

TOWN OF WEST TISBURY

1059 State Road West Tisbury, Massachusetts 02575 Jennifer Rand



FACILITY CONDITION ASSESSMENT

of

HOWES HOUSE 1042 State Road

West Tisbury, Massachusetts 02568

PREPARED BY:

EMG

222 Schilling Circle, Suite 275 Hunt Valley, Maryland 21031 800.733.0660 410.785.6220 (fax) www.emgcorp.com

EMG Project #: Date of Report: On site Date: 95268.10R-002.017 February 22, 2011 December 22, 2010

EMG CONTACT:

Bill Champion Asset Management Director 800.733.0660, x 6234 bchampion@emgcorp.com



Project at a Glance

Howes House						
West Tisbury, Massachusetts				Office Building		
Date of site visit: October 25, 2010				Square Footage:		3,833
EMG Project No. 95268.10R-002.017				Building Age:		100
				Immediate	Short-Term	Replacement
Physical Condition Summary	Good	Fair	Poor	Repairs	Repairs	Reserves
Executive Summary						
1.2 Follow-Up Recommendations				\$0	\$0	\$0
Code Compliance and Accessibility				•		
3.1 Building, Zoning, and Fire Code Compliance	√			\$0	\$0	\$0
3.2 Accessibility	√	 ✓ 		\$1,000	\$0	\$0
Site Improvements						
5.1 Utilities	√	✓		\$0	\$0	\$36,499
5.2 Parking, Paving and Sidewalks	✓	✓		\$384	\$0	\$14,201
5.3 Storm Sewer, Drainage Systems & Erosion Control	√			\$0	\$0	\$0
5.4 Landscaping and Topography	√	1		\$0	\$0	\$0
5.5 General Site Improvements	✓	1		\$0	\$0	\$0
Building Architectural & Structural Systems	•					
6.1 Foundations	√			\$0	\$0	\$0
6.2 Superstructure and Floors	√			\$0	\$0	\$2,500
6.3 Roofing		✓		\$0	\$0	\$24,100
6.4 Exterior Walls	- ✓			\$0	\$0	\$32,200
6.5 Exterior and Interior Stairs	✓			\$0	\$0	\$0
6.6 Windows and Doors	✓	✓		\$200	\$0	\$0
6.7 Patio, Terrace and Balcony	✓	1		\$0	\$0	\$0
Building Mechanical and Electrical Systems	•					
7.1 Building Heating, Ventilating, and Air-Conditioning	√	✓		\$0	\$0	\$30,502
7.2 Building Plumbing and Domestic Hot Water	✓	✓		\$0	\$0	\$2,900
7.3 Building Gas Distribution	✓			\$0	\$0	\$0
7.4 Building Electrical	√			\$0	\$0	\$0
7.5 Building Elevators and Conveying Systems		 ✓ 		\$0	\$0	\$62,500
7.6 Fire Protection	✓			\$250	\$0	\$5,000
Building						
8.1 Interior Finishes	✓	 ✓ 		\$0	\$0	\$53,734
8.2 Kitchen Appliances	√			\$0	\$0	\$5,000
8.3 HVAC		Not Applicable		\$0	\$0	\$0
8.4 Plumbing		Not Applicable		\$0	\$0	\$0
8.5 Electrical		Not Applicable		\$0	\$0	\$0
Other Structures						
9.0 None		Not Applicable		\$0	\$0	\$0
				\$1,834	\$0	\$269,136
L						
Summary	Today	s Dollars	\$/SF			3.00%
Immediate Repairs	\$1	.834	\$0.48]	Unoscalated	Escalatod
Short Torm Donairs	÷.	\$0	\$0.00	w/ Eccelation	¢/CE/Voor	¢/SE/Voor
	1	JU	JU.UU		J/JE/184	J/JE/18/

Conditions noted in the Project At a Glance Table are representative of the overall conditions of the property. There may be more detail on specific assessment components in the report text, therefore the Project At a Glance Table should not be used as a stand alone document.

\$269,136

\$70.22

\$318,040

\$3.51

\$4.15

Replacement Reserves

Immediate and Short Term Repairs Cost Estimate

Property Name:	Howes House	Square Footage:	3,833	
Location:	West Tisbury, Massachusetts	Number Buildings:	1	
EMG Project Number:	95268.10R-002.017	Reserve Term /Years:	20	
		Building Age /Years:	100	

Sec	Component or System	Comments	Quantity	Unit	Unit Cost	Immediate Total \$	Short Term Total \$
3.2	ADA Accessibility	Itemized costs are provided in Section 3.2 of the report.	1	LS	\$1,000.00	\$1,000	\$0
5.2	Concrete walkways	Replace pea-gravel walk at Basement stairwell with sloped concrete walkway to eliminate a possible tripping hazard.	32	SF	\$12.00	\$384	\$0
6.6	Metal doors. Repair	Repair north main entrance door.	1	EA	\$200.00	\$200	\$0
7.6	Carbon Monoxide detector. Install.	Install in basement boiler room.	1	EA	\$250.00	\$250	\$0

Conditions noted in the Immediate and Short Term Repair Costs are representative of the overall conditions of the property. There may be more detail on specific assessment components in the report text, therefore the Immediate and Short Term Repair Costs should not be used as a stand alone document.

e	Total Repair Cost	\$1,834	\$0
	Cost per Square Foot	\$0.48	\$0.00

Replacement Reserves Cost Estimate

	Property Name Location EMG Project Number CPI Factor	: Howes H : West Tisl : 95268.10 : 3.00	louse bury, Mas R-002.017 %	ssachuset 7	ts	R Numl Squ	eserve Term: Building Age: ber Buildings: Jare Footage:	20 100 1 3,833) years) years }																					
		1	FFF	П		1 1		Cycle	Replace	I	Probable I	Replaceme	nt Dates and	Estimated	Expenditures	s (\$)													<u> </u>	Total
Sec.	Component or System	EUL	AGE	RUL	Quantity	Unit	\$ Cost	Replacement	Percent	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Reserves
					-			-		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Over Term
5.1	Water distribution system well. Replace	40	39	1	1	LS	\$36,499.20	\$36,499	100%	\$36,499	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0) \$0	\$0	\$0	\$0	\$0	\$0	\$36,499
5.2	Asphalt pavement. Overlay.	30	15	15	4,000) SF	\$1.00	\$4,000	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,000	\$0	\$0	\$0	\$0	\$0	\$4,000
5.2	Asphalt pavement. Seal coat.	5	1	4	4,000) SF	\$0.34	\$1,360	400%	\$0	\$0	\$0	\$1,360	\$0	\$0	\$0	\$0	\$1,360	\$0	\$0	\$0	\$0	\$1,360	\$0	\$0	\$0	\$0	\$1,360	\$0	\$5,440
5.2	Gravel surface. Add and grade.	50	40	10	15,000) SF	\$0.32	\$4,761	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,761	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,761
6.2	Insect Extermination Service	NA	NA	NA	1	LS	\$250.00	\$250	1000%	\$250	\$0	\$250	\$0	\$250	\$0	\$250	\$0	\$250	\$0	\$250	\$0	\$250	\$0	\$250	\$0	\$250	\$0	\$250	\$0	\$2,500
6.3	Roof membrane. Replace.	20	16	4	4	SQ	\$500.00	\$2,000	100%	\$0	\$0	\$0	\$2,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000
6.3	Roof shingles. Replace.	20	16	4	38	SQ SQ	\$550.00	\$20,900	100%	\$0	\$0	\$0	\$20,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,900
6.3	Skylights. Replace.	25	10	15	4	EA	\$300.00	\$1,200	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,200	\$0	\$0	\$0	\$0	\$0	\$1,200
6.4	Exterior trim. Paint.	5	1	4	1	LS	\$4,000.00	\$4,000	400%	\$0	\$0	\$0	\$4,000	\$0	\$0	\$0	\$0	\$4,000	\$0	\$0	\$0	\$0	\$4,000	\$0	\$0	\$0	\$0	\$4,000	\$0	\$16,000
6.4	Masonry. Clean. Repoint.	40	36	4	1	LS	\$1,500.00	\$1,500	100%	\$0	\$0	\$0	\$1,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0) \$0	\$0	\$0	\$0	\$0	\$0	\$1,500
6.4	Wood shingles. Replace.	20	11	9	1,200	SF	\$9.50	\$11,400	30%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,710	\$0	\$0	\$0	\$0	\$0	\$0 \$0	\$0	\$0	\$0	\$1,710	\$0	\$3,420
6.4	Wood shingles sealants	5	1	4	1,200) SF	\$2.35	\$2,820	400%	\$0	\$0	\$0	\$2,820	\$0	\$0	\$0	\$0	\$2,820	\$0	\$0	\$0	\$0	\$2,820	\$0	\$0	\$0	\$0	\$2,820	\$0	\$11,280
7.1	Fan Coil Unit. Replace.	20	10	10	1	EA	\$966.00	\$966	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$966	\$0	\$0	\$0	\$0) \$0	\$0	\$0	\$0	\$0	\$0	\$966
7.1	Fan Coil Unit. Replace.	20	10	10	1	EA	\$1,651.00	\$1,651	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,651	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,651
7.1	Condensing unit. Replace.	15	10	5	1	EA	\$5,720.00	\$5,720	100%	\$0	\$0	\$0	\$0	\$5,720	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0) \$0) \$C	\$0	\$0	\$0	\$0	\$5,720
7.1	Condensing unit. Replace.	15	10	5	1	EA	\$3,245.00	\$3,245	100%	\$0	\$0	\$0	\$0	\$3,245	5 \$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0) \$0) \$C	\$0	\$0	\$0	\$0	\$3,245
7.1	Split ductless system. Replace.	15	2	13	1	EA	\$3,510.00	\$3,510	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,510	\$0) \$(\$0	\$0	\$0	\$0	\$0	\$3,510
7.1	Boilers, oil-fired cast iron. Replace.	25	10	15	1	EA	\$8,500.00	\$8,500	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,500	\$0	\$0	\$0	\$0	\$0	\$8,500
7.1	Pumps, circulating. Replace.	15	5	10	5	6 EA	\$1,082.00	\$5,410	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,410	\$0	\$0	\$0	\$0) \$0	\$0	\$0	\$0	\$0	\$0	\$5,410
7.1	Insulation. Install	30	29	1	1	LS	\$1,500.00	\$1,500	100%	\$1,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0) \$0) \$C	\$0	\$0	\$0	\$0	\$1,500
7.2	Water heater. Replace.	20	5	15	1	EA	\$1,450.00	\$1,450	200%	\$0	\$0	\$0	\$0	\$1,450	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,450	\$0	\$0	\$0	\$0	\$0	\$2,900
7.5	Hydraulic passenger lift. Replace.	30	27	3	1	EA	\$62,500.00	\$62,500	100%	\$0	\$0	\$62,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0) \$0) \$C	\$0	\$0	\$0	\$0	\$62,500
7.6	Central alarm panel. Replace.	15	5	10	1	EA	\$5,000.00	\$5,000	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,000	\$0	\$0	\$0	\$0) \$0	\$0	\$0	\$0	\$0	\$0	\$5,000
8.1	Carpet. Replace.	10	8	2	178	SY SY	\$51.50	\$9,167	200%	\$0	\$9,167	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0) \$0	\$0	\$0	\$9,167	\$0	\$0	\$18,334
8.1	Walls and ceilings. Paint	5	1	4	4,000	SF	\$0.65	\$2,600	400%	\$0	\$0	\$0	\$2,600	\$0	\$0	\$0	\$0	\$2,600	\$0	\$0	\$0	\$0	\$2,600	\$0	\$0	\$0	\$0	\$2,600	\$0	\$10,400
8.1	Second Story finishes	20	19	1	1	LS	\$25,000.00	\$25,000	100%	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
8.2	Commercial Kitchen Appliances. Replace.	20	10	10	1	LS	\$5,000.00	\$5,000	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,500	\$2,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,000
		ANNUA	L RESERV	/E (UNINF	LATED)					\$63.249	\$9.167	\$62.750	\$35,180	\$10.665	\$0	\$250	\$0	\$12.740	\$20.288	\$2,750	\$0	\$3.760	\$10.780	\$15.400	\$0	\$250	\$9.167	\$12.740	\$0	\$269.136
1	EUL = Expected Useful Life (Average)	INFLAT	ION RATE	FACTOR	/					1.0000	1.0300	1.0609	1.0927	1.1255	1,1593	1,1941	1.2299	1.2668	1.3048	1.3439	1.3842	1.4258	1.4685	1.5126	1.5580	1.6047	1.6528	1.7024	1,7535	\$207,100
1	EFF = Effective Age of Building Components	ANNUA	L RESERV	/E (INFLAT	ED)		3.00%			\$63,249	\$9,442	\$66.571	\$38,442	\$12,004	\$0	\$299	\$0	\$16,139	\$26,471	\$3.696	\$0	\$5,361	\$15.831	\$23,294	\$0	\$401	\$15,152	\$21,689	\$0	\$318.040
1	RUL = Remaining Useful Life (Estimated)	RESER	VE / SQU	ARE FOOT	/ YEAR					\$3.51	Conditions noted in	the Replaceme	ent Reserve Cost F	stimate are repr	esentative of the ove	erall conditions of th	he property. Ther	e may be more de	etail	12,270	¢0	+=,=01		+,-/	, vo		+ ,			+=
	5									¢4.15																				

INFLATED RESERVE / SQUARE FOOT / YEAR \$4.15 on specific assessment components in the report text, therefore the Replacement Reserve Cost Estimate should not be used as a stand alone document.

— A S S E S S M E N T

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- ASSESSMENT

CERTIFICATION

EMG has completed a Facility Condition Assessment (FCA) of the subject property, Howes House, located at 1042 State Road in West Tisbury, Massachusetts. The FCA was performed on October 25, 2010 and the site was revisited on December 22, 2010.

The FCA was performed at the request of the Town of West Tisbury using methods and procedures consistent with good commercial and customary practice conforming to ASTM E2018-01, *Standard Guide for Facility Condition Assessments: Baseline Facility Condition Assessment Process.* Within this Facility Condition Assessment Report, EMG follows the ASTM guide's definition of User, that is, the party that retains EMG for the preparation of a baseline FCA of the subject property. A User may include, without limitation, a purchaser, potential tenant, owner, existing or potential mortgagee, lender, or property manager of the subject property.

This report is exclusively for the use and benefit of the Client identified on the first page of this report. The purpose for which this report shall be used shall be limited to the use as stated in the contract between the client and EMG.

This report is not for the use or benefit of, nor may it be relied upon by any other person or entity, for any purpose without the advance written consent of EMG.

The opinions expressed by EMG in this report were formed utilizing the degree of skill and care ordinarily exercised by an architect or engineer performing the same services in the same community under similar circumstances. Factual information regarding operations, conditions and test data provided by the Client or their representative has been assumed to be correct and complete. EMG assumes no responsibility or liability for the accuracy of information in this report which was obtained from the Client or the Client's representatives, from other interested parties, or from the public domain. The conclusions presented represent EMG's professional judgment based on data provided, observations made, and conditions that existed on the date of the assessment. EMG's evaluations, analyses and opinions are not representations regarding the building design or actual value of the property.

EMG certifies that EMG has no undisclosed interest in the subject property, EMG's relationship with the Client is at arm's-length, and that EMG's employment and compensation are not contingent upon the findings or estimated costs to remedy any deficiencies due to deferred maintenance and any noted component or system replacements.

EMG's FCA cannot wholly eliminate the uncertainty regarding the presence of physical deficiencies and the performance of a subject property's building systems. Preparation of a FCA, in accordance with Public Housing Modernization Standards Handbooks 7485.2, is intended to reduce, but not eliminate, the uncertainty regarding the potential for component or system failure and to reduce the potential that such component or system failure may not be noticed early on. This FCA was prepared, recognizing the inherent subjective nature of EMG's opinions as to such issues as workmanship, quality of original installation, and estimation of the remaining useful life of any given component or system. It should be understood that EMG's suggested remedy may be determined under time constraints and formed without the aid of engineering calculations, testing, exploratory probing, the removal of materials, or design. Furthermore, there may be alternate or more appropriate methods to remedy the physical deficiency. EMG's opinions are generally based upon its own observations and knowledge with some input from individuals familiar with the component's or system's performance.

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Any questions regarding this report should be directed to Bill Champion at <u>bchampion@emgcorp.com</u> or at 800.733.0660, x7607.

Prepared by:

Henry Miller and Brett Byers, Project Managers

Reviewed by:

TK-M. for

Kevin Lantry, FCA Reviewer for Bill Champion, Director of Asset Management Consulting



- ASSESSMENT

1. EXECUTIVE SUMMARY

1.1. PROPERTY INFORMATION AND GENERAL PHYSICAL CONDITION

The property information is summarized in the table below. More detailed descriptions may be found in the various sections of the report and in the Appendices.

Property Information					
Address:	1042 State Road, West Tisbury, Massachusetts 02575				
Year constructed:	1920s original construction; Renovated 1990s				
Site area:	0.82 Acres				
Gross floor area:	3,833 Square Feet				
Number of buildings:	One				
Number of stories:	Two + Basement				
Parking type and number of spaces:	43 spaces in open lots (shared with Library)				
Building construction:	Conventional wood-framed structures with basement				
Roof construction:	Gabled roofs with asphalt shingles				
	Flat roof section with EPDM single-ply membrane				
Exterior Finishes:	Wood shingle siding and wood trim				
Heating and/or Air	Heating: Oil-fired boiler and hydronic baseboard units				
conditioning:	Cooling: Split system fan coil units and roof-mounted or grade- mounted condensers				
Fire and Life/Safety:	Smoke detectors, alarms, and portable fire extinguishers				
Dates of visit:	October 25, 2010 and December 22, 2010				
Point of Contact (POC):	Jennifer Rand				

Generally, the property appears to have been constructed within industry standards in force at the time of construction. The property appears to have been well maintained in recent years and is in good overall condition.

According to property management personnel, the property has had an active capital improvement expenditure program over the past three years, primarily consisting of installation of a split ductless system for basement cooling. Supporting documentation was not provided in support of these claims but the work is evident.

1.2. SPECIAL ISSUES AND FOLLOW-UP RECOMMENDATIONS

No follow up studies are recommended at the property.

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- ASSESSMENT

1.3. OPINIONS OF PROBABLE COST

Cost estimates are attached at the front of this report (following the cover page).

These estimates are based on Invoice or Bid Document/s provided either by the Owner/facility and construction costs developed by construction resources such as *R.S. Means* and *Marshall & Swift*, EMG's experience with past costs for similar properties, city cost indexes, and assumptions regarding future economic conditions.

1.3.1. Methodology

Based upon site observations, research, and judgment, along with referencing Expected Useful Life (EUL) tables from various industry sources, EMG opines as to when a system or component will most probably necessitate replacement. Accurate historical replacement records, if provided, are typically the best source of information. Exposure to the elements, initial quality and installation, extent of use, the quality and amount of preventive maintenance exercised, etc., are all factors that impact the effective age of a system or component. As a result, a system or component may have an effective age that is greater or less than its actual chronological age. The Remaining Useful Life (RUL) of a component or system equals the EUL less its effective age. Projections of Remaining Useful Life (RUL) are based on continued use of the Property similar to the reported past use. Significant changes in tenants and/or usage may affect the service life of some systems or components.

Where quantities could not be derived from an actual take-off, lump sum costs or allowances are used. Estimated costs are based on professional judgment and the probable or actual extent of the observed defect, inclusive of the cost to design, procure, construct and manage the corrections.

1.3.2. Replacement Reserves

Components that are exhibiting deferred maintenance issues will be identified and estimates provided for "immediate" and "capital repair" costs based on observed conditions, available maintenance history and industry-standard useful life estimates. If applicable, this analysis will include the review of any available documents pertaining to capital improvements completed within the last ten years, or currently under contract. EMG shall also inquire about available maintenance records and procedures and interview on site maintenance staff.

- A Capital Facilities Plan includes, but is not limited to:
- Current or proposed new construction, additions or proposed alterations or reconstruction to facilities ranked in priority order of Code / Fire Safety Items and Critical Work Items;
- Major repairs ranked in priority order of Code / Fire Safety Items and Critical Work Items;
- Major system replacement and repairs and maintenance ranked in priority order of Code / Fire Safety Items and Critical Work Items.

Critical repairs and life safety issues will be addressed separately from repairs anticipated over the term of the analysis.

- ASSESSMENT

IMMEDIATE AND SHORT-TERM COSTS

Costs are broken out as either year one or years two and three. These include items with implications to personal safety and liability and items that, if left un-corrected, would cause further damage to other elements. Examples of the latter category include condensate leaks that cause water damage to ceiling tiles and flooring materials. Code compliance deficiencies and those with potential liability implications are included in this category.

INTERMEDIATE COSTS

These costs are generally incurred within the first five years of the evaluation period. These include items, beginning to show early stages of disrepair or wear, while posing no impending threat to personal safety of property deterioration. Examples might include painting, patching of pavement or sectional repair to pavement or the anticipated end of the useful life of roofing, equipment or system components like boiler tubes or cooling tower media.

RESERVE AND REPAIR COSTS

These are costs to be incurred over the life of the evaluation period, generally seven to twenty years. This table will include predictable expenditures intended to prolong the useful life of the facility. This table places these costs in appropriate years to allow the reader to quickly and visually search the table for annual expenditures or for line item costs in given years, or over the life of the evaluation period.

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- ASSESSMENT

2. PURPOSE AND SCOPE

2.1. PURPOSE

The purpose of this report is to assist the Client in evaluating the physical aspects of this property and how its condition may affect the Client's financial decisions over time. For this FCA, representative samples of the major independent building components were observed and their physical conditions were evaluated. These components include the site and building exteriors and representative interior areas. The estimated costs for repairs and/or capital reserve items are included in the Replacement Reserves Report. All findings relating to these opinions of probable costs are included in the relevant narrative sections of this report.

The property management staff and code enforcement agencies were interviewed for specific information relating to the physical property, code compliance, available maintenance procedures, available drawings, and other documentation.

The physical condition of building components is typically defined as being in one of three categories: Good, Fair, and Poor. For the purposes of this report, the following definitions are used:

- **GOOD** (G) = Component or system is sound and performing its function. However, it may show signs of normal wear and tear, commensurate with its age; some minor remedial work may be required.
- **FAIR (F) =** Component or system is performing adequately at this time but exhibits deferred maintenance, evidence of previous repairs, workmanship not in compliance with commonly accepted standards, is obsolete, or is approaching the end of its typical expected useful life. Repair or replacement is required to prevent further deterioration, restore it to good condition, prevent premature failure, or to prolong its expected useful life. Component or system exhibits an inherent deficiency of which the cost to remedy is not commensurate with the deficiency but is best remedied by a program of increased preventative maintenance or periodic repairs.
- **POOR (P) =** Component or system has either failed or cannot be relied upon to continue performing its original function as a result of: having realized or exceeded its typical expected useful life, excessive deferred maintenance, state of disrepair, an inherent design deficiency or workmanship. Present condition could contribute or cause the deterioration of contiguous elements or systems. Repair or replacement is required.

N/A = Not Applicable.

Additionally, the determination for the level of repair required to restore each component of each system to optimal condition is defined as follows:

Based upon our observations, research and judgment, along with consulting commonly accepted empirical Expected Useful Life (EUL) tables; EMG will render our opinion as to when a system or component will most probably necessitate replacement. Accurate historical replacement records provided by the facility manager are typically the best source for this data.

Exposure to the weather elements, initial system quality and installation, extent of use, the quality and amount of preventive maintenance exercised are all factors that impact the effective age of a system or component. As a result, a system or component may have an effective age that is greater or less than its actual age. The Remaining Useful Life (RUL) of a component or system equals the EUL less its effective age.



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— **A S S S S M E N T**

In addition to determining the EUL and the RUL for each major prime system and building component, EMG will categorize each cited deficiency within one of the following five Priorities:

PRIORITY 1: CURRENTLY CRITICAL (IMMEDIATE)

• Items in this category require immediate action and include a cited safety hazard, areas of accelerated deterioration and return a building component to normal operation.

PRIORITY 2: POTENTIALLY CRITICAL (YEARS 1-2)

• Items in this category require action in the next 1-2 years and include components that are experiencing intermittent operations, potential life safety issues, rapid deterioration and returning a building component to normal operation.

PRIORITY 3: NECESSARY - NOT YET CRITICAL (YEARS 3-5)

• Items in this category require appropriate attention to preclude predictable deterioration, potential downtime, additional damage and higher costs to remediation if deferred further.

PRIORITY 4: RECOMMENDED (YEARS 6-20)

 Items in this category represent a sensible improvement to the existing conditions. These are not required for the most basic function of the facility; however, Priority 4 projects will improve overall usability and/or reduce long-term maintenance costs.

PRIORITY 5: DOES NOT MEET CURRENT CODE BUT "GRANDFATHERED"

• No Action required at this time but should substantial work be undertaken correction would be required.



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- ASSESSMENT

2.2. PERSONNEL INTERVIEWED

The following personnel from the facility and government agencies were interviewed in the process of conducting the PCA:

Name and Title	Organization	Phone Number
Jennifer Rand Town Administrator	Town of West Tisbury	508.696.0102
Ernest Mendenhall Town Building Inspector	Town of West Tisbury	508.696.0113
Manuel Estrella Town Fire Chief	West Tisbury Fire Department	508.889.9925

The FCA was performed with the assistance of the city staff members noted above who were cooperative and provided information that appeared to be accurate based upon subsequent site observations. The onsite contacts are completely knowledgeable about the subject property and answered all questions posed during the interview process.

2.3. DOCUMENTATION REVIEWED

Prior to the PCA, relevant documentation was requested that could aid in the knowledge of the subject property's physical improvements, extent and type of use, and/or assist in identifying material discrepancies between reported information and observed conditions. The review of submitted documents does not include comment on the accuracy of such documents or their preparation, methodology, or protocol.

- Waste Water Disposal System Drawings, Kent A. Healy, PE, dated 8/5/91
- Well water sample Bacteriological analysis results, Wampanoag Environmental Laboratory, dated March 25, 2010

2.4. PRE-SURVEY QUESTIONNAIRE

A Pre-Survey Questionnaire was sent to the POC prior to the site visit. The questionnaire is included in Appendix G. Information obtained from the questionnaire has been used in preparation of this report.

2.5. WEATHER CONDITIONS

October 25, 2010: Cloudy, with temperatures in the 50s (°F) and light winds.

December 22, 2010: Overcast with periods of snow, temperatures in the 30s (°F) and light winds. There was approximately one-inch of snow on the ground.

- ASSESSMENT

3. CODE INFORMATION AND ACCESSIBILITY

3.1. CODE INFORMATION, FLOOD ZONE AND SEISMIC ZONE

According to Ernest Mendenhall of the West Tisbury Building Department, there are no outstanding building code violations on file. A copy of the original Certificate of Occupancy was requested but was not available.

According to Manuel Estrella of the West Tisbury Fire Department, there are no outstanding fire code violations on file. The Fire Department does not have an annual inspection program. They only inspect new construction, work that requires a building permit, and citizen complaints.

According to the Flood Insurance Rate Map Number 25007C0093H, published by the Federal Emergency Management Agency (FEMA) and dated July 6, 2010, the property is located in Zone X, defined as areas outside the 500-year flood plain with less than 0.2% annual probability of flooding. Annual Probability of Flooding of Less than one percent.

According to the 1997 Uniform Building Code Seismic Zone Map of the United States, the property is located in Seismic Zone 2A, defined as an area of low to moderate probability of damaging ground motion.

3.2. ADA ACCESSIBILITY

Generally, Title III of the Americans with Disabilities Act (ADA) prohibits discrimination by entities to access and use of "areas of public accommodations" and "commercial facilities" on the basis of disability. Regardless of its age, these areas and facilities must be maintained and operated to comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Buildings completed and occupied after January 26, 1992 are required to comply fully with the ADAAG. Existing facilities constructed prior to this date are held to the lesser standard of compliance to the extent allowed by structural feasibility and the financial resources available. As an alternative, a reasonable accommodation pertaining to the deficiency must be made.

During the PCA, a limited visual observation for ADA accessibility compliance was conducted. The scope of the visual observation was limited to those areas set forth in *EMG's Abbreviated Accessibility Checklist* provided in Appendix D of this report. It is understood by the Client that the limited observations described herein does not comprise a full ADA Compliance Survey, and that such a survey is beyond the scope of *EMG's* undertaking. Only a representative sample of areas was observed and, other than as shown on the Abbreviated Accessibility Checklist, actual measurements were not taken to verify compliance. The scope of the visual observation did not include any areas within tenant spaces.

At a city owned building the entire building is considered as a public accommodation including the site and all interior areas.

- ASSESSMENT

The facility does not appear to be accessible with Title III of the Americans with Disabilities Act. Elements as defined by the ADAAG that are not accessible as stated within the priorities of Title III are as follows:

Ramp

• Howes House: Existing exterior ramp handrails at entry are not continuous on one side to the top of the ramp.

A full ADA Compliance Survey may reveal additional aspects of the property that are not in compliance.

Corrections of these conditions should be addressed from a liability standpoint, but are not necessarily code violations; the Americans with Disabilities Act Accessibility Guidelines are civil rights issues as they pertain to the disabled. The cost to address the achievable item noted above is estimated at \$1,000, and is included as an ADA Compliance item in the Immediate Repairs Cost Estimate.

3.3. Mold

As part of the FCA, EMG completed a limited, visual assessment for the presence of visible mold growth, conditions conducive to mold growth, or evidence of moisture in readily accessible areas of the property. EMG interviewed property personnel concerning any known or suspected mold contamination, water infiltration, or mildew-like odor problems.

This assessment does not constitute a comprehensive mold survey of the property. The reported observations and conclusions are based solely on interviews with property personnel and conditions observed in readily accessible areas of the property at the time of the assessment. Sampling was not conducted as part of the assessment.

EMG did not note any visual indications of the presence of visible mold growth, conditions conducive to mold growth, or evidence of moisture in any readily accessible areas of the property.



- ASSESSMENT

4. EXISTING BUILDING ASSESSMENT

4.1. SPACE TYPES

The following table identifies the reported space types and mix at the subject buildings.

	Space Types and Mix					
Quantity	Туре	Vacant Spaces	Down Spaces			
1	Kitchen	0	0			
1	Meeting room	0	0			
1	Lounge/social room	0	0			
1	Sunroom	0	0			
2	Office	0	0			
2	Restroom	0	0			
1	Activity room (basement)	0	0			
2	Basement mechanical and storage	0	0			
1	Unfinished second floor	1	1			
12	TOTAL	1	1			

4.2. SPACES OBSERVED

EMG observed all of the building in order to gain a clear understanding of the property's overall condition. Other areas accessed included the exterior of the property and the interior areas. Sloped roofs were observed from the ground.

All areas of the property were available for observation during the site visit. The mechanical attic for the first floor meeting room was not accessible.

A "down space" or area is a term used to describe a non-usable space or area due to poor conditions such as fire damage, water damage, missing equipment, damaged floor, wall or ceiling surfaces, or other significant deficiencies.

The second floor of the building was partially finished and unoccupied at the time of the site visit.



- ASSESSMENT

5. SITE IMPROVEMENTS

5.1. UTILITIES

The following table identifies the utility suppliers and the condition and adequacy of the services.

Site Utilities				
Utility	Supplier	Condition and Adequacy		
Sanitary sewer	Onsite septic	Good		
Storm sewer	On site storm system	Good		
Domestic water	On site well	Fair		
Electric service	NSTAR	Good		
Natural gas service	None	N/A		

- The utilities appear to be adequate for the property.
- The septic system consists of a 1,000-gallon septic tank with a gas baffle on the outlet and an eight-foot diameter leaching pit. The tank is located approximately 42-feet east of the building and is connected to the sanitary system by four-inch Schedule 40 PVC pipe. The leaching pit is placed approximately 100-feet northeast of the septic tank. The leaching pit is designed to handle 392 gallons/day (GPD). Effluent flow was estimated at approximately 60 GPD, but varies depending on activities occurring in the facility. The septic tank is not pumped on any particular frequency and no issues were reported regarding backups or evidence of overloading. Routine maintenance is anticipated during the assessment period.
- The well for the building is 1.5-inch galvanized steel driven point well located in the basement of the building. The depth is estimated at 20 to 25-feet. A ½-HP (Sears Premium) shallow well jet pump and WellMate WM-9 pressure tank provide water to the building. The pump provides approximately 5 GPM at 20-feet. The well has been "shot" within the past several years to clear the screens and restore flow. The bullet was retrieved afterwards. It was reported that the well does not provide sufficient volume during periods of high usage. The well currently does not require disinfection and quarterly bacteriological samples are obtained and analyzed to ensure compliance with State drinking water regulations. Based on observed conditions and reported issues, development of a new well, or connecting to the Library water system, is recommended. A budgetary cost for a new well is included in the Replacement Reserves Report. Costs are based on a well depth of 48-feet but do not include any unique cost requirements or permit fees.
- There is one liquid propane gas tank (upright, 100-gallon estimated) located adjacent to the kitchen for kitchen equipment.
- The facility is not equipped with an emergency electrical generator.

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5.2. PARKING, PAVING, AND SIDEWALKS

The main entrance drive is located along State Road on the west side of the property. The parking areas and drive aisles are paved with a combination of asphalt and crushed stone. The parking area is shared with the Library.

Based on a physical count, shared parking is provided for 43 cars. All of the parking stalls are located in open lots. There is one designated handicapped-accessible parking stall at the Library (which is a gravel-surface space).

The sidewalks at Howes House are constructed of a combination of cast-in-place concrete and a small length of pea-gravel from the parking lot to the basement stairs.

The only curb consists of approximately 32 LF of creosote treated timbers at the edge of the pavement on the east side of the building. Surface runoff is directed to landscaped areas, which border the paved areas.

Observations/Comments:

- The asphalt pavement is in good condition. There are no significant signs of cracks or surface deterioration. However, based on the estimated Remaining Useful Life (RUL) and the high usage of the facility, overlay of the surface should be anticipated during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- In order to maximize the pavement life, pothole patching, crack sealing, seal coating, and re-striping of the asphalt paving will be required during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The concrete sidewalks throughout the property are in good condition. Routine cleaning and maintenance will be required during the assessment period.
- The pea-gravel at the stairs from the basement is captured between creosote treated railroad ties and has either compacted or eroded leaving a high step up to the stair well from the walk. The current configuration is a potential tripping hazard. Replacement of the pea-gravel with a sloped concrete sidewalk is recommended. The cost of this work is included in the Immediate Repairs Cost Estimate.
- The crushed stone paving is in good condition. There are no significant signs of erosion, scouring, or surface deterioration. Addition of crushed stone aggregate will be required during the assessment period. The cost of this work is included in the Replacement Reserves Report.

5.3. DRAINAGE SYSTEMS AND EROSION CONTROL

Storm water from the roofs, landscaped areas, and paved areas flows across the surface into a wetland which surrounds the property on the north and east sides of the site.

Observations/Comments:

• There is no evidence of storm water runoff from adjacent properties. The storm water system appears to provide adequate runoff capacity. There is no evidence of major ponding or erosion.



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5.4. TOPOGRAPHY AND LANDSCAPING

The property is essentially flat with minimal elevation change.

The landscaping consists of trees, shrubs, and grasses. Planter beds occur on the south exterior elevation of the building and in the parking lot closest to the Library. Surrounding properties include commercial properties to the west and residential properties to the north, east, and south.

Observations/Comments:

- The topography and adjacent uses do not appear to present conditions detrimental to the property.
- The landscape materials are in good condition and will require routine maintenance during the assessment period.

5.5. GENERAL SITE IMPROVEMENTS

Property identification is provided by building-mounted signage.

Exterior building illumination is provided by light fixtures surface-mounted on the exterior walls. Recessed light fixtures are located in the exterior soffits. Two exterior light fixtures are mounted on the wall at the north entrance ramp/stairs.

A cedar post and split-rail fence occurs along the west edge of the property at State Road. A park style bench is set at the north side of the property along State Road that appears to be used for a shuttle bus stop.

A dumpster is located in the parking area and is placed on the stone paving.

- The property identification sign is in good condition. Routine maintenance will be required during the assessment period.
- The exterior site and building light fixtures appear to be in good condition. Routine maintenance will be required during the assessment period. The ramp fixtures may require replacement as they are exposed to the elements. The cost of this work is relatively insignificant and may be included in the property's routine maintenance budget.
- The fence is in fair condition and mostly likely will require some repairs or replacement during the assessment period. The cost of this work is insignificant and should be incorporated into the facility's routine maintenance budget.
- The bench appeared to be in fair condition. The supports are precast concrete and are in good condition. Seat and back boards may be replaced for minimal cost. No costs are included in the Replacement Reserves for this work.
- The dumpster appears to be in good condition and will require routine maintenance during the assessment period.



- ASSESSMENT

6. BUILDING ARCHITECTURAL AND STRUCTURAL SYSTEMS

6.1. FOUNDATIONS

Based on observations and structures of similar size, configuration, and geographic location, it is assumed that the foundations consist of conventional reinforced concrete spread footings, which support wall and column loads.

The basement has load-bearing, stone and concrete perimeter retaining walls.

Observations/Comments:

- The footings could not be directly observed during the site visit. There is no evidence of movement that would indicate excessive settlement.
- The basement walls appear to be in good condition. There is no evidence of movement or water infiltration.

6.2. SUPERSTRUCTURE

The building is a conventional wood-framed structure with wood stud-framed exterior and interior bearing walls, which support the upper floor and roof diaphragms.

Upper floors are constructed with wood joists and are sheathed with wood planks. The roof diaphragms are constructed of wood beams and rafters and are sheathed with wood plank decking.

The original brick chimney appears to have been removed below the roof line of the second floor. The chimney above the roof is supported by the rafters which are shored by framing on the floor below.

- Walls and floors generally appear to be plumb, level, and stable. There appears to be some deflection of the roof section supporting the masonry chimney. This condition should be evaluated during roof and flashing replacement and additional framing added if necessary, ensuring that loads are transferred by structural columns to the basement floor or foundation.
- There is no evidence of wood framing deterioration due to insect infestation. However, given the location and soil conditions, a local, licensed exterminator should be retained to treat the property as required to eliminate the pests and associated threat. An annual termite and insect inspection program should be instituted. A cost allowance to conduct this program on an annual basis is included in the Replacement Reserves Report.

- ASSESSMENT

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6.3. ROOFING

The primary roofs are classified as pitched. The roofs are finished with asphalt shingles over asphalt-saturated paper. The roofs have sheet metal flashing elements. The roofs are insulated with fiberglass batts.

The roofs drain over the eaves to sheet metal gutters and downspouts, which discharge to paved and landscaped areas.

A portion of the main roof is flat and is surfaced with fully-adhered EPDM (ethylene polymer diene monomer) membrane roof system over plywood sheathing.

There are four curb-mounted plastic dome skylights on the flat roof section. Three occur over the sunroom addition and one over the entrance lobby.

Observations/Comments:

- The property does not have a dedicated roof repair and maintenance contractor. On site personnel maintain the roofs or a contractor is retained when required.
- The roof finishes are approximately 15 years old. Information regarding roof warranties or bonds was requested but was not available.
- There is no evidence of active roof leaks, but stains on the exposed roof decking in the vicinity of the chimney indicate that there have been leaks.
- There is no evidence of roof deck or insulation deterioration. The roof substrate and insulation should be inspected during any future roof repair or replacement work.
- There is no evidence of fire retardant treated plywood (FRT).
- The roof flashings are in fair overall condition. The flashing around the chimney is deteriorated and will require replacement in conjunction with the roof membrane replacement. The cost of this work is included with the roof replacement.
- Roof drainage appears to be adequate. Clearing and minor repair of drain system components should be
 performed regularly as part of the property management's routine maintenance program. A small section of
 gutter screen at the sun room was coming out of the gutter. This should be reinserted as a routine
 maintenance activity.
- The skylight assemblies appear to be in good condition. Due to the climate, wind exposure and quality of the skylights, some will require replacement during the evaluation period. An allowance for this work is included in the Replacement Reserves Report.
- The roof shingles are in fair condition. Based on observed conditions, confirmed by report, the asphalt shingles will require replacement in the next several years. Roof flashing will require replacement at the same time. An allowance for this work is included in the Replacement Reserves Report.
- The EPDM roof appears to be in good to fair condition. Due to the climate, wind exposure and membrane life, the EPDM membrane will also require replacement during the evaluation period. This work should be planned in conjunction with asphalt shingle replacement. An allowance for this work is included in the Replacement Reserves Report.

6.4. EXTERIOR WALLS

The exterior walls are finished with wood shingle siding and wood trim. The soffits are painted plywood and painted wood moldings.



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Vertical cedar board siding occurs on the north side of the main meeting room on the first floor. This appears to be an addition primarily for storage closets at the north end of the meeting room.

The chimney is brick masonry above the roof line.

Observations/Comments:

- The exterior finishes are in good condition. Painting and patching of trim materials will be required during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The wall shingles are in generally good condition. A few broken shingles under the rake trim in the gables were observed. The cost of repairs is relatively insignificant and should be included in the routine maintenance budget.
- Due to the climate, wind exposure and shingle life, the wood wall shingles will require sealant application during the evaluation period. An allowance for this work is included in the Replacement Reserves Report.
- The wood wall shingles will also require repairs and spot replacements during the evaluation period. A budgetary cost for this work is included in the Replacement Reserves Report.
- The vertical cedar wood siding appears to be in good condition and will require routine maintenance during the assessment period.
- The exposed brick masonry on the chimney is in fair to poor condition. Some of the brick have sheared faces and the pointing is in poor condition. Limited repairs have been done but the color of the mortar does not match the existing. Replacement of damaged brick and repointing will be required during the assessment period. The timing of this work should coincide with planned roof replacement. A cost for this work is included in the Replacement Reserves Report.

6.5. EXTERIOR AND INTERIOR STAIRS

The exterior stairs are constructed of cast-in-place concrete at the main entrance and to the basement. The stairs to the north egress door from the main floor meeting room are wood-framed with wood treads and open risers. The stairs to the south entrance from the patio are wood-framed with wood treads and closed risers. The handrails are constructed of metal.

The interior stairs are constructed of wood and have wood risers and treads. The treads are covered in rubber stair tread assemblies. The handrails and balusters are constructed of wood.

Observations/Comments:

• The exterior and interior stairs, balusters, and handrails are in good condition and will require routine maintenance during the assessment period. (Refer to Section 3.2 regarding the handicapped railing at the entry).

6.6. EXTERIOR WINDOWS AND DOORS

The windows are wood-framed double-glazed double-hung and awning units on the main floor and basement awning windows. The meeting room clerestory windows and sunroom windows are wood-framed double-glazed awnings with interior screens. The unfinished second floor has wood double-hung single-glazed windows.

- ASSESSMENT

The entrance doors are commercial painted metal with full-lites set in wood frames. The entrance doors have cylindrical locksets with lever handle exterior hardware with panic hardware on the interior.

Observations/Comments:

- There is no evidence of window leaks or window condensation. The basement and main floor windows appear to be in good condition and will require routine maintenance during the assessment period.
- The second floor windows are in good condition but should be upgraded if renovation is completed. The cost for this work is included in the budgetary allowance in Section 8.1.
- The exterior doors and door hardware appear to be in generally good condition and will require routine maintenance during the assessment period. The main north side entrance door is dragging on the concrete at the threshold. The door must be repaired and a cost for the work is included in the Immediate Repairs Cost Estimate.

6.7. PATIO, TERRACE, AND BALCONY

A stone-paved terrace is located at the southeast corner of the building outside the sun room. The terrace serves as an outdoor dining and social area.

Observations/Comments:

• The terrace slabs are in good condition and will require routine maintenance during the assessment period. There are no significant signs of movement, settlement, or cracking.

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7. BUILDING MECHANICAL AND PLUMBING SYSTEMS

7.1. BUILDING HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

Heating is provided by one Weil-McLain oil-fired hot water boiler (P-568-W, 1.50 GPH oil feed, DOE rated capacity 181 MBH) located in the basement mechanical room. Outdoor combustion air is provided to the boiler burner assembly through a 2-inch PVC pipe. Heating water is circulated to hydronic baseboard heaters on the perimeter walls by four Taco 1/8-HP cartridge pumps. The boiler also supplies hot water on a separate loop to an indirect-fired domestic water heater (refer to Section 7.2 for discussion) with an additional Taco circulating pump.

The boiler expansion tank is mounted under an air separator in the hot water supply line. Makeup water is controlled by a pressure regulating valve that is isolated from the domestic water system by a backflow preventer. Through one firing cycle, the boiler cut in at approximately 150°F and cut out at approximately 160°F. The observed operating pressure was 18 PSI.

Fuel oil for the boiler is supplied from a 250-gallon (estimated) storage tank located in the crawlspace area. Fuel fill and vent lines are steel pipe and the boiler fuel supply and return pipes are copper.

The entrance lobby has one small recessed fan-driven electric wall heater with an integral thermostat.

Cooling is provided on the main floor by two split system fan coil units with rooftop mounted condensing units. One of the air handling units (Radco, model FB4ANF024, two-tons nominal cooling) is located in the basement crawlspace adjacent to the well equipment and is supplied by a Carrier (model 38TRA024, two-tons nominal cooling) condensing unit on the flat roof section over the main entrance lobby. The other fan coil (not accessible, but assumed to be a Radco, model FB4ANF060, five-tons nominal cooling) is in an attic over the main meeting room and is connected to a condensing unit (Carrier, 38TRA060, five-ton nominal capacity) located next to the other condensing unit. The condensing units use R-22.

Condensate from the basement fan coil unit is collected and pumped to the sanitary system with a small sump pump.

Conditioned air in the main meeting room is supplied through diffusers mounted in the ceiling. Return air grilles are in the ceiling of the room. Conditioned air in the rest of the building is provided through supply grilles. The return air grille is located in the corridor adjacent to the offices.

Cooling in the basement activity room is provided by one split ductless system (Sanyo, C2472/KS2472, two-tons nominal). The fan coil is on the south wall of the activity room and the condensing unit is grade-mounted at the south exterior elevation.

The heating and cooling systems are controlled by local thermostats.

Natural ventilation is provided by operable windows. Mechanical ventilation is provided in the restrooms by ceiling exhaust fans.

Observations/Comments:

The property does not have a dedicated HVAC repair and maintenance contractor.

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- Records of the installation, maintenance, upgrades, and replacement of the HVAC equipment have been maintained since the property was reoccupied.
- The HVAC equipment appears to date to 1996.
- The oil-fired boiler appears to be in fair condition. The safety controls appeared to be in good condition, however a manual reset high temperature lockout control was not observed. Although low water cut off and high temperature lock out controls on this boiler may have been optional equipment, they are strongly recommended. The installed cost of controls is relatively minor and should be addressed as a routine maintenance activity. No leaks were observed from the T&P valve or excessive discharge from air separators and bleeders. Based on its estimated Remaining Useful Life (RUL), boiler replacement should be anticipated during the assessment period. The estimated cost of this work is included in the Replacement Reserves Report.
- The hydronic baseboard heaters appeared to be in good condition and will require routine maintenance during the assessment period.
- The fuel oil storage tank appeared to be good to fair condition. No leaks or deterioration of the tank, fuel vent/fill, or supply/return piping were observed. Routine maintenance is anticipated during the assessment period.
- No insulation was observed on exposed supply and return piping for heating zones or the domestic hot water piping. Insulation should be added to reduce standby losses and since the boiler runs year-round to supply domestic hot water, this will reduce summer cooling loads. The estimated cost of this work is included in the Replacement Reserves Report. If supplemental heat is needed in this space, a hydronic unit heater should be added.
- The circulating pumps appeared to be in good to fair condition. The circulating pump for the Kitchen and Parlor circuit has evidence of discharge flange leakage. Based on their estimated Remaining Useful Life (RUL), circulating pump replacement is expected during the assessment period. The estimated cost of this work is included in the Replacement Reserves Report.
- A carbon monoxide detector was not observed in the vicinity of the boiler as required by MA State regulations. Refer to Section 7.6 for costs.
- The condensing units that serve the fan coils were manufactured in 1996 but appear to be in fair condition. Based on their estimated Remaining Useful Life (RUL), replacement is recommended during the assessment period. It should be noted that oil used with non-ozone depleting refrigerant such as R-410A, is not compatible with R-22 oil. A qualified service company may flush the line sets and coils to remove residual oil. Filter driers and metering devices must be removed before flushing and then replaced. The line set may require replacement if the liquid line diameter is too small for the new refrigerant. In addition to more environmentally friendly refrigerants, much higher efficiencies are commonplace the use of which will reduce energy costs for cooling. The cost of replacement is included in the Replacement Reserves Report.
- The existing insulation on the line sets from the roof-mounted units is deteriorated and the suction line is exposed in some areas. Replacement of the insulation should be planned before the beginning of the airconditioning season. Since the roofs have a dark membrane, an enormous amount of radiated and reradiated heat can raise the suction line temperature/pressure and reduce the overall system efficiency. The cost of this work is insignificant and should be included in the routine maintenance budget.
- The fan coil in the basement was manufactured in 1996 but appeared to be in good condition and it is likely that the fan coil in the attic over the meeting room is in similar condition. Based on their estimated Remaining Useful Life (RUL), fan coil replacement is likely during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The condensate sump pump appeared to be in good condition. Based on its estimated Remaining Useful Life (RUL), replacement during the assessment period is likely. The cost of this work is relatively insignificant and may be included in the facility's routine maintenance budget.



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The split ductless system is in good condition. Based on estimated Remaining Useful Life (RUL), the system will require replacement during the assessment period. The estimated cost of this work is included in the Replacement Reserves Report.

7.2. **BUILDING PLUMBING AND DOMESTIC HOT WATER**

Domestic water is provided by an onsite well which feeds a 30-gallon hydropneumatic tank in the basement crawlspace of the building. Refer to Section 5.1 for discussion of the well and control system.

A water treatment tank and filter assembly were observed in the basement crawlspace.

The plumbing systems include the well water service, the cold water piping system, and the sanitary sewer and vent system. The risers and the horizontal distribution piping are copper. The soil and vent systems are PVC, copper, or cast iron.

Domestic hot water is supplied by a 40-gallon indirect-fired water heater Heat Transfer Products, Inc. SuperStor-40). The water heater is located in the basement adjacent to the boiler and has a dedicated circulating pump.

A small packaged lift station has been placed in the basement under the stairs to capture and dispose of gray water from the sink in the activity room.

The restrooms have commercial-grade fixtures and accessories including water closets and lavatories.

Observations/Comments:

- The plumbing systems appear to be well maintained and in good condition. The water pressure is reportedly a problem. Refer to Section 5.1 for discussion of the source water. The plumbing systems will require routine maintenance during the assessment period.
- The water treatment tank and filter appeared to be in good condition. Media replacement is considered routine maintenance and no costs have been included in the tables.
- There is no evidence that the property uses polybutylene piping for the domestic water distribution system.
- The pressure and quantity of hot water appear to be adequate.
- The water heater appears to be in fair condition. Based on its estimated Remaining Useful Life (RUL), the water heater will require replacement during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The boiler supply circulating pump is discussed in Section 7.1.
- The accessories and fixtures in the common area restrooms are in good condition and will require routine maintenance during the assessment period.

7.3. **BUILDING GAS DISTRIBUTION**

Gas service is supplied to the building kitchen from an above ground LP gas tank located at the northwest corner of the building outside the kitchen. The primary regulator is located on the tank. The gas distribution piping within the building is copper.



- ASSESSMENT

Observations/Comments:

- The pressure and quantity of gas appear to be adequate.
- The regulator appears to be in good condition and will require routine maintenance during the assessment period.
- Only limited observation of the gas distribution piping can be made due to hidden conditions. The gas piping appears to be in good condition.

7.4. BUILDING ELECTRICAL

The electrical supply lines run overhead from a pole-mounted transformer which feeds the exterior-mounted electrical meter at the north of the building.

The main electrical service size is comprised of a 150 amp, 120/240-volt single-phase three-wire alternating current (AC). The electrical wiring is copper, installed in non-metallic sheathed cable. One circuit breaker panel is in the basement mechanical room and one is located on the second floor near the lift door.

Interior lighting is provided by surface-mounted fluorescent light fixtures and recessed can lights. The restrooms have vent fan/light combination units and vanity wall sconces above the mirrors.

Observations/Comments:

- The electrical system up to the primary transformer as well as the utility meter are owned and maintained by the respective utility company.
- The electrical service and capacity appear to be adequate for the property's demands.
- The circuit breaker panels and meter base appear to be in good condition and will require routine maintenance during the assessment period.
- Interior lighting fixtures appeared to be in good condition and will require routine maintenance. Bulb, ballast, and single fixture replacement are considered routine maintenance activities.

7.5. Building Elevators and Conveying Systems

There is one hydraulic passenger lift manufactured by Whirlteq. The lift has a rated capacity of 750 pounds and a speed of 25 fpm. The machinery is located in a room in the basement, adjacent to the shaft.

- According to the maintenance staff, the lift is inoperable due to a broken component. Repairs to restore operation were nearly complete at the time of the site revisit in December 2010.
- Associated Elevator Companies out of South Yarmouth, MA services and maintains the lift.
- The lift is obsolete and parts are difficult to obtain. Based on its estimated Remaining Useful Life (RUL) and observed conditions, replacement may be anticipated during the assessment period. A budgetary cost is included in the Replacement Reserves Report. Costs are based on a standard hydraulic elevator without any alterations to the shaft or building structure. Code requirements may significantly affect the actual replacement if structural modifications are necessary. Such additions are not within the scope of an FCA and the services of an elevator contractor and/or engineer must be obtained to determine the scope of work and estimated cost.



ASSESSMENT

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7.6. FIRE PROTECTION AND SECURITY SYSTEMS

The fire protection system consists of fire extinguishers and a fire alarm system. Hard-wired smoke detectors and portable tire extinguishers are located throughout the building. The nearest fire hydrant is approximately 20-feet west of the building along State Road. The hydrant is dry and must be fed by a pumper that drafts from the pond located east of the property. Common areas and corridors are equipped with battery back-up exit lights, illuminated exit signs, pull stations, alarm horns, and strobe light alarms.

A Notifier SFP 400B central fire alarm panel is located in lobby and monitors the pull stations and smoke detectors. The alarm panel also sounds the alarm and automatically notifies the monitoring service or the fire department in the event of trouble.

The building interior stairwells are open. There are exits from the building at all elevations that may be used for emergency egress.

The boiler room did not appear to have a carbon monoxide detector installed.

- Copies of the fire alarm inspection report were requested but have not been received for review.
- The fire extinguishers are serviced annually and appear to be in good condition. The fire extinguishers were serviced and inspected within the last year.
- The pull stations and alarm horns appear to be in good condition and will require routine maintenance during the assessment period.
- Smoke detector replacement is considered to be routine maintenance.
- Exit sign and emergency light replacement is considered to be routine maintenance.
- The central alarm panel appears to be in good condition and is serviced regularly by a qualified fire equipment contractor. Equipment testing is not within the scope of a Facility Condition Assessment. Electronic equipment, such as a fire alarm panel, becomes obsolete and parts difficult to find before the equipment may actually fail. New replacement detectors and alarm devices often are not compatible with older systems. Based on its estimated technical Remaining Useful Life (RUL), replacement of the fire alarm control panel is recommended during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- A carbon monoxide detector was not observed in the vicinity of the boiler as required by MA State regulations. Installation is included in the Immediate Repairs Cost Estimate.

- ASSESSMENT

8. INTERIORS

8.1. INTERIOR FINISHES

The following table generally describes the interior finishes in tenant units:

Typical Tenant Unit Finishes					
Room	Floor	Walls	Ceiling		
Offices, meeting room, activity room, parlor room	Carpet	Painted drywall	Painted drywall		
Lobby, kitchen, restrooms	Ceramic tile	Painted drywall	Painted drywall		
Second floor areas	Exposed wood	Lath and plaster, open framing	Painted drywall vaulted system		
Basement mechanical areas	Bare concrete	Bare concrete	Open framing		

The interior doors are stained solid-core wood doors set in wood frames. The interior doors have cylindrical locksets with lever handle hardware.

The main meeting room is equipped with an accordion partition to divide the room equally into two sections.

- The carpet on the first floor and occupied areas of the basement is in fair condition with numerous stains and worn areas. The carpet will require replacement during the evaluation period. The estimated cost of this work is included in the Replacement Reserves Report.
- Interior painting is generally in good condition and repainting will be required during the evaluation period. The estimated cost of this work is included in the Replacement Reserves Report.
- The second floor has been partially renovated and requires more work to become ready for occupancy. The lath and plaster will need to be removed to properly insulate the exterior walls, electrical work must be done to bring the area up to code, windows may require replacement for energy savings, and HVAC will be a required addition. An allowance to complete this work is included in the Replacement Reserves Report.
- The interior doors and door hardware are in good condition and will require routine maintenance during the assessment period.
- The meeting room partition appeared to be in fair condition. Based on limited usage of the partition, routine maintenance is expected during the assessment period.



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8.2. KITCHEN EQUIPMENT

The kitchen includes the following major appliances, fixtures, and equipment:

Appliance	Comment
Refrigerators	Up-right, GE side by side
Range/oven	Gas, Bosch, four burner with oven
Warmer	Electric, seven-rack Wittco
Hood	Exhaust ducted to exterior
Dishwasher	Hobart commercial under counter
Microwave	Kenmore Elite countertop model
Work tables	Stainless steel
Shelving and Sink	Stainless steel

Observations/Comments:

• The kitchen appliances appear to be in good condition. Based on their estimated Remaining Useful Life (RUL), the kitchen appliances will require replacement during the assessment period. The cost of this work is included in the Replacement Reserves Report.

EMG

— A S S E S S M E N T

9. ACCESSORY STRUCTURES

Not applicable. There are no accessory structures at this facility.



- ASSESSMENT

10. APPENDICES

- APPENDIX A: Photographic Record
- APPENDIX B: Site Plan
- **APPENDIX C:** Equipment Inventory
- APPENDIX D: Preventive Maintenance Schedule
- APPENDIX E: Supporting Documentation
- APPENDIX F: EMG Abbreviated Accessibility Checklist
- APPENDIX G: Pre Survey Questionnaire
- APPENDIX H: Acronyms
- APPENDIX I: Resumes for Report Reviewer and Field Observer

— A S S E S S M E N T

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APPENDIX A: Photographic Record

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EMG PHOTOGRAPHIC RECORD

Project No.: 95268.10R-002.017



Photo Main entrance #1:



Photo Left side elevation #3:



Photo Rear elevation and pitched roof overview #5:

Project Name: Howes House



Photo Front elevation (State Road elevation); #2: note lower roof section deflection



Photo Right side elevation #4:



Photo Parking lot overview #6:



EMG PHOTOGRAPHIC RECORD

Project No.: 95268.10R-002.017



Photo Patio #7:



Photo Flat roof area with condensing unit and #9: skylight



Photo Exterior basement egress; note high step #11: up to stair well from pea-gravel walk

Project Name: Howes House



Photo Sunroom #8:



Photo Ramp railing (note: left rail stops before #10: top of ramp)



Photo Interior of Parlor #12:


Project No.: 95268.10R-002.017



Photo Kitchen #13:



Photo Stairwell #15:



Photo Unfinished basement with piping #17:

Project Name: Howes House



Photo Accessible restroom #14:



Photo Basement #16:



Photo Second floor vacant area; note framing #18: around chimney flue pipe



Project No.: 95268.10R-002.017



Photo HVAC boiler and water heater #19:



Photo Split ductless system fan coil #21:



Photo Heating zone controls #23:

Project Name: Howes House



Photo Basement fan coil unit #20:



Photo Circulating pump with flange corrosion #22:



Photo Split ductless system condensing unit #24:



Project No.: 95268.10R-002.017



Photo Well and pump #25:



Photo Hydropneumatic tank #27:



Photo Fire alarm panel #29:





Photo Package lift station under stairs #26:



Photo Water treatment tank and filter #28:



Photo Main electrical service panel #30:



Project No.: 95268.10R-002.017



Photo Elevator lift interior; repairs in progress #31:



Photo Electrical meter #33:



Photo LP gas tank by kitchen #35:



Photo Elevator machine room #32:



Photo Fuel oil tank in basement crawlspace #34:



Photo Fire hydrant along State Road #36:

Project Name: Howes House

CORPORATE HEADQUARTERS 222 SCHILLING CIRCLE, SUITE 275 HUNT VALLEY, MARYLAND 21031 800 733 0660 FAX 410 785 6220 www.emgcorp.com



Project No.: 95268.10R-002.017

Project Name: Howes House



Photo Deteriorated insulation on line set from #37: five-ton condensing unit



Photo Shingle falling out at gable rake #39:



Photo Screen over gutter falling out #41:



Photo Stained carpet in basement #38:



Photo Main entry door dragging on threshold #40:



Photo Brick, pointing, and flashing at chimney #42:

— A S S E S S M E N T

95268.10R-002.017

APPENDIX B: Site Plan



	Site Plan	
		<image/>
EMG	<u>Source:</u> Google	<u>Project Number:</u> 95268.10R-002.017
		Project Name: Howes House
L	The north arrow indicator is an approximation of 0° North.	On-Site Date: October 25, 2010 and December 22, 2010

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APPENDIX C: Equipment Inventory

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Component	Quantity	UOM	Manufacturer	Model	Serial	Capacity	Age	Comments
Boiler	1	Ea	Weil-McLain	P-568-W	Not available	181 MBH	15	Oil-fired, serves entire building
Condensing Unit	1	Ea	Carrier	38TRA060	3996E03781	5-tons	15	R-22, on roof
Condensing Unit	1	Ea	Carrier	38TRA024	1396E00169	2-tons	15	R-22, on roof
Condensing Unit	1	Ea	Sanyo	C2472	Not available	2-tons	1.5	R-410A, Split ductless system for basement
Fan coil	1	Ea	Sanyo	KS2472	01679 93	2-tons	1.5	R-410A, Split ductless system for basement
Fan coil	1	Ea	Radco	FB4ANF024	2996A23630	2-tons	15	In basement, A/C only
					Unit not			Located in mechanical attic over first floor
Fan coil	1	Ea	Unit not accessible	Unit not accessible	accessible	5-tons	15	meeting room, A/C only
Water heater	1	Ea	Heat Transfer Products	SuperStor	N/A	40-gallons	10	Installed 02/2000, model no longer available
Well Pump	1	Ea	Sears	SKMET38ABN	Not available	5 GPM @ 20 ft	10	1/2 HP, age estimated
Hydropneumatic tank	1	Ea	WellMate	WM-9	24493012	30-gallons	10	Composite construction, age estimated
Fuel oil tank	1	Ea	No manufacturer data	No nameplate	No nameplate	250-gallons	15	Capacity and age estimated
					Nameplate not			
Fire alarm system	1	Ea	Honeywell Notifier	SFP-400B	accessible	4-zone control panel	6	Multiplex, age estimated
			Whirlteq Type 3C					
Hydraulic Elevator	1	Ea	Controller	-	-	750-pounds	1	3-stops, 25 FPM
Flat Roof Membrane	4	SQ					15	EPDM, Fully adhered
Roof - Asphalt Shingles	38	SQ					15	



— A S S E S S M E N T

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APPENDIX D: Preventive Maintenance Schedule



— А S S E S S M E N T

Component	PM Description	Weekly	Monthly	Quarterly	Semi-annual	Annual	Comments
	Check functioning of						
Heating Boiler	emergency shut off switch		х				
	Bleed air from air						Ensure air bleeders/separators are
	separators		Х				working
	Check low water cutoff						Test to ensure they are working
	and high temperature						rest to ensure they are working
	lockout controls, relief						property. Clean scale and debris from
	valve			х			probe type LWCO.
	Inspect wiring and						At start up at beginning of heating
	connections					х	season (qualified service company)
							At start up at beginning of heating
	Check main burner flame					х	season (qualified service company)
	Check fuel pump pressure,						
	Ignitor clearance, replace						
	burner nozzle, and						At start up at beginning of heating
	perform combustion					Х	season (qualified service company)
	Clean combustion						At start up at beginning of heating
	chamber as needed					Х	season (qualified service company)
							At start up at beginning of heating
	Clean and inspect flue					Х	season (qualified service company)
							At start up at beginning of heating
	Change fuel oil filter					Х	season (qualified service company)
	Clean/Descale boiler and						As necessary to ensure optimum
	piping						operation (qualified service company)
	Check pressure in						As necessary to ensure optimum
	expansion tank					Х	operation (qualified service company)



— A S S E S S M E N T

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Component	PM Description	Weekly	Monthly	Quarterly	Semi-annual	Annual	Comments
				-			
Condensing Units	Clean condenser coils					Х	Before cooling season
							Before cooling season (qualified
	Check oil for acid					Х	service company)
	Inspect contactor,						
	capacitor, and electrical						Before cooling season (qualified
	connections					Х	service company)
	Check suction line						
	insulation					х	Replace as necessary
							Change more frequently as needed.
							Ensure that the correct size and air
							flow capacity is used. (Refer to
							manufacturers specifications provided
Fan Coil Units	Change filters			Х			with unit.)
							During seasonal change over
	Clean DX coils					х	(qualified service company)
	Inspect fan motor						
	controls, contactors,						
	capacitor, and electrical						During seasonal change over
	connections					Х	(qualified service company)
	Check for and repair leaks						During seasonal change over
	in piping					Х	(qualified service company)
	Lubricate motor bearings					Х	If motor bearings are not sealed.
Hydronic	Calibrate/adjust circuit						During seasonal change over
Baseboard	setters on hot water piping					Х	(qualified service company)
	Clean fin tube as						
	necessary					Х	Site maintenance
							Usually in conjunction with major
HVAC thermostate	Inspect/calibrate					Y	servicing
	mapelycandrate		1				JCI VICING



— А S S E S S M E N T

Component	PM Description	Weekly	Monthly	Quarterly	Semi-annual	Annual	Comments
							Flush at least 5 minutes through drain
Water Heater	Flush sediment				х		valve.
							Ensure the relief valves closes and
							does not leak. Change the valve if it
	Lift T&P lever					Х	does not seal.
	Check anode					Х	Replace as necessary with OEM anode.
Fire Alarm System	Testing					Х	Qualified service company
Fire Extinguishers	Inspection		Х				Check gauge pressure, hose, mounting
	Maintenance					Х	Qualified service company
							12-year intervals (consult expert for
	Hydrostatic testing						frequency)
							Qualified service company. Generally
							requires annual testing but must
Carbon Monoxide	Detector and control panel						follow applicable codes from the
Alarm	testing					Х	Authority Having Jurisdiction.
Septic tank	Inspect/pump					Х	Septic system service company.
	Static water level,						
	drawdown water level						
Well	during pumping, flow test					х	Qualified service company
							Granular calcite media. Change more
Well water							frequently as needed to keep pH in
neutralizer	Change media				x		desired range.



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APPENDIX E: SUPPORTING DOCUMENTATION



Flood Map



Locus Plan







WAMPANOAG ENVIRONMENTAL LABORATORY

DEP Certification M-MA 1084 Located at : Herring Creek Road in Aquinnah Mailing Address:20 Black Brook Road Aquinnah, MA 02535 <u>wtghalaboratory@comcast.net</u>, wampweather.org 508-645-2903 – Laboratory 508-797-2065 – Cell 508-645-9421 – Fax Kendra Read – Laboratory Director

March 25th, 2010

JOHN POWERS WEST TISBURY BOARD OF HEALTH P.O. BOX 278 WEST TISBURY, MA 02575

RESULTS FOR WEST TISBURY - HOWES HOUSE

COLLECTED 03.09.2010 BY J. POWERS SAMPLED RECEIVED 03.09.2010 ANALYSIS STARTED 03.09.2010 @ 1200 HRS ANALYSIS COMPLETED 03.09.2010 @ 1200 HRS LABORATORY ID # 9783

TOTAL COLIFORM, E.COLI BACTERIA	SM9223
TOTAL COLIFORM	0.0 CFU PER 100ML
E. COLI BACTERIA	0.0 CFU PER 100 ML

WATER IS CONSIDERED POTABLE FOR ALL PARAMETERS TESTED.

THANK YOU,

Kendra Newick Laboratory Director



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June 20, 2005

DN-4750 • B-330

SFP-400B 4-Zone Fire Alarm Control Panel

Section: Conventional Fire Alarm Control Panels

FEATURES

- · Four Class B (Style B) Initiating Device Circuits.
- Two Class B (Style Y) Notification Appliance Circuits.
- · Complies with NFPA 72 Local, Auxiliary, Remote Station, Central, and Proprietary Signaling Systems.
- 24-volt model.
- Microprocessor controlled.
- Power-limited on all circuits except Municipal Box output.
- · Alarm and trouble resound.
- · General Alarm operation.
- · Supervisory input option.
- · Waterflow input option.
- Alarm Verification option with discrimination between smoke detectors and contact devices.
- · Timed silence inhibit option.
- Notification appliance circuit disable.
- Optional module for four zone relays (4XZM).
- Optional transmitter module (4XTM).
- Optional supervised remote annunciator (RZA-4X). Requires LED interface module (4XLM).
- Optional digital communicator (911AC).
- Disable/enable controls per initiating zone.
- Battery/earth-fault supervision.
- · Last Event Recall feature traps unverified alarms or intermittent troubles.
- · One-man Walk Test feature with zone change indication and zone trouble indication.
- PTC protection on all indicating circuits.
- 24 VDC output power, 2.25 amperes.
- 7.0 AH battery, up to 60 hours standby.
- 230 VAC, 50 Hz international option.
- · Four-wire smoke detector power output.
- Non-resettable regulated 24 VDC power outputs.
- · Extensive transient protection.
- Watchdog timer to supervise microprocessor.
- · Slide-in labels for zone identification.
- Steel cabinet.
- Dead-front dress panel option (DP-400B).
- Trim ring (TR-2-G) for flush mount between 16" (40.64 cm) center studs.

CIRCUITS

Input Circuits (four):

- Initiating Device Circuit 1 (Class B, Style B).
- Initiating Device Circuit 2 (Class B, Style B).
- Initiating Device Circuit 3 (Class B, Style B).
- Initiating Device Circuit 4 (Class B, Style B).

This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information, contact NOTIFIER Phone: (203) 484-7161 FAX: (203) 484-7118

NOTIFIER®

by Honeywell









421-91-E (with gray cabinet ONLY)



Output Circuits (two):

(optional auxiliary relays track these circuits)

- Notification Appliance Circuit (Class B, Style Y).
- Notification Appliance Circuit (Class B, Style Y).

Front Panel Control Switches:

- Switch 1 Tone Silence
- Switch 2 Alarm Silence
- Switch 3 Alarm Activate (Drill)
- Switch 4 System Reset





OPTIONAL BOARDS

The SFP-400B has mounting slots for two optional boards. Any two of the three option modules may be installed.

4XTM Transmitter Module – The transmitter option provides a supervised output for local energy municipal box transmitter (for NFPA 72 Auxiliary Protective Signaling System) and alarm and trouble reverse polarity (for NFPA 72 Remote Station Protective Signaling System). Also included is a DISABLE switch and disable trouble LED. A jumper option allows the reverse polarity circuit to open with a System Trouble condition if no alarm condition exists.

RZA-4X Remote Annunciator – The Remote Annunciator mounts on a standard single-gang box and provides the following:

- a) System Trouble LED (YELLOW).
- b) Local Piezo Sounder.
- c) Silence Switch (for local sounder).
- d) Zone 1 LED (RED).
- e) Zone 2 LED (RED).
- f) Zone 3 LED (RED).
- g) Zone 4 LED (RED).

NOTE: The Remote Annunciator requires the use of an LED interface module (below).

4XLM LED Interface Module – The module supports the RZA-4X Remote Annunciator module. The module mounts to the main board occupying one of the two option connectors. Annunciator LED wiring is supervised for opens. A Fault will activate System Trouble condition.

4XZM Zone Relay Module – The Zone Relay module provides Form-C general alarm and trouble contacts and the following Form-C relays:

- a) Zone 1.
- b) Zone 2.
- c) Zone 3.
- d) Zone 4.

The 4XZM includes a switch that disconnects all the relays (supervised).

SPECIFICATIONS

AC power:

- 120 VAC, 60 Hz, 1.2 amps.
- Wire size: 14 AWG (2.0 mm²) with 600 V insulation.

Initiating circuits:

- Power-limited circuitry.
- Operation: Class B (Style B).
- Standby voltage: 24 VDC (ripple = 1V peak-to-peak).
- Alarm current: 15 mA minimum.
- Short circuit current: 40 mA maximum.
- Maximum detector current in standby: 2 milliamps (peak) per zone.
- Maximum loop resistance: 100 ohms.
- End-of-line resistor: 4.7 K ohms, 1/2 watt (P/N 71252).
- Detector loop current is sufficient to ensure operation of one alarmed detector per zone.
- Supervisory current: 5 mA.

Notification circuits:

- Power-limited circuitry.
- · Maximum voltage drop due to wiring: 2 VDC
- Voltage: 24 VDC (nonfiltered).
- Total current to all external devices: 2.25 amps maximum.

- Maximum signaling current per circuit: up to 1.5 amps.
- End-of-line resistor = 4.7K ohms, 1/2 watt (P/N 71252).

Alarm and Trouble relays:

- Dry Form-C contacts rated for:
 - 2.0 amps @ 30 VDC (resistive).
 - 0.5 amps @ 30 VAC (resistive).

Digital Communicator 911AC or 411UDAC: For Central Station service: (NFPA 72 Central Station Protective Signaling System) or Remote Station Service (NFPA 72 Remote Station Protective Signaling System). Meets the requirements for delayed AC trouble reporting.

4XTM Transmitter Module:

4XTM for Local Energy Municipal Box service (NFPA 72 Auxiliary Protective Signaling System):

- Supervisory current: 5.0 mA.
- Trip current: 0.35 amps (subtracted from indicating appliance power).
- Coil voltage: 3.65 VDC.
- Coil resistance: 14.6 W.

• Total wire resistance between panel and trip coil = 3 ohm.

4XTM for Remote Station service (NFPA 72 Remote Station Protective Signaling System):

- Maximum current allowed for both circuits shall not exceed 10 mA per circuit.
- Reverse-polarity output voltage = 24 VDC.

4XZM Zone Relay Module: Dry, Form-C contacts rated for: 2.0 amps @ 30 VDC (resistive); 0.5 amps @ 30 VAC (resistive).

Four-wire smoke detector power output terminals: Up to 200 mA of current is available for four-wire smoke detectors.

RMS regulated 24 VDC power output terminals: Total DC current available for powering external devices is 0.5 amp (subtracted from indicating appliance power dedicated to all output circuits).

Non-resettable 24 VDC power output terminals: Total DC current available from this output is up to 200 mA (subtracted from four-wire smoke power).

Field-programming selections:

Six-position dipswitch to select:

- Alarm Verification.
- Waterflow Input.
- Supervisory Input.
- Silence Inhibit.
- Bell Disable.
- Walk Test.

Cabinet dimensions:

Door: 14.13" (35.89 cm) high x 14.63" (37.16 cm) wide.

Backbox: 14.0" (35.56 cm) high x 14.5" (36.83 cm) wide x 2.75" (6.985 cm) deep.

Cabinet: 3.39" (8.61 cm) deep.

PRODUCT LINE INFORMATION

- SFP-400B Four-zone Style B (Class B) 24-volt Control Panel.
- DP400B Dead-front dress panel option.
- **TR-2-G** Trim ring for flush mount between 16" (40.64 cm) center studs.





68 BOILER REAR FLUE OUTLET



68V BOILER TOP FLUE OUTLET

READ ALL INSTRUCTIONS BEFORE INSTALLING

To the owner: Installation and service should be performed by qualified contractor. To the installer: Leave all instructions with boiler for future reference.

Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Includes:

Installation

Start-up
Service
Parts

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Section VI: Non-Packaged Boilers—Control and Burner Installation 14

IMPORTANT: When calling or writing about the boiler, PLEASE GIVE THE MODEL, SERIES, AND C.P. NUM-BER, located on the boiler nameplate.

Section VII: Wiring & Fuel Line Piping

Wiring Diagram 15

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WARNING

DO NOT USE PETROLEUM—BASED CLEANING OR SEALING COMPOUNDS IN BOILER SYSTEM. SEVERE DAMAGE TO THE BOILER WILL OCCUR.

2

The following defined terms are used throughout this manual to bring attention to the presence of hazards of various risk levels, or to important information concerning the life of the product.

DANGER

indicates presence of a hazard which will cause severe personal injury, death or substantial property damage if ignored.

WARNING

indicates the presence of a hazard which *can* cause *severe* personal injury, death or substantial property damage if ignored.

CAUTION

NOTICE

indicates presence of a hazard which *will* or *can* cause minor personal injury or property damage if ignored.

indicates special instructions on installations, operation, or maintenance which are important but not related to personal injury hazards.

WARNING

FAILURE TO FOLLOW ALL INSTRUCTIONS IN PROPER ORDER CAN CAUSE PERSONAL INJURY OR DEATH. READ ALL INSTRUCTIONS BEFORE INSTALLING.

CODES

Installations must comply with all local codes, laws, regulations and ordinances. When required, the installations must conform to American Society of Mechanical Engineers Safety Devices for Automatically Fired Boilers, No. CSD-1.

AIR SUPPLY FOR COMBUSTION

WARNING

Adequate combustion and ventilation air must be provided to assure proper combustion and prevent the possibility of flue gas spillage.

Exhaust fan must not be used in boiler area.

- 1. In buildings of conventional frame, masonry or metal construction, infiltration is normally adequate to provide combustion air for boilers in unconfined rooms.
- 2. If the space is in a building of unusually tight construction, air should be obtained from outdoors or from spaces which freely connect with outdoors (see 4 below).
- 3. For boilers in confined rooms, two permanent openings shall be provided: one within 12 inches from the ceiling and one within 12 inches from the floor of the room. Each opening shall be at least one square inch per 1,000 BTUH (140 sq. in. per 1 GPH) boiler input, but must not be less than 100 sq. inches. These openings shall freely connect with areas having adequate infiltration from outside.
- 4. When all air is provided from outdoors the confined space shall be provided with two openings as outlined above. These openings shall connect directly or by ducts with outdoors or spaces (crawl or attic) that freely connect with the outdoors and shall be of the size listed below for that particular arrangement:
 - (a) One square inch per 4,000 BTUH (35 sq. in. per 1 GPH) of boiler input for direct outdoor air supply through an outside wall or through vertical ducting directly to outside.

Section I: Pre-Installation

- (b) One square inch per 2,000 BTUH (70 sq. in. per 1 GPH) of boiler input for direct outdoor air through horizontal ducting.
- (c) All ducting shall be of the same size as the opening to which it is connected with minimum dimensions of no less than 3 × 3 inches or 9 total square inches of area.
 (d) Other size ducting must comply with local codes.
- 5. For boilers installed in closets, alcoves, undercounters, etc., see pages 6 and 7.

CHIMNEY OR VENT REQUIREMENTS

Designed for NATURAL DRAFT FIRING ONLY. Use a Class A chimney.

Minimum chimney or vent sizes:

Boiler sizes 2–7 – 8" x 8" square (63/4 \times 63/4 inside liner) or 8" round

15 feet high

Boiler sizes 8–9 — 12" x 12" square (105/8 x 105/8 inside liner) or 12" round

20 feet high

In most cases a chimney or vent extended at least 3 feet above the highest part of the roof or other structure within 30 feet will be sufficient to prevent downdrafts. Increase chimney cross-sectional area and height at least 4 percent for each 1,000 feet above sea level.



Inspect existing chimney or vent before installing new boiler. Failure to remove blockage, clean, or replace damaged pipe can cause severe injury or death.

An induced draft fan may be necessary if:

- 1) Excessive resistance to flow of combustion gases can be expected.
- 2) Cross-section area of chimney is smaller than minimum recommended.
- 3) Chimney height is less than recommended.

If an induced draft fan is used, overfire draft should not exceed -.02 inches water column.



SELECT THE BOILER LOCATION

CONSIDER ALL CONNECTIONS TO THE BOILER BE-FORE SELECTING A LOCATION.

WARNING

To avoid personal injury, death or property damage, keep boiler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

STANDARD MINIMUM CLEARANCES

- 24 inches—front and top
- 6 inches—Flue pipe to combustible materials.
- 6 inches—Right and left sides (except steam with tankless heater)
- 15 inches-Left side for steam with tankless heater.

6 inches-Back (top outlet)

SPECIAL CLOSE CLEARANCES-See Pages 6 and 7.

RESIDENTIAL GARAGE INSTALLATION

WARNING

Install boiler so burner is at least 18 inches above the floor.

BOILER FOUNDATION

Boiler may be installed on non-carpeted combustible flooring. Boiler legs provide approximately one inch air space for natural aeration.

Boiler must be installed on level surface. If non-level conditions exist or if area could flood, build LEVEL concrete or solid brick foundation. See Figure 1 and Table I.



FIGURE 1

TABL	TABLE I BOILER FOUNDATION SIZES						
	L = Length of Foundation						
Boiler Size	Packaged Water Only	All Other Boilers					
268	121/2"	—					
368	15 ¹ /2"	151/2"					
468	151/2"	181/2"					
568	181/2"	211/2"					
668	211/2"	241/2"					
768	241/2"	271/2"					
868		301/2"					
968	_	331/2"					



PLACEMENT

Position boiler close to chimney. Provide minimum clearances as indicated.

NOTICE

When transporting with crate removed, do not tip boiler forward. Damage to burner may result.

For 8 and 9-section blocks:

- 1. To split block:
 - a. Remove cleanout plate.
 - b. Remove (3) 51/2" tie rods.
 - c. Pull block apart. Save rods, nuts, washers, elastomer seals, and cope seal.
- 2. Move divided block to location.
- 3. Reassemble:
 - a. Clean port openings with dry rag. DO NOT USE OIL. Place elastomer seals in port openings.
 - b. Re-form cope seal and place in sealing groove.
 - c. Draw sections together evenly until metal-to-metal contact is made at nipple ports.
 - d. Replace cleanout plate.

HYDROSTATIC PRESSURE TEST

Section II: Installing Boiler

Pressure test BEFORE attaching piping or electrical supply. Install, but do not hook up, tankless heater (if used).

CAUTION

DO NOT pressure test with water level control installed. Damage to control can occur.

- 1. Remove shipping nipple.
- 2. Install drain valve.
- 3. Install valve at highest tapping to vent air.
- 4. Connect water supply.
- 5. Plug remaining tappings.
- 6. Fill boiler. Vent all air. Test at $1\frac{1}{2}$ times working pressure for more than 10 minutes.

WARNING

DO NOT LEAVE BOILER UNAT-TENDED. Cold water fill could expand and cause excess pressure.





TABLE II CONTROL TAPPINGS

- 7. Check for maintained gauge pressure.
- 8. Check for leaks. Repair if found.

CAUTION

Repair leaks at once. Damage to boiler can result. NEVER use petroleumbased stop leak compounds. Seal damage and leakage between sections will occur.

- 9. Drain boiler and remove testing plugs.
- 10. On initial start-up, check for leaks in system piping. If found, repair at once.

LOCATION	SIZE	WATER	STEAM
С	3/4"	Drain	Drain
D (in plate)	11/2"	High-Limit Control (bushed to 3/4")	Skim Tapping
D (in water heater)	3/4″	Combination High-Limit and Operating Control	-
н	1/4"	Combination Pressure and Temperature Gauge	Pressure Gauge and Pressure Limit Control
K ₁	3/4"	Water Relief Valve	Gauge Glass and/or Low- Water Cutoff (bushed to 1/2")
K ₂	3/4"	Plugged	Gauge Glass and/or Low- Water Cutoff (bushed to 1/2")
N	3/4"	To Compression Tank	Steam Relief Valve
U ₁ (in steam heater)	3/4"	-	Heater Operating Control (368 through 568 Boilers)
U ₂	3/4"	Plugged	Heater Operating Control (668–968 Boilers)





5



JACKET ASSEMBLY (For non-packaged boilers)

Refer to jacket erecting instructions packed in the jacket carton.

BREECHING ERECTION

Back outlet (68)—see Figure 3. Top outlet (68V)—see Figure 4.

Use full-sized breeching (P-268 can be reduced to 5 inches). See page 3 for chimney size.



FIGURE 3 68 BREECHING CONNECTION Connection must be above bottom of chimney to avoid blockage. Breeching must not enter chimney far enough to cause obstruction. Use a thimble or slip joint where breeching enters the chimney to allow removal for cleaning.



Avoid long horizontal breechings, excessive numbers of elbows or tees, or other obstructions restricting flow of combustion gases.



68V BREECHING CONNECTION

Section III: Close Clearance Installation

Water boilers can be located in close-clearance areas (such as alcove, closet, under counters, etc.) only when all instructions in this section are followed. Substitute these instructions for corresponding material in manual. All other procedures and practices must remain the same.

Standard minimum clearances (shown on page 4) should be used where possible. Where closer clearances are required:

Top of boiler—if less than 24" are available, provide removable surface to allow for cleaning boiler flueways. Distance between combustible surface and boiler can be no less than 2 inches.

Right and/or left side-2 inches minimum.

Front of boiler—2 inches minimum from burner. Double-wall flue pipe to combustible surface—as listed in Ta-

ble III and Figures 7 and 8 or 9.

NOTICE

6 1

Flue pipe clearances must take precedence over jacket clearances.

- 1. Install boiler using clearances listed.
- 2. Install barometric control 18-20 inches from boiler in breeching.
- Obtain and use kit, part no. 386-500-050.
 a. Attach manual reset temperature switch near upper surface of enclosed area. See Figure 5.
 - b. Install switch leads to burner primary control. See Figure 6.
- 4. Provide two fresh air openings when installing in confined space. Size each opening one square inch per 1,000 BTU (140 sq. in. per 1 GPH) input. Locate openings near top and bottom of enclosed space.

5. WARNING

TO THE HOMEOWNER: If red button on manual reset temperature switch has popped out, CALL YOUR SERVICEMAN IMMEDI-ATELY.









NOTE: Dimension "A" = Desired Clearance As Shown in Table III.

FIGURE 7



REFER TO WIRING DIAGRAM, PAGE 15.

FIGURE 6

TABLE III PROTECTION REQUIRED FOR CLEARANCES LESS THAN 6 INCHES*

WHEN DESIRED MINIMUM CLEARANCE FROM DOUBLE- WALL VENT PIPE TO COMBUSTIBLE SURFACE IS:	USE THE FOLLOWING PROTECTION**
3"	1/4" insulating millboard*** spaced out 1"
3"	28 gage sheet metal on 1/4" insulating millboard***
2"	28 gage sheet metal spaced out 1"
2"	28 gage sheet metal on 1/8" insulating millboard *** spaced out 1"
2"	22 gage sheet metal on 1" mineral wool bats reinforced with wire or equivalent
4"	1/4" insulating millboard ***

NOTES:

- * All clearances measured from outer surface of equipment to combustible surface, not to the protection used.
- ** Apply to combustible surface unless otherwise noted. Cover all surfaces as specified in Table III and Figure 7. Thicknesses are minimum.
- ** Factory fabricated board made of noncombustible materials, normally fibers, having thermal conductivity in range of 1 BTU inch per sq. ft. per °F or less.
- Spacers shall be made of noncombustible material.



► SEE TABLE III AND FIGURE 7

FIGURE 8



FIGURE 9



Undersized expansion tanks cause system water to be lost from relief valve and make-up water added through fill valve. Eventual section failure can result. Expansion tank installation:

 a) Closed type expansion tank—connect from the ³/₄" N.P.T. tapping "N" to the expansion tank using ³/₄" N.P.T. piping. Horizontal expansion tank piping must pitch upward toward tank at least 1 inch for each 5 feet of piping.



FIGURE 10 PIPING CONNECTIONS FOR WATER BOILERS WITH CLOSED-TYPE EXPANSION TANK

b) Closed diaphragm pre-pressurized type expansion tank—may be located anywhere in the system, preferably near the boiler.

NOTICE

A manual or automatic type air vent must be installed in the $^{3}/_{4}$ " N.P.T. tapping "N" when a closed diaphragm pre-pressurized tank is used. Refer to Figure 11.

FIGURE 11 PIPING CONNECTIONS FOR WATER BOILERS WITH CLOSED DIAPHRAGM PRE-PRESSURIZED TANK

TABLE IV *WATER BOILER PIPE SIZES

Boiler Size	Supply Pipe Size "A"	Return Pipe Size ''B''	Piping to Expansion Tank "C"
268/268V	1" N.P.T.	1″ N.P.T.	3⁄4″ N.P.T.
368-468/368V-468V	11/4" N.P.T.	11/4" N.P.T.	3/4" N.P.T.
568-768/568V-768V	11/2" N.P.T.	11/2" N.P.T.	3/4" N.P.T.
868-968	2" N.P.T.	11/2" N.P.T.	³⁄4″ N.P.T.

*Minimum pipe size with 20°F temperature rise through the boiler.

- 2. Connect supply, return and cold water fill piping.
- 3. Install water relief valve in K1 tapping.

WARNING

Relief valve discharge piping must be piped near to the floor or to a floor drain to eliminate potential of severe burns. Do not pipe where freezing could occur.

4. Low water cut-off:

CLOSED DIAPHRAGM

TANK

CIRCULATOR

PRE-PRESSURIZED

TYPE EXPANSION

- i) Should be installed if boiler is located above radiation level.
- ii) May be required on water boilers by certain state, local or territorial codes or by insurance companies.

Use a low water cut-off designed for water installations. An electrode probe type is recommended. Install in a tee in supply piping above boilers.

5. If the system is to comply with ASME codes, an additional high temperature limit is needed. Purchase and install in supply piping from the boiler.

- 6. For multiple zoning with circulators, these changes must be made (see Figure 12):
 - a) Size each circulator to individual circuit requirements.
 - b) Remove circulator and preformed pipe (when furnished as standard equipment).
 - c) From 1¹/₂" N.P.T. tapped return inlet at front of boiler, construct a pipe manifold according to the number of circulators used.
 - d) Install circulators.
 - e) Install flow control values to prevent gravity circulation.

- f) Install balancing valves to adjust the flow so it is about the same in each zone.
- g) Separate relays (Honeywell R845A, White-Rodgers 829A-845, or equivalent) are required for each additional circulator.
- 7. For multiple zoning with zone valves, install balancing valves to adjust the flow so it is about the same in each zone. A separate transformer is recommended to power zone valves. Refer to zone valve manufacturer's instructions.



**MAY BE INSTALLED IN ALTERNATE LOCATIONS

MULTIPLE ZONING WITH CIRCULATORS FIGURE 12

USE WITH REFRIGERATION SYSTEM

The boiler must be installed so that chilled medium is piped in

parallel with the heating boiler with appropriate valves to prevent the chilled medium from entering the boiler. Consult 2. To protect boiler from condensation formed by low water temperature returned from large water content converted gravity systems, etc., see Figure 15.



FIGURE 13 PIPING FOR COMBINATION HEATING & COOLING (REFRIGERATION) SYSTEMS

BYPASS PIPING

BYPASS PIPING IS NOT NORMALLY REQUIRED ON TYPICAL BASEBOARD SYSTEM.

Bypass piping should be used for the following installations. Bypass, supply, and return piping should be same size.

1. To protect system radiant panels, plaster, etc. from high temperature water supplied from boiler, see Figure 14.





FIGURE 15

3. To protect boiler from condensation while protecting system from high water temperatures, as in large water content radiant ceiling panels, see Figure 16.





- 1. Connect piping near boiler as shown in Table V and Figures 17 or 18.
- 2. Connect cold water fill supply piping close to boiler in the condensate return piping.
- 3. Install steam relief valve in "N" tapping.
 - WARNING

Relief valve discharge piping must be piped near to floor or to a floor drain to eliminate potential of severe burns. Do not pipe where freezing could occur.

TABLE V STEAM BOILER PIPE SIZES

Steam Boiler	Ris Pipe	Riser Pipe Size		Equalizer	
Size	Α	В	Н	J	
368-768	2"	_	2"	1 ¹ /4″	
868-968	2"	2"	21/2"	11/4"	

*24" minimum from water line to the bottom of header.



REPLACEMENT BOILER CONNECTIONS ONE-PIPE STEAM SYSTEM

•

Recommended piping for replacement boiler on older one-pipe steam system is shown below.

Some installations may require an added water tank for additional steaming capacity. By installing two plugged tees as shown in Figure 19, a tank can easily be added if necessary.

Obtain Bulletin AE-8403 from your Weil-McLain distributor for tank sizing.



NOTE: SWING JOINTS NOT SHOWN

> FIGURE 19 RECOMMENDED PIPING FOR REPLACEMENT STEAM BOILER—ONE-PIPE SYSTEM

Section V: Tankless & Storage Heater Hook-up

TANKLESS HEATER HOOK-UP

Install as shown in Figure 20 (water boiler) or Figure 21 (steam boiler). 268/268V cannot use a tankless heater.

- 1. Install automatic mixing valve.
- 2. Install flow regulating valve. Size according to intermittent draw of heater as shown in Table VI.
- 3. Operating control with a small differential scale is recommended. Install in temperature control tapping in heater plate.
- 4. In hard water areas, it is advisable to soften cold domestic supply water to tankless heater to prevent lime build-up.







FIGURE 21 TANKLESS HEATER PIPING (STEAM BOILER)

	BOILER TANKLESS HEATER RATINGS							
Boiler E Size	Heater No.	*Intermittent Draw GPM 100°F. Average Temp. Rise	**Continuous Draw GPM 100°F Temp. Rise	inlet and Outlet Tappings	Temp. Control Tapping			
WATER	T							
368/368V	E-624	3.00	2.00	1/2"	3/4"			
468/468V	E-624	3.25	2.70	1/2″	3/4"			
568/568V	E-624	3.25	3.30	1/2*	3/4"			
668/668V	E-626	3.50	4.00	1/2"	3/4 "			
768/768V	E-632	4.25	4.60	1/2"	3/4 "			
868-968	E-632	4.50	4.75	1/2"	3/4 "			
STEAM								
368	35-S-29	3.00	2.00	3/4 "	3/4″			
468	35-S-29	3.25	2.70	3/4"	3/4"			
568	35-S-29	3.50	3.30	3/4"	3/4 "			
668	35-S-29	3.75	4.00	3/4"	3/4"			
768-968	35-S-29	4.00	4.60	3/4"	3/4"			

TABLE VI STEAM AND FORCED HOT WATER

Weil-McLain ratings based on 60 PSIG domestic water pressure at heater.

 Gallons of water per minute heated from 40° to 140°F. with 200°F. boiler water temperature.
 Continuous draw—no recovery period.
 Not available on 268/268V boilers.

STORAGE HEATER HOOK-UP (forced hot water boiler only)

NOTICE

62-2-E Storage Heater cannot be used with 268/268V thru 568/568V forced hot water boilers or any size steam boiler.

- 1. Locate tank as high as possible above boiler.
- 2. Vertical type storage tank can be used if bottom of tank can be located above top of boiler.
- 3. To provide gravity circulation:
 - a) Horizontal supply from heater to tank must pitch upward 1 inch for each 10 feet of piping.
 - b) Horizontal return from tank to heater must pitch downward 1 inch for each 10 feet of piping.
- 4. Locate return piping above storage heater.
- 5. Use as few elbows and pipe fittings as possible

TABLE VII STORAGE HEATER RATINGS

Boiler Size*	Storage Heater Number	180° Boller Water Heater Capacity Gallons 40°–140° Rise	212° Boller Water Heater Capacity Gallons 40°-140° Rise
668–968 668V–768V	62-2-E	50 in 3 Hours	70 in 3 Hours
Recommended S	torage Tank	50–90 Gallons	75-125 Gallons

*No. 62-2-E storage heater cannot be used with 268/268V through 568/568V water boilers or with any steam boilers.



FIGURE 22 STORAGE HEATER PIPING

Section VI: Non-packaged Boilers—Control & Burner Installation

WARNING

Failure to properly install, pipe and wire boiler controls may result in severe damage to boiler, building and personnel.

WATER BOILER CONTROLS

1. Install control where shown on tapping table, page 5.

STEAM BOILER CONTROLS

- 1. Connect a low water cut-off to gauge glass tappings K1 and K2. Refer to Figure 23. Follow instructions packed with control. Pipe drain near the floor or floor drain.
- 2. Install the pigtail syphon, pressure gauge and steam pressure limit control. See Figure 23.

OIL BURNER

For B-68/68V boiler:

- 1. Place gasket over end of air tube.
- 2. Loosely screw three mounting bolts into boiler mounting plate.
- 3. Mount burner.
- 4. Tighten mounting bolts.

For A-68/68V boiler:

WARNING

- 1. Secure universal mounting flange and gasket to burner mounting plate. Use three bolts provided.
- 2. Position burner so it is level to $1^{1/2}^{\circ}$ tilt downward. Air tube should be flush to 1/4 inch recessed from inside wall of combustion chamber.





FIGURE 23 STEAM CONTROLS

Section VII: Wiring & Fuel Line Piping

WIRING

For your safety, turn off electrical power supply at service entrance panel before making any electrical connections to avoid possible electrical shock hazard.

Wiring must comply with the National Electrical Code and any additional national, state, or local codes.

See wiring diagram, page 15 for proper wiring.

All safety circuit wiring must be N.E.C. Class 1.

For any additional electrical safety controls, use No. 14 gauge wire. Electrical supply wiring to burner should be No. 14 gauge or heavier with fused disconnect switch. Be sure boiler is properly grounded at switch box.

FUEL LINE PIPING

Refer to separate burner manual and any local or national code requirements which may apply to sizing and installing the fuel line piping.



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Section VIII: Final Adjustments

WATER TREATMENT

Never use petroleum based stop-leak compounds. Water seal deterioration will occur, resulting in leakage between sections.

Continual make-up water will reduce boiler life. Minerals can build up in the sections, reducing heat transfer, overheating the cast iron, and causing section failure.

For unusually hard water areas or low pH conditions (less than 7.0) consult local water treatment company.

Freeze protection (when used):

Use antifreeze especially made for hydronic systems. Inhibited propylene glycol is recommended. DO NOT use undiluted or automotive type antifreeze.

50% solution provides maximum protection to about -30° F. Local codes may require a back-flow preventer or actual disconnect from city water supply.

Determine quantity according to system water content. Boiler water content is listed on page 18.

Follow antifreeze manufacturer's instructions.

FILLING WATER BOILER

- 1. Close manual air vents, drain cocks, and automatic air vent, if used.
- 2. Fill to correct system pressure. Correct pressure will vary with each application.
- 3. Open automatic air vent two turns, if used.
- 4. a) Starting on lowest floor, open air vents one at a time until water squirts out. Close vent.
 - b) Repeat with remaining vents.
- 5. Refill to correct pressure.
- 6. Close, then open automatic air vent, if used, one full turn for normal boiler operation.

FILLING STEAM BOILER

- 1. Do not fill (except for leakage tests) until boiler is ready to be fired.
- 2. Fill to normal waterline, halfway up gauge glass.
- 3. Boiler water pH 7.0 to 8.5 is recommended.
- 4. Follow skimming procedure.

BURNER ADJUSTMENT

CAUTION

Final burner adjustments must be made using combustion test equipment to assure proper operation. DO NOT FIRE BOILER WITHOUT WA-TER OR SECTIONS WILL OVER-HEAT.

- 1. Refer to burner manual for start-up. Adjust air band to provide a clean yellow flame without smokey tips.
- 2. Allow boilers to heat to design conditions.
- 3. Using combustion test equipment, adjust burner for:a) 0 smoke with maximum CO₂.
 - b) -0.02 inches W.C. negative draft overfire.

SKIMMING STEAM BOILER

CAUTION

Clean newly installed steam boiler to remove oil and grease. Failure to properly clean can result in violent fluctuations of water level, water passing into steam mains, or high maintenance costs on strainers, traps and vents. Do NOT use petroleum based products in boiler.

- 1. Provide $1^{1/2}$ " piping from boiler skim tapping to floor drain.
- 2. Adjust waterline to midpoint of skim piping.
- 3. Fire boiler to maintain a temperature below steaming rate during skimming process.
- 4. Feed in water to maintain water level. Cycle burner to maintain temperature below steaming.
- 5. Continue skimming until discharge is clear. This may take several hours.
- 6. Drain boiler. While boiler is warm but NOT HOT, flush all interior surfaces under full pressure until drain water runs clear.
- 7. Remove skim piping and plug tapping.
- 8. Close drain cock. Fill with fresh water to waterline. Start burner and steam for 15 minutes to remove dissolved gases. Stop burner.
- 9. Check traps and air vents for proper operation.

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Section IX: Check-out Procedure

CHECK-OUT PROCEDURE (Check-off steps as completed.)

- \Box 1. Water boiler:
 - a. System properly filled with water?
 - b. Air purged from system?
 - c. Automatic air vent, if used, open one turn?
- \Box 2. Steam boiler:
 - a. Boiler properly filled with water?
 - b. System vents operating properly?
 - c. Boiler properly skimmed?
- □ 3. Air purged from oil piping? Piping checked for leaks?
- □ 4. Proper draft and burner flame? Final adjustment made with combustion test equipment?
- □ 5. Test safety controls: If boiler is equipped with a low water cut-off or additional safety controls, test for operation as outlined by manufacturer. Burner should be operating and should go off when controls are tested. When safety devices are restored, burner should reignite.

- □ 6. Test limit control: While burner is operating, move indicator of limit control below actual boiler water temperature or pressure. Burner should go off. Circulator should continue to operate (water boilers only). Raise limit control above boiler water temperature or pressure and burner should reignite.
- □ 7. Limit control set to design temperature or pressure requirements of system? Maximum limit setting -240°F. (water boilers)-15 psi (steam boilers).
- □ 8. For multiple zones, flow adjusted so it is about the same in each zone (water boilers only)?
- 9. Thermostat heat anticipator set properly? Refer to wiring diagram.
- 10. Boiler cycled with thermostat? Raise to highest setting. Boiler should go through normal start-up cycle. Lower to lowest setting. Boiler should go off.
- \Box 11. Several operating cycles observed for proper operation?
- \Box 12. Room thermostat set to desired temperature?
- □ 13. All instructions shipped with boiler reviewed with owner or maintenance person, returned to envelope and given to owner or displayed near boiler?
- 14. On initial start-up, check for leaks in system piping. If found, repair at once.

Installation and Service Certificate

BOILER MODEL	SERIES	CP NUMBER	DATE INSTALLED			
BTU INPUT		 Installation instructions have been followed. Check-out sequence has been performed. Above information is certified to be correct. Information received and left with owner/maintenance person. 				
Installer (Company)	(Address)	(Phone)	(Installer's Signature)			

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Section X: Ratings—Data

RATINGS

The second secon		EATING	NET I = B = R RATINGS**			I=B=R CHIMNEY		BOILER WATER CONTENT (GAL.)		T (GAL.)		
BOI	LER	BURNER CAPACITY	CAPACI	ГҮ МВН	STEAM	STEAM	WATER	SIZE	HEIGHT	WATER		STEAM
PREFIX	NUMBER	GPH	STEAM	WATER	SQ. FT.	MBH	MBH	INCHES	FEET	P68; P,A,orB-68V	A or B-68	(To Waterline)
P	268/268V	0.70	_	86	_	_	74.8	8 × 8	15	7.0	_	
A,B, P	368 368V	0.95 0.95	113	114 114	355	84.8 —	99.1 99.1	8 × 8 8 × 8	15 15	13.3 13.3	13.3 13.3	11.2 —
A,B, P	468 468∨	1.25 1.25	149	151 151	465 —	111.8 —	131.3 131.3	8 × 8 8 × 8	15 15	8.6 8.6	14.9 14.9	12.4 —
A,B, P	568 568V	1.50 1.50	179	181 181	560 —	134.3 —	157.4 157.4	8 × 8 8 × 8	15 15	10.2 10.2	16.5 16.5	13.6 —
A,B, P	668 668V	1.80 1.80	216 —	218 218	675 —	162.0 —	189.6 189.6	8 × 8 8 × 8	15 15	11.8 11.8	18.1 18.1	14.8 —
A,B, P	768 768V	2.05 2.05	246 	248 248	770	184.5 —	215.7 215.7	8 × 8 8 × 8	15 15	13.4 13.4	19.7 19.7	16.1 —
A,B	868	2.30	269	269	840	201.8	233.9	12 × 12	20	_	21.3	17.4
A,B	968	2.55	298	298	930	223.6	259.1	12 × 12	20		22.9	18.6

Based on standard test procedures prescribed by the United States Department of Energy at combustion condition of 13% CO₂. <u>†</u>.

Net I-B-R ratings are based on a piping and pick-up allowance of 1.15. Steam ratings are based on an allowance of 1.333. An additional allowance should be made for unusual piping and pick-up. and pick-up loads.

IBR Gross Output

DIMENSIONS (Inches)

68	REAR	FLUE	OUT	LET

			L* (IN)		
BOILER SIZE	A (IN)	B (IN)	PACKAGED WATER	PACKAGED STEAM OR KNOCKED DOWN WATER OR STEAM	
268	—	91/2	103/8	—	
368	_	91/2	133/8	133/8	
468	_	121/2	13 ³ /8	163/8	
568	-	151/2	16 ³ /8	193/8	
668	-	181/2	19 ³ /8	223/8	
768	-	211/2	223/8	253/8	
868	251/4	241/2	_	283/8	
968	281/4	271/2	_	313/8	

(H)



*Jacket extension increases length 171/2 in.

∎18**=**





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28-

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PACKAGED SIDE (STEAM)

15½

U_I.

HEATER /

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-2¼

APPROX.

13눈

68 REAR FLUE OUTLET (Continued)







ASSEMBLED LEFT SIDE







INTERMEDIATE

— 19



3

68V TOP FLUE OUTLET

DIMENSIONS

BOILER	INCHES						
SIZE	Α	В	E	L*			
268V+	5	91/2	59/16	103/8			
368V	5	91/2	5 ^{9/} 16	133/8			
468V	6	121/2	71/16	133/8			
568V	6	151/2	71/16	16 ³ /8			
668V	7	181/2	71/16	193/8			
768V	7	211/2	71/16	223/8			

+ 268V available as packaged unit only *Jacket extension increases length 171/2 in.



PACKAGED FRONT (WATER ONLY)





10

ASSEMBLED FRONT



B

28

PACKAGED SIDE (WATER ONLY)







INTERMEDIATE

Section XI: Replacement Parts



PARTS LIST

REF.	DESCRIPTION	
NO.	DESCRIPTION	NUMBER
1	Front Section, P-68-W (6813) Front Section, P-68-S, A or B-68–W or S (6813)	316-601-216 316-601-249
2	Intermediate Section (6815) Intermediate Section w/Lugs, A or B-868/968–W or S (6816)	316-601-222 316-601-225
3	"T" Back Section, Wide, P-68-S, A or B-68-W or S (6818) (except 868/968) "T" Back Section, Wide w/Supply, A or B-868/968-W or S (6819) Back Section, Narrow, P-268-W/P-468-W thru P-768-W (6814)	316-601-231 316-601-234 316-601-219
	Back Section, Wide, P-368-W (6817)	310-601-228
4 5	Elastomer Seal, 6″ (top) Elastomer Seal, 3″ (bottom)	592-800-007 592-800-010
6	Tie Rod $-1/2 \times 81/2$ (P-288-W) $1/2 \times 10$ (P-368-W) $1/2 \times 111/2$ (P-468-W) $1/2 \times 111/2$ (P-468-W) $1/2 \times 111/2$ (P-568-W) $1/2 \times 111/2$ (P-568-W) $1/2 \times 10$ (P-368-S, A or B-368-W or S) $1/2 \times 10$ (P-368-S, A or B-568-W or S) $1/2 \times 101/4$ (P-768-S, A or B-568-W or S) $1/2 \times 101/4$ (A or B-868/968-W or S) $1/2 \times 101/2$ (A or B-868/968-W or S) $1/2 \times 101/2$ (A or B-968-W) $3/8 \times 9$ (P-368-W) $3/8 \times 101/2$ (P-268-W) $3/8 \times 101/2$ (P-268-W) $3/8 \times 101/2$ (P-268-W) $3/8 \times 101/2$ (P-768-W) $3/8 \times 101/2$ (P-688-S) $3/8 \times 101/2$ (A or B-868/W or S) $3/8 \times 101/2$ (A o	560-234-466 560-234-467 560-234-477 560-234-477 560-234-478 560-234-478 560-234-478 560-234-478 560-234-478 560-234-478 560-234-478 560-234-478 560-234-478 560-234-478 560-234-488 560-234-488 560-234-400 560-234-400 560-234-400 560-234-400 560-234-400 560-234-400 560-234-400 560-234-400 560-234-400 560-234-400 560-234-402 560-234-402 560-234-402 560-234-402 560-234-402 560-234-402 560-234-402 560-234-402 560-234-402 560-234-402

68 BOILER

Can be purchased at local supply house. NOTE: Order burner parts directly from burner manufacturer.

15

NO.	DESCRIPTION	NUMBER
	Reg. Hex Nut, 3/8 Washer, Plain Type A 3/8–.438 × 1.00 × .083	5
	Cope Seal (7' per joint)	591-641-862
7	Cleanout Plate268/368 468 568 668 768 868 968	450-030-949 450-030-950 450-030-951 450-030-952 450-030-953 450-030-954 450-030-954
8	Cleanout Plate Gasket—268/368 466 568 668 768 868 968 968	591-221-260 591-221-261 591-221-262 591-221-263 591-221-264 591-221-264 591-221-265 591-221-266
9	Rectangular Heater Cover Plate (Steam) Tankless Heater w/Gasket (Steam) 35-S-29	450-030-934 590-921-666
10	Rectangular Heater Cover Plate Gasket (Steam)	590-317-579
11	Round Heater Cover Plate—3/4" Opening (Water) 11/2" Opening (Steam) Tankless Heater w/Gasket (Water)—E-624 E-626 Storace Heater w/Gasket 62-E-2	592-243-217 592-243-216 590-921-670 590-921-675 590-921-658 590-921-665
12	Round Heater Cover Plate Gasket (Water)	590-317-495
13	Universal Burner Mounting Plate Ass'y (includes burner mounting plate, refractory, and insulation) Front Refractory Cerafelt Insulation	343-500-540 591-000-061 591-221-054
14 15	Observation Port Shutter Secondary Air Shutter	460-039-867 460-039-898
16 17	Rear Refractory Back Refractory Pin Refractory Blanket 268/368 468 568 668 768 868 968	591-000-060 591-000-054 591-221-235 591-221-230 591-221-231 591-221-232 591-221-233 591-221-233 591-221-234 591-221-236
18	Return Pipe Manifold	591-124-002

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68V BOILER



PARTS LIST

REF. NO.	DESCRIPTION	PART NUMBER
1	Front Section (6823)	316-601-237
2	Intermediate Section (6825)	316-601-243
3	Back Section, Wide, P-368V-W, A or B-368V-W (6827) Back Section, Narrow, P-468V-W thru P768V-W, A or B-468V-W thru A or B-768V-W (6824)	316-601-246 316-601-240
4 5	Elastomer Seal, 6" (top) Elastomer Seal, 3" (bottom)	592-800-007 592-800-010
6	Tie Rod—1/2 × 81/2 (268V) 1/2 × 10 (368V) 1/2 × 111/2 (468V) 1/2 × 111/2 (468V) 1/2 × 111/2 (568V) 1/2 × 101/2 (768V) Reg. Hex Nut, 1/2–13 Lockwasher, 1/2 Helical Spring Tie Rod—3/6 × 71/2 (268V) 3/6 × 101/2 (468V) 3/6 × 101/2 (468V) 3/6 × 101/2 (468V) 3/6 × 191/2 (768V) Reg. Hex Nut, 3/6 Washer, Plain Type A 3/6–.438 × 1.00 × .083	560-234-466 560-234-469 560-234-471 560-234-471 560-234-478 560-234-478 560-234-400 560-234-400 560-234-400 560-234-430 560-234-435
	Cope Seal (7' per joint)	591-641-862
7	Cleanout Plate—268V/368V 468V 568V 668V 768V	450-030-960 450-030-961 450-030-962 450-030-963 450-030-964

REF. NO.	DESCRIPTION	PART NUMBER
8	Cleanout Plate Gasket—268V/368V 468V 568V 668V 768V	591-221-260 591-221-261 591-221-262 591-221-263 591-221-263 591-221-264
11	Round Heater Cover Plate—3/4" Opening (Water) Tankless Heater w/Gasket (Water)—E-624 E-626 E-632	592-243-217 590-921-670 590-921-675 590-921-658
12	Round Heater Cover Plate Gasket (Water)	590-317-495
13	Universal Burner Mounting Plate Ass'y (includes burner mounting plate, refractory, and insulation) Front Refractory Cerafelt Insulation	343-500-540 591-000-061 591-221-054
14 15	Observation Port Shutter Secondary Air Shutter	460-039-867 460-039-898
16 17	Rear Refractory Back Refractory Pin Refractory Blanket 266V/368V 468V 568V 668V 768V	591-000-060 591-000-054 591-221-235 591-221-230 591-221-231 591-221-231 591-221-232 591-221-233
18	Vertical Flue Collector 268V/368V 468V 568V 668V 768V	450-020-100 450-020-101 450-020-102 450-020-103 450-020-104
19	Return Pipe Manifold	591-124-002

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APPENDIX F:

EMG ABBREVIATED ACCESSIBILITY CHECKLIST

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Property Name: Howes House **Date:** October 25, 2010

Project Number: 95268.10R-002.017

	EMG Abbreviated Accessibility Checklist								
	Building History	Yes	No	N/A	Comments				
1.	Has the management previously completed an ADA review?		\checkmark						
2.	Have any ADA improvements been made to the property?	~							
3.	Does a Barrier Removal Plan exist for the property?		\checkmark						
4.	Has the Barrier Removal Plan been reviewed/approved by an arms-length third party such as an engineering firm, architectural firm, building department, other agencies, etc.?		~						
5.	Has building ownership or management received any ADA related complaints that have not been resolved?		~						
6.	Is any litigation pending related to ADA issues?		~						
	Parking	Yes	No	N/A	Comments				
1.	Are there sufficient parking spaces with respect to the total number of reported spaces?	~							
2.	Are there sufficient van-accessible parking spaces available (96" wide/ 96" aisle for van)?	~							
3.	Are accessible spaces marked with the International Symbol of Accessibility? Are there signs reading "Van Accessible" at van spaces?	~							
4.	Is there at least one accessible route provided within the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones, if provided, and public streets and sidewalks?	~							
5.	Do curbs on the accessible route have depressed, ramped curb cuts at drives, paths, and drop-offs?	~							



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	EMG Abbreviated	Accessil	bility Cł	necklist	
	Parking	Yes	No	N/A	Comments
6.	Does signage exist directing you to accessible parking and an accessible building entrance?	~			
	Ramps	Yes	No	N/A	Comments
1.	If there is a ramp from parking to an accessible building entrance, does it meet slope requirements? (1:12)	~			
2.	Are ramps longer than 6 ft complete with railings on both sides?		\checkmark		Railing does is not continuous to the top of the ramp.
3.	Is the width between railings at least 36 inches?	\checkmark			
4.	Is there a level landing for every 30 ft horizontal length of ramp, at the top and at the bottom of ramps and switchbacks?	~			
	Entrances/Exits	Yes	No	N/A	Comments
1.	Is the main accessible entrance doorway at least 32 inches wide?	\checkmark			
2.	If the main entrance is inaccessible, are there alternate accessible entrances?	\checkmark			
3.	Can the alternate accessible entrance be used independently?	\checkmark			
4.	Is the door hardware easy to operate (lever/push type hardware, no twisting required and not higher than 48 inches above the floor)?	\checkmark			
5.	Are main entry doors other than revolving door available?	\checkmark			
6.	If there are two main doors in series, is the minimum space between the doors 48 inches plus the width of any door swinging into the space?	~			
	Paths of Travel	Yes	No	N/A	Comments
1.	Is the main path of travel free of obstruction and wide enough for a wheelchair (at least 36 inches wide)?	~			
2.	Does a visual scan of the main path reveal any obstacles (phones, fountains, etc.) that protrude more than 4 inches into walkways or corridors?	~			
3.	Are floor surfaces firm, stable, and slip resistant (carpets wheelchair friendly)?	\checkmark			



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	EMG Abbreviated Accessibility Checklist							
	Paths of Travel	Yes	No	N/A	Comments			
4.	Is at least one wheelchair-accessible public telephone available?	\checkmark						
5.	Are wheelchair-accessible facilities (toilet rooms, exits, etc.) identified with signage?	~						
6.	Is there a path of travel that does not require the use of stairs?	~						
7.	If audible fire alarms are present, are visual alarms (strobe light alarms) also installed in all common areas?	~						
	Elevators	Yes	No	N/A	Comments			
1.	Do the call buttons have visual signals to indicate when a call is registered and answered?			~	Alternative lift device provided			
2.	Are there visual and audible signals inside cars indicating floor change?			\checkmark				
3.	Are there standard raised and Braille marking on both jambs of each host way entrance?			~				
4.	Do elevator doors have a reopening device that will stop and reopen a car door if an object or a person obstructs the door?			~				
5.	Do elevator lobbies have visual and audible indicators of car arrival?			~				
6.	Does the elevator interior provide sufficient wheelchair turning area (51" x 68")?			~				
7.	Are elevator controls low enough to be reached from a wheelchair (48 inches front approach/54 inches side approach)?			~				
8.	Are elevator control buttons designated by Braille and by raised standard alphabet characters (mounted to the left of the button)?			~				
9.	If a two-way emergency communication system is provided within the elevator cab, is it usable without voice communication?			~				
	Restrooms	Yes	No	N/A	Comments			
1.	Are common area public restrooms located on an accessible route?	~						
2.	Are pull handles push/pull or lever type?	\checkmark						
3.	Are there audible and visual fire alarm devices in the toilet rooms?	\checkmark						



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	EMG Abbreviated Accessibility Checklist								
	Restrooms	Yes	No	N/A	Comments				
4.	Are corridor access doors wheelchair- accessible (at least 32 inches wide)?	~							
5.	Are public restrooms large enough to accommodate a wheelchair turnaround (60" turning diameter)?	\checkmark							
6.	In unisex toilet rooms, are there safety alarms with pull cords?	\checkmark							
7.	Are stall doors wheelchair accessible (at least 32" wide)?	\checkmark							
8.	Are grab bars provided in toilet stalls?	\checkmark							
9.	Are sinks provided with clearance for a wheelchair to roll under (29" clearance)?	\checkmark							
10.	Are sink handles operable with one hand without grasping, pinching or twisting?	\checkmark							
11.	Are exposed pipes under sink sufficiently insulated against contact?	\checkmark							
12.	Are soap dispensers, towel, etc., reachable (48" from floor for frontal approach, 54" for side approach)?	~							
13.	Is the base of the mirror no more than 40" from the floor?	\checkmark							



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APPENDIX G: Pre Survey Questionnaire



FACILITY CONDITION ASSESSMENT: PRE-SURVEY QUESTIONNAIRE

Please complete the following form to the best your knowledge. During the site visit, EMG's Field Observer may ask for details associated with selected questions. This questionnaire will be utilized as an exhibit in EMG's final Facility Condition Report.

Name of perso 1

Association

Length of association

Dat

Ρ

Ρ

EMG Project Number:

	INSPECTIONS	DATE LAST	LIST ANY OUTSTANDING REF	PAIRS REQUIRED
1	Elevators	unshowill	140 persilde	
2	HVAC, Mechanical, Electric, Plumbing			
3	Life-Safety/Fire			
4	Roofs			
	QUEST	ION	RESPONSE	
5	List any major cap within the last thre	oital improvement ee years.	ARE COND. ?	
6	List any major cap planned for the ne	bital expenditures ext year.	CLUVATOR ?	
7	What is the age o	f the roof(s)?	10-15+	
8	What building sys interior/exterior fir are the responsib to maintain and re	tems (HVAC, roof, lishes, paving, etc.) lities of the tenant eplace?		

on completing questionnaire:	GENEET MENDENITALL
with property:	BUILDING OFFICIAL
with property:	70 468
te Completed:	12/17/10
hone Number:	66 013
roperty Name:	Howes House

Mark the column corresponding to the appropriate response. Please provide additional details in the Comments column, or backup documentation for any Yes responses. Note: NA indicates "Not Applicable", Unk indicates "Linknown"							
	QUESTION		RES	PONS	E	COMMENTS	
		Y	N	NA	Unk		
9	Are there any unresolved building, fire, or zoning code issues?	<u>1980</u> 29756.0539	V	<u>DEDURITSPELIN</u>	<u> </u>	a new katara da da ku da katara ku	
10	Are there any "down" or unusable units?	6					
11	Are there any problems with erosion, stormwater drainage or areas of paving that do not drain?		4				
12	Is the property served by a private water well?	1					
13	Is the property served by a private septic system or other waste treatment systems?	1					
14	Are there any problems with foundations or structures?			M	\checkmark		
15	Is there any water infiltration in basements or crawl spaces?		/				
16	Are there any wall, or window leaks?		V				
17	Are there any roof leaks?	~					
18	Is the roofing covered by a warranty or bond?		V				
19	Are there any poorly insulated areas?	V					
20	Is Fire Retardant Treated (FRT) plywood used?				i		
21	Is exterior insulation and finish system (EIFS) or a synthetic stucco finish used?		V				
22	Are there any problems with the utilities, such as inadequate capacities?		1				
23	Are there any problems with the landscape irrigation systems?			V			
24	Has a termite/wood boring insect inspection been performed within the last year?		1				
25	Do any of the HVAC systems use R-11, 12, or 22 refrigerants?				V	1	
26	Has any part of the property ever contained visible suspect mold growth?		V				

		2116 ELSON	Ur	ik indic	ates "Ur	nknown" F
	QUESTION		RES	PONS	<u>E </u>	COMMENTS
		Y	N	NA .	Unk.	
27	Is there a mold Operations and Maintenance Plan?		~			
28	Have there been indoor air quality or mold related complaints from tenants?		/			
29	Is polybutylene piping used?		*			
30	Are there any plumbing leaks or water pressure problems?	~				
31	Are there any leaks or pressure problems with natural gas service?				V	
32	Does any part of the electrical system use aluminum wiring?					
33	Do Residential units have a less than 60-Amp service?			1		
34	Do Commercial units have less than 200-Amp service?				1	
35	Are there any recalled fire sprinkier heads (Star, GEM, Central, Omega)?		~			
36	Is there any pending litigation concerning the property?		V			
37	Has the management previously completed an ADA review?		·			
38	Have any ADA improvements been made to the property?		1			
39	Does a Barrier Removal Plan exist for the property?		y .			
40	Has the Barrier Removal Plan been approved by an arms-length third party?		V			
41	Has building ownership or management received any ADA related complaints?					
42	Does elevator equipment require upgrades to meet ADA standards?					
43	Are there any problems with exterior lighting?		r			
44	Are there any other significant issues/hazards with the property?		Û	1		

Mark the column corresponding to the appropriate response. Please provide additional details in the Comments column, or backup documentation for any Yes responses. Note: NA indicates "Not Applicable", Unk indicates "Unknown"								
	QUESTION	Y	RES N	PONS NA	E Unk	COMMENTS		
45	Are there any unresolved construction defects at the property?				V			

Further Comments regarding major concerns at the facility:

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APPENDIX H: Acronyms

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- ASSESSMENT

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EMG

ASTM E2018-01 ACRONYMS

- ADA The Americans with Disabilities Act
- ASTM American Society for Testing and Materials
- BOMA Building Owners and Managers Association

BUR - Built-up Roofing

- DWV Drainage, Waste, Ventilation
- EIFS Exterior Insulation and Finish System
- EMF Electro Magnetic Fields

EMS - Energy Management System

EUL - Expected Useful Life

FEMA - Federal Emergency Management Agency

FFHA - Federal Fair Housing Act

FIRMS - Flood Insurance Rate Maps

FRT- Fire Retardant Treated

FOIA - U.S. Freedom of Information Act (5 USC 552 et seq.) and similar state statutes

FOIL - Freedom of Information Letter

FM - Factory Mutual

HVAC - Heating, Ventilating and Air-conditioning

IAQ - Indoor Air Quality

MEP – Mechanical, Electrical and Plumbing

- NFPA National Fire Protection Association
- FCA Capital Needs Assessment
- PCR Property Condition Report
- PML Probable Maximum Loss

RTU - Rooftop Unit

RUL - Remaining Useful Life

STC – Sound Transmission Class

UBC – Uniform Building Code

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APPENDIX I: Resumes for Report Reviewer and Field Observer



BILL CHAMPION, PMP

Program Manager Cost Segregation Manager

Education

- MBA from the University of Rochester (Simon)
- MS in Mechanical Engineering from the State University of New York at Buffalo
- BS in Mechanical Engineering from the State University of New York at Buffalo

Project Experience

- Housing Authority of the City of Pittsburgh, Pittsburgh, PA Mr. Champion was a member of the Quality Assurance Review Team for this Physical Needs Assessment portfolio that encompassed over 6,114 housing units within 20 separate communities in City of Pittsburgh, Pennsylvania. The objective of the PNA was to provide a general description of all physical improvements that the Client would need to undertake to bring its properties, including dwellings and non-dwellings structures, to a level that will provide safe, decent and sanitary living conditions for the residents. Mr. Champion utilized his engineering expertise to ensure that the methodology and protocol were not compromised during the execution of the assessment.
- *George Mason University, Fairfax, VA* As Program Manager, Mr. Champion was responsible for meeting with the Client and developing a specific program that exceeded the Client's expectations. The program was designed to provide facility condition assessments and prepare a database for tracking, systems, building components, deficiencies and replacements. This database was customized further to include a detailed equipment inventory. This database was designed based on Client input and the end user in mind. Mr. Champion's ability to troubleshoot issues allowed EMG to conduct this program effectively and maintain the schedule and budget.
- University of Virginia, Charlottesville, VA Mr. Champion performed Facilities Condition Audits on academic buildings on the campus of The University of Virginia. He evaluated building condition and systems, outlined physical deficiencies and gave recommendations for prioritizing them to maximize safety and minimize long-term costs.

Industry Tenure

- A/E: 1994
- EMG: 2002

Related Experience

- Multifamily Housing Portfolios
- Government Agency Portfolios
- K-12 Education Portfolios
- Higher Education Portfolios
- Retail Portfolios
- Industrial Portfolios

Industry Experience

- Multi-family Housing
- Cost Segregation
- Government
- Retail
- Industrial
- K-12 Education
- Higher Education

Active Licenses / Registrations

- Certified Project Management Professional (PMP) by the Project Management Institute, # 50241
- Engineer in Training in the State of New York, # 046094
- Member- American Society of Mechanical Engineers

Regional Location

Baltimore, Maryland



KEVIN M. LANTRY

Lead Project Manager

Education

• Bachelor of Science, Mechanical Engineering - Purdue University School of Mechanical Engineering, 2003.

Project Experience

- Indianapolis Housing Agency, Indianapolis, IN Lead Project Manager. Completed Physical Needs Assessments and Energy Assessments at 11 multifamily and senior living properties in the City of Indianapolis. Provided subsequent comprehensive update assessments for Tax Credit Rehabilitation purposes. Reports included life/safety concerns, deferred maintenance, capital planning, and ADA issues. Compiled capital plan into EMG's AssetCALC database software for client use.
- Ann Arbor Housing Commission, Ann Arbor, MI Lead Project Manager. Completed Physical Needs Assessments and Energy Audits at 17 multifamily and senior living properties in the City of Ann Arbor. Compiled PNA Reports along with energy benchmarking, conservation measures, and financial calculations.
- Housing Authority of the City of Paterson; Paterson, NJ Project Manager. Completed Energy Audits at office, residential, and recreational properties owned and operated by the Housing Authority of Paterson. Energy Audits included physical assessment, plan review, utility consumption analysis, and energy conservation recommendations.
- Mark to Market Green PCAs; Various Locations Project Manager. Completed multiple Mark to Market Green PCAs per Housing and Urban Development (HUD) protocol. Reports included standard mark to market assessments with energy audits including ECMs and recommendations for sustainability.
- Alan Bible Federal Building; Las Vegas, NV Project Manager. Completed a Level IV Building Engineering Report (BER) for the US Government General Services Administration. Evaluated the mechanical, plumbing, and elevator systems as part of the assessment team sent by EMG to analyze all building components.
- *First Energy Facility Assessments; Multiple Sites, PA* Project Manager. Performed facility assessments on over forty sites in central and eastern Pennsylvania. Evaluated district offices, regional headquarters and maintenance facilities. Compiled results into Facility Condition Reports and AssetCALC software.

Industry Tenure

- A/E: 2001
- EMG: 2004

Related Experience

GSA Assessment Team

Industry Experience

- Industrial
- Commercial
- Multi-family Residential
- Affordable Housing
- Condition Assessment
- Energy Assessment

Active Licenses/Registration

• Engineer in Training Indiana ET31011662

Special Skills & Training

- ISO 9000
- AutoCAD
- VFA.Facility Certified
- Cross Trained for Environmental Assessments
- Certified Multifamily Building Analyst by Building Performance Institute (BPI)

Memberships

- ASHRAE
- U.S. Green Building Council

Regional Location

Indianapolis, Indiana



HENRY H. MILLER, AIA

Project Manager

Education

University of Notre Dame, Bachelor of Architecture, 1979 University of Notre Dame, Rome (Italy) Studies Program, 1977

Harvard Graduate School of Design, Continuing Education Studies, 1985-87

Project Experience

- With over 28 years of experience, Mr. Miller has delivered work in all eastern states, as well as in Canada, Texas, the Pacific Northwest and California. His expertise includes Architecture, Master Planning, Construction Management, Real Estate Development and Due Diligence.
- Mr. Miller has provided Real Estate Due Diligence services including Property Condition Assessments throughout the United States for a variety of clients including John Hancock, Host Marriott, GMAC, KeyBank, GE Capital, Capri Capital Quadrant Real Estate, Crescent Hospitality, Legacy Partners, Lexington Properties, JPI Lifestyles and CBRE Investors, for debt and equity transactions, as well as US Government studies for HUD and the GSA.
- Owner Representation / Property Condition Assessments / Construction Management
- Construction Field Observation / Façade Forensic Analysis / Tenant Lease Analysis

Industry Tenure

- A/E: 1979
- EMG: 2000

Related Experience

- Educational Facility Condition Assessment reports
- Assisted Living Portfolios
- Hospitality Portfolios
- Retail Portfolios
- Architectural Design
- GSA & HUD

Industry Experience

- Government Facilities
- Office
- Industrial
- Housing/Multi-family
- K-12
- Higher Education
- Hospitality
- Healthcare
- Retail/Wholesale
- High-rise

Active Licenses/Registration

 Massachusetts, Connecticut, Georgia Registered Architect, NCARB Certified, 1981

Special Skills & Training

Fluent in Italian

Regional Location

Boston, MA



BRETT BYERS

Technical Reviewer

Education

 Associate of Science, Electrical Engineering, Tidewater Community College, 2003

Project Experience

- National Park Service, Washington, D.C Mr. Byers served as a project engineer and Field Leader for four teams of project engineers during a comprehensive condition assessment of the monuments, memorials, maintenance support facilities, park police substations, and historical structures in the National Capital Region Parks. The assessment included national icons such as the Washington Monument, Jefferson Memorial, Lincoln Memorial, FDR Memorial, and Ford's Theatre. He conducted interviews with the facility managers and maintenance personnel. He reviewed the condition of the building structures, electrical and mechanical systems and developed a thorough condition report along with cost estimates for deficiency mitigation. His work helped to complete this project on schedule and within the project budget.
- National Park Service, Death Valley, Ca Mr. Byers served as the Field Leader for six teams of project engineers on the comprehensive condition survey of single and multi family housing, park visitor centers, park maintenance and support facilities, utility infrastructure systems, and historical museum facilities such as Scotty's Castle. He conducted interviews with the facility manager, maintenance personnel, historical preservation specialists, and other client liaisons. Mr. Byers performed assessments of building electrical, mechanical, and structural systems after which he prepared condition reports. The work performed by the teams was accepted by the client and the data submitted was incorporated into the National Park Service's annual congressional budget requests.

Industry Tenure

- A/E: 1992
- EMG: 2006

Related Experience

- Educational Facility Condition Assessment reports
- Utility System Infrastructure Condition Assessment Reports
- Historical Structure Condition
 Assessments
- Retail and Restaurant Condition Assessments
- Office Portfolios

Industry Experience

- Government Facilities
- Office
- Housing/Multi-family
- K-12
- Hospitality
- Infrastructure
- Retail/Wholesale
- Commercial Garage
- Universities

Active Licenses/Registration

 EPA Transitional Refrigerant Recovery Certification, 1994

Special Skills & Training

- Held Colorado 'D' Water Treatment Plant Operator's License
- Held Colorado 'C' Wastewater Treatment Plant Operator's License
- ANSI 3.1 Senior Health Physics Technician

Regional Location

Knoxville, TN



Project Experience (A/E)

- *National Park Service, Yellowstone National Park, Wyoming* As Project Engineer, Mr. Byers applied his expertise to the assessment of this property. He assessed the water treatment and distribution systems and wastewater collection and treatment systems in this 2,200,000 acre National Park. He developed a hierarchy to describe the functional relationship of equipment components in the treatment systems. Mr. Byers' findings equipped the client with the information to make effective business decisions and operational budget forecasts.
- Carroll County Public Schools, Carroll County, Maryland As a Project Manager in A&E Consulting, Mr. Byers completed comprehensive condition assessments in five of Carroll County's 40 public school facilities. His particular area of concentrated effort was an Architectural and Structural evaluation of each of the facilities and site infrastructure. At the conclusion of the field inspection and draft reporting phases, Mr. Byers provided program technical review support prior to final client submittals.
- Stafford County Public Schools, Stafford, Virginia Mr. Byers provided Architectural and site infrastructure subject matter expertise during the facility condition assessments of Stafford County's public school facilities. During the facility evaluations, he conducted interviews with school principals, facility management, and maintenance personnel. His report information documented existing facility conditions and forecasted capital expenditures for improvements and code compliance. Mr. Byers coordinated report preparation and performed technical reviews leading up to report submittal to the Stafford County school system administration.
- County of San Diego, San Diego, California Mr. Byers served as a Project Manager and Technical Report Reviewer for A&E Consulting during an eleven-month long Facility Condition Assessment Program of buildings owned by The County of San Diego. Structure types ranging from single-family housing to large commercial buildings and offices were included in the assessment. He worked closely with the lead Project Management for The County of San Diego, the EMG Project Management Team, and Capital Planning Solutions Inc. Management to implement reporting requirements and client delivery. Mr. Byers reviewed reports submitted by the EMG team and coordinated report production. His efforts contributed to a timely and satisfactory completion of the contract.
- City of Dallas, Dallas, Texas As an A&E Technical Report Reviewer, Mr. Byers applied his expertise to
 reviewing Facility Condition Assessment reports written by EMG Project Managers and EMG subcontractors on
 more than 750 buildings belonging to the City of Dallas. The buildings range in complexity from simple storage
 warehouses to large office structures with some industrial type facilities included. He was responsible to
 implement changes in report format and coordinated the efforts of other reviewers to meet scheduled client draft
 report delivery deadlines.
- University of the District of Columbia, Washington, D.C. Mr. Byers served as the Senior Engineering Consultant overseeing the activities of a team of Project Managers conducting a Physical Needs Assessment of campus buildings and infrastructure, an in-depth roof survey, and a Phase I Environmental Site Assessment. He was responsible for client interface activities, report reviews, submittal of reports, and management review and presentation of findings. Mr. Byers also assisted in the development of proposals for follow up engineering studies to investigate deficiencies identified during the on site assessment work.
- Alexandria City Public Schools, Alexandria, VA As the Senior Engineering Consultant for a Physical Needs Assessment of the schools and support facilities for Alexandria City Public Schools, Mr. Byers is responsible for scheduling and overseeing the activities of several teams of Project Managers. In addition he is responsible for reviewing written reports and ensuring the accuracy of data in a fully populated database that is being provided to the client at the completion of the contract. Mr. Byers has also participated in the on site assessments and report writing. The school system is using data acquired to make budget requests for maintenance and capital improvements to their facilities.



- **Pennsylvania National Guard** Mr. Byers served as a Project Manager and Technical Report Reviewer for A&E Consulting during an eight-month long Physical Needs Assessment Program of buildings owned by the Pennsylvania Department of Military and Veterans Affairs. Structure types primarily consisting of National Guard Readiness Centers, Field Maintenance Shops, and storage buildings were included in the assessment. He worked closely with the lead Project Management staff for PADMVA and the EMG Project Management Team to implement reporting requirements and client delivery. Mr. Byers reviewed reports submitted by the EMG team and coordinated report production. His efforts contributed to a timely and satisfactory completion of the contract.
- *Texas Southern University, Houston, Texas* Mr. Byers served as the Senior Engineering Consultant and Technical Report Reviewer overseeing and reviewing the activities of a team of Project Managers conducting a Physical Needs Assessment of 54 educational and housing buildings and the campus site infrastructure. He was responsible for client interface activities, report reviews, submittal of reports, management review and presentation of findings, and conducting database training for the client.

