

PREVIOUS STUDY INFORMATION

**MAYNARD FIRE STATION
Maynard, Massachusetts**

**The Carell Group, Inc. Architects
85 Main Street
Hopkinton, MA**

MAYNARD FIRE HEADQUARTERS

DRAFT FIRE STATION PROGRAM

03/12/2007

SPACE	AREA	FUNCTION	PROGRAM ISSUES	MECHANICAL/ELECTRICAL
Apparatus Room	(4) 18' x 80' bays 5700 s.f.	Accommodate existing and future equipment Ladder Engine 1 Engine 2 Engine 3 Brush truck Ambulance Command car Boat Bucket truck	Drive-through garage access. If Possible Access to turn out gear Access to staff areas 14' x 14' overhead doors with glazing CMU/Tile walls Utility sink/mop receptor	Remote control overhead door operation Overhead truck fills, 1-1/2" diameter at fill port, each vehicle Pull-down electric (reels) access to driver's side door, each vehicle Overhead compressed air, flexible tubing, access to all vehicles (separate utility air compressor) Exhaust evacuation (source venting at each truck) Lighting ceiling mounted Gas/oil interceptor, trench drains Night lighting Maintain 55° inside temperature, unit heaters and/or radiant heat Fully sprinklered Telephone, intercom, radio
Maintenance Bay	18' x 40' 720 s.f.	Light maintenance	Adjacent to shop area	Comp. air 3 phase power
Apparatus Room Storage	400 s.f.	Dead storage for infrequently used equipment in separate room(s)		
Hose Storage	150 s.f.	Racks for storage of hoses. Inspection, hose maintenance and drying		
Turnout Gear	800 s.f.	Storage for 60 sets of gear (2 sets/person) Industrial washing machine Dehydrator	Adjacent to Apparatus Room Protected from moisture/sunlight Vented metal cubbies	Elec for recharging flashlights, etc Ventilation HW/CW
Ambulance/Rescue Vehicle Storage	200 s.f.	Medication, oxygen, ambulance supplies and equipment Rescue vehicle equipment – ropes, lights, etc.	Secure room Adjacent to ambulance bay(s) Clean room Shelf, rack & cabinet storage	

SPACE	AREA	FUNCTION	PROGRAM ISSUES	MECHANICAL/ELECTRICAL
Workshop/Tools	150 s.f.	Light maintenance	Work bench Tool storage (lockable) Shelving Access to both apparatus rooms	Utility compressed air Electrical (240V, 3 phase)
Hose Tower	100 s.f.	Hose drying Ladder training Rappelling "Fire Escape" attack training	Exterior / Interior Stars & ladder	FD Hoist
Washdown	200 s.f.	Cleaning turnout gear and equipment (not hazardous materials)	Large, low utility sink Access to outside Dousing shower Access to apparatus room Heavy-duty washer/dryer (industrial)	Floor drain Hot water/cold water
Walk-in First Aid/ Public Conference Room	120 s.f.	Triage, ambulatory care, blood pressure, etc.	Near public entry Wall space Near toilet Sink & counter	Hot water/cold water Telephone
Air Compressor Room	150 s.f.	Filling SCBA packs Air compressor to provide station utility air Air pack/bottle storage	Clean room, separate from apparatus room Exterior air inlet Reuse existing air compressor	Electrical power to compressor
Toilets/Showers	250 s.f.	Male toilets Female toilets Unisex showers w/changing rooms	Access to bunk area Access to locker rooms	Hot water/cold water Ventilation
Bunk Rooms	800 s.f.	(5) 2-Bunk Rooms for officers and firefighters M/F accommodations (5 persons/shift) Redundant dispatch in captains room	Reading lights Night lighting Access to apparatus Access to toilet/showers	Telephone/radio Alarm
Locker Rooms	800 s.f.	60 male lockers 5 female lockers	Lockable lockers 2' x 2' x 6' Benches Access to showers Access to bunk area	Ventilation

SPACE	AREA	FUNCTION	PROGRAM ISSUES	MECHANICAL/ELECTRICAL
Day Room	300 s.f.	Lounging Dining Accommodate 10 persons	Privacy from public Access to toilets/lockers/showers Access to apparatus room Bookshelves	TV/Cable Night lighting Telephone Alarm
Kitchen	200 s.f.	Food storage/preparation	Access to day room Cabinets/counter (1 cab/shift) Range/oven Refrigerator Microwave oven Sink with disposal Dishwasher	Hot water/cold water Gas Electric Range exhaust to outside
Meeting/Training Room / EOC	900 s.f.	Public meetings Staff use -- training/meetings/conference Emergency operations center	Storage for training equipment Storage for chairs and tables Storage for EMS training supplies A/V storage Pull-down screen Sub-dividable Marker boards Access to kitchen	Dimmable lights Ceiling mounted TVs Audio/Visual
Janitor's Closets	2 @ 30 s.f. each	Janitorial supply, storage and services Shelving	Mop receptor Ventilation Mop rack	Hot water/cold water Ventilation
Fitness Room	400 s.f.	Exercise & Strength Training	Exercise machines Mirrors Acoustical isolation Gym lockers	Ventilation Drinking fountain
ADMINISTRATION OFFICES				
Chief's Office	250 s.f.	Department administration Small meetings	Desk Files Access to clerical Access to public Coat closet	Radio communication Telephone Computer Alarm

SPACE	AREA	FUNCTION	PROGRAM ISSUES	MECHANICAL/ELECTRICAL
4 Captains Shared Office	200 s.f.	Plan review Administrative operations FP, Training, EMS, "Float"	Desks Files Access to public Access to clerical Coat closets Plan review/layout table	Telephones Computers
Union Room	200 s.f.	Meetings/Conferences/Admin		
Lobby/Reception	100 s.f.	6 People	1. sturdy built-in seating 2. access to public conference 3. access to toilets (H/C accessible) 4. provide closet	
Clerical	150 s.f.	Clerical work for department Public reception	Desk Files Possibly combine with dispatch Access to offices Coat closet	Telephone Computer
Plan/Review Area	100 s.f.	Layout surfaces for building plan review	Flat file storage Library Counter Adjacent to Captains Office	
Active File Storage	150 s.f.	Storage of current files	Access to secretary/admin area	
Dead File Storage	150 s.f.	Storage of inactive files	Discreet location	
Office Supply Storage	100 s.f.	Storage of paper and other stationary	Adjacent to offices	
Toilet Rooms	2@40 s.f. each	Male toilets Female toilets	Access to offices	HW/CW Ventilation
Kitchenette	50 s.f.	Coffee Light food preparation for admin.	counter/cabinets microwave oven small refrigerator sink Adjacent to Admin	HW/CW Coffee maker

SPACE	AREA	FUNCTION	PROGRAM ISSUES	MECHANICAL/ELECTRICAL
Dispatch	400 s.f.	Communications Station Control	H/C Access Lockers H/C Toilet Access flooring Kitchenette View of apron Technology Room	Tel/Data1 E 911 Radio/Communication AC

Total Program Area 14,480
Circulation/Soft Space (20%) 2,900
 Total 17,380

C. A. CROWLEY ENGINEERING, INC.
645 County Street, Unit 6
Taunton, MA 02780

MEMO:

TO: Greg Carell - The Carell Group

FROM: Jeffrey P. Krockta, P.E.

DATE: April 2, 2007

SUBJECT: HVAC Deficiencies

This memorandum is a list of deficiencies and possible renovation options identified during the introductory walk through at the site on March 28, 2007.

Deficiency List

1. Boiler - The boiler is 52 years old. It is well beyond its useful life expectancy and should be replaced. If the unit is not replaced a catastrophic failure can be expected in the near future.
2. Boiler Room Asbestos - The boiler and surrounding piping appear to have insulation that contains asbestos. Asbestos is a severe health hazard and should be abated as soon as possible.
3. Heating Distribution - The steam distribution is old and in need of renovation. The system does not perform adequately, zoning is poor and the system is terribly inefficient. The system should be replaced in its entirety.
4. Electric Service - The existing service is 225A, 240/120V, 1PH, 3W. This is inadequate for the department needs.
5. Lead Paint - There is suspect lead paint in the building. This is a serious safety hazard and should be abated.
6. Hose Tower - The structural integrity of the hose tower is in question. This should be reviewed by a structural engineer. The tower is also fire hazard, as the proper fire ratings are not maintained.
7. Apparatus Bay - While a source capture system is in place, a purge fan is not. Massachusetts Building Code requires a purge exhaust system for all enclosed parking facilities, regardless of the source capture system. This purge system would be controlled by wall mounted CO and Nox monitors. This system would provide better protection for the occupied areas upstairs.
8. Air Pressurization - There are no means for mechanical ventilation in the building. This means that any fumes that are in the Apparatus Bay will migrate upstairs to the occupied areas. This is an unhealthy situation. A central air conditioning system should be installed such that a positive pressure relationship is maintained between the occupied areas and the Apparatus Bay. This means air will move from the occupied areas to the unoccupied areas and fumes will be unable to migrate into the sleeping quarters/offices/etc.

9. Exhaust - There is no mechanical exhaust in the building with regard to the kitchen, toilet rooms, locker rooms, shower areas, laundry areas and janitor's closet. This is a violation under the current code requirements. While not a life safety issue, this may need to be addressed if the HVAC system is renovated.
10. Energy Code - The existing system does not meet any of the requirements of the Massachusetts Energy Code. Again, not a life safety issue, but will need to be addressed if the HVAC system is renovated.

All of the items listed above are important. Prioritization of the items is not possible. All of the items listed require attention. A phased 3-5-8 year plan is not plausible. The work is either completed in its entirety, or it is not started with the occupants being moved to a new facility. Renovation costs are estimated as follows:

Boiler replacement	\$100,000.00
Heating distribution replacement	\$100,000.00
Purge System for Apparatus Bay	\$ 25,000.00
Ventilation Air/Pressurization/Air Conditioning	\$100,000.00
Exhaust systems (Toilets, Showers)	\$ 25,000.00
Kitchen Hood Exhaust System(NFPA 96 Compliant)	\$ 35,000.00
New ATC Control System	\$ 85,000.00
Total HVAC Renovation	\$470,000.00

This price does not include any provisions for correcting the hose tower situation (including heat and fire rating requirements), structural modifications to facilitate the installation of new equipment, upgrading the electrical service, asbestos or lead abatement requirements. These requirements would push the total cost well above \$700,000.00. More accurate numbers would depend on the design and the extent of the abatement requirements.

The only possible short-term option would be to replace the boiler. This would cost approximately \$150,000.00 to \$200,000.00 (including asbestos abatement, provisions for combustion air, a new condensate receiver, chemical treatment and a new chimney). This would provide assurance that the boiler will not fail in the next heating season, but it would not eliminate the various other problems in the building related to the HVAC system (hot spots, cold spots, inoperable radiation, failed controls, inadequate ventilation, etc.) Our recommendation is for a complete renovation of the building mechanical systems.

If you have any questions, please call this office.

C.A. Crowley Engineering, Inc.

Jeffrey P. Krockta, P.E.
Project Engineer

C. A. CROWLEY ENGINEERING, INC.
645 County Street, Unit 6
Taunton, MA 02780

SITE VISIT

March 29, 2007

LOCATION: Maynard, MA

DATE: March 28, 2007

PROJECT: Maynard Fire Station

PRESENT: Stephen Kulick - Maynard Fire Chief
Jeffrey Krockta - C.A. Crowley Engineering, Inc.

A meeting and site visit was conducted at the Maynard Fire Station in Maynard, MA. The building currently houses the Fire and Police Departments. The building is inadequate for the needs of both the Police and Fire Departments. The Police Department is being relocated to another building. The fire chief requested a review of the site conditions to determine a concept for revisions with ballpark estimates for review by the town. This information would be used to begin the process of determining the balance between the fire department's needs and the existing condition of the building.

The chief indicated that the fire department would be moving out of the current building. However, this relocation is at least 8 years away. This raises the following questions:

- What is the recommended scope of work?
- What is the cost of the recommended scope of work?
- At what point does it make more sense to spend money on a new building, rather than renovating the existing building?

The site investigation revealed the following concerns:

- The existing boiler is a Dillon Steam Boiler installed in 1955. The boiler is encased in suspect ACM insulation. The boiler room houses the turnout gear washing machine in violation of clearance requirements and has no provisions for outdoor air.
- The electrical service is 225A, 240/120V, 1PH, 3W. This is inadequate for the building.
- The heating distribution system does not perform adequately. The typical problems include: failed traps, poor zoning, hot/cold spots, etc.
- There is a battery system located in the stairwell at the basement level.
- There are major lead and asbestos abatement concerns.

- The hose tower construction is in question, with regard to structure and fire rating.
- The apparatus bay employs a source capture Plymovent system, but there is no purge system or CO/Nox monitoring.
- There are no air pressurization systems in the occupied areas to prevent the migration of vehicle exhaust gases in the occupied and sleeping areas.
- The use of multiple through wall air conditioning units makes the inadequate electrical situation worse.
- There is no mechanical exhaust in the building, with regard to the kitchen, toilet room, shower area, laundry area, janitor's closet, etc.

The chief has requested a short report where the deficiencies of the building are identified with a recommended priority list and ballpark estimates for construction costs. The town will use this information to determine what the next step will be. The preliminary options include:

1. Do no work in this building and finding a new location as soon as possible.
2. Do limited work to correct life safety issues and create a stable facility for the fire department to remain in while a new location is identified or constructed.
3. Renovate the existing building in its entirety.

C.A. Crowley Engineering, Inc.

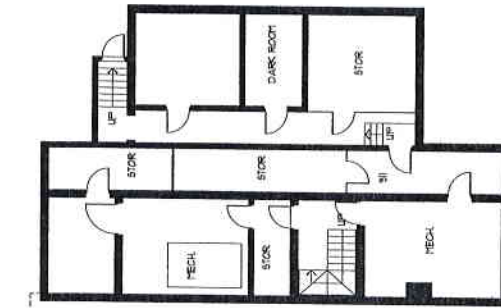
Jeffrey P. Krockta, P.E.
Project Engineer

MAYNARD FIRE & POLICE STATION

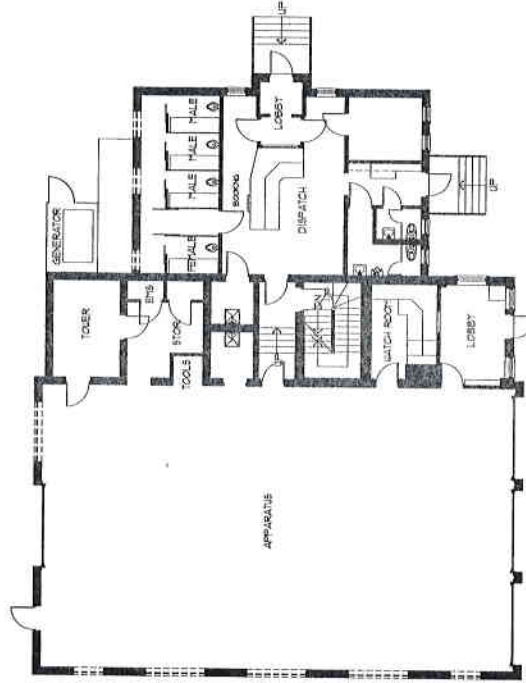
MAYNARD, MASSACHUSETTS

EXISTING BUILDING

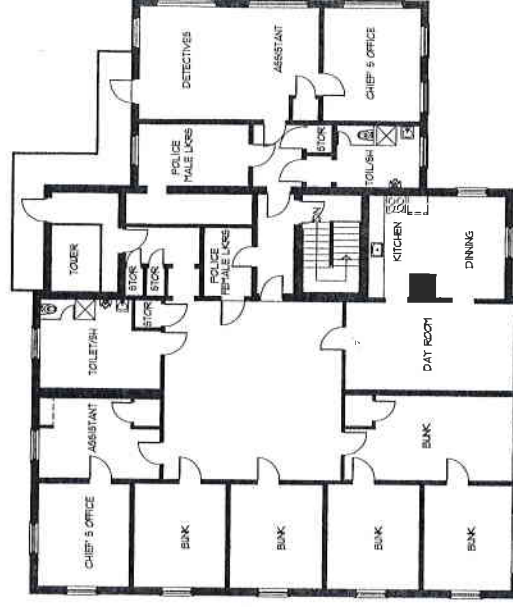
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BASEMENT FLOOR PLAN



FIRST FLOOR PLAN



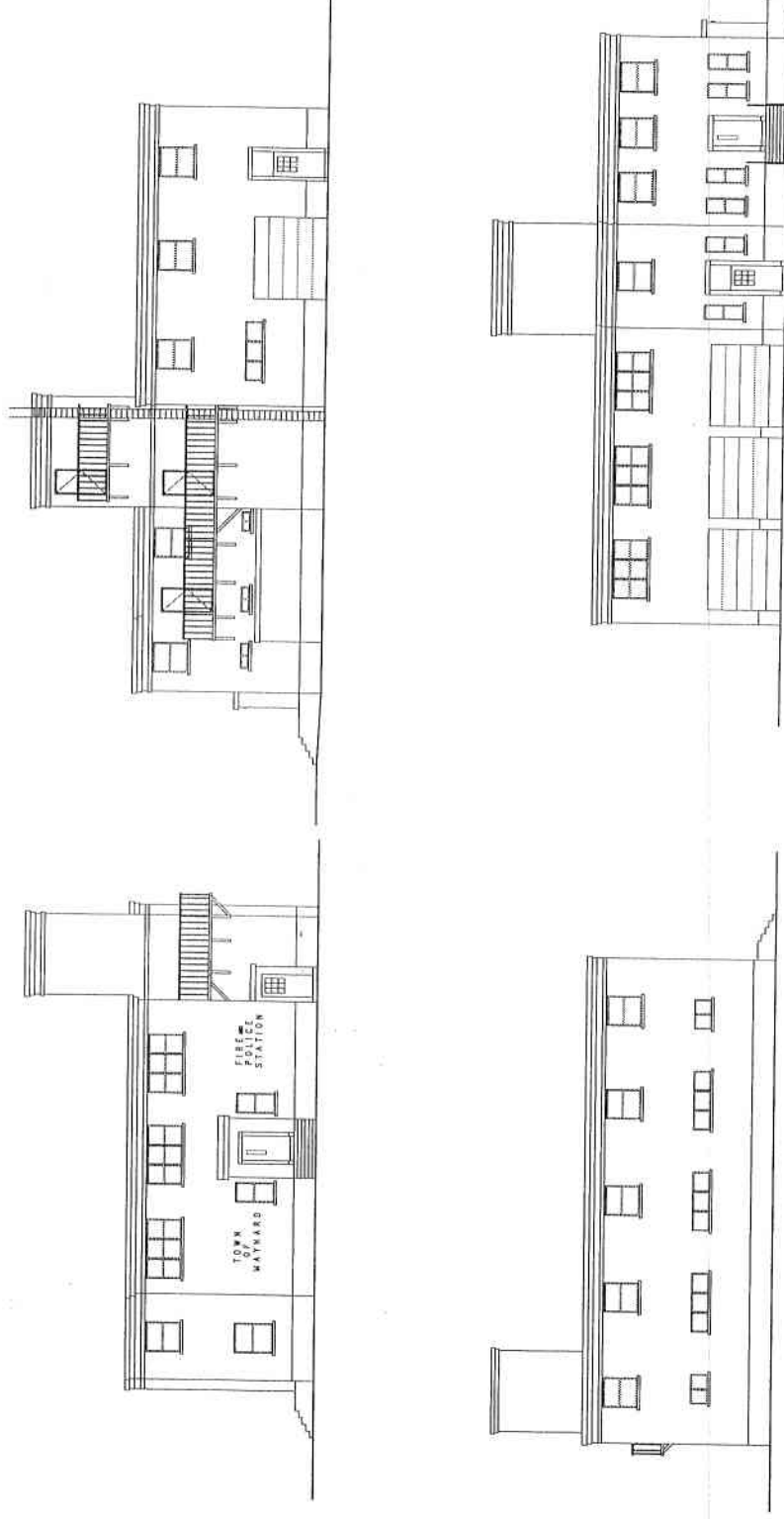
SECOND FLOOR PLAN

MAYNARD FIRE & POLICE EXISTING STATION

MAYNARD, MASSACHUSETTS

ELEVATIONS

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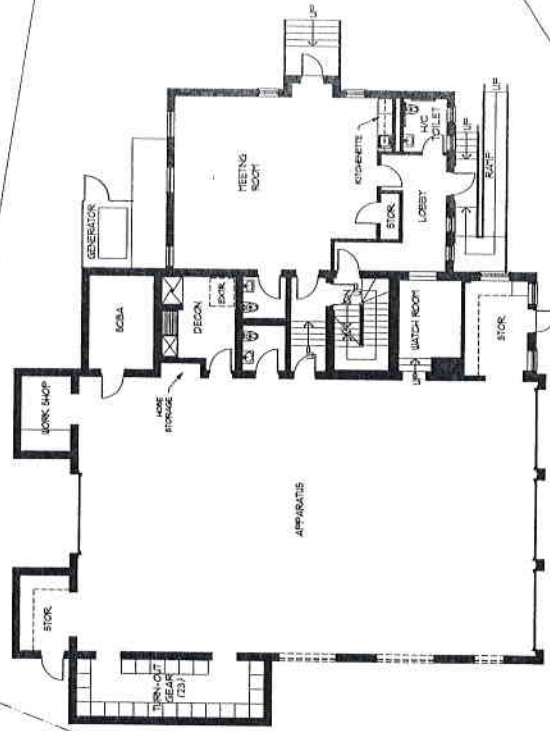
MAYNARD FIRE STATION - STUDY A

MAYNARD, MASSACHUSETTS

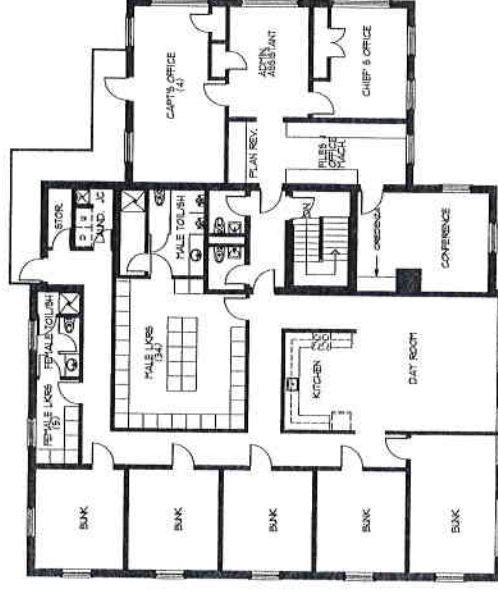
FLOOR PLANS

The Carell Group, Inc

ACTION STREET



FIRST FLOOR PLAN



SECOND FLOOR PLAN

SUNDER STREET

MAYNARD, MASSACHUSETTS

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MAYNARD FIRE HEADQUARTERS
Project Budget 3/22/07 Renovation

CONSTRUCTION

Construction Estimate	\$	2,020,000
Spring 08 Start, 6% escalation	\$	121,200
Construction Contingency (10%)	\$	214,120
TOTAL CONSTRUCTION	\$	2,355,320

CONSTRUCTION RELATED COSTS

Document Printing	\$	10,000
Owners Project Manager (OPM)	\$	150,000
Legal Fees	\$	5,000
Bond costs to Town	\$	20,000
Utility back charges	\$	10,000
Builders Risk Insurance	\$	4,000
Soils/Concrete Testing	\$	8,000
TOTAL CONSTRUCTION RELATED COSTS	\$	207,000

FURNISHINGS & EQUIPMENT

Furniture	\$	50,000
Window Treatment	\$	5,000
Industrial Washer/Extractor	\$	9,000
Dehydrator for Turnout Gear	\$	9,000
Telephone System	\$	25,000
Radio/Communication	\$	100,000
Computer System	\$	25,000
Vehicle exhaust evacuation system (New bay only)	\$	30,000
Cable TV	\$	6,000
TV's, VCR's, OH Projectors	\$	5,000
Misc building supplies (Floor buffer, wastebaskets, etc.)	\$	5,000
Fitness equipment	\$	-
SCBA compressor	\$	-
Technology Cabling	\$	20,000
Soft Cost Total	\$	289,000
Soft Cost Contingency 5%	\$	14,450
TOTAL FURNISHINGS & EQUIPMENT	\$	303,450

ARCHITECT & ENGINEERING

Fees	\$	250,000
Expenses	\$	10,000
Town Engineering (Survey, Borings, 21E)	\$	20,000
Contingency	\$	20,000
TOTAL ARCHITECT & ENGINEERING	\$	300,000

TOTAL PROJECT **\$ 3,165,770**

MAYNARD FIRE HEADQUARTERS
Project Budget 3/22/07 Renovation/Addition

CONSTRUCTION

Construction Estimate	\$	2,420,000
Spring 08 Start, 6% escalation	\$	145,200
Construction Contingency (10%)	\$	256,520
TOTAL CONSTRUCTION	\$	2,821,720

Site Acquisition	\$	800,000
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CONSTRUCTION RELATED COSTS

Document Printing	\$	10,000
Owners Project Manager (OPM)	\$	150,000
Legal Fees	\$	5,000
Bond costs to Town	\$	20,000
Utility back charges	\$	10,000
Builders Risk Insurance	\$	4,000
Soils/Concrete Testing	\$	8,000
TOTAL CONSTRUCTION RELATED COSTS	\$	207,000

FURNISHINGS & EQUIPMENT

Furniture	\$	50,000
Window Treatment	\$	5,000
Industrial Washer/Extractor	\$	9,000
Dehydrator for Turnout Gear	\$	9,000
Telephone System	\$	25,000
Radio/Communication	\$	100,000
Computer System	\$	25,000
Vehicle exhaust evacuation system (New bay only)	\$	30,000
Cable TV	\$	6,000
TV's, VCR's, OH Projectors	\$	5,000
Misc building supplies (Floor buffer, wastebaskets, etc.)	\$	5,000
Fitness equipment	\$	-
SCBA compressor	\$	-
Technology Cabling	\$	20,000
Soft Cost Total	\$	289,000
Soft Cost Contingency 5%	\$	14,450
TOTAL FURNISHINGS & EQUIPMENT	\$	303,450

ARCHITECT & ENGINEERING

Fees	\$	250,000
Expenses	\$	10,000
Town Engineering (Survey, Borings, 21E)	\$	20,000
Contingency	\$	20,000
TOTAL ARCHITECT & ENGINEERING	\$	300,000

TOTAL PROJECT	\$	4,432,170
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MAYNARD FIRE HEADQUARTERS NEW

Project Budget 3/22/07 New Building

CONSTRUCTION

Construction Estimate	17300	\$ 300.00 per sf	\$ 5,190,000
Spring 08 Start, 6% escalation			\$ 311,400
Construction Contingency (10%)			\$ 550,140
TOTAL CONSTRUCTION			\$ 6,051,540

SITE ACQUISITION

\$ -

CONSTRUCTION RELATED COSTS

Document Printing		\$ 10,000
Owners Project Manager (OPM)		\$ 150,000
Legal Fees		\$ 5,000
Bond costs to Town		\$ 50,000
Utility back charges		\$ 10,000
Builders Risk Insurance		\$ 6,000
Soils/Concrete Testing		\$ 8,000
TOTAL CONSTRUCTION RELATED COSTS		\$ 239,000

FURNISHINGS & EQUIPMENT

Furniture	\$	80,000
Window Treatment	\$	5,000
Industrial Washer/Extractor	\$	9,000
Dehydrator for Turnout Gear	\$	9,000
Telephone System	\$	25,000
Radio/Communication	\$	100,000
Computer System	\$	25,000
Vehicle exhaust evacuation system (New bay only)	\$	30,000
Cable TV	\$	6,000
TV's, VCR's, OH Projectors	\$	5,000
Misc building supplies (Floor buffer, wastebaskets, etc.)	\$	5,000
Fitness equipment	\$	-
SCBA compressor	\$	-
Technology Cabling	\$	20,000
Soft Cost Total	\$	319,000
Soft Cost Contingency 5%	\$	15,950
TOTAL FURNISHINGS & EQUIPMENT	\$	334,950

ARCHITECT & ENGINEERING

Fees	\$	550,000
Expenses	\$	10,000
Town Engineering (Survey, Borings, 21E)	\$	20,000
Contingency	\$	20,000
TOTAL ARCHITECT & ENGINEERING		\$ 600,000

TOTAL PROJECT**\$ 7,225,490**

