



### DIEBOLD 816™ Audio System Sound Specifications

DIEBOLD engineering has taken sound level measurements on our audio products associated with our VATs (Vacuum Air Tube Systems); VAT 21, VAT 23, and VAT 30/Easy-air 10 systems. These pneumatic tube systems are equipped with DIEBOLD 816™ Audio Systems.

In order to simulate a worst case configuration, all lane volume controls were set to the maximum levels and the person talking into the microphone stayed within one inch of the microphone. Normally, the lane volume potentiometers are adjusted on a per site basis to allow for normal ambient noise levels. Normal procedure also calls for the person speaking to be within three inches of the microphone.

<i>dB</i>	<i>Distance from Customer Unit (Feet)</i>
75 dB	3
72 dB	10
64 dB	20
61 dB	30
57 dB	40
55 dB	50
53 dB	60
53 dB	70

Please note that these are maximum values and the 816 Audio System is completely adjustable down to zero output. Also, these measurements were taken with no vehicle present, which will block a significant portion of the audio. Normal site conditions require less than maximum levels of output. The system is adjustable to local conditions. Once adjustments are made for the customer terminal (outside), they cannot be changed from outside of the building. In addition, changes made inside the building require a technician to remove a latched panel and make any adjustments for the outside terminal with a tool. The operator makes the inside operator terminal volume adjustments to his/her preference using the volume control.

*Continued*

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For your convenience, the following table is included:

<i>DB level</i>	<i>Description</i>
0 dB	Threshold of Hearing
10 dB	Rustle of Leaves
20 dB	Quiet Studio or Auditorium
30 dB	Quiet Office
60 dB	Conversation at 3 feet
70 dB	Conversation at 1 foot
80 dB	Orchestra Average Level
90 dB	Vanaxial Ventilating Fan
100 dB	Gas Powered Lawn Mower
110 dB	Rock Concert
120 dB	Jet Takeoff at 1,500 feet
130 – 1400 dB	Threshold of Physical Pain

DIEBOLD, INCORPORATED

Dan McIntyre  
Product Manager  
Pneumatic Systems

The Vacuum Air Tube (VAT) 23 underground pneumatic system provides highly dependable operation within a small footprint.

Small 10" (25.4cm) square customer terminal footprint fits virtually any drive-up application

Overhead or underground tubing with true 20" (50.8cm) radius bends and cast clamps for smooth operation

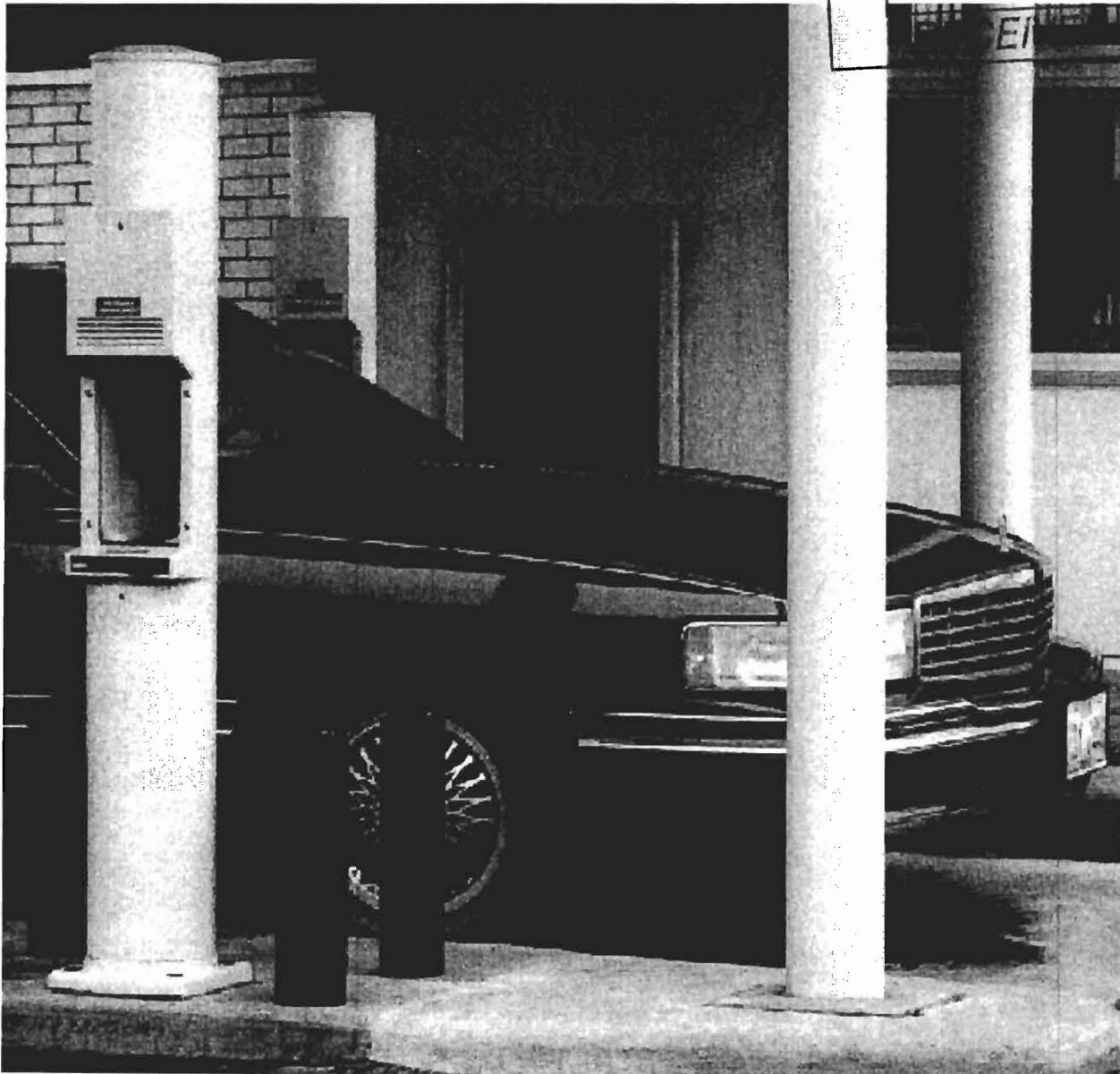
Undercounter operator terminal controls all system functions

Suspended operator terminal for overhead tubing applications, keeps countertop clear for a more efficient work environment

DEPT. OF BUILDING INSPECTION  
CITY OF PORTLAND, ME

DEC 14 2003

**DIEBOLD DRIVE-UP SOLUTIONS**  
VAT 23 Underground Pneumatic System



**DIEBOLD**  
We won't rest.

**FEATURES**

**Durable Low-maintenance Design**

The VAT 23 underground customer terminal is protected by a weather-resistant, low-maintenance epoxy finish. A single efficient blower package housed in the customer unit and long-life electronic components ensure reliable trouble-free operation. The system also features tubing with uniform connections that promote smooth operation to minimize carrier wear, extend the life of the blower system and eliminate the need for periodic realignment of connections. During extensive testing, the VAT 23 system successfully completed a quarter of a million round-trip cycles without failure.

**Construction Flexibility**

A small footprint allows the VAT 23 customer unit to be installed on virtually any new or existing drive-up island. The tubing and wiring can be installed overhead or underground in either a culvert or direct buried configuration. Compact 20" (50.8cm) radius bends reduce the required excavation depth, resulting in significant cost savings.

**Operator Workstation**

The operator workstation fits neatly under the counter, or can be suspended above. The workstation facilitates efficient transaction processing and allows operators to power on, power off, and close and lock the system from within the facility.

**Customer Terminal**

The compact, ergonomically designed terminal features familiar "Send" and "Call" buttons and end-opening carrier for customer convenience and efficient throughput. An optional base raises the terminal for convenient access from vans and trucks.

**Clear Two-way Communication**

Each VAT 23 system is supplied with the 816 Audio™ System for efficient two-way communication. The system allows the operator to select the customer with whom they wish to communicate.

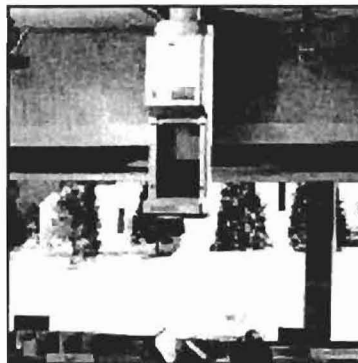
**Options**

Customer Terminal Base Riser 8" (20.32cm) high

Diebold CCTV provides video capabilities for operator only, or operator and customer.



Undercounter Operator Terminal



Suspended Operator Workstation

**SPECIFICATIONS**

Customer terminal  
 10.75" W x 10.75"D x 55.37"H  
 (27.31cm x 27.31cm x 162.56cm)  
 Noise level: less than 68 dBA  
 Operating temperature:  
 -30°F to 131°F (-48°C to 54°C)  
 Relative Humidity: 15% to 100% non-condensing

**Operator workstation**

Undercounter terminal  
 7.44"W x 14"D x 38"H  
 (18.90cm x 35.56cm x 96.52cm)

**Suspended terminal**

9"W x 9.43"D x 28.375"H  
 (22.86cm x 23.97cm x 72.07cm)

Noise level: less than 68 dBA  
 Operating temperature:  
 50°F to 100°F (10°C to 22.8°C)  
 Relative Humidity: 15% to 80% non-condensing

**Tubing**

Standard 4.5" (11.43cm) diameter tubing with 20" (50.8cm) radius bends

**Propulsion design**

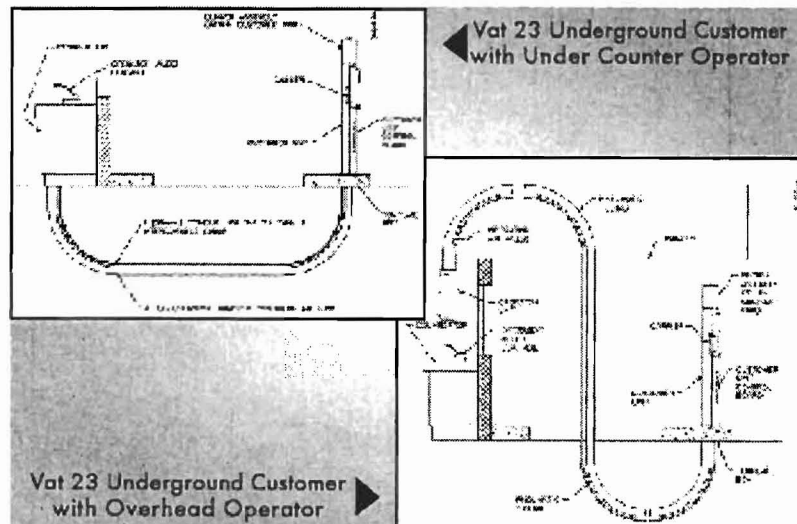
Blower package is located in the customer terminal.  
 Supports payloads of up to 6 lbs. (2.72kg)

**Power Requirements**

115VAC, 60Hz  
 1 AMP  
 220VAC, 50Hz  
 Optional step-down transformer

**Listings and Approvals**

UL 114, Office Appliance & Business Equipment  
 UL 291 Rain Test Specification  
 C22 (CSA) No. 950



**DIEBOLD DRIVE-UP SOLUTIONS**  
 VAT 23 Underground Pneumatic System

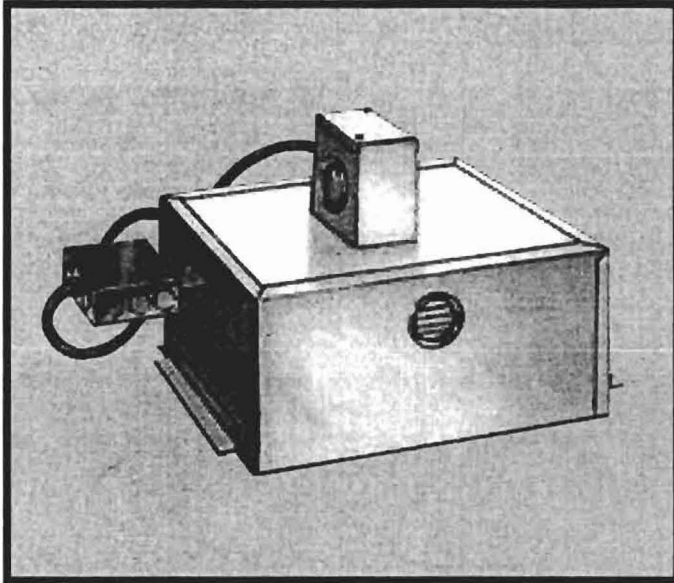
Diebold Incorporated  
 Post Office Box 3077  
 Dept. 9-B-16  
 North Canton, Ohio  
 44720-8077

800.999.3600 USA  
 888.545.9444 Canada  
 330.490.4000 Outside N. America  
 e-mail:  
 productinfo@diebold.com  
 www.diebold.com

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 We won't rest.

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 .JM 0104 File No. 78-583 r.3

# 851/852/8614 SERIES



The 851/852 Series is a universal mount recessed fixture that requires no framing and is perfect for new construction or retrofit in any type of ceiling material. It features a removable top for easy installation and maintenance, and is available with a vented cover-up to hide previously existing fixture openings in retrofit applications. Aluminum housing and door frame provide specification grade quality and longevity in a competitively priced and in-stock luminaire.

The 8614 Series offers the same features in a smaller housing for narrow soffits. Like its 851 Series counterpart, it requires no framing and is perfect for new construction or retrofit in any type of ceiling material.

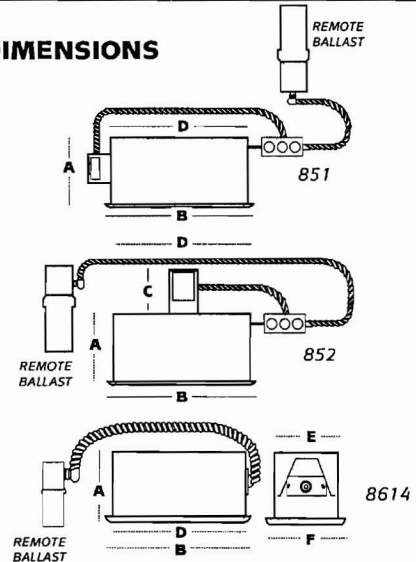


## Fixture Specifications

### FEATURES

- One-piece, corrosion resistant aluminum door frame with retainer cable
- Weatherproof powder-coat finish
- Aluminum housing
- UL listed, suitable for damp locations
- Available vented cover-up
- Mounting hardware included
- Vertical lamp has 60% longer lamp life (852 Series)
- Lamp included
- Pre-wired junction box (14GA, CRS)
- Removable outlet box and socket assembly (852 Series)

### DIMENSIONS



### ORDERING INFORMATION

#### SAMPLE CATALOG NUMBER

**8XXX XX XXXXXX XX XX XX XXX**

Series    Mounting    Wattage/Source    Lens    Application    Finish    Voltage

SERIES	
852	Vertical Lamp
851	Horizontal Lamp
8614	Horizontal Lamp

MOUNTING	
WW	Wall Wash
DL	Downlight
SM	Surface Mount (not avail. for 8614)

WATTAGE/SOURCE <sup>1</sup>	
100MH	100 watt metal halide
175MH	175 watt metal halide
250MH	250 watt metal halide (surface only)
100HPS	100 watt high pressure sodium
150HPS	150 watt high pressure sodium
250HPS	250 watt high pressure sodium (surface only)

LENS	
FP	Flat temp. Prismatic
DO	Drop Opal (851/852 only)

APPLICATION	
OW	Plywood, Drywall, Plaster
AL	Aluminum

FINISH <sup>2</sup>	
WH	White
AD	Almond
DB	Dark Bronze

VOLTAGE	
120	120 Volt
277	277 Volt

<sup>1</sup> Consult factory for other lamp wattage/source options.  
<sup>2</sup> Consult factory for other finishes.



A HUBBELL LIGHTING, INC. COMPANY

Performance Designed Lighting Products

[www.securitylightingsystems.com](http://www.securitylightingsystems.com)

1085 Johnson Drive • Buffalo Grove, IL 60089 • TOLL-FREE: 800-544-4848 • PHONE: 847-279-0627 • FAX: 847-279-0642

## INSTALLATION INSTRUCTIONS



*Place remote ballast on nearest ceiling joist.*



*Disengage fixture top, raise fixture through opening and insert (4) "L" angles through crossed slots.*



*Use tab and bottom of fixture to sandwich ceiling material. Tighten screw. (No framing required.)*



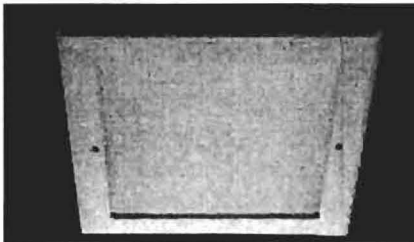
*Drop flex through top of fixture and make all connections to 1900 box provided.*



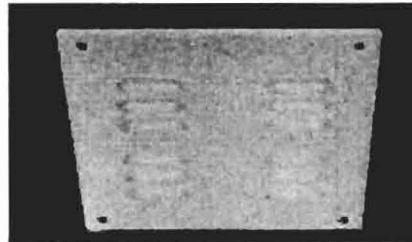
*Install lamp, hinged door frame and lens.*



*Swing door frame to closed position and tighten screws.*



*Hinged aluminum door frame with FTP lens*



*Vented cover-up with screen*



A HUBBELL LIGHTING, INC. COMPANY

**Performance Designed Lighting Products**

[www.securitylightingsystems.com](http://www.securitylightingsystems.com)

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**SOLID WASTE**  
**University Credit Union**

**Anticipated Solid Waste Generation**

The proposed credit union will generate minimal solid waste from its operation and the waste material will be handled on a daily basis by the cleaning contractor and disposed of in an off-site licensed facility. During construction solid waste will be generated during the site work and the building construction. The former Burger King building has already been demolished and removed from the site.

Construction Phase: The site is primarily pavement and some concrete features. The construction of the proposed building and parking area will generate a limited amount of construction debris.

Type	Estimated Quantity
Demolition	
Pavement:	125 CY
Miscellaneous:	30 CY
Construction Debris ( <i>Assume 6,000 SF x 7 CY/1000 SF</i> )	42 CY

**Solid Waste Disposal**

Solid waste will be disposed as follows:

Construction Phase:

Demolition

- Steel will be sent to a recycling facility.
- Pavement will be sent to a pavement recycling facility where it will be used in pavement materials.
- Miscellaneous debris will be recycled if possible and the materials that cannot be recycled will be disposed of at a licensed solid waste disposal facility.

Construction debris will be recycled on site if possible. If any material is not suitable for this process, it will be disposed at a local construction material recycling facility.

Licensed haulers that may be used by the applicant:

- Waste Management – Portland, Maine
- Pine Tree Waste Services – South Portland, Maine

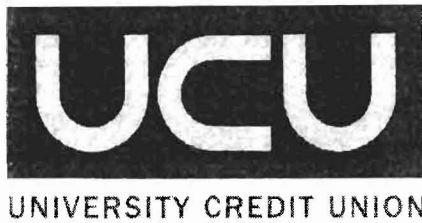
- Trojano Waste Services – South Portland, Maine
- BBI Waste Industries – Old Orchard Beach, Maine

Local recycling and/or disposal facilities include:

- Regional Waste Systems – Portland, Maine
- Commercial Recycling Services on Pleasant Hill Road - Scarborough, Maine
- Riverside Recycling Facility - Portland, Maine
- MERC - Biddeford, Maine

JBSW:jbsw/kn  
November 29, 2006





Tel: (207) 772-1906  
Fax: (207) 772-1852  
Toll Free: (800) 696-8696

November 16, 2006

City of Portland  
Planning Division  
Attn: Shukria Wiar  
389 Congress Street  
Portland, ME 04101

RE: 1071 Brighton Avenue / University Credit Union Project  
Application # 2006-0221; CBL 274 D0116001

M. Wiar,

I am writing in response to your letter to Jan Wiegman of Sebago Technics dated November 14, 2006. More specifically, I am addressing your concerns under the subsection of Miscellaneous Items, Item C. University Credit Union [UCU] is Maine's 5<sup>th</sup> largest credit union with over \$153 million in assets and over 20,000 members. A state chartered credit union incorporated in 1967, UCU exists to serve the financial needs of the students, employees and alumni of the University of Maine system schools statewide and their immediate family members.

It is the intent of UCU to fund the construction project at hand with existing cash resources and established lines of credit. The attached balance sheet details our current liquidity position and we presently have a \$14 million available line of credit with Tricorp Federal Credit Union of Westbrook, ME and a \$51 million line of credit (of which approximately \$20 million is unused) with the Federal Home Loan Bank of Boston.

I believe that the enclosed information is sufficient evidence that UCU is a well capitalized institution with more than adequate means to finance the projected \$2.3 million project at hand.

If I can be of further service, please do not hesitate to contact me directly at 207-772-1906 x2231 or [joc.gervais@maine.edu](mailto:joc.gervais@maine.edu).

Respectfully,

A handwritten signature in black ink, appearing to read "Joseph R. Gervais", is written over a white background.

Joseph R. Gervais  
Executive Vice President

2007 Spring Meeting  
University of Maine at Bangor  
[www.umaine.edu](http://www.umaine.edu)

**University Credit Union**  
**Consolidated Statements of Financial Condition**  
**Month Ended October 31, 2006**  
**In Thousands**

Assets	Current	Last Month		Last Year			
	As of 10/31/06	As of 09/30/06	\$ Change	% Change	As of 10/31/05	\$ Change	% Change
Real Estate Loans	\$85,398	\$85,472	(\$74)	-0.09%	\$82,499	\$2,899	3.51%
Commercial Loans	4,258	4,564	(308)	-6.76%	5,587	(1,329)	-23.84%
Other Secured Loans	32,579	32,006	573	1.79%	33,177	(597)	-1.80%
Other Unsecured Loans	3,457	3,425	32	0.94%	3,282	175	5.33%
Participation Loans	5,265	455	4,810	1056.66%	239	5,026	2099.23%
Allow for Loan Losses	(323)	(314)	(10)	3.05%	(459)	136	-29.62%
Loans, Net	130,631	125,608	5,023	4.00%	124,324	6,307	5.07%
Tricorp & Eascorp FCUs	2,167	5,849	(3,683)	62.96%	4,991	(2,824)	56.58%
Investments HTM & AFS	5,244	5,377	(133)	-2.48%	6,169	(926)	-15.00%
CDs & Debentures	837	935	(98)	-10.48%	1,755	(918)	-52.30%
Other Investments	1,929	2,090	(162)	-7.75%	2,146	(218)	-10.14%
Total Investments	10,176	14,251	(4,076)	-28.60%	15,060	(4,885)	-32.43%
Cash & Cash Equivalents	3,418	3,169	249	7.85%	2,961	457	15.42%
Investment in PMC	326	333	(8)	-2.26%	372	(46)	-12.39%
Accrued Interest Receivable	611	621	(11)	-1.70%	584	27	4.63%
Loans held for sale, net	120	0	120	N/A	(2)	122	-5837.45%
Premises, Net	3,491	3,453	38	1.12%	3,770	(278)	-7.39%
Furniture & Fixtures, Net	458	409	49	11.97%	484	(26)	-5.34%
NCUSIF Deposit	1,015	1,015	-	0.00%	967	48	4.96%
Assets acquired in liquidation of loans, Net	0	0	-	N/A	24	(24)	-100.00%
Other Assets	2,881	2,381	499	20.97%	943	1,937	205.31%
Total Assets	\$153,126	\$151,242	\$1,885	1.25%	\$149,488	\$3,638	2.43%
<b>Liabilities</b>							
Accounts Payable	\$786	\$1,362	(\$576)	-42.28%	\$794	(\$8)	-0.97%
Notes Payable	31,750	28,750	3,000	10.43%	33,500	(1,750)	-5.22%
Accrued & Other Liabilities	206	217	(11)	-5.00%	264	(58)	-21.94%
Total Liabilities	32,742	30,329	2,413	7.96%	34,558	(1,816)	-5.25%
<b>Member Deposits</b>							
Shares	29,833	30,303	(470)	-1.55%	31,132	(1,299)	-4.17%
Drafts	19,092	20,640	(1,548)	-7.50%	19,366	(274)	-1.42%
Premier Checking	2,537	2,932	(395)	-13.48%	3,072	(535)	-17.42%
Clubs, IOLTAs, & Escrows	4,918	4,090	828	20.25%	2,761	2,158	78.15%
SuperShares	5,063	5,398	(335)	-6.21%	6,646	(1,583)	-23.82%
Money Markets	1,037	1,178	(141)	-11.93%	1,487	(450)	-30.23%
Preferred Money Markets	6,707	6,883	(176)	-2.56%	8,071	(1,363)	-16.89%
Share Certificates	31,188	29,620	1,569	5.30%	24,184	7,004	28.96%
IRA Clubs	1,416	1,424	(8)	-0.53%	1,643	(227)	-13.81%
IRA Certificates	4,015	3,979	36	0.91%	3,265	750	22.98%
Total Member Deposits	105,808	106,447	(640)	-0.60%	101,627	4,181	4.11%
<b>Reserves</b>							
Regular Reserves	6,478	6,434	44	0.68%	5,985	493	8.25%
Accum Unrealized Gain / Loss on AFS Invest	(58)	(63)	5	-8.65%	(104)	47	-44.82%
Undivided Earnings	8,156	8,094	62	0.76%	7,423	733	9.87%
Total Reserves	14,576	14,465	111	0.77%	13,303	1,273	9.57%
Total Liabilities							
Deposits and Reserves	\$153,126	\$151,242	\$1,885	1.25%	\$149,488	\$3,638	2.43%



P.O. Box 1429  
Portland, Maine 04104

2 Ledgeview Drive  
Westbrook, Maine 04092

(207) 761-0774  
1-800-346-1936

November 20, 2006

Mr. Joseph Gervais, EVP  
University Credit Union  
Rangely Road  
Orono, ME 04469-5779

**Re: University Credit Union Line of Credit**

Dear Joe:

Pursuant to your request this letter is written to outline University Credit Union's line of credit relationship and creditworthiness with Tricorp FCU.

University Credit Union has a considerable relationship with Tricorp FCU and is considered among the most creditworthy. University Credit Union currently has a contract for a revolving line of credit totaling \$14 Million. As of November 20, 2006 there was no outstanding balance. The overnight deposit relationship is significant as well, with average balances exceeding \$1 Million in most months.

Please do not hesitate to contact me at 800-346-1936 Ext. 209 should you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Fred M. Johnson', written in dark ink.

Fred M. Johnson  
Vice President/CFO

completeness

Applicant: University C.U.

Date: 11/7/06

Address: 1071 Brighton Ave

C-B-L: 274-D-016

CHECK-LIST AGAINST ZONING ORDINANCE

received revised plans 12/13/06

Date -

#07-0478

Zone Location - B-2

Interior of corner lot -

Planning Bd Conditional Use

Proposed Use/Work -

to change the use from Restaurant to

Sewage Disposal -

Bank with drive-thru - 5,541 sq Bldg

Lot Street Frontage -

50' min SAT 125.25'

Front Yard - No further back than - 24.15' shown 20.36' shown

Rear Yard - 10' min -

54.15' ± 2 = 27' min - shown

Plans received 12/13/06

Side Yard - Side yard on side of = 10' min - SAT show 11' OK

Projections -

Width of Lot - None, 42' 3 5/8" given in Elevation book - not to scale

Height - 45' max - ~~no Bldg~~ (Submitted)

Lot Area - 10,000 sq min, .74 acres - 32,216 sq given

Lot Coverage Impervious Surface - 80% max 25' x 2.8' max 22,874 sq 271%

Area per Family - N/A 32,216 sq x 80% = 25,773 sq

Off-street Parking - 19 parking spaces - 5541 / 334 = 16.58 or 17 req

Loading Bays - N/A

Site Plan - 2006-0221

Shoreland Zoning/ Stream Protection - N/A

Flood Plains - Panel 6 - Zone X

Requires SA Conditional Use to the Planning Bd for the Drive Thru



# COMcheck Software Version 3.4.1 Envelope Compliance Certificate

## 90.1 (2001) Standard

Report Date: 05/02/07

Data filename: B:\BP\07239B-1\07239.cck

### Section 1: Project Information

Project Title: UNIVERSITY CREDIT UNION

Construction Site:  
1071 BRIGHTON AVENUE  
PORTLAND, ME 04102

Owner/Agent:

Designer/Contractor:  
SHREMSHOCK ENGINEERING, INC  
6130 S. SUNBURY RD  
WESTERVILLE, OH 43081

### Section 2: General Information

Building Location (for weather data): **Portland, Maine**  
 Heating Degree Days (base 65 degrees F): **7378**  
 Cooling Degree Days (base 50 degrees F): **1943**  
 Building Type for Envelope Requirements: **Non-Residential**  
 Project Type: **New Construction**  
 Vertical Glazing / Wall Area Pct.: **27%**

Activity Type(s)	Floor Area
Retail and Banking:Banking Activity Area	2295
Common Space Types:Restrooms	254
Common Space Types:Office - Enclosed	444
Common Space Types:Conference/Meeting/Multipurpose	512

### Section 3: Requirements Checklist

**Envelope PASSES: Design 15% better than code.**

#### Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor
Roof 1: Attic Roof with Wood Joists	3505	30.0	0.0	0.034	0.027
Exterior Wall 1: Wood-Framed, 24" o.c.	3766	19.0	0.0	0.065	0.089
Window 1: Vinyl Frame:Double Pane with Low-E, Tinted, Fixed, SHGC 0.34	924	---	---	0.300	0.570
Door 1: Glass, Tinted, SHGC 0.34	84	---	---	0.300	0.570
Floor 1: Slab-On-Grade:Unheated	269	---	---	---	---

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

#### Insulation:

- 1. Open-blown or poured loose-fill insulation has not been used in attic roof spaces with ceiling slope greater than 3 in 12.
- 2. Wherever vents occur, they are baffled to deflect incoming air above the insulation.
- 3. Recessed lights, equipment and ducts are not affecting insulation thickness.
- 4. No roof insulation is installed on a suspended ceiling with removable ceiling panels.
- 5. All exterior insulation is covered with protective material.
- 6. Cargo and loading dock doors are equipped with weather seals.

N/A

#### Fenestration and Doors:

- 7. Windows and skylights are labeled and certified by the manufacturer for U-factor and SHGC.
- 8. Fixed windows and skylights unlabeled by the manufacturer have been site labeled using the default U-factor and SHGC.
- 9. Other unlabeled vertical fenestration, operable and fixed, that are unlabeled by the manufacturer have been site labeled using the default U-factor and SHGC. No credit has been given for metal frames with thermal breaks, low-emissivity coatings, gas fillings, or insulating spacers.

**Air Leakage and Component Certification:**

- 10. All joints and penetrations are caulked, gasketed, weather-stripped, or otherwise sealed.
- 11. Windows, doors, and skylights certified as meeting leakage requirements.
- 12. Component R-values & U-factors labeled as certified.
- 13. Building entrance doors have a vestibule and equipped with closing devices.

*Exceptions:*

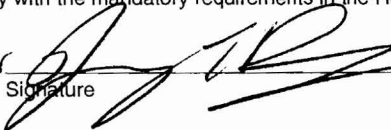
Buildings less than four stories above grade. Building entrances with revolving doors.

Doors that open directly from a space less than 3000 sq. ft. in area.

- 14. Insulation installed according to manufacturer's instructions, in substantial contact with the surface being insulated, and in a manner that achieves the rated R-value without compressing the insulation.

**Section 4: Compliance Statement**

*Compliance Statement:* The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 90.1 (2001) Standard requirements in COMcheck Version 3.4.1 and to comply with the mandatory requirements in the Requirements Checklist.

Jeromy T. Percy PE, Mechanical Engineer

5/2/07

Name - Title
Signature
Date



COMcheck Software Version 3.4.1

# Lighting and Power Compliance Certificate

## 90.1 (2001) Standard

Report Date: 05/02/07

Data filename: B:\BPI\07239B~1\07239.cck

### Section 1: Project Information

Project Title: UNIVERSITY CREDIT UNION

Construction Site:  
1071 BRIGHTON AVENUE  
PORTLAND, ME 04102

Owner/Agent:

Designer/Contractor:  
Reece Prather  
SHREMSHOCK ENGINEERING, INC  
6130 S. SUNBURY RD  
WESTERVILLE, OH 43081  
614-545-4550  
rprather@shremshock.com

### Section 2: General Information

Building Use Description by: **Activity Type**  
Project Type: **New Construction**

<u>Activity Type(s)</u>	<u>Floor Area</u>
Retail and Banking:Banking Activity Area	2295
Common Space Types:Restrooms	254
Common Space Types:Office - Enclosed	444
Common Space Types:Conference/Meeting/Multipurpose	512

### Section 3: Requirements Checklist

#### Interior Lighting:

1. Total actual watts must be less than or equal to total allowed watts.

<b>Allowed Watts</b>	<b>Actual Watts</b>	<b>Complies</b>
7196	5572	YES

#### Exterior Lighting:

2. Minimum efficacy of 60 lumen/watt for lamps greater than 100W.
3. Lighting power for canopies, entrances, and exits meets the following criteria (trade-offs allowed among these applications):
- (i) Lighting power for free-standing canopy areas or building entrances with canopies is less than or equal to 3 watts per square foot.
  - (ii) Lighting power for building entrances without a canopy is less than or equal to 33 watts per linear foot of door width.
  - (iii) Lighting power for building exits is less than or equal to 20 watts per linear foot of exit door width.
4. Lighting power for building facades is less than or equal to 0.25 watts per square foot of the illuminated area.

*Exceptions:*

Controlled by motion sensor, signal or advertising signage, highlighting features of historic monuments and buildings, or required for safety or security.

#### Controls, Switching, and Wiring:

5. Independent manual or occupancy sensing controls for each space (remote switch with indicator allowed for safety or security).
- N/A  6. Automatic shutoff control for lighting in >5000 sq.ft buildings by time-of-day device, occupant sensor, or other automatic control.

*Exceptions:*

24 hour operation lighting.

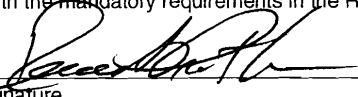
- N/A  7. Master switch at entry to hotel/motel guest room.
- N/A  8. Separate control device for display/accent lighting, case lighting, task lighting, nonvisual lighting, lighting for sale, and demonstration lighting.
- 9. Photocell/astronomical time switch on exterior lights.  
*Exceptions:*  
 Covered vehicle entrance/exit areas requiring lighting for safety, security and eye adaptation.
- 10. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).  
*Exceptions:*  
 Electronic high-frequency ballasts;  
 Luminaires not on same switch;  
 Recessed luminaires 10 ft. apart or surface/pendant not continuous;  
 Luminaires on emergency circuits.

**Voltage Drop:**

- 11. Feeder conductors have been designed for a maximum voltage drop of 2 percent.
- 12. Branch circuit conductors have been designed for a maximum voltage drop of 3 percent.

**Section 4: Compliance Statement**

*Compliance Statement:* The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 90.1 (2001) Standard requirements in COMcheck Version 3.4.1 and to comply with the mandatory requirements in the Requirements Checklist.

Reece A. PRATHER, PE, PRINCIPAL/SUBCONTRACTOR  05/02/07  
 Name - Title Signature Date

**Section 5: Post Construction Compliance Statement**





# Lighting Application Worksheet

## 90.1 (2001) Standard

Report Date:

Data filename: B:\BPI\07239B~1\07239.cck

### Section 1: Allowed Lighting Power Calculation

A Area Category	B Floor Area (ft <sup>2</sup> )	C Allowed Watts / ft <sup>2</sup>	D Allowed Watts (B x C)
Retail and Banking:Banking Activity Area	2295	2.4	5508
Common Space Types:Restrooms	254	1	254
Common Space Types:Office - Enclosed	444	1.5	666
Common Space Types:Conference/Meeting/Multipurpose	512	1.5	768
Total Allowed Watts =			7196

### Section 2: Actual Lighting Power Calculation

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
<b>Retail and Banking:Banking Activity Area (2295 sq.ft.)</b>				
Linear Fluorescent 5: A: Other / Electronic	2	8	60	480
Linear Fluorescent 6: C: Other / Electronic	3	1	142	142
Compact Fluorescent 9: E: Other / Electronic	1	2	36	72
Compact Fluorescent 1: F: Other / Electronic	1	3	36	108
Compact Fluorescent 3: G: Other / Electronic	1	1	12	12
Incandescent: H: Other / Electronic	1	4	50	200
Incandescent 1: I: Other	1	8	50	400
Linear Fluorescent 7: K: Other / Electronic	1	4	23	92
Linear Fluorescent 2: L4: Other / Electronic	3	13	64	832
Linear Fluorescent 8: M: Other / Electronic	1	16	39	624
Linear Fluorescent 3: N: Other / Electronic	1	1	100	100
Incandescent 3: R: Other	1	5	50	250
Linear Fluorescent 1: Q1: Other / Electronic	2	1	60	60
Linear Fluorescent 10: Q2: Other / Electronic	2	1	60	60
Incandescent 7: S: Other	1	2	50	100
Incandescent 2: T: Other	1	8	20	160
Incandescent 4: V: Other	1	4	50	200
<b>Common Space Types:Restrooms (254 sq.ft.)</b>				
Linear Fluorescent 12: A: Other / Electronic	2	5	60	300
<b>Common Space Types:Office - Enclosed (444 sq.ft.)</b>				
Linear Fluorescent 14: A: Other / Electronic	2	2	60	120
Compact Fluorescent 4: F: Other / Electronic	1	6	36	216
Linear Fluorescent 13: L4: Other / Electronic	3	3	64	192
Linear Fluorescent 4: L12: Other / Electronic	4	1	192	192
<b>Common Space Types:Conference/Meeting/Multipurpose (512 sq.ft.)</b>				
Compact Fluorescent 5: F: Other / Electronic	1	2	36	72
Compact Fluorescent 6: G: Other / Electronic	1	3	12	36
Linear Fluorescent 15: L4: Other / Electronic	3	3	64	192
Linear Fluorescent 11: L8: Other / Electronic	1	1	128	128
Incandescent 6: R: Other	1	2	50	100

Incandescent 5: T: Other	1	3	20	60
Compact Fluorescent 7: U: Other / Electronic	1	2	36	72
Total Actual Watts =				5572

### Section 3: Compliance Calculation

If the Total Allowed Watts minus the Total Actual Watts is greater than or equal to zero, the building complies.

Total Allowed Watts =	7196
Total Actual Watts =	5572
Project Compliance =	1624

**Lighting PASSES: Design 23% better than code.**



COMcheck Software Version 3.4.1

# Mechanical Compliance Certificate

## 90.1 (2001) Standard

Report Date: 05/02/07

Data filename: B:\BPI\07239B~1\07239.cck

## Section 1: Project Information

Project Title: UNIVERSITY CREDIT UNION

Construction Site:  
1071 BRIGHTON AVENUE  
PORTLAND, ME 04102

Owner/Agent:

Designer/Contractor:  
SHREMSHOCK ENGINEERING, INC  
6130 S. SUNBURY RD  
WESTERVILLE, OH 43081

## Section 2: General Information

Building Location (for weather data): **Portland, Maine**  
Heating Degree Days (base 65 degrees F): **7378**  
Cooling Degree Days (base 50 degrees F): **1943**  
Project Type: **New Construction**

## Section 3: Mechanical Systems List

### Quantity System Type & Description

- | Quantity | System Type & Description  |
|----------|--|
| 1        | HVAC System 1: Heating: Central Furnace, Gas, Heating Capacity <65 kBtu/h / Cooling: Split System, Capacity <54 kBtu/h, Air-Cooled Condenser / Single Zone             |
| 1        | HVAC System 2: Heating: Duct Furnace, Gas, Heating Capacity >=65 - <225 kBtu/h / Cooling: Split System, Capacity >=54 - <65 kBtu/h, Air-Cooled Condenser / Single Zone |
| 1        | HVAC System 3: Heating: Central Furnace, Gas, Heating Capacity >=65 - <225 kBtu/h / Cooling: Split System, Capacity <54 kBtu/h, Air-Cooled Condenser / Single Zone     |
| 1        | HVAC System 4: Cooling: Split System, Capacity <54 kBtu/h, Air-Cooled Condenser / Single Zone  |
| 1        | Storage Water Heater 1: Electric Storage Water Heater, Capacity: 10 gallons  |

## Section 4: Requirements Checklist

### Requirements Specific To: HVAC System 1 :

- 1. Equipment minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% Et
- 2. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 2 :

- 1. Equipment minimum efficiency: Duct Furnace (Gas): 80% Ec
- 2. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 3 :

- 1. Equipment minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% Et
- 2. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 4 :

- 1. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: Storage Water Heater 1 :

- 1. No efficiency requirements for water heater with storage capacity less than 20 gallons.
- 2. First 8 ft of outlet piping is insulated

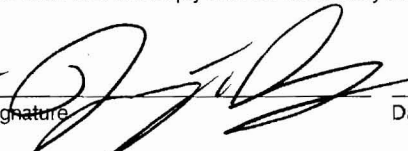
- 3. Hot water storage temperature adjustable down to 120 degrees F or lower
- 4. Heat traps provided on inlet and outlet of storage tanks
- 5. Hot water system sized per manufacturer's sizing guide or engineering standards acceptable to the adopting authority.

**Generic Requirements: Must be met by all systems to which the requirement is applicable:**

- 1. Load calculations per 2001 ASHRAE Fundamentals
- 2. Thermostatic controls has 5 degrees F deadband
  - Exception: Thermostats requiring manual changeover between heating and cooling
- 3. Hot water pipe insulation: 1 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in. Chilled water/refrigerant/brine pipe insulation: 1 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in. Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.
  - Exception: Piping within HVAC equipment
  - Exception: Fluid temperatures between 55 and 105 degrees F
  - Exception: Fluid not heated or cooled
  - Exception: Runouts <4 ft in length
- 4. Piping, insulated to 1/2 in. if nominal diameter of pipe is <1.5 in.; Larger pipe insulated to 1 in. thickness
- 5. Lavatory faucet outlet temperatures in public restrooms limited to 110 degrees F (43 degrees C)
- N/A  6. Where separate thermostats are used for heating and cooling, acceptable measures are used to prevent simultaneous heating and cooling
- N/A  7. Stair and elevator shaft vents are equipped with motorized dampers
- 8. Acceptable measures used to prevent simultaneous humidification and dehumidification
  - Exception: Desiccant systems and systems for uses requiring specific humidity levels (approval required)
- 9. Automatic controls for freeze protection systems present
- N/A  10. Automatic ventilation controls (e.g., CO2 controls) or exhaust air heat recovery present for high design occupancy areas (>100 person/1000 ft2) with >3,000 cfm outside air capacities
- 11. Duct, plenum, and piping insulation surfaces suitably protected from weather, moisture, or likely damage
- 12. R-6 supply and return air ducts in unconditioned spaces R-8 supply and return air ducts outside the building R-8 insulation between ducts and the building exterior when ducts are part of a building assembly R-3.5 supply and return air ducts insulation underground
- 13. Duct Sealing: Pressure sensitive tape is not used as the primary sealant Longitudinal and transverse seams for ducts in unconditioned spaces Longitudinal and transverse seams and duct wall penetrations for ducts outside the building Transverse seams on buried ducts
- 14. Humidistat controls prevent reheating, recooling, and mixing of mechanically heated air with mechanically cooled air
- N/A  15. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted
- N/A  16. Kitchen hoods >5,000 cfm provided with 50% makeup air that is uncooled and heated to no more than 60 degrees F unless specifically exempted
- N/A  17. Buildings with fume hood systems must have variable air volume hood design, exhaust heat recovery, or separate makeup air supply meeting the following: a) 75% make up air quantity, and /or b) within 2 degrees F of room temperature and/or c) no humidification d) no simultaneous heating and cooling

**Section 5: Compliance Statement**

*Compliance Statement:* The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2001) Standard requirements in COMcheck Version 3.4.1 and to comply with the mandatory requirements in the Requirements Checklist.

Jerome T. Perry PE, Mechanical Engineer            5/2/07  
 Name - Title      Signature      Date

**Section 6: Post Construction Compliance Statement**

- HVAC record drawings of the actual installation and performance data for each equipment provided to the owner within 90 days after system acceptance.
- HVAC O&M documents for all mechanical equipment and system provided to the owner within 90 days after system acceptance.
- Written HVAC balancing report provided to the owner.



COMcheck Software Version 3.4.1

# Mechanical Requirements Description

## 90.1 (2001) Standard

Report Date:

Data filename: B:\BPI\07239B~1\07239.cck

The following list provides more detailed descriptions of the requirements in Section 4 of the Mechanical Compliance Certificate.

### Requirements Specific To: HVAC System 1 :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% Et
2. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 2 :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Duct Furnace (Gas): 80% Ec
2. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 3 :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% Et
2. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 4 :

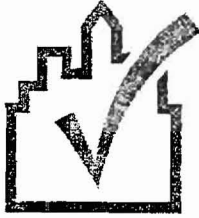
1. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: Storage Water Heater 1 :

1. Service water heating equipment used solely for heating potable water, pool heaters, and hot water storage tanks must meet the following minimum efficiency: No efficiency requirements for water heater with storage capacity less than 20 gallons.
2. Insulation must be provided for the first 8 ft of outlet piping for a constant temperature nonrecirculating storage system and for the inlet pipe between the storage tank and a heat trap in a storage system.
3. Temperature controls must be provided that allow for storage temperature adjustment from 120 degrees F or lower to a maximum temperature compatible with the intended use except when the manufacturer's installation instructions specify a higher minimum thermostat setting to minimize condensation and resulting corrosion. Documentation of the installation instructions must be provided to be exempted from this requirement.
4. Heat traps must be provided on inlet and outlet vertical pipe risers serving storage water heaters and storage tanks not having integral heat traps and serving a nonrecirculating system. Heat traps must be installed as close as practical to the storage tank. Acceptable heat traps are either a) a device specifically designed for the purpose or b) an arrangement of tubing that forms a loop of 360 degrees F, or c) piping that from the point of connection to the water heater (inlet or outlet) includes a length of piping directed downwards before connection to the vertical piping of the supply water or hot water distribution system.
5. Service water heating system design loads for the purpose of sizing systems and equipment must be determined in accordance with manufacturers' published sizing guidelines or generally accepted engineering standards and handbooks acceptable to the adopting authority (e.g., ASHRAE Handbook - HVAC Applications).

### Generic Requirements: Must be met by all systems to which the requirement is applicable:

1. Design heating and cooling loads for the building must be determined using procedures in the ASHRAE Handbook of Fundamentals or an approved equivalent calculation procedure.
2. Thermostats controlling both heating and cooling must be capable of maintaining a 5 degrees F deadband (a range of temperature where no heating or cooling is provided).
  - Exception: Deadband capability is not required if the thermostat does not have automatic changeover capability between heating and cooling.



# COMcheck Software Version 3.4.1 Envelope Compliance Certificate

## 90.1 (2001) Standard

Report Date: 05/02/07

Data filename: B:\BP\07239B-1\07239.cck

### Section 1: Project Information

Project Title: UNIVERSITY CREDIT UNION

Construction Site:  
1071 BRIGHTON AVENUE  
PORTLAND, ME 04102

Owner/Agent:

Designer/Contractor:  
SHREMSHOCK ENGINEERING, INC  
6130 S. SUNBURY RD  
WESTERVILLE, OH 43081

### Section 2: General Information

Building Location (for weather data): **Portland, Maine**  
 Heating Degree Days (base 65 degrees F): **7378**  
 Cooling Degree Days (base 50 degrees F): **1943**  
 Building Type for Envelope Requirements: **Non-Residential**  
 Project Type: **New Construction**  
 Vertical Glazing / Wall Area Pct.: **27%**

Activity Type(s)	Floor Area
Retail and Banking:Banking Activity Area	2295
Common Space Types:Restrooms	254
Common Space Types:Office - Enclosed	444
Common Space Types:Conference/Meeting/Multipurpose	512

### Section 3: Requirements Checklist

**Envelope PASSES** Design 15% better than code.

#### Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor
Roof 1: Attic Roof with Wood Joists	3505	30.0	0.0	0.034	0.027
Exterior Wall 1: Wood-Framed, 24" o.c.	3766	19.0	0.0	0.065	0.089
Window 1: Vinyl Frame:Double Pane with Low-E, Tinted, Fixed, SHGC 0.34	924	---	---	0.300	0.570
Door 1: Glass, Tinted, SHGC 0.34	84	---	---	0.300	0.570
Floor 1: Slab-On-Grade:Unheated	269	---	---	---	---

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

#### Insulation:

- 1. Open-blown or poured loose-fill insulation has not been used in attic roof spaces with ceiling slope greater than 3 in 12.
- 2. Wherever vents occur, they are baffled to deflect incoming air above the insulation.
- 3. Recessed lights, equipment and ducts are not affecting insulation thickness.
- 4. No roof insulation is installed on a suspended ceiling with removable ceiling panels.
- 5. All exterior insulation is covered with protective material.
- 6. Cargo and loading dock doors are equipped with weather seals.

N/A

#### Fenestration and Doors:

- 7. Windows and skylights are labeled and certified by the manufacturer for U-factor and SHGC.
- 8. Fixed windows and skylights unlabeled by the manufacturer have been site labeled using the default U-factor and SHGC.
- 9. Other unlabeled vertical fenestration, operable and fixed, that are unlabeled by the manufacturer have been site labeled using the default U-factor and SHGC. No credit has been given for metal frames with thermal breaks, low-emissivity coatings, gas fillings, or insulating spacers.

**Air Leakage and Component Certification:**

- 10. All joints and penetrations are caulked, gasketed, weather-stripped, or otherwise sealed.
- 11. Windows, doors, and skylights certified as meeting leakage requirements.
- 12. Component R-values & U-factors labeled as certified.
- 13. Building entrance doors have a vestibule and equipped with closing devices.

*Exceptions:*

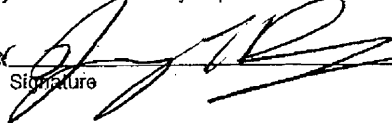
Buildings less than four stories above grade. Building entrances with revolving doors.

Doors that open directly from a space less than 3000 sq. ft. in area.

- 14. Insulation installed according to manufacturer's instructions, in substantial contact with the surface being insulated, and in a manner that achieves the rated R-value without compressing the insulation.

**Section 4: Compliance Statement**

*Compliance Statement:* The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 90.1 (2001) Standard requirements in COMcheck Version 3.4.1 and to comply with the mandatory requirements in the Requirements Checklist.

Jeremy T. Perry PE, Mechanical Engineer

5/2/07

Name - Title
Signature
Date



COMcheck Software Version 3.4.1

# Lighting and Power Compliance Certificate

## 90.1 (2001) Standard

Report Date: 05/02/07

Data filename: B:\BPN\07239B-1\07239.ckk

### Section 1: Project Information

Project Title: UNIVERSITY CREDIT UNION

Construction Site:  
1071 BRIGHTON AVENUE  
PORTLAND, ME 04102

Owner/Agent:

Designer/Contractor:

Reece Prather  
SHREMSHOCK ENGINEERING, INC  
6130 S. SUNBURY RD  
WESTERVILLE, OH 43081  
614-545-4550  
rprather@shremshock.com

### Section 2: General Information

Building Use Description by: **Activity Type**  
Project Type: **New Construction**

Activity Type(s)	Floor Area
Retail and Banking:Banking Activity Area	2295
Common Space Types:Restrooms	254
Common Space Types:Office - Enclosed	444
Common Space Types:Conference/Meeting/Multipurpose	512

### Section 3: Requirements Checklist

#### Interior Lighting:

1. Total actual watts must be less than or equal to total allowed watts.

Allowed Watts	Actual Watts	Complies
7196	5572	YES

#### Exterior Lighting:

2. Minimum efficacy of 60 lumen/watt for lamps greater than 100W.
3. Lighting power for canopies, entrances, and exits meets the following criteria (trade-offs allowed among these applications):
- (i) Lighting power for free-standing canopy areas or building entrances with canopies is less than or equal to 3 watts per square foot.
  - (ii) Lighting power for building entrances without a canopy is less than or equal to 33 watts per linear foot of door width.
  - (iii) Lighting power for building exits is less than or equal to 20 watts per linear foot of exit door width.
4. Lighting power for building facades is less than or equal to 0.25 watts per square foot of the illuminated area.

*Exceptions:*

Controlled by motion sensor, signal or advertising signage, highlighting features of historic monuments and buildings, or required for safety or security.

#### Controls, Switching, and Wiring:

5. Independent manual or occupancy sensing controls for each space (remote switch with indicator allowed for safety or security).
- N/A  6. Automatic shutoff control for lighting in >5000 sq.ft buildings by time-of-day device, occupant sensor, or other automatic control.

*Exceptions:*

24 hour operation lighting.



N/A  
N/A

- 7. Master switch at entry to hotel/motel guest room.
- 8. Separate control device for display/accent lighting, case lighting, task lighting, nonvisual lighting, lighting for sale, and demonstration lighting.
- 9. Photocell/astronomical time switch on exterior lights.

Exceptions:

Covered vehicle entrance/exit areas requiring lighting for safety, security and eye adaptation.

- 10. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).

Exceptions:

Electronic high-frequency ballasts;

Luminaires not on same switch;

Recessed luminaires 10 ft. apart or surface/pendant not continuous;

Luminaires on emergency circuits.

#### Voltage Drop:

- 11. Feeder conductors have been designed for a maximum voltage drop of 2 percent.
- 12. Branch circuit conductors have been designed for a maximum voltage drop of 3 percent.

### Section 4: Compliance Statement

*Compliance Statement:* The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 90.1 (2001) Standard requirements in COMcheck Version 3.4.1 and to comply with the mandatory requirements in the Requirements Checklist.

Reece  
Name - Title

A. PRATER, PE, PRINCIPAL / STUDIO MGR.

Signature

Date

05/02/07

### Section 5: Post Construction Compliance Statement



COMcheck Software Version 3.4.1

# Lighting Application Worksheet

## 90.1 (2001) Standard

Report Date:

Data filename: B:\BPM\07239D-1\07239.cck

### Section 1: Allowed Lighting Power Calculation

A Area Category	B Floor Area (ft <sup>2</sup> )	C Allowed Watts / ft <sup>2</sup>	D Allowed Watts (B x C)
Retail and Banking:Banking Activity Area	2295	2.4	5508
Common Space Types:Restrooms	254	1	254
Common Space Types:Office - Enclosed	444	1.5	666
Common Space Types:Conference/Meeting/Multipurpose	512	1.5	768
Total Allowed Watts =			7196

### Section 2: Actual Lighting Power Calculation

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
<b>Retail and Banking:Banking Activity Area (2295 sq.ft.)</b>				
Linear Fluorescent 5: A: Other / Electronic	2	8	60	480
Linear Fluorescent 6: C: Other / Electronic	3	1	142	142
Compact Fluorescent 9: E: Other / Electronic	1	2	36	72
Compact Fluorescent 1: F: Other / Electronic	1	3	36	108
Compact Fluorescent 3: G: Other / Electronic	1	1	12	12
Incandescent: H: Other / Electronic	1	4	50	200
Incandescent 1: I: Other	1	8	50	400
Linear Fluorescent 7: K: Other / Electronic	1	4	23	92
Linear Fluorescent 2: L4: Other / Electronic	3	13	64	832
Linear Fluorescent 8: M: Other / Electronic	1	16	39	624
Linear Fluorescent 3: N: Other / Electronic	1	1	100	100
Incandescent 3: R: Other	1	5	50	250
Linear Fluorescent 1: Q1: Other / Electronic	2	1	60	60
Linear Fluorescent 10: Q2: Other / Electronic	2	1	60	60
Incandescent 7: S: Other	1	2	50	100
Incandescent 2: T: Other	1	8	20	160
Incandescent 4: V: Other	1	4	50	200
<b>Common Space Types:Restrooms (254 sq.ft.)</b>				
Linear Fluorescent 12: A: Other / Electronic	2	5	60	300
<b>Common Space Types:Office - Enclosed (444 sq.ft.)</b>				
Linear Fluorescent 14: A: Other / Electronic	2	2	60	120
Compact Fluorescent 4: F: Other / Electronic	1	6	36	216
Linear Fluorescent 13: L4: Other / Electronic	3	3	64	192
Linear Fluorescent 4: L12: Other / Electronic	4	1	192	192
<b>Common Space Types:Conference/Meeting/Multipurpose (512 sq.ft.)</b>				
Compact Fluorescent 5: F: Other / Electronic	1	2	36	72
Compact Fluorescent 6: G: Other / Electronic	1	3	12	36
Linear Fluorescent 15: L4: Other / Electronic	3	3	64	192
Linear Fluorescent 11: L8: Other / Electronic	1	1	128	128
Incandescent 6: R: Other	1	2	50	100

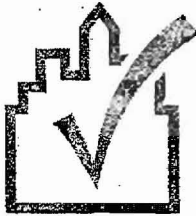
Incandescent 5: T: Other	1	3	20	60
Compact Fluorescent 7: U: Other / Electronic	1	2	36	72
Total Actual Watts =				5572

### Section 3: Compliance Calculation

If the Total Allowed Watts minus the Total Actual Watts is greater than or equal to zero, the building complies.

Total Allowed Watts = 7196  
 Total Actual Watts = 5572  
 Project Compliance = 1624





COMcheck Software Version 3.4.1

# Mechanical Compliance Certificate

## 90.1 (2001) Standard

Report Date: 05/02/07

Data filename: B:\BP\107239B~1\07239.cck

## Section 1: Project Information

Project Title: UNIVERSITY CREDIT UNION

Construction Site:  
1071 BRIGHTON AVENUE  
PORTLAND, ME 04102

Owner/Agent:

Designer/Contractor:  
SHREMSHOCK ENGINEERING, INC  
6130 S. SUNBURY RD  
WESTERVILLE, OH 43081

## Section 2: General Information

Building Location (for weather data): **Portland, Maine**  
Heating Degree Days (base 65 degrees F): **7378**  
Cooling Degree Days (base 50 degrees F): **1943**  
Project Type: **New Construction**

## Section 3: Mechanical Systems List

Quantity	System Type & Description
1	HVAC System 1: Heating: Central Furnace, Gas, Heating Capacity <65 kBtu/h / Cooling: Split System, Capacity <54 kBtu/h, Air-Cooled Condenser / Single Zone
1	HVAC System 2: Heating: Duct Furnace, Gas, Heating Capacity >=65 - <225 kBtu/h / Cooling: Split System, Capacity >=54 - <65 kBtu/h, Air-Cooled Condenser / Single Zone
1	HVAC System 3: Heating: Central Furnace, Gas, Heating Capacity >=65 - <225 kBtu/h / Cooling: Split System, Capacity <54 kBtu/h, Air-Cooled Condenser / Single Zone
1	HVAC System 4: Cooling: Split System, Capacity <54 kBtu/h, Air-Cooled Condenser / Single Zone
1	Storage Water Heater 1: Electric Storage Water Heater, Capacity: 10 gallons

## Section 4: Requirements Checklist

### Requirements Specific To: HVAC System 1 :

- 1. Equipment minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% Et
- 2. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 2 :

- 1. Equipment minimum efficiency: Duct Furnace (Gas): 80% Ec
- 2. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 3 :

- 1. Equipment minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% Et
- 2. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: HVAC System 4 :

- 1. Equipment minimum efficiency: Split System: 10.0 SEER

### Requirements Specific To: Storage Water Heater 1 :

- 1. No efficiency requirements for water heater with storage capacity less than 20 gallons.
- 2. First 8 ft of outlet piping is insulated

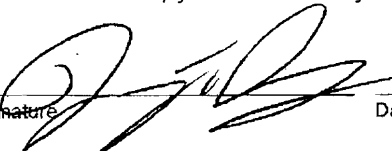
- 3. Hot water storage temperature adjustable down to 120 degrees F or lower
- 4. Heat traps provided on inlet and outlet of storage tanks
- 5. Hot water system sized per manufacturer's sizing guide or engineering standards acceptable to the adopting authority.

**Generic Requirements: Must be met by all systems to which the requirement is applicable:**

- 1. Load calculations per 2001 ASHRAE Fundamentals
- 2. Thermostatic controls has 5 degrees F deadband
  - Exception: Thermostats requiring manual changeover between heating and cooling
- 3. Hot water pipe insulation: 1 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in. Chilled water/refrigerant/brine pipe insulation: 1 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in. Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.
  - Exception: Piping within HVAC equipment
  - Exception: Fluid temperatures between 55 and 105 degrees F
  - Exception: Fluid not heated or cooled
  - Exception: Runouts <4 ft in length
- 4. Piping, insulated to 1/2 in. if nominal diameter of pipe is <1.5 in.; Larger pipe insulated to 1 in. thickness
- 5. Lavatory faucet outlet temperatures in public restrooms limited to 110 degrees F (43 degrees C)
- N/A  6. Where separate thermostats are used for heating and cooling, acceptable measures are used to prevent simultaneous heating and cooling
- N/A  7. Stair and elevator shaft vents are equipped with motorized dampers
- 8. Acceptable measures used to prevent simultaneous humidification and dehumidification
  - Exception: Desiccant systems and systems for uses requiring specific humidity levels (approval required)
- 9. Automatic controls for freeze protection systems present
- N/A  10. Automatic ventilation controls (e.g., CO2 controls) or exhaust air heat recovery present for high design occupancy areas (>100 person/1000 ft2) with >3,000 cfm outside air capacities
- 11. Duct, plenum, and piping insulation surfaces suitably protected from weather, moisture, or likely damage
- 12. R-6 supply and return air ducts in unconditioned spaces R-8 supply and return air ducts outside the building R-8 insulation between ducts and the building exterior when ducts are part of a building assembly R-3.5 supply and return air ducts insulation underground
- 13. Duct Sealing: Pressure sensitive tape is not used as the primary sealant Longitudinal and transverse seams for ducts in unconditioned spaces Longitudinal and transverse seams and duct wall penetrations for ducts outside the building Transverse seams on buried ducts
- 14. Humidistat controls prevent reheating, recooling, and mixing of mechanically heated air with mechanically cooled air
- N/A  15. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted
- N/A  16. Kitchen hoods >5,000 cfm provided with 50% makeup air that is uncooled and heated to no more than 60 degrees F unless specifically exempted
- N/A  17. Buildings with fume hood systems must have variable air volume hood design, exhaust heat recovery, or separate makeup air supply meeting the following: a) 75% make up air quantity, and /or b) within 2 degrees F of room temperature and/or c) no humidification d) no simultaneous heating and cooling

**Section 5: Compliance Statement**

*Compliance Statement:* The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2001) Standard requirements in COMcheck Version 3.4.1 and to comply with the mandatory requirements in the Requirements Checklist.

Jecomy T. Perry PE, Mechanical Engineer            5/2/07  
 Name - Title      Signature      Date

**Section 6: Post Construction Compliance Statement**

- HVAC record drawings of the actual installation and performance data for each equipment provided to the owner within 90 days after system acceptance.
- HVAC O&M documents for all mechanical equipment and system provided to the owner within 90 days after system acceptance.
- Written HVAC balancing report provided to the owner.



## COMcheck Software Version 3.4.1

# Mechanical Requirements Description

### 90.1 (2001) Standard

Report Date:

Data filename: B:\BPI\07239B-1\07239.cck

The following list provides more detailed descriptions of the requirements in Section 4 of the Mechanical Compliance Certificate.

#### Requirements Specific To: HVAC System 1 :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% E1
2. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

#### Requirements Specific To: HVAC System 2 :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Duct Furnace (Gas): 80% Ec
2. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

#### Requirements Specific To: HVAC System 3 :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Central Furnace (Gas): 78% AFUE or 80% Et
2. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

#### Requirements Specific To: HVAC System 4 :

1. The specified heating and/or cooling equipment is covered by ASHRAE 90.1-2001 Standard and must meet the following minimum efficiency: Split System: 10.0 SEER

#### Requirements Specific To: Storage Water Heater 1 :

1. Service water heating equipment used solely for heating potable water, pool heaters, and hot water storage tanks must meet the following minimum efficiency: No efficiency requirements for water heater with storage capacity less than 20 gallons.
2. Insulation must be provided for the first 8 ft of outlet piping for a constant temperature nonrecirculating storage system and for the inlet pipe between the storage tank and a heat trap in a storage system.
3. Temperature controls must be provided that allow for storage temperature adjustment from 120 degrees F or lower to a maximum temperature compatible with the intended use except when the manufacturer's installation instructions specify a higher minimum thermostat setting to minimize condensation and resulting corrosion. Documentation of the installation instructions must be provided to be exempted from this requirement.
4. Heat traps must be provided on inlet and outlet vertical pipe risers serving storage water heaters and storage tanks not having integral heat traps and serving a nonrecirculating system. Heat traps must be installed as close as practical to the storage tank. Acceptable heat traps are either a) a device specifically designed for the purpose or b) an arrangement of tubing that forms a loop of 360 degrees F, or c) piping that from the point of connection to the water heater (inlet or outlet) includes a length of piping directed downwards before connection to the vertical piping of the supply water or hot water distribution system.
5. Service water heating system design loads for the purpose of sizing systems and equipment must be determined in accordance with manufacturers' published sizing guidelines or generally accepted engineering standards and handbooks acceptable to the adopting authority (e.g., ASHRAE Handbook - HVAC Applications).

#### Generic Requirements: Must be met by all systems to which the requirement is applicable:

1. Design heating and cooling loads for the building must be determined using procedures in the ASHRAE Handbook of Fundamentals or an approved equivalent calculation procedure.
2. Thermostats controlling both heating and cooling must be capable of maintaining a 5 degrees F deadband (a range of temperature where no heating or cooling is provided).
  - Exception: Deadband capability is not required if the thermostat does not have automatic changeover capability between heating and cooling.

3. All pipes serving space-conditioning systems must be insulated as follows: Hot water piping for heating systems: 1 in. for pipes  $\leq 1\frac{1}{2}$ -in. nominal diameter 2 in. for pipes  $> 1\frac{1}{2}$ -in. nominal diameter. Chilled water, refrigerant, and brine piping systems: 1 in. insulation for pipes  $\leq 1\frac{1}{2}$ -in. nominal diameter 1  $\frac{1}{2}$  in. insulation for pipes  $> 1\frac{1}{2}$ -in. nominal diameter. Steam piping: 1  $\frac{1}{2}$  in. insulation for pipes  $\leq 1\frac{1}{2}$ -in. nominal diameter 3 in. insulation for pipes  $> 1\frac{1}{2}$ -in. nominal diameter.
  - Exception: Pipe insulation is not required for factory-installed piping within HVAC equipment.
  - Exception: Pipe insulation is not required for piping that conveys fluids having a design operating temperature range between 55 degrees F and 105 degrees F.
  - Exception: Pipe insulation is not required for piping that conveys fluids that have not been heated or cooled through the use of fossil fuels or electric power.
  - Exception: Pipe insulation is not required for runout piping not exceeding 4 ft in length and 1 in. in diameter between the control valve and HVAC coil.
4. Service hot water piping, where required, must be insulated to  $\frac{1}{2}$  in. if pipe less than 1.5 in. nominal diameter. Larger pipe must be insulated to 1 in.. Pipe insulation will have a conductivity of less than 0.28 Btu.in/(h-ft<sup>2</sup>-degrees F).
5. Temperature controlling means must be provided to limit the maximum temperature of water delivered from lavatory faucets in public facility restrooms to 110 degrees F.
6. Where zone heating and cooling are controlled by separate zone thermostats, means (such as limit switches, mechanical stops, or, for DDC systems, software programming) must be provided to prevent simultaneous heating and cooling to the zone.
7. Stair and elevator shaft vents must be equipped with motorized dampers capable of being automatically closed during normal building operation and interlocked to open as required by fire and smoke detection systems. All gravity outdoor air supply and exhaust hoods, vents, and ventilators must be equipped with motorized dampers that will automatically shut when the spaces served are not in use. Exceptions: - Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height above grade. - Ventilation systems serving unconditioned spaces.
8. Where a zone is served by a system(s) with both humidification and dehumidification capability, means (such as limit switches, mechanical stops, or software programming) must be provided to prevent simultaneous operation of humidification and dehumidification equipment.
  - Exception: Zones served by desiccant systems, used with direct evaporative cooling in series; Systems serving zones where specific humidity levels are required.
9. All freeze protection systems, including self-regulating heat tracing, must include automatic controls capable of shutting off the systems when outside air temperatures are above 40 degrees F or when the conditions of the protected fluid will prevent freezing. Snow- and ice-melting systems must include automatic controls capable of shutting off the systems when the pavement temperature is above 50 degrees F and no precipitation is falling, and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40 degrees F.
10. Systems with design outside air capacities  $> 3,000$  cfm serving areas having an average design occupancy density exceeding 100 people per 1000 ft<sup>2</sup> must include means to automatically reduce outside air intake below design rates when spaces are partially occupied. Ventilation controls must be in compliance with ASHRAE Standard 62 and local standards.
11. Duct and pipe insulation exposed to weather must be suitable for outdoor service; e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material. Insulation covering chilled water piping, refrigerant suction piping, or cooling ducts located outside the conditioned space must include a vapor retardant located outside the insulation (unless the insulation is inherently vapor retardant), all penetrations and joints of which must be sealed.
12. R-6 supply and return air ducts in unconditioned spaces R-8 supply and return air ducts outside the building R-8 insulation between ducts and the building exterior when ducts are part of a building assembly R-3.5 supply and return air ducts insulation underground
13. Duct Sealing Requirements: - Pressure sensitive tape prohibited as the primary sealant - Longitudinal and transverse seams for ducts in unconditioned spaces - Longitudinal and transverse seams and duct wall penetrations for ducts outside the building - Transverse seams on buried ducts
14. Where humidistatic controls are provided, such controls must prevent reheating, mixing of hot and cold air streams, or other means of simultaneous heating and cooling of the same air stream. Exceptions: - capability to first reduce flow rate - cooling capacity  $< 80$  kBtu/h and capability to unload cooling equipment - cooling capacity  $< 40$  kBtu/h - rigid humidity requirements - site-recovered or site-solar energy sources or - use of a desiccant systems.
15. Individual fan systems with a design supply air capacity of 5000 cfm or greater and minimum outside air supply of 70% or greater of the supply air capacity must have an energy recovery system with at least a 50% effectiveness. Exceptions: - Systems serving spaces that are not cooled and heated to  $< 60$  degrees F. - Commercial kitchen hoods (grease) classified as Type 1 by NFPA 96 - Systems exhausting toxic, flammable, paint, or corrosive fumes or dust If an air economizer is also required, heat recovery must be bypassed or controlled to permit air economizer operation.
16. Individual kitchen exhaust hoods larger than 5000 cfm must be provided with make-up air sized for at least 50% of exhaust air volume that is uncooled and either unheated or heated to no more than 60 degrees F Exceptions: - Where hoods are used to exhaust ventilation air that would otherwise exfiltrate or be exhausted by other fan systems. - Certified grease extractor hoods that require a face velocity no  $> 60$  fpm.
17. Buildings with fume hood systems having a total exhaust rate  $> 15,000$  cfm must either have variable air volume hood design, exhaust air heat recovery, or separate make up air supply meeting the following makeup air requirements: - at least 75% of exhaust flow rate - heated to no more than 2 degrees F below room setpoint temperature - cooled to no lower than 2 degrees F above room setpoint temperature - no humidification added - no simultaneous heating and cooling