Historic Preservation Services
Community Development & Neighborhood Services
281 North College Avenue
P.O. Box 580
Fort Collins, CO 80522.0580

970.224.6078
preservation@fcgov.com
fcgov.com/historicpreservation

CERTIFICATE OF APPROPRIATENESS
ISSUED: April 9, 2024
EXPIRATION: April 9, 2025

City of Fort Collins
c/o Lynsey Bosch, CSU Energy Institute
430 N. College Ave.
Fort Collins, CO 80524

Dear Property Owner:

This letter provides you with confirmation that the proposed changes to your designated Fort Collins landmark property, the Fort Collins Power Plant at 430-454 N. College Ave., have been approved by the City's Historic Preservation Division because the proposed work meets the criteria and standards in Chapter 14, Article IV of the Fort Collins Municipal Code.

1) Gas turbine exhaust ducting and thimble, through roof, with related rooftop reinforcement. All permanent exhaust ducting to terminate 25" above roof membrane (below level of existing parapet). Temporary 5-10 foot chimney raised only during engine operation. See attached work description and figures for additional details.

Notice of the approved application will be provided to building and zoning staff to facilitate the processing of any permits that are needed for the work.

Please note that all ensuing work must conform to the approved plans. Any non-conforming alterations are subject to stop-work orders, denial of Certificate of Occupancy, and restoration requirements and penalties.

If the approved work is not completed prior to the expiration date noted above, you may apply for an extension by contacting staff at least 30 days prior to expiration. Extensions may be granted for up to 12 additional months, based on a satisfactory staff review of the extension request.

Property owners can appeal staff design review decisions by filing a written notice of appeal to the Director of Community Development & Neighborhood Services within fourteen (14) days of this decision. If you have any questions regarding this approval, or if I may be of any assistance, please do not hesitate to contact me. I can be reached at yjones@fcgov.com or at 970-224-6045.

Sincerely,

Yani Jones
Historic Preservation Planner

Applicable Code Standard	Summary of Code Requirement and Analysis (Rehabilitation)	Standard Met (Y/N)
SOI #1	*A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships;* **This project will not alter the existing use of this historic building by the Energy Institute, and so this Standard is met.**	**Y**
SOI #2	*The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.* **The only exterior materials that will need to be removed for this project include roofing, which is not a distinctive material of this historic building because the flat roof is hidden behind a parapet. Although the temporary chimney will be visible from the public rights-of-way, it will only be extended while the engine is running, and so this element does not compromise the historic character of the building.**	**Y**
SOI #3	*Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.* **The proposed exhaust ductwork, thimble, and temporary chimney are clearly modern features, and so they do not create a false sense of historical development.**	**Y**
SOI #4	*Changes to a property that have acquired historic significance in their own right will be retained and preserved.*	**N/A**
SOI #5	*Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.* **Distinctive materials, features, finishes, construction techniques, or examples of craftsmanship will not be impacted by this project due to the project's location on the flat roof.**	**Y**
SOI #6	*Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.*	**N/A**
SOI #7	*Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*	**N/A**

SOI #8	*Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*	**N/A**
SOI #9	*New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.*	**N/A**
SOI #10	*New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.* **Because the exterior work area is limited to the building's flat roof, the exhaust system could be removed in the future without impact to the integrity of the historic property or its environment.**	**Y**

Gas Turbine Exhaust Scope of Work

Changes Overview

Gas Turbine exhaust must be safely routed outdoors through the roof. To do this a hole must be cut in the roof to allow for the exhaust ducting and a heat insulating thimble to pass through. The thimble is necessary for heat protection of the surrounding roof. Structural redesign and reinforcement are necessary to rebuild the area of the roof puncture so that it can hold the ducting and thimble securely, as well as reinforce around the minor beam being removed to make way for the exhaust. All design, construction, and installation on the roof will be done by Hillside Construction Inc, as specified in Appendix Fig 1.

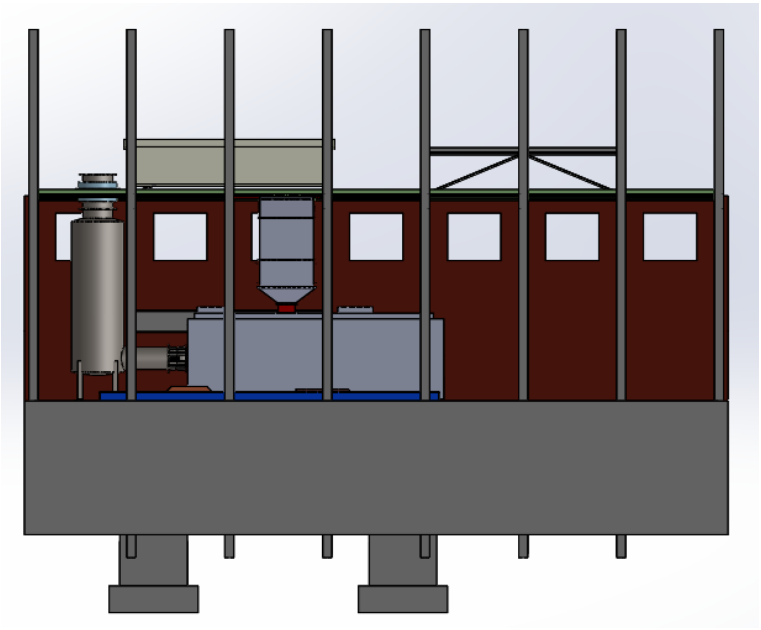


Fig 1. SolidWorks Model

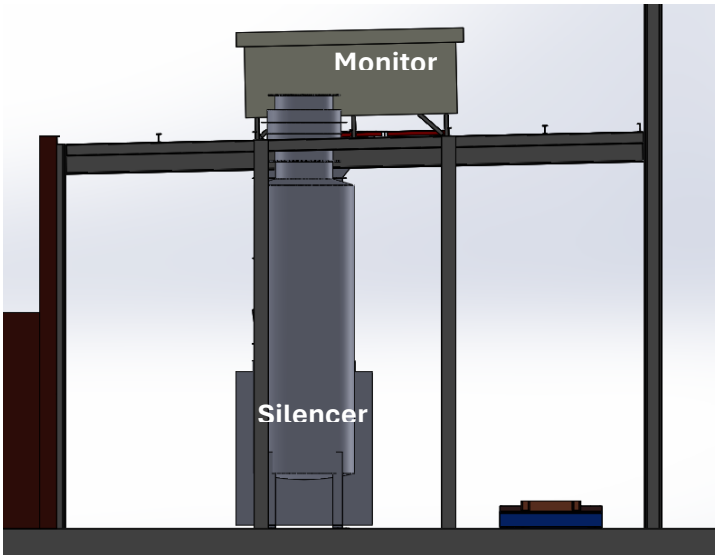


Fig 2. SolidWorks Model

Above shows a SolidWorks model of the building structure with the silencer inside. You can see the silencer exhaust ducting and thimble going through the roof. The ducting terminates below the top edge of the monitor.

Below, Fig 3 and Fig 4 are images of the silencer inside the building. Fig 4 shows an up-close view of the minor structural member that will need to be removed, marked with red. In the same image, marked in blue, is the fire sprinkler system, which will need to be rerouted further away from the silencer, still within the interior building space. Sprinkler rerouting is being directed by Hillside Construction and Front Range Fire.

Fig 3. Photo of Silencer

Fig 4. Photo of silencer at ceiling

Visibility from street

All permanent exhaust ducting will terminate 25” above the roof membrane. This is not visible from the front of the building, as it is blocked by the parapet roof, which extends 32” from the roof membrane at the point of interest. The ducting ends well below the top of the monitor, which is barely visible from the street. Below are sidewalk view images from the west entrance of the building, and a roof image of the zone to be cut.

The engine exhaust will have a temporary chimney that is erected only when running, and lowered below visibility when the engine is not running. The chimney will have a height of approximately 5-10 feet and be visible from the sidewalk during testing.

Fig 5. Sidewalk View of Powerhouse West

Fig 6. Roof image at construction zone

Appendix

FIELD CHANGE ORDER WORKSHEET

Hillside Construction Inc.
216 Hemlock Street, Suite B
Fort Collins, CO 80524
(970) 567-1821

JOB: Power House - Roof Repairs for 'Thimble'
DATE: 26-Feb-24

FCO#: Roof Repairs for Thimble **AIA CO#:**

DESCRIPTION: Structural Steel Systems and Roof Repairs for New 'Thimble' System at Power House Lab Area.

HCI COSTS:

CODE	DESCRIPTION	PRICE
1016	Supervision for Site Coordination (24 hrs at $105/hr)	$ 2,520.00
1017	Project Manager for collection of pricing and relaying to field staff, General Coordination (6 hrs at $120/hr)	$ 720.00
1180-1185	Hillside Team Members utilize Building Restrooms and Trash/Recycle Dumpsters - By CSU/Engines Lab/Power House	**By Owner**
		$ -

MATERIAL & SUB COSTS:

CODE	SUB	DESCRIPTION	PRICE
			$ -
1250	Corbel Engineering	Structural Engineering for Roof Support Structure for New 'Thimble' Unit	$ 1,500.00
5100	Tiger Steel	Budget: Fabrication for Steel & Decking Support Structure Systems for 'Thimble'	$ 3,723.00
5100	High Country Steel	**Budget:** Installation of 'Thimble' Steel Support Systems; Lift for Roof Decking	$ 10,800.00
5100	High Country Steel	**Budget:** Galvanized Spray Paint New Steel Systems to match (E) as best as possible	Inc.
6100	Hillside Construction Inc.	Cutting & Removal of Existing Roofing Tiles	$ 1,300.00
7310	Advanced Roofing	Roofing Repairs for Roof Penetrations	$ 1,475.00
15500	Front Range Fire	***Budget:*** Fire Sprinkler Relocation	$ 3,495.00
16050	Electrical by Engines Lab	Relocation of Power Systems by CSU Engines Lab/Power House Team	***By Owner***
			$ -
1001	Permits & Fees - Excluded	Permits and Fees - Excluded	***Excluded***
Cont.	Hillside/Engines Lab	Construction Contingency	$ 1,500.00

SUB TOTAL: $ 27,033.00

2.00%	**General Liability Insurance (Builder's Risk is NOT Included)**	**$ 540.66**
10.00%	**Contractor Overhead & Fee**	**$ 2,757.37**

TOTAL: **$ 30,332.00**

EXCLUSIONS & QUALIFICATIONS: Proposal is good for 30 days from date of Proposal.

Fig 7. Hillside Construction Invoice

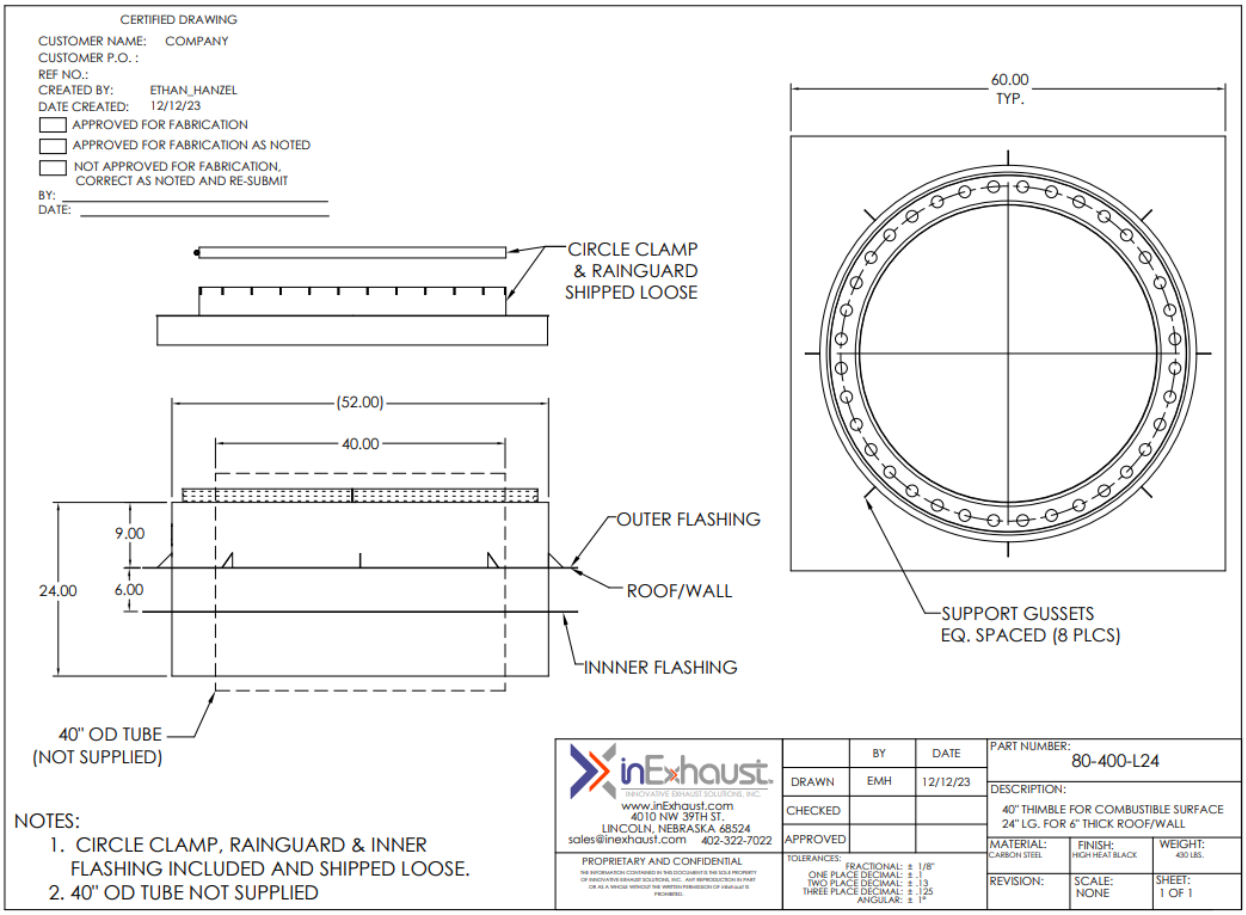


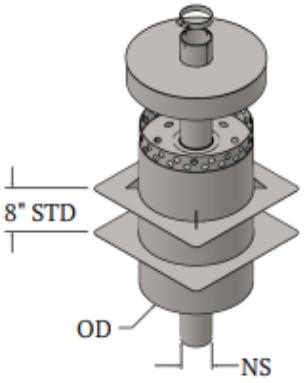
Fig 8. Inexhaust Thimble Drawing

Thimble Installation Guide

ISO 9001:2015 CERTIFIED
inExhaust
INNOVATIVE EXHAUST SOLUTIONS, INC.

Read through the entire manual before proceeding with installation.

Any procedures presented in this guide are suggestions only, and it is the responsibility of the owner/operator to ensure that the installation is done only by trained, qualified individuals, and performed according to all applicable codes including, but not limited to, local codes for your municipality, city, county and state; this includes all electrical and mechanical work. All workers must be trained in the proper safety procedures and appropriate PPE and attire must be worn at all times.



Thimbles provide protective transitions for exhaust piping where it is necessary to pass through walls and/or roofs safely to the outside atmosphere. Thimbles are critical in complying with local fire and safety regulations by protecting wall and/or roof material from exhaust tube heat. You should obtain the most up-to-date copies of documents from the National Electrical Code and other applicable authorities.

PRE-INSTALLATION

- We recommend hi-temperature rated sealant (Mil-A-46106B, 100 Series RTV) or similar for use in this application.
- Prior to unpacking, check all components for shipping damage.
- Keep shipping materials intact to protect the unit until installation is complete.
- Verify the correct parts are received by comparing the nameplate with the packing list.
- Verify that the thimble and recommended components are of proper size for the mating surface openings and ensure that all mating surfaces are clean and free of foreign material before installation.
- When cleaning the surfaces, do not use abrasive materials such as steel wool or wire brushes. Use only isopropyl alcohol and clean with soft rags. (Do not use chloride or halide-based cleaners.)
- Ensure the installation location is free of electrical, plumbing, or any other obstacle.

INSTALLATION

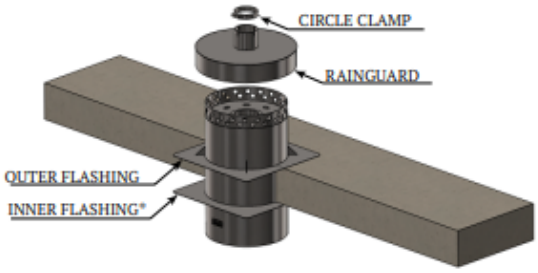
1. Cut a hole in the desired installation surface ¼" larger than the thimble diameter or as the installing contractor recommends.
2. Apply a bead of sealant around the perimeter of the exterior flashing that will be in contact with the surface and is a minimum of one inch from the edge of the flashing.
3. Install the thimble through the hole so that the exterior flashing is flush against the outside surface, clocking as needed.
4. Apply a bead of sealant around the perimeter of the interior flashing that will be in contact with the surface and is a minimum of one inch from the edge of the flashing.
5. Install the interior flashing and clock as needed.
6. Install corrosion resistant fasteners into both the exterior and interior flashing surfaces, installing the fasteners with the recommended sealant in order to secure the thimble.
7. With thimble installed and fastened to surface, insert exhaust piping through the ID hole of the thimble. Ensure that enough exhaust piping is installed to be able to allow installation of the rain cap and clamp. Ensure that the exhaust piping is not in contact with the inner wall of the thimble.
8. Install a ½" bead of sealant at the gap around the perimeter of the thimble body and the exterior flashing to cover any gaps and prevent leakage.
9. From the exterior of the building, install the rain guard over the exhaust pipe with the included clamp.
10. Tighten the clamp to secure the rain guard to the thimble.
11. Ensure that the ventilation holes/slots are not blocked and are free of obstructions.

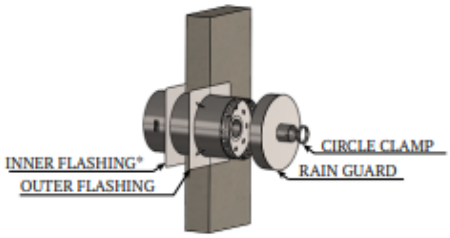
www.inExhaust.com | Phone 402.322.7022 | Fax 402.322.7032 | sales@inExhaust.com

CONTINUED

POST-INSTALLATION

- Review that all components of your exhaust system are properly installed and ready for operation.
- If there is any indication of leaks or damage, cease operation immediately and conduct a broader inspection to determine the cause and resolve.
- After the initial engine run and cool down, re-check all bolts for tightness and torque as required.
- Exhaust back-pressure must not exceed the allowable back-pressure specified by the engine manufacturer. Excessive exhaust back-pressure reduces engine power and engine life and may lead to high exhaust temperatures and smoke. Engine exhaust back-pressure should be estimated before the layout of the exhaust system is finalized and is recommended to be measured at the exhaust outlet under full–load operation, as needed.
- Verify that the type and amount of movement generated by the system are acceptable and do not cause damage to the installed product(s).





*Inner flashing ships loose

MAINTENANCE

It is recommended that maintenance is performed monthly, or every 10 hours of operation, (whichever comes first).

Maintenance for a typical exhaust system installation will consist of physical and visual examination of the exhaust system for any sign of gas leakage, cracks, significant areas of damage or corrosion. Re-tighten any loose bolts if necessary. Apply new sealant as needed.

Note: If there is any indication of leaks or damage, cease operation immediately and conduct a broader inspection to determine the cause and resolve.

Thank you for choosing inExhaust as your exhaust system components solution!
For any questions, please contact us at sales@inExhaust.com.

This guide is also available on our website: www.inExhaust.com

From:	Bosch,Lynsey
To:	Raime Lanham; Yani Jones
Cc:	Raime Lanham
Subject:	[EXTERNAL] Re: Powerhouse Project: Exhaust Ducting
Date:	Monday, April 8, 2024 4:37:14 PM
Attachments:	image001.png image002.png image003.png Exhaust Scope of Work[62].docx

---

Hi Yani,

Please find an updated document and the comments below from the research team.

The sprinkler system is being rerouted but will stay within the interior of the building, there is no sprinkler going on the exterior. The document has been clarified.

There will be a permanent exhaust pipe extending through the roof that is always not visible. We are limiting any exhaust visibility as much as possible, that is why the temporary chimney will only be raised while the engine is running. The temporary chimney and may extend 5-10 feet from the top of the permanent exhaust, so it will be clearly visible at certain times.

Let me know if there are further questions or more needed revisions.

Regards,
Lynsey

Lynsey Bosch
Associate Director of Operations
Energy Institute
Colorado State University
P: 970-297-3756 I **C**: 970-980-3047
Powerhouse Energy Campus
430 North College Avenue I Fort Collins, CO 80524

From: Bosch,Lynsey <Lynsey.Bosch@ColoState.EDU>
Date: Monday, April 8, 2024 at 12:31 PM
To: Raime Lanham <rlanham@fcgov.com>
Cc: Raime Lanham <rlanham@fcgov.com>, Yani Jones <yjones@fcgov.com>
Subject: Re: Powerhouse Project: Exhaust Ducting

Hi Raime,

Thank you for the update. I've requested the clarifications from the research team and will get those back to you ASAP.

Kind regards,
Lynsey

Lynsey Bosch
Associate Director of Operations
Energy Institute
Colorado State University
P: 970-297-3756 I **C**: 970-980-3047
Powerhouse Energy Campus
430 North College Avenue I Fort Collins, CO 80524

From: Raime Lanham <rlanham@fcgov.com>
Date: Friday, April 5, 2024 at 8:49 AM

To: Bosch,Lynsey <Lynsey.Bosch@ColoState.EDU>
Cc: Raime Lanham <rlanham@fcgov.com>, Yani Jones <yjones@fcgov.com>
Subject: RE: Powerhouse Project: Exhaust Ducting

**** Caution: EXTERNAL Sender ****

Good morning Lynsey,

Happy Friday! I have CC'd Yani Jones to this email. She is with Historic Preservation and advised she would be happy to help you with the review in order to get the Certificate of Appropriateness. She has requested that you provide the following to her:

1. For the purposes of having complete/accurate project documentation for the Certificate of Appropriateness, would you please have the project description document you sent over updated to reflect the final plans? If what she reviews/approves via a COA doesn't match what comes in with the associated building permit, it can sometimes cause a headache. For instance, the description document notes an exhaust height of 25" on page 3 (below the height of the roof parapet, not at the level of the parapet) and a temporary chimney raising up 5-10 feet when running (rather than the 12-18 inches you've noted below).
2. She will also need to see some detail about the current and proposed location of the fire sprinkler system if it's on the exterior, which is also noted on page 3 as being marked on a photo in blue.

As a further update, I am awaiting word from the City Attorney's Office (CAO) on the form. Once we have approval from the CAO and Historic, I will have Ralph sign the form and send it your way. Please let me know if you have additional questions. Thank you for your time!

Best Regards,

Raime Lanham
Business Support III
Real Estate Services
City of Fort Collins
300 Laporte Ave
(970) 221-6211 (office)
rlanham@fcgov.com