WHITELINE | Architects Inc.

DESIGN STUDY

Owen Sound Fire Station Headquarters
1209 3rd Avenue East, Owen Sound, ON

November 2024

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1 Executive Summary

The City of Owen Sound requested a formal pre-design study to review the status of the existing building and to prepare and price design concepts to address the shortfalls experienced in the existing building including existing building components that required repairs or replacements.

2 Introduction

In March 2024, Whiteline Architects was hired to conduct a detailed Facility Needs Assessment and Design Study for Owen Sound's main full time Fire Station. A building review was conducted by Whiteline Architects and provided a detailed description of current conditions, most of which help guide to the recommended design listed herein. This study is a more detailed expansion on the study done by Whiteline back in 2020, with references to the Building Condition Assessment done by McIntosh Perry in June 2023.

Background and Context

Owen Sound's fire station and headquarters is located at 1209 3rd Avenue in Owen Sound. The original 10,442 sq. ft. building was constructed in 1974 and has continuously served as headquarters for Fire administration as well as a full-time fire station.

An approximate 1,220 sq. ft. expansion in 1990 added a fourth apparatus bay to the north of the existing building. In 2003 a 3 bay EMS station was added to the north end of the building which is not considered in this report since it is considered a separate building and not a City property. The current parking area is shared between Fire and EMS.

Based on initial correspondence from stakeholders, some existing building issues and considerations that were addressed during the review process are as follows:

- Bunker room is currently located within the apparatus bays and lacks sufficient storage, and a separate exhaust and proper negative pressure ventilation system.
- Inadequate storage space
- Inadequate Training Room space
- Missing gender-neutral washrooms, lockers, showers, and dormitory. Currently no separate female suppression staff washroom and change area
- Missing Decontamination room with separate exhaust system in existing station.
- General program areas in existing building have insufficient space and accommodations for studying and break-out space
- Building is not barrier free accessible for office staff or public.
- Heating and air conditioning creates non-consistent environment and temperatures between different levels and areas of the building.
- Age of numerous infrastructure and building elements items are past their life span
- Hose tower is not used to store hoses anymore and should be re-purposed
- Apparatus bays too short to store current trucks and does not allow for future expansion
- Existing workout equipment is located in the basement, both taking up room for storage as well as not being in a separate properly ventilated room.
- Existing main entrance is not monitored and is not conducive to proper flow of visitors since there is no parking this location
- No proper location to display historical Owen Sound Fire Department artifacts and equipment

3 Existing Building Characteristics

The existing masonry building is designed as a 2 storey wing to the south which contains the offices and suppression staff areas as well as a small basement with a gymnasium and mechanical / electrical space. To the north are the 4 apparatus bays and amenity spaces.

The primary access to the station is via an entrance at the parking lot located to the east side of the building with access being at grade. Even though this access is at grade no barrier free operators are provided. There is no Barrier Free access to the Upper or Lower Levels, however one washroom on the main floor has been upgraded to a barrier free washroom. Some building improvements were completed in past years including overhead doors in 2023 and roofing in 2020.

The construction is concrete block and steel structure with precast concrete floors and a combination of brick veneer and metal siding exterior. The roof is a flat roof and BUR type membrane on precast concrete in 2 storey wing and metal deck on the apparatus bays. According to the original construction documents, the wall cavity appears to contain no insulation, however vermiculite insulation could have been used in the block cavity as was done during this era of construction.

4 Risks, Assumptions and Unknown Information

As is expected in this study there are some areas that either require further in-depth examination or additional engineering to confirm in regard to proposed designs. These include the following items, of which certain dollar amounts were included in cost estimates.

1. The possibility of the exterior concrete block containing vermiculite should be explored as this could be expensive to remediate as it is considered hazardous. Removal of this material while keeping the building operational is extremely expensive and destructive. The intent would be to only remediate the areas where the block is cut.
2. There will be unknown costs and unknown operational challenges for staff during construction. Staff may remain although additional accommodations, via possible temporary office/living space be provided as the phased construction occurs. We have allowed in the costs for temporary trailers to be provided as required depending on phasing, however this may not be possible when determining the needs of the construction firm and the neighbouring EMS station.

5 Recommended Solutions

The recommended design discussed below is the result of several meetings and reviews of design development with City and Fire Department staff. The mandate was to try and address the shortfalls of the existing building for today and for the future. A lack of capital investment over the years has resulted in a build-up of components at the end of, or past their useful lifespan. We also met with the Building and Planning department and they were able to confirm that be locating all suppression staff only to the second floor, they would not require barrier free (elevator) access since fire fighters need to be non-disabled to perform their job. The ground floor would be made accessible for any staff on light duty as well as any visitors that may be in a wheelchair.

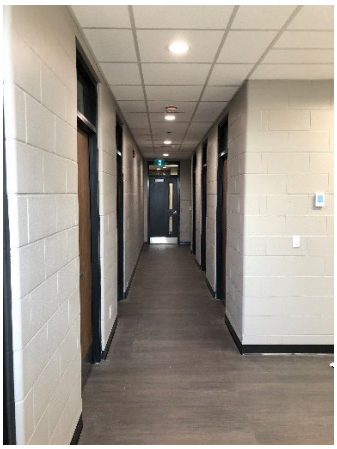
The preferred scope of work would provide additional square footage by creating a new two story office wing addition as well as an expansion of all the apparatus bays, while also renovating the interior spaces. The ground floor office areas would remain mostly intact with little change other than exterior walls.

Design Summary

Description	Notes / Comments
Demolition of hose tower. Two storey office addition and expansion of apparatus bays to the east as well as interior renovations.	Addition includes space on ground floor for 1923 vintage fire truck to be displayed. All suppression staff located on second floor. Office areas can remain with minimal interruption. Meets all requirements to extend life of building for the foreseeable future.
Existing Area of Building	11,662 ft2
Additional space Allocation	4,000 ft2
Total Finished Space	15,662 ft2
Costs	$5.7 million
Cost per ft2	$n/a
Cost Benefit vs space	High cost mainly due to lack of capital investment requiring many upgrades as building components are beyond expected life.
Impact on Operation	Certain areas of station would need to be vacated for construction
Concerns	
Bunker room concerns	New bunker gear room with separate exhaust
Inadequate storage space	Basement re-purposed for storage
Gender neutral or female washrooms / change rooms / dormitory	Female washrooms and change rooms provided Separate private dorm rooms for all.
Decontamination room with separate exhaust	New decontamination room and shower Separate exhausted bunker gear room
No insulation in exterior walls	Addition would meet current code. Some areas such as where siding is replaced can easily have insulation installed. Brick to be removed, insulation provided and new brick veneer installed.
Inadequate Training Area	New Training Room and Storage area
Building Fully Barrier Free	Ground floor fully accessible. Second floor suppression only
Aged infrastructure	All upgraded and replaced (mechanical and electrical)
Main entrance	New addition to provide new entrance with parking
Outdated equipment	New SCBA and bunker gear extractor
More apparatus bay space	All bay depths increased to address current sizes of apparatus
Hose tower removed	Yes
Relocate Exercise room	Yes
Display of artifacts	Area for vehicle and displays in lobby
Overall Viability	Viable to extend life span of building for next 25 years plus

This is an example of a fire station we designed with a historic apparatus on display in the main entrance lobby with visibility to the residents passing by. Other historic items were also on display in the lobby for visitors to see. This helps engage the public and shows the pride the fire department has in respecting and preserving their past.

Milton Fire Station Headquarters



Above are some examples of individual fire fighter's sleeping rooms. These private rooms are becoming much more common as they solve some inherent problems with open dorm rooms, such as male/female fire fighters sleeping together, lights from reading devices or laptops, as well as noise from some individuals (snoring, c-pap machines, etc…) interfering with other resident's sleep. The room typically contains storage for each shift's clothes as well as change of bedding and can sometimes have a small desk.

Various Stations

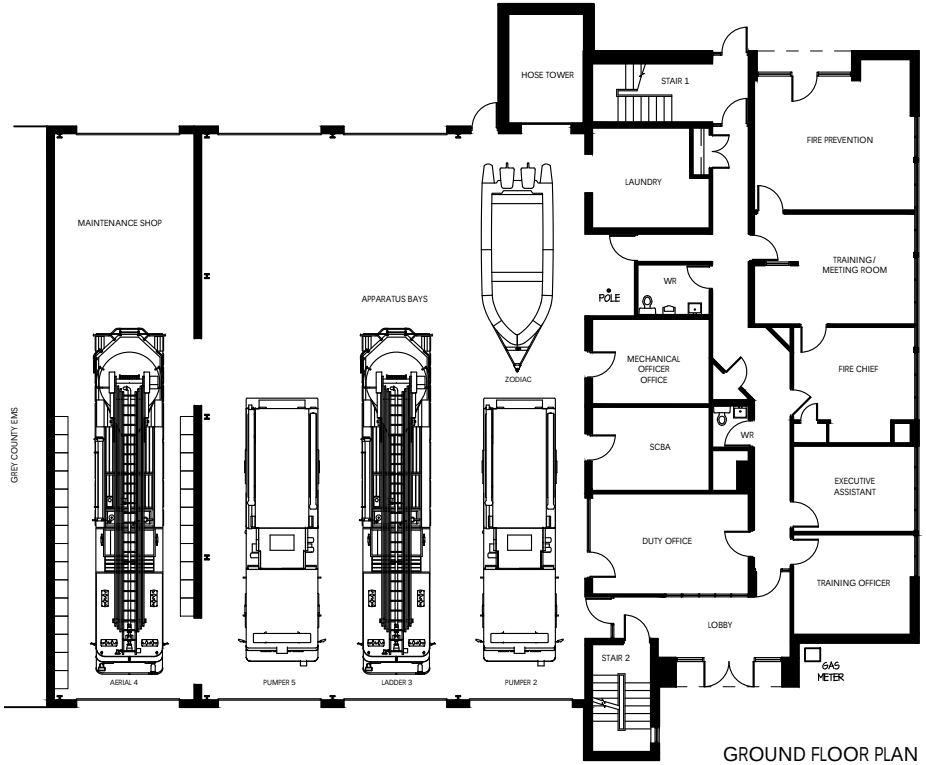
OWEN SOUND FIRE STATION HEADQUARTERS ADDITION AND RENOVATION
CLASS D HIGH LEVEL COST ESTIMATE

ASSUMED 12 MONTH CONSTRUCTION 2024-11-01

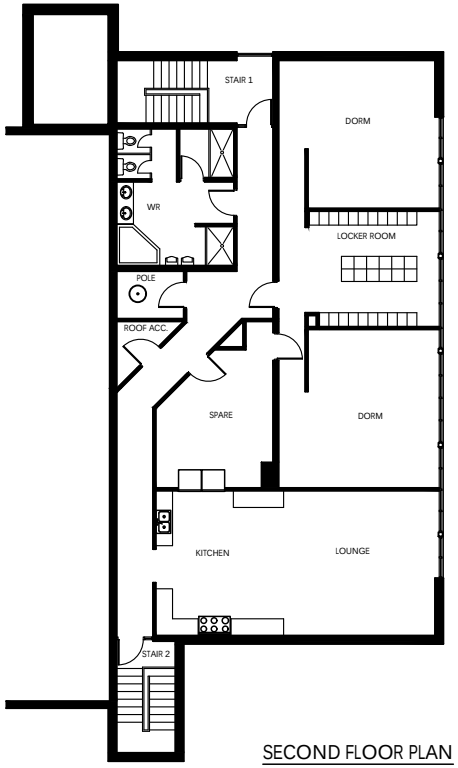
ELEMENT	AREA	RATE	AMOUNT
HAZARDOUS MATERIAL ABATEMENT			$60,000
DEMOLITION OF HOSE TOWER			$25,000
DEMOLITION OF EXTERIOR ELEMENTS			$75,000
SITE DEMOLITION (SIDEWALKS/ASPHALT/SOD)			$40,000
INTERIOR DEMOLITION			$60,000
SUBTOTAL DEMOLITION			**$260,000**
ASPHALT REPAIRS AND NEW PAVING			$120,000
NEW CONCRETE SIDEWALKS			$15,000
NEW FENCING AND GATES			$8,000
LANDSCAPING REPAIRS			$10,000
SUBTOTAL SITE WORKS			**$153,000**
NEW 2 STOREY ADDITION (NOT BROKEN DOWN)	4000 FT2	$400.00	$1,600,000
SUBTOTAL ADDITION			**$1,600,000**
REPLACE EXISTING METAL SIDING			$60,000
BRICK REPAIRS / REPOINTING			$12,000
REPLACE ALUMINUM SOFFITS			$14,000
TIE IN NEW ROOF TO EXISTING			$75,000
ROOF ACCESS LADDER UPGRADES			$5,000
NEW EXTERIOR DOORS AND FRAMES	1		$15,000
NEW EXTERIOR WALL INFILL /INSUL. / WINDOWS			$150,000
NEW THIN BRICK VENEER WITH INSULATION	1520	$65.00	$100,000
REPLACE EXTERIOR LIGHTING WITH LED			$10,000
SUBTOTAL EXTERIOR RENOVATIONS			**$441,000**
NEW INTERIOR DOORS AND FRAMES	18		$50,000
UPGRADE GUARDS IN STAIRS TO CODE	2		$10,000
APPARATUS BAY FLOOR PAINTING			$40,000
APPARATUS BAY CEILING PAINTING			$30,000
NEW INTERIOR WALLS	2850	$15.00	$43,000
NEW CEILINGS	4010	$23.00	$92,000
NEW FLOORING	2700	$15.00	$40,500
WINDOWS INTO APPARATUS BAYS 2ND FLOOR			$10,000
FIRESTOPPING / CAULKING REPLACEMENT			$5,000
TOILET PARTITIONS			$6,000
NEW BARRIER FREE OPERATORS			$4,000
NEW MILLWORK			$20,000
NEW LOCKERS	24		$10,000

PAINT (WALLS, DOORS AND FRAMES, CEILINGS)			$40,000
WASHROOM ACCESSORIES			$5,000
INTERIOR WAYFINDING			$2,000
NEW WINDOW BLINDS			$3,000
UPGRADE EYEWASH STATIONS	2		$5,000
NEW WATER METER AND INSULATE PIPES			$20,000
TRENCH DRAIN UPGRADES			$40,000
FURNACE REPLACEMENTS WITH ROOFTOP UNITS			$400,000
APPARATUS BAY HEATER REPLACEMENTS			$75,000
ROOFTOP CONDENSER REPLACEMENTS			$30,000
REPLACE HOT WATER TANKS			$15,000
UPDATE ELECTRIC HEATERS			$20,000
REPLACE APPARATUS FANS			$10,000
REPLACE NEDERMAN EXHAUST SYSTEM			$50,000
REPLACE EXHAUST FANS WITH ERV AND NEW			$75,000
ELECTRICAL PANEL REPLACEMENTS			$125,000
UPDATE FIRE ALARM AND PANEL			$30,000
NEW INTERNAL CALL SYSTEM			$10,000
UPDATE EXIT SIGNS			$5,000
NEW PERMANENT GENERATOR			$350,000
SUMP PUMP AND ALARM UPGRADE			$6,000
NEW PLUMBING (SHOWERS, TOILETS, SINKS)			$75,000
PROVIDE BAS FOR ALL SYSTEMS			$75,000
MISCELANEOUS ELECTRICAL ITEMS			$75,000
SECURITY SYSTEM			$5,000
PROPER CO2 SYSTEM			$60,000
NEW BUNKER GEAR RACKS	48		$20,000
NEW SCBA FILL STATION			$55,000
NEW BUNKER GEAR WASHER & DRYER			$30,000
SUBTOTAL INTERIOR RENOVATIONS			**$2,071,500**
GENERAL CONDITIONS *		$20K PER MONTH	$240,000
SUBTOTAL CONSTRUCTION			**$4,779,500**
GENERAL CONSTRUCTION CONTINGENCY	7.50%		$358,463
INSPECTION AND TESTING (SOILS/CONCRETE)			$30,000
TEMPORARY FACILITIES DURING RENOVATION	ESTIMATE		$40,000
FURNISHINGS, FITTINGS, EQUIPMENT	ESTIMATE		$100,000
PERMITS	ESTIMATE		$18,000
CONSULTING FEES (ARCHITECT + ENGINEERS)	8%		$380,000
GENERAL REQUIREMENTS TOTAL			**$926,463**
PROJECT TOTAL			**$5,705,963**

* General Conditions includes contractor's profit, overhead, insurance, site personnel, rentals such as site office, portable toilet, fencing, etc…



GROUND FLOOR PLAN



SECOND FLOOR PLAN

OWEN SOUND FIRE DEPARTMENT
EXISTING HEADQUARTERS
CURRENT FLOOR PLANS

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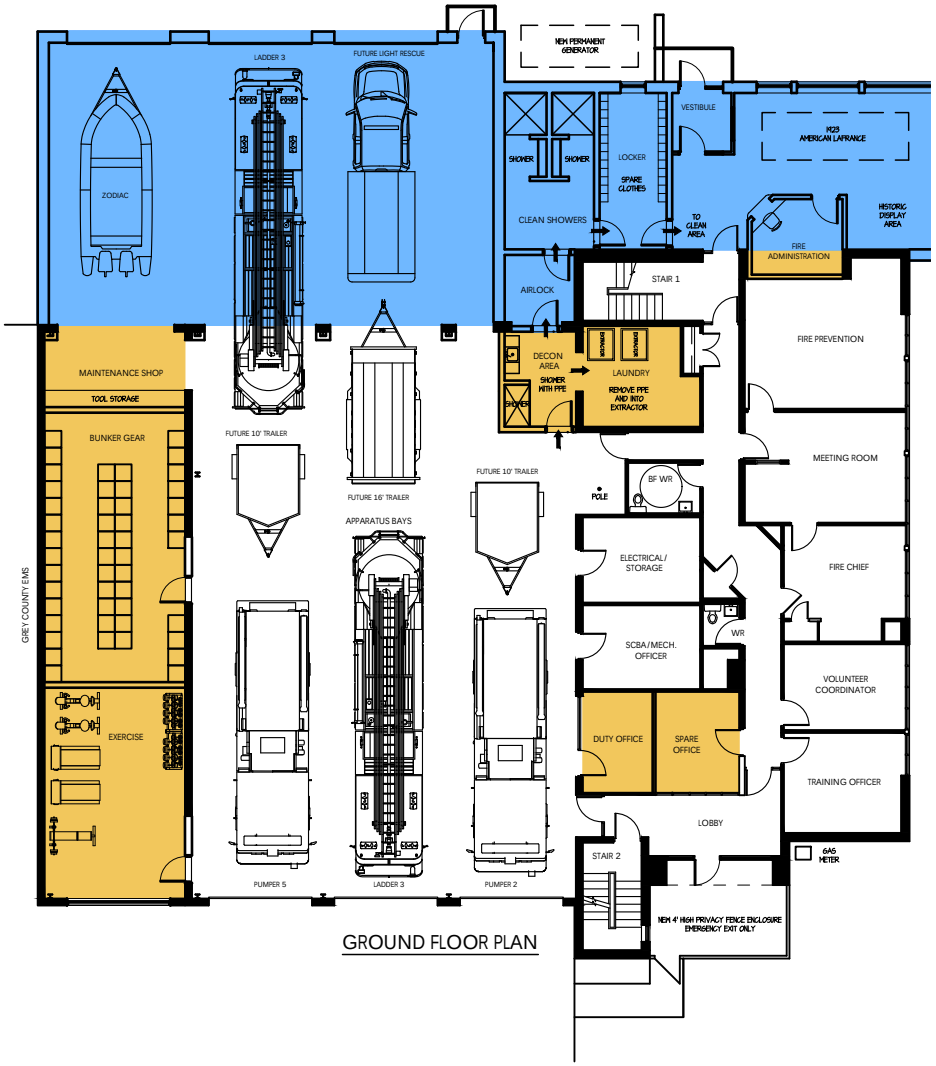
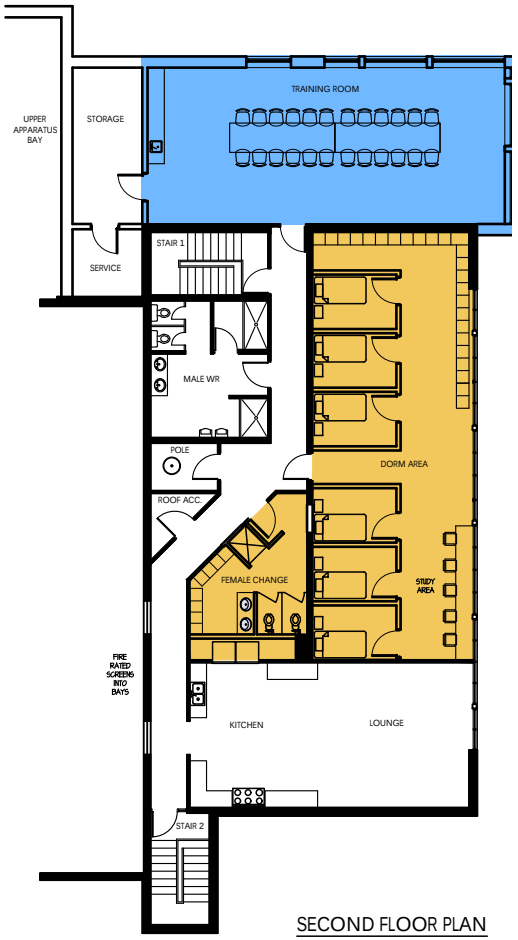


GROUND FLOOR PLAN



SECOND FLOOR PLAN

OWEN SOUND FIRE DEPARTMENT
EXISTING HEADQUARTERS
PROPOSED FLOOR PLANS

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OWEN SOUND FIRE DEPARTMENT
EXISTING HEADQUARTERS
PROPOSED EXTERIOR
Rear Parking Lot

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OWEN SOUND FIRE DEPARTMENT

EXISTING HEADQUARTERS

PROPOSED EXTERIOR

3rd Avenue East

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