Request for Proposal
for
Mechanical / Electrical Engineering Services

City of Owosso
City Hall Improvements Project

ADDENDUM #2
15 November 2024

Below is a summary of the pre-bid walk-through for the M/E Engineer RFP for the above-mentioned project:

1. The group began with introductions of both the Ownership team and the participants.

2. Katie then reiterated some of the key milestone dates for the RFP:
   - Questions are due no later than noon on 14 November 2024.
   - Proposals are due by 5:00 pm EST on 20 November 2024.
   - The Ownership team will make a recommendation to the City Council for their approval at the 02 December Council meeting and will inform the teams sometime that week.

3. Regarding the project schedule, Nathan shared that the City's fiscal year runs from July to June.

The following questions were received during the walk-through. Answers are captured below.

4. It appears that the building is in a floodplain / floodway. Are there any issues foreseen with permitting?
   No.

5. Are there any drawings of the building available?
   Yes, though they are of the original layout, and may not be accurate to today's configuration. These will be shared with the proposing teams.

6. Will the interior ductwork be replaced?
   No, though some of the actuators and dampers will be. To that end, the City recently completed a flow test on the system, and will share the test and balance report with the proposers.

7. How does the Historic District Commission play into the scope of work, and what is that process?
   Nathan noted that there is nothing within the M/E scope that will require their review—no ductwork should be routed along the building façade. He also indicated that any landscaping/fencing re-do around the mechanical units and generator will not need review, since it does not specifically alter or affect the building exterior.

8. How long has the unit in the closet adjacent to the Chambers been out of service?
   Ryan noted that the unit has not been in service since he has been with the City, beginning in 2021.

9. What area(s) of the building does (did?) this unit serve?
   This was a bit unclear and will need further investigation. For what it's worth, an observation was made that the control box in the room is labelled VAV 4 and RTU 1.

10. Does the City want to use JCI for controls, given that this is their current system?
    Not necessarily. The City wants to upgrade to a new system that is appropriate given new technologies and their specific needs. JCI is acceptable, but not mandated.

    As an aside, the group was able to view the two control panels, one in the basement and one on the second floor.

11. What alterations do you foresee to the electrical service?
    The service panel needs to be replaced, though there is some capacity. Ryan noted that the service coming into the building is new from Consumers, but the panel needs updating.

12. Will the scope of work be divided among other professionals (ie. an architect)?
    No. The chosen engineer should hold all required services under their scope of work.

13. Will the ductwork leading from the unit on the roof outside of the women's restroom need to be insulated?
    Yes. Any outdoor ducts will require insulation.

14. What part of the building is serviced by the unit on the roof outside of the women's restroom?
    It services the east half of the building.

15. Is the building sprinkled?
    No, though there is a halon suppression system in the IT room.

16. Are there other symptoms in the IT room that need to be addressed (ie. humidity)?
    No. The City just needs a new unit to serve this space, possibly with some added capacity.

17. Is there a receptacle for power outside near the pad?
    Yes.

18. What happens to all of the conduit/piping in the subterranean room beneath the mechanical pad?
    As stated in the RFP, these will need to be assessed to determine if they are still active, and will need to be addressed as part of the solution to this space.

19. How much of the building needs to be tied to the new generator?
    The entire building, including all systems / services.

A few other items were noted during the walk-through, as follows:

20. There is currently no back-up power save for a 4-hour battery for the IT systems.

21. None of the mechanical units have been modified at least since 2021 (when Ryan joined the City).

22. Ryan noted that there is a new electrical service to the building. This was the one on the right when facing the front of the building. It is a 100,000 kW service.

The following questions were received after the walk-through:

23. Is the intent to keep the building open during construction?
    Yes.

24. Is the intent to replace all electrical distribution or just those impacted by mechanical and generator upgrades?
    This decision will ultimately be based on the budget. We will look to our engineering team to evaluate and make a recommendation on the distribution centers that need to be replaced.

25. Do the feeders get replaced with the distribution panels?
    No, unless it is deemed necessary by the engineering professional.

26. CLARIFICATION: As you develop your fee, please clearly outline any assumptions or exclusions to the terms of the RFP.

27. The following additional information is included as part of this addendum:
    - Pre-bid walk-through sign-in sheet
    - Existing building drawings
    - Test and balance report
    - Structural assessment
    - Mechanical data plate photos
    - Generator data plate photo
    - Miscellaneous project photos

end of Addendum #2

Sign-in Sheet

Name	Company	E-mail Address
Jacob Landrey	Spicer Group	jacob.landrey@spicergroup.com
Nathan Smith	matrix Consulting	nSmith@matrixCeinC.com
Renee Ladomer	Fishbeck	RLadomer@Fishbeck.com
SEAN TABACSKO	OHM Advisors	Sean.Tabacsko@ohm-advisors.com
Nick Hill	Tetra Tech	nick.hill1@tetratech.com
Eric Schippers	Century A+E	eschippers@centuryae.com
ROBERT WERBROUCK	IGNYTE DESIGN	RWERBROUCK@IGNYTE.DESIGN

TETRA TECH

Nick Hill, P.E., LEED AP BD+C
Mechanical Engineer

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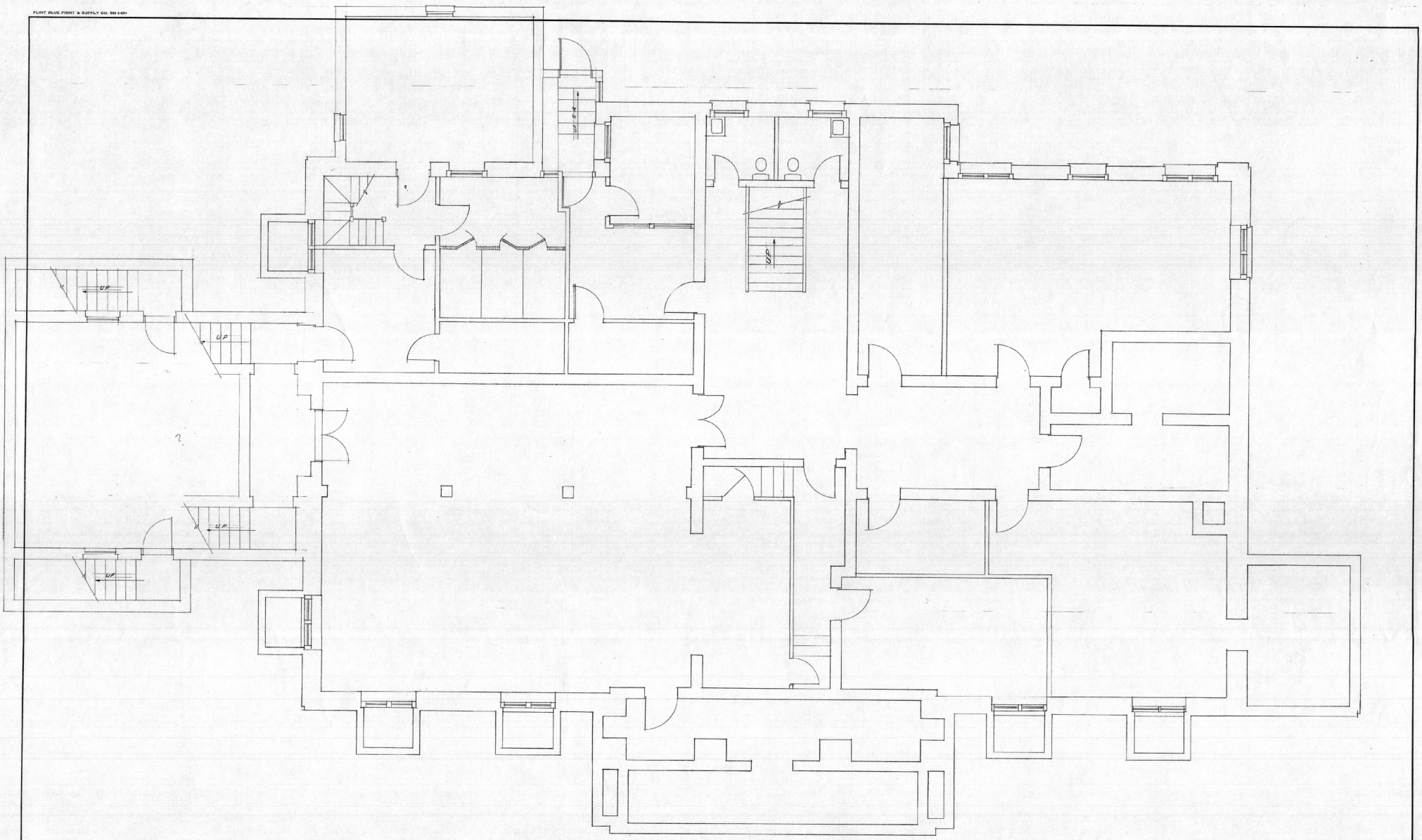
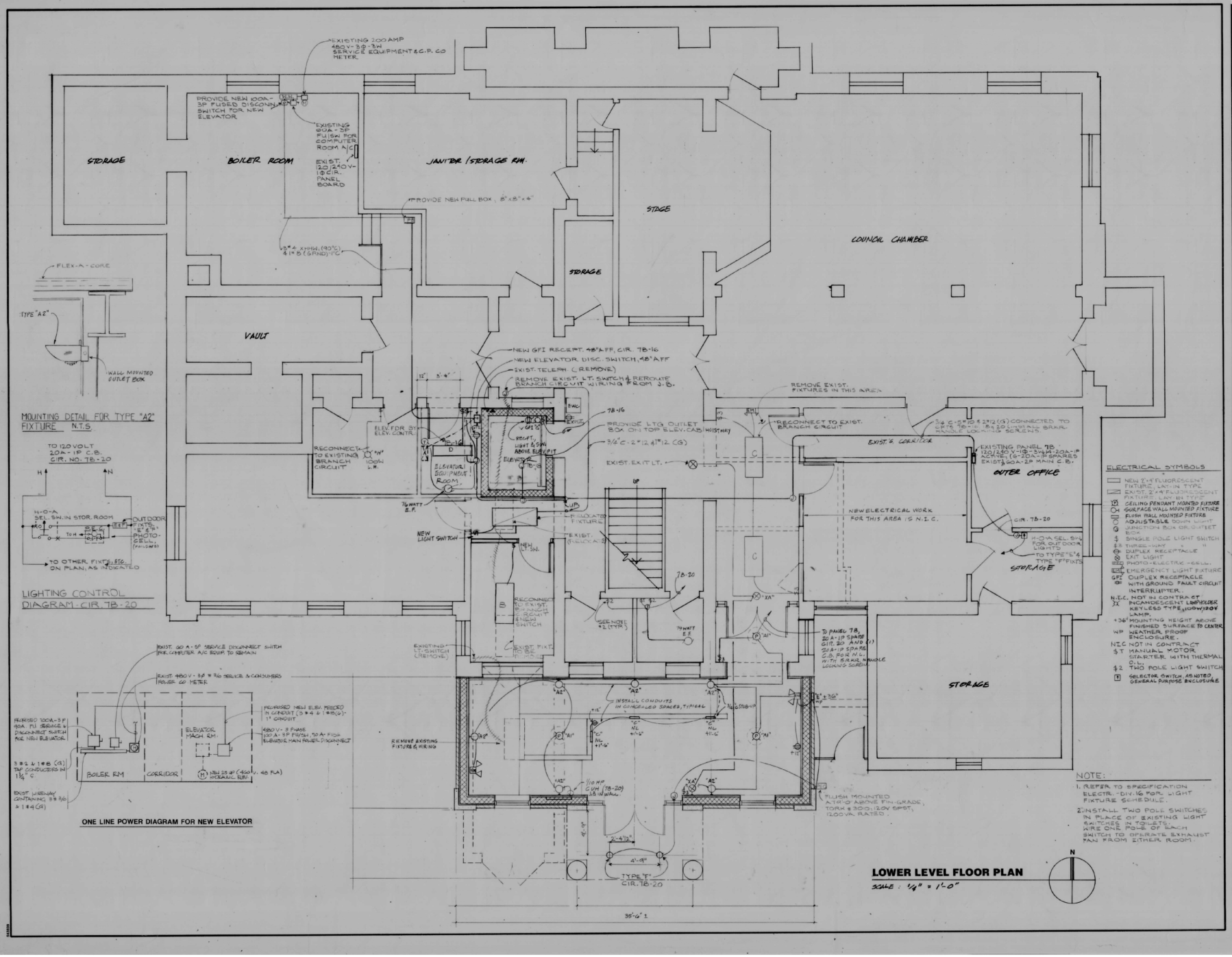
Tel +1.734.213.4016 Cell +1.847.863.8053
nick.hill1@tetratech.com | www.tetratech.com



BASEMENT FLOOR PLAN — OWOSSO CITY HALL

1/8" = 1'-0"

DRAWN BY	COMM. NO.	gibbs, tomblinson & harburn ARCHITECTS	SHEET NO.
RAK		700 KELSO ST. FLINT, MICHIGAN 48506 PHONE 767-5600	1
CHECK BY	DATE		OF 2
JT	9/15/67		



DATE	ISSUED FOR

Giffels Consultants Inc.
Architects Engineers Project Managers
Southfield, Michigan

PROJECT MANAGER J.D.	DRAWN E.A.
PROJ. ENG/ARCH. E.B.	CHECKED E.B.
DATE 11/8/94	APPROVED

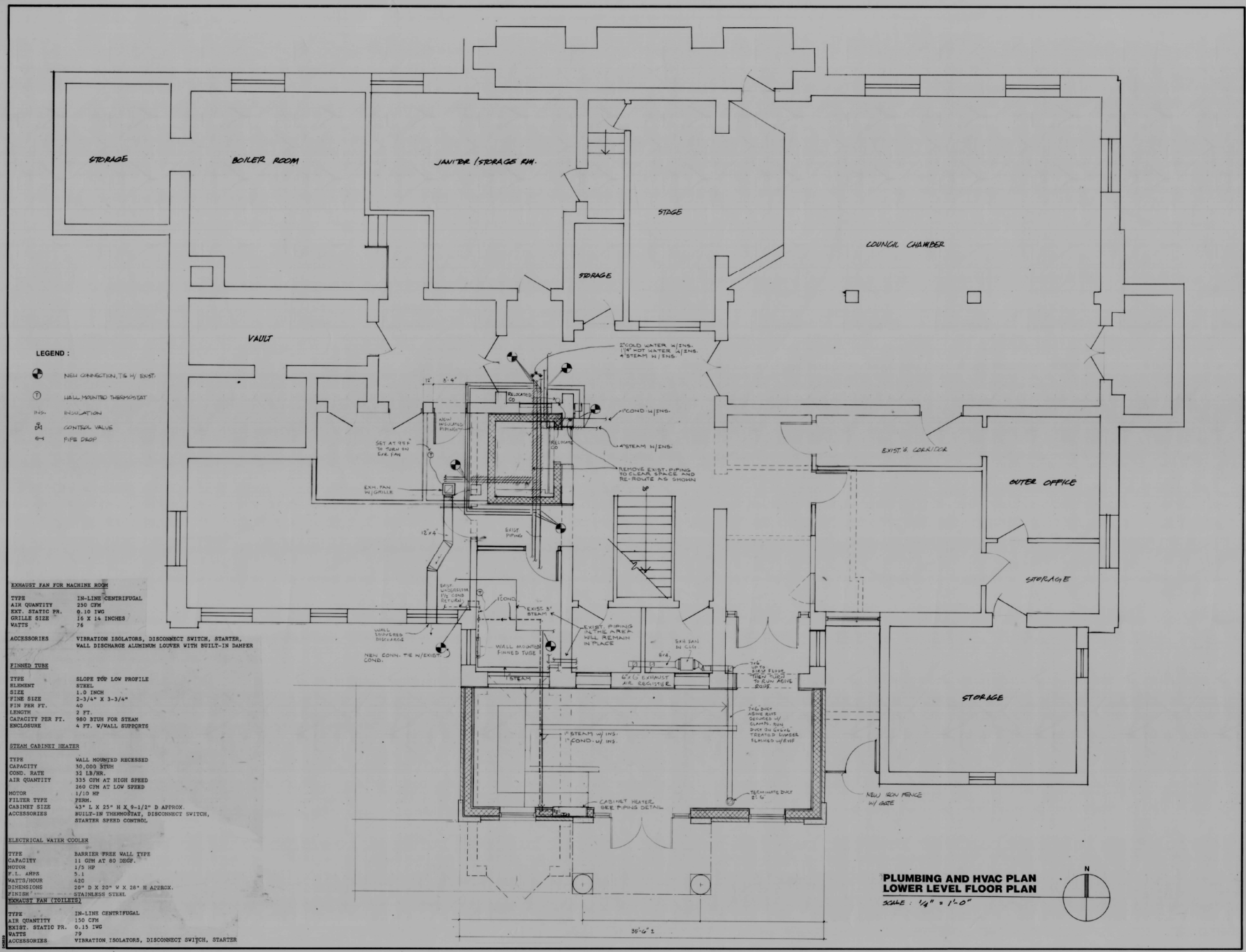
CLIENT
CITY OF OWOSSO

PROJECT
OWOSSO CITY HALL RENOVATION

DRAWING TITLE
LOWER LEVEL POWER AND LIGHTING PLAN

CHECK SCALE (print may be photo-reduced)
0 1 inch 0 10mm.

PROJECT NO.	DRAWING NO.
94282	E-1



PLUMBING AND HVAC PLAN
LOWER LEVEL FLOOR PLAN
SCALE : 1/4" = 1'-0"

EXHAUST FAN FOR MACHINE ROOM

TYPE	IN-LINE CENTRIFUGAL
AIR QUANTITY	250 CFM
EXT. STATIC PR.	0.10 IWG
GRILLE SIZE	16 X 14 INCHES
WATTS	76
ACCESSORIES	VIBRATION ISOLATORS, DISCONNECT SWITCH, STARTER, WALL DISCHARGE ALUMINUM LOUVER WITH BUILT-IN DAMPER

FINNED TUBE

TYPE	SLOPE TOP LOW PROFILE
ELEMENT	STEEL
SIZE	1.0 INCH
FINE SIZE	2-3/4" X 3-3/4"
FIN PER FT.	40
LENGTH	2 FT.
CAPACITY PER FT.	980 BTUH FOR STEAM
ENCLOSURE	4 FT. W/WALL SUPPORTS

STEAM CABINET HEATER

TYPE	WALL MOUNTED RECESSED
CAPACITY	30,000 BTUH
COND. RATE	32 LB/HR.
AIR QUANTITY	335 CFM AT HIGH SPEED
	260 CFM AT LOW SPEED
MOTOR	1/10 HP
FILTER TYPE	PERM.
CABINET SIZE	43" L X 25" H X 9-1/2" D APPROX.
ACCESSORIES	BUILT-IN THERMOSTAT, DISCONNECT SWITCH, STARTER SPEED CONTROL

ELECTRICAL WATER COOLER

TYPE	BARRIER FREE WALL TYPE
CAPACITY	11 GPH AT 80 DEGF.
MOTOR	1/5 HP
F.L. AMPS	5.1
WATTS/HOUR	420
DIMENSIONS	20" D X 20" W X 28" H APPROX.
FINISH	STAINLESS STEEL

EXHAUST FAN (TOILETS)

TYPE	IN-LINE CENTRIFUGAL
AIR QUANTITY	150 CFM
EXIST. STATIC PR.	0.15 IWG
WATTS	79
ACCESSORIES	VIBRATION ISOLATORS, DISCONNECT SWITCH, STARTER

DATE	ISSUED FOR

Giffels Consultants Inc.
Architects Engineers Project Managers
Southfield, Michigan

PROJECT MANAGER J.D.	DRAWN E.A.
PROJ. ENG./ARCH. S.K.	CHECKED S.K.
DATE 11/8/94	APPROVED

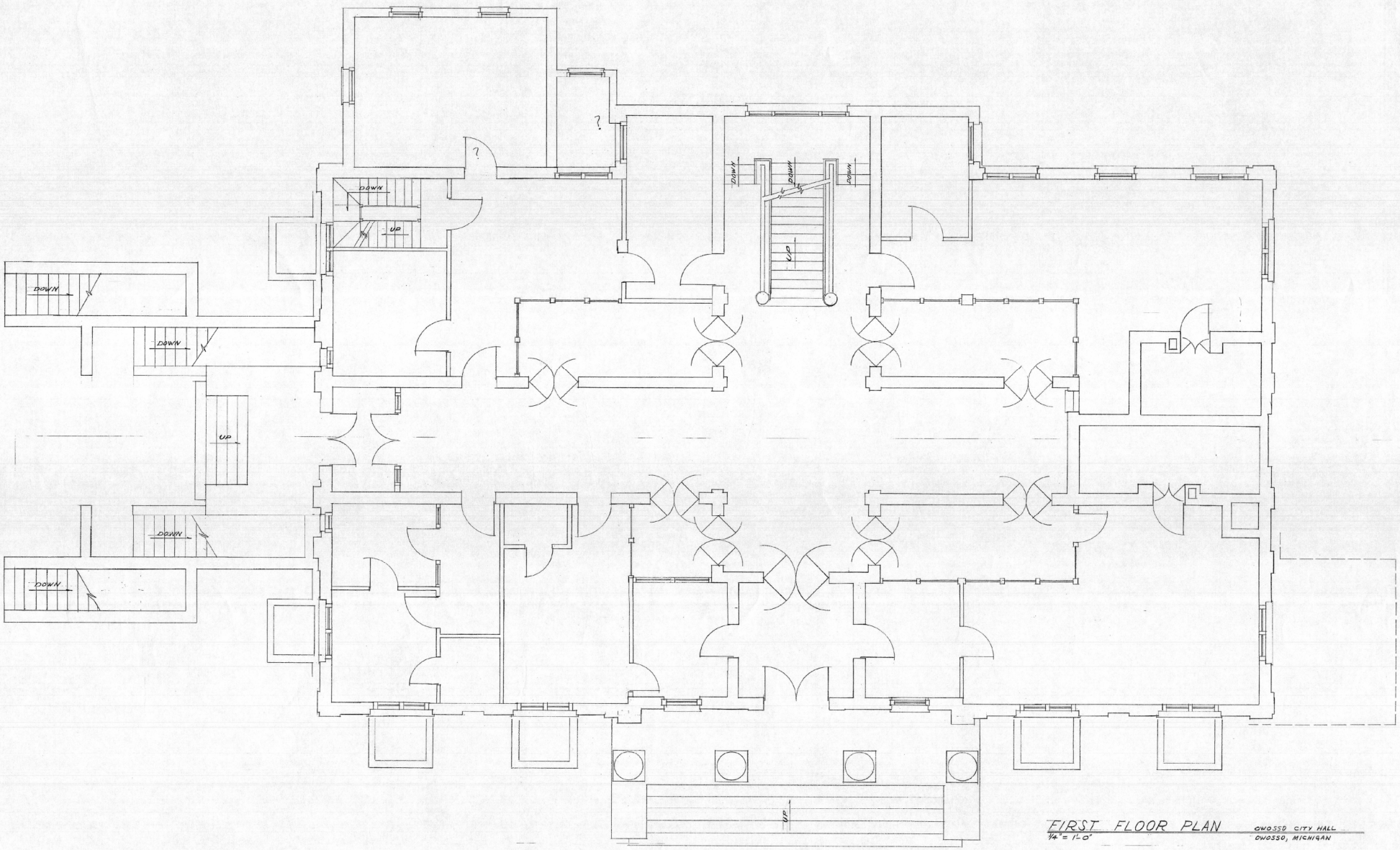
CLIENT
CITY OF OWOSSO

PROJECT
OWOSSO CITY HALL RENOVATION

DRAWING TITLE
LOWER LEVEL PLUMBING AND HVAC PLAN

CHECK SCALE (print may be photo-reduced)
0 1 inch 0 10mm.

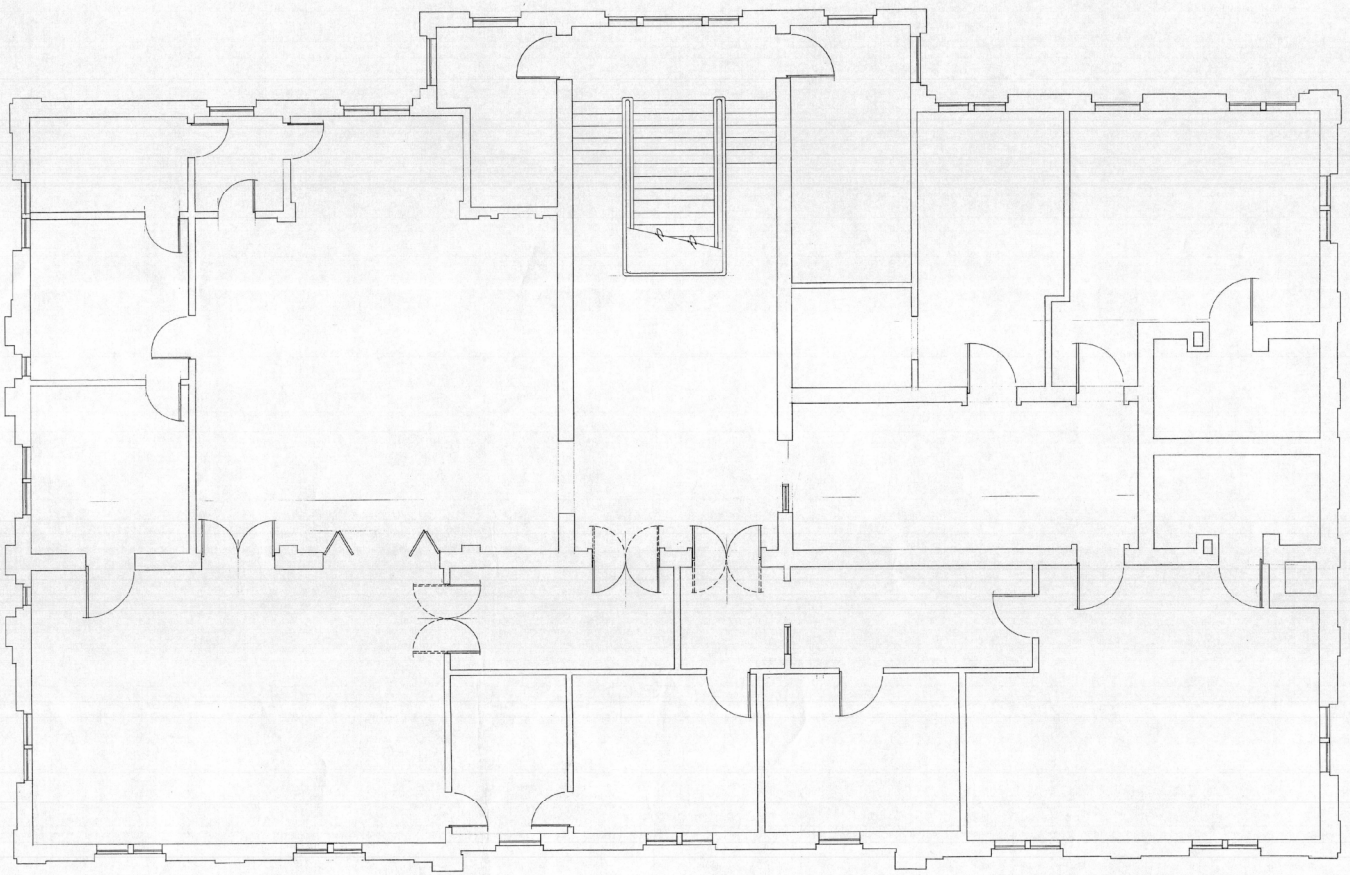
PROJECT NO.	DRAWING NO.
94282	M-1



FIRST FLOOR PLAN
1/4" = 1'-0"

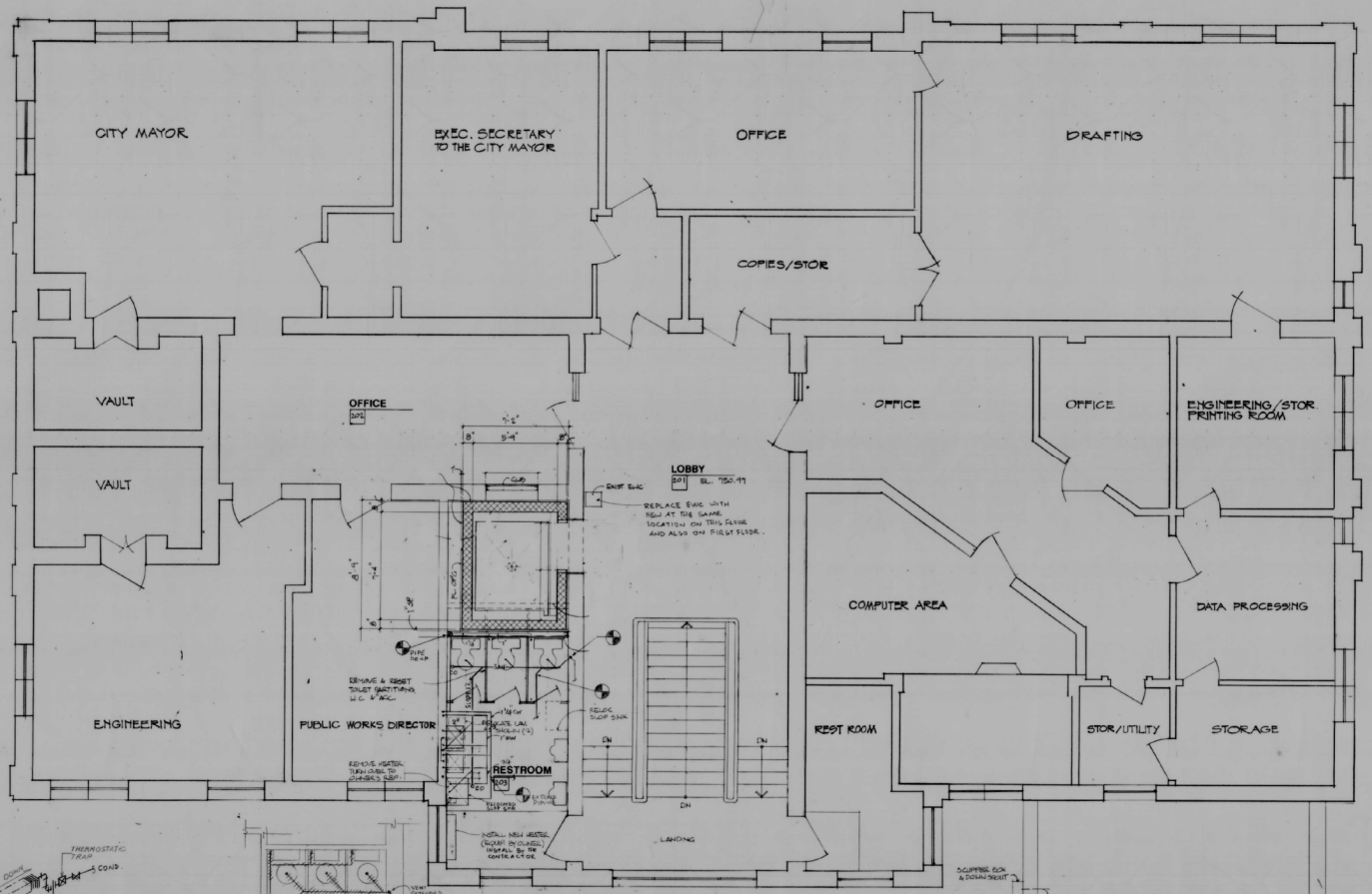
OWOSSO CITY HALL
OWOSSO, MICHIGAN

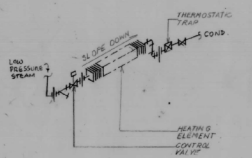
DRAWN BY	COMM. NO.	gibbs, tomblinson & harburn ARCHITECTS	SHEET NO.
RAR			2
CHECK BY	DATE	705 KELSO ST. FLINT, MICHIGAN 48506 PHONE 767-5600	OF
JT	4-18-67		



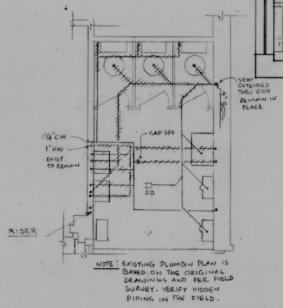
SECOND FLOOR PLAN - OWOSSO CITY HALL
1/4"=1'-0" OWOSSO, MICHIGAN

DRAWN BY	COMM. NO.	gibbs, tomblinson & harburn ARCHITECTS	SHEET NO.
J.T.		705 KELSO ST. FLINT, MICHIGAN 48506 PHONE 767-5600	3
CHECK BY J.T.	DATE 9-15-67		OF 3



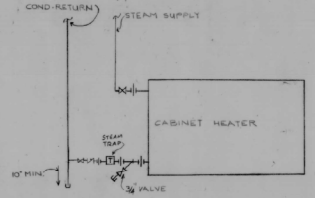


FINNED TUBE PIPING DETAIL



NOTE: EXISTING PLUMBING PLAN IS BASED ON THE ORIGINAL DRAWINGS AND FIELD SURVEY. VERIFY HIDDEN PIPING IN THE FIELD.

PLUMBING DEMOLITION PLAN
SCALE: 1/4=1'-0"



CABINET HEATER PIPING DETAIL

LEGAND
- REMOVE
- NEW PIPING CONNECTION TIE W/ EXIST
CO - CLEAN OUT
SAN - SANITARY

PLUMBING FIXTURE CONNECTIONS

ITEM	CW	HW	WASTE
W.C.	1"	-	4"
LAV	½"	½"	1½"
SLOP SINK	¾"	¾"	3"

SCUPPER BOX & DOWNSPOUT

SECOND FLOOR MECH
SCALE : 1/4" = 1'-0"

N

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Southfield, Michigan

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PROJ. ENG./ARCH. S.K.	CHECKED S.K.
DATE 11/8/94	APPROVED

CLIENT
CITY OF OWOSSO

PROJECT
OWOSSO CITY HALL RENOVATION

DRAWING TITLE
SECOND FLOOR PLUMBING PLAN

CHECK SCALE (print may be photo-reduced)
0 1 inch 0 10mm

PROJECT NO.	DRAWING NO.
94282	M-2

Ener-Tech Testing

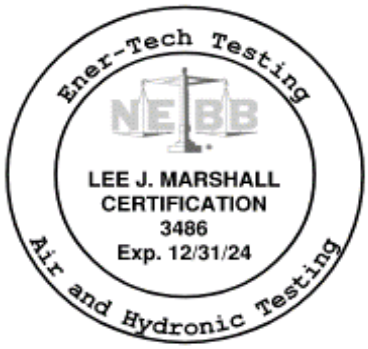
Independent TAB Services
NEBB Certification # 3486

4221 East Baldwin Road - Holly, MI 48442
(810) 579-5000 FAX: (810) 579-2664

Owosso City Hall

Pre-demo Readings

Owosso, Michigan



Date: 2/13/2024
Test and Balance Report

Ener-Tech Testing

Summary of Balancing Reports

NEBB Certification Number: 3486

Project:	**Owosso City Hall**		
Location:	**301 West Main st. Owosso, MI 48867**		
Engineer:			
Contractor:	**William E. Walter**	**Date:**	**02/13/24**
Tests were evaluated by:	**Lee Marshall**	**Job No:**	**1523-24**
Tests were performed by:	**Mickey Denver**		

Index #	System Description	
1	RTU	Second Floor Supply
2	RTU	First Floor East Supply
3	RTU	First Floor West Supply
4	RTU	Basement Supply
5	Furn	Second Floor IT Room Supply
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
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25		
26		
27		
28		

Ener-Tech Testing

NEBB Certification #3486

Air Apparatus Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: Second Floor Supply **Location:** Roof

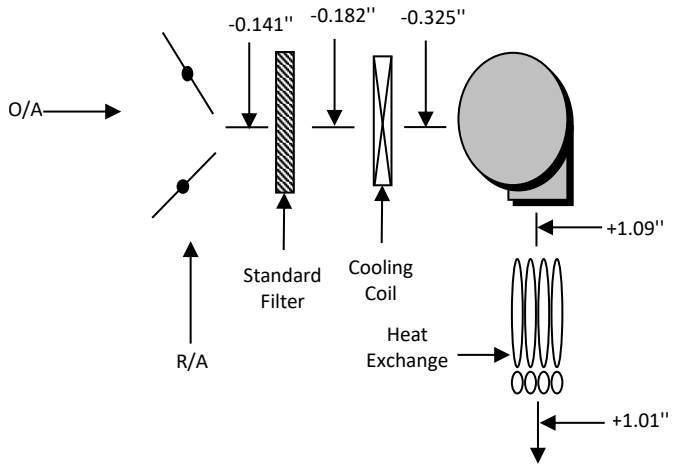
Fan / Unit Data		
Make	Trane	
Model	YCD120B4HAEB	
Type / Size	~	~
Class/Arrangement	~	~
Serial Number	P42103977D	
Discharge	~	
Fan Drive Information		
Sheave Diameter	BK85	
Shaft Size(Bushing)	1"	
No. Belts/Size	1	BX62

Motor Data			
Manufacturer	Marathon		
H.P. / Amps	2.00		3.1
Ph./Hertz/Volts	3	60	460
Frame / RPM	56HZ-80		1725
Ser. Factor/P. F.	1.15		~
Efficiency:	~		
Motor Drive Information			
Sheave Diameter	AK45 Fixed		
Shaft Size (Bushing)	7/8"		
CL to CL Distance	21-1/2"		
Motor Adjustment	+ 0		- 0

Test Data	Design	Actual
Total CFM	~	**1676**
Return Air CFM	~	**1500**
Minimum OA CFM	~	**176**
Total S.P.	~	**1.415"**
External S.P.	~	**1.150"**
Fan RPM	~	**885**
Brake Horsepower	~	**1.93**
Electrical Test Data		
Motor Amps T1 T2 T3	**2.70**	**2.80** **2.80**
Motor Volts T1 T2 T3	**500**	**497** **497**
V.F.D. Setting	**~**	
Motor Frequency	**~**	
Thermal Overloads	**Thermally Protected**	

Test Data	Design	Actual
Fan Discharge S.P.	~	**+1.090"**
Fan Suction S.P.	~	**+0.325"**
Total S.P.	~	**+1.415"**
Component Pressure Drops		
Filter:	~	**0.041"**
Coil:	~	**0.143"**
HTX:	~	**0.080"**
Test Conditions		
Return Air Damper	~	**~**
Outside Air Damper	~	**~**
Relief Air Damper	~	**~**

Remarks/Schematics:



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Date:	2/13/2024

Ener-Tech Testing

NEBB Certification #3486

Duct Traverse Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: Second Floor Supply **Location:** Roof

Traverse Description:	Minimum Outdoor Air Data											
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	**42**	**12**	**~**	**~**	**56**	**176**						
Square Ft.:	**3.150**				D.S.P. @ Reading							
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1	32	60	76									
2												
3												
4												
5												

Traverse Description:												
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	~	~	~	~	~	~						
Square Ft.:	~				D.S.P. @ Reading						~	
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												

Remarks/Schematics:

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Page:	1
Date:	2/13/2024

Ener-Tech Testing

NEBB Certification #3486

Outlet/Inlet Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: Second Floor Supply **Location:** Roof

Area Served	Outlet/Inlet			Design		Test Data			Test Results		
	NO.	Size/Type	AK	CFM	VEL	1st	2nd	3rd	VEL	DP	CFM
	Supply Air Data										
	1	6"Ø Nk Diff	FH	~		0					0
	2	6"Ø Nk Diff	FH	~		36					36
	3	6"Ø Nk Diff	FH	~		29					29
	4	6"Ø Nk Diff	FH	~		0					0
	5	6"Ø Nk Diff	FH	~		0					0
	6	6"Ø Nk Diff	FH	~		38					38
	7	8"Ø Nk Diff	FH	~		47					47
	8	8"Ø Nk Diff	FH	~		39					39
	9	16"x8" Reg	FH	~		204					204
	10	6"Ø Nk Diff	FH	~		35					35
	11	6"Ø Nk Diff	FH	~		51					51
	12	6"Ø Nk Diff	FH	~		0					0
	13	6"Ø Nk Diff	FH	~		29					29
	14	6"Ø Nk Diff	FH	~		40					40
	15	8"Ø Nk Diff	FH	~		47					47
	16	24"x12" Open	FH	~		310					310
	17	6"Ø Nk Diff	FH	~		65					65
	18	6"Ø Nk Diff	FH	~		90					90
	19	8"Ø Nk Diff	FH	~		80					80
	20	8"Ø Nk Diff	FH	~		121					121
	21	8"Ø Nk Diff	FH	~		161					161
	22	10"Ø Nk Diff	FH	~		39					39
	23	8"Ø Nk Diff	FH	~		138					138
	24	8"Ø Nk Diff	FH	~		77					77
	Design Capacity			**~**			**Achieved Capacity**				**1676**

Remarks/Schematics:

Index:	1
Page:	3
Date:	2/13/2024

Ener-Tech Testing

NEBB Certification #3486

Air Apparatus Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: First Floor East **Location:** Roof

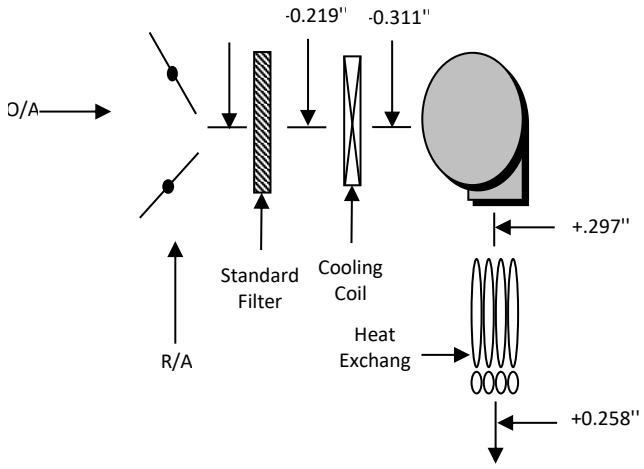
Fan / Unit Data		
Make	Trane	
Model	YCH060C4H0BF	
Type / Size	~	~
Class/Arrangement	~	~
Serial Number	P41103258D	
Discharge	~	
Fan Drive Information		
Sheave Diameter	Direct Drive	
Shaft Size(Bushing)		
No. Belts/Size		

Motor Data			
Manufacturer	~		
H.P. / Amps	0.60		2.5
Ph./Hertz/Volts	1	60	460
Frame / RPM	~		~
Ser. Factor/P. F.	~		~
Efficiency:	~		
Motor Drive Information			
Sheave Diameter	Direct Drive		
Shaft Size (Bushing)			
CL to CL Distance			
Motor Adjustment			

Test Data	Design	Actual
Total CFM	~	**1464**
Return Air CFM	~	**1315**
Minimum OA CFM	~	**149**
Total S.P.	~	**0.608"**
External S.P.	~	**0.477"**
Fan RPM	~	**1630**
Brake Horsepower	~	**0.39**
Electrical Test Data		
Motor Amps T1 T2 T3	~	**1.50** ~
Motor Volts T1 T2 T3	~	**499** ~
V.F.D. Setting	~	
Motor Frequency	~	
Thermal Overloads	**Thermally Protected**	

Test Data	Design	Actual
Fan Discharge S.P.	~	**+0.297"**
Fan Suction S.P.	~	**+0.311"**
Total S.P.	~	**+0.608"**
Component Pressure Drops		
Filter:	~	**None**
Coil:	~	**0.092"**
HTX:	~	**0.039"**
Test Conditions		
Return Air Damper	~	**~**
Outside Air Damper	~	**~**
Relief Air Damper	~	**~**

Remarks/Schematics:



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Ener-Tech Testing

NEBB Certification #3486

Duct Traverse Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: First Floor East **Location:** Roof

Traverse Description:	Minimum Outdoor Air Data											
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	40	12	~	~	50	149						
Square Ft.:	3.000				D.S.P. @ Reading							
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1	61	38	50									
2												
3												
4												
5												

Traverse Description:												
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	~	~	~	~	~	~						
Square Ft.:	~				D.S.P. @ Reading						~	
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												

Remarks/Schematics:

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Date:	2/13/2024

Ener-Tech Testing

NEBB Certification #3486

Outlet/Inlet Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: First Floor East **Location:** Roof

Area Served	Outlet/Inlet			Design		Test Data			Test Results		
	NO.	Size/Type	AK	CFM	VEL	1st	2nd	3rd	VEL	DP	CFM
	Supply Air Data										
	1	10"x6" Reg.	FH	~		65					65
	2	10"x6" Reg.	FH	~		153					153
	3	6"Ø Nk Diff	FH	~		65					65
	4	8"Ø Nk Diff	FH	~		234					234
	5	12"x10" Reg.	FH	~		82					82
	6	16"x8" Reg	FH	~		63					63
	7	14"x8" Open	FH	~		70					70
	8	8"Ø Nk Diff	FH	~		103					103
	9	8"Ø Nk Diff	FH	~		109					109
	10	8"Ø Nk Diff	FH	~		53					53
	11	8"Ø Nk Diff	FH	~		30					30
	12	8"Ø Nk Diff	FH	~		90					90
	13	8"Ø Nk Diff	FH	~		120					120
	14	8"Ø Nk Diff	FH	~		86					86
	15	8"Ø Nk Diff	FH	~		141					141
	Design Capacity			**~**			**Achieved Capacity**				**1464**

Remarks/Schematics:

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Ener-Tech Testing

NEBB Certification #3486

Air Apparatus Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: First Floor West **Location:** Ground

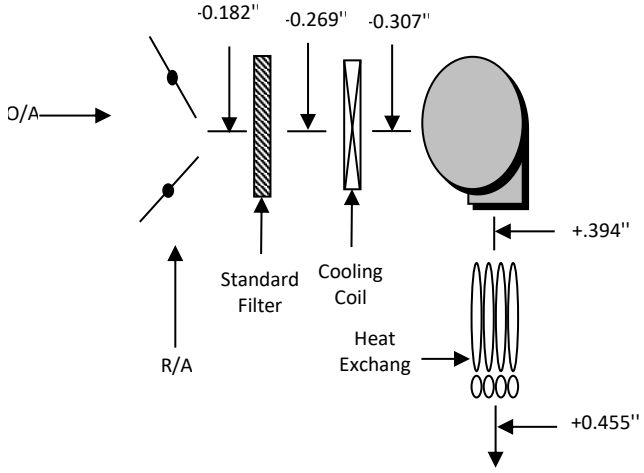
Fan / Unit Data		
Make	Trane	
Model	YCH060C4H0BF	
Type / Size	~	~
Class/Arrangement	~	~
Serial Number	P41103200D	
Discharge	~	
Fan Drive Information		
Sheave Diameter	Direct Drive	
Shaft Size(Bushing)		
No. Belts/Size		

Motor Data			
Manufacturer	~		
H.P. / Amps	0.60		2.5
Ph./Hertz/Volts	1	60	460
Frame / RPM	~		~
Ser. Factor/P. F.	~		~
Efficiency:	~		
Motor Drive Information			
Sheave Diameter	Direct Drive		
Shaft Size (Bushing)			
CL to CL Distance			
Motor Adjustment			

Test Data	Design	Actual
Total CFM	~	**1402**
Return Air CFM	~	**1262**
Minimum OA CFM	~	**140**
Total S.P.	~	**0.701"**
External S.P.	~	**0.637"**
Fan RPM	~	**1624**
Brake Horsepower	~	**0.18**
Electrical Test Data		
Motor Amps T1 T2 T3	~	**0.70** ~
Motor Volts T1 T2 T3	~	**497** ~
V.F.D. Setting	~	
Motor Frequency	~	
Thermal Overloads	**Thermally Protected**	

Test Data	Design	Actual
Fan Discharge S.P.	~	**+0.394"**
Fan Suction S.P.	~	**+0.307"**
Total S.P.	~	**+0.701"**
Component Pressure Drops		
Filter:	~	**0.087"**
Coil:	~	**0.038"**
HTX:	~	**0.061"**
Test Conditions		
Return Air Damper	~	**~**
Outside Air Damper	~	**~**
Relief Air Damper	~	**~**

Remarks/Schematics:



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Ener-Tech Testing

NEBB Certification #3486

Duct Traverse Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: First Floor West **Location:** Roof

Traverse Description:	**Minimum Outdoor Air Data**											
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	**40**	**12**	**~**	**~**	**47**	**140**						
Square Ft.:	**3.000**				D.S.P. @ Reading							
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1	25	36	79									
2												
3												
4												
5												

Traverse Description:												
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	~	~	~	~	~	~						
Square Ft.:	~				D.S.P. @ Reading						~	
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												

Remarks/Schematics:

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Ener-Tech Testing

NEBB Certification #3486

Outlet/Inlet Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: First Floor West **Location:** Roof

Area Served	Outlet/Inlet			Design		Test Data			Test Results		
	NO.	Size/Type	AK	CFM	VEL	1st	2nd	3rd	VEL	DP	CFM
	Supply Air Data										
	1	8"Ø Nk Diff	FH	~		36					36
	2	8"Ø Nk Diff	FH	~		162					162
	3	6"Ø Nk Diff	FH	~		29					29
	4	6"Ø Nk Diff	FH	~		0					0
	5	8"Ø Nk Diff	FH	~		181					181
	6	8"Ø Nk Diff	FH	~		144					144
	7	8"Ø Nk Diff	FH	~		161					161
	8	10"x6" Reg.	FH	~		41					41
	9	12"x10" Reg.	FH	~		139					139
	10	8"Ø Nk Diff	FH	~		35					35
	11	8"Ø Nk Diff	FH	~		38					38
	12	12"x10" Reg.	FH	~		213					213
	13	8"Ø Nk Diff	FH	~		142					142
	14	6"Ø Nk Diff	FH	~		81					81
	Design Capacity			**~**			**Achieved Capacity**				**1402**

Remarks/Schematics:

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Ener-Tech Testing

NEBB Certification #3486

Air Apparatus Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: Basement **Location:** Ground

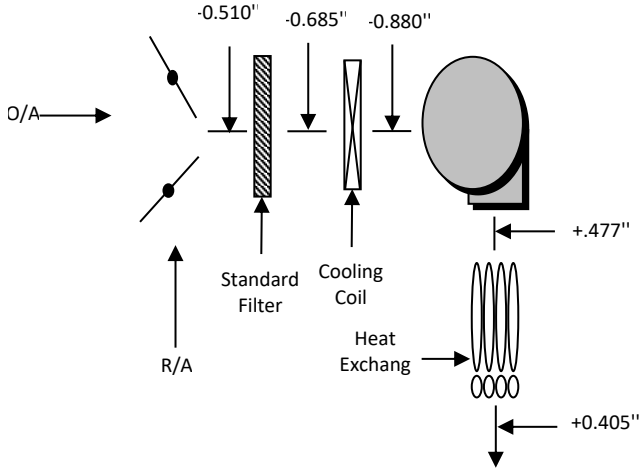
Fan / Unit Data		
Make	Trane	
Model	YCH120B4H0EB	
Type / Size	~	~
Class/Arrangement	~	~
Serial Number	P43102206D	
Discharge	~	
Fan Drive Information		
Sheave Diameter	BK72	
Shaft Size(Bushing)	1"	
No. Belts/Size	1	BX62

Motor Data			
Manufacturer	GE Motors		
H.P. / Amps	3.00		4.6
Ph./Hertz/Volts	3	60	460
Frame / RPM	56HZ		1725
Ser. Factor/P. F.	~		~
Efficiency:	~		
Motor Drive Information			
Sheave Diameter	8450L at Min		
Shaft Size (Bushing)	7/8"		
CL to CL Distance	22"		
Motor Adjustment	+ 0		- 0

Test Data	Design	Actual	
Total CFM	~	**3683**	
Return Air CFM	~	**3589**	
Minimum OA CFM	~	**94**	
Total S.P.	~	**1.357"**	
External S.P.	~	**0.915"**	
Fan RPM	~	**808**	
Brake Horsepower	~	**3.33**	
Electrical Test Data			
Motor Amps T1 T2 T3	**4.70**	**4.60**	**4.80**
Motor Volts T1 T2 T3	**497**	**501**	**499**
V.F.D. Setting	**~**		
Motor Frequency	**~**		
Thermal Overloads	**Thermally Protected**		

Test Data	Design	Actual
Fan Discharge S.P.	~	**+0.477"**
Fan Suction S.P.	~	**+0.880"**
Total S.P.	~	**+1.357"**
Component Pressure Drops		
Filter:	~	**0.175"**
Coil:	~	**0.195"**
HTX:	~	**0.072"**
Test Conditions		
Return Air Damper	~	**~**
Outside Air Damper	~	**~**
Relief Air Damper	~	**~**

Remarks/Schematics:



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Ener-Tech Testing

NEBB Certification #3486

Duct Traverse Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: Basement **Location:** Ground

Traverse Description:	Minimum Outdoor Air Data											
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	**34**	**12**	**~**	**~**	**37**	**94**						
Square Ft.:	**2.550**				D.S.P. @ Reading							
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1	28	40	42									
2												
3												
4												
5												

Traverse Description:												
	Width	Height	Design CFM	Design FPM	Achieved FPM	Achieved CFM						
Duct Size:	~	~	~	~	~	~						
Square Ft.:	~				D.S.P. @ Reading						~	
Reading Description:			Alt. in Ft @ Reading		~	Temp. @ Reading (Deg. F)					~	
Position	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												

Remarks/Schematics:

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Ener-Tech Testing

NEBB Certification #3486

Outlet/Inlet Test Report

Project: Owosso City Hall **Unit Number:** RTU

Area Served: First Floor East **Location:** Roof

Area Served	Outlet/Inlet			Design		Test Data			Test Results		
	NO.	Size/Type	AK	CFM	VEL	1st	2nd	3rd	VEL	DP	CFM
	Supply Air Data										
	1	20"x12" Open	FH	~		1973					1973
	2	8"Ø Nk Diff	FH	~		138					138
	3	8"Ø Nk Diff	FH	~		0					0
	4	8"Ø Nk Diff	FH	~		155					155
	5	6"Ø Nk Diff	FH	~		37					37
	6	10"x4" Reg.	FH	~		37					37
	7	10"x6" Reg.	FH	~		39					39
	8	8"Ø Nk Diff	FH	~		47					47
	9	10"Ø Nk Diff	FH	~		95					95
	10	6"Ø Nk Diff	FH	~		54					54
	11	8"Ø Nk Diff	FH	~		137					137
	12	10"x6" Reg.	FH	~		170					170
	13	8"Ø Nk Diff	FH	~		249					249
	14	6"Ø Nk Diff	FH	~		149					149
	15	10"x6" reg.	FH	~		96					96
	16	8"Ø Nk Diff	FH	~		53					53
	17	8"Ø Nk Diff	FH	~		65					65
	18	6"Ø Nk Diff	FH	~		49					49
	19	6"Ø Nk Diff	FH	~		51					51
	20	6"Ø Nk Diff	FH	~		27					27
	21	6"Ø Nk Diff	FH	~		32					32
	22	6"Ø Nk Diff	FH	~		30					30
	23	6"Ø Nk Diff	FH	~		0					0
	Design Capacity			**~**			**Achieved Capacity**				**3683**

Remarks/Schematics:

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Ener-Tech Testing

NEBB Certification #3486

Air Apparatus Test Report

Project: Owosso City Hall **Unit Number:** Furnace

Area Served: Second Floor IT Room **Location:** Above Ceiling

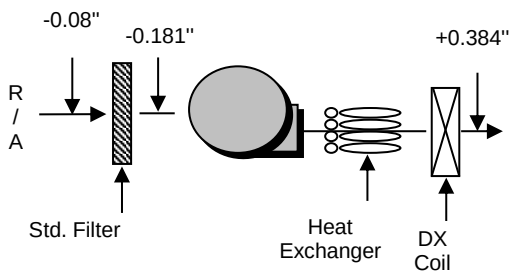
Fan / Unit Data		
Make	Bryant	
Model	376CAV048096AGJA	
Type / Size	~	~
Class/Arrangement	~	~
Serial Number	3099A20312	
Discharge	~	
Fan Drive Information		
Sheave Diameter	Direct Drive	
Shaft Size(Bushing)		
No. Belts/Size		

Motor Data			
Manufacturer	~		
H.P. / Amps	0.50		10.2
Ph./Hertz/Volts	1	60	115
Frame / RPM	~		~
Ser. Factor/P. F.	~		~
Efficiency:	~		
Motor Drive Information			
Sheave Diameter	Direct Drive		
Shaft Size (Bushing)			
CL to CL Distance			
Motor Adjustment			

Test Data	Design	Actual
Total CFM	~	**1163**
Return Air CFM	~	**1163**
Minimum OA CFM	~	**~**
Total S.P.	~	**0.565"**
External S.P.	~	**0.464"**
Fan RPM	~	**~**
Brake Horsepower	~	**0.19**
Electrical Test Data		
Motor Amps T1 T2 T3	~	**3.60** ~
Motor Volts T1 T2 T3	~	**126** ~
V.F.D. Setting	~	
Motor Frequency	~	
Thermal Overloads	**Thermally Protected**	

Test Data	Design	Actual
Fan Discharge S.P.	~	**+0.384"**
Fan Suction S.P.	~	**+0.181"**
Total S.P.	~	**+0.565"**
Component Pressure Drops		
Filter:	~	**.101"**
Coil:	~	**~**
HTX:	~	**~**
Test Conditions		
Return Air Damper	~	**100%**
Outside Air Damper	~	**~**
Relief Air Damper	~	**~**

Remarks/Schematics:



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Ener-Tech Testing

NEBB Certification #3486

Outlet/Inlet Test Report

Project: Owosso City Hall **Unit Number:** Furnace

Area Served: Second Floor IT Room Supply **Location:** Above Ceiling

Area Served	Outlet/Inlet			Design		Test Data			Test Results		
	NO.	Size/Type	AK	CFM	VEL	1st	2nd	3rd	VEL	DP	CFM
	Supply Air Data										
	1	6" Open	FH	~		36					36
	2	6"Ø Nk Diff	FH	~		131					131
	3	12"Ø Nk Diff	FH	~		581					581
	4	6"Ø Nk Diff	FH	~		132					132
	5	6"Ø Nk Diff	FH	~		180					180
	6	6"Ø Nk Diff	FH	~		103					103
	Design Capacity			~			Achieved Capacity				1163

Remarks/Schematics:

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FLINT BLUE PRINT & SUPPLY CO. 800 1-67

Furnace Abandoned

RTU Index 4

12' x 8'
6' x 6'
6' x 6'
12' x 8'
13' x 13'
14' x 5'
14' x 12'
36' x 30'
27' x 13'
11' x 8'
11' x 5'
22' x 13'
12' x 8'
20' x 10'

10" x 6" Reg. 170cfm 12 6"
6" 149cfm 14
8" x 8" N.I
96cfm
10" x 6" Reg. 15
39cfm
8" x 8" N.I
10" x 6" Reg. 7
8" x 8" N.I
6 37cfm
10" x 4" Reg.
155cfm 8" 4
138cfm 8" 2
12" x 8" N.I
12" x 8" N.I
8" 137cfm 11
10 6" 54cfm
20" x 8" N.I
13 249cfm 8"
37cfm 6" 5
10' x 4'
20" x 8" N.I
24" x 10" N.I
16" x 12" N.I VAD-3
20" x 8" N.I
9 10" 95cfm
20" x 8" N.I
3 8" 0cfm
20" x 12" N.I VAD-2
24" x 10" N.I
24" x 10" N.I
53cfm 8" 16
24" x 10" N.I
20" x 12" N.I VAD-4
47cfm
36" x 10" N.I
8" 8
36" x 10" N.I
24" x 24" N.I
1973cfm
1 20" x 12" N.I open VAD-1
51cfm 6" 19
26" x 8" INS.
26" x 8" INS.
20 6" 27cfm
22 6" 30cfm
12' x 8'
18" x 8" INS.
0cfm
6" 23
26" x 8" INS.
32cfm 6" 21
18 49cfm 6"
17 8" 65cfm

BASEMENT FLOOR PLAN — OWOSSO CITY HALL
1/4" = 1'-0"

Room Size

DRAWN BY	COMM. NO.	gibbs, tomblinson & harburn ARCHITECTS	SHEET NO.
KAR		705 KELSO ST. FLINT, MICHIGAN 48506 PHONE 767-5600	1
CHECK BY	DATE		OF 3
VT	9-15-67		

RTU Index 2

RTU Index 3

Walls Removed

East

West

18' x 14'

13' x 8'

12' x 8'

28' x 20'

44' x 14'

32' x 10'

19' x 11'

19' x 16'

10' x 6'

19' x 10'

16' x 8'

20' x 20'

8' x 7'

13' x 9'

16' x 11'

12' x 11'

12' x 9'

20' x 13'

15' x 10'

Duct Runs above hardlid ceiling

153cfm 10" x 6" Reg. 2

65cfm 10" x 6" Reg. 1

16" x 12" N.I VAD-6

10" x 8" N.I

65cfm 6" to womens restroom 3

16" x 8" N.I

24" x 8" N.I

20" x 8" N.I

4 8" 234cfm

12" x 10" Reg. 82cfm 5

20" x 8" N.I

14" x 8" N.I VAD-5

20" x 16" N.I

20" x 16" N.I

20" x 16" N.I

103cfm 8" 8

16" x 12" N.I VAD-7

14" x 8" N.I

24" x 8" N.I

70cfm

7 Open

109cfm 8" 9

24" x 8" N.I

16" x 8" N.I

6 16" x 8" Reg. 63cfm

24" x 8" N.I

53cfm 8" 10

41cfm 10" x 6" Reg. 8

6" to mens restroom

144cfm 8" 6

161cfm 8" 7

14" x 8" N.I

14" x 8" N.I

12" x 10" Reg. 9

6"

139cfm

20" x 8" N.I

181cfm 8" 5

0cfm 6" 4

29cfm 6" 3

24" x 8" N.I

15" x 12" N.I VAD 9

90cfm 8" 12

20" x 8" N.I

14" x 8" N.I

38cfm 8" 11

35cfm 8" 10

16" x 8" N.I

20" x 16" N.I

12" x 10" N.I VAD 10

36cfm 8" 1

10" x 8" N.I VAD 11

8" 13 120cfm

11 8" 30cfm

8" 141cfm 15

86cfm 8" 14

12" x 10" Reg. 12

213cfm

14" x 8" N.I

8" 13 142cfm

15' x 10'

2 8" 162cfm

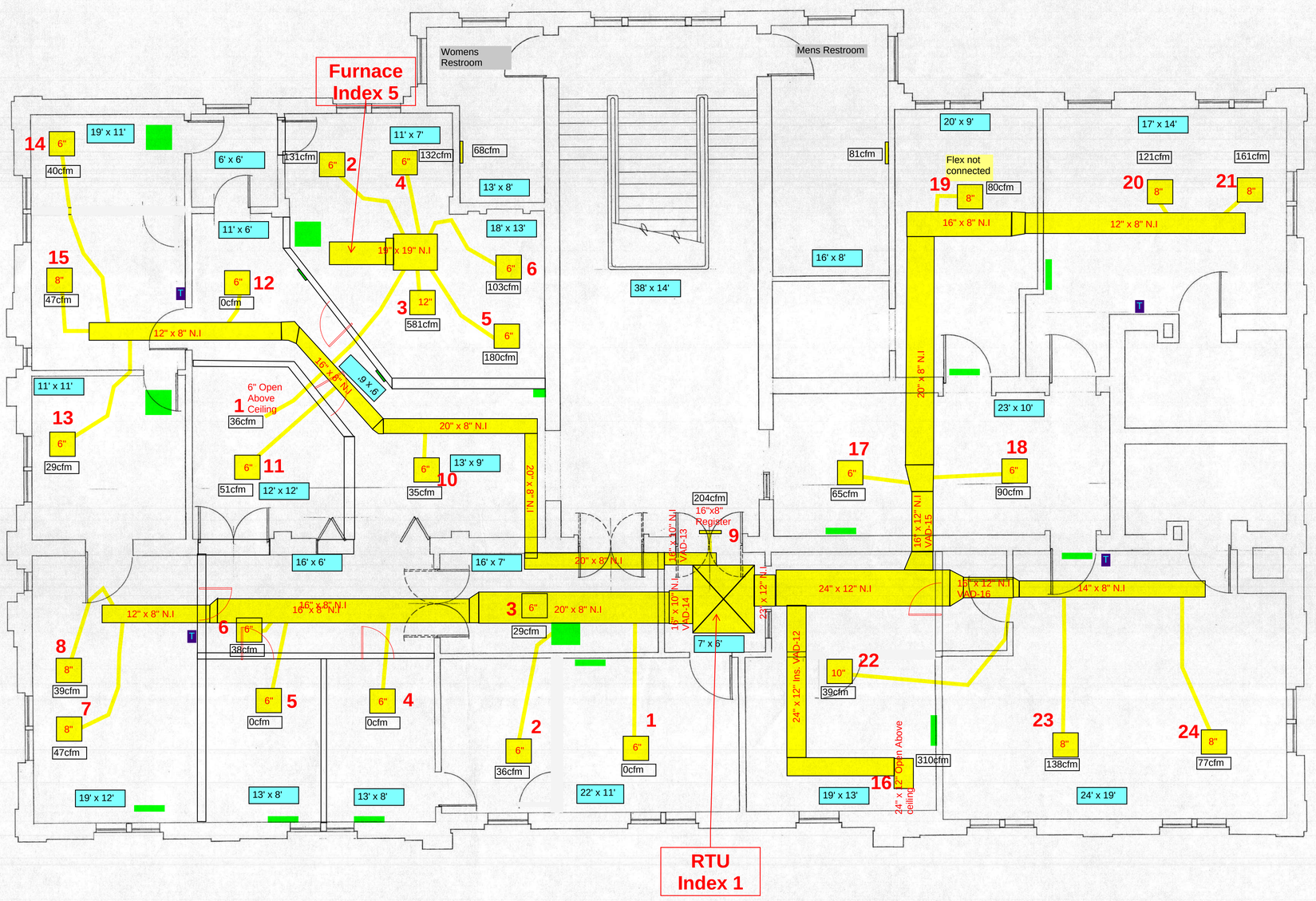
Room Size

FIRST FLOOR PLAN

1/4" = 1'-0"

OWOSSO CITY HALL
OWOSSO, MICHIGAN

DRAWN BY	COMM. NO.	gibbs, tomblinson & harburn ARCHITECTS	SHEET NO.
RAR		705 KELSO ST. FLINT, MICHIGAN 48506 PHONE 767-5600	2
CHECK BY	DATE		OF 3
JT	9-18-67		



SECOND FLOOR PLAN - OWOSSO CITY HALL
1/4"=1'-0" OWOSSO, MICHIGAN

Room Size

DRAWN BY	COMM. NO.	gibbs, tomblinson & harburn ARCHITECTS	SHEET NO.
JT		705 KELSO ST. FLINT, MICHIGAN 48506 PHONE 767-5600	3
CHECK BY	DATE		OF 3
JT	9-14-67		

M E M O R A N D U M

To: Glenn M. Chinavare – Director of Public Services
City of Owosso, Michigan

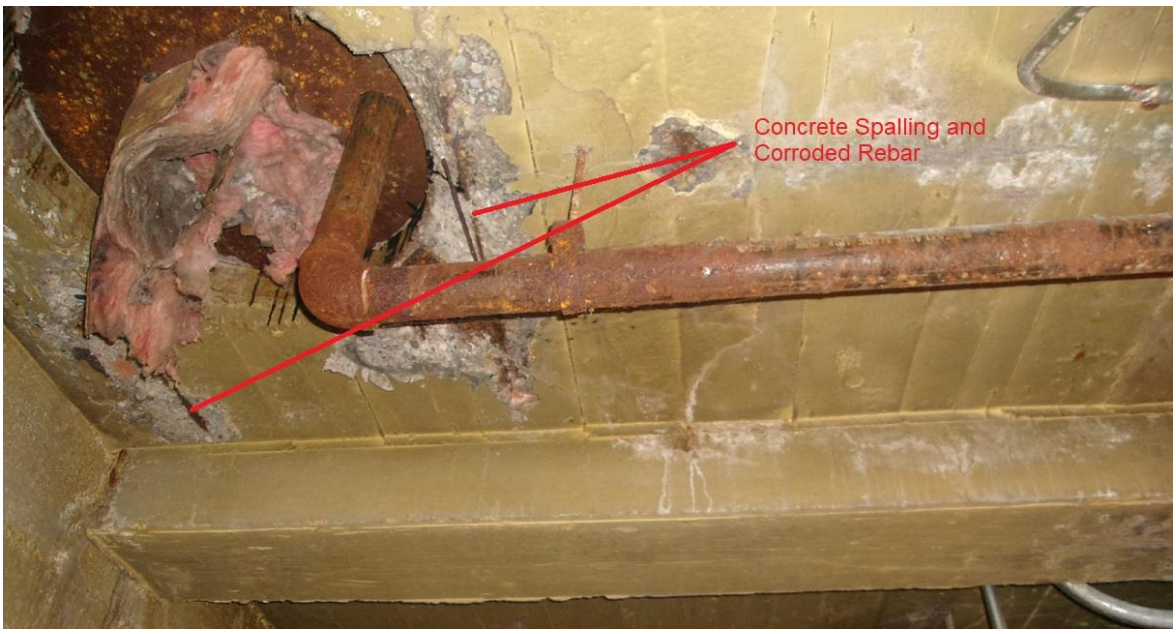
Subject: Basement Storage Room – Structural Evaluation

From: Aaron J Davenport, PE Date: April 3, 2020

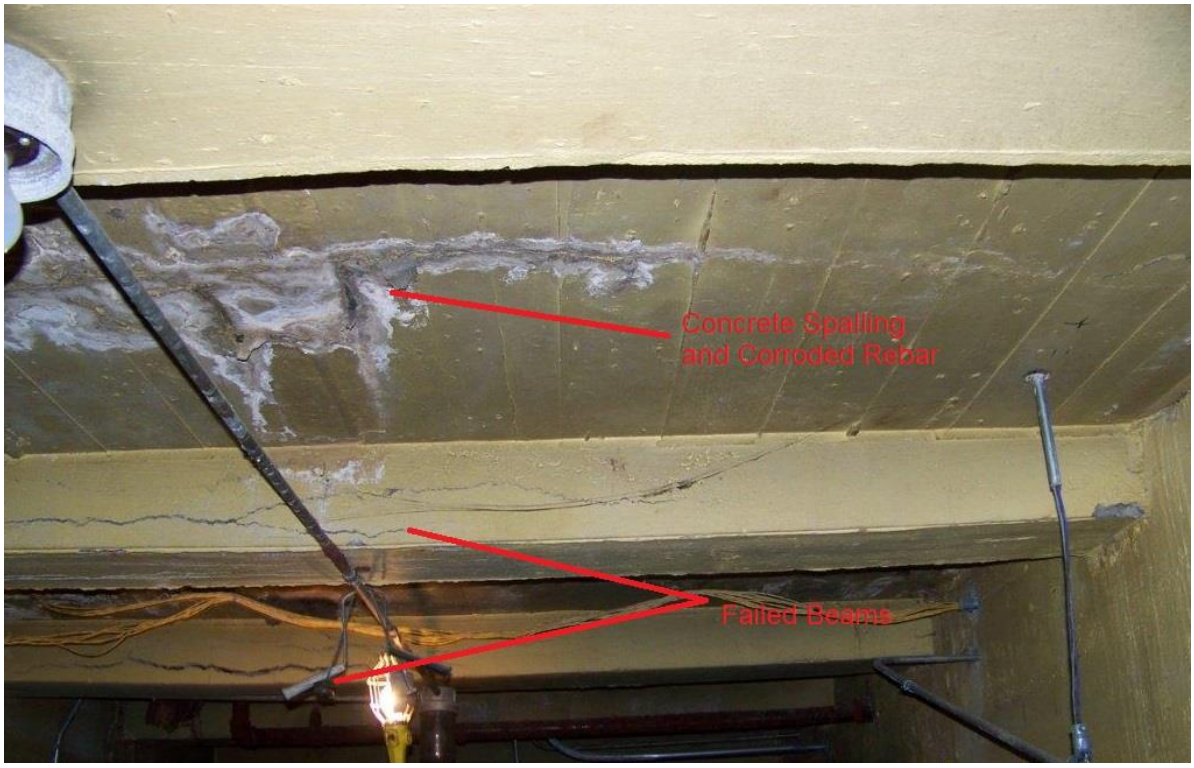
Introduction

Jon P. Nassaux, PE and Aaron J. Davenport, PE of Jones & Henry Engineers, Ltd visited the Owosso City Hall on March 16, 2020, to review the structural condition of the basement storage room. In the past the storage room served as a coal storage room and was constructed with cast-in-place concrete walls and cast-in-place concrete ceiling/roof. The roof is supported by four integral concrete beams. The roof supports two exterior HVAC units and a standby generator. The review included a visual inspection of the physical condition of concrete walls, roof slab and roof beams.

Prior to the inspection, maintenance personnel informed us that the room has been leaking water for some time. During the inspection, it was discovered that the roof slab was cracked and spalling concrete in several locations, exposing reinforcing bars.



Three of the four beams were cracked. Two of the beams were severely cracked to the point that they could not be repaired by patching or epoxy injection. These beams are damaged to the extent that they no longer have any structural viability.



It was evident that, over time, water has migrated into the concrete cracks and corroded the reinforcing within. Eventually the reinforcement corrosion expanded and increased the cracks widths to a degree that repair is not practical.

The walls of the room were sounded with a hammer and determined to be sound concrete. The walls are in good enough structural condition for continued use. The extent of the damage to the roof beams is such that the beams should be shored as soon as possible to protect personnel and the equipment above.

Restoration Options

After reviewing the plans and physical condition, we propose the following two (2) methods of restoring the structural viability:

City of Owosso, Michigan
Basement Storage Room – Structural Evaluation

Option 1:

Summary: Option 1 would provide adequate structural support for the equipment sitting above the coal room. This option would require that the storage area below be infilled with a lightweight structural fill to support the existing concrete slab. This option will support the roof beams, slab and the HVAC equipment above with the least amount of effort and expense, however the storage capacity of the room will be lost.

Work Items

- Shore roof beams to support HVAC units during construction.
- Masonry Block infill of the existing door entrance way to the storage area.
- Core holes through the existing roof slab at several locations.
- Place light weight flowable concrete through roof holes to entirely fill the storage space below.
    - Note – This will need to be installed in three lifts, 24-hours apart, to reduce lateral pressure on block infill at the doorway and existing walls

Estimated construction cost $43,000

Option 2:

Summary: Option 2 maintains the storage area's functionality and provides a structurally sound support for the existing HVAC units and generator above. This option comes at a higher cost and has a longer construction period but will allow for the continued use of the space and will extend the useful life of this portion of City Hall.

Work Items

- Shore roof beams to support HVAC units during removal.
- Shore walls to support lateral soil loads while roof is removed.
- Remove HVAC units, generator, and associated equipment, piping, wiring, and ducts.
- Remove roof slab and beams.
- Install waterstop along the top perimeter of the walls.
- Seal any wall cracks that may allow leakage of water.
- Install new reinforced, cast-in-place concrete roof and equipment pads.
- Reinstall HVAC and generator equipment.

Estimated construction cost $57,000.

City of Owosso, Michigan
Basement Storage Room – Structural Evaluation

Attachments: Engineer's Opinion of Probable Cost – Option 1 and Option 2

Cc: Jon Nassaux, PE – Jones & Henry Engineers, Ltd.

ENGINEER'S ESTIMATE OF CONSTRUCTION COST

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008
Phone (269)-353-9650 Fax (269)-353-9651

Client: City of Owosso
Project Name: **City Hall - Basement Storage Area Structural Assessment**
Project Location: Owosso, Michigan
Type of Work: Option 1

Project Number: 012-7677.001
Date: 4/3/2020
Estimator/Engineer: JPN
Checked By: AJD
Stage: [ ] Conceptual [ ] Preliminary [X] Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	General Conditions	10	%	$3,426.00	$3,426.00
2	Beam Shoring, Permanent	6	EA	$200.00	$1,200.00
3	Door Infill - Block	28	SF	$45.00	$1,260.00
4	Roof Slab Coring	6	EA	$50.00	$300.00
5	Flowable Fill (Assumes 3 Lifts - 1 per day)	80	CY	$393.75	$31,500.00
				Sub Total	**$37,686.00**
				Contingencies (15%)	**$5,652.90**
				Total Project Cost:	**$43,338.90**

ENGINEER'S ESTIMATE OF CONSTRUCTION COST

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008
Phone (269)-353-9650 Fax (269)-353-9651

Client: City of Owosso
Project Name: **City Hall - Basement Storage Area Structural Assessment**
Project Location: Owosso, Michigan
Type of Work: Option 2

Project Number: 012-7677.001
Date: 4/3/2020
Estimator/Engineer: JPN
Checked By: AJD
Stage: [ ] Conceptual [ ] Preliminary [X] Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	General Conditions	10	%	$4,483.90	$4,483.90
2	Slab Shoring, Temporary	6	EA	$200.00	$1,200.00
3	HVAC Equipment Removal	1	LS	$4,200.00	$4,200.00
4	Generator Removal	1	LS	$2,500.00	$2,500.00
5	Fencing Removal	66	LF	$9.00	$594.00
6	Wall Shoring, Temporary	4	EA	$200.00	$800.00
7	Equipment Pad Removal	103	CF	$30.00	$3,090.00
8	Ceiling Slab, Remove and Dispose	153	CF	$45.00	$6,885.00
9	Saw Cutting, Slab	100	LF	$6.50	$650.00
10	Waterstop	76	LF	$5.00	$380.00
11	Install Dowels	76	EA	$36.00	$2,736.00
12	Cast-In-Place Concrete Slab	8	CY	$650.00	$5,200.00
13	Cast-In-Place Equipment Pads	4	CY	$315.00	$1,260.00
14	Install Fencing	66	LF	$9.00	$594.00
15	HVAC Equipment, Installation	1	LS	$8,500.00	$8,500.00
16	Generator, Installation	1	LS	$5,250.00	$5,250.00
17	Damp Proofing	1	LS	$1,000.00	$1,000.00
				Sub Total	**$49,322.90**
				Contingencies (15%)	**$7,398.44**
				Total Project Cost:	**$56,721.34**