



**State of Rhode Island  
Department of Administration / Division of Purchases  
One Capitol Hill, Providence, Rhode Island 02908-5855  
Tel: (401) 574-8100 Fax: (401) 574-8387**

**Solicitation Information  
November 26, 2012**

**ADDENDUM # 2**

**RFQ #7458202  
Title: ENERGY PERFORMANCE CONTRACTING SERVICES (ESCO) RIC  
BID OPENING: DECEMBER 21, 2012 AT 10:00 AM (EST)**

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**Notice to Vendors:**

**SEE ATTACHED STEAM PRODUCTION DATA FROM 2010 – 2012 (3 YEARS)**

**Thomas Bovis  
Interdepartmental Project Manager**

*Interested parties should monitor this website, on a regular basis, for any additional information that may be posted.*

# Disk Based Bidding Information

## File Format

All disk based bid files are ZIP files that you can open using the **WinZip 8.1** software. The ZIP file will contain one or more files based on the type of Bid/RFP.

## Downloading the Disk Based Bid

Bids that have a file for download are marked with a "D" in the Info field of the bid search results. The "D" will be an active link to the WinZip file until the bid reaches its opening date. Clicking on the active "D" link will allow you to open or save the ZIP file associated with the bid. Opening the WinZip file will download a copy to your computer's temporary directory.

## Opening the Disk Based Bid

Once downloaded, you can open the ZIP file with Winzip and view the Microsoft Office files contained within the WinZip file. Immediately save (extract) the individual files to an appropriate directory on your computer, such as "Desktop" or "My Documents".

## Completing the Disk Based Bid

Once the Microsoft Office files are properly saved, open the individual files and enter the required information in the appropriate fields. Save each file again to capture the new information you entered.

## Submitting the Disk Based Bid

Save the completed files to a CD or diskette. Label the CD or diskette with the Bid/RFP number and bidder's name (company name, not contract name). Submit as instructed in the Bid or RFP solicitation document.

RIC – Energy Performance Contracting Services (ESCO)  
Multiple Projects  
RFP #7458202  
November 9, 2012

1. Do you know how much of the electricity used is lighting?

*Answer: No, the campus is master metered and we don't have that level of detail on our energy usage.*

2. Are control or sequence drawings available for review?

*Answer: Not available at this time. If they become available we will post as separate addendum.*

3. Any lighting upgrades in any of the buildings being audited?

*Answer: Some upgrades but they haven't comprehensive. The buildings have not been audited and gone through systematically.*

4. Will there be outside lighting upgrades?

*Answer: Yes, only the ones attached to the buildings. Site lighting not included for purposes of proposal.*

5. Have there been boiler plant improvements? How many boilers?

*Answer: The boilers have been re-built, they are from the 70's. The plant is severely lacking in controls and metering capabilities. There are 3 main boilers.*

6. Are there existing mechanical and electrical drawings for buildings to be audited?

*Answer: Available drawings will be posted in a separate addendum.*

7. Are the buildings available for survey?

*Answer: The college will escort vendors on tours through the buildings. Vendors shall meet college staff outside the building prior to the tour. The schedule for site visits is as follows:*

- *Steam Plant, Weds 11/28, 9:00 am -3:00 pm*
- *Horace Mann, Thurs 11/29, 9:00 am -3:00 pm*
- *Browne Hall, Friday 11/30, 9:00 am -3:00 pm*

*The follow up would be Weds, 12/5 from 9:00-3:00 (two hours each building)*

RIC – Energy Performance Contracting Services (ESCO)  
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8. Can you distribute floor plans for each building?

*Answer: Yes. They are included as part of this addendum.*

9. Are there any preliminary audits?

*Answer: No.*

10. Are there steam production records at the steam plant?

*Answer: Yes, there are assumptions, they will be posted in a separate addendum.*

11. Do you have two years of electric usage broken down monthly?

*Answer: Yes. This is for the whole campus. We do not have individual meters on buildings. This is included as part of this addendum.*

12. The RFP stated that there was 3 years worth of utility data.

*Answer: The utilities are billed through the State but we will compile what we have and post in a separate addendum.*

13. Does the condensate go back to the central plant?

*Answer: Yes.*

14. What year was the underground steam put in? Do you have records of where repairs were done?

*Answer: Some parts as far back as the 60's, some were replaced last year. We will post aerial infrared report (April 2011) as part of this addendum.*

15. Do you have recent copies of all utility bills including, electric, gas, sewer and water?

*Answer: Yes, we will post in a separate addendum (electric included in this addendum).*

16. Do you have boiler performance results?

*Answer: Yes, it is done annually, we will post records in a separate addendum.*

17. Is there a computer power management system?

*Answer: The college has a Siemens Building Management System. There is no plan to change this system.*

Energy Performance Contracting Services

November 16, 2012

Company	Representative	Address	Email	Phone
1. NORESKO	Thomas Greshardt	ONE RESEARCH DR, 400C WESTBOROUGH, MA 01581	tyeghhardt@NORES.CO.COM	508 614 0560
2. NORESKO	John Kauppinen	11	JKAUPPINEN@NORES.CO.COM	508-614-1052
3. NORESKO	Christopher Farren	11	CFARREN@NORES.CO.COM	978-551-0645
4. SIEMENS	JERRY DRUMMOND	40 SHAWX M CRANSTON, RI 02920	JERRY.DRUMMOND@SIEMENS.COM	401 323-9089
5. AMERESCO	KLEO TALIAADOURIS	111 SPEEN ST FRAMINGHAM MA 01701	KTALIAADOURIS@AMERESCO.COM	508-661-2263
6. Ameresco	Jeremy Scott	11	JSCOTT@AMERESCO.COM	401-578-7970
7. ENE Systems, Inc	Paul Murphy	480 Neponset Street Suite 110 Canton MA 02021	PMURPHY@ENESYSTEMS.COM	781 710 1666
8. Honeywell	H.M. Lopp II	101 Columbia Road MORRISTOWN NJ 07962	max.lope@honeywell.com	908-391-3278
9. Honeywell	DORREN HAMILTON	712 Brook Street Rocky Hill, CT. 06067	DORREN.HAMILTON@HONEYWELL.COM	860.305.9666
10. Honeywell	Michael Healy	106 Metro Park Rochester NY 14623	Michael.healy@honeywell.com	973-216-4795
11. Honeywell	Dylan Albach	712 Brook St. Rocky Hill, CT 06067	Dylan.albach@honeywell.com	551-590-5292
12. HONEYWELL	Seth Teller	712 BROOK ST SUITE 106 ROCKY HILL, CT 06067	seth.teller@honeywell.com	860-883-0952

primary point of contact



Energy Performance Contracting Services

November 16, 2012

Company	Representative	Address	Email	Phone
13. Veolia Energy	Uweck Martin	99 Summer street Boston	vmartin@veoliaenergy.ma.com	6176575418
14. NORESKO	Tony RINALDI	129 South St, Boston <del>129 South St</del>	arinaldi@noresko.com	617542-8567
15. Care Technology (LED Lighting) manufact Rutherford NJ	Chon Wong	42 Meshassude Rd, Lincoln RI 02865	wong@caretechnology.biz	401-7283235
16. <del>SIEMENS</del>	Lisa Schoonenman	40 Sharpe Dr. Cranston	lisa.schoonenman@siemens.com	781-248-7132
17. Siemens	Vijay Srinivasachari	40 Sharpe Dr. Cranston	vijay.srinivasachari@siemens.com	860-682-2519
18. Daniel Cartier RIC	Don Cartier	600 Mount Pleasant	Dcartier@RIC.ED	401-456-8262
19. GBC Gillbane Building Co.	David Bird Mike Buscari	7 Jackson Walkway	dbird@gilbane.com mbuscari@gilbane.com	5084967587 401-456-5672
20. Ameresco	Chris Stevadore	111 Spear St Framingham MA 01701	cstevadore@ameresco.com	508 661 2233
21. TRANE	Geobar Santos Steve Soltz	50 VISTAS BLVD EAST PROVIDENCE RI 02884	gsantos2@trane.com STEVEN.SOLTZ@TRANE.COM	381-572-6691
22. Constellation	Caleb Benham	116 Huntington Ave suite 700 Boston MA 02116	Caleb.benham@constellation.com	727-492-0713
23.				
24.				



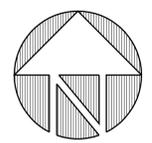
**B** BASEMENT FLOOR PLAN

SCALE: 1/16" = 1'-0"  
 0 1' 2' 4' 8' 16'





SCALE: 1/16" = 1'-0"  
 0 1' 2' 4' 8' 16'

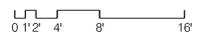


**0** GROUND FLOOR PLAN





SCALE: 1/16" = 1'-0"



**2** SECOND FLOOR PLAN



**RHODE ISLAND COLLEGE**

600 Mount Pleasant Avenue | Providence, Rhode Island | 02908

PREPARED BY:

URBAN DESIGN GROUP

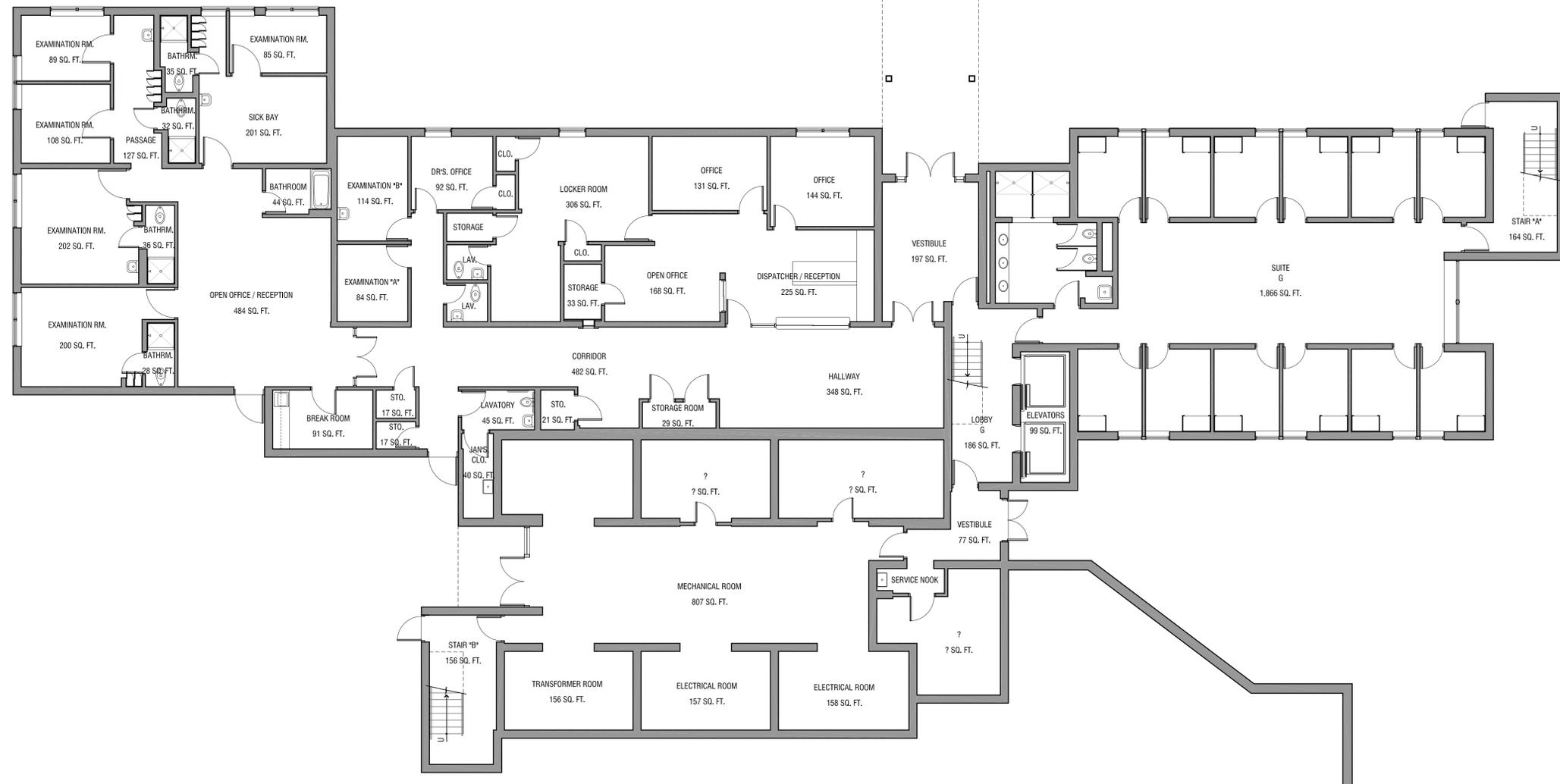
530 Wood Street | Bristol, Rhode Island | 02809 | 401-254-2032

**BUILDING # 16**  
**LUCIUS A. WHIPPLE HALL**

DATE:  
06-21-2011

SHEET #:

**16.2**



SCALE: 1/8" = 1'-0"  
 0 1' 2' 4' 8' 16'

0 **GROUND FLOOR PLAN**



**RHODE ISLAND COLLEGE**

600 Mount Pleasant Avenue | Providence, Rhode Island | 02908

PREPARED BY:

URBAN DESIGN GROUP

530 Wood Street | Bristol, Rhode Island | 02809 | 401-254-2032

**BUILDING # 34**

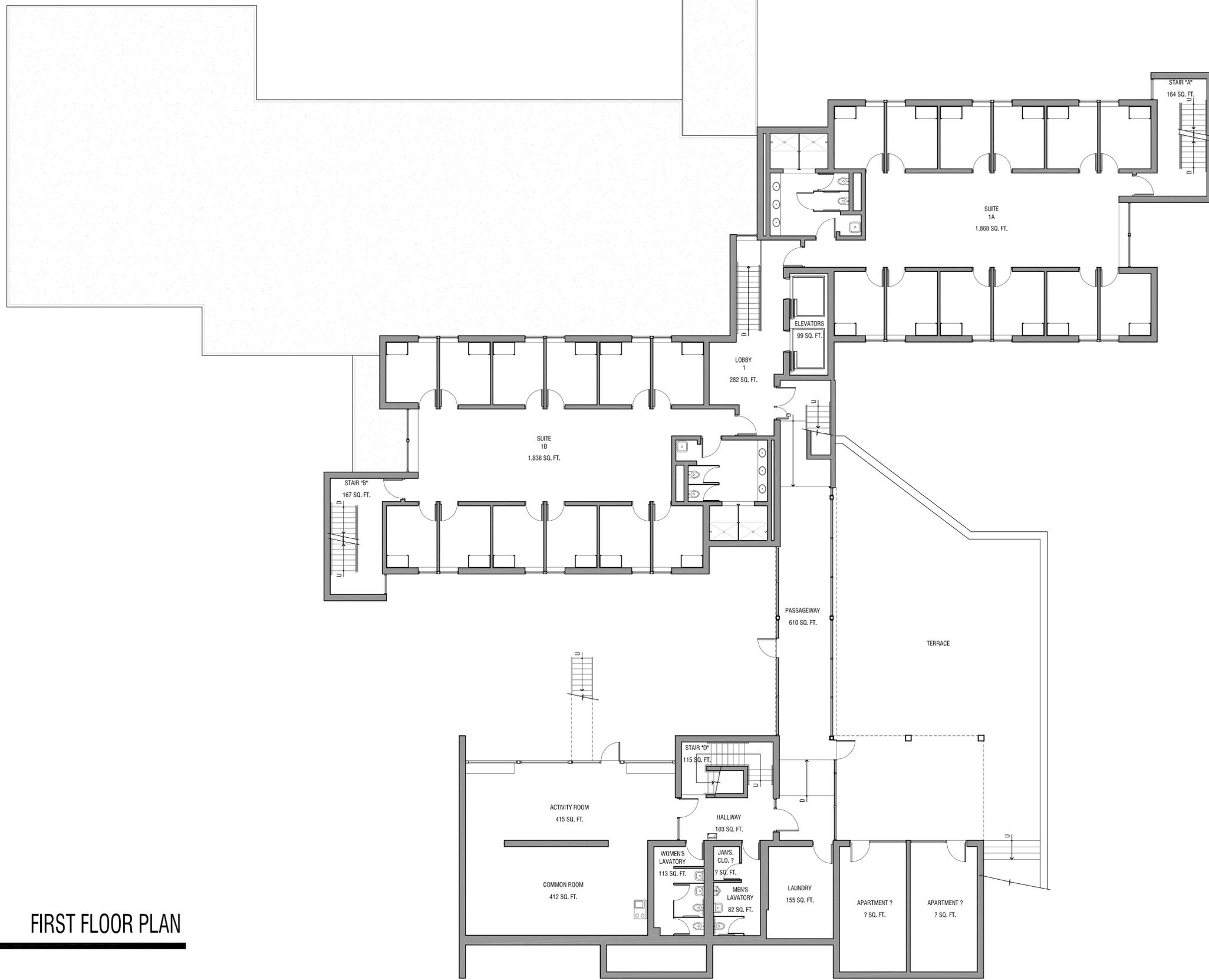
**ROSE BUTLER BROWNE RESIDENCE HALL**

DATE:

02-01-2011

SHEET #:

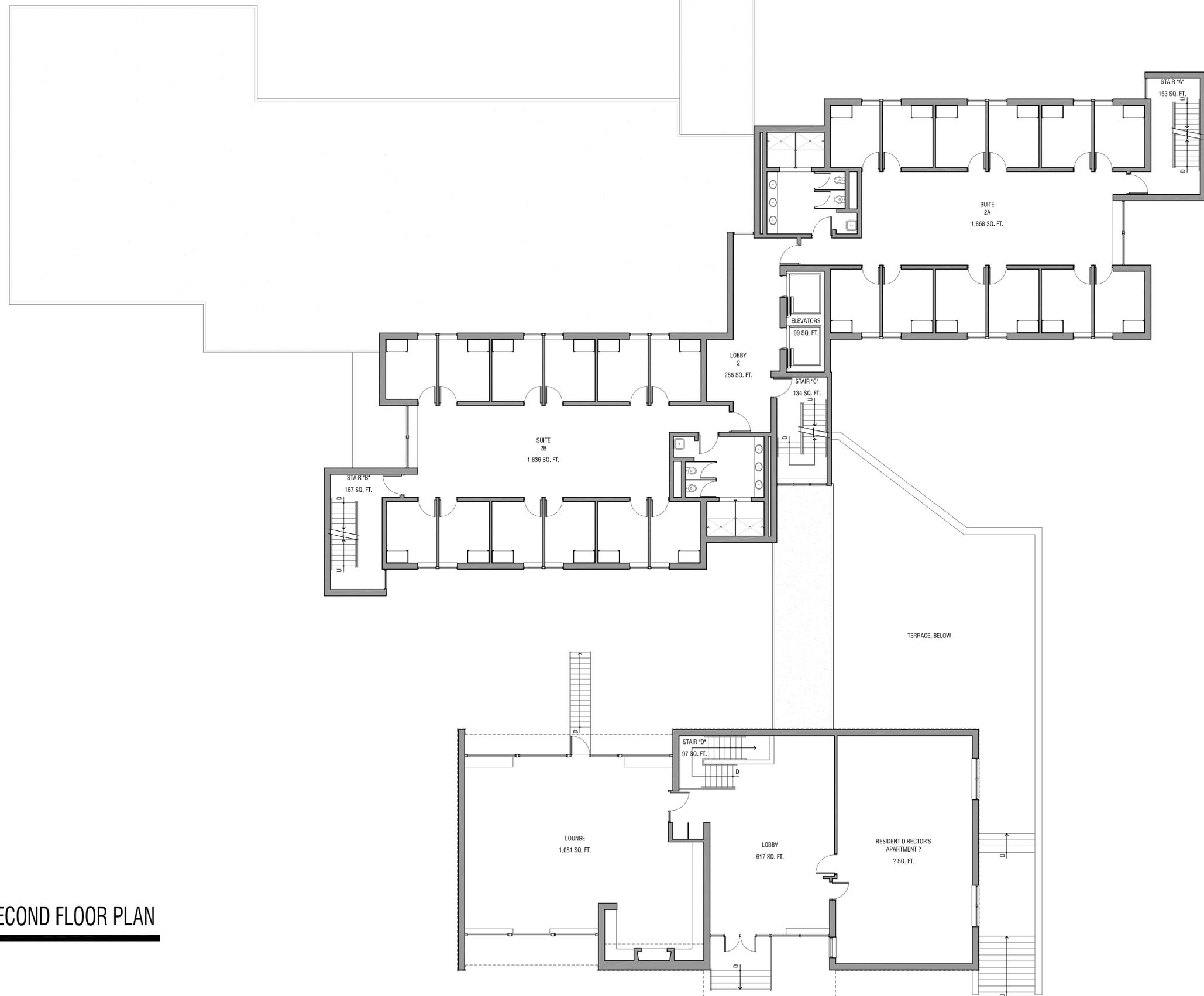
**34.0**



1 FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"  
 0 1' 2' 4' 8' 16'





2 SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"  
 0 1' 2' 4' 8' 16'

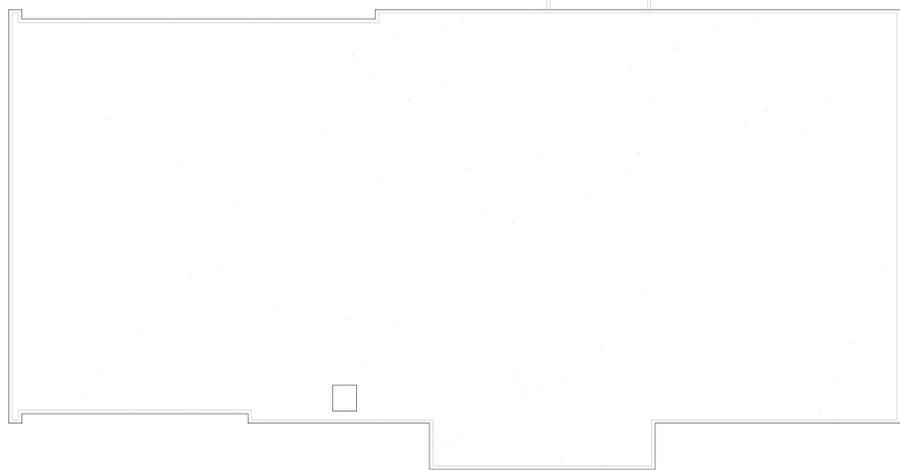
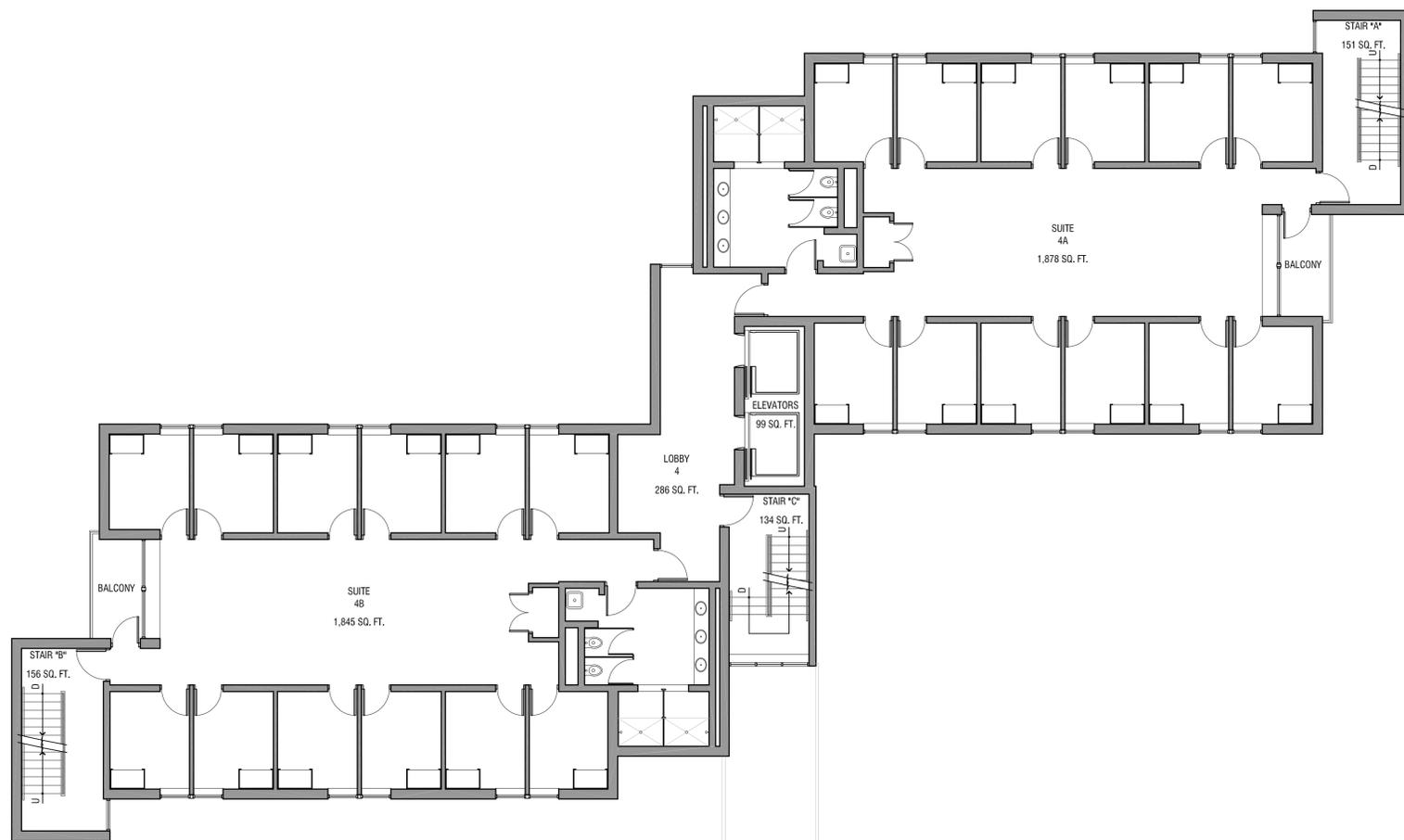




**3** THIRD FLOOR PLAN

SCALE: 1/8" = 1'-0"  
 0 1' 2' 4' 8' 16'

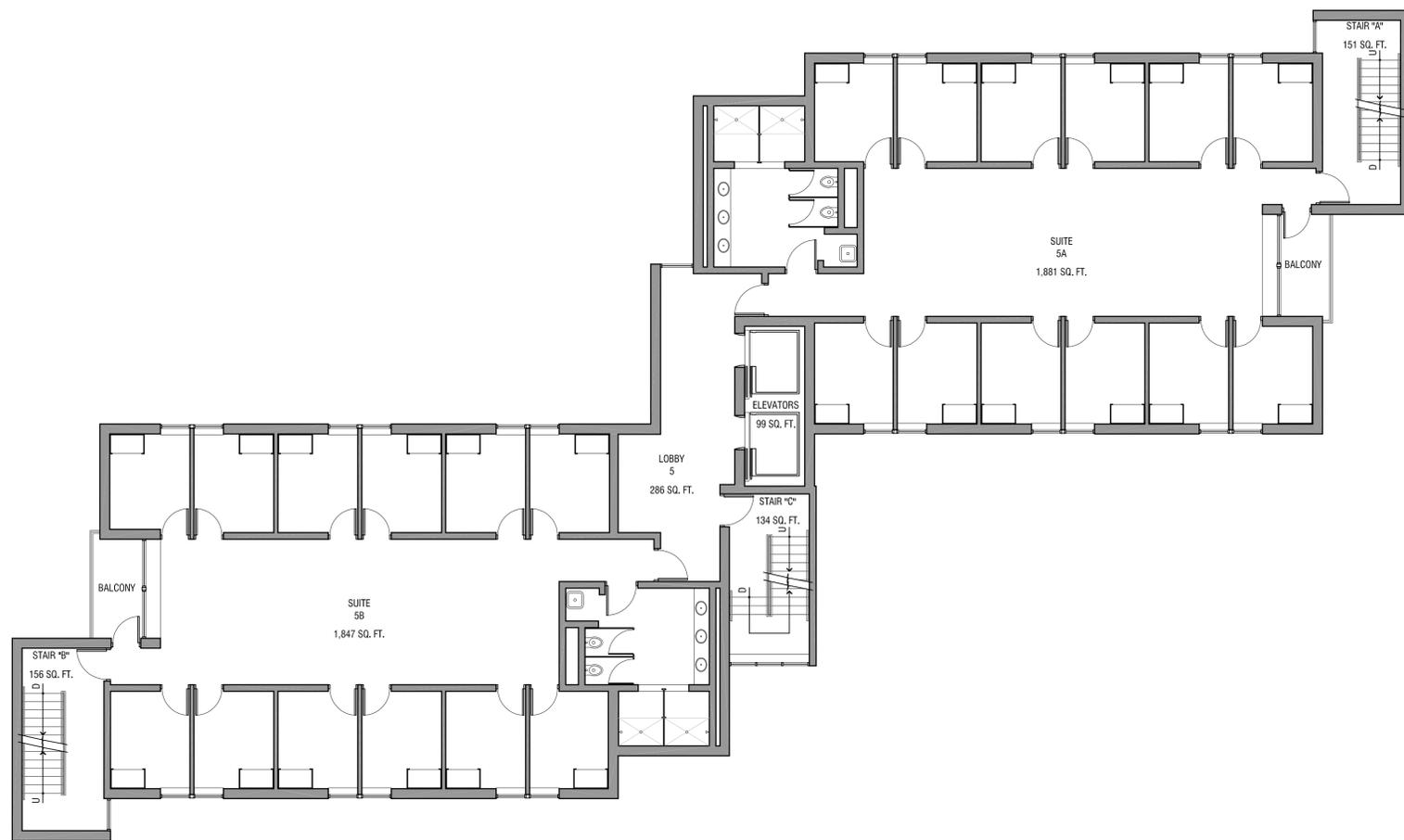




SCALE: 1/8" = 1'-0"  
 0 1' 2' 4' 8' 16'



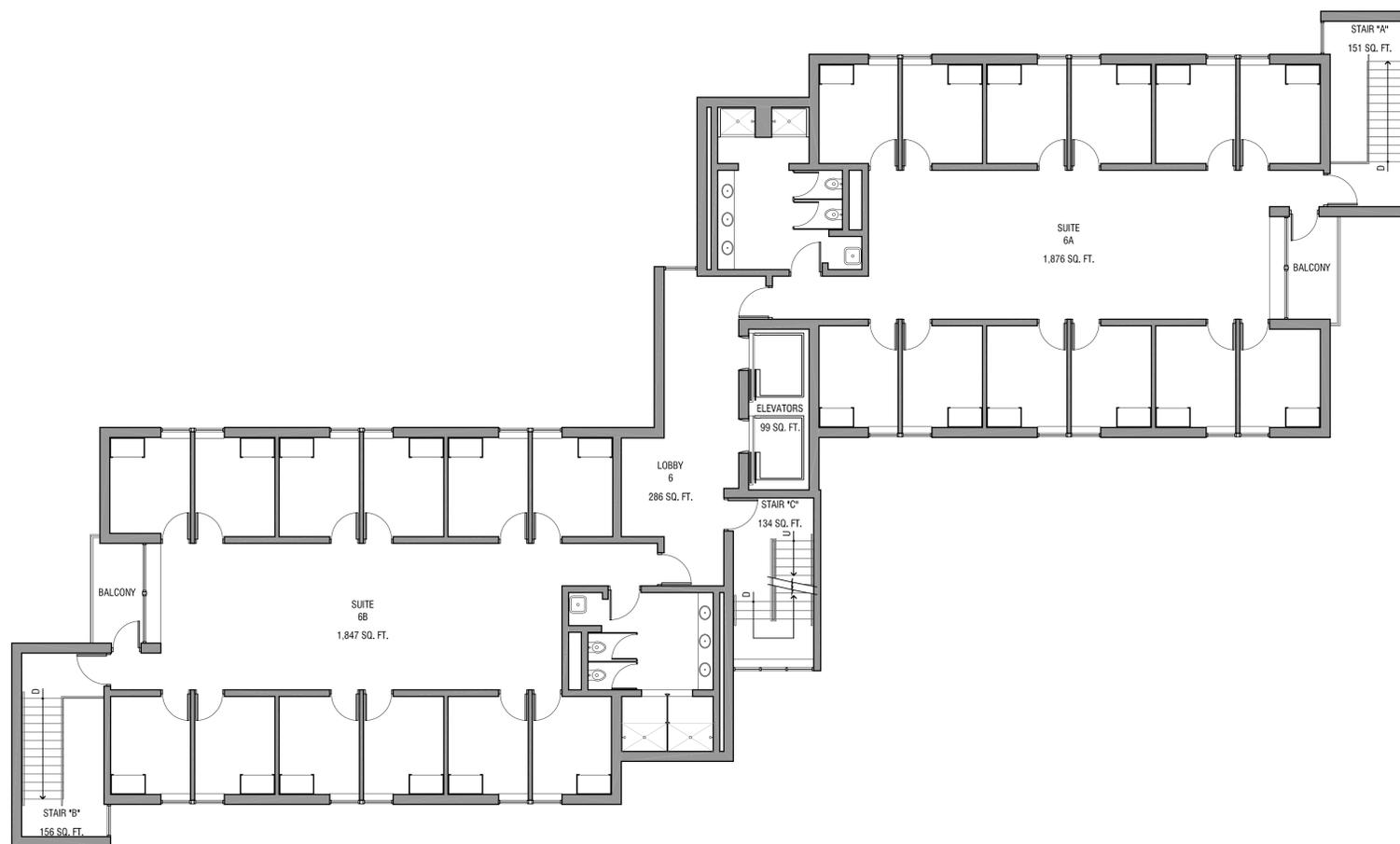
**4** FOURTH FLOOR PLAN



SCALE: 1/8" = 1'-0"  
 0' 1' 2' 4' 8' 16'



**5** FIFTH FLOOR PLAN



SCALE: 1/8" = 1'-0"  
 0' 1' 2' 4' 8' 16'



**6** SIXTH FLOOR PLAN



**RHODE ISLAND COLLEGE**

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**BUILDING # 34**

**ROSE BUTLER BROWNE RESIDENCE HALL**

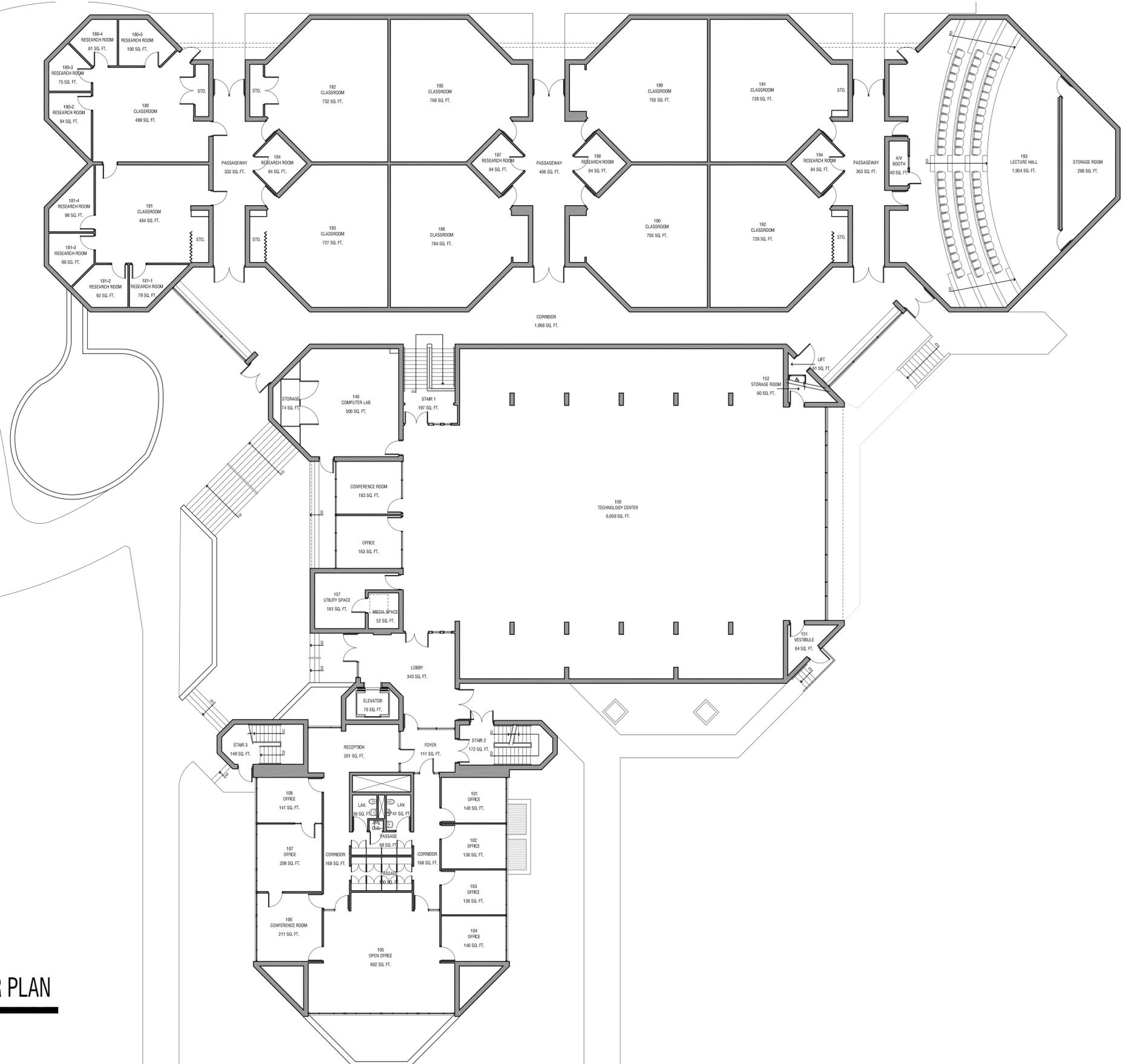
DATE:

02-01-2011

SHEET #:

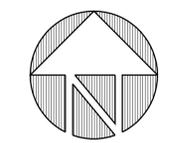
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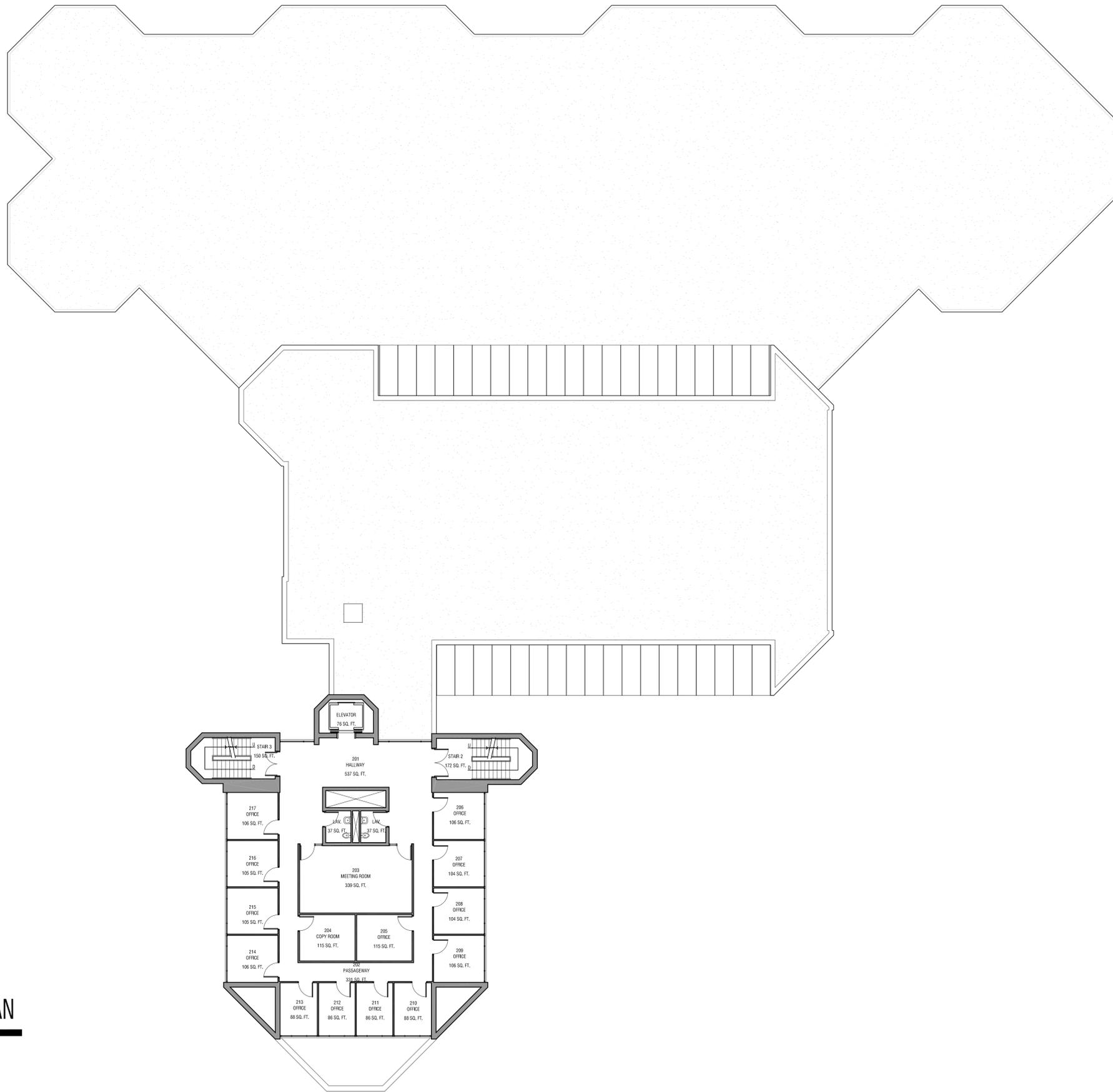




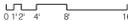
**1** FIRST FLOOR PLAN

SCALE: N.T.S.  
 0 1/2" 4" 8" 16"





SCALE: N.T.S.



2

SECOND FLOOR PLAN



RHODE ISLAND COLLEGE

600 Mount Pleasant Avenue | Providence, Rhode Island | 02908

PREPARED BY:

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530 Wood Street | Bristol, Rhode Island | 02809 | 401-254-2032

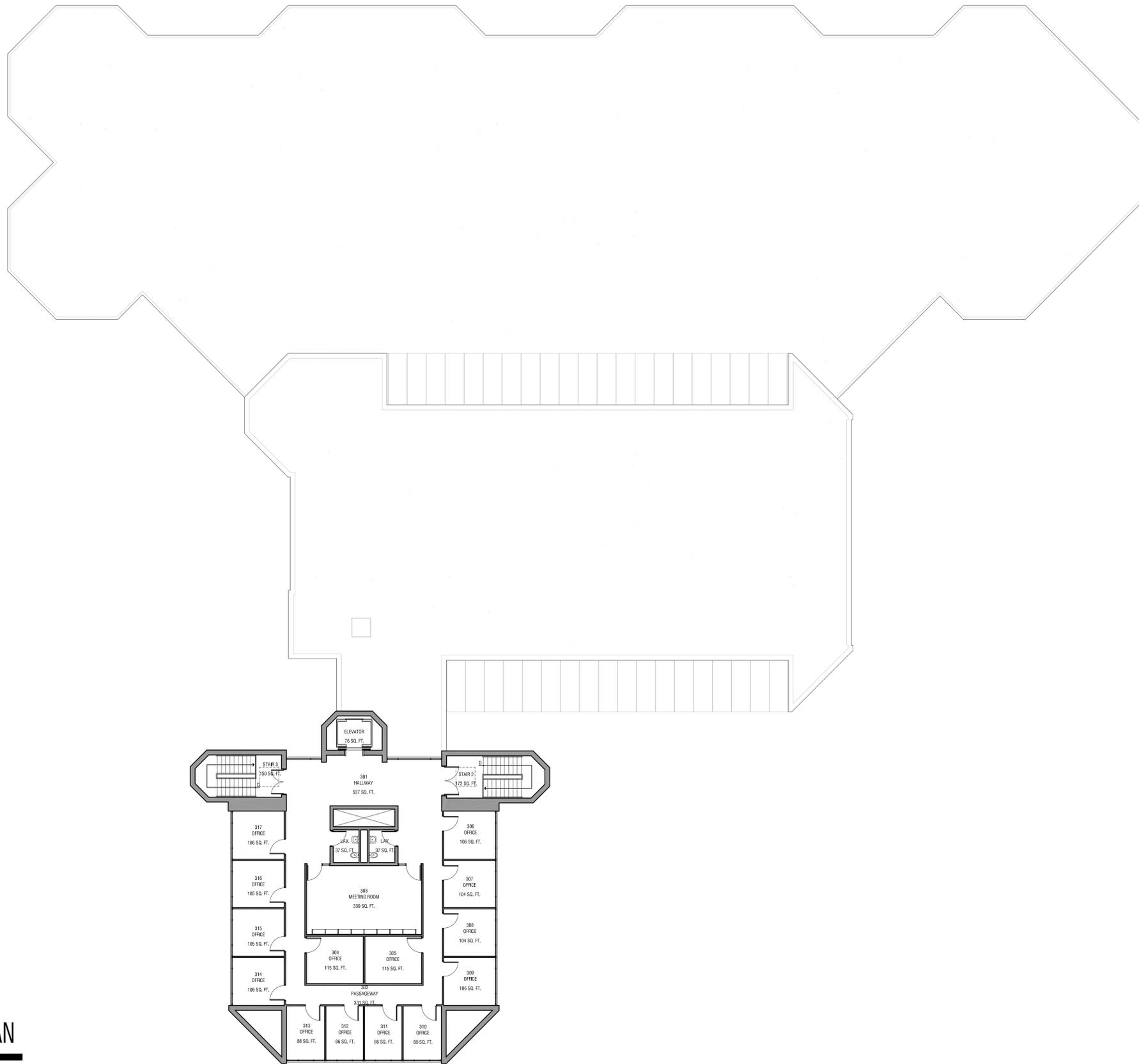
BUILDING # 38  
HORACE MANN HALL

DATE:

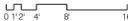
02-01-2011

SHEET #:

38.2



SCALE: N.T.S.



**3** THIRD FLOOR PLAN



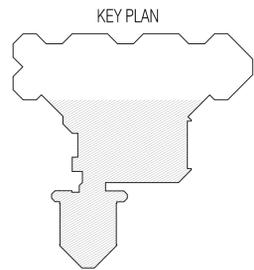
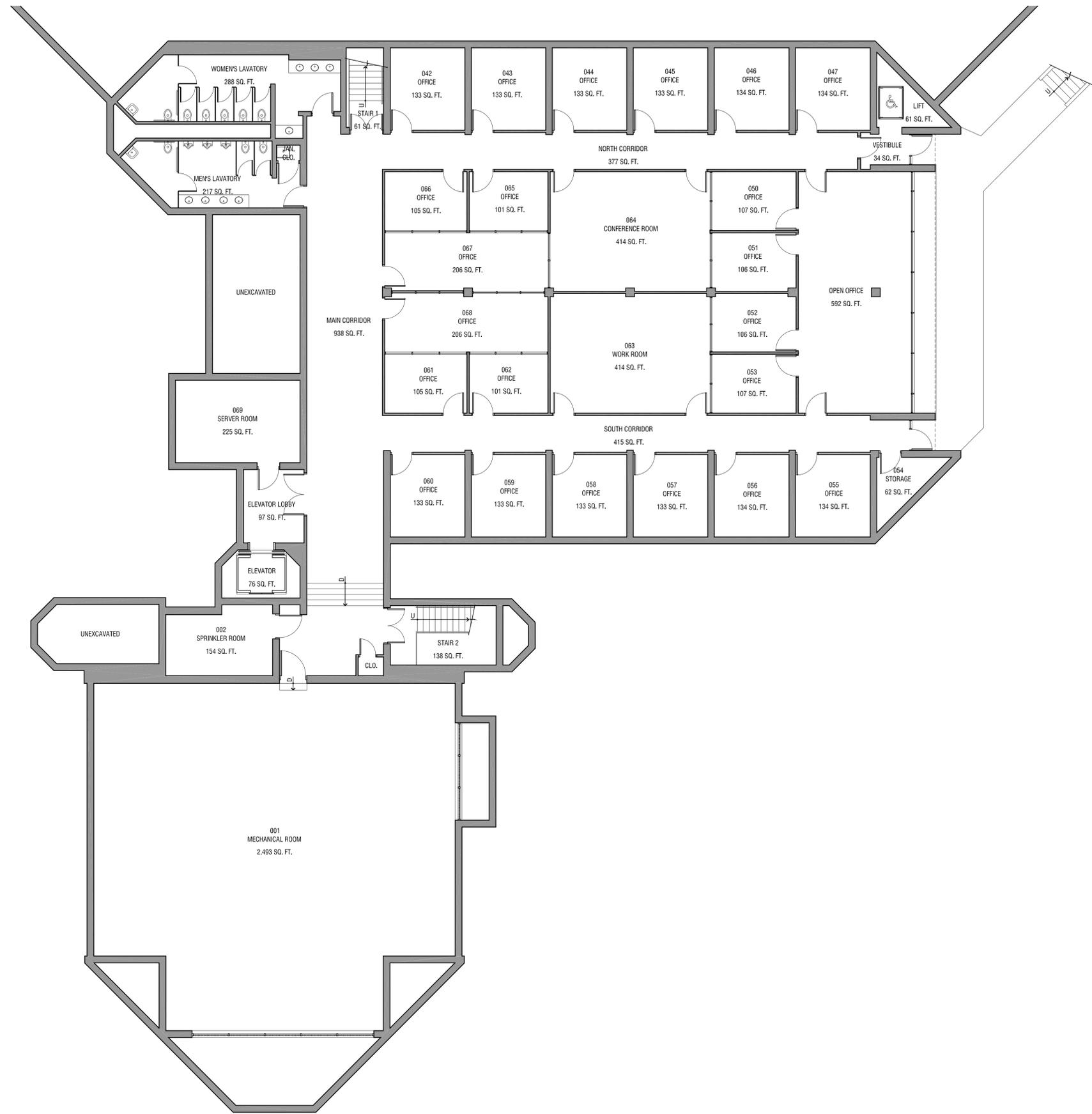
**RHODE ISLAND COLLEGE**  
 600 Mount Pleasant Avenue | Providence, Rhode Island | 02908

PREPARED BY:  
**URBAN DESIGN GROUP**  
 530 Wood Street | Bristol, Rhode Island | 02809 | 401-254-2032

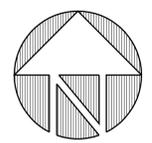
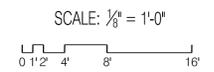
**BUILDING # 38**  
**HORACE MANN HALL**

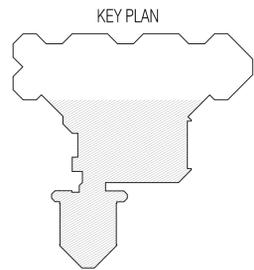
DATE:  
 02-01-2011

SHEET #:  
**38.3**



**0S** GROUND FLOOR PLAN - SOUTH / TOWER

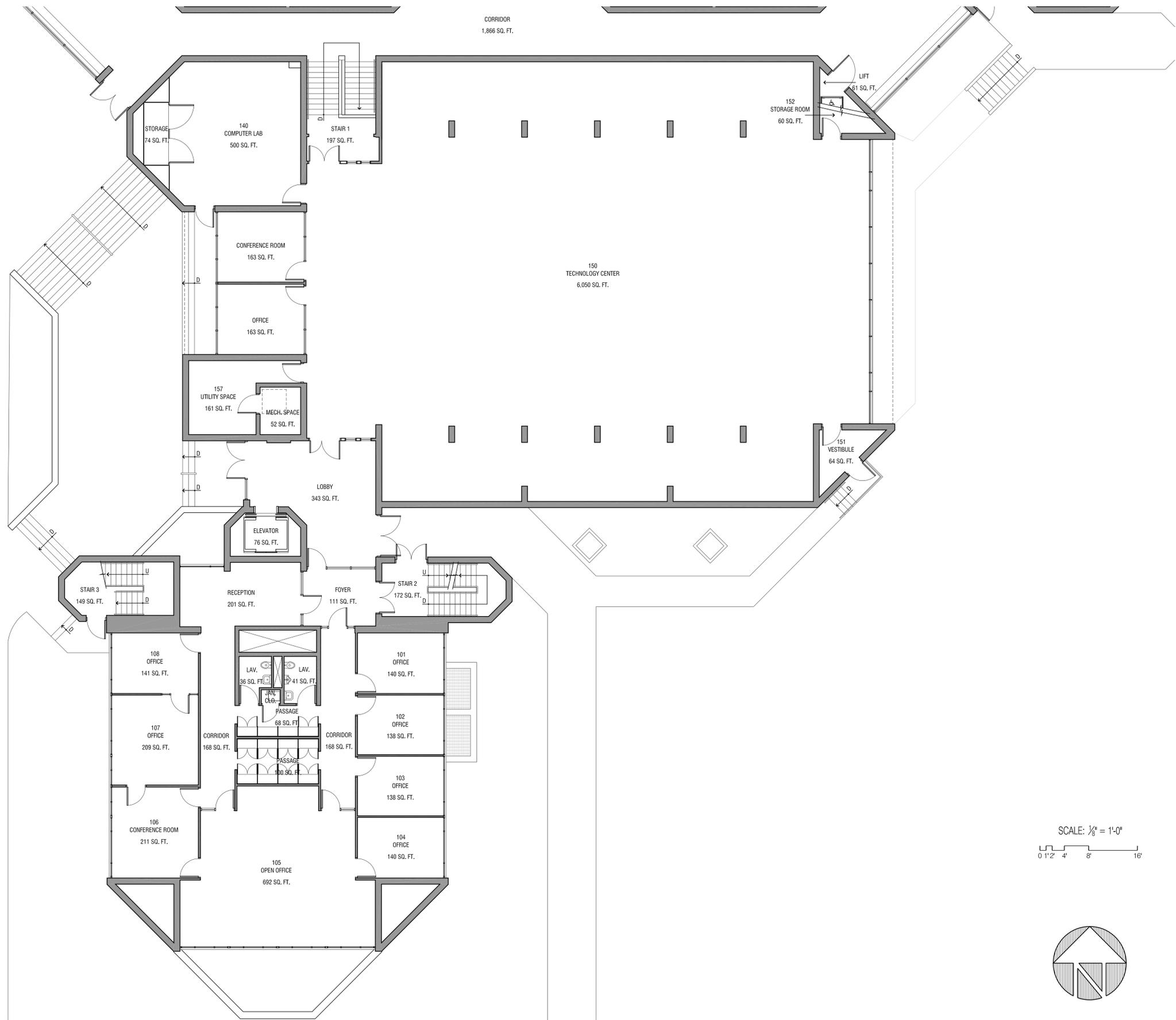




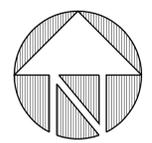
KEY PLAN

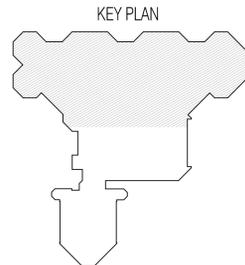
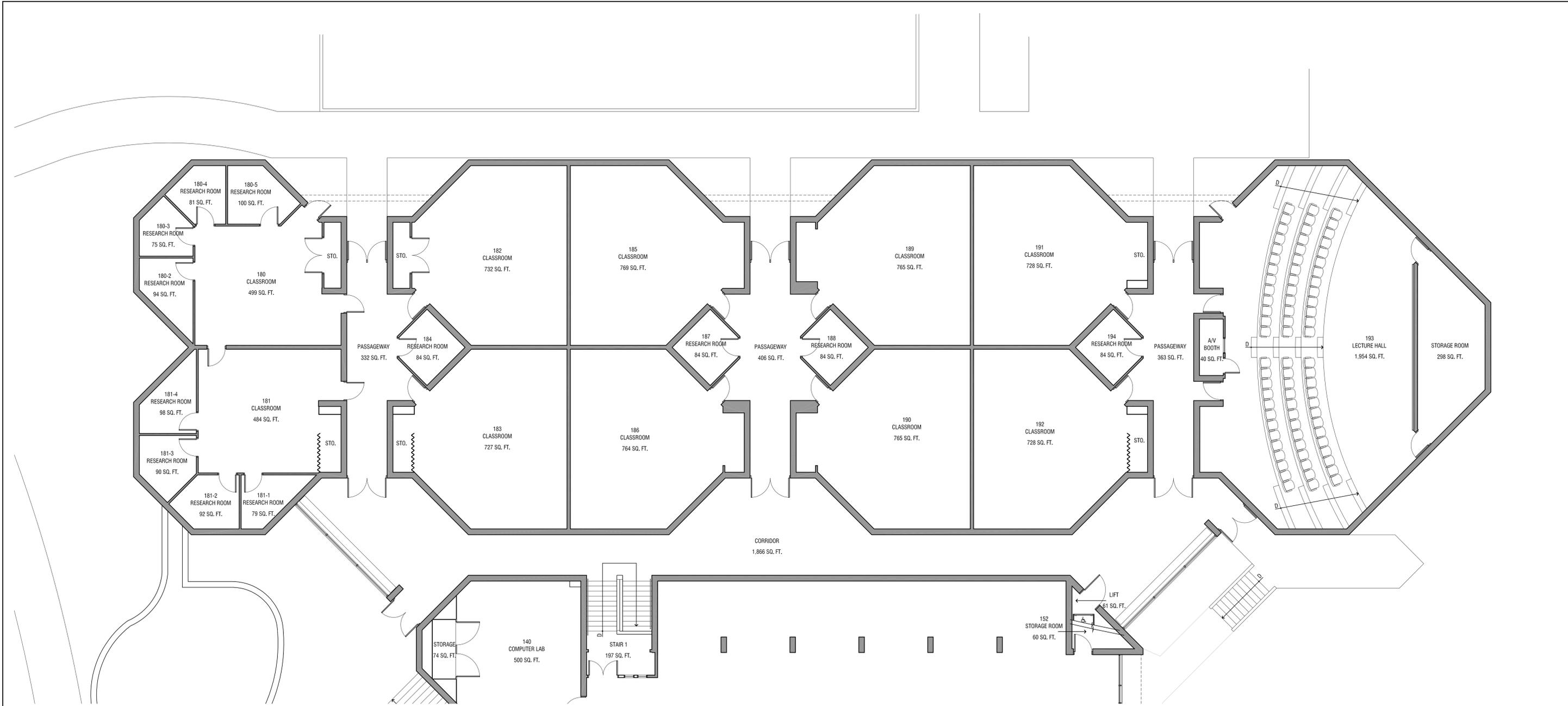
1S

# FIRST FLOOR PLAN - SOUTH / TOWER



SCALE: 1/8" = 1'-0"  
0' 1' 2' 4' 8' 16'





SCALE: 1/8" = 1'-0"  
 0' 1' 2' 4' 8' 16'

**1N** FIRST FLOOR PLAN - NORTH WING





	CSS Acct	Year	Mo	Rdg Date	#Days	Rate	Cur Amt	KWH Peak	KWH OffPk	KWH Shldr	KWH Totl	Bil Dem	Pk KW	Pk KVA	Pwr Factr	Del \$/Kwh	Gen \$/Kwh
1	4056578006	2011	12	12/19/2011	31	G32	129,037.18	1226000	0	0	1,226,000	2,687	2,360	2,600	0.908	0.032	0.073
2		2011	11	11/18/2011	30	G32	117,892.68	1224000	0	0	1,224,000	2,687	2,340	2,600	0.9	0.032	0.064
3		2011	10	10/19/2011	29	G32	134,098.28	1362000	0	0	1,362,000	3,492	3,380	3,880	0.871	0.034	0.065
4		2011	9	9/20/2011	29	G32	135,361.41	1310000	0	0	1,310,000	3,582	3,500	3,980	0.879	0.035	0.069
5		2011	8	8/22/2011	32	G32	154,759.60	1542000	0	0	1,542,000	3,546	3,380	3,940	0.858	0.033	0.068
6		2011	7	7/21/2011	30	G32	144,783.80	1470000	0	0	1,470,000	3,402	3,280	3,780	0.868	0.033	0.066
7		2011	6	6/21/2011	62	G32	235,653.26	2388000	0	0	2,388,000	3,204	3,080	3,560	0.865	0.034	0.065
8		2011	4	4/20/2011	30	G32	113,346.48	1152000	0	0	1,152,000	2,889	2,260	2,480	0.911	0.033	0.065
9		2011	3	3/21/2011	32	G32	120,260.03	1204000	0	0	1,204,000	2,889	2,240	2,460	0.911	0.032	0.068
10		2011	2	2/17/2011	31	G32	130,961.60	1236000	0	0	1,236,000	2,889	2,340	2,560	0.914	0.031	0.075
11		2011	1	1/17/2011	60	G32	229,557.58	2116000	0	0	2,116,000	2,889	2,300	2,520	0.913	0.031	0.077
12		2010	11	11/18/2010	29	G32	117,790.69	1136000	0	0	1,136,000	2,889	2,300	2,520	0.913	0.03	0.074
13		2010	10	10/20/2010	29	G32	129,044.68	1260000	0	0	1,260,000	3,384	3,320	3,760	0.883	0.031	0.072
14		2010	9	9/21/2010	29	G32	146,270.24	1412000	0	0	1,412,000	3,852	3,760	4,280	0.879	0.031	0.073
15		2010	8	8/23/2010	32	G32	159,113.45	1522000	0	0	1,522,000	3,366	3,200	3,740	0.856	0.029	0.076
16		2010	7	7/22/2010	30	G32	162,466.22	1558000	0	0	1,558,000	3,582	3,400	3,980	0.854	0.029	0.075
17		2010	6	6/22/2010	32	G32	149,201.66	1356000	0	0	1,356,000	3,114	2,960	3,460	0.856	0.029	0.081
18		2010	5	5/21/2010	29	G32	120,742.86	1084000	0	0	1,084,000	2,610	2,540	2,900	0.876	0.03	0.082
19		2010	4	4/22/2010	29	G32	122,285.12	1082000	0	0	1,082,000	2,484	2,220	2,460	0.902	0.029	0.084
20		2010	3	3/24/2010	33	G32	142,810.67	1236000	0	0	1,236,000	2,484	2,220	2,460	0.902	0.029	0.087
21		2010	2	2/19/2010	29	G32	135,222.24	1158000	0	0	1,158,000	2,484	2,240	2,460	0.911	0.032	0.085
22		2010	1	1/21/2010	64	G32	284,453.31	2286000	0	0	2,286,000	2,484	2,300	2,540	0.906	0.032	0.093
23		2009	11	11/18/2009	29	G32	146,725.54	1140000	0	0	1,140,000	2,484	2,240	2,460	0.911	0.032	0.097
24		2009	10	10/20/2009	32	G32	163,533.31	1258000	0	0	1,258,000	3,294	3,200	3,660	0.874	0.033	0.097
25		2009	9	9/18/2009	29	G32	172,127.40	1328000	0	0	1,328,000	3,312	3,140	3,680	0.853	0.033	0.097
26		2009	8	8/20/2009	62	G32	329,161.45	2538000	0	0	2,538,000	3,294	3,160	3,660	0.863	0.033	0.097
27		2009	6	6/19/2009	30	G32	131,674.08	1014000	0	0	1,014,000	2,592	2,200	2,620	0.84	0.033	0.097
28		2009	5	5/20/2009	29	G32	134,846.27	1040000	0	0	1,040,000	2,592	2,440	2,760	0.884	0.033	0.097
29		2009	4	4/21/2009	32	G32	156,563.55	1218000	0	0	1,218,000	2,592	2,220	2,440	0.91	0.032	0.097
30		2009	3	3/20/2009	28	G32	140,458.60	1086000	0	0	1,086,000	2,592	2,280	2,520	0.905	0.033	0.097
31		2009	2	2/20/2009	30	G32	157,539.61	1226000	0	0	1,226,000	2,592	2,360	2,580	0.915	0.032	0.097
32		2009	1	1/21/2009	64	G32	338,282.36	2290000	0	0	2,290,000	2,620	2,620	2,640	0.992	0.028	0.12
33		2008	11	11/18/2008	32	G32	195,356.39	1256000	0	0	1,256,000	2,592	2,320	2,560	0.906	0.026	0.13
34		2008	10	10/17/2008	29	G32	184,502.52	1180000	0	0	1,180,000	2,754	2,680	3,060	0.876	0.026	0.13
35		2008	9	9/18/2008	30	G32	213,153.38	1358000	0	0	1,358,000	3,456	3,340	3,840	0.87	0.027	0.13
36		2008	8	8/19/2008	32	G32	229,270.24	1470000	0	0	1,470,000	3,258	3,100	3,620	0.856	0.026	0.13

	CSS Acct	Year	Mo	Rdg Date	#Days	Rate	Cur Amt	KWH Peak	KWH OffPk	KWH Shldr	KWH Totl	Bil Dem	Pk KW	Pk KVA	Pwr Factr	Del \$/Kwh	Gen \$/Kwh
37		2008	7	7/18/2008	30	G32	188,569.17	1478000	0	0	1,478,000	3,384	3,200	3,760	0.851	0.026	0.101
38		2008	6	6/18/2008	30	G32	148,677.07	1192000	0	0	1,192,000	3,330	3,160	3,700	0.854	0.028	0.097
39		2008	5	5/19/2008	28	G32	203,128.26	1678400	0	0	1,678,400	2,641	2,300	2,580	0.892	0.024	0.097
40		2008	4	4/21/2008	32	G32	77,792.58	599600	0	0	599,600	2,641	2,178	2,432	0.896	0.033	0.097
41		2008	3	3/20/2008	57	G32	271,603.15	2197800	0	0	2,197,800	2,641	2,310	2,566	0.9	0.027	0.097
42		2008	1	1/23/2008	15	G32	63,038.63	507600	0	0	507,600	2,641	2,316	2,554	0.907	0.028	0.097
43		2007	12	12/31/2007	0	G32	0	0	0	0	0	0	0	0	0	0	0
44		2007	11	11/16/2007	30	G32	141,799.61	0	650800	574800	1,225,600	2,893	0	0	0.885	0.032	0.084
45		2007	10	10/17/2007	29	G32	155,999.58	211400	681400	446400	1,339,200	3,521	3,418	3,912	0.874	0.033	0.084
46		2007	9	9/18/2007	32	G32	165,511.15	473600	748600	209800	1,432,000	3,337	3,174	3,708	0.856	0.032	0.084
47		2007	8	8/17/2007	29	G32	151,088.35	471400	623800	209800	1,305,000	3,119	2,940	3,466	0.848	0.032	0.084
48		2007	7	7/19/2007	30	G32	137,300.64	420600	567400	187200	1,175,200	3,215	3,080	3,572	0.862	0.033	0.084
49		2007	6	6/19/2007	61	G32	253,004.86	231600	1116200	828200	2,176,000	2,720	2,514	2,924	0.854	0.033	0.084
50		2007	5	5/29/2007	0	G32	0	0	0	0	0	0	0	0	0	0	0
51		2007	4	4/19/2007	29	G32	125,319.05	0	565200	518800	1,084,000	2,516	0	0	0.897	0.032	0.084
52		2007	3	3/21/2007	29	G32	125,319.05	159200	550600	374200	1,084,000	2,516	2,214	2,476	0.904	0.032	0.084
53		2007	2	2/20/2007	29	G32	133,667.82	494400	565000	101600	1,161,000	2,516	2,310	2,566	0.9	0.032	0.084
54		2007	1	1/22/2007	34	G32	124,707.57	414800	543000	87200	1,045,000	2,516	2,138	2,366	0.904	0.032	0.087
55		2006	12	12/19/2006	62	G32	278,242.29	291200	1127600	774000	2,192,800	3,182	3,058	3,536	0.865	0.033	0.094
56		2006	11	10/18/2006	15	G32	74,565.90	0	299000	294400	593,400	2,849	0	0	0.883	0.032	0.094
57		2006	10	10/3/2006	46	G32	231,563.50	611200	883800	309000	1,804,000	3,181	3,056	3,534	0.865	0.033	0.096
58		2006	9	9/27/2006	0	G32	0	0	0	0	0	0	0	0	0	0	0
59		2006	8	8/18/2006	29	G32	175,673.54	475000	641000	214400	1,330,400	3,292	3,134	3,658	0.857	0.032	0.1
60		2006	7	7/20/2006	30	G32	176,858.38	485400	638200	214800	1,338,400	3,355	3,204	3,728	0.859	0.032	0.1
61		2006	6	6/20/2006	32	G32	151,703.48	262400	584600	293400	1,140,400	3,182	3,018	3,536	0.854	0.033	0.1
62		2006	5	5/19/2006	29	G32	137,545.26	0	537400	505000	1,042,400	2,529	0	0	0.856	0.032	0.1
63		2006	4	4/20/2006	29	G32	140,416.39	0	553200	513400	1,066,600	2,483	0	0	0.9	0.032	0.1
64		2006	3	3/22/2006	42	G32	207,727.30	331800	817800	433200	1,582,800	2,483	2,226	2,466	0.902	0.031	0.1
65		2006	2	2/8/2006	40	G32	186,323.18	578200	717200	124400	1,419,800	2,483	2,202	2,462	0.894	0.032	0.1
66		2006	1	12/30/2005	28	G32	117,865.72	418600	519600	88600	1,026,800	2,483	2,284	2,582	0.885	0.033	0.082

# Aerial Infrared Thermographic Survey

April 16, 2011

## Steam Distribution System & Liquid Leaks Report



*Prepared for:*

**Kevin Fitta, P.E.**  
College Engineer





# Aerial Infrared Survey of the Steam Distribution System and Liquid Leaks

Herein, please find the report from the qualitative infrared (IR) thermographic survey at the facilities of Rhode Island College (RIC) in Providence, RI. The campus was the subject on an aerial photographic and thermographic survey on April 16, 2011. This report consists of a printed copy of this file and a DVD-ROM, containing the project files.

## ***Understanding Thermal Infrared (IR) Imagery***

Thermal infrared imagery is imagery that shows heat. It is often in the form of a grayscale picture whose shades of gray indicate the differences in temperature and emissivity of objects in the image. Typically, objects in the image that look lighter are warmer and those that look darker are cooler. Bright white objects are the warmest in the images while black objects are the coolest. Any object with a temperature above absolute zero (0 Kelvin or  $-273$  degrees Celsius) emits some infrared radiation. A thermal infrared picture only shows objects which emit energy in thermal infrared wavelengths. The images collected during the flight were collected in the 3000-5000 nanometer range. Objects in visible light wavelengths of 400 to 700 nanometers are detected, but only as a result of their heat emissions. An example of this would be a warm street light that can be seen in the IR imagery.

## ***Report Format***

We flew pre-drawn lines and recorded the infrared imagery onto a hard drive. Through the use of software, the lines were rendered into strips which were then stitched to make the mosaics. The client-supplied drawings and Terra-server imagery was the basis for the ortho-rectification. All the images are shown on the grid map by the letter/number of the image, corresponding to the place on the map where that image was taken (X-axis & Y-axis). All grid tiles that contained anomalies have four images as follows:

- 1\_PIC (photograph)
- 2\_IR (thermograph marked with anomalies)
- 3\_MAP (client-supplied drawing)
- 4\_IR (thermograph unmarked)





# Aerial Infrared Survey of the Steam Distribution System and Liquid Leaks

## ***Report Anomalies***

Each anomaly, or potential problem area within the image is individually lettered, therefore every anomaly has its own separate designation. The grid images are ~3% larger than the actual grid, so that one can see features and match the image to its adjacent image easier. In this report, map images that contain no information has been removed. Also, A01-A04 and E03-E08 has been removed.

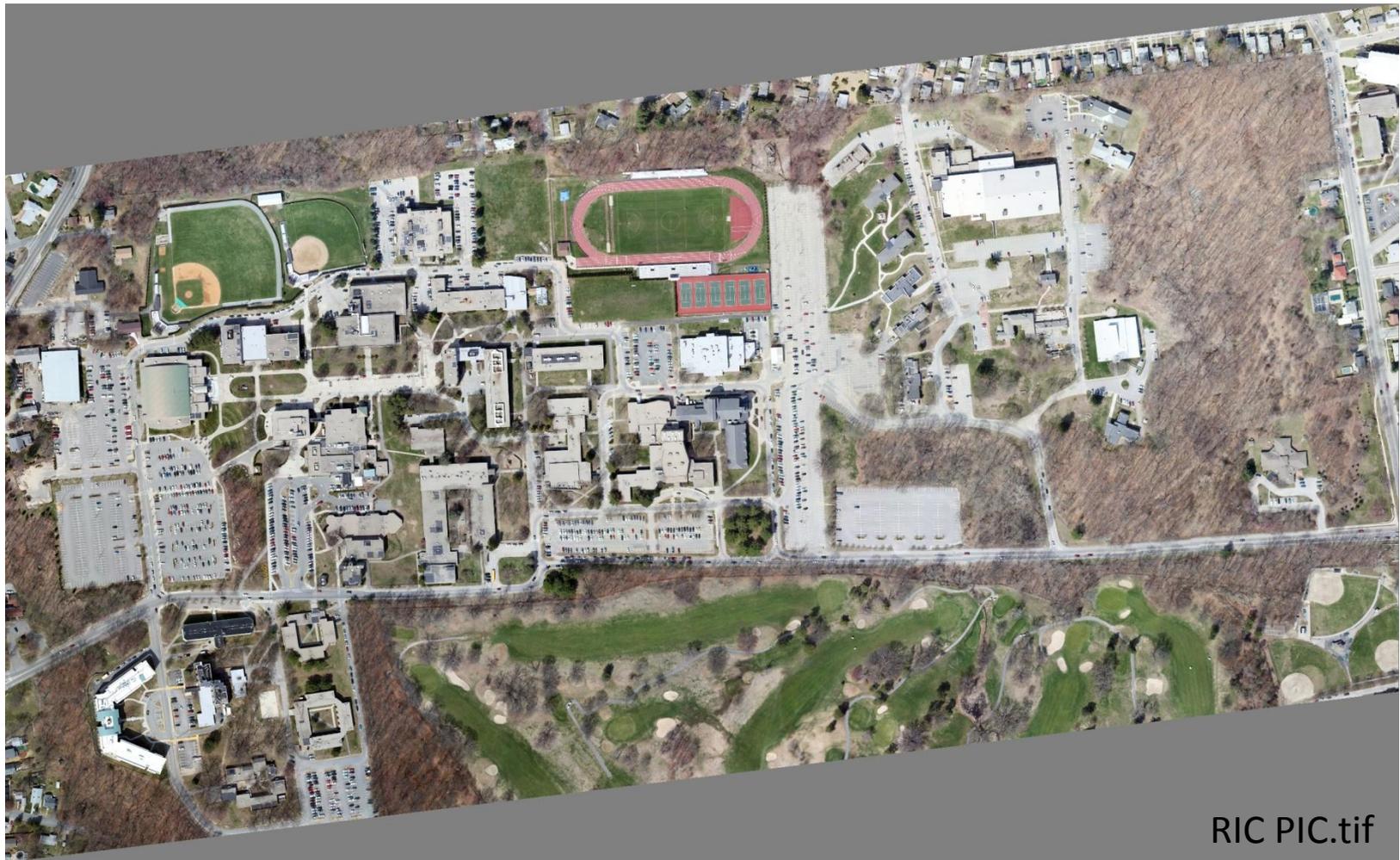
There is only one designation for each anomaly, so if an anomaly can be seen at the extreme right edge of an image, but it is not marked in that image, it will be marked on the image to the right of that one. Shapes, such as arrows and area boxes and other shapes were placed on the 2-IR images where heat loss could be seen as shown below in the key.

### KEY to arrows/shapes contained in the report

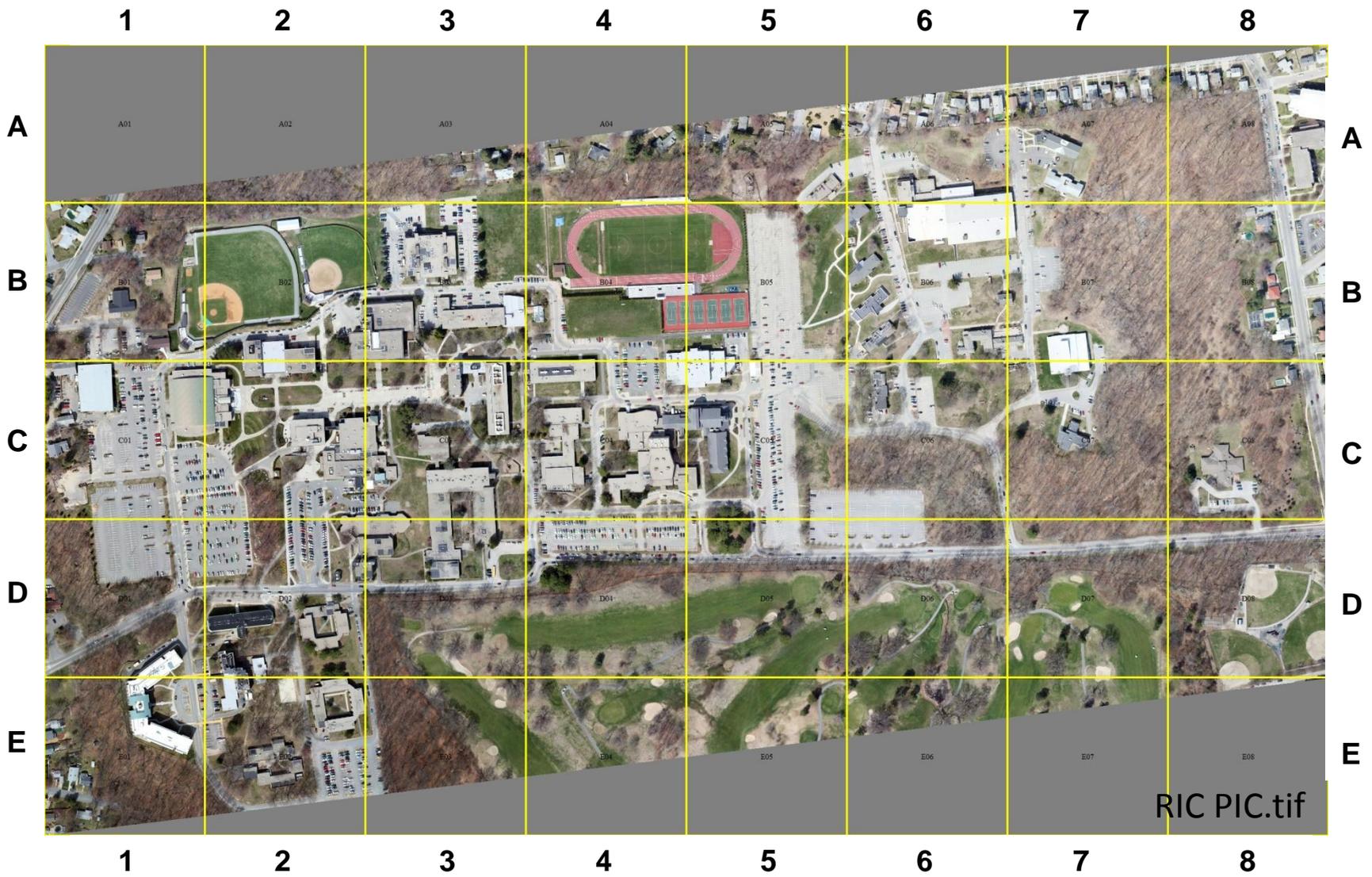
-  ***Red shapes indicate more heat loss on the heating distribution system.***
-  ***Yellow shapes indicate less heat loss on the heating distribution system.***
-  ***Cyan shapes are areas of natural springs and seeps and possible liquid leaks.***
-  ***White shapes are warm or hot spots or areas of heat loss that are not believed to be lights, but cannot be tied directly to the heating system or a liquid leak.***

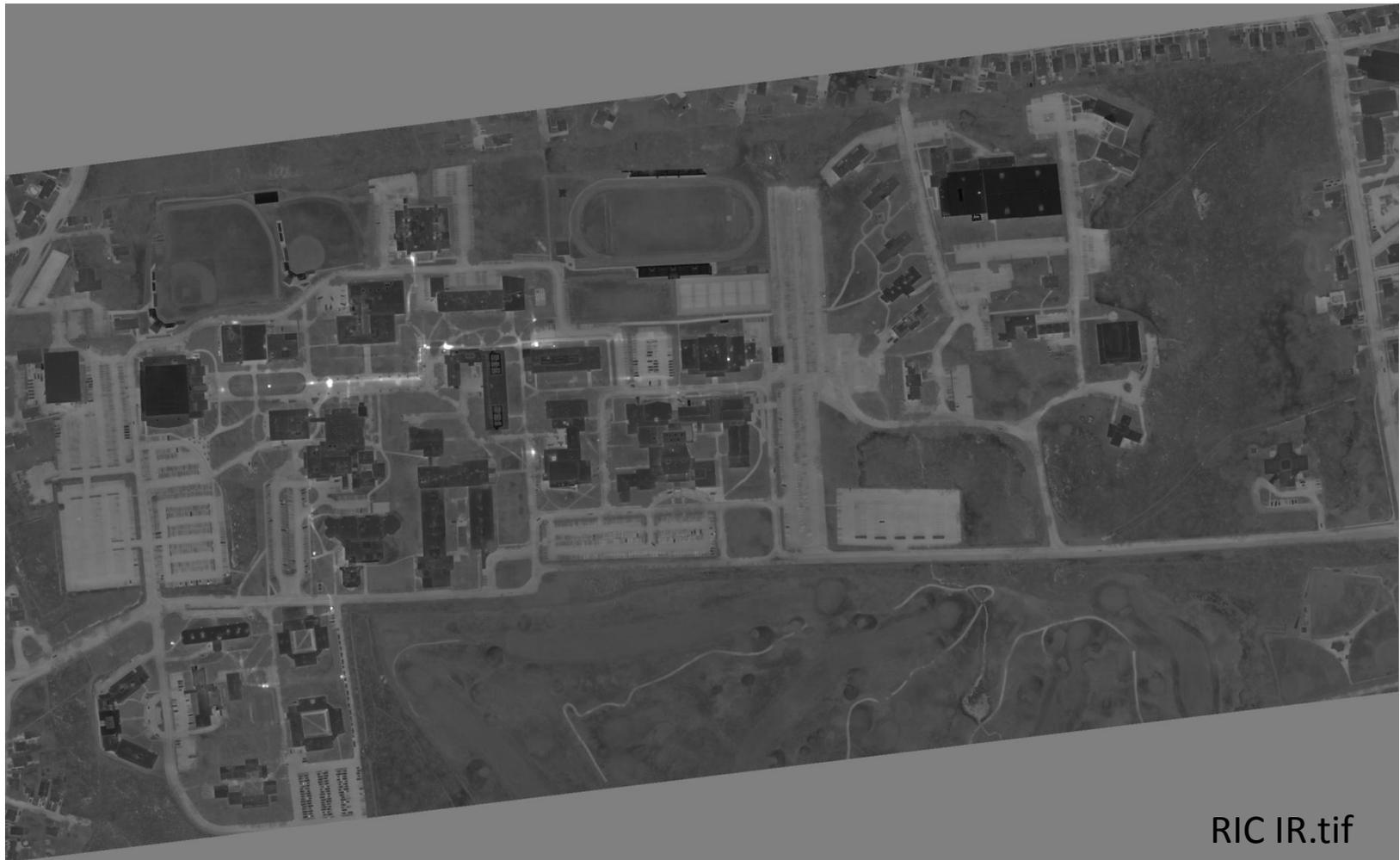
Contact Dean Trytten at 864-787-1685 or email [admin@AnchorElite.com](mailto:admin@AnchorElite.com) with questions.



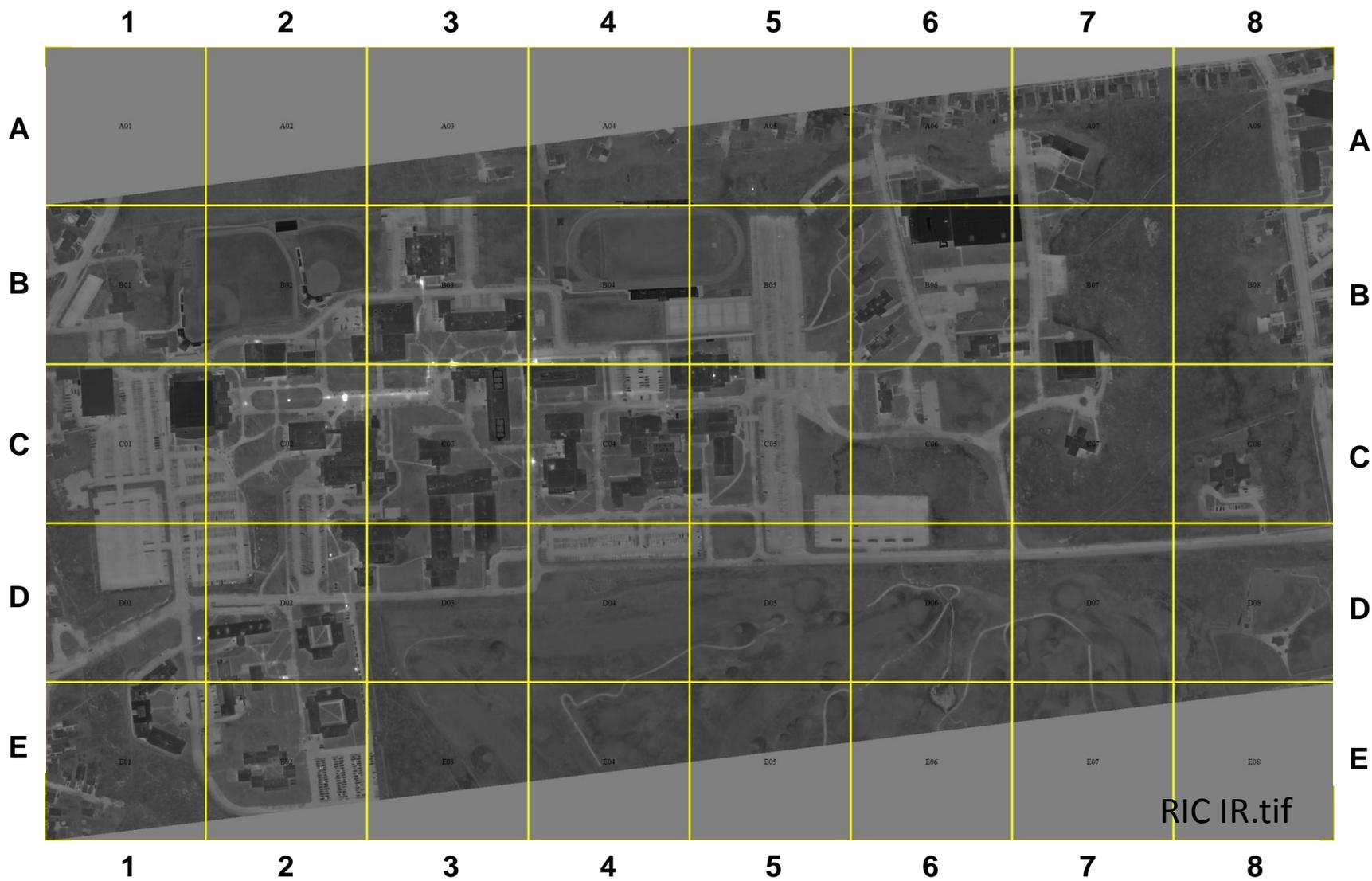


RIC PIC.tif





RIC IR.tif





RIC MAP.tif



# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_A05\_1-PIC

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_A05\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_A05\_3-MAP

# Aerial Infrared Thermographic Survey

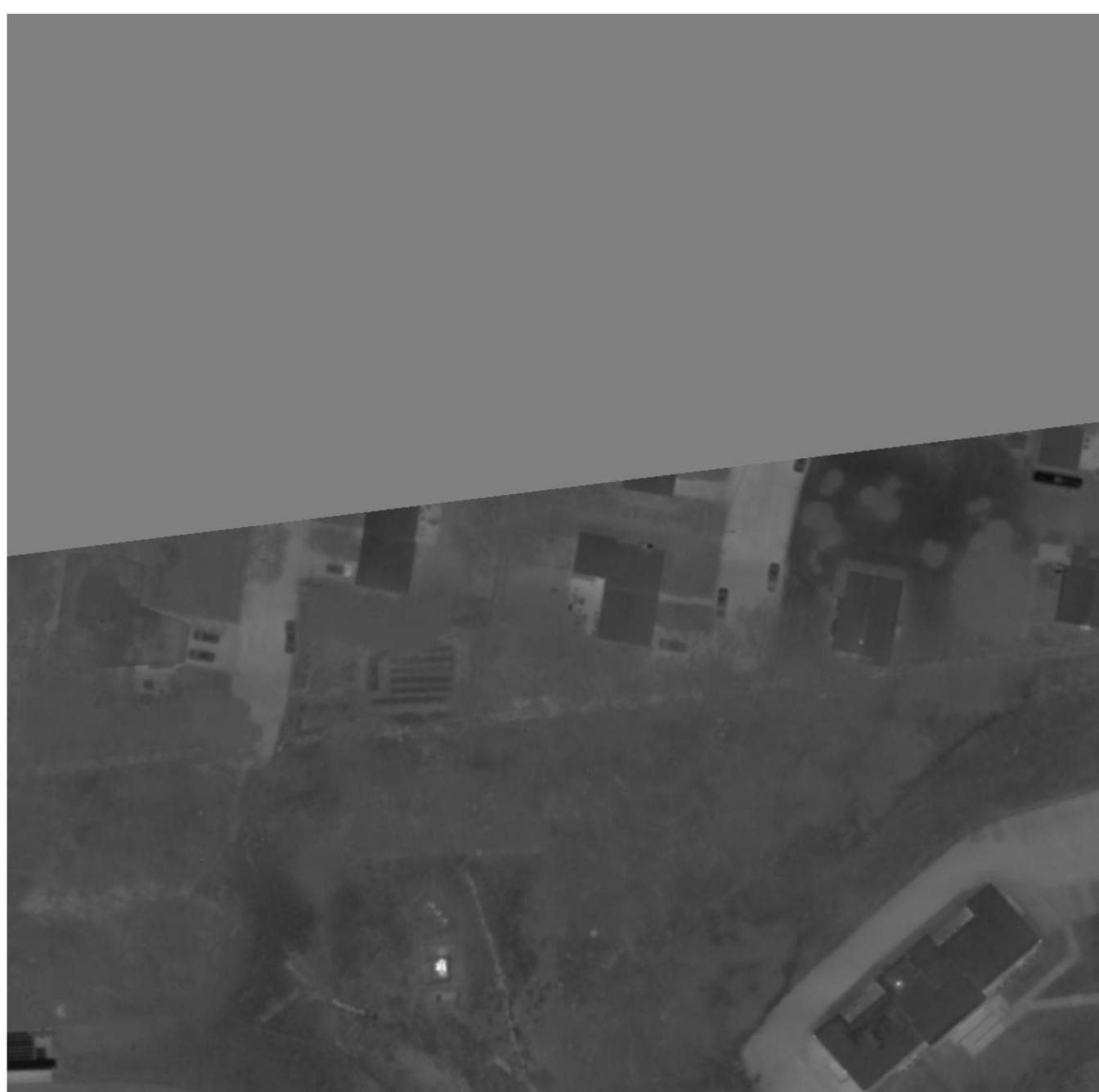


## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_A05\_4-IR

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## Steam Distribution & Liquid Leak Report

April 16, 2011



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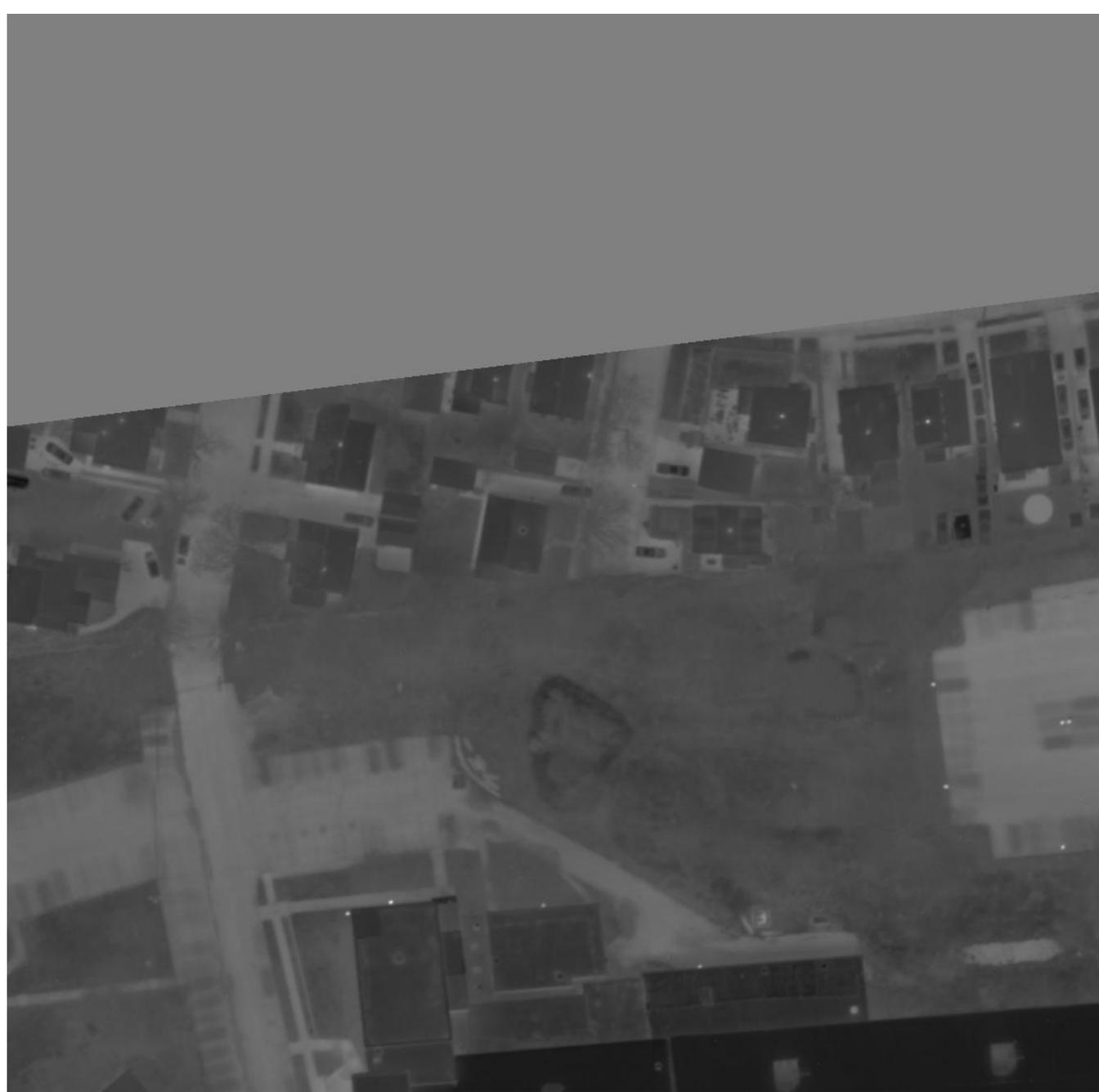
RIC\_A06\_1-PIC

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## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_A06\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_A06\_3-MAP

# Aerial Infrared Thermographic Survey

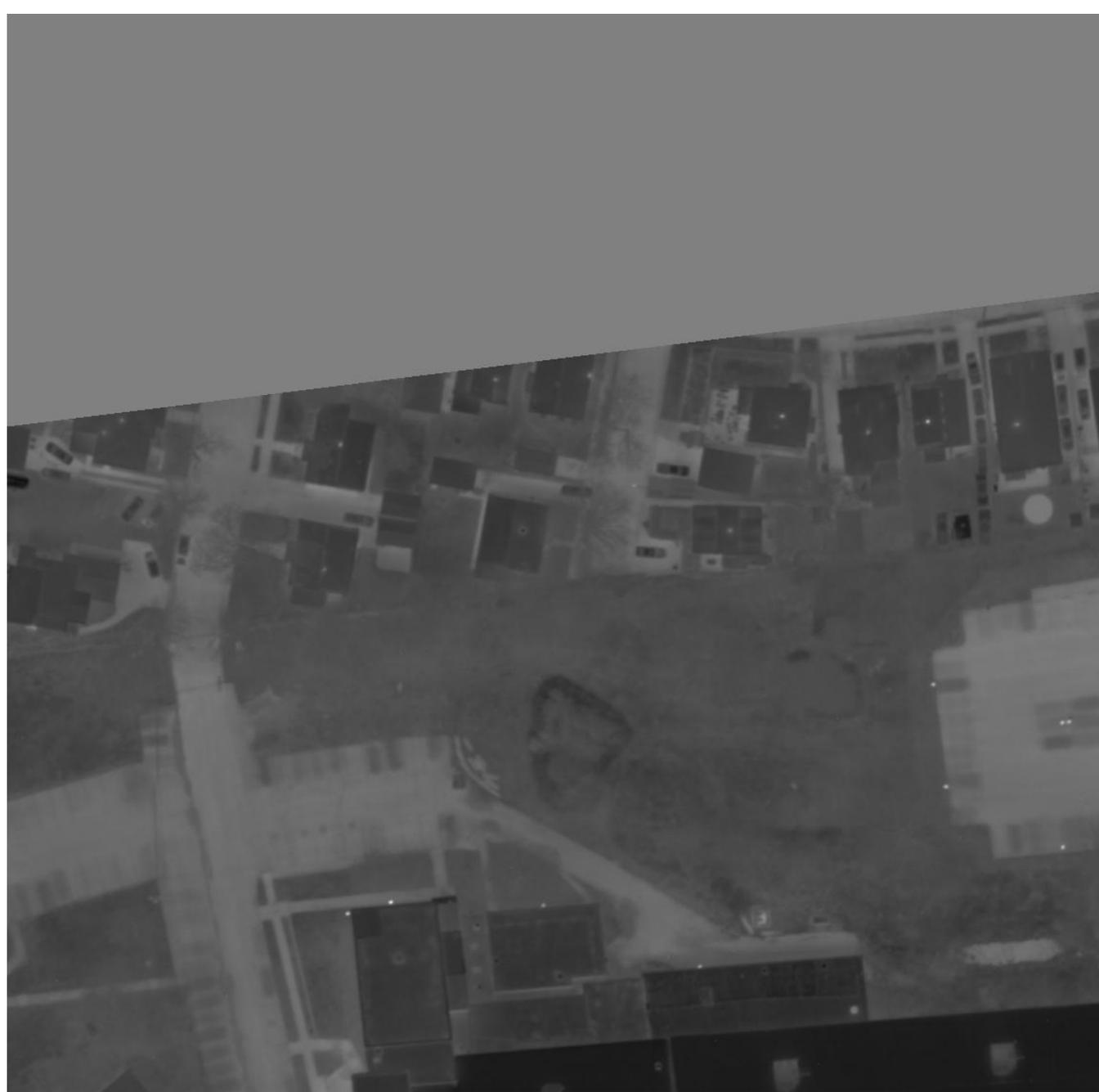


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April 16, 2011



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RIC\_A06\_4-IR

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## Steam Distribution & Liquid Leak Report

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RIC\_A07\_1-PIC

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RIC\_A07\_2-IR

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## Steam Distribution & Liquid Leak Report

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RIC\_A07\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_A07\_4-IR

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RIC\_A08\_1-PIC

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RIC\_A08\_2-IR

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RIC\_A08\_3-MAP

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RIC\_A08\_4-IR

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RIC\_B01\_1-PIC

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April 16, 2011



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RIC\_B01\_2-IR

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RIC\_B01\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_B01\_4-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_B02\_1-PIC

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



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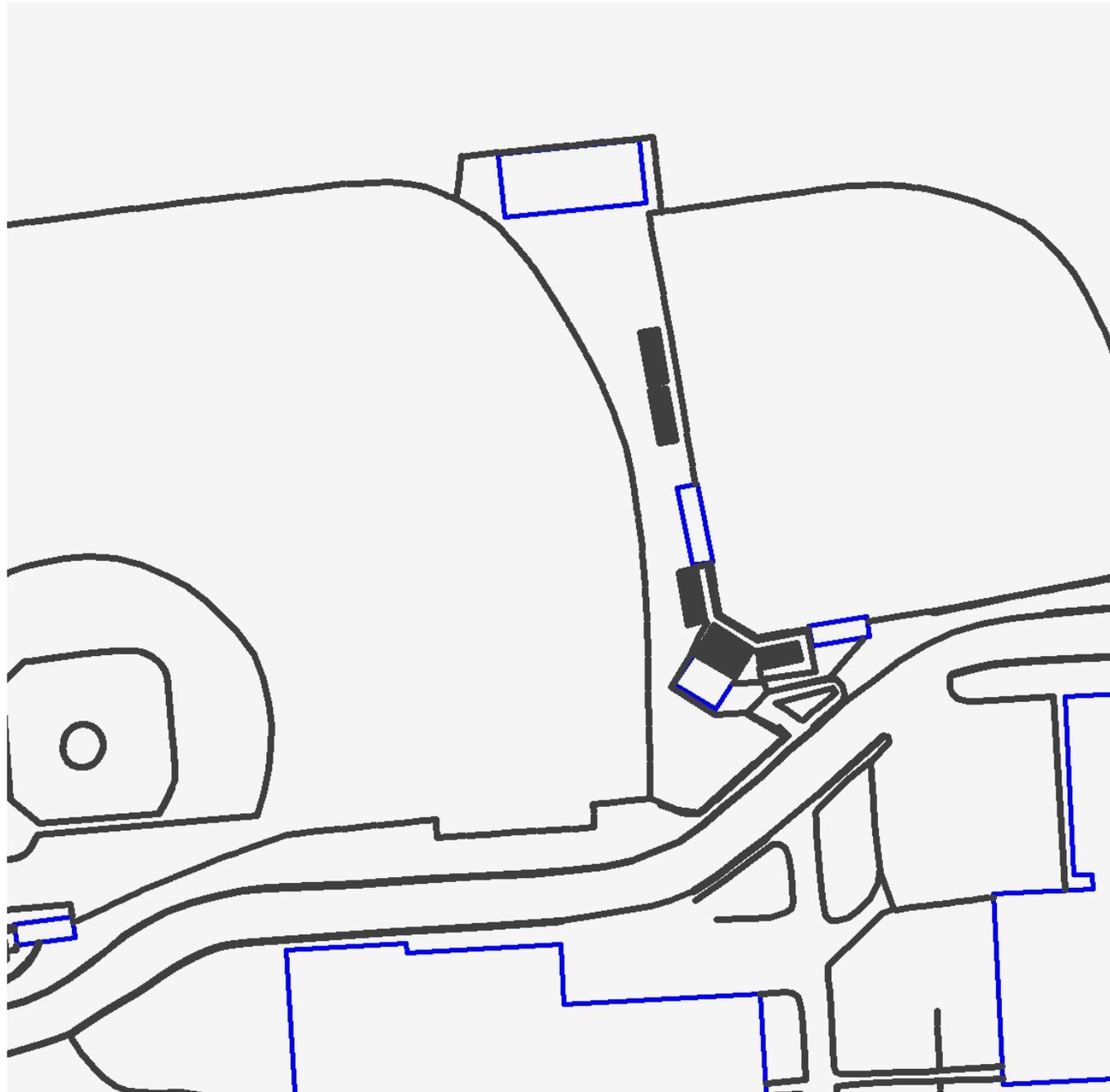
RIC\_B02\_2-IR

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## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_B02\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_B02\_4-IR

# Aerial Infrared Thermographic Survey

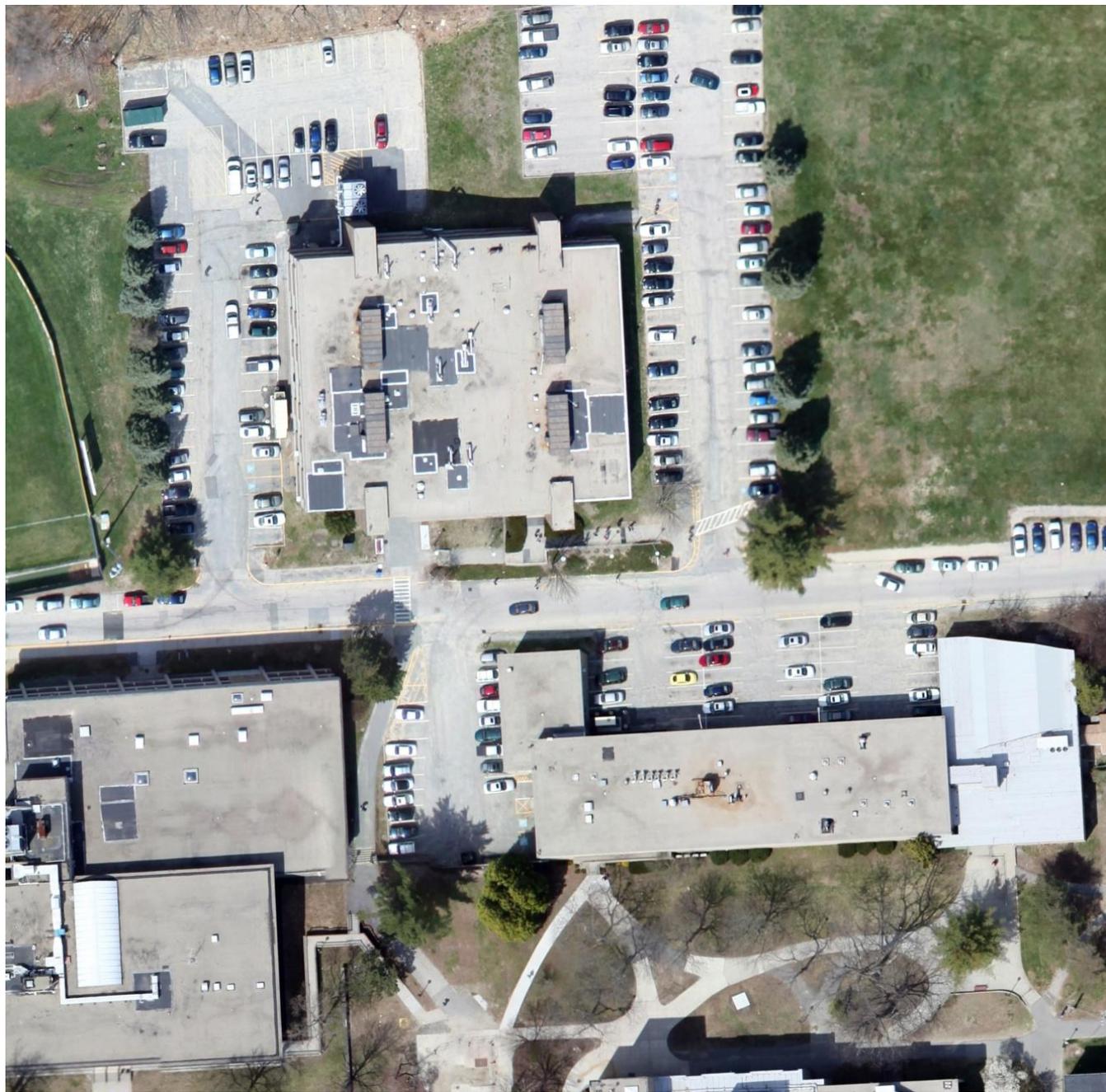


## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_B03\_1-PIC

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Shown in C03)

RIC\_B03\_2-IR

# Aerial Infrared Thermographic Survey



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RIC\_B03\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_B03\_4-IR

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## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_B04\_1-PIC

# Aerial Infrared Thermographic Survey



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April 16, 2011



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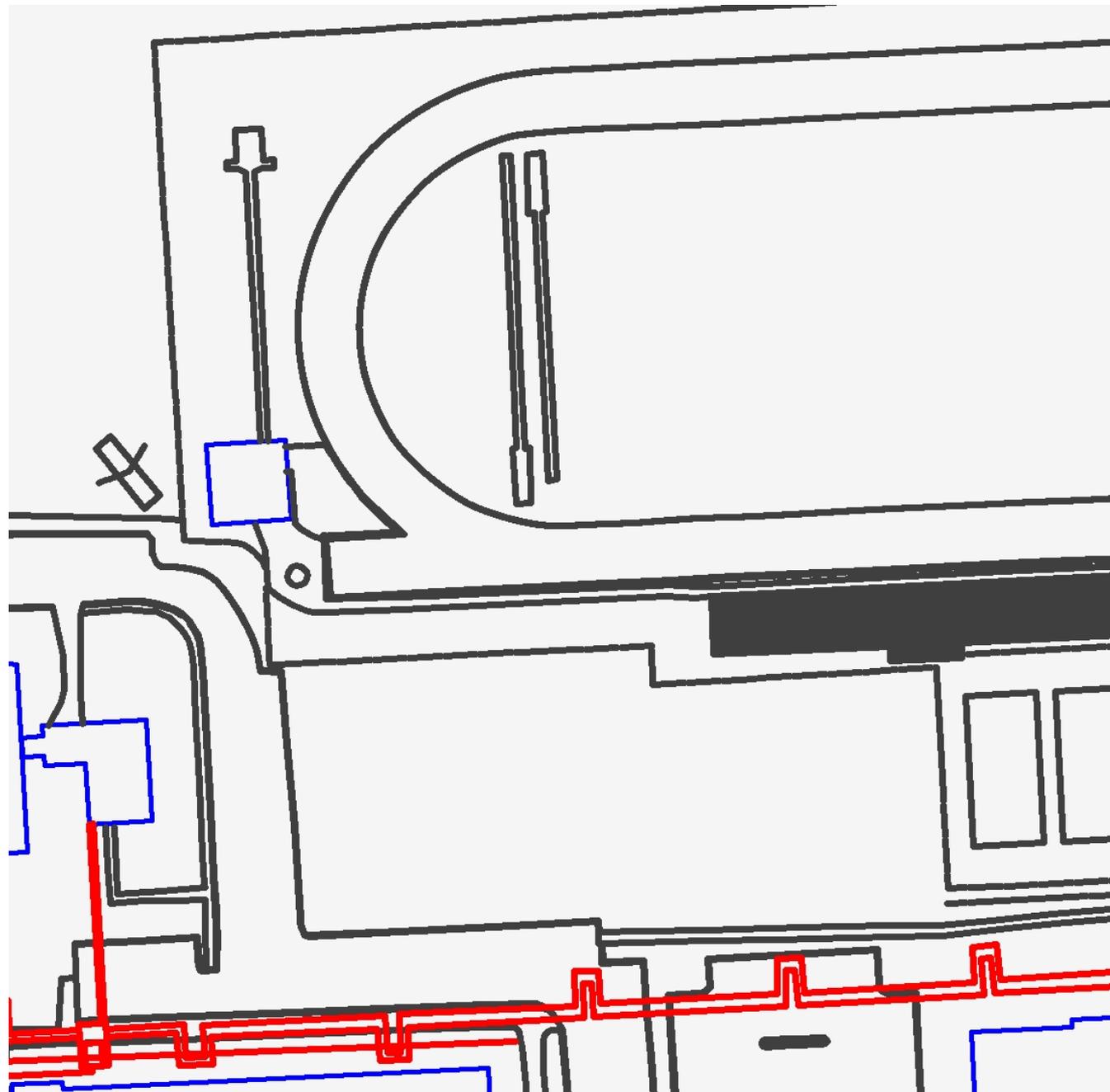
RIC\_B04\_2-IR

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RIC\_B04\_3-MAP

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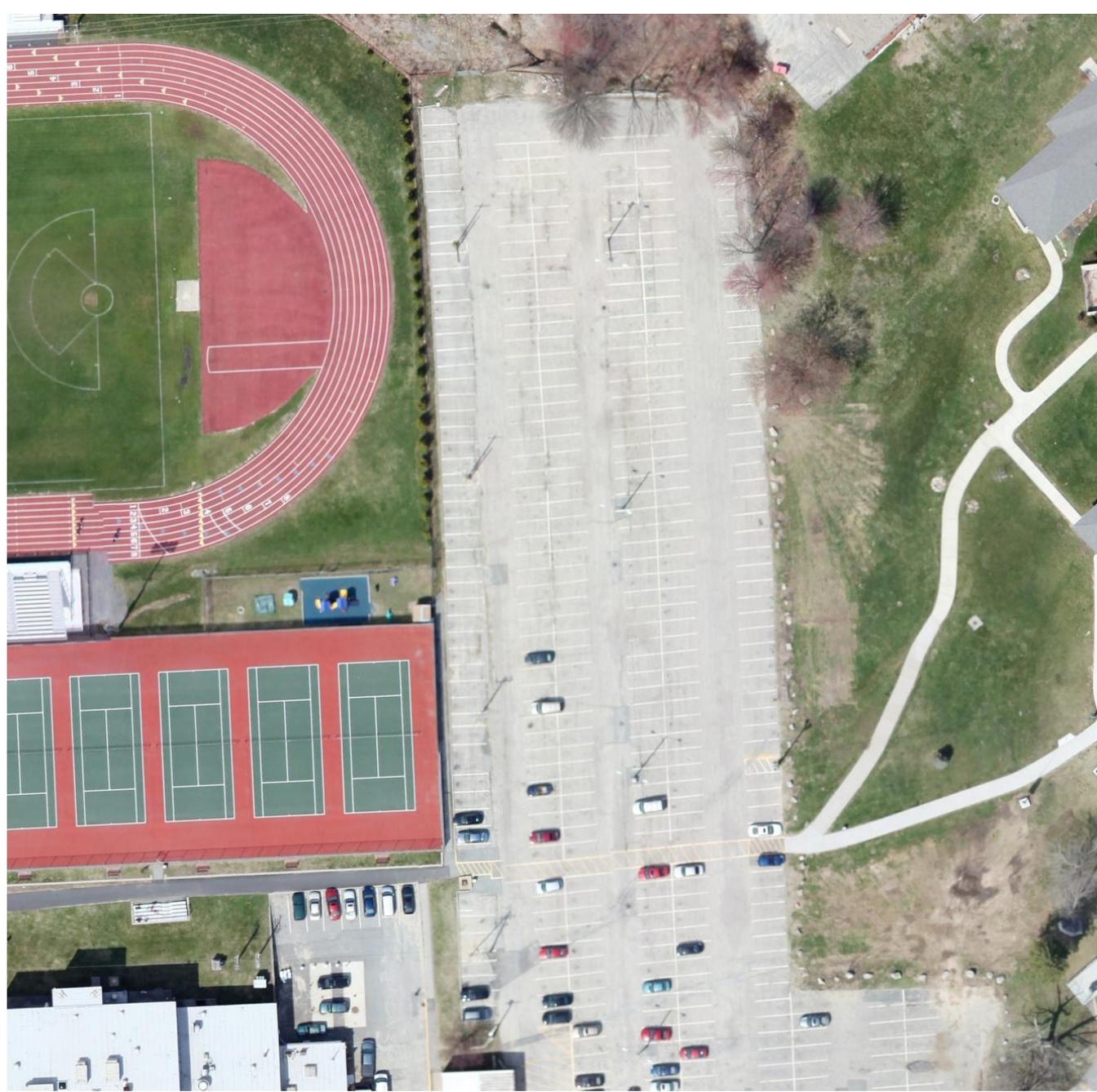
RIC\_B04\_4-IR

# Aerial Infrared Thermographic Survey



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RIC\_B05\_1-PIC

# Aerial Infrared Thermographic Survey



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RIC\_B05\_2-IR

# Aerial Infrared Thermographic Survey

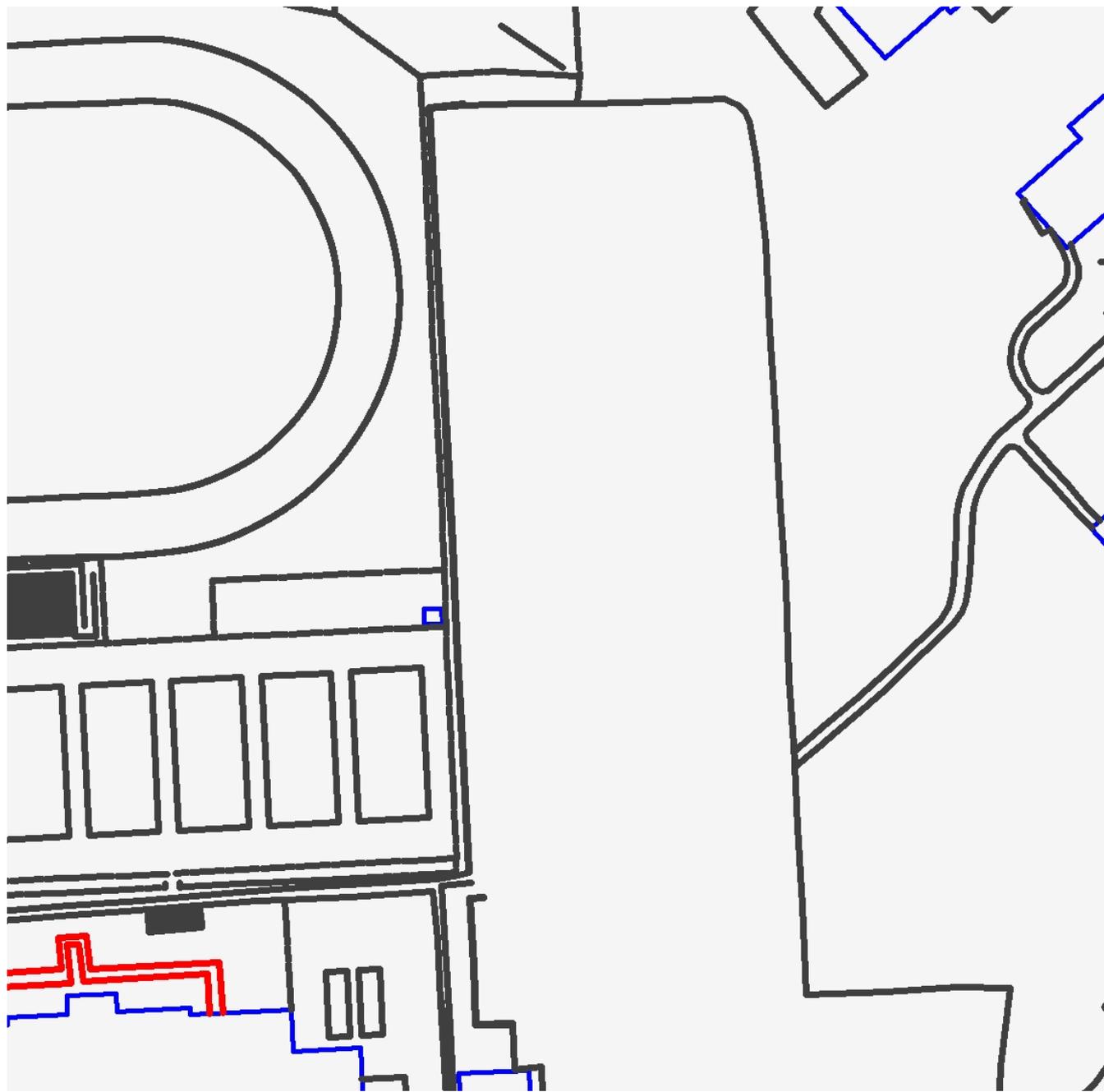


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RIC\_B05\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_B05\_4-IR

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RIC\_B06\_1-PIC

# Aerial Infrared Thermographic Survey

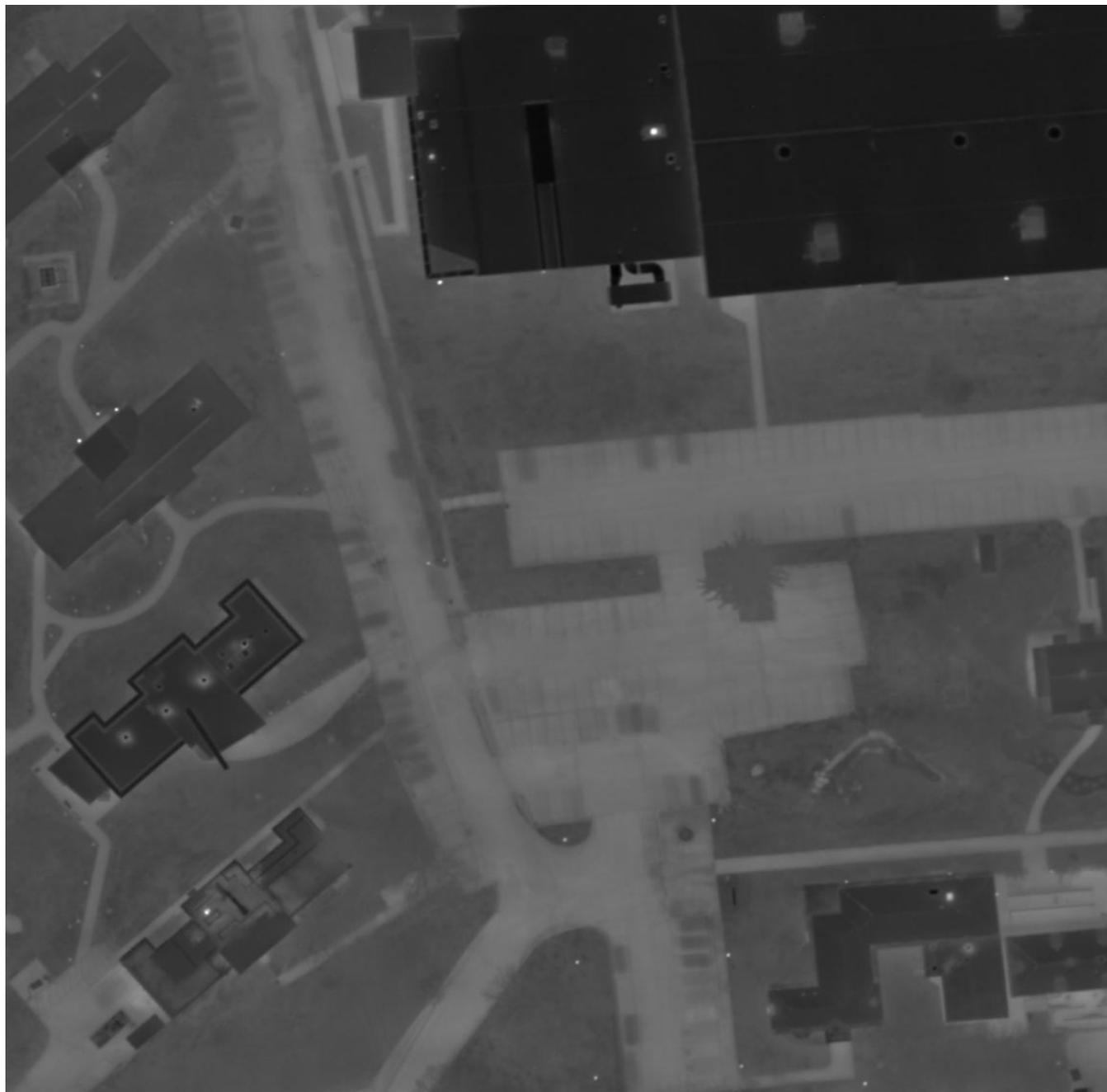


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April 16, 2011



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RIC\_B06\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_B06\_3-MAP

# Aerial Infrared Thermographic Survey

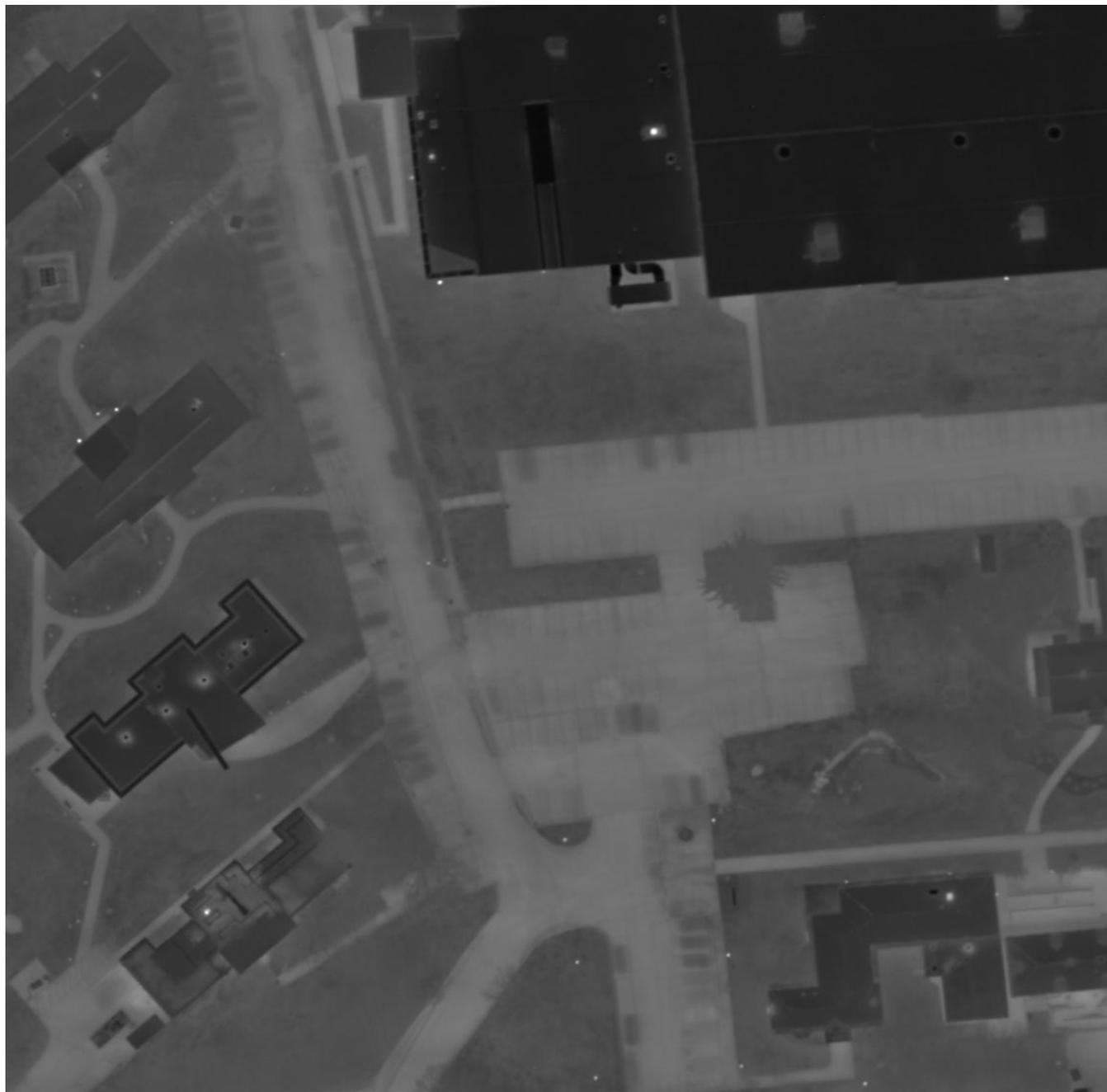


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RIC\_B06\_4-IR

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RIC\_B07\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_B07\_3-MAP

# Aerial Infrared Thermographic Survey



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April 16, 2011



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RIC\_B07\_4-IR

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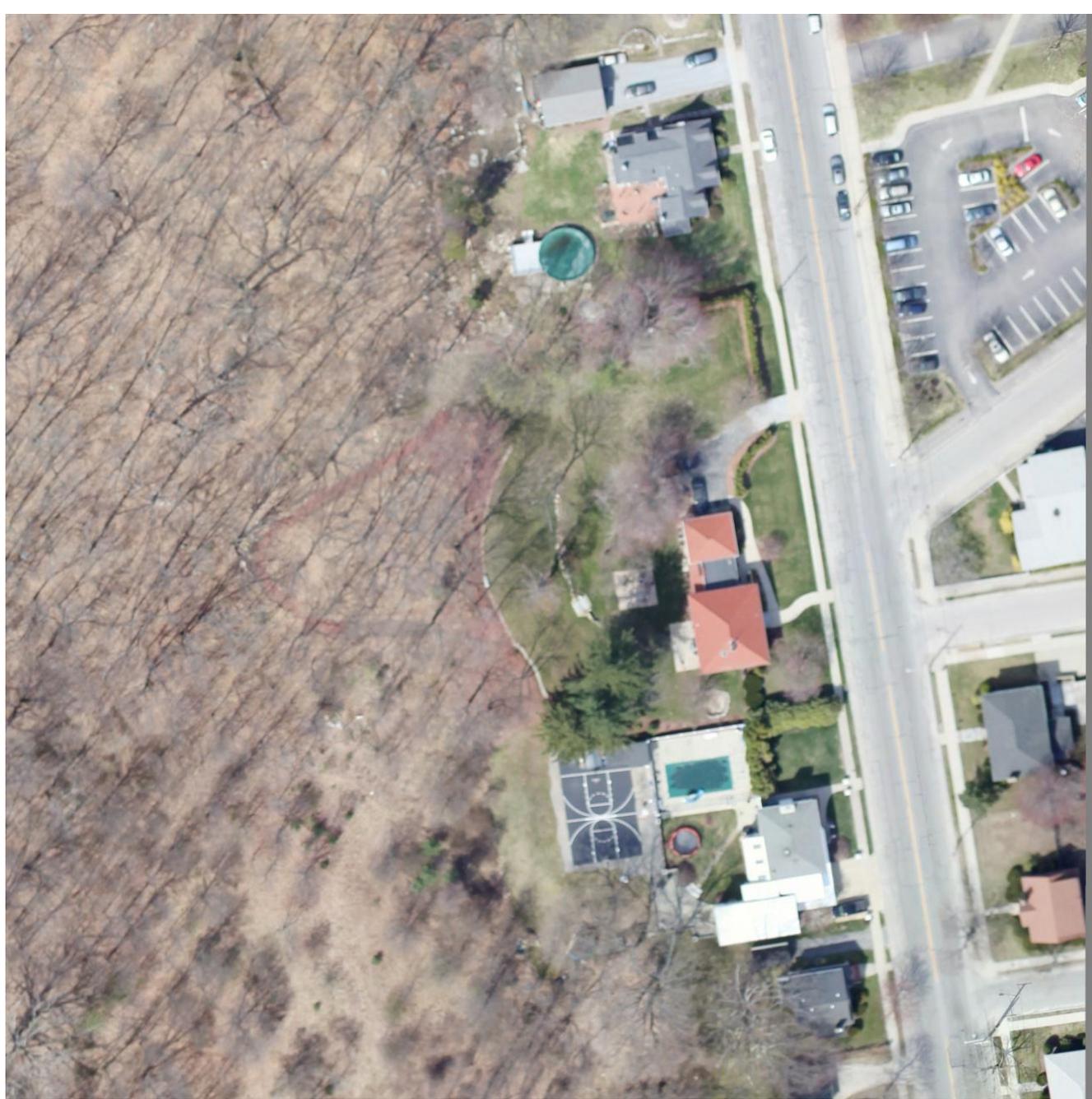


## Steam Distribution & Liquid Leak Report

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RIC\_B08\_1-PIC

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## Steam Distribution & Liquid Leak Report

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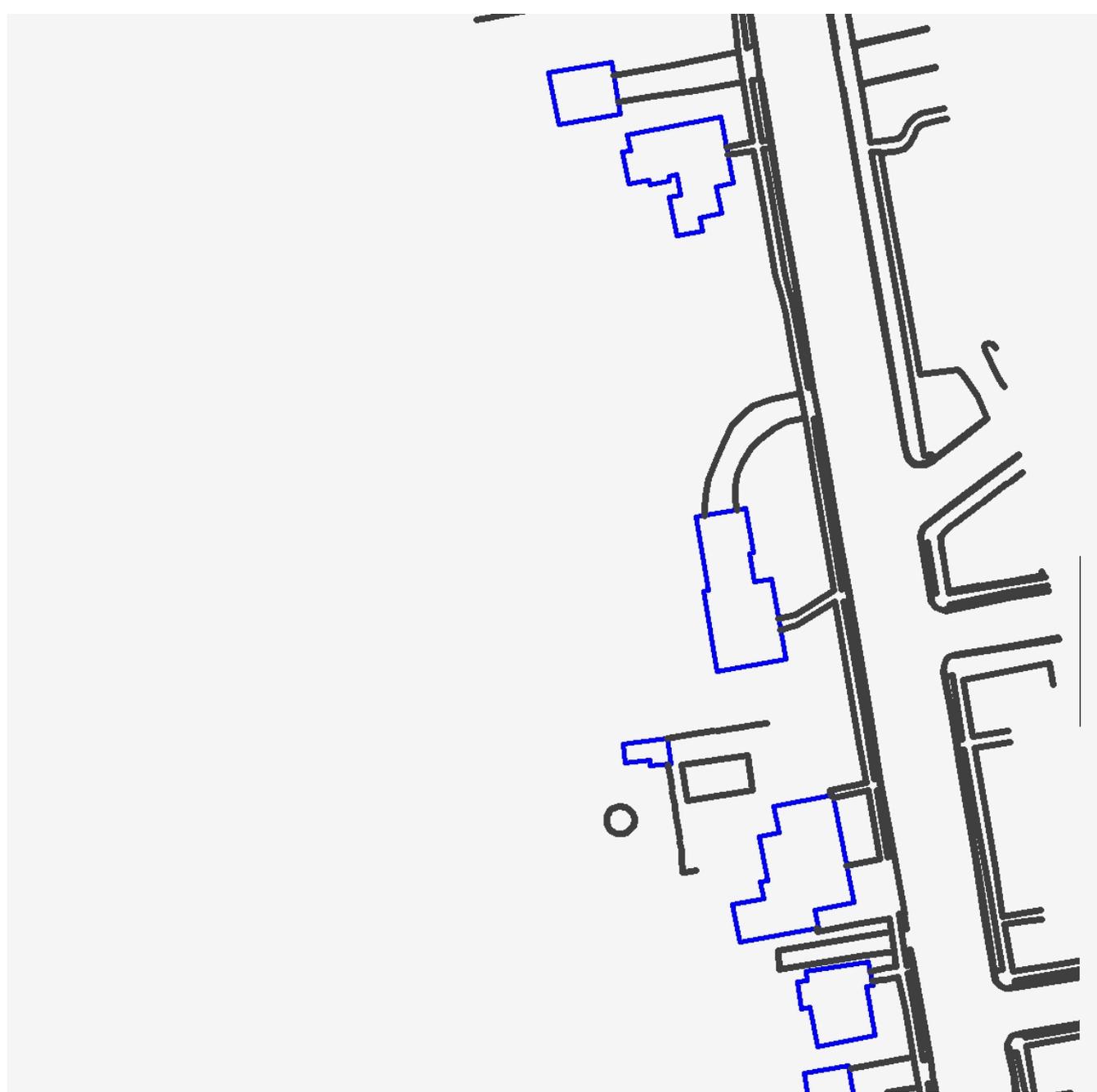
RIC\_B08\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_B08\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_B08\_4-IR

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## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_C01\_1-PIC

# Aerial Infrared Thermographic Survey

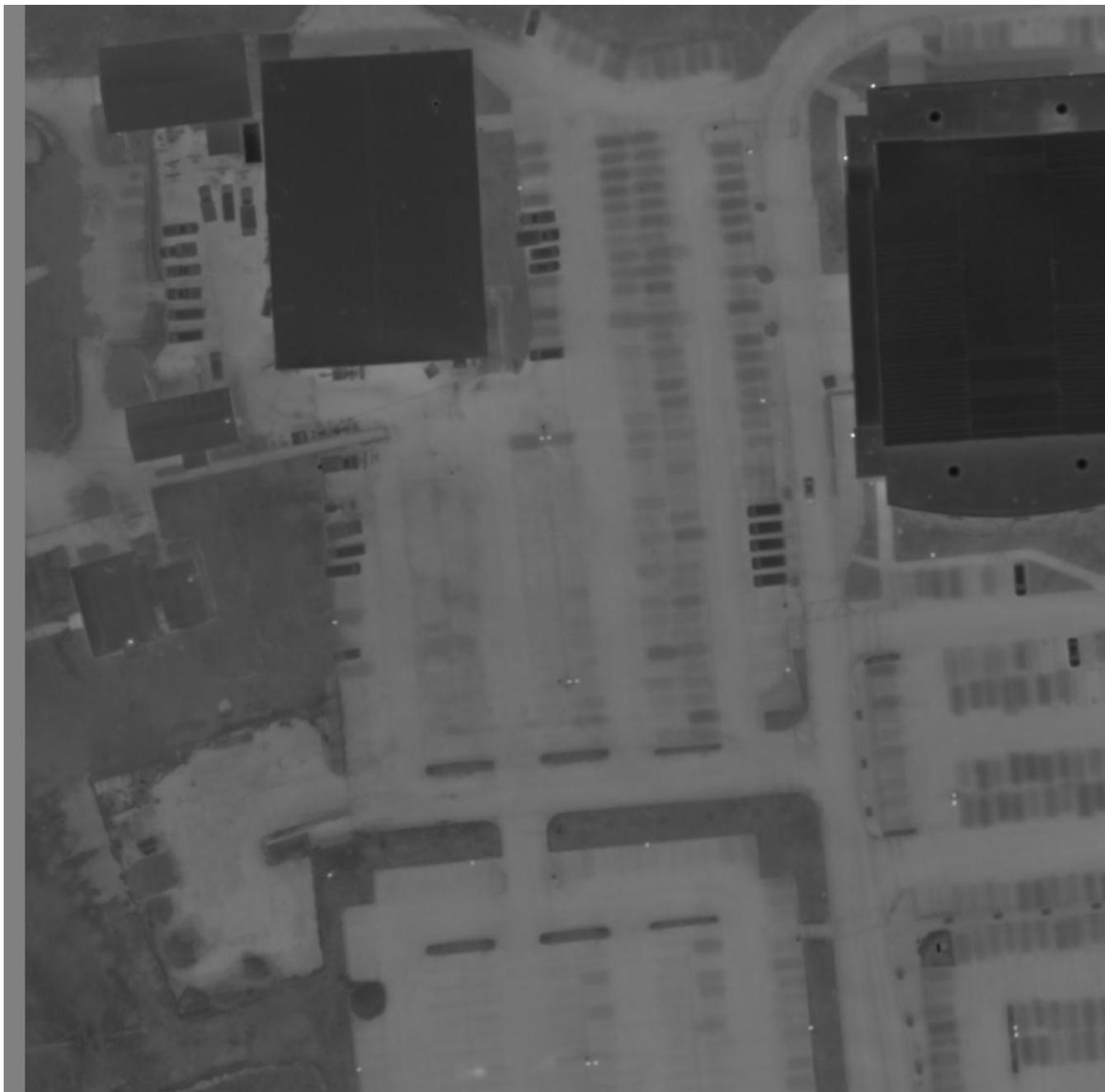


## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_C01\_2-IR

# Aerial Infrared Thermographic Survey

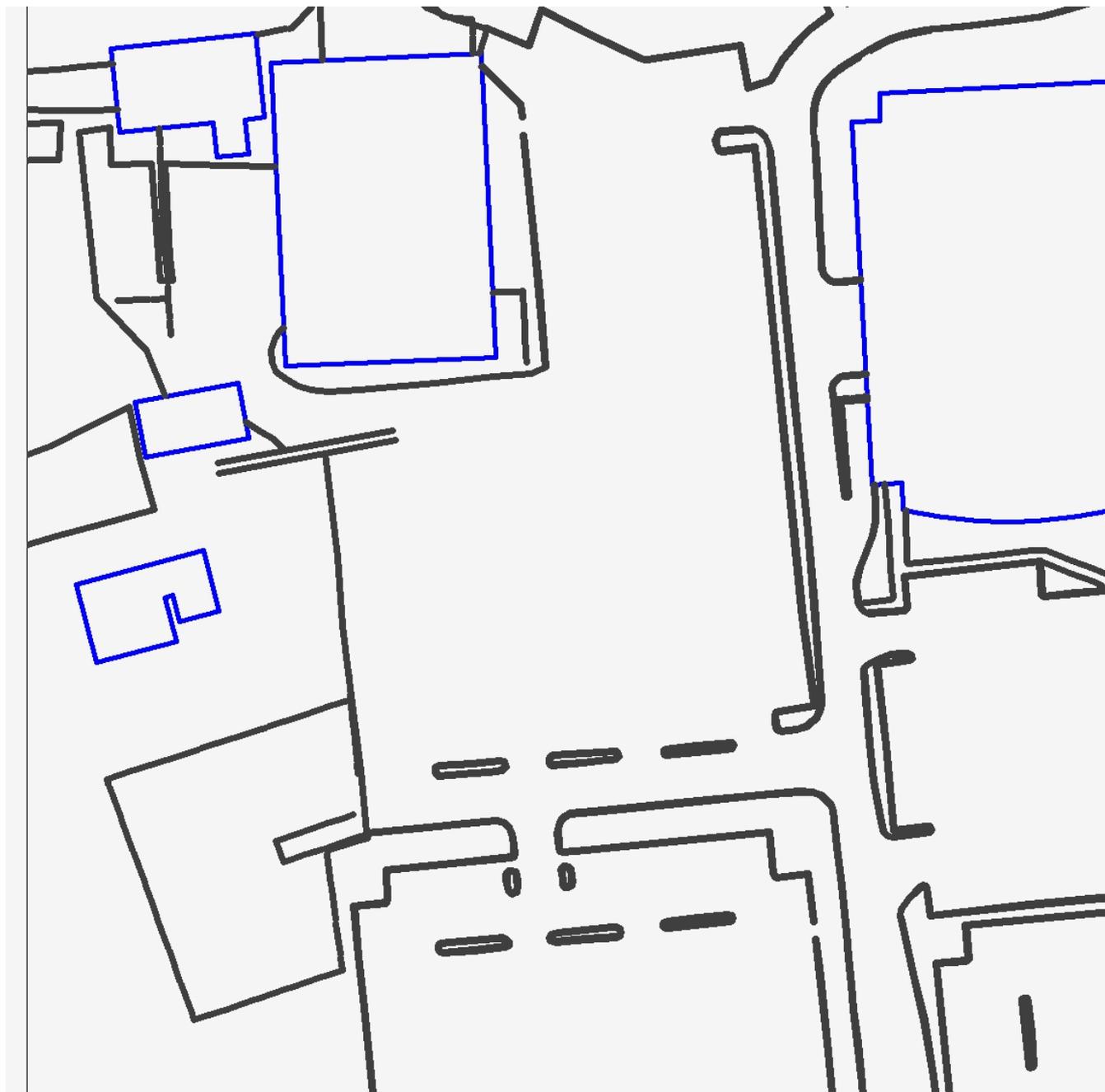


## Steam Distribution & Liquid Leak Report

April 16, 2011



**AITSCAN**  
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RIC\_C01\_3-MAP

# Aerial Infrared Thermographic Survey

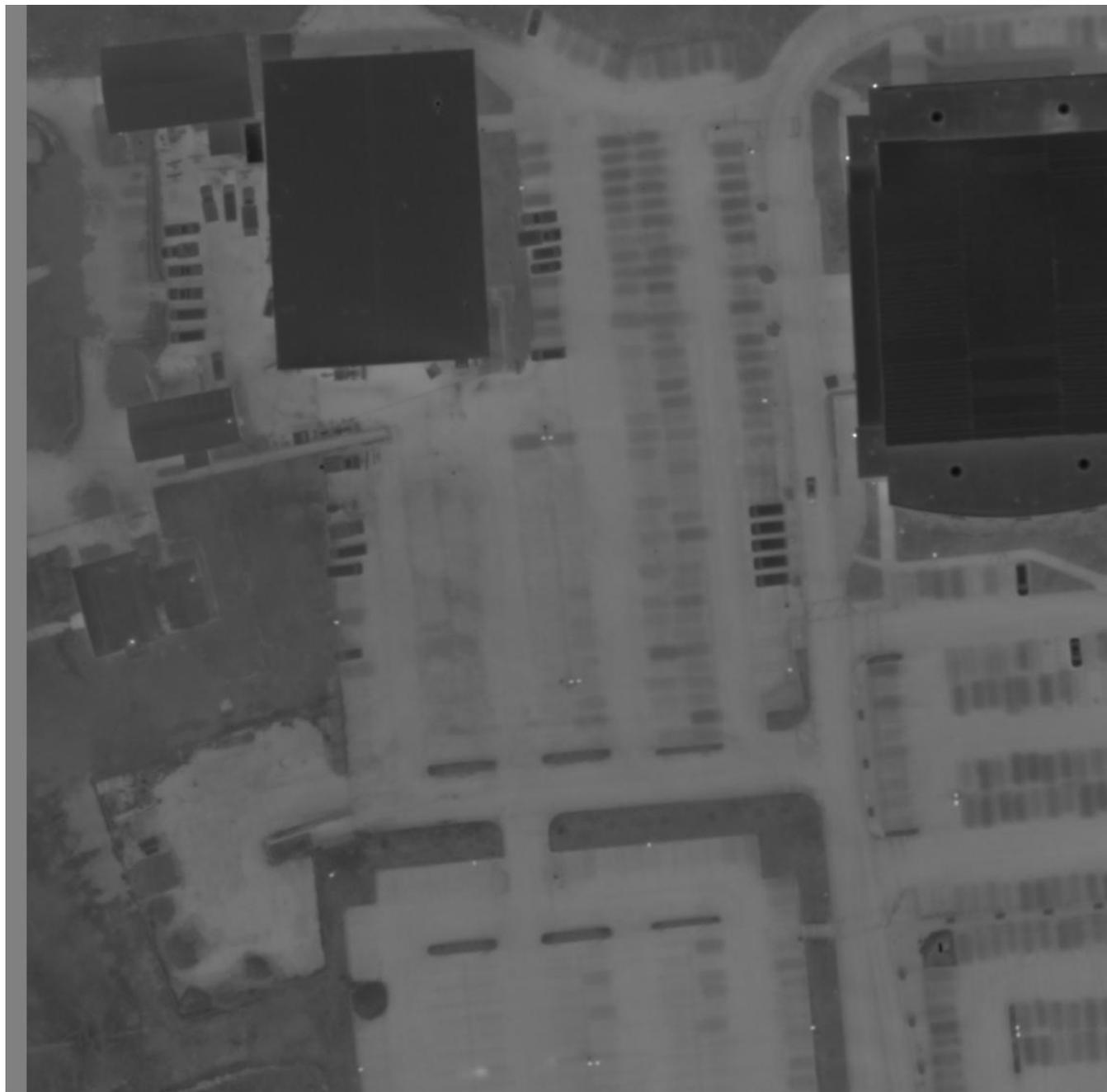


## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_C01\_4-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_C02\_1-PIC

# Aerial Infrared Thermographic Survey

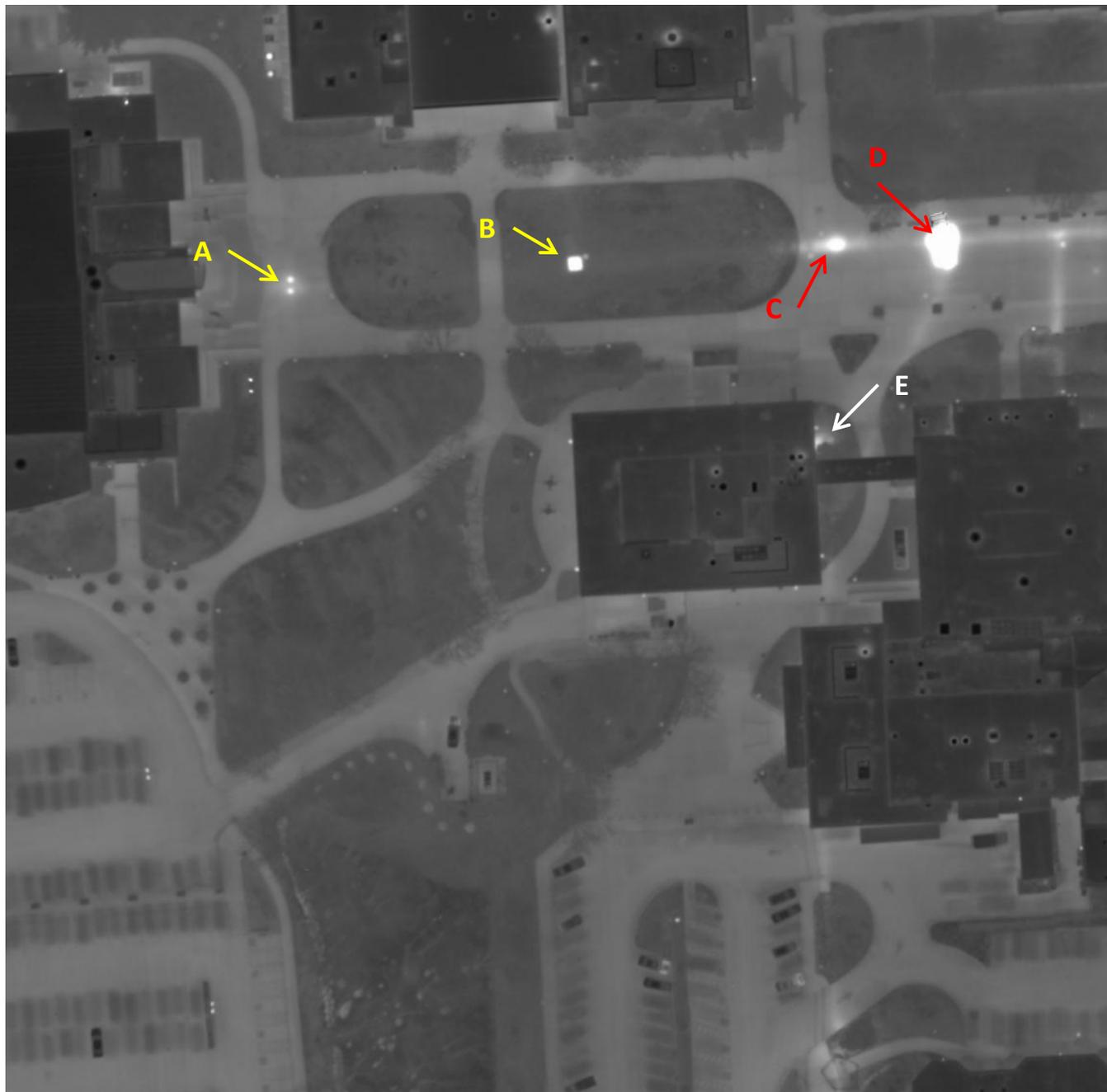


## Steam Distribution & Liquid Leak Report

April 16, 2011



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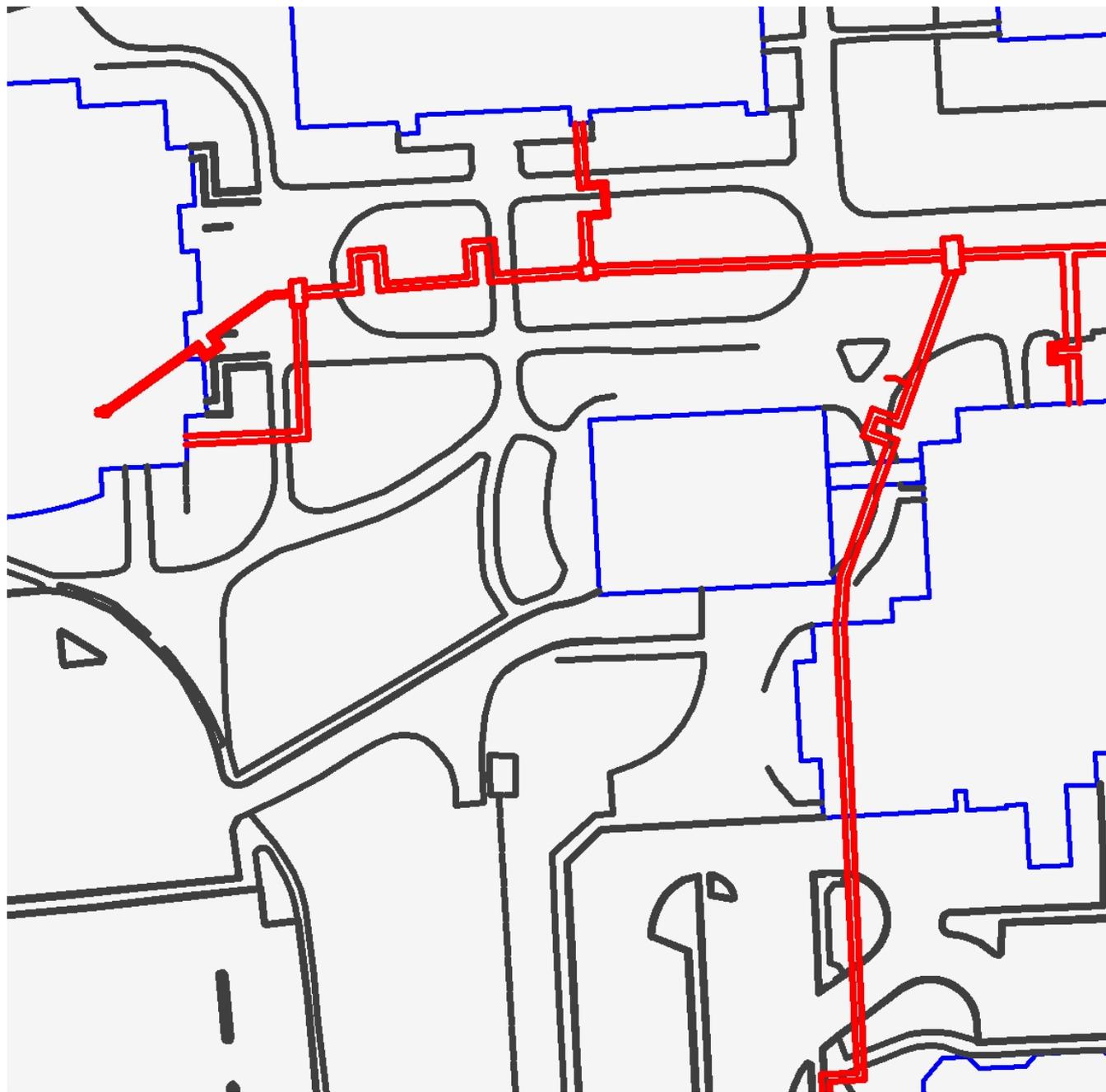
RIC\_C02\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_C02\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_C02\_4-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



**AITSCAN**  
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RIC\_C03\_1-PIC

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_C03\_2-IR

# Aerial Infrared Thermographic Survey

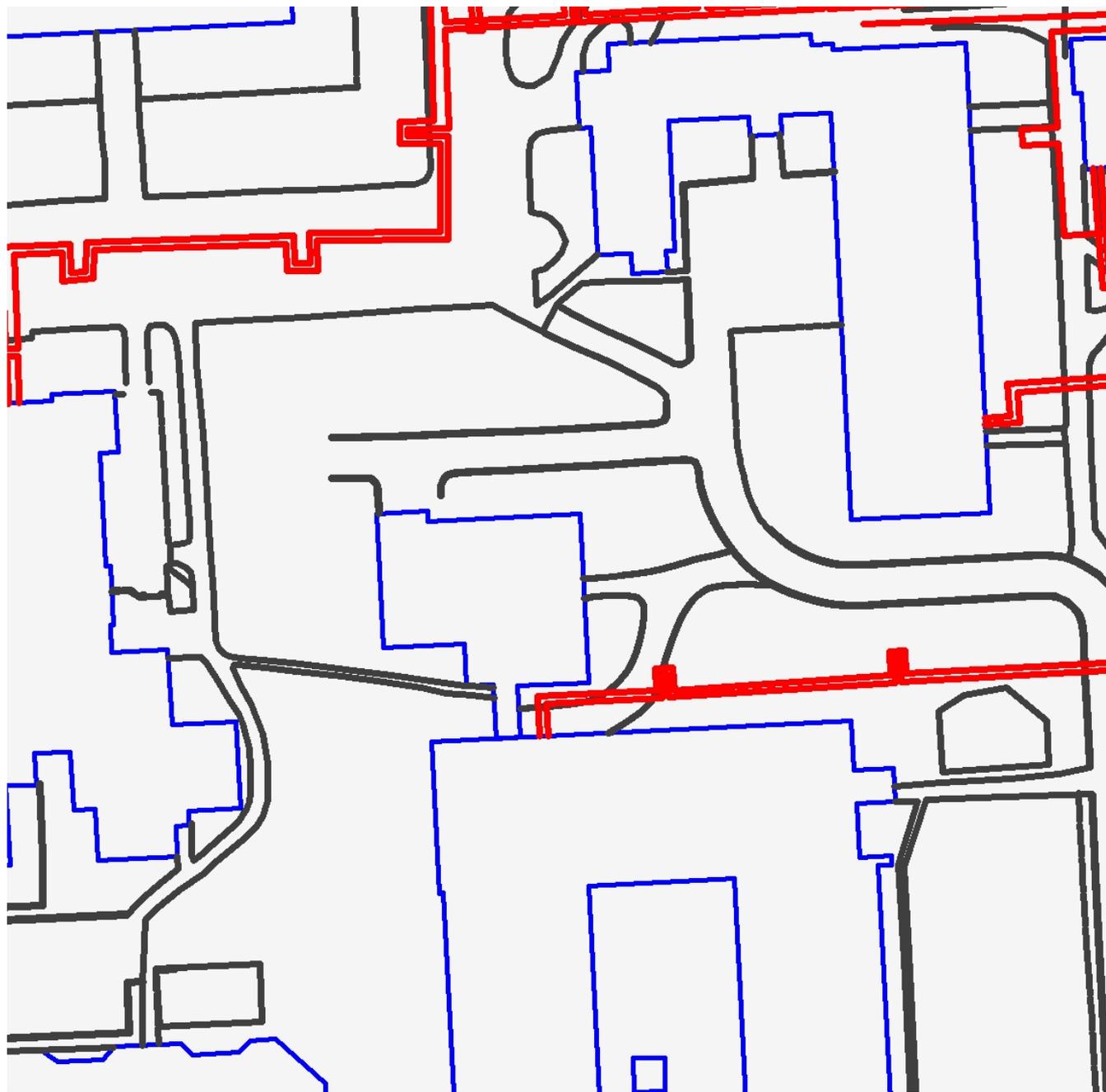


## Steam Distribution & Liquid Leak Report

April 16, 2011



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STEAM LEAK FINDIR™



RIC\_C03\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_C03\_4-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



**AITSCAN**  
STEAM LEAK FINDIR™



RIC\_C04\_1-PIC

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



**AITSCAN**  
STEAM LEAK FINDIR™



RIC\_C04\_2-IR

# Aerial Infrared Thermographic Survey

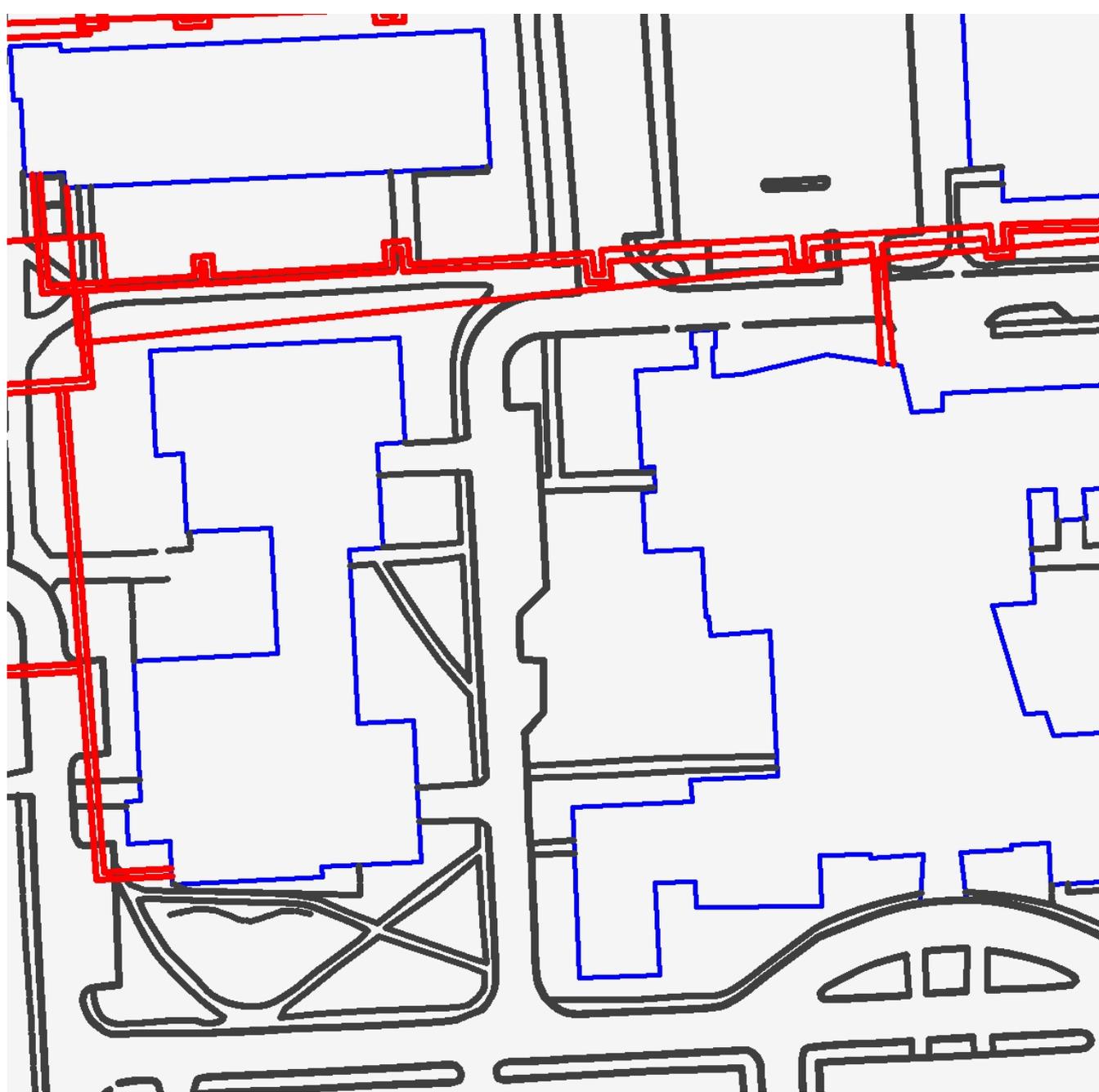


## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_C04\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



**AITSCAN**  
STEAM LEAK FINDIR™



RIC\_C04\_4-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



**AITSCAN**  
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RIC\_C05\_1-PIC

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_C05\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_C05\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



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RIC\_C05\_4-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

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RIC\_C06\_1-PIC

# Aerial Infrared Thermographic Survey



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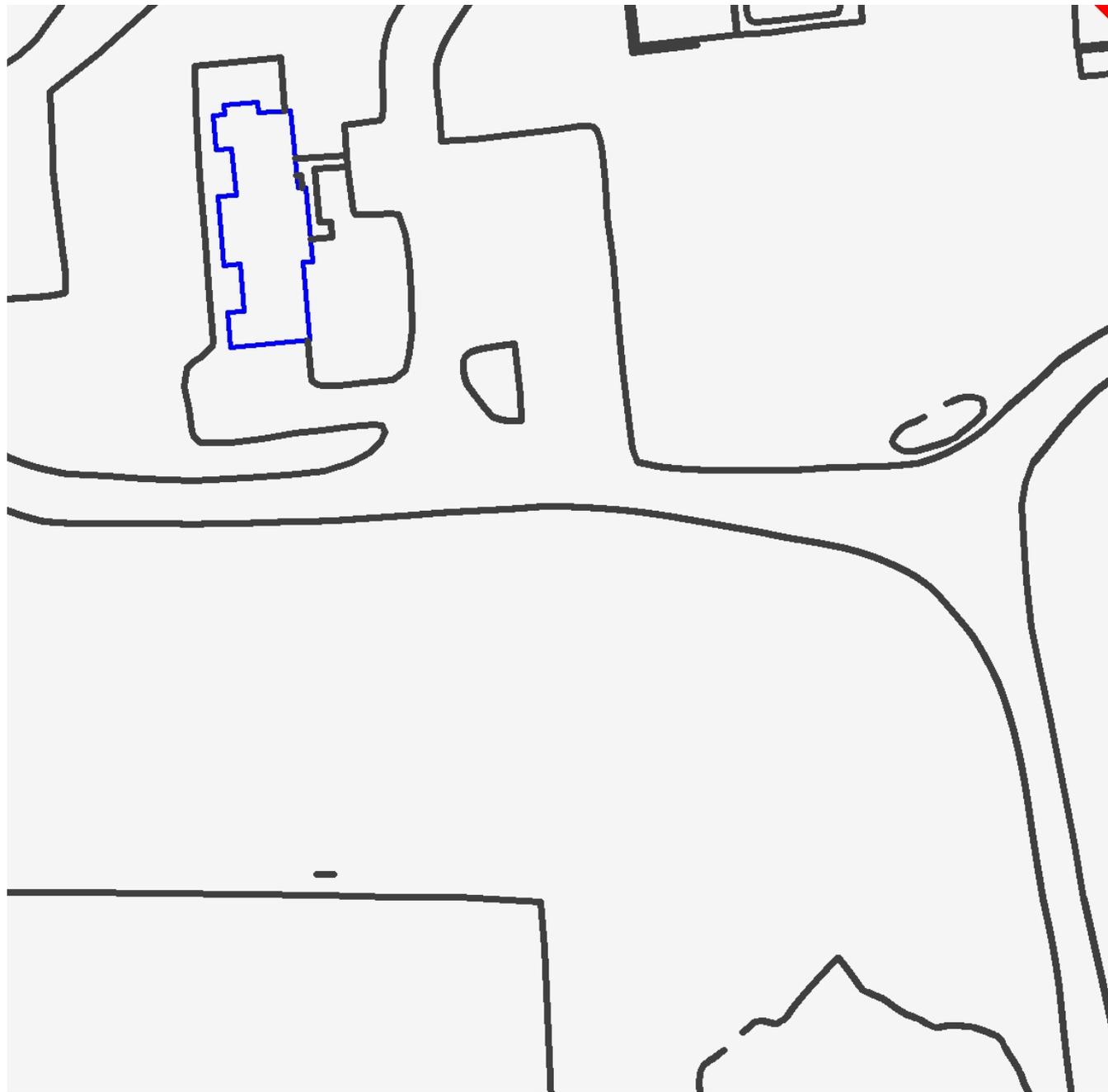
RIC\_C06\_2-IR

# Aerial Infrared Thermographic Survey



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RIC\_C06\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_C06\_4-IR

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RIC\_C07\_1-PIC

# Aerial Infrared Thermographic Survey



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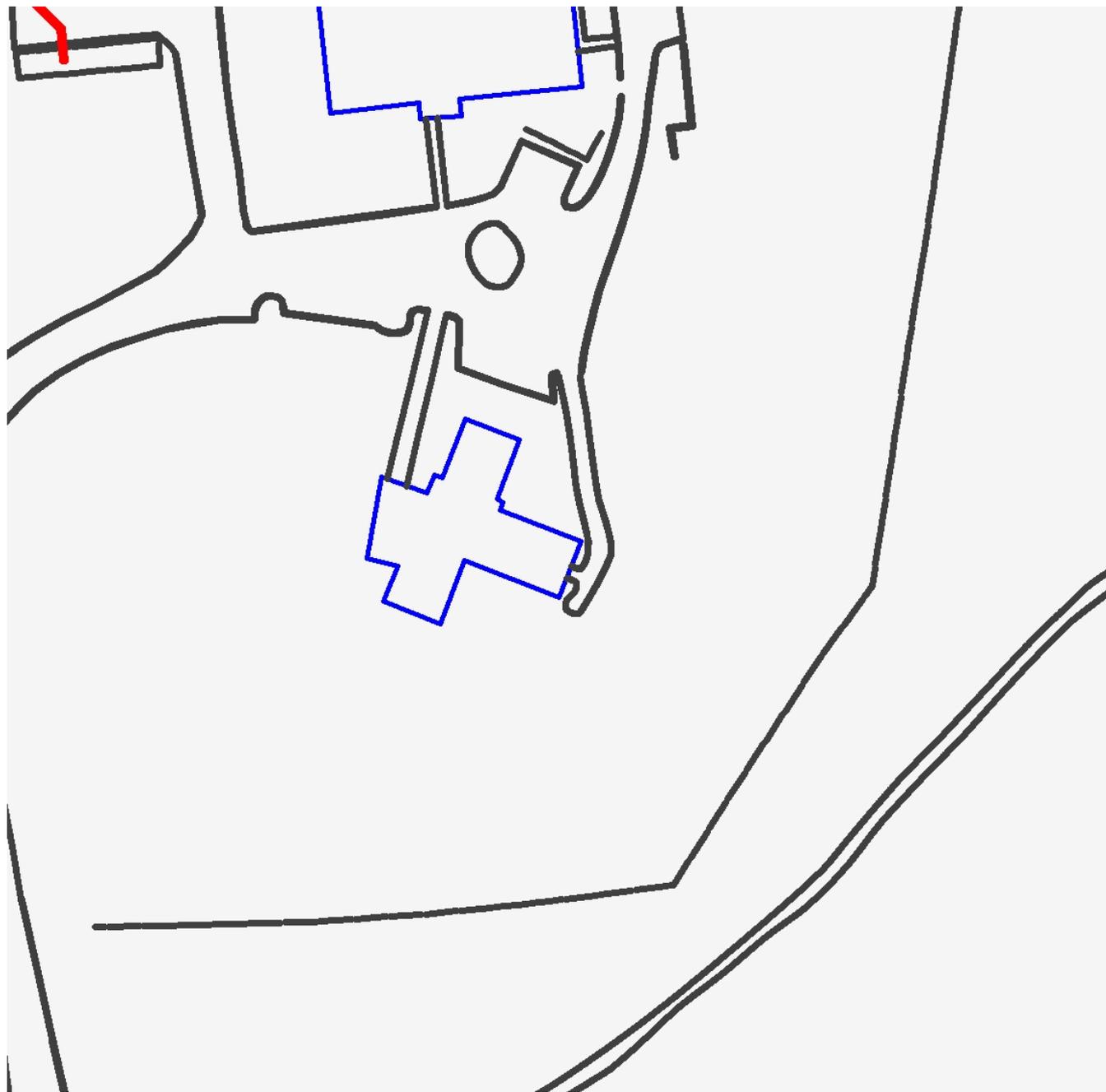
RIC\_C07\_2-IR

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RIC\_C07\_3-MAP

# Aerial Infrared Thermographic Survey



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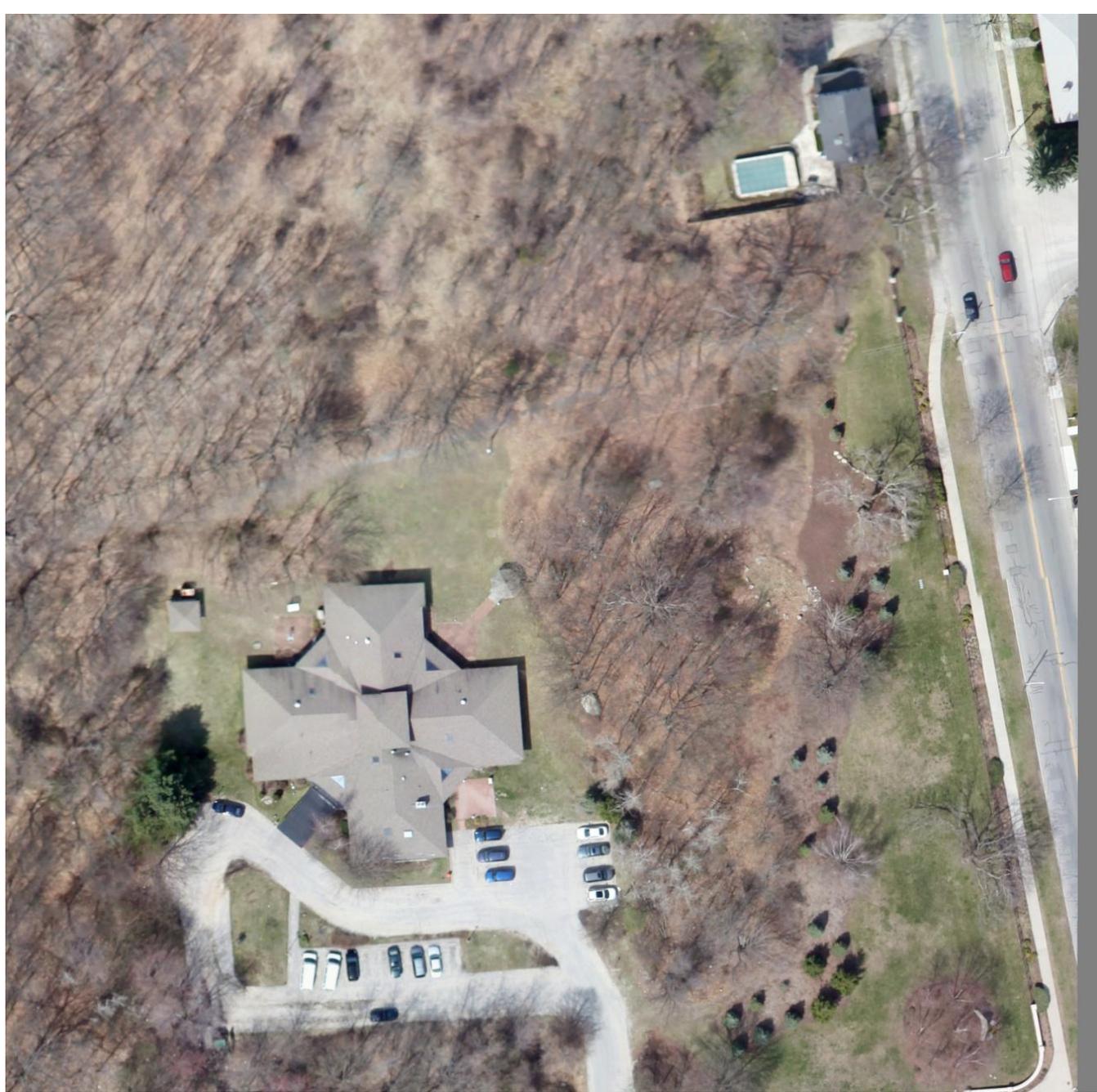


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RIC\_C08\_1-PIC

# Aerial Infrared Thermographic Survey



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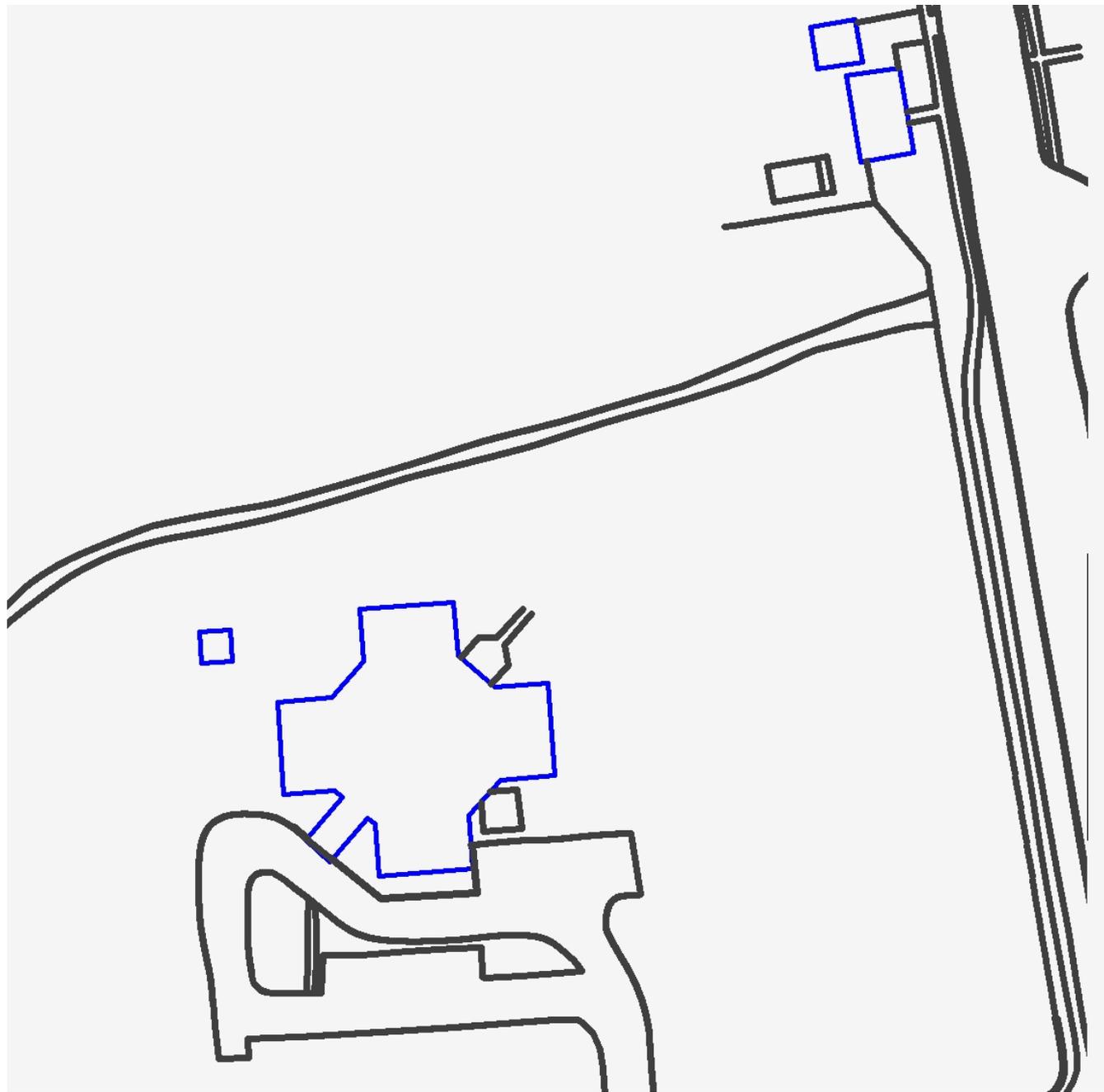
RIC\_C08\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

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RIC\_C08\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_C08\_4-IR

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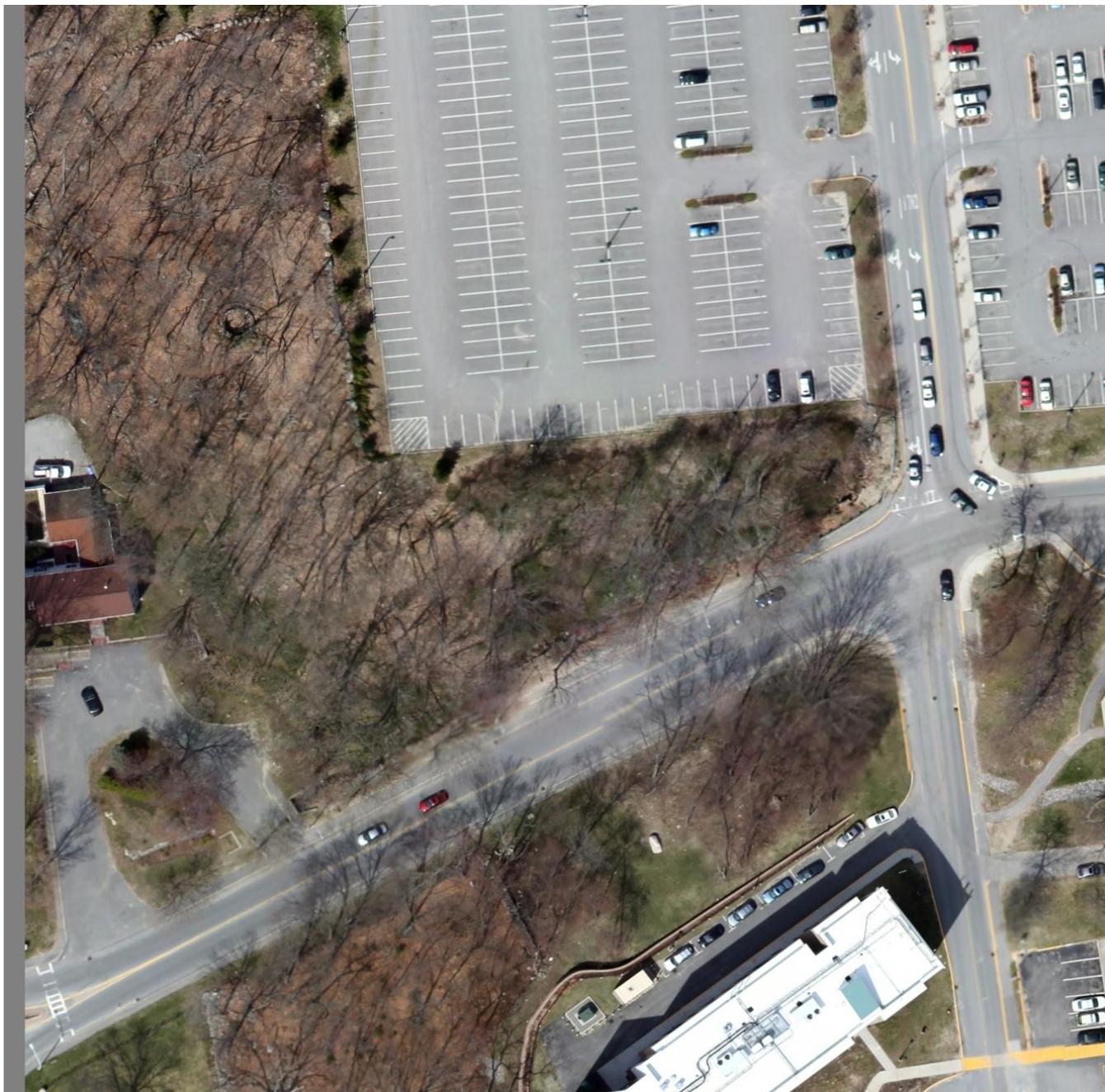


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RIC\_D01\_1-PIC

# Aerial Infrared Thermographic Survey



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RIC\_D01\_2-IR

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RIC\_D01\_3-MAP

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RIC\_D01\_4-IR

# Aerial Infrared Thermographic Survey



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RIC\_D02\_1-PIC

# Aerial Infrared Thermographic Survey

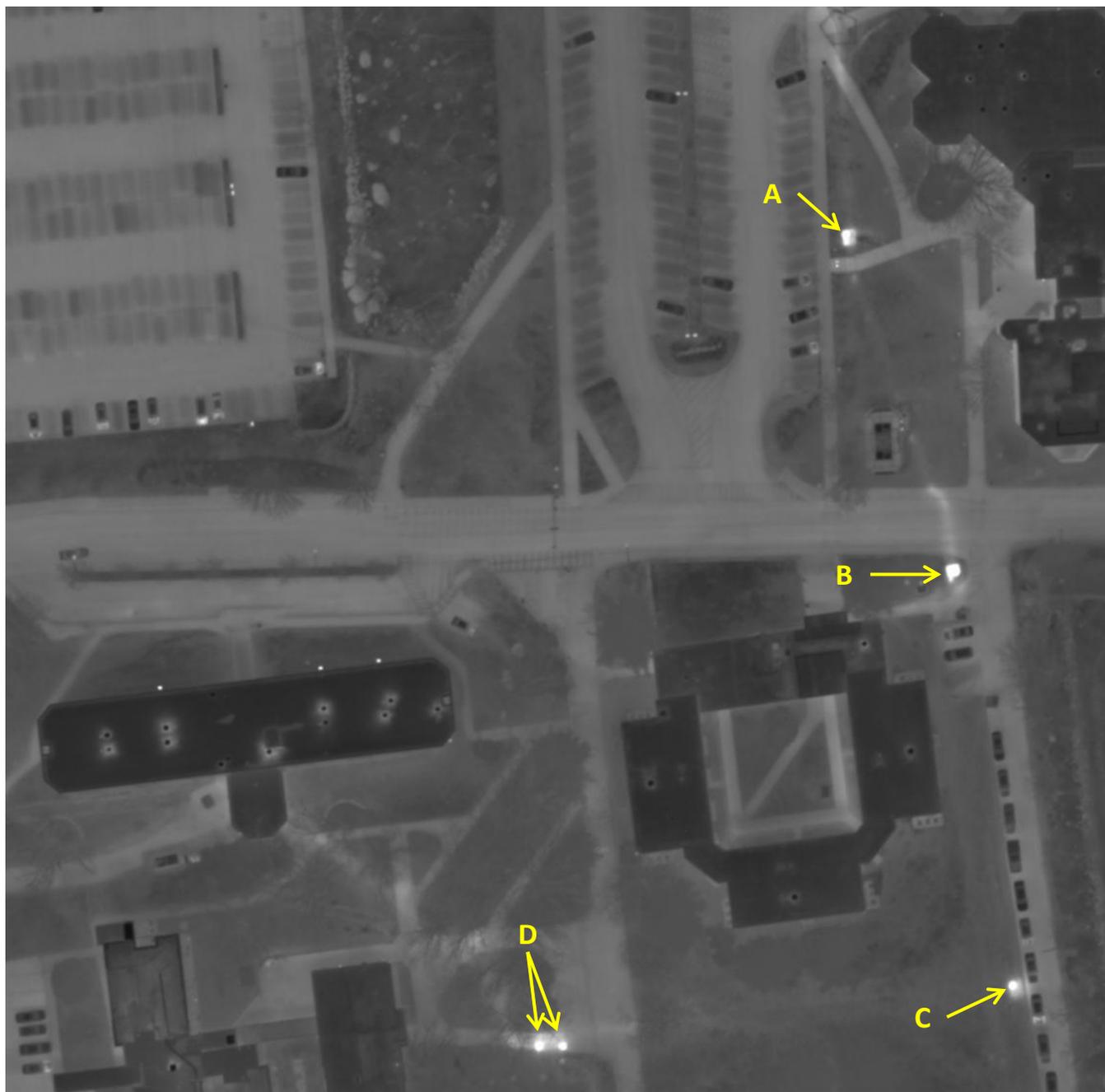


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RIC\_D02\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

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RIC\_D02\_3-MAP

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RIC\_D02\_4-IR

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RIC\_D03\_1-PIC

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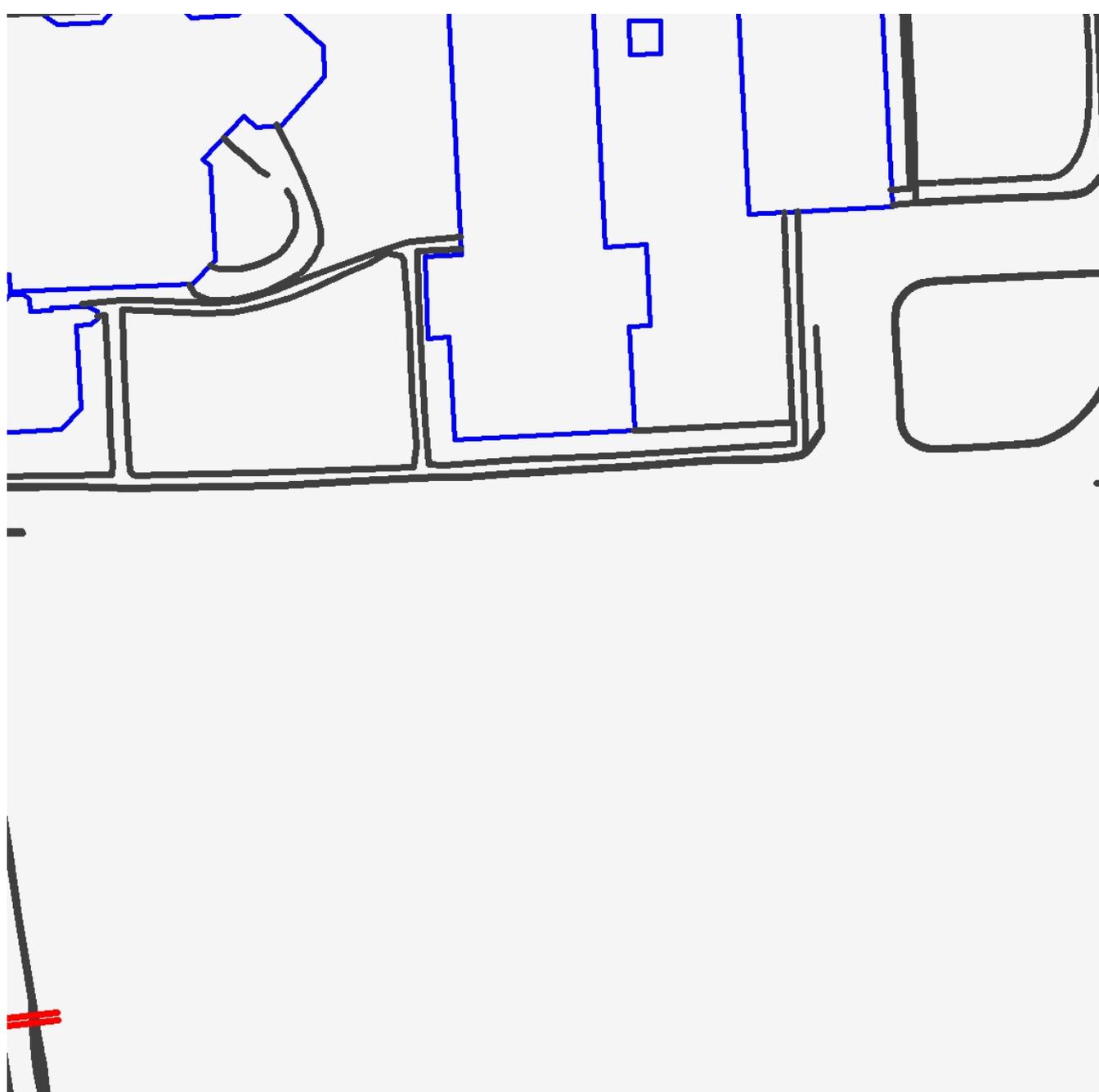
RIC\_D03\_2-IR

# Aerial Infrared Thermographic Survey



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RIC\_D03\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_D03\_4-IR

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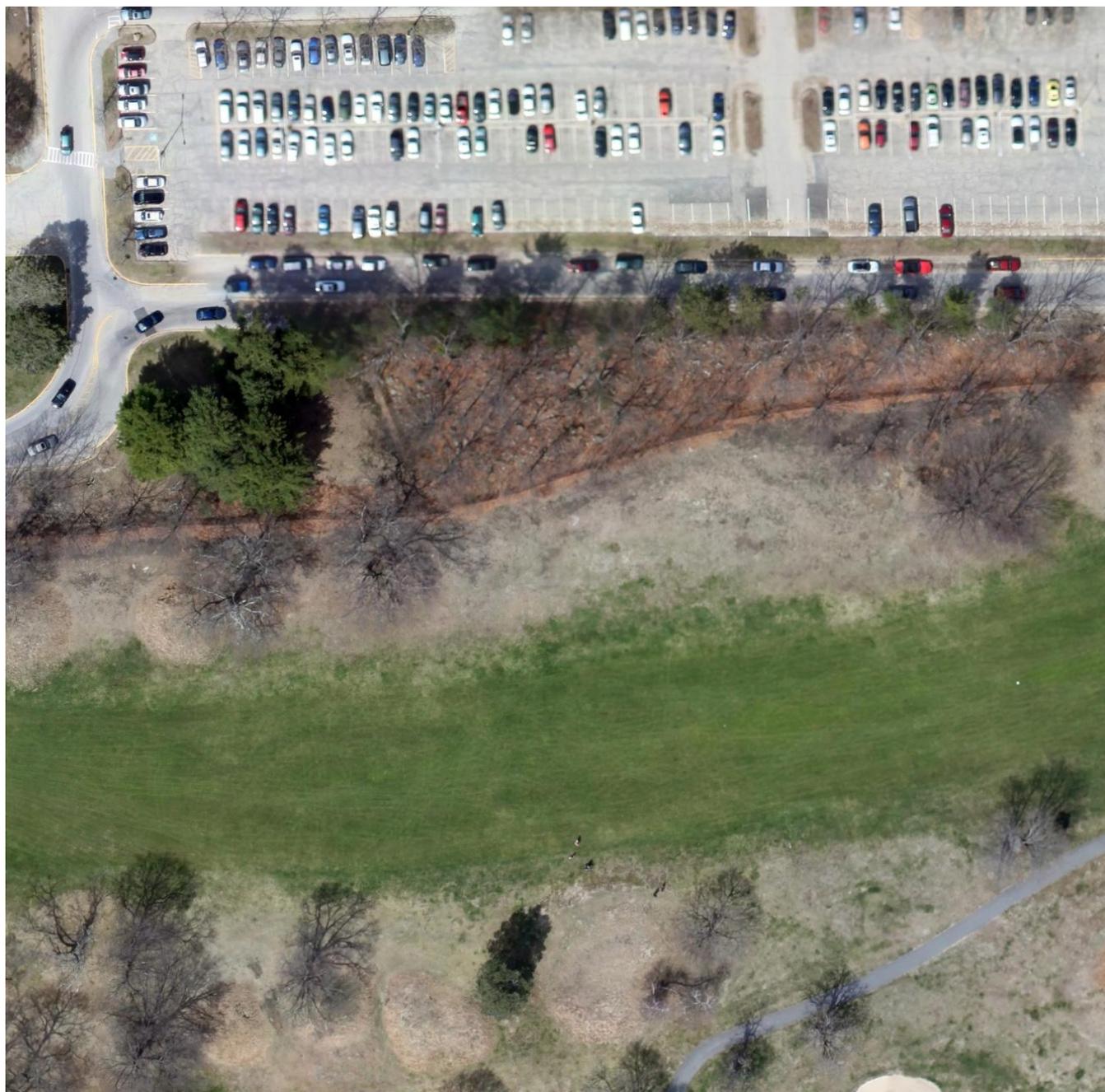


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RIC\_D04\_1-PIC

# Aerial Infrared Thermographic Survey



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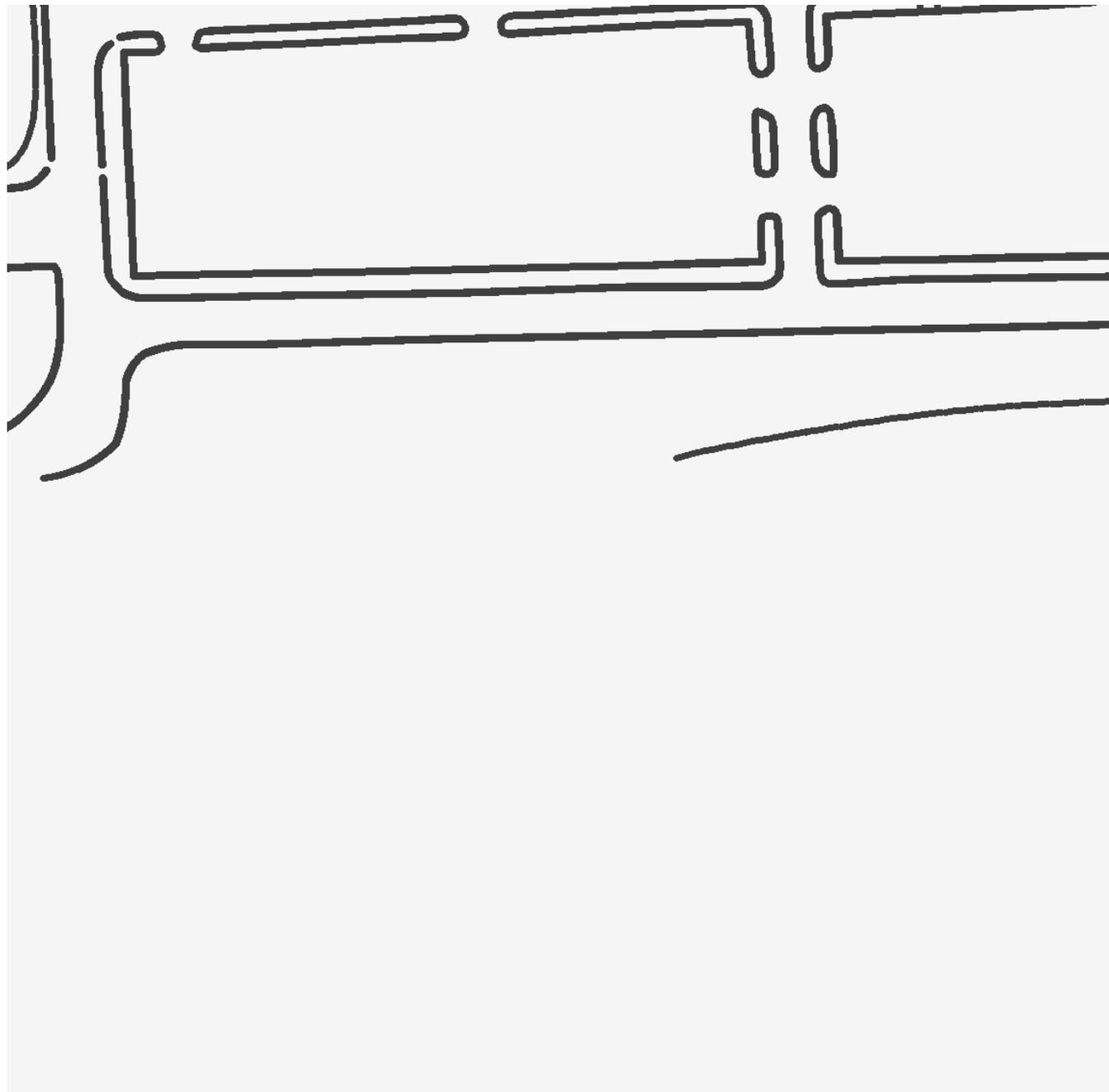
RIC\_D04\_2-IR

# Aerial Infrared Thermographic Survey



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RIC\_D04\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_D04\_4-IR

# Aerial Infrared Thermographic Survey



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RIC\_D05\_1-PIC

# Aerial Infrared Thermographic Survey



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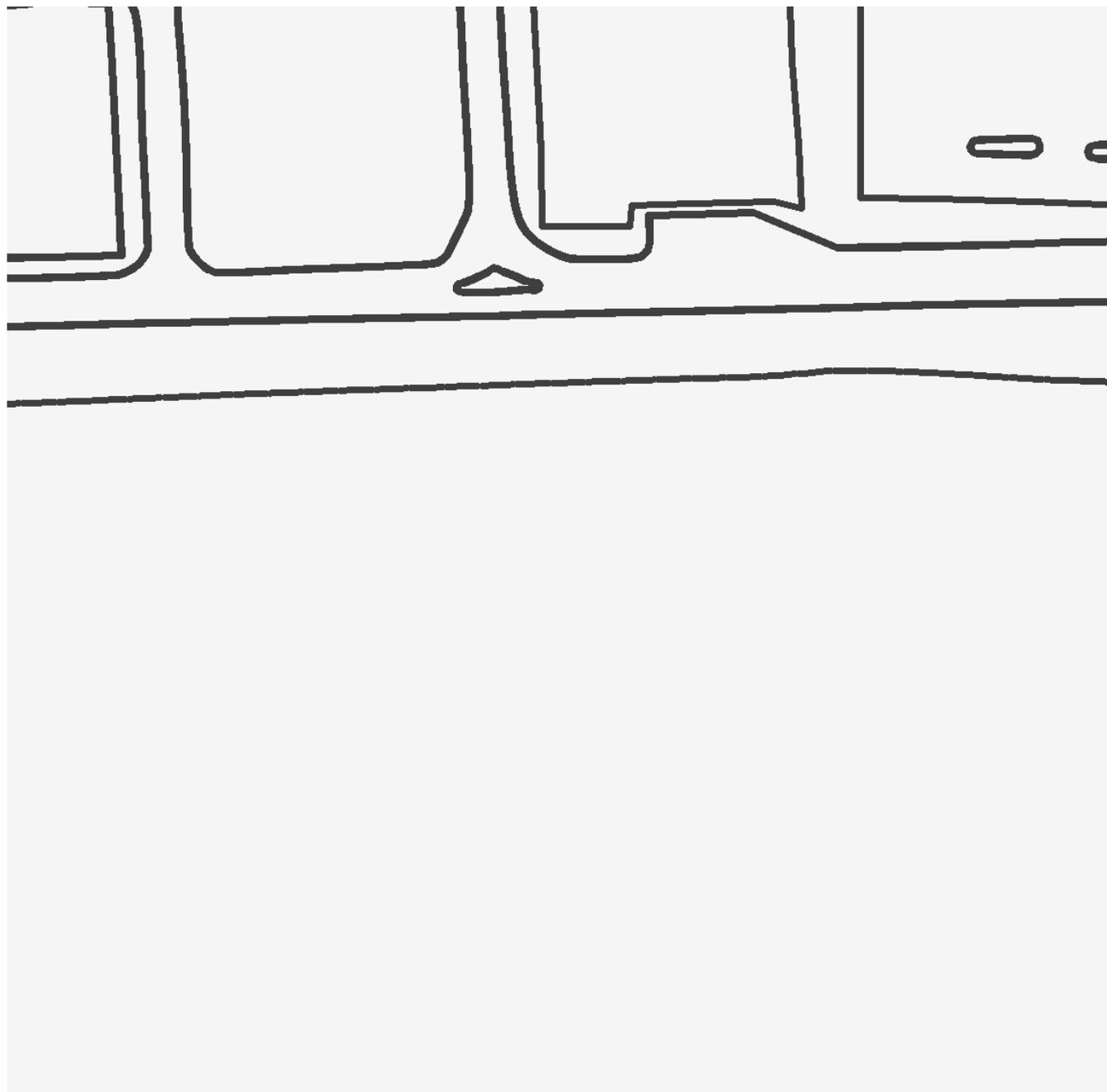
RIC\_D05\_2-IR

# Aerial Infrared Thermographic Survey



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RIC\_D05\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_D06\_1-PIC

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RIC\_D06\_2-IR

# Aerial Infrared Thermographic Survey

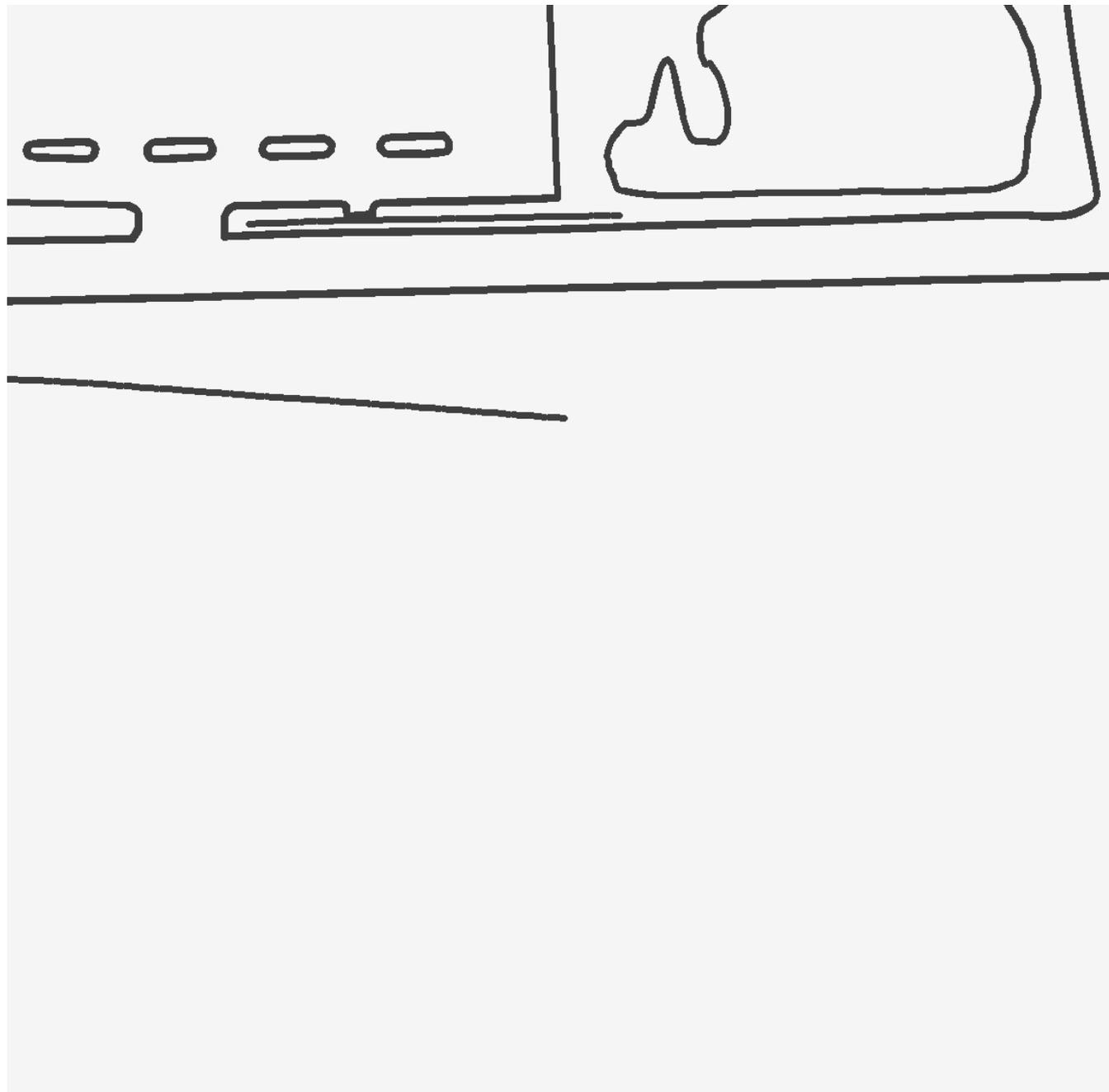


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RIC\_D06\_3-MAP

# Aerial Infrared Thermographic Survey



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RIC\_D06\_4-IR

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April 16, 2011



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RIC\_D07\_1-PIC

# Aerial Infrared Thermographic Survey

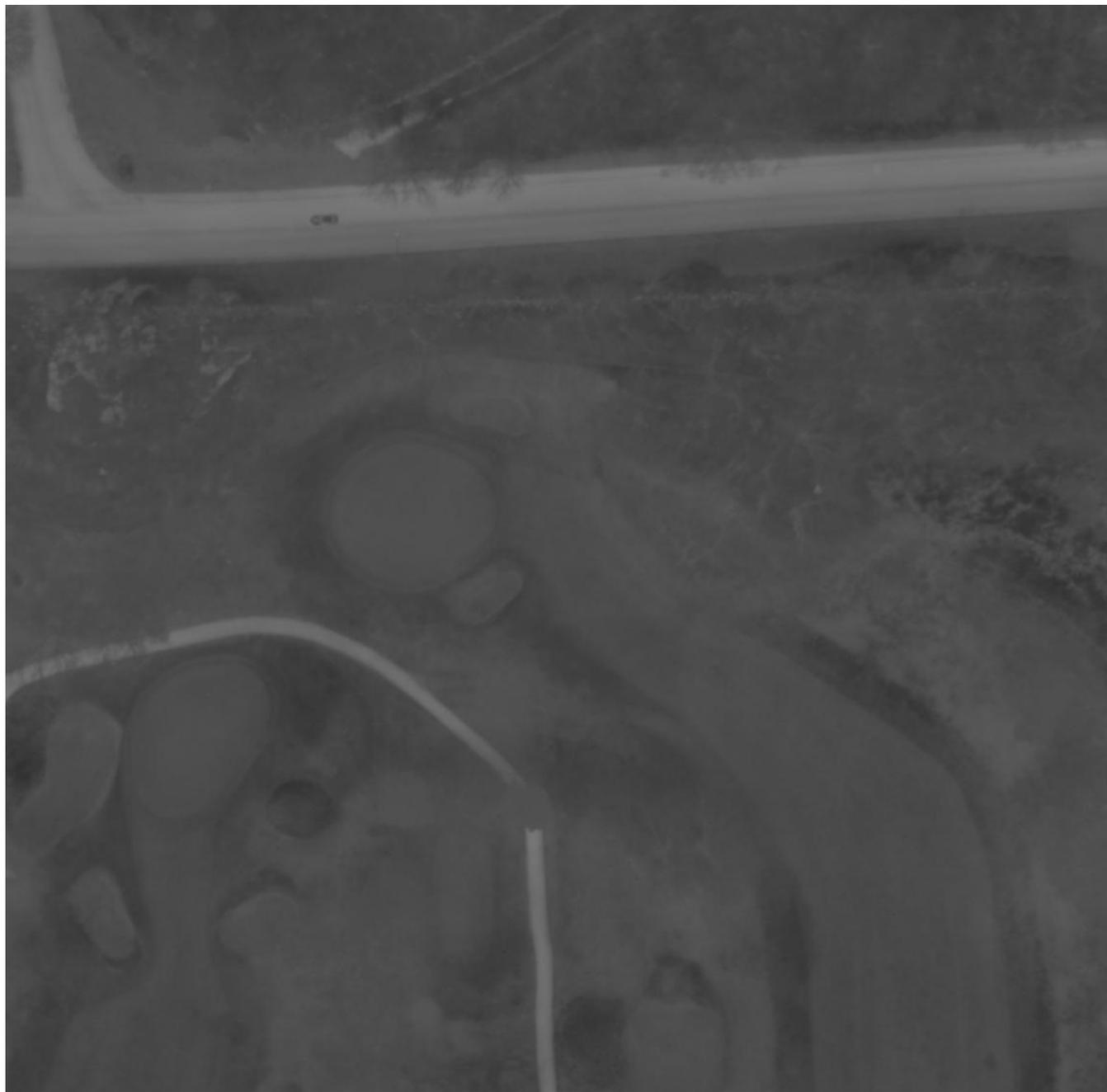


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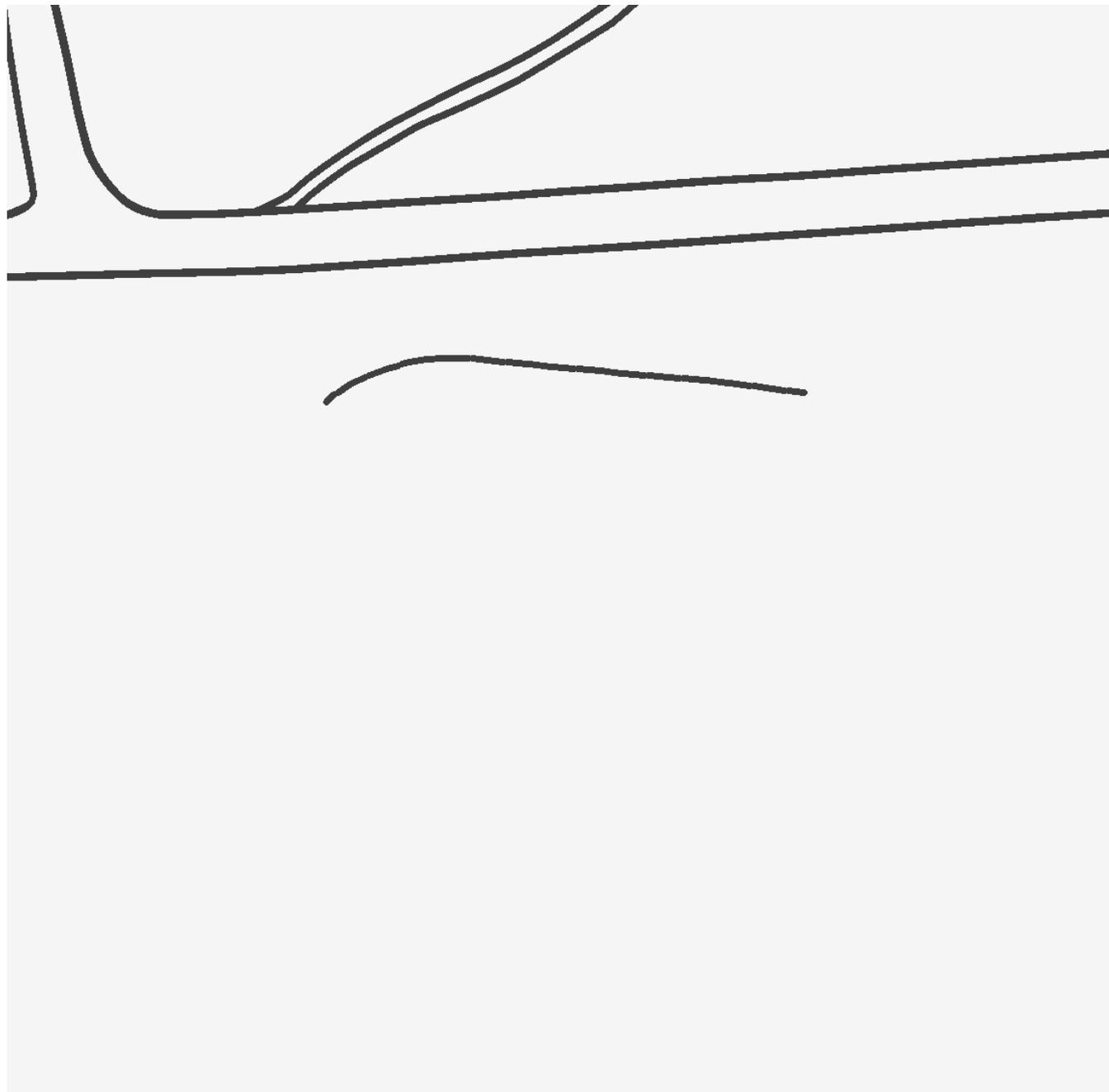
RIC\_D07\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



RIC\_D07\_3-MAP

# Aerial Infrared Thermographic Survey

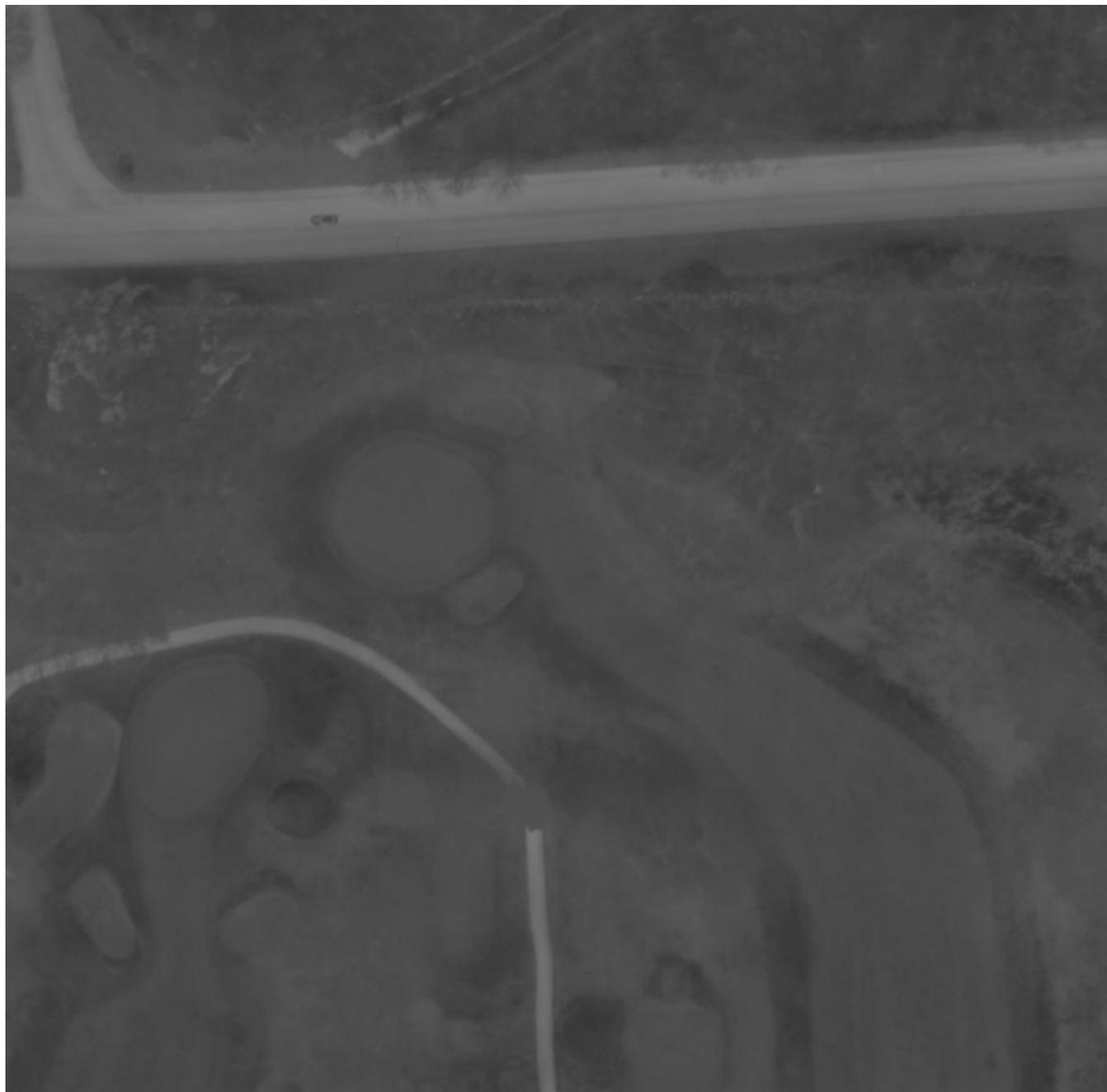


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RIC\_D07\_4-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

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RIC\_D08\_1-PIC

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

April 16, 2011



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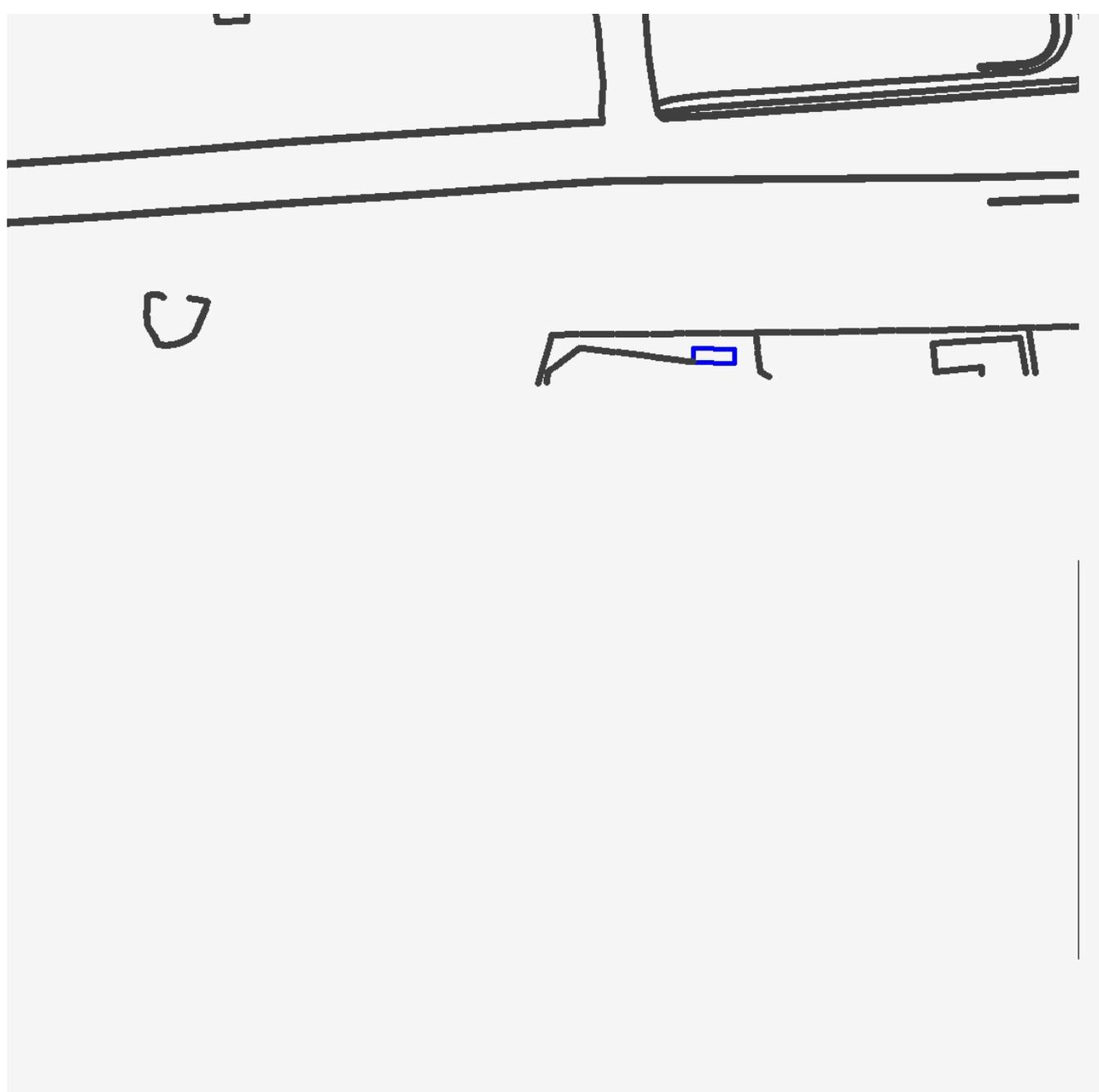
RIC\_D08\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

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RIC\_D08\_3-MAP

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

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RIC\_D08\_4-IR

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April 16, 2011



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RIC\_E01\_1-PIC

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April 16, 2011



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RIC\_E01\_2-IR

# Aerial Infrared Thermographic Survey



## Steam Distribution & Liquid Leak Report

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RIC\_E01\_3-MAP

# Aerial Infrared Thermographic Survey



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April 16, 2011



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RIC\_E01\_4-IR

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RIC\_E02\_1-PIC

# Aerial Infrared Thermographic Survey

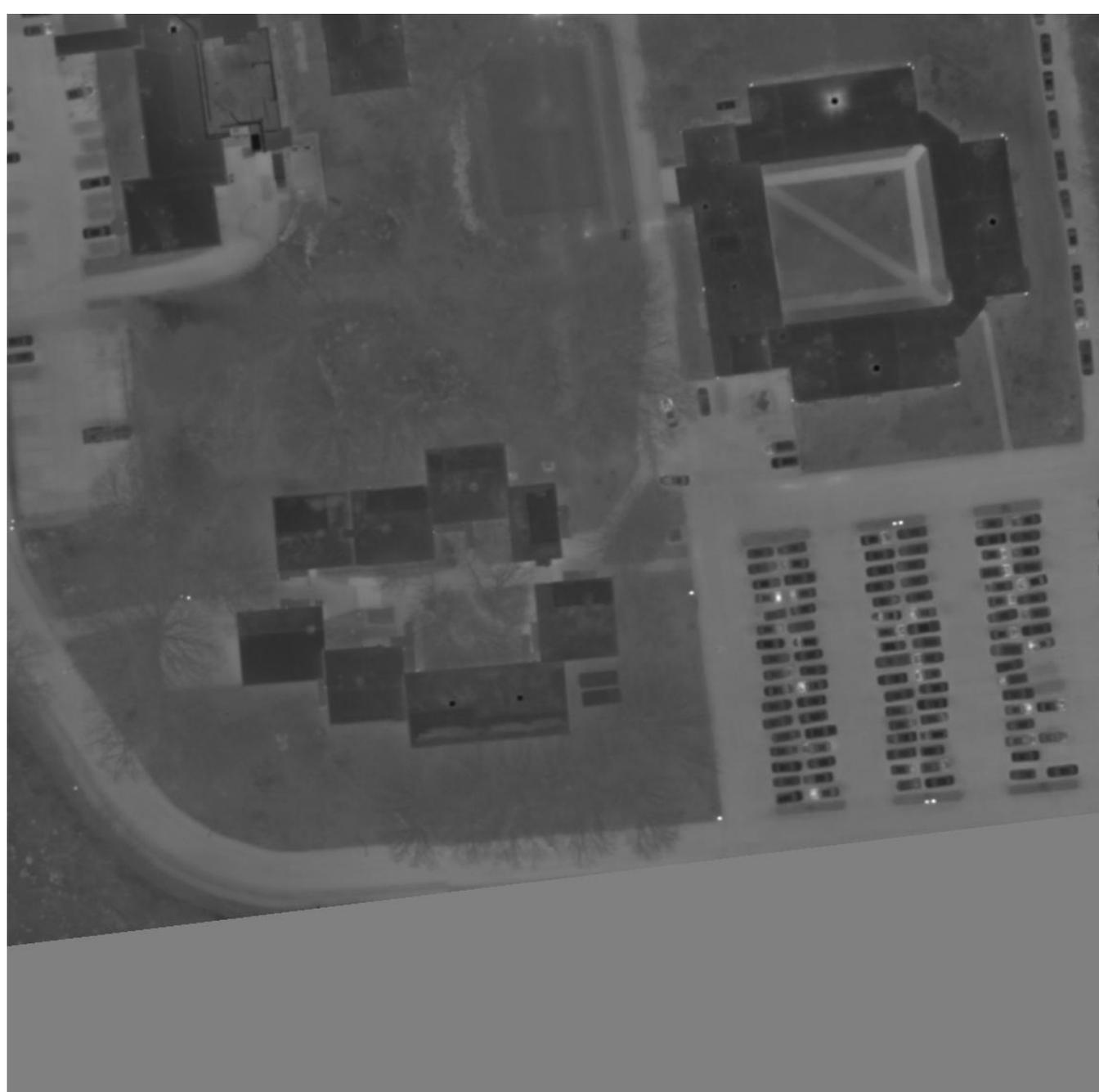


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RIC\_E02\_2-IR

# Aerial Infrared Thermographic Survey

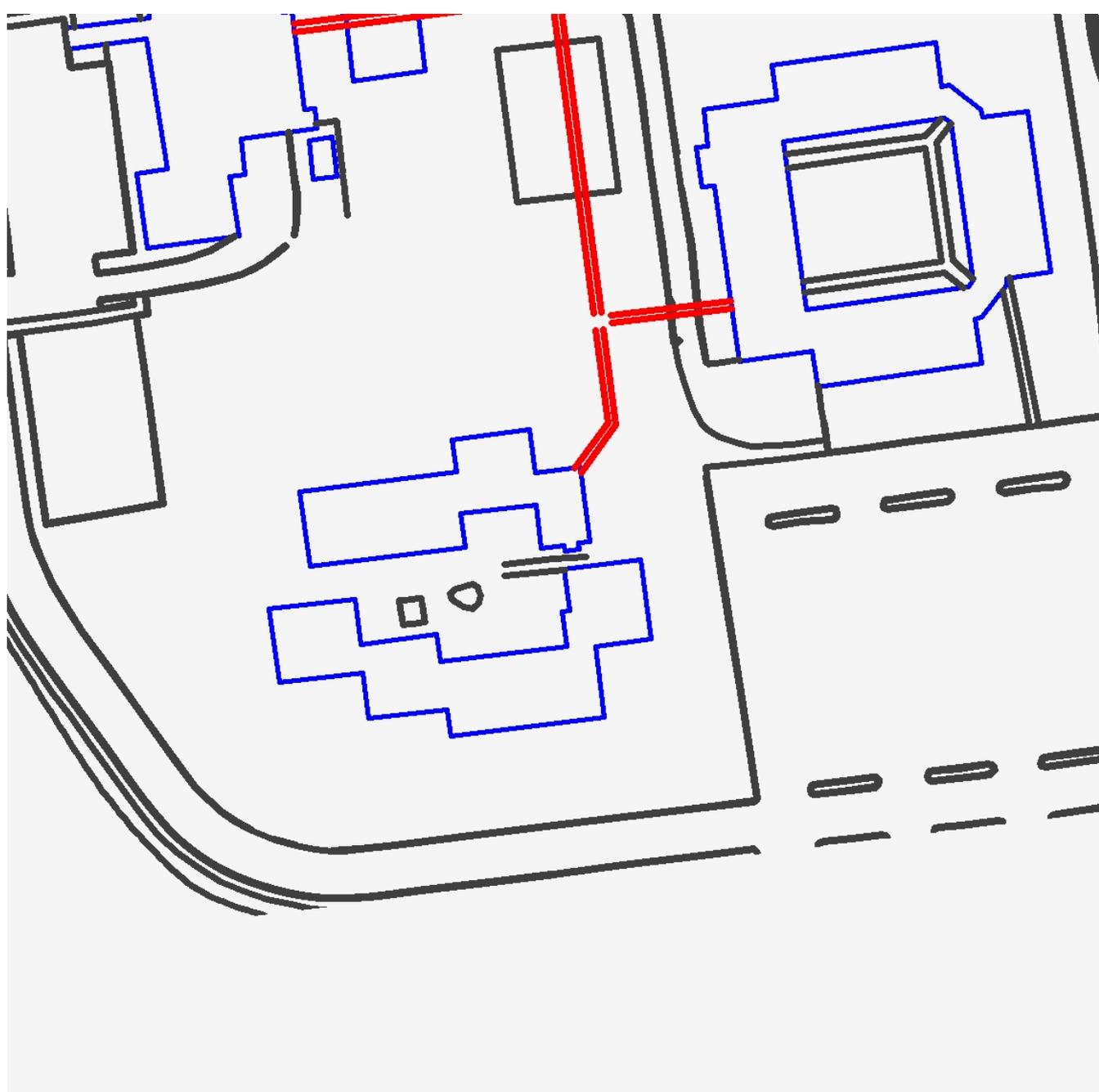


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RIC\_E02\_3-MAP

# Aerial Infrared Thermographic Survey

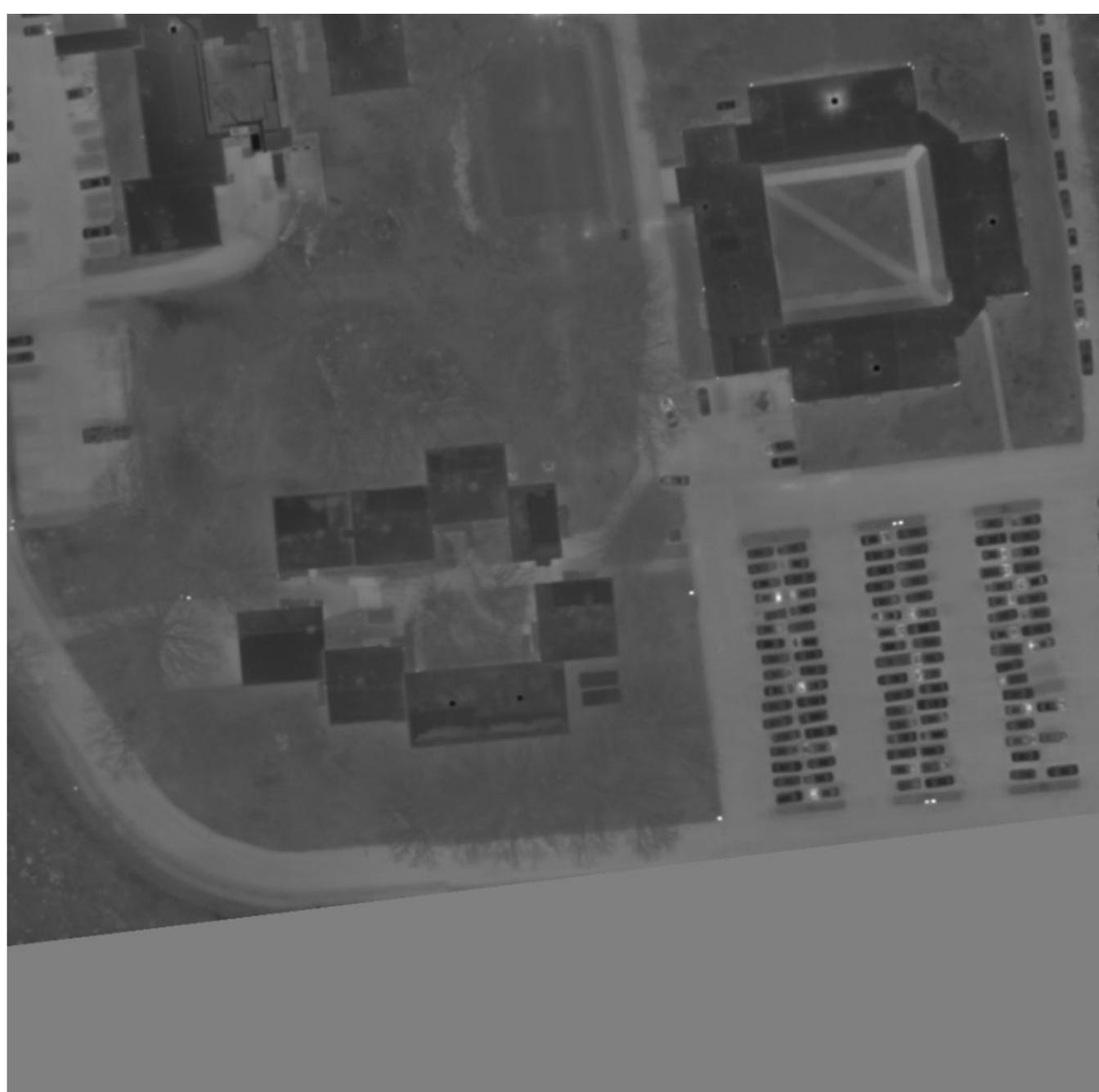


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