### **Development Services**

### From Concept to Construction

Phone: 503-823-7300 Email: bds@portlandoregon.gov 1900 SW 4th Ave, Portland, OR 97201 More Contact Info (http://www.portlandoregon.gov//bds/article/519984)





### APPEAL SUMMARY

Appeal ID: 16060	Project Address: 4784 SE 17th Ave
Hearing Date: 11/1/17	Appellant Name: Gabe Headrick
Case No.: B-011	Appellant Phone: 5033488874
Appeal Type: Building	Plans Examiner/Inspector: Mark Ragan, Connie Jones
Project Type: commercial	Stories: 2 Occupancy: F2 Construction Type: III-A
Building/Business Name: Ruse Brewing	Fire Sprinklers: Yes - Whole Building
Appeal Involves: Alteration of an existing structure	LUR or Permit Application No.: 17-205897-CO
Plan Submitted Option: pdf [File 1] [File 2]	Proposed use: F2

### APPEAL INFORMATION SHEET

### Appeal item 1

Code Section	OSSC Section 414.1.3
Requires	The subsection regarding combustible dust requires a facility that manufactures, generates or uses combustible dust in a particular manner or concentration to be classified as a High-Hazard Occupancy (H- Occupancy).
Proposed Design	All grain handling will happen in a single enclosed room holding only the grain grinder, grist storage, and 55lb bags of whole grain, with no other igniters within the space. The room will be provided with negative pressure ventilation to the exterior preventing the escape of fugitive dust into other rooms.
	The grinder itself is a dust-tight enclosed assembly that creates grist which is transported in an enclosed auger to be stored in the grist case, which is then moved within an enclosed auger once again to the mash tun in the brew house. There is very little dust created in this enclosed system, further reduced by the low volume of material being processed.
Reason for alternative	The overall layout and design of the actual grain handling processes within the facility produces very little dust, thus very little risk as defined by a High-Hazard Occupancy. By enclosing both the grinding process and the transportation of the grist material from beginning to end, along with good housekeeping measures by the brewer, the potential hazard of combustible dust is mitigated to a degree which should allow the occupancy of the grain handling area to be that of the rest of the brewery. Please refer to the Grain Milling Hazard Report & Partial Code Study prepared by Symons Engineering Consultants, Inc. dated October 11, 2017.

### APPEAL DECISION

https://www.portlandoregon.gov/bds/appeals/index.cfm?action=entry&appeal\_id=16060

### Appeals | The City of Portland, Oregon

Note: Approval is granted for this process and tenant only, provided there are no additional ignition sources in the grinding area not noted in the hazardous materials report subject to Fire Marshal verification.

At any time the Fire Marshal's Office finds that the manual housekeeping efforts have become ineffective in maintaining low level of accumulated dust, a mechanical dust collection system may be required.

Any changes in processes, equipment, or materials shall be approved by the Building Official in consultation with the Fire Marshal's Office prior to implementation.

The Administrative Appeal Board finds that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 24.10, you may appeal this decision to the Building Code Board of Appeal within 180 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.



SCALE: N.T.S.



2. VICINITY PLAN



SHEET NOTES:

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SE 18TH

-(7)

1. REFER TO A0.1 FOR SYMBOLS, HATCHES AND ABBREVIATIONS. ALL ITEMS ARE EXISTING TO REMAIN, U.O.N.

2. EXISTING COMBINATION SANITARY SEWER IN S.E. 17TH AVE

3. EXISTING SEWER ACCESS STUB OUT IN TENANT SPACE - SEE CONSTRUCTION PLAN FOR EQUIPMENT AND CONNECTION LOCATIONS, AND PLUMBING TRADE PERMIT FOR SPECIFIC LAYOUT AND MATERIALS

4. EXISTING 8" C.I. WATER SERVICE LINE IN S.E. 17TH AVE.

5. EXISTING 1" WATER METER SERVICE TO BUILDING FROM 8" C.I. MAIN IN SE 17TH AVE.

6. SEE SHELL / CORE PERMIT 16-141368-CO FOR ALL SITE IMPROVEMENTS, STREET TREES, BICYCLE PARKING, WHOLE BUILDING OCCUPANCY, EXITING AND BATHROOM FIXTURE CALCULATIONS

7. APPROVED COMPLIANT TRASH AREA UNDER SHELL CORE PERMIT 16-141368-CO

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> and, or 9720) RUSE BREWING 4784 SE 17TH AVE

PERMIT - 07/19/1 

SITE PLANS

A1.1

SCOPE OF WORK

## CODE SUMMARY

### GENERAL: Coi Jurisdictional Authority: City of Portland Bureau of Development Services Zor Multnomah County, State of Oregon Pla Portland Zoning Code - Title 33 of the City Code Applicable Codes: 2014 Oregon Structural Specialty Code (OSSC) Allo ICC A117.1-2009 Acc'ble & Usable Bldgs Trades and Other 2014 Oregon Mechanical Code Exi 2014 Oregon Electrical Code Under Separate Permit: 2014 Oregon Plumbing Code Ruse Brewing (Brewery + Tasting Room) Project Info: Prir 4784 SE 17th Ave. Ste. 107 Portland, OR 97202 115,000 SF Building Area: Tenant Area, this permit: 4,888 SF Minor Commercial Alteration, Tenant Improvements Project Scope: in existing multi-tenant building, see Shell / Core

nermit 16-141368-CO

## ZONING SUMMARY:

Base Zone:	IG1 - Industrial
Overlays:	NA
Comp Plan:	IS - Industrial San
Zoning Map:	3532
Plan / Historic District:	No
Allowable Uses:	Manufacturing and Wholesale, Indust
Existing Use:	Industrial - see co 16-141368 for all b
Primary Use:	Manufacturing Pro up to 10% access



octuary

d Production, Warehouse, trial Service, Railroad Yards

ompleted shell / core permit building / site conformity.

oduction primary use, with sory use (4,888 SF)

For occupant loads and means of egress this tenant space only, see plan this page. Primary Use: F2 Brewery. Total gross square footage per 16-141368-CO = 4,888 SF

Occupancy / Ratio	Area (SF)	Occupants
Factory (F2 primary) / 100:	2,364	23.7
Mercantile (M) / 30:	188	6.2
Storage (S1) / 300:	1,320	5.4
B (accessory) / 15 (assembly):	435	29
<u>B (Back Bar) / 100</u>	486	5
Total useable SF:	4,793 SF	69 occ.
Unoccupied areas:	95 SF	
including exterior wall structure	e and demising walls	
Total GSF:	4,888 SF	

## COST OF CONSTRUCTION:

\$161,865 Tenant Improvements: ALL AVAILABLE ACCESSIBILITY UPGRADES COMPLETED THROUGH SHELL / CORE PERMIT 16-141368-CO. ALL NEW TENANT IMPROVEMENTS MEET ADA REQUIREDMENTS

Occupancy Grou Sprinklered: Area Seperation

Table 503: Stories Total Bldg. Area

SEPARATE FIRE PROTECTION PERMITS REQUIRED: Fire Sprinklers Fire Alarm Systems Hazardous Materials Tanks (including C02) All process piping for hazardous materials requires a mechanical permit from BDS

## **ENERGY CODE COMPLIANCE:**

### SHEET NOTES:

1. REFER TO A0.1 FOR SYMBOLS, HATCHES AND ABBREVIATIONS, A1.3 FOR WINDOW, DOOR AND FINISH SCHEDULES. ALL ITEMS ARE EXISTING TO REMAIN, U.O.N.

2. PROVIDE NEW WALL MOUNTED PORTABLE FIRE EXTINGUISHER: 2-A 10B:C

3. VERIFY EXISTING OR PROVIDE EMERGENCY LIGHTING ON SEPARATE POWER SOURCE & BATTERY BACKUP FOR MIN. 90 MINUTES - MIN. 1 FOOT-CANDLE ALONG WALKING SURFACE FROM EGRESS DOOR TO POINT OF DISCHARGE - SEE RCP A3.1

4. VERIFY EXISTING OR PROVIDE NEW APPROVED ILLUMINATED EXIT / DIRECTIONAL SIGN

5. MEANS OF EGRESS MAX. DISTANCE W/ AUTOMATIC SPRINKLER SYSTEM INSTALLED FOR F OCCUPANCY = 100' (SECTION 1014.3)

POINT A TO COMMON PATH OF TRAVEL (POINT B) = 91'-10"

POINT A TO COMMON PATH OF TRAVEL (POINT C) = 80'-10"

POINT D TO POINT OF EGRESS IN R.O.W. (POINT E) = 91'-8"

6. SEE SHELL / CORE PERMIT 16-141368-CO FOR PLUMBING FIXTURE CALCULATIONS, WHOLE BUILDING EXITING AND FIRE PROTECTION SYSTEMS

up:	F2-Industrial Yes	Type of Construction: III-A
IS:	No	Occupancy/Fire Separations: No
	Allowable	Existing
	4	1
ı	28,500 SF	115,000 SF

No changes proposed to mechanical load or unconditioned shell / core building under this permit. Ex freeze protection heaters installed under permit 16-279791-MT. COMCheck form for interior lighting provided to building inspector for review. 



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EGRESS + CODE SUMMARY

RUSE BREWING 4784 SE 17TH AVE

PERMIT - 07/19/1 REV.1 - 09/27/17 REV.2 - 10/27/17





CODE	TYPE / SPEC.	QTY.	CONNECTIONS	VOLTS/AMP
EQ.1	BREWERY CONTROL PANEL	1		240V / 40A
	PKW 10BBL DIRECT FIRE			
EQ.2	BOIL KETTLE / HOT LIQUOR TANK	2	3/4 NPT GAS	230V 50/60H
	ECONOMITE BURNERS			3A
EQ.3	MOBILE BREWERY PUMP	1		230V
	CPE SYSTEMS 2HP PUMP W/ VFD			
EQ.4	KEG WASHER	1	AIR-100PSI @	
	PREMIER STAINLESS 2 HEAD SEMI-AUTO		35 CFM QD	
EQ.5	CO2 TANK	1		
EQ.6	GRIST CASE	1		
EQ.7	MILL / CHAIN DISK CONTROL PANEL	1		460VAC 60H
	ABM EQUIP.			
EQ.8	GRAIN MILL	1		230-460 60H
	RAD 300 ROLLER MILL, 70LBS / MIN.			
EQ.9	CHAIN PUCK SYSTEM	1		230-460 60H
	ABM 2 3/8 OD CHAIN PUCK SYSTEM			
EQ.10	GLYCOL CHILLER - G&D 7x7	1	1.5 FPT	230/460
EQ.11	GLYCOL TEMP. CONTROL + SOLENOID VALVE	6 EA.		120V
	RANCO NEMA 4x 2 STAGE W/ TEMP. PROBE			
	GW KENT STAINLESS SOLENOID		FEMALE NPT	110VAC
EQ.12	LOW TEMP. DISHWASHER	1		120V
	AMERICAN DISH SERVICE ET-PD-H			
EQ.13	FERMENTER TANK	4		
EQ.14	BRITE TANK	2		
EQ.15	COMPRESSOR	1		
	INGERSOLL RAND VERT. 120GAL.			
EQ.16	BOTTLE REFRIGERATOR	1		115V / 2.88A
	ACANTCO UBB-60G-HC 60"			
EQ.17	GLASS WASHER	1	1/2" FPT	
	AMERICAN DISH SERVICE ET			
EQ.18	HOT WATER TANK	1		

ELECTRIC - 75 GALLON

SHEET NOTES:

1. REFER TO A0.1 FOR SYMBOLS, HATCHES AND ABBREVIATIONS. ALL ITEMS ARE EXISTING TO REMAIN, U.O.N.

2. ENGINEERING TO BE INCLUDED WITH WALK-IN COOLER SEPARATE SUBMITTAL

3. EXISTING TRANSFORMER, SEE SHELL/CORE PERMIT 16-141368-000-00-CO

4.EMERGENCY SPILL CONTAINMENT WITHIN SLOPED SLAB PORTION - SEE CALCULATIONS BELOW. PROVIDE F.9 SLAB COATING FOR WATER TIGHTNESS, SEE A1.3

5. EXISTING ENTRY AND ROLL UP DOORS

6. REMOVE EXISTING ROLL UP DOOR AND SALVAGE FOR REUSE IN ADJACENT LOCATION

7. REMOVE EXISTING ENTRY DOOR W/ (2) SIDELITES AND SALVAGE FOR REUSE IN ADJACENT LOCATION

8. REPAIR EXISTING DOORS WITH 180 DEG. SWING AND LOCKING HARDWARE, NOT AN ENTRANCE OR EGRESS - PROVIDE NEW EXTERIOR MOUNTED STEEL GUARDRAIL WITH PICKETS SPACED SO THAT A 4" SPHERE MAY NOT PASS THROUGH - EPOXY ANCHOR INTO EXISTING MASONRY JAMB, SEE 4/A6.1

9. ALL SAW CUTS FOR DRAINS TO BE IN STRAIGHT LINES, PARALLEL TO EXISTING BUILDING, TYP.

10. NEW CONC. SAMPLING VAULT - 3'x3'x3' INSIDE CLEAR DIMENSION W/ ALU. LOCKING HATCH, FLUSH WITH FLOOR SURFACE. 'Y' CONNECTION OF GRAY WATER AND PRODUCTION DRAINAGE W/ MIN 12" RUN OF COMBINED SANITARY LINE - SEE 3/A6.1

11. NEW WATER LINE FROM EXISTING 1" METER SERVICE TO BUILDING - PROVIDE NEW PREMISES-ISOLATION (PI) (RPBA) TO BE INSTALLED PRIOR TO ANY ADDITIONAL PIPING RUNS PER WATER BUREAU REQUIREMENTS

12. EMERGENCY SPILLAGE SHUT-OFF VALVE PROVIDED FOR ALL PRODUCTION FACILITIES WITHIN THE CONTAINMENT ZONE. PROVIDE PERMANENT PLASTIC OR PAINTED STEEL SIGN CLEARLY VISIBLE FROM EAST AND WEST SIDE OF BREWERY AREA THAT READS "EMERGENCY DRAIN SHUT OFF VALVE. SHUT OFF VALVE TO REMAIN CLOSED EXCEPT DURING CLEANING ACTIVITIES. IN CASE OF SPILL IMMEDIATELY CALL CITY OF PORTLAND (BES) SPILL RESPONSE NUMBER 503-823-7180"

13. ACCESSIBLE BAR COUNTER, +2'-8" A.F.F., W/ MIN 27" KNEE CLEARANCE UNDERNEATH.

14. ENCLOSED FLEX AUGER - ROUTE FROM MILL TO BREW HOUSE, CONNECTIONS TBD BY INSTALLER

15. ACCESSIBLE PATH CLEARANCE

16. EXISTING SHORT AND LONG TERM BIKE PARKING AS SHARED BUILDING AMENITY -SEE SHELL / CORE PERMIT 16-141368-CO

17. SAW CUT AND REMOVE EXISTING SLAB IN THIS AREA ONLY. EXCAVATE AS NECESSARY TO MEET EDGE OF NEW 6" SLAB FLUSH WITH SURROUNDING EXITING AND MEET MINIMUM SLAB DEPTH, S.S.D. FOR NEW SLAB REINFORCEMENT AND CONSTRUCTION

18. PROVIDE FRP CLADDING ON ALL INSIDE FACES OF STORAGE ROOM FULL HEIGHT TO UNDERSIDE OF CEILING

19. DURACLAD PVC LINER PANEL WALL COVERING UP TO +8'-0" A.F.F. IN BREWERY PRODUCTION AREA W/ 4" RUBBER BASE

20. 6" CONC. SLAB ON GRADE W/ #4 @ 12" O.C. EA. WAY

21. INSTALL BREWING TANK ANCHORAGE PER SK-2/S1.1, TYP. ALL TANKS

22. ROUTE CONDENSATE WASTE FROM COOLER TO ADJACENT FLOOR OR UTILITY SINK

23. NEW SHELVING UNITS TO A HEIGHT +5'-0" - FURNITURE SPECIFICATION BY OWNER

24. NO STACKING OF BARRELS / KEGS ALLOWED IN "KEG + BARREL STORAGE" AREA  $\boldsymbol{\alpha}$ 

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RUSE BREWING 4784 SE 17TH AVE

PERMIT - 07/19/1 REV.1 - 09/27/17 REV.2 - 10/27/17

A2.

PLAN

FLOOR

CONSTRUCTION

683.3 GALLONS

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SEC Symons Engineering Consultants, Inc.

12805 S.E. Foster Road Portland, OR 97236 **(503) 760-1353** Fax 762-1962

October 25, 2015

Project No. 17-36

### Ruse Brewing Grain Milling Hazard Report &

### Partial Code Study – 4784 SE 17th Avenue, Portland, Oregon

### REF: Construction Floor Plans by Steelhead Architecture dated 7/19/17 Owner / Operators: Shaun Kalis and Devin Benware

**Disclaimer:** This hazard report and code study is intended to be a design guide for the parties designing and reviewing this project. Not all applicable sections have been listed below and citations are not direct quotes. It is hoped that this abbreviated summary will identify, for coordination purposes, all of the Fire/Life/Safety code issues having a reaching impact on this project. Interpretation of sometimes ambiguous code language is a subject of discussion between the designer and the Building Official of any sizeable project. Each section of the code that affects any party's interest in this project should be read directly and thoroughly along with all other related sections and model codes. Contractors furnishing bidder-designed systems are responsible for application of their respective model codes and *timely* coordination with the Engineer-of-Record for implementation of their project requirements into the project documents.

Comments in bold italics are project specific responses to the code requirements cited and compose the content of this Hazard Report.

### Governing Codes Covered Under This Review as they relate to grain milling:

2014 Oregon Structural Specialty Code, 2014 Oregon Fire Code, NFPA 61 (Limited) and 654 (Limited)

### **Statistics**

Existing Building Area: Affected Area: Occupancy of Affected Area: Height: Construction Type: 115,000 s.f.
4,888 s.f.
F-2 Brewery, F-1 Milling Room per B.O.
2 Stories
IIIA, Sprinkled

### **Oregon Structural Specialty Code**

High Hazard Group H. The use of a building or structure, or portion thereof, that involves the manufacturing, processing, generation, or storage of materials in excess of the maximum allowable quantity (MAQ) limits per control area set forth in Tables 307.1 (1) and 307.1 (2).

Table 307.1 (1) Maximum Allowable Quantity per control area of Combustible Dust per Footnote q: Where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based upon information prepared in accordance with Section 414.1.3

### MAQ is essentially identified by this report.

414.1.3 Information required. A report shall be submitted to the building official identifying the maximum expected quantities of hazardous materials to be stored, used in a closed system and used in an open system, and subdivided to separately address hazardous material classification categories based on Tables 307.1 (1) and 307.1 (2) *This report is intended to fulfill this requirement.* 

414.3 Ventilation. Rooms, area or spaces of Group H in which explosive, corrosive, combustible, flammable or highly toxic dusts, mists, fumes, vapors or gases are or may be emitted due to processing, use handling or storage of materials shall be mechanically ventilated as required by the Fire Code and Mechanical Code.

Ducts conveying explosives or flammable vapors, fumes or dusts shall extend directly to the exterior of the building without entering other spaces. Exhaust ducts shall not extend into or through ducts and plenums.

A manual shutoff control for ventilation equipment required by this section shall be provided outside the room adjacent to the principal access door to the room. The switch shall be of the break-glass type and shall be labeled: VENTILATION SYSTEM EMERGENCY SHUTOFF.

The Building Official has imposed a mechanical ventilation system consistent with Group H occupancies. This report is associated with an appeal to not classify the proposed small scale grain cracking as Group H. Due to the energy losses associated with continuous ventilation it is the opinion of this author that continuous ventilation and break-glass type switch requirements be waived for this application. As mitigation, a manual "ventilation on" and an automatic "ventilation on" interlocked with milling equipment at startup equipped with a timed shutoff delay of 20 minutes. All other code requirements related to ventilation shall still apply.

**Oregon Fire Code** 

Chapter 2 – Definitions

COMBUSTIBLE DUST. Finely divided solid material which is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust will pass through a US No. 40 standard sieve.

### Chapter 22 – Combustible Dust-Producing Operations

2203.1 Sources of ignition. Smoking or the use of heating or other devices employing an open flame, or the use of spark-producing equipment is prohibited where combustible dust is generated, stored, manufactured, processed or handled. **(Same language as PFC)** 

2203.2 Housekeeping. Accumulation of combustible dust shall be kept to a minimum in the interior of buildings. Accumulated combustible dust shall be collected by vacuum cleaning or other means that will not place combustible dust into suspension in air. Forced air or similar methods shall be used to remove dust from surfaces. (Same language as **PFC**)

2204.1 The fire code official is authorized to enforce explosion protection in accordance with NFPA 61, 69, and 654 to prevent and control dust explosions.

2205 Dust collection. Dust collection systems shall be designed and installed in accordance with Section 540 of the International Mechanical Code. Electric ventilation fan motors shall be interlocked in accordance with Section 503.1 of the IMC. *No dust collection system is proposed as part of Grain Milling Process (see Owner/operator furnished description at the end of this document). Electric ventilation fan proposed shall comply with the 2014 OMSC. Building Official is requiring 1CFM/S.F.* 

### Chapter 80 – Reference Standards

- NFPA 61-13 Prevention of Fires and Explosions in Agricultural and Food Processing Facilities
- NFPA 69-08 Explosion Prevention Systems.
- NFPA 654-13 Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids

It should be noted that codes are constantly evolving to provide greater levels of safety and understanding. NFPA has published 61-17, 69-14, and 654-17 since the 2014 Oregon Fire Code was adopted, the changes were numerous and the sections cited here will not cross-reference directly to the upcoming codes. Updating this Code Study to be consistent with recently adopted codes should be considered as an essential element of Management of Change as required under the currently adopted version of NFPA 654-13.

- **NFPA 61** Prevention of Fires and Explosions in Agricultural and Food Processing Facilities
- 1.1.1.1 This standard shall apply to all facilities that receive, handle, process, dry, blend, use, mill, package, store, or ship dry agricultural bulk materials, their byproducts, or dusts that include grains, oilseeds, agricultural seeds, legumes, sugar, flour, spices, feeds, and other related materials.
- 3.3.7 Dust Collection System definition. A combination of equipment designed to contain, capture, collect, and filter airborne dusts.

## The project does not propose a dust collection system. The Fire Inspector may require a dust collection system if upon inspection it is evident that one is needed.

- 4.1.1 The construction, renovation, modification, reconstruction, alteration, repair, addition, change of use or change of occupancy classification, demolition, and relocation of all buildings and structures shall comply with the governing building code, except as modified herein.
- 4.2 Interior Surfaces. Horizontal surfaces shall be minimized to prevent accumulations of dust in all interior structural areas where significant dust accumulations could occur.

# The grain cracking room is proposed to be lined with FRP (fiberglass reinforced panels) and a hard lid to minimize accumulation of dust on ledges and facilitate cleaning.

7.5.1.2 Where tributary spouts or conveyors feed whole grain or grain products for size reduction into grinders, pulverizers, or rolling mills, they shall be equipped with properly installed permanent magnets or listed electromagnets, pneumatic separators, specific gravity separators, scalpers, or screens to exclude metal or foreign matter of a size larger than the grain being processed as far as practicable. *(Owner/operator furnished information):* 

# No tributary spouts or conveyors proposed, bagged grain is typically screened for foreign matter at the time of packaging. The proposed mill has a safety mechanism in case of foreign object passing.

- 10.1 General. Dust control as used in this chapter shall be the control of emission of airborne combustible dusts from process and conveying equipment or material transfer points.
- 10.2 Removal of Layered Agricultural Dust.
- 10.2.1 Dust on floors, structural members, and other surfaces shall be removed concurrently with operations.

- 10.2.1.1 The facility shall develop and implement a written housekeeping program that establishes the frequency and method(s) determined best to reduce accumulations of fugitive agricultural dust on ledges, floors, equipment, and other exposed surfaces.
- 10.2.2 The use of compressed air or other means that cause dust to be suspended in air during removal from ledges, walls, and other surfaces shall be permitted only after all machinery in the area has been shut down and all sources of ignition controlled.

Exception: Areas in processing facilities shall be permitted to be cleaned with compressed air, provided that both of the following conditions are met: (1) Airborne material will not envelop adjacent operating equipment.

(2) Prior to blowdown, areas and adjacent equipment are checked to ensure that no ignition sources are present.

## The use of compressed air is not consistent with PFC, compressed air for cleaning is not anticipated.

10.2.3 Portable electric vacuum cleaners, if used, shall be listed for use in Class II, Group G, Division 1 atmospheres as defined in NFPA 70, National Electrical Code.

Housekeeping shall comply with this chapter. (Owner/operator furnished information): The grain cracking room and grinder cabinet will be swept and shop-vacuumed daily. This room will also be negatively pressurized by a mechanical ventilation system to the exterior. Malt dust invites rodents, and dust can harbor bacteria that can potentially infect the beer, conscientious brewers work hard to keep dust to a minimum in every respect.

12.1 Portable fire extinguishers shall comply with NFPA 10, Standard for Portable Fire Extinguishers.

It is assumed that the shell permit required adequate distribution of fire extinguishers throughout the building. Additional fire extinguisher(s) may be required by the Fire Inspector in the vicinity of the grain room if upon inspection it is evident that more is needed.

- 12.2 Automatic Sprinklers. Where installed, automatic sprinklers shall comply with NFPA 13, Standard for the Installation of Sprinkler Systems.
- 12.3 Supervisory Services. Where installed, supervisory services shall comply with NFPA 72, National Fire Alarm and Signaling Code.

## The existing building is sprinkled, supervisory services are not within the scope of this study.

13.10.1 Sacks, nonessential uninstalled machinery or parts, or other supplies shall not be stored in areas where the only other combustible material is the agricultural commodity that is being stored.

13.10.2 Miscellaneous storage shall not impede facility housekeeping or fire fighting. *Operations shall comply with this chapter.* 

A.3.3.1 Any time a combustible dust is processed or handled, a potential for explosion exists. The degree of explosion hazard will vary depending on the type of agricultural dust and processing methods used.

A dust explosion has the following five conditions, all of which must be met:

- (1) The dust is combustible.
- (2) The dust particles are in suspension.
- (3) The dust particles exceed the minimum explosive concentration in air.
- (4) The dust is confined within a piece of equipment, a building, or a structure.
- (5) A source of ignition is present.

Included for information only. It is not anticipated that conditions 3 and 5 will be present and condition 1 will only be present in small quantities due to fugitive dust and not as a direct result of the milling process. Grain cracking to approximately 889 microns on a small scale such as this does not produce an appreciable amount of dust. The dust produced will largely be contained within the grinder cabinet. Due to daily housekeeping there will be so little dust available during an earthquake that condition 2 will not be created.

### NFPA 69 Explosion Prevention Systems.

This standard was not adopted by Reference in the 2014 OSSC and has not been reviewed since it has not been demonstrated by the data furnished that the proposed grist mill operation will create an explosion hazard due to particle size and concentration as defined in Table A.6.2.1 of NFPA 61.

**NFPA 654** Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids

- 1.1.1 This standard shall apply to all phases of the manufacturing, processing, blending, conveying, repackaging, and handling of combustible particulate solids or hybrid mixtures, regardless of concentration or particle size, where the materials present a fire or explosion hazard.
- 3.3.6 Combustible Particulate Solid definition. Any solid material composed of distinct particles or pieces, regardless of size, shape, or chemical composition that presents a fire hazard.
- 4.1.1 The design of processes and facilities that handle combustible particulate solids shall consider the physical and chemical properties that establish the hazardous characteristics of the materials.

# The grain delivered in 55 lb bags and manually loaded into a small grist mill does not present considerable hazardous characteristics. No further technical review of NFPA 654 is deemed necessary other than that which is cited below.

4.2.3 If the process, equipment, or operation does not prevent accumulation of dust external to equipment at all times, then the process hazard analysis shall specify and document maximum allowable layer thickness (or area density), maximum allowable deposit surface area, and minimum personal protective equipment (PPE) requirements. (See Chapter 6 for dust layer thickness requirements.)

## For a description of Grain Milling and Conveying Equipment see attached Equipment Proposal dated 8/16/17 by ABM Equipment.

- 4.2.4 The process hazard analysis shall be reviewed and updated at least every 5 years.
- 4.3 Management of Change. Written procedures to manage change to process materials, technology, equipment, procedures, and facilities shall be established and implemented.

## *It is the owner / operator's responsibility to re-evaluate hazards as processes, equipment, materials, or management practices change over time.*

- 6.1.1 Hazard assessment. The facility and process equipment shall be evaluated for dust flash fire and dust explosion hazards in accordance with this chapter.
- 6.1.1.1Those portions f the process and facility interior where dust accumulations exist external to equipment in sufficient depth to prevent discerning the underlying surface color shall be evaluated to determine if a dust explosion hazard for flash fire hazard exists.

# It is the owner / operator's responsibility to ensure that housekeeping policies and procedures prevent such accumulation of dust thus eliminating dust explosion or flash fire hazards.

- 7.11.1.1 Where an explosion hazard exists within enclosed conveyors, they shall be protected in accordance with 7.1.4
- 7.11.1.2 Housings for enclosed conveyors (e.g. screw conveyors and drag conveyors) shall be of metal construction and shall be designed so as to prevent escape of combustible dusts.
- 7.11.2.1 All conveyors shall be equipped with a device that shuts the power to the drive motor and sounds an alarm in the event the conveyor plugs.

### ABM Equipment proposal attached specifies galvanized tubing, emergency stop switches, alarm jam, and jam interlock shutoff controls for the puck conveyor.

- 8.2 Housekeeping. All requirements of 8.2.1 through 8.2.3 shall be applied retroactively.
- 8.2.2.1 Surfaces shall be cleaned in a manner that minimizes the risk of generating a fire or explosion hazard.

8.2.2.2 Vacuuming shall be the preferred method of cleaning.

8.2.3.1 Portable vacuum cleaners that meet the following minimum requirements shall be permitted to be used to collect combustible particulate solids:

(1) Materials of construction shall comply with 7.13.2 and 9.3.2.

(2) Hoses shall be conductive or static dissipative.

(3) All conductive components, including wands and attachments, shall be bonded and grounded.

(4) Dust-laden air shall not pass through the fan or blower.

(5) Electrical motors shall not be in the dust laden air stream unless listed for Class II, Division 1 locations.

(6) When liquids or wet material are picked up by the vacuum cleaner, paper filter elements shall not be used.

Housekeeping shall comply with Chapter 8 in its entirety, not all of which is cited here. Portable shop vacuums used for cleaning the grain cracking room shall comply with NFPA 70.

**Owner/operator furnished Grain Milling Process:** 

1. Grain will arrive in leak proof sealed 55 lb bags, as whole kernels on a wrapped pallet containing 40 or less bags. This grain will be stored in our closed and ventilated grain room. No more than 2 pallets of grain will be stored on premises at a time.

2. Every brewing session will use no more than 600 lbs of grain. Grain will be staged prior to grain crushing on brew days in the closed and ventilated grain room.

3. The grain room will have 1 door in the east facing side of the brewing space. (See architectural plans for dimensions). The grain will be poured one bag at a time into our RAD mill for cracking.

4. The RAD grain crusher is specified as a dust tight housing with a UL listed, explosion proof motor. (See RAD attached document). The two roller 5 HP motor, will crack grain and directly supply the fully enclosed ABM chain disk conveyer system. (See attached ABM document). After grain is crushed for a batch of beer trace amounts of particulates (less than 1/8 oz) are found around the grain crusher. The trace dust amounts will be collected using an explosion proof portable vacuum system.

5. At the end of the chain disk enclosed conveying system the grain will be dropped into the tightly plumbed grist hydrator where hot water will be mixed with crushed grain to create a slurry called "mash". The mash is then mixed in the mash tun and rested for 1 hour in order to activate the enzymes which convert starches into fermentable sugar. (Fully closed system). 6. There are multiple reasons why it is important to not over-crack the malted grain. The intact husks that have been gently cracked open act as a filter medium which aid in the process of separating the sugar rich wort from the grain. The general rule of brewing is to crack open the malt as little as possible. The main purpose is to not create flour.

7. We will initially brew 2-3 batches per week and expand to 4-5 batches per week.

### **CONCLUSION:**

Grist milling produces particle sizes in the 889 micron to 1651 micron range and is not a direct producer of significant quantities of combustible dust. There will be ancillary dust accumulation from the opening and dumping of bags that is addressed above under Housekeeping. Any dust particles incidentally generated by the milling operation are confined within the very small compartment of the enclosed mill and are mostly conveyed to a vat of water at the beginning of the brewing process. Dust that settles within and around the cabinet that is not captured will be removed via daily housekeeping. The proposed grist milling does not manufacture, process, generate, or store combustible dust as it is defined by the code, therefore it does not warrant an H-2 Occupancy classification.



Attachments:

RAD Roller Mill 300 brochure ABM Equipment Specifications

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ROLLER MILL 200 & 300

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ROLLER MILL MODEL 200 & 300









END VIEW

45° PERPENDICULAR OUTLET

45° PARALLEL OUTLET

**BAGING OUTLET** 

MODEL						DIM	<b>IENSI</b>	ONS					
MODEL	A	В	C	D	E	F	G	H	J	K	L	М	MAX.
200	12 3/4	15 7/8	18 1/4	16 3/4	10 1/4	15 1/8	21 5/8	14 1/8	42	48 5/8	41 1/8	41	38 1/2
300	15 3/4	15 7/8	18 1/4	16 3/4	10 1/4	15 1/8	21 5/8	14 1/8	42	48 5/8	41 1/8	41	38 1/2

### SPECIFICATIONS AND CAPACITY OF SINGLE ROLLER MILL

MODEL	ROLLER DIAMETER	ROLLER WIDTH	CORRUGATION (TEETH/INCH)	DRY CORN	HIGH MOISTURE CORN	DRY SMALL GRAIN	HIGH MOISTURE SMALL GRAIN
			5	4.3 T/H	3.7 T/H		
200	6 1/2"	4 1/2"	8.5 (INCLINED)	2.7 T/H	2.5 T/H	1.5 T/H	1.2 T/H
			10.5			1.2 T/H	1.0 T/H
			5	7.0 T/H	2.5 T/H		<u> </u>
300	6 1/2"	7 1/2"	8.5 (INCLINED)	4.5 T/H	4.2 T/H	2.5 T/H	2.0 T/H
			10.5			2.1 T/H	1.7 T/H

### SUGGESTED MOTOR

MODEL	GRAIN	HP	RPM
200	CORN	2	1800
	BARLEY	3	1800
300	CORN	3	1800
	BARLEY	5	1800

Specifications are subject to change without notice.



\* 57 ROCKWELL C TEMPERED STEEL ROLLER

- \* HEAVY STEEL ROBUST CONSTRUCTION
- \* EASY ACCESS MAGNET DRAWER
- \* EASY PRESSURE AND SPACING OF THE ROLLERS
- \* SAFETY MECANISM IN CASE OF FOREIGN OBJECT PASSING
- \* OTHERS ACCESSORIES AVAILABLE

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### Quotation No.: 172273 Reference: Dry Grain Handling Systems

Date: August 16, 2017



Shaun Kalis Devin Benware

Prepared By: Adam DuBose

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### Item 1.01 RAD MODEL 300 ROLLER MILL

### Quantity 1 - Capacity of 70 lbs/min.

- $2 6\frac{1}{2}$ " Dia. x 7<sup>1</sup>/<sub>2</sub> Width roller with 10<sup>1</sup>/<sub>2</sub> splines per inch.
- 5 HP TEXP Motor, 230-460V/60htz/3ph, 184T Frame.
- Independent adjustment of gap and pressure.
- 2 v-belts main drive with chain slave drive.
- OSHA belt and chain guards.
- Inlet feed hopper with grate, magnet, and flow adjustment slide gate.
- Discharge hopper to mate Choretime 
   B auger (inclined 45°).
   Other discharge arrangements available.
- Adjustable support stand.
- Infeed hopper cover w/ piano hinge, 4" inlet, 2" dust sock.
  - Allow for addition of specialty malts while controlling dust.

### Item 1.02 - 2-3/8"Ø CHAIN PUCK SYSTEM

### **Application: Mill to Mash**

- Enclosed system moving 35 lbs per minute of milled grain.
- Batch time for 800 lbs is ~23 minutes.
- 1 ea. Chain Disk Drive Unit 1.5 HP 230-460/3/60
- 1 ea. Chain Disk gravity flow infeed with access door.
- 8 ea. Chain Disk corner
- 7 ea. Galvanized tubing 2 3/8" OD x 20 ft x 16 gauge
- 8 ea. 3 bolt galvanized black 2 3/8" compression couplers
- 1 ea. Discharge outlet to 4"Ø
- 150' Chain disk with nylon disk
- 2 ea. Chain link for disk chain
- Inlet Adapter with 4" Tri-Clover Fitting.

### 1.03

### Quantity 1 Installation based on similar jobs is \$ 5,000 and includes:

- Installation of mill.
- Installation of chain disk from mill to mash.
- Misc. Transitions and fittings between equipment.
- Assumed free and clear access to the work area.
- Restrooms provided by customer.
- Estimated time for install is 2 people, 2 days on-site, Monday-Friday.
- Only travel expenses included are miles from port to port.
- Exclusions:
  - If man lift will need to be rented and will be billed at cost. (not included above).
  - Electrical wiring to panel and from panel to motors is by others.
    - If this could be done simultaneously then we could startup equipment and help troubleshoot.
- Roof & Wall penetration sealed by others (if required).





### Item 1.04 – CONTROL PANEL

### COMPLETE WITH:

- NEMA 4 Painted carbon steel enclosure.
- Numbered control terminal strip for field wiring connections
- NEMA 4 indicating lights for:
  - 1 ea. Control power on (Green)
  - 1 ea. Mill Run. (Green)
  - 1.ea. Chain Disk Run (Green)
  - 1 ea. Puck System Jam (Red)
- NEMA 4 control operators for:
  - 1 ea. Emergency stop (PB)
  - 1 ea. Emergency stop reset (PB)
  - 2 ea. Mill start (PB) & Stop stop (PB)
  - 1 ea. Puck System 1 HOA (SW)
  - 1 ea. Alarm reset (PB)
- 1 ea. Indicator Beacon
  - Red Alarm jam
- Main power disconnect
- 120 volt control transformer to supply control voltage
- Short circuit protection
- Across the Line Full Voltage Motor Starters:
  - 1 ea 5 HP Mill Motor
    - 1 ea. 1.5 HP Puck Conveyor
- Interlocks:
  - Puck 1 Jam turns off mill.
  - Mill start/stop also starts/stops puck system when in auto.
- Requires 460 VAC/60HZ/3PH service





Model 236



Installation and Operation Manual



BY THE

GS.





### 3. Decals



### 4. Specifications

Capacity	The rated capacity is up to 50 lbs./min. (23 kg/min.) Capacity is based on a feed density of 40 lbs./ft. <sup>3</sup> (641 kg/m <sup>3</sup> ). Refer to chart on <i>Page 24</i> depending on tubing material and run time.
Overall system length	The maximum effective length can be up to 2000' (610 m). Refer to chart on <i>Page 24</i> . Subtract 25' (7.6 m) per corner or effective length = (Total ft. of chain) + 25' (# of corners).
Types of feed	The Model 236 Chain Disk is specifically designed to convey normal types of swine and poultry feeds. When conveying any other type of material contact the manufacturer as the warranty may be invalidated.
	There are two (2) options:
Tubing	<ol> <li>Clear and white PVC tubing having dimensions of 2.00" (51 mm) I.D. and 2.36" (60 mm)</li> <li>O.D. coming in 10' (3 m) lengths. Clear and white PVC couplers are used to join sections of tubing together.</li> </ol>
	<ol> <li>Welded steel tube having dimensions of 2-3/8" O.D. x 2.277" I.D. Steel compression couplers are used to join sections together. Available in lengths or 10' or 20'.</li> </ol>
Corners	Each corner has a 9.4" (239 mm) diameter cast steel self-cleaning wheel with non-greasable ball bearings encased in a clear polycarbonate housing with a removable cover.
Chain	The flexible chain is heat treated with a 3000 lbs. (13.3 kN) breaking strength. Nylon disks having 1.7" (43 mm) O.D. are molded on every other chain link. The chain is connected together using a special open link connector. The disks are symmetrical, making the chain non-directional.
Drive unit	The drive unit, having dimensions of 51.6" (1.3 m) length, 17.6" (0.4 m) height and 20.3" (0.5 m) width, is an enclosed stainless steel housing with a spring loaded aluminum idler tensioning wheel and drive sprocket inside. The drive sprocket is directly coupled to the output shaft of an aluminum housed speed reducer, which in turn is driven by an electric motor.
Electric motor	There are three (3) special built 1.5 HP motors to choose from: 208V-230V, 1 PH, 60 Hz; 230V, 1 PH, 50 Hz; 208V-230V/460V, 3 PH, 50/60 Hz.
Control unit	A 230V, 1 PH unit is available. With an additional 3 PH contactor, it can be used to control a 3 PH drive unit. The APCD-500 control unit has a built in 24 hours time clock, maximum run timer and drop feed control. The APCD-600 has a built in maximum run timer and is used for continuous feeding. The APCD-500-S is used in conjunction with the APCD-500, when configuring feed systems with multiple Chain Disk drive units. A single APCD-500 can control up to seven (7) APCD-500-S control units.

Part #	Description
	Model 300 Flex-Flo fill system or comparable equivalent having a maximum of 50 lbs./min. (23 kg/min.) rated capacity.
APCD-620	Chain Disk fill hopper which connects to Flex-Flo control unit.
APCD-109	Manual kwik-attach drop kit (single).
APCD-110	Manual kwik-attach drop kit (box of 10).
APCD-119	Pneumatic kwik-attach drop kit assembly.
APCD-710	Drop kit for Chain Disk with pull cord (single).
APCD-710-10	Drop kit for Chain Disk with pull cord (box of 10).
AP-1260	ACCU-DROP feeders fitting tube with 2.36" (60 mm) outside diameter.
AP-2259	Farrowing drop feeder - Model 236 (8.5 lbs. capacity).
AP-2263	Farrowing drop feeder - Model 236 (12 lbs. capacity).
APCD-294	Tube mounted proximity switch.
FLX- 4256	Proximity switch, 20V DC to 240V AC, N.O. (used with APCD-294).
AP-2385	ECONO-DROP feeder fitting tube with 2.36" O.D. PVC tube.
AP-3800	ULTRA-DROP feeders for gestation with 2.36" O.D. PVC tube or welded steel tube.
AP-3800A	ULTRA-DROP feeders for farrowing with 2.36" O.D. PVC tube or welded steel tube.