SAND; mostly medium to fine sand, trace silty fines; reddish tan; moist (SP)	
1,4,4,5	12"	SS		5		- grades light brown	
2,3,3,4	18"	SS				- grades slightly coarser and tan	Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
1,2,2,2	14"	SS		10		E.O.B. 10.0' bgl	
				15			
				20			
				25			
				30			

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 794 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: None
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-2
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description		Comments
						Surface Conditions: Grass		
						TOPSOIL; brown; sandy (4")		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
1,1,1,1	12"	SS				Poorly graded SAND; mostly medium to fine sand, trace silty fines; brownish-red; moist (SP)		
2,2,2,2	18"	SS		5		- grades light brown and moist with trace gravel		Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
2,2,2,2	12"	SS						
1,1/12,1	18"	SS				- grades slightly coarser		
				10		E.O.B. 10.0' bgl		
				15				
				20				
				25				
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 791 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: None
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-3
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)	Comments
						Surface Conditions: Grass		
						TOPSOIL; brown; sandy (4")		
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; tan; moist		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
1,1,1,2	20"	SS						
1,1/12,1	12"	SS		5				Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
1,2,2,3	24"	SS				- grades with mostly coarse to fine sand; stone		
1,2,2,4	18"	SS		10				
						- grades wet with mostly medium to fine grained sand		
3,6,6,7	20"	SS		15				
						SILT; mostly silty fines, little fine sand; gray; wet (ML)	1.75	
2,3,6,6	22"	SS		20		E.O.B. 20.0' bgl		
				25				
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 794 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 13.5'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-4
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)
						Surface Conditions: Grass	
						TOPSOIL; brown; sandy (4")	
						Poorly graded SAND; mostly medium to fine grained; tan; moist (SP)	
1,1,2,2	14"	SS					
1,1,1,2	20"	SS		5		- grades with trace fine gravel -grades wet	
1/24	17"	SS					
1,2,2,5	16"	SS				- grades without fine gravel	
				10		Lean CLAY; gray-brown; moist (CL)	
						-sand lens/layer from 13.5'	
5,13,9,15	20"	SS		15			4.5+
						- grades with silt lenses	3.0
4,8,10,16	24"	SS		20		E.O.B. 20.0' bgl	
				25			
				30			

Comments

Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers

Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 790 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 6'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-5
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)	Comments
						Surface Conditions: Grass		
						TOPSOIL; sandy; brown (6")		
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; reddish-brown; moist		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers
2,2,3,4	10"	SS						
2,2,2,3	12"	SS		5		-grades tan		
1,2,1,2	8"	SS						
1,1,3,5	12"	SS				- grades wet		
				10				Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
						LEAN CLAY; gray-brown; moist; with silt seams (CL)		
2,5,8,10	20"	SS					3.5	
				15				
						-grades with wet silt/fine sand lenses	1.75	
5,8,9,9	24"	SS						
				20		E.O.B. 20.0' bgl		
				25				
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 794 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 8'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

Client: Production Industries
Project: Production Industries G15-132
Location: Thompsonville, MI

Boring Log Of: B-7
Date Drilled: 7/1/2015
Drilling Contractor: Shepler
Page 1 of 1

Std. Penetration Resistance (N)	Recovery	Sample Method	Sample Type/Interval	Depth (feet)	Soil Type	Soil Description	Pocket Penetrometer (TSF)	Comments
						Surface Conditions: Grass		
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; tan; moist (SP)		Boring advanced with ATV mounted Geoprobe 7872 DT drill rig with 4¼" hollow stem augers Logged by observation of drill cuttings and recovered samples by USCS visual-manual method, ASTM D 2488.
2,3,2,3	18"	SS						
2,3,4,3	15"	SS		5				
,1,2,3	12"	SS						
2,2,2,3	15"	SS		10		-grades slightly coarser; trace gravel		
						Poorly graded SAND; mostly medium to fine sand, trace silty fines; brown; wet (SP)		
1,1/12,1	18"	SS		15		-2" clay lens @ 13' (qp = 1.5 TSF)		
Weight of hammer	0"	SS		20				
						Poorly graded SAND; mostly medium to fine sand; tan; wet (SP)		
2,2,5,8	10"	SS		25		E.O.B. 25.0' bgl		
				30				

Well Construction / Boring Data

Top of Casing : N/A
Ground Elev.: 791 +/-
Casing: N/A
Screen: N/A
Screen Setting: N/A

Water Encountered: 11.5'
Date: 7/1/2015
Logging Method: Visual-Manual
Development Method: N/A

Driller: ES
Helper: DM
Logged By: BW

Otwell Mawby, P.C.
309 E. Front Street
Traverse City, MI 49684
231-946-5200
Fax 231-946-5216

BENZIE-LEELANAU DISTRICT HEALTH DEPARTMENT
Visit our Website at www.bldhd.org

BENZIE OFFICE
6051 Frankfort Hwy. Suite 100
Benzonia, MI 49616
231-882-4409

LEELANAU OFFICE
7401 E Duck Lake Rd,Suite 100
Lake Leelanau, MI 49653
231-256-0201

COMPUTER ID#: 014946
DATE: 07/24/13
VACANT LAND #: B13-010

==========

SITE SURVEY

MAIL TO NAME: MANSFIELD LAND USE CONSULT
ADDRESS: ATTN: PETRA 830 COTTAGEVIEW D
CITY,STATE,ZIP: SUITE 201 TRAVERSE MI 49684

COUNTY: BENZIE
TOWNSHIP/CITY: WELDON
SECTION: 34

008-10 KM
PROPERTY TAX ID#: 10-12-034~~-003-00 (PART)~~
PROPERTY ADDRESS: WELDON RD
TYPICAL LOT SIZE: 4.6 A
NUMBER OF LOTS: 1

SUBDIVISION:
LOT #:

==========

SOIL CONDITIONS:

SOIL BORINGS INDICATED FINE TO MEDIUM SAND TOPSOIL TO 9"; REDDISH TAN FINE TO MEDIUM SAND TO 30"; REDDISH TAN FINE TO MEDIUM SAND AND GRAVEL TO 36"; REDDISH TAN FINE TO MEDIUM SAND TO 46" AND TAN MEDIUM SAND TO 78". NO ELEVATED GROUNDWATER TABLE WAS ENCOUNTERED.

ON-SITE SEWAGE DISPOSAL: SUITABLE - SEE BELOW

REASONS/SPECIAL CONDITIONS:

THE BOTTOM OF ANY FINAL DISPOSAL SYSTEM MUST BE NO DEEPER THAN 24" BELOW GRADE AT SOIL BOING #1 (SEE MAP) THIS IS DUE TO ELEVATED GROUNDWATER TABLE ON PROPERTIES DUE SOUTH OF THE PROPOSED LAND SPLIT. OBTAIN A SEWAGE DISPOSAL AND WELL PERMIT PRIOR TO CONSTRUCTION. THE EXACT WELL AND SEPTIC SYSTEM SIZE, DESIGN AND LOCATION WILL BE DETERMINED WHEN THE PERMIT IS SECURED.

Sanitarian: _____ Date of Inspection: 07/23/13
J. ERIC JOHNSTON, R.S.

Benzie-Leelanau District Health Department

BENZIE OFFICE
6051 Frankfort Highway
Suite 100
Benzonia, Michigan 49616
Phone (231) 882-4409
Fax (231) 882-2204

LEELANAU OFFICE
7401 E. Duck Lake Road
Suite 100
Lake Leelanau, Michigan 49653
Phone (231) 256-0200
Fax (231) 256-0225

Website: www.bldhd.org

July 24, 2013

Mansfield Land Use Consultants
830 Cottageview Drive
Suite 201
Traverse City, MI 49635

Attn: Ms. Petra Kuehnis, RLA

RE: Production Industries, Inc. Proposed Production Facility Conceptual Approval, Weldon Township, Benzie County
(Property #: Part of 10-12-034-003-00)

Dear Ms. Kuehnis:

This Department has received and reviewed the proposal for a new production facility for Production Industries, Inc. on the Northwest corner of the intersection of Cadillac Highway and Weldon Road. On July 22 and 23, 2013, our Department preformed soil analysis in the location of the proposed sewage disposal system, per the July 17, 2013 Site and Dimension Plan you provided. The soil conditions encountered are suitable for the proposed facility.

A sewage disposal and well permit must be acquired from this Department prior to construction.

If you have any questions regarding this matter, please feel free to write or call me at ejohnston@bldhd.org or (231) 882-2109.

Sincerely,

J. Eric Johnston, R.S.
Environmental Health Sanitarian
Benzie/Leelanau District Health Department

Enclosures

SOIL BORING RESULTS

(Production Industries, Inc. Proposed Production Facility Site,
Northwest Corner of Cadillac Hwy. and Weldon Road, Weldon Township)
(Property Number: Part of 10-12-034-003-00 (SE corner of Property)

SB #1

Fine to Medium Sand Topsoil 0" to 9"
Red Fine to Medium Sand 9" to 27"
Reddish Tan Fine to Medium Sand 27" to 32"
Reddish Tan Medium Sand 32" to 47"
Tan Fine to Medium Sand 47" to 78"
(SUITABLE)

SB #2

Fine to Medium Sand Topsoil 0" to 8"
Reddish Tan Fine to Medium Sand 8" to 42"
Reddish Tan Fine to Medium Sand with Gravel 42" to 44"
Tan Medium Sand 44" to 59"
Light Brown Medium Sand 59" to 66"
Tan Medium Sand 66" to 78"
(SUITABLE)

SB #3

Fine to Medium Sand Topsoil 0" to 9"
Reddish Tan Fine to Medium Sand 9" to 30"
Reddish Tan Fine to Medium Sand and Gravel 30" to 36"
Reddish Tan Fine to Medium Sand 36" to 46"
Tan Medium Sand 46" to 78"
(SUITABLE)

SB #4

Fine to Medium Sand Topsoil 0" to 19
Reddish Brown Fine to Medium Sand 19" to 33"
Reddish Tan Fine to Medium Sand 33" to 62"
Tan Fine to Medium Sand 62" to 78"
(SUITABLE)

NOTES:

The soil boring locations are as follows (All measurements are taken from the Surveyor's pin located in the Southeast corner of the property, next to an Underground Electric Sign):

SB#1 is 105' North and 75' West
SB#2 is 155' North and 120' West
SB#3 is 184' North and 95' West
SB#4 is 125' North and 55' West

014946

Computer ID # [redacted]

Site Evaluation# 13-010

BENZIE - LEELANAU DISTRICT HEALTH DEPARTMENT

Benzie County Office

6051 Frankfort Hwy Suite100

Benzonia, MI 49616

Phone: (231) 882-2103 Fax: (231) 882-2204 www.bldhd.org

SITE SURVEY / VACANT LAND EVALUATION (Perc Test)

Check here if you would like to be present at inspection.

"*" indicates required fields. To see all required fields click on the Highlight Fields button above.

*Property Tax ID# 10-12-034-003-00 (part of, pending land di | Existing Home No

*Type of Evaluation Individual Site Survey - 1 Lot | *Proposed Use Commercial

Property Dimensions a 4.6 acre triangle. 638'x657'x483' +/- | Date Parcel Recorded pending land div

*Location of Parcel / Street Name / Address Weldon Road

*Directions to site: (Include name of nearest crossroads) on Weldon Road approximatly 200 feet north of the intersection with M-115 on the west side of the road. the property begins at the underground electric sign and extends 638 feet north.

*County and Township Benzie -Weldon | Section 34 | Subdivision N/A | Lot # N/A

*Owner Name Crystal Enterprises, Inc Attn: Kirk Davidson | e-mail [redacted]

* Address 12500 Crystal Mountain Drive

*City Thompsonville | *State MI | *Zip Code 49683-9742

Purchaser's Name Production Industries, Inc. Attn: Jay DeYoung | e-mail [redacted]

Address 1048 Main Street

City Frankfort | State MI | Zip Code 49635

E-Mail to | *Name Mansfield Land Use Consultants Attn: Petra | e-mail [redacted]

Address 830 Cottageview Drive Suite 201

City Traverse City | State MI | Zip Code 49684

I hereby authorize the Benzie-Leelanau District Health Department to conduct an evaluation at the above location.

*Signed By [signature] Petra Kuehnis, RLA | Current Date 7/22/13

This request will be processed when the completed application and the correct fee are received.

Please make check payable to: BLDHD

FOR HEALTH DEPARTMENT USE ONLY

X Site Evaluation Fee: $307 - 1 Parcels@ $307/parcel = $ 307

Subdivision / Site Condo Fee Up to 20 Lots = $1270

over 20 lots: $1270 + ($55x _____ additional lots) = $_____

Other Fee Amount

Date Fee Paid: 1-24-13

Cash Check# 3046

Paid By: CHADCO, LLC

Receipt#: 613936

04/01/2013

Include on Sketch:

1. **Property lines / dimensions**
2. **Location of any buildings**
3. **Well locations (old and/or new) and distance to septic/drainfield**
4. **Neighboring well/septic system distance from your well/ septic system**
5. **Septic tank & drainfield location (s)-new and/or existing**
6. **Location(s) of streets/ roads**
7. **Location(s) of body(s) of water****
8. **Location(s) of underground fuel storage tanks**
9. **Driveway location**
10. **Any buried utilities (cable, gas, electric, etc.)**
11. **Critical Dunes on property**

****If your construction project is within 400 feet of the Betsie River, Little Betsie River, or Dair Creek, the Michigan Department of Natural Resources needs to be contacted to obtain a Scenic Rivers Act permit. Call (989) 732-3541 ext. 5088**

N
W E
S

*Detailed drawing included? Yes

Use additional sheet if necessary

FOR HEALTH DEPARTMENT USE ONLY

Soil & Site Conditions:

On-Site Sewage Disposal: __ Suitable __Unsuitable __Conventional _ Alternative __Holding Tanks

Reasons / Special Conditions:

Date

Environmental Health Representative

Commercial Application Supplement

(MUST be completed for commercial establishments)

Please be as descriptive as possible when indicating the following.
Attach additional pages if necessary.
You may be asked to submit architectural or engineered drawings.

Property Tax ID#:	10-12-034-003-00 (part of, pending land d	Property Address:	Weldon Road

Type of building: (office, food service, etc)	industrial manufacturing
If existing, current use of building.	N/A
Proposed or future use of building:	industrial manufacturing

Estimated number of employees per day:	15-30	Number of shifts per day.	1-2	Estimated number of public/ patrons per day.	0
☒ Private Water Well ☐ Municipal Water		Estimated number of hours per day of operation.	10-18	Estimated number of days per week of operation.	5

(Check with the Benzie County Building Department regarding fixture requirements.)

List all Fixtures: (number of sinks, lavatories, showers, etc.)	2-3 accessible bath rooms (2-3 toilets, 2-3 sinks) 1-2 drinking fountains 1 slop sink 1 eye wash 1 water heater 1 kitchenette sink with garbage desposal

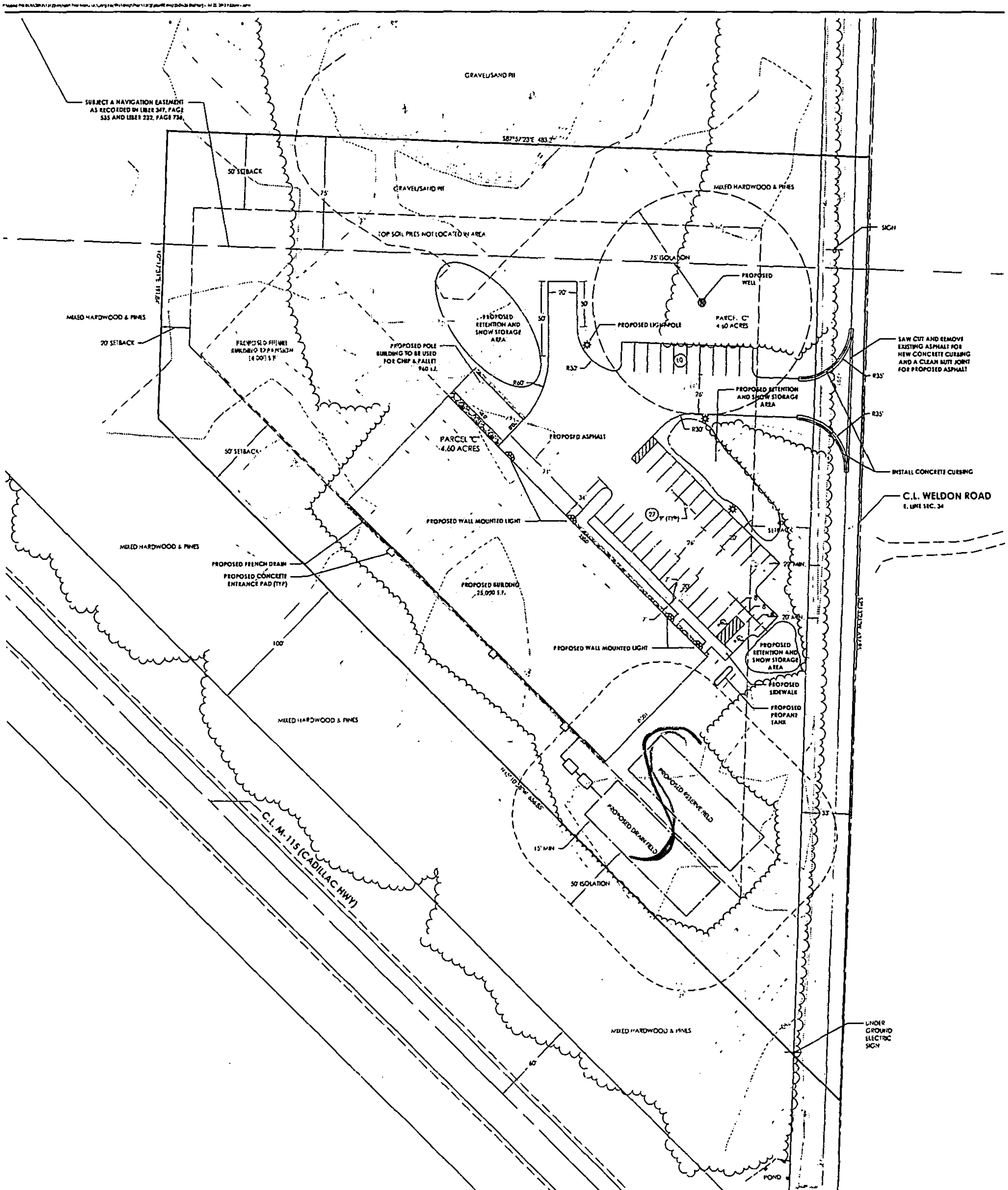
Will any 'water-using ' fixtures be available to the public ?

☒ NO

☐ YES - If yes, list what fixtures and how many

List fixtures available to public (number of sinks, lavatories, showers, etc.)	N/A

Lot / property / size dimensions (survey is helpful if not known) and if the property 'is to be' or 'has been' split - if applicable, indicate size and date of split.	see attached survey and proposed site plan



OPEN SPACE CALCULATIONS

4.60 Acres gross
0.47 Acres Weldon Road R.O.W
4.13 Acres net
0.6 Acres proposed buildings
0.50 Acres proposed asphalt
0.02 Acres proposed concrete
3.01 Acres open space or 73% open space

NOTES:

- ALL ON SITE LIGHTING SHALL BE CONTAINED TO THE SITE FULL CUT OFF AND COMPLY WITH DARK SKY STANDARDS
- DUMPSTER TO BE LOCATED INSIDE BUILDING
- INSTALL SILT FENCE WHERE REQUIRED

NOTE:
Property boundaries, land contours, physical features and the like illustrated on this plan are exhibited for planning purposes only. Mansfield Land Use Consultants makes no guarantee to the correctness nor the completeness of this information.

SHT 5 OF 1 | 13122 | PRELIMINARY

Production Industries, Inc.
Proposed Production Facility
Site & Dimension Plan
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

0	7.1*.13	dim	mmm	dim	Original design

Mansfield
Land Use Consultants
830 Cottageview Dr., Ste. 201
P.O. Box 4015
Traverse City, MI 49685
Phone: 231-946-9310
www.maaeps.com
info@maaeps.com

Septic System & Well Sizing

Bldg ft^2 = 25,000 ft^2

not realistic → Office Bldg Calc (per ME criteria) = 25,000 × 1/10 = 2500 gal/day

30 Employees w/ 1 shift

using → Factory Calc (per ME Criteria) = 30 employees × 35 gal/day
= 1050 gal/day

35 employee × 35 gal/day =
1225 gal/day

Tank Sizing 2 @ 1200 = 2400

DF Sizing 1225 ÷ .75 (Assumed) 1633.33 ft^2

Computer ID #_____ Site Evaluation# _____

BENZIE - LEELANAU DISTRICT HEALTH DEPARTMENT

Benzie County Office
6051 Frankfort Hwy Suite100
Benzonia, MI 49616
Phone: (231) 882-2103 Fax: (231) 882-2204 www.bldhd.org

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*Owner Name Crystal Enterprises, Inc Attn: Kirk Davidson e-mail

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Address 1048 Main Street

City Frankfort State MI Zip Code 49635

E-Mail to *Name Mansfield Land Use Consultants Attn: Petra e-mail

Address 830 Cottageview Drive Suite 201

City Traverse City State MI Zip Code 49684

I hereby authorize the Benzie-Leelanau District Health Department to conduct an evaluation at the above location.

*Signed By Petra Kuehnis, RLA Current Date 7/22/13

This request will be processed when the completed application and the correct fee are received.

Please make check payable to: BLDHD

FOR HEALTH DEPARTMENT USE ONLY

X **Site Evaluation Fee: $307** 1 Parcels@ $307/parcel = $ 307

__ **Subdivision / Site Condo Fee Up to 20 Lots = $1270**

__over 20 lots: $1270 + ($55x _____additional lots) = $_____

__ Other Fee Amount

Date Fee Paid: _____

_Cash _Check#_____

Paid By:_____

Receipt#:_____

04/01/2013

Include on Sketch:

1. **Property lines / dimensions**
2. **Location of any buildings**
3. **Well locations (old and/or new) and distance to septic/drainfield**
4. **Neighboring well/septic system distance from your well/ septic system**
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7. **Location(s) of body(s) of water****
8. **Location(s) of underground fuel storage tanks**
9. **Driveway location**
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11. **Critical Dunes on property**

****If your construction project is within 400 feet of the Betsie River, Little Betsie River, or Dair Creek, the Michigan Department of Natural Resources needs to be contacted to obtain a Scenic Rivers Act permit. Call (989) 732-3541 ext. 5088**

N
W E
S

*Detailed drawing included? Yes

Use additional sheet if necessary

FOR HEALTH DEPARTMENT USE ONLY

Soil & Site Conditions:

Soil borings indicated fine to medium Sand Topsoil to 9", Reddish Tan fine to medium Sand to 30", Reddish Tan fine to medium Sand typical to 36", Reddish Tan fine to medium Sand to 46" and Tan medium Sand to 78". No elevated groundwater table was encountered.

On-Site Sewage Disposal: ✓Suitable ✓Conventional _ Alternative __Holding Tanks __Unsuitable

Reasons / Special Conditions:

The bottom of any final disposal system must be no deeper than 24" below grade at Soil Boring #1 (see map.), this is due to elevated groundwater table on properties due south of the proposed (and split) obtain a sewage disposal and well permit prior to construction. The exact ~~well~~ septic system size, design, and location will be determined when the permit is secured.

7/23/2013
Date

J. Emil [illegible] R.S.
Environmental Health Representative

Commercial Application Supplement

(MUST be completed for commercial establishments)

Please be as descriptive as possible when indicating the following.
Attach additional pages if necessary.
You may be asked to submit architectural or engineered drawings.

Property Tax ID#:	10-12-034-003-00 (part of, pending land d	Property Address:	Weldon Road

Type of building: (office, food service, etc)	industrial manufacturing
If existing, current use of building.	N/A
Proposed or future use of building:	industrial manufacturing

Estimated number of employees per day:	15-30	Number of shifts per day.	1-2	Estimated number of public/ patrons per day.	0
☒ Private Water Well ☐ Municipal Water		Estimated number of hours per day of operation.	10-18	Estimated number of days per week of operation.	5

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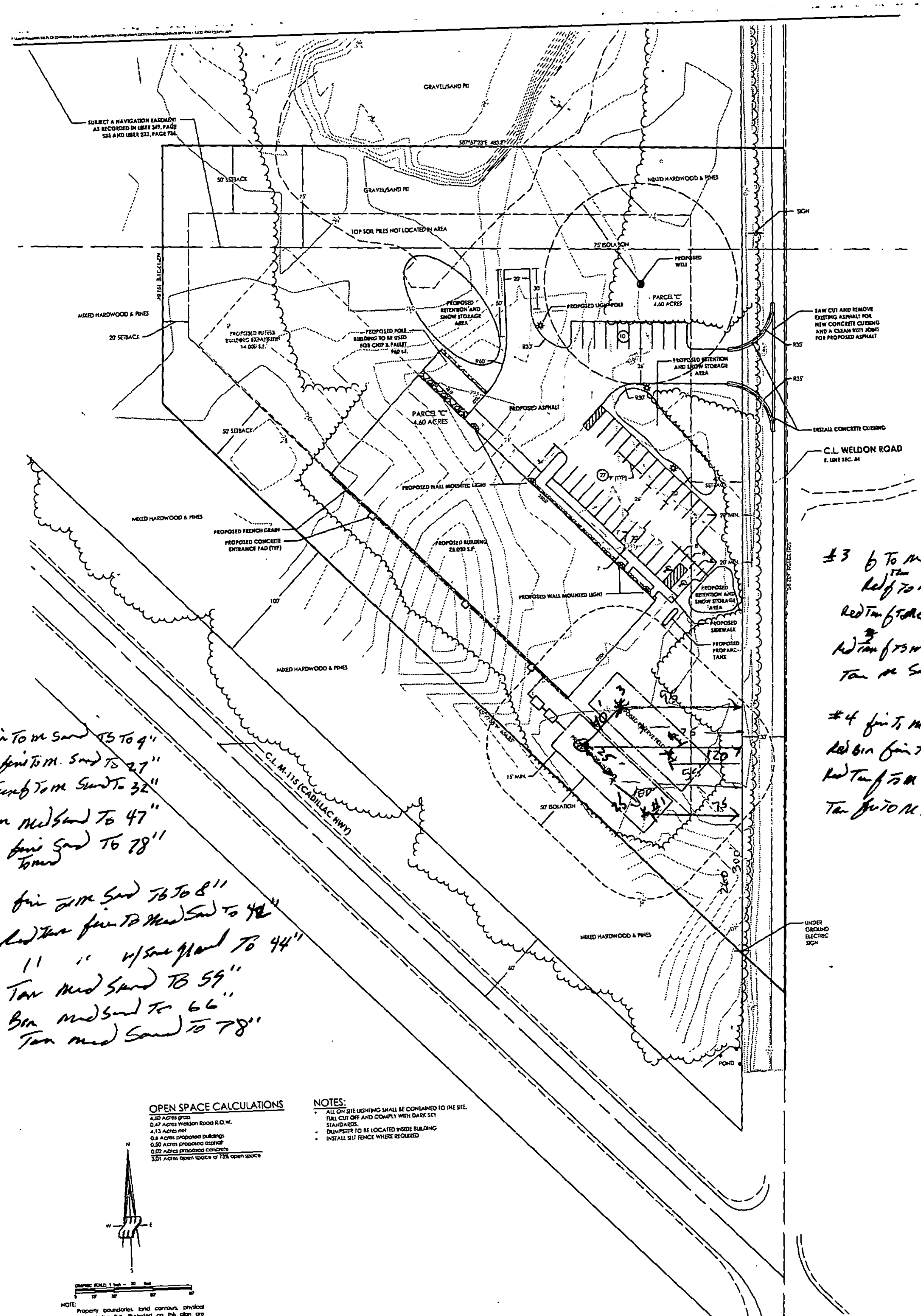

#1 fine To m Sand TS To 9"
Red fine To m. Sand To 27"
Red Tan f To m Sand To 32"
Red Tan Med Sand To 47"
Tan fine Sand To 78"

#2 fine To m Sand TS To 8"
Red Tan fine To Med Sand To 42"
" " w/ Some gravel To 44"
Tan Med Sand To 55"
Lt Brn Med Sand To 66"
Tan Med Sand To 78"

#3 f To m Sand TS To 9"
Red Tan f To m Sand To 30"
Red Tan f To Med Sand + G To 36"
Red Tan f To m Sand To 46"
Tan m Sand To 78"

#4 fine To m Sand TS To 19"
Red Brn fine To m Sand To 33"
Red Tan f To m Sand To 62"
Tan fine To m Sand To 78"

OPEN SPACE CALCULATIONS

4.60 Acres gross
0.47 Acres Weldon Road R.O.W.
4.13 Acres net
0.6 Acres proposed buildings
0.50 Acres proposed asphalt
0.02 Acres proposed concrete
3.01 Acres open space or 73% open space

NOTES:

- ALL ON SITE LIGHTING SHALL BE CONTAINED TO THE SITE. FULL CUT OFF AND COMPLY WITH DARK SKY STANDARDS.
- DUMPSTER TO BE LOCATED INSIDE BUILDING
- INSTALL SILT FENCE WHERE REQUIRED

NOTE: Property boundaries, land contours, physical features and the like illustrated on this plan are exhibited for planning purposes only. Mansfield Land Use Consultants makes no guarantee to the correctness nor the completeness of this information.

1" : 100'

SHT 5 OF 1 | 13122 | PRELIMINARY

Production Industries, Inc.
Proposed Production Facility
Site & Dimension Plan
Section 34, Town 25 North, Range 14 West
Weldon Township, Benzie County, Michigan

0	7.12.13	dlm	mmm	dlm	Original design

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Phone: 231-946-9310
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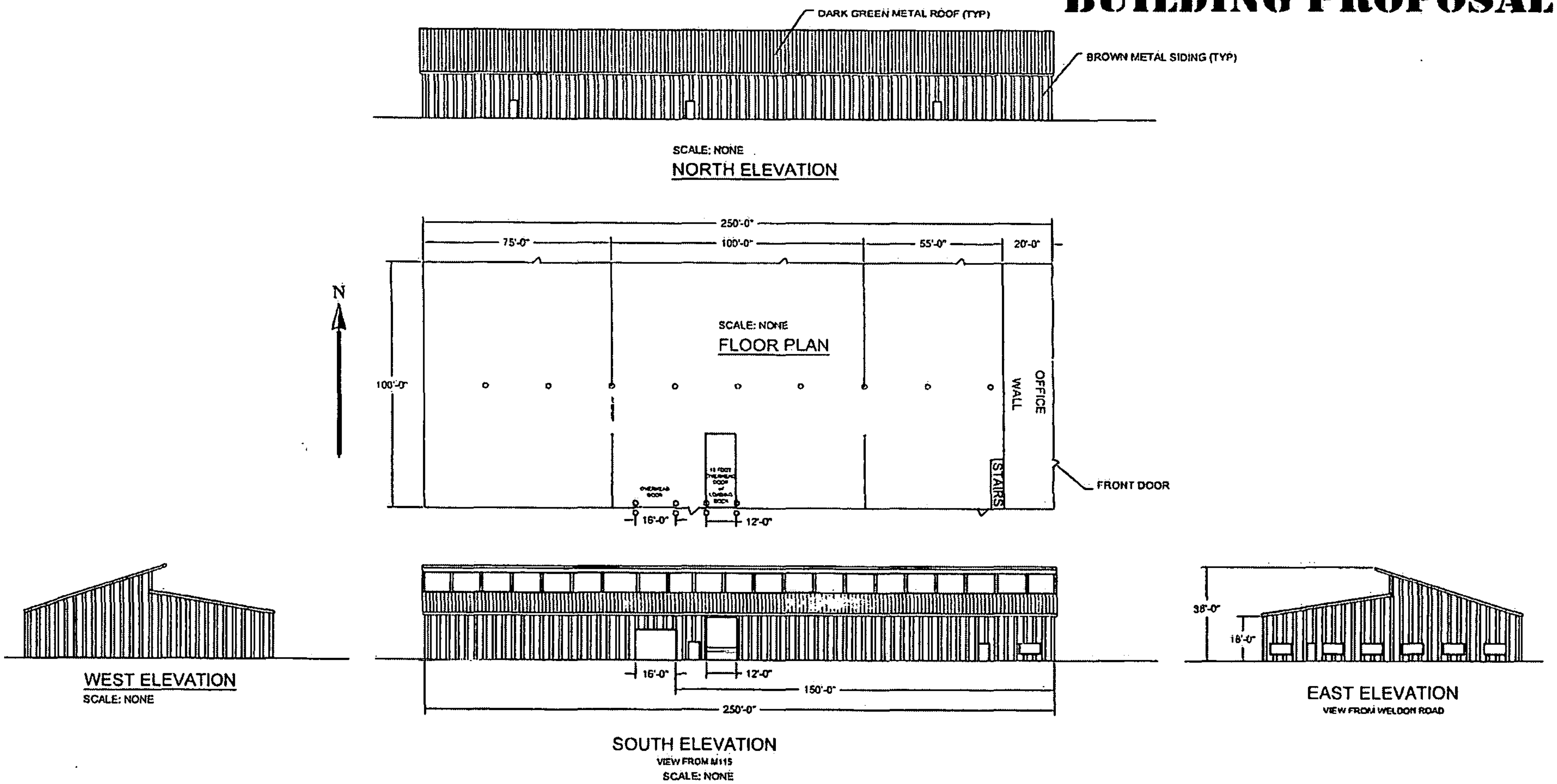
info@maseps.com

BUILDING PROPOSAL



REV	BY/DATE	DESCRIPTION
H		
G		
F		
E		
D		
C		
B		
A		

PRODUCTION INDUSTRIES INC.

TITLE: BUILDING PROPOSAL FLOOR PLAN AND ELEVATIONS

FRACTIONAL ±0.015 · 2-PLACE ±0.010 · 3-PLACE ±0.005

DRAWN JWG · DATE 08-24-13 · SHEET 1 OF 1 · REV -

CHECKED - · DATE -

SIZE D · SCALE NONE · DWG NO. BLDG PROP

APetra

[redacted]

Production Industries

Mansfield

115 & Weldon Rd

Septic fee $ 445.00
+ 91.00
536.00

well fee $ 269.00
Type III
Type II $498.00

Site Survey fee $ 307

Special Use Pre-application for Production Industries, Inc. and Chadco II, LLC

25 June 2013

Concept statement for the project:

At this time Production Industries, Inc. is seeking a special use permit to build a new manufacturing facility in Weldon Township. Production Industries, Inc. has been in business for over 60 years; in 2005 it was acquired by Frost, Inc. a family owned group of business' that has been in the Grand Rapids area for 98 years (see the attached Frost Inc. timeline). Production Industries currently leases two buildings (totaling just over 23,000 sq.ft.) in the City of Frankfort. Production Industries manufacturers engineered chain products for almost all industries (food, automotive, power generation, paper, wood, waste treatment, aluminum, etc).

Chadco II, LLC, a sister company of Frost Inc., wants to purchase land currently owned by Crystal Mountain to relocate and build a new facility for Production Industries at the northwest corner of Weldon Road and M115 in Weldon Township. The land in question is just over 4 acres between M115 and the airport right of way and West of Weldon Road. A purchase agreement for the land has been signed by Chadco II, LLC and agreed to in principle by the current owners. With this agreement a large tree filled setback to M115 would remain and a tree filled set back off of Weldon road would also remain except for any entrance, exit, signage or building requirements. The entrance to the facility would be approximately 600' North of M115. The nearest building to the proposed facility is the gas station at the Southeast corner of Weldon and M115. This location is desirable because of the proximity to M115 and the three phase power required to run our machines. The proposed facility would house our sales and engineering offices and all manufacturing and assembly operations. We are currently evaluating building constructions, but are initially considering a metal framed building with metal siding and roofing with passive solar lighting and heating along with any other "green" technologies which include storm water runoff and other items that can be economically justified into our manufacturing facility which will help minimize the environmental impact and reduce operating costs. Production Industries Inc. and Chadco II, LLC is committed to being a good neighbor and environmental steward.

The preliminary lot layout includes a 25,000 sq. foot building with possible future expansion up to 35,000 total sq. feet. In addition the initial layout includes a detached pole building approximately 20' x 50' for welding fixtures, chip and pallet storage. The main facility would initially utilize propane heat until natural gas is available, a well for potable water and a septic system. There is minimal water usage at the facility (bathroom use only). We are working on retaining an engineering firm to start the initial site work and required soil testing.

Production Industries utilizes a wide range of manufacturing equipment including, but not limited to: numerically controlled (N.C.) and manual lathes and mills, metal welding and cutting equipment, stamping, forming and assembly presses. This facility uses water based coolant for machining operations and produces no hazardous waste. There is minimal noise from the machining, stamping and forming operations. Machine chips, stamping and cutting scrap material are disposed of through metal recyclers. With the new facility we will also update and replace some of our existing manufacturing equipment to better meet our customer's needs and grow the business.

The employee base in the new facility would be an estimated maximum of 30 people between the shop and office. The current number of employees is seven (7), but it has been over 35 in previous years. This would primarily be a first shift operation with the possibility of a limited second shift in the future. We receive steel and components via dedicated delivery trucks or common carriers and ship out finished product mostly on common carriers. We generally only receive and ship product during the day and are usually limited to just three or four trucks coming to the facility daily.

Project Phasing:

Zoning and regulatory approvals, bids and plans completed by the end of the 3rd quarter of '13.

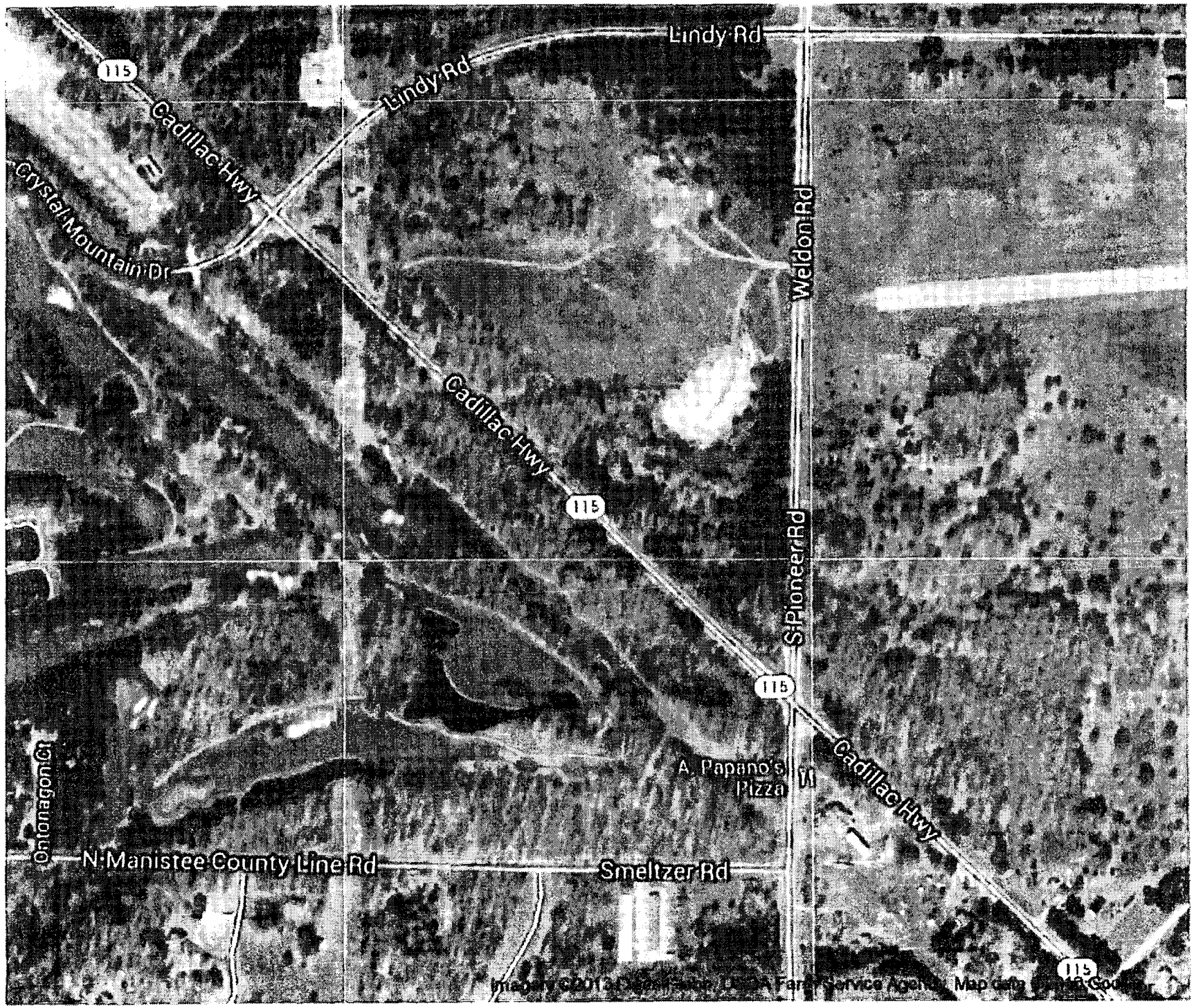
Site work and start of construction early 4th quarter of '13.

Enclosed building by 4th quarter of '13.

Finish construction 1st quarter of '14.

Moving equipment 1st quarter to 2nd quarter of '14.

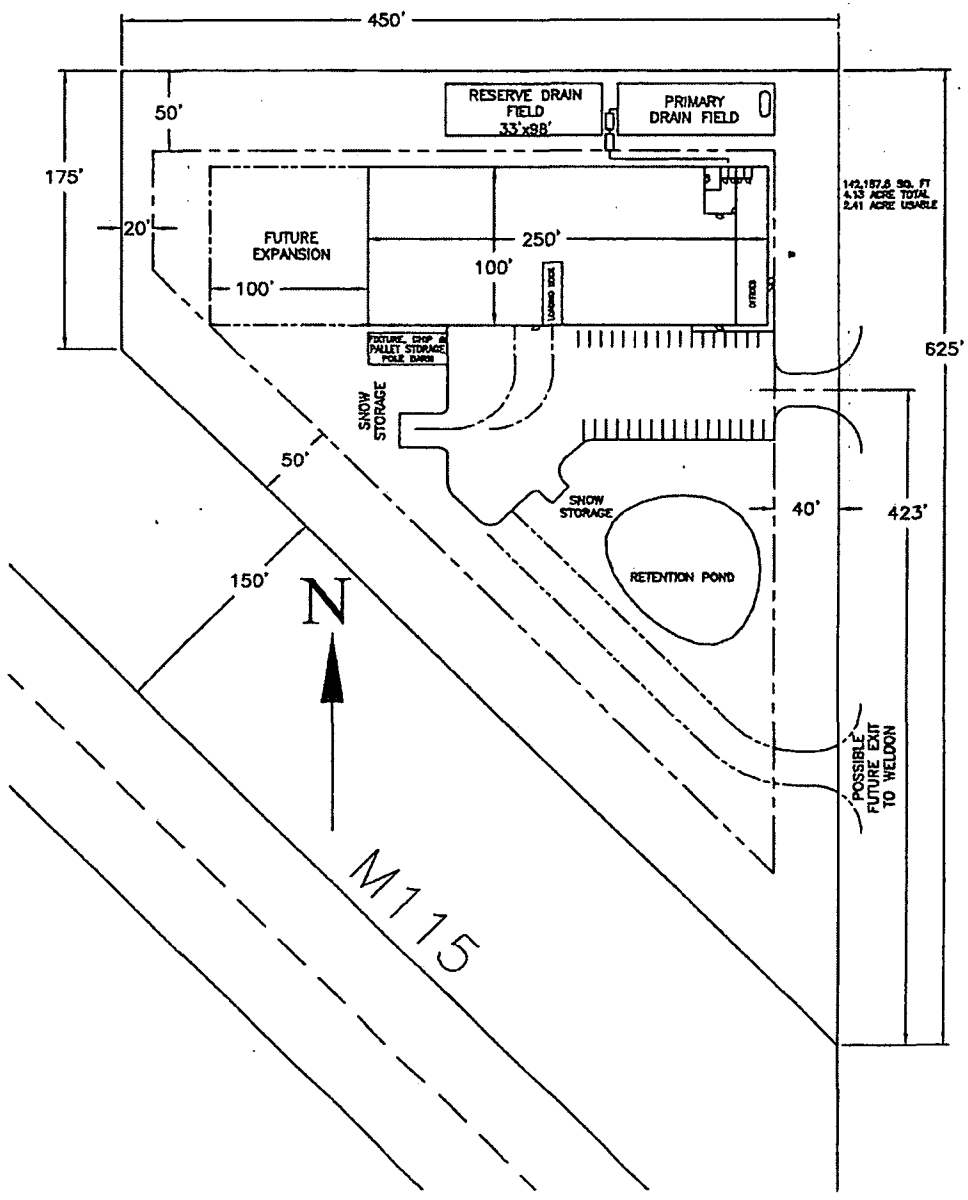
Complete move in 2nd quarter of '14.

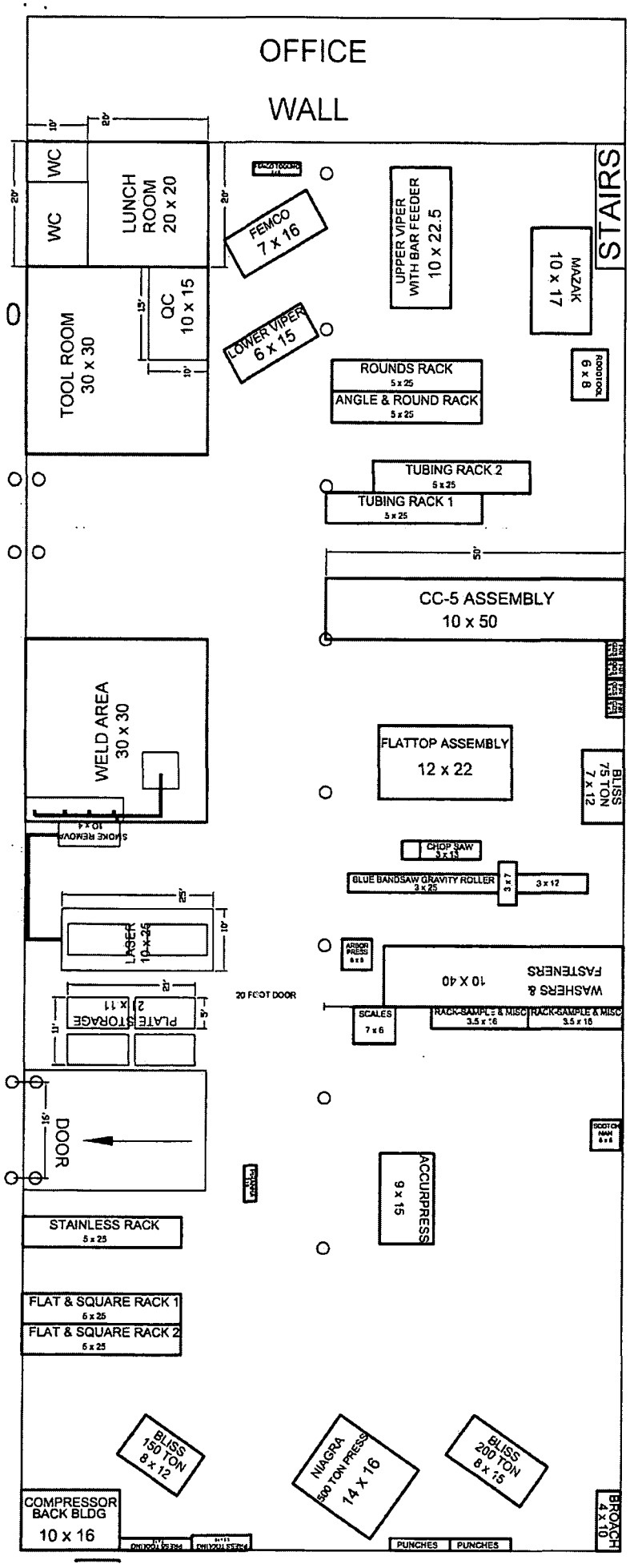

Lindy Rd
Lindy Rd
115
Cadillac Hwy
Crystal Mountain Dr
Weldon Rd
Cadillac Hwy
115
S Pioneer Rd
115
A. Papano's Pizza
Cadillac Hwy
Ottawagon
N Manistee County Line Rd
Smeltzer Rd
115
Imagery ©2014 DigitalGlobe, USDA Farm Service Agency, Map data ©2014 Google

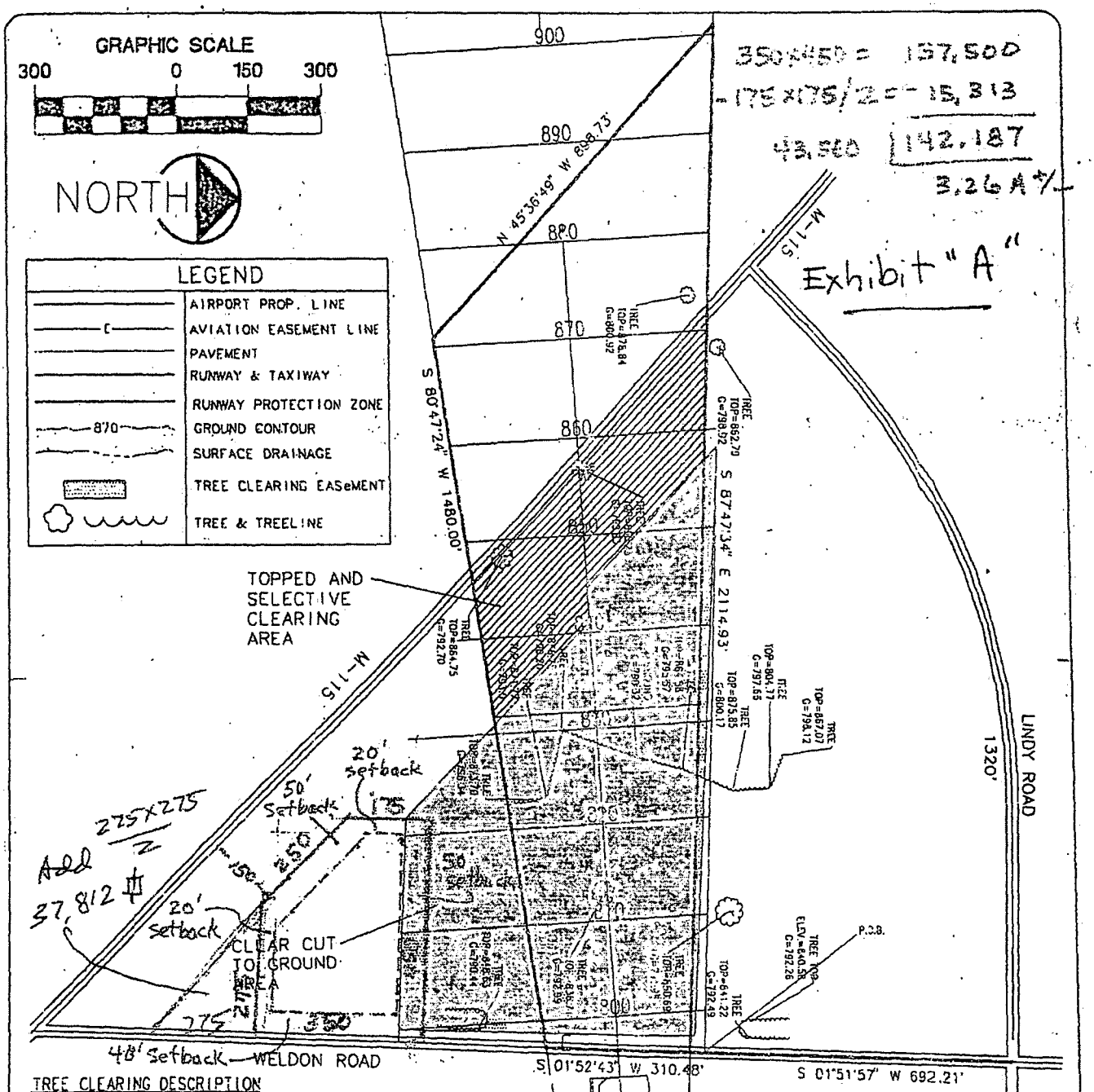
Cadillac Hwy
Cadillac Hwy
Cadillac Hwy
115
S Pioneer Rd
Weldon Rd
Weldon Rd
© 2013 DigitalGlobe, Inc., data ©2013

PRELIMINARY LOT LAYOUT FOR PRODUCTION INDUSTRIES, INC. FACILITY

24 JUNE 2013




OFFICE
WALL
WC
WC
LUNCH ROOM 20 x 20
TOOL ROOM 30 x 30
QC 10 x 15
FEMCO 7 x 16
LOWER VIPER 6 x 15
UPPER VIPER WITH BAR FEEDER 10 x 22.5
MAZAK 10 x 17
STAIRS
ROUNDS RACK 5 x 25
ANGLE & ROUND RACK 5 x 25
TUBING RACK 2 5 x 25
TUBING RACK 1 5 x 25
CC-5 ASSEMBLY 10 x 50
WELD AREA 30 x 30
FLATTOP ASSEMBLY 12 x 22
BLISS 75 TON 7 x 12
CHOP SAW 3 x 13
GLUE BANDSAW GRAVITY ROLLER 3 x 25
3 x 12
LASER 10 x 25
PLATE STORAGE 21 x 11
20 FOOT DOOR
WASHERS & FASTENERS 10 X 40
SCALES 7 x 6
RACK-SAMPLE & MISC 3.5 x 16
DOOR
ACCURPRESS 9 x 15
STAINLESS RACK 5 x 25
FLAT & SQUARE RACK 1 5 x 25
FLAT & SQUARE RACK 2 5 x 25
BLISS 150 TON 8 x 12
NIAGRA 500 TON PRESS 14 x 16
BLISS 200 TON 8 x 15
COMPRESSOR BACK BLDG 10 x 16
PUNCHES
PUNCHES
BROACH 4 x 10



TREE CLEARING DESCRIPTION

ON THE DESCRIPTION (WHICH IS WITHIN THE ABOVE DESCRIPTION) TREES MAY BE CUT TO GROUND LEVEL AND MAINTAINED AT GROUND LEVEL.

BEGINNING AT THE NE CORNER OF THE S1/2 OF THE NE1/4 OF THE SEI/4 OF SECTION 34, T25N, R14W. THENCE WESTERLY ALONG THE N. LINE LINE OF THE S1/2 OF THE NE1/4 OF THE SE1/4 OF SECTION 34, T25N, R14W; TO A LINE WHICH IS 200' NORTHEASTERLY OF AND MEASURED AT RIGHT ANGLES TO AND PARALLEL WITH THE CENTER LINE OF M-115. THENCE SOUTHEASTERLY ALONG SAID PARALLEL LINE TO THE CENTER LINE OF RUNWAY EXTENDED WEST. THENCE EASTERLY ALONG SAID EXTENDED CENTER LINE TO A LINE WHICH IS 250' NORTHEASTERLY OF AND MEASURED AT RIGHT ANGLES TO AND PARALLEL WITH THE CENTER LINE OF M-115. THENCE SOUTHEASTRELY ALONG A LINE WHICH IS 250' NORTHEASTERLY OF AND MEASURED AT RIGHT ANGLES TO AND PARALLEL WITH THE CENTER LINE OF M-115 TO THE S1/8 LINE OF SAID SECTION. THENCE EASTERLY ALONG THE S1/8 LINE OF SAID SECTION TO THE EAST LINE OF SAID SECTION. THENCE NORTHERLY ALONG THE EAST LINE OF SAID SECTION TO THE POINT OF BEGINNING.

EASeMENT DESCRIPTION

THE S1/2 OF THE NE1/4 OF THE SE1/4 OF SECTION 34, T25N, R14W; EXCEPT THAT PART INCLUDING THE 120 FT RIGHT OF WAY OF THE RECORD FOR HIGHWAY M115; AND EXCEPT THAT PART OF THE S1/2 OF THE NE1/4 OF THE SE1/4 OF SAID SECTION 34 WHICH LIES SOUTHWESTERLY OF SAID M115 RIGHT OF WAY.

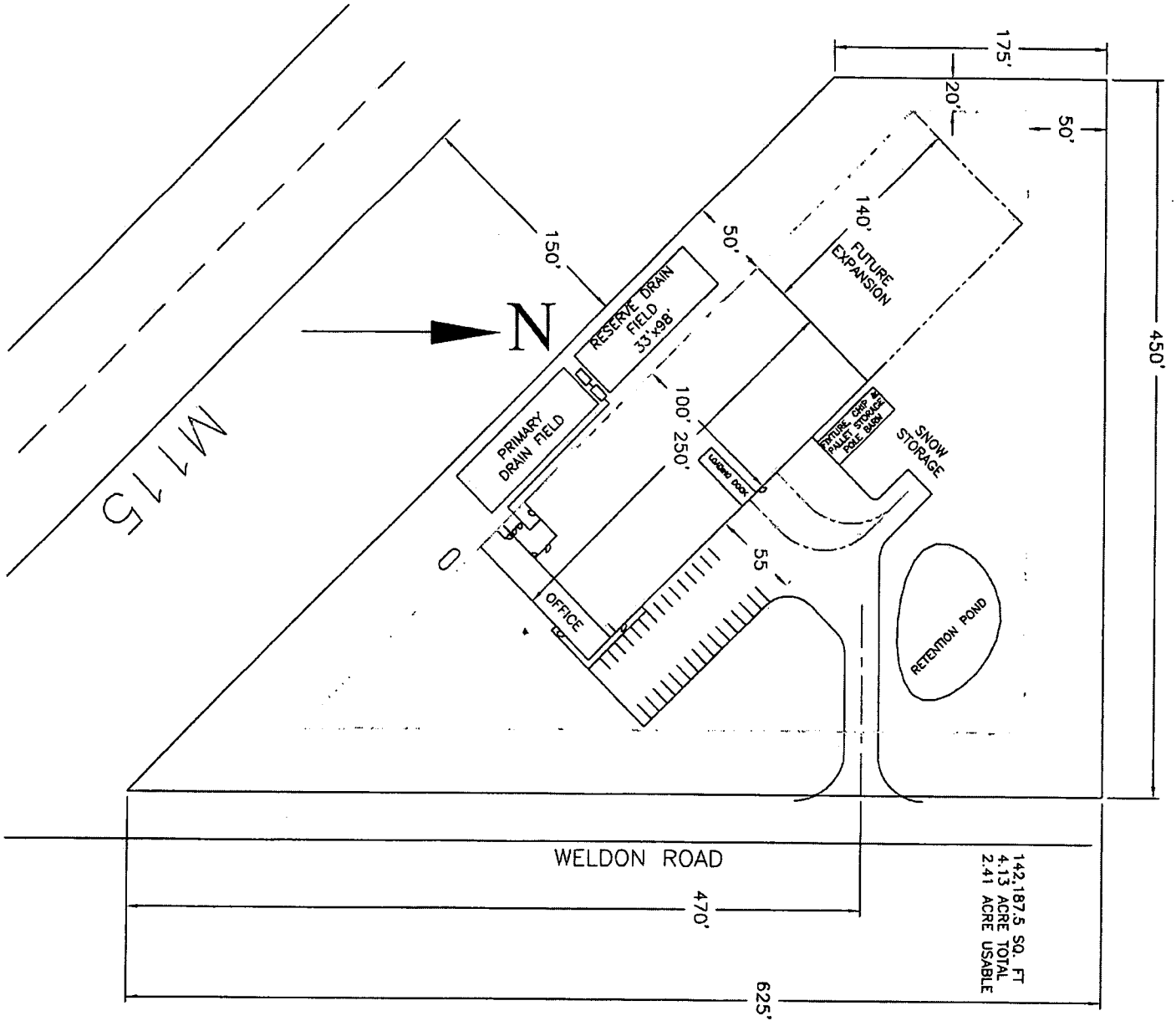
TAX PARCEL NO. 10-12-034-008-00
CRYSTAL ENTERPRISES, INC.
12500 CRYSTAL MT. DR.
THOMPSONVILLE, MI. 49683
16300 WINDY KNOLL
HOLLY, MI. 48442

M103129\PDS\EXIBIT-X1

TITLE	THOMPSONVILLE AIRPORT	DATE 10/07/98	JOB NO. M103129
	URS Greiner	DR. RJC	SKETCH NO. 1
	GRAND RAPIDS, MI., FARMINGTON HILLS, MI., PETOSKEY, MI., INDIANAPOLIS, IN.	CK. PWS	

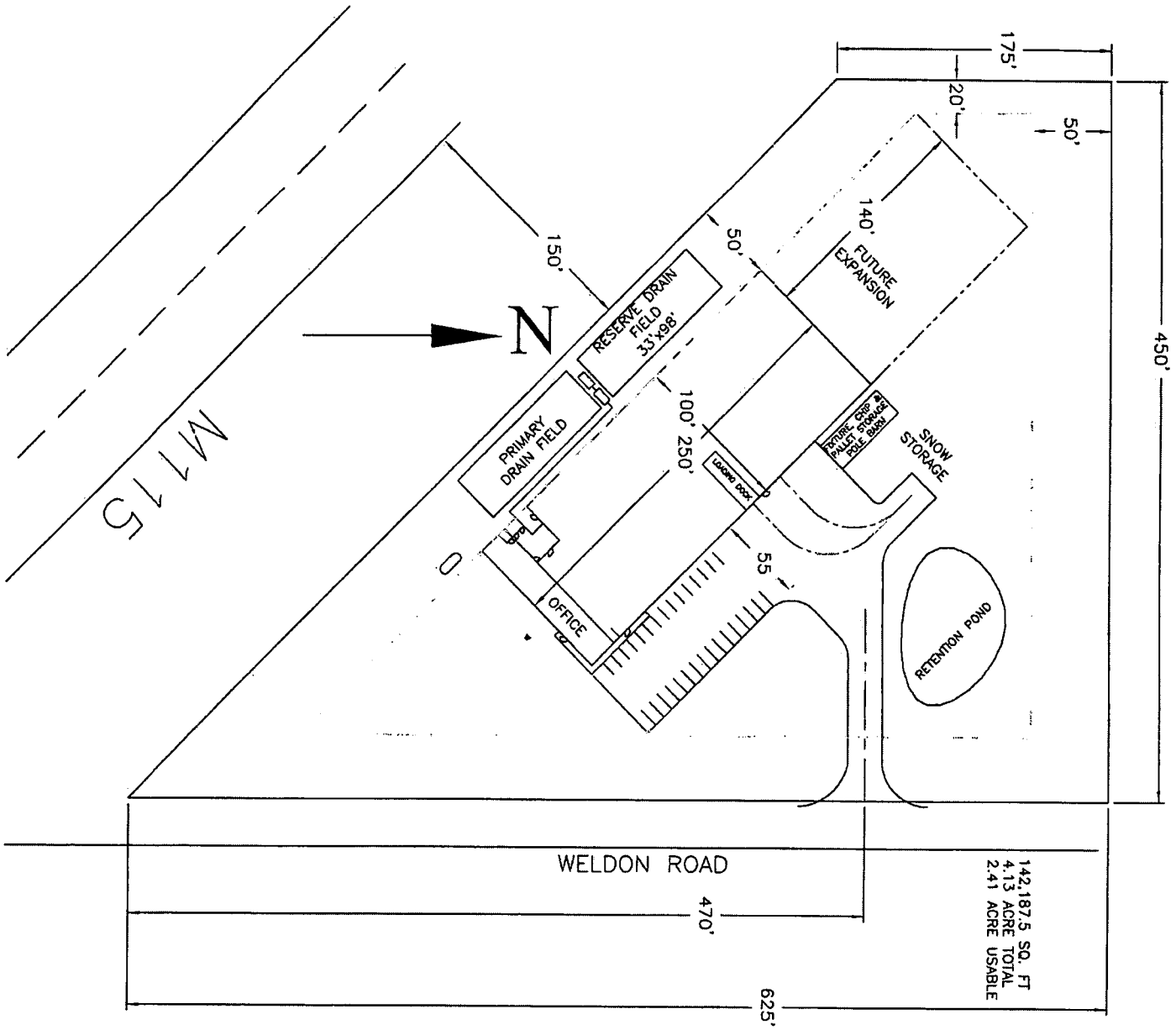
PRELIMINARY LOT LAYOUT FOR PRODUCTION INDUSTRIES, INC. FACILITY

10 JULY 2013



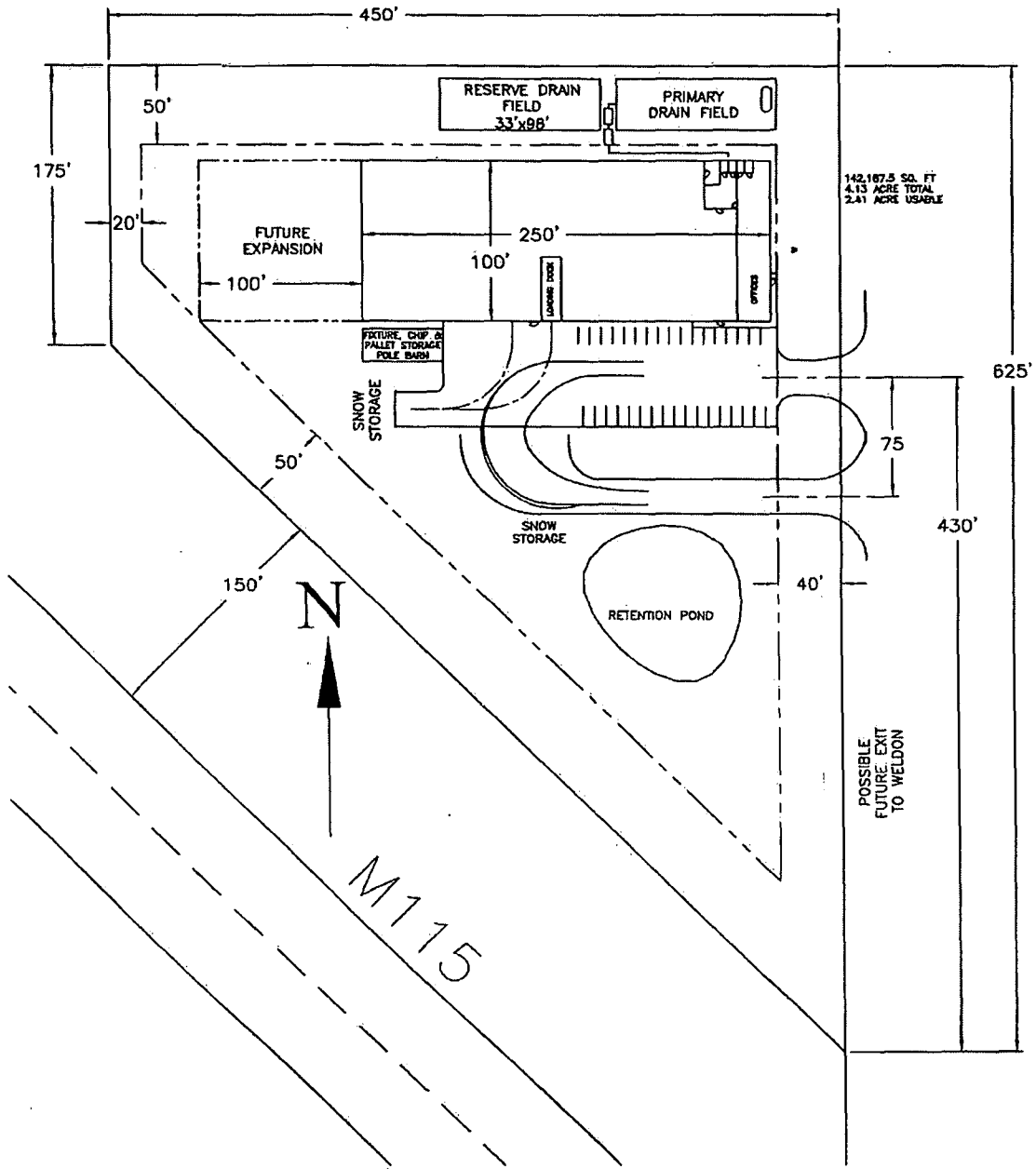
PRELIMINARY LOT LAYOUT FOR PRODUCTION INDUSTRIES, INC. FACILITY

10 JULY 2013

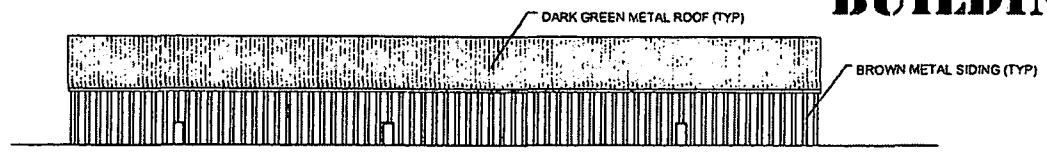


PRELIMINARY LOT LAYOUT FOR PRODUCTION INDUSTRIES, INC. FACILITY

24 JUNE 2013

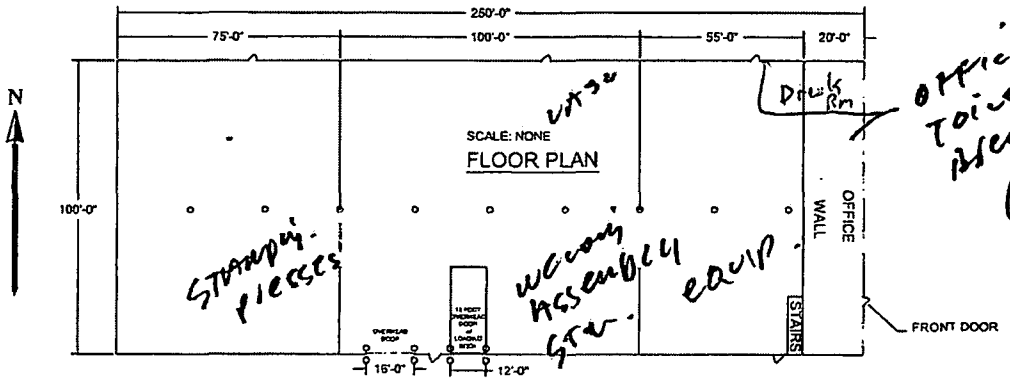


BUILDING PROPOSAL



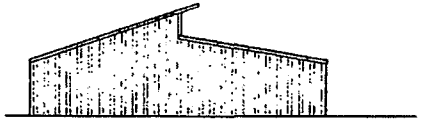
SCALE: NONE

NORTH ELEVATION



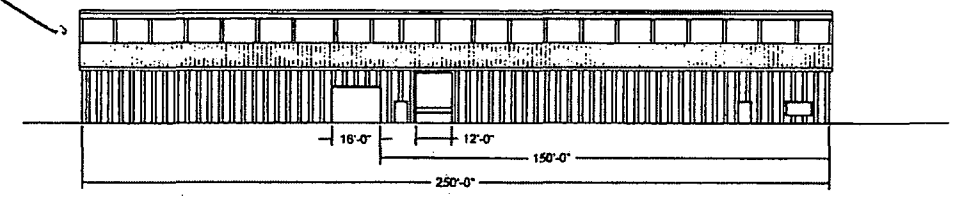
SCALE: NONE

FLOOR PLAN



WEST ELEVATION

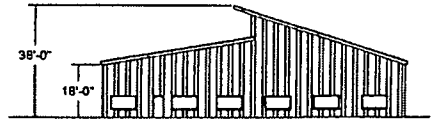
SCALE: NONE



SOUTH ELEVATION

VIEW FROM M115

SCALE: NONE



EAST ELEVATION

VIEW FROM WELDON ROAD

REV	BY/DATE	DESCRIPTION
H		
G		
F		
E		
D		
C		
B		
A		

PRODUCTION INDUSTRIES INC.

TITLE: BUILDING PROPOSAL FLOOR PLAN AND ELEVATIONS

FRACTIONAL ±0.015 | 2 PLACE ±0.010 | 3 PLACE ±0.005

DRAWN | DATE 08-24-12 | CHECKED | DATE | SIZE D | SCALE NONE | DWG NO. BLDG PROP

Eric Johnston

From: Eric Johnston
Sent: Monday, July 22, 2013 9:13 AM
To: 'Mitchell A. Kruizenga'
Cc: Kris Malkowski
Subject: RE: Production Industries
Attachments: Capacity Development Plan.pdf

Mr. Kruizenga,

Due to some uncertainty of aspects of the project, the permit costs are going to be dependent upon what occurs on the site. I will do my best to explain the fees in this email, however, please feel free to call me to clarify anything you are not sure about.

The septic permit fee will be $536.00, however, Mansfield & Associates has called about having our office perform a vacant land evaluation on the site. If our office does perform the vacant land eval, the cost of the septic permit is half off, so the price will be $268.00.

The well permit fee will be dependent on how many employee's the building will house when they first open up. If they will have less than 25 employees at the time of opening, the cost of a Type III water well permit will be $269. If they will have 25 or more employees at the time of opening, the cost of a Type II water well permit will be $498. I have attached a Capacity Development Plan worksheet that needs to be completed by Production Industries and returned to our department, prior to the issuance of the well permit.

The well and septic permit application can be found on our website www.bldhd.org. The application and a check (made out to BLDHD) with the appropriate fee (septic and well permit fee combined) will need to be sent to our department.

Benzie/Leelanau District Health Department
6051 Frankfort Hwy.
Suite 100
Benzonia, MI 49616

I will work be working with the plant designers to determine the appropriate sizing for the septic and water systems. However, you can use the design you sent me to get a ballpark idea of the septic system sizing. As far as the propane heat is concerned, our Department does not regulate the installation or permitting of propane storage tanks.

If you have any questions regarding the application or the fees, please feel free to contact me or Ms. Kris Malkowski (231-882-2103 or kmalkowski@bldhd.org)

Thank you,

Eric

J. Eric Johnston, R.S.
Noncommunity Water Supply Program Coordinator
Benzie/Leelanau District Health Department
(231) 882-2109 (p)
(231) 882-2204 (f)
ejohnston@bldhd.org

From: Mitchell A. Kruizenga [redacted]
Sent: Thursday, July 18, 2013 9:23 AM
To: Eric Johnston
Subject: Production Industries

Thank you for receiving my phone call earlier this morning. I wanted to double check with you to make sure I have some of my hidden costs taken care of. I am putting together a package for a client from Grand Rapids who is looking to build at the corner of Weldon road and M115 in Weldon Twp. My client is expecting to use a Septic system for sanitary waste and use a well for water. Could you please tell me any costs we may incur while trying to install these items? Could you also list any permits and who I would need to talk too to obtain the correct permits. They are also looking to use propane for heat, if there is any costs associated with this could you also let me know.

Attached is the preliminary drawings we received from the owner and a small synopsis of what they plan on building.... I am looking to provide a price to the owner by the end of next week, could you please have something to me early next week so I have time to put it all together. Thanks,

Mitch Kruizenga
Gerace Construction
[redacted]
www.Geraceconstruction.com
Experience to Build on.

50 Years
1963-2013
GERACE CONSTRUCTION

DETERMINING PEAK DEMANDS

FIXTURE METHOD

FACILITY NAME Production Industries WSSN _____ DATE 7/29/2013

1)Determine Total Fixture Value

FIXTURE TYPE	FIXTURE VALUE (GPM FLOW)		NUMBER OF FIXTURES		TOTAL
Water closet, with tank	5	X	6	=	30
Water closet, with flush valve	27	X	____	=	____
Urinal, with tank,	4	X	____	=	____
Urinal, with flush valve	15	X	1	=	15
Lavatory	3	X	5	=	15
Bathtub, or tub/shower combination	10	X	____	=	____
Shower	6	X	____	=	____
Drinking fountain	2	X	3	=	6
Hose bibb or yard hydrant, 1/2" connection	3	X	____	=	____
5/8" connection	5	X	____	=	____
3/4" connection	10	X	____	=	____
Washing machine, 1/2" connection	3	X	____	=	____
5/8" connection	5	X	____	=	____
3/4" connection	10	X	____	=	____
Laundry tray	8	X	1	=	8
Lawn sprinkler, per sprinkler head	5	X	____	=	____
Auto washing, hand spray type	5	X	____	=	____
Tractor and equipment washing	5	X	____	=	____
Water Softener regeneration	7	X	____	=	____
Dental unit	1	X	____	=	____
Dental lavatory	2	X	____	=	____
Garbage disposal, domestic	3	X	____	=	____
commercial	5	X	____	=	____
Kitchen sink, small	6	X	1	=	6
large	8	X	____	=	____
Spray rinse, hand operated	4	X	____	=	____
Ice machine	2	X	____	=	____
Ice cream machine	2	X	____	=	____
Ice cream dipperwell	2	X	____	=	____
Glass filling unit	2	X	____	=	____
Hot chocolate unit	0.5	X	____	=	____
Coffee urn	0.5	X	____	=	____
Other_____	____	X	____	=	____
_____	____	X	____	=	____
_____	____	X	____	=	____

2 Drinking Fountains, 1 Eye Wash

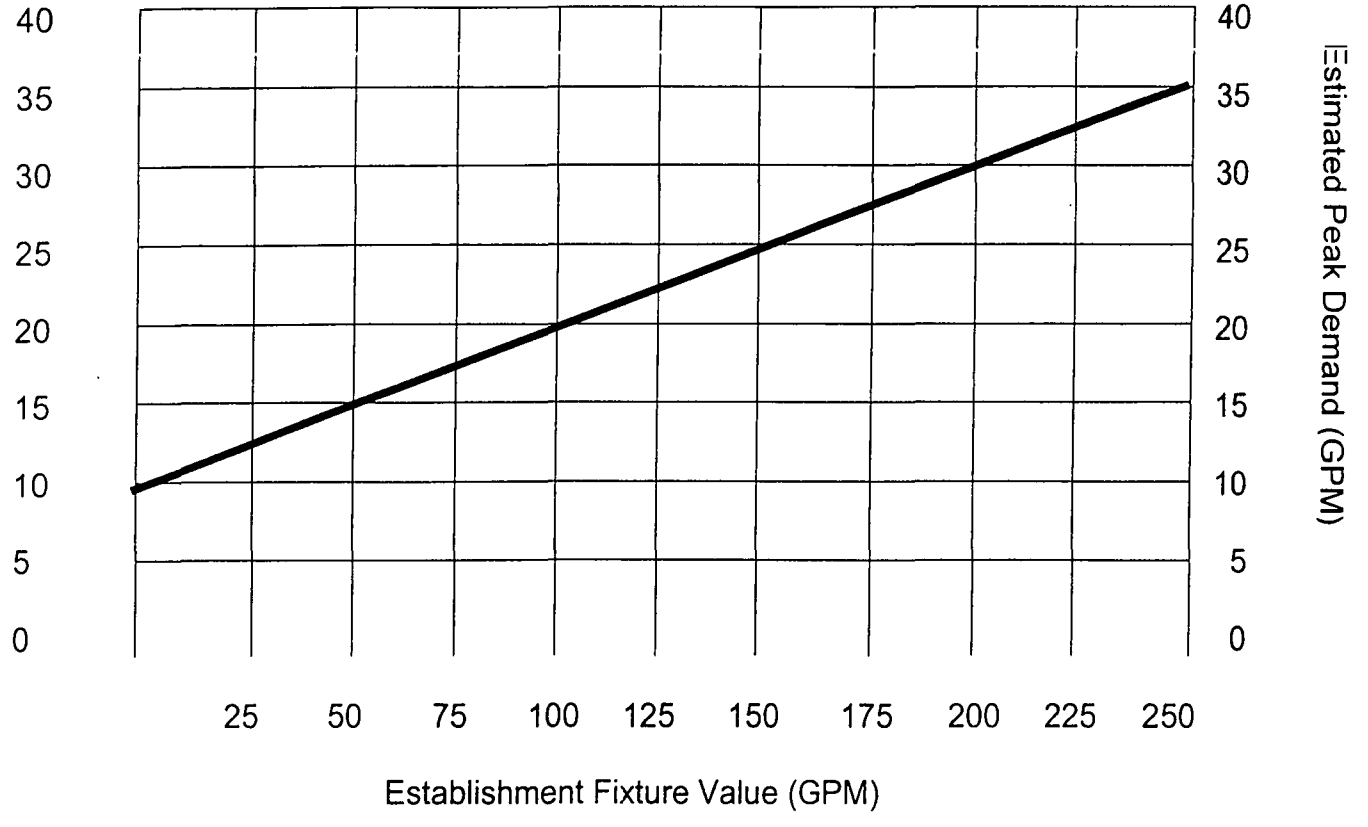
Total Fixture Value = 80

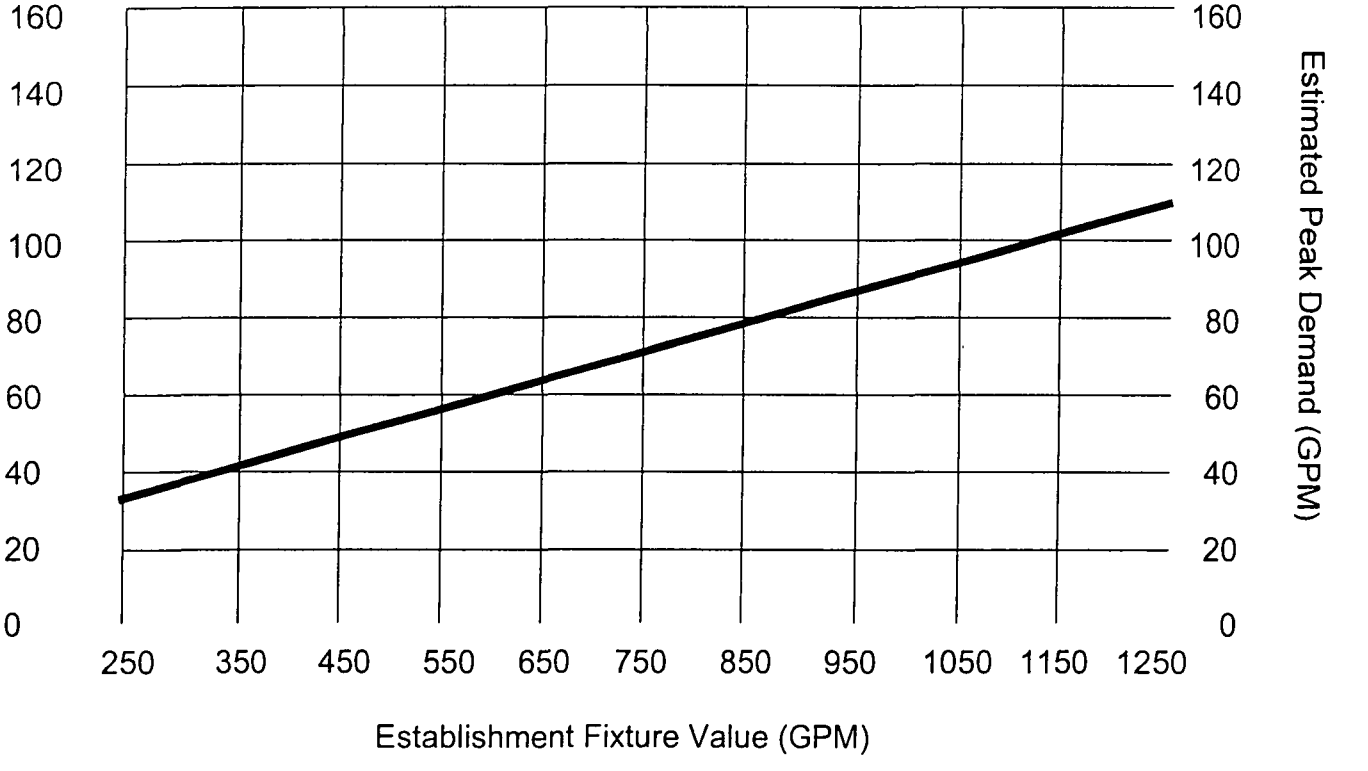
2) Determine GPM from graph on reverse side of sheet using Total Fixture Value above.
GPM from graph = 18

3) Irrigation, process water, and automatic dishwasher needs must be added to the GPM listed in item #2.
Irrigation - Number of sprinkler heads 0 X GPM/sprinkler head 0 = ~ GPM
Process Water - Cooling, wash down, rinse, tank filling, etc. = ~ GPM
Automatic dishwasher - Use gpm flow as indicated in NSF Food Service Equipment listing. ~ GPM
TOTAL ~ GPM

4) GPM from #2 18 + GPM from #3 0 = Total Demand 16 GPM

GRAPH


40
35
30
25
20
15
10
5
0
25
50
75
100
125
150
175
200
225
250
Establishment Fixture Value (GPM)
Estimated Peak Demand (GPM)


160
140
120
100
80
60
40
20
0
250
350
450
550
650
750
850
950
1050
1150
1250
Establishment Fixture Value (GPM)
Estimated Peak Demand (GPM)

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION

DETERMINING PEAK DEMANDS
FIXTURE COUNT METHOD

FACILITY NAME Production Industries WSSN _____ DATE _____

1) Total Fixtures - Toilets 6

Urinals	1
Lavatories	5
Kit Sinks	1
Service sinks	1
Garbage Disposal	
Hose Bibs	
Drinking Fountains	2
Food Equipment	
Bathtub/Showers	
Other	1
TOTAL	17

2) GPM per fixture (see table below) 1.25

PEAK DEMAND IN GALLONS PER MINUTE (GPM) PER FIXTURE

Type of Building	25 or less	26-50	51-75	76-100	101-200	201-400
Hospitals	1.00	1.00	.80	.70	.60	.50
Churches, Halls, Theaters	1.50	1.25	1.00	.80	.75	.70
Mercantile Buildings	1.30	1.00	.80	.75	.70	.60
Office Buildings	1.20	.90	.75	.70	.65	.50
Factories, Warehouses	1.25	1.00	.80	.75	.70	.60
Schools	1.20	.85	.70	.65	.60	.55
Motels, Hotels	.80	.65	.55	.50	.45	.40
Apartment Buildings	.60	.55	.50	.40	.35	.30

3) Total fixtures (#1 above) 17 X GPM per fixture (#2 above) 1.25 = Peak rate 21.25 GPM

D-236 11/02
Authority: 1976 PA 399