

Wisconsin Department of Veterans Affairs
Office of Policy, Planning & Budget
Madison, WI

MARDEN MEMORIAL CENTER FIRE SPRINKLER SYSTEM STUDY

WISCONSIN VETERANS HOME
KING, WI

DSF Project No 10L1E-I
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By;

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Ms. Susan Mattix
Budget & Policy Analyst
STATE OF WISCONSIN
WI Department of Veterans Affairs
Office of Policy, Planning & Budget
201 W. Washington Ave.
Madison, WI 53707

RE: Marden Memorial Center Fire Sprinkler System Study

Dear Ms. Mattix,

We have completed our analysis of the Marden Memorial Center for the Wisconsin Department of Veterans Affairs (WDVA). The goal of this study was to provide architectural/engineering resources to assist the Owner in evaluating the requirements and options to add a fire sprinkler system in the existing Marden Memorial Center at the Wisconsin Veterans Home in King.

The work consists of a study that included a field survey, an analysis of code requirements, sketches of any plan changes, reports recommending the required retrofit work and a proposed construction budget for any corrective measures required to the building, utilities and/or infrastructure. Specific work shall include installing a complete fire sprinkler system and replacing/reinstalling the ceiling areas affected by this work.

The consultant for the Fire Protection engineering work is Grumman/Butkus Associates.

All costs are based on union labor rates.

We trust the following information is satisfactory and meets your needs. If there is additional information needed, please let us know.

Sincerely,

GO/A Architects, Inc.

Mr. Gary Oien, President
and Principal Point of Contact

Codes & Standards Impacting This Study:

Fire Code (NFPA 1, 2009 edition).

International Fire Code (2009 edition).

Installation of Sprinkler Systems (NFPA 13, 2007 edition).

Wisconsin Administrative Code (12/2011 edition), Chapter SPS314, Fire Prevention.

Existing Systems

The Marden Center is currently unsprinklered. The facility is served by an existing 4" domestic water service off of an 8" main which runs beneath Cumberland Avenue. It is not likely that the existing 4" water service could be utilized as a combined service given the domestic and fire suppression supply needs. Further hydraulic study will be necessary during the design phase to confirm once the primary pipe routing has been defined.

Recommended Fire Protection Work

It is recommended that a new 6" fire suppression service be installed to serve the building with a fire department connection located on the south side of the building. This new service would be fed from the 8" main which runs beneath Cumberland Avenue. A wet sprinkler riser would be installed in the mechanical room with a double check valve, main drain, and flow switch. Tamper and flow switches are required to be tied into the fire alarm system to alert for supervisory, trouble, and alarm conditions.

The building consists of Light, Ordinary Group 1, and Ordinary Group 2 hazards. The wood shop is the hydraulically most demanding area calling for a demand of 0.20 GPM over 1,500 S.F. A 250 GPM hose stream will be required. A wet pipe sprinkler system would meet the needs of the building; however, an antifreeze system will be necessary to protect the front entrance canopy due to the combustible nature of its construction. A second combustible overhang exists off the west end of the library. Given the age of this structure, it would be most cost effective from both an installation and maintenance standpoint to have this structure removed, however costs assume it is sprinklered. A preaction system may be considered for installation in the museum to mitigate incidental discharge damage to the exhibits. Also, on the north side of the building is a covered smoking lounge. While this area appears to be non-combustible, it would be advantageous to provide dry sidewall sprinklers to provide an added level of protection given the activity in this area.

The facility's wooden ceilings provide a significant challenge in coverage and installation of the sprinkler system. Because the ceilings are combustible, sprinklers will be required both above and below the ceiling per NFPA 13. Sprinkler mains would run above the ceilings with concealed or semi-recessed pendant sprinklers below the ceilings and upright sprinklers installed on pipe nipples above. With sprinkler mains routed above the ceilings, the poured concrete beams would either require coring (if possible) or the sprinkler piping offset below the beams and returned above the wooden ceiling with auxiliary drains installed at the low points for drainage of trapped piping. This piping could be painted to minimize visual impact.

Additionally, concealed or semi-recessed sprinkler heads would be recommended in areas with drywall and suspended ceilings. In areas where no ceilings exist, exposed piping with upright sprinkler heads would be installed. More sensitive areas, such as the gathering space outside of the gift shop, could employ horizontal sidewall sprinklers. The glass enclosure in the gift shop would also require sprinklers unless the glass is removed and left

open to above. Another difficult ceiling to contend with is the bowling alley's saw-tooth ceiling structure. This ceiling would need to be opened to permit concealed pendant sprinkler installation to protect the area below.

A sprinkler head will be required in the bottom of the elevator shaft thus the existing elevator controller must be carefully reviewed to determine any required elevator upgrades required for sprinkler installation.

All sprinkler heads will be quick response type. Extended coverage sprinklers will be utilized were applicable. Concealed pendants may be selected with a painted or metallic finish to match the adjacent ceiling finish.

Probable construction cost of this project is: **\$170,500.00**. Please note that this portion of the cost estimate does not include removing and replacing the wooden ceiling, coring of structural beams, or the installation of a preaction sprinkler system in the museum.

Codes & Standards Impacting This Study;

International Existing Building Code with Wisconsin modifications (IEBC, 2009 edition), Alterations- Level 2 for an Assembly, Group A, use.

Existing Conditions

The rooms currently have suspended acoustical, drywall and suspended wood ceiling systems.

Ceiling Removal & Installation

To install the new fire sprinkler system the ceilings will have to be removed and replaced or reinstalled to facilitate the work.

We propose to remove the existing 12x12 acoustical tile ceiling system and replace with a new +- 2,592 sq. ft. 24"x 24" acoustical panel system. The estimated cost of the acoustical ceiling improvements is **\$22,095**.

We propose to remove the existing drywall ceiling system and replace with a new +- 1,647 sq. ft. drywall system. The estimated cost of the drywall ceiling improvements is **\$13,779**.

We propose to remove the existing suspended wood ceiling system and reinstall +- 13,212 sq. ft. to match the original. The estimated cost of the suspended wood ceiling improvements is **\$102,558**.