

**Section 7 – Clearances**

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## 7-1 Basic Electric Clearances - Services

### Clearances for Electric Overhead Services

(Not for primary or secondary clearances.)  
 (Per NESC Table 232-1 and Table 234-1)

Note that the following are the minimum clearances needed. Additional clearances must be added to account for thermal loading, ice loading, and snow depth when looking at vertical clearances. All clearances are for services under 750 volts unless otherwise indicated.

Triplex & Quadruplex Cables (most common)  
 Open Wire Poly Insulated Cables

Type A  
 Type B

Rule 230C3

<b><u>Vertical Clearances</u></b>	<b>A</b>	<b>B</b>
Roads, Streets, Driveways, Parking Lots, Alleys, Cultivated Land, Grazing Forest, Orchards, etc.	<b>16.0'</b>	16.5'
If the height of the building to which the service is attached does not permit and there is only a residential driveway (no chance of trucks), under 150 volts to ground, and insulated.	<b>12.0'</b>	12.5'
Drip Loop	<b>10.0'</b>	10.5'
Spaces & ways subject to pedestrian or restricted traffic only (no horse riding or vehicles over eight feet).	<b>12.0'</b>	12.5'
Spaces & ways subject to pedestrian or restricted traffic only (no horse riding or vehicles over eight feet), the building height does not permit, under 150 volts to ground, and insulated.	<b>10.0'</b>	10.5'
Drip Loop	<b>10.0'</b>	10.5'
If along roads in rural districts where it is unlikely that vehicles will be crossing under the line (must consider blow out to embankments, etc.)	<b>14.0'</b>	14.5'
If along rural roads and located relative to fences, ditches, embankments, etc., so that ground under the line would not be expected to be traveled except by pedestrians, may be reduced to the following: The service must be under 150 volts to ground and insulated.	<b>9.5'</b>	12.5'

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**7-1 Basic Electric Clearances – Services (Cont'd)**

<u>Vertical Clearances</u>	<b>A</b>	<b>B</b>
DOT minimum clearances over roadway (only State and Federal Highways) (use NESC if greater than this) (under worst case conditions) (MI DOT Annual Permit Form).	<b>MI: 18.0'</b>	MI: 18.0'
Over or under roofs or projections <u>not readily accessible</u> (no permanent stairs, ladders, doorways, ramps, windows, etc. to the roof; no vehicles) and the service is <u>NOT ATTACHED</u> to that structure. (This clearance also applies above railings, walls, or parapets around balconies or roofs.) MI	<b>3.5'</b>	10.5'
Over or under balconies & roofs <u>readily accessible</u> to pedestrians (as part of structure to which <u>service is NOT ATTACHED to that structure</u> (casually accessed through a doorway, ramp, window, stairway, or permanently mounted ladder etc.) (NESC Table 234-1 row 1(b)(2) columns 3 & 5.)	<b>11.0'</b>	11.5'
Over roofs, balconies, porches, or attached decks over which they pass and the <u>service is ATTACHED to that structure</u> (NESC 234C(3)(d)).  <u>Accessible</u>  <u>Not Readily Accessible</u> to pedestrians (including drip loops)  MI: Under 750 volts phase to phase MI: Under 300 volts phase to phase	<b>10.0'</b>   <b>3.0'</b> <b>3.0'</b>	10.0'   10.0'* 3.0'
Over or under catwalks & other surfaces upon which personnel walk	<b>11.0'</b>	11.5'
Other vertical clearances to signs, chimneys, billboards, radio & TV antennas, tanks, and other installations not classified as buildings or bridges.	<b>3.5'</b>	6.0'

\* Was 8.0' prior to 2007.

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**7-1 Basic Electric Clearances – Services (Cont'd)**

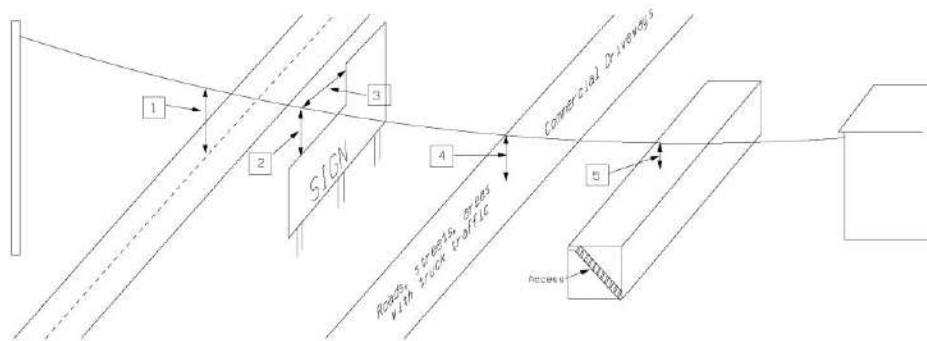
<u>Horizontal Clearances</u>	<b>A</b>	<b>B</b>
Horizontal clearance, at rest (no wind) to walls, projections, windows, balconies, and areas readily accessible to pedestrians.	<b>5.0'</b>	5.5'
Horizontal clearances to signs, chimneys, billboards, radio & TV antennas, tanks, and other installations not classified as buildings or bridges.		
Accessible	<b>5.0'</b>	5.5'
Non-Accessible	<b>3.5'</b>	5.5'

Notes:

- Where these clearances cannot be obtained, the conductors and rigid live parts shall be guarded. (NESC 234C2)
- See figure #3 for an exception to roof clearance when using a periscope (through the roof raceway) and non-accessible roof or balcony and with voltages less than 300 volts to ground (NESC 234C3d (1)).
- Code requires a clearance to any part of an OH service to be three feet in any direction from windows (unless window is not designed to open) (above windows is acceptable if triplex or quadruplex), doors, porches, and fire escapes if the service drop is attached to the building and not readily accessible. This clearance also applies to the drip loop. See Figure #2 (NESC 234C3d (2)).



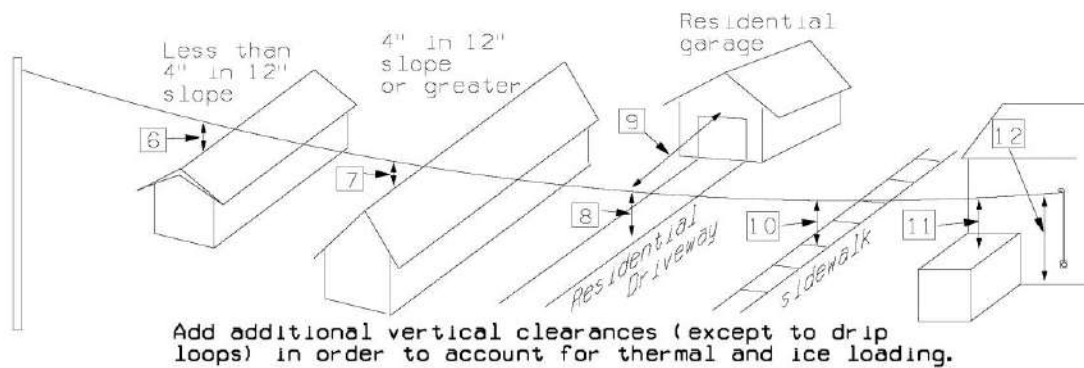
7-1 Basic Electric Clearances – Services (Cont'd)



□ Notes:

**Triplex Services Under 150 Volts to Ground**

1. 16'0" under worst case in Michigan, State and Federal roads.
2. 3'6" vertical clearance to signs, chimneys and other structures (not readily accessible).
3. 3'6" horizontal clearance to signs, chimneys, and other structures (not readily accessible).
4. 16'0" vertical clearance to roads and areas subject to truck traffic.
5. 11'0" over accessible roofs or balconies not attached to the building being served by the service drop.



6. 3'6" in Michigan if low sloped roof and inaccessible.
7. 3'6" in Michigan if steep roof and inaccessible.
8. 12'0" to residential driveways where higher attachment points can't be obtained. If there is a reasonable chance of truck traffic, this clearance does not apply.
9. 5'0" horizontal clearance to building.
10. 12'0" over sidewalks and pedestrian-only areas. This does not apply if vehicles can reasonably be driven here or horses ridden here. 10'0" if can't get height, due to building height attachment limits.
11. 10'0" over accessible, attached roofs and balconies. In Michigan this is 3'0" if not readily accessible.
12. Adjacent line clearance for the lines applies. In this example it would be 12'0" (note 10).

## 7-2 Miscellaneous Clearances

### Wells

Underground     5 feet for electric or gas. May be reduced to one foot with special permission and with special precautions for lightning damage (Company Design Rule).

Overhead           Horizontal clearance must be considered for well maintenance. MIOSHA requires at least 10' working clearance.

### Private Septic Systems

Clearance to holding tanks, collector tanks, drainfields, and mound systems (Company design policy):     10 feet

### Stored Materials

Overhead           Overhead lines shall not be run over areas designated for material storage where cranes or other types of tall machinery are used unless adequate clearance can be provided for full use of the equipment (Company design rule).

### Working Clearances

Following are the MIOSHA Rule 408.14005(4) rules.

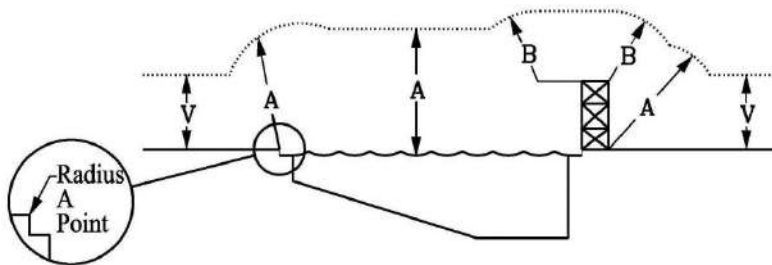
<b>Voltage</b>	<b>Minimum personnel clearance, To any part of crane, or to the load in feet</b>
69 kv and below	10
115 kv and 138 kv	11
345 kv	15

### Swimming Pools (also includes Outdoor Hot Tubs)

Underground     5 feet of pool / hot tub or auxiliary equipment (horizontally) (NESC 351C1)

Overhead           Shall be avoided by a minimum of 10 feet horizontally from the edge of the pool, diving platform, diving tower, water slide, or other fixed, pool-related structures. The following are clearances for utility triplex service drops (under 750 volts). Conductor thermal and ice loading must be considered also.

A=22.5 feet, B=14.5 feet, V=normal ground clearance



**7-2 Miscellaneous Clearances (Cont'd)****Padmount Transformers**

See subsection 3-10.

**Separation from Natural Gas Lines**

Basic underground clearance from gas lines to all other utilities or below-ground structures is one foot. It is recommended to maintain 5' clearance to wells.

See subsection 4-1 for clearances involving gas meters.

**Fuel Tanks****Overhead**

An above-ground LP Gas container and any of its parts shall not be located within 6 feet of a vertical plane beneath overhead electric power lines that are over 600 volts minimal (LP Gas Code Handbook 6.4.5.12). Should not run electric lines over other above-ground fuel storage tanks. Company design policy is 15 feet horizontally for primary.

**Underground**

Underground cables shall not go under fuel tanks. They shall not come within 10 feet of above or below-ground tanks. Electric cables can come closer if installed in approved conduit. (Call Regional Engineer on contamination and maintenance issues.) (Concern is strength and compatibility; most fuels dissolve PVC.)

**Class I Hazardous Locations**

Buried electric lines, meter sockets, CT cabinets, or termination enclosures must observe the following minimum horizontal clearances from the flammable fuel system components listed below:

Under fuel storage tanks (above or below ground)	0 feet (not allowed under the fuel tank)
Fill Pipe	10 feet
Dispensing device	20 feet
Remote pump	10 feet
Vents	5 feet

Consult the Company for other Class I hazardous locations. (NESC 127, NEC Article 514 and NEC Article 515).

**Antennas**

See subsection 7-3 for details.

**Buildings**

Underground electric lines should not be installed under buildings. (NESC 351C2 and 350.H.) (See also NEC 300-5c.)

**Billboards**

The OH Service attachment and drip loop must have the following clearances from any access platform, assuming that the access platform is not accessible (no fixed access ladder or a ladder that is at least 8 feet short of the ground). The normal attachment should be on a corner of the sign. The service should not go across the face of the sign, where it might block access. NESC 234C.3.d.

3 feet below the platform (and at least 3 feet in all directions from an access ladder).

3 feet above the platform (or 3 feet out from the platform).

**Special Cases**

See the Company for additional clearance requirements not listed above. Some of the items which require special clearances include the following:

Railroads	Sailboat Areas
Flag Poles	Boat Landings
Light Poles (standards)	Airport Approaches
Grain Bins	Electric Transmission / Distribution Lines
Bridges	Ladders Mounted to Tall Buildings (Over 50 ft.)
Catwalks	



## **7-3 Antenna Clearances**

### **Location of Outdoor Antennas**

Outdoor antennas and satellite dishes (receiving stations) and supporting structures, at or on residences, shall have a horizontal clearance from Company electric lines, greater than its total height. Lead-in conductors attached to buildings shall be installed so they cannot swing closer than 10 feet to or pass over the electric supply conductors.

Exception: Service drops of 150 volts or less to ground shall have a minimum clearance of 4 feet from the antenna and supporting structure and a minimum clearance of 2 feet from the lead-in conductors.

Consult the Company when these clearances cannot be met.

Also note: NESC 234 Table 234-1  
NEC 810.18(A) and 810.13