



**Building Permit Application**  
**City of Portland, Oregon - Bureau of Development Services**

1900 SW 4th Avenue, Portland, Oregon 97201 • 503-823-7310 • TTY 503-823-6868 • www.portlandoregon.gov/bds

12-155470-CD

**Type of work**

New construction  Addition/alteration/replacement

Demolition  Other:

**Category of construction**

1 & 2 family dwelling  Commercial/industrial  Accessory building

Multifamily  Master builder  Other:

**Job site information and location**

Job no.: \_\_\_\_\_ Job address: 2730 NW 31st Ave

City/State/ZIP: Portland, OR

Suite/bldg./apt. no.: \_\_\_\_\_ Project name: Pyramid Breweries

Cross street/directions to job site: \_\_\_\_\_

Subdivision: \_\_\_\_\_ Lot no. \_\_\_\_\_ Tax map/parcel no. \_\_\_\_\_

**Description of work**

Full tear off, 1.5" ISO w/1/4" Dens DkK and 60 mil TPO Mechanically fastened

Reference RS / Combination  Permit no. \_\_\_\_\_

**Property owner**  **Tenant**

Name: North American Breweries

Address: 2730 NW 31st Ave

City/State/ZIP: Portland, OR

Phone: \_\_\_\_\_ FAX: \_\_\_\_\_

**Owner installation:** This installation is being made on property that I own, which is not intended for sale, lease, rent, or exchange.

Owner signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Contractor**

Business name: Centimark

Address: 3033 NE 172 Place

City/State/ZIP: Portland, OR

Phone: 503-209-2463 FAX: \_\_\_\_\_

CCB lic. no. 109234

Authorized signature: Norman Clark

Print name: Norman Clark Date: \_\_\_\_\_

**Applicant**  **Contact Person**

Business name: Centimark

Contact name: same

Address: \_\_\_\_\_

City/State/ZIP: \_\_\_\_\_

Phone: \_\_\_\_\_ FAX: \_\_\_\_\_

E-mail: \_\_\_\_\_

Authorized signature: \_\_\_\_\_

Print name: \_\_\_\_\_ Date: \_\_\_\_\_

This permit application expires if a permit is not obtained within 180 days after it has been accepted as complete.

**Office Use Only**

Permit no: \_\_\_\_\_

Date received: \_\_\_\_\_

By: \_\_\_\_\_

**Required Data: One and Two Family Dwelling**

Permit fees\* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation:	
Number of bedrooms:	
Number of bathrooms:	
Total number of floors:	
New dwelling area:	square feet
Garage/carport area:	square feet
Covered porch area:	square feet
Deck area:	square feet
Other structure area:	square feet

**Required Data: Commercial Use**

Permit fees\* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation:	<u>\$175,000</u>
Existing building area:	<u>8,006</u> square feet
New building area:	square feet
Number of stories:	
Type of construction:	
Occupancy groups	
Existing:	
New:	

**Notice**

All contractors and subcontractors are required to be licensed with the Oregon Construction Contractors Board under ORS 701 and may be required to be licensed in the jurisdiction in which work is being performed. If the applicant is exempt from licensing, the following reasons apply.

**Statement of Fact:** I certify that the facts and information set forth in this application are true and complete to the best of my knowledge. I understand that any falsification, misrepresentation or omission of fact (whether intentional or not) in this application or any other required document, as well as any misleading statement or omission, may be cause for revocation of permit and/or certificate of occupancy, regardless of how or when discovered.

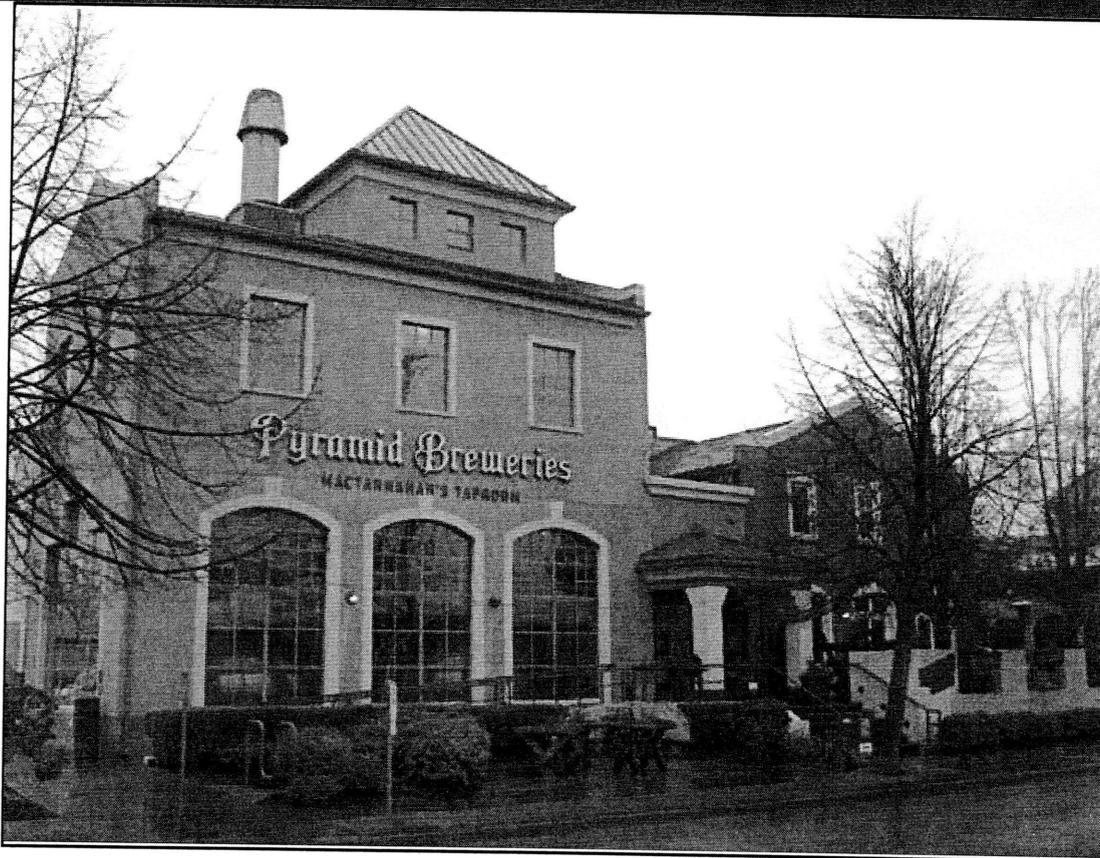
**Building Permit Fees\***

Please refer to fee schedule

Fees due upon application	
Amount received	
Date received	

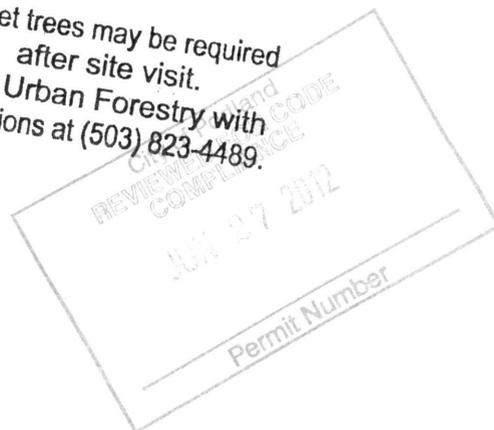
Sub-contractor information can be faxed to 503-823-7693.

# Roof Assessment and Proposed Solution



NorthAmerican Breweries - Portland, OR

Street trees may be required  
after site visit.  
Call Urban Forestry with  
questions at (503) 823-4489.

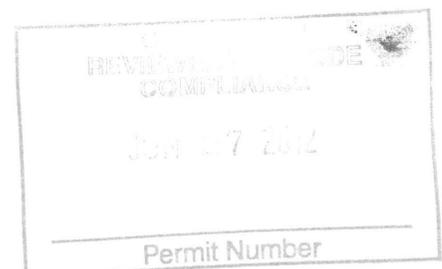
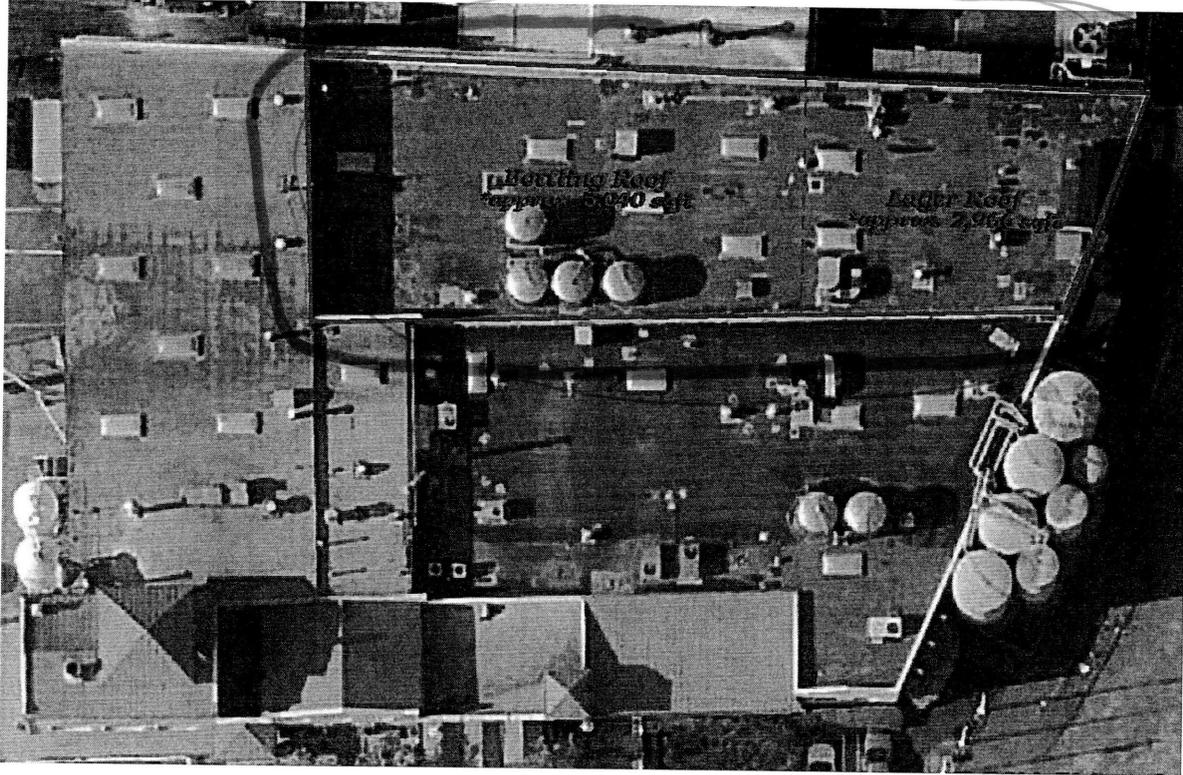


12-155470-CO

# ◀◀◀ Drawing ▶▶▶

Area: Drawing

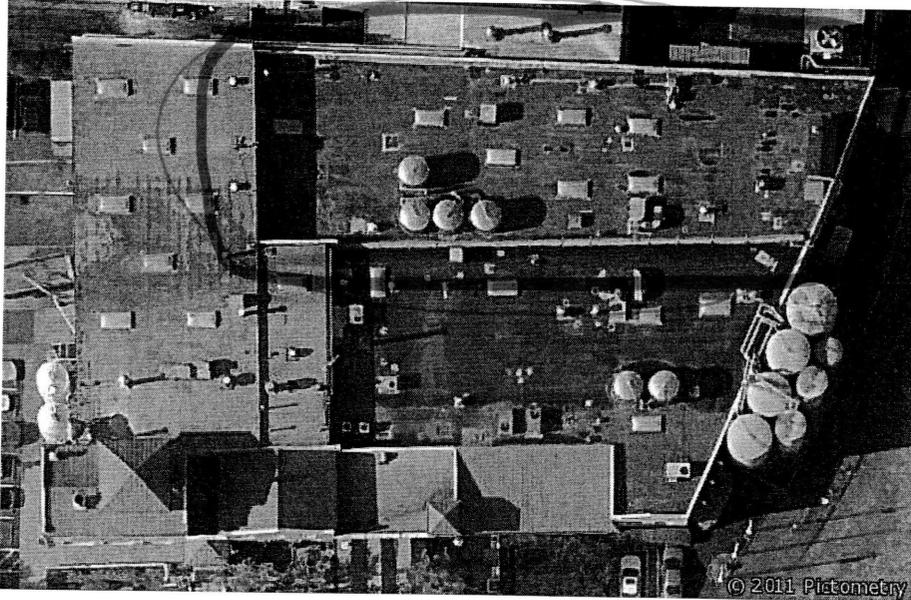
Caption: Drawing of Roof Sections



# ◀◀◀ Overview Pictures ▶▶▶

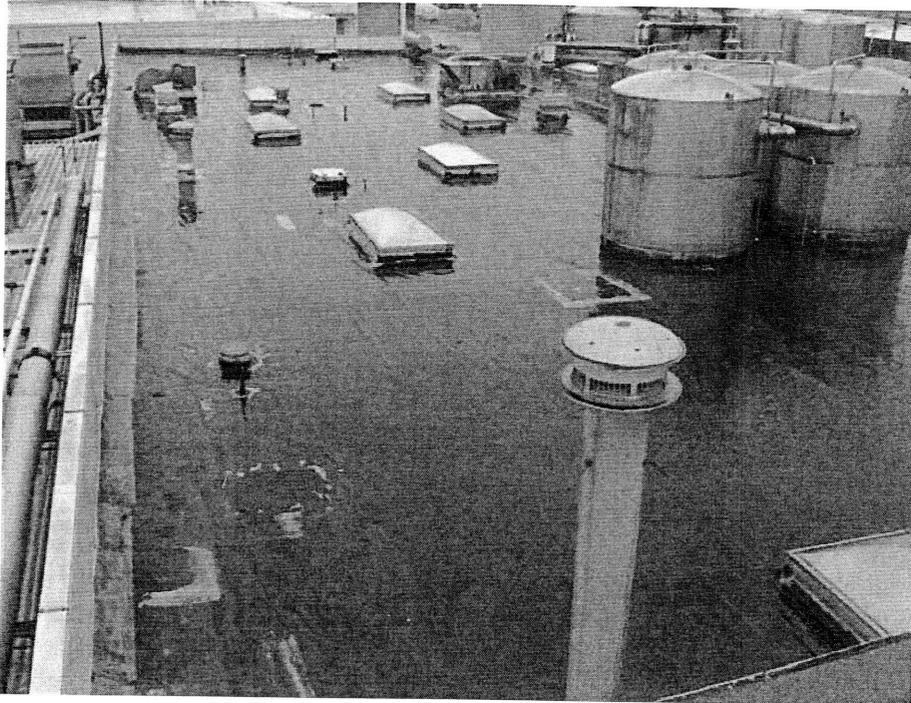
Area: Overview

Caption: Birds Eye View of Entire Roof



Area: Overview

Caption: Overview of Bottling and Lager Roof Sections



City of Portland  
REVIEWED FOR CODE  
COMPLIANCE

JUN 27 2012

Permit Number

# ◀◀◀ Roof Condition Summary ▶▶▶

## Section Condition Overview

Section	Sq. Footage	Leaks	Description
Bottling Roof	5,040	Unknown	Failing
Lager Roof	2,966	Unknown	Failing



# ◀◀◀ Roof Condition Summary ▶▶▶

NorthAmerican Breweries  
2730 Nw 31st Ave.  
Portland, OR 97210

<b>Section:</b> Bottling Roof	<b>Sq. Footage:</b> 5,040	<b>Leaks:</b> Unknown															
	<b>Core Analysis</b> <table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Layer</th> <th style="width: 50%;">Material</th> <th style="width: 25%;">Thickness</th> </tr> </thead> <tbody> <tr> <td>Plywood</td> <td>Deck</td> <td>0.6</td> </tr> <tr> <td>5-Ply Asphalt</td> <td>BUR (Asphalt)</td> <td>0.5</td> </tr> <tr> <td>Cap Sheet 72 lb.</td> <td>BUR (Asphalt)</td> <td>0.2</td> </tr> <tr> <td>3-Ply Asphalt</td> <td>BUR (Asphalt)</td> <td>0.3</td> </tr> </tbody> </table>		Layer	Material	Thickness	Plywood	Deck	0.6	5-Ply Asphalt	BUR (Asphalt)	0.5	Cap Sheet 72 lb.	BUR (Asphalt)	0.2	3-Ply Asphalt	BUR (Asphalt)	0.3
Layer	Material	Thickness															
Plywood	Deck	0.6															
5-Ply Asphalt	BUR (Asphalt)	0.5															
Cap Sheet 72 lb.	BUR (Asphalt)	0.2															
3-Ply Asphalt	BUR (Asphalt)	0.3															
<b>Core Comments:</b> Existing Roof Core																	

**Roof Condition Summary:** We strive to provide our customers with comprehensive information as to their overall roof condition and life expectancy. The roof is failing and in need of replacement. The roof assembly is saturated and delaying the project will likely result in increased costs associated with extended deck replacement and other expenses due to replacement or removal of the current assembly.

**Membrane:** The field of the roof has clearly reached the end of its life cycle. Previous repairs have been made and further attempts to repair this roof are not recommended.

- (BUR/Mod-Bit) "Ridging" of Felts - Will lead to other problems such as punctures, tears and result in premature system failure. (see photo)
- (All) Punctures / Tears - Abuse - Allow moisture to enter the roof system leading to premature roof failure. (see photo)

**Details:** The conditions of the roof details are poor. The roof is in need of being replaced.

- (BUR/Mod-Bit) Wall Flashing Failure - Allows moisture that results in premature membrane, insulation and decking deterioration. (see photo)
- (All) Pipe Flashing Failure - Allows moisture that results in premature membrane, insulation and decking deterioration. (see photo)
- (All) Penetration - Not Properly Flashed Wrong Detail - Allows moisture that results in premature membrane, insulation and decking deterioration. (see photo)

**Drainage:** The roof currently experiences too much standing water that has resulted in deck deflection due either its weight or destruction caused by the water entering the roof assembly.

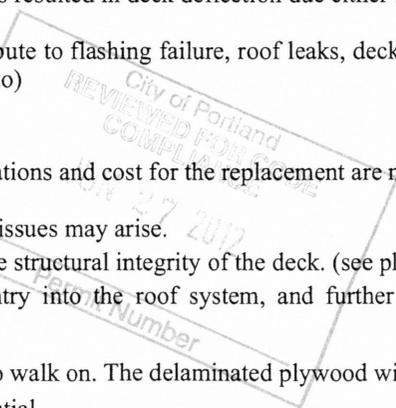
- (All) Drains - Debris Strainer - Clogged - Clogged drains can contribute to flashing failure, roof leaks, deck deflection, or roof collapse during heavy rainfall or snow and ice melt periods. (see photo)

**Insulation:** The current roof assembly did not utilize roof insulation.

**Deck:** Areas of the deck are in need of removal and replacement. Specifications and cost for the replacement are noted in the scope of work.

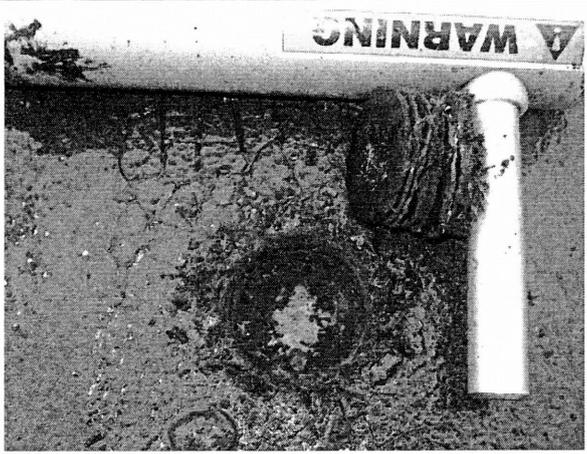
- (All) Ceiling Tiles - Deteriorated - Not visually appealing and safety issues may arise.
- (All) Rotted Wood - Rotted wood may create safety concerns with the structural integrity of the deck. (see photo)
- (All) Deflection - Leads to increased standing water, moisture entry into the roof system, and further structural decking deflection or failure.

**Comments:** This roof has deteriorated to the point where it is dangerous to walk on. The delaminated plywood will not support a



# ◀◀◀ Roof Condition Summary ▶▶▶

NorthAmerican Breweries  
2730 Nw 31st Ave.  
Portland, OR 97210

<b>Section:</b> Lager Roof	<b>Sq. Footage:</b> 2,966	<b>Leaks:</b> Unknown															
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**Roof Condition Summary:** We strive to provide our customers with comprehensive information as to their overall roof condition and life expectancy. The roof is failing and in need of replacement. The roof assembly is saturated and delaying the project will likely result in increased costs associated with extended deck replacement and other expenses due to replacement or removal of the current assembly.

**Membrane:** The field of the roof has clearly reached the end of its life cycle. Previous repairs have been made and further attempts to repair this roof are not recommended.

**Details:** The conditions of the roof details are poor. The roof is in need of being replaced.

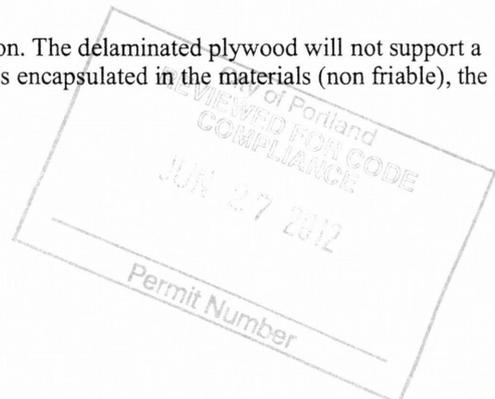
**Drainage:** The roof currently experiences too much standing water that has resulted in deck deflection due either its weight or destruction caused by the water entering the roof assembly.

**Insulation:** The current roof assembly did not utilize roof insulation.

**Deck:** Areas of the deck are in need of removal and replacement. Specifications and cost for the replacement are noted in the scope of work.

- (All) Ceiling Tiles - Deteriorated - Not visually appealing and safety issues may arise.
- (All) Rotted Wood - Rotted wood may create safety concerns with the structural integrity of the deck. (see photo)
- (All) Deflection - Leads to increased standing water, moisture entry into the roof system, and further structural decking deflection or failure.

**Comments:** This roof has deteriorated to the point where it is dangerous to walk on. The delaminated plywood will not support a person's weight in several areas. This roof has material that contains asbestos. It is encapsulated in the materials (non friable), the particles will not be airborne.



# ◀◀◀ Construction Specification ▶▶▶

NorthAmerican Breweries  
2730 Nw 31st Ave.  
Portland, OR 97210

## Specifications For CentiMark 60mil TPO Mechanically Fastened System (Full Tear Off)

Sections included: Lager Roof, Bottling Roof

### ***Project Preparation:***

Perform a pre-job meeting to determine jobsite logistics and safety requirements.

Furnish proposed construction schedule, if needed.

### **Safety Related**

Furnish and install proper safety equipment in accordance with Centimark's written safety program.

Furnish and install warning lines to identified areas associated with ground related roofing activities.

Store roofing materials in accordance with good roofing practices. Material placement will be to distribute weight loads throughout the entire roof area.

### ***Surface Preparation:***

Tarps will be installed under ceiling to capture any leaking debris from roof work. This will be done during non-bottling hours, allowing bottling production to continue during the project.

Remove and dispose of existing roof systems & existing structural plywood deck.

Trained personnel will remove and dispose of asbestos roof system.

Personnel will be in fall arrest and roofing will be cut manually versus roof saw in all areas with compromised decking.

Personnel will have plywood on hand to create safe walk paths for our crews as required.

All required air monitoring will be provided.

Removal of existing roof will be limited to an amount that can be replaced the same day.

From roof side remove insulation from between roof truss bays and power vacume the bays. Dispose of properly.

Remove roof top equipment as designated by Owner. Furnish and install deck material to replace void left by equipment removed.

Remove existing counter-flashings and dispose of debris.

Remove existing coping and store for re-installation.

Remove existing pre-engineered metal wall panels and dispose of debris.

Remove existing wall flashings to a workable surface and dispose of debris.

Furnish and install approx. 8,006 sqft of 2"x6" "Select Deck" tongue & groove structural decking.

After the deck replacement and roofing is completed the tarps and ceiling tiles will be removed. The ceiling tiles and misc debris will be disposed of and the rooms cleaned. This will occur during non-bottling hours.

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COMPLIANCE  
JUN 25 2012  
P. [unclear]

Any electrical/hvac work to be done in conjunction with removal of ceiling tiles and/or roofing will be the responsibility of the owner.

### ***Insulation Attachment:***

Furnish and install a 4 mil polyethylene vapor/air barrier over the prepared deck to inhibit air pressure inside the building from pushing moisture from the room into the roof system.

Furnish and install sealing tape at all penetrations through roof to stop moisture venting from building into roof system.

Furnish and install a layer of 1/4" DensDeck gypsum board, over a prepared substrate. This gypsum product will be laid in place, act as a fire barrier and protect the insulation.

Furnish and install a layer of 1.5" polyisocyanurate 25# nominal insulation, (R-Value = 9). This layer of insulation will be mechanically attached to the prepared substrate utilizing FM Global (FM) approved 3" plates and fasteners.

The purpose of the insulation is to help keep the condensation 'dew' point above the roof. This will help reduce or eliminate the moisture in the rooms from dripping off the underside of the decking and onto the production areas.

### ***System Application:***

Furnish and install **CentiMark** 60 mil reinforced, TPO roof membrane.

Position the TPO membrane over the prepared substrate and allow the membrane sufficient time to "relax" prior to installation.

Install the new TPO membrane over the prepared surface by utilizing mechanical fasteners on at the edges of the 5 and 10 foot wide membranes.

Mechanical attachment of the membrane shall be done utilizing a 1" wide polymer batten bar or 2 3/8" round seam plates and FM Global (FM) approved fasteners. Maximum spacing 6" on center.

The thermoplastic membrane seams will be overlapped a minimum of 5", then hot air welded together. Weld width shall be a minimum of 1.5" in width for automatic machine welding. Weld width shall be 2" in width for hand welding. Upon completion of welding, each seam shall be probed to ensure proper securement.

### **HVAC, Curbed Penetrations and Other Air Handling Unit Details**

Furnish and install at the base of the unit 2 3/8" round seam plates to the field membrane. Adhere a second piece of thermoplastic membrane to the curb with bonding adhesive and install prefabricated universal corners for reinforcement.

Furnish and install a 30" wide TPO protective mat at rooftop access points and roof top units requiring regular maintenance.

### **Parapet Wall Detail**

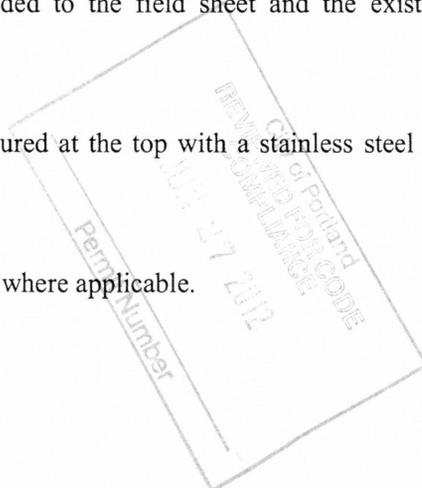
Furnish and install 2 3/8" round seam plates or 1" wide polymer batten strip to the field sheet at the base of the wall. A second piece of membrane will be adhered to the wall, welded to the field sheet and the existing coping re-installed.

### **Pipes Less Than 6" In Diameter**

Furnish and install new prefabricated thermoplastic pipe boot secured at the top with a stainless steel screw type clamp fully adhered to the field sheet.

### **Stacks Greater Than 6" In Diameter**

Furnish and install a 60 mil, non-reinforced thermoplastic flashing, where applicable.



**Miscellaneous Projections**

Furnish and install thermoplastic flashings to the roof projections. Upon completion of welding, each seam shall be probed to ensure proper securement.

***Sheet Metal Accessories:***

Furnish and install new retrofit drain inserts into existing drains.

Furnish and install aluminum termination bar at the edge of the membrane at any applicable perimeter(s).

Re-install existing metal coping.

***Standard Operating Procedures:***

**Employee Professionalism**

All work shall be performed in a safe, professional manner in compliance with Centimark policy.

Permits CentiMark will supply the necessary permits for the project, including for asbestos removal and disposal.

Asbestos Testing Core samples of the existing roof systems have been taken to an independent laboratory for the testing of asbestos content (ACRM). This testing revealed asbestos in the roof system.

**Nightly Tie-In's**

Depending on new roof system being installed, temporary water cut-offs are to be constructed at the end of each working day to protect the newly installed roof system and building interior.

**Clean Up**

All work premises will be cleaned daily during the construction process and at the completion of the project.

**Job Acceptance and Punch List**

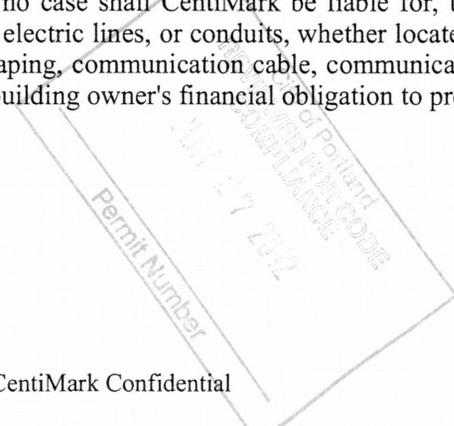
Conduct a post job walk through for final sign-off of our job completion form.

**Warranty**

Upon purchase of the roofing system, you become entitled to receive the benefits of single source responsibility through **CentiMark's** comprehensive written warranty. This warranty protects your roof against defects in materials or workmanship. If your roof leaks at any time during the warranty period, we will provide complete warranty service.

Quote Name	Section Name	Length
All Quotes.	All Sections.	Twenty(20)

**CentiMark Corporation** disclaims any and all responsibility for pre-existing conditions including, but not limited to: structural damage or deficiencies, clogged drains, mold growth, excessive standing water, removal of hazardous material or other hidden deficiencies such as; damaged or leaking skylights, HVAC units/conduits, electrical or gas lines. This proposal does not cover, and in no case shall CentiMark be liable for, the removal of, or damage to, HVAC units/conduits, gas lines, water lines, electric lines, or conduits, whether located above, below, or in the roof system, lightning protection systems, landscaping, communication cable, communication devices, or other devices, including recalibration of satellites. It is the building owner's financial obligation to provide corrective measures.



# ◀◀◀ Executive Proposal Summary ▶▶▶

NorthAmerican Breweries  
2730 Nw 31st Ave.  
Portland, OR 97210

Quote	Section	Sq Ft.	System	Warranty*	Price
Bottling & Lager-MF 60mil TPO w/VB, Dens & ISO(TO)					\$177,322 <b>\$ 175,000</b>
	Lager Roof	2,966	<u>TPO Fastened</u>	Twenty(20) years	
	Bottling Roof	5,040	<u>TPO Fastened</u>	Twenty(20) years	
* Roof system warranties protect your roof against defects in materials or workmanship for the specified period as outlined in the CentiMark Non-Prorated Limited Roof Warranty or the manufacturer's warranty.					

For internal use only, ID # 126903

CentiMark Project Manager Signature \_\_\_\_\_ Date \_\_\_\_\_

**Standard terms: One-third (1/3) of the contract price due at the job start and the balance due net thirty (30) upon job completion, unless otherwise agreed to in the contract document. (Special terms are available upon request)**

*The quotes appearing in this Proposal have been calculated based on current prices for the component building materials. However, the market for building materials is considered to be volatile, and sudden price increases could occur through no fault of CentiMark. Since the quotes are material terms of this Proposal, CentiMark exclusively reserves the right to revoke, without written notice, the quotes at any time prior to a valid purchase order or fully executed contract.*

**This quote does not include any supplemental deck attachment as may be required by Factory Mutual Global (FM). Please note that should FM and/or you require such deck attachment, additional costs will be estimated and added as a separate item to the overall cost of this project.**

Valid from 03/28/2012 to 05/20/2012



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ROOF COVERING MATERIALS (TEVT)

Roofing Systems (TGFU)—Continued

- Insulation:** Any UL Classified insulation, any thickness.  
**Barrier Board:** 1/4 in. min G-P Gypsum Dens-Deck® or Dens-Deck Prime™, with all joints staggered 6 in. from the plywood joints.  
**Membrane:** "EverGuard PVC", adhered with TACC "LA 432" adhesive at 1 gal/60 sq ft or "FA 636" adhesive at 1 gal/140 sq ft.
18. **Deck:** NC **Incline:** 1/2  
**Insulation:** Atlas Roofing "ACFoam II", "BMCA EnergyGuard RA", wood fiber, glass fiber or perlite, any thickness.  
**Membrane:** "EverGuard TPO", 45-80 mil, fully adhered with "TPO Bonding Adhesive", 60 sq ft/gal.
19. **Deck:** NC **Incline:** 2  
**Membrane:** "EverGuard TPO FB", 45-60 mil fully adhered with TACC 636 Bonding Adhesive at 120 sq ft/gal.
20. **Deck:** NC **Incline:** 2-1/2  
**Membrane:** "EverGuard TPO FB", 45-60 mil fully adhered with Imperial "586" Roofing Adhesive, 100 sq ft/gal.
21. **Deck:** NC **Incline:** 3-1/2  
**Membrane:** "EverGuard TPO FB", 45-60 mil, hot mopped or mechanically fastened.
22. **Deck:** NC **Incline:** 1/2  
**Insulation:** Atlas Roofing "ACFoam II", "BMCA EnergyGuard RA", wood fiber, glass fiber or perlite, any thickness.  
**Membrane:** "EverGuard TPO", 45-80 mil, fully adhered with Imperial "3738T" Roofing Adhesive, 120 sq ft/gal.
23. **Deck:** NC **Incline:** 1/4  
**Insulation:** Firestone "ISO 95+GL", "EnergyGuard", wood fiber, glass fiber or perlite, any thickness.  
**Membrane:** "EverGuard TPO", 45-80 mil, fully adhered with Imperial "3738T" Roofing Adhesive, 120 sq ft/gal.
24. **Deck:** NC **Incline:** 1/4  
**Insulation:** Firestone "ISO 95+GL", "EnergyGuard", wood fiber, glass fiber or perlite, any thickness.  
**Membrane:** "EverGuard TPO", 80 mil, fully adhered with Imperial "4459MG" Roofing Adhesive, 60 sq ft/gal.
25. **Deck:** NC **Incline:** 2-1/2  
**Membrane:** One layer "Everguard TPO FB 450 Ultra", "Everguard TPO FB 600 Ultra" or "Everguard TPO FB 800 Ultra", adhered with Imperial 3738T at 120 sq. ft./gal.
26. **Deck:** NC **Incline:** 2-1/2  
**Membrane:** One layer "Everguard TPO FB 450 Ultra", "Everguard TPO FB 600 Ultra" or "Everguard TPO FB 800 Ultra", adhered with TACC 636 at 120 sq. ft./gal.
27. **Deck:** NC **Incline:** 2-1/2  
**Membrane:** One layer "Everguard TPO FB 450 Ultra", "Everguard TPO FB 600 Ultra" or "Everguard TPO FB 800 Ultra", adhered with Imperial 586 at 100 sq. ft./gal.
28. **Deck:** NC **Incline:** 1  
**Membrane:** One layer "EverGuard TPO FB 450 Ultra", "Everguard TPO FB 600 Ultra" or "Everguard TPO FB 800 Ultra", hot mopped or mechanically fastened.
29. **Deck:** NC **Incline:** 3/4  
**Insulation (Optional):** Any UL Classified polyisocyanurate, wood fiber, glass fiber, or perlite any thickness.  
**Base Sheet:** One or more layers Type G1 or G2 or "GAF Stratavent Eliminator Venting Base Sheet (Nailable)", mechanically fastened.  
**Ply Sheet (Optional):** One or more layers Type G1 "GAFGLAS Ply 6", hot mopped or mechanically fastened.  
**Membrane:** Two or more layers "Ruberoïd 20" or three or more plies Type G1 "GAFGLAS" Ply 6", hot mopped.  
**Membrane:** "EverGuard TPO FB", 600 Ultra and 800 Ultra or "Everguard FB" 40-100 mil (TPA), hot mopped or mechanically fastened.
30. **Deck:** C-15/32 **Incline:** 3/4  
**Insulation:** Any UL Classified polyisocyanurate, min 3 in. thick.  
**Base Sheet:** One or more layers Type G1 or G2 or "GAF Stratavent Eliminator Venting Base Sheet (Nailable)", mechanically fastened.  
**Ply Sheet (Optional):** One or more layers Type G1 "GAFGLAS Ply 6", hot mopped or mechanically fastened.  
**Membrane:** Two or more layers "Ruberoïd 20" or three or more plies Type G1 "GAFGLAS Ply 6", hot mopped.  
**Membrane:** "EverGuard TPO FB", 600 Ultra and 800 Ultra or "Everguard FB" 40-100 mil (TPA), hot mopped or mechanically fastened.
31. **Deck:** NC **Incline:** 3/4  
**Insulation (Optional):** Wood fiber, glass fiber, perlite, 1/2 in. thick min.

ROOF COVERING MATERIALS (TEVT)

Roofing Systems (TGFU)—Continued

- Membrane:** One layer "Everguard TPO FB" 450 Ultra, 600 Ultra or 800 Ultra, hot mopped or mechanically fastened.
32. **Deck:** NC **Incline:** 1/2  
**Insulation (Optional):** Min. 1/2 in. wood fiber over any UL Classified polyisocyanurate, any thickness.  
**Membrane:** "EverGuard Freedom TPO" or "Freedom EZ", self adhered.
33. **Deck:** NC **Incline:** 2  
**Membrane:** "EverGuard Freedom TPO" or "Freedom EZ", self adhered.
34. **Deck:** C-15/32 **Incline:** 2  
**Insulation (Optional):** Any UL Classified, any thickness.  
**Barrier Board:** 1/4 in. G-P Gypsum Dens-Deck®.  
**Membrane:** "EverGuard Freedom TPO" or "Freedom EZ", self adhered.
35. **Deck:** NC **Incline:** 1/4  
**Insulation (Optional):** Atlas Roofing "ACFoam II", "BMCA Energy-Guard RA", Firestone "ISO 95+GL", "EnergyGuard", wood fiber, glass fiber or perlite, any thickness.  
**Membrane:** "EverGuard Freedom TPO" or "Freedom EZ", self adhered.
- Class B - Fully Adhered**
1. **Deck:** C-15/32 **Incline:** 1-1/2  
**Gypsum Board (Optional):** 1/2 in., mechanically fastened.  
**Slip Sheet:** Atlas Roofing "FR-50".  
**Insulation:** Apache Building Products "Pyrox White", 2 in. min, mechanically fastened.  
**Membrane:** "EverGuard FB", 40-100 mil (TPA).
2. **Deck:** NC **Incline:** 1  
**Base Sheet:** Type G3, hot mopped or nailed.  
**Insulation:** Firestone Building Products "ISO-95+GL", Atlas Roofing "ACFoam II", any thickness.  
**Membrane:** "EverGuard FB", 40-100 mil (TPA).
3. **Deck:** NC **Incline:** 1/2  
**Base Sheet:** Type G3, hot mopped or nailed.  
**Insulation:** Celotex "Top-R-II", any thickness.  
**Membrane:** "EverGuard FB", 40-100 mil (TPA).
4. **Deck:** NC **Incline:** 1/4  
**Insulation:** Atlas Roofing "ACFoam II", "GAFTEMP Isotherm RA", wood fiber, glass fiber or perlite, any thickness.  
**Membrane:** "EverGuard TPO FB", 45-60 mil, fully adhered with Imperial "3738T" Roofing Adhesive, 180 sq ft/gal.
- Class C - Fully Adhered**
1. **Deck:** C-15/32 **Incline:** 1-1/2  
**Gypsum Board (Optional):** 1/2 in., mechanically fastened.  
**Insulation:** Johns Manville "ENRGY 1G", Rmax "Ply 1" or "Multi-Max", Apache Building Products "Pyrox White", Firestone Building Products "Iso 95+GL" or Atlas Roofing "ACFoam II", 1-1/2 in. thick min.  
**Membrane:** "EverGuard FB", 40-100 mil (TPA).
2. **Deck:** NC **Incline:** 1/2  
**Insulation:** Atlas Roofing "ACFoam II", "BMCA EnergyGuard RA", wood fiber, glass fiber or perlite, any thickness.  
**Membrane:** "EverGuard TPO", 45-60 mil, fully adhered with Ashland "PLIOBOND 2825", 60 sq ft/gal.
- SINGLE PLY MEMBRANE ROOFING SYSTEMS (TPA, PVC and TPO)**
- Class A - Mechanically Fastened**
1. **Deck:** NC **Incline:** 2  
**Gypsum Board (Optional):** 1/2 in., mechanically fastened.  
**Insulation:** Apache Building Products "Pyrox White" or Johns Manville "ENRGY 3", any thickness.  
**Membrane:** "EverGuard PVC", 40-100 mil (TPA).
2. **Deck:** NC **Incline:** 1-1/2  
**Gypsum Board (Optional):** 1/2 in., mechanically fastened.  
**Insulation:** Rmax "Therमारoof Plus" or Atlas Roofing "ACFoam II", any thickness.  
**Membrane:** "EverGuard PVC", 40-100 mil (TPA).
3. **Deck:** C-15/32 **Incline:** 3-1/2  
**Insulation (Optional):** Isocyanurate, extruded or expanded polystyrene, any thickness.  
**Barrier Board:** 1/2 in. gypsum wallboard or 1/4 in. G-P Gypsum Dens-Deck®.  
**Membrane:** "EverGuard PVC", 40-100 mil (TPA).
4. **Deck:** NC **Incline:** 1/4  
**Insulation:** Polystyrene (1 to 2.5 lb per cu ft), 1 in. min.  
**Slip Sheet:** Atlas Roofing "FR-10".  
**Membrane:** "EverGuard PVC", 40-100 mil (TPA).
5. **Deck:** NC **Incline:** 2-1/2

