

Re: Lightning protection

Source: <http://sci.tech-archive.net/Archive/sci.electronics.repair/2005-07/msg00762.html>

- *From:* Choreboy <choreboyREMOVE@xxxxxxxxxxxxx>
 - *Date:* Sat, 09 Jul 2005 16:54:45 -0400
-

w_tom wrote:

>
>
> That is also true of lightning. Lightning is not some DC
> pulse. Lightning is AC electricity – at numerous radio
> frequencies.

Isn't the definition of AC electricity whose current changes direction?
Are you saying all lightning strikes change direction?

>
>
> Ground wires from any surge protector must avoid sharp
> bends. As I have so often done, a published source:
> US Army Training Manual 5-690
> 3.4 Lightning protection subsystem (p 46)
>> d.1(i) Installation of surge arresters is shown for
>> grounded and ungrounded service ... In order to prevent
>> introducing excessive inductance and resistance in the
>> transient path to the surge arrester, No. 4 AWG (minimum)
>> insulated stranded copper wire of the minimum feasible
>> length must be used to make the interconnection(s) unless
>> otherwise recommended and guaranteed by the manufacturer.
>> Also, the interconnecting wiring must not contain loops
>> or sharp bends. Otherwise, the response time of the surge
>> arrester will be delayed and a higher clamp voltage than
>> that of the surge arrester will be impressed across the
>> protected equipment, thus increasing the possibility of
>> damage. In the event a very fast transient should occur,
>> it is quite likely that the surge arrester would never
>> turn on, and all of the transient energy would be
>> dissipated by supposedly protected equipment.

I wonder why they specify insulated wire. Uninsulated wire is easier to inspect and easier to identify as a ground. Stranded wire has less inductance than solid, but what about flat braid? I think it's specified for commercial transmission towers because it has less inductance than stranded wire.

If an Army technician had thirty feet of ground wire to connect

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terminals ten feet apart, he might leave the extra twenty feet taped in a coil halfway between. I agree that a loop like that would be bad. By comparison, how bad would it be to have a sharp bend around a wooden corner?

>

> I never said the earthing wire for a lightning rod must not
> be surrounded by a building's girders. I only said the
> preferred method of routing that earthing wire is to keep it
> outside the building. This for reasons beyond the scope of
> this discussion which is impedance, the purpose of earthing,
> and characteristics of a lightning pulse that makes it so
> challenging.

>

An external ground wire would be easy to inspect and less likely to be damaged by humans. Are there more technical reasons?

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◆ **Re: Lightning protection**

◇ From: w_tom

• References:

◆ **Lightning protection**

◇ From: Tom MacIntyre

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◇ From: w_tom

◆ **Re: Lightning protection**

◇ From: CJT

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