



FIRE ALARM SYSTEMS CONNECTION TO MUNICIPAL SYSTEM

CITY OF LACONIA FIRE PREVENTION DIVISION
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FIRE
PREVENTION
Fire Alarms

200-5

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The connection of the Municipal Fire Alarm Cable to the Master Fire Alarm Box shall be as determined by the Fire Chief or his designee. All installations are preferred to be underground, but may be aerial at the discretion of the Fire Chief. All municipal cable shall be enclosed in metallic raceway whenever it is installed within a structure or along the exterior of a structure.

Aerial Municipal Service Construction

Provide a minimum of ½" EMT, terminated with a weather head, and located a minimum of 16 feet above finished grade, from the Master Box to the location of the structure designated for aerial termination. Greater height may be required for long spans that cross driveways, city streets, railroad tracks, or waterways. Specific height requirements shall be determined by the Fire Chief.

Provide a utility grade eyebolt, or similar approved device nest to the weather head, properly secured to support aerial cable.

The maximum allowed span for aerial cable is 200 feet. For longer spans, additional utility poles shall be required.

Install two [2] conductor, # 14 AWG Solid Copper Conductor, IMSA approved cable in the conduit from the weather head to the Master Box. As an alternate construction, two [2] single conductors, #12 AWG Solid Copper, with insulation type THWN may be used.

The selected position for termination of the aerial service shall not be require crossing over buildings or passing through trees. Tree branches shall be removed to provide clear space of aerial cable.

Underground Service Construction

Underground services shall be installed in approved raceway, and in accordance with the following requirements. Direct burial cable is NOT APPROVED for municipal service to a Mater Fire Alarm Box.

Provide IMSA 20-1-1984, four [4] Conductor, #14 AWG Solid Copper Conductor, Polyethylene Jacketed Duct Cable installed in 1" minimum diameter, Schedule 40 PVC Electrical Grade Conduit.

No other cables or wires are permitted within the fire alarm conduit.

Cement conduit at all joints.

Bury conduit a depth of 18" minimum below finished grade.

The conduit shall be bedded 2" below, and 4" above with sand not to exceed ¼" mesh. Standard warning tape shall be placed on top of the sand before backfilling. The backfill material shall be free of large rocks, stumps, or debris of any kind.

The conduit run shall not contain more than a total of 270 degrees in total bends, including the two [2] 90 degree sweeps required at each end. All bends in the conduit shall be made using an approved bending method, or shall be made using commercially available 22 ½ degree sweeps. For conduit lengths exceeding 150, larger conduit and/or pull boxes may be required by the Fire Chief.

The two [2] 90 degree sweeps at the end of the conduit shall be rigid steel.

Provide one length of rigid conduit [10 feet] extending up the utility pole from the sweep at the base.

Provide Schedule 40 PVC conduit above the conduit in 6.2.7, extending up the pole to a position 12" above the existing Telephone Company aerial cable. Terminated with a weather head.

Termination to the Master Box shall be made with rigid steel conduit extending from the sweep to above grade level. EMT may be used above grade, or within a structure from an approved pull box, to the Master Box. If a pull box is used, a splice may be made, and two [2] #12 AWG Solid Conductor THWN may be installed from the pull box to the Master Box, provided all construction is above grade or within a structure.

Splices

Splices may be made in the Municipal Service Wiring under the following conditions.

ALL SPLICES SHALL BE MADE BY THE LACONIA FIRE DEPARTMENT.

Cable runs which terminate inside a structure, before connection to the Master Box.

Splice enclosures shall be a screw cover "J" box or equal, in an accessible location, identified using **RED** paint and marked as a Fire Alarm Junction Box using permanent markers, tags or other approved methods.

A splice may be made inside a Fire Alarm Control Panel, provided the splice location is identified as in 5.3.2.

Lightening Protection

Lightening protection shall be provided by the contractor, consisting of a TI Model 317A or equal protector, located inside the Master Box, across the Municipal connection terminals.

Additional protection, if required will be installed at the utility pole by the Laconia Fire Department, Fire Alarm Division.

Grounding

The Master Box frame, internal metal assembly, and the conduit entrances shall be solidly grounded. See NFPA 70 [National Electric Code for information].

Attach the Master Box grounding strap to the case and connect the Ground Terminal on the connection block.

Ground the case of the master Box using any of the following:

#8 AWG Solid Copper Conductor from the Master Box frame to an eight [8] foot ground rod driven into the finished grade attached to the structure to prevent damage.

#8 AWG Solid Copper Conductor from the Master Box frame to an eight [8] foot ground rod driven into the finished grade within 10 feet of the structure. This conductor shall be enclosed in metallic conduit for protection from damage if it cannot be properly attached to the structure.

#8 AWG Solid Copper Conductor from the Master Box frame to a copper domestic water pipe using an approved attachment means, and jumpers as required by NFPA 70, Article 250.

[EXCEPTION]: #10 AWG Copper Conductor may be installed in a grounded raceway, inside a structure provided all other requirements of 6.2.2.3 are met.

Master Box Type and Manufacturer

All Master Fire Alarm Boxes shall be **GAMEWELL LOCAL ENERGY TRIP, MODEL M34-60** as suitable. Rebuilt boxes are acceptable provided they are delivered to the Laconia Fire Department for inspection and tested before installation.

The Master Box location shall be determined by the Laconia Fire Department.

The Master Box shall be installed as close as practical to the Main Entrance of the occupancy.

The Code Wheel and Identification Plate Number shall be assigned by the Laconia Fire Department, and furnished by the Contractor after the acceptance of the fire alarm plans.

The Master Box shall be provided with a Standard keyed lock. Both keys shall be turned over to the Laconia Fire Department upon final acceptance of the installation.

The timing for the Code Wheel shall be ½ second.

A **RED** location indicator light shall be placed above each exterior Master Box in order to increase visibility from the street.

General Premises Wiring Requirements

These requirements apply to all Fire Alarm Systems installed to meet the Code requirements of the City of Laconia, and apply equally to systems connected via Master Box or DACT/DACR.

Equipment

All equipment utilized for Initiation, Notification, or Control purposes shall be UL Listed and FM Approved for the purpose. All power supplies shall be UL Class 2 Power Limited.

Control Panels

Control Panels used for systems required by City of Laconia code shall be dedicated Fire Alarm Control Panels, having no other functions. Multi-function control panels utilizing keypads for controlling the functions are specifically NOT ALLOWED. All control functions shall be performed using clearly marked switches. Indicator lights shall provide an indication of the status of the panel.

[EXCEPTION]: Multiplex Fire Alarm Control Panels for installations using addressable initiation devices and/or evacuation devices are allowed by special permission of the Fire Chief.

Control Panels shall be located in the normally occupied area of the structure served. By special permission, they may be located in a remote area where heat is provided to maintain the back-up batteries +40 Degrees Fahrenheit.

Control Panels Locks shall be keyed for a "CAT-60" or a "Simplex B" [CAT-30] key.

Multi-zone Panels shall have the ability to disable any single zone without disabling any other zone. The Zone disable function shall be a clearly identified switch, and shall cause a Trouble indication to activate.

“Campus Panels” used to receive signals from a remote Control Panel and re-transmit to the Master Box shall be accessible without entry onto private occupancies. These Campus Panels may be located in common areas, utility rooms, or in an accessible remote location, subject to the approval of the Fire Chief.

Panel Identification

Every Fire Alarm Control Panel [FACP] shall be clearly marked using permanently attached, engraved non-metallic plates, RED with WHITE lettering, or BLACK with White lettering, with the following information:

Panel identification if more than one FACP is used:

FACP-1, etc.

Zone identification within the Panel:

ZONE-1, etc.

Zone location:

1ST FLOOR FRONT, etc.