1978–1980

National Electrical Safety Code Interpretations

1978—1980 inclusive

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Interpretations 1978-1980

National Electrical Safety Code Committee, ANSI C2

National Electrical Safety Code Interpretations

1978—1980 inclusive

and

Interpretations Prior to the 6th Edition, 1961

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ABSTRACT

This edition includes official interpretations of the National Electrical Safety Code as made by the Interpretations Subcommittee of the National Electrical Safety Code Committee, ANSI C2.

Key words: electric supply stations, overhead electric supply and communication lines, underground electric supply and communication lines, clearances to electric supply and communication lines, strength requirements for electric supply and communication lines.

Contents

Foreword

In response to repeated public inquiries and requests from C2 Committee members, the IEEE C2 Secretariat arranged for publication of Interpretation Requests received and Interpretations made by the National Electrical Safety Code Subcommittee on Interpretations. The original requests have been lightly edited to remove extraneous matter and focus on the C2 problem presented. Some illustrations have been redrawn for publication. With these exceptions, requests are in the form received.

The first volume, INTERPRETATIONS 1961 - 1977, published in 1978 included the first interpretation request received for the 6th Edition of Part 2 (IR 92, May 1961) and ended with the last interpretation issued in 1977 (IR 212). This new volume, INTERPRETATIONS 1978 - 1980, continues with IR 213 issued in 1978 and ends with the last interpretation issued in 1980 (IR 283). It also includes all interpretations found in the archives and applying to the 5th and prior editions of the Code (IR 11 through IR 90). Where no copy of an interpretation request, or an interpretation could be found in the archives, this fact is noted.

The Secretariat hopes that the publication of all interpretations will prove helpful to those concerned with the National Electrical Safety Code.

National Electrical Safety Code Interpretations Introduction

General: Interpretations are prepared by the National Electrical Safety Code Interpretations Subcommittee in response to formal requests received by the NESC Secretariat.

This volume contains all interpretations issued on the NESC through 1980 and not previously published.

Arrangement: This compilation includes a numerical index for all issued interpretations arranged in order of interpretation number, showing the rule number and topic covered. This will be convenient for location of the text if only the interpretation request number is available.

Interpretation requests and interpretations quoted in full are arranged according to the primary rule number. Applicable cross references are inserted appropriately if a request covers several rules. If illustrations were provided, they follow the Interpretation Request text. In the 1977 Edition some changes were made in the rule numbers. Exact correspondence of Rule numbers between other editions does not exist in some cases. 1977 and 1981 Editions Interpretations are so appropriately identified.

The request date refers to the date on the original letter request. The Interpretation date is the date of the response letter.

Procedure for Requesting an Interpretation: Requests for interpretation should be addressed to:

Secretary
National Electrical Safety Code Committee, ANSI C2
IEEE Standards Office
345 East 47th Street
New York, NY 10017

Requests for interpretations should include:

A. The rule number in question.
B. The applicable conditions for the case in question.

Line drawings should be black-ink or excellent black pencil originals. Photos should be black and white glossy prints. These illustrations must be reproduced for committee circulation and eventually will be used to supplement the text of our next edition. Clear diagrams and pictures will make the work of interpretation easier and more valuable to C2 users.

Requests, including all supplementary material must be in a form that is easily reproduced. If suitable for Subcommittee

consideration, requests will be sent to the Interpretations Subcommittee. After consideration by the Subcommittee, which may involve many exchanges of correspondence, the inquirer will be notified of the Subcommittee's decision. Decisions will be published from time to time in cumulative form and may be ordered from IEEE.

Interpretations are issued to explain and clarify the intent of specific rules and are not intended to supply consulting information on the application of the Code. The Interpretations Subcommittee does not make new rules to fit situations not yet covered.

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Dec 18, 44	**18**	For special construction supply circuits is 550 the maximum allowable voltage or the nominal?	220B3
	19	*No record*	
Feb 15, 45	**20**	Do words "containing steel" describe composite conductor or merely any wire of such a stranded conductor?	261F2
	21 *through* **23**	*No record*	
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Oct 23, 45	**25**	Increased clearances for excess span length	232B
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Numerical Listing by Interpretation Request (IR) Numbers

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	27	*No record*	
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	29	*No record*	
	30		
Mar 28, 47	**31**	Clearance over farm fields for voltages of 50kV	232, Table 1
	32 *through* **36**	*No record*	
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	38 *through* **41**	*No record*	
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	44	*No record*	
	45		
Oct 31, 49	**46**	Thickness of metal used for metal poles	261A3e
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	48	*No record*	
May 10, 50	**49**	Classification of jumper wires at poles	235A3, Table 9
May 26, 50	**50**	Guys attached to wood poles	283B4b
Aug 25, 50	**51**	Double crossarm over railroad tracks in suspension insulator type of construction	261D5
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	54		

Numerical Listing by Interpretation Request (IR) Numbers

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Mar 10, 52	**59**	Clearance from buildings	234C4a(1)and(2)
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July 16, 52	**61**	Grade B construction, conductor size; does Exception 2 apply to railroad crossings?	261F2
Nov 27, 52	**62**	Are clearance increases cumulative in 1, 2, and 3 as indicated in the text on page 52?	233A, B
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		b) Classification of CATV cable as a communication circuit	238
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Aug 5, 53	**67**	Clearances from buildings	234C4, Table 4
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Numerical Listing by Interpretation Request (IR) Numbers

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May 31, 55	**72**	Minimum size of conductors in a crossing span of 215 feet over a railroad track	262I2b, Table 24
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Aug 1, 55	**74**	Horizontal and vertical clearances from a steel windmill tower	234C4a, Table 4
Aug 29, 55	**75**	Guy insulators; acceptability of fiberglass as insulating material	283A1a
Sept 13, 55	**76**	Clearance requirements for telephone lines which pass over driveways into farmer's fields in strictly rural areas	232A, Table 1
Nov 15, 55	**77**	Clearance requirements for conductors passing by or over buildings	234C4a
Nov 16, 55	**78**	Clearance requirements for conductors passing by or over buildings	234C4
Jan 4, 55	**79**	Clearance for cabled service drop, 150V max to ground	232A Table 1
Aug 14, 56	**80**	Clearance between 8.7-15kV line and grounded neutral or secondary conductors	237B3
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Numerical Listing by Interpretation Request (IR) Numbers

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		b) Service brackets at end of crossarms	238D
		c) Clearance to buildings	234C3, 4
Nov 1, 56	**83**	a) Increase in clearance, V 50kV	232B2, 233B2
		b) Clearance for basic and longer spans	234C4
		c) Clearance to building corner	
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		b) Clearance between signal conductors and multiple light system circuit	238E
		c) Clearance of vertical supply conductors from communication crossarm	239F
		d) Dead ending or guying of communication messenger	
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Feb 26, 57	**85**	a) Classification of specific cable construction	230C
		b) Clearance requirements	234D
May 1, 57	**86**	a) Requirements for a fence to prevent unauthorized entry	102
		b) What is practicable limit for reduction of hazards. Does rule apply to employee or public?	110
		c) Is exterior of porcelain arrester a live part?	114 Table 2,C
		d) Clearance to ground in substation; measured from earth or concrete supporting base for arresters	

Numerical Listing by Interpretation Request (IR) Numbers

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		e) Clearance to live parts adjacent to fence separating station area from public	114 Table 2
		f) Does locked fence constitute guarding by isolation	114C
Jun 12, 57	**87**	a) Clearance to building b) Is clearance (in a specific case) in accordance with the NESC?	234C4
July 15, 57	**88**	Can grounding conductor of primary spark gap be solidly interconnected with the secondary neutral on an otherwise ungrounded system?	97
Apr 14, 58 Apr 17, 58	**89**	a) Should clearance of conductors passing by buildings include swing	234C4a(2)
		b) Insulator swing considerations	235A2a(1) 235A2b
		c) Sag increase; span 150 ft or 350 ft?	234A 233 234C4a(1)
Aug 12, 57	**89X**	a) Clearance for lines 70kV	422C1
		b) Clearance for hot line work	
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Oct 24, 58	**90**	Systematic inspection—time interval between inspections	213A2
	91	*No record*	
	92 *through* **212**	**See Interpretations 1961-1977 volume**	

Numerical Listing by Interpretation Request (IR) Numbers

Request Date	*IR Number*	*Subject*	*Rule*
Nov 26, 77	**213**	Load on structure or foundation; application of overload capacity factors	260C
Nov 28, 77	**214**	Application of overload capacity factor unguyed and guyed angle factors	261A2d
Dec 12, 77	**215**	Meaning of "reconstructions"	202B1
Dec 21, 77	**216**	Load on foundation, application of overload capacity factors	261B
Jan 3, 78	**217**	Guy connection and placement of insulators	282C; 283B
Jan 5, 78	**218**	Conductor clearance from guy of parallel line structure	235E
Jan 23, 78	**219**	Reconstruction definition. Does line voltage change from 7.2/12.5kV to 14.4/24.9kV require compliance with 1977 Edition?	202B
Jan 18, 78	**220**	Reconstruction definition. Does line voltage change from 7.2/12.5kV to 14.4/24.9kV require compliance with 1977 Edition clearances?	202B
Jan 25, 78	**221**	Horizontal clearance under wind loading. One or both conductors under maximum swing angle?	233B1; 233B1b
Jan 25, 78	**222**	Horizontal clearance between line conductors 2 circuits 115kV and 230kV on same support	235B1
Feb 7, 78	**223**	Service drops—clearance to ground	232, Table 232-1
Jan 26, 78	**224**	Clearance over residential driveways	232, Table 232-1
Feb 14, 78	**225**	Clearance of primary riser termination from communication cable	239F

Numerical Listing by Interpretation Request (IR) Numbers

Request Date	*IR Number*	*Subject*	*Rule*
Feb 23, 78	**226**	Clearance in pole to building spans between communication and electric supply service drops	235C2b
Feb 23, 78	**227**	(a) Magnitude limit of ground fault storage (b) Intent of "effectively grounded"	215C1
Feb 28, 78	**228**	(a) Centerline spacing for adequate clearance between parallel lines on separate structures	233B1 235B2
		(b) Use of switching surge factor in above case	235B3
Mar 6, 78	**229**	Clearance to bridle guy	235E
Apr 5, 78	**230**	Definition of reconstruction	202B
Apr 6, 78	**231**	Example requested	231B1a
Apr 6, 78	**232**	Horizontal and vertical clearances; effect of high temperature	234
Apr 11, 78	**233**	2: Does the exception apply to horizontal clearances or both	234B Table 235-5
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July 21, 78	**234**	Use of line conductor as grounding point in place of common point on wye-connected secondary	92B1
July 27, 78	**235**	Use of double guy insulators in down guy	283B2b
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Sept 19, 78	**237**	Rationale involved in calculating basic clearances shown in Table 234-3	234E1, Table 234-3
Sept 25, 78	**238**	Governing clearance to building—horizontal or vertical	234C4a
Oct 31, 78	**239**	Calculation of support load at angle in line	252B3

Numerical Listing by Interpretation Request (IR) Numbers

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Nov 30, 78	**241**	Definition of "large"; meaning of "segregated"	153A2
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Jan 17, 79	**243**	New installations, reconstruction extensions; status of existing installation if cable TV line is added	202B
Jan 17, 79	**244**	Definition of unsealed jars and tanks	141
Feb 13, 79	**245**	Overload capacity factors for composite components	261
Feb 5, 79	**246**	Frequency of inspection for service drops	214A2
Mar 13, 79	**247**	Service drop conductors (a) Minimum height in span (b) Minimum height of point of attachment	232, Table 232-1
Mar 15, 79	**248**	Grain bin clearance (building vs tank) 115kV line	234C, Table 234-1
Mar 23, 79	**249**	Spaces or ways accessible to pedestrians only; service drop clearance	232, Table 232-1
Mar 27, 79	**250**	Application of an overload capacity factor of 4.0 to the vertical load on an eccentric loaded column	261A2b
June 1, 79	**251**	Clearance requirements for building in transit	234
June 25, 79	**252**	Clearance of service drop	238D
July 11, 79	**253**	Grounding of rolling metal gate of a substation	92E

Numerical Listing by Interpretation Request (IR) Numbers

Request Date	*IR Number*	*Subject*	*Rule*
Aug 29, 79	**254**	(a) Distinction between rule, recommendation, Note exception (b) Requirements for guy insulator	283B1
Oct 15, 79	**255**	Clearance for CATV amplifier power feed	220B2; 235E; 235G
Nov 2, 79	**256**	Effect of trees on minimum clearances	232, Table 232-1
Nov 2, 79	**257**	Disconnecting provision acceptability	173B
Nov 6, 79	**258**	Location of padmounted equipment	231B Section 38
Nov 7, 79	**259**	(a) Steel tower and footings—bonding requirements	94A3
		(b) Acceptability as ground electrode of 20 ft steel wire wrapped around rebar cage	94B6
		(c) Does 95A3 apply only to buildings or are steel supporting structures included also?	95A3
Nov 8, 79	**260**	Determination of diagonal clearance	234 Fig 234-1; 234A3
Oct 23, 79	**261**	Conductor clearance for line near recreational water area	232 Table 232-1
Nov 12, 79	**262**	Conductor clearance to swimming pool slide	234E1 Table 234-3
Jan 4, 80	**263**	Acceptability of steel wire wrapped around reinforcing bar cage as grounding electrode.	94A3
Jan 21, 80	**264**	Horizontal clearance between wires in a triangular configuration	235 Table 235-5
Mar 3, 80	**265**	Guarding requirement applicability Clearance to building	234C4b
Mar 7, 80	**266**	Ice loading computation on noncircular cross-section conductor	251A2

Numerical Listing by Interpretation Request (IR) Numbers

Request Date	*IR Number*	*Subject*	*Rule*
Mar 20, 80	**267**	(a) Voltage between conductors	235C
		(b) Ground required at distribution transformer	94B4a
May 16, 80	**268**	(a) Is base of epoxy extension arm noncurrent carrying?	238A, B Table 238-1
		(b) Spacing required between noncurrent carrying parts of adjacent supply and communication circuits	
May 21, 80	**269**	Communication cable clearance to ground	232A Table 232-1
June 25, 80	**270**	Clearance over snow covered ground	232A
June 13, 80 July 16, 80	**271**	Warning signs on tubular steel poles	280A1b
July 14, 80	**272**	Grade of construction for conductors/structure	242
July 24, 80	**273**	Use of steel-clad copper wire as neutral conductor on direct buried, bare concentric neutral cable	332
July 25, 80	**274**	Clearance to conveyor structure	234C
Aug 6, 80	**275**	Clearance to ground for equipment on structures—not above a roadway	286E
Aug 18, 80	**276**	Meaning to be attached to "prevent" in connection with equipment enclosures	110A
Aug 25, 80	**277**	Ground clearance for service	232 Table 232-1
Aug 25, 80	**278**	Installation of submarine cable on islands in connection with aids to navigation	330

Numerical Listing by Interpretation Request (IR) Numbers

Request Date	*IR Number*	*Subject*	*Rule*
Sept 4, 80	**279**	Clearance for aerial secondary and service conductors with an insulated neutral	230C
Sept 9, 80	**280**	Neutral separation on distribution transformer poles to minimize dc flow	96A
Oct 14, 80	**281**	Clearances to noncurrent-carrying metal parts clearance for CATV	235
Oct 17, 80	**282**	Clearance for oversize haulage trucks	232A
Dec 8, 80	**283**	Clearance at crossing between transmission line and rigid bus structure	124A Table 2

Grounding Methods for Electric Supply and Communication Facilities

Section 9.

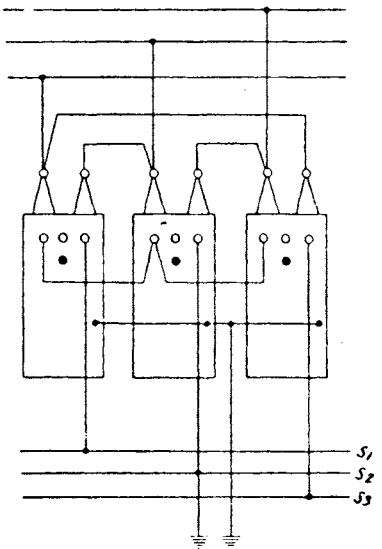
Use of line conductor as grounding point in place of common point on wye-connected secondary

REQUEST (July 21, 78) IR 234

Please inform . . . of the correct interpretation of Paragraph 92B1. which reads as follows: "Where required, the point of grounding connection on wye-connected three-phase or three-wire single-phase systems shall be neutral."

Question: "Can we use any one leg of the wye-secondary of the transformer bank as the neutral?"

The transformers in question are three single phase units (12470/277) connected delta on the 12 470 V side and wye on the low side for 480 V service. The common connection (the center of the wye) is floating and insulated from ground. One leg of the wye is grounded and used as the neutral. Three wires are carried to the motor starter. This installation is used for single three-phase motor service only.



3 PHASE
3 TRANSFORMERS
3 WIRE WYE - CORNER GROUNDED
POWER ONLY

Fig IR 234

INTERPRETATION (Nov 7, 78)

The simple answer to the question is 'no' because grounding a phase conductor does not make it a neutral. The conductor would be a grounded phase conductor just as in the case of a corner grounded delta. Note that Part 2 of the Code is silent regarding grounding of phase conductors. The methods of Section 9 apply to situations where grounding is required by some other part of the Code. Rule 92B does not, therefore, apply to the situation.

Grounding of rolling metal-gate of a substation

REQUEST (July 27, 79) IR 253

This is a request for an interpretation of Rule 92E in regard to the use of rolling metal gates. Our substations are enclosed with a grounded metal fence consisting of seven ft of mesh with a barbed wire extension. We are installing rolling metal gates utilizing roller equipment of metal-to-metal construction so that we have continuous metal-to-metal contact from the gate, through the rollers, to the fence.

We would like to know if this arrangement meets the intent of rule 92E which reads in part, "Gates shall be metallically connected or bonded to the grounding conductor, jumper, or fence."

INTERPRETATION (Sept 11, 79)

The Interpretations Subcommittee has considered your letter but has been unable to reach a consensus on your request.

Six members do not believe that the rolling contact satisfies Rule 92E.

Six members believe that the rolling contact does satisfy Rule 92E.

There is no possibility of an early resolution of the impasse.

Steel tower and footings; bonding requirements

REQUEST (Nov 7, 79) IR 259a

Does a steel framed tower structure with four legs and each leg supported by its own separate concrete foundation require bonding interconnecting all four of the foundations anchor bolts and reinforcing bars? (Foundations approx. 24 ft apart). Is the steel framed tower structure considered to be the interconnecting bonding of the anchor bolts and reinforcing bars of the four separate concrete foundations?

INTERPRETATION (Dec 26, 79)

A steel tower with each leg on a separate foundation does not require supplemental bonding between the piers. The tower itself is considered to provide adequate electrical connection.

* * * *

Acceptability of steel wire wrapped around reinforcing bar cage, as grounding electrode

REQUEST (Jan 4, 80) IR 263

Does steel wire at least 20 ft long which is clamped to an anchor bolt and wrapped around the steel reinforcing bar cage of a concrete foundation for a steel tower supporting structure constitute an effective and acceptable type of grounding electrode?

INTERPRETATION (Mar 28, 80)

By itself, a steel wire would have to be at least 20 ft long and ⅜ in. in diameter to be considered as an acceptable grounding electrode.

If the wire is shorter than 20 ft or of a diameter less than ⅜in, it would have to be welded, clamped or tied to the re-bar cage with the normally used steel wire ties before it and the cage could be considered as an acceptable electrode in accordance with rule 94A3. (See rule 94B6)

94B4a See 235C, IR 267a

94B6

Acceptability as a ground electrode of 20 ft of steel wire wrapped around rebar cage

REQUEST (Nov 7, 79) IR 259b

Does 5/16 in diameter steel wire at least 20 ft long and clamped to an anchor bolt and wrapped around the reinforcing bar cage of a concrete foundation for a steel framed tower structure constitute an acceptable ground electrode?

INTERPRETATION (Dec 26, 79)

Rule 94A3 calls for bonding between anchor bolts and reinforcing steel. It does not specify the size of the conductor(s) used to achieve bonding. Thus 5/16 inch diameter wire may be used. However, "bonding" will require a better means of connection than mere wrapping. Presumably this would entail welding or clamping.

95A3

Steel-framed structures vs steel towers

REQUEST (Nov 7, 79) IR 259c

Does 95A3 pertain to building structures only or is this Article 95A3 also a requirement for steel supporting structures?

INTERPRETATION (Dec 26, 79)

Rule 95A3 applies to steel framed structures, not to steel towers. In the case of steel towers where steel members constitute the grounding conductor, rule 94A3 covers the method of connection between the steel members and the concrete encased electrode.

96A

Neutral separation on distribution transformer poles to minimize dc flow

REQUEST (Sept 9, 80) IR 280

. . . Power Association, in an attempt to mitigate direct current flow in distribution transformers in the vicinity of a high voltage direct current (HVdc) system ground electrode, has separated neutrals on distribution transformers in accordance with Fig IR 280-1 and Fig IR 280-2. If primary and secondary neutrals were bonded together on Fig IR 280-2, a very low resistance between the customer grounding system and 7.2 kilovolt (kV) primary would exist. When the HVdc system is operated in the earth return mode, direct current will flow from customer grounding system through the transformer on to the 7.2 kV distribution system resulting in voltage distortion due to transformer saturation. We have found by simply separating the neutrals and having separate ground rods for each, the direct current flow can be considerably reduced and transformer saturation is no longer a problem.

The National Electrical Safety Code (NESC), 1977 Edition, addresses single ground systems, multiple ground systems and separation of grounding conductors, but it does not appear to be written for the application we have in mind. As we see it, we need an interpretation on the following: [In Fig IR 280-1 is] the secondary of the transformer considered to be a single ground or a multiple ground system? It appears to be a multiple ground system if a customer grounding system exists.

Does 97D. apply to the application? It appears 97D. is for an ungrounded primary system and not appropriate for the application.

Please consider addressing in the interpretation the following:

(1) Interpretation of secondary being single grounded, multi grounded or other type system.

(2) Using a low voltage spark gap to interconnect the neutrals—presently we have a 6 kilovolt (kV) spark gap installed. Perhaps we should install a much lower voltage gap if one can be obtained.

(3) For our particular application we would prefer having one secondary ground in the vicinity of the primary ground. The secondary ground would be installed considering step potential between grounding system.

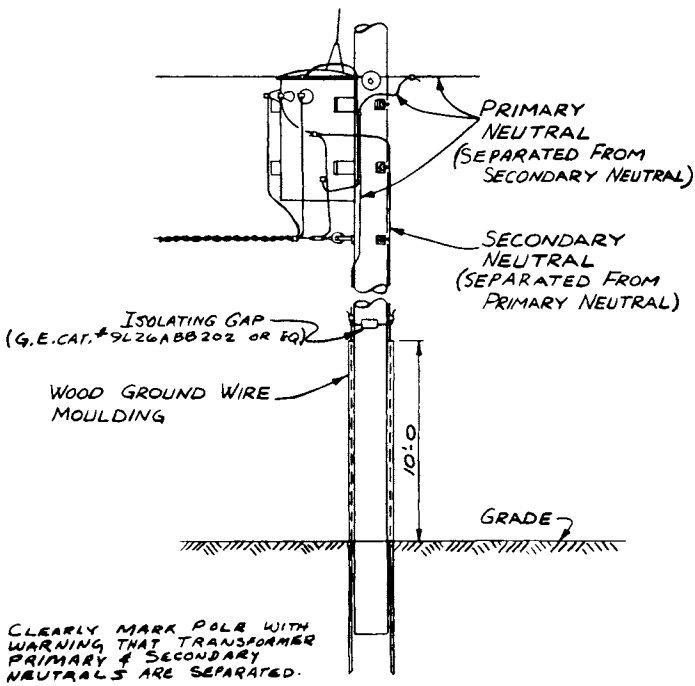

PRIMARY NEUTRAL (SEPARATED FROM SECONDARY NEUTRAL)
SECONDARY NEUTRAL (SEPARATED FROM PRIMARY NEUTRAL)
ISOLATING GAP (G.E.CAT.# 9L26ABB202 OR EQ)
WOOD GROUND WIRE MOULDING
10'-0
GRADE
CLEARLY MARK POLE WITH WARNING THAT TRANSFORMER PRIMARY & SECONDARY NEUTRALS ARE SEPARATED.

Fig IR 280-1

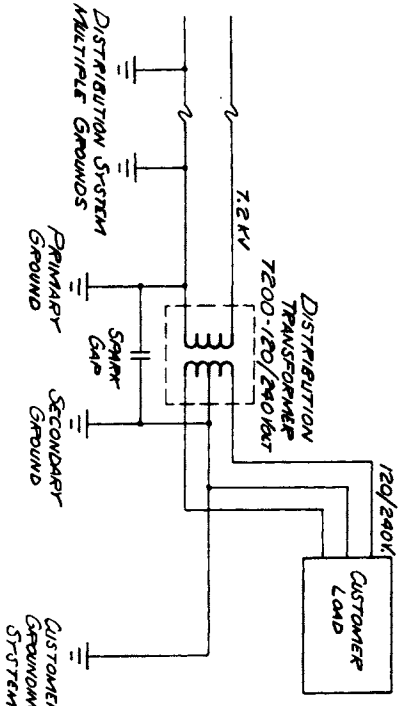

DISTRIBUTION SYSTEM MULTIPLE GROUNDS
PRIMARY GROUND
SPARK GAP
SECONDARY GROUND
CUSTOMER GROUNDING SYSTEM
7.2 KV
DISTRIBUTION TRANSFORMER 7200-120/240 VOLT
120/240V
CUSTOMER LOAD

Fig IR 280-2

INTERPRETATION (Dec 8, 80)

The secondary system you describe is not a single grounded system per se. On the other hand it does not appear to qualify as a multiple grounded system under 96A3. Rule 97D does apply to your situation and a 10V spark gap would be required.

The secondary ground should be located a minimum of 20 ft from the primary ground to meet rule 97D.

Rules for the Installation and Maintenance of Electrical Supply Stations and Equipment

Part I (Sections 10-19)

110A

Meaning to be attached to "prevent" in connection with equipment enclosures.

REQUEST (Aug 18, 80) IR 276

Request is hereby made for interpretation of the above-referenced rule which provides, in part: "Rooms and spaces in which electrical supply conductors or equipment are installed shall be so arranged with fences, screens, partitions or walls as to prevent entrance of unauthorized persons or interference by them with equipment inside. Entrances not under observation of an authorized attendant shall be kept locked. Warning signs shall be displayed at entrances."

The word "prevent" used in the above rule is a strong term which seems to imply an absolute duty on the utility company. However, the rule goes on to provide: "Metal fences, when used to enclose electrical supply stations having energized electrical conductors or equipment that can be reached by trespassers, shall be a minimum of seven ft in height and shall be effectively grounded. Other types of construction, such as nonmetallic material, shall present equivalent barriers to climbing or other unauthorized entry."

Here, the requirement that nonmetallic fences be constructed to "present equivalent barriers" rather than "prevent" climbing or other unauthorized entry, implies a duty to impede rather than to prevent unauthorized entry.

Since it would be impossible to prevent entry into fenced or fully enclosed electrical supply stations if enough effort is put into penetrating protective measures, it seems to us that the word "prevent" in the context of this rule is not intended to apply to intentional forcible entry.

We request an interpretation on the duty of an electric utility to enclose equipment for the purpose of creating a barrier to unauthorized entry.

INTERPRETATION (Nov 11, 80)

The word "prevent" as used in rule 110A is not intended to imply that intentional or forced entry must be stopped. You are quite correct in stating that it would be impossible to prevent entry into fenced or enclosed supply stations if sufficient effort is put into circumventing the protective measures.

124A Table 2

Clearance at crossing between transmission line and rigid bus structure

REQUEST (Dec 8, 80) IR 283

. . . presently installing a 345/69kV switchyard at . . . Generating Station . . . . There are three (3) 345kV lines leaving the switchyard on the south side. The takeoff structures for these lines are located 193 ft north of the south fence line. The first transmission towers are located 410 ft south of the fence line. An east to west 345kV rigid bus, possibility of another circuit, is located 117 ft (A phase), 135 ft (B phase) and 153 ft (C phase) south of the takeoff structure and under the three 345kV transmission lines (see Fig IR 283). What is the required clearance between the transmission lines and the rigid bus?

Our opinion is that in the absence of specific rules in Part 1 which would conflict, and since the major portion of the span in question is outside of the fence of the substation, that Rule 233 of Part 2 applies and that the required clearance is 14.66 ft at our maximum design conductor temperature of 176°F. The low point in the downhill span is located over "C" phase of the rigid bus in the substation.

The following is the design criteria used:

Transmission Lines

Conductor:	2-954 Kcmil ACSR per phase
Design Temperature:	176°F
Span Length:	603 ft
Tension:	8000# per phase

An outgoing 345kV transmission circuit is perpendicular to, and crosses over, a 345kV rigid bus in a substation. This bus may not be of the same circuit. The major portion of the span, which rises to a higher elevation on another structure outside of the substation area, is outside of the substation fence. Is the clearance required between this outgoing feeder and the rigid bus in the station covered by Part 1 of the National Electrical Safety Code? If not, where is it covered by the Code and what clearance is required at final sag and at a conductor temperature of 176°F?

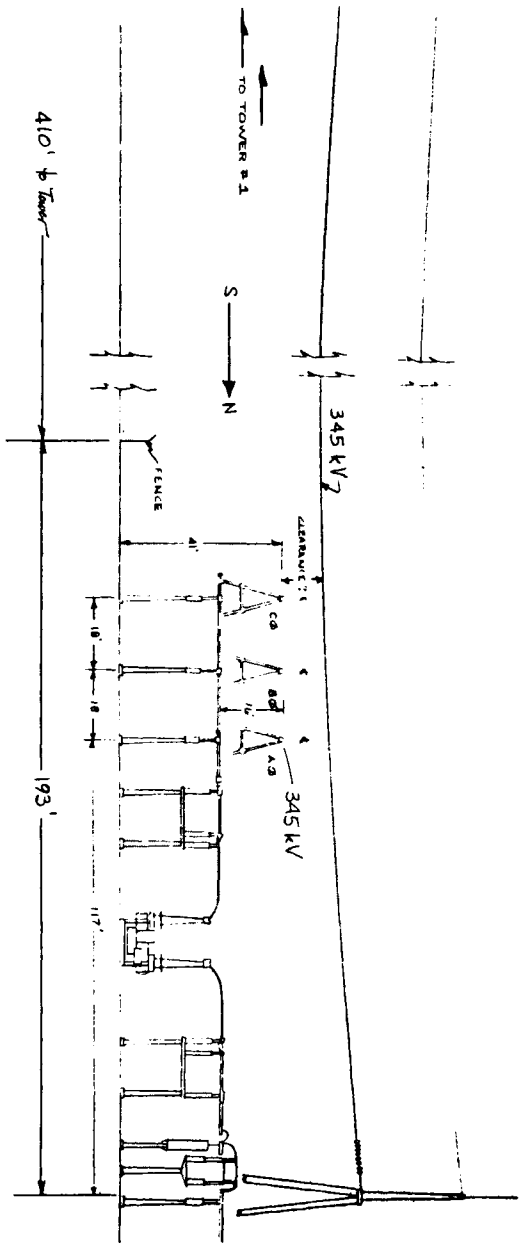


Fig. IR 283

INTERPRETATION (Mar 18, 81)

Part 1 of the Code does not specify the clearance requirements between conductors of an outgoing 345kV transmission line and rigid buses in a generating station.

Part 2 of the Code (Rule 233) may be used as a guide to determine the clearance if desired. In the absence of switching surge information, the straight line method should be used. The 60°F clearance would be the sum of 14.66 ft plus 75% of the mid span sag increase incurred between 60°F and 176°F. The 176°F clearance of 14.66 ft meets the requirements of Rule 233. Given the switching surge for the line, Table 233-2 might provide a somewhat lesser clearance.

141

Definition of unsealed jars and tanks

REQUEST (Jan 17, 79) IR 244

. . . [provide] an interpretation or definition of the term "unsealed jars and tanks" as referred to in Rule 141, Section 14, of the National Electrical Safety Code.

Section 14 on Storage Batteries in Rule 141, Locations, states: "Storage batteries shall be so located as to be accessible only to properly qualified persons. Separate battery rooms shall be required only for unsealed jars and tanks."

A previous edition of the Code defined two types of cell construction in Section 13, Rule 130.

"The sealed type in which the only passage for the escape of gases from the interior of the cell is provided by a vent of effective spray-trap design adapted to trap and return to the cell, particles of liquid entrained in the escaping gases."

If this is still the recognized interpretation, separate battery rooms would not be required when modern enclosed batteries equipped with vent plugs or explosion-resistant vents . . . are used.

INTERPRETATION (Mar 14, 79)

Rule 141 does not require a separate room for sealed type batteries. The description of sealed type batteries contained in subparagraph 1 of Rule 130, Part 1 of this Code (approved as an American Standard May 8, 1941) is appropriate for application of Rule 141 of the 1977 Code.

153A2

Definition of "large", meaning of "segregated"

REQUEST (Dec 7, 78) IR 241

. . . [concerning the] location of pad mount transformers in proximity to building and areas accessible to the public, . . . provide . . . an interpretation on a rule of the National Electrical Safety Code. The rule in question is found in Section 15, Rule 153 A2. "Large oil-filled transformers should be segregated or protected by the following methods, to minimize fire hazards." See also: IR244.

What is the interpretation of "large oil-filled transformers"?

What is the interpretation of "space separations"? Were actual minimum distances considered as clearances from buildings?

INTERPRETATION (Jan 19, 79)

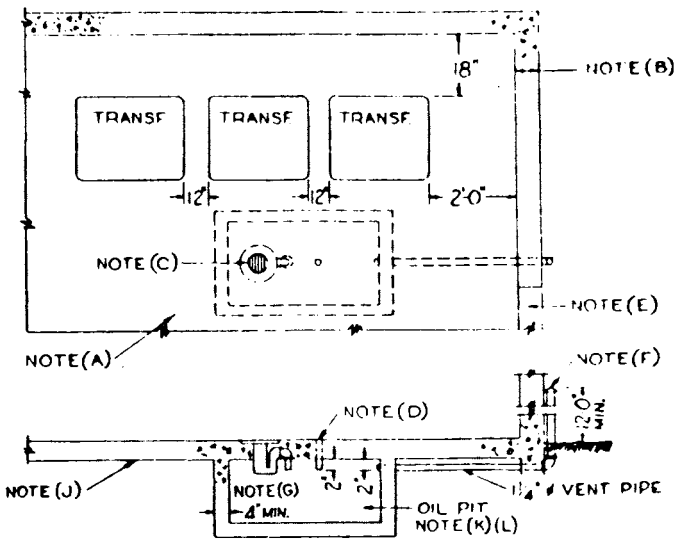
Pad mounted transformers in areas accessible to the general public do not fall under the jurisdiction of Part 1 of the Code. Part 1 covers power generating stations, substations, etc. which are accessible only to qualified personnel. Pad mounted transformers accessible to the general public are covered under Part 3 of the National Electrical Safety Code. However, Part 3 contains no rules which deal with the specific hazard of fire involving oil-filled transformers.

153B1

Floor drains for transformer buildings. Meaning of "outside the building"

REQUEST (May 24, 78) IR 240

In Part 1, Section 15, Rule 153B1 of the 1977 Edition of the National Electric Safety Code, ANSI C2, when referring to indoor transformer installations, the code states "Floor drains shall be provided to carry oil to a safe location outside the building." Clarification is needed as to what is meant by outside of the building. Attached is a standard used . . . in the locating of oil containment facilities in conjunction with indoor customer transformer vaults. Please comment on whether or not each of the three installations diagrammed meets code requirements.



NOTE:

(A) FLOOR TO BE SLOPED NOT LESS THAN ¼" PER FOOT TOWARD DRAIN

(B) 6" MIN. REINFORCED CONCRETE WALL OR 8" MIN. BRICK WALL OR 12" LOAD BEARING HOLLOW TILE WITH CEMENT PLASTER ON THE INSIDE

(C) JOSAM #253-A COMBINED TRAP AND DRAIN OR EQUIVALENT

(D) 2" DIA. PIPE THRU SLAB WITH FLUSH BRASS PLUG FOR PUMPING OUT TANK

(E) CONCRETE OR BRICK DOOR SILL, MIN. HEIGHT 4"

(F) WEATHER PROOF VENT HOOD

(G) 3" DIA. DRAIN PIPE

(H) 2" DIA. PIPE THRU GROUND WITH BRASS CAP FOR PUMPING OUT TANK

(I) 3" DIA. DRAIN PIPE - PITCH ¼" PER FOOT

(J) FLOOR SLAB: THICKNESS DEPENDING ON SUB-SOIL AND WEIGHT OF TRANSFORMERS

(K) LOCATION OF DRAIN, PIT AND TANK IN CENTER OF TRANSFORMER VAULT

(L) SIZE OF OIL PIT OR TANK 10% LARGER THAN OIL CAPACITY OF LARGEST SINGLE TRANSFORMER

(M) LOCATION OF OIL TANK UNDERGROUND OUTSIDE OF TRANSFORMER VAULT

Fig IR 240-1

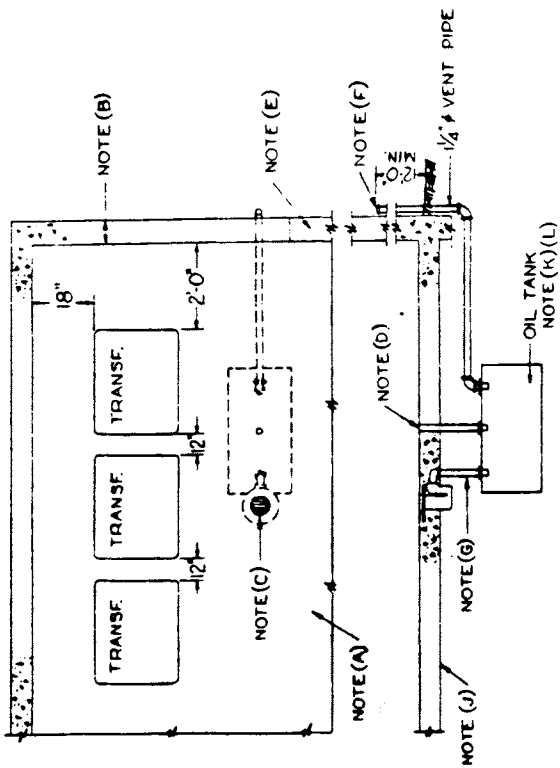

NOTE (B)
NOTE (E)
NOTE (F)
MIN 12-0"
1/4" VENT PIPE
18"
2'-0"
TRANSF.
TRANSF.
TRANSF.
12"
12"
NOTE (C)
NOTE (D)
OIL TANK
NOTE (K)(L)
NOTE (A)
NOTE (G)
NOTE (J)

Fig IR 240-2

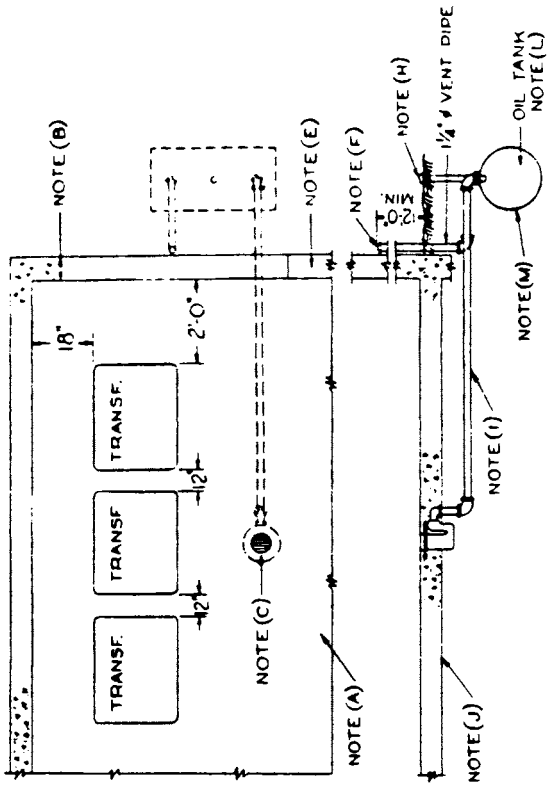

NOTE (B)
NOTE (E)
NOTE (F)
NOTE (H)
1½" VENT PIPE
OIL TANK
NOTE (L)
2'-0" MIN.
18"
2'-0"
TRANSF.
TRANSF
TRANSF.
12"
12"
NOTE (C)
NOTE (A)
NOTE (I)
NOTE (M)
NOTE (J)

Fig IR 240-3

INTERPRETATION (Jan 22, 79)

"We believe that each of the three designs meets the intent of Rule 153B1."

162 See 124A Table 2, IR 283

173B

Disconnecting provision acceptability

REQUEST (Nov 2, 79) IR 257

. . . request an official interpretation of Section 17, Article 173B, "Provisions for Disconnecting," of the 1977 National Electrical Safety Code.

Would a 600 A, 5 kV load break switch with provision for padlocking, in either the open or closed position, satisfy the intent of the above paragraph?

This switch is used to disconnect a 5 kV feeder to a medium-voltage, drawout contactor type, motor starter. The contactor is both mechanically and electrically interlocked so that the contactor cannot be drawn out unless the contactor is deenergized.

INTERPRETATION (Jan 14, 80)

Rule 173B requires that remotely controlled switches, oil switches and disconnectors be arranged so they can be secured in the open position or plainly tagged to avoid inadvertent closing. Padlocking to keep a switch in the open position is an acceptable means of meeting this rule.

Safety Rules for the Installation and Maintenance of Overhead Supply and Communication Lines

Part 2 (Sections 20-28)

202A

(a) Distinction between Rule, Recommendation, Note, Exception
(b) Requirements for guy insulator

REQUEST (Aug 29, 79) IR 254

The question is the relative force of a *Rule,* or extent to which it is mandatory, as opposed to the *Exception* frequently stated following the statement of the *Rule.*

In the 1973 Edition [of the National Electrical Safety Code], only the differentiation between *shall* and *should* were provided, together with the significance of a *Recommendation* vs. a *Rule.*

In addition, in the 1977 Edition, in a number of places the phrase is used "Notes contained herein are for information purposes . . ." I am particularly interested in an answer to this question relative to the question of insulators in guys. In the 1973 Edition, *Rule* 283B1 requires a guy insulator under the stated circumstances, while the *Exceptions* that follow negate this requirement. For example, is the use of insulators preferred over grounding without the use of insulators? If the two alternatives are strictly at the installer's option, why is the "Rule" and "Exception" format employed?

A change in the 1977 Edition wording of Rule 283B1 now adds a *Note*, which carries similar, but not identical wording to the 1973 Edition. The term "need not be" has now in effect been substituted for the phrase ". . . are not required . . ." which appears in the 1973 Edition, Rule 283B4. May this change be interpreted as strengthening the requirement for guy insulators?

INTERPRETATION (Oct 31, 79)

A rule is written to cover the general case and, for the described circumstances, is the governing requirement. Exceptions provide for specific conditions under which the rule is not applicable. It is not the intent of the code to show a preference as to whether exposed guys are to be equipped with insulators or effectively grounded. Code rules, including exceptions, have the force of law where the code is adopted by the governing body of the state, city or municipality.

202B

Reconstruction definition. Does line voltage change from 7.2/12.5 kV to 14.4/24.9 kV require compliance with 1977 Edition

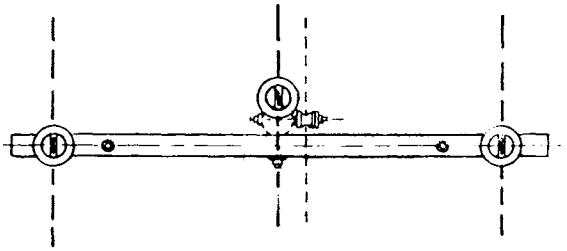
REQUEST (Dec 17, 77) IR 219

. . . request an interpretation of Section 202B on page 106 in the 1977 Edition of the National Electrical Safety Code. The specific question on interpretation involves existing line designed for 7.2/12.5 kV operation to be re-insulated for 14.4/24.9 kV operation.

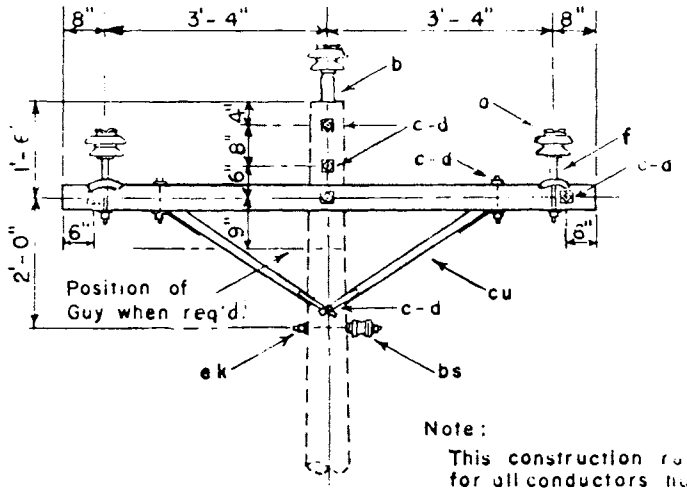
Section 202B, "Application of Rules", states under 202B1, "These rules *shall* apply to all new installations, reconstructions, and extensions except . . .". Section 202B states under 202B2, "Existing installations, including maintenance replacements, which comply with prior editions of this code need not be modified to comply . . .".

At the present time, many electrical distribution systems are converting from 7.2/12.5 kV to 14.4/24.9 kV operating voltage. Both of these voltage levels fall within the 0 to 15K phase to ground voltage category in the Code. The required clearances are the same for each voltage. To convert from 7.2/12.5 kV operation to 14.4/24.9 kV operation simply requires replacement of existing insulators with units having a higher insulation level. Any pole changeouts or other material replacement certainly can be considered maintenance as they are not required by the voltage change, even though they may be accomplished at the same time. The attached drawings from the REA specifications show that, typically, the insulators and possibly the insulator pins are the only difference between the 7.2/12.5 kV and the 14.4/24.9 kV configurations.

Therefore, our question is, does the replacement of 7.2/12.5 kV insulation constitute reconstruction and therefore require the line to meet the 1977 code requirements.



PLAN



Note:
This construction required for all conductors having a breaking strength of more than 4500 pounds

Fig IR 219

REQUEST (Jan 18, 78) IR 220

In the opinion of the Committee on Interpretations, are the conditions of application described hereafter considered "reconstruction" and therefore apply under Rule 202B1 or are they considered "ordinary maintenance" and therefore apply under Rule 202B2? The basic issue is whether or not a request and a granting of waiver from the proper administrative authority is required if during the line modification the conductor clearances are not to be brought up to conformance with clearance requirements of Part 2 of ANSI C2-1977.

Description of existing lines

The lines in question consist of 7.2 kV single phase 7.2/12.5 kV multiphase overhead grounded neutral distribution lines.

The lines are located in rural areas, across "other land" per Item 4, Table 232-1, Rule 232, ANSI C2-1977, or on such land but adjacent to "road rights-of-way" or with poles located within public "road rights-of-way" but with line conductors overhanging private "other land".

The lines were constructed during periods when the 4th, 5th, and 6th National Electrical Safety Codes were in effect. The clearances are generally equal to or exceed clearance requirements for "along and within limits of road rights-of-way" per Rule 232A, and Table I of the superseded Codes, but in many cases do not meet the "other land" clearance requirements per Rule 232 ANSI C2-1977.

It must be assumed the original designers considered such clearances in conformance with general requirements of Rules 200C, 210 and 211 for there is essentially no existing evidence contained on easements or other documents to indicate any specific clearance requirements were agreed upon with the land owners.

Condition of application Case 1

To increase capacity without reconductoring, it is proposed to convert said lines from 7.2 kV to 14.4 kV single-phase or from 7.2/12.5 kV to 14.4/24.9 kV multiphase.

The required line modifications consist of replacing insulators, distribution transformers, fuse cutouts, surge arresters, reclosers, etc. as required for the new voltage level. It is generally not intended to replace poles unless otherwise required by deterioration.

Condition of application Case 2

In this specific application the lines were designed with pole strengths as required for 3-phase lines, however, only one or two of the phase conductors are now installed.

To increase capacity it is now proposed to add conductor or conductors to convert the line to 3-phase operation.

The required line modifications consist of addition of phase conductors, insulators, etc., and in some cases, cross arms. It is generally not intended to replace poles unless otherwise required by deterioration.

Inquirer's interpretation

The writer concedes in some cases, conformance to the clearances required for the "other land" requirements per Rule 232, ANSI C2-1977, may be impractical, and may impose an unfair economic burden on the utility which will in turn be passed on to their consumers.

At the same time, by our own strict interpretation of ANSI C2-1977, we can not construe the modifications in either Case 1 or Case 2 above to be "ordinary maintenance", and therefore must be considered to fall under the category "reconstruction" as defined on page 100 of ANSI C2-1977.

By Rule 202B1, it is mandatory that the rules of ANSI C2-1977 be applied for "reconstruction" except where waived by the proper administrative authority.

While in some cases we believe that a waiver is justified and should be requested, it is our opinion it was the intent of the Code Committee, that the determination of justification for waiver is the prerogative of the proper local administrative authority.

We therefore believe, as professional consulting engineers, we would be in error by making any recommendations other than the utility reconstruct in conformance with the 1977 Code or request a waiver from their state commission or other proper administrative authority.

The writer has expressed this opinion to a number of clients and at seven seminars on the 1977 National Electrical Safety Code either as a speaker or panelist. It has come to our attention that this opinion is being challenged by some engineers. We therefore believe it is in order to request an opinion from the ANSI Committee on Interpretation.

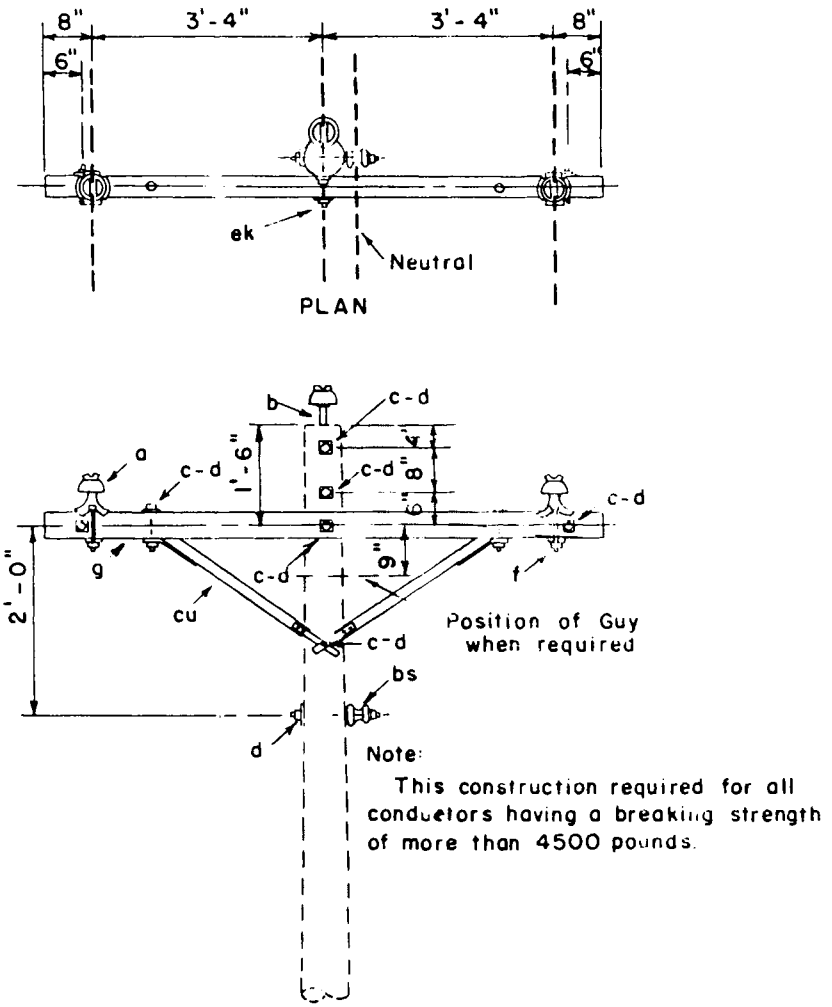

8"
3'-4"
3'-4"
8"
6"
6"
ek
Neutral
PLAN
b
c-d
a
c-d
1'-9"
c-d
8"
6"
c-d
d
g
c-d
9"
f
2'-0"
cu
Position of Guy
when required
c-d
bs
d
Note:
This construction required for all
conductors having a breaking strength
of more than 4500 pounds.

Fig IR 220

INTERPRETATION (May 9, 78)

The Interpretations Committee has carefully considered your question but has been unable to reach a consensus. Part of the committee believes that raising the voltage does not constitute reconstruction unless it is accompanied by an increase in the mechanical loading on the pole. Another view is that with every pole being worked on to change insulators and all transformers, capacitors, cutouts, etc., being replaced, this is more than mere maintenance. We are sorry we are unable to provide a clear-cut answer at this time; if the committee does reach agreement, we shall advise you accordingly.

NESC Secretariat Note. See 1981 Edition NESC Section I, Rule 013B2

* * * *

Definition of reconstruction.

REQUEST (Apr 5, 78) IR 230

. . . have 12 mi of existing Vϕ or two-phase line that we wish to convert to 3ϕ or three-phase. This would require the addition of one more phase wire. The poles are already framed for three phase. The poles vary in length from 30 ft to 40 ft. The addition of the phase wire will not affect existing clearance . . . Will this be considered reconstruction when phase wire is added? . . .

INTERPRETATION (July 6, 78)

Adding a third phase wire to an existing line is not considered reconstruction; it would be considered a new installation or an extension of the phase.

NESC Secretariat Note. See 1981 Edition NESC Section I, Rule 013B2

* * * *

New installations, reconstruction, extensions; status of existing installation if cable TV is added

REQUEST (Feb 16, 79) IR 243

. . . Company X desires to find out whether the attachment to its electric utility poles of certain cable television facilities, including cables, wires, supporting strand, brackets, drop wires, tap-offs, line amplifiers and related equipment, would constitute a "new installation, reconstruction, or extension" under Rule 202B, such that the increased overhead clearance requirements (under 1977 code amendments) of 22 ft for . . . electric lines crossing over roads, streets, and alleys subject to truck traffic, would apply. . . . currently has in excess of 50 000 utility poles of 35 ft length which conform to the clearance provisions of the 1975 edition of the code by allowing not less than 18 ft of clearance from the center of any road, street, alley or parking lot subject to truck traffic. Because of various constraints, the 22 ft clearance required in the 1977 amendment to the code cannot be obtained without replacement of the 35 ft poles by 40 ft poles. In the due course of installations, reconstructions and extensions of X electrical facilities, X has been

and is replacing the shorter poles with taller ones and is conforming clearances to the 22 ft requirement. However, there has been no effort to accomplish this conversion in wholesale fashion over a short period of time, nor is manpower available for such a short-term conversion.

X has recently entered into a pole license agreement with a corporation which is engaged in providing cable television services to . . . residents. That agreement grants Company Y the right to attach its facilities to X poles, where such use will not interfere with X service requirements or others' use. The parties understand, and Y has agreed under the contract, that its cable facilities will comply with the clearance requirements of the code as currently amended and as applicable to communication facilities, and there is no question being raised here as to the applicability of the current rules to the cable facilities. X is concerned only with the compliance status of its own electrical facilities, but neither of the parties to the contract is desirous of undertaking the wholesale replacement of 50 000 utility poles. To clarify that no such mass replacement is required under the code, X is seeking an interpretation that the attachment of the cable television facilities is not a "new installation, reconstruction, or extension" which would trigger compliance with the new clearance standards for the X electrical facilities which are already in place on the poles.

X believes that there are a number of reasons why attachment of the cable facilities does not constitute such a "new installation, reconstruction or extension." The cable facilities will themselves comply with current clearance provisions of the code, and their installation clearly is *not* an extension or reconstruction of the existing electrical facilities which are in place, nor do they constitute a new electrical installation or one which will require significant alteration of the in-place electrical facilities. Logically, the new clearance provisions should apply when the electrical equipment itself is replaced, extended or reconstructed, but not when unrelated, complying facilities are attached.

(1) Voltage of conductors?
   (a) Telephone cable — 105 V ac ring 48 V dc talk.
   (b) CATV cable — 60 V ac.
   (c) Neutral — O V.
   (d) Secondary — 120 V ac line to ground and 240 V line to line.
   (e) Primary — 7620 V ac phase to ground and 13 200 V ac phase to phase.

(2) The CATV cable has a continuous metallic sheath which is grounded at each pole attachment point.

(3) Distance from grade to:
(a) Telephone Cable — 15 ft midspan 16 ft 6 in at pole.
(b) Neutral — 20 ft midspan 20 ft 10 in at pole.
(c) Secondary — 21 ft midspan 21 ft 10 in at pole.
(d) Primary — 27 ft midspan 29 ft at pole.
These clearances do not constitute a violation of those recommended by the National Electrical Safety Code; However, Texas Case Law requires that the neutral be treated as an energized phase conductor. The question you are being asked to resolve is, "does the addition of CATV cable and appurtenance, with no revision of electric facilities, constitute a change such that the pole should be reconstructed with the increased clearances specified in the 1977 National Electrical Safety Code?" Since Texas treats the neutral as a phase conductor, this would require for new installations, raising the neutral from 20 ft to 22 ft above grade for lines crossing public roads, streets, alleys, and parking lots subject to truck traffic.

(4) Drawings of a present pole (Fig IR 243-1), a proposed pole (Fig IR 243-2), and a minimum clearance pole (Fig IR 243-3) follow. Fig IR 243-1 illustrates the dimensions given in the answer to item 3. Fig IR 243-2 shows the dimensions which would cover the majority of the 35 ft poles in our system, and these are as follows: From Grade to:
(b) CATV Cable — 17 ft 6 in at pole.
(c) Neutral — 20 ft 10 in at pole.
(d) Secondary — 21 ft 10 in at pole.
(e) Primary — 20 ft at pole.
Fig IR 243-3 shows the absolute minimum clearance for conductors from ground on a 35 ft pole only along alleys or easements and these are as follows:
From grade to:
(a) Telephone Cable — 15 ft 6 in at pole.
(b) CATV Cable — 16 ft 6 in at pole.
(c) Neutral — 19 ft 10 in at pole.
(d) Secondary — 20 ft 10 in at pole.
(e) Primary — 28 ft at pole.

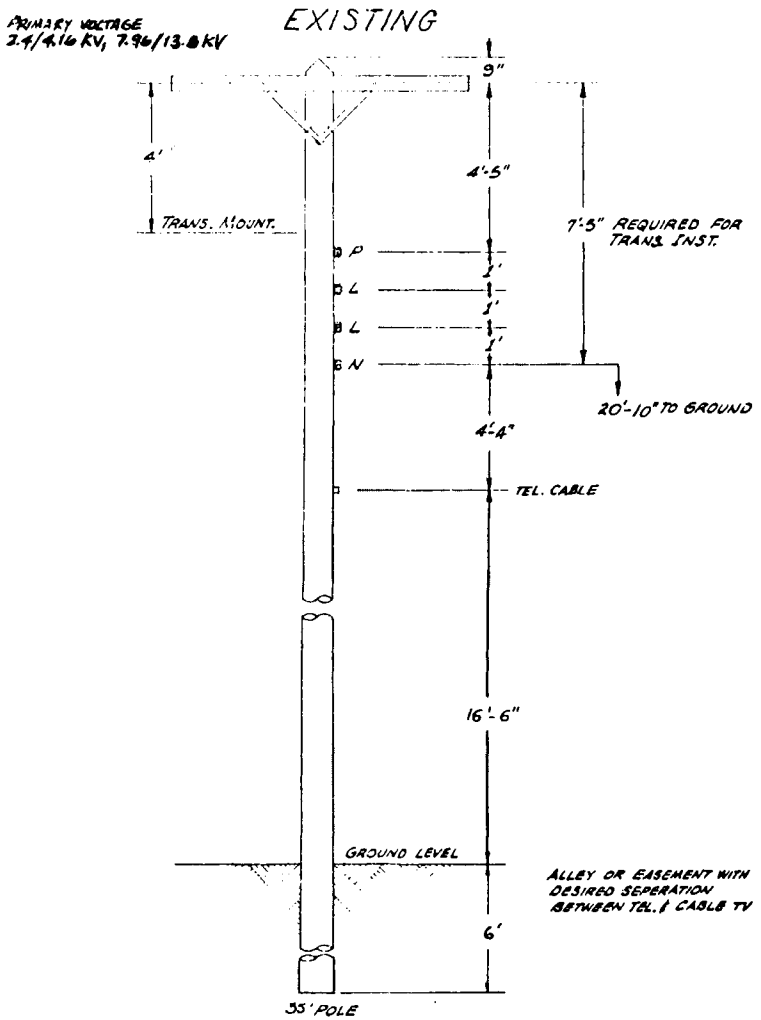

PRIMARY VOLTAGE
2.4/4.16 KV, 7.96/13.8 KV
EXISTING
9"
4'
4'-5"
TRANS. MOUNT.
7'-5" REQUIRED FOR TRANS. INST.
P
L
L
N
1'
1'
1'
20'-10" TO GROUND
4'-4"
TEL. CABLE
16'-6"
GROUND LEVEL
ALLEY OR EASEMENT WITH DESIRED SEPERATION BETWEEN TEL. & CABLE TV
6'
35' POLE

Fig IR 243-1

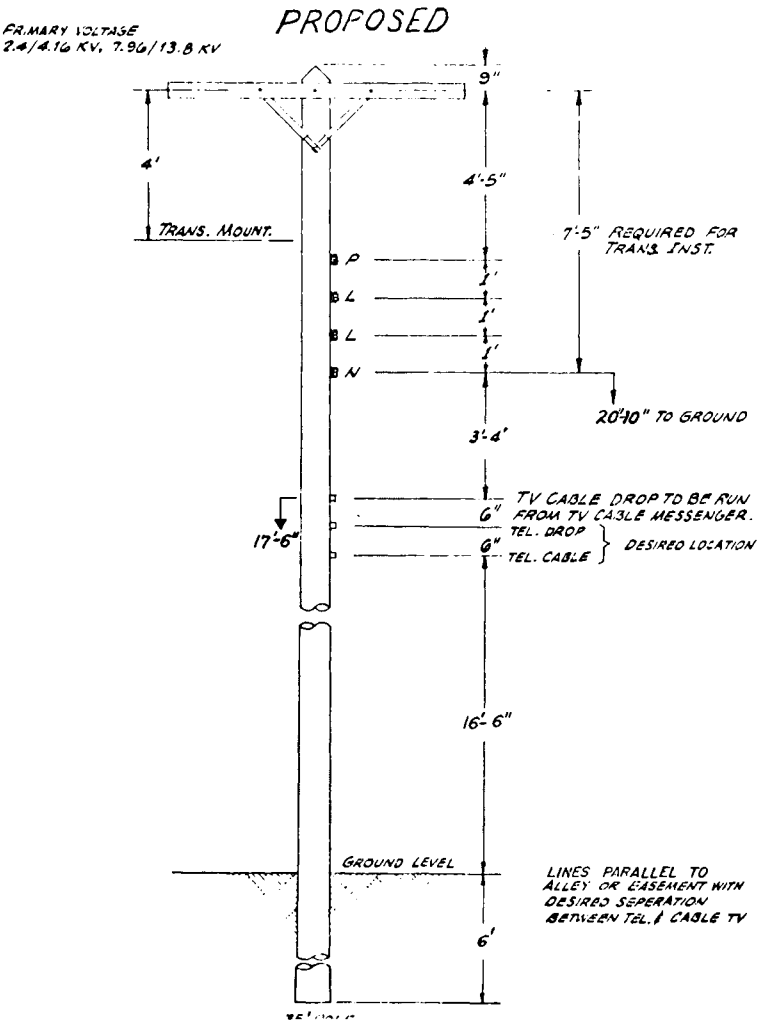

PROPOSED
PRIMARY VOLTAGE
2.4/4.16 KV, 7.96/13.8 KV
9"
4'
4'-5"
TRANS. MOUNT.
7'-5" REQUIRED FOR TRANS. INST.
P
L
L
N
1'
1'
1'
20'-10" TO GROUND
3'-4'
TV CABLE DROP TO BE RUN FROM TV CABLE MESSENGER.
6"
TEL. DROP
6"
TEL. CABLE
DESIRED LOCATION
17'-6"
16'-6"
GROUND LEVEL
LINES PARALLEL TO ALLEY OR EASEMENT WITH DESIRED SEPERATION BETWEEN TEL. & CABLE TV
6'

Fig IR 243-2

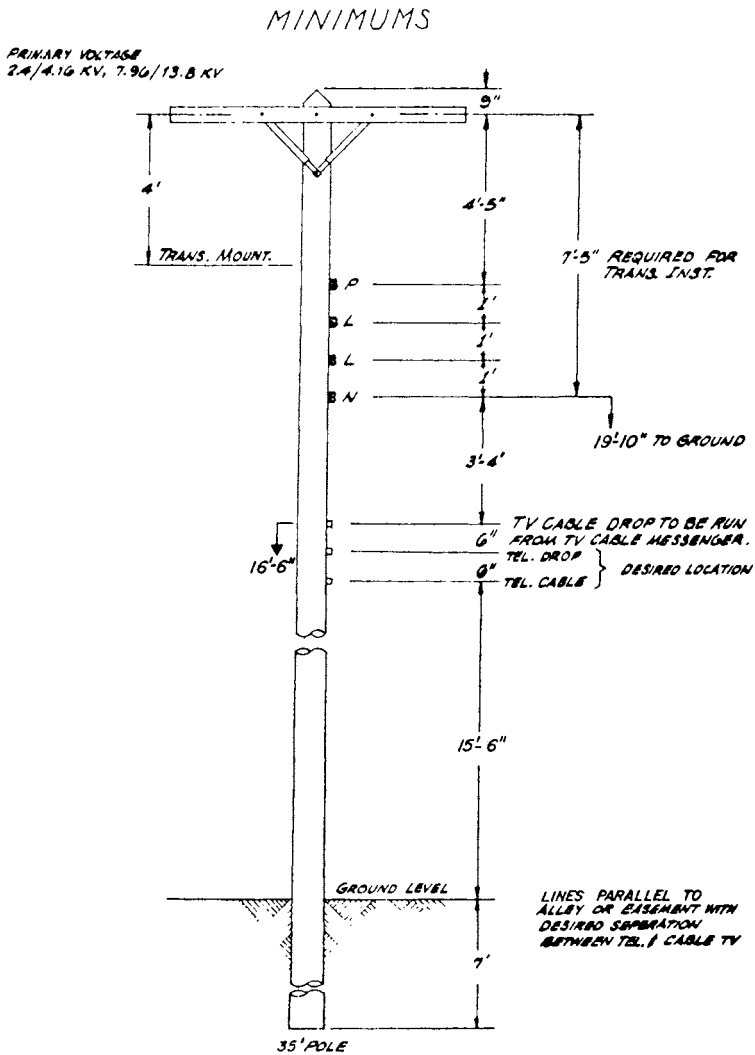

MINIMUMS
PRIMARY VOLTAGE
2.4/4.16 KV, 7.96/13.8 KV
9"
4'
4'-5"
TRANS. MOUNT.
7'-5" REQUIRED FOR TRANS. INST.
P
L
L
N
1'
1'
1'
19'-10" TO GROUND
3'-4'
TV CABLE DROP TO BE RUN FROM TV CABLE MESSENGER.
6"
TEL. DROP
6"
TEL. CABLE
DESIRED LOCATION
16'-6"
15'-6"
GROUND LEVEL
LINES PARALLEL TO ALLEY OR EASEMENT WITH DESIRED SEPARATION BETWEEN TEL. & CABLE TV
7'
35' POLE

Fig IR 243-3

INTERPRETATION (Mar 14, 79)

Addition of communication facilities to an existing jointly used line does not affect the ground clearance requirements for the electric power facilities. However, clearances between the added communications facility and the electric power facility must meet the requirements of Rule 235, (essentially the same requirements in the 1977 and 1973 Codes). Also, the line would have to meet the strength requirements of Rule 261 after the addition of the communication facilities.

202B1

Meaning of "reconstruction"

REQUEST (Dec 12, 77) IR 215

. . . We have need for knowing the definition and meaning of the word "Reconstructions" as used in Part 2, Rule 202B1 of the 1977 Edition of the National Electrical Safety Code. Upon studying the usage of the word "reconstruction" we find several definitions are used in the industry.

We have electric cooperatives that have been installing single phase overhead lines and have provided pole strength for future conversion to two or three phase where their long range planning determined multiphases would be required at a later date.

We would appreciate clarification of the intent and application of Rule 202. Do incidents involving replacement of facilities resulting from storm damage rebuilding constitute maintenance? Does normal pole replacement constitute maintenance?

INTERPRETATION (Mar 13, 78)

Replacement in kind regardless of the reason, is generally considered maintenance; replacement with stronger, larger or taller units is generally considered reconstruction. Maintenance replacements are not considered reconstruction.

NESC Secretariat Note. See 1981 Edition NESC Section I, Rule 013B2

214A2

Frequency of inspection for service drops

REQUEST (Feb 5, 79) IR 246

Using the data supplied on the attached sketch, please advise whether or not an interpretation can be rendered regarding the frequency with which the service drop span should be inspected. . . .

This particular 500 MCM four-wire, delta service drop is 75 ft long and spans from a wooden utility pole to a mast at the rear of a restaurant, with all of the output of the transformers being solely for the purpose of supplying power to the restaurant. The service drop span operates at 240 V delta with a center tap on one phase to provide 120 V for lighting and receptacles and small appliances. This installation exists in an urban area on the mid-Atlantic coast with the ocean a few blocks to the east and is subject to occasional hurricane force winds and temperatures ranging from below zero to 100°F.

The service drop is easily visible from vehicles passing by on the street and the utility pole is at the sidewalk.

If there are no specific rules or known minimum standards for the frequency at which such an installation should be inspected and any defects recorded and/or acted upon, can you then advise what the general consensus is within the electric utility industry with regard to customary acceptable procedures and practices for systematic inspection of service drop installations such as the one pictured on the attached sketch.

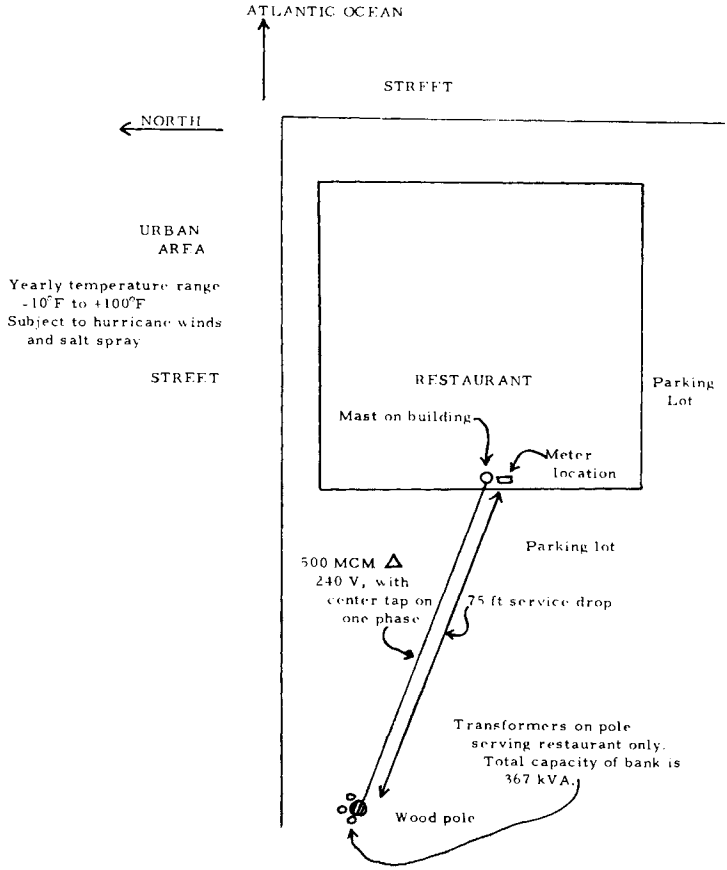

ATLANTIC OCEAN
STREET
NORTH
URBAN
AREA
Yearly temperature range
-10°F to +100°F
Subject to hurricane winds
and salt spray
STREET
RESTAURANT
Parking
Lot
Mast on building
Meter
location
Parking lot
500 MCM Δ
240 V, with
center tap on
one phase
75 ft service drop
Transformers on pole
serving restaurant only.
Total capacity of bank is
367 kVA.
Wood pole

Fig IR 246

INTERPRETATION (Apr 10, 79)

Rule 214A2 states that inspection should be at such intervals as experience has shown to be necessary. The 'experience' referred to in the rule means, in general, the experience of the utility involved. The National Electrical Safety Code does not specify the fixed period of time, and the Interpretations Subcommittee cannot provide a specific answer.

215C1

(a) Magnitude limit of ground fault voltage. (b) intent of "effectively grounded" as applied to structures.

REQUEST (Feb 23, 78) IR 227

Referring to ANSI C2, 1977 Edition, National Electrical Safety Code: Page 107, Part 215: Grounding shall be in accordance with applicable methods given in Section 9. 215C1: . . . Supporting structures . . . shall be *effectively grounded.* Page 102, Definition: supporting structure.

What is the intent of the meaning or definition of *effectively grounded?*

IEEE Std 100-1972, *Dictionary of Electrical and Electronics Terms,* defines:

> **effectively grounded.** Grounded through grounding connection of sufficiently low impedance (inherent or inherently added or both) that ground faults that may occur cannot build up voltages in excess of *limits established* for apparatus, circuits, or systems so grounded.

Who or what authority *determines the limits of the ground fault voltages established* for apparatus, circuits, or systems so grounded?

Do you agree, that this means that metal supporting structures are to be grounded so that voltage due to ground faults on the structure cannot build up to a value which is lethal? Consider that you *do* specify limiting maximum tolerable voltage differences for Supply Stations according to your Rule 96A1.

INTERPRETATION (June 16, 78)

You are raising questions which relate to a definition contained in the IEEE Dictionary. Such questions should be referred to the responsible committee (C-42). For purposes of the National Electrical Safety Code, the term "effectively grounded" is defined on Page 99 of the Definitions Section in the 1977 Edition. With respect to the touch-and-step voltage formulas contained in Rule 96A1, please note that these are not mandatory; they are recommendations and are stated as such.

See also Rule 94A3

215C2 See 283A3, IR 236

220B2

Clearance requirements for CATV amplifier power feed

REQUEST (Oct 15, 79) IR 255

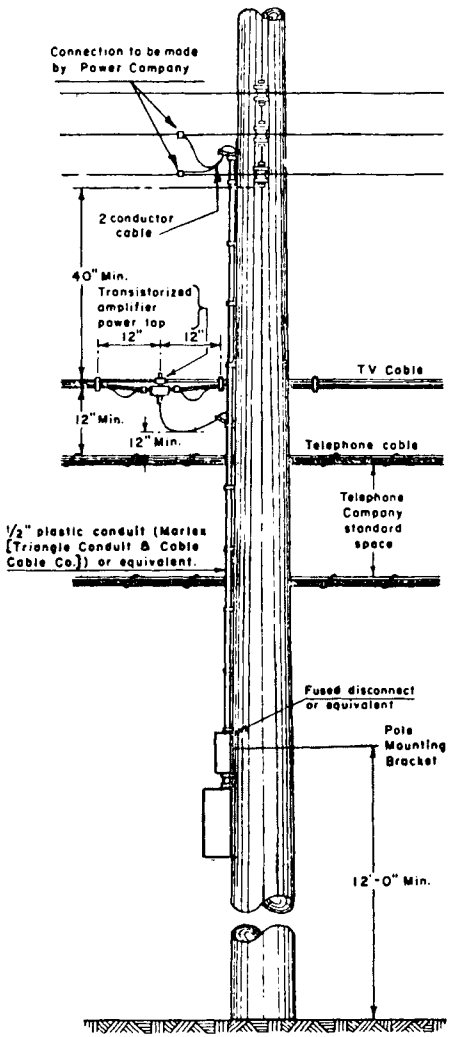
. . . [Fig IR 255 below] . . . shows a typical arrangement of power line conductors, cable television, and telephone facilities on a common use pole. The 120 V power lead for the transistorized amplifier power tap is dimensioned as 12 in minimum between this power lead and the telephone cable below. Is this 120 V power lead a line conductor, a communications line, a vertical conductor, or a lateral conductor?

If the 120 V power lead is interpreted to be a line conductor, the required minimum clearance would be 40 in as specified in Table 235-5, column 1, line 1, or 16 in if the telephone and cable television companies comply with Rule 220B2.

The definition of a communication line allows power supply conductors to be included under specified conditions. If the 120 V power lead is interpreted to be a communication line, are these specified conditions limited to those in the definition of a communication line or do they include Rule 220B2? Does Rule 235G apply to this situation if the 120 V power lead is interpreted to be a communications line? If so, the minimum clearance between the 120 V power lead and the telephone cable is 4 in.

If the 120 V power lead is interpreted to be a vertical or lateral conductor, Rule 235E, Table 235-6, permits 3 in between a communications line conductor and a vertical or lateral conductor.

JOINT POWER, TELEPHONE AND TV POLE
TELEVISION EQUIPMENT POLES
TYPICAL ARRANGEMENTS



DETAILS OF POWER SUPPLY TO CATV
CABLE SYSTEM SERVICE MOUNTING
USING 1001 POWER SUPPLY HOUSING

Fig IR 255

INTERPRETATION (Dec 20, 79)

The small cable extending from the vertical run on the pole to the CATV amplifier is best described as a communications jumper. It is not a line conductor; neither is it a vertical nor lateral conductor. It follows that the vertical run to which it is connected is a communications facility.

We understand that this jumper carries 60V ac and is current limited, rather than 120V ac as originally indicated. There is no prescribed clearance between communication cables and jumpers.

Rule 220B2 was intended to cover special power supply arrangements used in the operation of certain railroad communications systems. It was not visualized that these kinds of installations would have other applications. Communication facilities should operate within the limitations of the definition; Rule 220B2 is an exception for a special situation.

Rule 235G applies to line conductors on vertical racks. It does not apply to jumpers such as the one from the amplifier to the pole. Note that table 235-6 applies to open wire. It does not apply to the jumper partly because the jumper is neither vertical nor a lateral conductor and partly because the jumper is a fully-insulated cable.

230C

Clearance for aerial secondary and service conductors with an insulated neutral

REQUEST (Sept 4, 80) IR 279

We use high density Polyethelene (HDPE) insulated triplex and quadruplex cable with an HDPE insulated neutral for our aerial secondary and service conductors. These cables are operated below 600 V and do not have metalic shielding. The effectively grounded neutral is an all aluminum alloy conductor which also serves as the supporting messenger. Much of our service area is located in an area of high contamination and the insulated neutral provides some mechanical and corrosive protection.

We would like an interpretation of Rule 230C, National Electrical Safety Code, ANSI C2, 1977 Edition as it would apply to supply cables with insulated messengers. Since all three categories of Rule 230C specifically state the grounded messenger is *bare*, can we consider our supply cable as conforming to Rule 230C for clearance purposes?

INTERPRETATION (Nov 19, 80)

The supply cable you describe cannot be considered as meeting Rule 230C because the neutral is not bare. For clearance purposes, the cable would be treated as open conductors and column 2 of Table 232-1 would apply for voltages below 750 V.

231 B

Location of pad-mounted equipment

REQUEST (Nov 6, 79) IR 258

In reference to the 1977 Editon of the National Electrical Safety Code, . . . [please provide] . . . a clarification with respect to the locations of pad-mounted equipment.

In Part 3, the code makes no mention of any physical locations in relationship to streets, roads and highways. Part 2, Rule 231B states a specific distance from the street side of the curb to overhead equipment supports. Does this rule also apply to pad-mounted equipment in underground systems? If not, what is the recommended distance?

INTERPRETATION (Dec 21, 79)

Rule 231B does not apply to pad-mount installation. Rules 300, 310 and 311 apply but do not specify a definite distance.

231B1a

Example requested

REQUEST (Apr 6, 78) IR 231a

Please furnish an interpretation as to when Rule 231B1a of the 1977 Edition of the National Electric Code would apply.

* * * *

REQUEST (Apr 11, 78) IR 231b

. . . request your assistance in interpreting several specific requirements of the 1977 Edition of the National Electrical Safety Code. *Rule 231B1a*

Under what condition would the 6 in setback apply, since we interpret one ft is required on all local streets and roads, and a 2 ft setback is required on all arterial roads?

INTERPRETATION (July 7, 78)

Rule 231B1a was inadvertently altered during the printing and editing of the book. As approved by letter ballot of the C-2 committee, this rules reads as follows:

B. From Streets, Roads, and Highways

1. Where there are curbs, the measurement from the street side of the curb to the supporting structure, support arms and equipment attached thereto up to 15 ft above the road surface:
   a. shall not be less than 6 in.
   b. should be not less than 2 ft on arterials which are primarily for through traffic, usually on a continuous route.
   c. should be not less than 1 ft on local streets and roads which are primarily for access to residences, businesses, or other abutting properties.

232 Table 232-1

Ground clearance for service

REQUEST (Aug 25, 80) IR 277

. . . presently staking distribution lines that will provide electrical service to numerous cathodic protection stations. These installations are served with 120/240 V service from a primary transformer pole which will be provided by the Cooperative and a meter pole which is provided by the customer.

A question has arisen concerning the intended height for service wires to these installations.

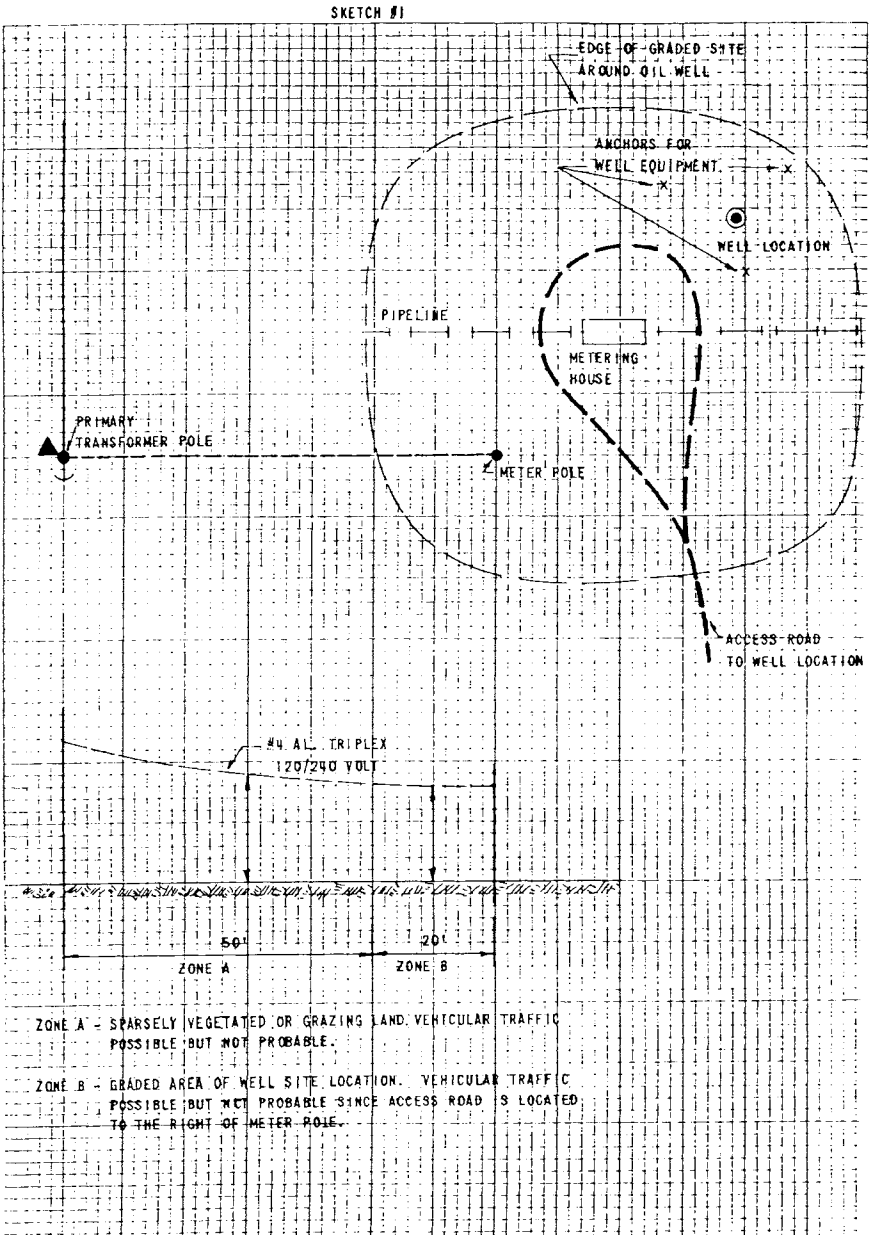

SKETCH #1
EDGE OF GRADED SITE AROUND OIL WELL
ANCHORS FOR WELL EQUIPMENT
WELL LOCATION
PIPELINE
METERING HOUSE
PRIMARY TRANSFORMER POLE
METER POLE
ACCESS ROAD TO WELL LOCATION
#4 AL. TRIPLEX 120/240 VOLT
50'
20'
ZONE A
ZONE B
ZONE A - SPARSELY VEGETATED OR GRAZING LAND. VEHICULAR TRAFFIC POSSIBLE BUT NOT PROBABLE.
ZONE B - GRADED AREA OF WELL SITE LOCATION. VEHICULAR TRAFFIC POSSIBLE BUT NOT PROBABLE SINCE ACCESS ROAD IS LOCATED TO THE RIGHT OF METER POLE.

Fig IR 277

INTERPRETATION (Nov 11, 80)

The circumstances described in your letter and [in Fig IR 277 above] indicate this installation falls in category 4 of Table 232-1. That is, the required clearance in both zone "A" and zone "B" is 18 ft at 60°F no wind.

232A Table 232-1

Service drops; clearance to ground

REQUEST (Feb 7, 78) IR 223

This rule requires 15 ft basic clearance with provisons of reduction of clearance to 12 and 10 ft.

The following are types of services which we are concerned with in relation to overhead service drops from the utility company's power pole to the consumer's building:

(1) 240/120 V, three-wire, single-phase.
(2) 208/120 V, four-wire wye, three-phasse.
(3) 480/277 V, four-wire wye, three-phase.
(4) (a) 240 V, three-wire, corner grounded delta, three-phase.
(b) 240 V, four-wire delta, three-phase.
(5) (a) 480 V, three-wire, corner grounded delta, three-phase.
(b) 480 V, four-wire delta, three-phase.

What type of services were intended to fall under Note 8a and 8b? More directly, the following are areas involving Note 8 which we would like clarified in relation to the above mentioned services:

(A) What is meant by the statement in Note 8a, "Supply conductors limited to 300 V to ground"? Example: does 1, 2, 3, 4a, 4b fall in the category?

(B) What is meant by the statement in Note 8b, "Supply conductors limited to 150 V to ground"? Example: does 1, 2, 4b fall in this category, or does it simply mean two wire services from 1 and 2 above?

(C) Is it the intent of Note 8b that all services which fall under this category and attach to the electric service entrance of the building, may reduce the required minimum clearance (15 ft) to 10 ft, or does it mean that the attachment height of the service can be 10 ft, thereby allowing even less clearance due to sag in the cable?

INTERPRETATION (Apr 10, 78)

(A) Supply Conductors limited to 300 V to ground include the following:

240/120 V three-wire single-phase
208/120 V four-wire wye three-phase
480/277 V four-wire wye three-phase if the neutral is grounded
240 V delta, three-wire or four-wire, grounded or not

(B) Supply conductors limited to 150 V to ground include the following:

240/120 V three-wire single-phase mid-point grounded
208/120 V four-wire wye three-phase grounded neutral
This is not restricted to two-wire services.

Voltage to ground of grounded circuits is defined on page 103 in the definitions.

(C) Footnote 8b of Table 232-1 refers to the clearance at the building; it does not allow a lesser clearance anywhere else in the span.

* * * *

Clearance over residential driveways

REQUEST (Jan 26, 78) IR 224

Your interpretation is requested as to the intent of Item 3 in Table 232-1. Is this item meant to apply to all residential driveways irrespective of their potential for "truck traffic" or should clearances for residential driveways with such potential be considered as shown in Item 2, "Road, Streets, Alleys, Parking Lots Subject to Truck Traffic," or Item 4, "Other Land Traversed By Vehicles Such as Cultivated, Grazing, Forest, Orchard, Etc."?

Our specific concern is that vehicles such as motor homes, pickup trucks with campers, moving vans, etc., often exceed the Note 23 guideline which considers a truck to be any vehicle in excess of 8 feet in height and thus can be reasonably anticipated in most residential driveways.

INTERPRETATION (May 8, 78)

Item 3 of Table 232-1 applies to all residential driveways, regardless of the fact that there might be at some time or other a camper, van, etc., in the driveway. In Table 232-1, Item 3, the left column should read "residential driveways, and commercial areas not subject to truck traffic."

INTERPRETATION (July 25, 80)

Based upon your description of the area and the traffic count accompanying it, the locale in question must be considered urban. The required 60°F clearance for the installation is 18 ft.

* * * *

Effect of trees on minimum clearance

REQUEST (Nov 2, 79) IR 256

Please provide the interpretation of the following rule of the National Electrical Safety Code, ANSI C2, Section 232, Vertical Clearance of Wires, Conductors, Cables, and Live Parts of Equipment Above Ground, Rails, or Water.

With reference to this Section, does the presence of trees affect the minimum clearances stated in Table 232-1?

INTERPRETATION (Dec 20, 79)

The presence of trees does not affect the clearances stated in Table 232-1. Rule 281A calls for trimming where trees may interfere with supply conductors, but it does not specify safe clearances.

* * * *

Clearance over snow covered ground

REQUEST (June 25, 80) IR 270

. . . currently designing a 345 kV line in the high mountain country where the snow cover can reach a depth of almost 15 ft. Since the National Electrical Safety Code, 77th Edition, Rule 232, does not specify any special requirements for this condition, we would appreciate any recommendations on this clearance problem.

INTERPRETATION (Sept 30, 80)

The Code does not specifically address the question of clearances where snow accumulation in the vicinity of supply lines may be significant. Rules 200, 210 and 211 do, however, provide some general requirements.

* * * *

Clearance for oversize haulage trucks

REQUEST (Oct 17, 80) IR 282

. . . would like clarification of the proper vertical clearance minimum requirements for truck haulage routes. The only related requirement in ANSI C2 is Table 232-1, item 2, "Roads, streets, alleys, parking lots subject to truck traffic." The minimum requirements in item 2 are 18-22 ft, depending on the voltage level of the lines. Modern haulage trucks ranging from 22 ton to 350 ton payloads have overall heights (with body down and empty) from 12 ft to 30 ft. Obviously, use of the clearances listed in Table 232-1 would present a hazard to operators of the larger haulage trucks. . . . Realizing that no one general height could be satisfactory for all truck sizes, . . . wonder if you might recommend a vehicle height plus for minimum clearance.

Another separate but related matter of concern is the height of power lines located in close proximity to truck dump sites. As an example, a dump point located approximately 100 ft from and parallel to power lines. The haulage trucks would back up passing under the power lines enroute to the dump point. Because of the nearness of the power lines, it is imperative that the dump body be fully lowered before any forward progress of the truck.

. . . question is, would ANSI recommend any additional clearance distance for power lines located in close proximity to sites where truck dump bodies are operated (see Figs IR 282-1-7 for vehicle height examples).

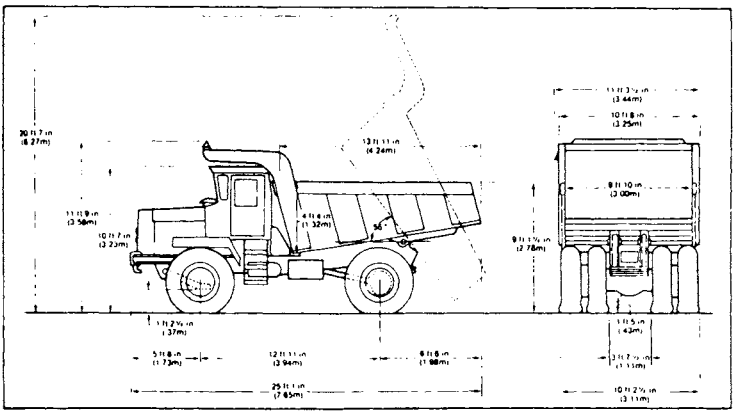


Fig IR 282-1

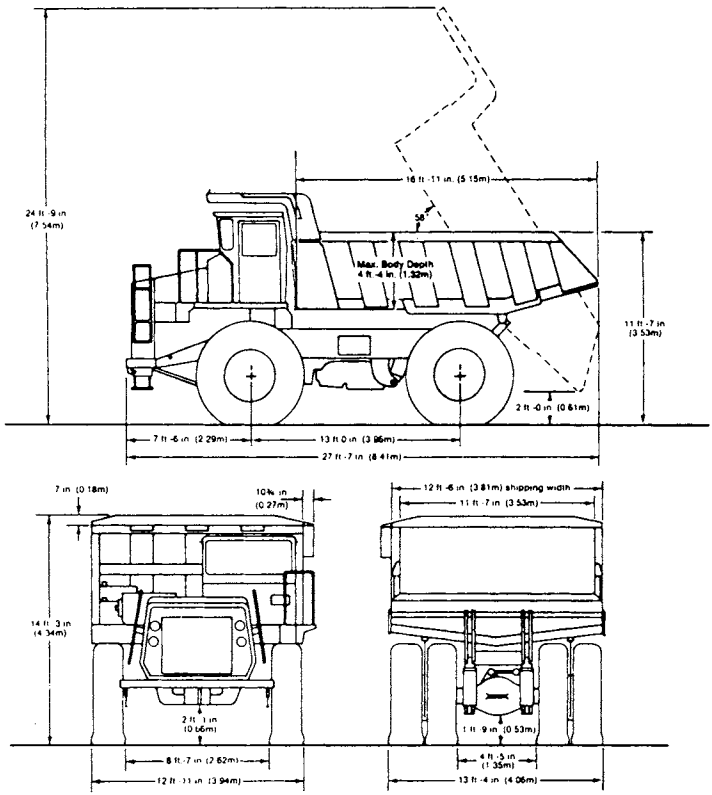

24 ft -9 in
(7 54m)
16 ft -11 in. (5 15m)
58°
Max. Body Depth
4 ft -4 in. (1.32m)
11 ft -7 in
(3 53m)
2 ft -0 in (0 61m)
7 ft -6 in (2 29m)
13 ft 0 in (3 96m)
27 ft -7 in (8 41m)
7 in (0 18m)
10¾ in
(0 27m)
14 ft -3 in
(4 34m)
2 ft -1 in
(0 66m)
8 ft -7 in (2 62m)
12 ft -11 in (3 94m)
12 ft -6 in (3 81m) shipping width
11 ft -7 in (3 53m)
1 ft -9 in (0 53m)
4 ft -5 in
(1 35m)
13 ft -4 in (4 06m)

Fig IR 282-2

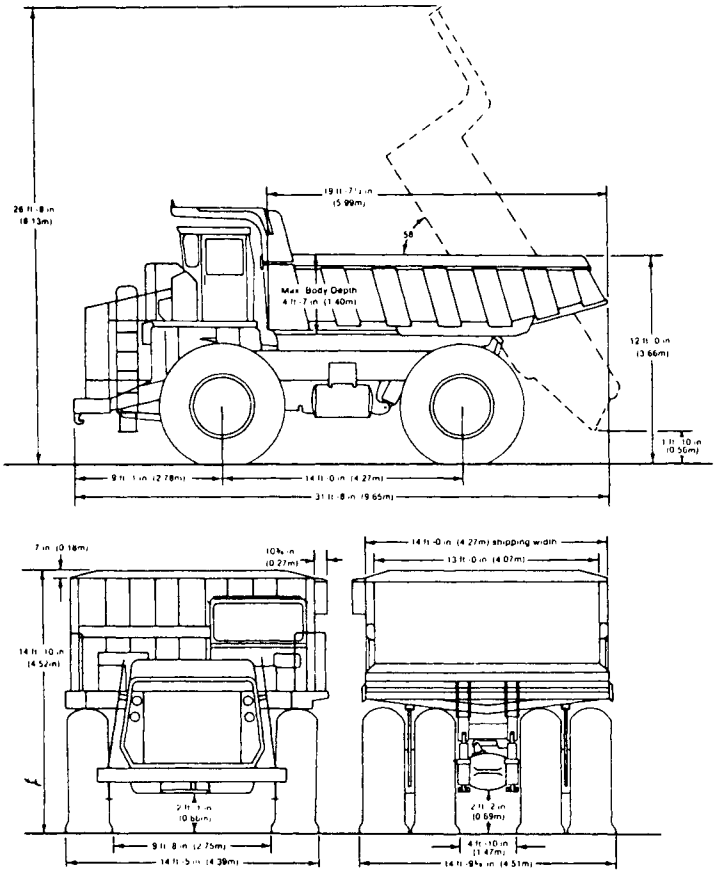

Max Body Depth
4 ft 7 in (1 40m)
12 ft 0 in
(3 66m)
1 ft 10 in
(0 56m)
14 ft 0 in (4 27m) shipping width
13 ft 0 in (4 07m)
14 ft 10 in
(4 52m)
9 ft 8 in (2 75m)
4 ft 10 in
(1 47m)

Fig IR 282-3

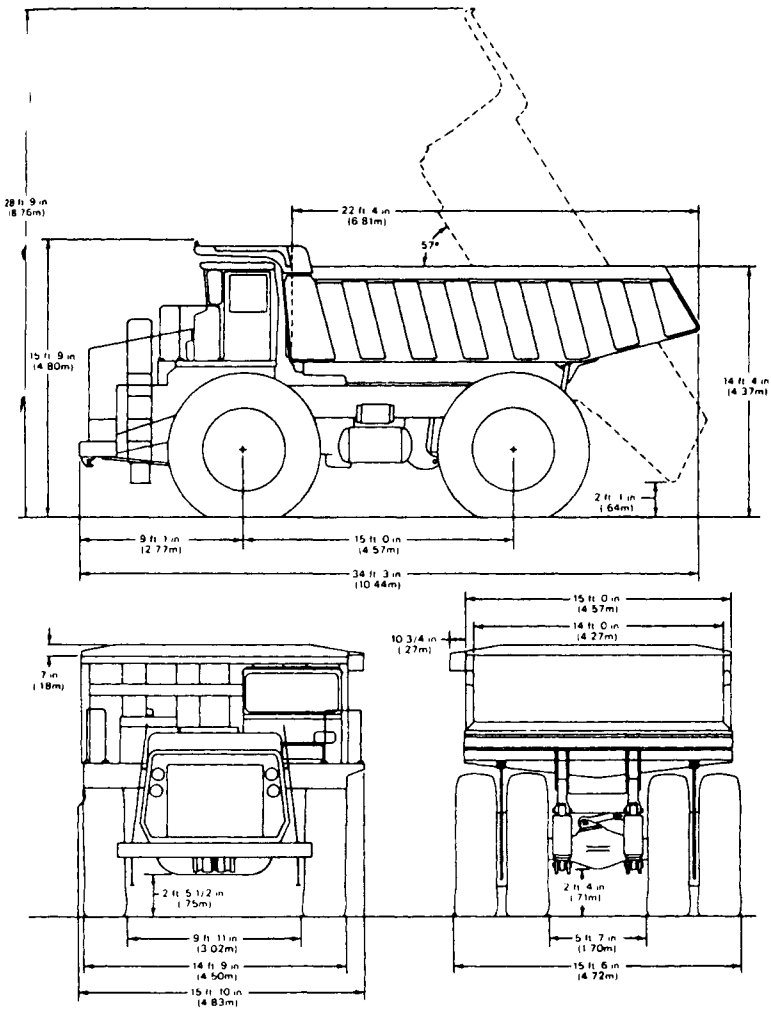

28 ft 9 in
(8 76m)
22 ft 4 in
(6 81m)
57°
15 ft 9 in
(4 80m)
14 ft 4 in
(4 37m)
2 ft 1 in
(64m)
9 ft 1 in
(2 77m)
15 ft 0 in
(4 57m)
34 ft 3 in
(10 44m)
15 ft 0 in
(4 57m)
14 ft 0 in
(4 27m)
10 3/4 in
(27m)
7 in
(18m)
2 ft 5 1/2 in
(75m)
9 ft 11 in
(3 02m)
14 ft 9 in
(4 50m)
15 ft 10 in
(4 83m)
2 ft 4 in
(71m)
5 ft 7 in
(1 70m)
15 ft 6 in
(4 72m)

Fig IR 282-4

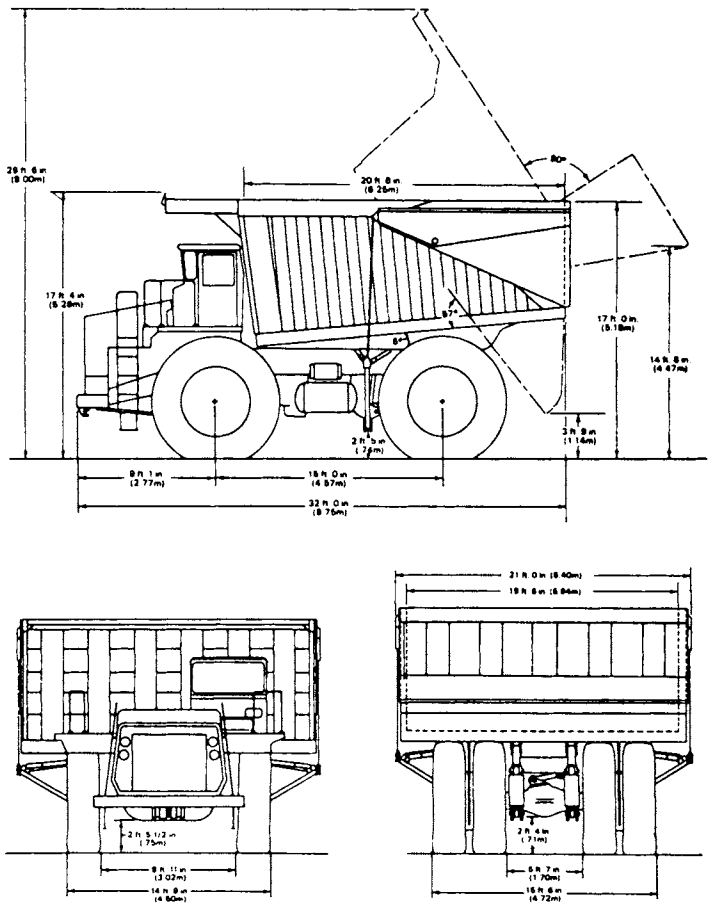

29 ft 6 in
(9.00m)
17 ft 4 in
(5.28m)
20 ft 8 in
(6.25m)
80°
97°
6°
17 ft 0 in
(5.18m)
14 ft 8 in
(4.47m)
3 ft 9 in
(1.14m)
2 ft 5 in
(.75m)
9 ft 1 in
(2.77m)
15 ft 0 in
(4.57m)
32 ft 0 in
(9.75m)
21 ft 0 in (6.40m)
19 ft 8 in (6.04m)
2 ft 5 1/2 in
(.75m)
9 ft 11 in
(3.02m)
14 ft 8 in
(4.50m)
2 ft 4 in
(.71m)
5 ft 7 in
(1.70m)
15 ft 6 in
(4.72m)

Fig IR 282-5

BODY CAPACITIES AND LOADING HEIGHTS					
BODY WIDTH	17 FT. (5.18 M)		19 FT. (5.79 M)		
STRUCK B.A.E. CUBIC YARDS	70	85	70	85	110
CUBIC METERS	53.5	65	53	65	84.1
2:1 HEAP B.A.E. CUBIC YARDS	94.5	105.5	104	114.5	133
CUBIC METERS	72.2	80	79.5	87.3	101.7
LOADING HEIGHT FEET METERS	16 ft. 1 in. 4.90	17 ft. 2 in. 5.23	15 ft. 8 in. 4.78	16 ft. 6 in. 5.03	18 ft. 2 in. 5.54

*Standard

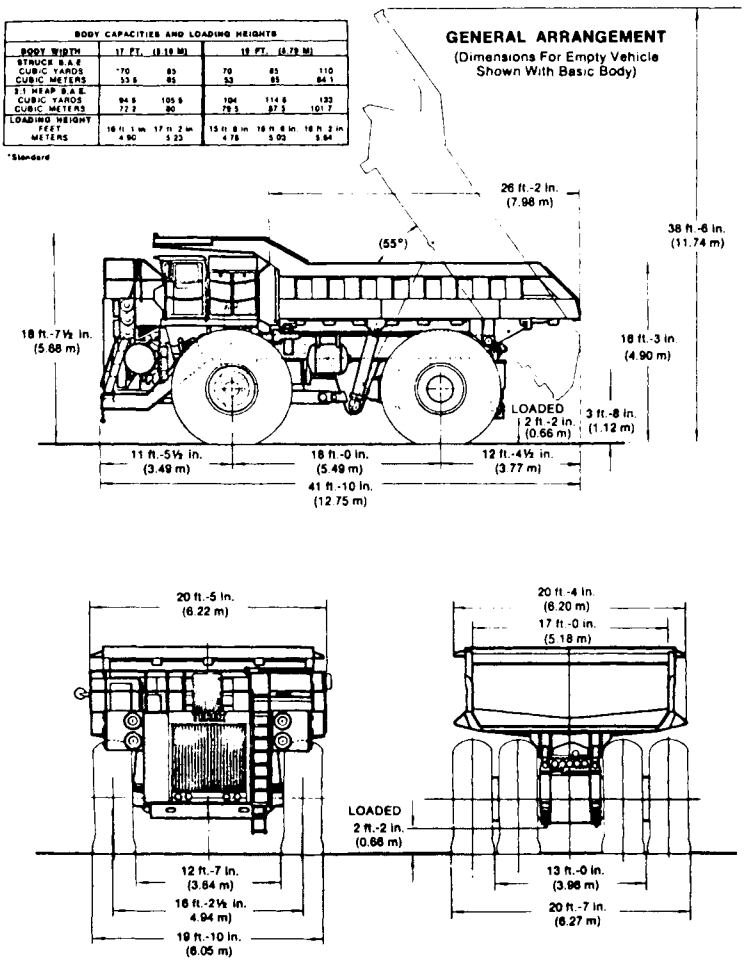


Fig IR 282-6

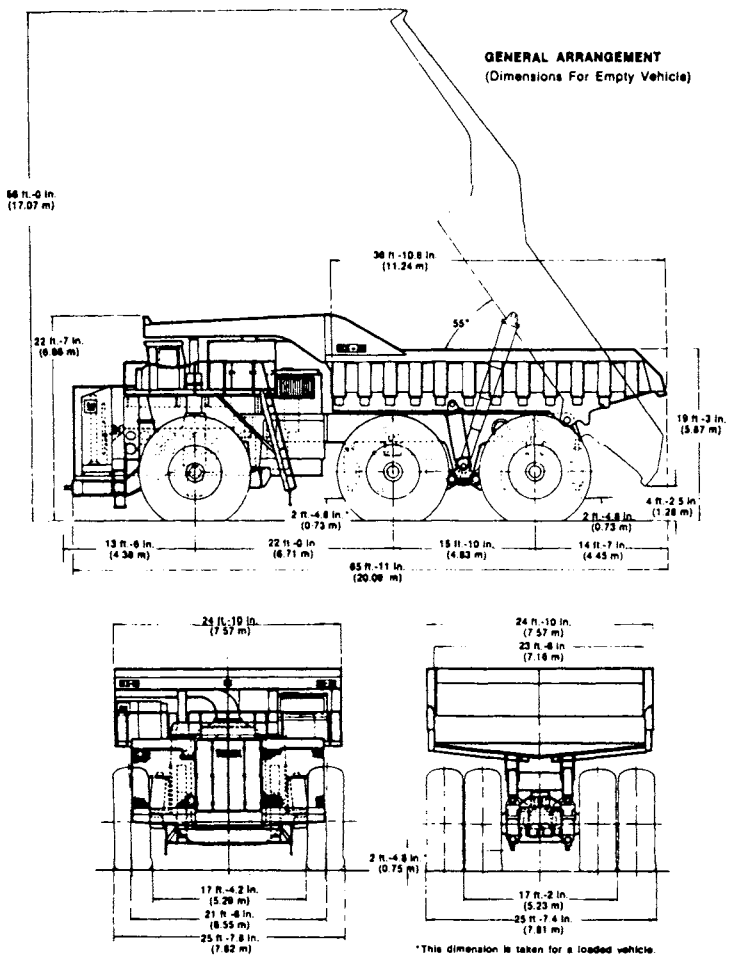

GENERAL ARRANGEMENT
(Dimensions For Empty Vehicle)
56 ft.-0 in.
(17.07 m)
36 ft.-10.8 in.
(11.24 m)
55°
22 ft.-7 in.
(6.86 m)
19 ft.-3 in.
(5.87 m)
4 ft.-2.5 in.
(1.28 m)
2 ft.-4.8 in.
(0.73 m)
2 ft.-4.8 in.
(0.73 m)
13 ft.-6 in.
(4.38 m)
22 ft.-0 in.
(6.71 m)
15 ft.-10 in.
(4.83 m)
14 ft.-7 in.
(4.45 m)
65 ft.-11 in.
(20.09 m)
24 ft.-10 in.
(7.57 m)
17 ft.-4.2 in.
(5.28 m)
21 ft.-6 in.
(6.55 m)
25 ft.-7.8 in.
(7.82 m)
24 ft.-10 in.
(7.57 m)
23 ft.-6 in.
(7.16 m)
2 ft.-4.8 in.
(0.75 m)
17 ft.-2 in.
(5.23 m)
25 ft.-7.4 in.
(7.81 m)
*This dimension is taken for a loaded vehicle.

Fig IR 282-7

INTERPRETATION (Jan 14, 81)

The 1977 Edition of the Code does not specifically address the matter of clearance involving oversize trucks and supply lines. Some general guidance is contained in Sections 20 and 21. Note also that footnote 17 associated with Table 232-1 does point out that the clearances for surface category #4 are based upon an equipment or vehicle height of 14 ft. These clearances are the same as for category #2 (Roads, streets, alleys, etc., subject to truck traffic).

A reasonable procedure (although not required by the code) would be to increase the road crossing clearances of Table 232-1 by the difference between the height of the tallest truck in the operating condition and 14 ft. Clearances involving situations such as those you describe should be based on agreement between the utility and the organization that controls the haulage route and the size of the trucks used.

* * * *

Conductor clearance for line near recreational water area

REQUEST (Oct 23, 79) IR 261

. . . require . . . a clear and accurate interpretation of the meaning and intent of Item No. 8 in Table 232-1 in the 1977 Edition of the National Electrical Safety Code. Your comments relative to its application are requested.

We have an existing single phase, 7200 V electric distribution line that runs parallel to and within 20 ft of a branch of Lake . . . The energized conductor is bare wire as is its accompanying multigrounded neutral conductor. The line does not cross over water. Fig. IR 261-1 below shows the physical location of the distribution line in relation to its environment. Also attached is a table, Table B, which summarizes actual field measurements made this summer of the vertical clearance of the neutral conductor above the ground at the point of apparent minimum clearance.

The National Electrical Safety Code (ANSI C2) Item 8, of Table 232-1, states (that where wires, etc., cross over) "public or posted private land and water areas for rigging or launching sailboats" — "clearance above ground shall be 5 ft greater than in 7 above. . . ."

The following information is pertinent to the investigation of this problem:

(1) This is private land, not public, but it is conceivable that the general public could trespass and use this portion of beach for miscellaneous purposes.
(2) The land in question is not posted in any manner. It could be in the future.
(3) By observation, this is not an apparent launching or rigging area for sailboats, but because of its convenient location to both a public road and water, it may be used for this purpose.
(4) It has been observed that this land area has been used for "beaching" sailboats and other water vehicles.
(5) A stringent interpretation and enforcement of this portion of the National Electrical Safety Code could cause . . . electric utilities financial hardships because of the vast number of installations similar to this one.

REA Bulletin 40-7, April 29, 1977, directs . . . [the company] . . . to comply to the National Electrical Safety Code. Our specific question is: Must this portion of distribution line (and similar ones) comply with Item 8 of Table 232-1?

TABLE B
(see Fig IR 261-1)

Pole Number	Pole Height (ft) and Class	Approx. Distance to Water's Edge (1)	Approx. Distance Down Guy to Water	Measured Span (Between Poles)	Span Length	Distance to Pt. Measured fror Immediate Pole to West	Measure Height-Ground to Neutral Conductor	Approx. Height-Ground to Primary Conductor (±4 in)
3	40-6	60 ft	45 ft					
4	35-6	55 ft	40 ft	3-4	335 ft	210 ft	25 ft 8 in	29 ft 8 in
5	35-6	10 ft	None	4-5	258 ft	145 ft	24 ft 4 in	28 ft 4 in
6	35-6	15 ft	5 ft	5-6	222 ft	114 ft	23 ft 7 in	27 ft 7 in
7	35-6	40 ft	DNA	6-7	270 ft	135 ft	23 ft 4 in	27 ft 4 in
8	35-6	10 ft	None	7-8	292 ft	156 ft	23 ft 6 in	27 ft 6 in
9	35-6	6 ft	None	8-9	298 ft	156 ft	22 ft 7 in	26 ft 7 in
10	35-6	20 ft	8 ft	9-10	242 ft	130 ft	22 ft 9 in	26 ft 9 in
11	35-6	5 ft	In Water	10-11	354 ft	180 ft	19 ft 8 in	23 ft 8 in
11.1	35-6	15 ft	0 ft	11-11.1	180 ft	87 ft	25 ft 1 in	29 ft 1 in
12	35-6	5 ft	In Water	11.1-12	192 ft	80 ft	24 ft 10 in	28 ft 10 in

(1) As measured on August 29, 1979 (approx. 75°F, wind SE approx. 10 mph).

232A Table 232-1

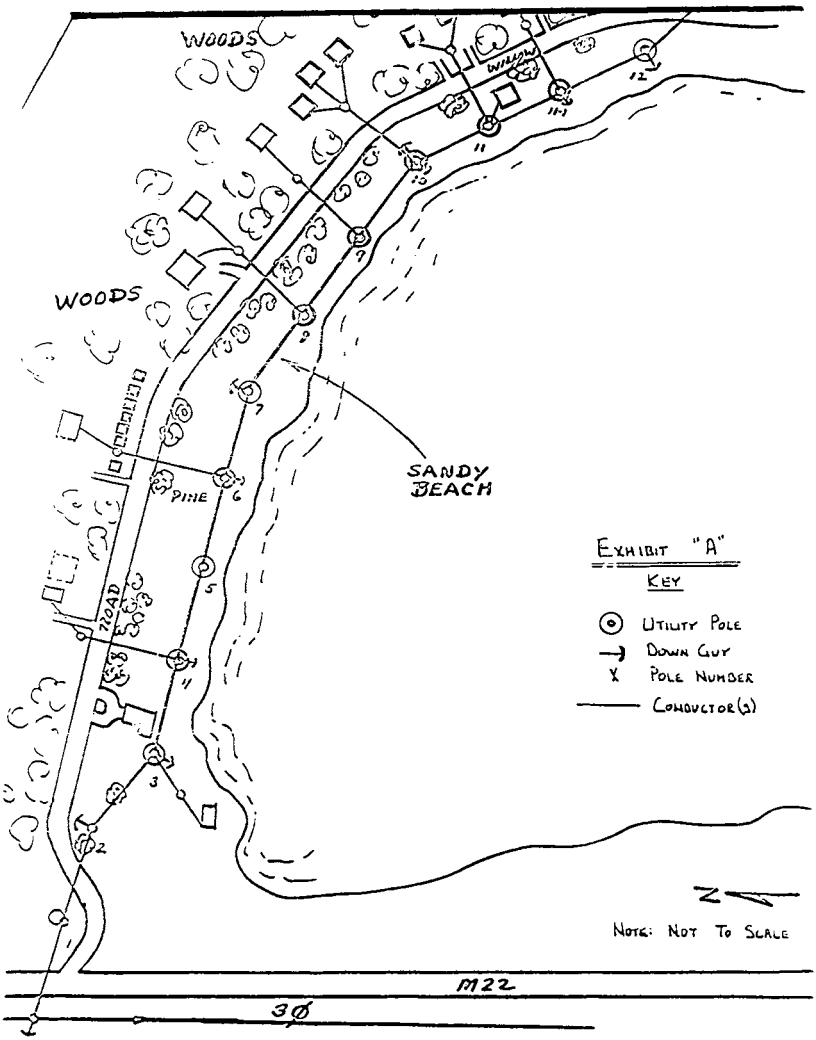

WOODS
WOODS
WILLOW
SANDY BEACH
PINE
ROAD
EXHIBIT "A"
KEY
UTILITY POLE
DOWN GUY
POLE NUMBER
CONDUCTOR(S)
NOTE: NOT TO SCALE
M22
3Ø

Fig IR 261-1

Fig IR 261-2

Fig IR 261-3

Fig IR 261-4

Fig IR 261-5

INTERPRETATION (Feb 15, 80)

In our view, the description of the land traversed by your line does not require the higher clearance specified by Item 8 of Table 232A. Further, Rule 202B2 makes it clear that installations which comply with prior editions of the code need not be modified to meet the requirements of the 1977 code.

* * * *

Communication cable clearance to ground

REQUEST (May 21, 80) IR 269

. . . communications cable runs along a two-lane blacktop entirely within city limits. The traffic on this road was observed for a three-hour period and found to be 162 vehicles (see enclosed traffic analysis). Referring to the enclosed maps, we are concerned with the two-block area (725 ft) of. . . . Street between the . . . service road and the canal. . . . Street is not a through street as it dead ends at a boat launch (as shown on the larger map).

The immediate area is lightly developed, mostly residential. It appears that the vacant field is used as parking for . . . inn, although it is not designated as a parking area. The elevation of the field is 6 to 12 in higher than that of . . . street, and there are no ditches along the road. The posted speed limit is 20 mph.

Does this fall within the 13 ft vertical clearance for roads in rural districts as set out in Table 232-1, point 10, footnote 12, or is a different clearance required in this case?

Analysis of Traffic

[Specific date and time given]

Type of Vehicle	Direction Vehicles Were Headed	
	North	South
Auto	48	39
Small Trucks	18	57
Tractor Trailers	0	0
Total	66	96

Number of vehicles towing boat trailers—8
Number of U-turns made in the area of the cable damage—3 (1 auto & 2 small trucks)

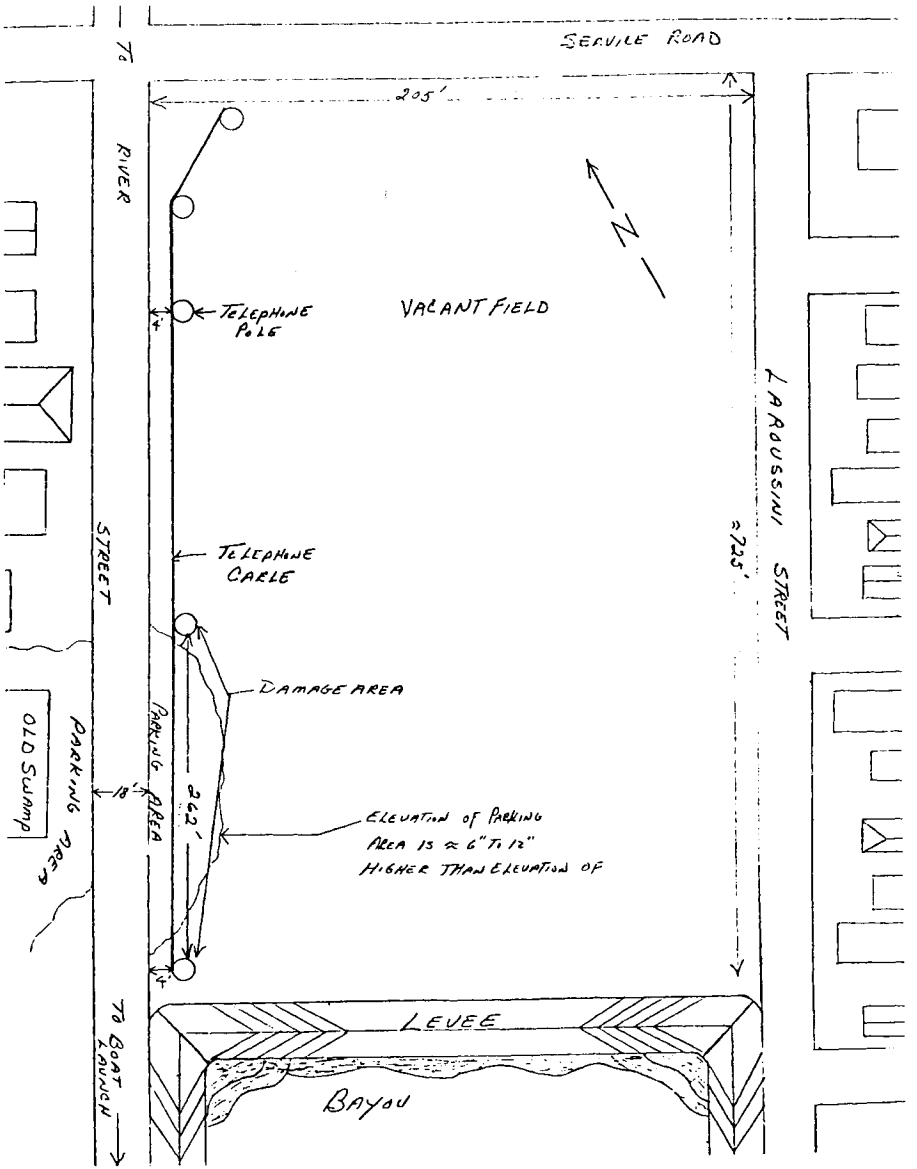

SERVILE ROAD
205'
RIVER
TELEPHONE POLE
VACANT FIELD
N
LA ROUSSINI STREET
≈725'
STREET
TELEPHONE CABLE
DAMAGE AREA
PARKING AREA
OLD SWAMP
PARKING AREA
18'
262'
ELEVATION OF PARKING AREA IS ≈ 6" TO 12" HIGHER THAN ELEVATION OF
LEVEE
TO BOAT LAUNCH
BAYOU

Fig IR 269-1

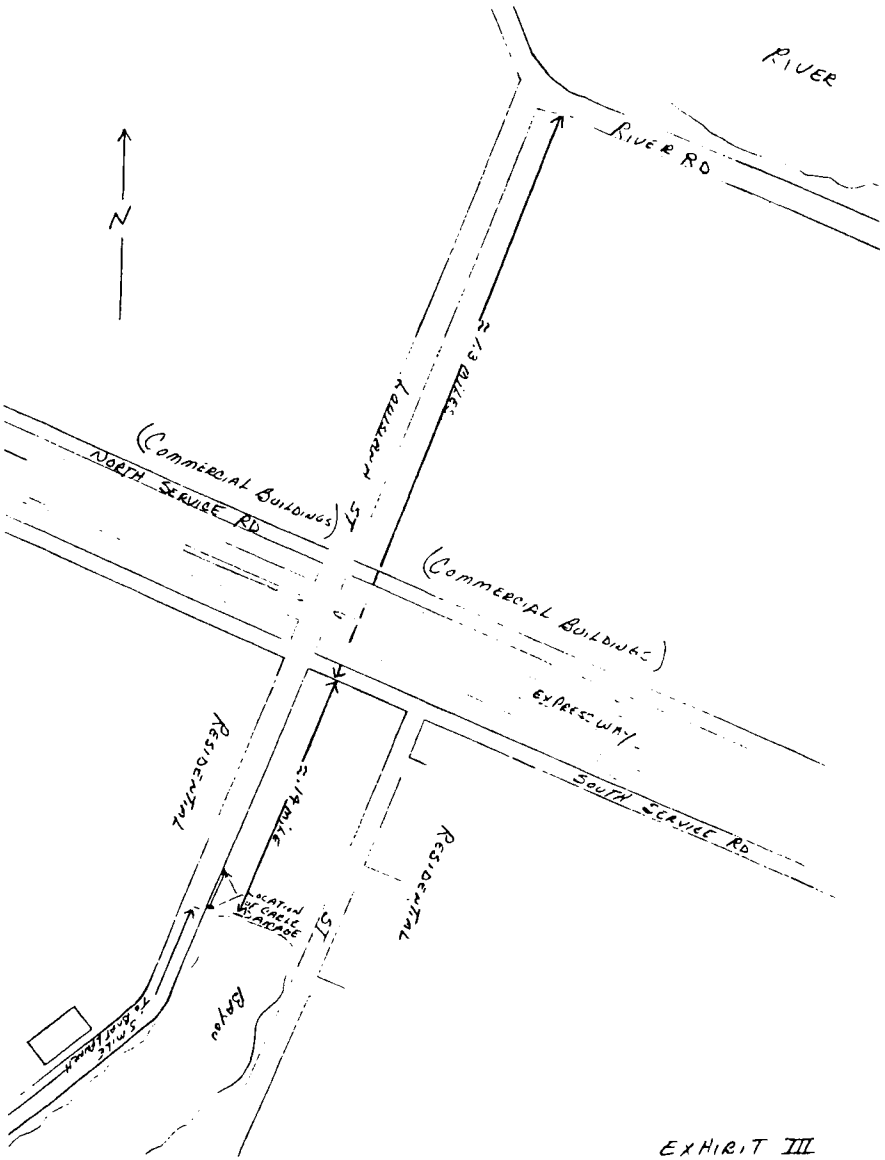

RIVER
RIVER RD
N
LAUREL ST
1.3 MILES
(COMMERCIAL BUILDINGS)
NORTH SERVICE RD
(COMMERCIAL BUILDINGS)
EXPRESSWAY
SOUTH SERVICE RD
RESIDENTIAL
1.1 MILES
LOCATION OF CABLE CROSSING
RESIDENTIAL
BAYOU
EXHIBIT III

Fig IR 269-2

INTERPRETATION (July 25, 80)

Based upon your description of the area and the traffic count accompanying it, the locale in question must be considered urban. The required 60°F clearance for the installation is 18 ft.

* * * *

Spaces or ways accessible to pedestrians only; service drop clearance

REQUEST (Mar 23, 79) IR 249

We would like a clarification of Rule 232, Table 232-1, Footnote 8(b) as it applies to "5. Spaces or Ways Accessible to Pedestrians Only."

Specifically as it applies to service drops with conductors meeting Rules 230C2 or 230C3 120V to ground to houses. Can Footnote 8(b) be interpreted to say that the minimum ground clearance of conductors meeting Rules in Table 232-1, 5. and footnotes 8(a) and (b) and 9 can be reduced to 10 ft anywhere in the span serving a building.

A two fold problem has arisen. First the . . . [city] . . . uses the National Electrical Code which only requires 10 ft of clearance. Secondly, the cases are nonexistent where 12 ft of ground clearance (Rule 232 Table 232-1 Footnote 8(a)) can be maintained in the span of the conductor if there is only 10 ft of ground clearance at the building.

INTERPRETATION

No consensus was reached in the Interpretation Subcommittee.
NESC Secretariat Note. See 1981 Edition, Table 232-1, Footnote 8b

* * * *

Service drop conductors: (a) minimum height in span; (b) minimum height of point of attachment.

REQUEST (Mar 13, 79) IR 247

The State adopted the 1977 National Electrical Safety Code without amendments. Our County and City joint Electrical Code Committee are attempting to resolve the differences of above ground clearances between the 1978 National Electrical Code and the 1977 National Electrical Safety Code. We hereby request interpretations of the following clearances.

(a) Rule 232, minimum height of service drop conductors (complying with 230C3) passing over a rear yard without a driveway. Voltage 120-240. Accessible to pedestrians only.

(b) Rule 232, minimum height of point of attachment for location described above. Voltage 120-240. See also IR 249 for Rule 232C.

INTERPRETATION

No consensus was reached in the Interpretations Subcommittee.
NESC Secretariat Note: See 1981 Edition, Table 232-1, Footnote 8b