



# Engineering Standard

SAES-T-018

28 January, 2004

## Telecommunications - Symbols, Abbreviations and Definitions

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## Saudi Aramco DeskTop Standards

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## 1 Scope

This standard describes mandatory requirements governing the symbols and abbreviations used for telecommunication facilities.

Electrical, electronics and radio symbols are not included in this standard. For these symbols, refer to the following:

<i>IEEE 315</i>	<i>Graphic Symbols for Electrical and Electronics Diagrams</i>
<i>ASME Y14.15</i>	<i>Electrical and Electronics Diagrams</i>
<i>CCIR Report 440-1</i>	<i>General Graphical Symbols for Radio Communications</i>
<i>GTE 017-900-042</i>	<i>Drawings WECO Symbols</i>

## 2 Conflicts and Deviations

Any deviations, providing less than the mandatory requirements of this standard require written waiver approval as per Saudi Aramco Engineering Procedure SAEP-302. ||

## 3 References

All referenced Specifications, Standards and Codes, Forms, Drawings and similar material shall be of the latest issue (including all revisions, addenda and supplements) unless stated otherwise. Applicable references are listed below.

### 3.1 Saudi Aramco References

Saudi Aramco Engineering Procedure

<i>SAEP-302</i>	<i>Instructions for Obtaining a Waiver of a Mandatory Saudi Aramco Engineering Requirement</i>
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Saudi Aramco Engineering Standards

<i>SAES-T-Series</i>	<i>Telecommunications Standards</i>
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Saudi Aramco Drafting Manual

### 3.2 Industry Codes and Standards

American Society of Mechanical Engineers

<i>ASME Y14.15</i>	<i>Electrical and Electronics Diagrams</i>
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*CCIR Report 440-1*      *General Graphical Symbols for Radio  
Communications*

General Telephone and Electronics

*GTE 017-900-042*      *Drawings WECO Symbols*

Institute of Electrical and Electronics Engineers

*IEEE 315*      *Graphic Symbols for Electrical and Electronics  
Diagrams*

## **4 Design**

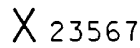
The GTE 018 Series Telecommunications "Symbols, Abbreviations and Definitions" is hereby recognized as Saudi Aramco Engineering Standard SAES-T-018, as modified below. SAES-T-018 replaces SAES-T-011, Symbols Communication (Latest Issue dated 17 December, 1979).

- 4.1      GTE Section 018-000-001      (Issue 3) January, 1979  
Symbols and Abbreviations Poles, Anchors and Guys
- 4.1.1      General
- 4.1.1.1      Paragraph 1.01 - This section identifies and defines the symbols and abbreviations related to poles and associated equipment. These symbols and abbreviations are for use primarily on construction work plans and records, but may also be used on maps when necessary.
- 4.1.2      Pole Symbols
- 4.1.2.1      Paragraph 2.01 - Place pole information as close as possible to the pole symbol. There should be no confusion as to which symbol the information governs. If the timber and treatment are not specified on the work order, it should be furnished by the placing forces.

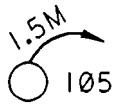
4.1.2.2 Paragraph 2.02 - Pole symbols used to identify existing plant are as follows:



EXISTING POLE NO. 105 SOLELY OWNED BY SAUDI ARAMCO TELECOMMUNICATIONS.



EXISTING SAUDI ARAMCO TELECOMMUNICATIONS ATTACHMENT TO A POWER-OWNED (PDD, SCECO, ETC.) POLE NO. 23567. (FREE ATTACHMENT, RENTAL ATTACHMENT, LEASED POLE, ETC.).

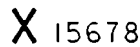


MOVE A SAUDI ARAMCO OWNED POLE. THE NUMBER AND ARROW INDICATE THE DIRECTION AND DISTANCE THE POLE IS TO BE MOVED.

4.1.2.3 Paragraph 2.05 - Proposed poles are identified by pole number (if available), ownership, height, class, and species of timber. Proposed attachments are identified by ownership and pole number. Proposed poles and attachments are shown in the following examples:

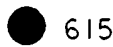


35'-5 PROPOSED 35-FOOT, CLASS 5 TO BE PLACED BY SAUDI ARAMCO TELECOMMUNICATIONS.



PROPOSED SAUDI ARAMCO TELECOMMUNICATIONS ATTACHMENT TO A PROPOSED POWER-OWNED (PDD, SCECO, ETC.) POLE NO.15678.

4.1.2.4 Paragraph 2.09 - Existing plant that is to be removed, replaced or abandoned is shown in the following examples:



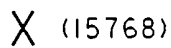
(30'-5)  
35'-5

EXISTING POLE NO. 615, A 30-FOOT, CLASS 5 POLE TO BE REPLACED WITH A PROPOSED 35-FOOT, CLASS 5 POLE.



(35'-5)

EXISTING POLE NO. 105, A 35-FOOT, CLASS 5 POLE TO BE REMOVED OR ABANDONED.












SAUDI ARAMCO TELECOMMUNICATIONS ATTACHMENT BE REMOVED FROM POWER-OWNED (PDD, SCECO, ETC.) POLE NO. 15768.

### 4.1.3 Guy and Anchor Symbols

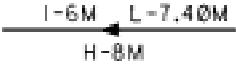
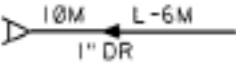
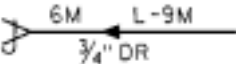
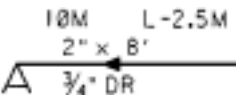
#### Existing Plant

4.1.3.1 Paragraph 5.02 - Guy and anchor symbols used to identify existing plant are as follows:

	GUY
	GUY AND ANCHOR
	INSULATED GUY AND ANCHOR
	SIDEWALK GUY AND ANCHOR
	I-BEAM ANCHOR AND GUY
	ROCK BOLT AND GUY
	PUSH BRACE
	FOREIGN OWNED ANCHOR AND GUY
	JOINTLY-OWNED ANCHOR

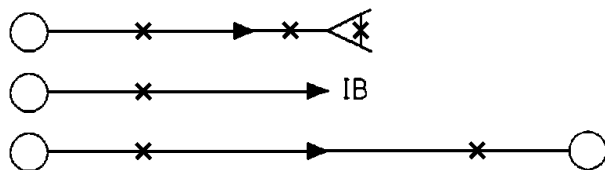
#### Proposed Plant

4.1.3.2 Paragraph 5.03 - Proposed guy and anchor symbols used on construction work plans are identified by using the existing plant symbols drawn with heavy solid lines, as shown in the following examples:

	PROPOSED OVERHEAD GUY ONE 6,000 POUND STRAND WITH A 7.40 METER LEAD AND 8 METER HEIGHT OF ATTACHMENT.
	PROPOSED 10,000-POUND GUY AND ANCHOR WITH A 6-METER LEAD, 1-INCH-DOUBLE-EYE ANCHOR ROD.
	GUY ATTACHED TO AN EXISTING JOINT USED ANCHOR, A 6,000-POUND STRAND WITH A 9-METER LEAD, 3/4-INCH DOUBLE-EYE ANCHOR ROD.
	PROPOSED GUY AND SIDEWALK ANCHOR ASSEMBLY. - DENOTE PIPE SIZE LENGTH.

### Removal of Existing Plant

- 4.1.3.3 Paragraph 5.04 - To indicate removal of existing guys and anchors, place an X through the guy and anchor symbol as shown in the following examples:



- 4.1.4 Guy and Anchor Abbreviations

- 4.1.4.1 Paragraph 6.01 - Guy and anchor symbols abbreviations are as follows:

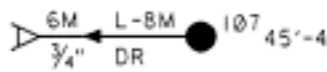
ANCHOR	A
ANCHOR GUY	AG
ANCHOR AND GUY	A & G
CONCRETE ANCHOR	CON A
CONCRETE GROUND BRACE	CON GR B
DEAD END	DE
DOUBLE-EYE ANCHOR ROD	DR
FALSE DEAD END	FDE
GROUND BRACE	GR B
GUY	G
HEIGHT	H
HEAD GUY	HG
I BEAM	IB
LEAD OF ANCHOR GUY	L
MESSENGER DEAD END	MDE
OVERHEAD GUY	OHG
PATENT ANCHOR	PAT A
PUSH BRACE	PB
ROCK BOLT AND GUY	RB & G
ROCK BOLT	RB
SIDE GUY	SG
SIDEWALK ANCHOR AND GUY	SW A & G
SINGLE-EYE ANCHOR ROD	SR
TRIPLE-EYE ANCHOR ROD	TR
2,200-POUND STRAND	2.2M
6,000-POUND STRANT	6M
10,000-POUND STRAND	10M
16,000-POUND STRAND	16M
25,000-POUND STRAND	25M

4.1.5 Foreign Power Symbols

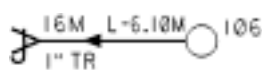
4.1.5.1 Paragraph 7.01 - Foreign power symbols are required for construction information only and are not posted in plant records. Foreign power symbols are as follows:



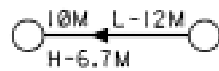
4.1.6 Addition - The following examples shows combination of pole, guy and anchor symbols:



PROPOSED SOLELY OWNED SAUDI ARAMCO TELECOMMUNICATIONS 45-FOOT, CLASS 4 POLE, 6M (6,000 POUND) GUY WITH AN 8-METERS LEAD, 3/4 INCH DOUBLE EYE ANCHOR ROD.



EXISTING SAUDI ARAMCO TELECOMMUNICATIONS SOLELY OWNED POLE. PROPOSED 16M (16,000-POUND) GUY WITH 6.10 METERS LEAD AND 1-INCH TRIPLE EYE JOINT ANCHOR.



EXISTING SAUDI ARAMCO TELECOMMUNICATIONS OWNED POLES AND OVERHEAD GUY. SHOWN GRADE OF ATTACHMENT AT 6.7 METERS.

4.2 GTE Section 018-000-002 (Issue 4) October, 1989  
Symbols and Abbreviations - Wire (Aerial Drop Wire and Buried Service Wire)

4.2.1 General

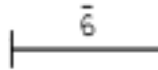
4.2.1.1 Page 1 - This practice provides information for using the symbols and abbreviations pertaining to wire plant and associated items, as indicated below:

Symbols	Explanation (Use light line if existing and dark line if proposed)
	PAIR DROP WIRE. NUMERAL INDICATES NUMBER OF CIRCUITS WHEN MORE THAN ONE. GAUGE CAN BE NOTED WHEN NECESSARY.
	TWO PAIR BURIED SERVICE WIRE. TYPE OF WIRE AND NUMBER OF PAIRS ARE TO BE ENTERED ABOVE LINE.
	DROP WIRE TO BE REMOVED OR ABANDONED AS INDICATED BY A NOTE.

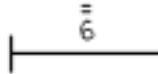
#### Wire Terminals



NONPROTECTED SINGLE PAIR WIRE  
TERMINAL.



CABLE PROTECTION WIRE TERMINAL 6 PAIRS.



STATION PROTECTION WIRE TERMINAL 6  
PAIRS.

4.3 GTE Section 018-000-003 (Issue 7) October, 1989  
Symbols and Acronyms for Cable, Terminals, Load Coil Cases, Build-out  
Capacitors and Carrier Repeaters

4.3.1 General

4.3.1.1 Page 2 - This section identifies and defines the symbols and acronyms used  
in descriptive data for:

- Cable
- Cable terminals
- Load coil cases
- Build-out capacitors
- Carrier repeaters

4.3.2 Overview

4.3.2.1 Page 2 - The symbols and acronyms in this section are to be used on  
construction drawings and records for telecommunication outside plant  
(OSP) facilities.

The cable sheaths and protective coverings listed in this section:

- Are not necessarily current standard material.
- Serve to identify and inform.

Refer to the SAES 920 series for applications of types of sheath and  
protective covering.



4.3.2.2 Page 2 - The following chart lists cable acronyms:

<b>Acronym</b>	<b>Explanation</b>
AWG	American Wire Gauge
B	Buried
C	Prefix to cable designations to indicate aerial construction
CA	Cable
COAX	Coaxial
Ga	Gauge
HC or H	House or inside cable system
IW	Inside wiring
Ld	Load or loaded
LP	Load point
PIC	Plastic insulated conductors
Pr	Pair
Qd	Quad or quadded
RS	Random splice
SC	Suffix added to size and gauge to indicate special or composite cable
Subm or S	Submarine cable
T	Terminal
U or UG	Underground

4.3.3 Cable Designations

4.3.3.1 Page 4 - Cable designations used on work order prints for strip paper or pulp-insulated conductor cables (where existing) are indicated in the following chart.

The Chart:

- Provides the code letters used to designate the type of cable sheath.
- Describes the types of cable sheath used primarily on strip paper or pulp-insulated conductor cables.

<b>Type of Sheath</b>	<b>Code Letter</b>	<b>Description</b>
Aluminum	B	An aluminum sheath extruded over the cable core
Lead	L	A lead alloy sheath extruded on the cable core
Stalpeth	S	<ul style="list-style-type: none"><li>o A corrugated aluminum tape applied longitudinally without an overlap.</li><li>o A corrugated steel tape with soldered longitudinal seam.</li><li>o An outer extruded polyethylene jacket.</li></ul>

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4.3.3.2 Page 4 - Cable designations used on work order prints are listed in following chart.

The Chart:

- Provides the code letters used to designate the type of cable sheath.
- Describes the types of cable sheath used only on plastic-insulated conductor cables.

Type of Sheath	Code Letter	Description
ALPETH	A	An aluminum tape with a fused clear polyethylene coating applied longitudinally with an: <ul style="list-style-type: none"><li>o Overlap</li><li>o Extruded jacket of polyethylene</li></ul>
PAP	D	<ul style="list-style-type: none"><li>o Extruded polyethylene over the core</li><li>o An outer extruded polyethylene jacket</li><li>o Aluminum tape with a fused clear polyethylene coating applied longitudinally with an overlap</li></ul>
PASP	E	<ul style="list-style-type: none"><li>o Extruded polyethylene over the core.</li><li>o Corrugated aluminum tape applied longitudinally without overlap.</li><li>o Corrugated steel with soldered longitudinal seam.</li><li>o Coating of thermoplastic flooding compound.</li><li>o An outer extruded polyethylene jacket.</li></ul>
PCP	F	<ul style="list-style-type: none"><li>o Extruded polyethylene over the core.</li><li>o Copper tape applied longitudinally with an overlap.</li><li>o An outer extruded polyethylene jacket.</li></ul>
POLYPIC	P	Mylar*TM* tape over the core with an outer extruded polyethylene jacket.
PWP	K	<ul style="list-style-type: none"><li>o Extruded polyethylene over the core.</li><li>o Flat steel wire flooded with asphalt.</li><li>o An outer extruded polyethylene jacket.</li></ul>
VA	N	Aluminum shield over the cable with a polyvinyl chloride jacket.

4.3.3.3 Page 6 - Cable designations used on work prints are listed on the following chart.

The Chart:

- Provides the code letters used to designate the type of cable sheath.
- Describes cable sheath used for other cable types.

Type of Sheath	Code Letter	Description
ALVYN	T	A .20 mm aluminum tape coated on the outer side with a special adhesive coating that adheres to the overlaying black polyvinyl chloride jacket.  <b>Note:</b> The coated aluminum tape is corrugated and longitudinally folded over the core tape with an overlap.
ASP	U	An aluminum tape with the following characteristics: <ul style="list-style-type: none"> <li>o Encased in a corrugated steel tape with overlap.</li> <li>o Protected on both sides with a chemically bonded polyethylene film that is not overlapped.</li> <li>o Filling compound is applied:               <ul style="list-style-type: none"> <li>- Under the aluminum tape.</li> </ul> </li> <li>o Between the aluminum tape and steel tapes.</li> <li>o The steel tape is flooded with               <ul style="list-style-type: none"> <li>- An extruded polyethylene jacket.</li> <li>- A thermoplastic flooding compound.</li> </ul> </li> </ul>
CUPETH	C	A copper tape applied longitudinally with an overlap and an extruded jacket of polyethylene.
LEPETH	G	<ul style="list-style-type: none"> <li>o Extruded polyethelene over the core.</li> <li>o A heat-barrier tape.</li> <li>o An outer lead sheath.</li> </ul>
LEPETH (Coaxial, Polyethylene)	R	<ul style="list-style-type: none"> <li>o Extruded polyethylene over the core.</li> <li>o A paper heat-barrier tape applied over the jacket with a lead alloy sheath.</li> </ul>
Optic (Polyvinyl - Chloride/other)	I	Fiber building cable with fire-retardant sheath. Type OFNR listing meeting UL 1666 for riser cable use.
Optic	J	Fiber building cable with fire-retardant sheath. Type OFNP listing meeting UL 910 for plenum use.
Optic (Polyethylene)	Y	An extruded polyethylene jacket.  <b>Note:</b> Used on fiber optic cables.
Polyethylene Jacket	H	A lepth cable with an outer extruded polyethylene jacket.

Type of Sheath	Code Letter	Description
LEPETH		<b>Note:</b> Use primarily on toll cables (strip paper or pulp-insulated conductors).
Video (lead)	V	<ul style="list-style-type: none"> <li>o Creped kraft paper tape.</li> <li>o Extruded lead sheath.</li> <li>o A helically-wrapped polyethylene tape applied longitudinally with overlap.</li> <li>o Copper tape applied helically with overlap.</li> </ul>
Video (Polyethylene)	W	<ul style="list-style-type: none"> <li>o A helically-wrapped tape over core.</li> <li>o Copper tape applied longitudinally with overlap.</li> <li>o Copper tape applied helically with overlap.</li> <li>o Polyethylene tape.</li> <li>o An outer extruded polyethylene sheath.</li> </ul>

4.3.3.4 Page 8 - The types of cable conductor insulation are listed in the following chart:

*Commentary Note:*

*For fiber optic cables, the type of fiber buffer is listed.*

Code Letter	Type Of Conductor Insulation
B	Polyethylene-polyvinyl chloride
D	Double Paper Wrapped
E	Plastic insulated color coded
F	Fiber-optic--non-buffered/bundled
G	Fiber optic--loose buffer
H	Fiber optic--tight buffer
J	Fiber optic--ribbon
K	Foam skin insulated--color coded
L	Pulp
P	Plastic insulated, noncolor coded
R	Rubber insulated
S	Single paper wrapped
T	Textile

4.3.3.5 GTE Page 9 - The following chart shows the code letters for special types of cable:

Code Letter	Description
A	Fiber optic -- air core nondielectric
B	Filled, screened cable
C	Composite coaxial cable
D	Fiber optic -- filled dielectric
F	Filled Cable
K	Fiber optic -- air core dielectric
L	Low capacitance cable
M	Multiple unit
N	Fiber optic -- filled nondielectric
Q	Quadded cable
S	Screened cable

4.3.3.6 Page 9 - If required, use the code letters in the chart in Paragraph 4.3.3.6.1 below in place of the codes in the chart in Paragraph 4.3.3.2 above.

*Commentary Note:*

*Do not use codes from both charts on the same cable designation.*

4.3.3.6.1 Page 10 - The following chart provides the code letters and descriptions for the types of cable protective covering.

*Commentary Note:*

*On work order prints, place the code letter behind the cable size and gauge.*

Type of Covering	Code Letter	Description
Aerial tape armor	TA	Either lead or polyethylene sheath: On... It consists of.. . Lead <ul style="list-style-type: none"><li>o A bedding of impregnated jute applied directly over the lead sheath.</li><li>o Two spiral wrappings of galvanized steel tape armor.</li></ul> Polyethylene sheath <ul style="list-style-type: none"><li>o Two layers of impregnated and reinforced paper.</li><li>o Two spiral wrappings of galvanized steel tape armor.</li></ul>

Type of Covering	Code Letter	Description
Buried Tape Armor	BT	Lead Sheath <ul style="list-style-type: none"> <li>o Impregnated paper and cushion of jute.</li> <li>o Two layers of steel tape</li> <li>o An outer covering of impregnated jute.</li> </ul>
Corrosion Protection	CP	<ul style="list-style-type: none"> <li>o An outer layer of rubber or asphalt-backed fabric tape.</li> <li>o Two reversed layers of impregnated and reinforced paper.</li> </ul>
Corrugated Steel Protection	CS	A 0.15 mm of corrugated steel tape longitudinally wrapped around fiber optic cable with a positive overlap.
Double Sheath	DS	A polyethylene inner jacket covered by an aluminum shield with an extruded polyethylene outer jacket.
Gopher Tape Armor	GT	<ul style="list-style-type: none"> <li>o Polyethelene sheath, armored with a 0.15 mm corrugated steel tape flooded with a thermoplastic compound.</li> </ul>
	MG	<ul style="list-style-type: none"> <li>o Outer polyethylene sheath</li> <li>o Welded corrugated .41 mm or .51 mm steel tape.</li> <li>o Flooding Compound.</li> <li>o Polyethylene inner sheath</li> </ul>
Jute Protection	JU	<ul style="list-style-type: none"> <li>o Asphalt compound.</li> <li>o Impregnated paper.</li> <li>o Jute covering.</li> </ul>
Jute Protection with tape armor	JUTA	<ul style="list-style-type: none"> <li>o Layer of impregnated paper.</li> <li>o Layer of jute filled with asphalt.</li> <li>o Two layers of asphalt-coated steel tapes.</li> <li>o Outer covering of impregnated jute finished with mica.</li> </ul>
Lightweight armor	LA	<b>Note:</b> Similar to single-wire armor submarine except smaller sized steel wires.

Either Lead or PAP Sheath:

On.....	It consists of.....
Lead Sheath	<ul style="list-style-type: none"> <li>o Impregnated jute.</li> <li>o Layer of galvanized steel wires.</li> <li>o Outer layer of impregnated jute.</li> </ul>
PAP Sheath	<ul style="list-style-type: none"> <li>o Jute</li> <li>o A layer of galvanized steel wires.</li> <li>o An outer layer of impregnated jute.</li> </ul>

Type of Covering	Code Letter	Description
Modified tape armor	MT	Lead sheath with: <ul style="list-style-type: none"><li>o A layer of alternate paper tapes.</li><li>o Two steel tapes.</li><li>o An outer covering of jute</li></ul>
Neoprene jacket	NJ	<ul style="list-style-type: none"><li>o For use with lead-covered cable.</li><li>o Consists of a combination of neoprene filled and all-neoprene tapes that adhere tightly to the underlying sheath.</li></ul>
Polyethylene jacket	PJ	Polyethylene jacket extruded over lead or aluminum sheath.
Submarine double armor	DA	Submarine-type cable covered by: <ul style="list-style-type: none"><li>o Two layers of impregnated jute spiral wrapping of galvanized wire armor.</li><li>o A layer of impregnated jute.</li><li>o Another wrapping of galvanized wire armor spiraled in the opposite direction.</li><li>o An outer covering of impregnated jute.</li></ul>
Submarine single armor	SA	Submarine-type cable covered by: <ul style="list-style-type: none"><li>o Two layers of impregnated jute.</li><li>o A spiral wrapping of galvanized wire armor.</li><li>o Impregnated jute.</li></ul>

4.3.3.6.2 Page 13 - The following chart provides the code letters for aerial cable assembled messenger support and describes the code meanings:

Letter	Description
IM	Integral messenger bonded to cable sheath with a polyethylene web (Figure 8 configuration)
ML	Cable prelashed to messenger with steel binding tape
SS	Self-supporting cable. Conductors provide required support

4.3.3.7 Page 13 - Numerals indicate the number of:

- Cable pairs and wire gauge.
- Or
- Fibers contained in the fiber optic cable.

#### 4.3.4 Symbols and Codes for Cables

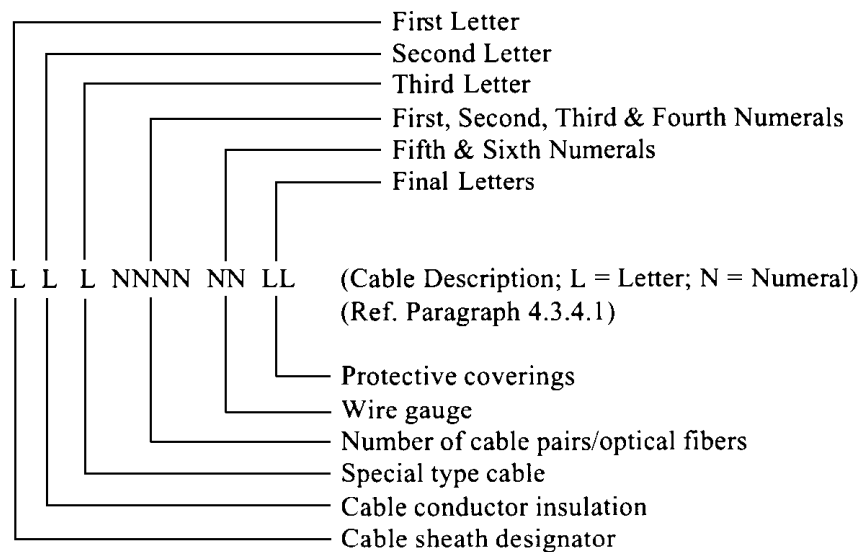
##### 4.3.4.1 Page 14 - Identify cables according to the following chart by using the letter or symbol codes or the numerical codes.

Letter or Numeral	Explanation								
First letter	Type of cable sheath. Refer to the following charts found in this standard in paragraphs indicated in this chart:  Reference  Cable sheath designations for Strip Paper or Pulp-Insulated Conductor Cables. Paragraph 4.3.3.1  Cable sheath designations for Plastic-Insulated Conductor Cables. Paragraph 4.3.3.2  Cable sheath designations for Other Cable Types. Paragraph 4.3.3.3.								
Second letter	Type of cable conductor insulation.  Or  In the case of fiber optics, protective fiber coating.  <b>Note:</b> See "Cable Conductor Insulation" in Paragraph 4.3.3.4.								
Third Letter	Special type cable. See "Special Type Cable" in Paragraph 4.3.3.5.								
First, Second, third & fourth numeral(s)	Indicate the number of: <ul style="list-style-type: none"><li>o Cable pairs</li></ul> Or <ul style="list-style-type: none"><li>o Optical fibers</li></ul> When placing numerals on work prints, use the rules in the following chart: <table><tbody><tr><td>Over 100</td><td>Indicate as actual total pairs (for example, a 300-pair and 2700-pair cable are shown as 300 and 2700)</td></tr><tr><td>From 25 to 75 Pair</td><td>The signifying two digits.</td></tr><tr><td>Of 24 or fewer pairs</td><td>Using an X for the second or third digit (for example, a 6-pair cable is designated as 6X and an 18-pair cable as 18X).</td></tr><tr><td>Of MAT/ICOT type cable pairs and special composite cable pairs.</td><td>Indicated as actual total pairs (for example 152, 455, 624).</td></tr></tbody></table>	Over 100	Indicate as actual total pairs (for example, a 300-pair and 2700-pair cable are shown as 300 and 2700)	From 25 to 75 Pair	The signifying two digits.	Of 24 or fewer pairs	Using an X for the second or third digit (for example, a 6-pair cable is designated as 6X and an 18-pair cable as 18X).	Of MAT/ICOT type cable pairs and special composite cable pairs.	Indicated as actual total pairs (for example 152, 455, 624).
Over 100	Indicate as actual total pairs (for example, a 300-pair and 2700-pair cable are shown as 300 and 2700)								
From 25 to 75 Pair	The signifying two digits.								
Of 24 or fewer pairs	Using an X for the second or third digit (for example, a 6-pair cable is designated as 6X and an 18-pair cable as 18X).								
Of MAT/ICOT type cable pairs and special composite cable pairs.	Indicated as actual total pairs (for example 152, 455, 624).								

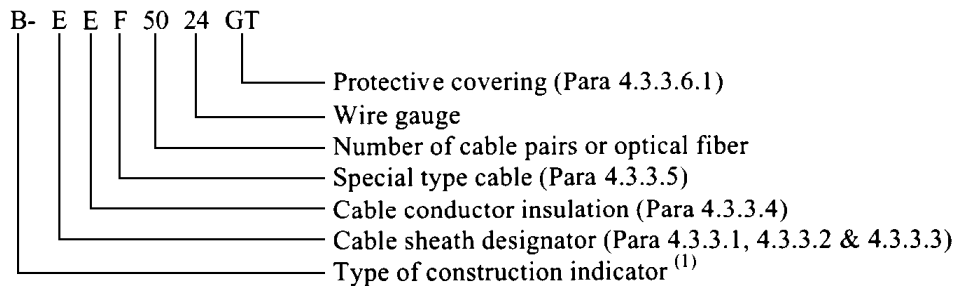


Letter or Numeral	Explanation								
Fourth and Sixth numerals *	Indicate wire gauge of cable conductors								
	* Replace the numerals with two letters to indicate special types of cables, as follows:								
	<table border="0"> <thead> <tr> <th style="text-align: left;">Code</th> <th style="text-align: left;">Explanation</th> </tr> </thead> <tbody> <tr> <td>SC</td> <td>Special composite cable of a mixture of gauges.  <b>Note:</b> The gauge number or SC code always follows the cable pair codes.</td> </tr> <tr> <td>SM</td> <td>Single-mode fiber optic cable</td> </tr> <tr> <td>MM</td> <td>Multimode fiber optic cable.</td> </tr> </tbody> </table>	Code	Explanation	SC	Special composite cable of a mixture of gauges.  <b>Note:</b> The gauge number or SC code always follows the cable pair codes.	SM	Single-mode fiber optic cable	MM	Multimode fiber optic cable.
Code	Explanation								
SC	Special composite cable of a mixture of gauges.  <b>Note:</b> The gauge number or SC code always follows the cable pair codes.								
SM	Single-mode fiber optic cable								
MM	Multimode fiber optic cable.								
Final letters	A two-letter code: <ul style="list-style-type: none"> <li>o Indicating the protective covering of the cable (See "Protective Coverings" in Paragraph 4.3.3.6.1).</li> </ul> Or <ul style="list-style-type: none"> <li>o Designating aerial messenger supports (See Paragraph 4.3.3.6.2).</li> </ul> <b>Note:</b> You must choose one two-letter code from either chart. Do not use codes from both charts in the same cable designation.								

4.3.4.1.1 Addition - In summary, symbology for use in designating cables on drawings and records will be shown as illustrated below:

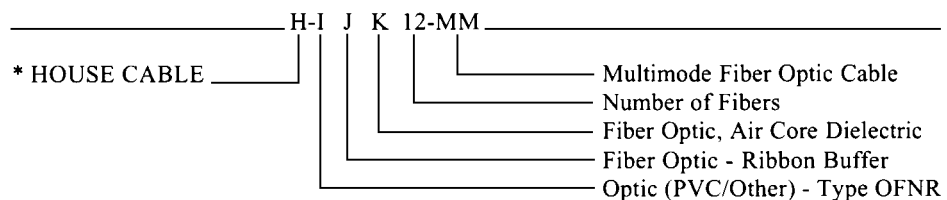
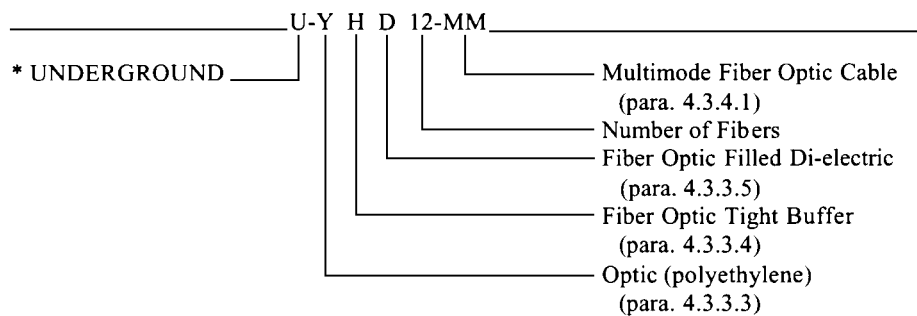
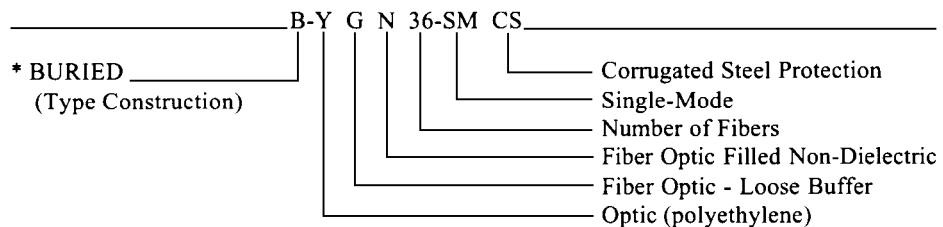


4.3.4.1.2 Addition - Shown below is an example of Typical Copper Cable designation:

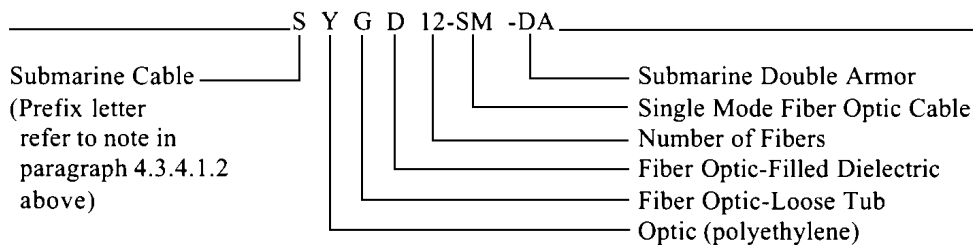


**Note:** <sup>(1)</sup> Prefix letter indicates type of construction; C = Aerial; B = Buried; U = Underground; S = Submarine; H = House Cable (cable inside buildings)

4.3.4.1.3 Addition - Listed below are examples for designating fiber optic cables on drawings and records (All cable lines are to be solid lines):



\* Prefix letter. Refer to Note in paragraph 4.3.4.1.2 above.



4.3.4.2 Pages 17-20 - The following examples are applications of the cable designations described in the preceding chart. (All lines used on Drawings or Records to represent cables are to be solid line, whether aerial, buried, underground, house or submarine cables are involved).

<b>Cable Designation (Prefix Letter to indicate type of const. is not shown)</b>	<b>Explanation</b>
_____ AE50-22 _____	<ul style="list-style-type: none"> <li>o Alpeh cable</li> <li>o Even-count plastic-insulated conductors color coded</li> <li>o 50 Pair</li> <li>o 22 Gauge</li> </ul>
_____ TB3-300-22 _____	<ul style="list-style-type: none"> <li>o Alwyn cable</li> <li>o Polyethylene-polyvinyl chloride insulated conductors (terminating cable)</li> <li>o 300 Pair</li> <li>o 22 Gauge</li> </ul>
_____ AE F100-22 _____	<ul style="list-style-type: none"> <li>o Alpeh cable</li> <li>o Even-count plastic-insulated conductors color coded</li> <li>o Filled</li> <li>o 100 Pair</li> <li>o 22 Gauge</li> </ul>
_____ UE F50-26 GT _____	<ul style="list-style-type: none"> <li>o Alpeh cable</li> <li>o Even-count plastic-insulated conductors color coded</li> <li>o Filled</li> <li>o 50 Pair</li> <li>o 26 Gauge</li> <li>o Gopher tape armor protective coating</li> </ul>
_____ AE100-22 GT _____	<ul style="list-style-type: none"> <li>o Alpeh cable</li> <li>o Even-count plastic-insulated conductors color coded</li> <li>o 100 Pair</li> <li>o 22 Gauge</li> <li>o Gopher tape armor protective coating</li> </ul>
_____ B L100-22 JU _____	<ul style="list-style-type: none"> <li>o Lead sheath cable</li> <li>o Single-paper wrapped insulated conductors</li> <li>o 100 Pair</li> <li>o 22 Gauge</li> <li>o Jute protection</li> </ul>

<b>Cable Designation (Prefix Letter to indicate type of const. is not shown)</b>	<b>Explanation</b>
___ AE25-19 M ___	<ul style="list-style-type: none"> <li>o Alpeh cable</li> <li>o Even-count plastic-insulated conductors</li> <li>o 25 Pair</li> <li>o 19 Gauge</li> <li>o Integral messenger (figure 8 configuration)</li> </ul>
___ YGA48-MM CS ___	<ul style="list-style-type: none"> <li>o Polyethylene-jacketed fiber optic</li> <li>o Loose-buffer</li> <li>o Air core-nondielectric</li> <li>o 48 Fiber</li> <li>o Multimode</li> <li>o Corrugated steel protection</li> </ul>
___ 7X19 TK1, 1-7 6 COAX ___	Composite LEPTH polyethylene sheath coaxial cable containing 43X-19GA and 6 Coaxial 0.375 tubes.

4.3.4.3 Addition - The cable designations shown above indicate conductor sizes in the American Wire Gauge (AWG) sizes only.

On cable drawings and records, cable manufactured to AWG shall be designated with the AWG designation (24, 22, etc.) and cable manufactured to metric system dimensions shall be designated with the metric designations (.5, .6, etc.) in accordance with SAEP 103 and the chart below.

<b>Conductor Size Comparisons</b>					
<b>American Wire Gauge</b>			<b>Metric Wire Sizes</b>		
<b>AWG</b>	<b>Size in mm</b>	<b>Show on Dwg's as</b>	<b>Standard Size</b>	<b>Size in mm</b>	<b>Show on Dwg's as</b>
19	0.9116	19	9	0.9000	.9
22	0.6438	22	6	0.6000	.6
24	0.5106	24	5	0.5000	.5
26	0.4049	26	4	0.4000	.4


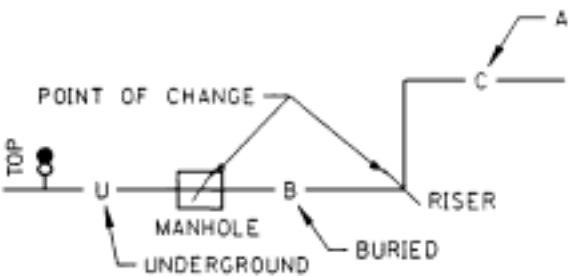



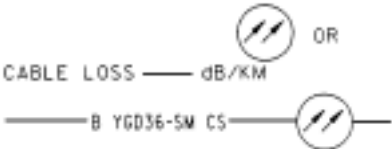

4.3.4.3.1 Addition - Metric Conversion Chart

<b>Equivalent Lengths</b>						
<b>mm</b>	<b>cm</b>	<b>meter</b>	<b>kilometer</b>	<b>inch</b>	<b>foot</b>	<b>mile</b>
1	0.1	0.001	$10^{-6}$	.03937	.003281	
10	1	0.01	$10^{-5}$	.3937	.032808	
1000	100	1	$10^{-3}$	39.37	3.28083	
106	105	1000	1	39370.	3280.83	
25.4	2.54	.0254		1	12	
304.8	30.48	.3048		12	1	
		1609.35	1.60935		5280	1

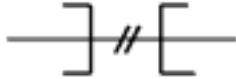
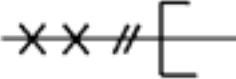
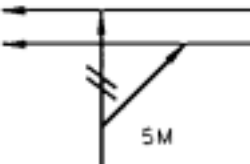
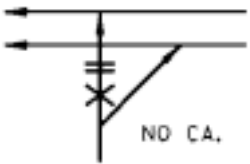



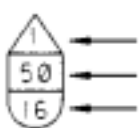
To convert from	To	Multiply by
Inches	millimeters	25.4
feet	meters	0.3048
miles	kilometers	1.6093
pounds	kilograms	0.4536
pounds per 1000 feet	kilograms per kilometer	1.4882

4.3.4.4 Page 22 to 25 - Listed in the chart below are symbols on drawings and/or records to represent cable and cable related operations and items:

Symbol	Explanation
	CABLES; AERIAL, BUILDING/HOUSE, BURIED, UNDERGROUND AND SUBMARINE CABLES ARE PRESENTED WITH SOLID LINE.
	BURIED CABLE MARKER POST LOCATION.
	CABLE REFERENCE BUBBLE AND HOOK.
	CAPPED AND MARKED BURIED SERVICE WIRE.
	ELECTRONIC MARKER.
	FOREIGN-OWNED CABLE. SHOW THE COMPANY NAME.
	LOOP IN CABLE.
	LOOP TREATMENT BOUNDARY.
	SPLICE (3-WAY SHOWN) SHOWS CHANGE IN SIZE, GAUGE, TYPE, OR COUNT.
	SPLICE INDICATING CHANGE IN SIZE, GAUGE, TYPE OF CABLE, CHANGE COUNT, ETC.
	STRAIGHT SPLICE, NO CHANGE IN SIZE, TYPE, GAUGE OR COUNT.

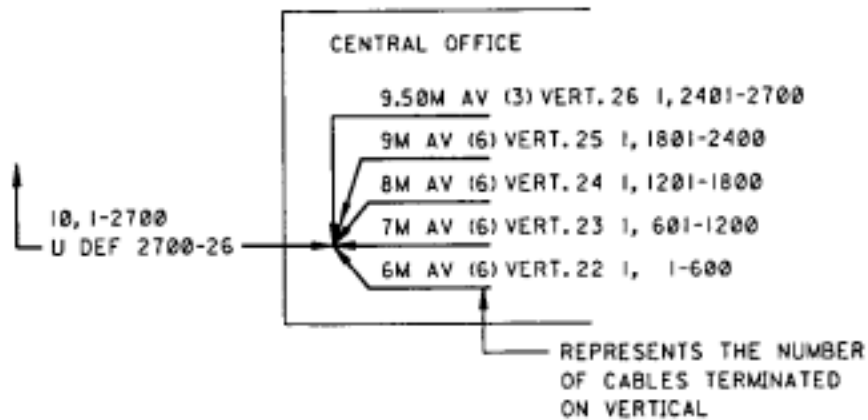
Symbol	Explanation
	<p>TICK MARK. DESIGNATES THE BEGINNING AND END OF A PIECE PART. SEE EXAMPLE BELOW:</p>
	<p>DENOTES A CHANGE IN FACILITIES. NO SPLICE.</p>
	<p>FEMALE CONNECTOR, FOR PRECONNECTORIZED CABLE.</p>
	<p>FUTURE EXTENSION.</p>
	<p>MALE CONNECTOR, FOR PRECONNECTORIZED CABLE.</p>
	<p>FIBER OPTIC CABLE SYMBOL. TWO CIRCLED DIAGONAL ARROWS AS SHOWN INDICATES A FIBER OPTIC CABLE. THE SYMBOL, WHEN USED MAY BE PLACED IN THE CABLE LINE OR JUST ABOVE IT.</p>
	<p>FIBER OPTIC CABLE SYMBOL SHOWING FIBER OPTIC PATCH PANEL.</p>

Work Symbols - The cable work operation symbols are shown in the following chart:

Symbol	Explanation
	CABLE TO BE CUT AND CAPPED.
	CABLE TO BE CUT, ONE END CAPPED, THE OTHER END REMOVED.
	CABLE REQUIRED FOR TRANSFER. THE SPLICER WILL CORRECT ESTIMATED MEASUREMENTS TO AS-BUILT MEASUREMENTS.
	NO CABLE REQUIRED FOR TRANSFER.
	CABLE SPECIFIED IN THE MANHOLE (a) ALLOWS FOR SPLICING OVERLAP. THE SPLICER WILL CORRECT CABLE LENGTH ON AS-BUILT DRAWING (b) TO INDICATE ACTUAL CABLE LENGTH FROM THE CENTER OF THE SPLICE TO THE DUCT (METERS).
	CONSTRUCTION WORK LOCATION. THE FUNCTION NUMBER IS ENTERED IN THE HEXAGON. MAY BE USED TO INDICATE WORK LOCATION WHERE NO SPLICING WORK IS REQUIRED.
	SPLICING WORK LOCATION SYMBOL. THE NUMBER INSIDE THE TRIANGLE INDICATES THE LOCATION NUMBER. WHERE DESIRED, THE NUMBER COULD BE USED TO INDICATE SPLICE OPERATION SEQUENCE.
	CABLE THROW SYMBOL WORK LOCATION NUMBER OF PAIRS TRANSFERRED NUMBER OF WORKING PAIRS

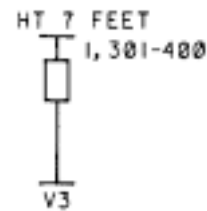
Use the symbols below to represent:

- CABLE INSTALLED ON CENTRAL OFFICE MDF WITH PRE-STUBBED PROTECTORS.
- THE AVERAGE STUB LENGTH OF THE TERMINATING CABLES FOR EACH VERTICAL.



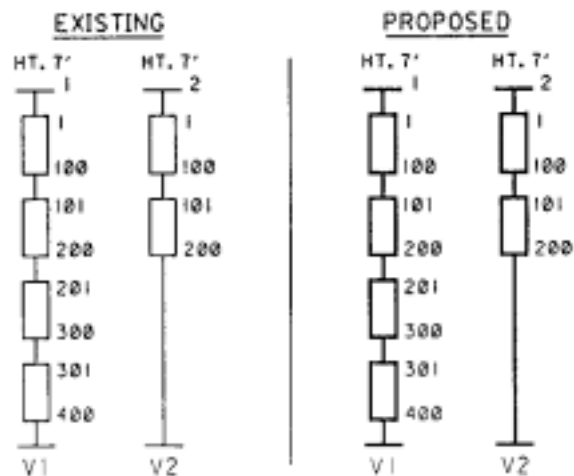
Main distribution frame (MDF) vertical with protector indicate:

- TERMINATED CABLE NUMBER AND PAIR COUNT.
- VERTICAL NUMBER
- VERTICAL HEIGHT (SHOWN HT. 7 FEET)
- TYPE OF PROTECTOR / CONNECTOR USE



ON ALL FRAMES IN CENTRAL OFFICES, OR LARGE BUILDINGS, TERMINATIONS WILL BE DESIGNATED.

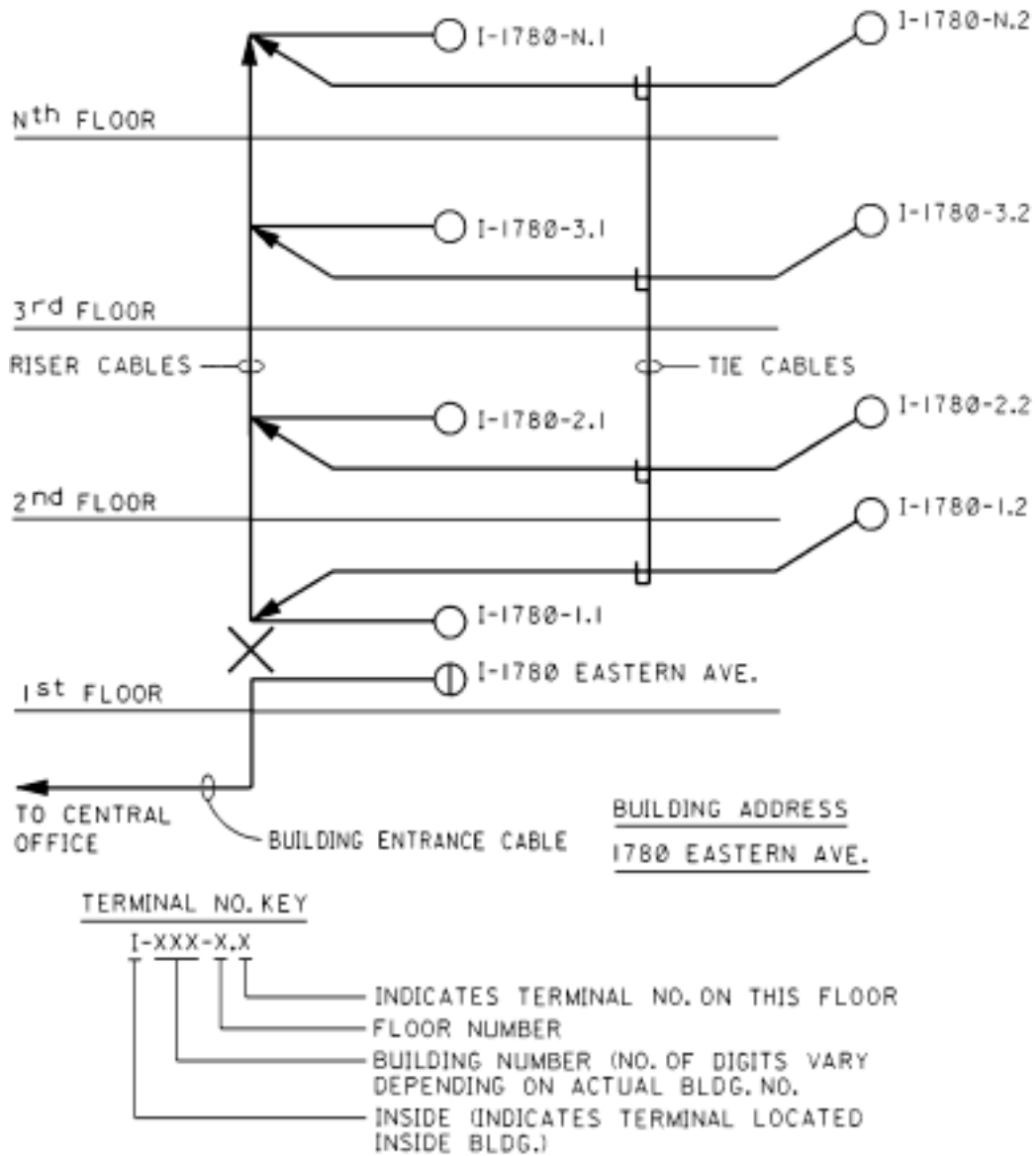
EXAMPLE SHOWS VERTICAL BLOCK PLACED ON VER-1 (COUNT FOR BLOCK WOULD BE DETERMINED BY SIZE & TYPE OF BLOCK AND SHOWN ON WORK PRINT).





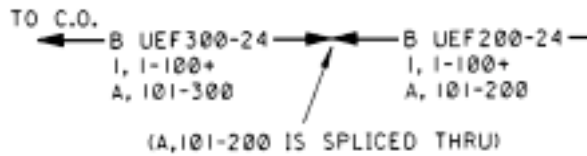
4.3.4.5 Addition

Terminal Addressing - Buildings

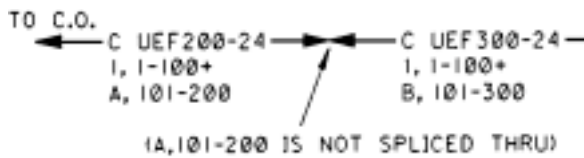


4.3.4.6 Addition

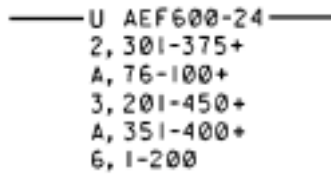
Cable Count Examples:



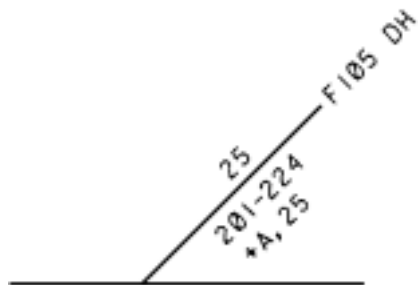
DEAD PAIR IN A CABLE COMPLEMENT WILL CARRY AN ALPHABETICAL DESIGNATION (A, B, C, D, ETC.). THE SPLICER, ENGINEER AND RECORDS WILL TREAT THIS DESIGNATION THE SAME AS IF IT WERE A CABLE NUMBER. THIS EXAMPLE, INDICATES THAT CABLE A, 101-200 IS SPLICED THROUGH AT THE INTERMEDIATE SPLICE.



THIS EXAMPLE INDICATES THAT CABLE A, 101-200 IS NOT SPLICED THROUGH TO CABLE B, 101-200.



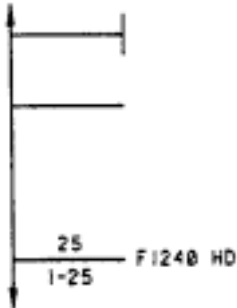
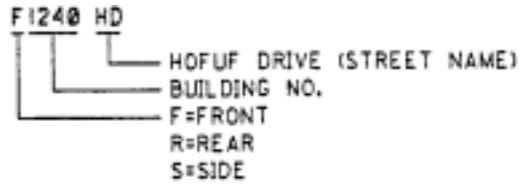
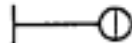

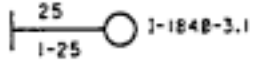
DEAD PAIRS IN A CABLE (I.E., SHEATH COUNT OF CABLE) WILL BE SHOWN IN THE EXACT ORDER THAT THEY APPEAR IN THE CABLE.










INDIVIDUAL DEAD CABLE PAIRS MAY BE IDENTIFIED BY THE EXACT ORDER OF COUNT THEY APPEAR IN.

### 4.3.5 Symbols For Cable Terminals

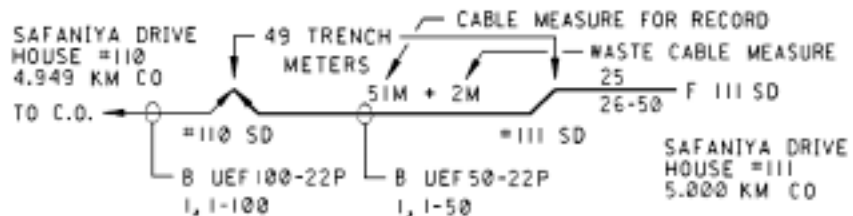
4.3.5.1 Page 26 - The following chart depicts terminal symbols. Proposed terminals are drawn using a heavy weight line:

Symbol	Explanation
	<ul style="list-style-type: none"> <li>• AERIAL/BURIED PROT. TERMINAL.</li> <li>• FIXED COUNT.</li>   <li>• AERIAL/BURIED UNPROT. TERMINAL.</li> <li>• FIXED COUNT.</li>   <li>TYPICAL UNPROTECTED TERMINAL</li>   <li>• SIZE OF TERMINAL ON THE STEM.</li> <li>• COUNT OF THE TERMINAL.</li> <li>• TERMINAL ADDRESS.</li> </ul>
<p>TERMINAL ADDRESS (TERMINAL OUTSIDE BUILDINGS)                  EXAMPLE:</p> 	
	<ul style="list-style-type: none"> <li>• BUILDING TERMINAL.</li> <li>• PROTECTED.</li> <li>• FIXED COUNT.</li> </ul>
	<ul style="list-style-type: none"> <li>• BUILDING TERMINAL.</li> <li>• UNPROTECTED.</li> <li>• FIXED COUNT.</li> </ul>
 <p style="margin-left: 40px;">                 0-BASEMENT                  1-FIRST FLOOR                  2-SECOND FLOOR                  ETC.             </p>	<p>TYPICAL BUILDING TERMINAL</p> <ul style="list-style-type: none"> <li>• SIZE AND TYPE OF TERMINAL                      -25 PAIR NC.</li> <li>• COUNT OF TERMINAL</li> <li>• BUILDING NUMBER – 1840.</li> <li>• TERMINAL NUMBER – 1-1840</li> <li>• ("1" INDICATES TERMINAL LOCATED INSIDE BUILDING)</li> <li>• FLOOR NUMBER – 3.1                      ("1" INDICATES IT'S THE FIRST TERMINAL ON THE THIRD FLOOR)</li> </ul>


4.3.5.2 Page 27 - Terminal and closure symbols used on direct buried cables are shown in the chart below.

Symbol	Explanation
	<p>LOOP THROUGH PEDESTAL.</p> <ul style="list-style-type: none"> <li>INSTALL AS A SPLICE CLOSURE ONLY.</li> <li>NO TERMINAL BLOCKS.</li> <li>CONSIDERED AS A CLOSURE FOR RECORD PURPOSES.</li> </ul>
	<ul style="list-style-type: none"> <li>FIXED COUNT.</li> <li>NON-REENTERABLE SUBSURFACE TERMINAL.</li> </ul>
	<ul style="list-style-type: none"> <li>SUBSURFACE REENTERABLE TERMINAL.</li> <li>FIXED COUNT.</li> </ul>
	<ul style="list-style-type: none"> <li>UNPROTECTED TERMINAL IN PEDESTAL.</li> <li>FIXED COUNT.</li> <li>PEDESTAL NUMBER.</li> <li>PEDESTAL LOCATION.                      A) STREET NAME (SAFANIYA DRIVE)                      B) BUILDING NUMBER                      C) KM. FROM C.O.</li> </ul>
	<ul style="list-style-type: none"> <li>PROTECTED TERMINAL IN PEDESTAL.</li> <li>FIXED COUNT.</li> </ul>
	<ul style="list-style-type: none"> <li>PEDESTAL/CLOSURE OFFSET 3.04 METERS (10') FROM BURIED MAIN CABLE RUN WITH CABLE LOOPED THROUGH IT.</li> </ul>
	<ul style="list-style-type: none"> <li>SYMBOL FOR PEDESTAL/CLOSURE PROPOSED SHOWN WITH HEAVY LINE.</li> </ul>

EXAMPLE OF A BURIED CABLE EXTENSION.



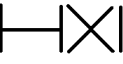
Terminal symbols continue

Symbol	Explanation
 <p>F205SD                  FSEC0F600                  CABINET  <u>600 PAIR</u>                  IN: 14, 1-200                  OUT: 205SD, 1-400</p>	X – CONNECT TERMINAL INDICATE: <ul style="list-style-type: none"> <li>• TERMINAL ADDRESS.</li> <li>• TYPE.</li> <li>• CAPACITY.</li> <li>• IN AND OUT.</li> </ul>

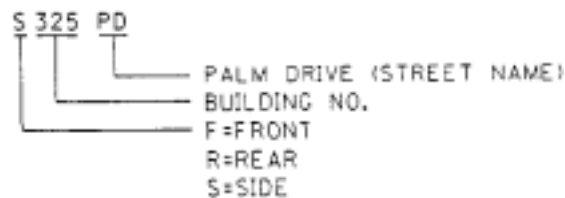
TERMINAL ADDRESS EXAMPLE:



**NOTE:** THE OUT CABLE NUMBER OF A CROSS-CONNECT TERMINAL IS DETERMINED BY THE TERMINAL ADDRESS NUMBER.

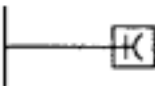
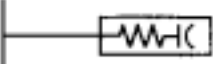


 <p>S325 PD                  40 EPI 76SACE  <u>1800 PAIRS.</u>                  3.110 KM FROM CO                  FEEDER PAIRS                  IN: 6, 201-800                  DISTRIBUTION PAIRS                  OUT: 325PD, 1-1200</p>	FAP INTERFACE CONNECTOR. INDICATE: <ul style="list-style-type: none"> <li>• TERMINAL ADDRESS.</li> <li>• TYPE.</li> <li>• CAPACITY.</li> <li>• KM FROM C.O.</li> <li>• IN AND OUT.</li> </ul>
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TERMINAL ADDRESS EXAMPLE:





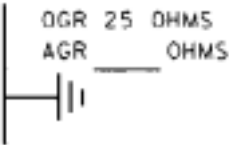

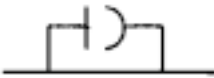


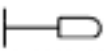


#### 4.3.6 Other Symbols


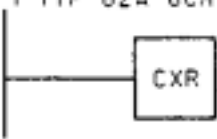
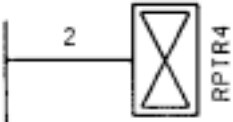
4.3.6.1 Page 28 - The following chart provides the symbols for load coil cases, build-out capacitors, and build-out lattice network:

Symbol	Explanation
<p>CASE 124/50 TYP                  .032MF                  11, 1-50</p> 	<p>BUILD-OUT CAPACITOR CASE. INDICATE THE:</p> <ul style="list-style-type: none"> <li>• TYPE OF CASE.</li> <li>• QUANTITY OF CAPACITORS.</li> <li>• CAPACITANCE IN MF (MICROFARADS).</li> <li>• COUNT OF TERMINATED CABLE PAIRS.</li> </ul>
<p>CASE 152/25 TYP 19B                  .020MF/120 OHM                  11, 1-25</p> 	<p>BUILD-OUT LATTICE NETWORK CASE.                  INDICATE THE:</p> <ul style="list-style-type: none"> <li>• TYPE OF CASE.</li> <li>• QUANTITY AND VALUE OF CAPACITORS IN MF (MICROFARAD).</li> <li>• RESISTANCE.</li> <li>• COUNT OF TERMINATED CABLE PAIRS.</li> </ul>
<p>CASE 152/50 TYP 662                  1, 1-50</p>  <p>END SECTION *</p> <p>* SHOWN AT LAST LOAD POINT ONLY.</p>	<p>LOAD CASE. INDICATE THE:</p> <ul style="list-style-type: none"> <li>• LOAD POINT NUMBER FROM C.O.</li> <li>• BACK SPAN DISTANCE TO C.O./LP.</li> <li>• TYPE OF CASE.</li> <li>• QUANTITY OF COILS.</li> <li>• TYPE OF COILS.</li> <li>• COUNT OF TERMINATED CABLE PAIRS.</li> <li>• DISTANCE TO NEXT LOAD POINT.</li> <li>• ON LAST LOAD POINT SHOW DISTANCE TO THE END OF CABLE.                      [914M (3000 FEET) OR GREATER]</li> </ul> <p><b>NOTE:</b> INDICATE SAME SYMBOL AND EXPLANATIONS WHEN LOAD COIL IS ENCLOSED IN SPLICE.</p>
<p>CASE 152/25                  TYP SAT IND                  1,1-25</p> 	<p>INDUCTOR:</p> <ul style="list-style-type: none"> <li>• TYPE CASE.</li> <li>• QUANTITY.</li> <li>• TYPE.</li> <li>• CABLE COUNT.</li> </ul>


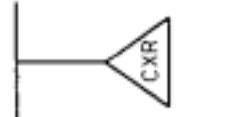

4.3.6.2 Page 29 - The symbols for cable grounding, bonding, and protection are provided in the chart below:

Symbol	Explanation
	BOND CABLE TO STRAND OR OTHER CABLE.
	BOND AND GROUND CABLE.
	BOND AND GROUND TO POWER NEUTRAL OR MULTI-GROUNDED NEUTRAL.
	GROUND (SHOW N OR MGN IF GROUND IS TO POWER GROUND).
	GROUND WITH DRIVEN GROUND RODS: <ul style="list-style-type: none"> <li>SPECIFY THE OBJECTIV GROUND RESISTANCE (OGR).</li> <li>RECORD THE ACTUAL GROUND RESISTANCE (AGR) WHEN THE GROUND IS INSTALLED.</li> </ul>
	PGR-POWER GROUND ROD. TGR-TELEPHONE GROUND ROD.
	INSULATING JOINT WITH NOISE SUPPRESSION CAPACITOR ACROSS THE JOINT.
	NEUTRALIZING TRANSFORMER: <ul style="list-style-type: none"> <li>QUANTITY OF TRANSFORMERS.</li> <li>TYPE OF TRANSFORMERS.</li> </ul>
	* RECTIFIER – INDICATES CATHODIC PROTECTION RECTIFIER. <b>NOTE:</b> SHOW OWNERSHIP BY A NOTE.
	* ANODE – INDICATES A SACRIFICIAL ANODE. * FOR CATHODIC PROTECTION SYMBOLS REFER TO DWG. #X AE-036785.

4.3.6.3 Page 31 - The symbols for carrier repeater housings and associated equipment are listed below:

Symbol	Explanation
<p>3 TYP 82A 24CH                      HSC TYP EMAR</p>  <p>TYPE BT/100                      IN: 1, 1-25                      OUT: PG30, 1-75</p>	<p>ANALOG CARRIER DEVICE WITH X-CONNECT. INDICATE THE:</p> <ul style="list-style-type: none"> <li>• TYPE OF CARRIER.</li> <li>• NUMBER OF SYSTEMS.</li> <li>• NUMBER OF CHANNELS.</li> <li>• X-CONNECT TYPE.</li> <li>• X-CONNECT CAPACITY.</li> <li>• IN AND OUT COUNT.</li> <li>• PG = PAIR GAIN</li> </ul>
<p>1 TYP 82A 6CH</p> 	<p>ANALOG SUBSCRIBER CARRIER CHANNELS OR PAIR GAIN SYSTEMS (MXU, DMS-I, ETC.) ARE INSTALLED IN A FIELD TERMINAL. INDICATE THE:</p> <ul style="list-style-type: none"> <li>• TYPE OF CARRIER.</li> <li>• NUMBER OF SYSTEMS.</li> <li>• NUMBER OF CHANNELS.</li> <li>• CABLE PAIRS ASSIGNED.</li> <li>• ANY OTHER PERTINENT INFORMATION.</li> </ul>
<p>2</p>  <p>#1 25/ITT TI D-NF                      1, 1-25                      #2 25/ITT TI D-NF                      1, 26-50</p>	<p>CARRIER REPEATER LOCATION.</p> <p><b>NOTE:</b> THE NUMBER ON THE SYMBOL STEM IS THE QUANTITY OF HOUSINGS SPLICED TO AN INDIVIDUAL CABLE. FOR EACH HOUSING, INDICATE THE:</p> <ul style="list-style-type: none"> <li>• HOUSING NUMBER.</li> <li>• CAPACITY OF THE HOUSING.</li> <li>• CABINET/HOUSING TYPE.</li> <li>• CABLE NUMBER AND COUNT OF TERMINATED CABLE PAIRS FOR EACH HOUSING.</li> </ul>



Symbol	Explanation
 <p data-bbox="472 556 633 619">6/EMAR B2A 1, 1-25</p>	<p data-bbox="776 359 1278 457">CUSTOMER CARRIER REPEATER LOCATION. REPEATERS ARE INSTALLED IN A WEATHER-PROOF HOUSING. ADJACENT TO THE SYMBOL, INDICATE THE:</p> <ul data-bbox="776 485 1149 640" style="list-style-type: none"> <li>• QUANTITY OF REPEATERS.</li> <li>• TYPE OF HOUSING.</li> <li>• HOUSING NUMBER.</li> <li>• TYPE OF CARRIER.</li> <li>• CABLE NUMBER AND COUNT OF TERMINATED CABLE PAIRS.</li> </ul>
<p data-bbox="472 709 690 793">TYP 914A 96CH HSG TYPE MNHUT 1 SYSTEM</p>  <p data-bbox="472 919 665 976">IN: 1, 1-25 OUT: PG30, 1-96</p>	<p data-bbox="776 737 1278 814">DIGITAL SUBSCRIBER CARRIER CHANNELS OR PAIR GAIN SYSTEMS INSTALLED IN A FIELD TERMINAL. INDICATE THE:</p> <ul data-bbox="776 835 1068 934" style="list-style-type: none"> <li>• TYPE OF CARRIER.</li> <li>• NUMBER OF CHANNELS.</li> <li>• NUMBER OF SYSTEMS.</li> <li>• IN AND OUT COUNT.</li> </ul>
<p data-bbox="472 1052 698 1136">TYP 914A 96CH HSG TYP PAD MTD 1 SYSTEM</p>  <p data-bbox="472 1266 665 1346">TYP BT/200 IN: 1, 1-25 OUT: PG30, 1-96</p>	<p data-bbox="776 1052 1278 1108">DIGITAL CARRIER DEVICE WITH X-CONNECT. INDICATE THE:</p> <ul data-bbox="776 1129 1068 1333" style="list-style-type: none"> <li>• TYPE OF CARRIER.</li> <li>• NUMBER OF CHANNELS.</li> <li>• NUMBER OF SYSTEMS.</li> <li>• LOCATION.</li> <li>• X-CONNECT TYPE.</li> <li>• X-CONNECT CAPACITY.</li> <li>• IN AND OUT COUNT.</li> <li>• DISTANCE FROM C.O.</li> </ul>

4.4 GTE Section 018-000-004 (Issue 5) October, 1989  
Symbols and Abbreviations, Conduit and Manholes



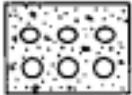

4.4.1 General

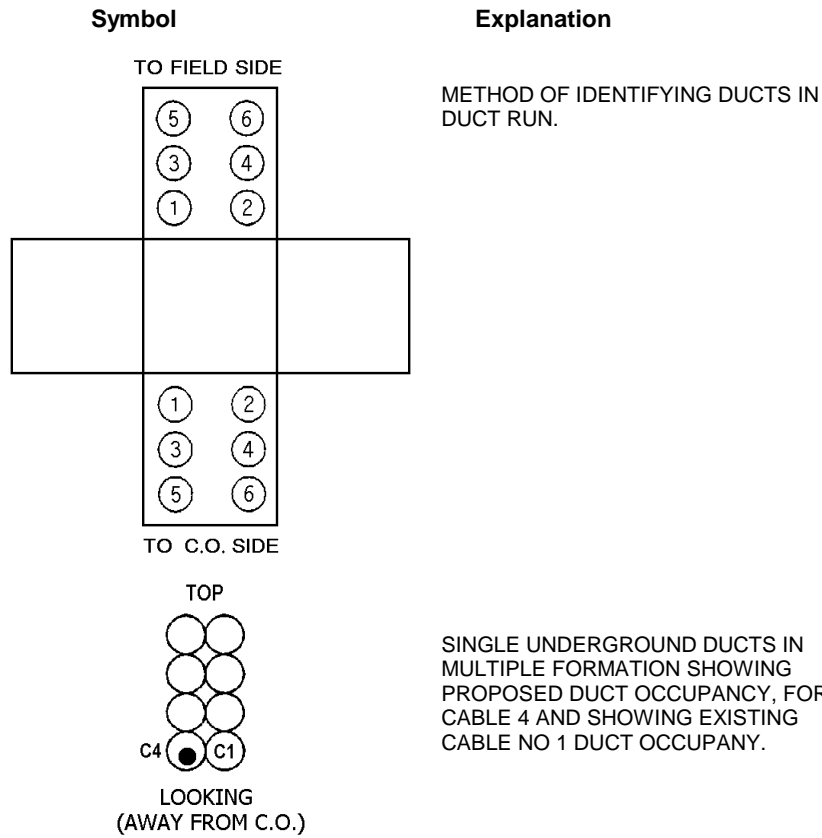
4.4.1.1 Page 1 - This section identifies and defines the symbols and abbreviations related to underground conduit and manholes. Use these symbols and abbreviations on:

- Construction work permits.
- Maps.
- Records.

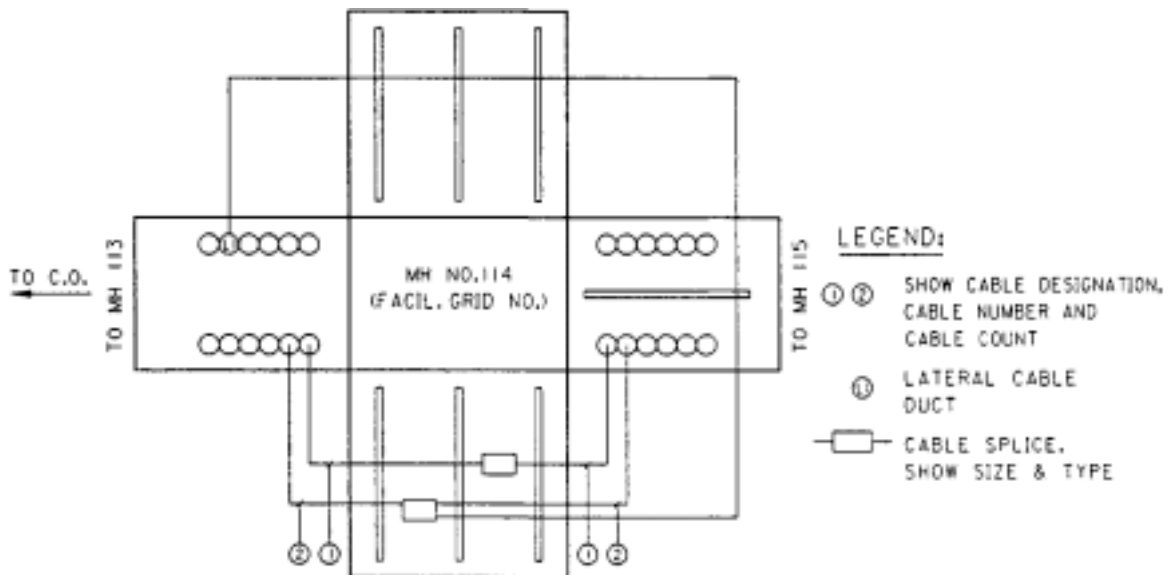
Refer to paragraph 4.6 below for symbols and abbreviations used with building conduit, and for additional miscellaneous symbols.


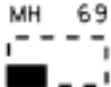

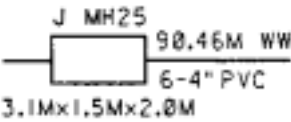
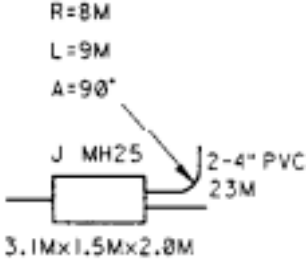
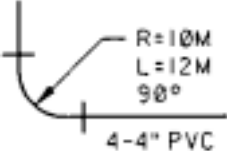
4.4.2 Page 2 - The following chart shows the commonly used underground conduit and manhole symbols: (Proposed symbols are the same as existing except symbols are drawn with heavy line).

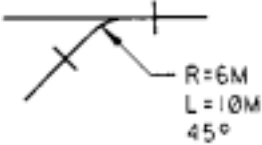
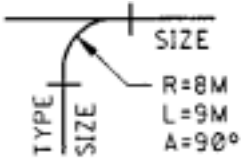
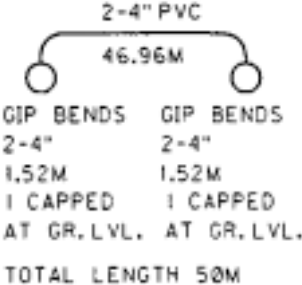
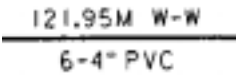

Symbol	Explanation
	LATERAL POLE WITH RISER CONDUITS.
<p>T60mm COVER</p> 	CONCRETE COVER OVER DUCTS.  <b>NOTE:</b> THE COVER IS THE VERTICAL DISTANCE FROM THE SURFACE GRADE OF THE GROUND OR PAVING TO THE TOP OF THE UNDERGROUND STRUCTURE INVOLVED.
	DUCTS ARE ENTIRELY ENCASED IN CONCRETE.
<p>100.00M WW</p> 	METHOD OF INDICATING TRENCH METER OF CONDUIT WALL-TO-WALL.  <b>NOTE:</b> USE THIS SYMBOL WITH CONDUIT MEASUREMENTS APPLY BETWEEN THE INSIDE SURFACE OF ADJACENT MANHOLE WALLS.

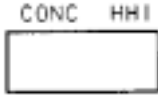
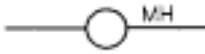

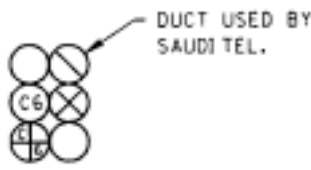






**TYPICAL MANHOLE FOLD OUT DRAWING AND CABLE FACILITY**  
 (SHOWN SPLAYED DUCTS FORMATION, DOUBLE BAY RACKING)



Symbol	Explanation
	<p>MANHOLE WITH INSIDE DIMENSIONS:</p> <ol style="list-style-type: none"> <li>1. LENGTH.</li> <li>2. WIDTH.</li> <li>3. HEADROOM.</li> <li>4. MANHOLE TYPE.</li> <li>5. MANHOLE NUMBER.</li> </ol>
	<p>MANHOLE OUTLINE.          AREA THAT IS FILLED IN REPRESENTS ACTUAL LOCATION OF MANHOLE.</p>
	<p>IRREGULAR SHAPE MANHOLE</p> <p><b>NOTE:</b> SYMBOLS FOR OTHER IRREGULAR SHAPES MAY BE DEVELOPED TO INDICATE MH SHAPE AND DIMENSIONS.</p>
<p>2.75Mx1.8Mx0.61Mx                  2.44Mx0.61Mx2M HR</p>	<p>MANHOLE DIMENSIONS ARE EXPRESSED BY INSIDE MEASUREMENTS, STARTING WITH THE LONGEST SIDE AND READING CLOCKWISE AND LEAVING HEADROOM LAST.</p>
	<p>MAIN UNDERGROUND CONDUIT AND MANHOLE. MANHOLE TEXT INDICATES MANHOLE:</p> <ul style="list-style-type: none"> <li>• TYPE.</li> <li>• NUMBER.</li> <li>• DIMENSIONS.</li> </ul>
	<p>CONDUIT TEXT INDICATES:</p> <ul style="list-style-type: none"> <li>• DISTANCE WALL-TO-WALL.</li> <li>• NUMBER OF DUCT.</li> <li>• DIAMETER OF DUCT.</li> <li>• TYPE OF CONDUIT.</li> </ul> <p>MAIN UNDERGROUND CONDUIT, MANHOLE AND LATERAL.</p>
	<p>CONDUIT BEND, SHOW ANGLE AND RADIUS OF BEND. SHOW TYPE, SIZE AND NUMBER OF CONDUITS.</p>

Symbol	Explanation
	<p>INTERCEPTING BEND 45 DEGREES. SHOW RADIUS OF BEND.</p>
	<p>Y COUPLING. SHOW RADIUS OF BEND.</p> <p>EXAMPLE:              R = RADIUS IN METER              L = LENGTH IN METER              A = ANGLE IN DEGREE</p>
	<p>UNDERGROUND CONDUIT DIP LATERAL FROM POLE-TO-POLE, POLE-TO-BUILDING, ETC. SHOW MANHOLE WALL-TO-POLE, POLE-TO-BUILDING, ETC., MEASUREMENTS.</p>
	<p>UNDERGROUND CONDUIT. TEXT INDICATES:</p> <ul style="list-style-type: none"> <li>• TYPE OF CONDUIT.</li> <li>• DIAMETER OF DUCT.</li> <li>• NUMBER OF DUCTS.</li> <li>• LENGTH WALL-TO-WALL.</li> </ul>
	<p>CROSS SECTION OF UNDERGROUND CONDUIT THAT CONTAINS SUBDUCTS.</p> <ul style="list-style-type: none"> <li>• SMALL CIRCLE INDICATES NUMBER OF SUBDUCTS.</li> <li>• SHOW NUMBER AND SIZE WITH THE NOTE I.E., 3-1' SUBDUCTS.</li> </ul>

Symbol	Explanation
<p><b>NOTE:</b> A HANDHOLE IS A BELOW GRADE ENCLOSURE TO SMALL FOR A MAN TO ENTER.</p> 	<p>HANDHOLE. TEXT INDICATES HANDHOLE:</p> <ul style="list-style-type: none"> <li>• TYPE.</li> <li>• NUMBER.</li> </ul>
	<p>FOREIGN UNDERGROUND CONDUIT AND MANHOLE OF OTHER WIRE USING UTILITY.</p>
	<p>DUCT LEASED OR USED BY A FOREIGN COMPANY OR A GOVERNMENT AGENCY.</p>
<p>EXAMPLE: DUCT SYMBOLS</p> 	<p><b>NOTE:</b> THE DUCT MUST BE LABELED TO INDICATE COMPANY OR AGENCY NAME.</p>
	<p>DUCT OCCUPIED BY SAUDI ARAMCO CABLE NO. 6.</p>
	<p>BLANK TERMINATOR</p>
	<p>VACANT DUCT</p>
	<p>DUCT LEASED OR USED BY SAUDI ARAMCO IN FOREIGN-OWNED CONDUIT SYSTEM.</p>

#### 4.4.3 Underground conduit abbreviations

4.4.3.1 Page 7 - Use the abbreviations listed in the following chart to indicate the underground conduit type:

Abbreviation	Type of Underground Conduit
FD	Fiber duct
MPD	Multiple plastic duct
PVC	Polyvinyl Chloride duct

4.4.3.2 Page 8 - Use the numerical codes listed in the following chart to identify underground conduit:

Numerical Code	Explanation
9-4" PVC	
	Abbreviation indicating the type of underground conduit.
	Inside diameter of ducts.
	Number of ducts.

#### 4.4.4 Miscellaneous Underground Conduit and Manhole Abbreviation

4.4.4.1 Page 8 - Miscellaneous Underground Conduit and Manhole abbreviations used on Construction Drawings, records, maps, etc. are listed in the following chart:



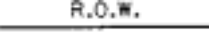










<b>Abbreviation</b>	<b>Description</b>
2-4" PVC	Two-duct PVC conduit with a 4-inch bore.
3L - CI Bend	Cast iron bend, type 3L indicated.
3" GIP Bend	Galvanized iron pipe - inside diameter indicated.
MH	Manhole
WW	Wall-to-wall
Lat	Lateral
PB	Pullbox
HH	Handhole
CC	Center of splice to center of splice
TR M	Trench meter
DU M	Duct meter
R=6m	Bend with a 6 - meter radius
L=30m	30-meter length
SB	Subduct

#### 4.4.4.2 Page 10 - Letter Codes Underground conduit abbreviations

Identify subsurface facilities of other utilities. Agencies, etc., using the codes listed in the following chart:

<b>Code Letters</b>	<b>Type of Facility</b>
CATV	Cable Television
E	Electric
G	Gas
PL	Pipe line
PO	Privately owned
S	Sewer
w	Water

4.4.4.3 Page 10 - The miscellaneous symbols used on underground conduit construction drawings are shown in the following chart:

Symbol	Explanation
	CATCH BASIN AT CURB
	WATER LINE VALVE IN LINE
	RIGHT-OF-WAY LINE
	PROPERTY LINE
	CENTER LINE
	TRAFFIC LIGHT SIGNAL POST.
	TRAFFIC LIGHT CONTROL, PEDESTAL MOUNTED.
	TRAFFIC LIGHT CONTROL, UNDERGROUND.
	SIGN POST, STREET, ROAD, STOP, ETC.
	ELECTRIC TRANSFORMER.
	CULVERT (SIZE INDICATED).
	TREE OR BUSHES (TRUNK DIAMETER INDICATED).
	SURFACE RAILROAD TRACKS.



Symbol	Explanation
<u>FL</u>	FLOW LINE.
<u>FENCE</u>	FENCE LINE.
<u>G</u>	FOREIGN COMPANY LINE/FACILITY.

**NOTE:** THE LETTER INDICATES THE TYPE:

- G = GAS
- E = ELECTRICITY
- T = TELEPHONE
- CATV = CABLE TV
- S = SEWER
- SW = SWEET WATER
- RW = RAW WATER
- AC = CENTRAL AIR CONDITIONING COOLANT PIPE.

4.5 GTE Section 018-000-005 (Issue 2) February, 1975  
Symbols and Abbreviations - Cable Pressurization

4.5.1 General

4.5.1.1 Paragraph 1.01 - This section presents the most common symbols and abbreviations used in cable pressurization.





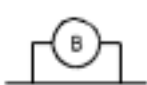
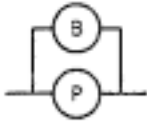
4.5.2 Abbreviations

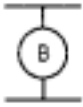
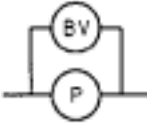


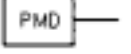
4.5.2.1 Paragraph 2.02 - Following is a list of the most common abbreviations:

B	Bypass (no shutoff valve)
BV	Bypass (with shutoff valve)
D	Air Dryer (compressor-dehydrator or refrigeration type)
P	Pressure Dam
V	Pressure-Testing Valve
PMD	Pole-Mounted Air Dryer

4.5.3 Symbols

4.5.3.1 Paragraph 3.01 - The symbols listed below are those most commonly used in pressurization work:






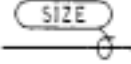


Symbol		Explanation
EXISTING	PROPOSED	
	SAME AS EXISTING EXCEPT MAKE SYMBOL HEAVY	PRESSURE PIPELINE NUMBER WITH THE DIRECTION OF AIR FLOW INDICATED BY THE POINT OF THE SYMBOL.
		PRESSURE PIPELINE NUMBER WITH THE DIRECTION OF AIR FLOW INDICATED BY THE POINT OF THE SYMBOL. (COLOR CODED AS REQUIRED).
		PRESSURE DAM IN AERIAL, UNDERGROUND, OR BURIED CABLE.
		PRESSURE CONTACTOR WITH NUMBER TO INDICATE THE NUMBER OF THE CONTACTOR.
		BYPASS (PLASTIC TUBING) TO CIRCUMVENT RESTRICTION.
		BYPASS (PLASTIC TUBING) INSTALLED TO BYPASS PRESSURE DAM.

Symbol		Explanation
EXISTING	PROPOSED	
	SAME AS EXISTING EXCEPT MAKE SYMBOL HEAVY	BYPASS (PLASTIC TUBING) BETWEEN TWO CABLES.
		BAYPASS VALVE WITH SHUTOFF INSTALLED IN PIPELINE AROUND PRESSURE DAM.
		PRESSURE-TESTING VALVE IN CABLE, SPLICE CLOSURE, OR BURIED TERMINAL HOUSING.
		AIR DRYER (REFRIGERATOR OR COMPRESSOR-DEHYDRATOR TYPE).
		POLE-MOUNTED AIR DRYER.


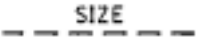





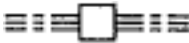



















- 4.6 GTE Section 018-000-007 (Issue 2) August, 1977  
Miscellaneous Symbols and Abbreviations BIC/BICSI
- 4.6.1 General
- 4.6.1.1 Paragraph 1.01 - This section includes miscellaneous symbols and abbreviations that will be useful in preparing construction work plans and will have limited use in developing and maintaining permanent plant records.

## 4.6.2 Symbols and Abbreviations

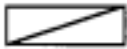






### 4.6.2.1 Paragraph 2.01 - The architectural symbols and abbreviations used on drawings covering communication facilities are shown below:

Symbol	Meaning
* 	OUTLET WITH CONDUIT STUB-UP OR STUB-DOWN AS NOTED.
* 	TELEPHONE TERMINAL BOARD, SIZE AS NOTED.
* 	TELEPHONE TERMINAL CABINET.
* 	LARGE (FEEDER) UNDERFLOOR DUCT, TRENCH HEADER, OR HEADER DUCT.
* 	STANDARD (DISTRIBUTION) UNDERFLOOR DUCT, OR CELLULAR FLOOR CELL.
	CONDUIT.
	TO TTB: HOME RUN CONDUIT TO TELEPHONE TERMINAL BOARD.
	TO TTB: TWO FLOOR OUTLETS, 1-INCH HOME RUN TO TTB AND OUTLET BOXES TIED TOGETHER WITH 3/4-INCH CONDUIT.





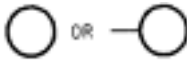


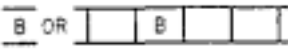



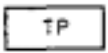
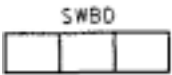


**NOTE:** \* ADDITIONAL SYMBOLS FROM THE LATEST BICSI MANUAL

Symbol	Meaning								
	CABLE EXPOSED.								
	CONDUIT.								
	CONDUIT CONCEALED IN CEILING OR WALL.								
	CONDUIT HOME RUN.								
	CONDUIT CONCEALED IN FLOOR.								
	CONDUIT FOR PLACING GROUND WIRE.								
	CONDUIT BACKBONE.								
	UNDERFLOOR DUCT AND JUNCTION BOX, TRIPLE SYSTEM (NUMBER OF LINES ENTERING A BOX IN THE HEADER DUCT RUN INDICATE NUMBER OF SYSTEMS TELEPHONE, ELECTRIC, TV, ETC.).								
	BACKBONE SLEEVE.								
<table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><u>EXISTING</u></td> <td style="text-align: center;"><u>PROPOSED</u></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> </table>	<u>EXISTING</u>	<u>PROPOSED</u>							<p>FLOOR OUTLET BOX OR FITTING.</p> <p>CEILING OUTLET BOX.</p> <p>WALL OUTLET BOX.</p>
<u>EXISTING</u>	<u>PROPOSED</u>								
									
									
									

**NOTE:** PLACE 'T' OR 'D' BESIDE OUTLET SYMBOLS.  
 T = TELEPHONE (VOICE)  
 D = DATA

Symbol	Meaning
	PRIMARY ENTRANCE LOCATION.
	CEILING DROP POLE.
	SWITCHBOARD.
	PULL BOX.
	TRENCH HEADER FEED ON CELLULAR OR UNDERFLOOR DUCT SYSTEM.
	HEADER DUCT WITH ACCESS UNIT ON CELLULAR OR UNDERFLOOR DUCT SYSTEM.
	TELEPHONE PANEL (ENTRY AND SECURITY).

#### 4.6.2.1.1 Electrical Symbols - BICSI

	DUPLEX RECEPTACLE OUTLET.
	WALL SWITCH.
	INDIVIDUAL FLOURESCENT FIXTURE.
	CONTINUOUS ROW FLOURESCENT FIXTURE.
	INCANDESCENT FIXTURE.
	LIGHTING PANEL.
	POWER PANEL.
	BUSWAY.
	WIREWAY.
	TRANSFORMER.
	TRANSFORMER - MANHOLE OR VAULT.
	TRANSFORMER PAD.
	SWITCHBOARD.
	THREE NO. 12 WIRES.
	FOUR NO. 12 WIRES.

- 4.6.3 This section includes BICSI acronyms and symbols to update symbology information (Refer to BICSI Chapter 17 & GTE section 018-000-008, page 3).

<b>Acronym</b>	<b>Explanation</b>
ac	Alternating current
Abdn	Abandon, abandoned, abandon
Al	Aluminum
A-D	Analog to digital conversion
ACO	Analog Central Office
AM	Aplitude Modulation
ASCII	American Standard Code for Information Interchange
AWG	American Wire Gauge
Asph	Asphalt
Att	Attach, attached, attachment
Ave	Avenue
B	Buried
BEF	Building Entrance Facility
BFx	Bridge fixture
BIC	Building Industry Consultant
BICSI	Building Industry Consulting Service International
Bdy	Boundary
Bk	Black
Bkn	Broken
Bkt	Bracket
Bldg	Building
Blk	Block
Bld	Boulevard
Brdg	Bridge
Bsmt	Basement
ckt	Circuit
C/L	Center line
CATV	Community Antenna Television; cable television
CC	Center of manhole to center of manhole
CCITT	The International Telegraph and Telephone Consultative Committee
CDF	Central Distribution Frame
CDO	Community Dial Office
CFC	Communications Flat Cable
CLT or CLOS	Closet
CO	Central Office
COdec	Coder decoder
COE	Central Office Equipment
COT	Central Office Terminal

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<b>Acronym</b>	<b>Explanation</b>
CP	Control point
CPC	Customer Premises Communication
CPE	Customer Premises Equipment or Customer Provided Equipment
CPU	Central Processing Unit
CSA	Canadian Standards Association
CXR	Carrier
Cap	Capacitor
Cl	Clearance
Cnd	Conduit
Conc	Concrete
Cwt	Hundredweight
dB	Decibel
dc	Direct current
D-A	Digital to analog conversion
DAF	Dedicated Access Facility
DCE	Data Circuit-Terminating Equipment
DCO	Digital Central Office
DEMARC	Demarcation point
DTE	Data Terminal Equipment
DU.FT.	Duct feet
Def	Defective
Distr	Distribution
Div	Division
Dr	Drive
Drwy	Driveway
Dwg	Drawing
ex or ext	Extension
E	East
EIA	Electronics Industries Association
EMI	Electromagnetic Interference
ESS	Electronic Switching System
ETV	Educational Television
Ea	Each
Est	Estimate
Exch	Exchange
Exist	Existing
Ext	Extended
freq	Frequency
FA	Fire alarm
FCC	Federal Communication Commission
FDM	Frequency-Division Multiplexing
FOTP	Fiber Optic Test Procedure
FOTS	Fiber Optics Transmission System

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<b>Acronym</b>	<b>Explanation</b>
Fdr	Feeder
Fl	Floor
Fr	From
gHZ	Gigahertz
Galv	Galvanized
GrB	Ground brace
GrL	Ground line
Grd	Ground
hc	Handset combination (single line telephone)
HH	Handhole
HS	High strength
HT	High tension
HVAC	Heating, Ventilation, and Air-Conditioning
Hwy	Highway
I	Iron
IEEE	Institute of Electrical and Electronics Engineers, Inc.
ISDN	Integrated Services Digital Network
IW (C)	Inside Wiring (cable)
J	Joint
Jct	Junction
KHZ	Kilohertz
KTS	Key Telephone Service
Kf	Kilofeet
Kv	Kilovolt
locap	Low-capacitance, low-loss paired cable
L=30m	30-meter length
LA	Location abandoned
LAN	Local Area Network
LASER	Light Amplification by Stimulated Emission of Radiation
LBO	Line Build-out
LEC	Local Exchange Carrier
LED	Light-Emitting Diode
LNA	Location not abandoned
Ld	Load or loaded
mm	millimeter
modem	Modulator demodulator
mtg	Mounting
M/G	Motor/Generator Set
MDF	Main Distribution Frame
MH	Manhole
MTT	Main Telephone Terminal
Mac	Macadam
Mu	Municipal

---

<b>Acronym</b>	<b>Explanation</b>
Mv	Move
N	North
NE	Northeast
NEC	National Electrical Code
NIU	Network Interface Unit
NW	Northwest
No	Number
OSP	Outside Plant
OPE	Outside Plant Engineer
P	Pipe or pole
P/L	Property line
PABX	Private Automatic Branch Exchange
PAM	Pulse Amplitude Modulation
PB	Pullbox
PBX	Private Branch Exchange
PCM	Pulse Code Modulation
PLT	Plant
PM	Phase Modulation
POI	Point Of Interface
POTS	Plain Old Telephone Service (colloquial)
PP	Private property
PR	Pair
PTSS	Passive Transmission Sub-System
Pkwy	Parkway
Pl	Place, placed, or plat
Plk	Plank
PR/W	Private right-of-way
Pri	Primary
R	Right
R.O.W.	Right-of-way
R=6m	Bend with a 6 - meter radius
RCDD	Registered Communication Distribution Designer
REP	Repair
RRXg	Railroad crossing
Rd	Road
Rf	Reinforce
RI	Relocate
Rm	Remove
Rp	Replace
Rt	Route
sys	System
S	South
SDN	Switched Digital Network

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<b>Acronym</b>	<b>Explanation</b>
SE	Southeast
SH	Second-hand
SI	System International
SPC	Stored Program Control
SPG	Single Point Ground
STA	Station
SUB	Subscriber
Salv	Salvage
SISp	Slack Span
Sq	Square
SW	Southwest
Swbd	Switchboard
TB	Terminal Block
TC	Toll Center
TDM	Time-Division Multiplexing
TEL	Telephone
TELCO	Telephone Company
TERM	Terminal or terminating
TR M	Trench meter
TT	Telephone Terminal
TTB	Telephone Terminal Board
TTC	Telephone Terminal Closet or Cabinet
Tfr	Transfer
Toll	Toll
Tr	Tree
Trk	Trunk
UL	Underwriters Laboratories, Inc.
UPS	Uninterruptible Power Supply
W	West
Wi	Wire
Xng	Crossing

- 4.7 GTE Section 018-000-008 (Issue 3) October, 1989  
Symbols and Acronyms – General
- 4.7.1 General
- 4.7.1.1 Page 1 - This section provides general information about symbols and acronyms.

#### 4.7.2 Overview

##### 4.7.2.1 Outside Plant symbols and acronyms indicate the meaning and intent of:

- Construction work plans
- Plant records
- Maps

Symbols and acronyms provide information and instructions while using limited space.

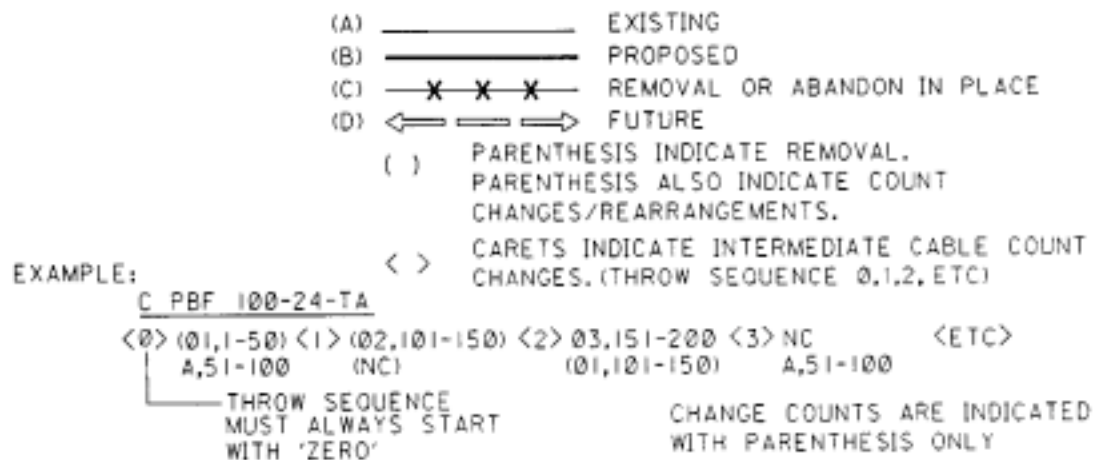
Most of the symbols in this practice indicate existing plant.

##### 4.7.2.2 Addition




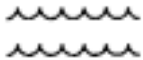


All symbols describing existing, proposed and removal of telecommunication outside plant (OSP) facilities should be distinguished as follows:

- Existing: All symbols of this category are fine line and open symbols.
- Proposed addition or modification to all symbols of this category are heavy lines and solid symbols.
- Removal or abandon in place: All symbols of this category are superimposed with an "X" indicating that they are being removed from plant.
- Planned future installation: Indicated by thin parallel lines.


















The following chart shows examples of the symbols that indicate plant type:



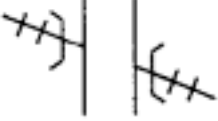


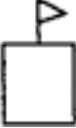




4.7.3 Page 10 - Miscellaneous Symbols


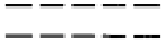
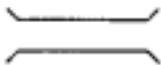










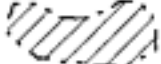



Symbol	Explanation
	BRIDGE.
	BUILDINGS.
	WATER.
	WATER (FLOWING)
	STREET CENTER LINE.
	CEMETERY.

FACILITY AREA PLAN (FAP) FILL BOXES

<p><b>FDR</b></p> <p> #PRESENT UNITS</p> <p><b>UP</b>  UNASSIGNED PAIRS</p> <p><b>AP</b>  ASSIGNED PAIRS</p> <p><b>RP</b>  REQUIRED PAIRS IN 2 YEARS</p> <p><b>UP</b>  ULTIMATE PAIRS</p> <p> ULTIMATE NUMBER OF 25-PAIR BINDER GROUP REQUIRED.</p>	<p><b>DIST</b></p> <p> # LIVING UNITS</p> <p> # ULTIMATE PAIRS REQUIRED</p> <p> # BINDER GROUP REQUIRED.</p>
<p><b>USE FOR CABLE TRANSFER ONLY.</b></p> <p> WORK LOCATION NO. # PAIRS TRANSFERED</p> <p> # SPECIAL CIRCUITS</p> <p> # WORKING LINES (INCLUDES POT'S AND SPECIALS)</p>	<p> # EXISTING LIVING UNITS</p> <p> # EXISTING PAIRS USED</p> <p> # ULTIMATE LIVING UNITS</p> <p> # ULTIMATE PAIRS REQ'D.</p> <p> # ULTIMATE BINDER GROUPS.</p>

Symbol	Explanation
	CAUTION SYMBOL USED TO FLAG A SAFETY HAZARD OR TO ADD ANY REQUIRED INFORMATION.
	HOSPITAL.
	RAILROAD UNDERPASS.
	WATER TOWER.
	CENTRAL OFFICE.
	SCHOOL.
	MOSQUE.
	VACANT HOUSE.

4.7.4 Addition Landbase Miscellaneous Symbols

Symbol	Explanation
	PAVED ROAD
	DIRT ROAD
	BRIDGE
	ROAD UNDER CONSTRUCTION
	TRAIL
	GUARD RAIL
	MEDIAN BARRIER
	RAILROAD
	RETAINING WALL
	SHORE LINE
	STREAM
	DIKE
	SABKHAH
	POND
	MUD FLAT
	DAM
	DITCH



Symbol	Explanation
	EXPOSED PIPELINE
	BURIED PIPELINE
	PIPERACK
	TREE LINE
	GATE VALVE
	POWER LIGHT & LEADER
	FIRE HYDRANT
	VALVE
	POWER LIGHT
	ANTENNA
	TANK
	TRANSMISSION TOWER
	TRANSMISSION TOWER WITH LEADERS
	CATCH BASIN
	SWAMP
	PALM
	WELL
	FLARE
	STANDPIPE

4.8 GTE Section 018-100-010 (Issue 2) May, 1969  
Symbols S-CATV, ETV, CCTV and ITV-RF Systems

4.8.1 General

4.8.1.1 Paragraph 1.01 - This section provides symbols to be used on work orders, construction work plans, maps, records, etc., for CATV, ETV, CCTV and ITV RF systems.




4.8.1.2 Paragraph 1.02 - For purposes of this section, the following abbreviations are given:

- a) CATV: Community antenna television
- b) ETV: Educational television
- c) CCTV: Closed circuit television
- d) ITV: Instructional television
- e) RF: Radio frequency

4.8.1.3 Paragraph 1.03 - For definitions and abbreviations, including those for paragraph 1.02 see section 018-100.011.






4.8.2 Antennas and Headend

4.8.2.1 Paragraph 2.01 - Following is a list of symbols and descriptions for antenna and headend:

	Symbol	Description
(A)	 (TYPE & FREQUENCY)	YAGI-ANTENNA
(B)	 (TYPE & FREQUENCY)	PARABOLIC ANTENNA
(C)		HEADEND



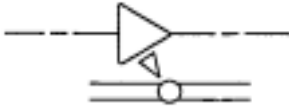


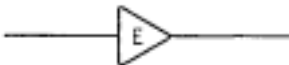

4.8.3 Cables

4.8.3.1 Paragraph 3.01 - Following is a list of symbols for cables and their descriptions:

Symbol	Description
(A) 	Ø.375 PCA.
(B) 	Ø.75Ø CA.
(C) 	Ø.5ØØ CA.
(D) 	Ø.412 CA.
(E) 	RG-59 CA.

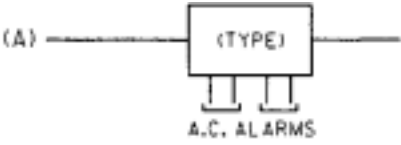
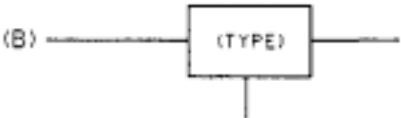
4.8.4 Amplifiers and Blocking Connection

4.8.4.1 Paragraph 4.01 - Following is a list of symbols and descriptions for amplifiers:

Symbol	Description
(A-1) 	TRUNK LINE AMPLIFIER (W/O AGC)
(A-2) 	TRUNK LINE AMPLIFIER (E/W AGC)
(A-3) 	TRUNK LINE AMPLIFIER (W/O AGC, E/W BRDGING AMP. AND 4-WAY SPLITTER)
(A-4) 	TRUNK LINE AMPLIFIER (E/W AGC, BRDGING AMP. AND 3-WAY SPLITTER)
(B) 	INTERMEDIATE BRIDGING (E/W 2-WAY SPLITTER)
(C) 	LINE EXTENDER AMPLIFIER
(D) 	A-C BLOCKING CONNECTION

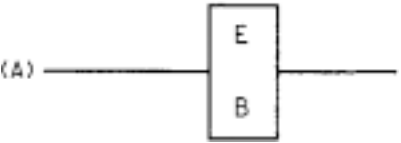
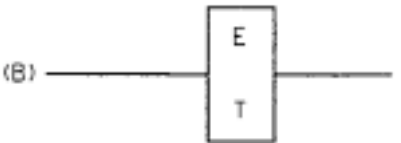

#### 4.8.5 Power Equipment

4.8.5.1 Paragraph 5.01 - Following is a list of symbols and descriptions for power equipment:

Symbol	Description
	POWER SUPPLY
	POWER COMBINER



#### 4.8.6 Equalizers

4.8.6.1 Paragraph 6.01 - Following is a list of symbols and descriptions for equalizers:

Symbol	Description
	BASIC EQUALIZER
	THERMAL EQUALIZER
	SPECIAL EQUALIZER

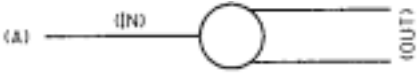

#### 4.8.7 Attenuators

4.8.7.1 Paragraph 7.01 - Following is a list of symbols and descriptions for attenuators (dB value is shown inside symbol):

Symbol	Description
(A) 	IN-LINE FLAT ATTENUATOR
(B) 	IN-LINE CABLE EQUIVALENT ATTENUATOR

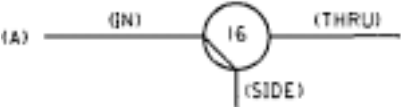
#### 4.8.8 Splitter

4.8.8.1 Paragraph 8.01 - Following is a list of symbols and descriptions for line splitters:

Symbol	Description
(A) 	LINE SPLITTER (2 WAY)
(B) 	LINE SPLITTER (3 WAY)

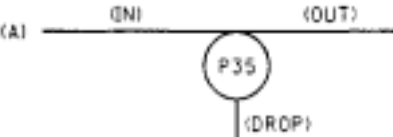
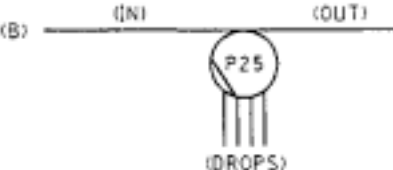
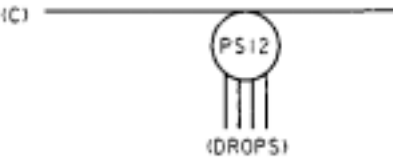
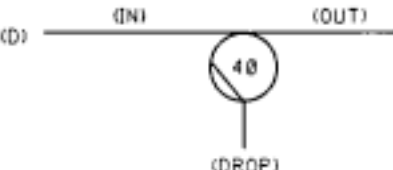
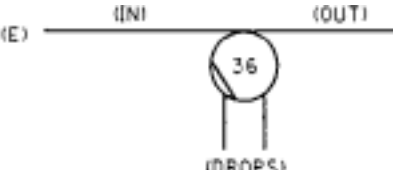
#### 4.8.9 Directional Coupler

4.8.9.1 Paragraph 9.01 - Following is a list of symbols and descriptions for directional coupler (dB value is shown inside symbol):

Symbol	Description
(A) 	DIRECTIONAL COUPLER

4.8.10 Taps

4.8.10.1 Paragraph 10.01 - Following is a list of symbols and descriptions for taps (dB value is shown inside symbol, also preceded by P for pressure type and S for sloped type):

Symbol	Description
(A) 	TAP, PRESSURE TYPE, BACK MATCHED (SINGLE)
(B) 	MULTI-TAP, PRESSURE TYPE, DIRECTIONAL COUPLER, (4-WAY)
(C) 	MULTI-TAP, PRESSURE TYPE, SLOPED, (4-WAY)
(D) 	TAP, IN-LINE DIRECTIONAL COUPLER (SINGLE)
(E) 	MULTI-TAP, IN-LINE, DIRECTIONAL COUPLER, (2-WAY)

Symbol	Description
	MULTI-TAP, IN-LINE, DIRECTIONAL COUPLER, (3-WAY)
	MULTI-TAP, IN-LINE, DIRECTIONAL COUPLER, (4-WAY)
	TAP, IN-LINE, SLOPED, DIRECTIONAL COUPLER, (SINGLE)
	TAP, IN-LINE, SLOPED, DIRECTIONAL COUPLER, (4-WAY)

#### 4.8.11 Terminations

4.8.11.1 Paragraph 11.01 - Following is a list of symbols and descriptions for terminations:

Symbol	Description
	TERMINATION (75 Ω)
	TEST POINT (INCLUDES 75 Ω TERMINATIONS)

- 4.9 GTE Section 018-100-011 (Issue 2) December, 1968  
Definitions and Abbreviations - Coaxial Cable Systems

This GTE Section may be referenced for coaxial cable system definitions and abbreviations. It will not be repeated here.

- 4.10 GTE Section 018-300-001 (Issue 1) September, 1977  
PABX/CENTREX - Glossary of Terms

This GTE Section will not be repeated here.

- 4.11 GTE Section 018-573-100 (Issue 4) August, 1973  
GTE LENKURT 757C Switching System - Symbols and Abbreviations

This GTE Section will not be repeated here.

**Revision Summary**

28 January, 2004 Revised the "Next Planned Update." Reaffirmed the contents of the document, and reissued with minor changes.