

Space Needs Analysis Bristol Municipal Buildings

Fire Department Headquarters

111 North Main

Total Building Area: 10,196 SF

Net Useable Area: 8,078 SF

Current Use: Fire Dept. HQ.

Original Construction Year: 1960's

Additions (years): None

Number of Floors: Two



Previous studies reviewed for this building:

Feasibility Study for Renovations 2004.

Drawings used for Study:

PDF's of Infrastructure Cabling Drawings 1997

Current Facility

Building Condition (Refer to Appendix 'A', Condition Survey)

Exterior Building Envelope



Roof: The roof is a dead-level, mechanically fastened E.P.D.M. system approximately 15 years old. Rainwater ponds on the surface of the roof. The roof should be modified to reduce the amount of ponding and provide positive drainage to the roof drains. If building modifications occur it is recommended that a white roof be installed to reduce energy load.



Roof access is by a permanent ladder in one of the stairs. An extension railing should be provided to the ladder and a guardrail added to the roof hatch.

Exterior walls: Typically non-bearing brick veneer over concrete masonry unit back-up wall. Insulation exists in the wall cavity. On the upper level the brick veneer is carried by a continuous steel shelf angle.

It appears that in the past, the roof has leaked into the walls causing efflorescence on the interior (noticeable in stair enclosures) and severe rusting of the shelf angle. There has also been extensive damage to the



brick including cracking, spalling and shifting. There is a strong possibility that wall ties in the wall may have corroded and failed. Some limited re-pointing and brick replacement has occurred. Also, as evidenced on the interior, there are vertical cracks at some locations where perpendicular walls intersect the exterior wall indicating that the wall is separating from the building.

Windows: Windows are showing signs of seal failure which is likely to continue throughout the other windows of the building. Windows in the stair enclosures are only single glazed and should be replaced.

Site

Site paving is badly cracked and should receive crack sealant as a minimum. A section of concrete sidewalk has settled and should be replaced.

Interior Finishes

A detailed condition report for the interior finishes is included in the Appendices.

In general the finishes are in good condition but there are some areas of concern. In particular the toilet rooms and showers are constructed with brick. We consider this to be an unsanitary condition as it is very difficult to clean and is porous in nature. Evidence also exists, on the underside of the second floor in the apparatus room that the showers have been leaking.



Elevator: None Provided.

Fire and Code Deficiencies

Use Group: Mixed Use, R2 Residential, B Business, S2 Storage.

Construction Type: Type IIB Building within area and height limitations.

Required Fire separation between uses: Two Hours (Minimal maintenance of vehicles)

There is no fire sprinkler system in the building.

The floor between the apparatus room and second floor has exposed steel that needs to have a 2 hour fire rating. A fire sprinkler system is recommended for the building.

Existing stairs are narrow and only have one handrail. Adding a second handrail will reduce the stairs, between handrails, to a little over 3'-0" which is acceptable only when the second floor occupant load is less than 50 people. The code occupancy is in excess of 50 people.



The exterior exit route to North Main Street has an excessively high step that should be replaced with a ramp.



The concrete pad at the exit to the south stair is cracked and needs replacement to a pad with a ramp.

ADA Deficiencies



Ramped access to the building is provided on the north end of the building. The entrance door is labeled “Authorized Personnel Only” and should be changed to be the primary public access.

Stairs are not of sufficient width to be accessible and only have handrails on one side.



Second floor toilet rooms and showers are not accessible and need to be replaced. First floor toilet rooms are accessible but require modifications such as adding the swing up railing. Drinking fountain is not accessible.

Kitchen sink is not ADA compliant.

Door knob sets need to be replaced with levers.



Hazardous Materials

Pipe elbows in the boiler room may contain asbestos.

Mechanical, Electrical, Plumbing and other services. (Refer to Appendix ‘B’, Mechanical and Electrical Systems, Existing Conditions Narrative).

In general with the exception of the domestic hot water system, emergency generator, and vehicle exhaust system, the systems are 25+ years old and have met their useful life expectancy. The system components are very inefficient. The ventilation system does not meet current code requirements. We recommend that most of the systems be replaced with new.

Structural Systems

Roof Structure: Tectum Decking on steel bulb-tees supported by structural steel framing.

Second Floor Structure: Reinforced, cast-in-place concrete floor slab supported by structural steel framing.

First Floor: Concrete slab-on-grade construction. Significant shrinkage cracks occur in the apparatus bays.

Structural Frame: Structural steel. Steel Beams in the east and west walls and columns at overhead doors are encased in concrete.

Condition: The concrete encasement of second floor perimeter beams is failing. Cracks and spalls exist which need to be repaired. It is unknown if the



steel shelf angle carrying the second floor brick is secured only to the concrete or if it has direct connection to the steel beam.
Shrinkage cracks exist between the floor drains of the apparatus room.

Available Parking

There are currently 27 parking spaces for the building on site with on street parking available. Redesigning the parking would result in 32 spaces. If an expansion occurs on the site the number could be 29 but this assumes the expansion will include an extra bay for fire equipment current located outside.



Use Recommendations

1. Fire Department HQ

- a. The current building is undersized for the needs of the Fire Department and parking is tight.

OPTION FD 1

A scheme has been developed that expands upon the 2004 study by adding an additional apparatus bay. The site is able to handle the expansion with a slight increase in the parking.

OPTION FD 2

If the maintenance portion of the building could be relocated off-site it would provide an additional bay for vehicles permitting an expansion similar to that indicated in the 2004 study but with a revised site layout to increase parking.

OPTION FD 3

Another option would be to relocate the building to the site of the Bingham School. In order to accomplish this, the school would need to be totally demolished. The school site is adequate for the needs of an expanded facility with plenty of parking. Within this option it would also be possible to construct a vehicle maintenance building to the rear of the site (possibly a metal building) reducing the size of the new main building.

2. Sell Building

- a. It has been reported that a local developer has expressed some interest in purchasing the current facility. If this was done then an entirely new facility would need to be constructed. (See Bingham School site option above).
- b. Lease the building for retail (first floor) and office space (second floor). Upgrades including an elevator will be required.

FIRE DEPARTMENT HEADQUARTERS

Interiors Conditions Survey

Rating : 1 = Good; 2 = Needs Refinished; 3 = Replace

Rm #	Name	Floor	Rating	Walls	Rating	Ceiling	Rating	Notes
101	Apparatus Room	Concrete	1	Brick	1	Concrete Deck		Some leaks from 2nd level
				GWB	2	Steel Beam		Some rusting on steel beam
								Asbestos hanging from pipes
								Some pipe leaks at ceiling
102	Repair Bay							
103	Storage	Concrete	2	Brick	1	Tectum	2	
104	Shop Area	Concrete	2	Brick	1	Tectum	2	
106	Boiler Room	Concrete	2	CMU	2	Concrete	2	
						Steel	2	
	Stair (#1)	Concrete	2	Brick*	1	Ptd GWB	2	* Efflorescence on brick
107	Equipment	Ptd Concrete	1	Brick	1	Concrete Deck	1	
						Steel	1	
108	Toilet	VCT	3	Brick	1	2x4 SAP	1	
				GWB	1			
109	Oil	Concrete	2	Ptd CMU	2	2x4 SAP	3	
110	Office	Carpet	1	Ptd CMU	1	2x2 SAP	1	Some stained panels
111	Office	Carpet	1	Ptd CMU	1	2x2 SAP	1	Window trim missing
								Stained ceiling panels
112	Fire Marshall Offices	Carpet	1	Ptd CMU	1	2x2 SAP	1	Refinish radiator
				Ptd GWB	1			
113	Waiting							
114	Fire Marshall Storage	Carpet	1	Ptd CMU	1	2x2 SAP	1	
115	Computer Room	Concrete	1	Ptd CMU	2	Tectum	2	Cracked CM in wall
116	Chief	Carpet	1	Ptd CMU	1	2x2 SAP	1	
117	Admin	Carpet	1	Ptd CMU	1	2x2 SAP	1	
118	Hall	Norament	1	Brick	1	2x2 SAP	1	
119	Hall	Norament	1	Brick	1			
				GWB	1			
201	Dorm	VCT	1	Ptd CMU	1	2x4 SAP	3	
				Brick	1			
202	Locker	VCT	2	Brick	1	2x4 SAP	2	

FIRE DEPARTMENT HEADQUARTERS

Interiors Conditions Survey

Rating : 1 = Good; 2 = Needs Refinished; 3 = Replace

Rm #	Name	Floor	Rating	Walls	Rating	Ceiling	Rating	Notes
203	Toilet	VCT	2	Brick	2	2x4 SAP	2	Replace Brick Shower
204	Meeting	VCT	1	Brick	1	2x4 SAP	1	Black grid
				Ptd CMU	2			
205	Day Room	VCT	1	Brick		2x4 SAP	2	Sagging/discolored ceiling panels
				Ptd CMU	1			
206	Hall	VCT	1	Ptd CMU	2	2x4 SAP	1	
				Brick				
207	Kitchen	CT	1	Ptd CMU	1	2x4 SAP	1	Black grid
				Ptd GWB	1			
208	Office toilet	VCT	1	Brick		2x4 SAP	3	Brick in shower & toilet
								Ceiling leaks
								Shower doesn't drain
								Unsanitary
209	Offices	VCT	1	Ptd CMU	1	2x4 SAP	2	Outside wall separating
210	Offices	VCT	1	Ptd CMU	1	2x4 SAP	2	Outside wall separating
211	Offices	VCT	1	Ptd CMU	1	2x4 SAP	2	Outside wall separating
212	Slide Pole	VCT	1	Ptd CMU	2	2x4 SAP	3	
				Ptd GWB	2			
	Stair (#2)	Ptd Concrete	2	Brick*		2x4 SAP	2	*Efflorescence on outside walls
						Ptd GWB	1	
								GENERAL:
								Windows: Seals failing.
								Second Floor exterior wall failing. See photos.
								Floor drains in Apparatus Room constantly plugged.

Appendix "B"

Mechanical and Electrical Systems
Existing Conditions Narrative

Fire Headquarters
Bristol, Connecticut
November 1, 2011

Prepared By
Consulting Engineering Services, Inc.
811 Middle Street, Middletown, Connecticut 06457
CES Project No. 2011127.00

APPLICABLE CODES AND STANDARDS

The mechanical, electrical, plumbing, and fire protection systems will be reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements.

- A. 2005 Connecticut State Building Code
- B. 2005 Connecticut State Fire Safety Code
- C. 2003 International Building Code(IBC)
- D. 2003 International Plumbing Code
- E. 2003 International Energy Conservation Code
- F. NFPA, All applicable code sections, Latest Version
- G. ASHRAE 90.1

PLUMBING NARRATIVE

PLUMBING UTILITIES

1. Domestic Water:

- a. Existing Domestic Water Service: The existing building is currently served by a 2 inch domestic water service. The domestic water service equipment includes a 1 ½ inch water meter, pressure reducing valve, and isolation valves. This water service currently serves all of the building's domestic water needs and has adequate pressure. The water distribution system is original to the building.



2. Natural Gas:

- a. Existing Natural Gas Service: There is currently no natural gas service to the building.

3. Sanitary:

- a. Existing Sanitary Service: The sanitary sewer system provides sanitary waste drainage for plumbing fixtures located throughout the building. The piping material above grade is primarily cast iron. The Plumbing fixtures drain to buried sanitary waste piping to the buildings exterior and to the municipal sewer system.

4. Storm:

- a. The storm piping is primarily cast iron and drains to the municipal storm water system. There are no secondary roof drains.
- b. There are areas of the storm water system where the piping has been replaced with PVC. Further investigation should be done to determine the exact cause of the failure.



- c. There are no reports of problems with the storm water piping below grade.

PLUMBING FIXTURES AND SPECIALTIES

1. Existing plumbing fixtures are as follows:

- Water closets are floor or wall mounted; flush valve, vitreous china. These fixtures are non-water conserving type in fair condition. Most of these fixtures are non-ADA compliant.



- Urinals are wall hung, vitreous china, with flush valves. These are non-water conserving type and in fair condition.



- Lavatories are wall hung vitreous china. Faucets are a combination of single lever handle and two lever handle faucets. The lavatories are in fair condition. The faucets and drains are non-ADA compliant.



- Drinking fountains are floor mounted steel units, non-ADA compliant and in fair condition.



- A stainless steel sink with two lever gooseneck type faucet and spray hose has recently been added to the kitchen. This sink is non-ADA compliant and in good condition.



- Janitor sinks are wall mounted cast iron units with two lever faucets. There is no vacuum breaker present at these sinks. The sinks are original to the building and in poor condition.



- The showers are constructed of brick with terrazzo type bases. The showers have single lever operators. These showers are non-ADA compliant and in poor condition.



DOMESTIC HOT WATER SYSTEMS

1. The existing domestic hot water system includes a Triangle Phase III indirect water heater which is fed from the existing boiler. The system also includes an A.O. Smith Model ECT 80-200 electric water heater. This equipment is in fair to good condition.



FIRE PROTECTION NARRATIVE

FIRE PROTECTION SERVICE

1. There is no fire protection system (sprinklers) currently at the building.

MECHANICAL SYSTEMS:

EXISTING SYSTEMS

1. The existing building is heated by a single H.B. Smith oil fired hot water boiler. The oil burner is a Carlin Model 702 CRD. The boiler is in fair condition. The oil burner is in good condition.



2. There are (3) zones for the heating hot water. Three (3) in-line circulator pumps push water to the three zones. These hot water pumps are in poor condition.



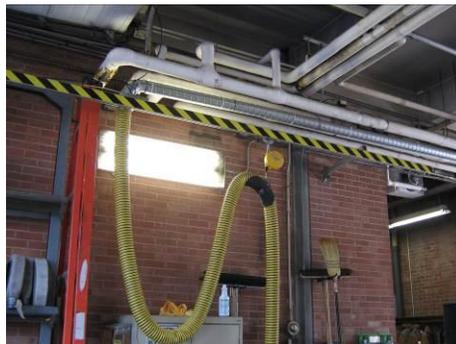
3. The present heating system also includes hot water cabinet unit heaters and baseboard radiators in the occupied areas of the building. Ceiling mounted fan powered unit heaters are located in the apparatus bays.



4. There are ceiling mounted fan coil units with supply air ductwork, ceiling mounted supply air diffusers, a single return, and remote condensing units for air conditioning. There are complaints from the occupants because of poor air distribution from these units. This equipment is in poor condition.



5. Toilet exhaust fans are located on the roof. This equipment is in poor condition.
6. The apparatus bays include a vehicle exhaust removal system manufactured by Plymovent. This includes flexible air hoses connected to the apparatus, support rails for the flexible hose, exhaust ductwork, fans and controls. This equipment is in good condition.



7. Window type air conditioning units have been added to supplement the overhead distribution system.



8. There are (2) separate fuel oil tanks on site. (1) 8000 gallon tank and (1) 4500 tank. The age and condition of these tanks is unknown.

ELECTRICAL NARRATIVE

EXISTING SYSTEMS

1. The building is served by a single electrical service rated 400amperes, 208Y/120volts, 3-phase, 4-wire. This service equipment consists of a 400amp main disconnect switch, panelboards and metering per utility company requirements. The service equipment is original to the building and is in fair condition.



2. There are a number of electrical panels located throughout the facility. These panelboards are original to the facility. The condition of these panelboards is fair. The majority of the panelboards do not have spare circuit breakers available for new circuits to be added, or have space to add new circuit breakers.



3. The lighting throughout the facility consists primarily of recessed mounted acrylic lensed fluorescent fixtures in the occupied spaces and industrial fluorescent fixtures in the apparatus bays and storage areas. There are other miscellaneous fixtures spotted throughout the building. Most of the lighting is older T12 technology and should be upgraded. There are other fixtures using incandescent lamps that are in poor condition that should be replaced. There are also other fixtures that are damaged that should be replaced. The lighting ranges from poor to fair condition.



4. Site lighting is limited and consists of building mounted flood lights. These fixtures are not energy efficient and are in poor condition.



5. The fire alarm system is manufactured by Simplex, Model 4004. The system includes manual pull stations, horn strobes, and ceiling mounted smoke or heat detectors. This system is in good condition. The coverage of smoke detectors and other devices appear to be inadequate. Additional devices, such as horn/strobe units, are required to comply with current ADA requirements.



6.

7. The emergency lighting is provided by the emergency generator. This emergency generator serves the entire facility. The emergency generator consists of an external generator manufactured by Cummins/Onan, weatherproof enclosure, base mounted fuel tank, and 400amp automatic transfer switch. This equipment is in very good condition.



8. The exit signs consist of fluorescent exit signs, some including batteries. This equipment is in fair condition.

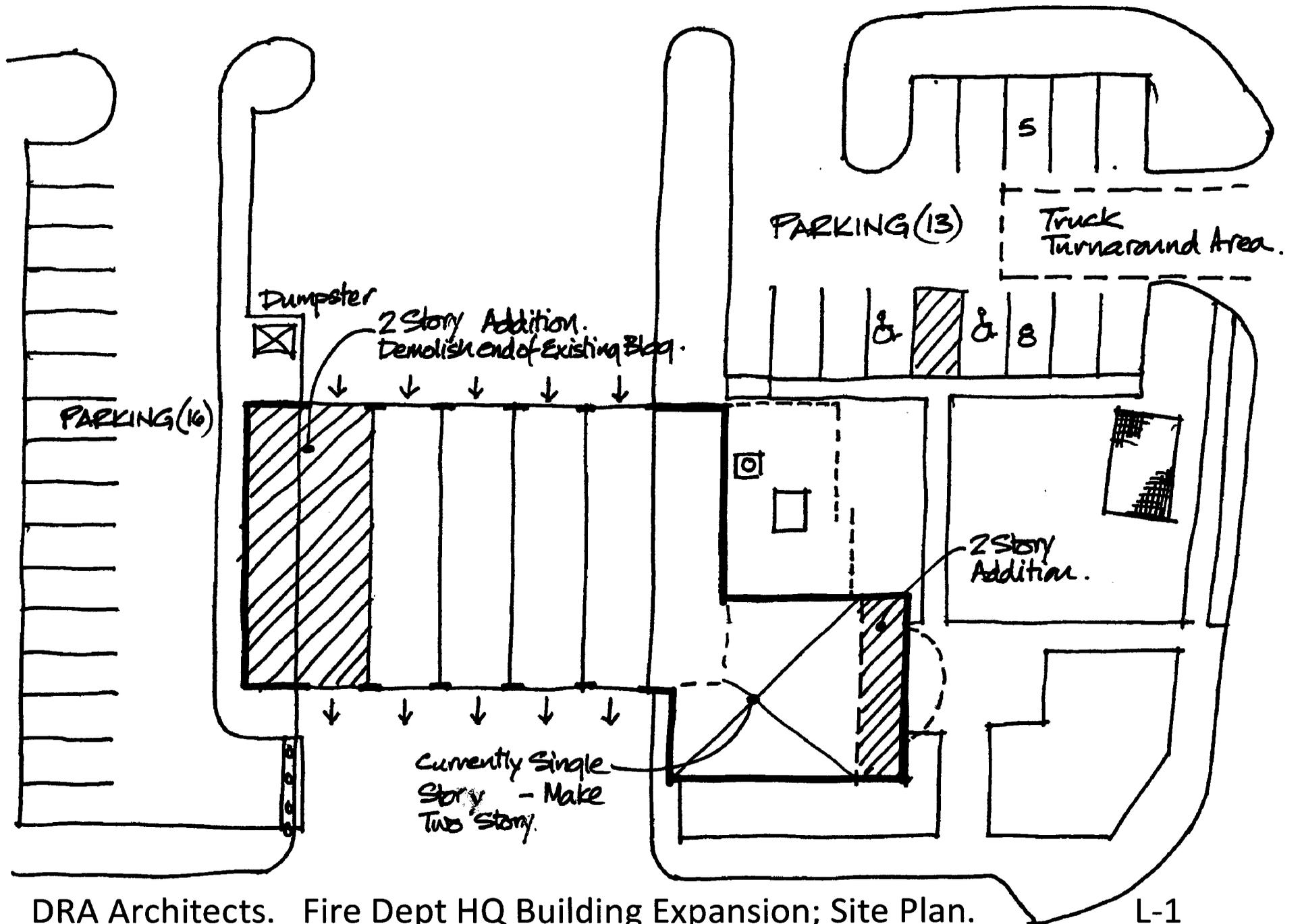


MEP SYSTEMS CONCLUSION

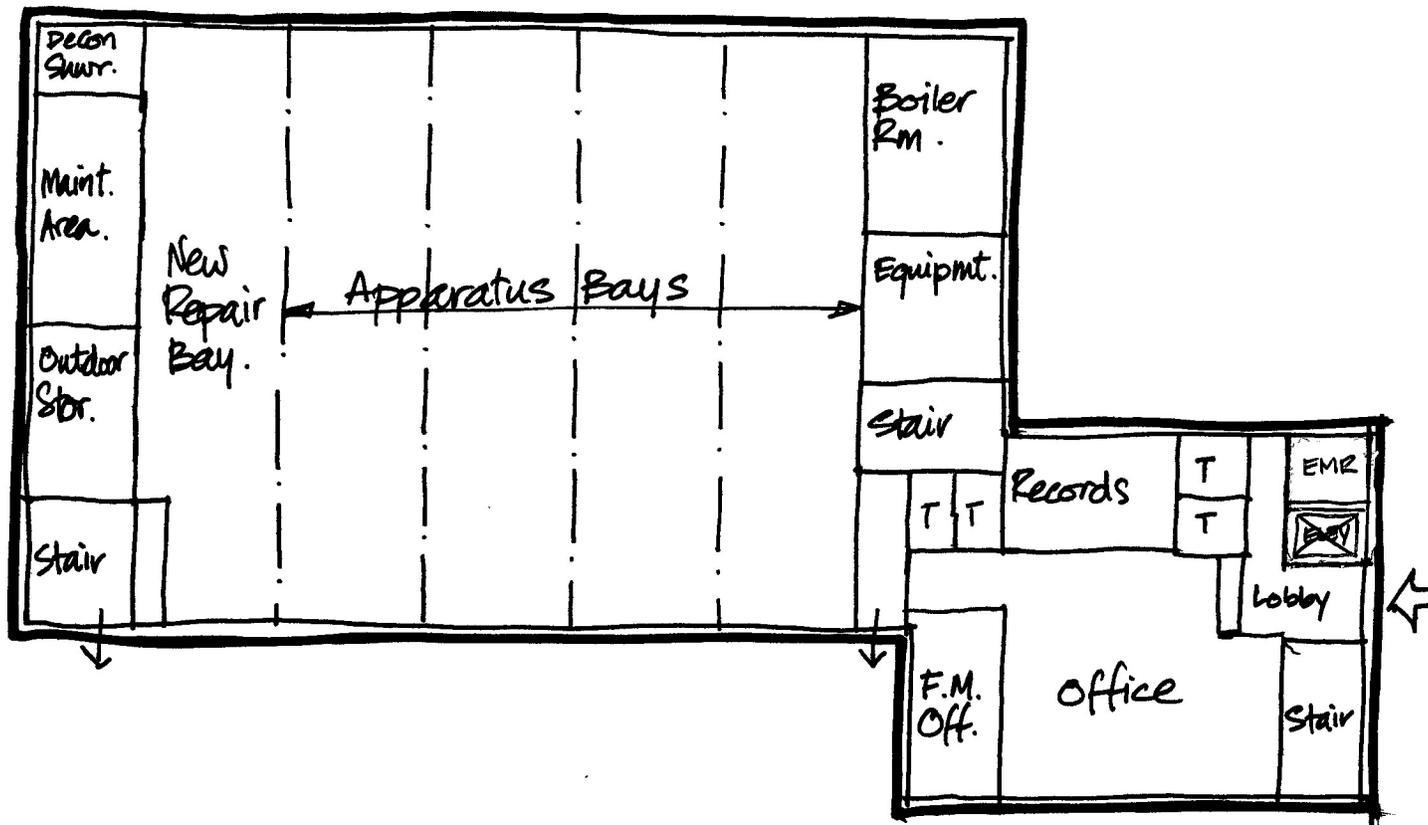
In general with the exception of the domestic hot water system, emergency generator, and vehicle exhaust system, the systems are 25+ years old and have met their useful life expectancy. The system components are very inefficient. The ventilation system does not meet current code requirements. We recommend that most of the systems be replaced with new.

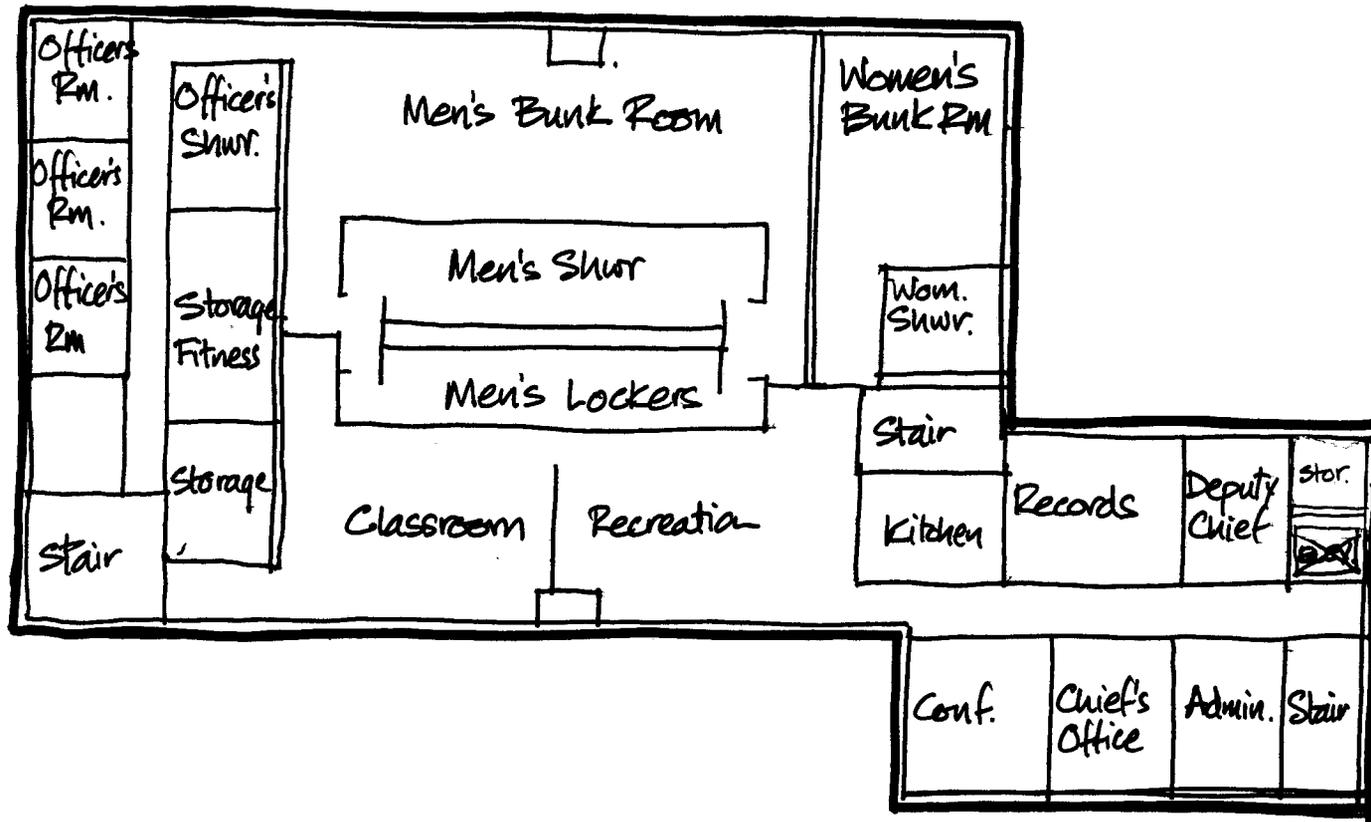
Space Summary- Bristol Fire Department Head Quarters

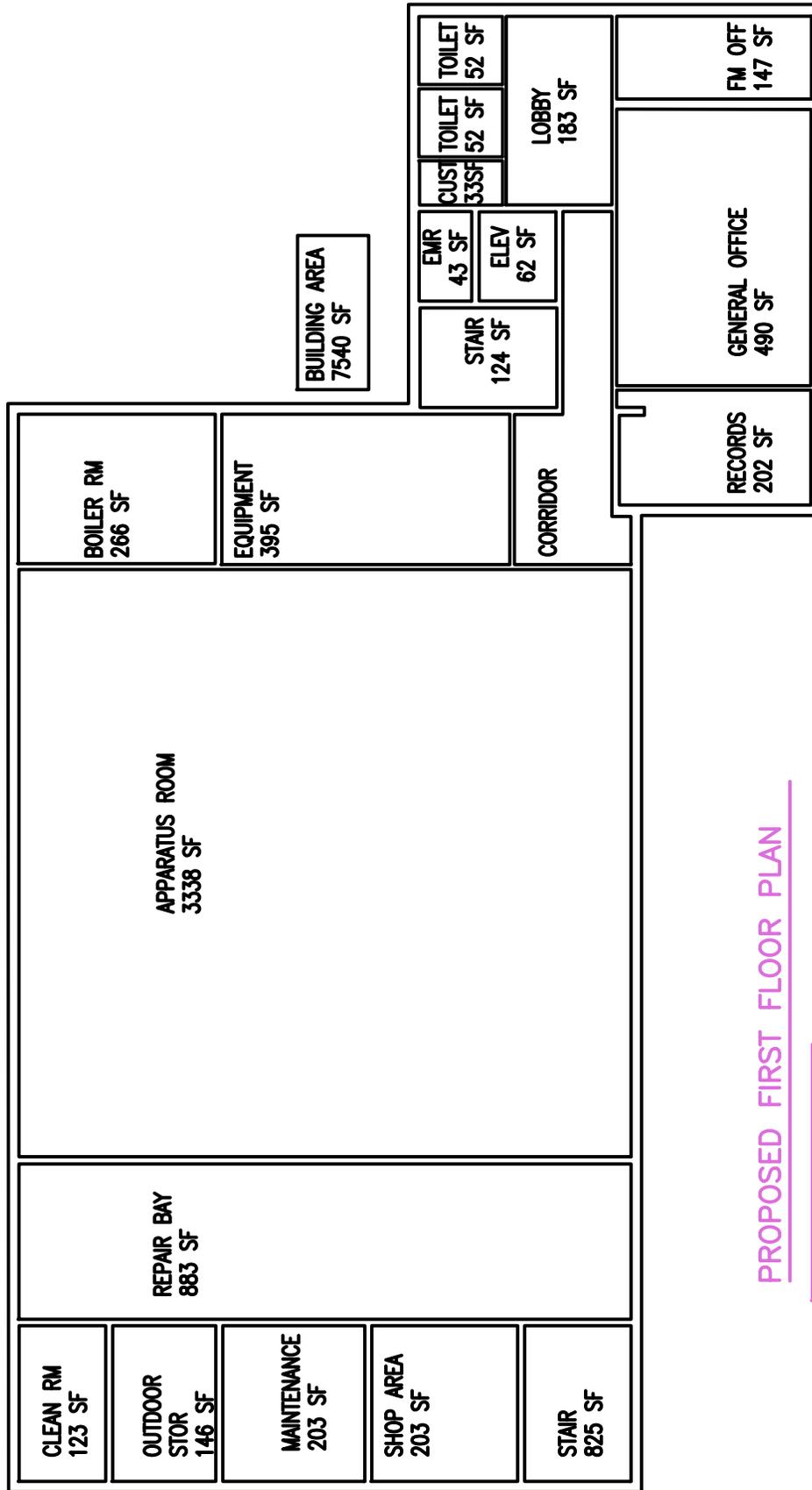
FIRE DEPARTMENT BREAKDOWN	EXISTING		OPTION FD 1	
	Current Space SF	Floor	Proposed SF	Floor
Chief's Office	230	1	255	2
Administration	140	1	184	2
Fire Marshal's Office	90	1	147	1
General office	370	1	490	1
Copier	95	1	0	
Computer Room	45	1	0	
Break Room	70	1	0	
Toilet	80	1	102	1
Equipment	200	1	395	1
Apparatus Room	2454	1	3338	1
Repair Bay	809	1	883	1
Maintenance	200	1	203	1
Classroom	500	2	500	2
Recreation Area	550	2	550	2
Kitchen	235	2	235	2
Men's Toilet/Showers	290	2	290	2
Men's Lockers	280	2	280	2
Dormitory	1035	2	1035	2
Officer 1	115	2	120	2
Officer 2	100	2	120	2
Officer 3	90	2	120	2
Officers Toilet	80	2	168	2
Closet	20	2	0	
New Required Spaces:				
Clean Room	0		123	1
Outdoor Storage	0		146	1
Shop Area	0		203	1
1st Floor Records Room	0		200	1
Women's Dormitory	0		342	2
Women's Toilet/Shower Room	0		203	2
Deputy Chief	0		178	2
Conference Room	0		240	2
2nd Floor Records Room	0		287	2
Fitness Room	0		380	2
Storage	0		137	2
Storage	0		143	2
TOTAL NET SF	8078		11997	
COMMON AREAS & WALLS	2118	21%	3083	20%
TOTAL BUILDING AREA SF	10196		15080	



DRA Architects. Fire Dept HQ Building Expansion; Site Plan.

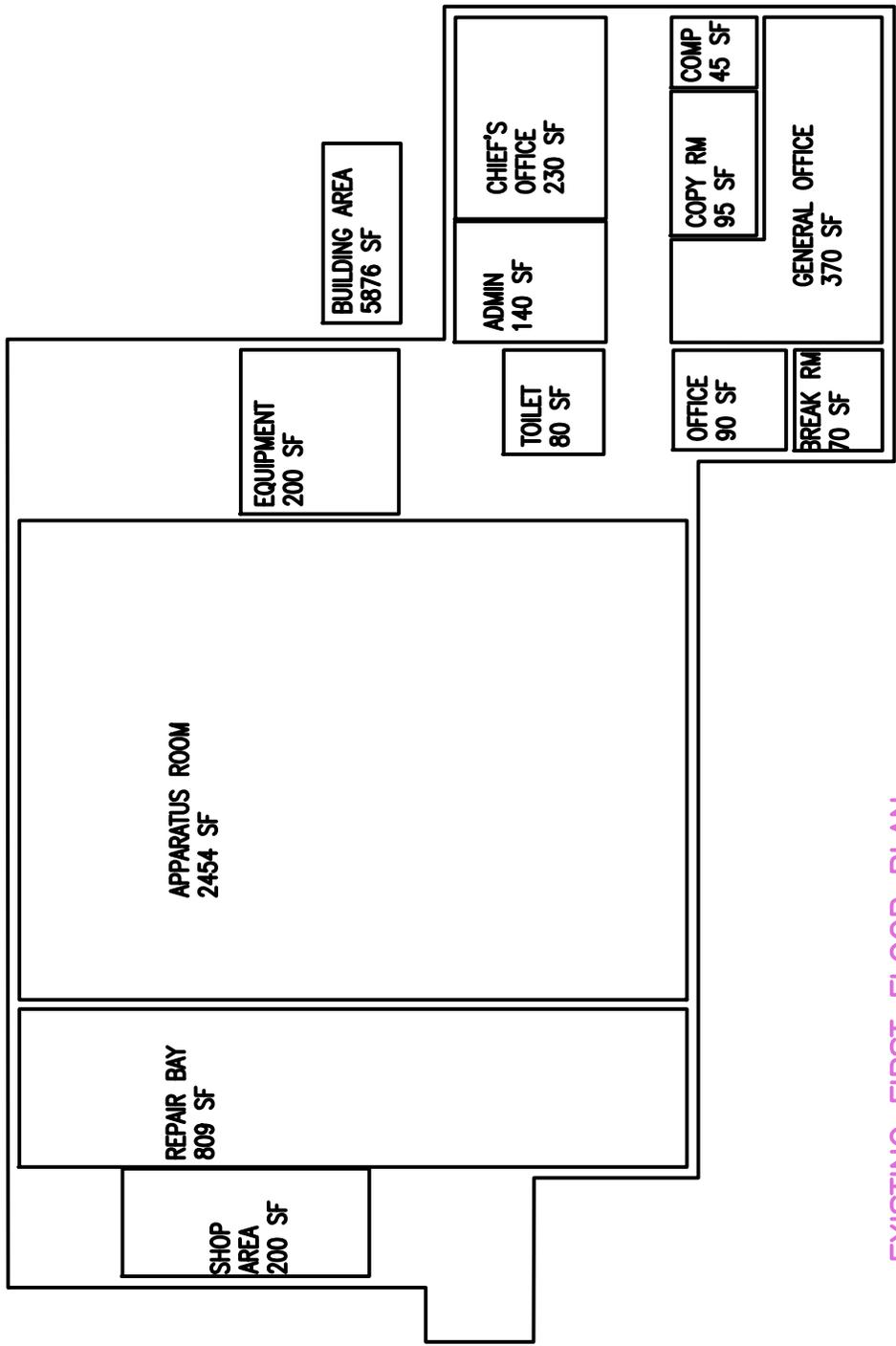




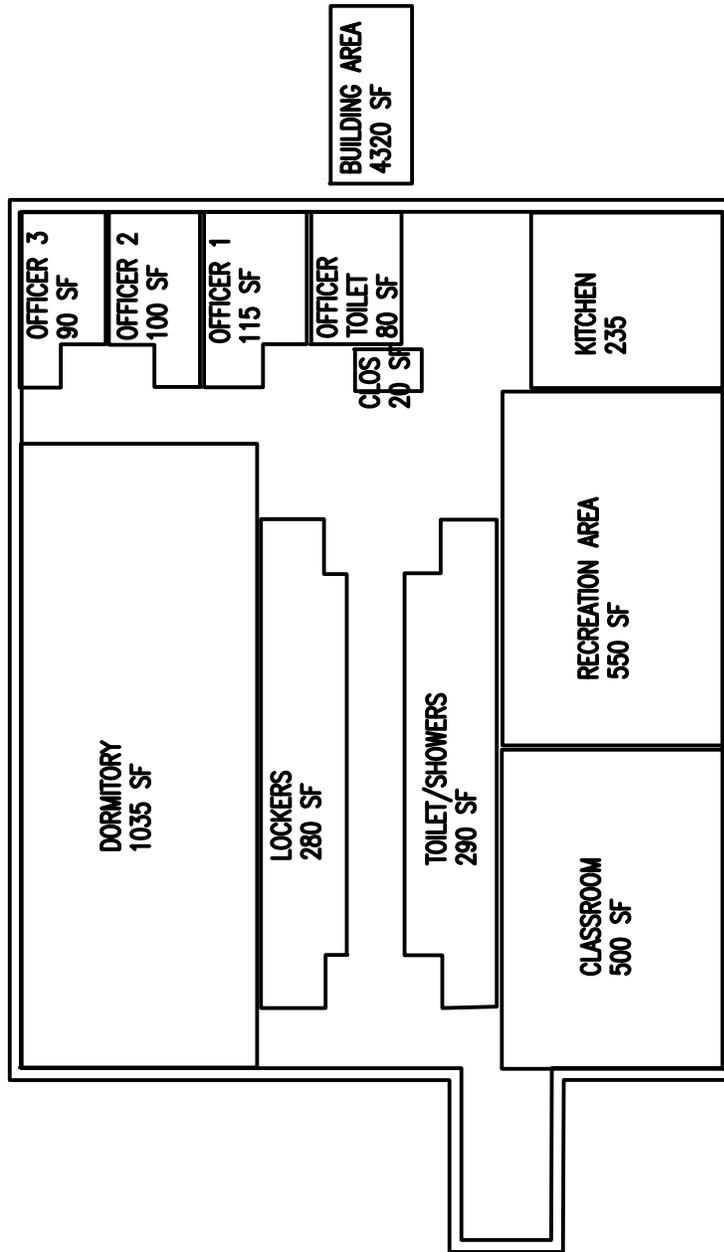


PROPOSED FIRST FLOOR PLAN

Option FD1



EXISTING FIRST FLOOR PLAN



EXISTING SECOND FLOOR PLAN



McGLADREY & PULLEN, LLP
 Certified Public Accountants and Consultants

PROJECT NAME:
 City of Bristol Connecticut
 Bristol, Connecticut
 Central Fire Headquarters

PROJECT NUMBER:
 37B-992-6

SYMBOLS & ABBREVIATIONS

- STAFF "STAFF" DROP LOCATION
 2 DATA CABLES
 1 VOICE CABLE SPLIT
- PUBLIC "PUBLIC" DROP LOCATION
 2 DATA CABLES
 0 VOICE CABLES
- INDICATES 2 PUBLIC DROPS
 4 DATA CABLES
 0 VOICE CABLES
- INDICATES 1 PUBLIC DROP AND 1 STAFF DROP
 4 DATA CABLES
 1 VOICE CABLE SPLIT

AFF ABOVE FINISHED FLOOR
 E.C. ELECTRICAL CONTRACTOR
 MDF MAIN DISTRIBUTION FRAME

LABELING LEGEND

- POSITION ON PATCH PANEL
- A-11 PATCH PANEL IDENTIFICATION

REVISIONS:

NO.	DESCRIPTION	DATE
0	FOR INFORMATION	03-24-97
1	FOR BID / CONSTRUCTION	04-28-97
2	CONSTRUCTION PLAN	8-20-98

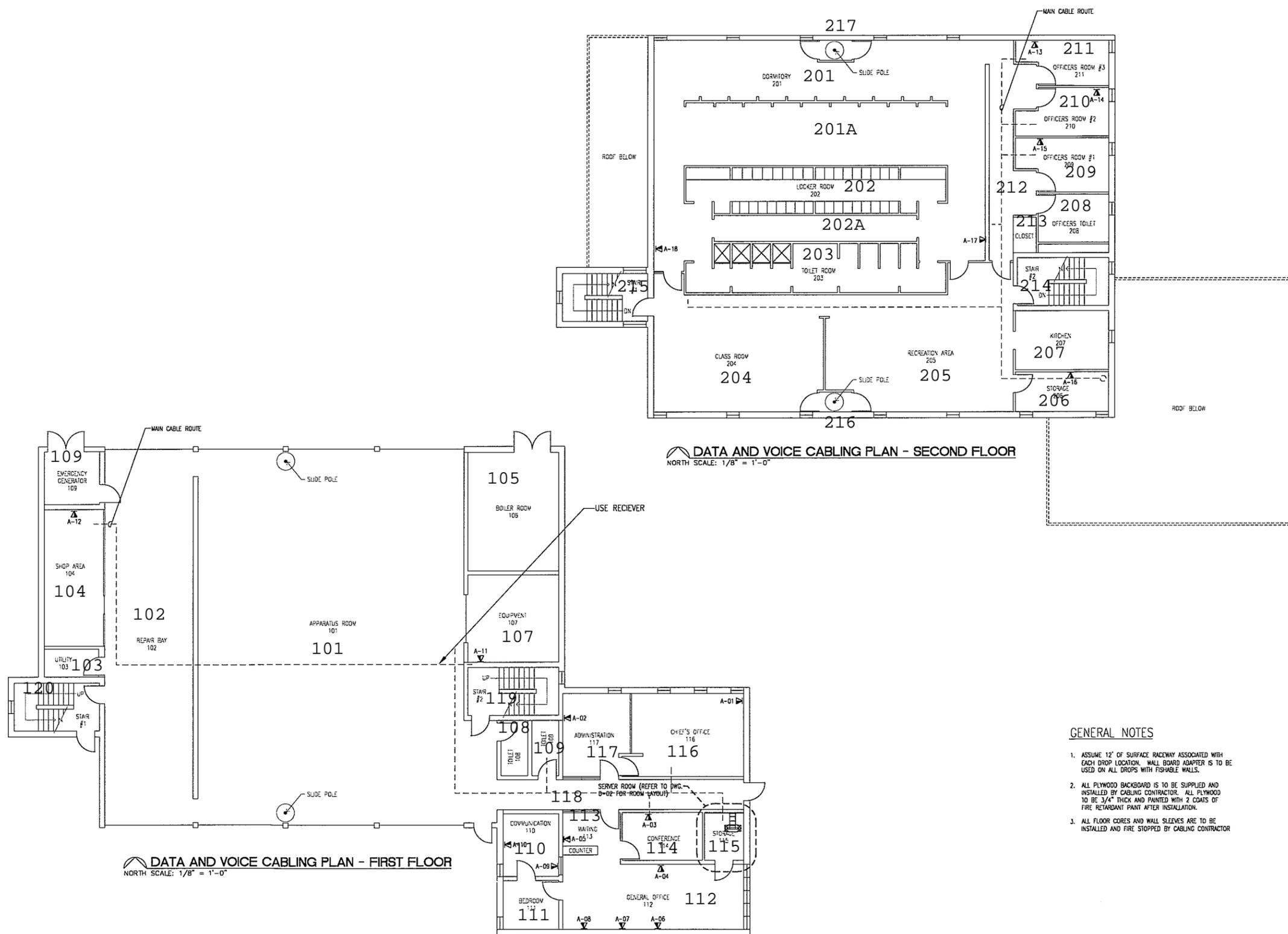
DESCRIPTION:
 CENTRAL FIRE HEADQUARTERS
 NETWORK INFRASTRUCTURE CABLING
 FIRST & SECOND FLOOR PLAN
 DATA & VOICE CABLING PLAN

DATE:
 03-12-97

DRAWN BY:
 SVT

DRAWING NUMBER:

D-01



GENERAL NOTES

1. ASSUME 12" OF SURFACE RACEWAY ASSOCIATED WITH EACH DROP LOCATION. WALL BOARD ADAPTER IS TO BE USED ON ALL DROPS WITH FISHBLE WALLS.
2. ALL PLYWOOD BACKBOARD IS TO BE SUPPLIED AND INSTALLED BY CABLING CONTRACTOR. ALL PLYWOOD TO BE 3/4" THICK AND PAINTED WITH 2 COATS OF FIRE RETARDANT PAINT AFTER INSTALLATION.
3. ALL FLOOR CORES AND WALL SLEEVES ARE TO BE INSTALLED AND FIRE STOPPED BY CABLING CONTRACTOR