

**TOWN OF ORLEANS MASSACHUSETTS  
REQUEST FOR QUALIFICATIONS  
ORLEANS FIRE STATION FEASIBILITY STUDY  
ADVERTISEMENT**

The Orleans Town Administrator, the Awarding Authority, seeks submissions from qualified Designers, as defined in Chapter 7, Sections 44-58 of the General Laws of Massachusetts, to perform a Fire Station Feasibility Study for a new fire station on the existing site or another site. The fire station is currently located at 58 Eldredge Park Way.

The qualified Designer will work with the community to first determine the most advantageous site, which may include the procurement of non-municipally owned property. Based on existing studies, the Designer shall complete the task of modeling a new station to meet current and future space needs while adhering to building codes for first responder facilities, DOER's Green Communities energy efficiency criteria and standards of functionality and comfort. The work will also include commissioning independent cost estimates for the potential acquisition of property, site development, a new building and associated Owner's development costs.

It is the intent of the Awarding Authority to engage a qualified Designer utilizing the Commonwealth of Massachusetts Contract for STUDY, FINAL DESIGN AND CONSTRUCTION ADMINISTRATIVE SERVICES as a basis for executing the study. Submission of the Designer's proposal will also include statutory compliance forms, acknowledgement forms and the ability to provide insurance coverages as identified within the draft document. Depending on the successful outcome of this study, the Owner may choose to continue on with the Study Phase Designer for subsequent project phases.

Designers are encouraged to tour the Fire Station prior to the submission of qualifications. It is incumbent for the Designer to clearly articulate in their submission a successful history of completing studies involving site selection, designs of new fire stations, or public safety complexes, of a similar magnitude.

A copy of the submission requirements may be obtained electronically on or after **December 9, 2021**, at no charge, by registering at [www.town.orleans.ma.us/bids](http://www.town.orleans.ma.us/bids) . Please refer to Orleans' website home page Bid / RFPs tab.

All submissions must be received by the Town Administrator's Office, 19 School Road, Orleans, MA 02653-3699 by 3:00 pm on **January 7, 2022**. Any submission received after this time and date will be returned to the applicant unopened. No exceptions will be allowed. Facsimile and electronic submissions will not be accepted and postmarks will not be considered. One (1) original, five (5) photocopies and one (1) electronic file of the submission must be submitted in a sealed envelope indicating the applicant's name and address and clearly marked in the lower left hand corner "NEW FIRE STATION FEASIBILITY STUDY". The Design Selection Committee intends to submit a Designer recommendation to the Awarding Authority by **January 27, 2022**. The Study completion is scheduled for **August 12, 2022**. The project fee shall be negotiated, with the maximum cost not to exceed \$90,000.

The Town Administrator reserves the right to accept and/or reject any and all submissions and waive any informality in the selection procedures to the extent allowed by law and make the award as may be deemed to be in the best interest of the Town.

John F. Kelly, Town Administrator

**TOWN OF ORLEANS MASSACHUSETTS  
REQUEST FOR QUALIFICATIONS  
ORLEANS FIRE STATION FEASIBILITY STUDY**

**SUBMISSION INSTRUCTIONS**

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The Town Administrator reserves the right to accept and/or reject any and all submissions and waive any informality in the selection procedures to the extent allowed by law and make the award as may be deemed to be in the best interest of the Town.

## **BACKGROUND INFORMATION**

The Orleans Fire Department provides Fire Suppression, Paramedic Level Emergency Medical Services, and all hazards emergency response to the citizens and visitors of Orleans. There are currently 24 full time positions, as well as 7 on call positions. Staff includes a Chief, Deputy Chief, Fire Inspector, Emergency Medical Services Coordinator, and a Principal Clerk. There are four rotating shifts of five firefighters on duty every day. In calendar year 2018, the Orleans Fire Department responded to 3002 requests for service.

The Fire Station, constructed in 1989, has two occupied levels with an uninsulated attic. The approximate areas consist of a 4,500 SF lower level apparatus bay with ancillary shops, a 1,800 SF upper level rescue vehicle bay and a 4,500 SF office with staff quarters. As noted in the supplemental information, an earlier study indicates that response times are impacted by the two story configuration.

The building is located within the property boundaries of the adjacent Elementary School. There is no official property delineation between the two facilities. Site access for emergency and public services is through a single drive primarily located on Nauset Regional Middle School property.

Poor air quality conditions were observed during a 2018 Barnstable County Health Department audit. As a result, interim HVAC improvements currently in progress, consist of installing a dedicated outside air handler to feed three existing attic located furnaces, limited building controls and a gas detection system. That work will be completed this spring. It is not anticipated that these modifications will be incorporated into the more comprehensive renovation of and/or addition to the building as envisioned by this study.

The building's main electrical service is 400A 120V/240V single phase. An original 40kW lower level located generator was replaced with a 60kW exterior gas fired unit. The additional capacity was designed to take the entire building load.

There is no fire suppression sprinkler system. However, the town's nearby domestic water service is adequate to handle the needs of a future sprinkler system.

The building envelope is original and does not meet current wind, seismic, storm impact, or DOER "Green Communities" efficiency standards. Further, architectural repairs are widely needed.

The asphalt shingled roof has been repaired but is in poor shape and needs to be replaced.

The Town has conducted area-specific hazardous building material surveys and has identified asbestos containing building materials on the foundation and exposed block facade.

These deficiencies and more have been confirmed in a report prepared by the Galante Architecture Studio. It is the completion of TGAS' August report that has convinced the community that the most cost effective solution is a replacement of the building.

During this study phase, the Designer will work directly with the Fire Department Staff, a Fire Station Feasibility Study Committee, Town Officials and the Building and Facilities Manager who will be the

interim Owner's Project Manager.

### **RESOURCES AVAILABLE TO ASSIST IN THE STUDY**

1. (Orleans) Fire Department Staffing and Organizational Study by Emergency Services International dated February 2020. - attached
2. Orleans Fire Department Facility Analysis by the Galante Architecture Studio and MacRitchie Engineering, Inc. dated January 31, 2020. – attached
3. Orleans Fire – DRAFT Rescue Strategic Plan for FY 21 through FY 25 - draft attached
4. Town of Orleans – Fire Station Feasibility Study by the Galante Architecture Studio dated August 11, 2020 - attached
5. Plans for the building as it was constructed in 1989.
6. Access to the Fire Chief and his staff, the Fire Station Building Committee as well as other Town of Orleans staff.
7. For a station tour, contact Building and Facilities Manager Ron Collins at [rcollins@town.orleans.ma.us](mailto:rcollins@town.orleans.ma.us) to schedule an appointment.

### **Milestone #1 – Assessment of Potential Properties for the Site of a New Fire Station**

Milestone #1 will conclude with a graphically enhanced report and presentations detailing the assessment of two non-municipally owned properties that have been determined to be advantageous to fulfill the Fire Department's needs with a new station.

The Designer shall guide the Town by suggesting the most significant criteria to determine a property's attributes. Primary areas of concern include: a centralized location, lot size, the availability of public utilities including sewer, price, site improvement costs to rectify existing conditions and on-going expenses to secure a property during its undeveloped state.

Equally important is to facilitate discussions on the appropriateness of acquiring property and the effect it will have on the community's "socioeconomic fabric". A component to affecting the community's socioeconomic fabric is how and when the town notifies owners, of potential properties, about the town's elevated interest.

Through decades of operation and past response time data, the Fire Department has determined that the east end of Eldredge Park Way appears to be highly advantageous with respect to addressing the town's overall needs for emergency responses. It will be incumbent on the Designer to confirm that hypothesis and determine the locale limits for maintaining acceptable response times.

Taking into account the issues above, the following tasks will form the basis for completing Milestone #1:

1. Assist the Town with developing a general solicitation of inviting the submission of proposals for acquiring real property in accordance with Mass. General Law Chapter 30B, Section 16.
2. Complete a desk top evaluation, using publically available GIS data, of no fewer than

eight properties. Develop a criteria matrix to establish a ranking order.

3. Meet with Town Officials to refine the possibility of properties to two sites. In a parallel track, the town will explore opportunities with acquiring municipal property.

### **Milestone #2 – Development of Building Models**

With the Town's agreement of Milestone #1's Assessment of Properties, the Designer will then complete two virtual building models in sufficient detail allowing the Town to choose one for further development. Generally, these models will include:

1. A building and site layout conveying a functionally efficient, attractive, and inviting environment for employees and visitors.
2. Evidence that the prospective lot sizes will address current and future department needs. This level of detail should also include conceptual space allocations and locations for mechanical and electrical areas.
3. A proposed schematic layout to address traffic flow within the building to accommodate staff-to-public and staff to-staff interactions.
4. A refinement of Milestone #1's overall projects costs including property acquisition.

### **Milestone #3 – Refinement of Conceptual Design**

Advance Milestone #2's chosen concept design to achieve the equivalent of a DCAMM certified solution.

1. This would include a publicly presented final written report for approval by the Select Board. Additionally, the Design Team will also be required to participate in two public presentation meetings.
2. Include preliminary site and floor plans, building elevations, and overall assessments.
3. Provide a feasibility level estimate, by an independent Estimator and a Commercial Property Assessor, for the acquisition of property, proposed new facility and Owner's development costs such as Designer fees, Owner's Project Manager (OPM) fees, furnishings, contingency, etc.
4. Milestone #3's finished product shall be in sufficient detail, to serve as a basis for continuation into the Design Development and Construction Bidding Phases.
5. The report should be concise and clear, summarizing the findings. The report shall be prepared in 8 1/2" x 11" format with fold outs as required.
6. The Designer shall also provide a complete collection of electronic sketches, preliminary designs and models used during the initial development of the Building Information Modeling program.

**PROJECT SCHEDULE** –Request for Qualifications documentation publicly available, December 1, 2021.

1. Submission of Designer's qualifications, January 7, 2022.
2. Interviews with potential Designers, the week of January 31, 2022.

3. Recommendation of the most Advantageous Designer to the Awarding Authority, February 4, 2022.
4. Contract executed, February 25, 2022.
5. Study completion, August 1, 2022.

#### **SUBMISSION REQUIREMENTS AND MINIMUM QUALIFICATIONS**

1. Submission of a completed Designer Selection Board application (a Standard DBS Application Form 2016 is attached for reference). It should highlight the key personal and Subconsultants that will directly participate in this study; also:
2. The Designer must be registered to practice in Massachusetts.
3. The Designer must have direct experience in feasibility studies which have been completed relative to site selection, and the full project execution of new fire stations in the complexity and magnitude described in the various studies available in the supporting documents.
4. The Designer must be familiar with applicable federal, state, local regulations, and codes necessary to undertake the study.
5. The Designer must submit a completed Certificate of State Tax Compliance, Certificate of Non-Collusion and Acknowledgment of Principal forms.
6. The Designer will also need to acknowledge the ability to provide insurance coverage accordance with the Town's minimum limits.
7. The Designer shall provide a detailed description of the methodology to be used to determine the size of a new station with supporting site requirements.
8. Provide a detailed description of how a Building Information Modeling BIM program will be implemented and its abilities to be used in the future project phases.
9. The Designer shall acknowledge that it has sufficient resources to complete the study by August 12, 2022

#### **SAMPLE CONTRACT**

It is the town's intent to enter into a contract with the successful designer based on the general format entitled COMMONWEALTH OF MASSACHUSETTS CONTRACT FOR STUDY; FINAL DESIGN AND CONSTRUCTION ADMINISTRATION SERVICES (October 2020 revision). Exceptions may be considered for articles specifically required by the Department of Capital Asset Management and Maintenance - DCAMM. A sample copy of the contract is attached for reference.

#### **COST**

The total fee for services to complete all three milestone activities described in the Scope of Work will be negotiated but shall not exceed \$90,000. It should be anticipated that the fee for completing each milestone will be identified as a separate amount.

#### **SUBMISSION REQUIREMENTS AND MINIMUM QUALIFICATIONS**

1. Submission of a completed Designer Selection Board application (a Standard DBS Application Form 2016 is attached for reference).
2. The Designer must be registered to practice in Massachusetts.
3. The Designer must have direct experience in feasibility studies which have been

- completed relative to the renovation of Fire Stations or similar type buildings.
4. The Designer must be familiar with applicable federal, state, local regulations and codes necessary to undertake the study.
  5. The Designer must submit completed Certificate of State Tax Compliance and Certificate of Non-Collusion and Acknowledgment of Principal forms.
  6. The Designer will also need to acknowledge the ability to provide insurance coverage accordance with the Town’s minimum limits.
  7. Provide a detailed description of the methodology to be used to determine the entire condition of the building and site.
  8. Provide a detailed description of the methodology to be used for estimating costs and projected durations.
  9. Provide the names and resumes of the persons and organizations that will directly participate.
  10. Describe the extent of Building Information Modeling the can realistically be achieved during the study phase, but for the entire project.

**EVALUATION OF CRITERIA**

All submissions will be evaluated based on two sets of criteria - **minimum and comparative**. The submission must address each of the points under the minimum and comparative evaluation criteria.

**MINIMUM EVALUATION CRITERIA**

The Prime Firm’s submission must meet all the following criteria in order to be considered for further evaluation.

- 1. Years in business**  
A minimum of ten (10) years in business
- 2. Number of Municipal Clients**  
Identify at least three (3) feasibility studies, or full designs, of Fire Stations or similar Public Safety projects, having a floor space in the range of 20,000 SF which they have successfully completed during the past fifteen (15) years.
- 3. Study Completion**  
The ability to complete the study by August 12, 2022.

RFQ Submissions which do not meet the minimum criteria will be judged unacceptable.

**COMPARATIVE EVALUATION CRITERIA**

The following grading system will be used to measure the relative merits of each submission, which has met the above minimum evaluation criteria.

	<b>Criteria</b>	<b>Maximum Grades</b>
1.	Quality of submission and sample reports	8
2.	Oral Presentation and interview	8
3.	References	3
4.	Years firm has been in business	2
5.	Years’ experience of project leader	2

6.	Number of Municipal clients	2
	Total (maximum)	25

**1. Quality of RFQ Submission and Study report(s)**

Include at least one report that has been provided to a client covering this type of feasibility study for a fire station or similar type building in the range of 20,000 sq. ft. completed during the past five years.

The report will be graded for:

- a. Clarity and organization of report
- b. Substance of report
- c. Clear final conclusions of report

Grading from 0 to 8 as follows...

- 8 All criteria listed above are positive
- 4 Two (2) of the criteria listed above are positive
- 2 One (1) of the criteria listed above is positive
- 0 None of the criteria listed above are positive

**2. Oral Presentation and/or Interview**

Prospective Design Firms may be provided with the opportunity to make a presentation to Town Officials. In addition to presenting the organization and qualifications of the firm, the presentation should include information on past feasibility studies for a new fire station or similar type buildings having a size in the range of 20,000 SF.

The oral presentation and/or interview will be graded for...

- a. Presentation of the Team’s experience in similar feasibility studies or projects
- b. Presentation of the methods and extent of effort required for property acquisition evaluations and preliminary facility modeling
- c. Presentation of the personnel who will be directly involved, and their qualifications to accomplish the study including Engineering, Cost Estimating Subconsultants and Commercial Property Assessors.
- d. How communication will be maintained with Town Officials during the study
- e. Experience in identifying temporary operational strategies for Town staff during construction
- f. Strategy, implementation and limitations of BIM as it relates to this specific project
- g. How accuracy of estimates and assessments are achieved

Grading from 0 to 8 as follows...

- 8 All above criteria are positive
- 6 Six of the above criteria are positive
- 4 Four or five of the above criteria are positive
- 2 Two or three of the above criteria are positive
- 1 One of the above criteria is positive
- 0 None of the above criteria are positive

**3. References**

Provide a list of at least three references with contact information in each case for a feasibility study for a Fire Station or similar type building in the range of 20,000 sq. ft. completed during the ten years.

The references will be graded for

- a. Adherence to study timetable
- b. Quality and completeness of study
- c. Accuracy of cost estimates
- d. Professionalism of designer personnel

Grading from 0 to 3 as follows...

- 3 All of the above criteria are positive
- 2 Three of the above criteria are positive
- 1 Two of the above criteria is positive

**4. Years Firm has been in Business**

The information “Year Established” in paragraph 2 of the Application to Designer Selection Committee will be used to determine the years in business.

Grading from 1 to 2 as follows...

- 2 Twenty or more years in business
- 1 Fifteen years to nineteen years in business
- 0 Ten to fourteen years in business

Note: Less than ten years does not meet the minimum criteria

**5. Project team leader - years of renovation feasibility study experience**

Refer to “Designer Selection Board Application” Section 7. Document the name of the Project Team Leader if an award is made. Outline the experience and the number of years this leader has worked on feasibility studies for renovation, expansion or replacement of Fire Stations or similar type buildings having a size in the range of 20,000 sq. ft.

Grading from 0 to 2 as follows...

- 2 Fifteen or more years of experience
- 1 Seven to fourteen nine years of experience
- 0 One to Six years of experience

**6. Number of Municipal clients** within the Commonwealth for which the

Designer has performed or has entered into a contract to perform feasibility studies for the renovation, expansion or replacement of municipal or similar type buildings having a size in the range of 20,000 SF. within the past Ten years.

Grading from 0 to 2 as follows...

- 2 Twenty or more Municipal Clients

- 1 Ten to Nineteen Municipal Clients
- 0 Less than ten Municipal Clients

End of technical section

**TOWN OF ORLEANS  
CERTIFICATE OF NON-COLLUSION**

Project Name: **NEW FIRE STATION FEASIBILITY STUDY**

Pursuant to M.G.L. Ch. 30B Section 10, the undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

---

(Signature of individual submitting bid or proposal)

---

(Name of business)

**STATEMENT OF STATE TAX COMPLIANCE**

Project Name: **FIRE STATION FEASIBILITY STUDY**

Pursuant to Ch. 233 of the Acts of 1983, §49A(b),

I, \_\_\_\_\_, acknowledge that I am the authorized signatory for  
\_\_\_\_\_, whose principal place of business is at  
\_\_\_\_\_, and as such, do hereby certify under  
the pains of penalties of perjury that this company has complied with all laws of the Commonwealth  
relating to taxes.

Social Security or Federal ID Number \_\_\_\_\_

Subscribed and sworn to this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public

**ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION:**

State of \_\_\_\_\_

County of \_\_\_\_\_ SS:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came and appeared \_\_\_\_\_ to me known, who, being by me duly sworn, did depose and say to me that he resides at \_\_\_\_\_, that he is \_\_\_\_\_ of \_\_\_\_\_ the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the impressions affixed to said instrument is an impression of such seal; that it was so affixed by the order of the directors of said corporation, and that he signed his name thereto by like order.

\_\_\_\_\_  
Contractor's Signature

(Seal)

\_\_\_\_\_  
Notary Public Signature

My Commission expires on:

**ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP:**

State of \_\_\_\_\_

County of \_\_\_\_\_ SS:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came and appeared to me known, and known to me to be one of the members of the firm of \_\_\_\_\_ described in \_\_\_\_\_ and which executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

\_\_\_\_\_  
Contractor's Signature

(Seal)

\_\_\_\_\_  
Notary Public Signature

My Commission expires on:

**TOWN OF ORLEANS  
INSURANCE REQUIREMENTS FOR INCLUSION  
IN ALL SPECIFICATIONS AND CONTRACTS**

PROJECT:      **NEW FIRE STATION FEASIBILITY STUDY**

Insurance. The Contractor shall carry and maintain in effect during the entire currency of the contract, at his own expense, the following kinds and minimum amounts of insurance in a company or companies approved by the Town of Orleans. Such insurance shall cover claims and suits which arise out of or result from the Contractor's execution of the contract work whether such execution by the Contractor himself or by any Subcontractor.

- 1)  Worker's Compensation as required by the Worker's Compensation Laws of the Commonwealth of Massachusetts and, in conjunction therewith, Employer's Liability with a minimum limit of \$500,000.00.
- 2)  "Broad Form" Comprehensive General Liability including, but not limited to, Bodily Injury, Personal Injury and Property damage Liability, Full Contractual Liability and liability arising from Explosion, Collapse and Underground Damage and all other applicable insurance necessary to carry out the contractual obligation to proceed under the contract. Minimum limit of liability \$2,000,000.00.
- 3)  Automobile Bodily Injury and Property Damage Liability for all owned, non-owned and hired automobiles operated in connection with the performance of the contract. Minimum limits of liability: Single limits of Property Damage and Bodily Injury \$ \$1,000,000.00
- 4)  Builder's Risk - Amount of the Contract
- 5)  Professional Liability in the amount of \$ 3,000,000.00
- 6)  Errors and Omissions

Certificate of Insurance. Prior to beginning work under the contract, the Contractor shall furnish the Town of Orleans a Certificate of Insurance naming the Town as 1)  an additional insured or 2)  certificate holder acceptable to said Town evidencing the existence of the foregoing insurance coverage. Such Certificate also shall provide that the Town of Orleans will be notified at least 30 days in advance of the cancellation or non-renewal of any insurance covered by the Certificate.



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- Attachment M: Prompt Payment Discount Form**

## ARTICLE 1: INTRODUCTION

- 1.1 **Multi-Phase Contract Generally.** This Contract addresses the services required for both the performance of Study Phase Services and the Design Phase Services of the Project. However, the Designer understands that the execution of this Contract authorizes the Designer to perform only the authorized Study Phase Services, as indicated in the Notice to Proceed. The Designer further understands that the Project shall not enter into subsequent Study Phase, if applicable, or the Design Phase unless and until all of the prerequisites for such Study Phase and/or Design Phase specified in this Contract are satisfied and an amendment is executed in accordance with this Contract.
- 1.2 **Subsequent Services and/or Phases Not Guaranteed.** The Awarding Authority makes no guarantee that the Project will extend beyond the immediately authorized Study Phase or that if the Project proceeds to the Design Phase that the Designer will be selected to perform the Design Phase Services.

## ARTICLE 2: DEFINITIONS

**Additional Services:** Any services in addition to the Basic Services Approved to be performed by the Designer for the Project in accordance Section 4.9 (Study Phase Additional Services) and/or Section 6.9 (Design Phase Additional Services), for which Designer shall be compensated in accordance with Section 4.10 (Compensation for Study Phase Additional Services) and Section 6.10 (Compensation for Design Phase Additional Services), as applicable.

**Approval:** A signed written communication from the Authorized Representative of the Awarding Authority to the Designer expressing the Awarding Authority's acceptance of services or documents prepared by the Designer, which acceptance shall not relieve the Designer from any of its professional responsibilities under this Contract for such services or documents.

**Approved:** An item for which Approval has been given.

**As-Built Drawings:** All drawings, specifications, Approved shop drawings, catalogue cuts and other items bearing markings or containing information provided by the general contractor to indicate construction details and changes made during the construction period.

**Authorized Representative:** The person named as such on the cover page of this Contract (or such other person or persons as the Awarding Authority may designate in writing), and who has the authority to grant Approval on behalf of the Awarding Authority as required under this Contract.

**Awarding Authority:** The Awarding Authority named on the cover page of this Contract.

**Basic Fee:** The amount owed to the Designer for Basic Services performed during the Study Phase and (if applicable) Design Phase, as specified in Section 4.8 (Payment for Study Phase Basic Services) and Section 6.8 (Payment for Design Phase Basic Services) of this Contract, respectively.

**Basic Services:** All services required to be performed by the Designer under this Contract during the Study Phase, and, if applicable, the Design Phase, except those services specified in Section 4.9 (Study Phase Additional Services), and Section 6.9 (Design Phase Additional Services).

**Building Information Model (“BIM”):** A digital representation of the physical and functional characteristics of a facility, which provides a reliable source of information upon which the Awarding Authority may rely upon to make decisions regarding the facility during and after the Project, to be developed and delivered by the Designer as specified in this Contract and in accordance with model requirements, including but not limited to derived documentation, data standards, model set-up, and other prescriptive information and model requirements provided herein.

**BIM Execution Plan:** A strategic and tactical tool to plan the interactions of the BIM team from the initiation of the Study Phase until the completion of construction and delivery by the Designer of the As – Built Drawings and associated BIM Deliverables, including, without limitation, integration of data, records, models, and commissioning information into CAMIS if requested by Awarding Authority, and which meets the requirements set forth in Section 4.5.3 (Preparation of Work Plan).

**BIM Manager:** Designer’s representative responsible for coordinating the performance and execution of BIM related services and deliverables on the Project in accordance with the BIM Execution Plan among the Designer, Consultants, general contractor, Owner’s Project Manager (if any), and appropriate personnel participating in the Project from the Awarding Authority and, if appropriate, User Agency.

**Capital Asset Management Information System (CAMIS):** a statewide application that includes several modules related to DCAMM functions, including, but not limited to, land/building portfolio management, real estate transactions, capital projects, and facility maintenance operations and services.

**Certified:** A Project for which an adequate appropriation of funds is available and all certifications required by M.G.L. c. 7C, ss. 59 - 60 have been duly made.

**CM At-Risk Delivery Method:** A construction method wherein a construction management at risk firm provides a range of preconstruction services and construction management services which may include cost estimation and consultation regarding the design of the Project, the preparation and coordination of bid packages, scheduling, cost control, and value engineering, acting as the general contractor during the construction, detailing the trade contractor scope of work, holding the trade contracts and other subcontracts, prequalifying and evaluating trade contractors and subcontractors, and providing management and construction services, all at a guaranteed maximum price in accordance with the provisions of M.G.L. c. 149A.

**Commissioner:** The Commissioner of the Division of Capital Asset Management and Maintenance.

**Construction Contract:** One or more contracts between the Awarding Authority and a general contractor or construction manager for the construction of the Project.

**Construction Cost:** The cost of constructing the Project inclusive of all designed construction, demolition, and renovation work, all supportive and preparatory construction work required for the Project, all general contractors, subcontractors, suppliers, materials, equipment, general conditions, insurance, overhead and profit and all other allowances. The Construction Cost includes change orders during the construction administration phase of the Design Phase of the Project.

**Construction Cost Estimate:** A submittal consisting of a written calculation of the Estimated Construction Cost prepared by the Designer, (if applicable) Designer’s professional cost estimator, and (if applicable) the independent cost estimator appointed by the Awarding Authority, at various points during the Study Phase and Design Phase on the basis of the *Uniformat II Elemental Classification for Building Specifications, Cost Estimating, and Cost Analysis* dated October 1999 published by the U.S. Department of Commerce NIST to the level of detail specified in this Contract, as well as the final cost estimate that

the Designer is required by this Contract to prepare in *MasterFormat* (2004 edition, as updated 2010 and 2012) published by the Construction Specifications Institute. The Construction Cost Estimate includes contingencies for: estimating, phasing and temporary work, and escalation.

**Consultant:** A subcontractor of the Designer.

**Consultants Estimating Manual:** The document published by DCAMM that details the methods, accuracy level, and Deliverables for estimate tasks of designers contracting with DCAMM.

**Contract:** This Contract for Study, Final Design, and Contract Administration Services.

**Contract Schedule:** A critical path management or Gantt schedule for the activities of the Designer and its Consultants required by this Contract.

**DCAMM:** The Division of Capital Asset Management and Maintenance of the Commonwealth of Massachusetts.

**Deliverable:** Work product of the Designer that is required to be delivered or submitted to the Awarding Authority pursuant to the terms of this Contract.

**Design Phase:** The portion of this Project that commences after both an amendment to this Contract is executed and a Notice to Proceed is issued to authorize Design Phase Services, during which the final design of the Project and the administration of the Construction Contract will occur. The Design Phase includes the design development phase, construction documents phase, construction administration phase, and the facility performance evaluation phase once each is authorized by a Notice to Proceed in accordance with this Contract.

**Design Phase Services:** All authorized services required to be performed by the Designer and its Consultants under this Contract in accordance with ARTICLE 6.

**Design Phase Scope of Services:** A written plan of the services to be provided by Designer during the Design Phase, which will be attached hereto as Attachment G – Design Phase Scope of Services and incorporated by reference upon execution of an amendment to this Contract as set forth in Section 5.6 (Contract Amended for Design Phase).

**Designer:** The Designer named on the cover page of this Contract.

~~**Designer Selection Board Advertisement:** The advertisement published by the Designer Selection Board in accordance with M.G.L. c. 7C to solicit proposals for the performance of Study Phase Services and/or Design Phase Services for the Project, attached to this Contract as Attachment A.~~

**Draft Study:** A document that meets the requirements of M.G.L. c. 7C, s. 1 and the requirements of this Contract, including the Approved Work Plan to be incorporated into this Contract, that defines and quantifies a User Agency's space needs, develops alternative architectural and/or engineering solutions to meet those needs, and contains a) a space program statement including spatial and relationship requirements; b) a recommended physical solution selected from several alternatives based on a determination of existing conditions and the feasibility of construction; and c) a Construction Cost Estimate. The Draft Study includes a Program as defined herein and shall include completion of required Deliverables through consensus solution in accordance as the *DCAMM Designers Procedures Manual*. This definition may be modified if the Approved Work Plan clearly indicates that aspects of this definition are not intended to be included.

**Estimated Construction Cost:** The Construction Cost as estimated in the Construction Cost Estimate prepared collectively by the Designer, (if applicable) Designer’s professional cost estimator, and (if applicable) the independent cost estimator appointed by the Awarding Authority, at various points in the Study Phase and Design Phase of the Project to the level of detail and in the format specified in this Contract.

**Fixed Limit Construction Cost:** The maximum allowable Construction Cost established by the Awarding Authority; unless otherwise communicated in writing by an Authorized Representative of Awarding Authority, during the Study Phase, this amount shall be the ECC stated in the Designer Selection Board Advertisement for the Project and during the Design Phase, this amount shall be the Estimated Construction Cost forth in the Certified Study.

**Global Workshop:** A working meeting led by the Designer pursuant to an Approved agenda at which attendance by the Designer and all Consultant team members is required. The meeting includes representatives of the User Agency, representatives of the Awarding Authority, appropriate DCAMM staff, and may include other outside consultants of DCAMM and/or the Awarding Authority. The purpose of a Global Workshop is to broadly review the Project, thus ensuring that an analysis of the Project is comprehensive.

A working meeting led by the Designer pursuant to an Approved agenda at which attendance by the Designer and all Consultant team members is required. The meeting includes representatives of the User Agency, representatives of the Awarding Authority, appropriate DCAMM staff, and may include other outside consultants of DCAMM and/or the Awarding Authority. The purpose of a Global Workshop is to broadly review the Project, thus ensuring that an analysis of the Project is comprehensive.

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outside consultants of DCAMM and/or the Awarding Authority. The purpose of a Global Workshop is to broadly review the Project, thus ensuring that an analysis of the Project is comprehensive.

A working meeting led by the Designer pursuant to an Approved agenda at which attendance by the Designer and all Consultant team members is required. The meeting includes representatives of the User Agency, representatives of the Awarding Authority, appropriate DCAMM staff, and may include other outside consultants of DCAMM and/or the Awarding Authority. The purpose of a Global Workshop is to broadly review the Project, thus ensuring that an analysis of the Project is comprehensive.

A working meeting led by the Designer pursuant to an Approved agenda at which attendance by the Designer and all Consultant team members is required. The meeting includes representatives of the User Agency, representatives of the Awarding Authority, appropriate DCAMM staff, and may include other outside consultants of DCAMM and/or the Awarding Authority. The purpose of a Global Workshop is to broadly review the Project, thus ensuring that an analysis of the Project is comprehensive.

**Gross Floor Area:** The total floor area of the Project buildings measured using the perimeter dimensions of the building shells and calculated in accordance with the *ASTM International Standard Classification for Building Floor Area Measurements for Facility Management – E-1236M-09e1*.

**Laws:** Applicable statutes, acts, rules, regulations, requirements, orders, directions, ordinances, judgments, decrees, and injunctions of or by the United States of America, the Commonwealth of Massachusetts, and any political subdivisions of either of them.

**Milestone:** An Approval of a completed Deliverable or group of Deliverables, which Approval entitles the Designer to a payment of a portion of its fee for Basic Services as specified in the Approved Work Plan or the Design Phase Schedule of Values, as applicable.

**Notice to Proceed:** A written communication from the Authorized Representative of the Awarding Authority directing the Designer to perform services for the particular phase of the Project as set forth in such communication. The Designer may not proceed with any services pursuant to this Contract and Awarding Authority shall have no liability for any such services performed absent receipt of a Notice to Proceed.

**Owner's Project Manager:** A professional consultant or professional construction manager hired by the Awarding Authority pursuant to M.G.L. c. 149, s. 44A1/2 or otherwise to work with the Designer as the owner's representative on the Project to ensure an optimum project including construction quality, cost control, and schedule control.

**Permits:** Governmental, quasi-governmental and other necessary permits and approvals, including the filing of notices or information with governmental or quasi-governmental entities and authorities, that are necessary for the implementation of the Project at the site. The term "Permits" shall include permits and approvals from utility companies and also include permissions, approvals and consents by private parties necessary for the design and construction of the Project, such as an approval by a landlord or other holder of an interest in the Project site.

**Program:** A document prepared in accordance with the provisions of M.G.L. c. 7C, ss. 1 and 59, which defines a capital facility project in terms of its content, time, and cost so that it provides a clear and detailed frame of reference for the design and implementation process.

**Project:** The Project identified on the cover page of this Contract.

**Public Entity:** The Commonwealth of Massachusetts or the political subdivision or subdivisions thereof of which the Awarding Authority is an agency or instrumentality.

**Record Drawings:** The drawings prepared by the Designer and its Consultants pursuant to this Contract which incorporate the changes made during the construction period and which incorporate information from the marked-up prints, As-Built Drawings, and other data furnished by the general contractor and subcontractors.

**Resident Engineer:** The on-site representative of the Awarding Authority for the Project.

**Schedule of Values:** A schedule prepared by the Designer that allocates the payments of the Design Phase Basic Fee to various Milestones in the performance of the Designer's Design Phase Basic Services in accordance with the percentages specified in Section 6.8 (Payment for Design Phase Basic Services). Once Approved, the Schedule of Values shall be incorporated by reference into this Contract.

**Schematic Design/Certifiable Study:** A document that meets the requirements of M.G.L. c. 7C, s. 1 and the requirements of this Contract, including the Approved Work Plan to be incorporated into this Contract, necessary to support Project certification in accordance with M.G.L. c. 7C, ss. 59 – 60, including, without limitation, schematic design in accordance with M.G.L. c. 7C, s. 59. The term "Schematic Design/Certifiable Study" as used in this Contract contains and includes a Draft Study and Program as defined herein. A Schematic Design/Certifiable Study may reveal that the Project is not warranted, or that the need can be satisfied without the construction of new, or the renovation of existing, facilities. This definition may be modified if the Approved Work Plan clearly indicates that aspects of this definition are not intended to be included.

**Study Guidelines:** Guidelines for Studies of Building Projects, Publication No. 14890-65-250-6-86-C.R. originally published March 1, 1983; revised October 2000, or any reasonable updates thereto. This document provides guidelines for the preparation of studies and programs for building projects by state agencies, counties, and building authorities. M.G.L. c. 7C requires DCAMM to establish these guidelines and to supervise the preparation of studies and programs.

**Study Manager:** The person appointed by the Awarding Authority to provide administration of the Study Phase of this Contract.

**Study Phase:** The portion of this Project that commences upon execution of this Contract, during which the Draft Study and, if authorized by a Notice to Proceed, Schematic Design/Certifiable Study are completed.

**Study Phase Services:** All authorized services required to be performed by the Designer and its Consultants under this Contract in accordance with ARTICLE 4.

**Substantial Completion:** "Substantial Completion" occurs when the Awarding Authority takes possession of the Project for occupancy.

**Surveys and Data:** Any existing and available surveys of the Project's building site or sites, showing the grades and lines of streets, pavements and adjoining properties; the rights, restrictions, easements, boundaries and contours of the site or sites; reports from any borings, test pits; chemical, mechanical or other tests; photographs and information as to water, sewer, electricity, steam, gas, telephone and other services; and data and drawings regarding existing buildings.

**User Agency:** The department, county, commission, board or agency that will occupy the Project or for which the Project shall be undertaken.

**Work Plan:** A written plan of services for the completion of the Draft Study Phase and (if applicable) Schematic Design/Certifiable Study. The Work Plan must be consistent with the "General Scope of Work" included in the Designer Selection Board Advertisement for this Contract and meet the requirements of Section 4.5.3 (Preparation of Work Plan) of this Contract and the Designer Selection Board's project criteria for the Project as stated in the Designer Selection Board Advertisement. In the case of any conflict between the terms of the Work Plan and the Designer Selection Board project criteria for the Project, the terms of the Approved Work Plan shall be controlling. Once Approved, the Work Plan shall be incorporated by reference into this Contract.

### ARTICLE 3: GENERAL PROVISIONS

#### 3.1 **Approvals.**

**3.1.1 Awarding Authority's Approval Responsibilities.** The Awarding Authority, through the Authorized Representative, shall without unreasonable delay either grant any Approval required by this Contract or notify the Designer in writing why such Approval is being withheld, provided that the Awarding Authority shall not unreasonably withhold any Approval. If necessary, the Awarding Authority and the User Agency shall attend meetings with the Designer to achieve Approval of a Deliverable. Approval by the Awarding Authority shall not in any way relieve the Designer from its professional responsibility for all services and documents furnished by the Designer and its Consultants hereunder.

**3.1.2 Designer's Approval Responsibilities.** The Designer shall not work on any task or Deliverable without first receiving all required Approvals. The Designer shall make all changes in Deliverables required by comments made by the Awarding Authority before the Deliverable will be Approved, unless such changes are in Designer's professional opinion not suitable, in which case the Designer shall communicate in writing the reasons why they are not suitable. When necessary, the Designer shall meet with the Awarding Authority, the User Agency, the Owner's Project Manager (if appropriate) and any appropriate Consultants to develop a mutually satisfactory Deliverable. Within 30 days after the Approval of Deliverables, the Designer shall provide the Awarding Authority with clearly identified hard or electronic copies, as specified by the Awarding Authority, of the Approved Deliverables.

#### 3.2 **Materials Provided to the Designer.**

**3.2.1 User Agency cooperation.** The Awarding Authority shall cause the User Agency to designate staff to represent the User Agency and to work with the Awarding Authority to provide relevant information to the Designer for the performance of the Designer's obligations under this Contract.

**3.2.2 Study Phase materials.** At the commencement of the Study Phase, the Awarding Authority shall deliver to the Designer.

- (a) ~~a copy on compact disc or electronic format of the current versions of the following documents: Guidelines for the Preparation of Studies for Building Projects (Publication No. 1381-66-250-4-83-CR, Interim Revision October 1998, Current Revision October 2000), Designers Procedures Manual, DCAMM Standard Specification, Consultants Estimating Manual, and, for use on DCAMM Projects, Cost Estimate Input Form, and Building Information Modeling (BIM) List of Design and Preconstruction Services (Revised April 30, 2015), BIM Guidelines for Design and Construction (dated April 30, 2015), and Template BIM Execution Plan;~~
- (b) ~~a draft of the Work Plan in accordance with Section 4.5.3 (Preparation of Work Plan), if not previously provided;~~
- (c) Surveys and Data; and
- (d) if the Awarding Authority is DCAMM, a current accessibility audit of existing building(s), unless otherwise indicated by the Study Manager.

**3.2.3 Design Phase materials** If applicable, at the commencement of the Design Phase and at any other time upon request of the Designer, the Awarding Authority shall provide any additional or updated copies of Surveys and Data.

**3.2.4 Ownership of materials provided to Designer.** All items provided to the Designer by the Awarding Authority hereunder shall remain the property of the Awarding Authority or the Public Entity. The Designer may use items provided by the Awarding Authority only for the purposes of this Contract and in accordance with Section 7.8 (Security and Confidentiality; Publication), unless otherwise agreed to in writing by the Awarding Authority. The Awarding Authority does not guarantee nor does it make any express or implied warranties concerning the accuracy of any such information furnished to the Designer.

**3.3 Standard of Care.** The Designer agrees: that the services provided hereunder shall conform to the standard of care and practice exercised by design professionals or consultants engaged in performing comparable services; that the personnel furnishing said services shall be qualified and competent to perform adequately the services assigned to them; and that the recommendations, guidance and performance of such personnel shall reflect such standards of care and practice.

**3.4 Sequential Order.** The sequential order of the Designer's services as set forth in this Contract and all documents incorporated by reference is of the essence. The Awarding Authority shall have no obligation to Approve or pay the Designer for Deliverables prepared during the Study Phase or the Design Phase other than in the order required by the Approved Work Plan or Design Phase Scope of Services, as applicable.

**3.5 Time of Essence.** The parties agree that time is of the essence for the completion of all Study Phase Services and Design Phase Services required by the Contract. The parties further confirm and agree that any and all Contract Schedules Approved during the Project shall reflect a reasonable period of time for completing the required services, obtaining required Approvals, obtaining all necessary Permits, addressing any and all design issues, and performing the Basic Services in accordance with this Contract.

**3.6 Staffing.** The Designer agrees that Designer's personnel who shall provide services under this Contract during the Study Phase are those listed in its application to the Designer Selection Board and, during the Design Phase, are those listed in Attachment I – Designer's Personnel Assigned to Project. No changes or additions may be made to Designer's personnel during the Study Phase or the Design Phase without Approval by the Awarding Authority. The Designer shall provide

sufficient personnel to complete the services required by this Contract in a continuous and timely manner in accordance with the Approved Work Plan and, during the Design Phase, in accordance with the Approved Contract Schedule agreed upon in accordance with Section 6.4 (Design Development Phase Services).

- 3.7 BIM Manager.** Designer shall appoint a BIM Manager for the Study Phase and, if applicable, the Design Phase, who shall be Approved by the Awarding Authority.
- 3.8 Designer Duties Generally.** The Designer shall be responsible for the professional accuracy and coordination of all Deliverables, including without limitation, designs, drawings, specifications, digital files, cost estimates, and other services and submittals furnished by Designer and by its Consultants in accordance with the standard of care set forth in Section 3.3 (Standard of Care). The Basic Fee shall compensate Designer for all of Designer's obligations specified in this Contract except as otherwise specifically provided herein.
- 3.9 Quality Assurance.** The Designer is responsible for quality assurance/quality control (QA/QC) in performance of all services required by the Designer under this Contract. As specified in Section 4.5.3 (Preparation of the Work Plan), the Designer shall submit to the Awarding Authority as part of its proposed Work Plan a written description of the QA/QC procedures the Designer will implement in the performance of all services required under this Contract, which shall (1) include all requirements for QA/QC set forth in the Designer Procedures Manual , (2) identify the individual(s) responsible for bid document review and cost estimating, and (3) identify methods utilized to determine the completeness, accuracy, and coordination of drawings, specifications, cost estimates, digital files, and other data and documentation. If Schematic Design/Certifiable Study Services and/or Design Phase Services are authorized under this Contract, the Designer shall continue to adhere to the QA/QC procedures set forth in the Approved Work Plan during the performance of the such services. The Designer shall be responsible for the completeness, accuracy and coordination of all data and information relating to all services performed under this Contract.
- 3.10 Calculations.** Whenever calculating the building gross area, departmental gross area, or net assignable area, as hereinafter defined, the Designer shall rigorously and exclusively adhere to the following specific methods of area calculation:
- 3.10.1. Building Gross Area:** The floor area of a building for all levels that are totally enclosed within the building envelope, including basements, mezzanines, or penthouses. To compute building gross area, measure to the outside face of exterior walls, disregarding cornices, pilasters, and buttresses, that extend beyond the wall face. The building gross area of basement space includes the area measured to the outside face of basement foundation walls.
- 3.10.2. Departmental Gross Area:** The net assignable areas and required secondary circulation assigned to an occupant group or department. To compute the departmental gross area, measure to the inside finished surface of the exterior building walls, to the finished surface of the walls surrounding major vertical penetrations and building core and service areas, and to the center of the walls dividing the space from adjoining departmental gross areas.
- 3.10.3. Net Assignable Area:** The area required to accommodate a function, equipment, occupant, or occupant group. Net assignable area includes interior walls, building columns, and projections. Net assignable area excludes exterior walls, major vertical penetrations, building core and service areas, primary circulation, and secondary circulation. To compute the Net Assignable Area, measure to the inside surface of the exterior building walls, to the finished surface of walls surrounding major vertical penetrations, building core areas, and service areas, and to the center

of partitions separating the net assignable area from adjoining net assignable areas and from secondary circulation space.

**3.11 Designer to Evaluate Information and Conditions.**

**3.11.1. Surveys and Data.** The Designer shall analyze and evaluate the Surveys and Data furnished by the Awarding Authority. If the Surveys and Data to be provided by the Awarding Authority are not available or are, in the reasonable opinion of the Designer, insufficient to permit the Designer to properly perform its services hereunder, the Designer shall submit a written request to the Awarding Authority for permission to obtain the services of one or more Consultants to perform the necessary services. If such services are not included in the Approved Work Plan or Design Phase Scope of Services, as applicable, the Designer shall be reimbursed in accordance with Section 3.14.1 (Retention of Special Consultants), or if the services are performed by the Designer's own employees, the Designer shall be compensated in accordance with Section 4.10 (Compensation for Study Phase Additional Services) or Section 6.10 (Compensation for Design Phase Additional Services), as applicable. In no case shall the Designer commence or authorize a Consultant to commence such services without the prior Approval of the Awarding Authority. In the event that any Surveys and Data are updated, corrected, supplemented, or otherwise modified in accordance with this Section, Designer shall provide such information and documents to Awarding Authority ~~and, if requested by Awarding Authority, shall provide such information and documents in a form compatible with CAMIS integration.~~

**3.11.2. Existing Conditions.** If the Awarding Authority is DCAMM, if an Approved Work Plan or Design Phase Scope of Services calls for an analysis of existing conditions of a site or facility by Designer, DCAMM shall provide Designer with the information related to such facility or site contained within CAMIS. Designer shall compare the information contained in its existing conditions analysis with such CAMIS information, and if necessary shall provide to DCAMM any necessary updates to the CAMIS information in a form compatible with CAMIS integration as indicated by DCAMM.

**3.12 Cost Estimates.** If the Awarding Authority has appointed a construction manager or an independent cost estimator for the Project during the Study Phase or the Design Phase or both, the Designer shall validate its Construction Cost Estimates with such person prior to submitting its Construction Cost Estimates to the Awarding Authority for Approval. The decision of the Awarding Authority shall be final in matters pertaining to the Construction Cost Estimates and changes thereto but the Designer shall not be responsible for any decision by the Awarding Authority that is inconsistent with generally accepted standards of professional practice provided that the Designer shall have advised the Awarding Authority in writing of the inconsistency at the time of the Approval.

**3.13 Corrections by Awarding Authority.** The Designer shall furnish appropriate competent professional services for each of the Study Phase and Design Phase of the Project to the point where detail checking or reviewing by the Awarding Authority is not necessary. Any changes, corrections, additions, or deletions made by the Awarding Authority shall be incorporated into the design of the Project unless specific written objections thereto are made by the Designer and such objections are agreed to by the Awarding Authority. The decision of the Awarding Authority shall be final in matters pertaining to this Section, but the Designer shall not be responsible for any such decision by the Awarding Authority that is inconsistent with generally accepted standards of professional practice provided that the Designer advised the Awarding Authority in writing of the inconsistency at the time the decision was made.

### **3.14 Employment of Consultants.**

**3.14.1. Generally.** Subject to the provisions of this Contract, the Designer shall employ the services of Consultants as needed and be responsible for their work, compensation, and the coordination and supervision thereof. Consultants so employed shall be Approved and registered in Massachusetts in their respective disciplines if registration is required by the applicable Laws. The Designer shall provide the Awarding Authority with complete copies of its contracts with each of its Consultants within fourteen (14) calendar days of the execution of such contracts.

#### **3.14.2. Retention of Special Consultants.**

- (a) If the services of a Consultant not included in the Approved Work Plan or Attachment G – Design Phase Scope of Services are required, the Designer shall submit a written request with a detailed description of the proposed services to the Awarding Authority for the Approval of the solicitation of such a Consultant. Upon Approval of such request to solicit, the Designer shall obtain fee proposals from at least three such consultants (including at least one MBE or WBE if available) and shall submit them to the Awarding Authority together with the Designer's recommendation for selection before any work may be Approved. The Awarding Authority may waive the requirement for three proposals for good cause provided that such waiver shall be in writing. To the extent applicable, Designer shall comply with the requirements of the Massachusetts Prevailing Wage Law, M.G.L. c. 149, ss. 26-27D, in the employment of such special Consultants. Each such Consultant whose fee for such services exceeds \$25,000 shall demonstrate professional liability insurance coverage in an amount not less than its fee.
- (b) The actual cost to the Designer for services of any Approved special Consultant shall be reimbursed by the Awarding Authority, provided that the Awarding Authority previously Approved such costs. The compensation for an Approved special Consultant may be a lump sum fee. For solicitation, inspection, analysis, coordination, and evaluation of such special Consultants' services, and for assuming liability therefore, the Designer shall be paid by the Awarding Authority (i) 10% of the actual expense, if the cost of the specific services is estimated not to exceed \$100,000 or (ii) a lesser equitable percentage to be agreed upon by the Designer and the Awarding Authority, if the not-to-exceed cost is projected to exceed \$100,000.

**3.14.3. Approval of Consultants.** To obtain Approval of Consultants, the Designer must submit the items required by M.G.L. c. 7C, s. 51 and a statement of the proposed Consultant's qualifications, accompanied by resumes and experience of relevant Consultant personnel, and any other documentation reasonably requested by Awarding Authority. The Designer may not request Approval for the hiring of a substitute for any Consultant that was part of the team presented to the Designer Selection Board unless such Consultant has, in the Designer's opinion, become unable or unwilling to perform its services in a satisfactory manner or unless the Consultant has voluntarily requested in writing to be relieved of its duties as a team member. The Designer shall make the request for substitution in writing and the request shall state with specificity the reasons why the Designer believes that the Consultant has become unable or unwilling to perform its services in a satisfactory manner, or if the Consultant has voluntarily requested to be relieved of its duties as a team member, the Designer shall include with the request a copy of the Consultant's written request for such relief.

**3.14.4. Consultants Barred from Work on Project.** The Designer shall not employ in any element of design, specification, estimating, evaluation or other work under this Contract any person or firm that expects to be a bidder, subcontractor or supplier for the construction of the Project or any part thereof. The Designer shall obtain from every Consultant a written representation that such Consultant is aware that it is prohibited from serving as a bidder,

subcontractor, or supplier for the construction of the Project or any part thereof. In addition, the Designer acknowledges that the services provided under this Contract require trustworthiness, confidentiality, and an absence of conflicts of interest. The Designer shall not perform planning, study, or similar services for any agency or officer of the Commonwealth other than the Awarding Authority, for any other federal, local or state public agency, or for any for-profit or nonprofit entity if those services are in any way related to the Project.

**3.14.5. Right to Rescind Approval of Designer's Employees and Consultants.** The Awarding Authority may at any time rescind the Approval of an employee of Designer, the designated BIM Manager, or a Consultant if, in the Awarding Authority's sole reasonable discretion, such employee, BIM Manager, or Consultant is incompetent, irresponsible or otherwise unsatisfactory, and the Designer shall remove such Consultant, BIM Manager, or employee from work on this Contract. If an employee, BIM Manager, or Consultant is so removed, the Designer shall provide another employee, BIM Manager, or Consultant with similar credentials and qualifications (including but not limited to MBE/WBE) and that is Approved by the Awarding Authority. The removal of such employee, BIM Manager, or Consultant shall not relieve the Designer from its responsibilities for the services to be provided by such employee or Consultant under this Contract.3.15

**3.14.6. Prompt Payment of Consultants.** The Designer shall, within fourteen (14) calendar days after receiving payment from the Awarding Authority, pay to each Consultant the amount due for work performed by the Consultant, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Consultant by the Designer. In the event any payment is withheld from a Consultant, the Designer shall notify the Awarding Authority in writing of the reason why such payment is not being made within such time period.

**3.15 Requests for Payment.** All invoices from the Designer shall be submitted to the Awarding Authority accompanied by a completed Commonwealth of Massachusetts Payment Voucher-Input Form PV attached hereto as Attachment L—DCAMM Payment Voucher Form (PV) and Instructions if this is a Commonwealth project, and otherwise accompanied by such forms as the Awarding Authority may require. All invoices will be promptly processed by the Awarding Authority if they are in conformity with this Contract and properly documented; if not they will be returned to the Designer. Designer shall submit an invoice for final payment in accordance with this Contract within 45 days of completion of Study Phase Services, and, (if applicable), Design Phase Services. Awarding Authority shall not be obligated to pay any claims received after such 45-day period.

**3.16 Method of Payment.**

**3.16.1 Electronic Funds Transfer.** Awarding Authority may require that Designer receive payments via electronic funds transfer (EFT).

~~**3.16.2 Prompt Payment Discount.** If Awarding Authority is a Commonwealth agency, Designer may elect to participate in prompt payment discounts as evidenced by execution of Attachment M—Prompt Payment Discount Form, in which case Awarding Authority may deduct prompt-payment discounts as set forth in Attachment M—Prompt Payment Discount Form.~~

**3.17 Right to Offset.** If the Awarding Authority finds that any Study Phase Services or Design Phase Services previously paid for by the Awarding Authority contained deficiencies, errors or omissions then the Awarding Authority may withhold from any future payment due to the Designer under this Contract an amount reasonably calculated by the Awarding Authority to cover the cost of correcting the deficiency, error or omission until the services have been corrected. The Awarding Authority may also offset against any payment due to the Designer the

amount of any costs incurred by the Awarding Authority arising from the Designer's failure to provide required services, deficiencies, errors or omissions. If the Awarding Authority shall discover that the charge for any previously paid-for services was calculated based upon incorrect information, the Awarding Authority may offset any overcharges against any future payment due to the Designer under this Contract. ~~Any disputes related to offsets taken by the Awarding Authority shall be subject to resolution pursuant to Section 7.26 (Mandatory Mediation) of this Contract.~~ Nothing in this paragraph shall limit any legal remedies of the Awarding Authority against the Designer for default, errors, omissions, erroneous claims, false claims, tort claims, or any breach by the Designer of the terms of this Contract or applicable Laws.

**3.18 Equitable Adjustments to Basic Fee.** If there is a substantial change in the services provided in this Contract during the Study Phase or the Design Phase as determined by the Awarding Authority, the Designer and the Awarding Authority will agree to an equitable adjustment in the Designer's Basic Fee for the affected Phase. For the purposes of this Contract, a "substantial change" in services shall include:

- (a) a substantial change in the scope of Designer's services that is not the fault of the Designer; or
- (b) a significant increase in the duration of the Project as provided in the Certified Study, or as otherwise agreed upon, that is not the fault of the Designer.

**3.19 Termination.**

**3.19.1 Termination by Awarding Authority for Convenience.** The Awarding Authority may terminate this Contract in whole or in part without regard to any fault or failure to perform by the Designer and solely for the Awarding Authority's convenience at any time by written notice to the Designer. In the event of such termination, the Awarding Authority shall incur no liability, except for the obligation to make payments to Designer in accordance with this Contract up to and including the date of termination, including progress payments due under this Contract, proportionate payment for partially completed work, and (if applicable) reimbursable expenses plus reasonable costs incurred in connection with the termination as approved by the Awarding Authority. The payments to the Designer shall not exceed the limits established for the services when Approved or the fair value of the Designer's work, as the Awarding Authority shall determine. No amount shall be allowed for anticipated profit on unperformed services. Termination of this Contract for convenience shall not impair the right of the Awarding Authority to recover damages occasioned by the fault or default of the Designer in the performance of its duties under this Contract.

**3.19.2 Termination by Awarding Authority for Cause.** If this Contract is terminated due to the failure of the Designer to fulfill its obligations under this Contract, the Awarding Authority may assume those obligations and/or enter into a contract with a replacement designer to complete the Project. In such case, the Designer shall be liable to the Awarding Authority for any damages, including without limitation the administrative costs and attorneys' fees and costs, incurred by the Awarding Authority thereby to the extent resulting from Designer's breach. These rights and remedies of the Awarding Authority are in addition to any rights and remedies provided by law or under this Contract and shall not impair the right of the Awarding Authority to recover damages occasioned by fault or default of the Designer in the performance of its duties under this Contract.

**3.19.3 Termination by Designer.** By written notice to the Awarding Authority, the Designer may terminate this Contract (a) if, sixty (60) days following written notice to the Awarding Authority from the Designer of any default by the Awarding Authority hereunder, the Awarding Authority shall have failed to remove such default, or (b) if, the Awarding Authority shall have

failed to issue a Notice to Proceed for of the next phase of the Design Phase at least six (6) months after the Designer shall have performed all services required of the Designer in the design development phase or the construction documents phase of the Project as described in this Contract. Upon any such termination by the Designer, the Awarding Authority shall pay to the Designer all compensation and reimbursement payable to the Designer in accordance with this Contract up to and including the date of termination, plus reasonable costs incurred in connection with the termination as approved by the Awarding Authority. The payments to the Designer shall not exceed the limits established for the services when Approved or the fair value of the Designer's work, as the Awarding Authority shall determine. No amount shall be allowed for anticipated profit on unperformed services.

**3.19.4 Designer's Duties upon Termination.** Within thirty (30) days of any termination of this Contract the Designer shall deliver to the Awarding Authority all data, drawings, specifications, digital files, reports, estimates, summaries, and such other information and materials, whether completed or in process, as may have been accumulated by the Designer in performing this Contract, all such documents, information, and materials being the property of the Awarding Authority as set forth in Section 7.7 (Copyrights, Patents, and Intellectual Property Rights).

**3.20 Release and Discharge.** The acceptance by the Designer of the last payment for services paid under the provisions of this Contract, shall in each instance operate as a release of the Public Entity, the User Agency, the Awarding Authority, and every employee and agent thereof, from all claims of the Designer arising from this Contract, and from liability for any act or omission relating to or affecting the Designer's services hereunder, except for those written claims submitted by the Designer to the Awarding Authority with the last payment requisition; and except that such acceptance shall not operate as a release of claims not known to Designer, which Designer could not reasonably have known about at the time of such acceptance.

## ARTICLE 4: STUDY PHASE

**4.1 Study Phase Term.** The Study Phase shall commence upon the execution of the Contract and shall continue through the completion of the Study Phase Services authorized and required hereunder, unless this Contract is terminated earlier.

**4.2 Purposes of the Study Phase.** The purpose of the Study Phase is to ensure that the Commonwealth does not waste money on final design services for projects that are not necessary, not technically feasible, or for which sufficient funds are not available for construction. At a minimum, the Study Phase shall allow the User Agency to:

- (a) determine the space needs of the User Agency and the relevant design criteria for the User Agency's anticipated types of use;
- (b) evaluate how the User Agency's space needs can be satisfied in the most cost-effective manner;
- (c) analyze the efficiency, cost and operational implications of existing conditions;
- (d) review site selection;
- (e) determine the technical feasibility of a proposed project;
- (f) utilize the Draft Study and/or Schematic Design/Certifiable Study (as applicable) as a prospectus in the planning and budgeting process for the User Agency, the Awarding

Authority, DCAMM, the Executive Office of Administration and Finance, and the legislature;

- (g) assure compliance with Laws including but not limited to M.G.L. c. 7C, ss. 12, 18 69, 59, 60, 61, ADA Title II, and 521 CMR;
- (h) prepare the Design Phase Scope of Services, if the Project proceeds to the Design Phase;
- (i) control programmatic changes made during construction; and
- (j) evaluate post-occupancy use.

**4.3 Study Phase Governing Documents.** During the Study Phase, the Designer shall perform its duties in accordance with all applicable Laws, the provisions of this Contract and the Approved Work Plan, which shall be incorporated herein by reference upon its Approval. In addition, the Designer shall comply with Designer Selection Board project criteria stated in the Designer Selection Board Advertisement for the Project, the *Guidelines for the Preparation of Studies for Building Projects (Publication No. 1381-66-250-4-83-CR, Interim Revision October 1998, Current Revision October 2000)*, DCAMM's *Designers Procedures Manual, DCAMM Standard Specifications, Consultants Estimating Manual, DCAMM CAD Standards (revision 2: February 2013)*, the *Building Information Modeling (BIM) List of Design and Preconstruction Services (Revised February 27, 2016)*, and the *BIM Guidelines for Design and Construction*. In the case of conflict between the terms of this Contract and any of the provisions incorporated herein by reference, the Designer shall make a written request for clarification to the Awarding Authority and the Awarding Authority's written response shall be conclusive.

**4.4 Permits during Study Phase.** During the Study Phase, the Designer shall identify and review all of the Permits required for the construction, use and occupancy of the Project and shall provide a list of all of the Permits required and an indication of when they must be applied for in the Design Phase of the Project. For each such Permit the Designer shall estimate in detail the cost of obtaining the Permit and the likely duration of the Permit issuing process. These costs and time requirements shall be accurately reflected in any cost estimates that the Designer is required to submit under this Contract and in any proposed construction schedules included in the Draft Study and/or Schematic Design/Certifiable Study.

**4.5 Draft Study Phase Services.**

**4.5.1 Notice to Proceed.** Upon execution of this Contract and receipt of a Notice to Proceed, the Designer shall commence and diligently perform to completion the Study Phase Services necessary to complete the Draft Study in accordance with this Contract, including, without limitation, once finalized, the Approved Work Plan.

**4.5.2 Initial Meeting.** After executing this Contract and upon receipt of a Notice to Proceed, the Designer, its key personnel, and such key Consultants as may be designated by the Awarding Authority shall attend an administrative conference with the Study Manager at the offices of the Awarding Authority for the purpose of making introductions, exchanging contact information, clarifying relationships, and reviewing billing procedures.

**4.5.3 Preparation of Work Plan.** Upon execution of this Contract and upon receipt of a Notice to Proceed, the Designer, working with the Study Manager, shall revise the draft Work Plan previously provided by the Awarding Authority and shall submit a proposed Work Plan to the Awarding Authority for Approval within two (2) weeks of the date of the Notice to Proceed. The proposed Work Plan shall:

- (a) comply with the Designer Selection Board project criteria for this Project stated in the Designer Selection Board Advertisement;
- (b) define and identify the tasks and Deliverables required to be provided by the Designer as part of Study Phase Basic Services, including, without limitation, delivery of a Program;
- (c) specify the sequences in which these tasks and Deliverables must be performed, prepared and submitted;
- (d) contain a Contract Schedule that includes: dates for submittals, Deliverables, actions, Milestones, design workshops, meetings, and the critical path through all Study Phase Services;
- (e) include allowances of time for the User Agency's and the Awarding Authority's review of Deliverables and for Awarding Authority's Approval of Deliverables;
- (f) specify the Milestones at which Approvals are required before any succeeding work is permitted to be performed by the Designer;
- (g) specify the lump sum payments of portions of the Study Phase Basic Fee that are due upon the Approval of Deliverables or Milestones;
- (h) include a description of the Designer's quality assurance procedures described in Section 3.9 (Quality Assurance) of this Contract; and
- (i) unless otherwise indicated by the Awarding Authority, include preparation of a BIM Execution Plan for the Project, which shall (i) organize the seamless transfer of BIM information for the Project, (ii) document the responsibilities and expected Deliverables of each group member on the Project, (iii) list the naming convention standards for models, (iv) state due dates for BIM-related Deliverables and Milestones, (v) specify the manner in which all BIM-related information will be transferred to the Awarding Authority and (vi) for DCAMM Projects, be prepared in accordance with DCAMM's template BIM Execution Plan.

In the event of any conflict between the "General Scope of Work" included in the Designer Selection Board Advertisement for this Contract and the Approved Work Plan, the terms of the Approved Work Plan shall be controlling.

**4.5.4 Global Workshop.** If requested by the Awarding Authority, the Designer shall prepare and attend a Global Workshop, which shall include presentations of alternative solutions.

## **4.6 Schematic Design/Certifiable Study Services.**

### **4.6.1 Notice to Proceed Required.**

- (a) Following the completion and Approval of the Draft Study, the commencement of the Schematic Design/Certifiable Study Phase must be authorized by Awarding Authority via issuance of a Notice to Proceed.
- (b) If the Schematic Design/Certifiable Study Phase Basic Fee amount is to be negotiated (as indicated on the Designer Selection Board Advertisement), the Awarding Authority and Designer shall work in good faith to develop the scope of Schematic Design/Certifiable Study Phase Basic Services and to establish the Basic Fee for the Schematic Design/Certifiable Study in accordance with M.G.L. c. 7C s. 50. If such negotiation is successfully completed, the Awarding Authority and Designer shall execute an amendment to the Contract to incorporate the following:

- (i) Updated Work Plan or other agreed upon documentation of the Basic Services for Schematic Design/Certifiable Study;
  - (ii) Schematic Design/Certifiable Study Basic Fee;
  - (iii) Truth-in-Negotiations Certificate; and
  - (iv) Any other documents as may (be) agreed by the Parties.
- (c) If this Contract has a Schematic Design/Certifiable Study Phase Basic Fee that must be negotiated, and the Contract is not amended as set forth above, this Contract will conclude automatically without liability to the Awarding Authority or the Public Entity upon written notice by the Awarding Authority to the Designer that negotiations have concluded unsuccessfully.
- (d) Upon receipt of a Notice to Proceed, the Designer shall commence and diligently perform to completion the Study Phase Services necessary to complete the Schematic Design/Certifiable Study in accordance with this Contract, including, without limitation, the Approved Work Plan.

**4.6.2 Schematic Design/Certifiable Study documentation.** Upon receipt of a Notice to Proceed with Schematic Design/Certifiable Study services, Designer shall meet regularly and as necessary with agents of the Awarding Authority and the User Agency, shall update and refine items submitted previously during the Study Phase, shall provide a schematic design in compliance with M.G.L. c. 7C, ss. 59 and 60 of the consensus solution (unless otherwise directed by the Awarding Authority) and shall provide the following schematic design level documentation which shall include and incorporate Awarding Authority and User Agency comments:

- (a) Building Information Model with the Level of Development specified in the BIM Guidelines for Design and Construction, drawings, concept sketches, three dimensional representations, and specifications;
- (b) an analysis of the design's compliance with building code;
- (c) an environmental assessment;
- (d) a preliminary life cycle cost analysis evaluating the short-term and long-term costs and technical feasibility of using alternate technologies to provide, lighting, heat, water heating, air conditioning, refrigeration, gas or electricity. The Designer shall calculate the life-cycle costs in accordance with assumptions and requirements set forth in M.G.L. c. 7C s. 29 and c. 149 s. 44M and the current DCAMM Designers Procedures Manual and, if requested by the Awarding Authority, shall coordinate with the Department of Energy Resources regarding the life cycle cost analysis;
- (e) a summary of applicable public utility incentive programs as determined by the Awarding Authority and a plan for implementation or inclusion of incentives;
- (f) an analysis of the design's compliance with Massachusetts Architectural Access Board requirements and how it meets the User Agency's ADA Title II obligations;
- (g) a space measurement analysis for the design which shall verify that the sum of all program floor areas in the Project plus all other floor areas in the Project equal the Gross Floor Area of the Project;
- (h) at least two Construction Cost Estimates for the design in Unifomat II Level 2 format with aggregated unit rates and quantities supporting each item and verified as accurate and complete by the cost estimator and/or Owner's Project Manager, if any, employed by the Awarding Authority; and

- (i) a summary comparing the schematic plans, specifications and Estimated Construction Cost of the design to the Program and Certified Study requirements and an explanation for any deviation therefrom.

**4.6.3 Cost Estimate.** At the end of the Schematic Design/Certifiable Study phase, the Designer shall provide a Construction Cost Estimate in Unifomat II Level 2 and CSI format. If the Construction Cost Estimate (as may be updated as part of any reconciliation with estimates provided by Awarding Authority and/or Awarding Authority's consultant(s), contractor(s), and/or construction manager) exceeds the Fixed Limit Construction Cost, the Designer shall advise and cooperate with the Awarding Authority and Awarding Authority's consultant(s), contractor(s), and/or construction manager in identifying, specifying and recommending cost reduction alternatives. Implementation of any of the recommended cost reduction alternatives shall be subject to Approval and Awarding Authority shall have the right, in its sole discretion, to choose which of the cost reduction alternatives developed by the parties shall be implemented, provided that the Designer shall not be required to incorporate any cost reduction alternatives into the design of the Project if doing so would result in a violation of applicable Laws. The processes and responsibilities of the Designer described in this Section shall also apply to any separate cost limits within the Estimated Construction Cost that have been established in writing by an Authorized Representative of Awarding Authority for certain phases, components, or elements of the Project. The Designer shall not be paid additional compensation for such services.

**4.6.4 Approval of Building Information Model and documents.** Schematic Design/Certifiable Study phase drawings, specifications, Building Information Model (with the Level of Development specified in the BIM Guidelines for Design and Construction), Construction Cost Estimates and other Deliverables shall be subject to the written Approval of the Awarding Authority. Unless a lesser number is requested by the Awarding Authority, the Designer shall submit to the Awarding Authority for Approval two (2) paper and one (1) electronic copy of schematic design drawings, specifications, cost estimates, and other Deliverables.

**4.6.5 Global Workshop.** If requested by the Awarding Authority, the Designer shall prepare and attend a Global Workshop during the Schematic Design/Certifiable Study phase.

**4.6.6 Coordination of Preconstruction Services.** Designer shall coordinate with Awarding Authority's consultant(s), contractor(s), and/or construction manager, as required throughout the Schematic Design/Certifiable Study Phase. This coordination includes, but is not limited to, working in good faith and in cooperation and coordination with the Awarding Authority and Awarding Authority's consultant(s), contractor(s), and/or construction manager to reconcile any differences between cost estimates prepared by the various parties, to clarify assumptions upon which cost estimates are based, and otherwise to address any concerns or questions with respect to such cost estimates raised by the Awarding Authority or its consultant(s), contractor(s), and/or construction manager.

**4.7 Evaluation of Designer [M.G.L. c. 7C, s. 48].** ~~The Awarding Authority shall provide the Designer with a written preliminary evaluation at the completion of the analysis stage of the Study Phase for informational purposes. The Awarding Authority will also evaluate the Designer after the Designer has completed its Schematic Design/Certifiable Study phase duties under this Contract in accordance with the Approved Work Plan. A copy of this evaluation will be sent to the Designer Selection Board and may be viewed by state agencies, authorities, and cities and towns for future work. If the Designer disagrees with the evaluation given by the Awarding Authority, the Designer may respond with a letter to the Study Manager and send a copy to the Designer Selection Board.~~

## **4.8 Payment for Study Phase Basic Services.**

### **4.8.1 Study Phase Basic Fee.**

- (a) For the satisfactory performance of all Study Phase Basic Services, the Designer's Study Phase Basic Fee shall not exceed the "Not-to-Exceed Maximum Study Contract Amount" stated on the cover page of this Contract, payable in accordance with Section 4.8.2 (Schedule for Payment of Study Phase Basic Fee) and the Approved Work Plan. Designer acknowledges and agrees that, if the Schematic Design/Certifiable Study Basic Fee is to be negotiated (as indicated on the Designer Selection Board Advertisement), following successful negotiations, the "Not-to-Exceed Maximum Study Contract Amount" will be amended to include the agreed upon amount for the Schematic Design/Certifiable Study Basic Fee in accordance with Section 4.6. Designer further acknowledges and agrees that, unless the Design Phase Basic Fee is to be established through negotiation (as indicated on the Designer Selection Board Advertisement), if Designer is selected for the performance of Design Phase Services and the Contract is amended to incorporate Design Phase Services in accordance with ARTICLE 5 the Design Phase Basic Fee shall be reduced by the amount paid for Schematic Design/Certifiable Study included in the Study Phase Services.
- (b) If Approved in advance, the Awarding Authority shall reimburse the Designer for the actual costs for specific items not included in the Study Phase Basic Fee, such as Permit filing fees and document copies in excess of numbers specified in the Contract if requested by the Awarding Authority. The Awarding Authority shall not reimburse the Designer for any out-of-pocket expenses, including without limitation telephone or travel expenses, unless Approved by the Authorized Representative in advance; provided, however, that if such reimbursement is pre-Approved, Awarding Authority shall reimburse such travel at the current travel reimbursement rates established for Commonwealth employees.

### **4.8.2 Schedule for Payment of Study Phase Basic Fee.**

- (a) The Approved Work Plan shall provide a schedule for payments of the Study Phase Basic Fee with a certain percentage of the Study Phase Basic Fee to be paid upon certain Milestones as agreed by the Awarding Authority and the Designer.
- (b) No payment shall be made for Basic Services during the Study Phase except for Milestones for which payments are specified in the Approved Work Plan.
- (c) The Awarding Authority shall not be obliged to pay any claims received more than 45 days after the Approval by the Awarding Authority of the final required submittal.

## **4.9 Study Phase Additional Services.**

**4.9.1 Generally.** With the prior Approval by the Awarding Authority, during the Study Phase the Designer shall perform as Additional Services any work that is not included in or inferred by the Approved Work Plan as being part of Study Phase Basic Services, such as:

- (a) energy modeling;
- (b) preparation of measured drawings, site surveys, wetlands delineations;
- (c) preparation of structural analyses, environmental analyses, geotechnical analyses, and soil borings;
- (d) conducting HVAC testing, hydrant flow testing, hazardous materials testing, other specialized testing; and

- (e) undertaking additional tasks identified subsequent to the Approval of the Work Plan.

Prior to performing any Study Phase Additional Services the Designer shall agree with the Awarding Authority upon the fee for such services in accordance with Section 4.10 (Compensation for Study Phase Additional Services) of this Contract. In the event that Designer includes in a proposed scope for any Additional Services Approved by Awarding Authority any terms that conflict with any portion of Articles 1 through 7 of this Contract, the terms of this Contract shall prevail unless specifically agreed to by an Authorized Representative of Awarding Authority in writing.

**4.9.2 Limitations on Study Phase Additional Services.** Notwithstanding the foregoing, without limitations, the Designer, its Consultants or Subconsultants shall not be entitled to compensation and shall not claim as Study Phase Additional Services:

- (a) work required to correct errors and omissions of the Designer, its Consultants or Subconsultants during the Study Phase; or
- (b) necessary additional work that, in the Awarding Authority's reasonable opinion, should have been anticipated by the Designer in the preparation of Study Phase Deliverables.

#### **4.10 Compensation for Study Phase Additional Services.**

**4.10.1 Lump Sum.** For the services provided pursuant to Section 4.9 (Study Phase Additional Services), the Designer shall be compensated by a lump sum fee agreed upon in advance in writing by the Designer and the Awarding Authority. In connection with the negotiation of any such lump sum fee, the Designer shall submit a truth in negotiations certificate in accordance with M.G.L. c. 7C, s. 51. The Designer agrees that the lump sum fee for Study Phase Additional Services may be adjusted within one year of the completion of this Contract if the Awarding Authority determines that the lump sum fee was increased due to inaccurate information provided to the Awarding Authority in the negotiation of the lump sum fee.

**4.10.2 "Not to Exceed" Limit.** No authorization by the Awarding Authority for the performance by the Designer of Study Phase Additional Services shall be valid unless it is made in writing and contains a "not to exceed" limit that may not be exceeded without further Approval by the Awarding Authority. Cost proposals for Study Phase Additional Services shall include a similar "not to exceed" limits for any associated reimbursables. Designer acknowledges that such "not to exceed" limits are required by state finance laws.

### **ARTICLE 5: TRANSITION FROM STUDY PHASE TO DESIGN PHASE**

- 5.1 Transition from Study Phase to Design Phase.** Following the conclusion of the Study Phase, the Schematic Design/Certifiable Study must be Certified and an appropriation of sufficient funds must be secured in order for the Project to proceed to the Design Phase. If and only if these requirements are satisfied, the Awarding Authority may, in its sole discretion, elect to proceed with the Design Phase of the Project, in which case the Awarding Authority shall select a designer to perform the Design Phase Services. If and only if the Awarding Authority selects the Designer to perform the Design Phase Services, the Awarding Authority and the Designer shall execute an amendment incorporating the Attachment G – Design Phase Scope of Services and, if applicable, a negotiated Design Phase Basic Fee, and shall execute all other necessary documents to this Contract in order to commence the Design Phase.

- 5.2 No Guarantee of Selection for Design Phase.** The Awarding Authority’s acceptance of and/or payment for Designer’s work under the Study Phase in no way obligates the Awarding Authority to select the Designer to perform the Design Phase Services.
- 5.3 Termination if Design Phase Prerequisites Not Satisfied.** If the Approved Schematic Design/Certifiable Study is not Certified or sufficient funds are not appropriated for the Design Phase of this Project or the Awarding Authority otherwise elects not to proceed with the Project into Design Phase, this Contract will conclude automatically without liability to the Awarding Authority or the Public Entity upon written notice from the Awarding Authority to the Designer.
- 5.4 Selection for Design Phase.** If the Approved Schematic Design/Certifiable Study is Certified, or accepted by the Awarding Authority, the Designer may be selected in accordance with applicable Laws to perform the Design Phase Services. The selection of the Designer to perform the Study Phase and the execution of this Contract does not guarantee that the Designer will be selected to perform the Design Phase and nothing herein shall require the Awarding Authority to select the Designer for the performance of the Design Phase Services. If the Awarding Authority selects an entity other than the Designer to perform the Design Phase Services, this Contract shall conclude upon Designer’s receipt of notice of such selection by the Awarding Authority and upon payment to the Designer for Study Phase Basic Services and, if applicable, Study Phase Additional Services. Regardless of whether the Designer is selected to perform the Design Phase Services, the Designer shall remain responsible for of any of its continuing obligations arising during the Study Phase.
- 5.5 Scope of Design Phase Services and (if applicable) Fee Negotiation.** If the Designer is selected to perform the Design Phase Services, the Designer and the Awarding Authority shall work in good faith to develop a Design Phase Scope of Services, to be attached hereto and incorporated by reference as Attachment G – Design Phase Scope of Services. If the Design Phase Basic Fee amount is to be negotiated (as indicated in the Designer Selection Board Advertisement), the Awarding Authority and Designer shall work in good faith to establish such Design Phase Basic Fee in accordance with M.G.L. c. 7C, s. 50. If the Designer is selected to perform the Design Phase Services and a Contract amendment is not successfully negotiated and executed for any reason, this Contract shall conclude upon the Awarding Authority’s written notification to Designer that Contract amendment negotiations have concluded unsuccessfully. The Designer shall not incur any costs associated with the Design Phase Scope of Services prior to the receipt of applicable Notices to Proceed.
- 5.6 Contract Amended for Design Phase.** If the Approved Schematic Design/Certifiable Study is Certified, the Designer is selected to proceed with Design Phase Services pursuant to this ARTICLE 5 of the Contract, and, if applicable, the Design Phase Basic Fee has been successfully negotiated, the Awarding Authority and Designer shall execute an amendment to the Contract to include the following, which shall be incorporated by reference:
- (a) Certified, or Accepted, Study;
  - (b) Attachment G – Design Phase Scope of Services;
  - (c) Design Phase Basic Fee;
  - (d) Attachment E-3 – Corporate Vote or Other Evidence of Authority (Design Phase);
  - (e) Attachment F-3 – Truth in Negotiations Certificate (Design Phase);
  - (f) Attachment I – Designer’s Personnel Assigned to Project; and

- (g) Attachment J – Certified Billing Rates of Designer’s and Designer’s Consultant’s Personnel
- (h) Any other documents as may be agreed by the Parties.

## **ARTICLE 6: DESIGN PHASE**

- 6.1 Design Phase Term.** The Design Phase shall commence upon the execution of an amendment to the Contract in accordance with Section 5.6 (Contract Amended for Design Phase), and shall continue through the completion of the Design Phase Services required hereunder, unless terminated earlier. Design Phase Services shall commence upon the issuance of a Notice to Proceed by the Awarding Authority, as more fully described below in Section 6.4 (Design Development Phase Services).
- 6.2 Design Phase Governing Documents.** During the Design Phase, the Designer shall perform its duties in accordance with all applicable Laws, the provisions of this Contract, the Certified Study which is incorporated herein by reference, the Attachment G – Design Phase Scope of Services, the provisions of M.G.L. c. 7C, s. 15, DCAMM’s *Designers Procedures Manual* if the Awarding Authority is DCAMM, and the procedures set forth in Attachment H – Awarding Authority’s Design Procedures (For use by Agencies Other than DCAMM) if the Awarding Authority is other than DCAMM, *DCAMM Standard Specifications, Consultants Estimating Manual, DCAMM CAD Standards (revision 2: February 2013)*, the *Building Information Modeling (BIM) List of Design and Preconstruction Services (Revised February 27, 2016)*, *BIM Guidelines for Design and Construction*, and the Approved BIM Execution Plan. In the case of conflict between the terms of this Contract and any of the provisions incorporated herein by reference, the Designer shall make a written request for clarification to the Awarding Authority and the Awarding Authority’s written response shall be conclusive.
- 6.3 Permits during Design Phase.** During the Design Phase, unless otherwise agreed to in writing, with the exception of the standard building Permits customarily obtained by the general contractor, the Designer shall obtain all other Permits required to implement Designer's design. The Designer shall obtain the prior Approval of the Awarding Authority of all Permit applications, notices, and accompanying documentation before filing them with the appropriate governmental entity or other party. The Designer shall certify in writing at the time that construction documents (or changes thereto) are submitted to the Awarding Authority that the Designer has identified all Permits required to implement the Project and that those not identified in writing as being the responsibility of the Awarding Authority have been identified in the specifications as being the general contractor’s responsibility. Notwithstanding the foregoing, any required attendance by the Designer at any public hearing in connection with any Permit shall be considered an Additional Service to be compensated in accordance with Section 6.10 (Compensation for Design Phase Additional Services) of this Contract, and any Permit application fee shall be considered a reimbursable expense to be reimbursed in accordance with the provisions of Section 6.8 (Payment for the Design Phase Basic Services).
- 6.4 Design Development Phase Services.**
- 6.4.1 Initial Meeting.** Upon receipt of a Notice to Proceed with the design development phase from the Awarding Authority, the Designer and its appropriate Consultants shall meet with agents of the Awarding Authority and the User Agency to arrive at a mutual understanding of the requirements of the Certified Study or Program furnished by the Awarding Authority.

**6.4.2 Work plan and Contract Schedule.** The Designer shall submit a proposed work plan, an updated BIM Execution Plan, and a proposed Contract Schedule consistent with any project schedule included in the Certified Study or Attachment G – Design Phase Scope of Services for the Design Phase Services. The Contract Schedule shall contain (a) dates for submittals, Deliverables, actions, Milestones, design workshops, meetings and the critical path through all Design Phase Services; (b) allowances of time for the User Agency's and the Awarding Authority's review and the Awarding Authority's Approval of Deliverables; and (c) allowances for necessary submissions for Permits in connection with the Project. The work plan shall also include a Schedule of Values. When Approved by the Awarding Authority, the work plan, updated BIM Execution Plan, and the Contract Schedule shall govern the Design Phase Services.

**6.4.3 Design Development Phase documentation.** Designer and its Consultants shall meet regularly and as necessary with agents of the Awarding Authority and the User Agency, shall update and refine items submitted during the Schematic Design/Certifiable Study Phase, and shall submit, on or before the date specified in the Contract Schedule, and on the basis of the Approved Schematic Design Phase documents and digital files:

- (a) an updated work plan, BIM Execution Plan, a current Building Information Model and associated data base(s), from which the drawings required below shall be generated, and Contract Schedule; a list of all Permits required to implement the design and a schedule of target dates for the procurement of such Permits, both of which shall be regularly updated during the remainder of the Design Phase;
- (b) information and documentation within the technical expertise of the Designer and its Consultants that is necessary for the Awarding Authority to file environmental notification forms, environmental impact reports, and any other filings for Permits that must be filed during the design development phase;
- (c) complete design development drawings, draft specifications indicating any filed sub-bid sections based on the cost of the work and other documents necessary to specify the size and character of the Project as to siting, landscape, architectural, structural, fire protection, plumbing, HVAC, electrical, ADA and MAAB compliance, product requirements, and other features;
- (d) quality control documentation demonstrating without limitation coordination of: ceiling clearances, mechanical room size, and shaft sizes; specifications and drawings; filed sub-bid work or sections; scheduling; equipment and power; existing and new construction; and phasing;
- (e) design development drawings for which the Designer shall submit for a "tentative approval" review to the public agency having jurisdiction over enforcement of the State Building Code with respect to the Project (the Department of Public Safety of the Commonwealth for state-owned projects or the building commissioner of the city or town in which the Project is located for other projects);
- (f) an updated life cycle cost analysis to evaluating the short-term and long-term costs and technical feasibility of using alternate technologies to provide, lighting, heat, water heating, air conditioning, refrigeration, gas or electricity. The Designer shall calculate the life-cycle costs in accordance with assumptions and requirements set forth in M.G.L. c. 7C s. 29 and c. 149 s. 44M and the current DCAMM Designers Procedures Manual and, if requested by the Awarding Authority, shall coordinate with the Department of Energy Resources regarding the life cycle cost analysis.;
- (g) a Construction Cost Estimate for the design in Unifomat II Level 3 format, with unit rates and quantities supporting each item, which shall have been reviewed and approved

as accurate and complete by any cost estimator or Owner's Project Manager employed by the Awarding Authority with respect to the Project;

- (h) a Construction Cost Estimate, in Construction Standards Institute Masterformat or UniFormat 2010, as specified by the Awarding Authority, cross-referenced to the Uniformat II Construction Cost Estimate. This estimate shall contain the same total and percentage allowances as the Uniformat II Construction Cost Estimate for overhead and profit and for any further allowances for escalation and other contingencies;
- (i) a space measurement analysis for the design verifying that the sum of all program areas in the Project plus all other floor areas in the Project equals the Gross Floor Area of the Project;
- (j) site and building signage graphically coordinated with the User Agency and the general building requirements and in compliance with the 2010 ADA Guidelines and MAAB, including, without limitation,
  - (i) parking signs, including van-designated parking signs;
  - (ii) room designation signs;
  - (iii) directories;
  - (iv) directions signs, including exterior signs at inaccessible entrances to orient people to the nearest accessible entrance, exterior "you-are-here" maps, interior direction signs, etc.;
  - (v) informational signs, including cautionary signs, hours of operations, rules of conduct, etc.;
  - (vi) signage related to loading and building areas; and
  - (vii) signage required by applicable building codes.
- (k) a summary or summaries comparing the design development drawings, specifications and cost estimates with the Program requirements, and explaining any deviations in writing.

**6.4.4 Cost Reconciliation and Value Engineering.** If the Construction Cost Estimate (as may be updated as part of any reconciliation with estimates provided by Awarding Authority and/or Awarding Authority's consultant(s), contractor(s), and/or construction manager) exceeds the Fixed Limit Construction Cost, the Designer shall advise and cooperate with the Awarding Authority and Awarding Authority's consultant(s), contractor(s), and/or construction manager in identifying, specifying and recommending cost reduction alternatives. Implementation of any of the recommended cost reduction alternatives shall be subject to Approval and Awarding Authority shall have the right, in its sole discretion, to choose which of the cost reduction alternatives developed by the parties shall be implemented, provided that the Designer shall not be required to incorporate any cost reduction alternatives into the design of the Project if doing so would result in a violation of applicable Laws. The processes and responsibilities of the Designer described in this Section shall also apply to any separate cost limits within the Estimated Construction Cost that have been established in writing by an Authorized Representative of Awarding Authority for certain phases, components, or elements of the Project. The Designer shall not be paid additional compensation for such services.

**6.4.5 Approval of Design Development Phase Building Information Model and documents.** Such digital files, drawings, specifications, cost estimate and other design development submittals shall be subject to the written Approval of the Awarding Authority. Unless a lesser number is requested by the Awarding Authority, the Designer shall submit to the Awarding Authority for

approval two (2) paper and one (1) electronic copy of design development drawings, specifications, cost estimates, and other submittals.

**6.4.6 Global Workshop. *If requested by the Awarding Authority, the Designer shall* prepare and attend a Global Workshop during the design development phase.**

## **6.5 Construction Documents Phase Services.**

**6.5.1. Document Updates and Revisions.** Upon receipt of a Notice to Proceed with the construction documents phase from the Awarding Authority, the Designer and its Consultants shall meet regularly as necessary with agents of the Awarding Authority and the User Agency, and based on the submittals Approved in the design development phase of the Project, shall update and refine the items previously submitted and shall submit on or before the date and time specified in the Approved Contract Schedule:

- (a) an updated work plan and Contract Schedule;
- (b) a Building Information Model with Level of Development required by the BIM Guidelines for Design and Construction, unless otherwise specified in the most recent Approved BIM Execution Plan, and associated data base(s) from which the drawings required below shall be generated;
- (c) summaries of the completed life-cycle cost estimates, which shall be filed with the building code commission and the director of the office of consumer affairs and business regulation prior to the advertising for bids for the Construction Contract, as required by M.G.L. c. 149 s. 44M;
- (d) complete construction drawings and specifications, certified by the Designer as having satisfied the applicable quality control review, Approved as required, in sufficient detail to permit fixed-price bids in open competition for construction of the Project;
- (e) an updated environmental assessment, building code analysis, ADA and MAAB compliance analysis, and structural and energy calculations;
- (f) a certified list of all required testing and all Permits required to implement the Project (including a certification that all Permits not identified in writing as being the responsibility of the Awarding Authority have been identified in the specifications as being the general contractor's responsibility) as well as a certification that all applicable local, state and utility officials have been contacted by the Designer regarding each utility connection and that the persons responsible for Permits or connection approval has agreed to the systems' use;
- (g) site and building signage graphically coordinated with the User Agency and in compliance with the general building requirements and the 2010 ADA Guidelines and MAAB, including, without limitation
  - (i) parking signs, including van-designated parking signs;
  - (ii) room designation signs;
  - (iii) directories
  - (iv) directions signs, including exterior signs at inaccessible entrances to orient people to the nearest accessible entrance, exterior "you are here" maps, interior direction signs, etc.;
  - (v) informational signs, including cautionary signs, hours of operations, rules of conduct, etc.;

- (vi) signage related to loading and building areas; and
  - (vii) signage required by applicable building codes.
- (h) at the approximate mid-point of completion of the final drawings and specifications as determined by the Awarding Authority, a Construction Cost Estimate prepared using the Uniformat II Classification to Level 3 and a Construction Cost Estimate in Construction Standards Institute Masterformat or Uniformat 2010, as specified by the Awarding Authority, cross-referenced to the Uniformat II Construction Cost Estimate for review by the Awarding Authority; both Construction Cost Estimates shall include quantities of all materials and unit prices of labor, equipment, and materials as well as a cost estimate for each item of work.

**6.5.2. Approval of drawings and other construction documents.**

- (a) For state projects: Two sets of the final drawings and specifications must be stamped "approved" and signed by the appropriate state building inspector from the Department of Public Safety. Two sets of plumbing drawings and specifications shall be signed and stamped "approved" by the Board of State Examiners of Plumbers and Gas Regulations Board. Two sets of the fire protection, HVAC, and electrical constructions documents shall be approved, stamped and signed by the local fire chief. Two sets of the electrical construction documents shall be approved, stamped and signed by the local electrical inspector.
- (b) For other projects: Two sets of the foregoing documents shall be approved, stamped and signed by the local building official, the local plumbing inspector, the local electrical inspector, and the local fire chief respectively.

**6.5.3. Cost Reconciliation: Value Engineering.** . If the Construction Cost Estimate (as may be updated as part of any reconciliation with estimates provided by Awarding Authority and/or Awarding Authority's consultant(s), contractor(s), and/or construction manager) exceeds the Fixed Limit Construction Cost, the Designer shall advise and cooperate with the Awarding Authority and Awarding Authority's consultant(s), contractor(s), and/or construction manager in identifying, specifying and recommending cost reduction alternatives. Implementation of any of the recommended cost reduction alternatives shall be subject to Approval and Awarding Authority shall have the right, in its sole discretion, to choose which of the cost reduction alternatives developed by the parties shall be implemented, provided that the Designer shall not be required to incorporate any cost reduction alternatives into the design of the Project if doing so would result in a violation of applicable Laws. The processes and responsibilities of the Designer described in this Section shall also apply to any separate cost limits within the Estimated Construction Cost that have been established in writing by an Authorized Representative of Awarding Authority for certain phases, components, or elements of the Project. The Designer shall not be paid additional compensation for such services.

**6.5.4. Final Construction Cost Estimate.**

- (a) The Designer shall furnish a final Construction Cost Estimate, current to the date of the final bid document submission, in Construction Standards Institute Masterformat or Uniformat 2010, as specified by the Awarding Authority, cross-referenced to the final Uniformat II Construction Cost Estimate. This estimate shall contain the same total and percentage allowances as the final Uniformat II Construction Cost Estimate for overhead and profit and for any further allowances for escalation and other contingencies.
- (b) The Designer shall also submit a summary comparing the final construction drawings and specifications and final Estimated Construction Cost with the Program requirements and

submittals made during the design development phase, explaining any significant deviations.

**6.5.5. Approval of Construction Documents Phase documents.** All submittals shall be subject to the Approval of the Awarding Authority. Unless a lesser number is requested by the Awarding Authority or is provided below in Section 6.5.6 (Copies of Approved drawings and specifications), the Designer shall furnish to the Awarding Authority for Approval two (2) paper and one (1) electronic set of the drawings, specifications Construction Cost Estimates and other submittals. The Designer shall also furnish electronic media copies of the foregoing drawings and documents in such form as is required by the Designers Procedures Manual if the Awarding Authority is DCAMM or otherwise in such other format as the Awarding Authority may require. All drawings and associated data bases shall be generated from the latest Approved BIM(s).

**6.5.6. Copies of Approved drawings and specifications.** From the Approved construction drawings and specifications, with such changes as the Awarding Authority requires, the Designer shall prepare and transmit to the Awarding Authority a set of reproducible black and white drawings and original specifications both in electronic format and on high quality white bond paper, single-sided, properly packaged, suitable for reproduction, stamped and signed by all disciplines, which documents shall become the property of the Awarding Authority. Other suitable methods may be used with the prior Approval of the Awarding Authority. One copy of the drawings and specifications shall be submitted with the reproducible drawings and specifications.

**6.5.7. Preparation of construction bid documents.** The Awarding Authority shall copy the construction bid documents, including advertisements, for receipt of proposals from construction contractors, and for execution of a Construction Contract(s). The Designer shall prepare all addenda (to include bidders' questions and Designer's responses), subject to the Approval of the Awarding Authority. The Designer and its Consultants shall attend and chair the pre-bid conference if one is scheduled, taking note of all questions asked. Relevant questions submitted in writing shall be answered by means of written addenda to the bid documents as required. The Designer shall attend the bid opening and conduct a review of the qualifications of the low filed sub-bidders and general bidder (and of other bidders if necessary) and shall, within three (3) working days of the respective bid opening dates, advise the Awarding Authority in writing of the Designer's opinions as to the sub-bidders' bids and as to which general bidder is the responsible and eligible bidder that has submitted the lowest bid.

**6.5.8. Prequalification Assistance.** If required by law or requested by the Awarding Authority, the Designer shall assist the Awarding Authority in the prequalification of prime contractors and sub-contractors in the filed sub-bidder or trade contractor scopes of work pursuant to M.G.L. c. 149, ss. 44D1/2 and 44D3/4 or M.G.L. c. 149A. Designer shall be compensated for such prequalification assistance services as set forth in the Attachment G – Design Phase Scope of Services and in accordance with Sections 6.8 (Payment for Design Phase Basic Services) and 6.10 (Compensation for Design Phase Additional Services), as applicable.

**6.5.9. Fixed Limit Construction Cost adjustments.** If within three (3) months after Approval of construction documents, in final form, the bids of the lowest responsible and eligible bidders exceed the Fixed Limit Construction Cost, the Designer shall, if so instructed in writing by the Awarding Authority, provide such revised construction drawings and specifications and construction cost estimates as the Awarding Authority shall require for the purpose of bringing the cost within the Fixed Limit Construction Cost; provided the Designer may in connection with such revision make reasonable adjustments in the scope of the project subject to the written approval of the Director, which approval shall not be unreasonably withheld. The Designer shall not be paid additional compensation for such services.

## 6.6 **Construction Administration Phase Services.**

**6.6.1. Generally.** Upon the award of the Construction Contract, the Designer and its Consultants shall:

- (a) be charged with general administration of the Construction Contract to the extent set forth herein;
- (b) furnish the general contractor with information for establishing lines and grades and shall prepare a set of plans and specifications that incorporate all addenda and SK drawings issued during the bidding process;
- (c) promptly and in accordance with the requirements of the Construction Contract check, obtain testing where necessary, and approve samples, schedules, shop drawings and other submissions by the general contractor;
- (d) prepare, maintain and update logs for all submittals and changes to the Construction Contract;
- (e) provide to the Awarding Authority a written certification of all Permits required to implement change order work at the Project site when the Designer submits for Approval any change order request to the Awarding Authority during the construction phase of the Project, whether the change order request was made by the Designer, the Awarding Authority, or the general contractor;
- (f) visit the site at intervals appropriate to the stage of construction but not less than weekly, and observe the progress of the work, issue written progress reports, and conduct job meetings, and prepare and distribute meeting minutes to assure that the work is being built in conformance with Approved construction documents;
- (g) report to the Awarding Authority weekly in writing on the progress of the work including whether or not the general contractor is keeping As-Built Drawings and BIM(s) updated;
- (h) on a weekly basis (or more often as may be necessary), make specific recommendations on rejection of all Project work observed by the Designer that fails to conform to the Construction Contract documents, and review and inspect corrected work;
- (i) require each Consultant employed in accordance with Section 3.14 (Employment of Consultants) to make visits weekly during the progress of any work to which that Consultant's services relate and to report upon it in writing to the Designer;
- (j) conduct semi-final and final inspections of the Project and report the results of such inspections in writing to the Awarding Authority;
- (k) observe the balancing of air and water circulation systems and report the results thereof;
- (l) observe the setting and adjustment of automatic controls and report thereon;
- (m) observe compliance with accessibility regulations and Project requirements and report discrepancies;
- (n) in a timely manner, decide all questions regarding interpretation of, or compliance with, the Construction Contract documents, except as the Awarding Authority may in writing otherwise determine;
- (o) furnish electronic versions of the Record Drawings, a final cost report, and other required documents; and

- (p) assist the Awarding Authority in any bid protest hearings, change order appeal hearings requested under M.G.L. c. 30, s. 39Q, and any other litigation, except as provided in Section 6.9 (Design Phase Additional Services).

Except as otherwise specifically set forth in the Construction Contract documents, the Designer shall neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the general contractor's work, since these are solely the general contractor's rights and responsibilities under the Construction Contract documents.

**6.6.2. General contractor's requisitions for payment.** The Designer shall submit to the Awarding Authority in a timely manner all requisitions for payment submitted by the general contractor in the form required by the Awarding Authority. With respect to each such requisition, the Designer shall certify to the best of its knowledge that the percentage of work included in the requisition is accurate and that the work performed conforms to the Construction Contract documents. In the event the Designer does not approve the requisition exactly as submitted by the general contractor, the Designer shall forward it for payment to the Awarding Authority dated and signed with corrections with an accompanying letter of explanation setting forth the Designer's objections and recommended changes. The Designer shall coordinate the required visits to the construction site so as to enable it to submit to the Awarding Authority the general contractor's monthly requisition for payment bearing the Resident Engineer's approval or accompanied by the Resident Engineer's letter of exceptions. Timely payments to the contractor are required by M.G.L. c. 30, s. 39K; therefore, the Designer shall establish procedures assuring either immediate mail or messenger delivery of the requisition for payment to the Awarding Authority, and shall process requisitions for payment within two working days after receipt of the same.

**6.6.3. Project Close Out Obligations [M.G.L. c. 30 s. 39K].** Within 10 days of general contractor's request for Substantial Completion, Designer shall submit to Awarding Authority a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. Awarding Authority may assign a specific portion of the Design Phase Basic Fee to the performance of these obligations.

**6.6.4. Review of Close Out Documents.**

- (a) Before examining the requisition for final payment submitted to the Awarding Authority by the general contractor and making any certification in response thereto, the Designer shall obtain from the general contractor:
  - (i) An As-Built Model File, as set forth in the BIM Guidelines for Design and Construction and consisting of a federated BIM showing the actual installation of the site utilities, plumbing, heating, ventilating, and electrical work as outlined in the Construction Contract, recording all changes, and containing descriptive or tabular data as required by the Awarding Authority and associated with the BIM;
  - (ii) As-Built Drawings, including drawings showing the actual installation of the site utilities, plumbing, heating, ventilating and electrical work as outlined in the Construction Contract, and recording all changes; and
  - (iii) All other documents required as part of the closeout process under the Construction Contract documents, including, without limitation, operation and maintenance (O&M) manuals and manufacturer's warranties for the Project.

- (b) The Designer shall ascertain that changes authorized by change orders are shown on the general contractor's As-Built Drawings and the As-Built Model File required above. The Designer shall revise the original BIM, the applicable original reproducible drawings and electronic media drawings on the basis of the As-Built Drawings and the federated BIM and shall submit them as Record Drawings and a Record Model, respectively. The Designer shall provide the Awarding Authority two sets of prints along with an electronic copy of Record Drawings. Record Drawings and the Record Model shall become the property of the Awarding Authority, all as part of the Design Phase Basic Fee.

**6.6.5. Evaluation of general contractor.** At the conclusion of the Construction Contract the Designer shall assist the Awarding Authority's Authorized Representative or Owner's Representative in the evaluation of the performance of the general contractor as required by M.G.L. c. 149, s. 44D or any other law.

**6.6.6. Copies of original design and calculations.** Two suitably bound legible copies of all original design and quantity calculations including those pertinent to change orders and shop drawings if applicable shall be furnished by the Designer to the Awarding Authority at the conclusion of the Construction Contract.

## **6.7 Facility Performance Evaluation Phase Services.**

The Awarding Authority, in consultation with the Designer, and its Consultants, may conduct a facility performance evaluation on all new buildings, major renovations and energy projects.

## **6.8 Payment for Design Phase Basic Services.**

### **6.8.1. Design Phase Basic Fee.**

- (a) For the satisfactory performance of all services required for the Design Phase of this Contract, excluding those services specified under Section 6.9 (Design Phase Additional Services), the Designer's Design Phase Basic Fee shall not exceed the "Design Contract Fee" stated on the cover page of this Contract, less a credit taken for the payment of schematic design services during the Schematic Design/Certifiable Study phase payable as provided in Section 6.8.2 (Schedule for Payment of Design Phase Basic Fee) as the same may be modified by the Design Phase Scope of Services.
- (b) If Approved by the Authorized Representative in advance, the Awarding Authority shall reimburse the Designer for the actual costs for specific items not included in the Design Phase Basic Fee, such as Permit filing fees and document copies in excess of numbers specified in the Contract if requested by the Awarding Authority. The Awarding Authority shall not reimburse the Designer for any out-of-pocket expenses, including without limitation telephone or travel expenses, unless Approved by the Authorized Representative in advance; provided, however, that if such reimbursement is pre-Approved, Awarding Authority shall reimburse such travel at the current travel reimbursement rates established for Commonwealth employees.

### **6.8.2. Schedule for Payment of Design Phase Basic Fee.**

- (a) Designer acknowledges and agrees that the Design Phase Basic Fee shall be reduced by the amount paid to Designer for Schematic Design Services during the Study Phase; if the Design Phase Basic Fee is negotiated, this will be taken into account during the negotiations. The remainder of the lump sum Design Phase Basic Fee shall be paid in accordance with the Schedule of Values for performance of Design Phase Services in accordance with this Contract. The Schedule of Values shall be consistent with the

following schedule so that the total amount paid equals the percentage of the Design Phase Basic Fee allocated to each of the Design Phases below, unless otherwise Approved by the Awarding Authority in writing. Actual payments can be requisitioned by the Designer upon completion of Milestones within each phase as set forth in the Schedule of Values.

*Fifteen percent (15%) for Schematic Design Services – paid during Study Phase*  
*Thirty percent (30%) for the Design Development Phase services;*  
*Twenty-five (25%) for the Construction Documents Phase services;*  
*Twenty-five percent (25%) for the Construction Administration Phase services*  
*Five percent (5%) for the performance of closeout services set forth in Sections 6.6.3 and 6.6.4.*

- (b) The Designer shall submit requisitions on a monthly basis for any Milestones completed within that month. The Awarding Authority shall not be obliged to pay any claims received more than forty-five days after notification to the Designer of final acceptance of the contractor's work under the Construction Contract.
- (c) During the Design Phase, no invoice (other than an invoice for the final payment to Designer under this Contract) shall be required to be so submitted or processed when the net amount due is less than \$200. Amounts of less than \$200 shall be added to the subsequent month's invoice.

**6.8.3. Change Orders.** Unless otherwise Approved by the Awarding Authority, payments to the Designer for a modification or a change order shall be made when the modification or change order has been Approved by the Awarding Authority and the Designer's services with respect to the same, other than construction administration services, have been completed.

## **6.9 Design Phase Additional Services.**

**6.9.1. Generally.** With the prior Approval of the Awarding Authority, during the Design Phase the Designer shall perform all or any of the following services in addition to the Basic Services:

- (a) revise previously Approved drawings, specifications or other documents to accomplish changes authorized by the Awarding Authority or required by changes in applicable Laws, and revisions not occasioned by the Designer's errors or omissions;
- (b) attend Permit or public hearings and preparing presentation renderings and presentation models in connection therewith that are authorized by the Awarding Authority;
- (c) prepare documents for alternate bids requested by the Awarding Authority except for alternates required to be prepared by the Designer to adjust the Estimated Construction Cost to within the Fixed Limit Construction Cost;
- (d) assist the Awarding Authority with the prequalification of bidders in accordance with M.G.L. c. 149, ss. 44E1/2 and 44D3/4 or M.G.L. c. 149A;
- (e) to the extent not specified in the Attachment G – Design Phase Scope of Services, provide prequalification services required in accordance with M.G.L. c. 149A for the Construction Manager At-Risk Delivery Method;
- (f) provide consultation concerning replacement of any work damaged by fire or other cause during construction and furnishing professional services of the type set forth in ARTICLE 6 as may be required in connection with the replacement of such work;
- (g) provide professional services necessary to evaluate substitutions proposed by the general contractor and prepare subsequent revisions to drawings and other documents resulting

therefrom or furnish professional services made necessary by the default of the general contractor, including, without limitation, an analysis of maintenance and life cycle cost implications of the proposed substitutions;

- (h) provide services after final payment to the general contractor, except for services occasioned by the Designer's errors or omissions;
- (i) prepare special documents for or appearing as a witness in change order appeal hearings under M.G.L. c. 30, s. 39Q or in judicial litigation arising out of the Construction Contract, except for litigation arising from the Designer's negligent acts, errors or omissions;
- (j) prepare change orders and supporting data, except as set forth in Section 6.9 (Design Phase Additional Services);
- (k) revise construction drawings and specifications submitted in their final and complete form for which bids were not received within six months after submission;
- (l) make studies other than those normally required and preparing applications and reports to assist the Awarding Authority in obtaining federal aid;
- (m) additional site visits requested by the Awarding Authority in excess of the site visits required under this Contract, if the time spent by Designer at the site for the required site visits and for such additional site visits requested by the Awarding Authority collectively exceed seven (7) hours in any given calendar week.

Prior to performing any Design Phase Additional Services, the Designer shall agree with the Awarding Authority upon the fee for such services in accordance with Section 6.10 (Compensation for Design Phase Additional Services) of this Contract. No authorization by the Awarding Authority for the performance of any Additional Services shall be valid unless it contains a "not to exceed" amount. In the event that Designer includes in a proposed scope for any Additional Services Approved by Awarding Authority any terms that conflict with any portion of Articles 1 through 7 of this Contract, the terms of this Contract shall prevail unless specifically agreed to by an Authorized Representative of Awarding Authority in writing.

**6.9.2. *Limitations on Design Phase Additional Services.*** Notwithstanding the foregoing, without limitations, the Designer, its Consultants, and Subconsultants shall not be entitled to compensation and shall not claim as Additional Services:

- (a) Work required to correct errors and omissions of the Designer, its Consultants or Subconsultants during the Study Phase or Design Phase;
- (b) Necessary additional work that, in the Awarding Authority's reasonable opinion, should have been anticipated by the Designer in the preparation of the Study Phase or Design Phase Deliverables;
- (c) Preparing changes required to make unit price adjustments due to existing conditions; or
- (d) Services involved in change orders for time extension only, provided that the time required for the review and approval of said change may be included as an Additional Service upon the Awarding Authority's Approval.

**6.10 *Compensation for Design Phase Additional Services.*** Except as otherwise authorized in writing by the Awarding Authority, for the Design Phase Additional Services, including additional site visits, performed by the Designer, the Designer shall be compensated as determined by the Awarding Authority as follows:

- (a) by a lump sum fee agreed upon in advance in writing by the Designer and the Awarding Authority, provided that the Designer shall submit a Truth in Negotiations certificate in accordance with M.G.L. c. 7C, s. 51 in connection with the negotiation of such lump fee and Designer agrees that the lump sum fee may be adjusted within one year of the completion of this Contract if the Awarding Authority determines that the lump sum fee was increased due to inaccurate information provided to the Awarding Authority in the negotiation of the lump sum fee; or
- (b) on an hourly basis at the rates set forth in Attachment J – Certified Billing Rates of Designer’s and Designer’s Consultant’s Personnel, for the Additional Services performed by the principal(s)-in-charge, prime consultant, management, design and production personnel employed by the Designer and, if applicable, by the Consultant(s); provided, however, that such personnel must be included in Attachment I – Designer’s Personnel Assigned to Project in order to be compensated hereunder for Additional Services. Clerical/support staff of the Designer and Consultants shall not be compensated and is considered part of office overhead.

No authorization by the Awarding Authority for the performance by the Designer of Additional Services shall be valid unless it is made in writing and contains a "not to exceed" amount which may not be exceeded without further written Approval by the Awarding Authority. Cost proposals for Additional Services shall also include a similar "not to exceed amount" for any associated reimbursables.

## **ARTICLE 7: LEGAL PROVISIONS**

- 7.1 No Waiver.** The Awarding Authority's review, Approval, acceptance of, or payment for, any of the services furnished by the Designer hereunder shall not be construed as a waiver of any rights under this Contract or of any cause of action arising out of the performance of this Contract. The Awarding Authority's Approval shall not in any way relieve the Designer from performing all work required under this Contract in accordance with the standard of care set forth in Section 3.3 (Standard of Care) of this Contract.
- 7.2 Compliance with Executive Order 484 [Leading By Example – Clean Energy and Efficient Buildings].** As part of the Basic Services of the Contract, Designer is required to provide professional services necessary to meet the requirements of Executive Order 484, provided, however, that the fees for the submission of documentation necessary to documentation to the U.S. Green Building Council or other certifying entity to demonstrate compliance with Executive Order 484 shall be considered a reimbursable expense. The Designer understands that, pursuant to Executive Order No. 484, all new construction and renovation projects over 20,000 s.f. must meet a Massachusetts LEED Plus building standard, and that smaller projects must meet the minimum energy performance standards established by the Commonwealth of Massachusetts Sustainable Design Roundtable. Furthermore, Designer understands that the Massachusetts LEED Plus standard applies to all projects overseen by DCAMM as well as all projects built on state land for use by state agencies. The Study Phase Services shall reflect the fact that the Design Phase will require a design in accordance with the above referenced standards. Without limiting the foregoing, the Study and all Construction Cost Estimates, and other cost estimates and Deliverables required by this Contract shall reflect any particular work necessary for the Project to meet the requirements of such standards. THE TOWN OF ORLEANS IS DESIGNATED AS A DOER “GREEN COMMUNITY”.
- 7.3 Compliance with Life-Cycle Cost Estimate Requirements [M.G.L. c. 7C s. 29 and 149 s. 44M].** The Designer shall comply with all of the life-cycle cost estimate and analysis

requirements set forth in M.G.L. c. 7C s. 29 and c. 149 s. 44M and this Contract. The Designer acknowledges that failure to obtain life-cycle cost estimates as required hereunder may result in the director of the office of consumer affairs and business regulation prohibiting the Designer from contracting, directly or indirectly, with the Commonwealth or any political subdivision thereof for similar Services for a period of one year, pursuant to M.G.L. c. 149 s. 44M.

#### **7.4 Conflicts of Interest.**

**7.4.1 Compliance with M.G.L. c. 268A and 231 CMR 4.00.** The Designer shall familiarize itself with and at all times comply with the conflict of interest law, M.G.L. c. 268A and with the Rules of Professional Conduct, 231 CMR 4.00. The Designer certifies compliance with both the conflict of interest law M.G.L. c. 268A, specifically s. 5(f), and Executive Order 346 which includes limitations regarding the hiring of state employees. If this is a privatization contract then the Designer shall be prohibited from hiring at any time during the term of Contract, and for any position in the Designer's company, any state management employee who is, was, or will be involved in the preparation of the solicitation for this contract, the negotiations leading to the awarding of the Contract, the decision to award this Contract, and/or the supervision or oversight of performance under this Contract.

**7.4.2 Prompt Disclosure of Conflicts of Interest.** The Designer shall promptly disclose to DCAMM any matters which, although they may not violate M.G.L. c. 268A, may give rise to a potential conflict of interest on the part of the Designer or its personnel in its performance of its duties hereunder.

#### **7.5 Proprietary Items.** Without limitation, the Designer, Designer's employees and Consultants shall adhere to the provisions of M.G.L. c. 30, s. 39M, which provides in part:

*"Specifications for such contracts, and specifications for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefor, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if, in the opinion of the awarding authority: (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said name or described materials."*

The Designer shall refer to the law and consult with the Awarding Authority for procedures regarding proprietary items. The Awarding Authority may waive the provisions of this law for "sound reasons in the public interest." No such waiver shall bind the Awarding Authority unless made in writing and executed by the Awarding Authority. Awarding Authority may require that Designer provide documentation that any proprietary item can be maintained by at least two firms prior to waiving the provisions of this law.

**7.6 Accessibility and Non-Discrimination Laws.** The Designer shall perform its services under this Contract in strict compliance with all Laws relating to architectural and program accessibility for persons with disabilities, including without limitation, the applicable sections of the Americans with Disabilities Act of 1990 amended by ADA Amendments Act of 2008 (“ADA”, 42 U.S.C. sections 12101 *et. seq.*; 47 U.S.C. sections 225, 611), the 2010 ADA Standards for Accessible Design (“2010 ADA Standards”), and the Rules and Regulations of the Massachusetts Architectural Access Board (“MAAB”), codified at Section 521 of the Code of Massachusetts Regulations (521 CMR 1.00 *et. seq.*, latest edition). To the extent related to its services under this Contract, the Designer hereby assumes the Public Entities’ obligations, including those that exist under the MAAB’s Rules, and/or the 2010 ADA Standards to design a facility accessible to and usable by persons with disabilities. The Schematic Design/Certifiable Study and all designs provided by the Designer shall reflect the requirements for a design in accordance with the above referenced standards without waivers unless the seeking of such waivers is Approved by the Awarding Authority. Without limiting the foregoing, the Schematic Design/Certifiable Study and all Construction Cost Estimates, and other cost estimates and Deliverables required by this Contract shall reflect specific ADA or MAAB work determined necessary for the Project and any additional accessibility identified by the Awarding Authority. If the Awarding Authority is DCAMM, the Schematic Design/Certifiable Study shall include a copy of the accessibility audit and Designer shall complete the DCAMM Scoping Form for MAAB Compliance for Building Repairs, Alterations, and Renovations (available on the DCAMM website).

**7.7 Copyrights, Patents, and Intellectual Property Rights.** The Designer hereby grants to the Awarding Authority and the Public Entity an irrevocable royalty-free license to use for any lawful public purpose, including without limitation the right to share with other public agencies for their use on projects, the following items developed or made part of the work or services performed under this Contract: all Deliverables, drawings, designs, specifications, photographs, images, notes, materials and other work and ideas of the Designer and its Consultants related to the performance of this Contract which are or may be covered by copyright, patent, or other intellectual property Laws or as to which Designer and its Consultants may assert any rights or establish any claim under any such Laws. The Designer shall incorporate by reference this provision into all contracts with its Consultants and subcontractors on this Project including, but not limited to, architects, engineers, estimators, designers and photographers. The Designer and its Consultants and subcontractors shall not be responsible for changes made in the documents without the Designer's authorization, nor for the Awarding Authority's or other public entity's use of the documents on projects other than the Project, unless this is a contract for design services for a master plan or prototype. The Awarding Authority assumes the risk resulting from any such changes made in the documents without the Designer's authorization, or for the Awarding Authority's or other public entity's use of the documents on projects other than the Project. The Designer shall provide (or, if applicable, shall obtain from Consultants) in a form acceptable to the Awarding Authority any specific waivers necessary to transfer to the Awarding Authority ownership and the right to modify any product generated in the performance of this Contract and protected by intellectual property rights under Law, including, without limitation, the Visual Artists Rights Act 17 U.S.C. § 106A *et seq* and M.G.L. c. 231 § 85S.

**7.8 Security and Confidentiality; Publication.** Except as required for the discharge of its duties to the Awarding Authority under this Contract, or required by subpoena or court order, the Designer agrees to hold all information, documents, and materials obtained or developed in connection with its services under this Contract (including without limitation all prints, plans, policies, procedures, studies, specifications and drawings, which relate to internal layout and structural elements, electrical and mechanical systems, security measures, emergency preparedness, threat or vulnerability assessments, and any other records relating to the security or safety of persons or

buildings, structures, facilities, utilities, transportation or other infrastructure located within the Commonwealth) that Designer should reasonably know to be of a confidential or sensitive nature (“Confidential Information”) in the strictest confidence, and shall not communicate, release, or disclose Confidential Information in any to any third party without the prior written Approval by the Awarding Authority. The Designer shall not use any Confidential Information other than for the performance of services under this Contract. The Designer shall inform all persons to whom any such Confidential Information has been or will be communicated, released or disclosed of the privileged and confidential nature of Confidential Information, and shall ensure that all necessary steps are taken so that such Confidential Information is treated confidentially. Without limiting the foregoing, if the Project is a designated "Security Sensitive Information" project, the Designer shall execute separate Security Sensitive Information Procedures and Confidentiality Agreements and shall comply with such document protection requirements as may be referenced in said agreement.

## **7.9 Confidentiality: Personal Data [M.G.L. c. 66A].**

**7.9.1 Certifications.** For all contracts involving Designer’s access to personal information, as defined in M.G.L. c. 93H, and personal data, as defined in M.G.L. c. 66A or access to agency systems containing such information or data, Designer certifies under the pains and penalties of perjury that Designer:

- (a) has read M.G.L. c. 93H and c. 66A and agrees to protect any and all personal information and personal data; and
- (b) has reviewed all of the “Enterprise Information Security Policies and Standards” published by the Executive Office for Technology Services and Security (“TSS”) or stricter standards prescribed by Awarding Authority.

**7.9.2 Obligations.** Notwithstanding any contractual provision to the contrary, in connection with Designer’s performance under this Contract, for all state agencies in the Executive Department, including all offices, boards, commissions, agencies, departments, divisions, councils, bureaus, and offices, now existing and hereafter established, the Designer shall:

- (a) obtain a copy, review, and comply with the pertinent security guidelines, standards and policies;
- (b) comply with the “Enterprise Information Security Policies and Standards” published by TSS, or a comparable set of policies and standards (“Information Security Policy”) as prescribed by the Commonwealth;
- (c) communicate and enforce such security guidelines, standards, policies and the applicable Information Security Policy among all employees (whether such employees are direct or contracted) and Consultants;
- (d) implement and maintain any other reasonable appropriate security procedures and practices necessary to protect personal information and data to which Designer is given access by Awarding Authority from the unauthorized access, destruction, use, modification, disclosure or loss;
- (e) be responsible for the full or partial breach of any of these terms by its employees (whether such employees are direct or contracted) or Consultants during or after the term of this Contract, and any breach of these terms may be regarded as a material breach of this Contract;

- (f) in the event of any unauthorized access, destruction, use, modification, disclosure or loss of the personal information or personal data (collectively referred to as the “unauthorized use”): (i) immediately notify Awarding Authority if the Designer becomes aware of the unauthorized use; (ii) provide full cooperation and access to information necessary for Awarding Authority to determine the scope of the unauthorized use; and (iii) provide full cooperation and access to information necessary for Awarding Authority and Designer to fulfill any notification requirements.

**7.9.3 Breach.** Breach of these terms may be regarded as a material breach of this Contract, such that the Commonwealth may exercise any and all contractual rights and remedies, including without limitation indemnification, withholding of payments, Contract suspension, or termination. In addition, the Designer may be subject to applicable statutory or regulatory penalties, including and without limitation, those imposed pursuant to M.G.L. c. 93H and under M.G.L. c. 214, § 3B for violations under M.G.L. c. 66A.

## **7.10 Records. Disclosure Statements. Accounting Controls. Audits.**

**7.10.1 Records to be Kept for Six Years.** The Designer shall make, and keep for at least six (6) years after final payment has been made, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Designer. [M.G.L. c. 30, s. 39R(b)(1)-(2)]

**7.10.2 Records Open to Inspection.** Until the expiration of six (6) years after final payment has been made, the Governor or his designee, the Secretary of Administration and Finance, the State Auditor, the Office of the Inspector General, the Commissioner of DCAMM, the Awarding Authority and any other public official authorized by law, shall have the right to examine any books, documents, papers or records of the Designer or of its Consultants and subcontractors that directly pertain to, and involve transactions relating to, the Designer or its Consultants and subcontractors. [M.G.L. c. 30, s. 39R(b)(1)-(2); Executive Order 195]

**7.10.3 Changes in Method of Accounting.** If this Contract is a contract for an amount exceeding \$10,000 or is a contract for the design of a Project with an Estimated Construction Cost exceeding \$100,000, and if the Designer shall make any change in its method of maintaining records that would materially affect any statements filed by the Designer with the Awarding Authority, the Designer shall forthwith deliver to the Awarding Authority a written description of such change, the effective date thereof, and the reasons therefor. The Designer shall submit with such description a letter from the Designer’s independent certified public accountant approving or otherwise commenting on the change. [M.G.L. c. 30, s. 39R(b)(3)] The Designer hereby represents that there have been no such changes to date that have not been so reported to the Awarding Authority.

**7.10.4 Warranty by Designer.** If this Contract is for an amount exceeding \$30,000 or is for the design of a Project with an Estimated Construction Cost exceeding \$300,000, the Designer warrants and represents that Designer has filed a statement of management on internal accounting controls as set forth in Section 7.10.5 (Filing of Statement of Management on Internal Accounting Controls) below prior to the execution hereof. [M.G.L. c. 7C, s. 51]

**7.10.5 Filing of Statement of Management on Internal Accounting Controls.** If this is a Contract for an amount exceeding \$10,000 or is for the design of a Project with an Estimated Construction Cost exceeding \$100,000, the Designer shall file with the Awarding Authority a statement of management as to whether the system of internal accounting controls of the Designer

and its subsidiaries reasonably assures that: (1) transactions are executed in accordance with management's general and specific authorization; (2) transactions are recorded in a standard accounting format i) to permit preparation of financial statements in conformity with generally accepted accounting principles, and ii) to maintain accountability for assets; (3) access to assets is permitted only in accordance with management's general or specific authorization; and (4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference. The Designer shall also file with the Awarding Authority a statement prepared and signed by an independent certified public accountant, stating that the accountant has examined the statement of management on internal accounting controls, and expressing an opinion as to (1) whether the representations of management in response to this section and sections 1 and 2 above are consistent with the result of management's evaluation of the system of internal accounting controls; and (2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements. [M.G.L. c. 7C, s. 51 M.G.L. c. 30, s. 39R(c)]

**7.10.6 Representation Regarding Audited Financial Statement.** If this is a contract for an amount exceeding \$30,000 or is for the design of a Project having an Estimated Construction Cost exceeding \$300,000, the Designer represents that it has filed prior to the execution hereof and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in Section 7.10.7 (Filing of Annual Statement Required) below. [M.G.L. c. 7C, s. 51 M.G.L. c. 30, s. 39R(d)]

**7.10.7 Filing of Annual Statement Required.** The Designer shall annually file with the Commissioner of DCAMM during the term of this Contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the Awarding Authority upon request. [M.G.L. c. 7C, s. 51 M.G.L. c. 30, s. 39R(d)]

**7.10.8 Records Not Public.** Records and statements required to be made, kept or filed under the provisions of this Section 7.10 shall not be public records as defined in M.G.L. c. 4, s. 7 and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of Section 7.10.2 (Records Open to Inspection) above.

## **7.11 Insurance.**

### **7.11.1 General Requirements [M.G.L. c.7C, s. 51].**

- (a) Generally. The Designer shall purchase and maintain insurance of the type and limits listed in this Section with respect to the services to be performed under this Contract. This insurance shall be provided at the Designer's expense and shall be in force and effect for the full term of the Contract or for such longer period as this Section requires. The limits and coverage required by this Section shall in no way limit the liability of the Designer under this Contract.
- (b) Insurance company rating. All policies shall be issued by companies lawfully authorized to write that type of insurance under the Laws of the Commonwealth with a financial strength rating of "A-" or better as assigned by A.M. Best Company, or an equivalent rating assigned by a similar rating agency acceptable to the Awarding Authority, or otherwise acceptable to the Awarding Authority.

- (c) Certificates of insurance. The Designer shall submit three originals of each certificate of insurance acceptable to the Awarding Authority simultaneously with the execution of this Contract. Certificates shall show each type of insurance, insurance company, policy number, amount of insurance, deductibles/self-insured retentions, additional insured status, and policy effective and expiration dates. The Designer shall submit updated certificates prior to the expiration of any of the policies referenced in the certificates so that the Awarding Authority shall at all times possess certificates indicating current coverage. Failure by the Designer to obtain all policy renewals and to provide the respective insurance certificates as required shall constitute just cause for termination of Designer's services under this Contract.
- (d) Termination, cancellation, or modification to policy. Termination, cancellation, or material modification of any insurance required by this Contract, whether by the insurer or the insured, shall not be valid unless written notice thereof is given to the Awarding Authority at least thirty days prior to the effective date thereof, which shall be expressed in said notice.
- (e) Deductible. The Designer is responsible for the payment of any and all deductibles under all of the insurance required below. The Awarding Authority shall not be responsible for the payment of deductibles, self-insured retentions or any portion thereof.
- (f) Excess coverage. The Designer or any Consultant or Subconsultant may elect to carry any other type of insurance coverage or higher limits over the required insurance coverage. Any excess coverage(s) shall be at the sole expense of the Design, Consultant or Subconsultant obtaining such coverage.

**7.11.2 Worker's Compensation, Commercial General Liability, Automobile Liability, Valuable Papers, and Hazardous Materials.** The Designer shall purchase and maintain at its own expense during the life of this Contract the following insurance:

- (a) Workers' Compensation Insurance in accordance with M.G.L. c.152. Employers Liability shall be carried in limits not less than:
  - \$500,000 each accident
  - \$500,000 by disease-policy limit
  - \$500,000 by disease-each employee
- (b) Commercial General Liability Insurance, with a minimum limit written on an occurrence basis with coverage no less broad than the most recent version of ISO CG 00 01. No amending or exclusionary endorsements material to obligations in this Contract may be attached. Limits shall be not less than \$1,000,000 each occurrence. The Public Entity and the Awarding Authority shall each be listed as an additional insured on a form no less broad than CG 20 38.
- (c) Automobile Liability Insurance covering all owned, non-owned and hired automobiles at a limit of not less than \$1,000,000 each accident or loss. Limits may be provided through a combination of primary and umbrella policies.
- (d) Valuable Papers insurance in an amount sufficient to assure the restoration of any plans, drawings, computations, field notes, or other similar data relating to the work covered by this Contract in the event of loss or destruction while in the custody of the Designer until the final fee payment is made or all data is turned over to the Awarding Authority, and this coverage shall include coverage for relevant electronic media including, but not limited to, documents stored in computer aided design drafting (CADD) systems.

- (e) To the extent the Contract requires hazardous material consulting services, the Designer, its Consultant, and/or Subconsultant shall purchase and maintain, or cause to be purchased and maintained, pollution liability coverage for bodily injury and property damage, including loss of use of owned and non-owned damaged or stigmatized property, resulting from liability arising out of pollution related exposures such as asbestos abatement, lead paint abatement, tank removal, removal of contaminated soil, etc. The insurance policy shall cover the liability of Designer, its Consultant, or Subconsultant, as applicable, during the process of removal, storage, transport and disposal of hazardous waste and contaminated solid and/or asbestos abatement. The policy shall include coverage for on-site and off-site bodily injury and loss of damage to, or loss of use of property, directly or indirectly arising out of the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gas, waste materials or other irritants, contaminants or pollutants into or upon the land, the atmosphere or any water course or body of water, whether it be gradual or sudden and accidental. The policy shall also include legal defense, investigation and on and off-site clean-up costs. If coverage is written on a claims-made basis, any retroactive date shall be no later than the effective date of this Contract; and continuous coverage will be maintained or an extended discovery period exercised to ensure that coverage is maintained for six (6) years beginning from the time that work under the Contract is complete. Designer shall submit either (i) renewal insurance certificates to evidence coverage is being maintained throughout the six (6) year period; or (ii) a six (6) year extended reporting period endorsement. The amount of coverage shall be not less than the following unless a higher amount is specified in writing by Awarding Authority, in which case Designer shall provide the additional coverage:

Limit of Liability:	\$1,000,000 per occurrence
	\$3,000,000 aggregate

**7.11.3 *Professional Liability.*** The Designer shall maintain professional liability insurance covering errors and omissions and negligent acts of the Designer, and of any person or entity for whose performance the Designer is legally liable. Unless an alternate amount is otherwise specified in the documents incorporated by reference into Sections 4.1 (Study Design Phase Governing Documents) or 6.2 (Design Phase Governing Documents) of this Contract, the minimum amount of such insurance shall equal the lesser of \$5 1,000,000 or 10% of the Project's Fixed Limit Construction Cost / Estimated Construction Cost but in no event less than \$250,000 per claim. Unless the Designer is specifically required to provide project specific insurance in the documents incorporated by reference into Sections 4.1 (Study Design Phase Governing Documents) or 6.2ARTICLE 6: (Design Phase Governing Documents), the policy may be in a "claims made" format. If the policy is a "claims made" policy, it shall include a retroactive date that is no later than the effective date of this Contract, and Designer shall continue to provide such coverage for a period of at least six (6) years after the earlier of (1) the date of official acceptance of the completed Project by the Awarding Authority; (2) the date of the opening of the Project to public use; (3) the date of the acceptance by the general contractor of a final pay estimate prepared by the Awarding Authority pursuant to M.G.L. chapter 30; or (4) the date of substantial completion of the Construction Contract and the taking of possession of the Project for occupancy by the Awarding Authority or the User Agency, which requirement can be met by providing renewal certificates of professional liability insurance to the Awarding Authority as evidence that this coverage is being maintained; provided, however, that if the Designer is not selected to perform the Design Phase or this Contract is terminated prior to the Design Phase, such extended coverage for "claim made" professional liability policy shall extend for at least six (6) years after the earlier of Approval of the Study or the termination of this Contract.

**7.11.4 Liability of Designer.** Insufficient insurance shall not release the Designer from any liability for breach of its obligations under this Contract. Without limitation, the Designer shall bear the risk of any loss if its valuable papers insurance coverage is insufficient to cover the loss of any work covered by this Contract.

**7.12 Indemnification.** To the fullest extent permitted by law, the Designer shall indemnify, defend and hold harmless the Public Entity, the User Agency, the Awarding Authority and all of their agents, employees, successors and assigns from and against all claims, damages, losses and expenses, including but not limited to court costs, reasonable attorneys' fees, interest and costs to the extent caused by or resulting, in whole or in part, from the willful misconduct and/or negligent acts, errors or omissions of the Designer in performance of the services covered by this Contract, whether by Designer or its employees, Consultants or subcontractors, provided that the Awarding Authority shall notify the Designer of such suits and claims within a reasonable time after the Awarding Authority becomes aware of them. The Designer shall be afforded an opportunity to participate in the defense and/or settlement of all such suits and claims. The Designer shall not be bound by the amount of damages suffered in any litigation or settlement unless the Designer is given the opportunity to participate in negotiations for settlement and/or defense of such litigation or claim. As used in this paragraph, the term "agent" shall specifically exclude any construction-related personnel.

**7.13 Non-Resident Processing; Signatures.** Every Designer that is a nonresident of the Commonwealth of Massachusetts, or a nonresident partner of a Designer, hereby appoints the Secretary of the Commonwealth of Massachusetts to be his true and lawful attorney in and for Massachusetts, upon whom all lawful processes in any action or proceeding arising out of this Contract may be served. When legal process against any such person is served upon the Secretary of State, a copy of such process shall forthwith be sent by registered mail with a return receipt requested by the Awarding Authority or its lawful attorney to said Designer or partner at the address set forth in this Contract. Said Designer or said partner hereby stipulates and agrees that any lawful process against it which is served on said attorney shall be of the same legal force and validity as if served on said Designer or said partner. Such authority shall continue in force so long as any liability remains outstanding against said Designer or said partner.

**7.14 Anti-Boycott Covenant [Executive Order 130].** The Designer warrants, represents and agrees that during the time this Contract is in effect, neither it nor any affiliated company, as hereafter defined, will participate in or cooperate with an international boycott, as defined in section 999 (b) (3) and (4) of the Internal Revenue Code of 1954, as amended, or engage in conduct declared to be unlawful by General Laws Chapter 151E, ss. 2 and 3. If there shall be a breach in the warranty, representation and Contract contained in this section, then without limiting such other rights as it may have the Commonwealth shall be entitled to rescind this Contract. As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the contractor or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interests of the contractor, or which directly or indirectly owns at least 51% of the ownership interests of the contractor.

**7.15 Truth-In-Negotiation Certificate [M.G.L. c. 7C, s. 51].** To the extent that the Designer's fee has been negotiated, the Designer certifies that it has filed a truth-in negotiations certificate in accordance with M.G.L. c. 7C, s. 51 prior to being awarded this Contract. Said certificate is attached hereto as Attachment F-1 – Truth in Negotiations Certificate (Study Phase) and, if

applicable, Attachment F-2 – Truth in Negotiations Certificate (Study Phase Amendment, if applicable) and Attachment F-3 – Truth in Negotiations (Design Phase), and incorporated herein by reference.

- 7.16 Employment Eligibility Verification Requirements [8 U.S.C., ss. 1324a, 1324b; M.G.L. c. 149, s. 19C; Executive Order No. 481].** The Designer certifies under the pains and penalties of perjury they shall not knowingly use undocumented workers in connection with the performance of the Contract; that, pursuant to federal requirements, they shall verify the immigration status of all workers assigned to Contract without engaging in unlawful discrimination; and that they shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker. The Designer understands and agrees that breach of any of these terms during the period of a Contract may be regarded as a material breach, subjecting Designer to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.
- 7.17 Northern Ireland [M.G.L. c. 7, s. 22C].** Pursuant to M.G.L. c. 7 s. 22C, the Designer certifies that it does not employ ten or more employees in an office or other facility in Northern Ireland and if the Designer employs ten or more employees in an office or other facility located in Northern Ireland the Designer certifies that it does not discriminate in employment, compensation, or the terms, conditions and privileges of employment on account of religious or political belief; and it promotes religious tolerance within the work place, and the eradication of any manifestations of religious and other illegal discrimination; and the Designer is not engaged in the manufacture, distribution or sale of firearms, munitions, including rubber or plastic bullets, tear gas, armored vehicles, or military aircraft for use or deployment in any activity in Northern Ireland.
- 7.18 Veteran and Other Preference [Chapter 108 of the Acts of 2012].** The Awarding Authority encourages the participation of Service-Disabled Veteran- Owned Business Enterprises (“SDVOBE”) and Veteran-Owned Business Enterprises (“VBE”) in its construction and design projects pursuant to Chapter 108 of the Acts of 2012 and Executive Order 565. The benchmark for SDVOBE and VBE participation on the Project is 3% of the lump sum established set fee for Study Phase, Schematic Design Phase and Final Design as shown on the Designer Selection Board Advertisement attached hereto as Attachment A – Designer Selection Board Advertisement. For the Commonwealth's VBE and SDVOBE program purposes, a VBE or SDVOBE is a firm so certified directly by the Massachusetts Supplier Diversity Office ("SDO") [www.mass.gov/sdo](http://www.mass.gov/sdo) or is: 1) certified by a certifying agency that's certification is accepted by the SDO; 2) the firm has submitted its existing certification credentials directly to the SDO by submitting an application for verification of certification to the SDO; 3) the SDO has reviewed and granted the application for verification; and 4) the SDO has certified the firm as a VBE or SDVOBE for purposes of the Commonwealth's program as evidenced by a letter issued by the SDO to the firm. VBEs and SDVOBEs shall be provided opportunities to participate in the Project and Designer shall within 30 days of Contract execution submit its “Anticipated Veteran Owned Business and Service-Disabled Veteran-Owned Business Enterprise Participation” plan to the Awarding Authority’s Compliance Office. Designer shall report on the amount of SDVOBE and VBE participation on the Project on a regular basis, in the form, format and frequency requested by the Awarding Authority, including, but not limited to, by electronic reporting through the means requested and, for DCAMM projects, through DCAMM’s online compliance reporting system. The Commonwealth also encourages the participation of Portuguese Business Enterprises (PBE), Lesbian, Gay, Bisexual, and Transgender Business Enterprises (LGBTBE); and Disability-Owned Business Enterprises (DOBE) on its contracts.

**7.19 Minority Business Enterprise & Women Business Enterprise (MBE/WBE) Participation.**

Designer shall comply with the MBE and WBE participation provisions attached hereto as Attachment C – MBE/WBE Participation Provisions and incorporated herein by reference.

**7.20 Non-Discrimination in Employment and Affirmative Action.**

**7.20.1. Compliance.** The Designer shall comply with all Laws promoting fair employment practices or prohibiting employment discrimination and unfair labor practices and shall not discriminate against any qualified employee or applicant for employment because of race, color, national origin, ancestry, age sex, religion, disability, or sexual orientation or for exercising any right afforded by Law. The Designer shall comply with all applicable Laws prohibiting discrimination in employment including but not limited to: Title VII of the Civil Rights Act of 1964; the Age Discrimination in Employment Act of 1967; American With Disabilities Act Title I: Employment, 42 U.S.C. s. 12111 et seq.; M.G.L. c. 151B, s. 4(1); and all relevant administrative orders and executive orders, including Executive Orders 478. If a complaint or claim alleging violation of such statutes, rules or regulations is presented to the Massachusetts Commission Against Discrimination (MCAD), the Designer and its agents agree to cooperate fully with MCAD in the investigation and disposition of such complaint or claim. In the event of the Designer's noncompliance with the provisions of this section, the Awarding Authority shall impose such sanctions as it deems appropriate, including, but not limited to, withholding of payments due the Designer under this Contract until the Designer complies, and termination or suspension of this Contract.

**7.20.2. Nondiscrimination, Diversity, Equal Opportunity and Affirmative Action [Executive Order 526].** The Designer shall not engage in any discriminatory employment practices. By signing this Contract the Designer hereby certifies under the pains and penalties of perjury that the Designer currently complies with and will continue to comply with all federal and state laws, rules and regulations promoting fair employment practices or prohibiting employment discrimination and unfair labor practices and shall not discriminate in the hiring of any applicant for employment nor shall any qualified employee be demoted, discharged or otherwise subject to discrimination in the tenure, position, promotional opportunities, wages, benefits or terms and conditions of their employment because of race, color, national origin, ancestry, age, sex, religion, disability, sexual orientation or for exercising any rights afforded by law. The Designer commits to purchasing supplies and services from certified minority or women-owned businesses, small businesses or businesses owned by socially or economically disadvantaged persons or persons with disabilities.

**7.20.3. Affirmative Action Plan [Executive Order 526].** If the Awarding Authority is a state agency then pursuant to Executive Orders 524 and 526, any Contract with a maximum obligation of fifty thousand dollars (\$50,000) or more must include an Affirmative Action Plan. If this Contract has a maximum obligation of \$50,000 or more then the Affirmative Action Plan attached hereto as Attachment B – Affirmative Action Plan is incorporated herein by reference

**7.20.4. Minority and Women Workforce Reporting.** If the Awarding Authority is a state agency then pursuant to M.G.L. c. 7C, s. 6 and M.G.L. c. 149, s. 44A(2)(G) the Designer shall be required to provide regular reports of the gender and race/ethnicity of employees engaged in work under this contract in the form and format required by DCAMM, including but not limited to, by electronic reporting through the requested means and with the frequency required by DCAMM.

**7.20.5. Material Breach.** Any breach of this Section shall be regarded as a material breach and shall be subject to all other sections of this Contract. The Awarding Authority shall have access to all records which are necessary to document compliance with this section.

- 7.21 Sexual Harassment and Workplace Violence Prevention.** The Commonwealth does not tolerate sexual harassment, workplace violence or a hostile work environment. It is the goal of the Commonwealth of Massachusetts to promote a workplace where people treat each other with dignity and respect. This applies to all Commonwealth employees, consultants, contractors and subcontractors regardless of tier, and covers actions within, by, among and across these groups as they interact with each other. As part of this contract, the Designer agrees to promote a workplace that is free from sexual harassment and workplace violence, and to require all of its subcontractors to agree to the same. Without limiting its other rights and remedies of removal and/or termination, the Awarding Authority reserves the right to remove or terminate individuals and/or contractors whose conduct violates any of the provisions of this paragraph.
- 7.22 Choice of Law.** This Contract shall be construed under and governed by the laws of the Commonwealth of Massachusetts. The Designer, and the agents thereof, agree to bring any federal or state legal proceedings arising under this Contract, in which either the Commonwealth or the Awarding Authority is a party, in a court of competent jurisdiction within the Commonwealth of Massachusetts. This section shall not be construed to limit any rights a party may have to intervene in any action, in any court or wherever, pending, in which the other is a party.
- 7.23 Amendments, Severability, Waivers.** No amendment to this Contract shall be effective unless it is in writing and is executed by authorized representatives of both parties. If any provision of this Contract is declared or found illegal, unenforceable, or void, then both parties shall be relieved of all obligations under that provision. The remainder of the Contract shall be enforced to the fullest extent permitted by law. The Awarding Authority reserves the right to waive any provision or requirement of this Contract if the Awarding Authority determines that such waiver is justified and in the public interest. No such waiver shall be effective unless in writing and signed by the Authorized Representative of the Awarding Authority. No other action or inaction by the Awarding Authority shall be construed as a waiver of any provision of this section.
- 7.24 Non-Appropriation.** Payments are subject to appropriation and shall be made only for work performed in accordance with the terms of this Contract. The Designer shall not be obligated to perform, and may not perform, services outside the duration and scope of this Contract without an appropriate amendment to this Contract, and a sufficient appropriation(s) to support such additional services. The Commonwealth may immediately terminate or suspend this Contract in the event that the appropriation(s) funding this Contract is eliminated or reduced to an amount which will be insufficient to support anticipated future obligations under this Contract.
- 7.25 Notices, Approvals, Invoices.** Notices to the Designer shall be deemed given when hand-delivered to the Designer at the Project site, or when deposited in the U.S. mail addressed to the Designer at the Designer's address specified in this Contract, when delivered by courier to said address, or when delivered via e-mail or facsimile transmission. Unless otherwise specified in writing by the Awarding Authority, notices and deliveries to the Awarding Authority shall be effective only when delivered to the Awarding Authority at the address specified in this Contract and date-stamped at the reception desk or for which a receipt has been signed by the agent or employee designated by the Awarding Authority to receive official notices.
- ~~**7.26 Mandatory Mediation.** In the case of a dispute where the dollar amount in dispute is \$50,000 or more the Awarding Authority and the Designer shall engage in good faith in a non-binding mediation process using the services of a mediator, who shall be an impartial third party not having an interest in the Public Entity, Awarding Authority, User Agency, Designer, any~~

~~construction contractor on the Project, or the Project. Such mediation process shall be conducted within ninety (90) days from the date that either party submits to the other a written request therefor. The parties shall make good faith efforts to agree on the selection of a mediator experienced in mediating building design and construction disputes. The cost of the services of any mediator selected jointly by the parties to this Contract shall be borne equally by the Designer and the Awarding Authority.~~

**7.27 Independent Contractor.** The Designer is an independent contractor with respect to its duties under this Contract. No act or direction of Awarding Authority shall be deemed to be the exercise of supervision or control of the Designer's performance hereunder. Under no circumstances shall the Designer be deemed a "state employee" or a "special state employee" for the purposes of receiving protection from liability under the provisions of M.G.L. c. 258.

**7.28 Certifications of Designer Made Under Pains and Penalties of Perjury.** No changes shall be made in the matters represented in this Section at any time during the life of this Contract without written notification to the Awarding Authority and when required, receipt of written Approval from the Awarding Authority. (Attach additional sheets if necessary for each section.)

**7.28.1. Designer's Beneficial Owners.** By signing this Contract, the Designer certifies under the penalties of perjury that entities and individuals named in Attachment K – Certifications of Designer Made Under Pains and Penalties of Perjury are the legal and beneficial owners of the Designer as of the date of the execution hereof.

**7.28.2. Professional Registrants.** By signing this Contract, the individual executing this Contract on behalf of the Designer certifies under the penalties of perjury that the individuals named in Attachment K – Certifications of Designer Made Under Pains and Penalties of Perjury are registered by the Commonwealth as architects, landscape architects, or engineers pursuant to the provisions of General Laws Chapter 112, ss. 60A - 60O and further that (a) if the Designer is an individual the Designer is the individual named below, (b) if the Designer is a partnership, the majority of all the partners are persons who are registered architects, landscape architects, or engineers, (c) if the Designer is a corporation, sole proprietorship or joint stock company or other entity, the majority of the directors or a majority of the stock ownership and the chief executive officer, are persons who are registered architects, landscape architects, or engineers and the person to have the Project in his or her charge is registered in the discipline required for the Project, or (d) if the Designer is a joint venture, each joint venturer satisfies the requirements of the preceding clauses (a) – (c) as the case may be. [M.G.L. c. 7C, s. 48]

**7.28.3. Resume on File with Designer Selection Board.** By signing this Contract, the Designer certifies under the penalties of perjury that in accordance with the provisions of M.G.L. c. 29, s. 29A (4) a resume of the Designer has been filed with the Designer Selection Board.

**7.28.4. No Inducements.** By signing this Contract, the Designer certifies under the penalties of perjury that the Designer has not given, offered or agreed to give any person, corporation, or other entity any gift, contribution or offer of employment as an inducement for, or in connection with, the award of the Contract for design services; no consultant to or subcontractor for the Designer has given, offered or agreed to give any gift, contribution or offer of employment to the Designer, or to any other person, corporation, or entity as an inducement for, or in connection with, the award to the consultant or subcontractor of a contract by the Designer; and no person, corporation or other entity, other than a bona fide full-time employee of the Designer has been retained or hired by the Designer to solicit for or in any way assist the Designer in obtaining the Contract for design services upon an Contract or understanding that such person, corporation or

other entity be paid a fee or other consideration contingent upon the award of the Contract to the Designer. [M.G.L. c. 7C, s. 51]

**7.28.5. Tax Returns.** By signing this Contract, the Designer certifies under the penalties of perjury that pursuant to General Laws Chapter 62C, s. 49A, the Designer has filed all state tax returns, paid all taxes and complied with all Laws of the Commonwealth relating to taxes; and that pursuant to General Laws Chapter 151A, s. 19A, the Designer has complied with all Laws of the Commonwealth relating to contributions and payments in lieu of contributions to the Employment Security System.

**7.28.6. Existing Government Contracts.** By signing this Contract, the Designer certifies under the penalties of perjury that the list in Attachment K – Certifications of Designer Made Under Pains and Penalties of Perjury is a listing of all other existing contracts or income derived by Designer from the Commonwealth or any political subdivision thereof or public authority therein, from the Federal Government or any agency thereof, and from the Awarding Authority or any governmental source for services rendered. [M.G.L. c. 7C, s. 48]:

**7.28.7. Annual Reports: Corporate Filings.** By signing this Contract, the Designer certifies under the penalties of perjury that, if the Designer is a corporation, the Corporation has filed with the Secretary of State all certificates and annual reports required by Chapter 156B, s. 109 (Business Corporation), by Chapter 156D (Foreign Corporation), or by Chapter 180, s. 26A (Non-Profit Corporation) of the Massachusetts General Laws.

**7.28.8. Dependent Care Assistance Program.** By signing this Contract, the Designer certifies under the penalties of perjury that, at the time of execution, Designer is in compliance with the provisions of section 7 of Chapter 521 of the Acts of 1990 as amended by Chapter 329 of the Acts of 1991, and 102 CMR 12.00 and the Contractor is either a "qualified employer" because it has fifty (50) or more full time employees and has established a dependent care assistance program, child care tuition assistance, or on-site or near-site child care placements, or is an "exempt employer."

**7.28.9. Debarment: Suspension.** By signing this Contract, the Designer certifies under the penalties of perjury that the Designer is not currently debarred or suspended by the Commonwealth of Massachusetts, or any of its entities or subdivisions under any Commonwealth law or regulation, including but not limited to M.G.L. c. 29, s. 29F and M.G.L. c. 152, s. 25C, or any other state, and that it is not currently debarred or suspended by the Federal Government under any federal law or regulation.

#### **ADDENDUM REGARDING DESIGNER PROCEDURES MANUAL:**

**DCAMM's Designers Procedures Manual is under revision to reflect the fact that schematic design is now included in what formerly was referred to as the Study. The Draft Study of this Contract incorporates the services of the "Study Phase" of the Designers Procedures Manual, except for "Final Performance Evaluation" and "Study Certification". The Schematic Design/Certifiable Study of this Contract incorporates the services of the "Schematic Design Phase", the "Final Performance Evaluation", and "Study Certification" of the Designers Procedures Manual. In case of any conflict between the terms of this Contract and the current Designers Procedures Manual, the terms of this Contract and the Approved Work Plan shall control. If updates are completed during the term of this Contract, DCAMM shall provide Designer with the revised Designers Procedures Manual when it has been completed and, provided that it is consistent with the terms of**

**this Contract and the Approved Work Plan, the Designer shall conform its work to the revised version of the Designers Procedures Manual.**

**[THIS SPACE IS INTENTIONALLY BLANK.  
SIGNATURES TO FOLLOW ON NEXT PAGE]**

**SIGNATURES**

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the date of its execution by the Commonwealth of Massachusetts below, first written above and the individual executing this Contract on behalf of the Designer makes the representations and certifications set forth in this Contract under the pains and penalties of perjury.

---

**DESIGNER:**

\_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_  
hereunto duly authorized

Date: \_\_\_\_\_

**AWARDING AUTHORITY:**

\_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_  
hereunto duly authorized

Date: \_\_\_\_\_

Approval as to Form: \_\_\_\_\_  
(Signature)

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date : \_\_\_\_\_

\*\* If this Contract is executed by the Authorized Representative, then the Authorized Representative hereby certifies that this Contract award has received the prior Approval of the chief executive officer of the Awarding Authority.

**Attachment A – Designer Selection Board Advertisement and Designer Application**

**Attachment B – Affirmative Action Plan**

**(NOT REQUIRED FOR THE TOWN ORLEANS)**

**Attachment C – MBE/WBE Participation Provisions**

**(NOT REQUIRED FOR THE TOWN ORLEANS)**

**AGENCY SPECIFIC PROVISIONS REGARDING PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES**

**THE FOLLOWING PROVISIONS APPLY TO DESIGNERS CONTRACTING WITH DCAMM:**

The following provisions establishing goals and procedures to ensure full participation by minority business enterprises (“MBEs”) and women businesses enterprises (“WBEs”) (collectively “MBE/WBE’s”) on this Contract are included pursuant to M.G.L. c.7C, § 6; Executive Order 524 and Executive Order 526.

**1. Goals.**

- a. The separate Minority Business Enterprise and Women Business Enterprise (MBE & WBE) participation goals for this Contract are the following percentages of fee for Study Phase, Schematic Design Phase and Final Design (also set forth in the Designer Selection Board Advertisement attached to this Contract in Attachment A – Designer Selection Board Advertisement and Designer Application): \_\_\_\_\_% MBE and \_\_\_\_\_% WBE.
- b. The Designer shall comply with all of the terms and conditions of this Contract, which include the provisions pertaining to MBE/WBE participation set forth in the Designer Selection Board’s request for applications, incorporated herein by reference, in order to meet the MBE/WBE participation goal established for this Contract.
- c. MBE or WBE participation credit will be given for the value of the work under the Contract by Designer (only if Designer is itself a Supplier Diversity Office (SDO) certified MBE or WBE firm) and each MBE and WBE Consultant or subcontractor (hereafter “subcontractors”) to the Designer.

**2. MBE/WBE Status.**

- a. A minority owned business shall be considered an MBE only if it has been certified as a minority business enterprise by the Supplier Diversity Office (SDO).
- b. A woman owned business shall be considered a WBE only if it has been certified as a woman business enterprise by SDO.
- c. Certification as a disadvantaged business enterprise (“DBE”), certification as an MBE/WBE by any agency other than SDO, or submission of an application to SDO for certification as an MBE/WBE shall not confer MBE/WBE status on a firm for the purposes of this Contract. Please note that only firms SDO certified as MBE or WBEs can be credited toward meeting project MBE or WBE goals.

**3. Subcontracts with MBE/WBEs.**

- a. The parties acknowledge that the Designer has submitted to d DCAMM for approval and that DCAMM has approved a Schedule of MBE/WBE Participation and Letters of Intent

for each of the MBE/WBEs who will perform work under this Contract for MBE/WBE participation credit.

- b. Within seven (7) days after the Notice to Proceed is received by the Designer, the Designer shall (i) execute a subcontract with each MBE/WBE who has executed a Letter of Intent approved by DCAMM, and (ii) furnish DCAMM with a signed copy of each such subcontract.

#### **4. Performance of Contract Work by MBE/WBEs.**

- a. The Designer shall not perform with its own organization or subcontract or assign to any other firm work designated to be performed by any MBE/WBE in the Letters of Intent or Schedule of MBE/WBE Participation (“MBE/WBE Work”) without the prior written approval of DCAMM, nor shall any MBE/WBE assign or subcontract to any other firm, or permit any other firm to perform any of its MBE/WBE Work without the prior written approval of DCAMM. Any such unapproved assignment, subcontracting, sub-subcontracting, or performances of MBE/WBE Work by others shall be a change in the MBE/WBE Work for the purposes of this Contract. DCAMM shall not apply to the MBE/WBE participation goal(s) any sums attributable to such unapproved assignments, sub-contracts, sub-subcontracts, or performance of MBE/WBE work by others.
- b. The Designer shall be responsible for monitoring the performance of MBE/WBE Work to ensure that each scheduled MBE/WBE performs its own MBE/WBE Work.
- c. The Designer shall periodically submit to DCAMM a completed and executed Designer’s Certification of Payment to Minority and Women Business Enterprises in the form and by the method required by DCAMM. DCAMM shall establish the schedule for submitting such certifications.
- d. The Designer and each MBE/WBE shall provide DCAMM with all other information and documentation that DCAMM determines is necessary to ascertain whether or not an MBE/WBE has performed its own MBE/WBE Work as set forth in its Letter of Intent.
- e. At the discretion of DCAMM, the failure of the Designer to submit a required Designer’s Certification of Payment to Minority and Women Business Enterprises or any other documentation that DCAMM has determined is necessary to ascertain whether or not an MBE/WBE has performed its own MBE/WBE Work as set forth in its Letter of Intent shall establish conclusively for the purpose of giving MBE/WBE participation credit under this Contract that such MBE/WBE did not perform such work.

#### **5. Notification of Changes in MBE/WBE Work.**

- a. If at any time during the performance of the Contract the Designer determines or has reason to believe that (i) a scheduled MBE/WBE is unable or unwilling to perform its MBE/WBE Work, or (ii) there has been or will be a change in the value or scope of any MBE/WBE Work, or that a party different from the scheduled MBE/WBE will perform all or part of such work, or (iii) the Designer will be unable to meet the MBE/WBE participation goal(s) for this Contract for any reason, the Designer shall immediately notify DCAMM Compliance Office in writing of such circumstances.

- b. Any notice that there will be a change in the value or scope of MBE/WBE Work or that a party different from the scheduled MBE/WBE will be performing such work, that is given to DCAMM pursuant to subparagraph (a) above shall include a revised Schedule of MBE/WBE Participation and additional or amended Letters of Intent and subcontracts, as the case may be, all of which shall be subject to the approval of DCAMM.

**6. Actions Required if there is a Reduction in MBE/WBE Participation.**

- a. In the event there is a change or reduction in any MBE/WBE Work which will result in the Designer failing to meet the MBE/WBE participation goal(s) for this Contract, other than a reduction in MBE/WBE Work resulting from a change in the Contract work ordered by DCAMM, then the Designer shall make a diligent, good faith effort to make up the shortfall in MBE/WBE participation as follows:
  - i. The Designer shall identify all items of work remaining to be performed under the Contract that may be made available for subcontracting to MBE/WBEs and shall send a list of such items of work to DCAMM for its approval. The Designer shall also send DCAMM a list of the remaining contract work that may not be made available to MBE/WBEs in the Designer's opinion, and a statement of the reason why each such item of work may not be made available for subcontracting to MBE/WBEs.
  - ii. The Designer shall send written notices soliciting proposals to perform the items of work that may be made available for subcontracting to MBE/WBEs to all MBE/WBEs qualified to perform such work. The Designer shall advise DCAMM of (I) each MBE/WBE solicited, and (II) each MBE/WBE listed in the SDO directory under the applicable professional category who was not solicited and the reasons therefor. The Designer shall also advise DCAMM of the dates that notices were mailed and provide a copy of the written notice(s) sent.
  - iii. The Designer shall make reasonable efforts to follow up the written notices sent to MBE/WBEs with telephone calls or personal visits in order to determine with certainty whether the MBE/WBEs were interested in performing the work. Phone logs or other documentation must be submitted to DCAMM evidencing this effort.
  - iv. The Designer shall make reasonable efforts to assist MBE/WBEs that need assistance in obtaining insurance or lines of credit in order to perform work under the Contract, and shall provide DCAMM with evidence that such efforts were made.
  - v. The Designer shall provide DCAMM with a statement of the response received from each MBE/WBE solicited, including the reason for rejecting any MBE/WBE who submitted a proposal.
  - vi. The Designer shall take any additional measures reasonably requested by DCAMM to meet the MBE/WBE participation goal(s) established for this Contract.

- vii. The Designer shall submit to DCAMM all information or documentation that is necessary in the judgment of DCAMM to ascertain whether or not the Designer has complied with any of the provisions of this Article.

**7. Suspension of Payment and/or Performance for Noncompliance.**

- a. If at any time during the performance of the Contract, DCAMM determines or has reason to believe that (i) there has been a change or reduction in any MBE/WBE Work which will result in the Designer failing to meet the MBE/ WBE participation goal(s) for this Contract, other than a reduction in MBE/WBE Work resulting from a change in the Contract work ordered by DCAMM, and (ii) the Designer has failed to comply with all of the terms and conditions of paragraphs 1 through 6 above, DCAMM may:
  - i. suspend payment to the Designer of an amount equal to the value of the work which was to have been performed by a MBE/WBE pursuant to the Designer's Schedule of MBE/WBE Participation but which was not so performed, in order to ensure that sufficient contract funds will be available if liquidated damages are assessed pursuant to paragraph 8, and/or
  - ii. suspend the Designer's performance of this Contract in whole or in part.
- b. DCAMM shall give the Designer prompt written notice of any action taken pursuant to paragraph (a) above and shall give the Designer and any other interested party, including any MBE/WBEs, an opportunity to present evidence to DCAMM that the Designer is in compliance with the requirements of this Article or that there is some justifiable reason for waiving the requirements of this Article in whole or in part. DCAMM may invite SDO and the Massachusetts Commission Against Discrimination to participate in any proceedings undertaken pursuant to this paragraph.
- c. Upon a showing that the Designer is in full compliance with the requirements of this Article, or that the Designer has met or will meet the MBE/WBE participation goals for this Contract, DCAMM shall release any funds withheld pursuant to clause (i) and lift any suspension of the Designer's performance under clause (ii).

**8. Liquidated Damages: Termination.**

- a. If payment by DCAMM or performance by the Designer is suspended by DCAMM as provided in paragraph 7 above, DCAMM shall have the following rights and remedies if the Designer thereafter fails to take all action necessary to bring the Designer into full compliance with the requirements of this Article, or if full compliance is no longer possible because the default of the Designer is no longer susceptible to cure, or if the Designer fails to take such other action as may be required to meet the MBE/WBE participation goals set forth in Paragraph 1:
  - i. DCAMM may terminate this Contract, and/or
  - ii. DCAMM may retain from final payment to the Designer, as liquidated damages, an amount not to exceed the difference between the total of the MBE/WBE participation goals set forth in paragraph 1 of this Article, and any amounts paid or owing to MBE/WBE's for MBE/WBE Work actually performed by them under this Contract, the parties agreeing that the damages for failure to meet the

MBE/WBE participation goals are difficult to determine and that the foregoing amount to be retained by DCAMM represents the parties' best estimate of such damages.

- b. Before exercising its rights and remedies hereunder, DCAMM may, but DCAMM shall not be obligated to, give the Designer and any other interested party another opportunity to present evidence to DCAMM that the Designer is in compliance with the requirements of this Article or that there is some justifiable reason for waiving the requirements of this Article in whole or in part. DCAMM may invite SDO and the Massachusetts Commission Against Discrimination to participate in any proceedings undertaken hereunder.

**9. Division of Capital Asset Management Right to Waive Provisions of this Article in Whole or In Part.**

- a. DCAMM reserves the right to waive any provision or requirement of this Article if DCAMM determines that such waiver is justified and in the public interest.
- b. No such waiver shall be effective unless in writing and signed by a representative of DCAMM Compliance Office or Office of the General Counsel. No other action or inaction by DCAMM shall be construed as a waiver of any provision of this Article.

**Attachment D – Intentionally Omitted**

**Attachment E-1 – Corporate Vote or Other Evidence of Authority (Study Phase)**

\_\_\_\_\_20\_\_\_\_\_

I hereby certify that I am the \_\_\_\_\_ clerk, \_\_\_\_\_, assistant clerk, \_\_\_\_\_ managing partner of

\_\_\_\_\_. (the “Corporation”) and that at a  
(Name of Corporation/Partnership)

duly authorized meeting of the Board of Directors of the Corporation/Partners held on

\_\_\_\_\_ in \_\_\_\_\_ at which a quorum was  
(Date) (Location)

present and voting it was voted to authorize \_\_\_\_\_  
(Name)

\_\_\_\_\_ of the Corporation/Partnership to (Officer Title)  
execute and deliver on behalf of the Corporation/Partnership the following contract and to act as principal to  
execute the contract and make Certifications in connection therewith, which contract and certifications were  
presented to and made a part of the records of said meeting:

**Mass State Project No.**

Project Title:

**I further certify that \_\_\_\_\_ is the duly qualified and acting**  
(Name of Corporate Officer/Partner)

\_\_\_\_\_ of the Corporation/Partnership and that said vote  
(Officer Title)

has not been repealed, rescinded or amended.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

(CORPORATE SEAL)

SUBSCRIBED AND SWORN TO THIS \_\_\_\_\_ DAY OF \_\_\_\_\_ 20\_\_\_\_ BEFORE ME

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**Attachment E-2 – Corporate Vote or Other Evidence of Authority (Study Phase Amendment,  
if applicable)**

\_\_\_\_\_20\_\_\_\_\_

I hereby certify that I am the \_\_\_\_\_ clerk, \_\_\_\_\_, assistant clerk, \_\_\_\_\_ managing partner of

\_\_\_\_\_. (the “Corporation”) and that at a

(Name of Corporation/Partnership)

duly authorized meeting of the Board of Directors of the Corporation/Partners held on

\_\_\_\_\_ in \_\_\_\_\_ at which a quorum was

(Date)

(Location)

present and voting it was voted to authorize \_\_\_\_\_

(Name)

\_\_\_\_\_ of the Corporation/Partnership to (Officer Title)  
execute and deliver on behalf of the Corporation/Partnership the following contract and to act as principal to  
execute the contract and make Certifications in connection therewith, which contract and certifications were  
presented to and made a part of the records of said meeting:

Mass State Project No.

Project Title:

I further certify that \_\_\_\_\_ is the duly qualified and acting

(Name of Corporate Officer/Partner)

\_\_\_\_\_ of the Corporation/Partnership and that said vote

(Officer Title)

has not been repealed, rescinded or amended.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

(CORPORATE SEAL)

SUBSCRIBED AND SWORN TO THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_ BEFORE ME

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**Attachment E-3 – Corporate Vote or Other Evidence of Authority (Design Phase)**

\_\_\_\_\_ 20 \_\_\_\_\_

I hereby certify that I am the \_\_\_\_\_ clerk, \_\_\_\_\_, assistant clerk, \_\_\_\_\_ managing partner of \_\_\_\_\_  
(the “Corporation”) and that at a  
- (Name of Corporation/Partnership)

duly authorized meeting of the Board of Directors of the Corporation/Partners held on

\_\_\_\_\_ in \_\_\_\_\_ at which a quorum was  
(Date) (Location)

present and voting it was voted to authorize \_\_\_\_\_

(Name)  
\_\_\_\_\_ of the Corporation/Partnership to  
(Officer Title)

execute and deliver on behalf of the Corporation/Partnership the following contract and to act as principal to execute the contract and make Certifications in connection therewith, which contract and certifications were presented to and made a part of the records of said meeting:

Mass State Project No. \_\_\_\_\_

Project Title: \_\_\_\_\_

I further certify that \_\_\_\_\_ is the duly qualified and acting  
(Name of Corporate Officer/Partner)

\_\_\_\_\_ of the Corporation/Partnership and that said vote  
(Officer Title)

has not been repealed, rescinded or amended.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

(CORPORATE SEAL)

SUBSCRIBED AND SWORN TO THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_ BEFORE ME

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**Attachment F-1 – Truth in Negotiations Certificate (Study Phase)**

The Designer hereby certifies and agrees to the following:

- a) The Designer certifies that the wage rates and other costs, if any, used to support the Designer's compensation are accurate, complete, and current at the time of contracting; and
- b) The Designer agrees that the Basic Fee, fees for Additional Services, and reimbursements for costs and expenses specified in this Contract as it may be modified from time to time may be adjusted within one year of completion of the Contract to exclude any significant amounts if DCAMM, or the Awarding Authority, determines that the fee was increased by such amounts due to inaccurate, incomplete, or noncurrent wage rates or other costs.

Designer : \_\_\_\_\_

By: \_\_\_\_\_  
duly authorized

Print Name \_\_\_\_\_

Date: \_\_\_\_\_

**Attachment F-2 – Truth in Negotiations Certificate (Study Phase Amendment, if applicable)**

The Designer hereby certifies and agrees to the following:

- a) The Designer certifies that the wage rates and other costs, if any, used to support the Designer's compensation are accurate, complete, and current at the time of contracting; and
- b) The Designer agrees that the Basic Fee, fees for Additional Services, and reimbursements for costs and expenses specified in this Contract as it may be modified from time to time may be adjusted within one year of completion of the Contract to exclude any significant amounts if DCAMM, or the Awarding Authority, determines that the fee was increased by such amounts due to inaccurate, incomplete, or noncurrent wage rates or other costs.

Designer : \_\_\_\_\_

By: \_\_\_\_\_  
duly authorized

Print Name \_\_\_\_\_

Date: \_\_\_\_\_

**Attachment F-3 – Truth in Negotiations Certificate (Design Phase)**

The Designer for design services for

\_\_\_\_\_ ,

hereby certifies and agrees to the following:

- a) The Designer certifies that the wage rates and other costs used to support the Designer's compensation are accurate, complete, and current at the time of contracting; and
- b) The Designer agrees that the original contract price and any additions to the contract may be adjusted within six years of completion of the contract to exclude any significant amounts if the Awarding Authority determines that the fee was increased by such amounts due to inaccurate, incomplete, or noncurrent wage rates or other costs.

Designer Firm:

\_\_\_\_\_

Printed Name: \_\_\_\_\_  
duly authorized

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**Attachment G – Design Phase Scope of Services**

*[TO BE COMPLETED WITH SPECIFIC PROJECT REQUIREMENTS IF CONTRACT IS AMENDED TO AUTHORIZE DESIGN PHASE.]*

**Attachment H – Awarding Authority’s Design Procedures (For use by Agencies Other than DCAMM)**

**1. Indicate whether Designer is required to use the DCAMM Standard Specification:**

**Not Applicable**

**2. Indicate whether Designer is required to follow the DCAMM Designers Procedures Manual - Not Applicable**

**3. Indicate any other procedures or standards applicable to this Contract:**

**Attachment I – Designer’s Personnel Assigned to Project**

**(Provide Name, Title and Project Role for Each Individual Listed)**

**INFORMATION TO BE PROVIDED WITH THE SUBMISSION OF  
QUALIFICATIONS**

**Attachment J – Certified Billing Rates of Designer’s and Designer’s Consultant’s Personnel**

**TO BE SUBMITTED DURING THE CONTRACT NEGOTIATION PHASE**

**(Use additional sheets if necessary. Do not list any support staff.)**

The following categories are to be completed for each Consultant Firm. Use additional sheets if necessary.

**Design Firm Principal:**

**Design Firm Associate:**

**Design Firm Project Manager:**

**Design Firm Project Architect:**

**Design Firm CAD Operator:**

---

**Name of Consultant Firm:**

**Consultant Principal:**

**Consultant Associate:**

**Consultant Project Manager:**

**Consultant Project Engineer:**

**Consultant CAD Operator:**

---

**Name of Consultant Firm:**

**Consultant Principal:**

**Consultant Associate:**

**Consultant Project Manager:**

**Consultant Project Engineer:**

**Consultant CAD Operator:**

---

**Name of Consultant Firm:**

**Consultant Principal:**

**Consultant Associate:**

**Consultant Project Manager:**

**Consultant Project Engineer:**

**Consultant CAD Operator:**

---

**Name of Consultant Firm:**

**Consultant Principal:**

**Consultant Associate:**

**Consultant Project Manager:**

**Consultant Project Engineer:**

**Consultant CAD Operator:**

**Attachment K – Certifications of Designer Made Under Pains and Penalties of Perjury**

*Attach additional sheets if necessary to complete any of the following information.*

**1) Designer’s Beneficial Owners**

CORPORATION: (Names of Officers and Shareholders of Corporation, including their titles)

_____	_____
_____	_____
_____	_____

PARTNERSHIP: (Names of all Partners):

_____	_____
_____	_____
_____	_____

INDIVIDUAL (Name of Owner):

\_\_\_\_\_

**2) Professional Registrants**

Name                      Title                      Mass. Registration

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

NOTE: The above information must be completed to comply with the provisions of General Laws Chapter 7C, s. 44. Programmers and construction managers are not required to be registered under s. 44.

Designer warrants that the Massachusetts registered principal of the Designer responsible for the project is:

Name

\_\_\_\_\_

**3) Existing Government Contracts**

Contract Description & Awarding Authority	Present Status % Design/Construction	Fee Received	Total Fee Anticipated

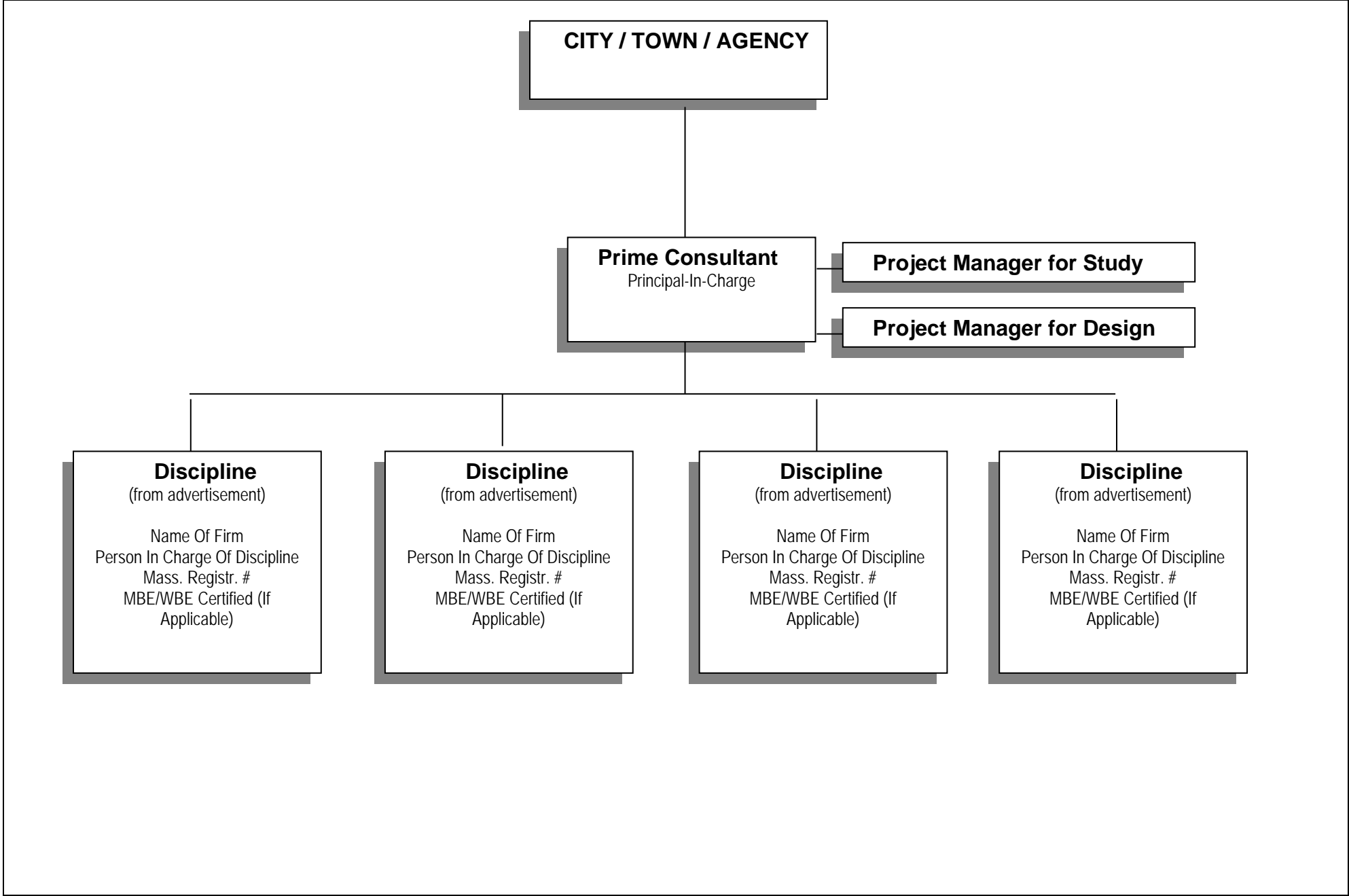
*REMAINDER OF PAGE INTENTIONALLY BLANK.*





<b>Commonwealth of Massachusetts</b>  <b>Standard Designer Application</b> <b>Form for Municipalities and Public</b> <b>Agencies not within DSB</b> <b>Jurisdiction (Updated July 2016)</b>	1. Project Name/Location For Which Firm Is Filing:	2. Project #					
	This space for use by Awarding Authority only.						
3a. Firm (Or Joint-Venture) - Name and Address Of Primary Office To Perform The Work:	3. Name Of Proposed Project Manager: For Study: (if applicable) For Design: (if applicable)						
3b. Date Present and Predecessor Firms Were Established:	3f. Name and Address Of Other Participating Offices Of The Prime Applicant, If Different From Item 3a Above:						
3c. Federal ID #:	3g. Name and Address Of Parent Company, If Any:						
3d. Name and Title Of Principal-In-Charge Of The Project (MA Registration Required):  Email Address:  Telephone No: Fax No.:	3. Check Below If Your Firm Is Either: (1) SDO Certified Minority Business Enterprise (MBE) <input type="checkbox"/> (2) SDO Certified Woman Business Enterprise (WBE) <input type="checkbox"/> (3) SDO Certified Minority Woman Business Enterprise (M/WBE) <input type="checkbox"/> (4) SDO Certified Service Disabled Veteran Owned Business Enterprise (SDVOBE) <input type="checkbox"/> (5) SDO Certified Veteran Owned Business Enterprise (VBE) <input type="checkbox"/>						
4. Personnel From Prime Firm Included In Question #3a Above By Discipline (List Each Person Only Once, By Primary Function -- Average Number Employed Throughout The Preceding 6 Month Period. Indicate Both The Total Number In Each Discipline And, Within Brackets, The Total Number Holding Massachusetts Registrations):							
Admin. Personnel	_____ ( _____ )	Ecologists	_____ ( _____ )	Licensed Site Profs.	_____ ( _____ )	Other	_____ ( _____ )
Architects	_____ ( _____ )	Electrical Engrs.	_____ ( _____ )	Mechanical Engrs.	_____ ( _____ )	_____	_____ ( _____ )
Acoustical Engrs.	_____ ( _____ )	Environmental	_____ ( _____ )	Planners: Urban./Reg.	_____ ( _____ )	_____	_____ ( _____ )
Civil Engrs.	_____ ( _____ )	Fire Protection	_____ ( _____ )	Specification Writers	_____ ( _____ )	_____	_____ ( _____ )
Code Specialists	_____ ( _____ )	Geotech. Engrs.	_____ ( _____ )	Structural Engrs.	_____ ( _____ )	_____	_____ ( _____ )
Construction Inspectors	_____ ( _____ )	Industrial	_____ ( _____ )	Surveyors	_____ ( _____ )	_____	_____ ( _____ )
Cost Estimators	_____ ( _____ )	Interior Designers	_____ ( _____ )	_____	_____ ( _____ )	_____	_____ ( _____ )
Drafters	_____ ( _____ )	Landscape	_____ ( _____ )	_____	_____ ( _____ )	Total	_____ ( _____ )
5. Has this Joint-Venture previously worked together? <input type="checkbox"/> Yes <input type="checkbox"/> No							

6. List **ONLY** Those Prime And Sub-Consultant Personnel Specifically Requested In The Advertisement. This Information Should Be Presented Below In The Form Of An Organizational Chart. Include Name Of Firm And Name Of The One Person In Charge Of The Discipline, With Mass. Registration Number, As Well As MBE/WBE Status, If Applicable:



7. Brief Resume of ONLY those Prime Applicant and Sub-Consultant personnel requested in the Advertisement. <u>Include Resumes of Project Managers</u> . Resumes should be consistent with the persons listed on the Organizational Chart in Question # 6. Additional sheets should be provided only as required for the number of Key Personnel requested in the Advertisement and they must be in the format provided. By including a Firm as a Sub-Consultant, the Prime Applicant certifies that the listed Firm has agreed to work on this Project, should the team be selected.	
a. Name and Title Within Firm:	a. Name and Title Within Firm:
b. Project Assignment:	b. Project Assignment:
c. Name and Address Of Office In Which Individual Identified In 7a Resides: <div style="text-align: right;">           MBE <input type="checkbox"/>            WBE <input type="checkbox"/>            SDVOBE <input type="checkbox"/>            VBE <input type="checkbox"/> </div>	c. Name and Address Of Office In Which Individual Identified In 7a Resides: <div style="text-align: right;">           MBE <input type="checkbox"/>            WBE <input type="checkbox"/>            SDVOBE <input type="checkbox"/>            VBE <input type="checkbox"/> </div>
d. Years Experience: With This Firm: _____ With Other Firms: _____	d. Years Experience: With This Firm: _____ With Other Firms: _____
e. Education: Degree(s) /Year/Specialization	e. Education: Degree(s) /Year/Specialization
f. Active Registration: Year First Registered/Discipline/Mass Registration Number	f. Active Registration: Year First Registered/Discipline/Mass Registration Number
g. Current Work Assignments and Availability For This Project:	g. Current Work Assignments and Availability For This Project:
h. Other Experience and Qualifications Relevant To The Proposed Project: (Identify Firm By Which Employed, If Not Current Firm):	h. Other Experience and Qualifications Relevant To The Proposed Project: (Identify Firm By Which Employed, If Not Current Firm):

8a. Current and Relevant Work By Prime Applicant Or Joint-Venture Members. Include <b>ONLY</b> Work Which Best Illustrates Current Qualifications In The Areas Listed In The Advertisement (List Up To But Not More Than 5 Projects).					
a. Project Name And Location Principal-In-Charge	b. Brief Description Of Project And Services (Include Reference To Relevant Experience)	c. Client's Name, Address And Phone Number (Include Name Of Contact Person)	d. Completion Date (Actual Or Estimated)	e. Project Cost (In Thousands)	
				Construction Costs (Actual, Or Estimated If Not Completed)	Fee for Work for Which Firm Was Responsible
(1)					
(2)					
(3)					
(4)					
(5)					

8b. List Current and Relevant Work By Sub-Consultants Which Best Illustrates Current Qualifications In The Areas Listed In The Advertisement (Up To But Not More Than 5 Projects For Each Sub-Consultant). Use Additional Sheets Only As Required For The Number Of Sub-Consultants Requested In The Advertisement.

Sub-Consultant Name:

a. Project Name and Location Principal-In-Charge	b. Brief Description Of Project and Services (Include Reference To Relevant Experience	c. Client's Name, Address And Phone Number. Include Name Of Contact Person	d. Completion Date (Actual Or Estimated)	e. Project Cost (In Thousands)	
				Construction Costs (Actual, Or Estimated If Not Completed)	Fee For Work For Which Firm Was/Is Responsible
(1)					
(2)					
(3)					
(4)					
(5)					

9. List All Projects Within The Past 5 Years For Which Prime Applicant Has Performed, Or Has Entered Into A Contract To Perform, Any Design Services For All Public Agencies Within The Commonwealth.

# of Total Projects:		# of Active Projects:	Total Construction Cost (In Thousands) of Active Projects (excluding studies):		
Role P, C, JV *	Phases St., Sch., D.D., C.D., A.C.*	Project Name, Location and Principal-In-Charge	Awarding Authority (Include Contact Name and Phone Number)	Construction Costs (In Thousands) (Actual, Or Estimated If Not	Completion Date (Actual or Estimated) (R)Renovation or (N)New
		1.			
		2.			
		3.			
		4.			
		5.			
		6.			
		7.			
		8.			
		9.			
		10.			
		11.			
		12.			

\* P = Principal; C = Consultant; JV = Joint Venture; St. = Study; Sch. = Schematic; D.D. = Design Development; C.D. = Construction Documents; A.C. = Administration of Contract

10. Use This Space To Provide Any Additional Information Or Description Of Resources Supporting The Qualifications Of Your Firm And That Of Your Sub-Consultants For The Proposed Project. If Needed, Up To Three, Double-Sided 8 ½" X 11" Supplementary Sheets Will Be Accepted. **APPLICANTS ARE ENCOURAGED TO RESPOND SPECIFICALLY IN THIS SECTION TO THE AREAS OF EXPERIENCE REQUESTED IN THE ADVERTISEMENT.**

**Be Specific – No Boiler Plate**

11. Professional Liability Insurance:

Name of Company	Aggregate Amount	Policy Number	Expiration Date
-----------------	------------------	---------------	-----------------

12. Have monies been paid by you, or on your behalf, as a result of Professional Liability Claims (in any jurisdiction) occurring within the last 5 years and in excess of \$50,000 per incident? Answer **YES** or **NO**. If YES, please include the name(s) of the Project(s) and Client(s), and an explanation (attach separate sheet if necessary).

13. Name Of Sole Proprietor Or Names Of All Firm Partners and Officers:

Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline
a.				d.			
b.				e.			
c.				f.			

14. If Corporation, Provide Names Of All Members Of The Board Of Directors:

Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline
a.				d.			
b.				e.			
c.				f.			

15. Names Of All Owners (Stocks Or Other Ownership):

Name And Title	% Ownership	MA. Reg.#	Status/Discipline	Name And Title	% Ownership	MA. Reg.#	Status/Discipline
a.				d.			
b.				e.			
c.				f.			

16. I hereby certify that the undersigned is an Authorized Signatory of Firm and is a Principal or Officer of Firm. I further certify that this firm is a "Designer", as that term is defined in Chapter 7C, Section 44 of the General Laws, or that the services required are limited to construction management or the preparation of master plans, studies, surveys, soil tests, cost estimates or programs. The information contained in this application is true, accurate and sworn to by the undersigned under the pains and penalties of perjury.

Submitted by \_\_\_\_\_ Printed Name and Title \_\_\_\_\_ Date \_\_\_\_\_  
 (Signature)

# Orleans Fire Department Massachusetts



## FIRE DEPARTMENT STAFFING AND ORGANIZATIONAL STUDY



February, 2020

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## Executive Summary

On December 5, 2019, the Town of Orleans, Massachusetts contracted with Emergency Services Consulting International (ESCI) to provide a Fire Department Staffing and Organizational Study. The purpose of the study was threefold:

1. To assess and evaluate the department's current staffing, organization and delivery of services, with the primary focus being emergency medical response;
2. To identify existing strengths, weaknesses, and costs in these areas;
3. To present potential options, recommendations, and implementation strategies for structural and procedural improvements in these areas.

### OVERVIEW

The men and women of the Orleans Fire Department have consistently provided the highest possible level of emergency service to the Orleans community within the confines of the resources provided to them by the Town of Orleans. ESCI's in person meetings with firefighters and members of the community, as well as ESCI's review of the internal and external customer surveys, all indicate that the Orleans Fire Department is comprised of employees who not only serve, but genuinely care for, their community. Those efforts are very much noticed by the residents of Orleans.

While the staffing model that is in place within the Orleans Fire Department has served the community to date, it is ESCI's finding that this current staffing model is neither sustainable nor efficient. The fact that the current model has remained in place for as long as it has is a testament to the operational line personnel who are regularly making split-second decisions about the dynamic deployment of firefighters and apparatus.

### SUMMARY FINDINGS

ESCI's review of the Orleans Fire Department identified that the current deployment structure includes the following critical weaknesses:

1. Inadequate Shift Staffing
2. Over-Reliance Fire Fighter Callbacks
3. Inefficient Staffing Deployment

### ESCI PREFERRED STAFFING RECOMMENDATION

The ESCI Preferred Staffing Recommendation is based upon the totality of the factors evaluated within this report. This option provides the foundation to:

- Maintain current shift staffing of five firefighters per shift.
- Increase minimum staffing to four firefighters per shift.
- Change ambulance staffing from three to two firefighters.

- Staff three firefighters on the engine or ladder; two of which could potentially deploy a second ambulance if required.
- Eliminate the use of routine callback overtime for EMS calls.
- Elimination of routine callback overtime for EMS calls will allow the Town of Orleans to consider expanding the existing requirement for firefighters hired after March 8, 2000 to live within a seven-mile radius of the fire station within one year of the date of hire. Expanding this radius could increase the potential pool of new firefighters. This is important because the recruitment of new firefighters has become increasingly more challenging for the Orleans Fire Department in recent years.

The contract with the Orleans Fire Fighters is currently open for negotiation. This presents the Town with the opportunity to negotiate changes to the contract to implement the ESCI Preferred Staffing Recommendation or a variation of the recommendation. Changes to contract language regarding minimum staffing, the number firefighters that are allowed off per shift, and the use of administrative personnel for calls will be required in order to implement the ESCI Preferred Staffing Recommendation.

## Emergency Services Consulting International Project Team

The ESCI Team for the *Orleans Fire Department Staffing and Organizational Study* was comprised of the following members:

Stuart McCutcheon, *Eastern Region Director*

Mary-Ellen Harper, *Project Manager*

Andrea Hobi, *Business Manager*

Robert Graff, *Senior Consultant*

Michael Gulino, *Associate*

Jo-Ann Lorber, *Associate*

Rodney Mascho, *Associate*

Stuart McElhaney, *Associate*

Shannon Swearingen, *Associate*

## Evaluation of Current Conditions

### CURRENT SERVICE DELIVERY INFRASTRUCTURE

The following evaluation and analysis of data and other information is based primarily on the internal data provided by the Orleans Fire Department, town demographic information, and other external resources. The Current Conditions section compares the department and its' operations to industry best practices, National Fire Protection Association (NFPA) standards, Commission on Fire Accreditation International (CFAI) self-assessment criteria, health and safety requirements, national mandates relative to emergency services, and generally accepted best practices within the emergency services community.

Each section in the following report provides the reader with general information about a specific element, as well as observations and analysis of any significant issues or pertinent conditions. Observations are supported by data validation through a site visit to the extent practical. Finally, specific recommendations are included to address identified issues or to take advantage of opportunities that may exist.

### *Organizational Overview*

The Organizational Overview provides a summary of agency composition, configuration, and services provided by the Orleans Fire Department. ESCI analyzed data provided by administrative and management staff of the Orleans Fire Department. In addition, interviews with line personnel, bargaining unit representatives, supervisory and administrative staff, elected/appointed officials, and allied governmental agencies were combined with information collected during ESCI's fieldwork to develop the following overview.

The purpose of this section is two-fold. First, it verifies the accuracy of baseline information along with ESCI's understanding of the agency's composition and operations. This provides the foundation from which the Staffing and Organizational Study is developed. Secondly, the overview serves as a reference for the reader who may not be fully familiar with the details of the agency's operations. Where appropriate, ESCI includes recommended modifications to current observed departmental practices based on industry standards and best practices.

### *Service Area*

The Town of Orleans is in Barnstable County, Massachusetts and is situated along the east-central shore of Cape Cod. According to the U.S. Census Bureau, the 2018 population in the Town of Orleans was 5,798. The town encompasses 22.7 square miles of which 14.1 square miles is land and 8.5 square miles, or 37.59%, is water. Orleans is bordered by Eastham to the north, the Atlantic Ocean to the east, Pleasant Bay and the town of Chatham to the south, Harwich to the southwest, Brewster to the west, and Cape Cod Bay to the northwest.

Orleans is 27 miles south of Provincetown, 22 miles east of Barnstable, 36 miles east of the Sagamore Bridge, and 90 miles southeast of Boston. The town is located on the inner "elbow" section of Cape Cod. It is dotted with bogs and ponds in the western part of town, with many inlets, islands and harbors along the eastern coast of the town, including Town Cove, Nauset Harbor, Pleasant Bay, and Little Pleasant Bay. Rock Harbor, bounded by and shared with the town of Eastham, is in the "crease" of the inner elbow and provides boating access to Cape Cod Bay. Cape Cod National Seashore lies along the coast as well.

### ***Population & Demographics***

Orleans is a small coastal town within in the Commonwealth of Massachusetts. With its population of 5,798 people and two constituent neighborhoods, Orleans is the 233<sup>rd</sup> largest community in Massachusetts.

Orleans is also a town of artists. Orleans has more artists, designers, and people working in media than 90% of the communities in America. This concentration of artists has helped to shape the character of the Town.

A relatively large number of people in Orleans telecommute to their jobs. Overall, approximately 11.64% of the Town's workforce works from home. While this may seem like a small number, as a fraction of the total workforce, it ranks among the highest in the country. These workers are often telecommuters who work in knowledge-based, white-collar professions.

Orleans is an extremely popular destination for tourists and seasonal residents. So much of the population is seasonal that the town's population swells significantly during the vacation season, June through September, and drops again when the season ends. Because of this, much of the local economy is centered around tourism; some businesses operate only during the high season. During the low-season, year-round residents will notice that the city is a substantially quieter place to live.

Orleans is an attractive community for families. With an enviable combination of good schools, low crime, college-educated neighbors who tend to support education because of their own experiences, and a high rate of single-family home ownership, Orleans has many desirable features for families that plan to raise children.

Another benefit to living in Orleans is the lack of traffic congestion. The average resident's commute to work is 19.10 minutes, which is substantially less than the national average. Not only does this mean that the drive to work is more pleasant for the driver, but noise and pollution levels are lower as a result as well.

Orleans has a very educated population with 55.40% of the adults in Orleans having earned a 4-year college degree, Master's degree, MD, law degree, or PhD. This is much higher than the national average of 21.84% for all cities and towns.

The people who call Orleans home describe themselves as belonging to a variety of racial and ethnic groups. The greatest number of Orleans residents report their race to be White, followed by Black or African American. The racial makeup of the town is 93.9% White; 4.5% Black or African American; 1.4% Hispanic or Latino, and 0.9% Asian. Predominate ancestries of the people in Orleans include Irish, English, German, Italian, and Portuguese. The most common language spoken in Orleans is English.

In the town, the estimated 2018 population age range was spread out with 2.7% under the age of 5 years, 13.9% persons under the age of 18, 43.8% between ages 18 and 64, and 39.6% persons 65 years and over. The median age for residents of Orleans is 61.4 years young.

### ***History of the Orleans Fire Department***

Members of the Orleans community are documented to have been concerned with fire protection as early as 1893. Community members voted at the Annual town meeting in 1893 to spend up to one thousand dollars for the purchase of a pumper and hose. During its service, the pumper proved its worth, saving

many structures including the Orleans Town Hall. The pumper was replaced by a motor driven chemical fire engine in February 1922. Shortly after the arrival of the chemical fire engine, the Orleans Fire Department was officially organized. In subsequent years, the Orleans community purchased pumpers, hose and ladder trucks in addition to selecting fire chiefs.

### ***Governance and Lines of Authority***

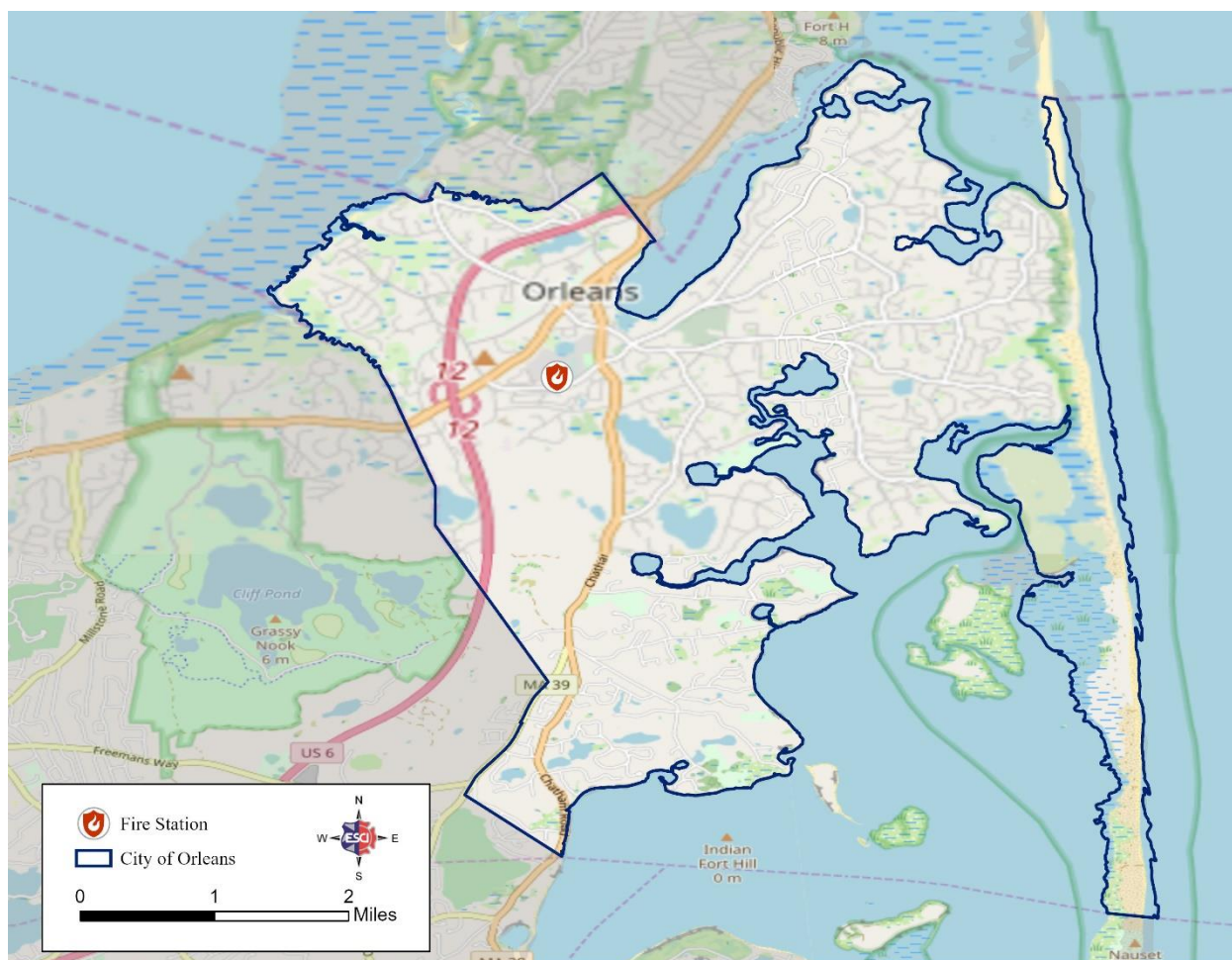
Orleans is represented in the Massachusetts House of Representatives as a part of the Fourth Barnstable district, which includes all the towns east and north of Harwich on the Cape. The town is represented in the Massachusetts Senate as a part of the Cape and Islands District, which includes all of Cape Cod, Martha's Vineyard and Nantucket, except for the towns of Bourne, Falmouth, Sandwich and a portion of Barnstable. The town is patrolled by the Second (Yarmouth) Barracks of Troop D of the Massachusetts State Police.

The Town of Orleans is governed by the open town meeting form of government and is led by a town secretary and a board of selectmen. The head of the elected governing body is known as Chairman – Board of Selectmen.

The top appointed official is the Town Administrator. The Administrator is responsible for implementing town policies and directives, leading the preparation of the Town's budget, and overseeing daily operations for the departments and offices in the town of Orleans.

The following figure reflects the service area of Orleans Fire Department.

Figure 1: Service Area Map



### ***Foundational Policy Documents***

The Orleans Fire Department's Rules and Regulations have not been recently reviewed or updated. Fire departments operate in a dynamic environment. Service demand, evolving technology, changes to industry standards and best practices all create a need for the regular review and update of fire department operations and the documents that govern those operations. **ESCI recommends that the Orleans Fire Department review and update all Rules and Regulations.**

### ***Organizational Structure***

The Orleans Fire Department provides traditional fire, rescue and Emergency Medical Services (EMS) including ambulance transport services to the community. The department has 29 total personnel including 25 that are full-time and 4 paid-on-call firefighters. The full-time employees include 20-line personnel, the Fire Chief, Deputy Fire Chief, the Fire Inspector, the EMS Coordinator, and the Principal Account Clerk.

The Orleans Fire Department operates out of one fire station with a combination of 13 pieces of apparatus and equipment. The department responds to just over 2,300 calls for service annually. Operating within a broad range of services, the department responds to not only fire and medical emergencies, but they also

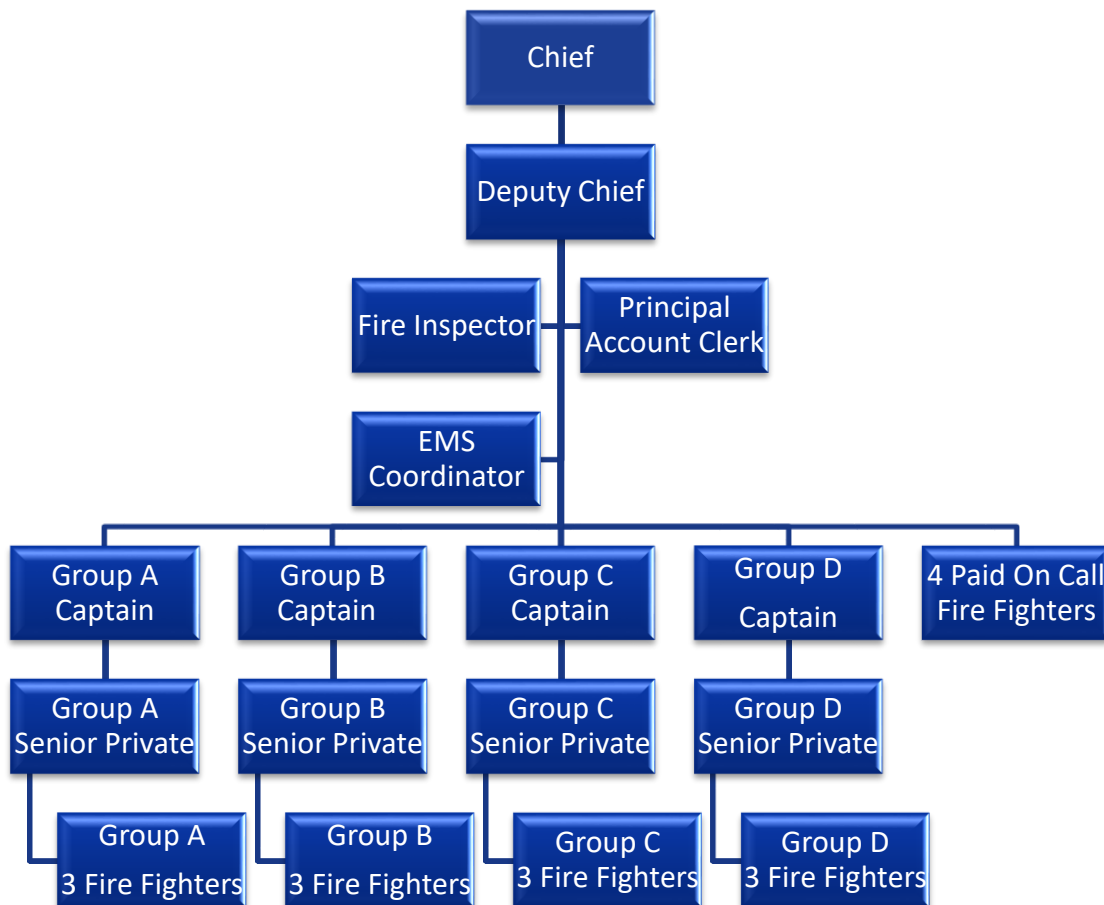
respond to fire alarms, carbon monoxide alarms, motor vehicle accidents (MVAs), beach/water rescues, hazardous materials spills, technical rescues, boating emergencies, investigations and citizen assists.

The Fire Chief is hired by contract and reports to the Town Administrator. The Fire Chief has the authority to hire and fire personnel. The department is not subject to Civil Service Rules. Legal Counsel is available to the Fire Chief through the Town Attorney. In addition to the Town Attorney, advice from a specialized labor attorney is available to the Fire Chief.

To operate effectively, the structure of a fire department should be clearly defined in the form of an organizational chart. The chart institutionalizes the agency's hierarchy, identifies roles and, most importantly, reporting authority. It also helps assure that communication flows appropriately, as well as limiting opportunities to circumvent the reporting structure.

The Orleans Fire Department has a well-defined organizational chart that achieves this purpose and illustrates that it operates under a traditional top-down manner. Lines of authority are clear and depicted. The Orleans Fire Department organizational chart is reflected in the following figure.

**Figure 2: Fire Department Organizational Chart**



## ORGANIZATIONAL PLANNING PROCESSES

Emergency services exist in a rapidly changing environment. Along with the improved tools and various technologies that are now used to provide service, there is increased regulation of activities, new risks to protect, and other challenges that can quickly catch the unwary off guard. Only through continuous internal and external environmental awareness, assessment and periodic course corrections can an organization stay on the leading edge.

### *Internal Assessment of Critical Issues*

The planning process within the Orleans Fire Department has satisfied the Town's needs to date. While the community has grown and developed, the department was consistently able to provide the level of service desired by the community. The Orleans Fire Department is now facing several challenges related to delivery of fire service within the community that will require the planning efforts of the fire department to be more formally integrated with the community it serves. Discussions with Orleans Fire Department labor and management revealed that both groups share some of the same unanswered questions: Where does the Orleans Fire Department's current service delivery stand in relation to the needs of the community, what should the fire department look like in 5 and 10 years, and how do "we" get from here to there?

The fire department leadership further identified what they considered to be the five most critical issues facing the Orleans Fire Department. The identified issues, prioritized with the number one being the most critical issue, were as follows:

**Figure 3: Five Most Critical Issues**

Five Most Critical Issues Facing the Orleans Fire Department	
1.	Critical staffing shortage
2.	Building out of space 10+ years ago.
3.	Poorly situated facility
4.	Poor morale due to above issues
5.	Outdated organizational structure.

**Through appropriate planning, the Orleans Fire Department should establish a vision for the future, create a framework within which decisions are made, and chart its course to the future. The quality and accuracy of this planning function will determine the success of the organization.**

To be truly effective, the Orleans Fire Department must consider planning on four distinct levels:

Figure 4: Planning for the Future

Planning Level	Description
1. Tactical Planning	The development of strategies for potential emergency incidents.
2. Operational Planning	The organization of day-to-day activities, as primarily outlined by a department's standard operating guidelines and procedures. This includes the integration of the agency into other local, regional, or national response networks.
3. Master Planning	Preparation for the long-term effectiveness of the agency as the operating environment changes over time.
4. Strategic Planning	The process of <i>identifying</i> an organization's mission, vision, and values <i>and prioritizing goals and objectives</i> for things that need to be accomplished in the near future.

### Tactical Planning

A firefighter's first visit to a building often occurs when the building is involved in a fire or another emergency. This is also the point in time where the internal environment is at its worst. Contrary to movie portrayals of the inside of a building on fire, visibility is at or near zero due to smoke. A lack of familiarity with a building can easily lead a firefighter to become disoriented or injured by an unfamiliar internal layout, or by equipment or other hazards that might be encountered.

It is critically important that firefighters and command staff have comprehensive, accurate information readily at hand to identify hazards, direct operations, and use built-in fire-resistive features. This can only be accomplished by building familiarization tours, developing pre-fire plans, and conducting exercises, either on-site or by tabletop simulation.

ESCI found that the Orleans Fire Department does not have pre-incident plans, but that target hazards have been identified. **The Orleans Fire Department is encouraged to develop and maintain effective pre-incident and special hazard plans and to incorporate the plans routinely into dispatch communications.**

Pre-incident plans should be easy to use, quick reference tools for company officers and command staff. At a minimum, a pre-incident plan should include information such as:

- Building construction
- Occupant characteristics
- Incorporated fire protection systems
- Capabilities of public or industrial responding personnel
- Water supply
- Exposure factors
- Facility layouts

NFPA 1620 is the fire service industry standard for the development and use of pre-incident plans and should be used as a reference. Once pre-incident plans are established or updated, training should be provided to all personnel who may respond to an incident at those locations. In addition, copies of pre-incident plans and drawings should be available on each response vehicle and incorporated into dispatch procedures.

### ***Operational Planning***

Operational planning includes the establishment of minimum staffing policies, standardized response protocols, regional incident command planning, mutual aid, automatic aid planning (locally and regionally), resource identification and planning, and disaster planning.

Within an agency, operational plans should be in place to ensure that adequate volumes of the appropriate types of resources are deployed to an emergency. Doing so involves:

- Identification of potential risk types;
- Determination of resources needed to mitigate an incident affecting the particular risk type; and
- A methodology of assuring that adequate resources are dispatched to an incident via 911 center protocols.

Looking outside of the agency's own resources, operational plans should address the timely implementation of mutual and automatic aid. Best practices include identifying risk exposures and resource needs that are incorporated into mutual aid agreements. Further, and of significant importance, automatic aid deployment should be seamlessly incorporated into the 911 center's Computer Aided Dispatch (CAD) systems.

The 20 fire departments within Barnstable County participate in the Barnstable County Fire Chiefs Mutual Aid Plan. These fire departments have entered into a mutual aid agreement to provide effective response to both routine and large-scale incidents. The fire departments that participate in the Barnstable County Fire Chiefs Mutual Aid Plan are listed in the following figure.

**Figure 5: Barnstable County Fire Chiefs' Mutual Aid Plan**

Automatic Aid Community	
1.	Barnstable Fire Department
2.	Bourne Fire Department
3.	Brewster Fire Department
4.	Centerville Fire Department
5.	Chatham Fire Department
6.	Cotuit Fire Department
7.	Dennis Fire Department
8.	Eastham Fire Department
9.	Falmouth Fire Department
10.	Harwich Fire Department
11.	Hyannis Fire Department
12.	Joint Base Cape Cod
13.	Mashpee Fire Department
14.	Orleans Fire Department
15.	Province Town Fire Department
16.	Sandwich Fire Department
17.	Truro Fire Department
18.	Wellfleet Fire Department
19.	West Barnstable Fire Department
20.	Yarmouth Fire Department

Field interviews with Orleans Fire Department labor and management representatives revealed that both groups were very satisfied with the aid that is both received and given by the Orleans Fire Department as part of the Barnstable County Fire Chiefs Mutual Aid Plan.

### ***Master Planning***

Department leadership, firefighters from every rank and shift, and members of the community all articulated the need for a stronger planning process. Engaging in a long-range master planning process will assist the Orleans Fire Department in answering the following three questions:

- Where is the organization today?
- Where will we need to be in the future? and,
- How will we get there?

A master plan is particularly essential in a community undergoing change or that is growing. Additionally, it is important in effectively identifying agency needs and planning for future emergency responses. A Master Plan is designed to provide a view of the organization in a 10- to 15-year time frame. Implementation of the master plan findings should be accomplished by way of an implemented strategic plan. Should the department choose at some point in the future to work toward international accreditation from the Center for Public Safety Excellence, the presence of a community-based master plan will be a significant consideration.

The Orleans Fire Department should consider the need for a long-range planning effort by undertaking this master planning process. The master planning process will give the department a clear idea of where it is today. The Master Plan will also project the Orleans Fire Department's future needs as well as strategies for meeting them. This Master Plan is designed to provide a view of the organization in a 15-year time frame.

### *Strategic Planning*

A strategic plan involves a three- to five-year planning window and establishes prioritized goals and objectives for the organization. The planning approach is particularly important when a master plan has been completed. The reason for a strategic plan is that a master plan identifies multiple recommendations and future strategies, which then require evaluation and prioritization within the strategic plan.

Establishing a customer-oriented strategic plan accomplishes the following:

- Development of a mission statement giving careful attention to the services currently provided and which logically can be provided in the future.
- Development of a vision statement for the agency moving forward.
- Establish the values of the members of the agency.
- Identification of the strengths, weaknesses, opportunities, and challenges of the agency.
- Determination of the community's service priorities.
- Understanding of the community's expectations of the agency.
- Establishment of realistic goals and objectives for the future.
- Identifications of implementation tasks for each objective.
- Definition of service outcomes in the form of measurable performance objectives and targets.

A strategic plan is a dynamic tool that, when kept current, can be used to assist in guiding an agency. It provides not only a defined sense of purpose and direction, but also a map to chart the course for the agency moving forward. **ESCI recommends that the Orleans Fire Department consider engaging in a Strategic Planning process to prioritize goals and objectives for the organization to achieve within the next three to five years.**

### STAFFING

The Orleans Fire Department's greatest asset is its people. It is important that special attention be paid to managing human resources in a manner that achieves maximum productivity while ensuring a high level of job satisfaction for the individual. Consistent management practices combined with a safe working environment, equitable treatment, opportunity for input and recognition of the work force's commitment, and sacrifice are key components impacting job satisfaction.

The size and structure of an organization's staffing is dependent upon the specific needs of the organization and the community it serves. These needs must directly correlate to the needs and financial capabilities of the community and a structure that works for one entity may not necessarily work for

another agency. This section provides an overview of the Orleans Fire Department staffing configuration and management practices.

Fire department staffing is divided into two distinctly different groups. The first group is the “operations unit.” The operations unit is comprised of emergency response personnel. The second group is the “administrative unit.” The administrative unit provides the support needed by operational personnel to effectively respond to and mitigate emergencies.

### ***Emergency Response Staffing***

The Orleans Fire Department operates a continuous fire fighter staffing model that is comprised of twenty full-time, line firefighters. The department has four Shift Captains, four Senior Private Fire Fighters, and 12 full-time firefighters that are organized into four groups. These groups are called Group A, Group B, Group C and Group D and together, provide 24-hour staffing. The department also employs four paid-on-call firefighters.

In order to put the appropriate emergency apparatus and equipment to its best use in mitigating incidents, an adequate and properly trained staff of emergency responders is required. Insufficient staffing at an operational scene decreases the effectiveness of the response and increases the risk of injury to all individuals involved as well as the community.

Tasks that must be performed at a fire can be broken down into two key components—life safety and fire flow. Life safety tasks are based on the number of building occupants, and their location, status, and ability to take self-preservation action. Life safety related tasks involve search, rescue, and evacuation of victims. The fire flow component involves delivering a sufficient volume of water to extinguish the fire and create an environment within the building that allows entry by firefighters.

The number and types of tasks needing simultaneous action will dictate the minimum number of firefighters required to combat different types of fires. In the absence of adequate personnel to perform concurrent actions, the command officer must prioritize the tasks and complete some in chronological order, rather than concurrently which may negatively affect outcome. These tasks include:

- **Command**
- **Scene safety**
- **Search and rescue**
- **Fire attack**
- **Water supply**
- **Pump operation**
- **Ventilation**
- **Back-up/rapid intervention**

The first 15 minutes are the most crucial period in the suppression of a fire. This 15-minute period does not start when the firefighters arrive at the scene but begins when the fire initially starts. How effectively and efficiently firefighters perform during this period has a significant impact on the overall outcome of the event. This general concept is applicable to fire, rescue, and medical situations. Critical tasks must be conducted in a timely manner to control a fire or to treat a patient. The Orleans Fire Department is responsible for ensuring that responding companies can perform all the described tasks in a prompt, efficient, and safe manner.

While it is the community served who must establish the levels of fire and rescue services provided, considerable debate surrounds the matter of firefighter staffing. Frequently, this discussion is set in the context of firefighter safety. The 2020 Edition of NFPA 1710, *Standard for Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* specifies the number of firefighters assigned to a particular response apparatus, often characterized as a “minimum of four personnel per engine company.”

ESCI notes that the more critical issue is the number of firefighters that are assembled at the scene of an incident in conjunction with the scope and magnitude of the job tasks expected of them, regardless of the type or number of vehicles that arrive. Setting staffing levels is a determination that is made at the community level based on risk, capability, citizen expectations and willingness/ability to fund. There are not mandated requirements that fit all situations, although NFPA 1710 has objectives to meet regarding the number required for some typical scenarios.

Some terms are used nearly interchangeably, such as the assembly of firefighters on an incident, which may be called the “Initial Full Alarm Assignment,” the “Effective Firefighting Force” (EFF), or the “Effective Response Force” (ERF). ESCI outlines the NFPA 1710 levels for this effective response force for three different scenarios in the figures below.

The following figure describes an initial full alarm assignment for a single-family 2,000 square foot 2-story residential structure without a basement and with no exposures. This type of structure is common throughout the Town of Orleans. The ERF for a structure fire in a single-family residential home is 17 firefighters.

**Figure 6: Initial Full Alarm Assignment for Residential Structure Fire**

Initial Full Alarm Assignment—2,000 SF Residential Structure Fire	
Incident Commander	1
Water Supply Operator	1
2 Application Hose Lines	4
1 Support member per line	2
Victim Search and Rescue Team	2
Ground Ladder Deployment	2
Aerial Device Operator	1
Incident Rapid Intervention Crew (2FF)	4
<b>Total</b>	<b>17</b>

The following figure describes an initial full alarm assignment for an open-air strip type shopping center. This type of structure is also common throughout the Town of Orleans. The ERF for an open-air strip shopping center is 28 firefighters.

**Figure 7: Initial Full Alarm Assignment for Strip Shopping Center**

Initial Full Alarm Assignment Open Air Strip Shopping Center (13,000 SF to 196,000 SF)	
Incident Commander	2
Water Supply Operators	2
3 Application Hose Lines	6
1 Support member per line	3
Victim Search and Rescue team	4
Ground Ladder Deployment	4
Aerial Device Operator	1
Rapid Intervention Crew (4FF)	4
EMS Care	2
<b>Total</b>	<b>28</b>

The following is an initial full alarm assignment for a three-story apartment building with a single 1,200-square foot apartment fire. This third type of occupancy is also common throughout the Town of Orleans. The ERF for a three-story apartment building is 28 firefighters.

**Figure 8: Initial Full Alarm Assignment in a Three-Story Apartment Building**

Initial Full Alarm Assignment 1,200 SF Apartment (3-story garden apartment)	
Incident Commander	2
Water Supply Operators	2
3 Application Hose Lines	6
1 Support member per line	3
Victim Search and Rescue Team	4
Ground Ladder Deployment	4
Aerial Device Operator	1
Rapid Intervention Crew (4FF)	4
EMS Care (1 crew)	2
<b>Total</b>	<b>28</b>

As previously noted, the Orleans Fire Department participates in the Barnstable County Fire Chiefs Mutual Aid Plan. The Barnstable County Mutual Aid Plan establishes "run cards" which assign fire apparatus for up to four alarms within Barnstable County. Figure 9 illustrates the first three alarms that would respond to a working structure fire within the Town of Orleans. For the purposes of fire response, Orleans is divided into two planning areas. Those are identified within the following table as "A" and "B". The Barnstable County Fire Chiefs Mutual Aid Plan establishes minimum staffing for each type of apparatus in the plan. The established minimum staffing is used below to calculate the number of firefighters that can reasonably be expected with each alarm. While fire apparatus may respond with more than the required minimum staffing, the minimum staffing number was used in the following calculations to provide a safety

factor within the staffing plan. Of additional note, the Orleans Fire Department is listed in the run cards as providing two engines, a ladder truck and an ambulance to its own calls on a first alarm. This response would include 11 firefighters based on the Barnstable County Fire Chiefs Mutual Aid Plan minimum staffing requirements. As the Orleans Fire Department staffs only five firefighters on a shift, the 11-fire fighter total for the first alarm was reduced to five firefighters.

Based on the current run cards, in order to achieve an effective fire fighting force of 17 firefighters for a single-family residence, Orleans will require 1 or 2 alarms. In order to satisfy the ERF of 28 firefighters for a strip shopping center or an apartment building, Orleans will require a second alarm response from the Barnstable County Fire Chiefs Mutual Aid Plan. **ESCI recommends that the Orleans Fire Department work with the Barnstable County Mutual Aid Plan to assure that run cards reflect current fire department minimum staffing and that adequate resources are dispatched to a working fire in a single-family home to initially respond at least 17 firefighters and that at least 28 fire fighters are initially dispatched for working fires in strip malls and apartment buildings.**

**Figure 9: Barnstable County Fire Chiefs Mutual Aid Plan: 1<sup>st</sup> and 2nd Alarm Fire Fighter Totals**

1st Alarm				2nd Alarm			
A		B		A		B	
Apparatus	Minimum Staffing	Apparatus	Minimum Staffing	Apparatus	Minimum Staffing	Apparatus	Minimum Staffing
Orleans E175	3	Orleans E175	3	Eastham 156	3	Brewster E239	3
Orleans E177	3	Orleans E177	3	Chatham E185	3	Eastham E155	3
Orleans L176	3	Orleans L176	3	Harwich L66	3	Harwich L66	3
Orleans A174	2	Orleans A174	2	Wellfleet A97	2	Harwich A72	2
Harwich E65	3	Eastham E156	3	Eastham C151	1	Harwich C62	1
Brewster E239	3	Brewster L237	4	Chatham C181	1	Chatham C181	1
Chatham A183	2	Harwich E65	3				
Brewster C231	1	Brewster A243	2				
		Brewster C231	1				
Harwich C62	1	Eastham C151	1				
<b>Alarm Total Adjusted</b>	<b>14</b>		<b>19</b>		<b>13</b>		<b>13</b>
<b>Adjusted Cumulative Scene Total</b>	<b>14</b>		<b>19</b>		<b>27</b>		<b>32</b>
<b>Adjusted for Actual Staffing:</b>							
<b>Run Cards Show Orleans as responding 11; this number is adjusted to 5 for actual Staffing Level</b>							

Using the same planning assumptions that were established when calculating the number of firefighters that could reasonably be expected to respond to first or second alarm for structure fire in the Town of Orleans, ESCI further calculated the number of firefighters that could reasonably be expected to respond to a third or fourth alarm for a structure fire in Orleans. Those numbers are illustrated in the following figure.

**Figure 10: Barnstable County Fire Chiefs Mutual Aid Plan: 3<sup>rd</sup> and 4th Alarm Fire Fighter Totals**

3rd Alarm				4th Alarm			
A		B		A		B	
Apparatus	Minimum Staffing	Apparatus	Minimum Staffing	Apparatus	Minimum Staffing	Apparatus	Minimum Staffing
Harwich E69	3	Chatham E185	3	Harwich E64	3	Wellfleet E94	3
Brewster E234	3	Harwich E69	3	Eastham E155	3	Yarmouth E42	3
Dennis E111	3	Dennis E111	3			Dennis E115	3
Brewster A243	2	Dennis A104	2			Wellfleet C81	1
						Yarmouth C551	1
	11		11		6		11
	38		43		44		54

These are generalizations that are representative of different types of structures and risks. Fire departments may handle these types of fires with fewer or more personnel, however, this describes the work functions that must take place for the mitigation of a fire.

When a fire escalates beyond what can be handled by the initial assignment, unusual characteristics such as a wind-driven fire are present, or the fire is accelerated with a highly flammable compound, additional personnel will be needed. Other scenarios such as mass casualty incidents, explosions, tornadoes, etc., may also require additional staffing. It is difficult or impossible to staff for these worse case incidents, which is why a strong mutual aid or automatic aid plan is needed.

**STAFF SCHEDULING METHODOLOGY**

The regular work schedule for Orleans shift personnel is an average of forty-two (42) hours per week. The work schedule consisting of 24 hours on duty, followed by 24 hours off duty, followed by 24 hours on duty, followed by five days (120 hours) off duty. An average of 42 hours is worked over an eight-week period.

All personnel are trained as firefighter Emergency Medical Technicians with most trained at a minimum of Emergency Medical Technician Paramedic (EMT-P) level and the department provides Advanced Life Support (ALS) services.

**Administrative and Support Staffing**

One of the primary responsibilities of Orleans Fire Department’s administrative team is to ensure that the operational segment of the organization has the ability and means to respond to and mitigate emergencies in a safe and efficient manner. The appropriate balance of administration and support compared to operational resources and service levels is critical to the success of the department in accomplishing its mission and responsibilities.

Typical responsibilities of administration and support staff include planning, organizing, directing, coordinating, and evaluating the various programs within the department. This list of functions is not exhaustive, and other functions may be added. It is also important to understand that these functions do

not occur in a linear fashion and can more often occur concurrently. This requires the Fire Chief and administrative support staff to focus on many different areas at the same time.

The current administrative organizational structure includes a Fire Chief and Deputy Fire Chief position as well as a full-time Principal Account Clerk. This is a total of three administrative positions out of 29 total full-time and paid-on-call members of the fire department. The administrative and support staff makes up 10.34 percent of the total Orleans Fire Department workforce.

ESCI has noted that appropriately and effectively staffed small to mid-size departments maintain administrative staff levels in the 10 to 12 percent range. ESCI's assessment is that overall the department is appropriately staffed administratively in comparison to the operational staff within the Orleans Fire Department. **ESCI Recommends that if the Orleans Fire Department increases operational staffing, that consideration be given to increasing administrative positions to maintain administrative staffing levels within the ten to 12 percent range.**

## PERSONNEL MANAGEMENT

While the purchase of capital equipment can appear expensive when viewed as a one-time expense, personnel expenses typically account for more than 70 percent of an organization's annual expenditures. It is important that special attention be given to managing human resources in a manner that achieves maximum productivity while ensuring a high level of job satisfaction for the individual. Consistent management practices combined with a safe working environment, equitable treatment, opportunity for input, and recognition of the workforce's commitment and sacrifice are key components impacting job satisfaction.

In this section, ESCI will review and analyze personnel management related activities of Orleans Fire Department.

### *Compensation*

An agency's ability to attract, hire, and retain employees has a direct impact on its ability to effectively and efficiently provide the desired services. The Orleans Fire Department is no different. Agencies should provide periodic reviews of current compensation structures, market competitiveness, and department compensation philosophies. These internal and external comparisons of equitable positions and workloads ensure the agency can attract and maintain an effective workforce.

One concern that was repeatedly expressed during interviews with both the management and labor of the Orleans Fire Department was the disparity between the salaries in the Orleans Fire Department and those offered by other fire departments in Cape Cod and the ability to attract new fire fighter paramedics. The Town of Orleans has recently struggled with recruiting new fire fighter paramedics.

The following table illustrates the salaries offered by the Orleans Fire Department in comparison to the salaries offered by the fire departments that directly border Orleans. Salaries represented in this table are current through 2020 except for Orleans. The Orleans collective bargaining agreement contract expired in 2018, which is a secondary detractor to salary in the Town's ability to attract new paramedic firefighters.

**Figure 11: Salary Comparison: Orleans and Bordering Fire Departments**

Fire Department	Fiscal Year	Base Salary Including EMTP	% Higher Than Orleans
Harwich	2020	\$72,899	35.7%
Chatham	2020	\$62,028	15.5%
Brewster	2020	\$60,495	12.6%
Eastham	2020	\$59,263	10.3%
Orleans	2018	\$53,716	NA

The towns that directly border Orleans are currently offering starting fire fighter paramedics between 10.3 percent and 35.7 percent higher base salaries than is being offered by Orleans. All the surrounding towns have current contracts with their firefighters. **The Town of Orleans should make it a priority to settle a contract with its firefighters that includes salaries that are competitive with its border towns. Without a competitive contract, the Orleans Fire Department should plan for it to become increasingly more difficult to attract new fire fighter paramedics for open positions within the fire department.**

### ***Labor-Management Relationships***

ESCI's meetings with the management and labor groups of the Orleans Fire Department revealed that there is room for improvement within the Labor-Management Relationship. Currently, a disconnect exists between management and labor that could easily be resolved with regular communication. **ESCI recommends that, in accordance with the collective bargaining agreement, it be a priority for the new fire chief to comply with the following sections of the labor contract:**

**27.2 Regular officer's meetings shall be held by the Chief and/or Deputy Chief.**

**27.2.1 The purpose of these meetings shall be to disseminate information from the Chief to the officers and for the officers to discuss concerns about the department with the Chief.**

**27.2.2 These meetings shall be limited in time, shall be conducted from an agenda, and a maximum of one (1) hour of overtime compensation per officer per meeting may be paid.**

**29.1 There shall be a labor-management committee consisting of two (2) Union representatives and the Fire Chief and/or Deputy Fire Chief for the Town. The Committee shall meet on request of either party a minimum of six (6) to a maximum of twelve (12) monthly meetings per year to discuss all matters of mutual concern. The Committee shall have the authority to make recommendations to the Union and Fire Chief.**

It was readily apparent to ESCI during the site visit that labor and the current Chief do not have a close working relationship or associated level of trust. While the appointment of a new chief may help to improve this situation, it is ESCI's opinion that the Orleans Fire Department would benefit from outside assistance establishing a solid foundation for the labor-management relationship between the firefighters and the new chief. **ESCI suggests that the Orleans Fire Department may benefit by bringing the International Association of Fire Chiefs' new program Member and Leadership Collaboration (MLC)**

into the Orleans Fire Department. This program is focused on leveraging behavioral analysis to manage group dysfunction through understanding DISC behavioral styles. DISC is an acronym that stands for the four prominent behavior styles - Dominance, Influence, Steadiness and Conscientiousness.

The program begins with a comprehensive personality assessment and is designed for emergency services organizations facing the challenges of service delivery within the fire department system. The workshop is specifically designed to open lines of communication and focus the organization on common goals to provide the highest level of service. Experienced chief officers serve as facilitators to deliver this interactive program on-site which includes:

- Assisting department key leadership personnel in gaining an understanding of the unique challenges facing their organization.
- Allowing input from external and internal stakeholders through an in-depth analysis based on local and national trends and needs of the organization.
- Establishing organizational and personal goals that recognize and support the value of the volunteer, part-time, and career components of the organization.

The MLC is administered over two days with two facilitators. Requesting agencies are required to pay a flat fee for the workshop which includes all facilitator travel and custom behavioral style reports for up to 10 key leadership personnel. This program can be contracted through the International Association of Fire Chiefs and may, if desired by the Township, be facilitated by all or part of the ESCI team that conducted the Orleans Fire Department site visit.

### ***Counseling Services***

Our nation's firefighters are faced with emotional needs that are very different and unique to the occupation. The percentage of firefighters struggling with career-related stress is very high, with suicide rates climbing each year. These issues manifest themselves through higher divorce rates and addictions such as alcohol, drugs, or gambling. Frequently seen in recent studies and another major concern is Post Traumatic Stress Disorder (PTSD). As these symptoms occur, employees need a support system in place that is readily accessible from someone who is qualified and truly understands his or her circumstances.

The Orleans Fire Department offers mental health services through the Town's insurance carrier. As part of this arrangement, firefighters may seek free, confidential mental help for themselves or a member of their household.

### ***Recruitment, Promotion and Disciplinary Processes***

The Orleans Town Administrator's office is responsible for managing the human resources aspects of the fire department. This includes recruitment and employment, classification and compensation plans, contract negotiations, personnel policies, discipline, employee assistance and training programs, and compliance with federal and state employment laws. The Town of Orleans is an Equal Opportunity Employer.

The fire department promotional process requirements are very clearly detailed within the collective bargaining agreement. The contract requires the fire chief to maintain a current promotional eligibility list and that testing shall be given a minimum of every three years or whenever the eligibility list falls below four members.

In accordance with the contract, the Promotional process will consist of a Written Exam, an Oral Board Review and a Chief's interview and shall be administered by an independent, recognized testing agency. The Written Exam will constitute 40 percent of the final grade. The Oral Board will constitute 50 percent of the final grade, and the Chief's interview makes up the final 10 percent of the grade. The minimum passing score for the Written Exam is 70 percent. Candidates who pass all three portions of the promotional process with a minimum cumulative grade of 70 percent are considered to have successfully passed the complete promotional process. The chief is required to list the top four scores on the eligibility list and designate those individuals as senior privates. The fire chief must then review the promotional list and choose, without prejudice, the candidate the he/she feels will best serve the department in that capacity from the top four candidates.

ESCI's review of the Orleans Fire Departments current recruitment and promotional processes finds that that the department is following best practices and industry standards.

### ***Health and Safety Programs***

NFPA 1500: *Standard on Fire Department Occupational Safety and Health Program*, is the industry standard for development and administration of a fire department safety program. At the time of this report, the collective bargaining agreement established a safety committee; however, employees would like to see the committee become more active. The establishment and empowerment of a safety committee can be one of the best tools to increase the safety of firefighters. **ESCI strongly encourages the department to ensure all activities of the safety committee are in alignment with Chapter 4 of NFPA 1500.** To be effective, safety committees must be diverse in their representation from across the department, ensuring representation by shift, rank, function, and interest, and including representation from non-uniformed and staff members as well.

**The safety committee should meet monthly and include in its mission the raising of awareness and modifying of member behaviors that will result in a safe work environment. Additionally, the committee should review all accidents, injuries, near-miss incidents, and workplace safety suggestions.** The committee should analyze the information before them and report their findings to the fire chief. In contrast to being reactionary through the development of additional rules, it is recommended that the committee should work to implement member safety education programs and encourage members' safety self-awareness. The committee should maintain regular and open meeting times and locations; and minutes of the meetings should be recorded and posted for all members of the department to review. ESCI underscores the importance of maintaining a functioning Safety Committee.

While the Orleans Fire Department Staffing and Organizational Study does not specifically include evaluation of the fire department's fixed facilities as part of the scope of work, ESCI personnel did take note of a number of issues within the fire station that could have an impact on the health and wellness of Orleans fire department personnel.

In recent years, the fire service has become increasingly concerned with the issue of firefighter cancer, and cancer-prevention practices. Within the Orleans Fire Department, there are cancer policies in place. Firefighters have been provided with training, extra hoods, wipes, and protocols for both cancer prevention and decontamination. An additional preventative measure that could be taken by the Orleans Fire Department is to limit/reduce firefighter exposure to toxic products of combustion which occur *after the fire* (aka, off-gassing). **The Orleans Fire Department should take steps to store turnout gear in a well-ventilated room to prevent additional firefighter exposure to off gassing of chemicals absorbed into turnout gear during a fire. To that end, the Orleans Fire Department should also relocate the current fitness area that is in the apparatus bay to a location where firefighters can exercise without exposure to the toxic products of combustion.**

## TRAINING PROGRAM

A comprehensive training program is one the most critical factors for helping to ensure the safe and effective provision of emergency services. ESCI conducted a full evaluation of the Orleans Fire Department Training Program. The Training Program evaluation is included in this report as Appendix A.

## FIRE PREVENTION PROGRAM

Fire Prevention has three traditional segments: code enforcement, fire investigation and public education. ESCI conducted a full evaluation of the Orleans Fire Department Public Education Program. The Fire Prevention Program evaluation is included in this report as Appendix B.

## SERVICE DELIVERY AND PERFORMANCE

While there are many components of an emergency services agency that may be evaluated, perhaps the most important aspect is the agency's ability to deliver services to their community. When evaluating service delivery and performance, each of the components listed below should be included in the analysis and continually monitored. The following major components of service delivery and performance were evaluated for the Orleans Fire Department:

- Service Demand
- Resource Distribution
- Resource Concentration
- Response Reliability
- Response Performance

### *Service Demand Study*

#### *Incident Type Analysis*

While service demand can be measured simply as the number of incidents within a given time period, seeing that same demand categorized by incident type provides policy makers the ability to assess current demand and plan for future demand.

The National Fire Incident Reporting System (NFIRS) has developed a classification system in order to categorize various types of incidents. These codes identify the various types of incidents to which the fire department responds and allows the fire department to document the full range of incidents it handles.

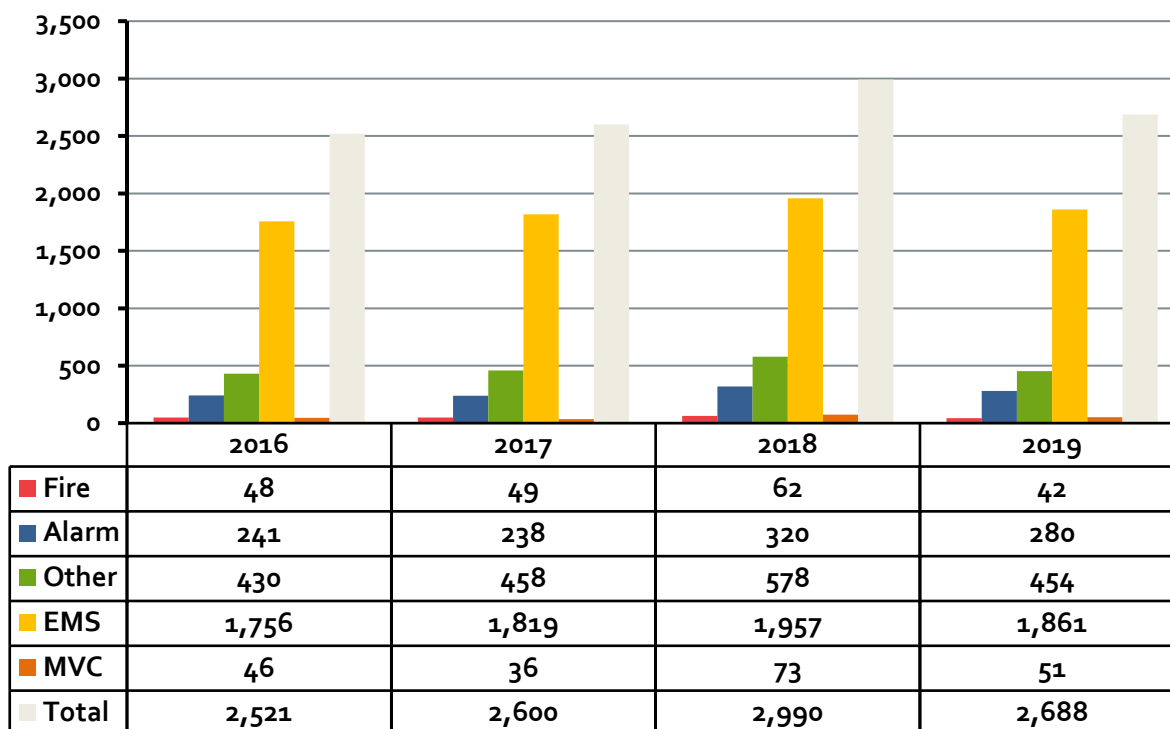
This information can be used to analyze the frequency of different types of incidents, provide insight on fire and other incident problems, and identify training needs. The codes are three digits and are grouped into series by the first digit as illustrated in the figure below.

**Figure 12: NFIRS Classification System**

Incident Series	Incident Heading
100-Series	Fires
200-Series	Overpressure Rupture, Explosion, Overheat (No Fire)
300-Series	Rescue and Emergency Medical Service (EMS) Incidents
400-Series	Hazardous Condition (No Fire)
500-Series	Service Call
600-Series	Cancelled, Good Intent
700-Series	False Alarm, False Call
800-Series	Severe Weather, Natural Disaster
900-Series	Special Incident Type

While the above grouping is utilized to provide an in-depth analysis of the response data, the data provided by the Orleans Fire Department did not include the NFIRS incident type codes. Instead, the figure below illustrates an historical view of incidents for the Orleans Fire Department based upon the CAD response type field placed into higher level groups. **ESCI recommends that the Orleans Fire Department utilize an established NFIRS reporting system to record this data and the many other data points that will enable them to have important information available used to plan for prevention and response activities.**

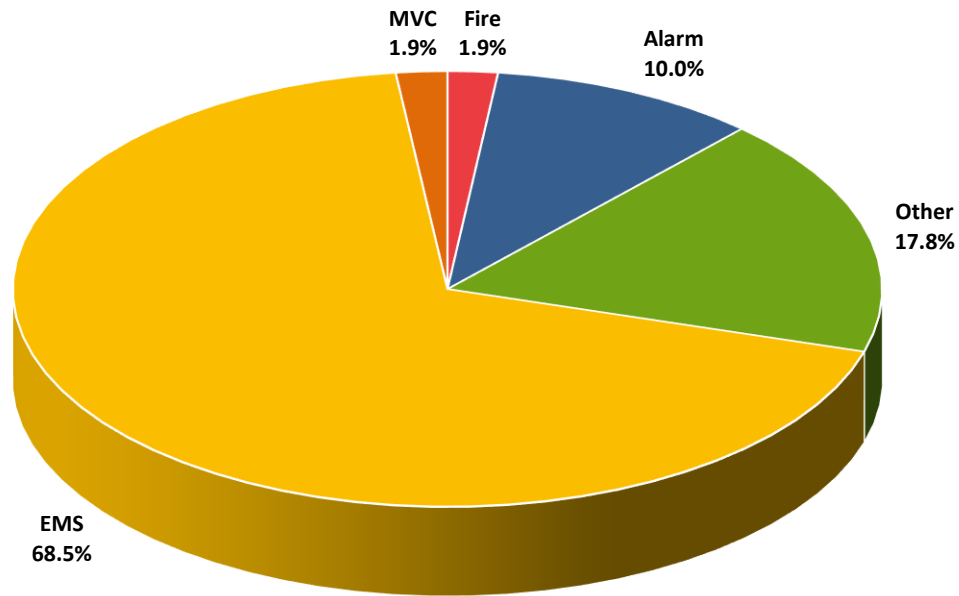
Figure 13: Service Demand by Incident Type 2016–2019



During the study period, from 2016 to 2019, there was an overall 6.6% increase in service demand. With an average increase of 3% annually, the outlier is the change in service demand during 2018. From 2017 to 2018, there was a 15% increase followed by a 10% decrease in 2019. This outlier was the result of a year that involved multiple coastal storms and a microburst during the months of January, March and August. The 2019 total incident volume appears consistent with the years prior to 2018.

While the figure above illustrates a more detailed analysis of the incident types and a year-to-year trend, it is also important to understand the percentage of each category as it compares to the whole. The figure below illustrates this same service demand data for the various incident types as they compare to the whole. As shown, most incidents are for emergency medical services. This ratio of call types to the whole is similar to that typically found with other all-hazard departments across the United States.

**Figure 14: Service Demand by Incident Type 2016–2019**

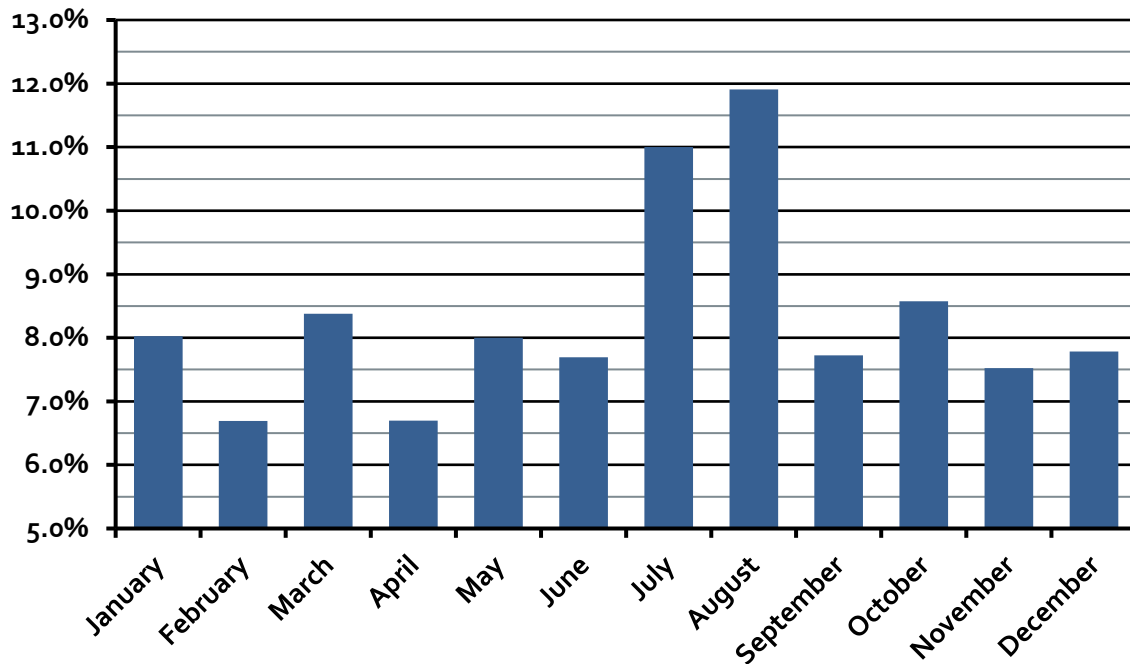


*Temporal Analysis*

While the incident type analysis provides leadership knowledge as to the various types of services needed, understanding the temporal component is of equal importance. Through an analysis of the various temporal components, leadership can better plan for non-incident activities such as training, apparatus maintenance, hydrant testing, hose testing and pre-fire planning. Each temporal component is presented as the percentage relative to the total service demand that occurred during the study period.

The figure below illustrates the temporal variation by month for the Orleans Fire Department. This component has the greatest impact on balancing non-incident monthly activities. As illustrated, the greatest service demand occurs in July and August. The lowest service demand occurs in February and April. The remaining months are fairly consistent, without great variation from each other.

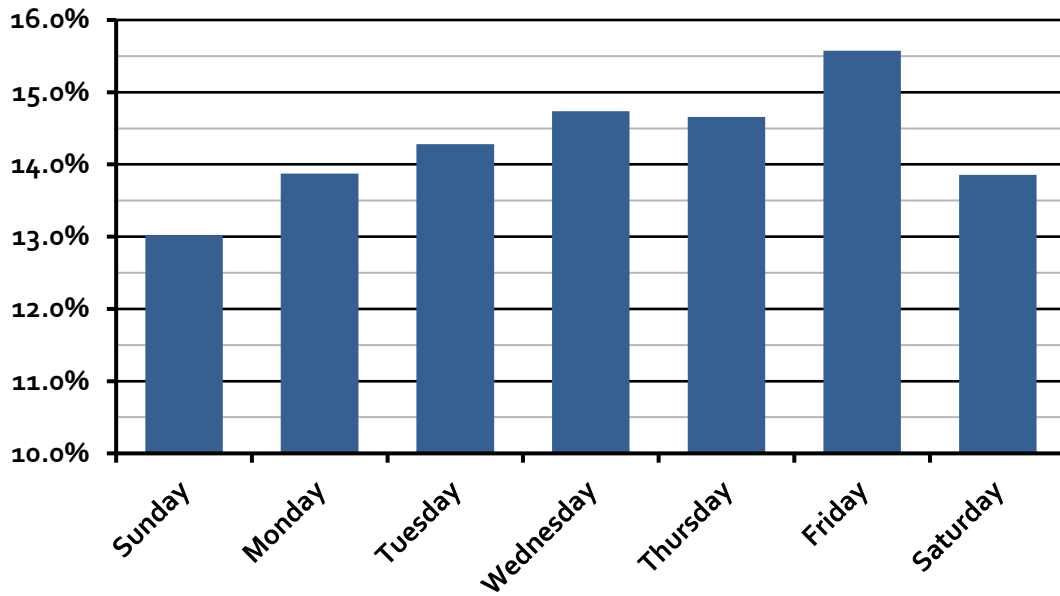
Figure 15: Service Demand by Month 2016–2019



Although the fire department has historically “upstaffed” from June 15 through September 15 to compensate for an increase in calls during the summer months, the last four years of data indicates that an increase in activity only occurs in July and August. Further evaluation revealed that the 4-month period, June 15 through September 15, has trended between 30.35 percent and 31.46 percent of the annual calls for service during the last four years. This is a normal distribution of annual calls for service. **ESCI recommends that the Orleans Fire Department regularly evaluate trends within service demand and that staffing be adjusted as necessary according to current data.**

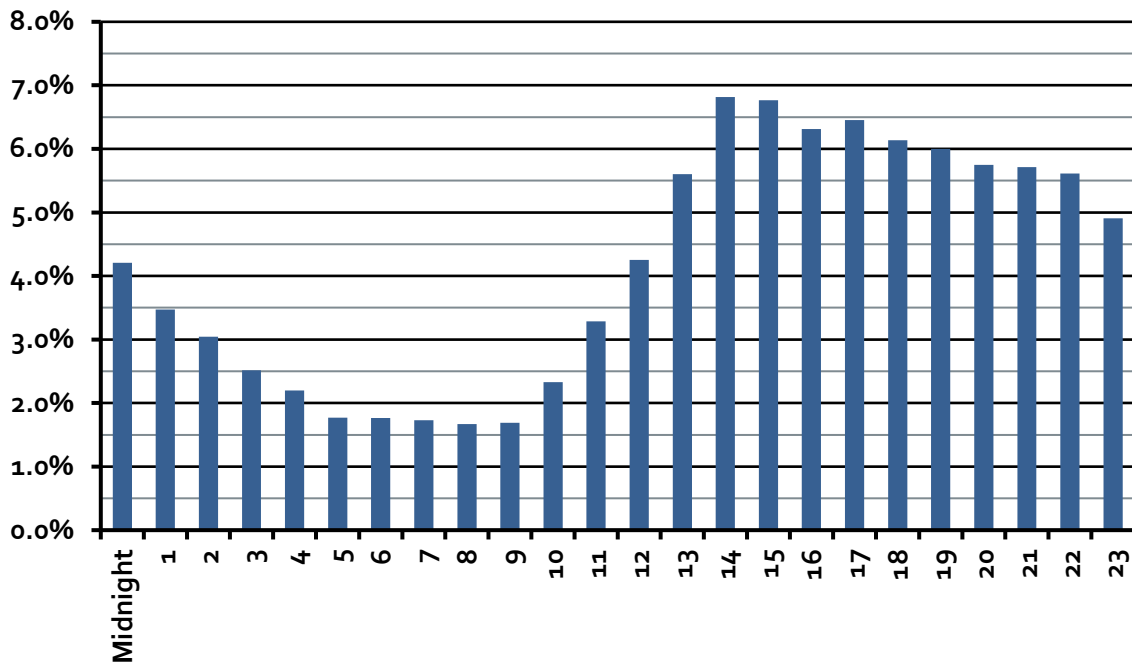
The second temporal variation is by day-of-the-week. As illustrated, the lowest demand for service occurs on Sunday. Demand increases throughout the week, reaching its peak on Friday. It then decreases on Saturday.

Figure 16: Service Demand by Day of Week 2016–2019



The final component of temporal analysis is call volume by time-of-day. The figure below illustrates this component for the Orleans Fire Department. Calls for service begin increasing at 10 AM and continue to a peak at 2 PM. This is followed by a general decrease throughout the afternoon and evening until midnight. After midnight, there is a greater decline in service demand, reaching the lowest demand from 5 AM until 9 AM.

Figure 17: Service Demand by Time of Day 2016–2019



The combined temporal analysis for the Orleans Fire Department indicates that the highest demand for service during the last four years occurs on Fridays during the midafternoon in July and August. While service demand is lowest during those early morning hours, it should be noted that most fatal residential fires occur most frequently late at night or early in the morning. Based on findings from a national study, from 2014 to 2016, residential fatal fires were highest between 1:00am to 2:00am, and 4:00am to 5:00am. The 8-hour peak period (11pm to 7am) accounted for 48 percent of residential fatal fires<sup>1</sup>.

### *ISO Distribution*

The Insurance Services Office (ISO) is a national insurance industry organization that evaluates fire protection for communities across the country. ISO assesses all areas of fire protection and breaks them down into four major categories including emergency communications, fire department, water supply, and community risk reduction. Following an on-site evaluation, an ISO rating, or specifically, a Public Protection Classification (PPC®) number is assigned to the community ranging from 1 (best protection) to 10 (no protection). The PPC® score is developed using the Fire Suppression Rating Schedule (FSRS), which outlines sub-categories for each of the four major categories, detailing the specific requirements for each area of evaluation.

A community's ISO rating is an important factor when considering fire station and apparatus concentration, distribution, and deployment due to its effect on the cost of fire insurance for the residents and businesses. To receive maximum credit for station and apparatus distribution, ISO evaluates the percentage of the community (contiguously built upon area) that is within specific distances of fire stations, central water supply access (fire hydrants), engine/pumper companies and aerial/ladder apparatus.

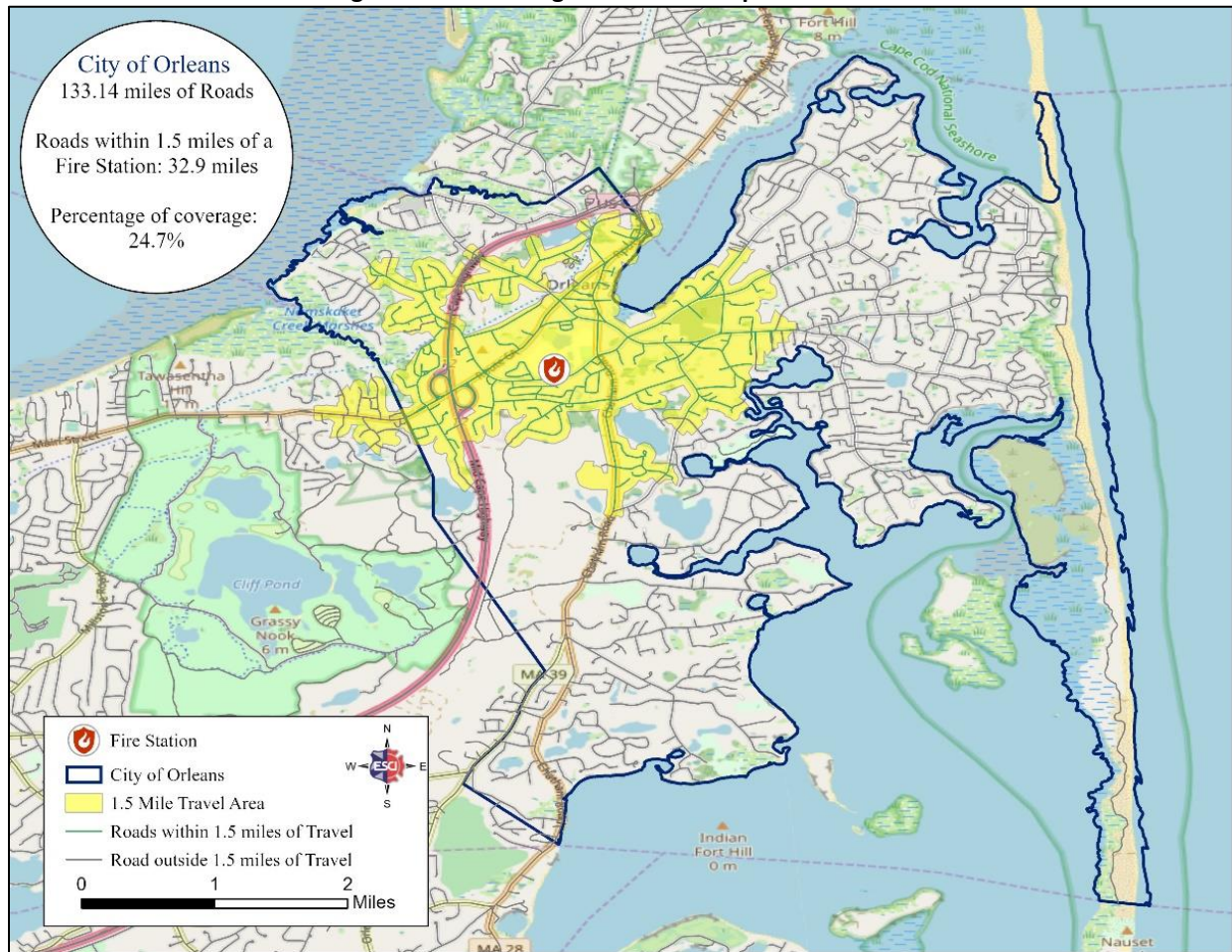
### *Travel Distance from a Fire Station*

The percentage of the service area that falls within 1.5-miles travel distance from a staffed fire station is the first travel component evaluated by ISO. As illustrated in the figure below, only 24.7% of Orleans, MA service area falls within this distance.

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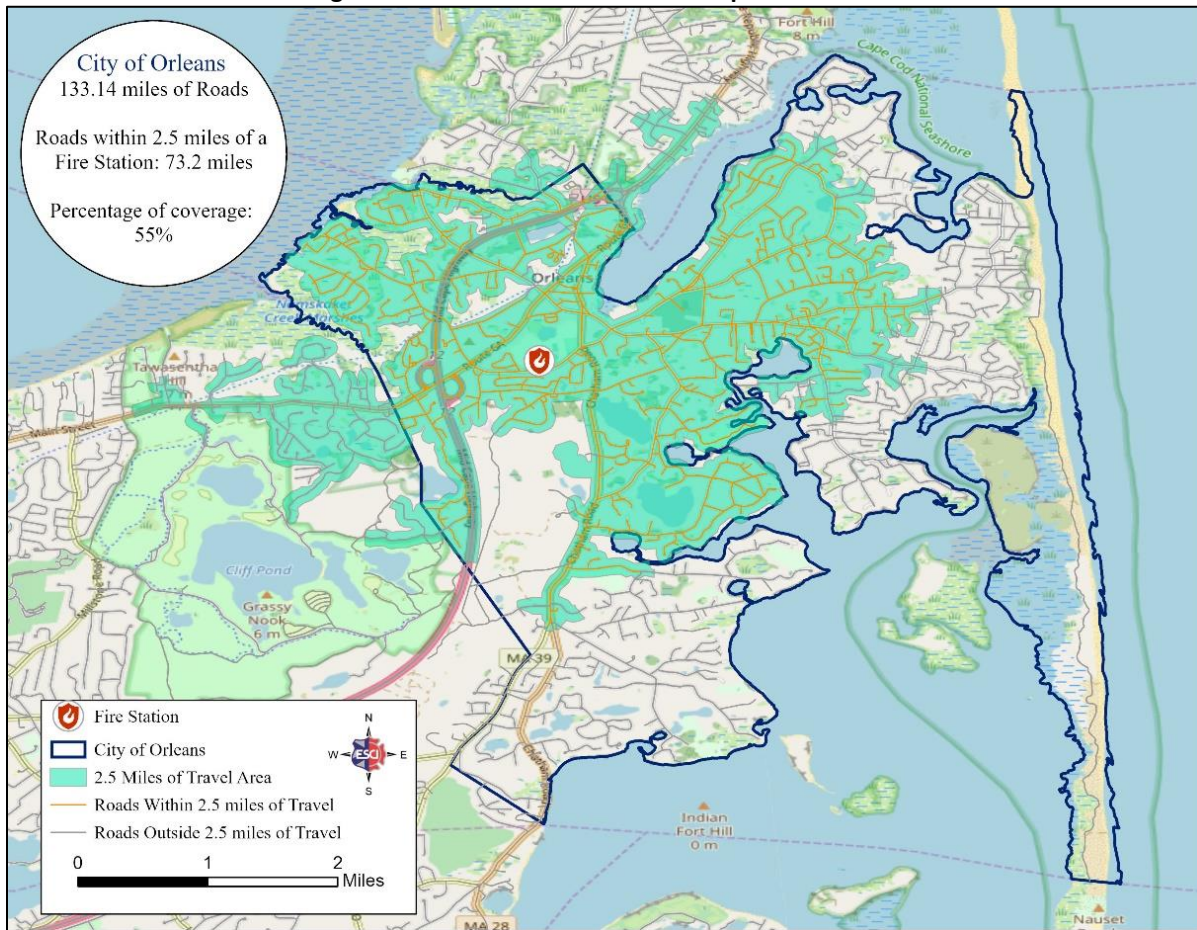
<sup>1</sup> Fatal Fires in Residential Buildings (2014-2016), Topical Fire Report Series Volume 19, Issue 1 /June 18, U.S. Department of Homeland Security, U.S. Fire Administration, National Fire Data Center.

**Figure 18:.5-Mile Engine Distribution per ISO Criteria**



The second travel component evaluated by ISO is the percentage of service area that falls within a 2.5-mile travel distance from a staffed aerial apparatus. As illustrated in the figure below, 55% of Orleans falls within this distance.

**Figure 19: 2.5-Mile Truck Distribution per ISO Criteria**



The final travel component evaluated by ISO is the percentage of service area that falls within 5-mile travel distance of a staffed fire station. As illustrated by the figure below, 93.2% of Orleans falls within this distance.

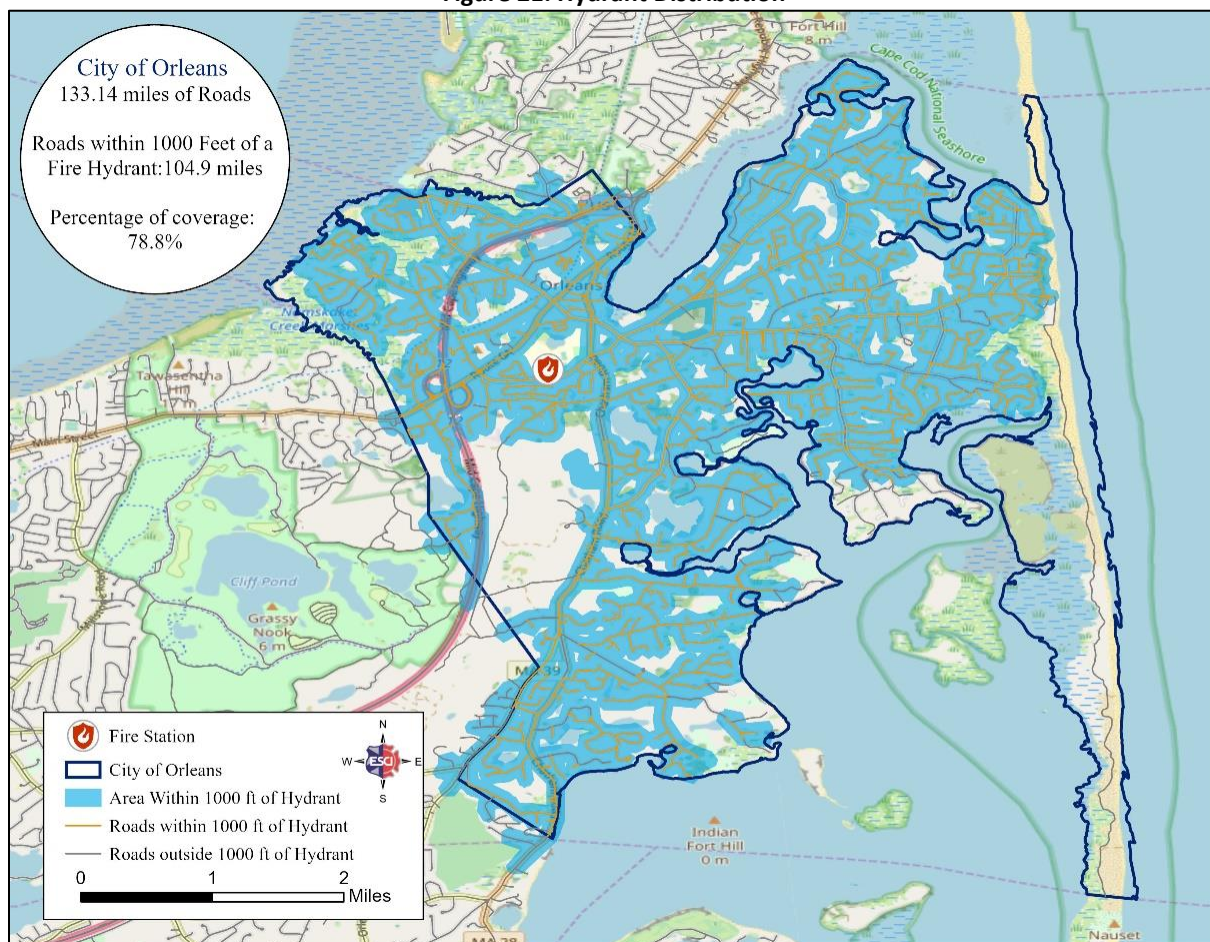
**Figure 20: 5-Mile Distribution per ISO Criteria**



*Water Supply Distribution*

ISO evaluates a community’s availability of a sufficient water supply, which is critical for the extinguishment of fires. Included in this evaluation is the geographic location and distribution of fire hydrants. Structures outside a 1,000-foot radius of a fire hydrant are subject to a lower Public Protection Classification® rating than areas with adequate hydrant coverage, thus signifying limited fire protection. Exceptions are made when a fire department can show that either a dry hydrant or a suitable water tanker operation is possible to provide the needed volume of water for fire suppression activities for a specific period. As illustrated by the figure below, 78.8% of the Orleans service area is within 1,000 feet of a fire hydrant.

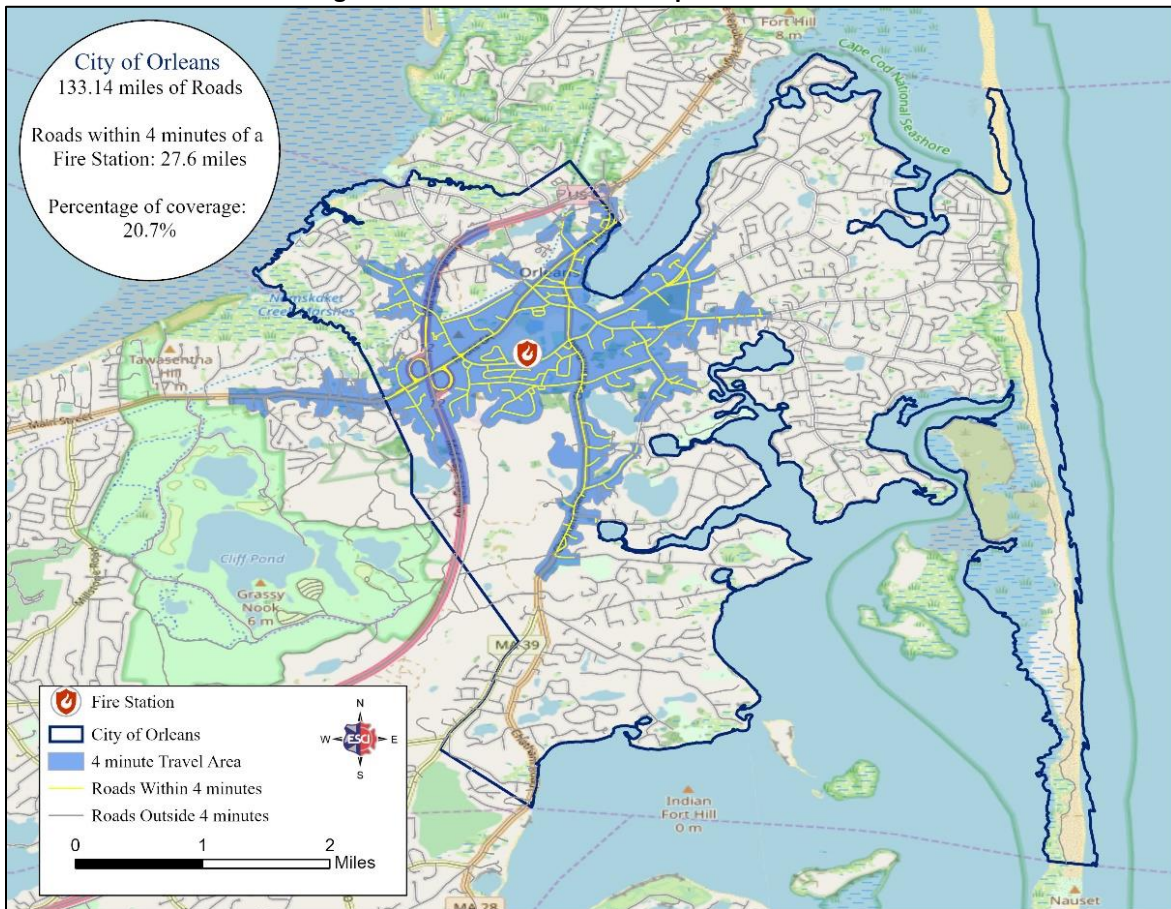
**Figure 21: Hydrant Distribution**



**NFPA Distribution**

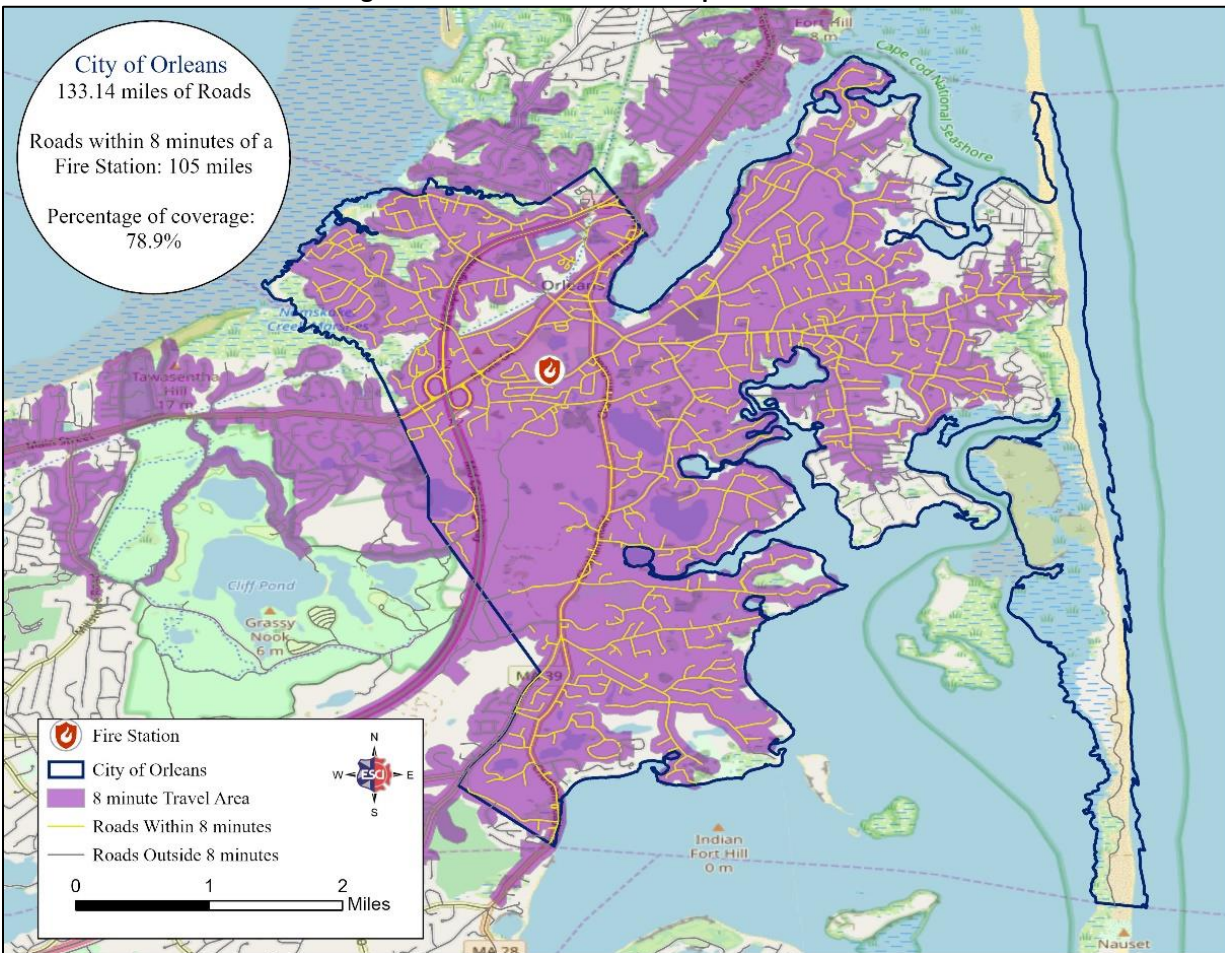
National Fire Protection Association (NFPA) standards and the Center for Public Safety Excellence (CPSE) accreditation of fire departments both evaluate response time criteria for purposes of analyzing resource distribution. For low/medium hazard incidents, the first unit should arrive within 4 minutes and the full assignment should arrive within 8 minutes. Travel time is calculated using the posted speed limit and adjusted for negotiating turns, intersections, and one-way streets. As illustrated by the following two figures, 20.7% of the service area is within the 4-minute travel distance and 78.9% falls within the 8-minute travel distance. This impact will be seen when looking at response time performance as travel time can be one of the factors with greatest impact on total response time.

Figure 22: 4-Minute Travel Time per NFPA Criteria



As illustrated in Figure 22, coverage based on NFPA 1710 requirements for first due responding units are only met in approximately one fifth of Orleans. Based on this figure, it would be anticipated that travel time performance will be elevated compared to national standards. Next, the projected travel time performance at 8-minutes is displayed. Eight minutes is the amount of time specified for the arrival of an ambulance or the balance of an effective response force to the scene of an emergency.

Figure 23: 8-Minute Travel Time per NFPA Criteria



The majority of the Town, 78.9%, lies within an 8-minute travel time of the fire station. As the majority of incidents within Orleans are EMS in nature, the department should have the capability to provide emergency transport services at or near industry standards.

### **Response Reliability Review**

As previously identified, the ability of an agency to respond to calls for service in a timely manner is a key component of service delivery and performance. This ability to respond is impacted by two key reliability factors—workload and call concurrency.

### **Workload/Unit Hour Utilization**

While number of calls presents a view of workload, the greater value is provided by analyzing the amount of time spent on calls by the various responding units. This measure is referred to as unit hour utilization and represents the amount of time in service that a unit is assigned to response activities. The data provided by Orleans did not provide the unit level detail to analyze the workload of each unit. As recommended in the incident type section, **ESCI recommends the use of an established NFIRS reporting system—along with accurate entry by crews on each incident—the department would be enabled to track the workload by unit to use as part of the consideration for needs to change resource distribution.**

### Call Concurrency

Workload and incident location have great impacts on the ability to provide timely service. Call concurrency refers to the number of incidents occurring at the same time within the jurisdiction and impacts the ability to provide timely service. While there is no specific standard to which the data can be compared, this provides insight as to the ability of the department to at least provide an initial responding unit to calls within the Town. The figure below illustrates the call concurrency for the Orleans Fire Department for 2016–2019. With two units providing primary response, Orleans, MA can provide one unit to approximately 91% of incidents with the immediate resources on hand. It is important to note, however, that this does not mean that the Town provides the necessary resources for 90% of its calls. In the event any of these incidents requires more than 2-4 firefighters, mutual or automatic aid would be required.

**Figure 24: Concurrent Incidents 2016–2019**

Concurrent Incidents in Progress	Number of Incidents	Percent of Total Incidents
Single Incident	7,076	65.41%
Two Incidents	2,802	25.90%
Three Incidents	717	6.63%
Four Incidents	137	1.27%
Five Incidents	26	0.24%
More than Five Incidents	60	0.55%

### Response Performance Summary

Perhaps the most publicly visible component of an emergency services delivery system is that of response performance. Policy makers and citizens want to know how quickly they can expect to receive emergency services.

For policy makers and citizens to make informed decisions concerning response performance, it is essential that jurisdictions record and report the various components of the jurisdiction's current performance.

In analyzing response performance, ESCI generates percentile measurements of response time performance. The use of percentile measurement using the components of response time follows the recommendations of industry best practices. The best practices are derived by the Center for Public Safety Excellence (CPSE), Standard of Cover document and NFPA 1710.

The "average" measure is a commonly used descriptive statistic also called the mean of a data set. The most important reason for not using the average for performance standards is that it may not accurately reflect the performance for the entire data set and may be skewed by outliers, especially in small data sets. One extremely high or low value can skew the average for the entire data set.

The "median" measure is another acceptable method of analyzing performance. This method identifies the value at the middle of a data set and thus tends to not be as strongly influenced by data outliers.

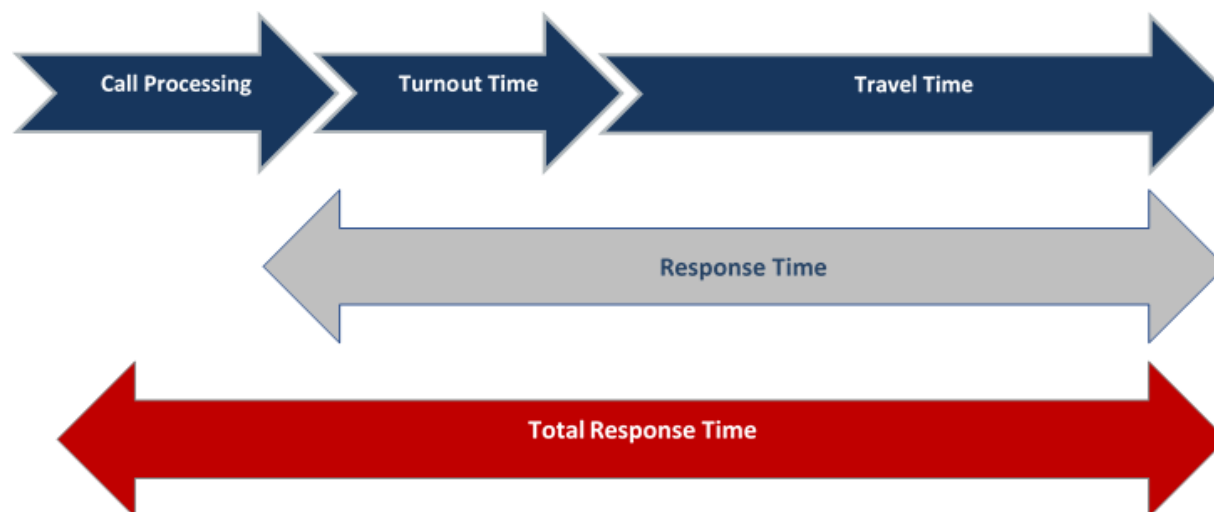
Percentile measurements are a better measure of performance because they show that most of the data set has achieved a particular level of performance. The 90<sup>th</sup> percentile means that 10 percent of the values are greater than the value stated, and all other data are at or below this level. This can be compared to the desired performance objective to determine the degree of success in achieving the goal.

As this report progresses through the performance analysis, it is important to keep in mind that each component of response performance is not cumulative. Each is analyzed as an individual component, and the point at which the fractile percentile is calculated exists in a set of data unto itself.

The *response time continuum*—the time between when the caller dials 911 and when assistance arrives—is comprised of several components:

- *Call Processing Time*—The time between a dispatcher getting the call and the resources being dispatched.
- *Turnout Time*—The time between unit notification of the incident and when they are responding.
- *Travel Time*—The time the responding unit spends on the road traveling to the incident.
- *Response Time*—A combination of turnout time and travel time, this is the most commonly used measure of fire department response performance.
- *Total Response Time*—The time from when the 911 call is answered until the dispatched unit arrives on the scene.

Figure 25: Response Time Continuum



*Total response time* is the amount of time a resident or business waits for resources to arrive at the scene of an emergency beginning when they first placed a 911 call. This process begins for the fire department once the appropriate unit is dispatched by the communications center. The NFPA standard for alarm handling and call processing is derived from NFPA 1221: *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* and provides for communication centers to have alarm handling time of not more than 15 seconds, 90 percent of the time and not more than 20 seconds, 95 percent of the time. Additionally, NFPA 1221 requires the processing of the call to occur within 64

seconds, 90 percent of the time for high-priority incidents. Similarly, NFPA 1710 requires the call processing time to be 60 seconds or less, 90 percent of the time, as does ISO.

**Figure 26: NFPA 1710 Standards for Fire/EMS Responses**

Response Interval	NFPA/CAI Recommendations
Call Processing	60 seconds or less at 90%
Turnout Time	60 seconds or less at 90%
Travel Time	240 seconds

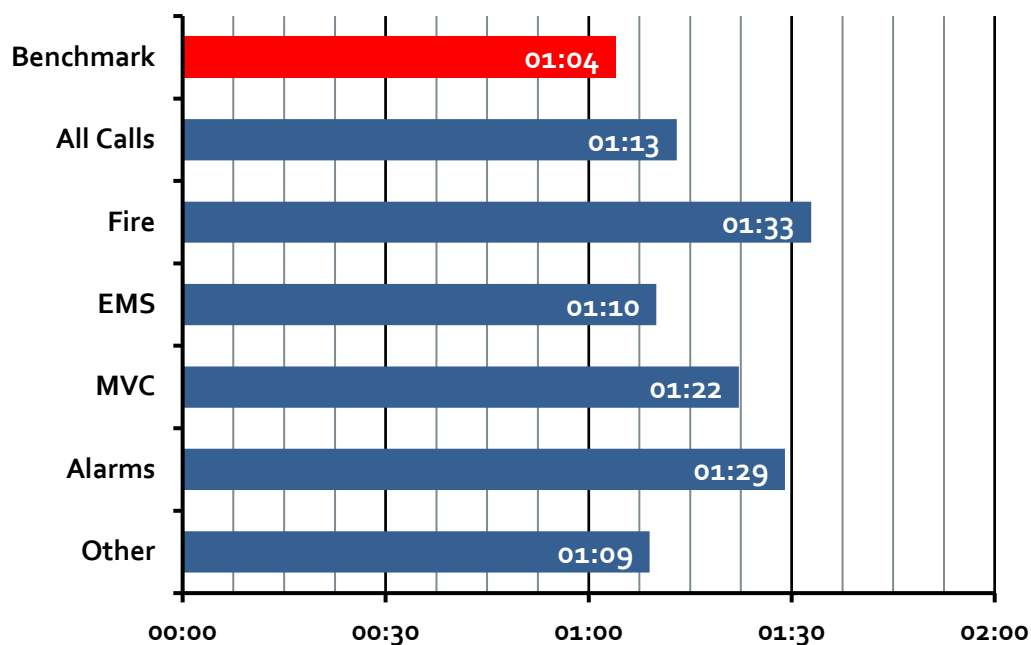
Tracking the individual components of response time enables jurisdictions to identify deficiencies and areas for improvement. In addition, knowledge of current performance for the components listed above; is an essential element of developing response goals and standards that are relevant and achievable. Fire service best practice documents recommend that fire jurisdictions monitor and report each of the components of total response time. As identified in the previous sections, the data provided by Orleans did not have unit level detail.

The following analysis is based on the CAD data provided. While it provides an overall picture of response time performance, it does not provide for in-depth analysis and accuracy that would be available with unit level data. The data also did not separate emergency response from non-emergency response. **ESCI recommends that the Orleans Fire Department track its responses with the ability to separate emergency from non-emergency responses at the unit level.** This should be kept in mind when reviewing the analysis, since times generally improve when focused only on the emergency response to incidents.

### *Call Processing Performance*

Call processing is the time between the dispatcher's receipt of the incident and dispatch of units. This generally falls under the control of the dispatch center, but department leadership should work with that entity to monitor performance. As illustrated in the figure below, for incidents overall, the call processing time is only 9 seconds greater than the expected standard. When grouped into the incident type, call processing ranged from 1 minute, 9 seconds on other incidents to 1 minute, 33 seconds on fire incidents.

Figure 27: Call Processing Time Performance 2016–2019

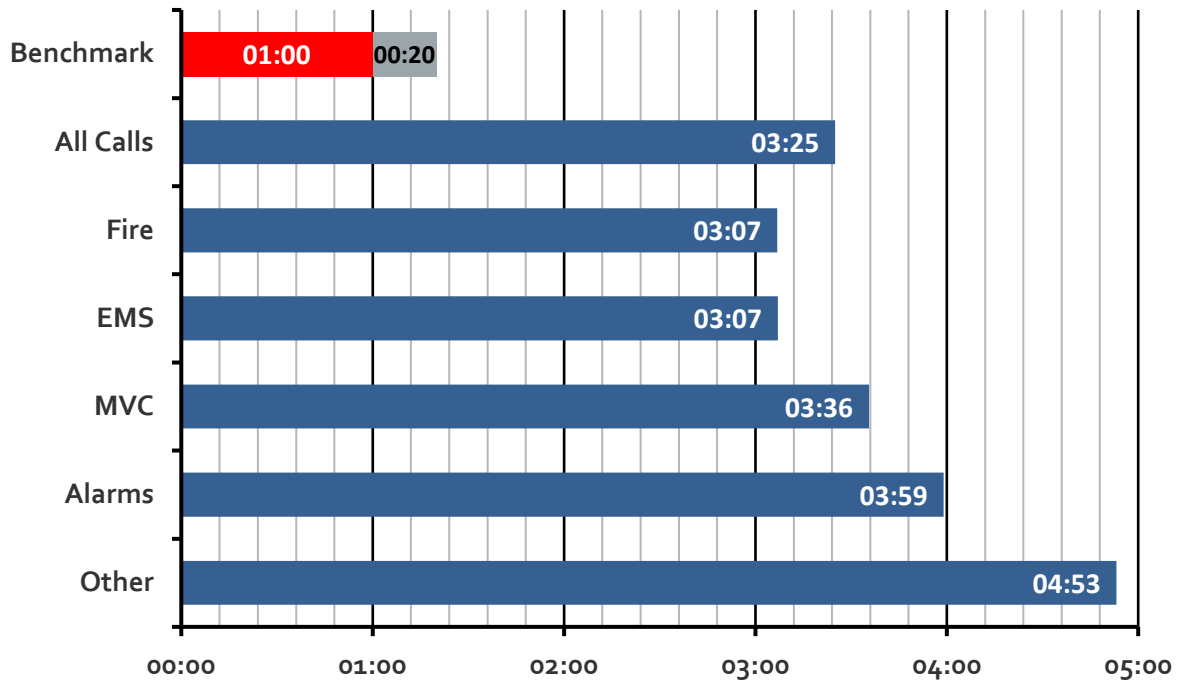


### Turnout Time Performance

The first component of response performance that is under direct control of the fire department is turnout time. This is the time it takes personnel to receive the dispatch information, move to the appropriate apparatus and proceed to the incident. NFPA 1710 specifies that turnout time performance should be less than 60 seconds (01:00), measured at the 90th percentile for incidents other than fire and special operations. For those incidents, turnout time performance should be 1 minute, 20 seconds (1:20).

Figure 28 illustrates the turnout time performance for the Orleans Fire Department. With an overall turnout time of 3 minutes, 25 seconds, the department is exceeding the standard by approximately 2 minutes. When analyzed by individual call types, performance ranged from 3 minutes, 7 seconds for fire and emergency medical incidents to 4 minutes, 53 seconds for other incidents. **Leadership should analyze the various components associated with turnout time to determine any methods of improving this performance.** This may include dispatch notification systems, layout of the fire station as it relates to movement to the apparatus and personnel activities during duty hours. **The layout of the current fire station, in which firefighters normally occupy areas that are very remote from the apparatus and must then transcend long stairways to reach the bays, is likely a key contributor to the long turnout times that currently exist in Orleans.** Fire department leadership should prioritize the need for an efficient fire station design when considering future fire station improvements.

Figure 28: Turnout Time Performance 2016–2019

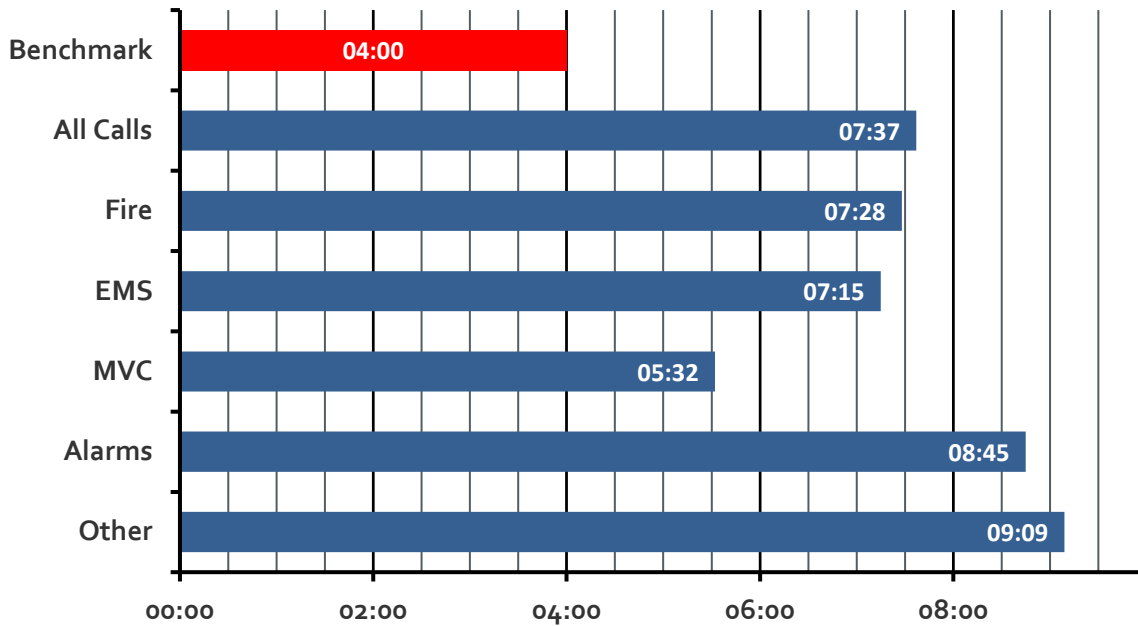


*Travel Time Performance*

Since the geographic location of the incident as it relates to location of the unit responding has the greatest impact on travel time performance, this is potentially the longest component of total response time.

The figure below illustrates the travel time performance for the Orleans Fire Department. As shown, the overall travel time performance is 7 minutes, 37 seconds which is approximately 3.5 minutes greater than the expected performance. This performance does coincide with the expected performance based on the projected NFPA travel time reviewed previously. However, it should be noted that in order to meet the requirements of the standard, departments often have to add significant additional resources that may not be balanced out by the service demand. **ESCI recommends that the department leadership review all aspects of travel time response and determine the travel time goal for their community and what resources it will require to meet that goal.**

**Figure 29: Travel Time Performance 2016–2019**

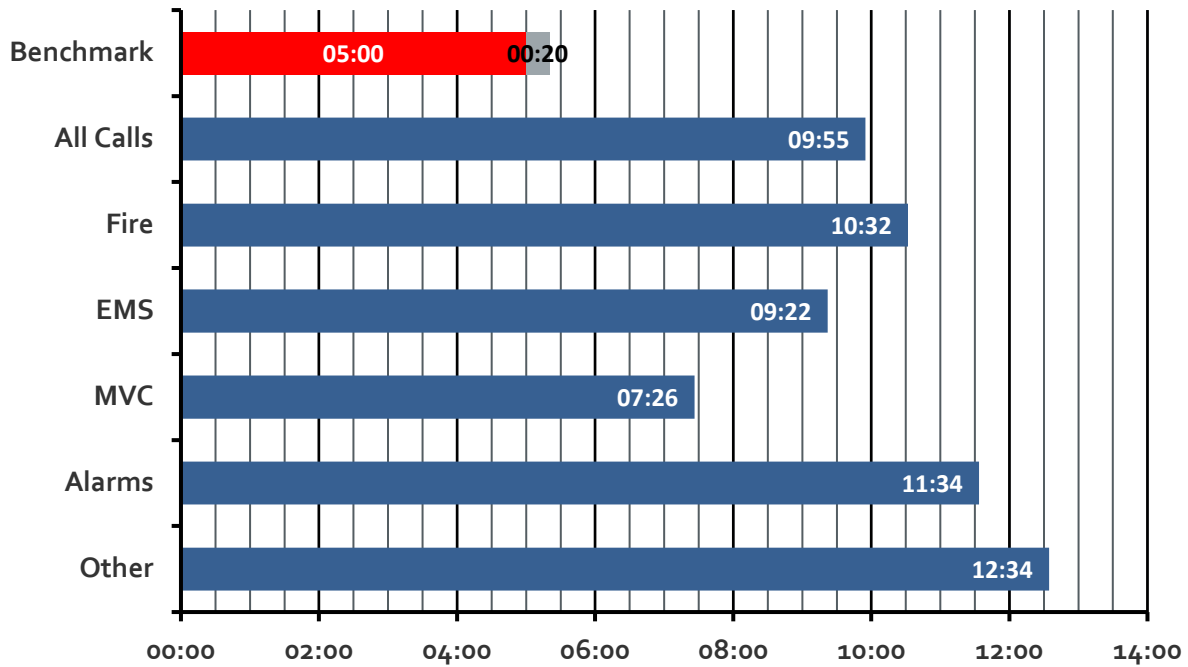


*Response Time Performance*

When turnout time and travel time are combined, this is expressed as fire department response time with an expected performance of 5 minutes or less. This is perhaps one of the most often tracked and reported response time performance measures, as it is comprised of components under direct control of the fire department.

As illustrated in the figure below, the overall response time performance for the Orleans Fire Department was 9 minutes, 55 seconds—approximately 4.5 minutes greater than the national standard. By incident type, the response time performance ranged from 7 minutes, 26 seconds for motor vehicle collision incidents to 12 minutes, 34 seconds for other incidents. While geography and resources may not be able to be adjusted to improve response time performance, improvement in turnout time performance will improve response time performance.

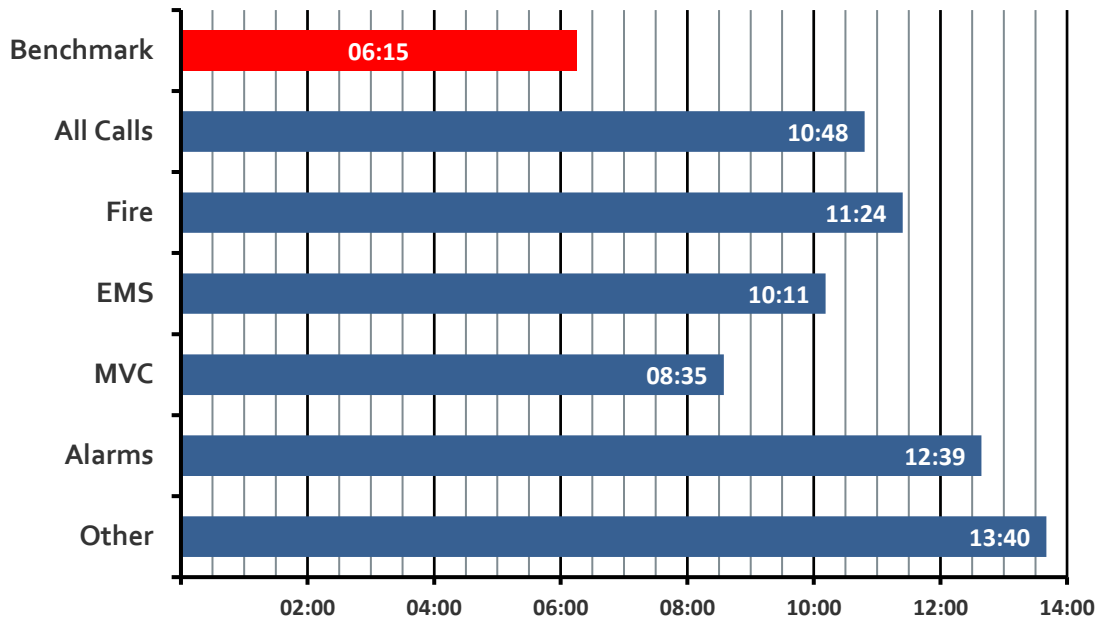
**Figure 30: Response Time Performance 2016–2019**



*Total Response Time Performance*

The final performance measure combines all components of the response—from the initial 911 call handling in the communications center until the first fire department unit arrives at the incident. The figure below illustrates that the overall total response time for the Orleans Fire Department is 10 minutes, 48 seconds which is approximately 4.5 minutes greater than the national standard. When viewed by incident type, performance ranged from 8 minutes, 53 seconds for motor vehicle collision incidents to 13 minutes, 40 seconds for other incidents.

**Figure 31: Total Response Time Performance 2016–2019**



**OPERATING BUDGET AND FUNDING**

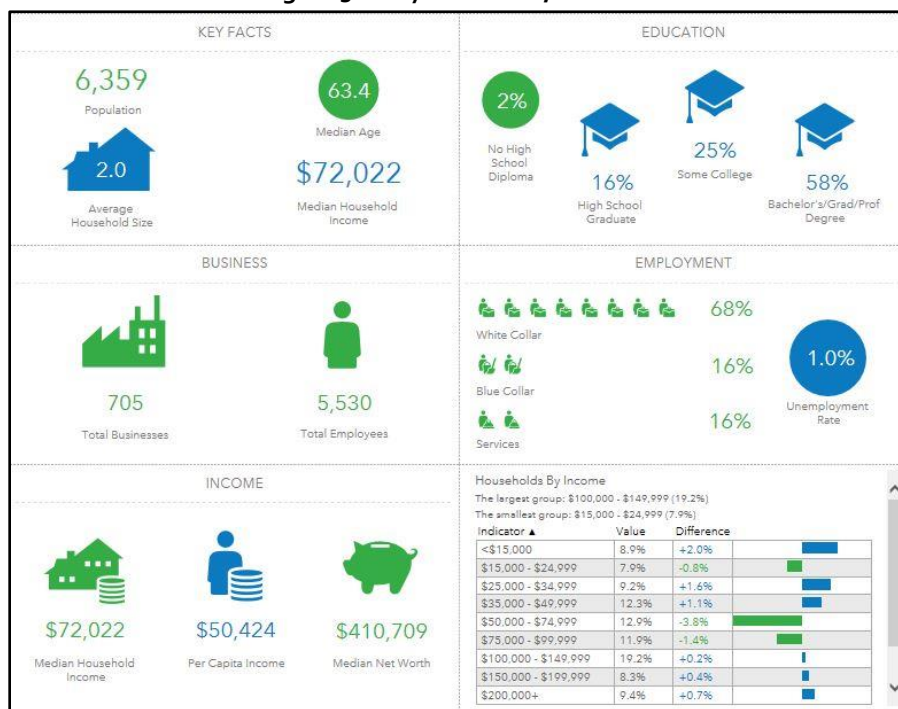
The Town of Orleans Fire and Finance Departments provided ESCI with considerable financial information and background data to develop the financial overview. This section is intended to provide elected officials, administrators, and the general public with a summary of the recent financial history and near-term outlook for the fire department based upon current information. A historical analysis and subsequent status quo forecast for the department and all its functions will serve as the basis for evaluating the financial impact of various future options.

The Orleans Fire Department is a department of the Town of Orleans and is funded through the Town’s General Fund (GF). The review of the fire department’s finances begins with a brief overview of Orleans’ community and its General Fund, followed by specific analysis the fire department budget. As public safety (fire and police) represent the second largest area of spending for Orleans, changes to the fire department’s budget may affect how the Town allocates future resources. The Town operates under a July 1 to June 30 fiscal year and the day-to-day operations of the Town are managed by the Town Administrator. Orleans uses a zero-based budget approach to finance based on current financial resources and a modified accrual basis of accounting.

***Trends of Key Indicators***

Using Esri software, demographic information based upon 2020 estimates of key indicators were collected. Within the Town of Orleans, the median household income of \$72,022 was slightly less than that of the State of Massachusetts at \$74,176, but approximately 17% below the median household income of Barnstable County, \$86,621. Additionally, with a median age of 63.4, this is a mature community well above the median age of the state median age at 39.4, and of Barnstable County’s median age of 52.4. Predominately, Orleans is a well-educated community and possesses a low unemployment rate of 1%.

Figure 32: Key Indicators, Esri 2020



It is important to understand the financial makeup of Orleans and the surrounding area because the ability to fund staffing, operating equipment, capital equipment, and upgrade existing facilities will depend on the community's ability and willingness to fund those improvements.

The following figure illustrates the population, median income, per capita income, and median house values of Orleans and immediately surrounding communities. This information is based upon 2017 American Community Survey data, which was the most current data available from the U.S. Census at the time of the report.

Figure 33: Orleans and Surrounding Community's Population, Median Income, Per Capita Income, and Median House Value Comparison: 2017<sup>2</sup>

Town	Population	Median Income	Per Capita Income	Median House Value
Orleans	5,827	\$62,386	\$40,742	\$622,000
Eastham	4,956	\$62,143	\$39,357	\$453,400
Brewster	9,820	\$69,479	\$44,211	\$432,300
Harwich	12,243	\$73,468	\$41,819	\$378,900
Chatham	6,125	\$74,875	\$54,908	\$614,000

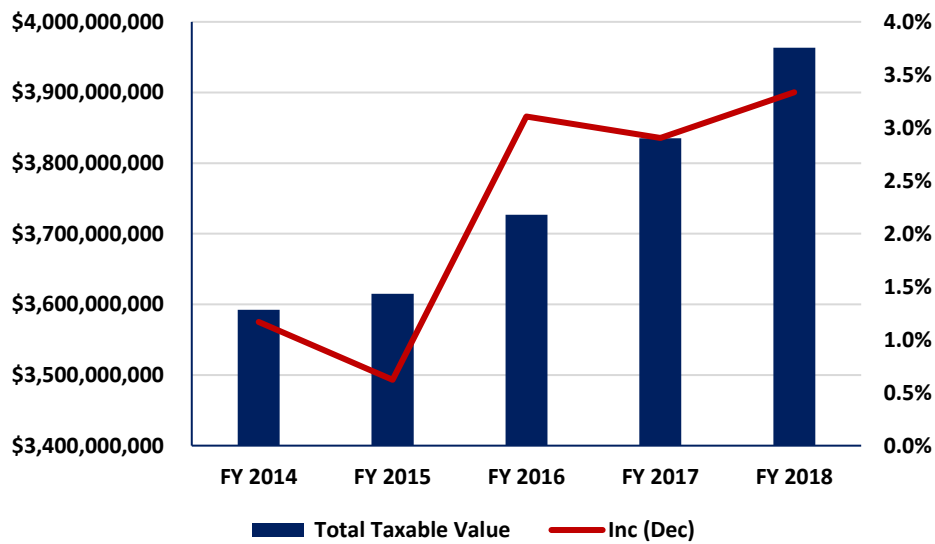
The total population reported for a community is an important consideration when evaluating the demand for fire and rescue services; however, Orleans' population is somewhat unique due to its location on the coast and recognition as a summer destination. According to data provided by Orleans, the Town's

<sup>2</sup> Data provided by the United States Census Bureau.

homeowner composition is comprised of 44% residents and 56% nonresidents (second homeowners) who pay the annual tax levy, with an overall 47% resident and 53% nonresident split. Additionally, during summer months, tourism within the Town can raise population levels in excess of 20,000 people at certain points during this time<sup>3</sup>. When comparing population, housing, and income statistics of Orleans and communities immediately adjacent, Orleans possesses one of the lower populations and income while also having the greatest median home values relative to its neighbors.

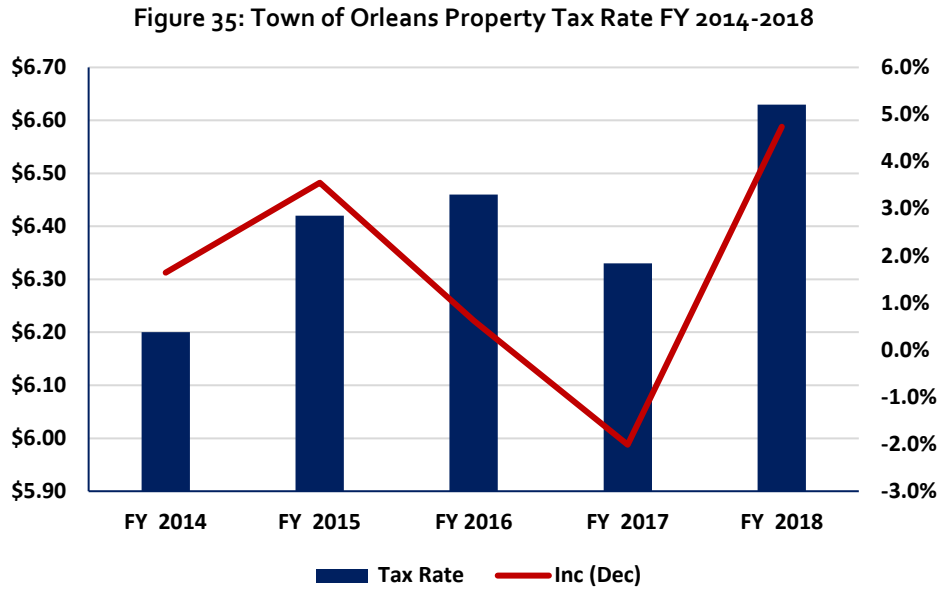
Figure 34 displays the total taxable value within the Town from 2014-2018. During this 5-year period, the total taxable values have increased 10.3% from 2014 through 2018.

Figure 34: Total Taxable Values FY 2014-2018



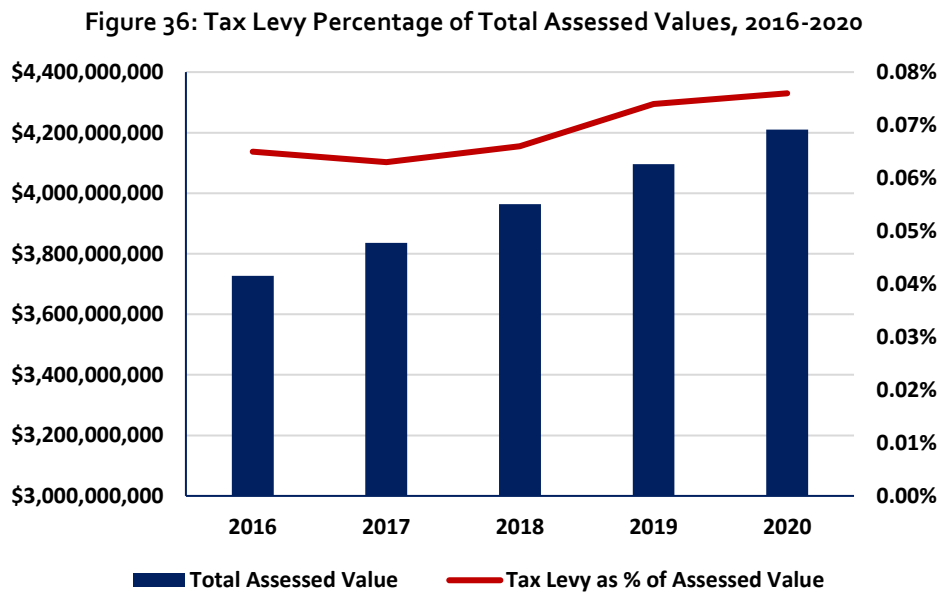
Next, the Town’s property tax rate is compared over the same period. The property tax rate assesses an amount per \$1,000 of all classes of property owned by residents of the Town.

<sup>3</sup> Town of Orleans



As increases to the total taxable value occurred year to year, a similar trend is seen in the tax rate within Orleans. From 2014 to 2018, an overall increase of 6.7% occurred, slightly lower than the increase seen in total taxable values for the same time period. From 2018 to the approved budget in 2020, the tax rate increased from \$6.63 to \$7.56, an increase of 14.0%.

The assessed valuation of property within Orleans has experienced a steady increase since 2016. In Figure 36, the annual assessed values are displayed along with the Town’s annual tax levy shown as a percentage of the total assessed values for that year. The general trend during this period is an increase in the relative tax levy percentage along with an increase in assessed property values.



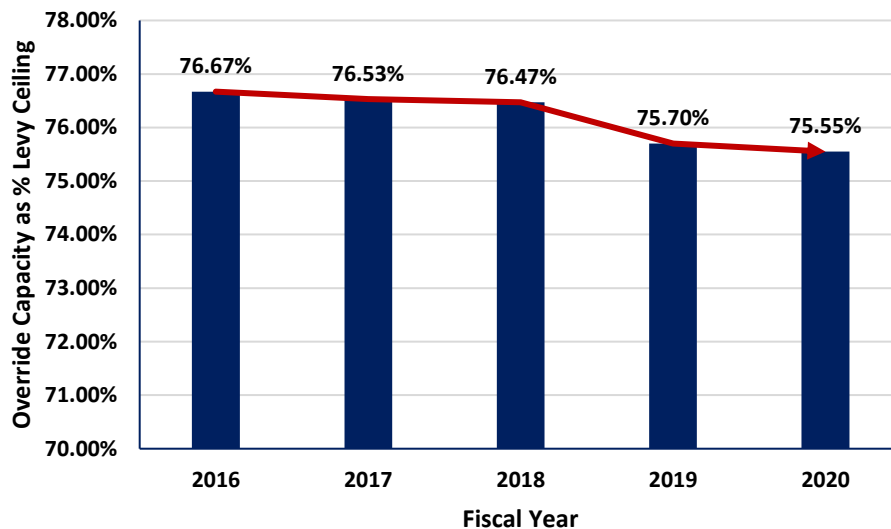
The annual increase in property taxes that the Town of Orleans can raise annually is limited by Massachusetts General Law (MGL. c. 59, § 21C), commonly referred to as Proposition 2 ½ which limits

property tax assessments by municipalities. Proposition 2 ½ limits the total tax that may be assessed to real and personal properties at 2.5% annually.

Should a municipality require additional revenue through taxation, such as when declining or flat property valuations inhibit the municipality’s ability to fund current services, a Levy Limit Override may be used to generate additional revenues. A Levy Limit Override must be placed on an election ballot and pass by a majority vote. At passage, it becomes a permanent increase to the amount of property taxes the Town can raise and increases at a rate of 2.5% annually, and the additional taxes raised can be used for any municipal purpose.

Municipalities can also seek funding for specific projects by adopting a Capital Override, which is a one-year increase in the property tax levy for the specific item or project. Alternatively, if a municipality wishes to finance a project, a Debt Exclusion may be adopted to increase the property tax level to pay the annual debt service on the project to be financed. Both a Capital Override and Debt Exclusion requires a ballot vote and a majority to approve passage. Unlike General Overrides, Capital Overrides and Debt Exclusions are temporary increases to property taxes. Debt Exclusions expire with the final payment to the debt service to which the debt exclusion was attributed. With the exception of debt service paid by fees (such as for Water Projects), the majority of the Town of Orleans debt service are collected annually through debt exclusions.

Figure 37: Override Capacity as a Percentage of the Levy Ceiling



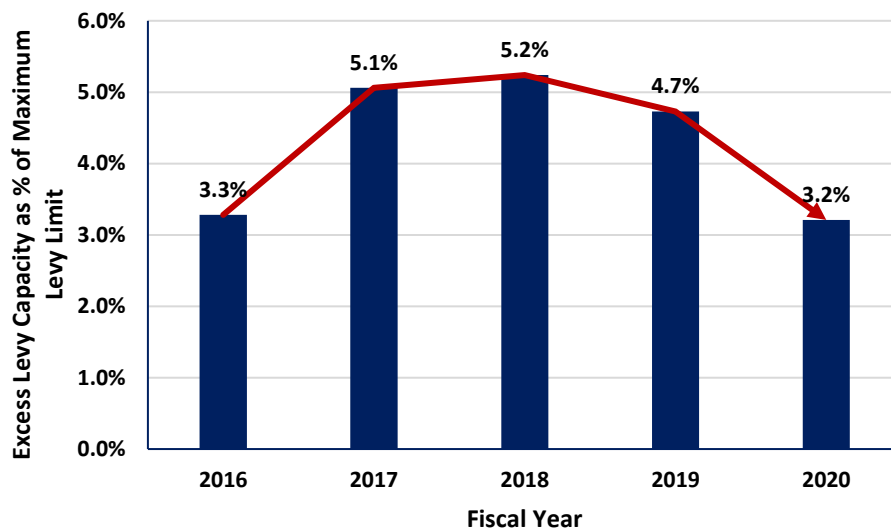
Unlike some municipalities within Massachusetts who have at some point reached the levy ceiling to raise additional revenues, Orleans possesses an override capacity of approximately 75% of the levy ceiling. The levy ceiling is the maximum amount that a municipality can tax based upon the value of 2.5% of its total annual assessed values, plus additional credit for annual growth. In 2008, a 5-year trend began in which a depressed real estate market resulted in lower assessed valuations in addition to annual 2.5% increases in collection through Proposition 2 ½. As expenditures began to outpace the ability to collect additional revenues at the capped rate, some municipalities “hit the ceiling” as their annual levy limits approached

or matched their levy ceiling<sup>4</sup>. When this occurs, a communities’ override capacity approaches zero. Override capacity is an indicator of the health of a community, and while Orleans possesses a relatively significant capacity at this time, the trend since 2016 is a slight but gradual decline.

Within Proposition 2 ½, municipalities have the ability to increase taxes by up to 2 ½ percent each year; however, they are not required to do so. When an annual increase is set below 2.5%, the difference between the maximum amount available for assessment and the actual amount assessed is the excess levy capacity. Excess levy capacity may be saved for subsequent fiscal years and applied in addition to the maximum 2.5% assessed in a given year. Municipalities may choose to tax at a lower rate for a number of reasons; however, the ability to assess a lower rate in one year and set an increased rate (above 2.5%) in another is advantageous as it allows revenues to be collected without permanently increasing the tax rate on top of the annual maximum 2.5% as would occur with an override. This also gives municipalities flexibility in managing their budgets without eliminating services when changes to the environment occur that are outside of their control, such as the Great Recession in 2008.

Figure 38 illustrates Orleans’ excess levy capacity as a percentage of the maximum annual levy limit.

**Figure 38: Excess Levy Capacity as a Percentage of the Maximum Annual Levy Limit**

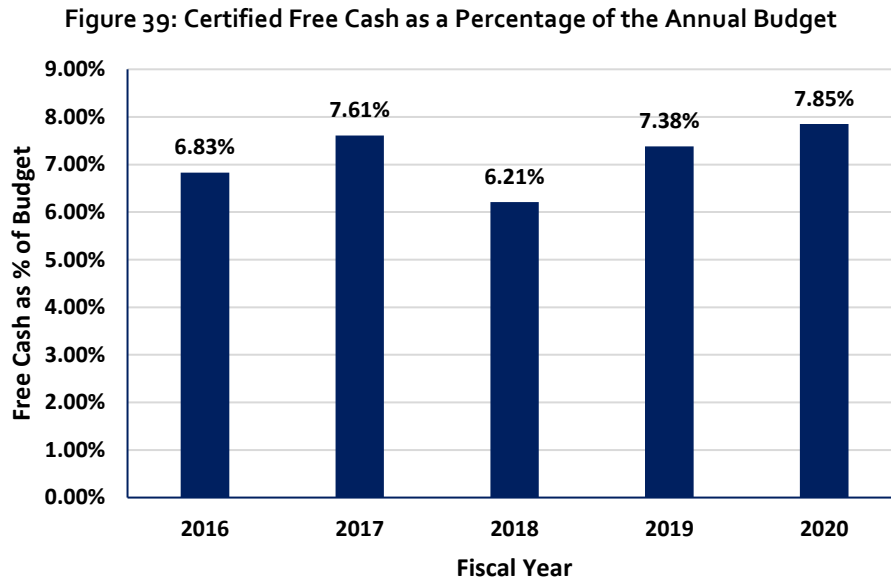


Since 2018, Orleans excess levy capacity has declined 38.5%, from 5.2% to 3.2%. In FY 2020, nearly \$451,000 of excess levy capacity was lost. Although levels had remained relatively stable from 2017-2019, if cost control measures cannot curb this downward trend, an override may be required in subsequent years. If the decline in 2020 continues at the same rate moving forward, an override would be needed in 2022 when Orleans excess levy capacity would be depleted.

In addition to raising taxes, the Town of Orleans possesses other means to collect revenue, offset expenses and maintain services. Free cash is a source of unrestricted revenue resulting from the

<sup>4</sup> How Close is Your Ceiling, 2016, City and Town

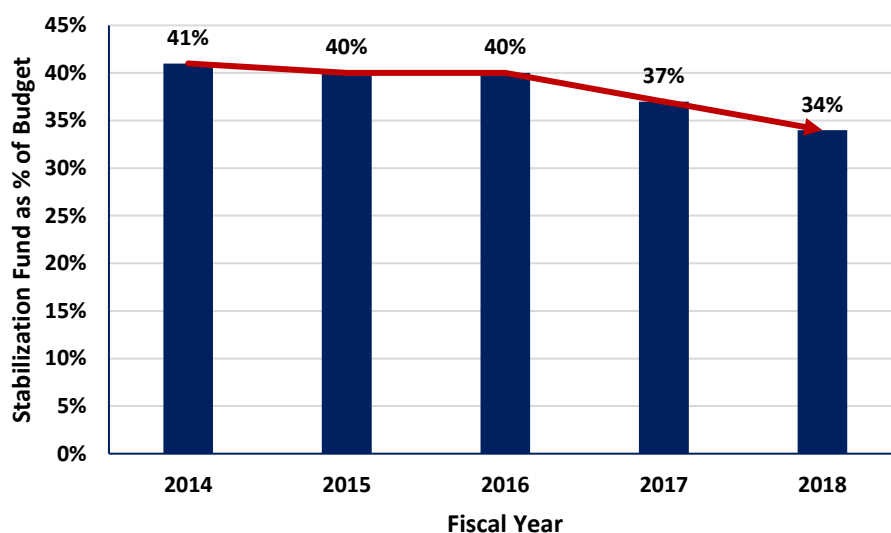
municipality spending less than it budgeted. This nonrecurring revenue source can be used for one-time expenditures, capital projects, transferred to other accounts, or used to offset the amount of the annual tax levy to realize excess levy capacity and place less of a burden on taxpayers for that year. In Figure 39, the percentage of free cash available to Orleans as a percentage of the annual budget is displayed.



The amount of free cash available to Orleans has remained between 6% and 8% of the Town’s budget since 2016. Although the dollar amount of free cash has increased annually, increases to the Town’s General Fund for operations have increased at a similar rate resulting in a relatively stable ratio. The Government Finance Officers Association (GFOA) recommends maintaining a reserve balance of between 5% to 15% of the municipalities’ General Fund budget.

In addition to free cash, Orleans also maintains a stabilization fund. In Figure 40, this is displayed as a percentage of the annual budget for that fiscal year. While the total dollar amount remained relatively stable, increases to the cost of operations resulted in a year-to-year decline in this fund when presented as a percentage of the annual budget.

Figure 40: Stabilization Fund as a Percentage of the Budget



As the costs of operations increase, and the ability of the Town to raise sufficient revenues to cover those costs through mechanisms such as free cash, reserve funds, and excess levy capacity, the Town could potentially encounter a situation where a decision must be made to either increase revenues through an override or debt exclusion or reduce services. Cost saving measures, such as those identified within the recommendations section of this report, are intended to assist the Town in maintaining efficient and effective levels of service while operating within the ability of its citizens to fund those services.

**Fire Department Budget and Funding**

The Orleans Fire Department provides fire rescue and emergency medical transport services to the Town of Orleans. While funded by the General Fund, the department collects fees for emergency medical transport services and receives a transfer of funds annually based upon the collection rate. Since 2015, the department’s budget generally maintained a trend of increased total spending, with a 12.5% increase from FY 2015 to the approved FY 2019 budget. Figure 41 provides an overview of department spending year-to-year and FY 2020 is included to illustrate how the current year’s proposed budget compares to prior years actual expenditures.

These figures are provided in a condensed version to allow for a more simplistic evaluation of the department’s budget. Categories within the actual budget provided by the Town were combined based on their commonality, ( i.e. electricity, heating fuel, trash collection, and telecommunications were combined into the Utilities category), and line items that experienced significant change are presented separately to highlight how funding within these areas changed over time. Within the administration category, the increase in spending occurring in the 2020 budget is due to the addition of an EMS Coordinator position.

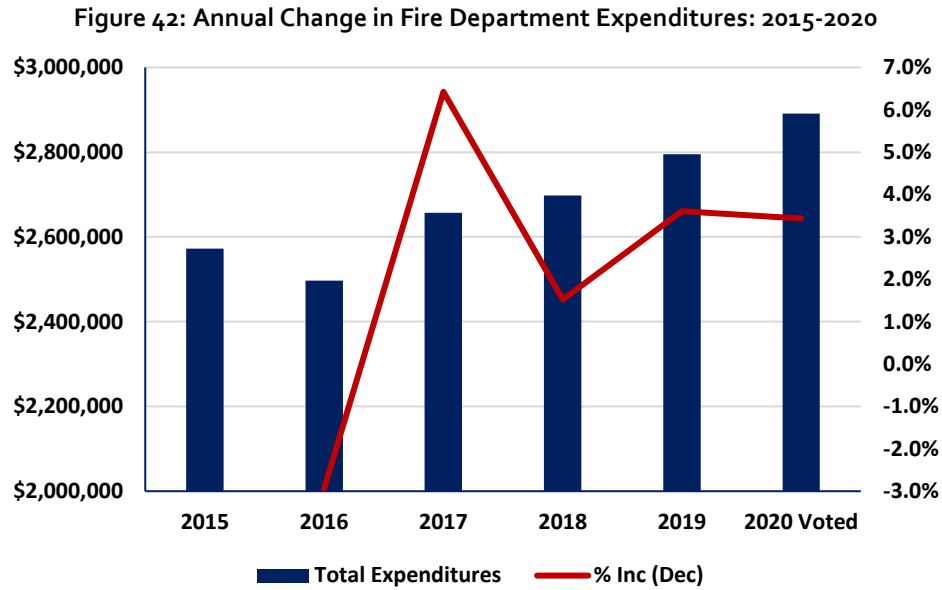
Figure 41: Orleans Fire Department Annual Budget: 2015-2020

Expenditures:	2015	2016	2017	2018	2019	2020 Voted
Administration	\$277,293	\$284,439	\$290,626	\$300,735	\$307,261	\$390,724
Personnel	\$1,893,157	\$1,912,562	\$1,973,303	\$2,071,108	\$2,135,509	\$2,155,371
Utilities	\$31,600	\$23,450	\$23,273	\$28,731	\$24,163	\$28,218
Equipment Repair	\$538	\$1,704	\$3,180	\$17,513	\$14,241	\$13,260
Professional Services	\$110,161	\$76,503	\$84,818	\$87,571	\$85,719	\$104,317
Training	\$13,782	\$30,165	\$7,658	\$4,800	\$4,995	\$19,017
Maintenance Contracts	\$7,514	\$10,272	\$14,167	\$33,450	\$37,082	\$32,790
Office Supplies	\$16,561	\$19,349	\$18,438	\$4,703	\$4,281	\$6,896
Vehicle Maintenance	\$45,504	\$30,273	\$73,798	\$58,498	\$86,685	\$50,897
Maintenance/Supplies	\$114,800	\$88,467	\$123,278	\$75,598	\$79,541	\$72,996
Uniforms	\$22,858	\$19,492	\$44,537	\$15,296	\$15,293	\$16,250
Capital Outlay	\$38,500	\$0	\$0	\$0	\$0	\$0
<b>Total Expenditures</b>	<b>\$2,572,265</b>	<b>\$2,496,672</b>	<b>\$2,657,074</b>	<b>\$2,697,552</b>	<b>\$2,794,769</b>	<b>\$2,890,736</b>

To provide a comparison of actual expenditures year-to-year, the following statistics compare FY 2015 and FY 2019, and the percentages provided indicate the amount of change between the two audited budgets over the 5-year period. Operational personnel costs increased at nearly the same rate as the total budget at 12.8% and include a 17.3% increase in overtime spending with a 64.5% decrease in paid-on-call spending. Utilities, professional services, maintenance and supplies, and uniforms all decreased within a similar range, 22.2% to 33.1%. Spending in training and office supplies also decreased by 63.8% and 74.2%; respectively. The costs of vehicle maintenance increased by 90.5%, while maintenance contracts increased 393.5%, and equipment repair by 2,547.0%. This would suggest that either the department severely underfunded these categories in the past or that the replacement of current vehicles and equipment are needed.

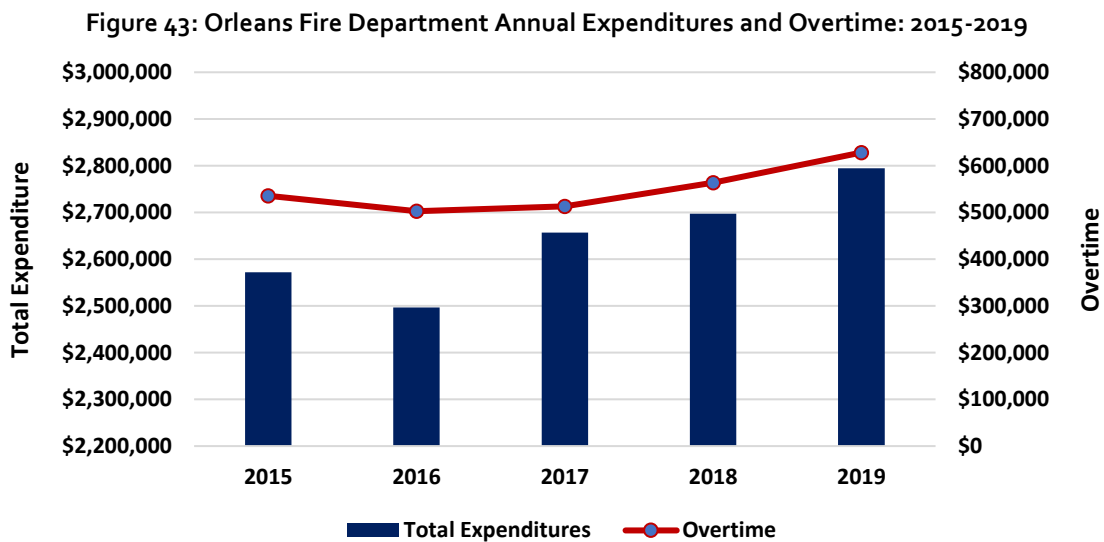
Although capital outlay only shows spending in 2015, motor vehicle and equipment purchases are achieved annually through the Motor Vehicle and Equipment Stabilization Account. Each year, departments submit capital vehicle and equipment requests. These requests are entered into a 10-year forecast or capital improvement plan. The forecast is presented at a Town meeting, and a tax override for Capital purchases funded at a standard amount is approved each year. Currently, this account is funded at \$570,000. Finally, overall operating costs for Orleans Fire Department decreased by 3.1%.

In Figure 42, the total expenditures of the fire department are displayed with the amount of increase or decrease in annual expenditures year-to-year.



Although the department experienced a slight decrease in spending from 2015 into 2016, overall the department’s budget has increased 8.9% from 2015 to 2019 and 12.4% when the adopted 2020 budget is included.

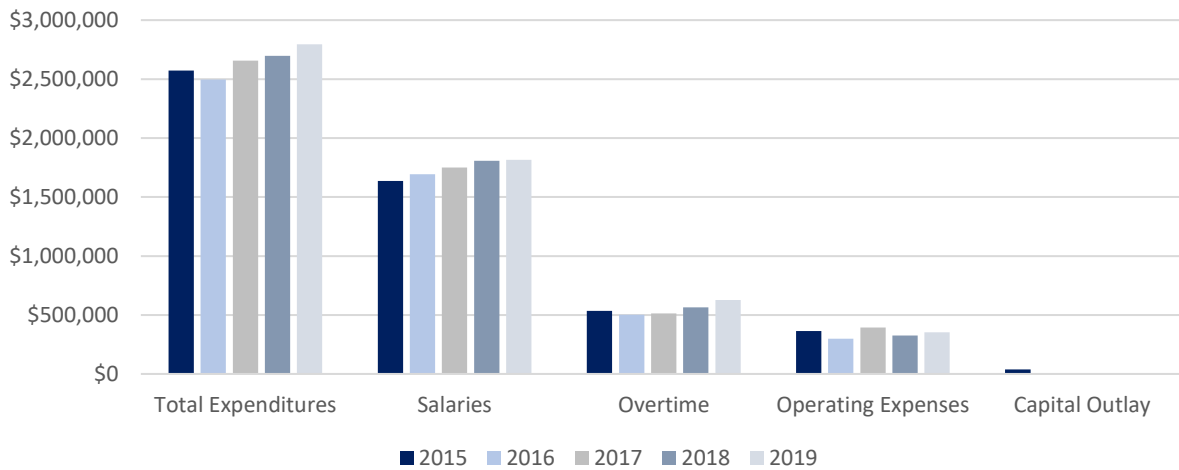
Within the fire department, personnel costs represent the greatest proportion of expenses. While total operational personnel costs have maintained pace with increases in total taxable value and tax rates, overtime expenses have increased at a faster rate while the use of paid-on-call firefighters decreased. Figure 43 illustrates the changes to the department’s budget and use of overtime from 2015 through 2019 based upon independently audited financial statements.



With overtime expenses representing 22.5% of the department’s spending in FY 2019, operating expenses representing 12.6% and salaries (minus overtime) the remaining 64.9%, the fire department should strongly consider a reevaluation of how resources are deployed within the Town.

Figure 44 provides an overview of the major components of the fire department’s budget from 2015-2019.

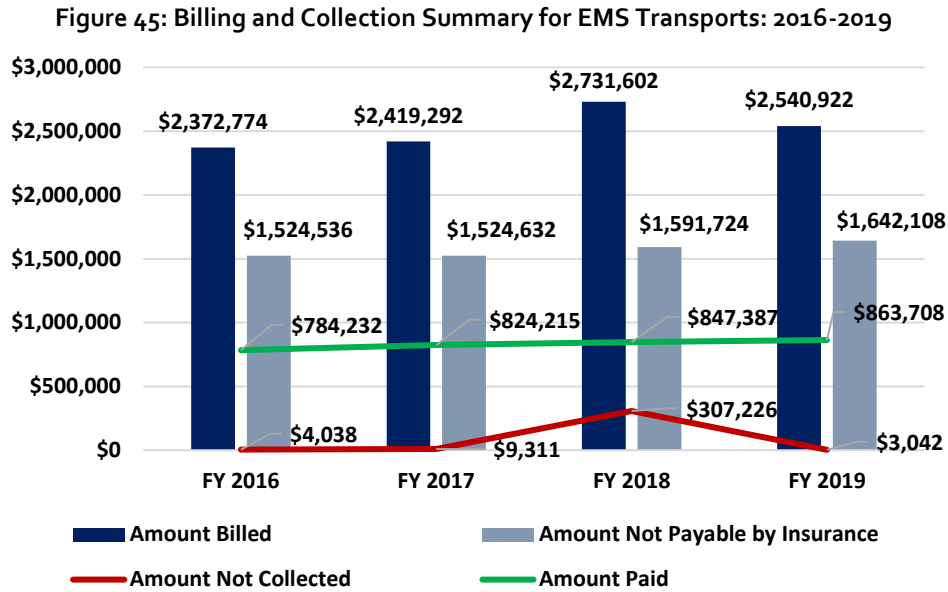
Figure 44: Fire Department Budget Overview: 2015-2019



When major components of the fire department’s budget are compared year-to-year, operating expenses remained consistent and capital outlay was present only in 2015. In all other categories, increases to salaries and overtime costs have driven the overall increasing expenditures of the fire department each year.

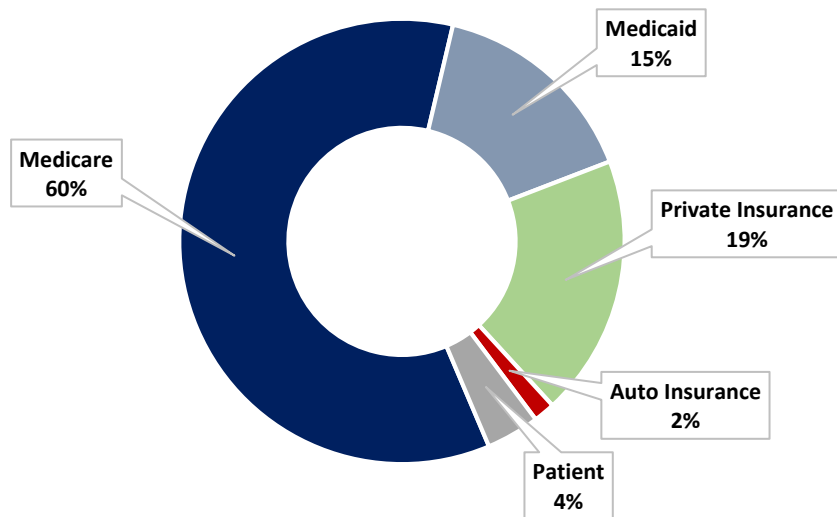
**EMS Transport**

The Orleans Fire Department provides Advanced Life Support (ALS) and Basic Life Support (BLS) transport services to the Town. Ambulances are staffed with a minimum of three personnel to deliver those services.



In the previous figure, the discrepancy in billing versus collections for the Orleans Fire Department is illustrated. On average from 2016 through 2019, the department collected 33.0% of what was charged to provide transport services. Factors affecting collection rates include the ability of the patient to pay and the type of insurance held, what the insurance provider is willing to pay, costs that must be absorbed due to an inability to pay for services, and how much the department must charge due to staffing or equipment configurations.

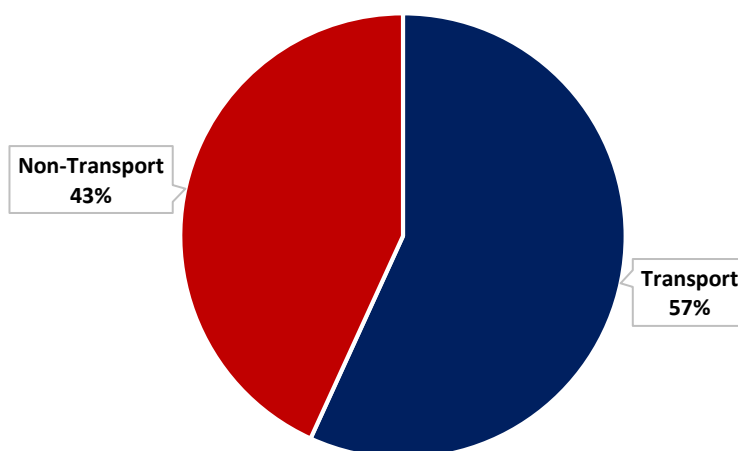
**Figure 46: EMS Transport Payor Mix: 2017-2019**



The majority of patients transported by the Orleans Fire Department, 75.5%, are covered by Medicare or Medicaid. These types of providers limit the payments that a transport agency will receive, regardless of what they actually bill. Because of this limitation in ability to collect revenue, and that these types of transports represent three quarters of the transport provided, Orleans Fire Department should consider options to reduce the costs of providing services while still meeting industry standards and state statutes.

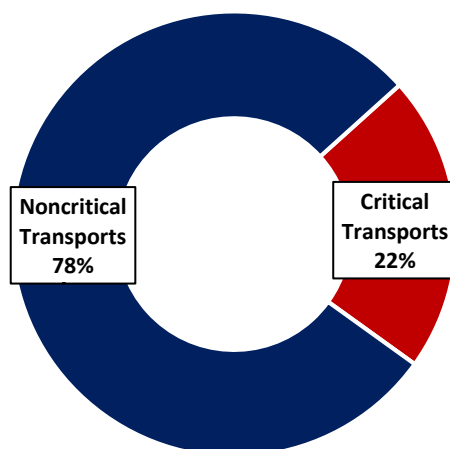
Finally, the next two figures display the frequency and types of transports provided by Orleans Fire Department in FY 2019. It is important to understand that not all emergency medical calls result in a patient being transported to the hospital and likewise, not every medical call requires a paramedic to provide care. Additionally, some calls require the care of two paramedics based on medical director protocols. Information for this figure was provided by the fire department and contained a total of 1,080 incidents for 2019.

Figure 47: Ratio of EMS Responses Resulting in a Transport vs. Non-transport, 2019



For FY 2019, Orleans transported just over half (57%) of the patients requesting emergency medical services. Transport data showing when two paramedics were required by medical protocol was provided by Orleans Fire Department. The date range provided was from 8/01/2018 through 6/30/2019 and contained records for 954 transports.

Figure 48: High Priority Transports, 8/1/2018 – 6/30/2019



Detailed accounting for the incident types which require two paramedics was not available at the time of the report; however, the figure shown above provides some insight into the frequency of this occurrence. Due to the generality of the information available, assumptions were made such as all airway obstruction or cardiac related calls required the use of two paramedics for the transport.

The Orleans Fire Department staffs three personnel on transport units with at least two paramedics at all times. Although a rough estimation, if 22% of transports are critical and require two paramedics, and 57% of medical responses involving an ambulance result in a transport, based on the 2019 totals, Orleans would have needed a second paramedic for 12.5% of the calls that occurred in 2019. Additionally, medical director protocols do not require three personnel on an ambulance. Staffing the ambulance with one paramedic and one EMT would have been sufficient for 87.5% of the Orleans Fire Department service demand in 2019.

## EXTERNAL AND INTERNAL CUSTOMER ASSESSMENTS

ESCI team members conducted stakeholder interviews to determine internal, external, and policy-maker expectations of the Orleans Fire Department. Stakeholder groups included members of the Orleans Community and members of the Orleans Fire Department including fire department leadership, the representatives of the fire department labor union, and Town officials.

### *External Survey Results*

In order to solicit input from the Orleans Community, ESCI created a seven-question online survey. The survey was open for participation from January 13-24, 2020. The Orleans Fire Department posted the link to this survey on the department Facebook page and shared information about the survey through its other normal communication channels. 47 people completed this online survey. This is less than 1% of the Orleans year-round population and includes 17 participants who claim not to be Orleans Residents. The results of this survey are not necessarily representative of the majority of Orleans Residents.

On the evening of January 14, 2020, ESCI facilitators held a Community Forum at the Orleans Fire Department. The Orleans Fire Department Deputy Chief welcomed the members of the community to the fire station and provided a brief overview of the operations of the Orleans Fire Department. He then thanked the members of the community for taking the time to participate in this process and left the room.

ESCI facilitators then introduced themselves and explained ESCI's approach to the Orleans Fire Department Staffing and Organizational Study. Following a question and answer session, the ESCI facilitators led the participants through the same seven-question survey that was available online. 19 people took this survey in person during the Community Forum.

The survey results reported by ESCI include the responses from the 47 people who took the survey online and the 19 people who took the survey in person at the Community Forum for a combined total of 66 external survey participants.

The people who participated in the Orleans Fire Department External Customer Assessment Survey were, in general, very pleased with the services offered by the fire department. This is a credit to the men and women of the Orleans Fire Department who provide a consistently high levels of service to the community every day.

An overwhelming majority of survey participants felt that Paramedic Ambulance Service and Fire Suppression services were "critical". 97 percent of the participants rated Paramedic Ambulance Service as critical while 95 percent of the participants rated Fire Suppression as critical. This is an indication that the services provided by the fire department are valued by the community.

Survey participants appreciated the public education opportunities that are offered by the Orleans Fire Department and expressed an interest in additional programs being offered. Survey participants suggested that the fire department consider offering, or continuing to offer, a Citizens Fire Academy, Stop the Bleed, Severe Weather Emergency Training, Water Rescue Services, and Training for Mental Health Issues. None of the survey respondents felt that that fire department should stop providing any of its current services.

It is notable that the majority of survey participants felt that the of the fire department service was appropriate, that the response performance of the fire department was appropriate, but that the staffing was understaffed / too light.

The single most common response to this question by more than half of the survey respondents was that they expected a fast, professional response to emergencies.

Survey participants did express concerns about the staffing and ability of the fire department to respond to all of the demands for service within the community. They were also concerned about the condition and size of the existing Orleans Fire Station.

In general, the people who participated in the External Customer Assessment Survey valued the service that is offered by the fire department. Survey participants repeatedly used the words "professional" and "caring" to describe their firefighters. The work done by the men and women of the Orleans Fire Department has not gone unnoticed by their community.

The External Survey and a detailed breakdown of the results for each question are included in this report as Appendix C.

### ***Internal Survey Results***

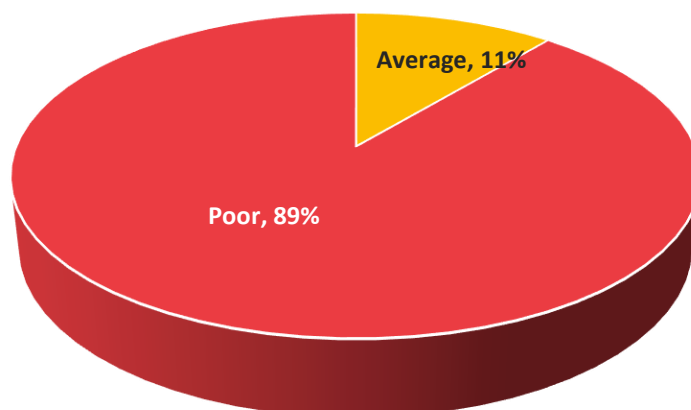
Input from the Orleans Firefighters was solicited using a 20-question online survey. The survey was open for participation from January 10-24, 2020. The Orleans Fire Department shared this link with their firefighters and encouraged their participation. Eighteen Orleans Fire Fighters completed this survey, which is 90% of the department's firefighters. This survey can be considered to be representative of the majority of the Orleans Fire Fighters.

In addition to the online survey, ESCI solicited input from Orleans firefighters through two in-person meetings. The first was with the Union Leadership and the second was open to all Orleans Fire Fighters. The feedback from the in-person sessions is incorporated into the Staffing and Personnel Management sections of this report. The following summarizes the results of the online external survey.

All of the internal survey participants reported six or more years of service with the Orleans Fire Department. The respondents were evenly distributed with 33% (six people) having six to ten years of service, 39% (seven people) having ten to 20 years of service, and 28% (five people) having more than twenty years of service. Almost half, 44 percent, of the survey participants held the rank of fire fighter. This equated to seven firefighters. Twenty-five percent (four people) held the rank of Private and an additional twenty-five percent (four people) held the rank of Captain. Six percent (1 person) who completed the survey identified themselves as a Chief Officer.

The internal survey revealed that the overwhelming majority of Orleans Fire Department personnel were very united in their feelings. Most of the survey participants shared the same concerns about the future of their fire department, and most valued the same elements of their fire department that their fellow members valued. This bodes well for the future of the fire department as the survey results indicated a united desire among the fire department membership to be proactive, take care of the members of the fire department so they can take care of the community, and to continue to provide a high level of service. With that said, the survey also revealed some very serious concerns on the part the membership that could limit the future success of the Orleans Fire Department if they are not immediately addressed.

The survey results indicated that there exists within the Orleans Fire Department a significant morale problem. The majority – 89 percent (16 people) classified morale within the fire department as poor. The second most common response was that morale was “average” with 11 percent of the participants (2 people) selecting that answer. Not a single one of the survey participants felt that morale within the Orleans Fire Department was Excellent or even Good.

**Figure 49: Internal Survey: Morale**

An analysis of the individual results of the 20-question internal survey presents a very clear picture of the current state of the Orleans Fire Department. Fire Department personnel believe that the fire department has a good image within the community. The survey participants take great pride in providing outstanding EMS Care, but they also feel that the department should more actively engage members of the community.

The survey participants were much less complimentary when assessing the internal operations of the Orleans Fire Department. While the overwhelming response by the majority of survey participants indicated that the members of the Orleans Fire Department are by far its greatest strength, major critical issues that were repeatedly cited throughout the survey were that the department is currently suffering from a lack of leadership, including inconsistent handling of personnel and poor communication. Other aspects of the fire department that are directly contributing to low morale include poor fire station facilities, lack of a current contract, low pay, and the need for more training.

The survey participants did express excitement at the prospect of a new fire chief and the opportunity for change within the department. ESCI recommends that the next chief of the Orleans Fire Department review the results of the Internal Survey and then meet with fire department personnel to discuss those results in person. After meeting with the members of the department, the new fire chief will be well-positioned to prioritize and begin to address the issues identified.

**ESCI suggests that the major concerns that were identified in the Internal Survey are a logical starting place for a Fire Chief in the Orleans Fire Department but caution that they are not a substitute for Strategic Planning. ESCI further recommends that following the appointment of a permanent Fire Chief, that it be a priority for the Orleans Fire Department to engage in both the Master Planning and Strategic Planning Processes.**

The culture that currently exists within the Orleans Fire Department is not a positive work environment and is not contributing to the overall success of the organization. It is ESCI's opinion that most, but not all, of the fire department members that attended the workshop with ESCI could be an asset for drastically

improving the culture of the Orleans Fire Department if they were placed under the direction of a strong fire chief who clearly communicated with them the plan for the future, and also demonstrated a willingness to support them in their efforts to implement that plan.

The next Orleans Fire Chief must actively take steps to address issues of immediate concern. The members of the Orleans Fire Department crave structure and stability. This is entirely consistent with Abraham Maslow's Hierarchy of Needs. This hierarchy suggests that people are motivated to fulfill basic needs before moving on to other, more advanced needs. Until the basic needs—including security and safety—are met, the members of the Orleans Fire Department will not seek successively higher self-fulfillment needs, including achieving their full potential.

The Internal Survey and a detailed breakdown of the results for each question are included in this report as Appendix D.

## Orleans Fire Department Staffing Recommendations

### STRENGTHS OF THE CURRENT ORLEANS FIRE DEPARTMENT STAFFING MODEL

The men and women of the Orleans Fire Department have consistently provided the highest possible level of emergency service to the Orleans community within the confines of the resources provided to them by the Town of Orleans. ESCI's in-person meetings with firefighters and members of the community, as well as ESCI's review of the internal and external customer surveys, all indicate that the Orleans Fire Department is comprised of employees who not only serve, but genuinely care for, their community. Those efforts are very much noticed by the residents of Orleans.

While the staffing model that is in place within the Orleans Fire Department has served the community to date, it is ESCI's finding that this current staffing model is neither sustainable nor efficient. The fact that the current model has remained in place for as long as it has is a testament to the operational line personnel who are regularly making split-second decisions about the dynamic deployment of firefighters and apparatus.

### WEAKNESSES OF THE CURRENT ORLEANS FIRE DEPARTMENT STAFFING MODEL

ESCI's review of the Orleans Fire Department identified that the current deployment structure includes the following critical weaknesses:

1. Inadequate Shift Staffing
2. Over-Reliance on Fire Fighter Callbacks
3. Inefficient Staffing Deployment

#### *Inadequate Shift Staffing*

The current Orleans Fire Department staffing model allows for as few as two firefighters on shift year-round excluding the Chief and Fire Inspector. There is an increase to three firefighters per shift between June 15<sup>th</sup> and September 15<sup>th</sup>; however, the Fire Chief and Deputy Chief count toward this increased level of staffing.

A financial analysis was conducted to provide additional information to Orleans Fire Department regarding the financial impact of varying staffing configurations. To accomplish the analysis and compare how adequate staffing versus the costs of overtime impact the department, a relief factor was included. A relief factor is the amount of additional staffing required, in excess of the daily minimum staffing, to theoretically eliminate the need for overtime.

While in practice it is difficult to completely eliminate all situations that could potentially generate overtime, this model assumes that 25% of the time an employee will use sick or vacation time from each job class listed. The total cost of the model employing additional staffing is then compared to the model which relies on overtime and the difference in costs calculated between the two. For this analysis, staffing configurations were calculated based on the actual 2019 salaries of the 20 Orleans line firefighters, a relief factor of 25%, a fringe benefit rate of 37% of base salary, and overtime calculated at 1.5 times the salary of the respective position. Because the number of hours worked and pay rate also affect how fringe benefits are calculated, this is included to provide Orleans with a better understanding of the true costs of

staffing. In Figure 50 the following staffing configurations are compared: a 4-shift model with and without a relief factor and a 3-shift model with and without a relief factor.

**Figure 50: Financial Impact of Staffing Configurations with a 37% Fringe Benefit Rate**

With Relief Factor				
Minimum Staffing	Annual Cost	FTEs	Additional FFs Needed	Total
5 (4 Shifts)	\$2,240,623	25	5	\$2,240,623
4 (4 Shifts)	\$1,809,076	20	0	\$1,809,076
7 (3 Shifts)	\$2,327,787	26.25	6	\$2,327,787
6 (3 Shifts)	\$2,004,127	22.5	3	\$2,004,127
No Relief Factor				
Minimum Staffing	Annual Cost	FTEs	Additional FFs Needed	Total
5 (4 Shifts)	\$1,792,498	20	0	\$2,464,685
4 (4 Shifts)	\$1,447,261	16	-4	\$1,989,983
7 (3 Shifts)	\$1,862,230	21	1	\$2,560,566
6 (3 Shifts)	\$1,603,302	18	-2	\$2,204,540

When 3 and 4-shifts models are compared with and without a relief factor, the most cost-effective option is a 4-shift model, a minimum staffing of 4 firefighters, and a relief factor provided with a 5<sup>th</sup> firefighter on each shift. This staffing configuration requires 20 FTEs and matches the total number of personnel currently assigned to each shift combined. While the second most cost effective option is a 4-shift model, a minimum staffing of 4 firefighters, and no relief factor, this option has two immediate drawbacks aside from costs: a 4 person minimum staffing with no relief factor would reduce the total number of firefighters on shift from 5 to 4 at all times, whereas the previous configuration assumes 5 firefighters would be on shift 75% of the time, limiting the department's flexibility to adapt to varying response needs. Second, the number of FTEs would be reduced from 20 to 16 FTEs. Based on current and predicted future demand, ESCI does not recommend reducing staffing from its current levels. Other options include the deployment of a 3-shift configuration with a minimum staffing of either 6 or 7 firefighters. Although the total number of firefighters per shift increases daily in three of the four scenarios, the 3-shift model is not used within the Cape Cod area and a change of this type would necessitate impact bargaining. At this time, ESCI does not view the 3-shift model as a feasible option for consideration.

To provide a shift configuration model in line with how salaries and overtime are displayed within the fire department's budget, the same staffing configurations are displayed without the 37% fringe benefit rate added to the totals.

Figure 51: Financial Impact of Staffing Configurations with no Fringe Benefits Added

With Relief Factor				
Minimum Staffing	Annual Cost	FTEs	Additional FFs Needed	Total
5 (4 Shifts)	\$1,635,491	25	5	\$1,635,491
4 (4 Shifts)	\$1,320,493	20	0	\$1,320,493
7 (3 Shifts)	\$1,699,115	26.25	6	\$1,699,115
6 (3 Shifts)	\$1,462,867	22.5	3	\$1,462,867
No Relief Factor				
Minimum Staffing	Annual Cost	FTEs	Additional FFs Needed	Total
5 (4 Shifts)	\$1,308,393	20	0	\$1,799,040
4 (4 Shifts)	\$1,056,395	16	-4	\$1,452,543
7 (3 Shifts)	\$1,359,292	21	1	\$1,869,026
6 (3 Shifts)	\$1,170,293	18	-2	\$1,609,153

Figure 51 provides the same analysis as shown in Figure 50, but matches the format of how salaries and overtime are provided within the annual budget for the department. Once again, the configuration that matches current fire department staffing numbers with a minimum staffing of four and a relief factor is the most cost-effective option. In Figure 52, a comparison of the calculated costs of staffing 5 firefighters across 4 shifts (current practice) with a minimum staffing of 4 per shift is compared with the actual base salary and overtime costs in 2019.

Figure 52: Comparison of Calculated Shift Staffing Costs versus Actual FY 2019 Expenditures

Staffing Configuration	Cost
Current Base Salary + 2019 OT	\$1,814,263
Calculated Cost of 4 shifts, Minimum Staffing of 4 with a Relief Factor	\$1,320,493
Difference between Actual and Calculated	\$493,770
% Difference	37.4%
% Savings	27.2%

Based on the assumptions within the model, should Orleans decide to utilize the 4-shift model, a minimum staffing of 4 firefighters, and a relief factor provided with a 5<sup>th</sup> firefighter on each shift, an annual reduction in overtime spending of \$493,770 annually, assuming all other factors remain constant, which represents a 37.4% difference in spending and a savings of 27.2% annually.

Since Orleans current minimum staffing is either 2 or 3 firefighters per day, a major contributor to the difference in spending is likely due to the use of call back overtime where employees are paid overtime for responding back to the fire station on their days off and receiving a set amount of time or greater for each call back. Because some overtime is likely to occur throughout the year, Orleans should continue to allocate funding to the overtime line item; however, Orleans has the current potential to drastically reduce overtime if managed appropriately.

The common practice of staffing one unit with a minimum staffing of 2 or 3 personnel while maintaining a shift staffing of 5 FTE's and call back overtime policy significantly impact the efficiency and effectiveness of the department. **ESCI recommends that the Orleans Fire Department increase minimum staffing to 4 firefighters on all shifts while maintaining 5 budgeted FTEs per shift.**

### ***Over-Reliance Fire Fighter Callbacks***

The present staffing model relies on a callback system where firefighters respond back to the station in response to a radio tone. Whenever the staff on duty are actively engaged on a fire or rescue call which takes them out of the Town of Orleans, the station will tone the call twice allowing a maximum of ten minutes to fill the station with a minimum of two off duty staff who also hold a current EMT certification prior to filling the station with the Fire Inspector during his duty hours or staff who hold a First Responder Certification. The current contract requires that all members will remain at the station for 60 minutes for rescue call backs and 30 minutes for fire call backs. Requested callback coverage for the primary rescue is three firefighters and two firefighters are requested for each additional ambulance thereafter.

This staffing model is inconsistent and expensive. There is no guarantee that the required number of firefighters will respond to callback. Fire Fighters who chose to respond to the callback must then drive to the station. Although the current contract requires all members that are hired after March 8, 2000 to live within a seven-mile radius of the fire station within one year of the date of hire, this travel to the station still creates a delay in staffing the station. ESCI's estimation is that the current callback system is the major contributor to the nearly \$494,000 difference in calculated versus actual costs of annually spending in salaries + overtime based on the assumption of a 25% relief factor to cover all of the shifts. **ESCI recommends that the Orleans Fire Department discontinue the current fire fighter callback system in favor increasing minimum shift staffing.**

### ***Inefficient Staffing Deployment***

The current Orleans Fire Department staffing model regularly assigns three firefighters to the ambulance. The configuration of this crew varies with staffing but can include between one and three paramedics. While staffing three personnel on an ambulance is consistent with other Cape Cod Fire Departments, this is not the practice throughout most of the rest of the country. Ambulances throughout the United States are typically staffed with a total of two personnel, only one of which is generally a paramedic.

A review by the New Jersey State Legislature's Office of Legislative Services in 2013, determined the following:

- "A majority of states require staffing [of ALS units] by two EMTs" but "do not specify whether both...must be capable of performing paramedic skills."
- "Several other states require ALS ambulances to be staffed by only one certified emergency medical responder—i.e., one paramedic or one EMT.
- "In summary, ... it does not appear that any other state [except New Jersey] requires ALS vehicles to be staffed by a minimum of two paramedics..."

A 2010 study of 10,298 out-of-hospital cardiac arrests evaluated whether more paramedics (three or more vs. two paramedics) resulted in improved outcomes. No difference was found in survival to discharge and return of spontaneous circulation wasn't associated with a greater number of paramedics.<sup>5</sup>

The Code of Massachusetts Regulations (CMR) 105 Section 170.305 requires that when an ALS Ambulance transports a patient receiving care at the Paramedic level, the ambulance must be staffed with a minimum of two EMTs, at least one of whom is certified at the Paramedic level. The CMR further specifies that such ambulances must implement criteria, approved by its affiliate hospital medical director and in accordance with administrative requirements of the Department, for determining those EMS calls when two Paramedics would be required to provide appropriate care, based on the patient's medical condition and acuity. The service must implement a procedure to ensure that a second Paramedic is immediately dispatched if the EMTs determine appropriate care of the patient's medical condition and needs requires a second Paramedic.

The Orleans Fire Department currently has this protocol in place and uses it on any calls that do not initially include a two-paramedic response. Figure 53 provides a comparison of the costs of staffing a 3-person ambulance using a captain, senior private, and firefighter versus the costs of staffing an ambulance with 2 firefighter/paramedics based on 2019 base salaries. As the common practice within Orleans is to staff 3 personnel per shift, staff the ambulance with 3 personnel with multiple ranks on that unit, and request call back overtime when that unit is dispatched, the 3-person model with no relief factor appears to accurately represent the department's current practice. When compared with the 2 firefighter/paramedic model with a relief factor, which would be the case in ESCI's preferred staffing recommendation, the difference in salary and overtime costs for the ambulance could be as great as \$476,050 annually.

**Figure 53: Costs of Staffing Ambulances with a Captain, Senior Private, and Firefighter Versus 2 Paramedics**

With Relief Factor			
Minimum Staffing	Annual Cost	FTEs	Total
3 per Ambulance Captain, Senior Private, Firefighter	\$1,005,496	15	\$1,005,496
2 per Ambulance FF/PM	\$629,995	10	\$629,995
No Relief Factor			
Minimum Staffing	Annual Cost	FTEs	Total
3 per Ambulance Captain, Senior Private, Firefighter	\$804,396.43	12	\$1,106,045
2 per Ambulance Firefighter/Paramedic	\$503,996.36	6	\$692,995

In addition to reducing operating costs on the ambulance, the ratio of annual expenditures to operate this service versus the amount of revenue collected must also be considered. In 2019, Orleans collected \$863,708 in revenue related to EMS transport and billed \$2,540,922 based on the currently adopted fee schedule. This represents a difference of \$1,677, 214 annually. A reduction in salary and overtime costs to

<sup>5</sup> Eschmann NM, Pirrallo RG, Aufderheide TP, et al. The association between emergency medical services staffing patterns and out-of-hospital cardiac arrest survival. *Prehosp Emerg Care.* 2010;14(1):71–77.

operate the ambulance would directly impact the department's return on investment for EMS transport expenses versus revenues generated and, in both models, the 2-person staffing of the ambulance with firefighter/paramedics allows Orleans to staff these units at a cost below the revenue received. Likewise, the 3-person staffing of the ambulance exceeds the annual revenue collected by as much as \$476,050 per year. By maintaining a 5-person crew with a 4-person minimum staffing, and staffing at least one paramedic on the engine/ladder truck, Orleans will effectively double the number of units in service daily, reduce the costs of providing EMS transport, and have the ability to provide a second paramedic when required.

**ESCI recommends that the Orleans Fire Department redeploy existing staff by discontinuing the practice of staffing three people on an ambulance in favor of staffing an additional engine, ladder truck, or other unit as deemed appropriate based on the nature of the incident.**

### ESCI PREFERRED STAFFING RECOMMENDATION

The ESCI Preferred Staffing Recommendation is based upon the totality of factors evaluated within this report. This option provides the foundation to:

- Maintain current shift staffing of five firefighters per shift.
- Increase minimum staffing to four firefighters per shift.
- Change ambulance staffing from three to two firefighters.
- Staff three firefighters on the engine or ladder; two of which could potentially deploy a second ambulance if required.
- Eliminate the use of routine callback overtime for EMS calls.
- Expand the radius for hiring personnel. – The elimination of routine callback overtime for EMS calls will allow the Town of Orleans to consider expanding the existing requirement for firefighters hired after March 8, 2000 to live within a seven-mile radius of the fire station within one year of the date of hire. Expanding this radius could increase the potential pool of new firefighters. This is important because the recruitment of new firefighters has become increasingly more challenging for the Orleans Fire Department in recent years.

### *Deployment of the ESCI Preferred Staffing Recommendation*

As illustrated in the Service Delivery Section of this report, 65.41 percent of Orleans Fire Department's calls occur without other calls happening at the same time. The Orleans Fire Department had two simultaneous incidents in progress 25.90 percent of the time. This means that by increasing minimum shift staffing to four fire fighters, the Orleans Fire Department will be positioned to immediately deploy two fire fighters each to 91.31 percent of its calls for service and be positioned to meet 90<sup>th</sup> percentile performance goals as units would presumably be available over 90% of the time. This is an improvement compared to the current deployment model which often staffs only one unit and relies on fire fighters

being called back to the fire station, thus creating a delayed response or potentially no response until mutual aid is requested.

The Orleans Fire Department had three concurrent incidents in progress an additional 6.63 percent of the time for a total of three or fewer incidents concurrently in progress within the town 97.94 percent of the time. The Service Delivery Section of this report further illustrated that historically, peak demand for service within the Orleans Fire Department is on weekday afternoons in July and August. The Orleans Fire Department is staffed with a Chief, Deputy Chief, EMS Officer and Fire Inspector during these peak demand weekday hours. These employees are trained and maintain fire and medical certifications and should be deployed as necessary. The Orleans Fire Department currently relies on mutual aid to assist with four or more concurrent incidents in progress and would continue to do so under the ESCI Preferred Staffing Recommendation.

### ***Implementation of the ESCI Preferred Staffing Recommendation***

The contract with the Orleans Fire Fighters is currently open for negotiation. This report presents the Town with the opportunity to negotiate changes to the contract to implement the ESCI Preferred Staffing Recommendation or a variation of the recommendation. Changes to contract language regarding minimum staffing, the number firefighters that are allowed off per shift, and the use of administrative personnel for calls will need to be negotiated.

ESCI recognizes that although a preferred recommendation is offered within this report, the ultimate decision on how this process will proceed is the purview of the citizens of the Town of Orleans.

## Orleans Fire Department General Recommendations

ESCI was contracted to perform a Staffing and Organizational Study for the Orleans Fire Department. While the focus of this project was to assess and evaluate the department’s current staffing, organization and delivery of services, ESCI also identified a variety of other areas for improvement within the Orleans Fire Department.

Each of the following recommendations listed below previously appeared within the narrative or in an appendix of this report in a bold font. This list represents the totality of ESCI’s general recommendations and prioritizes them into Short Term, Mid Term and Long-Term Recommendations.

- **Short Term Recommendations:** These recommendations can reasonably be accomplished within twelve months.
- **Mid Term Recommendations:** These recommendations can be expected to require between one and three years to accomplish.
- **Long Term Recommendations:** These recommendations can be anticipated to require three years or longer to accomplish.

ESCI offers the following recommendations to improve the delivery of fire and emergency services to the community served by the Orleans Fire Department.

**Figure 54: Orleans Fire Department General Recommendations**

Duration	Recommendations
<b>Short Term 0–12 Months</b>	<ol style="list-style-type: none"> <li>1. ESCI recommends that the Orleans Fire Department review and update all Rules and Regulations and establish SOPs/SOGs.</li> <li>2. Through appropriate planning, the Orleans Fire Department should establish a vision for the future, create a framework within which decisions are made, and chart its course to the future. The quality and accuracy of this planning function will determine the success of the organization.</li> <li>3. The Orleans Fire Department is encouraged to develop and maintain effective pre-incident and special hazard plans and to incorporate the plans routinely into dispatch communications.</li> <li>4. The Orleans Fire Department should consider the need for a long-range planning effort by undertaking this master planning process. The master planning process will give the department a clear idea of where it is today. The Master Plan will also project the Orleans Fire Department’s future needs as well as strategies for meeting them. This Master Plan is designed to provide a view of the organization in a 15-year time frame.</li> <li>5. ESCI recommends that the Orleans Fire Department consider engaging in a Strategic Planning process to prioritize goals and objectives for the organization to achieve within the next three to five years.</li> <li>6. ESCI recommends that the Orleans Fire Department work with the Barnstable County Mutual Aid Plan to assure that run cards reflect current</li> </ol>

Duration	Recommendations
	<p>fire department minimum staffing and that adequate resources are dispatched to a working fire in a single-family home to initially respond at least 17 firefighters and that at least 28 fire fighters are initially dispatched for working fires in strip malls and apartment buildings.</p> <ol style="list-style-type: none"> <li>7. The Town of Orleans should make it a priority to settle a contract with its firefighters that includes salaries that are competitive with its border towns. Without a competitive contract, the Orleans Fire Department should plan for it to become increasingly more difficult to attract new fire fighter paramedics for open positions within the fire department.</li> <li>8. ESCI recommends that, in accordance with the collective bargaining agreement, that it be a priority for the new chief to comply with the following sections of the labor contract:                     <ul style="list-style-type: none"> <li>27.2 Regular officer's meetings shall be held by the Chief and/or Deputy Chief.                             <ul style="list-style-type: none"> <li>27.2.1 The purpose of these meetings shall be to disseminate information from the Chief to the officers and for the officers to discuss concerns about the department with the Chief.</li> <li>27.2.2 These meetings shall be limited in time, shall be conducted from an agenda, and a maximum of one (1) hour of overtime compensation per officer per meeting may be paid.</li> </ul> </li> <li>29.1 There shall be a labor-management committee consisting of two (2) Union representatives and the Fire Chief and/or Deputy Fire Chief for the Town. The Committee shall meet on request of either party a minimum of six (6) to a maximum of twelve (12) monthly meetings per year to discuss all matters of mutual concern. The Committee shall have the authority to make recommendations to the Union and Fire Chief.</li> </ul> </li> <li>9. ESCI suggests that the Orleans Fire Department may benefit by bringing the International Association of Fire Chiefs' new program Member and Leadership Collaboration (MLC) into the Orleans Fire Department. This program is focused on leveraging behavioral analysis to manage group dysfunction through understanding DISC behavioral styles. DISC is an acronym that stands for the four prominent behavior styles - Dominance, Influence, Steadiness and Conscientiousness.</li> <li>10. ESCI strongly encourages the department to ensure all activities of the safety committee are in alignment with Chapter 4 of NFPA 1500. The safety committee should meet monthly and include in its mission the raising of awareness and modifying of member behaviors that will result in a safe work environment.</li> </ol>

Duration	Recommendations
	<ol style="list-style-type: none"> <li>11. The Safety Committee should review all accidents, injuries, near-miss incidents, and workplace safety suggestions.</li> <li>12. The Orleans Fire Department should take steps to store turnout gear in a well-ventilated room to prevent additional firefighter exposure to offgassing of chemicals absorbed into turnout gear during a fire.</li> <li>13. The Orleans Fire Department should also relocate the current fitness area that is in the apparatus bay to a location where firefighters can exercise without exposure to the toxic products of combustion.</li> <li>14. The Orleans Fire Department should consider adopting minimum annual training requirements for all firefighters, as it will ensure a standard method of evaluation of knowledge, skills, and abilities of staff.</li> <li>15. ESCI recommends that the Orleans Fire Department utilize an established NFIRS reporting system to record the data points that will enable them to have important information available used to plan for prevention and response activities.</li> <li>16. ESCI recommends that the Orleans Fire Department regularly evaluate trends within service demand and that staffing be adjusted as necessary according to current data.</li> <li>17. ESCI recommends the use of an established NFIRS reporting system—along with accurate entry by crews on each incident—the department would be enabled to track the workload by unit to use as part of the consideration for needs to change resource distribution.</li> <li>18. ESCI recommends that the Orleans Fire Department track its responses with the ability to separate emergency from non-emergency responses at the unit level.</li> <li>19. Leadership should analyze the various components associated with turnout time to determine any methods of improving this performance.</li> <li>20. With overtime expenses representing 22.5% of the department’s spending in FY 2019, operating expenses representing 12.6% and salaries (minus overtime) the remaining 64.9%, the fire department should strongly consider a reevaluation of how resources are deployed within the Town.</li> <li>21. ESCI suggests that the major concerns that were identified in the Internal Survey are a logical starting place for a Fire Chief in the Orleans Fire Department but cautions that they are not a substitute for Strategic Planning. ESCI further recommends that following the appointment of a permanent Fire Chief, that it be a priority for the Orleans Fire Department to engage in both the Master Planning and Strategic Processes.</li> <li>22. ESCI recommends that the Orleans Fire Department increase minimum staffing to 4 firefighters on all shifts while maintaining 5 budgeted FTEs per shift.</li> </ol>

Duration	Recommendations
	<p>23. ESCI recommends that the Orleans Fire Department discontinue the current fire fighter callback system in favor of increasing minimum shift staffing.</p> <p>24. ESCI recommends that the Orleans Fire Department redeploy existing staff by discontinuing the practice of staffing three people on an ambulance in favor of staffing additional ambulances, engines or the ladder truck.</p>
<p><b>Mid Term 1–3 Years</b></p>	<p>25. Although not currently required, Orleans Fire Department should consider adopting NFPA 1021, <i>Standard for Fire Service Officer Professional Qualifications</i> as their standard to achieve as baseline knowledge, skills, and abilities of fire officers.</p> <p>20. Orleans Fire Department does not have a designed practice of maintaining fire and EMS service training files for personnel. Currently the employee’s personnel records are used to include any training certifications submitted by employees. NFPA 1401, <i>Recommended Practice for Fire Service Training Report and Records</i> provides a recognized standard Orleans Fire Department could model their efforts after.</p> <p>21. It is recommended Orleans Fire Department continue to refine its regularly scheduled training by implementing training drills developed using NFPA 1410: <i>Standard on Training for Emergency Scene Operations</i>. This standard can serve as the basis for delivering drills that objectively measure the performance of personnel responding to emergency incidents.</p> <p>22. The Orleans Fire Department should provide a training manual as well as procedural guidelines for conducting training evolutions.</p> <p>23. The workload for the Fire Inspector’s Office is high and would benefit from additional manpower. This can come in the form of a part-time inspector, additional clerical support staff, or providing additional training to current line captains so they may assist with inspections and such while on duty.</p> <p>24. Efficiency of operations could be improved in the Fire Inspector’s Office with improvements in the day-to-day tracking of duties, making appointments, and communication with construction professionals. There are several software options to assist with this and to ensure that all required work is being done in a timely fashion and follow up is efficient.</p> <p>25. The Orleans Fire Department should review its reporting practices related to fire loss reporting to assure that the data collected by the fire department accurately reflects the true fire loss.</p> <p>26. ESCI recommends that the department leadership review all aspects of travel time response data and determine the travel time goal for their community and what resources it will require to meet that goal.</p> <p>27. The majority of patients transported by the Orleans Fire Department, 75.5%, are covered by Medicare or Medicaid. These types of providers limit the amount of payments that a transport agency can bill. Because of this limitation in ability to collect revenue, and that these types of transports represent threequarters of the transport provided, Orleans Fire Department</p>

Duration	Recommendations
	<p>should consider options to reduce the costs of providing emergency medical services while meeting industry standards and state statutes.</p>
<p><b>Long Term &gt; 3 Years</b></p>	<p>28. ESCI Recommends that if the Orleans Fire Department increases operational staffing, consideration be given to increasing administrative positions to maintain administrative staffing levels within the ten to 12 percent range.</p> <p>29. To effectively train in a more efficient and effective manner without negatively impacting the ability to respond to incidents within the Orleans Fire Department jurisdiction, it is recommended that the department evaluate the effectiveness of establishing a training facility within the center of the response jurisdiction.</p> <p>30. The layout of the current fire station, in which firefighters normally occupy areas that are very remote to the apparatus and must then transcend long stairways to reach the bays, is likely a key contributor to the long turnout times that currently exist in Orleans. Fire department leadership should prioritize the need for an efficient fire station design when considering future fire station improvements.</p>

## Conclusion

The ESCI project team began collecting information about the Orleans Fire Department in December of 2019. The team members recognize this report contains a large amount of information, and ESCI would like to thank the Orleans Fire Department staff and Orleans Town officials for their efforts in bringing this project to fruition.

It is ESCI's sincere hope the information contained in this report is used to its fullest extent, and the emergency services the Orleans Fire Department provides to the citizens in and the surrounding area will be improved by its implementation.

## Appendix A: Training Program

A comprehensive training program is one of the most critical factors for helping to ensure the safe and effective provision of emergency services. This is especially true of organizations such as the Orleans Fire Department, that provide a broad range of services throughout the community. To ensure maximum effectiveness and safety in complex environments, firefighters and officers must acquire and maintain sufficient initial training, ongoing training, and continuing medical education (CME). Failure to provide necessary training endangers firefighters and citizens and exposes the fire department to liability. In addition, a well-trained workforce substantially contributes to better emergency incident outcomes and community services.

Newly hired firefighters must participate in probationary firefighting training. The National Fire Protection Association (NFPA)—in its standard NFPA 1001 (Firefighter I and II)—identifies the minimum training requirements that can serve as the basis for entry-level firefighters. This training is voluntary in Massachusetts but required by Orleans Fire Department which is commendable. The NFPA recommends other standards that address initial and ongoing training for firefighters and officers in a variety of specific topics.

Following initial training, firefighters (i.e., all emergency services personnel) should actively participate in ongoing training that includes testing to ensure that practical skills and knowledge are maintained. In its Fire & Emergency Service Self-Assessment Manual (8th edition), the Commission on Fire Accreditation International (CFAI) addresses “Training and Competency,” and lists a number of performance indicators under the headings of training and education program requirements, performance, and resources. Some of these competencies include the following:

- The organization has a process in place to identify training needs. The process identifies the tasks, activities, knowledge, skills, and abilities required to deal with anticipated emergency conditions.
- The agency's training program is consistent with the mission statement, goals and objectives and meets its needs.
- The training program is consistent with legal requirements for performing mandatory training.
- The agency identifies minimum levels of training required for all positions in the organization.
- A command and staff development program are in place that encourages pursuit of professional credentialing.
- A process is in place to ensure that personnel are appropriately trained.
- The agency provides a training schedule that meets the organization's needs.
- The agency evaluates individual and crew performance through validated and documented performance-based measurements.
- The agency analyzes student evaluations to determine the reliability of training conducted.
- The agency maintains a training records management system that meets recognized standards.

- Facilities and apparatus are provided to support the agency's all hazards training needs. The agency has plans addressing any facilities and apparatus not available internally to complete training activities.
- The agency has instructional personnel with teaching qualifications and expertise to meet its needs.
- Instructional materials are current, support the training program, and are easily accessible.
- The agency has a process for purchasing, developing, or modifying existing curriculum to meet its needs.
- Equipment utilized for training are properly maintained in accordance with the agency's operational procedures. The agency makes training equipment readily accessible to instructional personnel.
- The agency maintains a current inventory of all training equipment and resources.
- A selection process is in place for training and educational resource materials.
- Training materials are evaluated at least annually, to reflect current practices and meet the needs of the agency.

Furthermore, the Insurance Services Organization (ISO) requires detailed hours of specific training as part of their fire department ranking. Below is a summary of the initial as well as recurrent annual ISO required training hours for each firefighter.

- Facilities Training: 18 Hours
- Company Training: 192 Hours
- Officer Development Training: 12 Hours
- New Driver Training: 60 Hours
- Driver Continuing Education: 12 Hours
- Hazardous Materials Training: 6 Hours
- New Recruit Training: 240 Hours
- Pre-fire Planning: Annual Review

Even though the Insurance Service Organization (ISO) requires specific detailed required training for department personnel, training programs must go beyond simply fulfilling mandatory hours. Emergency services training administrators and instructors must ensure that firefighters, EMS personnel, and officers are not only competent, but also self-confident in the variety of skills necessary to perform effectively in high-stress situations.

In the following section, ESCI has reviewed the various training practices and resources of the Orleans Fire Department, compares them to assorted standards and best practices, and makes recommendations where indicated.

### General Training Competencies

Training is most effective when it is based on established and proven standards. The Massachusetts Fire Training Council has the statutory authority, under Massachusetts General law Chapter 670, Section 165A, to administer the fire service certification process in the Commonwealth. The Massachusetts Fire Training Council is a board appointed by the governor made up of representatives of the major fire service organizations of the state and citizens of the Commonwealth. In Massachusetts, the firefighter Job Performance Requirements (JPR) utilized are based on the NFPA standards for Firefighter I and Firefighter II. Completion of the standardized training helps to prepare personnel for the National Board on Fire Service Professional Qualifications (commonly referred to as The Pro Board). The Council entered into this system voluntarily to validate their program against international expectations. This rigorous assessment assures evaluations meet best national practices. The following figure lists the general training competencies found at Orleans Fire Department.

**Figure 55: General Training Competencies**

Training Competency	Description
Fire Fighter Recruit Training	NFPA Firefighter I & II Preferred, not required Provided through the Massachusetts Fire Fighting Academy 6-month lead time
Fire Officer Training	Current Officers are all certified to at least the Fire Officer I level, but this is not required by Orleans Fire Department.
Incident Command System Training	Orleans Fire Department trains all personnel on the National Incident Management System (NIMS)
Special Rescue Training	Orleans Fire Department belongs to the Barnstable County Rescue Team. 5 Orleans Fire Department Members are trained
Hazardous Materials Training	All Orleans Fire Department Personnel are trained to the Hazardous Materials Awareness Level
Emergency Vehicle Operations	Practical and Simulator training sessions are provided by the Orleans Fire Department Insurance Carrier
Emergency Medical Training	Orleans Fire Department EMS Supervisor provides on-going training. Orleans Fire Department personnel attend a two-week training academy through the Cape and Islands EMS Systems to accomplish all of their required annual CMEs.
Other Training Competences	Vehicle Extrication, Small Tools, Power Tools, and Radio Communications Training are all provided in-house by Orleans Fire Department personnel.

All Orleans Fire Department firefighters are required to have firefighter I or II training to get hired while waiting to attend the Massachusetts Fire Fighting Academy. Orleans Fire Department does not have annual required renewal of JPRs. **The Orleans Fire Department should consider adopting minimum annual training requirements for all firefighters, as it will ensure a standard method of evaluation of knowledge, skills, and abilities of staff.** All Lieutenants and Captains are highly encouraged to maintain

Fire Officer I and/or II certifications. **Although not currently required, Orleans Fire Department should consider adopting NFPA 1021, *Standard for Fire Service Officer Professional Qualifications* as their standard to achieve as baseline knowledge, skills, and abilities of fire officers.**

Orleans Fire Department uses the Incident Command System and requires all employees to be trained in the National Incident Management System (NIMS). Orleans Fire Department firefighters are required to have completed NIMS 100, 200, and 700. Officers are encouraged to complete NIMS 300 and 400 training. The department uses an accountability system for tracking members during emergency operations.

### ***Training Administration***

ESCI evaluated the administrative functions, staffing and resources of Orleans Fire Department Training. The following figure lists several of the administrative components related to training.

**Figure 56: Training Program Administrative Components**

<b>Training Program Administrative Components</b>	<b>Orleans Fire Department</b>
Director of Training Program	Senior Private Firefighter as fire training coordinator & EMS coordinator
Training goals & objectives identified	No
Use of Certified instructors (qualifications)	Yes, all instructors are certified by Massachusetts Fire Training Council in accordance with NFPA 1041
Annual training report	No
Procedures manual	No
Administrative training support	No

To function effectively, a training program must be managed. An additional element of effective administration is the development of program guidance in the form of training planning, goals, and defined objectives. Orleans Fire Department training is overseen by two training coordinators, one responsible for fire training and the other EMS training. In the case of Orleans Fire Department, a fire training coordinator is established through a senior private who oversees the department's fire training needs. This is an operational position that has administrative duties assigned for training requirements, and by design can be hampered by normal department mission requirements. As such it is difficult to maintain a training calendar. EMS training requirements are managed by a separate designated EMS training coordinator. This position was established and implemented recently and is helping to ensure the department meets EMS related training requirements. Orleans Fire Department does not have anyone assigned to help provide clerical support for daily training needs.

### ***Instructors & Instructor Requirements***

Orleans Fire Department uses internal instructors for training. These instructors are trained and certified through Massachusetts Fire Training Council to NFPA 1041, Standard for Fire and Emergency Services Instructor Professional Qualifications. This practice is an industry standard and should be continued.

### *Training Records & Recordkeeping*

Orleans Fire Department does not have a designed practice of maintaining fire and EMS service training files for personnel. Currently the employee's personnel records are used to include any training certifications submitted by employees. The training coordinators are responsible for entering and maintaining class records, as well as individual records for all personnel in the department when they lead the training. Company Officers, firefighters, and other staff are accountable for maintaining their individual training and continuing education records. Daily company training is entered into ImageTrend®. Orleans Fire Department used the Firehouse® RMS for previous years but recently made the transition to ImageTrend® software. **NFPA 1401, Recommended Practice for Fire Service Training Report and Records** provides a recognized standard Orleans Fire Department could model their efforts after.

The following figure lists information regarding training records and recordkeeping.

**Figure 57: Training Records & Recordkeeping**

Recordkeeping	Orleans Fire Department
Individual training files	No
Computerized records and files	Records Management System- ImageTrend®
Annual training hour tracking	Image Trend
Daily training records	Yes
Company training	Yes
Responsibility for training records	Yes, Company Officer
Training equipment	Fire- props EMS- Full array of equipment available for check out

### *Personnel Trained*

Orleans Fire Department has made a commitment to training and is commended for the evident dedication assuring that department personnel are trained to operate safely on the emergency scene. The department's needs for training are an ever-difficult balance to achieve while providing emergency services with limited staff. All of Orleans Fire Department's efforts provide multiple avenues to ensure responders are trained and prepared to handle emergencies of any kind. Emergency medical services training and continuing medical education is delivered by Cape and Islands EMS Systems through a two-week training class designed to provide EMS providers with all of the required ongoing training CME's. This training is in conjunction with the Medical Director and assures Orleans Fire Department that all of their practitioners are meeting current standards of practice.

### *Training Schedule*

As with many fire departments, one of the challenges at Orleans Fire Department with conducting training sessions with on-duty firefighters is the necessity to maintain sufficient personnel and apparatus to ensure adequate response-emergency response capability during drills and classes. Because of the lack of sufficient resources, competency-based training sessions occur infrequently at Orleans Fire

Department. Orleans Fire Department, like many fire departments across the United States do an exceptional job of training personnel to entry-level requirements, but many fall-short in the delivery of on-going training of employees. In addition to ensuring personnel have the quality knowledge, skills, and abilities necessary to deliver effective and efficient emergency services, training programs have an added effect of improving employee morale.

### *Training Methodologies*

To deliver effective training to fire and EMS personnel, some resources are necessary to arm the trainer with the tools needed to provide adequate educational content. The greatest expenses related to this training involve props, facilities and locations to host the training, and audio-visual support when needed. In addition to tools, effective methodologies must be employed if delivery is to be sufficient to meet needs. The Orleans Fire Department training coordinator utilizes a variety of effective training methodologies. Some include lectures and hands on tactile training. Most of these trainings done within Orleans Fire Department are achieved by on duty crews in between answering calls for service. This makes delivery very difficult to complete without interruption. The Orleans Fire Department has worked hard to incorporate new and emerging technologies in the fire service into their daily routine by bringing outside training to its members. For instance, the Nozzle Forward class has been delivered twice for the department. More of this type of training should be conducted.

Manipulative skills are used to train employees in various topics of pumping, apparatus operations, ladders, structural firefighting tactics, extrication, and fire ground skills to name a few. Task proficiency should be reviewed for department performance and establishing training goals for the future.

**It is recommended that the Orleans Fire Department continue to refine its regularly scheduled training by implementing training drills developed using NFPA 1410: *Standard on Training for Emergency Scene Operations*. This standard can serve as the basis for delivering drills that objectively measure the performance of personnel responding to emergency incidents.**

A significant component to ensuring the safety of firefighters includes conducting an effective post-incident analysis (PIA) of fire department operations. An effective PIA provides the opportunity for firefighters and officers to learn from their personal actions and experiences. In addition to improving firefighter performance, the PIA has the added value of improving firefighter safety. Orleans Fire Department provides for a PIA to be conducted following each major incident. This is an excellent way for crews to identify both good things and bad things to learn from. Consideration of using them on even small-scale incidents will add value to training.

### *Training Facilities*

The ability to train in a realistic environment is critical to developing and maintaining skills. Many of the skills necessary to be truly effective must be taught and practiced in a controlled environment allowing for skill development and yet ensures firefighters are as safe as possible. Additionally, ISO requires the regular use of dedicated training locations to gain maximum credit for Public Protection Classification scoring.

Currently, Orleans Fire Department must rely upon space at the fire station and other publicly available locations. The use of these spaces is limited based upon availability at the time of need. The use of non-

fire department locations (i.e., business parking lots) can have a negative impact by interfering with the operations of the respective businesses. The use of available public spaces does not allow for consistency in conducting training evolutions as the availability may change on a daily or hourly basis.

The department does not have dedicated training facilities and relies on movable props built by department staff. These props are great additions to the training methods and practices, and include hose deployment trays, entanglement and wall breach simulators. Acquired structures are also used when available. **To effectively train in a more efficient and effective manner without negatively impacting the ability to respond to incidents within the Orleans Fire Department jurisdiction, it is recommended that the department evaluate the effectiveness of establishing a training facility within the center of the response jurisdiction.** This evaluation should include an analysis of a strategic location to reduce travel time to and from and maximize the ability to quickly respond to incidents occurring within the jurisdiction. The lack of a dedicated training facility presents a number of challenges in delivering the minimum training requirements for Orleans Fire Department firefighters.

Ideally, Orleans Fire Department should have its own training facility located strategically and easily accessible from the fire station. Current plans involve using the nearby fire station in Brewster that has additional training props constructed there. Many departments use mobile burn facilities and facilities constructed from shipping containers. These facilities are relatively economical to construct, require very little space, and provide very realistic training environments. The Orleans Fire Department should consider this as an option to provide the necessary training facility.

### ***Training Program Goals and Objectives***

Each facet of the department requires established goals and objectives to ensure success. The department's training program is no different. Discussions with staff yielded the following critical issues regarding training within Orleans Fire Department.

**Figure 58: Critical Issues Regarding Training**

Critical Issues	Deputy Fire Chief's Perspective
First	Lack of live fire training
Second	Dedicated time for members to receive training
Third	Established goals and objectives for department training

Without a dedicated facility to provide live fire training, Orleans Fire Department will struggle to ensure firefighters remain proficient with operating inside an Immediately Dangerous to Life and Health (IDLH) environment. Fire departments must ensure their organizations can be prepared for these challenges. NFPA 1403, *Standard on Live Fire Training Evolutions* and NFPA 14, *Standard on Facilities for Fire Training and Associated Props* provide guidance and direction for establishing ways to meet these needs.

The Orleans Fire Department will continue to have challenges providing adequate training as long as staff is limited. The Orleans Fire Department should establish dedicated staff to provide training as well as coordinate the efforts of the training program.

Goals and objectives provide the foundation for an effective training program. These goals and objectives can be determined by creating a training committee of dedicated employees who are passionate about department training. An analysis of the department's ability to complete tasks and evolutions outlined in NFPA 1410 will provide the basic evaluation of where to begin. Furthermore, PIA review can also provide much needed information as to weaknesses and gaps in service ability. Once these gaps are identified, the training program can be constructed to address the deficiencies.

### ***Training Procedures and Manuals***

Orleans Fire Department does not have dedicated training procedures or manuals. Currently many different textbooks and mediums are available to provide necessary content and support for training items. Several publishers like International Fire Service Training Association and Jones & Bartlett produce textbooks with a variety of subjects for the fire service. Often very detailed and structured information can be found on the world wide web and through social media platforms for free. A general search of topics related to the fire service on the web will yield information for use. **Once a dedicated training division or group is established and a full-time staff member is identified, Orleans Fire Department should strive to provide a training manual as well as procedural guidelines for conducting training evolutions.**

## Appendix B: Public Education Program

Fire Prevention has three traditional segments: code enforcement, fire investigation and public education. The specific person responsible for these duties within the Orleans Fire Department is the Fire Chief. The Chief has delegated these responsibilities to staff and line personnel with assignment of these duties at the will of the Fire Chief. The Fire Chief has delegated code enforcement operations to the Fire Inspector. The fire investigation component is the responsibility of the Deputy Chief or the shift Captain on duty when a fire occurs. Fire prevention duties are shared by two personnel and they are assisted by the line firefighters.

### *Fire Code Enforcement*

The Fire chief is the Authority Having Jurisdiction (AHJ) and is also referred to the head of the department in Massachusetts General Law (MGL). MGL Part I, Title XX, Chapter 148, section 4, provides the Fire Chief with the power to delegate inspection duties, and in Orleans, these duties are generally delegated to the Fire Inspector. In times when the Fire Inspector is away, the Deputy Fire Chief will typically cover the duties normally assigned to the Fire Inspector during that time. The inspector works four days a week for ten hours per day during a normal work week. The fire inspector is expected to adhere to a daily schedule of appointments unless the department responds to a high priority call.

For budgeting purposes, the Fire Inspector position is listed as one of the fire department captains. It is not a fire department line position and it shares a single support staff member, Melissa Clayton. Her duties are to assist the Fire Chief, the Deputy Chief and the Fire Inspector Office.

The Fire Chief is deemed the local enforcement officer as defined by MGL Part I, Title XX, Chapter 148A. This law clarifies that the Chief may designate this to someone else in the department or the local building inspector. The Fire inspector and the Building Inspector work together frequently but the Building Official does most of the formal code abatement in Orleans. The current code is the Massachusetts Comprehensive Fire Safety Code (527 CMR 1.00). This document is based upon NFPA 1-Uniform Fire Code with Massachusetts amendments.

The inspections that the town of Orleans is required to perform are found in MGL Part I, Title XX, Chapter 148A.

### *Qualifications*

The State of Massachusetts qualifications to perform the duties of Fire Inspector are relegated to the local municipality to determine. General qualifications are State fire prevention classes, approximately five modules online and pass a test. There are continuing education requirements and additional classes to improve knowledge base for fire inspections.

According to the Fire Inspector job description, the Fire Inspector is required to obtain The Fire Prevention Officer I designation within one year of appointment. The Fire Prevention Officer Level I and Level II Credential expire after 36 months. Anyone wishing to maintain their Level I and Level II credentials must accumulate 36 points or 72 points, respectively, of approved attendance and activities in a consecutive 36-month period that begins on the date the latest credential was issued. ESCI reviewed this job description and determined it to be appropriate to the current duties and requirements of the Fire Inspector position.

## ***Fire Inspector Office Operations***

### *Plan Review*

Plan reviews are done primarily by the Building Official. If there is a fire code specific issue, they will request a consult with Fire Inspector to provide input as it relates to fire alarm, restaurant hood systems, and any other relevant items.

### *Inspections*

The Orleans Fire Department performs more than 600 inspections per year. The inspector's office uses Fire House Software in which to keep track, numerically, of the inspections performed. Reports can be readily produced to present the workload tracking of the Fire Inspector's Office. Several state laws apply to regulate the inspection operations. In addition, the Orleans Board of Selectmen also issues permits/licenses to certain businesses such as assembly and those that serve alcohol. Inspections are required on these properties annually in order to maintain these permits/licenses.

Residential inspections are performed when a home is in the process of being sold. These inspections are done to ensure that there are adequate smoke and CO detectors. A fee of \$25-\$50 is received when the fire inspector inspects a residence for smoke and CO detectors.

#### ***MGL Part I, Title XX, Chapter 148, section 4***

The head of the fire department or whom he delegates authority, shall make an inspection and submit a report, every three months of institutions as defined by the state building code, licensed by:

- Department of public health
- Department of public welfare

The head of the fire department shall also make an inspection every three months of the premises specified in innholder's licenses.

#### **MGL PART I, TITLE XX, CHAPTER 148, SECTION 5**

The head of the department or whom he delegates authority, shall, upon complaint, enter into buildings at any reasonable hour, and make an investigation as to the existence of conditions likely to cause fire. They shall notify the owner of the building in writing of the remedies for the accumulation of combustibles and obstacles to ingress or egress. In addition, they are authorized to make subsequent entry and remove the hazards at the expense of the building owner.

**The workload for the Fire Inspector's Office is high and would benefit from additional manpower. This can come in the form of a part-time inspector, additional clerical support staff, or providing additional training to current line captains so they may assist with inspections and such while on duty.**

**Efficiency of operations in the Fire Inspector's Office could be improved by tracking of daily duties, making appointments, and communication with construction professionals. There are several software options to assist with this and to ensure that all required work is being done in a timely fashion and follow up is efficient.**

### *Other Duties*

Additional wide-ranging duties assigned to the Fire Inspector include: various consultations with citizens and contractors pertaining to fire safety questions; oil burner, oil tank and tanker inspections; complaint investigations; storage of hazardous materials inspections; Knox Box installations and key updates; rough inspections on construction projects; and witness of fire drills.

### *Fire Cause and Origin Investigations*

Over the last three years, the number of structure fires was consistent (approximately 30). The procedure used by the Orleans Fire Department is to notify the Deputy Fire Chief and take direction. Consultation will take place between the Captain (or senior firefighter) on scene and the Deputy Chief in order to decide whether to contact the State Fire Marshal's Office or to conduct the investigation with the Orleans Fire Department staff. The State Fire Marshal's Office may be requested by Orleans Fire Department to respond to any fire when they are needed.

Small fires, such as brush fires, trash fires, and vehicle fires are investigated by the senior staff person on the fire apparatus. Additional reports are sent to the State when there is a fire involving a vehicle.

Per state law, the head of the department or whom he delegates authority, shall submit an annual report of all official action in relation to fires to the commissioner of insurance.

ESCI's review of the ten-year general fire loss revealed that there is a general trend of an increase in fire only calls, but the number of structure calls has not varied a great deal. Although the number of structure fires has averaged about 30 over the last five years, the reported loss amounts have increased during that same period of time. There is a noticeable inconsistency in the reporting of loss. When comparing the number of structure fires to the number that are reporting a loss, there is a wide gap in that reporting. Either this is inaccurate and there are a large number of structure fire with no dollar loss, or the monetary loss is under-reported and therefore the loss, in dollars, is underestimated. **The Orleans Fire Department should review its reporting practices related to fire loss reporting to assure that the data collected by the fire department accurately reflects the true fire loss.**

There were zero fire related fatalities in the last ten years and both fire service and civilian injuries are very low. Coupled with the relatively moderate number of structure fires and the reported dollar loss suggests that the enforcement and public education components are doing a satisfactory job.

**Figure 59: Ten-Year General Fire Loss**

Year	# Calls (less EMS)	Structure Fires <sup>a</sup>	Structure Fires reporting a dollar loss	Loss amount reported in Structure Fire	Civilian Injuries	Fire Service Injuries
2010	583	27	1	\$60,000	0	0
2011	601	17	2	\$122,000	1	0
2012	550	31	3	\$120,000	1	0
2013	757	21	2	\$455,000	0	0
2014	754	44	5	\$816,000	0	0
2015	753	39	10	\$1,528,000	4	1
2016	788	36	10	\$1,693,000	0	0
2017	807	35	2	\$588,000	0	0
2018	996	33	8	\$1,013,000	1	0
2019	774	33	5	\$219,000	0	0
<b>Total</b>	<b>7,363</b>	<b>316</b>	<b>48</b>	<b>6,614,000</b>	<b>7</b>	<b>1</b>

a-Fires which the Type of Alarm was reported as chimney fire, electrical fire, cooking incident, or structure fire.

### **Public Education**

The duties of public education are delegated to a captain and fire fighter. The Orleans Fire Department provides a variety of public education programs to its citizens. In addition to these established programs, the Orleans Fire Department personnel routinely field citizen's questions and concerns, meet with residents on apartment safety, and perform home safety checks upon request. The following provides a summary of the Public Education Programs offered to by the Orleans Fire Department. The Orleans Fire Department's public education efforts are many and varied and are very well received by the community based on the results of ESCI's External Customer Assessment. The results of this External Customer Assessment are detailed later in this report.

#### **Student Awareness of Fire Education (SAFE)**

This program is delivered to the elementary school children in Pre-K through grade 5. SAFE is a program sponsored by the State of Massachusetts. It is the goal of the Public Education Division to provide instruction to all elementary school students in the Orleans community.

#### **Citizens Fire Academy**

The academy is run by the Orleans Fire Department during which approximately 15 citizens learn about the fire department and fire safety. The academy has many different topics that are presented once evening a week for six weeks. The Citizens Fire Academy runs the full program once to twice per year.

#### **Open House**

This is an annual event held at the fire station in October. The fire department welcomes the community to the firehouse with a concentration on fire safety.

### *Block Party*

The Orleans Police Department sponsors an annual block party held in August and the fire department operates a booth. This is a large community event that provides an opportunity for the public education to talk to residents and visitors about fire safety.

## Appendix C: External Customer Assessment Survey Results

The first question asked survey participants if they were residents of the Town of Orleans.

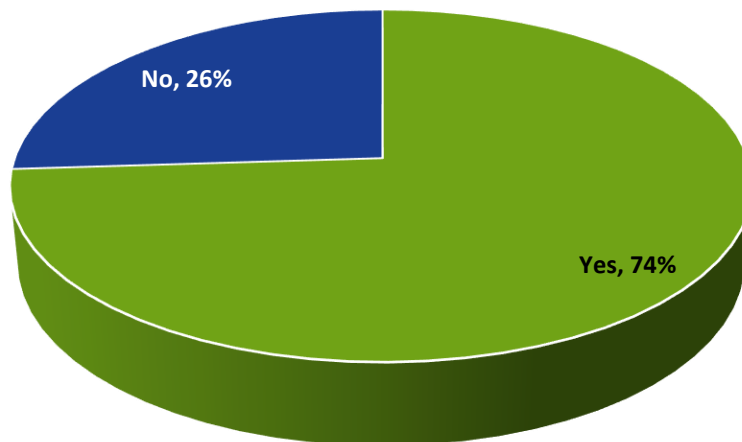
**Figure 60: External Survey Question 1**

**1. Are you a current resident of the Orleans, MA?**

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Out of 66 total survey participants, 74%, or 49 people, identified themselves as current residents of Orleans and 26%, or 17 people, reported that they were not a current resident of Orleans. The results of the first question are illustrated in the following figure.

**Figure 61: External Survey Question 1 Results**



The second question on the asked respondents to identify their personal interactions with the fire department during the last year.

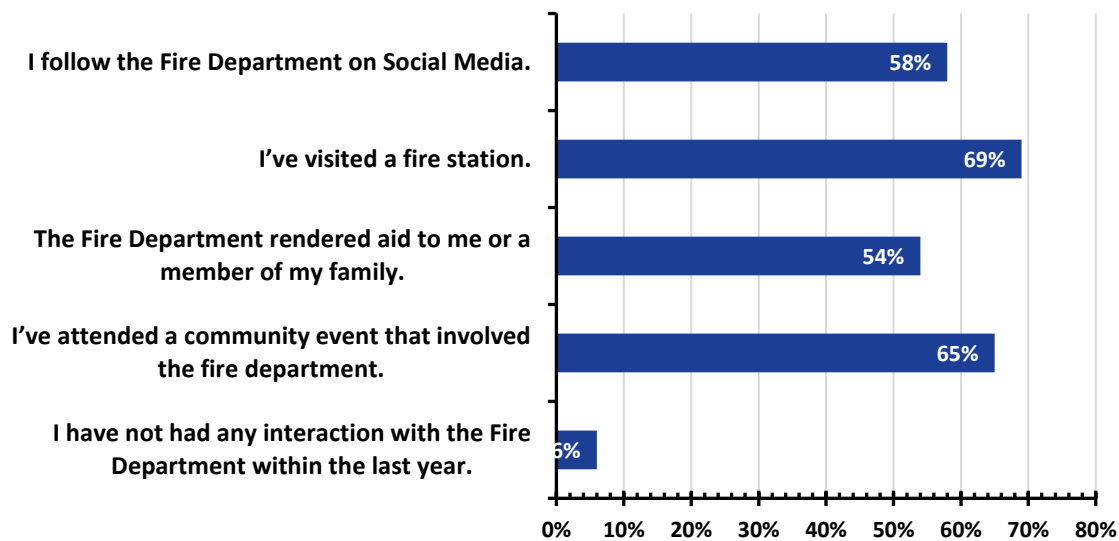
Figure 62: External Survey Question 2

**2. Please check the boxes next to all the interactions that you have had with the Orleans Department during the last year.**

- The Fire Department rendered aid to me or a member of my family.
- I've visited a fire station.
- I've attended a community event that involved the fire department.
- I follow the Fire Department on Social Media.
- I have not had any interaction with the Fire Department within the last year.
- Other interaction, please specify:

The most common interaction with the fire department reported by 69% of survey participants (46 people) was a visit to the fire station. The second most common interaction was attendance at a community event attended by the fire department (43 people or 65%). The results of the second question are illustrated in the following figure.

Figure 63: External Survey Question 2 Results



There were three parts to the third survey question.

Figure 64: External Survey Question 3

- 3. This is a three-part question.**
- A. Please rank the following services provided by the Orleans Department as Critical (1), Important (2) or Not Important (3).**
  - B. If you would like to see a service added, please list it in the blank at the bottom of the following list.**
  - C. Cross out any services you feel shouldn't be provided by your fire department.**

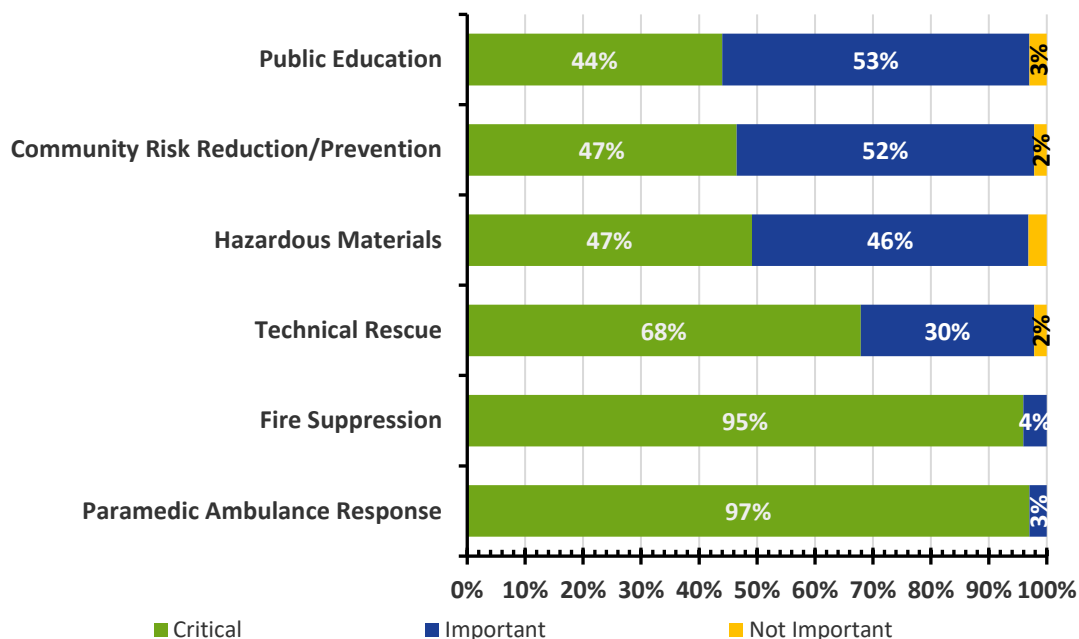
*1: Critical 2: Important 3: Not Important*

- \_\_\_\_\_ Paramedic Ambulance Response
- \_\_\_\_\_ Fire Suppression
- \_\_\_\_\_ Technical Rescue
- \_\_\_\_\_ Hazardous Materials
- \_\_\_\_\_ Community Risk Reduction - Prevention
- \_\_\_\_\_ Public Education
- \_\_\_\_\_ Add:

The two services that were most highly ranked as "Critical" were Paramedic Ambulance Response (97% or 64 people) and Fire Suppression (95 percent or 63 people). Services such as Technical Rescue, Hazardous Materials, Community Risk Reduction and Public Education were identified as critical by many survey participants but were identified as "Important" rather than "Critical" by almost half of the participants.

Survey Respondents suggested that the fire department consider offering, or continuing to offer, a Citizens Fire Academy, Stop the Bleed, Severe Weather Emergency Training, Water Rescue Services, and Training for Mental Health Issues. None of the survey respondents felt that that fire department should stop providing any of its current services. The results of the third question are illustrated in the following figure.

Figure 65: External Survey Question 3 Results



In the fourth question, participants were given an opinion poll and asked to check one box under each of the headings of Staffing, Response Performance, and Cost of Service.

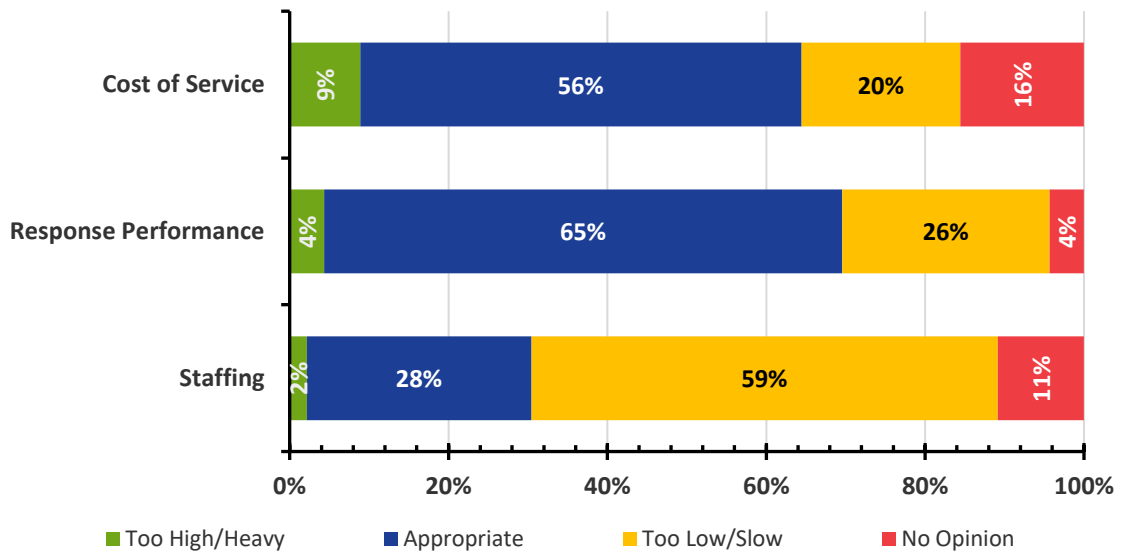
Figure 66: External Survey Question 4

**4. Please check the boxes that reflect your *opinions* as they relate to staffing, response and costs. Please add any explanatory comments in the notes section immediately following the table.**

<u>Staffing</u>	<u>Response Performance</u>	<u>Cost of Service</u>
<input type="checkbox"/> Overstaffed	<input type="checkbox"/> Response too heavy	<input type="checkbox"/> Too expensive
<input type="checkbox"/> Staffed appropriately	<input type="checkbox"/> Response appropriate	<input type="checkbox"/> Appropriate
<input type="checkbox"/> Understaffed	<input type="checkbox"/> Response too slow/light	<input type="checkbox"/> Underfunded
<input type="checkbox"/> No Opinion	<input type="checkbox"/> No Opinion	<input type="checkbox"/> No Opinion

The results of the fourth question are illustrated in the following figure.

Figure 67: External Survey Question 4 Results



It is notable that the majority of survey participants felt that the of the fire department service was appropriate, that the response performance of the fire department was appropriate, but that the staffing was to understaffed / too light.

The fifth question asked survey participants to identify their expectations for their fire department.

Figure 68: External Survey Question 5

**5. Please list the expectations you have of your fire department:**

The single most common response to this question by more than half of the survey respondents was that they expected a fast, professional response to emergencies. The other most frequent responses to this question are illustrated in the following figure.

Figure 69: External Survey Question 5 Results

time provide **Fire** timely fashion **respond** called **emergencies**  
 Fast **needed** emergency medical **response** life professional

The sixth survey question asked participants to identify any concerns that they had about their fire department.

Figure 70: External Survey Question 6

**6. Please list any concerns you have regarding your fire department:**

The most common concern cited by survey participants was the ability of the fire department to respond to all of the demands for service in the community. The second most common concern was the condition and size of the current fire station. The other most frequent responses to this question are illustrated in the following figure.

Figure 71: External Survey Question 6 Results



The seventh and final question invited survey participants to share what they believed were the strengths of their fire department.

Figure 72: External Survey Question 7

**7. Please list any strengths you would like to share regarding your fire department:**

The two most common responses to this question were overwhelmingly that the survey participants felt that their fire department was both professional and caring. The other most frequent responses to this question are illustrated in the following figure.

Figure 73: External Survey Question 7 Results



## Appendix D: Internal Customer Assessment Survey Results

The first survey question asked respondents how many years they have worked for the Orleans Fire Department.

**Figure 74: External Survey Question 1**

**1. Please identify your total number of years of service for the Orleans Fire Department**

**Answer Choices**

**0-5 years**

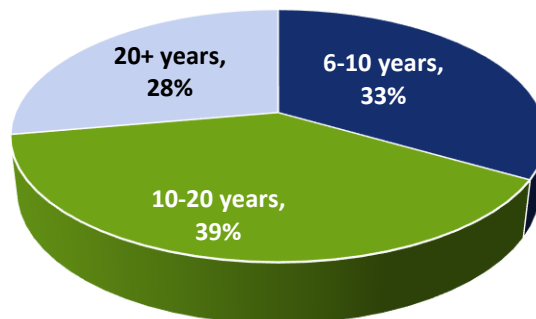
**6-10 years**

**10-20 years**

**20+ years**

All of the survey participants reported six or more years of service to the Orleans Fire Department. The respondents were evenly distributed with 33% (six people) having six to ten years of service, 39% (seven people) having ten to 20 years of service, and 28% (five people) having more than twenty years of service. The results of the first question are illustrated in the following figure.

**Figure 75: Internal Survey Question 1 Results**



The second survey question asked participants to identify their position within the Orleans Fire Department.

**Figure 76: Internal Survey Question 2**

**2. Which one of the following best describes your current position?**

**Answer Choices**

**Fire Fighter**

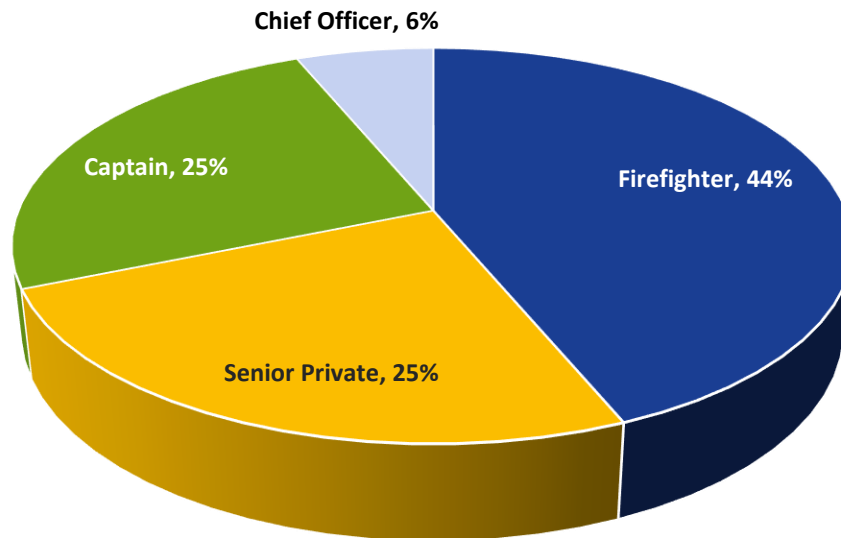
**Senior Private**

**Captain**

**Chief Officer**

Almost half - 44 percent - of the survey participants held the rank of fire fighter. This equated to seven firefighters. Twenty-five percent (four people) held the rank of Private and an additional twenty-five percent (four people) held the rank of Captain. Six percent (1 person) who completed the survey identified themselves as a Chief Officer.

**Figure 77: Internal Survey Question 2 Results**



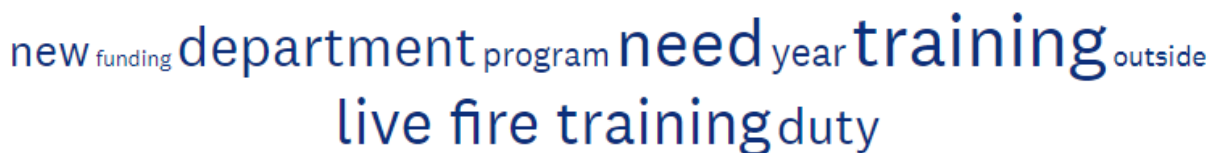
The third question asked survey participants to share their thoughts about the department’s training program.

**Figure 78: Internal Survey Question 3**

**3. If you could change one thing about the department's training program, what would it be?**

The most common answer to this question was that firefighters wanted more training. They also wanted off duty training and live fire training. The following figure illustrates the remainder of the most common responses.

**Figure 79: Internal Survey Question 3 Results**



The fourth question on the survey asked about communication within the Orleans Fire Department.

**Figure 80: Internal Survey Question 4**

4. In your opinion, what is the best way to communicate information at the Orleans Fire Department?

The overwhelming majority of firefighters felt that email was the best way to communicate information within the Orleans Fire Department. After email, many firefighters suggested that in person staff meetings in conjunction with email would go a long way to improving existing communications within the department. The following figure illustrates the other popular answers to this question.

**Figure 81: Internal Survey Question 4 Results**

Captains Also Officers memos shift Department  
 text messages full department Email notice  
 meetings POSTED communication information

The fifth question asked survey participants about morale within the Orleans Fire Department.

**Figure 82: Internal Survey Question 5**

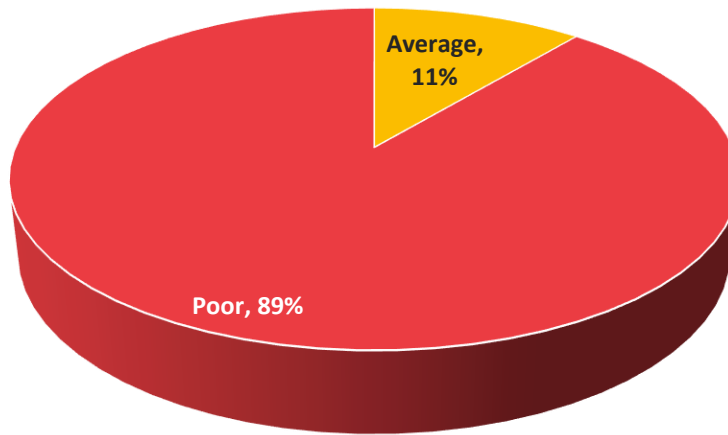
5. How would you rate morale at the department?

**Answer Choices**

- Excellent
- Good
- Average
- Poor
- No Opinion

The overwhelming response – 89 percent (16 people) to this question was that morale was poor within the Orleans Fire Department. The second most common response was that morale was average with 11 percent of the participants (2 people) selecting that answer. None of the survey participants felt that morale within the Orleans Fire Department was Excellent or even Good.

**Figure 83: Internal Survey Question 5 Results**



**Figure 84: Internal Survey Question 6**

**6. What suggestions do you have for improving firefighter morale at the department?**

The overwhelming majority of survey participants cited improved communication as being the best way to improve morale. Better wages and settling the contract were the next most common responses to this question. The other common responses to this question are illustrated in the next figure.

**Figure 85: Internal Survey Question 6 Results**



As a follow up to the question about morale, the seventh question asked survey participants what they thought the department’s leadership should be doing more of.

**Figure 86: Internal Survey Question 7**

**7. In your opinion, what should the department's leadership be doing more of?**

Survey participants were again overwhelmingly united in their response to this question. Most every given answer included some request for more, better or consistent communication. Other responses to this question are illustrated in the following figure.

**Figure 87: Internal Survey Question 7 Results**

need better shift FIGHTING staff future Communicating  
training work goals captains members

The eighth question asked survey participants to rate their overall work experience within the Orleans Fire Department.

**Figure 88: Internal Survey Question 8**

**8. How would you rate your overall personal work environment at the department?**

**Answer Choices**

**Excellent**

**Good**

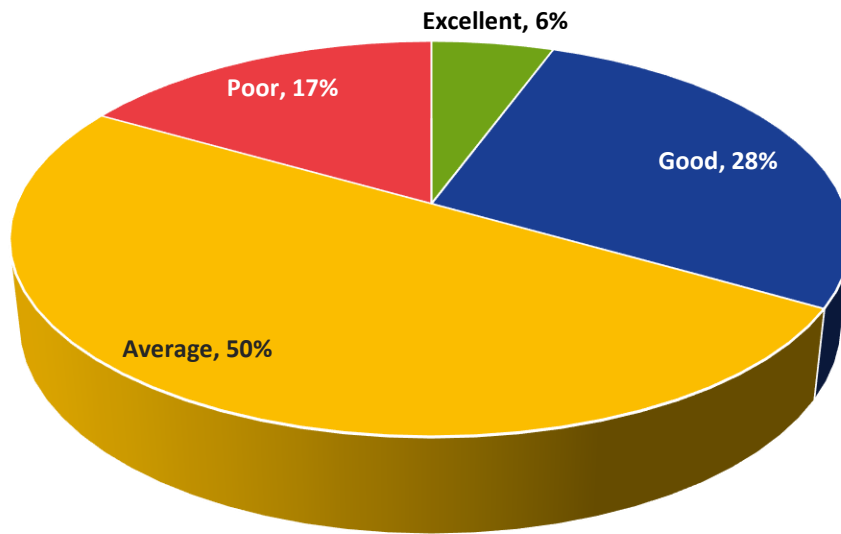
**Average**

**Poor**

**No Opinion**

Half of the survey participants (nine people) felt that their experience was average while 28 percent (5 people) rated it good, 17 percent (three people) felt that it was poor, and six percent (1 person) selected excellent. The following figure illustrates the breakdown of responses.

**Figure 89: Internal Survey Question 8 Results**



The ninth question asked survey participants to rate their level of pride related to being a member of the Orleans Fire Department.

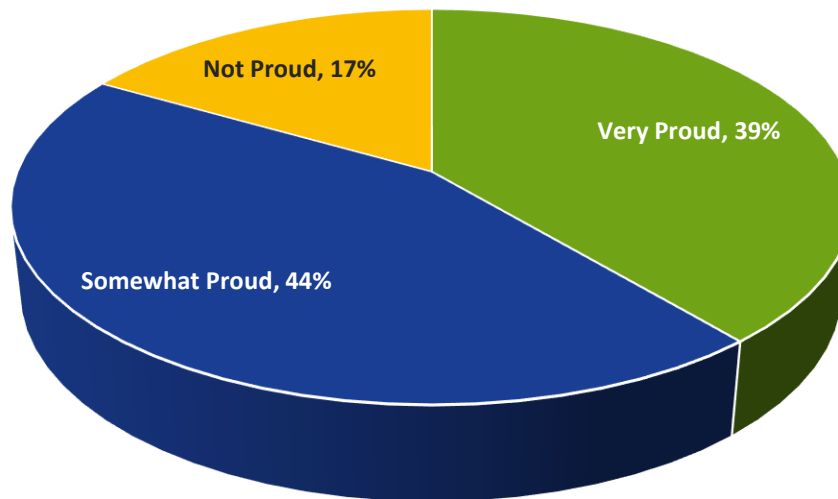
**Figure 90: Internal Survey Question 9**

- 9. How proud are you to tell other people that you are a member of the Orleans Fire Department?

**Answer Choices**

- Very Proud
- Somewhat Proud
- Not Proud
- No Opinion

Almost half of the survey participants – 44 percent (eight people) were Somewhat Proud to be an Orleans Fire Fighter. An additional 39 percent (7 people) were Very Proud to be an Orleans Fire Fighter. Only seventeen percent (3 people) were Not Proud to be an Orleans Fire Fighter. The responses to question nine are illustrated in the following figure.

**Figure 91: Internal Survey Question 9 Results**

The tenth question asked survey participants to rate the various services provided by the Orleans Fire Department.

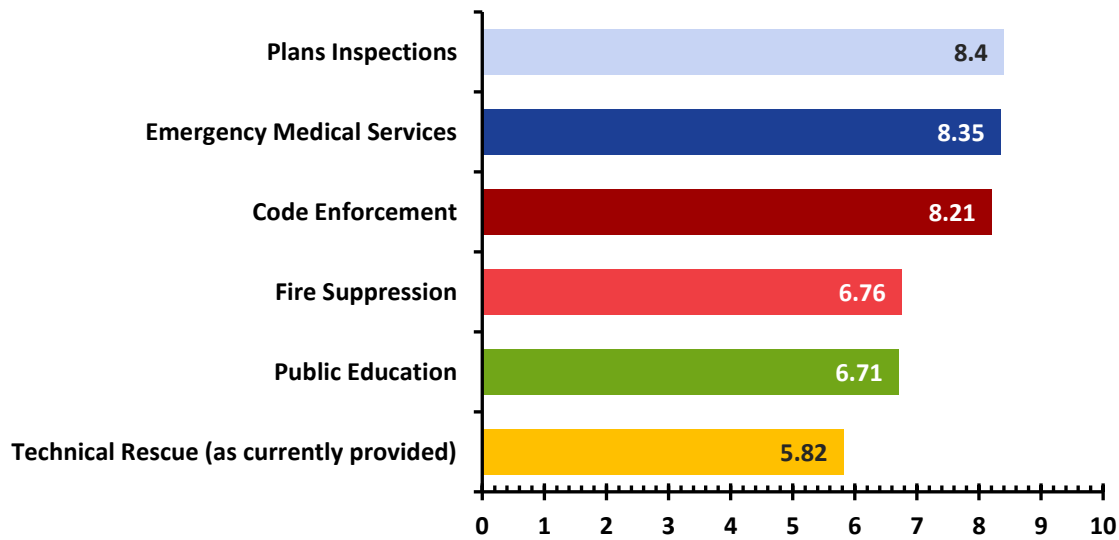
**Figure 92: Internal Survey Question 10**

**10. On a scale of 1 to 10, where 1 is poor and 10 is excellent, how would you rate the following external services and programs provided to the public by the department?**

- Fire Suppression**
- Emergency Medical Services**
- Technical Rescue (as currently provided)**
- Code Enforcement**
- Plan Inspections**
- Public Education**

Using the weighted average of the responses from the survey participants, the areas of Plans Inspections, EMS and Code Enforcement were all scored the highest, each earning scores in the eight range. Fire Suppression and Public Education were scored slightly lower in the sixes, and the lowest score was given to Technical Rescue with a 5.82. It is worth noting that the survey participants scored all of the services in the top half of the 10-point range with no service being rated with a weighted score below five. The answers to question ten are illustrated in the following figure.

Figure 93: Internal Survey Question 10 Results



The eleventh question asked survey participants to use the same ten-point scale from the previous question to rate internal services.

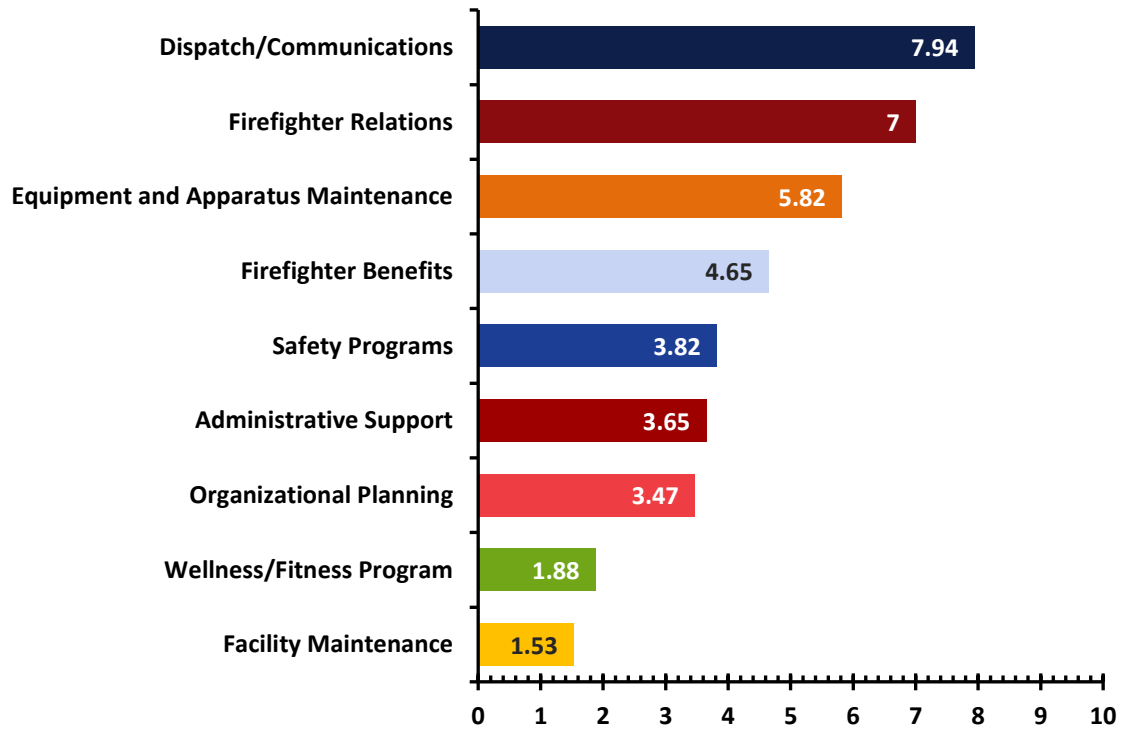
Figure 94: Internal Survey Question 11

11. On a scale of 1 to 10, where 1 is poor and 10 is excellent, how would you rate the following internal services and processes provided by the department?

- Organizational Planning
- Safety Programs
- Wellness/Fitness Program
- Administrative Support
- Firefighter Relations
- Firefighter Benefits
- Dispatch/Communications
- Equipment and Apparatus Maintenance
- Facility Maintenance

The internal services were generally rated lower than the external services. The Dispatch / Communications received the highest score at 7.94 followed by Fire Fighter Relations and Equipment and Apparatus Maintenance. The lowest ratings were earned by Facility Maintenance, Wellness / Fitness Programs and Organizational Planning. The responses to question eleven are illustrated in the following figure.

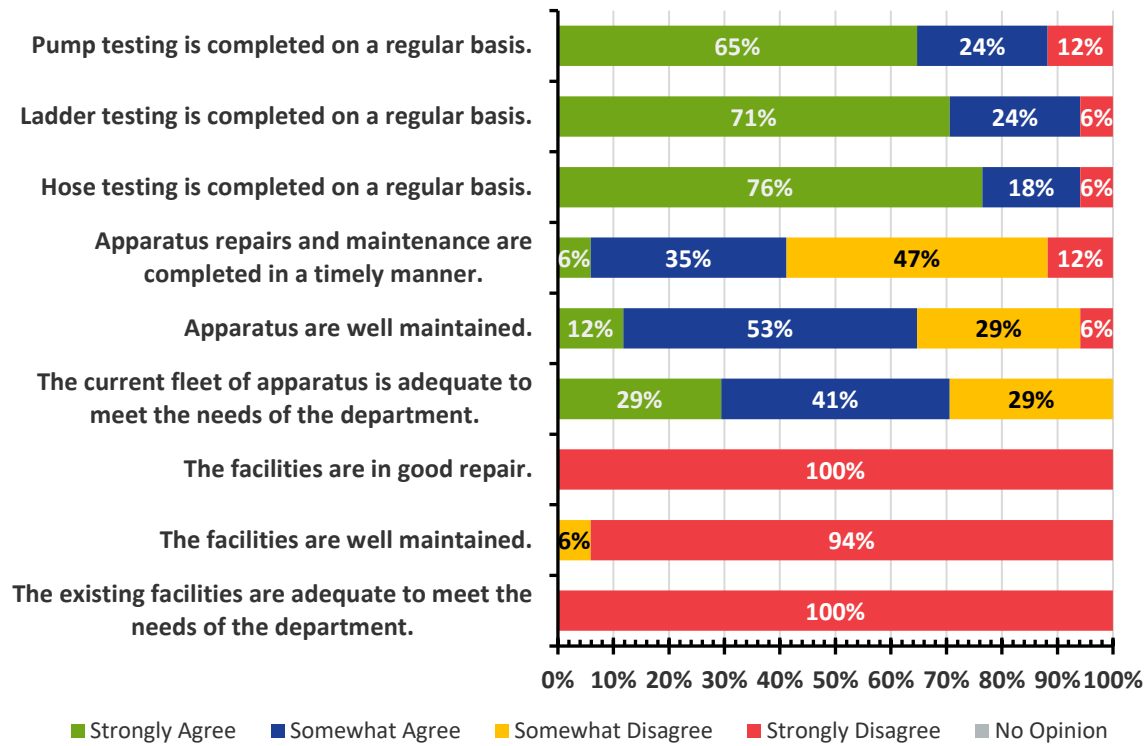
Figure 95: Internal Survey Question 11 Results



The twelfth question asked survey participants to share their opinion about the department’s facilities and apparatus.



**Figure 97: Internal Survey Question 12 Results**



The thirteenth question asked survey participants to share what one thing they would like to change about the Orleans Fire Department.

**Figure 98: Internal Survey Question 13**

**13. If you could change only one thing about the work environment at the Orleans Fire Department, what would it be?**

The most common response to this question was a new / renovated fire station with better air quality and air movement. The next most common response was better communication.

The fourteenth question asked survey participants to share their opinions about the Orleans Fire Department’s community relations.

Figure 99: Internal Survey Question 14

14. Please identify your level of agreement with each of the following statements as they relate to the department's community relations.

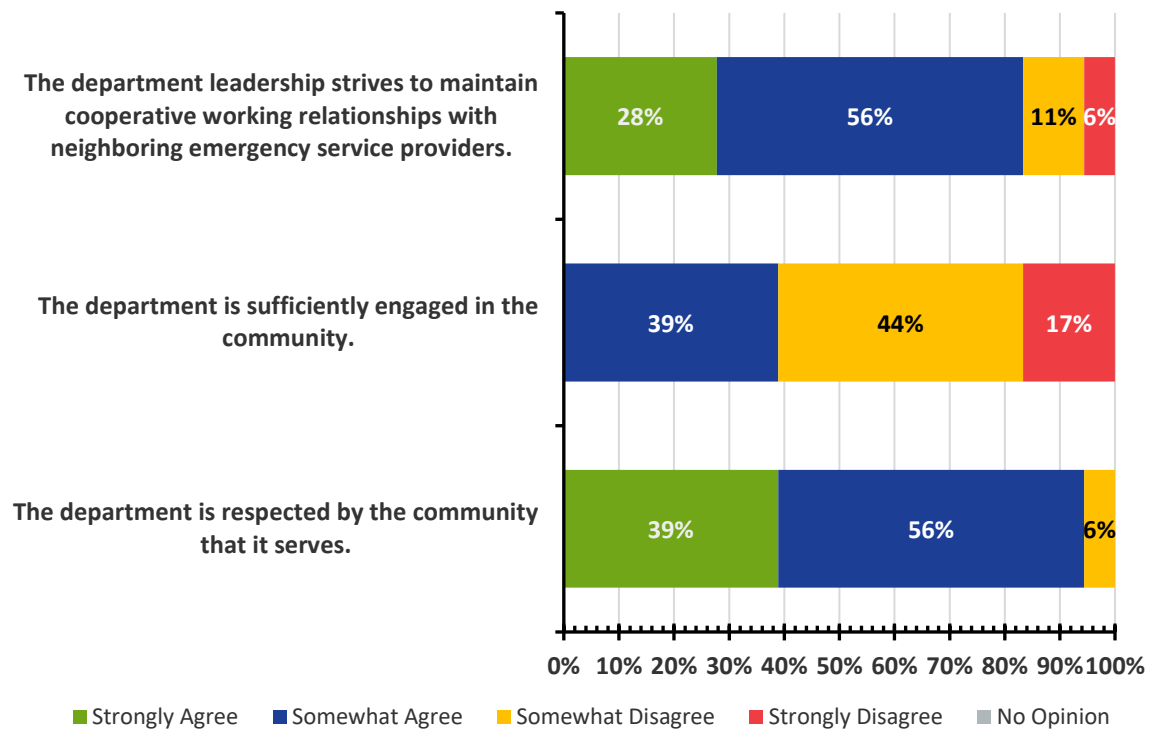
Answer Choices

Strongly Agree      Somewhat Agree      Somewhat Disagree      Strongly Disagree      No Opinion

The department is respected by the community that it serves.  
 The department is sufficiently engaged in the community.  
 The department leadership strives to maintain cooperative working relationships with neighboring emergency service providers.

The majority of the survey participants strongly agreed or agreed that the department leadership strives to maintain cooperative relationships with the community and that it is respected by the community. The majority of survey participants did not agree that the department is sufficiently engaged in the community. The responses to question fourteen are illustrated in the following figure.

Figure 100: Internal Survey Question 14 Results



The fifteenth question asked survey participants to rate the department's overall image.

Figure 101: Internal Survey Question 15

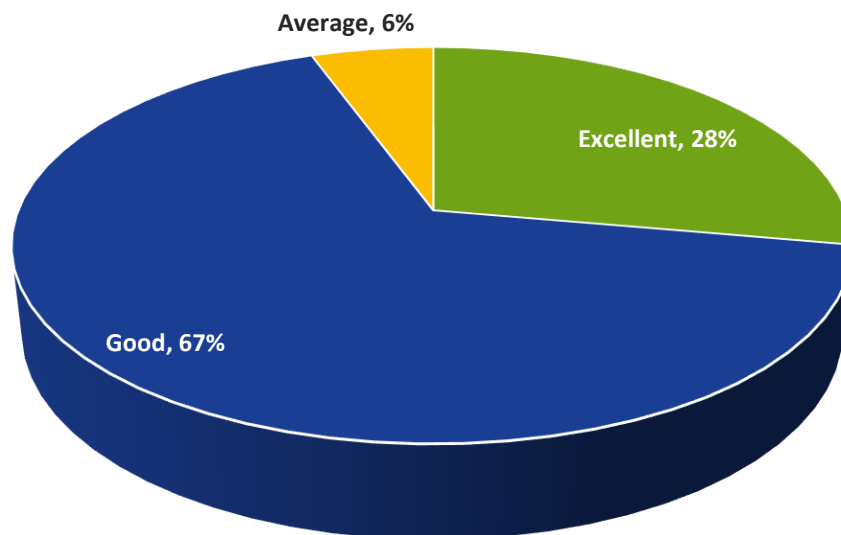
15. In your opinion, what is the community's overall image of the Orleans Fire Department?

Answer Choices

- Excellent
- Good
- Average
- Poor
- No Opinion

The majority of survey participants - 67 percent - rated the department's overall image as Good (12 people) and an additional 28 percent (5 people) rated it Excellent. Only six percent (1 person) rated the department's image to the community as Average. None of the survey respondents rated the department's image to the community as being Poor. The responses to question fifteen are illustrated in the following figure.

Figure 102: Internal Survey Question 15 Results



The sixteenth question asked survey participants to identify the department's greatest strength.

**Figure 103: Internal Survey Question 16****16. In your opinion, what is the department's single greatest strength?**

The overwhelming response by the vast majority of survey participants was that the members of the Orleans Fire Department are by far its greatest strength. The very distant second most common response to this question was that the Orleans Fire Department's greatest strength is providing outstanding EMS care.

**Figure 104: Internal Survey Question 16 Results**

EMS members firefighters

The seventeenth question asked survey participants to identify the department's single greatest weakness.

**Figure 105: Internal Survey Question 17****17. In your opinion, what is the department's single greatest weakness?**

The overwhelming majority of survey participants identified leadership as the department's single greatest weakness. The lack of contract and shift staffing were very distant second and third place answers. The following figure illustrates the most common answers to question seventeen.

**Figure 106: Internal Survey Question 17 Results**

Current chief leadership staffing

Question eighteen asked survey participants to identify the single biggest opportunity for the department in the future.

**Figure 107: Internal Survey Question 18****18. In your opinion, what single greatest opportunity should the department take advantage of in the future?**

The overwhelming majority of participants in the study identified the biggest opportunity for the Orleans Fire Department as being the appointment of a new fire chief. A summary of the answers to question eighteen is illustrated in the following figure.

**Figure 108: Internal Survey Question 18 Results**

chief Fire Department needs department

The nineteenth question asked survey participants to identify the single biggest threat to the department.

**Figure 109: Internal Survey Question 19**

**19. In your opinion, what is the single most significant threat that the department faces in the future?**

The overwhelming majority of participants responding to the survey identified the biggest threat to the Orleans Fire Department as losing personnel. Reasons for losing personnel were varied and included pay, lack of contract, low morale and staffing. A summary of the responses to question nineteen is illustrated in the following figure.

**Figure 110: Internal Survey Question 19 Results**

Morale<sub>pay</sub> Losing<sub>low</sub> departments leadership<sub>good</sub> due<sub>good</sub>  
staffing employees

The twentieth question invited survey participants to share any final thoughts.

**Figure 111: Internal Survey Question 20**

**20. Please use the space below to tell us your suggestions or final thoughts for improving the Orleans Fire Department.**

The responses to the final question almost unanimously expressed excitement at the prospect of new chief and requested strong leadership, consistency, communication and a better work facility. A summary of the answers to question twenty is illustrated in the following figure.

**Figure 112: Internal Survey Question 19 Results**

changes<sub>need increase</sub> department<sub>increase</sub> building  
Orleans Fire Department Pay<sub>good</sub> staffing<sub>improve</sub> work  
members<sub>need</sub> communication<sub>us</sub>

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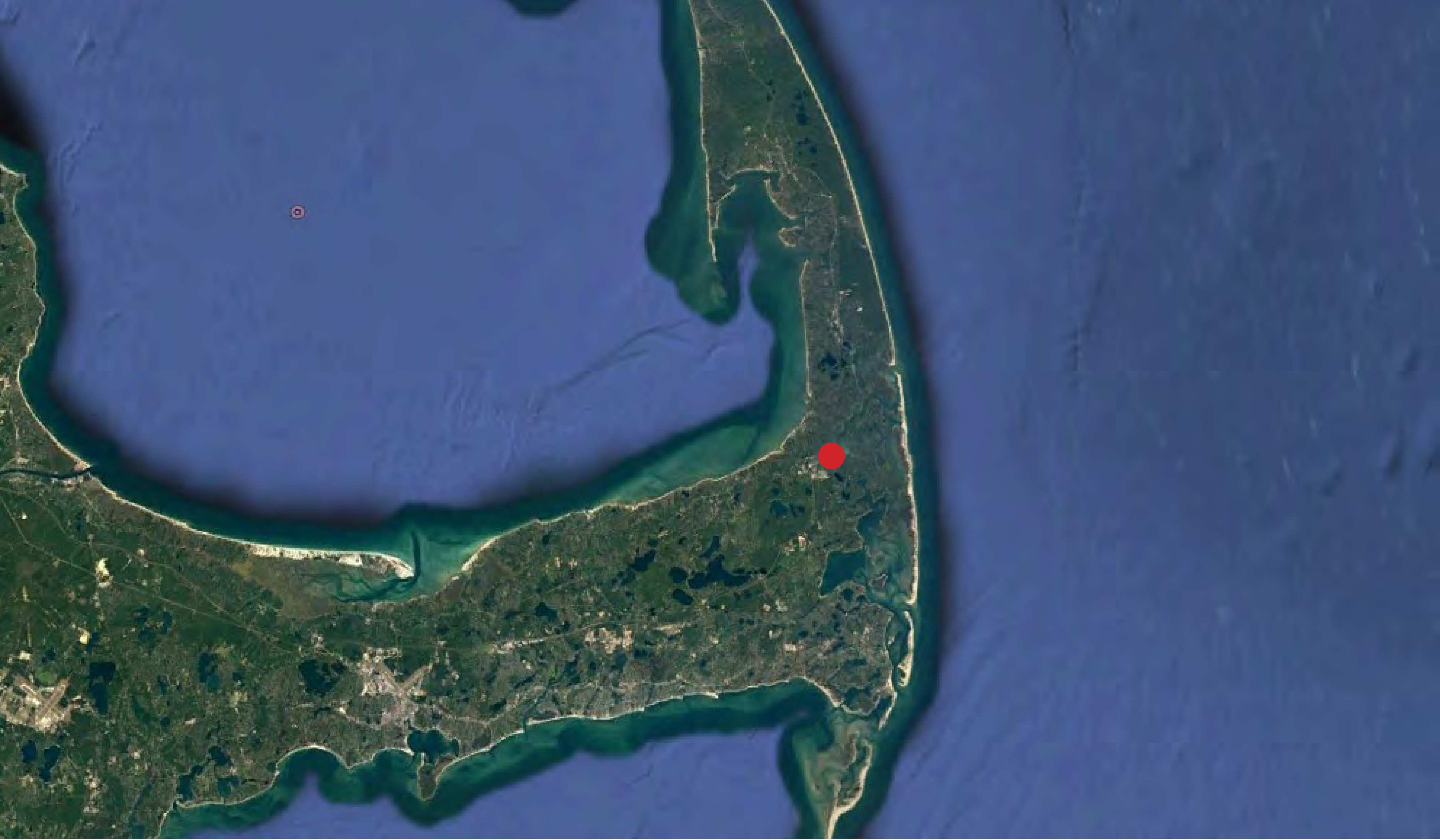
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# Orleans Fire Department

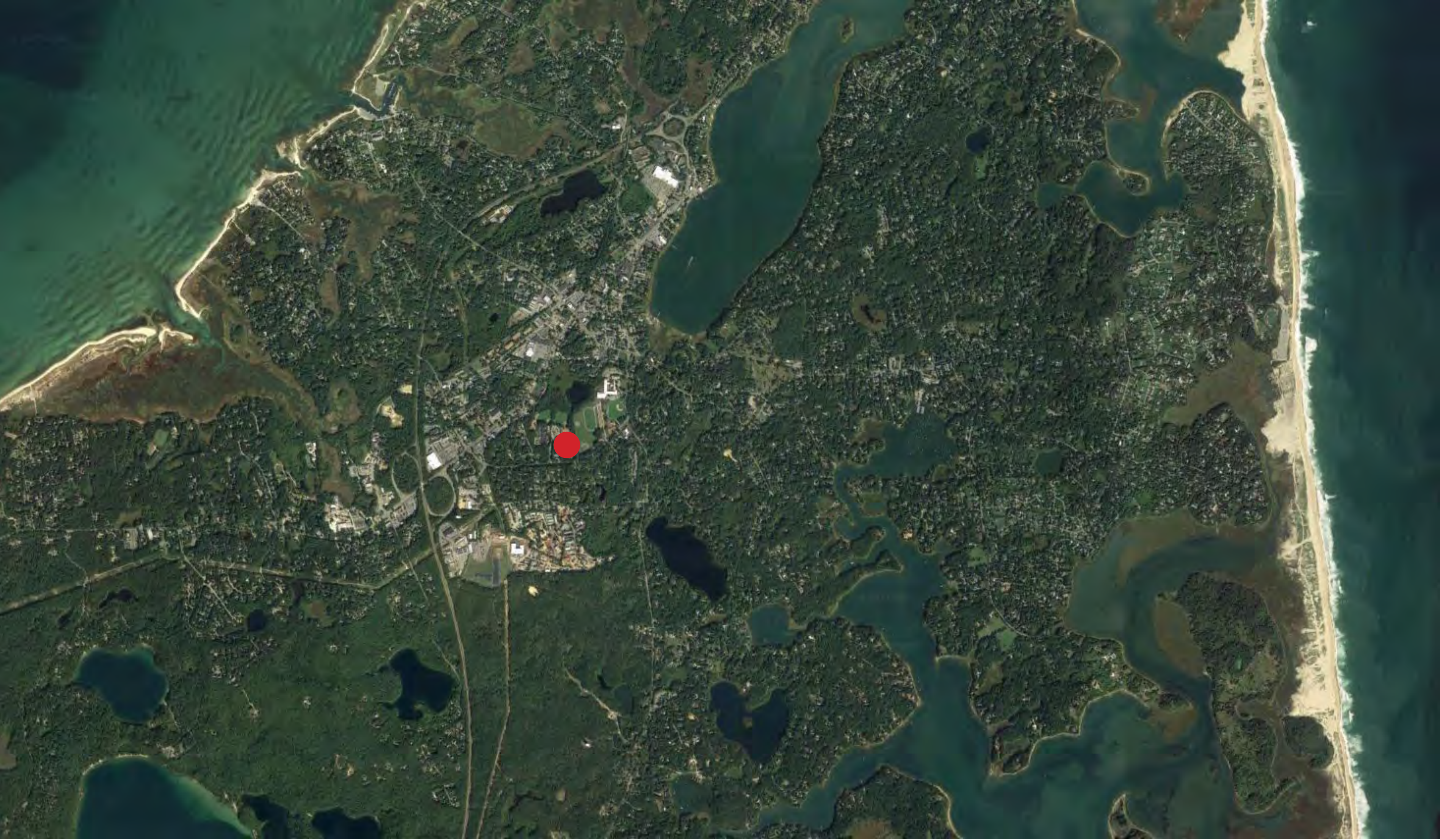
## Facility Analysis



TGAS

Town of Orleans





TGAS

Orleans Fire Department



Cape Cod Bay

Atlantic Ocean

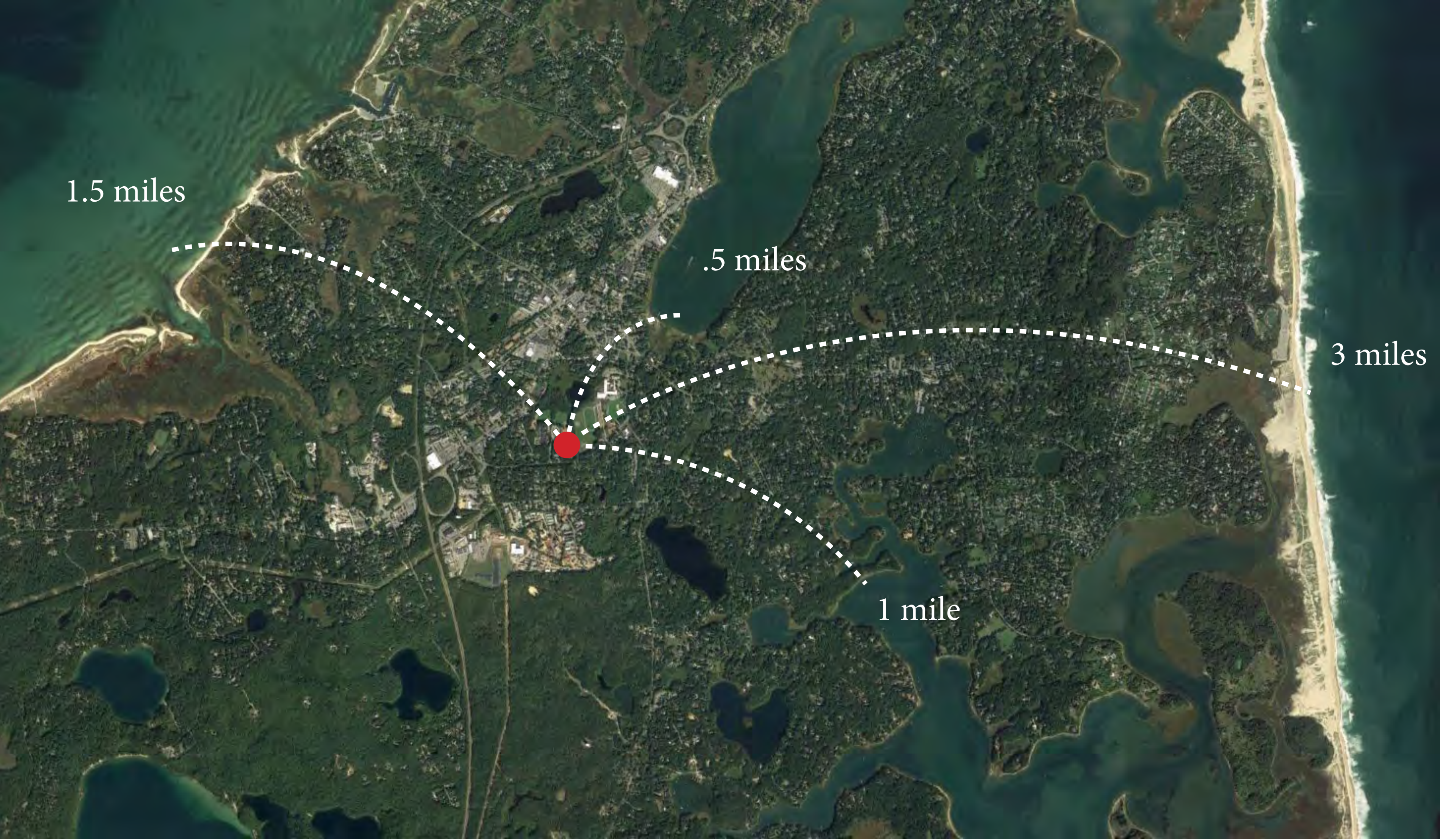
Orleans Cove

Meeting House Pond

Crystal Lake

Viking Point









TGAS

Orleans Fire Department



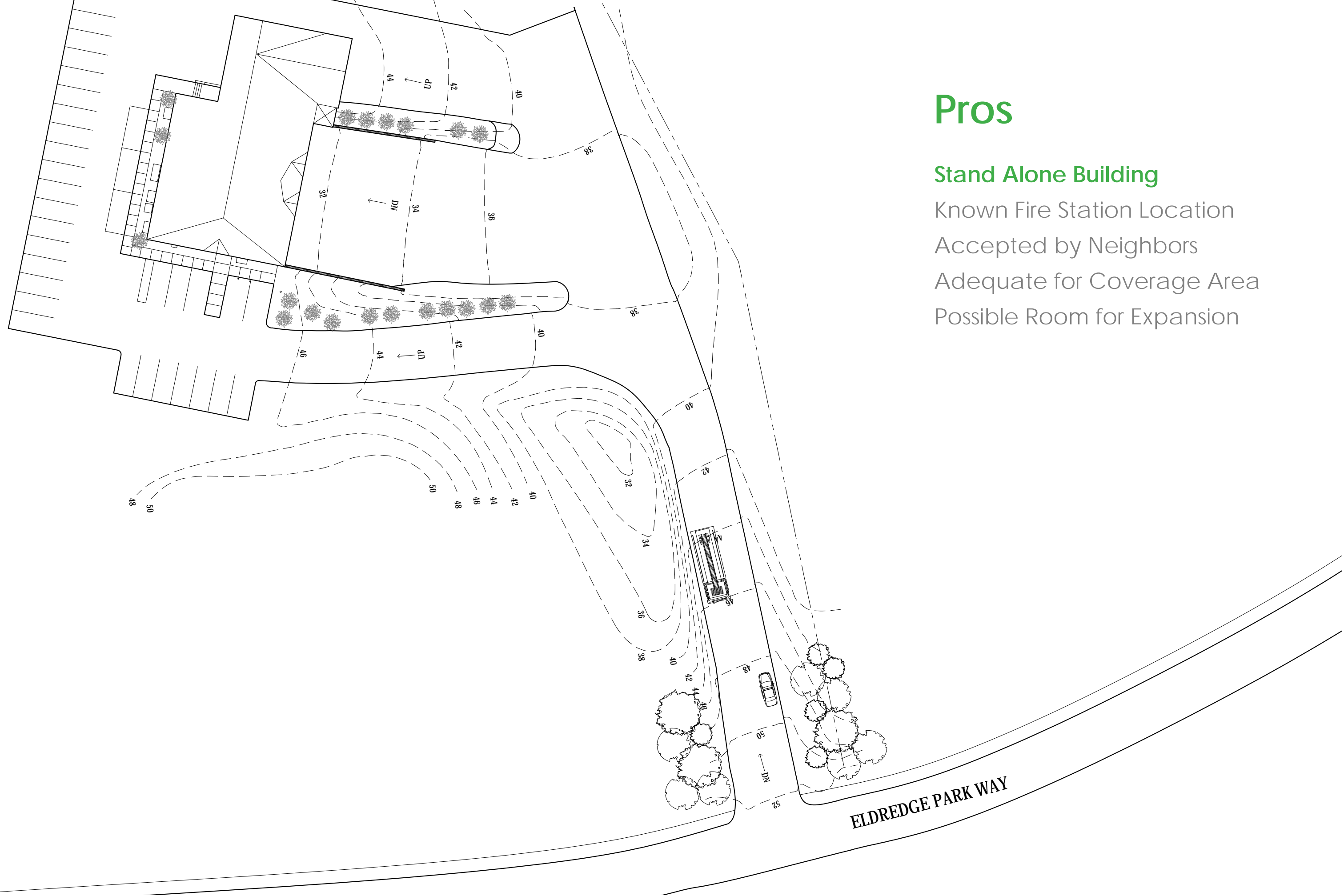




# Pros

## Stand Alone Building

- Known Fire Station Location
- Accepted by Neighbors
- Adequate for Coverage Area
- Possible Room for Expansion



## Pros

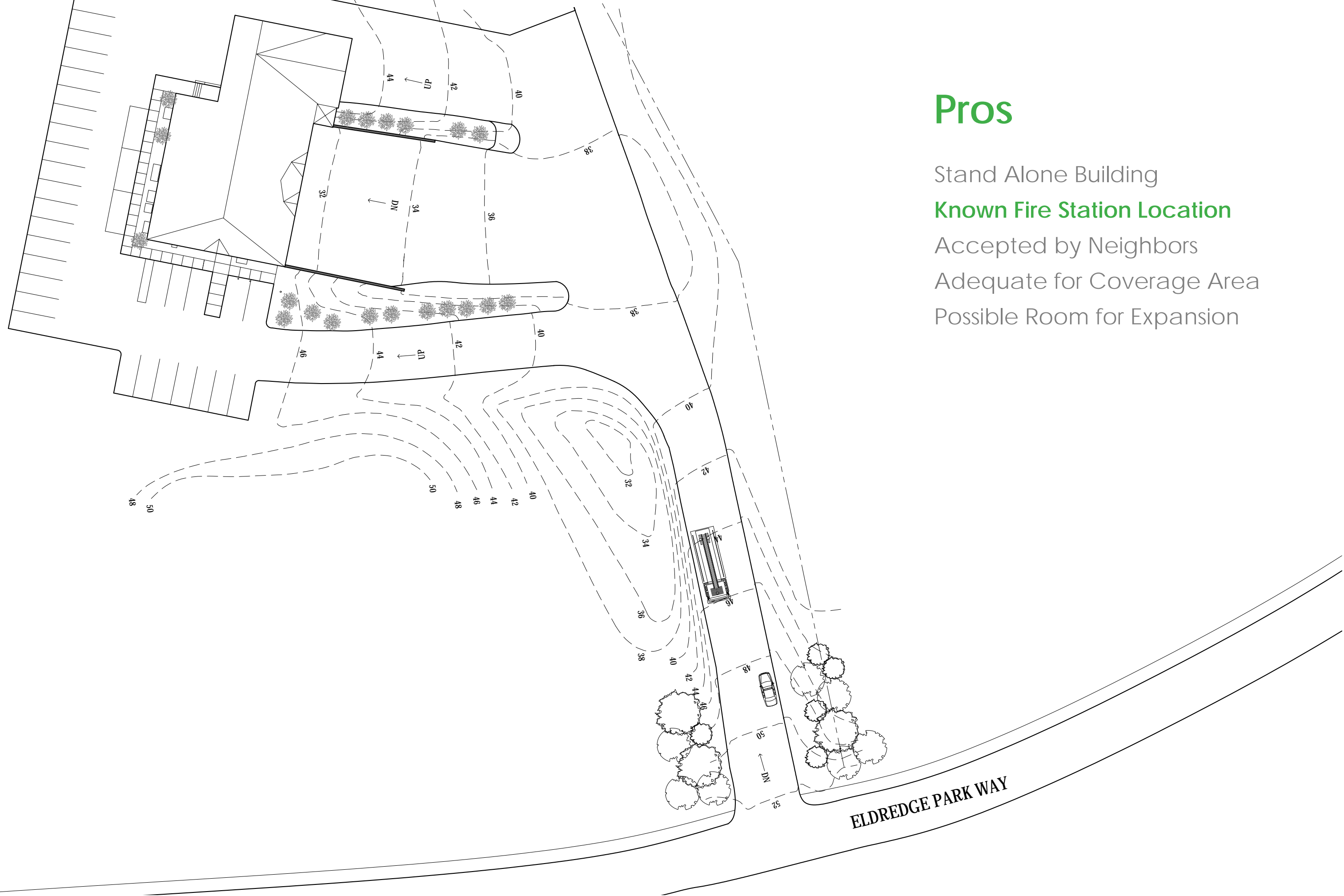
Stand Alone Building

**Known Fire Station Location**

Accepted by Neighbors

Adequate for Coverage Area

Possible Room for Expansion



## Pros

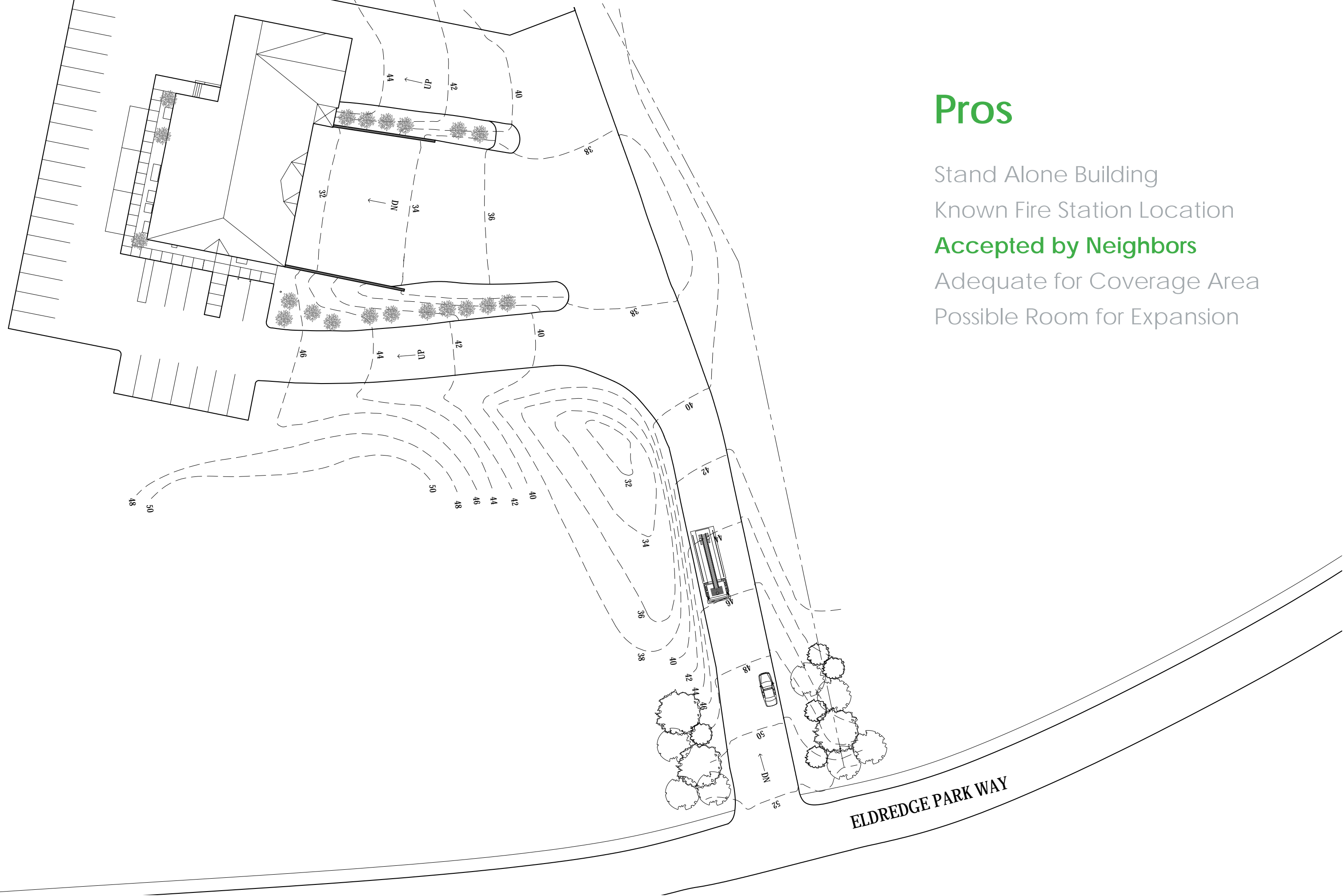
Stand Alone Building

Known Fire Station Location

**Accepted by Neighbors**

Adequate for Coverage Area

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## Pros

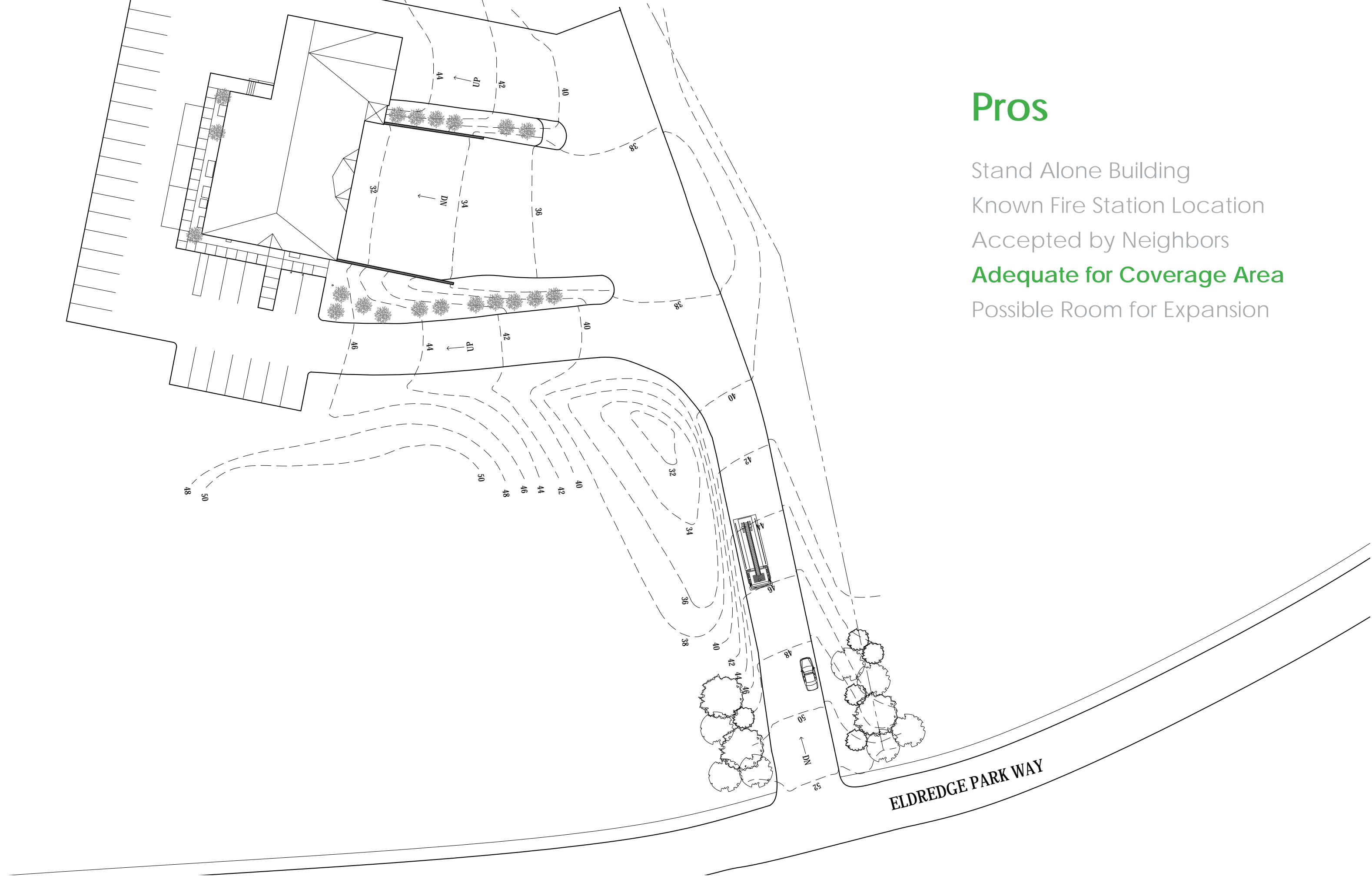
Stand Alone Building

Known Fire Station Location

Accepted by Neighbors

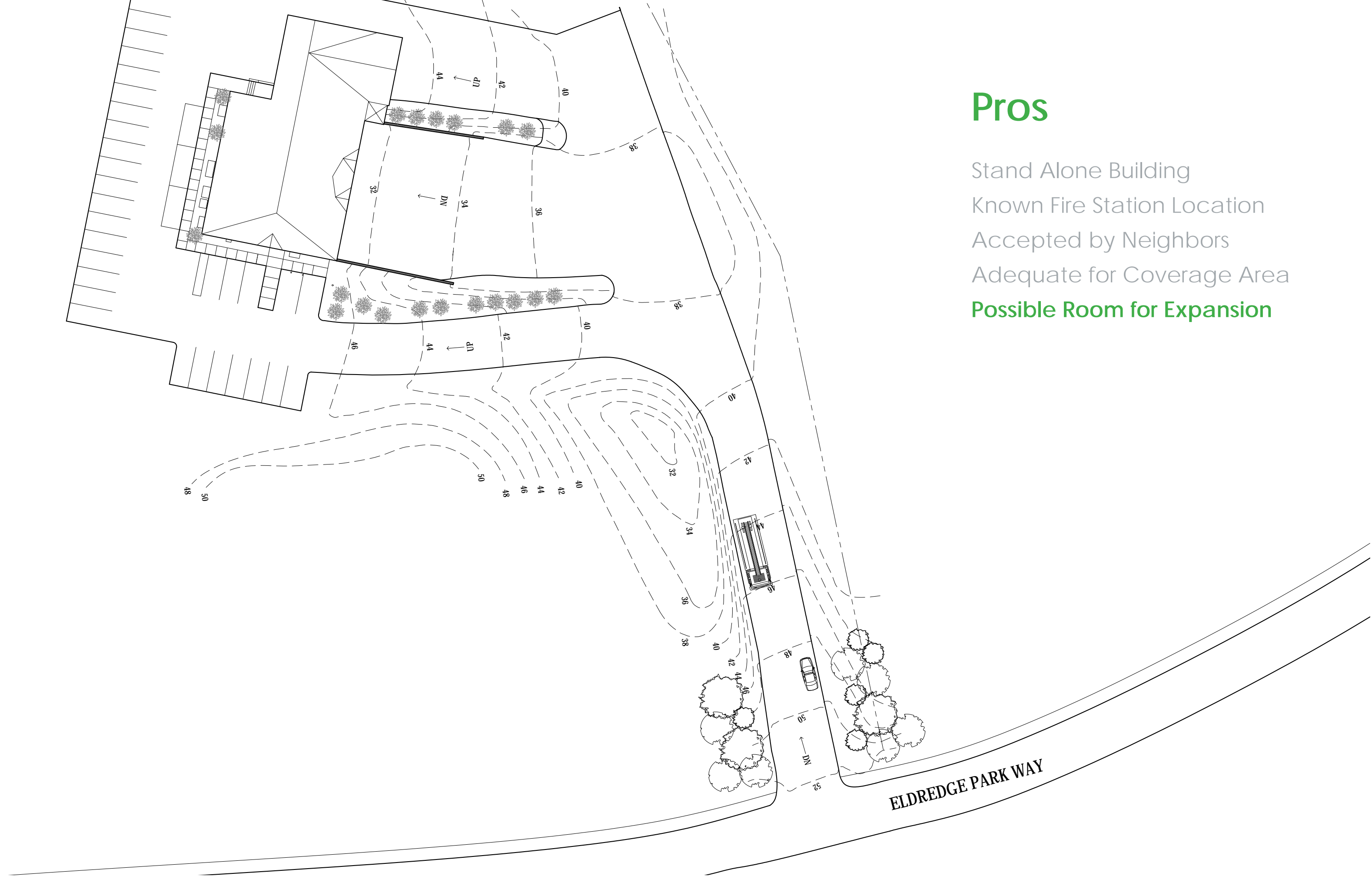
**Adequate for Coverage Area**

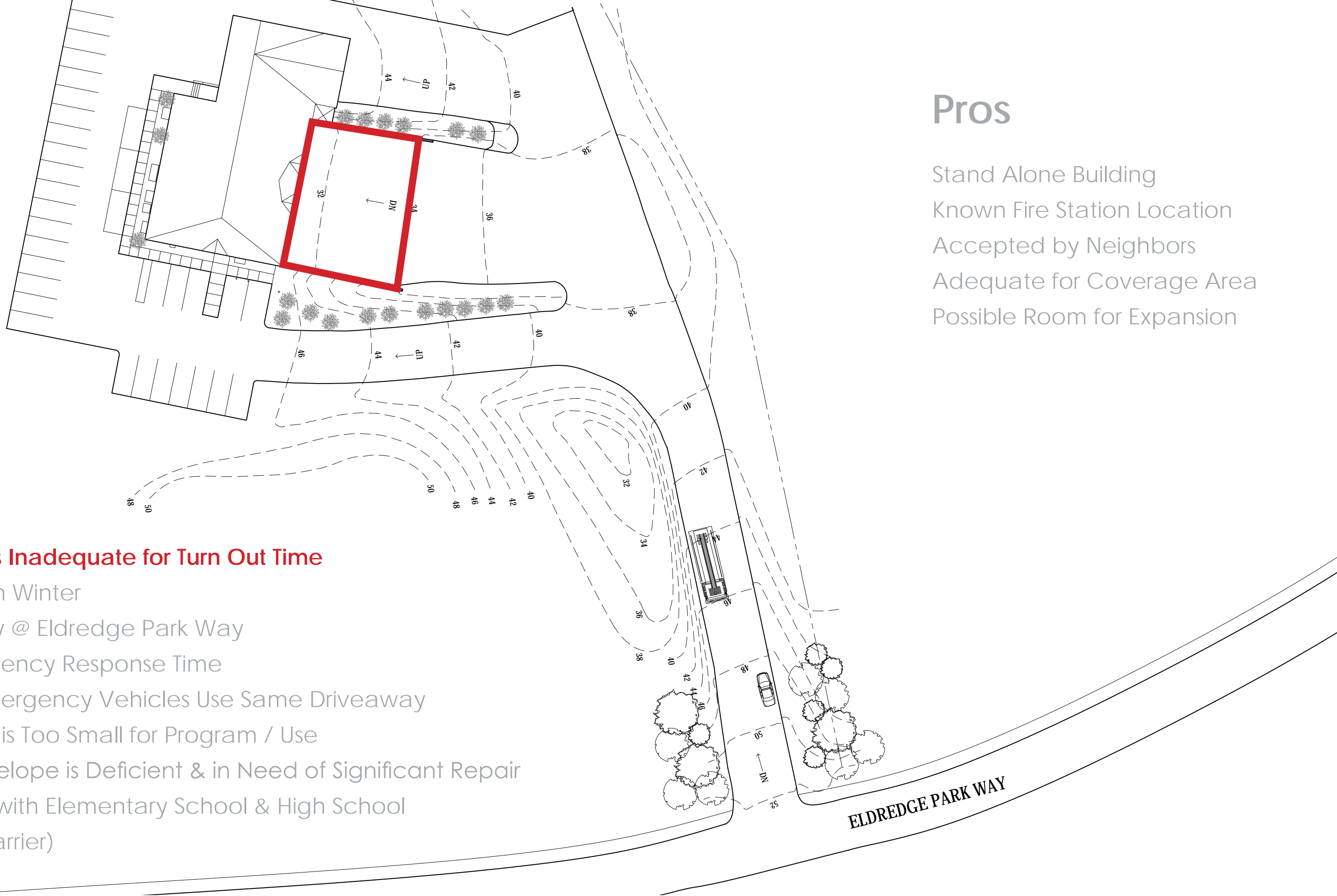
Possible Room for Expansion



## Pros

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## Pros

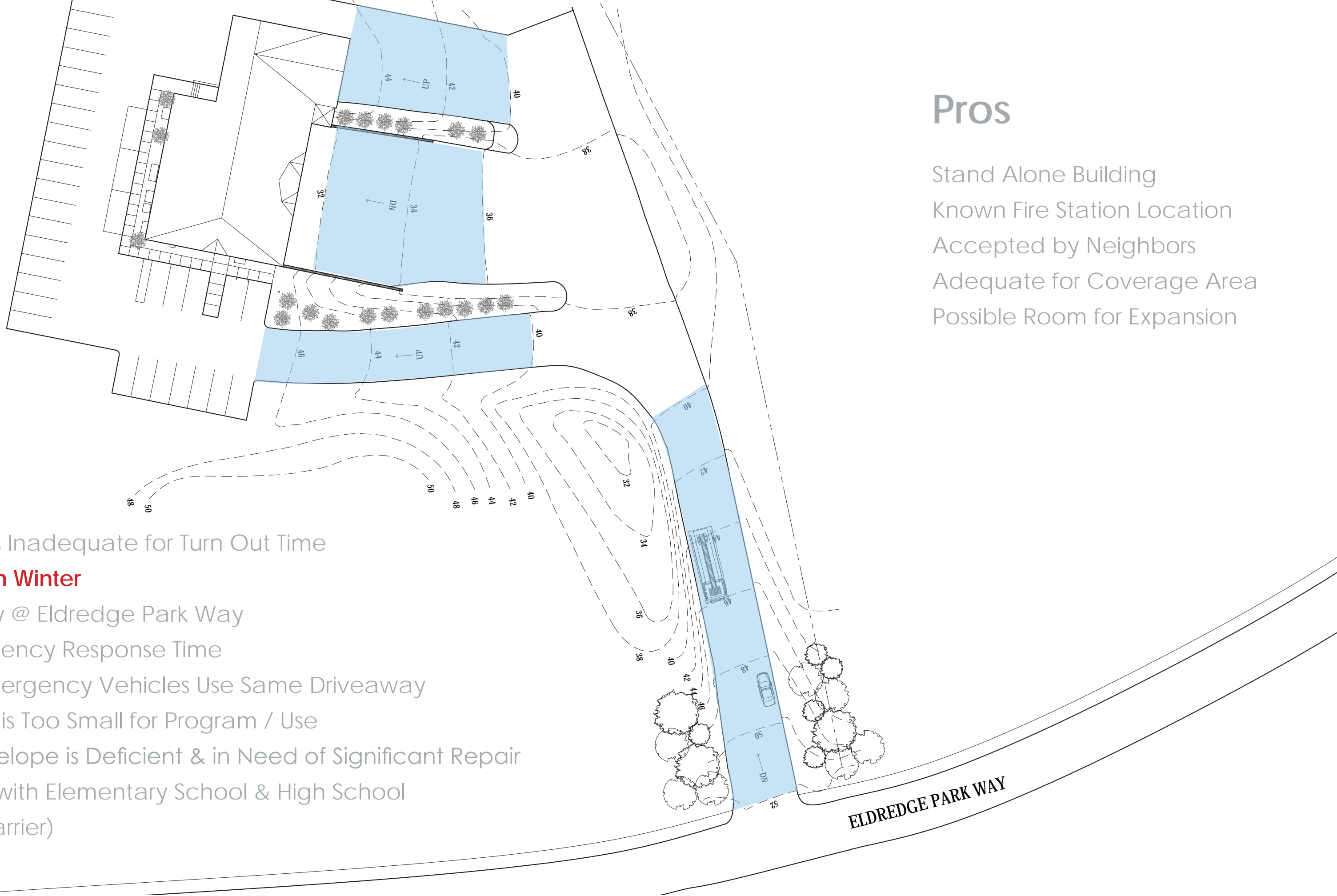
- Stand Alone Building
- Known Fire Station Location
- Accepted by Neighbors
- Adequate for Coverage Area
- Possible Room for Expansion

## Cons

### Site / Ramps Inadequate for Turn Out Time

- Ramps Ice in Winter
- Poor Visibility @ Eldredge Park Way
- Slows Emergency Response Time
- Visitors & Emergency Vehicles Use Same Driveaway
- The Building is Too Small for Program / Use
- Building Envelope is Deficient & in Need of Significant Repair
- Site Shared with Elementary School & High School  
(No Clear Barrier)

Current Site Plan



## Pros

- Stand Alone Building
- Known Fire Station Location
- Accepted by Neighbors
- Adequate for Coverage Area
- Possible Room for Expansion

## Cons

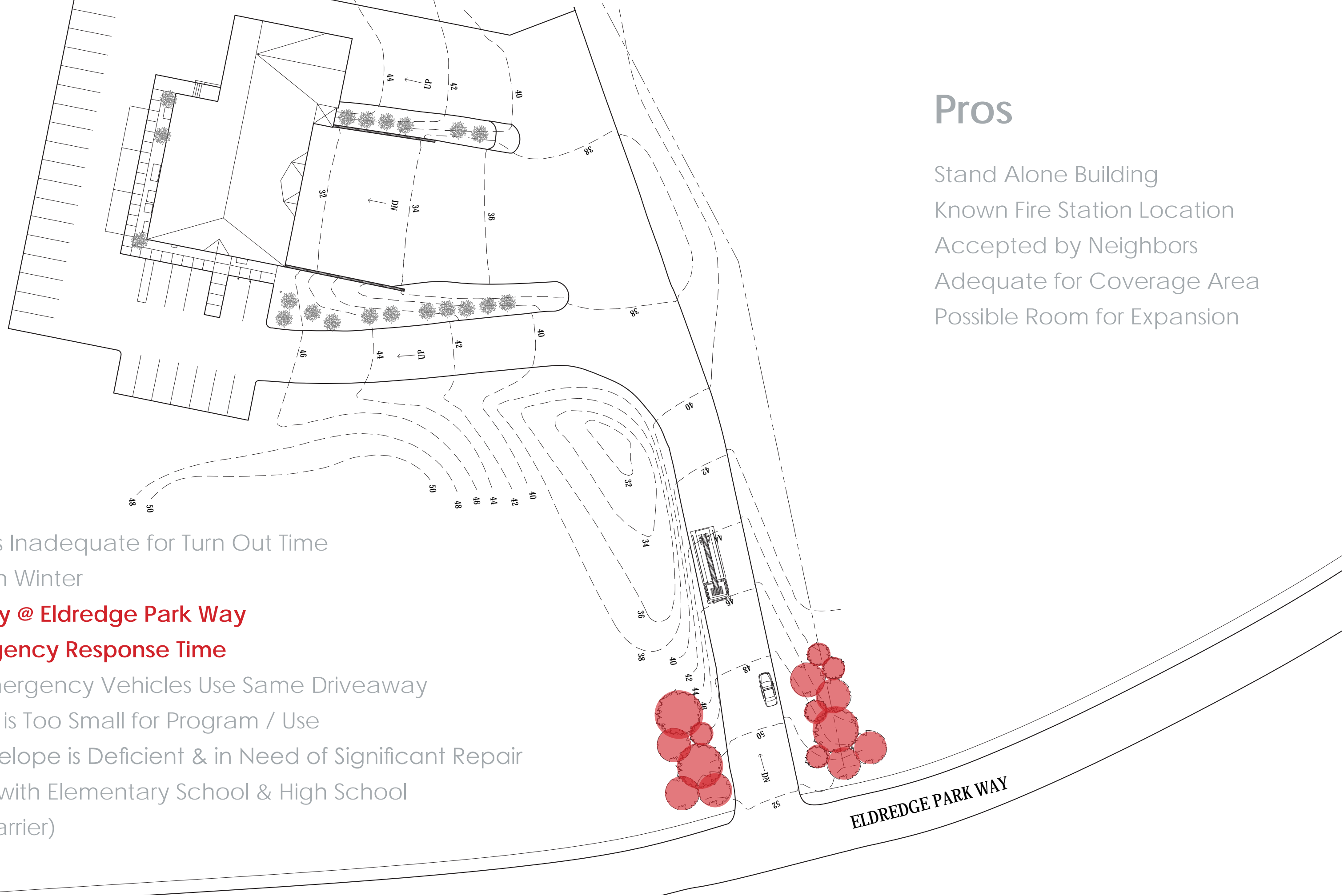
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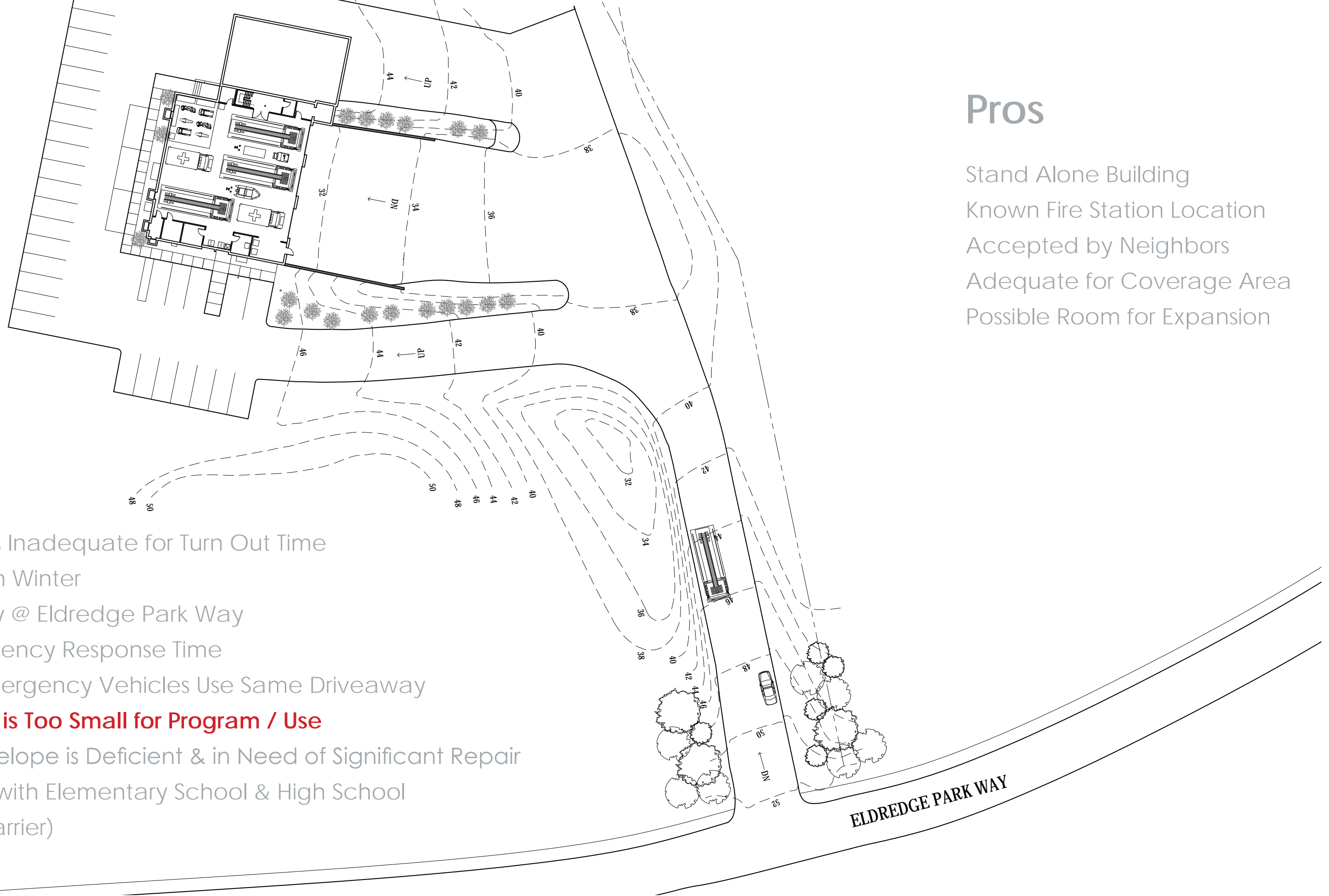


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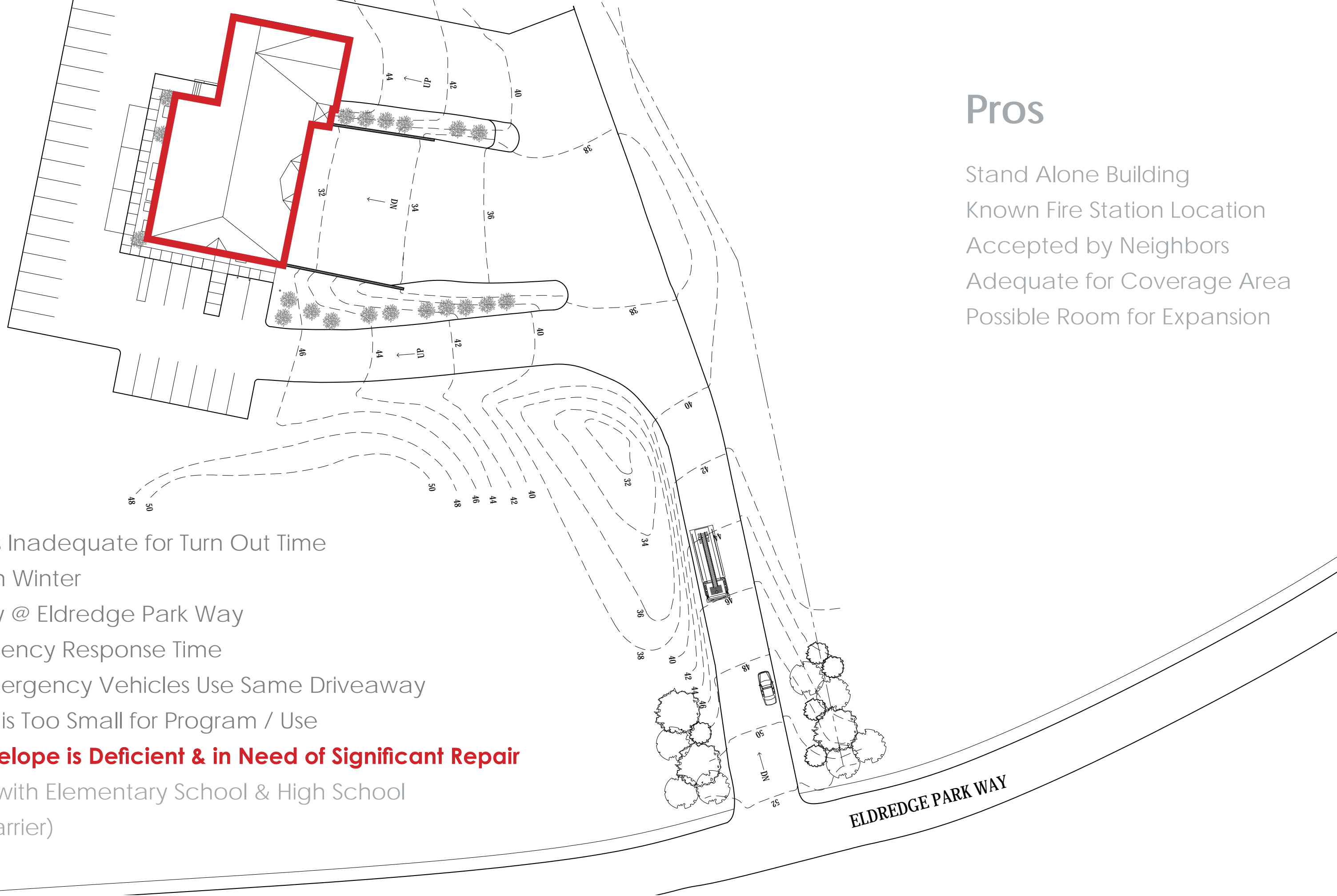


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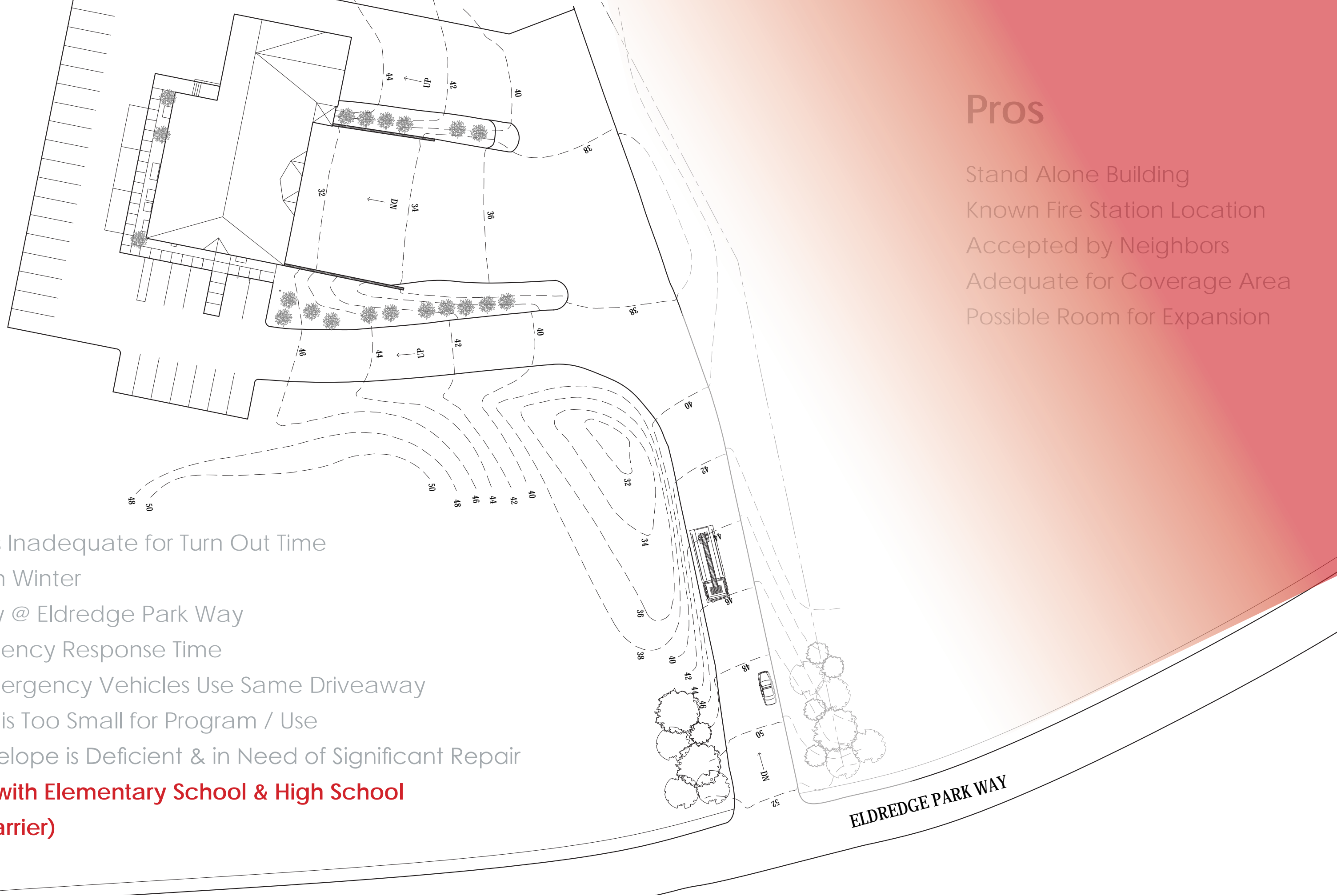


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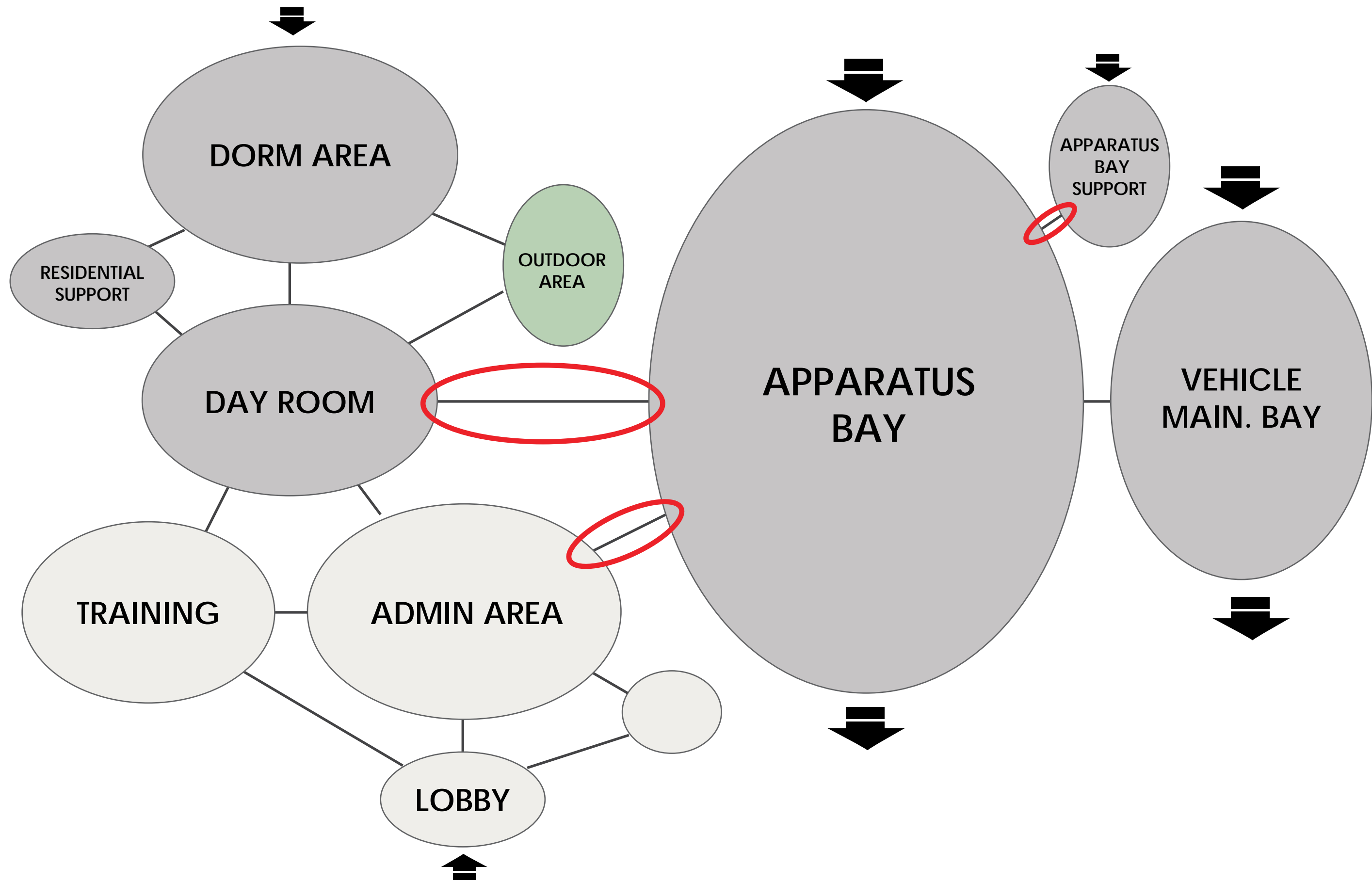


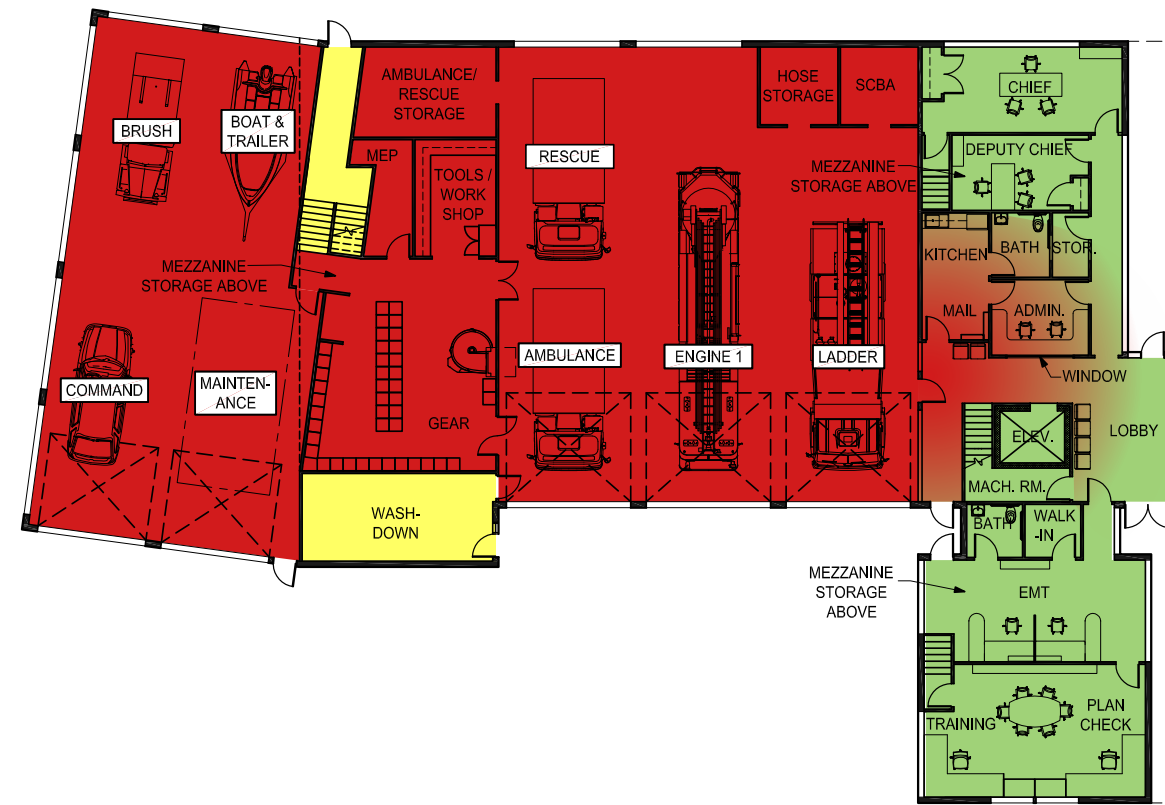
TGAS

Limiting Carcinogen Transfer



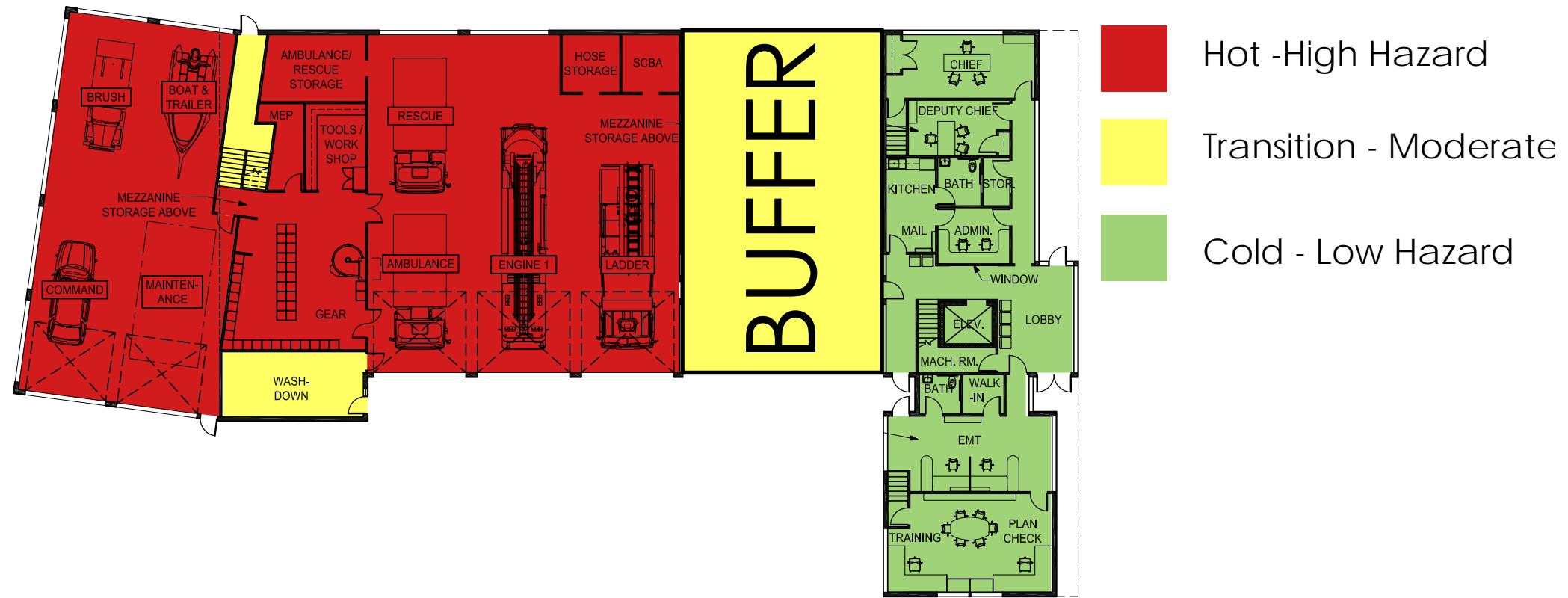






- Hot - High Hazard
- Transition - Moderate
- Cold - Low Hazard

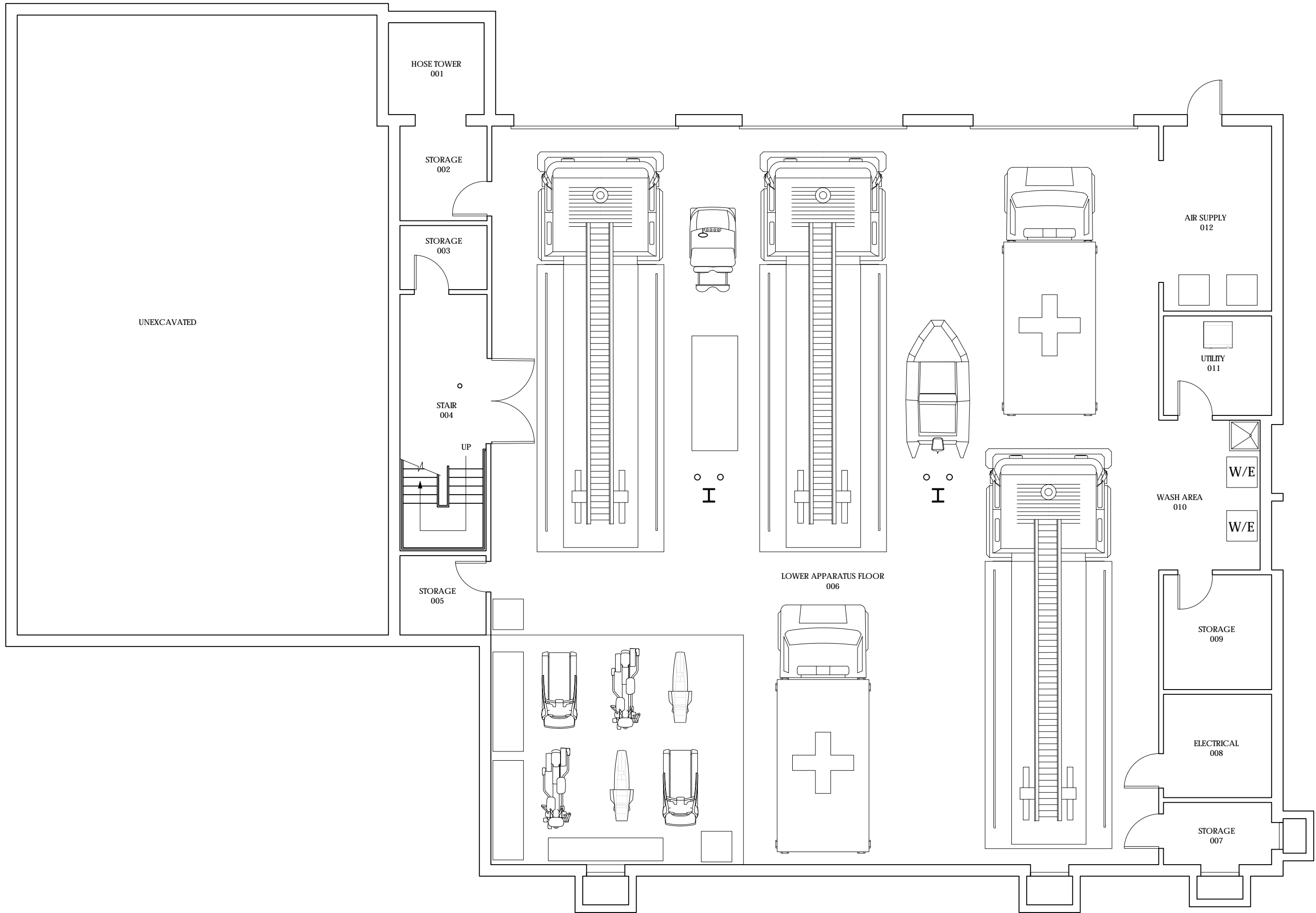




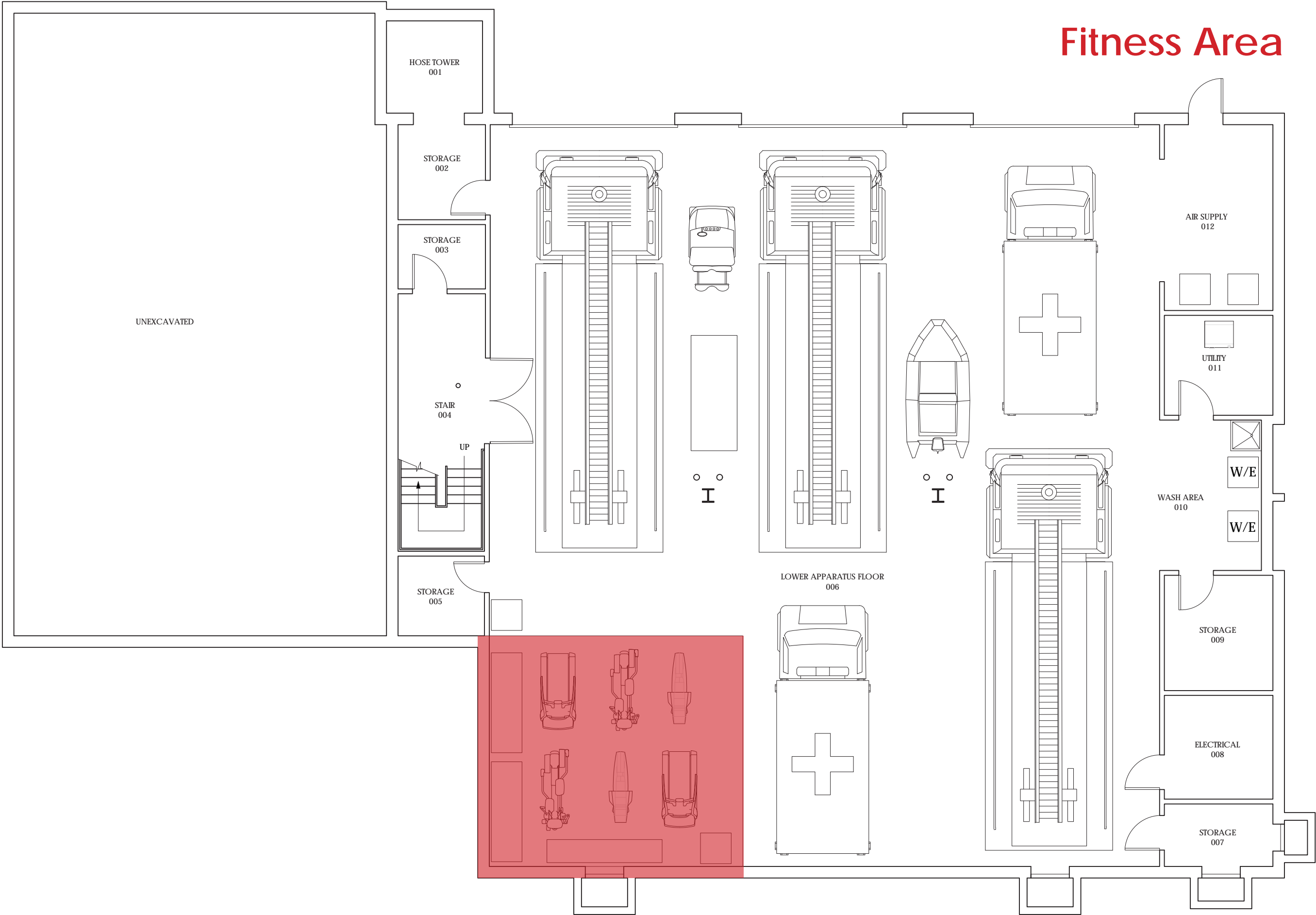


TGAS

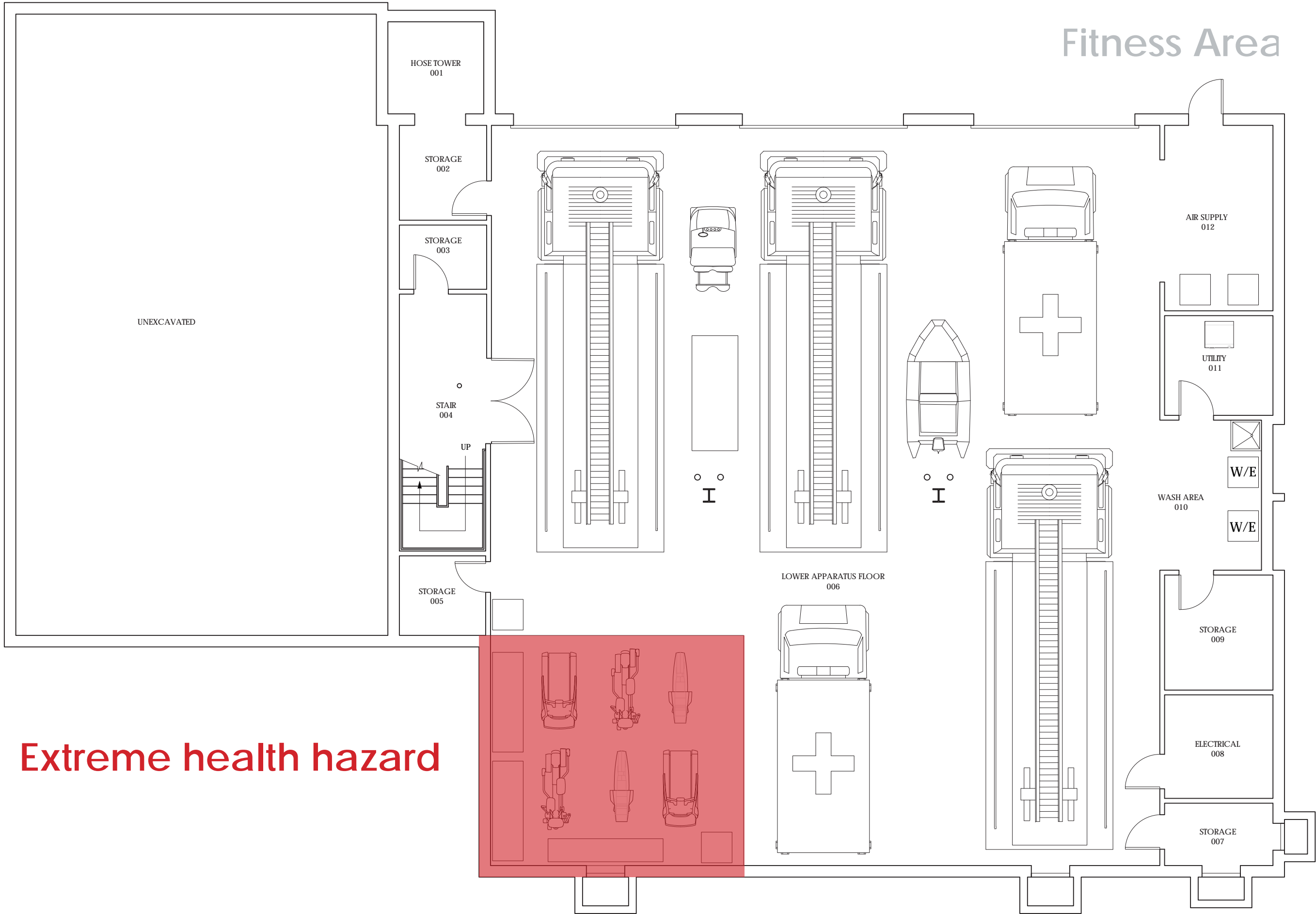




# Fitness Area



Fitness Area



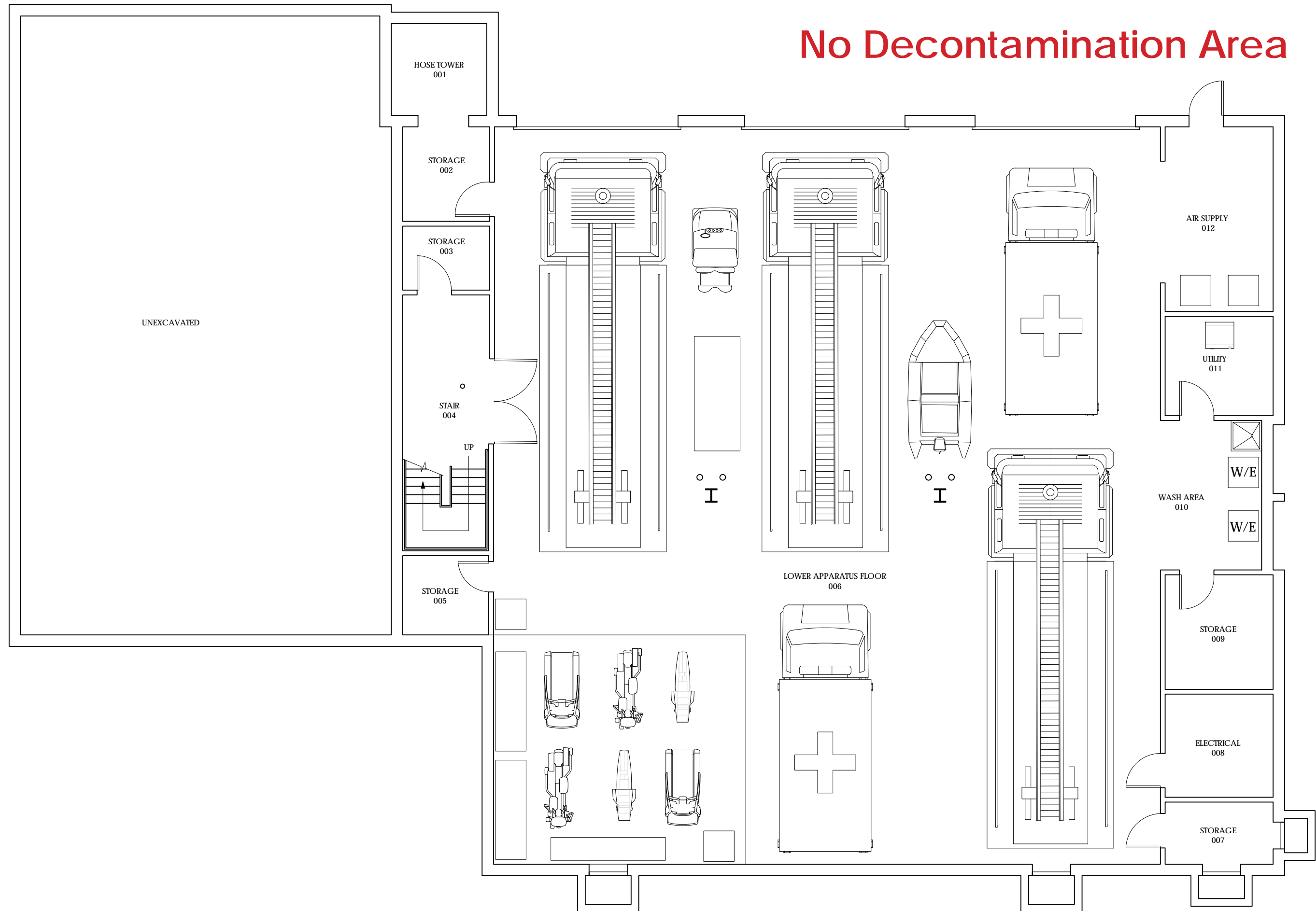
Extreme health hazard

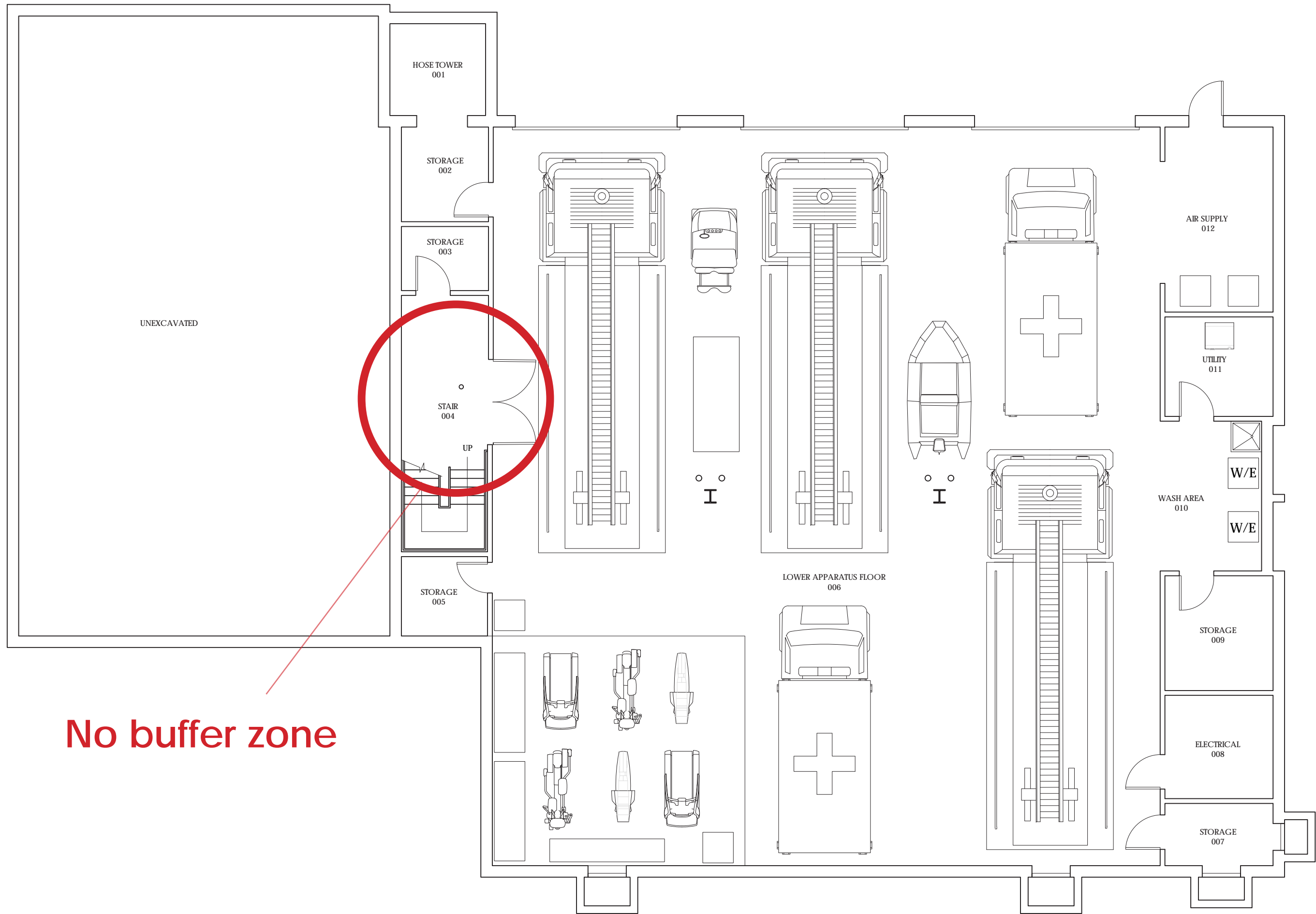
Basement Floor Plan



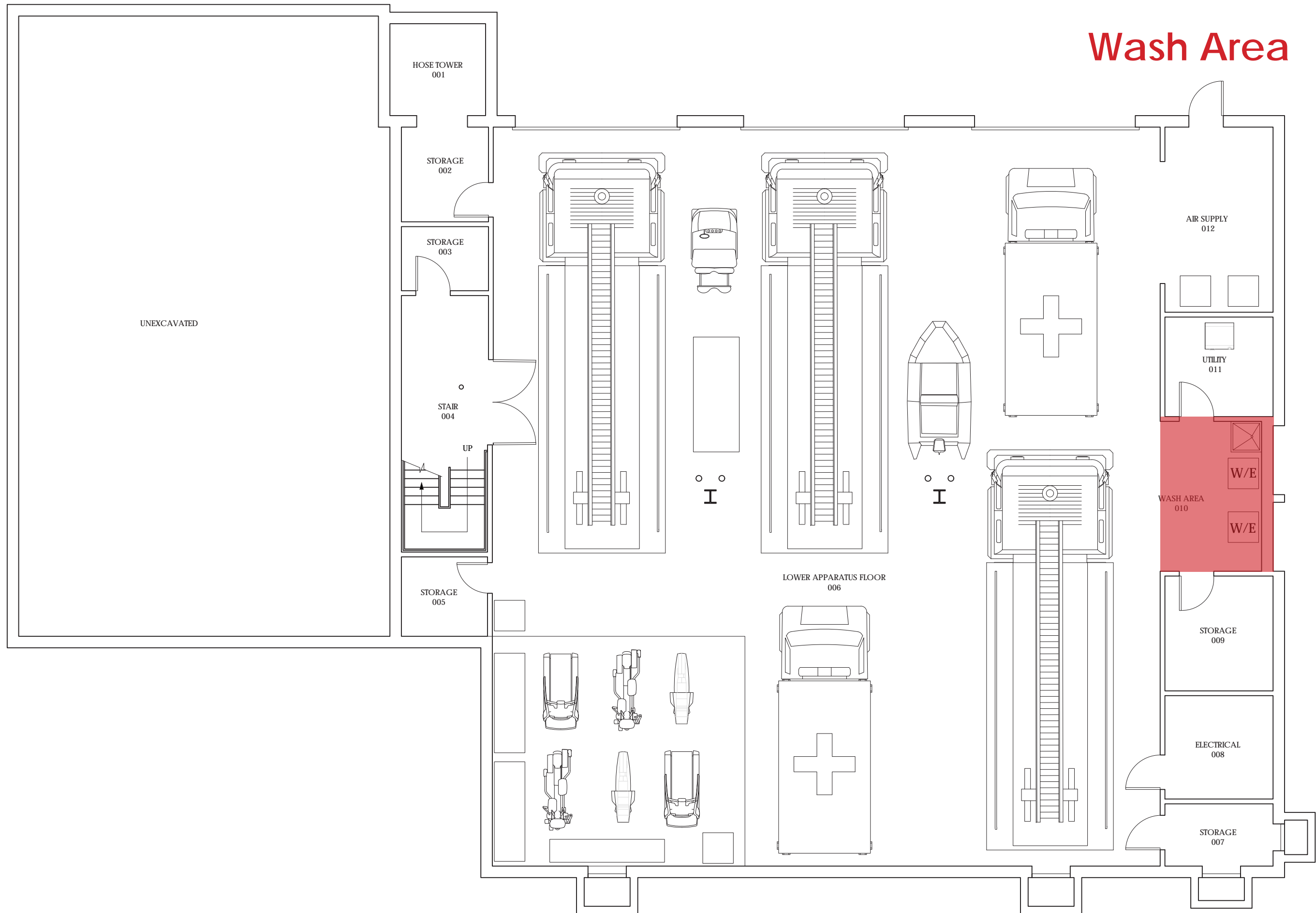


# No Decontamination Area

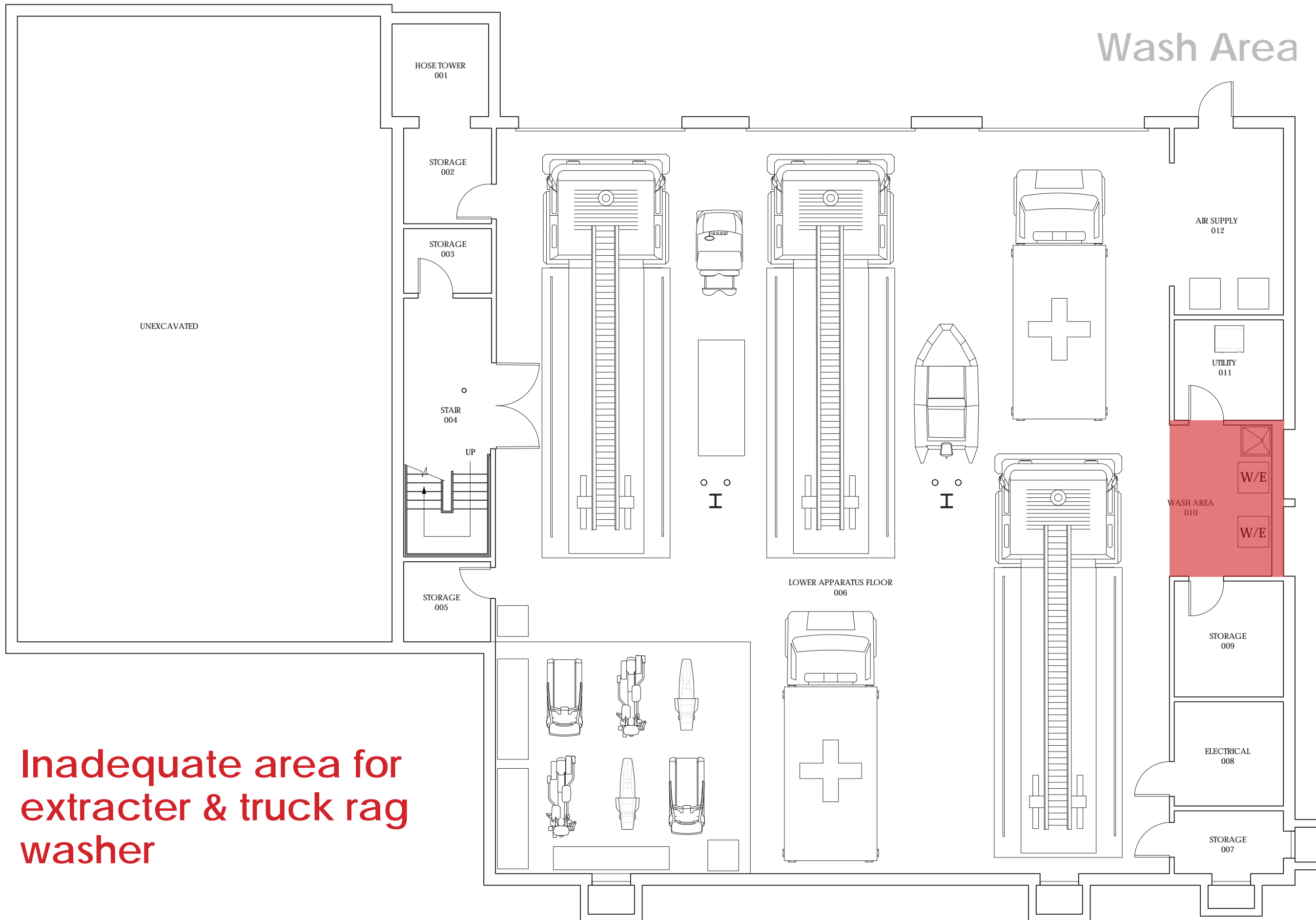




# Wash Area



# Wash Area

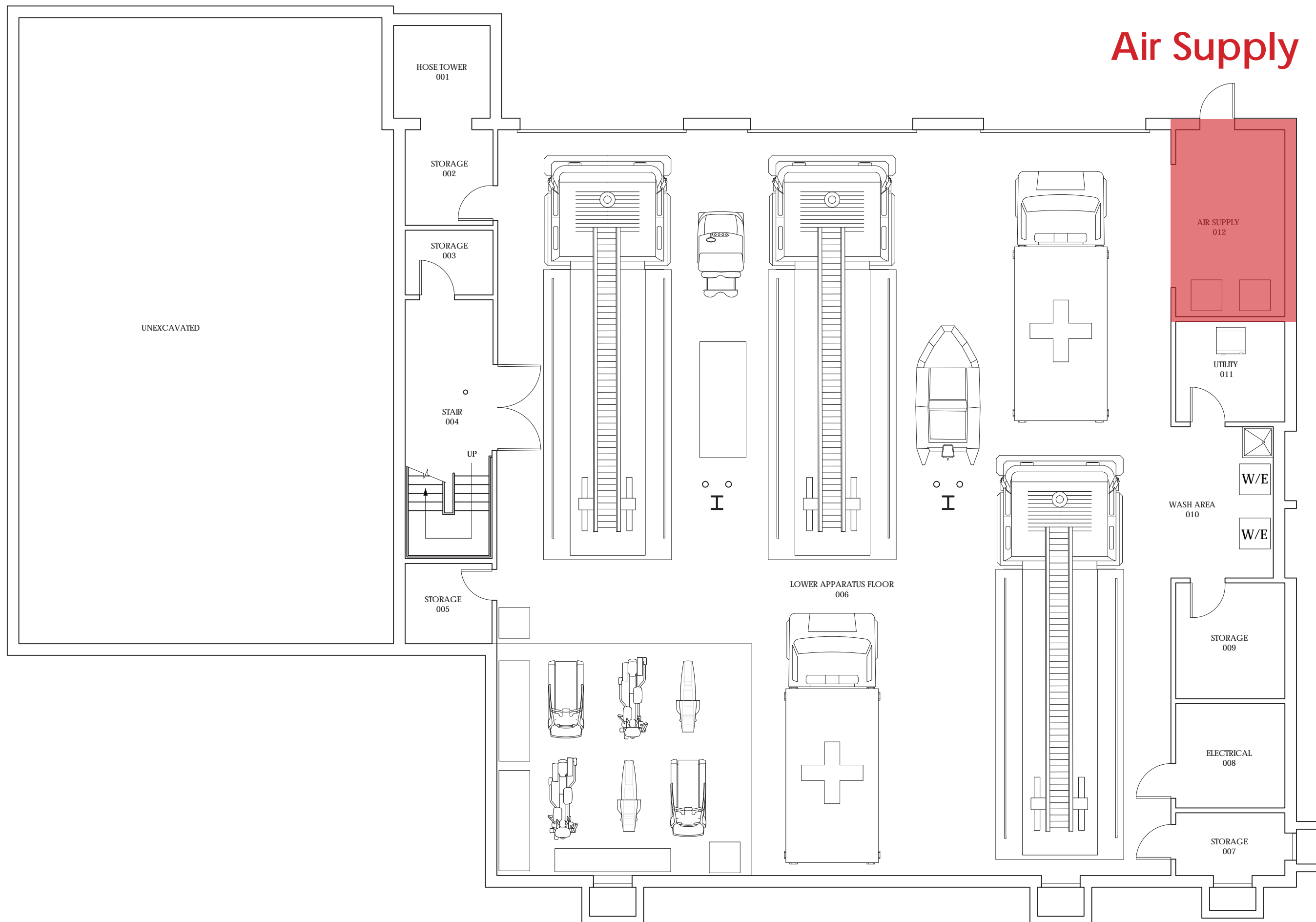


**Inadequate area for  
extracter & truck rag  
washer**

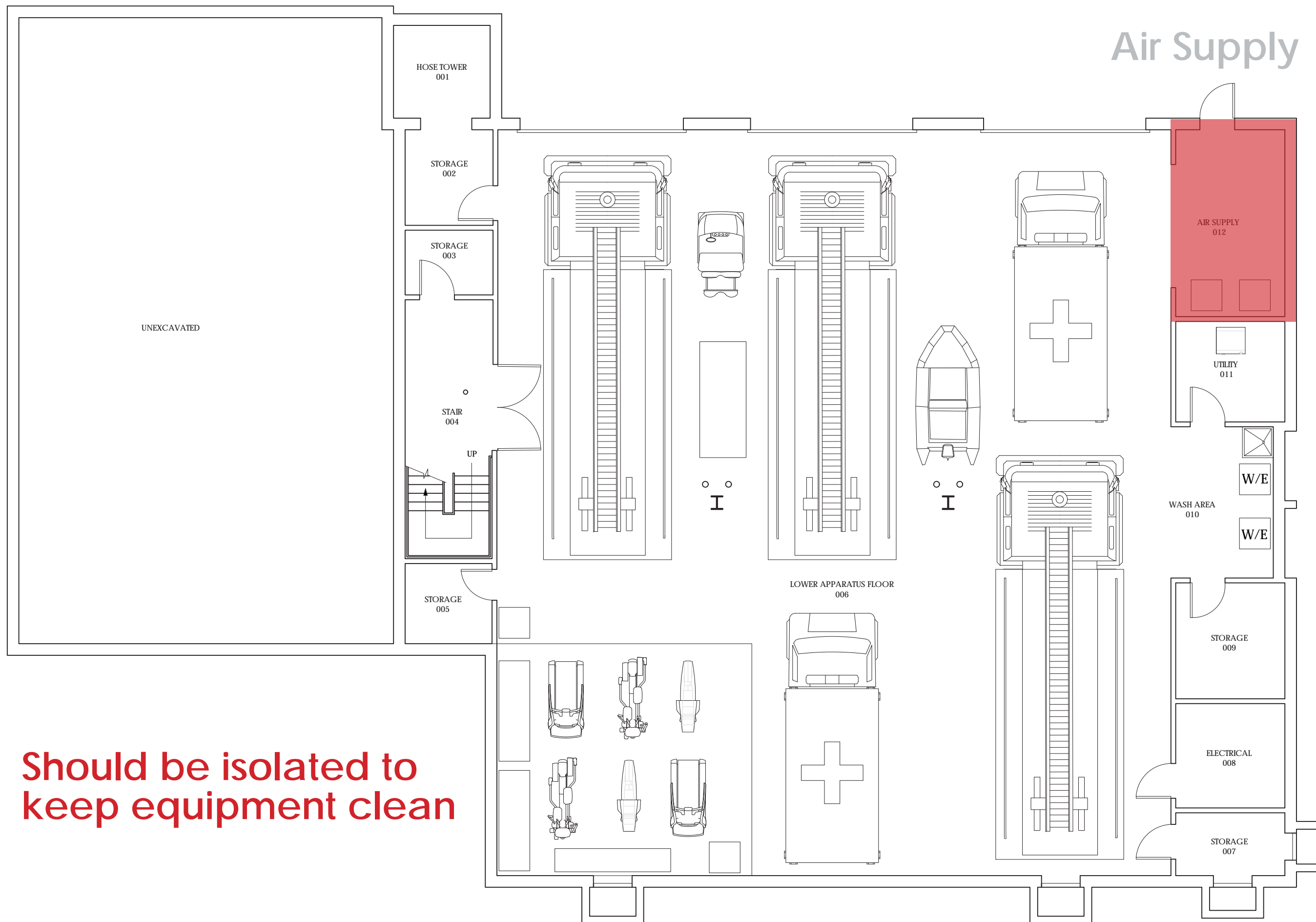




# Air Supply



Air Supply



Should be isolated to keep equipment clean

Basement Floor Plan



TGAS

Air Supply

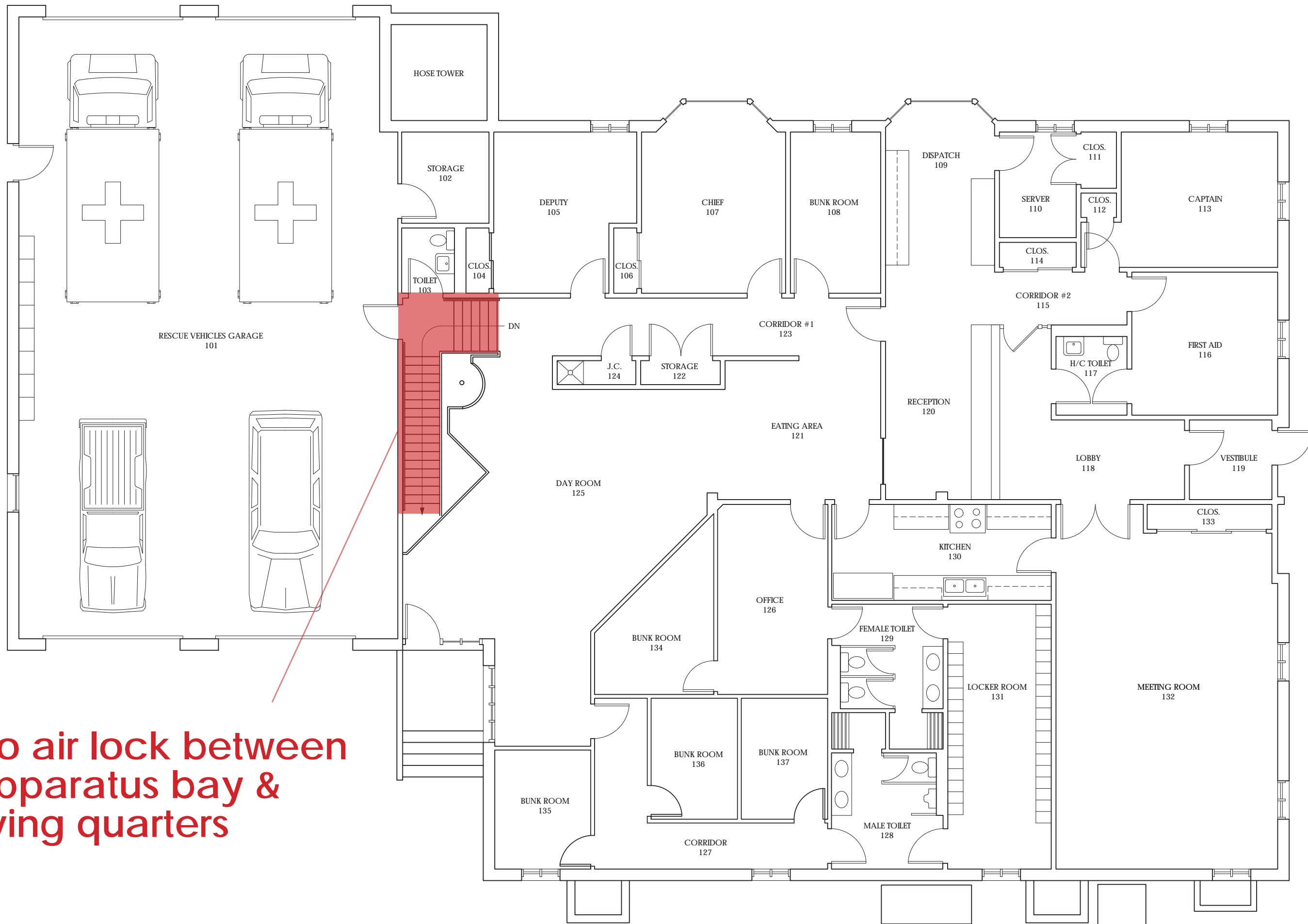




TGAS

Air Supply





No air lock between apparatus bay & living quarters

First Floor Plan



**FIRE DEPT**

**3<sup>RD</sup> RESCUE 172** →

**1<sup>ST</sup> RESCUE 173** ↓

**2<sup>ND</sup> RESCUE 174** →

**2<sup>ND</sup> TRUCK 170** ←

**1<sup>ST</sup> ENGINE 175** ↓

**1<sup>ST</sup> LADDER 176** ↓

**2<sup>ND</sup> ENGINE 177** ↓

**OUT OUT**

**OUT**

**1<sup>ST</sup>**

**2<sup>ND</sup>**

**ENGINE 178**

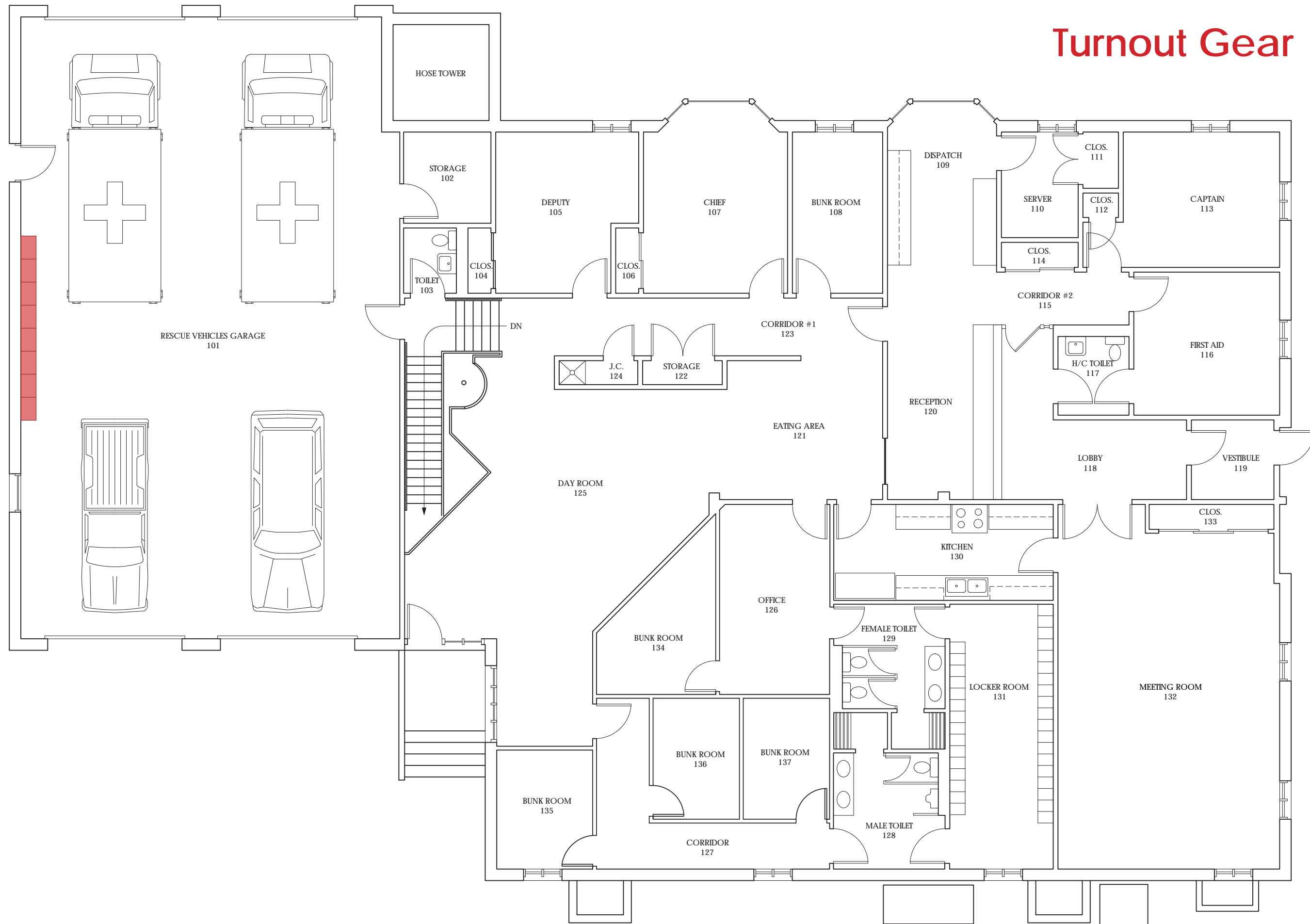
**3<sup>RD</sup>**

↑

**3<sup>RD</sup>**

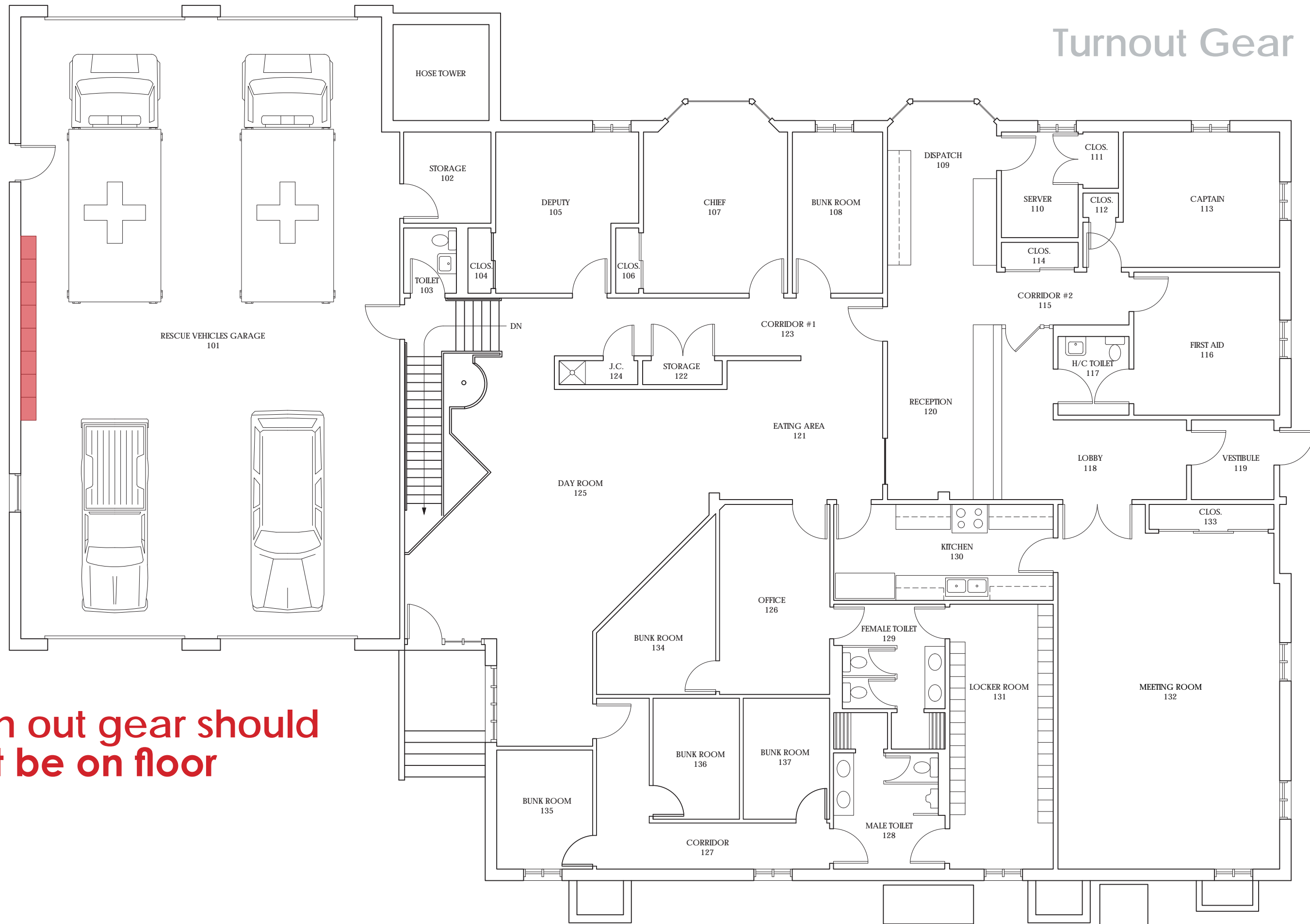
**3<sup>RD</sup>**

# Turnout Gear

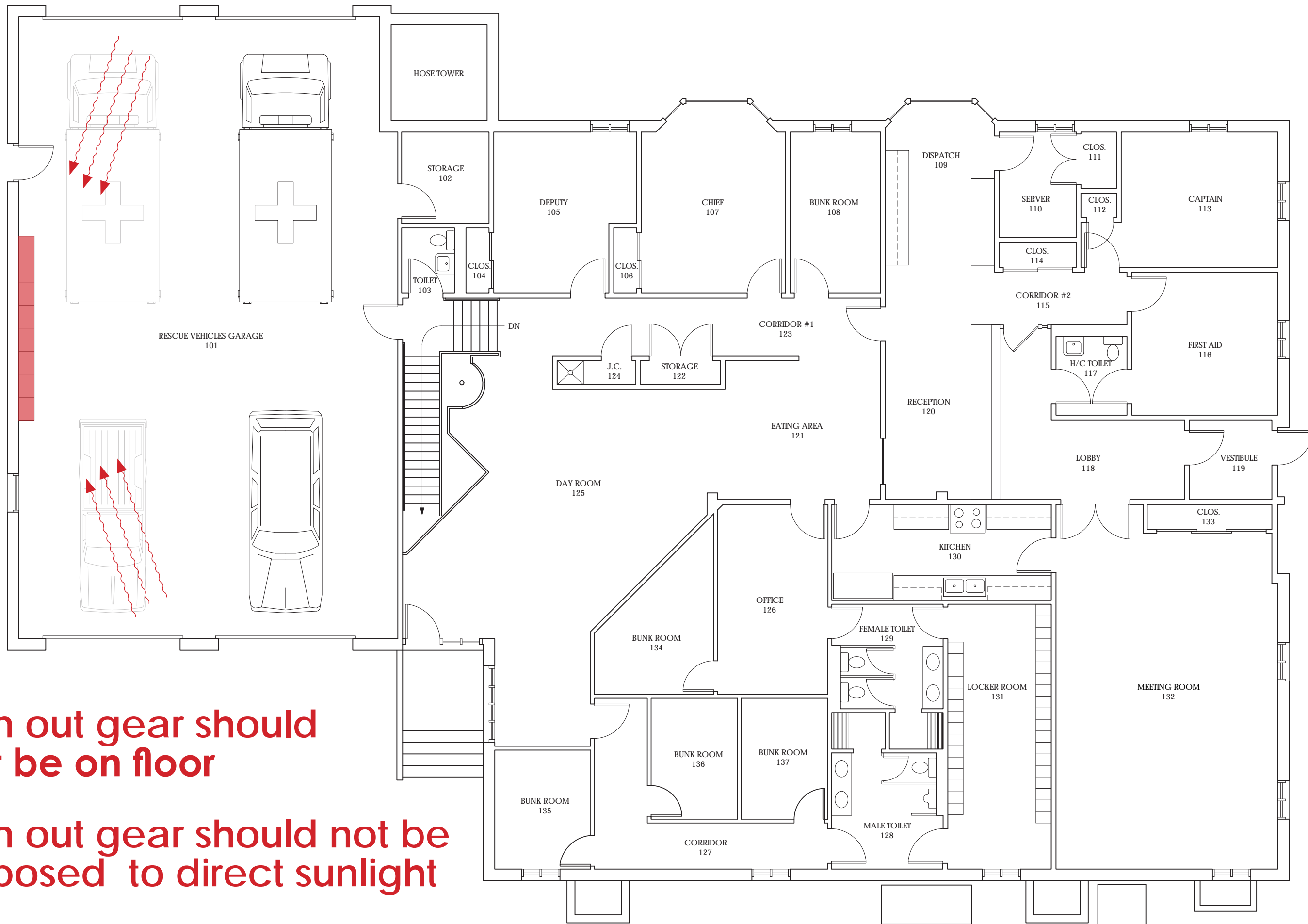


First Floor Plan

# Turnout Gear



**1. Turn out gear should not be on floor**



**1. Turn out gear should not be on floor**

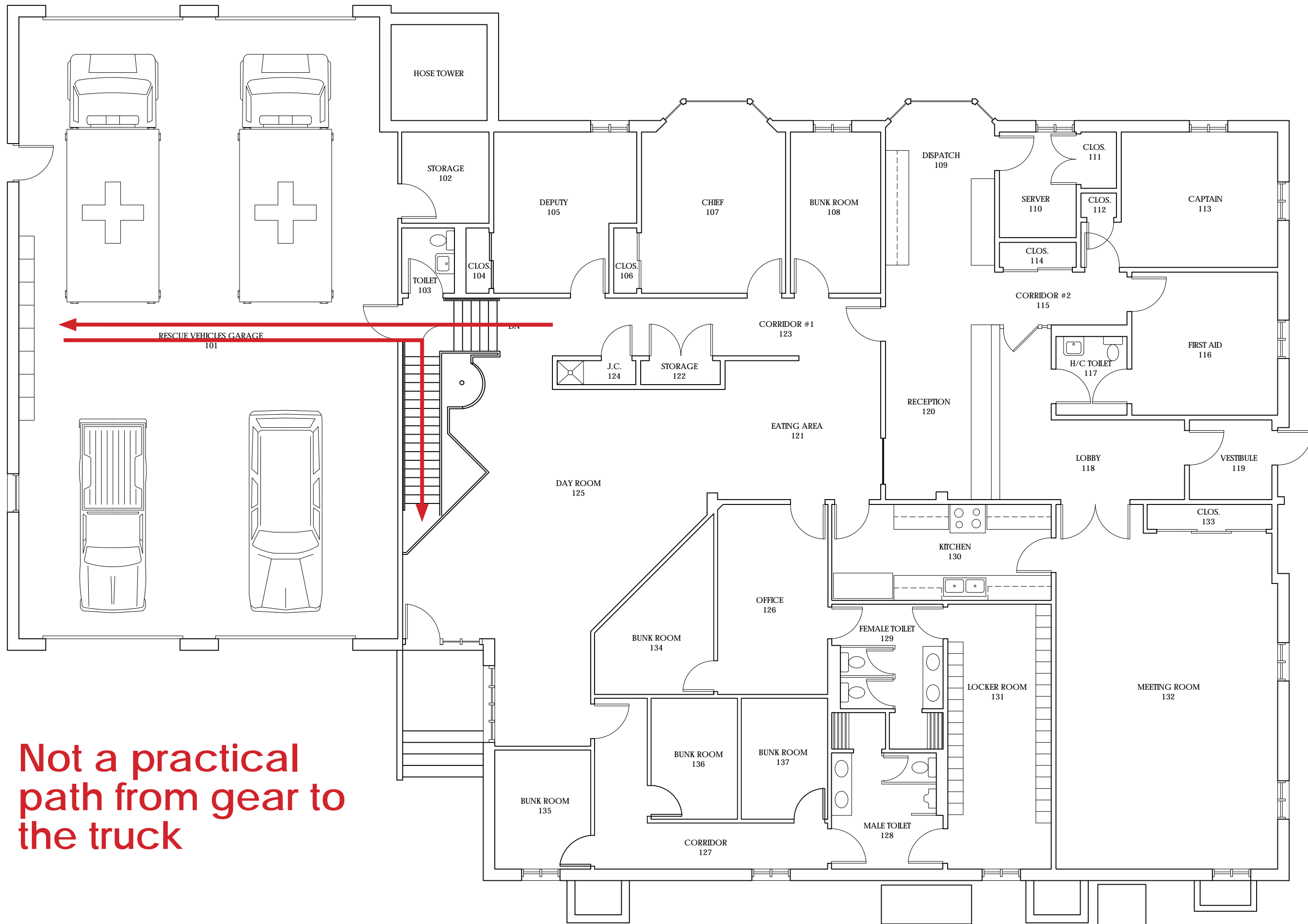
**2. Turn out gear should not be exposed to direct sunlight**



TGAS

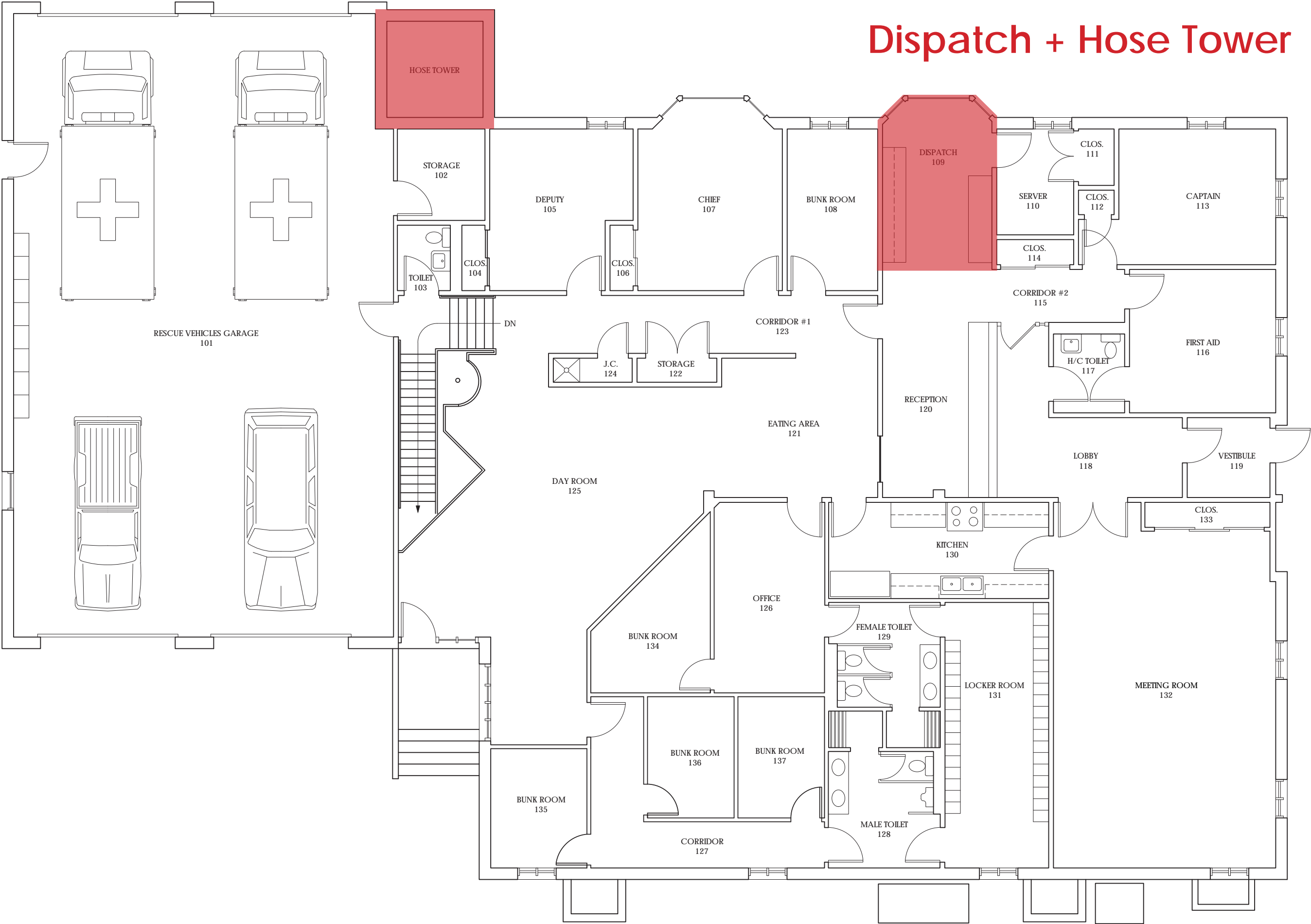
Turn Out Gear



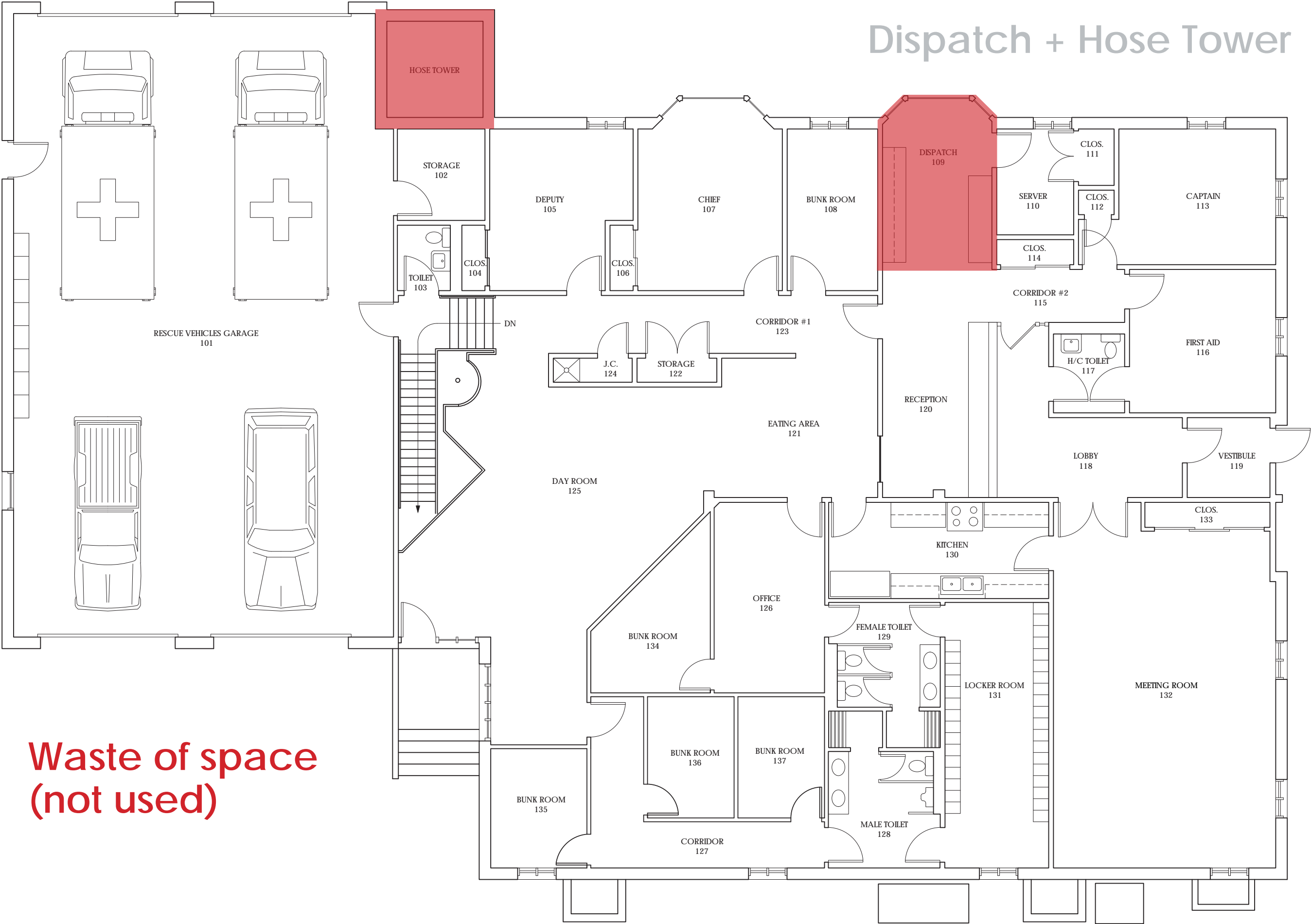


Not a practical path from gear to the truck

# Dispatch + Hose Tower



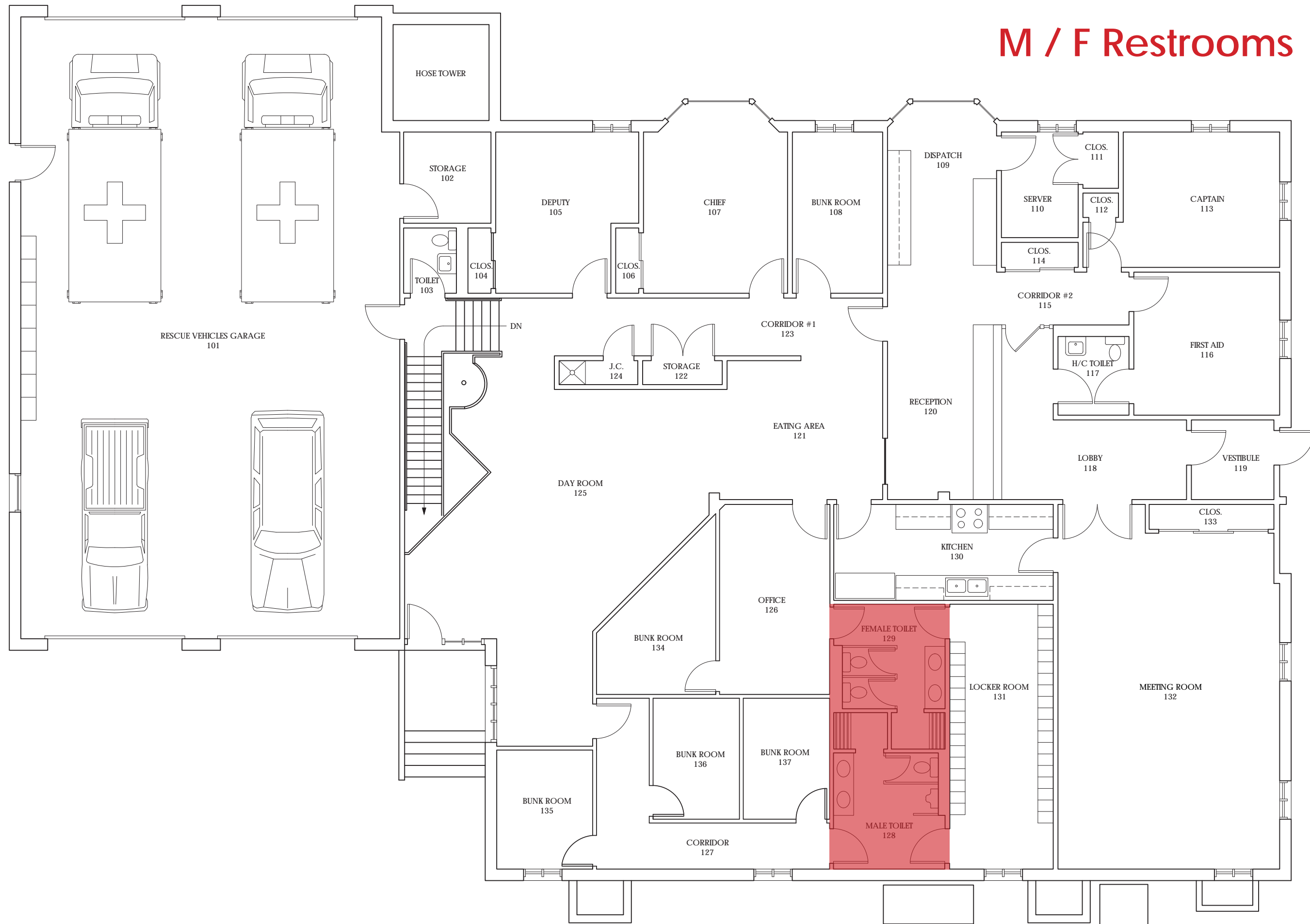
# Dispatch + Hose Tower



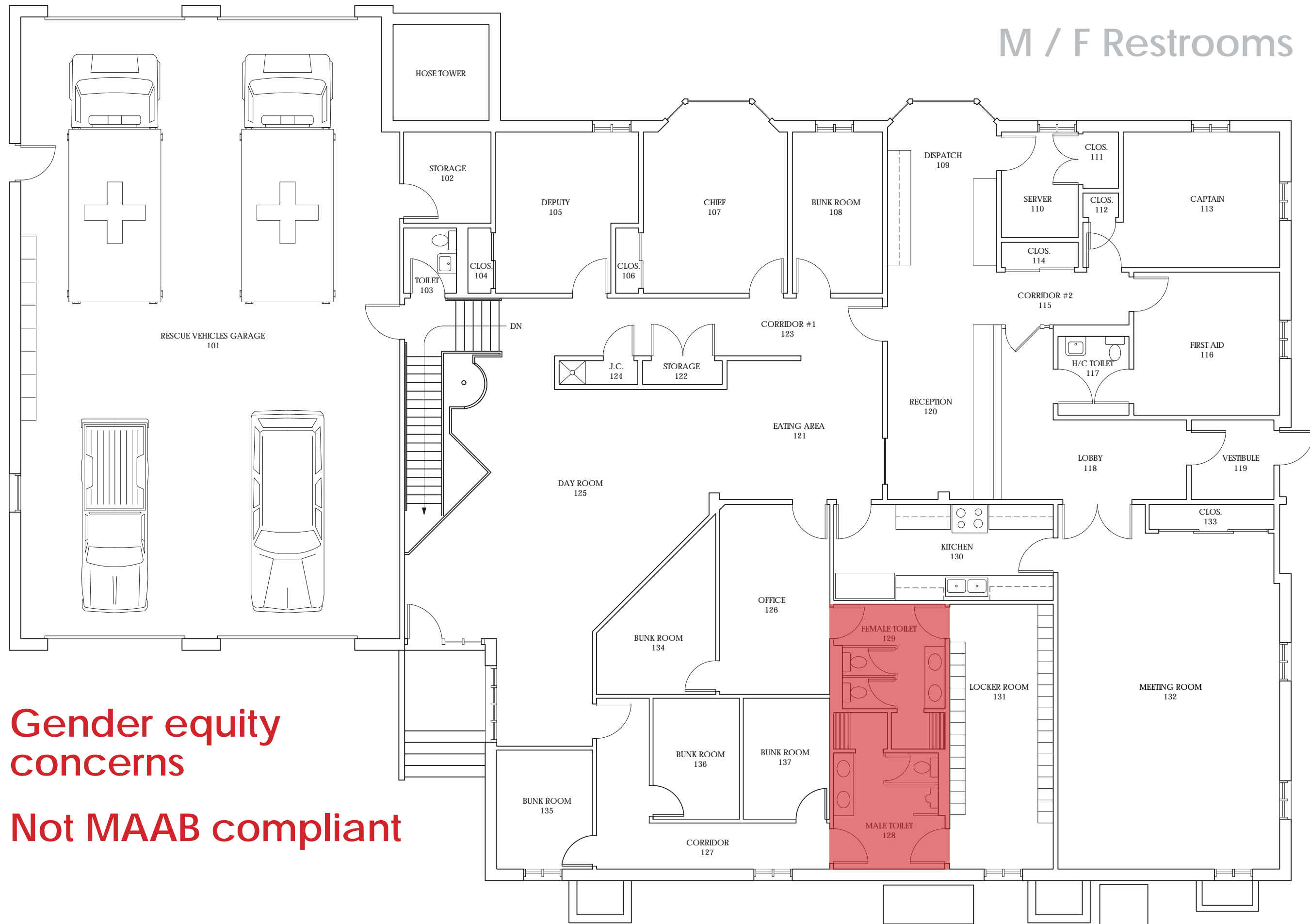
Waste of space  
(not used)

First Floor Plan

# M / F Restrooms



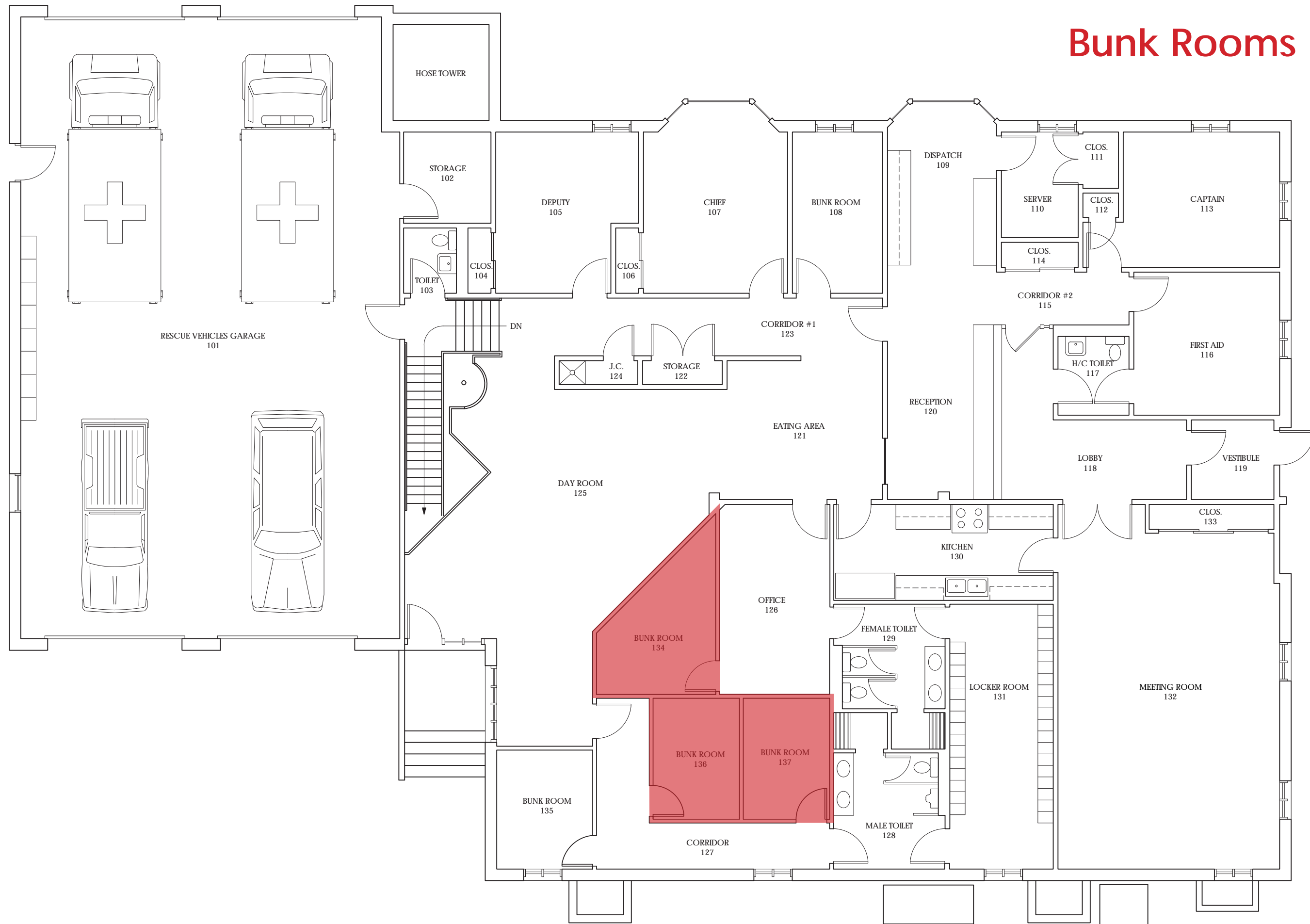
# M / F Restrooms



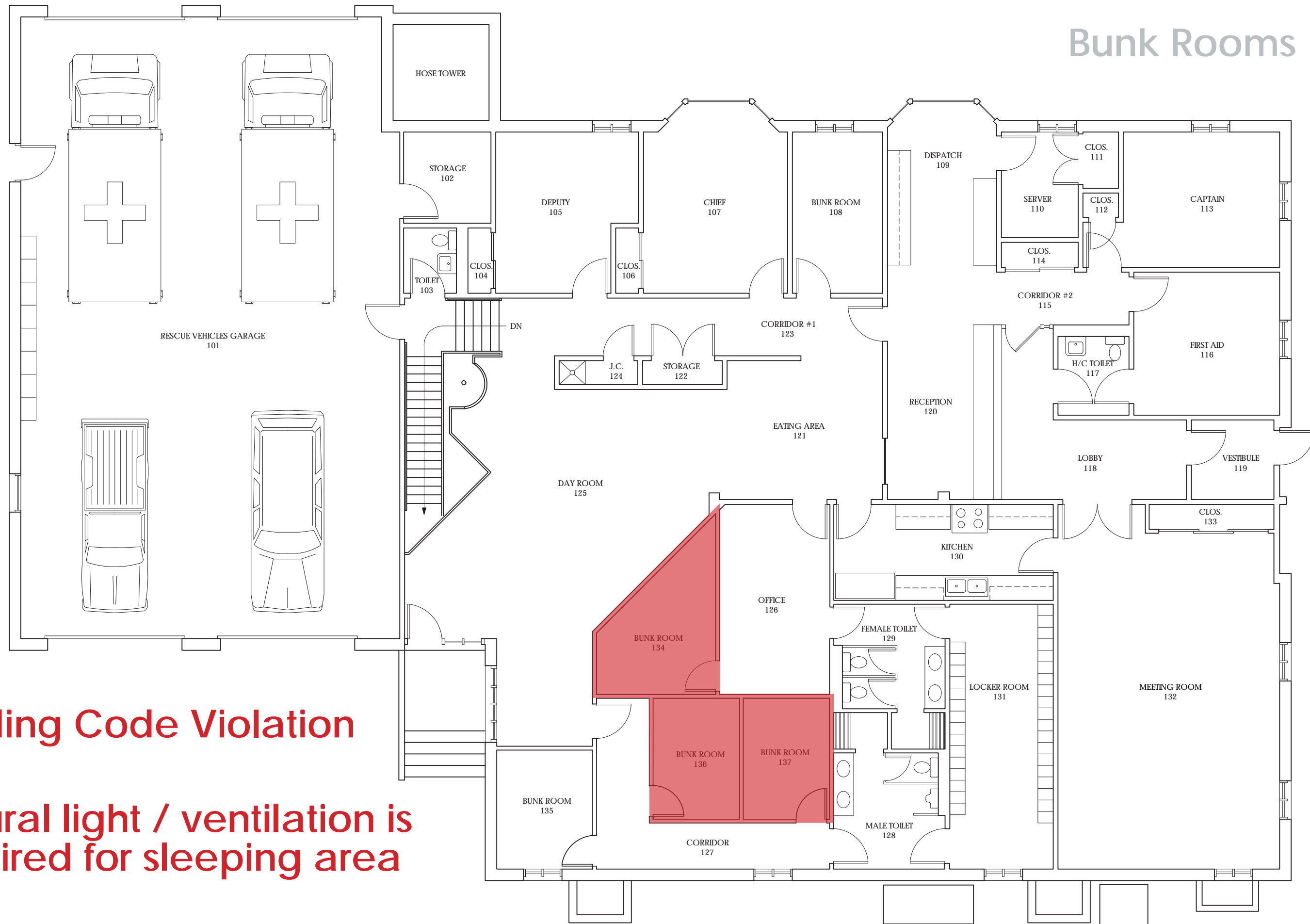
**Gender equity  
concerns**

**Not MAAB compliant**

# Bunk Rooms



# Bunk Rooms



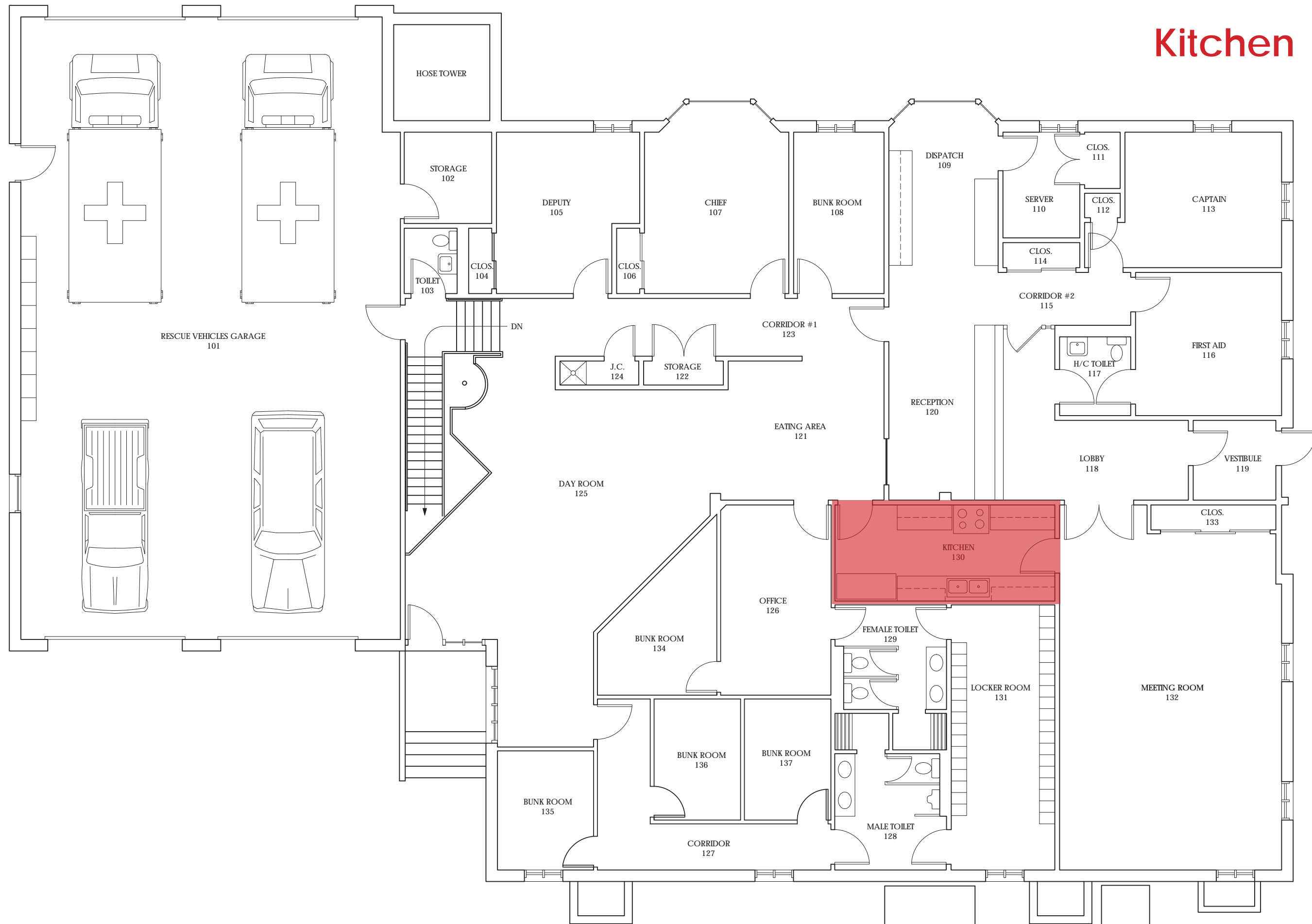
**Building Code Violation**

**Natural light / ventilation is required for sleeping area**

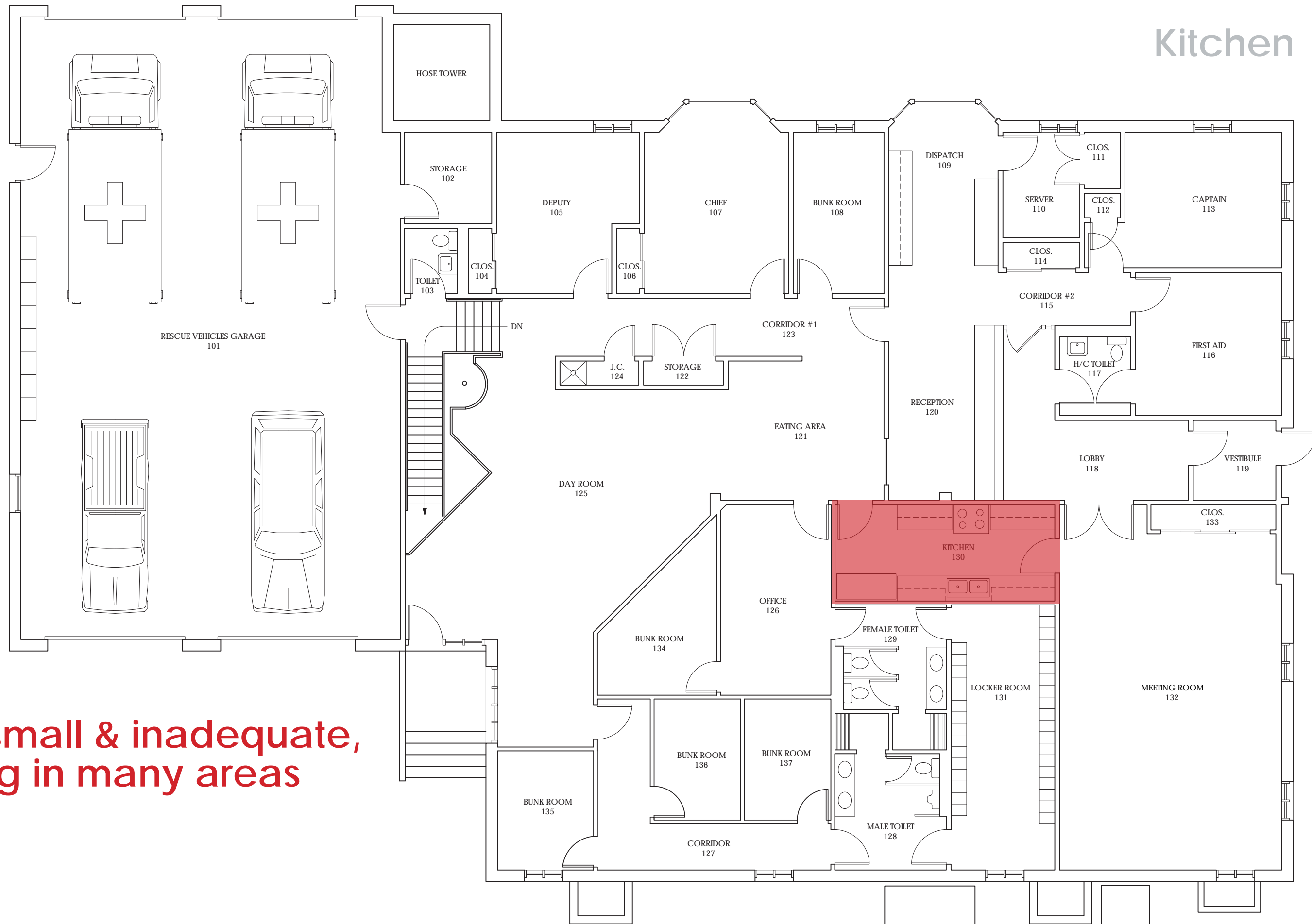
First Floor Plan



# Kitchen



Kitchen



Too small & inadequate,  
failing in many areas





TGAS

Kitchen





TGAS

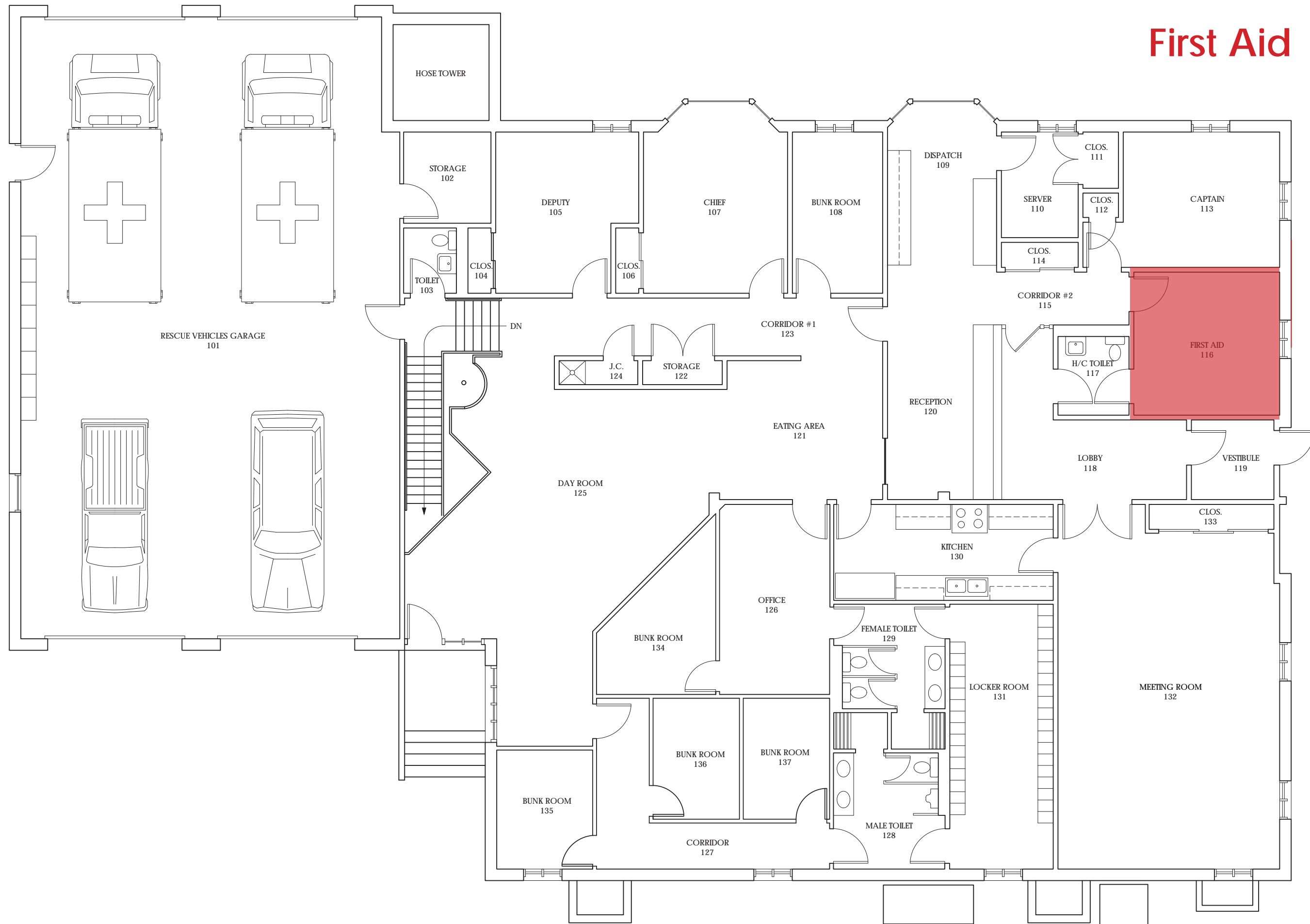
Kitchen



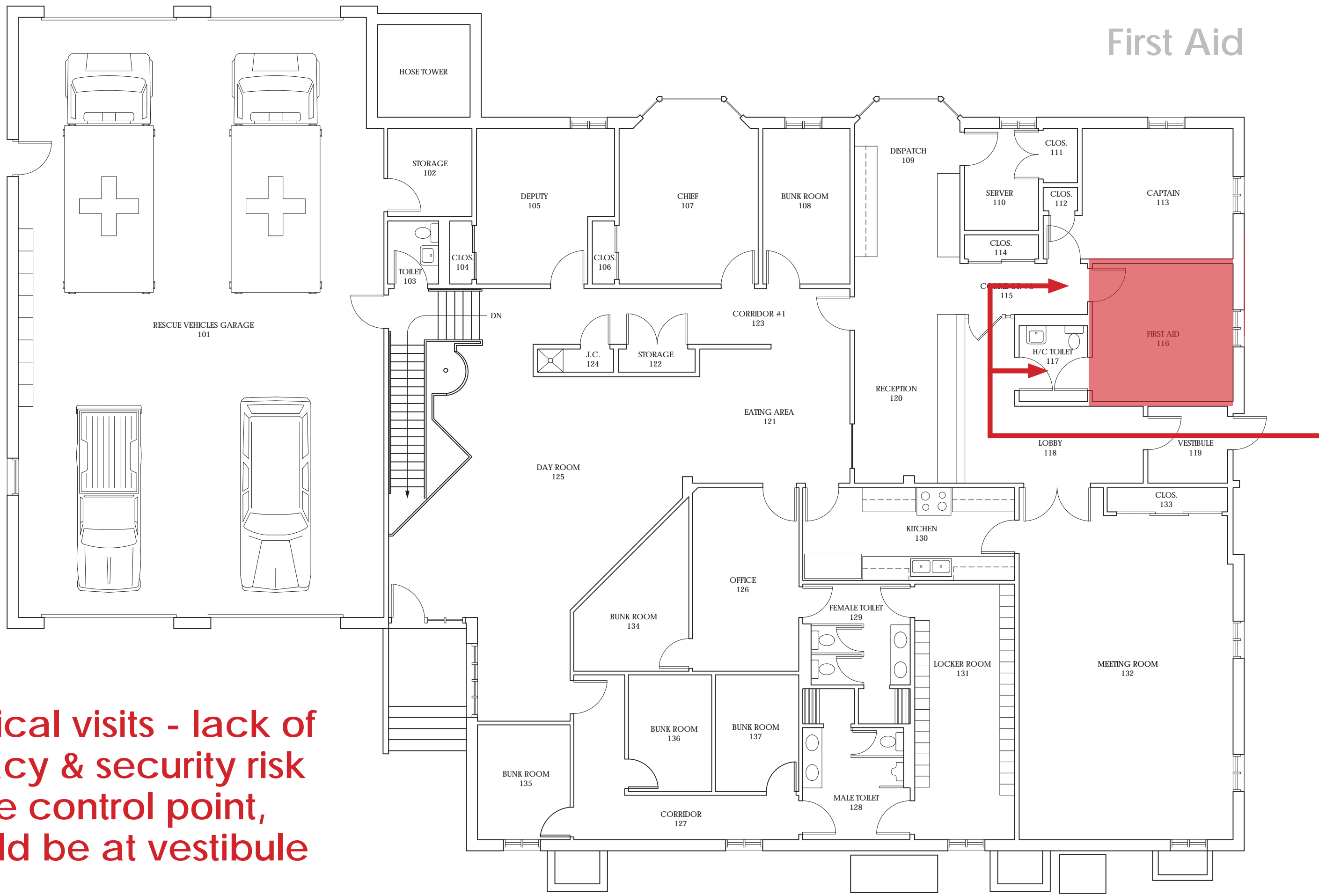
**Need domestic laundry on living quarters floor**



# First Aid

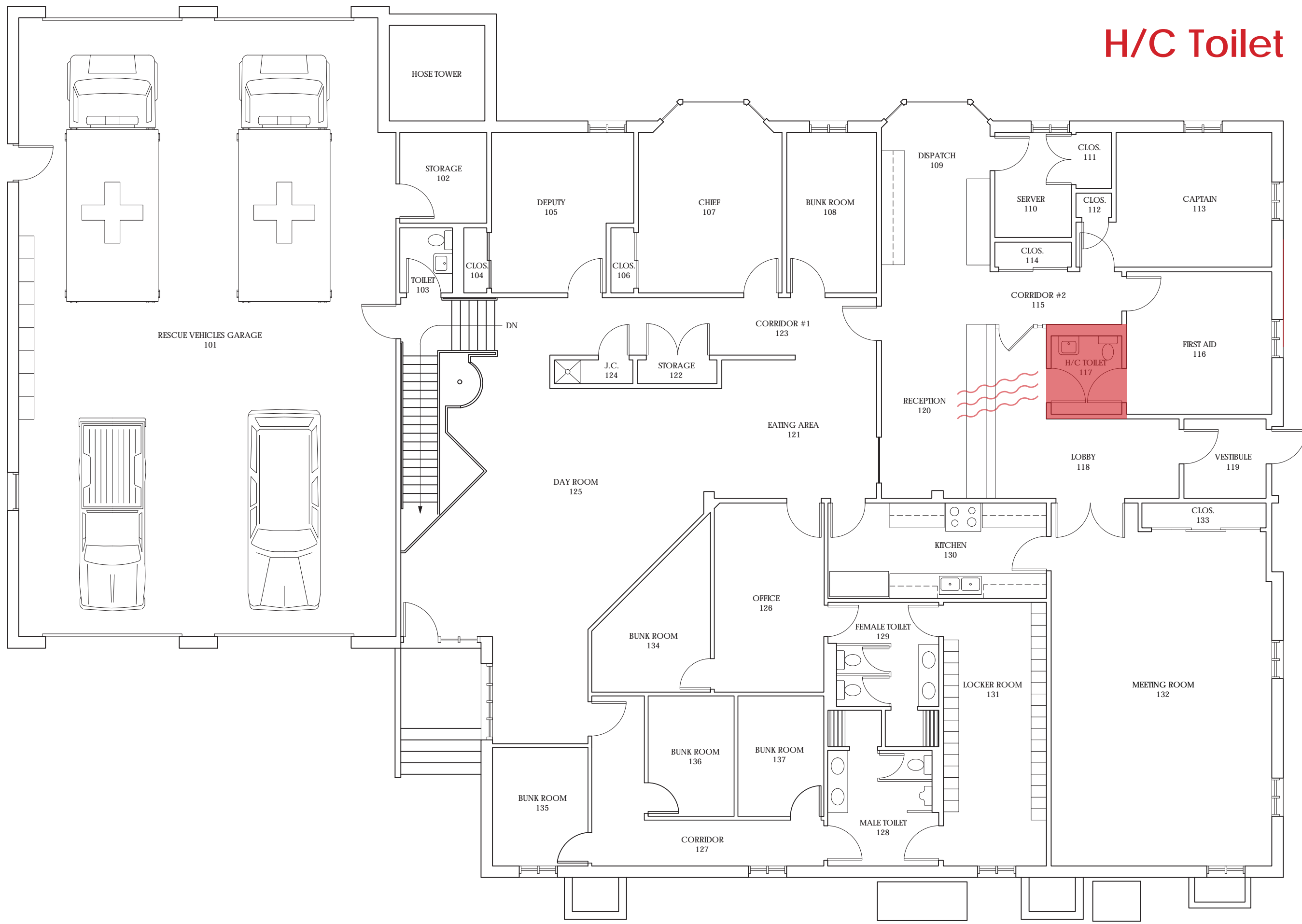


# First Aid

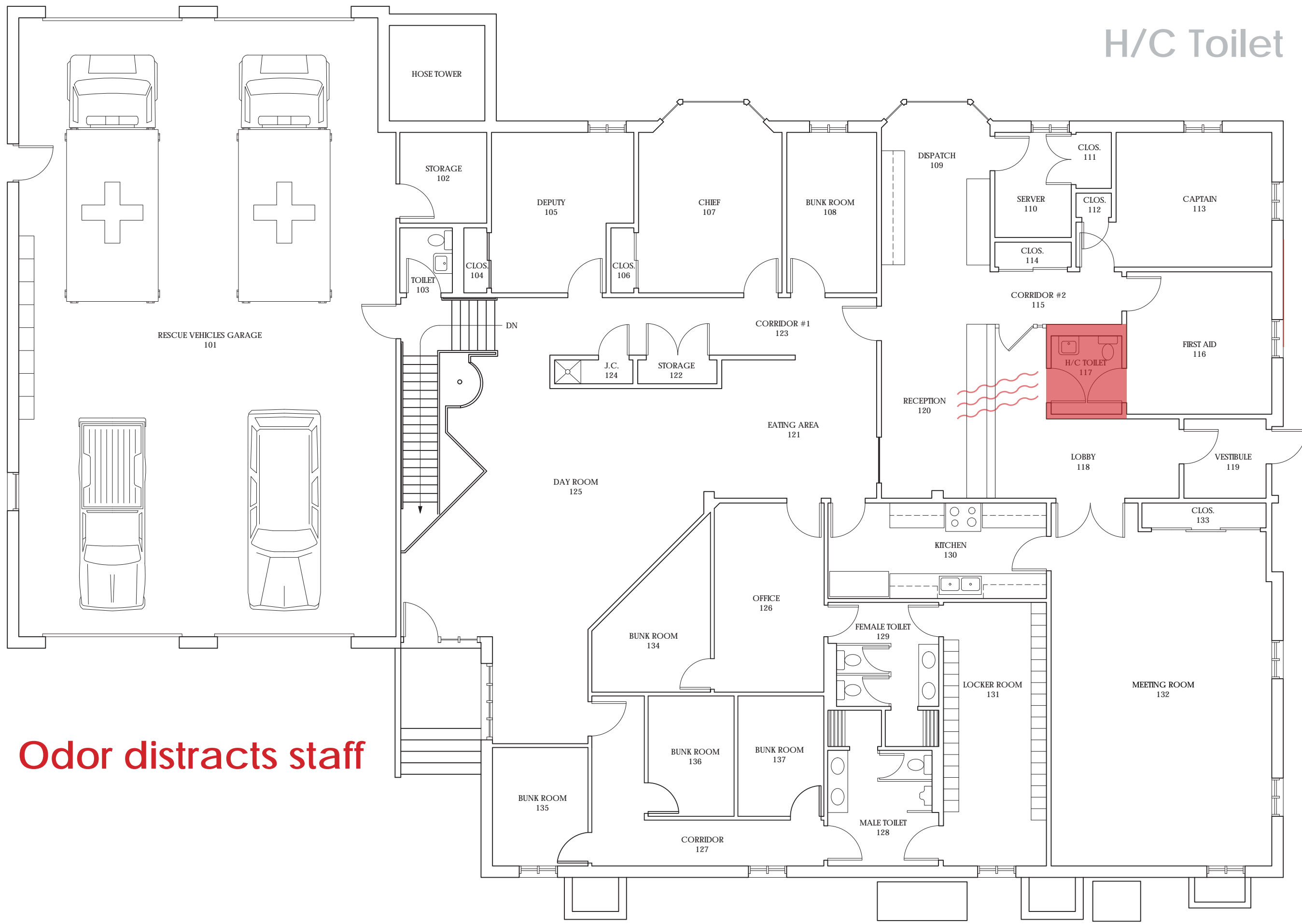


Medical visits - lack of privacy & security risk inside control point, should be at vestibule

# H/C Toilet



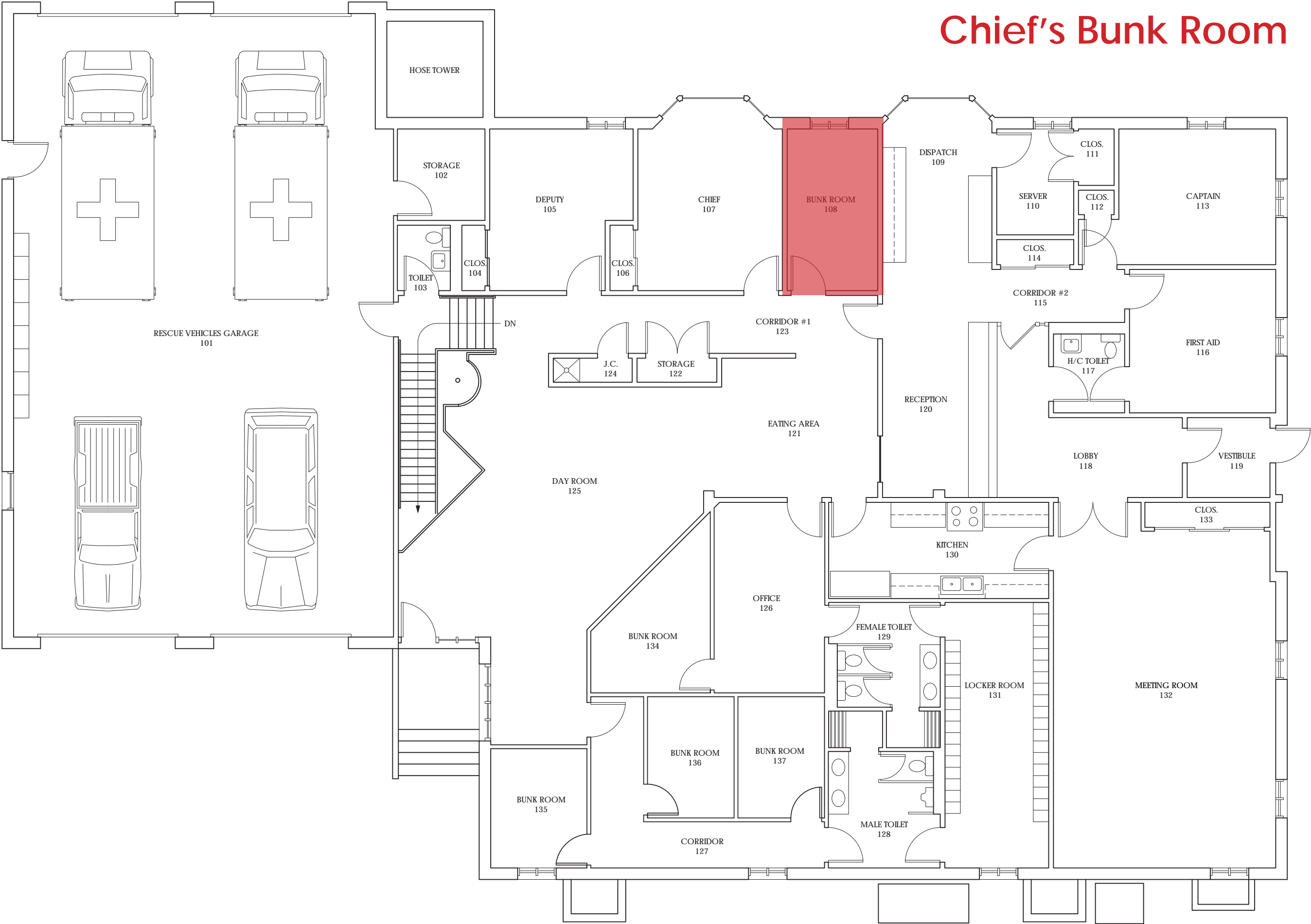
H/C Toilet



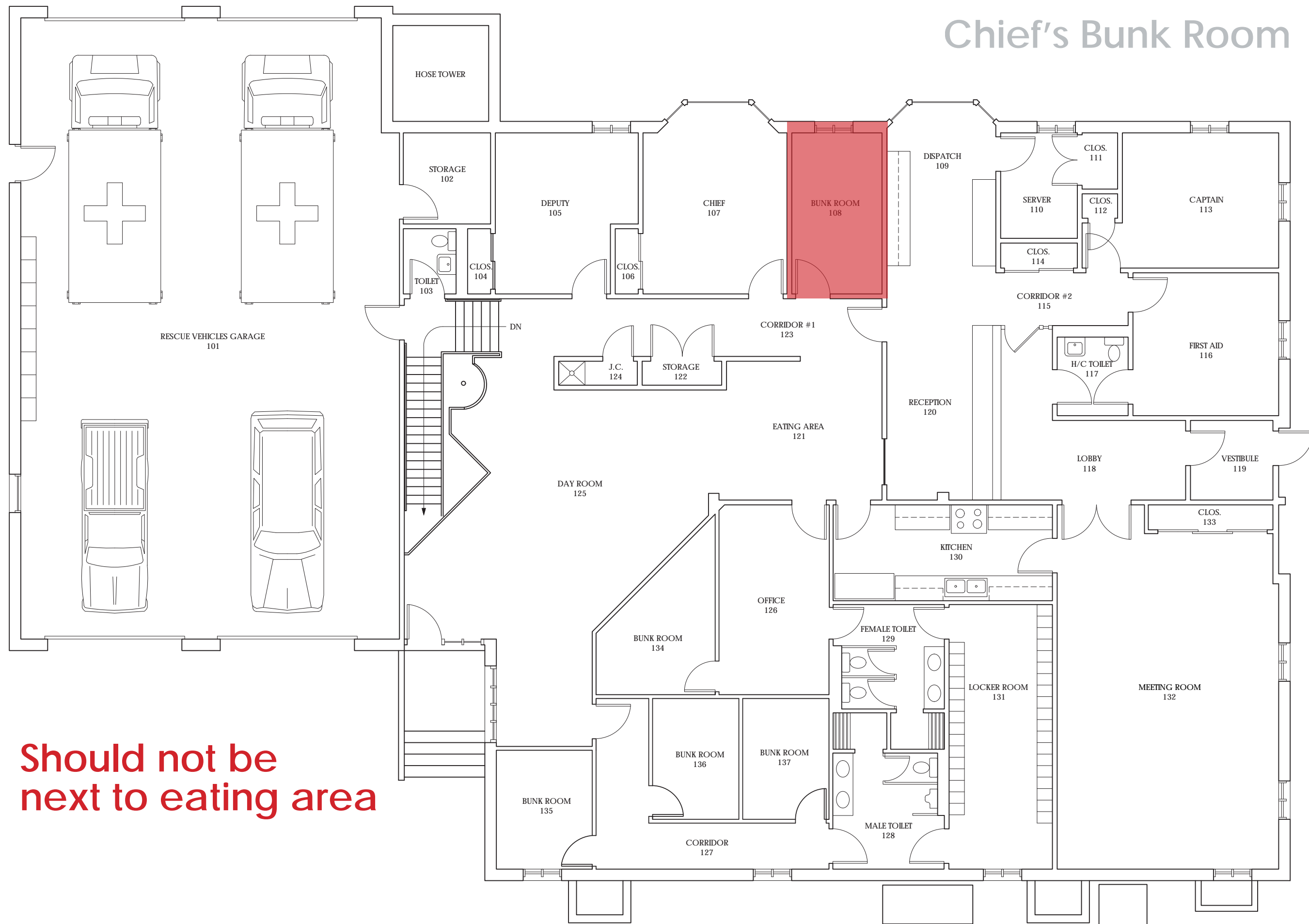
Odor distracts staff



# Chief's Bunk Room



# Chief's Bunk Room



Should not be next to eating area



# SUMMARY

## **THIS FACILITY IS IN NEED OF SIGNIFICANT IMPROVEMENT**

### **CONS:**

Site / Ramps Inadequate for Turn Out Time

Ramps Ice in Winter

Poor Visibility @ Eldredge Park Way

Slows Emergency Response Time

Visitors & Emergency Vehicles Use Same Driveaway

The Building is Too Small for Program / Use

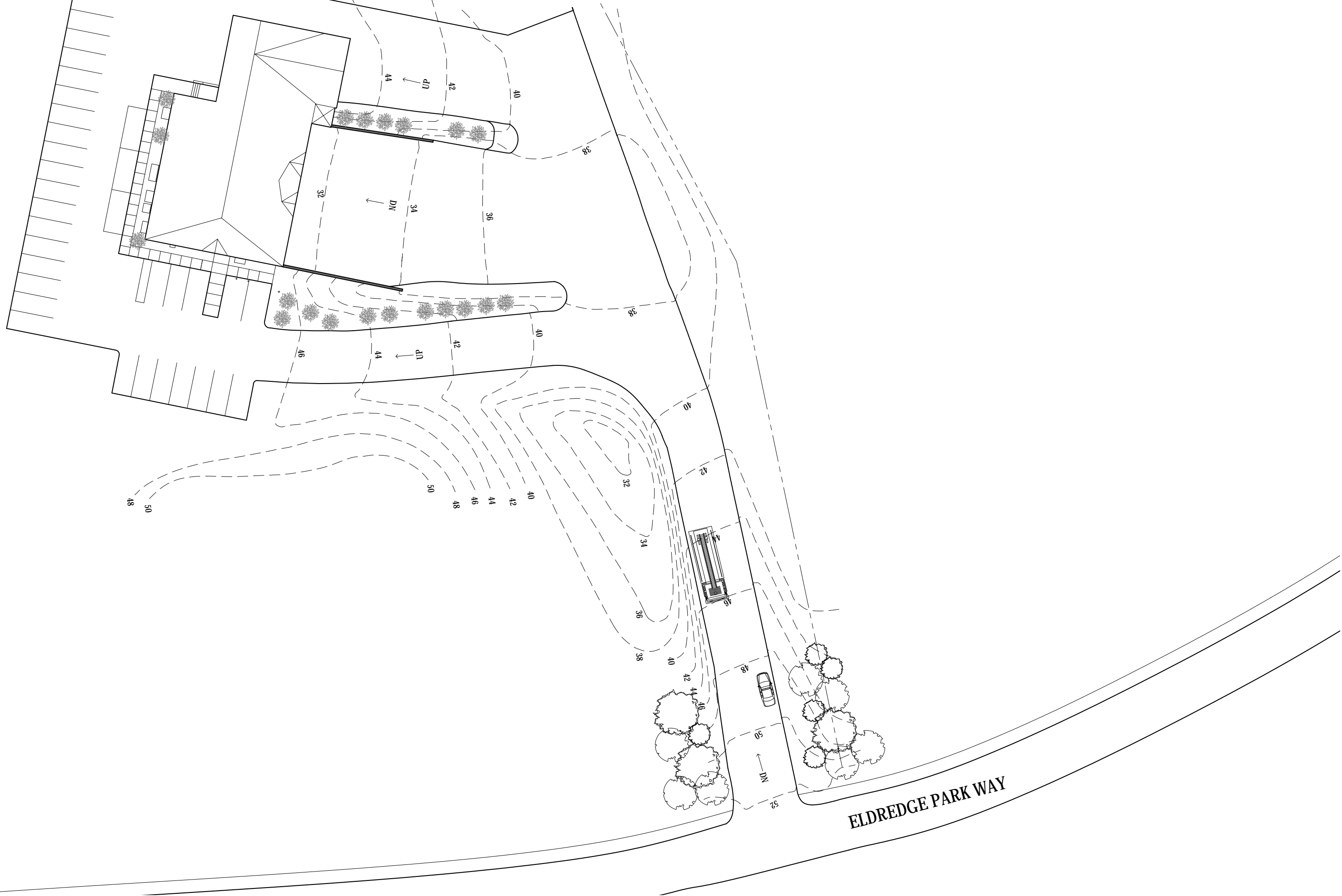
Building Envelope is Deficient & in Need of Significant Repair

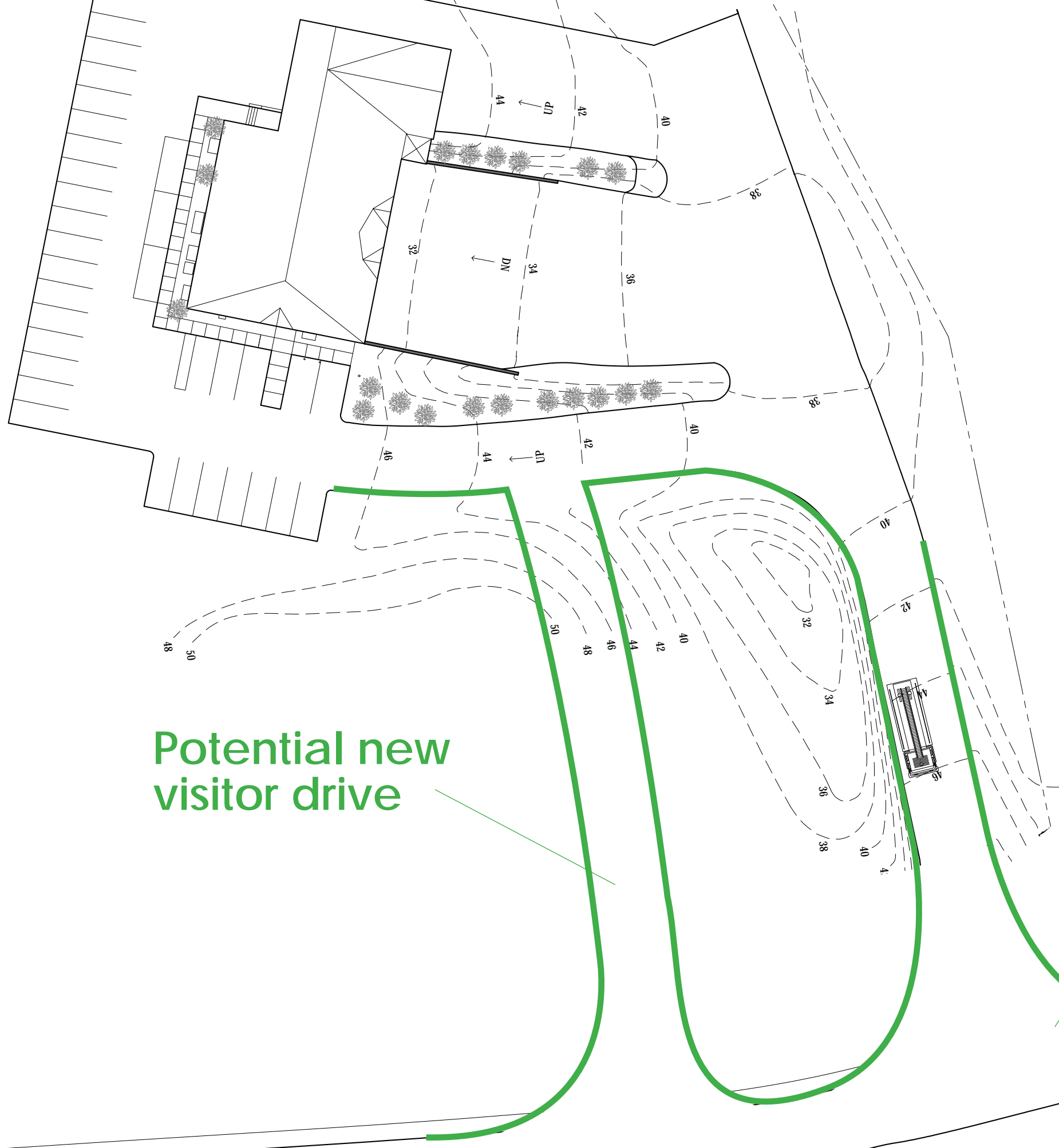
Site Shared with Elementary School & High School (No Clear Barrier)

# RECOMMENDED PROGRAM TO RELOCATE / MODIFY

Bunk Rooms	600 sf
<b>Office</b>	250 sf
Kitchen	600 sf
Restrooms	400 sf
Locker Rooms	600 sf
Laundry	150 sf
Fitness Room	800 sf
Decon Area	500 sf
SCBA	300 sf
Extractor	200 sf
T.O.G.	600 sf

<b>subtotal</b>	<b>5,000 sf</b>
<b>Net to Gross</b>	<b>1.2</b>
<b>Total</b>	<b>6,000 sf</b>





Adding heat below apron

Potential new visitor drive

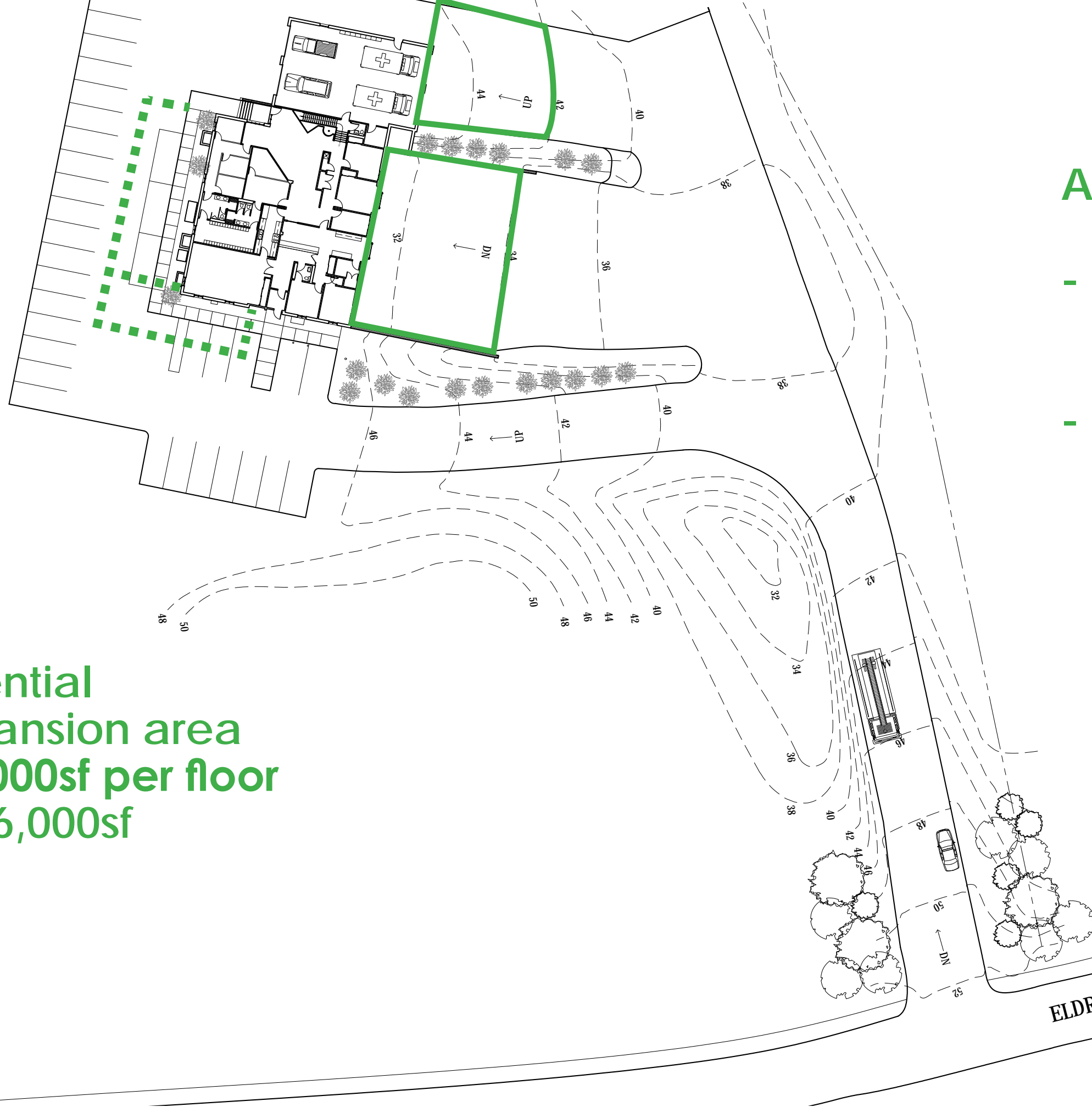
Remove trees

Widen access

ELDREDGE PARK WAY

Add traffic signal





## ADD

- Large missile impact resistant windows
- Improve energy efficiency with thermal envelope

Potential expansion area  
+ 3,000sf per floor  
or +6,000sf

TGAS

+





**MacRITCHIE ENGINEERING INCORPORATED**

197 Quincy Avenue, Braintree, MA 02184  
Tel. (781) 848-4464 Fax (781) 848-2613



**Interim HVAC Report for the:**

**ORLEANS FIRE DEPARTMENT**

58 Eldredge Park Way  
Orleans, MA 02653

January 31st, 2020



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### 0.1 - ABBREVIATIONS

CFM	Cubic Feet Per Minute	deg F	Degrees Fahrenheit
IAQ	Indoor Air Quality	OSHA	Occupational Safety and Health Administration
AHU	Air Handling Unit	ppm	Parts Per Million
OA	Outside Air	ppb	Parts Per Billion
CO	Carbon Monoxide	pt/cc	Pints per cubic centimeter
CO2	Carbon Dioxide	EPA	Environmental Protection Agency
NO2	Nitrous Oxide	HVAC	Heating Ventilation & Air Conditioning
MEI	MacRitchie Engineering Inc.	UFP	Ultra-fine particles
VOC	Volatile Organic Compound	ERV	Energy Recovery Ventilator
HHW	Heating Hot Water	CHW	Chilled Water
BMS	Building Management System	VRF	Variable Refrigerant Flow
DOAS	Dedicated Outside Air System		

### 0.2 - Purpose of study:

This HVAC study will evaluate the existing conditions and provide recommendations for HVAC improvements at the Orleans Fire Station. The study will address the need for ventilation improvements based on complaints of poor indoor air quality and replacement of outdated HVAC equipment that is at or past its useful life.

### 0.3 - Background Information:

In May of 2019 The select board has approved this study to investigate what type of HVAC improvements can be implemented at the facility including any Architectural or Structural aspects that can help extend the facility's life. Poor air quality concerns were observed during a 2018 Barnstable County Health department survey. A 2018 existing conditions balancing report indicated a slight negative pressure relationship of 0.004" w.c. in the upper level with respect to the apparatus floor on the lower level. There are concerns that the negative pressure relationship between these spaces is promoting the migration of vehicle exhaust fumes into the upper level from the lower level and rescue vehicle area.

## SECTION 1 – EXISTING IAQ & HVAC CONDITIONS

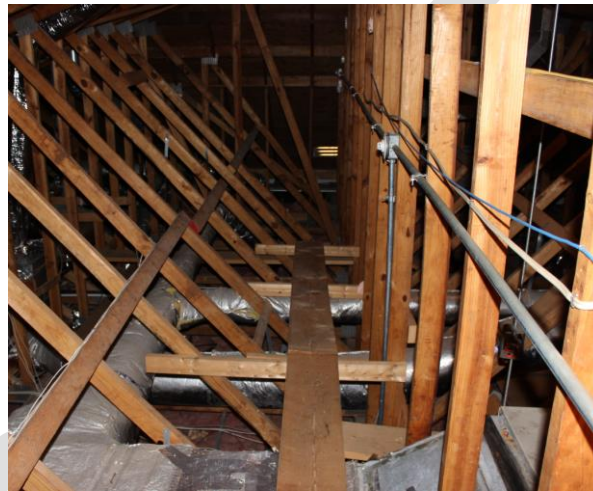
### 1.1 - Description of Existing HVAC systems serving upper level:

**Air Handling Units:** The 3 original air handling units (AHU) serving the upper level, located in the attic, were replaced at some point with 80% efficient Lennox furnaces and mated to the original carrier DX cooling coil sections. The model number on the furnaces suggest they are 10 years or older (more than halfway through its anticipated lifespan). At some point they were modified to draw air directly from the outdoors via a roof vent (as OA derived from the attic space is no longer allowed).



**1.1.1 Condensing Units:** The condensing units that serve these AHU's do not appear to be original, however they are older models that utilize the now defunct R-22 refrigerant and will have a limited lifespan going forward as they will not be easily serviceable.

**1.1.2 Maintenance Access:** The AHU's in the attic are located at the far end of the building (Southern end) from where access is provided in the ceiling of the Day room. Access to each of the AHUs are limited as it requires one to traverse 2x10 planks that have been secured to the cross bracing that makes up the wooden truss system of the roof which creates a hazard for maintenance personnel. Servicing these units is difficult and not practical.



*Typical access for attic AHUs*

**1.1.3 HVAC Zones:** The layout of the AHU systems serving the upper level are configured so they each form a separate zone with separate controls to cover a limited portion of the upper level.

- Zone "F-1" covers the east and southern exposures of the building and consists of mostly the offices and reception areas.
- Zone "F-2" covers the core of the building, which consists of the kitchen/eating areas, day room and some of the bunk rooms.
- Zone "F-3" covers part of the Southern and mostly all of the Western exposures of the building, which consists of the meeting room, locker room and bunk rooms along the exterior.

**1.1.4 Balancing Issues:** After reviewing the Air Balance survey report that was issued on 7/31/2018, it was noted that the current system shows areas of imbalance and incorrect airflows compared to the original design. It is notable that areas where there are complaints for lack of heat, these areas are experiencing greater disparity from what air flow they are receiving and what they are designed for. The thermostat for zone F-1 is located in the reception area which can lead to overheating in other spaces as the thermostat takes longer to become satisfied.

- Zone F-1 is operating at 71% of design airflow
- Zone F-2 is operating at 70% of design airflow



- Zone F-3 is operating at only 66% of design.

**1.1.5 The addition of partitions to create bunk rooms:** It is worth noting that when the additional partitions were constructed to create private bunk rooms that professional engineering services were not consulted and the balancing to those rooms may not have been set correctly, throwing the system that serves that side of the building out of balance. Additionally, when the original furnaces were replaced with the current models, it is unclear how the units were selected and what performance parameters were used. If fans with less static pressure ability were selected this may result in lower overall output and effecting system balance.

**1.1.6 Exhaust Fans:** From the air-balance survey work that was done, it was determined that most of these fans are not operating at their designed flow rates (CFM). For example the meeting room has an excessive amount of exhaust air, which may drag odors and particulates from other areas of the building and creating a negative condition in that space and promoting more infiltration air through gaps in doors and windows, also effecting the temperature of the space.

**1.1.7 Kitchen Exhaust:** It should also be noted that the range exhaust hood is operating at a lower CFM than designed and is vented through the roof using a corrugated rubber/plastic hose which is not suitable for higher temperature grease applications and could become a potential fire hazard due to excessive amounts of grease being stuck in the ribs of this rubber/plastic hose.

## **1.2 - Description of existing systems serving Apparatus & Rescue Vehicle Areas:**

**1.2.1 Apparatus Floor Heating:** The apparatus floor on the lower level is heated by two gas fired unit heaters that are centrally located within the space. These units are only intended to maintain space temperature and recover the temperature in the space when the doors are opened.

**1.2.2 Ventilation Air & Exhaust:** There is no ventilation air being introduced directly into this space and the two exhaust fans that are existing do not appear to be functional. With the exercise equipment sharing this space with the equipment, this is leading to some serious health concerns for those who use this space as the only means of ventilation comes from opening the door which is not practical during the winter months.

**1.2.3 Existing Exhaust Source Capture:** A Plymovent system was installed to provide source capture of exhaust from the vehicles when they were started indoors, this system consists of rubber hoses hung from a track system that is connected directly to exhaust ductwork. The fans that provide the exhaust flow run whenever the system detects exhaust flow or is operated by the firefighters. This system does not capture general space exhaust, larger general-purpose fans for the space are also required.



*Fitness equipment located on the apparatus floor*

**1.2.4 Rescue Vehicles Bay Heating:** The Rescue Vehicles bay adjacent to the upper level feature the same type of gas fired unit heaters, centrally located within the space.

**1.2.5 Ventilation and Exhaust for Rescue Vehicles bay:** There is no direct exhaust fan for the Rescue Vehicle area. This area should be under a negative with respect to the adjacent living quarters and should have some type of general purpose exhaust.

**1.2.6 Rescue Vehicle Exhaust Source Capture:** A Plymovent source capture system has also be installed in this location. The Rescue Vehicle space is separated from the living quarters on the upper level only by a single door which leads directly to the Day room. With no constant volume of exhaust air to provide a negative relationship in the Rescue Vehicle bay, it is possible that exhaust fumes and other contaminants are finding their way into the living areas of the upper level.

### **1.3 - Survey Work Performed:**

Throughout the month of December 2019, MacRitchie Engineering Inc (MEI) performed survey work to determine existing conditions, Air quality and specific complaints.

**1.3.1 Newer Partitions and Converted Bunk rooms:** It was noted that many spaces have been converted over the years to provide more Bunk space for their firefighters. Walls were constructed to form rooms in places the as-built plans do not show and it was unknown if their HVAC needs were factored into the construction. The "Shift officer" room was converted to a bunk room and there are complaints that the space is "always cold". The "On Call" room had server equipment installed within it which now gets too hot in the summer months. The reception area was notably cold compared to the thermostat setpoint of



68 deg F. Finally, the “Male Dorm” area was converted to several private bunk rooms which feature no windows and have complaints of being “stuffy” which suggests poor air quality.

**1.3.2 - CO2 Datalogger Results:**

Datalogging equipment was installed by MEI on 12/20/19 and were set to sample air quality every 15 minutes. The dataloggers were retrieved on 01/06/20. Three locations were chosen:

1. Deputy’s Office 105
2. Day Room 125
3. Bunk Room 137

Data from the Data Loggers was retrieved around 10am. The fire station population was less than 10 people, activity was low. Below is the Averages retrieved from the data loggers:

**Deputy’s Office 105 (Data Logger SN: 20769877)**

At Time of Arrival: 786 ppm CO2 / 30% R.H. / 70.6°F  
Max CO2 Measured: 975 ppm  
Min CO2 Measured: 391 ppm  
Avg CO2 Measured: 508 ppm

**Day Room 125 (Data Logger SN: 20769862)**

At Time of Arrival: 488 ppm CO2 / 31% R.H. / 65.3°F  
Max CO2 Measured: 841 ppm  
Min CO2 Measured: 379 ppm  
Avg CO2 Measured: 489 ppm

**Bunk Room 137 (Data Logger SN: 20769861)**

At Time of Arrival: 520 ppm CO2 / 30% R.H. / 67.4°F  
Max CO2 Measured: 1,450 ppm  
Min CO2 Measured: 362 ppm  
Avg CO2 Measured: 629 ppm

**1.3.3 -Carbon Dioxide Testing Conclusions:**

Carbon Dioxide correlates with metabolic human activity as people inhabit a room, the concentration increases in spaces depending on the number of people, what type of activity is performed and how much fresh air is circulated throughout the space. Higher than normal CO2 levels in a space can lead to drowsiness, headaches, or lead to overall lower productivity and responsiveness. CO2 is measured in Parts per million (ppm) and typically buildings are designed with enough ventilation to a maximum of 1,000 ppm. Levels above 1,500 ppm can produce signs of drowsiness and is considered less ideal but not dangerous.

From the data gathered shows that none of the spaces tested rose higher than 1,500 ppm and on average were lower than 1,000 ppm. This means that the spaces are getting enough ventilation to maintain a healthy CO2 level for the space. Small short duration spikes in CO2 that were observed can be remedied with simple modifications to system balancing. For comparison: outdoor air is typically 350



to 450 ppm which means we have a fair amount of infiltration of air into the building. Due to the upper floor being at a slight negative this may be due in part to air being pulled through cracks in door and window frames around the building, or other unsealed penetrations. It could also indicate that the OA connections at the AHU's are not set correctly and could be allowing an excessive amount of OA, which could produce a less efficient heating and cooling system.

#### **1.3.4 - Indoor Air Quality (IAQ) Testing:**

On Monday January 6<sup>th</sup>, 2020 with the assistance of Cashins Associates, we conducted Indoor Air Quality testing of the Orleans Fire Department. There was a total of 3 rounds of testing conducted. Each round of testing was done in the same selected locations for consistency. Each location selected was the most typical representation of adjacent spaces and each location represented a different HVAC zone. The spaces selected for testing were (in order of testing):

1. Meeting room 132
2. Kitchen 130
3. Day Room 125
4. Bunk Room 136
5. Locker Room 131
6. Reception 120
7. Captain 113
8. Deputy 105
9. Rescue Vehicles Garage 101
10. Apparatus Floor 006 (Exercise Area)
11. Apparatus Floor 006 (Turnout Gear area)

These spaces were tested for the following contaminants:

1. Carbon Dioxide (CO<sub>2</sub>)
2. Carbon Monoxide (CO)
3. Volatile Organic Compounds (VOC)
4. Ultra-Fine Particles (UFP)

There was additional testing done for Nitrous Oxide (NO<sub>2</sub>) in specific areas that included:

1. Bunk Room 136
2. Day Room 125
3. Rescue Vehicles Garage 101
4. Apparatus Floor 006

**Test #1:** Baseline measurement with HVAC system off, no trucks or equipment running, typical environment conditions.

**Test #2:** Baseline measurement with HVAC system on, no trucks or equipment running, typical environment conditions.

**Test #3:** Worst case scenario condition based on a typical morning equipment check (running trucks and equipment outside in front of building for maintenance checks). HVAC system off, Exhaust fans in bathrooms on.



Test #4: A Worst-case scenario condition based on same criteria as Test #3, with HVAC system on and exhaust fans on. This test was not completed as test #3 provided overwhelming data showing excessive contamination.

It was noted during Test #3 that when the trucks were started on the apparatus floor and pulled out, it took less than 5 minutes for the entire front half upper level of the fire station to fill with strong odors of exhaust gasses. Source capture plymovent systems were in place and operational at the time, smells only occurred when trucks were pulled outside.

1.3.5 - Indoor Air Quality (IAQ) Testing Results:

Location	CO Levels (ppm)		
	Test #1	Test #2	Test #3
Meeting Room	<0.1	<0.1	0.9
Kitchen	<0.1	0.2	0.9
Day Room	0.3	0.2	2.6
Bunk 136	<0.1	0.2	1.2
Locker Room	0.6	0.4	1.1
Deputy Chief	0.3	0.2	1.8
Reception Area	0.4	0.2	2.6
Captain	0.5	0.1	1.8
Rescue Vehicles	0.9	0.2	2.6
Apparatus Area	0.4	0.9	4.4
Laundry Area	0.4	0.2	3.6
<b>Max = 9ppm, Concern = 5ppm</b>			

Location	UFP Levels (pt/cc)		
	Test #1	Test #2	Test #3
Meeting Room	2180	1870	2070
Kitchen	2240	1710	8910
Day Room	2190	1640	58700
Bunk 136	1940	1460	4140
Locker Room	1980	1580	4250
Deputy Chief	2510	1700	113000
Reception Area	2500	1630	123000
Captain	2050	1660	49200
Rescue Vehicles	2150	1900	61800
Apparatus Area	2480	1870	288000
Laundry Area	2400	1800	273000
<b>Larger increase = more air contamination</b>			



Indoor Air Quality (IAQ) Testing Results (continued):

Location	VOC Levels (ppb)		
	Test #1	Test #2	Test #3
Meeting Room	92	276	258
Kitchen	88	264	288
Day Room	83	252	533
Bunk 136	84	215	217
Locker Room	108	211	255
Deputy Chief	147	282	1562
Reception Area	137	278	1111
Captain	129	221	462
Rescue Vehicles	173	197	716
Apparatus Area	216	263	541
Laundry Area	233	281	462
<b>Max = 500 ppb</b>			

Location	NO2 Levels (ppm)		
	Test #1	Test #2	Test #3
Meeting Room	-	-	-
Kitchen	-	-	-
Day Room	<0.5	-	<0.5
Bunk 136	<0.5	-	<0.5
Locker Room	-	-	-
Deputy Chief	-	-	-
Reception Area	-	-	-
Captain	-	-	-
Rescue Vehicles	-	-	-
Apparatus Area	<0.5	-	<0.5
Laundry Area	-	-	-
<b>Max = 5ppm</b>			

1.3.5 - Indoor Air Quality Testing Conclusions:

Concentrations of carbon monoxide, VOCs, and ultrafine particulate were found to be at acceptable, normal levels for a typical indoor office environment throughout Test #1 and Test #2 sampling rounds.

However, A quick and noticeable increase in CO, VOCs, and ultrafine particles occurred within 5-10 minutes of the diesel engines becoming active during Test #3. In addition, a strong diesel odor affected various indoor areas. Locations most affected were the office spaces, day room, reception, Rescue Garage, and Apparatus area. Levels in these areas were found to be well above what would normally be found in a typical office environment. Less impacted were the bunk areas, adjacent bathroom and locker room.



Ultrafine particle (UFP) sampling is often used in indoor air quality investigations to assess if combustion products are present and to track the source. UFP's are used as a surrogate for diesel emissions because they are easy to measure and can represent the myriad of contaminants that make up diesel exhaust and which would be impossible to measure individually. There is no UFP criteria that would determine if a safe or unsafe condition exists when diesel emissions is a major contributor to poor air quality. The benefit of UFP testing in this instance is that significant increases in UFPs can be easily associated with poor air quality and provides an easy benchmark to gauge improvements.

Levels of NO<sub>2</sub> were found to be less than 0.5 ppm, the instrument's limit of detection and not considered to be an issue. This result is to be expected as most modern Diesel vehicles typically have emission control devices to limit the output of NO<sub>2</sub> to meet modern EPA emission standards. These numbers could rise in a situation where a truck's emission control systems were not functioning properly or otherwise compromised.

The top floor is under a slight negative pressure in comparison to the apparatus areas and the outdoors. This would help explain the rapid increase in various airborne contaminants found on the upper floor.



***Test #3 being conducted leading to higher levels of contaminants***



## **SECTION 2 – POTENTIAL CORRECTIVE HVAC OPTIONS**

This section will discuss three different options to address the first goal of correcting Indoor Air Quality, and our second goal of improving overall HVAC efficiency and comfort. The strategy behind improving Air Quality is simple: Change the pressure relationship between the upper and lower levels to eliminate the movement of exhaust gasses and other harmful particulate into the living areas of the upper level. Pressurization of the upper level, and exhausting the lower level are key to achieving healthier air quality. It should be noted that any Architectural changes to the building (additions or room modifications) can have additional impacts to the loads on the HVAC system and would need further evaluation during a design phase.

### **2.1- 3 to 5 year IAQ option:**

If the Town's goal is to ultimately replace the fire station at a later date, there are a few things that can be done to correct the poor air quality issues at the facility and potentially address a few of the comfort issues.

#### **New Dedicated Outside Air System (DOAS):**

To pressurize and provide pre-treated ventilation air for the upper level of the fire station.

#### **Complete Re-balance of the HVAC systems on the upper level:**

Rebalance to optimize system performance and ventilation.

#### **New exhaust system for apparatus floor:**

Used to maintain code mandated continuous exhaust airflow rates to provide a negative pressure relationship against the upper level, Eliminating potential migration of exhaust gasses to living and office spaces.

#### **Potential impact to operations:**

All of the work outlined in this section could be performed while the Fire Station remains operational. Temporary Heating and Cooling may not be necessary as the existing Air Handling units would remain operational.



## **2.2 – 20 Year HVAC and IAQ option:**

If the Fire Station is to be renovated and fully updated to comply with modern Fire station construction standards, then it is suggested that the town consider the following HVAC improvements to address Indoor air quality concerns and improve the overall comfort of the facility:

### **New Heating Hot Water Boilers:**

95% efficient boilers to serve air handling units to provide greater system flexibility through modulation of coil output to provide finer control over building loads as they change throughout the day and season.

### **New Air-cooled chiller:**

An Higher efficiency Air-cooled chiller using the same principles of a boiler system; to provide greater flexibility through modulation of coil output to provide finer control over building loads as they change throughout the day and season.

### **New Air Handling Units:**

To replace existing furnaces with New air handling units with economizers, hydronic cooling and heating coils capable of modulation for better zone control and efficiency when outdoor conditions are favorable. Fans can run continuously year round to provide required ventilation and positive pressurization year round.

### **Improved AHU Accessibility:**

Dedicated pathway for servicing attic Air Handling equipment, with new service platforms for the new air handling units.

### **New Roof Dormers:**

A total of (3) dormers should be constructed on the eastern side of the hip roof to provide outside air louvers and plenums for each of the air handling units.

### **New exhaust system for apparatus floor:**

Installation of new general-purpose exhaust fans that are controlled by a Carbon Monoxide and Nitrous oxide monitoring system. Designed to maintain a constant negative pressure relationship in the apparatus and rescue vehicle bays and then ramp up in volume when the presence of exhaust gasses are detected to eliminate transmission to the upper level.

### **New Building Management System (BMS):**

It is recommended that a BMS is installed to help manage the many control points of the system and allow for remote 3<sup>rd</sup> party monitoring and diagnosis of the system.



**Upgraded Electrical Service:**

With the additional equipment, it is likely the electrical service may need to be upgraded. Further evaluation is required.

**Potential impact to operations:**

All of the work outlined in this section could be performed while the Fire Station remains operational. However, some work (such as removal of the old air handlers) would require temporary heating or cooling to be provided while the work is being done. With proper coordination and phasing, this work could be performed in a relatively short timeframe.

**2.3 – 20 Year HVAC and IAQ Green option:**

It is understood that there is funding for energy efficient, green construction that the town could use for this project. The options listed in this section (section 2.3) could offer potential energy rebates and eligibility for funding through green initiatives. If the Fire Station is to be renovated and fully updated to comply with modern Fire station construction standards and wants to pursue a greener alternative, then it is suggested that the town consider the following HVAC improvements to address Indoor air quality concerns and improve the overall comfort of the facility:

**New Geothermal Wells:**

If Geothermal wells were installed on site it would allow for many options to heat and cool the building throughout the year. Hydronic based heating and cooling, water source Heat pumps or Water source VRF (Variable Refrigerant Flow) could be implemented for greater efficiencies year-round.

**New Dedicated Outside Air System (DOAS):**

To accomplish the goal of healthy indoor air quality a Dedicated Outside air System would need to be installed. The new DOAS unit would likely be installed along the exterior of the building and ducted up into the attic space to be distributed. Attic installation may be possible, but only through additional evaluation during a design phase.

**New exhaust system for apparatus floor:**

Installation of new general-purpose exhaust fans that are controlled by a Carbon Monoxide and Nitrous oxide monitoring system. Designed to maintain a constant negative pressure relationship in the apparatus and rescue vehicle bays and then ramp up in volume when the presence of exhaust gasses are detected to eliminate transmission to the upper level.

**New Building Management System (BMS):**

It is recommended that a BMS is installed to help manage the many control points of the system and allow for remote 3<sup>rd</sup> party monitoring and diagnosis of the system.



remotely (by the town or 3<sup>rd</sup> party service) before deploying town personnel to investigate. A BMS will also allow for greater fine tuning of HVAC components from a single interface.

**Upgraded Electrical Service:**

With the additional equipment, it is likely the electrical service may need to be upgraded. Further evaluation is required.

**Potential impact to operations:**

All of the work outlined in this section could be performed while the Fire Station remains operational. However, some work (such as removal of the old air handlers) would require temporary heating or cooling to be provided while the work is being done. With proper coordination and phasing, this work could be performed in a relatively short timeframe.

## **SECTION 3 – ELECTRICAL STUDY**

### **3.1 - Purpose of Electrical study:**

This Electrical Service study was conducted in conjunction with the HVAC Existing Conditions Study in order to confirm the capacity of the existing electrical service to support potential upgrades to the Fire Station.

### **3.2 - Description of Existing Electrical Service:**

The existing electric utility service to the Fire Station is a 120/240V Single Phase Service. The existing service approaches the building underground and terminates at a meter socket mounted approximately 3 feet above grade on the exterior of the building. From the meter socket, the service goes back underground to eventually penetrate up into the building through the concrete slab floor of the electric room. The service, comprised of 600 KCMIL Copper wiring, first lands at a 400A Main Circuit Breaker. From the main circuit breaker, 500 KCMIL Copper conductors travel through a wireway and a splice block that reduces the conductors to 350 KCMIL Copper. From the wireway, the 350 KCMIL conductors travel through a combination of EMT and Flexible Conduit overhead to terminate on the Normal lugs of a 400A ATS. **This length of 350 KCMIL wiring is not properly protected. 350 KCMIL copper wiring is only rated for 310A, but the breaker protecting this run is rated at 400A.**

The ATS is also fed from a Cummings Generator. The generator is mounted on a pad outside the Fire Station and is in a weatherproof enclosure. From the generator, 350 KCMIL Copper Conductors penetrate the building and come down the wall of the electric room to feed a 400A Generator Main Circuit Breaker. From the Main Circuit Breaker, 350 KCMIL Conductors feed the Emergency terminals of the ATS.



From the load terminals of the ATS, conductors travel through a combination of EMT and flexible conduit across the floor and eventually re-enter the wireway beneath the Main Circuit Breaker. The conductors are spliced within the wireway into multiple sets smaller conductors.

One set of these smaller conductors continues through the wireway to feed two 'Main Lug Only' (MLO) panels, LP1 and LP2. **The feeders to LP1 and LP2 and the panels themselves are not properly protected. The only protection ahead of the feeders is the 400A Main Breaker. The wires feeding LP1 and LP2 could not be identified by their written information, but appeared to be 1/0 copper, which is only rated for 150A.**

Another set terminates at an enclosed circuit breaker labeled "Emg. Power." Within the breaker enclosure, the single set of conductors are split into two sets of conductors. These two sets of conductors travel through the wireway and overhead via EMT to a wireway across the room and ultimately terminate at two MLO panels, EP1 and EP2. **While MEI could not confirm the size of the breaker labelled "Emg. Power," MEI assumes that it is not appropriately sized to protect the conductors that travel between the breaker and EP1 and EP2.**

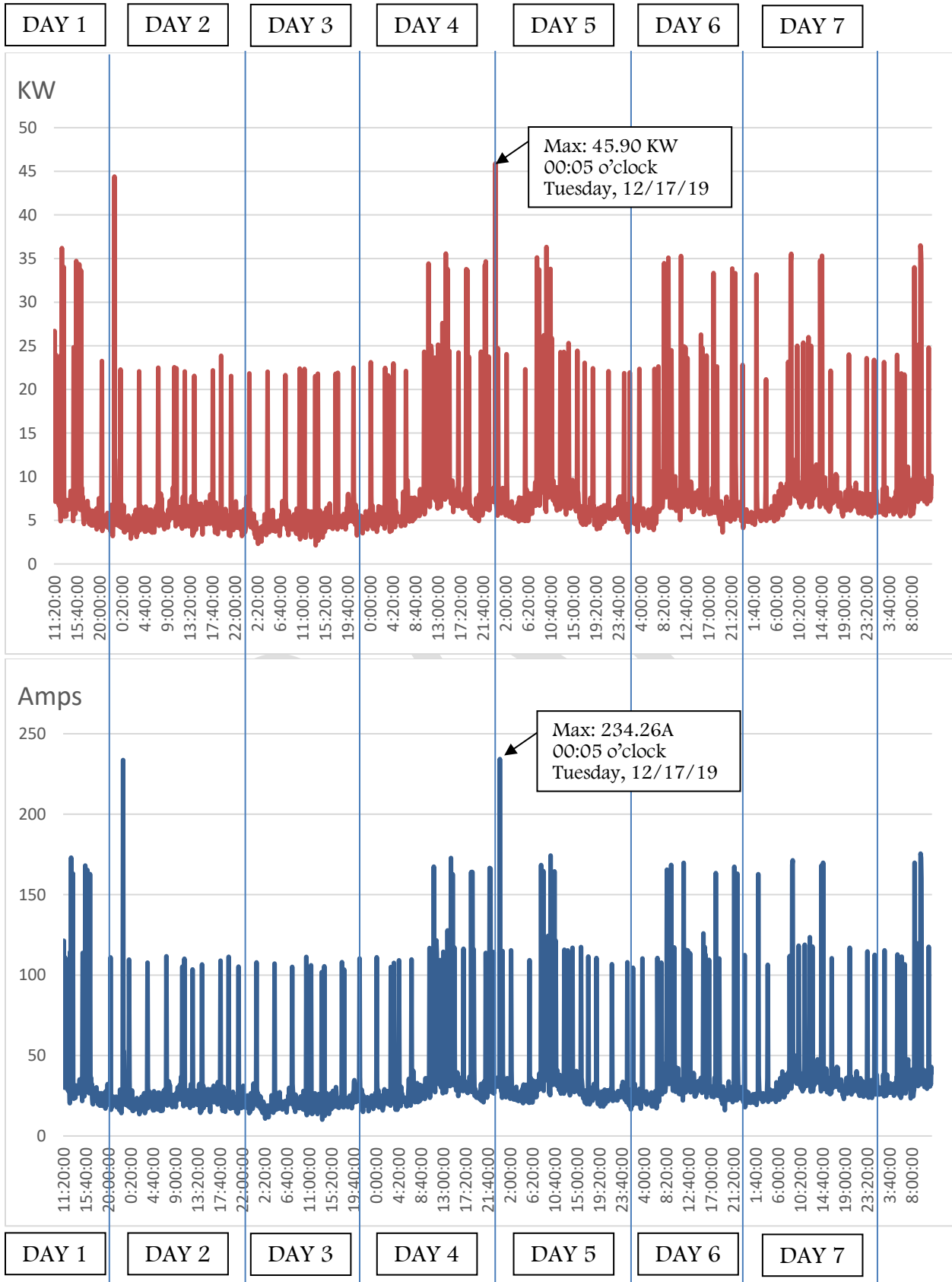
### 3.3 - Survey Work Performed:

On December 13, 2019, MEI installed recording power meters within the ATS enclosure in the electric room. The meters recorded data for a week before being retrieved by MEI on December 20, 2019. While installed, the meters recorded the total load (power) and draw (current) of the Fire Station at five minute intervals.

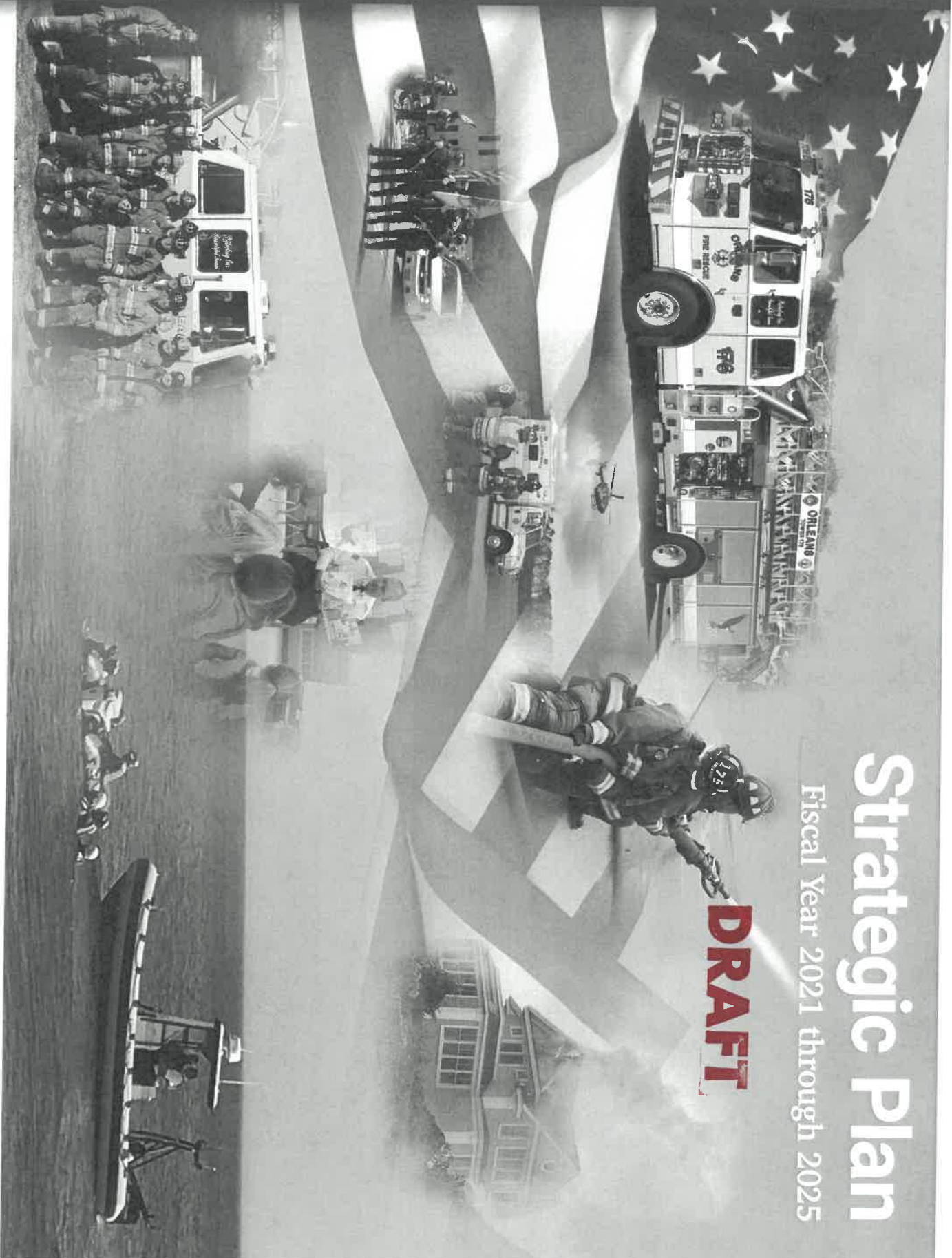
The most relevant data are the amperage (A) and power (KW), which are mapped out on the graphs on the following page. The maximum load on the fire station's service is 45.90 KW, and the corresponding maximum amperage was 234.2A. There is currently a compressor at the Fire Station that was not active during this study since the power meters were installed during December with a full load amperage of 22.8A. MEI assumes that this is counterbalanced by the Electric Unit Heaters that were active during the study but will not be active during the summer.

### 3.4 - Conclusions:

MEI concluded that while the existing 400A 120/240V service does have a moderate amount of capacity for growth, the existing service should be replaced, even if in kind, to resolve the issues noted in the analysis of the existing conditions above.



# ORLEANS FIRE-RESCUE



## Strategic Plan

Fiscal Year 2021 through 2025

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**ORLEANS**  
FIRE-RESCUE



## **DRAFT** Mission Statement

The Town of Orleans Fire Rescue Department is a dedicated professional organization committed to serving the community protecting life, property, and the environment through performance of Fire Suppression and Prevention, Emergency Medical and Rescue Services and Community Outreach and Education.

## **Vision Statement**

The most esteemed Fire Rescue organization on Cape Cod achieved through operations excellence, enhanced training and professional development, effective communications, robust community engagement and a focus on a culture of wellness and values.

## **Core Values and Beliefs**

We will build an enduring department that:

- Upholds Service before Self in the Finest Tradition of the OFD.
- Takes pride in and preserves our valued reputation.
- Consistently conducts all relationships with honesty, transparency, integrity, empathy and respect.
- Creates a team-oriented workplace that values both team and personal accountability.
- Continuously improves our service performance, processes and skills.
- Celebrates victories along the way.

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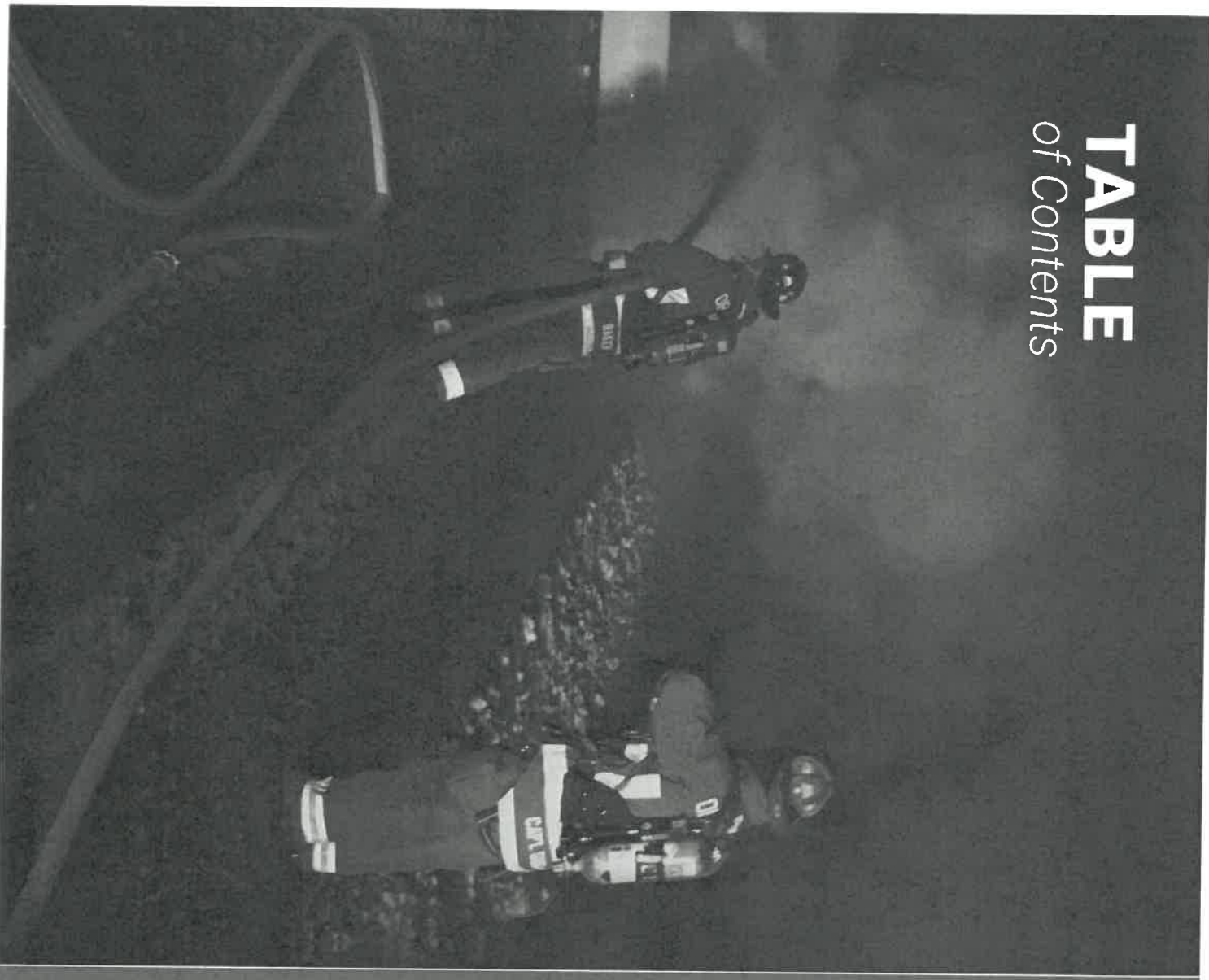
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## Detailed Strategy Descriptions

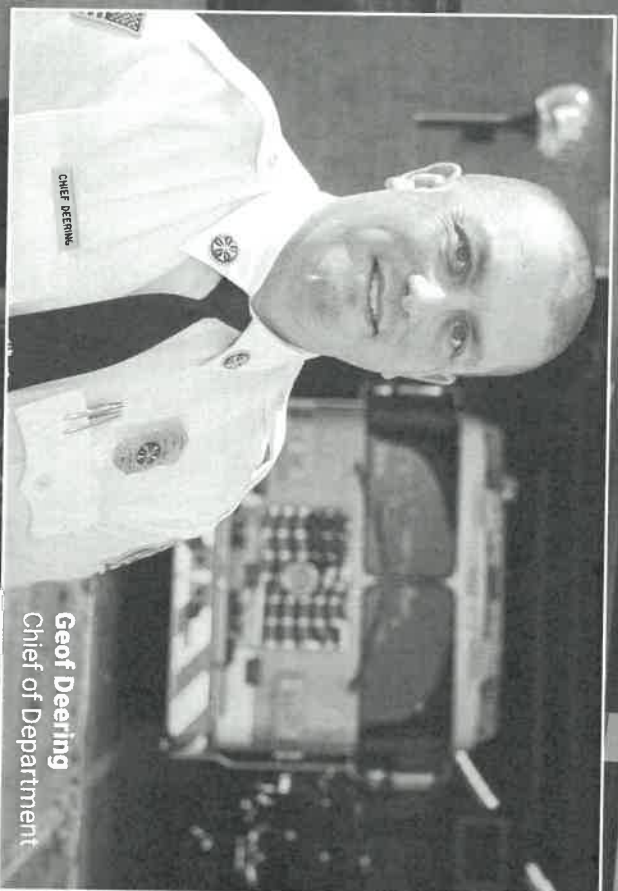
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# MESSAGE

from the Chief



**Geoff Deering**  
Chief of Department

I am proud to present the Orleans Fire-Rescue Department's strategic plan for 2021-2025. This plan is a culmination of the strong work of a team of dedicated firefighters across all ranks of our Department. In order to provide comprehensive fire, rescue, and emergency medical services to the citizens and visitors of Orleans, the Orleans Fire-Rescue Department must continuously improve, solve problems, collaborate on issues, understand community needs and develop viable solutions. The strategic planning process allowed us to evaluate all aspects of how we provide service to our community, how to become a better and vibrant organization, and compare ourselves to industry standards and best practices. Then we developed a plan to ensure that we do the very best we can with the resources we are provided.

The development of this strategic plan is a first of its kind in the Orleans Fire-Rescue Department. It reflects the concerted effort of all department members to define and refine our mission, vision, and core values and then to step forward together into the future. The goals outlined in the plan focus on improving our people, the department, operations, facilities, and further engaging our community.

In closing, I would like to thank the members of the department for their support and insight during the strategic planning process. It is a privilege to see the men and women of the Orleans Fire-Rescue Department actively engage in an ongoing improvement process. Our member's commitment to this strategic planning process clearly shows their unwavering devotion to the community of Orleans. As your fire-rescue department, we stand united and committed to making these strategic goals a reality, enhancing the services we provide, and meeting the future needs to best serve our community.

**Geoff Deering**  
Chief of Department

**DRAFT**

The Orleans Fire-Rescue Department consists of 30 professional men and women from diverse backgrounds all dedicated to providing fire suppression, emergency medical response, rescue and other life protecting services to the Town of Orleans and surrounding communities. The Town of Orleans is a scenic, vibrant Cape Cod community of approximately 6,000 year-round residents, with an estimated summer population of 20,000. Orleans is comprised of 14.1 square miles total land area with another 8.5 square miles of water. The Orleans Fire-Rescue Department responds from one fire station on Eldredge Park Way. In Fiscal Year 2021, the fire department operating budget was \$2.9 million dollars.

As first responders, all members of the Orleans Fire-Rescue Department have a multitude of emergency medical and fire suppression related responsibilities and duties that vary not only day-to-day, but sometimes minute-by-minute. All front-line personnel are cross trained as firefighters and either Paramedics or Emergency Medical Technicians (EMT). The department operates on a four-group system. Full time personnel work 24 hour shifts with a duty cycle of on-off-on-off for five days. Each group is made up of a Captain, a Lieutenant, and three firefighters. There is a minimum of four personnel on duty for each shift. Additionally, the department has five on-call firefighters.

All 911 calls for the Town of Orleans are answered by the Barnstable County Sheriff's

Office Communications Center. The center is uses modern 911 and computer aided dispatch programs, as well as highly trained dispatchers, to provide first-class emergency communications for Orleans. This center also coordinates mutual aid responses to neighboring towns, as well communications between our ambulances and Cape Cod Hospital.

The Orleans Fire-Rescue Department also maintains a safety presence at Nauset Beach during the Summer and Fall. A seasonal Beach Emergency Medical Technician program is staffed by four seasonal EMTs that provide public safety, emergency medical care, and public education. The first of its kind on Cape Cod, this program addresses the safety concerns of the visitors to Nauset Beach and recognizes the presence of sharks near shore. EMTs assigned to Nauset Beach respond using specially equipped all terrain vehicles and work closely with the Natural Resources Department including Harbor Patrol, Lifeguards and Beach staff.

In addition to front-line personnel, the Orleans Fire-Rescue department is supported by a Chief, Deputy Chief, Fire Inspector, Emergency Medical Services Coordinator, and a Principal Clerk. These members provide organizational oversight, policy direction, financial management, ambulance administration, fire prevention/inspection, and community relations for the Department. The primary responsibility is to provide our frontline personnel with the knowledge, equipment, and support necessary to respond to the community's

needs while being good stewards of public funds and ensuring alignment with the department's Strategic Plan, goals, and objectives.

### Department Facts

Department Founded..... 1922  
 FY21 Budget..... \$2,971,117  
 Calls for service ..... (2019) 2690

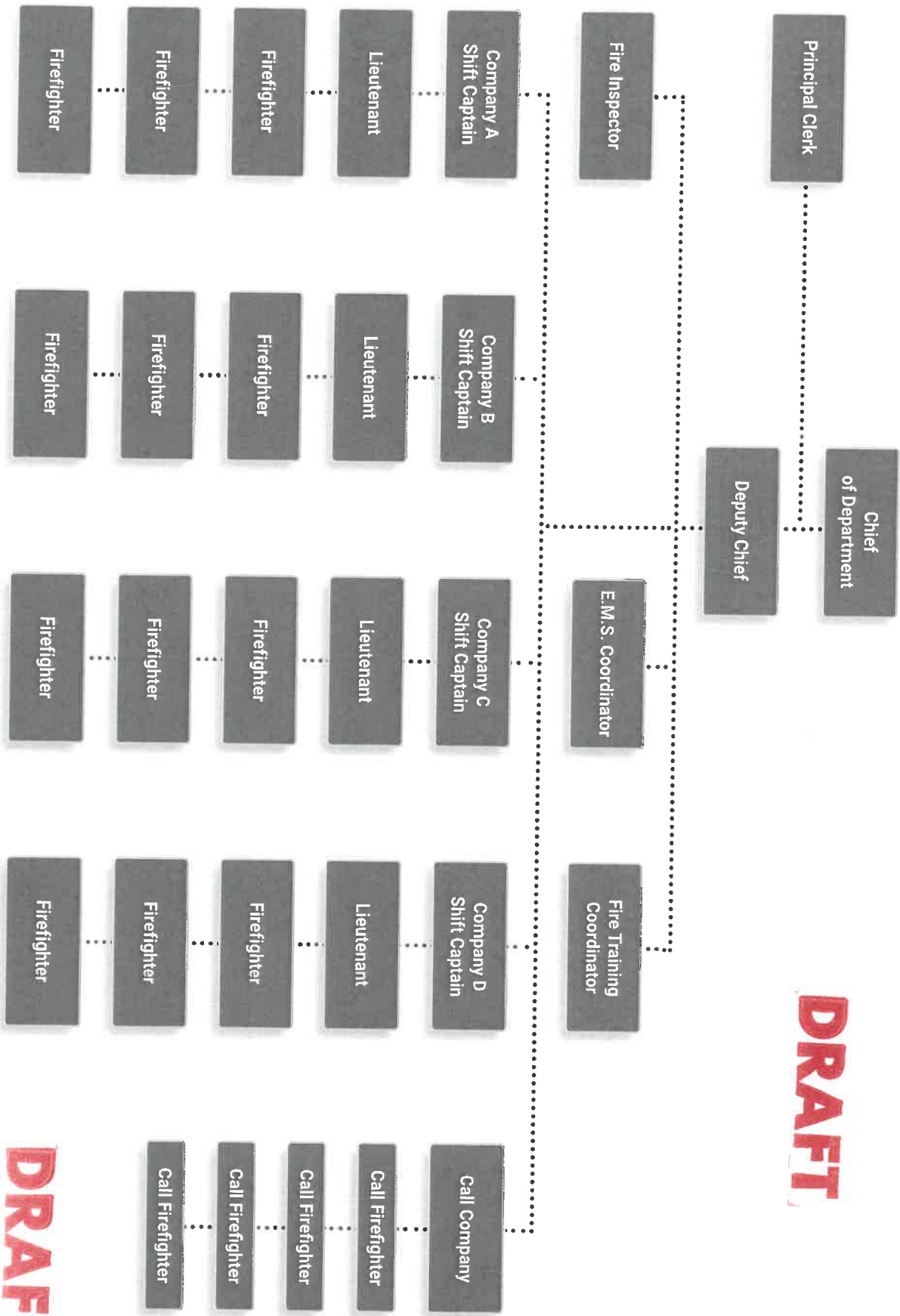
### Personnel

Fire Chief ..... 1  
 Deputy Chief ..... 1  
 Captain ..... 4  
 Lieutenant ..... 4  
 Firefighters ..... 12  
 Fire Inspector ..... 1  
 Emergency Medical Services Coordinator .... 1  
 Call Firefighter ..... 5  
 Principal Clerk ..... 1

### Vehicles and Equipment

Engine ..... 2  
 Tower Ladder ..... 1  
 Ambulance ..... 3  
 Forestry Truck ..... 1  
 Special Hazards Unit ..... 1  
 Utility vehicle ..... 1  
 ATV ..... 2  
 Boats ..... 2  
 Support Vehicles ..... 4

# ORGANIZATIONAL CHART (Traditional)

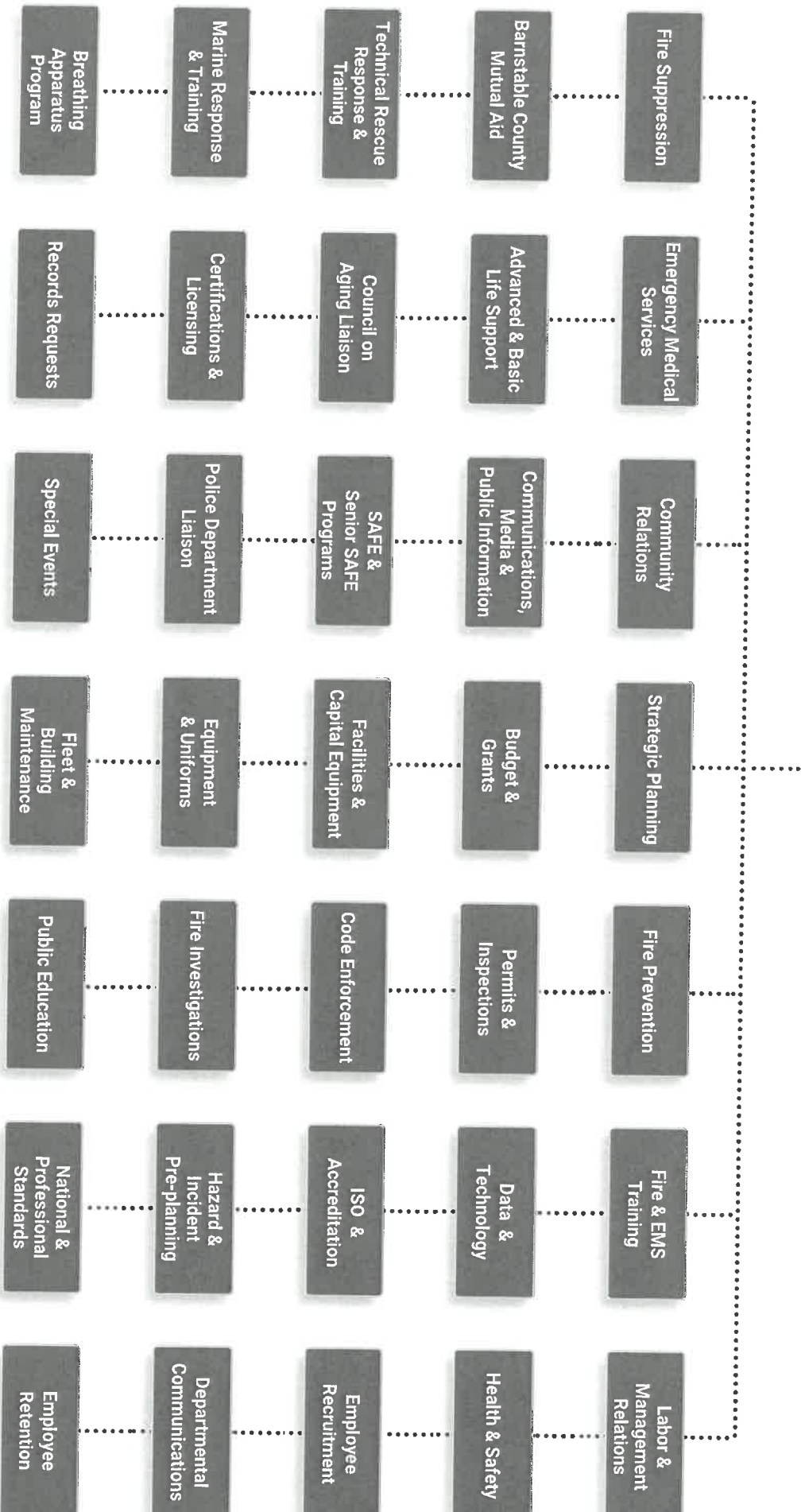


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# ORGANIZATIONAL CHART (Functional)

## Administration

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### Strategic Planning

#### WHAT IS STRATEGIC PLANNING AND WHY IT IS IMPORTANT?

Strategic planning, used by all types of organizations worldwide, is a process that defines the organization's Identity, Mission, Value and most importantly it's Vision and the Plan to arrive at a newly defined future-space. Generally, strategic plans are home grown processes, (developed from within an organization), that articulate direction for the next 3-5 years and exist in the form of a governing "living" document that is regularly reviewed and updated. It is the highest level of thinking within an organization, provides the road map for all future actions and is the basis for all other related planning, (e.g. Personnel, Budget, Capital).

#### STRATEGIC PLANNING PROCESS (CLASSICAL APPROACH)

A "classic" strategic plan has several distinct parts but can be basically viewed as two (2) phases, 1. Visioning, and 2. Planning. Visioning begins with what is commonly referred to as a SWOT Analysis, (Strengths, Weaknesses, Opportunities, Threats), which layout what an organization is defined by today, (S,W), and what the organization may be defined by or encounter in the future,(O,T). The SWOT Analysis becomes the basis for the creation of the Mission and Vision. The Mission, or "Mission Statement", articulates the fundamental purpose of an organization; what it is and does today, and is the platform for the journey to the future.

It defines the organization's key market/primary stakeholders, contribution (how it provides value), its distinction or differentiation and is designed to be a centering and motivational device, convincing and elemental. The Vision, or "Vision Statement", is the core element of the strategic plan and articulates what an organization wants to be; a longer-term view of its future and the space it seeks to occupy in the marketplace, community, etc. It defines what the organization wants to accomplish, the potential inherent in its future and, as with the "Mission", is designed to be a centering and motivational device, convincing and elemental.

The Planning phase of the strategic plan process consists of establishing a set of general but clear Strategic Goals, that when attained through the follow on plan, achieve the Vision. These strategic goals define the destination, changes the current organizational direction and the mindset of the personnel. The plan itself is derived from these goals and then drills down from the general to the very specific. For each established strategic goal, a set of Objectives is created to achieve the goal. This portion of the plan creates a series of concrete steps that establish a road to the destination, is inherently shorter term and translates thought into action. Then, within each objective, a set of Strategies is created designed to achieve the objective. Strategies define the methods or plans used to create outcomes, employment of resources and are specific and measurable. Finally, the

execution of each strategy is supported by a Tactical Action Plan, which describes or lists what needs to be done, by whom and when.



# PLANNING PROCESS & IMPLEMENTATION

## OFD Strategic Process

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The Orleans Fire Rescue Department (OFD) strategy planning process was initiated due to two (2) driving forces:

- 1.) A key recommendation from the “Fire Department Staffing and Organizational Study”, performed by Emergency Services Consulting International (ESCI) completed in February 2020, and
- 2.) The firm commitment by the new OFD leadership team to embark on a unifying process that would chart a new course for the department for the next five (5) years and bring the team together in full participation and ownership in their future.

The Strategic Planning process for the Orleans Fire Rescue Department began in March 2020 amidst the beginning of the COVID-19 pandemic and its ensuing restrictions for gatherings and live interpersonal communications. The development team consisted of the entire OFD membership as the internal “working group”, the Chief and Deputy Chief and the services of the strategy and management consultant utilized for the development of the previous Orleans Police Department Five Year Strategic Plans (2014-2019, 2020-2024) to design and facilitate the strategic planning process.

The consultant met with the OFD leadership team in March and in April 2020 virtually via

Zoom to develop a workable process challenged by the restrictions of COVID-19 protocols. Initially, the consultant developed a SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats) lifting information from the ESCI study as a basis. To strive for full participation and inclusiveness while moving the process along despite the pandemic, the full OFD membership was solicited via email for their confidential SWOT input in early May as a virtual substitute for what would have been the first of a series of working group meetings. The consultant then consolidated both the ESCI and OFD SWOT information.

Beginning in June, and lasting through October 2020, a series of four (4) working group meetings were held in-person at the OFD facility utilizing the ambulance bay with doors open for ventilation and observing COVID-19 protocols. The first “live” group meeting was held on June 16, 2020 and covered training on the strategic planning process, a review and editing of the consolidated SWOT analysis, and then focused on the development of a new Mission statement, Core Values and Beliefs and the creation of a Vision statement. The second meeting of the group on July 28, 2020 reviewed the newly created Mission and Vision statements, Core Values and Beliefs and developed Strategic Goals as the pillars of the new plan. The third group meeting held on August 25, 2020 was devoted entirely to the development of Objectives for

each Strategic Goal. With the considerable amount of material yet to develop relative to Strategies and Tactical Action Plans, a smaller working group was assembled to tackle this last part of the planning process. This “small working group” consisted of the Chief and Deputy Chief, three other OFD members and the consultant. Four (4) small working group meetings were held on September 24, September 30, October 6 and October 20, 2020 in the Community Room of the Orleans Police Department facility, (observing COVID-19 protocols), to develop Strategies and Tactical Action Plans for each of the Objectives previously developed. Chief Moran from the Brewster Fire Department joined in the first meeting and provided valuable input in the areas of professional development, training and operations. The final full working group meeting was held on October 29, 2020 to review and edit the final versions of the plan elements which comprised the first strategic plan draft. The results of all four full working group meetings and four small working group meetings were loaded into the strategic plan template that serves as the final plan report

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# PLANNING PROCESS & IMPLEMENTATION

**OFD Strategic Process** (Continued)

## **REVIEW, ACCOUNTABILITY & IMPLEMENTATION**

OFD leadership is committed to the successful communication and implementation of the Strategic Plan. Each tactical action plan, in support of strategies, objectives and goals will have a dedicated accountability within the OFD to ensure its successful execution. The Strategic Plan will be reviewed and updated annually prior to the Town's annual budget review cycle.

## **BUDGET CONSIDERATIONS**

All initiatives depicted in this Strategic Plan are either currently represented in the existing Town of Orleans Capital Plan or are budget neutral to the Orleans Fire Department operational budget for FY 2021.

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# ACKNOWLEDGMENTS

**DRAFT**

## Strategy Consultant

Per John Ostman  
Ostman Business Strategy, LLC

## Orleans Fire-Rescue

### Department

Chief of Department  
Geof Deering

Deputy Fire Chief  
Timothy M. Gula

## Strategic Planning

### Working Group

Captain  
Kevin Delude

Firefighter  
Dana Medeiros

Firefighter  
Jesse Rancourt

## Department Members

Captain  
Peter Vogt

Captain  
William Reynolds

Captain  
Chester Burge

Lieutenant  
Aaron Burns

Lieutenant  
Doug Edmunds

Lieutenant  
Joseph Lang

Lieutenant  
Thomas Pellegrino

Fire Inspector  
Gregory Baker

Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

Firefighter  
Steven Thomas

Firefighter  
Wayne Robillard

Firefighter  
L. Michael Pires

Firefighter  
Scott Renkainen

Firefighter  
Ryan McGrath

Firefighter  
Brandon Henderson

Firefighter  
Kyle Simkins

Firefighter  
Benjamin Nickerson

Firefighter  
Henry Rex

Principal Clerk  
Melissa Clayton

Call Firefighter  
Timothy Delude

Call Firefighter  
Matthew Andre

Call Firefighter  
Ian Mack

Call Firefighter  
Gabriella Parker

## Graphic Designer

Brian Bierig

## Town of Orleans

## Media Operations Coordinator

Sarah Eaton

**DRAFT**

# GOALS & OBJECTIVES

**DRAFT**

**Goal 1**  
Personal and Cultural Wellness

**Objective 1**  
Identify and Develop Personal Wellness Programs

**Objective 2**  
Enhance Labor Management Relationship

**Objective 3**  
Redefine Recruitment Program

**Objective 4**  
Improve Staff Retention

**Goal 2**  
Operations Excellence

**Objective 1**  
Reinvent OFD Planning Process

**Objective 2**  
Address Industry Standards to Improve Operations

**Objective 3**  
Improve Organizational Model

**Objective 4**  
Address OFD Response Time

**Objective 5**  
Address Requirements of NFPA 1620

**Objective 6**  
Data Collection and Deployment

**Objective 7**  
Address NFPA 1500 Chapter 4

**Goal 3**  
Training and Professional Development

**Objective 1**  
Adopt NFPA 1021

**Objective 2**  
Identify Minimum Annual Training Requirement and Certifications

**Objective 3**  
Develop a Training Manual and Guidelines

**Objective 4**  
Develop New Recruit Onboarding Program

**Objective 5**  
Create a Performance and Accountability Culture

**Goal 4**  
Facilities, Equipment and Technology Deployment

**Objective 1**  
New/Renovated Facility Plan

**Objective 2**  
Develop Equipment Acquisition Plan

**Objective 3**  
Equipment Preventive Maintenance and Replacement Program

**Objective 4**  
New Technology Deployment

**Goal 5**  
Community Education and Engagement

**Objective 1**  
Management and Coordination of Events and Educational Programs

**Objective 2**  
Improve OFD Community Communications

**Objective 3**  
Rejuvenate/Reinvigorate Fire Associations

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**Goal**

Specific statement of intended future results and general and continuing statements of intended future results.

**Objectives**

Are broad categories. They are non-measurable, nondated, continuous, and ongoing. Objectives move the agency from motive to action.

**Strategy**

Specific measurable activity that supports the objective and ultimately contributes to the achievement of the goal.

**Target Completion Date**

Displays when each strategy is slated to take place, in calendar year format.

**Active Fiscal Year/Funding Graph**

Depicts when each strategy is expected to be working and how it is funded. Active years are shaded red; funding sources include general fund, CIP grant and TBD (to be determined).

**Action Plan**

A description of what needs to be done, when and by whom to achieve the results called for by one or more objectives.

**Purpose**

Why the Department is implementing the strategy.

**Measures of Success**

Benchmarks that have been set by the Strategy Sponsor in order to evaluate if the strategy is successful.

**Strategy Sponsor**

OFD employee who has been tasked with implementing the defined strategy.

**GOAL ONE**

Define, Develop and Sustain Organizational Culture

**Objective 1 Attract and Acquire the Right People**

Strategy 1	Improve OFD Marketing
Target Completion Date	????????????
Active Fiscal Year/Funding	????????????
<b>Action Plan</b>	<ul style="list-style-type: none"> <li>Create a cultural profile video in the form-</li> <li>Create a cultural profile narrati-</li> <li>Create recruiting literature that of the local area.</li> </ul>
<b>Purpose</b>	Develop marketing materials that re attributes of the working environme-
<b>Measures of Success</b>	Increase the pool of qualified officer ca-...ures that will provide improved opportunities for selection and acquisition to maintain required department staffing levels.

Replace with page 28 once photos are in place!!!

**Strategy Sponsors**



Lieutenant Kevin Coffey



Lieutenant Kevin Coffey

**DRAFT**

# STRATEGIC GOAL 1 Personal and Cultural Wellness

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## Detailed Strategy Descriptions

### **Objective 1 Identify and Develop Personal Wellness Programs**

- Strategy 1 Provide wellness resources to address the unique requirements of Fire Fighters and EMTs
- Strategy 2 Individualize Wellness Plans

### **Objective 2 Enhance Labor Management Relationship**

- Strategy 1 Redefine Organization and Internal Communication
- Strategy 2 Structured Department Meetings and Agendas
- Strategy 3 Update OFD Rules and Regulations

### **Objective 3 Redefine Recruitment Program**

- Strategy 1 Leverage Labor Contract to Attract New Recruits
- Strategy 2 Improve OFD Marketing Communications
- Strategy 3 Participate in recruiting events and related in-person marketing opportunities.

### **Objective 4 Improve Staff Retention**

- Strategy 1 Formalize Employee Recognition
- Strategy 2 Career Development Program



**DRAFT**

# GOAL 1 Personal and Cultural Wellness

**DRAFT**

## Objective 1 Identify and Develop Personal Wellness Programs

### Strategy 1

Provide wellness resources to address the unique requirements of Fire Fighters and EMTs.

### Strategy Sponsors

**Target Completion Date**

2023

**Active Fiscal Year/Funding**

2022

### Action Plan

- Re-examine and reemphasize Town Employee Assistance Program (EAP).
- Investigate IAFF (International Association of Fire Fighters) Wellness Programs and resources.
- Investigate Critical Incident Stress Management Wellness Programs and resources.
- Investigate costs and acceptability of other wellness programs.

### Purpose

Provide necessary augmentation of the existing Town EAP to properly address the special and expanded needs of Fire Fighters and EMTs. Preserve privacy; remove stigma and anxiety of personnel. Provide specialized counseling.

### Measures of Success

- Improved longevity of service.
- Reduce time away from work activity.
- Improved wellbeing of individuals and the department as a whole.



Firefighter  
Dana Medeiros



Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

**DRAFT**

# GOAL 1 Personal and Cultural Wellness

**DRAFT**

## Objective 1 Identify and Develop Personal Wellness Programs

### Strategy 2

Individualize Wellness Plans

Target Completion Date

2025

Active Fiscal Year/Funding

2023

### Strategy Sponsors

Lieutenant  
Thomas Pellegrino

### Action Plan

- Develop Individual Wellness Plans to address nutrition, physical fitness, mental/emotional health and financial health.
- Provide incentive and rewards for participation and completion of program milestones.
- Schedule Wellness time.
- Phase-in and provide evaluations, screenings and physicals to address NPPA 1582.
- Address Wellness initiatives in labor/management negotiations.
- Include Wellness requirements in design of any proposed new/renovated facility (Air Quality, Training and Fitness facility, Alert systems lighting and sound), consider reduced or no stairs.

### Purpose

Invest in the wellbeing of staff and improve the effectiveness of wellness programs by tailoring various menu programs to individual needs.

### Measures of Success

- Improved recruitment, retention and performance.
- Reduction of sick days.
- Reduction of injuries and time inactive due to injuries.



Emergency Medical  
Services Coordinator  
Leslie Vasconcellos



Firefighter  
Ryan McGrath



**DRAFT**

# GOAL 1 Personal And Cultural Wellness

## Objective 2 Enhance Labor Management Relationship

**DRAFT**

### Strategy 1

Redefine Organization and Internal Communication

### Strategy Sponsors

**Target Completion Date**

2022

**Active Fiscal Year/Funding**

2021

Chief of Department  
Geof Deering

### Action Plan

- Create traditional and functional organization charts.
- Define communication routes within the organization.
- Have all staff members use town email accounts.
- Define and set expectations of an open-door policy with the Chief and Deputy Chief.
- Define common goals as a basis for ongoing labor/management negotiations.

Fire Inspector  
Gregory Baker

### Purpose

Build, sustain and preserve trust and respect between command and staff personnel while enhancing the performance of the organization through collaborative activity and decision-making. Improve openness while preserving the chain of command and information. Build a culture focused on Responsibility and Accountability, not Authority.

### Measures of Success

- Improved Morale.
- All department staff communicate on common platform.
- Open communications with OFD Leadership.
- Create ongoing labor/management agenda.

Lieutenant  
Thomas Pellegrino

**DRAFT**

# GOAL 1 Personal And Cultural Wellness

## Objective 2 Enhance Labor Management Relationship

**DRAFT**

### Strategy 2

Structured Department Meetings and Agendas

#### Target Completion Date

2021

#### Active Fiscal Year/Funding

2021

#### Strategy Sponsors

Deputy Fire Chief  
Timothy M. Gula

#### Action Plan

- Set regular schedule and agenda for Labor and Management meetings.
- Set regular schedule and standard agenda for Chief and Deputy Chief meetings.
- Set regular schedule and standard agenda for Command Staff meetings.
- Set regular schedule for Full Department meetings.
- Set framework for daily Officer in Charge/Deputy Chief Meetings.
- Develop and maintain a status-board/dashboard of departmental metrics.

#### Purpose

Provide framework, structure and schedule to interdepartmental meetings and communications to improve information flow through the department.

#### Measures of Success

- Staff is well informed.
- Agenda items flow up through the organization.
- Achieve improved transparency.

**DRAFT**

Lieutenant  
Thomas Pellegrino

Fire Inspector  
Gregory Baker

# GOAL 1 Personal And Cultural Wellness

**DRAFT**


## Objective 2 Enhance Labor Management Relationship

**Strategy 3** Update OFD Rules and Regulations

**Target Completion Date** 2024

**Active Fiscal Year/Funding** 2022

### Strategy Sponsors



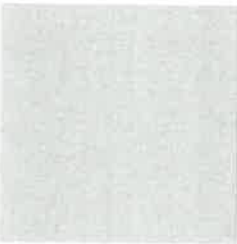
Chief of Department  
Geof Deering

### Action Plan

- Create a committee to review, update and manage the rules, regulations and operating procedures for the department.
- Review and update all rules, regulations, methods and procedures of the department.
- Investigate and utilize various software and application solutions to managing this process.

### Purpose

Conduct a thorough review of the rules, regulations, methods and procedures that guide the performance of the team and update on a regular basis.



Deputy Fire Chief  
Timothy M. Gula

### Measures of Success

- Complete review and update of the rules, regulations, methods and procedures.
- Ongoing operation of the responsible committee.
- Successful utilization of software and /or application tools.



Fire Inspector  
Gregory Baker

**DRAFT**

# GOAL 1 Personal And Cultural Wellness

## Objective 3 Redefine Recruitment Program

**DRAFT**

### Strategy 1

Leverage Labor Contract to Attract New Recruits

### Strategy Sponsors

Target Completion Date

2024

Active Fiscal Year/Funding

2023

Chief of Department  
Geof Deering

### Action Plan

- Investigate expansion of the living radius limit to expand the available pool of talent.
- Remain current on and include market area cost of living, pay levels and benefits to ensure competitiveness.
- Provide professional development and career incentive programs.

### Purpose

Improve competitiveness of salary and benefits to successfully recruit desired Fire Fighter and EMS talent to fill open positions in the department.

Firefighter  
Jesse Rancourt

### Measures of Success

- Increased pool of Fire Fighter and EMS candidates.
- Improved quality of candidates.
- Increased employment longevity of department personnel.

Firefighter  
Brandon Henderson

**DRAFT**

# GOAL 1 Personal And Cultural Wellness

## Objective 3 Redefine Recruitment Program

**DRAFT**

**Strategy 2** Improve OFD Marketing Communications

**Target Completion Date** 2022

**Active Fiscal Year/Funding** 2021

### Strategy Sponsors

Lieutenant  
Doug Edmunds

### Action Plan

- Improve OFD Website.
- Continue to build and support an OFD social media presence.
- Create an OFD video.
- Create a “What Does OFD Offer” Brochure.

### Purpose

Improve OFD visibility and messaging to the marketplace of potential candidates.

Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

### Measures of Success

- Social media hits.
- Website analytics.
- Improved candidate pool.

**DRAFT**

Firefighter  
Dana Medeiros

# GOAL 1 Personal And Cultural Wellness

## Objective 3 Redefine Recruitment Program

**DRAFT**

### Strategy 3

Participate in recruiting events and related in-person marketing opportunities.

### Strategy Sponsors

Target Completion Date

2025

Active Fiscal Year/Funding

2022

### Action Plan

- Participate in teaching opportunities at The Cape Cod Community College, Fire Academy, etc.
- Participate in Job fairs and other impactful recruiting events.

### Purpose

In-person market outreach to attract candidates.

### Measures of Success

- Number of teaching opportunities.
- Number of market events.
- Improved candidate pool.



Firefighter  
Dana Medeiros



Firefighter  
Brandon Henderson

**DRAFT**

# GOAL 1 Personal And Cultural Wellness

## Objective 4 Improve Staff Retention

**DRAFT**

### Strategy 1

Formalize Staff Recognition

**Target Completion Date**

2021

**Active Fiscal Year/Funding**

2021

### Strategy Sponsors



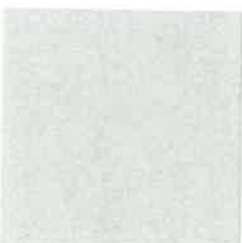
Chief of Department  
Geof Deering

### Action Plan

- Create a staff recognition committee to oversee activity.
- Develop and hold recognition events that include families and the community on a regular basis.
- Organize and deliver length of service awards on a regular basis.
- Recognize promotions on a regular basis.
- Recognize great saves and other efforts of significance.
- Coordinate events with Fire Associations.

### Purpose

To improve and sustain morale of the department by providing recognition of performance, service and other significant contribution.



Firefighter  
Dana Medeiros

### Measures of Success

- A regular flow of valued recognition.
- Improved morale.
- Improved staff retention.

**DRAFT**



Lieutenant  
Doug Edmunds

# GOAL 1 Personal And Cultural Wellness

## Objective 4 Improve Staff Retention

**DRAFT**

**Strategy 2** Career Development Program

### Strategy Sponsors

**Target Completion Date** 2023

**Active Fiscal Year/Funding** 2021

Lieutenant  
Joseph Lang

### Action Plan

- Identify and communicate department career pathways and trajectories.
- Develop individualized career development plans.
- Develop and assign career mentoring resources.

### Purpose

Provide understanding of and support for career advancement opportunities within the department.

Captain  
Kevin Delude

### Measures of Success

- Improved morale.
- Improved staff retention.
- Improved overall staff advancements.
- Improved operational performance.

**DRAFT**

# STRATEGIC GOAL 2 Operations Excellence

## Detailed Strategy Descriptions

**DRAFT**

### Objective 1 Reinvent OFD Planning Process

Strategy 1 Engage in Strategic Planning

### Objective 2 Address Industry Standards to Improve Operations

Strategy 1 Improve ISO Rating

Strategy 2 Accreditation from Center for Public Safety Excellence

### Objective 3 Improve Organizational Model

Strategy 1 Review and Achieve Effective Shift Staffing Levels

Strategy 2 Improve Support Structure

### Objective 4 Address OFD Response Time

Strategy 1 Improve OFD response time to meet industry standards

### Objective 5 Address the requirements of NFPA 1620 (Pre-incident and Special Hazard Plans)

Strategy 1 Update and further develop Pre-incident and Special Hazard Plans

### Objective 6 Data Collection and Deployment

Strategy 1 Improve Statistical Analysis and Reporting

### Objective 7 Address NFPA 1500 Chapter 4 (Safety Committee)

Strategy 1 Meet NFPA 1500 Safety Standards. Build on this accomplishment to improve ISO rating and achieve accreditation.



# GOAL 2 Operations Excellence

## Objective 1 Reinvent OFD Planning Process

**DRAFT**

**Strategy 1** Engage in Strategic Planning

**Target Completion Date** 2021

**Active Fiscal Year/Funding** 2021

### Strategy Sponsors

Chief of Department  
Geof Deering

### Action Plan

- Create Initial 5-year Strategic Plan.
- Implement Strategic Plan.
- Develop Scorecard to measure results and progress.
- Review Annually in September prior to next FY Budget development.

### Purpose

Provide a holistic vision driven and participatory process in department planning and decision-making. Use as the basis of all future planning and decision-making.

Firefighter  
Kyle Simkins

### Measures of Success

- Produce 5-year Strategic Plan.
- Confirm results and progress.

Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

**DRAFT**

# GOAL 2 Operations Excellence

## Objective 2 Address Industry Standards to Improve Operations

**DRAFT**

### Strategy 1

Improve ISO Rating

#### Target Completion Date

2023

#### Active Fiscal Year/Funding

2021

#### Strategy Sponsors

Deputy Fire Chief  
Timothy M. Gula

#### Action Plan

- Identify team and leader to oversee progress.
- Review Insurance Services Office requirements.
- Set plan for improvements.

#### Purpose

Achieve higher Insurance Services Office rating through operational improvements that enhance response time and effectiveness.

Captain  
Kevin Delude

#### Measures of Success

- Improve OFD current Insurance Services Office rating of 4 to 2.

Firefighter  
Kyle Simkins

**DRAFT**

# GOAL 2 Operations Excellence

## Objective 2 Address Industry Standards to Improve Operations

### Strategy 2

Accreditation from Center for Public Safety Excellence  
(National Commission for Fire Accreditation)

**Target Completion Date**

2025

**Active Fiscal Year/Funding**

2023

### Action Plan

- Identify a team and leader to oversee progress.
- Set plan and timeline for accreditation paperwork submissions and site visits.
- Meet the standards in the 10 Categories.
- Budget necessary funding.

### Purpose

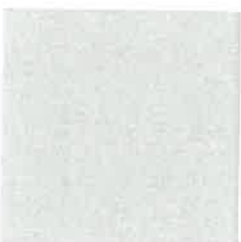
Provide a stretch goal and framework for self-evaluation in 10 categories that drives many strategic plan initiatives. This unique recognition would be a major achievement for the OFD and addresses the core Vision of this plan to be the most admired fire rescue organization on Cape Cod. Attaining accreditation results in a superior functioning fire rescue organization and also enhances the success of future grant funding.

### Measures of Success

- Implementation of the Strategic Plan.
- Attain Accreditation.
- Improved grant funding.

**DRAFT**

### Strategy Sponsors



Chief of Department  
Geof Deering



Deputy Fire Chief  
Timothy M. Gula

**DRAFT**

# GOAL 2 Operations Excellence

## Objective 3 Improve Organizational Model

**DRAFT**

### Strategy 1

Review and Achieve Effective Shift Staffing Levels

Target Completion Date

2022

Active Fiscal Year/Funding

2021

### Strategy Sponsors

Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

### Action Plan

- Review and analyze 2 vs. 3 staff in ambulance as best service fit for community.
- Review and Analyze Minimum required shift staffing for EMS and Fire Protection.
- Provide for correct officer/rank on duty.
- Create staffing Model that achieves 2 ambulances staffed at a time or 1 ambulance and 1 fire apparatus staffed daily while appropriately using callbacks for surge and high demand times.
- Examine Cost/Benefit analysis of callback (overtime) vs. additional full-time personnel vs. scheduled overtime.
- Seek additional staff funding through SAFER (Staffing for Adequate Fire and Emergency Response) grant to reduce costs of additional personnel to meet staffing levels.

### Purpose

Institute and fund Fire Fighter, EMS and officer staffing levels for personnel efficiency, utilization and level of service and safety to achieve ISO and accreditation levels of performance. Analyze the value of callbacks versus scheduled overtime and/or additional full-time personnel.

### Measures of Success

- Achieve national standards for staffing and levels of service.
- Fund additional staffing requirements.

**DRAFT**

Lieutenant  
Doug Edmunds

Lieutenant  
Thomas Pellegrino

# GOAL 2 Operations Excellence

## Objective 3 Improve Organizational Model

**DRAFT**

**Strategy 2** Improve Support Structure

### Strategy Sponsors

**Target Completion Date** 2025

**Active Fiscal Year/Funding** 2024

Deputy Fire Chief  
Timothy M. Gula

### Action Plan

- Analyze appropriate number of administrative personnel vs. Fire Fighters and EMTs with other similar Fire Rescue organizations to gauge current department effectivity, deficiencies and task saturation.
- Set plan for adjustment of administrative support positions commensurate with growth of Fire Fighters and EMTs.
- Examine regionalization issues and initiatives for purchasing, training and shared specialized equipment.

### Purpose

Examine workload of current administrative personnel and integrate with Fire Fighter and EMT staffing level changes providing broader array of support services in discrete positions to improve operational efficiency and level of service.

Firefighter  
Ryan McGrath

### Measures of Success

- Resources added to complement re-staffing of OFD.
- Operational efficiency and level of service improvements.

**DRAFT**

# GOAL 2 Operations Excellence

## Objective 4 Address OFD Response Time

**DRAFT**

### Strategy 1

Improve OFD response time to meet industry standards

Target Completion Date

2022

Active Fiscal Year/Funding

2021

### Strategy Sponsors

#### Action Plan

- Improve shift staffing.
- Address building location and interior layout.
- Leverage information technology.
- Improve vehicle maintenance.
- Work with Barnstable County Dispatch for system improvements.



Firefighter  
Brandon Henderson

#### Purpose

Achieve improved response time for EMT and Fire Fighting calls in accordance with national standards.



Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

#### Measures of Success

- Improved fire suppression response time.
- Improved EMS response time.

**DRAFT**

# GOAL 2 Operations Excellence

## Objective 5 Address the requirements of NFPA 1620 (Pre-incident and Special Hazard Plans)

**DRAFT**

### Strategy 1

Update and further develop Pre-incident and Special Hazard Plans

#### Target Completion Date

2022

#### Active Fiscal Year/Funding

2021

#### Action Plan

- Update existing pre-incident and special hazard plans.
- Identify other pre-planning opportunities.
- Digitize Pre-plans.
- Make plans available in vehicles for real-time access.

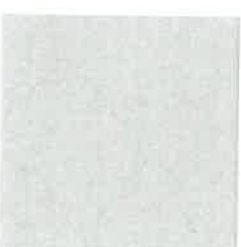
#### Purpose

Provide timely incident and hazard information necessary to improve response time and fire suppression efficiency. Addresses improvements required to achieve improved ISO rating and accreditation.

#### Measures of Success

- Improved response time.
- Improved site efficiency.

#### Strategy Sponsors



Fire Inspector  
Gregory Baker



Lieutenant  
Joseph Lang

**DRAFT**

# GOAL 2 Operations Excellence

## Objective 6 Data Collection and Deployment

DRAFT

**Strategy 1** Improve Statistical Analysis and Reporting

**Target Completion Date** 2022

**Active Fiscal Year/Funding** 2021

### Strategy Sponsors



Captain  
Chester Burge



Firefighter  
Kyle Simkins

### Action Plan

- Define metrics that drive the organization.
- Collect, analyze and report metrics.
- Cleanse/update data on a regular basis.

### Purpose

Use accumulated department data and analysis to create a set of performance metrics to inform the staff and community and drive operations improvements and investment.

### Measures of Success

- Create performance metrics set.
- Communicate performance results.
- Purge and refine data sets.

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# GOAL 2 Operations Excellence

## Objective 7 Address NFPA 1500 Chapter 4 (Safety Committee)

**DRAFT**

### Strategy 1

Meet NFPA 1500 Safety Standards. Build on this accomplishment to improve ISO rating and achieve accreditation.

### Strategy Sponsors

Target Completion Date

2023

Active Fiscal Year/Funding

2021

### Action Plan

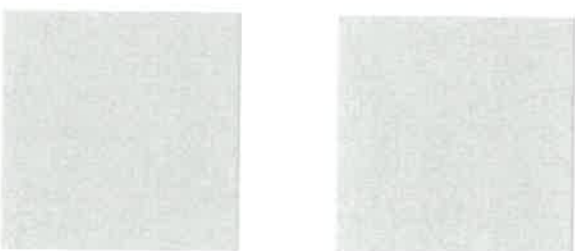
- Reinvigorate Safety Committee – Assign Officer, meet regularly.
- Meet OSHA Standards.
- Communicate Committee Findings.
- Implement recommendations.

### Purpose

Improve personnel safety by addressing requirements of ISO rating improvement and accreditation.

### Measures of Success

- Reduction in injuries.
- Meet industry standards.



Captain  
Kevin Delude

Firefighter  
Kyle Simkins

**DRAFT**

# STRATEGIC GOAL 3 Training and Professional Development

## Detailed Strategy Descriptions

**DRAFT**

**Objective 1 Adopt NFPA 1021 – Recommendations for Fire Service Officer Professional Qualifications**

Strategy 1: Institute Industry Recommendations for defining Professional Qualifications

**Objective 2 Identify Minimum Annual Training Requirements and Certifications**

Strategy 1 Utilize NFPA and ISO standards to guide training and qualification of OFD personnel

**Objective 3 Develop a Training Manual and Guidelines**

Strategy 1 Coordinate and consolidate all training, programs and requirements

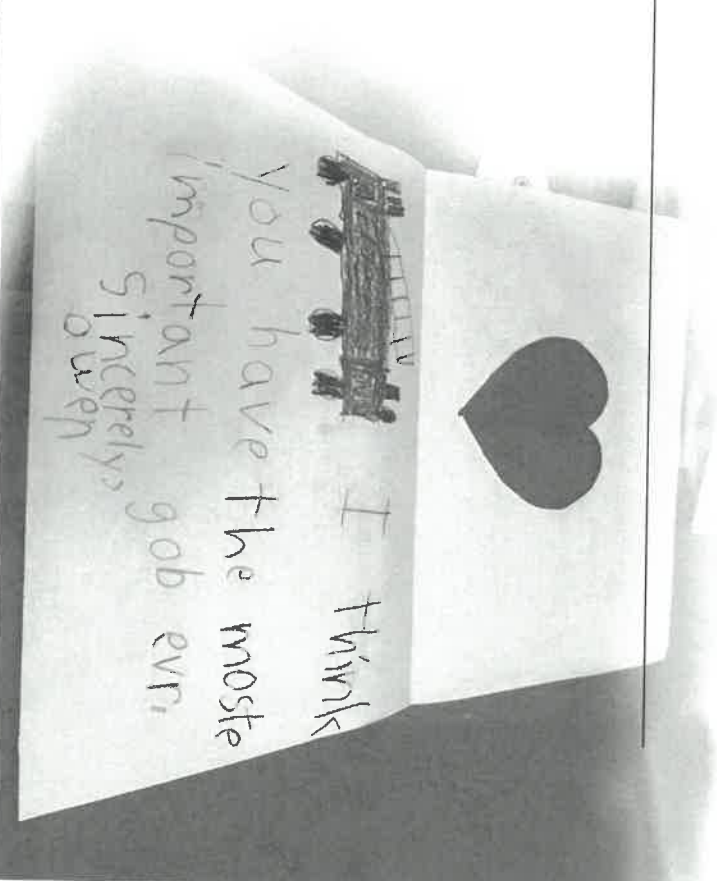
**Objective 4 Develop New Recruit Onboarding Program**

Strategy 1 Improve new recruit transition into the OFD

**Objective 5 Create a Performance and Accountability Culture**

Strategy 1 Develop Performance Review Process

**DRAFT**



# GOAL 3 Training and Professional Development

## Objective 1 Adopt NFPA 1021 – Recommendations for Fire Service Officer Professional Qualifications



### Strategy 1

Institute Industry recommendations for defining Professional Qualifications

**Target Completion Date** 2024

**Active Fiscal Year/Funding** 2023

### Strategy Sponsors



Chief of Department  
Geof Deering

### Action Plan

- Provide training and certification for emergency decision makers.
- Ensure all Lieutenant level and above are cert. to NFPA 1021 (Instructors, Officers and Safety Officers).

### Purpose

Provide formalized training and quality OFD Fire Service Officers in accordance with industry recommendations.



Lieutenant  
Thomas Pellegrino

### Measures of Success

- Certify OFD Fire Service Officers to NFPA 1021.
- Improve OFD Operational Performance.
- Improve advancement within the OFD.



# GOAL 3 Training and Professional Development

**DRAFT**

## Objective 2 Identify Minimum Annual Training Requirements and Certifications

### Strategy 1

Utilize NFPA and ISO standards to guide training and qualification of OFD personnel

### Strategy Sponsors

**Target Completion Date** 2022

**Active Fiscal Year/Funding** 2021

### Action Plan

- Adopt NFPA 1410 – Standard on Training for Emergency Scene Operations.
- Align ISO with NFPA 1410 requirements.
- Build Training Program Standards.
- Develop Call and Career Monthly Training Plan (Captain's or Officer of the Day to use).
- Improve Monthly Fire Fighter and EMS Shift Training Drills.
- Certify to NFPA Fire Fighter 1/2.
- Set Crew Benchmarks.
- Regular EMS Training and Certification.
- Seek opportunities for train the trainer officer training.

### Purpose

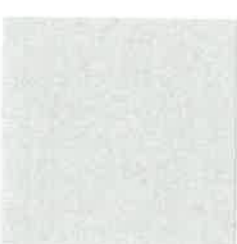
Ensure OFD personnel are properly trained and certified to industry standards.

### Measures of Success

- All OFD personnel are qualified to industry standards.
- Monthly training plans are developed and conducted.
- Improve operational performance.



Deputy Fire Chief  
Timothy M. Gala



Captain  
Kevin Delude

**DRAFT**

# GOAL 3 Training and Professional Development

## Objective 3 Develop a Training Manual and Guidelines

**DRAFT**

### Strategy 1

Coordinate and consolidate all training, programs and requirements

### Strategy Sponsors

Target Completion Date

2022

Active Fiscal Year/Funding

2022

### Action Plan

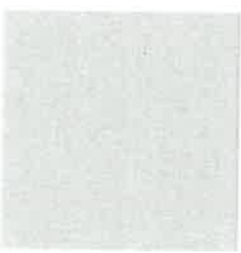


Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

- Create a committee to oversee OFD Training programs and develop standards.
- Develop Fire Fighter Training Documentation log.
- Develop EMS Training Documentation log.

### Purpose

Organize OFD training and related programs into a comprehensive document.



Captain  
Kevin Delude

### Measures of Success

- Create Committee.
- Develop Training Manual.
- Improve Operational Performance.
- Increase personnel advancement.

**DRAFT**

# GOAL 3 Training and Professional Development

## Objective 4 Develop New Recruit Onboarding Program

**DRAFT**

### Strategy 1

Improve new recruit transition into the OFD

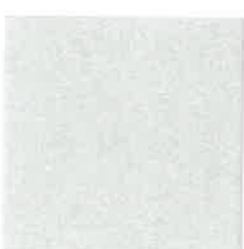
#### Target Completion Date

2022

#### Active Fiscal Year/Funding

2021

### Strategy Sponsors



Firefighter  
Benjamin Nickerson



Firefighter  
Henry Rex

### Action Plan

- Develop Onboarding program for Fire Fighters.
- Develop Onboarding program for EMS.
- Develop General Onboarding program for HR related documentation.
- Develop first year Mentoring/Field Training Officer program.
- Develop Offer of Employment documenting probationary period expectations.

### Purpose

Effectively onboard new recruits into the OFD with a formalized program, expectations for success and support.

### Measures of Success

- Document various onboarding processes.
- Formalize new recruit mentoring program.
- Formalize/standardize employment offers and expectations.

**DRAFT**

# GOAL 3 Training and Professional Development

## Objective 5 Create a Performance and Accountability Culture

**DRAFT**

**Strategy 1** Develop Performance Review Process

**Target Completion Date** 2025

**Active Fiscal Year/Funding** 2023

### Strategy Sponsors



Chief of Department  
Geof Deering

### Action Plan

- Include performance review process in labor negotiations.
- Develop performance review template document.
- Conduct regular performance reviews of all staff.

### Purpose

Provide a mechanism for review, feedback and improvement of staff to mutually agreed performance expectations. Subject to labor negotiation.



Captain  
Chester Burge

### Measures of Success

- Each staff member has quarterly and annual reviews with their supervisors.
- Improved morale and performance.
- Fair and balanced treatment of staff.

**DRAFT**

# STRATEGIC GOAL 4 Facilities, Equipment and Technology Deployment

## Detailed Strategy Descriptions

**DRAFT**

### Objective 1 New/Renovated Facility Plan

Strategy 1 Deficient existing facility makes the case for a new or renovated Firehouse

### Objective 2 Develop Equipment Acquisition Plan

Strategy 1 Ensure equipment requirements are effectively projected and acquired

### Objective 3 Equipment Preventive Maintenance & Replacement Program

Strategy 1 Improve effectiveness and timeliness of equipment maintenance and replacement to ensure optimum department performance

### Objective 4 New Technology Deployment

Strategy 1 Technological advancements support improvements to operational efficiency and speed.



# GOAL 4 Facilities, Equipment and Technology Deployment

## Objective 1 New/Renovated Facility

**DRAFT**

### Strategy 1

Deficient existing facility makes the case for a new or renovated Firehouse

### Strategy Sponsors

Target Completion Date

2025

Active Fiscal Year/Funding

2021

Chief of Department  
Geof Deering

### Action Plan

- Develop New/Renovated building feasibility study.
- Create Building Committee.
- Develop Facility Plan.
  - Budget
  - Plans
  - Timeline
- Develop Community Outreach Program.
- Ensure Regulatory Compliance.
  - Fire/EMT requirements
  - OSHA compliance
  - ADA compliance
  - Air Quality
- Include personnel Wellness improvements.

### Purpose

Develop feasibility, plans, funding and implementation of a new or renovated Firehouse to meet the current and future needs of the OFD.

### Measures of Success

- Complete Feasibility Study.
- Identify Building Committee.
- Develop New Facility Plan.
- Approve and Fund Plan.

**DRAFT**



Fire Inspector  
Gregory Baker



Firefighter  
Kyle Simkins



Chief of Department  
Geof Deering

# GOAL 4 Facilities, Equipment and Technology Deployment

**DRAFT**

## Objective 2 Develop Equipment Acquisition Plan

### Strategy 1

Ensure equipment requirements are effectively projected and acquired

#### Target Completion Date

2023

#### Active Fiscal Year/Funding

2021

### Strategy Sponsors



Lieutenant  
Aaron Burns

### Action Plan

- Develop 5-year annual rolling Capital Equipment Plan.
  - Ambulance cycle
  - Pumper cycle
  - Ladder truck cycle
- Develop 5-year annual rolling Expense Equipment Plan.
  - Heart monitors, etc.
- Seek alternative funding when applicable (Grant funding/Federal AFG program/State/Private).



Firefighter  
Kyle Simkins

### Purpose

Provide longer range plan and outlook for equipment requirements to ensure tax-payer approval and Town funding while leveraging grant opportunities.

### Measures of Success

- Approved Comprehensive Capital Equipment Plan.
- Approved Comprehensive Expense Equipment Plan.
- Acquire grant funding.

**DRAFT**

# GOAL 4 Facilities, Equipment and Technology Deployment

## Objective 3 Equipment Preventive Maintenance & Replacement Program



### Strategy 1

Improve effectiveness and timeliness of equipment maintenance and replacement to ensure optimum department performance

**Target Completion Date** 2022

**Active Fiscal Year/Funding** 2021

### Strategy Sponsors



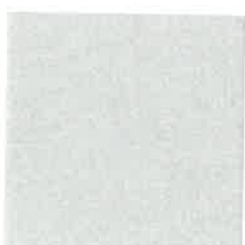
Deputy Fire Chief  
Timothy M. Gula

### Action Plan

- Identify inhouse or outsourced vehicle maintenance professional.
- Articulate day to day, interval and annual preventative maintenance plan.
- Develop Software solution for tracking plan.
- Include alarm/reminder of maintenance due

### Purpose

Formalize and improve the timing, method and execution of equipment maintenance and replacement for the OFD.



Lieutenant  
Thomas Pellegrino

### Measures of Success

- Develop and execute daily, weekly, monthly, annual maintenance plans.
- Improved operations performance.



# GOAL 4 Facilities, Equipment and Technology Deployment

## Objective 4 New Technology Deployment

**DRAFT**

### Strategy 1

Technological advancements support improvements to operational efficiency and speed.

### Strategy Sponsors

**Target Completion Date**

2023

**Active Fiscal Year/Funding**

2021

### Action Plan



Captain  
Chester Burge

- Develop process/committee to evaluate new technologies.
- Review/update/upgrade IT infrastructure.
- Online/Virtual training.
- Improve computer access in trucks.
  - Effectivity of hardware
  - Data to support Plan
- Analyze “Bryx 911” and other Mobile Computer Aided Dispatch applications.
- Improve Digital Communications.
- Research and test other new Fire Fighting and EMS Technologies.



Firefighter  
Kyle Simkins

### Purpose

Identify, evaluate and deploy technological advancements to improve OFD operational effectiveness.

**DRAFT**

### Measures of Success

- Identify Technology Committee.
- Develop process for identification, evaluation and approval for use.
- Deploy effective new technologies.

# STRATEGIC GOAL 5 Community Education and Engagement

## Detailed Strategy Descriptions

**DRAFT**

### **Objective 1 Management and Coordination of Events and Educational Programs**

- Strategy 1 Organize and bring focus to OFD Community Engagement activity
- Strategy 2 Conduct Community Education
- Strategy 3 Conduct and participate in Community Events

### **Objective 2 Improve OFD Community Communications**

- Strategy 1 Develop OFD Media Program

### **Objective 3 Rejuvenate/Reinvigorate Fire Associations**

- Strategy 1 Leverage existing OFD associations to promote community engagement

**DRAFT**



# GOAL 5 Community Education and Engagement

## Objective 1 Management and Coordination of Events and Educational Programs

**DRAFT**

### Strategy 1

Organize and bring focus to OFD Community Engagement activity

**Target Completion Date** 2022

**Active Fiscal Year/Funding** 2021

### Strategy Sponsors



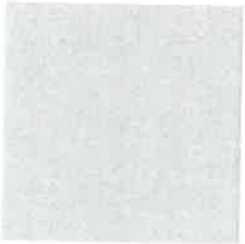
Lieutenant  
Thomas Pellegrino

### Action Plan

- Create Community Engagement Committee.
- Manage listing and scheduling of annual OFD community participation.
- Publish annual events and education calendar.
- Field requests for OFD participation in community events.
- Field requests for OFD sponsorship opportunities.
- Create OFD logo-ware for use in community events.

### Purpose

Coordinate all community contact and involvement through a committee that will be responsible for organizing OFD's annual Community Engagement Calendar and supporting resources.



Emergency Medical  
Services Coordinator  
Leslie Vasconcellos

### Measures of Success

- Committee is formed and managing community engagements.
- Publish annual events and education calendar.

**DRAFT**

# GOAL 5 Community Education and Engagement



## Objective 1 Management and Coordination of Events and Educational Programs

### Strategy 2

Conduct Community Education

#### Target Completion Date

2022

#### Active Fiscal Year/Funding

2021

#### Action Plan

- Continue current educational programs:
  - Citizens Fire Academy
  - CPR First Aid
  - Fire Safety in Schools/SAFE
  - Senior SAFE
  - Stop the Bleed
- Investigate Additional programs:
  - Storm Preparation classes
  - Other

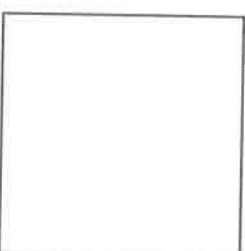
#### Purpose

Provide Fire and EMS oriented educational classes and programs to promote safety and awareness in the community.

#### Measures of Success

- Provide an effective well publicized and attended community educational program.
- Loss of life and property is reduced.

#### Strategy Sponsors



Emergency Medical  
Services Coordinator  
Leslie Vasconcellos



Firefighter  
Dana Medeiros



# GOAL 5 Community Education and Engagement

**DRAFT**

## Objective 1 Management and Coordination of Events and Educational Programs

**Strategy 3** Conduct and participate in Community Events

**Target Completion Date** 2023

**Active Fiscal Year/Funding** 2021

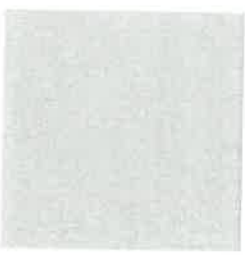
### Strategy Sponsors



Firefighter  
Jesse Rancourt

### Action Plan

- Continue to Sponsor and/or Participate in existing community events:
  - Parades
  - Honor Guard
  - Fireworks
  - Bonfires
  - Toys for Tots
  - Homeless for the Holidays
  - Open House Pizza Parties
  - Annual Block Party
- Santa Stampede
- Run to the Top (Pilgrim Monument) Cancer fundraiser
- Community Drive-bys
- Investigate additional Community participation opportunities:
  - Community Challenge events
  - Fire Truck delivers pizza
  - Blood drive
  - Other



Firefighter  
Brandon Henderson

### Purpose

Organize and/or participate in events to promote good will and connection with the community.

### Measures of Success

- OFD community profile and value is raised.
- OFD increases community event participation.

**DRAFT**

# GOAL 5 Community Education and Engagement

## Objective 2 Improve OFD Community Communications

**DRAFT**

**Strategy 1** Develop OFD Media Program

**Target Completion Date** 2022

**Active Fiscal Year/Funding** 2021

### Strategy Sponsors

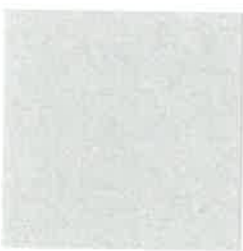


Captain  
Chester Burge

- Assign coordinator and responsibility for overseeing OFD Media Program.
- Supervise and accumulate copy, photo and video content.
- Create OFD community publication.
- Continue to build and support an OFD social media presence.

### Purpose

Provide a marketing and communications platform to support improved OFD community engagement.



Firefighter  
Brandon Henderson

### Measures of Success

- Improved community outreach and department visibility.
- Improved department participation and morale.

**DRAFT**

# GOAL 5 Community Education and Engagement

## Objective 3 Rejuvenate/Reinvigorate Fire Associations

**DRAFT**

### Strategy 1

Leverage existing OFD associations to promote community engagement

### Strategy Sponsors

#### Target Completion Date

2022

#### Active Fiscal Year/Funding

2021

#### Action Plan

- OFD leadership coordinates with OFD association boards to stimulate involvement and restart planning:

- Orleans Rescue Squad Association
- Orleans Firemen’s Relief Association
- Fire Fighter’s Union Local 2675

#### Purpose

Reinvigorate OFD Associations to provide additional support for community and staff engagement programs.

#### Measures of Success

- OFD Associations restart regular meetings and planning.
- OFD Associations participate in and support community events.



Captain  
Peter Vogt



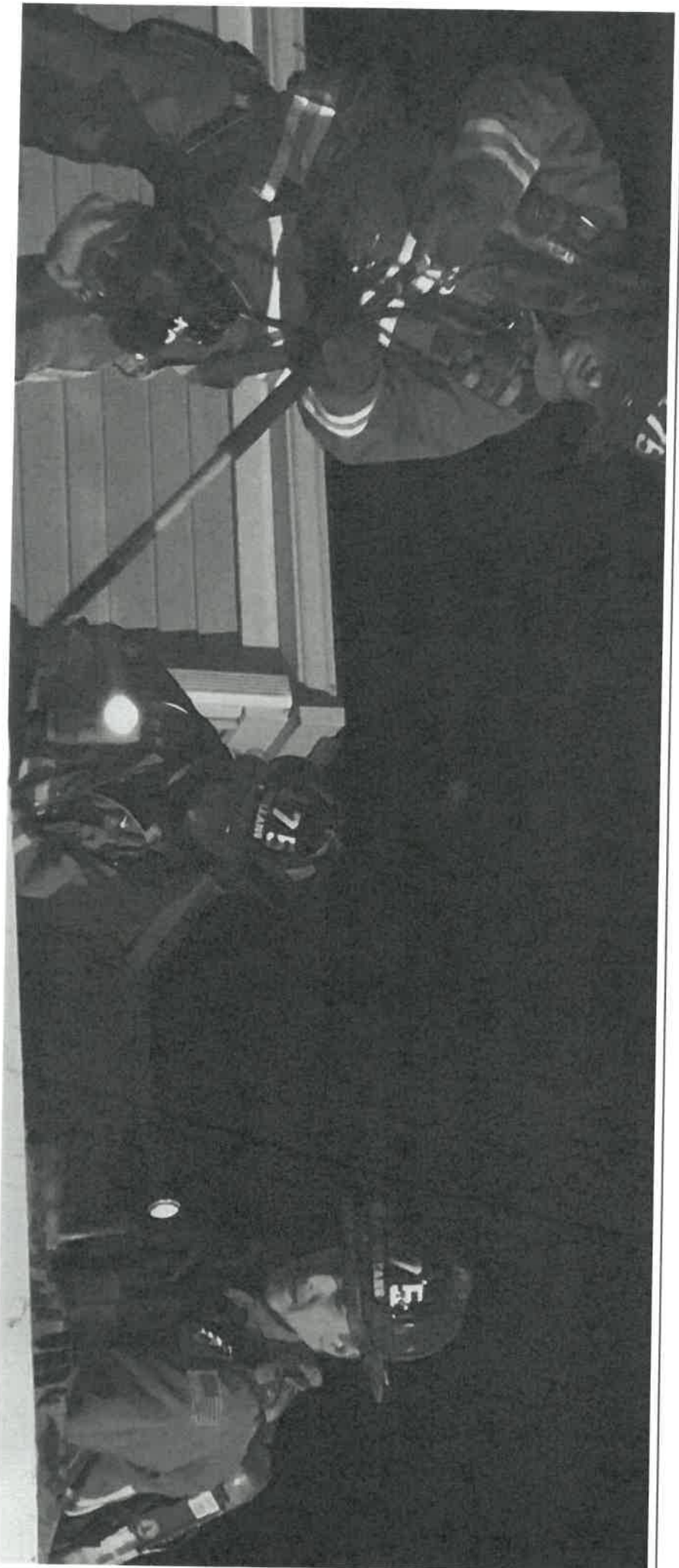
Firefighter  
Dana Medeiros

**DRAFT**



**ORLEANS**  
FIRE-RESCUE

**DRAFT**



**DRAFT**

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# TOWN OF ORLEANS FIRE STATION FEASIBILITY STUDY

August 11th, 2021

The Galante Architecture Studio  
146 Mount Auburn Street  
Cambridge, MA 02138

P: (617) 576-2500  
galantearchitecture.com

TOWN OF ORLEANS

# FIRE STATION FEASIBILITY STUDY



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The Orleans Fire Department aims high with their mission statement, vision statement, and core values. Further, professional agencies in 911 dispatch centers and surrounding communities providing mutual aid require a professional level of services be available.

From the Orleans Fire Department:

#### MISSION STATEMENT

The Town of Orleans Fire Rescue Department is a dedicated professional organization committed to serving the community protecting life, property, and the environment through performance of Fire Suppression and Prevention, Emergency Medical and Rescue Services, and Community Outreach and Education.

#### VISION STATEMENT

The most esteemed Fire Rescue organization on Cape Cod achieved through operational excellence, enhanced training and professional development, effective communications, robust community engagement and a focus on a culture of wellness and values.

#### CORE VALUES AND BELIEFS

We will build an enduring Department that:

- Upholds Service before Self in the Finest Tradition of the OFD.
- Takes pride in and preserves our valued reputation.
- Consistently conducts all relationships with honesty, transparency, integrity, empathy and respect.
- Creates a team-oriented workplace that values both team and personal accountability.
- Continuously improves our service performance, processes and skills.
- Celebrates victories along the way.

The Orleans Fire Department aims high with their mission statement, vision statement, and core values. This is the first in depth analysis of this site and facility and defines our recommendations for the Town of Orleans.

#### EXISTING CONDITIONS

The 1987 fire station is located at 58 Eldredge Park Way, with access to the station by a single driveway. The topography of the site required that the station be built with apparatus bays on two different levels. It is fed by single phase electric, does not have fire suppression, and has a septic system sized for the current size facility.

The Orleans Fire Station is a split face masonry structure built on a site that is bounded on all sides by school and private property. It is a single story on the side with the building entrance, rear of the building, side and portion of the building front. The middle front of the building is two stories with an outdated hose tower. It has an asphalt roof and “punched” window openings and concrete decorative arches over the apparatus bay doors.

Due to site topography, the interior has multiple floor levels (tri-level) with various rooms on each level. Originally designed with one large bunk room and a fitness room on the same level, the station has been renovated and retrofitted over the years to accommodate changing needs. The most recent renovation included adding temporary HVAC upgrades to correct interior air quality concerns.

#### PARTIAL DESCRIPTION OF DEFICIENCIES

The short- and long-term health and safety of the first responders is at risk within the existing site and building (critical issue)

Site topography has the building placed down in a valley which promotes buildup of ice and snow on roads with severe grade, leading to unsafe conditions in winter and periods of heavy rain

There is only one access road mixing emergency traffic with “civilian” traffic with potential for accidents between the two.

The driveways and parking areas were not constructed for truck traffic and are universally failing



The “tri-level” nature of the building imposes a constant obstacle of traversing stairs to initiate almost every first responder task

Interior space efficiency is very low and not easily corrected

The building is outdated as State & Local Codes have evolved. For example;

Any attempt at expanding and renovating this facility will trigger full and complete building and life safety code upgrades

There are seismic (earthquake), wind, storm impact and life safety code requirements for a current era category IV public safety facility (Category IV buildings are those designated as essential facilities such as fire, rescue, police, emergency shelters, emergency operations centers, etc.).

The existing building does NOT meet category IV requirements for a public safety facility. These buildings now must withstand major events and remain standing for continued delivery of services. The existing building would need major upgrades to bring it into compliance.

The building does NOT have a fire suppression system. Any expansion of the existing building requires the retroactive installation of a full fire suppression system and fire alarm system

The building has very limited Massachusetts Architectural Access Board (MAAB) compliance. Any expansion of the building will trigger varying levels of MAAB compliance

The septic system for the building is sized for the current facility. Any expansion of the building would trigger replacement of the septic with an adequately sized system meeting today’s nitrogen emission standards

The building does NOT meet any level of Energy Code. Any building expansion area must meet energy code – including HVAC systems. Mixing older and newer HVAC systems does not work since there is no possibility of an air barrier. An expansion of the existing building would trigger compliance with energy code.

Orleans Green Community Guidelines have been put in place in Town and this building is NOT designed to be energy efficient in today’s standards

The doors, roof, windows, and walls are simple construction and not impact resistant as today’s public safety buildings are required to be



Most of the reconfigured bunk rooms are windowless, not code compliant, and cut up in a way that limit functionality

The 2009 vehicle direct capture exhaust venting system is not adequate and its installation limits performance

Decorative arches on overhead doors are too low for ever growing fire service vehicles

Many areas of the building do not meet National Fire Protection Association (NFPA) standards that are customarily met by fire departments

There are additional items that could be added to this list, and outlined in the Building Code summary herein



Inefficiencies in the existing building have capital cost implications that a new facility will not have

A new facility would support the town's recent designation as a Green Community by implementing energy efficient systems

Based on this brief summary, and the detailed reports that follow, it is our strong recommendation that the most fiscally sound and safest approach is to develop a portion of the adjacent site and build a new fire station closer to Eldredge Park Way.

We would like to take this opportunity to thank all of you for the opportunity to investigate this site and facility. We specialize in the design of public safety facilities and work hard to take care of our first responders. We take pride in our work and believe our findings to be in the best long term interest of the Town of Orleans and the Orleans Fire Department. As always, we are available to discuss this report or any aspect of the project in greater detail.

Thank you,

A handwritten signature in blue ink, appearing to read 'Theodore Galante'. The signature is fluid and cursive.

Theodore (Ted) Galante AIA LEED AP

## RECOMMENDATIONS

The most financially sound approach is to select a site or portion of an adjacent site and develop a new facility designed to today's firefighting standards, align the goals of the fire department with the town, and provide a safe, contaminant free building and environment for our first responders while they finish using the current building.

Renovating the current facility will require a temporary facility to be put in place costing in the range of \$2 to 4 million. This money would be best used in a new facility (See Appendix H pg. 86)

Building a new facility allows this building to be used as a "temporary" facility during construction

Renovating the existing facility may still result in a "tri-level" complicated building which does NOT improve fire fighter response time

## The Orleans Fire Station Site

The Orleans fire station is located on a site with significant deficiencies. Many of the design decisions made when the original building was built would simply not be made today. The existing building is situated in a way that is most unfitting for fire stations. There are numerous problems with the site that are not easily overcome without significant expenditure. Even with this expenditure the resultant building would likely not be the most efficient for the Town and the Fire Department and therefore result in committing significant funds for a mediocre outcome.

One very clear result of our study is to suggest that the site and building do not meet contemporary firefighting standards, are not suitable to hurricane resistance, do not meet criteria to withstand gale force winds that current emergency services buildings are required to meet, etc.

The building sits on a limited site area with complicating levels of grade and topography. These varying conditions have detrimental impact on delivery of emergency services by limiting how quickly fire responders can get from where they are sitting when a call comes in, to the trucks, exiting the site, and on to the road. NFPA standards call for response times of 4 to 8 minutes, with 8 being the least desirable and only for certain vehicles. These standards are in place to save lives, limit brain damage, and not cause longer term health issues, and / or healthcare costs.

The topography of the site requires the apparatus bays be set on multiple levels. The building is placed in a valley with existing site grades that have an approximately 8% slope dropping down and then rising back up between the building and the roadway. Locating an emergency services building on two levels was not a good idea since maneuvering AASHTO rated vehicles the size and complexity of fire trucks is very difficult on such complex grades – especially in icy or snowy New England winters. Sloping in one direction is possible, sloping in a number of directions puts first responders at great risk. The existing portion of the site that is set back from Eldredge Park Way is much less than ideal and should be seen as an unacceptable condition by the town for the safety of their first responders.

**It is highly recommended to locate public safety facilities on relatively flat sites, as close to the street as possible.**



Moreover, the facility currently has a single drive lane for emergency responders as well as for civilians visiting the station. It is a narrow curving drive lane and carries risks the town may not be considering. If the sloping roadway was icy, and an ambulance was careening out of the station while someone was driving to the station, the narrow drive lane poses risk of accident. Since it is the only drive lane to and from the building, a follow on emergency vehicle would not be able to get to the original call since the drive lane would be blocked, and there would be limited ways of safely handling the accident on fire station property. For this reason (and more) current day fire station design requires at least two drive lanes – one for emergency vehicles and one for civilian traffic. By separating the two, each group is kept safe, and first responders are able to get to their planned destination in as timely a manner as possible.

**It is highly recommended to provide two drive lanes for safety, with clear visibility.**

## The Orleans Fire Station Interior

The Orleans fire station has a confusing, inefficient interior layout that causes delays in getting personnel to the trucks, as well as deploying the trucks from the site. The layout is poorly planned, has multiple floor heights, poor and complicated storage locations, repurposed rooms that are inefficient and are in violation of some of the Building Code. Modern fire stations are designed for efficient “turn out and response times”. They are designed to be better than simply code compliant, and focus on immediate as well as longer term fire-fighting solutions.

As illustrated in the enclosed existing building circulation diagrams, the facility is poorly planned, outdated, less secure, and unsafe for the occupants. The multiple levels of the building complicates circulation as do the room layouts, and chopped up nature of the rooms which have been changed or modified over time. As a result the entire building is less than adequate for reasonable use.

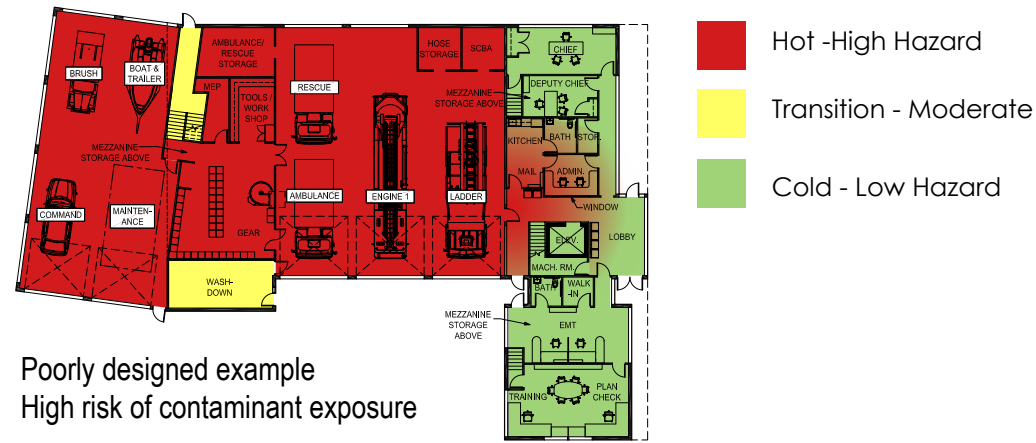
Further, and more critically for the occupants of the building, the Orleans fire station is NOT designed to limit carcinogen transfer, potentially leading to long term health impacts on its inhabitants. Many functions and room designations indicate potential risks for fire fighters in how they use the building. A Plymovent (direct vehicle exhaust capture) system was installed in 2009 but the building housed fire diesel emitting vehicles for almost 25 years prior to then. As a result, the walls may be covered in soot from that period and soot is one of the elements that is unhealthy for fire fighters. The venting system was installed with limited understanding and consideration for the range of possible vehicles housed in the apparatus bays, and therefore limits possible truck placement, truck orientation, and type of truck that can be housed there. In short, it is one more limiting factor in this facility that prevents the efficient and professional delivery of emergency services. The fan motor for the retrofit vehicle exhaust system was placed in whatever available space, not in a designated area. As a result it was installed in the out dated hose tower being used for storage, and in a manner that has potential for injury.

Due to a general lack of square footage and space, there is no fitness room in the building. Fire Fighters are known as occupational athletes and keeping fit so they can perform their line of duty is essential. Any contemporary fire station being designed today has a fitness room for the health and well-being of the fire fighters.



In Orleans, the fitness equipment is located directly on the apparatus floor – the biggest Hot Zone in a fire station – and the worst possible place for deep breathing caused by exercise. Anyone working out on an apparatus floor is breathing in the history of soot, but also potentially any current day carcinogens that return with the trucks and / or the diesel exhaust the trucks emit as they enter the building – even with the Plymovent system. This is a very big hazard and needs to be corrected.

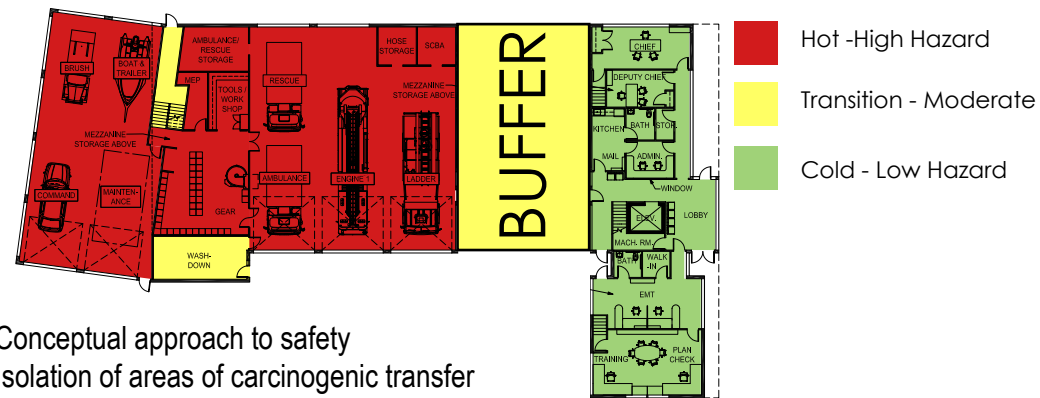
Today's fire stations are designed to separate areas of high internal hazard such as apparatus bays from areas of no internal hazard such as living quarters. Fire fighters are faced with more types of cancer diagnoses than most other career choices. Until recently the design of fire stations were not considered part of the solution. Given extensive research and development, it is clear that the “second home” of the first responder needs to be designed to promote their long term health and well-being. As a result, we now focus on Hot zone, Warm zone, and Cool zone design strategies. These use both architectural separations (walls, doors, windows) as well as mechanical, electrical, and plumbing system separation.



Poorly designed example  
 High risk of contaminant exposure

The express result is isolation and removal of as many carcinogens as possible from all areas of the building. Hot zones are those where response vehicles are stored, turn out gear is stored, tools and equipment are stored. They also include areas for a fire fighter to decontaminate themselves. Warm areas are those transitional zones as one is leaving a hot zone. These are short corridors or vestibules, or enclosed vertical circulation. Cool zones are those where first responders rest, eat, sleep, exercise, and similar activities. As occupational athletes, fire stations should be designed to help their strength, endurance, and general fitness. The existing Orleans fire station is NOT designed in this manner, and may have a negative impact on its inhabitant's long term health.

**It is highly recommended that a building be planned and designed to take care of the town's first responders long-term health and welfare by protecting them from carcinogen transfer in the station.**



Conceptual approach to safety  
 Isolation of areas of carcinogenic transfer  
 \*Diagrammatic only, not representative of actual size

# Narrative

## Where the Site and Building meet

Fire stations have what is known as an “apron” at the outside edge of each overhead door. The design and material choice of the apron is of critical importance to fire station operations, safety, and longevity of town owned trucks, ambulances, trailers, (collectively Apparatus). These expensive vehicles endure best when the apron is a smooth transition from the interior to the exterior, and the apron is safest for our first responders when it is not slick or slippery.



The aprons in place at the existing station are made of asphalt. Today this material would NOT be used for the reasons above and more. Asphalt settles, cracks, and moves radically with temperature changes. It is slippery when wet and builds ice easily. It is a more dangerous material to first responders for this reason, and much more abusive to the Town’s trucks and property leading to long-term expensive truck repair or replacement. Further, it does NOT last as long as concrete, which can be designed specifically for these areas. The current aprons are outdated, failing, cracked, not draining properly, and are a general safety hazard and nuisance to the fire department. Repairing them would require extensive reworking and we suggest this would be a poor use of tax dollars.

Today’s fire stations have “light broom finished” concrete aprons that are longer than the trucks that use them for safe maneuverability. They are structurally reinforced, align with the apparatus bay interior, and designed for proper drainage to eliminate rain, snow, and ice buildup. The goal is a non-slip, safe surface to protect the health and welfare of those who are responding to emergencies. In some cases we design them with in-slab radiant heat that melts ice and snow and allows emergency vehicles to dispatch safely any time of day or night regardless of New England winter conditions.

**It is recommended that concrete aprons be incorporated into any future design thinking**

Beyond safe design to limit carcinogen transfer, and the poor interior layout, the Orleans fire station has a wide range of other concerns that impact their ability to properly function in the world we live in today. An easy place to start is the size of the overhead doors where fire apparatus deploys. The low point of these arch shaped openings is 10’-0” to 11’-6” which limits the ability for emergency apparatus. These existing arches are designed and built in a way that prevents them from being easily increased in size. Any work on these openings would require a major overall of this portion of the building. Fire apparatus manufacturers are responding to NFPA standards and as a result, trucks keep getting larger, both in terms of height and in terms of width. Many historic fire stations have trucks custom made at great expense and cannot host visiting fire companies or have dual coverage should their own apparatus be out of service. Today’s standards for fire stations include doors that are 14’-0” tall and 14’-0” wide. The decorative precast archways limit the door’s effective clearance height.

There are numerous other building deficiencies ranging from re-purposed or poorly planned functional spaces, outdated spaces that no longer serve current function, as well as spaces that are simply missing that are essential to a current day functioning fire station. For example, the bunkrooms in the building are adaptations of what used to be one large bunkroom. When it was divided into smaller rooms some space efficiencies were lost, but more importantly there are rooms with code violations now in place. Some of the rooms are oddly shaped (inefficient) and some do not have any natural daylight or ventilation. These are not professional ways to treat our first responders, and all items that need re-planning and correction.

The kitchen is far too small for current staff needs. It does not have emergency shutdown switches needed for when the department is cooking but then needs to rush out to a fire. Systems like these provide safe places for fire fighters to live and work. The kitchen is NOT accessible to those in wheelchairs or others with physical impairments and without a regulatory variance in place, it needs to be. All elements of the kitchen are outdated, inadequate, with limited functionality. It is very clear they lack storage for all that is required in a modern day fire station.

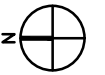


The training room is too small to meet department needs. It has no storage, and seems it is currently used as a combination storage room / training room. Beyond being outdated in almost every possible way, new duct work was added through a window that protrudes into the room and is in visible way of everything around it. The fact that this was accepted as a solution speaks to the near crises mode and limits the department has, in order to “fix” portions of the building and advance their cause. A modern day fire station requires at least a 30 – 60 person training room with proper heating, cooling, and ventilation, lighting, sound, and communication systems. These rooms have storage for tables and chairs and allow for flexibility and use by other members of the community. Training is an essential part of a fire fighter’s and an EM T’s life, with more and more training becoming essential in our complex world. Orleans needs a training facility befitting of the needs of the department and more.

**It is highly recommended the interior of the new fire station be designed in a way that meets today’s fire station working and living conditions, is durable with limited maintenance, and plans for future department growth and safety.**

Respectfully,

Theodore Galante AIA LEED AP



Project Number

2106

Project Title

Orleans Fire Dept  
58 Eldredge Park Way  
Orleans, MA 02653

Drawing Title

Feasibility Study  
Site Plan

Date/Issued For

08.11.21

**NOT FOR  
CONSTRUCTION**

Print 11x17

Scale

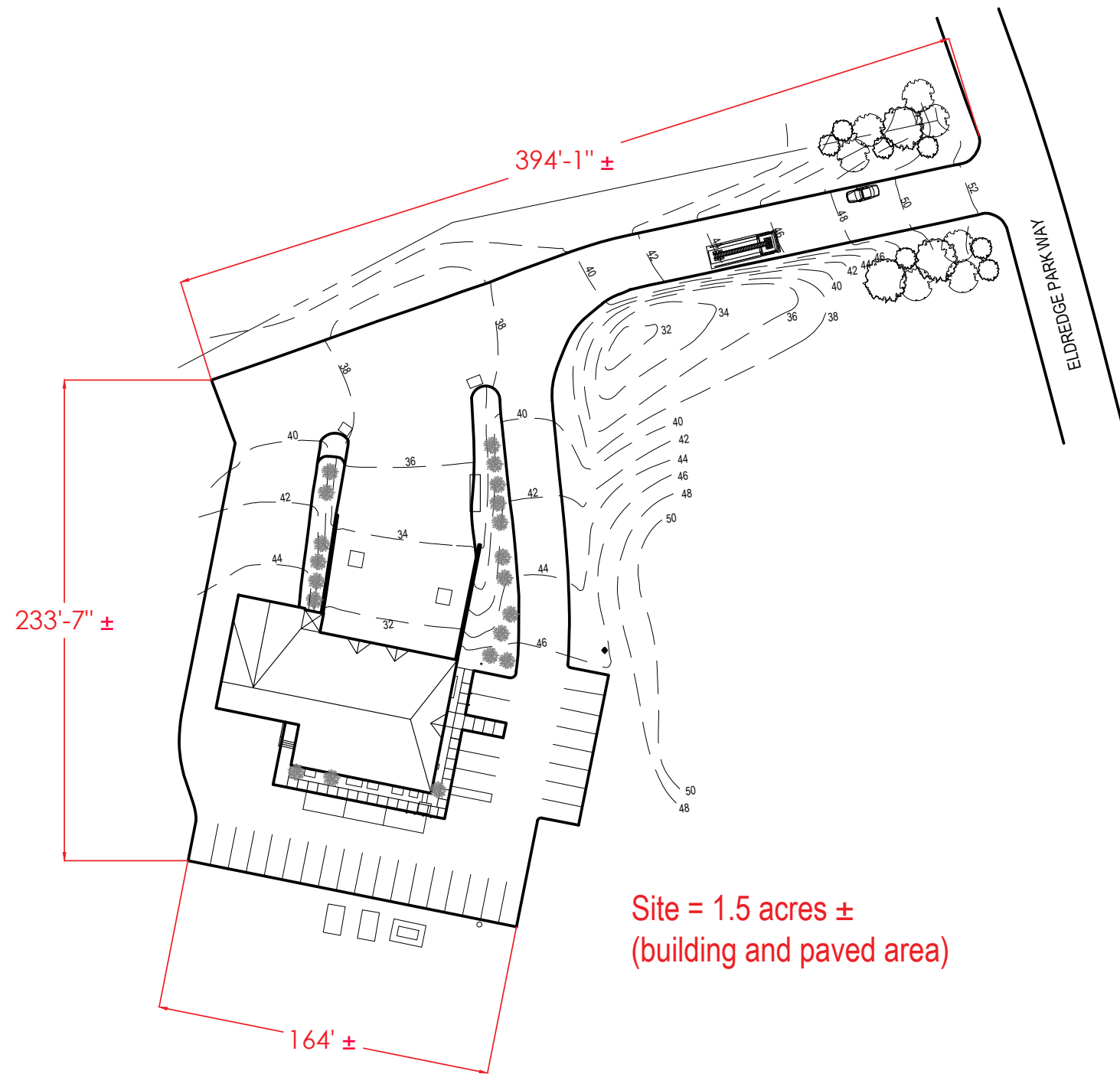
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Drawn By

TGAS

Drawing Number

Ex Site 1





Project Number

2106

Project Title

Orleans Fire Dept  
58 Eldredge Park Way  
Orleans, MA 02653

Drawing Title

Feasibility Study  
Site Plan

List of deficiencies

Date/Issued For

08.11.21

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Scale

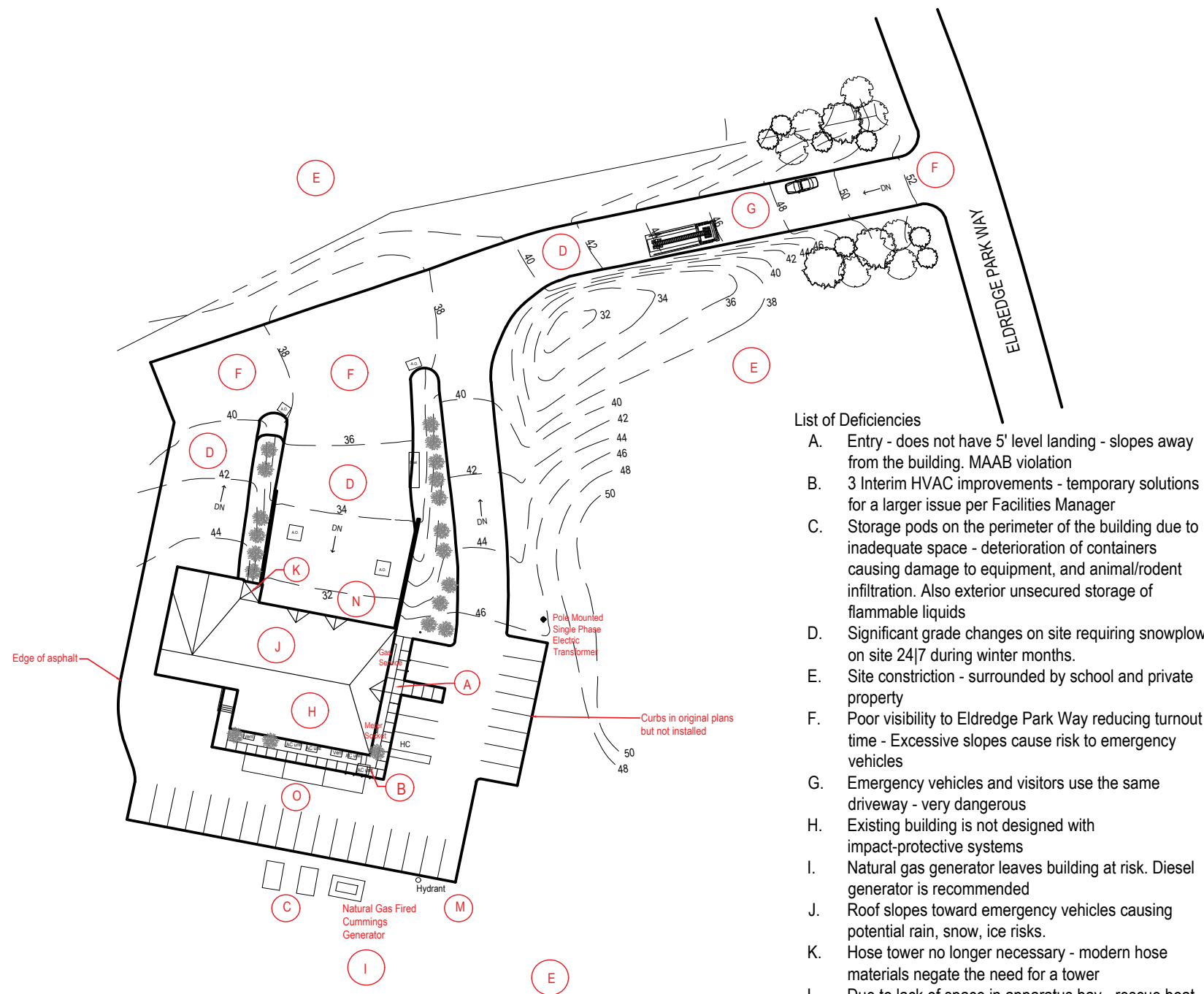
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Drawing Number

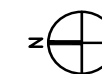
Ex Site 1a



List of Deficiencies

- A. Entry - does not have 5' level landing - slopes away from the building. MAAB violation
- B. 3 Interim HVAC improvements - temporary solutions for a larger issue per Facilities Manager
- C. Storage pods on the perimeter of the building due to inadequate space - deterioration of containers causing damage to equipment, and animal/rodent infiltration. Also exterior unsecured storage of flammable liquids
- D. Significant grade changes on site requiring snowplow on site 24/7 during winter months.
- E. Site constriction - surrounded by school and private property
- F. Poor visibility to Eldredge Park Way reducing turnout time - Excessive slopes cause risk to emergency vehicles
- G. Emergency vehicles and visitors use the same driveway - very dangerous
- H. Existing building is not designed with impact-protective systems
- I. Natural gas generator leaves building at risk. Diesel generator is recommended
- J. Roof slopes toward emergency vehicles causing potential rain, snow, ice risks.
- K. Hose tower no longer necessary - modern hose materials negate the need for a tower
- L. Due to lack of space in apparatus bay - rescue boat stored outside
- M. When hydrant is used for training it causes low pressure at the Orleans Elementary School
- N. No concrete apron at the exit of the apparatus bays.
- O. Drive aisles in the parking areas appear to be undersized for two-way traffic, as minimum should be 24' wide





Project Number

2106

Project Title

Orleans Fire Dept  
58 Eldredge Park Way  
Orleans, MA 02653

Drawing Title

Feasibility Study  
Basement

Existing Conditions

Date/Issued For

08.11.21

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CONSTRUCTION**

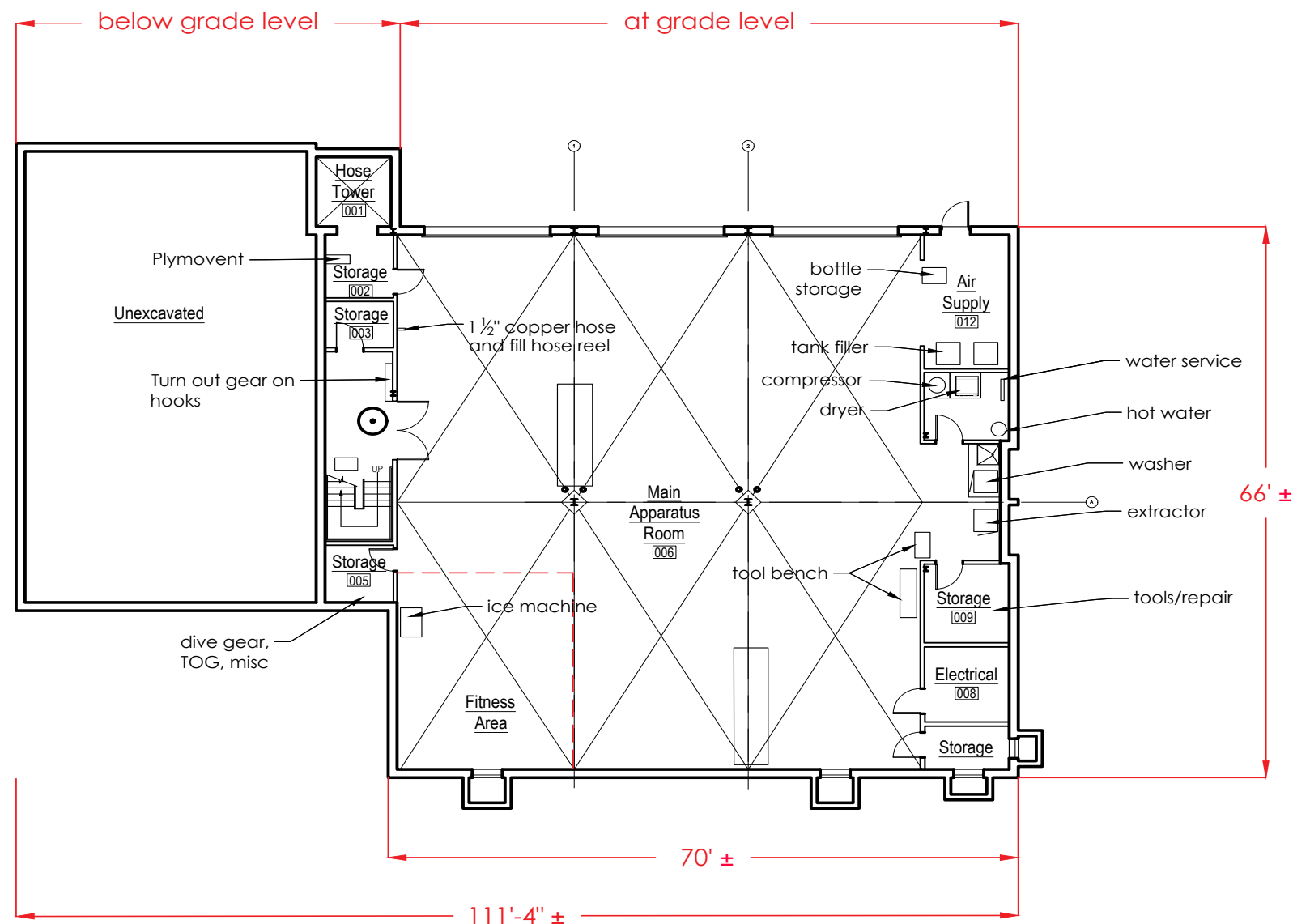
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TGAS  
Drawing Number

**EX-101**





Project Number  
2106

Project Title  
Orleans Fire Dept  
58 Eldredge Park Way  
Orleans, MA 02653

Drawing Title

Feasibility Study  
Basement

List of deficiencies

Date/Issued For  
08.11.21

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CONSTRUCTION**

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1/16" = 1'0"

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Drawing Number

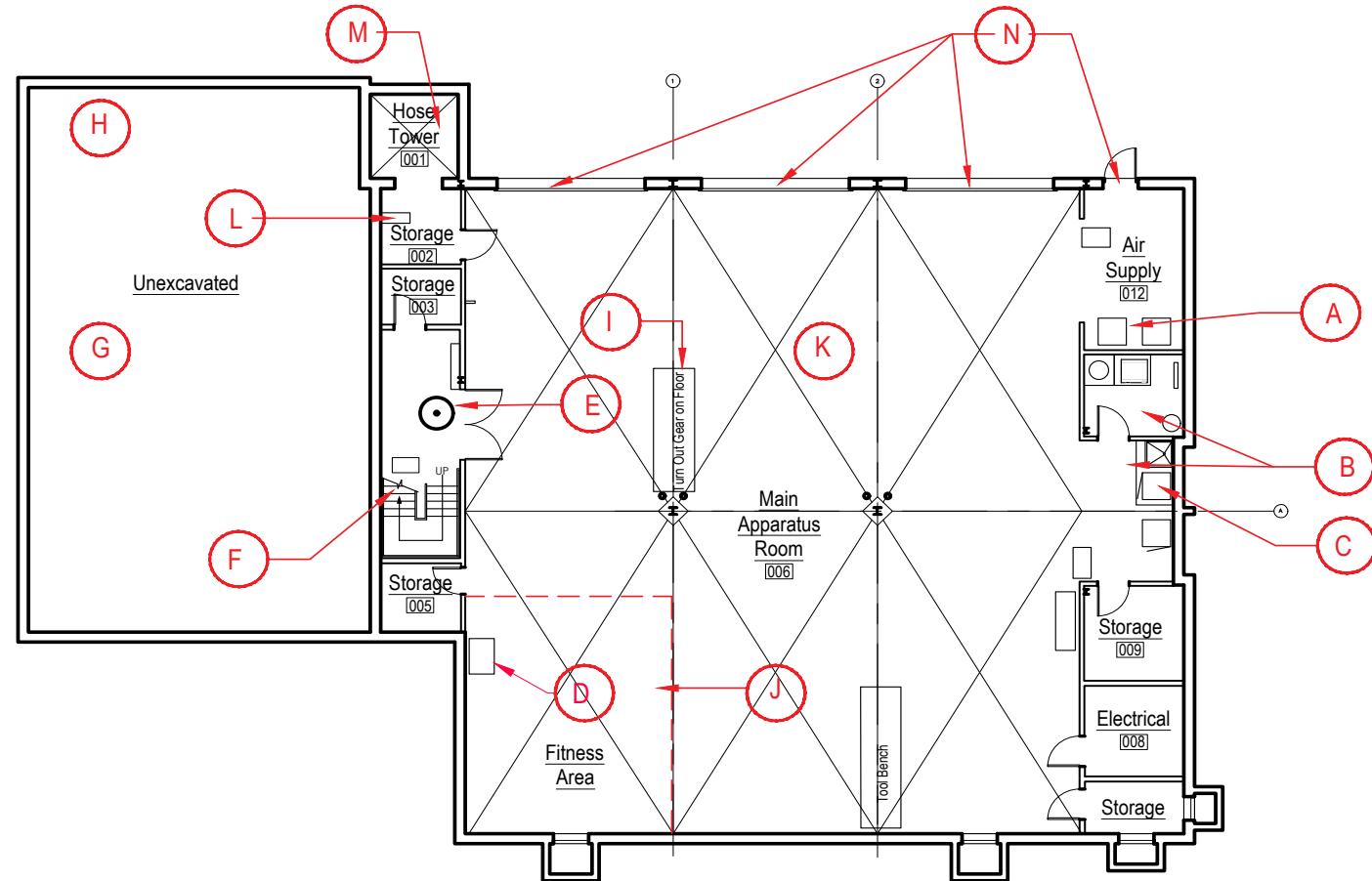
**EX-101a**

List of Deficiencies

- A. SCBA - Cascade type filling system compressor produces a noise concern and should be in its own room
- B. Gear laundry area - No floor drains - Not installed correctly, no exhaust in area. Not in a designed/dedicated space. Waste water pumps remove water from extractor and washing machine to sink - routinely overwhelmed and floods
- C. Domestic washer/dryer in gear area - Hazardous chemical exposure to all occupants and bedding
- D. Ice Machine location - should be located in area safe from carcinogenic contamination. Currently piped to floor drain - tripping hazard
- E. No transition areas between hot/cold zones of the station - ease of carcinogenic transfer
- F. Stairway to apparatus bay has no air separation from living quarters
- G. EMS Supplies storage is not centralized and inadequate, on apparatus floor, in contaminated areas, near office and lobby areas
- H. Truck repair - inadequate space for repairs due to ceiling height
- I. Turn out gear stored in apparatus bay - NFPA violation
- J. Fitness area in apparatus bay - leading to carcinogenic exposure
- K. Apparatus floor drains clog and routinely back up, drains go to a septic leech pit, not a tight tank
- L. Plymovent system not designed for vehicles that must be turned around during winter storms due to grade. Installed 2009 - soot stained walls from pre-2009
- M. Hose tower floor drain easily overwhelmed - contaminated water from hose cleaning spills into lower apparatus bay toward gear racks.
- N. Door often blocked by ice and snow in winter storms. Apparatus doors do not seal properly at floor causing consistent energy loss.

Additional Notes

- Lower floor Apparatus door height/Ceiling height - Inadequate for apparatus. Door height at lowest point is currently 11'6", contemporary standards require 14'-0" doors
- Very limited storage
- Electrical service will be insufficient for new service requirements
- Flooding and equipment loss on basement level - potential mold on walls where supplies are stored





Project Number

2106

Project Title

Orleans Fire Dept  
58 Eldredge Park Way  
Orleans, MA 02653

Drawing Title

Feasibility Study  
First Floor

Existing  
Conditions

Date/Issued For

08.11.21

**NOT FOR  
CONSTRUCTION**

Print 11x17

Scale

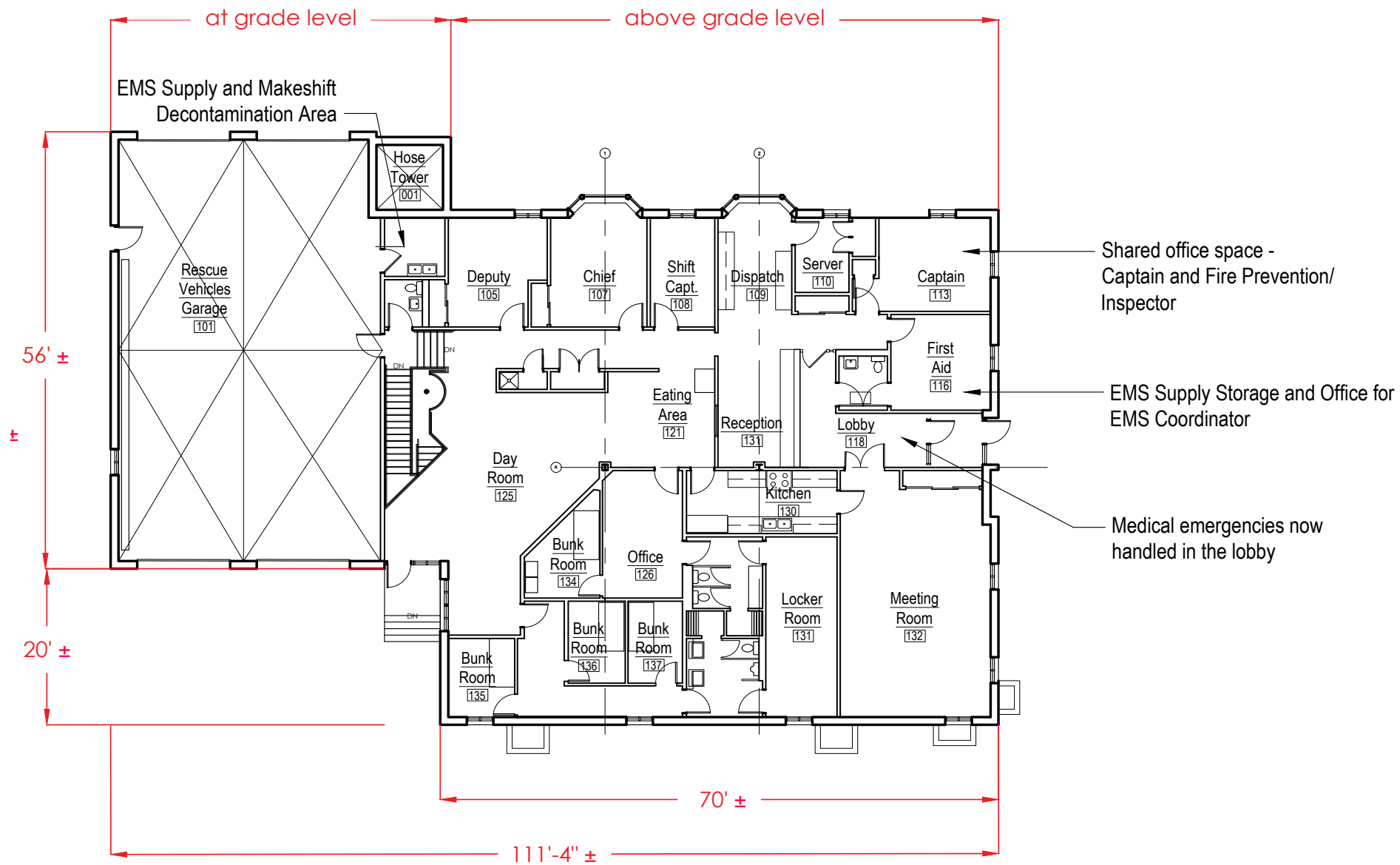
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Drawn By

TGAS

Drawing Number

**EX-102**





Project Number

2106

Project Title

Orleans Fire Dept  
58 Eldredge Park Way  
Orleans, MA 02653

Drawing Title

Feasibility Study  
First Floor

List of Deficiencies

Date/Issued For

08.11.21

**NOT FOR CONSTRUCTION**

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Scale

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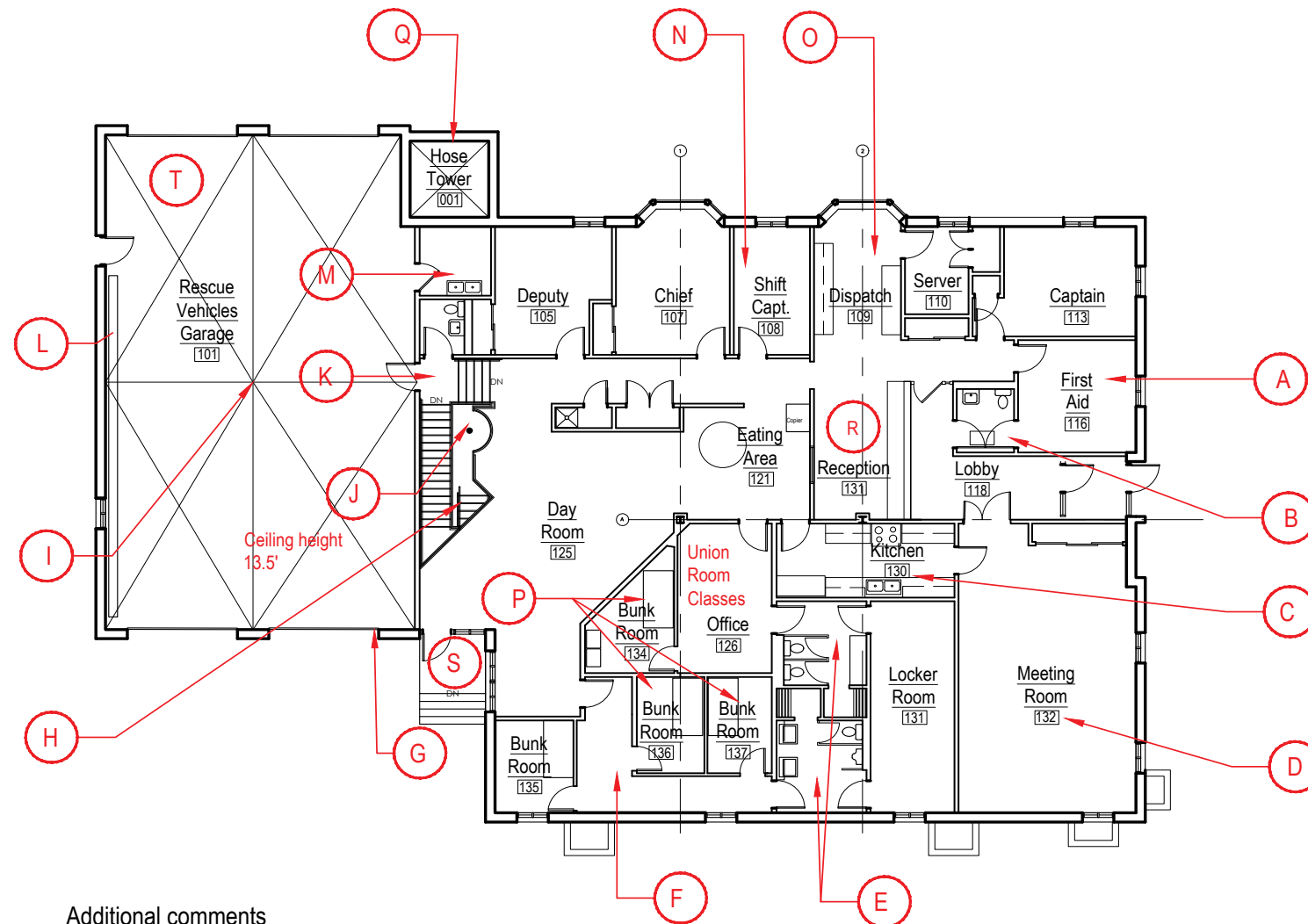
TGAS

Drawing Number

EX-102a

List of deficiencies

- A. First Aid Room - has been repurposed for EMS Coordination and Supplies. First Aid is now handled in the lobby which was not the original plan and therefore does not function as well as it could (ie no sink).
- B. Public restroom (MAAB Violation) - Unsecured location and privacy issues (odor, etc)
- C. Kitchen - Current facility has been outgrown, is outdated and inadequate for personnel. Not MAAB compliant
- D. Training/Meeting Room - Not large enough to accommodate 30+ station personnel, and to function as backup Emergency Operations Center. Temporary HVAC repair takes up space.
- E. Restrooms - Not handicap accessible and not easily accessible to station personnel. Women need to go through men's locker room. Bathroom sinks drain slowly/back up routinely due to design issues.
- F. Laundry facilities - No domestic laundry available leading to potential carcinogen transfer.
- G. First floor apparatus door height/Ceiling height - Inadequate for apparatus. Door height at lowest point is currently 10', ceiling height is 13.5' Contemporary standards require 14'-0" doors
- H. Stairway to apparatus bay has no air separation from living quarters potentially leading to carcinogen transfer
- I. No decontamination area for personnel near the apparatus bay potentially leading to carcinogen transfer
- J. Fire Pole - currently not used therefore wasted space, safety issues, air penetration from hot zone
- K. No transition area between hot/cold zones of the station potentially leading to carcinogen transfer
- L. Turnout gear on apparatus floor - does not conform to NFPA standards
- M. EMS Medical Supply - Space inadequate  
Two bay sink blocks door swing
- N. Shift capt. office - Used for sleeping but was not designed for this. Poorly located
- O. Dispatch area - No longer used therefore inactive space
- P. Bunk rooms in violation of building codes. No natural light or ventilation. Too small as built.
- Q. Hose tower no longer used
- R. Reception desk not MAAB compliant
- S. No separation of the dayroom from the exterior - door not tight and cold air infiltrates
- T. Vehicles must be driven out of the back of the upper apparatus bay - can not back up the hill during minimal snow and ice (even with plowing and sanding)



Additional comments

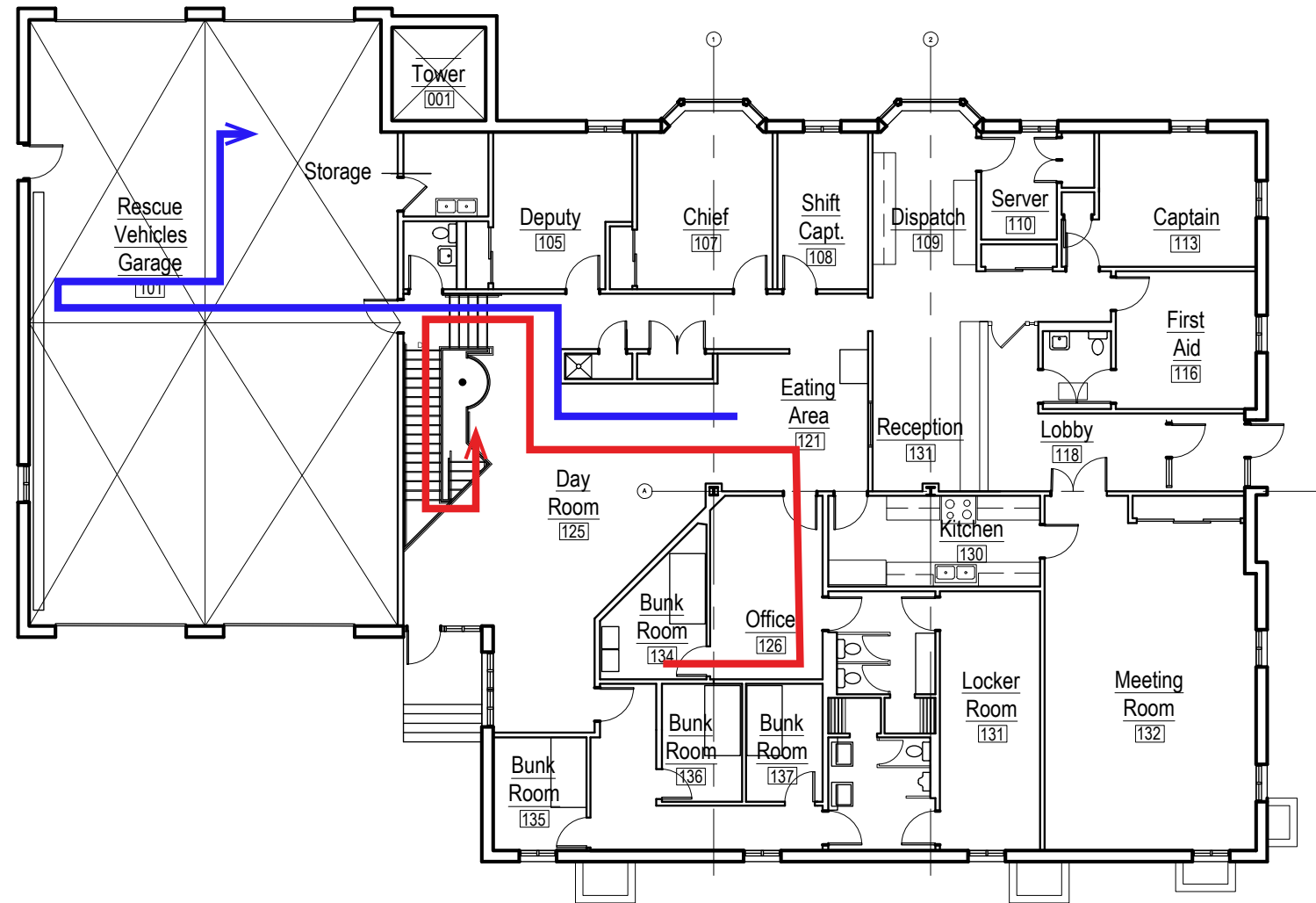
- Exterior wall and roof assembly that defines the conditioned air envelope is not a proper thermal barrier
- Exterior CMU wall is coated with a bituminous mastic containing asbestos
- Water infiltration into building during rainstorms - needs roof replacement
- Fire alarm altered due to water infiltration
- Exterior trim rot - animal/rodent infiltration

Decontamination:

- Equipment - done in apparatus bay or outside due to EMS storage room configuration. Equipment must be placed outside to dry or hung in apparatus bay.
- Personnel - remove uniforms in apparatus bay - traverse living area/hallways/bunk space wrapped in blankets to reach showers. No separate area for male/female. Two showers in the entire building - inadequate.

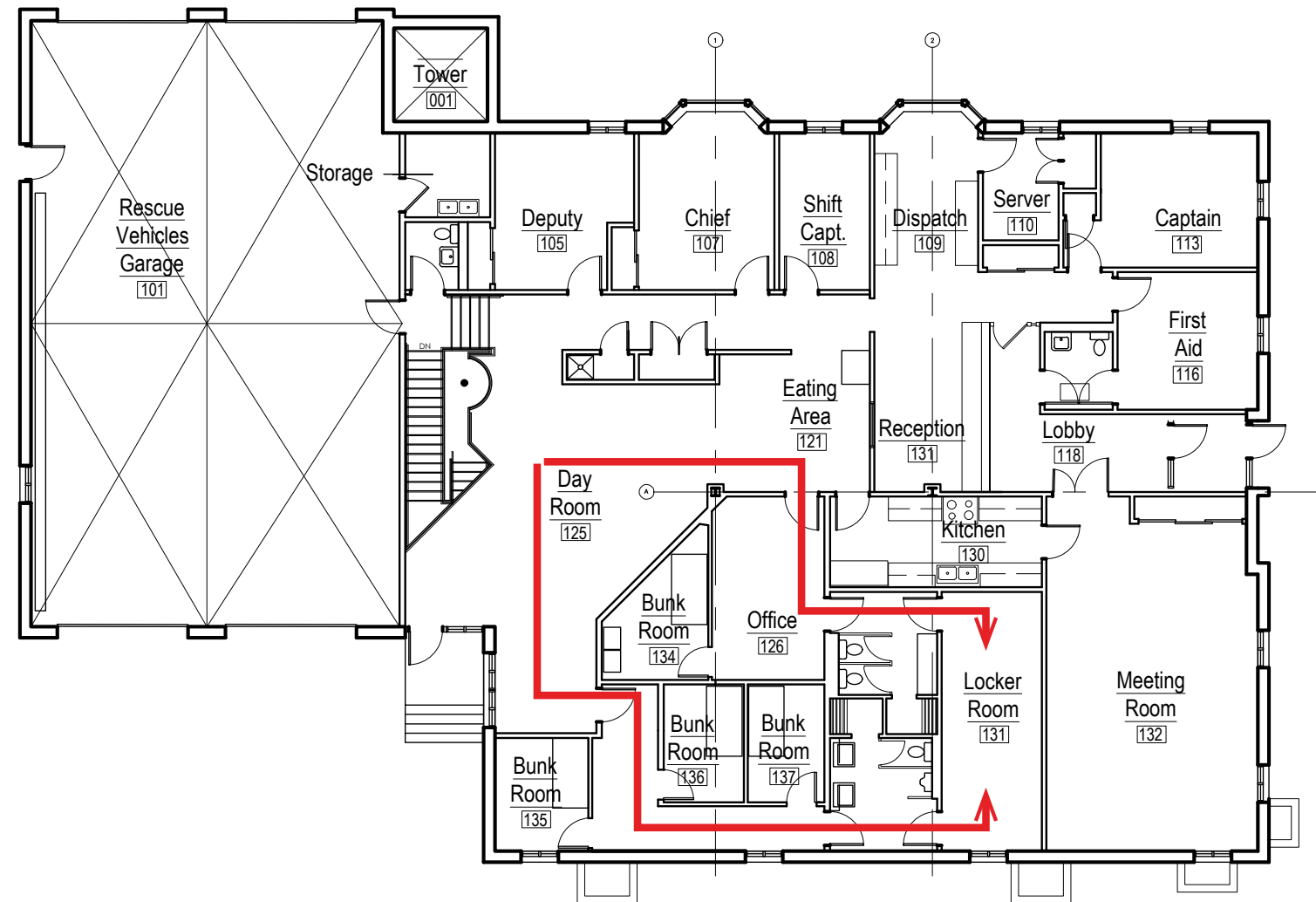


No direct path to apparatus

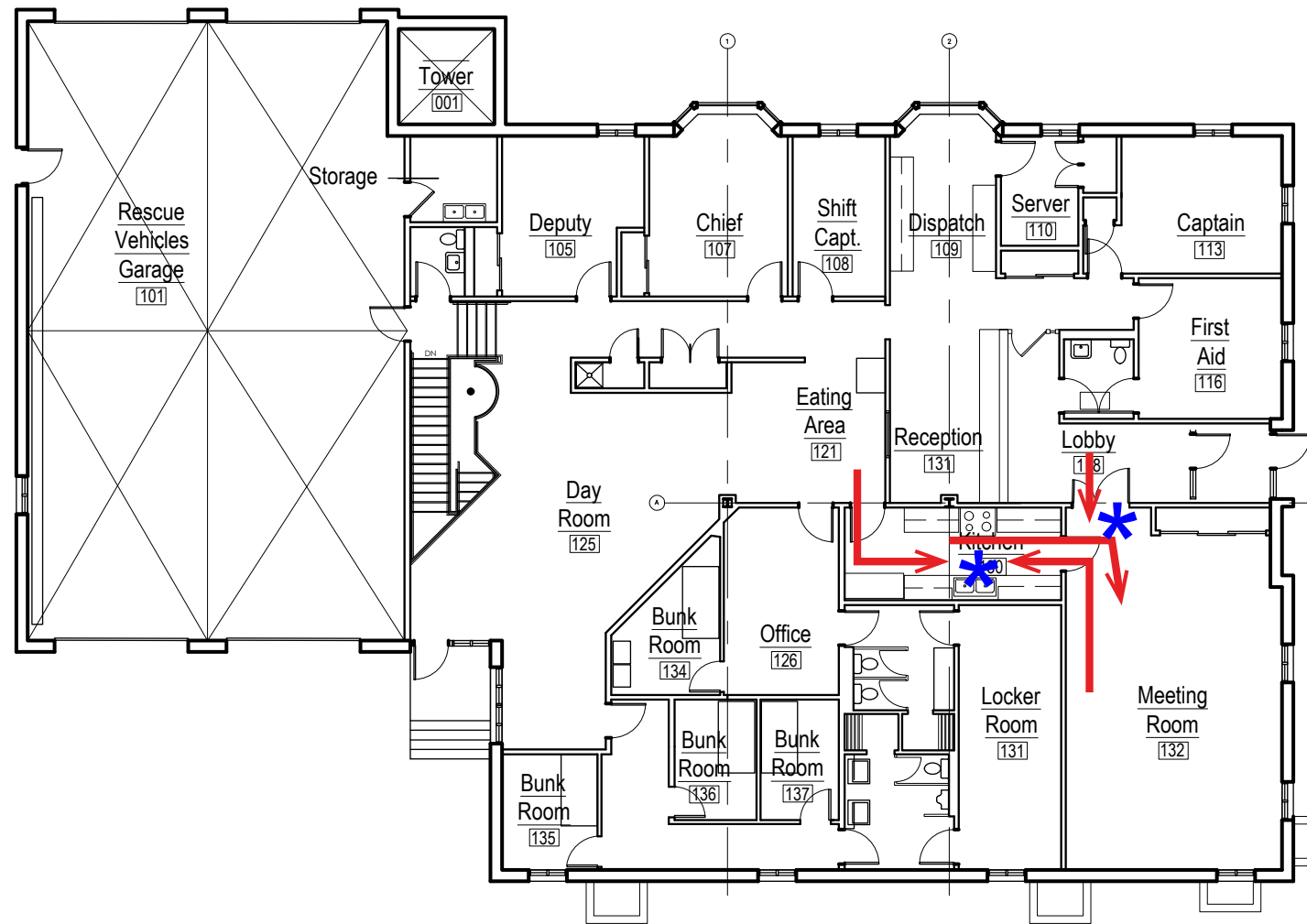


Slow response times due to poor layout

## Complicated Path to Apparatus Bay

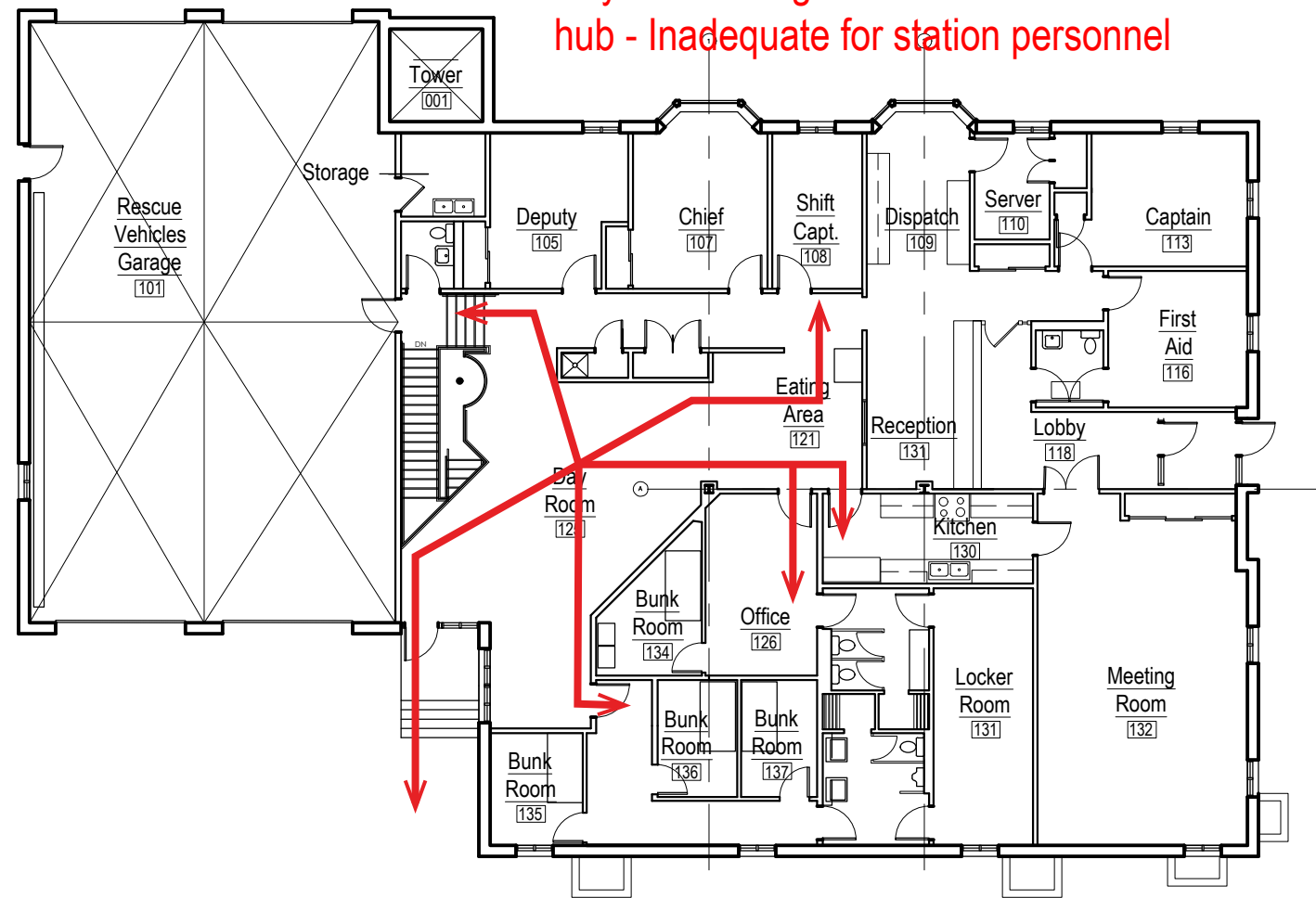


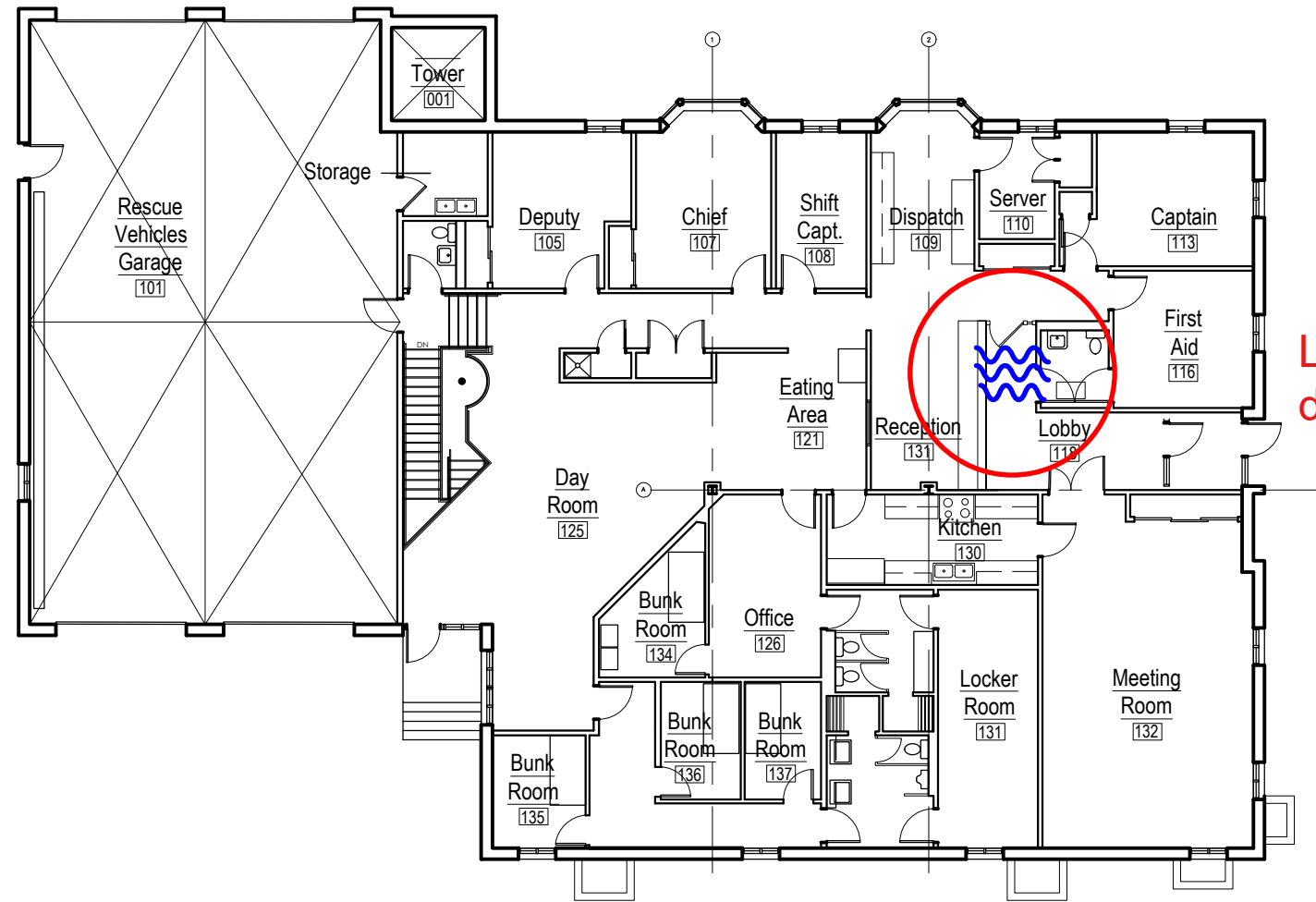
Locker room - path is through the male/  
female bathrooms. Poor circulation path



Kitchen - Path in/through kitchen is problematic

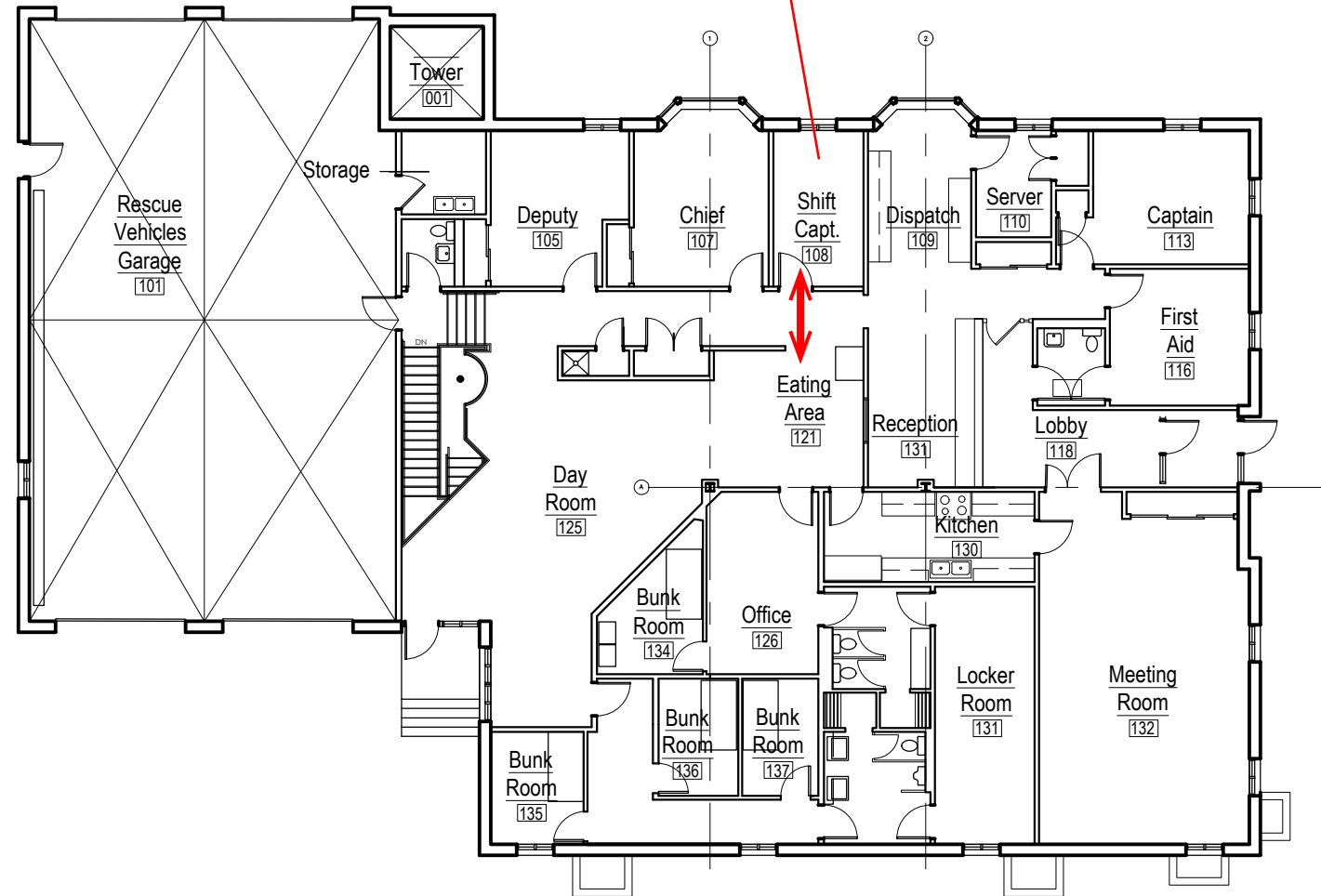
Dayroom/eating area is the main circulation hub - Inadequate for station personnel

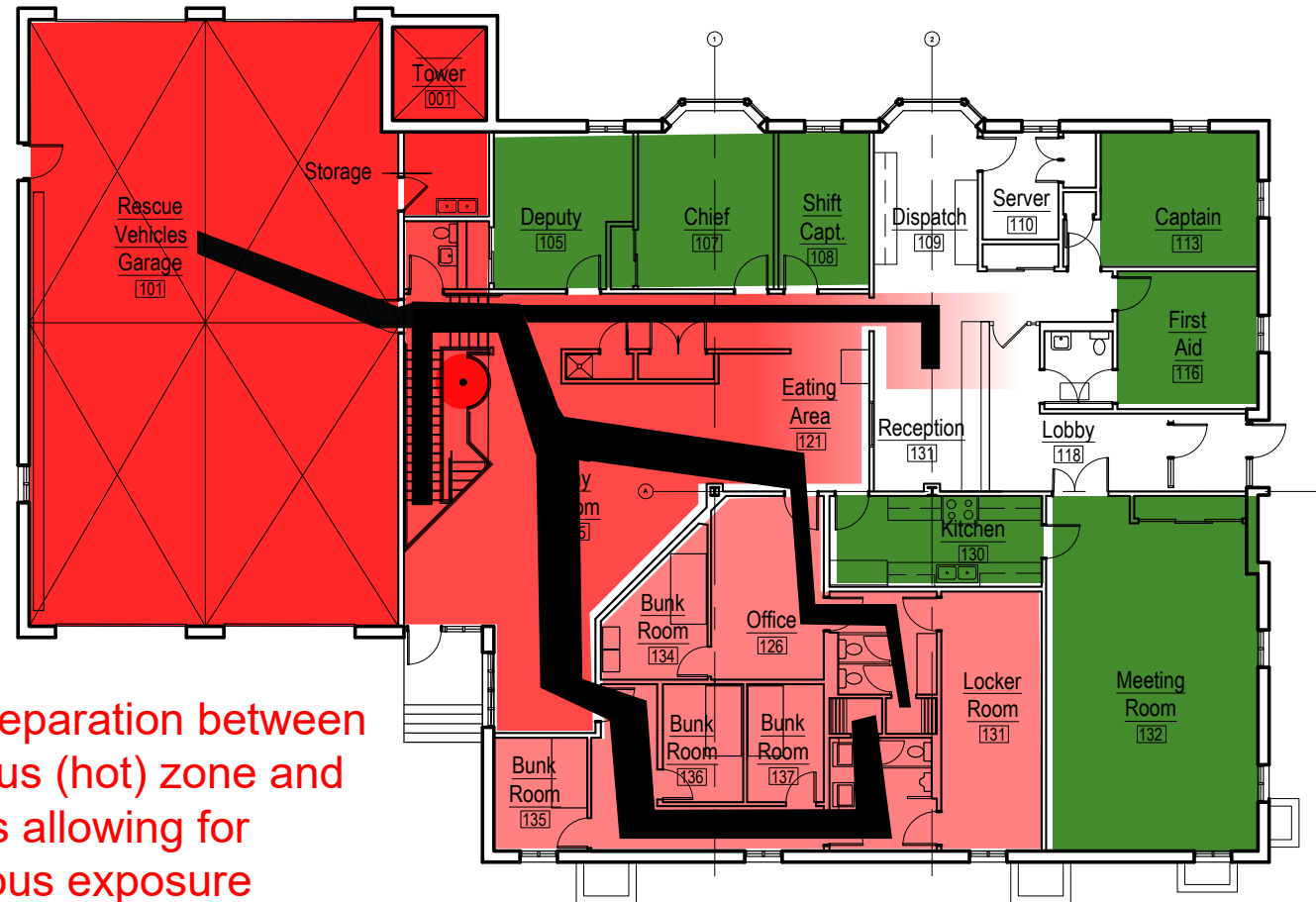




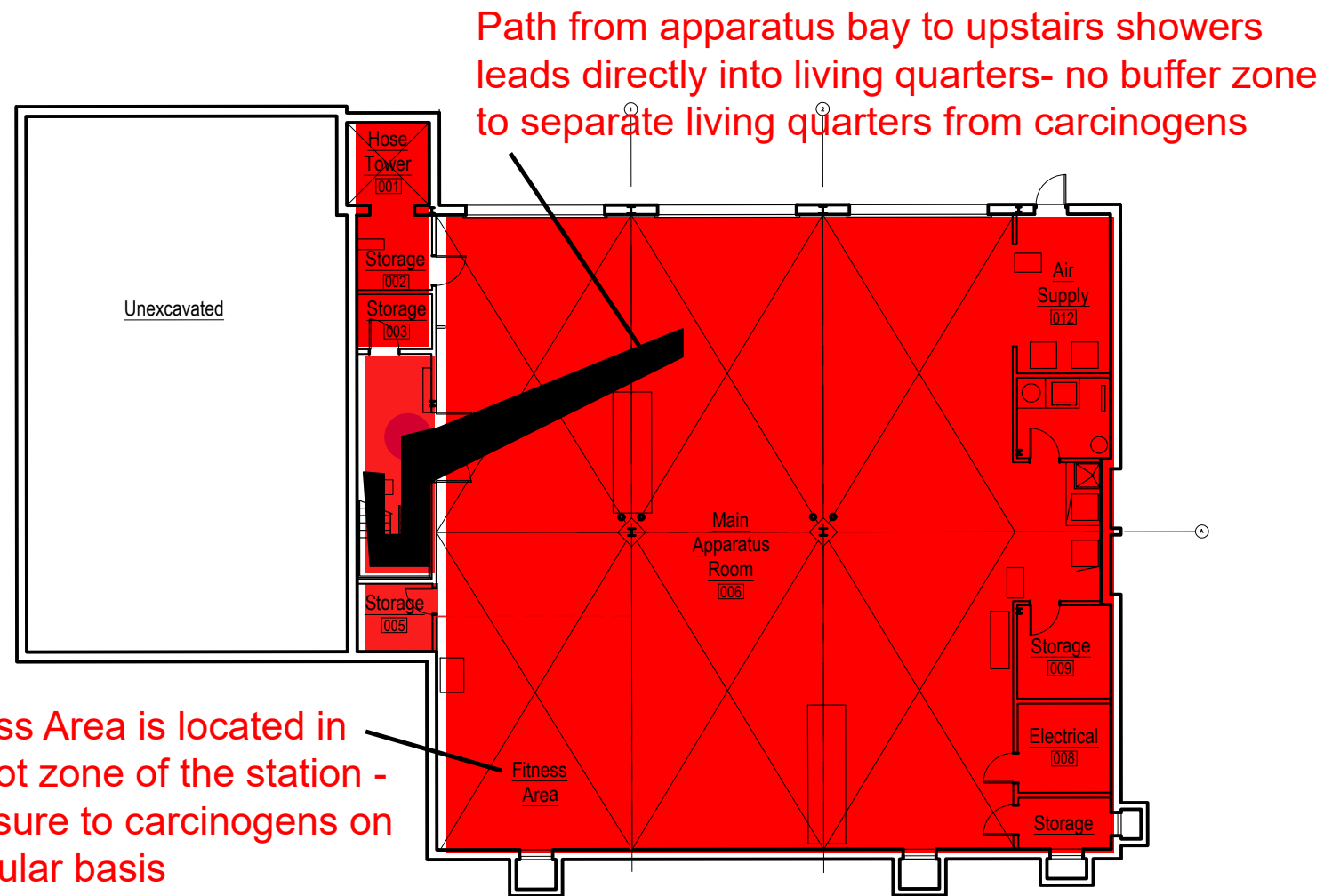
Location of restroom -  
distracting/odors

Re-purposed  
bunkroom too close to  
offices and eating area





No air separation between apparatus (hot) zone and showers allowing for dangerous exposure in the living quarters



Path from apparatus bay to upstairs showers leads directly into living quarters- no buffer zone to separate living quarters from carcinogens

Fitness Area is located in the hot zone of the station - exposure to carcinogens on a regular basis

TOWN OF ORLEANS

**FEASIBILITY STUDY  
SUPPORTING EVIDENCE  
OF DEFICIENCIES**





Significant grade changes causing slow turnout time in winter storms



Main Entry to building is not clear, and access has non-compliant slope

## Site Deficiencies



Apparatus bays lack a concrete apron, and asphalt is in poor condition. Precast arch shaped lintels limit effective overall height of doors which limits apparatus selection

Storage pods at perimeter of site due to lack of storage space and do not provide adequate protection from the elements

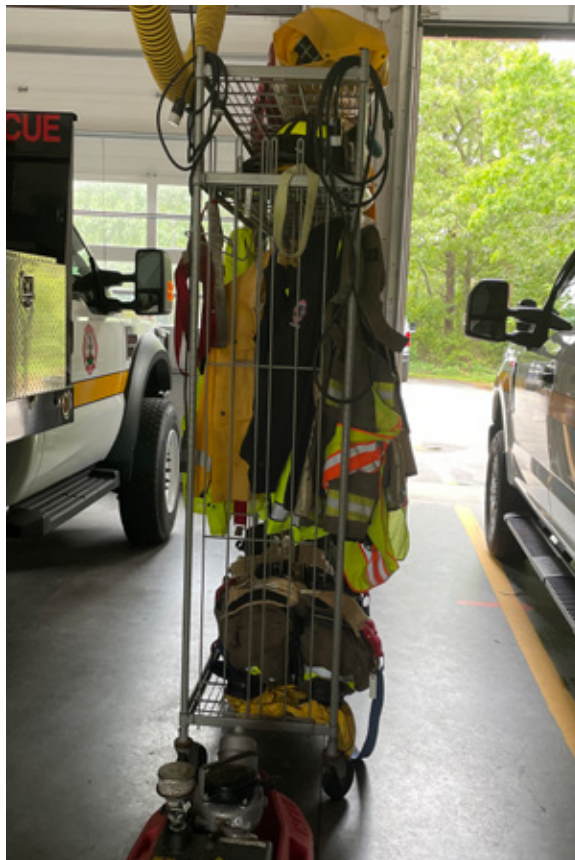


Interim HVAC improvements located to minimize sound issues and structure modifications



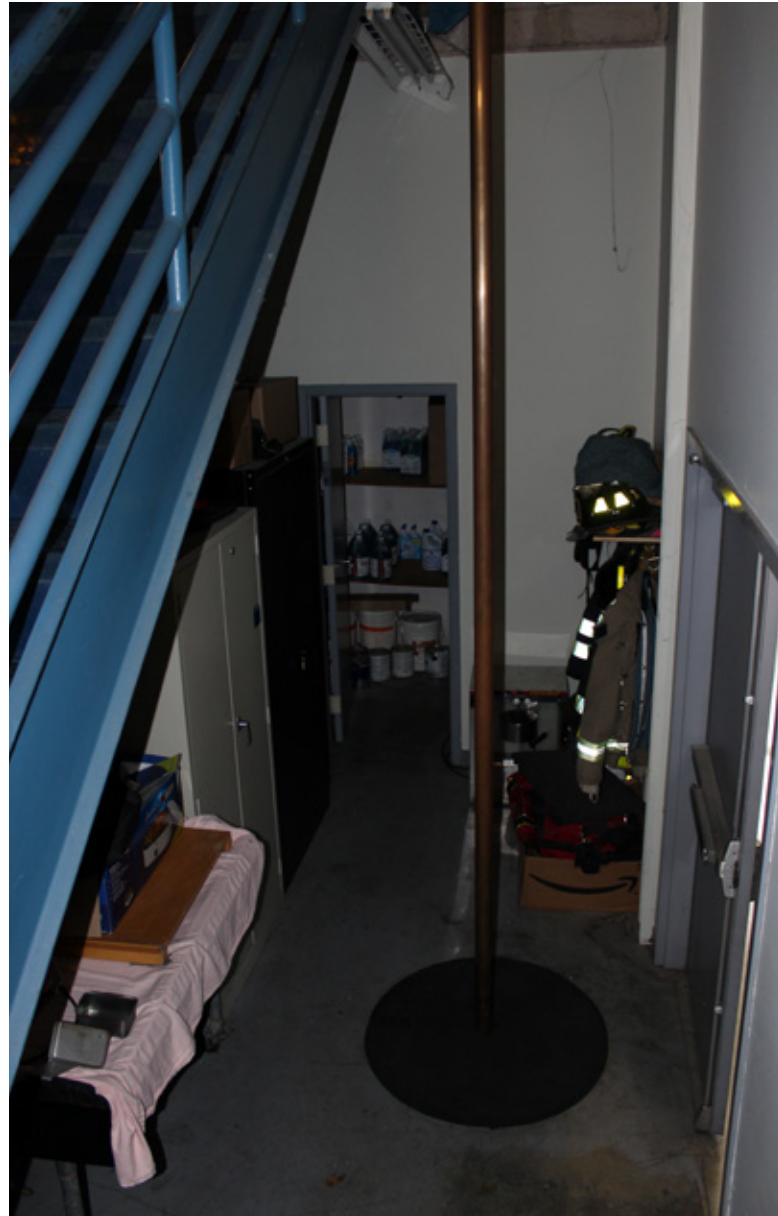


Apparatus bays are too small for current fire-rescue vehicles



Turnout gear is stored in unsafe conditions in the apparatus bays and does not conform to NFPA standards





- No air separation between the apparatus bay and the living quarters
- Pole does not meet safety guidelines
- Pole is not used and is a space waster



Fitness area in the apparatus bay puts personnel at risk of constant carcinogenic exposure

No janitor's closet so cleaning supplies are continually exposed too



Ice machine located in apparatus bay **HOT** zone





### Lower Apparatus Bay

Lacks designated storage for turnout gear - not compliant with NFPA standards

Protective gear is often dried in apparatus bay or outdoors





## Lower Apparatus Bay Issues

- Inadequate and not isolated laundry facilities
- Inadequate repair space
- No proper ventilation
- Inadequate plumbing services



## Dayroom

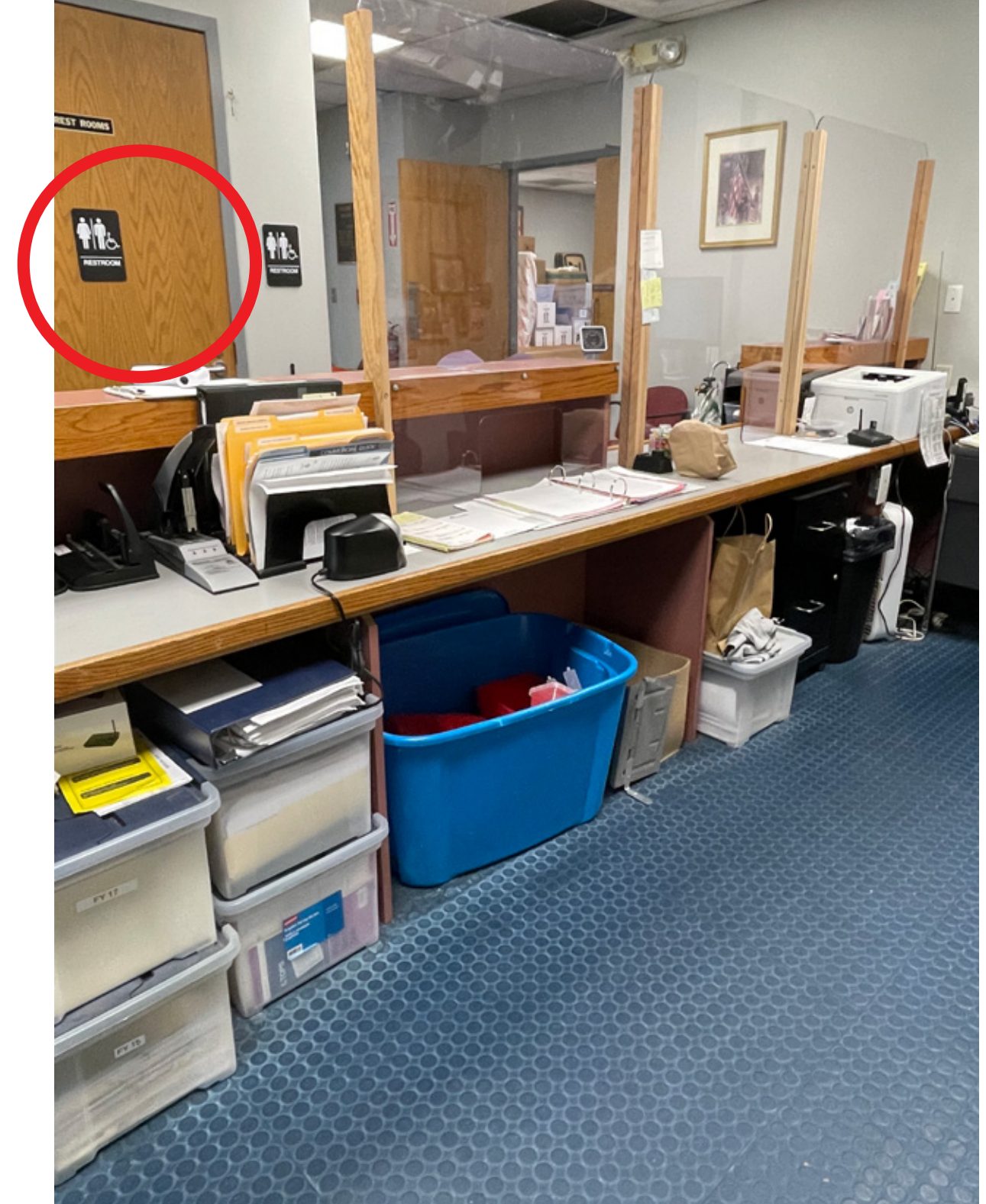
1. The main circulation paths of the station are through the dayroom and eating area which is less than ideal for the shared living space.
2. No designated turnout gear storage area so sometimes ends up in the house.
3. Exterior entry directly into the dayroom makes climate control difficult.



First Aid handled in the lobby,  
not the original plan and lacks privacy



Public, handicap accessible bathroom is directly  
opposite Reception area - odors can be distracting





Kitchen:

- Inadequate Facilities
- Outdated and outgrown
- Not MAAB Compliant





Training/Meeting Room  
currently serves primarily as  
storage. Space needed for  
station meetings/back up  
Emergency Operations Center



Bunkrooms are not Building Code and MAAB compliant as three of five rooms have no exterior walls and no windows





## Bunkroom Bathrooms

- There are two showers that are not MAAB compliant in the entire station (one for males, one for females).
- Due to their location in the center of the living quarters personnel must traverse the whole station following a call.
- Locker room is only accessible through the bathrooms.
- In general, living space is very cramped.

## Misuse/Lack of Use of Spaces

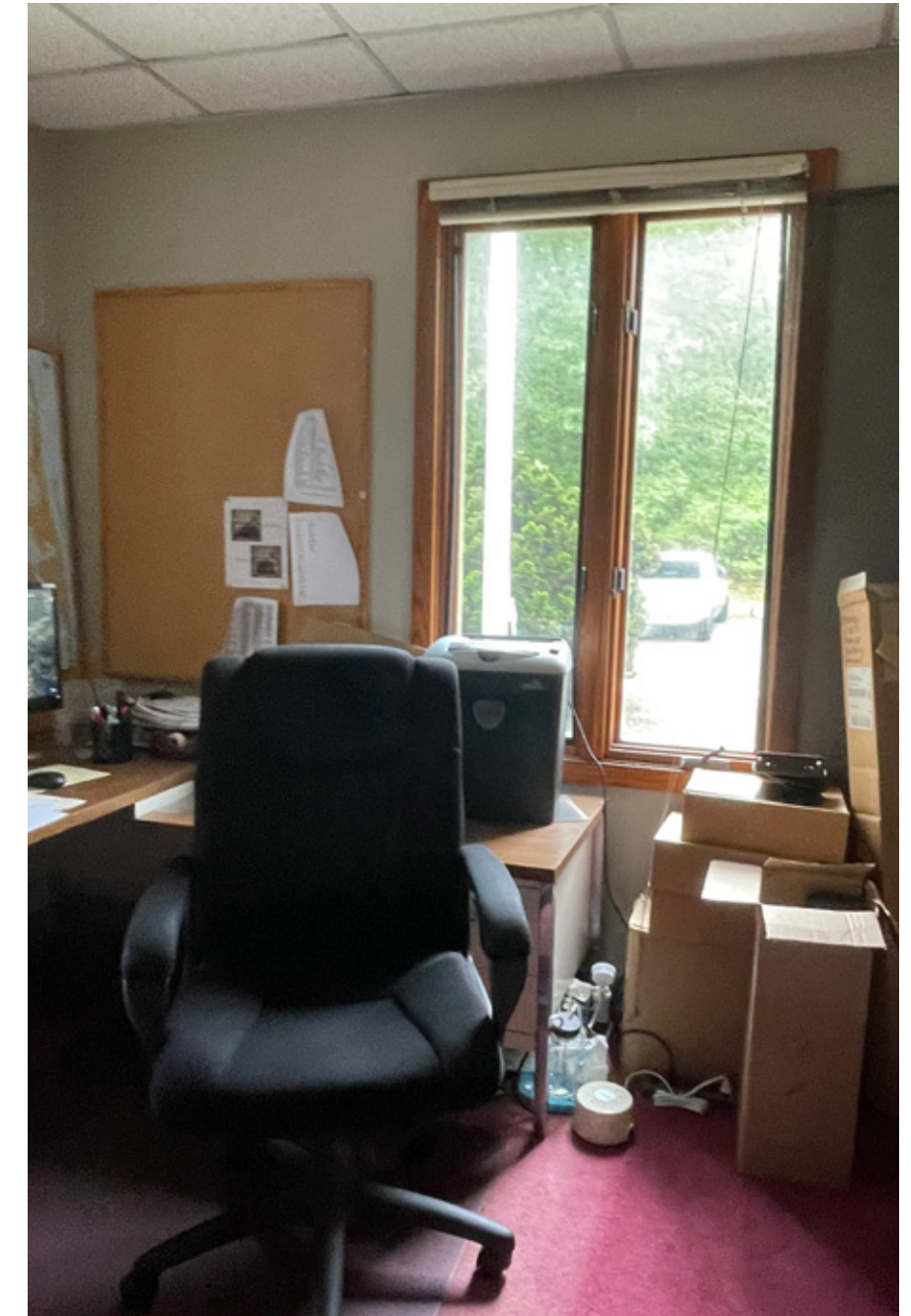
Office currently used as a bunkroom, poorly located



Dispatch area no longer used



Office space crowded with stored equipment and supplies

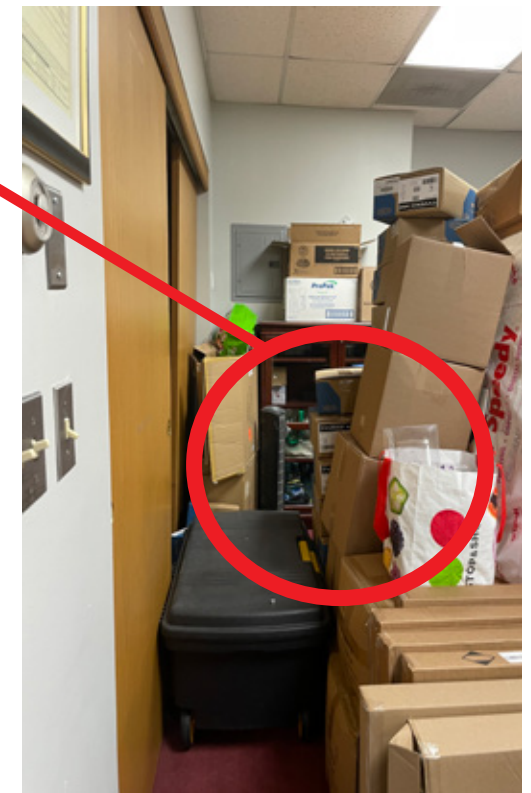
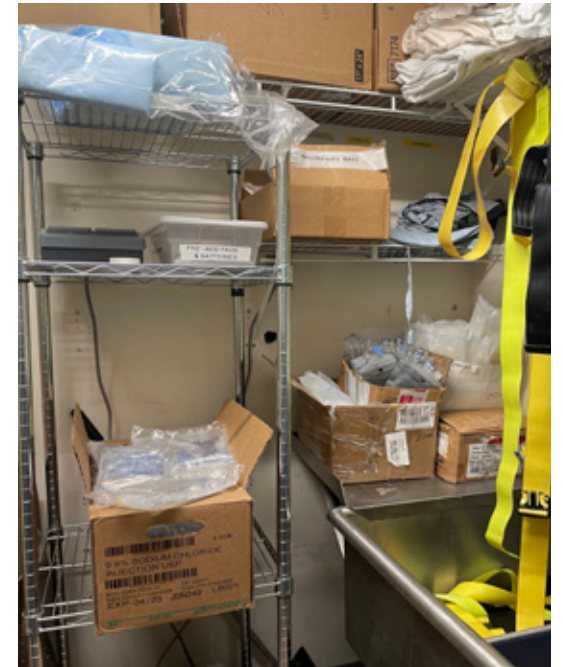




EMS Supply Room was retrofitted with a sink. Because of crowded conditions door can not fully open.

Throughout the station there is evidence of not enough storage.

No dedicated decontamination space



Storage found throughout the building in non-designated areas including in the dayroom, under stairs, and on top of cupboards



Town	Chatham	Brewster	Wellfleet	Harwich	Dennis	Orleans
Population - 2019	5,982	9,775	3,481	12,142	13,871	<b>5,788</b>
Est. Summer Population	35,000	20,000	16,000	63,000	63,000	<b>20,000</b>
Current Fire Station • Area	21,184 SF	22,500 SF	18,662 SF	Station #2 9,500 SF	Station #2 21,922 SF	<b>11,500 SF</b>
• Cost	\$10.6 million	\$13.5 million	\$5.5 million	\$6.75 million	Estimate \$14 million	
• Built	2016	2018	2009	2018	Projected 2022	<b>1987</b>
Total # of Calls 2020	2,785	2,644	1,152	4,351	5,030	<b>2,364</b>
Personnel/Station	32 Personnel 1 Station	31 Personnel 1 Station	18 Personnel 1 Station	31 Personnel 2 Stations	55 Personnel 2 Stations	<b>34 Personnel 1 Station</b>
Size Acres(est)	1.75	2.5	1.35	1.0	3.0	<b>1.5</b>

Current Dollars

**PROGRAM COMPARISON (Recent Complete Station Program for Dennis FD/ Base Request from Orleans FD)**

Dennis	Area (SF) Designed	Orleans	Area (SF) Proposed	Notes
Pop. 13,871/5,030 calls 2020 55 personnel/2 stations	1 new station	Pop. 5,788/2,364 calls 2020 34 Personnel/1 station		
Lobby Area (incl. H/C Lav+ 216 SF 1 <sup>st</sup> floor restrooms)	662	Lobby	630	Admin. Asst. w/appropriate barriers/separation from public
Training Room	362	Conference/Training Room	360	For Chief
	Conference Room 1838		1,000	[Could also serve as Community Room]
	Community Room			
Fitness Room	606	Fitness Room	800	
I.T. Room	74	IT Room	100	
Station Supply Room	312	Station Supply Room	300	
Records Room	250	Records room	200	
EMS Supply Room	241	First Aid room	300	Near entrance
		EMS Supply Room	500	Near ambulances
(3) Apparatus Bays	4,588	Apparatus Bays	7,560	Height/Length to accommodate apparatus
(2) Apparatus Floor Restrooms	73	Apparatus Restrooms	80	
Turnout Gear Room	651	Negative pressure/Turnout gear room	700	
Turnout Gear Laundry Room	170	TOG Laundry room	180	Large capacity extractor, gear dryer, regular washer/dryer
Decontamination Room	190	Decontamination room/showers	190	Separate entrance
Workshop Room	85	Workshop Room	80	
Hose Storage/Firematic Storage Rooms	695	Hose Storage/Firematic Storage Rooms	400	
SCBA Room	127	SCBA Room	150	
(12) Bunk Rooms	983	Bunk Rooms	1,100	7-10 Bunk rooms
	6 rooms x 2			
(4) Unisex Bunk Restrooms	384	Bunk Restrooms	400	
Bunk Room Janitor Closet	43	Bunk Room Janitor Closet	40	
Laundry room	26	Laundry Room	50	
Computer Workstations		Computer workstations	80	
Dayroom	396	Dayroom	400	
Kitchen and Dining room	961	Kitchen and Dining Room	1,000	
Patio Area	545			
	Deck off Kitchen/Dayroom			
Locker Rooms (2 <sup>nd</sup> Fl. Men/Women)	697	Locker Rooms	700	
Dispatch/Offices (includes PD office)	698	Offices	1700	
		Helicopter landing pad		
		Medical Simulation Lab		
Basement	2,650			
First Floor	13,465	Net to Gross Factor – Existing Building	1.5	
Second Floor	5,807			
Net SF	19,454	Net SF – New Building	19,000	
Gross SF	21,922	Gross SF – New Building	22,800	
Net to Gross Factor	1.13	Net to Gross Factor - New Building	1.2	
		<b>Existing Facility - SF</b>	<b>11,500</b>	*Existing building was decreased 1,400 SF from original plan per Deputy Chief Gula
		<b>Program Requirements - SF</b>	<b>22,800</b>	
		<b>BUILDING SHORTFALL - SF</b>	<b>11,300</b>	

TOWN OF ORLEANS

# FEASIBILITY STUDY REPORTS

- **Structural**
- **Mechanical, Electrical, Plumbing**
- **Civil**
- **Hazardous Materials**



## Orleans Fire Station – Structural Assessment

A structural inspection of the Orleans Fire Station located at 58 Eldredge Park Way, Orleans, MA 02653 was conducted on June 4, 2021. The visual inspection (no test) was performed to evaluate the overall condition of the existing building as part of the feasibility study for the Fire Station.

### Executive Summary

This stand-alone masonry bearing wall building, with steel interior framing and wood truss hip roof was constructed in 1987 using the 4th Edition of the Massachusetts Building Code (780 CMR). The building presents a basement as the apparatus room with 6 vehicle bays, first floor as administrative office with living space at the north end and the rescue vehicles garage with 4 vehicle bays at the south end plus an attic. Generally the building is structurally sound with little distress exhibited in the primary masonry bearing wall elements or within the steel interior framing support systems. The hip roof was observed to be without obvious deflection given the straight and well aligned roof slopes that were observed this day. The structure exhibited no obvious sign of water entry through the walls or roof and there was no obvious evidence of steel deterioration, wood decay or failure from decay. The details of the site inspection are in the following findings with selected photos.

### Findings:

1. Basement: The 66'x77' area for the main apparatus room consists of rooms for the hose tower access, storage, electrical and emergency generator with the open floor for the 3 bays with 2 rows of vehicles each. The three sides (north, west, south) of the basement are the foundation walls (and the masonry wall with the 3 overhead doors on the east side for access to the vehicle bays. Steel framing supporting the first floor directly above complete the construction in the basement.
  - a. The concrete foundation wall and exterior masonry wall at the basement, stairwell and the hose tower is in good condition with no visible cracks and no sign of water entry. Some of the interior paint exposed to moisture has faded, bubbled and peeled.
  - b. The exposed floor concrete slab is in satisfactory condition with a few cracks observed mainly at the first row of the vehicle bays from the entrance. The cracks appear to be shrinkage cracks with no visible differential observed.
  - c. The first floor steel framing and deck is in good condition with some surface rusting observed at the base of the steel columns and minor rusting at the underside of the steel deck and around the floor penetrations observed at the main apparatus room.
2. First Floor: The first floor consist of 66'x77' area directly above the basement on the south side for the office administration and living space and 33'-4"x60'-0" area on unexcavated soil on the north side for the rescue vehicles garage with 2 bays of 2 rows of vehicles each. There are two overhead doors on both the east and west sides of the garage for access to the vehicle bays. The perimeter masonry bearing walls and interior steel framing at about the center of the building supports the wood hip roof trusses with attic spaces above the whole first floor areas.
  - a. Typical gypsum board walls, flooring and hung ceiling covered the structure from view at the office administration and living space areas.

- b. The exterior masonry bearing wall at the rescue vehicles garage is in good condition with no visible cracks and no sign of water entry. Some of the interior paint exposed to moisture has faded, bubbled and peeled.
  - c. The exposed floor concrete slab at the rescue vehicles garage is in satisfactory condition with a few shrinkage cracks with no visible differential observed.
3. Attic: The attic above the office administration and living space area provide the space for mechanical equipment's and it is accessible from the ceiling opening near the west exit door. The attic above the rescue vehicles garage is accessible from the wood stair & platform (the wood stair and platform is not shown on the construction drawings) at the southwest corner of the garage.
  - a. The wood roof trusses and catwalk structure in the attic are in good condition with no visible wood decay or failure from decay.
4. Exterior Façade and structures:
  - a. The exterior masonry was generally in good condition with some minor efflorescence.
  - b. Some efflorescence and hairline cracks observed at the precast concrete lintels above the 5 overhead doors at the building east elevations to access the main apparatus room and the rescue vehicles garage.
  - c. No surface erosion observed around the base of the building and soil line.
  - d. Both retaining walls in front of the main apparatus room entrance were generally in good condition with some hairline cracks but no sign of movement or settlement.
  - e. Minor rusting and cracks are observed at the face of the exterior concrete steps at the building west exit.





Photo #1 Building South Elevation  
Main Entrance at the 1st Floor



Photo #2 Building West Elevation



Photo #5 Building North Elevation



Photo #6 Building East Elevation  
Rescue Vehicle Garage Doors are at the 1st floor  
near the northeast corner



Photo #3 Building West Elevation  
Rescue Vehicle Garage Doors



Photo #4 Building West Elevation  
Concrete steps with minor cracks and surface  
rusting observed



Photo #7 Building East Elevation  
Hose Tower and the Main Apparatus Garage  
Doors at the basement level



Photo #8 North Retaining Wall



Photo #9 South Retaining Wall



Photo #10 Basement Apparatus Room slab  
Shrinkage cracks at the front north bay



Photo #15 Underside of first floor concrete deck  
above the apparatus front north bay  
Surface rust is observed at the steel deck and  
floor penetrations



Photo #11 Basement Apparatus Room slab  
Shrinkage cracks at the front middle bay

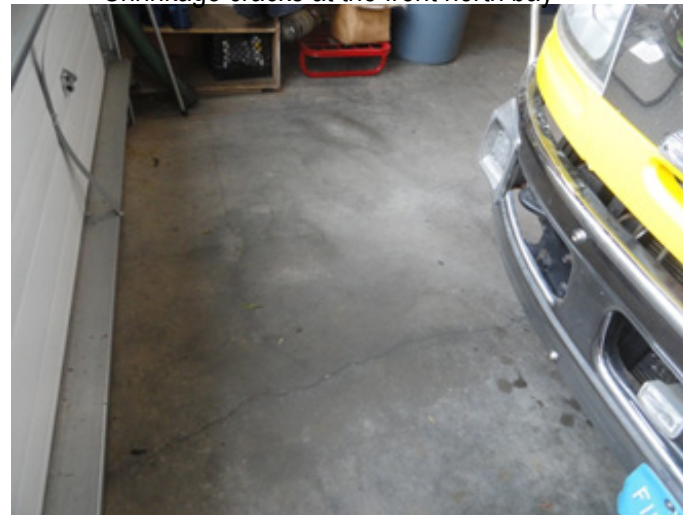


Photo #12 Basement Apparatus Room slab  
Shrinkage cracks at the front south bay



Photo #16 Hose Tower - interior masonry



Photo #13 First floor steel framing above the main  
apparatus bays



Photo #14 Basement Apparatus Room Surface rust is  
observed at the bottom of the steel column

## Conclusions

The structural existing condition finding is one of a building in satisfactory to good condition. The continued use of the current structure as its original capacity and function does not require any immediate repair or upgrade. However, it is the understanding that the current needs of the fire stations have surpassed the existing building capacity and function where the alteration and addition to the existing building is anticipated. The following are items to be considered in regard to the alteration and addition to the existing building in order to meet the current building codes. The 2015 International Existing Building Code (IEBC) is referenced for the alteration, repair, addition and change of occupancy of existing structures under chapter 3 prescriptive compliance method.

1. Additions to the building shall comply with the 2015 International Building Code (IBC) for new construction. Alterations to the existing building shall be made to ensure that the existing building together with the addition are no less conforming to the provisions of the IBC than the existing building was prior to the addition.
2. Any existing gravity load-carrying structural element for which an addition and its related alterations cause an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased load required by the 2015 International Building Code (IBC) for new structures.
3. Where the addition is structurally independent of the existing structure, existing lateral load-carrying structural elements shall be permitted to remain unaltered. Where the addition is not structurally independent of the existing structure, the existing structure and its addition acting together as a single structure shall be shown to meet the requirements of sections 1609 Wind loads and 1613 Earthquake loads of the IBC unless the demand-capacity ratio with the addition considered is no more than 10 percent greater than its demand-capacity ratio with the addition.

In conclusion, the noted requirements of IEBC above will require the upgrade of the existing building to meet the current code for any moderate to significant alteration and addition.



LIN ASSOCIATES, INC.  
2001 Beacon Street  
Brighton MA 02135



# Structural Assessment





## MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION NARRATIVE

### APPLICABLE CODES AND STANDARDS

The mechanical, electrical, plumbing, and fire protection systems has been reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements.

1. 2015 International Building Code (IBC) as amended by 780 CMR (MA Building Code, 9th Edition)
2. 2015 International Existing Building Code (IEBC)
3. 248 CMR 10.00: Uniform State Plumbing Code
4. 2015 International Mechanical Code (IMC)
5. 2015 International Energy Conservation Code (IECC)
6. Illuminating Engineering Society Lighting Handbook (IESNA), 9th Edition.
7. 2020 NFPA 70 - National Electrical Code as amended by 527 CMR 12.00

### OVERALL SUMMARY MEP/FP SYSTEMS:

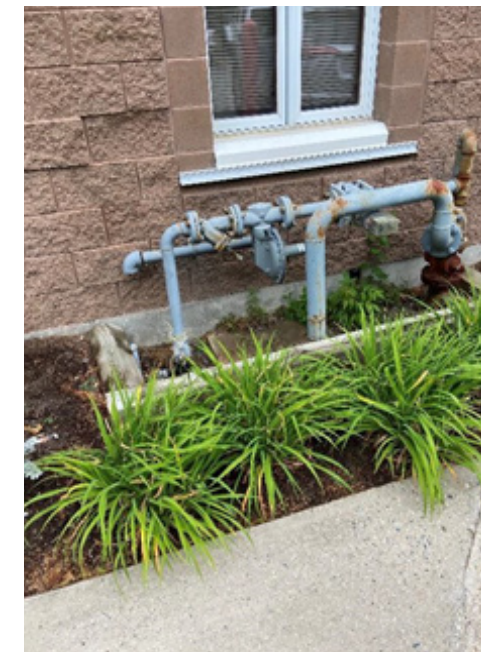
The existing fire station and its systems appear to have been well maintained but are original and beyond their predicted life. While still operational, the MEP systems do not meet the current energy code requirements. CES' overall recommendation is that as the building is expanded/renovated, all systems are replaced within the spaces being renovated and all systems in an expanded building will be new. Some significant items include the following below. Refer to the recommendations and requirements section for additional items.

- 1) Lack of a fire protection system. The new expansion will require an NFPA 13 sprinkler system to be installed and therefore likely a new service to the building.
- 2) Existing electrical service is at capacity. A new 3-phase service with higher amperage would be brought to the building concurrent with the expansion. A larger generator will also be required.
- 3) An outdoor air system was recently added but due to limitations of budget and construction space, it was installed in a way that is not conducive to proper balancing and control. If the building is expanded, a new outdoor air system would be provided as the existing system is not adequately sized for future expansion.

## PLUMBING SYSTEMS:

### Existing Plumbing Utilities

1. Domestic Water Service: The existing building is currently served by a 2-1/2" domestic water service fed from the local water company. The service equipment includes a water meter and isolation valves. If the building is expanded, a new domestic water service would be required.
2. Natural Gas Service: The existing building is currently served by a single natural gas service which enters the building at grade level outside of the First Aid room. The gas service serves the water heater, unit heaters, fan coil furnaces, generator, and kitchen equipment. Natural gas piping within the building is schedule 40 black steel pipe. Shut-off valves and regulators are provided where required. Natural gas supply is regulated at the building exterior prior to the gas piping entering the building. If the building is expanded, a new larger gas service would be required.



Gas Service

3. Sanitary Service: The existing building is currently served by a 4" sanitary main that leaves the building in the Northwest corner of the Main Apparatus Room and continues to the septic system. The piping material is cast iron. Refer to the civil engineer's section pertaining to the septic system. If the building is expanded, a new sewer connection would be provided to the septic system.

### Existing Plumbing Fixtures and Specialties

1. Water Closets: Water closets are wall mounted flush valve vitreous china fixtures. These fixtures do not have low-flow water usage and do not meet current code. It is recommended that these be upgraded to current plumbing code standards for water usage.
2. Urinal: Urinal is a wall mounted vitreous china fixtures with manual flush valves. These fixtures do not have low-flow water usage and do not meet current code. It is recommended that these be upgraded to current plumbing code standards for water usage.

3. Lavatories: Lavatories are wall hung vitreous china with two twist or two lever handle faucets. These fixtures do not have low-flow water usage and do not meet current code. It is recommended that these be upgraded to current plumbing code standards for water usage. It was brought to CES' attention that the lavatories drain slow and backup routinely. This problem is commonly because of an undersized waste and/or vent pipe



Existing Water Closet

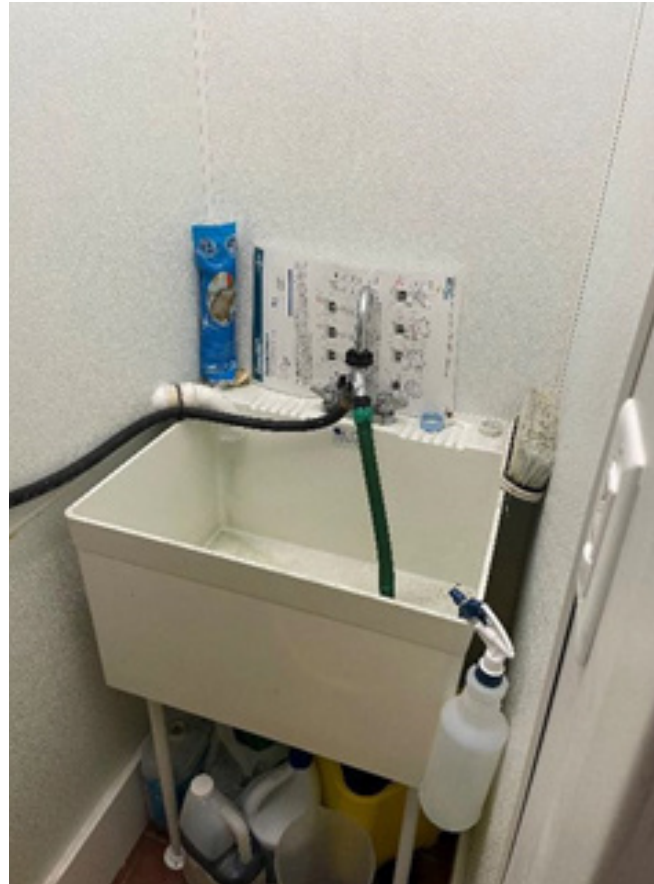


Existing Urinal

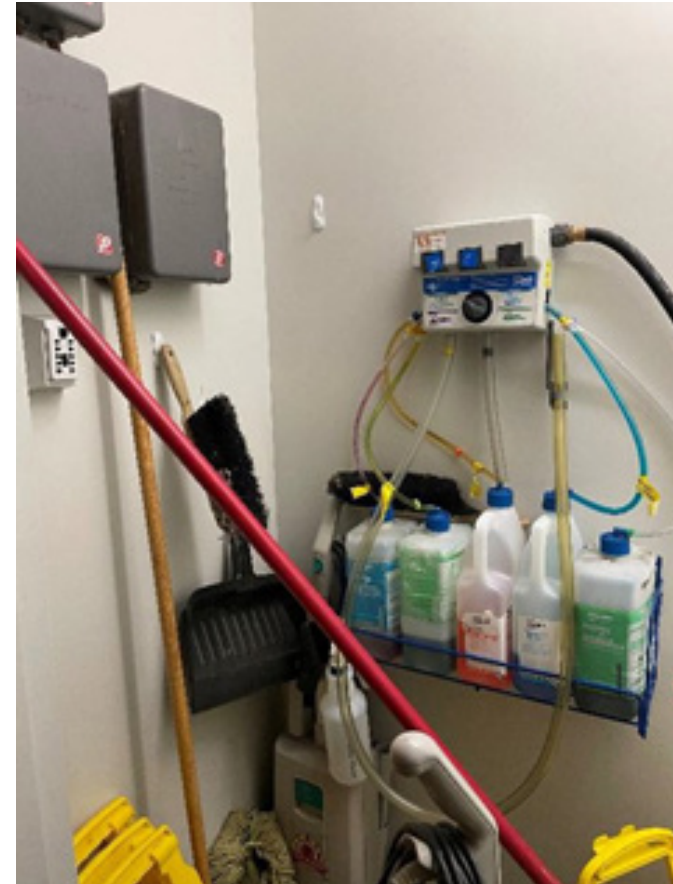


Existing Lavatory

4. Janitor's Sink: The janitor's sink is a laundry tub style with two lever faucets. The sink is in good condition but space is tight inside the room with number of chemicals and cleaning supplies. The sink is provided with a cleaning chemical dispensing unit mounted on the wall. There is no testable backflow preventer installed between the unit and the water supply in order to protect the water supply from contamination. It is recommended to install a testable backflow preventer.



Janitor Sink

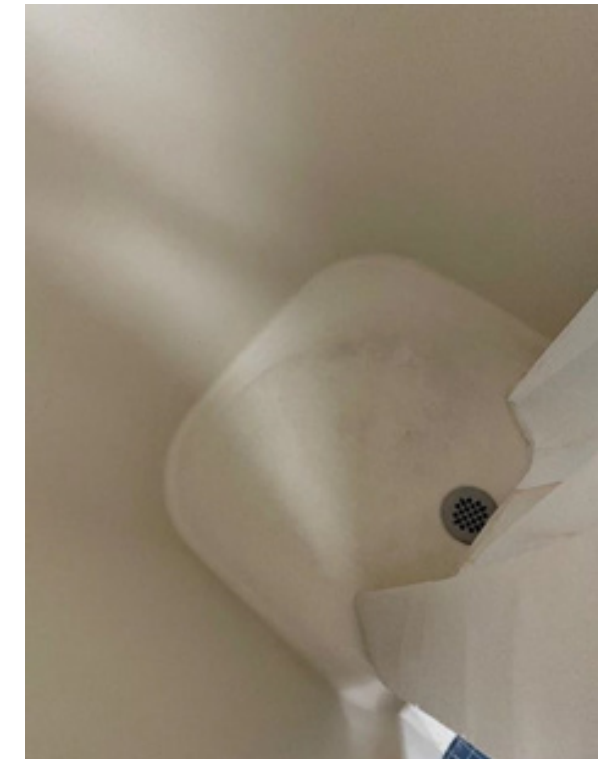


Chemical Dispensing Unit

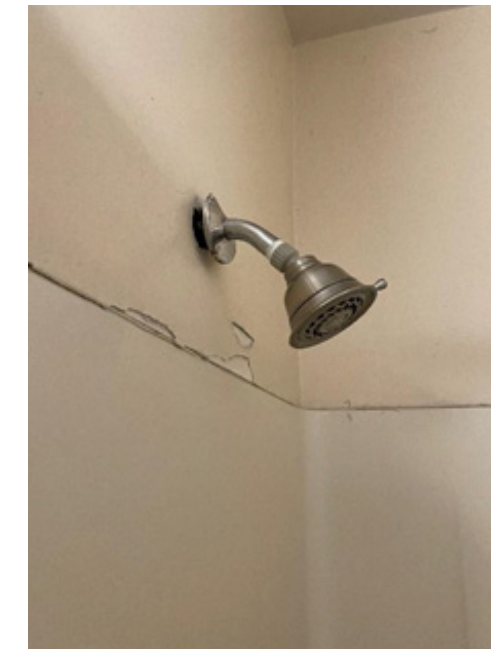
5. Showers: The two showers in the building are fiberglass units with integral thermostatic mixing valves. The showers appear to be in poor condition and it is recommended that these be replaced.



Existing Shower Valve



Existing Shower Drain



Existing Shower Head

6. Air Compressor: An air compressor is provided for compressed air throughout the facility. The air compressor appears to be in good condition but there are no acoustical barriers between the compressor and washer/dryer room



Air Compressor

7. Kitchen: The Kitchen is provided with a residential oven and exhaust hood. These appliances are both significantly outdated and not sufficient for a modern day fire station. It is recommended that these be removed and updated with commercial appliances and proper exhaust to meet MAAB requirements



Kitchen Oven and Cooktop

8. Apparatus Bay Floor Drains: The Apparatus Bays and Hose Tower are provided with floor drains and are in good condition. They currently back up which is commonly caused by the waste and/or vent pipe being undersized. They drain into the septic system. A new or renovated system will require a tight tank.

9. Extractor and Washing Machine Waste: The waste from the extractor and washing machine in the Apparatus Bay drain into a laundry tub sink. The waste from the sink is then pumped up via an ejector pump and taps into the gravity waste. It was brought to CES' attention that the sink routinely overflows onto the floor when the extractor and washing machine are running. This issue is likely caused by an undersized ejector pump which cannot handle the amount of water flow.



Ejector Pump for Laundry Tub

#### Domestic Hot Water Systems

1. Hot Water Heater: The existing building is currently provided with hot water through the use of (1) 100 gallon gas-fired hot water heater. The water heater is in good condition.



Gas Fired Water Heater

## MECHANICAL SYSTEMS:

### Existing Heating and Cooling System

1. Heating and Cooling System: Heating and cooling is provided for the non-apparatus bay portions of the building via gas furnaces with duct mounted DX cooling coils. These units are located in the attic space of the building and ductwork is distributed to each space. The furnaces are at the end of their useful life and only in fair condition.



Furnace Unit in Attic Space



Furnace Unit in Attic Space

2. Gas-Fired Unit Heaters: The apparatus bays are provided with gas-fired unit heaters. These units appear to be relatively new and are in good condition.



Gas Fired Unit Furnace

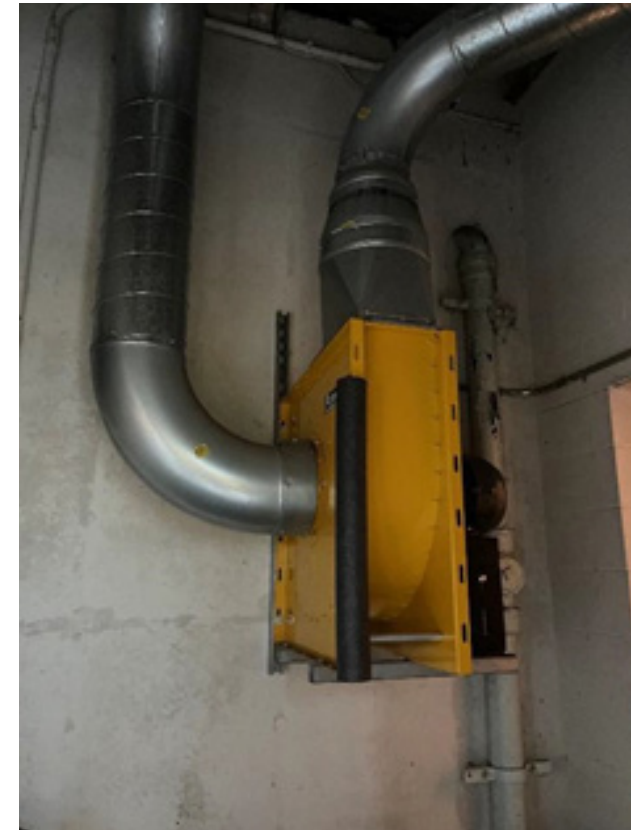
## Ventilation and Exhaust Systems

1. Energy Recovery Ventilator: Ventilation is provided to the building via an energy recovery ventilator (ERV) mounted outside on the ground and ducted into the building attic space. The outdoor air is ducted into the return mains of the furnace units and the exhaust air is ducted directly to the spaces. The ERV is new and is in good condition, however, the unit is located in order to minimize the amount of structural penetrations. The unit's ductwork enters the building in the conference room, protruding into the space and taking up floor area.

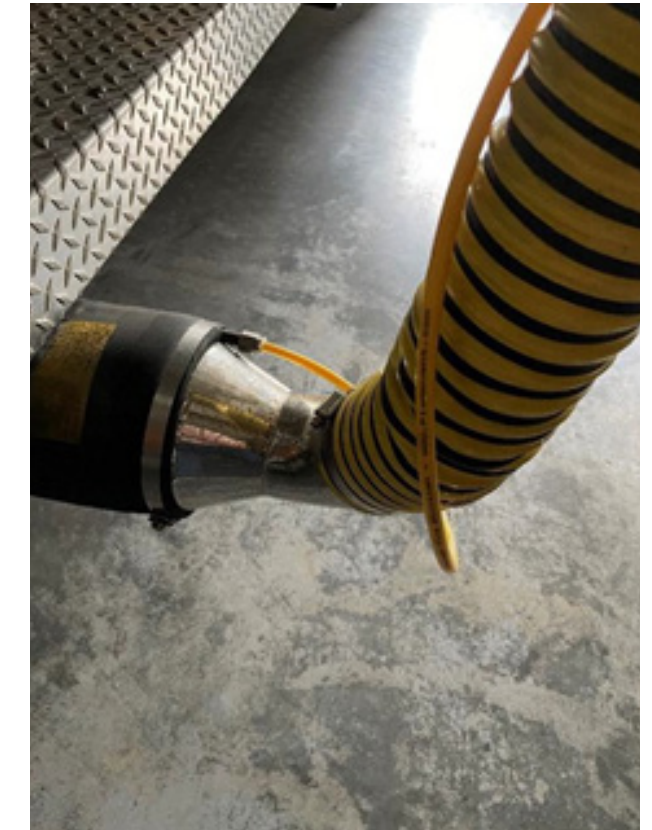


Outdoor Energy Recovery Ventilator (ERV)

2. Plymovent System: A Plymovent vehicle exhaust extraction system is utilized to capture and release vehicle exhaust outdoors. The exhaust extraction system consists of hose reel assemblies with pneumatic grabbers and a central exhaust fan. This equipment is in good condition. The hose grabbers locations are not designed for vehicles to enter the apparatus bay in reverse. It was brought to CES' attention that this is a common issue during the winter months when vehicles have to back into the apparatus bay. The fumes from vehicles in the bay that aren't able to be connected to the Plymovent system can reach dangerous and toxic levels to individuals.

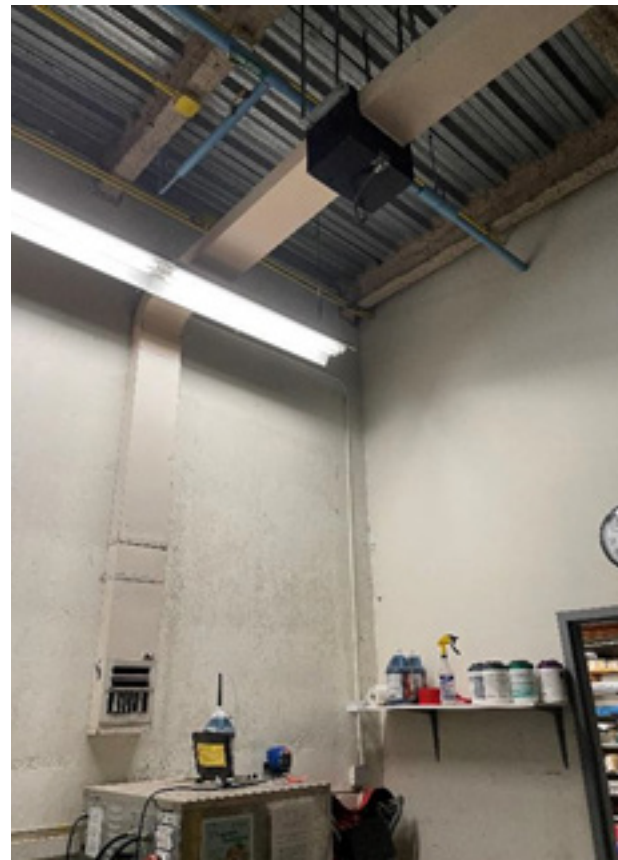


Plymovent Exhaust Fan



Vehicle Exhaust Pneumatic Grabber

3. Laundry Area Exhaust: The Gear Laundry area is provided with exhaust ductwork for the dryer and makeup air. This room does not have any general space exhaust which is recommended for the gear that is currently being stored in this room. The adjacent extractor/washing machine space is provided with an exhaust fan and grille mounted on the wall behind the equipment. CES did not verify the amount of airflow from this fan because of the location of the fan and the need for a flow hood.



Washing Machine Area Exhaust Fan



Dryer Exhaust and Relief Ductwork

### Controls

1. Each furnace is provided with local thermostats in the space. There is currently no centralized building management system at the facility. Thermostats do not appear to have energy saving controls. It is recommended that these be replaced with programmable thermostats at a minimum. The ideal solution is to bring in a building management system (BMS) for the overall building for better control and energy efficiency.



Existing Thermostat

## Electrical Systems:

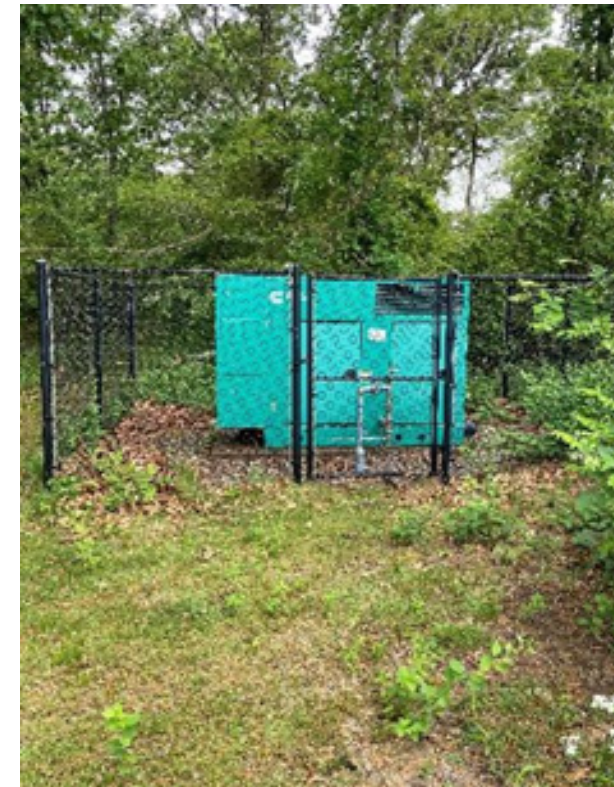
1. Electrical Service: The existing electrical service is a 400 amp, 240/120volt, 1-phase, 3-wire service that consists of a main disconnect switch and distribution panelboards. The main disconnect switch is manufactured by Square D. The distribution panelboard is manufactured by Siemens/I-T-E. This equipment is in good condition. If the building is renovated or expanded, the current service size would not be adequate. It is recommended that a 3-phase service with higher amperage be brought to the building. Single phase power is not adequate for the electrical needs of a modern day fire station.



Electrical Service Equipment



Distribution Panelboard



Generator



Automatic Transfer Switch

2. Generator: A 60kW natural gas fired generator is manufactured by Cummins and is approximately 9 years old. This provides back-up power to the entire building. This equipment is located outside of the building in a fenced-in enclosure. There is an automatic transfer switch located in the main electrical room. This switch is manufactured by Asco. This equipment is in good condition. This generator is not adequate to handle the additional load if the building is expanded and cannot be categorized by code as a life safety generator if it's not a diesel generator. Life safety generators must be sized for the entire load of the building without derating and must have 3-days' worth of diesel storage. The life safety equipment inside the building must be located in 2-hour rated enclosures.

3. Panelboards: There are a number of branch circuit panelboards in the Main Electrical Room. These panelboards are original to the building and manufactured by Square D. There are missing blank-off plates in one panel. These original panelboards are in fair condition and have very limited spare capacity. There are also newer panelboards that were installed with the generator. These panels are manufactured by Siemens/I-T-E and are in good condition.



Older Electrical Panels



Newer Electrical Panel

4. Lighting: Lighting throughout the facility consists of a number of type of light fixtures including but not limited to the following below. Fixtures are technologically outdated. There is a rudimentary Fire Station Alerting System that is tied to the building lighting systems. However, given the age of the lighting and wiring in the existing building, this type of Fire Station Alerting System cannot be used. It is recommended that the Fire Station upgrades their lighting systems to incorporate with the Fire Station Alerting System.

- a. Pendant mounted industrial fixtures
- b. Surface mounted industrial fixtures
- c. Wall mounted fixtures
- d. Recessed fixtures
- e. Recessed compact downlights
- f. Lamps



Pendant Industrial Fixture



Surface Mounted Fixture



Recessed Fixtures

5. Lighting Control: Lighting control for the building consists of local toggle switches and selected local occupancy switches. As spaces are renovated, a lighting control system for energy savings should be incorporated as the current mixed system is not energy efficient and does not meet the requirements for the Town's Green Community Mandate for Public Buildings.

6. Fire Alarm: The fire alarm system is operational but looks to be at maximum capacity. A new system should be incorporated into the expansion and designed to back feed existing spaces that will be upgraded as they are renovated. The entire system will eventually need to be replaced.

7. Data/Technology: Data/technology consists of wired computer stations throughout the building. Most of this has been added over the years as needed or to adapt to technology changes. This equipment is in good condition but is not adaptable and will need to be replaced with a new system. The security system is outdated and does not provide an adequate level of security for this type of facility. It is recommended that this system be upgraded to a new state of the art system.

#### Fire Protection Requirements for a Renovation/Expansion:

- Provide a NFPA 13 sprinkler system.

#### Plumbing Requirements to Meet Current Codes:

- Replace existing shower with new low-flow model.
- Replace existing urinals, water closets, and lavatories with new low-flow fixtures.
- Remove and update kitchen appliances and exhaust systems.
- Install a testable backflow preventer for the Janitor's Sink chemical dispensing unit.

#### Plumbing Recommendations:

- Upgrade the ejector pump for the extractor and washing machine to a larger pump.
- Upsize waste/vent piping for lavatories.
- Upsize waste/vent piping feeding Apparatus Bay floor drains.

#### Mechanical Recommendations:

- Upgrade the HVAC control system to a new electronic system with energy management capability.
- Relocate temporary ERV system and ductwork.
- Replace existing furnace units in attic space.
- Add general space exhaust for the Gear Laundry Room.

#### Electrical Recommendations:

- Upgrade the existing fire alarm system with one that can support ADA compliant devices. The existing system will not support ADA compliant devices and additional devices are required for proper coverage. This will include pull stations, ADA compliant horn/strobe units, smoke and CO detectors, power supplies, and electrical wiring from a local power source.
- Repair damaged wiring devices, including occupancy sensors.
- Upgrade the lighting control systems with a new state-of-the-art system.
- Upgrade the data/technology systems with a new state-of-the-art system.
- Upgrade the security system with a new state-of-the-art system.
- Upgrade the electrical service and replace older panelboards and circuit breakers.

#### MEP Services for Future Expansion:

- The current MEP services are not sized for future expansion. If future expansion is pursued, the following items would be needed for the services to the building:
  - o A 3-phase service would be brought in from Eldredge Park Way in order to upgrade the current single-phase service and to also bring in more available amperage.
  - o A new domestic water and fire protection mains and gas service would be brought to the facility to provide for the increased load of the expanded building.
  - o A new gas service would be brought to the facility to provide for the increased load of the expanded building.
  - o A new sewer main would leave the expanded building and connect to the septic system.



Re: Orleans Fire Station – 58 Eldredge Parkway

SCI File #51030.00

To: Theodore Galante AIA, LEED AP

From: Danell Baptiste  
Stephen Powers, PE

July 9, 2021

#### Assessment Overview

The following are preliminary research and findings of the existing site infrastructure and potential permitting requirements for the proposed Orleans Central Fire Station located at 58 Eldredge Park Way in Orleans, Massachusetts. The Central Fire Station shares the property with the Orleans Elementary School (located to the west). The Fire Station site has significant changes in topography throughout the development.

#### Overview (Civil + Infrastructure)

The existing utility information was obtained from existing record plans (See Enclosed Attachments), on-site investigation, as well as MassGIS mapping software.

Additionally, an existing conditions survey was provided by Ryder & Wilcox, Inc. While it provided some good initial information, we would request more detail including, but not limited to expansion of topography (additionally in areas where a potential helicopter area could be sited - location TBD), underground utilities, detailed grading (i.e. spot grades) around the current structure. Note: Falmouth Hospital's helicopter pad is approximately 100' x 100'.

Some utilities (water, gas, & power) are public and available within the immediate vicinity of the existing site, with the exception to sanitary sewer which is mitigated by an existing onsite Soil Absorption System (SAS). Additionally, while there were no site drawings to confirm, it appears all on-site stormwater infrastructure is contained on the fire station/school property with no visible connections to a public conveyance system.

#### Site Access/Parking

Access to the site is provided via one (1) signalized two-way access driveway (20'± width) off Eldredge Park Way. The existing driveway slopes down from the public road at approximately 8-9% slope before sloping up again to the main parking areas and upper vehicle bays.

Based on our site visit, review of the existing conditions survey, and feedback from the Town, we conclude that the existing access to the site is inadequate for the current use due to diminished sight lines, narrow driveway width for two-way traffic and driveway slopes that approach or exceed maximum recommended grades. Any new or redevelopment of the property should involve remediating the current site access (i.e. improving sight distances, slope, surface drainage, possible relocation, etc.).

Site currently accommodates thirty (34) parking spaces (including one ADA accessible space). Parking spaces appear to be appropriately sized (9'x18' minimum), however drive aisles serving these parking areas appear to be undersized for two-way traffic, as minimum should be 24' wide drive aisles. We would recommend reconfiguration/expansion of the parking areas to be code compliant with any future development.

#### Pavement

Based on visual inspection, the on-site parking areas and access drives are primarily asphalt pavement and in fair to poor condition (See Figure 6). Lateral cracking was visible throughout, with conditions approaching gross failure (i.e. alligator cracking) in some areas – specifically adjacent to the lower vehicle bay driveway area. Multiple asphalt patches were also present in the bay driveway area, surrounding below grade utility structures.

Records of existing pavement profiles (i.e. pavement/stone thickness) are currently unavailable. It is recommended representative pavement cores be performed prior to any project redevelopment/expansion. Depending on the core reports, it is likely the entire asphalt pavement area would need to be mill/overlayed and/or repaired with a full-depth replacement.

#### ADA Compliance

Based on a site visit on June 4th, 2021, it was observed that 34 existing on-site parking spaces were provided. One (1) parking space was dedicated as ADA accessible. The existing ADA space did not appear to be code compliant as it appears to exceed standard slope tolerances for pedestrian travel way to the front door of the public entrance. Furthermore, a van accessible parking space (8' wide stall with 8' wide loading area) needs to be provided for a total of two (2) ADA parking spots. At minimum, these areas should be reviewed and modified to comply with ADA standards for any future development.

#### Water Service

According to an as-built sketch dated April 1988 (See Figure 2), the fire station is serviced by a 2" PVC pipe that runs 20-25 feet from the existing foundation and is buried 12'-14' deep. The water service connects to an existing 8" water main branch via a 2" saddle located just off the pavement of the western parking area. The 8" water main branch appears to extend off the water main (size unknown) that serves the existing Orleans Elementary school located to the west. Additionally, there is an existing Hydrant (#861) located to the SW of the fire station (adjacent to the western parking area) that provides coverage to the property. There was no visible evidence/record drawings of water service to this site connecting off Eldredge Park Way. There is currently no building fire protection service, and any future expansion/development will need to consider a new fire line for fire protection. Condition of domestic water service will also need to be evaluated by the site MEP to determine the viability for reuse. A Hydrant flow test is recommended prior to design to ensure proper flow is provided.

#### Sanitary Sewage

According to the town record documents dated 6/25/01 (See Figure 3) there is an existing on-site septic system located north of the existing fire station. The existing sanitary sewer pipe exits to the rear of the building and connects to a 1,500-gallon septic tank located within the existing driveway (access covers to grade) which then conveys the effluent to a leaching facility, consisting of five (5) absorption chambers surrounded by stone. An inspection of the on-site septic system should be performed to ensure it meets current Title V and Town Board of Health (BOH) regulatory standards prior to any future design work.

As previously mentioned, no public sewer is currently available in this area of the Orleans. Any building and/or program expansion may likely require a new septic system. Sizing of a new system would be based on usage and sized in accordance with 310 CMR 15.000 design standards. New sanitary/kitchen waste sewer services and an external grease trap (sized by the MEP) may also be required. The Town should be cognizant that any new internal truck bay drainage systems shall connect to a tight tank in accordance with Title V and MADEP guidelines, as flow from these structures are not allowed to be discharged to an on-site septic system.

### Stormwater Management

There is existing on-site drainage infrastructure that captures overland stormwater run-off. Two (2) catch basin inlets at the site access drive, appear to collect run-off from a portion of Eldredge Park Way and discharge it to depression along western side of the access drive. There are at least three (3) existing catch basin inlets that serve the area around the lower bays. It is unknown where stormwater conveyance pipes may tie into on-site infrastructure (e.g. tanks, detention system, etc.) There are other paved areas surrounding the site that sheet flow directly to adjacent depressed areas. Existing roof leaders appear to be hard piped and perhaps connect to a subsurface drainage system. As previously noted, stormwater management/conveyance system records are currently not available.

As part of any new construction on this site, a stormwater detention/infiltration system would likely be necessary to detain/treat the on-site stormwater runoff prior to connecting to any municipal stormwater conveyance systems. Due to site constraints, it is anticipated that this system design would likely entail underground chambers set in stone and supplemented with mechanical Water Quality Units. All Best Management Practices (BMP) will implement design standards set forth within the Massachusetts stormwater handbook.

### Gas Service

Per our site walk and existing conditions survey (by others), the station is fed from a gas service that extends from south side of Eldredge Park Way, north along the driveway shoulder, to a gas meter located adjacent to the station's public entrance. The size of the existing service is unknown at this time.

### Electric/Telecom Service

The existing Fire station is fed via overhead wires and utility poles off Eldredge Park Way to a pole mounted transformer on the property. Electrical service then runs underground to an electric meter located just south of the public entrance to the building. Telecom service also appears to follow the same path (overhead wires to underground feed). In reviewing the on-site conditions, it is presumed that electric and telecom service would continue to be fed off infrastructure along Eldredge Park Way.

### Wetland Resource Areas

Based on a desktop review (e.g. Oliver MassGIS), there appears to be no wetlands resource areas (e.g. BVW, ILSF, perennial streams, etc.) within 200' of the existing development. The closest resource area appears to be Boland Pond, which is located 600'+/- from the edge of the existing fire station development.

### Flood Plain

There are no FEMA floodplain zones identified within 500' of the property (see Figure 4).

### Permitting:

#### Site Plan Review Process

Any new construction or proposed redevelopment that entails an addition that expands the existing structure by more than 1,000 sf in gross floor area requires informal submittal to the Site Plan Review Committee. The Committee will outline to applicants the specific section of state laws and local bylaws, rules, regulations and explain what is legally required get the project approved.

We anticipate any proposed development scheme will require appearance in front of this Committee. The extent of the redevelopment (or new construction) will dictate the complexity of the jurisdictional permitting.

#### Town of Orleans Wetland Protection Ordinance

Due to the lack of wetland resource areas within any notable distance of the subject site, it is not anticipated that the Wetland Protection Act (WPA) regulations would be applicable to the proposed project.

#### Town of Orleans Curb Opening Permit

Any new curb cut off Eldredge Park Way will require a Permit through the Town. These curbs cut openings would need to be permitted via a Curb Cut Application process through the City Department of Public Works (DPW).

#### Town of Orleans Stormwater Management Permit

A Stormwater Management Permit may be required by the DPW to confirm that the stormwater and drainage system design meets the Town regulations and specifications (Note: Orleans is subject to following MS4 Permit requirements through US EPA and MassDEP). If required, this permit would be pursued concurrently with any Site Plan Review process through the Town (e.g. Planning Board), with the DPW and Engineering departments being the primary reviewing entity.

#### Town of Orleans Board of Health Permit

Any significant expansion to the building (or new construction) may require designing and permitting a new on-site sewage disposal system through the Board of Health to ensure the system is appropriately sized to accommodate the usage.

#### EPA NPDES Construction General Permit (CGP) and Stormwater Pollution Prevention Plan (SWPPP)

A NPDES Construction General Permit (CGP) and a Stormwater Pollution Prevention Plan (SWPPP) will need to be obtained by the contractor from the EPA prior to the start of construction should disturbance associated with the property exceed 1 acre.

### Conclusion

Our Team discussions have included possible expansions/renovations to the existing building. Given the challenges of the existing site with significant changes in topography, limited access from the street, and potentially unsafe emergency response areas; expansion of the facility might prove difficult at best. Further, if the area in and around the building were to undergo significant construction activity, a temporary site and facility, with a full compendium of underground utilities, grading, drainage, emergency response paths, vehicle parking, and much more would be required. It is unclear if the adjacent fields are appropriate to accommodate this temporary use, or if the Town has ability to temporarily abandon this site and construct a temporary fire station elsewhere. This condition would require significant expense and take resources away from any overall, permanent expansion/renovation project.

If you have any questions or comments regarding this memo, please call or email me at dbaptiste@samiotes.com at 508-877-6688 (ext 26) or Stephen Powers, PE at spowers@samiotes.com (ext. 14).

#### Samiotes Consultants, Inc.

Civil Engineers + Land Surveyors  
20 A Street  
Framingham, MA 01701-4102

**Quick Zooms**

**Find Properties**

Owner:

Parcel ID:

Address:

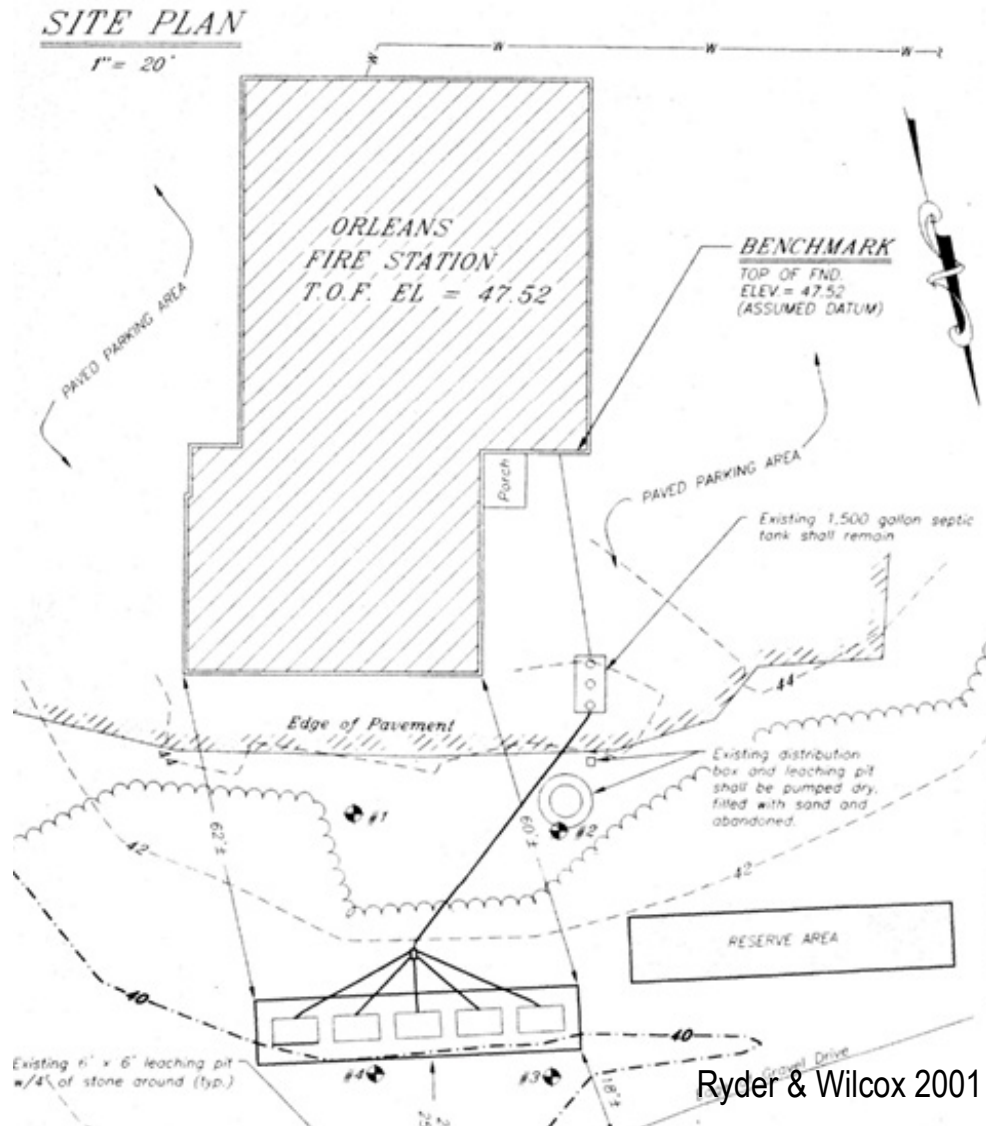
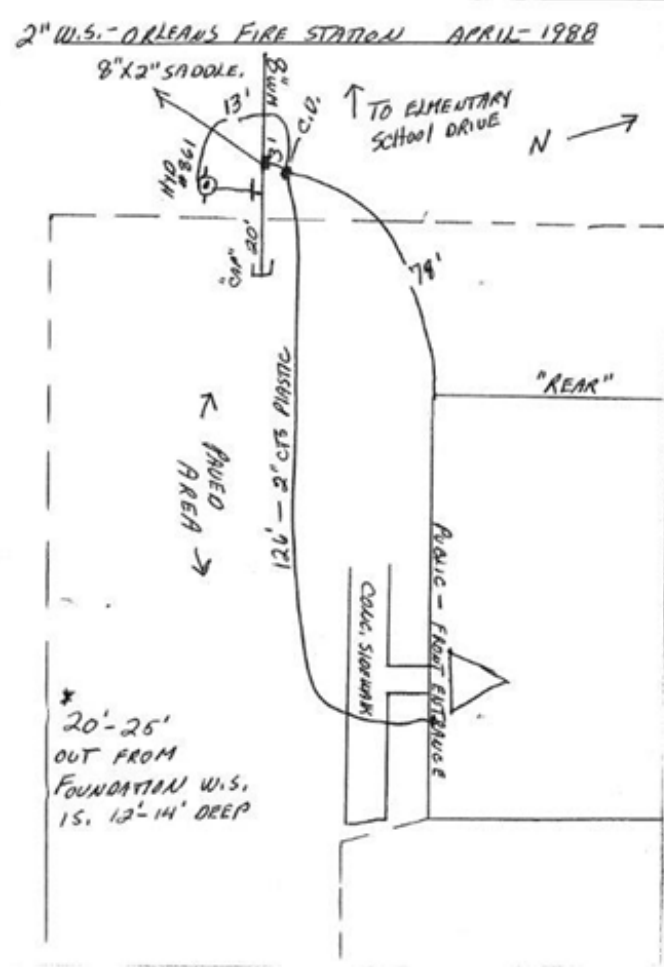
**Results Summary**

CAMA ID	Address	Owner
46-4-45	46 ELDREDGE PARK	TOWN OF ORLEANS

**Detail Information**

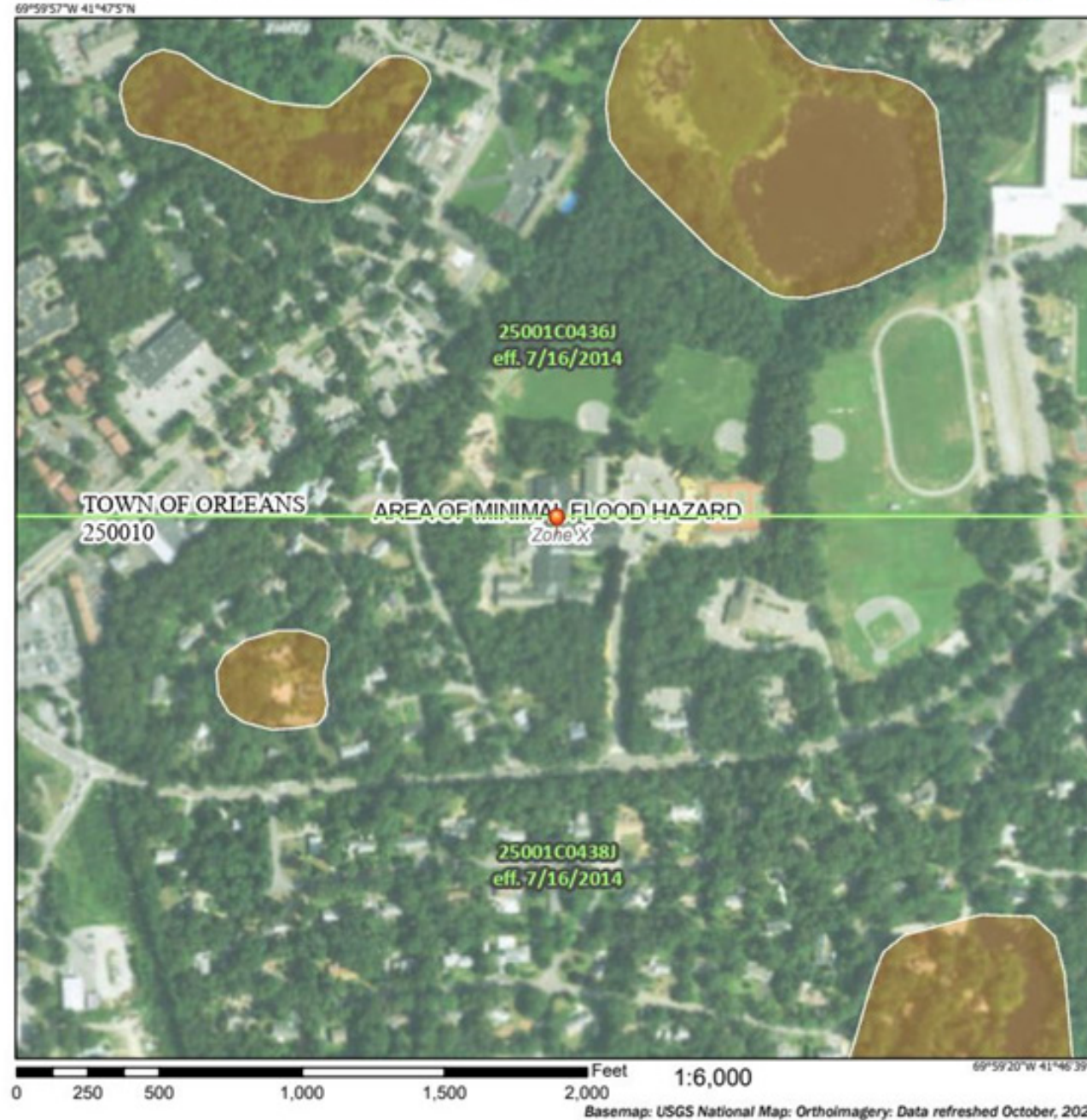
CAMA ID	46-4-45
Address	46 ELDREDGE PARK WY
Owner	TOWN OF ORLEANS
GIS Num	2649.0000000000000000
Acres	23.00
CS Order	3569
Key	3569
GIS ID	F_1047054_2749039
Year	2021
Map	40
Parcel	65
Extension	0
Property Type	E
Loc No	46
Loc Alpha	
Loc St	ELDREDGE PARK WY
Name (suppressed)	TOWN OF ORLEANS
Name 2 (suppressed)	ELEN SCHOOL/YRE DEPT
Mail St (suppressed)	19 SCHOOL RD
Mail St 2 (suppressed)	
Mail City (suppressed)	ORLEANS
Mail State (suppressed)	MA
Mail Zip (suppressed)	02453
Mail Country (suppressed)	
Name 2	ELEN SCHOOL/YRE DEPT
Mail Street	19 SCHOOL RD
Mail Street 2	
Mail City	ORLEANS
Mail State	MA
Mail Zip	02453
Mail Country	
State Class	9340
State Class Desc	399.EDUCATION
Certificate (suppressed)	17974

Site 4121



Ryder & Wilcox 2001

# National Flood Hazard Layer FIRMette



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, X, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
MAP PANELS		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/24/2021 at 6:02 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.







Figure 6: Existing asphalt conditions - Public entrance (left); Lower Apparatus Bays (right). Varying levels of pavement deterioration.

Hazardous Materials Identification Study - Orleans Fire Station

1.0 INTRODUCTION:

Universal Environmental Consultants (UEC) has been providing comprehensive asbestos services since 2001 and has completed projects throughout New England. We have completed projects for a variety of clients including commercial, industrial, municipal, and public and private schools. We maintain appropriate asbestos licenses and staff with a minimum of thirty-two years of experience.

UEC was contracted by The Galante Architecture Studio, Inc to conduct the following services at the Orleans Fire Station, Orleans, Massachusetts:

- Asbestos Containing Materials (ACM) determination inspection and sampling

The scope of work included the inspection of accessible ACM, collection of bulk samples from materials suspected to contain asbestos, determination and quantities of types of ACM found. Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) Method in accordance with Environmental Protection Agency (EPA) standard. Bulk samples were collected by a Massachusetts licensed asbestos inspector Mr. Leonard J. Busa (AI-030673) and analyzed by a Massachusetts licensed laboratory Asbestos Identification Laboratory, Woburn, MA.

This report should not be used to demolish the building as only limited destructive testing was performed and roofing materials were not sampled.

Samples results are attached.

2.0 FINDINGS:

Asbestos Containing Materials (ACM):

The regulations for asbestos inspection are based on representative sampling. It would be impractical and costly to sample all materials in all areas. Therefore, representative samples of each homogeneous area were collected and analyzed or assumed.

All suspect materials were grouped into homogeneous areas. By definition, a homogeneous area is one in which the materials are evenly mixed and similar in appearance and texture throughout. A homogeneous area shall be determined to contain asbestos based on findings that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent in accordance with EPA regulations. Per the Department of Environmental Protection (DEP) any amount of asbestos found must be disposed as asbestos. No additional suspect and accessible ACM were found during this survey.

Hidden ACM may be found during the renovation and demolition activities.

Number of Samples Collected:

Twenty-six (26) bulk samples were collected from materials suspected of containing asbestos, including:

Type and Location of Suspect Material

- Fireproofing at upper engine bay
- Fireproofing at upper engine bay
- Fireproofing at upper engine bay
- Fireproofing at lower engine bay
- Fireproofing at lower engine bay
- Joint compound at lower bay
- Joint compound at public entrance vestibule
- Textured joint compound at upper engine bay
- Textured joint compound at upper engine bay
- Joint compound at second floor closet
- Linoleum floor covering at second floor hallway
- Linoleum floor covering at second floor hallway closet
- Exterior window framing caulking
- Exterior window framing caulking
- Exterior window framing caulking
- Exterior window framing caulking
- Exterior window framing caulking
- Exterior roll-up door framing caulking
- Exterior roll-up door framing caulking
- Damproofing behind exterior CMU
- Damproofing behind exterior CMU
- Damproofing behind exterior CMU
- Damproofing on foundation wall
- Damproofing on foundation wall
- 2' x 4' Suspended acoustical ceiling tile
- 2' x 4' Suspended acoustical ceiling tile

Sample Results:

Type and Location of Suspect Material	Sample Result
1. Fireproofing at upper engine bay	No Asbestos Detected
2. Fireproofing at upper engine bay	No Asbestos Detected
3. Fireproofing at upper engine bay	No Asbestos Detected
4. Fireproofing at lower engine bay	No Asbestos Detected
5. Fireproofing at lower engine bay	No Asbestos Detected
6. Joint compound at lower bay	No Asbestos Detected
7. Joint compound at public entrance vestibule	No Asbestos Detected
8. Textured joint compound at upper engine bay	No Asbestos Detected
9. Textured joint compound at upper engine bay	No Asbestos Detected
10. Joint compound at second floor closet	No Asbestos Detected

# Hazardous Materials Identification Study



11.	Linoleum floor covering at second floor hallway	No Asbestos Detected
12.	Linoleum floor covering at second floor hallway closet	No Asbestos Detected
13.	Exterior window framing caulking	No Asbestos Detected
14.	Exterior window framing caulking	No Asbestos Detected
15.	Exterior window framing caulking	No Asbestos Detected
16.	Exterior window framing caulking	No Asbestos Detected
17.	Exterior window framing caulking	No Asbestos Detected
18.	Exterior roll-up door framing caulking	No Asbestos Detected
19.	Exterior roll-up door framing caulking	No Asbestos Detected
20.	Damproofing behind exterior CMU	10% Asbestos
21.	Damproofing behind exterior CMU	10% Asbestos
22.	Damproofing behind exterior CMU	10% Asbestos
23.	Damproofing on foundation wall	2% Asbestos
24.	Damproofing on foundation wall	10% Asbestos
25.	2' x 4' Suspended acoustical ceiling tile	No Asbestos Detected
26.	2' x 4' Suspended acoustical ceiling tile	No Asbestos Detected

Observation and Conclusions:

The condition of ACM is very important. ACM in good condition does not present a health issue unless it is disturbed. Therefore, it is not necessary to remediate ACM in good condition unless it will be disturbed through renovations, demolition, or other activity.

1. Damproofing behind exterior CMU was found to contain asbestos.
2. Damproofing on foundation wall was found to contain asbestos.
3. Vermiculite insulation was previously found not to contain asbestos.
4. All other suspect materials were found not to contain asbestos. Hidden ACM may be found during renovations and demolition activities. It should be noted that no destructive testing was performed.

3.0 DESCRIPTION OF SURVEY METHODS AND LABORATORY ANALYSES:

Asbestos samples were collected using a method that prevents fiber release. Homogeneous sample areas were determined by criteria outlined in EPA document 560/5-85-030a. Bulk material samples were analyzed using PLM and dispersion staining techniques in accordance with EPA/600/R-93/116.

4.0 LIMITATIONS AND CONDITIONS:

This report has been completed based on visual and physical observations made and information available at the time of the site visits, as well as an interview with the Owner's representatives. This report is intended to be used as a summary of available information on existing conditions with conclusions based on a reasonable and knowledgeable review of evidence found in accordance with normally accepted industry standards, state, and federal protocols, and within the scope and budget established by the client. Any additional data obtained by further review must be reviewed by UEC and the conclusions presented herein may be modified accordingly.

This report and attachments, prepared for the exclusive use of Owner for use in an environmental evaluation of the subject site, are an integral part of the inspections and opinions should not be formulated without reading the report in its entirety. No part of this report may be altered, used, copied, or relied upon without prior written permission from UEC, except that this report may be conveyed in its entirety to parties associated with Owner for this subject study.

Inspected By:



Leonard J. Busa Asbestos Inspector

PROJECT NO: 221 357.00

Survey Date:

July 10, 2021

CONDUCTED BY:



UNIVERSAL ENVIRONMENTAL CONSULTANTS

12 Brewster Road

Framingham, MA 01702

# Hazardous Materials Identification Study





### Asbestos Identification Laboratory

165 New Boston St., Ste 227  
Woburn, MA 01801  
781-932-9600

Web: [www.asbestosidentificationlab.com](http://www.asbestosidentificationlab.com)  
Email: [mikemanning@asbestosidentificationlab.com](mailto:mikemanning@asbestosidentificationlab.com)

Batch: 66363



July 14, 2021

Ammar Dieb  
Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

**Project Name:** 58 Eldredge Park Way, Orleans, MA  
**Project Number:**  
**Date Sampled:** 2021-07-10  
**Work Received:** 2021-07-13  
**Work Analyzed:** 2021-07-13

**Analysis Method:** BULK PLM ANALYSIS EPA/600/R-93/116

Dear Ammar Dieb,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency. Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Ammar Dieb for your business.

Michael Manning  
Owner/Director

# Hazardous Materials Identification Study



July 14, 2021

Ammar Dieb  
 Universal Environmental Consultants  
 12 Brewster Road  
 Framingham, MA 01702

**Project Name:** 58 Eldredge Park Way, Orleans, MA  
**Project Number:**  
**Date Sampled:** 2021-07-10  
**Work Received:** 2021-07-13  
**Work Analyzed:** 2021-07-13

**Analysis Method:** BULK PLM ANALYSIS EPA/600/R-93/116

FieldID LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
1 738117	Fireproofing (FP)	Upper Engine Bay	gray	Cellulose 40 Non-Fibrous 60	None Detected
2 738118	Fireproofing	Upper Bay	gray	Cellulose 35 Non-Fibrous 65	None Detected
3 738119	Fireproofing	Upper Bay	gray	Cellulose 35 Non-Fibrous 65	None Detected
4 738120	Fireproofing	Lower Engine Bay	gray	Cellulose 30 Non-Fibrous 70	None Detected
5 738121	Fireproofing	Lower Bay	gray	Cellulose 35 Non-Fibrous 65	None Detected
6 738122	Joint Compound (Smooth)	Lower Bay	white	Non-Fibrous 100	None Detected
7 738123	Joint Compound (Smooth)	Public Entrance Vestibule	white	Non-Fibrous 100	None Detected
8 738124	Joint Compound (Smooth)	2nd Floor Sleeping	white	Non-Fibrous 100	None Detected
9 738125	Textured Joint Compound (Loft Wall)	Upper Engine Bay	white	Non-Fibrous 100	None Detected
10 738126	Textured Joint Compound (clg)	Upper Bay	white	Non-Fibrous 100	None Detected
11 738127	Joint Compound	2nd Floor Closet	white	Non-Fibrous 100	None Detected
12 738128	Linoleum	2nd Floor Hall	multi	Cellulose 30 Synthetic 10 Non-Fibrous 60	None Detected
13 738129	Linoleum	2nd Floor Hall Closet	multi	Cellulose 20 Synthetic 20 Non-Fibrous 60	None Detected
14 738130	Window Frame Caulk	Exterior Random	gray	Non-Fibrous 100	None Detected

Wednesday 14 July

Page 1 of 2

FieldID LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
15 738131	Window Frame Caulk	Exterior Random	white	Non-Fibrous 100	None Detected
16 738132	Window Frame Caulk	Exterior Random	white	Non-Fibrous 100	None Detected
17 738133	Window Frame Caulk	Exterior Random	white	Non-Fibrous 100	None Detected
18 738134	Roll-Up Door Frame Caulk	Exterior Upper Bay	white	Non-Fibrous 100	None Detected
19 738135	Roll-Up Door Frame Caulk	Exterior Upper Bay	white	Non-Fibrous 100	None Detected
20 738136	Damproofing Behind Exterior Brick	Attic @ End Wall	black	Non-Fibrous 90	Detected Chrysotile 10
21 738137	Damproofing Behind Exterior Brick Wall	From Attic, Public Entrance	black	Non-Fibrous 90	Detected Chrysotile 10
22 738138	Damproofing Behind Exterior Brick Wall	From Attic, Public Entrance	black	Non-Fibrous 90	Detected Chrysotile 10
23 738139	Damproofing on Foundation	Exterior Rear @ Upper Bay Area	black	Non-Fibrous 98	Detected Chrysotile 2
24 738140	Damproofing on Foundation	Exterior by Public Entrance	black	Non-Fibrous 90	Detected Chrysotile 10
25 738141	2x4 SAT	Random @ 2nd Floor	gray	Fiberglass 40 Cellulose 40 Non-Fibrous 20	None Detected
26 738142	2x4 SAT	Random @ 2nd Floor	gray	Fiberglass 40 Cellulose 40 Non-Fibrous 20	None Detected

Wednesday 14 July

Analyzed by:

*Michael Thumny*

End of Report

Batch: 66363

Page 2 of 2

# Hazardous Materials Identification Study



# CHAIN OF CUSTODY

102

Universal Environmental Consultants  
 12 Brewster Road  
 Framingham, MA 01702  
 Tel: (508) 628-5486 - Fax: (508) 628-5488  
 adieb@uec-env.com

Town/City: Orleans, MA Building Name: 58 Eldredge Park Way

Sample	Result	Description of Material	Sample Location
1		Fireproofing (FP)	upper engine Bay
2		FP	upper Bay
3		FP	upper Bay
4		FP	lower engine Bay
5		FP	lower Bay
6		Joint Compound (smooth JC)	lower Bay
7		JC	Public Entrance vestibule
8		JC	2 <sup>nd</sup> FL sleeping
9		Textured JC (wall)	upper engine Bay
10		Textured JC (ply)	upper Bay
11		JC	2 <sup>nd</sup> FL closet
12		Caulk	2 <sup>nd</sup> FL hall
13		Caulk	2 <sup>nd</sup> FL hall closet
14		window frame caulk	exterior random
15		wintc	
16		wintc	
17		wintc	
18		roll-up door frame caulk	upper bay
19		roll-up door fr	" "
20		damp proofing behind exterior brick	area around wall

Reported By: [Signature] Date: 7-10-21 Due Date: 24 hr  
 Received By: [Signature] Date: 7/13/21

# CHAIN OF CUSTODY

202

Universal Environmental Consultants  
 12 Brewster Road  
 Framingham, MA 01702  
 Tel: (508) 628-5486 - Fax: (508) 628-5488  
 adieb@uec-env.com

Town/City: Orleans, MA Building Name: 58 Eldredge Park Way

Sample	Result	Description of Material	Sample Location
21		dp behind exterior brick wall	area near Public Entrance
22		dp behind ext brick wall	area near Public Entrance
23		damp proofing on foundation	Exterior near upper bay area
24		dp on foundation	Exterior by Public Entrance
25		2x4 SAT	random on 2 <sup>nd</sup> FL
26		2x4 SAT	" " "

Reported By: [Signature] Date: 7-10-21 Due Date: 24 hr  
 Received By: [Signature] Date: 7/13/21

## Hazardous Materials Identification Study



# APPENDIX

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## Harold R. Cutler

Consulting Fire Protection Engineer  
165 Landham Road  
Sudbury MA 01776

There are thresholds in the Ninth Edition of the Existing Building Code of Massachusetts (EBCM9), Massachusetts General Laws, Chapter 148, Section 26G and the Massachusetts Accessibility Regulations (521 CMR) that will affect when sprinklers are required, when accessibility upgrades and when structural upgrades are required. References to new construction requirements are to the Ninth Edition of the Massachusetts State Building Code (MSBC9).

For purposes of this memo, it is assumed the building and project have the following basic characteristics:

Building height is one story and <25 feet (except the hose tower)

Building area is 11,500 sf.

Building is Construction Type IIB (unprotected, noncombustible)

Occupancies include Use Group B, S-2, R-2 and A-2/3

The occupancies present are arranged in a non-separated mixed use relationship.

No change of occupancy is anticipated

No expansion of the building is anticipated

The building is not sprinklered.

The separate thresholds for specific upgrades are summarized below.

### Sprinkler Requirements - EBCM9

Under these circumstances, the EBCM9 has one provision that might result in a requirement for sprinklers in the building. The work within the existing building will be subject to the requirements for EBCM9 Chapter 8 concerning Level 2 or Level 3 Alterations.

In accordance with EBCM9 Section 804.2.2, in buildings with any of the occupancies in this building, work areas that include exits or corridors shared by more than one tenant or that serve an occupant load greater than 30 shall be provided with automatic sprinkler protection where all of the following three conditions occur:

1. The work area is required to be provided with automatic sprinkler protection in accordance with the MSBC9 as applicable to new construction;
2. The work area exceeds 50 percent of the floor area; and
3. The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump.

The area thresholds of MSBC9 for new construction sprinkler requirements in the MSBC9 range from 0 sf for Use Group R-2 and S-2, 5,000 sf for Use Group A-3 and 12,000 sf for Use Group B. Therefore, sprinklers would be required in this building if constructed new. Condition 1 above is, therefore, satisfied.

The work area (area being reconfigured) within the existing building will be limited to the immediate area of the new interior or exterior walls, demolished interior or exterior walls or new or closed openings through interior or exterior walls. If the aggregate area of the individual work areas exceeds 50% of the area of the floor on which they are located, Condition 2 above would be met and sprinkler protection would be required under Section 804.2.2.

I assume the water supply requirement of Condition 3 is also met.

Assuming the work area exceeds 50% of the floor area, sprinklers would be required by the EBCM9. MGL Chapter 148, Section 26G

Massachusetts General Laws, Chapter 148, Section 26G, requires retroactive installation of sprinklers in an existing building when the aggregate area measured to the exterior side of exterior walls on all levels is more than 7,500 sf and the building is undergoing major alterations or being expanded.

The proposed project may include "major alterations" of the existing building as defined in the attached advisory document from the Department of Public Safety Automatic Sprinkler Appeals Board. The threshold for applicability of Section 26G as explained in that advisory document is the following:

The Board has established the following two presumptions that may be used to determine if the scope or the cost of the planned alterations or modifications are "major" thus requiring sprinklers to be installed throughout a building.

- 1) Major alterations or modifications are reasonably considered major in scope when such work affects thirty-three (33) % or more of the "total gross square footage" of the building, calculated in accordance with section 26G.
- 2) Major alterations or modifications are reasonably considered major in scope or expenditure, when the total cost of the work (excluding costs relating to sprinkler installation) is equal to or greater than thirty-three (33) % of the assessed value of the subject building, as of the date of permit application.

The bottom line is that renovations and alterations affecting 33% or more of a building would trigger the requirement of Section 26G for sprinklers.

### Accessibility

Requirements of 521 CMR concerning accessibility will be applicable to those portions of the building that are open to the public. That applicability might be limited to meeting rooms and business areas. However, it may be that the entire building is potentially considered to be open to the public because tours of the station are offered to school groups or the general public. In addition, although I've not seen discussion of the subject, it may be that a fire station utilized by volunteer or paid-on-call firefighters and EMT's from the community would be regulated as a public accommodation by 521 CMR.

The thresholds for applicability of 521 CMR to an existing building are the following:

3.3.1 If the work being performed amounts to less than 30% of the full and fair cash value of the building and

- a. if the work costs less than \$100,000, then only the work being performed is required to comply with 521 CMR
- or
- b. if the work costs \$100,000 or more, then the work being performed is required to comply with 521 CMR. In addition, an accessible public entrance and an accessible toilet room, telephone, drinking fountain (if toilets, telephones and drinking fountains are provided) shall also be provided in compliance with 521 CMR.

Exception: General maintenance and on-going upkeep of existing, underground transit facilities will not trigger the requirement for an accessible entrance and toilet unless the cost of the work exceeds \$500,000 or unless work is being performed on the entrance or toilet.

Exception: Whether performed alone or in combination with each other, the following types of alterations are not subject to 521 CMR 3.3.1, unless the cost of the work exceeds \$500,000 or unless work is being performed on the entrance or toilet. (When performing exempted work, a memo stating the exempted work and its costs must be filed with the permit application or a separate building permit must be obtained.)

- a. Curb Cuts: The construction of curb cuts shall comply with 521 CMR 21.00: CURB CUTS.
- b. Alteration work which is limited solely to electrical mechanical, or plumbing systems; to abatement of hazardous materials; or retrofit of automatic sprinklers and does not involve the alteration of any elements or spaces required to be accessible under 521 CMR. Where electrical outlets and controls are altered, they must comply with 521 CMR.
- c. Roof repair or replacement, window repair or replacement, repointing and masonry repair work.
- d. Work relating to septic system repairs, (including Title V, 310 CMR 15.00, improvements) site utilities and landscaping.

3.3.2 If the work performed, including the exempted work, amounts to 30% or more of the full and fair cash value (see 521 CMR 5.00) of the building the entire building is required to comply with 521 CMR.

- a. Where the cost of constructing an addition to a building amounts to 30% or more of the full and fair cash value of the existing building, both the addition and the existing building must be fully accessible.

Under any of these circumstances, new construction of features within the building affecting accessibility is required to comply with 521 CMR.

**TABLE 1604.5  
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES**

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: <ul style="list-style-type: none"> <li>• Agricultural facilities.</li> <li>• Certain temporary facilities.</li> <li>• Minor storage facilities.</li> </ul>
II	Buildings and other structures except those listed in Risk Categories I, III and IV.
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: <ul style="list-style-type: none"> <li>• Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300.</li> <li>• Buildings and other structures containing Group E occupancies with an occupant load greater than 250.</li> <li>• Buildings and other structures containing educational occupancies for students above the 12th grade with an occupant load greater than 500.</li> <li>• Group I-2 occupancies with an occupant load of 50 or more resident care recipients but not having surgery or emergency treatment facilities.</li> <li>• Group I-3 occupancies.</li> <li>• Any other occupancy with an occupant load greater than 5,000.<sup>a</sup></li> <li>• Power-generating stations, water treatment facilities for potable water, wastewater treatment facilities and other public utility facilities not included in Risk Category IV.</li> <li>• Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that:                             <ul style="list-style-type: none"> <li>Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the <i>International Fire Code</i>; and</li> <li>Are sufficient to pose a threat to the public if released.<sup>b</sup></li> </ul> </li> </ul>
IV	Buildings and other structures designated as essential facilities, including but not limited to: <ul style="list-style-type: none"> <li>• Group I-2 occupancies having surgery or emergency treatment facilities.</li> <li>• Fire, rescue, ambulance and police stations and emergency vehicle garages.</li> <li>• Designated earthquake, hurricane or other emergency shelters.</li> <li>• Designated emergency preparedness, communications and operations centers and other facilities required for emergency response.</li> <li>• Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures.</li> <li>• Buildings and other structures containing quantities of highly toxic materials that:                             <ul style="list-style-type: none"> <li>Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the <i>International Fire Code</i>; and</li> <li>Are sufficient to pose a threat to the public if released.<sup>b</sup></li> </ul> </li> <li>• Aviation control towers, air traffic control centers and emergency aircraft hangars.</li> <li>• Buildings and other structures having critical national defense functions.</li> <li>• Water storage facilities and pump structures required to maintain water pressure for fire suppression.</li> </ul>

a. For purposes of occupant load calculation, occupancies required by Table 1004.1.2 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

b. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

# Excerpts from the 2015 International Building Code

**[BS] HURRICANE-PRONE REGIONS.** Areas vulnerable to hurricanes defined as:

1. The U. S. Atlantic Ocean and Gulf of Mexico coasts where the ultimate design wind speed,  $V_{ult}$ , for Risk Category buildings is greater than 115 mph (51.4 m/s);
2. Hawaii, Puerto Rico, Guam, Virgin Islands and American Samoa.

❖ This definition identifies the areas where hurricane-force winds are expected.

pg. 2-61

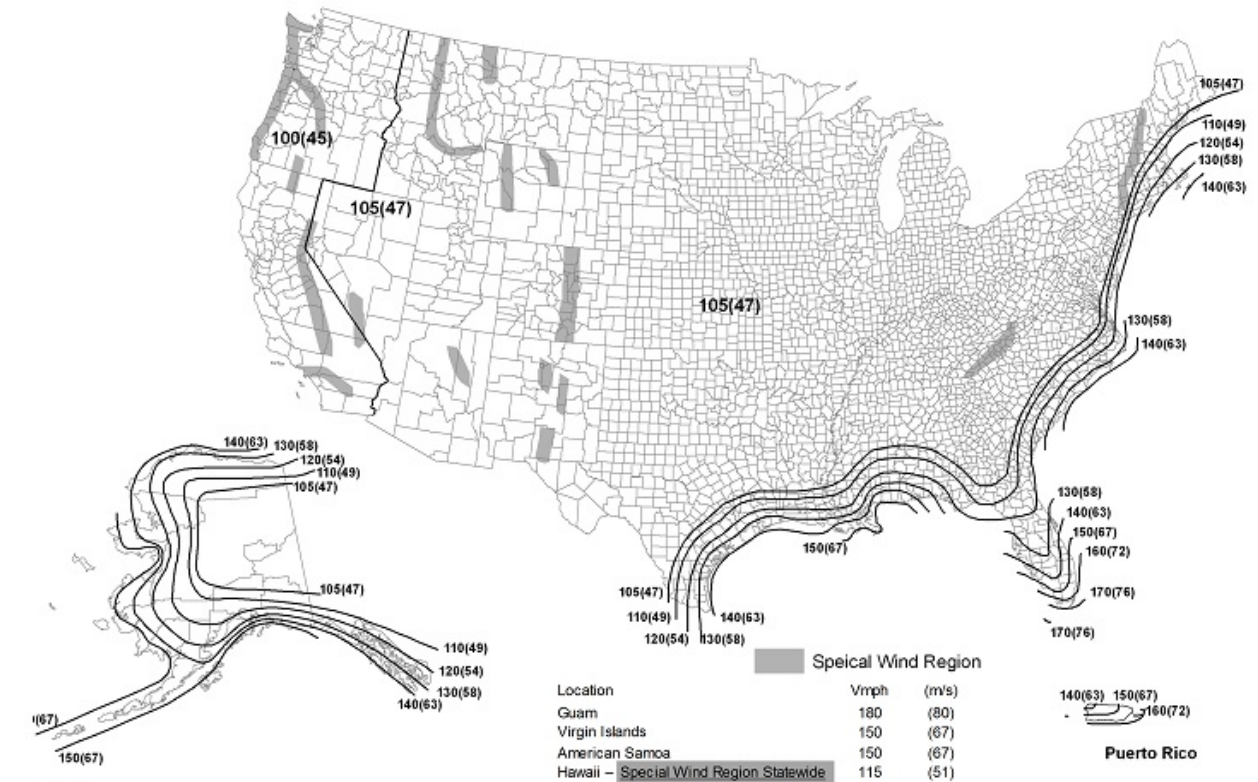
**[BS] WIND-BORNE DEBRIS REGION.** Areas within hurricane-prone regions located:

1. Within 1 mile (1.61 km) of the coastal mean high water line where the ultimate design wind speed,  $V_{ult}$ , is 130 mph (58 m/s) or greater; or
2. In areas where the ultimate design wind speed is 140 mph (63.6 m/s) or greater; or Hawaii.

For Risk Category II buildings and structures and Risk Category III buildings and structures, except health care facilities, the wind-borne debris region shall be based on Figure 1609.3.(1). For Risk Category IV buildings and structures and Risk Category III health care facilities, the wind-borne debris region shall be based on Figure 1609.3(2).

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FIGURE 1609.3(2) ULTIMATE DESIGN WIND SPEEDS,  $V_{ult}$ , FOR RISK CATEGORY III AND IV BUILDINGS AND OTHER STRUCTURES



Notes:  
 1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.  
 2. Linear interpolation between contours is permitted.  
 3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.  
 4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.  
 5. Wind speeds correspond to approximately a 15% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00333, MRI = 300 Years).

MA State Building Code 780 - 9th edition  
Table 1604.11 Snow Loads, Wind Speeds and Seismic Parameters

American Society of Civil Engineers  
Minimum Design Loads 7-10

City/Town	SNOW LOADS		BASIC WIND SPEED, $V_{ult}$ (mph)			SEISMIC PARAMETERS (g)	
	Ground Snow Load, $P_g$ (psf)	Minimum Flat Roof Snow Load, $P_r^1$ (psf)	Risk Category I	Risk Category II	Risk Category III or IV	$S_s$	$S_1$
New Ashford <sup>2</sup>	50	40	105	115	120	0.173	0.068
New Bedford	30	30	129	139	150	0.170	0.058
New Braintree	50	35	111	121	131	0.176	0.066
New Marlborough	50	40	105	115	120	0.171	0.065
New Salem	50	35	106	117	125	0.177	0.068
Newbury	50	30	114	125	136	0.263	0.077
Newburyport	50	30	114	124	135	0.265	0.078
Newton	40	30	117	127	138	0.208	0.068
Norfolk	40	35	119	129	140	0.186	0.065
North Adams <sup>2</sup>	60	40	105	115	120	0.175	0.069
North Andover	50	30	113	123	134	0.251	0.076
North Attleborough	35	30	121	131	142	0.180	0.063
North Brookfield	50	35	112	122	132	0.176	0.066
North Reading	50	30	115	125	136	0.240	0.073
Northampton	40	35	106	117	124	0.171	0.066
Northborough	50	35	114	124	135	0.188	0.067
Northbridge	40	35	116	127	137	0.179	0.065
Northfield	60	35	105	115	120	0.179	0.069
Norton	35	30	122	133	144	0.184	0.063
Norwell	35	30	123	133	144	0.203	0.065
Norwood	40	35	119	129	140	0.195	0.066
Oak Bluffs	25	25	133	140	154	0.144	0.053
Oakham	50	35	111	121	131	0.179	0.067
Orange	60	35	106	117	124	0.180	0.069
Orleans	25	25	132	140	152	0.144	0.053
Otis	50	40	105	115	120	0.170	0.066
Oxford	50	35	115	125	136	0.174	0.064
Palmer	40	35	111	121	131	0.173	0.065
Paxton	50	35	112	122	133	0.180	0.066
Peabody	50	30	117	127	138	0.240	0.073

**26.10.3.1 Wind-borne Debris Regions**  
Glazed openings shall be protected in accordance with Section 26.10.3.2 in the following locations:

1. Within 1 mi of the coastal mean high water line where the basic wind speed is equal to or greater than 130 mi/h (58 m/s), or
2. In areas where the basic wind speed is equal to or greater than 140 mi/h (63 m/s).

— For Risk Category II buildings and other structures and Risk Category III buildings and other structures, except health care facilities, the wind-borne debris region shall be based on Fig. 26.5-1A. For Risk Category III health care facilities and Risk Category IV buildings and other structures, the wind-borne debris region shall be based on Fig. 26.5-1B. Risk Categories shall be determined in accordance with Section 1.5.

**EXCEPTION:** Glazing located over 60 ft (18.3 m) above the ground and over 30 ft (9.2 m) above aggregate-surfaced-roofs, including roofs with gravel or stone ballast, located within 1,500 ft (458 m) of the building shall be permitted to be unprotected

**26.10.3.2 Protection Requirements for Glazed Openings**

Glazing in buildings requiring protection shall be protected with an impact-protective system or shall be impact-resistant glazing.

Impact-protective systems and impact-resistant glazing shall be subjected to missile test and cyclic pressure differential tests in accordance with ASTM E1996 as applicable. Testing to demonstrate compliance with ASTM E1996 shall be in accordance with ASTM E1886. Impact-resistant glazing and impact-protective systems shall comply with the pass/fail criteria of Section 7 of ASTM E1996 based on the missile required by Table 3 or Table 4 of ASTM E1996.

**EXCEPTION:** Other testing methods and/or performance criteria are permitted to be used when approved.

— Glazing and impact-protective systems in buildings and other structures classified as Risk Category IV in accordance with Section 1.5 shall comply with the “enhanced protection” requirements of Table 3 of ASTM E1996. Glazing and impact-protective systems

pg. 255, 257





DEVAL L. PATRICK  
GOVERNOR  
TIMOTHY P. MURRAY  
LT. GOVERNOR  
KEVIN M. BURKE  
SECRETARY

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DEPUTY STATE FIRE MARSHAL



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JOHN J. MAHAN  
CHAIRMAN  
MAURICE M. PILETTE  
VICE CHAIRMAN

**MEMORANDUM**

**TO:** Heads of Fire Departments  
**FROM:** Stephen D. Coan  
State Fire Marshal  
**DATE:** November 1, 2009  
**SUBJECT:** **Advisory regarding recent amendments to M.G.L. c. 148, s. 26G (Chapter 508 of the Acts of 2008) which requires enhanced sprinkler protection in certain buildings which total more than 7,500 gross square feet in floor area.**

Enclosed please find an advisory memorandum issued by the Fire Safety Commission's, Automatic Sprinkler Appeals Board, regarding the recent amendments to M.G.L. c. 148, s. 26G. The law takes effect January 1, 2010. This document provides guidance to the heads of fire departments who are charged with enforcing this law.

The new amendments to M.G.L. c. 148, s. 26G arose out of the aftermath of a tragic commercial building fire, which occurred in Newton, Massachusetts, in February 2000, resulting in the death of five individuals.

For your convenience, a copy of this advisory memorandum is also posted on the Department of Fire Services' website for members of the fire service, building service, and other interested parties. In the next several weeks, the Department of Fire Services will begin a series of informational seminars relative to this advisory memorandum and the new law. **Watch for an e-mail with the training schedule.**

If you have any questions, or require assistance, please contact the Code Compliance & Enforcement Unit at (978) 567-3375 or in western Massachusetts at (413) 587-3181.

SDC/bhs

*Administrative Services • Hazardous Materials Response*  
*Massachusetts Firefighting Academy • Office of the State Fire Marshal*

**MEMORANDUM**

**TO:** Interested persons  
**FROM:** Commonwealth of Massachusetts, Fire Safety Commission's Automatic Sprinkler Appeals Board  
**DATE:** October 14, 2009  
**RE:** **Advisory regarding recent amendments to M.G.L. c. 148, s. 26G (Chapter 508 of the Acts of 2008) which requires enhanced sprinkler protection in certain buildings which total more than 7,500 gross square feet in floor area.**

**Introduction**

**Because of the unique characteristics of each building construction project, the Board realizes that it is not possible to address all aspects of this law in a single guidance document. As the Board hears appeals based upon the newly revised law, the Board anticipates that some of the conclusions found in this document may be subject to further review and possible modification. Accordingly, persons should closely monitor further guidance and decisions from the Board regarding this matter.**

The Commonwealth of Massachusetts' Fire Safety Commission and the Automatic Sprinkler Appeal's Board (hereinafter referred to as "the Board"), has received several requests for guidance regarding the recent amendments to M.G.L. c.148, s.26G (Chapter 508 of the Acts and Resolves of 2008), which requires an adequate system of automatic sprinklers to be installed in certain buildings or structures totaling more than 7,500 square feet. Under s. 26G, this Board has jurisdiction to hear appeals from orders issued by heads of the fire department who are charged with enforcing the law. Under the authority of M.G.L. c. 30A, s. 8, the Board is issuing this advisory guidance document to assist heads of fire departments and building owners to understand the basic requirements of this law.

In developing this document, the Board has used its best efforts in developing guidance consistent with the language of the statute, legislative intent, related cases and common sense. This

document is not intended to be the final word on this matter or meant to be a substitute for a good faith, reasonable interpretation of the statute by the head of the fire department. In determining whether a building is subject to this law, the head of the fire department should make fair, consistent and well-reasoned determinations, based upon the reading of the law and the specific factors that exist for a particular building.

#### 1. How did the law change?

The law changed in two significant ways. First, the law will now be applied uniformly throughout the state in all cities and towns. The provisions of M.G.L. c. 148, s. 26G, in various forms, have been law since 1982. However, until this recent amendment to M.G.L. c. 148, s. 26G (c. 508 of the Acts of 2008), the law only applied within those cities and towns that adopted the law by local option. However the law now applies to all municipalities on a statewide basis.

The second major change expanded the instances in which sprinkler systems will be required. The law limits the installation of sprinklers to new buildings and buildings subject to major alterations or additions if said buildings feature more than 7,500 gross square feet in floor area. Under the old law, the construction of an addition required sprinklers in the “addition only.” The new law requires sprinklers to be installed based upon the building’s sum total of square feet (s.f.) in floor area “in the aggregate.” As an example, under the new law, if you have an existing building that has 5,000 s.f. of floor area and you are constructing a 3,000 s.f. addition, you will now be required to install an adequate sprinkler system throughout the building, since the building will now total over 7,500 s.f. in the aggregate (8,000 s.f.).

#### 2. Why was the law changed?

The legislative activity to amend the provisions of M.G.L. c. 148, s. 26G arose in the aftermath of a tragic commercial building fire, which occurred in Newton, Massachusetts in February, 2000, resulting in the death of five individuals. It was the Legislature’s intent to apply the law throughout the state. This reasoning is based upon the long-standing, fire safety principal that sprinklers save lives. Additionally, there was the desire to eliminate a perceived loophole, which existed in the old s. 26G. Under the old law, if you were only constructing an addition to a building without any major modifications to the existing building, a sprinkler system was required in the “addition only” if the addition itself contained over 7,500 s.f. in floor area. A building could have been added to by means of a series of smaller additions (7,500 s.f. or less) over the course of many years, resulting in the significant enlargement of the original building without the need to ever install sprinklers.

#### 3. When does the law take effect?

The new law clearly applies to “the construction of buildings, structures or additions or major modifications thereto which total, in the aggregate, more than 7,500 gross square feet *permitted after January 1, 2010*.” (Sec. 6, c. 508 of the Acts of 2008). Therefore, if the date of the issuance of the permit is after January 1, 2010, the enhanced requirements will be applicable.

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#### 4. What type of buildings or structures are covered by the law?

The law, in general applies to “every building and structure...” and does not specify which particular use groups or building classifications are subject to the law. However the law does include several specific exemptions. The law does not apply to:

- Buildings or additions used for residential purposes;
- Rooms or areas of a telephone central office equipment building when such rooms or areas are protected with an automatic fire alarm system;
- Open-air parking structures, defined as: buildings, structures, or portions thereof, used for parking motor vehicles and having not less than twenty- five per cent of the total wall area open to atmosphere at each level, utilizing at least two sides of the structure; and
- Buildings used for certain agricultural purposes, as defined in M.G.L. c. 128 s. 1A.

Additionally, the statute contains some exceptions, if certain conditions or circumstances exist. They include:

- Buildings or structures, or certain areas of such buildings or structures, where the discharge of water would be an actual danger in the event of a fire, the head of the fire department shall permit the installation of such other fire suppressant systems as are prescribed by the state building code in lieu of automatic sprinklers; and
- No such sprinkler system shall be required unless sufficient water and water pressure exists.

It should also be noted that buildings owned by the Commonwealth are generally not subject to the provisions of s. 26G. In accordance with long standing case law and confirmed by a fairly recent Opinion of the Attorney General (No. 00/01-1), buildings owned by the state are not subject to the statutory requirements of laws such as s. 26G, unless there is express statutory language indicating that the state is subject to the law. However, buildings that are owned by state authorities or other similar entities created by the Legislature, may not necessarily be considered “state owned” and therefore exempt. In such situations, the particular statute creating the authority or entity should be reviewed by the head of the fire department with the assistance of the town attorney to determine if an exemption exists.

#### 5. Does the law apply retroactively to all existing buildings, which are within the scope of the law?

No, the Legislature intended to give some protection to owners of existing or older buildings against the large expense of installing sprinklers by requiring the installation only upon some triggering event. The law is only triggered if: (1) a new building or structure is constructed or (2)

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an addition is built onto an existing building or structure or (3) major alterations or modifications are planned for an existing building. Additionally, it should be noted that the building must total more than 7,500 gross s.f. in floor area, in the “aggregate” (existing building and addition). In short, if you are not constructing a new building, adding onto an existing building or undertaking major alterations to an existing building, or if the building does not total more than 7,500 gross s.f. in the aggregate, you are not required to install sprinklers under this particular law.

**6. What method is used to determine if a building totals, in the aggregate, more than 7,500 gross square feet in floor area?**

The statute specifically states that for the purposes of this law, “the gross square footage of a building or structure shall include the sum total of the combined floor areas for all floor levels, basements, sub-basements and additions, in the aggregate, measured from the outside walls, irrespective of the existence of interior fire resistive walls, floors and ceilings”. It should be noted that this calculation is unique and is somewhat different from the method used in the state building code, which in general, uses interior measurements to determine floor area.

**7. Is a sprinkler system always necessary when there is an addition to a building, which is within the scope of the law?**

It will depend upon how large the building will be after the addition is built. If an addition is being constructed to an existing building and the addition creates a building with a combined total of more than 7,500 s.f. “in the aggregate”, an adequate system of sprinklers will now be required throughout the building (addition and the existing building), without regard to the existence or extent of alterations, if any, to the previously existing building.

The legislative activity to amend the provisions of M.G.L. c. 148, s. 26G arose in the aftermath of a tragic commercial building fire, which occurred in Newton, Massachusetts in February 2000, resulting in the death of five individuals. The elimination of the limiting words “addition only,” in the old law and the requirement that the square footage determination be conducted “in the aggregate”, indicates the clear intent of the Legislature to require the enhanced sprinkler protection throughout the building when the building is added to and if the gross s.f. of the addition, combined with the existing building, totals more than 7,500 s.f. “in the aggregate.” If the building, including the new addition, totals less than 7,500. s.f., sprinklers are not required under the provisions of this law.

**8. Is a sprinkler system always required if renovations are taking place in a building, which is within the scope of the law?**

This depends upon whether the renovations are considered “*major*” alterations or modifications, as those terms are used in the statute. The Board realizes that the determination to install sprinklers, is often difficult and should be decided on a case-by-case basis, based upon the unique characteristics of the building and the nature and extent of the work. However, the Board suggests that such decisions be made in a predictable and consistent manner throughout the Commonwealth. Therefore, the Board suggests that fire officials, in deciding if “major alterations or modifications” are taking place, should be guided by the Massachusetts Appeals Court case

*Congregation Beth Shalom & Community Center, Inc. v. Building Commissioner of Framingham et. Al., 27 Mass. App. Ct. 276 (1989).*

In this case, the Court discussed the meaning of the terms “major alterations” as those words are used in M.G.L. c. 148, s. 26G. (It should be noted that those terms remain in the law, notwithstanding the amendments to s. 26G) The Court said that the terms “major alterations” shall include “any work, not repairs, which is “major” in scope or expenditure, and which results in changes affecting a substantial portion of the building”. In its decision, the Court looked at the nature of the planned work and would require sprinklers throughout the building if “the extra cost of installing sprinklers would be moderate in comparison to the total cost of the work contemplated...” or “if the physical work being done is of such scope that the additional effort to install sprinklers would be substantially less than would have been if the building were intact.”

At this time, it is the intent of the Board to consider the following factors established in the *Congregation Beth Shalom case*, to determine whether “major” alterations or modifications are taking place, thus requiring sprinklers to be installed throughout a building in accordance with M.G.L. c. 148, s. 26G.

**A. What is the nature of the actual work?**

- Is the planned physical work the type of work that would make the effort to install sprinklers substantially less than it would have been if the building were intact?
- Is the work merely minor repairs or cosmetic vs. major alterations? Examples of “major” alterations or modifications, include, but may not be limited to:
  - The demolition or reconstruction of existing ceilings or installation of suspended ceilings;
  - The removal and/or installation of sub flooring, not merely the installation or replacement of carpeting or finished flooring;
  - The demolition and/or reconstruction or repositioning of walls or stairways or doorways; or
  - The removal or relocation of a significant portion of the building’s HVAC, plumbing or electrical systems involving the penetration of walls, floors, or ceilings.

**B. What is the scope of the work or cost/ benefit of sprinkler installation?**

This involves a review of the scope of the major alterations or modifications. Does it affect a substantial portion of the building? This requires a review to determine how much of the building is being affected by the work; **or** a determination that the cost of installing sprinklers is moderate in comparison to the total cost of the work.

To assist fire officials, building owners and construction project managers in making decisions, the Board has established the following two presumptions that may be used to determine if the scope or the cost of the planned alterations or modifications are “major” thus requiring sprinklers to be installed throughout a building.

- 1) Major alterations or modifications are reasonably considered major in scope when such work affects thirty-three (33) % or more of the “total gross square footage” of the building, calculated in accordance with section 26G.
- 2) Major alterations or modifications are reasonably considered major in scope or expenditure, when the total cost of the work (excluding costs relating to sprinkler installation) is equal to or greater than thirty-three (33) % of the assessed value of the subject building, as of the date of permit application.

It is the conclusion of the Board, at this time, that if the nature of the work is the type of work described in **A** and also meets at least one of the two presumptions described in **B** above, then it can be reasonable to conclude that the alterations or modifications are “Major”, thus requiring sprinklers throughout the building.

The Board is aware that buildings and circumstances vary from one project to another and that it would be unreasonable to expect that a single set of criteria could reasonably apply to all situations. Therefore, this list of described factors is not necessarily all-inclusive, but is meant to provide a common sense guideline for fire departments and building owners to determine if a sprinkler system is probably required under the provisions of this particular law.

**9. What if the work is not “major” in scope for this particular permitted project, but appears to be part of a long-range plan?**

If the specific permitted alterations or modifications are not considered “major,” as described, but appear to be one phase of a series of modifications being conducted over a reasonably short period (i.e. 5 years or less), it may be reasonable to conclude that such work could be part of a long range project resulting in “major alterations” to the entire building, or a substantial portion of it, thus triggering the sprinkler requirements. Although this occurrence may be rare, fire officials should be aware of future and past recent projects to determine if there is a series of planned projects that, taken together, may be considered “major” alterations or modifications, which would trigger the sprinkler requirements.

**10. The statute states that “no such sprinkler system shall be required unless sufficient water and water pressure exists”. How is it determined if there is a lack of sufficient water and water pressure?**

This language, creating an apparent exemption for situations involving lack of sufficient water and water pressure, has remained unchanged in the new amendments. In determining cases in which this issue has been raised, the Board has been guided by the Massachusetts Appeals Court case of *Chief of the Fire Department of Worcester v. John Wibley, et al. 24 Mass. App. Ct. 912 (1987)*.

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In that case the court concluded that:

“The term “sufficient water and water pressure exists” means that the owner of a building or addition to which the statute applies must have access to a source of water sufficient to operate an adequate system of sprinklers, or the exemption applies. The source may be either on the land on which the new building or addition is constructed or off the land, provided that it is legally available to the owner of the building or addition.”

In the *Wibley* case, the court, in agreeing with the fire chief, concluded that sufficient water and water pressure existed, notwithstanding the fact that the source of water was not on the owner’s land, but was legally available by means of a connection requiring the excavation to a legally available water main located 500 yards away.

**11. Who has the responsibility to enforce the sprinkler installation requirements of this new law?**

Under both the old and new version of M.G.L. c. 148, s. 26G, the head of the fire department is given the statutory authority to enforce the law.

**12. What action should be taken by the head of the fire department at this time?**

It is recommended that the head of fire department coordinate with the local building official and confirm that the building official is aware of the new law, its applicability and the statute’s unique method of determining a building’s total floor area. Additionally, it is suggested that procedures be established to assure that the building official communicate to the appropriate fire department personnel the existence of construction activities to buildings in excess of 7,500 s.f., which may be subject to the provisions of M.G.L. c. 148, s.26G. Once the head of the fire department determines that a planned building construction project is subject to s. 26G, the building owner/construction manager should be informed of the determination and the reasons for it by a written notice signed by the head of the fire department. The notice should also contain the information about the ability to appeal such determination to the Commonwealth’s Automatic Sprinkler Appeals Board within 45 days of the receipt of such notice.

**13. How are appeals filed with the Board?**

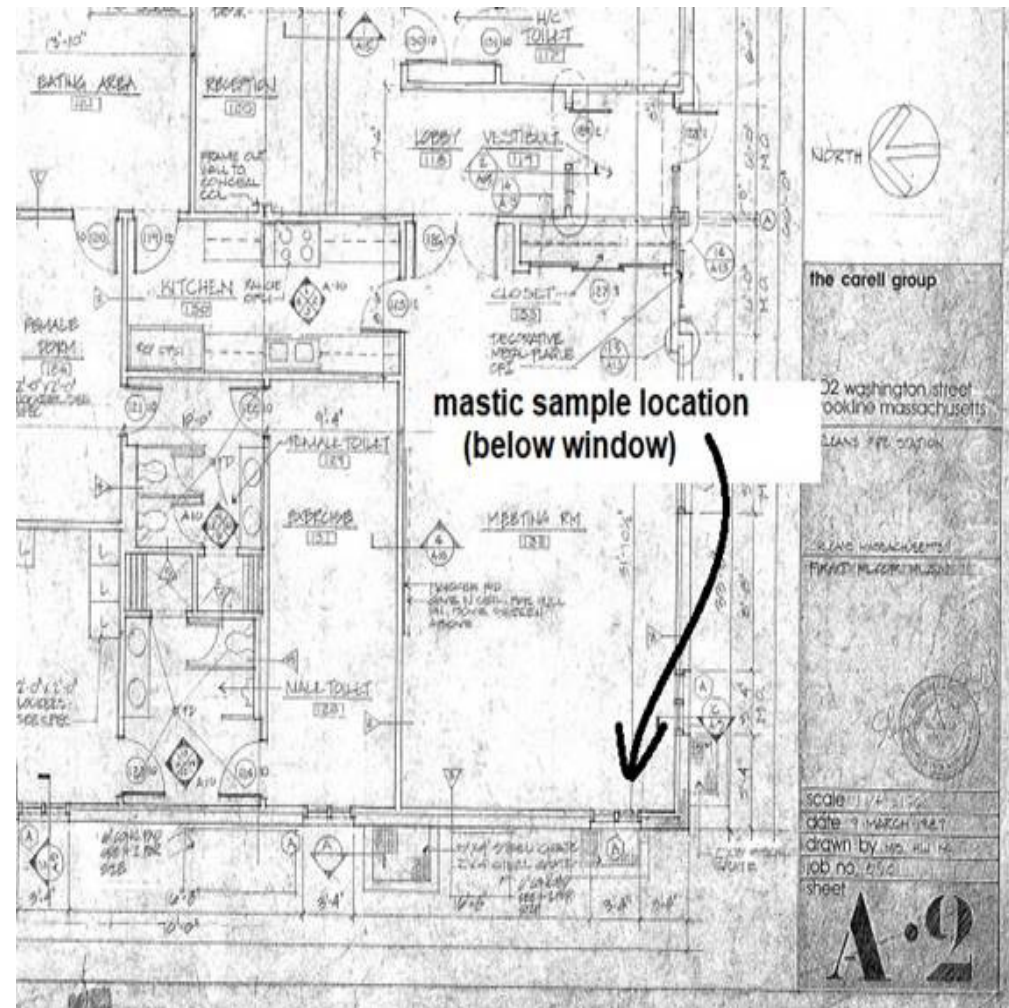
The law allows for any person aggrieved by an interpretation, order, requirement or direction of the head of the fire department, (or the failure to so act) to file an appeal with the Automatic Sprinkler Appeals Board. Such appeals must be filed *within 45 days* after receiving service of notice of the head of the fire department’s determination. The Board has a formal application form that must be completed by the person seeking the appeal. In addition to the application form, a detailed statement of the basis for the appeal, a copy of the chief’s determination and an appeal application fee (\$100.00) must accompany each application. Automatic Sprinkler Appeals Board application forms may be obtained by calling: 978-567-3181 or on the web at [www.mass.gov/dfs](http://www.mass.gov/dfs) (right side of the page Mass. Automatic Sprinkler Appeals Board).

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**14. What are the Board hearings like?**

Members of the Commonwealth's Fire Safety Commission hold hearings of the Automatic Sprinkler Appeals Board. The hearings are informal and the strict rules of evidence used in a court of law are not used. The hearings require the presence of the appellant and the head of the fire department or their agent or attorney. The parties should be fully prepared to present their positions at the hearing. All plans, drawings, photographs expert findings/analysis or any other documents, information and testimony and arguments should be presented at the hearing to assist the Board in making its findings and determination.

# Information regarding collection of mastic samples at the Orleans Fire Station July 10, 2021



# FIREHOUSE RENOVATE OR REPLACE?

By Ted Galante

The decision to renovate or replace an existing fire station leaves many things to be considered. Costs are often the biggest drivers in such a decision, but many other issues must be considered as well. Temporary quarters for equipment and personnel will weigh on the decision to renovate or replace a station. Sustainability is having greater influence on decision-making when it comes to our buildings, and some municipalities have set sustainable goals. In addition, local zoning ordinances define setbacks and building size—factors that could impact the decision. Historic preservation is also an issue, as a beloved station may only gain support if it is renovated and not replaced. Let's look at a few factors related to the decision to renovate or replace.

## HISTORIC PRESERVATION

Historic preservation starts with the idea that the existing building—also known as “original building fabric” to regulatory agencies—is noteworthy enough to preserve for cultural reasons. Fire stations are part of our civic identity and, as such, may be worth preserving for future generations to come.

Preservation requires an architect with experience renovating historic structures and sometimes even a dedicated preservation consultant. One key is to understand how far to take the renovation, as many historic buildings could really use a total makeover. However, budgets don't allow for complete renovations, and a project is often influenced by multiple structural requirements and various building code required upgrades.

Here are some examples of historic preservation issues: Foundations below historic buildings were built very differently than our modern-day facilities. They are often stone of varying sizes and shape, perhaps battered away from the building. It's important to determine exactly how to sort this out before trying to place new columns or new foundations adjacent to the existing structure, or be subject to potential cost change orders during construction. Historic buildings were also subject to much smaller forces than our buildings are today. For example, a full stable of horses weighs a lot less than the ASSHTO-rated fire trucks we use today. As a result, structural slabs were much weaker and often need to be replaced with slabs that can support modern-day rigs.

Preservation also involves careful treatment of the building envelope. Brick often needs to be repaired, re-pointed and occasionally replaced. Finding brick that is similar in size, shape,



color or even structural density requires a lot of effort on the part of the architect. Moreover, mortar needs to be replicated in a way that matches existing conditions, but also structurally performs in equal capacity to existing mortars. However, historic preservation provides the opportunity to save beloved building elements like an old cornice line, a limestone carving or some other element that shows the public that we believe in preserving the department's institutional heritage.

Further, many materials that were historically used in construction are now deemed hazardous materials. Removal and disposal of these items can be quite involved from a regulatory perspective and quite costly from a remediation point of view. Preserving a building requires a battery of testing be done to determine the presence and quantity of specific materials to determine if abatement is necessary. One should operate very cautiously when it comes to considering which materials to change, use, match, etc., as these can run the gamut of environmental regulatory hazards. In contrast, new facilities are built with materials that meet all modern-day environmental requirements and, if selected carefully, may also be 200-year materials made from recycled content—a good solution for a planet with limited resources.

## SUSTAINABILITY

One reason to consider preserving an existing building fabric is sustainability. Keeping a building in tact might also be understood as keeping all that material out of the landfill. If a city or town would like to pursue LEED (Leadership in Energy and Environmental Design) certification, limiting material waste could be an easy set of points. This position is becoming ever more popular, and younger generations simply expect this approach.

An equally important sustainability factor is that most buildings being renovated perform well below modern-day energy standards. Specifically, fire and EMS stations built before the 1990s are likely cold and drafty in a number of places. Building envelopes were assumed to be nothing more than non-insulated places to store equipment and therefore designed for minimal energy performance. One clear result is that all of them need radical upgrades to perform in a way that meets current standards.

Upgrading a building envelope is a costly and complicated endeavor. If the building is masonry, changing the building's thermal properties will most likely have major implications on overall performance—structural, moisture absorption, air barrier, etc. Masonry is dry and brittle; both water and air

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particles enter through its surface, and they need reasonable paths of travel. A properly designed wall allows this water and air to enter, but more importantly, provides ways for it to get back out. One could say the wall breathes in order to keep the building healthy. Performance requirements are being put on these older masonry buildings as energy codes become more stringent and what was a reliable system of construction is simply less able to keep up. For a number of years, people thought adding spray foam to the interior of a masonry wall was a viable solution. It was easy to install, it provided great thermal insulation, and it even helped with moisture entering the building—or so they thought. Soon, cracks started to appear and mold started to build up between masonry and insulation. The energy code requirement is still high, but design professionals who renovate older buildings now know how to insulate a masonry wall so it complies on all levels and does not end up cracking.

If the building is wood-frame, there are more opportunities to increase sustainable performance; however, providing a proper air and moisture barrier requires extensive work on both sides of the building envelope. If not handled properly, air and moisture do an equal amount of damage to these wall types and could significantly increase costs.

Renovating to achieve these levels of thermal performance is not necessarily something to shy away from, as it has merit on many levels. Further, it may be mandated by the municipality. However, if not carefully managed, costs are likely to escalate quickly, not to mention costly repairs a few years down the road if things are not renovated properly. If you do go this route, the best approach is to consult a professional, specifically one with years of experience renovating fire and EMS stations. Of course, it's also important to keep in mind that simply replacing the station may be the better approach. Putting money into a response time is money better spent than trying to patch up an old, drafty wall. A new building may well be a better use of funds.

## ZONING SETBACKS

Another little understood reason to consider keeping an existing station is that most buildings standing for 25 years or more are located well outside of required setbacks. The buildings are known as “existing non-conforming.” Zoning ordinances are legal regulations that establish use of a particular parcel of land, but also define how far a building needs to be set back from property lines on all sides of the parcel. They also identify allowable heights of a building and how much of the property it is allowed to cover. Because these ordinances are updated periodically, and setbacks increased to minimize new building size on a parcel of land, most existing buildings sit outside of newer setback lines and are therefore under the category of “existing non-conforming.”

The implications of this for renovation are a bit more favorable. If the building is existing non-conforming, it is often easier to expand that building farther outside the setbacks, as it already

does not conform. Trying to construct a new building outside the setback lines is often more of a regulatory hurdle. The theory seems to be that if an existing building was built before regulations were imposed, then the regulations do not apply as stringently as they do to new construction that comes after adopting new setback lines. Sometimes municipalities want to lead by example, and gaining zoning relief on newer buildings may be difficult. However, it is always best to have your architect check with local authorities on this one, as public safety buildings are often exempt from zoning ordinances.

## COSTS

In general, it is often much more expensive to renovate a fire or EMS station than it is to replace one. Taking down a building is inexpensive, and replacement is a very cost-effective approach. Renovation requires much more time from the professionals to the contractors, as there is time involved with measuring and re-integrating pieces of the building with the new elements planned to be added.

We all know that there are many heating, air conditioning, exhaust, electrical, plumbing and fire protection systems intertwined within our stations. In decades of experience, I have never seen these systems not completely entangled with one another. Untangling them and determining which to save and which to replace is a very difficult and messy task that runs the risk of costing more as the project develops. Replacing these systems wholesale is very costly, and usually requires that expensive solutions be developed to allow each system full integration in and around an existing building. Contrast this with a new facility where all conduit, ducts, exhaust and related systems can be planned and organized from the start. It is much easier for all professionals, architects, engineers, contractors and service personnel to understand and document these systems in all their detail.

Historic preservation is the most expensive renovation approach as compared to replacing the structure with a new building, which is the most cost-effective. However, replacement with a building that tries to replicate a historic design is also very expensive due to costly materials and details, needing to move mechanical, electrical and fire protection systems to unused spaces, like attics and eaves. Recent construction cost trends have driven many projects designed this way over budget, sending a few architects back to the drawing board.

Because the construction industry is set up for speed and efficiency, modern buildings are the most cost-effective solution. Fire and EMS departments that use modern construction methods for their buildings will be the ones able to put the most money back into personnel, equipment and provide the best services to the public. Further, efficient use of construction funds on a building allows for a larger facility, more room for growing equipment as well as more durable materials, furniture, fixtures and equipment for living spaces.



# TEMPORARY FACILITY STUDY

## CAMBRIDGE MA

### SCHEDULE/BUDGET



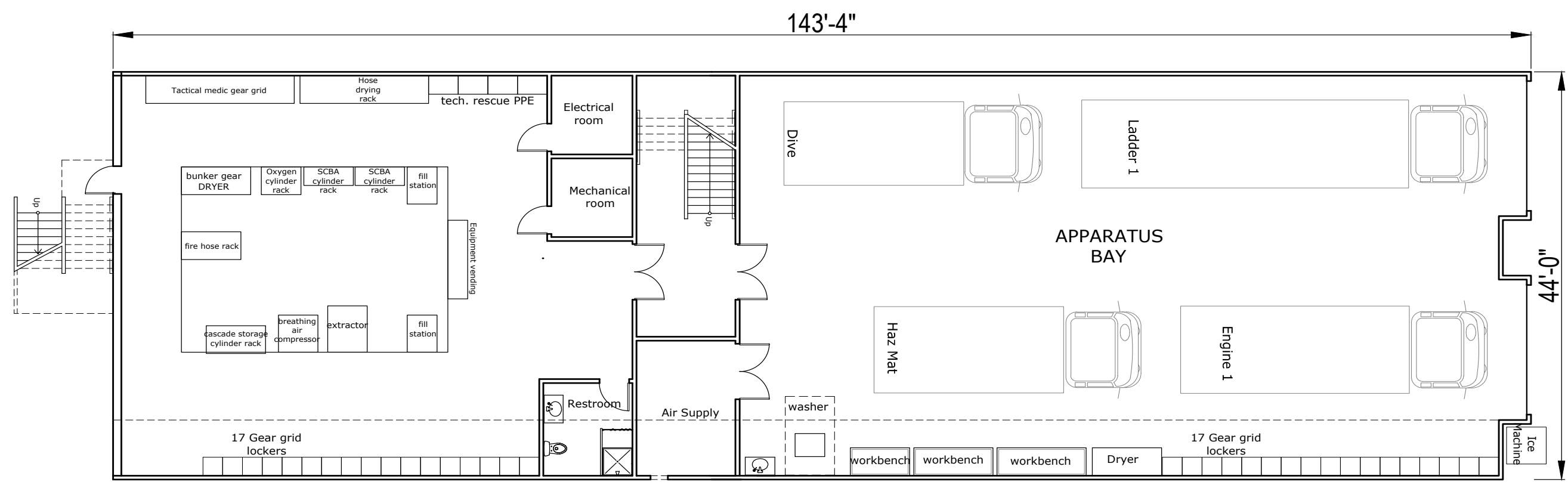
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Twin St Ct

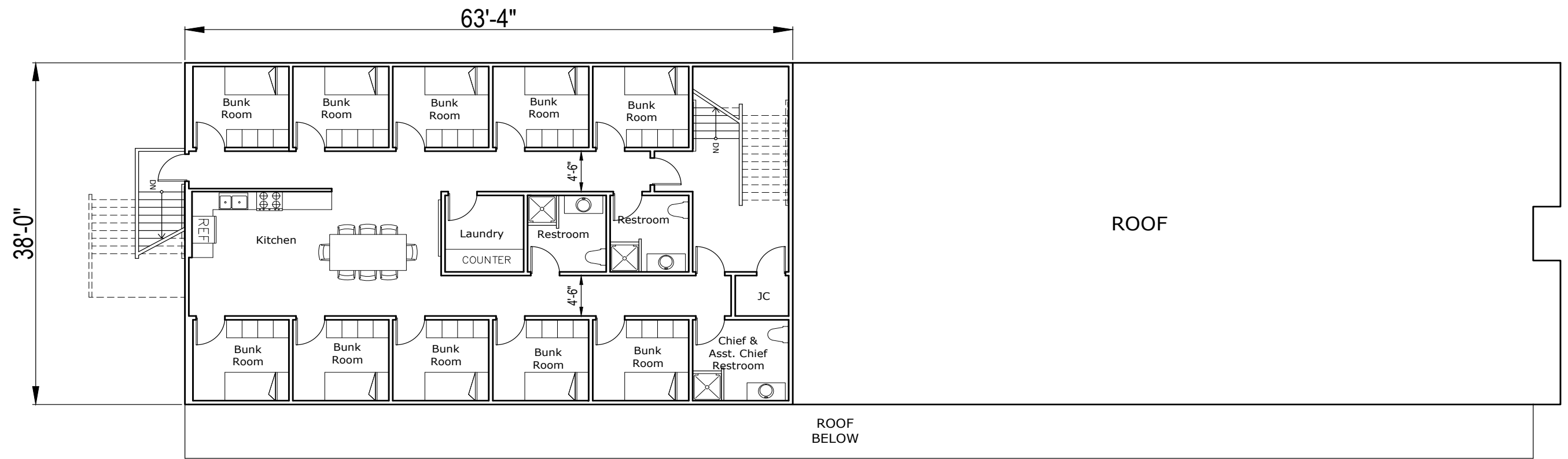
Hovey Ave

Leonard Ave

Line

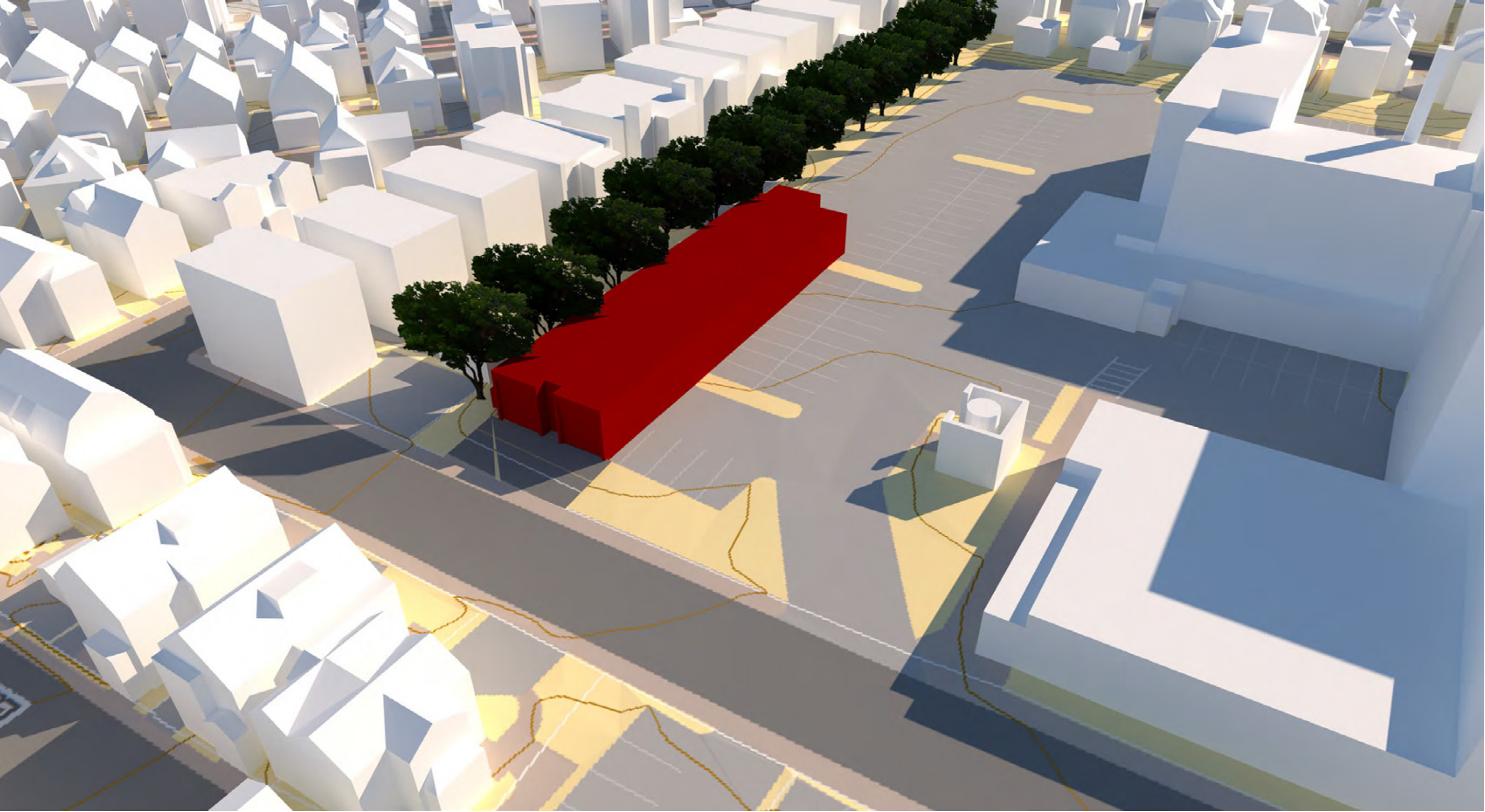


FIRST FLOOR  
(Apparatus Bay)



SECOND FLOOR  
(Living Quarters)

ROOF  
BELOW



## APPROXIMATE BUDGET

\$400/sq. ft x 8,825 sq. ft = **\$3,530,000**

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## APPROXIMATE SCHEDULE

### ± 3 months

- of community
- feedback

### 3 months

- of design time
- following city's
- confirmation of site

### 6 months

- of construction time
- after placement of
- order

TGAS +

