All fire alarm systems installed shall meet all the applicable sections of the following current codes: California Building Code, California Fire Code; California Electrical Code; NFPA Standard 72 - National Fire Alarm Code. All installation work shall be done by a contractor who possesses a valid C-10 or C-07 California Contractor's License. Please contact the Bureau of Fire Protection and Life Safety at (650) 522-7940 with any questions or to schedule an inspection.

1. Submittal Requirements

Plans shall be submitted to the Building Division. All Fire Alarm System Plan Submittals shall include:

A. A completed Permit Application

B. Four (4) complete sets of the required plans, specifications, and calculations meeting the Fire Alarm Design Criteria. (Refer to Plan Submittal Requirement Checklist).

   NOTE: If the installing contractor is not the designer of the system, the plans will be required to be stamped and wet signed by the Licensed System Design Engineer.

C. Payment of Fees. A plan check and permit fee will be charged for each submittal. Please remit payment in full at the time of submittal.

   NOTE: Failure to provide all of the requested information will result in unnecessary delays in the plan review process.

2. Approval of Plans

The approved permit application entitles the applicant to one (1) inspection of the rough wiring installation prior to cover; one (1) 24 hour Standby Battery Test; one (1) final inspection, at which time all initiating and signaling devices will be tested; and one (1) reinspection. It is the installer's responsibility to perform sufficient pre-inspection testing to ensure operational integrity and reliability of the system in order to avoid delays at the time of the final inspection.

The approved plans, specifications, calculations, and permit shall remain on the job site at all times. Failure to provide the approved plans or permit at the time of inspection will result in a failed inspection and a reinspection fee will be assessed.

3. Pre-Testing and Inspections

A. Fire Department Witnessed 100% Test

   1. On the day of the test the installing contractor shall provide the following:

      a) Minimum of two (2) personnel
      b) Sound (db) Meter
      c) Voltage Meter
d) Ladder  
e) 2 Portable Radios  
f) Appropriate tools for removing, testing, activating, etc., any fire alarm device  
g) Reset instructions made of a durable material shall be affixed to the fire alarm panel.  
h) Reduced size and legible device plan indication device locations.  
i) Approved plans and/or revised plans with permit card  
j) NFPA 72-written “Record of Completion” document.

NOTE: Scheduling of inspections shall be requested a minimum of 48 hours in advance by calling Fire Prevention at (650) 522-7940.

4. Fire Alarm Design Criteria

1. The fire alarm system shall meet the requirements of NFPA 72 and the Fire Department.
2. Identify the type of fire alarm system per the current California Building Code and/or California Fire Code and NFPA 72.
3. Visual devices shall be installed in interior corridors and small common rooms.
4. Visual and Audible shall be installed in all common areas.
5. All alarm devices, junction boxes, and modules exposed to the weather or installed in below grade areas (i.e. parking garages, utility areas, etc.) shall be listed for use in a weather/water environment. All installed per the manufacturers’ recognized weather/water tight manner. There are no exceptions.
6. All penetrations of any fire rated assemblies shall be repaired with a listed system. Provide the listed penetration details on the plans.
7. Residential single station smoke detectors required by CBC shall not be connected to the building fire alarm system.
8. The fire alarm system shall be addressable as to the type of device and zoned per floor.
9. All fire alarm systems shall be capable of audibility level of 15 db over ambient. For residential units the minimum ambient sound level shall be 35 dba.
10. Off-site monitoring shall be capable of identifying the following signals: Automatic fire alarm, trouble alarm, and supervisory alarm independently. Supervisory alarms shall also be independently identified per fire sprinkler controls, fire pumps, fire dampers, duct detectors, and type of device.
11. Provide certification and contract for off-site monitoring company.
12. Provide all test documentation per NFPA 72.
13. Any repairs or the replacement of a fire alarm panel shall be considered a new fire alarm system and subject to all the testing requirements for a new fire alarm system.

5. Plan Submittal Requirement Checklist

A TYPICAL FIRE ALARM SYSTEM PLAN SUBMITTAL WILL INCLUDE FOUR (4) COMPLETE SETS OF THE FOLLOWING ITEMS (A thru P): Check off completed items. **Failure to provide the required information will result in the delay of your plan review.**

- [ ] Signed Pre-Submittal Agreement
- [ ] Title Sheet (refer to Exhibit A) which includes
  - [ ] Address of project (including suite number).
Name and Address of Owner.

Name and Address of Tenant.

Name and Address of Project Engineer and/or Architect.

Name and Address of System Designer and/or Installing Contractor.

Scope of Work. Detail the exact nature of the work in a clear, concise, and simple to understand language including the intent of the fire alarm system.

Floor Plan (refer to Exhibit B), which includes:
- Device locations
- Type of device
- Controls location
- Conduit connection and size
  - Surface mounting installation
  - Semi-flush mounting installation
  - Flush mounting installation
- Type and size of wire or cable
- Exterior mounted devices (Weatherproof Fixture with listed back boxes)
- Matrix indicating sequence of operation.

Point to Point System Wiring Diagram (refer to Exhibit C), which includes:
- Interconnection of identified devices
- Type of power feed to the control panel
- External connection of modules in control panel

Symbol List and Equipment Identification on Drawing (refer to Exhibit D), which includes:
- Symbols to be used on drawings
- Symbol description
- Model number and manufacturer's name

Riser Diagram (refer to Exhibit E), which includes:
- Single line interconnection of devices

FIRE DEPARTMENT
☐ Conductor quantity: either hash marks or number
☐ Initiating and indicating zone designations

☐ Signaling Circuit Load Consumption of Furthest Alarm Circuits on Drawing (refer to Exhibit F), which includes:
  ☐ Quantity of audio/visual indicating devices on furthest circuit and current consumption
  ☐ Length of furthest circuit and resistance of wire
  ☐ Formula on drawing and acceptable limit

☐ Manufacturer's Data Sheets on All System Components and Devices
☐ California State Fire Marshal's Listing Sheets for All System Components and Devices.

☐ Battery Calculation Sheet (refer to Exhibit G), which includes:
  ☐ Standby power consumption for all current drawing devices times the hours required by the applicable NFPA Standard.
  ☐ Alarm power consumption of all current drawing devices times the minutes required by the applicable NFPA Standard.

☐ System Operating Instructions that includes:
  ☐ Step by step instruction for the operation of each type of initiating device in the system, including reset procedures.
  ☐ A copy of the reset instructions shall be made of a durable material and shall be permanent affixed to the fire alarm control panel.

☐ Design Details (refer to Exhibit H), which includes:
  ☐ Standards used for the design of the system
  ☐ Details on the occupancy type
  ☐ Construction type
  ☐ List of initiating and signaling zone assignments
  ☐ Detailed scope of work that identifies the intended system functions or assignments (i.e. system replacement, addition to an existing system, new system, etc.).

☐ Equipment List (refer to Exhibit I), which includes:
  ☐ Quantity of the devices
  ☐ Model Numbers and Description
☐ California State Fire Marshal Listing Number

☐ Completed NFPA 72 monitoring forms, which includes:
  ☐ Identify the type of monitoring, Central Station or Remote
  ☐ UL certification for installed equipment
  ☐ UL central station certification
  ☐ Copy of monitoring contract

☐ Identification of wire tagging method that conforms to the requirements of NFPA 72 and CEC section 760-10. All wiring into each device shall be identified. The wiring into a device shall indicate the origin or where it is coming from and the wiring leaving a device shall indicate the destination or where it is going. Each wire tag shall identify the device number, circuit number and the floor. (refer to Exhibit J)

☐ If utilizing any of the existing fire alarm components, written verification that the contractor has tested all existing components and the existing system is capable of handling the new work. The written verification shall include the Contractor’s Name, address, phone number and Contractors License Number.
Exhibit A

TITLE SHEET

PROJECT
234 56th Avenue, Suite 123
San Mateo, California

OWNER
John R. Drawers
415 23rd Avenue, San Mateo

TENANT
DotCom Computers
1652 12th Avenue, San Mateo

ENGINEER
Thomas Sparks

CONTRACTOR
All Alert Fire Alarms Inc.
Lic # 12345 C-10
Phone: (510) 462-5677
Fax: (510) 462-5678

FIRE ALARM
Simplex Time Recorder Company

EQUIPMENT SUPPLIER

SCOPE OF WORK
Install new central station fire alarm system in an existing tenant space.
# Exhibit D

<table>
<thead>
<tr>
<th>STATE FIRE MARSHAL NO.</th>
<th>MODEL NO.</th>
<th>EQUIPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>7165 – 026:147</td>
<td>4001-9403</td>
<td>FACP</td>
</tr>
<tr>
<td>7120 – 026:148</td>
<td>4601-9101</td>
<td>ANN</td>
</tr>
<tr>
<td>7150 – 026:11</td>
<td>2099-9201</td>
<td>MANUAL PULL STATION</td>
</tr>
<tr>
<td>7135 – 026:139</td>
<td>2901-9833</td>
<td>FIRE ALARM HORNS</td>
</tr>
<tr>
<td>7135 – 026:138</td>
<td>2901-9321</td>
<td>FIRE ALARM BELLS</td>
</tr>
<tr>
<td>7270 – 026:43</td>
<td>2098-9464</td>
<td>HEAT DETECTOR</td>
</tr>
<tr>
<td>7257 – 026:132</td>
<td>2098-9636</td>
<td>SMOKE DETECTOR W/01 BASE</td>
</tr>
<tr>
<td>3550 – 047:1</td>
<td>2098-9554</td>
<td>DOOR HOLDER 24VDC</td>
</tr>
</tbody>
</table>

**Symbol Key:**
- FACP
- ANN
- F
- □
- ▽
- ◇
- ○
- ◯
- ◐
Exhibit F

ACTUAL POINT TO POINT VOLTAGE DROP CALCULATION!

\[ \begin{array}{cccc}
22SA & 21A & 19.5A & 18A & 16.5A \\
0.94V & 0.92V & 0.88V & 0.86V \\
\end{array} \]

\[ \begin{array}{cccc}
\text{TOTAL CURRENT EACH POINT} \\
0.08A & 1.06A & 12A & 11.6A & 11.5A \\
\end{array} \]

\[ \begin{array}{cccc}
0.018V & 0.021V & 0.024V & 0.029V \\
\end{array} \]

\[ \begin{array}{cccc}
\text{TOTAL CURRENT EACH POINT} \\
0.075A & 0.06A & 0.045A & 0.03A & 0.015A \\
\end{array} \]

\[ \begin{array}{cccc}
0.015V & 0.012V & 0.009V & 0.006V & 0.003V \\
\end{array} \]

\[ V_l = 359 \]

24VDC = 1.49%

\[ \nabla = \text{MINI HORN @ 0.015 AMP ALARM CURRENT @ 24VDC} \]

ASSUME 15 FEET BETWEEN HORNS OF 18-2 POWER LIMITED CABLE

\((AxL \times 21.36) + \text{CIRC MILS (1620)}\)

VOLTAGE DROP IS TAKEN AT EACH DEVICE -

USE CURRENT TOTAL FOR DEVICES TO THAT POINT IN FORMULA.

USE WIRE LENGTH ADDITIONAL BETWEEN EACH POINT.

IN THIS EXAMPLE WIRE LENGTH IS 15' STANDARD.
### Exhibit G

**Battery Calculations**

<table>
<thead>
<tr>
<th>Standby Condition/Tonealert Sounding</th>
<th>24 Hour Standby</th>
<th>60 Hour Standby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Module</td>
<td>@</td>
<td>=</td>
</tr>
<tr>
<td>Zone Module</td>
<td>@</td>
<td>=</td>
</tr>
<tr>
<td>Signal Module</td>
<td>@</td>
<td>=</td>
</tr>
<tr>
<td>Detectors</td>
<td>@</td>
<td>=</td>
</tr>
<tr>
<td>Other</td>
<td>@</td>
<td>=</td>
</tr>
</tbody>
</table>

= __________ amps X __________ hours = __________ ah

**Alarm Condition/Signal Sounding**

| Control Module                     | @               | =               |
| Zone Module                         | @               | =               |
| Signal Module                       | @               | =               |
| Detector(s)                         | @               | =               |
| Signals                             | @               | =               |
| Annunciator Lamps                   | @               | =               |
| Other                               | @               | =               |

= __________ amps X __________ hours = __________ ah

X (0.083) =

Total amp hours required =

---

Local and Proprietary Alarm Systems

24 hours standby - 5 mins. of alarm

Auxiliary or Remote Service Station

60 hours standby - 5 mins. of alarm

EMERGENCY GENERATOR

YES  ☐  NO  ☐
### Exhibit H

#### DESIGN DETAILS

<table>
<thead>
<tr>
<th>Installation Standard</th>
<th>California Building Code, NFPA 72,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Occupancy</td>
<td>B Office Space</td>
</tr>
<tr>
<td></td>
<td>S-3 Garage</td>
</tr>
<tr>
<td></td>
<td>A-3 Meeting Room</td>
</tr>
<tr>
<td>Type of Construction</td>
<td>Type V-N</td>
</tr>
<tr>
<td>Special Hazards or Considerations</td>
<td>None</td>
</tr>
<tr>
<td>Type of Fire Evacuation System</td>
<td>NFPA 72 per C.E.C</td>
</tr>
<tr>
<td></td>
<td>Article 760 Part A, C</td>
</tr>
<tr>
<td>Type of Initiating Circuits</td>
<td>4 Zones - Class &quot;B&quot;</td>
</tr>
<tr>
<td></td>
<td>Power Limited</td>
</tr>
<tr>
<td>Type of Indication Circuits</td>
<td>1 Zone - Class &quot;B&quot;</td>
</tr>
<tr>
<td></td>
<td>Power Limited</td>
</tr>
<tr>
<td>Type of Supplementary Circuits</td>
<td>None</td>
</tr>
<tr>
<td>Conductor Information</td>
<td>Red for Indicating Circuits</td>
</tr>
<tr>
<td></td>
<td>White for Initiating Circuits</td>
</tr>
</tbody>
</table>
### Exhibit I

#### EQUIPMENT LIST

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>MODEL#</th>
<th>DESCRIPTION</th>
<th>CSFM#</th>
<th>MOUNTING REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4001-9401</td>
<td>Fire Control Panel</td>
<td>7165-026:147</td>
<td>Surface mounted in Elec. Room</td>
</tr>
<tr>
<td>10</td>
<td>2903-9101</td>
<td>Audio/Visual Horn</td>
<td>7135-026:115</td>
<td>Surface mounted in 2975-9145 backbox</td>
</tr>
<tr>
<td>10</td>
<td>2975-9145</td>
<td>Backbox for above horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>2099-9201</td>
<td>Manual Pull Station</td>
<td>7150-026:11</td>
<td>Semi-Flush mount on a single gang ring</td>
</tr>
<tr>
<td>136</td>
<td>2901-9836</td>
<td>Mini Horn</td>
<td>7135-569:105</td>
<td>Flush mounted on a single gang ring</td>
</tr>
<tr>
<td>10</td>
<td>2901-9833</td>
<td>Vibrating horn</td>
<td>7135-026:139</td>
<td>Mounts in 2975-9145 audio/visual backbox</td>
</tr>
<tr>
<td>1700 ft. CL3</td>
<td>2901-9833</td>
<td>Fire Cable</td>
<td>7160-1236:103</td>
<td>Installed within the walls</td>
</tr>
</tbody>
</table>
Approved by:

[Signature]

Ray Iverson
Deputy Fire Chief