AGENDA ITEM SUMMARY

DATE: 07/02/2012 **DEPARTMENT:** Administration **DEPT. HEAD SIGNATURE:** MHC

SUBJECT:

Motion to authorize mayor to sign Revocable Agreement with Eco Global Solutions, LLC which allows this company to place a recycle bin on City Hall property for collection of polypropylene bags for creating reusable bags out of them.

AUTHORITY: ☐ ID Code _____ ☐ IAR _____ ☐ City Ordinance/Code _____
(IFAPPLICABLE)

BACKGROUND/SUMMARY OF ALTERNATIVES CONSIDERED:

A verbal authorization was given to this company a few years ago. The owner of Eco Global Solutions, LLC Darcie Olsen has had recent conversations with the Mayor regarding using city hall as a collection spot for these recycled polypropylene bags. As a result of these conversations, Mayor Haemmerle asked that we formalize the authorization of allowing this business to use city property for her recycling efforts.

The Hailey City Attorney drafted this agreement. This agreement includes comments from the owner of Eco Global Solutions, LLC.

FISCAL IMPACT / PROJECT FINANCIAL ANALYSIS:

ACKNOWLEDGEMENT BY OTHER AFFECTED CITY DEPARTMENTS: (IFAPPLICABLE)

☒	City Administrator	☐	Library	☐	Benefits Committee
☒	City Attorney	☒	Mayor	☐	Streets
☒	City Clerk	☐	Planning	☐	Treasurer
☐	Building	☐	Police	☒	Sustainability Coordinator
☐	Engineer	☐	Public Works, Parks	☐	_____
☐	Fire Dept.	☐	P & Z Commission	☐	_____

RECOMMENDATION FROM APPLICABLE DEPARTMENT HEAD:

Motion to approve as is or as amended and authorize the Mayor to sign. and Resolution 2012-43

ACTION OF THE CITY COUNCIL:
Date : _____

City Clerk _____

FOLLOW-UP:

*Ord./Res./Agrmt./Order Originals: Record
Copies (all info.):
Instrument # _____

*Additional/Exceptional Originals to: _____
Copies (AIS only)

CITY OF HAILEY
RESOLUTION NO. 2012-43

RESOLUTION OF THE CITY COUNCIL FOR THE CITY OF HAILEY AUTHORIZING THE EXECUTION OF A LICENSE WITH ECO GLOBAL SOLUTIONS, LLC, FOR ALLOWING PLASTIC BAG RECYCLING AT CITY HALL

WHEREAS, the City of Hailey desires to enter into a revocable license with Eco Global Solutions, Llc under which Eco Global Solutions, Llc will be allowed to use city hall for a designated collection of recycled plastic bags.

WHEREAS, the City of Hailey and Eco Global Solutions, Llc have agreed to the terms and conditions of the Contract for plastic bag recycling collection at city hall, a copy of which is attached hereto.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF HAILEY, IDAHO, that the City of Hailey approves the License between the City of Hailey and Eco Global Solutions, Llc and that the Mayor is authorized to execute the attached Agreement,

Passed this 2nd day of JULY 2012.

City of Hailey

_____
Fritz X. Haemmerle, Mayor

ATTEST:

_____
Mary Cone, City Clerk

LICENSE

THIS LICENSE is made this ___ day of July, 2012, by and between the City of Hailey, a municipal corporation ("Licensor") and Eco Global Solutions, LLC, an Idaho limited liability company ("Licensee").

RECITALS

A. Licensor presently owns the building located at 115 Main Street So., Hailey Idaho ("City Hall").

B. Licensee has in the past collected and desires to continue collecting polypropylene, rip-stop plastic coated bags at City Hall for the purpose of recycling and selling them.

C. Licensor is willing to allow Licensee to collect polypropylene, rip-stop plastic coated bags until further notice but does not, by virtue of such use intend to allow the Licensee to obtain any claim to an express, implied or prescriptive easement over the City Hall, or any claim to any portion of the City Hall by adverse possession, or any claim to City Hall by any theory.

D. The Licensee does not wish to cease the use of the City Hall, but does not intend to make a claim to any portion of the City Hall.

NOW, THEREFORE, Licensor and the Licensee hereby agree as follows:

1. License. Subject to the permitted uses described in paragraph 2, below, and the conditions stated herein, Licensor hereby grants and conveys to the Licensee a non-exclusive license over and across the City Hall.

2. Uses. The Licensee is only given permission and consent to use the City Hall, to maintain a recycling receptacle for polypropylene, rip-stop plastic coated bags at a location acceptable to Licensor. Licensee shall not allow any trash or hazardous or dangerous material or property to be stored in the recycling receptacle at City Hall. Licensee shall ensure that the recycling receptacle is emptied on a regular basis, that the contents of the recycling receptacle are not overflowing from the receptacle and that the receptacle and its contents do not produce any unpleasant odor. Licensor reserves the right to relocate or further regulate the use of City Hall at any time, in its sole and absolute discretion.

3. Revocable License. The Licensees acknowledge and agree that the License granted herein is revocable by Licensor, in its sole and absolute discretion. In the event the Licensor determines in the exercise of its sole and absolute discretion that the use of City Hall by Licensee interferes with the use of City Hall, Licensor shall have the authority to immediately and without notice remove the recycling receptacle and to revoke the License.

4. Indemnification. The Licensee hereby indemnifies and agrees to hold Licensor safe and harmless from any and all loss, cost, liability, damage and expense (including attorney fees and court costs), suffered or incurred by reason of this License, or the use of City Hall by the Licensee, or anyone claiming, by, through or under the Licensee.

5. Miscellaneous Provisions.

a. Release. Each Licensee waives, disclaims and releases any and all claims or interest in City Hall other than the License hereby granted, including but not limited to Licensee's claim to an express, implied or prescriptive easement over City Hall, or any claim to any portion of City Hall by adverse possession, or any claim to City Hall by any theory.

b. Successors and Assigns. The terms and conditions of this License shall be binding upon the successors and assigns of the parties hereto. This License shall run with the land and shall benefit and bind the successors, heirs and assigns of the Licensor and Licensees.

c. Governing Law. This License shall be construed according to the laws of the State of Idaho.

d. Entire Agreement. This License contains the entire agreement between the parties respecting the matters herein set forth and supersedes all prior agreements between the parties hereto respecting such matter;

e. No Presumption. No presumption shall exist in favor of or against any party to this License as a result of the drafting and preparation of the Agreement.

f. Attorneys' Fees. In the event of any dispute with regard to the interpretation or enforcement of this License, the prevailing party shall be entitled to recover his/her/its reasonable costs and attorneys' fees incurred therein, whether or not a lawsuit is actually filed, and on any appeals, and in any bankruptcy proceeding.

g. Notices. Any and all notices, demands, requests, and other communications required to be given hereunder by either of the parties hereto shall be in writing and be deemed properly served or delivered, if delivered by hand to the party to whose attention it is directed, or when sent, two (2) days after deposit in the U.S. mail, postage prepaid, or upon the sending of a facsimile, followed by a copy sent by U.S. mail as provided herein, addressed as follows:

To Licensor:

The City of Hailey
115 Main Street South, Suite H
Hailey, Idaho 83333
208/788-4221 (telephone)
208/788-2924 (facsimile)

To Licensee:

Darcie Olsen
208/721-0696 (cell)
208/622-5199 (home/facsimile)

or at such other address, or facsimile number, or to such other party which any party entitled to receive notice hereunder designates to the other in writing as provided above.

h. Counterparts. This License may be executed in several counterparts and all so executed shall constitute one License, binding on all the parties hereto even though all the parties are not signatories to the original or the same counterpart.

DATED this _____ day of June, 2012.

"LICENSOR"

CITY OF HAILEY

By:_____
Fritz X. Haemmerle, Mayor

ATTEST:

By:_____
Mary Cone, Clerk

"LICENSEE"

ECO GLOBAL SOLUTIONS., LLC

By_____
Samuel Kory, its manager

AGENDA ITEM SUMMARY

DATE: 07/02/2012 DEPARTMENT: Public Works/Sustainability DEPT. HEAD SIGNATURE: MP

SUBJECT: John Reuter with Greenworks LLC has submitted a quote for professional services for air infiltration testing at the Interpretative Center.

AUTHORITY: ☐ ID Code _____ ☐ IAR _____ ☐ City Ordinance/Code _____
(IFAPPLICABLE)

BACKGROUND/SUMMARY OF ALTERNATIVES CONSIDERED:

The service is $495. This amount was budgeted for in the US EPA grant for the Hailey Community Climate Challenge as city match.

The testing will 1) help Sawtooth Construction and the city locate air leaks in the building envelope during prior to finishing the walls and 2) after the building is complete is provides an air leakage rate that will be used to identify how energy efficient the building is and how many LEED energy efficiency points the building receives towards LEED Certification.

During both of these tests the Hailey Community Climate Challenge will be organizing a tour for education and outreach to design and building industry professionals in the area to better understand the test and its benefits.

Reuter's services include presenting an overview of the 2 tests – one to detect leaks for sealing and one to determine the final air infiltration rate of the building.

FISCAL IMPACT / PROJECT FINANCIAL ANALYSIS:

ACKNOWLEDGEMENT BY OTHER AFFECTED CITY DEPARTMENTS: (IFAPPLICABLE)

☐	City Administrator	☐	Library	☐	Benefits Committee
☐	City Attorney	☐	Mayor	☐	Streets
☐	City Clerk	☐	Planning	☐	Treasurer
☐	Building	☐	Police	☒	Grants
☒	Engineer	☐	Public Works, Parks	☐	_____
☐	Fire Dept.	☐	P & Z Commission	☐	_____

RECOMMENDATION FROM APPLICABLE DEPARTMENT HEAD:

Motion to approve the Agreement and Resolution and authorize the Mayor to sign both.

ACTION OF THE CITY COUNCIL:
Date : _____

City Clerk _____

FOLLOW-UP:

*Ord./Res./Agrmt./Order Originals: Record
Copies (all info.):
Instrument # _____

*Additional/Exceptional Originals to: _____
Copies (AIS only)

CITY OF HAILEY
RESOLUTION NO. 2012-44

RESOLUTION OF THE CITY COUNCIL FOR THE CITY OF HAILEY AUTHORIZING THE EXECUTION OF CONTRACT FOR SERVICES WITH JOHN REUTER GREENWORKS, LLC, FOR AIR INFILTRATION TESTING AT THE INTERPRETIVE CENTER

WHEREAS, the City of Hailey desires to enter into an agreement with John Reuter Greenworks under which John Reuter Greenworks will perform and be responsible for Air Infiltration Testing At The Interpretive Center for the City of Hailey.

WHEREAS, the City of Hailey and John Reuter Greenworks have agreed to the terms and conditions of the Agreement for Professional Services, a copy of which is attached hereto.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF HAILEY, IDAHO, that the City of Hailey approves the Letter Of Agreement For Air Infiltration Testing Services between the City of Hailey and John Reuter Greenworks and that the Mayor is authorized to execute the attached Agreement,

Passed this _____ day of JULY 2012.

City of Hailey

_____
Fritz X. Haemmerle, Mayor

ATTEST:

_____
Mary Cone, City Clerk

LETTER OF AGREEMENT FOR AIR INFILTRATION SERVICES

June 29, 2012

John Reuter Greenworks LLC
PO Box 4714
Ketchum, ID 83340

Subject: *Hailey Community Climate Challenge* – Air Infiltration Testing Services at the Interpretive Center

Dear John:

You have been selected as Testing Agent for the Interpretive Center, to provide air infiltration testing as part of the *Hailey Community Climate Challenge*. Please review the following conditions of the award, sign this letter and return the original to the City of Hailey. I will then send you a complete, signed copy for your records.

1. The Testing Agent activities, requirements, and testing are outlined in the attached request for quotes and proposal submitted by you.
2. Air Infiltration Testing will be provided as specified in attached request for quotes and proposal submitted by you for $495.
3. All work will be conducted at the required times, determined by the timing of the construction activities. Timing of the construction activities will be determined by City of Hailey and Sawtooth Construction. It is anticipated that initial work will commence immediately following July 5, 2012. The start and end date for work described in the attached Scope of Work are approximates. Dates are subject to change.

Thank you very much for the thought and effort that have gone into your proposal for air infiltration testing services. The City of Hailey is grateful for your participation in the *Hailey Community Climate Challenge*, and I look forward to working with you on the Interpretive Center.

Sincerely,

Mariel Platt
Sustainability Coordinator
City of Hailey

Fritz X. Haemmerle, Mayor Date

John Reuter, Greenworks, LLC Date

Hailey Interpretive Center

Proposal for Air Infiltration Testing

Tel: 208.721.2922
jreuter@gmx.com
P.O. Box 4714
Ketchum, ID 83340
www.johnreutergreenworks.com

To:	The City of Hailey
From:	John Reuter, John Reuter Greenworks, LLC, Accredited HERS Energy Rater
Date:	June 26, 2012
Subject:	Proposal to perform air infiltration testing for the future Hailey Interpretive Center

John Reuter Greenworks, LLC provides RESNET certified home energy rating and auditing and verification of the National Association of Home Builder's National Green Building Standard, in addition to other green building consulting services.

Please see answers to the requested items (1-6) of the RFP below:

1.0 TRAVEL EXPENSES

All travel expenses are included in the cost.

2.0 AVAILABILITY

I am available during the two requested weeks, and also available several weeks on either side of these, in case scheduling changes.

3.0 PRICING INFORMATION

The cost of services shall be a single fixed fee based on the scope of services below. Billing can be a lump sum or divided, based on the preference of the City of Hailey. See table below:

Scope of Work	Cost
1) Communication with contractor regarding best air-sealing practices	-
2) Optional blower door test at an existing home built by the contractor to establish base-line air infiltration given their construction methods	-
3) Rough-in blower door testing including communication with contractor, and public presentation	-
4) Blower door testing at substantial completion per ASTM E779-10 and public presentation	-
5) Up to 2 additional blower door tests per ASTM E779 *if further leak-finding is required to meet LEED criteria*	-
6) All transportation costs included	-
7) Final report per ASTM E779-10	-
All Inclusive Total	**$495.00**

4.0 LEVEL OF INVOLVEMENT

Energy rating and testing begins with builder advocacy – in support of contractors and never as the *rating police*. It is my mission to promote best building practices, implement innovative strategies, and serve local contractors by providing quantitative and measurable information to enhance building performance. As a testing agent I serve the builder, the architect, and the project as a whole – this begins with communication.

I will be in communication with the building contractor as soon as possible, as some sources of air-infiltration are difficult to retro-fit if not addressed properly the first time. If desired by the contractor I will test an existing structure built by the contractor to determine how air-tight his typical level of construction is, *for no extra fee*. We will also discuss the project timeline to ensure that the building envelope is closed and ready for testing at rough-in.

5.0 EXPERIENCE

I have been performing blower door testing since July 2011. Since then I have tested 46 existing homes, and 7 homes under construction during rough-in (pre-drywall) for code-compliance and leak finding. In addition, I am currently providing consulting and testing services for 14 new local building, several of which are listed later in this proposal. Current certifications and education include:

- Residential Energy Services Network (RESNET) Energy Rater #WAHERS – 0064
- NAHB National Green Building Standard Verifier #003406
- B.A. Environmental Science – Bates College, Lewiston, Maine
- M.S. Energy and Sustainable Building Design - De Montford University, England, Online – currently enrolled.

My testing experience has followed RESNET's protocol for blower door testing, which is generally the same as ASTM E779-10. The ASTM E779-10 asks for greater attention to detail regarding temperature, reporting criteria etc. I use Retrotec's 1000 blower door and DM-2 manometer. The manometer does the majority of required calculations, however air-density calculations will be performed in accordance with the standard.

6.0 SELECTED CURRENT PROJECTS AND REFERENCES

- Friedman Residence, Ruscitto Residence, and Lyle Residence, Ketchum. Jim Ruscitto, RLB Architectura. 208-726-5608
- McHanville Apartments, Ketchum and Wirth Residence, Hailey. Michael Doty, AIA. 208-726-4228
- Heart Rock Ranch, Bellevue. Dennis Kavanagh Construction. 208-726-2599
- Krouse Residence, Blaine County. Mark McQueen Construction. 208-721-2918
- Goose Island Residence, Ketchum. Erin McGinnis, KMV Construction. 208-726-4843
- Farnham Residence, Hailey Green Building Program, Thad Farnham. 208-726-4313

Mariel Platt

From: Mariel Platt
Sent: Thursday, June 21, 2012 1:35 PM
Subject: Request for Quotes - Air Infiltration Testing
Attachments: Scope of Work.pdf; ASTM E 779.pdf; 1.0.pdf; 2.1.pdf; 3.0.pdf; 2012.02.15_3.0 Floor Plan.pdf

Dear Testing Agent,

The City of Hailey is seeking price quotes for a testing agent to provide air infiltration testing on a new commercial building in Hailey, Idaho, that is seeking LEED certification.

ABOUT THE PROJECT: *Hailey Community Climate Challenge (Challenge)* is a Climate Showcase Community Grant Program made possible by a grant from the U.S. Environmental Protection Agency to the City of Hailey. One of the components of the *Challenge* involves obtaining LEED NC certification of the city's Interpretive Center. The Interpretive Center is part of the Hailey Rodeo Park. In addition to the Interpretive Center, the Park will include a multi-use arena, an indoor ice rink, and a skate park (these facilities will not be obtaining LEED certification). The Interpretive Center will be used as a gallery space for historical displays and office and visitor space for the Hailey Chamber of Commerce and the City of Hailey. In addition, part of the *Challenge* includes 1) the production of a film, which will document all project components of the *Challenge,* including the air infiltration testing and 2) two opportunities for local builders and architects to tour the site during, or directly after air, infiltration testing has occurred, with a brief overview by the chosen testing agent, describing the methodology, purpose, and benefits of the air infiltration test to the tour participants. Scheduling and organization of the two tours and filming is the responsibility of the City; however, cooperation and a brief presentation by the testing agent is required.

Please see the attached Scope of Work, ASTM E799 protocol, and building plans. The square footage is approximately 1,700.

PRICE QUOTE INFORMATION: The City of Hailey seeks the following information in your price quote:

1. Pricing on all travel expenses, if applicable.
2. Indication of your availability during the two times frames identified in the attached Scope of Work.
3. Any other pricing information necessary to provide a complete price quote, inclusive of all costs.
4. Indication of level of involvement and anticipated roles of the building contractor and construction team.
5. Information on the agent's experience level working as an air infiltration testing agent, any credentials or certifications that are related to the Scope of Work and familiarity with ASTM E779-10.
6. Any other information describing what is included in the price quote for the expected requirements of the testing activities (detailed in the Scope of Work).

Please limit your price quotes and any supporting documents to no more than 3 pages. Price quotes should be sent via email to mariel.platt@haileycityhall.org .

Price quotes must be received by, **8am on June 27, 2012.**

Minority and women owned businesses are encouraged to respond.

Thank you,

Mariel Platt *LEED® AP*
Sustainability Coordinator

City Of Hailey

Hailey Rodeo Park, Interpretive Center
Building Envelope Air Leakage Testing

Scope of Work

Summary: Two different tests will be conducted. The first test will involve #2-4, as indicated below. This must occur before closing the walls up, but after doors and windows have been installed. The full air barrier should be in place in order to get the building to the desired pressure of 25 or 50 Pa. No results or data needs to be recorded during this first test. The testing agency will only need to pressurize the building envelope in order to detect leaks, so they can be identified to the building contractor and eliminated or minimized. Integrated Design Laboratories will then follow standards set forth in ASTM E1186-03(2009), which will locate leakage sites by performing a diagnostic evaluation. The second test will involve #1-5, as indicated below and should occur after construction is complete.

Timing: The test agency must be available between July 11-13th 2012 for the first test and between September 1st – 15th (excluding weekends and holidays) 2012 for the second test. Exact dates are not currently known and flexibility and cooperation with the building contactor is a must, in order to minimize construction schedule conflicts and delays.

1. Standard for Air Leakage

Test the building envelope for air leakage using standard conditions specified in ASTM E779-10 (attached).

2. Test Equipment Air Flow Capacity

The minimum induced pressure for valid test is 75 Pa. In planning for a test agency must determine how much test air flow capacity they will need on site and supply that amount for the test. The test agency should plan to bring a quantity of pressurization equipment to site that would be sufficient to provide 0.30 CFM/sq ft. of flow again a pressure of 75 Pa. Since the true leakage rate goal is 0.25 CFM/sq. ft. of flow at 75 Pa, the potential additional flow allows a comfortable margin to account for baseline pressures, reduced on-site voltages or other effects which could prevent the theoretical induced pressure from being attained. Testing agent should verify the approximate equipment needs/fan size to ensure it can meet the pressure requirements, based on the surface area and volume of the building

3. Pressure Gauge and Test Fan Accuracy Requirements

Pressure gauges must be digital with a resolution of 0.1 Pa and accurate to within +or- 1% of reading or + or – 0.25 Pa, whichever is greater, and must have a means of adjustable time averaging to compensate for wind. Pressure gauges shall have their calibration checked and accuracy verified within the past two (2) years or sooner, based on the gauge manufacture's recommendations.

Test fan measurement equipment shall have their calibration verified within the last four (4) years, in compliance with ASTM E1258-88(2008).

Building Envelope Pressure Measurement: A minimum of one building envelope pressure measurement channel is required.

Interior Pressure Uniformity: Pressure differences within the test zone shall be monitored to confirm that it is uniform within 10% of the average induced envelope pressure. Test fans must be installed to satisfy the requirement.

4. Before Starting the Test

Record set-up conditions: Take pictures of setup conditions, so that the test is reproducible. Take interior and exterior temperature, ensuring that there is at least a 5° C temperature difference between the two. Pictures should include the preparation of the building type and location of test fan, pressure gauges and associated pneumatic tubing routes.

Preparation of the Building: Seal or otherwise effectively isolate all intentional holes in the test boundary. This includes air intake or exhaust louvers, make-up air intakes, pressure relief dampers or louvers, exhaust vent dampers and any other intentional hole that is not included in the air barrier design or construction. The following requirements pertain to masking HVAC openings other than flues:

a. The test is conducted with ventilation fans and exhaust fans turned off and the outdoor air inlets and exhaust outlets sealed by dampers and/or masking.
b. Motorized dampers must be closed and may be tested masked or unmasked,
c. Undampered HVAC openings must be masked during testing, and
d. Gravity dampers shall be prevented from moving or can be masked.

Exterior windows and doors are not intentional openings and are included in the air barrier test boundary. Exterior windows and doors shall be in the closed and locked position only; no additional films or additional means of isolation at fenestrations is allowed. Ensure that all pump traps are filled with water. The HVAC system must be shut down or disabled for the duration of the test. All interior doors connecting to rooms within the test zone must be held open during the test to create a single uniform zone. Dropped ceiling plenum must have four (4) sq. ft. of tiles removed for every 500 sq. ft. of ceiling area. Additional tiles may be removed at the discretion of the testing agency so a uniform pressure distribution in the plenum spaces is achieved. As an alternative the dropped ceiling plenum pressure can be tested to see if the building meets the pressure uniformity requirements with the tiles in place. All vented, non sealed combustion equipment must be disabled or be in the pilot position

5. Performing the Test – Pressurization and Depressurization

a) Confirm uniform interior pressure
b) Confirm gauge accuracy

c) Induce envelope pressures with Test fans at 75 Pa
d) Record initial baseline envelope pressure in Pa.
e) Record the tm duration of the baseline envelop pressure
f) Collect a series of at least 10 approximately equally spaced envelop pressure test points where each point consists of the average induced envelope pressure and the average test fan flow reading required to induce that pressure. Induced envelop pressure test points shall be average d over at least 20 seconds and shall be no lower than 25 Pa. The highest point must be at least 75 Pa, no greater than 85 Pa, and there must be at least 25 Pa difference between the lowest and highest.
g) Record pressure differential to demonstrate compliance with the internal pressure uniformity requirement of no two locations differing from one another by more than 10% of the induced envelope pressure. Document compliance at each induced envelope pressure test point.
h) Record final baseline envelope pressure in Pa.
i) Subtract the average baseline envelop pressure from tall pressures to determine the induced envelope pressures.
j) Record indoor and outdoor temperatures after the test.
k) Calculate the total corrected flow for all test fans using the range and flow data. Use temperatures and altitude to correct to STP using equations from ASTM E779-10.
l) Repeat these steps for depressurization.

Baseline pressure may be up to 30% of the lowest induced envelope pressure, allowing this method to be used in a wider range of weather conditions. The testing agency must achieve at lest 75 Pa at or below the passing leakage air flow to prove the building is sufficiently airtight to pass the building envelope air leakage requirement of 0.25 CFM/sq. ft. 75Pa.

The testing agency shall perform a multipoint test in general accordance with this protocol and ASTM E779-10 so an approximate air leakage value can be provided to the building contractor. This will allow an estimate of the magnitude of the repairs necessary to meet the air leakage requirement.

The data collected during the multi-point test will be corrected for standard conditions.

Designation: E779 – 10

Standard Test Method for Determining Air Leakage Rate by Fan Pressurization[1]

This standard is issued under the fixed designation E779; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method measures air-leakage rates through a building envelope under controlled pressurization and de-pressurization.

1.2 This test method is applicable to small temperature differentials and low-wind pressure differential, therefore strong winds and large indoor-outdoor temperature differentials shall be avoided.

1.3 This test method is intended to quantify the air tightness of a building envelope. This test method does not measure air change rate or air leakage rate under normal weather conditions and building operation.

NOTE 1—See Test Method E741 to directly measure air-change rates using the tracer gas dilution method

1.4 This test method is intended to be used for measuring the air tightness of building envelopes of single-zone buildings. For the purpose of this test method, many multi-zone buildings can be treated as single-zone buildings by opening interior doors or by inducing equal pressures in adjacent zones.

1.5 Only metric SI units of measurement are used in this standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements see Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E631 Terminology of Building Constructions

E741 Test Method for Determining Air Change in a Single Zone by Means of a Tracer Gas Dilution

E1258 Test Method for Airflow Calibration of Fan Pressurization Devices

3. Terminology

3.1 For definitions of terms used in this test method, refer to Terminology E631.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *air-change rate, n*—air-leakage rate in volume units/h divided by the building space volume with identical volume units, normally expressed as air changes/h, ACH.

3.2.2 *air-leakage, n*—the movement/flow of air through the building envelope, which is driven by either or both positive (infiltration) and negative (exfiltration) pressure differences across the envelope.

3.2.3 *air-leakage graph, n*—the graph that shows the relationship of measured airflow rates to the corresponding measured pressure differences, plotted on a log-log scale.

3.2.4 *air-leakage rate, n*—the volume of air movement/unit time across the building envelope including airflow through joints, cracks, and porous surfaces, or a combination thereof driven by mechanical pressurization and de-pressurization, natural wind pressures, or air temperature differentials between the building interior and the outdoors, or a combination thereof.

3.2.5 *building envelope, n*—the boundary or barrier separating different environmental conditions within a building and from the outside environment.

3.2.6 *effective leakage area, n*—the area of a hole, with a discharge coefficient of 1.0, which, with a 4 Pa pressure difference, leaks the same as the building, also known as the sum of the unintentional openings in the structure

3.2.7 *height, building, n*—the vertical distance from grade plane to the average height of the highest ceiling surface.

3.2.8 *interior volume, n*—deliberately conditioned space within a building, generally not including attics and attached structures, for example, garages, unless such spaces are connected to the heating and air conditioning system, such as a crawl space plenum.

3.2.9 *single zone, n*—a space in which the pressure differences between any two places, differ by no more than 5 % of the inside to outside pressure difference including multi-room

[1] This test method is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.41 on Air Leakage and Ventilation Performance.

Current edition approved Jan. 15, 2010. Published April 2010. Originally approved in 1981. Last previous edition approved in 2003 as E779 – 03. DOI: 10.1520/E0779-10.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

TABLE 1 Symbols and Units

Symbol	Quantity	Unit
E	Elevation above sea level	m [ft]
Q	Measured airflow rate	m^3/s [cfm]
Q_o	Air leakage rate	m^3/s [cfm]
C	Air leakage coefficient	$m^3/(s \cdot Pa^n)$ [cfm/Pa^n]
ρ	Air density	kg/m^3[lb/ft^3]
T	Temperature	° C [°F]
n	Pressure exponent	...
P	Pressure	Pa [lb/ft^2]
dP	Induced pressure difference	Pa [lb/ft^2]
dP_r	Reference pressure difference	Pa [lb/ft^2]
μ	Dynamic air viscosity	kg/(m·s) [lb/(ft·h)]
A	Area	m^2[ft^2]

space that is interconnected within itself with door-sized openings through any partitions or floors where the fan airflow rate is less than 3 m^3/s (6×10^3 ft^3/min).

3.2.10 *test pressure difference, n*—the measured pressure difference across the building envelope, expressed in Pascals (in. of water or pounds-force/ft^2 or in. of mercury).

3.3 *Symbols and Units*—See Table 1.

4. Summary of Test Method

4.1 This test method consists of mechanical pressurization or de-pressurization of a building and measurements of the resulting airflow rates at given indoor-outdoor static pressure differences. From the relationship between the airflow rates and pressure differences, the air leakage characteristics of a building envelope are determined.

5. Significance and Use

5.1 Air leakage accounts for a significant portion of the thermal space conditioning load. In addition, it affects occupant comfort and indoor air quality.

5.2 In most commercial or industrial buildings, outdoor air is often introduced by design; however, air leakage is a significant addition to the designed outdoor airflow. In most residential buildings, indoor-outdoor air exchange is attributable primarily to air leakage through cracks and construction joints and is induced by pressure differences due to temperature differences, wind, operation of auxiliary fans (for example, kitchen and bathroom exhausts), and the operation of combustion equipment in the building.

5.3 The fan-pressurization method is simpler than tracer gas measurements and is intended to characterize the air tightness of the building envelope. It is used to compare the relative air tightness of several similar buildings to identify the leakage sources and rates of leakage from different components of the same building envelope, and to determine the air leakage reduction for individual retrofit measures applied incrementally to an existing building, and to determine ventilation rates when combined with weather and leak location information.

6. Apparatus

6.1 The following is a general description of the required apparatus. Any arrangement of equipment using the same principles and capable of performing the test procedure within the allowable tolerances shall be permitted.

6.2 *Major Components:*

6.2.1 *Air-Moving Equipment*—Fan, blower, HVAC air movement component or blower door assembly that is capable of moving air into and out of the conditioned space at required flow rates under a range of test pressure differences. The system shall provide constant airflow at each incremental pressure difference at fixed pressure for the period required to obtain readings of airflow rate.

6.2.2 *Pressure-Measuring Device*—Manometer or pressure indicator to measure pressure difference with an accuracy of ± 5 % of the measured pressure or 0.25 Pa (0.001 in. H_2O), whichever is greater.

6.2.3 *Airflow Measuring System*—Device to measure airflow with an accuracy of ± 5 % of the measured flow. The airflow measuring system shall be calibrated in accordance with Test Method E1258.

6.2.4 *Temperature-Measuring Device*—Instrument to measure temperature with an accuracy of ± 1°C (2°F).

7. Hazards

7.1 *Eye Protection*—Glass breakage at the building pressure differences normally applied to the test structure is uncommon: however, for added safety, adequate precautions, such as the use of eye protection shall be taken to protect the personnel.

7.2 *Safety Clothing*—Use safety equipment required for general field work, including safety shoes, and hard hats.

7.3 *Equipment Guards*—The air-moving equipment shall have a proper guard or cage to house the fan or blower and to prevent accidental access to any moving parts of the equipment.

7.4 *Noise Protection*—Exposure to the noise level generated by fans can be hazardous to the hearing of involved personnel and hearing protection is required.

7.5 *Debris and Fumes*—The blower or fan forces a large volume of air into or out of a building while in operation. Care shall be exercised to not to damage plants, pets, occupants, or internal furnishings due to influx of cold or warm air. Caution shall be exercised against sucking debris or exhaust gases from fireplaces and flues into the interior of the building. Active combustion devices shall be shut off or the safety determined of conducting the test by a properly trained technician before conducting the test.

8. Procedure

8.1 To create a single zone for this test procedure, all interconnecting doors in the conditioned space shall be open such that a uniform pressure shall be maintained within the conditioned space to within ±10 % of the measured inside/outside pressure difference. This condition shall be verified by differential pressure measurements at the highest pressure used in the test. These measurements shall be taken at the highest ceiling elevation and lowest floor elevation of the building and on the windward and leeward sides.

8.2 HVAC balancing dampers and registers shall not be adjusted. Fireplace and other operable dampers shall be closed unless they are used to pass air to pressurize or de-pressurize the building.

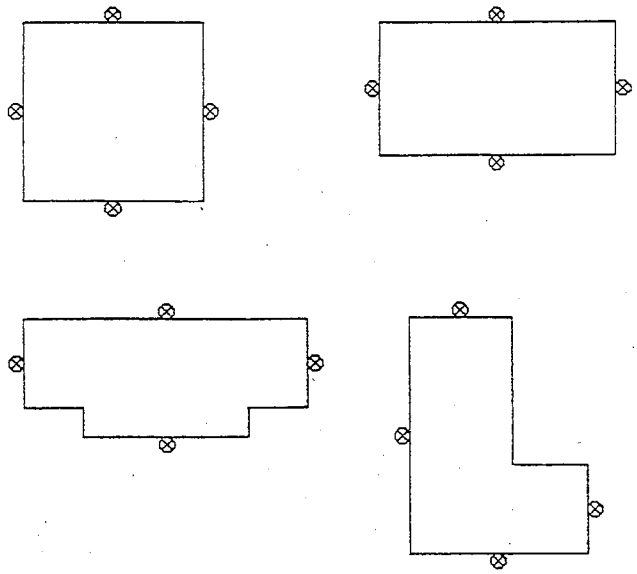


FIG. 1 Recommended Locations for Exterior Pressures (Plan Views of Buildings—"X" Within Circles Mark Pressure Tap Locations)

8.3 General observations of the condition of the building shall be recorded, including appropriate observations of the windows, doors, opaque walls, roof, and floor.

8.4 Measure and record the indoor and outdoor temperatures at the beginning and the end of the test and average the values. If the product of the absolute value of the indoor/outdoor air temperature difference multiplied by the building height, gives a result greater than 200 m °C (1180 ft °F), the test shall not be performed, because the pressure difference induced by the stack effect is too large to allow accurate interpretation of the results.

8.5 Connect the air duct or blower door assembly to the building envelope, using a window, door, or vent opening. Seal or tape openings to avoid air leakage at these points.

8.6 If a damper is used to control airflow, it shall be in a fully closed position for the zero flow pressure measurements.

8.7 *Installing the Envelope Pressure Sensor(s)*—Install the pressure measuring device across the building envelope. Where possible, locate the pressure tap at the bottom of the leeward wall. When wind causes adverse pressure fluctuations it may be advantageous to average the pressures measured at multiple locations, for example, one across each facade. Fig. 1 illustrates preferred locations that avoid extremes of exterior pressures. A good location avoids exterior corners and should be close to the middle (horizontally) of the exterior wall. Beware of direct sunlight hitting pressure tubing, especially vertical sections.

8.8 Measure zero flow pressures with the fan opening blocked. These zero flow envelope pressures shall be measured before and after the flow measurements. The average over at least a 10-s interval shall be used. These zero flow pressures shall be subtracted from the envelope pressures measured during pressurization and depressurization.

NOTE 2—Some equipment may perform this step, or an equivalent step, automatically. Follow the manufacturer's instructions accordingly.

8.9 The range of the induced pressure difference shall be from 10 to 60 Pa (0.04 to 0.24 in. H_2O), depending on the capacity of the air-moving equipment. Because the capacity of the air-moving equipment, the lack of tightness in the building, and the weather conditions affect leakage measurements, the full range of the higher values may not be achievable. In such cases, substitute a partial range encompassing at least five data points.

NOTE 3—It is advisable to check that the condition of the building envelope has not changed after each pressure reading, for example, that sealed openings have not become unsealed or that doors, windows, or dampers have not been forced open by the induced pressure.

8.10 Use increments of 5 to 10 Pa (0.02 to 0.04 in. H_2O) for the full range of induced pressure differences.

8.11 At each pressure difference, measure the airflow rate and the pressure differences across the envelope. After the fan and instrumentation have stabilized, the average over at least a 10-s interval shall be used.

8.12 For each test, collect data for both pressurization and de-pressurization.

8.13 Determine the elevation of the measurement site, E (m or ft), above mean sea level within 100 m (330 ft).

9. Data Analysis and Calculations

9.1 Unless the airflow measuring system gives volumetric flows at the barometric pressure and the temperatures of the air flowing through the flowmeter during the test, these readings shall be converted using information obtained from the manufacturer for the change in calibration with these parameters. The barometric pressure or air density, if used in the conversions, may be calculated using equations from Appendix X1.

9.2 Convert the readings of the airflow measuring system (corrected as in 9.1, if necessary) to volumetric air flows at the temperature and barometric pressure of the outside air for depressurization tests or of the inside air for pressurization tests (see Appendix X1, Eq X1.1 through X1.4 for determining indoor and outdoor air densities). To convert the airflow rate to air leakage rate for depressurization, use the following equation:

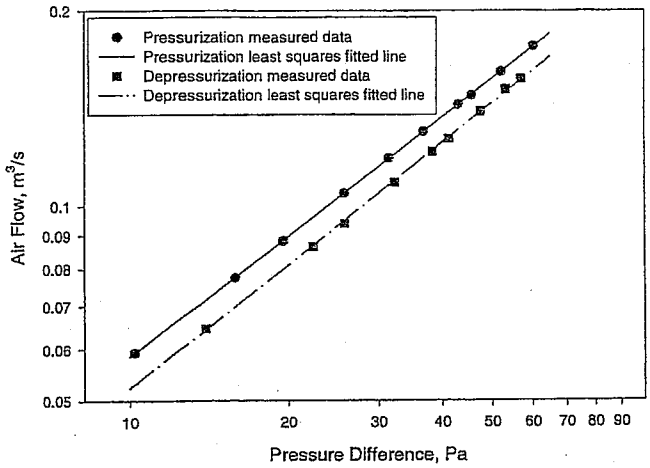


FIG. 2 Example Air Leakage Graph

$$Q_o = Q\left(\frac{\rho_{in}}{\rho_{out}}\right) \quad (1)$$

where:

ρ_{in} = the indoor air density, in kg/m^3 (lb/ft^3), and
ρ_{out} = the outdoor air density, in kg/m^3 (lb/ft^3).

9.2.1 To convert the airflow rate to air leakage rate for pressurization, use the following equation:

$$Q_o = Q\left(\frac{\rho_{out}}{\rho_{in}}\right) \quad (2)$$

9.3 Average the zero flow envelope pressures measured before and after the flow measurements. Subtract the average from the measured envelope pressures at each pressure station to determine the corrected envelope pressures.

9.4 Plot the measured air leakage against the corrected pressure differences on a log-log plot to complete the air leakage graph for both pressurization and de-pressurization (for an example, see Fig. 2).

9.5 Use the data to determine the air leakage coefficient, C, and pressure exponent, n, in Eq 3 separately for pressurization and depressurization:

$$Q = C(dP)^n \quad (3)$$

9.5.1 Use an unweighted log-linearized linear regression technique, where Q is the airflow rate, in m^3/s (ft^3/min), and dP is the differential pressure in Pa. In determining the fit of the above equation, the confidence intervals of the derived air leakage coefficient C and pressure exponent n shall be calculated according to Annex A1. C and n shall be calculated separately for pressurization and depressurization. If the pressure exponent is less than 0.5 or greater than 1, then the test is invalid and shall be repeated.

NOTE 4—Check the following before repeating the test:
(1) Equipment for proper calibration,
(2) Weather conditions against the temperature and pressure used in the calculations,
(3) Connection of the pressurizing fan to the enclosure for leaks,
(4) Connection between sections of the building, and
(5) All windows, doors, and other potential building openings are closed, etc.

9.6 Correct the air leakage coefficient C to standard conditions [20°C and sea level E = 0 m (68°F, E = 0 ft)] with Eq 4.

$$C_o = C\left(\frac{\mu}{\mu_o}\right)^{2n-1}\left(\frac{\rho}{\rho_o}\right)^{1-n} \quad (4)$$

where:

μ = the dynamic viscosity of air, kg/m·s (lb/ft/h), and
ρ = the air density, kg/m^3(lb/ft^3).

9.6.1 The unsubscripted quantities refer to the values under the conditions of the test (indoor air for pressurization and outdoor air for depressurization), and the subscripted quantities to the values under the standard reference conditions. Appendix X1 contains the appropriate tables and equations for the temperature and barometric pressure (elevation) variation of ρ and μ.

9.6.2 The leakage area A_L, in m^2, shall be calculated from the corrected air leakage coefficient and the pressure exponent using a reference pressure (dP_r) in Eq 5. Calculate the leakage areas separately for pressurization and depressurization:

$$A_L = C_o\left(\frac{\rho_o}{2}\right)^{\frac{1}{2}}(dP_r)^{\left(n-\frac{1}{2}\right)} \quad (5)$$

9.6.3 The conventional reference pressure is 4 Pa, but other values may be used if the value is included in the test report.

9.6.4 To obtain a single value for flow coefficient, pressure exponent, leakage area or flow at a particular pressure for use in other calculations, the average of the values obtained for pressurization and depressurization shall be used.

9.7 Determine confidence limits for the derived values from the data used to determine Eq 3 using Annex A1. To obtain the confidence limits of a combined pressurization and depressurization result use the combined result (which is the simple average of the pressurization and depressurization values) plus and minus the quantity calculated using equation Eq 6.

$$PE95(x_{combined}) = \left(\frac{1}{2}\right)\cdot \text{sqrt}(PE95(x_{depress})^2 + PE95x_{press}()^2) \quad (6)$$

where:

$PE95(x_{depress})$ = half the width of the 95 % confidence interval (from 9.7) in the depressurization result, and
$PE95(x_{press})$ = half the width of the 95 % confidence interval (from 9.7) in the pressurization result.

10. Report

10.1 Report the following information:

10.1.1 Building description, including location, address (street, city, state or province, zip or postal code, country, and elevation [above mean sea level in m (ft)].

10.1.2 Construction, including date built (estimate if unknown), floor areas for conditioned space, attic, basement, and crawl space, and volumes for conditioned spaces, attic, basement, and crawl space.

10.1.3 Condition of openings in building envelope including:

10.1.3.1 Doors, closed, locked or unlocked;

10.1.3.2 Windows, closed, latched or unlatched;

10.1.3.3 Ventilation openings, dampers closed or open;

10.1.3.4 Chimneys, dampers closed or open; and a

10.1.3.5 Statement whether the test zone is interconnected with at least door-sized openings. If not, the results of pressure measurements between portions of the zone.

10.1.4 HVAC system, including the location and sizes of ducts that penetrate the test zone envelope.

10.2 Procedure, including the test equipment used (manufacturer, model, serial number), and calibration records of all measuring equipment.

10.3 Measurement data, including:

10.3.1 Fan pressurization measurements (inside-outside zero flow building pressure differences); inside and outside temperature (at start and end of test) and the product of the absolute value of the indoor/outdoor air temperature difference multiplied by the building height; tabular list of all air leakage measurements and calculations: time, building pressure difference, air density, nominal airflow rate, fan airflow rate, and air leakage rate; and deviations from standard procedure.

10.3.2 Wind speed/direction and whether wind speed is estimated or measured on site. When measured on site, record the height above the ground at which wind speed was measured.

10.4 Calculations, including:

10.4.1 The leakage coefficient and pressure exponent for both pressurization and de-pressurization in accordance with 9.6;

10.4.2 The effective leakage areas for pressurization, depressurization, and combined. Report if a reference pressure other than 4 Pa is used; and

10.4.3 An estimate of the confidence limits in accordance with 9.7.

11. Precision and Bias

11.1 The confidence limits calculated in 9.7 give an estimate of the precision uncertainty of the test results. The specific precision and bias of this test method is dependent largely on the instrumentation and apparatus used and on the ambient conditions under which the data are taken.[3]

12. Keywords

12.1 air leakage; air-leakage rates; blower-door test; building envelope; depressurization; energy conservation; fan pressurization testing; infiltration; pressurization; ventilation

[3] Murphy, W.E., Colliver, D.G., and Piercy, L.R., "Repeatability and Reproducibility of Fan Pressurization Devices in Measuring Building Air Leakage," *ASHRAE Trans*, Vol 97, Part 2, 1990.

ANNEX

(Mandatory Information)

A1. PROCEDURE FOR ESTIMATING PRECISION ERRORS IN DERIVED QUANTITIES

A1.1 This test method contains several derived quantities, which often are used to summarize the air tightness of the building or component tested. It is important to report an estimate of the precision error in such quantities. The following method shall be used: all derived quantities depend on the estimation of the air leakage coefficient C and air pressure exponent n of Eq 3. To determine C and n, make a log transformation of the variables Q and dP for each reading.

$$x_i = \ln(dP_i) \qquad \text{for } i = 1..N$$
$$y_i = \ln(Q_i)$$

where:

N = the total number of test readings.

A1.1.1 Eq 3 then transforms into the following:

$$y = \ln(C) + n \cdot x \tag{A1.1}$$

A1.1.2 Compute the following quantities:

$$\bar{x} = \frac{1}{N}\sum_{i=1}^{N} x_i \tag{A1.2}$$

$$\bar{y} = \frac{1}{N}\sum_{i=1}^{N} y_i \tag{A1.3}$$

$$S_x^2 = \frac{1}{N-1}\sum_{i=1}^{N} (x_i - \bar{x})^2 \tag{A1.4}$$

$$S_y^2 = \frac{1}{N-1}\sum_{i=1}^{N} (y_i - \bar{y})^2 \tag{A1.5}$$

$$S_{xy} = \frac{1}{N-1}\sum_{i=1}^{N} (x_i - \bar{x})(y_i - \bar{y}) \tag{A1.6}$$

A1.1.2.1 Then the best estimate of n and $\ln(C)$ is given by the following:

$$n = \frac{S_{xy}}{S_x^2} \tag{A1.7}$$

$$\ln(C) = \bar{y} - n \cdot \bar{x} \tag{A1.8}$$

$$C = \exp^{[\bar{y} - n \cdot \bar{x}]} \tag{A1.9}$$

A1.1.2.2 The 95 % confidence limits for C and n can be determined by the following equations. The variance of n is given in the estimate:

$$S_n = \frac{1}{S_x}\left(\frac{S_y^2 - n \cdot S_{xy}}{N-2}\right)^{\frac{1}{2}} \tag{A1.10}$$

and the estimate of the variance of $\ln(C)$ is given by:

$$S_{\ln(C)} = S_n \left(\frac{\sum_{i=1}^{N} x_i^2}{N}\right)^{\frac{1}{2}} \tag{A1.11}$$

The confidence limits for $\ln(C)$ and n are respectively:

$$I_{\ln(C)} = S_{\ln(C)}\, T\,(95\ \%, N-2) \tag{A1.12}$$

$$I_n = S_n\, T\,(95\ \%, N-2) \tag{A1.13}$$

Where the values of the two-sided student distribution (T (95 %, $N-2$)) are given in Table A1.1.

TABLE A1.1 Two-Sided Confidence Limits T (95 %, N) for a Student Distribution

N – 2	3	4	5	6	7	8	9	10
T (95 %, N - 2)	3.182	2.776	2.571	2.447	2.365	2.306	2.262	2.228
N - 2	11	12	13	14	15	16	17	18
T (95 %, N - 2)	2.201	2.179	2.160	2.145	2.131	2.120	2.110	2.101

A1.1.2.3 This means that the probability is 95 % that the pressure exponent n lies in the interval $(n - I_n, n + I_n)$ and the probability is 95 % that the air leakage coefficient C lies in the interval:

$$(C \cdot exp^{-I_{ln(C)}}, C \cdot exp^{I_{ln(C)}}) \quad \text{(A1.14)}$$

A1.1.2.4 The estimate of the variance around the regression line Eq A1.1 at the value x is:

$$S_y(x) = S_n \left(\frac{N-1}{N} S_x^2 + (x - \bar{x})^2 \right)^{\frac{1}{2}} \quad \text{(A1.15)}$$

and the confidence interval in the estimate of y using Eq A1.1 at any x is:

$$I_y(x) = S_y(x)\, T(95\ \%, N-2) \quad \text{(A1.16)}$$

A1.1.2.5 The airflow rate Q, predicted by Eq 3 at any pressure difference dP, therefore, lies in the interval:

$$(Q \cdot exp^{-I_{y(ln(dP))}}, Q \cdot exp^{I_{y(ln(dP))}}) \quad \text{(A1.17)}$$

with a probability of 95 %.

A1.1.2.6 It is this interval that shall be used to estimate the error in the leakage area or the airflow rate across the building envelope or building envelope component at a reference pressure, for example 75 Pa. For example, the confidence interval of the estimate of the leakage area A_L using Eq 5 is as follows:

$$(A_L \cdot exp^{-I_{y(ln(dP))}}, A_L \cdot exp^{I_{y(ln(dP))}}) \quad \text{(A1.18)}$$

with a probability of 95 %.

A1.1.3 In practice, the above error analysis shall be carried out using standard statistical computer programs.

APPENDIXES

(Nonmandatory Information)

X1. DEPENDENCE OF AIR DENSITY AND VISCOSITY ON TEMPERATURE AND BAROMETRIC PRESSURE (ELEVATION)

X1.1 Use Eq X1.1 to calculate inside air density. Use Eq X1.2 to calculate outside air density. Use Eq X1.3 and X1.4 for inch-pound units.

$$\rho_{in} = 1.2041 \left(1 - \frac{0.0065 \cdot E}{293}\right)^{5.2553} \left(\frac{293}{T_{in} + 273}\right) \quad \text{(X1.1)}$$

$$\rho_{out} = 1.2041 \left(1 - \frac{0.0065 \cdot E}{293}\right)^{5.2553} \left(\frac{293}{T_{out} + 273}\right) \quad \text{(X1.2)}$$

where:
E = elevation above sea level (m),
ρ = air density (kg/m^3), and
T = temperature (°C).

NOTE X1.1—The standard conditions used in calculations in this test method are 20°C (68°F) for temperature, 1.2041 kg/m^3 (0.07517 lbm/ft^3) for air density, and mean sea level for elevation.

$$\rho_{in} = 0.07517 \left(1 - \frac{0.0035666 \cdot E}{528}\right)^{5.2553} \left(\frac{528}{T_{in} + 460}\right) \quad \text{(X1.3)}$$

$$\rho_{in} = 0.07517 \left(1 - \frac{0.0035666 \cdot E}{528}\right)^{5.2553} \left(\frac{528}{T_{out} + 460}\right) \quad \text{(X1.4)}$$

where:
E = elevation above sea level (ft),
ρ = air density (1bm/ft^3), and
T = temperature (°F).

X1.1.1 The dynamic viscosity μ, in kg/(m·s), at temperature T, in °C, can be obtained from Eq X1.5.

$$\mu = \frac{b(T + 273)^{0.5}}{1 + \frac{s}{T + 273}} \quad \text{(X1.5)}$$

where:
b = to 1.458 × 10^{-6}; in kg/(m·s·K$^{0.5}$);
s = to 110.4, in K.

X1.1.1.1 For inch-pound units the dynamic viscosity μ, in lb/(fthr), at temperature T, in °F, can be obtained from Eq X1.6:

$$\mu = \frac{b(T + 460)^{0.5}}{1 + \frac{s}{T + 460}} \quad \text{(X1.6)}$$

where:
b = to 2.629 × 10^{-3}; in lb/ (ft·h · °F$^{0.5}$);
s = to 198.7, in °F.

X1.1.1.2 The barometric pressure in kPa, as a function of elevation only is obtained from Eq X1.7. Use Eq X1.8 for inch-pound units.

$$P = 101.325 \cdot \left(\frac{1 - 0.0065 \cdot E}{293}\right)^{5.2553} \quad \text{(X1.7)}$$

$$P = 2116 \cdot \left(\frac{1 - 0.003567 \cdot E}{528}\right)^{5.2553} \quad \text{(X1.8)}$$

X2. EXAMPLE CALCULATIONS

TABLE X2.1 Measured Pressurization Data Points

Point	Pressure Difference Across Building Envelope, (Pa)	Measured Flow Through Flowmeter, (m^2/s)[A]
1	9.9	0.0568
2	15.5	0.0741
3	19.2	0.0844
4	25.4	0.1000
5	31.1	0.1133
6	36.5	0.1246
7	42.7	0.1371
8	45.4	0.1416
9	51.8	0.1539
10	59.9	0.1688

[A] This measured flow is corrected for the temperature and density of the air flowing through the flowmeter and is the volumetric flow at the measurement conditions.

Initial pressure offset = –0.42 Pa
Final pressure offset = –0.30 Pa
Average pressure offset (dP_{off}) = ½ (–0.42 – 0.30) = –0.36 Pa
Outdoor temperature (T_{out}) = 8°C
Indoor temperature (T_{in}) = 21°C
Wind speed = 1 m/s

X2.1 Introduction

X2.1.1 This test method is performed for both pressurization and depressurization. Detailed, step-by-step calculations are given for pressurization only, and the depressurization calculation procedure is summarized for brevity.

X2.2 Site Data

X2.2.1 Single-story house with a ceiling to floor height of 2.5 m. The house is located at 600 m above sea level (E).

X2.3 Checking Test Limits

X2.3.1 *Section* 8.4—The product of indoor-outdoor temperature difference and building height shall be less than 200 m °C. In this case, the building is a bungalow with a floor to ceiling height of 2.5 m. The indoor-outdoor temperature difference during the test is 13°C. Multiplied together, these temperature differences give 2.5 m × 13°C = 32.5 m °C; therefore, this test passed.

X2.3.2 The average windspeed is 1 m/s, and the outdoor temperature is 8°C, thus meeting the specifications of 8.5.

X2.3.3 Ten pressure difference and flow measurements are made between 10 and 60 Pa, thus meeting the requirements of 8.10.

X2.4 Pressurization Data

X2.4.1 *Measured Pressurization Data*—See Table X2.1.

X2.4.2 *Calculations*:

X2.4.2.1 Because this is a pressurization test, the measured air flow rates through the flowmeter are converted to flow rates through the building envelope using Eq 2. This conversion requires the indoor and outdoor air density, calculated using Eq. X1.1 and X1.2.

$$\rho_{in} = 1.2041\left(1 - \frac{0.0065 \cdot E}{293}\right)^{5.2553}\left(\frac{293}{T_{in} + 273}\right) \quad \text{(X2.1)}$$

TABLE X2.2 Corrected Depressurization Data Points

Point	Pressure Difference Across Building Envelope, (Pa)	Flow Through Building Envelop, (m^3/ s)
1	10.26	0.0594
2	15.86	0.0775
3	19.56	0.0883
4	25.76	0.1046
5	31.46	0.1185
6	36.86	0.1304
7	43.06	0.1434
8	45.76	0.1482
9	52.16	0.1610
10	60.26	0.1766

Substituting E = 600 m and T_{in}= 21°C:

$$\rho_{in} = 1.2041\left(1 - \frac{0.0065 \cdot 600}{293}\right)^{5.2553}\left(\frac{293}{21 + 273}\right) = 1.118\ \text{kg/m}^3 \quad \text{(X2.2)}$$

Substituting E = 600 m and T_{out} = 8°C:

$$\rho_{out} = 1.2041\left(1 - \frac{0.0065 \cdot 600}{293}\right)^{5.2553}\left(\frac{293}{8 + 273}\right) = 1.170\ \text{kg/m}^3 \quad \text{(X2.3)}$$

X2.4.2.2 Each Flow in Table X2.1 is multiplied by the ratio of ρ_{out}/ρ_{in}, for example, for point number 1:

$$Q_o = Q\left(\frac{\rho_{out}}{\rho_{in}}\right) = 0.0568\left(\frac{1.170}{1.118}\right) = 0.0594\frac{m^3}{s} \quad \text{(X2.4)}$$

X2.4.2.3 Each pressure difference has the pressure offset of –0.36 Pa subtracted from it, for example, for point number 1:

$$9.9 - (-0.36) = 10.3\ Pa \quad \text{(X2.5)}$$

X2.4.2.4 This results in the corrected data shown in Table X2.2 for pressure and flow.

X2.4.2.5 The data in Table X2.2 are plotted in Fig. 2. Following the method outlined in Annex A1 the flow coefficient, C, pressure exponent, n, are determined as follows:

X2.4.3 *Logarithmic Transformation*—Table X2.3 shows the natural logarithms of the pressures and flows from Table X2.2.

X2.4.3.1 The variance of the log of pressure is calculated using Eq A1.4:

$$S^2_{\ln(dP)} = \frac{1}{N-1}\sum_{i=1}^{N}(\ln(dP)_i - \overline{\ln(dP)})^2 = \quad \text{(X2.6)}$$

$$\frac{1}{10-1}((2.3239 - 3.4002)^2 + (2.7616 - 3.4002)^2 + \ldots. + (4.0894 - 3.4002)^2) = 0.32329$$

X2.4.3.2 The variance of the log of flow is calculated using Eq A1.5:

$$S^2_{\ln(Q)} = \frac{1}{N-1}\sum_{i=1}^{N}(\ln(Q)_i - \overline{\ln(Q)})^2 = \quad \text{(X2.7)}$$

$$\frac{1}{10-1}((-2.8251 + 2.1667)^2 + (-2.5592 + 2.1667)^2 + \ldots. (-1.7359 + 2.1667)^2) = 0.12885$$

X2.4.3.3 The covariance of the log of pressure and the log of flow is calculated using Eq A1.6:

TABLE X2.3 Logarithms of Pressure and Flow Data Points[A]

Point	Ln (Pressure Difference Across Building Envelope, (Pa))	Ln (Flow Through Building Envelope, (m^3/ s))
1	2.3283	−2.8230
2	2.7638	−2.5571
3	2.9735	−2.4270
4	3.2488	−2.2574
5	3.4487	−2.1325
6	3.6071	−2.0374
7	3.7626	−1.9418
8	3.8234	−1.9095
9	3.9543	−1.8262
10	4.0987	−1.7338

[A] The number of observations (N) is 10.

$$S_{\ln(dP)\ln(Q)} = \frac{1}{N-1}\sum_{i=1}^{N}(\ln(dP)_i - \overline{\ln(dP)})(\ln(Q)_i - \overline{\ln(Q)}) = \quad \text{(X2.8)}$$

$$\frac{1}{10-1}((2.3239 - 3.4002)(-2.8251 + 2.1667) + ... + (4.0894 - 3.4002)(-1.7359 + 2.1667)) = 0.198500$$

X2.4.3.4 Then n and ln (C) are given by Eq A1.7 and A1.9:

$$n = \frac{S_{\ln(dP)\ln(Q)}}{S^2_{\ln(dP)}} = \frac{0.198841}{0.32397} = 0.6140 \quad \text{(X2.9)}$$

$$C = \exp(\bar{y} - n\bar{x}) = \exp(-2.1667 - 0.613 \times 3.4002) = 0.0142\,\frac{m^3}{sPa^n} \quad \text{(X2.10)}$$

X2.4.3.5 To make the corrections to standard conditions the density and viscosity at both the standard and measurement conditions shall be calculated as follows:

X2.4.3.6 The viscosity is calculated using Eq X1.5:

For indoor temperature of 21°C:

$$\mu = \frac{1.458 \times 10^{-6}(21 + 273)^{0.5}}{1 + \frac{110.4}{21 + 273}} = 1.817 \times 10^{-5} \quad \text{(X2.11)}$$

For the reference temperature of 20°C:

$$\mu = \frac{1.458 \times 10^{-6}(20 + 273)^{0.5}}{1 + \frac{110.4}{20 + 273}} = 1.813 \times 10^{-5} \quad \text{(X2.12)}$$

X2.4.3.7 The air leakage coefficient is corrected to standard conditions with Eq 4.

$$C_o = C\left(\frac{\mu}{\mu_o}\right)^{2n-1}\left(\frac{\rho}{\rho_o}\right)^{1-n} = 0.143\left(\frac{1.817 \times 10^{-5}}{1.813 \times 10^{-5}}\right)^{(2\times0.613-1)}\left(\frac{1.047}{1.204}\right)^{(1-0.613)} = 0.138\,\frac{m^3}{s \cdot Pa^n} \quad \text{(X2.13)}$$

X2.4.3.8 The leakage area is calculated using Eq 5, using a reference pressure (dP) of 4 Pa:

$$A_L = C_o\left(\frac{\rho_o}{2}\right)^{\frac{1}{2}}(dP_r)^{\left(n-\frac{1}{2}\right)} = 0.0135\left(\frac{1.204}{2}\right)^{\frac{1}{2}}(4)^{(0.613-0.5)} = 0.01257_4 m^2 = 122.6_4 cm^2 \quad \text{(X2.14)}$$

TABLE X2.4 Measured Depressurization Data Points

Point	Pressure Difference Across Building Envelope, (Pa)	Measured Flow Through Flowmeter, (m^3/ s)[A]
1	9.3	0.0503
2	14.2	0.0660
3	22.7	0.0883
4	26.1	0.0958
5	32.6	0.1110
6	38.6	0.1238
7	41.5	0.1296
8	47.9	0.1429
9	53.5	0.1545
10	57.3	0.1605

[A] This measured flow has been corrected for the temperature and density of the air flowing through the flowmeter and is the volumetric flow at the measurement conditions.

Initial pressure offset = −0.38 Pa
Final pressure offset = −0.21 Pa
Average pressure offset (dP_{off}) = ½ (−0.38 + (−0.21)) = −0.30 Pa
Outdoor temperature (T_{out}) = 17°C
Indoor temperature (T_{in}) = 24°C

X2.5 Depressurization Data

X2.5.1 *Measured Depressurization Data*—See Table X2.4.

X2.5.2 *Calculations*:

X2.5.2.1 Using E = 600 m and T_{in} = 24°C:

$$\rho_{in} = 1.2041\left(1 - \frac{0.0065 \cdot 600}{293}\right)^{5.2553}\left(\frac{293}{24 + 273}\right) = 1.1071\ kg/m^3 \quad \text{(X2.15)}$$

X2.5.2.2 Using E = 600 m and T_{out} = 17°C:

$$\rho_{out} = 1.2041\left(1 - \frac{0.0065 \cdot 600}{293}\right)^{5.2553}\left(\frac{293}{17 + 273}\right) = 1.1338\ kg/m^3 \quad \text{(X2.16)}$$

X2.5.2.3 Each flow in Table X2.4 is multiplied by the ratio of ρ_{in}/ρ_{out}, for example, for point number 1:

$$Q_o = Q\left(\frac{\rho_{in}}{\rho_{out}}\right) = 0.0503\left(\frac{1.038}{1.061}\right) = 0.0491 \quad \text{(X2.17)}$$

X2.5.2.4 Each pressure difference has the pressure offset of 0.3 Pa subtracted from it, for example, for point number 1:

$$-9.3 - (-0.3) = -9.0\ Pa \quad \text{(X2.18)}$$

X2.5.2.5 This results in the corrected depressurization data for pressure and flow shown in Table X2.5. The data in Table X2.5 are plotted in Fig. 2. Following the method outlined in Annex A1 and shown above for pressurization data, the flow coefficient, C, and pressure exponent, n, are determined as follows:

X2.5.3 *Logarithmic Transformation*—Table X2.6 shows the natural logarithms of the pressures and flows from Table X2.5.

X2.5.3.1 The variance of the log of pressure is calculated using Eq A1.4:

$$S^2_{\ln(dP)} = \frac{1}{N-1}\sum_{i=1}^{N}(\ln(dP)_i - \overline{\ln(dP)})^2 = \quad \text{(X2.19)}$$

$$\frac{1}{10-1}((2.1978 - 3.39)^2 + (2.6294 - 3.39)^2 + ... + (4.0433 - 3.39)^2) = 0.36287$$

X2.5.3.2 The variance of the log of flow is calculated using Eq A1.5:

TABLE X2.5 Corrected Depressurization Data Points

Point	Pressure Difference Across Building Envelope, (Pa)	Flow Through Building Envelope, (m^3/ s)
1	−9.005	0.0491
2	−13.905	0.0644
3	−22.405	0.0862
4	−25.805	0.0935
5	−32.305	0.1084
6	−38.305	0.1209
7	−41.205	0.1295
8	−47.605	0.1395
9	−53.205	0.1509
10	−57.005	0.1567

TABLE X2.6 Logarithms of Pressure and Flow Data Points[A]

Point	Ln (Pressure Difference Across Building Envelope, (Pa))	Ln (Flow Through Building Envelope, (m^3/ s))
1	2.1978	−3.0136
2	2.6322	−2.7420
3	3.1093	−2.4509
4	3.2506	−2.3693
5	3.4752	−2.2221
6	3.6456	−2.1129
7	3.7186	−2.0672
8	3.8629	−1.9695
9	3.9742	−1.8914
10	4.0431	−1.8533

[A] The number of observations (N) is 10.

$$S^2_{\ln(Q)} = \frac{1}{N-1}\sum_{i=1}^{N}(\ln(Q)_i - \overline{\ln(Q)})^2 = \quad \text{(X2.20)}$$

$$\frac{1}{10-1}((-3.0119 + 2.2675)^2 + (-2.27402 + 2.2675)^2 + ...(-1.8516 + 2.2675)^2)$$
$$= 0.14374$$

X2.5.3.3 The covariance of the log of pressure and the log of flow is calculated using Eq A1.6:

$$S_{\ln(dP)\ln(Q)} = \frac{1}{N-1}\sum_{i=1}^{N}\left(\ln(dP)_i - \overline{\ln(dP)}\right)(\ln(Q)_i - \overline{\ln(Q)}) = \quad \text{(X2.21)}$$

$$\frac{1}{10-1}((2.1978 - 3.39)(-3.0119 + 2.2675) + ... + (4.0433 - 3.39)(-1.8516 + 2.2675))$$
$$= 0.22834$$

X2.5.3.4 Then n and ln (C) are given by Eq A1.7 and Eq A1.9:

$$n = \frac{S_{\ln(dP)\ln(Q)}}{S^2_{\ln(dP)}} = \frac{0.22848}{0.36330} = 0.629 \quad \text{(X2.22)}$$

$$C = \exp^{(\bar{y} - n\cdot\bar{x})} = \exp(-2.265 - 0.629 \times 3.39) = 0.0122 \quad \text{(X2.23)}$$

X2.5.3.5 To make the corrections to standard conditions the density and viscosity at both the standard and measurement conditions shall be calculated. For depressurization, the measurement conditions shall be the outdoor air conditions, which is the air flowing through the envelope.

X2.5.3.6 The outdoor viscosity is calculated using Eq X1.5: For outdoor temperature of 17°C:

$$\mu = \frac{1.458 \times 10^{-6}(17 + 273)^{0.5}}{1 + \frac{110.4}{17 + 273}} = 1.798 \times 10^{-5} \quad \text{(X2.24)}$$

For the reference temperature of 20°C:

$$\mu_o = \frac{1.458 \times 10^{-6}(20 + 273)^{0.5}}{1 + \frac{110.4}{20 + 273}} = 1.813 \times 10^{-5} \quad \text{(X2.25)}$$

X2.5.3.7 The air leakage coefficient is corrected to standard conditions with Eq 4.

$$C_o = C\left(\frac{\mu}{\mu_o}\right)^{2n-1}\left(\frac{\rho}{\rho_o}\right)^{1-n}$$
$$= 0.123\left(\frac{1.798 \times 10^{-5}}{1.813 \times 10^{-5}}\right)^{(2\times 0.629-1)}\left(\frac{1.061}{1.204}\right)^{(1-0.629)}$$
$$= 0.119\,\frac{m^3}{s \cdot Pa^n} \quad \text{(X2.26)}$$

X2.5.3.8 The leakage area is calculated using Eq 5, using a reference pressure (dP) of 4 Pa:

$$A_L = C_o\left(\frac{\rho_o}{2}\right)^{\frac{1}{2}}(dP_r)^{\left(n-\frac{1}{2}\right)}$$
$$= 0.0117\left(\frac{1.204}{2}\right)^{\frac{1}{2}}(4)^{(0.629-0.5)}$$
$$= 0.01109\ m^2$$
$$= 108.5\ cm^2 \quad \text{(X2.27)}$$

X2.6 Combined Pressurization and Depressurization Data

X2.6.1 *Calculations*—The leakage coefficient $C_{0,\,combined}$ is the average of the C_0 values for pressurization and depressurization.

$$C_{0,\,combined} = 0.5\ 8\ (0.0138 + 0.0119) = 0.0129 \quad \text{(X2.28)}$$

X2.6.1.1 The leakage exponent $n_{combined}$ is the average of the n values for pressurization and depressurization.

$$n_{combined} = 0.5 \cdot (0.6140 + 0.6293) = 0.6216 \quad \text{(X2.29)}$$

X2.6.1.2 The leakage area $AL_{combined}$ is the average of the AL values for pressurization and depressurization.

$$AL_{combined} = 0.5 \cdot (0.01257 + 0.01109) = 0.01183 \quad \text{(X2.30)}$$

X2.7 Estimates of Confidence Limits

X2.7.1 *Pressurization Confidence Limits*—The 95 % confidence limits for C and n are below. The variance of n is given by Eq A1.10:

$$S_n = \frac{1}{S_{\ln(dP)}}\left(\frac{S^2_{\ln(Q)} - n \cdot S_{\ln(dP)\ln(Q)}}{N-2}\right)^{\frac{1}{2}} \quad \text{(X2.31)}$$
$$= \frac{1}{0.3244}\left(\frac{0.1218 - 0.613 \times 0.1988}{10-2}\right)^{\frac{1}{2}} = 0.001261$$

X2.7.1.1 The estimate of the variance of ln (C) is given by Eq A1.11:

$$S_{\ln(C)} = S_n\left(\frac{\sum_{i=1}^{N} dP_i^2}{N}\right)^{\frac{1}{2}} \quad \text{(X2.32)}$$
$$= 0.001252\left(\frac{2.3239^2 + 2.7616^2 + ... + 4.0984^2}{10}\right)^{\frac{1}{2}} = 0.0043427$$

X2.7.1.2 The confidence limits for ln (C) and n require the values of the two-sided Student distribution (T (95 %, N – 2)) that are given in Table A1.1. In this case, (T (95 %, 8)) = 2.306.

X2.7.1.3 The 95 % confidence interval for n and ln (C) is then given by Eq A1.13:

$$I_n = S_n\, T\,(95\ \%, N-2) = 0.001252 \times 2.306 = 0.002908 \quad \text{(X2.33)}$$

$$I_{\ln(C)} = S_{\ln(C)}\, T\,(95\ \%, N-2) = 0.004310 \times 2.306 = 0.010014 \quad \text{(X2.34)}$$

X2.7.1.4 This means that the probability is 95 % that the pressure exponent n lies in the interval (0.611, 0.617), and the air leakage coefficient C lies in the interval:

$$(C \cdot \exp^{-I_{\ln(C)}},\ C \cdot \exp^{I_{\ln(C)}}) = (0.0143\exp(-0.009939),\ 0.0143\exp(0.009939)) = (0.0141, 0.0144)\frac{m^3}{sPa^n} \quad \text{(X2.35)}$$

X2.7.1.5 To estimate the confidence limits for leakage area requires an estimate of the variance around the regression line (Eq A1.1) at the reference pressure difference (dP_r):

$$S_{\ln(Q)}(\ln(dP_r)) = S_n\left(\frac{N-1}{N}S^2_{\ln(dP)} + (\ln(dP_r) - \overline{\ln(dP)})^2\right)^{\frac{1}{2}} \quad \text{(X2.36)}$$

substituting the appropriate values gives:

$$S_{\ln(C)}(\ln(4)) = 0.001252\left(\frac{9}{10}0.342397 + (\ln(4) - 3.4002)^2\right)^{\frac{1}{2}} = 0.0026303 \quad \text{(X2.37)}$$

and the 95 % confidence interval in the estimate of ln (Q) using Eq A1.1 at the reference pressure, dP_r, is as follows:

$$I_{\ln(Q)}(\ln(dP_r)) = S_{\ln(C)}(\ln(dP_r))T(95\ \%, N-2) \quad \text{(X2.38)}$$

$$= 0.002610 \times 2.306 = 0.006065$$

X2.7.1.6 The 95 % confidence interval of the estimate of the leakage area A_L using then is given by the following:

$$A_L\exp(-I_{\ln(C)}(\ln(dP_r))) = 0.0126exp(-0.006020) = 0.01254\ m^2 \quad \text{(X2.39)}$$

$$A_L\exp(I_{\ln(C)}(\ln(dP_r))) = 0.0126exp(0.006020) = 0.0126\ m^2 \quad \text{(X2.40)}$$

$$A_L\exp(I_{\ln(C)}(\ln(dP_r))) = 0.01226\exp(0.05965) = 0.012334 \quad \text{(X2.41)}$$

Therefore the 95 % confidence limits for A_L (0.01257 m^2 or 125.7 cm^2) are (0.0125, 0.0126) m^2 or (125, 126) cm^2.

X2.7.2 *Depressurization Confidence Limits*—The depressurization confidence limits are calculated the same way as for pressurization, with the following results:

X2.7.2.1 The 95 % confidence interval for n is (0.620, 0.639).

X2.7.2.2 The 95 % confidence interval for C is (0.0118, 0.0126 m^3/sPa^n).

X2.7.2.3 The 95 % confidence interval for A_L is (0.0109, 0.0113) m^2 or (109, 113) cm^2.

X2.7.3 *Combined Pressurization and Depressurization Confidence Limits*—The combined pressurization and depressurization confidence limits are calculated with equation Eq 6, with the following results:

X2.7.3.1 The 95 % confidence interval for n is (0.617, 0.627).

X2.7.3.2 The 95 % confidence interval for C is (0.0127, 0.0131 m^3/sPa^n).

X2.7.3.3 The 95 % confidence interval for A_L is (0.0117, 0.0119) m^2 or (117, 119) cm^2.

AGENDA ITEM SUMMARY

DATE: 07-02-12 **DEPARTMENT:** Public Works **DEPT. HEAD SIGNATURE:** _____

SUBJECT:
Request approval for Sun Valley Brewery Block Park Concert Series will be held at Sun Valley Brewery on July 3, 4, 9, 12, 16, 19, 23, 26 and August 2, 6, 9, 13, 16, 20, 31, 2012 from 6:00 p.m. to 10:00 p.m.

AUTHORITY: ☐ ID Code _____ ☐ IAR _____ ☐ City Ordinance/Code _____
(IFAPPLICABLE)

BACKGROUND/SUMMARY OF ALTERNATIVES CONSIDERED:
This application has not been approved by the City Department Heads, HPD has commented via email which are copied below:

"Ok, However I will be pulling it from the consent agenda for discussion. Items of concern will be music until 10:00 p.m. on week nights and frequency of music in that general area created by the Spud and Brewery." Jeff

The Wicked Spud is not required to have a special events permit under the new ordinance and will only be required to complete an Amplification of Sound Permit.

FISCAL IMPACT / PROJECT FINANCIAL ANALYSIS: Caselle #_____
Budget Line Item #_____ YTD Line Item Balance $_____
Estimated Hours Spent to Date: _____ Estimated Completion Date: _____
Staff Contact: _____ Phone # _____
Comments:

ACKNOWLEDGEMENT BY OTHER AFFECTED CITY DEPARTMENTS: (IFAPPLICABLE)

☐	City Administrator	☐	Library	☐	Benefits Committee
☐	City Attorney	☐	Mayor	☒	Streets
☐	City Clerk	☒	Planning	☐	Treasurer
☐	Building	☒	Police	☐	_____
☒	Engineer	☐	Public Works, Parks	☐	_____
☒	Fire Dept.	☐	P & Z Commission	☐	_____

RECOMMENDATION FROM APPLICABLE DEPARTMENT HEAD:

- Certificate of Liability Insurance

Motion to approve the Sun Valley Brewery Block Party Concert Series and authorize the Mayor to sign.

ADMINISTRATIVE COMMENTS/APPROVAL:

City Administrator _____ Dept. Head Attend Meeting (circle one) Yes No

ACTION OF THE CITY COUNCIL:

Date _____

City Clerk _____

FOLLOW-UP:
*Ord./Res./Agrmt./Order Originals: Record
Copies (all info.):
Instrument # _____

*Additional/Exceptional Originals to: _____
Copies (AIS only)

DECISION

Based on the Application for a Special Event Permit for the 2012 Sun Valley Brewery Block Party Concert Series 2012, the City of Hailey, pursuant to Chapter 12.14 of the Hailey Municipal Code, approves the Application and grants the Special Event Permit, subject to the following conditions:

Standard Conditions

a. The Applicant shall comply with the terms, plans, covenants and provisions of the Application, as approved or as modified by the City of Hailey.
b. The Applicant shall comply with all applicable local, state and federal laws, regulations and ordinances before, during and after the Special Event(s).
c. The Applicant shall execute an agreement, relating to the reimbursement of expenses, indemnification and other provisions immediately upon the approval of the application for the Special Events Permit.
d. In the event the Applicant fails to comply with all the conditions set forth herein, the City may revoke the Special Events Permit, in whole or in part.

Other Conditions

- Declaration of Insurance will need to be submitted.

DATED this 02th day of July, 2012.

CITY OF HAILEY

By: _____
Fritz Haemmerle, its Mayor

ATTEST:

_____
Mary Cone, City Clerk

AGREEMENT

In consideration of the granting of a special event permit by the City of Hailey ("the City") for the 2012 Sun Valley Brewery Block Party Concert Series that will occur on July 3, 4, 9, 12, 16, 19, 23, 26 and August 2, 6, 9, 13, 16, 20, 31, 2012, 2012 from 6:00 p.m. to 10:00 p.m., plus specified set up and teardown time, ("the Event"), and pursuant to Section 12.14 of the Hailey Municipal Code, the undersigned, as the applicant ("Applicant") of a Special Event Permit from the City for the Event, does hereby agree to reimburse the City for any costs incurred by the City in repairing damage or providing any services or materials resulting from the Event. The Applicant agrees that such costs may be deducted from a service security deposit

as established by the City, and that if costs exceed any deposit made by the applicant, further reimbursement will be made to the City upon demand. The Applicant hereby agrees to indemnify, defend and hold harmless the City and its officers and employees, in their official and individual capacities, from any and all claims, demands, obligations, liabilities, lawsuits, judgments, attorneys' fees, costs, expenses and damages of any nature caused by or arising out of, or connected with the Event. In the event either party hereto is required to retain counsel to enforce a provision of this Agreement, or to recover damages resulting from a breach hereof, the prevailing party shall be entitled to recover from the other party all reasonable attorney's fees incurred herein or on appeal, or in bankruptcy proceedings. The Applicant agrees to comply with all the laws and ordinances of the City of Hailey, Idaho applicable to the subject matter thereof, and to conduct the Event in accordance with the terms and provisions of the application for a Special Event Permit, as approved or as modified by the City, and all conditions of the Special Event Permit. The Applicant agrees that the Special Event Permit is nontransferable and shall be conducted only for the dates and locations as approved by the City.

IN WITNESS WHEREOF, Applicant and the City have executed this Agreement on this 02th day of July, 2012.

APPLICANT:

By: _____

_____
(please sign and print name and title, if applicable)

CITY OF HAILEY:

By: _____
Fritz Haemmerle, its Mayor

ATTEST:

_____
Mary Cone, its City Clerk

HFD: ✓ CERT INSURANCE: _____
HPD: _____ STR CLOSURE: yes
HBLDG: _____ BARRICADE MAP: _____
HENG: _____ CATERING PERMIT: _____
HPD SEC: _____ AMPL PERMIT: yes
SIGN PERMIT: _____

RECEIVED
JUN 25 2012

SPECIAL EVENT PERMIT APPLICATION

EVENT NAME: Sun Valley Brewery Block-Party Concert Series

LOCATION FOR EVENT (Be specific e.g.. Hop Porter Park, all of 1st Avenue between Walnut and Pine, 115 Main St. S.):
☒ Public Property ☒ Private Property
SV Brewery parking lot and carbonate, from Main St – Alleyway

III. EVENT SCHEDULE

Special Events are limited to four days, including set-up and tear-down days. No more than eight events per calendar year can be conducted by a single party or organization, unless a modification is granted by the City Council. **Please submit your modification requests in writing and attach to your application.**

Date(s) of Event	Hours		Estimated # of Attendees
7/3 7/4 7/5 7/12 7/16 7/19 7/23 7/26	Start Time: 6 pm	End Time: 10 pm	One Hour Interval: 100 All Day: 100
8/2 8/6 8/9 8/13 8/16 8/20 8/31	Start Time: 11	End Time: 11	One Hour Interval: 11 All Day: 11
Date of Set-Up	Start Time: 5 pm	End Time: 6 pm	
Date of Tear Down	Start Time: 10	End Time: 1030	

IV. FEES

Special Event Permit Application Fee $125 ☑ 125.00
Events that meet the following criteria may be exempted from Park Rental Fee by resolution of the City Council:
- ☐ Non-profit event that is held annually within the City of Hailey for at least ten consecutive years and consistently draw large numbers of participants and spectators. **Tax Exempt #:** _____
- ☐ Promoted locally and regionally within the state and the northwest.

Per Day Park Rental Fee	$200	☐	—
Tax (on park rental fees only)	6%	☐	—
Security Services Deposit		☐	—
TOTAL DUE			125.00

V. ORGANIZATION INFORMATION

Sponsoring Organization: Sun Valley Brewery
Applicant's Name: Sean Flynn Title: President
Address: 202 N Main City: Hailey State: ID Zip: 83333
Telephone Day: 721 0407 Evening: Same FAX: 788-5777
Applicant Driver's License #: FA126039F EMAIL: SVB@sunvalleybrewery.com
Federal Tax #: 82-0420007 State Tax #: 269053

VI. EVENT INFORMATION

New Event: Yes X No _____ Annual Event: Yes X No _____ Years Operating 1st yr
Event Category: ☒ Commercial ☐ Noncommercial
Estimate of Gross Ticket Sales & Revenues (commercial event only): Free Event
Description of Event: A series of outdoor, live music events in the brewery parking Lot.
Additional Details: _____

VII. INSURANCE REQUIREMENTS

It is the responsibility of your Special Event organizers to maintain a COMPREHENSIVE GENERAL LIABILITY insurance policy with coverage of not less than $1,000,000.00 combined single limit per occurrence. Each policy shall be written as a primary policy, not contributing with or in excess of any coverage which the City may carry. ***A certificate naming the City of Hailey, Blaine County, Idaho as additional insured shall be delivered to the City of Hailey with this application.*** The adequacy of all insurance required by these provisions shall be subject to approval by the City Clerk. Failure to maintain any insurance coverage required by this agreement shall be cause for immediate termination of the application.

Insurance Company: Liberty Northwest Agent Name: Greg Bloomfield Phone: 788-1100

Wood River Insurance

HOLD HARMLESS CLAUSE

Permittee (organization/applicant) shall indemnify and hold harmless the City of Hailey, its agents, its employees and authorized volunteers from and against all claims, damages, losses and expenses, including attorney's fees, arising out of the permitted activity or the conduct of Permittee's operation of the event if such claim (1) is attributable to personal injury, bodily injury, disease or death, or to injury to or destruction of property, including the loss of use there from, and (2) is not caused by any negligent act or omission of willful misconduct of the City of Hailey or its employees acting within the scope of their employment.

SPECIAL EVENT ACTIVITIES & CITY SERVICES REQUESTED

Your Event Organizer is responsible for providing a complete list of event activities including a list of suppliers providing services. An event logistics map is required, detailing the location for all road closures, event set up, canopies, stages, vendors, booths, and any other major services or activities planned.

Yes	No	Check all Planned Activities	Yes	No	Check all Planned Activities
✓		**Street Closures & Access / Parade (if yes)** • Street Closure for Special Event Application and detailed map listing areas of closure, parade route is required. ***An ITD permit is required for Main Street.*** • Your Event Coordinator is required to have the Notification Certification completed by all affected businesses, churches, schools and neighborhoods.			**Alcohol Served (Free of Charge)** (name of provider)
			✓		**Alcohol Sold** Requires Alcohol Beverage Catering Permit (Hailey Code 5.13)
# 2-10x10		**Canopies/Tents/Membranes/Temporary Structures** (Number & Size(s) City of Hailey Fire Department, Fire Code Enforcement may require a permit for tents, canopies, membrane, or temporary structures over 200 sq. ft.		✓	**Food/Beverages** will be served (List Caterers):
#	✓	**Security** (detail who, number of officers, times. Attach plan)	6	✓	**Vendors** items sold/ solicitation [redacted]
	✓	**Medical Services** (Circle) First Aid and/or EMS Services *Determination of EMS services is dependent on event size and type. Who is providing this service: _____			
	✓	**Traffic Control / Shuttle Buses** (Number of buses / locations / hours of operation, attach plan.)	✓ # 2		**Booths** (Profit) / Non-Profit live music + Beer Booth on SVB Property
#	✓	**Electricity / Generators** (Size _____) Attach detailed electrical plan.	✓		**Activities / Entertainment** (Agenda) Other equipment or entertainment
	✓	**Lighting plan:** attach plan		✓	**Signs or Banners:** sign permit may be required by the City Planning and Zoning Department
	✓	**Gray Water Barrel / Grease Barrel** (circle /detail # and locations)	✓		**Stages** (Number and Size(s) 1 - 12X12
✓		**Sanitation** -Trash bins, Dumpsters, Recycle (circle /detail # and locations)	✓ # 4		**Barricades.** How many identify locations and attach logistics map entrance to E. Carbonate to Alley
#	✓	**Porta Toilets / Wash Stations** (Quantity ADA Regular)	# ✓		**EVENT estimated attendance:** 100 per event Number of staff working event: 5 Number of volunteers working event: 5
	✓	**Water** Drinking / Washing (circle)	✓		**Amplified Sound Permit**-the allowable sound decibel level – **(90) dB maximum**

I hereby certify that I have read and will abide by the laws, rules and regulations set forth by the City of Hailey, Blaine County, and the State of Idaho, and in signing this application, I hereby agree that I and the organization I represent, shall hold the City of Hailey and all of its agents or employees free and blameless from any claim, liability or damage which may arise from use of City facilities or equipment, whether or not the City of Hailey, its agents or employees are jointly negligent. I further agree to promptly reimburse the City of Hailey and all of its agents for any clean up loss or damage to City property resulting from this use, as well as permitting, staffing, equipment use/rental, property use/rental, clean up, inspections involving the use of public property, public employees or public equipment for the Special Event. In the event the deposit exceeds the actual charges, the City Clerk shall refund the balance to the applicant.

Event Organizer's Signature: _____ **Date:** 6/27/12

The Sun Valley Brewery's BLOCK-PARTY

Summer concert series

Objective: Liven up Hailey, bring some Summer excitement to our downtown to compete with Ketchum/Sun Valley, and keep or attract customers for local businesses which in turn, generate LOT taxes. We can achieve this by producing **14 nights** of world class entertainment during this Summer concert series in Hailey. We have had live music in our parking lot before, (4 events last Summer) and this has proved to be very popular and successful. We'd like to replicate that success in bringing several more nights of music to Hailey.

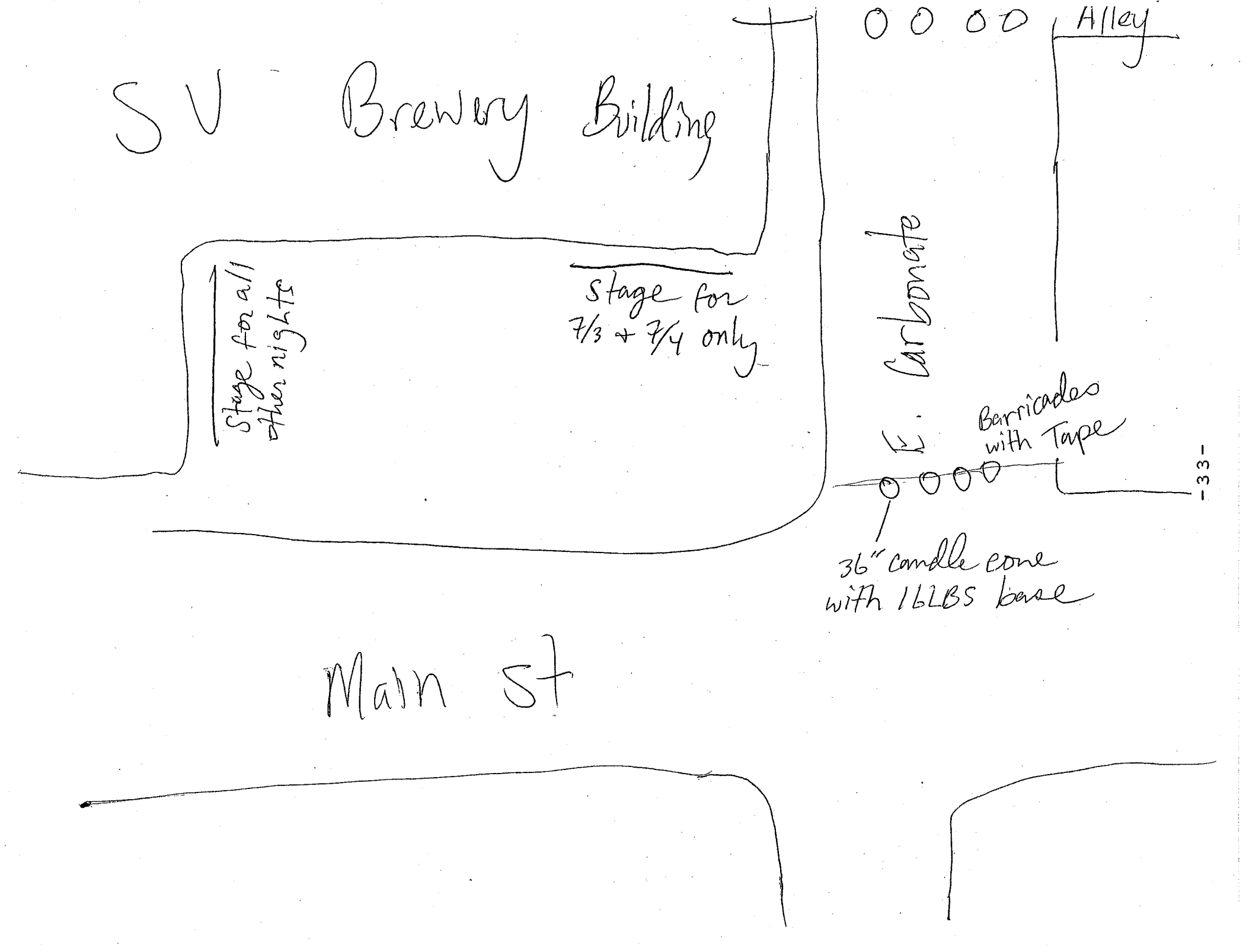
The Sun Valley Brewery is proud to present a world class series of live, outdoor (hopefully) music performances, (14 nights of music, as of this writing), throughout the July and August Summer season. They are featuring artists from all over the country such as: The Shook Twins (Portland), Swagger (Salt Lake), Montana Skies (S. Carolina), The B-Side Players (San Diego), Carrie Nation and The Speak Easy (Kansas City), Molly Gene (Missouri), Trevor Green (Huntington Beach), Billy Franklin & Nola Live (New Orleans), Smooth Money Gesture (Boulder), Holden Young Trio (Boulder), Tater Famine (Santa Cruz), and Jonathan Warren and Billy Goats (Boise).

These events will take place in the Sun Valley Brewery parking lot, weather permitting, or inside. Some of these events will (hopefully) also include having the side street, E. Carbonate Street to the first alley way, closed off.

Thank you for your consideration in helping bring world class live music to Hailey!

Sincerely,

Sean Flynn & the staff at Sun Valley Brewery! (Cell #208-721-0407)


SV Brewery Building
Alley
Stage for all other nights
Stage for 7/3 + 7/4 only
E. Carbonate
Barricades with Tape
-33-
36" candle cone with 16LBS base
Main St

CITY of HAILEY EST. 1881

RECEIVED
JUN 21 2012
BY: _____

AMPLIFIED SOUND PERMIT APPLICATION

Instructions:
Fill in the details on the application return it to the Special Events Administrator. It will then be forwarded to the appropriate authority for approval and signature. The completed and signed application will act as your permit and will be forwarded to you once approvals and signatures are completed.

It is important for the success of your event that surrounding residents and businesses are aware of the event and to have a contact for the event. *It is your responsibility to notify all residents and businesses in the immediate area that may be affected by the events amplified music prior to the event. On the back of this permit is a form entitled "Notification of Amplified Sound Event" to be used for notification. Please fill out the form, copy and distribute it to your event neighbors.*

By notifying surrounding residents in advance of your event, it is the expectation of the City of Hailey that you will take the opportunity to correct amplification levels if you are contacted directly.

Events may require an Amplified Sound Permit to be filed along with a Special Events Permit. The Hailey Municipal Code does exempt certain events as a special event, however, an Amplified Sound Permit maybe required. Please contact the Special Events Administrator at 208-788-4221 x22 to help determine the requirements for your event.

Applicable Requirements: There is no fee for the administrative review of this application or the first Hailey Police Department visit to your event, for visits 2 and more the fee charged to the applicant will be $25.00 per visit. The allowable sound decibel level is – **(90) dB maximum and sound may only be amplified between the hours of 10 am and 10 pm.**

Name of Applicant: Sun Valley Brewery (Sean Flynn) Phone: 788-5777

Address of Applicant: 202 N. Main St, Hailey, ID 83333

Type of Event: Street Party

Location of Event: SV Brew – 202 N. Main St.

Date of Event: / Number of People Expected: 200

Time of Amplification: From 6 pm to 10 pm

7/3, 7/4, 7/12, 7/16, 7/19, 7/23, 7/26, 8/2, 8/6, 8/9, 8/13, 8/16 8/20 + 8/31

By signing this application, you are confirming the receipt and knowledge of the applicable requirements and agree to comply with them. In the event the Police Department has to intervene, the permit may be voided if found to not be in compliance with the applicable requirements.

Signature of Applicant: _____ Date: 6/21/12

When signed by the Police Chief or designee, a copy of the signed application will be your permit.

Chief of Police, or designee: _____ Date: _____

☐ **Permit Approved**	*(For City Use Only)*
☐ **Not Approved (check reason below)**	
☐ Use of the equipment would constitute a detriment to traffic safety;	
☐ The issuance of the permit would be otherwise detrimental to the public health, safety or welfare;	
☐ The issuance of the permit will substantially interfere with the peace and quiet of the neighborhood or the community;	
☐ The applicant would violate the provisions of this Code or any other law.	

CITY of HAILEY
EST. 1881

OFFICE USE ONLY:
Date Received _____.
On time: ☐ Late: ☐

STREET CLOSURE FOR SPECIAL EVENT

Notification Certification

To be submitted to the City Special Events Administrator by Event Organizer at least 30 days prior to the event.

EVENT NAME: Block Party Summer Concert Series @ SV Brewery
The above listed event received a street closure permit for a community event.

STREET CLOSURE DATES: Various - 7/3 7/9 7/12 7/16 7/19 7/23 7/26 8/2 8/13 8/16 8/20 + 8/31

STREET CLOSURE TIMES: 6 pm - 10 pm

☑ **I certify that the entities listed below have been notified about my upcoming special event.**

Signature of Sponsor or Authorized Representative		**Date**	6/21/12

Name/Business	Address	Phone	Email
Christopher's CO	120 Main St	788-1123	

STREET CLOSURE FOR SPECIAL EVENT

EVENT NAME: Block Party, Summer Concert Series @ SV Brewery
The above listed event received a street closure permit for a community event.

STREET CLOSURE DATES: 7/3, 7/9, 7/12, 7/16, 7/19, 7/23, 7/26, 8/2 8/6, 8/9, 8/13, 8/16 8/20 & 8/31

☐ **Route/street closure is map is attached.**

Names of streets to be closed (attach further closures on a separate sheet if needed)		
E. Carbonate St.	Between (street) Main	And (street) Alley way betwe 1st Ave
	Between (street)	And (street)
	Between (street)	And (street)
	Between (street)	And (street)
	Between (street)	And (street)
	Between (street)	And (street)
	Between (street)	And (street)
Time of Street Closure	Start: 530 pm	End: 1030 pm
Participant type and number of entries of each type (check all that apply): ☒ Participants/Spectators 100 ☐ Animals____ ☐ Vehicles____ ☐ Floats____ ☐ Busses____ ☒ Bikes 25		

AGENDA ITEM SUMMARY

DATE: 7/2/2012 **DEPARTMENT:** Legal **DEPT. HEAD SIGNATURE:** _____

SUBJECT:

Summary of Hailey Ordinance No. 1105 (Amendments to Build Better Program Ordinance)

AUTHORITY: ☐ ID Code _____ ☐ IAR _____ ☐ City Ordinance/Code _____
(IFAPPLICABLE)

BACKGROUND/SUMMARY OF ALTERNATIVES CONSIDERED:

I am enclosing a summary of Hailey Ordinance No. 1105 which amends Chapter 15.08. Ordinance No. 1105 created an additional exemption to Hailey Build Better Program for new residential construction and extended the voluntary Build Better Program to January 1, 2013.

Ned

FISCAL IMPACT / PROJECT FINANCIAL ANALYSIS Casele #_____
Budget Line Item #_____ YTD Line Item Balance $_____
Estimated Hours Spent to Date: _____ Estimated Completion Date: _____
Staff Contact: _____ Phone # _____
Comments:

ACKNOWLEDGEMENT BY OTHER AFFECTED CITY DEPARTMENTS: (IFAPPLICABLE)

___	City Attorney	___	Clerk / Finance Director	___	Engineer	___	Building
___	Library	___	Planning	___	Fire Dept.	___	_____
___	Safety Committee	___	P & Z Commission	___	Police	___	_____
___	Streets	___	Public Works, Parks	___	Mayor	___	_____

RECOMMENDATION FROM APPLICABLE DEPARTMENT HEAD:

Make a motion to approve the summary of Hailey Ordinance No. 1105.

FOLLOW-UP REMARKS:

SUMMARY OF HAILEY ORDINANCE NO. 1105

The following is a summary of the principal provisions of Ordinance No. 1105 of the City of Hailey, Idaho, duly passed and adopted July 2, 2012, by the City Council and Mayor of the City of Hailey:

AN ORDINANCE OF THE CITY OF HAILEY, AMENDING SECTION 15.08.012(A) OF THE HAILEY MUNICIPAL CODE TO PROVIDE AN ALTERNATIVE VERIFICATION; AMENDING SECTION 15.08.012(C) OF THE HAILEY MUNICIPAL CODE TO DESCRIBE THE ALTERNATIVE VERIFICATION; AMENDING SECTION 15.08.020(E) OF THE HAILEY MUNCIPAL CODE TO REVISE THE EXPIRATION DATE OF THE BUILD BETTER PROGRAM TO JANUARY 1, 2013; BY PROVIDING FOR A SEVERABILITY CLAUSE; BY PROVIDING FOR A REPEALER CLAUSE; AND BY PROVIDING AN EFFECTIVE DATE.

Hailey Ordinance No. 1105 amends Hailey Municipal Code, as follows:

Section 1 amends Section 15.08.012(A) of the Hailey Municipal Code, to allow an alternative method of verifying an exemption from the Build Better Program as described in Section 15.08.012(C)(1)(a)(ii) of the Hailey Municipal Code.

Section 2 amends Section 15.08.012 (C), of the Hailey Municipal Code to add a new subsection 15.08.012(C)(1)(a)(ii), which provides an exemption for new residential construction provided there is installation of a 90% AFUE furnace or equivalent system, a 0.62 EF water heater or equivalent system, and LED or CFL lights, and provided air sealing tests verify 5 air exchanges per hour at 50 Pascal.

Section 3 amends Section 15.08.020 (E) of the Hailey Municipal Code to provide that the expiration date of the Build Better Program is January 1, 2013.

Section 4 provides for a severability clause.

Section 5 provides for a repealer clause.

Section 6 provides Sections 15.08.030 and 15.08.020(P)(1) and (2) of the Hailey Municipal Code and Sections 15.08.012 of the Hailey Municipal Code, as amended by Sections 1 and 2 of Ordinance No. 1105, and Section 15.08.020 (E) of the Hailey Municipal Code, as amended by Section 3 of Ordinance No. 1105, shall be in full force and effect on January 1, 2013, following a prior review by the Hailey Council and after subsequent passage, approval and publication according to law.

The full text of Ordinance No. 1105 is available at Hailey City Hall at 115 South Main Street, Suite H, Hailey, Idaho 83333 and will be provided to any citizen upon request during regular business hours.

CERTIFICATION OF CITY ATTORNEY

I, the undersigned Attorney at Law, as attorney for the City of Hailey, Idaho, hereby certify that I have read the foregoing summary of Ordinance No. 1105 of the City of Hailey, that I have compared it to the full text of Ordinance No. 1105, and that in my opinion, the above summary is true and complete and provides adequate notice to the public of the contents of said Ordinance.

Dated this ___ day of July, 2012.

_____

Ned Williamson, Hailey City Attorney

Publish: Idaho Mountain Express, July ___, 2012

530 Deer Trail Drive
Hailey, ID 83333-8539+
May 25, 2012

Hailey Police Department
Officer 108
Hailey, Idaho

Re: Water

Thanks for the warning about my sprinklers; I've lived in this house for nearly 20 years and have tried my best to follow the water regulations. The landscaping people turned on my sprinklers and apparently did not re-program them and there may have been a 31-day month of which I should have been aware.

I have now turned the sprinklers off and will leave them off until it stops raining. I do have a patch of bare earth in what I call the "dog yard" where I am trying to re-grow the grass they destroyed. I am well aware that water is a precious resource and that as Hailey grows more and more demand is being put on our supply. Thanks for your vigilance.

I am among your senior constituents in my 88th year and don't always hear the water when it comes on. I'll check more often. We seniors appreciate the work the Hailey police does in keeping us safe and thank you sincerely for what you do for us.

Barbara Dargatz