

PSC 114

Table PSC 114-232-1.

## MINIMUM VERTICAL CLEARANCE of WIRES, CONDUCTORS, and CABLES ABOVE GROUND, RAILS or WATER

(Voltages are phase to ground for effectively grounded circuits and those other circuits where all ground faults are cleared by promptly de-energizing the faulted section, both initially and following subsequent breaker operations. See the definition section for voltages of other systems.)

Nature of surface underneath wires, conductors, or cables	Communication conductors and cables, guys, messengers, surge protection, wires, neutral conductors meeting Rule 230E1, and supply cables meeting Rule 230 C1 <sup>(1)</sup> (ft)	Supply line conductors, street lighting conductors, and service drops <sup>(2)</sup>		Trolley and electrified railroad contact conductors and associated span or messenger wires <sup>(1)</sup>		
		Open supply line conductors 0 to 750 V. Supply cables of all voltages meeting Rule 230C2 or 230C3 (ft)	Open supply line conductors		0 to 750 V to ground (ft)	750 V to 50 kV to ground (ft)
			750 V to 15 kV (ft)	15 to 50 kV (ft)		
<b>Where wires, conductors, or cables cross over or overhang</b>						
1. Track rails of railroads (except electrified railroads using overhead trolley conductors) <sup>(2)(10)(24)</sup>	<sup>(3)(15)</sup> 27	<sup>(3)</sup> 27	<sup>(3)</sup> 28	30	<sup>(4)</sup> 22	<sup>(4)</sup> 22
2. Roads, streets, alleys; nonresidential driveways, parking lots, and other areas subject to truck traffic <sup>(2)(22)</sup>	<sup>(13)(6)</sup> 18	18	20	22	<sup>(5)</sup> 18	<sup>(5)</sup> 20
3. Residential driveways; commercial areas not subject to truck traffic <sup>(2)(22)</sup>	10	<sup>(8)</sup> 15	20	22	<sup>(5)</sup> 18	<sup>(5)</sup> 20
4. Other land traversed by vehicles such as cultivated, grazing, forest, orchard, etc.	<sup>(24)</sup> 18	18	20	22	—	—
5. Spaces or ways accessible to pedestrians only <sup>(9)</sup>	<sup>(7)</sup> 15	<sup>(8)(14)</sup> 15	15	17	16	18
6. Water areas not suitable for sailboating or where sailboating is prohibited <sup>(10)</sup>	15	15	17	17	—	—
7. Water areas suitable for sailboating including lakes, ponds, reservoirs, tidal waters, rivers, streams, and canals with an unobstructed surface area of: <sup>(17)(18)</sup>						
(a) Less than 10 acres	18	18	20	22	—	—
(b) 10 to 80 acres	30	30	31	33	—	—
(c) Over 80 acres	40	40	40	42	—	—
8. Public or private land and water areas posted for rigging or launching sailboats			Clearance above ground shall be 5 ft. greater than in 7 above, for the type of water areas served by the launching site			
<b>Where wires, conductors, or cables run along and within the limits of highways or other road rights-of-way but do not overhang the roadway</b>						
9. Roads, streets, or alleys in urban districts	<sup>(13)(10)</sup> 18	<sup>(10)</sup> 18	20	22	<sup>(5)</sup> 18	<sup>(5)</sup> 20
10. Roads in rural districts where it is unlikely that vehicles will be crossing under the line	<sup>(10)(2)</sup> 14	<sup>(10)</sup> 15	18	20	<sup>(5)</sup> 18	<sup>(5)</sup> 20

## Footnotes for Table PSC 114-232-1:

① Where subways, tunnels, or bridges require it, less clearances above ground or rails than required by Table 232-1 may be used locally. The trolley and electrified railroad contact conductor should be graded very gradually from the regular construction down to the reduced elevation.

② For wire, conductors, or cables crossing over mine, logging, and similar railways which handle only cars lower than standard freight cars, the clearance may be reduced by an amount equal to the difference in height between the highest loaded car handled and 20 ft., but the clearances shall not be reduced below that required for street crossings.

③ These clearances may be reduced to 25 ft. where paralleled by trolley-contact conductor on the same street or highway.

④ In communities where 21 ft. has been established, this clearance may be continued if carefully maintained. The elevation of the contact conductor should be the same in the crossing and next adjacent spans. (See Rule 289D2 for conditions which must be met where uniform height above rail is impractical.)

⑤ In communities where 16 ft. has been established for trolley and electrified railroad contact conductors 0 to 750 V to ground, or 18 ft. for trolley and electrified railroad contact conductors exceeding 750 V, or where local conditions make it impractical to obtain the clearance given in the table, these reduced clearances may be used if carefully maintained.

⑥ If a communication service drop or a guy which is effectively grounded or is insulated against the highest voltage to which it is exposed, up to 8.7 kV, crosses residential streets and roads, the clearance may be reduced to 16 ft. at the side of the traveled way provided the clearance at the center of the traveled way is at least 18 ft. This reduction in clearance does not apply to arterial streets and highways which are primarily for through traffic, usually on a continuous route.

⑦ This clearance may be reduced to the following values:

	<i>feet</i>
(a) For insulated communication conductors and communication cables	8
(b) For conductors of other communication circuits	10
(c) For guys	8
(d) For supply cables meeting Rule 230C1	10

⑧ This clearance may be reduced to the following values:

	<i>feet</i>
(a) Supply conductors limited to 300 V to ground.	12
(b) Drip loops of supply conductors limited to 150 V to ground and meeting Rules 230C2 or 230C3 and located at the electric service entrance to buildings.	10

⑨ Spaces and ways accessible to pedestrians only are areas where vehicular traffic is not normally encountered or not reasonably anticipated.

⑩ Where a supply or communication line along a road is located relative to fences, ditches, embankments, etc., so that the ground under the line would not be expected to be traveled except by pedestrians, this clearance may be reduced to the following values:

	<i>feet</i>
(a) Insulated communication conductor and communication cables	8
(b) Conductors of other communication circuits	10
(c) Supply cables of any voltage meeting Rule 230C1 and supply cables limited to 150 V to ground meeting Rules 230C2 or 230C3	10
(d) Supply conductors limited to 300 V to ground	12
(e) Guys	8

⑪ No clearance from ground is required for anchor guys not crossing track rails, streets, driveways, roads, or pathways.

⑫ This clearance may be reduced to 13 ft. for communication conductors.

⑬ Where communication wires or cables or supply cables meeting Rule 230C1 cross over or run along alleys, driveways, or parking lots, this clearance may be reduced to 15 ft. for spans limited to 150 ft.

Table PSC 114-242-1

**GRADES of CONSTRUCTION for SUPPLY CONDUCTORS ALONE, at CROSSING, or on the SAME STRUCTURES WITH OTHER CONDUCTORS**

(The voltages listed in this table are line to ground values for: effective grounded ac circuits, two wire grounded circuits, or center grounded dc circuits; otherwise line to line values shall be used. The grade of construction for supply conductors, as indicated across the top of the table, must also meet the requirements for any lines at lower levels except when otherwise noted.)

Supply conductors at higher levels ①	Constant-potential supply conductors										Constant current supply conductors	Communication conductors used exclusively in the operation of and run as supply lines
	0-0.75 kV		0.75-8.7 kV				Exceeding 8.7 kV ⑩					
	Urban	Rural	Urban		Rural		Urban		Rural			
	Open or Cable	Open or Cable	Open	Cable	Open	Cable	Open	Cable	Open	Cable		
Exclusive private rights-of-way	N	N	②N	N	N	N	②N	②N	N	N	B, C, or N; see Rule 242A	C or N; see Rule 242C
Common or public rights-of-way	N	N	C	N	N	N	③C	C	N	N		
Railroad tracks and limited access highways	B	B	B	B	B	B	B	B	B	B	B	B
Constant potential supply conductors 0 to 750 V Open or cable	N	N	C	N	N	N	③C	C	④C	N		
750 V to 8.7 kV	⑥C	N	C	C	N	N	③C	C	N	N	B, C or N; see Rule 242A	B, C, or N; see Rule 242C
Open												
Cable	N	N	C	N	N	N	③C	C	N	N		
Exceeding 8.7 kV	⑤B	⑤C	B	B	N	N	③C	C	N	N		
Open												
Cable	⑤C	N	C	N	N	N	③C	C	N	N		
Constant current supply conductors: Open or cable	B, C, or N; see Rule 242A										B, C, or N; see Rule 242A	B, C, or N; see Rules 242A and 242C
Communication conductors: Open or cable, used exclusively in the operation of supply lines ⑩	B, C, or N; see Rule 242C										B, C, or N; see Rules 242A and 242C	B, C, or N; see Rule 242C
Communication conductor: Urban or rural, open or cable ⑥	N	N	⑦⑧B	C	⑦⑧B	C	⑧B	C	⑧B	C	⑧⑨B C or N; see Rule 242A	B, C, or N; see Rule 242C

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## Footnotes for Table PSC 114-242-1:

① The words "open" and "cable" appearing in the headings have the following meanings as applied to supply conductors: Cable means the Type 1 cables described in Rule 241A; open means open wire and Type 2 cables.

② Lines that can fall outside the exclusive private rights-of-way shall comply with the grades specified for lines not on exclusive private rights-of-way.

③ Supply conductors shall meet the requirements of grade B construction if the supply circuits will not be promptly de-energized, both initially and following subsequent breaker operations, in the event of a contact with lower supply conductors or other grounded objects.

④ Grade N construction may be used if crossing over supply services only.

⑤ If the wires are service drops, they may have grade N sizes and tensions as set forth in Table 263-2.

⑥ Grade N construction may be used where the communication conductors consist only of not more than one insulated twisted-pair or parallel-lay conductor, or where service drops only are involved.

⑦ Grade C construction may be used if the voltage does not exceed 2.9 kV.

⑧ The supply conductors need only meet the requirements of grade C construction if both of the following conditions are fulfilled:

(1) The supply voltage will be promptly removed from the communication plant by de-energization or other means, both initially and following subsequent circuit breaker operations in the event of a contact with the communication plant.

(2) The voltage and current impressed on the communication plant in the event of a contact with the supply conductors are not in excess of the safe operating limit of the communication protective devices.

⑨ Grade C construction may be used if the current cannot exceed 7.5 A or the open-circuit voltage of the transformer supplying the circuit does not exceed 2.9 kV.

⑩ Communication circuits located below supply conductors shall not affect the grade of construction of the supply circuits.

⑪ Grade B construction shall always be used if the voltage exceeds 175 kV (to ground).

SECTION 25. *LOADING FOR GRADES B, C, AND D*

PSC 114.250D [follows NESC 250C, p. 228] Longitudinal Capability (Addition) Add the following subsection:

## D. Longitudinal Capability

Each supply line designed to operate at 300 kV (phase to phase) or above shall be constructed to limit the effects of a cascading-type failure to a line segment not exceeding 6 miles to 10 miles in length. Such construction requirement may be met by providing at appropriate intervals, structures and associated facilities having full dead-end capability under the loading provisions of 250 A, B and C. Consideration shall be given to factors such as structure type and material, length of line, distance between dead-end or heavy angle structures, and other basic design criteria in determining the length of such individual line segments. For lines supported by "flexible" structures designed with plastic, energy-absorbing capability in failure this requirement may be met if such design and construction will provide equivalent limitation to longitudinal cascading.