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**cheshire fire station
building condition assesment**

**cheshire
ma**

tch-6090

: 15 august 2022

existing building report

code

Stories:	Single story; partial mechanical basement
Gross Building Area:	6,800 +/- square feet (per property card)
Occupancy	B – Business, S2 – Storage, A3 – Assembly (Non-separated)
Sprinklered	No

building description

The building is a single story building approximately 6,800 S.F. currently occupied as the Town of Cheshire volunteer fire department. The structure appears to be an original garage building with several additions. The construction dates of the original building and additions are unknown.

The building consists of a four bay apparatus room, two offices, two toilet/shower rooms, a day room, a kitchen, a large training room and ancillary storage rooms. There is an exterior access to a small basement mechanical room on the north side and small plywood storage room on the east side of the building

The exterior façade is brick veneer on the street (west) elevation and vinyl siding and horizontal corrugated metal panel on the balance of the building. There are 4 overhead doors into the apparatus room on the west elevation and one overhead door into the apparatus room on the east side. The main entrance is a hollow metal door (with vision lite) on the west elevation adjacent to the apparatus bay overhead doors.

The roof is single ply membrane of various ages and small areas of granular roll roofing and standing seam metal roofing.



Street (west) elevation



Membrane Roofing



Membrane and Roll Roofing

code review

It is undetermined whether the construction type is Type 5A or Type 5B. If the construction type is 5B then the building is potentially too large in area for a mixed use group that includes an A3 occupancy.

The main entrance to the building is not handicap accessible.

The ramp between the office area and the apparatus bay is not ADA compliant

The landing and railing on exterior door on the north side west corner is not code compliant

The showers in the Men's Room are not handicap accessible

There are no showers provided in the Women's Room

The basement furnace room ceiling room nor code compliant

If the Construction Classification is 5A the furnace room ceiling is required to be 1 hour rated



Main Entry



Door at Northwest corner



Ramp to Offices



Basement Ceiling

condition review

Building enclosure -

The brick veneer is showing signs of water infiltration and pulling away from the substrate (see structural report)



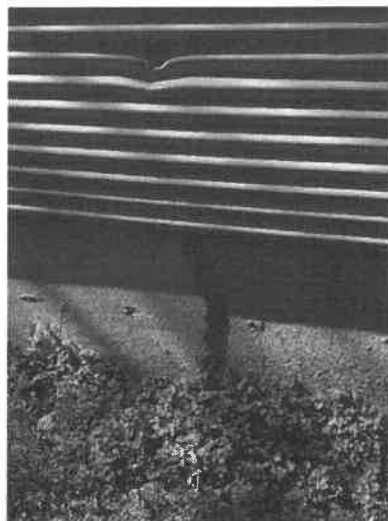
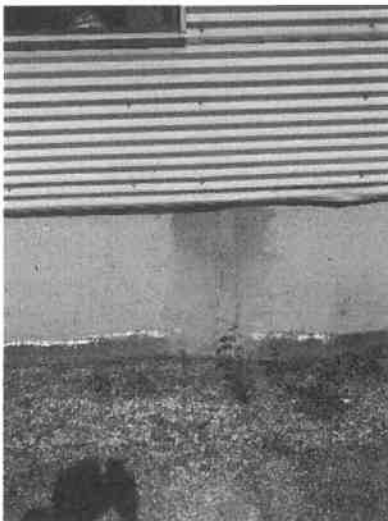
The storage shed in the southeast corner is in disrepair and should be demolished and replaced.



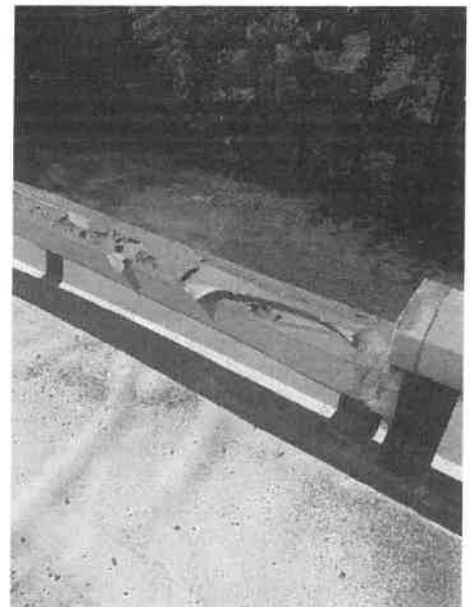
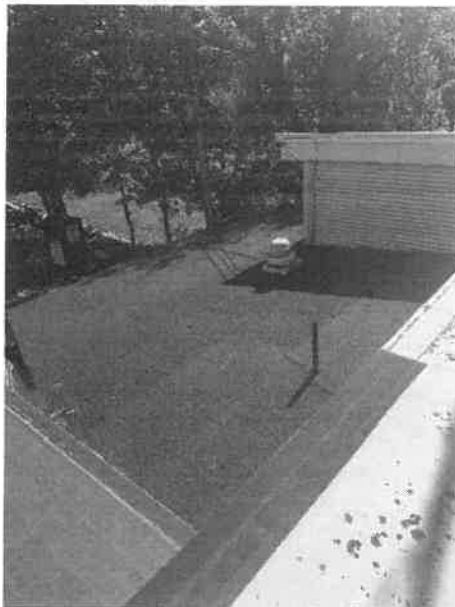
The metal siding is in moderate to poor condition and should be replaced within 5 years.



The foundation has settlement cracks in two locations and the Training room floor is sagging (see structural report)



The white mebrance roof is in poor condition and requires replacement. The black membrane roof is in fair conditon and does not require immediate replacement. The roll roofing is intended for temporary roofs and should be replaced with membrane roofing. All metal fascias are in poor condition and require replacement.



end of architectural assesment

existing building report

structural systems

The building structure of the Cheshire fire Station has been evaluated based on a visual observation investigation, no destructive or internal investigations have been performed.

Additionally, conversations with both the Fire Chief and Cheshire Building Official discussing known issues with the Cheshire Fire Station Structure.

The building was originally constructed in the 30's as a gas station/repair facility consisting of two (2) repair bays and an office. In the 70's the gas pumps were removed. In 1988 the structure was remodeled from a garage to its present use.

Base on the visual observations and conservations the following structural issues were observed during the visual observations.

observations

- Settlement was easily observed at the Northeast corner of the Training Room. A previous foundation crack had been repaired, although additional cracks were observed in this area. See the pictures below:

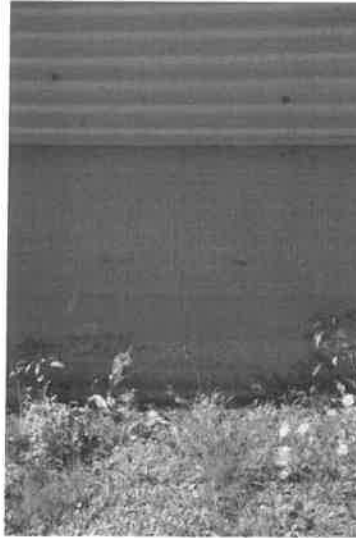


Previously Repaired Crack North Side Training Room Associated with Northeast Corner Settlement



Previously Repaired Crack East Side Training Room Associated with Northeast Corner Settlement

- On further observation it was noted the entire East side of the Training Room exhibited a previous settlement. Cracking of the foundation along this area was also observed. See the picture below:

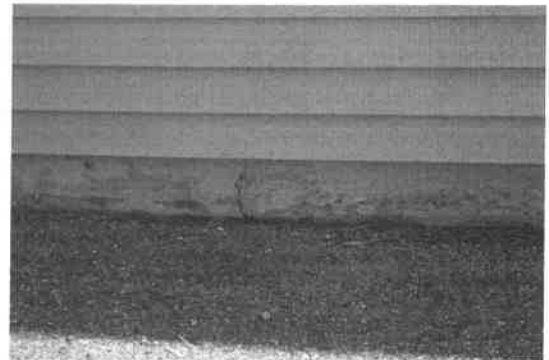


Typical Crack Along Training Room

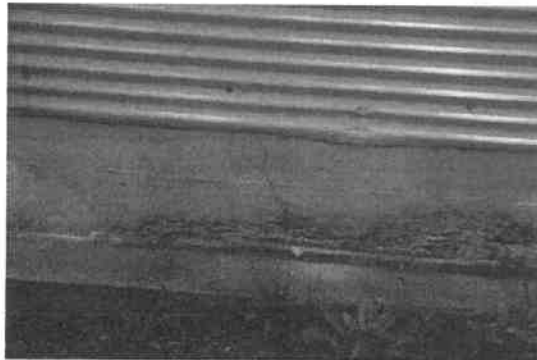
- Cracks along other areas of the foundation were observed. See the pictures below:



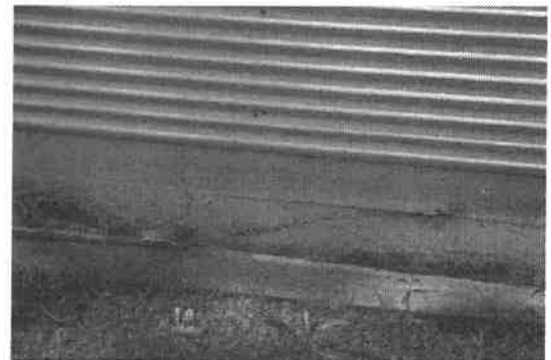
Foundation Crack South Side Apparatus Bays



Foundation Crack South Side Apparatus Bays



Foundation Crack North Side Day Room



Foundation Crack and Cold Seam North Side Day Room

- Mortar joint erosion and top of foundation erosion was observed along the West side of the structure. See the pictures below:



Mortar Joint Erosion West Wall Day Room



Mortar joint Erosion and Foundation Erosion West
Wall Apparatus Rave

- The slab condition in the Apparatus Bays was noted to be inconsistent with areas where the slab is in good condition and areas where the slab is severely cracked and in poor condition. Additionally, it was noted the areas of the slab had settled forming an uneven surface. See the pictures below:



Newer Slab Area Adjacent to a Severely Cracked
Slab Area



Cracked Slab

- The ceiling suspension system support in the Day Room was observed to be in failure. See the picture below:



Suspended Ceiling Suspension
Support Failure

- The slab in the Training Room is cracked in the North South orientation. See the picture below:



Crack in Slab – Training Room

- A crack was observed in the floor finish between the Kitchen and Kitchen Storeroom. See the picture below:



Crack in Floor Finish

- Floor Sheathing in Kitchen Storeroom was observed to have been water damaged. See the picture below:



Water Damaged Floor Sheathing

additional items discussed

- A lath and plaster ceiling failure had previously occurred in the Apparatus Bay. This was repaired by installing a layer of gypsum board over the lath and plaster and securing the gypsum board to the ceiling above.
- An area of roofing and framing failed and was repaired above the Day Room.
- It was indicated that oil seeps through the floor of the Training Room.

Recommendations – observed items

- Training Room foundation settlement – Due to the severity and continued settlement of the foundation it is recommended that subsurface investigation be performed to determine the cause of the settlement. The repair requirements could vary from do nothing option, to a subsurface soil improvement and a new foundation system under the Training Room.
- Foundations cracks in areas other than the Training Room – These cracks were observed and were noted not to be severe enough to require any foundation repairs.

- Mortar joint erosion – It is recommended that the eroded mortar joints be cleaned and repointed. After the repointing is complete the brick masonry should be coated with a waterproof agent to assist in delaying future repointing requirements.
- Apparatus Bay slab – The slab in the Apparatus Bay is a patchwork of damaged slab areas and previous patches, it is recommended this slab be removed and replaced with a new 6" thick reinforced concrete slab.
- Suspended ceiling system support failure – The failure of the suspended ceiling system support in the Day Room should be investigated as to the cause of the failure, repairing damaged elements that contributed to the failure and re-supporting the suspended ceiling system.
- Floor crack in the Training Room – The floor crack should be addressed as part of Training Room foundation repair. See Training Room foundation settlement above.
- Crack in the floor finish between the Kitchen and the Storeroom – The area of the crack is located at change of support for the floor from a concrete slab to a wood framed floor. The floor finish crack is most likely due a differential finished floor elevation and/or floor movement differential between the slab on grade and the wood floor. The wood floor framing shall be investigated to determine if it adequate for the loads applied to the floor and if not adequate reinforced to carry the existing floor loads. Particular attention should be given to settlement and movement during the present potential loads.
- Water damaged floor sheathing – The water damaged sheathing in the Kitchen Storeroom shall be scheduled for replacement.

Recommendations – additional discussed items

- Lath and plaster failure in the Apparatus Bay – If installed as described by installing gypsum board directly over the failing lath and plaster ceiling without any additional reinforcement it is recommended that both the gypsum board and lath and plaster ceilings be removed and replaced with a new fully support ceiling system.
- Roofing and framing failure – No recommendations.
- Oil seepage through the Training Room Floor – It is recommended that an environmental investigation of the site be performed, and a remediation be performed to address the source of the oil that is seeping the floor of the Training Room.

conclusion

The building structure of the Cheshire fire Station is fair condition with area maintenance requirements have been minimally addressed or neglected.

The unforeseen issue is the foundation issue in the Training Room area and the oil seepage in the Training Room area.

These factors may make it advantageous to seek an alternate site with a new structure.

existing building assessment

general

The existing Cheshire Fire Station mechanical and plumbing systems were visually reviewed by edm on May 16, 2022. No destructive investigations, testing, opening of enclosures nor adjustments were made by, or in the presence of edm, and as such, actual operating capacity functionality, performance abilities and useful life expectancies are based solely on the visually observed conditions of the equipment and their distribution. This mechanical and plumbing assessment does not address potential future upgrades, renovations and/or additions, which could be a later phase of construction. No drawings, specifications or reports of the mechanical and plumbing systems were available for use with this assessment.

codes

The heating, ventilation, and air conditioning as well as plumbing system codes that are applicable for this assessment project is based upon the applicable portions of the following codes and referenced standards therein as they relate to continued use and maintenance of existing buildings:

- Massachusetts ninth edition of the MA State Building Code, 780 CMR
- Massachusetts Comprehensive Fire Safety Code 527 CMR 1.00
- Massachusetts General Laws.
- 2015 International Building Code, as amended by Massachusetts
- 2015 International Existing Building Code, as amended by Massachusetts
- 2015 Mechanical Code of Massachusetts (adopting without amendments, 2015 International Mechanical Code) for fuel oil
- 2018 IECC Base Code with Massachusetts amendments
- 2014 NFPA 58, Liquefied Petroleum Gas Code
- 2016 ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality
- 248 CMR 10.00 Massachusetts Uniform State Plumbing Code

mechanical systems

There is an abundant amount of deferred maintenance mechanical items requiring immediate mitigation or repair/replacement within the next 3-5 years, or sooner, as noted below. The heating plant consists of a natural gas fired (formerly oil) H.B. Smith Series 8 Cast Iron Sectional Atmospheric boiler-burner unit located in the basement mechanical room along with the water service entry. Besides the zone pumps controllers, a Tekmar boiler control system was observed. A B&G compression tank was noted tucked in the rafters and piped to the heating distribution accordingly. Fresh water makeup with a pressure reducing valve and backflow preventer was observed. We were advised that the existing hydronic boiler was formerly in operation at the town hall and brought over to the fire station. Further, we were told that upon annual startup, the hot water supply and return heating distribution system is always air bound and requires purging every year. Several signs of deterioration, internal and external rust were observed. The heating plant has exceeded its useful life and while it may be continued in use, higher operating costs, repair costs and the likelihood of failure is increasing day by day. The boiler-burner, pumps, accessories, and appurtenances should be replaced in years 1-3, but as soon as possible.

edm

6.15.22 Mech & Plumb

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The basement mechanical room did not appear to include combustion air intake (ducted to within 18" of the finished floor per NFPA 54) and combustion air relief (ducted to within 18" of finished ceiling per NFPA 54) ductwork nor equipment. While details of design would be included in the next phase, where an NFPA 54 unconfined area does not exist with the mechanical room door closed, either combustion air intake and relief systems would have to be added or applicable non-atmospheric direct vent boiler and water heater or similar equipment would have to be added.

There is flue venting with a barometric damper from the boiler to the existing chimney that appears in good condition that can remain in operation until the boiler is replaced. There is also flue venting from the water heater draft diverter through an unsealed hole in the Mechanical Room wall and through an unsealed hole in the adjacent room used as storage. This water heater flue should be enclosed to separate the flue from the storage room it runs through, and the flue modified to meet manufacturer recommendations. This water heater flue appears in good condition that can remain in operation until the water heater is replaced.

From the boiler plant, hot water heating piping distributes to baseboard radiation, wall convectors, Modine unit heaters and other terminal units throughout the fire station from zone pumps next to the boiler-burner. The Day Room includes slanted top convectors surrounding the exterior wall. The Men's and Women's Rooms include slant top convectors on the end wall of the water closet enclosure. The large meeting assembly room also includes slant top convectors surrounding the exterior perimeter. The apparatus bays are heated with Modine hot water unit heaters aiming airflow to the overhead doors.

The terminals and distribution appear to be the age of each addition where they are located and while the terminals could continue to be in operation from 5-10 years, given the annual startup air binding of the system noted above, they should be upgraded/replaced when the heating plant is replaced. Different vintages of thermostats exist in the building and when the terminal units and/or controls are added, modern, matching thermostats should change out the existing. Similarly, we were advised that the carbon monoxide system and heat detection systems are inoperative; these should be replaced immediately.



Observed rust at front boiler section



Observed rust at integral exchanger

The former #2 fuel oil system that used to serve the boiler-burner has some clipped lines that are abandoned in place; these should be removed and properly disposed of. In reply

to an edm inquiry about the storage of prior fuel oil and whether there still exists a buried fuel oil tank, fill, vent, piping, valving and fittings on site, the owner was not certain of the final disposition about any buried fuel oil tank and systems remaining on site, although no fills nor vents were observed. If any fuel oil system remnants exist, they should all be investigated by a Licensed Site Professional (LSP) and be removed and properly disposed of (including hazardous waste manifest meeting EPA, MassDEP, state and local DOT recommendations) in year 1.



#2 fuel oil abandoned remnants

The kitchen includes a ducted hood that did not have a posted listing, did not include a fire suppression system, and did have cleanable filters. The hood has a 10/18/18 "Certification of Performance" by Advanced Air Quality, Inc. that expired on 10/18/19; another deferred maintenance item. While the hood appears to be in good condition, it should be fully investigated (including the ductwork and exhaust fan with modifications as needed), have a fire suppression system added and either certified in place, replaced with a listed hood to the requirements of the listing, or obtain direction and approval from all Authorities Having Jurisdiction in year 1.

There are 8 wind turbine gravity roof vents and 4 mechanical exhaust fans on the roof. We were told that the rotating-top gravity ventilation units serve the attic areas. The mechanical exhaust fans appear designed to serve occupied areas, and we were told that of the four rooftop exhaust fans, only one is in operation. Apparatus Bay ceiling exhaust grilles exist, however, most of them are inoperative. These mechanical exhaust fans should be serviced and where impractical to repair, replaced in year 1.



Roof view of turbine & EF



Another roof view of turbines & EF

While we did see some insulation with fitting covers on elbows, valves and tees on the existing supply distribution near the zone pumps, insulation on almost all of the water piping, fittings, valves, etc. was virtually non-existent. Insulation retrofitting should be provided in the first five years.

plumbing systems

edm

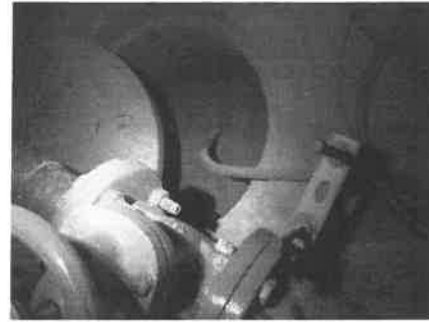
6.15.22 Mech & Plumb

tch-6090 | 3

There is an abundant amount of deferred maintenance plumbing items requiring immediate mitigation or repair/replacement within the next 3-5 years, or sooner, as noted below. The existing Cheshire Fire Station plumbing systems potable city water originates in the basement boiler room and includes an iron OS&Y valve, strainer (to capture city water system debris), backflow prevention with OS&Y valves and a water meter with remote reader at the ceiling. Beneath the backflow prevention is a pit (filled with sand), cover and a portable yard hose inside the basin.



Domestic Cold Water Service Entry



Sump pit with cover, filled in

The cold water service entry from the public utility connects to the plumbing fixtures throughout as well as to the existing 40 MBH natural gas-fired 40 gallon storage American Water Heater Company model BFG6140S403NOHV atmospheric water heater. The water heater includes a Therm-X-Trol diaphragm expansion tank. Domestic hot water distributes from the water heater and extends to the plumbing fixtures along with the cold water distribution.

There exists a water-cooled Scotsman CME256AE-1C ice machine with a portable sump pump on the floor behind the ice maker, which discharges to the Janitor's Service Sink. While this ice machine appears to be in operating condition, given water conservation desires in states and towns, its continued use shall be verified with the Authorities Having Jurisdiction.

Truck water filling is facilitated by two supplies. A larger-size cold water main located between a pair of front overhead doors with a stub to the outside (with a ball valve) and an interior hose-end drain to prevent freezing of the exterior fill. Another truck fill standpipe is in the rear of an apparatus bay with an isolation ball valve. The piping close to overhead doors should be insulated and protected from freezing. As freeze-ups have not occurred, insulation could be performed in the next 3 years.



Apparatus Bay Fill #1



Apparatus Bay Fill #2

The kitchen includes a 10-burner natural gas-fired stove with double door oven, double-bowl, undercounter, deep pot sink with spray hose. Other plumbing fixtures include 2 wall-hung, tank type water closets, wall hung urinal, 2 wheelchair lavatories,

approximately 5 floor drain (the adjacent floor finishes require repair and resealing), commercial washer/extractor, a pair of showers, a wall hung Janitor's Service Sink, a wall hung porcelain classroom style drinking fountain (that we were told is not used any more), and hose bibbs scattered around the perimeter. Plumbing fixture upgrading could be expedited in the next year or two.

While we did see some insulation with fitting covers on elbows and tees on the existing water heater, insulation on almost all the water piping, fittings, valves, etc. was virtually non-existent. Insulation retrofitting should be provided in the first five years.

Four large capacity drainage pits with heavy grating set flush with the finished floor exists in the apparatus bays, along with a diamond plate floor grating of what was described as the filled-in hole from the original hydraulic lift piston; as the owner was not certain where these drains and floor access discharge, these drains need to be serviced, cleaned and investigated as to where they drain to. Given that the drains are in the apparatus bay with diesel and other vehicles, this report recommends a LSP Recommendation be obtained and pursued in year 1.



Apparatus Bay H.D. Grating



Apparatus Bay Diamond Plate Grating

The kitchen with the two-bay undercounter pot sink should be run through a grease interceptor. As none was observed, there was a question about where the kitchen sink and other sanitary drains discharge to. The owner advised that they did not know. An allowance for a Big Dipper Automatic Grease Removal Unit if no interceptor exists, or remove the pot sinks in year 1.



Kitchen sink and faucet

In reply to another edm inquiry about whether there is a septic tank, distribution box and leeching field, or does the sanitary leaving the building connect to a city sewer elsewhere on site, the owner did not know. As the commercial cooking equipment could generate an abundance of Fats, Oils and Grease (FOG), this report also recommends that the drainage system be investigated and a LSP Recommendation be obtained and pursued in year 1.

End of Mechanical and Plumbing Assessment

existing building evaluation

site The Fire Station is located on State Rd in Cheshire, MA. The building is used by the town fire department. Currently the Main electric service is located in a Storage room located on the first floor. Building is served from (1) electric meters rated at 120/208V, 3 Phase, 200A.

Representatives of **edm** toured the building to evaluate the existing condition of the building in order to understand its current use, and propose potential options for improvement and expansion.

code	Electric Service:	120/208V, 3 Phase, 200A
	Meter location:	North side of building.
	Stories:	1 floor, slab on grade

lighting:

Light fixtures located on the exterior of the building consist of recessed down lights, and led floodlights. The fixtures look to be in good condition. Fixtures could be replaced or additional fixtures installed if more light is desired.



Figure 1 exterior lighting



Figure 2 exterior lighting

Interior lighting consists, primarily of recessed 2x4 fluorescent fixtures with what appears to be t-8 lamps. These are effective in their application and are reasonably efficient.



Figure 3 Fluorescent lighting



Figure 4 shop/BOH lighting

Emergency egress lighting is provide by means of emergency lighting units (ELU's), remote heads, illuminated exit signage, combination exit sign/ELU. These do not appear to be in working order. There operation should be checked regularly.



Figure 5 emergency lighting unit-ELU



Figure 6 combination exit sign and ELU



Figure 7 remote head



Figure 8 remote head

power:

The Main Electric service is 120/208V, 3 Phase, 200A. It is served from pole mounted utility transformers located across the street in front of the building. The service comes into the building overhead through a line voltage meter also located on the north side of the building (or left side if facing the building).



Figure 9 pole mounted transformers



Figure 10 electric meter

From the meter, the service is brought in to the building through what appears to be a service entrance rated transfer switch. From the transfer switch, power is brought into panelboard PP-1. At this point power is distributed out to the rest of the building in form of branch circuits and a feed to an additional panelboard PP-2 that is located on the west side of the building. Additional branch circuits are distributed out into the building from there.

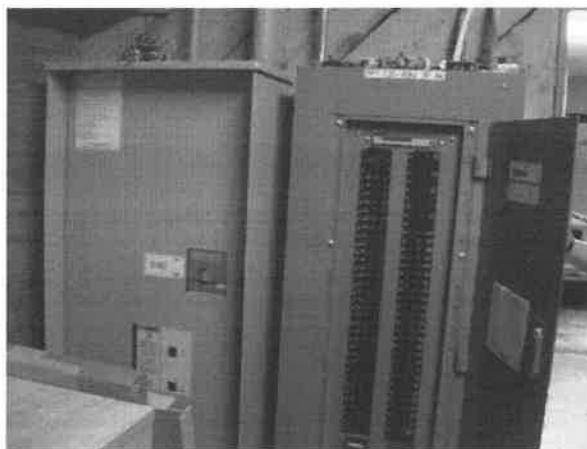


Figure 11 transfer switch and panelboard



Figure 12 panelboard

There is a 20kW natural gas standby generator on site. The generator provides back-up power to the building. Due to the size of the generator, only a portion of the buildings electric power is able to be powered. Edm was not able to determine what type of load shedding is used to protect the

generator from overload. The generator, wiring and transfer switch all appear to be in good condition and should be able to continue to be used.



Figure 13 generator



Figure 14 generator

During the walk thru some wiring, issues were found. These include wires spliced outside of a junction box and junction boxes with no covers. Grounding may be insufficient as there was no jumper across the water meter



Figure 15 wiring code violation



Figure 16 wiring code violation



Figure 17 grounding electrode conductor



Figure 18 grounding electrode conductor

There does not appear to be a fire alarm system. There is two heat detectors. One is located in the center of each truck bay. They are connected to an abandoned control panel that is not connected to an alarm system



Figure 19 heat detector



Figure 20 control panel

Recommendation:

The Electric Service, Panelboards, and interior wiring are sufficient at this time. If renovations are to be performed, the branch circuits may be replaced where necessary but the service should be able to remain, unless the renovation includes a significant increase in electric load.

Interior lighting should be replaced with energy efficient LED fixtures. LED fixtures consume a fraction of the power used by traditional Fluorescent and incandescent lighting. This will lead to lower utility costs and will comply with National, State and local energy conservation codes. In addition, all new lighting shall be controlled with new equipment designed for new LED fixtures. This will include occupancy sensors that turn off lighting when a space is unoccupied, daylight sensors that will dim fixtures when less light is needed due to the amount of natural ambient light. In addition, new fixtures shall be manually dimmable. These new lighting controls are now required by national and local energy codes that have been adopted by the state of Massachusetts. Lighting fixture layout will comply with energy code power density limits.

The electrical service grounding conductors should be inspected to verify the conductor's integrity and that the building is properly grounded. By not jumping the water meter, the buildings water piping may not be protected

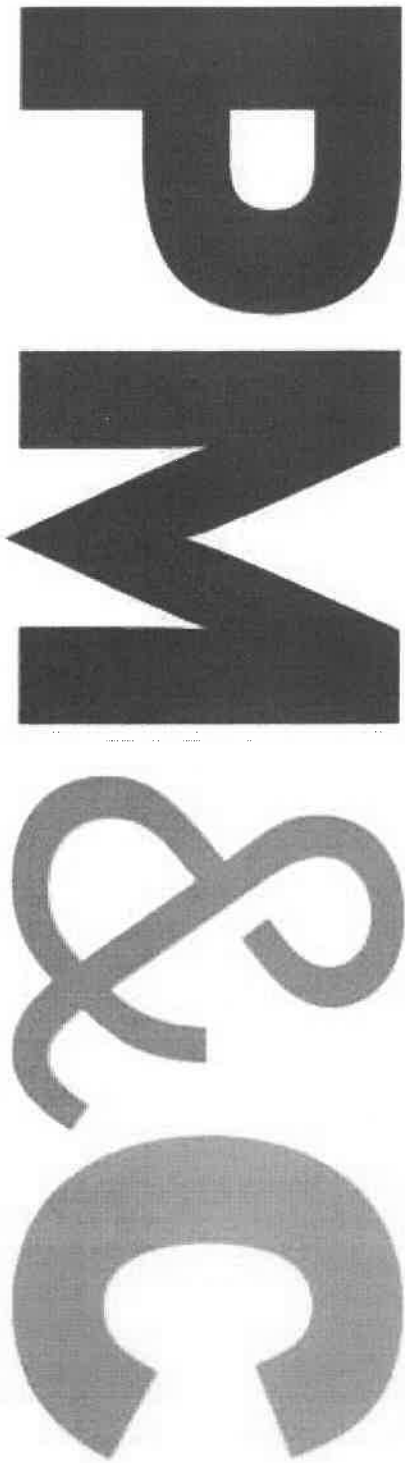
An electrical contractor should inspect existing branch circuit wiring and correct any code violations, such as found above. All new receptacles, lighting, and mechanical equipment shall be served with new wiring.

As stated above edm was unable to ascertain if any form of load shedding is employed. Edm strongly suggests that the style of load shedding be verified so that the generator is protected from overload. Overloading the generator can have serious and adverse effects on the continued operation of the generator.

Equipment such as emergency lighting units and exit signage should be checked regularly for proper operation and have maintenance performed as needed. The same holds true for all electrical equipment such as the generator. Regular maintenance can prolong the equipment's normal life span.

**Study
Estimate**

**Cheshire Fire Station
Improvements**
Cheshire, MA



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Prepared for:

EDM

July 29, 2022



Cheshire Fire Station
Improvements
Cheshire, MA

29-Jul-22

Study

MAIN CONSTRUCTION COST SUMMARY

	Construction Start	Gross Floor Area	\$/sf	Estimated Construction Cost
TRADE COSTS				
Building Improvements	Jul-23	6,800	\$126.39	\$859,430
HazMat removals at existing building				NIC
Sitework - Trade Costs	Jul-23			\$0
SUBTOTAL TRADE COSTS		6,800	\$126.39	\$859,430
Design and Estimating Contingency	15.0%			\$128,915
Escalation Allowance	4.0%			\$34,377
SUBTOTAL INCLUDING CONTINGENCIES				\$1,022,722
Subcontractor Bonds				In rates
General Conditions	15.0%			\$153,408
General Requirements	3.0%			\$30,682
Winter Conditions				excl
Insurances - GLI/Builders Risk	1.40%			\$14,318
Bond	0.70%			\$7,159
Building Permit				Waived
Overhead & Profit	10.0%			\$102,272
TOTAL ESTIMATED CONSTRUCTION COST		6,800	\$196	\$1,330,561



Cheshire Fire Station
Improvements
Cheshire, MA

29-Jul-22

Study

BASIS OF ESTIMATE

This Study cost estimate was produced from drawings and specifications prepared by EDM and their design team dated June 20, 2022. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

This estimate includes all direct construction costs, construction manager's overhead and profit and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding under:

Chapter 149 of the Massachusetts General Laws to pre-qualified general contractors, and pre-qualified sub-contractors, open specifications for materials and manufacturers.

If a CM at risk CH149a procurement is used costs will increase from the costs presented in this report.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT CONSIDERED IN THIS ESTIMATE

Items not included in this estimate are:

- All professional fees and insurance
- Building Permit costs
- All Furnishings, Fixtures and Equipment
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items (e.g. draperies, furniture and equipment)
- Work to City streets and sidewalks, (except as noted in this estimate)
- Construction or occupancy phasing or off hours' work, (except as noted in this estimate)



Cheshire Fire Station
Improvements
Cheshire, MA

29-Jul-22

Study

GFA

6,800

CONSTRUCTION COST SUMMARY

Building Detail

BUILDING SYSTEM

SUB-TOTAL

TOTAL

SUMMARY ALL BUILDINGS

A10 FOUNDATIONS		\$130,945
A1010 Standard Foundations	\$30,945	
A1020 Special Foundations	\$0	
A1030 Lowest Floor Construction	\$100,000	
B20 EXTERIOR CLOSURE		\$218,160
B2010 Exterior Walls	\$218,160	
B2020 Windows	\$0	
B2030 Exterior Doors	\$0	
C30 INTERIOR FINISHES		\$81,300
C3010 Wall Finishes	\$12,000	
C3020 Floor Finishes	\$10,500	
C3030 Ceiling Finishes	\$58,800	
D20 PLUMBING		\$43,000
D2000 Plumbing	\$43,000	
D30 HVAC		\$128,700
D3000 HVAC	\$128,700	
D40 FIRE PROTECTION		\$0
D4000 Fire Protection	\$0	
D50 ELECTRICAL		\$233,525
D5010 Service & Distribution	\$14,800	
D5020 Lighting & Power	\$119,100	
D5030 Communication & Security Systems	\$80,925	
D5040 Other Electrical Systems	\$18,700	
F20 HAZMAT REMOVALS		\$23,800
F2010 Building Elements Demolition	\$23,800	
F2020 Hazardous Components Abatement	\$0	

TOTAL DIRECT COST (Trade Costs)

\$859,430



Cheshire Fire Station
Improvements
Cheshire, MA

29-Jul-22

Study

GFA 6,800

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
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Building Detail

GROSS FLOOR AREA CALCULATION

Ground Level 6,800 sf

TOTAL GROSS FLOOR AREA (GFA)

6,800 sf

A10 FOUNDATIONS

A1010 STANDARD FOUNDATIONS

033000 CONCRETE

New Foundation wall footings @ Training Room North East, allow 60 LF 7 cy 1,200.00 8,400
Foundation wall @ Training Room North East, allow 60 LF 10 cy 1,800.00 18,000

312000 EARTHWORK

E/B at foundation wall 101 cy 45.00 4,545

SUBTOTAL \$ 30,945

A1020 SPECIAL FOUNDATIONS

CONCRETE

Placing concrete

SUBTOTAL \$ -

A1030 LOWEST FLOOR CONSTRUCTION

033000 CONCRETE

Patch slab @ Training Room, allow 1000 sf 1,000 sf 10.00 10,000

Remove/replace slab at apparatus bay, allow 50' x 60' area 3,000 sf 25.00 75,000

061000 ROUGH CARPENTRY

Modifications to extg Kitchen & Storeroom wood framed floor to adjust elevation height 1 ls 15,000.00 15,000

Replace water damaged sheathing @ Kitchen & Storeroom Included above

SUBTOTAL 100,000

TOTAL - FOUNDATIONS

\$130,945

B20 EXTERIOR CLOSURE

B2010 EXTERIOR WALLS

720 sf

040001 MASONRY

Remove/reinstall masonry for new foundation work. Replace new as req'd, allow 60 lf 720 sf 30.00 21,600

Temp shoring as req'd 60 lf 200.00 12,000

Repoint extg brick masonry veneer, assume perimeter 380 lf at 12'H 4,560 sf 40.00 182,400

052000 MISC. METALS

720 sf 2.00 1,440

070001 WATERPROOFING, DAMPPROOFING AND CAULKING

720 sf 1.00 720

SUBTOTAL \$ 218,160

B2020 WINDOWS

No Work in this section

SUBTOTAL \$ -

B2030 EXTERIOR DOORS

No Work in this section ea

SUBTOTAL \$ -

TOTAL - EXTERIOR CLOSURE

\$218,160

C30 INTERIOR FINISHES

C3010 WALL FINISHES

090007 PAINTING

Paint & refinish work area 4,000 gsf 3.00 12,000



Cheshire Fire Station
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GFA 6,800

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
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Building Detail

063	C3010	SUBTOTAL				\$	12,000
064							
065	C3020	FLOOR FINISHES					
066	090005	RESILIENT FLOORS					
067		Patch floor of work area, Training Room	1,000	sf	8.00	8,000	
068		Patch floor of work area, Kitchen	1	ls	2,500.00	2,500	
069	C3020	SUBTOTAL				\$	10,500
070							
071	C3030	CEILING FINISHES					
072							
073	064020	INTERIOR ARCHITECTURAL WOODWORK					
074		No Work in this section		sf			
075							
076	090003	ACOUSTICAL TILE					
077		Repair/re-support suspended ceiling system @ Day Room	400	sf	12.00	4,800	
078							
079	092900	GYPSUM BOARD ASSEMBLIES					
080		Gypsum board and lath and plaster ceilings be removed and replaced with a new fully support ceiling system @ Apparatus Bay	3000	sf	18.00	54,000	
081							
082	C3030	SUBTOTAL				\$	58,800
083							
084		TOTAL - INTERIOR FINISHES					\$81,300
085							
086							
087	D20	PLUMBING					
088							
089	D2000	PLUMBING, GENERALLY					
090		Demolition					
091		Remove existing fixtures	8	ea	250.00	2,000	
092		Equipment					
093		Domestic water service, meter and BFP - existing				ETR	
094		Water heating equipment - existing				ETR	
095		New grease interceptor at existing pot sink	1	ea	8,000.00	8,000	
096		Plumbing Fixtures & Specialties					
097		Replace existing plumbing fixtures	8	ea	2,500.00	20,000	
098		Floor drain - existing				ETR	
099		Piping					
100		Domestic water piping - existing				ETR	
101		Sanitary waste and vent - existing				ETR	
102		Insulate existing domestic water piping	1	ls	7,500.00	7,500	
103		Natural Gas Piping					
104		Natural gas piping - existing				ETR	
105		Miscellaneous					
106		Coordination & management	1	ls	5,000.00	5,000	
107		Fees & permits	1	ls	500.00	500	
108	D2000	SUBTOTAL				\$	43,000
109							
110		TOTAL - PLUMBING					\$43,000
111							
112	D30	HVAC					
113							
114	D3000	HVAC, GENERALLY					
115		Demolition					
116		Remove existing boiler, pumps and accessories	1	ls	2,500.00	2,500	
117		Remove existing fuel oil tank and piping - excluded				NIC	
118		Remove existing terminal heating devices	1	ls	1,500.00	1,500	
119		Remove existing fan / roof ventilator	12	ea	200.00	2,400	
120		Equipment					
121		New gas-fired atmospheric boiler, 300 mbh	1	ea	12,000.00	12,000	
122		Circulating pump, inline	2	ea	4,500.00	9,000	
123		Expansion tank	1	ea	3,500.00	3,500	
124		Air separator, 2"	1	ea	2,000.00	2,000	
125		Replace existing HW heating devices	1	ls	10,000.00	10,000	
126		Replace existing general exhaust fans	4	ea	3,500.00	14,000	
127		Exhaust fan for range hood	1	ea	3,000.00	3,000	
128		Replace existing turbine ventilators	8	ea	750.00	6,000	



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GFA

6,800

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
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Building Detail

129	New range hood with fire suppression	1	ea	10,000.00	10,000		
130	<u>HVAC Pipe</u>						
131	Heating hot water distribution piping - existing to remain					ETR	
132	Tie new boiler and pumps into existing mains	1	ls	3,000.00	3,000		
133	Insulate existing hot water piping	1	ls	7,500.00	7,500		
134	<u>Sheet metal & Accessories</u>						
135	Misc. duct modifications	1	ls	5,000.00	5,000		
136	Boiler flue - connect to existing chimney	1	ls	4,000.00	4,000		
137	<u>Controls</u>						
138	Controls for new equipment (non DDC)	1	ls	10,000.00	10,000		
139	<u>Balancing</u>						
140	System testing & balancing	1	ls	5,000.00	5,000		
141	<u>Miscellaneous</u>						
142	Coordination & management	1	ls	10,000.00	10,000		
143	Coring, sleeves & fire stopping	1	ls	2,500.00	2,500		
144	Equipment startup	1	ls	1,500.00	1,500		
145	Rigging & equipment rental	1	ls	3,000.00	3,000		
146	Fees & permits	1	ls	1,300.00	1,300		
147	D3000 SUBTOTAL					\$ 128,700	
148							
149	TOTAL - HVAC						\$128,700

D40 FIRE PROTECTION

D4000 FIRE PROTECTION, GENERALLY

155	<u>Fire Protection Equipment</u>						
156	No work in this section					NIC	
157	D4000 SUBTOTAL					\$ -	
158							
159	TOTAL - FIRE PROTECTION						

D50 ELECTRICAL

D5010 SERVICE & DISTRIBUTION

164	200A panelboard					ETR	
165	Modify existing panelboard	1	ls	4,000.00	4,000		
166	Overhead service is ETR					ETR	
167	20KW emergency generator					ETR	
168	<u>Equipment Wiring</u>						
169	Boiler feed and connection	1	ea	1,750.00	1,750		
170	Pump feed and connection	2	ea	1,750.00	3,500		
171	Hood feed and connection	1	ea	1,500.00	1,500		
172	DDC feed and connection	1	ea	650.00	650		
173	Misc. feed and connections	6,800	sf	0.50	3,400		
174	D5010 SUBTOTAL					\$ 14,800	

D5020 LIGHTING & POWER

177	<u>Lighting & Power</u>						
178	Replace LED lighting	6,800	sf	8.00	54,400		
179	Exit and emergency lighting	6,800	sf	0.50	3,400		
180	Exterior building lighting	1	ls	3,500.00	3,500		
181	Lighting controls with switches and sensors	6,800	sf	1.50	10,200		
182	<u>Branch Power</u>						
183	Duplex and GFI receptacle	6,800	sf	1.00	6,800		
184	Branch circuitry	6,800	sf	6.00	40,800		
185	D5020 SUBTOTAL					\$ 119,100	

D5030 COMMUNICATION & SECURITY SYSTEMS

188	<u>Fire Alarm</u>						
189	Control panel with testing & programming	1	ls	8,500.00	8,500		
190	Beacon	1	ea	225.00	225		
191	FA devices and circuitry	6,800	sf	4.00	27,200		
192	<u>Telecommunications</u>						
193	MDF Closet	1	ls	3,500.00	3,500		



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GPA

6,800

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Building Detail							
194	Devices and cabling	6,800	sf	1.50	10,200		
195	Rough-in	6,800	sf	0.50	3,400		
196	<u>Alert Response System</u>						
197	Alert Response System	1	ls	7,500.00	7,500		
198	<u>Security System</u>						
199	Security System (NIC per DW)	6,800	sf	3.00	20,400		
200	D5030 SUBTOTAL					\$ 80,925	
201							
202	D5040 OTHER ELECTRICAL SYSTEMS						
203	Demolition work	1	ls	5,000.00	5,000		
204	Temp power and lighting	1	ls	5,000.00	5,000		
205	Coordination, BIM	1	ls	5,500.00	5,500		
206	Permits and fees	1	ls	3,200.00	3,200		
207	D5040 SUBTOTAL					\$ 18,700	
208							
209	TOTAL - ELECTRICAL						\$233,525
210							
211	F20 SELECTIVE BUILDING DEMOLITION						
212							
213	F2010 BUILDING ELEMENTS DEMOLITION						
214	Misc. selective demolition for new work, allowance	6,800	gsf	1.00	6,800		
215	Demo extg foundations	1	ls	12,000.00	12,000		
216	Site demolition as req'd for foundation work	1	ls	5,000.00	5,000		
217	F2010 SUBTOTAL					\$ 23,800	
218							
219	F2020 HAZARDOUS COMPONENTS ABATEMENT						
220	See main summary for HazMat allowance					See Summary	
221	F2020 SUBTOTAL					\$ -	
222							
223	TOTAL - SELECTIVE BUILDING DEMOLITION						\$23,800

